July 18, 1985

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Docket No. 50-302

Mr. Walter S. Wilgus
Vice President, Nuclear Operations
Florida Power Corporation
ATTN: Manager, Nuclear Licensing
& Fuel Management
P. O. Box 14042; M.A.C. H-2
St. Petersburg, Florida 33733

Dear Mr. Wilgus:

The Commission has issued the enclosed Exemption to certain requirements of 10 CFR 50 Appendix R Sections III.G.2 and III.G.3 in response to your letters of September 24, 1984, October 5, 1984 and December 11, 1984 for Crystal River Unit No. 3. Section III.G.2 specifies that one train of cables and equipment necessary to achieve and maintain safe shutdown be maintained free of fire damage. If conditions of Section III.G.2 cannot be met, then Section III.G.3 specifies that there be an alternative shutdown capability independent of the fire area of concern.

You requested exemptions from the requirements specified in Sections III.G.2 and III.G.3 in nine areas throughout the plant. For six of these locations listed below, we conclude that additional modifications would not enhance fire protection safety above that provided by existing and proposed alternatives for the facility and therefore exemption from the requirements in Section III.G has been granted. These locations are as follows:

1. Intermediate Building Redundant Emergency Feedwater System Pumps and Valves (Fire Area IB-95-200)
2. Auxiliary Building Seawater Pump Room (Fire Area AB-95-3)
3. Auxiliary Building Redundant Makeup Pumps (Fire Area AB-95-3)
4. Auxiliary Building Redundant Makeup System Valves (Fire Area AB-95-3)
5. Reactor Building Penetration Assemblies (Fire Area IB-119-201)
6. Control Complex HVAC Equipment Room (Fire Area CC-164-121)

For the remaining three locations listed below, we conclude that your requested exemption from Section III.G.2 of Appendix R is not necessary since the requests do not apply to fire protection within fire areas. However, the existing fire protection with the proposed modifications meets the guidelines for establishing fire area boundaries set forth in Appendix A of BTP APCSB 9.5-1 in Section D.1(j) and is therefore acceptable. These locations are as follows:

1. Auxiliary Building Fire Area Penetrations (Fire Areas AB-95-3 and AB-119-6)
2. Auxiliary Building Decay Heat Pits (Fire Areas AB-75-4, AB-75-5 and AB-95-3)
3. Intermediate Building Ceiling/Floor Penetrations (Fire Areas IB-95-200 and IB-119-201)

A copy of the Exemption from the requirements of Appendix R and Safety Evaluation covering BTP APCSB 9.5.1 items is enclosed.

Sincerely,

ORIGINAL SIGNED BY
JOHN F. STOLZ

John F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing

Enclosures:
1. Exemption
2. Safety Evaluation

cc w/enclosures:
See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
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July 23, 1985

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DOCKET No. 50-302

MEMORANDUM FOR: Docketing and Service Branch
Office of the Secretary of the Commission

FROM: Office of Nuclear Reactor Regulation

SUBJECT: CRYSTAL RIVER UNIT NO. 3 NUCLEAR GENERATING PLANT

One signed original of the *Federal Register* Notice identified below is enclosed for your transmittal to the Office of the Federal Register for publication. Additional conformed copies (6) of the Notice are enclosed for your use.

- ☐ Notice of Receipt of Application for Construction Permit(s) and Operating License(s).
- ☐ Notice of Receipt of Partial Application for Construction Permit(s) and Facility License(s): Time for Submission of Views on Antitrust Matters.
- ☐ Notice of Consideration of Issuance of Amendment to Facility Operating License.
- ☐ Notice of Receipt of Application for Facility License(s); Notice of Availability of Applicant's Environmental Report; and Notice of Consideration of Issuance of Facility License(s) and Notice of Opportunity for Hearing.
- ☐ Notice of Availability of NRC Draft/Final Environmental Statement.
- ☐ Notice of Limited Work Authorization.
- ☐ Notice of Availability of Safety Evaluation Report.
- ☐ Notice of Issuance of Construction Permit(s).
- ☐ Notice of Issuance of Facility Operating License(s) or Amendment(s).
- ☐ Order.
- ☒ XX Exemption.
- ☐ Notice of Granting of Relief.
- ☐ Other: _____

Division of Licensing, ORB#4
Office of Nuclear Reactor Regulation

Enclosure:
As stated

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	7/23/85						

OFFICIAL RECORD COPY

Mr. W. S. Wilgus
Florida Power Corporation

Crystal River Unit No. 3 Nuclear
Generating Plant

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Mr. Wilbur Langely, Chairman
Board of County Commissioners
Citrus County
Inverness, Florida 36250

7590-01

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
FLORIDA POWER CORPORATION, ET AL.	)	Docket No. 50-302
	)	
(Crystal River Unit No. 3 Nuclear Generating Plant)	)	

EXEMPTION

I.

The Florida Power Corporation (the licensee) and eleven other co-owners are the holders of Facility Operating License No. DPR-72 which authorizes operation of Crystal River Unit No. 3 Nuclear Generating Plant (the facility) at steady state reactor power levels not in excess of 2544 megawatts thermal. The facility comprises one pressurized water reactor at the licensee's site located in Citrus County, Florida. The license provides, among other things, that it is subject to all rules, regulations and Orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

II.

On November 19, 1980, the Commission published a revised Section 10 CFR 50.48 and a new Appendix R to 10 CFR 50 regarding fire protection features of nuclear power plants (45 FR 76602). The revised Section 50.48 and Appendix R became effective on February 17, 1981. Section III. of Appendix R contains fifteen subsections, lettered A through O, each of which specifies requirements for a particular aspect of the fire protection features at a nuclear power plant. One of these fifteen subsections, III.G., which requires that one train of cables and equipment necessary to achieve and maintain safe shutdown be maintained free of fire damage, is the subject of this exemption.

The specific areas in which exemptions from the requirements of Section III.G. have been requested are as follows.

Fire exemption requests concern separation of redundant equipment within a fire area:

1. Intermediate Building Redundant Emergency Feedwater System Pumps and Valves (Fire Area IB-95-200)
2. Auxiliary Building Seawater Pump Room (Fire Area AB-95-3)
3. Auxiliary Building Redundant Makeup Pumps (Fire Area AB-95-3)
4. Auxiliary Building Redundant Makeup System Valves (Fire Area AB-95-3)
5. Reactor Building Penetration Assemblies (Fire Area IB-119-201)

One exemption request concerns the fixed suppression system for a fire area:

1. Control Complex HVAC Equipment Room (Fire Area CC-164-121)

Six additional exemption requests concern fire area boundaries, the acceptance criteria for which are called out in Appendix A to Branch Technical Position (BTP) APCSB 9.5-1. Deviations from these fire area boundary guidelines do not require exemption and are accordingly not addressed herein.

III.

By letters dated September 24, 1984 and October 5, 1984, and superseded by letter dated December 11, 1984, the licensee requested an exemption from requirements specified in Section III.G of Appendix R of 10 CFR 50. The specific requests and the acceptability of the exemption are addressed below.

A) Exemptions from Section III.G.2.

Subsection III.G.2 of Appendix R requires that one train of cables and equipment necessary to achieve and maintain safe shutdown be maintained free of fire damage by one of the following means:

a. Separation of cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a 3-hour rating. Structural steel forming a part of or supporting such fire barriers shall be protected to provide fire resistance equivalent to that required of the barrier;

b. Separation of cables and equipment and associated non-safety circuits or redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or

c. Enclosure of cables and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

The licensee requests exemption from Section III.G.2 of Appendix R to the extent that it requires separation of redundant safe shutdown components by 3-hour fire rated barriers for fire areas as follows:

1) Redundant Emergency Feedwater System Pumps and Valves (Fire Area IB-95-200)

This fire area is located on the 95 foot elevation of the Intermediate Building. It is bounded by 3-hour fire rated walls on all sides. The ceiling and floor are reinforced concrete.

This area contains the A-train motor driven and the B-train turbine driven emergency feedwater system pumps. One of the pumps is required for safe shutdown.

The pumps are separated by a partial height concrete wall. Pipes and conduits traverse the open areas above and beyond the end of the wall and an open trench passes under the wall.

Two A-train valves and cables for an A-train valve located in another fire area are exposed by the B-train pump. One of the exposed valves has a redundant valve located in another fire area.

The fuel load of oil, grease, and cable insulation corresponds to an equivalent fire severity of approximately 25 minutes.

Existing fire protection includes an area-wide ionization detection system, portable extinguishers, and one hose station.

The licensee proposes (1) to rotate the exposed A-train valve so that its motor operator will be located behind the partial height wall with respect to the turbine driven pump; (2) to enclose the valve within a 1-hour

fire rated enclosure; (3) to install automatic sprinklers throughout the fire area, except in the tendon access gallery; (3) to protect one train of redundant cables with 1-hour fire rated barriers; (4) to modify all cables traversing the space between the pumps to eliminate them as intervening combustibles; and (5) to install a steel plate across the drain trench to prevent flame propagation through the trench.

The technical requirements of Section III.G.2 are not met because redundant shutdown components are not separated by 3-hour fire rated barriers.

The concern was that a fire would damage both emergency feedwater systems. However, the area-wide detection system provides reasonable assurance that a fire anywhere in the fire area would be detected in its early stages and extinguished by the plant fire brigade before damage to redundant safe shutdown equipment occurs.

If rapid fire growth occurs prior to brigade arrival, the automatic sprinklers would operate and control or extinguish the fire.

The partial height wall separating the pumps, the valve enclosure, and the cable protection would provide passive protection and would prevent damage to these systems by flame impingement and radiant heat energy until the fire brigade arrives or the sprinkler system operates. Therefore, we have reasonable assurance that one emergency feedwater system train will be available for safe shutdown after a fire in this area.

The tendon access gallery contains negligible combustibles. Therefore, sprinkler protection is not required in this area.

Based on our evaluation, we conclude that the existing fire protection with the proposed modifications provides reasonable assurance that one train of the emergency feedwater system will be available for safe shutdown after a fire. Therefore, the exemption in Fire Area IB-95-200 is granted.

2) Auxiliary Building Seawater Pump Room (Fire Area AB-95-3)

This fire area is located on the 95 foot elevation of the Auxiliary Building. The Seawater Pump Room is located within this fire area. The room is bounded by reinforced concrete walls, floor, and ceiling. The room has open doorways to the reactor coolant pump seal injection filter room and the nuclear service booster pump room.

Redundant shutdown equipment in the room includes the emergency nuclear services and decay heat closed cycle cooling water system pumps, the emergency nuclear services and decay heat service seawater pumps, and their associated circuits. The minimum separation distance between redundant pumps is approximately 10 feet.

Combustible materials consists of oil, grease, cable insulation, and a negligible amount of ordinary combustibles. The estimated fire severity is less than 12 minutes.

Existing fire protection consists of an ionization detection system, portable extinguishers, and one hose station.

The licensee proposes to install sprinkler protection throughout the room, except in the heat exchanger area, and to enclose one train of redundant cables in 1-hour fire rated barriers.

The technical requirements of Section III.G.2 are not met because redundant safe shutdown equipment is not separated by 3-hour fire rated barriers.

The concern was that a fire would damage redundant safe shutdown components resulting in loss of safe shutdown capability.

The detection system provides reasonable assurance that a fire in the fire area would be detected before significant flame propagation or temperature rise occurs. The fire brigade would then extinguish the fire using available equipment before redundant equipment in the Seawater Pump Room is damaged.

If fire brigade response is delayed or rapid fire growth occurs, the automatic sprinkler system would operate, resulting in fire control, reduced room temperatures, and protection of redundant equipment. The 1-hour fire rated cable protection will provide passive protection and provide reasonable assurance that one train of redundant circuits will be maintained free of damage until the fire is extinguished.

The combustible loading in the heat exchanger area is negligible. Therefore, the absence of automatic sprinklers in this area is acceptable.

Based on our evaluation, we conclude that the existing fire protection with the proposed modifications provides reasonable assurance that one train of safe shutdown components located in the Seawater Pump Room will be available following a fire. Therefore, the licensee's request for exemption in the Seawater Pump Room is granted.

3) Auxiliary Building Redundant Makeup Pumps (Fire Area AB-95-3)

This fire area is located on the 95 foot elevation of the Auxiliary Building. The makeup pump area is located in this area and is enclosed by reinforced concrete walls with offset open doorways at the northeast to southeast corners. The pump area is divided into three cubicles by two reinforced concrete walls. The cubicles are connected by an open 3-foot wide corridor. There are ventilation exhaust ducts in the dividing walls. One cable tray traverses all three cubicles.

The ceiling in each end cubicle is 3-hour fire rated. The ceiling in the center cubicle is reinforced concrete with penetrations to the floor above.

Each cubicle contains one makeup pump and its supporting lube oil and gear oil pumps. One end pump is powered and controlled by A-train circuits, the other end pump by B-train circuits and the center pump by either A or B-train circuits.

The equivalent fire severity per cubicle is approximately 5 minutes.

Existing fire protection consists of hose stations and portable extinguishers located adjacent to the cubicles.

The licensee proposes (1) to install ionization detectors in the makeup pump area; (2) to install automatic sprinklers in the corridor that connects the pump cubicles; (3) to seal all ceiling penetrations; (4) to install 3-hour fire rated dampers in the exhaust ducts in the dividing walls; and (5) to seal the cable tray penetrations in the dividing walls.

The technical requirements of Section III.G.2 are not met because redundant safe shutdown components are not separated by 3-hour fire rated barriers.

We were concerned that a fire originating either outside of or within the makeup pump area would result in loss of safe shutdown capability. However, because the fuel load is low, we do not expect a fire of significant magnitude or duration to occur in the makeup pump area. If a fire occurs anywhere in the fire area, it would be detected by the ionization detectors and extinguished by the plant fire brigade before spreading into the makeup pump area or from the cubicle of origin.

If rapid fire growth occurs in the fire area, the cubicle walls, penetration seals, duct dampers, and corridor sprinklers provide reasonable assurance that fire damage would be limited to no more than one cubicle.

In our opinion, under these conditions, any fire would, at most, cause damage to one shutdown system, but would not propagate horizontally and damage either of the two adjacent pumps before self-extinguishing or being extinguished by the plant fire brigade.

Based on our evaluation, we conclude that the existing fire protection with the proposed modifications provides an equivalent level of safety to that achieved by compliance with Section III.G. Therefore, the licensee's request for exemption in the makeup pump cubicles is granted.

4) Auxiliary Building Redundant Makeup System Valves (Fire Area AB-95-3)

This fire area is located on the 95 foot elevation of the Auxiliary Building. Three redundant makeup system block valves are located in a hallway in this area. The hallway is bounded on the west by the Reactor Building and on the east by a reinforced concrete wall. There are open doorways to the north, northeast, and south. The floor and ceiling are reinforced concrete. Two small penetrations to the 119 foot elevation will be sealed.

One A-train makeup system block valve is located between and within 20 feet of two B-train valves. The fuel load in the hallway corresponds to an equivalent fire severity of less than 2 minutes.

Existing fire protection consists of one hose station adjacent to the hallway and two portable extinguishers in the hallway.

The licensee proposes to install ionization detectors and automatic sprinklers in the hallway and to protect the A-train valve cables with 1-hour fire rated barriers.

The technical requirements of Section III.G.2 are not met because redundant shutdown equipment is not separated by 3-hour fire rated barriers.

Our concern was that a fire would damage the redundant makeup system block valves. Because the fuel load is low, we do not expect a fire of significant magnitude or duration to occur. If a fire does occur, it would be detected by the ionization detectors and extinguished by the plant fire brigade before damaging the redundant valves. If rapid fire growth occurs, the sprinkler system will operate and control or extinguish the fire.

Moreover, the 1-hour fire rated cable protection will protect the A-train valve cables until the fire brigade arrived or the sprinkler system operates. Therefore, we have reasonable assurance that loss of shutdown capability would not occur.

Based on our evaluation, we conclude that the existing fire protection with the proposed modifications provides a level of protection equivalent to the requirements of Section III.G. Therefore, the exemption for the hallway containing the makeup system valves is granted.

5) Reactor Building Penetration Assemblies (Quadrants I and IV) (Fire Area IB-119-201)

This fire area is the 119 foot elevation of the Intermediate Building. It is bounded on all sides by 3-hour fire rated walls. The ceiling is formed by the building roof and has open vents to the outside. THe floor is partially basemat and is partially over Fire Area IB-95-200.

The fire area contains Reactor Building penetration assemblies in Quadrant I that are redundant to penetration assemblies in Quadrant IV. The penetration assemblies are separated by less than 20 feet with intervening combustible cable insulation between them.

The fuel load consists of approximately 70,000 pounds of cable insulation, 3,000 pounds of Class A combustibles, and 600 pounds of plastic. This corresponds to an equivalent fire severity of approximately 60 minutes.

Existing fire protection includes area-wide ionization detectors, two hose stations, and portable extinguishers.

The licensee proposes (1) to install automatic sprinklers throughout the fire area: (2) to enclose one train of redundant cables in the fire area in 1-hour fire rated barriers where redundant assemblies exist within the same quadrant.

The technical requirements of Section III.G.2 are not met because redundant safe shutdown equipment is not separated by 3-hour fire rated barriers.

We were concerned that an undetected, unsuppressed fire in this fire area would result in damage to redundant safe shutdown components. However, we expect the ionization detectors to detect any potential fire before significant flame propagation or temperature rise occurs, and the 1-hour fire rated barriers to provide passive protection until the fire brigade extinguishes the fire.

If rapid fire growth occurs prior to fire brigade arrival, we expect the automatic sprinklers to operate, control fire spread, and prevent damage to redundant systems.

We also expect smoke and hot gases to vent through the large open roof vents, further reducing the potential for damage to more than one shutdown division.

Based on our evaluation, we conclude that the existing fire protection with the proposed modifications provides reasonable assurance that loss of shutdown capability will not occur. Therefore, the licensee's request for exemption for the Reactor Building Penetration Assemblies, Quadrants I and IV is granted.

B) Exemptions from Section III.G.3

If the requirements of Section III.G.2 are not met, Section III.G.3 requires that there be an alternative shutdown capability independent of the fire area of concern. It also requires that a fixed suppression system be installed in the fire area of concern if it contains a large concentration of cables or other combustibles.

1) The licensee requests exemption from Section III.G.3 of Appendix R to the extent that it requires the installation of a fixed fire suppression system in the Control Complex HVAC Equipment Room (Fire Area CC-164-121).

This fire area is located in the 164 foot (upper) elevation of the Control Complex. The HVAC Equipment Room is located in this fire area and is bounded by 3-hour fire rated or exterior walls. The floor is 3-hour fire rated. There is no safe shutdown equipment on the roof.

The fire area contains the HVAC equipment required to maintain the air temperature in the control room, cable spreading room, essential switchgear rooms, battery rooms, and inverter rooms within acceptable limits for safe plant shutdown.

Combustible materials consist primarily of charcoal in the charcoal filters. There are minor quantities of cable insulation, oil, and miscellaneous combustibles. The total fuel load of approximately 80,000 BTU/ft^2 yields an equivalent fire severity of 1 hour.

Existing fire protection includes an area-wide ionization detection system, portable extinguishers, and automatic water spray systems for the charcoal filter banks.

To ensure that the areas within the Control Complex containing safe shutdown equipment will be cooled adequately if this existing HVAC system is disabled by fire, a separate dedicated system is being provided. This system will be located in another fire area.

The technical requirements of Section III.G.3 are not met in this fire area because of the lack of a complete fixed fire suppression system.

We were concerned that a fire would disable the HVAC system, resulting in loss of cooling to safe shutdown equipment in the Control Complex such that safe shutdown could not be achieved and maintained.

The principal fire hazards are the charcoal filters. Each filter bank is protected by an automatic water spray system consistent with the requirements of Regulatory Guide 1.52. Therefore, we expect any fire in the filters to be controlled by these systems. The water flow alarm will initiate fire brigade response resulting in extinguishment before the fire spreads from the filter involved.

We also expect any fire originating outside of the filters to be detected during its early stages by the area-wide detection system and extinguished by the fire brigade before damage to redundant equipment occurs.

If any fire disables the Control Complex HVAC system, the alternate ventilation cooling system will be used to cool the safe shutdown equipment located in the Control Complex that is required to achieve and maintain safe shutdown.

Based on our evaluation, we conclude that the existing fire protection with the proposed modifications provides an equivalent level of safety to that achieved by compliance with Section III.G. Therefore, the licensee's request for exemption in the Control Complex HVAC Room is granted.

IV.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, an exemption is authorized by law and will not endanger life or property or common defense and security and is otherwise in the public interest and hereby grants an exemption from the requirements of Sections III.G.2 and III.G.3 of Appendix R to 10 CFR 50 to the extent discussed in Section III above.

Pursuant to 10 CFR 51.32, the Commission has determined that the issuance of the exemption will have no significant impact on the environment (50 FR 29005).

FOR THE NUCLEAR REGULATORY COMMISSION

Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 18th day of July 1985

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION RELATED TO FIRE PROTECTION EXEMPTIONS FLORIDA POWER CORPORATION ET AL. CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT DOCKET NO. 50-302

1.0 INTRODUCTION

By letters dated September 24, 1984, October 5, 1984 and superseded by letter dated December 11, 1984, Florida Power Corporation (the licensee for the Crystal River Unit No. 3 Nuclear Generating Plant) requested, among other things, six exemptions from Section III.G.2 of Appendix R of 10 CFR 50. The exemptions are concerned with the following six areas to the extent that they require separation of redundant safe shutdown components by 3-hour fire rated barriers.

1. Auxiliary Building Open Stairway (Fire Areas AB-95-3 and AB-119-6)
2. Auxiliary Building Reactor Coolant Bleed Tank Room (Fire Areas AB-95-3 and AB-119-6)
3. Auxiliary Building Elevator Shaft (Fire Areas AB-95-3 and AB-119-6)
4. Auxiliary Building Open Stairway and Pipe Chase (Fire Areas AB-95-3 and AB-119-6)
5. Auxiliary Building Decay Heat Pits (Fire Areas AB-75-4, AB-75-5, and AB-95-3)
6. Intermediate Building Ceiling/Floor Penetrations (Fire Areas IB-95-200 and IB-119-201)

Section III.G.2 of Appendix R contains requirements for fire protection within fire areas. Our review indicates that the six exemption requests are associated with fire area boundaries for which Section III.G.2 of Appendix R does not apply. Acceptable guidelines for the establishment of fire area boundaries are set forth in Appendix A to BTP APCSB 9.5-1 in Section D.1(j). Therefore we have reviewed these six fire areas for conformance with the guidelines given in Appendix A of BTP APCSB 9.5-1. Fire areas 1 through 4 above are evaluated as part A of the evaluation below and Fire areas 5 and 6 are covered in part B and C respectively.

Additional exemption requests contained in the above-noted letters from the licensee have been addressed in a separate Exemption from the requirements of 10CFR Part 50, Appendix R.

A. Auxiliary Building Fire Area Penetrations (Fire Areas AB-95-3 and AB-119-6)

These fire areas are located on the 95 foot and the 119 foot elevations of the Auxiliary Building. They are connected by (1) an open stairway in the northeast corner of the building, (2) open doorways from the Reactor Coolant Bleed Tank Room, (3) an elevator shaft in the middle of the building, and (4) an open stairway and pipe chase in the southwest corner of the building.

There are safe shutdown components in both fire areas.

Existing fire protection includes area-wide ionization detection systems, portable extinguishers, and hose stations.

The open stairway in the northeast corner connects a hallway that runs the length of the north end of Fire Area AB-95-3 with a hallway that runs the length of the north end of Fire Area AB-119-6. The hallways are bounded by reinforced concrete and 3-hour fire rated walls with reinforced concrete floors and ceilings. There are openings from both hallways to adjacent fire zones. An HVAC duct penetrates the north wall of the Fire Area AB-95-3 hallway.

The fuel load of cable insulation, Class A materials, and plastics corresponds to an equivalent fire severity of 1.6 hours for the Fire Area AB-95-3 hallway and 4.6 hours for the fire Area AB-119-6 hallway.

The licenee proposes (1) to install automatic sprinklers throughout both hallways and in areas adjacent to the hallways; (2) to install a draft stop and close-spaced sprinklers around the perimeter of the stairway opening between the 95 foot and 119 foot elevations; (3) to protect at least one train of redundant cables in each hallway and the stairway vicinity, i.e., the space defined by the stairway and extending 10 feet west to column line 302 and 20 feet south to column line J on both elevations, with 1-hour fire rated barriers; (4) to protect a sufficient number of cable trays in the stairway vicinity to reduce the anticipated fire severity to less than 3 hours; (5) to seal all ceiling/floor penetrations between the hallways with the exception of the open stairway; and (6) to install a 3-hour fire rated damper in the Fire Area AB-95-3 hallway HVAC duct.

The Reactor Coolant Bleed Tank Room extends from the floor of Fire Area AB-95-3 to the ceiling of Fire Area AB-119-6 and is open to both areas via an offset open passageway on each elevation.

The Reactor Coolant Bleed Tank Room is bounded on all sides by reinforced concrete walls. Makeup ventilation flow enters the room through these openings and is exhausted through a closed duct.

There are no redundant safe shutdown components located in the Reactor Coolant Bleed Tank Room. The nearest safe shutdown component to the room is located 16 feet from the 95 foot elevation room entrance.

The room contains approximately 3300 pounds of cable insulation which correspondes to a fire severity of approximately 10 minutes.

The licensee proposes to install automatic sprinkler protection in the passageway to the Reactor Coolant Bleed Tank Room on the 95 foot elevation and in adjacent zones that contain safe shutdown components. The licensee also proposes to protect at least one train of redundant safe shutdown circuits in zones adjacent to the Reactor Coolant Bleed Tank Room with 1-hour fire rated barriers.

The elevator shaft is bounded on three sides by reinforced concrete walls. Elevator doors form the fourth boundary. These doors cannot be opened simultaneously in both fire areas.

The fuel load in the shaft is negligible.

The licensee proposes to install automatic sprinklers in all areas around the elevator shaft that contain safe shutdown components or circuits, and to enclose at least one train of safe shutdown circuits in these areas in 1-hour fire rated barriers.

The shaft for the open stairway and pipe chase in the southeast corner of the building is bounded by reinforced concrete walls, floor, and ceiling. There are open doorways from the shaft on both elevations.

The primary fuel load in the lower elevation stairway is approximately 5000 pounds of cable insulation. This represents an equivalent fire severity of approximately 30 minutes. The fuel load of miscellaneous combustibles in the upper elevation of the shaft yields an equivalent fire severity of approximately 5 minutes.

The licensee proposes (1) to install automatic sprinklers throughout the lower elevation stairway and in areas that contain safe shutdown equipment outside of the stairway on both elevations, (2) to install a draft stop and water curtain around the perimeter of the stair opening, (3) to install a draft stop around the perimeter of the pipe chase opening, and (4) to protect at least one train of redundant safe shutdown circuits in each fire area with 1-hour fire rated barriers.

The existing fire protection with the proposed modifications meets the guidelines in Section D.1.(j) of Appendix A to BTP APCSB 9.5-1, and is therefore acceptable.

B. Auxiliary Building Decay Heat Pits (Fire Areas AB-75-4, AB-75-5 and AB-95-3)

The two Decay Heat Pits are located on the 75 foot elevation of the Auxiliary Building. The pits are separated by a commmon 3-hour fire rated wall. The pit boundaries are external reinforced concrete below grade walls. The ceilings are reinforced concrete. There is an open entrance hatchway to Fire Area AB-95-3, the 95 foot elevation of the Auxiliary Building, in the ceiling of each pit.

The pit hatchways are around a corner from each other and are approximately 50 feet apart. They are surrounded by 24-inch high curbs.

The combustible loading in each pit yields an equivalent fire severity of less than 10 minutes per pit.

Existing fire protection includes an area-wide ionization detection system in each pit and hose stations and portable extinguishers near each pit hatchway.

The licensee proposes to install automatic sprinklers over and beyond both hatchways in Fire Area AB-95-3 and to enclose at least one train of redundant cables serving the decay heat pumps in 1-hour fire rated barriers throughout Fire Area AB-95-3.

The existing fire protection with these proposed modifications meets the guildeines in Section D.1.(j) of Appendix A to BTP APCSB 9.5-1 and is therefore acceptable.

C. Intermediate Building Ceiling/Floor Penetrations (Fire Areas IB-95-200 and IB-119-201)

Both fires areas are bounded by 3-hour fire rated walls. The ceiling/floor assembly separating the fire areas is reinforced concrete and except for the following open penetrations offers fire resistance equivalent to 3 hours: (1) fifteen pipe penetrations, (2) four tendon stressing fitting openings, and (3) two ceiling gratings.

Both fire areas contain redundant safe shutdown components and circuits.

The pipe penetrations are 8 to 16 inches in diameter. On average, each is occupied about 30 percent by the pipe. Each penetration is sleeved with a steel pipe which extends from 3 to 36 inches above the floor.

Each tendon stressing fitting opening is approximately 9 square feet in area. Each opening is surrounded by a steel enclosure that extends approximately 30 inches from the floor. Each opening is covered by grating.

The ceiling gratings are located directly below the main steam lines. There are no combustible materials or safe shutdown components above or below these gratings.

The fuel load in Fire Area IB-119-201 consists of approximately 70,000 pounds of cable insulation, 3100 pounds of ordinary combustibles, and 600 pounds of plastics. This corresponds to an estimated equivalent fire severity of 60 minutes. The fuel load in Fire Area IB-95-200 consists of approximately 23 gallons of oil and grease and 11,300 pounds of cable insulation. The estimated fire severity is 25 minutes.

Exisitng fire protection includes area wide ionization detection systems, hose stations and portable extinguishers.

The licensee proposes to install a wet pipe sprinkler system throughout each fire area and to enclose one train of redundant cables in each area in 1-hour fire rated barriers.

The existing fire protection with these proposed modifications meets the guidelines in Section D.1.(j) of Appendix A to BTP APCSB 9.5-1 and is therefore acceptable.

D. Conclusion

Based on our review, we find the existing fire protection with the proposed modifications in the Auxiliary Building fire area penetrations (Fire Areas AB-95-3 and AB-119-6), Auxiliary Building Decay Heat Pits (FIre Areas AB-75-4, AB-75-5, and AB-95-3), and Intermediate Building Ceiling/Floor Penetrations (Fire Areas IB-95-200 and IB-119-201) to be in accordance with the guidelines of Appendix A to BTP APCSB 9.5-1, Section D.1.(j), and therefore acceptable.

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