

February 21, 1985

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Docket No. 50-335

Mr. J. W. Williams, Jr.
Vice President
Nuclear Energy Department
Florida Power & Light Company
P. O. Box 14000
Juno Beach, Florida 33408

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Dear Mr. Williams:

SUBJECT: EXEMPTION REQUESTS FOR ST. LUCIE PLANT, UNIT NO. 1
10 CFR PART 50, APPENDIX R, FIRE PROTECTION PROGRAM
FOR NUCLEAR POWER FACILITIES OPERATING PRIOR TO
JANUARY 1, 1979.

The Commission has issued the enclosed Exemption from certain requirements of Appendix R to 10 CFR Part 50 in response to your letters of March 19, 1981, and April 12 and April 25, 1983. The Exemption applies to St. Lucie Plant Unit No. 1.

The location, fire zone, pertinent section of Appendix R and disposition of the exemptions requested are summarized as follows:

1. Control Room (Fire Area F):

III.G.3.b, request for exemption from the requirement to install a fixed suppression system. Granted

2. Reactor Containment Building (Fire Area K):

III.G.2.d, request for exemption from the requirement to separate redundant safe shutdown trains by a non-combustible radiant energy shield or by a horizontal separation of greater than 20 feet. This request concerns three locations. Granted

3. Shutdown Heat Exchanger Room (Fire Area L):

III.G.2.a, request for exemption from the requirement to separate redundant trains by 3-hour fire rated barriers. (Section 4 of enclosed Safety Evaluation). Not Needed

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4. ECCS Pump Room (Fire Area M):
III.G.2.a, same as item 3.
(Section 5 of enclosed SE). Not Needed
5. Charging Pump Area (Fire Area N):
III.G.2.a, same as item 3. Granted
6. Intake Cooling Water Area (Fire Area R-R):
III.G.2.b, request for exemption from the requirement
to install an automatic fire suppression system. Granted
7. Steam Trestle Area (Fire Area S-S):
III.G.2.b, same as item 6. Granted
8. Component Cooling Pumps (Fire Area U-U):
III.G.2.b, same as item 6 plus installation of a fire
detection system. Granted
9. Diesel Oil Storage Tank Area (Fire Area T-T):
III.G.2.b, same as item 8. Granted
10. Duct Penetrations in 3-Hour Fire Rated Barriers (Fire
Areas J-L and J-A):
III.G.2.a, request for exemption from providing 3-hour rated
dampers in ducts that penetrate 3-hour fire barriers. Granted
11. Penetrations in 3-Hour Fire Rated Barriers (Fire Area C-E):
III.G.2.a, request for exemption from providing 3-hour fire
rated doors in doorways in a 3-hour fire rated barrier. Granted
12. Penetrations in 3-Hour Fire Rated Floor Ceiling Assemblies
(Reactor Auxiliary Building):
III.G.2.a, request for exemption from sealing two hatch
openings in 3-hour fire rated barriers. Granted
13. Oil Collection System for Reactor Coolant Pumps
III.O, request for exemption from providing a collection tank
sized to hold the lube oil inventory of all reactor coolant
pump motors. Granted
14. Upgrade Existing Fire Pumps
III.A, request for exemption for the fire pump controller.
(Section 16 of enclosed SE). Not Needed

15. Fire Doors

III.G.2.a, request for exemption for six watertight doors that are not approved fire doors. Granted

16. Exterior Wall Penetrations

III.G.2.a, request for exemption for installation of 3-hour fire rated penetration seals, doors, and dampers. (Section 14 of enclosed SE). Not Needed

In granting the exemption requests, the staff has determined that the level of protection provided in the areas referred to above, given the proposed modifications, is equivalent to the level of protection required by Sections III.G and III.O of Appendix R. The details of our evaluation and bases for our findings are contained in the enclosed Safety Evaluation and in the Exemption.

A copy of the Exemption is being filed with the Office of the Federal Register for publication.

Sincerely,

JS

James R. Miller, Chief
Operating Reactors Branch #3
Division of Licensing

Enclosures:

- 1. Exemption
- 2. Safety Evaluation

cc w/enclosures:
See attached list

*See previous concurrence page

ORB#3:DL*
PKreutzer
10/8/84

ORB#3:DL*
DESells:dd
10/14/84

ORB#3:DL*
JRMiller
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2/13/85

2/13/85

15. Fire Doors

III.G.2.a, request for exemption for six watertight doors that are not approved fire doors. Granted

16. Exterior Wall Penetrations

III.G.2.a, request for exemption for installation of 3-hour fire rated penetration seals, doors, and dampers. Not Needed

In granting the above exemption requests, we have determined that the level of protection currently provided in the areas and the proposed modifications are equivalent to the level of protection required by Sections III.A, III.G, and III.O of Appendix R. the details of our evaluation and bases for our findings are contained in the enclosed Safety Evaluation and the Exemption.

A copy of the Exemption is being filed with the Office of the Federal Register for publication.

Sincerely,

James R. Miller, Chief
Operating Reactors Branch #3
Division of Licensing

Enclosures:

- 1. Exemption
- 2. Safety Evaluation

cc w/enclosures:
See attached list

[Signature]
ORB#3:DL
PK Reutzer
10/15/84

[Signature]
ORB#3:DL
DE Sells:dg
10/14/84

[Signature]
ORB#3:DL
JR Miller
10/15/84

*Not approved -
more work
needed - see
esp. p. 25 of
exemption*

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~~W Payton~~ GCLainas
10/19/84 10/1/84

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DL DL
DGEisenhut
10/1/84

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of
FLORIDA POWER AND LIGHT
COMPANY

(St. Lucie Plant,
Unit No. 1)

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Docket No. 50-335

EXEMPTION

I.

Florida Power and Light Company (the licensee) is the holder of Facility Operating License No. DPR-67 that authorizes the operation of the St. Lucie Plant, Unit No. 1 (the facility) at a steady-state power level not in excess of 2700 megawatts thermal. The facility is a pressurized water reactor (PWR) located at the licensee's site in St. Lucie County, Florida. The license provides, among other things, that the facility is subject to all rules, regulations and orders of the Commission now or hereafter in effect.

II.

10 CFR 50.48, "Fire protection," and Appendix R to 10 CFR Part 50, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," set forth certain specific fire protection features required to satisfy the General Design Criterion related to fire protection (Criterion 3, Appendix A to 10 CFR Part 50).

Section III.G of Appendix R requires fire protection of safe shutdown capability for structures, systems and components important to safe shutdown. Section III.O of Appendix R requires that the reactor coolant pumps be equipped

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with an oil collection system if the containment is not inerted during normal reactor operation. The collection system is required to be capable of collecting all the oil in a vented closed container.

III.

Exemption requests submitted in 1981 and 1982 were susperseded by the exemption requests submitted in letters dated April 12 and 25, 1983 except for one dealing with fire doors. This item was identified in the Safety Evaluation that was issued with Amendment 33 to Operating License No. DPR-67. The licensee's exemption request for these fire doors is contained in a letter dated March 19, 1981.

IV.

Control Room (Fire Area F)

The licensee requested an exemption from Section III.G.3.b to the extent that it requires the installation of a fixed suppression system in the control room. The licensee will install alternative shutdown capability independent of the control room.

The control room is a continuously occupied space that houses controls and instruments necessary to remotely operate valves, pumps, motors, etc. required for plant operation. Most of these controls and instruments are mounted on centrally located panels. Redundant safe shutdown related cables are routed in the area to various control panels. Ionization type fire detectors are located in the control room. No automatic fire suppression capability is provided. However, portable fire extinguishers and standpipe hose stations are available for use in the control room.

Plant Technical Specifications require that the control room be continuously manned by the operations personnel. Most of these personnel are trained members of the fire brigade. Therefore, these personnel constitute a continuous fire watch. The fuel load in the area is low. Manual suppression if a fire occurred would be prompt and effective; thus, a fixed suppression system would not enhance the fire protection in this area.

Based on the above evaluation, the staff concludes that the existing and proposed fire protection for the Control Room (Fire Area F) provides a level of fire protection equivalent to the technical requirements of Section III.G.3.b. Therefore, the exemption is granted.

Reactor Containment Building (Fire Area K)

The licensee requested an exemption from Section III.G.2.d to the extent that it requires the separation of redundant safe shutdown trains by a non-combustible radiant energy shield or by a horizontal separation of greater than 20 feet. This request concerns three locations: (1) pressurizer cubicle, (2) annular region inside Containment, and (3) valve locations.

The Reactor Containment Building is separated from other plant areas by 3-hour fire rated barriers. The containment is one fire area with a large volume and a high ceiling. There are four floor levels inside containment at the 18 ft., 23 ft., 45 ft., and 62 ft. elevations. Normal access to the containment is controlled and limited.

Redundant safe shutdown trains inside containment include Power Operated Relief Valves (PORVs) and associated Block Valves, valves for shutdown cooling, letdown, charging, auxiliary spray and instrumentation with associated cabling.

The pressurizer cubicle is inaccessible during plant operation. All cables inside the pressurizer cubicle are routed in conduit. The PORVs and their Block Valves are located within the pressurizer cubicle.

The annular area inside containment contains shutdown cable trays that are located 15 feet to 55 feet above the basemat. All nonqualified IEEE-383 cables are covered with a fire retardant mastic material. Redundant cable trays are separated from each other by a horizontal distance of more than 7 feet. They are installed on separate elevations separated by approximately 25 feet. Combustible material in the area consists of cables and lubricating oil contained in various components. Portable fire extinguishers are available inside containment. Ionization smoke detectors are provided in selected locations.

The licensee proposes to install radiant energy shields between redundant trains in the cable penetration area. In addition, the licensee committed to relocate one pressurizer level transmitter to achieve separation by a radiant energy shield. The licensee documented this commitment in a letter of December 14, 1983.

The technical requirements of Section III.G.2.d are not met in three locations inside containment because radiant energy shields are not provided to separate redundant trains.

Because of the configuration and location of the pressurizer cubicle within the containment and the restricted access of this zone during plant operation, an exposure fire involving the accumulation of significant quantities of

transient combustible material is unlikely. Because of the limited amount of cable insulation in the pressurizer cubicle and because the majority of insulation is enclosed in conduit, a fire of sufficient magnitude to damage redundant cables or components inside the pressurizer cubicle is unlikely. The staff has reasonable assurance that one of the redundant trains will remain free of fire damage.

Because of the restricted access to the containment, an exposure fire from the accumulation of transient combustibles in the annular area inside containment would be limited in size and duration. The high ceiling and the open metal grating walkways in the annular area inside containment will allow hot gases from anticipated exposure fires to be safely dissipated. Because of the configuration of redundant cables in the annular area inside containment and the limited size and duration of anticipated fires, the staff has reasonable assurance that one train of redundant cables will be free of fire damage.

Based on the above evaluation, the existing protection and proposed modifications for the pressurizer cubicle, the annular area within the containment, and valve locations (Fire Area K) provide a level of protection equivalent to the technical requirements of Section III.G.2.d of Appendix R. Therefore, these exemptions are granted.

Charging Pump Area (Fire Area N)

The licensee requested an exemption from Section III.G.2.a of Appendix R to the extent that it requires separation of redundant trains by 3-hour fire rated barriers.

The Charging Pump Area is located in the Reactor Auxiliary Building at elevation -0.50 feet. The area is separated from other plant areas by 3-hour fire rated barriers. The ceiling height in the area is 20 feet.

The area contains three redundant charging pumps. The pumps are installed on 10 foot centers with approximately 20 feet between the end pumps. The pumps are separated from each other and a common hallway by cubicles consisting of partial height (7 feet) 3-hour fire rated walls. The power cables for the Division B and C pumps are routed in conduit embedded in concrete up to the pump motors. The licensee has committed to enclose the power cables associated with the Division A pump located in the Division C pump cubicle in a one-hour fire rated barrier. In addition, the licensee has committed to relocate the Division B manual control station and associated wiring located in the common hallway to inside the Division B pump cubicle. The licensee documented these commitments in a letter of December 14, 1983.

The in-situ combustible in the area is limited to the lubricating oil, approximately 3 gallons per pump. The oil provides unpressurized lubrication. The oil has a flash point of greater than 450°F. The area does not contain hot surfaces that could ignite the oil. Fire protection in the area consists of early warning fire detection. Manual hose stations and portable fire extinguishers are available for use in this area.

The technical requirements of Section III.G.2.a are not met because the three-hour fire rated wall does not completely separate the redundant shutdown components.

The in-situ fire load in the area is negligible and because of the limited accessibility to the area, the staff would not expect any significant quantities of transient combustibles to accumulate in these areas. Any postulated fire would therefore not propagate to any significant degree. For anticipated fires, heat and smoke would rise into the ceiling area, which would act as a heat sink; therefore, the damaging effects of convective heat from a fire would be dissipated in the ceiling area. The existing partial height 3-hour fire rated barrier between the charging pumps would effectively prevent any heat caused by a fire near one pump from damaging the redundant pumps that are located on the other side of the wall.

Because of the smoke detection system in the area, a fire, if one should occur, would be discovered early. This would assure the timely response of the plant fire brigade. Although some time delay is expected before eventual fire extinguishment, the staff has reasonable assurance that the existing fire wall will prevent components from at least one shutdown division from sustaining fire damage.

Based on the above evaluation, the existing protection combined with the proposed modifications and commitments provides a level of fire protection in the Charging Pump Area (Fire Area N) equivalent to the technical requirements of Section III.G.2.a; therefore, the exemption is granted.

Intake Cooling Water Area (Fire Area R-R)

The licensee requests an exemption from Section III.G.2.b to the extent that it requires the installation of an automatic fire suppression system in the area.

This is an outdoor area that contains the Intake Structure, Chlorine Building and a storage building. The concrete intake structure deck elevation is 16.5 feet. The safe shutdown related components in this area are the three intake cooling water (ICW) pumps. The three intake cooling water pumps are on approximately 13 foot centers. These pumps rest on concrete pedestals approximately 31 inches high. All three pumps are enclosed in a common steel tornado missile barrier approximately 20 feet high, 9 feet wide and 37 feet long. This tornado missile barrier is surrounded by grating that drains to the Intake Canal below. Openings at the top and bottom of the missile barrier allow for free convection cooling of ICW pump motors.

There are four circulating water pumps on 14 foot centers. Two screen wash pumps on approximately 6 foot centers are located 4.5 feet south of the southernmost intake cooling water pump. A separation of approximately 6 feet exists between a circulating water pump and the closest ICW pump. A 6-inch curb surrounding each circulating water pump directs any leakage from the respective pump away from the ICW pump enclosure and into the deck grating.

Safe shutdown related cables, associated with the ICW pumps, are routed in three separate manhole systems, each containing the cables for one ICW pump. The manholes are located a minimum of 14 feet from the circulating water pumps. The cables from the manholes to the ICW pump motor terminal boxes are routed in galvanized steel conduit and are encased in concrete from the manholes up to the intake structure deck.

The combustibles in the area consist of 235 qts. of lubricating oil in each of the four circulating water pump motors, 53 qts. in each of the three intake cooling water pump motors, and four qts. in each of the two screen wash pump motors. The oil provides unpressurized lubrication. The oil has a flash point of greater than 450°F. This area does not contain hot surfaces to ignite the oil. The licensee has installed early warning fire detection in the area that will initiate an alarm locally and in the Control Room. This is documented in a letter of September 16, 1983. The area is provided with portable fire extinguishers and manual hose stations. The fire detection system will provide reasonable assurance that a fire will be discovered at an early stage before significant damage results.

This area does not comply with Section III.G.2.b of Appendix R because an automatic suppression system is not installed in the area.

Because of the low fire load, the open area, the separation of the redundant components and the early warning fire detection system, it is the staff's opinion that any postulated fire in the area would be extinguished within a short time. Although a time delay is anticipated between the receipt of the initial fire alarm and the arrival of the fire brigade, the staff has reasonable assurance that one train of equipment will remain free of fire damage.

Based on the above evaluation, the existing fire protection combined with the licensee's commitments provides a level of fire protection in the Intake Cooling Water Area (Fire Area R-R) equivalent to the technical requirements of Section III.G.2.b; therefore, the exemption is granted.

Steam Trestle Area (Fire Area S-S)

The licensee requested an exemption from Section III.G.2.b to the extent that it requires the installation of an automatic fire suppression system in the area.

The Steam Trestle Area is an outdoor area located on the west side of the containment at elevation 19.0 feet. The area includes the Auxiliary Feedwater Pumps (AFW) 1A, 1B, and 1C and their associated cabling and valves. The AFW pumps are bounded on three sides by 1-inch thick steel plates and by the Containment Building on the remaining side. The two electrically driven AFW pumps (1A and 1B) are separated from the turbine driven AFW pump 1C by concrete floodwalls and two 1-inch thick steel missile shields.

The in-situ combustibles in the area are limited to the lubricating oil contained in the pumps' motor housing. The oil has a flash point of greater than 450°F. Manual hose stations and portable fire extinguishers are available for use in this area. The licensee has committed to install early warning fire detectors in the area. The licensee documented this commitment in a letter dated December 14, 1983.

This area does not comply with Section III.G.2.b of Appendix R because an automatic suppression system is not installed in the area.

The area is outdoors and open without a ceiling. The arrangement will prevent the accumulation of hot stratified gases from anticipated fires. Redundant cables and equipment are separated by 28 feet, free of intervening combustibles. The fire detection system consisting of detectors by each pump, which the licensee has committed to install in the area, will provide

reasonable assurance that a fire will be discovered at an early stage before significant damage results. Because of the low in-situ fuel load, available manual fire fighting equipment, and fire brigade training, it is the staff's opinion that any postulated fire in the area would not be beyond the capabilities of the fire brigade to extinguish within a short time span. Although a time delay is anticipated between the receipt of the initial fire alarm and the arrival of the fire brigade, the separation of redundant trains by missile shield walls and 28 feet, and the location of the trains outdoors will provide sufficient passive fire protection until the fire is extinguished.

Based on the above evaluation, existing fire protection combined with the licensee's commitments provides a level of fire protection in the Steam Trestle Area (Fire Area S-S) equivalent to the technical requirements of Section III.G.2.b of Appendix R; therefore, the exemption is granted.

Component Cooling Pumps (Fire Area U-U)

The licensee requested an exemption from Section III.G.2.b to the extent that it requires the installation of automatic fire suppression and fire detection systems throughout the area.

The Component Cooling Water Area is an outdoor area located at elevation 28.5 feet just north of the refueling water tank. It includes the three component cooling water (CCW) pumps, the CCW heat exchangers and associated cables, valves, and piping.

The CCW pumps are mounted on 11 feet high concrete pedestals that extend up to a metal grating at elevation 23.5 feet. The area below the grated platform contains piping in a dike at elevation 12.0 feet. Each pump is enclosed by a steel missile barrier. There is approximately 12 feet between

adjacent CCW pumps. CCW system control valves and motor operated valves are located just under the metal grating surrounding the CCW pumps. Power and control cables for each pump are imbedded in concrete, with only a short exposed section at each pump.

The combustible loading in this area consists of approximately 15 gallons of lubricating oil and four pounds of grease contained within the pump motor housings. The oil provides unpressurized lubrication. The oil has a flash point of greater than 450°F. This area does not contain hot surfaces to ignite the oil. Manual hose stations and portable fire extinguishers are available for use in this area. The licensee committed to install early warning fire detection at each CCW pump. The licensee documented this commitment in a letter of December 14, 1983.

The area does not comply with Section III.G.2.b because automatic suppression systems are not installed and the fire detection system is not throughout the area.

The fire detection system will provide reasonable assurance that a fire will be discovered at an early stage before significant damage results. The area is open without ceiling or walls. This arrangement will prevent the accumulation of hot stratified gases from anticipated fires. Because of the low fire load, the open area, and the separation of redundant components, it is the staff's opinion that any postulated fire in the area would not be beyond the capabilities of the fire brigade to extinguish within a short time span. Although a time delay is anticipated between the receipt of the initial fire alarm and the arrival of the fire brigade, the staff has reasonable assurance that one train of components will remain free of fire damage.

Based on the above evaluation, the existing fire protection combined with the licensee's commitments provides a level of fire protection in the Component Cooling Pump Area (Fire Area U-U) equivalent to the technical requirements of Section III.G.2.b; therefore, the exemption is granted.

Diesel Oil Storage Tank Area (Fire Area T-T)

The licensee requested an exemption from Section III.G.2.b to the extent it requires the installation of early warning fire detection and an automatic fire suppression system.

Fire Area (T-T) is the Diesel Oil Storage Tank area located at elevation 19.0'. It includes 2 diesel oil storage tanks, diesel oil transfer pumps, and associated valves and piping. Each tank is surrounded by a 5.5 feet high concrete wall and holds about 20,000 gallons of diesel fuel. The tanks are built in accordance with API standards and meet the requirements of the National Fire Code. The fuel oil transfer pumps are located in tornado protected concrete enclosures, one north and one south of the diesel oil storage tanks. These enclosures are approximately 60 feet apart. The in-situ combustibles in this area consist of approximately 20,000 gallons of diesel oil contained in each tank. Portable fire extinguishers and manual hose stations are provided in the area.

This area does not comply with Section III.G.2.b because automatic suppression and detection systems are not provided. The diesel oil storage tanks are

separated by 21 feet and a dike capable of containing the entire contents of the tanks. The separation of tanks is in compliance with NFPA Std. 30, "Flammable and Combustible Liquids Code" for the spacing of adjacent, above-ground storage tanks. NFPA Std. 30 does not recommend a fire extinguishing system for tanks of this size that are installed in compliance with applicable spacing requirements. Because of the separation distance and diking between tanks, it is the staff's opinion that there is reasonable assurance that one train will be maintained free of fire damage. The installation of an automatic suppression and detection system would not significantly enhance the level of fire protection in this area.

Based on the above evaluation, the staff finds that the existing protection in the diesel oil storage area provides a level of fire protection equivalent to the technical requirements of Section III.G.2.b; therefore, the exemption is granted.

Duct Penetration In 3-Hour Fire Rated Barriers

At the time the fire protection rule became effective, duct penetrations through fire rated walls was an open item in the fire protection safety evaluation report for St. Lucie 1. Because this SER open item was not resolved prior to the effective date of the fire protection rule for operating nuclear plants, February 17, 1981, it is subject to the applicable provisions of Appendix R to 10 CFR Part 50. As a result, to the extent that the licensee's proposals to resolve the open item does not comply with the rule, these proposals are considered to represent exemption requests from Appendix R.

The licensee has requested exemptions from providing 3-hour fire rated dampers in ducts that penetrate 3-hour fire rated barriers with separate redundant trains in the following areas:

- a. 1 duct penetrating the wall between the Pipe Tunnel (Fire Area J) and the Division A Electrical Penetration Area (Fire Area A).
- b. 1 duct penetrating the wall between the Pipe Tunnel (Fire Area J) and the ECCS Heat Exchanger Room (Fire Area L).

a. Duct Penetration Between the Pipe Tunnel (Fire Area J) and Division A Cable Penetration Area (Fire Area L)

The Division A Electrical Penetration Area and the Pipe Tunnel are located at EL 19.5 feet. in the northwest section of the Reactor Auxiliary Building. Early warning fire detection is provided in the Division A cable penetration area. Fire extinguishers and hose stations are provided for use in the area. The combustible fuel loading for the Division A Electrical Penetration Area is high; however, all cabling in the area has been coated with a flame retardant coating or is qualified to IEEE-383. The fuel load in the Pipe Tunnel is negligible.

The duct penetration is located in the east wall approximately 18 feet above the floor. The penetration is approximately 2 square feet. in size. The Pipe Tunnel is a high radiation area and access is limited. The Pipe Tunnel contains valves required for cold shutdown.

b. Duct Penetration Between the Pipe Tunnel (Fire Area J) and ECCS Heat Exchanger Room (Fire Area L)

The Heat Exchanger Room (Fire Area L) is located on elevation -0.50 ft. of the Reactor Auxiliary Building. Early warning fire detection is provided in the ECCS heat exchanger room. Fire extinguishers and hose stations are provided in the immediate area. The fuel load in both areas is negligible. The licensee has committed to install 3-hour fire rated dampers in all duct

penetrations with the exception of a penetration between the Pipe Tunnel and the ECCS Heat Exchanger Room. The licensee documented this commitment in a letter of December 14, 1983.

The duct penetration in question is located in the north wall approximately 13 feet above the floor. The Pipe Tunnel that the duct enters is a high radiation area and access is limited. The only safe shutdown equipment in the pipe tunnel are valves required for cold shutdown. The licensee indicated that the valves can be manually operated to their correct cold shutdown position in the event of a fire.

The technical requirements of Section III.G.2.a are not met in these areas because of the unprotected penetrations in the 3-hour fire rated walls.

Because the fuel load in the Pipe Tunnel is negligible and access to the tunnel is limited due to high radiation levels, a fire in this area would be small and would not present a threat to the redundant components. A fire in the Division A cable penetration area would involve only Division A systems. Because the cables are coated with a fire retardant coating or qualified to IEEE-383, any postulated fire would tend to propagate slowly and with initially low heat generation. The damage-producing effects of such a fire, i.e., the radiant and convective heat and other products of combustion, would be confined to the area of fire origin by the fire rated walls. A small quantity of smoke and hot gases would be expected to propagate beyond the walls into the Pipe Tunnel because of the unprotected penetrations. However, the unprotected penetrations are located away from the redundant shutdown systems. Therefore, hot gases passing through the penetrations would not affect components or cabling of redundant divisions.

Because of the configuration, the area-wide fire detection capability and the accessibility of the areas within the Reactor Auxiliary Building, the staff has reasonable assurance that one safe shutdown system train will remain free of fire damage.

Based on the above evaluation, the staff concludes that the existing fire protection in the Division A Cable Penetration Area (Fire Area A), Pipe Tunnel (Fire Area J), and the ECCS Heat Exchanger Room (Fire Area L) provides an acceptable level of safety equivalent to that provided by Section III.G.2.a and, therefore, the exemptions are granted.

Penetrations In 3-Hour Fire Rated Barriers

The licensee requested an exemption from providing 3-hour fire rated doors in doorways in a 3-hour fire rated barrier that separates redundant trains.

The barrier separates the Personnel Area (Fire Area C) from the Hold Up Tank Area (Fire Area E). The barrier is located on elevation 19.50 feet of the Reactor Auxiliary Building. The unprotected openings in the fire barrier are two 3 feet by 7 feet passageways between the two areas. The passageways are protected by a concrete "T" shaped labyrinth installed in Fire Area C. The fuel load in the vicinity of the opening in both areas is negligible. Fire protection in the areas is provided by early warning fire detection. Manual hose stations and portable fire extinguishers are available for use in these areas.

The technical requirements of Section III.G.2.a are not met in these areas because of the unprotected openings in the 3-hour fire rated barrier.

If a fire occurred in one of these areas, a small quantity of smoke and hot gases would be expected to propagate through the unprotected openings. Because the in-situ combustibles in the vicinity of the unprotected openings are minimal

and because the safe shutdown systems are located away from the openings, the redundant divisions in the other areas would not be threatened. Because these areas are provided with early warning fire detection and because they are located in an area of the Auxiliary Building that is easily accessible to the fire brigade, the staff has reasonable assurance that one safe shutdown system train will be free of fire damage.

Based on the above evaluation, the staff concludes that the existing fire protection in the Personnel Area (Fire Area C) and the Hold Up Tank Area (Fire Area E) provides an acceptable level of safety equivalent to that provided by Section III.G.2.a and, therefore, the exemption is granted.

Penetrations In 3-Hour Fire Rated Floor Ceiling Assemblies

The licensee has requested exemptions from sealing two hatch openings in 3-hour fire rated barriers separating redundant trains in the Reactor Auxiliary Building.

The hatch openings are between elevations -0.50 feet and 19.50 feet in the Reactor Auxiliary Building. One hatch opening is located between column lines RAJ and RA5. The other hatch is located between column lines RA4 and RAC. Steel plates, 1/4 inch thick, are used to cover the hatch opening at elevation 19.5 feet. The openings are protected with early warning detection. There are negligible combustibles in the immediate area of the hatch openings. The licensee committed to install an automatic water curtain consisting of sidewall sprinkler heads to provide protection for each hatch opening. The licensee documented this commitment in a letter of December 14, 1983.

The technical requirements of Section III.G.2.a are not met in these areas because 3-hour penetration seals have not been provided for openings in 3-hour fire rated floor/ceiling assemblies used to separate redundant trains.

The in-situ fuel load in the immediate area of each hatch opening is negligible; however, unanticipated circumstances could result in the presence of transient combustibles creating significantly higher levels of combustibles in these areas. The automatic water curtain will provide active fire protection to aid in the protection of the hatch openings. Because (1) the hatch openings are covered with noncombustible covers, (2) automatic fire detection and fire suppression have been provided, and (3) the concentration of in-situ combustibles is negligible beneath each hatch opening, the staff finds that the installation of 3-hour penetration seals in lieu of the hatch covers would not significantly increase the level of fire safety.

Based on the above evaluation, the existing protection in the Reactor Auxiliary Building elevations -0.5 ft. and 19.5 ft. and commitments provide a level of fire protection equivalent to the technical requirements of Section III.G.2.a; therefore, the exemptions are granted.

Oil Collection System for Reactor Coolant Pumps

An exemption is requested from Section III.0 to the extent it requires an oil collection tank sized to hold the lube oil inventory of all three Reactor Coolant Pump (RCP) motors.

The unit has four reactor coolant pumps with an oil collection system that drains to a vented closed collection tank. The quantity of lubricating oil in each pump is 190 gallons. The capacity of the oil collection tank is 225

gallons. The components have been designed so that they are capable of withstanding a safe shutdown earthquake (SSE).

The collection tank is arranged such that, if a failure of more than one RCP motor lube system occurred, the oil collection tank would overflow onto the lower containment floor. The lubricating oil used in the RCP motors has a flash point of approximately 450°F. There are no ignition sources at the floor level of the lower containment.

The RCP motor lube oil system does not comply with Section III.0 because the oil collection tank is not sized to contain the entire lube oil system inventory.

The oil collection tank is provided with sufficient capacity to hold the total lube oil inventory of one reactor coolant pump with margin and is designed so that any overflow will be drained to a safe location and will not present an exposure fire hazard to, or otherwise endanger, safety related equipment. The staff agrees with the licensee that this combination of features is acceptable.

Based on the above evaluation, the existing RCP motor lube oil collection system provides a level of safety equivalent to the technical requirements of Section III.0 and, therefore, the exemption is granted.

Fire Doors

By letter dated March 19, 1981 the licensee requested an exemption for six watertight doors that are not approved fire doors.

The licensee has based this exemption request on the test report dated February 1982, "Fire Evaluation of Doors and a Water Curtain," Southwest Research Institute project number 01-6763-201. This report shows that watertight doors of the type proposed, successfully passed a 3-hour fire test

conducted in accordance with test method ASTM E-119, an acceptable method of demonstrating fire resistance.

The technical requirements of Section III.G.2.a are not met because the watertight doors are not approved fire doors.

The staff has evaluated the February 1982 test report and the supplemental information provided and agrees that the proposed alternative provides a level of fire protection equivalent to the level of protection required by the technical requirements of II.G.2.a; therefore, the exemption is granted.

Summary

Based on the staff's evaluation, the following exemptions are granted:

1. Control Room (Fire Area F)
2. Reactor Containment Building (Fire Area K)
3. Charging Pump Area (Fire Area N)
4. Intake Cooling Water Area (Fire Area R-R)
5. Steam Trestle Area (Fire Area S-S)
6. Component Cooling Pumps (Fire Area U-U)
7. Diesel Oil Storage Tanks (Fire Area T-T)
8. Penetrations In Three Fire Rated Barriers (Three Exemptions)
9. Steel Hatches (Two Exemptions)
10. Oil Collection System
11. Fire Doors.

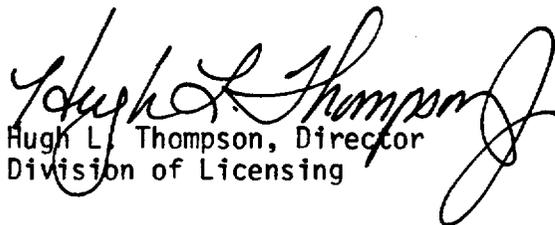
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Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, the exemptions are authorized by law and will not endanger life or property or common defense and security and are otherwise in the public interest and hereby grants exemptions from the requirements of Subsections III.G and III.0 of Appendix R to 10 CFR Part 50 to the extent discussed in Section IV 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 (49 FR 45675).

Dated at Bethesda, Maryland, this 21st day of February, 1985.

FOR THE NUCLEAR REGULATORY COMMISSION


Hugh L. Thompson, Director
Division of Licensing



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO EXEMPTIONS FROM 10 CFR PART 50, APPENDIX R
TO FACILITY OPERATING LICENSE NO. DPR-67
FLORIDA POWER AND LIGHT COMPANY
ST. LUCIE PLANT, UNIT NO.1
DOCKET NO. 50-335

1.0 Introduction

By letters dated April 12, 1983 and April 25, 1983, the licensee requested exemptions from Sections III.G and III.0 of Appendix R. These requests superseded all previous exemption requests. These letters also provided information concerning SER open item 3.7 Ventilation Duct Penetrations. By letters dated August 24, 1983, September 16, 1983, and December 14, 1983, the licensee provided additional information.

Section 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:

- (1) Separation of cables and equipment and associated nonsafety 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.
- (2) Separation of cables and equipment and associated nonsafety circuits of 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.
- (3) Enclosure of cable and equipment and associated nonsafety 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.

If these conditions 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. These alternative requirements are not deemed to be equivalent; however, they provide equivalent protection for those configurations in which they are accepted.

Because it is not possible to predict the specific conditions under which fires may occur and propagate, the design-basis protective features rather than the design-basis fire are specified in the rule. Plant-specific features may require protection different from the measures specified in Section III.G. In such a case, the licensee must demonstrate, by means of a detailed fire hazards analysis, that existing protection or existing

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protection in conjunction with proposed modifications will provide a level of safety equivalent to the technical requirements of Section III.G of Appendix R .

In summary, Section III.G is related to fire protection features for ensuring that systems and associated circuits used to achieve and maintain safe shutdown are free of damage. Either fire protection configurations must meet the specific requirements of Section III.G or an alternative fire protection configuration must be justified by a fire hazard analysis. Generally, the staff will accept an alternative fire protection configuration if:

- (1) The alternative ensures that one train of equipment necessary to achieve hot shutdown from either the control room or emergency control stations is free of fire damage.
- (2) The alternative ensures that fire damage to at least one train of equipment necessary to achieve cold shutdown is limited so that it can be repaired within a reasonable time (minor repairs using components stored on the site).
- (3) Fire-retardant coatings are not used as fire barriers.
- (4) Modifications required to meet Section III.G would not enhance fire protection safety levels above those provided by either existing or proposed alternatives.
- (5) Modifications required to meet Section III.G would be detrimental to overall facility safety.

2.0 Control Room (Fire Area F)

2.1 Exemption Requested

The licensee requested an exemption from Section III.G.3.b to the extent that it requires the installation of a fixed suppression system in the control room.

2.2 Discussion

The control room is a continuously occupied space that houses controls and instruments necessary to remotely operate valves, pumps, motors, etc., required for plant operation. Most of these controls and instruments are mounted on centrally located panels. Redundant safe shutdown related cables are routed in the area to various control panels. Ionization type fire detectors are located in the control room. No automatic fire suppression capability is provided. However, portable fire extinguishers and standpipe hose stations are available for use in the control room.

The licensee will install alternative shutdown capability independent of the control room.

2.3 Evaluation

Plant Technical Specifications require that the control room be continuously manned by the operations personnel. Most of these personnel are trained members of the fire brigade. Therefore, these personnel constitute a continuous fire watch. The fuel load in the area is low. Manual suppression if a fire occurred would be prompt and effective; thus a fixed suppression system would not enhance the fire protection in this area.

2.4 Conclusion

Based on the above evaluation, the staff concludes that the existing and proposed fire protection for the Control Room (Fire Area F) provides a level of fire protection equivalent to the technical requirements of Section III.G.3.b. Therefore, the exemption should be granted.

3.0 Reactor Containment Building (Fire Area K)

3.1 Exemption Requested

The licensee requested an exemption from Section III.G.2.d to the extent that it requires the separation of redundant safe shutdown trains by a non-combustible radiant energy shield or by a horizontal separation of greater than 20 feet. This request concerns three locations: (1) pressurizer cubicle, (2) annular region inside Containment, and (3) valve locations.

3.2 Discussion

The Reactor Containment Building is separated from other plant areas by 3-hour fire rated barriers. The containment is one fire area with a large volume and a high ceiling. There are four floor levels inside containment at the 18 ft., 23 ft., 45 ft., and 62 ft. elevations. Normal access to the containment is controlled and limited.

Redundant safe shutdown trains inside containment include Power Operated Relief Valves (PORVs) and associated Block Valves, valves for shutdown cooling, Letdown Valves, charging, auxiliary spray and instrumentation and associated cabling.

The pressurizer cubicle is inaccessible during plant operation. All cables inside the pressurizer cubicle are routed in conduit. The PORVs and their Block Valves are located within the pressurizer cubicle.

The annular area inside containment contains shutdown cable trays that are located 15 feet to 55 feet above the basemat. All nonqualified IEEE-383 cables are covered with a fire retardant mastic material. Redundant cable trays are separated from each other by horizontal distance of more than 7 feet. They are installed on separate elevations separated by approximately 25 feet.

Combustible material in the area consists of lubricating oil contained in various components and cables.

Portable fire extinguishers are available inside containment. Ionization smoke detectors are provided in selected locations.

The licensee proposes to install radiant energy shields between redundant trains in the cable penetration area. In addition, the licensee has verbally committed to relocate one pressurizer level transmitter to achieve separation by a radiant energy shield. The licensee documented this commitment in a letter of December 14, 1983.

3.3 Evaluation

The technical requirements of Section III.G.2.d are not met in three locations inside containment because radiant energy shields are not provided to separate redundant trains.

Because of the configuration and location of the pressurizer cubicle within the containment and the restricted access of this zone during plant operation, an exposure fire involving the accumulation of significant quantities of transient combustible material is unlikely. Because of the limited amount of cable insulation in the pressurizer cubicle and because the majority of insulation is enclosed in conduit, a fire of sufficient magnitude to damage redundant cables or components inside the pressurizer cubicle is unlikely.

The staff has reasonable assurance that one of the redundant trains will remain free of fire damage.

Because of the restricted access to the containment, an exposure fire from the accumulation of transient combustibles in the annular area inside containment would be limited in size and duration. The high ceiling and the open metal grating walkways in the annular area inside containment will allow hot gases from anticipated exposure fires to be safely dissipated. Because of the configuration of redundant cables in the annular area inside containment and the limited size and duration of anticipated fires, the staff has reasonable assurance that one train of redundant cables will be free of fire damage.

3.4 Conclusion

Based on the above evaluation, the existing protection and proposed modifications for the pressurizer cubicle, the annular area within the containment, and valve locations (Fire Area K) provide a level of protection equivalent to the technical requirements of Section III.G.2.d of Appendix R. Therefore, these exemptions should be granted.

4.0 Shutdown Heat Exchanger Room (Fire Area L)

4.1 Exemption Requested

The licensee requested an exemption from Section III.G.2.a of Appendix R to the extent that it requires separation of redundant trains by 3-hour fire rated barriers.

4.2 Discussion

The Shutdown Heat Exchanger Room is located on elevation -0.5 feet of the Reactor Auxiliary Building. The room is separated from other areas by 3-hour fire rated barriers. The room is approximately 30 feet x 57 feet with a 20 foot ceiling.

The room contains redundant cold shutdown heat exchangers. These heat exchangers are separated by 16 feet and a partial height concrete wall. The wall is 8 feet high and runs the entire length of the room. All redundant valves and cables associated with each heat exchanger are installed below the top of the wall.

The room is a high radiation area with limited personnel access. The in-situ fuel load is negligible.

Fire protection in the area consists of early warning fire detection installed in the HVE 10A and 10B ventilation system exhaust ducts with manual hose stations and portable fire extinguishers available for use in the shutdown heat exchanger room.

4.3 Evaluation

The technical requirements of Section III.G.2.a are not met because the 3-hour fire rated wall does not completely separate the redundant cold shutdown components.

Because the in-situ fuel load in the area is negligible and located below the partial height wall and because of the limited accessibility, the staff would not expect any significant quantities of transient combustibles to accumulate in the area. Any postulated exposure fire would be limited in size and would be located on one side of the partial height wall. The convective heat and smoke of such fires would rise into the ceiling area and away from the redundant component. The concrete wall between the components will prevent radiant heat released by a fire near one component from damaging the redundant cold shutdown components that are located on the other side of the wall.

Because of the smoke detection system in the area, a fire, if one should occur, would be discovered early. This would assure the timely response of the plant fire brigade. Although some time delay is expected before eventual fire extinguishment, the staff has reasonable assurance that the components from at least one shutdown division will not sustain fire damage.

4.4 Conclusion

Based on the above evaluation, the staff concludes that the licensee's existing fire protection will achieve an acceptable level of fire protection equivalent to that provided by the technical requirements of Section III.G.2.a. However, Appendix R, Section III.G.2.a does not apply in this area, because it contains no hot shutdown components. Therefore, no exemption is required.

5.0 ECCS Pump Room (Fire Area M)

5.1 Exemption Requested

The licensee requested an exemption from Section III.G.2.a of Appendix R to the extent that it requires separation of redundant trains by 3-hour fire rated barriers.

5.2 Discussion

The ECCS Pump Room is located on elevation -0.5 feet of the Reactor Auxiliary Building. The room is separated from other plant areas by 3-hour fire rated barriers. The ECCS Pump Room is divided by a partial height 3-hour fire rated barrier, ranging in height from 20 feet from column line RAI to RAG, to 9.5 feet from column line RAG to RAE. The wall divides the room into two zones. Each zone contains one Low Pressure Safety Injection Pump (LPSI), one Containment Spray Pump and one High Pressure Safety Injection Pump. Only one LPSI pump is required for cold shutdown. The valves and cabling for each system are also located in the same zone as their associated pumps.

The area contains a negligible fuel loading and, as a radiation area, it has limited personnel access. The area is provided with ionization smoke detectors. Hose stations and portable fire extinguishers located outside the area are provided for manual fire fighting.

The separation of redundant safe shutdown cables in some locations is less than 20 feet. The licensee has verbally committed to enclose all redundant safe shutdown cables not separated by 20 feet that run above the partial height barrier in an approved one-hour fire rated barrier. The licensee documented this commitment in a letter of December 14, 1983.

5.3 Evaluation

The technical requirements of Section III.G.2.a are not met because the three-hour fire rated wall does not completely separate the redundant cold shutdown components.

The in-situ fuel load in the area is negligible. Because of the limited accessibility, the staff would not expect any significant quantities of transient combustibles to accumulate in the area. Any postulated fire would

be located on one side of the partial barrier and not propagate to any significant degree. The convective heat from the fire would be dissipated in the high ceiling area. The existing partial height 3-hour fire rated barrier between the redundant LPSI pumps would prevent any radiant heat released by a fire near one LPSI pump from damaging the redundant pump located on the other side of the barrier.

Because of the smoke detection system in the area, a fire, if one should occur, would be discovered early. This would assure timely response of the plant fire brigade. Although some time delay is expected before eventual fire extinguishment, the staff has reasonable assurance that components from at least one shutdown division would not sustain damage.

5.4 Conclusion

Based on the above evaluation, the existing protection combined with the proposed modifications and commitments provides a level of fire protection in the ECCS Pump Room equivalent to the technical requirements of Section III.G.2.a. However, Appendix R Section III.G.2.a does not apply in this area, because it contains no hot shutdown components. Therefore, no exemption is needed.

6.0 Charging Pump Area (Fire Area N)

6.1 Exemption Requested

The licensee requested an exemption from Section III.G.2.a of Appendix R to the extent that it requires separation of redundant trains by 3-hour fire rated barriers.

6.2 Discussion

The Charging Pump Area is located in the Reactor Auxiliary Building at elevation -0.50 feet. The area is separated from other plant areas by 3-hour fire rated barriers. The ceiling height in the area is 20 feet.

The area contains three redundant charging pumps. The pumps are installed 10 feet on centers with approximately 20 feet between the end pumps. The pumps are separated from each other and a common hallway by cubicles consisting of partial height (7 feet) 3-hour fire rated walls. The power cables for the Division B and C pumps are routed in conduit embedded in concrete up to the pump motors. The licensee has committed to enclose the power cables associated with the Division A pump located in the Division C pump cubicle in a one-hour fire rated barrier. In addition, the licensee has committed to relocate the Division B manual control station and associated wiring located in the common hallway to inside the Division B pump cubicle. The licensee documented these commitments in a letter of December 14, 1983.

The in-situ combustible in the area is limited to the lubricating oil, approximately 3 gallons per pump. The oil provides unpressurized lubrication. The oil has a flash point of greater than 450°F. The area does not contain hot surfaces that could ignite the oil.

Fire protection in the area consists of early warning fire detection. Manual hose stations and portable fire extinguishers are available for use in this area.

6.3 Evaluation

The technical requirements of Section III.G.2.a are not met because the three-hour fire rated wall does not completely separate the redundant shutdown components.

The in-situ fire load in the area is negligible and because of the limited accessibility to the area, the staff would not expect any significant quantities of transient combustibles to accumulate in these areas. Any postulated fire would therefore not propagate to any significant degree. For anticipated fires, heat and smoke would rise into the ceiling area, which would act as a heat sink; therefore, the damaging effects of convective heat from a fire would be dissipated in the ceiling area. The existing partial height 3-hour fire rated barrier between the charging pumps would effectively prevent any heat caused by a fire near one pump from damaging the redundant pumps that are located on the other side of the wall.

Because of the smoke detection system in the area, a fire, if one should occur, would be discovered early. This would assure the timely response of the plant fire brigade. Although some time delay is expected before eventual fire extinguishment, the staff has reasonable assurance that the existing fire wall will prevent components from at least one shutdown division from sustaining fire damage.

6.4 Conclusion

Based on the above evaluation, the existing protection combined with the proposed modifications and commitments provides a level of fire protection in the Charging Pump Area (Fire Area N) equivalent to the technical requirements of Section III.G.2.a; therefore, the exemptions should be granted.

7.0 Intake Cooling Water Area (Fire Area R-R)

7.1 Exemption Requested

The licensee requests an exemption from Section III.G.2.b to the extent that it requires the installation of an automatic fire suppression system in the area.

7.2 Discussion

This is an outdoor area that contains the Intake Structure, Chlorine Building and a storage building. The concrete intake structure deck elevation is 16.5 feet. The safe shutdown related components in this area are the three intake cooling water (ICW) pumps. The three intake cooling water pumps are on approximately 13 foot centers. These pumps rest on concrete pedestals

approximately 31 inches high. All three pumps are enclosed in a common steel tornado missile barrier approximately 20 feet high, 9 feet wide and 37 feet long. This tornado missile barrier is surrounded by grating that drains to the Intake Canal below. Openings at the top and bottom of the missile barrier allow for free convection cooling of ICW pump motors.

There are four circulating water pumps on 14 feet centers. Two screen wash pumps on approximately 6 feet centers are located 4.5 feet south of the southernmost intake cooling water pump. A separation of approximately 6 feet exists between a circulating water pump and the closest ICW pump. A 6-inch curb surrounding each circulating water pump directs any leakage from the respective pump away from the ICW pump enclosure and into the deck grating.

Safe shutdown related cables, associated with the ICW pumps, are routed in three separate manhole systems, each containing the cables for one ICW pump. The manholes are located a minimum of 14 feet from the circulating water pumps. The cables from the manholes to the ICW pump motor terminal boxes are routed in galvanized steel conduit and are encased in concrete from the manholes up to the intake structure deck.

The combustibles in the area consist of 235 qts. of lubricating oil in each of the four circulating water pump motors, 53 qts. in each of the three cooling water pump motors, and four qts. in each of the two screen wash pump motors. The oil provides unpressurized lubrication. The oil has a flash point of greater than 450°F. This area does not contain hot surfaces to ignite the oil.

The area is provided with portable fire extinguishers and manual hose stations.

The licensee has installed early warning fire detection in the area that will initiate an alarm locally and in the Control Room. This is documented in a letter of September 16, 1983.

7.3 Evaluation

This area does not comply with Section III.G.2.b of Appendix R because an automatic suppression system is not installed in the area.

The fire detection system will provide reasonable assurance that a fire will be discovered at an early stage before significant damage results.

Because of the low fire load, the open area, the separation of the redundant components and the early warning fire detection system, it is the staff's opinion that any postulated fire in the area would be extinguished within a short time. Although a time delay is anticipated between the receipt of the initial fire alarm and the arrival of the fire brigade, the staff has reasonable assurance that one train of equipment will remain free of fire damage.

7.4 Conclusion

Based on the above evaluation, the existing fire protection combined with the licensee's commitments provides a level of fire protection in the Intake Cooling Water Area (Fire Area RR) equivalent to the technical requirements of Section III.G.2.b; therefore, the exemption should be granted.

8.0 Steam Trestle Area (Fire Area S-S)

8.1 Exemption Requested

The licensee requested an exemption from Section III.G.2.b to the extent that it requires the installation of an automatic fire suppression system in the area.

8.2 Discussion

The Steam Trestle Area is an outdoor area located on the west side of the containment at elevation 19.0 feet. The area includes the auxiliary feedwater pumps (AFW) 1A, 1B, and 1C and their associated cabling and valves. The AFW pumps are bounded on three sides by 1 inch thick steel plates and by the Containment Building on the remaining side. The two electrically driven AFW pumps (1A and 1B) are separated from the turbine driven AFW pump 1C by concrete floodwalls and two 1-inch thick steel missile shields.

The in-situ combustibles in the area are limited to the lubricating oil contained in the pumps' motor housing. The oil has a flash point of greater than 450°F. Manual hose stations and portable fire extinguishers are available for use in this area. The licensee has committed to install early warning fire detectors in the area. The licensee documented this commitment in a letter dated December 14, 1983.

8.3 Evaluation

This area does not comply with Section III.G.2.b of Appendix R because an automatic suppression system is not installed in the area.

The area is outdoors and open without a ceiling. The staff finds the arrangement will prevent the accumulation of hot stratified gases from anticipated fires.

Redundant cables and equipment are separated by 28 feet free of intervening combustibles. The fire detection system consisting of detectors by each pump which the licensee has committed to install in the area, will provide reasonable assurance that a fire will be discovered at an early stage before significant damage results. Because of the low in-situ fuel load, available manual fire fighting equipment, and fire brigade training, it is our opinion that any postulated fire in the area would not be beyond the capabilities of the fire brigade to extinguish within a short time span. Although a time delay is anticipated between the receipt of the initial fire alarm and the arrival of the fire brigade, the separation of redundant trains by missile shield walls and 28 feet, and the location of the trains outdoors will provide sufficient passive fire protection until the fire is extinguished.

8.4 Conclusion

Based on the above evaluation, existing fire protection combined with the licensee's commitments provides a level of fire protection in the Steam Trestle Area (Fire Area S-S) equivalent to the technical requirements of Section III.G.2.b of Appendix R; therefore, the exemption should be granted.

9.0 Component Cooling Pumps (Fire Area U-U)

9.1 Exemption Requested

The licensee requested an exemption from Section III.G.2.b to the extent that it requires the installation of automatic fire suppression and fire detection systems throughout the area.

9.2 Discussion

The Component Cooling Water Area is an outdoor area located at elevation 28.5 feet just north of the refueling water tank. It includes the three component cooling water (CCW) pumps, the CCW heat exchangers and associated cables, valves, and piping.

The CCW pumps are mounted on 11 feet high concrete pedestals that extend up to a metal grating at elevation 23.5 feet. The area below the grated platform contains piping in a dike at elevation 12.0 feet. Each pump is enclosed by a steel missile barrier. There is approximately 12 feet between adjacent CCW pumps. CCW system control valves and motor operated valves are located just under the metal grating surrounding the CCW pumps. Power and control cables for each pump are imbedded in concrete, with only a short exposed section at each pump.

The combustible loading in this area consists of approximately 15 gallons of lubricating oil and four pounds of grease contained within the pump motor housings. The oil provides unpressurized lubrication. The oil has a flash point of greater than 450°F. This area does not contain hot surfaces to ignite the oil. Manual hose stations and portable fire extinguishers are available for use in this area.

The licensee committed to install early warning fire detection at each CCW pump. The licensee documented this commitment in a letter of December 14, 1983.

9.3 Evaluation

The area does not comply with Section III.G.2.b because automatic suppression systems are not installed and the fire detection system is not throughout the area.

The area is open without ceiling or walls. This arrangement will prevent the accumulation of hot stratified gases from anticipated fires.

The fire detection system will provide reasonable assurance that a fire will be discovered at an early stage before significant damage results. Because of the low fire load, the open area, and the separation of redundant components, it is the staff's opinion that any postulated fire in the area would not be beyond the capabilities of the fire brigade to extinguish within a short time span.

Although a time delay is anticipated between the receipt of the initial fire alarm and the arrival of the fire brigade, the staff has reasonable assurance that one train of components will remain free of fire damage.

9.4 Conclusion

Based on the above evaluation, the existing fire protection combined with the licensee's commitments provides a level of fire protection in the Component Cooling Pump Area (Fire Area U-U) equivalent to the technical requirements of Section III.G.2.b; therefore, the exemptions should be granted.

10.0 Diesel Oil Storage Tank Area (Fire Area T-T)

10.1 Exemption Requested

The licensee requested an exemption from Section III.G.2.b to the extent it requires the installation of early warning fire detection and an automatic fire suppression system.

10.2 Discussion

Fire Area (T-T) is the Diesel Oil Storage Tank area located at elevation 19.0'. It includes 2 diesel oil storage tanks, diesel oil transfer pumps, and associated valves and piping. Each tank is surrounded by a 5.5 foot high concrete wall and holds about 20,000 gallons of diesel fuel. They are built in accordance with API standards and meet the requirements of the National Fire Code. The fuel oil transfer pumps are located in tornado protected concrete enclosures; one north and one south of the diesel oil storage tanks. These enclosures are approximately 60 feet apart. The in-situ combustibles in this area consist of approximately 20,000 gallons of diesel oil contained in each tank. Portable fire extinguishers and manual hose stations are provided in the area.

10.3 Evaluation

This area does not comply with Section III.G.2.b because automatic suppression and detection systems are not provided. The diesel oil storage tanks are separated by 21 feet and a dike capable of containing the entire contents of the tanks. The separation of tanks is in compliance with NFPA Std. 30, "Flammable and Combustible Liquids Code" for the spacing of adjacent, above-ground storage tanks. NFPA Std. 30 does not recommend a fire extinguishing system for tanks of this size that are installed in compliance with applicable spacing requirements. Because of the separation distance and diking between tanks, it is the staff's opinion that there is reasonable assurance that one tank will be maintained free of fire damage. The installation of an automatic suppression and detection system would not significantly enhance the level of fire protection in this area.

10.4 Conclusion

Based on the above evaluation, the staff finds that the existing protection in the diesel oil storage area provides a level of fire protection equivalent to the technical requirements of Section III.G.2.b; therefore, the exemption should be granted.

11.0 Duct Penetration In 3-Hour Fire Rated Barriers

11.1 Exemption Requested

At the time the fire protection rule became effective, duct penetrations through fire rated walls was an SER open item. Because this SER open item was not resolved prior to the effective date of the fire protection rule for operating nuclear plants, February 17, 1981, it is subject to the applicable provisions of Appendix R to 10 CFR Part 50. As a result, to the extent that the licensee's proposals to resolve the open item does not comply with the rule, these proposals are considered to represent exemption requests from Appendix R.

The licensee has requested exemptions from providing 3-hour fire rated dampers in ducts that penetrate 3-hour fire rated barriers with separate redundant trains in the following areas:

- 1 duct penetrating the wall between the Pipe Tunnel (Fire Area J) and the Division A Electrical Penetration Area (Fire Area A).
- 1 duct penetrating the wall between the Pipe Tunnel (Fire Area J) and the ECCS Heat Exchanger Room (Fire Area L).

11.2 Discussion

a. Duct Penetration Between the Pipe Tunnel and Division A Cable Penetration Area

The Division A Electrical Penetration Area and the Pipe Tunnel are located at EL 19.5 ft. in the northwest section of the Reactor Auxiliary Building.

Early warning fire detection is provided in the Division A cable penetration area. Fire extinguishers and hose stations are provided for use in the area. The combustible fuel loading for the Division A Electrical Penetration Area is high; however, all cabling in the area has been coated with a flame retardant coating or is qualified to IEEE-383. The fuel load in the Pipe Tunnel is negligible.

The duct penetration is located in the east wall approximately 18 feet above the floor. The penetration is approximately 2 sq. ft. in size. The Pipe Tunnel is a high radiation area and access is limited. The Pipe Tunnel contains valves required for cold shutdown.

b. Duct Penetration Between the Pipe Tunnel (Fire Area J) and ECCS Heat Exchanger Room (Fire Area L)

The ECCS Heat Exchanger Room (Fire Area L) is located on elevation -0.50 ft. of the Reactor Auxiliary Building. Early warning fire detection is provided in the ECCS heat exchanger room. Fire extinguishers and hose stations are provided in the immediate area. The fuel load in both areas is negligible. The licensee has committed to install 3-hour fire rated dampers in all duct penetrations with the exception of a penetration between the Pipe Tunnel and the ECCS Heat Exchanger Room. The licensee documented this commitment in a letter of December 14, 1983.

The duct penetration in question is located in the north wall approximately 13 feet above the floor. The Pipe Tunnel that the duct enters is a high radiation area and access is limited. The only safe shutdown equipment in the pipe tunnel are valves required for cold shutdown. The licensee indicated that the valves can be manually operated to their correct cold shutdown position in the event of a fire.

11.3 Evaluation

The technical requirements of Section III.G.2.a are not met in these areas because of the unprotected penetrations in the 3-hour fire rated walls.

Because the fuel load in the Pipe Tunnel is negligible and access to the tunnel is limited due to high radiation levels, a fire in this area would be small and would not present a threat to the redundant components. A fire in the Division A cable penetration area would involve only Division A systems. Because the cables are coated with a fire retardant coating or qualified to IEEE-383, any postulated fire would tend to propagate slowly and with initially low heat generation. The damage-producing effects of such a fire, i.e., the radiant and convective heat and other products of combustion, would be confined to the area of fire origin by the fire rated walls. A small quantity of smoke and hot gases would be expected to propagate beyond the

walls into the Pipe Tunnel because of the unprotected penetrations. However, the unprotected penetrations are located away from the redundant shutdown systems. Therefore, hot gases passing through the penetrations would not affect components or cabling of redundant divisions.

Because of the configuration, the area-wide fire detection capability and the accessibility of the areas within the Reactor Auxiliary Building, the staff has reasonable assurance that one safe shutdown system train will remain free of fire damage.

11.4 Conclusion

Based on the above evaluation, the staff concludes that the existing fire protection in the Division A Cable Penetration Area (Fire Area A), Pipe Tunnel (Fire Area J), and the ECCS Heat Exchanger Room (Fire Area L) provides an acceptable level of safety equivalent to that provided by Section III.G.2.a and, therefore, the exemptions should be granted.

12.0 Penetrations In 3-Hour Fire Rated Barriers

12.1 Exemption Requested

The licensee requested an exemption from providing 3-hour fire rated doors in doorways in a 3-hour fire rated barrier that separates redundant trains.

12.2 Discussion

The barrier separates the Personnel Area (Fire Area C) from the Hold Up Tank Area (Fire Area E). The barrier is located on elevation 19.50 ft. of the Reactor Auxiliary Building. The unprotected openings in the fire barrier are two 3 ft. by 7 ft. passageways between the two areas. The passageways are protected by a concrete "T" shaped labyrinth installed in Fire Area C. The fuel load in the vicinity of the opening in both areas is negligible. Fire protection in the areas is provided by early warning fire detection. Manual hose stations and portable fire extinguishers are available for use in these areas.

12.3 Evaluation

The technical requirements of Section III.G.2.a are not met in these areas because of the unprotected openings in the 3-hour fire rated barrier. If a fire occurred in one of these areas, a small quantity of smoke and hot gases would be expected to propagate through the unprotected openings. Because the in-situ combustibles in the vicinity of the unprotected openings are minimal and because the safe shutdown systems are located away from the openings, the redundant divisions in the other areas would not be threatened. Because these areas are provided with early warning fire detection and because they are located in an area of the Auxiliary Building that is easily accessible to the fire brigade, the staff has reasonable assurance that one safe shutdown system train will be free of fire damage.

12.4 Conclusion

Based on the above evaluation, the staff concludes that the existing fire protection in the Personnel Area (Fire Area C) and the Hold Up Tank Area (Fire Area E) provides an acceptable level of safety equivalent to that provided by Section III.G.2.a and, therefore, the exemption should be granted.

13.0 Penetrations In 3-Hour Fire Rated Floor Ceiling Assemblies

13.1 Exemption Requested

The licensee has requested exemptions from sealing two hatch openings in 3-hour fire rated barriers separating redundant trains in the Reactor Auxiliary Building.

13.2 Discussion

The hatch openings are between elevations -0.50 ft. and 19.50 ft. in the Reactor Auxiliary Building. One hatch opening is located between column lines RAJ and RA5. The other hatch is located between column lines RA4 and RAC. Steel plates, 1/4 inch thick, are used to cover the hatch opening at elevation 19.5 ft. The openings are protected with early warning detection. There are negligible combustibles in the immediate area of the hatch openings. The licensee committed to install an automatic water curtain consisting of sidewall sprinkler leads to provide protection for each hatch opening. The licensee documented this commitment in a letter of December 14, 1983.

13.3 Evaluation

The technical requirements of Section III.G.2.a are not met in these areas because 3-hour penetration seals have not been provided for openings in 3-hour fire rated floor/ceiling assemblies used to separate redundant trains.

The in-situ fuel load in the immediate area of each hatch opening is negligible; however, unanticipated circumstances could result in the presence of transient combustibles creating significantly higher levels of combustibles in these areas. The automatic water curtain will provide active fire protection to aid in the protection of the hatch openings.

Because (1) the hatch openings are covered with noncombustible covers, (2) automatic fire detection and fire suppression have been provided, and (3) the concentration of in-situ combustibles is negligible beneath each hatch opening, the staff finds that the installation of 3-hour penetration seals in lieu of the hatch covers would not significantly increase the level of fire safety.

13.4 Conclusion

Based on the above evaluation, the existing protection in the Reactor Auxiliary Building elevations -0.5 ft. and 19.5 ft. and commitments provide a level of fire protection equivalent to the technical requirements of Section III.G.2.a; therefore, the exemptions should be granted.

14.0 Exterior Wall Penetration

The licensee requested an exemption from installing 3-hour fire rated penetration seals, doors and dampers in exterior wall penetrations in the Reactor Auxiliary Building and Diesel-Generator Building. The staff has reviewed the licensee's requests and finds that the exterior walls in these buildings do not separate redundant safe shutdown equipment and no fire hazards exist within 50 feet of the building. The staff finds this acceptable. Therefore, no exemptions from Section III.G.2.a of Appendix R are needed.

15.0 Oil Collection System for Reactor Coolant Pumps

15.1 Exemption Requested

An exemption is requested from Section III.0 to the extent it requires an oil collection tank sized to hold the lube oil inventory of all three Reactor Coolant Pump (RCP) motors.

15.2 Discussion

The unit has four reactor coolant pumps with an oil collection system that drains to a vented closed collection tank. The quantity of lubricating oil in each pump is 190 gallons. The capacity of the oil collection tank is 225 gallons. The components have been designed so that they are capable of withstanding a safe shutdown earthquake (SSE).

The collection tank is arranged such that, if a failure of more than one RCP motor lube system occurred, the oil collection tank would overflow onto the lower containment floor. The lubricating oil used in the RCP motors has a flash point of approximately 450°F. There are no ignition sources at the floor level of the lower containment.

15.3 Evaluation

The RCP motor lube oil system does not comply with Section III.0 because the oil collection tank is not sized to contain the entire lube oil system inventory. The oil collection tank is provided with sufficient capacity to hold the total lube oil inventory of one reactor coolant pump with margin and is designed so that any overflow will be drained to a safe location and will not present an exposure fire hazard to or otherwise endanger safety related equipment. The staff agrees with the licensee that this combination of features is acceptable.

15.4 Conclusion

Based on the above evaluation, the existing RCP motor lube oil collection system provides a level of safety equivalent to the technical requirements of Section III.0 and, therefore, the exemption should be granted.

16.0 Upgrade Existing Fire Pumps

16.1 Exemption Requested

An exemption is requested from Section III.A for the fire pump controller.

16.2 Discussion

As a part of the licensee's response to open items of the Amendment 33 safety evaluation and the staff's letter dated November 24, 1980, the licensee requested an exemption for their fire pump controllers. In a February 11, 1981 letter, the licensee provided a comparison of their fire pump controllers to the requirements of NFPA Std. 20.

16.3 Evaluation

The staff has evaluated the February 11, 1981 submittal with regard to the fire pumps and controllers and finds them equivalent to an approved system that meets NFPA Std. 20.

16.4 Conclusion

Based on the above evaluation, the fire pumps and controllers provide a level of safety equivalent to the technical requirements of Section III.A. However, Appendix R, Section III.A does not require meeting NFPA Std. 20 in this case. Therefore, no exemption is needed.

17.0 Fire Doors

17.1 Exemption Requested

An exemption is requested for six watertight doors that are not approved fire doors.

17.2 Discussion

The licensee has based this exemption request on the test report dated February 1982, "Fire Evaluation of Doors and a Water Curtain," Southwest Research Institute project number 01-6763-201. This report shows that watertight doors of the type proposed successfully passed a 3-hour fire test conducted in accordance with test method ASTM E-119, an acceptable method of demonstrating fire resistance.

17.3 Evaluation

The staff has evaluated the February 1982 test report and the supplemental information provided and agrees that the proposed alternative provides a level of fire protection equivalent to the level of protection required by the technical requirements of III.G.2.a.

17.4 Conclusion

Based on the above, the staff concludes that the watertight doors are acceptable in meeting the requirements of III.G.2.a; therefore the exemption should be granted.

18.0 Summary

Based on the staff's evaluation, the following exemptions should be granted:

1. Control Room (Fire Area F)
2. Reactor Containment Building (Fire Area K)
3. Charging Pump Area (Fire Area N)
4. Intake Cooling Water Area (Fire Area R-R)
5. Steam Trestle Area (Fire Area S-S)
6. Component Cooling Pumps (Fire Area U-U)
7. Diesel Oil Storage Tanks (Fire Area T-T)
8. Penetrations In Three Fire Rated Barriers (Three Exemptions)
9. Steel Hatches (Two Exemptions)
10. Oil Collection System
11. Fire Doors.

Based on the staff's evaluation, the following exemptions are not needed:

1. Shutdown Heat Exchanger Room (Fire Area L)
2. ECCS Pump Room (Fire Area M)
3. Fire Pumps and Controllers
4. Outside Wall Penetrations

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