

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 AUTH. NAME: WILLIAMS, J.W. AUTHOR AFFILIATION: Florida Power & Light Co.
 RECIP. NAME: EISENHUT, D.G. RECIPIENT AFFILIATION: Division of Licensing

DOCKET # 05000335

SUBJECT: Commits to listed mods to App R fire protection exemption requests. Commitments should be incorporated into appropriate sections as Rev 2 to 1 fire protection submittal.

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NOTES:

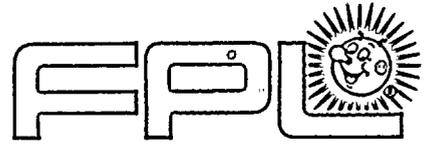
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| EXTERNAL: | ACRS 11 | | 3 3 | | LPDR 03 | | 1 1 |
| | NRC PDR 02 | | 1 1 | | NSIC 05 | | 1 1 |
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The following information was obtained from the records of the
 Department of the Interior, Bureau of Land Management, at
 Washington, D. C., on the date of the above mentioned
 investigation.

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 Department of the Interior, Bureau of Land Management, at
 Washington, D. C., on the date of the above mentioned
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FLORIDA POWER & LIGHT COMPANY

December 14, 1983

L-83-588

Office of Nuclear Reactor Regulation
 Attention: Mr. Darrell G. Eisenhut, Director
 Division of Licensing
 U.S. Nuclear Regulatory Commission
 Washington, D.C. 20555

Dear Mr. Eisenhut:

Re: St. Lucie Unit 1
 Docket No. 50-335
Fire Protection

The purpose of this letter is to formalize verbal commitments made between FPL and the Chemical Engineering Branch's Appendix R Fire Protection reviewer during the past few months. FPL hereby commits to the following modifications to its Appendix R Exemption Requests:

- 1) Fire Area "C" - Provide sidewall sprinklers below the 19.50' elevation near the hatch perimeter at column RAJ/RA5
- 2) Fire Area "E" - Provide a sidewall type sprinkler below the 19.50' elevation near the hatch perimeter at column RAC/RA4
- 3) Fire Area "L" - Essential cables extending above the barrier between the shutdown heat exchangers will be protected or relocated.
- 4) Fire Area "L" - Fire detectors will be provided
- 5) Fire Area "L" - Three hour rated fire dampers will be provided in penetrations 6, 7, 8, 16, 17 and 22.
- 6) Fire Area "M" - Essential cables extending above the barrier between the shutdown heat exchangers will be protected or relocated.
- 7) Fire Area "N" - The pushbutton station for charging Pump 1B is being relocated from the common access corridor to inside the charging Pump 1B cubicle
- 8) Fire Area "O" - Exemption 01 is deleted
- 9) Fire Area "S-S" Fire detectors will be provided, consisting of two detectors at the Pump C trestle and two detectors at the Pumps A and B trestle
- 10) Fire Area "U-U" Fire detectors will be provided in this area, consisting of one detector at each component cooling water pump.

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These commitments should be incorporated into the appropriate sections as Revision 2 to the St. Lucie Unit 1 Fire Protection submittal.

In addition, affected pages of the Fire Hazards Analysis write-ups have been revised to maintain consistency with the exemption requests. Pages FA-K-16, FA-L-23, FA-N-30 and FA-N-34 are attached as Revision 2 to the Fire Hazards Analysis write-ups. A paragraph was added to Page METH-6 in the methodology stating the basis and location of fire detectors throughout the plant.

Should you have any questions regarding this submittal, please advise.

Very truly yours,

JW


J.W. Williams
Vice President
Nuclear Energy Department

JWW/RJS/DCB
Attachment

cc: J.P. O'Reilly, Region II
Harold F. Reis, Esquire

METH 6

- Ducts extending through or terminating at the barrier penetration are dampered to maintain barrier integrity.
- Propagation of a fire involving electrical cables through cable tray penetrations of fire barriers is prevented by the use of suitable fire stops at the fire barrier. Fire stop assemblies consist of various combinations of recognized noncombustible and fire-retardant materials so configured to prevent passage of fire through the barrier openings for the required rating times. Present design assemblies utilize noncombustible rigid board, insulating coatings and mastics, such as Quelpyre and Flamemastic. These materials have been fire tested by independent testing agencies.

DETECTION

(Subsection 5c, FHA)

Ionization, flame, or thermal type smoke detection devices are installed in areas containing combustible materials where operation of essential equipment may be impaired due to a fire. The type of detector is identified and its fire control function described.

The quantity spacing and location of fire detectors was determined by combustible loading, ventilation flow, location of combustibles and location of equipment to be protected. The location of fire detectors installed in the plant are shown on plant drawings 8770G-413 Sh 1, 2, 3, 4, 7 and 8 and are not always installed in accordance with NFPA.

R2

FIRE PROTECTION SYSTEM

(Subsection 5d, FHS)

Fire extinguishing equipment and suppression systems in or adjacent to the fire area are described and classified as either primary (first use) or secondary (backup) line of fire control defense. Following the postulation of a fire in the area, the adequacy and suitability of the systems and equipment is assessed. Accessibility to needed equipment and its capability to be used effectively is reviewed.

SMOKE VENTING

(Subsection 5e, FHA)

Credit is taken for plant ventilation systems or natural ventilation for the removal of smoke generated by a fire in plant areas. The total exhaust capacity from the fire area is given and related to the area of the floor to determine the unit smoke removal rate in cfm per sq. ft. It is recognized that the smoke dilution required to permit area access and fire control is much less than would be required to permit continued habitability of key operational areas such as the Control Room. Ventilation system damper closure effects are reviewed.

FIRE AREA "C"

This fire area includes fire zones 55W (Cable Loft), 78 (Train B Electrical Penetration Area), 43*, 44*, 54* (RAB Personnel Areas), 56 (Train B Switchgear Room), and 58 (Train B Battery Room), as shown on the attached drawings. Essential equipment within this fire area is shown in the attached essential equipment list.

The following exemptions to Appendix R to 10CFR50 are requested:

Exemption C1

An exemption is requested from Section III-G.2.a of Appendix R for exterior wall and roof penetrations because no fire dampers or penetration fire seals or doors are provided.

Evaluation C1

- 1) Fire Area "C" is provided with ionization smoke detection.
- 2) Outdoor exposure fires are not postulated in the plant yard based on the lack of combustible storage adjacent to buildings and on the height of penetration above grade which allows for heat dissipation. Where concentrations of combustible material, such as oil in plant transformers or diesel generator fuel oil storage tanks, are in the plant yard adequate spacial separation from important plant facilities and/or fire suppression systems are provided and the flow of combustible liquids is directed to or confined a safe distance from important plant facilities as outlined in the Fire Hazard Analysis Report.
- 3) A postulated fire involving in-situ or transient combustibles in Fire Area "C" does not require 3 hour fire rated dampers or penetration fire seals or doors due to the non-essential nature of the Turbine Generator Building and large physical separation, the yard area and the additional dissipation of heat to the atmosphere.

Conclusion C1

Based on our evaluation, the existing fire barrier provides adequate separation. The installation of fire dampers, penetration fire seals and doors at exterior penetrations would not augment or materially enhance the safety of the plant since they would not aid in the preventing fire migration through the fire barrier. Therefore, we conclude, this is an acceptable exemption to Appendix R to 10CFR50, Section III-G.2.a.

Exemption C2

An exemption is requested from Section III-G.2.a of Appendix R for the hatch at Column RAJ/RA5 because a steel hatch cover of 1/4 inch minimum thickness is being provided at elevation 19.5 feet.

Evaluation C2

- 1) The hatch cover is located in the fire barrier between Fire Areas "C" and "O", both of which have ionization smoke detection.
- 2) A 1/4 inch minimum thickness steel hatch cover is provided.
- 3) Fire damage to the hatch cover is precluded because the metal thickness, heat transmission and dissipation characteristics serve to render the cover impervious to deformation or heat failure for periods of expected fire duration. While localized high off-gas temperatures can be expected in the immediate vicinity of a fire, air mixture dilution and the cooling effect of manually applied hose stations will mitigate the effects and duration of a fire.
- 4) Sidewall type sprinklers are being provided below the 19.50 ft. elevation near the hatch perimeter to provide coverage of the hatch cover underside and floor area below. The sprinkler system will not be in strict accordance with NFPA 13, but will be a wet system supplied from existing fire protection piping in the Reactor Auxiliary Building. The sprinklers will inhibit the spread of fire from the area under the hatch, cool any rising hot off-gases, and provide cooling for the steel hatch cover.

R2

Conclusion C2

Based on our evaluation, the provision of a 1/4 in. minimum thickness steel hatch cover and sidewall type sprinklers provides adequate separation of fire area. The use of materials of greater fire resistance for the hatch cover would not augment or materially enhance the safety of the plant since it would not aid in preventing fire migration between Fire Areas "O" and "C". Therefore, we conclude, this is an acceptable exemption to Appendix R to 10CFR50, Section III-G.2.a.

R2

Exemption C3

An exemption is requested from Section III-G.2.a of Appendix R for the entries to the holdup tanks on elevation 19.50 ft (zone 41) because no fire doors are provided.

Evaluation C3

- 1) Fire Area "C" is provided with ionization smoke detection.
- 2) Fire zone 41 contains negligible combustible load.

- 3) The entries to fire zone 41 are inside labyrinthine entry corridors with wire-mesh access doors.
- 4) The holdup tanks contain several thousand gallons of water which would tend to rapidly dissipate heat generated by a fire in Fire Area "C" through the tank walls into the contained water.
- 5) There is no continuity of combustibles in fire zone 41, which will mitigate the propagation of fire from Fire Area "C" to adjacent Fire Area "E".

Conclusion C3

Based on our evaluation the existing fire barrier provides adequate separation. The installation of fire doors at the entries to holdup tank room would not augment or materially enhance the safety of the plant since they would not aid in preventing fire migration through the entries. Therefore, we conclude, this is an acceptable exemption to Appendix R to 10CFR50, Section III-G.2.a.

FIRE AREA "E"

This fire area includes fire zones 46 (Containment Purge), 47 (AB Switchgear Room), 49 (RAB Volume Control Tank), 48 (RAB Letdown Heat Exchanger), 61 (RAB HVAC Equipment Room), 41 (RAB Holdup Tank), 55E (Corridor east of column line RAH), 50 (Demineralizers), 51 (Drumming Station), 52 (Boric Acid Concentrators), 62 (Resin Addition Tank) and 80 (Steam Generator Blowdown Tank) as shown on the attached drawings. Essential equipment within this fire area is shown on the attached list.

The following exemptions from Appendix R to 10CFR50 are requested:

Exemption E1

An exemption is requested from Section III-G.2.a of Appendix R for the hatch at Column RAC/RA4 because a steel hatch cover of 1/4 inch minimum thickness is being provided at elevation 19.50 feet.

Evaluation E1

- 1) The hatch cover separates Fire Areas "E" and "O", both of which have ionization smoke detection.
- 2) A 1/4 inch minimum thickness steel hatchcover is provided.
- 3) Fire damage to the hatch cover is precluded because the metal thickness, heat transmission and dissipation characteristics serve to render the cover impervious to deformation or heat failure for periods of expected fire duration. While localized high off-gas temperatures can be expected in the immediate vicinity of a fire, air mixture dilution and the cooling effect of manually applied hose streams will mitigate the effects and duration of a fire.
- 4) A sidewall type sprinkler is being provided below the 19.50 ft elevation near the hatch perimeter to provide coverage of the hatch cover underside and floor area below. The sprinkler will not be in strict accordance with NFPA 13, but will be a wet system supplied from existing fire protection piping in the Reactor Auxiliary Building. The sprinkler will inhibit the spread of fire to the area under the hatch, cool any rising hot off-gases, and provide cooling for the steel hatch cover.

R2

Conclusion E1

Based on our evaluation, the provision of a 1/4 in. minimum thickness steel hatch cover and sidewall type sprinkler provides adequate separation of fire areas. The use of materials of greater fire resistance for the hatch cover would not augment or materially enhance the safety of the plant since it would not aid in the preventing fire migration between Fire Areas "E" and "O". Therefore, we conclude, this is an acceptable exemption to Appendix R to 10CFR50, Section III-G.2.a.

R2

Exemption E2

An exemption is requested from Section III-G.2.a of Appendix R because no fire doors or dampers or penetration fire seals are provided at exterior wall penetrations.

Evaluation E2

- 1) Outdoor exposure fires are not postulated in the plant yard based on the lack of combustibile storage adjacent to buildings. Where concentrations of combustibile material (such as oil in the Turbine Generator Building) exist, fire detection and automatic suppression systems are provided and the flow of combustibile liquids is confined as outlined in the Fire Hazard Analysis Report.
- 2) A postulated fire involving in-situ or transient combustibles in Fire Area "E" would not affect the non-essential yard area because of the heat dissipation effects of the atmosphere.

Conclusion E2

Based on our evaluation, the existing fire barrier provides adequate separation. The installation of the fire doors, dampers and fire seals in exterior wall penetrations would not augment or materially enhance the safety of the plant. Therefore, we conclude that this is an acceptable exemption from Appendix R to 10CFR50, Section III-G.2.a.

Exemption E3

An exemption is requested from Section III-G.2.a of appendix R for the entries to the holdup tanks (zone 41) because no fire doors are provided.

Evaluation E3

See Evaluation C3

Conclusion E3

See Conclusion C3

FIRE AREA "L"

This fire area is fire zones 31 and 32 (Shutdown Heat Exchanger Room) as shown on the attached drawings. Essential equipment within this area is shown in the attached essential equipment list.

The following exemptions from Appendix R to 10 CFR 50 are requested:

Exemption L1

An exemption is requested from Section III-G.2.a of Appendix R because a full height 3 hr. rated fire barrier is not provided between the redundant shutdown heat exchangers.

Evaluation L1

- 1) The shutdown heat exchangers are 16 ft. apart edge to edge and are separated by a 7 ft. high 3 hour fire rated partition.
- 2) This fire area contains a negligible in-situ combustible load and as a radiation area has limited personnel access, which reduces the probability of introducing transient combustibles.
- 3) This fire area is being provided with ionization type smoke detectors.
- 4) A fire on either side of the fire partition involving either in-situ and/or transient combustibles could not directly impinge upon or radiate heat to the essential equipment on the opposite side. While localized high off-gas temperatures can be expected in the vicinity of a fire, air mixture dilution temperatures which would stratify in the upper level of this area would not reach a point capable of jeopardizing the operation of the redundant heat exchanger.
- 5) all cables routed in this area are in steel conduit. Redundant essential cable necessary for safe shutdown extending above the fire rated partition will be provided with one hour rated protection or relocated.

R2

Conclusion L1

Based on our evaluation the existing 7 ft. high 3 hour fire rated partition provides adequate separation of the redundant heat exchangers. Providing a full height 3 hour fire barrier in lieu of the existing partition would not augment or materially increase the safety of the plant since a single fire would not cause damage to the redundant heat exchangers. Therefore, we conclude that this is an acceptable exemption from Appendix R to 10 CFR 50, Section III-G.2.a.

Exemption L2

An exemption is requested from Section III-G.2.a of Appendix R for penetration 5 through the fire barrier between Fire Areas "L" and "J" because no penetration fire seal or fire damper is provided in the ventilation duct.

R2

Evaluation L2

- 1) Fire Area "L" and "J" have negligible in-situ combustibles and as radiation areas have limited personnel access, which reduces the probability of introducing transient combustibles.
- 2) Fire Area "L" is being provided with fire detection.
- 3) Fire damage to the duct is precluded because the heavy gage duct material (14 gage as compared to 22 gage for 3-hour rated fire dampers) and metal heat transmission and dissipation characteristics would serve to render the duct impervious to expansion deformation or heat failure for periods of expected fire duration.

R2

R2

R2

Conclusion L2

Based on our evaluation the existing fire barrier provides adequate separation. The installation of a fire damper in the ventilation duct at penetration 5 or penetration fire seal would not augment or materially increase the safety of the plant since they would not provide material protection for the heat exchangers. Therefore, we conclude that this is an acceptable exemption from Appendix R to 10 CFR 50, Section III-G.2.a.

R2

Exemption L3

An exemption is requested from Section III-G.2.a of Appendix R for watertight door RA-7 and 61 because the fire rating of the custom manufactured door is not Underwriters Laboratory listed.

Evaluation L3

See Evaluation J4(RA-7) and Evaluation M2(RA-61).

Conclusion L3

See Conclusion J4(RA-7) and Conclusion M2(RA-61).

FIRE AREA "M"

This fire area is fire zones 34 and 35 (RAB ECCS Room) as shown on the attached drawings. Essential equipment within this fire area is shown in the attached essential equipment list.

The following exemptions to Appendix R to 10CFR50 are requested:

Exemption M1

An exemption is requested from Section III-G.2.a of Appendix R because a full height 3 hour rated fire barrier is not provided between the redundant shutdown cooling pumps.

Evaluation M1

- 1) Fire Area "M" is provided with ionization smoke detectors.
- 2) The Fire area has a very low combustible loading.
- 3) Fire Area "M" is a radiation area and therefore personnel access is limited which reduces the probability of introducing transient combustibles.
- 4) The redundant LPSI Pumps are physically over 20 ft apart, edge to edge.
- 5) Redundant equipment and cable essential for safe shutdown in this fire area are separated by a 20 ft high, 3 hour fire rated partition from Column RAI to RAG (reducing to 9.5 ft high from Column RAG to RAE).
- 6) A postulated fire on either side of the 20 ft high 3 hour fire rated partition involving transient or in-situ combustibles would not directly impinge upon or radiate heat to the essential equipment on the opposite side. While localized high off-gas temperatures can be expected in the immediate vicinity of a fire, air mixture dilution temperatures would not reach a level detrimental to the normal operation of the LPSI Pumps.
- 7) All cables routed in this area are in steel conduits. Redundant essential cables extending above the fire rated partition will be provided with one hour rated protection or relocated. | R2

Conclusion M1

Based on our evaluation, the existing 20 ft high 3 hour fire rated partition provides adequate separation of redundant trains. The extension of the partition to full height, would not augment or materially enhance the safety of the plant since it would not aid in the containment of a fire to one train of equipment required for the shutdown. Therefore, we conclude, this is an acceptable exemption to Appendix R to 10CFR50, Section III-G.2.a.

FIRE AREA "N"

This fire area is fire zones 38, 75, 76 and 36A (charging Pump Area) as shown on the attached drawings. Essential equipment in this area is shown in the attached essential equipment list.

The following exemptions from Appendix R to 10CFR50 are requested:

Exemption N1

Exemption is requested from Section III-G.2.a of Appendix R since the redundant charging pumps are not separated by a full height 3 hour rated fire barrier.

Evaluation N1

- 1) Fire Area "N" is being provided with ionization type smoke detection.
- 2) The charging pumps are approximately 10 ft apart separated by a 7 ft high 3 hour fire rated partition, with labyrinth entries from the common access corridor.
- 3) This fire area contains a very low combustible loading and as a radiation area has limited personnel access, thus reducing the probability of introducing transient combustibles.
- 4) A fire on either side of the fire partitions involving in-situ and/or transient combustibles would not directly impinge upon or radiate heat to the essential equipment on the opposite side. While localized high off-gas temperatures can be expected in the vicinity of a fire, air mixture dilution temperatures which would stratify in the upper level of this area would not reach a point capable of jeopardizing the operation of the redundant charging pumps.
- 5) Cable indicated in the attached list, extending above the fire rated partition, is being protected or relocated.

Conclusion N1

Based on our evaluation, the 7 ft 3 hour fire rated partitions provide adequate separation of the redundant charging pumps. The extension of the walls to full height would not augment or materially enhance the safety of the plant since it would not provide additional protection for redundant charging pumps. Therefore, we conclude that this is an acceptable exemption from Appendix R to 10 CFR50, Section III-G.2.a.

Exemption N2

An exemption is requested from Section III-G-2.b of Appendix R because no sprinkler system is provided in the common access corridor (zone 36A).

Evaluation N2

- 1) Fire Area "N" has negligible in-situ combustibles and as a radiation area has limited personnel access, therefore reducing the probability of introducing transient combustibles.
- 2) The access corridor contains charging pump push button stations, separated by more than 20 ft with negligible intervening combustibles.
- 3) The charging pumps cubicle access corridor is being provided with an ionization type smoke detection system.
- 4) The pushbutton station for Charging Pump 1B is being relocated from the common access corridor to inside the Charging Pump 1B cubicle.
- 5) Conduits carrying cables for charging pump 1A in fire zone 38 will be provided with one hour rated protection.

R2

Conclusion N2

Based on our evaluation the existing separation, pushbutton relocation and negligible combustible load provides adequate protection for the push buttons. The addition of an automatic sprinkler system would not augment or materially enhance the safety of the plant since it would not reduce the time required for fire extinguishment. Therefore, we conclude that this is an acceptable exemption from Appendix R to 10CFR50, Section III-G.2.b.

R2

Exemption N3

An exemption is requested from Section III-G.2.a of Appendix R for watertight door RA-8 because the fire rating of the custom manufactured door is not Underwriters Laboratory listed.

Evaluation N3 - See Evaluation J4.

Conclusion N3 - See Evaluation J4.

FIRE AREA "O"

This fire area includes fire zones 27, 29, 36, 37, 39, 40 and 74 as shown on the attached drawings. Essential equipment within this fire area is shown in the attached essential equipment list.

The following exemptions to Appendix R at 10CFR50 are requested:

Exemption 01 - Deleted

R2

Exemption 02

An exemption is requested from Section III-G.2.a of Appendix R for the hatch at Column RAC/RA4 because a steel hatch cover of 1/4 inch minimum thickness is being provided at elevation 19.50 feet.

Evaluation 02 - See Evaluation E1

Conclusion 02 - See Conclusion E1

Exemption 03

An exemption is requested from Section III-G.2.a of Appendix R for the hatch at Column RAJ/RA5 because a steel hatch cover of 1/4 inch minimum thickness is being provided at elevation 19.50 feet.

Evaluation 03 - See Evaluation C2

Conclusion 03 - See Conclusion C2

Exemption 04

An exemption is requested from Section III-G.2.a of Appendix R for watertight doors RA-4, 5 and 6 because the fire rating of the custom manufactured doors is not Underwriters Laboratory listed.

Evaluation 04 - See Evaluation M-2

Conclusion 04 - See Conclusion M-2

FIRE AREA "S-S"

This fire area is the Steam Trestle Area previously designated as Fire Area 1. Essential equipment within this fire area is shown in the attached essential equipment list.

The following exemption to Appendix R to 10 CFR 50 is requested:

Exemption S-S1

An exemption is requested from Section III-G.2.b of Appendix R for automatic fire suppression and partial area coverage for fire detection because an automatic fire suppression system is not provided and only two fire detectors per trestle are provided.

R2

Evaluation S-S1

- 1) The fire area is lightly trafficked thus minimizing the probability of introducing transient combustibles.
- 2) The fire area has a very low combustibles loading with no continuity of combustibles.
- 3) Auxiliary Feed Water Pump C and its associated valves and cables is separated from its redundant counterparts, Auxiliary Feed Water Pumps A and B and their associated valves and cables, by 28 feet.
- 4) Pump C is located within a concrete dike wall and steel missile shield. Pumps A and B are located within a separate but similar enclosure.
- 5) This is an open-air structure, allowing for vertical heat dissipation to atmosphere from a fire involving in-situ and/or transient combustibles.
- 6) Fire detectors are being provided in the fire area, consisting of two detectors at the Pump C trestle and two detectors at the Pumps A and B trestle.

R2

Conclusion S-S1

Based on our evaluation, installation of proposed fire detection in addition to the existing spacing, missile shields and negligible combustibles provide adequate separation and detection. The installation of an automatic suppression system and additional detectors would not augment or materially enhance the safety of the plant since it would not improve the natural separation already provided. Therefore, we conclude, this is an acceptable exemption to Appendix R to 10 CFR 50 Section III-G.2.b.

R2

FIRE AREA "U-U"

This fire area is the component cooling area, previously designated as Fire Area 5. Essential equipment within this area is shown in the attached essential equipment list.

The following exemptions from Appendix R to 10 CFR 50 are requested:

Exemption U-U1

An exemption is requested from Section III-G.2.b of Appendix R for automatic fire suppression and partial area coverage for fire detection because an automatic fire suppression system is not provided and only one fire detector per pump will be provided.

R2

Evaluation U-U1

- 1) This area is lightly trafficked thus the probability of introducing transient combustibles is minimized.
- 2) The Fire Area has a very low combustible load with no continuity of combustibles.
- 3) Each Component Cooling Water Pump and Heat Exchanger is mounted on an 11.5 foot high concrete pedestal surrounded by open metal grate at elevation 23.5 feet. Pump and Heat Exchanger 1A are 11 feet from Pump 1C and 30 feet from Pump and Heat Exchanger 1B. Pump and Heat Exchanger 1B is also 11 feet from Pump 1C (distances measured from nearest edge to nearest edge). Power cables to pumps are located in buried conduit, with a short exposed section at each pump and motorized isolation valve. Failure of the motorized valves in any combination of positions will not affect system capability, therefore, cable to the valves is not addressed further.
- 4) The metal grate will prevent a pool fire at the pump level, and the existing separation is considered adequate for the pumps and cable (each capable of supplying 100 percent of the cold shutdown requirements) from an exposure fire 11.5 feet below.
- 5) Fire detectors are being provided in the fire area, consisting of one detector at each Component Cooling Water Pump.

R2

Conclusion U-U1

Based on our evaluation, installation of proposed fire detection in addition to the existing arrangement provides adequate protection for the redundant Component Cooling Water Pumps. The installation of an automatic fire suppression system and additional detectors would not augment or materially enhance the safety of the plant since no single fire would effect redundant equipment. Therefore, we conclude that this is an acceptable exemption to Appendix R to 10 CFR 50, Section III-G.2.b.

R2

FA-K-16

dilution and temperatures at essential equipment above the top of the sump would not reach a sustained high level capable of causing loss of operability. Therefore, no adverse effect on safe shutdown capability would occur in the event of a fire.

While the foregoing demonstrates the basis for Exemption Request K1 from Section III-G.2.d of Appendix R to 10 CFR 50, a description of the separation of redundant equipment and cables required for safe shutdown in the event of a fire follows:

Pressurizer Pressure (PT-1102A and PT-1102B)

Redundant pressure transmitters are located above the 18.00' and 62.00' elevations. Associated cables are routed in separate trays on the 18.00' and 45.00' elevations. In addition to the vertical separation, the cable trays are approximately 7 to 11 feet apart horizontally. Although not separated by 20 ft. horizontal distance the low combustible load, lack of continuity of combustibles, air mixture dilution temperature of localized hot off-gases from a fire, and the horizontal/vertical separation of redundant equipment and cables assures the availability of at least one train of equipment required for safe shutdown in the event of a fire.

Pressurizer Level (LT-1110X and 1110Y)

Redundant level transmitters are located above the 18.00' elevation reinforced concrete slab. Associated cables are routed in separate trays on the 18.00' and 45.00' elevations. In addition to the vertical separation, the cable trays are approximately 7 to 11 feet apart horizontally. Although not separated by 20 feet horizontal distance the low combustible load, lack of continuity of combustibles, air mixture dilution temperature of localized hot off-gases from a fire, and the horizontal/vertical separation of redundant cables assures the availability of at least one train of cable required for safe shutdown in the event of a fire. Although not separated by 20 ft. horizontal distance, the redundant level transmitters will be shielded from each other by a radiant energy shield. There are no combustibles above the slab in close proximity to the level transmitters. Therefore, at least one train of equipment required for safe shutdown in the event of a fire is available.

R2

Reactor Coolant System Temperature (TE-1115 and TE-1125)

Redundant temperature elements are over 20 ft. apart horizontally above the 18.00' elevation. This meets the criteria of Section III-G.2.d of Appendix R to 10 CFR 50. Associated cables are embedded in concrete and are then routed in separate trays on the 18.00' and 45.00' elevations. In addition to the vertical separation, the cable trays are approximately 7 to 11 feet apart horizontally. Although not separated by 20 ft. horizontal distance the low combustible load, lack of continuity of combustibles, air mixture dilution temperature of localized hot off-gases from a fire and the horizontal/vertical separation of redundant cables assures the availability of at least one train of cable required for safe shutdown in the event of a fire.

FA-L-23

custom designed watertight doors which do not bear an Underwriter's Laboratory or other recognized agency label substantiating a three hour fire resistance rating. This is the basis of Exemption Request L3 from Appendix R to 10CFR50.

The ventilation duct penetrating the fire barrier between Fire Area L and Fire Area J is not provided with a three-hour fire resistance rated damper or penetration fire seal. Both Fire Areas L and J contain very low combustibile loads and no continuity of combustibles. The penetrating duct is sealed to restrict the passage of air through the penetration. While localized high off-gas temperatures could be produced in the immediate vicinity of a fire, air mixture dilution temperatures which would stratify in the upper levels of either fire area do not reach a point capable of jeopardizing the operation of essential shutdown equipment in the adjacent fire area. Therefore, safe reactor shutdown capability in the event of a fire will be maintained. This is the basis of Exemption Request L2 from Appendix R to 10CFR50.

R2

R2

A fire in either zone of Fire Area L would not directly impinge upon or radiate heat to essential equipment on the opposite side of the partial height wall. Localized high temperature off-gas, while subject to air mixture dilution, could adversely affect redundant essential cables necessary for safe shutdown above the partial height wall. These cables are identified and protected with a minimum three hour fire rated enclosure, or relocated. Therefore, safe reactor shutdown capabilities in the event of a fire will be maintained.

R2

Due to the very small quantity of combustibles in Fire Area L and the total enclosure of the fire area with three hour fire rated barriers except where specific exemption is requested, no adverse involvement in adjacent Fire Area M, O, J or C occurs in the event of a fire.

6c. Fire Protection System Operating:

Fire Area L has ionization smoke detectors throughout which provide annunciation locally and in the Control Room. There are three accessible fire extinguishers and two standpipe hose stations in the hallway of Fire Area O. An effective response by the trained fire brigade, utilizing the nearby portable fire extinguishers and standpipe hose stations will assist in limiting the consequences of any fire effects. Safe reactor shutdown capabilities will not be adversely affected in the event of a fire.

ST LUCIE UNIT 1

FIRE HAZARD ANALYSIS FOR FIRE AREA N

1. DESCRIPTION OF FIRE AREA

- 1a Building: RAB Charging Pump Rooms Elev -0.50'
- 1b Reference Drawing: SK-8770-M-305, sh 1
- 1c Floor Area: 1019 sq. ft.
- 1d Subspaces Within Fire Area:
 - Zone 76 Charging Pump 1A
 - Zone 75 Charging Pump 1B
 - Zone 38 Charging Pump 1C
 - Zone 36A Common Hallway

2. ESSENTIAL SHUTDOWN EQUIPMENT WITHIN FIRE AREA

- Zone 76: Charging Pump 1A
 - Suction Pressure Interlock PIC-2224X
- Zone 75: Charging Pump 1B
 - Charging Pump 1B Pushbutton (B53)
 - Suction Pressure Interlock PIC-2224Y
- Zone 38: Charging Pump 1C
 - Suction Pressure Interlock PIC-2224Z
 - RWT Supply Valve V2504
 - Pushbutton Station for Valve V2504 (B 1831)
- Zone 36A: Charging Pump 1A Pushbutton (B52)
- Charging Pump 1C Pushbutton (B54)

R2

R2

is less than 250 sq ft and the entire 10 gallons of lube oil would spread over the zone and be contained within the curbed compartment. The oil is assumed to ignite and continues to burn until completely consumed. Due to the small quantity of combustibles involved in the fire, the expected short duration of the fire, the separation provided by the partial height walls, the distances separating the pumps, and the lack of continuity of combustible materials, the fire will not result in the loss of function of either of the other two available charging pumps located in Fire Area N. Therefore, safe reactor shutdown capabilities in the event of a fire will be maintained. This is the basis of Exemption Request N1 from Appendix R to 10CFR50.

If the fire were to occur in Zone 38, RWT Supply Valve V2504 could be adversely affected. However, redundant functions are available totally external to Fire Area N, therefore safe reactor shutdown capability in the event of a fire will be maintained.

The common hallway (Zone 36A) contains the pushbutton stations for charging pumps 1A and 1C, with a maximum separation exceeding 30 ft. Zone 75 contains the pushbutton station for charging pump 1B. Due to the negligible quantity of combustibles, expected short duration of a fire, distance separation between pushbuttons, enclosure of one pushbutton in Zone 75, lack of continuity of combustibles and resultant localization of a fire, loss of charging pump function will not occur. Therefore, safe reactor shutdown capabilities in the event of a fire will be maintained. This is the basis of Exemption Request N2 from Appendix R to 10CFR50.

R2

R2

Fire Area N contains, in total, approximately 11,170 Btu/Sq.Ft. This is far below generally accepted criteria for one hour fire resistance rated barriers. However, a significant safety factor is introduced by the total enclosure of Fire Area N in fire barriers which have a minimum of three hour fire resistance rating. Fire barrier integrity is maintained by the provision of penetration fire seals, fire doors and fire dampers. The north entry to fire Zone 36A is, of necessity, a custom designed watertight door which does not bear an Underwriter's Laboratory or other recognized agency label substantiating a three hour fire resistance rating. This is the basis of Exemption Request N3 from Appendix R to 10CFR50.

A fire in any zone of Fire Area N would not directly impinge upon or radiate heat to essential equipment on the opposite side of the 7 ft partial height walls. Localized high temperature off-gas, while subject to air mixture dilution, could adversely affect redundant essential cables above the partial height walls. These cables are identified and protected with a minimum three hour fire rated enclosure, or relocated. Therefore, safe reactor shutdown capabilities in the event of a fire will be maintained.

Due to the small quantity of combustibles in Fire Area N and the total enclosure of the fire area with three hour fire rated barriers except where specific exemption is requested, no adverse involvement in adjacent Fire Area M, O, J or E occurs in the event of a fire.

