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 AUTH. NAME AUTHOR AFFILIATION
 CUTTER, A.B. Carolina Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION
 VARGA, S.A. Operating Reactors Branch 1

SUBJECT: Forwards technical justification for request for exemption
 from requirements of 10CFR50, App R, Section III, G.3 re
 detection & fixed suppression requirements for three fire
 areas. Fee paid.

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Carolina Power & Light Company

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Director of Nuclear Reactor Regulation
Attention: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing
United States Nuclear Regulatory Commission
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
APPENDIX R - EXEMPTION REQUEST

Dear Mr. Varga:

INTRODUCTION

Pursuant to 10 CFR 50.12, Carolina Power & Light Company (CP&L) hereby requests a technical exemption from the requirements of 10 CFR 50, Appendix R, Section III.G.3. This exemption is from the III.G.3 detection and fixed suppression requirements for three fire areas.

BACKGROUND

In a letter dated July 20, 1984 (Mr. A. B. Cutter to Mr. S. A. Varga, Serial No. NLS-84-292), CP&L requested a similar exemption for seven fire areas. On November 30, 1984 (Mr. A. B. Cutter to Mr. S. A. Varga, Serial No. NLS-84-434) CP&L submitted a letter to the NRC documenting changes in the Company's method of implementing Alternate Shutdown Capability. Item 6 of that letter identified additional fire zones where credit was taken for the Alternate Shutdown Capability (III.G.3) in the H. B. Robinson safe shutdown scenario. For these additional fire zones CP&L would also like to request an exemption from the III.G.3 suppression and detection requirements. In order to avoid any misunderstandings, CP&L has prepared the enclosed exemption request such that it envelopes the request made on July 20, 1984 and the additional areas mentioned above. This revised exemption request uses an area versus a zone concept. This approach was discussed with your staff in a phone conversation dated December 27, 1984, and found acceptable. Attachment 1 to this letter provides the technical justification for the exemption request and the technical information required by the NRC staff. This letter supersedes and withdraws the July 20, 1984 exemption request.

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CONCLUSION

The Company has prepared the enclosed exemption request for three fire areas which utilize an Alternate Shutdown Capability. Carolina Power & Light Company respectfully submits that this exemption request will not endanger life or property or the common defense and security, and is otherwise in the public interest. The Company has evaluated this request in accordance with the provisions of 10 CFR 170.12 and determined that an exemption application fee is required. A check for \$150.00 is enclosed in payment of this fee.

Should you have any questions concerning this letter, please contact Mr. Sherwood Zimmerman at (919) 836-6242.

Yours very truly,



A. B. Cutter - Vice President
Nuclear Engineering & Licensing

PPC/ccc (1082PPC)

Enclosures

cc: Dr. J. Nelson Grace (NRC-RII)
Mr. G. Requa (NRC)
Mr. H. Krug (NRC Resident Inspector - RNP)

ATTACHMENT 1

10 CFR 50, APPENDIX R, SECTION III.G.3

EXEMPTION REQUEST TECHNICAL JUSTIFICATION

A. EXEMPTION SUMMARY

An exemption from the detection and fixed fire suppression requirements of Section III.G.3 of Appendix R to 10 CFR 50 is requested for the following fire areas:

1. Fire Area A

General Auxiliary Building Area.

2. Fire Area B

Charging Pump Room, VCT Room, and Non-Regenerative Heat Exchanger Room.

3. Fire Area G

Exterior Area.

B. AREA DESCRIPTION

1. General Description

The fire areas under consideration contain redundant trains of safety shutdown systems and alternative shutdown capability is proposed for each area. Areas A and G are comprised of several fire zones. In each case, the alternative shutdown capability will be electrically independent from the room or zone under consideration. Passive safe shutdown components such as tanks, heat exchangers, manually operated valves, and other components have undergone a separate evaluation to establish freedom from fire damage. Each of the fire zones under consideration is discussed separately below.

- a. The following fire zones in Area A contain detection and suppression in accordance with Section III.G.3 of Appendix R, as summarized in Table 1, and are included for reference purposes:

Zone 1 - Diesel Generator B Room
Zone 2 - Diesel Generator A Room
Zone 14 - Solid Waste Handling Room
Zone 19 - Unit 2 Cable Spreading Room
Zone 20 - Emergency Switchgear Room and Electrical Equipment Area

- b. The following fire zone in Area A has received an exemption from the requirements of Section III.G of Appendix R and is included for reference purposes:

Zone 22 - Control Room (Exemption granted via NRC letter dated November 13, 1981.)

- c. The following fire zones in Area A do not comply with the detection and fixed suppression requirements of Section III.G.3 of Appendix R, as summarized in Table 2:

Fire Zone 3 - Safety Injection Pump Room
Fire Zone 6 - Auxiliary Feedwater Pump Room
Fire Zone 7 - Auxiliary Building Hallway (Ground Floor)
Fire Zone 8 - Boron Injection Tank Room
Fire Zone 11 - Pipe Alley
Fire Zone 12 - Waste Holdup Tank, RHR Heat Exchangers
Fire Zone 13 - Chemical Storage Area, Boric Acid Batching Tank
Fire Zone 15 - Auxiliary Building, Second Level Hallway
Fire Zone 16 - Battery Room
Fire Zone 17 - HVAC Equipment Room for Control Room
Fire Zone 18 - Unit No. 1 Cable Spreading Room
Fire Zone 21 - Rod Control Room
Fire Zone 23 - Hagan Room

- d. Fire Area B does not comply with the detection and suppression requirements of Section III.G.3 of Appendix R, as summarized in Table 2.

- e. The following fire zone in Area G contains detection and fixed suppression in accordance with Section III.G.3 of Appendix R, as summarized in Table 1, and is included for reference purposes:

Zone 26 - Yard Transformers

- f. The following fire zone in Area G has received an exemption from the requirements of Section III.G of Appendix R and is included for reference purposes:

Zone 29 - Service Water Pump Area (Exemption granted via NRC letter dated November 25, 1983.)

- g. The following fire zones in Area G do not comply with the detection and suppression requirements of Section III.G.3 of Appendix R, as summarized in Table 2:

Zone 25 - Turbine Building
Zone 28 - New Fuel Storage, Fuel Handling Area, Hot Machine Shop, Hold-Up Tanks
Zone 30 - Diesel Oil Storage Tank
Zone 31 - Refueling Water Storage Tank
Zone 32 - Primary Water Storage Tank
Zone 33 - Condensate Storage Tank

2. Fire Protection Features

See Tables 1 and 2.

TABLE 1

Summary of Fire Zones Meeting Detection/Suppression Requirements

Fire Zone	Combustible Loading (Btu/ft ²)	Equivalent Fire Severity (min.)	Fire Detection (Note 1)	Fixed Fire Suppression	Manual Fire Suppression (Note 2 & 4)
1	89,000	67	2-UV 1-HD 1-MPS	CO ₂	1-ABC 1-CO ₂ 2-AFFF 2-H 1-HS 1-WH
2	89,000	67	2-UV 1-HD 1-MPS	CO ₂	1-ABC 1-CO ₂ 2-AFFF 2-H 1-HS 1-WH
14	40,000	30	12-HD 1-MPS	Preaction Sprinkler	1-ABC 1-H 1-HS
19	128,000	96	2-HD 2-ISK 4-PSD 1-MPS	Halon	1-CO ₂ 2-H 2-HS 1-WH
20	52,000	39	6-HD 4-ISK 4-PSD 1-MPS	Halon	1-CO ₂ 2-H 2-HS 1-WH
26	N/A	N/A	Deluge System	Deluge System	2-WH 1-ABC 1-H 2-YH

TABLE 2

Summary of Fire Areas/Zone Not Meeting Detection/Suppression Requirements

Fire Zone	Combustible Loading (Btu/ft ²)	Equivalent Fire Severity (min.)	Fire Detection (Note 1)	Fixed Fire Suppression	Manual Fire Suppression (Note 2 & 4)
Area A/ Zone 3	31,400	23	2-HD 2-ISD 2-MPS	None	2-ABC 1-WH 2-AFFF 1-H 1-HS
Area A/ Zone 6	29,400	22	1-HD 1-ISD 1-MPS	None	2-WH 1-H 1-HS
Area A/ Zone 7	37,000	28	11-HD 11-ISD 7-PSD 5-MPS	Preacton Sprinkler (partial)	2-ABC 1-WH 2-AFFF 3-H 3-HS
Area A/ Zone 8	18,000	14	1-HD 1-ISD 1-MPS	None	2-ABC 1-HS
Area A/ Zone 11	16,000	12	2-HD 4-ISD 1-MPS	None	1-ABC 1-H 2-HS 1-WH
Area A/ Zone 12	Negligible	Negligible	None	None	1-ABC 1-H 1-HS
Area A/ Zone 13	3,300	3	None	None	1-ABC 1-H 2-HS
Area A/ Zone 15	28,000	21	5-HD 5-ISD 2-MPS	None	1-ABC 1-H 2-HS
Area A/ Zone 16	13,000	10	3-HD 3-ISD 2-MPS	None	1-CO ₂ 2-H 1-HS 1-WH
Area A/ Zone 17	8,000	6	2-HD 2-ISD 1-MPS	None	1-ABC 1-WH 1-CO ₂ 1-HS

TABLE 2 (Continued)

Summary of Fire Areas/Zones Not Meeting Detection/Suppression Requirements

Fire Zone	Combustible Loading (Btu/ft ²)	Equivalent Fire Severity (min.)	Fire Detection (Note 1)	Fixed Fire Suppression	Manual Fire Suppression (Note 2 & 4)
Area A/ Zone 18	32,000	24	2-HD 2-ISD 2-MPS	None	1-ABC 1-CO ₂ 1-H 1-HS 1-WH
Area A/ Zone 21	14,000	10	3-HD 3-ISD 1-MPS	None	1-H 1-HS
Area A/ Zone 23	31,600	24	2-HD 2-ISD 1-MPS	None	1-CO ₂ 2-H 1-H ₂ O 1-HS
Area B/ Zone 4	18,500	13	2-HD 2-ISD 1-MPS	None	1-ABC 1-H 2-HS 1-WH
Area G/ Zone 25 (Note 3)	N/A	N/A	5-HD 5-ISD 1-MPS Deluge System	Deluge System (partial)	11-ABC 3-WH 1-CO ₂ 4-H 1-H-WC 15-HS 3-YH
Area G/ Zone 28	Negligible	Negligible	None	None	1-ABC 1-CO ₂ 4-HS 1-YH
Area G/ Zone 30	N/A	N/A	Security	None	1-WH 1-YH
Area G/ Zone 31	Negligible	Negligible	Security	None	1-YH
Area G/ Zone 32	Negligible	Negligible	Security	None	1-YH
Area G/ Zone 33	Negligible	Negligible	Security	None	1-YH

NOTES

Note 1: The following abbreviations are used to represent fire detection devices:

UV	Ultraviolet flame detector
HD	Heat detector
ISD	Ionization smoke detector
PSD	Photoelectric smoke detector
MPS	Manual pull station

Note 2: The following abbreviations are used to represent manual fire suppression equipment:

ABC	Dry chemical fire extinguisher (typ. 18-20 lb.)
AFFF	2 1/2 gallon foam fire extinguisher
CO ₂	Carbon dioxide fire extinguisher (typ. 15-20 lb.)
H	Halon fire extinguisher (typ. 17 lb.)
H ₂ O	Water fire extinguisher (2 1/2 gal.)
HS	Manual hose station
WH	Halon 1211 wheeled cart fire extinguisher (150 lb.)
YH	Yard hydrant

Note 3: Combustible loadings were not calculated for zones in the exterior Fire Area G.

Note 4: The following equipment is available at the Fire Equipment Building for use in any area:

1. 150 lb. Halon 1211 wheeled fire extinguisher
2. 95 gpm AFFF foam cart
3. 125 gpm AFFF foam unit

3. Safe Shutdown Equipment

- a. The designated alternative shutdown method for Area A is Alternative Train A. The fire zones under consideration within Area A which contain Train A safe shutdown components are discussed below.

Fire Zone 3 - SI Pump Room

This fire zone contains RWST outlet valves SI-864A and SI-864B. These valves must be closed for safe shutdown. However, analysis has demonstrated that 70 minutes are available to close these valves in the event of a fire. The equivalent fire severity in this zone is approximately 23 minutes, therefore, ample time exists to extinguish the fire and gain access to these valves for manual operation.

Fire Zone 11 - Pipe Alley

The fire zone contains component cooling water supply and return valves FCV-626 and CC-716 A and CC-716 B in the flow path to and from the reactor coolant pump thermal barriers. This zone also contains RCP seal water return valve CVC-381. It is necessary to establish either CCW flow or RCP seal water flow to maintain seal integrity. Seal water injection flow is independent of the above valves. The equivalent fire severity in this zone is 12 minutes, therefore, ample time exists to establish seal water injection, extinguish the fire, and gain access to these valves to provide additional assurance of RCP seal integrity.

Fire Zone 12 - Waste Holdup Tank, RHR Heat Exchangers

This fire zone contains the two RHR heat exchangers, one of which is necessary for plant cooldown. Due to the negligible combustible loading in this zone and the passive nature of the metal, the water-filled heat exchangers will remain free of fire damage and will be available for cooldown in the event of a fire in this zone.

Fire Zone 16 - Battery Room

The fire zone contains power feeds to Auxiliary Panels DC and GC. These panels should be de-energized to properly position safe shutdown valves. However, the valves can be placed in their proper position by using the control switches in the Control Room.

For the remaining fire zones in Area A, Alternative Train A is independent of each zone and available for safe shutdown.

- b. The designated alternative shutdown method for Area B is Alternative Train B. This method utilizes the safety injection pumps and pressurizer PORVs. This area is enclosed in a 3-hour

fire barrier. Separation analysis has indicated that Train B is completely independent of this area and available for safe shutdown.

- c. The designated alternative shutdown method for Area G is Alternative Train B. This method utilizes normal plant on-site power. The fire zones under consideration within Area G which contain Train B safe shutdown components are discussed below.

Fire Zone 30 - Diesel Oil Storage Tank

This fire zone contains the Diesel Oil Storage Tank and Diesel Oil Transfer Pumps. These tanks fuel Diesel Generators A and B. The Diesel Generator Day Tanks are independent of Fire Area G. Each day tank contains approximately a 16 hour supply of fuel. The Dedicated Shutdown Diesel Generator has an independent supply of fuel. This equipment is located over 500 feet from Zone 30. The availability of the day tanks and the DS diesel will assure that safe shutdown can be accomplished in the event of a fire in this zone.

Fire Zone 31 - Refueling Water Storage Tank

This zone contains the Refueling Water Storage Tank (RWST). This tank is the designated source of reactor makeup water for Alternative Train B. The RWST will remain free of fire damage and available to support safe shutdown because of the lack of combustibles in proximity to this zone, the outdoor location, and water-filled configuration of the metal tank itself.

Fire Zone 33 - Condensate Storage Tank

This zone contains the Condensate Storage Tank (CST). This tank is the designated source of steam generator makeup water for Alternative Train B. The CST will remain free of fire damage and remain available to support safe shutdown because of the lack of combustibles in proximity to this zone, the outdoor location, and water-filled nature of the metal tank.

For the remaining zones in Area G, Alternative Train B is completely independent of each zone and available for safe shutdown.

C. BASIS FOR EXEMPTIONS

The existing features in each of these areas will ensure safe shutdown capability for a fire in any area. Assurance that a fire in any of these areas would be quickly detected and extinguished is provided by the presence of automatic early warning detection system, fixed and manual fire suppression consistent with the hazards in each fire zone, and a well-equipped and well-trained fire brigade. The low fixed combustible

loadings and physical separation provide further assurance that safe shutdown capability will not be precluded. Therefore, the addition of further fire detection and fixed suppression in each of the zones in Fire Areas A, B, and G would not enhance the existing fire protection capability.

D. CONCLUSION

Exemption from the fixed suppression and detection requirements of 10 CFR 50, Appendix R, Section III.G.3 is requested for the following three fire areas:

1. Fire Area A

General Auxiliary Building Area

2. Fire Area B

Charging Pump Room, VCT Room and Non-Regenerative Heat Exchanger Room

3. Fire Area G

Exterior Area

The technical bases which justify the exemption requests are summarized below:

1. Alternative/dedicated shutdown capability is electrically independent from the room or zone under consideration.
2. Combustible loading results in a maximum fire severity of 24 minutes or less in each zone without fixed suppression.
3. The presence of automatic early warning detection systems, fixed and manual suppression consistent with the hazards in each fire zone and a well-equipped and well-trained fire brigade, provides assurance that a fire in any of these areas would be quickly detected and extinguished.
4. Physical separation will provide further assurance that safe shutdown capability will not be precluded.