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UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
CAROLINA POWER & LIGHT COMPANY	)	Docket Nos. 50-325 and 50-324
	)	
(Brunswick Steam Electric Plant, Units 1 and 2)	)	

EXEMPTION

I.

Carolina Power & Light Company (the licensee) is the holder of Facility Operating License Nos. DPR-71 and DPR-62 which authorize operation of the Brunswick Steam Electric Plant, Units 1 and 2, respectively (Brunswick or the facilities). These licenses provide, among other things, that the facilities are subject to all rules, regulations and Orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

The facilities are boiling water reactors located at the licensee's site in Brunswick County, North Carolina.

II.

Section 50.48 of 10 CFR Part 50 requires that licensed operating reactors be subject to the requirements of Appendix R of 10 CFR Part 50. Appendix R contains the general and specific requirements for fire protection programs at licensed nuclear facilities. On February 17, 1981, the fire protection rule for nuclear power plants, 10 CFR 50.48 and Appendix R, became effective. This rule required all licensees of plants licensed prior to January 1, 1979, to submit by March 19, 1981: (1) plans and schedules for meeting the applicable requirements of Appendix R, (2) a design description of any modifications

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proposed to provide alternative safe shutdown capability pursuant to Paragraph III.G.3 of Appendix R, and (3) exemption requests for which the tolling provision of Section 50.48(c)(6) was to be invoked.

By letter dated March 6, 1981, the licensee requested exemptions from Section III.G.3 of Appendix R to 10 CFR 50 to the extent that it requires the installation of a fixed fire extinguishing system in the Control Room and the cable spreading rooms of both units. By letter dated June 30, 1982, the licensee requested additional exemptions from Section III.G of Appendix R to 10 CFR 50. By letters dated September 3, 1982, and October 1, 1982, the licensee provided additional information on these exemption requests. In January 1983, the licensee committed to provide clarifying information to explain why these exemptions were needed. We met with the licensee on January 5, 1983 and February 9, 1983 to resolve 44 exemption requests. By letter dated January 31, 1983 we concluded that 44 exemptions could not be approved based on the information provided.

By letter dated May 2, 1983 the licensee provided additional information regarding the exemption requests and the schedule for performing an alternate shutdown study. By letter dated July 27, 1983, an exemption was issued for seven of the exemption requests and 57 other exemption requests were denied. The NRC indicated in the January 31, 1983 letter to the licensee transmitting the Draft Safety Evaluation and confirmed in the July 27, 1983 letter, that the licensee was given 6 months to provide the description of the modifications for the alternate shutdown capability. This was to include modifications to the diesel generator building equipment hatches, installation of suppression

system in the cable spreading room, a preliminary description of the alternate shutdown modification within 6 months and a final alternate shutdown report in 9 months. By letter dated April 24, 1984, as supplemented on December 21, 1984 and October 28, 1985, the alternate shutdown report was submitted along with 11 exemption requests.

By the submittal dated April 24, 1984, as supplemented, the licensee requested exemptions from the requirements in III.G and J of Appendix R to 10 CFR 50 as follows:

7.2.1 Exemption from III.G.2 provisions for safe shutdown separation features on -17, 20, and 50 feet elevations in Unit 1 Reactor Building.

Justification is based upon automatic detection and suppression, separation zone considerations, physical separation of redundant trains, water curtain, venting paths precluding stratification, use of fire stop and 1-hour barriers on exposed cables, and addition of sprinklers.

7.2.2 Exemption from III.G.2 provisions in Unit 1 ECCS room for safe shutdown separation features and for unrated penetrations.

Justification is based upon low fire potential; lack of ignition sources; electrical cables inside conduit; sufficient propagation retardancy; adequate separation and detection; installation of wrap, fuses, and a "quick response" sprinkler head; an inerted primary containment; and features of existing seals.

7.2.3 Exemption from III.G.2 provisions for safe shutdown separation features on -17, 20 and 50 feet elevations in Unit 2 Reactor Building.

Justification is based upon automatic detection and suppression, separation zone considerations, physical separation of redundant trains, water curtain, venting paths precluding stratification, use of fire stops and 1-hour barriers on exposed cables, and addition of sprinklers.

7.2.4 Exemption from III.G.2 provisions in Unit 2 ECCS room for safe shutdown separation features and for unrated penetrations.

Justification is based upon low fire potential; lack of ignition sources; electrical cables inside conduit; sufficient propagation retardancy; adequate separation and detection; installation of wrap, fuses, and a "quick response" sprinkler head; an inerted primary containment; and features of existing seals.

7.2.5 Exemption from III.G.2 provisions for safe shutdown system separation for the Diesel Generator Building basement.

Justification is based upon minimal personnel use of the basement; activities do not involve combustibles; fixed combustibles are self extinguishing; the proposed Halon automatic suppression system combined with the existing automatic suppression system will prevent a fire from damaging redundant trains or diesel pad seals; redundant alarms would mobilize the fire brigade promptly; and stairwells provide protected staging areas for initiating fire response activities.

7.2.6 Exemption from III.G.2 provisions for safe shutdown system separation (intervening combustibles) for Service Water Building, elevations 4 feet and 20 feet.

Justification is based upon lack of ignition sources; minimal fixed combustibles; existing suppression, detection, hose stations, and separation; and installation of barriers.

7.2.7 Exemption from III.G.2 provisions as necessary from full area suppression for Diesel Generator building, fire area DG-8.

Justification is based upon small amount of fixed combustibles; unlikelihood of cable ignition; fire detection; and installation of rated barriers.

7.2.8 Exemption from III.G.3 provisions for fixed suppression requested for Turbine Building.

Justification is based upon automatic detection and early brigade response; existing automatic suppression over certain equipment and lack of ignition sources; ceiling penetrations providing venting paths; the ability to achieve safe shutdown; and that additional suppression would not enhance safe shutdown capability.

7.2.9 Exemption from III.G.3 provision for suppression in any "area, room, or zone" where alternative shutdown capability is provided for rooms in the control and diesel generator buildings.

Justification is based upon automatic detection alarmed in the control room; availability of manual fire fighting equipment; alternative shutdown capability is provided; low fire hazards; the control room suppression exemption; and installation of suppression in two rooms in the Control Building.

7.2.10 Exemption from III.G.3 provisions for suppression and detection for the East Yard.

Justification is based upon constant patrols and closed circuit TV surveillance; the dike surrounding the diesel fuel tank; combustion products venting to atmosphere; low probability of radiant energy damage to CST level switches and AC power feeds; and alternative shutdown capability is provided to the RCIC logic circuits and for a fire in manholes.

7.2.11 Exemption from emergency lighting provisions of III.J for the East Yard.

Justification is based upon ready availability of hand lights that will be adequate for traversing East Yard and reading gages; also, additional modifications would not enhance safe shutdown capability.

Section III.G of Appendix R to 10 CFR 50 requires that one train of cables and equipment necessary to achieve and maintain safe shutdown be maintained free of fire damage by one of the following means:

a. Separation of cables and equipment and associated 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 a fire resistance equivalent to that required of the barrier;

b. 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, and;

c. Enclosure of cables 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 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.

Section III.J of Appendix R requires battery-powered emergency lighting be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto.

By letter dated October 30, 1986, the licensee provided information relevant to the "special circumstances" finding required by revised 10 CFR 50.12(a) (See 50 Fed. Reg. 50764). Previously, the licensee has stated that the existing and proposed fire protection features at the Brunswick facility accomplish the underlying purpose of the rule. In the October 30, 1986 letter, the licensee addressed the additional costs that would be incurred in achieving verbatim compliance with Appendix R to 10 CFR 50 in the absence of the requested exemptions. Because of the plant configuration, compliance would require modifications to the basic plant structures. In addition, the licensee would have to install a dedicated shutdown capability as delineated in Section III.L of Appendix R. The installation of a dedicated shutdown system would require longer plant outages to facilitate connection of the dedicated system to existing plant structures and systems. Even with a dedicated shutdown capability, considerable expenditures would be required to protect associated circuits. The licensee has estimated that the cost of installing the dedicated shutdown system alone could range from 35 to 45 million dollars based on a survey of other utilities and industry estimates. The licensee states that even without a detailed cost comparison, it is evident that the cost of installing a dedicated shutdown system would significantly exceed the cost of installing the proposed modifications and alternate shutdown capability and that no corresponding increase in fire protection capability would be achieved. The licensee therefore concludes

that "compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted."

The staff agrees with the licensee's determination and therefore concludes that "special circumstances" exist for the licensee's requested exemptions in that application of the regulations in these particular circumstances is not necessary to achieve the underlying purpose of Appendix R to 10 CFR Part 50 and that undue costs would be imposed if the exemptions were not granted. See 10 CFR 50.12(a)(2)(ii) and (iii).

The licensee requested the above exemptions with the justification provided. We have evaluated the licensee's request and the associated analysis and justification and have provided the details in our related Safety Evaluation issued concurrent with this Exemption. Based on our evaluation, we concluded that the level of protection for Brunswick is equivalent to the technical requirements of Section III.G and J of Appendix R for certain exemption requests, and therefore these requested exemptions 7.2.1 through 7.2.11 should be granted. We have determined that exemption for the Control Building Extended (fire area 23 E), is not necessary. This is a part of exemption request 7.2.9.

III.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, this exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. The Commission further determines that special circumstances, as provided in 10 CFR 50.12(a)(2)(ii) and (iii), are present justifying the exemption, namely that application of the regulation in the particular

circumstances would not serve the underlying purpose of the rule and is not necessary to achieve the underlying purpose of the rule - to ensure the ability to effect safe shutdown of the plant - and would impose undue costs. Safe shutdown could be effected if a fire occurred in any of the areas for which an exemption has been requested because of alternative fire protection features provided and the existence of redundant shutdown systems.

Accordingly, the Commission hereby grants the exemptions from Appendix R of 10 CFR Part 50 as described below:

7.2.1 Exemption from III.G.2 provisions for safe shutdown separation features on -17, 20, and 50 feet elevations in Unit 1 Reactor Building.

7.2.2 Exemption from III.G.2 provisions in Unit 1 ECCS room for safe shutdown separation features and for unrated penetrations.

7.2.3 Exemption from III.G.2 provisions for safe shutdown separation features on -17, 20 and 50 feet elevations in Unit 2 Reactor Building.

7.2.4 Exemption from III.G.2 provisions in Unit 2 ECCS room for safe shutdown separation features and for unrated penetrations.

7.2.5 Exemption from III.G.2 provisions for safe shutdown system separation for the Diesel Generator Building basement.

7.2.6 Exemption from III.G.2 provisions for safe shutdown system separation (intervening combustibles) for Service Water Building, elevations 4 feet and 20 feet.

7.2.7 Exemption from III.G.2 provisions as necessary for full area suppression for Diesel Generator building, fire area DG-8.

7.2.8 Exemption from III.G.3 provisions for fixed suppression requested for Turbine Building.

7.2.9 Exemption from III.G.3 provision for suppression in any "area, room, or zone" where alternative shutdown capability is provided for rooms in the control and diesel generator buildings (fire area 23 E not necessary to include).

7.2.10 Exemption from III.G.3 provisions for suppression and detection for the East Yard.

7.2.11 Exemption from emergency lighting provisions of III.J for the East Yard.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this Exemption will have no significant impact on the environment (51 FR 46736).

This Exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

R. Wayne Houston, Acting Director
Division of BWR Licensing
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 30th day of December 1986

December 30, 1986

DOCKET NO.

MEMORANDUM FOR: Rules and Procedures Branch
Division of Rules and Records
Office of Administration

FROM: Office of Nuclear Reactor Regulation

SUBJECT: CAROLINA POWER & LIGHT COMPANY
Brunswick Steam Electric Plant, Units 1 and 2

One signed original of the *Federal Register* Notice identified below is enclosed for your transmittal to the Office of the Federal Register for publication. Additional conformed copies (5) of the Notice are enclosed for your use.

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- ☐ Notice of Receipt of Partial Application for Construction Permit(s) and Facility License(s): Time for Submission of Views on Antitrust Matters.
- ☐ Notice of Consideration of Issuance of Amendment to Facility Operating License.
- ☐ Notice of Receipt of Application for Facility License(s); Notice of Availability of Applicant's Environmental Report; and Notice of Consideration of Issuance of Facility License(s) and Notice of Opportunity for Hearing.
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