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Docket Nos. 50-272
and 50-311

Mr. R. A. Uderitz
Vice President - Nuclear
Public Service Electric and Gas Company
Mail Code T15A
Post Office Box 570
Newark, New Jersey 07101

Dear Mr. Uderitz:

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2, FIRE
PROTECTION - REQUEST FOR EXEMPTION FROM REQUIREMENTS OF
APPENDIX R TO 10 CFR 50, SECTION III.G

The Commission has issued in Enclosure 1 two exemptions to certain requirements of Section 50.48 and Appendix R to 10 CFR 50 in response to your letter dated March 19, 1981. These exemptions pertain to fire protection of safe shutdown capability.

By letter dated March 19, 1981, PSE&G requested four exemptions from 10 CFR Part 50, Appendix R, Item III.G for the Salem Nuclear Generating Station, Units 1 and 2. These requests are summarized as follows:

1. Use of fire doors and/or fire dampers rated for 1 1/2 hours rather than a 3-hour fire barrier as required by Item III.G.2a.
2. Use of 1 hour fire barriers without an automatic fire suppression system as required by Item III.G.2c.
3. Substitution of redundant automatic fire suppression systems for barriers or barriers plus an automatic fire suppression system as required by Items III.G.2a and 2c.
4. Substitution of portable fire extinguishers for a fixed fire suppression system in the control room areas of Units Nos. 1 and 2 as required by Item III.G.3.

Subsequently, during a series of meetings between the NRC staff and PSE&G from April 30, 1981 to May 6, 1981, the need for request 3 was removed since the licensee decided to provide a one hour fire barrier for one train of auxiliary feedwater trays.

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Mr. R. A. Uderitz

- 2 -

We have granted the enclosed Exemption from the requirements of 10 CFR Part 50, Appendix R, Item III.G.2a for your first request and from Item III.G.3 for your fourth request. The bases for this Exemption are given in the enclosed Safety Evaluation.

Your second request is still under review and will be the subject of separate correspondence.

The Exemption is being forwarded to the Office of the Federal Register for publication.

Sincerely,

Original signed by:
S. A. Varga

Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing

Enclosures:

- 1. Exemption
- 2. Safety Evaluation

cc w/enclosures:
See next page

OFFICE	ORB #1: DL <i>cp</i>	ORB #1: DL <i>WJR</i>	ORB #5: DL <i>JVM</i>	ORB #1: DL <i>S. Varga</i>	AD/OR: DL <i>GL</i>	OELD <i>JML</i>	D/DLO <i>DL</i>
SURNAME	CParrish	WRoss <i>ds</i>	TWambach	S. Varga	GLainas	W. Shields	DLsenhut
DATE	09/1/82	09/1/82	09/2/82	09/9/82	09/10/82	09/13/82	09/16/82

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UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of)	
)	
Public Service Electric and Gas)	Docket Nos. 50-272 and 50-311
Company)	
)	
(Salem Nuclear Generating Station,)	
Units Nos. 1 and 2))	

EXEMPTION

I.

Public Service Electric and Gas Company (the licensee) and three other co-owners are the holders of Facility Operating Licenses Nos. DPR-70 and DPR-75 which authorize operation of the Salem Nuclear Generating Station Units 1 and 2 (Salem or the facilities). These licenses provide, among other things, that they are subject to all rules, regulations and Orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

The facilities are pressurized water reactors located at the licensee's site in Salem County, New Jersey.

II.

Section III.G.2a of Appendix R to 10 CFR 50 requires that structural steel forming a part of or supporting a fire barrier with a 3-hour rating shall be protected to provide fire resistance equivalent to that required of the barrier.

The licensee indicated in its March 19, 1981 letter that the walls forming barriers between redundant equipment and/or cables incorporating fire dampers are fire rated for three hours. The fire doors and/or fire dampers that are used for protection of these openings are fire rated for 1 1/2 hours. The licensee has stated that an exemption for the doors and/or dampers is justified since the fire hazard analysis performed for Salem calculated a potential fire duration of less than one hour in all such areas.

Based on our evaluation, we conclude that the fire loading in the vicinity of openings in the affected areas is sufficiently low so that protection by the 1 1/2 hour fire door/dampers in the walls is acceptable. Therefore, the licensee's request to be exempted from the requirement to provide a three hour barrier should be granted.

III.

Section III.G.3 of Appendix R to 10 CFR Part 50 requires that a fixed fire suppression system be installed in an area, room or zone under consideration for alternative safe shutdown modifications. In the case of Salem, under this provision a fixed fire suppression system would be required in the control room.

The licensee indicated in its March 19, 1981 letter, that the fire protection features currently installed in the control room provide adequate fire fighting capability in the control room and constitute an adequate fixed fire suppression system for the area. However, inasmuch as the term "fixed suppression" has been used to connote sprinklers or gas suppression systems, the licensee has requested an exemption from the requirements of III.G.3 to provide a fixed suppression system.

The licensee's exemption request is based on the following:

- An alternate shutdown system has been provided for the control room. This alternate shutdown system provides remote control capabilities for those systems needed to carry out a reactor shutdown function, maintain hot shutdown, proceed to and maintain cold shutdown, from outside the main control room.
- A fire detection system has been installed in the control room.

- Portable fire extinguishers have been installed inside the control room.

The modifications which the licensee's exemption request is based on are required by Appendix R to 10 CFR Part 50. Therefore, the above modifications alone do not justify an exemption from the requirement to install a fixed fire suppression system in areas where redundant divisions are located. However, the control room is a unique area of the plant that is required to be continually occupied by the operators. In the event of a fire, manual fire suppression would be effective and prompt. Because the operators provide a continuous fire watch in the control room, a fixed suppression system is not necessary to achieve adequate fire protection in the control room. This is similar to the concept reflected in the staff's acceptance, on a short-term basis, of a continuous fire watch as an alternative to fixed suppression systems when such systems become unavailable per 3.7.10.2 of the Standard Technical Specifications.

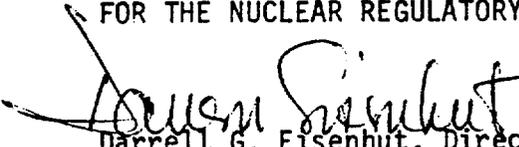
Based on our evaluation, we conclude that the licensee's fire protection features for the control room meet the objectives of Section III.G, "Fire Protection of Safe Shutdown Capability," of Appendix R to 10 CFR Part 50, and, therefore, the licensee's request to be exempted from the requirement to provide a fixed fire suppression system in the control room should be granted.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, these exemptions are authorized by law and will not endanger life or property or the common defense and security, are otherwise in the public interest, and are hereby granted.

The Commission has determined that the granting of this Exemption will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with this action.

This Exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Darrell G. Eisenhut, Director
Division of Licensing

Dated at Bethesda, Maryland
this 16th day of September, 1982



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

APPENDIX R REVIEW

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
PHILADELPHIA ELECTRIC COMPANY,
DELMARVA POWER AND LIGHT COMPANY, AND
ATLANTIC CITY ELECTRIC COMPANY

SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-272 AND 50-311

Introduction

By letter dated March 19, 1981, the licensee requested an exemption from Section II.G. "Fire Protection of Safe Shutdown Capability," Appendix R, 10 CFR Part 50, to the extent that:

- (A) Paragraph III.G.2a - a three hour barrier for hot shutdown systems and cables, including structural steel forming a part for supporting the barrier.
- (B) Paragraph III.G.2c - a one hour fire barrier for protection of one train of hot shutdown systems and an automatic suppression system in the fire area.
- (C) Paragraph III.G.2a and 2c - a three hour fire rated barrier to separate cables and equipment of redundant trains or the enclosure of cable and equipment of one redundant train in a 1 hour fire rated barrier in addition to fire detectors and an automatic fire suppression system.
- (D) Paragraph III.G.3 - that a fire zone for which alternate shutdown capability was designed (the control room) must have a fixed fire suppression system and fire detectors.

Discussion

- (A) The licensee indicated that the walls forming barriers between redundant equipment and/or cables incorporating fire dampers are fire rated for 3 hours. The fire doors and/or fire dampers that are used for protection of these openings are fire rated for 1 1/2 hours. The licensee has stated that an exemption is justified since the fire hazards analysis performed for Salem calculated a potential fire duration of less than one hour in all such areas.

- (B) The licensee states that the Salem design protects hot and cold shutdown systems with a one-hour fire rated barrier and no automatic suppression system. Certain areas of the plant such as the electrical penetration area, 4160V and 460V switchgear room have a fixed total flooding manual actuated CO₂ system installed in addition to the one-hour fire rated barriers. The licensee stated that the exemption is justified since on the basis of the fire hazards analysis, the fire loading in these areas is less than 1/2 hour.
- (C) In the auxiliary feedwater pump room the licensee designed and installed redundant separately actuated automatic sprinkler systems for protection of redundant safety-related equipment and cables. During a meeting between the staff and the licensee on April 30 - May 6, 1981, as documented in Supplement 6 of the Salem SER, the staff agreed that fire protection equivalent to that required by III.G.2a or III.G.2c would be achieved by these redundant systems if the cable trays associated with the turbine-driven auxiliary feedwater pump in the auxiliary feedwater pump room were provided with a one-hour fire barrier. The requirement for such a fire barrier was made a condition in the license for Unit 2 and, the licensee has committed to provide the same protection for Unit 1. This request for exemption is therefore vacated.
- (D) The licensee states that the control room has fire detectors and portable fire extinguishers as well as being continuously manned. In addition, the licensee states there are personnel safety considerations due to the discharge of an automatic suppression system on the control room operators. Alternate shutdown is being provided to by-pass the control room and therefore there is no adverse affect on safety by not having a fixed suppression system.

Evaluation

The staff contracted Gage-Babcock and Associates to assist in evaluating the licensee's requests. The contractor's recommendations are presented in the attachment to this Safety Evaluation and have been factored into this evaluation.

- (A) Our evaluation has confirmed that fire loading in the vicinity of openings in the affected areas (as listed on tabulation sheets P795406, P759409, 9G109 and 9G111) is sufficiently low so that protection by the 1 1/2 hour fire doors/dampers in the walls is acceptable.
- (B) The level of protection contemplated by Appendix R requires a 1-hour barrier for one train of hot shutdown systems plus an automatic suppression system even in areas of low fire loadings; i.e., a magnitude of 1/2-hour or less on the average. A low fire loading in an area is not sufficient justification for an exemption since the average fire loading is only low when it is distributed evenly throughout the room; it may actually be concentrated in a relatively small area and result in a localized loading significantly greater than a 1/2-hour fire duration. Also, the licensee has not taken into consideration that an exposure fire of transient

combustibles will add to the fire load to this specific area. The reliability of the fire barrier during the forty year life of the plant may be such that any modification or adding and/or deleting cables to it may lessen its fire resistance. Safety would be significantly improved by an automatic suppression system in addition to the 20 feet between divisions or to a one-hour fire rated barrier around one redundant division because it provides protection to the unwrapped tray as well.

The response time of manual CO₂ systems cannot be equated to automatic systems because delayed response to a fire may be anticipated (i.e., a member of the fire brigade must arrive at the fire areas and manually activate the system in the immediate area of the fire before it will discharge).

- (C) Resolved by license condition to install a 1 hour fire barrier.
- (D) The licensee is providing independent alternate shutdown capability for the control room so that both hot and cold shutdown can be accomplished from outside this room. The fire load in the control room is low, as well as the room is continuously manned; therefore, the addition of a fixed automatic fire suppression system will not significantly increase the level of fire protection for the room.

Conclusion

Based our evaluation, we conclude that:

- (A) The installed 1 1/2 hour fire rated dampers and/or fire doors provide an acceptable barrier to the propagation of fire and properly protect such openings as well as meeting the objectives of Section III.G.2a of Appendix R to 10 CFR Part 50.
- (B) A one hour fire barrier for one redundant division with no automatic suppression system for all other areas of the plant does not meet the objectives of Section III.G of Appendix R to 10 CFR Part 50. Therefore, to limit the potential for damage to redundant division an automatic fire suppression system should be provided, in addition to the one hour fire barrier, for all areas that are within the twenty foot zone of influence of a fire.
- (C) The redundant automatic sprinkler system for the auxiliary pump room and a one hour fire rated barrier on one redundant division meet the objectives of Section III.G of Appendix R to 10 CFR Part 50.
- (D) The existing fire protection and alternate shutdown is acceptable in lieu of an automatic fire suppression system for the control room and meet the objectives of Section III.G.3 of Appendix R to 10 CFR Part 50.

Principal Contributors:

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