November 14, 1990

Docket Nos. 50-272/311

Mr. Steven E. Miltenberger
Vice President and Chief Nuclear
Officer
Public Service Electric & Gas Company
Post Office Box 236
Hancocks Bridge, New Jersey 08038

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Dear Mr. Miltenberger:

SUBJECT: EXEMPTION AMENDMENT FROM THE REQUIREMENTS OF 10 CFR PART 50, APPENDIX R (FIRE PROTECTION), SALEM GENERATING STATION, UNITS 1 AND 2 (TAC NOS. 76377/76378)

In response to your request dated March 23, 1990, and supplemented by letter dated September 13, 1990, the Commission has issued the enclosed exemption amendment for the Salem Generating Station, Units 1 and 2. This action modifies the exemption granted on July 20, 1989, by allowing the use of a water-based, manually actuated fire suppression system in Areas 1 and 2 FA-RC-78 to protect Panel 335 and allowing the use of smoke detectors as detection devices. A copy of the Safety Evaluation supporting the exemption amendment is also enclosed. You are requested to notify the Commission, in writing, when this exemption amendment is implemented and when the exemptions approved by letter dated July 20, 1989 are implemented.

A copy of the exemption amendment has been forwarded to the Office of the Federal Register for publication.

Sincerely,

/S/

James C. Stone, Project Manager
Project Directorate I-2
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Exemption
2. Safety Evaluation

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See next page

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

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Baltimore, MD 21202-3486

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of PUBLIC SERVICE ELECTRIC AND GAS COMPANY (SALEM GENERATING STATION, UNITS 1 AND 2)	)	Docket Nos. 50-272/311

EXEMPTION AMENDMENT

I.

The Public Service Electric & Gas Company (the licensee) is the holder of Facility Operating License Nos. DPR-70 and DPR-75 which authorizes operation of the Salem Generating Station, Units 1 and 2, at a power level not in excess of 3411 megawatts thermal each. The facilities are pressurized water reactors located at the licensee's site in Salem County, New Jersey. The license provides, among other things, that the facilities are subject to all rules, regulations and orders of the Commission now or hereafter in effect.

II.

On November 19, 1980, the Commission published a revised section 10 CFR 50.48 and a new Appendix R to 10CFR Part 50 regarding fire protection features of nuclear power plants (45 FR 76602). In response to a fire protection exemption request by the licensee for Salem Units 1 and 2, dated July 15, 1988, the NRC granted, on July 20, 1989, an exemption from the requirements of Item III.G.2 of Appendix R to 10 CFR Part 50 for the Salem Units 1 and 2 containments (Exemption Request No. 12, Fire Areas 1-FA-RC-78 and 2-FA-RC-78). The containment subareas (within the above fire areas) housing the pressurizer and Panel 335, at elevation 100 feet, were exempted from the requirement

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that redundant cables and equipment, within the above subareas, be separated either at least 20 feet of horizontal distance that is free of intervening combustibles or by a radiant energy shield. The exemption further stated that no additional fire protection modifications at the pressurizer were needed to enhance the currently existing level of fire safety in the containment and that the licensee would install, at Panel 335 for each unit, an automatic fire suppression system to enhance the fire protection for the panels which contain redundant channels of pressurizer pressure and level instrumentation. By submittal dated March 23, 1990, the licensee requested a correction to the totally automatic feature of the fire suppression system identified for Panel 335 in the NRC's approval letter. The licensee pointed out that their intent as identified in the exemption request of July 15, 1988 was to provide for a localized automatically actuated fire suppression system only if a gaseous type suppression system would be used. If, however, a localized water-based fire suppression system were to be used, it would require a remote manual action to open the normally closed containment fire suppression header isolation valve to actuate the system. In the March 23, 1990 letter, the licensee further stated that on review of the various fire suppression agents available, they had determined that a water-based fire suppression system would be the best choice for the Salem units and that they had consequently chosen a dry pipe sprinkler system. The licensee outlined the procedures for activating such a system. Additionally, the licensee

provided justification for eliminating the originally identified need (licensee's submittal dated July 15, 1988) for using fire detectors for the suppression system actuation. In a letter dated September 13, 1990, the licensee provided additional details concerning the alarms and air pressurization associated with the dry pipe sprinkler system. The Commission's staff evaluated the information provided by the licensee to support the exemption amendment. The Commission's Safety Evaluation relating to the use of a remote, manually actuated water fire suppression system and the elimination of fire detectors for fire suppression system actuation is being issued concurrently with this exemption amendment. The Safety Evaluation concludes that the use of a manually actuated, water based fire suppression system and smoke detectors is acceptable and does not invalidate NRC's earlier exemption approval.

III.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a), the exemption amendment as described above is authorized by law and 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 50.12(a)(2)(ii), are present for the exemption amendment in that application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of Appendix R to 10 CFR Part 50 because the licensee's alternate fire protection configuration, including the modifications that were proposed, provide a level of safety equivalent to that provided by compliance with Appendix R.

Therefore, the Commission hereby grants the exemption amendment from the requirements of 10 CFR Part 50, Appendix R, Section III.G.2.

Pursuant to 10 CFR 51.32 the Commission has determined that the granting of this exemption amendment will have no significant impact on the environment (55 FR 46877).

This exemption amendment is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Steven A. Varga, Director
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland
this 14th day of November , 1990.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

AMENDMENT TO APPROVED EXEMPTION FROM 10 CFR Part 50, APPENDIX R, ITEM III.G.2 REQUIREMENTS FOR CONTAINMENT FIRE AREAS

SALEM GENERATING STATION, UNITS 1 AND 2

DOCKET NOS. 50-272 AND 50-311

1.0 INTRODUCTION

In response to a fire protection exemption request by Public Service Electric and Gas Co. (the licensee) for Salem Units 1 and 2 dated July 15, 1988, the NRC granted, on July 20, 1989, an exemption from the requirements of Item III.G.2 of Appendix R to 10 CFR Part 50 for the Salem Units 1 and 2 containments (Exemption Request No. 12, Fire Areas 1-FA-RC-78 and 2-FA-RC-78). The containment subareas (within the above fire areas) housing the pressurizer and Panel 335 at elevation 100 feet, were exempted from the requirement that redundant cables and equipment within the above subareas be separated either by at least 20 feet of horizontal distance that is free of intervening combustibles or by a radiant energy shield. The exemption further stated that no additional fire protection modifications at the pressurizer were needed to enhance the currently existing level of fire safety in the containment and that the licensee would install at Panel 335 for each unit an automatic fire suppression system to enhance the fire protection for the panels which contain redundant channels of pressurizer pressure and level instrumentation. By letter dated March 23, 1990, the licensee requested a correction to the totally automatic feature of the fire suppression system identified for the panel in the NRC's approval letter. The licensee pointed out that their intent as identified in the exemption request of July 15, 1988 was to provide for a localized automatically actuated fire suppression system only if a gaseous type suppression system would be used. If, however, a localized water-based fire suppression system were to be used, it would require a remote manual action to open the normally closed containment fire suppression header isolation valve to actuate the system. In the March 23, 1990 letter, the licensee further stated that on review of the various fire suppression agents available, they had determined that a water-based fire suppression system would be the best choice for the Salem units and that they had consequently chosen a dry pipe sprinkler system and outlined the procedures for activating such a system. Additionally, the licensee provided justification for eliminating the originally identified need (licensee's submittal dated July 15, 1988) for using fire detectors for the suppression system actuation. In a letter dated September 13, 1990, the licensee provided additional details concerning the alarms and air pressurization associated with the dry pipe sprinkler system. Staff's evaluation of the requested correction relating to the provision of a fire suppression system at Panel 335 and the proposed elimination of the use of fire detectors for the system actuation is given below.

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2.0 EVALUATION

In the March 23, 1990 letter and supplemented on September 13, 1990, the licensee recognized the need for rapid opening of the normally closed containment fire suppression header isolation valve by the control room operator to activate the localized water-based fire suppression system and the potential for delay in personnel response to such a need. Therefore, the licensee stated that the following design provisions will be available and the following procedures will be implemented to activate the suppression system in a timely manner whenever it is required:

(1) The containment fire suppression header isolation valve will be opened by control room operator using pushbuttons located in the control room.

(2) The system design will include automatic controls to open the fire suppression system valve.

(3) The system will be supplemented by smoke detectors in the areas around the Panel 335.

(4) The control room operator will be required to open the header isolation valve on receipt of both an early warning smoke detector alarm and the dry pipe sprinkler system alarm that is activated by a pressure switch that senses the loss of system air pressure. The above manual action will be performed regardless of whether the fire brigade has entered the containment to investigate the fire situation. The two independent alarms required for actuating the fire suppression system will minimize inadvertent wetting of the equipment in the containment.

(5) The above procedure will not preclude the control room operator's option to open the header isolation valve in advance of receipt of both alarms. However, exercising this option will require the fire brigade to identify a need to commence immediate fire fighting activities and communicate such a need to the control room operator.

The staff has determined that the time difference between detection alarm, and manual initiation versus detection and automatic initiation is not significant. The time difference will essentially be the few seconds that it takes for the operator to recognize the alarms and operate the push buttons.

Based on the above finding and the discussion of the fire hazard in the containment provided in the SE dated July 20, 1989, approving the exemption request identified above, the staff concludes that there is reasonable assurance that the water-based localized fire suppression system at the Panel 335 will be actuated in a timely manner. Therefore, at least one channel of pressurizer pressure and level instrumentation will be available at Panel 335, thus assuring the capability to achieve safe shutdown following a fire event in the containment.

In the March 23, 1990 submittal and supplemented on September 13, 1990, the licensee further stated that the dry pipe sprinkler system employs pressurized air from the Control Air System to hold the fire suppression system valve closed. The Control Air System maintains pressure in the dry pipe sprinkler system and provides for makeup of minor system losses through the use of an air pressure maintenance device. The air pressure maintenance device incorporates a check valve to prevent water backflow into the air system and a 1/16-inch diameter orifice. The orifice restricts air flow, thus allowing the dry pipe sprinkler system to depressurize when a fusible sprinkler head is thermally actuated. Releasing the air pressure causes the fire suppression system valve to open, thus eliminating their originally identified need (July 15, 1988 submittal) to use the fire detectors for the suppression system actuation. The staff finds the above justification acceptable.

3.0 CONCLUSION

Based on the above, the staff concludes that the installation of a localized water-based fire suppression system requiring remote manual opening of the containment fire suppression header isolation valve in lieu of a totally automatic localized fire suppression system at Panel 335 in the Salem Units 1 and 2 containments is acceptable. In addition, the use of smoke detectors around the panels to provide early warning alarms for remote manual opening of the header isolation valve is also acceptable. Based on our review, we conclude that the licensee's alternate fire protection configuration provides a level of fire safety equivalent to that previously approved by the NRC staff and does not invalidate NRC's earlier approval of the licensee's exemption request, identified above, from the requirements of 10 CFR Part 50, Appendix R, Section III.G.2.

Principal Contributor: T. Chandrasekaran

Dated: November 14, 1990