

June 17, 1994

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

Dear Mr. Miltenberger:

SUBJECT: EXEMPTION CORRECTION - EXEMPTION FROM THE REQUIREMENTS OF 10 CFR 50,
APPENDIX R (FIRE PROTECTION), SALEM NUCLEAR GENERATING STATION,
UNITS 1 AND 2, (TAC NOS. M84069 AND M84070)

By letter dated July 14, 1992, Public Service Electric and Gas Company (PSE&G) requested a number of corrections to previously approved exemptions to 10 CFR Part 50, Appendix R, Fire Protection. These exemptions were issued July 20, 1989, and published in the Federal Register on July 27, 1989 (54 FR 31270). The staff has completed its review of the July 14, 1992 submittal. Based on the staff's reanalysis of two of the original exemptions and the corrections, the staff's original conclusion has not changed.

Enclosed is a copy of a Notice of Correction (Enclosure 1) to the Appendix R exemptions that is being forwarded to the Office of the Federal Register for publication. In addition to the Federal Register notice, the safety evaluation (Enclosure 2) of the requested corrections and the corrected pages (Enclosure 3) for the original safety evaluation are enclosed. The changes to the original safety evaluation are noted by a vertical bar in the right margin.

Sincerely,

/s/

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

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Enclosures:

- 1. Federal Register Notice
- 2. Safety Evaluation
- 3. Replacement Pages

cc w/enclosures:

See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

June 17, 1994

Docket Nos. 50-272
and 50-311

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

Dear Mr. Miltenberger:

SUBJECT: EXEMPTION CORRECTION - EXEMPTION FROM THE REQUIREMENTS OF 10 CFR 50, APPENDIX R (FIRE PROTECTION), SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2, (TAC NOS. M84069 AND M84070)

By letter dated July 14, 1992, Public Service Electric and Gas Company (PSE&G) requested a number of corrections to previously approved exemptions to 10 CFR Part 50, Appendix R, Fire Protection. These exemptions were issued July 20, 1989, and published in the Federal Register on July 27, 1989 (54 FR 31270). The staff has completed its review of the July 14, 1992 submittal. Based on the staff's reanalysis of two of the original exemptions and the corrections, the staff's original conclusion has not changed.

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Sincerely,

A handwritten signature in cursive script that reads "James C. Stone".

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

Enclosures:

1. Federal Register Notice
2. Safety Evaluation
3. Replacement Pages

cc w/enclosures:
See next page

Mr. Steven E. Miltenberger
Public Service Electric & Gas
Company

Salem Nuclear Generating Station,
Units 1 and 2

cc:

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7590-01

UNITED STATES NUCLEAR REGULATORY COMMISSIONPUBLIC SERVICE ELECTRIC AND GAS COMPANYDOCKET NOS. 50-272 AND 50-311CORRECTION

On July 27, 1989, (54 FR 31270) was published in the Federal Register which contained exemptions to 10 CFR Part 50, Appendix R, related to the Salem Nuclear Generating Station, Units 1 and 2. The following corrections should be incorporated:

1. Page 31271, Column 1, Line 53, change "1 & 2" to "12".
2. Page 31271, Column 2, replace Line 3 through Line 32 with the following:

"The rooms within this area are separated by hollow core metal office partitions except the air conditioning rooms, which are separated by a reinforced concrete wall. The two control rooms are separated by a 10-foot wide corridor. Room partitions between the control rooms and the senior shift and shift supervisor's office contain glass panels. The control rooms are separated from their associated control equipment rooms by built-in steel frame control cabinets. Dropped ceilings are finished with acoustic tile."

3. Page 31272, Column 1, Line 5, change "1006" to "100G".
4. Page 31272, Column 2, Line 35, change "781" to "78I".
5. Page 31272, replace Column 2, Line 37 to Column 3, Line 44, with the following:

"4.1 Exemption Requested

An exemption was requested from Section III.G.2.c to the extent that it requires the separation of redundant cables and equipment by hour rated fire barriers plus area-wide suppression and detection. Specifically, these locations are not protected by automatic fire suppression system or area-wide fire detection systems.

4.2 Discussion

This fire area consists of the mechanical penetration areas on elevations 78 feet and 100 feet of the auxiliary building. It is constructed of reinforced concrete with 3-hour fire rated barriers. Doors, dampers, and HVAC duct penetrations are not 3-hour rated; however, these are the subject of a generic exemption previously evaluated to be acceptable.

Elevation 100 ft contains the fuel handling area exhaust ventilation equipment and the containment pressure relief exhaust unit and the steam generator blowdown tanks. The area also contains some safety-related instrument panels. Elevation 78 ft. contains piping for various systems which run between the auxiliary and the containment building. The area also contains service water piping which enters the auxiliary building from the service water intake structure. Partial area fire detection is provided for the protection of the major fire hazards on elevations 78 ft. and 100 ft. Continuous thermal strip detectors are also provided to protect charcoal filters in the ventilation units. Additionally, automatic fire suppression is provided in the ventilation units by a water deluge spray system actuated by the thermal strip detectors. Portable fire extinguishers and manual hose stations are also provided on elevation 100 ft.

The redundant equipment located in this area includes piping and valves associated with the following systems:

- Auxiliary Feedwater
- Component Cooling
- Charging System
- Containment Ventilation
- Service Water
- Residual Heat Removal
- Main Steam

4.3 Evaluation

The fire protection in this area does not comply with the technical requirements of Section III.G.2.c of Appendix R because the redundant cables are protected by a 1-hour rated barrier but, without automatic suppression and area-wide detection.

There was a concern that a fire in this fire area could cause the loss of normal shutdown capability. The in-site combustibles in the Mechanical Penetration area will result in a total fire load of approximately 28,000 BTU/ft² (21 minutes on the ASTM time-temperature curve). The major combustibles in this area consist

of the charcoal filters and electrical cable insulation. The charcoal filters are protected by automatic deluge suppression systems. The electrical cables are widely dispersed and protected by the partial detection system. There is a reasonable assurance that a fire in this area will be detected by the partial fire detection system in its early stages and extinguished by the fixed fire suppression system or the fire brigade before adjacent safety-related areas are threatened. The 1-hour fire barriers would maintain one division of cables needed for safe shutdown free of fire damage until the fire brigade could extinguish the fire.

4.4 Conclusion

Based on the above evaluation, it is concluded that the existing fire protection features already in place combined with the 1-hour fire barriers in the above described fire areas provide a level of fire protection equivalent to the technical requirements of Section III.G.2.c of Appendix R. Therefore, the exemption is granted."

6. Page 31275, Column 1, Line 8, change "Panel 35" to "Panel 355".
7. Page 31275, Column 3, Line 67, change "1&2 FA-AB-122A" to "12 FA-AB-122A".
8. Page 31276, Column 1, Line 16, change "781" to "78I".
9. Page 31276, Column 1, replace Lines 18 through 24 with the following:
"7. Lack of complete 1-hour fire rated barriers between redundant shutdown systems in the 460V switchgear room. (Areas 1&2 FA-AB-84A) (Licensee Exemption 6);"
10. Page 31276, Column 1, replace Lines 30 through 33 with the following:
"9. Lack of complete 1-hour fire rated barriers between redundant shutdown system and a manually actuated fire suppression system in lieu of an automatic system in the 4160V switchgear room (Areas 1&2 FA-AB-64A) (Licensee Exemption 9);"

11. Page 31276, Column 1, Line 46, change "45A" to "45A and B".

Dated this day at Rockville, Maryland, this 17th day of June, 1994.

FOR THE NUCLEAR REGULATORY COMMISSION

Charles L. Miller

Charles L. Miller, Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

ENCLOSURE 3

REPLACEMENT PAGES

OF SER DATED

JULY 20, 1989

1-1

3-1

4-1

4-2

5-1

9-2

13-1



UNITED STATES
NUCLEAR REGULATORY COMMISSION
 WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2

CORRECTION TO PREVIOUS EXEMPTIONS FROM THE REQUIREMENTS

OF 10 CFR PART 50, APPENDIX R

DOCKET NOS. 50-272 AND 50-311

1.0 INTRODUCTION

By letter dated July 14, 1992, Public Service Electric and Gas Company (PSE&G), the licensee for Salem Nuclear Generating Station Units 1 and 2 (SGS), requested corrections to the Safety Evaluation Report (SER), dated July 20, 1989, that granted several exemptions for SGS from certain technical requirements of Appendix R. In the letter, the licensee provided information concerning typographical errors and inconsistencies between its exemption request submittal of June 15, 1988, and the SER. We have reexamined the submittal of June 15, 1988, and reviewed exemptions 2 and 5. We also reviewed the typographical errors submitted by the licensee.

2.0 GENERIC CORRECTION - APPLICABILITY OF PREVIOUS SUBMITTALS

PSE&G requested that only the July 15, 1988 submittal be referenced in both the Exemption and the SER Enclosure 1 and 2, respectively, of the July 20, 1989 NRC letter. The reference to the January 31, 1985, and January 17, 1986, letters should be deleted.

The reference to the earlier letters in the Exemption and SE was necessary because there were still unresolved issues associated with them. The reference in the Exemption and SER provides a complete record of closure. The wording of the Exemption is adequate in providing that closure. The SER will be changed to state the information in the July 15, 1988 submittal supersedes the information in the previous submittals dated January 31, 1985 and January 17, 1986.

3.0 CONTROL ROOM COMPLEX FIRE AREA 12 FA-AB-122A (Licensee Exemption 2)

In its letter of June 15, 1988, the licensee requested an exemption from the requirements of Section III.G.3 of Appendix R to 10 CFR Part 50 to the extent that it requires a fixed fire suppression system for an area where alternate shutdown capability is provided. Specifically, the Salem Units 1 and 2 control room complex does not have a fixed suppression system. The staff approved the request and issued the exemption and supporting Safety Evaluation Report (SER) to the licensee with a letter of July 20, 1989. By letter dated July 14, 1992, the licensee informed the NRC that the description provided in the Safety Evaluation for this exemption is not consistent with the description provided by the licensee in its submittal of July 15, 1988.

Specifically, Section 2.2 of the exemption and page 3-1 of the SER describe the physical configuration of the control room complex for the Salem Nuclear Generating Station as follows:

"Although the walls separating the two control rooms are not fire walls, the doors leading to the control rooms are rated for 3/4 hour. The doors are marked as fire doors and must remain closed. They are also equipped with automatic door closures. The doors have been included in the fire door list and are governed as a Technical Specification item. The restrictions on these doors are designed to prevent the propagation of smoke from one control room to the other.

The Unit 1 ventilation equipment provides cooling for the Unit 1 control complex, the corridor between the two control rooms and the peripheral rooms that are shared by both units. The Unit 2 ventilation equipment provides cooling for the Unit 2 control complex. The ventilation systems for both units have been balanced to maintain equal pressure in both control rooms. Tests have been performed and it has been confirmed that smoke does not propagate between control rooms when the ventilation systems are balanced. The damper vanes are mechanically locked in position to maintain the pressure balance."

Contrary to the above, the configuration of the SGS control room complex, as stated in the July 15, 1988 submittal is as follows:

"The rooms within this area are separated by hollow core metal office partitions except the air conditioning rooms, which are separated by a reinforced concrete wall. The two control rooms are separated by a 10 foot wide corridor. Room partitions between the control rooms and the senior shift and shift supervisor's office contain glass panels. The control rooms are separated from their associated control equipment rooms by built-in steel frame control cabinets. Dropped ceilings are finished with acoustic tile."

The licensee's submittal of July 15, 1988, did not identify either 3/4 hour rated fire doors or the arrangement of the ventilation system in the control room complex.

In response to the licensee's letter of July 14, 1992, the staff reviewed its previous evaluation of the subject exemption against the true description of the control room complex. On the basis of this review, the staff concluded that its previous safety evaluation and conclusions remain valid despite its new understanding of the physical description of the control room complex.

The staff was originally concerned that a fire of significant magnitude could occur within the control room complex. Existing combustible materials are dispersed throughout the area. The automatic fire detection system, coupled with the continuous presence of control room operators, provides reasonable assurance that a fire will be discovered in its initial stages before significant propagation and room temperature rise occurs. At such a point in

time, the fire would be expected to be extinguished by plant operators or the fire brigade before much damage occurred to plant safety systems. If rapid fire spread occurred before intervention by plant personnel, the control room could be evacuated and safe plant shutdown achieved using the alternate shutdown capability, which the licensee has affirmed is physically and electronically independent of the control room, in accordance with its emergency shutdown procedures. In the June 15, 1988 submittal, the licensee stated that sufficient staff, even at minimum Technical Specification requirements, are available to perform simultaneous alternate shutdown of both units. Timeline studies showed that both units can be brought to hot standby with the available manpower. Therefore, installation of a fixed fire suppression system would not significantly increase the level of fire safety. Therefore, the previously approved exemption from Section III.G.3 of Appendix R to 10 CFR Part 50 remains valid for the control room complex.

4.0 MECHANICAL PENETRATION AREAS - Elevation 78 feet and 100 feet, Fire Area 1 and 2 FA-MP-78I (Licensee Exemption 5)

In its letter of June 15, 1988, the licensee requested an exemption from Section III.G.2 of Appendix R to 10 CFR Part 50 to the extent that it requires the separation of redundant cables and equipment by 1-hour fire rated barriers plus area-wide suppression and detection. Specifically, Fire Areas 1 and 2 FA-MP-78I are not protected by automatic fire suppression systems and area-wide fire detection capability. The staff approved this exemption request and issued the exemption and supporting SER to the licensee with a letter of July 20, 1989. In a letter of July 14, 1992, the licensee informed the staff that some aspects of the discussions provided in the SER of July 20, 1989, were not consistent with its submittal of July 15, 1988. Specifically, relative to area-wide detection, Enclosure 1, page 13 of the licensee's submittal of July 15, 1988, states: "Partial area detection is installed for the protection of the major fire hazards on elevation 78 feet and 100 feet." In addition, Enclosure 1, page 14, states, "The electrical cables are widely dispersed and protected by the partial detection system." Finally, the licensee's conclusion for Exemption 5 states, "The installation of area-wide detection or the addition of an automatic fire suppression system in the area would not significantly enhance the level of fire protection for safe shutdown cabling." However, Section 4.1 of the SER of July 20, 1989, stated, "An exemption was requested from Section III.G.2.c to the extent that it requires an automatic fire suppression system installed in a fire area that contains redundant safe shutdown equipment." Further, Section 4.2 stated, "The existing fire protection includes an area-wide fire detection system," and Section 4.3 stated that, "An area-wide detection system is available in this area and in adjacent areas." This information is inconsistent with the submittal of July 15, 1988.

Additionally, the discussion relative to this Fire Area provided in Section 4.2 of the SER states, "The fire load in this area is low (less than 10,000 BTU per square foot) and there are no fire hazardous equipment or concentrated heavy fire loads in the area. The low fire loads of 10,000 BTU per square foot translates into a fire severity of less than 10 minutes on the ASTM E-119

time-temperature curve." The above statement is contrary to the licensee's July 15, 1988 submittal which states, "The in-site combustibles in the Mechanical Penetration area will result in a total fire load of approximately 28,000 BTU/ft² (21 minutes)." In addition, "The major combustibles in this area consist of the charcoal filters and electrical cable insulation. The charcoal filters are protected by automatic deluge suppression systems. The electrical cables are widely dispersed and protected by the partial detection system."

The mechanical penetration area consists of two elevations (100 ft. and 78 ft.). Elevation 100 ft. contains the fuel handling area exhaust ventilation equipment and the containment pressure relief exhaust unit and the steam generator blowdown tanks. The area also contains some safety-related instrument panels. Elevation 78 ft. contains piping for various systems which run between the auxiliary and the containment building. The area also contains service water piping which enters the auxiliary building from the service water intake structure. The floor, ceiling, and walls in this area are all constructed of reinforced concrete with a nominal fire rating of 3 hours. Partial area fire detection is provided for the protection of the major fire hazards on elevations 78 ft. and 100 ft. Continuous thermal strip detectors are also provided to protect charcoal filters in the ventilation units. Additionally, automatic fire suppression is provided in the ventilation units by a water deluge spray system actuated by the thermal strip detectors. Portable fire extinguishers and manual hose stations are also provided on elevation 100 ft. There is a reasonable assurance that a fire in this area will be detected by the partial fire detection system in its early stages and extinguished by the fixed fire suppression system or the fire brigade before adjacent safety-related areas are threatened. Based on the above evaluation, the staff has concluded that the existing fire protection features provide a level of fire protection equivalent to the technical requirements of Section III.G.2.c of Appendix R. The staff has concluded, therefore, that the discrepancies do not alter the conclusions reached in the previous exemption and the exemption from the requirements of Section II.G.2 of Appendix R to 10 CFR Part 50 remains valid.

5.0 TYPOGRAPHICAL ERRORS AND CLARIFICATIONS

In the letter of July 14, 1992 the licensee identified the following typographical errors and minor clarifications to the exemption and the SER transmitted to the licensee July 20, 1989.

- a. Exemption, Section 2, page 6 and Item III.2., page 25, and the Safety Evaluation, page 3-1 - "Fire Areas 1 and 2 FA-AB-122A" should read "Fire Area 12 FA-AB-122A". This corrects the designation of the fire area and is acceptable.

The request cited page 2 of the Exemption as the location of Section 2 and page 5-1 of the SER as the location of the discussion of Fire Area 12 FA-AB-122A. In a phone conversation with the

licensee it was determined that page 6 of the exemption and page 3-1 of the SER is the correct reference.

- b. Exemption, Section 3.2, page 9 and SE, Page 5-1 - "Fire Areas 1 and 2 FA-EP-1006" should read "Fire Areas 1 and 2 FA-EP-100G". This corrects the designation of the fire area and is acceptable.
- c. Exemption, Section 4, page 11 and Item III.6, page 26, and the SER, page 4-1 - "Fire Areas 1 and 2 FA-MP-781", should read, "Fire Areas 1 and 2 FA-MP-78I". This corrects the designation of the fire area and is acceptable. Also, see item 4 above for correction of the text.
- d. Exemption, Section 4, page 11, and SE, page 4-1 - References to the Safety Injection System correspond to the Charging System (high head) listed on page 14 of Enclosure 1 of the July 15, 1988, of licensee submittal. See item 4 above for resolution of this issue.
- e. Exemption, Section 6, page 15 and SE, Section 7, page 7-1, the Chemical and Volume Control System (CVCS) equipment is referenced while the July 15, 1988 submittal, Exemption 7, page 20, references the charging system and charging pumps. The charging system and charging pumps are part of the CVCS. Therefore, the staff sees no need to change the Exemption or SER.
- f. Exemption, Section 8.4, page 22, and SE, page 9-2 - "Panel 35" should be "Panel 335". This corrects the designation for the panel and is acceptable. Also, see the Exemption Amendment that was issued on November 14, 1990, that allowed use of a water-based, manually actuated fire suppression system to protect Panel 335.
- g. Exemption, Item III.11, page 27 - Lists the exemption as only applicable to Fire Areas 1 and 2 FA-AB-45A. This exemption also applies to Fire Areas 1 and 2 FA-AB-45B. This brings the summary into agreement with the discussion of Section 7 of the Exemption.
- h. Based on the information provided in the licensee's submittal of July 15, 1988 and in Section 5 of the July 20, 1989, Exemption, the use of a manual CO₂ system in lieu of an automatic system is associated with Fire Areas 1 and 2 FA-FB-64A (Exemption, Section III.9) rather than Fire Areas 1 and 2 FA-FB-84A (Exemption, Section III.7). This change will bring the Section III description of the exemptions into agreement with the text in Section 5. Therefore, it is acceptable.

The staff finds that in all cases, the conclusions reached when granting the exemptions in its SER of July 20, 1989 are still valid.

Principal Contributor: A. Singh

Date: June 17, 1994



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

SAFETY EVALUATION REPORT
EXEMPTIONS FROM 10 CFR 50, APPENDIX R
SALEM GENERATING STATION, UNITS 1 AND 2
DOCKET NOS. 50-272/311

1 INTRODUCTION

By letter dated July 15, 1988, Public Service Electric and Gas Company, the licensee, requested approval of exemptions from the technical requirements of Section III.G of Appendix R to 10 CFR 50 in fourteen fire areas and a "generic" exemption that relates to conditions in a number of plant locations. This submittal supersedes information contained in previous letters to the staff including those dated January 31, 1985 and January 17, 1986.

The most recent letter includes information pertaining to exemptions which had previously been approved by the staff. However, the staff has concluded that sufficient new information exists to issue a revised safety evaluation pertaining to those exemptions.

Section III.G.2 of Appendix R 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:

1. Separation of cables and equipment and associated non-safety 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 fire resistance equivalent to that required of the barrier;
2. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet containing no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; and
3. Enclosure of cables and equipment and associated non-safety 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 fire 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.

3 CONTROL ROOM COMPLEX (AREA 12 FA-AB-122A)

3.1 Exemption Requested

The licensee requested an exemption from Section III.G.3 of Appendix R to 10 CFR 50 to the extent it requires a fixed fire suppression system for an area where alternate shutdown capability is provided. Specifically, the Salem Unit 1 & 2 control room complex does not have a fixed fire suppression system.

3.2 Discussion

The physical configuration of the control room complex, including perimeter construction, fire hazards and existing fire protection features is as described in Enclosure 1 of the licensee's July 15, 1988 letter.

The rooms within this area are separated by hollow core metal office partitions except the air conditioning rooms, which are separated by a reinforced concrete wall. The two control rooms are separated by a 10 foot wide corridor. Room partitions between the control rooms and the senior shift and shift supervisor's office contain glass panels. The control rooms are separated from their associated control equipment rooms by built-in steel frame control cabinets. Dropped ceilings are finished with acoustic tile.

In the event that fire were to propagate from one control room to the next the licensee has affirmed that the capability exists to bring both units to a safe shutdown condition.

The licensee justified the exemption on the basis of the existing fire protection and the continuous presence of control room operators.

3.3 Evaluation

The technical requirements of Section III.G.3 are not met in the control room because of the lack of a fixed fire suppression system.

The staff was originally concerned that a fire of significant magnitude could occur within the control room complex. However, the existing combustible materials are dispersed throughout the area. The automatic fire detection system, coupled with the continuous presence of control room operators, provides reasonable assurance that a fire will be discovered in its initial stages before significant propagation and room temperature rise occurs. At such a point in time, the fire would be expected to be extinguished by plant operators or the fire brigade before much damage occurred to plant safety systems. If rapid fire spread occurred before intervention by plant personnel, the control room could be evacuated and safe plant shutdown achieved using the alternate shutdown capability, which the licensee has affirmed is physically and electronically

4 MECHANICAM PENETRATION AREAS - ELEVATION 78 FEET AND 100 FEET (FIRE AREA 1 & 2 FA-MP-78I)

4.1 Exemption Requested

An exemption was requested from Section III.G.2.c to the extent that it requires the separation of redundant cables and equipment by 1-hour rated fire barriers plus area-wide suppression and detection. Specifically, these locations are not protected by automatic fire suppression system or area-wide fire detection systems.

4.2 Discussion

This fire area consists of the mechanical penetration areas on elevations 78 feet and 100 feet of the auxiliary building. It is constructed of reinforced concrete with 3-hour fire rated barriers. Doors, dampers, and HVAC duct penetrations are not 3-hour rated; however, these are the subject of a generic exemption previously evaluated to be acceptable.

Elevation 100 ft. contains the fuel handling area exhaust ventilation equipment and the containment pressure relief exhaust unit and the steam generator blowdown tanks. The area also contains some safety-related instrument panels. Elevation 78 ft. contains piping for various systems which run between the auxiliary and the containment building. The area also contains service water piping which enters the auxiliary building from the service water intake structure. Partial area fire detection is provided for the protection of the major fire hazards on elevations 78 ft. and 100 ft. Continuous thermal strip detectors are also provided to protect charcoal filters in the ventilation units. Additionally, automatic fire suppression is provided in the ventilation units by a water deluge spray system actuated by the thermal strip detectors. Portable fire extinguishers and manual hose stations are also provided on elevation 100 ft.

The redundant equipment located in this area include piping and valves associated with the following systems:

- Auxiliary Feedwater
- Component Cooling
- Charging System
- Containment Ventilation
- Service Water
- Residual Heat Removal
- Main Steam

4.3 Evaluation

The fire protection in this area does not comply with the technical requirements of Section III.G.2.c of Appendix R because the redundant cables are protected by a 1-hour rated barrier but, without automatic suppression and area-wide detection.

There was a concern that a fire in this fire area could cause the loss of normal shutdown capability. The in-site combustibles in the Mechanical Penetration area will result in a total fire load of approximately 28,000 BTU/ft² (21 minutes on the ASTM time-temperature curve). The major combustibles in this area consist of the charcoal filters and electrical cable insulation. The charcoal filters are protected by automatic deluge suppression systems. The electrical cables are widely dispersed and protected by the partial detection system. There is a reasonable assurance that a fire in this area will be detected by the partial fire detection system in its early stages and extinguished by the fixed fire suppression system or the fire brigade before adjacent safety-related areas are threatened. The 1-hour fire barriers would maintain one division of cables needed for safe shutdown free of fire damage until the fire brigade could extinguish the fire.

4.4 Conclusion

Based on the above evaluation, it is concluded that the existing fire protection features already in place combined with the 1-hour fire barriers in the above described fire areas provide a level of fire protection equivalent to the technical requirements of Section III.G.2.c of Appendix R. Therefore, the exemption is granted.

- 5 REACTOR PLANT AUXILIARY EQUIPMENT AREA - ELEVATION 100 FT. AND 110 FT. (AREAS 1 & 2 FA-AB-100C)
- UPPER ELECTRICAL PENETRATION AREA (AREAS 1 & 2 FA-EP-100G)
- INNER PIPING PENETRATION AREA (AREAS 1 & 2 FA-PP-100H)
- REACTOR PLANT AUXILIARY BUILDING - ELEVATION 64 FT. (AREAS 1 & 2 FA-AB-64B)

5.1 Exemptions Requested

The licensee requested exemptions from the requirements of Section III.G.2 of Appendix R to 10 CFR 50 in the above-referenced areas to the extent that it requires the separation of redundant safe shutdown cables and equipment by 1-hour fire-rated barriers plus automatic fire suppression and detection systems. Specifically, these locations are not protected by automatic fire suppression systems or area-wide fire detection systems.

5.2 Discussion

The physical configuration of the subject fire areas, including perimeter construction, fire hazards and existing fire protection features is as described in Enclosure 1 to the licensee's July 15, 1988 letter.

The staff was initially concerned that although the licensee has been explicit as to the shutdown-related cables located in the areas, not all of the redundant post-fire safe shutdown components had been identified. The licensee affirmed, however, that the only redundant safe shutdown components present in these locations were those specifically identified in the exemption requests.

The licensee committed in the July 15, 1988 letter to protect cables associated with one safe shutdown path in a 1-hour fire-rated barrier.

In Fire Areas 1 & 2 FA-EP- 100G in lieu of protecting the air supply and chilled water cabling, the non-fire-affected unit's emergency control air compressor will be utilized.

The licensee justifies the exemptions on the bases of the limited fire loading, the existing fire protection and the proposed modifications.

5.3 Evaluation

The technical requirements of Section III.G.2 are not met in the subject locations because of the lack of automatic fire suppression systems. The absence of area-wide fire detection systems is not considered a non-conformance. Generic Letter 86-10 stipulates that where partial coverage automatic fire detection and suppression exist in an area, licensees may perform a fire hazards evaluation to justify the lack of complete coverage. The staff considers the summary analyses contained in the exemption requests as being sufficient to satisfy the guidelines issued in the Generic Letter.

With regard to the absence of an automatic fire suppression system, the staff was originally concerned that a fire could occur in the subject areas and damage cables or components of both shutdown divisions. However, the principal fire hazard in these locations is combustible cable insulation. The remaining combustibles are of a type and quantity that do not represent a significant hazard. A fire in these areas would be characterized initially by smoldering combustion with limited heat release. The smoke from a fire would be detected automatically by the existing fire detection system or by plant operators. The fire

achieved by compliance with Appendix R. Therefore, the licensee's request for exemption from the requirements of Section III.G.2 for at least 20 feet of separation between redundant shutdown systems at Panel 335 and at the pressurizer within containment is granted.

13 SUMMARY

Based on its evaluation, the staff finds that the following exemptions should be granted:

- Generic exemption pertaining to non-3-hour fire-rated features in 3-hour fire barriers;
- Lack of a fixed fire suppression system in the control room;
- Lack of an automatic fire suppression system in the reactor plant auxiliary equipment area, elevations 100 and 110 feet;
- Lack of an automatic fire suppression system in the inner piping penetration area;
- Lack of an automatic fire suppression system in the reactor plant auxiliary building, elevation 64 feet;
- Lack of an automatic fire suppression system in the mechanical penetration areas, elevations 78 and 100 feet;
- The lack of complete 1-hour fire rated barriers between redundant shutdown systems in the 4160 switchgear room. Also, this area is protected by a manually actuated fire suppression system in lieu of an automatic system;
- The lack of complete 1-hour fire rated barriers between redundant shutdown systems in the lower electrical penetration area;
- The lack of complete 1-hour fire rated barriers between redundant shutdown systems in the 460 V switchgear room.
- The lack of complete 1-hour fire-rated barriers or 20 feet free of intervening combustibles between redundant systems in the reactor plant auxiliary equipment area, elevation 84 feet;
- The lack of complete 3-hour fire barriers between redundant shutdown systems in the RHR pump and heat exchanger areas;
- The lack of 20 feet of separation free of intervening combustibles between redundant shutdown systems in containment;
- The lack of an automatic fire suppression system and the absence of 20 feet of spatial separation between redundant systems in the pipe tunnel, elevation 84 feet;
- The lack of an automatic fire suppression system in the CO₂ equipment room, elevation 84 feet.

Based on its evaluation in Section 5 above, the staff denies the licensee's request for exemption in the upper electric penetration area.

Principal Contributor: D. Kubicki

Dated: July 20, 1989