

November 14, 1986

Dockets Nos. 50-277/278

Mr. Edward G. Bauer, Jr.  
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Dear Mr. Bauer:

SUBJECT: EXEMPTION FROM APPENDIX R TO 10 CFR 50 CONCERNING PENETRATION SEALS AND FIRE DETECTION (TAC 55059, 55060, 61149, 61150)

RE: Peach Bottom Atomic Power Station, Units 2 and 3

The Commission has issued the enclosed Exemption from the requirements of Sections III.F and III.M of Appendix R to 10 CFR Part 50 to the extent that one fire area (Emergency Cooling Tower Stairwell) not be required to install a fire detection system and that certain penetration seals be permitted to contain combustible material.

Copies of our Safety Evaluations are enclosed.

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

Also enclosed for your information is a copy of an Environmental Assessment and Finding of No Significant Impact which has been published in the Federal Register.

Sincerely,

original signed by  
R. W. Houston for

Robert M. Bernero, Director  
Division of BWR Licensing

Enclosures:

1. Exemption
2. Safety Evaluation - Penetration Seals
3. Safety Evaluation - Emergency Cooling Tower
4. Environmental Assessment

cc w/enclosures:  
See next page

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DBL:PD#2	DBL:PD#2	DBL:PD#2	OGC-Bethesda	DBL:PD#2
SNORRYS	GGears:cb	DMuller	w.shields	RBernero
10/20/86	10/20/86	10/1/86	10/21/86	10/22/86

*Handwritten notes:*  
 → see comments on enclosure copy -  
 also check III.F re  
 SER open item in 1980.

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Mr. E. G. Bauer, Jr.  
Philadelphia Electric Company

Peach Bottom Atomic Power Station,  
Units 2 and 3

cc:

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Section III.F requires that for areas where alternative or dedicated shutdown is provided, fire detection and a fixed fire suppression system shall also be installed in the area, room, or zone under consideration. Subsection III.M of Appendix R requires that penetration seals utilize only noncombustible materials.

### III.

By letter dated May 27, 1983, the licensee requested an exemption from Section III.M of Appendix R to 10 CFR 50 to the extent that Section III.M requires penetration seals which utilize only noncombustible materials. By letters dated July 22, 1983, September 16, 1983, December 2, 1983, February 10, 1984, September 17, 1984, January 16, 1985 and September 24, 1985, the licensee provided additional information to support the exemption request.

By letter dated September 16, 1983, the licensee also requested an exemption from the requirements of Section III.F of Appendix R. Section III.F of Appendix R requires the installation of automatic fire detection systems in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

In the NRC's staff meeting summary dated May 13, 1986, the licensee provided information relevant to the "special circumstances" finding required by revised 10 CFR 50.12(a) (see 50 FR 50764). The licensee's information is summarized as follow:

#### i) Penetration Seals

The technical requirement of Section III.M of Appendix R would not be met because certain penetration seals are not entirely constructed of noncombustible materials. However, the licensee states that they have

committed to refurbishing all subject seals used in fire rated barriers in accordance with the staff accepted ASTM tests. Therefore, it is the licensee's position that the modified seals will provide adequate performance under fire conditions and provide an equivalent level of protection to that required by Section III.M. Thus, the application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule (see 10 CFR 50.12(a)(2)(ii)). Additionally, compliance with Section III.M concerning the subject seals would result in costs that are significantly in excess of those contemplated when the regulation was adopted since it would result in the complete removal and total replacement of all seals in question.

ii) Emergency Cooling Tower Fire Detectors

The licensee stated that although safety-related cables in conduits are located in this area (stairwell), no other fixed combustibles are present and access is controlled by security personnel. This area is not used for storage and current administrative controls on combustibles preclude the presence of a fire hazard. Therefore, application of the regulation (Section III.F of Appendix R) in this particular circumstance is not necessary to achieve the underlying purpose of the rule (safe shutdown).

The staff concludes that "special circumstances" exist for the licensee's requested exemptions in that the application of the regulation in these particular circumstances is not necessary to achieve the underlying purposes of Appendix R to 10 CFR 50.12(a)(2)(ii).

The following list of exemption requests, therefore, reflects the latest status:

i) Penetration Seals

The technical requirement of Section III.M of Appendix R would not be met because certain penetration seals are not entirely constructed of non-combustible materials.

ii) Emergency Cooling Tower Fire Detector

An exemption was requested from the specific requirements of Section III.F to the extent that automatic fire detection in this area would not be provided.

The acceptability of these exemption requests is addressed below. Details are contained in the NRC staff's concurrently issued Safety Evaluations.

DISCUSSION

In response to the new fire protection rule Appendix R to 10 CFR Part 50, the licensee committed to upgrade all penetration seals in barriers used to separate redundant safe shutdown equipment which the staff had previously questioned. Upon further investigation of this open item the licensee determined that approximately 6,250 seals in 341 fire barriers needed to be upgraded, and in some cases, the licensee further concluded that certain penetration seals would require removal and replacement with fire rated seals. By letter dated May 27, 1983, the licensee indicated that instead of replacing penetration seals in accordance with III.M of Appendix R in some cases, existing seals which contain combustible materials would be modified and the modified seal would be tested in accordance with appropriate ASTM testing requirements. By letter dated September 24, 1985, the licensee stated that the redesigned penetration seals used in fire rated barriers will be refurbished with modified penetration seals which have been successfully tested and approved under appropriate ASTM standards.

Based on the licensee's commitments and the tests conducted on the redesigned penetration seals, we find the modified seals which contain combustible material will provide adequate performance under fire conditions and will provide an equivalent level of protection to that required by Section III.M of Appendix R.

The technical requirements of Section III.F are not met in the Emergency Cooling Tower Stairwell because automatic fire detection systems have not been installed. The combustible loading in the stairwell is negligible. Consequently, a fire of any significant magnitude or duration is not expected. Therefore, the safety-related cabling in the stairwell would not be prone to fire damage. Therefore, we find that installation of automatic fire detection systems would not significantly increase the level of fire protection in these areas.

#### IV.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a)(1) the exemptions as described in Section III are authorized by law and will not present an undue risk to the public health and safety, and are consistent with common defense and security and (2) special circumstances are present for the exemptions in that application of the regulation in these particular circumstances is not necessary to achieve the underlying purpose of Appendix R to 10 CFR Part 50. Therefore, the Commission hereby grants the following exemptions from the requirements of Section III.M and III.F of Appendix R to 10 CFR Part 50:

- i) Penetration Seals

An exemption to the technical requirement of Section III.M of Appendix R to have penetration seals entirely constructed of noncombustible materials.

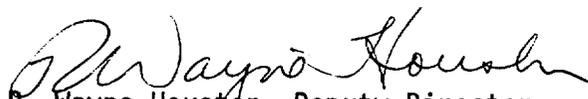
ii) Emergency Cooling Tower Fire Detectors

An exemption from the specific requirements of Section III.F to the extent that automatic fire detection in the emergency cooling tower does not have to be provided.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of these exemptions will have no significant impact on the environment ( 51 FR 41450 ).

This Exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

  
R. Wayne Houston, Deputy Director  
Division of BWR Licensing

Dated at Bethesda, Maryland this 14th day of November, 1986



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO APPENDIX R EXEMPTION REQUEST

PHILADELPHIA ELECTRIC COMPANY

PEACH BOTTOM NUCLEAR POWER STATION, UNITS 2 AND 3

DOCKET NOS. 50-277/278

Introduction

By letter dated September 16, 1983, the licensee requested an exemption from the requirements of Section III.F of Appendix R. Section III.F of Appendix R requires the installation of automatic fire detection systems in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

Discussion

The licensee has requested an exemption from installing automatic fire detectors in Fire Zone 51-136, Emergency Cooling Tower Stairwell. The Emergency Cooling Tower is remote from the Power Block and pedestrian traffic is minimal. The wall of the cooling tower is noncombustible. Entrance to the stairwell is controlled by a locked fence gate. There are no combustibles located in the stairwell. Only one train of safety-related cables is located in the stairwell. Loss of the safety-related cables will not affect safe shutdown.

Evaluation

The technical requirements of Section III.F of Appendix R are not met in the Emergency Cooling Tower Stairwell because automatic fire detection systems have not been installed. The combustible loading in the stairwell is negligible. Consequently, we do not expect a fire of any significant magnitude or duration to occur. Therefore, the safety-related cabling in the stairwell would not be prone to fire damage. In addition a fire in the stairwell would not affect safe shutdown capability of the plant.

Conclusion

Based on the above evaluation, we conclude that the existing fire protection for the Emergency Cooling Tower Stairwell provides a level of fire protection equivalent to the technical requirements of Section III.F of Appendix R. Therefore, the licensee's request for exemption from Section III.F of Appendix R should be granted.

Principal Contributor: J. Stang

Dated: November 14, 1986

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO APPENDIX R EXEMPTION REQUEST

PHILADELPHIA ELECTRIC COMPANY

PEACH BOTTOM NUCLEAR POWER STATION, UNITS 2 AND 3

DOCKET NOS. 50-277/278

Introduction

In our Fire Protection Safety Evaluation, we requested the licensee to provide a detailed description and evaluation of electrical and mechanical penetration seals. By letter dated February 21, 1980 the licensee provided additional information concerning the penetration seals. We reviewed the information and in our Fire Protection Safety Evaluation, we stated that the information was not adequate to resolve the open item. By letter dated November 24, 1980, we informed the licensee that penetration seals Safety Evaluation open items 3.1.7 and 3.2.8(2) remained open issues and final resolution and acceptability of the penetration seals would be predicated upon compliance with the provisions of Section III.M of Appendix R to 10 CFR Part 50. By letter dated March 20, 1981, the licensee committed to examine and upgrade as required in accordance with Section III.M of Appendix R to 10 CFR Part 50 penetration seals in barriers whose integrity is required to ensure safe shutdown capability. By letter dated May 27, 1983, the licensee indicated that some penetration seals would not be upgraded to be in accordance with Section III.M as previously committed and requested an exemption from Section III.M from providing noncombustible material in penetration seals. By letters dated July 22, 1983, September 16, 1983, December 2, 1983, February 10, 1984, September 17, 1984, January 16, 1985 and September 24, 1985, the licensee provided additional information to support the exemption request.

Exemption Request

By letter dated May 27, 1983, the licensee requested an exemption from Section III.M of Appendix R to 10 CFR 50 to the extent it requires penetration seals which utilize only non-combustible materials.

Discussion

In response to the new fire protection rule Appendix R to 10 CFR Part 50, the licensee committed to upgrade all penetration seals in barriers used to separate redundant safe shutdown equipment which the staff had previously

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questioned. Upon further investigation of this open item the licensee determined that approximately 6,250 seals in 341 fire barriers needed to be upgraded, and in some cases, removing existing penetration seals and replacing them with fire rated seals would not be practical. By letter dated May 27, 1983, the licensee indicated that instead of replacing penetration seals in accordance with Section III.M of Appendix R in some cases, existing seals which contain combustible materials would be modified and the modified seal configuration would be tested in accordance with ASTM E 814-81 "Standard Method of Fire Tests of Through Penetration Fire Stops." The licensee conducted a series of tests at the National Gypsum Company Research Center, Buffalo, New York. The Factory Mutual Research Corporation witnessed the test and prepared the following test reports:

1. "ASTM E 814-81 Fire Endurance and Hose Stream Tests on Wall Penetration Fire Stops Design WP 694 for Philadelphia Electric," November 4, 1983
2. "ASTM E 814-81 Fire Endurance and Hose Stream Tests on Wall Penetration Fire Stops Design WP 713 for Philadelphia Electric," February 16, 1984
3. "ASTM E 814-81 Fire Endurance and Hose Stream Test on Floor Penetration Fire Stops Design FC 350 for Philadelphia Electric," March 14, 1984

The licensee has submitted test reports to support the use of combustible materials in the penetration seals.

### Evaluation

The technical requirements of Section III.M of Appendix R to 10 CFR Part 50 are not met because the subject penetration seals are not entirely constructed of noncombustible materials.

The staff was concerned that where combustible materials are used in penetration seals, such materials may be ignited and transmit a fire from one fire area to another. Test results have also indicated that penetration seals in which combustible material is encased between noncombustible material are susceptible to somewhat earlier failures if the noncombustible material has become cracked and a fire produces a positive pressure on the hot side of the seal.

The test results submitted by the licensee indicated that some of the modified penetration seal designs passed the ASTM E 814 test for a 3-hour fire resistive temperature rating. The licensee, however, had not committed to use only seals that were tested and approved. In addition the licensee indicated that some penetration seals which passed the fire endurance test failed the hose stream test. By letter dated September 24, 1985 the licensee stated that the redesigned penetrations seals used in fire rated barriers will have passed both the fire endurance and hose stream tests of ASTM E 814-81. All penetration seals installed in fire rated barriers will be refurbished in accordance with the modified penetration seals which have been tested and approved.

Based on the licensee's commitments and the tests conducted on the redesigned penetration seals, we find that the modified seals which contain combustible materials will provide adequate performance under fire conditions and provide an equivalent level of protection to that required by Section III.M of Appendix R.

Conclusion

Based on our evaluation, we find the penetration seals which contain combustible materials will provide an equivalent level of protection to the technical requirements of Section III.M of Appendix R. Therefore, the exemption should be granted.

Principal Contributor: J. Stang

Dated: November 14, 1986

UNITED STATES NUCLEAR REGULATORY COMMISSIONPHILADELPHIA ELECTRIC COMPANYDOCKETS NOS. 50-277 AND 50-278ENVIRONMENTAL ASSESSMENT AND FINDING OFNO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC/the Commission) is considering issuance of an exemption from the requirements of Appendix R of 10 CFR 50 to the Philadelphia Electric Company (PECO/the licensee), for the Peach Bottom Atomic Power Station, Units 2 and 3 located in York County, Pennsylvania.

ENVIRONMENTAL ASSESSMENTIdentification of Proposed Action:

The licensee would be exempted from the requirements of Sections III.F and III.M of Appendix R to 10 CFR 50 to the extent that automatic fire detection systems would not be required in the Emergency Cooling Tower Stairwell (III.F) and that certain penetration seals would be constructed of non-combustible materials (III.M).

The Need for the Proposed Action:

The licensee has undertaken a penetration seal modification program in accordance with staff accepted ASTM tests. However, certain modified seals still contain combustible material not in accordance with III.M of Appendix R although they meet the ASTM test standards.

In addition, the licensee has requested that the Emergency Cooling Tower Stairwells be exempt from the requirements of III.F (Automated Fire Detection

Systems) of Appendix R because there are no fixed combustibles. The area and access is strictly limited by plant security.

Environmental Impact of the Proposed Action:

The proposed action would not impact the ability to effect safe shutdown of the plant in the event of a fire and would provide an acceptable level of safety, equivalent to that attained by compliance with Section III.F and III.M of Appendix R to 10 CFR 50. On this basis, the Commission concludes there are no significant radiological environmental impacts associated with this proposed exemption.

With regard to potential nonradiological impacts, the proposed exemption involves features located entirely within the restricted areas as defined in 10 CFR Part 20. It does not affect nonradiological plant effluents and has no other environmental impact. Therefore, the Commission concludes that there are no significant nonradiological environmental impacts associated with the proposed exemption.

Alternative Use of Resources:

This action involves no use of resources not previously considered in the Final Environmental Statement (construction permit and operating license) for the Peach Bottom Atomic Power Station, Units 2 and 3.

Agencies and Persons Consulted:

The NRC staff reviewed the licensee's request and did not consult other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined not to prepare an environmental impact statement for the proposed exemption.

Based upon the foregoing environmental assessment, we conclude that the proposed action will not have a significant effect on the quality of the human environment.

For further details with respect to this action, see the request for exemption dated May 27, 1983, as supplemented July 22, September 16, December 2, 1983, February 10, September 17, 1984, January 16 and September 24, 1985 (Section III.M) and request for exemption dated September 16, 1983 (Section III.F), which are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C., and at the Government Publications Section, State Library of Pennsylvania, Education Building, Commonwealth and Walnut Streets, Harrisburg, Pennsylvania, 17126.

Dated at Bethesda, Maryland this 10th day of November 1986.

FOR THE NUCLEAR REGULATORY COMMISSION



Daniel R. Muller, Director  
BWR Project Directorate #2  
Division of BWR Licensing