

December 7, 2001

Mr. Oliver D. Kingsley, President
Exelon Nuclear
Exelon Generation Company, LLC
200 Exelon Way, KSA 3-E
Kennett Square, PA 19348

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3, RE:
EXEMPTION FROM THE REQUIREMENTS OF 10 CFR PART 50, APPENDIX
R, SECTION III.F, AUTOMATIC FIRE DETECTION (TAC NOS. MB2219 AND
MB2220)

Dear Mr. Kingsley:

The Commission has approved the requested exemption from specific requirements of Title 10 of the *Code of Federal Regulations*, Part 50, Appendix R, Section III.F, "Automatic Fire Detection," for the Peach Bottom Atomic Power Station, Units 2 and 3. This action is in response to your application dated June 15, 2001, to be exempt, with respect to specific rooms, from the requirement to have automatic fire detection systems. The requested exemption is granted.

A copy of the exemption is enclosed. The exemption has been forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/

John P. Boska, Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-277 and 50-278

Enclosure: Exemption

cc w/encl: See next page

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Peach Bottom Atomic Power Station
Units 2 and 3

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Peach Bottom Atomic Power Station
Units 2 and 3

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
EXELON GENERATION COMPANY, LLC
PSEG NUCLEAR LLC
PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3
DOCKET NOS. 50-277 AND 50-278
EXEMPTION

1.0 BACKGROUND

Exelon Generation Company, LLC (Exelon) and PSEG Nuclear LLC (the licensees) are the holders of Facility Operating Licenses Nos. DPR-44 and DPR-56, which authorize operation of the Peach Bottom Atomic Power Station, Units 2 and 3 (Peach Bottom or the facilities). The licenses provide, among other things, that the facilities are subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC or the Commission) now or hereafter in effect.

The facilities consist of two boiling water reactors located at the licensees' site in York County, Pennsylvania.

2.0 REQUEST/ACTION

Section III.F of Appendix R to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, requires that automatic fire detection systems (capable of operating with or without offsite power) be installed in all areas of the plant that contain or present an exposure fire hazard to safety-related or safe shutdown systems or components. By letter dated June 15, 2001, Exelon requested an exemption from Section III.F of Appendix R regarding the provisions for an automatic fire detection capability in room 222, a Unit 2 feedwater heater room

in the turbine building, and room 429, the Unit 2 and Unit 3 turbine generator hall in the turbine building.

3.0 DISCUSSION

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present. Under 10 CFR 50.12(a)(2)(ii), special circumstances are present when application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule. The underlying purpose of the rule is to reasonably assure the capability to achieve and maintain safe shutdown in the event of a fire.

The NRC staff examined Exelon's rationale to support the exemption request and concluded that notwithstanding the absence of an automatic fire detection system in rooms 222 and 429, given the circumstances discussed below, the underlying purpose of 10 CFR 50, Appendix R, section III.F would still be met with respect to those rooms.

Room 222

Room 222 is a feedwater heater room located in the Unit 2 turbine building on elevation 135. Exelon has determined that the only safe shutdown or safety-related systems or components located in this room susceptible to fire damage are circuits associated with offsite power. This room has not been provided with automatic fire detection in accordance with the provisions specified in Section III.F of Appendix R. The fire hazards in this room consist solely of electrical cables located in three cable trays that are, or will be provided with metal covers. There are no transient combustibles stored in this area during plant operation. When hot work is performed in this room, a continuous fire watch is stationed in the room. The cables located

in the trays are either qualified in accordance with the flame test provisions specified in Institute of Electrical and Electronics Engineers (IEEE) Standard 383, "Standard for Type Test of Class 1E Electric Cables, Field Splices, and Connections for Nuclear Power Generating Stations," or qualified to a flame test equivalent to the one adopted by IEEE-383. There are no fire protection systems or features provided in this room. Due to the high radiation field present in this area during plant operation, this room is normally locked with restricted personnel access. The cable associated with offsite power is routed in a cable tray which passes vertically through the room along the north wall. This cable tray (2BV080) is separated from the other cable trays (2BV070 & 2BV090) by a minimum horizontal distance of 24 inches. Exelon has determined that the failure of the cables in this room will not adversely impact the availability of offsite power to the 4kV safeguard switchgear required to achieve and maintain safe shutdown following a fire event. Exelon has determined that the only combustibles located in this room consist of a limited quantity of cables qualified in accordance with the criteria specified in IEEE 383 or a test equivalent to that specified in IEEE 383. Cables qualified in accordance with the provisions specified in IEEE-383 are less susceptible to self-ignition or ignition from an external source and have a lower flame spread than non-qualified cables. These qualified cables also remain operable at a higher temperature than non-qualified cables. In the event of a fire involving the adjacent cable trays (2BV070 & 2BV090), the spatial separation of the trays (24 inches to 96 inches) and the metal covers provided on all the trays reduces the potential for damage to the cables located in tray 2BV080. The addition of fire detection in this room would provide little benefit for a self-ignited cable fire in tray 2BV080, as damage would likely occur prior to the response of the plant fire brigade. In the event that damage does occur, either due to a self-ignited cable fire in tray 2BV080 or an exposure fire from the other trays due to hot work, Exelon has determined that an alternate offsite power supply to the 4kV safeguard switchgear is available and will remain free of fire damage. The transfer from the #343-SU

offsite power located in room 222 to the #2-SU offsite power is automatic; therefore the transfer does not require any additional operator actions. Hot work performed in this area requires a continuous fire watch, in accordance with plant procedures, which can provide for rapid detection of a fire in this room and the prompt notification of the plant fire brigade. Based on the lack of significant fire hazards in this room (IEEE-383 qualified cables only), the separation of the cable trays in the room, the enclosure of the cables in the tray with metal covers, and the restricted access during plant operation, the NRC staff concludes that the lack of fire detection in room 222 does not present an undue risk to the public health and safety, fire detection specified by the rule is not necessary to achieve the underlying purpose of Section III.F of Appendix R, and that the NRC's principles of defense-in-depth are satisfied without the addition of fire detection capability.

Room 429

Room 429 is located in the common area of the Peach Bottom turbine building, elevation 165, and Exelon has determined that the only safe shutdown and/or safety-related systems or components located in this room susceptible to fire damage are circuits associated with the #343-SU offsite power to the 4kV safeguard switchgear, and reactor vessel pressure and level instrumentation. This room has not been provided with full area automatic fire detection in accordance with the provisions specified in Section III.F of Appendix R. The fire hazards in this area consist of turbine lube oil, hydrogen used for generator cooling, two maintenance office/shop structures, electrical cabinets and cable trays. The circuits associated with offsite power are located in three conduits routed along the west wall of room 429. Exelon has determined that the circuits in this room related to reactor vessel pressure and level instrumentation identified in a previous submittal dated December 31, 1998, as supplemented on January 14 and April 14, 2000, are "associated circuits" as defined in Generic Letter 81-12, "Fire Protection Rule," dated February 20, 1981, and Exelon has committed to perform an

analysis to ensure that the failure of these circuits (i.e. hot shorts, open circuits, or shorts to ground) will not adversely impact the operation of the instrumentation required to achieve and maintain safe shutdown following a fire event. Exelon has committed to make a physical plant change if necessary to assure safe shutdown capability following the completion of the analysis. However, the instrumentation circuits are not within the scope of Section III.F of Appendix R and thus are not being assessed by the NRC staff in this exemption request. Fire protection systems and features in this room include sprinkler protection on the turbine bearings, smoke detection over each turbine bearing lift pump, hydrogen pressure monitoring, and sprinkler systems in the maintenance office and shops. The conduits containing the offsite power cables are located at least 30 feet horizontally from the significant fire hazards in this room. Exelon has determined that in the event that fire damages the conduits located in this room, a separate offsite power source is available to achieve and maintain safe shutdown. The conduits of interest in this area are adjacent to the entrance to the main control room and this is a high-traffic area for plant personnel. Due to the personnel passing through, a fire would not go undetected for very long. The spatial separation of over 30 feet from the conduits to the significant fire hazards present in this room, the high ceilings and large volume above the turbine operating floor, the fire protection provided on the significant hazards present in this room (i.e. turbine bearings, lift pumps, offices/shops and hydrogen system), and the high-personnel traffic through the area provide reasonable assurance that a fire that has the potential to damage the conduits associated with offsite power located on the west wall will be detected by the existing fire protection systems, or plant personnel prior to damaging the offsite power cables. The existing fire suppression systems in conjunction with the plant fire brigade should be effective in controlling and extinguishing fires prior to damage occurring to the conduits located on the west wall of room 429. In the event that the existing fire suppression systems, or the plant fire brigade is not able to prevent damage to the conduits containing the

cables related to offsite power, Exelon has determined that an alternate offsite power supply to the 4kV safeguard switchgear is available and will remain free of fire damage. The transfer from the #343-SU offsite power located in room 429, to the #2-SU offsite power is automatic; therefore the transfer does not require any additional operator actions. Therefore, based on the information provided by Exelon, the NRC staff concludes that pursuant to 10 CFR 50.12(a)(2)(ii) additional fire detection in room 429 is not necessary to achieve the underlying purpose of Section III.F of Appendix R, the NRC's principles of defense-in-depth are satisfied without the addition of full area fire detection capability, and the lack of full area fire detection in room 429 does not present an undue risk to the public health and safety.

4.0 CONCLUSION

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, the 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. Also, special circumstances are present in that application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule. Therefore, the Commission hereby grants Exelon an exemption from the requirements of 10 CFR Part 50, Appendix R, Section III.F, for rooms 222 and 429, for Peach Bottom Units 2 and 3, with the provision that metal covers are installed on all cable trays in room 222.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not have a significant effect on the quality of the human environment (66 FR 50696).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 7th day of December 2001.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

John A. Zwolinski, Director
Division of Licensing Project Management
Office of Nuclear Reactor Regulation