

# PHILADELPHIA ELECTRIC COMPANY

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MAR 7 1986

JOHN S. KEMPER  
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Docket Nos. 50-277  
50-278

Mr. Robert M. Bernero, Director  
Division of Boiling Water Reactor Licensing  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

SUBJECT: Peach Bottom Atomic Power Station  
Structural Steel Survivability Analysis

- REFERENCES:
- (1) Letter, V. S. Boyer to D. G. Eisenhut,  
dated September 16, 1983
  - (2) Letter, V. S. Boyer to H. L. Thompson, Jr.,  
dated March 29, 1985
  - (3) Letter, V. S. Boyer to H. L. Thompson, Jr.,  
dated June 6, 1985
  - (4) Telecon between NRC Staff and PECO  
Fire Protection Personnel on February 25, 1986

Dear Mr. Bernero:

Philadelphia Electric Company, in Reference (1), Appendix 2, submitted a structural steel survivability analysis for all safe shutdown fire areas including the methodology, assumptions, conservatisms, and results. This analysis demonstrates a viable, economic, and technically sound approach toward meeting the requirement of Appendix R to 10CFR Part 50 that structural steel forming a part of or supporting fire barriers shall be protected to provide fire resistance equivalent to that required of the barrier (Section III.C.2).

Subsequent to the above submittal, a similar structural steel analysis methodology was submitted for PECO's Limerick Generating Station. The methodology was approved by the NRC staff in Supplement 2 of the Limerick SER in October 1984.

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In the course of finalizing the Limerick structural steel analysis methodology, it became evident that changes were required to the September 1983 Peach Bottom submittal to conform it to the Limerick methodology. The Reference (2) submittal included the refinements necessary to convert the Peach Bottom submittal into a duplication of the approved Limerick methodology including the major refinement of changing the structural steel acceptance temperature to 1100°F. The Reference (3) submittal transmitted our evaluation of problem areas and our tabulation of proposed "fixes".

The purpose of this letter, in response to the Reference (4) telephone conference, is to:

1. Confirm that the September 1983 Structural Steel submittal has been superseded in its entirety by the March 1985 submittal as supplemented by the June 6, 1985 letter; and
2. Specifically request exemptions from Appendix R for structural steel forming or supporting selected fire barriers.

Therefore, in accordance with the provisions of 10CFR50.12, Philadelphia Electric Company (PECo) requests exemption from the requirement of 10CFR50, Appendix R, Section III.G.2, that 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, for those seventeen specific areas listed in Attachment 1.

#### Justification for the Requested Exemption

50.12(a)(1) provides for the granting of specific exemptions which are authorized by law, will not present an undue risk to the public health and safety and are consistent with the common defense and security.

1. The Requested Exemptions are Authorized by Law

As demonstrated below, the criteria established in 10CFR50.12 are satisfied in this case; and the Commission, therefore, has the authority under the Atomic Energy Act and its regulations to grant the requested exemption. The activities to be authorized by the requested exemption do not violate any other applicable laws or regulations. Thus, the Commission is authorized by law to grant this exemption request.

2. The Requested Exemptions will Not Present an Undue Risk to Public Health and Safety

As demonstrated in Attachment 1, the structural steel in the areas for which an exemption is requested, when consideration is given to the effects of alternative mitigative features, has adequate fire resistance without additional protection. Thus, the exemptions will present no undue risk to the public health and safety.

3. The Requested Exemptions will Not Endanger the Common Defense and Security

The granting of this exemption will have no effect on the common defense and security.

50-12(a)(2) provides descriptions of the particular types of special circumstances which must be present for an exemption to be granted. The exemptions requested herein fit the following categories of special circumstances:

Application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule.

The underlying purpose of the requirement of Appendix R that steel be protected to provide a fire resistance equivalent to that required of the barrier is to assure the integrity of the barrier and not adversely affect the ability of the barrier to serve its fire protection purpose. Thus, if it can be shown that not adding protection to certain steel areas will not adversely affect the ability of the barrier to continue to perform its function, the underlying purpose of the regulation is still achieved.

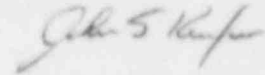
The Structural Steel Survivability Analysis and Attachment I hereto demonstrate that the structural steel forming a part of or supporting III.G.2 fire barriers, either by itself or with associated installed fire protection and security features, provides "fire resistance equivalent to that required of the barrier". Otherwise, in those instances where particular steel could not meet equivalency criteria, protection will be upgraded to meet Appendix R III.G.2.

Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted.

Generic Letter 83-33 recognized the hardship of meeting the specific requirement of the rule for all structural steel members forming a part of a critical fire barrier. The Licensee's fire protection upgrade program costs for extensive modifications to meet this specific requirement would have increased the cost of the overall fire protection program substantially without, as demonstrated in the Analysis and Attachment I hereto, a corresponding increase in the level of improvement in fire protection.

If you have any question, please do not hesitate to call us.

Sincerely,

A handwritten signature in cursive script, appearing to read "John S. Kiefer".

GMM/cb/03048605

Attachment (1)

Copy to: T. P. Johnson, Resident Inspector  
NRC Document Control Desk

ATTACHMENT I

Docket Nos. 50-277  
50-278

The structural steel analysis revealed that the following areas exhibited temperatures that would allow structural steel supporting the ceilings to reach the critical temperature of 1100°F:

1. Radwaste Building, el. 135, Unit 2 M-G Set Room, calc. #19 - The M-G set room did not pose a problem with one door open for a ventilation controlled fire. Area gas temperatures for case number 1 only reached 762°F. Case number 2 with two doors open did reach a gas temperature of 1272°F with the steel reaching the failure temperature at the 130 minute mark. We do not feel it is credible to have two supervised security doors open for any extended length of time. For that matter, we do not feel it is credible to have one supervised security door open for any length of time. However, due to the large quantity of combustible liquid in the area, we propose to extend an existing sprinkler system provided for the fluid drive and the generator to the entire floor area. Due to the existence of energized load centers in the room, the extended sprinkler system will be installed to provide floor area coverage for an oil spill fire only. The sprinkler system will be designed and installed by a qualified fire protection engineer with "System Interaction" concerns a major consideration. The installation will not be a strict NFPA area sprinkler system.
2. Turbine Building, el. 135, Emergency Switchgear Rooms (eight rooms), calc. #20 - We do not plan to provide structural steel protection in these rooms. The steel survivability calculations indicate that for a one door open fire scenario the steel does not reach the critical steel temperature for 30 minutes. The doors to the switchgear rooms are electrically supervised security doors with a card reader at the entrance to monitor access. These door locations are also located in fire barriers. Should one of these doors be left open, a security guard would be dispatched to the location immediately. If it is necessary to leave the door open during modification work, a fire watch would be provided in accordance with plant technical specifications.
3. Reactor Building, el. 88, Unit 2 HPCI Room, calc. #30 - The HPCI room is provided with early warning fire detection as well as an automatic carbon dioxide fire protection system. The automatic CO<sub>2</sub> system will assure that a fire in the HPCI room is promptly discovered and controlled and the structural steel in the room will not be jeopardized.

4. Reactor Building, el. 88, Unit 3 HPCI Room, calc. #35 - See Item number 3.
5. Reactor Building, el. 91'-6, Unit 2, C RHR Pump and HX Room, calc. #47 - The calculation for this area indicates with one or two doors open the structural steel exposure is acceptable. Three access doors need to be left open to provide sufficient air to produce a fire that would jeopardize the steel in the room. The doors to the room are all inside secure areas. The area is also a radiation area requiring Health Physics examination prior to entry. Smoke detection is provided in the room. Based on the above, no structural steel protection will be provided.
6. Radwaste Building, el. 135, Unit 3 M-G Set Room, calc. #53 - See Item number 1.
7. Turbine Building, el. 135, Battery Room (four rooms), calc. #90 - These rooms are similar to the switchgear rooms evaluated under Item number 2. The walls are three hour fire barriers; the doors are electrically supervised and require card reader access. There is little likelihood of any access door being left open without a fire watch posted per technical specification requirements. These rooms have also been sealed under the penetration sealing program, and uncontrolled airflow into or out of the rooms is an absolute minimum. Additionally, smoke detectors are provided in each room; and the electrolyte in the batteries would provide a quenching effect in the event of a fire in the rooms. Based on the above, we do not plan to provide structural steel protection for this area.