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V. S. BOYER
VICE-PRESIDENT

MAR 29 1985

Mr. Hugh L. Thompson, Jr.
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Docket Nos. 50-277
50-278

SUBJECT: Peach Bottom Atomic Power Station, Units 2 and 3
Structural Steel Survivability Analysis

REFERENCE: (1) Letter V. S. Boyer to D. G. Eisenhut
dated September 16, 1983
(2) Letter V. S. Boyer to D. G. Eisenhut
dated January 16, 1985

Dear Mr. Eisenhut:

As stated in the Reference (2) letter, Philadelphia Electric Company proposed to submit the Peach Bottom Structural Steel Survivability Analysis on April 1, 1985. Enclosed for your review is that analysis (Attachment #1). The analysis is based on the same methodology that was used at PECo's Limerick Generating Station. The Limerick analysis was approved by the NRC in the Limerick Safety Evaluation Report.

Ninety plant areas have been evaluated in the Units 2 and 3 Reactor Buildings, the Radwaste Building and the Turbine Building.

A review of the calculation summary revealed that 13 calculations representing 27 plant areas had area fire durations and temperatures which exceeded the structural steel temperature acceptance criteria. Additionally, the calculations indicated that we had 60 cases of failure due to localized heating effects in 16 plant areas. We have enclosed (Attachment #2) a detailed discussion of the problem areas and the alternatives we are considering to correct any structural steel fire protection deficiencies.

The corrective actions we plan to take and any calculation refinements, if necessary, will be transmitted to you within 60 days.

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REG FILE 1C4
24X 1C4
LPDR 1C4
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NSIC 1C4
EXTRAS TO PM, G. GEARS

We are anxious to discuss our proposed alternatives/actions with your staff and request that a meeting be scheduled at your convenience to discuss them.

J. S. Kemper
for V. S. Boyer

GJR/cb/03278502

Enclosures

Copy to: T. P. Johnson
Site Resident Inspector

Attachment #2

Discussion of Structural Steel Problem Areas

The structural steel survivability analysis identified 27 plant areas which had expected fire durations and structural steel temperatures which did not meet the steel temperature acceptance criteria. The areas are as follows:

1. Radwaste Building, el. 135, Medical Station and Corridor, calc. #10

2. Radwaste Building, el. 135, Unit 2 M-G Set Room, calc. #19

3. Turbine Building, el. 135, Emergency switchgear Rooms (8 rooms), calc. #20

4. Radwaste Building, el. 165, Fan Room (Remote Shutdown Panel Area), calc. #22

5. Circ. Water Pump House, High Pressure Service Water Pump Bay (2 rooms), calc. #26

6. Diesel Building, Diesel Generator Rooms (4 rooms), calc. #27

7. Diesel Building, Cardox Room, calc #28

8. Reactor Building, el. 88, Unit 2 HPCI Room, calc. #30

9. Reactor Building, el. 88, Unit 3 HPCI Room, calc. #35

10. Reactor Building, el. 91-6, Unit 2, C RHR Pump and HX Room, calc. #47

11. Radwaste Building, el. 135, Unit 3 M-G Set, calc. #53

12. Radwaste Building, el. 135, Radwaste Control Room, calc. #54

13. Turbine Building, el. 135, Battery Room (4 rooms), calc. #90

The obvious fix for each of these areas is to provide structural steel fire proofing or area sprinkler protection, however, other alternatives/considerations are being reviewed for several plant areas.

a. The HPCI rooms and the Diesel Generator Rooms are provided with automatic total flooding carbon dioxide systems. Detection and automatic operation of the carbon dioxide system will be sufficient to control/suppress any fire until the fire brigade arrives. At no time should we reach the high heat release necessary to jeopardize the exposed structural steel.

b. The structural steel in the Diesel Bays, including the fifth diesel bay or Cardox Room, the High Pressure Service Water Pump Bays and the Fan Room support ceilings which are not Appendix R, III.G.2 fire barriers. However, should the structural steel fail, we are evaluating the effects on adjacent walls which are III.G.2 fire barriers. If the structural evaluation determines that the adjacent walls will not fail, we do not plan to provide any steel protection. The walls in question are seismically designed reinforced concrete and are two to three feet thick.

Failures due to localized effects were evident in 16 plant areas and included a total of 60 beams plus the entire Cable spreading Room. We are considering the following alternatives to address these problems:

a. Where cable tray crosses the axis of a beam in a perpendicular direction, we propose to coat the beam three feet in each direction from the area of flame impingement with fire proofing material or provide solid tray covers of a similar length for the cable tray. We are currently evaluating whether any cable derating is required if we install tray covers. Since the problem associated with localized effects is direct flame impingement; fire proofing or solid tray covers will protect the beam.

b. When a cable tray runs parallel to and beneath a beam, the entire beam will be coated with a three foot overlap at the ends or tray covers will be provided.

c. Beams that are jeopardized by vertical trays will be coated five feet in each direction from the area of flame impingement.

d. If tray covers are not acceptable due to derating, an evaluation will be made to determine whether the beam should be coated or if sprinkler protection will be provided.

e. The jeopardized structural members will be evaluated to determine their structural significance. If the members are not required structurally, no protection will be provided.

f. The Cable Spreading Room was unusual. The area temperature did not cause a structural problem when based on combustible loading , however, every beam failed due to localized effects because of the close proximity of raceway to the ceiling. The Cable Spreading Room ceiling is not a III.G.2 fire barrier. Automatic carbon dioxide is provided for the room. The CO_2 system is actuated by cross-zoned smoke detectors.

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