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ADENSAM, E. BWR Project Directorate 3

SUBJECT: Discusses circuits outside control room associated w/fire protection. Analysis of circuits within fire zones not completed as reported in 851218 ltr. Analysis shows necessity to rate wall area & floor area highlighted on encl figures.

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DEC 11 1986

Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Project Director
BWR Project Directorate No. 3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
FIRE PROTECTION: ASSOCIATED CIRCUITS
OUTSIDE THE CONTROL ROOM
PLA-2762 FILE R41-2, P5-1, A17-15

Docket Nos. 50-387
and 50-388

Dear Ms. Adensam:

As you are aware, PP&L is in the process of conducting a computerized Appendix R safe shutdown analysis. As part of this effort we are comparing the results of this program with the work we have completed to date. During the conduct of this effort, we became aware that our analysis of associated circuits within fire zones outside the control (Concern 4A) was not completed as previously reported in PLA-2566 dated December 18, 1985.

Our previous analysis failed to address logic circuits for the inboard isolation valves in the HPCI and RCIC systems and the Shutdown Cooling Mode of the RHR system. Power circuits for these systems were analyzed.

We are currently in the process of completing our computerized safe shutdown analysis. Upon completion of this work we will have resolved the shortcomings of our previous analysis.

In addition, we have reviewed our Fire Barrier Analysis and have found it necessary to rate the wall area and floor slab highlighted on the attached figures (Figures 6.0 and 11.0 of Appendix B to Concern No. 1 which was previously submitted to you). All penetrations in the wall area and floor slab will be upgraded. Deviation justifications for one door (Attachment A), two fire dampers (Attachment B) and structural steel (Attachment C) are



A006
1/1

attached. These deviations will be included in the revised Fire Protection Review Report when it is issued.

Should you have any questions, please call.

Very truly yours,

H. W. Keiser
Vice President-Nuclear Operations

cc: M. C. Thadani - NRC
L. R. Plisco - NRC

FLOOR PLAN @ EL. 779'-1

FIGURE 6.0

Scale: 1/8" Letter Height Drafting Standard: Dwg. No. - 3/8"; Title - 3/16"; Subtitle - 5/32"; Letter Figures - 1/8" Min.

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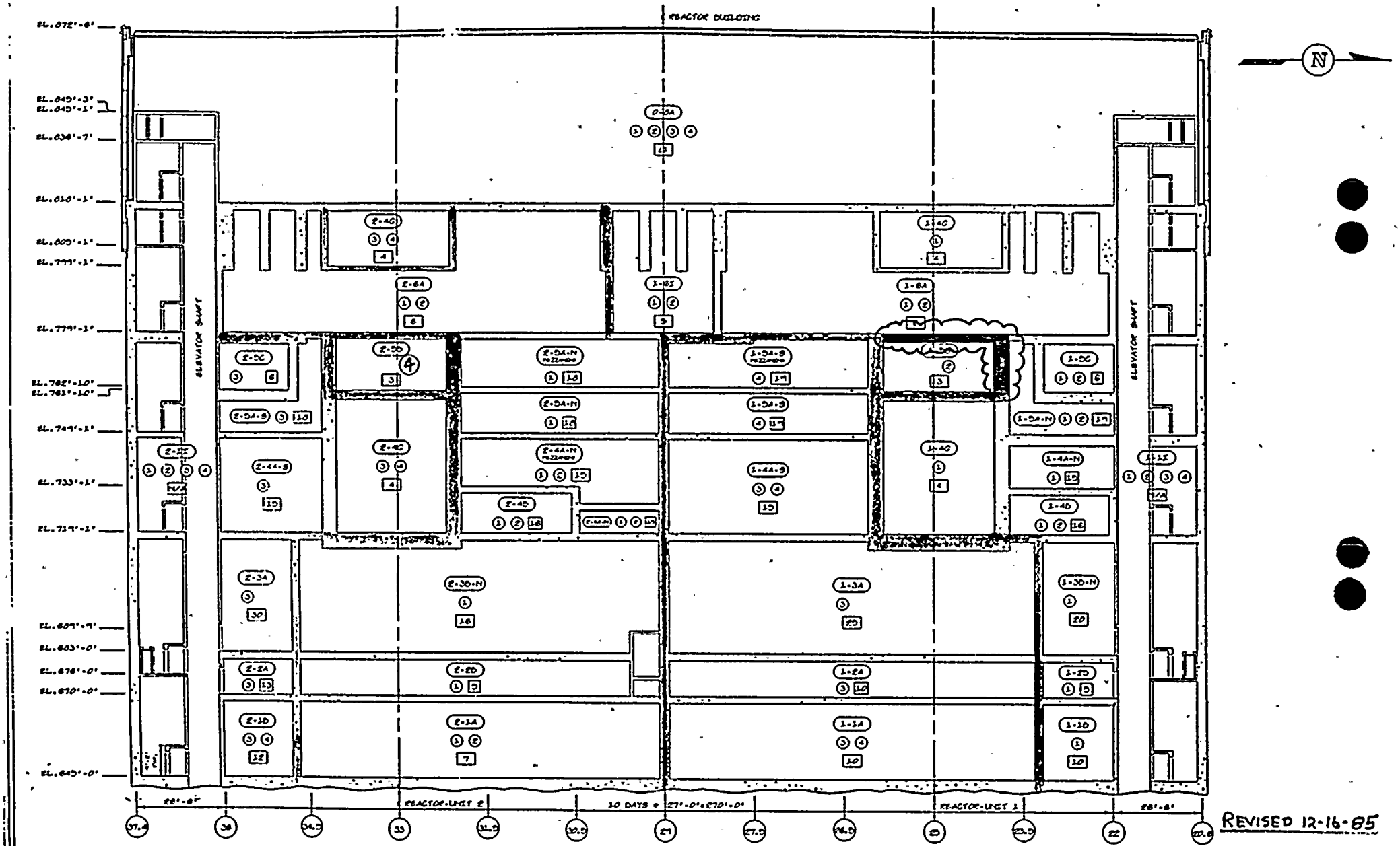


SECTION C-C

REVISED 12-16-85

FIGURE 11.0

FIRE DOOR NUMBER 504

Door #504 is the only door needed to be rated as a result of the upgraded wall shown in Figure 11.0. This door exists between Fire Zones 1-5B and 1-5A-N and is a pressure resistant door. This type of door is a Type II door as defined by Deviation Request No. 3. Therefore, since this door is of the same construction as those doors listed as Type II in Deviation Request No. 3, this door is bounded by that Deviation Request. This information will be verified by Factory Mutual when the high radiation area adjacent to the door becomes accessible.

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## DEVIATION REQUEST NO. 3

## FIRE DOORS - NON-RATED

| WALL BETWEEN FIRE ZONES | UNIT NUMBER | DOOR NUMBER | DOOR TYPE | FM REPORT |
|---|---|---|---|---|
| 1-1A/1-1B | 1 | 13 | I | 1/85 |
| 1-1E/1-1F | 1 | 23 | I | 1/85 |
| 1-2A/1-2B | 1 | 111 | II | 8/85 |
| 1-3A/1-3B-N | 1 | 201 | II | 8/85 |
| 1-4A-S/1-4G | 1 | 407 | II | 6/86 |
| 1-5A-W/1-5E | 1 | 515 | III | 8/85 |
| 2-1A/2-1B | 2 | 14 | I | 1/85 |
| 2-1E/2-1F | 2 | 24 | I | 1/85 |
| 2-2A/2-2B | 2 | 112 | II | 6/86 |
| 2-3A/2-3B-N | 2 | 202 | II | 6/86 |
| 2-5E/2-5A-W | 2 | 514 | III | 6/86 |
| 2-5A/2-5B | 2 | 530 | III | 6/86 |
| 2-4G/2-6A | 2 | 711 | II | 6/86 |
| 1-5B/1-5A-N | 1 | 504 | II | * |

TABLE 3-1

* This door added after 6/86. Factory Mutual has not yet inspected and verified that this door is identical to other type II doors (i.e. 111, 201, etc.).

PENETRATION: X-25-5-15

FIRE ZONE/FIRE ZONE: 1-5B/1-5A-N

DUCT SIZE: 22" x 18"

VENTILATION SYSTEM: Reactor Building Zone I Equipment Compartment (Filtered) Exhaust

DISCUSSION:

As shown on Shts. 2 and 2A of Drawing C-205789, this duct assembly penetrates the fire barrier wall through penetration X-25-5-15 at El. 770'-1". This penetration joins Fire Zone 1-5A-N with Fire Zone 1-5B. An exhaust air register is located in the duct in Fire Zone 1-5B. Neither fire zone has sprinkler protection.

JUSTIFICATION:

a) Fire initiated in Fire Zone 1-5A-N with potential to spread to Fire Zone 1-5B.

There are no openings in the duct assembly in Fire Zone 1-5A-N within at least 50' of the subject penetration. If a fire were initiated in Fire Zone 1-5A-N, the heat generated as a result of that fire would have to travel through at least 50' of duct work before reaching into Fire Zone 1-5B. As the heat would escape from the exhaust air register in Fire Zone 1-5B, it would migrate upwards away from cable tray F1PL and not have sufficient heat content to adversely affect this cable tray or any other system in Fire Zone 1-5B.

b) Fire initiated in Fire Zone 1-5B with potential to spread into Fire Zone 1-5A-N.

Fire Zone 1-5B has minimal combustibles. As noted on the referenced sketch, a 12" x 4" cable tray is situated directly under the exhaust air register in Fire Zone 1-5B. However, this cable tray would not generate sufficient heat to affect the duct assembly in Fire Zone 1-5A-N and since there are no openings in the duct assembly in Fire Zone 1-5A-N within at least 50' of the subject duct penetration, sufficient heat would not be generated by a fire in Fire Zone 1-5B to adversely affect any system in Fire Zone 1-5A-N.

CONCLUSION:

Based on the above discussion, NFPA 90A Section 3-3.2.1.1, the physical layout of the adjacent fire zones, and the combustible configuration within these fire zones, a fire damper is not required in penetration X-25-5-15.

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PENETRATION: X-25-5-13

FIRE ZONE/FIRE ZONE: 1-5B/1-5A-N

DUCT SIZE: 30" x 26"

VENTILATION SYSTEM: Unit 1 Primary Containment Drywell and Suppression Pool Purge Exhaust to Standby Gas Treatment

DISCUSSION:

Sheet 2 of Drawing C-205791 shows the duct assembly system but does not show it passing through penetration X-25-5-13. This penetration joins Fire Zone 1-5A-N with Fire Zone 1-5B. There are no openings in the duct assembly in Fire Zone 1-5A-N or Fire Zone 1-5B. Neither fire zone has sprinkler protection.

JUSTIFICATION:

a) Fire initiated in Fire Zone 1-5A-N with potential to spread to Fire Zone 1-5B.

Since this duct system performs a primary containment purge function, there are no openings in the duct system throughout its entire length. Therefore, a fire initiated in Fire Zone 1-5A-N would not generate enough heat to breach the duct system and transfer heat into Fire Zone 1-5B.

b) Fire initiated in Fire Zone 1-5B with potential to spread to Fire Zone 1-5A-N.

Since this duct system performs a primary containment purge function, there are no openings in the duct system throughout its entire length. Therefore, a fire initiated in Fire Zone 1-5B would not generate enough heat to breach the duct system and transfer heat into Fire Zone 1-5A-N.

CONCLUSION:

Based on the above discussion, NFPA 90A Section 3-3.2.1.1, the physical layout of the adjacent Fire Zones and the combustible configuration within the Fire Zones, a fire damper is not required in penetration X-25-5-13.

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# UNIT 1 FIRE RATED FLOOR SLAB ABOVE FIRE ZONE 1-5B

Reference Drawing being prepared.

## DESCRIPTION:

The fire rated floor slab in question is 1'-9" thick and the top of the entire slab is at elevation 779'-1". This reinforced concrete slab acts compositely with the structural steel beams to support this elevation as shown on the reference drawing. The combustibles in these fire zones located beneath the fire rated floor slab are cable trays of varying elevation and location as shown on the reference drawing.

## EVALUATION:

The fire rated floor slab is exposed by only two horizontal cable trays. Section 3.3 of the Summary Report for Structural Steel Evaluation provides the justification for the adequacy of structural steel for a combustible configuration of two horizontally stacked cable trays. The condition analyzed in the summary report bounds this combustible configuration of two side-by-side horizontal cable trays.

## CONCLUSION:

Based on the above evaluation and the specific combustible configuration beneath the fire rated floor slab in question, a postulated fire in Fire Zone 1-5B would not generate sufficient heat to adversely impact the required structural steel beams supporting the fire rated floor slab.

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