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SUBJECT: Requests exemption from 10CFR50, App R re automatically
 actuated fixed suppression in proposed new B Battery room.

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AUG 20 1992

R. B. STARKEY, JR.
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SERIAL: NLS-92-227

United States Nuclear Regulatory Commission
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Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

APPENDIX R EXEMPTION REQUEST - BATTERY B ROOM

Gentlemen:

Carolina Power & Light Company (CP&L) requests an exemption from 10CFR50, Appendix R regarding automatically actuated fixed suppression in the proposed new B Battery room at H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR2). The enclosure to this letter provides details of the request.

The exemption is requested pursuant to the provisions of 10CFR50.12(a)(2)(ii) in that the application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule. Measures discussed in the enclosure to this letter will continue to provide adequate fire protection in the B Battery room.

Questions regarding this matter may be referred to Mr. R. W. Prunty at (919) 546-7318.

Yours very truly,


R. B. Starkey, Jr.

RES/jbw

Enclosure

cc: Mr. S. D. Ebnetter
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H. B. ROBINSON UNIT NO. 2
EXEMPTION REQUEST
PENETRATION PRESSURIZER TANK ROOM
BATTERY ROOM B, 125V DC EQUIPMENT ROOM B

1.0 EXEMPTION REQUEST

An exemption from the requirements of Section III.G.3 to 10CFR50, Appendix R is requested for the new Penetration Pressurizer Tank Room, Battery Room B, and 125V DC Equipment Room. This area will consist of a reconfiguration of existing Fire Zone 13 (the Boric Acid Batch Tank Room). Specifically, CP&L requests a revision to the basis of the exemption for Section III.G.3, to the extent that automatic fire suppression is not installed, and due to the increase in the overall combustible loading in the area. The combustible loading will not exceed a fire severity of two hours in any of the new fire zones.

2.0 INTRODUCTION

Fire Zones 13 (Boric Acid Batch Tank Room) and 16 (Battery Room) are presently exempted from Section III.G.3 of 10CFR Part 50, Appendix R by NRC letter dated September 17, 1986, to the extent that area-wide automatic fire detection (Zone 13) and fixed automatic suppression (Zones 13 and 16) are not installed. The Safety Evaluation Report (SER), which granted the exemption, was based primarily on the following:

- The combustible loading in the Boric Acid Batch Tank Room is low (equivalent fire severity of three minutes).
- Alternative shutdown capability is available independent of this area.

Ongoing operational considerations have established the need for enlarging both trains of safety-related station batteries. The existing Battery Room (Zone 16) cannot accommodate the planned additional battery capacity. Therefore, CP&L plans to modify as a new Battery Room B and 125V DC Equipment Room within the space currently known as the Boric Acid Batch Tank Room (Zone 13), as shown in Figure 1. The installation of the batteries and switchgear in these rooms would constitute a change in the previously approved physical configuration by introducing additional cable combustibles and batteries into the new Penetration Pressurizer Tank Room, Battery Room B, and 125V DC Equipment Room.

Existing Fire Zone 16 (Battery Room) will be redesignated as the Battery Room A.

This letter summarizes the existing configuration, previously approved by the NRC, and provides details regarding the planned arrangement and fire protection features for the new Penetration Pressurizer Tank Room, Battery Room B, and 125V DC Equipment Room.

3.0 EXISTING CONFIGURATION

3.1 Fire Zone 13 (Boric Acid Batch Tank Room)

3.1.1 Safe-Shutdown Components

This zone contains the Boric Acid Batch Tank, which will be relocated. Borated water for safe shutdown can be obtained from the Refueling Water Storage Tank; therefore, the Boric Acid Batch Tank is not credited as a safe-shutdown component.

In addition, several cables serving Alternate "A" safe-shutdown components are located in this zone. However, operator's manual actions in other fire areas/zones are credited for these components.

3.1.2 Fire Protection

Combustible Loading

The Boric Acid Batch Tank Room is approximately 710 ft² in area and is separated from adjacent areas by three-hour-rated concrete walls, floor, and ceiling. The existing combustible loading in the area consists primarily of paper bags of boric acid. Electrical cables are inside conduits.

The total combustible loading in the Boric Acid Batch Tank Room is approximately 3326 Btu/ft², which is equivalent to a fire severity of approximately three minutes.

Existing Active and Passive Fire Protection Features

Portable fire extinguishers are available, in addition to fire extinguishers and fire hose stations located in adjacent areas.

3.2 Fire Zone 16 (Battery Room - Existing)

3.2.1 Safe-Shutdown Components

This zone contains the safe-shutdown Alternate "B" DC electrical distribution equipment (125V DC batteries, chargers, and distribution panels). Alternative safe-shutdown equipment, in the form of the safe-shutdown Alternate "A" Dedicated Shutdown (DS) electrical distribution system, is available outside this area.

3.2.2 Fire Protection

Combustible Loading

The existing battery room is 510 ft² in area and is separated from adjacent areas by three-hour-rated concrete walls, floor, and ceiling. The existing combustible loading in the area consists primarily of electrical cables. Those cables not inside conduits are coated with a flame-retardant material or are IEEE-383 qualified.

The total combustible loading in the existing battery room is approximately 17,000 Btu/ft², which is equivalent to a fire severity of approximately 13 minutes.

Ventilation is provided to maintain the hydrogen concentration within the area to less than 2 percent by volume.

Existing Active and Passive Fire Protection Features

A two-train fire detection system is installed in the area.

Portable fire extinguishers are available, in addition to fire extinguishers and fire hose stations located in adjacent areas.

A missile shield is installed between the two sets of batteries to minimize damage in the event of fire or explosion.

4.0 PROPOSED CONFIGURATION CHANGES

4.1 Fire Zone 13 (Boric Acid Batch Tank Room)

4.1.1 Safe-Shutdown Components

This area will contain the 125V DC station batteries, chargers, and Motor Control Centers (MCCs) for train "B." This equipment provides control power for the normal shutdown systems. In the event this equipment is damaged, safe shutdown can be accomplished by the (DS) electrical distribution system.

4.1.2 Combustible Loading

As shown on Figure 1, CP&L plans to install station batteries and DC switchgear within Fire Zone 13. Switchgear will be separated from the station batteries and other plant equipment by three-hour-rated walls. Cables installed in these rooms will be qualified to IEEE-383, Vertical Flame Test. The existing room will be subdivided into three smaller rooms (Fire Zones 13, 37, and 38), separated by three-hour-rated fire barriers, as follows:

Fire Zone 13 (Penetration Pressurizer Tank Room) will be an area of approximately 203 sq. ft. The maximum combustible loading installed will be approximately 14,720 Btu/ft², which is equivalent to a fire severity of approximately 11 minutes.

Fire Zone 37 (Battery Room B) will be an area of approximately 276 sq. ft. The maximum combustible loading installed will be approximately 142,644 Btu/ft², which is equivalent to a fire severity of approximately 107 minutes.

Fire Zone 38 (125V DC Equipment Room) will be an area of approximately 192 sq. ft. The maximum combustible loading installed will be approximately 148,855 Btu/ft², which is equivalent to a fire severity of approximately 112 minutes.

Ventilation will be provided to maintain the hydrogen concentration within the area to less than 2 percent by volume.

4.1.3 Fire Protection

The modification will separate redundant safety-related station batteries by three-hour-rated reinforced concrete walls into separate fire zones.

A two-train fire detection system will be installed to provide early warning to the control room.

Manual suppression from portable fire extinguishers and hose stations continues to be available. Manual suppression can be deployed without exposing the alternate train to a fire.

The high degree of compartmentalization within the Penetration Pressurizer Tank Room, Battery Room B, and 125V DC Equipment Room, combined with the slow-burning nature of the hazards involved, assures that even with the moderate combustible loadings within Fire Zones 37 and 38, a fire can be rapidly controlled and extinguished by the fire brigade.

4.2 Fire Zone 16 (Battery Room A)

4.2.1 Safe-Shutdown Components

The existing train "B" safety-related 125V DC batteries and associated equipment will be removed from service, leaving only the train "A" equipment. Alternative safe shutdown, in the form of the DS electrical distribution system, is available.

4.2.2 Combustible Loading

The combustible loading will not change from the current configuration.

4.2.3 Fire Protection

The fire protection features will not change from the current configuration.

5.0 POTENTIAL ENVIRONMENTAL IMPACT

The proposed exemption will provide a degree of fire protection that is consistent with that required by Appendix R for other areas of the plant such that there is no significant increase in the risk from fires at the facility. Consequently, the probability of fires has not been increased. Likewise, the post-accident radiological releases will not be greater than previously determined, nor does the proposed exemption otherwise affect plant radiological effluents. Therefore, CP&L believes that there are no significant radiological environmental impacts associated with this proposed exemption.

With regard to potential non-radiological impacts, the proposed exemption involves features located entirely within the restricted area as defined in 10CFR Part 20. It does not affect non-radiological plant effluents and has no other environmental impact. Therefore, CP&L believes that there are no

significant non-radiological environmental impacts associated with the proposed exemption.

6.0 SUMMARY

A modification is separating redundant station batteries by placing an enlarged battery set in a fire zone adjacent to the existing battery room. A two-train fire detection system will be installed within the new battery area to provide early warning fire detection, commensurate with the fire protection currently available in the existing battery room.

Portable fire extinguishers and manual fire hose stations are available in adjacent areas and would be deployed if needed.

The fire severity will increase to 11 minutes for Fire Zone 13 (Penetration Pressurizer Tank Room), 107 minutes for Fire Zone 37 (Battery Room B), and 112 minutes for Fire Zone 38 (125V DC Equipment Room).

PENETRATION PRESSURIZER TANK ROOM
BATTERY ROOM B, 125V DC EQUIPMENT ROOM B
FIRE ZONES 13, 37, and 38
SUMMARY PARAMETER EVALUATION TABLE

A. Area Description

1. Construction

- a. Walls - reinforced concrete
- b. Floors - reinforced concrete
- c. Ceiling - reinforced concrete

B. Safe-Shutdown Equipment

These zone areas will contain the 125V DC station batteries, chargers, and MCCs for the B train. This equipment provides control for the normal shutdown systems. In the event this equipment is damaged, safe shutdown can be accomplished by the DS system, which utilizes 120V AC control power from the DS bus and transformer.

C. Fire Hazards

1. Type of Combustibles in Area

- a. IEEE-383 qualified cable in cable tray and raceway
- b. Station battery cases constructed of Styrene-Acrylonitrile (SAN) and Butadiene Styrene plastics (Fire Zone 37 only)

2. Combustible Loading and Equivalent Fire Severity

- a. Fire Zone 13 - 14,720 Btu/sq. ft.; 11 minutes (low fire severity)
- b. Fire Zone 37 - 142,644 Btu/sq. ft.; 107 minutes (moderate fire severity)
- c. Fire Zone 38 - 148,855 Btu/sq.ft.; 112 minutes (moderate fire severity)

D. Existing Fire Protection Features

- 1. Fire Detection Systems - No fire detection currently exists in Fire Zone 13 (Boric Acid Batch Tank Room), which will become the new Penetration Pressurizer Tank Room, Battery Room B, and 125V DC Equipment Room B. A two-train fire detection system is located throughout other fire zones within the Fire Area.

2. Fire Suppression Systems

- a. Portable fire extinguishers
- b. Fire hose stations

E. Proposed Additional Fire Protection Features

- 1. A two-train fire detection system will be installed in the Penetration Pressurizer Tank Room, Battery Room B, and 125V DC Equipment Room.

2. Fire Suppression Systems

Portable fire extinguishers and hose stations are available in the Penetration Pressurizer Tank Room and adjacent fire zones.

PLANT
NORTH

FIRE ZONE 3B

FIRE ZONE 13

FIRE ZONE 37

LEGEND

- (F) FIRE EXTINGUISHER
- (H) HOSE STATION
- (Hatched) EXISTING 3 HOUR BARRIER
- (Cross-hatched) NEW 3 HOUR BARRIER

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CAROLINA POWER & LIGHT COMPANY
NUCLEAR ENGINEERING DEPARTMENT - RALEIGH, N.C.

CP&L

PLANT: H.B.ROBINSON UNIT #2 SCALE

TITLE:
REACTOR AUX. BLDG. EL. 242'-6"
CABLE TRAY & CONDUIT LAYOUT
INCREASED BATTERY CAPACITY

DWG NO.

FIGURE 1

REF DWG: HBR2-10427 REV. 1