REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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SUBJECT: Responds to 840229 ltr re control room habitability,per NUREG-0737,Item III.D.3.4.Planned mods provide full redundancy to currently installed sys to preclude loss of function due to single failure.

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APR 20 1984

Director of Nuclear Reactor Regulation
Attention: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing
United States Nuclear Regulatory Commission
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
NUREG-0737 ITEM III.D.3.4
CONTROL ROOM HABITABILITY

Dear Mr. Varga:

In response to your letter dated February 29, 1984, Carolina Power & Light Company (CP&L) provides the following information for the H. B. Robinson Steam Electric Plant Unit No. 2 (HBR2).

NRC Comment

1) Provide justification for all active components of the proposed control room emergency ventilation system (such as fans, isolation dampers, chillers and radiation monitors) that will not be redundant and/or single failure proof following the proposed modifications.

CP&L Response

The planned modifications provide full redundancy to the currently installed system to preclude a loss of function due to a single failure.

The planned modifications will retain the existing fans and condensing unit and add a new fan and new condensing unit sized to back up the existing equipment. A redundant damper will be added to the filter bypass duct. In addition the power supplies for the motors and controls for the dampers were grouped so that a full complement of equipment consisting of fans, condensers and dampers will be operable from separate electrical sources.

NRC Comment

2) Identify proposed technical specification requirements for periodic leak testing of (1) control room emergency zone, (2) filter bypass dampers, (3) outside air dampers and/or valves, and ESF leakage outside containment, or justification if these leak tests are not proposed.

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CP&L Response

The HBR2 Technical Specification (TS) limiting conditions for operation and surveillance requirements for the existing control room ventilation system are written in terms of the overall system and basic components (HEPA filters, fans, etc.) without reference to component numbers. Therefore, the addition of redundant equipment can be covered by the existing TS and no changes are needed.

NRC Comment

3) Provide updated control room operator dose calculations using parameters based in the proposed modifications.

CP&L Response

The updated control room operator thyroid thirty day integrated dose is conservatively calculated to be 20.1 rems based upon a containment leakage rate of 0.1% per day as used in the updated Final Safety Analysis Report (FSAR).

NRC Comment

4) Identify the locations of radiation release points from design basis accidents, other than the LOCA, relative to control room outside air intake location. Provide bases for the justification, for example, through the use of layout drawings.

CP&L Response

Based on the analysis of the control room dose reported in the FSAR, the LOCA dose is controlling. This conclusion would not be affected by the proposed HVAC modification. Therefore, only the LOCA was considered with leakage via the containment and the ECCS sump. Since the LOCA dose is controlling, radiation release points from other design basis accidents need not be considered.

NRC Comment

5) Provide justification for including cable and relay room in the proposed control room emergency envelope. The Review Procedures of SRP Section 6.4 state that areas such as cable and battery rooms should generally be excluded from the control room emergency envelope to decrease the probability of smoke or toxic gases entering the emergency zone.

CP&L Response

The battery rooms are not included in the HBR2 control room emergency zone. There were several advantages attained by including the cable spreading rooms in the control room emergency zone. They are as follows:

a) The unfiltered in-leakage will be reduced. The low pressure HVAC ducts which are routed through the Cable Spread Room and the HVAC

Equipment room leaked air outward from the supply ducts and inward to the return ducts. This increases the need for outdoor air to satisfy the system leakage and also directly takes in unfiltered air from the Auxiliary Building ventilation supply system. By enclosing the Cable Spread Rooms in the control room emergency zone, the unfiltered inleakage and the outdoor intake air quantities were substantially reduced.

b) The larger control room emergency zone is easier to seal to reduce infiltration. The building room arrangements are such that the supply and return ducts penetrated common walls and floors between the Control Room and other rooms of the Control building such as the Cable Spread Rooms, Hagan Room and the HVAC Equipment Room. By establishing the outer walls and common floor as the emergency zone boundary, there will be fewer paths for infiltration to and from the outdoors.

c) The Cable Spread Room #1 and the HVAC Equipment Room were ventilated by air from the once through, non filtered Auxiliary Building air supply. By cooling these rooms with the redundant control room emergency zone HVAC equipment, a reliable heat sink is established without dependency on other systems outside of the emergency zone.

d) The Cable Spread Rooms are separated from each other and the HVAC Equipment Room by a fire rated barrier. If a fire should occur in one of the rooms it will be isolated and the smoke generated by the fire can be purged from the remainder of the emergency zone.

NRC Comment

6) Although benefit could be gained by increasing the time of CO_2 buildup following control room isolation, increasing the size of the control room results in higher design basis control room whole body dose and potential for greater unfiltered inleakage. Show that the increase in the size of control room does not result in unacceptable whole body dose.

CP&L Response

The circumstance at HBR2 is such that by increasing size of the control room emergency zone, the unfiltered inleakage is almost eliminated by enclosing all ductwork within the emergency zone and by reducing the number of wall and floor penetrations that could provide a path for inleakage of unfiltered air into the control room.

The size of the control room is not physically increased. The volume served by the control room ventilation system is increased through the use of ducting which connects the control room with the other rooms. This serves to reduce the radionuclide concentrations while the actual physical volume of the control room remains the same; therefore, the whole body dose is reduced along with the thyroid dose.

NRC Comment

7) Provide information which shows that the control room emergency ventilation system is designed to function properly in the event of a loss

of offsite power, or a pipe break in areas adjacent to the control room.

CP&L Response

The power supplies to the safety related control room air conditioning equipment assure that in the event of a loss of offsite power, emergency power from the diesel generators will maintain power to the equipment.

There are no high pressure lines within or adjacent to the emergency zone. A fire line to the Hagan Room is isolated at an automatic valve on the ground floor to prevent inadvertent discharge of water into either the Relay Room or the Hagan Room.

If you have any further questions on this subject, please contact a member of our Nuclear Licensing staff.

Yours very truly,

S. R. Zimmerman
Manager
Nuclear Licensing Section

ONH/ccc (9805ONH)

cc: Mr. J. P. O'Reilly (NRC-RII)
Mr. G. Requa (NRC)
Mr. Steve Weise (NRC-HBR)