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RECIP.NAME RECIPIENT AFFILIATION
VARGA,S.A. Operating Reactors Branch 1

SUBJECT: Forwards response to 830915 request for addl info re control room habitability per NUREG-0737,Item III.D.3.4.

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CP&L

Carolina Power & Light Company

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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:

Carolina Power & Light Company (CP&L) has received your request for additional information dated September 15, 1983, regarding Control Room Habitability for the H. B. Robinson Steam Electric Plant Unit No. 2 (HBR2). Your requested items, with our response to each item, are as follows:

NRC REQUEST NO. 1

In order to confirm dose computations in the revised vendor report, NUS-3696, the following information is needed:

a. The free volume of the increased control room emergency zone.

b. Schematic drawings showing the location of control and fire dampers, radiation monitors, filters and fans, with normal and emergency flows and estimated leakages for all ducts and volumes indicated.

CP&L RESPONSE

a. The free volume of the HBR2 Control Room Emergency Zone is 20,134 $feet^3$, which includes the volume of the vestibule, supply and return ducts, filter housing and air handler housing (the volume of the emergency zone excluding the vestibule and duct volume is 16,523 $feet^3$). The proposed modification to the HBR2 Control Room Emergency Zone will increase the volume to approximately 49,000 $feet^3$ (volume of the emergency zone excluding the vestibule and duct volumes). This can be accomplished by modifying the HVAC System and including the Cable Spreading Room and Hagen Room as part of the emergency zone (see Figure 4-2, attached). The basis for the increased emergency zone is provided in our June 2, 1983 submittal (Section A.1.6 and A.1.8 in Table A-1).

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b. Schematic drawings showing the location of control and fire dampers, filters and fans with normal and emergency flows, estimated leakage for all ducts, and room volumes are provided in Figure 3-1 and Figure 4-1 for the existing Control Room HVAC System. Drawings showing the proposed modification to the Control Room HVAC System are provided in Figure 4-2 and Figure 4-3. The ability to detect, filter, and discharge airborne contaminants in the Control Room is described in our June 2, 1983 submittal (Section A.2.5 in Table A-1).

NRC REQUEST NO. 2

To protect the control room occupants against fuel handling and radioactive waste accidents, radiation monitors in the normal air intake should be capable of automatically actuating control room habitability systems. Describe such provisions or justify their absence.

CP&L RESPONSE

During an emergency such as a fuel handling accident, a radioactive waste accident, or a design-basis accident, a Safety Injection (SI)* signal or a high radiation signal (2.5 mrem/hr) from the radiation monitor in the control room will automatically (can be initiated manually in the control room, if required) place the Control Room HVAC System in the emergency recirculation mode and start the filter booster fan (HVE-19). In addition, the signal will close the air inlet damper, the toilet exhaust damper and stop the toilet exhaust fan.

For any radioactive release accidents, the radiation monitor located in the Control Room will provide warning of radiation in the Control Room. The signal from the radiation monitor will automatically place the HVAC System in the emergency recirculation mode. Therefore, additional protection for Control Room occupants during a radioactive release is not considered necessary.

*In our June 2, 1983 submittal, the vendor's Finding & Evaluation described the emergency filter system as being activated automatically from a high radiation signal from the Control Room radiation monitor or from a containment isolation signal. This should have said that the emergency filter system is activated automatically by a high radiation signal from the Control Room radiation monitor or by an SI signal.

NRC REQUEST NO. 3

Specify the number of normal and emergency occupants of the Control Room and the inventory and location of self-contained breathing apparatus and bottled air available to them. These provisions are to protect occupants against smoke from Control Room fires and other on-site emergencies as well as off-site toxic hazards.

CP&L RESPONSE

The shift complement consists of seven (7) shift members (with a minimum of 2 licensed operators in the Control Room) during normal operation. In an emergency, CP&L will limit the number of personnel (above the shift complement) in the Control Room to the minimum required to handle the emergency. This will consist of a minimum of 2 licensed operators and a shift technical advisor.

As described in our June 2, 1983 submittal (Section A.1.4 of Table A-1), there are two (2) self-contained breathing air apparatuses inside the control room. Additionally, ten (10) self-contained breathing apparatuses, twenty (20) charged air cylinders and four (4) 423 ft^3 capacity charged cylinders (in cascade arrangement) for self-contained breathing apparatus cyclinder recharge are stored in the Fire Equipment Building less than 100 feet away from the Control Room. Although there are no toxic gas detectors in the air intake or Control Room, a recent toxic chemical survey of the Robinson site, including nearby sources, indicated that there was no danger from toxic chemicals because of the small quantities of the chemicals and their distance from the Control Room. The off-site sources of hazardous chemicals that may be trucked along the nearby Highway 151 are unknown at this time. The course of action to resolve the issue is discussed in our June 2, 1983 submittal. With respect to fire, any smoke generated by fire in the Control Room or by a fire in the charcoal filter will be detected by the existing smoke detectors in the Control Room as discussed in our June 2, 1983 submittal (Section A.3.3 of Table A-1). Fire detectors and fire fighting systems of appropriate capacity and capabilities are provided and designed to minimize the adverse effects of fires.

In addition, a recent leak rate test performed on the Control Room HVAC bypass system (total leak rate across the normal and emergency bypasses) indicated that the leak rate was well within the acceptance critiera (at less than or equal to 1 percent of design flow). The actual leak rate test results indicate that the vendor's leak rate assumption for the isolation damper was conservative. Therefore, the vendor's Findings and Evaluations in our June 2, 1983 submittal (Section A.3.3(1) and Table A-1), describing the isolation damper having a 10 percent of design flow leak rate, should be considered a conservative value and not an actual leak rate. Although the leak rate of the damper is acceptable, CP&L still commits to adding a redundant damper to the normal bypass duct to meet the single failure criteria as part of the modification to the existing control room HVAC system as indicated in our June 2, 1983 response.

If you have any questions concerning this matter, please contact a member of the Nuclear Licensing Staff.

Yours very truly,

S. R. Zimmerman
Manager
Nuclear Licensing & Special Nuclear Programs

ONH/pgp (8281ONH)
Attachments

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

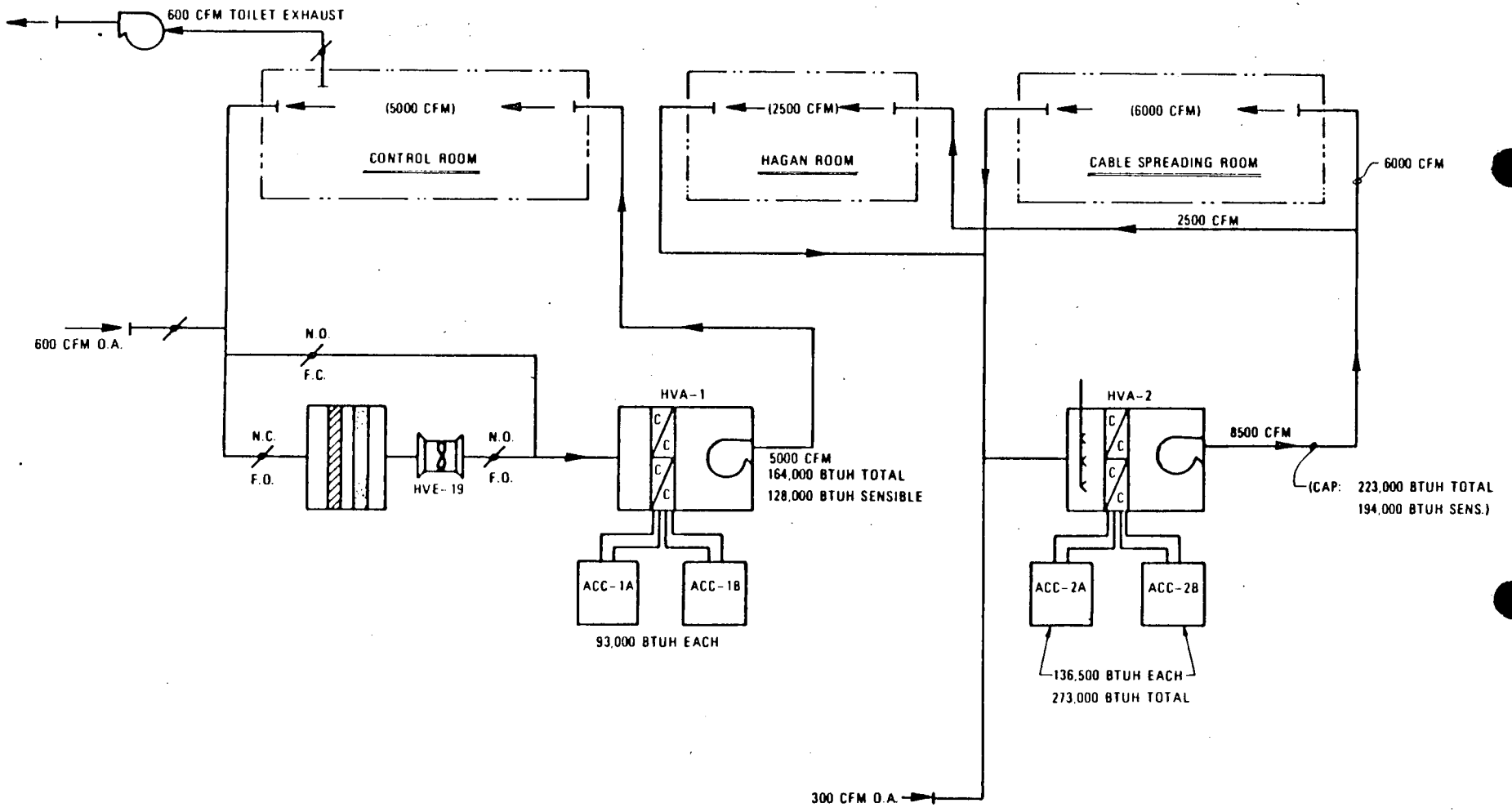
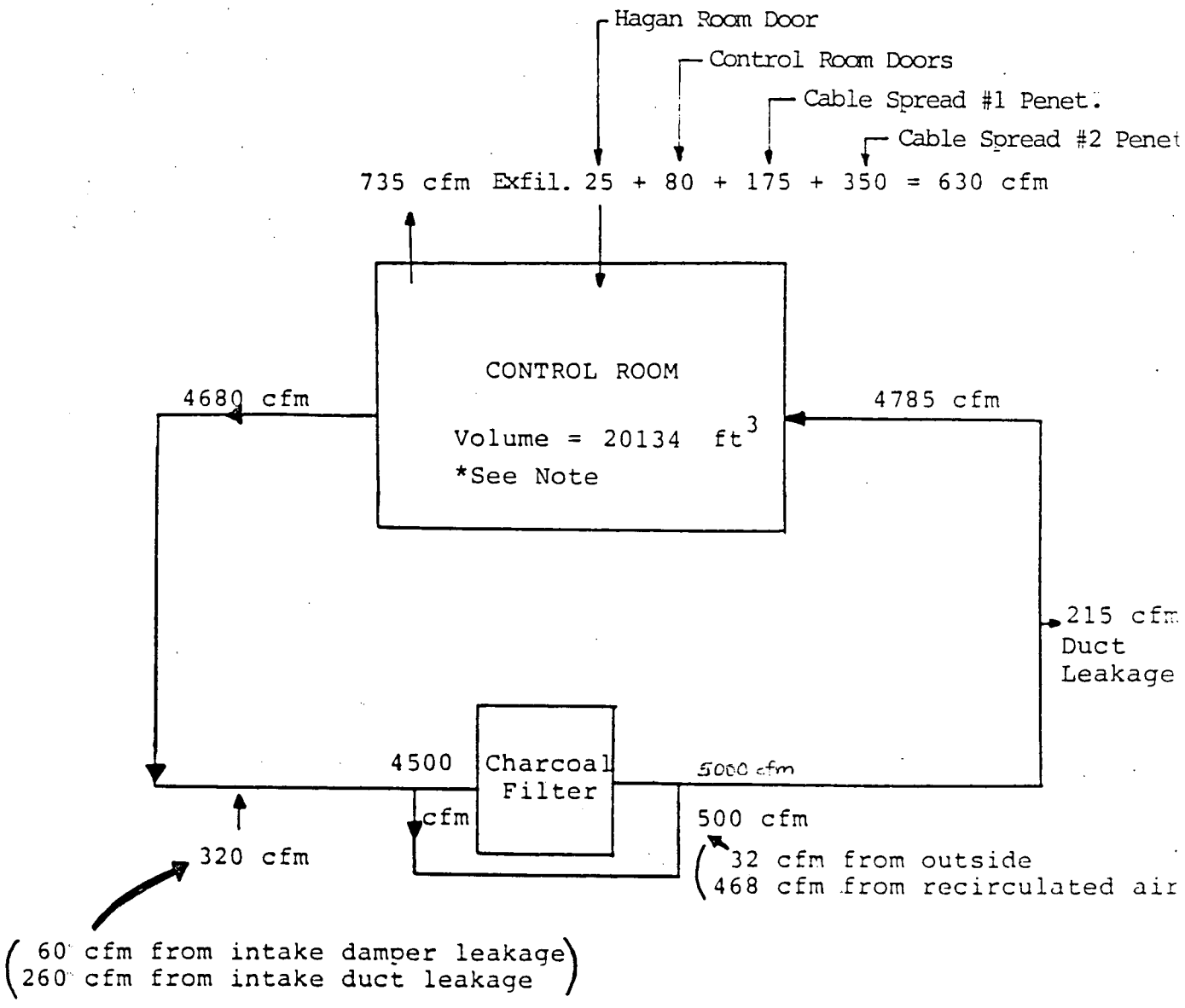


FIGURE 3-1
EXISTING CONTROL ROOM HVAC FLOW DIAGRAM



NOTES:

Total leakage from outside that will be unfiltered = 630 + 32 = 662 cfm.

Total leakage from outside that will be filtered = 320 - 32 = 288 cfm.

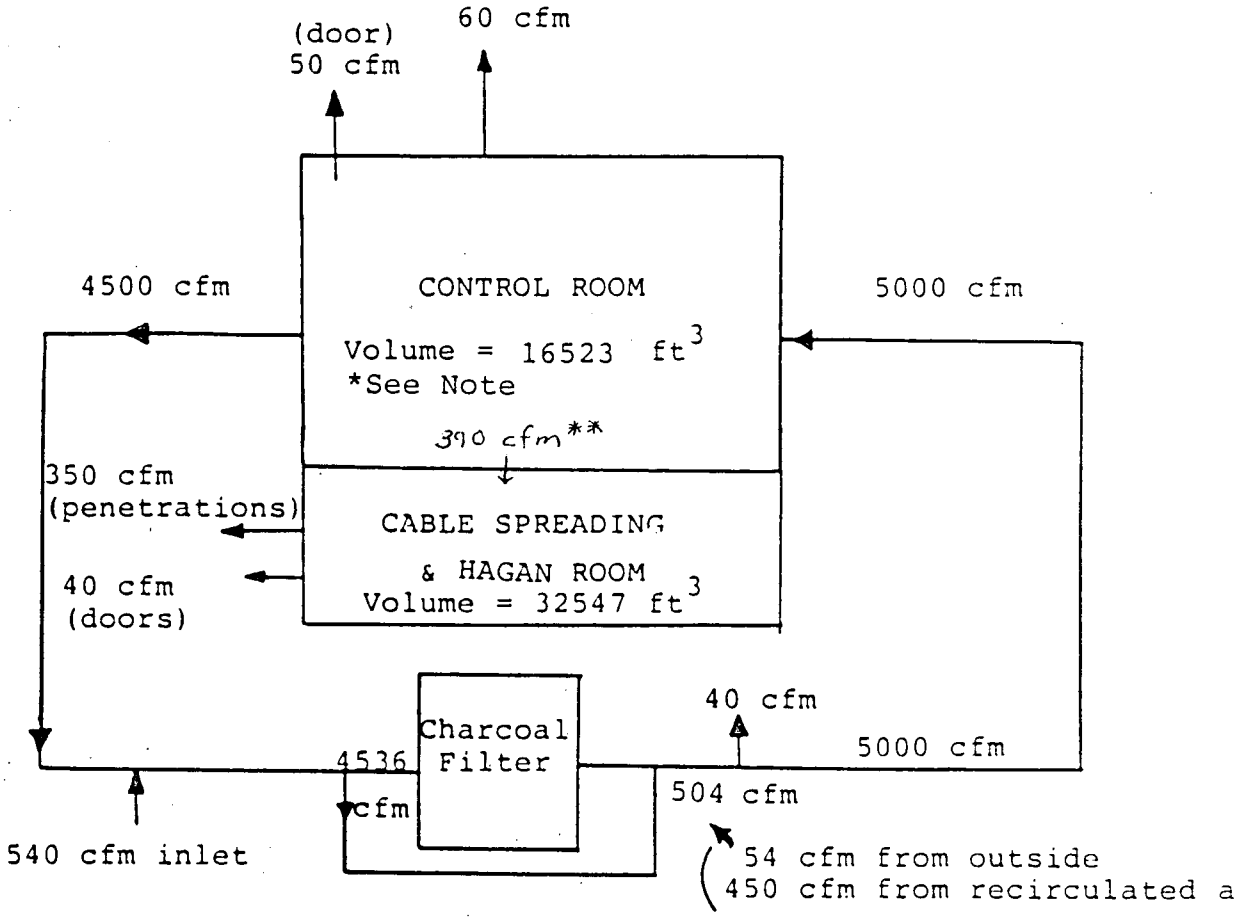
Total flow that is recirculated through filter = 4680 - 468 = 4212 cfm.

Volume of Control Room includes volume of vestibule, supply and return ducts, filter housing and air handler housing.

FIGURE 4-1

ROBINSON CONTROL ROOM EXISTING HVAC SYSTEM FLOW DIAGRAM

SHOWING CALCULATED FLOW RATES AND INLEAKAGE



NOTES:

Total leakage from outside that will be unfiltered = 54

Total leakage from outside that will be filtered = 540 - 54 = 486

Total flow that is recirculated through filter = 5040 - 504 = 4536

*Volume of Control Room excluding vestibule and duct volumes

** Assume this source is the Control Room.

FIGURE 4-2

ROBINSON CONTROL ROOM MODIFIED HVAC SYSTEM FLOW DIAGRAM SHOWING CALCULATED FLOW RATES AND INLEAKAGE

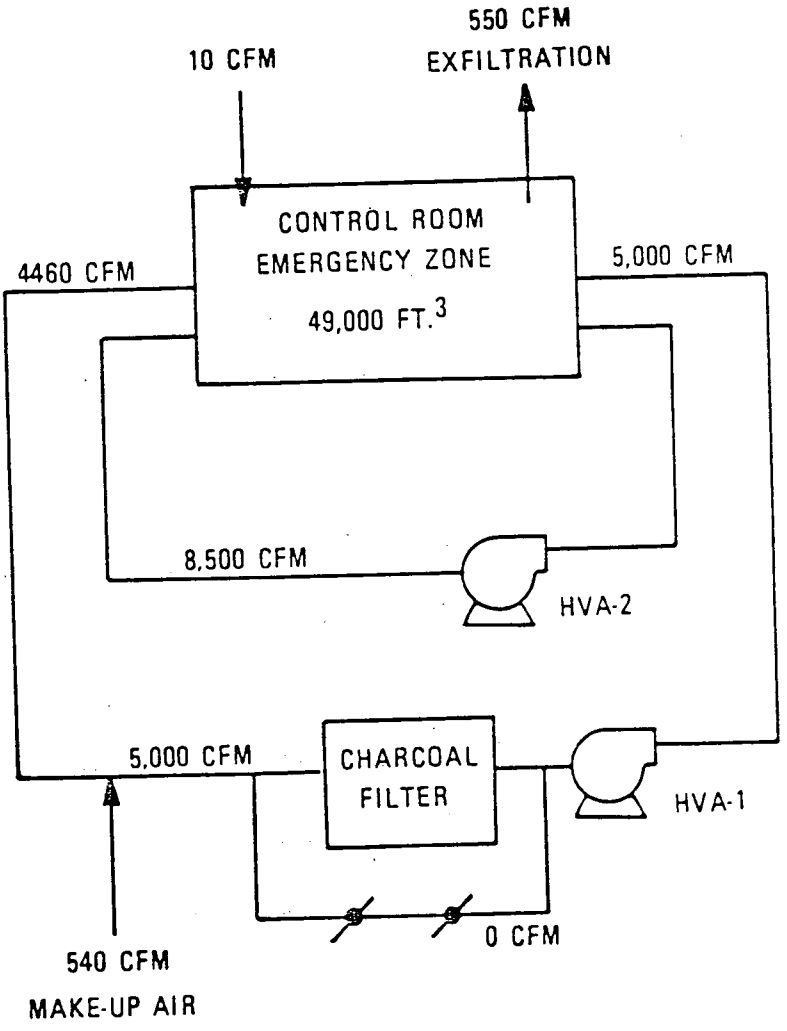


FIGURE 4-3.

ROBINSON CONTROL ROOM - MODIFIED SYSTEM FLOW DIAGRAM WITH ENLARGED EMERGENCY ZONE AND WITH THE ADDITION OF LOW LEAKAGE DAMPERS ON THE FILTER BYPASS