3/4.7.7 AUXILIARY BUILDING FILTERED VENTILATION EXHAUST SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.7 ~~The~~ TWO Auxiliary Building Filtered Ventilation Exhaust Systems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION: (UNITS 1 AND 2)

With ~~the~~ ONE Auxiliary Building Filtered Ventilation Exhaust System inoperable, restore the inoperable system to OPERABLE status within ~~24 hours~~ 7 DAYS or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.*

SURVEILLANCE REQUIREMENTS

4.7.7 The Auxiliary Building Filtered Ventilation Exhaust System shall be demonstrated OPERABLE:

a. At least once per 31 days, by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 15 minutes;

b. At least once per 18 months, or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system, by:

1) Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% and uses the test procedure guidance of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 54,000 cfm ± 10% (both fans operating - Unit 1) or 43,000 cfm ± 10% (both fans operating - Unit 2);

*Until 11:59 p.m., September 7, 1983, HOT STANDBY conditions may be maintained on Unit 1 without proceeding to COLD SHUTDOWN. If the system is not restored to OPERABLE status by that time, be in COLD SHUTDOWN within the following 30 hours.

STANDBY NUCLEAR SERVICE WATER POND (Continued)

The limitations on minimum water level and maximum temperature are based on providing a 30-day cooling water supply to safety-related equipment without exceeding their design basis temperature and is consistent with the recommendations of Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Plants," March 1974. The Surveillance Requirements specified for the dam inspection will conform to the recommendations of Regulatory Guide 1.127, Revision 1, March 1978

3/4.7.6 CONTROL AREA VENTILATION SYSTEM

The OPERABILITY of the Control Area Ventilation System ensures that: (1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system, and (2) the control room will remain habitable for operations personnel during and following all credible accident conditions. Cumulative operation of the system with the heaters on for 10 hours over a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less whole body, or its equivalent. This limitation is consistent with the requirements of General Design Criterion 19 of Appendix A, 10 CFR 50. ANSI N510-1975 will be used as a procedural guide for surveillance testing.

3/4.7.7 AUXILIARY BUILDING FILTERED VENTILATION EXHAUST SYSTEM

The OPERABILITY of the Auxiliary Building Filtered Ventilation Exhaust System ensures that radioactive materials leaking from the ECCS equipment within the auxiliary building following a LOCA are filtered prior to reaching the environment. ~~The operation of this system and the resultant effect on offsite dosage calculations were assumed in the accident analyses.~~ ANSI N510-1975 will be used as a procedural guide for surveillance testing. The methyl iodide penetration test criteria for the carbon samples have been made more restrictive than required for the assumed iodine removal in the accident analysis because the humidity may be greater than 70% under normal operating conditions.

McGUIRE ASSUMES THE POST-LOCA ECCS LEAKAGE TO BE TWICE THE MAXIMUM OPERATIONAL LEAKAGE IN ACCORDANCE WITH NUREG-0800 15.6.5 APPENDIX B. FOR THIS SOURCE TERM THE OFFSITE DOSES ARE WELL WITHIN THE 10 CFR PART 100 DESIGN LIMITS EVEN WITHOUT ASSUMING ANY CREDIT FOR FILTRATION.

AMENDMENT NO. (UNIT 1)
AMENDMENT NO. (UNIT 2)

Attachment 2

Justification and Safety Analysis

The Auxiliary Building Filtered Ventilation Exhaust (VA) system Technical Specification (3.7.7) action requirement currently allows 24 hours for restoration of an inoperable system, otherwise be in at least Hot Standby within the next 6 hours and in Cold Shutdown within the following 30 hours. However, 24 hours is not a sufficient amount of time for certain corrective actions such as replacing the large Charcoal Adsorber Beds or performance of other maintenance when the system is inoperable (replacing one of the Carbon Filter Units and subsequent testing requires approximately 5 days). Since Charcoal Filter performance tests do not occur only at scheduled outages this could necessitate a unit shutdown with attendant undesirable thermal cycle and detrimental effects on availability, component lifetime and safety. Consequently, the proposed amendment would increase the time allowed to restore the inoperable VA system to operable status to 7 days (2 days allowed for unexpected delays).

The function of the VA system is to filter radioactive materials associated with coolant leakage from ECCS equipment in the Auxiliary Building (shared for both units) following a LOCA which may involve release from the fuel as a result of heatup. The McGuire FSAR (Section 9.4.2) describes the VA system as a single train system for each separate unit (as opposed to one large shared system). On this basis T.S. 3.7.7 allows only 24 hours for system inoperability before beginning shutdown, instead of 7 days as in Standard Technical Specifications. Actually, the air intakes for these two VA trains are located in the same general (open) area of the Auxiliary Building near the ECCS Pump Rooms. Therefore, the VA system trains have the capability to back up each other. Although the two VA system trains are not exactly equivalent, either train has sufficient capacity to maintain the Auxiliary Building under negative pressure. Further, following a LOCA on either unit the Auxiliary Building normal ventilation system is isolated and both trains of the VA system start automatically. The only exhaust from the Auxiliary Building is via one or the other (or both) filtered exhaust trains; as a result there is no unfiltered exhaust even if only one filtered exhaust train is functional. Both trains have sufficient diversity of power sources to ensure the operability of both in the event of a design basis accident at one of the units. It is Duke's engineering judgement that defacto redundancy exists for the VA system. A detailed description of the VA system is provided in attachment 2A, along with 9 "as built" drawings with appropriate protions of the VA system highlighted.

Based on the above judgement of defacto redundancy, the requirement to restore the VA system to operability within 24 hours is excessively stringent when compared with other filtered ventilation systems required for safety. For example, the McGuire (shared) Control Room is equipped with two filtered ventilation systems for which Technical Specifications (TS 3.7.6) allow 7 days to restore the inoperable system to operability provided the redundant system is functional. Further, Westinghouse standard Technical Specifications (Rev. 4, TS 3.7.8) allow a 7 day restoration period for redundant ECCS Pump Room exhaust air cleanup systems (which correspond to McGuire's VA system).

The offsite dose consequences of a LOCA are discussed in FSAR Section 15.6.4.3 and Table 15.6.4-11. The thyroid doses with ECCS equipment leakages are 200 REM at the exclusion area boundary. Although the VA system is provided to

reduce offsite doses due to excessive ESF equipment leakages following a LOCA, no credit is taken for Auxiliary Building exhaust filtration in these calculations. Therefore, the dose consequences would not exceed 200 REM (thyroid dose) whether or not any VA train is functional post-LOCA. These consequences are well within 10CFR100 requirements. In a real life situation the consequences are expected to be less since at least one VA train is expected to be functional. In fact, inoperability of one filter train reduces offsite doses slightly because the Auxiliary Building air is processed more slowly by a single unit allowing some decay of the radioactivity. Therefore, the consequences of inoperability of one VA system train following a LOCA are insignificant.

Finally, the requested 7-day duration of operation without each unit having its own VA train operable is small. The VA system is not required for normal operation and is only used post-LOCA. The probability of a LOCA occurrence with potential for core heatup during this exposure time is extremely small. For example, considering a large break (>6 inches) LOCA frequency of 4.7×10^{-5} per reactor year (Ref. Sequoyah RSSMAP-NUREG/CR-1659) the probability of a large break LOCA during a 7-day period is 9.0×10^{-7}. The probability of excessive ECCS leakages subsequent to a LOCA are even smaller. Therefore, the proposed Technical Specification change does not involve any undue risk to the health and safety of the public, and would avoid unnecessary thermal cycles and provide real benefits in terms of availability, component lifetime and safety.

In addition, the footnote for T.S. 3.7.7 which allowed hot standy conditions to be maintained until 11:59 p.m., September 7, 1983, without proceeding to cold shutdown is being deleted since it is no longer applicable. This is an administrative change only and has no safety implications.

Attachment 2A

Additional Information Regarding
The Auxiliary Building Ventilation System

1.0 Auxiliary Building Supply & Exhaust

1.1 System Purpose

1.1.1 The purpose of this system is to provide the "normal" ventilation and "emergency" exhaust requirements for the Auxiliary Building. The Auxiliary Building supply and unfiltered exhaust serve no function during a LOCA and are not Nuclear Safety Related. The filtered exhaust, however, does function during a LOCA.

1.2 System Description & Function

1.2.1 The supply portion of this system consists of four (4) 50% capacity air handling units, two (2) in Unit 1 and two (2) in Unit 2, containing water cooling coils, hot water heating coils, roughing filters, and associated ductwork.

1.2.2 The lake water cooling coils are controlled by a thermostat with averaging bulb located in the air handling unit discharge. This thermostat is set at 45°F, and will call for cooling as long as the discharge temperature is above 45°F. Outside air temperature and cooling water supply temperature are monitored and compared to determine if lake water should be admitted to the cooling coils. If the lake water is cooler than outside air, the RV throttling valve will open and allow flow through the coils. If the outside air temperature is less than the cooling water temperature, the RV throttling valve will close to take advantage of the cooling effect of the cooler outside air.

1.2.3 The heating coils are supplied a water-glycol solution from a primary-secondary hot water heating system (YH). Supply to the coils is also thermostatically controlled by the thermostat with averaging bulb located in the air handling unit discharge.

1.2.4 The thermostat with averaging bulb located in the discharge of the supply units controls both the cooling and heating operations. The thermostat is set for 45°F and will call for cooling (either from lake water or outside air) as long as the discharge temperature remains above 45°F. When the discharge temperature falls to 45°F or below, the thermostat will open the heating water valve, controlling the discharge temperature at 45°F.

1.2.5 The exhaust portion of this system is divided into unfiltered exhaust and filtered exhaust. The unfiltered exhaust consists of four (4) 50% capacity fans, two (2) in Unit 1 and two (2) in Unit 2, and associated ductwork. The unfiltered exhaust takes air from the non-contaminated areas of the auxiliary building and discharges directly to the atmosphere through the unit vent stack. The filtered exhaust consists of four (4) 50% capacity fans, two (2) in Unit 1 and two (2) in Unit 2, and two (2) filter trains, one (1) in Unit 1 and one (1) in Unit 2, and associated ductwork. The filtered exhaust takes air from potentially contaminated areas of the auxiliary building and filters it prior to discharge to the atmosphere through the unit vent stack.

1.2.6 The auxiliary building filtered exhaust filter train contains prefilters, absolute filters, and carbon filters of the gasketless design.

1.2.7 Dampers consist of check valve type dampers in the discharge of fans for isolation; pneumatic motor operated dampers on outside air intake to the supply units for shut-off; pneumatic motor operated dampers on outside intake to filter units for shutoff and volume control; manual volume dampers to balance air flow in duct system; and pneumatic motor operated isolation dampers on filter units for bypass control.

1.2.8 Air flow monitors are provided in the filtered and unfiltered exhaust ducts to the unit vent stack, and the supply duct to monitor air flow rates (cfm). Read-outs are on control panels 1ABFX-CP-1B and 2ABFX-CP-1B for filtered exhaust and 1RB-CP-1 and 2RB-CP-1 for unfiltered exhaust and supply air.

1.2.9 A thermostat in the discharge of the charcoal absorber section of the filtered exhaust filter train controls the outside air intake to the filter train to maintain a maximum discharge temperature of 200°F.

1.2.10 High limit thermostats set for 160°F and located at the intake to the filtered exhaust filter trains and the intake to the unfiltered exhaust fans will shutdown the auxiliary building supply air handling units if actuated.

1.2.11 The supply units are freeze protected by a low limit thermostat located in the discharge of the heating coil. The thermostat is set for 35°F and will shut down the supply unit if actuated. Another low limit thermostat located in the outside air intake is set for 40°F and will start the secondary hot water pump if actuated.

1.3 Component Design Parameters

1.3.1 Auxiliary Building Supply Units (MCM-1211.00-252)

a) Design Flow/AH Unit	31,355 cfm
b) External Static Press/Unit	3.82 inches w.g.
c) Air Density	0.075 PCF
d) Motor HP	40
e) Motor Electrical Data	575v/60cy/3ph
f) Cooling Coil Data	
Ent. Air	95°Fdb & 78°Fwb
Leav. Air	73.1°db & 72.3°Fwb
Ent. Water	70°F
Leav. Water	77°F
Gpm	195
g) Heating Coil Data	
Ent. Air	10°F
Leav. Air	81°F
Ent. Glycol	190°F
Leav. Glycol	154°F
Gpm	149

1.3.2 Auxiliary Building Unfiltered Exhaust Fans (MCM-1211.00-359 and 360)

a) Design Flow/Fan	19,074
b) Static Press	4.47 inches w.g.
c) Air Density	0.075 PCF
d) Motor HP	25
e) Motor Electrical Data	575v/60cy/3ph

1.3.3 Auxiliary Building Filtered Exhaust Fans (MCM-1211.00-361 and 362)

a)	Design Flow/Fan	
	Unit 1	27,140 cfm
	Unit 2	21,700 cfm
b)	Static Press	8.0 inches w.g.
c)	Air Density	0.075 PCF
d)	Motor H.P.	
	Unit 1	40
	Unit 2	30
e)	Motor Electrical Data	575/60cy/3ph

1.4 Instrumentation and Control

1.4.1 Electrical

1.4.1.1 For detailed information concerning electrical instrumentation and control refer to the electrical system description in Duke File Number MCSD-0166-00.

1.4.2 Pneumatic

1.4.2.1 For detailed information concerning pneumatic instrumentation and control refer to Duke drawings MC-1522-01.56-00 and MC-1522-01.57.00, and Duke File Number MCM-1211.00-707.

1.4.3 Control Panels

1.4.3.1 The HVAC Main Control Board (hereinafter referred to as HVAC-MCB) is located in the Control Room as indicated on Duke drawing MC-1205-4.1.

1.4.3.2 For location of electrical control panels refer to the electrical system description in Duke File Number MCSD-0166-00.

1.4.3.3 Pneumatic control panels 1RB-CP-1, 1RB-CP-1A, 2RB-CP-1 and 2RB-CP-1A, 1ABFX-CP-1A and 1B and 2ABFX-CP-1A and 1B are located in the Auxiliary Building as indicated on Duke drawings MC-1205-2 and MC-1205-3.

1.4.4 Startup and Operation Sequence

1.4.4.1 Place switches for ABSU-1A and ABSU-1B on control panel 1RB-ECP-1 and switches for ABSU-2A and 2B on control panel 2RB-ECP-1 in Auto position. Supply fans will start provided all exhaust fans are operating.

1.4.4.2 Place switches for ABFXF-1A, 1B and ABFXF-2A, 2B on control panels 1ABFX-ECP-1A, 1B and 2ABFX-ECP-1A, 1B respectively to On position and filtered exhaust fans will start.

1.4.4.3 Place switches ABUXF-1A, 1B and ABUXF-2A, 2B on control panels 1RB-ECP-1 and 2RB-ECP-1 respectively to On position and the unfiltered exhaust fans will start.

1.4.4.4 Place switches for AB1-P-2, 2A, 3 and 3A and AB2-P-2, 2A, 3, 3A, on control panels 1RB-ECP-1 and 2RB-ECP-1 respectively to Auto position. These switches should remain in Auto position except when the hot water pumps are down for maintenance, or when Hand position is used to test operation of the hot water pumps, or when it is necessary to manually operate the hot water pumps due

to a malfunction of the automatic controls.

1.5 System Operation

1.5.1 The normal mode of operation for this system requires the operation of all exhaust fans and supply fans during normal plant operation.

1.5.2 If any one (1) of the unfiltered exhaust fans stops operating for any reason, the associated supply unit will stop operating, i.e., if unfiltered exhaust fan ABUXF-1A stops operating then supply unit ABSU-1A will stop operating, etc. This is required to prevent pressurization of the auxiliary building.

1.5.3 If any one (1) of the filtered exhaust fans stops operating for any reason, all of the supply fans will stop operating. This is to prevent pressurization of the auxiliary building and to prevent movement of air from potentially contaminated areas to non-contaminated areas.

1.5.4 If a fire alarm indicates a fire in one (1) of the filtered exhaust filter trains, the Operator must manually open the deluge valve at the filter train.

1.6 Maintenance

1.6.1 Visually check the operation of dampers every 90 days making sure they open fully and close tight. Replace or repair damaged parts as necessary.

1.6.2 Lubricate fan bearings in accordance with manufacturer's recommendations.

1.6.3 Visually inspect fan drive belts every 90 days, adjust belt tension and replace belts as necessary.

1.6.4 Maintenance of valves and pumps in hot water system to be covered in system description for the heating water system - YH in Duke File Number MC-1211.00-28.

1.6.5 Maintenance of filtered exhaust filter train covered in CVI Maintenance and Operation Manual in Duke File Number MCM-1211.00-525.

1.6.6 Visually inspect operation of valves 1RV28, 1RV23, 2RV28 and 2RV23 every 90 days. Check diaphragm and spring operation. Replace damaged parts as necessary.

1.6.7 Change filters in supply units as indicated by filter change lights on control panels 1RB-ECP-1 and 2RB-ECP-1.

1.6.8 The Mechanical Contractor responsible for the installation work is Bahnson Service Company, P. O. Box 10458, Winston Salem, N.C. 27108, Telephone: 919-724-1581. Contact this firm for other than routine maintenance problems.

1.6.9 The pneumatic controls sub-contractor to Bahnson Service Company is Powers Regulator Company, Charlotte, N.C. They may be contacted directly for what' appears to be a pneumatic controls problem; although, preferably they should be contacted through Bahnson Service Company.

1.6.10 None of the electrical controls are vendor (Powers Regulator Co.) supplied.

1.6.11 Check operation of pneumatic controls yearly. Repair or replace damaged or malfunctioning controls as necessary.

Attachment 3

Analysis of Significant Hazards Consideration

As required by 10 CFR 50.91, this analysis is provided concerning whether the proposed amendments involve significant hazards considerations, as defined by 10 CFR 50.92. Standards for determination that a proposed amendment involves no significant hazards considerations are if operation of the facility in accordance with the proposed amendment would not: 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in margin of safety.

The proposed amendment would increase the time allowed to restore an inoperable VA system to operable status from 24 hours to 7 days.

Because the VA system serves only to mitigate the consequences of a LOCA, the probability of an accident is unaffected by the proposed amendment. The consequences of an accident are not significantly increased by the proposed amendments because (1) the operable VA system train would provide substantial filtration of postulated ECCS leakage, (2) no credit for VA system filtration is taken for offsite dose LOCA calculations, and (3) the probability of a LOCA during a seven-day period is small (9.0×10^{-7}).

No new or different accident is created by the proposed change because the VA system only serves to mitigate accidents.

The safety margins contained in the LOCA analyses described in the FSAR are unaffected. Also, the dose consequences of a postulated LOCA are not significantly affected with one VA train filter out of service. Accordingly, the proposed amendment would not involve a significant decrease in a safety margin.

The deletion of the outdated footnote which allowed hot standby conditions to be maintained until 11:59 p.m., September 7, 1983, is an administrative change only and has no safety implicaitons.

Based upon the preceding analyses, Duke Power Company concludes that the proposed amendments do not involve a significant hazards consideration.