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DUKE POWER

May 9, 1994

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413 and 50-414
Request for Additional Information on Containment Air Cleanup Filter Unit
TAC Nos. M86545 and M86546

Reference: Letter from Robert E. Martin, NRC to David L. Rehn, DPCo., same subject,
dated May 2, 1994

Gentlemen:

Please find attached our reply to the subject Request for Additional Information. Expedious review and closeout of this issue is requested, as we would like to reinstall the HEPA filters prior to the end of the existing Unit 2 refueling outage. Should you have any questions pertaining to this material, please call L.J. Rudy at (803) 831-3084.

Very truly yours,

A handwritten signature in ink, appearing to be 'D.L. Rehn', written over a horizontal line.

D.L. Rehn

LJR/s

Attachment

xc: S.D. Ebnetter, Regional Administrator
Region II

R.J. Freudenberger, Senior Resident Inspector

R.E. Martin, Senior Project Manager

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Supplemental Response of Additional NRC Questions
Regarding NRC Bulletin 93-02

- 1) Provide a description of the HEPA and Prefilter construction.

HEPA

The HEPA filters used in containment at CNS have stainless steel frames; waterproof, fire retardant, radiation resistant fiberglass media, aluminum separators, neoprene expanded rubber gaskets, and a 4x4 mesh galvanized hardware cloth faceguard on both sides. The media, separators and faceguards are held into the frame using a waterproof neoprene adhesive. These filters conform to MIL-F-51068 which requires them to be tested with $700^{\circ}\text{F} \pm 50^{\circ}\text{F}$ air for 5 minutes. Additionally, this type of filter has been tested by the manufacturer with 261°F air for 24 hours and 261°F steam for 4 hours without any significant degradation. The design operating conditions for the UCVUs are 11,730 cfm/0.75"w.g.; for the IIRVUs they are 5,100 cfm /0.75"w.g.; and for the CACFUs they are 8,000 cfm/4.5"w.g..

The HEPA filters meet the criteria of MIL-F-51068. This specification requires that this type of filter be subjected to three (3) week environmental cycles consisting of one week at -65°F , one week at 160°F and 10% RH, and one week at 113°F and 88% RH. This three (3) week cycle must be repeated three (3) times without significant filter degradation.

Prefilters

The prefilters used in containment at CNS have heavy duty chipboard (cardboard) frames stapled to metal media retainers on both sides of the filter. The filter media is fiberglass and is placed between the metal retainers.

- 2) Provide explanation of "no credible HELBs in upper containment."

The upper containment at CNS does not contain any high energy pipes as defined in section 3.6.1.1 of the CNS FSAR.

- 3) Provide the postulated peak temperature and pressure in containment following a LOCA.

Upper containment - 180°F
14 psig

Lower containment - 245°F
14 psig

4) Filter housing arrangement

The UCVUs are vertical, draw through air handling units. Both the inlet and discharge of these units are unducted and are covered with wire screens. The filters used in these units are 2" prefilters that are located in the unit inlet behind the wire screen.

The IIRVUs are vertical, draw through air handling units. The inlet to these units is unducted and covered with a wire screen. The discharge is connected to a supply duct. The filters used in these units are 2" prefilters that are located in the unit inlet behind the wire screen.

The CACFUs are horizontally oriented filter units comprised of a prefilter section, a HEPA filter section, a carbon filter section and a fan section. The discharge is ducted to supply air to the lower containment. The filter unit inlet is unducted and draws air in from the lower containment. There are no screens covering the prefilters which are located in the unit inlet. The HEPA filters are behind the prefilters and have integral wire screens. The carbon filters are located behind the HEPA filters.

5) Are there dampers or louvers that would prevent a back pressure from dislodging the filters?

There are no dampers or louvers that would prevent the filters from being dislodged on either the supply or discharge side of the UCVUs. However, these units are located in the upper containment and there are no high energy pipes in the upper containment to dislodge the filters.

The IIRVUs have backdraft dampers in the supply side ductwork which would inhibit a back pressure from dislocating the filters from these units. It should be noted that these units are located in the Incore Instrument area and are not subject to high energy pipe breaks.

The CACFUs do not have any dampers or louvers in the supply ductwork. However, the carbon filter section will impose a pressure restriction that would inhibit a back pressure from dislodging the filters from their holding frames.

6) Is the adhesive waterproof if submerged for long periods?

The long term effect of submerging the adhesive is unknown. However, the filters were subjected to 261°F steam for 4 hours without any significant degradation and they have been demonstrated to survive an exposure of 113°F and 88% relative humidity for one week without degradation.

7) Describe the rooms the IIRVUs are located in.

The IIRVUs are located in the Instrumentation Rooms which are part of the Accumulator Floor area as described in Design Basis Specification

#CNS-1144.00-00-0010. These rooms are located in the lower containment on either side of the 90° azimuth. The floor of the rooms is part of the Accumulator Floor which is a 2' thick reinforced concrete slab located at elevation 565'+ 3". The ceiling of these rooms is a 3'-8" concrete slab at elevation 591'+2½". The bottom of the ice condensers is above the Instrumentation Rooms. The Crane Wall (minimum 3'-0" thick reinforced concrete) and the Steel Containment Vessel form the two (2) side walls of the rooms while the ends are enclosed by concrete wing walls. It is important to note that the Instrumentation Rooms are physically isolated from the effects of a pipe break or a LOCA by a personnel pressure door located in the Crane Wall and by a series of pressure seals placed between the Steel Containment Vessel and the walls and floor of the Instrumentation Room.

- 8) What criteria was used to determine susceptibility of filters to pipe break interaction?

The units containing filters were analyzed by their proximity to specific pipe break locations. There is no high energy piping in upper containment so the UCVUs are unaffected. Likewise, the IIRVUs are unaffected since they are isolated from high energy breaks. The CACFUs were reviewed (physically walked down) and, due to their location and the amount of piping, supports, etc., surrounding them, they would also be unaffected by a pipe break. Review of the CACFUs did not specifically include analyzing a potential back pressure dislodging the filters. Further review, however, has shown that breaks do not exist that would pressurize the duct. Based on the sheetmetal construction of the duct and the 90° turns in the duct, any break blowing into the duct would tend to tear the duct apart and not create a back pressure. Any break would inevitably pressurize all of lower containment, not just the duct and filter housing, thereby putting equal pressure on both sides of the filters. Therefore, a back pressure concern does not exist.

- 9) Provide system descriptions and the purpose of the systems.

Systems descriptions are attached which provide general information on the systems such as system purpose, when the systems operate, and other system parameters.

It should be noted that all three (3) systems (Upper Containment Ventilation system, Incore Instrumentation Room Ventilation system and the Containment Auxiliary Carbon Filter Unit system) can be operated when the plant is at power. This condition has been evaluated and does not pose any undue risk to dislodge filters.

References

- 1) AAF Filter catalog
- 2) MIL-F-51068
- 3) AAF Topical Report #TR-7101
- 4) CNS Environmental Qualification Criteria Manual
- 5) CNS FSAR
- 6) Design drawings CN-1041-3
 CN-1041-8
 CN-1041-14
 CN-1522-22.21-00

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Catawba Nuclear Station, Units 1-2

System Description

Containment Ventilation System - VV

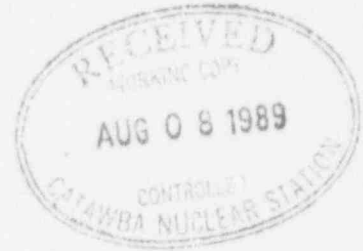
Drawing Numbers: CN-1522-22.20-00
CN-1522-22.21-00
CN-1522-22.21-01
CN-1522-22.22-00
CN-1522-22.23-00
CN-1522-22.24-00

Flow Diagram Number: CN-1576-2.0

Duke Power Company File Number: CN-1211.00-18

Date: April 23, 1982

Revision: 1



CNSD-1211-00.08

<u>R.H. Burley</u>	<u>4-27-82</u>	<u>P.M. White</u>	<u>5/5/82</u>
ORIGINATED BY	DATE	INSPECTED BY	DATE
<u>J.M. Foulkes</u>	<u>4-27-82</u>		
CHECKED BY	DATE	INSPECTED BY	DATE
<u>Paul J. Smith</u>	<u>4-28-82</u>		
APPROVED BY	DATE		

By: P. M. White
Mechanical Division - Station Services

PMW/RB/cds
MN32100W

CNSD-1211.00-8

System Description

Containment Ventilation System - VV

Duke Power Company File Number: CN-1211.00-18

Revision Log:

1. Revision 0 - Initial Approved Release, May 7, 1979
2. Revision 1 - Supersedes Revision 0 - April 23, 1982