DUKE POWER COMPANY
P.O. BOX 33189
CHARLOTTE, N.C. 28242

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

TELEPHONE
(704) 373-4531

July 26, 1983

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Ms. E. G. Adensam, Chief
Licensing Branch No. 4

Re: Catawba Nuclear Station
Docket Nos. 50-413 and 50-414

Dear Mr. Denton:

Section 15.4.6 of the Catawba Safety Evaluation Report provides a discussion of Confirmatory Item 41, ESF Grade Containment Purge Filter System Design. Attached are revised Catawba FSAR pages which respond to this item.

Very truly yours,

H.B. Tucker 1-1111

Hal B. Tucker

ROS/php

Attachment

cc: Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

NRC Resident Inspector
Catawba Nuclear Station

Mr. Robert Guild, Esq.
Attorney-at-Law
P. O. Box 12097
Charleston, South Carolina 29412

Palmetto Alliance
2135½ Devine Street
Columbia, South Carolina 29205

Mr. Jesse L. Riley
Carolina Environmental Study Group
854 Henley Place
Charlotte, North Carolina 28207

A001
1/1

TABLE 6.2.4-1

CONTAINMENT ISOLATION VALVE AND ACTUATOR DATA (PAGE 5)

Item Number	Service	Pen. No.	(1,17) Valve Arrangements	Nominal Line Size Inches	Flow Direction Relative to Containment	Seismic (7) Connections Inside	Seismic (7) Connections Outside	(6,15) Valve Number	(19) Valve Location	Type Valve & Size	(4,16) Type Actuator	(2,3) Actuation Signal	(2,3) Actuation Type	(4) Valve Position Normal	(4) Valve Position Failsafe	(4) Valve Position Shutdown	(4) Valve Position Post Accident	FSAR Figure No.	Vent And Drain For Type A Test	(18) Type C Leakage Test	Justification For Not Testing
67	Nuclear Service Wtr. to NC Pump and Lower Cont. Vent. Units	M240	B6	12	In	Yes	Yes	RM437B	Outside	Gate 12"	E	P	A,R,M	O	AI	O	C	9.2.1-6	Yes	Yes	----
								RM438	Inside	Check 12"	-	-	-	O	-	O	C				
68	Nuclear Service Wtr. from NC Pump and Lower Cont Vent Units	M230	A9	12	Out	Yes	Yes	RM404A	Inside	Gate 12"	E	P	A,R,M	O	AI	O	C	9.2.1-7	Yes	Yes	----
								RM407B	Outside	Gate 12"	E	P	A,R,M	O	AI	O	C				
								RM485	Inside	Check 3/4"	-	-	-	C	-	C	C				
69	Nuclear Service Wtr. to Upper Cont. Vent. Units	M385	B6	6	In	Yes	Yes	RM404B	Outside	Gate 6"	E	P	A,R,M	O	AI	O	C	9.2.1-7	Yes	Yes	----
								RM405	Inside	Check 6"	-	-	-	O	-	O	C				
70	Nuclear Service Wtr. from Upper Cont. Vent. Units	M308	A9	6	Out	Yes	Yes	RM429A	Inside	Gate 6"	E	P	A,R,M	O	AI	O	C	9.2.1-6	Yes	Yes	----
								RM432B	Outside	Gate 6"	E	P	A,R,M	O	AI	O	C				
								RM430	Inside	Check 3/4"	-	-	-	C	-	C	C				
71	Incore Instrumentation Rm. Purge In	M213	A5	12	In	Yes	No	VP17A	Inside	Butterfly 12"	D	T (14)	A,R	C	C	C	C	9.4.5-1	No	Yes	----
								VP18B	Outside	Butterfly 12"	D	T (14)	A,R	LC	C	C	C				
72	Incore Instrumentation Rm. Purge Out	M240	A5	12	Out	Yes	Yes	VP19A	Inside	Butterfly 12"	D	T (14)	A,R	C	C	C	C	9.4.5-1	No	Yes	----
								VP20B	Outside	Butterfly 12"	D	T (14)	A,R	LC	C	C	C				
73	Upper Compartment Purge Inlet	M456	A5	24	In	Yes	No	VP1B	Outside	Butterfly 24"	D	T (31)	A,R	C	C	C	C	9.4.5-1	No	Yes	----
								VP2A	Inside	Butterfly 24"	D	T (31)	A,R	C	C	C	C				
74	Upper Compartment Purge Inlet	M432	A5	24	In	Yes	No	VP3B	Outside	Butterfly 24"	D	T (31)	A,R	C	C	C	C	9.4.5-1	No	Yes	----
								VP4A	Inside	Butterfly 24"	D	T (31)	A,R	C	C	C	C				
75	Lower Compartment Purge Inlet	M357	A5	24	In	Yes	No	VP5B	Outside	Butterfly 24"	D	T (31)	A,R	LC	C	C	C	9.4.5-1	No	Yes	----
								VP7A	Inside	Butterfly 24"	D	T (31)	A,R	C	C	C	C				
76	Lower Compartment Purge Inlet	M434	A5	24	In	Yes	No	VP8G	Outside	Butterfly 24"	D	T (31)	A,R	LC	C	C	C	9.4.5-1	No	Yes	----
								VP9A	Inside	Butterfly 24"	D	T (31)	A,R	C	C	C	C				
77	Containment Purge Exhaust	M36A	A5	24	Out	Yes	Yes	VP10A	Inside	Butterfly 24"	D	T (31)	A,R	C	C	C	C	9.4.5-1	No	Yes	----
								VP11B	Outside	Butterfly 24"	D	T (31)	A,R	C	C	C	C				
78	Containment Purge Exhaust	M433	A5	24	Out	Yes	Yes	VP12A	Inside	Butterfly 24"	D	T (31)	A,R	C	C	C	C	9.4.5-1	No	Yes	----
								VP13B	Outside	Butterfly 24"	D	T (31)	A,R	C	C	C	C				
79	Containment Purge Exhaust	M119	A5	24	Out	Yes	Yes	VP15A	Inside	Butterfly 24"	D	T (31)	A,R	C	C	C	C	9.4.5-1	No	Yes	----
								VP16B	Outside	Butterfly 24"	D	T (31)	A,R	LC	C	C	C				
80	Steam Generator 1D Blowdown	M455	A7	4	Out	Yes	Yes	8B8A	Inside	Gate 4"	E	T	A,R,M	O	AI	C	C	10.4.8-1	No	No	(23)
								8B10B	Outside	Gate 4"	E	T	A,R,M	O	AI	C	C				
								8B52	Inside	Check 3/4"	-	-	-	C	-	C	C				
81	Steam Generator 1A Blowdown	M142	A7	4	Out	Yes	Yes	8B147B	Outside	Globe 1"	E	T	A,R,M	C	AI	C	C	10.4.8-1	No	No	(23)
								8B56A	Inside	Gate 4"	E	T	A,R,M	O	AI	C	C				
								8B57B	Outside	Gate 4"	E	T	A,R,M	O	AI	C	C				
								8B53	Inside	Check 3/4"	-	-	-	C	-	C	C				
82	Steam Generator 1C Blowdown	M3105	A7	4	Out	Yes	Yes	8B148B	Outside	Globe 1"	E	T	A,R,M	C	AI	C	C	10.4.8-1	No	No	(23)
								8B60A	Inside	Gate 4"	E	T	A,R,M	O	AI	C	C				
								8B61B	Outside	Gate 4"	E	T	A,R,M	O	AI	C	C				
								3B54	Inside	Check 3/4"	-	-	-	C	-	C	C				
83	Steam Generator 1B Blowdown	M277	A7	4	Out	Yes	Yes	8B149B	Outside	Globe 1"	E	T	A,R,M	C	AI	C	C	10.4.8-1	No	No	(23)
								8B19A	Inside	Gate 4"	E	T	A,R,M	O	AI	C	C				
								8B21B	Outside	Gate 4"	E	T	A,R,M	O	AI	C	C				
								8B55	Inside	Check 3/4"	-	-	-	C	-	C	C				
								8B150B	Outside	Globe 1"	E	T	A,R,M	C	AI	C	C				

Rev. 8

Containment Isolation Valve and Actuator Data

22. During the injection phase of safety injection, these valves are closed. Water from the refueling water storage tank (FWST) provides approximately 48 feet of head on these valves (~ 20.8 psig). This head will preclude any leakage through this penetration. During the recirculation phase of safey injection, these valves are open to provide flow to ND pump suction.

23. The main steam, feedwater, auxiliary feedwater, sample and blowdown lines are all connected to the secondary side of the steam generator which is kept at a higher pressure than the primary side soon after a LOCA occurs. Any leakage between the primary and secondary sides of the steam generator is directed inward to the containment.

24. Deleted

25. Type C leak test not required by 10 CFR 50, Appendix J because these containment isolation valves:

    a. Do not provide a direct connection between the inside and outside atmospheres of the primary reactor containment under normal operation.

    b. Are not required to close automatically upon receipt of a containment isolation signal in response to controls intended to effect containment isolation, and

    c. Are not required to operate intermittenly under post accident conditions.

    In addition, these penetrations have been evaluated per 10CFR50, Appendix J, III.A.d. It was concluded that testing was not required.

26. These valves are sealed against leakage by the Containment Valve Injection Water System as discussed in Section 6.2.4.4.

27. Type B test performed per 10 CFR 50, Appendix J.

28. Deleted

29. This system is required to be in operation during the Type A test in order to maintain the unit in a safe condition. Therefore, this penetration will not be vented and drained.

30. This penetration is a part of a closed system inside containment. All piping inside containment is seismic Category 1 and therefore not subject to rupture as a result of a LOCA. This penetration will not be drained and vented for the Type A test.

31. Valve closes on receipt of a high radiation or high relative humidity signal.

The containment purge supply fans, purge exhaust fans, and filter trains are controlled in two trains. The controls are designed to have simultaneous starting and stopping of the matching supply and exhaust equipment. The controls for the Incore Instrumentation Room Purge System are designed to have simultaneous starting and stopping of the supply and exhaust equipment. The controls are also designed to initiate an automatic shutdown and containment isolation upon receipt of a containment isolation signal.

The containment purge exhaust system filter trains are described in Section 12.3.3.

9.4.5.3 Safety Evaluation

Each Containment Purge Ventilation System supply and exhaust penetration through the containment vessel is equipped with two normally closed isolation valves, each connected to separate control trains. A failure in one train will not prevent the remaining isolation valve from providing the required isolation capability. The isolation valves and containment penetrations are the only portions of the Containment Purge Ventilation System that are engineered safety features, and are discussed in Section 6.2.4. Design specifications for the purge system isolation valves are presented in Table 9.4.5-1.

The containment purge exhaust system is isolated on high radiation or high relative humidity signals. Relative humidity is controlled and monitored upstream of the containment purge exhaust filter trains. Electric preheaters maintain $\leq$ 70% relative humidity.

Since containment purge system operation is intermittent, relative humidity is monitored in the vicinity of the carbon adsorbers. Carbon adsorbers are heated as necessary to maintain a suitable "storage" environment ($\leq$ 70% relative humidity). High carbon adsorber bed relative humidity is alarmed.

A fuel handling accident inside the containment has been analyzed assuming the Purge System is in operation during refueling operations. This analysis is described in Section 15.7.4.

9.4.5.4 Inspection and Testing Requirements

The nonessential components are not normally in operation and are accessible for periodic inspection. Essential components and controls are tested during preoperational tests and periodically thereafter as required by the Technical Specifications.

Table 12.3.3-6 (Page 3)

Comparison of Containment Purge Filter System
With Regulatory Guide 1.52
Revision 2, March 1978

Paragraph	Compliance Status
C-3-k	Adsorber section design includes a manual water spray system. Single-failure criterion is not considered in its design.
C-3-l	In Compliance
C-3-m	In Compliance
C-3-n	1980 version of ANSI N509 is followed.
C-3-o	In Compliance
C-3-p	In compliance with the following clarification: 1980 version of ANSI N509 is followed.
C-4-a	In Compliance
C-4-b	Since all filter banks are arranged for external servicing, three feet of spearation between filter banks is not necessary. Two and one half feet are provided for inspection purposes.
C-4-c	In Compliance
C-4-d	Containment purge system operation is Tech Spec limited.
C-4-e	In Compliance
C-5-a	In Compliance
C-5-b	In Compliance
C-5-c	In Compliance
C-5-d	In Compliance
C-6-a	In Compliance
C-6-b	In Compliance

Table 12.3.3-6 (Page 2)

Comparison of Containment Purge Filter System
With Regulatory Guide 1.52
Revision 2, March 1978

Paragraph	Compliance Status
C-2-g (continued)	locally. System discharge flow is recorded at the control room. Relative humidity is monitored prior to filtration and high humidity is alarmed.
C-2-h	Not applicable - the system is not designated as Class 1E electrical equipment except for its containment isolation functions.
C-2-i	The Containment Purge System operates continuously during the postulated fuel handling accident. The system is automatically isolated during the postulated LOCA.
C-2-j	Filter trains will not be removed as intact units. Gasketless filter adsorbers are used which permits the fluidizing of carbon for external filling and removal. In this manner, we comply with ALARA recommendations.
C-2-k	In Compliance
C-2-l	In Compliance
C-3-a	System design does not include domisters.
C-3-b	Heaters are Seismic Category II.
C-3-c	Prefilters are tested in accordance with ASHRAE Standard 52.68 and carry UL Class 2 labels.
C-3-d	In Compliance
C-3-e	In Compliance
C-3-f	In Compliance
C-3-g	In Compliance
C-3-h	In Compliance
C-3-i	In Compliance
C-3-j	In Compliance

Table 12.3.3-6 (Page 1)

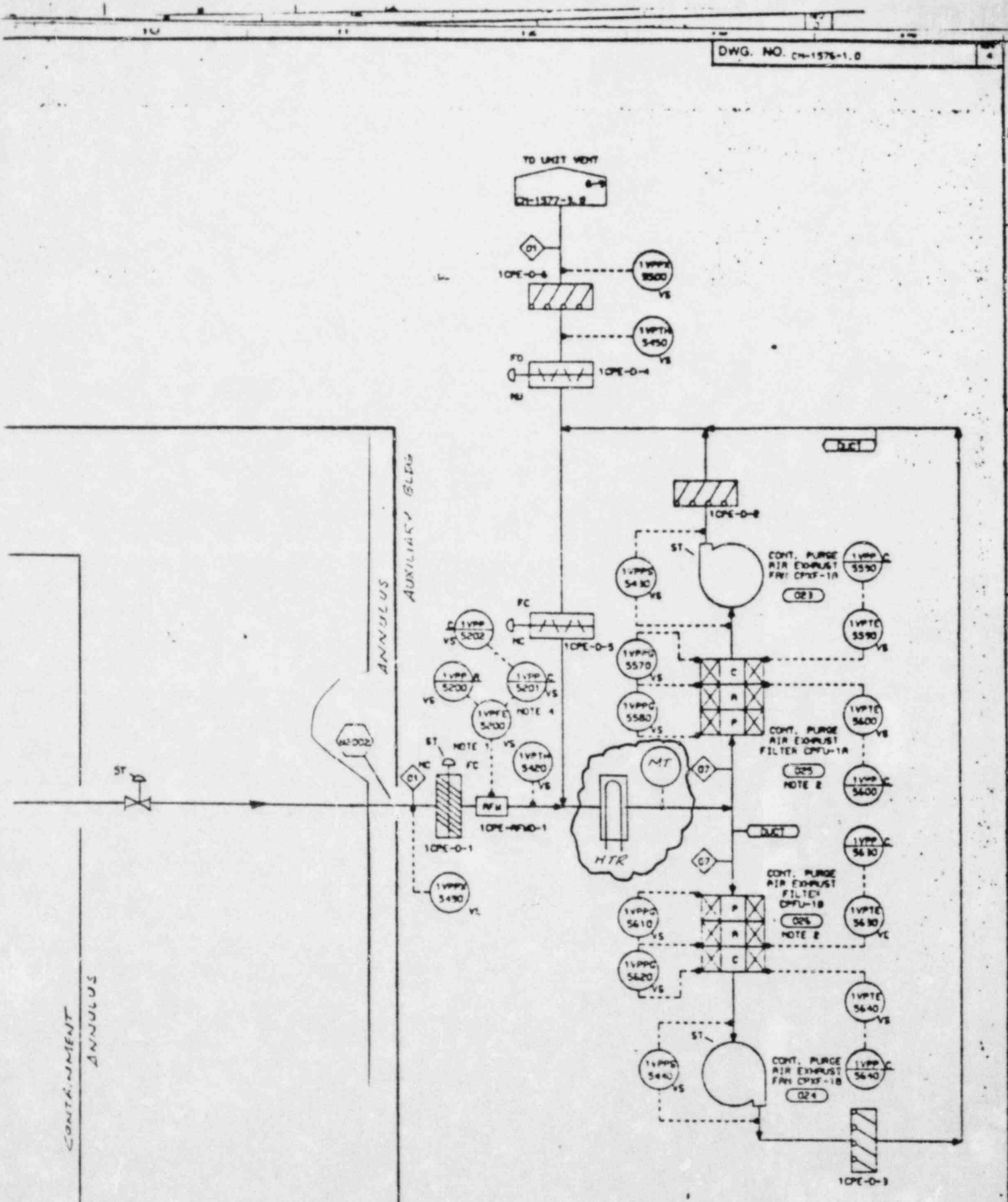
Comparison of Containment Purge Filter System
With Regulatory Guide 1.52
Revision 2, March 1978

Paragraph	Compliance Status
C-1-a	The Containment Purge Filter System is not an engineered safety feature. System design is based on normal plant operation and shutdown modes. System design does; however, ensure a safe release path from the containment in the event of a fuel handling accident inside containment with the purge system operating.
C-1-b	Regulatory Guides 1.3 and 1.4 do not apply as the Containment Purge System is Technical Specification limited such that a LOCA is not postulated while the system is in operation.
C-1-c	See paragraph c-1-b.
C-1-d	In Compliance
C-1-e	In Compliance
C-2-a	System design provides two (2) 50% capacity filter trains and fans. System design does not include domisters or HEPA filters downstream of the adsorbers. Heaters are used to control relative humidity prior to filtration.
C-2-b	See paragraph c-2-a.
C-2-c	In Compliance
C-2-d	The Containment Purge System is isolated during the pressure surge resulting from a postulated LOCA. The system is not required to operate during or after the postulated LOCA.
C-2-e	In Compliance
C-2-f	In Compliance
C-2-g	System instrumentation consists of local flow and pressure drop indication. System discharge flow is totalized and indicated

TABLE 12.3.3-5

FILTER SYSTEM DESIGN PARAMETERS

SYSTEM	CARBON BED (MINIMUM DEPTH, IN.)	HEATER SIZE (KW)
Annulus Ventilation	2	45
Control Room Area Pressurizing	4	25
Fuel Handling Area Exhaust	2	80
Auxiliary Building Filtered Exhaust	2	30
Containment Purge Exhaust	2	100



CNS FSAR Figure 9.4.5.1
(PARTIAL PLAN)