



**ENTERGY**

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Waterford 3

W3F1-93-0083  
A4.05  
PR

December 3, 1993

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

Subject: Waterford 3 SES  
Docket No. 50-382  
License No. NPF-38  
Submittal of Requested Additional Information For NRC  
Review of Appendix R Exemption Request (TAC No. 80691)

Gentlemen:

The attached information is submitted in response to your May 20, 1993 request for additional information associated with a Waterford 3 Appendix R Exemption request currently under review by your staff (TAC No. M80691).

The request was submitted to the NRC via W3F1-91-0233 dated May 24, 1991. The request was for reaffirmation of NRC approval of a portion of an earlier request (W3P84-0709 dated March 26, 1984) for relief from 10 CFR 50 Appendix R requirements in light of discrepancies identified associated with the justification of the original NRC approval. Specifically, the request was for relief from Section III, G.2 of appendix R for not having fire dampers installed in two duct penetrations of a continuous duct through two, three hour fire walls. The fire walls separate a vestibule (211) from Reactor Auxiliary Building Fire Areas 8B and 8C.

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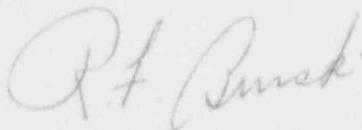
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If you need further assistance, please contact O.P. Pipkins at (504) 739-6707.

Very truly yours,



R.F. Burski  
Director  
Nuclear Safety

RFB/OPP/dc

Attachment: Requested Information (TAC NO. M80691)

Drawings:	1564 G859 s01 rev 18
	5817 G252 s11 rev 06
	1564 G853 s08 rev 12
	1564 G321 s01 rev 18
	1564 G331 rev 17
	5817 6382 rev 07
	5817 6383 rev 02
	5817 6384 rev 02
	5817 6385 rev 07
	5817 6337 rev 07
	5817 6338 rev 03
	5817 1812 rev 10

cc: J.L. Milhoan, NRC Region IV  
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R.B. McGehee  
N.S. Reynolds  
NRC Resident Inspectors Office

REQUESTED INFORMATION  
(TAC NO. M80691)

1. Provide a detailed description of the duct between the east wall of fire area 8B and north wall fire area 8c, including the function (supply or exhaust), air flow routes, design drawings, materials of construction, the size and number of openings in the duct between fire areas 8B and 8C.

DESCRIPTION:

The function of the duct between the east wall of fire area 8B and the north wall of fire area 8C is to supply cooling ventilation to vestibule 211 (RAB +21 elevation.) After the duct penetrates the 3 hour rated fire wall separating the vestibule from fire area 8B, the function of the duct is to supply cooling ventilation to the extreme east end of fire area RAB 8B (switchgear 'B' area.)

The duct branches away from the main supply trunk in fire area RAB 8C (Switchgear 'AB' area) and extends north approximately 18 feet, where it penetrates the 3 hour rated fire wall separating fire area RAB 8C from vestibule 211. The duct continues north approximately 9 feet in the vestibule where it angles 90 degrees west for an approximate distance of 3 feet and penetrates the 3 hour rated fire wall separating the vestibule from fire area RAB 8B. Inside RAB 8B, the duct tees off in a north-south direction, immediately above the safety-related 480 volt motor control center MCC 3B313-S (7 feet south, 17 feet north.) So in summary, the route of supply air flow is from fire area RAB 8C through vestibule 211 to fire area RAB 8B (see drawing G859 s01.)

The design drawings involved are as follows (copies attached):

1564 G859 s01 rev 18 - HVAC Reactor Auxiliary Bldg Plan E1 +21'-0  
5817 G252 s11 rev 05 - Safe Shutdown Analysis RAB +21  
1564 G853 s08 rev 12 - HVAC Air Flow Diagram Sheet 3  
1564 G321 s01 rev 18 - Electrical Equip Room Tray & Conduit Layout  
1564 G331 rev 17 - Electrical Penetration Area Tray & Conduit  
Layout

The material of construction for the duct, per Specification LOU 1564.744 (A), is 16 gage sheet metal. The duct is classified as safety-related and special construction, designed for a pressure range of 0-3" water gage. The duct is covered with 1-1/2" fibrous glass insulation.

The duct branch has four openings. Wherein the term "opening" is here defined as a register, grille, vent, etc. Each of the four openings is equipped with an air register. One of the openings is a 24" x 12" (730 CFM) register, located in fire area RAB 8C, approximately 11 feet south of the duct penetration into vestibule 211. A second 12" x 6" (180 CFM) register is located in vestibule 211 approximately 2 feet north of the vestibule's south wall. The remaining two registers, each sized 36" x 12" (north register 1460 CFM, south register 1420 CFM) are located approximately 18 feet apart in the north-south duct tee extending into fire area RAB 8B.

2. Provide a complete description of combustible fuel packages (e.g., cable trays/location), including maximum anticipated transient fuel packages and type of fire expected (type of heat release rates) for fire areas 8B and 8C and the corridor.

DESCRIPTION:

Combustible fuel packages [from Calc No. EC-F91-010 Rev. 1] in fire area RAB 8B, located within 20' of the duct penetration are as follows:

<u>Cable Tray</u>	<u>Calculated BTUs</u>
P202C-SB	25,555,968
P202B-SB	45,914,112
C201 -SB	2,351,655
C201A-SB	12,931,060
C202 -SB	8,152,190
C201F-SB	6,941,568
C201C-SB	6,746,640
C201D-SB	<u>6,465,530</u>
	115,658,723 BTUs

NOTE: The term "duct penetration" is defined here as the wall opening provided to allow passage of the duct.

Combustible fuel packages in fire area RAB 8C within 20' of the duct penetration between RAB 8C and the vestibule are as follows:

Fire Hose	500,000 BTUs [Calc No.EC-F91-010]
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Combustible fuel packages in vestibule 211 are as follows:

Trash can	estimated maximum of 400,520 BTUs
Emergency Lighting Unit	estimated maximum of 810 BTUs
Public Address Speaker	estimated maximum of 43,282 BTUs
PVC Jacket Material	estimated maximum of 38,652 BTUs
Earplug dispenser	estimated maximum of 20,026 BTUs
Approximately 2 lbs of Polyethylene Plastic	estimated maximum of <u>40,050 BTUs</u>
	543,340 BTUs

Vestibule 211 floor area is approximately 191 square feet. The resultant fire severity is approximately 2 minutes.

The vestibule serves as the main ingress/egress point for the Reactor Auxiliary Building. As such, it will contain various amounts of transient combustibles (accompanied by site personnel) in transit for very short durations. There is no equipment installed in the vestibule that requires regular or extensive maintenance. A conservative estimate of the maximum anticipated transient fuel package is approximately 152,000 BTUs. This figure assumes one person transporting chemicals used in the chemistry lab. Larger items would be brought into the plant through equipment access points located elsewhere.

Fires postulated for the switchgear envelope include:  
(from Combustible Loading Calc EC-F91-010 revision 1)

- a) an in-situ combustible exposure fire which assumes ignition of localized concentrations of cable insulation, and
- b) a transient combustible exposure fire.

The postulated fire area RAB 8B in-situ fire generates 374,187,392 BTUs and has a 33 minute fire severity. And, the postulated fire area RAB 8C in-situ fire generates 47,169,797 BTUs and has a 14 minute fire severity.

3. Provide a description of the distances (horizontal and vertical) between the fixed combustibles and the opening of the duct in both fire areas.

DESCRIPTION:

The distances (horizontal and vertical) between the fixed combustibles and the two duct penetrations are as follows:

Fire Area 8B

<u>Cable Tray</u>	<u>Approximate Distance from RAB 8B/ vestibule penetration</u>
P202C-SB	0'-3" vertical, 2'-6" horizontal
P202B-SB	0'-3" vertical, 5'-6" horizontal
C201 -SB	0'-3" vertical, 5'-0" horizontal
C201A-SB	0'-3" vertical, 3'-0" horizontal
C202 -SB	1'-0" vertical, 5'-6" horizontal
C201F-SB	0'-3" vertical, 1'-10" horizontal
C201C-SB	0'-3" vertical, 19'-8" horizontal
C201D-SB	0'-3" vertical, 22'-0" horizontal

Fire Area 8C      Approximate Distance from RAB 8C/ vestibule penetration

Fire Hose	4'-0" vertical, 4'-0" horizontal
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The approximate distances between the fixed combustibles (horizontal and vertical) and the four duct openings are as follows:

1.) 12" x 6" Register in Vestibule 211

Trash can	6'-8" vertical, 8'-0" horizontal
Emerg. light unit	1'-8" vertical, 10'-0" horizontal
Loudspeaker	3'-0" vertical, 13'-0" horizontal
FP control valves	
w/PVC cable jacket	4'-0" vertical, 4'-0" horizontal
Earplug dispenser	4'-8" vertical, 8'-0" horizontal

NOTE: Measurements taken from approximate centerline of registers to nearest edge of cable tray.

2.) 24"x 12" register in RAB 8C

C201F-SB	0'-4" vertical, 15'-6" horizontal
Fire Hose	5'-0" vertical, 4'-0" horizontal

3.) North 36"x 12" register in RAB 8B

P202B-SB	0'-2" vertical, 3'-3" horizontal
C202 -SB	1'-0" vertical, 3'-3" horizontal
P202C-SB	0'-3" vertical, 9'-7" horizontal
C201A-SB	0'-3" vertical, 11'-11" horizontal

4.) South 36"x 12" register in RAB 8B

C202 -SB	1'-0" vertical, 2'-8" horizontal
C201 -SB	1'-3" vertical, 0'-4" horizontal
C201A-SB	0'-3" vertical, 6'-1" horizontal
P202C-SB	0'-3" vertical, 8'-5" horizontal

4. Provide a description of the shortest distances between redundant safe shutdown equipment (including cabling), considering the pathway through the duct.

DESCRIPTION:

Safety-related 480V MCC 3B313-S is located immediately beneath the portion of the duct branch located in fire area RAB 8B. Within 20' of the registers in fire area RAB 8B are the safety-related 480V SWGR 3B31-S and the 4.16KV SWGR 3B3-S. The redundant equipment for these cabinets is located in RAB 8A Switchgear 'A' area (approximate coordinates 10A-11A and 13'-0" N/G) more than 70' to the south through RAB 8C (Switchgear 'AB' Area).

5. Provide fire protection and sprinkler system as-built drawings for fire areas 8B and 8C.

DESCRIPTION:

The following fire protection and sprinkler system as-built drawings are Attached:

1564 G859 s01	rev 18,	"HVAC Reactor Auxiliary Building Plan EL +21"
5817 6382	rev 07,	"RAB Sprinkler Sys FP-M25B&M30A Switchgear B"
5817 6383	rev 02,	"Detector Layout RAB Sys FP-M25B Switchgear Area B sheet 1"
5817 6384	rev 02,	"Detector Layout RAB Sys FP-M25B Switchgear Area B sheet 2"
5817 6385	rev 07,	"RAB Sprinkler Sys FP-M25B Switchgear Area B"
5817 6337	rev 07,	"RAB Multicycle Sprinkler Sys FP-M30A Switchgear Areas A & AB"
5817 6338	rev 03,	"Detector Layout RAB Sys FP-M30A Switchgear Areas A & AB"
5817 1812	rev 10,	"Detector Layout RAB sheet 2 of 9"

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