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Vogtle Project

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November 11, 1985

Director of Nuclear Reactor Regulation
Attention: Ms. Elinor G. Adensam, Chief
Licensing Branch #4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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REF: NOVAK TO FOSTER DATED JULY 29, 1985

NRC DOCKET NUMBERS 50-424 AND 50-425
CONSTRUCTION PERMIT NUMBERS CPPR-108 AND CPPR-109
VOGTLE ELECTRIC GENERATING PLANT - UNITS 1 AND 2
SER OPEN ITEM 7A: FIRE DOORS AND FIRE DAMPERS

Dear Mr. Denton:

Enclosed for your staff's review is additional information related to the unrated hatch covers and oversized fire dampers installed at Plant Vogtle. The safe shutdown analysis has allowed combination of fire areas and therefore the number of unrated hatches and oversized fire dampers installed in fire area boundaries. The enclosure provides additional justification for the VEGP request for deviation from the CMEB 9.5-1 requirement to install 3-hour fire-rated fire doors and fire dampers in fire area boundaries.

If your staff requires any additional information, please do not hesitate to contact me.

Sincerely,

J. A. Bailey
Project Licensing Manager

JAB/rlk/caa
Enclosure

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Attachment 1

Open Item: 7A Fire Doors and Fire Dampers

SER Section: 9.5.1.4 Building Design

VEGP Unrated Hatch Covers in Fire Area Boundaries

Nine (9) of the original ten (10) unrated hatch covers are no longer located in fire area boundary barriers. As such, there is now only one (1) unrated hatch cover installed in a 3-hour fire area boundary barrier. This hatch cover is located at level A of the auxiliary building wing area and separates the train B component cooling water pump room (level A) from the level B corridor area just east of the auxiliary cooling water and safety injection pump rooms. The level B corridor contains Train A safe shutdown raceway.

The hatch opening is used to facilitate equipment maintenance by allowing transporting of large components to and from the plant shop areas. Permanent closure of the opening cannot be allowed from a maintenance standpoint and replacement or modification of the opening so as to obtain a rated closure is not warranted based on the low level of combustibles and the distance separating redundant safe shutdown trains.

The hatch opening is 7' x 12' and while the 1/4-inch thick A36 steel checkered plate hatch cover is not rated or designed as a fire barrier, it does represent a physical barrier and an impediment to fire propagation from one level of the auxiliary building to the other. The rest of the floor area separating the train B equipment area at level A from level B is rated as a three hour fire barrier.

Train A safe shutdown components (includes electrical raceway) are located at least 30 horizontal feet from the underside (level B) of the hatch opening. Train B safe shutdown components (includes electrical raceway) are located at least 5 horizontal feet from the hatch opening (16' at level A, 12' at level 1 and 5' at level 2). The aggregate separation distance between redundant safe shutdown trains is at least 35 horizontal feet.

There are no combustible materials directly below or above the hatch as these areas are maintained free of obstruction to facilitate equipment moving. There are no intervening combustibles between the hatch opening and the train B safe shutdown components located above the unrated hatch. The only combustible which represents an intervening combustible of significance below the hatch opening is a single cable tray which is at least 15 horizontal feet from the underside of the hatch opening at level B.

The results of the fire hazards analysis as tabulated below, in addition to the above, is used to justify this deviation.

Unrated hatch cover, Auxiliary Building Level A, Wing Area

Size, ft.	7 x 12	
Fire Area Separation	1-AB-LD-G & 1-AB-LA-B	
Fire Zone Separation	26A & 37	
Fire Hazards	<u>Fire Zone 26A</u>	<u>Fire Zone 37</u>
Fire Load, lb. (cable insulation)	1,144	1,946
Combustible Loading, Btu/ft ²	6,278	8,469
Fire Severity, min.	4.7	6.4

VEGP Oversize Fire Dampers in Fire Area Boundaries

Seven of the original 17 oversize fire dampers are not located in fire area boundary walls. As such, there are now only ten (10) fire damper assemblies (5 each in units 1 and 2) installed (6 vertically and 4 horizontally) in 3-hour fire area boundary barriers which should comply with the guidelines of BTP CMEB 9.5-1. These fire dampers do not bear a UL label of approval as their size exceeds the manufacturer's UL test limitations.

The manufacturer's "as-tested" configuration limits the size of a single fire damper in multiple damper assemblies to 36" x 36". VEGP oversize fire dampers comply with the single damper in multiple damper assembly size limitations. However, the VEGP oversize fire dampers do not comply with the overall damper assembly size requirements which is limited to 36" x 72" when installed in a horizontal configuration and to 72" x 72" when installed in a vertical configuration. (Note that a 2" wide mullion is provided between single fire dampers in multiple damper assemblies.)

VEGP fire area boundaries have been established in accordance with the guidance of BTP CMEB 9.5-1, Section B.3 "Establishment and Use of Fire Areas" in that separation of redundant safety divisions, separation of safety-related systems from fire hazards in nonsafety-related areas and isolation to limit the spread of fires between components that are major fire hazards within a safety division have been considered as well as separation of redundant safe shutdown trains.

In spite of the fact that the oversize fire damper assemblies are without a UL label of approval, the manufacturer has certified that the fire dampers have been fabricated of the same material, with the same method, and to the same design and UL procedures as their standard UL approved 3-hour multiple fire damper assembly. These oversize fire damper assemblies have been evaluated and found to be acceptable by Bechtel's registered fire protection engineer whose evaluation is attached.

The results of the fire hazards analysis as tabulated below, in addition to the above is used to justify this deviation.

Results of Unit 1 Analysis

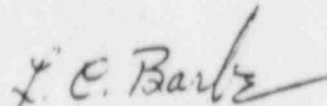
A. <u>Unrated Fire Damper</u>	A-1551-S7-612 Auxiliary Bldg.	
Size, in.	94 x 48	
Installation Configuration	Vertical	
Number/Size of Single Dampers	6/30 x 23	
Fire Area Separation	1-AB-L2-A & 1-AB-L1-B	
Fire Zone Separation	53 & 149	
Fire Hazards	<u>Fire Zone 53</u>	<u>Fire Zone 149</u>
Fire Load, lb.	1,567	578
Cable Insulation	21,000	0
Combustible Loading, Btu/ft ²	42,545	12,149
Fire Severity, min.	31.9	9.1
B. <u>Unrated Fire Damper</u>	A-1553-S7-603	
Size, in.	48 x 96	
Installation Configuration	Vertical	
Number/Size of Single Dampers	2/32 x 23 4/30 x 23	
Fire Area Separation	1-AB-L2-A & 1-AB-L2-B	
Fire Zone Separation	53 & 172	
Fire Hazards	<u>Fire Zone 53</u>	<u>Fire Zone 172</u>
Fire Load, lb.		
Cable Insulation	1,567	213
Charcoal	21,000	5,000
Combustible Loading, Btu/ft ²	42,545	46,326
Fire Severity, min.	31.9	34.7
C. <u>Unrated Fire Damper</u>	A-1553-S7-602	
Size, in.	48 x 96	
Installation Configuration	Vertical	
Number/Size of Single dampers	2/32 x23 4/30 x 23	
Fire Area Separation	1-AB-L2-B & 1-EB-A	
Fire Zone Separation	172 & 141	

Fire Hazards	<u>Fire Zone 172</u>	<u>Fire Zone 141</u>
Fire Load, lb.		
Cable Insulation	213	32
Charcoal	5,000	3,553
Combustible Loading, Btu/ft ²	46,326	10,143
Fire Severity, min.	34.7	7.6
D. <u>Unrated Fire Damper</u>	1-1551-S7-626	
Size, in.	64 x 54	
Installation Configuration	Horizontal	
Number/Size of Single Dampers	4/31 x 26	
Fire Area Separation	1-AB-L1-B & 1-AB-LD-B	
Fire Zone Separation	149 & 46	
Fire Hazards	<u>Fire Zone 149</u>	<u>Fire Zone 46</u>
Fire Load, lb.		
Cable Insulation	578	2,577
Charcoal	0	0
Combustible Loading, Btu/ft ²	12,149	4,188
Fire Severity, min.	9.1	3.1
E. <u>Unrated Fire Damper</u>	A-1551-S7-523	
Size, in.	52 x 44	
Installation Configuration	Horizontal	
Number/Size of Single Dampers	4/25 x 21	
Fire Area Separation	1-AB-LD-B & 1-AB-LD-A	
Fire Zone Separation	46 & 11	
Fire Hazards	<u>Fire Zone 46</u>	<u>Fire Zone 11</u>
Fire Load, lb.		
Cable Insulation	2,577	7,545
Charcoal	0	0
Combustible Loading, Btu/ft ²	4,188	32,445
Fire Severity, min.	3.1	24.3

I have evaluated the following oversize* fire dampers installed at Plant Vogtle:

<u>Tag No.</u>	<u>Size</u>	
1. A-1551-S7-612	94x48	Vertical
2. A-1553-S7-603	48x96	Vertical
3. A-1553-S7-602	48x96	Vertical
4. 1-1551-S7-626	64x54	Horizontal
5. A-1551-S7-523	52x44	Horizontal
6. 2-1551-S7-626	64x54	Horizontal
7. A-1551-S7-524	52x44	Horizontal
8. A-1553-S7-607	48x86	Vertical
9. A-1553-S7-608	48x86	Vertical
10. A-1551-S7-613	80x48	Vertical

Based upon the review of Air Balance, Incorporated certification of materials and construction letter of February 24, 1982; UL File R4708-Project 80NK10529 December 1, 1980, "Report on Vertically Mounted Fire Dampers of the Curtain Type for Three Hour Classification"; UL File R4708-8-Assignment 69OR3968 July 9, 1969, "Report on Horizontally Mounted Fire Dampers of the Curtain and Round Single Blade Types for 1-1/2 Hour Classification"; my discussions with Dennis Kubicki, NRC; the VEGP blue prints and specifications; as well as a review of NFPA 90A, and UL Standard 555; and various conversations with the UL damper committee, it is my opinion that the above fire dampers meet, to an engineering certainty, the standards of UL 555 and NFPA 90A and will function in the necessary manner as three hour fire barriers.



L. C. Barbe
Registered Fire Protection
Engineer, California #435

*Fire damper size limited to 72x36 for horizontal applications and 72x72 for vertical applications by UL test.