



Entergy

Entergy Operations, Inc.
River Bend Station
5485 U. S. Highway 61
P.O. Box 220
St. Francisville, LA 70775
Tel 504 336 6225
Fax 504 635 5068

Rick J. King
Director
Nuclear Safety & Regulatory Affairs

December 17, 1998

U.S. Nuclear Regulatory Commission
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Washington, DC 20555

Subject: River Bend Station - Unit 1
Docket No. 50-458
License No. NPF-47
Withdrawal of Deviation Request from 10 C.F.R. Part 50,
Appendix R (TAC No. M97241)

File Nos.: G9.5, G9.42

RBF1-98-0270
RBG-44787

Ladies and Gentlemen:

In previous submittals (*see* References in Enclosure), River Bend Station (RBS) requested an exemption from the requirements of 10 C.F.R. Part 50, Appendix R, Section III.G, identifying a deviation from the National Fire Protection Association (NFPA) Code. Specifically, Fire Area C-16 contains certain Division II safe shutdown cables that were previously protected by a three-hour fire barrier. Because of ampacity concerns, the three-hour barrier was replaced with a one-hour barrier, in combination with a full-area detection system and a partial suppression system. We have determined that the exemption request should be withdrawn and the deviation from the NFPA Code and proposed sprinkler system modifications evaluated in accordance with the RBS Operating License and 10 C.F.R. § 50.59, "Changes, Tests, and Experiments."

Partial-area suppression systems, protecting the Division II safe shutdown cables from damage due to a fire in the area, in combination with the installed detection system and the one-hour fire barrier, meet the intent of Appendix R to ensure the capability to safely shutdown the plant.

Based on discussions with the RBS Project Manager and the Plant Systems Branch, information is provided in the enclosure explaining the regulatory basis for our conclusion. We are proceeding to install an additional suppression system in Fire Area C-16 consistent with our evaluation.

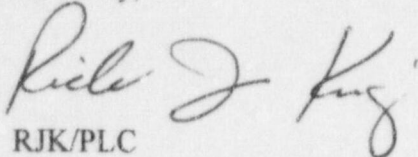
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No specific commitments are contained in this letter. If you have any questions, please contact Patricia Campbell at 225-381-4615.

Sincerely,


RJK/PLC

Enclosure

Mr. Robert J. Fretz
NRR Project Manager
U. S. Nuclear Regulatory Commission
M/S OWFN 13-H-3
Washington, DC 20555

NRC Resident Inspector
P. O. Box 1050
St. Francisville, LA 70775

U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 70611

Department of Environmental Quality
Radiation Protection Division
P. O. Box 82135
Baton Rouge, LA 70884-2135
Attn: Administrator

River Bend Station Fire Area C-16

Fire Area C-16 contains Division II cables that are required to be protected for safe shutdown in the event of a fire in the area. Previously, a three-hour fire barrier provided the necessary protection. However, due to ampacity concerns, the three-hour barrier was replaced with a one-hour barrier. Appendix R, paragraph III.G.2, specifies the acceptable means of ensuring that one redundant train remains free of fire damage. In addition to separation by a three-hour fire barrier, the combination of a one-hour fire barrier with fire detectors and an automatic fire suppression system installed in the fire area is an acceptable means of separation (paragraph III.G.2.c). A one-hour fire barrier, installed for separating the Division II cable in Fire Area C-16, with the full-area detection system and an existing partial-suppression system provides an equivalent level of protection as that previously provided by the three-hour barrier.

The information provided below follows our November 4, 1998, teleconference regarding the means of separation for the cables in this fire area. As supported by an independent review by Duke Engineering Services, Inc. (DE&S), the partial suppression system, supported by the final engineering and Section 50.59 evaluation, will allow removal of compensatory measures and comply with Section III.G.2.c of 10 C.F.R. Part 50, Appendix R, in accordance with the provisions in the RBS Operating License.

Technical Overview

RBS initially protected some of its safe-shutdown cables by enclosing them in three-hour rated Thermo-Lag barriers. After discovery that the fire ratings for Thermo-Lag fire barriers may have been over-estimated, RBS initiated a program to regain full compliance with our commitment to Appendix R, Section III.G. Part of that program involved the protection of Division II cables in Fire Area C-16 by a Thermo-Lag fire barrier with a confirmed one-hour fire rating and a partial suppression system that was determined to be adequate for the fire hazard presented by the combustible loading in the area. Detection is also installed in the area.

RBS has performed an engineering evaluation, which demonstrates that the fire detection system in the area meets NFPA Code requirements (Ref. 3). Finally, RBS clarified the sources of contributions to combustible loads in the area, and explained that the bulk of the combustibles were Thermo-Lag and the insulation on IEEE-383 qualified cable. Additional details about the proposed suppression system and the control of combustibles in the area were provided (Ref. 4). Of particular note was the addition of sprinkler protection for the Division I cables, which are near the Division II cables, but are not required for safe shutdown in the event of a fire.

More recently, RBS retained the services of DE&S to conduct an independent evaluation of the proposed suppression system for fire area C-16. DE&S identified recommendations to improve the capability of the sprinklers in the suppression system and the calculation of the results of a single inadvertent activation of a sprinkler head. Subject to the completion of these recommendations, DE&S concluded that "[t]he installed partial automatic fire sprinkler system will provide adequate fire suppression capability in the immediate area around the one-hour Thermo-Lag protected Division II raceways. . . . Therefore, following implementation of the recommendations [in the report], the partial wet pipe automatic sprinkler system No. AS-63, in conjunction with area detection and the one-hour Thermo-Lag fire barrier enclosures, provides an equivalent level of protection to 10 C.F.R. Part 50, Appendix R, Section III.G.2.c, for the credited Division II cables in fire area C-16." RBS agrees with DE&S conclusions and plans to evaluate these recommendations for implementation.

Regulatory Overview

RBS was licensed to operate on August 29, 1985, after the January 1, 1979, cut-off date for application of Appendix R. Accordingly, RBS is not an Appendix R plant. Rather, RBS was subject to NUREG-0800, "Standard Review Plan." RBS may make changes to its fire protection program in accordance with Attachment 4, "Fire Protection Program Requirements," to RBS Operating License NPF-47, which states, in part:

3. EOI may make changes to features of the approved fire protection program which do not significantly decrease the level of fire protection without prior Commission approval provided (a) such changes do not otherwise involve a change in a license condition or technical specification or result in an unreviewed safety question (see 10 C.F.R. 50.59) - - -.

RBS's proposed change to the fire protection program is the replacement of a three-hour rated fire barrier by a one-hour rated fire barrier plus a partial suppression system, which has been determined by RBS and, independently by DE&S, not to decrease the level of fire protection. Because the change does not involve a significant decrease in the level of fire protection, the license condition allows RBS to implement the change.¹

Moreover, no exemption from RBS's commitment to the substance of Appendix R is needed because Appendix R does not require a full-area-wide suppression system in all cases. As interpreted by the NRC in Generic Letter (GL) 86-10,² a partial suppression system complies with Appendix R as long as an engineering evaluation shows that the partial area system is sufficient to protect the safe shutdown components against the hazards of the area.

In discussions with the NRC Staff, it was suggested that for a partial-area suppression system to be found adequate, it should be capable of extinguishing an exposure fire in the vicinity of the protected safe shutdown cables. This was suggested, even though the suppression system has been demonstrated to protect the safe shutdown cables so as to enable them to perform their safe shutdown functions.

While RBS agrees the extinguishing of an exposure fire by a suppression system may be preferable when practical, it is not required by the regulations, nor is it needed as a technical or nuclear safety matter to preserve the plant's ability to shutdown safely in the event of a fire. Section III.G.2 of Appendix R was specifically designed to enable a plant to shutdown safely without the need to extinguish an exposure fire. This is suggested by the regulatory alternatives, which were adopted by the Commission.

The alternative specified in Section III.G.2.a is that safe shutdown equipment and cables be enclosed in a three-hour fire barrier. No fire detection or suppression is required, based on the conclusion that the largest credible fire that must be protected against can burn for three hours without suppression. It is this configuration which is being replaced by the one-hour fire rated barrier with partial suppression and area-wide detection. Thus, in Fire Area C-16, the fire protection program, approved by the NRC, included a determination that safe shutdown was attainable, even if an exposure fire burned for up to three-hours without suppression.

The alternative specified in Section III.G.2.b is that redundant safe shutdown equipment and cables be separated by at least twenty feet with no intervening combustibles. Detection and suppression also are required. A partial area suppression system adequate for the combustible load is sufficient. This alternative is

¹ We plan to update the 10 C.F.R. § 50.59 evaluation to reflect our conclusions as well as clarifying the technical change (i.e., from a three-hour barrier to a one-hour barrier with partial suppression and full detection in the area).

² NRC Generic Letter 86-10, "Implementation of Fire Protection Requirements," April 24, 1986.

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based on the determination that a fire which could destroy one set of the redundant cables or equipment could be prevented, by a combination of distance and suppression, from simultaneously preventing the ability of the redundant set of cables or equipment from performing their safe shutdown functions. There is no requirement that the suppression system be capable of extinguishing a fire. The suppression must preserve the safe shutdown function.

The alternative specified in Section III.G.2.c is that safe shutdown cable and equipment be protected by a one-hour fire rated barrier with detection and suppression. As noted above, the NRC, in GL 86-10, has interpreted suppression to mean suppression "sufficient to protect against the hazards of the area." GL 86-10, Enclosure 1, "Interpretation of Appendix R," ¶5: *suppression adequate to preserve the "ability to achieve and maintain safe shutdown in the event of a fire,"* GL 86-10 ¶F. "Addition of Fire Protection Program into FSAR." Therefore, only the equipment needed for safe shutdown needs to be maintained free from fire damage. If the definition of adequate suppression were to go beyond this long-standing interpretation to include the capability of extinguishing an exposure fire, the alternative of a one-hour barrier plus a suppression system would exceed the protection afforded by a three-hour barrier, which was approved as acceptable by the NRC. Any application beyond the approved RBS fire protection program would be subject to 10 C.F.R. 50.109, "Backfitting."

Conclusion

Changing the means of separation for the Division II cables in Fire Area C-16 from a three-hour barrier to a one-hour barrier in combination with detection and suppression maintains an adequate level of fire protection. Under these circumstances, no prior NRC approval is required for a one-hour barrier and partial area suppression system which has been found to provide an equivalent level of fire protection to the previously approved three-hour fire rated barrier. While GL 86-10 suggests that "[a]lthough not required, licensees may submit their evaluations to the staff for review and concurrence," we have determined that the most appropriate approach is to implement the suppression system modification according to the provisions of the RBS Operating License and 10 C.F.R. § 50.59.

References

- (1) RBG-43321, "License Amendment Request 96-048, Deviation Request," dated November 6, 1996
- (2) RBC-47683, "Request for Deviation from 10 C.F.R. Part 50, Appendix R, Request for Additional Information," dated June 16, 1997
- (3) RBG-44110, "Request for Deviation from 10 C.F.R. Part 50, Appendix R Request for Additional Information," dated July 31, 1997
- (4) RBG-44466, "Request for Deviation from 10 C.F.R. Part 50, Appendix R, Request for Additional Information," dated April 13, 1998