



October 4, 2000

L-2000-164
10 CFR 50.12
10 CFR 50.4

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Re: St. Lucie Unit 1
Docket No. 50-335
10 CFR 50 Appendix R K1 Exemption Clarification/Request

Pursuant to commitments made in LER 50-335/1999-009-00 and pursuant to the requirements of 10 CFR 50.12, FPL is resubmitting the original 10 CFR 50 Appendix R exemption request K1 for St. Lucie Unit 1. The K1 Appendix R exemption deals with separation issues inside the Unit 1 reactor containment building.

This exemption request meets the criteria of 10 CFR 50.12(a)(2)(ii) where application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule. The bases for the exemption are contained in Attachment 1. The FPL proposed mark up of the March 5, 1987, NRC SER is contained in Attachment 2.

The exemption request has been reviewed by the St. Lucie Facility Review Group and the FPL Company Nuclear Review Board.

FPL would like to hold a management level meeting to discuss this submittal once the NRC review process starts. My staff will coordinate this meeting with the NRC.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Rajiv S. Kundalkar', is written over a printed name.

Rajiv S. Kundalkar
Vice President
St. Lucie Plant

RSK/EJW/KWF

Attachments

cc: Regional Administrator, USNRC, Region II
Senior Resident Inspector, USNRC, St. Lucie Plant
Mr. W. A. Passetti, Florida Department of Health and Rehabilitative Services

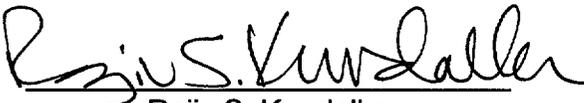
A006

STATE OF FLORIDA)
) ss.
COUNTY OF ST. LUCIE)

Rajiv S. Kundalkar being first duly sworn, deposes and says:

That he is Vice President, St. Lucie Plant, for the Nuclear Division of Florida Power and Light Company, the Licensee herein;

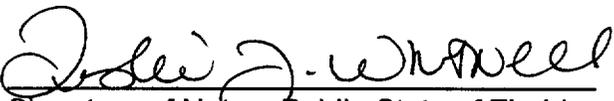
That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information and belief, and that he is authorized to execute the document on behalf of said Licensee.


Rajiv S. Kundalkar

STATE OF FLORIDA
COUNTY OF St. Lucie

Sworn to and subscribed before me
this 4 day of October, 2000

by Rajiv S. Kundalkar, who is personally known to me.


Signature of Notary Public-State of Florida



Leslie J. Whitwell
MY COMMISSION # CC646183 EXPIRES
May 12, 2001
BONDED THRU TROY FAIR INSURANCE, INC.

Name of Notary Public (Print, Type, or Stamp)

Abstract

This exemption request addresses a discrepancy identified in the NRC Safety Evaluation Reports (SERs) dated February 21, 1985, and March 5, 1987, for 10 CFR 50 Appendix R Exemption K1 that pertains to the physical separation of certain redundant safe shutdown components necessary for safe shutdown capability associated with a fire in containment.

Redundant safe shutdown components were determined from recent engineering reviews and/or walkdowns to be separated by less vertical distance than implied by the February 21, 1985, NRC SER and stated in the March 5, 1987, SER. The FPL correspondence associated with these submittals did not specifically state that 25 feet of vertical separation was provided between the redundant safe shutdown components or trains. This exemption addresses the physical separation and/or fire protection features for the cabling associated with safe shutdown equipment in the Unit 1 containment. FPL concludes that adequate separation is provided for the redundant safe shutdown trains in the Unit 1 containment annular area without consideration for vertical separation. In addition, a detailed discussion is provided that identifies the NRC and FPL correspondence involved in the discrepancy.

The existing design features provide adequate protection to prevent fire damage to cables and associated non-safety related circuits of redundant trains. As such, the separation present in the area of concern provides a level of protection that is equivalent to 10 CFR 50, Appendix R, Section III.G.2.d - f for noninerted containments. To alleviate the discrepancy associated with vertical separation, FPL provided a markup of the NRC March 5, 1987, SER (see Attachment 2 to FPL letter L-2000-164).

Method of Analysis

This exemption is a restatement of FPL's original licensing submittals and associated SERs regarding Exemption K1. A review was performed based on the contents of the FPL submittals without consideration for the existence of 25 feet of vertical separation identified in the NRC SERs dated February 21, 1985, and March 5, 1987, to ascertain the reliance on vertical separation of safe shutdown cabling as a part of the basis for the NRC approval of Exemption K1.

Background/Licensing & Design Basis

Background

On December 16, 1999, as a result of FPL's ongoing Appendix R review activities, FPL discovered inconsistencies between FPL's exemption request K1 and the related NRC SERs dated February 21, 1985, and March 5, 1987.

The March 5, 1987, NRC SER states that 25 feet of vertical separation exists between raceways containing redundant divisions of safe shutdown cables in the Unit 1 containment annular area. The statement in the SER does not match the actual plant condition. There is 25 feet of vertical separation between floor elevations in the Unit 1 containment, but 25 feet of vertical separation does not exist between raceways containing redundant divisions of safe shutdown cables. As part of the engineering review of the resulting Condition Report 99-2513, operability and reportability determinations were performed. The engineering disposition determined that the existing design features provide adequate protection to prevent fire damage to cables and associated non-safety related circuits of redundant trains. An appropriate 10 CFR 50.72 notification was made on the date of discovery. The condition was determined to be "outside the design basis" and on January 18, 2000, LER 50-335/99-009-00 was submitted pursuant to 10 CFR 50.73(a)(2)(ii). The corrective action for that LER stated that FPL would resubmit exemption request K1 to clarify the vertical separation criteria.

Licensing Basis

St. Lucie Unit 1 was licensed to operate prior to January 1, 1979, and 10 CFR 50.48(a) establishes the requirement that Unit 1 must have a Fire Protection plan that satisfies Criterion 3, "Fire Protection," of 10 CFR 50 Appendix A, "General Design Criteria for Nuclear Power Plants." Nuclear power plants licensed to operate prior to January 1, 1979, must satisfy the applicable requirements of Appendix R to 10 CFR 50, including specifically the requirements of sections III.G, III.J, and III.O, pursuant to 10 CFR 50.48(b).

The NRC has granted a number of exemptions from Appendix R requirements, including Exemption K1 for the St. Lucie Unit 1 containment. Exemption K1 was originally granted by the NRC as discussed in NRC SER dated February 21, 1985, and subsequently revised in NRC SER dated March 5, 1987. Exemption K1 identifies conditions in the Unit 1 containment that deviate from Appendix R Section III.G.2.d.

Appendix R Requirements

Appendix R, Section III.G.2.d-f, states:

"...Inside noninerted containments one of the fire protection means specified above or one of the following fire protection means shall be provided:

- d. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards;*
- e. Installation of fire detectors and an automatic fire suppression system in the fire area; or*

- f. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a noncombustible radiant energy heat shield.”*

Exemption K1 for the Unit 1 containment is an approved exemption to the requirements of Appendix R Section III.G.2.d.

Unit 1 Operating License

Unit 1 License Condition 2.C(3), Fire Protection, states;

“The licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report for the facility (The fire protection program and features were originally described in licensee submittals L-83-514 dated October 7, 1983, L-83-227 dated April 22 [12], 1983, L-83-261 dated April 25, 1983, L-83-453 dated August 24, 1983, L-83-488 dated September 16, 1983, L-83-588 dated December 14, 1983, L-84-346 dated November 28, 1984, L-84-390 dated December 31, 1984 and L-85-71 dated February 21, 1985) and as approved by NRC letter dated July 17, 1984 and supplemented by NRC letters dated February 21, 1985, March 5, 1987 and October 4, 1988 subject to the following provisions:

The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.”

In the above excerpt, the date referenced for L-83-227 is incorrect. The correct date is April 12, 1983, and will be used throughout the evaluation. This administrative error will be corrected by a future license amendment.

FPL Appendix R Exemption Submittals

Each of the submittals identified in the Operating License is summarized below with regard to the vertical and horizontal separation provided in the Unit 1 containment annular area.

The FPL submittal to the NRC dated April 12, 1983, (L-83-227) does not specifically address the actual vertical or horizontal separation provided in Exemption K1. The letter states only that the requirement to maintain 20 feet of horizontal separation is not met. No discussion of vertical separation is provided.

The FPL submittal to the NRC dated April 25, 1983, (L-83-261) is limited to a discussion of Exemption K2 that requested exemption from Section III-O of Appendix R regarding the oil collection system.

The FPL submittal to the NRC dated August 24, 1983, (L-83-453) provides a minor revision (revised wording resulting from completion of detection modifications and removal of outdated "Zone" references) to the submittal dated April 12, 1983, (L-83-227) and does not specifically address the actual vertical or horizontal separation provided in Exemption K1 – only that 20 feet of horizontal separation is not provided. No discussion of vertical separation is provided.

The FPL submittal to the NRC dated September 16, 1983, (L-83-488) provides a detailed fire hazard analysis of the Unit 1 containment (Fire Area K). As part of this analysis, a discussion of the cable routes for specific components is provided on pages FA-K-16 through FA-K-18. Certain sections of the discussions (pressurizer pressure & level, RCS temperature, and SG 1A and 1B level & pressure) state that;

"...Associated cables are routed in separate trays on the 18.00' and 45.00' elevations. In addition to the vertical separation, the cable trays are routed 7 to 11 ft apart horizontally. ..."

Note that in the context of the fire hazard analysis, the words "routed on the 18.00' elevation" indicated that the routing was between the 18.00' and 45.00' elevations. The words "routed on the 45.00' elevation" indicated that the routing was between the 45.00' and 62.00' elevations. Throughout the fire hazard analysis, components are listed by floor elevation, and not by the actual elevation of the component.

The FPL submittal to the NRC dated November 28, 1984, (L-84-346) provides a minor revision (Revision 3) to the submittal dated April 12, 1983, and does not specifically address the actual vertical or horizontal separation provided in Exemption K1 – only that 20 feet of horizontal separation is not provided. No discussion of vertical separation is provided.

NOTE: It is this submittal that revised Exemption K1 by adding "no intervening combustibles" between raceways containing redundant divisions of safe shutdown cables to the description of the exemption.

FPL submittals to the NRC dated December 31, 1984, (L-84-390), December 14, 1983, (L-83-588), and October 7, 1983, (L-83-514) do not address Exemption K1.

Excerpts from NRC SERs

The NRC SERs dated July 17, 1984, and October 4, 1988, do not address Exemption K1.

The NRC SER dated February 21, 1985, states:

"...Redundant cable trays are separated from each other by horizontal distance of more than 7 feet. They are installed on separate elevations separated by approximately 25 feet..."

The NRC SER dated March 5, 1987, states:

"...Separation of redundant cables was by more than 7 feet horizontally and 25 feet vertically..."

The revised SER included the statement "no intervening combustibles" as part of the exemption.

Exemption K1

The FPL submittal to the NRC dated November 28, 1984, (Revision 3) regarding Exemption K1 is as follows:

"FIRE AREA "K"

This fire area is the Reactor Containment Building previously designated as Fire Area 26. Essential equipment within this area is shown in the attached equipment list.

The following exemptions to appendix R to 10 CFR 50 are requested:

Exemption K1

An exemption is requested from Section III-G.2.d of Appendix R because the containment cables and associated non-safety circuits of redundant trains are not in all cases separated by 20 feet with no intervening combustibles.

Evaluation K1

- 1) A new Reactor Coolant Pump Oil Collection System is provided to collect pressurized and unpressurized leaks from each of the Reactor Coolant Pump Lube Oil Systems. This installation will confine the major portion of combustible inventory to a separate oil collection tank in accordance with Appendix R, Section III-O. The remaining combustible oil in the fire area is light.*
- 2) Fire detection is provided as shown on drawings 8770-G-413.*

- 3) *Redundant safety-related equipment is protected from exposure to localized combustibile sources by spatial separation and/or the use of existing barriers and partitions (i.e., concrete walls, floors and ceilings) having a greater than three hours fire resistive rating.*

Separation is provided to maintain independence of electrical circuits and equipment so that the protective function required during any design basis event can be accomplished. The degree and method of separation varies with the potential hazards in a particular area. This is accomplished by use of spatial separation, barriers, and radiant energy shields where required.

- 4) *Electrical cables are concentrated at the Penetration Areas at El 23.00 ft between column lines 6 and 8. The cables are immediately separated and routed to several items of equipment.*

Radiant energy shields are being provided between safety-related A and B cable trays in the cable penetration area to provide separation.

- 5) *Non IEEE 383 1974 cables in Fire Area "K" were coated with Flamemastic fire protective coating system. New cables meet the IEEE-383 1974 criteria.*
- 6) *Fire Area "K" is a high radiation area and personnel access is limited, thus minimizing the probability of introducing transient combustibles.*
- 7) *The large free volume (2.5 million cubic feet) of Fire Area "K" allows for dissipation of hot off-gases temperatures and reduces the effect of stratified hot gases at essential components.*
- 8) *Instrument cable trays are covered.*

Conclusion K1

Based on our evaluation, the existing features in Fire Area "K" provide adequate separation for a fire in transient or in-situ combustibles. Additional modification would not augment or materially enhance the safety of the plant since it would not aid in the prevention of fire damage to redundant components essential for safe shutdown. Therefore, we conclude, this is an acceptable exemption to Appendix R to 10 CFR 50, Section III-G.2.d."

Note that minor changes were made to the original April 12, 1983, FPL submittal in Revision 1 (FPL's submittal dated August 24, 1983) and additional information was provided regarding Fire

Area K in a fire hazards analysis provided in Supplement 2 (FPL's submittal dated September 16, 1983).

Evaluation

Evaluation of FPL Submittals vs. NRC SERs

The FPL submittals do not specifically state that 25 feet of vertical separation existed between the redundant safe shutdown raceways in the Unit 1 containment annular area. The FPL submittal dated September 16, 1983, (L-83-488) did state that the associated cables for certain safe shutdown components (Reference Sections for pressurizer pressure & level, RCS temperature, and SG 1A and 1B level & pressure) *“are routed in separate trays on the 18.00’ and 45.00’ elevations. In addition to the vertical separation, the cable trays are routed 7 to 11 ft apart horizontally.”*

The statements in the September 16, 1983, FPL submittal appear to have attempted to describe the general routing of the trays in the containment annular area. That is, routed on the 18.00’ elevation meant the trays were located above that elevation and between the 18.00’ elevation and the 45.00’ elevations. In any case, there is arguably some ambiguity in the statements with regard to the actual vertical separation present, and these statements appear to have been misinterpreted by the Staff to imply that 25 feet of vertical separation is provided for the cables associated with each of the components identified.

General Electrical Raceway Arrangement in the Unit 1 Containment Annular Area

In general, the electrical raceways (cable trays and conduit) in the Unit 1 containment annular area are routed by division. A and B division electrical raceways are routed on different elevations above and below the 45.00’ elevation in the annular region. The B-train raceways are typically routed near the containment outer wall. Conversely, the A-train raceways are routed near the bio-shield walls on the opposite side of the annular area. This design provides the maximum horizontal separation between divisions given the width of the annular area. As such, the opposite divisions are provided with between seven and 11 feet of horizontal separation, except at areas where conduit(s) cross over the opposite division to continue or complete their route to the associated component.

The “18.00’ elevation” raceways are predominantly located near the ceiling (three to six feet below the 45.00’ elevation grating). Above the 45.00’ elevation, the electrical raceways are predominantly located between four and 15 feet above the floor level. With regard to redundant cables separated by floor elevation, approximately five feet or more of vertical separation is maintained. However, since redundant cable may be located in electrical raceways above a common elevation and/or risers exist that pass through the 45.00’ elevation, minimal to no vertical separation may exist in some cases. Therefore, 25 feet of vertical separation between redundant components is not assured. FPL evaluated the effect of this lack of vertical separation with consideration for the NRC basis for

granting Exemption K1 as delineated in the Vertical Separation Evaluation section of this exemption request.

Exemption K1 Bases

The NRC staff appeared to have considered numerous factors in determining the acceptability of Exemption K1 prior to issuance of their SER dated February 21, 1985, and the subsequent revision dated March 5, 1987. The content of FPL's original submittals for Exemption K1 dated April 12, 1983, August 24, 1983, September 16, 1983, and November 28, 1984, remain valid. The bases for the NRC acceptance are documented in Section 3.3, Evaluation, of the February 21, 1985, NRC SER. Relative to the containment annular area, this section states:

"Because of the restricted access to the containment, an exposure fire from the accumulation of transient combustibles in the annular area inside containment would be limited in size and duration. The high ceiling and the open metal grating walkways in the annular area inside containment will allow hot gases from the exposure fires to be safely dissipated. Because of the configuration of redundant cables in the annular area inside containment and the limited size and duration of anticipated fires, the staff has reasonable assurance that one train of redundant cables will be free of fire damage."

This evaluation credits the limited size and duration of anticipated fire, restricted access, high ceiling, open metal grating walkways, and the configuration of redundant cables in the Unit 1 containment as the bases for acceptance of Exemption K1. Clearly and with regard to vertical separation, the point of concern is limited to the "configuration of redundant cables." Section 3.2 of the SER discussion outlines the configuration of the redundant cables. This section describes this configuration as follows:

"The annular area inside containment contains shutdown cables trays that are located 15 feet to 55 feet above basemat. All nonqualified IEEE 383 cables are covered with a fire retardant mastic material. Redundant cable trays are separated from a horizontal distance of more than 7 feet. They are installed on separate elevations separated by approximately 25 feet."

With exception to the last sentence, the "configuration" is valid as described. The last sentence is subject to interpretation since "25 feet" could be interpreted to either apply to the "redundant cable trays" or "separate elevations." This sentence should be interpreted, consistent with the FPL submittal dated September 16, 1983, that the elevations are separated by approximately 25 feet.

The March 5, 1987, NRC SER, discussion section paraphrased the April 1983 SER by stating that:

“Our previous evaluation of this exemption and its approval was based in part, on the following:

All nonqualified IEEE Std 383 cables are covered with a fire retardant mastic.

Separation of redundant cables was by more than 7 feet horizontally and 25 feet vertically.

Because of limited access and small amounts of combustibles, a fire of sufficient magnitude to damage redundant cables or associated circuits is unlikely.

The containment volume and high ceiling would cause a small fire’s energy to readily dissipate and not threaten redundant cables simultaneously.”

Although clearer in intent than the February 21, 1985, SER, the statement, “*Separation of redundant cables was by more than 7 feet horizontally and 25 feet vertically,*” is not consistent with the actual plant installation.

Vertical Separation Evaluation

As previously stated, seven feet or greater horizontal separation is provided between the redundant divisions in the Unit 1 containment. Contrary to the NRC SER, 25 feet of vertical separation does not exist in that area. Additionally, vertical separation is not identified in Appendix R as a viable design alternative to prevent the spread of fire or damage to safe shutdown components.

The annular area of the Unit 1 containment is not susceptible to the development of a hot gas layer since it is open to the containment dome area. The intermediate floor elevations are predominantly grated and do not trap heat and gases from a fire. Therefore, the potential for collateral damage from a fire is limited to the general area of the fire and the equipment or cable located in the fire plume. On the other hand, horizontal separation provides distance between the postulated fire and associated plume and the item(s) of concern. Since the annular area of containment is open to the upper elevation of containment and the containment dome area, the effects of stratification or hot gas layer development is not considered a potential threat.

With exception of a limited number of vertical tray risers, some degree of vertical separation is provided between the cables for redundant safe shutdown components. Horizontal tray runs containing the cables for redundant safe shutdown components are vertically separated by approximately five to 21 feet. Where vertical tray risers exist, minimal to no vertical separation may exist.

During power operations, the use of transient combustibles and hot work activities are procedurally controlled in containment. Access to containment is limited due to radiological concerns during power operations. Therefore, transient combustibles or transient ignition sources are not significant contributors to fire initiation.

The combustibles present are predominantly cable insulation. In-situ combustible liquids within the annular area are minimized and contained within components (e.g., valves) that are dispersed through out the annular area. Equipment containing significant quantities of combustible liquids (i.e. reactor coolant pumps) are typically not located in the annular area. In the absence of significant quantities of transient combustibles and combustible liquids the anticipated fire would not be floor-based. Therefore, the only potential fire will be limited in size and to the combustibles associated with cable insulation. The cables in containment are either IEEE-383 qualified or are coated with a Flamemastic fire retardant. In either case, the cable insulation would be difficult to ignite and sustain and fire growth would be slow. Internally generated cable fires are considered to be extremely unlikely given the nature of the cables and coating system, the sizing of the cables, and the electrical overcurrent protection provided. In containment, instrumentation cable trays are provided with sheet metal tray covers that would further inhibit the spread and growth of a fire.

In the unlikely event of a fire in the containment annular area, smoke detection is provided that annunciates in the main control room. Fire extinguishers are available in containment for brigade use. As indicated in the NRC SERs and for the reasons discussed above, the anticipated fire in the containment annular area is expected to be "limited in size and duration." For such a fire, the horizontal separation provided in the Unit 1 containment annular area is sufficient to preclude damage to redundant safe shutdown cables.

Conclusion

The existing features in the Unit 1 containment (Fire Area K) provide adequate separation of cables and associated non-safety related circuits of redundant trains based upon the following features:

- A fire of sufficient magnitude to damage redundant cables of associated circuits in the annular region of containment is unlikely because of limited access to containment and small amounts of combustibles in this region.
- The high containment ceiling, large containment volume, and open metal grating walkways in the annular region inside containment will allow hot gases from anticipated exposure fires to be safely dissipated.
- The cables inside containment are either IEEE-383 qualified or are coated with a Flamemastic fire retardant.
- The predominant combustible in the annular region of containment is cable insulation.
- In-situ combustible liquids within the annular area are minimized and contained within components that are dispersed through out the annular area.
- Internally generated cable fires are considered to be extremely unlikely given the nature of the cables and coating system, the sizing of the cables, and the electrical overcurrent protection provided.
- In the unlikely event a fire does occur in the containment annular area, smoke detection is provided that annunciates in the main control room.
- Separation of redundant cables by more than seven feet horizontally, with the limited size and duration of anticipated fires, provides reasonable assurance that one train of redundant cables will be free of fire damage.

Based upon the above, additional modifications would not augment or materially enhance plant safety since existing design features provide adequate protection to prevent fire damage to cables and associated non-safety related circuits of redundant trains. Therefore, this exemption request meets the criteria of 10 CFR 50.12(a)(2)(ii) where application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule. To alleviate the discrepancy associated with vertical separation, FPL is providing a markup of the NRC March 5, 1987, SER (see Attachment 2 to FPL letter L-2000-164).

References

1. St. Lucie Unit 1 UFSAR.
2. 10 CFR 50, Appendix A, GDC-3.
3. 10 CFR Part 50.48, "Fire Protection."
4. Appendix R to 10 CFR Part 50, Section III.G.
5. Generic Letter 86-10, "Implementation of Fire Protection Requirements", dated April 24, 1986.
6. NRC SER dated February 21, 1985 for PSL Unit 1.
7. NRC SER dated March 5, 1987 for PSL Unit 1.
8. FPL Letter (L-83-227) to NRC dated April 12, 1983.
9. FPL Letter (L-83-261) to NRC dated April 25, 1983.
10. FPL Letter (L-83-453) to NRC dated August 24, 1983.
11. FPL Letter (L-83-488) to NRC dated September 16, 1983.
12. FPL Letter (L-84-346) to NRC dated November 28, 1984.
13. FPL Letter (L-84-390) to NRC dated December 31, 1984.
14. Unit 1 LER 50-335/1999-009-00 dated January 18, 2000.

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Attachment 2
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NRC SER Markup

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FIRE AREA K (REACTOR CONTAINMENT BUILDING)

Exemption Requested

An exemption was requested from Section III.G.2.d of Appendix R to the extent that cables for safe shutdown equipment and associated nonsafety

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circuits of redundant trains in containment are not separated by 20 feet of horizontal distance with no intervening combustibles or fire hazards.

Discussion

This exemption request for Fire Area K was previously submitted to the NRC in the form of an exemption from either the "20 feet of separation" or "separation by a noncombustible radiant energy heat shield." This exemption was granted by a letter dated February 21, 1985. The revised exemption request, which is the subject of this evaluation, now incorporates the additional parameter of "no intervening combustibles" in the 20 feet of separation space.

The reactor containment building is separated from other plant areas by 3-hour fire rated barriers. The containment is one fire area with a large volume and a high ceiling. There are four floor levels inside the containment at the 18-, 23-, 45-, and 62-foot elevations. Normal access to the containment is controlled and limited.

Our previous evaluation of this exemption and its approval was based, in part, on the following:

- All nonqualified IEEE Std 383 cables are covered with a fire retardant mastic.
- Separation of redundant cables was by more than 7 feet horizontally, and ~~25 feet vertically.~~
- Because of limited access and small amounts of combustibles, a fire of

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sufficient magnitude to damage redundant cables or associated circuits is unlikely.

- The containment volume and high ceiling would cause a small fire's energy to readily dissipate and not threaten redundant cables simultaneously.

Evaluation

The fire protection in the containment fire area does not comply with the technical requirements of Section III.G.2.d of Appendix R because 20 feet of separation free of intervening combustibles have not been provided between safe shutdown equipment cables and associated nonsafety circuits of redundant trains.

Reaffirming our previous evaluation of the containment fire area and its redundant cables, it is concluded that because of the small amount of combustibles, a potential fire would be of limited magnitude and extent. The products of combustion from such a fire would be dissipated up into the higher elevations of the containment structure and away from the vulnerable shutdown components. Therefore, we conclude that one shutdown division would remain free of fire damage.

Conclusion

Based on the above evaluation, it is concluded that exemption request K₁ for Fire Area X (containment) from Section III.G.2.d of Appendix R is acceptable because the removal of the combustibles in the separation space between redundant cables and associated circuits would not significantly increase the level of fire protection. Therefore, the exemption is granted.