

NRC GENERIC LETTER 06 10 TECHNICAL EVALUATION

Appendix R Section III.G.2(b)
Twenty Foot Separation Between Redundant Components
With No Intervening Combustibles

Fire Zone 6M

and

Fire Zone 6S

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Fire Protection Technical Evaluation

Appendix R Section III.G.2(b) Twenty Foot Separation Between Redundant Components With No Intervening Combustibles

Purpose

The purpose of this technical evaluation is to review that portion of Fire Zones (FZ) 6M and 6S designated as a twenty foot separation space within the same fire area with no intervening combustibles. This review will evaluate the ability of the "twenty foot wide separation space" to prevent the spread of fire between FZs 6N and 6S and to maintain safe shutdown capability for both units. In addition, this evaluation will determine the impact that the twenty foot wide space will have on other evaluations or exemption requests previously performed and contained in the Fire Protection Program Manual (FPPM).

The twenty foot separation space is defined in accordance with the latest Appendix R analysis. This separation space is intended to represent a definitive portion of a fire zone(s), 20 foot in width, that spans from one fire barrier to another along an imaginary boundary. This imaginary boundary occurs where a common Unit 1 and 2 fire zone (6M) abuts a Unit 2 fire zone (6S). The separation space is used to provide appropriate separation between a Unit 1 Appendix R analysis area from a Unit 2 Appendix R analysis area.

Description

Appendix R to 10CFR50, Section III.G.2(b) states the following requirements for separation of redundant components within the same fire area:

"Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area".

Since no physical barrier existed or could be easily provided between FZs 6N and 6S, the compliance strategy method of III.G.2(b) was seen as a logical means of providing the needed separation between the Unit 1 and 2 analysis areas.

The 20 foot wide area exists along the border between FZs 6M and 6S, but spreads predominantly to the south into Unit 2 (FZ 6S). The area is bounded on the east by the "L" shaped labyrinth wall to the seal water filters and the western wall of the north safety injection pump cubicle

(FZ 65B). In the north-south direction, the separation space is located between the "L" shaped wall on the north and on the south by the wing wall that projects out from between the safety injection pump cubicles (FZs 65A and 65B). The distance between these two concrete walls is approximately 25 feet. On the western side of the separation space, the concrete wall on the southern side of the boric acid tank area provides a barrier to the north. Additionally, the concrete walls to the gas decay tank area provides a southern and western boundary to the separation space. The separation space also extends down the corridor formed between the boric acid tank area and the gas decay tank area. Refer to Sketch 1 showing the area of the plant containing this 20 foot wide separation space. This represents a repositioning of the 20 foot separation space more into FZ 6S than was previously analyzed.

The SSCA, Revisions 0 and 1, Chapter 8 identified modifications that were to be made to the plant in order to comply with Appendix R, Section III.G. (Note: This modification chapter has been transferred from the SSCA to the FPPM, where it remains as Chapter 8.) Section 8.3.1 identified that the open cable trays traversing the zones from the north side to the south side have been appropriately fire-stopped to prevent fire propagation from one section of the fire zone (FZ 6N) to the other (FZ 6S). The trays were originally fire stopped with a silicone foam fire seal within the trays. Traditionally, the tray would also be wrapped for several feet with a noncombustible (metal) material in the immediate area of the fire seal. However, in these instances, the cable trays were wrapped with Thermo-Lag fire barrier materials for the entire 20 foot length between the silicone foam fire stops.

In these prior analyses, the 20 foot wide separation space was applied to only those cable trays traversing the zones (FZs 6N, 6M and 6S) from north to south and included only those areas directly beneath the trays. Today, this separation space is conservatively assumed to extend across FZs 6M and 6S in an east-west direction until the physical barriers forming the corridor between the boric acid tank and gas decay tank areas are able to limit the straight line distance between the areas to the north and south of the separation space. The trays that only traversed north-south are located on the western side of the zones and are over 8 feet from the next closest tray. The eastern two trays traversing north-south that eventually turned east were also fire-stopped and wrapped. One of these trays (2AZ-C62) was required to be wrapped per III.G.2(c) by prior analyses. This tray connects with other trays that were also required to be wrapped which traversed east (2AZ-C75) or vertically (2AZ-C58) within the zone. The cables within these trays are no longer required to be wrapped per III.G.2(c) by our latest Appendix R analysis. Since the trays turned away from the opposite unit, they would not result in a fire propagation path to the other unit.

Only one cable tray (2AZ-P10) was partially wrapped through the separation space. This tray was wrapped where it was physically connected to tray 2AZ-C62. When considered among all the other wrapped cable trays, the partially wrapped tray can be viewed as an isolated cable run. Additionally, since this tray also turned east, it would not have resulted in direct fire propagation between cable trays of the opposite unit. There are no other cable trays that run north-south in the immediate area of where the trays turn east to cause a crisscross of trays that would allow the fire to propagate from one unit to the other. The closest non-fire-stopped north-south trays are near the elevators, which are more than 20 feet east of the separation space.

Fire Zone 6M is the Auxiliary Building, West End - Middle Section. This zone is located at the 587 ft. elevation and contains safe shutdown cables for both units. Fire Zone 6M forms a buffer between the Unit 1 FZ 6N and Unit 2 FZ 6S. This fire zone is part of a much larger fire area, Fire Area (FA) E. This fire area also contains FZs 5, 6A, 6N, 6S, 6I, 64A, 64B, 65A and 65B. This fire area includes much of the remaining portions of the Auxiliary Building at this elevation, including general access areas of both units (FZs 5, 6N, 6M and 6S), the Unit 1 and 2 El. 609 pipe tunnel (FZ 6A), the spray additive tank room (FZ 6I) and Unit 1 and 2 safety injection pump cubicles (FZs 64A, 64B, 65A and 65B).

Fire Zone 6S is the Auxiliary Building, West End - South Section. This zone is located at the 587 ft. elevation and contains safe shutdown cables and components for Unit 2. This fire zone is also part of FA E as explained above.

Safe Shutdown Equipment

The Appendix R safe shutdown analysis has evaluated the impact of a fire in this location. Safe shutdown analysis area 5 (AA5) contains FZs 5, 6A, 6M, 6N, 6I, 64A and 64B. Safe shutdown analysis area 6 (AA6) contains FZs 5, 6A, 6M, 6S, 6I, 65A and 65B. The twenty foot wide separation space described in this evaluation is located predominately in FZ 6S and prevents the propagation of fire between AA5 and AA6. AA5 contains mostly Unit 1 safe shutdown components and cables and some cables associated with Unit 2 safe shutdown components. AA6 contains mostly Unit 2 safe shutdown components and cables and some cables associated with Unit 1 safe shutdown components. The safe shutdown analysis has demonstrated that a fire in either analysis area will not prevent the safe shutdown of either unit. Safe shutdown compliance strategies of both analysis areas rely on a combination of strategies including repairs, redundant equipment and systems outside the area (Appendix R Section III.G.1), and the wrapping of redundant safety circuits within the same fire area by a 1-hour fire barrier (Appendix R Section III.G.2.c). Analyses AA5 and AA6 have demonstrated that no wrapping of cables is required within the 20 foot separation space to satisfy compliance with Appendix R Section III.G.2.c.

Fire Protection Equipment

Fire Zones 6N, 6M and 6S are provided with an ionization smoke detection system and dry pilot preaction sprinklers. The detection and sprinkler systems are installed throughout the normally accessible portions of the fire zone. The sprinklers in the area of the 20 foot separation space are located beneath the obstructions and cable trays. The sprinklers were installed to extinguish floor based fires that would threaten the cable trays in accordance with our commitments to Appendix A of BTP APCS 9.5-1. In addition, in FZs 6N and 6S sprinklers are installed in a close spaced configuration around the perimeter of the open stairway to form a water curtain between fire areas above and below.

Additionally, these fire detection and suppression systems also provide protection in the normally accessible portions of adjacent FZs 5, 64A, 64B, 65A and 65B within FA E. The open stairways of FZs 5 are also protected by a water curtain between fire areas above and below.

Fire Hazards Analysis

The normal fire loading for FZ 6M is considered low with a combustible loading of 27,000 BTU/sq.ft. for an equivalent fire severity of 20 minutes. (The actual combustible loading is under 21,000 BTU/sq.ft. having a fire severity of less than 16 minutes.)

The normal fire loading for FZ 6S is considered low with a combustible loading of 27,000 BTU/sq.ft. for an equivalent fire severity of 20 minutes. (The actual combustible loading is under 15,000 BTU/sq.ft. having a fire severity of less than 12 minutes.)

Plant components within the 20 foot wide separation space generally includes a valve control center, a lighting cabinet, process piping and instrumentation, conduits and cable trays.

The 20 foot wide separation space is toured daily to ensure that this space is kept free of permanent combustibles in accordance with this technical evaluation. The tours are conducted under a plant fire protection administrative guideline.

The presence of any transient combustibles within the 20 foot wide separation space would be accounted for in the total combustible loading for the zones under the plant's transient tracking program. If an exposed transient combustible were to remain within the 20 foot wide separation area for an extended period of time, plant policy is to establish a fire watch in the area. With the existence of the automatic detection and suppression systems within FZs 5, 6N, 6M, 6S, 64A, 64B, 65A and 65B, a roving fire watch in FZs 6M and 6S is an acceptable compensatory measure until the combustibles are removed.

There are no significant ignition sources present or fire hazards within the 20 foot wide separation space. However, if a fire were to start within or near this separation space the ionization smoke detection system and dry pilot portion of the sprinkler system will give alarm notification within the control rooms. The control room operators would then initiate fire brigade activities. The automatic sprinkler system will control and/or extinguish a floor based fire before the fire brigade arrives.

Fire spread between the units and its affect on safe shutdown of the plant has been previously analyzed in the Safe Shutdown Capability Assessment (SSCA) and FPPM. These analyses rely on Appendix R compliance strategy III.G.2(b) methodology to maintain the separation of Unit 1 and 2 analysis areas AA5 and AA6. This compliance strategy is maintained by the presence of the 20 foot wide separation space plus the existence of automatic fire detection and suppression within the separation space and throughout the normally accessible portions of the fire area. The presence of partial fire area detection and suppression systems has been reviewed under Technical Evaluation 10-A and found to be acceptable.

Additional guidance on Appendix R compliance is provided in NRC Generic Letter 86-10, Implementation of Fire Protection Requirements. Sections 3.5 and 3.6 provide guidance on separation of redundant circuits and intervening combustibles with regard to the 20 foot wide separation space. These sections are paraphrased below:

3.5.1 It is acceptable to erect a partial one-hour rated barrier for portions of circuits with less than 20 feet separation, as long as 20 feet of horizontal separation exists between the redundant unprotected portions of the circuits. Additionally, no intervening combustibles or fire hazards are to exist in the 20 foot separation space and the fire area is to be protected by automatic fire detection and suppression.

3.6.1 An isolated cable run is considered to be a negligible quantity of combustible material.

If more than negligible quantities of combustible materials exist between redundant shutdown divisions, an exemption request should be filed. Justifications for past exemptions have been based on: 1) large horizontal spatial separation between redundant divisions; all cables qualified to IEEE-383, 2) presence of automatic fire suppression system over the intervening combustible, 3) presence of fire stops to inhibit fire propagation in intervening cable trays, 4) likely propagation direction of burning intervening combustibles in relation to the



shutdown divisions and 5) available compensating active and passive fire protection.

- 3.6.2 "No intervening combustibles" means that there is no significant quantities of in-situ materials which will ignite and burn located between redundant shutdown systems. The amount of such combustibles that has significance is a judgmental decision.

Transient materials are not considered as an intervening combustible; however, they must be considered as part of the overall fire hazard within the area.

Cables in cable trays that are not enclosed by fire rated enclosures are considered as intervening combustibles. However, cables in trays having solid sheet metal bottom, sides and top and protected by automatic fire detection and suppression systems and supported by a fire hazards analysis have been found to be acceptable under the exemption process.

- 3.6.3 Cables in conduits are not considered to be an intervening combustible. Oil (a combustible liquid) in closed containers which are in accordance with NFPA 30 are not considered to be an intervening combustible.

As discussed above, the 20 foot wide separation space contains cable trays which pass through this space in a north-south direction. These cable trays traverse north from FZ 6S into FZ 6M, where all but one turn east. The trays have been provided with a Thermo-Lag fire barrier wrap through the 20 foot separation space in accordance with our prior analysis. At each end of the wrapped section, a cable tray fire stop was provided. The cable tray fire stops consist of silicone foam penetration ure sealant material. One cable tray was wrapped for only a portion of the distance within the 20 foot wide separation space. The fire stopping and wrapping of the cable trays with a fire resistive material initially conformed to the guidance provided in GL 86-10 Sections 3.5.1 and 3.6.1. However, as explained below, the NRC has required the removal of all Thermo-Lag materials within the 20 foot separation space.

Two of the western trays traverse directly from Unit 2 FZ 6S into FZ 6M where they empty into an electrical junction pan. From the pan, two trays travel east, two more travel west and a single tray (2AZ-C90) continues north into Unit 1 FZ 6N. The remaining cable trays from each unit that enter FZ 6M change direction and run in the east-west direction, resulting in Unit 1 and Unit 2 cable trays running parallel to each other. The routing of the cable trays in this manner restricts the propagation of fire directly from one unit to the other as discussed in GL 86-10, Section 3.6.1.

Two small electrical troughs exist within the 20 foot wide separation area along the wall surrounding the boric acid tank area. These troughs contain instrumentation cabling for the instrumentation located on the wall. Each trough is a three sided metal enclosure mounted with the fourth side against the wall. The bottom trough is located near the floor while the top trough is located approximately six feet above the floor. The design of the trough allows only small areas where cabling is exposed. The troughs are located away from other cable trays. These trays are considered to be isolated tray runs containing negligible quantities of combustibles as discussed in GL 86-10 Section 3.6.1.

In a letter dated March 13, 1995 to Mr. A. Marion of Nuclear Energy Institute (NEI), the NRC states that "the staff will not accept the use of the NEI guide to justify the use of Thermo-Lag materials where noncombustibles materials are specified by NRC fire protection requirements or to assess the combustibility hazards presented by Thermo-Lag materials. ... As an alternative to the NEI guide, the staff recommends that licensees reevaluate their use of Thermo-Lag ... as an enclosure to create a 20-foot combustible-free zone between redundant trains and seek other solutions. Examples of possible solutions include the following: ... (3) replace Thermo-Lag barriers used to create combustible-free zones with noncombustible barrier materials..." The NRC further states in Enclosure 2 of this letter, that Thermo-Lag is combustible as defined by previously established NRC fire protection guidelines, that when exposed to fire hazards representative of nuclear power plants that it would release flammable vapors, ignite and burn. The staff has also concluded that "Thermo-Lag 330-1 material located between redundant safe shutdown divisions should be considered an intervening combustible material." Therefore, based on this information, Thermo-Lag materials installed within the 20 separation space are to be removed.

In addition to the wrapped cable trays, several conduits and other miscellaneous intervening steel have been wrapped with Thermo-Lag material within the 20 foot separation area.

Existing concrete walls help provide natural separation of FZs 6M and 6S through a portion of this separation space. As a result, these walls form passive boundaries for a portion of the 20 foot wide separation space. These walls include the concrete wall directly south of the boric acid tank area and the "L" shaped concrete wall between the elevator shaft and the reactor coolant filter/seal water filter cubicles. The 20 foot separation space does not extend into the filter cubicles or the gas decay tank areas due to the labyrinth design of the filter cubicles and tank area, the lack of combustibles in these areas, their wall construction, the upgrading of the "L" shaped wall around the filter cubicles with penetration seals and the classification of the filter cubicles and gas decay tank area as ALARA areas.

One of the penetrations in the "L" shaped concrete wall contains an undampered duct. The duct is part of the Auxiliary Building ventilation system and is 12" x 14" in size. The absence of the fire damper will reduce the overall rating of the seal. Fire testing and NFPA 90 support the position that no fire damper is required for duct work penetrating a one hour fire wall. Additionally, the other mitigating features of the area, including construction and low fire loading, offset the absence of a fire damper and it will not alter the basic reasons for fire sealing the wall. The penetration and wall are being fire sealed in order to help define the 20 foot separation space separating Unit 1 FZ 6N from Unit 2 FZ 6S. Additionally, the sealing of the barrier will aid in reducing the amount of floor area within the separation space by the presence of rated construction.

Modifications Required

Due to the NRC letter of March 13, 1995, the Thermo-Lag fire barrier wraps installed on the cable trays, conduits and/or intervening steel within the 20 foot separation space are to be removed.

Fire stops are to be installed within the north-south cable trays as originally committed in order to create a 20 foot separation space to inhibit fire propagation in the intervening cable trays between FZ 6N and 6S. As a conservative measure, the fire-stopping of cable trays will include the cable trays that turn east once they exit the separation space, as well as the cable trays that traverse only in the north-south direction. The north-south cable trays that are to be fire stopped include as a minimum; 2AZ-C36, 2AZ-C37, 2AZ-C62, 2AZ-P3/2AZ-P4/2AZ-P6 and 2AZ-P10. The fire stopping will include a silicone fire seal within the cable tray and a noncombustible material wrapped around the tray for several feet in the immediate area of the silicone fire seal. The cable trays will not be wrapped with the noncombustible material for the entire 20 foot length between the fire seals as done previously.

The 20 foot separation space is to be positioned within the area bounded between the "L" shaped wall on the north and on the south by the wing wall that projects out from between the safety injection pump cubicles (FZs 65A and 65B). With the minor repositioning of the 20 foot separation space, the prior fire stops within the cable trays (which upon removal of the Thermo-Lag material will consist only of 12 inches of silicone foam) will no longer be used. These prior fire stops will be left in the trays as a conservative fire protection measure that will additionally retard fire propagation along the trays. Since the distance between these walls is approximately 25 feet, this allows flexibility with final placement of the separation space when accounting for field conditions and ease of installation.

Fire barrier penetration seals are to be installed in the concrete walls forming the passive boundaries of the separation space. These walls include as a minimum; 1) the east-west wall located directly south of the boric acid tanks and 2) the "L" shaped wall between the elevator shafts and the reactor coolant filter/seal water filter cubicles.

Conclusion

Based on the above evaluation and proposed modifications, reasonable assurance is provided that a 20 foot wide separation space along the boundary between FZs 6M and 6S will prevent the spread of fire between these two fire zones and maintain safe shutdown capability for both units. In addition, this evaluation does not adversely impact other evaluations and exemptions contained in the FPPM.

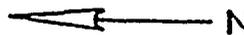
The bases that justify this conclusion are summarized as follows:

- 1) It has been determined that for a fire in either analysis area, AA5 or AA6, the fire will not prevent Unit 1 or Unit 2 from achieving safe shutdown.
- 2) The normal fire loading for these zone is considered low.
- 3) There are no significant ignition sources present or fire hazard present within the 20 foot wide separation space.
- 4) Fire Zones 6M and 6S are provided with an ionization smoke detection system and an automatic dry pilot sprinkler system within the normally accessible portions of the zones. The smoke detection and dry pilot portion of the automatic sprinkler system will give notification of a fire within this area. Additionally, these fire detection and suppression systems provide coverage for the fire zones adjacent to 6M and 6S.
- 5) Daily tours are performed for the 20 foot wide separation space to ensure that the space remains free of permanent or long term transient combustibles.
- 6) The monitoring of any transient combustibles within the 20 foot wide separation space and inclusion of these combustibles in the total combustible loading for the fire zones. The establishment of fire watches for any long term transients.
- 7) Many of the north-south cable trays near the area of concern turn east changing direction once they approach (from Unit 1) or exit (from Unit 2) the separation space, which will prevent the direct propagation of fire into the other unit via these trays.

- 8) The presence of fire stopped cable trays within the 20 foot wide separation space.
- 9) The two isolated instrument troughs in the 20 foot wide separation space represent a negligible combustible.
- 10) Existing concrete walls that are to be upgraded to fire rated barriers provide passive boundaries for the 20 foot wide separation space.
- 11) Additional modifications would not significantly enhance fire protection safety above that provided by present commitments.

587' Aux. BUILDING

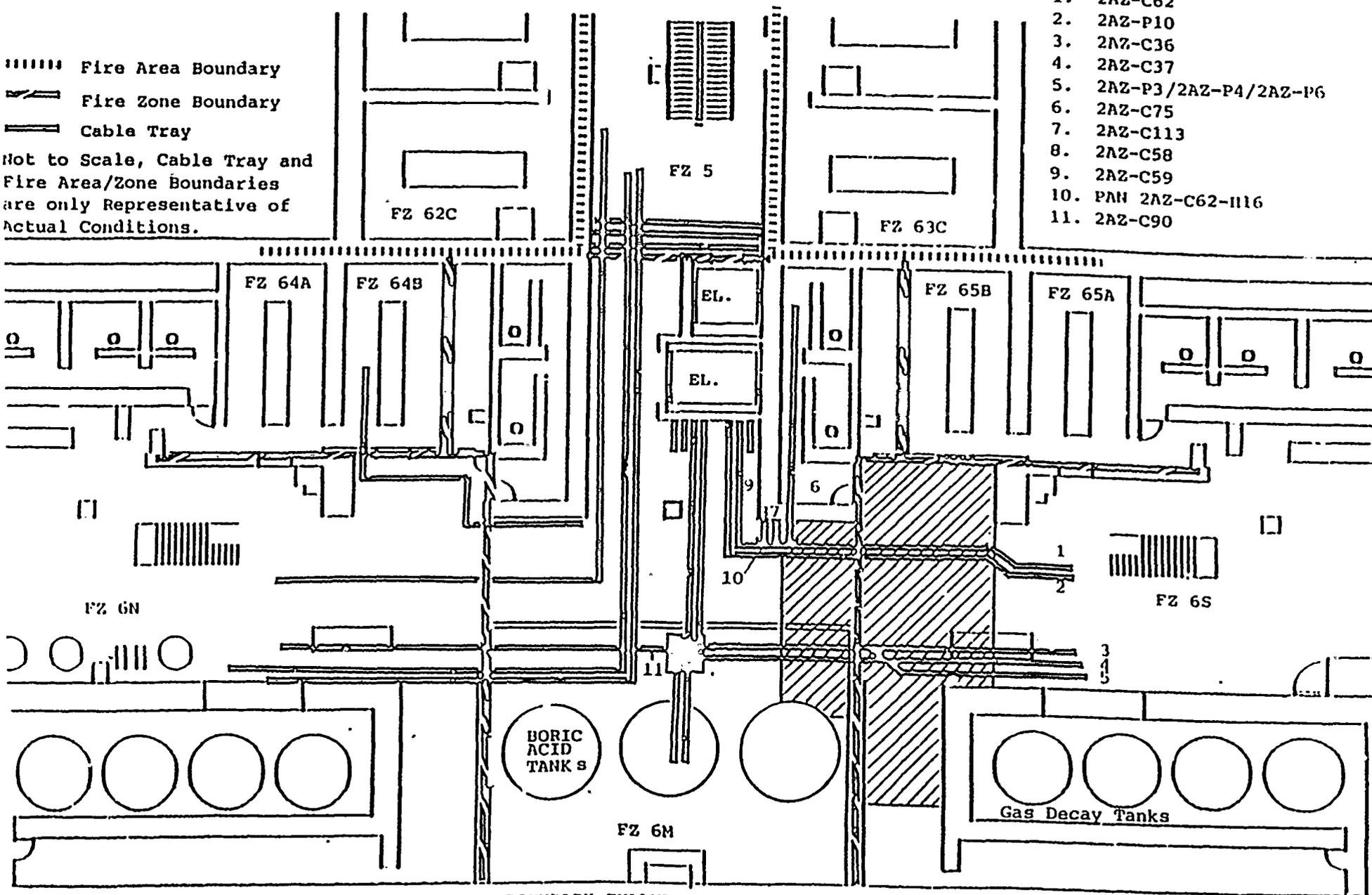
SKETCH 1



1. 2AZ-C62
2. 2AZ-P10
3. 2AZ-C36
4. 2AZ-C37
5. 2AZ-P3/2AZ-P4/2AZ-P6
6. 2AZ-C75
7. 2AZ-C113
8. 2AZ-C58
9. 2AZ-C59
10. PAN 2AZ-C62-1116
11. 2AZ-C90

- Fire Area Boundary
- Fire Zone Boundary
- Cable Tray

Not to Scale, Cable Tray and Fire Area/Zone Boundaries are only Representative of Actual Conditions.



BOUNDARY EVALUATION, TECHNICAL EVALUATION 11.42

JUL 26 1995



Date July 21, 1995

Subject Donald C. Cook Nuclear Plant Units 1 & 2
Nuclear Safety Evaluation for Fire Zones 6M & 6S;
Twenty Foot Separation Between Redundant Components
With No Intervening Combustibles

From J. M. Girgis

To AEP:NRC:0692DB File

Introduction

The 10CFR50 Appendix R analyses of fire zones 6M and 6S involve use of Section III.G.2 compliance strategy and feature a designated space (twenty foot separation space) along the boundary between these zones using the compliance strategy methods of Section III.G.2(b). As a result of the recent Appendix R revalidation project and the on-going Thermo-Lag resolution effort, changes to fire barriers within the twenty foot separation space, and to the definition of the space itself, are now desired. The separation space is used to provide regulatory separation between Appendix R safe shutdown analysis areas 5 and 6.

Accordingly, the purpose of this evaluation is to complete the necessary 10CFR50.59 evaluation, in accordance with the guidance provided in Generic Letter (GL) 86-10, to determine acceptability of the proposed changes to the designated separation space.

Discussion

The "SAFE-SI' TDOWN CAPABILITY ASSESSMENT AND PROPOSED MODIFICATIONS" (SSCA), dated March 1983 (reference 12), and revision 1 to the SSCA, dated December 1986, include licensing commitments to ensure compliance with Section III.G.2(b). Specifically, Section 8.3.1 of the SSCA requires that "The open cable trays traversing the zone [6] from the north side to the south side will be appropriately fire-stopped to prevent fire propagation from one section of the fire zone to the other." Section III.G.2(b) requires "Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards."

Trays traversing the designated 20 foot separation space from north to south were fire stopped and wrapped since prior Appendix R analyses considered cables located within these trays to be required for safe shutdown. The recent Appendix R revalidation project has demonstrated that cables within these trays are no longer required to be protected in accordance with Appendix R Section III.G.2(c). Therefore, a 1-hour fire

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wrap is not required for these trays. Also, it is noted that almost all of these trays travel from north to south and turn east shortly after exiting the designated separation space. Consequently, the likely propagation direction of fire along these trays precludes damage to redundant equipment. Only one tray which travels from north to south through fire zone 6M also continues on into fire zone 6N.

On March 13, 1995, NRC issued a letter (reference 12) to the Nuclear Energy Institute (NEI) indicating that the Thermo-Lag product is considered a combustible material and, therefore, should be removed from the 20 foot separation space. Accordingly, the proposed changes involve removal of Thermo-Lag fire barrier installed on cable trays, conduits, and/or intervening steel within the 20 foot separation space. Also, the 20 foot separation space will be redefined to conservatively include the entire width of fire zones 6M and 6S and will be shifted slightly to provide consistency in location between elevations. As a result, the existing fire stops in these trays will be abandoned in place and an appropriate fire stop design will be installed at the new end boundaries of the 20 foot separation space. In addition, fire barrier penetration seals will be installed in the concrete walls forming the new passive boundaries of the separation space (see Tech Eval. 11.42).

Evaluation

The following evaluation has been completed in accordance with procedures 227000-STG-5400-01 and 227000-LTG-2300-05, in compliance with federal regulations 10CFR50.59, 10CFR50.48, and 10CFR50 Appendix A Criterion 3, and, consistent with the guidance provided in Generic Letter (GL) 86-10, Section F. Further, the proposed changes were discussed with the Appendix R Project Manager and Cognizant Fire Protection Engineer, B. J. Gerwe.

Assessment of Potential Impact on the FHA, SSCA, and FPPM

As discussed with the Cognizant Fire Protection Engineer, the FHA is in the process of being revised to include the combustibility of Thermo-Lag material. At this time, it has been decided not to show a reduction in total combustible loading in the associated areas due to the removal of Thermo-Lag material. This is a conservative position for the analysis.

The Appendix R Project Manager has determined that the FPPM will require revision to reflect the described expansion and that the SSCA will not require revision because the modification chapter has been transferred to the FPPM (chapter 8).

Consideration of Combustible Loading and Distribution

As described above, the proposed changes reduce combustible loading and will not increase combustible distribution (reference 16).

Impact on Associated Circuits or Equipment Needed for Safe Shutdown

The Appendix R Project Manager has reviewed Technical Evaluation 11.42 (reference 16) and has determined that the proposed changes, as described

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above, will not impact associated circuits or equipment needed for safe shutdown.

Impact on Appendix R Compliance Strategies for Cook Nuclear Plant

The Appendix R Project Manager has determined that the proposed changes will not impact Appendix R compliance strategy.

Licensing Commitments Assessment

A licensing document search has been completed and no licensing commitments could be identified that would preclude implementing the proposed changes. Also, Section 7.13 of the SSCA requested exemption from Appendix R requirements for dampers located in fire zones 6M and 6S. By letter dated December 23, 1983 (reference 7), NRC provided the requested exemption. The proposed changes to the 20 foot separation space would not require a revision to this previous exemption and, based on the above review, no additional exemptions are required to support the proposed changes.

Impact on Fire Protection Administrative Controls

Based on the above review, the proposed changes will not involve additional or expanded exceptions to compliance with the Administrative Controls listed in Appendix A to BTP APCSB 9.5-1.

Unreviewed Safety Question Determination

In accordance with the guidance provided in GL 86-10 (reference 4), the determination of the involvement of an unreviewed safety question defined in 10CFR50.59(a)(2) is provided below to address overall plant fire safety. Accordingly, the postulated "accident previously evaluated" is a fire event (i.e., not a UFSAR chapter 14 design basis accident).

1. Does the proposed activity increase the probability of occurrence of an accident previously evaluated in the UFSAR?

No. The proposed changes are considered changes to passive fire protection features (i.e., fire barriers) used to protect systems required to achieve and maintain safe shutdown conditions. As such, the proposed changes are not considered accident initiators. Therefore, these changes will not affect the probabilities of occurrence of an accident considered in the UFSAR.

2. Does the proposed activity increase the consequences of an accident previously evaluated in the UFSAR?

No. The attached technical evaluation has concluded that the proposed changes, as described above, will prevent the spread of fire between the affected fire zones and maintain redundant safe shutdown capability (reference 16). Therefore, the fire protection features within fire zones 6M and 6S will continue to protect equipment necessary to mitigate the consequences of fire induced accidents. As such, the proposed changes will not increase the

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radiological consequences of the accidents previously evaluated in the UFSAR. Therefore, these changes will not increase the consequences of an accident previously evaluated in the UFSAR.

3. Does the proposed activity increase the probability of an occurrence of a malfunction of equipment important to safety previously evaluated in the UFSAR?

No. With consideration for items 1 & 2 above, the proposed changes will not challenge safety system performance or degrade required safe shutdown design basis capabilities. Also, the Cognizant Fire Protection Engineer has concluded that the fire protection measures available in these zones provide a level of protection commensurate with the fire hazards in the zones (reference 16). Therefore, the proposed changes will not increase the probability of an occurrence of a malfunction of equipment important to safety previously evaluated in the UFSAR.

4. Does the proposed activity increase the consequences of a malfunction of equipment important to safety previously evaluated in the UFSAR?

No. An increase in the consequences of a malfunction of equipment must involve an increase in dose to the public. As stated in item 2 above, the proposed changes will not increase the radiological consequences of the accidents previously evaluated in the UFSAR. Therefore, these changes will not increase the consequences of a malfunction of equipment important to safety previously evaluated in the UFSAR.

5. Does the proposed activity create the possibility of an accident of a different type than any previously evaluated in the UFSAR?

No. Possible accidents of a different type are limited to accidents that are as likely to happen as those considered in the SAR. The Cognizant Fire Protection Engineer has reviewed the proposed changes and has determined that the defense-in-depth fire protection available in these fire zones adequately protects the fire safety of the plant. Also, the removal of the Thermo-Lag material will be completed in accordance with plant procedures under PAR #12-P-0054 and, therefore, the potential risk of disturbance to the electrical trays will be minimal. Therefore, the proposed changes will not create the possibility of an accident of a different type than any previously evaluated in the UFSAR.

6. Does the proposed activity create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the UFSAR?

No. See item 5 above.

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7. Does the proposed activity reduce the margin of safety, as defined in the basis for any technical specification?

No. Based on the above evaluations and reviews, the proposed changes, as described above, will not reduce the margin of safety as defined in the basis for any technical specification (reference 2).

Conclusion

The above described changes will not involve additional or expanded exceptions to compliance with the administrative controls listed in Appendix A to BTP APCS 9.5-1, or impact Technical Specifications. The impact on the UFSAR has been reviewed and it was determined that revisions to the UFSAR will not be required, however, the FPPM will need to be revised. Based upon the above evaluation, the 10CFR50.59 evaluation indicates that the proposed change will not constitute an unreviewed safety question per 10CFR50.59(a)(2), nor does it constitute a significant hazard to the health and safety of the public. Therefore, Nuclear Safety concludes that the proposed changes are acceptable.

Finally, it is noted that the proposed changes do not represent a deviation from the guidelines listed in Appendix A to BTP APCS 9.5-1 or from previous licensing commitments. Therefore, based on the above review, the identified changes do not require NRC notification, review or approval. However, in accordance with commitments made under AEP:NRC:0692DA, resolution of Thermo-lag installations at Cook Nuclear Plant will be summarized and forwarded to NRC in December 1996 (AEP:NRC:0692DB). This evaluation completes the GL 86-10 review process and must be retained with all supporting documents for future NRC audits and reviews.

References

- 1) UFSAR Sections 1.7, 7.7, 9.8.1, 10.6, and Chapters 13 & 14
- 2) Technical Specifications 3.3.3.7, 3/4.7.9, and 3/4.7.10
- 3) QAPD Section 1.7.19
- 4) Generic Letter 86-10, Section F, dated April 24, 1986
- 5) GL 86-10, Enclosure 2, Section 8.4, dated April 24, 1986
- 6) Safety Evaluation Report (SER), dated July 31, 1979
- 7) AEP:NRC:0692L
- 8) AEP:NRC:0692E
- 9) Submittal letters dated January 31, March 31, and October 27, 1977
- 10) Section D.1.(j) of Appendix A to BTP APCS 9.5-1
- 11) Safe Shutdown Systems Analysis (SSSA)
- 12) SSCA, Sections 7.13 and 8.3, Rev.0, 03/83 and Rev.1, 12/86
- 13) Fire Hazards Analysis (FHA)
- 14) Fire Protection Program Manual (FPPM)
- 15) 10CFR50 Appendix R, Sections III.G, III.K, III.L
- 16) NRC GENERIC LETTER 86-10 TECHNICAL EVALUATION 11.42, dated 07/95.
- 17) Internal Memorandum from J. M. Girgis, date 11/03/93.
- 18) Letter of March 13, 1995, from C. McCracken, NRC, to A. Marion, NEI.

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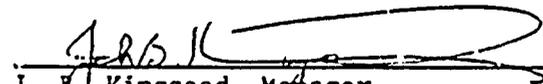
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Keywords

fire barriers

thermo-lag

Approved By: _____


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ATTACHMENT 3 TO AEP:NRC:0692DM

TECHNICAL EVALUATION FOR AUXILIARY BUILDING
FIRE ZONES 44N AND 44S