

NRC GENERIC LETTER 86-10 TECHNICAL EVALUATION

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

Fire Zone 44N

and

Fire Zone 44S

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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) 44N and 44S designated as a twenty foot separation space between alternate components 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 44N and 44S and maintain alternate safe shutdown capability. 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 Unit 1 fire zone (44N) abuts a Unit 2 fire zone (44S). 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".

The Appendix R analyses for FZs 44N and 44S at El. 609' use compliance strategy III.G.3. This strategy depends on alternate shutdown capability independent of cables, systems or components in the area, room or zone under consideration. To accomplish this, the cables, systems and components of the opposite unit are relied upon. Therefore, FZs 44N (Unit 1) and 44S (Unit 2) provide alternate shutdown capability for each other. Since no physical barrier existed or could be easily provided between FZs 44N and 44S, the compliance strategy method of III.G.2(b) was seen as a logical means of providing the needed

separation. Generic Letter 86-10, Enclosure 1, Item 6, "Alternate or Dedicated Shutdown" provides supportive guidance on this approach.

"... While "independence" is clearly achieved where alternative shutdown equipment is outside the fire area under consideration, this is not intended to imply that alternative shutdown equipment in the same fire area but independent of the room or the zone cannot result in compliance with the regulation. The "room" concept must be justified by a detailed fire hazards analysis that demonstrates a single fire will not disable both normal shutdown equipment and the alternative shutdown capability."

The 20 foot wide space exists along the border between FZs 44N and 44S and spreads to the south into Unit 2 (FZ 44S). The area is bounded on the west by the Turbine/Auxiliary Building wall and on the east by the western wall of the Unit 2 volume control tank and seal water heat exchanger area. In the north-south direction, the separation space is located between the two wing walls that project out approximately 8 feet from the volume control tank and seal water heat exchanger area. The distance between these two concrete wing walls is approximately 25 feet. The northern concrete wing wall is located between the elevator shafts and volume control tank area. The southern concrete wing wall is located between the monitor tanks and seal water heat exchanger. With the exception of the wing walls there are no other physical barriers on the north or south side of the 20 foot wide separation space. Refer to Sketch 1 showing the area of the plant containing this 20 foot wide separation space. This represents a slight repositioning of the 20 foot separation space from prior analyses.

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 8.16.1 identified that the open cable trays traversing the zone 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 44) to the other. 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 from north to south and included only those areas directly beneath the trays. Today, this separation space is conservatively assumed to include the entire east-west width of FZ 44S. The trays that only traversed north-south are located on the western side of the zones (FZs 44N and 44S). Four other trays located in the middle and eastern side of the zones also traverse



north-south through the 20 foot separation space, but once outside the space they turn east. Since the trays turned away from the opposite unit, they would not result in a fire propagation path to the other unit. Therefore, they were not fire-stopped. Additionally, these trays represented isolated cable runs. The two trays on the eastern side of the zone are approximately 21 feet from the middle two trays. The middle trays in turn are located approximately 5 feet from the western (fire-stopped) cable trays. There are no other cable trays that run north-south in the immediate area where the trays turn east. Had there been, a crisscross of trays would have resulted that could 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 44N is the Auxiliary Building, North End. This zone is located at the 609 ft. elevation and contains safe shutdown cables for both units. This fire zone is part of a much larger fire area, Fire Area (FA) HH. This fire area also contains FZs 37, 43, 44A-H and 44S. This fire area includes much of the remaining portions of the Auxiliary Building at this elevation, including general access areas of both units (FZs 44N and 44S), the Unit 1 and 2 El. 617 valve gallery (FZ 37), the access control area (FZ 43), the Unit 1 and 2 containment spray heat exchanger rooms (FZs 44A, 44B, 44E and 44F) and Unit 1 and 2 residual heat removal heat exchanger rooms (FZs 44C, 44D, 44G and 44H).

Fire Zone 44S is the Auxiliary Building, South End. This zone is located at the 609 ft. elevation and contains safe shutdown cables and components for Unit 2. This fire zone is also part of FA HH as explained above.

Safe Shutdown Equipment

The Appendix D safe shutdown analysis has evaluated the impact of a fire in this location. Safe shutdown analysis area 42 (AA42) contains FZ 44S. Safe shutdown analysis area 36 (AA36) contains FZs 37, 43, 44A through 44H and 44N. The twenty foot wide separation space described in this evaluation is located predominately in the northern part of FZ 44S and prevents the propagation of fire between AA42 and AA36. AA36 contains mostly Unit 1 safe shutdown components and cables and some cables associated with Unit 2 safe shutdown components. AA42 contains mostly Unit 2 safe shutdown components and cables and some cables associated with Unit 1 component cooling water system (CCW). 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 alternate shutdown capability (Appendix R Section III.G.3). Additionally, AA42 relies on 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 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 44N and 44S 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, sprinklers are installed in a close spaced configuration around the perimeter of the open stairways to form a water curtain between fire areas above and below.

Fire Hazards Analysis

The normal fire loading for FZ 44N is considered low with a combustibile loading of 67,000 BTU/sq.ft. for an equivalent fire severity of 50 minutes. (The actual combustibile loading is under 53,000 BTU/sq.ft. having a fire severity of less than 40 minutes.)

The normal fire loading for FZ 44S is considered low with a combustibile loading of 33,000 BTU/sq.ft. for an equivalent fire severity of 25 minutes. (The actual combustibile loading is under 25,000 BTU/sq.ft. having a fire severity of less than 19 minutes.)

Plant components within the 20 foot wide separation space generally includes the Unit 1 CCW heat exchangers, evaporator condensate filter area, 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 combustibile loading for the zones under the plant's transient tracking program. If an exposed transient combustibile 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 44N and 44S, a roving fire watch in FZs 44N and 44S 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 arrival of the fire brigade.

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 separation of Unit 1 safe shutdown cables and components from the alternate cables and components in Unit 2. 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-B 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 I.S.P.A 30 are not considered to be an intervening combustible.

As discussed above, the 20 foot wide separation space contains cable trays (eight total) which pass through this space in a north-south direction. These cable trays traverse north from FZ 44S into FZ 44N, where four trays continue in the north-south direction and four turn east. The four north-south trays (1-AI-C4, 1-AI-C9, 1-AI-P1 and 1-AI-P4) have been provided with a Thermo-Lag fire barrier wrap through the 20 foot separation space in accordance with our prior analyses. At each end of the wrapped section, a cable tray fire stop is provided. The cable tray fire stops consist of silicone foam penetration fire sealant material. 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.

The four cable trays that turn east (2-AI-C1, 2-AI-C9, 2-AI-P1 and 2-AI-P7) are not fire-stopped or wrapped within the new 20 foot wide separation space. In the area of FZ 44N where the east-west corridor intersects with the north-south corridor, the north-south cable trays from each unit 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.

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 the Thermo-Lag material within the 20 foot separation area.

Existing concrete walls help provide natural separation of FZs 44N from 44S through a portion of this separation space. As a result, these walls form a passive boundary for a portion of the 20 foot wide separation space. These new fire barriers are formed along the north and east sides of the Unit 2 volume control tank area. The 20 foot separation area does not extend into the tank area due to the labyrinth design of the tank area, the lack of combustibles in this area, its wall construction and the classification of the tank area as an ALARA area. The southern and western wall construction consisting of concrete, with an equipment removal section made of multiple layers of staggered high density block, will impede the propagation of fire.

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 44N and 44S. As a conservative measure, the fire-stopping of cable trays will include the four cable trays that turn east once they exit the separation space, as well as the four trays that were originally committed to be fire stopped. The cable trays that are to be fire

stopped include: 2-AI-C1, 2-AI-P1, 2-AI-C9, 2-AI-P7, 1AI-P4, 1AI-C9, 1AI-C4 and 1AI-P1. The 20 foot separation space is to be positioned within the area bounded by the wing walls. 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 the wing walls is approximately 25 feet, this allows flexibility with final placement of the separation space when accounting for field conditions and ease of installation. 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.

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 north-south wall between the residual heat removal heat exchanger room (FZ 44H) and the volume control tank area (FZ 44S) and 2) the east-west wall between the elevator shafts (FZ 44N) and the volume control tank area (FZ 44S) from FZ 44H west to the end of the wall.

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 44N and 44S will prevent the spread of fire between these two fire zones and maintain alternate safe shutdown capability between 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:

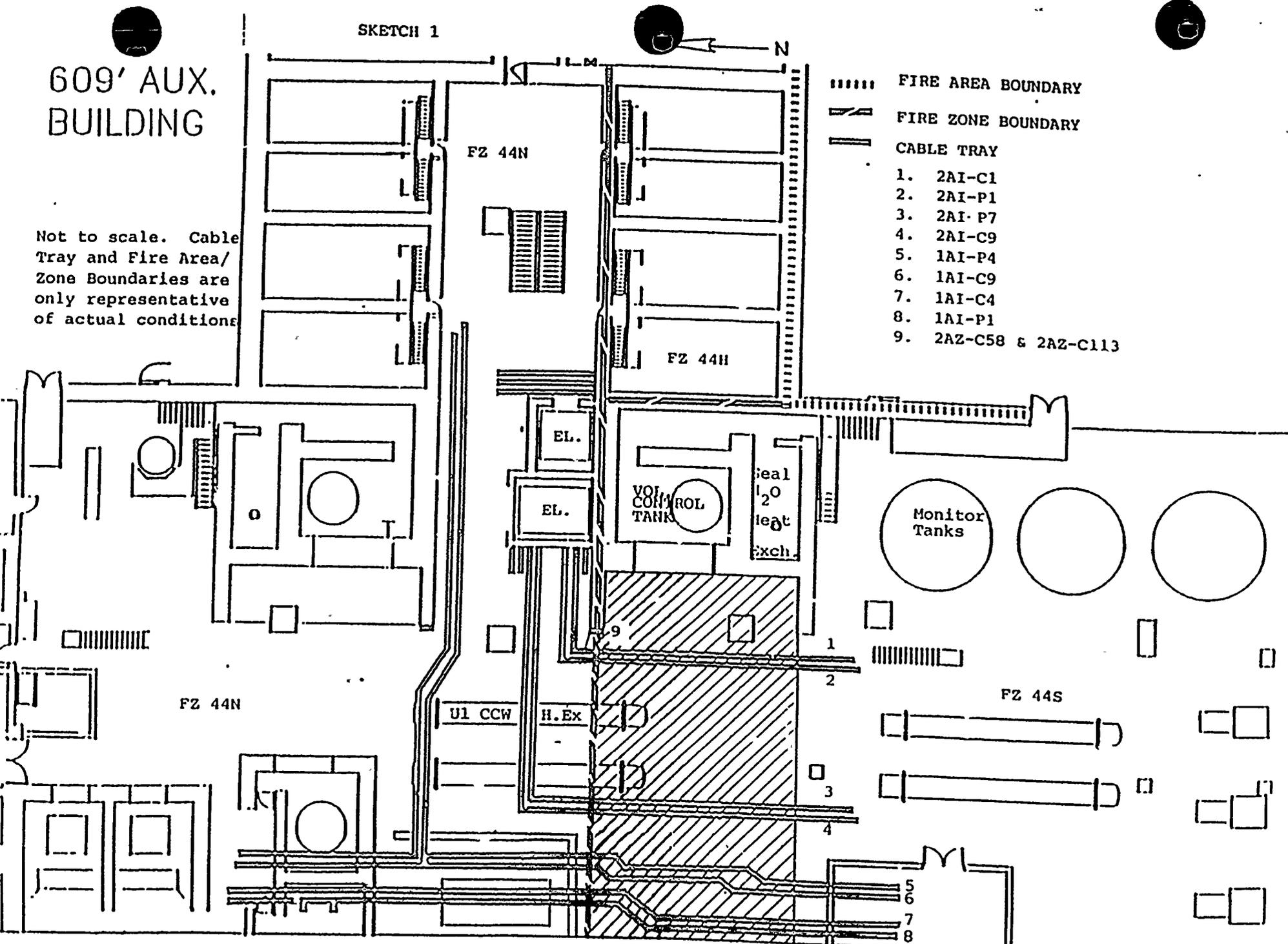
- 1) It has been determined that for a fire in either analysis area, AA42 or AA36, the fire will not prevent Unit 1 or Unit 2 from achieving safe shutdown.
- 2) The normal fire loading for these zones is considered low.
- 3) There are no significant ignition sources present or fire hazard present within the 20 foot wide separation space.
- 4) Fire Zones 44N and 44S 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.

- 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 which is in keeping with our original commitment.
- 9) Existing concrete walls that are to be upgraded to fire rated barriers provide passive boundaries for the 20 foot wide separation space.
- 10) Additional modifications would not significantly enhance fire protection safety above that provided by present commitments.

609' AUX. BUILDING

SKETCH 1

Not to scale. Cable
Tray and Fire Area/
Zone Boundaries are
only representative
of actual conditions



- ||||| FIRE AREA BOUNDARY
- FIRE ZONE BOUNDARY
- CABLE TRAY

1. 2AI-C1
2. 2AI-P1
3. 2AI-P7
4. 2AI-C9
5. 1AI-P4
6. 1AI-C9
7. 1AI-C4
8. 1AI-P1
9. 2AZ-C58 & 2AZ-C113



Date July 21, 1995

Subject Donald C. Cook Nuclear Plant Units 1 & 2
Nuclear Safety Evaluation for Fire Zones 44N & 44S;
Twenty Foot Separation Between Redundant Components
With No Intervening Combustibles

From J. M. Girgis *JMG*

To AEP:NRC:0692DB File

Introduction

The 10CFR50 Appendix R analyses of fire zones 44N and 44S involve use of Section III.G.3 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 areas 36 and 42 which include fire zones 44N and 44S, respectively.

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-SHUTDOWN 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 8.16.1 of the SSCA requires that "The open cable trays traversing the zone [44] 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."

Eight open cable trays traverse the designated 20 foot separation space. Trays 1-AI-C4, 1-AI-C9, 1-AI-P1, and 1-AI-P4 travel from north to south for almost the entire length of fire zones 44N and 44S. Accordingly, these four trays were provided with fire stop material at both end boundaries of the 20 foot separation space. In addition, these trays were

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also wrapped with a 1-hour Thermo-Lag fire barrier for the entire 20 foot length between the fire stops. It is noted, however, that analyses have demonstrated that compliance with Appendix R Section III.G.2(c) is not required within the separation space. Therefore, a 1-hour fire wrap is not required for these trays. Also, it is noted that trays 2-AI-C1, 2-AI-C9, 2-AI-P1, and 2-AI-P7, which also travel from north to south, were not wrapped or fire stopped because they turn east shortly after exiting the designated separation space. Consequently, the likely propagation direction of fire along these trays precludes damage to redundant equipment.

On March 13, 1995, NRC issued a letter (reference 18) 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 to the 20 foot separation space involve removal of the Thermo-Lag material from cable trays (1-AI-C4, 1-AI-C9, 1-AI-P1, and 1-AI-P4), 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 zone 44S and will be shifted slightly southward to provide consistency in location between elevations. As a result, the existing fire stops in trays 1-AI-C4, 1-AI-C9, 1-AI-P1, and 1-AI-P4 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. 11.43). Finally, as a conservative measure, trays 2-AI-C1, 2-AI-C9, 2-AI-P1, and 2-AI-P7 will also be fire stopped at both end boundaries of the 20 foot separation space.

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, P. C. Mangan and the 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).

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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 11.43 (reference 16) and has determined that the proposed changes, as described 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 implementation of the proposed changes. Also, Section 7.10 of the SSCA requested exemption from Appendix R Section III.G.2 for cables and equipment located in fire zone 44S. 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.

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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 44N and 44S will continue to protect equipment necessary to mitigate the consequences of fire induced accidents. As such, 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 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-3054 and, therefore, the potential risk of disturbance to the electrical trays will be minimal. Therefore, the proposed changes will not

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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.

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 r, 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 7.10 and 8.16, Rev.0, 03/83 and Rev.1, 12/86



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- 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 11.43, dated 06/95.
- 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.

Keywords

fire barriers
thermo-lag

Approved By: _____

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ATTACHMENT: reference 16

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ATTACHMENT 4 TO AEP:NRC:0692DM
DESIGN DETAIL DRAWING 2-1434R-5

ATTACHMENT 5 TO AEP:NRC:0692DM
DESIGN DETAIL DRAWING 2-1419R-6