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INDIANA
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AEP:NRC:0692BH

Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
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U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Attn: T. E. Murley

October 29, 1987

Dear Dr. Murley:

This letter responds to a request made by your staff during a telephone conference on October 28, 1987.

In accordance with the restrictions as to use set forth on the AEP drawings provided as Attachment 3 of AEP:NRC:0692BE, AEP hereby releases these documents to the NRC for its information and use in connection with the NRC's review of unrated hatches and postulated fire paths for I&M's D. C. Cook Units 1 and 2. AEP also permits the NRC to reproduce the drawings as necessary to facilitate review and distribution of the drawings to meet NRC requirements.

This document has been prepared following Corporate procedures which incorporate a reasonable set of controls to ensure its accuracy and completeness prior to signature by the undersigned.

Sincerely,

M. P. Alexich
Vice President
cm
cc: John E. Dolan
W. G. Smith, Jr. - Bridgman
R. C. Callen
G. Bruchmann
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NRC Resident Inspector - Bridgman
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Index of Supplemental Information for Evaluations Submitted in AEP:NRC:0692BE

1. Essential Service Water Pump House Hatch and Fire Damper Evaluation

This supplements the evaluation which provides our justification for an unrated hatch between the Unit 2 East ESW pump cubicle and the circulating water pump MCC room, Fire Zones 29C and 29G, respectively. Unit 1 and 2 safe shutdown system cabling is located in 29G; however it is protected by one-hour rated fire wraps.

Therefore, for a fire to affect redundant trains of unprotected safe shutdown system components or cabling, it must proceed from either Unit 1 ESW pump cubicle, down the stairs, across Zone 29G and up through the hatch into the 2-east ESW pump cubicle (or in the opposite direction). This highly unlikely, torturous path is discussed as "Postulated Fire No. 1" in the corresponding evaluation submitted in AEP:NRC:0692AN. This path is depicted for your information in the drawings found in Attachment 3.

Supplemental Information for Evaluations 2, 3, 4, 5, 6, 8 (See index for pertinent zones/areas involved)

Each of the fire areas directly adjacent to and on both sides of these hatches comply with 10 CFR 50, Appendix R, Section III.G.3. As such, each of these areas contain redundant trains of safe shutdown system cabling and components within close proximity of each other. Therefore, for a fire starting in either area, redundant trains of safe shutdown systems would be lost for an assumed fire in one area prior to that postulated fire's spread through the hatch.

However, for all the areas involved, a fire consuming both areas adjacent to the hatch would still permit safe shutdown of both units. This is due to remote, alternate safe shutdown capability (i.e., opposite unit safe shutdown support) existing outside the areas consumed by the single postulated fire communicating through the subject hatches.

7. Fire Zone 43 and Fire Area 56 Hatch Evaluation - Supplemental Information

Fire Zone 43 is part of a larger fire area containing Fire Zones 37, 43, 44A-H, and 44N. Fire Zone 56 is its own area.

For this analysis, we used the back-up data from our Safe Shutdown Capabilities Assessment (SSCA) report. Using that data we constructed the table below. The following is an

explanation of the methodology used in the table:

- "Affected Systems" is a list of safe shutdown systems lost for a fire consuming the area containing Fire Zone 43.

- "Available Systems" credits those systems outside the area containing Fire Zone 43 that would be available for safe shutdown of both units.

- The third column delineates those systems credited as "available" in the area containing Fire Zone 43 which are also available in Fire Area 56 (i.e., not affected by a fire in Fire Area 56). Therefore, a "YES" in the third column indicates that a fire consuming both areas (i.e., Fire Area 56 and the area containing Fire Zone 43) would not affect the system shown as "available" in the "available systems" column.

- The explanation of the nomenclature used in the "affected system" and "available systems" columns is as follows:

  - the first number indicates which unit's safe shutdown is involved.

  - the second portion of the term indicates the system, unit, and train used to provide safe shutdown support for the unit shown in the first portion of the term.

For example, "1-AFWMD2E" shown as the first entry in the "available system" column indicates that Unit 1 safe shutdown support using the Unit 2 east motor-driven train of auxiliary feedwater is available.

Affected Systems in Area Containing FZ 43	Available Systems Outside Area Containing FZ 43	System Available Outside Area Containing FZ 43 and not Affected by a Fire in FA 56
1-AFW1TD	1-AFWMD2E	Yes
1-AFWMD1E	1-AFW2TD	Yes
1-AFWMD1W		
1-AFWMD2W		

Affected Systems in Area Containing FZ 43	Available Systems Outside Area Containing FZ 43	System Available Outside Area Containing FZ 43 and not Affected by a Fire in FA 56
1-CCW1E	1-CCW2E	Yes
1-CCW1W		
1-CCW2W		
1-CVCS1E	1-CVCS2E	Yes
1-CVCS1W	1-CVCS2W	Yes
1-ESW1W	1-ESW2W	Yes
1-ESW2E	1-ESW1E	No
1-PMS-SG14W	1-PMS-SG14E(x)	Yes
1-PMS-SG23E	1-PMS-SG23W(x)	Yes
1-RHR1W	1-RHR1E, 2E, 2W	Yes
2-AFWMD1E	2-AFW1TD	Yes
2-AFWMD1W	2-AFWMD2E	Yes
2-AFWMD2W	2-AFW2TD	Yes
2-CCW1E	2-CCW2E	Yes
2-CCW1W	2-CCW2W	Yes
2-CVCS1E	2-CVCS2E	Yes
2-CVCS1W	2-CVCS2W	Yes
2-ESW1E	2-ESW2E	Yes
2-ESW1W	2-ESW2W	Yes
2-PMS-SG14X	2-PMS-SG14E(W)	Yes (Yes)
2-PMS-SG23X	2-PMS-SG23E(W)	Yes (Yes)
2-RHR2W	2-RHR2E	Yes
	2-RHR1E	Yes
	2-RHR1W	Yes

From the table, Column 3, we can see that the only affected system in Fire Zone 56 that is credited available in Fire Zone 43 is 1-ESW1E. This is acceptable because we still have 1-ESW2W which is Unit 1 shutdown using the Unit 2 West ESW system. If a fire did go through Fire Zone 43 to Fire Zone 56, we would use 1-ESW2W to shut down Unit 1, and 2-ESW2E, Unit 2 shutdown using the Unit 2 east pump (which we can see from Column 2 is available) to shut down Unit 2.

In conclusion, a fire consuming both the area containing Fire Zone 43 and Fire Zone 56 would not affect the ability for both units to safely shut down.

9. Fire Zone 52 and Fire Area 59 Hatch Evaluation - Supplemental Information

Fire Zone 52 is part of a larger fire area containing Fire Zones 3, 31, 32, 35, 36, 48, 49, 50, 51, 52, 69, 106, 107 and 146. Fire Zone 59 is its own area. The source data used and an explanation of the methodology used for this evaluation is the same as Evaluation 7, Fire Zones 43 and 56.

Affected Systems in Area Containing FZ 52	Available Systems Outside Area Containing FZ 52	System Available in FZ 52 and not Affected by a Fire in FA 59
1-AFW1TD	1-AFWMD1E(W)	Yes
	1-AFW2TD	Yes
	1-AFWMD2E(W)	No (No)
1-CCW2E	1-CCW1E	Yes
1-CCW2W	1-CCW1W	Yes
1-ESW1E	1-ESW1W	Yes
1-ESW2E		
1-ESW2W		
1-PMS-SG14W	1-PMS-SG14E(X)	Yes
1-PMS-SG23E	1-PMS-SG23W(X)	Yes
1-RHR1E	1-RHR1W	Yes
	1-RHR2E	Yes
	1-RHR2W	Yes
2-AFW2TD	2-AFWMD2E(W)	No (No)
	2-AFWMD1E(W)	Yes (No)
	2-AFW1TD	Yes
2-CCW1E	2-CCW2E	No
2-CCW1W	2-CCW2W	No
2-ESW1E	2-ESW1W	Yes
	2-ESW2E	No
	2-ESW2W	No
2-RHR2E	2-RHR2W	Yes
	2-RHR1E	Yes
	2-RHR1W	Yes

As we can see from the above table, Column 3 has more "No's" than Evaluation 7 had, but this is acceptable because in each case, except one, there is still at least one train of equipment available for safe shutdown for each unit.

We do have a potential problem with CCW in Unit 2. We can see from the table that both trains (east and west) of Unit 2 could be affected in the event that a fire communicates through the hatch connecting Fire Zones 52 and 59. We therefore investigated the location, in relation to the unrated hatch, of the equipment/cabling affected by the potentially communicated fire. The following is the location of the unprotected safe shutdown equipment closest to the hatch in each zone for Unit 2 CCW support - the function in question:

Fire Zone 52

- 2-CCW1W.

  2-2AM-D 15 feet north and 55 feet east on same floor elev. 633'-0" (Dwg. 2-1446).

  Cable 8170R-1 runs in cable tray 1AU-C13 105 feet north and 70 feet east on same floor elev. 633'-0" (Dwg. 2-1446).

Fire Zone 59

- 2-CCW2E.

  Cables 8867G-2 and 9149G-2 run in cable tray 2AM-C10 10 feet east and 0-11 inches below hatch.

  Due to the spatial separation, combined with the automatic detection and suppression on both sides of the hatch, it is unlikely that a single fire would result in the loss of this equipment on both sides of the hatch.

10. Fire Zone 70 and 73 Hatch Evaluation - Supplemental Information

This supplements the evaluation which provides our justification for unrated hatches between both the Unit 1 and 2 control rooms and their respective HVAC rooms located above the control rooms. Each control room complies with 10 CFR 50, Appendix R, Section III.G.3, and as such contains redundant trains of safe shutdown system cabling and components in close proximity. Each HVAC room and their

adjacent computer rooms (Fire Zones 70-73 constitute one fire area) and contain no safe shutdown system components or cabling.

One concern discussed in the evaluation is the unlikely situation of a fire occurring in either control room or HVAC/computer room and spreading through both hatches to communicate a fire involving both unit's control rooms simultaneously. This highly unlikely fire scenario is discussed in the corresponding evaluation submitted in AEP:NRC:0692AN.

2. If a reduction of the combustible loading cannot be accomplished, a fire watch will be established. This fire watch will either be a roving patrol or a continuous fire watch based upon the severity of the hazard.

These actions are not formalized in any plant procedure but will be included in the next revision to PMI-2270, Fire Protection, which is now in progress.

Section 2.6 of the Safe Shutdown Capability Assessment (SSCA) Report explains the maximum allowable combustible loading values that have already been established for certain fire zones/areas. These values were established in connection with the exemption requests and engineering evaluations given in the SSCA. These maximum values were developed to allow a reasonable increase in combustible loading with time, and to prevent re-evaluation and the need for resubmittal of the exemptions and engineering evaluations.

For those areas where maximum combustible loading values are not established, the factors which determine the combustible loading limits are: construction; fire ratings of doors, dampers, and penetration seals; and the presence of openings. The lowest fire rating assigned to the room construction, doors, and penetration seals is generally considered to be the upper limit for combustible loadings. As an example, a fire zone may have construction, doors, and penetration seals with a 3-hour rating and dampers with only a 1 1/2-hour rating. Therefore, the combustible loadings must be limited to 1 1/2 hours. When openings are present, an engineering evaluation is performed to assess the impact and to determine an upper limit. When suppression systems are provided, credit may also be taken for their ability to suppress a fire, and with an engineering evaluation, a combustible loading value that is above the limits provided by the construction, door, dampers, or penetration seals may be allowed.

It is not anticipated that we will reach a combustible loading value that will exceed the capabilities of the existing suppression systems for several reasons. First, historically the amount of increase in combustible loading for any fire zone/area is small. Second, conservatism is already built into the combustible loading values. Third, there is a low probability of a change in room classification or occupancy that would result in an increase in the combustible loading. Fourth, we have the ability to detect a fire in its incipient stage. (Presently, ionization detectors provide early detection of smoldering fires while infra-red flame detectors provide early detection of flaming fires.) And finally, early detection means early control and extinguishment by the suppression system and fire brigade.

The following actions will be taken if it is determined that the combustible loading in a given fire area/zone exceeds the maximum amounts permitted in that area/zone:

1. Attempts will be made to reduce the combustible loading to within the allowable limits.

This attachment contains one set of full-size drawings depicting the location of the unrated hatches discussed in Attachment 1.