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NRC/IE/DUASIA/ORPB

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JAN 21 1982

Docket Nos.: 50-315/316

MEMORANDUM FOR: J. Taylor, Director
Division of Reactor Programs
Office of Inspection and Enforcement

FROM: William V. Johnston, Assistant Director
Materials & Qualifications Engineering
Division of Engineering

SUBJECT: FIRE PROTECTION - D.C. COOK UNITS 1 AND 2

27

As requested by J. Stone of your office, we are enclosing a copy of a memorandum and several letters regarding fire protection for D.C. Cook Units 1 and 2.

1. Letter from Eisenhut to the licensee dated November 24, 1980, transmitting Fire Protection Rule and Summary of staff requirements to resolve open items.
2. Letter from Eisenhut to the licensee dated February 20, 1981, transmitting staff position safe shutdown capability and request for additional information.
3. Letter from the licensee to Denton dated March 27, 1981, responding to our letter of November 24, 1980.
4. Memorandum from Johnston to Novak dated December 31, 1981, indicating fire protection status for D.C. Cook Units 1 and 2.

NRR review of the fire protection program is complete.

William V. Johnston
William V. Johnston, Assistant Director
Materials & Qualifications Engineering
Division of Engineering

Enclosure:
As stated

cc: R. Vollmer	R. Ferguson
D. Eisenhut	S. Varga
R. Tedesco	V. Panciera
V. Benaroya	S. Minor
T. Wambach	T. Sullivan
O. Parr	R. Anand

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

November 24, 1980

Docket No. 50-315/316
Plant Name: D. C. Cook, Unit Nos. 1 and 2

TO ALL POWER REACTOR LICENSEES WITH PLANTS
LICENSED PRIOR TO JANUARY 1, 1979

The Commission published on November 19, 1980 (45 FR 76602), a revised Section 10 CFR 50.48 and a new Appendix R to 10 CFR 50 regarding fire protection features of nuclear power plants. The revised Section 50.48 and Appendix R will become effective February 17, 1981, which is 90 days after publication. A copy of the Federal Register Notice is enclosed (Enclosure 1).

The provisions of Appendix R that are applicable to the fire protection features of your facility can be divided into two categories. The first category consists of those provisions of the Appendix that are required to be backfit in their entirety by the new rule, regardless of whether or not alternatives to the specific requirements of these Sections have been previously approved by the NRC staff. These requirements are set forth in Sections III.G, Fire Protection of Safe Shutdown Capability; III-J, Emergency Lighting; and III-O, Oil Collection Systems for Reactor Coolant Pump. The fire protection features of your facility must satisfy the specific requirements of these three Sections by the dates established by Paragraph 50.48(c), unless an exemption from the Appendix R requirements is approved by the Commission. You should note the provisions for tolling the time for completing the modifications required by these three Sections of Appendix R set forth in Paragraph 50.48(c)(6).

The second category of Appendix R provisions applicable to the fire protection features of your facility consists of requirements concerning the "open" items of previous NRC staff fire protection reviews of your facility. An open item is defined as a fire protection feature that has not been previously approved by the NRC staff as satisfying the provisions of Appendix A to Branch Technical Position BTP PCSB 9.5-1, as reflected in a staff fire protection safety evaluation report. The fire protection features of your facility that are in this category must satisfy the specific requirements of Appendix R by the dates established by Paragraph 50.48(c), unless an exemption from the Appendix R requirements on those features is approved by the Commission.

Enclosure 2 is a summary listing of the open items concerning the fire protection features of your facility based on a review of our records. Also included is our position on the specific requirements that must be satisfied in order to resolve these open items. If you have any questions or disagreements with this enclosure, please advise us within 30 days of your receipt of this letter.

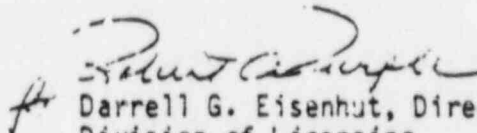
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With regard to the fire protection modifications that have been previously approved by the NRC staff, Paragraph 50.48(d) specifies a new schedule for their completion. This paragraph, when it becomes effective, will supersede the currently effective section of the regulations that temporarily suspends completion dates for previously approved fire protection modifications that are given in facility license conditions (45 FR 71569, October 29, 1980). The Commission expects that all such modifications will be completed in accordance with this new schedule, unless an extension has been requested and granted by the Director of the Office of Nuclear Reactor Regulation [see Paragraph 50.48(d)], or an exemption has been requested and granted by the Commission pursuant to Section 50.12 of the Commission's regulations.

If you have previously requested extensions of dates for completion of modifications that are required by license conditions for your facility which were not approved, and you have determined that these extensions are still necessary and justifiable, it will be necessary for you to reapply for any such extensions in accordance with the provisions of Paragraph 50.48(d).

All requests for Commission action resulting from this rule are subject to the schedule of fees specified in 10 CFR 170.21. If you have any questions concerning the subject matters of this letter, please contact the NRC Project Manager for your facility.

Sincerely,


Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosures:

1. Notice - Fire Protection Rule
2. Summary of Staff Requirements to Resolve Open Items

cc w/enclosures:
See next page

Enclosure 2

SUMMARY OF STAFF REQUIREMENTS
TO RESOLVE OPEN ITEMS
D. C. COOK, UNITS 1 & 2

There are no open items for this facility.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

February 20, 1981

TO ALL POWER REACTOR LICENSEES WITH PLANTS
LICENSED PRIOR TO JANUARY 1, 1979

SUBJECT: FIRE PROTECTION RULE (45 FR 76602, NOVEMBER 19, 1980) -
Generic Letter 81-17

Paragraph 50.48(b) of 10 CFR Part 50, which became effective on February 17, 1981, requires all nuclear plants licensed to operate prior to January 1, 1979 to meet the requirements of Sections III.G, III.J and III.O of Appendix R to 10 CFR Part 50 regardless of any previous approvals by the Nuclear Regulatory Commission (NRC) for alternative design features for those items. This would require each licensee to reassess all those areas of the plant "... where cables or equipment, including associated non-safety circuits, that could prevent operation or cause maloperation due to hot shorts, open circuits or shorts to ground or (sic) redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment ..." to determine whether the requirements of Section III.G.2 of Appendix R are satisfied. If not, the licensee must provide alternative shutdown capability in conformance with Section III.G.3 or request an exemption if there is some justifiable basis.

Paragraph 50.48(c)(5) requires that any modifications that the licensee plans in order to meet the requirements of Section III.G.3 of Appendix R must be reviewed and approved by the NRC. This paragraph also requires that the plans, schedules and design descriptions of such modifications must be submitted by March 19, 1981. To expedite our review process and reduce the number of requests for additional information with regard to this review, we are enclosing two documents which specify the information that we will require to complete our reviews of alternative safe shutdown capability. Enclosure 1 is "Staff Position Safe Shutdown Capability". This document was originally sent to you in late 1979. Section 8 specifies the information required for staff review. If you have already submitted any of the information required, you need only reference that previous submittal. Enclosure 2 indicates the additional information needed to ensure that associated circuits for alternative safe shutdown equipment is included in your reassessment and in our review. If you made no modifications that were required to provide alternative safe shutdown capability and if your reassessment concludes that alternative safe shutdown capability in accordance with the provisions of Section III.G.3 is not necessary, you do not have to provide the information requested by these Enclosures.

*Quoted from Section III.G.2 of Appendix R to 10 CFR Part 50. Note that the "or" preceding "redundant trains" is a typographical error and should read "of redundant trains".


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Finally, we request that as part of your submittal of plans and schedules for meeting the provisions of Paragraphs (c)(2), (c)(3) and (c)(4) of 10 CFR 50.48 as required by Paragraph 50.48(c)(5), you include the results of your reassessment of the design features at your plant for meeting the requirements of Sections III.G, III.J and III.O of Appendix R to 10 CFR Part 50.

This detailed information need not accompany the design description that must be submitted by March 19, 1981. However, we request that it be submitted as soon as possible, but no later than May 19, 1981.

This request for information was approved by GAO under a blanket clearance number R0071 which expires September 30, 1981. Comments on burden and duplication may be directed to the U. S. General Accounting Office, Regulatory Reports Review, Room 5106, 441 G Street, N. W., Washington, D. C. 20548.

Sincerely,



Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosures:

1. Staff Position
2. Request for Additional Information

cc w/enclosures:

See next page

STAFF POSITION
SAFE SHUTDOWN CAPABILITY

Enclosure 1

Staff Concern

During the staff's evaluation of fire protection programs at operating plants, one or more specific plant areas may be identified in which the staff does not have adequate assurance that a postulated fire will not damage both redundant divisions of shutdown systems. This lack of assurance in safe shutdown capability has resulted from one or both of the following situations:

- * Case A: The licensee has not adequately identified the systems and components required for safe shutdown and their location in specific fire areas.
- * Case B: The licensee has not demonstrated that the fire protection for specific plant areas will prevent damage to both redundant divisions of safe shutdown components identified in these areas.

For Case A, the staff has required that an adequate safe shutdown analysis be performed. This evaluation includes the identification of the systems required for safe shutdown and the location of the system components in the plant. Where it is determined by this evaluation that safe shutdown components of both redundant divisions are located in the same fire area, the licensee is required to demonstrate that a postulated fire will not damage both divisions or provide alternate shutdown capability as in Case B.

For Case B, the staff may have required that an alternate shutdown capability be provided which is independent of the area of concern or the licensee may have proposed such a capability in lieu of certain additional fire protection modifications in the area. The specific modifications associated with the area of concern along with other systems and equipment already independent of the area form the alternate shutdown capability. For each plant, the modifications needed and the combinations of systems which provide the shutdown functions may be unique for each critical area; however, the shutdown functions provided should maintain plant parameters within the bounds of the limiting safety consequences deemed acceptable for the design basis event.

Staff Position

Safe shutdown capability should be demonstrated (Case A) or alternate shutdown capability provided (Case B) in accordance with the guidelines provided below:

1. Design Basis Event

The design basis event for considering the need for alternate shutdown is a postulated fire in a specific fire area containing redundant safe shutdown cables/equipment in close proximity where it has been determined that fire protection means cannot assure that safe shutdown capability will be preserved. Two cases should be considered: (1) offsite power is available; and (2) offsite power is not available.

2. Limiting Safety Consequences and Required Shutdown Functions

- 2.1 No fission product boundary integrity shall be affected:
 - a. No fuel clad damage;
 - b. No rupture of any primary coolant boundary;
 - c. No rupture of the containment boundary.
- 2.2 The reactor coolant system process variables shall be within those predicted for a loss of normal ac power.
- 2.3 The alternate shutdown capability shall be able to achieve and maintain subcritical conditions in the reactor, maintain reactor coolant inventory, achieve and maintain hot standby* conditions (hot shutdown* for a BWR) for an extended period of time, achieve cold shutdown* conditions within 72 hours and maintain cold shutdown conditions thereafter.

* As defined in the Standard Technical Specifications.

3. Performance Goals

- 3.1 The reactivity control function shall be capable of achieving and maintaining cold shutdown reactivity conditions.
- 3.2 The reactor coolant makeup function shall be capable of maintaining the reactor coolant level above the top of the core for BWR's and in the pressurizer for PWR's.
- 3.3 The reactor heat removal function shall be capable of achieving and maintaining decay heat removal.
- 3.4 The process monitoring function shall be capable of providing direct readings of the process variables necessary to perform and control the above functions.
- 3.5 The supporting function shall be capable of providing the process cooling, lubrication, etc. necessary to permit the operation of the equipment used for safe shutdown by the systems identified in 3.1 - 3.4.
- 3.6 The equipment and systems used to achieve and maintain hot standby conditions (hot shutdown for a BWR) should be (1) free of fire damage; (2) capable of maintaining such conditions for an extended time period longer than 72 hours *de. not more* if the equipment required to achieve and maintain cold shutdown is not available due to fire damage; and (3) capable of being powered by an onsite emergency power system. *2.7 oc*
- 3.7 The equipment and systems used to achieve and maintain cold shutdown conditions should be either free of fire damage or the fire damage to such systems should be limited such that repairs can be made and cold shutdown conditions achieved within 72 hours. Equipment and systems used prior to 72 hours after the fire should be capable of being powered by an onsite emergency power system; those used after 72 hours may be powered by

offsite power.

- 3.8 These systems need not be designed to (1) seismic category I criteria; (2) single failure criteria; or (3) cope with other plant accidents such as pipe breaks or stuck valves (Appendix A BTP 9.5-1), except those portions of these systems which interface with or impact existing safety systems.

4. PWR Equipment Generally Necessary For Hot Standby

(1) Reactivity Control

Reactor trip capability (scram). Boration capability e.g., charging pump, makeup pump or high pressure injection pump taking suction from concentrated borated water supplies, and letdown system if required.

(2) Reactor Coolant Makeup

Reactor coolant makeup capability, e.g., charging pumps or the high pressure injection pumps. Power operated relief valves may be required to reduce pressure to allow use of the high pressure injection pumps.

(3) Reactor Coolant System Pressure Control

Reactor pressure control capability, e.g., charging pumps or pressurizer heaters and use of the letdown systems if required.

(4) Decay Heat Removal

Decay heat removal capability, e.g., power operated relief valves (steam generator) or safety relief valves for heat removal with a water supply and emergency or auxiliary feedwater pumps for makeup to the steam generator. Service water or other pumps may be required to provide water for auxiliary feed pump suction if the condensate storage tank capacity is not adequate for 72 hours.

(5) Process Monitoring Instrumentation

Process monitoring capability e.g., pressurizer pressure and level, steam generator level.

(6) Support.

The equipment required to support operation of the above described shutdown equipment e.g., component cooling water service water, etc. and onsite power sources (AC, DC) with their associated electrical distribution system.

5. PWR Equipment Generally Necessary For Cold Shutdown*

(1) Reactor Coolant System Pressure Reduction to Residual Heat Removal System (RHR) Capability

Reactor coolant system pressure reduction by cooldown using steam generator power operated relief valves or atmospheric dump valves.

(2) Decay Heat Removal

Decay heat removal capability e.g., residual heat removal system, component cooling water system and service water system to removal heat and maintain cold shutdown.

(3) Support

Support capability e.g., onsite power sources (AC & DC) or offsite after 72 hours and the associated electrical distribution system to supply the above equipment.

* Equipment necessary in addition to that already provided to maintain hot standby.

6. BWR Equipment Generally Necessary For Hot Shutdown

(1) Reactivity Control

Reactor trip capability (scram).

(2) Reactor Coolant Makeup

Reactor coolant inventory makeup capability e.g., reactor core isolation cooling system (RCIC) or the high pressure coolant injection system (HPCI).

(3) Reactor Pressure Control and Decay Heat Removal

Depressurization system valves or safety relief valves for dump to the suppression pool. The residual heat removal system in steam condensing mode, and service water system may also be used for heat removal to the ultimate heat sink.

(4) Suppression Pool Cooling

Residual heat removal system (in suppression pool cooling mode) service water system to maintain hot shutdown.

(5) Process Monitoring

Process monitoring capability e.g., reactor vessel level and pressure and suppression pool temperature.

(6) Support

Support capability e.g., onsite power source (AC & DC) and their associated distribution systems to provide for the shutdown equipment.

7. BWR Equipment Generally Necessary For Cold Shutdown*

At this point the equipment necessary for hot shutdown has reduced the primary system pressure and temperature to where the RHR system may be placed in service in RHR cooling mode.

(1) Decay Heat Removal

Residual heat removal system in the RHR cooling mode, service water system.

(2) Support

Onsite sources (AC & DC) or offsite after 72 hours and their associated distribution systems to provide for shutdown equipment.

* Equipment provided in addition to that for achieving hot shutdown.

8. Information Required for Staff Review

- (a) Description of the systems or portions thereof used to provide the shutdown capability and modifications required to achieve the alternate shutdown capability if required.
- (b) System design by drawings which show normal and alternate shutdown control and power circuits, location of components, and that wiring which is in the area and the wiring which is out of the area that required the alternate system.
- (c) Demonstrate that changes to safety systems will not degrade safety systems. (e.g., new isolation switches and control switches should meet design criteria and standards in FSAR for electrical equipment in the system that the switch is to be installed; cabinets that the switches are to be mounted in should also meet the same criteria (FSAR) as other safety related cabinets and panels; to avoid inadvertent isolation from the control room, the isolation switches should be keylocked, or alarmed in the control room if in the "local" or "isolated" position; periodic checks should be made to verify switch is in the proper position for normal operation; and a single transfer switch or other new device should not be a source for a single failure to cause loss of redundant safety systems).
- (d) Demonstrate that wiring, including power sources for the control circuit and equipment operation for the alternate shutdown method, is independent of equipment wiring in the area to be avoided.

- (e) Demonstrate that alternate shutdown power sources, including all breakers, have isolation devices on control circuits that are routed through the area to be avoided, even if the breaker is to be operated manually.
- (f) Demonstrate that licensee procedure(s) have been developed which describe the tasks to be performed to effect the shutdown method. A summary of these procedures should be submitted.
- (g) Demonstrate that spare fuses are available for control circuits where these fuses may be required in supplying power to control circuits used for the shutdown method and may be blown by the effects of a cable spreading room fire. The spare fuses should be located convenient to the existing fuses. The shutdown procedure should inform the operator to check these fuses.
- (h) Demonstrate that the manpower required to perform the shutdown functions using the procedures of (f) as well as to provide fire brigade members to fight the fire is available as required by the fire brigade technical specifications.
- (i) Demonstrate that adequate acceptance tests are performed. These should verify that: equipment operates from the local control station when the transfer or isolation switch is placed in the "local" position and that the equipment cannot be operated from the control room; and that equipment operates from the control room but cannot be operated at the local control station when the transfer or isolation switch is in the "remote" position.
- (j) Technical Specifications of the surveillance requirements and limiting conditions for operation for that equipment not already covered by existing Tech. Specs. For example, if new isolation and control switches are added to a service water system, the existing Tech. Spec. surveillance requirements on the service water system should add a statement similar to the following:

"Every third pump test should also verify that the pump starts from the alternate shutdown station after moving all service water system isolation switches to the local control position."
- (k) Demonstrate that the systems available are adequate to perform the necessary shutdown functions. The functions required should be based on previous analyses, if possible (e.g., in the FSAR), such as a loss of normal a.c. power or shutdown on a Group I isolation (BWR). The equipment required for the alternate capability should be the same or equivalent to that relied on in the above analysis.

- (1) Demonstrate that repair procedures for cold shutdown systems are developed and material for repairs is maintained on site.

REQUEST FOR ADDITIONAL INFORMATION

1. Section III.G of Appendix R to 10 CFR Part 50 requires cabling for or associated with redundant safe shutdown systems necessary to achieve and maintain hot shutdown conditions be separated by fire barriers having a three-hour fire rating or equivalent protection (see Section III.G.2 of Appendix R). Therefore, if option III.G.3 is chosen for the protection of shutdown capability, cabling required for or associated with the alternative method of hot shutdown for each fire area, must be physically separated by the equivalent of a three-hour rated fire barrier from the fire area.

In evaluating alternative shutdown methods, associated circuits are circuits that could prevent operation or cause maloperation of the alternative train which is used to achieve and maintain hot shutdown condition due to fire induced hot shorts, open circuits or shorts to ground.

Safety related and non-safety related cables that are associated with the equipment and cables of the alternative, or dedicated method of shutdown are those that have a separation from the fire area less than that required by Section III.G.2 of Appendix R to 10 CFR 50 and have either (1) a common power source with the alternate shutdown equipment and the power source is not electrically protected from the post-fire shutdown circuit of concern by coordinated circuit breakers, fuses or similar devices; (2) a connection to circuits of equipment whose spurious operation will adversely affect the shutdown capability, e.g., RHR/RCS Isolation Valves, or (3) a common enclosure, e.g., raceway, panel, junction box, with alternative shutdown cables and are not electrically protected from the post-fire shutdown circuits of concern by circuit breakers, fuses or similar devices.

For each fire area where an alternative or dedicated shutdown method, in accordance with Section III.G.3 of Appendix R to 10 CFR Part 50, is provided by proposed modifications, the following information is required to demonstrate that associated circuits will not prevent operation or cause maloperation of the alternative or dedicated shutdown method:

- A. Provide a table that lists all equipment including instrumentation and support system equipment that are required by the alternative or dedicated method of achieving and maintaining hot shutdown.
- B. For each alternative shutdown equipment listed in 1.A above, provide a table that lists the essential cables (instrumentation, control and power) that are located in the fire area.
- C. Provide a table that lists safety related and non-safety related cables associated with the equipment and cables constituting the alternative or dedicated method of shutdown that are located in the fire area.
- D. Show that fire-induced failures of the cables listed in B and C above will not prevent operation or cause maloperation of the alternative or dedicated shutdown method.
- E. For each cable listed in 1.B above, provide detailed electrical schematic drawings that show how each cable is isolated from the fire area.

2. The residual heat removal system is generally a low pressure system that interfaces with the high pressure primary coolant system. To preclude a LOCA through this interface, we require compliance with the recommendations of Branch Technical Position RSB 5-1. Thus, this interface most likely consists of two redundant and independent motor operated valves. These two motor operated valves and their associated cable may be subject to a single fire hazard. It is our concern that this single fire could cause the two valves to open resulting in a fire-initiated LOCA through the subject high-low pressure system interface. To assure that this interface and other high-low pressure interfaces are adequately protected from the effects of a single fire, we require the following information:

- A. Identify each high-low pressure interface that uses redundant electrically controlled devices (such as two series motor operated valves) to isolate or preclude rupture of any primary coolant boundary.
- B. Identify the device's essential cabling (power and control) and describe the cable routing (by fire area) from source to termination.
- C. Identify each location where the identified cables are separated by less than a wall having a three-hour fire rating from cables for the redundant device.
- D. For the areas identified in item 2.C above (if any), provide the bases and justification as to the acceptability of the existing design or any proposed modifications.

Cook 1/2

INDIANA & MICHIGAN ELECTRIC COMPANY

P. O. BOX 18
BOWLING GREEN STATION
NEW YORK, N. Y. 10004

file

March 27, 1981
AEP:NRC:00428A

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
FIRE PROTECTION RULE (45 FR 76602)



Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton:

The attachment to this letter provides our response to Mr. Eisenhut's letter of November 24, 1980 regarding the provisions of Appendix R to 10 CFR 50 which are applicable to the D. C. Cook Nuclear Plant. Those provisions are set forth in Section III.G, "Fire Protection of Safe Shutdown Capability"; III.J, "Emergency Lighting"; and III.O, "Oil Collection Systems for Reactor Coolant Pump" of the said Appendix R.

On July 31, 1979, the Commission issued Amendments No. 31 and No. 12 to the Cook Plant Operating License, along with the corresponding Fire Protection Safety Evaluation Report (SER). Table 1 of the SER listed the plant modifications and their respective completion dates. All of the items in Table 1 have been implemented, as required, and as such the fire protection program for the Cook Plant is in full compliance with the guidelines contained in Appendix A to Branch Technical Position APCS 9.5-1 and General Design Criterion 3. These facts are supported by the NRC's conclusion drawn in the July 31, 1979 SER which states:

"Our conclusion is that a fire occurring in any area of the D. C. Cook Nuclear Plant will not prevent either unit from being brought to a controlled safe shutdown, and further that such a fire would not cause the release of significant amounts of radiation".

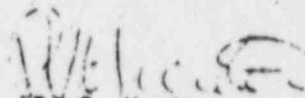
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*Anak
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On January 30, 1981, the Commission issued Amendments No. 44 and No. 26 to the Cook Plant Operating Licenses which provided us with the final revision to our fire protection Technical Specifications in accordance with Table 1 of the Fire Protection SER.

Enclosure 2 to Mr. Eisenhut's November 24, 1980 letter states that no open items from previous NRC staff fire protection reviews exist for the Cook Plant. The attachment to this letter demonstrates that the Cook Plant is already in compliance with the applicable provisions of Appendix R, noted above, which Mr. Eisenhut's letter requires to be backfit. These provisions of Appendix R, although not explicitly required by NRC Branch Technical Position APCS 9.5-1, were included in the previous fire protection upgrade effort as a result of the Plant's Fire Hazards Analysis and the ensuing NRC questions/positions on the fire protection features of the Cook Plant.

Very truly yours,


R. S. Hunter
Vice President

cc: John E. Dolan - Columbus
R. W. Jurgensen
D. V. Shaller - Bridgman
R. C. Callen
G. Charnoff
Region III Resident Inspector at Cook Plant - Bridgman

ATTACHMENT
TO
AEP:NRC:00428A

This attachment provides our response to Sections III.G, III.J and III.O of Appendix R to 10.CFR.50 as required by 10CFR50.48(c)(5). The information and references provided below demonstrate compliance with those sections of Appendix R and, as such, no further plant modifications are necessary.

Section III.G, "Fire Protection of Safe Shutdown Capability"

The initial design of the Cook Nuclear Plant employs a Hot Shutdown panel for each Unit separated from its associated Unit's control room. This control panel contains sufficient instruments and controls to shut the reactor down and maintain it in a hot shutdown condition.

Upon receipt of IE Bulletins 75-04 and 75-04A, issued subsequent to the Brown's Ferry Fire, a thorough study of the Cook Plant design was made to determine what changes and additions would have to be made to the existing plant design to permit shutting the reactor down and bringing the Unit to a cold shutdown condition from outside the control room. This study was completed and is described in our responses to the bulletins and monthly progress reports on the status of the work submitted to the NRC. The required engineering changes consisted of the installation in each Unit of local remote shutdown indicator panels with cabling independent of the cable spreading rooms. An alternate emergency shutdown and cooldown procedure in the event of a loss of normal and preferred alternate methods has been developed for use in conjunction with the local shutdown system. The procedure has been written so that it can be used in part or in its entirety by providing instructions for taking local control of any operation that can not be performed using normal or preferred alternate methods. The specific procedures for modifying components for local control are mounted at the component so that they will be readily available when the need arises. Through the use of these local shutdown panels, modifications of standby essential equipment for local manual control and the associated emergency shutdown and cooldown procedure, we have installed and demonstrated capability to safely shutdown and cooldown the plant with or without offsite power upon loss of control of essential systems and equipment from the control room and/or the hot shutdown panel.

We provided further detailed descriptive information on the local shutdown system and procedures in our response to Appendix A to Branch Technical Position APCS 9.5-1. in our Fire Hazards Analysis, during the NRC fire protection site visit (April 19-22, 1977), at the May 11, 1977 meeting with the NRC staff, in our letter of June 1, 1977 (followup to the May 11, 1977 meeting); in parts of Appendix Q to the FSAR (Question Q40.5) and in our responses to the "Fire Protection Questions" 1, 40, 46, 47, 52 asked in Mr. K. Kniel's letter of July 11, 1977. In addition, we have provided in both Units 1 and 2 local manual control capability of the emergency diesel generators as part of the alternate local shutdown system in accordance with Unit 2 license condition 2. C. 3. (D). (c). This provides the local shutdown system with the capability of performing its function given a loss of offsite power. The NRC fire protection SER, issued July 31, 1979, accepted the Cook local shutdown system and amended the Cook operating licenses accordingly, (removing Unit 2 license condition 2.C.3.(D) entirely). All changes and improvements listed in Table 1 of the SER, including those pertaining to the

local shutdown system have been implemented. Furthermore, as reported in the SER, the procedures and control operations for the local shutdown method were tested during Unit 2 initial power ascension. As such, the Cook Plant capability to achieve and maintain a safe cold shutdown condition including the necessary communications has been fully demonstrated.

Our fire hazards analysis considered the effects of fire in every fire zone in the Cook Plant with respect to structures, systems, and components important to safe shutdown. In all cases the ability to achieve and maintain a safe shutdown condition is preserved. Redundancy of design and separation of systems and equipment is provided in the Cook Plant design. As stated in our response to Question 040.6 in Appendix Q to the FSAR, the design of the Cook Plant complies with the separation requirements of Safety Guide 1.75 as applied to Class IE equipment and circuitry.

For the treatment of associated circuits the Cook Plant design provides the following:

- a) Non Class IE cables are routed with Class IE cables in cable trays. The cable numbers of these associated circuits are modified to include a letter designation identifying the train association. These cables are allowed to leave the Class IE cable trays and be routed with non-safety cables but are not allowed to be again routed with Class IE cables of either safety train.
- b) Non-safety loads are allowed to be connected to safety buses in the following manner. All non-safety loads, whether shed automatically upon transfer to emergency power or retained, are powered through Class IE circuit interrupting devices. All load shedding devices are Class IE as are the fault detecting and isolating equipment applied to disconnecting non-safety related loads. The non-safety loads are described in our response to Question 040.11 and 040.14 in Appendix Q to the FSAR. These non-safety loads do not degrade the performance of any safety bus. Class IE circuit breakers are provided for non-safety AC loads fed from AC safety buses which are not shed following a loss of offsite power.
- c) For the DC power system, fuses are used as the protective devices for non-safety loads connected to the DC safety buses. Non-safety cables originating from the CD battery (for example) are permitted to be routed with safety cables of the CD battery only. Non-safety cables from the CD battery are allowed to leave the CD battery safety trays and be routed with the balance of plant cables in non-safety trays but are not allowed to be again routed with CD battery safety cables. Once the non-safety cable leaves the safety train routing it must remain in the non-safety cable routing and cannot be again routed with the safety train cables of either train.

- d) Protection grade instrumentation safety equipment is protected from faults in the non-safety analog circuits connected to it by Isolators.

When accounting for the redundancy and separation of circuits for equipment necessary to achieve and maintain safe shutdown (Class IE circuits) and our treatment of associated circuits, the Cook Plant design provides adequate protection of safe shutdown capability. For any areas of the plant which were determined to be susceptible to a fire exposure from transient fire loads automatic fire detection and automatic sprinkler systems are provided. These fire protection systems were installed in the Cook Plant in accordance with Table 1 of the SER and these systems are included in our fire protection Technical Specifications. As such the Cook Plant design provides adequate protection of safe shutdown capability and supports the conclusion that a fire occurring in any area of the Cook Plant should not prevent either Unit from being brought to a controlled safe shutdown. Furthermore, special attention was given to the design of the local shutdown system so that either Unit could be brought to and maintained in a cold shutdown condition for the case of a fire in the cable spreading room rendering circuits in the main control room and hot shutdown panel inoperable. No further actions need to be taken with regard to Section III.G of Appendix R for the Cook Plant.

Section III.J "Emergency Lighting"

Emergency lighting units with an eight (8) hour battery pack are provided in all areas of the plant needed for operation of safe shutdown equipment and in access and egress routes thereto. This requirement has already been implemented in accordance with our September 30, 1977 response to fire protection questions Nos. 1 and 40 on the schedule pursuant to item No. 22 contained in Table 1 of the NRC fire protection SER. No further actions are necessary with regard to Section III.J of Appendix R for the Cook Plant.

Section III.O "Oil Collection System for Reactor Coolant Pump"

The Reactor Coolant Pump (RCP) oil spillage control and protection system has already been installed on each RCP in both Units of the Cook Plant in accordance with our August 19, 1977 response to fire protection question No. 51 as supplemented by our November 22, 1977 letter which, in part, provided additional information with regard to question No. 51 subsequent to our November 3-4, 1977 meeting with the NRC Staff.

This system was installed in accordance with item No. 19A of Table 1 of the NRC Fire Protection SER. This system fully meets the requirements of Section III.O of Appendix R and no further action is required for Cook Plant.