

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-315/89004(DRS); 50-316/89004(DRS)

Docket Nos. 50-315; 50-316

Licenses No. DPR-58; DPR-74

Licensee: Indiana Michigan Power Company
1 Riverside Plaza
Columbus, OH 43216

Facility Name: D.C. Cook Nuclear Power Station, Units 1 and 2

Inspection At: D.C. Cook Site, Bridgman, MI 49106

Inspection Conducted: February 13-17, March 15, and April 5, 1989

Inspectors: *D. Butler*
D. Butler (In office review only)

4-12-89
Date

Jeff Holmes
Holmes

4-12-89
Date

Joseph M. Ulie
Joseph. M. Ulie

4-12-89
Date

Approved By: *Ronald N. Gardner*
Ronald N. Gardner, Chief
Plant Systems Section

4-12-89
Date

Inspection Summary

Inspection on February 13-17, March 15, and April 5, 1989 (Reports No. 50-315/89004(DRS); 50-316/89004(DRS))

Areas Inspected: Routine, unannounced inspection to review the implementation of the licensee's fire protection program including a followup of licensee action on previous inspection findings; review of the fire protection organization; administrative controls; fire protection system surveillance test program; Quality Assurance; battery room exhaust fans; and Licensee Event Reports (LER) (30703, 64704, 90712, 92700, and 92701).

Results: Of the seven areas inspected, three violations were identified (failure to properly seal CO₂ system valve in the open position-Paragraph 5; failure to provide adequate design control measures-Paragraph 8; and improper electrical cable routing discovered by corporate reviewers not communicated to the cognizant plant staff in a timely manner resulting in delayed corrective actions-Paragraph 8). Additionally, two other violations were also identified;



however, in accordance with 10 CFR Part 2, Appendix C, Sections V.A and V.G, a Notice of Violation was not issued. The first of these violations regarded fire barriers that were degraded without the licensee establishing required fire watch patrols (Paragraph 2.g), while the second violation regarded isolated weaknesses in the licensee's program for controlling combustibles (Paragraph 4). Three unresolved items were identified in this report. The first unresolved item concerned the need for certain plant areas that contain safe shutdown cabling/components to receive an increased level of fire protection administrative controls commensurate with other designated plant areas (as specified in PMI-2270) (Paragraph 4). The second unresolved item concerned the independence of Quality Assurance audit teams (Paragraph 6). The third unresolved item concerned the issue of hot shorts within multi-conductor cables (Paragraph 8). An open item identified in this report concerned the Ruskin fire damper test report (Paragraph 2.b).



DETAILS

1. Persons Contacted

D.C. Cook Plant Personnel

- *K. R. Baker, Superintendent, Operations
- A. A. Blind, Assistant Plant Manager
- *S. Czuk, Technical Engineer
- J. B. Droste, Superintendent, Maintenance
- #*P. Jacques, Fire Protection Coordinator
- *D. Krause, Production Control Supervisor
- *T. Postlewait, Superintendent, Technical Engineering
- #*J. Sampson, Superintendent, Safety and Assessment
- *E. Schimmel, Technical Engineer
- *W. G. Smith, Jr., Plant Manager
- *T. R. Stephens, Production Supervisory Engineer
- *B. A. Svensson, Licensing Action Coordinator
- #M. Wiederwax, Supervisor, Quality Control

American Electric Power Service Corporation

- + °*A. B. Auvil, Nuclear Safety and Licensing
- °*S. Brewer, Nuclear Safety and Licensing Section Manager
- °B. Gerwe, Piping, HVAC and Fire Protection Section
- #T. Kwaitowski, Design Staff
- J. Rosing, Architect
- L. Taylor, Electrical Systems
- #B. Lanzaer, Nuclear Safety and Licensing
- °#J. Rosing, Architectural Design
- °#E. A. Taylor, Technical Support Section
- K. Toth, Nuclear Safety and Licensing
- °#S. J. Wolf, Site Quality Assurance Auditor

U.S. Nuclear Regulatory Commission Personnel

- *B. L. Jorgensen, Senior Resident Inspector

The inspectors also contacted other licensee personnel during the course of the inspection.

*Denotes persons attending the exit interview on February 17, 1989.

#Denotes persons participating by telecon in the exit interview on February 17, 1989.

°Denotes persons participating by telecon in the exit interview on March 15, 1989.

+Denotes persons participating by telecon in the exit interview on April 5, 1989.



2. Action on Previous Inspection Findings

- a. (Closed) Unresolved Item (315/82-08-17(DRS); 316/82-08-17(DRS)):
The inspector identified non-listed door frame assemblies and modifications to fire doors including handles and metal reinforcement plates which could degrade the required fire resistance of the fire door assembly.

During this inspection, the inspector requested documentation verifying that fire doors No. 333, 343, 357A, 373, 392, 393, 401, 431, 457 and 472 installed in Appendix A and Appendix R fire walls were Underwriters Laboratories (UL) listed or that documentation existed which verified that the fire doors, fire door frames and fire door modifications would provide an equivalent UL fire door assembly.

The licensee provided the inspector with UL reports recommending modifications to fire doors and fire door frames. The licensee indicated that the UL recommendations to the fire doors and frames had been completed. The inspector sampled several fire doors and no discrepancies were noted. The licensee indicated that all Appendix R, and to their belief, all Appendix A fire doors were rated assemblies or that modifications were performed according to UL to make the fire doors equivalent to rated assemblies. The inspector sampled several fire doors and no discrepancies were noted. The licensee indicated that a review of all Appendix A fire doors would be performed to insure that the assemblies were UL listed or equivalent and would perform necessary modifications if required. Based on the licensee's statements and the inspector's walkdown of several fire doors, this item is considered closed.

- b. (Closed) 10 CFR Part 21 - Ruskin Fire Dampers (315/84006-PP; 316/84006-PP): NRC Inspection Report Nos. 315/85013(DRS); 316/85013(DRS) identified that an engineering evaluation of the 10 CFR Part 21 report by the licensee was on-going and that no conclusions had been reached. In addition, the licensee informed the inspector that fire dampers other than those manufactured by Ruskin were installed in safety-related areas of the plant. The inspector suggested that the licensee broaden the engineering evaluation of the Part 21 report to include dampers other than those manufactured by Ruskin.

During this inspection, the inspector reviewed the licensee's test methodology and test results. The licensee indicated that out of 66 fire dampers, 8 fire dampers in the floors of the Units 1 & 2 control room HVAC equipment rooms would not close against air flow. For these areas, the licensee implemented administrative controls to cause the dampers to close. The licensee did not provide the inspector with the damper test information. In addition, the licensee did not broaden the engineering evaluation of the Part 21 report to include dampers other than Ruskin. The inspector requested that the



engineering evaluation be presented in an auditable form and that the evaluation be expanded to include fire damper manufacturers other than Ruskin.

In response to the inspector's request, the licensee developed an internal memo dated February 23, 1989, from H. Young to J. Grier, which indicated that an evaluation will be performed to confirm that all Ruskin dampers not previously tested were bounded by the testing previously performed and that the scope of the evaluation will be expanded to include dampers other than Ruskin. This evaluation will consider fire dampers in Appendix R and Appendix A fire walls and a report of this evaluation is scheduled to be completed by January 15, 1990.

Based on the licensee's proposed actions, this Part 21 (316/84006-PP) is considered closed. The proposed licensee actions are considered an open item (315/89004-01(DRS); 316/89004-01(DRS)) pending review and acceptance of the damper test results.

- c. (Closed) Open Item (315/85013-01(DRS); 316/85013-01(DRS)): Unprotected structural steel beams support 4 inch poured concrete above each of the diesel fire pump rooms. The rooms were provided with sprinkler protection and the diesel fuel oil tanks were installed in a sand covered pit. Subsequent to the previous inspection, NRR indicated that adequate fire protection features were in place.

During this inspection, the inspector toured the area. Due to the presence of the sprinkler system, the storage of the fuel oil tank in a sand pit, and the availability of fire hoses and foam, it appears that a potential fire can be easily controlled and extinguished. Based on this information, this open item is considered closed.

- d. (Closed) Open Item (315/85013-03(DRS); 316/85013-03(DRS)): The licensee utilized tygon plastic tubing as a flexible connector in the reactor coolant piping oil collection system. This item was to remain open pending the licensee's submittal of documentation clarifying the use of tygon plastic tubing in the oil collection system for review by NRR.

During this inspection, the inspector obtained the licensee's documentation regarding the use of tygon plastic tubing and forwarded the documentation to NRR. The results of this review will be documented in a future safety evaluation report.

- e. (Closed) Open Item (315/85013-11(DRS); 316/85013-11(DRS)): The licensee was unable to provide the applicable generic test data for penetration fire seals at the time of the inspection. Inspector review of the NRC issued Safety Evaluation Report dated July 31, 1979, identified that the licensee had cited applicable generic test data for the penetration fire stops. This data indicated that the

silicone foam material in this (the tested) application provided a three hour fire resistance to an ASTM E-119 type fire exposure. The SER also specified that during a site visit many of the Unit 1 penetration fire stops were observed. In addition, the SER specified that an additional penetration fire stop test was performed for a Unit 2 penetration seal design. As a result, the SER concluded that the penetration fire stops which were in place provided sufficient protection from the unbounded spread of fire along electrical cables. Based on the SER review and a visual inspection of safety-related areas during plant tours on February 13, 14 and 15, 1989, to confirm that selected required penetrations were sealed, this item is considered closed.

- f. (Closed) Open Item (315/85013-04(DRS); 316/85013-04(DRS)): The two electric motor-driven high demand fire pumps should be provided with controllers that are specifically tested and approved for fire service use. The controllers should comply with all applicable provisions of NFPA.

The NRC safety evaluation transmitted by letter dated July 31, 1979, to the licensee, indicated that the licensee's position regarding the controller's ability to meet the applicable provisions of NFPA 20 was reviewed and determined to be acceptable. Based on this review, this item is considered closed.

- g. (Closed) Unresolved Item (315/86022-04(DRS); 316/86022-04(DRS)): Several Licensee Event Reports were submitted to the NRC regarding fire barriers that were degraded without the licensee establishing compensatory measures as required by Technical Specification (TS) 3.7.10. The failure to have established the required fire watch patrols in accordance with the Action Statement of TS 3.7.10 is considered a violation (315/89004-02(DRS); 316/89004-02(DRS)).

The degraded fire barriers were subsequently repaired. During this inspection, the inspector was informed that improved personnel training has contributed to the prevention of recurrence of this problem for approximately the last two years. This violation meets the tests of 10 CFR 2, Appendix C, Section V.G; consequently, no Notice of Violation will be issued, and this matter is considered closed.

3. Fire Protection Organization

The inspector examined the qualifications of a corporate fire protection engineer, the plant fire protection coordinator, and other personnel who perform fire watch duties.

During this review, the licensee provided the inspector with resumes of the corporate fire protection engineer and the plant fire protection coordinator. The corporate fire protection engineer has degrees in fire

protection and electrical engineering and holds a "Member" Grade in the Society of Fire Protection Engineers. This individual had also received a Registered Professional Engineer's license from the State of Pennsylvania. The plant fire protection coordinator holds a degree in fire prevention technology and has completed other academic work-related training. The fire protection coordinator demonstrated an ability to apply his fire protection knowledge and responded appropriately during these discussions. No discrepancies were noted during this portion of the review.

During tours of designated safety-related areas of the plant, the inspector interviewed three fire watch personnel performing patrol duties while the CO₂ system was isolated. The inspector determined, after discussions with each of these individuals, that they were adequately trained. The fire watch individuals were able to describe the required emergency actions which they would take upon spotting a fire or smoke.

An unannounced fire drill was requested by the inspectors, however, the licensee requested that this drill be cancelled due to operation's outage related work that needed to be completed for Unit 2 prior to startup. As a result of the licensee's request the drill was cancelled.

In addition, the inspector requested documentation to demonstrate that the annual training with the offsite fire department had occurred during the previous two years. The fire protection coordinator provided a letter dated November 2, 1988, showing that the 1988 yearly fire training drill with the offsite fire department occurred on October 24, 1988. However, documentation for the 1987 yearly training session could not be found. During the exit interview on February 17, 1989, the fire protection coordinator and other licensee personnel affirmed that this training had occurred during 1987. This verbal confirmation was determined to be satisfactory.

4. Administrative Controls

While performing plant tours on February 13, 14, 15, and 17, 1989, the inspectors examined, in part, certain licensee fire protection administrative control procedures including the implementation of these procedures. The procedures reviewed included: (1) Plant Manager Instruction (PMI) No. PMI-2270, "Fire Protection," revision 19, dated June 30, 1988, (Attachment No. 4 and Step 2 of Attachment No. 6); (2) PMI-2290, "Job Order," revision 7, date not obtained (Steps 3.8.5 - 3.8.6); and (3) PMI-4010, "Plant Operations Policy," revision 7, date not obtained (Step 3.4).

The inspector's review of the identified portions of these procedures determined that they were generally well written and minimized the amount of combustibles that a designated safety-related area may be exposed to. During plant tours on February 13, 14, 15, and 17, 1989, an inspector, accompanied by the fire protection coordinator or other licensee staff, performed a walkthrough of designated safety-related areas including



the Units 1 and 2 auxiliary building, the 4KV switchgear spreading areas, control room cable vaults, cable tunnels, control rooms, auxiliary feedwater pump rooms, essential service water pump rooms and motor control centers. As a result, it was determined that, with two exceptions, these areas were being satisfactorily maintained.

It was observed by the inspectors that in the Unit 1 4KV spreading area and in one of the Unit 2 motor-driven auxiliary feedwater pump rooms, small amounts of miscellaneous waste debris (e.g., rags and cardboard containers) and work area tools/equipment were left unattended after a shift's work activities were no longer in-progress.

Attachment 4 of PMI-2270 specifies that all maintenance, modification, or construction work will be done on a "clean as you go" basis and that the supervisor shall insure that all combustibles are removed from the job site at the end of each shift. Step 3.4.1.2 of PMI-4010 specifies that electrical cable trays shall be maintained free of debris. Step 3.8.5 of PMI-2290 specifies that the work area shall be clean and free of trash, discarded parts, etc. It was determined that the small amounts of miscellaneous waste debris left unattended after the shift work activity was no longer in-progress was an isolated instance of a violation (315/89004-03(DRS); 316/89004-03(DRS)) of the plant procedures. This violation had minor safety significance. The licensee took corrective action prior to the inspectors' departure from the site. An inspector verified these corrective actions on February 17, 1989. This violation meets the tests of 10 CFR Part 2, Appendix C, Section V.A; consequently, no Notice of Violation will be issued, and this matter is considered closed.

During the review of PMI-2270, the inspectors noted that the procedure pertained only to specified areas of the plant which contain safe shutdown equipment. The inspectors noted that the corridor to the diesel generator rooms of each unit contain safe shutdown cabling but that these areas were omitted from the procedure. As a result, the inspectors informed the licensee that additional review of the scope of PMI-2270 is necessary to determine whether additional plant areas need to be added to the procedure. This is considered an unresolved item (315/89004-04(DRS); 316/89004-04(DRS)).

5. Fire Protection System Surveillance Test Program

The inspectors reviewed, in part, the licensee's fire protection system surveillance test program as required by plant Technical Specifications (TS). The fire protection TS system review included the valve line-ups for the fire suppression water and gaseous systems.

This review consisted of an examination of completed surveillance packages, a selective sampling of specific surveillance test areas, and discussions with licensee staff. The inspectors determined the following:

a. Carbon Dioxide (CO₂) Valve Line-up Surveillance

On February 15, 1989, a walkdown of five CO₂ system valves identified in fire protection valve line-up verification procedure No. 12-OHP 4030.STP.120VV was conducted by the inspectors. The inspectors were accompanied by a plant operator. Four of the five valves were found sealed correctly; however, one critical rising stem valve was incorrectly sealed so that the chain and seal arrangement was not locking the valve. This valve (12-FCO-174) provides all of the motive force required to actuate the TS CO₂ systems. The operator verified that the valve was open as required; however, with the chain and seal in their as-found condition, the valve could have been closed without disturbing the seal. The failure of the licensee to ensure that CO₂ pilot valve 12-FCO-174 was in the required sealed open position is considered a violation (315/89004-05(DRS); 316/89004-05(DRS)) of TS 6.8.1.f. The inspectors were informed by the licensee that this valve had had the annual cycling surveillance performed on August 12, 1988, and had undergone subsequent monthly visual inspections (which had failed to discover that the valve was not sealed properly) to determine valve operability on September 9, October 7, November 12, December 30, 1988, and January 26, 1989, prior to the inspector's discovery.

b. Fire Detection Instrumentation Surveillance Testing

Fire detection instrumentation semi-annual surveillance No. 12 THP 6030 IMP.142 verifies the operability of Technical Specification related ionization, flame and thermal detectors which provide alarm initiation and/or suppression system actuation. The inspector requested and received the last 3 completed fire detection instrumentation surveillances dated April 6, 1988, July 25, 1988, and January 2, 1989. The inspector randomly selected fire detection surveillances for zones 1, 2, 3, 4, 12, 13, 16 and 22. During a review of these zones, no discrepancies were identified.

c. Surveillance Inspection of Thermal Science Incorporated Wrapped Raceways

The licensee's eighteen-month surveillance inspection No. 12 SHP 4030 STP.005 of Thermal Science Incorporated (TSI) wrapped raceways verifies by visual examination that TSI wrapped raceways are functional. The inspector reviewed completed surveillances dated December 1985, June 1987 and December 1988 and sampled the TSI wrapped barriers in fire zones 1, 1D, 1H and 29G. The licensee's completed surveillances, in most instances, were completely filled out. However, in several instances the documentation provided did not specifically indicate what sections of the fire wrap were visually observed. Instead, the documentation indicated that all fire wrap was inspected. The inspector discussed with the licensee

the method utilized by the surveillance procedure to clearly delineate the sections of the fire wrap that were inspected. The licensee indicated to the inspector that in addition to the surveillance form, the licensee utilized as-built drawings. The drawings were marked as the surveillance was performed. The surveillance forms and drawings were then reviewed. The inspector concluded that the surveillance and recorded results were acceptable.

d. Six Month Fire Door Surveillance

The licensee's six-month surveillance and post-maintenance inspection Procedure No. 12 SHP 4030 STP.008 of fire doors, frames and hardware protecting safety-related areas verifies the operability of fire doors which protect safety-related equipment. The inspector reviewed completed surveillances dated December 2, 1987, May 21, 1987, and November 28, 1988. No unacceptable items were identified.

e. Daily Fire Door Visual Inspection

The licensee's daily fire door visual inspection verifies operability of the fire doors by visual observation.

The inspector reviewed completed surveillances dated February 12, 1989, February 13, 1989 and February 14, 1989. No unacceptable items were identified.

f. Annual Visual Inspection of Fire Hose Standpipe Stations

The licensee's 18-month standpipe inspection (No. 12 SHP 2270 fire.004) requires removing the hose from the reel and inspecting the hose and gaskets and then re-racking the hose.

The inspector reviewed completed surveillances dated December 1986 and June 1988. No unacceptable items were identified.

g. Carbon Dioxide Auxiliary Cable Vault Test

The licensee's eighteen-month auxiliary cable vault carbon dioxide (CO₂) fire suppression test (No. 12 THP 4030 STP.225.020) requires system valves, associated ventilation dampers and self-closing fire doors to actuate upon receipt of a simulated actuation and distribute CO₂ flow through each nozzle. The inspector reviewed Sections 5.2 and 5.5 of completed surveillances dated January 1986 and May 1987 and found the surveillances to be acceptable. It should be noted that the completed surveillance dated May 1987 was provided with Condition Report 12-7-87-999 that identified several administrative errors on the part of the individuals conducting the surveillance. The licensee's review indicated that the administrative errors did not affect the validity of the test. Based on the inspector's review of the Condition Report, this appears to be accurate. The licensee's



corrective action was to remind the person involved in the performance of surveillances of the importance of ensuring that activities are conducted in accordance with instructions and procedures. Based on the licensee's corrective action, the inspector had no further questions regarding this matter.

h. Weekly Diesel Fire Pump Starting Battery Banks and Charger Surveillance Test Procedure

The licensee's weekly maintenance surveillance test procedure (No. 12 MHP 4030 STP.018) for diesel fire pump starting battery banks and charger verifies the following:

1. Electrolyte level of each battery is above the plates.
2. The voltage of each battery is \geq 24 volts.
3. Specific gravity of each battery is appropriate for continued service.
4. Cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.
5. Battery to battery and terminal connections are clean, tight, free of corrosion and coated with anti-corrosion material.

The inspector reviewed completed surveillance procedures dated February 1, 1989 and February 8, 1989, for both units. No unacceptable items were identified.

i. Reactor Coolant Pump Motor Oil Spill Protection System Surveillance

The licensee implemented the reactor coolant pump motor oil spill protection surveillance (No. 12 MHP 5030.001.005) to perform an inspection of the reactor coolant pump motor oil levels and oil spill protection integrity during each refueling outage.

The inspector reviewed completed surveillance tests dated August 1987 (for Unit 1) and February 6, 1987 (for Unit 2). The inspector observed that for Unit 1 the oil collection system tank contained 107½ gallons of an oil and water mixture (45 gallons of oil and 62½ gallons of water).

The licensee indicated that manual actions are required to remove any liquid from the oil collection tank and that this cannot be accomplished during operation due to high radiation exposure.

This issue was discussed during a telephone conversation between NRR and Region III. As indicated in the December 1983 SER, the lube oil system is capable of withstanding the safe shutdown earthquake. In

addition, the tank is designed so that any overflow will be drained to a safe location onto the lower containment floor. There are no ignition sources at the floor level of the lower containment where the drainage takes place. The licensee also requires that the oil collection tank be drained of oil or water every refueling outage. Based on the above, the NRR reviewer indicated that the capacity of the oil collection system was adequate.

Based on the inspectors' review and the NRR response, no unacceptable items were identified.

6. Quality Assurance

The inspectors requested that the licensee provide the last audits performed to satisfy TS Sections 6.5.2.8.h, i, and j. The licensee provided two Nuclear Safety and Design Review Committee (NSDRC) audit reports (No. 142 dated December 30, 1987, and No. 154 dated January 25, 1989).

A partial review of each NSDRC audit report showed that the licensee performed the scheduled audits in accordance with the TS schedule. The review also verified that certain programmatic and implementation aspects of the in-place fire protection program were reviewed during these audits. On March 9, 1989, the inspector reviewed the licensee's plant responses to the recommendations of the NSDRC Audit No. 154. A review of these responses determined that the licensee was addressing the identified recommendations. However, a concern was raised regarding the audit team composition in that audit team personnel selected by the licensee had direct responsibility for the fire protection program which was being audited. Specifically, the corporate fire protection engineer and a licensing engineer who are directly involved in the licensee's fire protection program and in the safe shutdown capability assessment activities were two of the team members involved in this TS audit. Although an audit report comment (outside fire protection consultant) indicated that the identified auditors did not influence the audit conclusions during the audit, the appearance of such a team composition affords the potential of compromising the independence of the audit. Additionally, this team composition did not provide the outside independence from the licensee's organization as is described for the biennial and triennial audits identified in Enclosure 1 of Generic Letter No. 82-21, "Technical Specifications for Fire Protection Audits." This is considered an unresolved item (315/89004-06(DRS); 316/89004-06(DRS)) pending further review of this issue.

7. Battery Room Exhaust Fans

The inspector performed a review to confirm that the licensee has satisfactorily complied with Item No. 12 of Table 1 of the NRC Safety Evaluation Report dated July 31, 1979, for License Amendment Nos. 31 and 12.



Through direct observation of the control room annunciator panel and through discussions with the licensee's staff the inspector concluded that annunciators to supervise the shutting down of the battery room exhaust fans are installed as required.

In addition, during tours of those rooms, the inspector verified that adequate fire detection was installed in the battery rooms.

8. Licensee Event Report Followup

(Open) Licensee Event Report (315/88014-LL; 316/88014-LL): On September 15, 1988, licensee corporate personnel discovered that two cables (EIIS/BE-CBL4), intended to be re-routed as a result of the original Appendix R design changes, were not re-routed out of the fire zone of concern (Units 1 and 2 Control Room Cable Vaults) as intended.

Design changes (RFCs) 01-2668 and 01-2669 relocated Unit 1 Essential Service Water (ESW) pump controls (EIIS/BI-JC) out of the Unit 2 control room (EIIS/NA) and placed them on the Unit 1 Hot Shutdown (HSD) Panel (EIIS/NA-PL). RFCs 02-2685 and 02-2686 relocated Unit 2 ESW pump controls out of the Unit 1 control room and placed them on the Unit 2 HSD Panel. The engineering for these RFCs was completed in February of 1985. This was done in order to unitize the controls so that a fire in one unit's control room or control room cable vault (EIIS/NA) would not have the potential to eliminate remote control of all four ESW pumps (EIIS/BI-PP). The licensee's Appendix R analysis presently shows that for a fire in either unit's control room or control room cable vault, two of four ESW pumps and the ability to properly align their flow is required for Safe Shutdown (SSD).

The September 15, 1988 review revealed that although the controls were relocated out of their respective unit control rooms, two of the associated cables were not relocated out of the opposite unit control room cable vaults. One cable associated with the Unit 2 West ESW pump discharge valve was routed in the Unit 1 cable vault with the associated Unit 1 ESW pump control cables, and another cable associated with the Unit 1 East ESW pump discharge valve was routed in the Unit 2 cable vault with the Unit 2 ESW pump control cables.

The original plant design incorporated control for all four ESW pumps in each of the separate control rooms. Appendix R Safe Shutdown considerations subsequently led the licensee to separate the controls because the safe shutdown approach chosen by the licensee involved utilization of opposite unit equipment to support the fire-affected unit. The conceptual design and engineering for the design change to separate ESW as specified above were both completed in February 1985.

The concept was not properly communicated by the corporate design group, such that the detailed installation drawing instructions did not provide for complete inter-unit separation. As actually implemented, the control cable for Unit 2 West discharge valve WMO-704 remained routed through the Unit 1 cable vault, and the control cable for Unit 1 East discharge valve

WMO-701 remained routed through the Unit 2 cable vault. The failure of the licensee's design control organization, during the 1985 Appendix R design changes, to reroute the control cables for the Unit 1 East and Unit 2 West ESW pump discharge valves out of the opposite unit control room cable vaults is considered a violation (315/89004-07(DRS); 316/89004-07(DRS)) of 10 CFR 50, Appendix B, Criterion III as described in the Notice of Violation.

While the improper electrical cable routing of the ESW discharge valve control cables was identified during the licensee's corporate design reviews on September 15, 1988, cognizant plant staff personnel were not informed until the latter part of December 1988. As a result, more than 90 days transpired before corrective actions were initiated. The failure of the licensee to ensure that conditions adverse to quality were promptly corrected is considered a violation of 10 CFR 50, Appendix B, Criterion XVI (315/89004-08(DRS); 316/89004-08(DRS)) as described in the Notice of Violation.

The licensee informed the inspectors that they were considering the withdrawal of LER Nos. 315/88014-LL and 316/88014-LL. This was based on additional reviews of Generic Letter 86-10 by the licensee and their interpretation of Section 5.3.1 (Circuit Failure Modes) of the Generic Letter. The ESW discharge valve cables that were not rerouted as intended during the Appendix R modification were now considered by the licensee to meet the guidelines of Generic Letter 86-10. This was based in part on the use at D. C. Cook of "double break" isolation contacts in the control circuitry; the fact that the ESW discharge valves were not a Hi/Low pressure interface; and the fact that the spurious closure of any one of these valves would require two hot shorts (of the proper polarity) in the valve's associated multiconductor control cable (between four conductors). Section 5.3.1 indicates that for ungrounded circuits, if it can be shown that only two hot shorts of the proper polarity without grounding could cause spurious operation, no further evaluation is necessary except for cases involving Hi/Low pressure interfaces. It appears to the inspectors that the licensee's position meets the guidelines of Generic Letter 86-10. However, the inspectors are concerned that the two hot short event considered in Section 5.3.1 was the result of two hot shorts between multiple cables and not two hot shorts within a multiconductor cable. Pending further review by the NRC, this is considered an unresolved item (315/89004-09; 316/89004-09) concerning whether the licensee should have evaluated the possibility of spurious operations of SSD equipment (non-Hi/Low pressure interface) caused by two hot shorts in a multiconductor cable.

9. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. An open item disclosed during the inspection is discussed in Paragraph 2.b.



10. Unresolved Item

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items; items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 4, 6, and 8.

11. Violations For Which A "Notice of Violation" Will Not Be Issued

The NRC uses the Notice of Violation as a standard method for formalizing the existence of a violation of a legally binding requirement. However, because the NRC wants to encourage and support licensee's initiatives for self-identification and correction of problems, the NRC will not generally issue a Notice of Violation for a violation that meets the tests of 10 CFR 2, Appendix C, Section V.G. These tests are: (1) the violation was identified by the licensee; (2) the violation would be categorized as Severity Level IV or V; (3) the violation was reported to the NRC, if required; (4) the violation will be corrected, including measures to prevent recurrence, within a reasonable time period; and (5) it was not a violation that could reasonably be expected to have been prevented by the licensee's corrective action for a previous violation.

In addition, 10 CFR 2, Appendix C, Section V.A has been changed to provide the staff with the flexibility not to issue a Notice of Violation for inspection findings which involve isolated violations at a Severity Level V. Such violations are by definition of minor regulatory concern.

Violations of regulatory requirements identified during the inspection for which a Notice of Violation will not be issued are discussed in Paragraphs 2 and 4.

12. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on February 17, 1989, and summarized the scope and findings of the inspection. Also, on March 15, and April 5, 1989, a conference call was held between the inspector and the licensee's representatives. The inspectors also discussed the likely informational content of the inspection report with regard to documents reviewed by the inspectors during the inspection. The licensee did not identify any of the documents as proprietary.