U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-315/93005(DRP); 50-316/93005(DRP)

Docket Nos. 50-315; 50-316 License Nos. DPR-58; DPR-74

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

Facility Name: Donald C. Cook Nuclear Power Plant, Units 1 and 2

Inspection At: Donald C. Cook Site, Bridgman, MI

Inspection Conducted: January 20, 1993, through March 9, 1993

Inspectors: J. A. Isom
D. J. Hartland

Approved By: B. L. Jorgensen, Chief
Reactor Projects Section 2A

3-17-93
Date

Inspection Summary: Inspection from January 20, 1993, through March 9, 1993. (Report Nos. 50-315/93005(DRP); 50-316/93005(DRP))

Areas Inspected: Routine unannounced inspection by the resident inspectors of: action on previously identified item; plant operations; maintenance and surveillance; reportable events; and NRC Region III requests. In addition, a routine management meeting was held at the NRC Region III office on January 28, 1993.

Results: No violations or deviations were identified in any of the five areas inspected.

The inspection disclosed no notable weaknesses in the licensee's performance.

The inspection disclosed strengths in the licensee's conduct of a routine surveillance activity and in the maintenance activity involving replacement of the Unit 2 CD battery cell at power.

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DETAILS

1. Persons Contacted:

a. Management Meeting - January 28, 1993

American Electric Power Service Company (AEPSC)

E. E. Fitzpatrick, Vice President, Nuclear Operations
W. G. Smith, Jr., Chief Nuclear Engineer
S. J. Brewer, Manager, Nuclear Safety and Licensing
S. P. Hodge, Manager, Mechanical System-Nuclear Engineering
M. A. Barrett, Director, Quality Assurance
J. B. Kingseed, Section Manager, Nuclear Safety
D. H. Malin, Section Manager, Nuclear Licensing

Indiana Michigan Power/Cook Nuclear Power Plant

A. A. Blind, Plant Manager
D. M. Fitzgerald, General Supervisor-Environmental

Nuclear Regulatory Commission

H. J. Miller, Deputy Regional Administrator
E. G. Greenman, Director, Division of Reactor Projects
W. D. Shafer, Chief, Projects Branch 2
M. A. Ring, Chief, Operations Branch
B. L. Burgess, Chief, Operational Programs Section
E. R. Schweibinz, Senior Project Engineer
W. M. Dean, Senior Project Manager
J. A. Isom, Senior Resident Inspector

b. Inspection - January 20 through March 9, 1993

*A. A. Blind, Plant Manager
*K. R. Baker, Assistant Plant Manager-Production
L. S. Gibson, Assistant Plant Manager-Projects
*J. E. Rutkowski, Assist. Plant Manager-Technical Support
B. A. Svensson, Executive Staff Assistant
*T. P. Beilman, Maintenance Superintendent
P. F. Carteaux, Training Superintendent
D. C. Loope, Chemistry Superintendent
L. J. Matthias, Administrative Superintendent
D. L. Noble, Radiation Protection Superintendent
T. K. Postlewait, Design Changes Superintendent
*S. A. Richardson, Operations Superintendent
P. G. Schoepf, Project Engineering Superintendent
*J. S. Wiebe, Safety & Assessment Superintendent
L. H. Vanginhoven, Site Design Superintendent
*G. A. Weber, Plant Engineering Superintendent
M. L. Horvath, Quality Assurance Supervisor

The inspector also contacted a number of other licensee and contract employees and informally interviewed operations, maintenance, and technical personnel.

*Denotes some of the personnel attending the Management Interview on March 12, 1993.

2. Action on Previously Identified Item

(Closed) Inspection Report Followup Item (50-315/92018-02; 50-316/92018-02) and LER 50-316/91007 Rev. 1:

Simulator Scenario Identified Flowpath that Diverted ECCS Flow Caused By Plant Design/Emergency Response Guidelines.

This item was opened pending receipt and review of the revised LER and vendor report. The inspector reviewed both of these items. The vendor report was issued on November 3, 1992, in the form of a Nuclear Safety Advisory Letter (NSAL), Number NSAL-92-008. Westinghouse issued this NSAL for 27 units at 16 sites, and concluded that the situation described did not represent a substantial off-site radiation hazard or failure to comply to the requirements of 10 CFR 21.

The inspector reviewed the licensee's revision to procedure OHP 4023.ES-1.3, "Transfer to Cold Leg Recirculation," 09/30/92, to determine whether recommendations from the Nuclear Safety and Licensing group were incorporated. The inspector identified minor procedural enhancements to an associated "Step Deviation Document," which were incorporated by the licensee on February 5, 1993. This item is closed.

3. Plant Operations (71707, 71710, 42700):

The inspector observed routine facility operating activities as conducted in the plant and from the main control rooms. The inspector monitored the performance of licensed Reactor Operators and Senior Reactor Operators, of Shift Technical Advisors, and of Auxiliary Equipment Operators including procedure use and adherence, records and logs, communications, and the degree of professionalism of control room activities.

The inspector reviewed the licensee's evaluation of corrective action and response to off-normal conditions. This included compliance with any reporting requirements.

The inspector noted the following with regard to the operation of Units 1 and 2 during this reporting period:

a. Unit 1 status:

The licensee operated the unit at full power during the inspection until February 12, 1993, when reactor power was reduced to 57 percent to support planned maintenance activities on the main feed

pumps. Upon completion of the maintenance, the licensee returned the unit to full power on February 17, 1993. The licensee operated the unit at full power for the remainder of the inspection period, with no significant operational problems noted.

b. Unit 2 status:

The licensee operated the unit at full power throughout the inspection period, with no significant operational problems noted.

c. Volume Control Tank (VCT) Cross-Tied to Refueling Water Storage Tank (RWST):

The inspector held discussions with the Unit supervisor, the reactor operator, and the acting operations superintendent on the cycling of valve IMO-361, safety injection pump cross-tie to charging pumps suction, which caused the VCT to be cross-tied to the RWST for a short period of time. Although the inspector concluded that the safety significance of the evolution was small, he was concerned that the operating crew had realigned the charging and safety injection systems to an abnormal configuration without sufficiently considering the consequences from such an alignment.

Valve IMO-361 was required to be cycled to support motor operated valve testing after its packing was tightened. In support of this activity, a work activity clearance was issued which would have allowed the VCT and the RWST tanks to be interconnected when IMO-361 was opened. Another upstream isolation valve, IMO-360, could have been shut, but the operators were informed by the shift technical advisor that the plant's final safety analysis did not allow shutting IMO-360 at power because it might disable the opposite train safety injection pump. The operators decided to determine before maintenance even started, what would occur when IMO-361 was opened. They believed that because the safety injection pump suction and the VCT pressures were about equal, there would be no flow out of the VCT or the RWST. Both the volume and boric acid concentration of the RWST are subject to technical specification limits and could be affected by crossflow.

The operations staff monitored VCT and RWST conditions closely. When the VCT level decreased about 2 percent, the operators shut IMO-0361 and conducted discussions with the clearance group and the shift supervisor. It was determined later that shutting IMO-360 would have no effect on the operability of the remaining operable safety injection pump and IMO-360 was added to the clearance. Thereafter, maintenance and testing were completed successfully with no crossflow between the VCT and RWST.

No violations, deviations, unresolved or inspector followup items were identified.

4. Maintenance/Surveillance (62703, 61726, 42700):

The inspector reviewed maintenance activities as detailed below. The focus of the inspection was to assure the maintenance activities were conducted in accordance with approved procedures, regulatory guides and industry codes or standards, and in conformance with Technical Specifications. The following items were considered during this review: the Limiting Conditions for Operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures; and post maintenance testing was performed as applicable.

The following activities were inspected:

a. Unit 2 CD Battery Cell Replacement:

The inspector observed the replacement of a Unit 2 CD battery cell during power operations on January 27, 1993, under job order A35165 and reviewed the associated work procedure and safety review. The inspector observed that the evolution was planned and managed well. The battery cell replacement was performed safely and without incident. The inspector also noted that the "Battery Cell Replacement" procedure **12 IHP 5021.EMP.006, Revision No. 0, January 22, 1993, was well-written, and the safety review was thorough and conservative in nature.

The licensee replaced the cell because it was showing a decreasing voltage trend and was not holding a charge. It was the first time that the licensee had replaced a cell during power operations. The evolution involved paralleling three spare cells with the defective cell and the two adjacent to it to maintain battery voltage during the replacement.

The licensee declared the battery inoperable and entered the two hour LCO action statement for TS 3.8.2.3 because the spare cells and cables were not seismically qualified. The battery remained functional and on-line, however, and the licensee took several precautions to prevent an adverse interaction with safety-related equipment in the event of seismic activity. The licensee also verified the operability of the AB battery, which powered the opposite 250V DC train, prior to initiating the replacement.

Prior to paralleling the spare cells, the licensee verified that the voltage of the cells was matched as close as possible to the installed cells to minimize potential effects of arcing and sparking. The licensee carefully performed polarity checks on the cables prior to installing the fuses on the cables and monitored current flow throughout the evolution. The licensee replaced the cell and exited the action statement without incident.

b. SG Dump Valve Surveillance:

While observing the performance of Unit 2 "Steam Generator Stop Valve Dump Valve Surveillance Test," 2-OHP 4030.STP.018, Revision No. 6, May 1, 1989, the inspector noted steam coming from the discharge of dump valve 2-MRV-232 during testing of redundant valve 2-MRV-231. The inspector later determined that the steam was not due to leakage past 2-MRV-232. However, the auxiliary equipment operator (AEO) who also observed the potential adverse condition did not follow it up with operations shift management.

Each stop valve was designed such that when a close signal was received, a solenoid valve for the air-operated dump valve was energized, opening the dump valve and providing a vent path for steam above the piston of the MSIV. A 3-way motor-operated valve allowed for the isolation of each dump valve for testing at power.

Upon seeing steam coming from the discharge of the non-tested dump valve, the inspector confirmed the observation with the AEO who was present. The AEO did not know the origin of the steam, but he said that he would notify the unit supervisor upon completion of the surveillance. It appeared that the dump valve might be leaking by, although the MSIV did not begin to drift closed.

The inspector spoke with a system engineer and determined that the steam was probably coming from a common drain line that collected external moisture from the discharge piping of the dump valves. The inspector returned to the control room and discovered that the AEO had not notified the unit supervisor of the potential adverse condition. This suggested a lack of questioning attitude on the part of the AEO. Because such an attitude apparently contributed to the recent Unit 2 CD emergency diesel generator inoperability event, the inspector will continue to monitor licensee performance in response to concern in this area.

c. Reactor Trip Solid State Protection System (SSPS) Logic and Reactor Trip Breaker Train "B" Surveillance Test (Monthly):

The inspector observed the Instrumentation and Control (I&C) technicians perform "Reactor Trip SSPS Logic and Reactor Trip Breaker Train "B" Surveillance Test (Monthly)," **1 IHP 4030 STP.411, Revision 3, March 13, 1992. The monthly SSPS test verifies proper reactor trip breaker operation and ensures that one train of SSPS logic is functioning properly. The technicians performed the surveillance well. In particular, the lead I&C technician was very knowledgeable of the procedure, ensured that all procedure steps were followed and completed satisfactorily. He also worked well with his assistants to complete the surveillance well within the two hour maximum time allowed by the procedure.

The surveillance was completed satisfactorily with no parameters out of their required tolerances. The inspector noted that the reactor trip breaker "B" opened in 48 milliseconds. This was well under the maximum opening time of 150 milliseconds. Additionally, the inspector observed proper independent verification of the input error inhibit switch by the technicians.

d. Adjust Packing and Perform Motor-Operated Valve Analysis Testing on IMO-361:

The inspector observed packing adjustment and valve testing on IMO-361 under job order C0013922 and found that the work activity was conducted in an acceptable manner. Procedures and proper torque values were used and applied. Valve testing was conducted acceptably using "Limitorque Valve Operator Diagnostic Testing Using Oatis," procedure **12 IHP 5030.EMP.002, Revision 0, April 15, 1992. After a minor packing adjustment, the electricians determined that no adjustments were needed to the torque or limit switches.

No violations, deviations, unresolved or inspector followup items were identified.

5. Reportable Events (92700, 92720):

The inspector reviewed the following Licensee Event Reports (LERs) by means of direct observation, discussions with licensee personnel, and review of records. The review addressed compliance to reporting requirements and, as applicable, that immediate corrective action and appropriate action to prevent recurrence had been accomplished.

a. (Closed) LER 315/92005-LL: Engineered Safety Feature Actuation Due To Spurious Indication From Source Range Instrument While Unit 1 Descending For Refueling Outage

This LER was closed based on adequate licensee corrective action.

On June 22, 1992, an ESF actuation resulted from a spurious high reading from Unit 1 source range neutron flux detector 1-NRI-32 during shutdown of the unit for refueling. Operations personnel also observed that 1-NRI-31 was operating erratically at that time. When the trip occurred, Unit 1 was in Mode 3 with three of four control rod banks fully inserted and wide range neutron detectors indicating decreasing flux levels.

The licensee was unable to determine the root cause for the detector failure. The licensee concluded that dismantling the detectors was not possible due to design constraints. As corrective action, the licensee replaced the detectors.

b. (Closed) LER 316/92001-LL: Unit 2 Refueling Water Storage Tank Boron Concentration Greater Than Specification Limit Due to Incomplete Mixing

This LER was closed based on adequate licensee root cause evaluation and corrective action.

On January 22, 1992, the licensee declared an Unusual Event (UE) and commenced a unit shutdown after sample results of the Unit 2 RWST revealed that the boron concentration was greater than the TS limit. The licensee terminated the UE later that day after the NRC granted a temporary waiver of compliance. The next day, following dilution and recirculation, the licensee returned the RWST boron concentration to within TS compliance.

The licensee determined the root causes to be incomplete mixing in the RWST, less than precise blender control, and inadequate administrative control. On December 17, 1991, the licensee identified that the boron concentration was outside of its self-imposed administrative limits and, as a result, incorporated a plan for returning it to within the limits. This plan included a decision not to adjust the boron concentration during power operations. However, due to poor administrative control, borated water was added to the RWST on January 11, 1992, which ultimately resulted in the licensee exceeding its TS limit.

As corrective action, licensee management documented lessons learned from the event in a memo, which was discussed with operations personnel. The memo stressed the need of management to clearly communicate objectives to appropriate control room personnel. In addition, the licensee revised applicable operations procedures to provide precautions when adding borated water to the RWST.

c. (Closed) LER 316/92-008-LL: Unit 2 Train B Emergency Diesel Generator Tripped on Low Lube Oil Pressure Immediately After Starting

This LER is being administratively closed. Licensee corrective action will be tracked in conjunction with the escalated enforcement action taken in response to the findings documented in Inspection Report 50-315/92022(DRP); 50-316/92022(DRP).

d. (Closed) LER 315/92-011-LL: Inoperability of the Post Accident Containment Monitoring System (PACHMS) to Operate per Licensing Commitments

On September 17, 1992, while both units were shut down, it was identified that the ability of the PACHMS to operate per licensing commitments could not be assured. The PACHMS system operates to provide control room indication of hydrogen concentration in containment following a safety injection. During a system review,

it was determined that the PACHMS was supported by the control air system, which did not meet the minimum requirements of Regulatory Guide 1.97.

The licensee completed minor modification 12-MM-417 to provide backup air supply for the train of PACHMS to operate the hydrogen sampling valves in the event the control air system fails. The modification and post modification testing were completed for Unit 1 and Unit 2. The inspector's discussion with the operations department emergency operating procedure (EOP) engineer found that the licensee has incorporated or will shortly incorporate timely operation of PACHMS into several of their EOPs.

e. (Closed) LER 316/92-009-LL: Mode Change with Technically Inoperable Main Steam Isolation Valves

On November 22, 1992, at 12:21 a.m., an UNUSUAL EVENT was declared as a result of an apparent entry into Technical Specification (TS) 3.0.3 on Unit two. The unit entered MODE 2 with the main steam isolation valves (MSIVs) tagged closed for turbine generator maintenance. At the time, they were technically INOPERABLE as a result of not having current stroke time surveillances.

The licensee returned the unit to MODE 3 after the Shift Supervisor determined entry into MODE 2 was in error. Additionally, the licensee revised "Technical Specification Review and Surveillance" procedure, PMI-4030, Revision 17, February 22, 1993, to add a requirement for a senior reactor operator and the shift technical advisor to review each mode change request when any surveillances are in their grace period or when TS 3.0.4 is not applicable.

Followup evaluation determined that test frequency requirements had not been violated because frequency requirements may be suspended while the affected system is out of service. Thus, since none of the valves were ever opened while the plant was in MODE 3, no procedural or Technical Specification occurred.

The events discussed in paragraphs 5.b and 5.d above involved violations of regulatory requirements. Each of these matters was identified by the licensee and was properly reported and corrected. None was safety significant or willful. Therefore, pursuant to the NRC enforcement policy (10 CFR 2, Appendix C), the NRC is exercising enforcement discretion on these matters, and no Notice of Violation will be issued.

No deviations, unresolved or inspector followup items were identified. Three non-cited violations were identified.

6. Region III Requests (92705):

As requested by NRC Region III management, the inspector reviewed the licensee's contingency plans regarding a land vehicle bomb threat and

response. The inspection included a review of licensee procedures; discussions with security management; and a tour of the licensee's owner controlled area, including the equipment staging area. The inspector concluded that it appeared that the licensee was capable of implementing the plan within stipulated time requirements. Information was forwarded to NRC regional and headquarters offices as requested.

7. Management Meeting:

A management meeting, attended as indicated in paragraph 1.a., was conducted in the NRC Region III office on January 28, 1993. The purpose of the meeting was to discuss information relative to the licensee's 1993 goals and objectives, the Unit 2 turbine generator outage, zebra mussel plans and programs, the status of the Unit 1 steam generators, and an overview of the licensee's IPE/PRA submittal.

8. Management Interview:

The inspectors met with licensee representatives denoted in paragraph 1.b on March 12, 1993, to discuss the scope and findings of the inspection. In addition, the inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents or processes as proprietary.

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