

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-315/87019(DRS); 50-316/87019(DRS)

Docket Nos. 50-315; 50-316

Licenses No. DPR-58; DPR-74

Licensee: American Electric Power Service Corporation  
Indiana and Michigan Power Company  
1 Riverside Plaza  
Columbus, OH 43216

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

Inspection At: D.C. Cook Site, Bridgman, Michigan

Inspection Conducted: August 3-5, 1987

*P. R. Wohl*  
Inspectors: P. R. Wohl

9/1/87  
Date

*M. P. Huber*  
M. P. Huber

9/1/87  
Date

*M. P. Phillips*  
Approved By: M. P. Phillips, Chief  
Operational Programs Section

9/1/87  
Date

Inspection Summary

Inspection on August 3-5, 1987 (Reports No. 50-315/87019(DRS); 50-316/87019(DRS))

Areas Inspected: Special safety inspection of the licensee's activities with respect to Inspection and Enforcement Bulletin 85-03, "Motor-Operated Valve Failures During Plant Transients Due to Improper Switch Settings."

Results: No violations or other items were identified.

## DETAILS

### 1. Persons Contacted

#### a. Indiana and Michigan Electric Company

- \*W. G. Smith, Jr., Plant Manager
- \*J. Allard, Maintenance Superintendent
- \*J. Moline, Maintenance
- \*J. B. Droste, Production
- R. Czajka, Maintenance
- \*J. Rutkowski, Assistant Plant Manager, Production
- \*J. Van Ginhoven, Maintenance Engineer Supervisor

#### b. USNRC

- \*J. Heller, Resident Inspector

\*Denotes those who attended the exit meeting on August 5, 1987.

The inspector also contacted other licensee and contractor personnel during the course of the inspection.

### 2. IE Bulletin Followup

(Open) IE Bulletin 85-03: Motor-Operated Valve (MOV) Common Mode Failures During Plant Transients Due to Improper Switch Settings.

The inspection was performed to review the licensee's program of testing and operability determination methods for the MOVs addressed in the bulletin. The inspectors reviewed the licensee's bulletin response dated May 16, 1986, drawings and observed MOV testing. The licensee had a good start in implementing the bulletin requirements; however, they had not yet completed all phases of their program and key personnel were not available to interview during the inspection. Additional inspections will be performed to close the bulletin.

#### a. MOV Wiring Diagram and Valve Logic Review

The wiring diagrams were reviewed for a sample of the valves in the bulletin. The results of the review are listed below.

##### (1) Thermal Overloads

MOVs have protection circuitry installed to trip the motor breaker on electrical overload. The licensee had increased the overload setpoints from 125% to 200% of rated or actual load, whichever was greater, for seismically classed MOVs in order to conform with NRC Regulatory Guide 1.106. Motor protection will be further discussed with the licensee's staff during a subsequent inspection.



(2) Open Torque Switch Bypass

The licensee planned to rewire all of their MOVs and to bypass the open torque switch for the entire length of valve travel. Therefore, valve travel in the open direction would not be stopped by a torque switch, but would only be halted at the end of the travel using the "open on limit" logic. During "as found" testing; however, the thrust available at open torque switch trip was being determined by the licensee.

(3) Backseating

By procedure, the licensee normally set the open limit switch at 95% of travel. However, for certain high speed valves with a higher inertia, this limit switch was set at 90%. This was done to prevent backseating of the valve and was verified by fully stroking the valve open and observing the valve signature to ensure the valve was not backseating.

(4) Closure Logic

The rising stem valves the inspectors reviewed closed on the close torque switch. During testing, thrust values were taken at the torque switch trip for valve closure using the MOVATS equipment and recorded for analysis.

b. Program Implementation

The licensee was using the Motor-Operated Valve Analysis and Test System (MOVATS) to detect degradation, incorrect adjustments, and other abnormalities that may exist in the motor operators and valves. D.C. Cook Nuclear Plant Procedure No. 12-MHP-SP-122, "Testing of MOVATS 2150 Signature Analysis System with MCC Baseline Signatures," governed the performance of the testing of the valves in the bulletin.

The inspectors reviewed the testing being performed as well as a physical inspection of the valve and operator. The valve appeared to be in good physical condition and in good working order. Both licensee and contractor personnel performing the testing were knowledgeable of the procedure and valve characteristics. MOV signatures were obtained for as-found conditions, and following maintenance performed on the valve, as-left conditions.

(1) Differential Pressure (dp) and Static Testing

A sample of the bulletin valves were tested under actual dp conditions to determine the valve characteristics and operability. This was done for "as-found" conditions only.

The remainder of the valves would be tested under static conditions to determine valve operability. All valves on which maintenance was performed would be static tested to determine valve characteristics. The licensee also indicated that no valve failures were identified from differential pressure test activities already performed.

(2) Training And Engineering Support

The licensee had dedicated personnel for their valve testing program for the bulletin valves. Two full-time MOVATS technicians were onsite with two additional technicians to be added for additional testing. The Maintenance Department also provided personnel to perform the necessary electrical and hardware support activities for the MOV testing program.

The licensee also indicated that all personnel involved in the program were required to receive training on the MOVs and the MOVATS equipment as well as the procedure to be performed prior to any work being done.

c. Additional Program Review

The licensee's program appeared to be generally adequate; however, the following items needed further development and review by the licensee and NRC review.

(1) Long Term Operability

The licensee had not yet developed a program for followup testing in order to maintain long term MOV operability as required by Item d of Bulletin 85-03. The licensee indicated that it did not know this was a requirement, but would begin reviewing this matter.

(2) Procedure and Signature Data Review

This was the initial use of the MOV test procedure and the licensee recognized that problems did exist in the procedure. Further review would continue of valve diagnostic signature data and the licensee indicated that the data would be made available for inspector review once testing was completed. As of yet, no date had been set for program completion to include complete data review and operability justification.

The licensee had no onsite review capability of motor load testing data. This was to be reviewed further to ascertain if onsite review of data would be possible.



(3) Minimum Voltage

The inspectors reviewed an American Electric Power Service Corporation memo dated June 24, 1987, "Minimum Voltage Requirements for Motor-Operated Valves (MOV's)." More information was needed by the inspectors to determine operability status of valves under degraded voltage conditions. This issue would be discussed further with the licensee's engineering staff during a future inspection.

3. Final Considerations

Most of the testing and data analysis had yet to be completed. To close the bulletin, additional program development by D.C. Cook Nuclear Plant would be necessary. Therefore, additional inspection and evaluation will be necessary and will include further inspection of the evaluated data and discussions with engineering support personnel to determine acceptability of the licensee's program.

4. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) on August 5, 1987, to discuss the scope and findings of the inspection. The licensee acknowledged the statements made by the inspector with respect to items discussed in the report. The licensee also indicated that no proprietary information had been reviewed by the inspectors.