

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-315/83-01(DPRP); 50-316/83-01(DPRP)

Docket Nos. 50-315; 50-316

License Nos. DPR-58; DPR-74

Licensee: American Electric Power Service Corporation
Indiana and Michigan Power Company
2 Broadway
New York, NY 10004

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

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

Inspection Conducted: January 17-21 and February 17, 1983

Inspectors: <i>M Holzmer for</i> N. DuBry	<u>4/14/83</u>
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Inspection Summary

Inspection on January 17-21 and February 17, 1983 (Report No. 50-315/83-01 (DPRP); 50-316/83-01(DPRP))

Areas Inspected: Special, announced inspection by resident and region-based inspectors of licensee Quality Assurance/Quality Control organization and program in the areas of work controls, Operations Department interface with work in progress, design controls, and control of contractor activities.

The inspection involved a total of 167 inspector-hours onsite by 5 NRC inspectors including 0 inspector-hours onsite during off-shifts.

Results: No noncompliances or deviations were identified.

DETAILS

1. Persons Contacted

- *W. G. Smith, Jr., Plant Manager
- R. F. Kroeger, Manager, Quality Assurance
- *J. F. Stietzel, Quality Assurance Supervisor
- T. Bielman, Lead Auditor
- D. Krause, Operations Quality Control Implementation Coordinator
- D. Wizner, Maintenance Quality Control Implementation Coordinator
- *E. Townley, Assistant Plant Manager
- *B. Svensson, Assistant Plant Manager
- *M. Alexich, Assistant Vice President, Nuclear Engineering
- *R. Hunter, Vice-President - Construction and New York Engineering
- *C. Williams, Staff Engineer, Nuclear Engineering Division

The inspectors also contacted a number of other licensee personnel including members of the operations and maintenance departments and contractor personnel.

*Denctes those present at the exit interview.

2. Quality Assurance Organization

a. Overview

The licensee's QA/QC organization was examined to assess its effectiveness. The American Electric Power Service Corporation (AEPSC) QA organization has a corporate component that reports to the Executive Vice President for Engineering and Construction, and a site component that reports administratively to the D. C. Cook Plant Manager. The corporate QA organization audits QA program implementation in AEPSC, maintains the qualified vendors list, and conducts audits of the site QA organization. Audits required by Technical Specification 6.5.2.8 are performed by the Nuclear Safety and Design Review Committee (NSDRRC).

The site QA organization conducts audits of plant operations to satisfy the audit requirements of 10 CFR 50, Appendix B, Criterion XVIII. The site QA organization also performs non-destructive examination (NDE) inspections, and various investigative and tracking functions for the Plant Manager.

b. Identified Weaknesses

- (1) The QA auditing personnel do not appear, in all cases, to be sufficiently independent from the areas audited. For example, on-site QA auditors were scheduled to audit programs which they helped develop such as the Job Order system. This is considered to be an Unresolved Item pending further inspection in this area (315/83-01-01; 316/83-01-01).

- (2) For most utilities, the corporate QA organization conducts the Technical Specification audits under the cognizance of the offsite review committee. NRC experience indicates that when offsite review committees, such as the licensee's NSDRC, conduct these audits the program is not as comprehensive and effective as when the audits are conducted by the corporate QA organization.

Similarly, at other nuclear utilities the audits required by ANSI N18.7-1976, Section 4.5, are usually conducted by the corporate QA organization rather than by the QA organization reporting to the Plant Manager as is done at the Cook plant. Improved effectiveness of audits in this area may be achievable by realignment of audit responsibilities.

The above audit issues are considered to be an Unresolved Item pending further inspection in this area (315/83-01-02; 316/83-01-02).

- (3) The site QA organization differs from most utilities in that it does not include any QC functions other than NDE. The licensee does not provide QC as an in-line function when reviewing procedures, job orders, and other documentation prior to use which would provide an independent input with a different perspective than that of personnel in the originating department. However, each of the plant departments (Maintenance, Operations, Technical) provides some in-process quality control by peer inspection of hold points.

Prior to December 23, 1982, plant procedures did not preclude inspections being performed by the Maintenance Supervisors (sometimes called Maintenance Foreman in older procedures) who directly supervised the work. However, on December 23, 1982, the Maintenance Superintendent issued a memorandum to require independent verification of these inspections. The Maintenance Superintendent's memorandum specified that the person who independently verifies a hold point inspection should preferably be another Maintenance Supervisor. In the event that another Maintenance Supervisor is not available, other persons permitted to verify a hold point were listed. These persons included a Maintenance Mechanic A and a Quality Control Implementation Coordinator (QCIC).

The information contained in the Maintenance Supervisor's memorandum is the kind of information that should be set forth in a procedure. Improved effectiveness in the site QC area may be achievable by abandoning the peer inspection approach in favor of a well staffed and qualified site QC organization to provide in-line review functions and inspections. These issues are considered to be an Unresolved Item pending additional inspection in this area (315/83-01-03; 316/83-01-03).

- (4) The licensee allows QC inspections to be performed by non-craft, non-inspector personnel who may not be or may never have been current in inspection techniques or requirements. For example, in his memorandum of December 23, 1982, the Maintenance Superintendent allowed QCICs to perform in-process inspections. A record review revealed that one QCIC who was not craft qualified in the plant did not have any inspection training. At the exit interview, the licensee stated that they would examine the matter and ensure that either qualifications would be documented for persons in the Maintenance Superintendent's memorandum who were authorized to inspect hold points, or those persons would not be permitted to inspect. This is considered to be an Unresolved Item pending further inspection in this area (315/83-01-04; 316/83-01-04).
- (5) Section 1.7 of the FSAR states that department QCICs provide monitoring of work in progress. Interviews with QCICs indicated that they seldom monitor work in progress. Although the QCICs provide many valuable administrative services to the plant management other than monitoring work in progress, these administrative duties would not normally be considered QC functions. This is considered to be an Unresolved Item pending further inspection in this area (315/83-01-04; 316/83-01-04).

During the inspection, the licensee stated that a review of the QA/QC organization was in progress. The licensee stated that it would complete its review after the results of this inspection were known.

3. Work Controls

a. Overview

The licensee's work controls were examined to assess (1) the degree of control exercised over work in progress such as corrective maintenance and implementation of design changes; (2) the adequacy and clarity of procedures and forms used to define programs and to control work; and (3) the effectiveness of guidance for job planning, execution instructions, QC inspection, post-job testing, system restoration, and documentation reviews.

Plant Manager Instructions (PMIs) and Department Head Instruction (DHIs) implement the operations QA program. Their use is prescribed by PMI-2010, "Plant Manager and Department Head Instructions, Procedures and Associated Indexes," Revision 7, October 1978. All plant work is executed by the use of Job Orders (JOs) as prescribed by PMI-2290, "Job Orders."

b. Identified Weaknesses

- (1) Generally, PMI-2290 provides weak guidance for the control of work. This matter was identified in a previous inspection

and was related to a noncompliance. As a result of the noncompliance, PMI-2290 is being revised and the revision is being tracked under a separate item number.¹

Additionally, the JO form which is an attachment to PMI-2290 lacked specificity. Interviews during this present inspection with individuals who used PMI-2290 indicated differences of opinion as to the use of various blanks. This matter will be resolved with the noncompliance mentioned above.

Some other specific PMI-2290 areas of weakness are as follows:

- (i) PMI-2290 provides weak control of work which is performed within the skill of the craft with respect to inspection and testing. For example, the Job Order Preparation and Planning sections of PMI-2290 makes no reference to the establishment of hold point inspections for quality control purposes. (For work of an "undetermined scope" hold points were recommended for periodic reassessment of job scope, including such factors as "material availability, Technical Specification constraints, test requirements, etc." but this type of hold point did not serve a quality control function.)

In addition, while the Job Order Planning section of PMI-2290 required that test requirements "must be specified to assure that the affected equipment/systems are adequately tested upon completion of the job," the procedure and the Job Order form did not indicate who should establish these test requirements or what criteria to use to assure that testing is adequate. In the case of maintenance performed within the skill of the craft where no written, reviewed, and approved maintenance procedure established post-job test requirements, there was no assurance that appropriate tests would be properly performed.

The above issues regarding inspection and testing are considered to be an Unresolved Item pending further inspection in this area (315/83-01-06; 316/83-01-06).

- ii. The licensee's Job Order system, in some cases, provided weak guidance for use of written procedures. PMI-2290, Revision 5, states, "Based upon the nature of the work to be performed, consider if a procedure may be used or modified to perform the work or the development of a new procedure may be required. This area of the Job Order Form must be completed (checked yes or no) prior to the start of the work." PMI-2290 provides no additional guidance or criteria in determining when a written procedure should be used.

¹ Noncompliance 315/82-10-02; 316/82-10-03.

A recent problem which illustrated this weakness in the job order system occurred during the last refueling outage when the miniflow recirculation line for the to Unit 2 Coolant Charging Pumps (CCPs) was modified.² In this case, job planning including sequencing of work was performed, but was not written and communicated to the craftsman. As a result, the CCP recirculation line was cut in the wrong location causing reactor coolant to be sprayed inside the CCP room and resulted in the inoperability of both CCPs for a short time (the LCO was not exceeded).

The licensee does not utilize a work traveler along with Job Order to provide precautions, job sequencing instructions, insertion of QC hold points, system restoration requirements, etc. A work plan or traveler could improve the licensee's performance in this area.

This is considered to be an Unresolved Item pending further inspection in this area (315/83-01-07; 316/83-01-07).

- (2) PMI-2010 includes no provision for performing tests when significant procedure changes are made. For example, Procedure **1-OHP 4023.001.001, "Alternate Emergency Shutdown and Cooldown Procedure Due to Loss of Normal and Preferred Alternate Methods," was significantly revised in June 1979 in accordance with PMI-2010 and no test of the procedure changes was performed. When a walk-through of this procedure was performed during an NRC inspection, errors in the procedure were identified which "could preclude the operators from satisfactorily performing the emergency procedure."³ Since many of the procedural deficiencies involved misidentified or unlabeled components, a test or walk-through would have been useful in correcting these deficiencies before the procedure change was issued for use.

PMI-5040, Revision 5, "Design Changes", which establishes requirements for processing Requests for Change (RFCs), requires in Section 4 (RFC Testing) that "All RFC installations shall be tested to verify operability or shall have a documented review. . .which justifies why testing is not required." No testing guidance was provided other than "verifying operability" which was not defined. Testing to produce expected results, verify design criteria, verify no reductions in safety of operations, or to determine if adverse systems interactions occur was not discussed. (See Paragraph 5 for other findings on design changes.)

² Inspection Report 50-315/82-22; 50-316/82-22.

³ Finding 315/82-08-06(A); 316/82-08-06(A).

The above issues regarding tests following major procedure changes and modifications to systems are considered to be an Unresolved Item pending further inspection in this area (315/83-01-08; 316/83-01-08).

- (3) PMIs and their revisions require AEPSC QA Manager approval. DHIs and their revisions require site QA Supervisor approval. However, Temporary Procedure Changes (TPs) issued to change PMIs and DHIs do not require the approval of either of these individuals. This is considered to be an Unresolved Item pending further inspection in this area (315/83-01-09; 316/83-01-09).
- (4) The licensee initiated a matrix to identify the procedure(s) which implement each of the requirements of ANSI N18.7-1976 and other QA source documents but this matrix was incomplete. This is considered to be an Unresolved Item pending further inspection in this area (315/83-01-10; 316/83-01-10).

4. Operations Department Interface with Work in Progress

a. Overview

The inspector performed a general review of plant procedures and interviewed technical and operations personnel regarding the procedures to assess the awareness of Operations personnel of work in progress.

b. Weaknesses Identified

No weaknesses were identified in the interface area. However, during the review the inspector noted that temporary changes to procedures were reviewed and implemented properly but were not made permanent in a timely manner. As a result, some procedures had a large number of temporary changes attached. For example, PMI-2010 had 18 temporary changes some of which dated back to March 27, 1979. This could lead to confusion when using the procedures. This matter was identified in Inspection Report Nos. 50-315/82-17 and 50-316/82-17 and a corrective action program has been addressed in the licensee's Regulatory Performance Improvement Program dated February 7, 1982.

5. Design Change Activities

a. Overview

The inspector reviewed the administrative controls which provide the framework for accomplishment of changes to the facility design. Several design changes were reviewed to verify design control conformance. Special emphasis was given to deficiencies which suggested a lack of programmatic guidance.

b. Weaknesses Identified

- (1) Several licensee identified problems during the past year were examined to determine if they involved common design change control problems. Examples of design changes for which the work intended to be accomplished was not adequately specified are as follows:
 - (i) Installation of change RFC-12-2448, "Radiation Monitoring," exceeded the scope of a temporary waiver letter before the safety review and approval by AEPSC Nuclear Safety and Licensing (QA Surveillance 12-82-405).
 - (ii) For RFC-12-2444, "Reactor Vessel Level Indication System" only partial installation had been authorized, but the work performed exceeded that which was authorized (Unit 1 LER 82-02/99-1).
 - (iii) Modification to the ESF Ventilation Systems was completed for design change RFC-12-2528, "Control Room Ventilation," when only partial installation was intended. This resulted in violation of Unit 1 operability requirements due to failure to perform appropriate testing following the modification (LER 82-024/031-0).
 - (iv) Work on modifying the coolant charging pump recirculation path was not done as planned resulting in both pumps being inoperable at the same time (Unit 2 LER 82-96/031-0 and Paragraph 3.b.(1)(ii) of this report).

A problem common to the above matters was that design change packages sent to the site from the corporate engineering offices are generally not controlled by a "master installation procedure." Rather, installation is controlled by statements of design change goals and drawings of the as-modified system.

Lack of such a controlling procedure also makes it difficult to insert independent QC hold points.

This is considered to be an Unresolved Item pending further inspection in this area (315/83-01-11; 316/83-01-11).

- (2) Design Change RFC-12-2528, "Control Room Ventilation," did not receive complete input design considerations. This was indicated by the necessity for an addendum to the RFC at the site to add test ports to verify completion of the change. This is considered to be Unresolved Item pending further inspection in this area (315/83-01-1; 316/83-01-12).
- (3) RFC-12-2448, "Radiation Monitoring," was partially installed and tested for Unit 1. After declaring the monitor operable to satisfy Technical Specification (TS) requirements,

operators obtained negative radiation values when checking the alarm setpoints as required by a TS Surveillance (LER 82-61/03L-0). Testing (i.e., operating procedure checkout) was not performed to demonstrate the suitability of operating procedures. Testing of this nature is only recommended by PMI-8010, "Preoperational and Startup Test Program for Unit 2". Furthermore, the provisions of PMI-8010 are not considered by the licensee to be applicable to facility changes. During the exit meeting on February 17, 1983, the licensee committed to evaluate and revise PMI-8010 to clarify its applicability to design changes which fall under the requirements of ANSI 18.7-1976 Section 5.2.19(4). This is considered to be an Unresolved Item pending further inspection in this area (315/83-01-13; 316/83-01-13).

- (4) AEPSC General Procedure 3.0 implements the requirements of ANSI N45.2.11 with respect to design verification, but these requirements are not reflected in the program controls of General Procedure 25 or PMI-5040 which control design changes. The licensee has committed to complete this implementation by August 31, 1983. This is considered to be an Unresolved Item pending further inspection in this area (315/83-01-14; 316/83-01-14).

6. Indiana and Michigan (I&M) Electric Construction Department and Contractors

a. Overview

This area was inspected to evaluate the adequacy of work controls utilized by the I&M Construction Department and contractors. The organization and Quality Assurance and Quality Control responsibilities were reviewed to assess their impact on the conduct of design change work. The onsite I&M Construction group administers contracts for the services of eight contractor groups. These contractors install the majority of the design changes at the D. C. Cook plant.

b. Weaknesses Identified

- (1) Recent reorganizations of the I&M Construction Department have resulted in numerous management and supervisory re-assignments. Interviews with I&M Construction, contractor, and AEPSC representatives indicated that in some cases these administrative and functional changes had not been fully communicated to personnel. It was not clear to some of the individuals interviewed how the construction organization interfaced with the plant organization for technical and administrative direction. This is considered to be an Unresolved Item pending further inspection in this area (315/83-01-15; 316/83-01-15).

- (2) Quality Assurance aspects of work performed by contractor vendors were coordinated by the I&M Construction Department under PMI-9010, "I&M Construction Quality Control (QC) Manual," until PMI-9010 was cancelled on January 4, 1983. Up to that time, contractors were required to either use this document to govern their QC practices or use their own QC manuals. PMI-9010 was prepared in 1974 to serve as transitional guidance to integrate construction activities with the plant QA programs, and contractors used PMI-9010 instead of their own QC manuals.

Following the cancellation of PMI-9010, the QC manuals of three major contractors became the governing documents for their QC practices. Since QC requirements had previously been implemented by PMI-9010 and the manuals were not kept current, these manuals were out of date and required a number of changes. The inspector found efforts were underway to revise the manuals except for N.E.R.V.E. (Nuclear, Electrical, and Relay Verification Engineers) whose QC manual was up to date. This is considered to be an Unresolved Item pending further inspection in this area (315/83-01-16; 316/83-01-16).

7. Unresolved Items

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 is discussed in Paragraphs 2, 3, 4, 5, and 6.

8. Exit Interview

The inspectors met with license representatives denoted in Paragraph 1 on February 17, 1983. In addition to the resident inspectors, NRC personnel attending the exit meeting included M. Holzmer, Project Inspector; D. Boyd, Chief, Projects Section 2A; and J. Streeter, Chief, Projects Branch 2. Each of the weaknesses identified during this inspection was discussed in detail. Summaries of the items discussed are as follows:

- a. Persons auditing areas which they helped develop. (Paragraph 2.b.(1))
- b. Alignment of audit responsibilities of the corporate and site QA groups and of the NSDRC. (Paragraph 2.b.(2))
- c. Incorporation of the guidance of the Maintenance Superintendent's memorandum into procedures, and abandonment of peer inspection in favor of a qualified site QC organization. (Paragraph 2.b.(3))
- d. Training and qualifications of persons authorized to conduct or verify QC hold point inspections. (Paragraph 2.b.(4))

- e. Infrequent monitoring of work in progress by QCICs. (Paragraph 2.b.(5))
- f. Weaknesses in PMI-2290 including:
 - (1) Weak guidance for inspections and testing when work is performed under "skill of the craft." (Paragraph 3.b.(1)(i))
 - (2) Weak guidance for use of procedures. (Paragraph 3.b.(1)(ii))
- g. Weaknesses in guidance for testing following significant procedure changes or modifications to systems. (Paragraph 3.b.(2))
- h. Temporary Procedure Changes not being reviewed and approved by site or corporate QA. (Paragraph 3.b.(3))
- i. Incomplete matrix of QA program requirements vs. implementing procedures. (Paragraph 3.b.(4))
- j. Lack of a "Master Installation Procedure" to implement design changes. (Paragraph 5.b.(1))
- k. A design change not having a design input which considered system testing. (Paragraph 5.b.(2))
- l. Lack of clarity of design change procedures concerning operating procedure checkout, and the applicability of PMI-8010. (Paragraph 5.b.(3))
- m. Full incorporation of requirements of ANSI N45.2.11-1974 into PMI-5040 and General Procedure 25. (Paragraph 5.b.(4))
- n. Lack of clarity of authority, interface, and reporting responsibilities for the I&M Construction Department and contractors. (Paragraph 6.b.(1))
- o. Updates of contractor QC manuals. (Paragraph 6.b.(2))

The licensee agreed to consider these weaknesses along with recent PAS findings and submit a supplement to their Regulatory Improvement Program (AEP:NRC--0625C) addressing programs for corrective actions.