



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

August 15, 1985

Docket No. 50-461

Illinois Power Company
ATTN: Mr. W. C. Gerstner
Executive Vice President
500 South 27th Street
Decatur, IL 62525

Gentlemen:

SUBJECT: CONSTRUCTION APPRAISAL TEAM INSPECTION 50-461/85-30

Enclosed is the report of the Construction Appraisal Team (CAT) inspection conducted by the Office of Inspection and Enforcement (IE) on May 20-31 and June 10-21, 1985 at the Clinton Power Station site. The Construction Appraisal Team was composed of members of IE, Region III, and a number of consultants. The inspection covered construction activities authorized by NRC Construction Permit CPPR-137.

This inspection is the twelfth in a series of construction appraisal inspections conducted by the Office of Inspection and Enforcement. The results of these inspections are being used to evaluate the management control of construction activities and the quality of construction at nuclear plants.

The enclosed report identifies the areas examined during the inspection. Within these areas, the effort consisted primarily of detailed inspection of selected hardware subsequent to quality control inspections, a review of selected portions of your Quality Assurance Program, examination of procedures and records, and observation of work activities.

Appendix A to this letter is an Executive Summary of the results of this inspection and of conclusions reached by this office. The NRC CAT noted no pervasive breakdown in meeting construction requirements in the samples of installed hardware inspected by the team or in the licensee's project construction controls for managing the Clinton Power Station. In addition, the Illinois Power Company's Overinspection Program was viewed as being effective in identifying deficiencies which had eluded earlier first line inspection and in providing an added measure of the quality of construction at the site.

However, deficiencies noted by the NRC CAT indicate that a number of construction program weaknesses exist which warrant additional management attention. The major areas of concern to the NRC CAT are: (1) ineffective control of work performed by plant staff on systems and components after turnover from construction, (2) examples of inadequate control of design documents including ineffective corrective actions for previously identified design document control discrepancies, and (3) inadequate programs for the verification of electrical separation.

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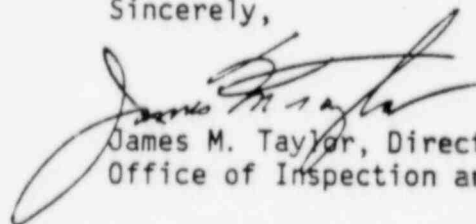
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Appendix B to this letter contains a list of potential enforcement actions based on the NRC CAT inspection observations. These are being reviewed by the Office of Inspection and Enforcement and the NRC Region III Office for appropriate action. In addition, Region III will be following your corrective action for deficiencies identified during this inspection.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosures will be placed in the NRC Public Document Room. No reply to this letter is required at this time. You will be required to respond to these findings after a decision is made regarding appropriate enforcement action.

Should you have any questions concerning this inspection, please contact us or the Region III Office.

Sincerely,



James M. Taylor, Director
Office of Inspection and Enforcement

Enclosures:

1. Appendix A, Executive Summary
2. Appendix B, Potential Enforcement Actions
3. Inspection Report

cc w/enclosures: See next page

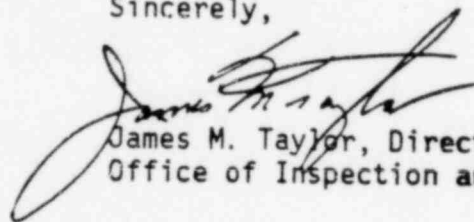
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James M. Taylor, Director
Office of Inspection and Enforcement

Enclosures:

1. Appendix A, Executive Summary
2. Appendix B, Potential Enforcement Actions
3. Inspection Report

cc w/enclosures: See next page

August 15, 1985

cc w/enclosures:

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APPENDIX A

EXECUTIVE SUMMARY

An announced NRC Construction Appraisal Team (CAT) inspection was conducted at Illinois Power Company's (IP) Clinton Power Station during the period May 20-31 and June 10-21, 1985.

OVERALL CONCLUSIONS

Hardware and documentation for construction activities were generally in accordance with requirements and licensee commitments. However, the NRC CAT did identify a number of construction program weaknesses, which in most cases, have resulted in hardware deficiencies that require additional management attention. These include:

1. Control of work performed by plant staff on components after turnover from construction requires improvement. This is evidenced by the number of deficiencies identified in the Maintenance Work Request (MWR) Program. Three MWRs were found to have used unqualified wire and three MWRs did not include, or properly document, the required quality control (QC) inspections. Also of concern is the lack of control of entries into and the number of errors found in IP's Startup Punchlist Tracking System.
2. Current programs for verification of electrical separation require improvement. The number of raceway separation deficiencies identified indicate that control of separation through design without inspection for separation is not adequate and the current walkdown program has not been effective. The FSAR does not currently allow the use of analysis which is now being used to justify reduced separation requirements.
3. Examples were noted where design requirements were not implemented by construction and verified by quality control activities. This is indicated by examples of hardware deficiencies identified in several areas. For example, power cable terminations were not insulated as required, tanks and heat exchangers were supplied with deficient welds, certain snubber supports were not modelled as committed, and a number of pieces of equipment were found to be mounted with bolts of a material grade other than that specified.
4. A number of document control discrepancies were found between the design change data listed for a specification or drawing in the Document Management System (DMS) and the design change documents actually posted with the controlled construction specification or drawing. This is of particular concern since control of construction specifications and drawings, and their computer data bases, is key in the management system established for ensuring that current design documents are used in developing work packages for installation and inspection. However, no resulting hardware deficiencies were noted in a sample of related work checked by the team.
5. Corrective action was not considered timely or sufficiently comprehensive for deficiencies identified by the licensee in the testing of structural fill. Deficiencies were identified in the structural fill records related to the lift thickness requirement of structural fill.

An effort was made by the NRC CAT to assess the IP Overinspection (IPOI) Program. The NRC CAT noted fewer program or hardware deficiencies in areas covered by the IPOI Program than in areas not covered by the IPOI Program.

These identified weaknesses require additional management attention to assure that completed installations meet design requirements.

AREAS INSPECTED AND RESULTS

Electrical and Instrumentation Construction

The electrical and instrumentation samples inspected generally met the applicable design requirements and installation specifications. However, several discrepancies were identified including some which will require additional management attention.

Electrical separation criteria detailed in the CPS FSAR had not been met in some raceway installations. The review of related activities indicates that existing design, quality verification and walkdown programs have not been completely adequate to assure compliance with specified commitments, and that personnel performing walkdown activities have not received adequate training and acceptance criteria to assure that existing deficiencies will be identified. Analysis to justify lesser spatial separation is also being used which is inconsistent with current FSAR commitments.

Separation deficiencies also exist in vendor wiring installed in several sections of the operator main control panels. In this area, the use of flexible metallic conduit as a fire rated barrier, and the fire protection adequacy of certain control room panels are items requiring further NRC evaluation. A number of deficiencies were also identified in vendor panels that have been excluded from the special QC inspection program.

Work performed on Class 1E equipment by plant staff under the Maintenance Work Request Program is not effectively controlled. Examples of unperformed inspections and the use of unqualified wire in safety-related components were identified.

Design specification requirements were not, in some cases, implemented by the construction and QC activities. This was evidenced by several uninsulated medium voltage terminations which were QC, and in one case IPOI, accepted although design, installation and inspection documents required them to be insulated.

Mechanical Construction

Piping, concrete expansion anchor installations, heating, ventilating and air conditioning (HVAC) ducts and supports, and mechanical equipment were found to be in general conformance to design and procedural requirements.

Discrepancies were identified in ASME and Class D pipe support/restraint installations. Greater attention to detail during inspections of Class D supports appears necessary. Potential damage and generic implications with respect to PSA 35 snubber component congruity needs to be addressed. A need for additional reanalysis of two supports is evidenced by their incorrect modelling. Controls for ensuring the timely removal of temporary supports are inadequate.

Welding and Nondestructive Examination

Welding and nondestructive examination activities were generally found to be conducted in accordance with the governing codes and specifications. However, a number of examples were identified where completed structural welds in pipe supports/restraints did not have the weld sizes specified by the Architect Engineer. Two of these examples were previously covered by IP Overinspection. The licensee has performed an engineering evaluation concerning this problem and concluded that the welds are structurally adequate for the intended application.

In the area of vendor supplied tanks and heat exchangers a number of tanks were found to have undersized weld reinforcements in nozzle to shell and manway to shell welded joints.

The NRC CAT inspectors also found radiographs for welds in areas of the containment liner and drywell wall which did not meet the specified acceptance criteria. The containment liner condition had been previously identified by the licensee who, based upon a sample review, had concluded that no remedial work was required. Based on this and the fact that MT and vacuum box inspection had been applied, the CAT concurred with the licensee conclusion.

Civil and Structural Construction

The civil and structural construction areas were found to be adequate. However, several deficiencies were identified.

The requirements in the FSAR and specifications for cadweld operator testing frequency were not met. Certain structural fill records were found to be inadequate relative to backfill lift thickness requirements in the FSAR. In addition, corrective actions taken by S&L for previously identified deficiencies in testing of cadweld operators and structural fill records were considered inadequate.

Two deficiencies were identified with the implementation of the IPOI Program in that not all primary steel beams were properly identified per applicable criteria for inspection and the torquing of bolts for slide connections was not adequately inspected.

Material Traceability and Control

The licensee's material traceability and control program was found to be acceptable, except for certain fastener hardware. Lack of traceability was found for some vendor supplied fastener materials, including bolts for large pump-motor and skid-mounted pump-turbine assemblies, and mounting bolts for HVAC control panel cabinets.

Design Change Control

The design change control program was determined to be generally in accordance with site procedures with several exceptions. A number of discrepancies were identified in the updating of a Civil and Structural Resident Engineer's Project Procedures Manual. A high rate of discrepancies was also found in the active change documents listed in the Document Management System related to a piping design specification and the change documents physically posted with controlled copies of the specification.

A systematic weakness was identified in the current computer data base system. The NRC CAT requests for and examinations of work packages associated with the installation of structural steel and electrical cable tray support design drawing requirements noted that the computer data base does not currently satisfy the Baldwin Associates QA Manual objective for an index system which will ensure the rapid and orderly identification and retrieval of records.

Corrective Action Systems

In general, corrective action measures were found to be acceptable. However, a high rate of errors was found with entries into the Startup Punch List. These included the listing of unrelated corrective action documents against punch list items, resulting in not identifying the closure against punch list items when the related corrective action documents were completed. In addition, corrective actions implemented to correct deficiencies identified by IP QA audits in the area of design document control had not been effective.

A number of nonconformances were found dispositioned use-as-is without evidence to substantiate this disposition.

APPENDIX B

POTENTIAL ENFORCEMENT ACTIONS

As a result of the NRC CAT inspection of May 20-31 and June 10-21, 1985, at the Clinton Power Station site, the following items are being referred to Region III as Potential Enforcement Actions. Section references are to the detailed portion of the inspection report.

1. 10 CFR 50, Appendix B, Criterion III, as implemented by Illinois Power Nuclear Power Construction (IPNPC) Quality Assurance Manual (QAM) Chapter 3, requires that measures shall be established to assure that applicable regulatory requirements and design basis are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, at the time of this inspection, the licensee's program was not adequately implemented in that two ASME Class 1 Nuclear Steam Supply System snubber supports were found to have been modelled and analyzed as rigid supports contrary to FSAR commitments to model them as flexible supports. (Section III.B.2)

2. 10 CFR 50, Appendix B, Criterion VI, as implemented by IPNPC QAM Chapter 6, requires that measures be established to assure that documents such as instructions, procedures, and drawings, including changes thereto, are distributed to and used at the location where the prescribed activity is performed.

Contrary to the above, at the time of this inspection, BA document control procedures were not properly implemented in that numerous discrepancies were identified in the filing and updating of procedures in the Civil and Structural Resident Engineer's copy of the BA Project Procedures Manual, and in the posting of design change documents in specifications. (Section VII.B.1)

3. 10 CFR 50, Appendix B, Criterion VII, as implemented by IPNPC QAM Chapter 7, requires measures be established to assure that purchased equipment and services conform to the procurement documents.

Contrary to the above, at the time of this inspection, the NRC CAT inspectors identified vendor procured tanks and heat exchangers that had been accepted and installed with deficient welds. They also identified various vendor and contractor supplied radiographs which did not have the required weld and film quality. (Sections IV.B.9, 10, and 11)

4. 10 CFR 50, Appendix B, Criterion VIII, as implemented by IPNPC QAM Chapter 8, requires that measures be established for control of materials, parts and components to prevent the use of incorrect or defective items.

Contrary to the above, at the time of this inspection, bolts for mounting large pump-motors, pump turbine assemblies mounted on skids, and HVAC control panel cabinets were not as required by the applicable drawings and specifications. (Section VI.B.1)

5. 10 CFR 50, Appendix B, Criterion X, as implemented by IPNPC QAM Chapter 10, requires that a program for inspection of activities be established and executed to verify conformance with documented instructions, procedures and drawings for accomplishing the activities.

Contrary to the above, at the time of this inspection, the licensee's inspection programs were not effectively implemented in that they:

- a. Have not assured that safety-related electrical raceways have been installed in accordance with FSAR commitments for electrical separation. (Section II.B.1)
 - b. Have failed to assure that appropriate quality verifications are conducted and that only qualified materials are used for work performed under the Maintenance Work Request Program. (Section II.B.2)
 - c. Had not assured that safety-related 5kV power cable terminations were accomplished in accordance with design documents in that required insulating materials had not been installed. (Section II.B.2)
6. 10 CFR 50, Appendix B, Criterion XVI, as implemented by IPNPC QAM Chapter 16, requires that conditions determined to be adverse to quality are promptly identified and corrected.

Contrary to the above, at the time of this inspection:

- a. NCR 31282 was incorrectly dispositioned by S&L as use-as-is based on specification requirements having been met, when the specification and FSAR requirements had not been met for cadweld operator testing frequency. (Section V.B.1)
- b. The resolution of NCR S-S-S-0006 and NCR 174 had not provided a timely and comprehensive review of applicable soil test data to ensure the FSAR commitments were met. Corrective action taken for NCR 174 had accepted structural fill placements using nuclear density test data where the sand cone test data had failed which was contrary to the project specifications. Further the evaluation performed of soils records did not identify or address that the inspection program during that period had not provided for adequate records or assurance that the structural fill was placed in 12 inch lifts as stated in the FSAR. (Section V.B.3)