U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-461/81-07

Docket No. 50-461 License No. CPPR-137

Licensee: Illinois Power Company
500 South 27th Street
Decatur, IL 62525

Facility Name: Clinton Power Station, Unit 1

Inspection At: Clinton Site, Clinton, Illinois

Inspection Conducted: April 8-9, and 13-15, 1981

Inspector: for I. T. Yin — 5/5/81

Approved By: D. H. Danielson, Chief
Materials and Processes Section — 5/5/81

Inspection Summary

Inspection on April 8-9, and 13-15, 1981 (Report No. 50-461/81-07)
Areas Inspected: Followup on licensee piping suspension system installation and inspection program prior to Region III concurrence to lifting the stop work order. The inspection involved a total of 24 inspector-hours onsite by one NRC inspector.
Results: An additional example of noncompliance identified in Region III Report No. 50-461/81-05 was disclosed.

DETAILS

Persons Contacted

Inspection Conducted on April 8-9, 1981

Illinois Power Company (IP)

*J. D. McHood, Vice President - Project Manager
*G. M. Brashear, Manager of Clinton Site Activities
*R. J. Canfield, Director - Construction
*L. W. Dozier, Assistant Director - Construction
*E. E. Connon, Assistant Director - Construction
*D. E. Korneman, Supervisor Mechanical Construction
*G. W. Bell, QA Audit Coordinator
*R. W. Morgenstern, QA Engineer

Baldwin Associates, Inc. (BA)

*W. J. Harrington, Project Manager
*T. Yearick, Assistant to Project Manager
*T. Selva, Manager, Quality and Technical Services
*L. A. Gelbert, QC Manager
*G. A. Chapman, Manager, Technical Services
*H. R. Swift, Project Engineer
*J. E. Findley, Resident Engineer
*R. C. Campbell, Senior QC Mechanical Engineer
R. Weber, QA Engineer
R. Holverson, QA Engineer

Quadrex

*R. E. Campbell, Supervisory Services Engineer

*Denotes those attending the April 9, 1981 management exit meeting.

Inspection Conducted on April 13-15, 1981

IP

*J. O. McHood, Vice President - Project Manager
*L. J. Koch, Vice President
*G. M. Brashear, Manager of Clinton Site Activities
*A. J. Budnick, Director QA
*R. J. Canfield, Director Construction
*L. W. Dozier, Assistant Director Construction
*E. E. Connon, Assistant Director Construction
*M. C. Hollan, Supervisor Construction QA
*G. W. Bell, Audit Coordinator

BA

*W. J. Harrington, Project Manager
*T. G. Yearick, Assistant Project Manager
*B. A. Curby, Project Superintendent
*H. R. Swift, Project Engineer
*J. E. Findley, Resident Engineer
*R. E. Forbes, QA Manager
*L. A. Gelbert, QC Manager
*G. A. Chapman, Manager Technical Services
*B. J. Bausch, QA Engineer
*E. Muelhausem, Senior Piping Superintendent
R. Forbes, Senior Quality Engineer
R. L. Neeb, Senior Piping Engineer
R. C. Campbell, QC Level III
J. Moberly, QC Level II
A. Lynch, QC Level I
M. E. Daniel, T. S. Senior Welding Technician

Quadrex

*R. E. Campbell, Supervisory Service Engineer

USNRC: Region III

*H. H. Livermore, Senior Resident Inspector
*H. M. Wescott, Project Inspector

*Denotes those who attended the April 15, 1981 management exit meeting.

Functional or Program Areas Inspected

Installation of safety related piping suspension systems was stopped by the licensee on February 13, 1981, as a result of the NRC trial team inspection effort conducted in February and March, 1981, (Region III Report No. 50-461/81-05) at the Clinton site. Since then, the licensee established new program measures and conducted a two-part trial program. Region III inspection of April 8-9, 1981, identified inadequate installation procedures and QC program. The licensee was requested to further upgrade the hanger program. A followup inspection by Region III staff conducted on April 13-15, 1981, concluded that the licensee should not lift the Stop Work Order (SWO) at this time. The decision was based on the fact that the implementation and effectiveness of the new QC program can not be determined until an additional trial program is completed, and the deficient hanger welds identified during April 14, 1981, inspection have been evaluated and the underlying causes of the problem can be determined.

1. Procedure Review

a. Work Performed on April 8-9, 1981

The inspector reviewed the following piping hanger installation procedures, and commented:

(1) BA Project Procedures Manual BAP 3.2.5, "Piping Component Supports", Revision 0, dated February 24, 1981; including Procedure Change Request PCR-36-81, dated March 2, 1981; PCR-41-81, dated March 6, 1981; and PCR-80-81, dated April 7, 1981.

(a) Paragraph 6.4.3.(e): Changing the bolt pattern on the base plate could shift the center of gravity for the hanger attachment. This area was not being controlled. The requirements for other than square plates were not provided.

(b) Paragraph 6.4.3.(f.3): Box type pipe guides with large gap clearances should be described in greater detail.

(c) Paragraph 6.4.6.(b.1), "Hydraulic Snubber Hanger Inspection Checklist, Form JV-693".

Paragraph 6.4.6.(b.5), "Mechanical Snubber Hangers Inspection Checklist, Form JV-697".

Based on the fact that installation, maintenance, and inspection requirements are different from one manufacturer to another, general type instructions may not be suitable for any specific snubber application.

(2) BAP 2.16, "Concrete Expansion Anchor Work," Revision 5, dated December 19, 1980; including CPR-20-81, dated February 4, 1981.

No comments at this time.

(3) BA Quality Control Instruction, "Piping/Mechanical QC Inspection Criteria Phase II Hanger/Support Installation Instructions," Revision 0, dated January 23, 1981.

(a) The instruction does not distinguish, among all the QC inspection items shown in many checklists, which items are to be inspected during the Phase I, II, and III installations defined in BAP 3.2.5.

(b) The instruction does not require documentation of deficient items found during QC inspection in Nonconformance Reports.

(c) No definite procedural requirement to hold Phase II installation until satisfactory correction of Phase I problems.

In addition to the procedure review, attention was given to the provisions established in the Fabrication/Installation Hanger/Support Traveler, Form JV-597 of BAP 3.2.5. Phase I and II Piping Superintendent and QC signoffs with dates were included in the traveler requirements.

b. Work Performed on April 13-15, 1981

The inspector reviewed the following program procedure improvements, and had the following comments:

(1) Installation Procedure

BA issued a PCR-90-81, dated April 13, 1981, to BAP 3.2.5, "Piping Component Supports," Revision 0, dated February 24, 1981, to include requirements for mechanical snubbers in the areas of receiving inspection, storage and maintenance, as well as installation. Item 1.a.(1).(c) relative to mechanical snubbers is considered resolved.

(2) QC Inspection Procedure (Excludes Welding)

BA QCI, "Piping/Mechanical QC Inspection Criteria - Hangers and Supports," Revision 1, dated April 11, 1981, resolved Items 1.a.(3).(a), (b), and (c) of this report. The newly established Phase I, II, and III Inspection Checklists are considered acceptable.

(3) Phase I Welding Inspection

(a) BA Technical Services (TS) issued a new instruction, "Piping Hanger Visual Inspection," Revision 0, dated April 13, 1981.

No comment.

(b) BA TS Procedure Specifications for Visual Inspection of Weldments, Revision 10, dated May 14, 11980.

The inspector commented that the procedures doe not address Phase I inspection requirements and documentation.

(4) Evaluation of Repeated Discrepancies

BA QA issued a new instruction, QA Review of Piping Component Support Inspection Checklists BQAI 160-1, Revision 0, dated April 11, 1981.

No comment.

Matters described in Paragraphs 1.a.(1).(a), 1.a.(1).(b), 1.a.(1)(c) relative to hydraulic snubbers, and 2.b.(3).(b) are considered to be unresolved items (461/81-07-01).

2. Documentation Review

In accordance with requirements established in Paragraphs 2.a. and 2.b. of the Region III Immediate Action Letter to IP dated March 5, 1981, the following actions were taken by BA:

a. BA Inter Office Memo (IOM), JEF-99-81, dated March 2, 1981, released large bore hanger work: (1) Ten old hangers for Phase I and Phase II inspection and rework, and (2) Ten new hangers for Phase I installation and inspection.

b. BA IOM, JEF-106-81, dated March 13, 1981, released 15 old hangers for Phase I and Phase II inspection and rework.

BA IOM, JEF-110-81, dated March 19, 1981, released 15 new hangers for Phase I installation and inspection.

The inspector selected the following old hanger Phase I and II installation and inspection records for review:

- Spring Hanger M-1RI02C06V, Revision B (Traveler H-RI-2-A).
- Guide M-1SX63017G, Revision A (Traveler H-SX-38-A).
- Rigid Hanger M-1FC01005R, Revision A (Traveler H-FC-64-A).

The inspector also selected the following new hanger Phase I installation and inspection records for review:

- Guide M-1SX52004G, Revision A (Traveler H-SX-22-E). The guide was not installed because of interference with another hanger.
- Rigid Hanger M-1RH02016R, Revision E (Traveler H-RH-16-I).
- Sway strut M-1DG03008X, Revision B (Traveler H-DG-4-B).

In conjunction with the records review, the inspector also had discussions with the QC inspectors relative to the observation findings and concluded that a system was not established to ensure Nonconformance Reports (NCRs) will be written for Phase I and II inspection findings. The reasoning provided by the IP and BA management was that if problems are identified in Phase I, they can be corrected in Phase II; and if problems are identified in Phase II, they can be corrected in Phase III.

The inspector stated that Phases I, II, and III hanger installation work are not considered in-process work, and any problem identified should be corrected and trended in accordance with the QA program provisions. This resulted in licensee corrective measures described in Paragraph 1.b. of this report. In addition, the BA QC also re-evaluated the previous QC inspected hangers including the trial program hangers and issued a total of seven NCRs.

3. Review of Hanger Audit Plans and Schedules

The inspector reviewed the "IP/BA QA Audit/Surveillance Plans for piping and Component Support/Hanger Activities" dated March 10, 1981, for CY 1981, and had no comments.

The inspector also reviewed the following audit and surveillance reports:

- IP QA Surveillance Plan and Report, File No. Q24-81(03-26)-L, dated March 23-27, 1981.

- IP QA Surveillance Plan and Report, File No. Q24-81(04-08)-L, dated March 30 - April 3, 1981.

- BA Internal Audit Report, No. I-173, "Piping Component Supports," dated March 3-4, 1981, approved on April 8, 1981.

- BA Site Surveillance Report (SSR) No. S-380, "Training Session (Piping Supports)," dated March 3, 1981.

- BA SSR, No. S-383, "Component Support Travelers," dated March 4, 1981.

- BA SSR, No. S-385, "Pipe Support Training Course Held by QC," dated March 5, 1981.

- BA SSR, No. S-389, "Auxiliary Building Diesel Generator Containment, Control Building/Pipe Support Surveillance," dated March 10, 1981.

- BA SSR, No. S-402, "Surveillance of Limited Release Large Bore Piping Supports," dated March 24, 1981.

- BA SSR, No. S-403, "Pipe Support Surveillance (Second Release of Old Hangers)," dated March 24, 1981.

Subsequent to the review, the inspector commented that problems described in Paragraphs 1 and 2 were not identified by the IP and BA QA and that the overall program including preparation of audit checklist required further review.

4. Observation of Installation Activities

On April 14, 1980, the inspector selected the following trial program hangers and restraints for observation:

- Spring Hanger 1SX08020V, with NCR 4386
- Spring Hanger 1VC03014V
- Pipe Guide 1SX35018G
- Pipe Guide 1VG16003G, with NCR 4331
- Spring Hanger 1RH12016V

As a result of the observation, the inspector concluded the QC inspection for the above components was adequate except for the following:

Pipe Guide 1VG 16003G, in addition to NCR 4331 written by the BA QC for two welds bypassing the inspection hold point, the inspector observed undersized weldments with large undercut, and that fitup of one of the component members was improper. In addition, these rejectable conditions had been QC inspected and accepted on September 2 and 3, 1980. Furthermore, one of the restraint gap clearances was shown 1/16" on the design drawing, but resulted in no clearance due to the improper fitup. This nonconformance was not identified by the QC inspector on his March 10, 1981 checklist.

In view of the event date, the inspector considers this deficiency as a failure to adhere to the following procedures:

- BA Technical Service Procedure N-1-1-A-1M, "Welding Procedure Specification for Shield Metal Arc Welding of Carbon Steel with Backing Ring or Strip," Revision 6, dated October 24, 1979.

- BA Technical Services, "Procedure Specification for Visual Inspection of Weldments," Revision 10, dated May 14, 1980.

- BAP 3.2.5, "Piping Component Supports," Revision C, dated February 24 1981.

- BA QC Instructions, "Piping/Mechanical QC Inspection Criteria Phase II Hanger/Support Installation Instructions," Revision 0, dated January 23, 1981.

This is an additional example of the licensee's failure to follow procedures for installation and inspection of large bore piping suspension systems as indentified in Region III Inspection Report No. 50-461/81-05.

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. An unresolved item disclosed during the inspection is discussed in Paragraph 1.

Exit Interview

The inspector met with the licensee representatives (denoted under Persons Contacted) at the conclusions of the inspections on April 9 and 15, 1981. The inspector summarized the purpose and findings of the inspection. The licensee acknowledged the findings reported herein.