

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

REGION III

Report No. 50-461/79-08

Docket No. 50-461

License No. CPPR-137

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

Facility Name: Clinton Nuclear Power Station, Unit 1

Inspection At: Clinton Site, Clinton, Illinois

Inspection Conducted: July 31-August 3, 1979

Inspectors: *H. M. Wescott*  
H. M. Wescott

8-23-79

*J. F. Suermann*  
J. F. Suermann

8-23-79

Approved By: *R. C. Knop*  
R. C. Knop, Chief  
Projects Section 1

8/23/79

Inspection Summary

Inspection on July 31-August 3, 1979 (Report No. 50-461/79-08)

Areas Inspected: Routine unannounced inspection: follow-up of previously identified noncompliances and unresolved items; observation of containment structural concrete work; review of structural concrete quality records; review reactor coolant pressure boundary piping QA records; review of reactor vessel installation QA implementing procedures. The inspection involved a total of 52 inspector-hours on site by two (2) inspectors.

Results: Of the five areas inspected, no items of noncompliance or unresolved items were identified.

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## DETAILS

### Persons Contacted

#### Principal Licensee Employees

- \*E. P. Barganier, Supervisor C/S
- \*G. M. Brashear, Site Manager
- \*R. Canfield, Construction Department
- \*L. W. Dozier, Assistant Director Construction
- \*R. W. Folek, C/S Quality Assurance
- \*W. ^ Gerstner, Executive Vice President
- \*J. A. Hampton, Supervisor of Construction Quality Assurance
- \*B. F. Kacer, Station QA Engineer
- \*W. J. Kelly, Chairman and President
- \*D. E. Korneman, Mechanical Construction Supervisor
- \*J. O. McHood, Vice President
- \*C. E. Motsegood, Field Engineering
- \*R. S. Unks, Director Quality Assurance
- R. Weber, QA Engineer

#### Baldwin Associates

- \*G. B. Browne, Senior C/S Engineer
- \*R. K. Hartley, Senior QA Engineer
- \*W. J. Harrington, Project Manager
- \*J. R. Hilding, QA Manager
- \*J. F. Linehan, Manager QC
- \*J. Smart, Senior QA Engineer
- \*H. Smither, Assistant P. T. M.
- \*A. Thorweger, Subcontract Administrator
- \*T. F. Walker, Senior QC Engineer
- \*C. E. Winfrey, Senior C/S Structural Engineer
- \*W. G. Woolery, Technical Services, Welding Engineer
- C. Zalewski, QC Inspector

#### General Electric Company

- \*S. G. Hall, Site QC

#### Hartford Steam Boiler Insurance Company

- \*M. J. King, Authorized Nuclear Inspector

#### Licensee Action on Previously Identified Items

(Closed) Unresolved Item (461/79-01-01): The licensee agreed to establish that the silastic material used as a sealant in the ventilation ducts was as specified in the S&L Specification No. K-2910. The inspector reviewed

Sargent and Lundy Engineer's letter to IPC, Subject: Specification K-2910, HVAC Work, Radiation Resistant Gaskets dated May 16, 1979 (SLMI-3264) and found the contents adequate to close this unresolved item.

(Closed) Unresolved Item (461/79-01-03): Work area identification sign not posted in accordance with Procedure Change Request No. 103-78 to procedure BAP 2.4 "Storage and Maintenance." The inspector reviewed BA Inter Office Memorandum dated April 4, 1979 (DMC-10-79), Subject: Inspection Report No. 1704 and found the contents adequate to close this unresolved item. The inspector further inspected Warehouse No. 2 and found the area clean with no fabrication taking place.

(Closed) Unresolved Item (461/79-06-03): Specification No. K-2910, Section 304, did not adequately address the environmental requirements that the sealants, gaskets and flexible connections used in the ductwork. The inspector reviewed Sargent and Lundy Engineering Change Notice No. 1178 that addresses Specification K-2910, Amendment 2, which adds additional environmental requirements such as radiation and temperature considerations.

(Open) 79-06-05 Lack of certification for Masterflow 713 grout (noncompliance): On August 1, 1979, the licensee informed the IE inspector that a complete set of documents pertaining to the quality certification of the grout had not yet been received. The inspector was unable to address the previous findings and the item remains open pending receipt of the licensee's documentation package on the grout and subsequent inspection by this office.

(Closed) 79-03-01 Lack of control of concrete vibrators (noncompliance): Inspection 79-03 identified a lack of control in the verification of the operating frequency of concrete vibrators used by Baldwin Associates. Subsequently, Baldwin Associates, in an Inter Office Memorandum dated May 7, 1979, identified approximately fifty-seven (57) concrete vibrators that were checked on May 2, 1979. The memo indicated the verified frequency of each vibrator, stated that defective vibrators would be taken out of service, repaired and re-verified, and all new vibrators issued to the field would be verified before use. On August 1, 1979, the IE inspector reviewed Procedures Change Request (PCR) No. 55-79, dated June 7, 1979. The PCR revised Concrete Procedure BAP 3.1.1, Rev. 9, April 30, 1979, to require that each vibrator used on a safety related pour be verified for conformance to project specifications (i.e. minimum of 8000 vpm) and the results be recorded on the Concrete Pour Placement and Testing Checklist Form JV-190. The IE inspector reviewed 16 placement checklists spanning a period from late June to July 1979 which indicated the required vibrator checks were being made for the revised procedure. This item is considered closed.

#### 50.55(e) Reports

On August 3, 1977, IPC verbally notified NRC RIII of a potential reportable deficiency. A follow-up letter (U-0046) (L14-PU-77 (09-01)-9) dated September 1, 1977, was received by RIII confirming a reportable deficiency.

The inspector reviewed IPC's investigation report and corrective action by Baldwin Associates in regards to a breakdown in procurement activities. The corrective action appears to be adequate to resolve the breakdown in procurement activities. However, as a result of the breakdown 3/8" wall thickness pipe was received for the shutdown service water system, where 1/2" wall thickness was specified by appropriate drawings. This item remains open pending a review of the analysis by S&L allowing the use of the 3/8" wall thickness pipe by the licensee and representatives of NRC RIII.

## Section I

Prepared by J. F. Suermann

Reviewed by D. W. Hayes, Chief  
Engineering Support  
Section 1

### 1. Observation of Containment Structural Concrete Work

- a. On August 1 and 2, 1979, the inspector checked the pour area for placement CT-S-3-2 at elevation 770' and observed a clean-up crew in progress. The Unit 1 slab pour was to consist of approximately 67 cubic yards (CY) of 4000 psi concrete. The formwork appeared tight, and the reinforcing steel was firmly secured and free of excessive rust and mill scale. Solvent was being used by the crew to clean reinforcing steel which had been contaminated by spilled oil. Although not addressed in the preparation procedures, the use of solvent was acceptable to the Sargent and Lundy field engineer. The solvent was a volatile chloro-ethane type which left no residue preventing bond between the steel and concrete. Coating of embedments with a splatter protective agent and inclement weather forced a delay in the pour until after the inspector's departure from the site.
- b. On August 3, 1979, the IE inspector was notified that drywell wall pours D-W-8 and 9 were in the process of receiving their final pre-placement check. The pours consisted of approximately 474 CY of 4000 psi concrete (Type II cement was to be used); pour depth was from elevation 781'-0" to elevation 797'-3". The pour was scheduled to proceed in a counterclockwise direction from azimuth 133° to azimuth 220°. The inspector performed a spot check of the formwork and reinforcing steel both of which appeared acceptable. The Baldwin QC inspector had completed his check and was satisfied the pour could proceed. The signatures of the various disciplines concerned (electrical, mechanical, piping, and civil) were all on the pour traveler and the required QC checks had been completed and indicated on the traveler. A lack of time prevented observing the actual placement techniques and verification of the vibrators used. A review of the documentation for the pour is planned for a later inspection.
- c. The qualification and training records of the Baldwin QC inspector for the drywell wall pours were reviewed against the requirements of ANSI standard N45.2.6 and Baldwin QC Training Manual, Rev. 2,



dated September 8, 1977. The inspector appeared to meet the requirements of both documents and his certification was current.

No noncompliances were identified in the areas inspected.

2. Containment Structural Concrete - Quality Records

- a. The IE inspector reviewed the calibration certificates for the tachometer used by Baldwin Associates to verify vibrator operating frequencies. Certificates QC-21 dated January 31, 1979, QC-112 and QC-115 dated July 6, 1979, for Frohm Tachometer T-61 Catalog No. 312473 indicated the tachometer was calibrated to standards traceable to the National Bureau of Standards.
- b. The inspector reviewed the documentation for pour CT-BW-1 which had been partially witnessed during a previous inspection. This pour was for the reactor shield wall and was poured June 28, 1979. A plasticizing agent, Melment, was used to facilitate placement of the concrete due to congestion and configuration problems. Paragraph 304.24 of Amendment 15 to Sargent and Lundy Specification K-29.4, dated July 16, 1979, deleted the vibration requirements during the pour and Paragraph a2 permitted the use of the plasticizer. The following specific documents relating to the pour were reviewed:
  - (1) Engineering Change Notice (ECN) No. 1150 - approved per procedure.
  - (2) Concrete Curing and Form Removal Checklist dated June 28, 1979 - the QC inspector had completed the required signoff.
  - (3) Pour Traveler CT-BW-1-782, Rev. 0, dated June 28, 1979 - the required disciplines had completed the checks and signed the form.
  - (4) Concrete Pour Placement and Testing Checklist dated June 28, 1979 - signed as required.
  - (5) Civil/Structural Inspection Report No. 2023, dated June 28, 1979 - signed by the QC inspector.
  - (6) Concrete Pour Preplacement Checklist, dated June 28, 1979 - signed by the QC inspector.
  - (7) Concrete Pour Traveler Checklist, dated June 28, 1979 - signed by the QC inspector.
  - (8) Report of Concrete Cylinders, dated June 28, 1979 No. 4143 - initial curing, slump, and air content were acceptable.

- (9) In-Process Concrete Test Report No. 1312, dated June 28, 1979 - was signed and reviewed; cylinders were made and cured in accordance with ASTM C-31-69; sampling was in accordance with C-172-71; slump tests were made in accordance with C-143-71; air content was measured according to C231-74T; air meter AM-7 and thermometer TE-150 were properly calibrated.
  - (10) Thirteen batch tickets were reviewed and appeared to meet procedural requirements.
- c. The inspector reviewed the documentation package for drywell pour D-W-6 which consisted of 536 CY of 4000 psi concrete (Type II cement) poured on May 25, 1979. The following specific documents were reviewed and found acceptable:
- (1) Concrete Pour Traveler D-W-6-652
  - (2) Concrete Pour Drawing Checklist
  - (3) Concrete Pre-Inspection Checklist for Walls
  - (4) Concrete Pour Traveler Checklist
  - (5) Concrete Pour Preplacement Checklist
  - (6) Concrete Pour Placement and Testing Checklist
  - (7) Civil/Structural Inspection Report (19 each)
  - (8) Electrical Quality Control Embedded Raceway Checklist
  - (9) U. S. Testing Company Incorporated "In-Process Concrete Test Report" No. 1239 - required tests were within specification limits; slump cone, air meter, thermometer, unit weight bucket and scale were all calibrated.
  - (10) U. S. Testing Company Incorporated "Report of Concrete Cylinders" No. 4012.
  - (11) Central batch plant tickets (69 each).
- d. The inspector reviewed the documentation package for containment wall pour CT-W-2 which consisted of 299 CY of 4000 psi concrete (Type II cement) poured on May 18, 1979. The following specific documents were reviewed and found acceptable:
- (1) Concrete Pour Traveler CT-W-12-704, as modified by FCR 2126.

- (2) Concrete Pour Drawing Checklist
- (3) Concrete Pre-Inspection Checklist for Walls
- (4) Concrete Pour Traveler Checklist
- (5) Concrete Pour Preplacement Checklist
- (6) Concrete Pour Placement and Testing Checklist
- (7) Electrical Quality Control Embedded Raceway Checklist
- (8) U. S. Testing Company Incorporated "In-Process Concrete Test Report" No. 1227
- (9) U. S. Testing Company Incorporated "Report of Concrete Cylinders"
- (10) Central batch plant tickets (46 each).

No items of noncompliance were identified in the above areas.



## Section II

Prepared by H. M. Wescott

Reviewed by R. C. Knop, Chief  
Projects Section 1

### 1. Reactor Coolant Pressure Boundary Piping Review of QA Records

The inspector reviewed pertinent quality related records of the reactor coolant pressure boundary piping system to ascertain conformance with applicable requirements, as follows.

- a. Review of records for the Reactor Core Isolation Cooling System spool pieces as follows:

1-RI-3-2	1-RI-7-5
1-RI-4-3	1-RI-7-6
1-RI-4-4	1-RI-10-1
1-RI-4-4A	1-RI-10-4A
1-RI-5-1	1-RI-10-4B
1-RI-5-2	

The records contained Certificates of Shop Inspection, Magnetic Particle Inspection Reports, Liquid Penetrant Inspection Reports, Radiographic Inspection Reports, Radiographic Technique Data Reports, Mill Test Reports, and Certification of Fittings (weldolets and sockolets).

- b. Review quality assurance records for the Reactor Heat Removal pipe spools as follows:

1-RH-10-1	1-RH-10-14
1-RH-10-2	1-RH-10-15
1-RH-10-3	

The records contained Certificates of Shop Inspection, Magnetic Particle Inspection Reports, Liquid Penetrant Inspection Reports, Radiographic Technique Data Reports, and Mill Test Reports.

- c. The inspector reviewed audits and surveillance reports of Southwest Fabricators and welding supplier of the Reactor Core Isolation and Reactor Heat Removal piping under P. O. No. C-4456, as follows:

- (1) Baldwin Associated External audit Report No. E-020, dated August 25, 1977.

- (2) Baldwin Associates External Audit Report No. E-072, dated September 14, 1979.
- (3) Baldwin Associates Internal Audit Report No. I-066 dated July 6, 1977.
- (4) Review of Supplier Quality Control Activity Reports as follows:

C-4457.2 dated September 23, 1978  
C-4457.3 dated September 20, 1978  
C-4457.4 dated October 24, 1978  
C-4457.5 dated November 28, 1979  
C-4457.6 dated January 29, 1979  
C-4457.7 dated March 7, 1979  
C-4457.8 dated March 19-20, 1979  
C-4457.9 dated May 9, 1979  
C-4457.10 dated June 25, 1979  
C-4457.11 dated July 30, 1979

All audits were performed as scheduled and findings where follow-up action was required was timely.

No items of noncompliance or deviations were identified in this area of the inspection.

2. Review of Quality Assurance Implementing Procedures for Reactor Vessel Installation

The inspector reviewed procedures for the reactor vessel installation to verify their establishment, as follows.

a. Review of Reliance Truck Company procedures as follows:

- (1) Procedure No. 103 "Setting The Reactor Pressure Vessel In Its Final Position In The Containment Building," Revision 0, dated April 6, 1979.
- (2) Procedure No. 106 "Hoist Pre Lift Check Out And Operational Procedure H-2 Bridge Crane," Revision 0, dated April 19, 1979.

These two procedures have been approved. The unapproved procedures will be reviewed at a subsequent inspection prior to placement of the reactor vessel.

No items of noncompliance or deviations were identified in this area of the inspection.

Exit Interview

The inspectors met with site staff representatives at the conclusion of the inspection on August 31, 1979. The inspectors discussed the scope and findings of the inspection which were acknowledged by the licensee.