

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-456/85-33(DRP); 50-457/85-32(DRP)

Docket Nos. 50-456; 50-457

License Nos. CPPR-132; CPPR-133

Licensee: Commonwealth Edison Company
P. O. Box 767
Chicago, IL 60690

Facility Name: Braidwood Station, Units 1 and 2

Inspection At: Braidwood Site, Braidwood, Illinois

Inspection Conducted: August 1 through November 30, 1985

Inspector: *M. L. Fair*
L. G. McGregor

Approved By: *W. S. Little*
W. S. Little, Director
Braidwood Project

12/20/85
Date

Inspection Summary

Inspection on August 1 through November 30, 1985 (Report No. 50-456/85-33(DRP); 50-457/85-32(DRP))

Areas Inspected: Routine unannounced safety inspection of 10 CFR 21 Reports, IE Bulletins, previously identified items, polar crane bolting, containment tendon inspection, flush procedures, and failure of diesel generators to sustain adequate prime. The inspection involved a total of 226 inspector-hours onsite by one NRC inspector including 35 inspector-hours onsite during off-shifts.
Results: Of the seven areas inspected no violations or deviations were identified.

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DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECO)

M. Wallace, Project Manager
*C. W. Schroeder, Project Licensing and Compliance Superintendent
*P. L. Barnes, Project Licensing and Compliance Engineer
*D. L. Cecchett, Project Licensing and Compliance Engineer
*L. M. Kline, Project Licensing and Compliance Supervisor
G. E. Groth, Project Construction Assistant Supervisor
D. P. Spence, Project Licensing and Compliance
*T. E. Quaka, Site Quality Assurance Superintendent
E. E. Fitzpatrick, Plant Manager

NRC Representatives

*W. S. Little, Director, Braidwood Project, Region III
*J. J. Harrison, Chief Engineering Branch, Region III
*J. W. Muffett, Reactor Inspector, Region III

*Denotes those personnel present at the exit interview.

Additional licensee and contractor personnel were contacted during the course of the inspection.

2. Licensee Action on 10 CFR 21 Reports

(Closed) Part 21 (456/84-03-PP; 457/84-03-PP): On August 29, 1984, Paul-Munroe Hydraulics, Inc., notified the Nuclear Regulatory Commission, of problems in the operation of the valve operator system as applied in the Limerick Generating Station. On several of the valve operators, it was observed that the hydraulic oil pump which maintains accumulator pressure was cycling more frequently than specified in the operating and maintenance manual. As a result of Paul-Munroe's investigation of this problem, it has been determined that the frequent cycling is caused by a pressure drop resulting from leakage occurring on any of the following three components:

- (a) Solenoid operated directional control valve. Microscopic abrasion or erosion to these valve seats resulting in leakage was observed.
- (b) Actuators piston seals. Premature abrasion and failure of the piston seal allowed leakage.
- (c) Accumulators. Leakage has been observed in the end cap area.

The frequent cycling to recharge the accumulator does not prevent the system from performing its intended function; however, it does reduce component life and causes the system to operate at elevated temperatures, which could, at some point, cause automatic shut down of the hydraulic

unit. Leakage of hydraulic fluid could have resulted in improper operation of the actuator since sufficient hydraulic pressure may not have been available to the actuator for its normal and safety modes of operation. If it had gone uncorrected, leakage of hydraulic fluid could have had an adverse effect on the operation of the intended valve.

The licensee determined that Paul-Monroe hydraulic operators were initially used at Braidwood with valves in the CW (Circulating Water), MS (Main Steam), VQ (Containment Purge), and WS (Non-essential Service Water) systems. The only Paul-Munroe applications remaining today are those in the WS system (Valves OWS001A, B and C - 42" butterfly); the other applications have been replaced with Durion (System CW) or Borg-Warner (MS and VQ Systems) operators. The inspector reviewed the licensee's documentation and system changes with regard to problems associated with the Paul-Monroe valve operators. Only three hydraulic valve operators, all in the nonsafety-related WS system, remain in operation and no defects have been identified during preoperational testing of the WS system. This item is considered to be closed.

(Closed) Part 21 (456/82-02-PP; 457/82-02-PP): On February 12, 1982, Pullman Sheet Metal Works, Inc., filed a 10 CFR 21 report with the Nuclear Regulatory Commission stating that due to their misinterpretation of a "Weld All Around" symbol there were occasions where required welds have been omitted on HVAC items for the Marble Hill Nuclear Generating Station. Pullman also stated that they were supplying HVAC items at Braidwood Nuclear Power Station, Plant Alvin W. Vogtle Nuclear Power Station, and St. Lucie Plant Unit 2. On February 18, 1982, the licensee notified Region III, per 10 CFR 50.55(e) of a reportable deficiency concerning both field and shop welded HVAC supports produced by Pullman. This deficiency is being tracked by 10 CFR 50.55(e) No. 456/82-01-EE; 457/82-01-EE and the 10 CFR 21 report is considered to be closed.

(Closed) Part 21 (456/83-04-PP; 457/83-04-PP): On October 5, 1983, ITT Grinnell Corporation (supplier of mechanical shock arrestors) notified the licensee of potential quality problems with mechanical shock arrestor capstan springs installed on Pacific Scientific Mechanical Shock Arrestors, Models PSA-1 and PSA-3. On or about this same date, Pacific Scientific made a 10 CFR 21 report to the NRC with regard to the mechanical shock arrestor and the possibility that defective capstan springs could have been installed on certain models of shock arrestors supplied to customers for use in nuclear power plants.

On October 28, 1983, the licensee notified Region III, per 10 CFR 50.55(e), that a potential quality problem in the capstan spring of certain Pacific Scientific Mechanical Shock Arrestors (snubbers) could exist. This deficiency is being tracked by 10 CFR 50.55(e) No. 456/83-15-EE; 457/83-15-EE and the 10 CFR 21 report is considered to be closed.

No violations or deviations were identified.

3. Bulletins

(Open) IE Bulletins (456/81-01-BB; 457/81-01-BB and 456/81-01-1B; 457/81-01-1B): Surveillance of Mechanical Snubbers.

This bulletin was previously reviewed in Reports 456/81-13; 457/81-13 and 456/82-08; 457/82-08. This bulletin has been assigned to the Region III Materials and Processes Section for review.

No violations or deviations were identified.

4. Previously Identified Items

(Open) Unresolved Item (456/84-09-11; 457/84-09-11): Potential for a failure of the diesel auxiliary feedwater pump causing damage to the minimum flow lines common to the diesel driven pump and the electric motor driven pump. This item remains open.

(Open) Unresolved Item (456/84-09-12; 457/84-09-12): Reliability of the auxiliary feedwater pump oil system. As stated in the report, the operator or maintenance technician cannot determine the condition of the filter (filter delta P), correct oil pressure, or the temperature change (delta T) across the oil cooler. Abnormal pressures or temperature conditions must be acknowledged by the plant equipment operators so that corrective action can be taken to prevent the potential loss of pump bearings. This item remains open and is assigned to the Region III Test Programs Section for review.

(Open) Violation (456/84-21-08; 457/84-20-08): Failure to adequately complete a plant redesign of the reactor coolant pump lateral support. The licensee responded to this violation in a letter dated January 31, 1985. This item has been assigned to the Region III Materials and Processes Section for review.

No violations or deviations were identified.

5. Polar Crane Bolting

The inspector reviewed Pittsburgh Testing Laboratory bolt inspection reports completed for the Polar Crane in Unit 1. The inspection reports indicated that all bolting was installed correctly and the proper torque value was applied to each bolt that was inspected. The inspector performed a visual inspection to ascertain whether installation requirements were in compliance with accepted codes, specifications and standards. The following discrepancies were noted:

<u>Location</u>	<u>Discrepancies</u>
27 degrees	Loose bolts on upper flange
57 degrees	Shim plates extend four or five inches beyond the bolted connection indicating the shims have moved.

<u>Location</u>	<u>Discrepancies</u>
67 degrees	Loose bolts on upper flange, extra nuts remain in the area.
87 degrees	Loose bolts on upper flange, bad arc mark on support girder.
127 degrees	Indications that the crane rail has up and down movement. Re-check torque on rail clamp bolts.
137 degrees	Loose bolts on upper flange.
157 degrees	Loose bolts on lower flange to girder - two bolts have washers missing.
167 degrees	Loose bolts on upper flange.
177 degrees	All eight lower flange to girder bolts are loose.
197 degrees	Four bolts on the lower flange to girder are loose.
207 degrees	Extra used A490 bolts are in the area.
227 degrees	Lower A490 bolts loose on girder and one upper bolt is loose.
247 degrees	Shim plates extend four to five inches beyond the bolted plates indicating shim movement. Extra 307 bolts in the area.
287 degrees	Indications that the crane rail has up and down movement. Crane rail clamp bolts loose. Loose upper and lower flange bolts and some bolts have washers missing.
307 degrees	Indications that the crane rail has up and down movement.

An inspection of the Unit 2 polar crane revealed similar discrepancies. The licensee has implemented a one hundred percent reinspection of all bolted connections on both polar cranes and a cleanliness inspection of the areas. The polar crane is not classified as safety related equipment, and, therefore, the QA/QC program required by 10 CFR 50, Appendix B is not applicable. However, the improper installation of the crane might result in problems that have safety significance and the reinspection results will be reviewed in a future inspection. This is considered an Open Item (456/85033-01(DRP) and 457/85032-01(DRP)).

6. Containment Tendon Inspection

Unresolved Item (456/85-04-01; 457/85-04-01) identified water leaking

from tendon 241 and numerous tendons have indications of grease leaking from the junction between the bearing plate and the grease can. The contractor prepared a procedure, "Post Tensioning Grease Can Removal, Replacement and Grease Level Determination and Adjustment, Revision 0," and received approval from the Architect Engineer for implementation. The grease cap was removed, inspected and samples of water and grease were taken for analysis at the Pittsburgh Testing Laboratory, Pittsburgh, Pennsylvania. Water and grease continued to seep out of the tendon head after the excess grease was removed and the surface wiped clean. On September 13, 1985, the licensee received the laboratory analysis of the four samples taken from the tendon. The analysis required tests to establish the concentration of chlorides, nitrates and sulfides using test methods described in ASTM D 512, ASTM D 992 and for sulfides APHA. Nitrate and sulfide content were less than one part per million and chlorides were less than 0.7 parts per million in three samples, however, the water taken from the grease cap contained 73 parts per million chlorides. Subsequently, the licensee implemented an inspection program of all vertical tendons. This unresolved item remains open.

No violations or deviations were identified.

7. Review of Braidwood Flush Procedure PSU 200.

Based on earlier NRC inspections of safety-related piping systems, it was determined that the cleanliness condition could not be established and that subsequent reflushing and inspections were necessary to establish the cleanliness appropriate for the systems in question. The inspector reviewed the draft flush procedure PSU 200 with minor questions on the documentation of flush criteria and turn over.

No violations or deviations were identified.

8. Failure of Diesel Generators to Sustain Adequate Prime

During initial operations and also while performing preoperational testing (DG-10), the Unit 1 diesels had starting times which varied from seven to eighty seconds. Plant Technical Specifications require the diesels to automatically start and assume emergency loading within 10 seconds. The diesel fuel oil day tank is located on the same elevation as the base of the diesel engine. A check valve located in the discharge of the fuel oil pump is the only protection for preventing the fuel oil draining back to the day tank. As a good design practice, day tanks are usually elevated to a level which is as high or higher than the fuel oil injectors. Additionally, the manufacturer's installation manuals for the Braidwood diesels require an elevated day tank in the fuel oil system. As installed at Braidwood, adequate fuel oil at the injectors (necessary for fast starting) depends upon the firm back seating of the check valve. The loss of fuel by back flowing may occur at any time without detection.

On July 23, 1985, the licensee reported a potential deficiency pursuant to 10 CFR 50.55(e) regarding the 1A and 1B diesel generators' failure to sustain adequate prime during testing (456/85-06-EE; 457/85-06-EE). The

licensee has submitted interim written reports dated August 22 and October 21 1985. Representatives from S&L, Cooper Energy Services, and CEC Co have agreed upon a modification to the diesel engine fuel system. Once the modification is completed, testing will be conducted to verify that adequate fuel oil system prime is maintained.

No violations or deviations were identified.

9. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector and which involve some action on the part of the NRC, the licensee, or both. An open item disclosed during the inspection is discussed in paragraph 5

10. Exit Meeting

The inspector met with licensee representatives denoted in Paragraph 1 at the conclusion of the inspection. The inspector summarized the scope and results of the inspection and discussed the likely content of this inspection report. The licensee did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.