U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-455/85004(DRS)

Docket No. 50-455 License No. CPPR-131

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: Byron Station, Unit 2

Inspection At: ITT-Grinnell Corporation, Warren, OH and Providence, RI (ITT-G)
USNRC, Region III, Glen Ellyn, IL (RIII)

Inspection Conducted: July 27, 1984 and February 4, 1985 at ITT-G, Providence, RI
September 10-11 and October 24-25, 1984 at ITT-G, Warren, OH
October 11 and 23, 1984, and January 16 and June 18, 1985 at RIII

Inspector: D H Danielson for T. T. Yin 7/2/85
Date

Approved By: D H Danielson for D. H. Danielson, Chief
Materials and Processes Section 7/2/85
Date

Inspection Summary

Special Inspection on July 27, 1984 through June 18, 1985 (Report No. 50-455/85004(DRS))
Areas Inspected: Special, announced inspection to evaluate Boeing steam generator snubber (SGS) requalification tests conducted by ITT-G. The inspection involved a total of 80 inspector-hours at the vendor testing facilities, and at the RIII office by one NRC inspector.
Results: Within the areas inspected, one violation was identified (SGS life cycle test was not conducted in accordance with the approved procedure - Paragraph 3).

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

*E. D. Swartz, Project Engineer
*P. R. Donavin, Field Engineering Coordinator
*K. Ainger, Nuclear Licensing Administrator

Sargent and Lundy Engineers (S&L)

S. Putman, Supervising Structural Engineering Specialist
*R. A. Salsbury, Mechanical Engineer
*C. S. Lim, Mechanical Project Engineer
*T. R. Tysen, Structural Engineer Specialist

ITT-Grinnell Corporation (ITT-G)

R. B. Mulcahey, Vice President and Director of Engineering
D. M. Sewell, Vice President and Director of QA
E. R. Eramian, Engineering Manager - Field Service
A. M. Guglielmo, Assistant Engineering Manager - Field Services
R. K. Taylor, Project Manager - Contract Administration
D. W. Mills, Senior Project Engineer
D. L. Jew, Analysis Section Leader

*Denotes those participating in the management exit interview telephone conference on June 18, 1985.

2. Licensee Action on Previously Identified Items

(Closed) Unresolved Item (455/83-17-07): Questionable qualification tests for the SGSs conducted by Boeing. See Paragraph 3 for details.

3. Requalification Testing of Boeing SGS

In conjunction with the snubber replacement efforts reported in Inspection Report Nos. 50-454/84-51; 50-455/84-35, Section III, the Byron Unit 2 Boeing SGSs were redesigned and modified by ITT-G and a series of requalification tests were conducted.

a. Review of Procedures

The inspector reviewed the following requalification test procedures contained in the ITT-G test program SPS-8471-11-0 and had no adverse comments:

- Test No. 1, "End Block/End Block Spring Rate with Block Valve," dated November 7, 1984.

- Test No. 2, "End Block/End Block Metallic Component Spring Rates," dated November 7, 1984.

- Test No. 3, "End Block/End Block Spring Rates With High Bulk Modules," dated November 7, 1984.

- Test No. 4, "Functional and End Block/End Block Spring Rate Testing Standard Boeing Valve with GE SF-1154 Fluid," dated November 7, 1984.

- Test No. 5, "Life Cycle Test to Evaluate Piston Ring as Cylinder Bore Wear," dated December 11, 1984.

- Test No. 6, "Valve Dynamic Test," dated December 26, 1984.

b. Observation of Tests

The inspector observed the following requalification tests:

- Test No. 1: The seal design test was conducted on October 24-25, 1984. Fluid leakage was observed at the control valve to cylinder body seal connection. The preliminary test showed that the ITT-G main SGS seal modification was adequate for the maximum design rated load capacity. Subsequently, the control valve seal leakage problem was corrected. (Testing performed on November 15-16, 1984, which was not observed by the inspector verified that the SGS effective spring rate met the S&L design specification requirements).

- Test No. 6: The valve dynamic test was conducted on February 4, 1985. The original Boeing control valve performed effectively under the dynamic loading conditions.

No violations or deviations were identified.

c. Review of Test Report

The inspector reviewed ITT-G Summary Report SPS 8471-13-0, "Developmental Testing of ITT Grinnell Modified Boeing Steam Generator Snubbers, Byron and Braidwood Station," dated February 21, 1985, and had no adverse comments concerning Test Nos. 1, 2, 3, 4, and 6. The procedure for Test No. 5 stated, "Block the valve passage in the direction to be tested and determine the bypass rate while stroking the snubber at 260,000 lbs. through one inch of stroke centered on the hot piston setting of the snubber, (3.07 in. from fully retracted), in both the tension and compression directions. The bypass rate shall be determined by measuring the slope of displacement versus time recorded continuously during the test." Contrary to this provision, the ITT-G Summary Report SPS 8471-13-0 stated that "The bypass rate was measured over one-half inch of stroke centered on the hot piston setting or for 30 minutes whichever occurred first. This was changed due to the low bypass experienced which required that the load be applied for up to four hours to move one inch."

Based on a review of test data and discussions with CECo and S&L technical personnel, the inspector concluded that even though the test as conducted was not as stringent as the specified testing, the test acceptably demonstrated that the snubber internal cylinder wear after repeated cycles would not impair the snubber functionability.

The failure to conduct SGS testing in accordance with an approved procedure is a violation of 10 CFR 50, Appendix B, Criterion V (455/85004-01).

d. Inadequate Corrective Action

The NRC inspector previously identified that the test procedure was not followed during testing of the Byron Unit 1 Paul-Munroe Hydraulic Company (PMH) SGSs, (Reference Inspection Report Nos. 50-454/84-51; 50-455/84-35, Section III, Paragraph 2) and a citation was issued for that matter. That testing was conducted during the week of September 10, 1984. The testing to satisfy Test No. 5 for the modified Boeing SGS was conducted on January 23 through February 1, 1985, and the NRC inspector identified that this testing was not conducted in accordance with the test procedure.

This is a repetitive violation in that effective corrective measures were not taken to prevent recurrence of a previous violation (Reference Inspection Report Nos. 50-454/84-51; 50-455/84-35 Item 3.b).

4. Ineffective Licensee Communication with RIII

RIII issued a letter to CECo dated March 7, 1984, requesting an opportunity to review testing procedures for the original Boeing snumbers, and that RIII be provided sufficient notification to allow the NRC an opportunity to observe the test facility and snubber testing. Instances of the licensee's failure to report SGS test problems in a timely manner to RIII are documented in Inspection Report Nos. 50-454/84-39; 50-455/84-28, Paragraph 2.c, and Nos. 50-454/84-51; 50-455/84-35, Paragraph 2 (close out of Unresolved Item 454/84-39-01; 455/84-38-01).

As a result of the inspector's concern regarding the licensee's failure to assure approved testing procedures are followed and failure to keep RIII informed of snubber testing activities, the licensee's Nuclear Licensing Administrator issued a Memorandum of Understanding (MOU) to the responsible SGS technical QA personnel on October 5, 1984. The memorandum states that, "In order to address the Region III concerns as discussed with Mr. Isa T. Yin at the Sargent and Lundy Offices on October 3 and 4, 1984, Commonwealth Edison has committed to heighten its communications with the Region concerning the Boeing and Paul Monroe Steam Generator Snubber activities including those activities associated with the ultimate Byron Unit 2 and Braidwood Units 1 and 2 resolution. In order to accomplish this objective as committed, the above listed individuals must keep the Nuclear Licensing Department appraised of all developments concerning the above activity such that effective communications can be maintained between the Region and Commonwealth Edison."

Since the issuance of the MOU, changes were made to facilitate completion of Test No. 5 of the ITT-G SGS requalification test program and these changes were not communicated to RIII. The NRC inspector stated that further improvement in communication regarding SGS testing activities is needed. Pending the licensee's evaluation of this matter and review of the licensee's actions by the inspector, this is considered to be an open item (455/85004-02).

5. 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 or licensee or both. An open item disclosed during the inspection is discussed in Paragraph 4.

6. Exit Interview

A telephone exit interview was conducted with licensee representatives on June 18, 1985, to discuss the inspection findings. The inspector discussed the likely informational content of the inspection report with regard to documents reviewed by the inspector during the inspection. The licensee did not identify any such documents proprietary.