

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

Report No. 99900509/80-03

Program No. 51200

Company: Stone and Webster  
Engineering Corporation  
P. O. Box 2325  
Boston, Massachusetts

Inspection at: Boston, Massachusetts

Inspection Conducted: August 4-8, 1980

Inspector:

C. J. Hale for  
J. R. Costello, Principal Inspector  
Program Evaluation Section  
Vendor Inspection Branch

8-27-80  
Date

C. J. Hale for  
R. M. Compton, Civil Engineer  
NRC Region II

8-27-80  
Date

Approved by:

C. J. Hale  
C. J. Hale, Chief  
Program Evaluation Section  
Vendor Inspection Branch

8-27-80  
Date

Summary

Inspection on August 4-8, 1980 (99900509/80-03)

Areas Inspected: Implementation of 10 CFR 50, Appendix B criteria in the areas of followup on IE Bulletin 79-14 inspection and followup on previous inspection findings. The inspection involved thirty one (31) inspector hours on site by one (1) Region IV NRC inspector.

Results: In the two (2) areas inspected, one (1) deviation was identified. There were no unresolved items.

Deviation: Followup on IE Bulletin 79-14 inspection - Surry project procedure STF-3 for IE Bulletin 79-14 related work was not adequate in addressing time frames and responsibilities for evaluating nonconformances with respect to system operability and prompt notification of the utility. (See Notice of Deviation enclosure.)

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DETAILS SECTIONA. Persons Contacted

- M. A. Ball, Engineering Associate, Engineering Assurance
- \*A. Banerjee, Assistant Project Engineer, Surry Project
- \*A. J. Benecchi, Engineering Assurance Engineer
- \*W. R. Curtis, Lead Engineer, Engineering Assurance
- \*H. W. Durkin, Project Engineer, Surry Project
- \*W. M. Eifert, Assistant Chief Engineer, Engineering Assurance
- D. Esielionis, Lead Engineer, Engineering Mechanics
- S. L. Hunt, Engineer, Engineering Assurance
- \*J. W. Kelly, Quality Assurance Program Administrator
- F. H. Kucharski, Assistant Project Engineer, Beaver Valley 1
- K. Polk, Designer, Stress Analysis
- J. J. Spitulnik, Lead Engineer, Continuing Education Group
- \*R. C. Tappan, Project Engineer, Beaver Valley 1
- \*H. W. Zassenhaus, Manager Records Management

\*Denotes those present at exit meeting

B. Followup on Previous Inspection Findings

1. (Closed) Deviation (Report No. 79-04): Contrary to EAP-2.4, experience records of Structural Division personnel did not contain information on their continuing education activities. EAP - 2.4 has been revised removing the requirement that an individual's continuing education activities and achievements be recorded in his experience record. This information is now contained in computer storage where each engineering division has access to it.
2. (Closed) Deviation (Report No. 79-04): Contrary to EAP 2.10, changes to activities specified in PSAR were made without the required documentation and review of these changes. A Licensing Document Change Request to revise Chapter 17.1.B in its entirety to reflect current project QA program and organization was approved by Gulf States Utilities on July 21, 1980. To prevent future occurrences, direction has been provided to QA Project Administrators to document future changes regardless of any apparently conflicting instructions.
3. (Closed) Deviation (Report No. 79-04): Contrary to QS-15.1, there was no indication on N&D #0121 that it had been closed out, but the equipment had been shipped and some had been installed.

N&D #021 was reviewed for completeness and closed out on August 23, 1979. This appears to be an isolated case. All PQA District Chiefs and inspection personnel have been reinstructed by memo concerning the paper closing N&Ds.

4. (Closed) Deviation (Report No. 79-05): Contrary to procedural requirements, Project Management Department has not established all of the written procedures for the operation of the Record Retention Center. All of the required procedures have now been issued and the project management department has been reminded of the requirement for established procedures prior to initiating any quality affecting activities. In addition, the Quality Assurance Department starting in 1980 will audit activities of the Records Management Division, including the Records Retention Center.
5. (Closed) Unresolved Item (Report No. 79-05): It is not apparent that a timely and completely generic review of amplified response spectra curves for all S&W projects is being conducted. This was handled through the Problem Report System (Problem Report EM-5). In reviewing the Problem Report Response Status it shows there were 18 responses regarding Pipe Stress Analysis Response Spectrum Curves and all 18 responses appear appropriate.
6. (Closed) Unresolved Item (Report No. 79-05): It is not apparent that a timely and completely generic review of the seismic requirement for safeguards area exhaust system ducting for all S&W projects is being conducted. An investigation was conducted which is documented in IPR-50512 which shows that the problem was not generic to other PWR plants and does not apply to BWR plants.
7. (Open) Unresolved Item (79-05): It is not apparent that adequate measures have been established to control humidity to specified requirements in the Record Retention Center. There is a major effort in effect to upgrade the records retention center which will replace the present air conditioning with a more sophisticated air conditioning system better able to control humidity. This item will be reinspected during the next inspection.
8. (Closed) Unresolved Item (80-02) It appears that IE Bulletin 79-04/79-14 activities on the North Anna Unit 1&2 projects may not have been conducted according to written and approved procedures. The North Anna IE Bulletin 79-14 related work conducted by Stone & Webster was only concerned with rechecking valve weights which does not require a formalized procedural program.

C. Followup on IE Bulletin 79-14

This area of inspection was a followup to a previous USNRC Region II inspection that covered IE Bulletin 79-14 related work for the Surry project. This inspection was conducted at the Stone and Webster facilities in Boston on June 16-18, 1980, and was reported in a Region II report numbered 50-280/80-22 and 50-281/80-25. The results of that inspection raised some questions about timely evaluation and reporting of nonconformances identified by IE 79-14 related work.

1. Objectives

- a. Determine if the deficiency/defect identified on stress problem 3033 (Reactor Purification System) should have been reported as a 10 CFR 21 reportable event.
- b. Assess the adequacy of Surry project procedures developed for 79-14 related work.

2. Method of Accomplishment

The preceding objectives were accomplished by examination of the following documents:

- a. QA-16.1, Stone & Webster Problem Report System, October 24, 1979.
- b. QS-16.2, Notifying Clients of Potentially Reportable Deficiencies Under 10 CFR 50.55(e), October 31, 1979.
- c. QS-16.3, Identifying and Reporting Defects and Failures to Comply Under 10 CFR 21, May 19, 1980.
- d. EAP-5.3, Preparation and Control of Manual and Computerized Calculations, February 8, 1980.
- e. EAP-16.1, Problem Report System, August 16, 1979.
- f. EAP-16.2, Notifying Clients of Potentially Reportable Deficiencies Under 10 CFR 50.55(e) October 31, 1979.
- g. EAP-16.3, Identifying and Reporting Defects and Failures to Comply Under 10 CFR 21, October 31, 1979.
- h. EMAG-41-D, Preparation, Review, and Control of Manual and Computer Calculations by the Engineering Mechanics Division (EMD), December 30, 1978.

- i. EMTF 9.3-0, Use of Amplified Response Spectra (ARS) Data By The Pipe Stress and Supports Section (PSAS), May 30, 1980.
- j. STF-1, Procedure For Evaluation of Dynamic Pipe Stress Analysis, Surry Power Station, Unit 1, April 4, 1980.
- k. STF-3, Procedure For the Evaluation of Stress and Reporting of Over-Allowable Stress For IE Bulletin 79-14, 79-02 and Show Cause Efforts, Surry Power Station - Units 1 & 2, Revision 0, 1, and 2 dated November 26, 1979, February 12, 1980, and July 14, 1980.
- l. Letter, serial no. 552B/070279, from W. C. Spencer, Vice President Power Station Engineering and Construction Services, VEPCO, to James P. O'Reilly, Director, Office of Inspection & Enforcement, USNRC, dated August 31, 1979, subject, 60-day response Surry 1 & 2.
- m. Letter, serial no. 972, from W. C. Spencer, Vice President, Power Station Engineering and Construction Services, VEPCO to Harold R. Dentron, Director, Office of Nuclear Reactor Regulation USNRC, dated November 28, 1979, subject, Seismic Analysis of Piping Systems Surry Power Station Units 1 & 2.
- n. Letter, serial no. SSV-1024, from B. F. Crowe, Project Engineer, Stone & Webster, to W. C. Spencer, Vice President, Power Station Engineering and Construction Services, VEPCO, dated February 11, 1980, subject, IE Bulletin 79-14, Surry Power Station Units 1 & 2.
- o. Letter, serial no. SVS-1052, from W. C. Spencer, Vice President, Power Station Engineering and Construction Services, VEPCO to B. F. Crowe, Project Engineer, Stone & Webster dated March 7, 1980, subject, Response to SSV-1024 Surry Units 1 and 2.

### 3. Findings

- a. One (1) deviation was identified, see Notice of Deviation enclosure. There were no unresolved items or followup items.
- b. The review of stress problem 3033 (Reactor Purification System) showed that the analysis cover sheet had been signed by the stress engineer on December 5, 1979, and signed by a checker on December 8, 1979. This analysis showed overstress conditions in two piping runs. The independent review block was not signed off until February 1, 1980. The plant Technical Services Supervisor stated that the site was informed by S&W that a nonconformance existed on this piping on February 18, 1980. The plant was shut down per the Technical Specifications at 10:15 p.m. on February 19, 1980,

and a Licensee Event Report initiated. All of the aforementioned information was found on the previous inspection trip of Region II to Stone & Webster and was reconfirmed on this inspection.

In the Surry project, Stone & Webster did not attempt to verify that the seismic analysis input information conformed to the actual configuration of safety related systems. This was not attempted due to a question of the adequacy of existing records. Instead, Stone & Webster analyzed the present actual configuration of the safety related systems.

Because of the uniqueness of the Surry project, the IE Bulletin 79-14 related work did not follow the conventional pattern. Much of the mode of operation is discussed in the letters listed above in paragraphs 2.l., m., n., and o.

Letters discussing the mode of operation were addressed to James P. O'Reilly of Region II and Harold R. Denton of NRR, but no response approving this mode of operation was received.

In Mr. Crowes letter of February 11, 1980, it was pointed out that the Surry IE Bulletin 79-14 does not follow the specific instructions of the bulletins. It was also pointed out that the specific deviation from the 2 day evaluation and 30 day analytical requirements should be documented.

Surry project procedures for IE Bulletin 79-14 related work did not stress the importance of immediate reporting of potentially reportable deficiencies/defects. This opened up the potential for a plant to continue to operate in an unsafe condition.

Discussions with the Principal Engineer, Engineering Mechanics (now Lead Engineer, Engineering Mechanics) who was responsible for passing stress problem 3033 to the independent design reviewer disclosed the following:

- (1) The Surry project was working on a tight schedule having committed to complete the analytical analysis program in five (5) months. Stone & Webster also had limited manpower available for this project.
- (2) The Lead Engineer felt his highest priority was to analyze all problems first before passing them on to an independent design reviewer even if they might be potentially reportable deficiencies/defects. This philosophy is partially described in Mr. Crowes letter of February 11, 1980.

- (3) The Lead Engineer did not establish any priorities for potential problems. Problems were passed on to an independent design reviewer whenever an independent design reviewer was available without trying to select potential problems.
- (4) The Lead Engineer was aware of the overstressed condition in problem 3033, but did not report it to anyone as he was not required to until the independent review was complete.

No responsible officer of Stone & Webster was aware of the over-stress condition in problem 3033 until it was reported to the utility. Therefore no reporting violation existed relative to 10 CFR Part 21 under the present Surry Project Procedures; however, this is the subject of the deviation identified.

D. Exit Meeting

A meeting was conducted with management representatives at the conclusion of the inspection on August 8, 1980. In addition to the individuals indicated by an asterisk in the paragraph A. above, those in attendance were:

- N. B. Cleveland, Vice President, Quality Assurance
- R. B. Kelly, Manager Quality Assurance
- C. B. Miczalc, Vice President, Engineering
- L. D. Nace, Chief Engineer, Engineering Assurance
- S. C. Rossier, Assistant Engineering Manager

The inspector summarized the scope and findings of the inspection for those present at the meeting. Management representatives questioned whether a deviation should be written against the Surry procedures for a lack of prompt reporting to the utility of deficiencies/defects. The inspector's conclusion was that the deviation is appropriate.