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

Report No. 99900509/81-01

Company: Stone & Webster Engineering Corporation
P. O. Box 2325
Boston, Massachusetts 02107

Inspection at: Boston, Massachusetts

Inspection Conducted: March 23-27, 1981

Inspectors: J. R. Costello — 5/1/81
J. R. Costello, Contractor Inspector — Date
Reactor Systems Section
Vendor Inspection Branch

J. R. Costello for — 5/1/81
D. D. Chamberlain, Contractor Inspector — Date
Reactor Systems Section
Vendor Inspection Branch

Approved by: C. J. Hale — 5-5-81
C. J. Hale, Chief — Date
Reactor Systems Section
Vendor Inspection Branch

Summary

Inspection on March 23-27, 1981 (99900509/81-01)

Areas Inspected: Implementation of 10 CFR Part 50, Appendix B and Topical Report SWSQAP 1-74A in the areas of follow up on four regional requests and follow up on two previous inspection findings. The inspection involved 64 inspector hours on site by two NRC inspectors.

Results: In the two areas inspected, no nonconformances or unresolved items were identified.

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DETAILS SECTION I

(Prepared by J. R. Costello)

A. Persons Contacted

M. P. Beradi, Supervisor Materials Application
R. L. Bernard, Assistant Manager Field Quality Control
H. M. Carmichael, Problem Report Engineer, Engineering Assurance
*W. R. Curtis, Lead Engineer, Engineering Assurance
E. P. Doherty, Supervisor, Engineering Assurance
*E. C. Fuller, Engineering Assurance Engineer
C. H. Hall, Lead Materials Engineer
*S. L. Hunt, Supervisor Problem Reports, Engineering Assurance
*J. W. Kelly, Quality Assurance Program Administrator
*R. J. Rudis, Engineering Assurance Engineer
*G. M. Schierberg, Manager Procurement Quality Assurance
J. B. Selden, Regulatory Advisor
W. K. Sherman, Principal Nuclear Engineer
G. L. Volpe, Procurement Quality Assurance Inspector/ Quality Assurance Engineer
H. W. Zassenhaus, Manager Record Management Division

*Denotes those present at exit meeting.

B. Follow Up On Previous Inspection Findings

1. (Closed) Unresolved Item (79-05): It is not apparent that adequate measures have been established to control humidity to specified requirements in the Records Retention Center.

S&W is completely rebuilding the "Records Retention Center" at 401 Summer, Boston, Massachusetts. The "Records Retention Center" will have a new microfilm storage area with a two hour rated fire protection system and an automatic temperature and humidity control with an electronic recording device. The microfilm storage area will be operational by July 1981. S&W has been following the guidance of the National Bureau of Standards Handbook H96, plus what industry has been recommending for preserving film. They expect to do some trial sampling of film from the old microfilm storage area this year and start a new program next year to assure a 40 year storage life. Spot checking of the film stored in the present microfilm storage area, which is refrigerated but does not have humidity controls, indicates present quality is still good.

2. (Closed) Deviation (80-06): Nonconformance and Disposition Reports (N&Ds) were identified that were not completed as required by procedures.

Corrective action was completed on the Millstone project prior to completion of the 99900509/80-06 inspection. Review of approximately

2000 N&D's on other projects subject to EAP 15.2 disclosed similar problems on some of these projects and these were corrected prior to the 99900509/81-01 inspection. One project was not using the EAP 15.2 forms and required a project procedure change and a complete review of all Category I N&D dispositions. Also, a memorandum referencing and restating the requirements of EAP 15.2 regarding the documentation of related activities was issued to all engineers responsible for disposition or review of N&Ds.

C. Follow Up On A Regional Request

In this area of inspection, a regional request relating to Stone & Webster's (S&W) questionable procurement/supplier control practices for Tower Iron Works was reviewed and evaluated by the inspector. This request was generated by a 10 CFR Part 50.55(e) report from Northeast Utilities concerning defective welds on the component cooling heat exchanger supports.

1. Objectives

a. Determine the adequacy of S&W's procurement practices.

b. Review the adequacy of S&W's surveillance practices.

c. Determine if S&W approved the welding procedures.

d. Determine if S&W verified whether the vendors QA program was adequate and properly implemented.

e. Determine the cause or reason for the poor fabrication work and poor QA controls by S&W.

f. Determine if the S&W QA program requirements were violated, were effective, or if they need change.

g. Evaluate the generic implications of the problem.

h. Verify compliance with the applicable reporting requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by an examination of:

a. Section 3.1.2.19 of Millstone Nuclear Power Station Unit 3 PSAR which covers the commitment for hot shutdown.

b. Engineering Assurance Procedures EAP 16.1 (Problem Report System) and EAP 16.2 (Notifying Clients of Potentially Reportable Deficiencies Under 10 CFR Part 50.55(e). These procedures governed the reporting of this problem.

c. Quality Assurance Directives QAD-2.5 (Qualification and Certification of Personnel Performing Quality Assurance Activities), QAD-4.2 (PQA Rating System), QAD-4.12 (Master Level Inspection Planning), QAD-7.1 (Seller Shop Quality Control Inspection System), QAD-7.14 (PQA Inspection Planning), QAD-15.1 (PQA N&D Report Preparation and Processing), QAD-18.2 (Quality Audit Plans) and QAD-18.11 (QA Program Audits of Sellers). These procedures govern the present procurement quality assurance program used to control the quality of sellers' output. These procedures are much more detailed and definitive than those that were in existence when the Tower Iron Works problem developed.

d. U. S. Nuclear Regulatory Commission Regulatory Guide 1.139 (Guidance For Residual Heat Removal). This guide was not committed to in the PSAR, but will be committed to in the FSAR. The guide affects cold shutdown and had it been in effect when the defective component cooling heat exchanger supports were identified, it would have required that the defective component cooling heat exchanger supports be reported under 10 CFR Part 21.

e. Memo J. H. Fletcher to R. Wessel, dated March 18, 1980, which recommended that defective component cooling heat exchanger supports be reported in accordance with 10 CFR Part 21.

f. Memo R. P. Wessel to S. J. Jacobs, dated March 26, 1981, which stated that defective component cooling heat exchanger supports qualified as a quality assurance program breakdown under 10 CFR Part 50.55(e).

g. Memo R. B. Kelly to S. B. Jacobs, dated April 10, 1980. This memo stated that the writer did not concur with the assumption of a quality assurance program breakdown because the magnetic particle examination specified would not have detected the weld defects. Review of the documentation indicates to the inspector that if the in-process visual and magnetic particle inspections had been properly performed the defective full penetration welds would have been identified.

h. Memo S. B. Jacobs to J. H. Fletcher, dated September 17, 1980, which states that failure of component cooling heat exchanger supports would not affect hot shutdown and therefore was not reportable under 10 CFR Part 21. The Millstone PSAR only required the ability to effect a hot shutdown, but the FSAR will require the ability to effect a cold shutdown. It appears that the decision not to report under 10 CFR Part 21 was based on a technicality and was not consistent with the intent of Part 21.

i. Memo W. Bezanson to R. B. Kelly, dated March 31, 1980. This memo covered a review of S&W inspections performed at Tower Iron Works, other project work being performed there, and a history of the company until they discontinued business operations.

j. Memo J. W. Kelly to D. C. Shelton, dated March 18, 1981, which covered the results of a study made of seven purchase orders placed with Tower Iron Works, including the one for component cooling heat exchanger support welds.

k. Letter J. S. Searway to E. R. Foster Jr., dated April 4, 1980, stating that unacceptable welds on component cooling heat exchanger supports were reportable under 10 CFR Part 50.55(e).

l. Letter W. G. Counsil to B. H. Grier dated May 8, 1980, which reported defective welds on component cooling heat exchanger supports as a 10 CFR Part 50.55(e) reportable item.

m. Report of a Problem IPR 50566, dated 3/10/80, Reactor Plant Component Cooling Heat Exchanger Supports - Unacceptable Welds.

n. Purchase Order *2214.414-134 to Tower Iron Works for one set of heat exchanger supports and one set of miscellaneous heat exchanger restraints. Purchase Order dated April 28, 1975.

o. Specification No. 2214.414-134, Reactor Plant Component Cooling Heat Exchanger Supports.

p. Addendum one to above specification, dated April 14, 1975, which among other things, added the following:

(1) ASME Boiler and Pressure Vessel Code Section III, Division I, Nuclear Power Plant Components, Subsection NA and Subsection NF and addenda hereto, dated June 30, 1974.

(2) Code Case 1651, dated August 12, 1974, ASME Boiler and Pressure Vessel Code Case Interpretation, Case 1651.

q. Tower Iron Works Specifications

(1) B-P1(N), Procedure Specifications for Shielded Metal Arc Welding of P-1 Materials.

(2) B-P1(N), Weld Repair Procedure.

(3) L-P1-8, Procedure Specification for Flux Core Arc Welding of P-1 Materials.

(4) QCP-34, Magnetic Particle Inspection Procedure.

r. Tower Iron Works Quality Assurance Manual - ASME Section III, original issue 2/1/75, approved by S&W 3/11/75.

s. Stone & Webster's Inspection System Handbook, February 14, 1980.

t. Test Inspection and Documentation Records (TID's). S&W issued 14 TIDs between September 8, 1975, and March 6, 1976. The TIDs were a record of the surveillance inspections performed by S&W personnel. TIDs are no longer used; they have been replaced by a more detailed inspection plan.

u. Five S&W supplier audits dated February 20, 1973, April 6, 1973, April 15, 1974, November 1, 1974, and May 2, 1978.

v. Four Nonconformance and Disposition Reports 0529, 0498, 0169, and 0130 all pertaining to Component Cooling Heat Exchanger Supports.

w. Six S&W drawings

(1) 12179-EV-63A-1, Miscellaneous Heat Exchanger Restraints;

(2) 12179-EV-63A-4, Miscellaneous Heat Exchanger Restraints;

(3) 12179-EV-42A-1, Reactor Plant Component Cooling Heat Exchanger Support, SH 1;

(4) 12179-EV-42A-3, Reactor Plant Component Cooling Heat Exchanger Support, SH 1;

(5) 12179-EV-42B-1, Reactor Plant - Component Cooling Heat Exchangers Support, SH 2; and

(6) 12179-EV-42B-3, Reactor Plant - Component Cooling Heat Exchangers Support, SH 2.

3. Findings

a. The component cooling heat exchanger supports were released for fabrication to Tower Iron Works Inc. on October 16, 1975, and were delivered to the Millstone 3 jobsite on March 12, 1976. The heat exchanger supports were stored outside until installation in the auxiliary building during the spring of 1979.

During the period of this contract, S&W had the same inspector call on Tower Iron Works 14 times. These inspections were documented on Test Inspection and Documentation Records (TIDs) issued between September 8, 1975, and March 6, 1976. A review of the TIDs indicated that no unsatisfactory conditions were identified during these inspections and a Shipping Release Tag was issued on March 8, 1976.

The problem of unsatisfactory welds was identified by Field Quality Control and was reported via a Nonconformance and Disposition Report, N&D 0169, dated September 6, 1979. The unacceptable welds

were identified during erection of the subject supports when the S&W field inspectors visually observed the full penetration welds. (Inspection by the field inspectors was not a requirement.) The unacceptable welds constituted the majority of all shop welding on the supports and included the primary load carrying members. The welding defects were of a gross nature as opposed to microscopic flaws. Several full penetration welds lacked from 50 percent to 90 percent of achieving full penetration.

All of the rejectable conditions recorded on N&D 0169 were identified by visual inspection The majority of the rejections were for lack of fusion occurring at the root of the single bevel joint configuration welds. S&W field inspectors visually confirmed that the back edge of the plates had not been fused, therefore, a potential lack of fusion existed which was later confirmed by grinding to determine the amount of fusion.

b. The problem had generic implications and was recommended by S&W engineering to be reported under both 10 CFR Part 21 and 10 CFR Part 50.55(e) by memo to the Chief Licensing Engineer dated March 26, 1980.

The problem was reported under 10 CFR Part 50.55(e) to NRC Region I on May 8, 1980.

On September 17, 1980, S&W's Chief Licensing Engineer determined that the component cooling heat exchanger supports were not reportable under 10 CFR Part 21. (See I.C.2.h.).

In the explanation for not reporting this defect under 10 CFR Part 21, the licensing engineer acknowledged that the component cooling system was designated as QA Category I and was by procedural definition a basic component. However, the system is not required for accident mitigation, only hot shutdown, according to the Millstone PSAR. Using this rational, S&W Licensing determined that the component cooling water system is not a basic component by USNRC regulatory definition (". . . capability to shutdown the reactor and maintain it in a safe shutdown condition . . . .") and therefore a potential defect did not exist.

The Millstone FSAR, currently in preparation, will require that the component cooling system be classified as necessary for achieving cold shutdown. Thus the decision not to report under 10 CFR Part 21 appears to have been made by S&W based on the PSAR classification, knowing that the system would be re-classified in the FSAR. The Part 21 reportability of this item by S&W will be evaluated further during subsequent inspections.

To assess the generic potential of this problem, S&W did a review of the other contracts they had with Tower Iron Works Inc. during the period June 12, 1975, through January 9, 1979. Based on their review of the documentation relative to seven contracts, they concluded that the defective welding in the heat exchanger supports was an isolated case. Based on the inspector's review of protions of these and other documents, he is not satisfied that the S&W conclusion is valid. This matter will be further reviewed during future inspections.

c. Tower Iron Works Inc. had been surveyed by Stone & Webster on three occasions (February 8, 1972, May 21, 1976, and January 27, 1978) and found to be satisfactory and placed on S&W Quality Rating List. As a result of a special S&W audit conducted February 21-24, 1978, Tower Iron Works was removed from S&W's Quality Rating List on June 12, 1978, and in the fall of 1978, Tower Iron Works discontinued doing business.

d. In reviewing this problem the inspector did not identify any nonconformances or unresolved items with the documented evidence supporting product quality. However, the inspector could not determine how weld defects identified by S&W's Field Quality Control could have missed detection at Tower Iron Works or by the S&W vendor inspector. It appeared that during this time frame too much emphasis was placed on documentation and not enough on hardware inspection.

Since the time of manufacture for the heat exchanger supports (October 16, 1975 to March 12, 1976), S&W has instituted a procurement quality assurance system enhancement program. This program requires a much more complete and detailed review of seller's procedures for controlling product quality and places more emphasis on inspection of hardware. The inspector will review this enhanced program further during subsequent inspections in light of the problems encountered with Tower Iron Works Inc.

D. Exit Meeting

A meeting was conducted with management representatives at the conclusion of the inspection on March 27, 1981. In addition to the individuals indicated by an asterisk in the Details Sections, those in attendance were:

F. B. Baldwin, Assistant Manager Quality Assurance
W. B. Dodson, Project Engineer
W. M. Eifert, Assistant Chief, Engineering Assurance
J. H. Fletcher, Project Engineer
R. B. Kelly, Vice President and Manager Quality Assurance
C. B. Miczek, Deputy Director of Engineering
D. M. Oman, Assistant Manager, Records Management Division
D. C. Shelton, Chief Engineer, Engineering Assurance
P. R. Sircar, Project Engineer
P. A. Wild, Director of Engineering

The inspector summarized the scope and findings of the inspection for those present at the meeting. Management representatives acknowledged the statements of the inspector.

DETAILS SECTION II

(Prepared by D. D. Chamberlain)

A. Persons Contacted

A. J. Benecchi, Engineering Assurance Engineer
S. H. Bhatt, Lead Structural Engineer
*W. R. Curtis, Lead Engineering Assurance Engineer
C. M. D'Esopo, Assistant Chief Electrical Engineer
*E. C. Fuller, Engineering Assurance Engineer
*S. L. Hunt, Engineering Assurance Supervisor
E. W. Jones, Principal Electrical Engineer
K. Lakshmipathiah, Senior Structural Engineer
D. P. Lopaus, Engineering Assurance Engineer
*D. Oakes, Assistant Chief Structural Engineer
*R. J. Rudis, Engineering Assurance Engineer
J. M. Spiznoco, Principal Engineer
*H. B. Wessinger, Project Engineer
J. P. Wicks, Senior Structural Engineer
*C. H. Wilbur, Assistant Project Engineer

*Denotes those present at the exit meeting.

B. Follow up on Regional Requests

In this area of inspection three regional requests relating to deficiencies or potential deficiencies were reviewed and evaluated by the NRC inspector. Each regional request is presented in three sections entitled "Objectives", "Method of Accomplishment", and "Findings":

1. Error in Stress Analysis for Steam Generator Support

a. Objectives

(1) Determine if there was a breakdown in the design control process.

(2) Determine if any design procedures have been violated.

(3) Determine if any procurement or surveillance procedures were violated.

(4) Determine the reason for the hardware not matching the stress analysis.

(5) Determine if the QA program requirements have been violated.

(6) Evaluate the generic implications of the problem.

(7) Verify compliance with the applicable reporting requirements.

b. Method of Accomplishment

The preceding objectives were accomplished by an examination of:

(1) Interim and final report (10 CFR Part 50.55(e) and 10 CFR Part 21) from Virginia Electric and Power Company (VEPCO) to NRC Region II.

(2) Notes of telephone conversations and correspondence relating to the potential problem with the steam generator support system analysis.

(3) Two Babcock & Wilcox (B&W) design drawings and one B&W design specification.

(4) One Stone & Webster (S&W) design drawing.

c. Findings

This potential problem originated as a concern from S&W to B&W relating to the mathematical model used for the stress and loading analysis of the upper steam generator trunion support for the North Anna 3 project. B&W is responsible for the design of the steam generator supports and for providing load values to S&W for the design of the structural steel and concrete structures. The load values that were originally provided to S&W in the B&W functional specification did not match the B&W hardware for the upper steam generator trunion support.

The results gathered from correspondence and the final report to the NRC indicates that B&W has determined that the mathematical model used for the steam generator support is adequate. B&W has indicated that they will provide S&W with revised load values or with instructions for the proper use of the original load values.

Relative to the S&W program, the NRC inspector concludes that there was no breakdown in the design control process, no procedures were violated, the QA program or reporting requirements were not violated and this item applies only to the North Anna 3 project. A follow up of this item will be conducted at B&W to determine if any program requirements were violated at B&W.

2. Error in Auxiliary Bui[illegible] Shear Wall Design

a. Objectives

(1) Determine if the programatic aspects of design verification were violated.

(2) Determine the reason for the error remaining undetected until uncovered by a S&W Engineering Assurance Audit.

(3) Determine if the QA program requirements have been violated.

(4) Evaluate the generic implications of the item.

(5) Verify compliance with the applicable reporting requirements.

b. Method of Accomplishment

The preceding objectives were accomplished by an examination of:

(1) Engineering Assurance Procedures:

(a) EAP 5.3, Preparation and Control of Manual and Computerized Calculations (Nuclear Projects);

(b) EAP 16.1, Problem Report System;

(c) EAP 16.2, Notifying Clients of Potentially Reportable Deficiencies under 10 CFR Part 50.55(e); and

(d) EAP 16.3, Identifying and Reporting Defects and Failures to Comply under 10 CFR 21.

(2) Technical Procedure EATP 6.1, Problem Report System - Preparation and Review.

(3) Initial Problem Report (Millstone 3 project) and the resultant Problem Report for action response.

(4) Written report on the review of seismic Category I structures for analytical approach used to resist horizontal loads.

(5) 13 Problem Report responses.

(6) Interoffice memorandum relating to the problem.

(7) Four design calculations.

(8) Results of the Engineering Assurance Audit that identified the original problem for the Millstone 3 project service building.

c. Findings

(1) Description of Problem and Initial Action

This problem involves the design calculation method used for concrete shear wall design of some Category I buildings. The shear wall design concept is where the walls are designed so they can carry the vertical and horizontal floor, equipment, and seismic loads from upper levels. All loads should be calculated and accumulated from floor to floor. The problem identified was an inconsistency in carrying the horizontal seismic overturning moment forces down from floor to floor to the base. The term overturning moment force indicates a bending moment force created at a lower level due to the load above. The overturning moment forces were calculated properly at each level but the accumulated effect at the base was not properly accounted for in some calculations.

This problem was initially identified by a S&W technical Engineering Assurance Audit of the Millstone 3 project service building shear wall design calculations. The audit was conducted on October 22 through December 6, 1979 and resulted in the generation of an Interim Problem Report and a review of the possible generic implications.

(2) Results of Review for Generic Implications

The results of the generic review of this problem were that three projects (Beaver Valley 2, Shoreham and Millstone 3) were identified as having used the suspect method of shear wall design calculations. A Problem Report was issued to instruct all projects regarding action to be taken. The status of the Problem Report leaves only three projects with problems or potential problems or with committed action outstanding. They are as follows:

(a) Millstone 3 project has completed the review of all Category I structures and has found that only the auxiliary building design is inadequate. Some design modifications have been completed for the auxiliary building and a final summary of required modifications will be submitted to Engineering Assurance when the work is finalized.

(b) Beaver Valley 2 project has completed the auxiliary building review and has determined that the design is adequate. The review of other Category I buildings is still in progress with a committed completion date of December, 1981.

(c) North Anna 3 project (recently reactivated) has committed that "The Structural Division will review and approve the method of analysis used for horizontal seismic load when the Project is reactivated."

The Structural Division Chief Engineer indicated in a memo to "All Holders of Structural Division Guidelines Manuals" that there is a need for a guideline describing the general approach to be followed for the seismic design and analysis of concrete structures. The present instruction is "Until the guideline is available, the approach to be used for seismic analysis and design of all new concrete structures shall be reviewed and approved by the Structural Division Chief prior to start of the effort."

(3) Conclusions

This problem was an error in the proper use of a valid design method. A design review was conducted and did not uncover the error. The errors that were uncovered were made in the 1973 to 1974 time frame and no programmatic aspects of design review in effect at that time were violated. No recent calculations (after 1975) have been found to be in error. S&W has strenthened their structural design review by the scheduling of a series of reviews during the design process. These reviews are intended to assure that the design methods are applied properly.

The reviews conducted during the 1973 to 1974 time frame were more of a checking process and did not require the in-depth review of design method and application that is presently required. The NRC inspector concludes that with the present program requirements and in depth design review and verification conducted, it is unlikely that this type of problem would be repeated. Also, with the present review status, all reporting requirements have been met and at present only one project (Millstone 3) has been found to have an inadequate design. Therefore, after assesing the present status of review and committed action by S&W, (the NRC inspector considers this item closed.)

3. Emergency Bus Residual Voltage Transfer

a. Objectives

(1) Determine if a design error was made.

(2) Determine if procedures are inadequate or if procedures were violated.

(3) Determine if QA program requirements have been violated.

(4) Evaluate the generic implications of the problem.

(5) Verify compliance with the applicable reporting requirements.

b. Method of Accomplishment

The preceding objectives were accomplished by an examination of:

(1) Four Stone & Webster design drawings.

(2) Two Stone & Webster design calculations.

(3) Initial Problem Report for North Anna 1 & 2 project.

(4) Interoffice correspondence relating to the problem.

(5) Surry 1 & 2 project client notification documentation.

(6) Client notification documentation for three past clients of Stone & Webster (Yankee Atomic Electric Company, Maine Yankee Atomic Power Company, and Connecticut Yankee Atomic Power Company).

(7) 10 CFR Part 21 report from Stone & Webster to USNRC Region II.

c. Findings

(1) Description of Problem and Initial Action

Stone & Webster identified a potential problem in June 1980 on the North Anna 1 & 2 project with the transfer of the emergency bus from the normal source to the diesel generator output breaker. The scenario that was examined is as follows:

(a) A safety injection signal occurs and initiates the start of safety injection equipment and starts the diesel generator. At this time, the emergency bus is being supplied from the normal source.

(b) A reduced voltage situation occurs on the emergency bus and causes an automatic transfer to the diesel generator output breaker.

(c) The fast transfer to the diesel generator could conceivably create the situation where the diesel generator output voltage is tied into the emergency bus residual voltage, out of synchronization. An overvoltage situation could be created on the emergency bus for an instant and could cause damage to the emergency equipment being fed from the emergency bus.

The licensee took initial action to install a two second time delay interlock on the diesel generator output breaker to allow for the residual voltage to decay on the emergency bus.

(2) Results of Review for Generic Implications

Stone & Webster reviewed all of their previous designs to determine the generic implications of this problem. No other projects that S&W was able to analyze were found to have this problem. However, S&W notified four projects or past clients that the potential for this problem exists at their facilities. These projects are Surry 1 & 2 Project, Yankee Atomic Electric Company, Maine Yankee Atomic Power Company, and Connecticut Yankee Atomic Power Company. The clients were advised by S&W to evaluate their plants for possible corrective action and reporting requirements.

(3) Conclusions

This area of design for the North Anna 1 & 2 project was completed in the 1970 time frame. A design error was not made based on the fact that this was a possible scenario that was not envisioned at that time.

The NRC inspector concludes that procedural and QA program requirements have not been violated. All reporting requirements have been met by Stone & Webster and the NRC inspector considers this item closed with respect to Stone & Webster.