

June 23, 1982

SBN- 284

T. F. B7.1.2

United States Nuclear Regulatory Commission  
Office of Inspection and Enforcement  
Region I  
631 Park Avenue  
King of Prussia, PA 19406

Attention: Richard W. Starostecki, Director  
Division of Resident and Project Inspection

References: (a) Construction Permit CPPR-135 and CPPR-136, Docket  
Numbers 50-443 and 50-444.  
(b) USNRC Letter, dated May 26, 1982, "Combined Inspection  
Numbers 50-443/82-03 and 50-444/82-03" R. W. Starostecki to  
W. C. Tallman.

Subject: RESPONSE TO INSPECTION NUMBERS 50-443/82-03 and 50-444/82-03

Dear Sir:

In response to the violations which you reported in Reference (b), PSNH offers the following:

Violation 1:

10 CFR 50, Appendix B, Criterion X and the Seabrook Station PSAR require that a program for inspection of activities affecting quality be established. The Seabrook Station FSAR endorses USNRC Regulatory Guide 1.30 (Revision 0) and requires that safety-related systems comply with IEEE-336-1971, which itself includes raceways as part of Class 1E systems requiring an inspection program to verify physical integrity.

Contrary to the above, as of March 28, 1982, no program of inspection to verify the physical integrity of installed Class 1E cable tray (a raceway) had been established. Defects were located in installed tray without evidence that they would have been identified by the licensee program, since no site inspection criteria exist for the documentation and resolution of such deficiencies.

A. Response:

We do not concur that the aforementioned item of violation is correct as stated; however, we recognize that at the time of the inspection, we were remiss in not fully outlining the scope of our cable tray inspection program.

The following chronology of actions taken and requirements imposed from the initiation of design to the point of installation inspection is offered in support of our contention that an adequate quality assurance program exists and has been in existence prior to acceptance and after installation.

1. On October 4, 1974, at the then AEC offices in Bethesda, Maryland, UE&C met with your Messrs. T. A. Ippolito and C. Miller to discuss certain generic problems with respect to regulatory requirements. The AEC stated that the regulatory requirement is that the cables should remain functional after a design basis seismic event, irrespective of what may eventually happen to the tray. If only the tray supports are seismically qualified, then an analysis should be presented to verify that the cables will remain functional after a seismic event. Such an analysis should include actual test data to show that the cable supported at the supports will remain functional, for the worst possible conditions, after a seismic event and a LOCA. Aspects such as the cable loadings due to maximum expected sag, etc. should be considered. Also, the analysis should include considerations of non-seismic trays falling on Class 1E circuits, and equipment. No two events occurring at the same time need be considered in such an analysis. Such analysis may be presented in the form of topical reports covering a range of plants whereby the need to repeat the analysis on each job may be eliminated.

The AEC statement, which was made at the meeting, "there is no regulatory requirement that the cables be supported in a tray" is of significance.

2. The UE&C cable tray Specification (Spec. No. 9763-006-109-1) was written for commercial grade cable tray with the exception that the tray must meet a static biaxial load test (Appendix B of the Specification). The cable tray seller (Metal Products Corporation) submitted a proposal including an offer to UE&C to witness the static load test. The static tests were performed on or about September 1977 on ladder type cable tray, similar to the proposed Seabrook cable tray. These tests were witnessed by UE&C. The results of these tests (Proposal Data) proved that the vertical and the transverse design loads were less than sixty percent (60%) of the test vertical and transverse allowable load limits. Metal Products Corporation (M-P) was therefore awarded the contract to furnish Seabrook cable trays.

The specification imposed UE&C's Quality Assurance Administrative and System Requirements Document No. 9763-QAS-2. This document provides requirements for the Quality Assurance/Control program to be maintained by the vendors supplying Non-Nuclear Safety/Class (NNS) items and services.

3. On or about May 1978, Metal Products Corporation conducted static biaxial tests on the ladder type and the corrugated bottom (solid) type cable trays, similar to the proposed Seabrook cable tray. This series of tests was witnessed by UE&C. The results of these tests proved that the vertical and the transverse design loads for the ladder type cable tray were equal to or less than the allowable load limits. Metal Products Corporation was then released for procurement of material in June 1978, and for fabrication of cable trays in August 1978.

On or about December 1978, Metal Products Corporation offered a trailer load of the ladder type cable tray, destined for Seabrook Station, Seabrook, New Hampshire. UE&C visited the M-P factory site and selected one (1) twelve-foot (12 ft.) straight section from the trailer for production run cable tray tests. The results of these tests were considered acceptable by UE&C's Mechanical Analysis Group.

4. On or about February 1979, material was received in damaged condition at the construction site, and was responded to indirectly by memorandum from M-P Corporation local sales office to M-P Corporation home office (Copy on file - UE&C). Approximately 181 pieces of cable tray items were set aside for ultimate return to Metal Products Corporation.

On or about June 1979, Fischbach-Boulos-Manzi, NH (FBM) (Seabrook Electrical Installation Contractor) refused to accept cable tray materials that UE&C Material Department had received and accepted. FBM cited a list of discrepancies (NCR-FBM-004, 6/11/79) and recommended replacement by M-P Corporation. The seller, M-P Corporation, came to Seabrook and inspected all cable tray material.

Material accepted by this inspection was reinspected by UE&C Materials Receiving and ultimately used. From this group of accepted material, M-P Corporation offered to retest sections of cable tray that were randomly selected by UE&C. On or about September 1980, UE&C visited M-P Corporation factory for the purpose of witnessing cable tray test on the job-site returned material (10 foot supports). UE&C representatives selected a corrugated bottom (solid bottom) cable tray from six (6) sections returned (3 ea. - ladder & 3 ea. - solid) for the ten (10) foot support test. The results of this test was considered acceptable by UE&C Mechanical Analysis Group. UE&C witnessed an additional optional test (12-foot supports) on new material. The results are recorded and calculated on calculation set number 9763-C-EE-IE-04-F, Revision 1.

The conclusions, Sheet #15, are that the twelve (12) foot support span, fully loaded cable tray, meets the requirements of Spec. No. 9763-006-109-1, Rev. 2, Appendix C.

5. M-P Corporation recognized the workmanship and galvanizing problems.

Due to the workmanship and galvanizing problems, UE&C/YAEC reviewed Metal Products' Quality Control Program for manufacturing and for

hot dip galvanizing at the vendors facilities. This includes procedure review and implementation at the vendor work stations. Recommendations to M-P were made and implemented (UE&C Notes of Conference E-91).

As a result of this review/inspection at the vendor facilities the UE&C Vendor Surveillance Check Plan was revised, and vendor surveillances at M-P were scheduled.

6. Please note that all of the above actions occurred prior to the installation of the cable tray.

We submit that all identified workmanship deficiencies were addressed, and adequate and reasonable actions were taken to correct and control the deficiencies.

B. Action Taken To Evaluate NRC Notice of Violation

1. A team consisting of three YAEC and one UE&C QA personnel chose three separate areas in Category I buildings to conduct an inspection on installed cable trays. The inspection points are the ones listed in the Vendor Surveillance Check Plan. The results of the inspection are summarized as follows:
  - a. Electrical "B" Train Tunnel - elevation - 15'. 18 trays inspected - 7 deficiencies.
  - b. Cable Spreading Room - elevation 50'. 9 trays inspected - 5 deficiencies.
  - c. PAB - elevation 30' 8". 16 trays inspected - 7 deficiencies.

Total of 43 trays inspected, total of 19 deficiencies noted.

NOTE: The standard length of ladder type cable tray is 12 feet long containing 16 rungs. Each rung has four weld areas that requires 4 inspection points at each area for a total of 16 inspection points per rung. As there are 16 rungs per 12 foot standard tray length, this totals 256 inspection points for the rungs. In addition, there are 3 general inspection criteria for the overall cable tray, 259 inspection points per 12-foot standard section of ladder type cable tray.

Translated to the 43 trays that were inspected there were 11,137 possible areas for deficiencies to occur with only 19 deficiencies found by the inspection team.

2. The YAEC Electrical and Mechanical Engineering Group were requested to evaluate the results of the team inspection.

Engineering elected to reinspect the same areas that the team had inspected plus one additional area that they randomly selected. Based upon the reinspection, Engineering determined that the trays, as installed, will fulfill the requirements expected of the trays.

The structural integrity of the trays is also considered to be adequate; however, additional evaluation of UE&C's analysis will be performed by YAEC Engineering to substantiate this position. The re-evaluation will be completed by July 30, 1982.

C. Inspection Program

1. UE&C's Seabrook Site QA Department does receiving inspection to their Vendor Surveillance Check Plan Section C.
2. FBM (the installing contractor) performs installation inspection per their procedure QCP-503. Two attributes of the inspection check list entitled Final Inspection do address some of the same inspection points as found on UE&C's Vendor Surveillance Check Plan; namely:
  - a. Tray is free of burrs and sharp edges.
  - b. Field cuts, holes, and damaged areas of tray have been coated with galvanized dressing.

In addition, FBM stated that while performing (a) and (b) above, they do report broken, cracked or loose welds.

D. Conclusion

1. We feel that the history of the action taken prior to the installation of cable tray must be considered when evaluating quality of the cable tray installed at the Seabrook Station. It demonstrates the recognition given to the initial tray deliverers, workmanship problems, and the action taken to adequately correct these problems.
2. The evaluation of YAEC Engineering demonstrates that the type and number of the deficiencies in the installed tray does not compromise the integrity of the cable tray system, nor do they endanger the cable during or after cable installation.
3. We submit that the UE&C receiving inspection and the contractor's (FBM) installation inspection program (QCP-503) is in fact an adequate inspection program for installed cable tray verification in line with IEEE-336 commitments.

Violation 2:

10CFR50, Appendix B, Criterion X and the Seabrook Station PSAR require that conformance to drawing details of activities affecting quality be verified by inspection of those activities. Details for the proper erection of a pipe support (833-SG-6) and conduit supports (e.g.: 4214) are provided in the following documents, respectively:

1. Pullman Hanger Drawing 833-SG-06 (Revision 3A)
2. UE&C Engineering Change Authorization 03/1067F, sketch of surface mounted strut details

Contrary to the above, as of April 28, 1982, QC inspection of pipe support 833-SG-6 had failed to identify several items (e.g.: weld length, member location and configuration, modification details) in nonconformance with the hanger drawing. QC inspection of several conduit supports (e.g.: 4244) typified by ECA 03-1067F had failed to identify the installation of nonconforming washers causing a visible deformation in part of the detailed strut connections.

This is a Severity Level IV Violation (Supplement II) applicable to Docket No. 50-443.

A. Response:

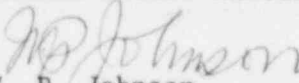
Corrective Action Taken and Results Achieved

As a result of the reinspection of support 833-SG-6, the installation contractor (Pullman-Higgins) initiated NCR No. 2209 which has been submitted to UE&C Engineering for disposition. The NCR also includes the actions proposed by Pullman-Higgins to prevent recurrence of situations of this type. UE&C expects to render disposition on the hardware errors and the proposed corrective action by June 30, 1982. YAEC will keep the NRC Site Inspector informed of the results of the UE&C review.

Fischbach-Boulos-Manzi, NH (FBM) has reinspected for installation of incorrect washers, resulting in the initiation of six (6) nonconformance reports. To prevent recurrence of this situation, FBM has retrained construction and QC personnel regarding washer requirements. In addition, ECA 03-1168A has been issued, revising the Bill of Material, specifying that 33 CL washers are to be used. It is expected that the required repairs will be completed by September 15, 1982.

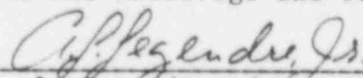
Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

  
W. P. Johnson  
Vice President

COMMONWEALTH OF MASSACHUSETTS )  
  )ss  
MIDDLESEX COUNTY                                    )

Then personally appeared before me, W. P. Johnson, who, being duly sworn, did state that he is a Vice President of Yankee Atomic Electric Company, that he is duly authorized to execute and file the foregoing request in the name and on the behalf of Public Service Company of New Hampshire and that the statements therein are true to the best of his knowledge and belief.

  
A. L. Legendre, Jr.  
My Commission Expires

Notary  
August

