

APPENDIX C

U. S. NUCLEAR REGULATORY COMMISSION

OFFICE OF SPECIAL PROJECTS

NRC Inspection Report: 50-445/88-05 Permits: CPPR-126
50-446/88-04 CPPR-127

Dockets: 50-445 Category: A2
50-446

Construction Permit
Expiration Dates:
Unit 1: August 1, 1988
Unit 2: Extension request
submitted.

Applicant: TU Electric
Skyway Tower
400 North Olive Street
Lock Box 81
Dallas, Texas 75201

Facility Name: Comanche Peak Steam Electric Station (CPSES),
Units 1 & 2

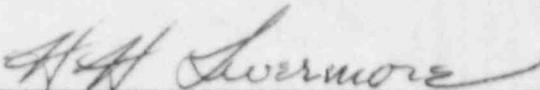
Inspection At: Comanche Peak Site, Glen Rose, Texas

Inspection Conducted: January 5 through February 2, 1988

Inspection conducted by NRC Consultants:

J. Dale - EG&G (paragraph 6.c)
K. Graham - Parameter (paragraphs 2.e, 4, 5, and 6.a)
P. Stanish - Parameter (paragraphs 2.a-d, 3, and 6.b)

Reviewed by:



H. H. Livermore, Lead Senior
Inspector

3-2-8

Date

Inspection Summary:

Inspection Conducted: January 5 through February 2, 1988 (Report 50-445/88-05; 50-446/88-04)

Areas Inspected: Unannounced, resident, safety inspection of applicant actions on previous inspection findings; follow-up on violations/deviations; assessment of allegations; Comanche Peak Response Team (CPRT) issue-specific action plan (ISAP) V.a; and the corrective action program (CAP) for small bore piping and pipe supports, conduit supports for A and B trains and C train greater than 2 inches, and HVAC.

Results: Within the areas inspected, the NRC inspectors identified no significant strengths or weaknesses during this inspection. One violation failure to identify a minimum wall violation, paragraph 6.c) and one deviation (failure to trend a nonconformance report (NCR), paragraph 2.e) was identified.

DETAILS1. Persons Contacted

- *J. C. Aldridge, Engineering Assurance (EA), Stone & Webster Engineering Corporation (SWEC)
- *R. P. Baker, EA Regulatory Compliance Manager, TU Electric
- *J. L. Barker, Manager, EA, TU Electric
- *D. P. Barry, Manager, ESG, SWEC
- *D. N. Bize, EA Regulatory Compliance Supervisor, TU Electric
- *M. R. Blevins, Manager, Technical Support, TU Electric
- *J. T. Conly, Lead Licensing Engineer, SWEC
- *J. C. Finneran, CPE-PSE, TU Electric
- *K. M. Fitzgerald, HVAC Program Manager, Ebasco
- *P. E. Halstead, Manager, Quality Control (QC), TU Electric
- *T. L. Heatherly, EA Regulatory Compliance Engineer, TU Electric
- *C. R. Hooten, CPE-Civil Engineering Unit Manager, TU Electric
- *J. J. Kelley, Manager, Plant Operations, TU Electric
- *O. W. Lowe, Director of Engineering, TU Electric
- *F. W. Madden, Mechanical Engineering Manager, TU Electric
- *D. M. McAfee, Manager, Quality Assurance (QA), TU Electric
- *D. E. Noss, QA Issue Interface Coordinator, TU Electric
- *E. Odar, Project Engineering Manager, Ebasco
- *M. D. Palmer, Plant Evaluation, Nuclear Operations, TU Electric
- *B. L. Ramsey, Project Manager Civil/Structural, TU Electric
- *D. M. Reynerson, Director of Construction, TU Electric
- *M. J. Riggs, Plant Evaluation Manager, Operations, TU Electric
- *A. B. Scott, Vice President, Nuclear Operations, TU Electric
- *C. E. Scott, Manager, Startup, TU Electric
- *J. C. Smith, Plant Operations Staff, TU Electric
- *M. R. Steelman, CPRT, TU Electric
- *P. B. Stevens, Manager, Electrical Engineering, TU Electric
- *J. F. Streeter, Director, QA, TU Electric
- *C. L. Terry, Unit 1 Project Manager, TU Electric
- *R. D. Walker, Manager of Nuclear Licensing, TU Electric

The NRC consultants also talked to other applicant and contractor employees during this inspection period.

*Denotes personnel present at the February 2, 1988, exit meeting.

2. Applicant Action on Previous Inspection Findings (92701)

- a. (Closed) Open Item (445/8601-0-03): This item involves an apparent error on Drawings GHH-CC-1-SB-027, Revision 6; GHH-CC-1-SB-040, Revision 12; and 2323-MI-0229, Revision CP-4. The error concerned the location of Valves ICC-137 and ICC-145. The NRC inspector, during an inspection of the Unit #1 Safeguards building, noticed that the valves were reversed from the locations on the piping isometrics. Since the valves are identical and will perform their intended function as installed, the applicant committed to correct the drawings. In this inspection period, the NRC inspector verified that Drawings MI-0229, Revision CP-5; and BRP-CC-1-SB-027, Revision 6, now accurately depict existing field conditions. This item is now closed.
- b. (Open) Unresolved Item (446/8602-U-23): This unresolved item dealt with the fact that the stated program did not appear to provide positive assurance that all required grouting of conduit support base plates would be accomplished. In this inspection period, the NRC inspector reviewed Brown and Root Procedure Number CEI-25, Revision 7, which provides instructions for grouting of base plates, equipment bases, and shear lugs. This procedure in paragraph 1.2.1.1 states, in part, ". . . determination of which base plates require grouting shall be made by the . . . craft support . . .," and in paragraph 3.1.2 states, in part, ". . . epoxy grouting . . . will be documented on a bearing inspection report . . ." Also, a note under this paragraph of the procedure appears to imply that an operational traveler is acceptable in lieu of the QC inspection report. This procedure does not address documentation for base plates which the craft determines to have adequate bearing area and, therefore, do not require grouting. Also, reviewed was TUGCO Instruction QI-QP-11.0-15, Revision 10, which states in paragraph 2.2, ". . . inspection identified in this instruction will be performed only on components that do not require grout in accordance with References 1-A and 1-B. This is indicated by a "SAT" craft bearing inspection report for that base plate/member . . ." Reference 1-A is the general specification for concrete, and Reference 1-B is Procedure C-25 which, as stated above, does not specifically require a bearing inspection report to be generated for a base plate that does not

require grouting. Therefore, this item will remain open until positive assurance is demonstrated that the inspection of all baseplates will be documented and satisfactorily dispositioned.

- c. (Closed) Unresolved Item (445-8622-U-05): This item dealt with the validity of using an NIS-2 form (a form to document an ASME Section XI repair/replacement) to document an as-installed component as stated in the disposition of NCR M-23175 N, Revision 1. The NCR in question was written to document an apparent lack of traceability for a specific valve bonnet. This NCR was subsequently dispositioned based on revised documentation from the vendor (ITT) which does provide traceability for the part in question. As for the generic use of an NIS-2 form as a stand-alone document for this type of problem, TU Electric has stated in office memorandum NE-16479 that the only way to document nonconforming as-installed components or conditions is through an NCR. While an NIS-2 form may have been used in the past as backup documentation for an NCR, this practice has been discontinued. Furthermore, TU Electric indicated that the NIS-2 form was never used as a stand-alone use-as-is document. This item is closed.
- d. (Closed) Open Item (445/8706-0-11; 446/8705-0-05): This item addressed the CPRT recommended changes to Gibbs & Hill Specification 2323-MS-100 and Brown and Root Procedure CP-CPM-6.9E concerning temporary supports, specifically limiting or prohibiting the use of certain materials for temporary supports and "less desirable temporary support practices." The NRC inspector reviewed Brown and Root Procedure CP-CPM-6.9E, Revision 10, "Pipe Fabrication and Installation," TU Electric Construction Department Procedure CPS-101, Revision 0, and DCA 62786, Revision 0. Based on this review the NRC inspector is satisfied that these items have been adequately addressed by invoking the requirements of Specification MS-100 for temporary supports, which through DCA 62786 specifically prohibits the use of specific undesirable materials and provides more definitive requirements for temporary supports; therefore, this item is now closed.
- e. (Closed) Open Item (445/8716-0-11): While the NRC inspectors were interviewing craftsmen performing work on Pipe Support DO-1-067-708-S53R and prior to the inspector's review of the associated work package, a QC

inspector arrived and reviewed the work package. Upon completion of the QC review, work was stopped due to a QC hold point being bypassed on a repair process sheet by a craftsman. NCR 87-A00491, Revision 1, was initiated. This situation was documented as an open item pending review of the applicant's NCR disposition and processing.

The NRC inspector contacted the TU Electric QA issue interface coordinator to evaluate the applicant's NCR dispositioning and processing. The subject NCR had been closed based upon rework of the weld repair area. The NRC inspector verified, by review of training records dated August 14, 1987, that the responsible craft personnel had been reinstructed to the appropriate procedural requirements for weld documentation usage and observance of hold points.

The NRC inspector requested that TU Electric identify the trend codes assigned to the Revision 1 disposition of NCR 87-A00491. TU Electric FSAR Section 17.1.15 requires trending of NCRs to identify trends adverse to quality. NRC inspection revealed that the NCR had not been assigned a trend code. As a result of the NRC finding, the applicant performed a broadness review and issued Deficiency Report (DR) P-88-00595 which documented that between July 11, 1987, and October 5, 1987, 2,024 NCRs were issued per Project Procedure AAP 16.1 and were not trended. The failure to assign a trend code prevents an evaluation for adverse trends. The failure to trend the subject NCR 87-A00491 for bypassing a QC hold point is considered a deviation from FSAR Section 17.1.15, Amendment 65 dated November 20, 1987, which states that procedures shall require trending of deficiencies reported on inspection reports, deficiency reports, and nonconformance reports in order to identify trends adverse to quality (445/8805-D-01).

3. Follow-up on Violations/Deviations (92702)

(Closed) Deviation (445/8622-D-06): This deviation dealt with the fact that valves supplied by Westinghouse under their Purchase Order 546-CCA-191000-XN were certified to the Summer 1972 Addenda to the 1971 edition of Section III of the ASME Code; however, the FSAR in Table 3.2-1, Section 3, Amendment 56, requires that Class 2 and 3 valves meet the requirements of the 1974 edition of Section III of the ASME Code. TU Electric in their response to this deviation stated

that the deviation was caused by an error in the FSAR. The FSAR commitment failed to recognize that the Westinghouse Contract No. Q202 invoked an earlier code edition and addenda. Based on the above, DR C-87 1980 was generated to initiate a change to the FSAR. Review of the FSAR by the NRC inspector revealed that the committed change was included in FSAR Amendment 64. Therefore, this deviation is closed.

4. Assessment of Allegations (99014)

(Closed) Allegation (OSP-87-A-0103): An allegation was received by the NRC that contained five concerns relating to the CAP for HVAC. These concerns have been assessed and documented below. Two of the concerns were substantiated resulting in violations issued in a previous NRC inspection report. The other three concerns were not substantiated. All five concerns are considered to be closed.

Concern No. 1

QC personnel are not technically cognizant enough to identify potentially nonconforming conditions which are outside the scope of the inspection procedures.

Review

The NRC inspector interviewed the QC supervisor responsible for inspection of HVAC duct segments and seismic duct supports in order to evaluate the responsibilities of QC personnel. The QC supervisor stated that HVAC inspection personnel's scope of responsibility is to identify problems with hardware and documentation associated with the construction traveler which has been presented to him for inspection. Furthermore, QC inspectors for HVAC, as a part of their training/certification program, have been instructed to identify and document any nonconforming condition that they become aware of in accordance with the requirements of project procedures. Currently, a total of 76 certified QC inspectors are assigned to inspection of HVAC CAP work activities.

NRC inspections of ISAP I.d.1, "QC Inspector Qualifications," have determined that the current QC inspector training/certification program meets the requirements of ANSI N45.2.6.

The NRC inspector selected the names of 10 of the 76 QC inspectors who are certified to perform HVAC inspections, from a list of all certified inspectors, and performed a review of

each individual's training/certification file. Evidence of training and certification for the following procedures and specifications was evaluated:

NQA-3.09-10.01, Requirements for Visual Weld Inspection

NQA-3.09-M-6.01, QC Inspection of Safety-related HVAC Systems

NQI-3.09-M-006, Verification/Inspection of Seismic HVAC Systems

NEO 3.05, Reporting and Control of Nonconformances

NEO 3.06, Reporting and Control of Deficiencies

2323-MS-85, Appendix J, Ductwork and Miscellaneous Details

2323-MS-85, Appendix K, Quality Control Inspection Requirements

Based upon a satisfactory review of training/certification records, the NRC inspector concluded that QC personnel should be technically cognizant enough to identify and document nonconforming conditions within their scope of responsibility.

Conclusion

QC inspectors have been trained to identify and document any potentially nonconforming condition within their scope of responsibility. The NRC inspector was unable to identify any requirement to document nonconforming conditions outside the scope of the individuals responsibility. However, project nonconformance reporting procedures require any individual to document concerns about safe operation of the plant or procedural inadequacies that they become aware of, on a nonconformance or deviation report. Based upon the NRC inspector's evaluation of procedural requirements, training/certification records, scope of responsibility for QC personnel, and lack of specifics, this concern could not be substantiated and is therefore closed.

Concern No. 2

Due to conflicting requirements, it is possible that the documentation packages for safety-related HVAC supports may incorrectly be designated as non-nuclear safety, thus, not receiving the required level of inspection.

Review

The NRC inspector reviewed Comanche Peak Engineering Specification 2323-MS-85, Appendix D, "Classification Summary-Ductwork, Louvers, and Accessories," Revision 5 dated September 15, 1987, and noted that three seismic category designations, Category I, Category II, and None, were listed. Project HVAC engineers assign safety class designations based upon the data contained in Appendix D.

The NRC inspector contacted the senior project engineer responsible for implementation of the HVAC CAP and was informed that all non-nuclear safety Seismic Category II supports are inspected to the more stringent requirements of Seismic Category I safety-related supports. The seismic category "None" is applicable only for nonsafety HVAC systems. A copy of Ebasco Interoffice Correspondence HV-0409 dated October 16, 1987, documents Ebasco's decision to inspect non-nuclear safety supports to the more stringent requirement. This memorandum was determined to provide adequate instruction to personnel preparing documentation packages for inspection.

In addition to the above review, NRC inspectors have reviewed HVAC documentation packages while performing CAP inspections and found that the required level of inspection was being performed. Reference NRC Inspection Reports 50-445/87-31, 50-446/87-23; and 50-445/87-35, 50-446/87-26.

The NRC inspector interviewed five working level engineering personnel to determine their knowledge of establishing safety class designation. These personnel were cognizant of the applicable requirements.

Conclusion

Based upon the review of the applicable engineering specification and review of project correspondence, concern No. 2 was not substantiated. Furthermore, previous NRC

inspections of the CAP concluded that the safety class designation of documentation packages was correct for all items inspected. This concern is closed.

Concern No. 3

Procedure CHV-106, Revision 1, has been marked up and used in the field; however, no formal revision has been made.

Review

The NRC inspector performed a review of TU Electric Procedure CHV-106, "Qualitative Walkdown of HVAC Supports and Ducts," Revision 1, dated October 12, 1987, and noted that paragraph 2B.2 of of Figure 7.6 contained wording which could have created confusion as to what the intent of the verification step was.

This concern was evaluated as a part of the NRC inspection of the HVAC CAP. Duct segment documentation package B-1-658-016, for which final field inspection by QC had been performed, was reviewed and found to contain a copy of Figure 7.6 on which the unclear wording had been resolved by a revision of the form. Revision of Figure 7.6 had been made outside the scope of the project procedures which is a violation of Criterion V of Appendix B to 10 CFR Part 50. NRC Inspection Report 50-445/87-35 documents this violation.

Conclusion

NRC inspection of the applicants HVAC CAP substantiated that project engineering personnel were documenting the results of engineering walkdowns on a form that had been revised without a formal revision in accordance with the procedures that control use of the form. Notice of Violation 445/8735-V-02 documents the NRC inspection finding. This part of the allegation (Concern No. 3) is closed.

Concern No. 4

There are inconsistencies identified in construction operation traveler instruction, e.g.:

- a. Status sheets state: "Remove paint from all safety-related welds."
- b. Scope sheets state: "Remove paint from all welds."

- c. Construction Operation Travelers state: "Remove coating from existing safety-related welds."

Review

This concern was previously evaluated during NRC inspection of the applicants HVAC CAP. In Inspection Report 50-445/87-35, 50-446/87-26, the NRC inspector performed field inspections and documentation reviews of four HVAC seismic duct support construction operation travelers (COTs) which were field complete by construction and for which final field QC acceptance inspection had been performed. The NRC inspector noted that the alleged inconsistencies existed in the COTs reviewed, and it was unclear as to whether or not coatings should be removed from nonsafety welds. NRC inspection of seismic duct hanger packages DH-1-844-1K-WP13, Revision 1, and DH-1-844-1K-1R, Revision 1, revealed that construction work forces had removed galvanized coatings from both safety and nonsafety welding to allow for a qualitative visual inspection of welding by QC inspectors in accordance with HVAC CAP commitments. The NRC inspector identified that five welds located on Seismic Duct Hanger DH-1-844-1K-WP13 and portions of welds located on Seismic Duct Hanger DH-1-844-1K-1R did not have the galvanized coating required by Comanche Peak Engineering (CPE) Specification 2323-MS-85. Engineering personnel confirmed that all planned HVAC CAP inspections of these items were complete and that these bare spots had not been identified. The applicant was cited for this previously (example 7 of 445/8735-V-02).

Conclusion

NRC inspection of the applicants HVAC CAP substantiated that inconsistencies in instruction for removal of paint do exist. These inconsistencies created confusion as to what construction work requirements were and what QC personnel were required to inspect during final acceptance inspection. As a result, galvanized coating was not reapplied to several welds. This was documented as an example of a violation in NRC Inspection Report 50-445/87-35. This part of the allegation (Concern No. 4) is closed.

Concern No. 5

The information/question request form may be incorrectly used in lieu of NCRs for documenting nonconforming conditions.

Review

NRC evaluation of Concern No. 5 revealed that the information and question request form is an informal document provided to HVAC engineering personnel as a result of an interoffice correspondence, HV-C0042, dated October 12, 1987. This correspondence documents that the form is to be used to document procedural questions asked and answers given. The respective lead and/or supervisor answers the question and returns a copy of the form to the individual asking the question. A note on the bottom of the form states, "This form is to be used only for requesting clarification of procedural intent."

The NRC inspector interviewed Ebasco engineering personnel responsible for the implementation of the HVAC CAP requirements and discussed the use of the information and question request form. These individuals were aware of the requirement to document nonconforming conditions on an NCR form. The NRC inspector reviewed a log book documenting these requests for clarification and performed a detailed review of nine forms which had been completed. The NRC review determined that these forms were being used to ask questions about the intent of procedures and were not being used to document nonconforming conditions.

Conclusion

The NRC inspector was unable to substantiate Concern No. 5 based upon a review of the usage of the forms by project personnel. The NRC review determined that the information and question request form was being used in accordance with the intent of Interoffice Correspondence HV-C0042. This item is closed.

5. CPRT ISAPsInspection for Certain Types of Skewed Welds in NF Supports (ISAP No. V.a) (57050)Third Party to Evaluate the Physical Significance of any Procedural Changes (NRC Reference 05.a.02.04)

The third party determined that historical revisions to inspection procedures for Type-2 skewed welds, QI-QAP 11.1-28 and QI-QAP 11.1-26, had no physical significance and did not

impact any previous QC inspection result, with the exception of those documented by TU Electric Design Deficiency Report (TDDR) PS-86-1973. This TDDR describes an error in the scribe line inspection technique which requires corrective action by the project and will be overviewed by CPRT in accordance with Appendix H of the CPRT program plan. The NRC inspector agrees with the CPRT conclusions reached during the CPRT review of procedural changes. This item is closed.

Determine the Need for Additional Inspection (NRC Reference 05.a.03.05)

The NRC inspector reviewed the results of all inspections and reviews performed by the third parties that were contained in the ISAP working file and identified the need to perform a more extensive evaluation of the need for additional inspections. A formal request for additional information (NRC letter dated September 16, 1987, Grimes to Council) was submitted to the applicant. The applicant responded (TU Electric Letter TXX-6858 dated December 30, 1987) with an additional evaluation of inspection results and design requirements. The NRC inspectors review of the additional information concluded that additional inspection of the Type-2 skewed weld population is not required since design requirements were met or exceeded for all population items which were inspected. This item is closed.

Identify Corrective Actions Required (NRC Reference 05.a.05.03)

The reinspections and documentation reviews performed under this action plan provided reasonable assurance that the Type-2 skewed welds located on pipe supports are within the ASME allowable stress levels. A third-party evaluation of design margin based on the measured weld size indicates that the Type-2 skewed welds in the plant will not exceed ASME limits. The NRC inspector has reviewed the ISAP working file and concurs with the third-party conclusion. The project is developing a corrective action plan to resolve TDDR-PS1973, an error in the scribe line inspection technique, which will be overviewed by the third party in accordance with Appendix H of the CPRT program plan. This item is closed.

Third Party Will Oversee and Verify the Review Program (NRC Reference 05.a.06.00)

The NRC inspector has reviewed documentation of third party activities contained in the ISAP working file. For those activities performed by the project during implementation of the ISAP (i.e., Historical Chronology of Inspection Procedures for Skewed Welds, Sample Selection Criteria, Evaluation of Inspection Results, etc.), independent third parties (TERA Corporation and Jack Benjamin and Associates) verified accuracy and completeness. Project personnel associated with implementation of procedural requirements were interviewed by the NRC inspector and design calculations were verified. The third party issued two discrepancy/issue resolution reports (DIRs), D-0130 and D-0133, to document discrepancies in project calculations related to the evaluation of twelve random sample selections in regard to undersize welds. These DIRs were classified as observations since conclusions reached by the project based on those calculations were correct. All third-party conclusions are complete and the NRC inspector considers third-party oversight of project actions to have been effective in identifying any significant errors. This item is closed.

6. Corrective Action Program (CAP)

a. Small Bore Piping and Pipe Supports (50090)

TU Electric has prepared a project status report (PSR) for small bore piping and pipe supports. TU Electric Letter TXX-6846 dated November 2, 1987, formally submitted this information to the NRC.

The purpose of the project status report is to demonstrate that the safety-related small bore piping and pipe supports in Unit 1 and Common (portions shared by both units) are in conformance with the CPSES licensing commitments, satisfy the design criteria, and will satisfactorily perform their safety-related functions.

The small bore piping and pipe supports PSR represents a road map of the validation effort from the early stages of design criteria development through the establishment and implementation of the detailed design and design control procedures. The report traces the updating of design/installation specifications, construction and QC procedures, the implementation of the post-construction

hardware validation program (PCHVP) to validate the as-built piping and pipe support design, and the completion of the Unit 1 and Common small bore pipe stress analysis packages and pipe support calculations.

The NRC inspector performed a review of the PSR and developed an NRC inspection plan to evaluate the CAP for small bore piping and supports. The NRC inspection plan when implemented is intended to accomplish the following:

- (1) Determine whether technical requirements have been adequately addressed in PCHVP CAP specifications and work procedures.
- (2) Determine through direct observation and independent evaluation of work, whether the applicant's work control system is functioning properly and whether the installation of safety-related pipe supports and restraints are in compliance with NRC requirements, applicant commitments, and applicable codes.
- (3) Provide assurance that the field installation of pipe support hardware is correct and will function in a manner that will allow safe operation of the associated plant system.

This inspection plan will be implemented and reported in subsequent inspection reports.

b. Conduit Supports A & B Train and C Train > 2" (48053)

During this inspection period, the NRC inspector selected a sample of 13 conduit walkdown packages to verify the accuracy and correctness of the Ebasco collected data. The following is a list of the NRC inspected packages:

<u>Conduit</u>	<u>Size</u>	<u>Room</u>	<u>*Area</u>	<u>**Supports</u>
C13G10289	1"	174	AUX	9
C02G11960	2"	174	AUX	10
C13G05377	2"	77S	SG1	9
C13G08392	1 1/2"	100A	SG1	9
C12G19660	1 1/2"	85D	SG1	14
C12K12472	3"	95	SG1	6
C13K30712	2"	94	SG1	7
C13C10287	2"	94	SG1	7
C14K03106	3"	94/100A	SG1	6
C14O20420	3/4"	77S	SG1	10
C15Y15296	1"	133	ECB	3
C13O16494	3/4"	155A	RB1	5
C12O08110	1 1/2"	154/155A	RB1	16

*SG1 - Unit 1 Safeguards Building
 *AUX - Auxiliary Building
 *ECB - Electrical/Control Building
 *RB1 - Unit 1 Reactor Building

**Number of supports includes conduit, junction boxes and pull box supports.

The NRC inspector's walkdowns were performed while adhering to the criteria of Field Verification Method (FVM) CPE-EB-FVM-CS-033, Revision 2, and resulted in the identification of the following discrepancies:

- (1) On Conduit Support C13G10289-05, the walkdown engineer reported the location of one of the four anchor bolts used to attach the support base plate to the wall, incorrectly. The location, for the bolt designated by the letter "A" on the detail drawing was reported as 1 1/2" up from the bottom edge of the base plate and 2 1/16" right of the left edge of the base plate. The NRC inspector measured the location to be 2 1/2" up from the bottom edge and 1 1/2" right of the left edge.
- (2) On Drawing 2323-S-0910 SH.05377 SK01 which is the isometric drawn to depict the Conduit Run C13G05377, the walkdown engineer reported a dimension of 4' 7 3/8" for the "saddle" type section of the vertical run. The NRC inspector measured this section of conduit at 3' 3 1/2". The tolerance for this type of measurement is plus or minus 3".

- (3) For Conduit Support C13G05377-08, the letter stamp on one of the Hilti Kwik bolts (HKB) was reported, by the walkdown engineer, to be the letter "E". The NRC inspector, during his walkdown of this support, found that the letter stamp was actually an "H". Since the letter stamp on the HKB designates the length of the bolt, the error outlined above would effect the embedment length and allowable loads used in the evaluation of the support.
- (4) On Conduit Support C13G05377-01, the walkdown engineer reported the length of the support base plate to be 8 11/16". The NRC inspector measured this dimension at 9 3/4". Also, on this support the thickness of the shim plate between the conduit and the support bracket was reported by the walkdown engineer as two different thicknesses, in the body of the sketch it is reported as 3/8" and in the tabulated data it is reported as 1/4". The NRC inspector found the shim to be 1/4" thick.
- (5) On Conduit Support C13G08392-01, the walkdown engineer failed to note that there was a violation of the minimum spacing requirement for HKB. The NRC inspector, during his walkdown of this support, found two 1/2" HKB that were 4 1/4" apart; the FVM calls for a minimum spacing of 5".
- (6) On Conduit Support C02G11960-03, the location of the HKB, designated as Bolt "E" on the detail drawing, was reported by the walkdown engineer as being 2 3/4" from the edge of the unistrut member. During the NRC inspector's walkdown, this dimension was measured at 2 3/8".

Errors such as the six examples cited above while not individually significant could have a cumulative effect which could cause the calculation of incorrect stress levels in the structural members (i.e., baseplates and unistruts) and, also, incorrect anchor bolt loading and load interactions.

The above findings (six examples) are similar to other examples cited in NRC Inspection Reports 50-445/87-31, 50-446/87-23; and 50-445/87-35; 50-446/87-26. Since the current six examples occurred in the time period of the other examples (before corrective actions for the

previous citations were implemented), a violation will not be issued. These examples have been discussed with Ebasco who has generated DRs to resolve them. Also, the above findings were detected during the NRC inspector's walkdown of 13 conduit walkdown packages. In each walkdown package there are in excess of 200 attributes that require inspection/documentation; therefore, the examples cited represent errors of less than 1% of the total required inspection points.

In regard to the remaining conduit runs, the results of the NRC walkdown revealed certain data that did not match that recorded by Ebasco; however, it was determined to be acceptable since the difference in the recorded dimensions was still within the tolerances specified in the applicable FVM. This is not considered to be a problem.

On January 28, 1988, meetings were held between representatives of the NRC, TU Electric, Ebasco, and Impell to discuss the discrepancies identified as deviations and violations in recent NRC inspection reports: 50-445/87-18, 50-446/87-14; 50-445/87-25, 50-446/87-19; 50-445/87-31, 50-446/87-23; and 50-445/87-35, 50-446/87-26. Both Ebasco and Impell offered the results of their analysis of discrepancies found during reinspection of a significant amount of work previously performed. Their analysis revealed similar discrepancy rates with Ebasco reporting 1.8% and Impell reporting 1.9% which is slightly higher than NRC findings. These discrepancy rates were presented by both companies as rates similar or less than those found throughout the industry for similar activities. Impell took their analysis one step further; they factored the discrepancies into their design verification calculations and found that none of the discrepancies caused the calculated stress to exceed 75% of the allowable. This indicates that none of these discrepancies were significant to the design of either the conduit or the conduit supports; therefore, there is no adverse impact on safety. Also, in performing these reviews, both Ebasco and Impell determined that certain procedural changes affecting how attributes are to be evaluated would reduce the possibility of future discrepancies; therefore, they have made these changes. In addition, both Impell and Ebasco discussed the NRC findings with their walkdown engineers, reviewed procedures, regularly

do independent checks of their walkdown engineers work, and held training sessions. TU Electric reported that the error rates reported were consistent with the error rate for the Corrective Action Program of a Region III utility which was calculated to be 1.9%.

Results

Based on NRC inspection and review of the applicant's walkdown of conduit supports for Trains A and B and Train C greater than 2" diameter and due to the numerical error rate and the fact that the findings were not safety significant, it appears that the applicant's program in this area is providing adequate input data for the design verification phase of the corrective action program.

c. Heating Ventilating and Air-Conditioning (HVAC) (50100)

NRC inspectors performed field inspections and documentation reviews of the following documentation packages. These packages were generated as a result of construction, engineering, and inspection activities related to HVAC CAP implementation.

<u>Seismic Duct Hanger</u>	<u>Unit</u>	<u>Room</u>
DH-1-844-1K-4E	1	99B
<u>Seismic Duct Segment</u>	<u>Unit</u>	<u>Room</u>
B-1-658-015	1	99B

NRC inspection of HVAC Duct Support DH-1-844-1K-4E, Revision 1, identified a fillet weld as a 3/16" by 3 5/8" (i.e., Weld 4 nearside documented in the construction traveler). CPE-EB-FVM-CS-029, Revision 5, requires that welding " . . . shall be identified for type of weld . . . weld length, and weld size." The NRC inspector identified that this weld had been incorrectly documented by walkdown engineering personnel as a 1/4" fillet weld and the same had been accepted by QC. This is another example of a discrepancy missed by a walkdown engineer. It is not being cited as a violation for the reasons given in paragraph 6.b.

The NRC inspection of HVAC Duct Segment B-1-658-015 identified a depression which appeared to have been

caused by grinding. This depression exceeded 1/32" in depth (a minimum wall violation). Project Specification 2323-MS-85, Revision 5, Section I.6.C, states, in part, "Depressions produced by grinding will not exceed the following: Sheet metal: 1/32" for 18 gauge sheet metal and thicker" An ultrasonic digital thickness report indicated that the section of duct with the grinding depression was fabricated with 16 gauge sheet metal which is thicker than 18 gauge metal. The NRC inspector could find no indication of an engineering evaluation or QC identification of this minimum wall violation.

The preceding example is a violation of Criterion V (445/8805-V-02).

NRC inspection of Seismic Duct Segment B-1-658-015 revealed that construction had removed the protective coating for QC inspection and subsequently the coating had not been reapplied. The NRC inspector identified an additional 10 examples where the protective coating had not been reapplied. See paragraph 3, Concern No. 4 in NRC Inspection Report 50-445/87-35; 50-446/87-26 and Example 7 of 445/8735-V-02. NRC inspection of Duct Segment B-1-658-015 also revealed several areas on the hem flange between segment B-1-658-015 and segment B-1-658-014 where the gasket material, Tremco 440, had been squeezed out from between the flange. This condition was identified by Ebasco on CAR 87-079 and subsequently Stop Work Order No. 88-02. This problem was also previously identified in an NRC inspection and is being tracked as open item 445/8735-0-04.

The NRC inspector has identified an increased awareness by TU Electric and Ebasco management to problems identified in HVAC and feels that this will help improve the work efforts in this area.

7. Exit Interview (30703)

On January 29, 1988, R. F. Warnick, H. H. Livermore and J. S. Wiebe met with L. D. Nace and A. B. Scott to discuss January inspection findings and other matters of interest. (See NRC Inspection Report 50-445/88-06, paragraph 5.)

An exit interview was conducted February 2, 1988, with the applicant's representatives identified in paragraph 1 of this report. No written material was provided to the applicant by the inspectors during this reporting period. The applicant did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection. During this interview, the NRC inspectors summarized the scope and findings of the inspection. The applicant acknowledged the finding.

50-445/88-05; 50-446/88-04

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