APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION

OFFICE OF SPECIAL PROJECTS

NRC Inspection Report: 50-445/88-32
50-446/88-28

Permits: CPPR-126
CPPR-127

Dockets: 50-445
50-446

Category: A2

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: April 6 through May 3, 1988

Inspection conducted by NRC consultants:

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

Reviewed by: H H Livermore 5-19-88
H. H. Livermore, Lead Senior Inspector Date

Inspection Summary:

Inspection Conducted: April 6 through May 3, 1988 (Report 50-445/88-32; 50-446/88-28)

Areas Inspected: Unannounced, resident safety inspection of applicant's actions on previous inspection findings; follow-up on violations/deviations; Comanche Peak Response Team (CPRT) issue-specific action plans (ISAPs); Corrective Action Program (CAP) for piping and pipe supports, conduit supports C Train less than or equal to 2", and cable tray and cable tray supports; and general plant areas (tours).

Results: Within the areas inspected, the NRC inspections did not identify any strengths or weaknesses. During the inspection one violation (improper use of nonconformance report (NCR) disposition "use-as-is," paragraph 3.d) and one unresolved item (the service life of mitered weld joints in piping systems, paragraph 5.a) were identified.

## DETAILS

1. Persons Contacted

*R. W. Ackley, Project Manager, Stone & Webster Engineering Corporation (SWEC)
*R. P. Baker, Licensing Compliance Manager, TU Electric
*J. L. Barker, Manager, Engineering Assurance, TU Electric
*M. R. Blevins, Manager, Technical Support, TU Electric
*J. T. Conly, Lead Licensing Engineer, SWEC
*C. G. Creamer, Instrumentation & Control (I&C) Engineering Manager, TU Electric
*G. G. Davis, Nuclear Operations Inspection Report Item Coordinator, TU Electric
*D. E. Devinev Manager, Operations QA, TU Electric
*P. E. Halstead, Manager, Quality Control (QC), TU Electric
*T. L. Heatherly, Licensing Compliance Engineer, TU Electric
*J. J. Kelley, Manager, Plant Operations, TU Electric
*J. C. Kuykendall, Vice President, Nuclear Administration, TU Electric
*O. W. Lowe, Director of Engineering, TU Electric
*J. W. Muffett, Manager of Civil Engineering, TU Electric
*L. D. Nace, Vice President, Engineering & Construction, 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
*K. C. Warapius, Project Director, Impell

The NRC inspectors also interviewed other applicant employees during this inspection period.

*Denotes personnel present at the May 3, 1988, exit meeting.

2. Applicant Action on Previous Inspection Findings (92701)

a. (Closed) Open Item (445/8513-0-13): During a reinspection of Evaluation Research Corporation (ERC) Pipe Support Package I-S-PS7N-144, the ERC inspector identified the following conditions to the NRC inspector as possible deviations.

. DR-1 Pipe Clamp parallelism out of tolerance.
. DR-2 Spherical bearing gap discrepancy.
. DR-3&4 No locking devices on clamp bolts.

The ERC inspector identified these findings on Deviation Reports (DRs) I-S-PS7N-144-DR-1, 2, 3, and 4 respectively which resulted in the initiation of NCR M-23054N with the following disposition.

| | | |
|---|---|---|
| . | DR-1 | . . . craft to align clamp halves. |
| . | DR-2 | Not a nonconformance no excess gap exists at spherical bearing spacers. |
| . | DR-3&4 | . . . craft to rework to stake threads on pipe clamp bolts as required. |

The NRC inspector reviewed TU Electric Drawing BRH-SRS Sheets 1 of 3 through 3 of 3, Inspection Report 001812 and inspected Pipe Support SI-1-SB-043-009-2 (ERC Reinspection Package I-S-PS7N-144) with the following results.

Drawing BRH-SRS, Revision 10, Sheet 3 of 3, Note 8e states: "Spacer not required unless gap exceeds thickness of eyerod on forward bracket." When the NRC inspector inspected the bracket and eyerod in question, he found the eyerod to be approximately 3/8" thick and the total gap between the eyerod and bracket to be less than 1/16" in width. The NRC inspector found the pipe clamp parallelism had been reworked and was within the prescribed 1/16" tolerance listed in Quality Instruction QI-037 and the pipe clamp bolt threads had been staked per the disposition of NCR M-23054N. This open item is closed.

b. (Open) Unresolved Item (445/8607-U-27): This item dealt with the following statement in the Results Report for ISAP VII.b.2: "While the potential for switching non-ASME and ASME Code class bonnets did exist, there is no implication that switching of non-ASME and ASME valve bonnets could be safety significant."

The NRC raised questions as to how the Results Report considered the differences between non-ASME and ASME code requirements with respect to material identification and traceability, welding and weld repairs, nondestructive examinations (NDE), and personnel qualifications. In response to these questions, the applicant provided documentation from the vendor of the valves in question which states that the differences in material documentation were that for non-ASME valve bonnets there are no unique serial numbers nor are there heat treat records, also non-ASME material does not have documentation for weld repairs. Further, non-ASME valve bonnets only have NDE when specified on the purchase order; however, they are hydrostatically tested in the same manner as code material but test pressures are much

lower than design ratings. Personnel who manufacture the bonnets are the same whether they are code or noncode so there is no personnel qualification concern.

The data presented does not support the statement in the Results Report relative to safety significance because of the absence of adequate material, weld repair, and NDE documentation. This item will remain unresolved pending the applicant's response to the concerns raised.

c. (Closed) Open Item (445/8518-0-20): This item involved discrepancies related to Verification Package I-S-INSP-023 for Instrument Tag 1-PI-978 on the safety injection system. The discrepancies reported as a result of ERC reinspection of this verification package were that the baseplate die stamp - used for identification of the instrument support - was not visible through the paint and the fillet weld between the baseplate and the structural tubing was undersized by 1/16 inch. ERC wrote DRs I-S-INSP-023-DR1 and I-S-INSP-023-DR2 to document the above conditions.

In response to DR I-S-INSP-023-DR1, NCR I-85-101585-SX was written. The disposition of the NCR was that the NCR was to be voided because a unique support number (S-1414) is present and visible on the support baseplate. The NRC inspector verified that this unique support number does, in fact, exist and that the installation meets requirements of Brown & Root, Inc. (B&R) Procedure CP-CPM-7.3, Revision 0, "General Fabrication Procedure."

For the undersized weld identified by ERC and documented on DR I-S-INSP-023-DR2, NCR 87-04503 was written with the disposition to rework the weld in question. The NRC inspector verified by field observation that the committed rework had been accomplished and that the instrument support in question is now in compliance with the applicable Design Drawing TNE-I1-0082. This item is closed.

d. (Closed) Open Item (445/8622-0-07): The NRC inspector witnessed the ERC reinspection of spherical bearing gaps on six supports, this resulted in ERC generating an out-of-scope observation for paint on the spherical bearings on three supports (SF-1-011-700-S42R, SI-1-001-015-S42R, and SI-1-001-014-S42R). An out-of-scope observation (No. 795) was written concerning paint on the spherical bearings which resulted in NCR M-25362N. The NCR was dispositioned as follows: "Existing paint on spherical bearing is not a nonconformance since component exhibits freedom of movement . . . ." The NRC inspector reviewed B&R project

Procedure BQI-QAP-11.1-28, Revision 34, Section 3.3.2, which states, in part, "Paint on spherical bearing is not to be considered as extraneous material on previously accepted or installed items, as long as bearing gimbles freely." The NRC inspector inspected the three supports in question and found that the spherical bearings do gimble freely. Therefore, this open item is closed.

e. (Closed) Unresolved Item (445/8622-U-15; 446/8620-U-06): The NRC inspector questioned ERC engineering concerning the adequacy of Quality Instruction (QI)-070, Revision 1, relative to instructions not being provided for weld size inspection when the edge of tubing fittings had either been consumed by the welding process or subjected to grinding/polishing. An additional related question was asked concerning the QI not requiring verification of socket weld fitting sizes.

The NRC inspector contacted warehouse personnel to evaluate the concern relating to ERC inspection personnel not verifying socket weld fitting sizes. NRC review of warehouse material control processes resolved any concern relating to adequacy of ERC reinspections relative to issuance of the correct size of socket weld fittings. Physical verification of fitting size was not necessary due to the fact that only the highest pressure rated fittings were available for each instrument tubing size.

Comanche Peak Engineering (CPE) performed evaluations relative to the adequacy of tubing weld sizes. Engineering Report ER-IC-002, Revision 0 dated April 27, 1988, documents results of the evaluations.

The minimum size for fillet welds according to site procedures and ASME Section III (1977) requirements was 1.09T but not less than 1/8", where T is the pipe/tube wall thickness.

Site procedures were changed by document change authorization DCA 25,007, Revision 2, to invoke the 1983 ASME Code which deleted the 1/8" minimum requirement for fillet weld size. Reinspection of weld size is not possible because of the following:

(1) For the welds in question, the edge of the fitting was consumed by the weld process, leaving no edge from which to measure.

(2) Scribe marks used for fit-up, which might be used for measurement, have been buffed off in most cases while cleaning the weld.

(3) The fitting manufacturer would not certify that the identifying marks on the fitting were exactly in the midpoint of the fitting.

TU Electric Quality Engineering performed radiographic testing (RT) on a sample of 12 tubing welds. TU Electric review of the radiographs determined that weld size was acceptable in all cases.

QE obtained several samples of 1/2" tubing welded with a single pass weld in order to perform destructive examination (DT) of these welds. The samples were cut in half along the axis of the tube and acid etched to demonstrate the amount of weld penetration as well as the differentiation between the weld and the fitting and the tubing. Adequate weld size was exhibited for all the samples.

TU Electric QE, based on the results of RTs and DT and with concurrence of Stone and Webster Engineering Corporation (SWEC) personnel, concluded that the measurement of weld size should not be a reinspection attribute for tube socket welds.

Based upon discussions with CPE, review of Engineering Report ER-IC-002, and visual observation of welds, the NRC inspection staff concludes that there is reasonable assurance that the quality of construction for the attribute of tubing weld size meets current design specification requirements. This item is closed.

f. (Closed) Open Item (445/8706-0-10; 446/8705-0-04): The CPRT had performed a study to address a concern raised about residual stresses induced in the piping and the effects they would have on the various failure modes that the piping might be expected to undergo. The study originally addressed the stated concern in regard to potential failure of the Unit 1, Loop 1, main steam line without addressing the effects residual stresses might have on other piping systems. During this inspection period, the applicant provided a report entitled "Evaluation of Nuclear Plant Piping Residual Stresses." This report addresses the causes of residual stress and the effects of residual stress on the various postulated failure modes of all nuclear piping systems, including: rupture due to overpressure, fatigue cracking, stress corrosion cracking, brittle fracture, plastic collapse, progressive distortion, creep, and structural instability. The conclusion states that residual stresses are a normal construction by-product. If this is compared to B31.1 piping service history, and considering the more extensive design and nondestructive

examination requirements - both at installation and in-service - for nuclear piping, the existence of residual stresses associated with construction and installation process will have negligible effect on failure modes of nuclear piping. Based on the NRC inspector's review of this report he is satisfied that this item has been fully evaluated and the conclusions reached are consistent and adequately address the stated concern. This item is closed.

g. (Closed) Unresolved Item (446/8602-U-15): During an inspection of cable tray supports in Unit 2 the NRC inspector observed a gap of 1/16" between the base angle and the concrete for Support CTH-2-11570. This condition was not addressed in the cable tray support procedure and it was felt that the condition may not be reflected in the final as-built analysis.

TU Electric responded to this unresolved item with the following information: TU Procedure QI-QP-11.10-2A states that verification of base members for bearing shall be accomplished per QI-QP-11.0-15, "Verification of Base Plates for Grouting."

The NRC inspector reviewed TU Electric Procedures QI-QP-11.10-2A, "Inspection of Unit 2 Cable Tray Supports"; QI-QP-11.0-15, "Verification of Base Plates for Grouting"; TU Electric Project Specification 2323-SS-9, "Concrete"; and SWEC Calculation 16345/6-CS(B)-192, Revision 0.

QI-QP-11.0-15 Section 3.1.2 states, in part, "The maximum allowable gap which does not require grout shall not exceed 1/16" for at least 80% of the base area under electrical equipment bases, base members for cable tray hangers, and base plates for pipe supports, conduit supports and other structural supports. The gap shall be measured from the periphery of the base plate or equipment base . . . ." The NRC inspector found this statement to agree almost verbatim with paragraph 9.2a of Project Specification 2323-SS-9 and the example given on page 48 of the same procedure.

The NRC reinspected Support CTH-2-11570 with the following results: Support CTH-2-11570 was found to have a 1/16' gap for approximately 70% of the base angle. The remainder of the base angle was in contact with the concrete. Therefore, this base angle is in compliance with the requirements of QI-QP-11.0-15.

The NRC inspector feels that the acceptance criteria as outlined in the referenced procedures is adequate and this unresolved item is closed.

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

a. (Closed) Deviation (445/8518-D-21, Item B.2): This item dealt with an ERC inspector signing off the inspection checklist which attested to the fact that a bolt was torqued to 50 inch-pounds (70% of the specified value). A subsequent NRC inspection, in which the same ERC inspection criteria was used, determined that the bolt torque value was only 40 inch-pounds. This occurred on Verification Package (VP) I-S-INSP-023, Support 23D.

Corrective actions taken by the applicant included reinspecting the support for this attribute, revising the inspection checklist, and issuing DR I-S-INSP-023-DR4. This resulted in the subsequent issuance of NCR I-86-100380-SX. Additionally, the torque value attribute was reinspected on five supports previously inspected by that particular ERC inspector. The reinspection resulted in the identification of one additional inspector error relative to torque value.

Actions to prevent recurrence included the implementation of an overview inspection (OI) program to reinspect a sample of each ERC inspector's work. The two inspectors' errors identified above were to be factored into the results of the OI program. The results of this OI for the inspector in question produced an error rate of 0.29% based on an overview of 13 VP's with 7603 decision points. Because of the low error rate and lack of significance of the errors, no further actions are required.

The disposition of NCR I-86-100380-SX, Revision 2, dated January 28, 1988, which addresses the "bolt that failed torque test" states that the hardware for the support in question ". . . shall be scrapped, replaced, and torqued to existing engineering requirements during execution of the FVM-086 program." Further, FVM-086 requires that all bolting installation meet the requirements of Specification CPES-I-1018, which, in Appendix E, paragraph 6b states, in part, "Verify that all the bolts and fasteners are secured." Appendix C to this specification provides the required torque values for the bolt sizes utilized on instrument tube supports. Inspection Report (IR) 1-0181244 dated February 17, 1988, documents that the torque value on the reinstalled hardware was satisfactory. The NRC inspector reviewed the results of the OI and reinspected the support in

question verifying that new hardware had been installed as required by the NCR disposition. This item is closed.

b. (Open) Violation (445/8602-V-10): The required radiography of the remaining portions of a 50' increment of weld was not performed even though one of the two 12" tracer radiographs, (146T2) at Seam BP84 of the Unit 2 containment liner, did not meet the acceptance standards. In the NRC inspection report (50-446/86-02), details section, the NRC inspector also noted that the - Chicago Bridge and Iron (CBI) terminology "Pick-up and Reshoot" was present on CBI radiographic test (RT) records.

TU Electric has denied the violation based on radiograph interpretation by Level III certified inspectors and contends that RT Film 146T2 was properly graded and does not reveal any unacceptable weld discontinuities. Furthermore, TU Electric contends that although grinding and deposition of additional weld filler material was performed at selected RT locations in order to resolve the appearance of surface indications on the RT film which could mask unacceptable volumetric inclusions, (i.e., "Pickup and Reshoot"), this additional work should not be considered to be the same as a repair.

NRC management and the NRC inspector met with TU Electric engineering and QA personnel on April 29, 1988, to resolve the response to the Notice of Violation (NOV). The NRC inspection staff committed to perform additional inspections of containment liner welding RT practices. This item remains open.

c. (Closed) Deviation (445/8603-D-18): The responsible ERC QA/QC discipline engineer failed to identify and incorporate into ERC Quality Instruction (QI)-029 the attribute for base material inspection on pipe supports. As a result, ERC reinspection of pipe supports did not document any conclusions relative to quality of construction for base material inspections.

Comanche Peak Engineering (CPE) developed and implemented Field Verification Method (FVM) ME-114 in order to respond to the NRC Deviation. This FVM required a reinspection program to be performed on a random sample of ASME Section III Subsection NF pipe supports.

The NRC inspector has reviewed the FVM for adequacy and reviewed inspection results from implementation of the FVM. QC inspectors did not identify any unacceptable base material defects during implementation of the FVM. Based upon this review the NRC inspector concurs that

there is no concern relative to quality of construction for the attribute "base material inspection" which was excluded from physical reinspection by Comanche Peak Response Team (CPRT).

The applicant committed to review the attributes that were included and those that were excluded in the quality instruction for each hardware construction work category (CWC) as an action to prevent recurrence of the NRC Deviation. This review would ensure that the list of attributes for each CWC is complete and that the attributes which were not reinspected were properly excluded.

The NRC inspector has reviewed results of the CWC inspection attribute review which provided an evaluation of the basis for excluding inspection attributes from inspection and concurs that the action taken to prevent recurrence should preclude further deviations. This item is closed.

d. (Closed) Deviation (445/8622-D-14): Overview Inspection Package I-M-B-SBCO-121 failed to identify two unsatisfactory decisions made by the initial ERC inspector. During an NRC inspection, two conditions were identified of pipe-to-hanger clearance violations of Section 5.2.6 in Revision 2 of QI-026. The initial ERC reinspection as well as the overview inspection failed to identify these deviating conditions.

A subsequent investigation by ERC confirmed the NRC inspection findings. Deviation Report (DR) I-M-SBCO-121-DR-3 was initiated on April 7, 1987, to document the two clearance deviations in addition to seven other clearance deviations which had been identified by ERC.

The NRC inspector contacted CPRT personnel in order to verify what corrective steps had been taken to avoid further deviations. ERC inspectors who failed to identify the clearance deviations had been retrained/counseled concerning the NRC inspection finding. NRC review of training records and ERC documentation indicated that corrective (i.e. retraining/counseling) steps had been taken to avoid further deviations.

Subsequent to the issuance of DR-I-M-SBCO-121-DR-3 in accordance with CPRT program commitments, NCR CM-87-6087, Revision 1, was issued to document the nine clearance deviations identified by the DR.

The NRC inspector reviewed a copy of the NCR and noted that CPE had dispositioned the clearance violations "Use-as-is". The technical justification for this disposition stated that Specification 2323-MS-100, "Field Fabrication and Erection of Piping and Pipe Supports," Revision 9, deletes the clearance criteria against which this NCR was written.

The NRC inspector reviewed 2323-MS-100 and found that although Revision 9 deleted commodity clearance requirements from Revision 8 of the specification, a specific reference to CPSES-S-1021 "Specification for Class 1 Commodity Clearance," was included in Revision 9. NRC review of CPSES-S-1021 identified that clearance violations documented on the NCR did not meet criteria established in the Separation Matrix, Attachment 1. Paragraph 5.3 of CPSES-S-1021, Revision 0, states in part, "If the separation matrix is implemented as optional guidance, any deviations should be recorded on the Clearance Evaluation Form and submitted to the Commodity Clearance Coordinator . . . ." CPE personnel were unable to provide documentation which would indicate completion of the Clearance Evaluation Form and informed the NRC inspector that an evaluation had not been performed.

Appendix A, Revision 0, of the TU Electric Quality Assurance Manual (QAM) defines "Use-as-is" as: "A disposition which may be assigned for a nonconformance when it can be established that the discrepancy shall result in no conditions adverse to safety and that the item under consideration will continue to meet all engineering functional requirements. This disposition requires technical justification by Engineering of the item's acceptability for use."

The NRC inspector reviewed project procedures which specify the requirements for reporting and control of nonconformances.

TU Electric Procedure NEO 3.05, the upper tier Nuclear Engineering and Operations Procedure for Reporting and Control of Nonconformances, Revision 3, dated September 8, 1987, paragraph 6.3.3, states in part, "Engineering shall review the nonconforming condition to determine the appropriate disposition . . . . If the NCR is dispositioned 'Use-as-is', ensure that the engineering basis for technical acceptability is provided . . . ."

On April 20, 1988, NRC management and the NRC inspector met with project personnel to discuss the NRC inspection

findings. Project personnel stated that commodity clearance evaluations would be performed by Engineering in accordance with the requirements of Field Verification Method (FVM) CPE-SWEC-FVM-CS-068, a Corrective Action Program (CAP) commitment.

Subsequent discussions with project personnel, on April 27, 1988, revealed that ECE 3.05, the TU Electric engineering procedure for reporting and control of nonconformances, permits a "Use-as-is" disposition of NCRs when resolution has already been provided by another NCR or by a design change released to the Paper Flow Group, or when the nonconforming item is being deleted because a design change, which is required for reasons independent of the nonconformance resolution, is being processed by Engineering. The NRC inspector identified that TU Electric Procedure NQA 3.05, QA Procedure for Reporting and Control of nonconformances, Revision 0, dated October 5, 1987, paragraph 6.1.4 states, in part, "When additional exploratory investigation(s), inspection(s), or test(s) are required, the data may be obtained by Engineering presenting the necessary instructions on the NCR in Block 15 (Disposition Details). In these cases the disposition blocks shall not be checked."

Disposition of NCR CM-87-6087, although reviewed, approved and closed by QA, did not have the additional exploratory investigations and/or inspections performed which are necessary to evaluate the documented piping clearance violations.

NRC review of CPSES-S-1021 and discussions with project personnel revealed that individual clearance violations which are evaluated and accepted by the walkdown engineer during implementation of FVM-068 would not be documented in all cases. Failure to document the individual clearance violations would preclude the establishment of an auditable paper trail for the NCR disposition.

The NRC inspection staff has noted that although CPE personnel may have acted in accordance with Procedure ECE 3.05, the failure to identify the results, the acceptability, and the actions taken in connection with clearance violations documented by NCR CM-87-6087, Revision 1, is a violation of Criterion V (445/8832-V-01).

On April 22, 1988, as a result of the NRC inspection findings, TU Electric issued Stop Work Order (SWO) 88-009 concerning implementation of CPE-SWEC-FVM-CS-068 pending management review of the

program. Corrective Action Request (CAR) 88-023 was written in concert with the SWO and documents that that program as defined in the FVM may not be sufficient to address all concerns associated with commodity clearances (for example, not documenting individual clearance violations which are evaluated and accepted by the walkdown engineer during the FVM implementation).

4. CPRT ISAPs: Installation of Main Steam Pipes (ISAP: V.e) (48063B)

Evaluate Engineering Significance of Residual Stress Due to Fitup Adjustments (NRC Reference 05.e.12.00)

To assess the significance of residual stresses, CPRT reviewed the effects such stresses have on the potential failure mechanisms of piping; such as, bursting due to overpressure, fatigue cracking, stress corrosion cracking, brittle fracture, plastic collapse or other distortion-related mechanisms, creep, and stress rupture. Based on calculations performed and material property considerations associated with applications of nuclear piping design, CPRT concluded that residual pipe stresses associated with the normal erection process will have no adverse effects. The NRC inspector has reviewed the data presented and is satisfied that the effects of residual stresses on possible failure mechanisms have been adequately addressed and the conclusion reached is logical. Inspection on this item is complete.

No violations or deviations were identified.

5. Corrective Action Plan (CAP)

a. Piping and Pipe Supports (50090)

The applicant has committed to perform QC reinspections of large bore and small bore piping hardware and isometric drawings (BRPs) as a result of CPRT sampling and reinspection findings. This commitment is being implemented in accordance with B&R ASME Component Installation Verification Procedure AQP-11.5.

The NRC inspector performed field inspections of the following BRPs in order to verify the adequacy and accuracy of field inspections performed by QC inspectors.

| Piping Isometric | Revision | System |
|---|---|---|
| BRP-DO-1-DG-001 | CP-3 | Diesel Generator Fuel Oil |
| BRP-CC-1-AB-076 | CP-1 | Component Cooling Water |

Inspection and documentation of the following installation attributes were verified by the NRC inspector.

- Piping configuration and component sequence is in accordance with piping isometric.
- All pressure boundary items are installed and complete.
- Valve orientation and flow direction is in agreement with piping isometric.
- Piping flanged connections have proper thread engagement and fasteners exhibit no looseness.
- All dimensions directly related to installation of piping and equipment are within installation tolerances.
- Equipment anchoring is in accordance with applicable requirements.

The NRC inspector reviewed the following BRPs to determine if documentation was adequate and complete.

| Piping Isometric | Revision | System |
|---|---|---|
| BRP-BR-X-AB-018 | CP-2 | Boron Recycle |
| BRP-BR-X-AB-019 | CP-1 | Boron Recycle |
| BRP-AF-1-SB-027A | CP-1 | Auxiliary Feedwater |

During NRC review of BRP-BR-X-AB-018, the NRC inspector noted that a mitered weld joint, weld joint 5-1A, exists in the boron recycle system. A mitered joint is one where two pipes join at an angle (usually 90°).

The ASME Code establishes a design lifetime limit of a maximum of 7000 pressure/temperature cycles for systems which utilize mitered weld joints. Furthermore, SWEC Procedure CPPP-7, "Design Criteria for Pipe Stress and Pipe Supports," limits all SWEC designed piping to less than 7000 cycles.

Control room personnel informed the NRC inspection staff that the boron recycle system should experience approximately 20 to 25 cycles per month. Based upon a system life of 40 years (480 months) the system would exceed the design limitation of 7000 cycles during lifetime of the system.

The NRC inspector discussed this inspection finding with project personnel. This is an unresolved item pending clarification of design requirements versus operational parameters (445/8832-U-02; 446/8828-U-02).

b. Conduit Supports C Train Less Than Or Equal to 2" (48053)

During this inspection period the NRC inspector selected a sample of 31 conduit support modifications to verify accuracy and correctness of the data collected by Impell. The following is a list of the supports inspected by the NRC.

| Support No. | Room | *Area |
|---|---|---|
| C12K17377-01 | 133 | ECB |
| C1TC60014-04 | 246 | AUX |
| C1TC60015-04 | 246 | AUX |
| C1TC60010-02 | 246 | AUX |
| C1TC60011-03 | 246 | AUX |
| C1TC60015-04 | 246 | AUX |
| C1TC60006-03 | 244 | AUX |
| C1TC60008-04 | 244 | AUX |
| C1TC60007-02 | 244 | AUX |
| C1TC60004-02 | 244 | AUX |
| C1FDA34-03 | 226 | AUX |
| C1PAS619-01 | 94 | SG1 |
| ECB3-23-06 | 135 | ECB |
| C1FPA61-01 | 135 | ECB |
| C1PACR11A-04 | 135 | ECB |
| C1TC60012-03 | 246 | AUX |
| C1PA-S24-01 | 64 | SG1 |
| C1PAS292-02 | 70 | SG1 |
| C1FDS7W-01 | 70 | SG1 |
| CKT5-01 | 206 | AUX |
| SB8-29-01 | 77S | SG1 |
| C1PA-S88A-02 | 78 | SG1 |
| C14K15999-01 | 154 | RB1 |
| C13K15267-01 | 133 | ECB |
| C12K21179-03 | 133 | ECB |
| C14K16052-01 | 133 | ECB |
| C1FPA33-01 | 133 | ECB |
| C1MSL4-02 | 133 | ECB |
| C12K11488-02 | 133 | ECB |
| C12K31375-10 | 133 | ECB |
| C12K08566-06 | 133 | ECB |

* ECB - Electrical Control Building
AUX - Auxiliary Building
SG1 - Unit #1 Safeguard Building
RB1 - Unit #1 Reactor Building

The results of the review/walkdown of the above supports revealed certain data which did not match that recorded by Impell; however, it was deemed to be acceptable since the difference in the recorded dimensions was found to be within the tolerances specified in the applicable project instruction (PI).

No violations or deviations were identified.

c. Cable Tray and Cable Tray Supports (48053)

The NRC inspector performed documentation reviews and field inspections of the following cable tray span length drawings to determine the adequacy of the applicant's installation records for Unit 1. The span length drawings had been completed by engineering and vaulted.

Span Length Drawing

CTH-1-SL-2000
CTH-1-SL-2005
CTH-1-SL-2025
CTH-1-SL-4019
CTH-1-SL-4170
CTH-1-SL-4186
CTH-1-SL-5007
CTH-1-SL-6019
CTH-1-SL-6021
CTH-1-SL-6061
CTH-1-SL-6078
CTH-1-SL-6157
CTH-1-SL-6197
CTH-1-SL-6244
CTH-1-SL-6269
CTH-1-SL-6286

TU Electric Project Procedure TNE-FVM-CS-001, Field Verification Method (FVM) Unit 1 Cable Tray Hanger As-Builting and Design Adequacy Verification Program, Table 5, entitled "Measurement and Inspection Tolerances," paragraph M, states, in part, "All linear dimensions . . . not specifically noted in this table shall be plus or minus 6."

Contrary to the above NRC inspection of cable tray span lengths of Drawings CTH-1-SL-2000, CTH-1-SL-4186, CTH-1-SL-6269, and CTH-1-SL-6286 identified the following discrepancies.

(1) A span length shown on Drawing CTH-1-SL-6269 as 1'-4", was measured as 2'-4" by the NRC inspector.

(2) A span length shown on Drawing CTH-1-SL-4186 as 3'-5" was measured as 4'-0" by the NRC inspector.

(3) A span length of 1'-4" west of Cable Tray Support CTH-1-6430 was found not to exist on Drawing CTH-1-SL-6286.

(4) A splice plate shown on Drawing CTH-1-SL-6286 as being 4'-6' west of Cable Tray Hanger CTH-1-6430 was found not to exist.

(5) A splice plate shown on Drawing CTH-1-SL-2000 as being 0'-7" above Cable Tray Support CTH-1-6948 was actually located 0'-7" below the support or 0'-8" out of tolerance.

The above findings (five examples of walkdown errors) are similar to 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 five 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 the applicant who had evaluated the impact of the walkdown errors on their design verification calculations. The results of the applicant's calculation review revealed that these errors did not cause the stress levels in any of the supports or cable trays to exceed code allowables. Further, the above findings were detected in the NRC inspector's walkdown of 16 span length drawings. On each span length drawing there are approximately 25 individual measurements that are documented; therefore, the examples cited represent approximately 1.25% of the required measurements.

6. Plant Tours (92700)

The NRC inspectors made frequent tours of Unit 1 and common areas of the facility to observe items such as housekeeping, equipment protection, and in-process work activities. No violations or deviations were identified and no items of significance were observed.

7. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. One unresolved item disclosed during the inspection is discussed in paragraph 5.a.

8. Exit Meeting (30703)

An exit meeting was conducted May 3, 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 meeting, the NRC inspectors summarized the scope and findings of the inspection.