APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report No. 50-445/92-01; 50-446/92-01

Operating License No. NPF-87

Construction Permit No. CPPR-127

Licensee: TU Electric
400 North Olive Street, L.B. 81
Dallas, Texas 75201

Facility Name: Comanche Peak Steam Electric Station (CPSES)

Inspection At: CPSES, Glen Rose, Texas

Inspection Conducted: January 6-9, 1992

Inspectors: L. Gilbert, Reactor Inspector, Materials and Quality Programs Section, Division of Reactor Safety
L. Ellershaw, Reactor Inspector, Materials and Quality Programs Section, Division of Reactor Safety
W. McNeill, Reactor Inspector, Materials and Quality Programs Section, Division of Reactor Safety

Approved: I. Barnes 1/28/92
I. Barnes, Chief, Materials and Quality Programs Section, Division of Reactor Safety — Date

Inspection Summary

Inspection Conducted January 6-9, 1992 (Report 50-445/92-01)

Areas Inspected: No inspection of Unit 1 was performed.

Results: Not applicable.

Inspection Conducted January 6-9, 1992 (Report 50-446/92-01)

Areas Inspected: Routine, announced inspection of actions taken on previously identified inspection findings and the implementation of the quality assurance and quality control programs for ongoing design, procurement, and construction activities for Unit 2.

Results: No violations or deviations were identified during this inspection. The quality assurance program applicable to the areas of construction, design, and procurement was found to be well defined and satisfactorily implemented. Responsibilities and functions are well established and proceduralized. The senior management quality assurance overview effort was found to be a strength. The observation that certain matrices were not maintained current appeared to the inspectors to be minor in significance.

Quality procedure audits and engineering assurance assessments of construction, design, procurement, and programmatic activities were found to be well planned, comprehensive, and technically competent. Audit and assessment personnel were qualified and were being appropriately used based on their engineering disciplines. Vendor audits and vendor performance evaluations were being performed in accordance with program requirements. Procurement quality assurance reviews of procurement documentation were being performed and the receiving inspection activities were functioning properly.

The pipe support and structural steel work activities in Unit 2 were found to be effectively controlled by construction engineering and quality control. The Unit 2 installation work packages contained comprehensive checklists for the inspection attributes, which was considered a strength of the construction and quality programs. In general, the surveillance and monitoring activities performed by quality assurance, quality control, and the code control group were well documented and provided a good assessment regarding the quality of construction activities.

DETAILS

1. PERSONS CONTACTED

TU ELECTRIC

*W. Cahill, Group Vice President
*H. Bruner, Senior Vice President
*D. McAfee, Manager, Quality Assurance
*S. Palmer, Stipulations Manager
*J. Green, Unit 2 Site Licensing
*L. Walker, Unit 2 Licensing
*T. Hope, Unit 2 Licensing Manager
*K. Williamson, Project Construction Engineer, Brown & Root U.S.A., Incorporated
*R. Martell, Project Management
*W. Morris, Engineering Overview
*H. Carmichael, Unit 2 Engineering Assurance Manager
*G. Ondriska, Startup Programs
*R. Daly, Manager, Startup
*R. Spence, Manager, Construction Quality Control
*D. Schmidt, Quality Construction Supervisor
*L. Hurst, Project Manager, Bechtel Power Corporation
*J. Wren, Construction Quality Assurance Manager
*C. Rau, Unit 2 Project Manager
*C. Killough, Procurement Quality Assurance Manager
*E. Magilley, Senior Quality Control Supervisor, Stone & Webster Engineering Corporation
*R. Mays, Supervisor Mechanical Codes and Standards
*D. Pendleton, Unit 2 Regulatory Services Manager
G. Bryant, Quality Engineering Supervisor
J. Conley, Licensing Engineer
D. Depierro, Lead Engineer
K. Kimbell, Lead Engineer
L. Monty, Mechanical Engineer
M. O'Meara, Engineer
C. Pruett, Quality Specialist
W. Sealover, Engineering Assurance Engineer
L. Whittet, Engineer
J. Simmons, Procurement Quality Engineering Supervisor
D. Ranstrom, Quality Engineering Supervisor

CASE

*O. Thero, Consultant

NRC

*D. L. Kelley, Reactor Inspector
*I. Barnes, Chief, Materials and Quality Programs Section
*J. Gagliardo, Chief, Test Programs Section

The inspectors also interviewed other licensee employees during the inspection.

*Denotes those attending the exit meeting on January 9, 1992.

2. FOLLOWUP OF LICENSEE ACTION ON PREVIOUSLY IDENTIFIED INSPECTION FINDINGS (92701 AND 92702)

2.1 (Closed) Violation (446/9111-01): An unqualified procedure and untrained individuals were used for locating the centerline of those welds requiring pre-service inspection that were not centerline marked.

The inspectors reviewed the licensee followup action which included the qualification of a technique that uses a delta ferrite meter for locating the centerline of austenitic stainless steel welds for pre-service examination. The procedure for locating and marking the centerline of welds was described in Appendix B to Procedure ACP-11.1, Revision 10, and was approved by the authorized nuclear inservice inspector. The training of 16 individuals for using the delta ferrite technique in establishing the centerline of welds was accomplished and documented. The method described in the procedure was demonstrated to the inspectors, and the technique appeared to adequately locate the weld centerline in austenitic stainless steel piping for the purpose of applying weld centerline reference marks for inservice inspection. This violation is considered closed.

2.2 (Closed) Unresolved Item (446/9131-01): Establishment of the correct temperatures to be assumed for determination of acceptability of certain pipe to penetration sleeve clearances which were similar in design.

It was established that the temperature assumptions used to evaluate the nonconformances identified in the previous report were in error, however, the acceptability of the pipe/sleeve installations in question was established by use of specific as-built dimensions and calculations using the worst-case thermal expansion for each pipe/sleeve installation. The inspectors verified the above through review of a sample of 10 of the 62 nonconforming condition reports and the subsequent acceptance calculations. This unresolved item is considered closed.

2.3 (Closed) Open Item (446/9131-02): Reconciliation of pressure and temperature data differences found on NPP-1 Code data reports for certain sequential pipe spools.

The NPP-1 code data sheets had correct pressure and temperature information when the sheets were issued. A later revision of the specification changed the pressure and temperature data for the spool in question. The inspectors verified the correct pressure and temperature data by review of the "ACCESS" line designation information, a computerized list of design information from the nuclear steam supplier. The vendor purchase order for the pipe spools in question and various revisions of Specification 2323-MS-43A were also reviewed by the inspectors. The change in pressure and temperature data did not appear to affect the acceptability of the spool. This open item is considered closed.

3. LICENSEE MANAGEMENT OF QUALITY ASSURANCE ACTIVITIES (35060)

The objectives of this area of the inspection were to determine the status and effectiveness of licensee management and implementation of the corporate quality assurance program for ongoing activities of design, procurement, and construction.

3.1 Quality Assurance Program

Chapter 17.1 of the Final Safety Analysis Report defined the quality assurance program for Unit 2 design, procurement, and construction activities. The last revision accepted by the NRC was Amendment 81. The current revision, Amendment 83, is under review by the NRC Region IV office. Amendment 82 of the Final Safety Analysis Report made no significant changes to the quality assurance program description. Nuclear engineering and operation policy statements, various lower tier procedures, and a CPSES quality assurance manual implement the quality assurance program description. One matrix (i.e., Unit 2 Procedure Applicability Matrix) identified the implementing TU and contractor procedures applicable to Unit 2 design, procurement and construction activities. This matrix included 493 procedures prepared by TU and the engineering and construction contractors (i.e., Bechtel Power Corporation; Brown & Root U.S.A., Incorporated; Ebasco Services Incorporated; ABB Impell Corporation; Peak Seals Incorporated; Stone & Webster Engineering Corporation; and Westinghouse Electric Corporation).

The inspectors compared a sample of 255 contractor and TU Electric procedures against the Unit 2 procedure applicability matrix and noted examples where the matrix was not current. Specifically, the matrix failed to include 6 station administration procedures and 2 Stone & Webster procedures which were active. In addition, the matrix also listed 5 procedures which did not exist.

The inspectors also observed that a matrix in the CPSES quality assurance manual (i.e., Appendix C), which listed those nuclear engineering and operations policy statements and procedures and licensing procedures that were applicable to the quality assurance program, had not been maintained current.

Specifically, 14 nuclear engineering and operations procedures and 3 licensing procedures, which had been deleted, were still shown as applicable in the matrix.

The inspectors verified, for the cases where procedures were omitted from the matrix, that the activities were being accomplished in accordance with approved procedures (e.g., freeze protection and control room access). The consequence of these errors appeared to be minor. However, in order to more clearly identify what procedures should be followed as part of the Unit 2 quality assurance program, the licensee took steps to correct these errors and review additional procedures on the Unit 2 matrix.

The inspectors reviewed the current organization charts and the qualifications of the new director of nuclear overview, which was the only significant personnel change made since the program was last reviewed. The inspectors found that no significant changes had occurred in the staff size, organizational structure or quality assurance program description since last inspected by the NRC (see NRC Inspection Reports 50-445; 50-446/90-37 and 50-445; 50-446/90-43).

The senior management quality assurance overview program identified in STA-113 was found to be a strength. Every other month, a committee consisting of 30 to 40 management personnel reviewed quality assurance activities. In general, only one third of these personnel were from nuclear overview and the meeting included senior and executive vice presidents, department directors, and line managers. Quality assurance reported to the committee on audits and surveillance activities, and programmatic and repetitive nonconformances. Engineering assurance reported on engineering audits and assessment activities, and reviews of TU evaluation reports, calculations, and design changes. Procurement quality assurance reported on vendor audits, vendor surveillance, procurement document reviews, and shop, warehouse, and receiving inspections. Quality control reported on quality accountability and trending, as well as, inspection and monitoring activities. Licensing reported on NRC inspections and 10 CFR Part 50.55(e) reports.

The inspectors reviewed the 1991 meeting minutes and the associated "CPSES Unit 2 Senior Management Quality Assurance Overview Committee Reports," which were issued by the Director of Nuclear Overview. The reports expressed satisfaction with the quality assurance program.

The inspectors noted that Procedure NQA 1.02, "Nuclear Overview Monthly Activities Report," was not implemented and reports associated with the bimonthly quality assurance overview committee appeared to have replaced the monthly reports. The licensee agreed to review this procedure and revise as necessary.

3.2 Design

The identification of design responsibilities and the external/internal design interfaces between the different architect engineering contractor organizations are delineated in Procedure 2EP-5.03 "Procedure for Design Engineering Interface," Revision 0, through Procedure Change Notice (PCN) 03. The design interface involves control of criteria, design and design changes, design input and output, specifications, and technical direction with respect to the specific scopes of work assigned to the engineering contractor organizations (i.e., Bechtel Power Corporation, Stone & Webster Engineering Corporation, ABB Impell Corporation, Westinghouse Electric Corporation) and TU Electric, Unit 2, Engineering. The procedure was noted by the inspectors to clearly articulate the division of design responsibilities and the means for transmitting design information between the various engineering organizations.

The effectiveness of design control measures is determined through the conduct of quality assurance audits and the performance of technical and programmatic engineering evaluations. Procedure NQA 3.07, "Quality Assurance Audit Program," Revision 7, through Document Change Notice (DCN) 02, established the methodology, responsibility, and applicability for audits performed by quality assurance. Procedure 2EP-3.23, "Engineering Activities Overview and Evaluation Procedure," Revision 0, through PCN 03, established the program and applicability for performing technical and programmatic evaluations of Unit 2 engineering activities by engineering assurance.

The quality engineering unit in the construction quality assurance group had the primary responsibility for conducting audits of engineering activities. To assess the implementation of the audit program, the inspectors reviewed the 1991 quality audit schedule. The schedule had been reviewed by management on at least a quarterly basis to assure that it reflected updated activities. The inspectors verified, by review of the schedule and six completed audits, that established audit frequencies were being complied with. The inspectors' selection of the six audits (QAA-91-207, QAA-91-211, QAA-91-220, QAA-91-223, QAA-91-226, and QAA-91-230) was made in order to review the assessments made on each of the four contractor engineering organizations, TU Electric, Unit 2, Engineering, and the overall design organization interface. It was apparent that a considerable planning effort was made prior to the conduct of the audits. Each of the audits was comprehensive, in-depth, and technical in nature. Audits of the engineering organizations included reviews of calculations and analyses. The audits were clearly identified and maintained in audit packages which included substantiating documentation. Audit findings were classified as either audit deficiencies or observations. All audit findings that were issued as "open" (i.e., not closed during the audit as a result of immediate corrective and preventive actions) were required to be responded to. Audit findings that were classified as deficiencies were identified and documented on TU Evaluation (TUE) forms. The inspectors verified that all open TUE forms resulting from quality assurance audits were being tracked. Quality assurance has been publishing, on a weekly basis, a quality assurance audit tickler list which shows the status of each open finding. It was noted that several deficiencies were not scheduled for

closure until May and June 1992. These pertained to items that will be resolved during the as-built reconciliation effort which should be underway at that time. The inspectors' review of audit finding responses and the subsequent handling of those responses showed that quality engineering was obtaining meaningful corrective actions.

The inspectors also reviewed the activities of the engineering assurance group, which is responsible for performing evaluations of engineering activities and for assessing the results of the evaluations to identify potential generic implications. The Unit 2 engineering assessment log showed that 104 evaluations had been performed during 1991. The scope of these evaluations showed them to be generally more focused in technical areas (i.e., reviews of stress analyses, calculations, design change authorizations, and design basis documents). The inspectors selected six evaluations for review (EN 91-041, EN 91-077, EN 91-100, EN 91-101, EN 91-118, and EN 91-126). Each of the evaluations was documented in an engineering overview and evaluation report and was maintained in its own package, along with the assessment plan which provided the scope and a listing of the attributes to be evaluated. Evaluation findings which require corrective actions and responses are classified as deficiencies (a technical or process error that renders an engineering product technically inadequate or unacceptable) or discrepancies (a minor error having no technical impact). The inspectors requested a printout showing all deficiencies identified during 1991. All deficient condition reports, with the exception of five, had been closed out. The status of those five was shown to be "CAV" (closed awaiting verification), which indicated that the required response had been accepted but verification of corrective actions had not yet been performed. The inspectors selected eight deficient condition reports that were shown to be closed on the printout and reviewed the evaluation packages to verify that the responses were adequate and had been accepted, and that subsequent verification of required actions had been performed. The inspectors verified that all necessary actions had been documented as being complete.

The training, qualification, and certification of auditors was to be accomplished in accordance with Procedure NQA 1.16-1.01, "Indoctrination, Training and Certification of Auditors and Lead Auditors," Revision 4, through DCN 01. This procedure incorporated the requirements of ANSI Standard N45.2.23 (1978), "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants," to which the licensee was committed. The procedure defined the requirements for training, qualification, and certification of the nuclear overview department's audit personnel.

The inspectors reviewed the qualifications and lead auditor certification and recertification records of four lead auditors in the quality engineering unit, who had been involved with the previously mentioned audits. The records clearly showed that each of the individuals was qualified and capable of performing the assigned audits. During review of the experience levels of other audit personnel, the inspectors also noted that a match had been made between the engineering experience/background of the auditor and the engineering discipline being audited.

The inspectors also learned that Unit 2, Project Management, by letter to Standard Distribution on July 23, 1991, established guidelines for a systematic internal self-assessment program (SISAP), including action, reporting, and coordination responsibilities. The guideline, identified as ACA-652Z, described the self-assessment process for monitoring the performance of activities affecting Unit 2, and is similar in nature to the systematic assessment of licensee performance program established by the NRC. The guideline established assessment areas, assessment attributes, and assessment performance. Attachment 1 to the guideline provided a listing of internal and external sources of information to be used, and assigned specific responsibility for review. Attachment 2 to the guideline established the functional or SISAP assessment areas. Of interest to the inspectors were the functional areas of engineering/technical support and safety assessment/ quality verification. The inspectors reviewed the SISAP report for September/October 1991, which was still in a draft status. The information contained within the two functional areas consisted of objective information derived from sources such as NRC inspection reports, quality assurance audits, quality accountability surveillances, independent design assessments, TUE reviews, and TU Electric's self-initiated construction appraisal team assessment. The cover letter to the report provided an overall assessment for the various areas in terms of strengths and weaknesses. The inspectors did not have sufficient time to assess the activities or actual benefits generated by this effort. However, this activity, if performed in a meaningful fashion, should provide Unit 2 management with additional insight towards effecting an overall improvement in performance.

3.3 Procurement

The quality assurance management structure, with respect to procurement, consists of a procurement quality assurance manager, a procurement quality engineering supervisor, and a procurement compliance supervisor. The procurement quality assurance manager's responsibilities include implementation of a vendor control program, quality assurance review of procurement documents, and implementation of a receipt inspection program. These activities are controlled by Procedures NQA 3.14, "Control of Vendor Activities," Revision 8; NQA 6.02, "Quality Review of Procurement Documents," Revision 6, through DCN 01; and NQA 3.09-11.03, "Receiving Inspection," Revision 8, through DCN 01. The procurement quality engineering supervisor is responsible for review of procurement documents, maintenance of the approved vendor list, and annual vendor evaluations. The procurement compliance supervisor is responsible for vendor audits/surveillance, and receiving inspection.

It is procedurally required that all procurement documents (i.e., purchase requisitions, purchase orders, and contracts) for safety-related services and components receive procurement quality assurance review, and be evidenced by signature.

The inspectors selected four safety-related procurement actions (two service contracts and two component purchase orders) for review in order to determine

the adequacy of the procurement documentation, validity of source selection including supplier performance evaluation, and the adequacy of the receipt inspection function. The four procurement actions consisted of the following: Contract B0001125 with Hurst Metallurgical Research Laboratory, Inc., dated April 5, 1990, for materials testing and analysis and engineering services associated with welding procedure qualifications; Contract C0006950-6CA with Failure Analysis Associates, Inc., dated October 7, 1990, through Supplement 3 dated December 16, 1991, for providing labor, material, and equipment for testing and examination services on the Unit 2 diesel generators; Purchase Order S0017502 7S2 with NPS Industries, Inc., dated May 16, 1991, for two line items of various ASME Section III, Subsection NF, Class 1, component supports; and Purchase Order B0027214 to Consolidated Power Supply, dated October 7, 1991, for 837 line items of various ASME Section III, Class 1 and 2 flanges and fittings. All of the procurement documentation, including the supplements, had been reviewed and approved by procurement quality assurance prior to issue. Each of the documents clearly specified the applicable technical and quality assurance requirements (i.e., Appendix B to 10 CFR Part 50, 10 CFR Part 21, ASME Code, and SNT-TC-1A personnel certification requirements). The procurement documents also specified that, where a subtier vendor was to be used, the applicable technical and quality assurance requirements were required to be imposed.

The inspectors reviewed the supplier performance evaluations which are conducted on an annual basis. Evaluations for each of the above vendors were on file and were valid for the dates of the procurement documents. The evaluations were documented on the vendor annual evaluation form, which is a standard form containing review results of: ONE and TUE forms initiated because of problems associated with the vendor; the previous 12 months activities regarding the vendor's supply of services or components; and a search of the nuclear plant reliability data system to determine if the vendor had been identified with problems elsewhere in the nuclear industry. In each of the four cases, the evaluations showed that there were no identified problems attributable to the vendors and they were considered acceptable. It was shown to the inspectors that the evaluations were capable of detecting problems which resulted, in several instances of letters being sent to vendors requesting documented corrective actions. In addition, problems identified during the evaluation process are added to the information data base for subsequent use during the triennial audit of the vendor.

The inspectors reviewed the approved vendor list dated December 1991, to verify that the four vendors noted above were properly listed. Each was listed, including the basis, the equipment and/or services to be provided, the vendor's location, the applicable codes or standards, the status, and any restrictions or comments. The approved vendor list also provided for the addition or deletion of vendors, including the justification. A memorandum, acting as an approved vendor list supplement, contained four vendor deletions and two vendor additions. Three of the deletions were because of inactivity and one was because of a lack of response to identified audit deficiencies. The two additions were as a result of recent quality assurance audits performed at the vendor facilities. The inspectors noted that there was one

case where a vendor had not been audited in accordance with the schedule which showed a due date of March 1991. This resulted in a restriction being added to the approved vendor list which stated that no safety-related purchase orders could be placed with that vendor until satisfactory completion of a NUPIC audit, which was scheduled to be performed during the third quarter of 1991. The inspectors reviewed the most recent audits of three of the four vendors noted above. Adequate time was not available to review the audit of Hurst Metallurgical Research Laboratory, Inc., although the approved vendor list showed that an audit had been performed. The reviewed audits showed the vendors to be acceptable. One of the audits identified four deficient conditions, all of which had been responded to, followed up for verification, and closed out. The audits appeared to be comprehensive and provided a thorough basis for placement of the vendor on the approved vendor list.

The inspectors reviewed the receiving inspection activities associated with certain items received from NPS Industries, Inc., and Consolidated Power Supply. In each case, a verification plan had been established which listed the critical characteristics or attributes requiring inspection and the applicable receiving inspection plan to be used for performing the inspection. The specific inspection method and acceptance criteria were delineated. Each verification plan had been reviewed and approved by procurement engineering, the supervising engineer, and procurement quality assurance.

Verification Plan VP-91-0952 and Receiving Inspection Report RIR-09923 showed that 25 pieces of Line Item 1 on Purchase Order S0017502 7S2 to NPS Industries had been received, inspected, and final accepted on December 23, 1991, with a final document review performed by procurement compliance on January 3, 1992. Verification Plan VP-91-2460 and Receiving Inspection Report RIR-09924 showed that 3 pieces of Line Item 629 on Purchase Order B0027214 to Consolidated Power Supply had been received, inspected, and final accepted on December 18, 1991, with a final document review performed by procurement compliance on January 3, 1992. The inspectors' review of the packages indicated that all of the technical, quality, and documentation requirements had been complied with.

The inspectors also discussed the interface between site initiated and corporate initiated procurement. The inspectors were informed that the corporate office could initiate purchase requisitions; however, if they are safety-related, they are required to be forwarded to the site for review by procurement quality assurance. In any event, all safety-related service and component purchase orders are released by the site.

3.4 Audits

Procedures NQA 3.07 and NQA 1.16-1.01 defined, respectively, the audit program requirements and auditor qualification requirements. Procedure NQA 2.08 established the requirements for a joint utility management audit which provides for an independent programmatic review by industry peers.

The inspectors reviewed the 1991 Unit 2 audit schedule and a sample of six audits performed during 1991 of Unit 2 quality assurance construction

activities. The sampled audits dealt with such subjects as heating, ventilation, air conditioning; electrical instrumentation and controls; civil installation activities; ASME code control group; quality control monitoring; and training. The sampled audits were numbered QAA-91-204, 208, 218, 222, 232, and 233. The schedule, which was updated quarterly, identified that 14 audits had been performed. Unlike operations audits, there were no master audit plans used for construction audits. The audit files indicated that an audit plan was developed and used for each audit. The sampled audits appeared to be in-depth and technically comprehensive. Audit findings were identified on TUE Forms. Two audit findings (TUE Forms 91-533 and 91-573) had been issued during the performance of the sampled audits. The audit findings had been responded to, followed up, and closed in a timely manner. The inspectors found that training, qualification, and certification of the four lead auditors, who performed the sampled audits, to be in accordance with the procedure and industry standards. The joint utility management audit performed in 1991, focused on Unit 2 engineering and concluded that the quality assurance program was being effectively implemented.

3.5 Summary

The quality assurance program applicable to the areas of construction, design, and procurement was found to be well defined and satisfactorily implemented. Responsibilities and functions are well established and proceduralized. The senior management quality assurance overview effort was found to be a strength. The observation that certain matrices were not maintained current appeared to the inspectors to be minor in significance.

Quality procedure audits and engineering assurance assessments of construction, design, procurement, and programmatic activities were found to be well planned, comprehensive and technically competent. Audit and assessment personnel were qualified and were being appropriately used based on their engineering disciplines. Vendor audits and vendor performance evaluations were being performed in accordance with program requirements. Procurement quality assurance reviews of procurement documentation were being performed and the receiving inspection activities were functioning properly.

4. IN-DEPTH QUALITY ASSURANCE INSPECTION OF PERFORMANCE (35061)

The objective of this inspection was to determine whether site work is being performed in accordance with NRC requirements, and that quality assurance and quality control programs are functioning in a manner to ensure the requirements are being met.

4.1 Site Work

The inspectors observed safety-related elements of field activities for installation of five pipe supports and a structural platform. The five pipe supports were identified with the following support numbers:

RC-2-069-402-C41R, FW-2-097-702-C62R, MS-2-RB-044-008-2, FW-2-106-412-C62R, and FW-2-104-408-C62R. The structural steel platform was identified as Platform RB2-156-01.

The first pipe support, RC-2-069-402-C41R, was an adjustable sway strut for a Class 1, 12-inch pipe in the reactor coolant system. This support was complete with the exception of a heat number error on the base plate that had been identified during final quality control package review. The corrective action, which had not been completed, was documented on TUE Form No. 91-3137. During observation of the pipe support, the inspectors verified that specific items of the support and selected dimensions on the support were consistent with the pipe support drawing and related drawings and the requirements of the component support fabrication and installation procedure, ACP-11.5, Revision 9. The support was checked against the drawings in the work package. The drawings consisted of the pipe support, Drawing RC-2-069-402-C41R, Revision CP-3; the inspection detail index, Drawing PS-2-0999, Revision CP-8; the inspection details for SRS (Sway Strut-Adjustable), Drawing PS-2-1000, Revision CP-3; the inspection details for XRB/SRRB/SMRB (Shock Arrestor and Sway Strut Rear Bracket), Drawing PS-2-1005, Revision CP-5; and the inspection details for SPC (Shock Arrestor and Sway Strut Pipe Clamp), Drawing PS-2-1008, Revision CP-3.

The second pipe support, FW-2-097-702-C62R, was a sway strut for a Class 2, 6-inch pipe in the main steam system. This pipe support had been completed prior to restart of construction for Unit 2. Therefore, in accordance with the instructions provided by Appendix A of Procedure ACP-11.5, a work package for this pipe support was prepared by construction engineering to reinspect the support to the revised generic fabrication/installation criteria for existing supports. The support had been reinspected by construction and a red-lined drawing had been prepared to show the current condition of the support. The red-lined drawing was identified as Advance Design Change (ADC) No. 1 to Drawing FW-2-097-702-C62R, Revision CP-1. The inspectors witnessed the quality control inspection of the pipe support. The quality control inspector was observed performing measurements and verifying that each dimension on the red-lined drawing was within the tolerance specified in Procedure ACP-11.5. The quality control inspector was knowledgeable of the inspection criteria and was equipped with the necessary tools to verify the pipe support location and configuration dimensions specified on the drawing. The quality control inspector identified an error for a red-lined dimension specified for the baseplate, in that, the dimension from the center of the support to the center of one of the bolts did not meet the plus or minus 1/4-inch tolerance specified in Procedure ACP-11.5. The quality control inspector documented the discrepancy. The inspectors were informed that construction engineering would correct and mark the drawing as ADC No. 2 before submitting the work package to quality control for reinspection.

The third pipe support, H-MS-2-RB-044-008-2, was a box support for a Class 2, 3/4-inch pipe in the main steam system. This pipe support was being reworked because of excess clearance between the pipe and the box support. The work package directed the craft to cut the box support and install new tube steel

for Items 6 and 7 of Drawing H-MS-2-RB-044-008-2, Revision CP-1. The inspectors reviewed the welding checklist and material identification log (MIL) in the work package. The checklist was appropriately completed for the status of the work and quality control had completed the specified in-process inspection hold points. The inspectors verified that the heat number (M26410) on the material for Items 6 and 7 matched the heat number recorded on the MIL in the work package for the support. The inspectors also verified that the heat number was traceable to the quality assurance records for procurement and receiving inspection.

The fourth pipe support, FW-2-106-412-C62R, was a sway strut for a Class 2, 3-inch pipe in the steam generator feedwater system. The inspectors observed quality control performing an inspection of the holes which had been drilled in the concrete floor for installation of the baseplate using four 1-inch diameter 10-inch long Hilti Kwik bolts. The quality control inspector was observed measuring the spalling around the holes, as well as, the proximity of abandoned holes. The inspection was performed consistent with the instructions in the work package checklist and the construction procedure for structural embedments, CQP-CV-109, Revision 1. The inspectors verified that the end markings on the bolts were consistent with the method of marking specified in Attachment 8.G of the construction procedure and that the bolts met the requirements specified for Item 18 on Drawing FW-2-106-412-C62R, Revision CP-1.

The fifth pipe support, FW-2-104-408-C62R, was a box support for a Class 2, 3-inch pipe in the steam generator feedwater system. This pipe support was being reworked to modify the support as shown on the drawing. The work package directed the craft to install a new box support using new tube steel for Items 15 and 16 on Drawing FW-2-104-408-C62R, Revision CP-1. The inspectors reviewed the welding checklist and material identification log (MIL) in the work package. The checklist was appropriately completed for the status of the work and quality control had completed the specified in-process inspection hold points. The inspectors verified that the heat number (T06205) on the material for Items 6 and 7 matched the heat number recorded on the MIL in the work package for the support. The inspectors also verified that the heat number was traceable to the quality assurance records for procurement and receiving inspection.

The structural steel platform, RB2-156-01, was the seal table support at elevation 832 feet-6 inches. The platform was being reworked to modify the seal table support as shown on Drawing S2-0556, Sheet C, Revision CP-2. The inspectors observed quality control performing an inspection of the completed welds on a segment of the platform and discussed the work on the platform with the craft, construction engineering, and quality control. The personnel were knowledgeable of the welding and bolting requirements specified on the drawing and in the construction/quality procedure for fabrication and erection of structural and miscellaneous steel, CQP-CV-105, Revision 1, through PCN-05.

The inspectors verified that the drawings and work procedures observed being used in the field activities were the most recent revision. The inspectors

noted that the work packages contained comprehensive checklists for inspection attributes. The work packages were prepared by construction engineering and the checklists were derived from the applicable construction/quality procedures. The inspection attributes in the checklists were cross referenced to the paragraph in the construction/quality procedure and vice versa. The inspectors considered these checklists to be a strength for assuring quality workmanship and quality documentation.

4.2 Quality Assurance and Quality Control Surveillance and Monitoring Programs

The inspectors reviewed the surveillance program administered by each site organization having a responsibility for performing a quality assurance or quality control function for installation of safety-related structural steel and piping supports in Unit 2. The inspectors were informed that the construction quality assurance manager was responsible for scheduling and coordination of surveillance activities for quality assurance. The Ebasco project quality assurance program manager was responsible for overviewing the ASME code installation activities performed by Brown & Root. The construction quality control manager was responsible for performing surveillance of construction activities.

The TU quality assurance surveillance program was described in Procedure NQA 3.23, Revision 5, through DCN 1. The inspectors verified that the surveillances were being scheduled and performed by reviewing the surveillance schedules for the past 6 months and reviewing seven surveillance reports.

The Ebasco code control group overview and surveillance activities were described in Section 8 of the Code Control Program, Revision 2. The inspectors verified that the surveillance of pipe supports was being conducted by reviewing the code control group surveillance log and 15 surveillance reports on ASME pipe support fabrication and installation activities including drawing control, personnel qualification, material control, in-process welding, and dimensional and configuration inspection.

The construction quality control surveillance program applicable to welding of pipe supports was described in the ASME quality procedure (AQP) for visual examination of weldments, AQP-10.15, Revision 3. The quality control monitoring program applicable to construction of structural steel platforms was described in Procedure NQA 3.23-0.01, Revision 1. The inspectors verified that the quality control program for surveillance of welding associated with the installation of pipe supports was effectively implemented by reviewing the quality control surveillance logs and reviewing 28 quality control surveillance/inspection reports that had been performed between December 10, 1991, and January 2, 1992. The inspectors also verified that the quality control program for monitoring structural steel construction activities was effectively implemented by reviewing the quality control monitoring accountability matrix for the past 6 months and reviewing nine quality control inspection reports that had been performed in the areas of structural steel, in-process welding, and inspector performance.

4.3 Summary

The pipe support and structural steel work activities in Unit 2 were found to be effectively controlled by construction engineering and quality control. The Unit 2 installation work packages contained comprehensive checklists for the inspection attributes, which was considered a strength of the construction and quality programs. In general, the surveillance and monitoring activities performed by quality assurance, quality control, and the code control group were well documented and provided a good assessment regarding the quality of construction activities.

5. EXIT INTERVIEW

An exit interview was conducted on January 9, 1992, with the personnel denoted in paragraph 1. At the exit interview, the inspection findings were summarized. No information was presented to the inspectors that was identified by the licensee as proprietary.

ATTACHMENT

Documents Reviewed:

"CPSES Quality Assurance Manual," Revision 4

"Unit 2 Procedure Applicability Matrix," Revision 5

"Nuclear Engineering and Operations Policy Statement Manual," Revision 41

"Nuclear Quality Assurance Procedure Manual," Revision 388

"Station Administration Manual," Revision 39

"Brown & Root ASME Administrative Procedures Manual," Revision 49

"Brown & Root ASME Construction Procedures Manual," Revision 47

"Brown & Root ASME Quality Procedures Manual," Revision 57

"CASES Unit 2 Code Control Program Procedures Manual," Revision 5

STA-113, "Senior Management Quality Assurance Overview Program," Revision 1

NQA 3.07, "Quality Assurance Audit Program," Revision 7, with DCN 3

NQA 2.08, "Joint Utility Management Audit Program," Revision 2

NQA 1.16-1.01, "Indoctrination, Training and Certification of Auditors and Lead Auditors," Revision 4, with DCN 1

NQA 1.02, "Monthly Activities Report," Revision 1

Procedure 2EP-5.03, "Procedure for Design Engineering Interface," Revision 0

Procedure 2EP-3.23, "Engineering Activities Overview and Evaluation Procedures," Revision 0

NQA 3.14, "Control of Vendor Activities," Revision 8

NQA 6.02, "Quality Review of Procurement Documents," Revision 6

NQA 3.09-11.03, "Receiving Inspection," Revision 8

NQA 3.23, "Surveillance Program," Revision 5

AQP-10.15, "Visual Examination of Weldments," Revision 3

NQA 3.23-0.01, "Quality Control Monitoring Program," Revision 1