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

Report No. 99900216/79-01 Program No. 51300

Company: Tubeco, Incorporated
123 Varick Avenue
Brooklyn, New York 11237

Inspection Conducted: February 12-16, 1979

Inspectors: H. W. Roberds 6/18/79
H. W. Roberds, Contractor Inspector, Vendor Inspection Branch — Date

I. Barnes 6/18/79
I. Barnes, Contractor Inspector, Vendor Inspection Branch — Date

L. E. Ellershaw 6/18/79
L. E. Ellershaw, Contractor Inspector, Vendor Inspection Branch — Date

Approved by: D M Hunnicutt 6/18/79
D. M. Hunnicutt, Chief, Components Section II, Vendor Inspection Branch — Date


Summary

Inspection conducted February 12-16, 1979 (99900216/79-01)

Areas Inspected: Implementation of 10 CFR 50 Appendix B Criteria and applicable codes and standards, including actions on previous inspection findings; Training Qualification of Auditors); Audits (External); Control of Nonconformances; Corrective Action; Procurement Document Control and Welding Material Control. The inspection involved eighty-four (84) inspector hours on site by three (3) NRC inspectors.

Results: In the seven (7) areas inspected the following deviations were identified:

Deviations: Actions on Previous Inspection Findings - Documentation of completed operations on the traveler not consistent with the requirements of Criterion V of 10 CFR 50 Appendix B and Section A-3 and J-3 of the QA Manual (Enclosure, Item A); Maintenance of liquid penetrant examination records not consistent with Criterion X of 10 CFR 50 Appendix B and NA-4930, NB-5250 and NB-4440 of the ASME Section III Code (Enclosure, Item B and C); procedure W-602 not revised to include all requirements of NB/NC-2400 as required by corrective action commitments (Enclosure, Item D); performance of weld repairs not in accordance with Criterion V of 10 CFR 50, Appendix B, and requirements of Procedure G-101 (Enclosure, Item E); procedure dealing with nameplates not written as required by corrective action commitments (Enclosure, Item F); verification of specified welding procedure being used not performed as required by Criterion V of 10 CFR 50, Appendix B, and Section P-1 of the QA Manual (Enclosure, Item G); performance of submerged arc welding not in accordance with Criterion V of 10 CFR 50, Appendix B, and position requirements of the applicable WPS (Enclosure, Item H); acceptance of welded pipe with inadequate weld metal toughness properties not in accordance with Criterion VII of 10 CFR 50, Appendix B, and purchase order requirements (Enclosure, Item I); failure to revise NQAM to provide full compliance with ASME Code requirements relative to control of temporary attachments, not in accordance with corrective action commitments (Enclosure, Item J); failure to perform required welding procedure qualification testing not in accordance with corrective action commitments (Enclosure, Item K); failure to write a procedure dealing with qualification of welding materials not in accordance with corrective action commitments (Enclosure, Item L); acceptance of heat treat chart for assembly that had utilized a WPS qualified only in the as welded condition, not in accordance with Criterion IX of 10 CFR 50, Appendix B, and NB/NC/ND-4333 in the ASME Section III Code (Enclosure, Item M); failure to set rate controllers to 25°F/hour less than maximum code permissible rate not consistent with corrective action commitments (Enclosure, Item N); performance of heat treatment not in accordance with Criterion IX of 10 CFR 50, Appendix B, and Section J-2 of the QA Manual (Enclosure, Item O); performance and review of heat treatment not in accordance with Criterion IX of 10 CFR 50, Appendix B, and Procedure H-3031 (Enclosure, Item P); failure to correctly control welding procedure selection and provide for ASME Code requirements relative to cold forming on Engineering drawing, not in accordance with Criterion V of 10 CFR 50, Appendix B, and Section P-1 of the QA Manual (Enclosure, Item Q).

Training (Qualification of Auditors) - no external (vendor) audits have been performed by auditors certified as being qualified, which is contrary to Criterion II of Appendix B to 10 CFR 50 (See Enclosure, Item R.); Audits (External) an active supplier of heat treatment services has not been audited within the required frequency, which is contrary to Criterion XVIII of Appendix B to 10 CFR 50 (See Enclosure, Item S.), and documentation

of external audits is not consistent with the QA Program requirements, which is contrary to Criterion XVIII of Appendix B to 10 CFR 50 (See Enclosure, Item T.); Control of Nonconformances - nonconforming parts were not identified as being nonconforming, which is contrary to Criterion XV of Appendix B to 10 CFR 50 (See Enclosure, Item U.) and documentation pertaining to nonconformances is not consistent with the QA Program requirements, which is contrary to Criterion XV of Appendix B to 10 CFR 50 (See Enclosure, Item V.1. and V.2.); Corrective Action - Nonconforming parts were not withheld from further processing with corrective action reports being issued, which is contrary to Criterion XVI of Appendix B to 10 CFR 50, and follow-up has not been performed on open corrective action reports thus causes of the nonconformances have not been determined which is contrary to Criterion XVI of Appendix B to 10 CFR 50 (See Enclosure, Item W.1. and W.2.) Procurement Document Control - purchase orders placed for welding materials did not contain the required notes as specified in the Welding Material Control procedure, which is contrary to Criterion IV of Appendix B to 10 CFR 50 (See Enclosure, Item X.), Weld Material Control - identification of welding electrodes has not been maintained, which is contrary to Criterion VIII of Appendix B to 10 CFR 50 (See Enclosure, Item Y.).

DETAIL SECTION I

(Prepared by H. W. Roberds)

A. Persons Contacted

L. Katz, Director of Quality Assurance
H. W. Zitzelsberger, Assistant Director of Quality Assurance
J. Cronise, Manager, Nondestructive Examination
S. Lou, Inspector, T Shop
G. Bevoinis, Inspector, T Shop
T. Maggio, NDE Level II

B. Action on Previous Inspection Findings

1. (Closed) Deviation (Inspection Report No. 78-01, Item 1 of Enclosure): NDE report was not attached to the QC copy of spool drawing for the dye penetrant inspection performed on certain weld joints and the ZQT form did not indicate acceptance of the radiographic operation.

   The inspector verified from Tubeco records that two (2) training sessions had been provided for the bay inspectors on March 27, 1978, and March 30, 1978.

   In the process of verifying effectiveness of the corrective action commitments three (3) additional deviations from requirements were identified. (See Enclosure, Item A. B. and C.)

2. (Closed) Deviation (Inspection Report No. 78-01, Item 2 of Enclosure): The Bay Inspector had indicated acceptance of an operation although the Authorized Inspector had not initialed the appropriate AI Hold Point.

   The inspector verified from Tubeco records that two (2) training sessions had been provided for the bay inspectors and a review of twelve (12) Tubeco manufacturing record sheets, form ZQT, did not reveal a similar discrepancy.

3. (Closed) Deviation (Inspection Report No. 78-01, Item 3 of Enclosure): Work had proceeded beyond a mandatory AI hold point.

The inspector verified from Tubeco records that two (2) training sessions had been provided for the bay inspectors and that additional warning had been issued to production personnel relative to the importance of inspection hold points. A review of twelve (12) manufacturing record sheets, form ZQT did not reveal a similar discrepancy.

4. (Closed) Deviation (Inspection Report No. 78-01, Item 4 of Enclosure) The Tubeco manufacturing record sheet, form ZQT did not provide space for the Inspector to initial and date those activities which he witnessed.

   The inspector verified that the traveler, form ZQT, was revised on January 31, 1978, to include space for the date for the inspector to record the date for those operations that he witnesses and the revised traveler, form ZQT, was attached to the twelve (12) job packets reviewed.

5. (Closed) Deviation (Inspection Report No. 78-01, Item 5 of Enclosure): A documentation checklist had not been initialed to indicate the final documentation to be collected per code and contract.

   The inspector verified that paragraph S-1-3 of the QA Manual had been revised to permit review and acceptance of a customer furnished documentation checklist and that the checklist that were currently in use had been reviewed and accepted by the Chief Quality Engineer.

6. (Closed) Deviation (Inspection Report No. 78-01, Item 6 of Enclosure): It could not be verified that measurements were taken, after bending operations, to assure compliance with the quality requirements of the ASME code relative to ovality.

   The inspector verified that the traveler had been revised to include space for the recording of pipe ovality after bending operations and a review of three (3) bending operations indicated that measurements had been taken and the ovality recorded on the traveler.

7. (Closed) Deviation (Inspection Report No. 78-01, Item 7 of Enclosure): Tubeco had not established a written practice for control and administration of NDT personnel.

   The inspector verified that a procedure T-505.1, Qualification of Nondestructive Examination Personnel, dated December 4, 1978, had been developed which outlined the control and administration of NDT personnel as required by ASME Code and SNT-TC-1A.

8. (Closed) Deviation (Inspection Report No. 78-01, Item 8 of Enclosure): Tubeco had not certified Level III Nondestructive Examination Personnel by examination for technical compentency and the procedure used for examination was not described in a written practice.

   The inspector verified that the Nondestructive Examination Level III services are contracted from the Hartford Steam Boiler Inspection and Insurance Company and Tubeco procedure T-505.1 describes the written practice for qualification of Level III personnel.

9. (Closed) Deviation (Inspection Report No. 78-01, Item 22 of Enclosure): Certain internal audits were not performed within the specified frequency.

   The inspector verified from Tubeco records, that the internal audits identified in the response letter, dated February 3, 1978, had been completed as scheduled in January and February, 1978.

10. (Closed) Deviation (Inspection Report No. 78-01, Item 23 of Enclosure): Certain vendors were not audited within the specified frequency.

    The inspector verified that the audit reports for Bonney Forge, Ladish Co., and Viking Machine were completed and the approved vendor list was updated by March 3, 1978.

11. (Closed) Deviation (Inspection Report No. 78-01, Item 24 of Enclosure): The vendor audit form T-3A, that is referenced in the manual was not used instead a modified report was utilized which did not contain the required information.

    The inspector verified that the Quality Assurance Manual had been revised to permit the use of alternate check list forms suitable to the type of facility being audited.

12. (Closed) Deviation (Inspection Report No. 78-01, Item 25 of Enclosure): The committed corrective action, relative to the issuance of a nonconformance report, was not accomplished.

    The inspector verified from Tubeco records that a meeting was held with fitters assigned to nuclear work and a nonconformance report was written.

13. (Closed) Deviation (Inspection Report No. 78-01, Item 26 of Enclosure): A procedure relative to design control had not been established.

    The inspector verified that the Engineering Department has developed a procedure, "Nuclear Project Engineering Procedure" dated May, 1978.

14. (Closed) Deviation (Inspection Report No. 78-01, Item 27 of Enclosure): Measures had not been established to prevent the use of incorrect or defective materials, parts, and components.

    The inspector verified that measures have been established to control the use of incorrect materials by instituting the review and acceptance by QA prior to issuance to the shop.

C. Exit Meeting

1. A post inspection exit meeting was held on February 16, 1979, at the Tubeco facility in Brooklyn, New York, and the results of the inspection were discussed with the following management representatives.

   R. Franzini, Executive Vice President
   L. Katz, Director, Quality Assurance
   H. W. Zitzelsberger, Assistant Director, Quality Assurance
   L. Webber, Chief Engineer
   J. Cronise, Manager, Nondestructive Examination
   A. Green, Vice President Purchasing
   J. Jaworski, Production Control & Plant Engineering Manager
   J. Carleo, Shop Superintendent
   J. Deniega, Welding Engineer

2. The inspectors summarized the scope and findings of the inspection and expressed particular concerns for those instances where corrective action commitments had not been implemented and for those findings of a similar nature to those previously reported.

3. The inspectors reiterated, in detail, the three (3) parts required in the response letter, relative to the findings.

4. The inspector informed the management representatives present that the enforcement action was being elevated to the Regional Directors level.

5. The management representatives informed the inspectors that Tubeco had received renewal of the Certificate of Authorization for NA number 2276 and NPT number 1282, from ASME with an effective date of February 2, 1979, and expiration date of January 5, 1982.

DETAILS SECTION II

(Prepared by I. Barnes)

A. Persons Contacted

L. Katz, Director of Quality Assurance
H. W. Zitzelberger, Assistant Director of Quality Assurance
L. A. Webber, Manager, Engineering
L. Barnett, Project Engineer
S. Carl, QA Supervisor
J. Deniega, Welding Engineer
J. Kahn, Welding Technician/Calibration Clerk

B. Action on Previous Inspection Findings

1. (Closed) Deviation (Item 9, Enclosure, Report No. 78-01): Release of a certain submerged arc wire and flux combination for production use without performance of the required tests.

   The inspector verified that a warning record was on file relative to documentation control and that a Certified Material Test Report did exist for the cited combination. It was also established that a review had been performed on test records for existing welding materials.

2. (Closed) Deviation (Item 10, Enclosure, Report No. 78-01): Measures not established with respect to procurement and testing of welding materials to assure compliance with the requirements of the ASME Section III Code.

   This finding has been closed on the basis that committed warning of personnel and testing of referenced welding materials (with the exception of MTN 7K 9860A, which had been determined to be of non-nuclear application only) had been performed. The failure to provide basic measures to assure compliance with ASME Section III requirements is reflected in the following deviation from corrective action commitments:

   The Tubeco Inc. (TC) corrective action response letter dated March 30, 1978, states in part with respect to Enclosure, Item No. 10 in Inspection Report No. 78-01, " . . . Procedure W-602 (Welding Material Control) will be revised to include all requirements of NB/NC-2400 . . . ."

Contrary to the above, Procedure W-602 was not revised to include all requirements of NB/NC-2400, in that:

a. Paragraph 8.3 required review of test report properties relative to the specific ASME Specification and not Section III. In particular, no acknowledgement or recognition was made of the fact that Charpy-V impact test acceptance criteria differ between Section III and Section II.C. welding material specifications. This statement is based on the fact that a minimum lateral expansion value appropriate to the TC fabrication thickness range had not been included as a requirement in the procedure.

b. The 5% minimum delta ferrite requirement of NB-2400 for austenitic stainless steel welds was not included in the procedure.

c. No definition was made by the procedure of cooling rate of qualification samples from the postweld heat treatment range, which would be required to assure compliance with the Section III general test requirement for cooling rates to be of the same order as that applicable to component weld material.

It was additionally noted by the inspector, that postweld heat treatment time for qualifications was not defined other than as 80% of anticipated maximum time at temperature. The anticipated maximum time at temperature in component fabrication was not defined by the procedure. (See Enclosure, Item D.)

3. (Closed) Deviation (Item 11, Enclosure, Report No. 78-01): Measures not established with respect to control of performance and documentation of weld repairs in accordance with the requirements of the ASME Code.

The inspector verified that the TC QA program (Section P-1 of the QA Manual and referenced procedure G-101) had been revised to provide a vehicle for control of performance and documentation of weld repairs.

During this inspection, however, a failure to comply with the QA program requirements relative to performance of weld repairs was identified, which is described in Item E of Enclosure.

4. (Closed) Deviation (Item 12, Enclosure, Report No. 78-01): This finding has been closed on the basis that committed actions relative to QA Manual and traveler revisions had been accomplished. The failure to write a procedure dealing with nameplates, welding

procedure selection and documentation is reflected in a further deviation from corrective action commitments, which is described in Item F of the Enclosure.

5. (Closed) Deviation (Item 13, Enclosure, Report No. 78-01): Failure of bay inspector to verify correct fit-up of Weld J, Job No. 502401, Drawing No. 1173.

   The inspector verified that the committed Nonconformance Report had been processed and that the training sessions for bay inspectors had been conducted. Sampling of in-process travelers revealed no additional instances of failure to document fit-up inspections.

6. (Open) Deviation (Item 14, Enclosure, Report No. 78-01): Failure of bay inspector to verify that welding procedure specified by drawing (Weld J, Job No. 502401, Drawing 1173) had been used, in that a different process and procedure to that specified was used.

   The inspector verified that committed training sessions for production department and inspection personnel had been performed. The inspector was unable, however, to verify that a training session had been conducted in the engineering department relative to issuance of procedures and instructions, in that no records could be located that showed a meeting (with attendance) had been held. It should be noted that a letter was in existence describing the agenda for the meeting and the date the meeting was to be held.

   During this inspection, the inspector identified a repeat deviation from commitments and two (2) additional deviations, which are described as follows:

   a. Weld C in Job No. 312261, Drawings A459 and A444, was specified by the drawings to be made using welding procedure specification (WPS) SMI-IB i.e., shielded metal arc process. The welds were actually made by the submerged arc process using WPS SAI-IB and were so entered on the QC traveler by the bay inspector. Investigation revealed that the Project Engineer had granted permission to use the submerged arc process by modifying the production department copy of the drawings, without similar modification of the QC copy. The QC copy, which contains the QA Manual specified traveler on the reverse side, serves as the control document and is the one presented to the Authorized Nuclear Inspector for review and selection of hold points. No record was made by the QC Inspector on the QC drawings or travelers to signify awareness that Engineering had permitted use of an alternate welding procedure. (See Enclosure, Item G.)

b. On examination of spool drawing A459 for Job No. 312261 with respect to the weld joint configuration for Weld C and the 1G position requirements of WPS SAI-IB, the inspector questioned the actual welding position utilized for submerged arc welding. The inspector was informed by the applicable welding foreman, that a squirt submerged arc welder had been used with a gun angle of $30^{\circ}$ - $40^{\circ}$ from the vertical position. This position constitutes a 2G (horizontal) welding position, as defined by Figure QW-461.1 in Section IX of the ASME Code, and was contrary to the 1G (flat) position required by the WPS. It was additionally noted by the inspector, that the welding operator utilized for the weld, had not been qualified for the 2G position, which is an essential variable requirement stipulated by QW-354 in Section IX of the ASME Code for the submerged arc process. (See Enclosure, Item H.)

c. Paragraph NC-2310 in the ASME Section III Code (through the Winter 1973 Addendum) states in part, " . . . The test requirements and acceptance standards shall be the same as specified in NB-2332 . . . ."

Paragraph NB-2364 in the ASME Section III Code states in part, ". . . On products which are welded with filler metal, one additional test with the specimens taken from the weld area shall also be made on each lot . . ."

Paragraph NB-2332 in the ASME Section III Code requires a minimum lateral expansion value of 25 mils in three (3) Charpy-V specimens, for nominal wall thickness of over 3/4 inch to 1½ inch, when tested at a temperature lower than or equal to the lowest service temperature.

Contrary to the above, 1.375 inch minimum wall SA 155 KCF 70 Class 1 pipe was accepted from a vendor with weld metal impact lateral expansion valves listed on the Certified Material Test Report as 18, 26 and 19 mils at a client specified test temperature of $40^{\circ}$F. (See Enclosure, Item I.)

7. (Closed) Deviation (Item 15, Enclosure, Report No. 78-01): Absence of criteria for control and documentation of attachment welding to assure compliance with the requirements of NB/NC-4435 in the ASME Section III Code.

This finding has been closed on the basis that committed revisions were made to the traveler to provide for identification of temporary attachment locations, welders and welding materials. The

failure to provide measures for assuring Code required use of identified temporary attachment materials and qualified welding procedures is reflected in the following deviation from corrective action commitments:

The TC corrective action response letter dated March 30, 1978, states in part with respect to Enclosure Item No. 15 in Inspection Report No. 78-01, " . . . The NQAM will be revised to provide criteria for control and documentation of attachment welds."

Contrary to the above,

a. Criteria was not provided to assure the use of attachment material that was identified and suitable for welding, as is required by paragraphs NB/NC-4435(b) in the ASME Section III Code. During this inspection, the inspector observed unidentified temporary attachment material welded to Job No. 206686, Drawing 30 (ASME Section III, Class 1).

b. Requirements were not imposed relative to definition and verification of use of qualified welding procedures, as is required by paragraphs NB/NC-4435(a) in the ASME Section III Code. (See Enclosure, Item J.)

8. (Closed) Deviation (Item 16, Enclosure, Report No. 78-01): Control of welding in accordance with written procedures not assured, in that the scope of monitoring activities had not been established to include all equipment in active use for welding nuclear components.

The inspector verified that Procedure C-224, Revision 0, had been written and implemented relative to monitoring of production welding.

9. (Closed) Deviation (Item 17, Enclosure, Report No. 78-01): Absence of specific QA instructions for calibration of a DC ammeter and Thermo-Temp devices used for monitoring and control of production welding, and use of a Thermo-Temp device with a past due calibration date.

The inspector established that a new device had been acquired for monitoring electrical parameters, which had been incorporated in the calibration program. Use of Thermo-Temp devices had been discontinued, as a result of inability to assure accurate calibration, and replaced with Tempil-Stiks for production control.

10. (Open) Deviation (Item 18, Enclosure, Report No. 78-01): Required two (2) tensile tests not performed on two (2) welding procedure qualifications.

The inspector established that an evaluation had been performed of procedure qualification status. The documentation of this evaluation was not specific, however, as to the scope of required additional testing of procedures to assure compliance with ASME Section IX. At the time of this inspection, the status of procedure qualifications was the same for the cited two (2) procedures as was identified in Inspection Report No. 78-01. This finding is reflected in a deviation from corrective action commitment, which is described in Item K of Enclosure. During this inspection, an additional deviation from commitments was identified, which is described in Item Q of the Enclosure.

11. (Closed) Deviation (Item 19, Enclosure, Report No. 78-01): Approved heat treat procedure for Job No. 502401 not entered in the procedure section of Drawing No. 3507.

    The inspector verified that committed instructions relative to specification of heat treat procedures on shop drawings had been issued by memo to drafting and project engineering personnel. Sampling of shop drawings for assemblies requiring postweld heat treatment revealed no additional instances of failure to specify required heat treat procedure.

12. (Open) Deviation (Item 20, Enclosure, Report No. 78-01): Monitoring of component accumulated postweld heat treatment time with respect to qualification times of applicable weld metal and welding procedures not being performed.

    The inspector established that a review had been performed of welding material documentation to assure testing of welding materials in the heat treated condition, where required. During this inspection, however, a deviation from corrective action commitments and a repeat deviation were identified, which are described, respectively, in Items L and M of the Enclosure.

13. (Open) Deviation (Item 21, Enclosure, Report No. 78-01): Failure to complete From ZRF for Job No. 502401, Drawing 3507, relative to placement of thermocouples on the load required by Procedure 505, acceptance of the heat treatment chart for this drawing by QA with a heating rate in excess of that permitted by Procedure 505 and the ASME Code.

    The inspector verified that approval had been received from the client for the use of Procedure H-303.1 to supercede Procedure 505. It was pointed out to the Director of Quality Assurance at this time, that Procedure 505 was correct for the contract in question, relative to starting temperature at which Code rules apply for determination of maximum heating rate. Only acceptance

by the client of a procedure invoking more liberal later Code requirements made the observed discrepancy with respect to heating rate acceptable.

During this inspection, the inspector identified a deviation from corrective action commitments and a repeat deviation from commitments, which are described respectively, in Item N and Item P of Enclosure. An additional deviation from commitments was also identified, which is described as follows:

In the TC corrective action response letter dated July 11, 1978, the following statement was made relative to Item 21 of Enclosure in Inspection Report No. 78-01, "Paragraph NB-4622.1 permits heat treatment in surveyed and calibrated furnaces. The surveys of the Tubeco furnace are performed following the calibration of the thermocouples and instruments and have consistently indicated a uniformity throughout the load and at a temperature varying by less than 1% from the temperature at the fixed locations of the recording and controlling thermocouples . . . ."

On request from the inspector to review this survey data, a response was given that TC no longer considered the scope of survey data to be adequate relative to verification of furnace uniformity. It was additionally pointed out to the inspector that a different type of refractory lining was now used and control thermocouples were no longer placed at fixed locations. Examination of the furnace, heat treat documentation and system currently used for temperature measurement revealed the following deviation from commitment:

Paragraph J-2-5A in Section J-2 of the QA Manual requires heat treatments to be performed in either a furnace surveyed and certified for uniformity, or by placing thermocouples in direct contact with the material being treated.

Paragraphs NB/NC-4622.1 in the ASME Section III Code permit use of temperature surveyed and calibrated furnaces, or performance of postweld heat treatment with thermocouples in contact with the material or attached to blocks in contact with the material.

Contrary to the above, the inspector observed the following with respect to current TC postweld heat treatment practice:

a. Control thermocouples are attached to pipe sections filled with refractory.

b. The control thermocouples are located at mid-width position in the furnace and not in contact with the Section III material being heat treated.

c. Survey records were not made available to the inspector to demonstrate adequate furnace uniformity. (See Enclosure, Item O.)

DETAILS SECTION III

(Prepared by L. E. Ellershaw)

A. Persons Contacted

J. Cronise, Manager, Nondestructive Examination
L. Katz, Director, Quality Assurance
P. Toyos, Foreman
B. L. Warshaw, Buyer
H. W. Zitzelsberger, Assistant Director, Quality Assurance

B. Training (Qualification of Auditors)

1. Objectives

The objectives of this area of the inspection were to verify that Tubeco had implemented the requirements for the qualification of auditors in accordance with the QA Manual and applicable NRC and ASME Code requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of QA Manual Section G-1, "Vendor Evaluation," dated December 18, 1978,

b. Review of Procedure No. G-115.0, "Vendor Audits," dated May 18, 1978,

c. Review of Procedure No. G-103.0, "Qualification of Auditors," dated January 19, 1977,

d. Review of record files established for those auditors performing external (vendor) audits,

e. Review of audit records relative to ten (10) vendors listed on the current Approved Vendor List (AVL),

f. Discussions with cognizant personnel.

3. Findings

a. Deviation From Commitments

See Enclosure, Item R.

It was found that no external (vendor) audits had been performed by auditors qualified in accordance with Procedure G-103.0, which has been in existence for two (2) years. The records show that four (4) auditors were subsequently certified as being qualified, in that the records contain Auditor Certifications, Auditor's Qualification Record Charts, and Audit Qualification Examinations, all dated February 8, 1979. It would appear that a regular review, regarding the status and adequacy of this part of the quality assurance program, had not occurred.

b. Unresolved Item

None.

C. Audits (External)

1. Objectives

The objectives of this area of the inspection were to verify that Tubeco had implemented the requirements for auditing subcontractors in accordance with the QA Manual and applicable NRC and ASME Code requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of QA Manual Section G-1, "Vendor Evaluation," dated December 18, 1978,

b. Review of Procedure G-115.0, "Vendor Audits," dated May 18, 1978,

c. Review of current Approved Vendor List (AVL), dated February 5, 1979,

d. Review of Vendor Files of ten (10) vendors and the audit records applicable to each,

e. Discussions with cognizant personnel.

3. Findings

a. Deviation From Commitments

(1) See Enclosure, Item S.

It was further noted that NDE Engineering Company, a supplier providing nondestructive examination services, was last audited on May 11, 1978, and the AVL shows this supplier to be valid until August 11, 1979, which is in excess of the annual requirements.

(2) See Enclosure, Item T.

Procedure G-115, paragraph 4-115.0.A. states in part, "On receipt of the (vendor's) manual, it shall be evaluated . . . using Audit Check List form ZQW (to evaluate against requirements of evaluation . . . shall be summarized on form ZAH (Checklist for Review of Vendor's QA Manual). In using form ZQW, the auditor shall indicate adequate coverage by a check in the 'yes' column, inadequate . . . by a check in the 'no' column, and inapplicability . . . in the 'N/A' column. The auditor shall also request an audit of conformance to specific commitments by placing a check in the 'V' (verification) column. On acceptance of the manual, an audit shall be performed . . . using form ZQW . . . On acceptance of a vendor, a Tubeco Vendor Evaluation Form (ZQV) shall be completed . . . ."

The inconsistencies regarding the use of the required forms, as noted in Item T of the Enclosure, are as follows:

(a) Audit Check List (ZQW);

1) Two vendor files did not contain form ZQW (NDE Engineering Company and Tube Forgings of America, Inc.).

2) Two vendor files contained form ZQW in which the auditor had not requested an audit of conformance to commitments in that no check marks were placed in the verification column. (Albert Pipe Supply Company and Ladish Company - Cudahy.)

3) Two vendor files contained ZQW's which did not reflect a review of vendor QA Manual against ASME NCA-3800, in that numerous Yes, No, and N/A columns were not checked off. (Southwestern Flange & Fitting Company and Taylor Forge - Memphis.)

It should be further noted that in the few cases where verification was required, the Remarks Column (used to indicate how the item was verified), in most cases, was blank.

(b) Checklist for review of Vendor's QA Manual (ZAH, which is a 26 page form);

Eight (8) vendor files did not contain ZAH, i.e., Albert Pipe Supply Company, Braddock Heat Treat Company, Carbon Steel Products Company et al.

One vendor file contained ZAH with just page 1 of 26 completed (Tube Forgings of America, Inc.).

(c) Checklist for Review of Vendor's QA Manual (ZAI, an attachment to Procedure G-115, but not addressed by either the Procedure or the QA Manual);

Three (3) of the ten (10) vendor files contained ZAI, two (2) of which did not reflect acceptance or inadequate coverage regarding the vendor's QA Manual, while the third ZAI did not reflect acceptance, inadequate coverage, or not applicable. (Ladish Company - Cudahy, NDE Engineering Company, and Taylor Forge - Memphis).

(d) Vendor Evaluation Summary (ZQV); Three vendor files contained ZQV's which were not completed relative to Tubeco's acceptance of a vendor's QA Manual. (NDE Engineering Company, Tube Forgings of America, Inc., and Bonney Forge).

The inspector expressed concerns regarding the above, in that it could not be ascertained whether or not audits had been performed in some cases, due to the lack of completed documentation and missing forms.

b. Unresolved Item

None.

D. Control of Nonconformances

1. Objectives

The objectives of this area of the inspection were to verify that Tubeco had implemented the requirements for the control of nonconformances in accordance with the QA Manual and applicable NRC and ASME Code requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of QA Manual Sections Q-1, "Nonconformances", and R-1, "Material Review Board" but listed in the QA Manual Index as "Corrective Action", both dated December 18, 1978.

b. Review of Procedure G-102.1, "Deficiency Report", dated January 6, 1978.

c. Review of Procedure G-107.0, "Nonconformance Report", dated January 27, 1978.

d. Review of Procedure G-109.0, "Corrective Action", dated January 27, 1978.

e. Review of six (6) closed and two (2) open nonconformance reports (NCR).

f. Review the deficiency reports (DR) associated with the above NCRs.

g. Observation of nonconforming material to assure that material is identified as nonconforming.

h. Discussions with cognizant personnel.

3. Findings

a. Deviation From Commitment

(1) See Enclosure, Item U.

(2) See Enclosure, Item V.1. and V.2.

In addition to the QA Manual requirements as noted in the Enclosure, Procedure G-102.1, paragraph 2.1.3 states, "Each applicable blank (of the DR) shall be filled. Place a N/A if the blank does not require any information." Paragraph 2.2.10 states in part, "Upon completion of the required action to correct the deficiency, the QC Inspector shall attach the DR to the QC copy of the drawing . . . ."

Procedure G-107.0 paragraph 2.1 states in part, "The Chief Quality Engineer . . . shall be responsible in . . . completing the nonconformance report." Paragraph 3.2 states, "If the item described in the DR violates the purchase order, specification, or the code, then the DR becomes a nonconformance."

Paragraph 3.7 states in part, ". . . If welding and/or NDE is required then the CQE (Chief Quality Engineer) shall outline the steps for resolution using form ZQO (repair traveler) and present it to the Authorized Inspector for indicating any hold points." Paragraph 3.11 states, "Form ZQO shall be a permanent part of the traveler." Paragraph 3.12 states, "The CQE shall review the documentation and indicate acceptance by signing or initialing and dating the NCR." Paragraph 3.13 states, "The AI shall then review and indicate his acceptance in the same manner."

The inconsistencies regarding the control of nonconformances as noted in Item V.1 of the Enclosure, are as follows:

a) Three DRs were not completed in that the "Issue Hold Tag to Inspector" block was not completed (DRs dated December 19, 1978, January 15, and February 5, 1979).

b) The "Action Verified", "Is this a Nonconformance", and "Nonconformance No." blocks were not completed on DR dated February 5, 1979.

c) The "Final QA Acceptance" blocks were not completed on NCR's 216 and 221, and the "ANI Review " block was not completed on NCR 221.

d) DRs applicable to NCRs 213, 217, 218 and 219, were not attached to QC's copy of the drawing, nor could they be located during this inspection.

e) NCRs 214, 216, and 218, were not recorded in the comments section of the respective travelers.

f) Form ZQO (repair traveler) was not initiated for those repairs required by NCRs 214 and 216.

b. Unresolved Item

None.

E. Corrective Action

1. Objectives

The objectives of this area of the inspection were to verify that Tubeco had implemented the requirements for correcting conditions adverse to quality in accordance with the QA Manual and applicable NRC and ASME Code requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of QA Manual Section R-1, "Material Review Board", but listed in the Index as "Corrective Action", dated December 18, 1978.

b. Review of Procedure G-109.0, "Corrective Action", dated January 27, 1978.

c. Review of QA Manual Section Q-1, "Nonconformances", dated December 18, 1978.

d. Review Nonconformance Report and Corrective Action Logs.

e. Discussions with cognizant personnel.

3. Findings

(1) See Enclosure, Item W.1.

(2) See Enclosure, Item W.2.

CAR No. 7 was written because an Authorized Nuclear Inspector Hold Point was by-passed, an ASME Code violation. The CAR requested corrective action and the cause of the nonconformance. It was addressed to a foreman and an inspector. Subsequently, the inspector responded and the foreman had not. Thus the cause had not been determined and follow-up by the DQA and/or CQE had not occurred in an attempt to obtain the cause.

b. Unresolved Item

None.

F. Procurement Document Control

1. Objectives

The objectives of this area of the inspection were to verify that Tubeco had implemented the requirements for the control of procurement documents in accordance with the QA Manual and applicable NRC and ASME Code requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of QA Manual, Section D-1, "Procurement Control", dated December 18, 1978.

b. Review of Procedure G-113.0, "Purchase Orders", dated April 20, 1978.

c. Review of Procedure W-602.1, "Welding Material Control", dated April 28, 1978.

d. Review of Purchase Orders placed with weld material suppliers.

e. Discussions with cognizant personnel.

3. Findings

a. Deviation From Commitment

See Enclosure, Item X.

b. Unresolved Item

None.

G. Welding Material Control

1. Objectives

The objectives of this area of the inspection were to verify that Tubeco had implemented the requirements for the control of welding material in accordnace with the QA Manual and applicable NRC and ASME Code requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of QA Manual Section J-1, "Welding Control", dated December 18, 1978.

b. Review of Procedure W-600, "Requisition and Distribution of Welding Material", dated November 1, 1976.

c. Review of Procedure W-602.1, "Welding Materials Control", dated April 28, 1978.

d. Review of Weld Material Requisitions, Form ZRW.

e. Observation of weld material storage ovens and the weld material stored within.

f. Review of weld material certifications and the cross reference between Tubeco's Material Traceability Number System and the actual heat/lot numbers of the weld material.

g. Observation of storage areas for weld material.

h. Discussions with cognizant personnel.

3. Findings

a. Deviation From Commitment

See Enclosure, Item Y.

b. Unresolved Item

None.

TUBECO, INC.
Docket Number 99900216

Items of deviations identified during the period from October 1977 through February 1979 of 10 CFR 50, Appendix B, and applicable Codes and Standards.

| REQUIREMENT | INSPECTION DATES ON WHICH ITEMS OF DEVIATIONS WERE IDENTIFIED |
|---|---|
| 1. Nuclear Quality Assurance Manual, paragraph T-1-1: All aspects of the QA program not audited as required. | October 11-14, 1977 |
| 2. Nuclear Quality Assurance Manual, paragraph G-2-4: Certain vendors were not audited at the specified frequency. | October 11-14, 1977 |
| 3. Nuclear Quality Assurance Manual, paragraph D-1-2e: Materials purchased from vendors that were not approved by Chief Quality Engineer. | October 11-14, 1977 |
| 4. Nuclear Quality Assurance Manual, paragraph M-1-3-C.3: Calibration records did not have traceability to National Standards. | October 11-14, 1977 |
| 5. Nuclear Quality Assurance Manual, paragraph Q-1-3.6: Nonconforming items not identified with "Rejected" tags. | October 11-14, 1977 |
| 6. Procedure G-102, paragraph 2.2.9: Deficiency Reports were not signed by the department foreman. | October 11-14, 1977 |
| 7. 10 CFR 50, Appendix B, Criterion V, and QA Manual, paragraph P-1-4: NDE report not attached to the QC copy of the spool drawing and radiographic operation not signed off, as required. | January 10-13, 1978 |
| 8. 10 CFR 50, Appendix B, Criterion V, and QA Manual, paragraph P-1-4: The Authorized Inspector had not initialed the appropriate AI hold point on ZQT form. | January 10-13, 1978 |
| 9. 10 CFR 50, Appendix B, Criterion X, and Procedure G-101, paragraph 2.6.2: Work had proceeded beyond a mandatory AI hold point. | January 10-13, 1978 |

| REQUIREMENT | INSPECTION DATES ON WHICH ITEMS OF DEVIATIONS WERE IDENTIFIED |
|---|---|
| 10. 10 CFR 50, Appendix B, Criterion XVII, and Section III of ASME Code, paragraph NCA-4134.9: Traveler form ZQT did not provide a space for the inspector to record the date for those activities which he witnessed. | January 10-13, 1978 |
| 11. 10 CFR 50, Appendix B, Criterion XVII, and QA Manual, paragraph S-1-3; A documentation checklist had not been drawn up to indicate the documentation to be collected per code and contract. | January 10-13, 1978 |
| 12. 10 CFR 50, Appendix B, Criterion X, and Section III of ASME Code, paragraphs NB/NC/ND-4223.2: Measurements were not taken after bending operations to assure Ovality requirements of the ASME Code. | January 10-13, 1978 |
| 13. 10 CFR 50, Appendix B, Criterion V, and SNT-TC-1A, paragraph 5.1: The employer had not established a written practice for control and administration of NDE personnel. | January 10-13, 1978 |
| 14. 10 CFR 50, Appendix B, Criterion IX, and Section III of ASME Code, paragraph NB-5521(a)(1): Tubeco had not certified Level III NDE personnel by examination. | January 10-13, 1978 |
| 15. 10 CFR 50, Appendix B, Criterion IX, and Section III of ASME Code, paragraph NB-4125: Additional test required for a submerged arc wire and flux combination were not performed. | January 10-13, 1978 |
| 16. 10 CFR 50, Appendix B, Criterion IV, and Section III of ASME Code, paragraph NB/NC-4125: Measures were not established to assure that welding materials were controlled as required. | January 10-13, 1978 |
| 17. 10 CFR 50, Appendix B, Criterion IX, Section III of ASME Code, paragraph NB-4453.2, and QA Manual, paragraph P-1-6a: Measures were not established to assure control of weld repairs. | January 10-13, 1978 |

| REQUIREMENT | INSPECTION DATES ON WHICH ITEMS OF DEVIATIONS WERE IDENTIFIED |
|---|---|
| 18. 10 CFR 50, Appendix B, Criterion V, and QA Manual, paragraph P-1-2.a(1): Attachment welds of name plates were not identified on the spool drawing. | January 10-13, 1978 |
| 19. 10 CFR 50, Appendix B, Criterion V, and QA Manual, paragraph J-3-2.c.: Acceptable fit-up of certain welds were not signified on form ZQT. | January 10-13, 1978 |
| 20. 10 CFR 50, Appendix B, Criterion V, and QA Manual, paragraph P-1-6-b.: The bay inspector did not verify that the procedure specified was used for a root weld. | January 10-13, 1978 |
| 21. 10 CFR 50, Appendix B, Criterion IX, and Section III of ASME code, paragraph NB/NC-4435: Temporary attachment welds were not identified or documented, as required. | January 10-13, 1978 |
| 22. 10 CFR 50, Appendix B, Criterion V, and QA Manual, paragraphs J-1-2.a and J-1-4.b,: The program as implemented did not assure control of welding in accordance with written procedures. | January 10-13, 1978 |
| 23. 10 CFR 50, Appendix B, Criterion XII, QA Manual, paragraph M-1-3.c., and Procedure T-200-7, paragraphs 3.2 and 3.9: Ammeters and thermo-temperature devices used to monitor certain welding parameters were not calibrated. | January 10-13, 1978 |
| 24. 10 CFR 50, Appendix B, Criterion IX, and Section IX ASME Code, paragraphs QW-202.1, QW-151.2, and QW-151.3: Measures were not established to assure conformance of certain weld procedures qualifications to the requirements of Section IX. | January 10-13, 1978 |
| 25. 10 CFR 50, Appendix B, Criterion V, and QA Manual, paragraph P-1-2.a.: The approved heat treat procedure was not reflected on the drawing, as required. | January 10-13, 1978 |

| REQUIREMENT | INSPECTION DATES ON WHICH ITEMS OF DEVIATIONS WERE IDENTIFIED |
|---|---|
| 26. 10 CFR 50, Appendix B, Criterion IX, and Section III, ASME Code, paragraphs NB/NC/ND-4333 and NB/NC-2431.1(c): Monitoring of component accumulated post-weld heat treatment with respect to the qualification time of the applicable weld procedure was not being performed, as required. | January 10-13, 1978 |
| 27. 10 CFR 50, Appendix B, Criterion V, QA Manual, paragraph J-2-3.b., and procedure 505, paragraph 2.0: Location of thermocouples was not indicated on form ZRF and the heating rate was in excess of that allowed by Section III of the ASME Code. | January 10-13, 1978 |
| 28. QA Manual, paragraph T-1-1 and Tubeco Corrective Action Response, dated November 23, 1977: Certain sections of the QA Manual were not audited, as required. | January 10-13, 1978 |
| 29. QA Manual, paragraph G-2-4: Certain vendors were not audited within the specified frequency. | January 10-13, 1978 |
| 30. QA Manual, paragraph T-3-4: A modified vendor audit report was utilized which did not comply with the requirements of the QA Manual. | January 10-13, 1978 |
| 31. Tubeco Corrective Action Response letter dated November 23, 1977: The committed corrective actions stated were not accomplished. | January 10-13, 1978 |
| 32. 10 CFR 50, Appendix B, Criterion III, and Section III, ASME Code, paragraph NCA-4134.3: Procedures had not been established relative to design control. | January 10-13, 1978 |
| 33. 10 CFR 50, Appendix B, Criterion V, and QA Manual, paragraph J-3-3b: The bay did not indicate acceptance of completed welds and the weld procedure or welder was not identified on the traveler. | February 12-16, 1979 |

| REQUIREMENT | INSPECTION DATES ON WHICH ITEMS OF DEVIATIONS WERE IDENTIFIED |
|---|---|
| 34. 10 CFR 50, Appendix B, Criterion X, and Section III, ASME Code, paragraphs NB-4440, NB-5250, and NA-4930: Records were not maintained of liquid penetrant examination of fillet welds attaching code plates. | February 12-16, 1979 |
| 35. 10 CFR 50, Appendix B, Criterion V, and procedure G-101, paragraph 2.8.1: Liquid penetrant examination reports of the results of examinations after removal temporary attachments welds were not attached to the traveler. | February 12-16, 1979 |
| 36. Tubeco Corrective Action response letter dated March 30, 1978: Procedure W-602 was not revised to include certain requirements of the ASME Code. | February 12-16, 1979 |
| 37. 10 CFR 50, Appendix B, Criterion V, and Procedure G-101, paragraphs 2.11.2, 2.11.3, and 2.11.4: Repair welds not documented as required. | February 12-16, 1979 |
| 38. Tubeco Corrective Action response letter dated July 11, 1978: A procedure dealing with name plates had not been written, as committed. | February 12-16, 1979 |
| 39. 10 CFR 50, Appendix B, Criterion V, and QA Manual, paragraph P-1-6B: The bay inspector did not verify the procedure that was specified was used for a welding operation. | February 12-16, 1979 |
| 40. 10 CFR 50, Appendix B, Criterion V, and Welding Procedure Specification SH1-1B: Welding was not accomplished in accordance with the procedure. | February 12-16, 1979 |
| 41. 10 CFR 50, Appendix B, Criterion VII, and Purchase Order 8E2584C: Class 1 welded pipe was accepted and did not meet ASME Code requirements for Charpy impact test. | February 12-16, 1979 |

| REQUIREMENT | INSPECTION DATES ON WHICH ITEMS OF DEVIATIONS WERE IDENTIFIED |
|---|---|
| 42. Tubeco Corrective Action response letter dated March 30, 1978: Nuclear Quality Assurance Manual was not revised to provide control and documentation of attachment welds. | February 12-16, 1979 |
| 43. Tubeco Corrective Action response letter dated March 30, 1978: Additional test for qualification of WPS not performed, WPS not requalified, as required. | February 12-16, 1979 |
| 44. 10 CFR 50, Appendix B, Criterion IX, and Section III of ASME Code, paragraph NB/NC/ND-4333: Monitoring of accumulated postweld heat treatment with respect to the qualification time of the applicable weld procedure was not being performed, as required. | February 12-16, 1979 |
| 45. Tubeco Corrective Action response letter dated March 30, 1978: Rate controllers were not set at 25°F less than the maximum code permissible rate. | February 12-16, 1979 |
| 46. 10 CFR 50, Appendix B, Criterion IX, and QA Manual, paragraph J-2-5A: Postweld heat treatment was not performed in accordance with QA program requirements. | February 12-16, 1979 |
| 47. 10 CFR 50, Appendix B, Criterion IX, and heat treat procedure H-303.1, paragraphs 4-303.1: Heating rates and cooling rates not in accordance with the procedure. | February 12-16, 1979 |
| 48. 10 CFR 50, Appendix B, Criterion V, and QA Manual, paragraph P-1-2A: Welding procedure had not been qualified in accordance with Sections III and IX of ASME Code and had not been approved by the client. | February 12-16, 1979 |
| 49. 10 CFR 50, Appendix B, Criterion II, and Procedure G-103.0, paragraphs 4.B.1, 4.c, and 4.E.2: External audits performed by personnel not qualified in accordance with the procedure. | February 12-16, 1979 |

| REQUIREMENT | INSPECTION DATES ON WHICH ITEMS OF DEVIATIONS WERE IDENTIFIED |
|---|---|
| 50. 10 CFR 50, Appendix B, Criterion XVIII, and QA Manual, paragraphs G-1-4 and G-1-6: Certain vendors were not audited within the specified frequency. | February 12-16, 1979 |
| 51. 10 CFR 50, Appendix B, Criterion XVIII, QA Manual, paragraph G-1-5 and Procedure G-115: Certain vendor files did not contain the required audit report forms and certain audit report forms were incomplete. | February 12-16, 1979 |
| 52. 10 CFR 50, Appendix B, Criterion XV, and QA Manual, paragraph Q-1-2.A: Nonconforming parts were not identified with an affixed tag, as required. | February 12-16, 1979 |
| 53. 10 CFR 50, Appendix B, Criterion XV, and QA Manual, paragraph Q-1-13: DRs and NCRs were incomplete and NCR not referenced on traveler. | February 12-16, 1979 |
| 54. 10 CFR 50, Appendix B, Criterion XVI, QA Manual, paragraph Q-1-2.B, and Procedure G-109.0, paragraph 2.0: Corrective Action Reports were not issued to allow further processing of nonconforming items. | February 12-16, 1979 |
| 55. 10 CFR 50, Appendix B, Criterion IV, and Procedure W-602.1, paragraphs 4, 4.2, and 4.4: Purchase Orders for weld filler materials did not reflect the requirements of the procedure. | February 12-16, 1979 |
| 56. 10 CFR 50, Appendix B, Criterion VIII, QA Manual, paragraph G-2-3-A.4, and Procedure W-602.1, paragraphs 5.1.2, 7.1, and 7.2: Incorrect identification of welding electrode recorded on documentation. | February 12-16, 1979 |

Items 36, 38, 42, 43, and 45 are deviations from corrective action commitments.

Items 27, 39, 44, and 47 are repeat deviations previously identified in inspection reports 77-01 and 78-01.

Items 29, 31, 35, 37, 50, and 51 are deviations similar in nature to those identified in inspection reports 77-01 and 78-01.