

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

Report No. 99900026/79-01

Program No. 51300

Company: SWEPCO Tube Corporation  
One Clifton Boulevard  
Clifton, New Jersey 07015

Inspection Conducted: April 24-27, 1979

Inspector: R. E. Oller 5/10/79  
R. E. Oller, Contractor Inspector, Vendor Date  
Inspection Branch

Approved by: D. M. Hunnicutt 5/11/79  
D. M. Hunnicutt, Chief, Components Section II, Date  
Vendor Inspection Branch

Summary

Inspection on April 24-27, 1979 (99900026/79-01)

Areas Inspected: Implementation of 10 CFR 50, Appendix B criteria, other NRC requirements, and applicable codes and standards including action on previous inspection findings; general review of vendor activities; and manufacture of SA-312 piping consisting of manufacturing process control, fitup and welding, weld heat treatment, ultrasonic examination and testing of completed products. The inspection involved twenty-seven (27) inspector-hours on site.

Results: In the seven (7) areas inspected, no unresolved items were identified and no deviations were identified in five (5) areas. The following were identified in the remaining areas.

Deviations: Fitup and Welding: Welding of SA-312, ASME Code Class 1 and 2, T-304 piping for 3 job orders, was not performed in full accordance with the specified WPS No. H-304-HN, Revision 4. Ultrasonic Examination: The eye examination records for five (5) SWEPCO NDE technicians were not certified by a physician as required by the QA Manual.

7908090 115

583 139

## Details Section

(Prepared by R. E. Oller)

A. Persons Contacted

- \*V. Battistuz, Manager of Technical Services
- W. Contrini, NDE Technician, Level III
- \*E. Dellavia, QA Manager
- B. Ficacci, Welding Operator
- \*V. Harris, Documentation Material Coordinator
- J. Konieczko, Welding Foreman
- E. Prince, NDE Technician, Level I
- \*A. Ridella, Executive Vice President
- \*J. Seme, Vice President of Engineering

\*Attended the exit meeting.

B. Action on Previous Inspection Findings

1. (Closed) Deviation (Report No. 99900026/77-02): Failure to provide procedure qualification records for WPS No. H-304-HN, Revision 3, which showed the assigned amperage of 240 for the top electrode and 120 for the bottom electrode. The inspector found that in accordance with SWEPCO's response letters dated September 23, 1977, and October 28, 1977, that the procedure was revised to include the amperage range of 160-220 for the 1G and 4G torch positions and the procedure qualification record was revised to show the procedure was qualified in accordance with the ASME Code Section IX. Review of the above WPS and other WPS showed they were approved by the QA Material Manager.
2. (Closed) Deviation (Report No. 99900026/77-02): Failure to include in heat treatment procedures No. MP-1002 and MP-2003, the QA Manual requirement that these procedures specify the manner of unloading the furnace. The inspector found the above procedures were revised in October, 1977, to include the manner of unloading the furnace. They were also stamped "Final Approved" by the QA Manager.
3. (Closed) Unresolved Item (Report No. 99900026/77-02): Failure to provide approval signatures on manufacturing and inspection procedures located at work stations. The inspector found that

all manufacturing and inspection procedures were recalled, reviewed, and final approved by the QA Manager.

C. General Review of Vendor's Activities

1. Objective

The objective of this area of the inspection was to assess the vendor's activities and their impact on future NRC inspections.

2. Method of Accomplishment

- a. Discussions with cognizant personnel.
- b. Review of a list of SWEPCO's customers to whom SA-312, ASME Code Section III, Class 1, 2, and 3 piping was supplied during 1978 and 1979.
- c. Review of a list of current job orders for SA-312 piping.
- d. Review of the QA Manual to verify that it included the QA Program elements necessary to assure final product conformance to the ASME Code Section III, Class 1, 2, and 3 for welded tubular products made both with and without filler metal.

3. Findings

a. Deviations From Commitments

None.

b. Unresolved Items

None.

c. Other Findings

- (1) The SWEPCO plant manufactures both piping and fittings, in austenitic stainless steel and other high alloys, welded with and without filler metal. The plant facilities can produce A-312 and SA-312 piping from 3 inch through 36 inch outside diameters with wall thicknesses in the range of 1/16 inch through 1/2 inch wall. The SA-358 piping can be manufactured in outside diameters of 3 inch through 48 inch with wall thicknesses of 1/16 inch through 2 inch for selected sizes.

- (2) The SWEPCO plant has an ASME "NPT" symbol authorization No. 1418 and an ASME "MM" (Material Manufacture) authorization.

D. SA-312 Piping - Manufacturing Process Control

1. Objectives

The objectives of this area of the inspection were to verify that the following items were controlled in accordance with applicable NRC and ASME Code requirements.

- a. A written system has been established to assure that manufacturing processes are controlled in accordance with applicable codes.
- b. Measures have been established and implemented to control the manufacturing processes by use of process sheets, travelers, checklists or procedures.
- c. The process sheets, travelers, checklists or shop procedures used included: the document numbers and revisions to which the processes, inspections or tests conformed; the results of completion of the specific operations; the signature, initials or stamp of the manufacturer's responsible representative and date are shown for operations completed.
- d. The equipment and facilities used for each operation are adequate and located in a manner to provide a continuous series of production and inspection operations which will preclude bypassing of required operations and inspections.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the QA Manual, Section 4, "Process Control."
- b. Observation of the following equipment and facilities used in manufacturing SA-312 piping, and discussions with cognizant personnel concerning the operations and inspections performed at the respective locations.
  - (1) The strip coil material straightener and cutoff equipment including sampling.

- (2) Weld edge beveling equipment.
  - (3) Press forming brakes.
  - (4) Automatic gas tungsten arc welding machines including both single torch and double torch machines.
  - (5) Pipe ring cutoff and etch to observe weld penetration, also, set-out of pipes for borescope examination of the inside diameter weld surface.
  - (6) Weld bead grinding.
  - (7) Heat treatment furnaces and water quench tanks.
  - (8) Pipe straightening equipment.
  - (9) Acid pickling and rinsing facilities.
  - (10) Final inspection area and facilities including hydrostatic testing, nondestructive examination, and marking.
- c. Review of the operations on the Travelers for Job. No. M-3333-9, for seven (7) pieces of pipe, to verify that required operations and inspections were identified to procedure and revision numbers. Also, that the completed travelers were initialed and dated.
  - d. Review of the completed Inspection Checklists applicable to inspection of completed operations shown on Job Traveler No. M-3333-9, to verify that inspection process control activity was being performed and documented.
  - e. Review of 12 standard operations manufacturing procedures and 15 standard operations inspection procedures, to verify they were reviewed and approved by the QA Manager and released for implementation.

### 3. Findings

Within this area of the inspection, no deviations or unresolved items were identified.

583 143

E. SA-312 Piping Fitup and Welding1. Objectives

The objectives of this area of the inspection were to verify that the following items were controlled in accordance with applicable NRC and ASME Code requirements.

- a. A written system has been established to assure that welding is performed and controlled in accordance with applicable codes and procedure specifications.
- b. The work is conducted in accordance with a process control document such as a traveler.
- c. Applicable qualified welding procedure specifications (WPS) and weld data sheets are used at the work stations.
- d. The requirements of essential variables and other applicable WPS parameters are complied with to produce weldments having the required properties.
- e. The welding is being performed by properly qualified personnel.
- f. The welding equipment is in good condition and calibrated, where required.
- g. The completed weld meets code requirements for nondestructive examination suitability, undercut, and other visual acceptance standards.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the QA Manual, Section 5, "Welding Quality Assurance."
- b. Review of welding procedure specification (WPS) No. H-304-HN, Revision 2, dated March 1969/Revision 3, dated October 1975. The procedure is used for automatic machine gas tungsten arc welding (GTAW) without filler metal of A-312, T-304, and T-316 piping. It provides for simultaneous welding from the outside and the inside in the 1G and 4G positions, respectively.

583 144

- c. Review of WPS No. H-304-HN, Revision 4, dated July 1978, used similarly to the above Revision 2/3 for welding of SA-312, T-304, and T-316 piping. Also, review of the supporting procedure qualification (PQR) dated July 1978, and the welding operator performance qualification dated March 1969, for the above Revision 2/3 of the subject WPS.
- d. Observation of welding of Job No. P-125-9, A-312, T-304, 8 inch O.D. X 0.109 inch wall pipe using WPS H-304-HN, Revision 4, and review of the welding parameter startup sheet "Welding Procedure and Job Record."
- e. Discussion with the welding foreman concerning the use of the procedure H-304-HN for GTAW without filler metal using both dual torch and single torch welding machines.
- f. Review of sixteen (16) different welding parameter startup sheets records called "Welding Procedure and Job Record," to verify that the welding of SA-312, T-304, and A-312, T-304 and T-316 piping was performed in accordance with the specified procedure WPS No. N-304-HN, Revision 4. This procedure involved automatic welding using simultaneous GTAW torches; one on the top outside 1G position and the other on the bottom inside 4G position. The 16 jobs were for different orders and involved the use of automatic welding machines Nos. 16, 18w, 44w, 56, and 74w.
- g. Review of nine (9) completed job documentation packages for SA-312, ASME Section III Code Class 1 and 2 piping, to verify that the travelers showed that the welding was performed in accordance with WPS H-304-HN, Revision 4.
- h. Observations of automatic welding machines.
- i. Discussions with cognizant personnel.

### 3. Findings

#### a. Deviations From Commitments

See Notice of Deviations, Item A.

#### b. Unresolved Items

None.

583 145

F. SA-312 Piping - Weld Heat Treatment1. Objectives

The objectives of this part of the inspection were to verify that the following were controlled in accordance with applicable NRC and ASME Code requirements.

- a. A written system has been established to assure that heat treatment of welds is performed and controlled in accordance with applicable codes.
- b. Documented procedures are available and are implemented, when required by welding procedure specifications to control postweld solution annealing heat treatment in accordance with ASME Code requirements.
- c. The weld heat treatments are suitably documented, where required.
- d. The heat treating equipment is calibrated where required.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the QA Manual, Section 8, "Heat Treating."
- b. Review of approved procedure MP 2003, Revision 1, dated October 1, 1977, "Manufacturing Procedure For Heat Treating."
- c. Observation of one heat treating furnace.
- d. Review of records of SA-312, ASME Code Class 2 Pipe for the following job orders including: Annealing Travelers; Heat Treatment Inspection Checklists and Furnace Time-Temperature Strip Charts, to verify that the postweld heat treatments and inspections of pipe welds were performed as required, and properly documented.

Job Number

- (1) M-3510-9
- (2) M-3472-9
- (3) M-3333-8

583 146



- e. Discussions with cognizant personnel.

3. Findings

Within this area of the inspection, no deviations or unresolved items were identified.

G. SA-312 Piping - Ultrasonic Examination

1. Objectives

The objectives of this area of the inspection were to verify that the following items were controlled in accordance with applicable NRC and ASME Code requirements.

- a. A written system has been established to assure that ultrasonic examination (UT) is performed in accordance with applicable codes.
- b. Final acceptance UT is performed in accordance with detailed written instructions or procedures which delineate requirements and acceptance standards.
- c. The UT procedures meet the requirements of the ASME Code.
- d. The UT is performed and the results interpreted by certified personnel.
- e. Test results are documented and evaluated to assure that the component or material examined contain no rejectable defects.
- f. Appropriate instruments are used, and the instruments are calibrated, where required.

2. Method of Accomplishment

- a. Review of the QA Manual, Section 6, "Non-Destructive Examination."
- b. Review of the four (4) ultrasonic examination procedures identified below, used in examination of the longitudinal welds in SA-312, ASME Code Classes 1 and 2 piping by SWEPCO for Class 2 piping and by their subcontractor for Class 1 piping, to determine if these procedures provided the following information and requirements in accordance with the ASME Code:

(1) Information and Requirements

- (a) The type of instrument and its frequency range, linearity and signal attenuation accuracy.
- (b) The extent of coverage (beam angles, surface scanning rate and direction) and the scanning technique.
- (c) The calibration requirements, including the calibration block type, size and material and location and size of UT reflectors.
- (d) The sizes and frequencies of search units.
- (e) The beam angles.
- (f) The method of compensation, such as a distance amplitude correction (DAC) curve or electronic DAC.
- (g) The reference reflectors for accomplishing transfer.
- (h) The reference level for monitoring discontinuities is defined and the scanning gain setting is specified.
- (i) The levels or limits for evaluation and recording of indications.
- (j) The method of recording significant indications and the reporting requirements.
- (k) The acceptance limits.

(2) Approved Procedures

- (a) UE-101, Revision 2, dated May 1976, "Procedure For Ultrasonic Examination Longitudinal Welds of Pipe and Pipe Fittings," and Addenda No. 1 dated August 2, 1977.
- (b) UE-102, Revision 0, dated June 1977, "Procedure For Ultrasonic Examination Longitudinal Welds of Pipe and Pipe Fittings."

(c) UE-103, Revision 0, dated May 1978, "Procedure For Ultrasonic Examination of Entire Volume of Pipe-Tube-Fittings."

(d) Spectrum Laboratories Inc., Ultrasonic Test Procedure No. QC-52A, dated July 6, 1976 (immersion technique).

- c. Observation of a demonstration of ultrasonic inspection by a SWEPCO Level I UT technician of the longitudinal weld in a 20" O.D X 0.375" wall, SA-312, ASME Code Class 2, T-304, pipe using procedure UE-101, Revision 2. Calibration was performed using a pipe ring reference standard notched in accordance with the procedure and the ASME Code.
- d. Review of Shop Travelers and Ultrasonic Inspection Reports for Job No. M-3617-9 and No. M-3333-8 for T-304, SA-312, ASME Code Class 2 piping, to verify that the ultrasonic examinations were identified and signed off on the travelers and properly documented in the reports.
- e. Review of the required records of training, qualification, certification, and eye examinations for SWEPCO's SNT-TC-1A, Level I, II, and III ultrasonic technicians, and for the subcontractor's (Spectrum Laboratories) personnel who performed 100% ultrasonic examination of piping, to verify that all of the personnel were trained, examined, and certified in accordance with the ASME Code.
- f. Discussions with cognizant personnel.

### 3. Findings

#### a. Deviations From Commitments

See Notice of Deviations, Item B.

#### b. Unresolved Items

None.

## H. SA-312 Piping - Testing of Completed Products

### 1. Objectives

583 149

The objectives of this area of the inspection were to verify that the following items were controlled in accordance with the applicable NRC and ASME Code requirements.

- a. A written system has been established to assure that final pressure tests are controlled in accordance with applicable procedures, specifications, and codes.
- b. Final pressure tests are performed in accordance with approved procedures.
- c. The results of test are documented and reviewed for acceptability.
- d. The test equipment is calibrated where required.
- e. The tests are performed by qualified personnel.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the QA Manual, Section 4, "Process Control."
- b. Review of the approved procedure No. MP 2006 dated November 1, 1978, "Manufacturing Procedure - Hydrostatic Testing."
- c. Review of records consisting of Job Travelers, Hydrostatic Test Reports and Hydrostatic Test Inspection Checklists for Job Numbers M-3523-9, M-3617-9, M-3472-9, M-3333-8, and M-3510-9, to verify that the hydrostatic tests were identified on the travelers and the test results were properly documented.
- d. Observations of the hydrostatic test equipment.
- e. Discussions with cognizant personnel.

3. Findings

Within this area of the inspection, no deviations or unresolved items were identified.

583 120

I. Exit Interview

1. The inspector met with management representatives denoted in paragraph A, at the conclusion of the inspection on April 27, 1979.
2. The following subjects were discussed:
  - a. Areas inspected.
  - b. Status of corrective and preventive action for the previously identified deviations and unresolved items.
  - c. Deviations identified during this inspection.
3. The manufacturer's representatives were asked to formulate their corrective action response to deviations in accordance with the three (3) conditions identified in the inspection report cover letter.
4. The manufacturer representative's questions related to clarification of the above items.