



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

May 3, 2019

Russell Lion  
Quality Assurance Director  
Tioga Pipe, Inc.  
100 Mort Drive  
Easton, PA 18040

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF  
TIOGA PIPE INC, NO. 99900879/2019-201

Dear Mr. Lion:

On March 25-29, 2019, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Tioga Pipe, Inc.'s (Tioga) facility in Easton, PA. This limited-scope routine inspection assessed Tioga's compliance with provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," and selected portions of Appendix B, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

This technically-focused inspection specifically evaluated Tioga's implementation of the quality activities associated with the supply of safety-related ferrous and non-ferrous material (e.g., pipes, fittings, flanges, bar, plates, etc.) for the U.S. operating nuclear power plants. The enclosed report presented the results of the inspection. This NRC inspection report does not constitute NRC endorsement of Tioga's overall quality assurance (QA) or 10 CFR Part 21 programs.

Based on the results of this inspection, the NRC inspection team found the implementation of your QA program met the applicable technical and regulatory requirements imposed on you by your customers or NRC licensees. No findings of significance were identified.

In accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding," of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, and its enclosure(s), will be made available electronically for public inspection in the NRC Public Document Room and from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions concerning this matter, please contact Mr. Thomas Herrity of my staff at (301) 415-2351.

Sincerely,

Kerri A. Kavanagh, Chief **/RA/**  
Quality Assurance Vendor Inspection Branch  
Division of Inspection and Regional Support  
Office of Nuclear Reactor Regulation

Docket No.: 99900879

EPID: I-2019-201-0023

Enclosure:  
Inspection Report No. 99900879/2019-201  
and Attachment

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF  
TIOGA PIPE INC., NO. 99900879/2019-201 Dated: May 3, 2019

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**U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
DIVISION OF INSPECTION AND REGIONAL SUPPORT  
VENDOR INSPECTION REPORT**

Docket No.: 99900879

Report No.: 99900879/2019-201

Vendor: Tioga Pipe, Inc.  
100 Mort Drive  
Easton, PA 18040

Vendor Contact: Mr. Russell Lion  
Email: rlion@tiogapipe.com  
Phone: (484) 546-5612

Nuclear Industry Activity: Tioga Pipe, Inc. (here after referred to as Tioga) is a Material Organization holding a Quality System Certificate from the American Society of Mechanical Engineers Boiler and Pressure Vessel Code. Tioga's scope of supply includes ferrous and non-ferrous material (e.g., pipes, fittings, flanges, bar, plates, etc.).

Inspection Dates: March 25-29, 2019

Inspectors: Yamir Diaz-Castillo NRR/DIRS/IQVB, Team Leader  
Thomas Herrity NRR/DIRS/IQVB  
Raju Patel NRR/DIRS/IQVB  
Dong Park NRR/DIRS/IQVB

Approved by: Kerri A. Kavanagh, Chief  
Quality Assurance Vendor Inspection Branch  
Division of Inspection and Regional Support  
Office of Nuclear Reactor Regulation

Enclosure

## EXECUTIVE SUMMARY

Tioga Pipe, Inc.  
99900879/2019-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at the Tioga Pipe, Inc.'s (hereafter referred to as Tioga) facility in Easton, PA, to verify that it had implemented an adequate quality assurance (QA) program that complies with the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," and 10 CFR Part 21, "Reporting of Defects and Noncompliance." In addition, the NRC inspection team verified that Tioga had implemented a program in accordance with the applicable requirements of Subsection NCA, "General Requirements for Division 1 and Division 2," of Section III, "Rules for Construction of Nuclear Facility Components," Subsection NB, "Class 1 Components," Subsection NC, "Class 2 Components," and Subsection ND, "Class 3 Components," of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, and the American Society for Nondestructive Testing, Inc.'s Recommended Practice No. SNT-TC-1A, "Personnel Qualification and Certification in Nondestructive Testing." This was the third inspection of Tioga at the Easton, PA facility.

This technically-focused inspection specifically evaluated Tioga's implementation of quality activities associated with the supply of safety-related ferrous and non-ferrous material (e.g., pipes, fittings, flanges, bar, plates, etc.) for the U.S. operating nuclear power plants.

The following regulations serve as the bases for the NRC inspection:

- Appendix B to 10 CFR Part 50
- 10 CFR Part 21

During this inspection, the NRC inspection team implemented inspection procedure (IP) 43002, "Routine Inspections of Nuclear Vendors," dated January 27, 2017; IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated January 27, 2017; and IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting of Defects and Noncompliance," dated February 13, 2012.

Specific activities observed by the NRC inspection team included:

- Final inspection of a 1/4-inch diameter nominal pipe size (NPS), schedule (Sch.) 80, seamless (SMLS) stainless steel (SS) pipe
- Brinell hardness test on a 3/8-inch thick plate
- Chemical analysis test on 3/8-inch thick plate
- Cut-off and transfer of material identification and traceability on a 1/2-inch NPS, Sch. 80, SMLS SS pipe
- Hydrostatic test on a 1/2-inch NPS, Sch. 80, SMLS SS pipe

- Material verification inspection of a 20-foot x 1-1/2-inch NPS, Sch. 80, SMLS SS pipe
- Flatness test on a 3-inch NPS, Sch. 160, SMLS SS pipe

With the exception of the minor issues described below, the NRC inspection team concluded that Tioga's QA policies and implementing procedures comply with the applicable requirements of Appendix B to 10 CFR Part 50 and 10 CFR Part 21, and that Tioga's personnel are implementing these policies and procedures effectively. The results of this inspection are summarized below.

#### 10 CFR Part 21

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the implementation of its 10 CFR Part 21 program to verify compliance with the requirements of 10 CFR Part 21. The NRC inspection team: (1) evaluated the 10 CFR Part 21 postings; (2) reviewed a sample of purchase orders (POs); (3) reviewed a 10 CFR Part 21 evaluation; and (4) verified that Tioga's nonconformance and corrective action programs provide a link to the 10 CFR Part 21 program.

No findings of significance were identified.

#### Commercial Grade Dedication and Utilization of Unqualified Source Material

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the implementation of its commercial-grade dedication (CGD) program to determine compliance with the requirements of Criterion III, "Design Control," Criterion IV, "Procurement Document Control," and Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. The NRC inspection team also reviewed Tioga's program for the utilization of unqualified source material to determine compliance with the requirements of Subparagraph NCA-4255.5, "Utilization of Unqualified Source Material," of Section III of the ASME B&PV Code. The NRC inspection team reviewed a sample of CGD packages to assess the different elements of the CGD program.

The NRC inspection team identified the following two minor issues associated with the implementation of Tioga's CGD program: (1) Tioga did not document the technical evaluation to identify the critical characteristics and the verification methods for two CGD packages; and (2) the conditions listed in Tioga's QA Manual and CGD implementing procedure do not match the conditions as written in the Nuclear Energy Institute document No. 14-05, "Guidelines for the Use of Accreditation in Lieu of Commercial Grade Surveys for Procurement of Laboratory Calibration and Test Services," Revision 1. Tioga initiated corrective action report (CAR) No. N-CAR-19-12 to address these issues.

No findings of significance were identified.

#### Supplier Oversight and Internal Audits

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the implementation of its supplier oversight and internal audits programs to verify compliance with the requirements of Criterion IV, Criterion VII, and Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. The NRC inspection team identified two minor issues associated with Tioga's oversight of their suppliers. Tioga's Approved Suppliers List (ASL) included seven certified

Material Organizations (MOs) who were restricted from supplying safety-related items but were approved because there were holders of ASME Certificates of Authorization or holders of a Quality System Certificate (QSC). Tioga stated that they were not performing the required implementation audits of these suppliers prior to November 2017. The NRC inspection team noted that since November 2017, Tioga has placed only two safety-related POs to one of the seven suppliers which has a QSC. The NRC inspection team determined this issue to be minor because Tioga had identified the issue, had performed 100% receipt inspection of the material and verified that it met the applicable technical requirements as imposed in the POs.

The NRC inspection team reviewed an audit of a commercial material supplier qualified as an MO by Tioga in accordance with the requirements of Subsection NCA-3842.2, "Evaluation of the Qualified Material Organization's Program by Certified Material Organizations of Certificate Holders," of Section III of the ASME B&PV Code. The audit failed to adequately verify that the material supplier had implemented an adequate 10 CFR Part 21 program as required by Tioga's QA program. The NRC inspection team also noted that the PO for this supplier adequately stated that 10 CFR Part 21 applies. The NRC inspection team determined this issue to be minor because the material supplier was adequately qualified as an MO and 10 CFR Part 21 was pass down to the supplier. Tioga initiated CAR No. N-CAR-19-13 to address these issues.

No findings of significance were identified.

#### Material Identification and Traceability

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the material identification and traceability program to verify compliance with the regulatory requirements of Criterion VIII, "Identification and Control of Material, Parts, and Components," of Appendix B to 10 CFR Part 50. The NRC inspection team performed a walk-down of the following areas at Tioga's facility: receipt and final inspection, fabrication and storage, measuring and test equipment (M&TE) storage, test laboratory, and the location where material with known nonconformances are held. The NRC inspection team confirmed that safety-related materials were adequately identified with Tioga's unique number traceable to Tioga's POs and vendor certification reports. The NRC inspection team also observed Tioga's operators appropriately transferred the material identification.

No findings of significance were identified.

#### Test Control

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the test control program to verify compliance with the requirements of Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50. The NRC inspection team witnessed testing activities associated with the utilization of unqualified source material process such as hardness, flatness, chemical analysis, and hydrostatic testing. The NRC inspection team also reviewed a sample of completed analysis and test reports and confirmed that the applicable customer's design and material specifications were adequately translated into job orders, and that the testing activities were performed in accordance with Tioga's test instructions by qualified test personnel using calibrated M&TE. The NRC inspection team also confirmed that the test results were independently verified by a Quality Control Inspector.

No findings of significance were identified.

### Control of Measuring and Test Equipment

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the control of M&TE program to verify compliance with the requirements of Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50.

The NRC inspection team observed that M&TE was calibrated, labeled, tagged, handled, stored, or otherwise controlled to indicate the calibration status and its traceability to nationally recognized standards. The NRC inspection team also confirmed that when an M&TE is found to be out of calibration, Tioga initiates a nonconformance report and performs an evaluation to determine the extent of condition.

No findings of significance were identified.

### Nonconformance and Corrective Actions

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the implementation of its nonconformance and corrective action program to determine compliance with the requirements of Criterion XV, "Nonconforming Materials, Parts or Components," and Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed a sample of items entered into Tioga's nonconformance and corrective action programs during calendar years 2018 and 2019.

No findings of significance were identified.



## REPORT DETAILS

### 1. 10 CFR Part 21

#### a. Inspection Scope

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the implementation of its Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," program to determine compliance with regulatory requirements. In addition, the NRC inspection team evaluated the 10 CFR Part 21 postings and a sample of Tioga's purchase orders (POs) for compliance with the requirements of Section 21.21, "Notification of Failure to Comply or Existence of a Defect and its Evaluation," and Section 21.31, "Procurement Documents." The NRC inspection team also evaluated whether Tioga's corrective action and nonconformance programs provide a link to the 10 CFR Part 21 program for evaluation and reportability, as applicable.

In addition, for a 10 CFR Part 21 evaluation performed by Tioga, the NRC inspection team verified that Tioga had effectively implemented the requirements for evaluating deviations and failures to comply.

The NRC inspection team discussed the 10 CFR Part 21 program with Tioga's management and staff. The attachment to this inspection report lists the documents reviewed, and staff interviewed by the NRC inspection team.

#### b. Observations and Findings

No findings of significance were identified.

#### c. Conclusion

The NRC inspection team concluded that Tioga established its 10 CFR Part 21 program in accordance with the regulatory requirements of 10 CFR Part 21. Based on the limited sample of documents reviewed, the NRC inspection team also determined that Tioga is effectively implementing its policies and procedures associated with the 10 CFR Part 21 program. No findings of significance were identified.

### 2. Commercial-Grade Dedication and Utilization of Unqualified Source Material

#### a. Inspection Scope:

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the implementation of its commercial-grade dedication (CGD) program to verify compliance with the requirements of Criterion III, "Design Control," Criterion IV, "Procurement Document Control," and Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. The NRC inspection team also reviewed Tioga's program for the utilization of unqualified source material to verify compliance with the requirements of Subparagraph NCA-4255.5, "Utilization of Unqualified Source Material," of Subsection NCA, "General Requirements for Division I and II," of Section III, "Rules for Construction of Nuclear Facility Components," of the

American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code.

The NRC inspection team reviewed a sample of CGD packages and commercial-grade surveys for different types of safety-related material and a CGD package for calibration services. The CGD packages contained such documents as the supplier's POs, CGD plans, quality assurance (QA) checklists, material verification reports, shop travelers, final inspection reports, and testing certificates, as applicable. The CGD packages included the technical evaluation for the identification and documentation of the basis and justification for the selection of the critical characteristics, acceptance methods, and acceptance criteria. The NRC inspection team evaluated the criteria for the identification of item functions, credible failure mechanisms/modes, selection of critical characteristics and acceptance criteria, and the identification of verification methods to verify effective implementation of Tioga's CGD process.

The NRC inspection team also reviewed Tioga's measures established for the use of accreditation in lieu of performing commercial-grade surveys for procurement of calibration and testing services as part of the CGD process. Tioga's QA Manual and the CGD procedure allows for the use of the International Laboratory Accreditation Cooperation (ILAC) accreditation process in lieu of performing commercial-grade surveys for domestic and international calibration and testing services. Tioga currently implements this process as described in the Nuclear Energy Institute (NEI) document No. 14-05A, "Guidelines for the Use of Accreditation in Lieu of Commercial Grade Surveys for Procurement of Laboratory Calibration and Test Services," Revision 1, which was recognized for use by the NRC in a safety evaluation report (SER) dated February 9, 2015 (Agencywide Documents Access Management System Accession (ADAMS) No. ML14322A535).

The NRC inspection team reviewed a sample of Certificates of Conformance and/or Certified Material Test Reports, receiving documents, and the supporting laboratory test reports that included the test results of the chemical analysis and mechanical properties testing that was performed on each piece of material to verify implementation of the utilization of unqualified source material process in accordance with the requirements of NCA-4255.5. The NRC inspection team also verified that the test results were consistent and from the same heat number and observed several in-process inspection and testing activities as part of the NCA-4255.5 process.

The NRC inspection team discussed the CGD and utilization of unqualified source material programs with Tioga's management and staff. The attachment to this inspection report lists the documents reviewed, and staff interviewed by the NRC inspection team.

b. Observation and Findings

During the review of a sample of CGS packages, the NRC inspection team noted that for two material suppliers, Tioga did not document the technical evaluation used to identify the critical characteristics and the acceptance methods in accordance with Tioga's QA procedures. The NRC inspection team determined this issue to be minor because the appropriate critical characteristics were listed and adequately verified.

The NRC inspection team also observed that the conditions listed in Tioga's QA Manual and in Quality System Procedure No. 107.1, "Commercial Grade Dedication of Items and Services," Revision 1, dated May 11, 2018, regarding the use of the ILAC accreditation process for procuring calibration and testing services, were not consistent with the conditions listed in the NRC's SER of NEI 14-05, Revision 1. The NRC inspection team considered this issue to be minor because Tioga imposed the required conditions in the POs and performed receipt inspection as required.

Tioga initiated CAR No. N-CAR-19-12 to address both of these issues. No findings of significance were identified.

c. Conclusion

With the exception of the two minor issues identified, the NRC inspection team concluded that Tioga established its CGD and utilization of unqualified source material programs in accordance with the regulatory requirements of Criterion III, Criterion IV, and Criterion VII of Appendix B to 10 CFR Part 50, and with the requirements of NCA-4255.5 of Section III of the ASME B&PV Code. Based on the limited sample of documents reviewed, the NRC inspection team also determined that Tioga is implementing its policies and procedures associated with the CGD and utilization of unqualified source material programs. No findings of significance were identified.

3. Supplier Oversight and Internal Audits

a. Inspection Scope

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the implementation of its supplier oversight and internal audits programs to verify compliance with the requirements of Criterion IV, Criterion VII, and Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50.

For the sample of POs reviewed, the NRC inspection team verified that the POs included, as appropriate, the applicable technical and quality requirements. For the sample of external and internal audits reviewed, the NRC inspection team verified the audit reports included an audit plan, any findings identified, adequate documented objective evidence of compliance with the applicable requirements, and a review by Tioga's responsible management. The NRC inspection team verified that the external and internal audits reviewed had been performed by qualified auditors, and in the case of the internal audits, that these audits were performed by personnel not having direct responsibilities in the areas being audited.

The NRC inspection team also discussed the supplier oversight and internal audits programs with Tioga's management and technical staff. The attachment to this inspection report lists the documents reviewed and the staff interviewed by the NRC inspection team.

b. Observations and Findings

During the review of Tioga's Approved Suppliers List (ASL), the NRC inspection team noted that Tioga's ASL listed seven certified Material Organizations (MOs) who were restricted from supplying safety-related items, but were approved, because they were

holders of ASME Certificates of Authorization or holders of a Quality System Certificate. Upon further discussion, Tioga stated that prior to November 2017, they were not performing the required implementation audits of these suppliers since they weren't buying a significant amount of material. After November 2017, and some changes in Tioga's QA personnel, Tioga decided to put this restriction of supplying safety-related items in-place because they had not been performing the required implementation audit. The NRC inspection team noted that since November 2017, Tioga has placed only two safety-related POs to one of the seven suppliers. The NRC inspection team determined this issue to be minor because Tioga had identified the issue, performed 100% receipt inspection of the material, and verified that it met the applicable technical requirements as imposed in the POs.

The NRC inspection team reviewed an audit of a commercial material supplier qualified as an MO by Tioga in accordance with the requirements of B&PV Subsection NCA-3842.2, "Evaluation of the Qualified Material Organization's Program by Certified Material Organizations of Certificate Holders." The NRC inspection team noted that the audit failed to adequately verify that the material suppliers had implemented an adequate 10 CFR Part 21 program. While vendors such as Tioga are not required to verify a supplier's 10 CFR Part 21 program, Tioga's QA manual requires that suppliers of safety-related material be evaluated to the requirements of 10 CFR Part 21. The NRC inspection team also noted that the PO for this supplier adequately stated that 10 CFR Part 21 applies. The NRC inspection team determined this issue to be minor because the material supplier was adequately qualified as an MO and 10 CFR Part 21 was pass down to the supplier.

Tioga initiated CAR No. N-CAR-19-13 to address both of these issues. No findings of significance were identified.

c. Conclusion

With the exception of the two minor issues identified, the NRC inspection team concluded that Tioga is implementing its supplier oversight and internal audits programs to verify compliance with the requirements of Criterion IV, Criterion VII, and Criterion XVIII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that Tioga is implementing its policies and procedures associated with the supplier oversight and internal audits programs. No findings of significance were identified.

4. Material Identification and Traceability

a. Inspection Scope

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the material identification and traceability program to verify compliance with the regulatory requirements of Criterion VIII, "Identification and Control of Material, Parts, and Components," of Appendix B to 10 CFR Part 50.

The NRC inspection team performed a walk-down of Tioga's fabrication facility and verified that materials were either marked with a part number, material specification, heat number/heat code, or serial number and with a shop traveler identifying their fabrication process status. The NRC inspection team confirmed that materials were

identified with acceptable tags indicating a part number, material type and grade, and were traceable to a PO, which identified the supplier's heat/lot number from which the materials were procured. The NRC inspection team observed Tioga's cutting of pipes operation, during which the operator transferred the material identification and traceability on the piece parts, as well as on the shop traveler.

The NRC inspection team also discussed the material identification and traceability program with Tioga's management and technical staff. The attachment to this inspection report lists the documents reviewed and the staff interviewed by the NRC inspection team.

b. Observation and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team determined that Tioga established its material identification and traceability program in accordance with the regulatory requirements of Criterion VIII of Appendix B to 10 CFR Part 50. Based on limited sample of documents reviewed, the NRC inspection team also determined that Tioga is implementing its policies and procedures associated with the material identification and traceability program. No findings of significance were identified.

5. Test Control

a. Inspection Scope

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the test control program to verify compliance with the requirements of Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50.

During the inspection, the NRC inspection team witnessed hydrostatic testing performed on a 20-foot long 1/2-inch nominal pipe size (NPS), schedule (Sch.) 80, seamless (SMLS) stainless steel (SS) pipe, serial No. 711323-1, in accordance with the 2017 Edition of American Society for Testing and Materials (ASTM) specification No. A999, "Standard Specification for General Requirements for Alloy and Stainless Steel Pipe." The NRC inspection team noted that the technician: (1) was using latest revision of Tioga's hydrostatic test instruction to calculate the hydrostatic test pressure range, (2) was performing the test to the current edition of the ASTM A999 material specification for hydrostatic hold time, and (3) was using calibrated pressure gages. The NRC inspection team also verified that: (1) the hydrostatic test reports documented the required qualitative and quantitative acceptance criteria, (2) confirmed the test activity was performed in accordance with Tioga's test instruction by a qualified technician using calibrated measuring and test equipment (M&TE); and (3) the results were independently verified by a Quality Control inspector (QCI).

In addition, the NRC inspection team observed several testing activities that were associated with Tioga's utilization of unqualified source material process, to verify compliance with the requirements of NCA 4255.5. The NRC inspection team observed: (1) a hardness test on a 3/8-inch thick plate using a Brinell tester to verify the hardness

value meets the 2017 Edition of ASME SA-312/SA-312M, "Specification for Seamless, Welded and Heavily Cold Worked Austenitic Stainless Steel Pipes," Type 304/304L material specification; (2) a chemical analysis on a sample from heat No. 523664 using a Spectro-analyzer to verify the material chemistry meets the 2017 Edition of ASME SA-240, "Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications," Type 304/304L material specification; and (3) a flatness test on a 3-inch NPS, Sch. 160, SMLS SS pipe using a Tinus Olsten compressor to verify the material meets the ASTM A999 material specification. The NRC inspection team observed that Tioga's laboratory technician followed Tioga's test instructions, used the latest edition of the applicable material specification for the acceptance criteria, conducted daily verification/calibration of the testing equipment using calibrated standards and documented the results in the test logs; and that the test results were independently verified by the laboratory supervisor. The NRC inspection team reviewed the training and certification records for the laboratory technician and the QCI to verify they were adequately trained and qualified.

The NRC inspection team also discussed the test control program with Tioga's management and technical staff. The attachment to this inspection report lists the documents reviewed and the staff interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that Tioga established its test control program in accordance with the regulatory requirements of Criterion XI of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and testing activities observed, the NRC inspection team also determined that Tioga is implementing its policies and procedures associated with the test control program. No findings of significance were identified.

6. Control of Measuring and Test Equipment

a. Inspection Scope

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the M&TE program to verify compliance with the requirements of Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50.

For a sample of M&TE, the NRC inspection team reviewed the calibration stickers and determined that the stickers documented the current calibration dates, including the calibration due date. The NRC inspection team also verified that the M&TE had been calibrated, adjusted, and maintained at prescribed intervals prior to use. The calibration records reviewed by the NRC inspection team indicated the 'as-found' or 'as-left' condition, accuracy required, calibration results, calibration dates, and the due dates for re-calibration.

The NRC inspection team reviewed equipment located in the M&TE storage area, the hold area, and the fabrication shop and observed that the M&TE was labeled, handled, and stored in a manner that indicated the calibration status of the instrument and ensured its traceability to calibration test data. The NRC inspection team observed that Tioga's process requires its staff to follow sign-out procedures before using M&TE. The procedure varies slightly for M&TE larger or smaller than 3 inches. For M&TE 3 inches and smaller, the calibration is checked daily at the beginning and at the end of the day. The results are then recorded in the Calibration Check Record. For M&TE larger than 3 inches, the M&TE is checked and recorded before and after each use in the Calibration Check Log.

The NRC inspection team also discussed the M&TE program with Tioga's Laboratory Supervisor. The attachment to this inspection report lists the documents reviewed and the staff interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that Tioga established its M&TE program in accordance with the regulatory requirements of Criterion XII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that Tioga is implementing its policies and procedures associated with the M&TE program. No findings of significance were identified.

7. Nonconforming Materials, Parts or Components and Corrective Action

a. Inspection Scope

The NRC inspection team reviewed Tioga's policies and implementing procedures that govern the nonconformance and corrective action programs to verify compliance with the requirements of Criterion XV, "Nonconforming Materials, Parts, or Components," and Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed a sample of nonconformance reports (NCRs) to verify that Tioga: (1) dispositioned the NCRs in accordance with the applicable procedures, (2) documented an appropriate technical justification for various dispositions, and (3) took adequate corrective action regarding the nonconforming items. For NCRs that were dispositioned use-as-is, the NRC inspection team confirmed the technical justifications were documented to verify the acceptability of the nonconforming item. The NRC inspection team also verified that the NCR process provides a link to the 10 CFR Part 21 program.

The NRC inspection team also reviewed a sample of CARs to ensure that conditions adverse to quality were promptly identified and corrected. The NRC inspection team verified the CARs provided: (1) adequate documentation and description of conditions adverse to quality; (2) an appropriate analysis of the cause of these conditions and the corrective actions taken to prevent recurrence, as applicable; (3) direction for review and approval by the responsible authority; (4) a description of the current status of the

corrective actions; and (5) the follow-up actions taken to verify timely and effective implementation of the corrective actions. In addition, the NRC inspection team verified that Tioga's corrective action program provides a link to the 10 CFR Part 21 program.

The NRC inspection team discussed the nonconformance and corrective action programs with Tioga's management and technical staff. The attachment to this inspection report list the documents reviewed and the staff interviewed by the NRC inspection team.

b. Observations and Findings

Corrective Action Associated with Nonconformance No. 99900879/2009-201-01

Following the August 2009 inspection of Tioga, the NRC issued Nonconformance 99900879/2009-201-01 for Tioga's failure to document controls for QA record retention requirements (i.e., duration, location and assigned responsibility) including the types of QA records that shall be stored in 2-hour fire rated cabinets at Tioga.

In its response dated October 8, 2009 (ADAMS Accession No. ML092890246), Tioga stated that QSP-16 would be revised to clearly identify documents considered to be QA records; would clearly identify which records are to be stored in which locations; would clearly identify storage requirements for quality records, and the organizational position which holds responsibility for maintaining these records at each location would be clearly defined.

The NRC inspection team reviewed the documentation that provided the objective evidence for the completion of the corrective actions. Tioga has revised its QA manual and renumbered its procedures. Currently the revisions discussed above are reflected in Tioga QSP-117, "Quality Assurance Records", Revision 0, dated January 5, 2018. The NRC inspection team confirmed that Tioga's current procedures provide the previously missing direction on record storage and identify the position that is charged with responsibility for record maintenance. Based on its review, the NRC inspection team closed Nonconformance 99900879/2009-201-01.

c. Conclusions

The NRC inspection team concluded that Tioga's established its nonconforming materials, parts, or components and corrective action programs in accordance with the regulatory requirements of Criterion XV and Criterion XVI of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that Tioga is effectively implementing its policies and procedures associated with the nonconforming materials, parts, or components and corrective action programs. No findings of significance were identified.

8. Entrance and Exit Meetings

On March 25, 2019, the NRC inspection team discussed the scope of the inspection with Richard Crowley, Director of Operations, and other members of Tioga's management and technical staff. On March 29, 2019, the NRC inspection team presented the inspection results and observations during an exit meeting with Bill Kotcher, Chief Operating Officer, and other members of Tioga's management and technical staff. The attachment to this



report lists the attendees of the entrance and exit meetings, as well as those individuals whom the NRC inspection team interviewed.

**Attachment**

1. **ENTRANCE/EXIT MEETING ATTENDEES**

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>Entrance</b>	<b>Exit</b>	<b>Interviewed</b>
Bill Kotcher	Chief Operating Officer	Tioga Pipe, Inc. (Tioga)		x*	
Richard Crowley	Director of Operations	Tioga	x	x	
Russell Lion III	Director of Quality Assurance	Tioga	x	x	x
Bryan Nichols	Quality Manager	Tioga	x	x	x
Brian Schantz	Receiving Inspector Hydro Tester	Tioga			x
Dave Lare	Receiving Supervisor	Tioga			x
Tony Cox	Nuclear Receiving, Fittings and Shipping Inspector	Tioga			x
Ernie Fiamiano	Laboratory Technician	Tioga			x
Scott Hansen	Laboratory Supervisor	Tioga			x
Elvira Pineda	Quality Assurance Analyst	Tioga			x
Thomas Herrity	Inspector	NRC	x	x	
Yamir Diaz-Castillo	Inspector	NRC	x	x	
Raju Patel	Inspector	NRC	x	x	
Dong Park	Inspector	NRC	x	x	

\* Present via telephone

2. INSPECTION PROCEDURES USED

Inspection Procedure (IP) 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," dated February 13, 2012

IP 43002, "Routine Inspections of Nuclear Vendors," dated January 27, 2017

IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated January 27, 2017

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Type	Description
99900879/2009-201-01	CLOSED	NON	Criterion XVII

4. DOCUMENTS REVIEWED

Policies and Procedures

- Tioga's Quality System Manual - Nuclear, Edition 4, Revision 1, dated August 30, 2018
- Quality System Procedure (QSP) Index, dated March 15, 2019
- QSP - 102.0, "Personnel Indoctrination and Training," Revision 0, dated November 29, 2018
- QSP - 104.0, "Procurement Document Control," Revision 0, dated January 5, 2018
- QSP - 107.0, "Control of Purchased Materials and Services," Revision 1, dated August 30, 2018
- QSP - 107.1, "Commercial Grade Dedication of Items and Services," Revision 1, dated May 11, 2018
- QSP - 107.3, "Control of Counterfeit, Suspect, and Fraudulent Items," Revision 0, dated March 14, 2019
- QSP - 112.0, "Identification and Control of M&TE," Revision 0, dated August 16, 2018
- QSP - 117, "Quality Assurance Records," Revision 0, dated January 5, 2018
- QSP - 118.0, "Audits," Revision 0, dated March 7, 2019
- Test Instruction (TI)-1, "Hydrostatic Pressure Testing," Revision 4, dated May 10, 2017
- TI-2, "Spectrometric Analysis," Revision 3, dated February 24, 2012
- TI-3, "Tension Testing of Metallic Specimens," Revision 3, dated April 26, 2016

- T1-5, “Flattening Testing,” Revision 2, dated March 1, 2015
- T1-6, “Rockwell Testing,” Revision 0, dated January 22, 2015
- T1-7, “Brinell Testing,” Revision 0, dated January 22, 2015

#### Commercial-Grade Dedication

- Commercial-Grade Dedication (CGD) Plan for the manufacturing of deformed bar anchors, No. CGD-317380-2, Revision 2, dated September 6, 2017
- CGD Plan for calibration services, Revision 0, dated February 13, 2018
- CGD Plan No. CGD-A312-18-316-316L-SMLS, Revision 0, dated October 16, 2018
- CGD Plan No. CGD-A106-15-B-Over 2 Inch O.D., Revision 0, dated April 25, 2018
- CGD Plan No. CGD-A36-To-3/4-inch-Thick-Plate-AAS, Revision 0, dated December 6, 2018
- CGD Plan No. CGD-A516-17-70-AA, Revision 0, dated July 17, 2018
- CGD package for three 5-feet 9-5/8-inch x18-inch diameter carbon steel pipes on purchase order (PO) No. 4501391439, dated March 6, 2019
- CGD package for one piece 4.5-feet x 14-inch Sch. 30 seamless pipe on sales order (SO) No. 335326 on PO No. 21003983, dated December 12, 2018
- CGD package for one piece 19-feet-7 inch, 18-inch NPS, Sch. 160, seamless carbon steel pipe on SO No. 335687 on PO No. M21003996, dated January 31, 2019
- CGD package for two pieces of ½-inch x 4.5 x 72-inch carbon steel plate on SO No. 466640 L/I 10 and 20, dated December 18, 2018
- CGD package for one piece of carbon steel disc on SO No. 465150, dated July 17, 2018
- CGD A package for one piece 14-inch Sch. 30 seamless stainless-steel pipe on SO No. 335326, dated October 16, 2018
- Commercial Dedication Record (receipt inspection) for the CGD of a tensile machine, dated March 27, 2019

#### Purchase Orders, Audit Reports, and Commercial-Grade Surveys

- Tioga Pipe Inc.’s Approved Suppliers List, dated March 25, 2019
- PO Attachment No. TPS-A1, Revision 7, dated September 10, 2015
- Service Order Attachment, Revision 6, dated September 22, 2015

- PO No. 887108 for concrete anchors, dated July 2, 2018
- PO No. 011519SH for calibration of three digital indicators, dated January 15, 2019
- PO No. 031919SH-2 for calibration of an Ashcroft pressure gauge, dated March 19, 2019
- PO No. 031919SH for calibration of a temperature indicator and a Luft hygrometer, dated March 29, 2019
- PO No. 020718SH for calibration of two pressure gauges, two micrometers, and a caliper, dated February 7, 2018
- PO No. 884338 for a seamless buttweld reducing tee, Revision 0, dated January 12, 2018
- PO No. 905068 for a seamless tube, Revision 0, dated November 1, 2017
- PO No. 409472 for carbon steel plates, Revision 0, dated April 26, 2018
- PO No. 888868 for piping, Revision 0, dated November 5, 2018
- PO No. 888026 for a blind flange, Revision 0, dated September 10, 2018
- PO No. 888955 for a half coupling, Revision 0, dated November 13, 2018
- PO No. 885930 for a socket weld elbow, Revision 0, dated April 19, 2018
- PO No. 031419S for carbon steel standards, dated March 14, 2019
- PO No. 905024 for 20 pieces of half-inch 3M Tee, dated September 19, 2017
- PO No. 03191511 for calibration of a temperature indicator and a Luft hygrometer, dated March 19, 2019
- PO No. 409581 for 1 piece of carbon steel disc, dated July 12, 2018
- PO No. 409745 for 2 pieces of carbon steel plates, dated December 6, 2018
- PO No. 409746 for 1 piece of bar, dated December 6, 2018
- PO No. 904585 for seamless (SMLS) carbon steel pipe, dated January 19, 2015
- Internal Audit Report No. IA-17-0021 for an audit conducted October 2-3, 2017
- Internal Audit Report No. IA-18-01 for an audit conducted August 7-9, 2018
- External Audit Report No. EA-18-05, Revision 0, for an audit conducted May 22-24, 2018

- External Audit Report No. EA-18-07, Revision 0, for an audit conducted September 19-21, 2018
- External Audit Report of a supplier of ferrous and non-ferrous fittings and flanges for an audit conducted November 17, 2016
- Qualification Audit Report of a supplier of forged fittings and forged or machined shapes for an audit conducted April 18-20, 2016
- Qualification Audit Report of a supplier of ferrous pipe and tube for an audit conducted April 13-14, 2016
- Qualification Audit Report of a supplier of ferrous fittings and elbows for an audit conducted June 15-16, 2016
- Commercial Grade Survey (CGS) Report No. EA-18-06, Revision 0, dated August 10, 2018
- CGS Report No. 317380-2, Revision 0, dated April 13, 2017
- CGS Report for a survey of a supplier of carbon steel plates, Revision 0, dated May 30, 2017

#### Test Report Records

- Hydrostatic Test Report for SO No. 337763, dated March 27, 2019
- Hydrostatic Test Report for SO No. 337774/30, dated March 26, 2019
- Hydrostatic Test Report for SO No. 337818/10, dated March 25, 2019
- Final Inspection Report for SO No. 337774, dated March 26, 2019 for
- Chemical analysis test report for SO No.337220, dated March 26, 2019
- Laboratory Test Report No. CTB-03/26/2019-4615-Q for Brinell hardness test on a 3/8-inch disc for SO No. 337220/30, dated March 26, 2019
- Laboratory Test Report No. CTB-03/25/2019-4613-Q for Chemical Analysis on SO No. 337818/10, dated March 27, 2019
- Flatness Test on a 1-inch pipe on SO No. 337818/10, dated March 27, 2019
- Material Verification Report for 20 feet of 1-1/2-inch Sch. 80 pipe to ASTM A312, "Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless-Steel Pipes," on SO No.337763, dated March 27, 2019

## Calibration Records

- Calibration Certificate No. TPS001-18-02-00759-1 for a pressure gauge, calibrated on February 15, 2018
- Calibration Certificate No. TPS001-18-12-06354-2 for a spherical outside micrometer, calibrated on January 2, 2019
- Calibration Certificate No. TPS001-18-06-02737-3 for a pressure gauge, calibrated on June 11, 2018
- Calibration Certificate No. TPS-001-18-09-04752-6 for a pressure gauge, calibrated on September 20, 2018
- Calibration Certificate No. TPS-001-18-08-03887-9 for a ball/tube micrometer, calibrated on August 14, 2018
- Calibration Certificate No. TPS001-18-12-06354-5 for a digital outside micrometer, calibrated on January 2, 2019
- Calibration Certificate No. TPS001-18-12-06354-3 for a spherical outside micrometer, calibrated on January 2, 2019
- Calibration Certificate No. TPS001-18-08-04454-3 for a Brinell scope, calibrated on October 15, 2018
- Calibration Certificate No. TPS001-19-02-00777-1 for a humidity and temperature meter, calibrated on February 21, 2019
- Calibration Certificate No. TPS-001-18-08-04454-2 for a Brinell hardness tester, calibrated on October 15, 2018
- Calibration Certificate No. TPS001-18-08-04454-1 for a Rockwell hardness tester, calibrated on October 15, 2018
- Spectro-Analyzer internal calibration standardization report, dated March 25, 2019
- Certificate of Analysis for standard BS-1026 Carbon Steel Grade 1026, dated 1999
- Analytical Standard Certificate of Analysis for standard 13x30403 (Batch A) for Stainless Steel Wrought dated 1998
- Calibration Certificate No. 60059605 for a Brinell scope, dated October 15, 2018
- Calibration Certificate No. 88550 for a Tinius Olsten load cell extensometer, dated March 4, 2019
- Calibration Certificate No. 60059604 for a Brinell hardness tester, dated October 15, 2018

- Calibration Certificate No. 60059603 for a Newage Rockwell hardness tester, dated October 15, 2018
- Calibration Certificate No.60095719 for a hygrometer, dated February 2, 2019
- Daily verification log for the Brinell hardness tester, dated March 26, 2019
- Test Laboratory Relative Humidity and Temperature daily log, dated March 26, 2019
- Certificate of Calibration and Conformance No. 030180 for Brinell Test Block serial number 0310180, accepted on March 22, 2019
- Certificate of Calibration and Conformance No. 0776361 for Brinell Test Block serial number 0776361, accepted on March 22, 2019

#### Miscellaneous

- Receiving Inspection report for 20 pieces 1/2-inch 3M socket weld tee, dated September 21, 2017
- PO Attachment for safety-related QA and Technical Requirements, Revision 6, dated September 23, 2015
- Lot of 1-1/2-inch 3000-pound SW Union in storage location YZ-07-30 identified by ID No. 55472 and part No. 358000150-30002, traceable to Heat No. M-297YNB
- Lot of 1-1/8-inch 3000-pound SW 9-degree Elbow in storage location YZ-03-24 identified by ID No. 13590-16 and part No. 30966-0012-30002 traceable to Heat No. LA
- 1/2-inch 3000# socket weld tee in storage location YZ-02-22, identified by ID No. 3152574, and part No. 34944-0050-30002, traceable to Heat No. L22
- Certificate of Conformance for black XV-12149 and yellow Ink markers with halogens and sulfur below 1% by weight, dated March 01, 2018
- Tioga's American Society of Mechanical Engineers (ASME) NCA-4255.5, "Utilization of Unqualified Source Material," package for SO No. 334581/30 for ASME Section III, "Rules for Construction of Nuclear Facility Components," Class 3 SA-106, "Specification for Seamless Carbon Steel Pipe for High-Temperature Service," Grade 8 pipes
- ASME NCA-4255.5 package for SO No. 322366 for ASME Section III Class 3 SB-111, "Specification for Copper and Copper-Alloy Seamless Condenser Tubes and Ferrule Stock," tubes
- ASME NCA-4255.5 package for SO No. 327362 for ASME Section III Class 3, SB-111 tubes

#### Training Records



- Qualification Records for one Quality Control Inspector and one hydro tester, dated March 21, 2019
- Annual vision acuity records for a QC Inspector, a hydro tester, and a laboratory technician, dated March 23, 2018
- Qualification Record for laboratory technician, dated March 1, 2019
- Tioga's appointment letter to Level III nondestructive test personnel for Ultrasonic Examination, dated February 28, 2019

#### Nonconformance Reports (NCRs)

- N-NCR 19-09, N-NCR 19-02, N-NCR 19-07, N-NCR 19-08, N-NCR 19-01, N-NCR 19-03, N-NCR 19-04, N-NCR-18-03, N-NCR-18-27, N-NCR-19-05, N-NCR 18-02, N-NCR 18-06, N-NCR 19-06, N-NCR 19-07, N-NCR 18-23, N-NCR 18-29, and N-NCR-19-04

#### Corrective Action Reports (CARs) Opened During the NRC Inspection

- N-CAR-19-12, opened for issues identified with the implementation of Tioga's CGD process, opened on March 27, 2019
- N-CAR-19-13, opened for issues identified with the implementation of Tioga's supplier oversight program, opened on March 27, 2019

#### Corrective Action Reports

- CR 2009-21(Response to 2009 Notice of Nonconformance), N-CAR-17-38, N-CAR-18-16, N-CAR-19-11, S-CAR N2017-20, N-NCR-19-07, N-SCAR 19-11, N-SCAR-19-12, N-CAR-18-04, N-CAR-19-03, N-CAR-19-01, N-CAR19-02, N-SCAR-18-08, N-SCAR 18-09, N-SCAR 18-11, N-SCAR 18-19, N-CAR 18-11, N-CAR 18-09, N-CAR 18-13, N-CAR 18-15, N-CAR 18-14, N-CAR 18-18, N-CAR18-20

#### Part 21 Evaluation

- 2017-30-00