September 11, 2018

Mr. Doug Roszman
Quality Assurance Director
Hayward Tyler, Inc.,
480 Roosevelt Highway
Colchester, VT 05446

SUBJECT: HAYWARD TYLER, INC. NUCLEAR REGULATORY COMMISSION INSPECTION REPORT NO. 99900345/2018-201, NOTICE OF NONCONFORMANCE

Dear Mr. Roszman:

On July 16-20, 2018, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Hayward Tyler, Inc. (hereafter referred to as HTI) facility in Colchester, Vermont. The purpose of the limited scope inspection was to assess HTI's compliance with the 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." The enclosed report presents the results of this inspection. This NRC inspection report does not constitute NRC endorsement of your overall quality assurance (QA) or 10 CFR Part 21 programs.

Based on the results of this inspection, the NRC staff determined that the implementation of your QA program failed to meet certain NRC requirements imposed on you by your customers. Specifically, the NRC inspection team determined that HTI was not fully implementing its QA program in the areas of procurement document control, control of purchased material, equipment, control of measuring and test equipment and services, and corrective action. The specific findings and references to the pertinent requirements are identified in the enclosure to this letter. In response to the enclosed Notice of Nonconformance, HTI should document the results of the extent of condition review for these findings and determine if there are any effects on other safety-related components.

Please provide a written statement or explanation within 30 days from the date of this letter in accordance with the instructions specified in the enclosed Notice of Nonconformance. We will consider extending the response time if you show good cause for us to do so.

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," the NRC will make available electronically for public inspection a copy of this letter, its enclosure, and your response through the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or Safeguards Information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your

response that deletes such information. If you request that such material be withheld from public disclosure, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim (e.g., explain why the disclosure of information would create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If Safeguards Information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Sincerely,

Kerri A. Kavanagh, Chief **/RA/**
Quality Assurance Vendor Inspection Branch-2
Division of Construction Inspection
and Operational Programs
Office of New Reactors

Docket No.: 99900345
EPID No.: I-2018-201-0039

Enclosures:
1. Notice of Nonconformance
2. Inspection Report No. 99900345/2018-201
   and Attachment

Letter to Doug Roszman from Kerri Kavanagh dated September 11, 2018

SUBJECT: HAYWARD TYLER, INC. NUCLEAR REGULATORY COMMISSION INSPECTION REPORT NO. 99900345/2018-201, NOTICE OF NOTICE OF NONCONFORMANCE Dated: September 11, 2018

DISTRIBUTION:
RGuzman
TJackson
ASakadales
ConE_Resource
NRO_DCIP_Distribution
Doug.Roszman@haywardtyler.com

ADAMS Accession No.: ML18250A302 **NRO-002**

OFFICE	NRO/DCIP/QVIB-2	NRO/DCIP/QVIB-2	NRO/DCIP/QVIB-2
NAME	JOrtega-Luciano	RPatel	THerrity
DATE	09/10/2018	09/10/2018	09/10/2018
OFFICE	NRO/DCIP/CIPB	NRO/DCIP/QVIB-2	
NAME	JBurke	KKavanagh	
DATE	09/10/2018	09/11/2018	

OFFICIAL RECORD COPY

NOTICE OF NONCONFORMANCE

Hayward Tyler, Inc.
480 Roosevelt Hwy.
Colchester, VT 05446

Docket No. 99900345
Report No. 2018-201

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the Hayward Tyler, Inc. (hereafter referred to as HTI) facility in Colchester, VT, from July 16, 2018 through July 20, 2018, HTI did not conduct certain activities in accordance with NRC requirements that were contractually imposed upon HTI by its customers or NRC licensees:

A. Control of Purchased Material, Equipment, and Services:

Criterion VII, "Control of Purchased Material, Equipment, and Services." 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," states, in part that, "Measures shall be established to assure that purchased material, equipment and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents. These measures shall include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the contractor or subcontractor source, and examination of products upon delivery."

Subsection NCA-3842.2, "Evaluation of the Qualified Material Organization's Program by Certified Material Organizations of Certificate Holders," of Section III, "Rules for Construction of Nuclear Facility Components," of the American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel (B&PV) Code 2015 Edition, states, in part that, "Evaluation of a Material Organization's Quality System Program by parties other than the Society, as provided by NCA-3820(b), shall be performed in accordance with the requirements of (a) through (i) below […] (b). The Quality System Manual (NCA-4253.1) shall be the party's guide for surveying and auditing the qualified Material Organization's continued compliance with the accepted Quality System Program.

Subsection NCA-4253.1, "Quality System Manual," in Section III of the ASME B&PV Code, 2015 Edition, states, in part that, "The Quality Program shall be described and summarized in a Quality System Manual that shall be a major basis for demonstration of compliance with the rules of this Section."

Contrary to the above, as of July 20, 2018, HTI failed to establish adequate measures for source evaluation and selection of contractors and subcontractors to ensure that purchased material, equipment, and services conformed to procurement documents. Specifically, the NRC inspection team determined that HTI failed to adequately qualify a material organization (MO) (i.e. castings) as an approved supplier in accordance with the requirements of NCA-3842.2. The NRC inspection team identified several instances in which the audit checklist did not provide sufficient objective evidence to support the conclusion that the MO had met the controls and applicable requirements of subsection NCA-3850, "Quality System Program Requirements." Furthermore, the NRC inspection team reviewed the quality manual of the MO to independently verify whether it met the applicable requirements of NCA-3800. The quality manual did not contain additional attachments or appendices to address the gaps between a Quality Systems Program

based on the International Organization for Standardization (ISO) 9001:2008, "Quality Management System – Requirements" and an ASME B&PV NCA-3800 Quality Systems Program.

These issues has been identified as Nonconformance 99900345/2018-201-01

B. Procurement Document Control:

Criterion IV "Procurement Document Control," states, in part that, "Measures shall be established to assure that applicable regulatory requirements, design bases, and other requirements which are necessary to assure adequate quality are suitably included or referenced in the documents for procurement of material, equipment, and services, whether by the applicant or by its contractors or subcontractors."

Contrary to the above, as of July 20, 2018, HTI failed to include the applicable regulatory requirements in its safety-related procurement documents for material and services procured as basic components to safety-related equipment which is necessary to ensure that adequate quality assurance is suitably included or referenced. Specifically, HTI did not impose the requirements of Appendix B to 10 CFR Part 50 in its safety-related procurement documents for materials and services procured as basic components. Procurement documents shall specify compliance with the requirements of Appendix B to 10 CFR Part 50 to ensure that adequate quality assurance is applied and passed down to the sub-suppliers.

This issue has been identified as Nonconformance 99900345/2018-201-02.

C. Control of Purchased Material, Equipment, and Services

Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50, states, in part that, "Measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents. These measures shall include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the contractor or subcontractor source, and examination of products upon delivery."

Contrary to the above, as of July 20, 2018, HTI failed to establish measures to assure that services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents. Specifically, the NRC inspectors determined that:

1. HTI performed limited-scope audits of its commercial supplier's QA program rather than commercial-grade surveys, to verify how the identified critical characteristics were controlled, specific to the service procured (i.e. machining services).
2. HTI procured welding material from a commercial supplier, in October 2017 and used the commercial welding material in safety-related applications without reviewing the suitability of the material or assuring that the material conformed to the purchase requirements of the customer.

This issue has been identified as Nonconformance 99900345/2018-201-03.

D. Control of Measuring and Test Equipment

Criterion XII, “Control of Measuring and Test Equipment,” of Appendix B to 10 CFR Part 50, states, in part that, “measures shall be established to assure that tools, gages, instruments, and other measuring and testing devices used in activities affecting quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits.”

Criterion V, “Instructions, Procedures, and Drawings,” of Appendix B to 10 CFR Part 50, states, “Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.”

HTI’s Quality Assurance Manual Section 12, “Control of Measuring and Test Equipment,” Subsection 12.3 states in part that, “calibration activities will be performed in accordance with written procedures prepared by the QC [Quality Control] inspector and reviewed and approved by the Quality Assurance Director (QAD). These procedures include the basis and method of calibration, allowable tolerance and other controls that assure that M&TE [measuring and test equipment] is properly adjusted at specified period of use intervals.” Further, it states, “Pressure gauges used for hydrostatic test will be calibrated against a standard dead weight tester before each test or series of tests. A series is that group of tests using the same gauge, which is conducted within a period not exceeding two weeks. Analog type gauges will have a range of not less than 1½ times nor more than 4 times the test pressure.”

Contrary to the above, as of July 20, 2018, HTI failed to establish adequate controls to ensure that the pressure gauges used in hydrostatic testing of safety-related components affecting quality were properly calibrated and adjusted at specified periods to maintain their accuracy within necessary limits using a written calibration procedure. Specifically, the NRC inspection team determined that the pressure gauge used during hydrostatic testing of three ASME Section III safety-related diffusers were not calibrated within the tolerance range of 0-400 pounds per square inch gauge (PSIG) using a standard dead weight tester and calibration procedure. HTI had been calibrating this pressure gauge with a standard dead weight tester and calibrated tolerance range of 1000 to 10,000 PSIG. The pressure gauge was used for hydrostatic testing of safety-related components since September 2015. The validity of such hydrostatic test results are of indeterminate quality.

This issue has been identified as Nonconformance 99900345/2018-201-04.

E. Corrective Action:

Criterion XVI, “Corrective Action,” of Appendix B, to 10 CFR Part 50, states in part that, “measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.”

Paragraph 16.1, “Purpose and Scope,” Section 16, “Corrective Action,” of the “Quality Assurance Manual of Hayward Tyler, Inc.,” Edition 7 Revision 0, dated January 7, 2017, states, in part that, “conditions adverse to quality such as repetitive audit findings, failures, malfunctions, deficiencies, defective material/services/equipment and other nonconformances are promptly identified and corrected and the cause is identified and corrected.”

Contrary to the above, as of July 20, 2018, HTI failed to promptly identify and correct conditions adverse to quality. Specifically, the corrective actions that were implemented by HTI to address the findings in the 2001 NRC Inspection Report 99900345/2001-201 were ineffective. As a result of the ineffective corrective actions, the NRC inspection team identified the following similar examples:

1. HTI did not ensure that verification of the suitability of material to be used in a safety-related application was verified;
2. The QA director was not independent of work being inspected; and
3. Weld material issued from weld storage by welders for use on safety-related components was not adequately confirmed by Quality Assurance or a Quality Control Inspector.

These issue have been identified as Nonconformance 99900345/2018-201-05.

Please provide a written statement or explanation to the US Nuclear Regulatory Commission. ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Chief, Quality Vendor Inspection Branch 2, Division of Construction Inspection & Operational Programs, Office of New Reactors within 30 days of the date of the letter transmitting this Notice of Nonconformance. This reply should be clearly marked as a “Reply to a Notice of Nonconformance” and should include for each noncompliance: (1) the reason for the noncompliance, or if contested, the basis for disputing the nonconformance; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken to avoid noncompliance; and (4) the date when your corrective action will be completed. Where good cause is shown, consideration will be given to extending the response time.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC’s document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html, to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deleted such information.

If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide, in detail, the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

Dated this 11th day of September 2018.

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NEW REACTORS
DIVISION OF CONSTRUCTION INSPECTION AND OPERATIONAL PROGRAMS
VENDOR INSPECTION REPORT

Docket No.:	99900345
Report No.:	99900345/2018-201
Vendor:	Hayward Tyler, Inc. 480 Roosevelt Hwy Colchester, VT 05446
Vendor Contact:	Mr. Doug Roszman Quality Assurance Director Phone: 1-802-316-2172
Nuclear Industry Activity:	Hayward Tyler, Inc. (HTI), is an American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel (B&PV) Code Certificate Holder holding an N, NPT, NA and U stamp. HTI's scope of supply includes, but is not limited to, design, fabrication, assembly, and testing of ASME B&PV Code Section III, Class 1, 2 & 3 and non-ASME safety-related pumps, spare, repair/replacement of parts, components and appurtenances associated engineering and field services.
Inspection Dates:	July 16-20, 2018

Inspectors:			
	Jonathan Ortega-Luciano	NRO/DCIP/QVIB-2	Team Leader
	Raju Patel	NRO/DCIP/QVIB-2	
	Thomas Herrity	NRO/DCIP/QVIB-2	

Approved by: Kerri A. Kavanagh, Chief
Quality Assurance Vendor Inspection Branch-2
Division of Construction Inspection
and Operational Programs
Office of New Reactors

EXECUTIVE SUMMARY

Hayward Tyler, Inc.
9990345/2018-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at the Hayward Tyler, Inc. (hereafter referred to as HTI) facility in Colchester, VT, 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." In addition, the NRC inspection also verified that HTI implemented a program under 10 CFR Part 21, "Reporting of Defects and Noncompliance."

This technically-focused inspection specifically evaluated HTI's implementation of quality activities associated with the design, fabrication, and testing activities associated with safety-related pumps and spare parts being provided to operating nuclear power plants. Specific activities observed by the NRC inspection team included:

- receipt inspection of set thread ring gage, ID No. HTS-35-438;
- receipt inspection of set plug gage, ID No. HTS-35-434; and
- commercial-grade dedication of helical compression spring.

In addition to observing these activities, the NRC inspection team verified that measuring and test equipment were being properly identified, marked, calibrated and used within calibrated range.

These regulations served as the bases for the NRC inspection:

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

During the course of this inspection, the NRC inspection team implemented 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, and IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated January 27, 2017.

This was the third NRC inspection of HTI's facility in Colchester, VT. The last NRC inspection was conducted in May 2001 and the results are documented in Inspection Report (IR) No. 999000345/01-201, dated August 3, 2001.

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

Control of Purchased Material, Equipment, and Services

The NRC inspection team issued Nonconformance 99900345/2018-201-01 and 99900345/2018-201-03, in association with HTI's failure to implement the regulatory requirements of Criterion VII, "Control of Purchased Material, Equipment, and Services" of Appendix B to 10 CFR Part 50. Nonconformance 99900345/2018-201-01 cites HTI for failing to adequately qualify a material organization (i.e. castings) as an approved supplier in accordance with the requirements of NCA-3842.2. HTI's audit checklist did not provide sufficient objective evidence to support a conclusion that the supplier had met the controls and applicable requirements of subsection NCA-3850, "Quality System Program Requirements."

Nonconformance 99900345/2018-201-03 cites HTI for failing to perform an adequate commercial-grade survey of machining services. Specifically, the NRC inspection team determined that HTI performed limited-scope audits of the commercial supplier's QA program rather than a commercial-grade surveys to verify how the identified critical characteristics were controlled, specific to the service procured.

Also, Nonconformance 99900345/2018-201-03 cites HTI for failing to control the procurement of welding materials and assure that the material purchased conforms to the requirements of the purchase order. Specifically, HTI procured welding material from a commercial supplier, in October 2017 and used the commercial welding material in safety-related applications without reviewing the suitability of the material or assuring that the material conformed to the requirements of the customer's purchase order.

Procurement Document Control

The NRC inspection team issued Nonconformance 99900345/2018-201-02 in association with HTI's failure to implement the requirements of Criterion IV, "Procurement Document Control," of Appendix B to 10 CFR Part 50. Specifically, HTI did not impose the requirements of Appendix B in its safety-related purchase orders for materials and services procured as basic components. Purchase orders shall specify compliance with the requirements of Appendix B to ensure that adequate quality assurance is applied and the requirements of Appendix B are adequately passed down to the sub-suppliers.

Control of Measurement and Test Equipment

The NRC inspection team issued Nonconformance 99900345/2018-201-04, as a result of HTI's failure to implement the regulatory requirements of Criterion XII, "Control of Measuring and Test Equipment," and Criterion V, "Instructions, Procedures, and Drawings," of Appendix B to 10 CFR Part 50. Specifically, the NRC inspection team determined that the pressure gauge used during hydrostatic testing of three ASME Section III safety-related diffusers was not calibrated within the tolerance range of 0-400 pounds per square inch gauge (PSIG) using a standard dead weight tester and without an established calibration procedure. The validity of such hydrostatic tests results are of indeterminate quality.

Corrective Action Program

The NRC inspection team issued Nonconformance 99900345/2018-201-05, as a result of HTI's failure to implement the regulatory requirements of Criterion XVI, "Corrective Actions of Appendix B to 10 CFR Part 50. Nonconformance 99900345/2018-201-05, cites HTI for failing to

ensure conditions adverse to quality were promptly identified and corrected. Specifically, the corrective actions that were implemented by HTI to address the findings in the 2001 NRC Inspection Report 99900345/2001-201 were ineffective. As a result of the ineffective corrective actions, the NRC inspection team identified the following similar examples: (1) HTI did not ensure that verification of the suitability of material to be used in a safety-related application was verified; (2) the QA director was not independent of work being inspected; and (3) weld material issued from the weld storage by welders for use on safety-related components were not adequately confirmed by Quality Assurance or a Quality Control Inspector.

Other Inspection Areas

The NRC inspection team determined that HTI is implementing its programs for training and qualification, 10 CFR Part 21, design control, control of special processes, test control, nonconforming material, parts, or components, and internal audits in accordance with the applicable regulatory requirements of Appendix B to 10 CFR Part 50 and 10 CFR Part 21. Based on the limited sample of documents reviewed and activities observed, the NRC inspection team also determined that HTI is implementing its policies and procedures associated with these programs. No findings of significance were identified.

REPORT DETAILS

1. Manufacturing Control

   a. Inspection Scope

   The NRC inspection team reviewed the Hayward Tyler, Inc., (hereafter referred by HTI) policies and implementing procedures that govern the control of special processes to verify compliance with the regulatory requirements of Criterion IX, “Control of Special Processes,” 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 with the requirements of Subsection NCA, “General Requirements for Division 1 and Division 2,” 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, 2015 Edition; Subsection NB, “Class 1 Components,” Subsection NC, “Class 2 Components,” Subsection ND, “Class 3 Components,” of Section III; Section V, “Nondestructive Examination,” and Section IX, “Welding and Brazing Qualification,” of the ASME B&PV Code, 2015 Edition; and the American Society for Nondestructive Testing (ASNT) SNT-TC-1A, “Personnel Qualification and Certification in Nondestructive Testing.”

   Welding

   Although there were no welding activities during the week of the inspection, the NRC inspection team reviewed a sample of welding records associated with the fabrication and inspection of safety-related components. The NRC inspection team verified that the welding procedure specifications (WPSs) and associated procedure qualification records (PQRs) were adequately qualified in accordance with the requirements of Section IX of the ASME B&PV Code requirements. Further, the NRC inspection team verified that the applicable welding data, such as weld material identification number, WPSs supporting the PQR, inspection procedures and the final inspection results were recorded on the weld travelers.

   The NRC inspection team performed a walk-down of the weld booth and weld storage area to verify weld material was controlled to prevent degradation, inadvertent use, or loss of traceability in accordance with HTI approved procedures. The NRC inspection team noted that the weld area was kept clean and protected from wind and moisture. The NRC inspection team verified that the weld electrodes were stored in heated storage ovens with their temperature maintained using a calibrated temperature readout display. The NRC inspection team verified the applicable welding data; such as weld material and heat/batch number, WPS, inspection procedures used, and the final inspection results were recorded in accordance with the applicable HTI procedures. The NRC inspection team reviewed a sample of job travelers and confirmed that the job traveler adequately linked the weld material to the weld storage area and welder.

   The NRC inspection team reviewed certified material test reports (CMTRs) for a sample of weld filler metal and electrodes documented on job travelers and from weld storage area to ensure the material specifications for physical and chemical properties were in accordance with ASME Section II and Section III Code requirements.

Nondestructive Examination

Although there was no nondestructive examination (NDE) activities during the week of the inspection, the NRC inspection team reviewed Visual Examinations (VEs) of welds and repairs of welds and Liquid Penetrant (LP) procedures to ensure they were adequately qualified to meet the requirements of Section V of the ASME B&PV Code. The NRC inspection team selected a sample of VE and LP reports for safety-related components used in the fabrication of pumps and verified the examinations were performed by qualified personnel and using qualified procedures in accordance with the requirements of Section III, V of the ASME B&PV Code and ASNT SNT-TC-1A using calibrated equipment.

The NRC inspection team reviewed HTI's procedure for certification and qualification of VE personnel and LP examination personnel and confirmed they were consistent with the latest revision of the ASNT SNT-TC-1A and Section III of the ASME B&PV Code. The NRC inspection team verified that the light meters used during VE and LP examinations were identified with a calibration sticker and verified their calibration records were current and within the specified range and frequency. In addition, the NRC inspection team verified that the LP penetrant, developer and remover used were from the same manufacturer and the material test reports specified the halogen contents below 1% weight, meeting the requirements of Section V of the ASME B&PV Code.

Qualification and Training of Welding and Nondestructive Testing Personnel

The NRC inspection team reviewed HTI's welder qualification records and confirmed the welders had completed the required training and maintained their qualification in accordance with HTI's procedures and were qualified in accordance with the applicable requirements of Sections III and IX of the ASME B&PV Code. The NRC inspection team verified that the welder continuity log was current in the welding process they had been qualified.

The NRC inspection team reviewed training and qualification records for two of HTI's NDE Level II inspectors and confirmed that their records reflect the individuals were trained and qualified in accordance with HTI's procedures, ASNT SNT-TC-1A, and the applicable requirements of Section III and V of the ASME B&PV Code. The NRC inspection team also verified that all NDE personnel annual vision test records were current.

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

b. Observation and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that HTI is implementing its manufacturing control program in accordance with the regulatory requirements of Criterion IX of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC

inspection team also determined that HTI is implementing its policies and procedures associated with the control of special processes program. No findings of significance were identified.

2. Test Control

a. Inspection Scope

The NRC inspection team reviewed HTI'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 there was no test activity that the NRC inspection team could witness. The NRC inspection team selected a sample of hydrostatic test reports for ASME Section III and safety-related pumps and components shipped to domestic nuclear customers to confirm that the test activity was performed in accordance with HTI's test procedure by qualified test personnel using calibrated measuring and test equipment (M&TE) (see Section 5 of this inspection report for details on an M&TE issue), results independently verified by quality control inspector (QCI) and witnessed by authorized nuclear inspector (ANI) for ASME pressure-retaining components.

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

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that HTI is implementing 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, the NRC inspection team also determined that HTI is implementing its policies and procedures associated with the test control program. No findings of significance were identified.

3. Procurement Control and Supplier Oversight

a. Inspection Scope

The NRC inspection team reviewed HTI's policies and implementing procedures that implement oversight of contracted activities program to verify compliance with the requirements of 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 reviewed a sample of purchase orders (POs),

external audits, and receipt inspection records to evaluate compliance with the applicable regulatory and technical requirements.

The NRC inspection team verified that for the sample of POs reviewed, the applicable technical and quality requirements were included. In addition, the NRC inspection team verified that for the sample of receipt inspection records reviewed (e.g., receipt inspection reports, Certificates of Compliance (CoCs), Certificate of Calibration, and CMTRs), these records were (1) reviewed by HTI for compliance with the requirements of the POs, and (2) the records contained the applicable technical and regulatory information.

For the sample of external audits reviewed, the NRC inspection team verified that the audit reports included an audit plan, any findings identified, adequate documented objective evidence of compliance with the applicable requirements, and a review by HTI's responsible management. In addition, the NRC inspection team verified that the external audits were performed by qualified auditors. The NRC inspection team also reviewed a sample of training and qualification records of HTI's lead auditors and auditors and confirmed that auditing personnel had completed all the required training and maintained qualification and certification in accordance with HTI's policies and procedures.

The NRC inspection team discussed the procurement document control and supplier oversight programs with HTI's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team

b. Observations and Findings

b.1 Procurement Document Control

For the POs reviewed, the NRC inspection team observed that HTI did not impose the requirements of Appendix B to 10 CFR Part 50 for safety-related materials and services procured as basic components. When discussed with HTI management, the NRC inspection team learned that rather than imposing Appendix B to 10 CFR Part 50 as a requirement, the HTI POs state that the work must be performed in accordance with the suppliers' approved quality assurance (QA) manual. Criterion IV of Appendix B requires that applicable regulatory requirements be included or referenced in the procurement documents. In order to ensure that items with safety-related functions have adequate QA applied, POs shall specify compliance with the requirements of Appendix B to 10 CFR Part 50. In addition, imposing Appendix B to 10 CFR Part 50 in the POs ensures that it is passed down to the sub-suppliers. Examples of items and services procured without the imposition of Appendix B to 10 CFR Part 50 in the POs include but are not limited to bars, pipe caps, castings, impeller assemblies, welding material, and concentric reducers. The NRC inspection team identified this issue as Nonconformance 99900345/2018-201-02 for HTI's failure to impose the requirements of Appendix B to 10 CFR Part 50 in its safety-related POs for items and services procured as basic

components. HTI initiated Corrective Action Report (CAR) No. 1102 to address this issue.

b.2 Oversight of Suppliers

HTI holds an ASME B&PV Code N-Type Certificate. HTI can qualify suppliers as Material Organizations (MOs) in accordance with Subsection NCA-3842.2, "Evaluation of the Qualified Material Organization's Program by Certified Material Organizations of Certificate Holders," in Subsection NCA, "General Requirements for Division 1 and Division 2," of Section III, "Rules for Construction of Nuclear Facility Components." These suppliers' QA programs must meet the requirements of NCA-3800, "Metallic Organization's Quality System Program." In Information Notice No. 86-21, "Recognition of American Society of Mechanical Engineers Accreditation Program for N Stamp Holders," the NRC stated that having a QA program based on NCA-3800 is evidence that the supplier has a documented QA program that meets the requirements of Appendix B to 10 CFR Part 50. However, since the NRC's recognition only applied to the programmatic aspects of the ASME accreditation program, Certificate Holders are still responsible for ensuring that the supplier is effectively implementing the approved QA program. For the procurement of safety-related items and services, these suppliers must also have a program that meets the requirements of 10 CFR Part 21, "Reporting of Defects and Noncompliance."

During the review of a sample of external audit reports, the NRC inspection team noted that an MO that was programmatically regarded as a safety-related supplier (i.e. castings). However, the supplier had a QA program based on the International Organization for Standardization (ISO) 9001:2008, "Quality Management System - Requirements." In order to qualify a supplier as an MO, HTI must ensure that the supplier's QA program meets the requirements of Section NCA-3850, "Quality System Program Requirements," of Section III of the ASME B&PV Code, as required by Subsection NCA 3842.2 (a). Specifically, Subsection NCA-3842.2 (a) states, "The Quality System Program shall be surveyed, accepted, and audited by the party performing the evaluation on the basis of its compliance with the applicable material requirements of this Section and the requirements of NCA-3850." In addition, the quality manual of an MO must meet the requirements of NCA-3853.1, "Quality System Manual," of Section III of the ASME B&PV Code, which states, in part that, "The Quality Program shall be described and summarized in a Quality System Manual that shall be a major basis for demonstration of compliance with the rules of this Section." The NRC inspection team identified several examples in which HTI's audit checklist did not provide sufficient objective evidence to support the conclusion that the MO's QA program had the processes and controls in place to meet the applicable requirements of Subsection NCA-3850. For example, the NRC inspection team noted that the audit checklist requirements were identified as being met; however, there was no additional information provided within the checklist to support the auditor's conclusion that the applicable NCA-3850 requirements were met. The NRC inspection team reviewed the MO's quality manual to independently verify whether they met the requirements of NCA-3853.1; however, the quality manual did not contain additional attachments or appendices that would address the gap between a QA program based on ISO 9001:2008 and a QA program based on Subsection NCA-3800. The NRC inspection team identified this issue as Nonconformance 99900345/2018-201-01 for HTI's failure to establish adequate measures for source evaluation and selection of contractors and subcontractors and

measures to obtain objective evidence of quality furnished by the contractors or subcontractors.

Additionally, during the review of welding material procurement, the NRC inspection team identified an example where HTI procured commercial material that was utilized in a safety-related application without reviewing the suitability of the material or ensuring conformance to the purchase requirements of the customer's PO. HTI performed weld repairs on three ASME Section III (Class 3, 1971 Edition, Summer 1973 Addenda) safety-related service water pump diffusers (HTI part number 71-420-067-001-N705A, batch numbers EK484, EK 485 and EK479 respectively), using commercially procured weld wires. Specifically, HTI issued PO No. 146172 (October 2017) for the procurement of commercial American Welding Society (AWS) A5.7, classification ERCuAl-A2 weld wires of 0.045-inch diameter size on lot numbers 2589 and 2611 from a commercial weld material supplier. During the period since HTI's previous purchase of the welding material, the supplier modified their QA program by removing the requirements of Appendix B to 10 CFR Part 50. HTI was aware of the changes the weld material supplier made to their QA program but failed to take action to verify the suitability of the material procured. HTI used this weld wire to weld repair three of the four safety-related service water pump diffusers that were shipped to a licensee. HTI's use of the commercial welding material supplier in safety-related applications resulted in the diffusers being of indeterminate quality. The NRC inspection team identified this issue as an example of Nonconformance 99900345/2018-201-03 for HTI's failure to verify the suitability of the material and assure the material conforms to the purchase document requirements. HTI immediately alerted the licensee that the diffusers in the safety-related pumps were of indeterminate quality and initiated their Part 21 evaluation process. HTI initiated CAR No. 1103 to address this issue.

c. Conclusion

The NRC inspection team issued Nonconformances 99900345/2018-201-02 99900345/2018-201-01, and 99900345/2018-201-03 associated with HTI's failure to implement the regulatory requirements of Criterion IV and VII respectively of Appendix B to 10 CFR Part 50.

Nonconformance 99900345/2018-201-02 cites HTI for failing to include the applicable regulatory requirements in its safety-related procurement documents for items and services to ensure that adequate quality is suitably included or referenced. Specifically, HTI did not impose the requirements of Appendix B to 10 CFR Part 50 in its safety-related POs for items and services procured as basic components.

Nonconformance 99900345/2018-201-01 cites HTI for failing to establish adequate measures for source evaluation and selection of contractors and subcontractors to assure that purchased material, equipment, and services conformed to procurement documents. Specifically, HTI failed to adequately qualify a commercial castings supplier as an approved supplier in accordance with the requirements of NCA-3800 in Subsection NCA of Section III of the ASME B&PV Code.

Nonconformance 99900345/2018-201-03 cites HTI for failing to verify the suitability of the material and assure the material conforms to the purchase documents requirements. Specifically, HTI procured welding material from a commercial supplier that was used for

weld repair of safety-related service water pump diffusers without reviewing the suitability of the material or assuring that the material conformed to the purchase requirements of the customer's purchase order.

4. Commercial-Grade Dedication

a. Inspection Scope

The NRC inspection team reviewed HTI's program for the dedication of commercial-grade items for use in safety-related applications to verify its compliance with the applicable regulatory requirements of Criterion III, "Design Control," and Criterion VII, "Control of Purchase Equipment, Materials, and Services" of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed the policies and procedures governing the implementation of commercial-grade dedication (CGD) program and review of related documentation. Specifically, the NRC inspection team reviewed dedication packages to assess the different elements of the CGD program, including the technical evaluation process, work package instructions, and inspection reports. The NRC inspection team evaluated the criteria for the identification of item functions, credible failure mechanisms/modes, selection of critical characteristics (CCs) and acceptance criteria, and the identification of verification methods to verify effective implementation of HTI's dedication process.

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

b. Observations and Findings

The NRC inspection team reviewed QIP-32.0, "Commercial Grade Dedication Program," which provides the process for dedicating commercial-grade items and services for use in safety-related applications, including the development of CCs, and identification of dedication methods and acceptance criteria. HTI primarily uses Method 1, "Special Tests and Inspections," and Method 2, "Commercial-Grade Survey," to perform CGD. These methods are included in the NRC endorsed industry guidance of Electric Power Research Institute's (EPRI) 3002002982, that states the purchaser must confirm, as part of the CGD survey, that the selected commercial-grade item CCs are controlled under a documented quality program for the scope of the activity. The NRC inspection team found several instances in which HTI performed limited-scope audits of the supplier's QA program rather than CGD surveys specific to the CCs of the item or service being dedicated.

During review of the selected CGD samples, the NRC inspection team noted that on some CGD plans, the CCs were not listed or easily identified for that particular item or service. The CGD plans provided tables that contained generalized quality control information instead of identifying a quantifiable and/or measurable attribute that could be verified as part of the CGD process. This practice is contrary to the requirements listed in HTI procedure QIP-32.0. During discussions with HTI Engineering and QA staff, it was explained to the NRC inspection team that there was a misunderstanding on the CCs selected by Engineering and QA. Specifically, HTI was auditing quality control

requirements and not the CCs of the specific item or service as identified by the CGD plans. For the CGD surveys reviewed (i.e. machining services), the NRC inspection team was not able to find objective evidence that HTI's CGD surveys would provide reasonable assurance that the item or service will perform its intended safety function. The NRC inspection team identified this issue as an example of Nonconformance 99900345/2018-201-03 for the failure to assure that purchased material and services conformed to the procurement documents through source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the contractor or subcontractor source, or examination of products upon delivery for the items or services provided. Specifically, the NRC inspection team determined that HTI performed limited-scope audits of the commercial supplier's QA program rather than commercial-grade surveys to verify how the identified CCs were controlled, which are specific to the item or service procured.

HTI initiated corrective actions to review the CGD plans and CGD survey checklists to ensure that the correct CCs, as defined by 10 CFR Part 21, were properly identified. As a result of the Nonconformance identified above, HTI generated CAR No. 1101 to address the issue with CGD surveys to ensure that the CCs identified in the technical evaluations are listed in the revised checklist that will be used to conduct CGD surveys.

c. Conclusion

The NRC inspection team issued Nonconformance 99900345/2018-201-03 in association with HTI's failure to implement the regulatory requirements of Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. Nonconformance 99900345/2018-201-03 cites HTI for failing to establish measures to assure that services whether purchased directly or through contractors and subcontractors, conform to the procurement documents. Specifically, the NRC inspection team determined that HTI performed a limited-scope audit of the commercial supplier's QA program of machining service rather than a commercial-grade survey to verify how the identified critical characteristics were controlled specific to the service procured.

5. Control of Measuring and Test Equipment

a. Inspection Scope

The NRC inspection team reviewed HTI'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.

The NRC inspection team selected a sample of M&TE to verify that they had the appropriate calibration stickers with the current calibration and due dates. The NRC inspection team also verified that the M&TE had been calibrated, adjusted, and maintained at prescribed intervals. In addition, reviewed calibration records to verify that it contained the "as-found," "as-left" conditions, accuracy required, calibration results, calibration dates, owner of the calibration services, standard(s) used, and the due date for recalibration. The NRC inspection team verified that the selected M&TE was calibrated using standards traceable to known industry standards including those outsourced for calibration and used within the acceptable tolerance range of application. All M&TE equipment was traceable with a unique identification (ID) number. The ID

number is traceable and retrievable to an M&TE log containing all of the information regarding the calibration history.

The NRC inspection team also verified HTI's process of handling out-of-tolerance M&TE received from a calibration supplier or when identified during the re-calibration process. The NRC inspection team verified that HTI initiated nonconformance reports (NCRs) for M&TE found out-of-tolerance to track all the items previously inspected and accepted using the same M&TE, if necessary, to conduct an extent of condition review for potential acceptability of items shipped.

The NRC inspection team discussed the M&TE program with HTIs management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

The NRC inspection team reviewed calibration records of M&TE selected from a sample of final inspection and test reports of ASME and safety-related components. During this review the NRC inspection team noted that a pressure gauge ID No. HTS-21-057 having a calibration tolerance range of 0-400 pounds per square inch gauge (PSIG) was pre-test calibrated and used during hydrostatic testing of three ASME Section III safety-related diffusers associated with part number (P/N) 71-420-067-001-N705A, batch Nos. EK484, EK485 and EK479 respectively, under HTI contract No. 10518, and shipped to a nuclear facility under PO No.4500041304. Upon review of HTS21-057 calibration records, the NRC inspection team noted that the pressure gauge had been calibrated outside its tolerance range with standard dead weight tester ID No. HTS-21-001 that had a calibrated tolerance range of 1,000 to 10,000 PSIG. Upon further, review of the gage control record for HTS-21-057, the NRC inspection team noted that the pressure gauge had been calibrated and used on safety-related hydrostatic testing activity since September 29, 2015. The pressure gauge was also calibrated using the same standard dead weight tester ID No. HTS-21-0001.

HTI's QA Manual Section 12, "Control of Measuring and Test Equipment," subsection 12.3, states, in part that, "calibration activities will be performed in accordance with written procedures prepared by the QCI and reviewed and approved by the QA Director. These procedures include the basis and method of calibration, allowable tolerance and other controls that assure that M&TE is properly adjusted at specified period of use intervals." The QA Manual also states, "pressure gauges used for hydrostatic test will be calibrated against a standard dead weight tester before each test or series of tests. A series is that group of tests using the same gauge, which is conducted within a period not exceeding two weeks. Analog type gauges will have a range of not less than 1 ½ times nor more than 4 times the test pressure."

To verify implementation of Section 12 of HTI's QA Manual, the NRC inspection team reviewed QIP-10, "Control of Measuring and Test Equipment," and noted that the procedure is for control of HTI's M&TE. However, the procedure has no detailed calibration guidance. The NRC inspection team determined that HTI had an inadequate calibration procedure for pressure gauges that would include the basis and method of calibration, allowable tolerance and other controls that assures the pressure gauge is properly adjusted at specified intervals of use. As a result of an inadequate procedure, HTI failed to establish controls to ensure that the pressure gauge used in hydrostatic

testing of safety-related components affecting quality were properly calibrated and adjusted at specified periods to maintain their accuracy within necessary limits. Specifically, the NRC inspection team determined that the pressure gauge used during a hydrostatic test of three ASME Section III safety-related diffusers for a licensed nuclear power facility was not calibrated within its tolerance range with a standard dead weight tester using an established calibration procedure. The validity of such hydrostatic test results are of indeterminate quality. This issue is identified as Nonconformance 99900345/2018-201-04. HTI initiated CAR, No. 1111 to address this issue.

c. Conclusion

The NRC inspection team issued Nonconformance 99900345/2018-201-04 for HTI's failure to implement the regulatory requirements of Criterion XII of Appendix B to 10 CFR Part 50. Nonconformance 99900345/2018-201-04 cites HTI for failing to establish measures to assure that measuring equipment used in activities affecting quality are properly calibrated and adjusted at specified periods to maintain accuracy within necessary limits. Specifically, in this example, HTI's inadequate procedure governing the control of M&TE resulted in the pressure gauge used in hydrostatic testing of safety-related components being improperly calibrated and adjusted to maintain their accuracy within necessary limits.

6. Corrective Action,

a. Inspection Scope

The NRC inspection team reviewed HTI's policies and implementing procedures that govern the corrective action program to verify compliance with the regulatory requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. The NRC inspection team also reviewed HTI's response to the Notice of Nonconformance 99900345/01-201-01 and 99900345/01-201-02 documented in the 2001 NRC inspection report.

The NRC inspection team also reviewed a sample of CARs to ensure that conditions adverse to quality were promptly identified and corrected. In addition, the NRC inspection team verified that the CARs provided: (1) adequate documentation and description of conditions adverse to quality; (2) appropriate analysis of the cause of these conditions and the corrective actions taken to prevent recurrence; (3) direction for review and approval by the responsible authority; (4) a description of the current status of the corrective actions; and (5) follow-up actions taken to verify timely and effective implementation of the corrective actions. Furthermore, the NRC inspection team verified that HTI's corrective action process provides a link to the 10 CFR Part 21 program.

The NRC inspection team also discussed the corrective action program with HTI's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

The NRC inspection team verified HTI's implementation of the corrective actions related to the 2001 NRC inspection findings by verifying the current policies and procedure and how these were implemented.

Nonconformance 99900345/01-201-01 stated that HTI's CGD procedure contained inadequate sample plan guidance for commercial-grade dedication. As a result, HTI failed to properly dedicate commercial-grade screws for a safety-related application. The NRC inspection team noted that HTI recently issued QIP-32.5, "Sampling Plan for Commercial Grade Dedication," which is based on EPRI TR-017218, "Guideline for Sampling in the Commercial-Grade Items Acceptance Process." Based on the recent changes in HTI's commercial-grade dedication sampling plan process and the recently revised procedure, the NRC inspection team concluded that if HTI performed sampling in accordance with QIP-32.5, then the sampling methodology should be adequate. Based on HTI's recent improvement on the process that describes the selection of sampling plans, the NRC inspection team determined that the issue identified as an example of Nonconformance 99900345/01-201-01 had been addressed.

The second example of Nonconformance 99900345/01-201-01 cited HTI for failing to adequately dedicate commercial material as required by the procurement documents before it was used in a safety-related application. To verify the adequacy of the corrective action program, the NRC inspection team evaluated the current CGD policies and implementing procedures. The NRC inspection team found an example of HTI procuring commercial material and failing to verify the suitability before use in a safety-related application (see NON 99900345/2018-201-03). Because the issues identified under Nonconformance 99900345/2018-201-03 are of a similar nature, the NRC inspection team closed Nonconformance 99900345/01-201-01.

Nonconformance 99900345/01-201-02 stated that HTI's QA Manager and QCI had been performing the duties of the quality control (QC) supervisor when the QC supervisor left HTI, thus lacking functional independence. The NRC inspection team reviewed HTI's implementation of their corrective action to ensure activities performed by individuals were independent from those that performed the work. Upon review of a final QA documentation package for PO 45481060, HTI contract No. UG9420, the NRC inspection team identified current examples were the QA Director had performed QC functions and then approved his own work, thus lacking independence. Specifically, the QA director performed a LP examination as a Level II NDE inspector on a rotor assembly, HTI part No. 01-403-581-001 serial No. EC933 on September 29, 2016, and then certified and approved the CoC and Form N-5 ASME Code data report on January 5, 2017, for HTI 2x3-13/ UC2-A3 Reactor Water Clean-Up Pump assembly serial No. 9420-1-3-15. In addition, the QA director performed Level II visual examination for welds on a thermal neck assembly cooling jacket, HTI part No. 01-403-581, batch No. EC909 and then certified the Form N-2 ASME Code data report on January 5, 2017. This action is contrary to Criterion II, Quality Assurance Program," and Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50 for HTI's failure to maintain organization independence and assure that conditions adverse to quality are promptly identified and corrected. The NRC inspection team determined that the QA Director was not independent of work being inspected. This issue is identified as an example of Nonconformance 99900345/2018-201-05. Because the issues identified under Nonconformance 99900345/2018-201-05 are of a similar nature, the NRC inspection team closed Nonconformance 99900345/01-201-02.

For the second example of Nonconformance 9990345/01-201-02, which cites HTI's failure to have adequate controls for the issuance of welding material, the NRC inspection team reviewed HTI's MFS-1, "Issuance and Return of Welding Material." The

NRC inspection team noted that Subsection 7.1.6 of MFS-1 requires QA personal to confirm the time and date the material was withdrawn prior to use and documented on a job traveler. The NRC inspection team selected a sample of nuclear job travelers and interviewed QCI and welders for the day and night shifts. The nuclear job travelers reviewed had weld material traceability documented with QA sign-off and date confirmed. However, the job traveler does not provide sufficient objective evidence whether the QC inspector verified the weld material traceability at the time and day it was issued and whether it was performed prior to welding activity. In addition, the job traveler has no objective evidence which day and time the welder issued the weld material from the weld storage area. The NRC inspection team determined that welding of safety-related components performed during night shift and on weekends was conducted without QA or QCI present to confirm the weld material traceability at the time weld material was issued prior to welding. This issue is identified as an example of Nonconformance 99900345/2018-201-05. Because the issues identified under Nonconformance 99900345/2018-201-05 are of a similar nature, the NRC inspection team closed Nonconformance 99900345/01-201-02.

c. Conclusion

The NRC inspection team issued Nonconformance 9990345/2018-201-05 for HTI's failure to implement the regulatory requirements of Criterion XVI of Appendix B to 10 CFR Part 50. Nonconformance 99900345/2018-201-05 cites HTI for failing to implement their corrective action program. Specifically, HTI did not ensure that: (1) verification of the suitability of material to be used in a safety-related application was verified; (2) the QA director was independent of work being inspected; and (3) the weld material issued from weld storage area by welders for use on safety-related components was confirmed by QA or QCI personal at the time and day they were released prior to any welding activity.

7. Internal Audits

a. Inspection Scope

The NRC inspection team reviewed HTI's program for managing internal audits to verify compliance with the applicable regulatory requirements of Criterion XVIII, "Audits" of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed HTI's policies and implementing procedures that govern the internal audit program to verify compliance with the regulatory requirements. The NRC inspection team reviewed a sample of internal audit reports from 2016 through 2017. The NRC inspection team verified that lead auditors prepared and approved plans that identified the audit scope and checklist criteria prior to the audit. The NRC inspection team verified the internal audits contained adequate documented evidence and that audits were performed by personnel not having direct responsibilities in the areas being audited. In addition, the NRC inspection team confirmed that audit findings were dispositioned and corrective actions were implemented to correct the issues identified in a timely manner. The NRC inspection team also reviewed a sample of HTI's auditor training records and confirmed that auditing personnel had the required training and maintained their qualification in accordance with HTI's policies and procedures.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that HTI is implementing its internal audit program in accordance with the regulatory requirements of Criterion XVIII of Appendix B to 10CFRPart 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that HTI is implementing its policies and procedures associated with the audit program. No findings of significance were identified.

8. 10 CFR Part 21

a. Inspection Scope

The NRC inspection team reviewed HTI's policies and implementing procedures that govern the 10 CFR Part 21, "Reporting of Defects and Noncompliance," program to verify compliance with the regulatory requirements. In addition, the NRC inspection team evaluated the 10 CFR Part 21 postings and a sample of HTI's POs for compliance with the requirements of 10 CFR 21.31, "Procurement Documents." The NRC inspection team also verified that HTI's nonconformance and corrective action procedures provide a link to the 10 CFR Part 21 program. The NRC inspection team reviewed HTI's two 10 CFR Part 21 evaluations and verified HTI had effectively implemented the requirements for evaluating deviations and failures to comply. The NRC inspection team verified that the notifications were performed in accordance with the requirements of 10 CFR 21.21, "Notification of Failure to Comply or Existence of a Defect and its Evaluation," as applicable.

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

b. Observations and Findings

No findings of significance were identified.

c. Conclusions

The NRC inspection team concluded that HTI is implementing 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 HTI is implementing its policies and procedures associated with the 10 CFR Part 21 program. No findings of significance were identified.

9. Nonconforming Materials, Parts, or Components

a. Inspection Scope

The NRC inspection team reviewed HTI's policies and implementing procedure that govern the control of the nonconformance program to verify compliance with the requirements of Criterion XV, "Nonconforming Materials, Parts, or Components," of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed a sample of NCRs to verify that HTI; (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 with regard to 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 NCRs provided a link to the 10 CFR Part 21 program.

The NRC inspection team also discussed the nonconforming materials, parts, or components program with HTI's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that HTI established its nonconforming materials, parts, or components program in accordance with the regulatory requirements of Criterion XV of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that HTI is implementing its policies and procedures associated with the nonconformance program.

No findings of significance were identified.

10. Entrance and Exit Meetings

On July 16, 2018, the NRC inspection team discussed the scope of the inspection with Mr. Benjamin Hardy, President, and other members of HTI's management and technical staff. On July 20, 2018, the NRC inspection team presented the inspection results and observations during an exit meeting with Mr. Hardy and other members of HTI'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

Name	Title	Affiliation	Entrance	Exit	Interviewed
Jonathan Ortega	Inspector, Team Lead	NRC	X	X	
Raju Patel	Inspector	NRC	X	X	
Thomas Herrity	Inspector	NRC	X	X	
Kerri Kavanagh	Branch Chief	NRC		X	
Benjamin Hardy	President	Hayward Tyler, Inc. (HTI)	X	X	
Doug Roszman	Q.A. Director	HTI	X	X	X
Keith Oldinski	Director of Product Development	HTI	X		
Erica Webb	Quality Engineer	HTI	X	X	
Shauna Richardson	DVS Manager	HTI	X	X	
Matthew Ellis	Quality Assurance Engineer	HTI	X	X	
Jeremy Frances	Director Of Continuous Improvement	HTI	X	X	
Drew Van Norman	Engineering Manager	HTI	X	X	
Shawn McCarthy	QE Services	HTI	X		
Nathan Howard	Director of Operations	HTI	X	X	
Cindy Guyette	Parts Value Stream Manager	HTI	X	X	
Li Kato	QA Inspector	HTI	X		
Paul Petty	QA Inspector	HTI	X	X	
Anne Provencher	Quality Administrator	HTI	X	X	X
James W. Martin	Quality Engineer	HTI	X	X	
Camden DiMiclo	Lead Aftermarket Design Engineer	HTI		X	

John Katon	QA Inspector	HTI		X	
Joseph Coglg	Supply Chain Manager	HTI		X	

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
99900345/2018-201-01	OPENED	NON	Criterion VII
99900345/2018-201-02	OPENED	NON	Criterion IV
99900345/2018-201-03	OPENED	NON	Criterion VII
99900345/2018-201-04	OPENED	NON	Criterion XII
99900345/2018-201-05	OPENED	NON	Criterion XVI
99900345/01-201-01	CLOSED	NON	Criterion VII
99900345/01-201-02	CLOSED	NON	Criterion V

4. DOCUMENTS REVIEWED

Policies and Procedures

- Hayward Tyler (HTI) Quality Assurance Manual Edition 7, Revision 0, dated January 12, 2017
- HTI 01-009-898, "Purchase Order Requirements for Subcontracting of Calibration and Testing Services," Revision L, dated July 12, 2018
- HTI 01-019-204, "Quality Assurance Requirements for Safety Related Items," Revision B, dated December 21, 2000
- HTI 01-019-409, "Quality Assurance Requirements for ASME Code Items," Revision B, dated February 27, 1996

- Quality Assurance Standard (QAS-1), “Receiving & Receiving Inspection,” Revision 10, dated July 11, 2018
- QAS-15, “Measurement of Dry Coating Thickness with Magnetic Gages,” Revision 0, dated March 10, 1994
- QAS-16, “Magnetic Particle Examination (Fluorescent),” Revision 2, dated April 13, 2017
- QAS-3, “In-Process and Final Inspection,” Revision 9, dated July 11, 2018
- QAS-4, “Direct Visual Examination of Welds and Repairs of Welds,” Revision 5, dated April 13, 2017
- QAS-8, “Operation of a Ferrite Indicator,” Revision 0, dated January 29, 1993
- Quality Implementing Procedure (QIP)-6, “Qualification of Inspection and Test Personnel,” Revision 5, dated March 20, 2017
- QIP-10, “Control of Measuring and Test Equipment,” Revision 8, dated April 10, 2017
- QIP-11, “Qualification and Certification of Visual Examination Personnel,” Revision 7, dated April 13, 2017
- QIP-32.5, “Sampling Plans for Commercial Grade Dedication,” Revision 0, dated July 2, 2018
- QIP-41, “Procedure for Engineering Evaluations,” Revision E, dated May 8, 2017
- QIP-7, “Training and Certification of Liquid Penetrant Personnel,” Revision 8, dated April 13, 2017
- QIP-8, “Hydrostatic Pressure Test of Parts and Components,” Revision 8, dated April 14, 2017
- QAS-1, “Receiving and Receiving Inspection,” Revision 10, dated July 11, 2018
- Manufacturing Standard (MFS)-1, “Issuance and Return of Welding Material,” Revision 5, dated September 12, 2016
- MFS-2, “Storage and Handling of Welding Electrodes,” Revision 1, dated August 26, 2015
- MFS-10, “Contamination Prevention for Corrosion-Resistant Alloys,” Revision 3, dated January 25, 2017
- Welding Procedure Specification (WPS)-T8.8-1, “Gas Tungsten Arc Welding (GTAW) P8 to P8,” Revision 3, dated August 17, 2017, qualified to ASME Section III and IX
- WPS-M8.8-1, “Gas Metal Arc Welding (GMAW) P8 to P8 Solid Wire,” Revision 2, dated January 15, 2014, qualified to ASME Section III and IX
- WPS-S8.8-1, “Shielded Metal Arc Welding (SMAW) P8 to P8,” Revision 2, dated September 15, 2004, qualified to ASME Section III and IX
- Procedure Qualification Record (PQR) of1K1-MH, dated January 18, 1980, for WPS T8.8-1, stainless steel materials in GTAW process, qualifying welder W111 in 3G position
- PQR 0T9K8ME, dated 9, 1980, for WPS M8.8-1 stainless steel material in GMAW process qualifying welder W101 in 1G position
- PQR 1E4K6MH, dated June 27, 1979, for WPS S8.8-1, stainless steel material in SMAW process qualifying welder W105 in 3G position
- ENS-86, “Spring Rate Test Procedure,” Revision 0, dated January 3, 2018
- WPS T35.35-4,”GTAW P35 to P35,” Revision 4, dated March 20, 2014

- WPS M35.35-3, “GMAW P35 to P35 with Solid Wire,” Revision 3 dated August 2, 2011

Design and Commercial-Grade Dedication Records

- Engineering Change Notice (ECN) 11582, dated September 14, 2001, to update MFS-1 Revision 0, to reflect current practice as part of NRC inspection May 2001
- ECN 12159, to update MFS-1, MFS-3 and MFS-9
- ECN 14126, dated December 01, 2009, to update MFS-1 Revision 2
- CGD-10413-001, “Commercial Grade Dedication Plan Check Valve Spring on HTI Contract 10413,” Revision A, dated February 21, 2018
- CGD-10219-006, “Commercial Grade Dedication Plan for Line Shaft Coupling on HTI Contract 10219,” Revision 0, dated October 31, 2017
- EST-0300-001, “Technical Evaluation for Measurement & Test Equipment Calibration Services,” Revision 0, dated April 13, 2018
- EST-0300-002, “Technical Evaluation for Laboratory Material Testing Services,” Revision 0, dated April 13, 2018
- QAF-75, “Commercial-Grade Dedication of Calibration and Testing Services for a Go/No Go Gage Set,” dated May 23, 2018
- QAF-75, “Commercial-Grade Dedication of Calibration and Testing Services,” Revision J
- QAF-75, “Commercial-Grade Dedication of Calibration and Testing Services for a Coordinate Measuring Machine,” dated February 8, 2018

American Society of Mechanical Engineers (ASME) and Welding Records

- ASME N-5 form, “Certificate Holder’s Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Supports, and Appurtenances,” for Reactor WCU assembly part No. 01-500-851 serial No. 9420-1-3-15 built to ASME Section III Class 3 1974 Edition 1975 Winter Addenda, for a licensee, dated January 5, 2017
- ASME N-1 form, “Certificate Holder’s Data Report for Nuclear Vessels,” for Horizontal Heat Exchanger part No. 01-500-854, serial No. 9420-1-3/11 built to ASME Section III Class 3 1974 Edition Winter 1975 Addenda for a licensee, dated January 5, 2017
- HTI nuclear job traveler for Job No. UN10222-1-6 for Motor-Case fabrication and machine part No. 01-403-636, operation No. 50 fabricate per drawing documents weld material traceability ER316L, batch No. EH932/EH933, verified by QCI on July 10, 2018

Calibration, Heat Treatment, Non-Destructive Examination (NDE), Inspection and Test Records

- Certificate of Calibration No. 0011076368, dated January 12, 2018 for HTI part No. HTS 01-065 10 pound weight test bar serial No. 19225 to HTI PO 146964, inspected upon receipt on January 20, 2018
- Certificate of Calibration No. 0011076346, dated March 12, 2018, for HTI part No. HTS 91-142 digital Radiometer model No. DM-365XA serial No. 2036962, inspected upon receipt by QCI on March 14, 2018
- HTI gage control record form No. 56, for 0-12-inch depth micrometer gage No. HTS-12-148, calibrated on November 7, 2017 using traceable standard gage block set No. HTS-01-023, due November 7, 2018
- HTI gage control form No. 56, for 0-400 pressure inch gage pressure gage No. HTS-21-057, calibrated on May 4, 2018 using master dead weight tester No. HTS-21-001
- Certificate of Calibration No. 0011041407, dated July 20, 2017, for HTI part No. HTS-21-001 dead weight tester model No. 1305B serial No. INA-24753, calibrated for 1025 – 10000 PSIG tolerance due July 20, 2018, inspected by QCI upon receipt on August 11, 2017
- Certificate of Calibration No. 0011048734, dated August 21, 2017 for HTI part No. HTS-01-039 Vernier caliper master serial No. 1589 due August 21, 2019 with as-found as-left condition traceable to known national standard, received by QCI on August 3, 2017
- Certificate of Calibration No. 0011076344, dated January 17, 2018, for HTI part No. HTS-01-023 gage block set serial No. 77110 calibration due January 17, 2019, with as-found and as-left condition and traceable known national standard
- Hydrostatic Test Report dated May 4, 2018, for Sales Order (SO) No. 10518 for Diffuser Part No. 71-420-067-001-N705A, serial No. EK485 tested per QIP-8 Revision 8 and Test Appendix 01-009-431 Revision 0 on job traveler No. PG10518-1-3 tested at 185 pounds per square inch gauge (PSIG) for 30 minutes using gage No. 21-057 (range 0-400 PSIG) with results documented by HTI technician, verified and accepted by quality control inspector (QCI) on May 4, 2018
- Hydrostatic Test Report dated February 12, 2018, for SO No. 10219-1 on a discharge elbow (EH630), three columns (EH421 and EH386), suction bowl (EH315) and diffuser (EH322) part No. 01-101-248-N0000, per QIP-8, Revision 8, Test Appendix No. 01-019-955 Revision A, on job traveler No. UG10219-1-1, tested at 300 PSIG for 10 minutes using gage No. HTIS-21-051, witnessed and accepted by QCI, ANI
- Hydrostatic Test Report dated February 12, 2018 for SO No. 10219-1-1 for 5 columns serial No. EH386 Part No. 01-101-248-001-N0000 using QIP-8 and Test Appendix 01-019-955 tested at 312 PSIG at 60 F for 10 minutes using gage ID No. HTIS-21-051 (range 0-1000 PSIG), using city water, with test reviewed and accepted by QCI and ANI
- Liquid Penetrant Examination (LPE) Report dated March 12, 2018 for Thermal Neck part No. 01-403-644 serial No. EH910 performed by a Level II Inspector
- LPE Report dated September 29, 2017 for rotor shaft for rotor assembly part No. 01-403-581, serial No. EC933 performed by QA director as Level II
- LPE Report dated October 21, 2016 for heat exchanger tube to tubesheet welds on heat exchanger part No. 01-500-854, serial No. ED744 performed by a Level II Inspector

- Visual Examination (VE) Report for Welds dated March 23, 2018, performed on motor/stator assembly part No. 01-403-637 batch No. EJ234 on SO No. 10222-1-3, accepted by a Level II Inspector
- VE Report dated October 21, 2016, performed on heat exchanger part No. 01-500-854 serial No. ED744 accepted by a Level II Inspector
- Receiving Inspection Report (RIR) for SO No. UB10769-1-1, for seamless tubes 5/8-inch x 0.095-inch wall material ASME SA 213 Type 316 Heat No. YX1703-659 and HTI PO No. 148429 accepted by QA on July 16, 2018, assigning HTI batch No. EL524-1 and EL524-2
- RIR for Part No. ARN NER 316L 3/32 weld electrodes size 3/32 X 36-inch x 10 pounds of ER316/316L procured on PO 146002 Heat No. 751142, lot No. CT0414, with CMTR reviewed and accepted by QA HTI 38 and final inspected by HTI on September 19, 2017 assigning Batch No. EH932
- RIR for Part No. ARN NER 316L 1/16 weld electrodes size 1/16 X 36-inch x 10 pounds of ER316/316L procured on PO 146002 Heat No. 751142, lot No. CT0414, with CMTR reviewed and accepted by QA HTI 38 and final inspected by HTI on September 19, 2017 assigned Batch No. EH933
- RIR for Part No. 01-004-215, 6 x ½-inch NPS Schedule 160 pipe Concentric Reducer ASME SA 403 Type 316, PO No. 146248 Heat No. 712686, with certified material test report (CMTR) reviewed and accepted by HTI QA 42 and receipt inspected by HTI on December 10, 2017 and accepted by HTI QA on January 18, 2018 documented on QAF-22 form
- RIR for PO No. 146304 item No. 3 part No. ARN N309L16 1/8 for 1/8 x 14 inch E309/309L-16 electrodes traceable to lot No. 15D17E, control No. DR reviewed and accepted by HTI QA 38 on January 15, 2018 assigning batch No. EJ274
- HTI Final Inspection Report dated May 7, 2018 for diffuser part No. 71-420-067-001-N705A, batch No. EK485 on SO No. 10518 for a licensee, reviewed and accepted by QC Inspector and accepted by QA
- HTI CMTR certifying weld wire processed by a supplier, certificate of conformance (CofC) dated October 20, 2017, for 3/32 x 36-inch weld wire 206 pounds lot No. 2611 and 1/8 x 36 inch 220 pound weld wire lot No. 2611 ER CuAl-A2 WWW A2 Bronze ASME A5.7 with analytical report No. 119231 from a laboratory, dated October 6, 2017 reviewed and accepted by HTI QA 36 on December 1, 2017 assigning batch No. EJ224 and EJ225
- CofC for Certified Material Test Report (CMTR) dated May 30, 1980, for HTI PO No. 21177 item No 01, 3/16 x16-inch 12x10 pound E308L-16 ASME SFA 5.4 electrodes traceable to Heat 95533 Lot No. 2406246, reviewed and accepted by HTI QA 22 on June 5, 1980
- CofC dated October 25, 2017, for HTI PO No. 146304 item No. 3 part No. ARN N309L16 1/8 for 1/8 x 14 inch E309/309L-16 electrodes traceable to lot No. 15D17E, control No. DR reviewed and accepted by HTI QA 38 on January 15, 2018 assigning batch No. EJ274
- CofC dated September 12, 2017, for HTI PO 146002 item No. 1 for 6 x 10 pounds of 3/32 x 36-inch ER316/316L electrodes traceable to Heat No. 751142, Lot No. CT0414,

reviewed and accepted by HTI QA 38 on September 25, 2017 assigning batch No. EH932

- CofC dated September 12, 2017, for HTI PO 146002, item No. 2 for 2 x 10 pounds of 1/16 x 36-inch ER316/316L SFA 5.9 electrodes traceable to Heat No. 751142, Lot No. AT0414, reviewed and accepted by HTI QA 38 on September 15, 2017 assigning batch No. EH933
- CofC dated October 4, 2016, for HTI PO No. 142997, item No. 1 for flux cored wire 0.045-inch x 33 pound spools ESAB E71T-1M traceable to Lot No. 10138487, reviewed and accepted by HTI QA 38 on October 26, 2016 assigning batch No. ED836
- CofC dated December 5, 2017 for HTI PO No. 146248, part No. 01-004-215-263-N3254 for 1 piece of 6 x 2-1/2-inch NPS Schedule 160 seamless concentric reducer with heat No. 712686, heat code NZOJ-1 ASME SA403 Grade WP316 reviewed and approved by HTI QA 42 assigning batch No. EJ609 on January 8, 2018
- CofC for SKC-S Cleaner HTI part No.MFX01-5750-78, dated February 18, 2014, batch No. 14B01K procured on PO 144327 assigned batch No. EF998
- CofC for SKD-S2 developer HTI part No. MFX01-5352-78 dated September 8, 2017, batch No. 17J03K procured on PO 147299 assigned batch No. EK230 by HTI on February 15, 2018

Purchase Orders (PO), Audit Reports, and Commercial-Grade (CG) Survey

- PO 146562, HTI for Diffuser, ASME SB148 C95400 Code Case 1288
- PO 146172, for Weld material, dated October 5, 2017
- PO 148038, for machining shaft, dated May 3, 2018
- PO148265, for Shaft ASTM A564 Type 630, H1150, dated May 29, 2018
- PO 146896, for Casting, dated January 3, 2018
- PO 141744, for Pipe Cap ½ NPS ,dated May 17, 2016
- PO 146897, for Bar, 1.25 dia. Annealed, dated January 3, 2018
- PO 148649, for Testing Services, dated July 16, 2018
- PO 146896, for Casting part, dated January 3, 2018
- PO 141744, for Pipe Cap, dated May 17, 2016
- PO 146897, for Bar, dated January 3, 2018
- PO 147894, for testing services, dated April 17, 2018
- PO 146002, for welding consumables, dated September 12, 2017
- PO 142997, for welding consumables, dated September 29, 2016
- PO 138584, for welding consumable, dated July 22, 2015
- PO 146304, for welding consumable, dated October 19, 2017
- External Audit Report, dated September 7, 2017
- External Audit Report, dated July 5, 2018
- External Audit Report, dated June 17, 2016
- External Audit Report, dated May 19, 2016
- External Audit Report, dated November 3, 2015
- CGD Survey & Limiting Scope Audit, dated April 25, 2018
- CGD Survey, dated April 25, 2018

- NIAC Audit, dated June 11, 2018
- Supplier Annual Evaluation, dated January 3, 2018
- Supplier Annual Evaluation, dated July 12, 2018
- Supplier Annual Evaluation, dated July 27, 2017
- Supplier Annual Evaluation, dated January 6, 2017
- Supplier Annual Evaluation, dated August 21, 2017
- Supplier Annual Evaluation, dated July 12, 2018
- Supplier Annual Evaluation, dated January 5, 2017
- Supplier Annual Evaluation, dated July 17, 2018
- Supplier Annual Evaluation, dated March 9, 2017
- Supplier Annual Evaluation, dated January 16, 2016

Nonconformance Reports

- HTI Discrepant Material Report (DMR) 0081, dated July 12, 2018, issued for ½-inch-14 plug gage ID No. HTIS-35-045 found out of tolerance
- DMR-086, dated July 13, 2018, issued for 11.0000 ringmaster ID No. HTIS-01-012
- DMR-0100, dated April 25, 2018, issued for Transducer ID No. HTIS-52-073
- DMR-0105, dated July 12, 2018, issued for 2.0001 ring gage ID No. HTIS-11-403A

Corrective Action Reports

- Audit Corrective Action Report (CAR) No. 1040, dated May 5, 2014 – Several examples were identified of documents deficiencies such as: no compliance with defined requirements, disagreement between documents, and not addressing standards practices
- Audit CAR No. 1086, dated November 16, 2016 – Reference NRC letter dated 3 November 2016 tracking # NRR-2016-A-0010 issue 1 in file attachments
- Audit CAR No. 1087, dated November 16, 2016 – NRC letter darted 2 November 2016 tracking # NRR-2016-A-0010 issue 2
- Audit CAR No. 1098, dated May 7, 2018 – NUPIC limited Scope Audit (Commercial Grade Dedication) resulted in one finding
- Process CAR No. 1093, dated October 16, 2017 – Out of compliance with QIP 32.0 and QIP 32.1

Corrective Action Reports generated as result of NRC Inspection

- Process CAR No. 1101, dated July 18 - Lack of objective evidence to support the conclusion of the 2017 and 2018 Audits and/or Commercial-Grade Surveys checklist
- Audit CAR No. 1102, dated July 17, 2018 – Safety related purchase orders failed to include requirements of 10CFR50 Appendix B and 10CFR part 21
- Process CAR No. 1102, dated July 19, 2018 – Quality Manual Edition 7 Revision 0 reflects wordings in Section 4 and 7 that are unintentionally restrictive or not sufficiently clear

- Process Car No. 1103, dated July 19, 2018 – Wording are not clear in paragraph 5.0, “Responsibilities” and 6 “Procedure” leading to confusion
- Audit Car No. 1103, dated July 17, 2018 – HTI Used material that were processed by a commercial supplier without a properly documented commercial-grade survey. Material was subsequently used on job PG 10518
- Process CAR No. 1104, dated July 19, 2018 - Several inconsistencies were identified that present confusing and/or conflicting requirements in QIP 32.0, QIP 32.1, QIP 32.2, and QIP 32.4
- Process CAR No. 1105, dated July 19, 2018 – Paragraph 3.6 the reference document (3002002982) is not consistent with QIP 32.0 reference document (5652)
- Process CAR No. 1106, dated July 19, 2018 – Documents 01-019-409 and 01-019-204 only identifies the requirement of 10CFR Part 21 being applicable for safety related purchase orders
- Process CAR No. 1107, dated July 19, 2018 – Procedure MFS-1 and 2 are not sufficiently detailed in specifying the additional concerns that need to be taken into consideration and documented when using the SMAW process
- Process CAR No. 1108, dated July 19, 2018 – The tables 1A and 1B in QIP 7 identify in the total hours column “NDE or QA.” The same verbiage is used in QIP 11 table 1.
- Process CAR No. 1109, dated July 19, 2018 – The qualification of a Level II QC Inspector expired on June 30, 2018.
- Process CAR No. 1110, dated July 19, 2018 – Developer identified as batch No. EJ689 and Cleaner EF998 were not presented to QC for the actual receiving inspection to be completed
- Process CAR No. 1111, dated July 19, 2018 – Dead weight tester, HTS 21-001 was being used for calibration of the Hydro test gages at below the pressure range that was verified by the approved calibration provider.

<u>Training Records</u>

- Level II Visual to QAS 5, dated February 22, 2018
- Level II LP to QAS 5 & 6, dated February 22, 2018
- Level II MP to QAS-16, dated February 22, 2018
- Level II Visual LP, dated January 9, 2018
- Level II Visual and LP dated January 4, 2018
- Level I Visual, dated April 19, 2016
- Level III, MISTRAS appointed as HTI Level III for VT, LP and MT, dated October 7, 2014
- Certificate of Inspection and Test Personnel QAF-4 form, qualified as Level I for receipt in-process and final inspection, hydrostatic testing and calibration services, dated on September 19, 2017
- Level III certificate of inspection and test personnel QAF-4 form, qualified as Level III in receipt in-process and final inspection, hydrostatic test, and calibration services, dated May 13, 2004
- Three Level I Inspectors receiving, in-process and final inspection, hydrostatic and calibration qualified on October 6, 2016

Miscellaneous

- HTI's Welder Continuity Log, dated May 22, 2018 for welder for Aluminum Bronze T35.35-4 and M35.35.3 procedures
- Visual Examination Report for Welds, dated April 13, 2017, for demonstration of QAS-4 Revision 5, to Authorized Nuclear Inspector (ANI) using T-Plate, rejected by HTI and reviewed by ANI on April 13, 2017
- NDE Magnetic Particle Examination Report, dated April 13, 2017, for demonstration of QAS-16, Revision 2, using acceptance criteria 01-020-837 Revision 0, to ANI using butt-welded plate serial No. PL5973, rejected by Level II and reviewed by ANI on April 3, 2018
- NDE Liquid Penetrant Examination Report, dated April 13, 2017, for demonstration of QAS-5, Revision 10 procedure using acceptance criteria 01-005-040 Revision 0, to ANI using a butt welding plate serial No. PL5974, rejected by Level II and reviewed by ANI on April 13, 2017
- Job Traveler No. PG10518-1-3, for part No. 71-420-067-001-N705A diffuser ASME SB148 C95400 Code Case 1288, serial No. 8182-01 to 8182-04 for a licensee with OP No. 20 Inspection conducted and documented by QC Inspector on May 3, 2018, OP No. 40 Hydrostatic Test documented by QA, Tester and QC Inspector on May 4, 2018
- Job Traveler No. RPVG6775/A for Casting Impeller, dated April 27, 2011