

April 21, 2017

Mr. Brett McGlone
Nuclear Compliance Specialist
Swagelok Company
6565 Davis Industrial Parkway, Suite A
Solon, OH 44139

SUBJECT: SWAGELOK COMPANY'S NUCLEAR REGULATORY COMMISSION
INSPECTION REPORT NO. 99901477/2017-201, AND NOTICE OF
NONCONFORMANCE

Dear Mr. McGlone:

On March 20-24, 2017, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Swagelok Company's (hereafter referred to as Swagelok) facilities in Solon, OH. The purpose of this limited-scope routine inspection was to assess Swagelok'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 Swagelok's implementation of the quality activities associated with the design, fabrication, and testing of safety-related valves and replacement parts being supplied to the Westinghouse Electric Company AP1000 reactor design and to domestic operating reactors. The enclosed report presents the results of the inspection. This NRC inspection report does not constitute NRC endorsement of Swagelok's overall quality assurance (QA) program.

During this inspection, the NRC inspection team found that the implementation of your QA program did not meet certain regulatory requirements imposed on you by your customers or NRC licensees. Specifically, the NRC inspection team determined that Swagelok was not fully implementing its QA program in the area of control of purchased material, equipment, and services. The specific finding and references to the pertinent requirements are identified in the enclosures to this letter. In response to the enclosed notice of nonconformance (NON), Swagelok should document the results of the extent of condition review for this finding and determine if there are any effects on other safety-related components.

Please provide a written statement or explanation within 30 days of this letter in accordance with the instructions specified in the enclosed NON. 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

11/20/2017, original, 5/11/2017 review has been completed, [Signature]

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,

/RA/

John P. Burke, Chief
Quality Assurance Vendor Inspection Branch-2
Division of Construction Inspection
and Operational Programs
Office of New Reactors

Docket No.: 99901477

Enclosures:

1. Notice of Nonconformance
2. Inspection Report No. 99901477/2017-201
and Attachment

SUBJECT: SWAGELOK COMPANY'S NUCLEAR REGULATORY COMMISSION
INSPECTION REPORT NO. 99901477/2017-201, AND NOTICE OF
NONCONFORMANCE Dated April 21, 2017

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NOTICE OF NONCONFORMANCE

Swagelok Company
6565 Davis Industrial Parkway, Suite A
Solon, OH 44139

Docket No. 99901477
Report No. 2017-201

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the Swagelok Company (hereafter referred to as Swagelok) facility in Solon, OH, from March 20, 2017 through March 23, 2017, certain activities were not conducted in accordance with NRC requirements that were contractually imposed on Swagelok by its customers or NRC licensees:

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."

Section 7-200, "Supplier Evaluation and Selection," of Swagelok's Quality Assurance Manual, Revision G, dated January 1, 2016, states, in part, that "All suppliers are evaluated based on the effect of the purchased items, source material, or service on the final product to determine their ability to meet specified technical and quality requirements. This includes suppliers who maintain an ASME Quality System Certificate or N type Certificate. The evaluation includes: (1) An on-site survey/audit (see Annex A: Glossary), (2) An assessment of the supplier's quality performance, including recent history of producing similar products, and (3) Quality program, including records and documented objective evidence of effective implementation."

Contrary to the above, as of March 23, 2017, Swagelok failed to establish adequate measures for source evaluation and selection of contractors and subcontractors and failed to establish adequate measures to obtain objective evidence of quality furnished by the contractors or subcontractors. Specifically, the NRC inspection team determined that:

1. Swagelok procured heat treating services from [REDACTED] as safety-related without the conduct of a supplier audit to verify and document the effectiveness of the suppliers quality program to meet the requirements of 10 CFR Part 50, Appendix B and 10 CFR Part 21.
2. Swagelok purchased safety-related material (raw material) and services (e.g. machining, deburring, grinding, cutting, and testing) and did not establish adequate measures to ensure that these suppliers had implemented the requirements of 10 CFR Part 50, Appendix B and 10 CFR Part 21. Specifically, the evaluation of Swagelok's Appendix B to 10 CFR Part 50 and 10 CFR Part 21 programs and associated implementing procedures did not provide documented objective evidence to demonstrate compliance with the requirements passed down through procurement documents.

In addition, Swagelok's audits of these suppliers did not verify that they had imposed and verified the necessary controls, including the applicable regulatory and technical requirements, on their sub-suppliers.

3. Swagelok's commercial-grade surveys of suppliers of commercial machining and heat treating services did not provide adequate documented objective evidence to demonstrate that the process and controls of the selected critical characteristics identified in the Swagelok technical evaluation were adequately controlled and the components would perform their intended safety function. Verification of the control of critical characteristics supports the basis for the selection of the sample testing population for the material's chemical composition and mechanical properties to complete the acceptance testing as part of Swagelok's dedication process.

This issue has been identified as Nonconformance 99901477/2017-201-01.

Please provide a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Chief, Quality Assurance Vendor Inspection Branch-2 Vendor Branch, Division of Construction Inspection and 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: (1) the reason for the noncompliance or, if contested, the basis for disputing the noncompliance; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken to avoid further noncompliance; and (4) the date when the corrective action will be completed. Where good cause is shown, the NRC will consider 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 Agencywide Documents Access and Management System, which is 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 the NRC can make it 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 deletes such information. If you request that such material be withheld, 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 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."

Dated this the 21st day of April 2017.

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

Docket No.: 99901477

Report No.: 99901477/2017-201

Vendor: Swagelok Company
6565 Davis Industrial Parkway, Suite A
Solon, OH 44139

Vendor Contact: Mr. Brett McGlone
Nuclear Compliance Specialist
Email: brett.mcglone@swagelok.com
Phone: 440-649-5601

Nuclear Industry Activity: Swagelok Company (hereafter referred to as Swagelok), located in Solon, OH, is under contract with Westinghouse Electric Company and with several domestic operating reactors to provide safety-related valves and replacement parts. Swagelok's scope of supply includes safety-related and American Society of Mechanical Engineers Boiler and Pressure Vessel Code Class 1, 2, and 3 valves and valve parts, fittings, quick connect parts, tubing, piping, and assemblies.

Inspection Dates: March 20-23, 2017

Inspectors:	Yamir Diaz-Castillo	NRO/DCIP/QVIB-2
	Richard P. McIntyre	NRO/DCIP/QVIB-2
	Andrea Keim	NRO/DCIP/QVIB-3
	Andrew Yeshnik	NRO/DEIA/MCB

Approved by: John P. Burke, Chief
Quality Assurance Vendor Inspection Branch-2
Division of Construction Inspection
and Operational Programs
Office of New Reactors

EXECUTIVE SUMMARY

Swagelok Company
99901477/2017-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at the Swagelok Company's (hereafter referred to as Swagelok) facilities in Solon, OH, 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 Swagelok implemented a program under 10 CFR Part 21, "Reporting of Defects and Noncompliance," that met the NRC's regulatory requirements. The NRC inspection team conducted the inspection on March 20-23, 2017. This was the first NRC inspection at the Swagelok facility.

This technically-focused inspection specifically evaluated Swagelok's implementation of quality activities associated with the design, fabrication, and testing the safety-related valves and replacement parts for the Westinghouse Electric Company AP1000 reactor design and for several domestic operating reactors. Specific activities observed by the NRC inspection team included:

- assembly and helium sniffer testing of an American Society of Mechanical Engineers Boiler and Pressure Vessel Code Class 2 bellows valve for Virgil C. Summer Nuclear Station
- receipt inspection of 10 pieces of 9/16-inch 316 stainless steel hex bars

In addition to observing these activities, the NRC inspection team verified that measuring and test equipment (M&TE) was properly identified, marked, calibrated, and used within its 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) 43002, "Routine Inspections of Nuclear Vendors," dated January 27, 2017, IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated January 27, 2017, and IP36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," dated February 13, 2012.

With the exception of the notice of nonconformance described below, the NRC inspection team concluded that Swagelok'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 Swagelok's personnel are implementing these policies and procedures effectively. The results of this inspection are summarized below.

Supplier Oversight

The NRC inspection team issued Nonconformance 99901477/2017-201-01 in association with Swagelok'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 99901477/2017-201-01 cites Swagelok for failing to (1) qualify [REDACTED] by the conduct of a safety-related audit for the supply of safety-related heat treating services; (2) provide adequate documented objective evidence in their external supplier audit reports of material (raw material) and services suppliers (e.g. machining, deburring, grinding, cutting, and testing) to provide reasonable assurance that the suppliers had implemented an Appendix B to 10 CFR Part 50 and 10 CFR Part 21, programs; and (3) provide adequate documented objective evidence in the commercial-grade surveys of suppliers of commercial machining and heat treating services to demonstrate that the selected critical characteristics identified in the technical evaluation were adequately controlled and the components would perform their intended safety function.

Other Inspection Areas

The NRC inspection team determined that Swagelok is implementing its 10 CFR Part 21, design control, commercial-grade dedication, manufacturing control, material traceability, test control, control of M&TE, nonconformance and corrective action programs in accordance with the applicable regulatory requirements of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and activities observed, the NRC inspection team also determined that Swagelok is implementing its policies and procedures associated with these programs. No findings of significance were identified.

REPORT DETAILS

1. Supplier Oversight

a. Inspection Scope

The NRC inspection team reviewed Swagelok's policies and implementing procedures that govern the implementation of its supplier oversight and internal audits program to verify compliance with the requirements of Criterion IV, "Procurement Document Control," Criterion VII, "Control of Purchased Material, Equipment, and Services," and Criterion XVIII, "Audits," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

The NRC inspection team verified that purchase orders (POs) included, as appropriate: the scope of work, right of access to facilities, and extension of contractual requirements to subcontractors. In addition, the NRC inspection team confirmed that all of the safety-related POs reviewed included the applicable technical and regulatory requirements, including the requirements of Appendix B to 10 CFR Part 50 and 10 CFR Part 21, "Reporting of Defects and Noncompliance."

The NRC inspection team reviewed a sample of external supplier audits, internal audits, and commercial-grade survey reports to evaluate compliance with the applicable regulatory and technical requirements. The NRC inspection team confirmed that the internal audit reports of supplier oversight activities contained objective evidence of the review of the relevant QA criteria of Appendix B to 10 CFR Part 50. The NRC inspection team also reviewed a sample of training and qualification records of Swagelok's lead auditors and auditors and confirmed that auditing personnel had completed all the required training and had maintained qualification and certification in accordance with Swagelok's policies and procedures. In addition, the NRC inspection team verified that external and internal audits were performed by qualified lead auditors and auditors.

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

b. Observations and Findings

During a review of a sample of external audits reports, the NRC inspection team noted that Swagelok procured heat treating services as safety-related from [REDACTED] a commercial-supplier without an Appendix B to 10 CFR Part 50 and 10 CFR Part 21 programs. Rather than performing an audit of [REDACTED] to verify that they had implemented a QA program that meets the requirements of Appendix B to 10 CFR Part 50 and the requirements of 10 CFR Part 21, Swagelok performed an audit of their commercial QA program that's based on ISO 9001-2008, "Quality Management System (QMS) - Requirements." The NRC inspection team identified this issue as an example of Nonconformance 99901477/2017-201-01 for Swagelok's failure to qualify a supplier by the conduct of an audit. Swagelok initiated corrective action report (CAR) No. CA170323002 to address this issue.

In addition, the NRC inspection team noted for a sample of 13 suppliers, the external audits did not contain adequate documented objective evidence to provide reasonable assurance that the suppliers had implemented an Appendix B to 10 CFR Part 50 QA and 10 CFR Part 21 programs for the supply of safety-related components and services. Specifically, the evaluation and documentation of these suppliers' Appendix B to 10 CFR Part 50 and 10 CFR Part 21 programs and implementing procedures did not demonstrate adequate compliance with the specific regulatory requirements. For example, the external audits did not contain sufficient information to determine if the supplier had an adequate procedure for the identification and evaluation of deviations and whether this procedure contained the appropriate timeliness and notification requirements. In addition, Swagelok's audits of these suppliers did not verify that they had imposed and verified the necessary controls, including the applicable regulatory and technical requirements, on their sub-suppliers. These included supply of raw materials and services such as machining, heat treating, deburring, grinding, and testing. The NRC inspection team identified this issue as another example of Nonconformance 99901477/2017-201-01 for Swagelok's failure to provide documented objective evidence necessary to confirm the conclusions associated with the supplier's Appendix B to 10 CFR Part 50 and 10 CFR Part 21 programs documented in the external audits and failure to ensure that the suppliers had imposed and verified the necessary controls on their sub-suppliers. Swagelok initiated CAR No. CA170323001 to address this issue.

To support its commercial-grade dedication process, Swagelok performs commercial-grade surveys as the method to accept the suppliers' programmatic process and controls of the selected critical characteristics related to the commercial-grade item or service. During the review of a sample of commercial-grade surveys, the NRC inspection team noted that Swagelok's commercial-grade surveys of five commercial suppliers of machining and heat treating services did not always provide adequate documented objective evidence to demonstrate that the selected critical characteristics identified in the product level dedication plan/technical evaluation were adequately controlled and the components would perform their intended safety function. In addition, the NRC inspection team noted that the oversight of these suppliers is not always clearly defined as a commercial-grade survey where Swagelok performs a specific review of the control of the selected critical characteristics identified in the product level dedication plan/technical evaluation. It was also noted that the Swagelok Supplier Quality Audit Reports identify multiple audit standards and identify the supplier category/scope of the audit as both Nuclear and commercial-grade survey. This distinction is important because Swagelok is using the results of these commercial-grade survey process controls to support the identification of the sample size per the Swagelok "Tightened and Normal Sampling Plans for Dedicating Parts for Use in Nuclear Application," (SKS-00650 and SKS-00651) for testing the material's chemical composition and mechanical properties to complete the acceptance testing as part of the dedication process. Commercial-grade surveys should not be confused with audits and should not be used interchangeably. The NRC inspection team identified this issue as another example of Nonconformance 99901477/2017-201-01 for Swagelok's failure to provide adequate documented objective evidence for the commercial-grade surveys of commercial suppliers of machining and heat treating services to demonstrate that the selected critical characteristics identified in the product level dedication plan/technical evaluation were adequately controlled. Swagelok initiated CAR No. CA170323001 to address this issue.

c. Conclusion

The NRC inspection team issued Nonconformance 99901477/2017-201-01 in association with Swagelok' failure to implement the regulatory requirements of Criterion VII of Appendix B to 10 CFR Part 50. Nonconformance 99901477/2017-201-01 cites Swagelok for failing to (1) qualify [REDACTED] by the conduct of an audit for the supply of safety-related heat treating services; (2) provide adequate documented objective evidence in their external audit reports of material (raw material) and services suppliers (e.g. machining, deburring, grinding, cutting, and testing) to provide reasonable assurance that the suppliers had implemented an Appendix B to 10 CFR Part 50 and 10 CFR Part 21, programs; and (3) provide adequate documented objective evidence in the commercial-grade surveys of suppliers of commercial machining and heat treating services to demonstrate that the selected critical characteristics identified in the technical evaluation were adequately controlled and the components would perform their intended safety function.

2. Design Control and Commercial-Grade Dedication

a. Inspection Scope

The NRC inspection team reviewed Swagelok's policies and implementing procedures that govern the design control program to verify compliance with the regulatory requirements of Criterion III, "Design Control," of Appendix B to 10 CFR Part 50, and the requirements of Subsection NCA-3855.5, "Utilization of Unqualified Source Material," of Section 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, 1998 Edition, 2000 Addenda. In addition, the NRC inspection team reviewed Swagelok' program for the dedication of commercial-grade items for use in safety-related applications to verify its compliance with the applicable regulatory and technical requirements.

The NRC inspection team reviewed a sample of design reports, design specifications, engineering drawings, shop travelers, and ASME B&PV Code data reports and verified that these documents contained the required information in accordance with Swagelok's procedures and the ASME B&PV Code requirements. The NRC inspection team reviewed the WEC customer purchase order, the WEC customer design specification, the Swagelok review of the design specification, the valve procurement specifications and valve data sheets to verify that Swagelok had correctly translated the technical and quality requirements into the appropriate specifications, drawings, and procedures for the fabrication of the valves. The NRC inspection team also evaluated how the design specifications were met, how design changes were controlled and approved, and the interactions between Swagelok and the designer (WEC) to resolve non-conformances. The NRC inspection team verified that the materials of construction and components for the valves conform to the appropriate material specification, design specification, and ASME B&PV Code requirements.

The NRC inspection team also reviewed Swagelok's commercial-grade dedication process for items and services. Swagelok's dedication process consists of (1) performing technical evaluations, (2) identification of critical characteristics, (3) selection of methods for accepting the commercial-grade items and services.

Swagelok predominantly utilizes special tests and inspections (Method 1) and commercial-grade surveys (Method 2) to support their commercial-grade dedication activities.

The NRC inspection team evaluated a sample of dedication packages, including the dedication of stainless steel, 3/8" globe style manually-actuated hermetically sealed bellows valve with 3/8" butt weld end connections being supplied to the VC Summer plant. This included the product level dedication plans, PO requirements, technical evaluations, criteria for the selection of critical characteristics, the basis for sampling plan selection, the selection of verification methods, checklists, results of tests, inspections and analyses, commercial-grade survey reports, and source verification reports. The NRC inspection team reviewed the product level dedication plan/technical evaluation and component level dedication acceptance activities to support the Swagelok dedication of the bellows valve for the bar stock material, stem extension, stem insert, and the stem adapter. The NRC inspection team confirmed that Swagelok's commercial-grade dedication process provides reasonable assurance that the components and services being dedicated would perform their intended safety function:

The NRC inspection team also evaluated Swagelok's approval process for upgrading unqualified source material in accordance with the requirements of NCA-3855.5. This included a review of several Swagelok Qualified Material Test Reports and the supporting chemical analysis, heat treatment, and tensile testing from various sub-suppliers for these testing services. The NRC inspection team confirmed that these reports contained the required chemical analyses and material hardness test reports that were performed on each piece of material to support the NCA-3855.5 material certification.

The NRC inspection team also discussed the design control, commercial-grade dedication, and utilization of unqualified source material programs with Swagelok'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 Swagelok is implementing its design control, commercial-grade dedication, and utilization of unqualified source material programs in accordance with the regulatory requirements of Criterion III of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that Swagelok is implementing its policies and procedures associated with the design control, commercial-grade dedication, and utilization of unqualified source material programs. No findings of significance were identified.

3. Material Traceability

a. Inspection Scope

The NRC inspection team reviewed Swagelok's policies and implementing procedures that govern the material 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 verified Swagelok's process for maintaining identification and traceability of materials and parts to the original melt for metallic material and source material. The NRC inspection team observed the process used by Swagelok to identify, mark and handle materials and parts used to maintain traceability throughout receipt, manufacturing, processing, storage and delivery of its product. Identification is maintained by part number and a trace identification number assigned by Swagelok. Swagelok utilizes an electronic tracking system and bar code equipment to support the traceability of material and parts used in the fabrication of Swagelok components.

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

4. Manufacturing Control

a. Inspection Scope

The NRC inspection team reviewed Swagelok's 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 to 10 CFR Part 50 and with the requirements in Subsection NCA, Subsection NB, "Class 1 Components," Subsection NC, "Class 2 Components," and Subsection ND, "Class 3 Components," of Section III, "Rules for Construction of Nuclear Facility Components," Section V, "Nondestructive Examination," and Section IX, "Welding and Brazing Qualification," of the ASME Boiler and Pressure Vessel Code, 1998 Edition, 2000 Addenda, and the American Society for Nondestructive Testing (ASNT) SNT-TC-1A, "Personnel Qualification and Certification in Nondestructive Testing," 2006 Edition.

The NRC inspection team reviewed a sample of shop travelers, weld procedure specifications (WPSs), supporting procedure qualification records (PQRs), welder qualifications, ASME Code Data Reports, liquid penetrant testing (PT) procedures, PT reports, PT examiner qualifications, and non-destructive examinations (NDE) Level III inspector qualifications. The NRC inspection team focused the inspection on activities associated with the three sets of valves (less than 2 inch in diameter) for the Virgil C. Summer Nuclear Station Units 2 and 3 and Vogtle Electric Generating Plant Units 3 and 4. The NRC inspection team verified that the WPS were qualified in accordance with the requirements of Sections III and IX of the ASME B&PV Code using the supporting PQRs and the applicable Swagelok procedures.

The NRC inspection team verified that the applicable welding data; such as weld heat/lot code, WPS, and welder were recorded in the process sheet in accordance with the applicable Swagelok procedures and instructions. Swagelok implements a digital work processing system which governs the fabrication process. Each welding station is linked into the digital work processing system which ensures that essential WPS or PQR variables cannot be exceeded without a manual override by the engineering department. Welding of a valve can only happen at a specified welding station, using a specified procedure, by a specified Swagelok employee (all are pre-determined by the engineering department). All applicable information, including drawings, procedures, and instructions are specified in the Production Order or Process Sheet. In addition to digital procedures displayed on monitors at the work stations, printed procedures are provided at the work stations and are stamped as "control copy."

The NRC inspection team also reviewed the weld wire control procedure, the working instructions for issuing weld wire, and discussed the process for issuing weld wire with technical staff from the Nuclear Services Group (NSG). The NRC inspection team observed the material storage station containing the nuclear-grade weld filler material. The majority of welds for Swagelok valves are autogenous and do not require filler metal. A single spool of nuclear-grade bare weld wire is used, when necessary, for all nuclear-grade components. Additionally, the nuclear-grade material is segregated from other commercial grade weld filler material. The weld filler material is kept in the manufacturer's spool and was labeled with the type of the material (grade and diameter), an internal tracking code, and a bar code. Because nuclear-grade valve fabrication is a low volume and high significance, the NSG conducts additional oversight in the issuance of weld filler metal from the storage station. As required by the normal Swagelok weld wire control procedures, the welder scans the bar code of the weld filler material prior to any welding. This way three levels of weld wire control are implemented: verification of the correct material by the welder, oversight by the NSG, and verification by the digital work processing system.

The NRC inspection team reviewed the NDE procedures and associated NDE records for the valves being supplied for the AP1000 reactor design. At Swagelok, NDE is performed by a sub-supplier on Swagelok's approved suppliers list. Control over NDE is implemented by POs, Swagelok's QA Manual and applicable procedures, and the vendor's procedures. The NDE sub-supplier's Level III is approved by Swagelok prior to the performance of any ASME B&PV Code related NDE activities. Swagelok reviews the sub-suppliers' PT examination procedures and specifies which procedure (including revision) is to be used. The NRC inspection team reviewed Swagelok's Level III approval procedure, the sub-supplier's NDE procedures, and the PT reports for the

AP1000 valves and confirmed that all documents were in accordance with the requirements of Sections III and V of the ASME B&PV Code.

The NRC inspection team reviewed the associated welder qualification records and confirmed that the welders had completed the required training and had maintained their qualifications in accordance with Swagelok's procedures and the applicable requirements of Sections III and IX of the ASME B&PV Code. In addition, the NRC inspection team reviewed Swagelok's sub-supplier NDE personnel training and qualification records and confirmed that the NDE personnel had completed the required training and had maintained their qualifications in accordance with Swagelok's procedures and the applicable requirements of ASNT SNT-TC-1A and Sections III and V of the ASME B&PV Code.

The NRC inspection team also discussed the manufacturing control program with Swagelok'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 Swagelok 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 Swagelok is implementing its policies and procedures associated with the control of special processes program. No findings of significance were identified.

5. Test Control

a. Inspection Scope

The NRC inspection team reviewed Swagelok'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.

SAI-03258, "Standard Leak Testing for Nuclear Valves," Revision C, describes the requirements for hydrostatic testing of safety-related valves and Section III of the ASME B&PV applications. The NRC inspection team verified that SAI-03258 adequately includes the technical, quality, and regulatory requirements identified in the associated AP1000 specifications. In addition, the test procedure provides an adequate description of the test responsibilities, objectives, instructions, parameters, and acceptance criteria. The NRC inspection team also verified that SAI-03258 met the applicable requirements of Section III of the ASME B&PV Code.

Although there was no hydrostatic test performed during the inspection, the NRC inspection team reviewed the ASME B&PV Code pressure test for a bellows valve which had already been certified. The NRC inspection team reviewed Swagelok's pressure test report and all the test requirements had been met. The NRC inspection team also

verified that the M&TE used during the ASME B&PV Code pressure test was within calibration.

In addition, the NRC inspection team observed a Helium sniffer test on a safety-related bellows valve. This test is a go/no-go check performed by the Swagelok technician to verify the correct assembly of a bellows valve. The Swagelok technician explained the operation to the NRC inspection team, and showed which procedures were used during the operation (both digital and paper copy), and the Swagelok technician explained how the production order sheet acts as a production routing sheet. The NRC inspection team also verified that the M&TE used during the Helium sniffer test was within calibration.

The NRC inspection team also discussed the test control program with Swagelok'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 Swagelok 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 Swagelok 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 Swagelok'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 determined that the M&TE had the appropriate calibration stickers and 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. In addition, the calibration records reviewed by the NRC inspection team indicated the as-found or as-left conditions, accuracy required, calibration results, calibration dates, and the due date for recalibration. The NRC inspection team also verified that the selected M&TE was calibrated using procedures traceable to known industry standards.

The NRC inspection team also verified that when M&TE equipment is received from the calibration service supplier and the calibration certificate states that it was found to be out of calibration, Swagelok generates a nonconformance report to identify items that have been accepted using this equipment since the last valid calibration date and to perform an extent of condition review.

The NRC inspection team also discussed the M&TE program with Swagelok'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 Swagelok is implementing 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 Swagelok 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 Swagelok's policies and implementing procedures that govern the control of nonconformances 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 Swagelok's nonconformance/quality notification (QN) and corrective action report (CAR) logs and selected a sample of QNs and CARs to verify that Swagelok had implemented an adequate program to assess and control nonconforming items, including appropriate identification, documentation, segregation, evaluation and disposition of these items. The NRC inspection team verified that the process properly applies the principles of acceptable, repair, rework, hold, scrap, or use-as-is, and it provides for the necessary technical justification be adequately supported and properly documented. The NRC inspection team also toured the fabrication facility to verify that there were designated areas to segregate and control nonconforming items. The NRC inspection team also verified that QNs provide a link to the 10 CFR Part 21 program.

The NRC inspection team reviewed a sample of Swagelok's CARs to ensure that Swagelok implemented an adequate program to ensure that conditions adverse to quality were promptly identified and corrected. The NRC inspection team also verified that significant conditions adverse to quality received a root cause analysis. In addition, the NRC inspection team verified that the CARs provide: (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; (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. Furthermore, the NRC inspection team verified that the Swagelok corrective action process provides a link to the 10 CFR Part 21 program.

The NRC inspection team also discussed the nonconforming materials, parts, or components and corrective action programs with Swagelok'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 Swagelok is implementing 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 Swagelok is implementing its policies and procedures associated with the control of nonconforming materials, parts, or components and corrective action program. No findings of significance were identified.

8. 10 CFR Part 21 Program

a. Inspection Scope

The NRC inspection team reviewed Swagelok's policies and implementing procedures that govern Swagelok's 10 CFR Part 21 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 Swagelok's POs for compliance with the requirements of 10 CFR 21.21, "Notification of Failure to Comply or Existence of a Defect and its Evaluation," and 10 CFR 21.31, "Procurement Documents." The NRC inspection team also verified that Swagelok's nonconformance and corrective action procedures provide a link to the 10 CFR Part 21 program.

For a sample of 10 CFR Part 21 evaluations performed by Swagelok, the NRC inspection team verified that Swagelok 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, as applicable.

The NRC inspection team also discussed the 10 CFR Part 21 program with Swagelok'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 Swagelok 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 Swagelok is implementing its policies and procedures associated with the 10 CFR Part 21 program. No findings of significance were identified.

9. Entrance and Exit Meetings

On March 20, 2017, the NRC inspection team discussed the scope of the inspection with David Peace, Swagelok's Vice-President of Engineering and other members of Swagelok's management and technical staff. On March 23, 2017, the NRC inspection team presented the inspection results and observations during an exit meeting with Ward Dumm, Swagelok's Vice-President of Quality and Continuous Improvement, and other members of Swagelok'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
Ward Dumm	Vice President, Continuous Improvement & Quality	Swagelok		X	
David H. Peace	Vice President, Engineering	Swagelok	X	X	
Nicholas Doljac	Senior Engineering Manager	Swagelok	X	X	
Steven Volcansek	Corporate Product Compliance Manager	Swagelok	X	X	
David Martin	Director, Quality & Continuous Improvement	Swagelok	X	X	
Chris Duke	Corporate Quality Assurance (QA) Manager	Swagelok	X	X	
Ken Whynott	Valve Services Group (VSG) Quality Manager	Swagelok	X	X	
Keye Daws	VSG Assembly Plant Manager	Swagelok	X	X	
Robert C. Soltis	VSG Site Manager	Swagelok			X
Brian Van Valkenburg	Nuclear Manager	Swagelok	X	X	
Troy Dunlap	High Purity Group Assembly Plant Manager	Swagelok	X		
Gregory Ard	Supplier Development Senior Manager	Swagelok	X	X	
Thomas Lippucci, PE	Senior Applications Engineer	Swagelok			X
Greg Grisez	Global Sourcing Manager	Swagelok	X		
Jennifer Pannell	Internal Quality Audits Manager	Swagelok	X	X	X
William M. Manusakis	Internal Audit Program Manager	Swagelok			X
Brett McGlone	Nuclear Compliance Specialist	Swagelok	X	X	X

Name	Title	Affiliation	Entrance	Exit	Interviewed
Jonathan Seewald	Senior Project Manager Product Compliance	Swagelok	X		
Robert Kozsey	Senior Quality Improvement Leader	Swagelok			X
Vince Ditorno	Receiving/Inspection Manager	Swagelok		X	
Matthew Smith	Receiving/Inspection Supervisor	Swagelok			X
Jim Lee	Senior Calibration Supervisor	Swagelok			X
Michael Carney	Welding Engineer	Swagelok			X
Brian Williamson	Welding Operator	Swagelok			X
Robert F. Moss	Internal Quality Auditor	Swagelok	X	X	X
Mark Hoare	Supplier Development Engineering (SDE) Technician	Swagelok		X	X
Tom Wozniak	Quality Control (QC) Inspector	Swagelok			X
Tom Stavec	Receipt Inspector	Swagelok			X
Brian Prochaska	Assembler	Swagelok			X
Lisa Walker	Assembler	Swagelok			X
Nate Wenzel	Nuclear Engineering Technician	Swagelok			X
Ron Hamilton	Site Calibrator	Swagelok			X
Yamir Diaz-Castillo	Inspection Team Leader	NRC	X	X	
Richard P. McIntyre	Inspector	NRC	X	X	
Andrea Keim	Inspector	NRC	X	X	
Andrew Yeshnik	Inspector	NRC	X	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
99901477/2017-201-01	Opened	NON	Criterion VII

4. DOCUMENTS REVIEWED

Policies and Procedures

- Swagelok's Nuclear Quality Assurance Manual, Revision G, dated January 1, 2016
- SAI-03258, "Standard Leak Testing For Nuclear Valves," Revision C (no date available)
- Standard Form (SF) 02-002, "Disciplined Problem Solving (DPS) Form," Revision K, dated November 13, 2014
- SF-02-030, "Corrective Action Evaluation Process Form," Revision A, dated February 16, 2012
- SF-05-550, "Customer Design Specification Review Form", Revision B, dated July 6, 2016, for review of WEC design specification APP-PV17-Z0-001, Rev.6
- SF-05-557, "Component Level Dedication Acceptance," Revision D, (various dates), for stem extension, stem insert, and actuator w/silver plate CGD
- SI-02-050, "Commercial Grade Dedication Instruction Instructions," Revision -, dated January 9, 2014
- Standard Instruction (SI)-02-050, "Commercial Grade Dedication Instruction," Revision 0, dated January 9, 2014
- SI-06-054, "Source Verification Instructions," Revision D, dated January 10, 2014
- SI-06-118, "Handling of Non-Conforming Gages," Revision H, dated August 16, 2016
- SI-06-127, "Nuclear Commercial Grade Surveys," Revision C, dated January 10, 2014

- SI-09-153, "NDE Level III Approval Procedure," Revision B, dated January 15, 2014
- SI-11-023, "Job Level Guide Inspection," Revision G, dated October 13, 2015
- SI-00031, "Receiving Inspection," Revision C, dated October 22, 2015
- SI-00032, "Receiving Inspection (Certifications)," Revision B, dated October 13, 2016
- SI-00154, "QN Form Instructions," Revision C, dated March 18, 2016
- SI-00157, "Inspection Sampling Plan," Revision C, dated May 26, 2016
- SI-00656, "Issue Floor stock Weld Material to Order," Revision 0 (no date available)
- Standard Procedure (SP)-02-003, "Approval Process for Unqualified Source Material (Nuclear)," Revision N, dated January 13, 2017
- SP-02-004, "Quality Records System," Revision AB, dated January 3, 2014
- SP-02-006, "Internal Quality Audit Process," Revision M, dated September 14, 2015
- SP-02-007, "Disciplined Problem Solving," Revision H, dated October 16, 2014
- SP-02-011, "Quality Investigation Process," Revision F, dated January 9, 2017
- SP-02-027, "Commercial Grade Dedication Process," Revision F, dated April 5, 2016
- SP-05-014, "Welding Qualification Process," Revision F, dated January 6, 2017
- SP-06-004, "Control of Inspection, Measuring, and Test Equipment," Revision T, dated August 27, 2015
- SP-06-18, "Pressure Test Procedure for ASME Code Stamped Products," Revision C (no date available)
- SP-09-001, "Approved Supplier List," Revision I, dated October 12, 2015
- SP-09-005, "Supplier Assessment and Development," Revision AB, dated September 4, 2015
- SP-09-023, "Supplier Quality System Audits," Revision D, dated May 27, 2016
- SP-10-027, "10CFR21 Reporting Procedure," Revision L, dated November 13, 2014
- SP-11-001, "Auditor Training and Qualification," Revision G, dated August 27, 2013
- SP-11-010, "Job Level Guide Procedure," Revision G, dated May 5, 2011
- SP-00018, "Supplier Selection and Qualification," Revision A, dated April 6, 2016

- SP-0021, "Quality Notification," Revision F, dated December 9, 2016
- SP-0021, "Quality Notification," Revision G, dated February 23, 2017
- SP-00022, "Quality Certifications," Revision A, dated June 2, 2014
- SP-00026, "Material Procurement," Revision B, dated August 10, 2016
- SP-00070, "Product Identification and Traceability," dated June 2, 2014
- SP-00111, "Weld Filler Materials - Control, Handling, and Ordering," Revision 0 (no date available)
- SP-00115, "Compliance with 10CFR50.55(e)," Revision A, dated May 26, 2015
- SKS-00650, "Tightened Sampling Plan for Dedicating Parts for Use in Nuclear Applications," Revision 0, dated June 20, 2016
- SKS-00651, "Sampling Plan for Dedicating Parts for Use in Nuclear Applications," Revision A, dated July 17, 2013
- SKS-00650, "Destructive Sampling Requirements," Revision B, dated September 10 2014
- SQS-00020, "Supplier Quality System Requirements," Revision K, dated December 11, 2015
- SQS-00021, "Supplier Quality Requirements for Nuclear Grade Purchases," Revision M, dated November 5, 2014
- SQS-00021, "Supplier Quality Requirements for Nuclear Grade Purchases," Revision N (no date available)
- SQS-00100, "Unqualified Source Material Testing," Revision O, dated October 26, 2016
- SQS-00187, "Calibration Requirements for Suppliers," Revision B, dated May 6, 2016
- SQS-00249 "Liquid Penetrant of Nuclear Material," Revision E (no date)
- SQS-00250 "Liquid Penetrant of Nuclear Welds," Revision C (no date available)
- SQS-F-A2, "Nuclear Quality Assurance Manual," Revision G, dated January 1, 2016
- PT.ASME.N1.2013, "Liquid Penetrant Examination; Color Contrast and Fluorescent Water-Washable Process," Revision 0 (no date available)
- PT.ASME.N2.2013, "Liquid Penetrant Examination; Solvent Removable, Fluorescent and Color Contrast," Revision 0 (no date available)

- 33.G.103-S1, "Qualification & Certification of NDT and Technical Personnel," Revision 15 (no date available)

Design Documents

- Westinghouse Electric Company (WEC) Design Specification No. APP-PV17-Z0-001, "Instrumentation Valves, ASME Boiler and Pressure Vessel Code," Revision 6, dated July 24, 2014
- Swagelok Customer Design Specification Review Form, dated July 6, 2015, for (WEC) Design Specification No. APP-PV17-Z0-001
- WEC Design Specification No. "APP-PV17-Z0D-106, PV17 Datasheet 106" (no date or revision available)
- Swagelok SS-6UW-BW6-T, Design Report for ADSME B&PV Section III, Class 2, Westinghouse APP-PV17-Z0D-106, Swagelok UW Series Bellows Valve, SS-6UW-BW6-T1-29944-NSR, dated august 19, 2016
- Product Level Dedication Plan for Calibration Services, Revision A, dated December 8, 2014
- Product Level Dedication Plan for a Bellows Sealed Valve, DCN #14-011608, dated May 13, 2016
- Product Level Dedication Plan for 60 Series Ball Valve, DCN #14-011608, dated April 28, 2014
- Swagelok Valve Nuclear Technical Drawing SS-6UW-BW6-T1-29944-NSR-TECH, Revision F, for ASME Section III, Class 2, APP-PV17-Z0D-106, Swagelok UW Series Bellows Valve, SS-6UW-BW6-T1-29944-NSR, dated December 16, 2016
- Component Level Dedication Acceptance sheets for DCN #14-011608, for bellows sealed valve stem extension, stem insert, and actuator, dated Various

American Society of Mechanical Engineers (ASME) Code Data Reports, and Welding Records

- Production Order SS-6UW-BW6-T1-29944-NSR
- Nuclear PS-29944, Nuclear Process Sheets SS-6UW-BW6-T1-29944-NSR, SS-4U-T1-S9-LP35116-NSR, SS-6UW-BW6S2A-LP-35117-NSR, SS-6UW-BW6S6A-LP-35118-NSR, and SS-60W-T1-29942-NSR

- Welding documentation for part SS-4U-T1-S9-LP35116NSR:
 - a. Weld Detail -35116, Revision A
 - b. Welding Procedure Specification (WPS) S-Gas Tungsten Arc Welding (GTAW)-P8F6-M6GF-AH4, Revision 0 (no date available)
 - c. WPS No. S-GTAW-P8A-M6G-AH4, Revision 0, (no date available)
 - d. Procedure Qualification Record (PQR) No. R-GTAW-P8F6-035-AH4, Revision 0 (no date available)
 - e. PQR No. R-GTAW-P8A-035-AH4, Revision 0 (no date available)
- Welding documentation for part SS-6UW-BW6S6A-LP-35118NSR:
 - a. WPS No. S-GTAW-P8A-035-AH4, Revision 0 (no date available)
 - b. PQR No. R-GWTA-P8A-035-AH4, Revision 0 (no date available)
 - c. Welding Procedure Qualification Q-GTAW-P8A035C1GAH4-72662
 - d. Weld Procedure No. WS-LH-P08-0,912x0.094-SEAL PS-35118 SA6 SUB
- Welding documentation for part SS-6UW-BW6S2A-LP-35117NSR:
 - a. WPS No. SEMB-288W-04159, Revision 0 (no date available)
 - b. PQR No. REBW-228W-04159, Revision 0 (no date available)

Calibration, Non-Destructive Examination, Inspection and Test Records

- Swagelok Quality Checklist for the receipt inspection of 10 pieces of 9/16" 316 stainless steel hex bars, dated March 22, 2017
- Certificate of Conformance No. 001055933 for 316 stainless steel hex bars, heat No. 751769, dated March 20, 2017
- Certificate of Conformance No. 001055201 for 316 stainless steel hex bars, heat No. 751590, dated March 6, 2017
- Gage Certification for radius gage No. CRG101, calibration date December 18, 2015
- Gage Certification for digital pressure gage No. PG-A15, calibration date July 5, 2016
- Gage Certification for torque wrench No. TH9A, calibration date March 4, 2017
- Gage Certification for flow meter No. C-T027, calibration date February 7, 2017
- Gage Certification for calibrated leak master No. 09614, date of calibration April 20, 2016
- Gage Certification for pressure gage master No. 3264796, date of calibration January 13, 2017
- Gage Certification for leak Helium tank No. TP7229, date of calibration March 23, 2016
- Gage Certification for perthometer No. 2343, date of calibration August 29, 2016

- Gage Certification for straight tri-rolls No. JS01419, date of calibration May 12, 2014
- Certificate of Calibration for gage No. PG-A15, dated January 30, 2017
- Certificate of Calibration for torque wrench No. TH9A, calibration date June 24, 2016
- Certificate of Calibration for [REDACTED] calibrated leak No. 4888, calibration date May 23, 2016
- Certificate of Calibration for leak master No. 09614, date of calibration April 20, 2016
- Certificate of Calibration for pressure gage master No. 3264796, date of calibration January 13, 2017
- Calibration Report No. 1500162659 for a pressure indicator No. 1203041, dated March 28, 2014
- Gage Reject Report for a flow meter, gage No. 01B40061163, calibration date January 30, 2017
- Inspection Certificate No. MEST037737 from [REDACTED] for 316 stainless steel bars, dated March 10, 2017
- Material Test Report No. 671152-1 from [REDACTED] for 316 stainless steel hexagonal bars, heat No. E161794, dated March 2, 2017
- Test Report No. IMP008-17-02-57145-1 from [REDACTED] for flattened bars and forgings, dated February 17, 2017
- ASME Pressure Test Record SS-60W-T1-29942-NSR

Purchase Orders, Audit Reports, and Commercial-Grade Dedication

- WEC Purchase Order (PO) 4500367195, to Swagelok, dated November 11, 2010, for various model and size PV-17 safety related instrument valves for VC Summer Units 2 & 3
- PO No. 4501498867 to [REDACTED] for raw material, dated March 21, 2017
- PO No. 4501494502 to [REDACTED] for calibration services, dated March 20, 2017
- PO No. 4500377913 to [REDACTED] for calibration services, dated July 10, 2015
- PO No. 4501357503 to [REDACTED] for calibration services, dated January 10, 2017
- PO No. 4501202046 to [REDACTED] for heat treating services, dated October 13, 2016

- PO No. 4501496305 to [REDACTED] for 316 stainless steel hexagonal bars, dated March 20, 2017
- PO No. 4501494171 to [REDACTED] for heat treating services, dated March 20, 2017
- PO No. 4501492734 to [REDACTED] for calibration services, dated March 17, 2017
- PO No. 4501498314 to [REDACTED] for coating services, dated March 21, 2017
- PO No. 4501497967 to [REDACTED] for testing services, dated March 21, 2017
- PO No. 4501496278 to [REDACTED] for 316 stainless steel bars, dated March 20, 2017
- PO Nos. PO 4501155448, 4500918326, 4500916456, 4500826895, 4500884510, and 4500856012 to [REDACTED] for non-destructive examination (NDE) services
- Audit Report of [REDACTED] dated April 4, 2016
- Audit Report of [REDACTED] dated February 1, 2017
- Audit Report of [REDACTED] dated April 9, 2014
- Audit Report of [REDACTED] dated October 13, 2016
- Audit Report of [REDACTED] dated November 15, 2014
- Audit Report of [REDACTED] dated May 13, 2015
- Audit Report of [REDACTED] dated September 30, 2015
- Audit Report of [REDACTED] dated August 27, 2015
- Audit Report of [REDACTED] dated September 21, 2016
- Audit Report of [REDACTED] dated May 19, 2015
- Audit Report of [REDACTED] dated March 24, 2015
- Audit Report of [REDACTED], dated January 31, 2017
- Audit Report of [REDACTED] dated March 24, 2016
- Audit Report of [REDACTED], dated September 23, 2015
- Audit Report of [REDACTED] dated March 25, 2014

- Audit Report of [REDACTED], dated May 26, 2016
- Audit Report of [REDACTED] dated February 25, 2016
- Audit Report of [REDACTED] date October 6, 2014
- Audit Report of Changshu Manufacturing Operation, dated February 16, 2017
- Commercial-Grade Survey of [REDACTED] dated March 3, 2015
- Internal Audit Report of the High Purity Group Assembly at the Order Fulfillment Center, dated March 2, 2016
- Internal Audit Report of the Nuclear Services Group, dated April 11, 2016
- Internal Audit Report of Sourcing/Supplier Management, dated April 19, 2016
- Internal Audit Report of Calibration at Solon and Highland, dated June 17, 2016
- Internal Audit Report of Training and Qualification, dated June 30, 2016
- Internal Audit Report of Welding, dated November 23, 2016
- Internal Audit Report of Special Processes Assessments, dated March 1, 2017

Nonconformance Reports (Quality Notifications [QN])

- QN 200147296, QN 200156285, QN 200162732, QN 200165944, QN 200195670, QN 200197858, QN 200207110, QN 200207111

Corrective Action Reports

- CA150114002, CA150528003, CA150702002, CA150702003, CA151124003, CA160715000, CA160929005, CA161103012, CA161103013, CA161103014, CA161103015, CA161103017, CA170203008, CA170302007, and CA170309002

Corrective Action Requests Opened During the NRC Inspection

- CA170323001, CA170323002, Document Change Request (DCR) 00107888, DCR-00107889, and DCR-00107890

Training Records

- John Stankovich, Lead Auditor, requalified on November 8, 2016
- Lawrence A. Ault, Lead Auditor, requalified on October 28, 2016
- Paul L. Lotarski, Lead Auditor, requalified on October 10, 2016
- Mark Hoare, Lead Auditor, requalified on October 28, 2016
- William M. Manusakis, Lead Auditor, requalified on April 22, 2016
- Robert F. Moss, Lead Auditor, requalified on August 29, 2016
- Jonathan Wakeen, Lead Auditor, requalified on December 9, 2016
- John L. Chapek, Lead Auditor, requalified on March 20, 2017
- Tom Stavec, Quality Control (QC) Inspector Level III, dated December 9, 2016
- Paramjit Kaur, QC Inspector Level IV, dated December 9, 2016
- Brian Kliminac, Welder Qualification
- Brian Williamson, Welder Qualification
- Franklin Duncan, NDE Liquid Penetrant Testing (PT) Level III
- Lawrence Taylor, NDE PT Level II

10 CFR Part 21 Evaluations

- Letter to the Nuclear Regulatory Commission, "Potential 10CFR21 Notification," dated April 17, 2012
- 10 CFR Part 21 Investigation, [REDACTED] dated May 21, 2013
- 10 CFR Part 21 Investigation, [REDACTED] dated November 21, 2016