

September 7, 2018

Ms. Joyce Hamman
Director of Safety and Quality
Crane Nuclear, Inc.
860 Remington Boulevard
Bolingbrook, IL 60440

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF
CRANE NUCLEAR NO. 99901450/2018-201

Dear Ms. Hamman:

On July 23-27, 2018, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at Crane Nuclear Inc.'s (hereafter referred to as CNI) facilities in Bolingbrook, IL. The purpose of this limited-scope routine inspection was to assess CNI'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 CNI's implementation of the quality activities associated with the design, fabrication, and testing of safety-related valves and, replacement valves and components being supplied to the construction of the Westinghouse Electric Company AP1000 reactor design in Waynesboro, GA and to current operating reactors. The enclosed report presents the results of the inspection. This NRC inspection report does not constitute NRC endorsement of CNI's overall quality assurance (QA) program.

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 (and if applicable), 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.: 99901450

Enclosures:

1. Inspection Report No. 99901450/2018-201
and Attachment

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF
CRANE NUCLEAR NO. 99901450/2018-201 Dated: September 07, 2018

DISTRIBUTION:

TJackson
KKavanagh
ASakadales
ConE Resource
NRO_DCIP_Distribution
Olivier.lareynie@asn.fr
jhamman@cranevs.com

ADAMS Accession No.: ML18239A372

NRO-002

OFFICE	NRO/DCIP/QVIB-2	NRO/DCIP/QVIB-2	NRO/DLSE/LB3
NAME	AKeim	TLamb	OLareynie
DATE	08/31/2018	08/31/2018	09/04/2018
OFFICE	NRO/DCIP/QVIB-2	NRO/DCIP/QVIB-2	
NAME	PPrescott	KKavanagh	
DATE	09/06/2018	09/07/2018	

OFFICIAL RECORD COPY

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

Docket No.: 99901450

Report No.: 99901450/2018-201

Vendor: Crane Nuclear, Inc.
860 Remington Boulevard
Bolingbrook, IL 60440

Vendor Contact: Ms. Joyce Hamman
Director of Safety and Quality
Email: jhamman@cranevs.com
Phone: (770) 429-4602

Nuclear Industry Activity: Crane Nuclear, Inc. (CNI), located in Bolingbrook, IL, is under contract with Vogtle Units 3 and 4, and with several domestic operating reactors to provide safety-related valves, and replacement parts for valves. CNI'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.

Inspection Dates: July 23 - 27, 2018

Inspectors: Andrea Keim NRO/DCIP/QVIB-2
Paul Prescott NRO/DCIP/QVIB-2
Taylor Lamb NRO/DCIP/QVIB-2
Olivier Lareynie NRO/DLSE/LB3

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

Enclosure

EXECUTIVE SUMMARY

Crane Nuclear, Inc.
99901450/2018-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at Crane Nuclear, Inc.'s (hereafter referred to as CNI) facilities in Bolingbrook, IL, 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 team also verified that CNI 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 July 23 - 27, 2018. The NRC last performed a vendor inspection at CNI's facility, in Bolingbrook, IL, in 2015.

This technically-focused inspection specifically evaluated CNI's implementation of quality activities associated with the design, fabrication, and testing of replacement valves and parts for the current operating fleet. Specific activities observed by the NRC inspection team included:

- On Wednesday, July 25, 2018, two inspectors observed the quality control process (setup) prior to performing a weld on a safety-related 20-inch disc. The quality control inspector ensured that the appropriate part and material was being used for the welding process, and utilized the appropriate procedure for the welding parameters. One inspector performed an observation of the welding process and generally observed appropriate controls.
- On Thursday, July 26, 2018, two inspectors observed the assembly of a sleeved plug valve. The inspectors noted that the appropriate procedure was in use and that the appropriate controls were in place for the assembly.

In addition to observing these activities, the NRC inspection team verified that measuring and test equipment were 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 April 25, 2011, IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated April 25, 2011, and IP36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," dated February 13, 2012.

The NRC inspection team concluded that CNI'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 CNI's personnel are implementing these policies and procedures effectively. The results of this inspection are summarized below.

REPORT DETAILS

1. 10 CFR Part 21 Program

a. Inspection Scope

The NRC inspection team reviewed Crane Nuclear Inc.'s (hereafter referred to as CNI) policies and implementing procedures that govern CNI's Title 10 of the *Code of Federal Regulations* (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 CNI's purchase orders (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 CNI's nonconformance and corrective action procedures provide a link to the 10 CFR Part 21 program. Furthermore, for a sample of 10 CFR Part 21 evaluations performed by CNI, the NRC inspection team verified that CNI 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 CNI'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 CNI 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 CNI is implementing its policies and procedures associated with the 10 CFR Part 21 program. No findings of significance were identified.

2. Design Control and Commercial-Grade Dedication

a. Inspection Scope

The NRC inspection team reviewed CNI's policies and implementing procedures that govern the design-control program to verify their compliance with the regulatory requirements of Criterion III, "Design Control," 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 team reviewed CNI's program for the dedication of commercial-grade items for use in safety-related applications to verify its compliance with the applicable regulatory requirements.

The NRC inspection team reviewed a sample of design reports, design specifications, engineering drawings, work orders, certificates of conformance (CoCs), certified material test reports (CMTRs) and American Society of Mechanical Engineers (ASME) Code requirements.

Specifically, the NRC reviewed the documentation associated with the final valve order for the Vogtle new construction activities. The valve order was for two 2-inch 2250 Class, Section III ASME Boiler and Pressure Vessel (B&PV) Code Class 2 ball valves. The NRC inspection team reviewed the design report which included the hydrostatic test reports, valve data sheets, material traceability sheets and certified material test reports. The NRC inspection team also reviewed a sample of work order (WOs) associated with the ball valves. Documentation in the WOs included the nondestructive examination reports, design drawings and CoCs. The NRC inspection team confirmed that the design reports and associated test reports included the correct technical and regulatory requirements per the customer specifications, CNI's procedures and the applicable ASME B&PV Code requirements.

The NRC inspection team also reviewed CNI's program for the dedication of commercial-grade items for use in safety-related applications. This assessment included a review of the policies and procedures governing the implementation of commercial-grade dedication (CGD) activities, interviews with CNI's personnel and review of CGD documentation. Specifically, the NRC inspection team reviewed dedication packages to assess the different elements of the CGD program, including the technical evaluation process, design drawings, sampling plans, and test and inspection reports. The NRC inspection team evaluated the criteria for the identification of item safety functions, credible failure modes and effects analyses, selection of critical characteristics and acceptance criteria, and the verification methods to assess the adequate implementation of CNI's dedication process.

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 CNI is implementing its design control and commercial-grade dedication 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 CNI is effectively implementing its policies and procedures associated with the design control and commercial-grade dedication programs. No findings of significance were identified.

3. Supplier Oversight

a. Inspection Scope

The NRC inspection team reviewed CNI's policies and implementing procedures that govern the implementation of its oversight of contracted activities 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.

Specifically, a review was performed of CNI's quality assurance (QA) process and procedures to verify that adequate controls have been established and implemented for the control and release of procurement documents and subsequent changes. A representative sample of CNI's procurement documents was reviewed to ensure that controls have been properly implemented. The documentation related to POs is adequately controlled and reviewed consistent with procedures and regulatory requirements.

A sample of external audits was reviewed to confirm that activities affecting quality comply with the QA program and have been implemented effectively. The NRC inspection team verified that CNI has qualified its suppliers and put them on an approved supplier list (ASL) based on source evaluation and selection. The NRC inspection team verified that triennial audits were being performed. Responsibilities and procedures for auditing, documenting and reviewing audit results and designating management levels to review and assess audit results was established.

Additionally, the NRC inspection team evaluated CNI's annual supplier performance assessments. The evaluation included a review of any associated deficiency reports (DRs), corrective action reports (CARs) and material test samples from the specific supplier. The NRC inspection team ensured that the ASL reflected the supplier's current QA program and had been reviewed and accepted by CNI.

The NRC inspection team also discussed the supplier oversight program with CNI'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 CNI is implementing its oversight of contracted activities in accordance with the regulatory requirements of Criterion IV and Criterion VII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that CNI is effectively implementing its policies and procedures associated with the oversight of contracted activities. No findings of significance were identified.

5. Manufacturing Control

a. Inspection Scope

The NRC inspection team reviewed CNI'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," in Appendix B to 10 CFR Part 50 and with the requirements in Subsection NCA, "General Requirements for Division 1 and Division 2," 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 B&PV Code, 1998 Edition, 2000 Addenda.

The NRC inspection team reviewed CNI's control of special processes used in the fabrication and assembly of valves to verify that adequate controls have been established and implemented for performing special processes consistent with regulatory requirements. The special process procedures provide adequate guidance for generating control documents, and completed special processes have been performed by qualified personnel.

The NRC inspection team verified that the appropriate requirements of ASME were incorporated into procedures and work instructions and that personnel are qualified in accordance with the ASME Code.

Additionally, the NRC inspection team witnessed ongoing special processes activities to verify acceptability relative to contract and procedural requirements. Specifically, the NRC inspection team observed welding and assembly of a sleeved plug valve. A sample of completed travelers and test reports were reviewed to verify that they comply with CNI's procedures and the ASME Code.

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

7. Control of Measuring and Test Equipment

a. Inspection Scope

The NRC inspection team reviewed CNI's policies and implementing procedures that govern the measuring and test equipment (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 dates for recalibration.

The NRC inspection team performed a walk-down to ensure that equipment located in the M&TE storage area, M&TE hold area and fabrication shop were labeled, handled, and stored in a manner that indicated the calibration status of the instrument and ensured its traceability to calibration test data.

The NRC inspection team discussed the M&TE program with CNI's 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 CNI 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 CNI is implementing its policies and procedures associated with the M&TE program. No findings of significance were identified.

8. Nonconforming Materials, Parts, or Components and Corrective Action

a. Inspection Scope

The NRC inspection team reviewed CNI'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 CNI's corrective actions in response to the inspection findings identified in NRC Inspection Report (IR) No. 99901450/2015-202, dated August 14, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15216A419).

The NRC inspection team reviewed a sample of deficiency reports and CARs from 2015 through July 2018 to verify the adequacy and control of nonconforming items and the corrective action program. The NRC inspection team also verified that there is a connection between the corrective action process and deficiency process to 10 CFR Part 21 program.

The NRC inspection team also discussed the nonconforming materials, parts, or components and corrective action programs with CNI'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 Corrective Action Associated with Violation No. 99901450/2015-202-01

Following the June 2015 inspection at CNI, the NRC issued Notice of Violation (NOV) No. 99901450/2015-202-01 for failure to evaluate a deviation potentially associated with a substantial safety hazard in accordance with 10 CFR 21.21(a)(1) or provide an interim report in accordance with 10 CFR 21.21(a)(2).

In a request for additional information (RAI) response dated October 20, 2015, CNI, stated, in part, that the cause of the violation was a failure to implement CNI procedures 15-100, "10 CFR 21 Reporting of Defects and Non-Compliance," and 16-100, "Corrective Action Reports," relative to the identification and timely reporting of a misclassified integral yoke. In addition, CNI stated that the procedures lacked clarity or were inadequate relative to significant conditions adverse to quality and that personnel did not understand the requirement contained in the procedures.

The NRC inspection team reviewed the documentation that provided objective evidence for the completion of the corrective actions and reviewed the updated procedures. In addition, the NRC inspection team reviewed current implementation of the procedures. Based on this review, the NRC inspection team closed NOV No. 99901450/2015-202-01.

b.2 Corrective Action Associated with Nonconformance No. 99901450/2015-202-02

Following the June 2015 inspection at CNI, the NRC issued Notice of Nonconformance (NON) No. 99901450/2015-202-02 for CNI's failure to assure that conditions adverse to quality were promptly identified and corrected, and that significant conditions adverse to quality the cause is determined and corrective action is taken to preclude repetition and reported to the appropriate levels of management. Specifically, CNI did not initiate a CAR to evaluate and implement measures to correct multiple drawing errors that needed revision to properly identify the valve yoke material as pressure retaining. In another instance, CNI did not initiate a CAR to evaluate a potential issue where non-pressure retaining parts (wedge guides) for ASME Class 1 bolted bonnet gate valve were welded to the pressure retaining valve body.

In an RAI response dated October 20, 2015, CNI, stated, in part, that the cause of the violation was a failure to appropriately implement CNI procedure 16-100, "Corrective Action Reports," relative to the identification and timely reporting of a misclassified integral yoke. In addition, CNI stated that the procedure lacked clarity or was

inadequate relative to conditions and significant conditions adverse to quality and that personnel did not understand the requirement contained in the procedure.

The NRC inspection team reviewed the documentation that provided objective evidence for the completion of the corrective actions and reviewed the updated procedures. In addition, the NRC inspection team reviewed current implementation of the procedures. Based on this review, the NRC inspection team closed NON No. 99901450/2015-202-02.

c. Conclusion

The NRC inspection team concluded that CNI is implementing its nonconforming materials, parts, or components and corrective action programs in accordance with the regulatory requirements of Criterion XV/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 CNI is implementing its policies and procedures associated with the control of nonconforming materials, parts, or components and corrective action. No findings of significance were identified.

9. Internal Audits

a. Inspection Scope

The NRC inspection team reviewed CNI's policies and procedures that govern internal audits to verify compliance with the requirements of Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed a sample of internal audit reports from 2016 through 2017. The NRC inspection team verified that internal audits were performed by qualified auditors. 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.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that CNI is conducting its internal audits in accordance with the regulatory requirements of Criterion XVIII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and interviews conducted, the NRC inspection team determined that CNI is adequately implementing its policies and procedures associated with internal audits. No findings of significance were identified.

10. Entrance and Exit Meetings

On July 23, 2018, the NRC inspection team discussed the scope of the inspection with Ms. Joyce Hamman, Director of Safety and Quality, and other members of CNI's management and technical staff. On July 27, 2018, the NRC inspection team presented the inspection results and observations during an exit meeting with Ms. Hamman, and other members of CNI'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
Joyce Hammon	Director	CNI	X	X	X
Burt Anderson	Site Leader	CNI	X	X	
Jim Dabulskis	Shop Manager	CNI	X	X	
Jennifer Bregovy	Manager, Safety and Quality	CNI	X	X	X
John Visser	Customer Service Manager	CNI	X	X	
Zenas McLucas	QA Engineer	CNI	X	X	
David Dwyer	Manager, New Product Development	CNI	X	X	
Samson Kay	Manager, Sustaining Engineering	CNI	X	X	X
Matt Fangman	Sales Manager	CNI		X	
Rick Scallate	Calibration	CNI			X
Jason Sample	QC Inspector	CNI			X
Ali Gashi	Welder	CNI			X
Michael Prazak	Assembly and Test Cell Leader	CNI			X
Andrea Keim	Inspection Team Leader	NRC	X	X	
Paul Prescott	Senior Inspector	NRC	X	X	
Taylor Lamb	Inspector	NRC	X	X	
Olivier Lareynie	Inspector	ASN	X	X	
Kerri Kavanagh	Branch Chief	NRC		X*	

* by phone

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
99901450/2015-201-01	CLOSED	NOV	10 CFR Part 21
99901450/2015-201-02	CLOSED	NON	Criterion XVI

4. DOCUMENTS REVIEWED

Policies and Procedures

"Nuclear Quality Assurance Manual 13th Edition" Revision 1, dated January 17, 2018

CNI Procedure No. 03-107, "Classification of Valve Components," dated June 6, 2018

CNI Procedure No. 04-100, "Procurement Control," Revision 11, dated September 29, 2016

CNI Procedure No. 04-105, "Purchase Order Receiving," Revision 7.1, dated December 21, 2017

CNI Procedure No. 07-100, "Receiving, Inspection, Material Release and Storage," Revision 16, dated September 30, 2016

CNI Procedure No. 10-101, "Final Inspection – Review and Acceptance of Quality Assurance Records," Revision 5, dated July 18, 2012

CNI procedure 12-100, Rev. 8, "Calibration," August 3, 2015

CNI procedure 12-100C, Rev. 5, "Calibration of Electrical Characteristic Indicators," September 4, 1996

CNI Procedure No. 15-100, "10CFR21 Reporting of Defects and Non-Compliance," Revision 9, dated August 31, 2015

CNI Procedure No. 15-104, "Deficiency Control Report," Revision 12, dated July 29, 2016

CNI Procedure No. 16-100, "Corrective Action Reports," Revision 6, dated June 22, 2015

CNI Procedure No. 18-100, "Lead Auditor Qualification and Certification," Revision 6, dated June 3, 2010

CNI Procedure No. 18-101, "Internal Audits," Revision 8, dated October 27, 2015

CNI Procedure No. 18-102, "Supplier Surveys and Audits," Revision 17, dated April 4, 2018

CNI Procedure No. 18-103, "Supplier Inspection Procedure," Revision 5, dated March 7, 2014

CNI Procedure No. CWP-31, "P-1 to P-1 Groove (GTAW – SMAW)," Revision 4, dated January 24, 1990

CNI Procedure No. CWP-PAHF-11, "Hardfacing to P-1 (PAW)," Revision 6, dated April 3, 2018

CNI procedure PAHF-111, "Norem 02 Hardfacing to P-1 (1" and above)," Revision 3, dated July 11, 2014

CNI procedure CWP-102, "Welding Control Procedure," Revision 8, dated May 15, 2015

CNI procedure PAHF-41, "Hardfacing to P-4 – PAW [Stellite6]," Revision 4, dated May 22, 2015

CNI procedure 02-100, "Qualification of Examination, Testing and Inspection Personnel," Revision 9, dated October 19, 2015

CNI procedure 12-100D, "Calibration of Torque Wrenches," Revision 4, dated September 26, 1996

CNI procedure, BTP-1, "Bolt Torque Procedure," Revision 11, dated November 14, 2014

CNI Procedure No. APS-6, "Assembly Procedure for Sleeved Plug Valves," dated September 11, 2009

DED-4, "Dedication of Commercial Material, Items and Calibration Services for Safety Related Applications," Revision 4, dated May 25, 2018

Design Documents

Design Report: "CNI Report No. DR-158, for 2" Class 2250 Top Entry Ball Valve, Gear Operated," Revision 7, dated July 13, 2012

Test Certification for Cotter Pin, Chemistry Report for 304 Stainless Steel, Revision 3 dated December 27, 2017

Test Certification for Cotter Pin, Chemistry Report for 304 Stainless Steel, Revision 3 dated December 27, 2017

Certified Material Test Report (CMTR) for Customer Order No. 51403, "Raw Bar," Revision 1, dated June 21, 2011

CMTR for Customer Order No. ACT-12438, "Raw Bar," Revision 1, dated October 19, 2010

Work Orders

Work Order (WO) No. 4407, Item No. CC04845, "F14N2 Ball (Lower); 2" Valve SA479 XM-19 with Stellite #6 HF," completed May 22, 2018

WO No. 35740-12-106, Item No. CC04906-764NQ, "Stem (Upper); 2" Ball Valve SB637 UNS NO7718 Cond P," completed March 22, 2014

WO No. 35740-12-119, Item No. CBO4925-321Q, "Plate, Actuator Mounting; 2" Ball A240 TP304," completed June 24, 2014

WO No. 35740-12-120, Item No. CA04926-B56Q, "Stand-off Yoke; 2" Ball A479 TP410 Cond A," completed May 15, 2015

WO No. 35740-12-125, Item No. CA05047-C95Q, "Adaptor, Spline (HIBC) Steel (Material Supplied by Vendor)," completed February 15, 2014

WO No. 35740-12-126, Item No. CA05048-D03Q, "Key for Actuator; B637 UNS NO7718 GR PH," completed May 5, 2014

WO No. 35740-12-100A, "Assembly; 2" BWE Class 2250 Gear Operated Ball Valve, Hydro, Seat Leak and Operational Test," completed May 11, 2018

WO No. 35740-12-100, "Assembly; 2" BWE Class 2250 Gear Operated Ball Valve, Assembly," completed May 23, 2018

WO No. 35740-12-200A, "Assembly; 2" BWE Class 2250 Gear Operated Ball Valve, Final Assembly/Hydro," completed May 18, 2018

WO No. CB04874-F13Q-005, Item No. CB04874-F13Q, "Seat Ring, 2" Ball Valve A494 Gr CY55nBiM," completed April 24, 2018

WO No. CB04874-F13Q-009, Item No. CB04894-F13Q, "Seat Ring, 2" Ball Valve A494 Gr CY55nBiM," completed April 17, 2018

WO No. 48684-01-600 (printed on 03/14/18) in process

Calibration, Heat Treatment, Non-Destructive Examination, Inspection and Test Records Purchase Orders, Audit Reports, and Commercial-Grade Dedication

DED-4-Nationwide, "Nationwide Gage Calibration, Inc." Revision 1 dated June 7, 2018

DED-4-49080-04, "Silicone O-Ring for Fuel Pool Heat Exchanger Closed Cooling Water (CCW) Discharge Isolation Valve," Revision 2, dated July 18, 2018 (Subsequently amended to Revision 3)

DED-4-49080-02, "Tefzel Seat for Fuel Pool Heat Exchanger CCW Discharge Isolation Valve," Revision 0, dated May 3, 2018 (Subsequently amended to Revision 1)

DED-4-49080-03, "Graphite Gasket for Fuel Pool Heat Exchanger CCW Discharge Isolation Valve," Revision 0 dated May 3, 2018

DED-4-490140-01, "Kel-f PCTFE (thermoplastic chlorofluoropolymer) Seat for 3" CI 300 HPBV Lug Type with Wrench Operator used for Emergency Coolant Injection," Revision 0 dated May 10, 2018 (Subsequently amended to Revision 1)

DED-4-49234-02, "Raw Bar AMS [Aerospace Materials Specification] 5759 (Haynes #25) to be Upgraded for Safety Related Non-pressure Boundary Application," Revision 0

DED-4-5, "Gasket, Body to Bonnet (PTFE) (synthetic fluoropolymer) for VLV-41-04, 1½" Gate Valve," Revision 0, dated February 8, 2017

DED-4.1-47910-01A, "Tefzel Seat for 30" 150 psi Butterfly Valve," Revision 0, dated May 8, 2018

DED-4-47993-01, "EPDM [ethylene propylene diene monomer rubber] Rubber O-ring for 18" Butterfly Valve," Revision 0, dated May 18, 2017

DED-4-4, "Fluorinated Ethylene Propylene (FEP) Seal (Wedge) Ring for 2" 300 psi Sleeved Plug Valve," Revision 3, dated October 2, 2017

DED-4.1-48394-03, "⅛" Diameter X 1¾" Stainless Steel Cotter Pin for 4" Swing Check Valve," Revision 0 dated December 21, 2017

Deficiency Reports

Deficiency Report (DR) 13374, "G18T-820c/PTFE Gasket – Gasket Dimensions Vary Slightly from Design Drawing No. D-16811-3, Revision 3," Revision 0, dated May 5, 2018

DR 13547, "O-ring – ID [Inside Diameter] of O-ring Slightly Oversized, but Oversized Cross Section will be Compensated by Crush Between Body and the Plug," Revision 0, dated May 10, 2018

DR 13753, "003068-CO9Q/Seal – The Seals did not have the Batch Number Identified on the Package or CoC [Certificate of Conformance], as required by the PO [Purchase Order]," Revision 0, dated December 19, 2017

Corrective Action Reports

Supplier CAR 100402946, "Quality Program did not meet ASME Section III, NCA 3800, nor 10 CFR Part 50, Appendix B and 10 CFR Part 21," dated August 4, 2016

Supplier CAR 100402949, "Procedure Control Process," dated August 4, 2016

Supplier CAR 100402960, "M&TE Calibration," dated August 4, 2016

Supplier CAR 100402962, "Temperature Instrumentation Calibration," dated August 4, 2016

CAR 15-15, "Acceptance of Material though the Material did not meet Hardness Requirements," dated March 20, 2015

CAR 15-25, "Part 21 Notification or Interim Report to NRC" dated July 3, 2015

CAR 16-44, "PO QA Requirements," dated September 15, 2016

CAR 16-45, 10 CFR Part 21 procedure requirements, dated September 15, 2016

CAR 16-46, "Internal Audits," dated September 15, 2016

CAR 16-48, "Purchase Orders," dated September 15, 2016

CAR 16-58, 16-59, 16-60, 16-61 and 16-62 "Internal Audit Findings/Observations" dated December 15, 2016

CAR 16-52, 16-53, 16-54, 16-55 and 16-56, "Internal Audit Findings/Observations," dated October 12, 2016

CAR 17-28, 17-29, 17-30, 17-31 and 17-32 "Internal Audit Findings/Observations," dated October 12, 2017

CAR No. 17-33, "Yoke Nut Failure, Update Weak Link Analysis," dated October 19, 2017

Documents Created During the NRC Inspection

CAR 18-20, "Update the NQAM to: 1.) Include the Correct Definition of Commercial Grade Item, 2.) Include the Year and Addenda of NQA-1 CNI Commits to, and 3.) Add Appendix B to the Definition of Dedication," dated July 26, 2018

CAR 18-21, "Procedural Adherence during Welding," due August 25, 2018 (created on July 26, 2018)

Deficiency Report No. 13996, weld surface not cleaned prior to welding, issued July 26, 2018

Training Records

Record of lead auditor qualification, dated November 29, 2016

Record of lead auditor qualification, dated November 5, 2017 0/5/17

Record of lead auditor qualification, dated October 16, 2015

Designation letter of individual as the Lead Auditor to perform the 2017 Internal Audit, dated October 5, 2017

Designation letter of individual as the Lead Auditor to perform the 2016 Internal Audit, dated October 5, 2017

Training and qualification records for welder performing the weld during observation on July 25, 2018

Calibration Records

Calibration certificate CNI002-17-10-39012-1 dated October 16, 2017

Calibration record of thermometer #DTH-1, dated July 17, 2018

Calibration record of ammeter #NPWA, dated July 17, 2018

Calibration record of voltmeter #NPWV, dated July 12, 2018

Calibration record of torque wrench #TWA-250-FT-2, dated July 24, 2018

Calibration record of torque wrench #TWA-1000IP-5, dated July 24, 2018

Calibration record of digital torque tester #TWT-25-250, dated January 19, 2018

Calibration record of digital torque tester #TWT-5-50, dated January 19, 2018

Purchase Orders

PO 68468, for performance prediction methodology for flex wedge gate valve, dated June 30, 2017

PO 67064, to Crane Nuclear, Inc. (Kennesaw), for strain gauge couplers, dated October 10, 2016

PO 68484, to Crane Nuclear, Inc. (Kennesaw), for pressure transducers, travel encodes, current sensors, and voltage attenuators, dated July 6, 2017

PO 68031 for quick disconnect, dated April 4, 2017

PO 68027 for screw/socket head cap, dated April 11, 2017

PO 70370 for weld powder, dated June 8, 2018

PO 70485 for casting cover and casting body, dated June 25, 2018

PO 70276 for casting body, dated May 22, 2018

PO 64992 for safety related manual gear box, dated December 3, 2015

PO 70585 for gage block, dated July 13, 2018

Audit Reports

Supplier Audit Report for engineering services, dated September 25, 2015

Supplier Audit Report for analytical services, metallurgical testing, NDE examination, and calibration services, dated September 26, 2016

NIAC Member Assessment for manufacture and supply of welding materials and services, dated May 1, 2018

Supplier Audit Report for safety related and ASME Section III castings and forgings, dated March 16, 2018

Supplier Audit Report for actuators and actuator parts including accessories, dated September 15, 2016

Internal Audit report (November 14-18, 2016), dated December 15, 2016

Internal Audit report (September 13-16, 2016), dated October 12, 2016

Internal Audit report (October 9-12, 2017), dated November 27, 2017

Annual Supplier Evaluations

“Annual Performance Assessment for Supplier No. 20020965,” dated September 12, 2017

“Annual Performance Assessment for Supplier No. 20020264,” dated May 25, 2017

“Annual Performance Assessment for Supplier No. 20020728,” dated May 2, 2017

“Audit for Supplier No. 22022,” performed January 24 – 27, 2017 (Audit is performed annually and qualifies as Annual Performance Assessment)

10 CFR Part 21 Documentation

Notification of Defect related to “Weak Link Analysis for Chapman Gate Valve Figure L900, Item #18, Drawing CC05307, Revision B,” dated December 19, 2017

Miscellaneous Documents

“Annual CNI Management Review of the Quality Program Adequacy and Effectiveness and Trend Analysis for 9/1/2016 through 8/31/2017,” dated October 9, 2017