

September 13, 2017

Mr. Robert Michiels
Project Quality Manager
Aecon Industrial
150 Sheldon Drive
Cambridge ON N1R 7K9
Canada

SUBJECT: NUCLEAR REGULATORY COMMISSION INSPECTION OF AECON
INDUSTRIAL REPORT NO. 99901444/2017-201

Dear Mr. Michiels:

From August 8-11, 2017, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Aecon Industrial (Aecon) facility in Cambridge, Ontario. The purpose of this limited-scope routine inspection was to assess Aecon'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 Aecon's implementation of the quality activities associated with the fabrication, assembly, and testing activities of mechanical modules being supplied to the Westinghouse Electric Company AP1000 reactor design. The inspection also evaluated activities related to Section III, "Rules for Construction of Nuclear Power Plant Components," of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code. The enclosed report presents the results of the inspection. This NRC inspection report does not constitute NRC endorsement of Aecon's overall quality assurance (QA) or Part 21 programs.

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

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," the NRC will make available electronically for public inspection a copy of this letter, its enclosure, and your response through the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or Safeguards Information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material be withheld from public disclosure, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim (e.g., explain why the disclosure

of information would create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If Safeguards Information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Sincerely,

/RA/

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

Docket No.: 99901444

Enclosure:
Inspection Report No. 99901444/2017-201
and Attachment

SUBJECT: NUCLEAR REGULATORY COMMISSION INSPECTION OF AECON
INDUSTRIAL REPORT NO. 99901444/2017-201

Dated: September 13, 2017

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NAME	JOrtega-Luciano	SSmith	JBurke
DATE	09/11/17	09/12/17	09/13/17

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

Docket No.: 99901444

Report No.: 99901444/2017-201

Vendor: Aecon Industrial
150 Sheldon Drive
Cambridge ON N1R 7K9
Canada

Vendor Contact: Robert Michiels
Project Quality Manager
rmichiels@aecon.com
(519) 740-7477 x3873

Nuclear Industry Activity: Aecon located in Cambridge, Ontario supplies mechanical modules to Vogtle Units 3 and 4. Aecon has a NCA 4000 Quality Assurance Manual approved by the American Society of Mechanical Engineers. Aecon also has an ASME NPT Certificate of Authorization for Class 1, 2, & 3 fabrication without design responsibility and an NS Certificate.

Inspection Dates: August 8-11, 2017

Inspectors: Jonathan Ortega NRO/DCIP/QVIB-2 Team Leader
Raju Patel NRO/DCIP/QVIB-2
Ashley Ferguson NRO/DCIP/QVIB-3
Alain Artayet RII/DCI/CIB3

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

Enclosure

EXECUTIVE SUMMARY

Aecon Industrial
99901444/2017-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at the Aecon Industrial (Aecon) facility in Cambridge, Ontario, to verify that Aecon 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 Aecon 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 from August 8-11, 2017. This was the second NRC inspection at this Aecon facility.

This technically-focused inspection specifically evaluated Aecon's implementation of QA activities related to the fabrication, assembly, and testing of mechanical modules for the AP1000 project associated with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code Section III Class 1, 2, and 3 Subsection NCA, "General Requirements for Division I and Division 2," and non-code safety-related fabrication, assembly, and testing. Also during the inspection, the NRC inspection team evaluated WECTEC's (a subsidiary of Westinghouse Electric Company) corrective actions taken to address piping spool welds that did not meet the ASME B&PV Code that were identified during the July 2016 NRC inspection. Additionally, the NRC inspection team reviewed Aecon's disposition of nonconformance report No. A00002-000-0259, associated with the piping spools, which addressed the design requirements. Results of the July 2016 inspection are documented in inspection report 99901444/2016-201 (ADAMS Accession No. **ML16228A086**). The NRC inspection team noted that WECTEC had taken adequate actions to perform weld repairs and 100 percent inspection by its Source Inspectors on all of the piping spool welds manufactured by the Chicago Bridge and Iron facility at Laurens, South Carolina. The NRC inspection team determined WECTEC's corrective actions adequately addressed the issue identified during the July 2016 NRC inspection.

Specific activities observed by the NRC inspection team included:

- Set-up and performance of receipt inspection of WECTEC supplied pipe spool assembly SV4-RCS-PLW-011F-1A serial No. PL7;
- Set-up and performance of visual testing of weld No. W46 on Module Q305, "Piping Assembly Series I Y05," for Vogtle Unit 4;
- Set-up and performance of solvent removable liquid penetrant examination on 3/16-inch fillet weld for support pad weld No. W46 on Module Q305 for Vogtle Unit 4;
- Set-up and performance of gas tungsten arc welding (GTAW) of weld No. W0-1 performed on Module Q305, for Vogtle Unit 4;
- Set-up and performance of magnetic particle examination on 1/4-inch fillet welds for support weld Nos. W50 and W51 on Module Q305 for Vogtle Unit 4;
- Set-up and performance of flux cored arc welding (FCAW) process of weld Nos. W0036 and W0031, on Ring Girder XRG Bumper to Ring Weld for Vogtle Unit 4
- Set-up and performance of FCAW of weld Nos. W7242 and W7243 on A-Frame Weldment module for Vogtle Unit 4; and

- Set-up and performance of surface preparation and coating of frame/support weld areas on module KB-36 for Vogtle Unit 3 in accordance with work instructions for assessment of dust residue, ambient air, soluble salts, and surface profile witnessed by quality control (QC) using calibrated measuring instruments.

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 the following Inspection Procedures (IP):

- IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance"
- IP 43002, "Routine Vendor Inspections"
- IP 43004, "Inspection of Commercial-Grade Dedication Programs"

Inspection Areas

The NRC inspection team determined that Aecon is implementing its programs for design control, commercial-grade dedication, supplier oversight, manufacturing control, inspection, control of special processes, control M&TE, nonconforming material parts, and components, and corrective action in accordance with the applicable regulatory requirements of Appendix B to 10 CFR Part 50. In addition, Aecon is implementing its 10 CFR Part 21 program in accordance with the regulatory requirements. Based on the limited sample of documents reviewed and activities observed, the NRC inspection team also determined that Aecon is implementing its policies and procedures associated with these programs and no findings of significance were identified.

REPORT DETAILS

1. 10 CFR Part 21 Program

a. Inspection Scope

The NRC inspection team reviewed Aecon's policies and implementing procedures that govern Aecon'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 Aecon's purchase orders (PO) 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."

In addition the NRC inspection team evaluated a sample of nonconformance reports that resulted in a Part 21 evaluation under Aecon's Part 21 program. The NRC inspection team evaluated and determined that the conclusion of those evaluations were adequate. The NRC inspection team also verified that Aecon's nonconformance and corrective action procedures provide a link to the 10 CFR Part 21 program. 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 Aecon 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 Aecon is implementing its policies and procedures associated with the 10 CFR Part 21 program. No findings of significance were identified.

2. Design Control

a. Inspection Scope

The NRC inspection team reviewed Aecon'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, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," and the requirements of Section III, "Rules for Construction of Nuclear Facility Components," of the ASME B&PV Code.

Although Aecon does not have responsibility for any design activities, the NRC inspection team reviewed Aecon's processes for reviewing WECTEC procurement requirements and translating the requirements into fabrication drawings and work travelers, including translation of technical and quality requirements into procedures and process controls. The NRC inspection team examined Aecon's quality control procedures and associated forms that control design changes, as well as a sample of

engineering drawings and inspection plans related to Westinghouse Electric Company (WEC) AP1000 Q601 module.

The NRC inspection team reviewed Aecon's procedures for its process to control design changes and examples of their implementation, as well as a sample of engineering drawings, contract changes, and the associated WEC POs. Additionally the NRC inspection team reviewed a sample of WECs Engineering and Design Consolidation Reports (E&DCRs) and the implementation of E&DCRs into engineering, as-built drawings and document technical lists for both Q601 and Q305 mechanical modules that were being fabricated to ASME B&PV Code Section III, Subsections NB, NC, and ND requirements for the Vogtle Units 3 and 4 AP1000 units. Lastly, the NRC inspection team reviewed the shop travelers and design specifications to ensure that the mechanical modules were designed and constructed in accordance with the ASME B&PV Code requirements.

The NRC inspection team discussed the design control program with Aecon'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 Aecon is implementing its design control program 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 Aecon is implementing its policies and procedures associated with the design control program. No findings of significance were identified.

3. Manufacturing Control and Control of Special Processes

a. Inspection Scope

The NRC inspection team reviewed Aecon's policies and implementing procedures that govern the implementation for the control of manufacturing and special processes programs to verify compliance with Criterion VIII, "Identification and Control of Materials, Parts and Components," and Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed Aecon's Welding Procedure Specifications (WPSs) with supporting Procedure Qualification Records (PQRs) and welder performance qualification records to determine whether applicable essential, nonessential, and supplementary essential (fracture toughness) variables for each welding process were in accordance with the requirements of the 1998 Edition including 2000 Addenda of ASME B&PV Code Section IX, "Welding and Brazing Qualifications".

The NRC inspection team witnessed several welding activities being performed on mechanical modules for Vogtle Unit 4 that included: (1) set-up and performance of GTAW of weld No. W0-1 on module Q305; (2) set-up and performance of FCAW

process on weld Nos. W0036 and W0031 on Ring Girder XRG Bumper to Ring Weld; (3) set-up and performance of FCAW of weld No. W7242, and W7243 on A-Frame Weldment module; and (4) set-up and performance of GTAW of weld No. W0-1 on Module Q305. The NRC inspection team verified that the WPS used for these submodules were qualified in accordance with the requirements of ASME Section III, Section IX and the applicable Aecon procedures. The NRC inspection team also reviewed an additional sample of WPSs and PQRs to verify that the documents were in accordance with the requirements of ASME Section IX, and the applicable Aecon's procedures.

The NRC inspection team performed a walk-down of the Aecon weld filler wire control storage area to verify that the weld filler metal was adequately controlled at all times until its consumption, and reviewed records associated with the storage, issuance, and return of weld filler wires. The weld filler metal was kept in locked containers and the environmental condition of the storage facility controlled and monitored daily using calibrated instrument in accordance with the requirements of ASME Section IX.

The NRC inspection team reviewed Aecon and their subcontractor's nondestructive examination (NDE) procedures and personnel qualifications (including annual vision tests) to determine whether examination methods and practices were in accordance with the applicable requirements of Articles and Appendices for the 1998 Edition including 2000 addenda of ASME B&PV Code Section V, "Nondestructive Examination".

During visual test (VT), magnetic particle (MP) and liquid penetrant (LP) examination, the NRC inspection team witnessed and verified that the Level II performed the examinations in accordance with procedures and appropriate acceptance criteria using calibrated instruments. The NRC inspection team also reviewed qualification records for a sample of three Level II NDE inspectors and Aecon's third-party Level III inspector to confirm that they were qualified in accordance with the requirements in ASNT SNT-TC-1A. The NRC inspection team verified that vision tests were performed yearly and Level II and Level III inspectors are recertified as required by the ASME Code and ASNT SNT-TC-1A. The NRC inspection team reviewed certified material test reports for the penetrant, developer, and cleaner to verify that they belong to same family and that their halogen contents were below one percent by weight in accordance with the requirements of ASME Section V.

The NRC inspection team discussed the control of manufacturing and special processes programs with Aecon's management, technical staff, and shop floor craft supervision and labor force. 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 Aecon is implementing its manufacturing control and control of special processes programs in accordance with the regulatory requirements of Criterion VIII and IX, of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and operations observed, the NRC inspection

team also determined that Aecon is effectively implementing its policies and procedures associated with the manufacturing control and control of special processes programs. No findings of significance were identified.

4. Inspection

a. Inspection Scope

The NRC inspection team reviewed Aecon's policies and implementing procedures that govern the inspection program to verify compliance with the regulatory requirements of Criterion X, "Inspection," of Appendix B to 10 CFR Part 50.

The NRC inspection team verified that Aecon's procedures for inspection activities provided measures for the generation of inspection documents, such as shop travelers, instructions, or other appropriate means. For a sample of shop travelers and as-built drawings, the NRC inspection team verified that these documents included the appropriate information as required by Aecon's procedures such as the heat numbers, welding material, welding procedures, inspection date, results of examination, and the initials/signature of the QC inspector. The NRC inspection team also verified that mandatory hold points were indicated and that work did not proceed without appropriate approval.

The NRC inspection team observed Aecon's QC inspector perform receipt inspection of two pipe spool assembly SV4-RCS-PLW-011F-1A serial No. PL7, received from WECTEC and reviewed the receipt inspection report. The receipt inspection report documented the inspection attributes to be verified, procedure and revision used and the acceptance results. The final report was approved by the QC supervisor and the Authorized Nuclear Inspector who witnessed the inspection.

The NRC inspection team verified that inspections are performed by persons other than those who performed or directly supervise the work being inspected and that the documents included appropriate information as required by Aecon's procedures such as inspection date, observations, results of examinations and tests, and the appropriate signature and/or initials of the QC inspector. The NRC inspection team verified that: (1) the inspections were performed by qualified personnel in accordance with approved policies and procedures and (2) specific part numbers and heat numbers were traceable to the raw material purchased or supplied from the suppliers and maintained throughout the production process.

The NRC inspection team discussed the inspection program with Aecon'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 Aecon is implementing its inspection program in accordance with the regulatory requirements of Criterion X of Appendix B to

10 CFR Part 50. Based on the limited sample of documents reviewed and operations observed, the NRC inspection team also determined that Aecon is implementing its policies and procedures associated with the inspection program. No findings of significance were identified.

5. Control of Measuring and Test Equipment

a. Inspection Scope

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

The NRC inspection team selected a sample of M&TE, and determined that they had the appropriate calibration stickers with the respective calibration service 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. In addition, the calibration records reviewed by the NRC inspection team indicated the "as-found," "as-left" conditions, accuracy required, calibration results, calibration dates, owner of the calibration services, standard(s) used, and the due date for recalibration. The NRC inspection team verified that the selected M&TE was calibrated using standards traceable to known industry standards including those outsourced for calibration and used within acceptable tolerance range of application. All M&TE equipment was traceable with a unique identification (ID) number. The ID number is traceable and retrievable to an M&TE log, which contains all of the information regarding the calibration history of the item.

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

The NRC inspection team performed a walk-down of Aecon's facility to ensure that M&TE located in the M&TE storage area, the M&TE hold area, and the 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 Aecon'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 Aecon 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 and operations observed, the NRC inspection team also determined that Aecon is implementing its policies and procedures associated with the M&TE program. No findings of significance were identified.

6. Commercial-Grade Dedication and Supplier Oversight

a. Inspection Scope

The NRC inspection team reviewed Aecon's policies and implementing procedures that govern the implementation of its commercial-grade dedication and supplier oversight programs to verify compliance with the requirements of Criterion III, "Design Control," Criterion IV, "Procurement Document Control," and Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed a sample of commercial-grade dedication plans, checklists, reports, associated POs, and commercial-grade surveys of several commercial vendors on Aecon's Approved Supplier's List. The NRC inspection team evaluated a sample of technical evaluations and concluded that the technical evaluations in the dedication plans appropriately identify the critical characteristics and technical attributes necessary to provide reasonable assurance that the item or services would perform their intended safety function. Also, the NRC inspection team verified a sample of Certified Material Test Reports, Certificates of Conformance, and receipt inspection records to verify that these documents contained the appropriate technical and quality requirements.

The NRC inspection team verified that the 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 the reviewed safety related POs invoked the requirements of Appendix B to 10 CFR Part 50 and 10 CFR Part 21.

The NRC inspection team reviewed a sample of commercial-grade surveys to verify the implementation of Aecon's supplier oversight program. The NRC inspection team verified that Aecon had prepared and approved commercial-grade dedication plans that identify the scope, critical characteristics to be verified and applicable checklist criteria before the initiation of the survey activity. The NRC inspection team confirmed that the survey reports contained objective evidence of the review of the relevant critical characteristics being verified. For commercial-grade surveys that resulted in findings, the NRC inspection team verified that the supplier had established a plan for corrective action and that Aecon had reviewed and approved the corrective action and verified its satisfactory completion and proper documentation.

The NRC inspection team reviewed Aecon's measures established for the use of accreditation in lieu of commercial-grade surveys for procurement of calibration and testing services. Aecon's QA manual allows for the utilization of the International Laboratory Accreditation Cooperation (ILAC) accreditation process in lieu of

commercial-grade surveys for calibration services as approved by the NRC in the Arizona Public Service Company QA program safety evaluation (ADAMS Accession Number **ML052710224**). The NRC inspection team observed that Aecon is also utilizing ILAC accreditation for testing services; however the provisions for this methodology had not been incorporated into Aecon's QA manual. Aecon initiated Nuclear Corrective/Preventative Action Report (NCPAR) 2017-0109 to revise its QA manual to include the appropriate provisions, as required by Nuclear Energy Institute (NEI) technical report NEI 14-05, "Guidance for the Use of Accreditation In Lieu of Commercial-Grade Surveys for Procurement of Laboratory Calibration and Test Services," for the utilization of ILAC accreditation for calibration and testing services in lieu of performing a commercial-grade survey.

The NRC inspection team reviewed a sample of safety-related supplier quality audits performed since the last NRC inspection (July 2016). The NRC inspection team verified that: (1) the supplier quality audits were performed at the required frequency; (2) the audits were performed using approved checklists and procedures; (3) and that the audit report contained objective evidence of the review of the relevant QA criteria of Appendix B to 10 CFR Part 50. Additionally, the NRC inspection team reviewed a sample of supplier annual assessments to verify Aecon's measures for ensuring that its suppliers are continuing to meet the quality requirements imposed. The NRC inspection team verified that Aecon took appropriate corrective actions for suppliers whose assessment showed degraded performance.

The NRC inspection team also reviewed a sample of training and qualification records of lead auditors and QC inspection personnel and confirmed that auditing and inspection personnel had completed the required training and maintained qualification and certification in accordance with Aecon's policies and procedures.

The NRC inspection team also discussed the commercial-grade dedication and supplier oversight programs with Aecon'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 Aecon is implementing its commercial-grade dedication and supplier oversight programs in accordance with the regulatory requirements of Criterion III, 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 Aecon is implementing its policies and procedures associated with the commercial-grade dedication and supplier oversight programs. No findings of significance were identified.

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

a. Inspection Scope

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

The NRC inspection team performed a walk-down of Aecon's fabrication and receiving storage areas to verify that nonconforming items were properly identified, marked, and segregated, when practical, to ensure that they were not reintroduced into the production processes. Additionally the NRC inspection team reviewed a sample of NCRs and NCPARs generated since the last NRC inspection to verify that: (1) nonconforming items were dispositioned in accordance with procedures; (2) technical justification were documented as appropriate for dispositions; and (3) nonconforming items were evaluated for 10 CFR Part 21 applicability, as appropriate. For NCRs dispositioned as repair for ASME Section III components, the NRC inspection team verified that the repairs were performed in accordance with prescribed procedures and that the required re-examinations (NDE) were performed.

Furthermore, the NRC inspection team reviewed Aecon's NCR and NCPAR log for the incorporation of conditions identified by WECTEC source inspectors Notice of Unsatisfactory Conditions.

The NRC inspection team also reviewed the implementation of the corrective actions for NCPARs generated during the previous NRC inspection. The NRC inspection team reviewed the objective evidence for the closeout of NCPARs 2016-141, 2016-142, 2016-143 and 2016-144, that were generated during the July 2016 inspection. The NRC inspection team determined that Aecon had implemented adequate corrective actions in accordance with the requirements of Criterion XVI of Appendix B to 10 CFR Part 50.

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

8. Entrance and Exit Meetings

On August 8, 2017, the NRC inspection team discussed the scope of the inspection with Dave Pankratz, Quality Director, Robert Michiels, Quality Manager, and other members of Aecon's management and technical staff. On August 11, 2017, the NRC inspection team presented the inspection results and observations during an exit meeting with Dave Pankratz, Robert Michiels, and other members of Aecon's management and technical staff. The attachment to this report lists the attendees of the entrance and exit meetings, as well as those individuals whom the NRC inspection team interviewed.

ATTACHMENT

1. ENTRANCE/EXIT MEETING ATTENDEES

Name	Title	Affiliation	Entrance	Exit	Interviewed
Jonathan Ortega-Luciano	Inspection Team Leader	NRC	X	X	
Ashley Ferguson	Inspector	NRC	X	X	
Alain Artayet	Inspector	NRC	X	X	
Raju Patel	Inspector	NRC	X	X	
Andrew St. Cyr	Welding Supervisor	Aecon			X
Chas Williams	Manufacturing Specialist	Aecon	X	X	X
Chris Armstrong	QC Inspector	Aecon			X
Dave Pankratz	Quality Director	Aecon	X	X	
David Leclen	Manufacturing Specialist	Aecon			X
David Whitehead	QC Inspector Level II	Aecon			X
Debbie Goad	QC Inspector	Aecon			X
Eric Dyke	Manager, Nuclear Fabrication	Aecon	X	X	X
Greg Martin	Fabrication Manager	Aecon	X		
John Hogarth	QC Supervisor	Aecon		X	X
Kevin Cassells	Senior Quality Manager	Aecon	X		
Louis Vizi	Manufacturing Specialist	Aecon			X
Nadia Crystal	Welder	Aecon			X
Pamela Stewart	QC Inspector/ Corrective action Coordinator	Aecon	X	X	X
Patrick Gregus	Production manager	Aecon	X		
Rick Berg	QC Inspector	Aecon			X
Robert Michiels	Quality Manager	Aecon	X	X	X

Name	Title	Affiliation	Entrance	Exit	Interviewed
Vikram Bassan	QC Inspector	Aecon			X
Wilfrid Bagley	Auditing Supervisor/QA Lead Auditor	Aecon	X	X	X
Wilson Kuang	QC Inspector Level II	Aecon			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. DOCUMENTS REVIEWED

Policies and Procedures

- Quality Assurance Manual for Nuclear Class Items, Revision 19, dated December 10, 2015
- Quality Assurance Manual Project Specific Supplement –Stone & Webster-A00002, Revision 4, dated November 15, 2015
- Quality Control Procedure (QCP)-302.1, "Qualification of Audit Personnel," Revision 10, dated October 3, 2013
- QCP-302.3, "Certification of QC Inspectors," Revision 7, dated January 19, 2012
- QCP-302.4, "Quality Assurance Auditing," Revision 17, dated June 8, 2017
- QCP-306.5, "Control of Suppliers," Revision 14, dated November 3, 2016
- QCP-309.44, "Fabrication Shop Nonconformance," Revision 10, dated April 12, 2017
- QCP-309.48, "Control of Nuclear Items," Revision 5, dated March 20, 2017
- QCP-309.54, "Production Engineering Drawing Work Flow (Nuclear)," Revision 3, dated June 12, 2017
- QCP-309.57, "Preparation of Quality Control Procedures, Work Instructions, Technical Specifications and Forms," Revision 7, dated June 7, 2016
- QCP-309.62, "Field Change Request," Revision 1, dated November 11, 2013
- QCP-309.64, "Request for Information," Revision 0, dated November 5, 2013
- QCP-309.65, "Customer Change Request," Revision 1, dated May 13, 2014
- QCP-309.74, "Corrective Action," Revision 3, dated March 30, 2017
- QCP-310.2, "Visual Inspection," Revision 19, dated December 6, 2016
- QCP-310.21, "Written Practice," Revision 13, dated October 30, 2015
- QCP-310.42, "Statistical Sampling Procedure," Revision 2, dated January 16, 2012
- QCP-311.6, "Verification of Welding Machines," Revision 5, dated January 31, 2017
- QCP-311.7, "Calibration of Weld Rod Ovens," Revision 9, dated February 23, 2015
- QCP-311.13, "Calibration of Magnetic Particle Yoke," Revision 5, dated October 31, 2014

- QCP-311.22, "Verification of Dial Depth Gauges," Revision 0, dated November 10, 2016
- QCP-405.12, "Nuclear Purchasing," Revision 14, dated May 1, 2015
- QCP-405.9, "10CFR21 and 10 CFR50.55(e) Reporting of defects and noncompliance," Revision 9, dated February 3, 2017
- QCP-405.7, "Receiving, Receiving Inspection, and Source Inspection of Nuclear Items," Revision 13, dated March 29, 2017
- QCP-409.19, "Commercial-Grade Dedication," Revision 1, dated January 10, 2014
- QCP-409.20, "Commercial-Grade Surveys," Revision 0, dated September 25, 2013
- QCP-409.4, "Training for Nuclear Personnel," Revision 7, dated March 27, 2012
- QCP-409.8, "Marking and Identification of Nuclear Material," Revision 5, dated October 28, 2011
- QCP-410.4, "Magnetic Particle Examination," Revision 15, dated October 31, 2016
- QCP-410.5, "Liquid Penetrant Examination," Revision 12, dated October 31, 2016
- QCP-410.8, "ITPS and Travelers for Nuclear Items," Revision 9, dated March 2, 2017
- QCP-410.9, "Inspection (Nuclear and EPC Program) Revision 9, dated July 6, 2016
- Acuren Radiographic Examination Procedure Qualification (CEN-RT-14P001 and Addenda A001) with authorize nuclear inspector (ANI) signature, dated August 30, 2013
- Acuren Ultrasonic Examination Procedure Qualification (CEN-UT-14P001) with ANI signature, dated August 30, 2013
- AcurenCan-CP-02P001, "Acuren SNT-TC-1A Written Practice," Revision 11, dated June 14, 2017
- Acuren CEN-RT-14A001, "NB, NC, ND, NE & NF Addendum to the Radiographic Procedure", Revision 3, dated July 25, 2014
- Acuren CEN-RT-14P001, "Acuren Radiographic Examination", Revision 4, dated January 27, 2016
- Acuren CEN-UT-14P001, "Acuren Ultrasonic Examination of Pressure Vessel, Piping and Support Welds", Revision 3, dated December 17, 2015
- CEN-UT-14P003, "Acuren Ultrasonic Thickness Measurements", Revision 2, dated May 7, 2014
- Work Instruction (WI)-018, "Receiving of Free Issue Material Job 2210 (Stone and Webster)," Revision 1, dated June 11, 2014
- WI-019, "Commercial Grade Dedication of Services," Revision 1, dated April 28, 2014
- WI-020, "Control of WEC E&DCRS Job No. 2210N," Revision 9, dated April 11, 2016
- WI-025, Surface Preparation and Coatings for Stone and Webster 2210N," Revision 6, dated October 17, 2016
- WI No. 038, "CFM/PFM Preventative Work Maintenance Work Instruction Job A00002," Revision 0, dated June 15, 2005
- WI-057, "General Fabrication Requirements for Module Assembly Job A00002," Revision 1, dated April 4, 2016

Part 21 Evaluations

- A00002-02, "Evaluation Form (10CFR21 / 10CFR50.55(e))," dated August 4, 2017

- A00002-000-0468-00, "Evaluation Form (10CFR21 / 10CFR50.55(e))," dated November 7, 2016
- A00002-00-0468, "Non-conformance Report," dated November 1, 2016 – A572 Gr. 50 plate, Heat U5409 Lot 1 did not receive Charpy Impact Test per ATS 059 Section 6
- A00002-000-0926, "Non-conformance Report," dated June, 17, 2017 – Multiple visual inspection reports were submitted by members of the A00002 QC group where a repeat error has been detected. Light meters 81-008, 81-009 and 81-010 were referenced on reports as having been used at time of inspection when this would have been impossible because they were out for calibration at time of said inspections.
- A00002-000-1006, "Non-conformance Report," dated August 4, 2017 – Op 45 – Fit and tack test caps to spool as per drawing (W1) Aecon DWG: SV4-Q305-CVS-PLW-HYD-281 R.1. The welder deposited tack welds in Op. 45 on August 3, 2017, (88-200-N28) on W1, joining Item 1 to SV4-Q305-CVS-PLW-HYD-281. The components being welded are ½" diameter. Weld ticket No. 405979 is qualified for 1-inch diameter and higher. Therefore, the welder is unqualified for the pipe diameter being used. The welder was signed in by the welding supervisor in Op. 5 and verified by QC in Op. 10 prior to tack welding

Design Documents

- WEC purchase order (PO) 132175-G230.04, Revision 27, dated June 21, 2017
- WEC APP-GW-GAH-030, "Quality Assurance Requirements for Safety-Related Components/Services of Standard AP1000 Plants," Revision 8
- WEC Design Specification APP-GW-P0-008, "AP1000 Specification for Field Fabricated Piping and Installation, ASME III, Code Classes 1, 2, and 3 and ASME B31.1," Revision 6, dated June 12, 2014
- WEC Engineering and Design Coordination Report (E&DCR) No. APP-PH01-GEF-850010, "EDCR PH01 Ring Girder Bumper Tolerance Change APP-PH-01-V2-006 & APP-PH01-V2-007," Revision 0, dated April 4, 2017
- WEC E&DCR No. APP-Q601-GEF-850023, "Q601 Fire Barrier Support Update," Revision 0, dated May 4, 2017
- WEC E&DCR No. APP-Q601-GEF-850022, "EDCR Q601 Welded Grating Supports," Revision 0, dated April 20, 2017

Drawings

- Aecon Drawing SV4-Q305-CVS-PLW-090-00, "Q305 Piping Assemblies," 16, Revision 2, dated July 16, 2017, with document list, Revision 5, dated July 6, 2017
- SV4-Q305-CVS-PLW-090-003, "Chemical & Volume Containment System," Revision 2, dated July 6, 2017
- SV4-Q305-CVS-PLW-HYD-090-B, "Chemical Volume Control System Class 1," Revision 1, dated June 19, 2017
- SV4-Q240-RWS-PLW-01.15, "Normal Residual Heat Removal for AP1000 Vogtle EPC-4," Revision 0, dated September 28, 2016

- S8084-XRG, "Ring Girder Assembly," Revision 2, dated June 30, 2017, for Q601 module for Vogtle Unit 3
- A6250-6, "A-Frame Weldment," Revision 0, dated January 26, 2017, for Q601 module for Vogtle Units 3 & 4
- S7370, "RCS-PH-1-1R0814 – Beam Weldment," for Vogtle Units 3 & 4, Revision 0, dated June 5, 2017
- S7365, "RCS-PH-11R0814 – Combined Back Beam Weldment," Revision 0, dated June 5, 2017
- Aecon Drawing SA7365,"RCS-PH-11R0814 – Box Beam Machined," Revision 0, dated June 5, 2017
- S6415, "Grading Support 801 & 806 Barrier Support Weldment," Revision 0, dated July 26, 2017
- S6610, "Grating Support 803, 804, & 805 Barrier Support Weldment," Revision 0, dated July 26, 2017
- S6499, "Grading Support 828 & 831 Weldment," Revision 0, dated July 26, 2017
- S6609, "Grating Support 829 Barrier Support Weldment," Revision 0, dated July 26, 2017
- P6489, "Grating Support 827 Upper PF," Revision 0, dated July 26, 2017
- S6493, "Grating Support 829 Weldment," Revision 0 dated July 26, 2017
- S6297, "Fire Barrier Steel Weldment to Upper PF," Revision 2, dated May 18, 2017
- S6484, "Grating Steel Welding to Upper PF," Revision 2, dated May 18, 2017
- S8084-BRG, "Ring Girder Assembly," for Mechanical Module Q601, Revision 2, dated June 30, 2017
- Aecon Drawing Index "Q601-SV3," for Vogtle Units 3, Revision 1, dated August 10, 2017

Audit Reports and Commercial-Grade Surveys

- Aecon Surveillance/Source Inspection Report A00002-0006, performed at LP Custom Machining Ltd., dated August 19, 2015
- Audit Report AI-SA-16-046 of TW Metals, Nuclear Material Solutions (NMS), dated August 19, 2016
- Audit Report AI-SA-16-047 of Lincoln Electric Company, Revision 0, dated January 20, 2017
- Audit Report No. A1-SA-17-053, of Aberfoyle Metal Treathers Ltd., Revision 0, dated April 24, 2017
- Audit Report No. AI-SA-15-036 of Superheat FGH, Revision 0, dated May 22, 2015
- Supplier Annual Assessment of Cambridge Materials Testing Limited, dated September 2, 2016
- Supplier Annual Assessment of LP Customs, dated May 4, 2017
- Supplier Annual Assessment of The Lincoln Electric Company, dated December 13, 2016
- Supplier Annual Assessment of TW Metals- nuclear Material Solutions, dated July 27, 2016
- Survey Report No. A1-SA-14-049, of Hexagon Metrology Inc., dated January 19, 2015

- Survey Report No. A1-SA-15-072, Revision 0, of Acuren Group Inc., dated September 16, 2015
- Survey Report No. A1-SA-17-044 of Cambridge Material Testing Ltd., Mississauga Division, dated June 6, 2017
- Survey Report No. A1-SA-17-048, of LP Custom Machining Ltd., dated March 21, 2017
- Survey Report No. A1-SA-17-053, of Aberfoyle Metal Treathers Ltd., Revision 2, dated April 12, 2017
- Survey Report No. A1-SA-17-43 of Cambridge Material Testing Ltd. Cambridge Division, Revision 0, dated June 1, 2017
- Survey Report No. A1-SA-14-049 of Hexagon Metrology, Inc. Revision 1, dated January 19, 2015
- Survey Report No. A1-SA-17-043 of Cambridge Material Testing Ltd., Cambridge Division, Revision 0, dated June 6, 2017

Commercial Grade Dedication Package

- Commercial-Grade Dedication (CGD) package for Aecon Project No. A00002, Laboratory chemical testing services,” per CGD Plan No. CGD-002, Revision 01, from Cambridge Materials Testing Ltd, for Module No. KB36, Q223, Q240, Q305, Q601, dated January 9, 2015, includes technical evaluation, determination of CGD, critical characteristics, receipt inspection report and review of test report.
- CGD Package for Aecon project No. 2210N, for calibration services performed by Hexagon Metrology Inc., per CGD Plan No. CGD-005, Revision 1, for Module KB36, Q223, Q240, Q305, Q601, dated August 12, 2016
- CGD Package for Aecon Project No. 2210N, for machining services performed by LP Custom Machining per CGD Plan No. CGD-004, Revision 1, for Module KB36, Q233, Q305, Q601, dated July 31, 2017, includes Surveillance/Source Inspection Report for SB2013-2 Box beam end prep machining services dated August 19, 2015
- CGD Package for Aecon Project No. 2210N/A00002 for Modules KB36, Q223, Q240, Q305 and Q601 for CGD Plan No. CGD-007 Revision 0, for nondestructive examination services performed by Acuren Group Inc., dated September 8, 2016
- CGD Plan CGD-004, for machining services performed by LP Custom Machining Ltd., Revision 2, dated September 30, 2016
- CGD Plan CGD-005, for calibration services performed by Hexagon Metrology of Motorized Industrial Total Station, Revision 1, dated November 28, 2014
- CGD Plan No. CGD-002, for chemical testing services performed by Cambridge Material Testing Ltd., Mississauga Division Revision 2, dated May 1, 2017
- CGD Plan CGD-009, for heat-treatment services performed by Aberfoyle Metal Treathers Ltd., Revision 0, dated March 6, 2017
- CGD Plan No. CGD-001 Revision 2, dated July 2, 2014, for the supply of mechanical testing services by Cambridge Material Testing Ltd., Cambridge Division
- CGD Plan No. CGD-001 for mechanical testing services by Cambridge Material Testing Ltd., Cambridge Division, Revision 2, dated April 19, 2017

- CGD Plan No. CGD-005, for calibration services performed by Hexagon Metrology, Inc., Revision 1, dated November 28, 2014
- CGD Plan No. CGD-007 for non-destructive examination services performed by Acuren Group Inc., Revision 0, dated July 27, 2015
- ATS-085, "CMTL CGD Survey Critical Characteristics," Revision 0, dated July 16, 2014
- ATS-104, "Commercial Grade Dedication CMTL Mississauga Chemical Testing," Revision 2, dated August 25, 2016
- ATS-114, "Commercial Grade Dedication: LP Custom Machining Ltd. Project A00002," Revision 2, dated June 27, 2017
- ATS-147, "Commercial Grade Dedication: Acuren Group, Inc. Project A00002," Revision 1, dated December 22, 2015
- ATS-164, "Testing Requirements for Pressure Sensitive Tapes Job A00002," Revision 0, January 25, 2016
- ATS-175, "Nuclear Weld Consumables Ordering Specification," Revision 1, dated February 6, 2017
- ATS-191, "Machining Services Supply for Ring Girder," Revision 1, dated October 26, 2016
- ATS-193, "Fabrication Service Supply for Ring Girder," Revision 2, dated November 24, 2016
- ATS-209, "Heat-treatment Services for Ring Girder," Revision 1, April 18, 2017
- ATS-221, "Local Heat Treatment by Superheat FGH for Job A00002," Revision 0, dated May 11, 2017

Calibration, Inspection and Test Reports

- Cambridge Material Testing Limited (CMTL) Test Report No. 749305-17, dated March 17, 2017, for seven wipe cloths tested for chemical analysis for chloride, fluoride for Baseline check per Aecon technical specification procedure ATS-104, Revision 2, for PO 4500102091 Change Order No. 04,
- CMTL Test Report No. 79964-17, dated March 30, 2017, for 2 wipe cloths tested for chemical analysis for chloride, fluoride for Baseline check per Aecon technical specification procedure ATS-104, Revision 2, for PO 4500102091 Change Order No. 04,
- CMTL Test Report No. 749040-17 Revised, dated March 17, 2017, for 12 wipe cloths tested for chemical analysis for chloride, fluoride for Baseline check per Aecon technical specification procedure ATS-104, Revision 2, for PO 4500102091 Change Order No. 04,
- Hexagon Metrology Precision calibration certificate No. 2015100365816, for Leica TDRA600 serial no. 365816, dated March 24, 2017
- Aecon Nuclear Material report dated January 21, 2016, for machined box beams SA3008-1 and SA3016-2 for module Q223, machined by LP Custom Machining Ltd., PO 4500034514,
- LP Custom Machining Ltd., certificate of compliance for SA3008-01 Box Beams dated December 17, 2015, reviewed and accepted by Aecon on January 19, 2016
- LP Custom Machining Ltd., dimensional inspection report for Aecon Box Beams SA3008-01, dated January 13, 2016, inspected and accepted by Aecon on January 19, 2016, to PO 45000034514

- Lincoln Electric Company (LEC) Certificate of Conformance (CofC) dated May 5, 2017, for 5250 pounds of 5/32-inch x E10018-D2-H4R Excalibur electrode lot no. 1334A to Aecon procedure ATS-175, and PO No. 4300000517
- LEC CofC dated May 8, 2017, for 8610 pounds of 1/8-inch x E10018-D2-MR Excalibur electrode lot no. 1333Z, ASME SFA 5,5 to Aecon procedure ATS-175, and PO No. 4300000517
- LEC CofC dated March 1, 2017, for 3408 pounds of 3/32-inch x E10018-D2-MR Excalibur electrode lot no. 1323V, ASME SFA 5,5 to Aecon procedure ATS-175, and PO No. 4300000517
- LEC CofC dated December 8, 2015, for 2500 pounds of 3/32 x 36-inch Lincoln ER70S-2 lot no. 1269G, ASME SFA 5.18 to Aecon procedure ATS-076, and PO No. 430002329
- LEC CofC dated July 5, 2016, for 50 pounds of 1/16 x 36-inch Lincoln ER308/308L lot no. 1256K, ASME SFA 5.9 to Aecon procedure ATS-061, and PO No. 4500100275
- LEC CofC dated June 20, 2016, for 6000 pounds of 1/8 x 36-inch Lincoln Excalibur 7018-1MR lot no. 12090H, ASME SFA 5.1 to Aecon procedure ATS-069, and PO No. 4500100275 change order 2
- Aecon receiving inspection report (RIR) No. 2210N-001/A00002-468 dated May 9, 2017, for 5/32-inch x E10018-D2-H4R Excalibur electrode lot no. 1334A; 1/8-inch E10018-D2-H4R SFA 5.5 electrodes Lot No. 1333Z, on PO No. 4300000517
- RIR No. 2210N-001/A000002-269, dated August 10, 2017, for one piece of spool assembly serial No. SV4-RCS-PLW-013-1 to PO 4500002695
- RIR No. 2210N-001/A00002-266, dated August 10, 2017, for one piece of spool assembly serial No. SV4-RCS-PLW-01F-1A to PO 4500002695
- RIR No. 2210N-001-A900002-407 dated May 7, 2017, for 3408 pounds of 3/32-inch electrode E10018-D2-H4R, SFA 5.5 NF Class 1 traceable to Lincoln Electric lot No. 1323V on PO No. 4300000517
- RIR No. 2210N-001/A00002-273, dated August 23, 2016, for 50 pounds of 1/16 x 36-inch weld wire ER308/308L, SFA 5.9, traceable to Lincoln Electric lot No. 1256K
- RIR No. 2210N-001A00002-100, dated January 27, 2016, for 3/32 x 36-inch Lincoln weld wire ER70S-2, Lot No. 1269G
- RIR No. 2210N-001A00002-213, dated July 5, 2016, for 1/16 x 36-inch Lincoln weld wire ER316/316L, Lot No. 1290K
- Visual Weld Examination Report VT-Y40-246, dated July 10, 2017, for Job No. A00002 for welds W83, W84, W85, W86, W87, W88, W89, W90 on SV4-Q240-RNS-PLW-15 x R.0 and SV4-Q240-RNS-PLW-01-04 x R.0 1 on Y40 module for Vogtle Unit 4, per QCP-310.2 procedure using flashlight in accordance with ASME Section III, 1998 Edition 2000 Addenda on Traveler TRV-A00002Y040-011, operation No. 90, using measuring and test equipment calibrated to current status, and drawing.

- Visual Weld Examination Report VT-Y05-146, dated July 17, 2017, for Job No. A00002 for welds W46, W50, W51 on CVS-PH-11R0202 Part 5 on Q305 module for Vogtle Unit 4, per QCP-310.2 procedure using flashlight in accordance with ASME Section III, 1998 Edition 2000 Addenda on Traveler TRV-A00002Y05-003, operation No. 325, using measuring and test equipment calibrated to current status and drawing SV4-Q305-CVS-PLW-090-03, Revision 2
- Visual Weld Examination Report VT-Y05-136, dated July 12, 2017, for Job No. A00002 of weld W46 on SV4-Q305-CVS-PLW-090-03 on Q305; Y05 module for Vogtle Unit 4, per QCP-310.2 procedure using flashlight in accordance with ASME Section III, 1998 Edition 2000 Addenda on Traveler TRV-A00002Y05-003, operation No. 315, using measuring and test equipment calibrated to current status
- Chemetall Certificate of Analysis/Compliance for Ardrex 9PR50 solvent remover for NDE-PT, Lot-No. 65012717 (Aecon-No. 600)
- Chemetall Certificate of Analysis/Compliance for Ardrex 906 penetrant for NDE-PT, Lot-No. 65050216 (Aecon-No. 508)
- Chemetall Certificate of Analysis/Compliance for Ardrex 9D1B developer for NDE-PT, Lot-No. 65050216 (Aecon-No. 443)
- Certificate of Calibration No. AIC006-16-10-36403-3 for Digital Clamp Meter 100-001, dated October 13, 2016
- Welding machine Meter Verification for 50-53 Orbital Weld, dated January 5, 2017
- Load Bank Calibration Report for Maintenance Load Bank, dated February 9, 2017
- AIC006-17-07-26296-2, Calibration Certificate from Laboratory Testing Inc., (LTI) for Infrared Thermometer (13-022) dated July 17, 2017
- AIC006-17-01-02836-2, Calibration Certificate from LTI for Digital Light Meter (81-008) dated February 6, 2017
- Aecon Certificate of Calibration for Active Assets\Weld Rod Oven (31-169) dated November 2, 2016
- Aecon Certificate of Calibration for Active Assets\AC Yoke (40-064) dated July 18, 2017
- AIC006-14-04-14938-7, Calibration Certificate from LTI for Thermo-Hygrometer (10-015) dated May 14, 2014
- Aecon Certificate of Calibration for Load Bank (MF276013U) dated June 13, 2017
- AIC006-16-10-36403-3 from LTI for Digital Clam Meter W/Flexible Probe (100-001) dated October 13, 2016
- QCP 311.3, "Calibration of Verniers & Micrometers," Revision 9 dated October 29, 2014
- AIC006-16-11-41746-4 from LTI for Coating Thickness Probe (11 / 14-013) dated December 4, 2016
- AIC006-16-11-41746-9 from LTI for Dew Point/Surface Temperature Probe (282467) dated November 29, 2016
- AIC006-16-11-41746-11 from LTI for Dial Thickness Gage (WEC767) dated November 18, 2016
- Cambridge Materials Testing Limited, Cambridge, ISO/IEC 17025:2005 certificate expires date August 8, 2017

- Cambridge Materials Testing Limited, Mississauga Division, ISO/IEC 17025:2005 certificate expires date May 13, 2018

Purchase Orders

- Purchase Order (PO) No. 45000102091 to Cambridge Material Testing Limited for the supply of testing services in accordance with Aecon WI 028, Revision 4, Table 3 Cleanliness Class C requirements, dated December 12, 2016
- PO No. 4300001051 to Hexagon Metrology Inc., for the supply of calibration services in accordance with Aecon ATS-016, Revision 01, dated March 21, 2017
- PO No. 4500034514, to LP Custom Machining Ltd., for the supply of machining services of box beams SA3008-01, dated October 14, 2015
- PO No. 4300000517 to Lincoln Electric Company dated March 6, 2017, for procurement of weld electrodes to Acuren procedure ATS-117
- PO 4500001979, Revision 2, issued to TW Metals Nuclear for the supply of ferrous and nonferrous materials

Qualification and Training Records

- Auditor Qualification Record for Wilfrid Bagley
- Inspection Qualification for Rick Berg, dated December 19, 2016, with annual evaluation performed on January 2017
- Appointment Letter for Brad Gamble, Aecon SNT-TC-1A NDE Level III – VT/MT/PT, February 1, 2017
- Certification of Qualification for Brad Gamble, Aecon NDE Level III – MT, PT, VT
- NDE Qualification & Certification & Supporting Information for Brad Gamble, SNT-TC-1A NDE Level III – VT(weld)/MT/PT Exp. May 31, 2022, and UT Exp. February 28, 2021
- Visual Acuity Report for Brad Gamble on Jan. 30, 2017
- Certification of Qualification for Tom Michels, Aecon NDE Level II – MT, PT, VT
- NDE Qualification & Certification & Supporting Information for Tom Michels, SNT-TC-1A NDE Level II – MT & PT Exp. 3 & 4/2018, and CWI with VT Exp. December 2018
- Visual Acuity Report for Tom Michels on January 11, 2017
- Certification of Qualification for Pamela Stewart, Aecon NDE Level II – MT, PT, VT
- NDE Qualification & Certification & Supporting Information for Pamela Stewart, SNT-TC-1A NDE Level II – MT/PT Exp. August 2019, and VT(weld) Exp. November 2018
- Visual Acuity Report for Pamela Stewart on Jan. 19, 2017
- Certification of Qualification for David Whitehead, Aecon NDE Level II – MT, PT, VT
- NDE Qualification & Certification & Supporting Information for David Whitehead, SNT-TC-1A NDE Level II – MT/PT/VT(weld), Exp. June 20, 2020
- Visual Acuity Report for David Whitehead on December 12, 2016

- Certification of Qualification for Wilson Kuang, Aecon NDE Level II – MT, PT, VT
- NDE Qualification & Certification & Supporting Information for Wilson Kuang, SNT-TC-1A NDE Level II – MT/PT/VT(weld), Exp. July 27, 2020
- Visual Acuity Report for Wilson Kuang on July 29, 2017
- Certificate of Qualification for Debbie Goad on Coatings QC Inspection, December 3, 2015
- Visual Acuity Report for Debbie Goad on November 19, 2016
- Aecon WPS-No. 33-21-N63, Revision 3, dated March 2, 2017 with supporting PQR-No. 33-21-005, Revision 1 used for manual GTAW and SMAW of P-No. 3 materials
- Aecon WPS-No. 33-500-N64, Revision 3, dated March 2, 2017 with supporting PQR-No. 33-500-006, Revision 1 used for semi-automatic FCAW of P-No. 3 materials
- Welder performance qualification records (36 total) and welder qualification logs for ID-Nos. 154 (8), 511 (4) , 524 (7), 549 (4), 557 (3), 564 (6), and 566 (4)
- Training record for CAR 2016-144, dated November 26, 2016

Nonconformance Reports

- NCR A00002-000-0206
- NCR A00002-000-0238
- NCR A00002-000-0118
- NCR A00002-000-0260
- NCR A00002-000-0684
- NCR A00002-000-0741
- NCR A00002-000-0618
- NCR A00002-000-0118
- NCR A00002-000-0864
- NCR A00002-000-0659
- NCR A00002-000-0741
- NCR A00002-000-0899
- NCR A0002-000-0486
- NCR A0002-000-0729

NCPARs

- NCPARs 2016-144, 2016-140, 2016-142, 2016-071, 2016-0239, 2016-0193, 2016-141, 2016-0143, 2016-0145; and NCPAR 2017-0999

Opened during the inspection:

- NCPARs N2017-0193, 2017-0190, N2017-0196, and NCPAR 2017-0195

Miscellaneous

- Aecon Contract Review for Job No. 2210N (A00002), dated July 31, 2017, for WECTEC PO 1321750G230.04 for ASME Section III Module Q240, "Residual Heat Removal Module,"
- Aecon Inspection and Test Plan (ITP)-2210N-Q601-16, "Module Q601: Fabrication of Support Box Beams for Piping," Revision 0, dated July 17, 2017
- Aecon ITP-A0023-RG-01, "Fabrication of Ring Girder Assembly," Revision 2, dated February 24, 2017
- Aecon request for information (RFI)-1655, "Q601 Welded Grating Supports," Revision 0, dated March 17, 2017
- Aecon RFI-1656, "Q601: Fire Barrier and Grating Support Steel Interface," Revision 0, dated April 20, 2017
- Aecon RFI-1672, "Q601 Box Beams for Pipe Supports CVS-PH-11R0814," Revision 0, dated May 29, 2017
- Aecon RFI-1695, "Q601 Welding of Stiffener Plates (Item 6) for App-RCS-PH-11R0059," Revision 0, August 2, 2017
- Aecon traveler TRV-A00002G01-169, Revision 0, with Technical Document List (TDL)-DL-TRV-A00002G01-169, released on May 29, 2017, "A-Frame Weldment-Q601 module," for Vogtle Unit 3
- Traveler TRV-A00002Y40-01, Revision 0, released on June 12, 2017, with operation No. 90, "Visually Inspection of completed welds," conducted on July 10, 2017, on VT-Y240-246
- Technical Document List (TDL)TRV-A00002Y40-011, Revision 2, released on July 4, 2017, for traveler TRV-A00002Y40-01
- TDL TRV-A00002Y05-004, released on July 7, 2017, for traveler TRV-A00002Y05-003 for Q305 Piping assemblies
- Traveler TRV-A00023XRG-003 Revision 0, released on June 19, 2017, indicate operation No. 105, Weld No. 0036, "Bumper to Ring Girder," being welded
- Weld Data Sheet A6250-6 for S6240 P6502 for issuance of weld wire issued to welder No. 549 for operation No. 65-Complete Welds W7247 and W7243 on A-Frame on August 8, 2017
- Procurement Strategy List of Suppliers dated July 31, 2017