

June 19, 2017

Jeremy Link, Plant Manager  
C&D Technologies  
200 W Main St.  
Attica, IN 47918

SUBJECT: NUCLEAR REGULATORY COMMISSION INSPECTION OF C&D  
TECHNOLOGIES, INC. REPORT NO. 99901466/2017-201 AND NOTICE OF  
NONCONFORMANCE

Dear Mr. Link:

On May 1 to May 5, 2017, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the C&D Technologies, Inc. (C&D) facility in Attica, IN. The purpose of the limited-scope inspection was to assess C&D's compliance with the provisions of selected portions of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," and 10 CFR Part 21, "Reporting of Defects and Noncompliance." In addition, the inspection assessed C&D's compliance with the confirmatory order issued on April 20, 2016 (ADAMS Accession No. ML16074A138).

This inspection specifically evaluated C&D's manufacturing and testing of batteries supplied to operating nuclear power plants. In addition, the inspection assessed corrective actions taken to close previously identified violations and nonconformances identified in Inspection Report (IR) 99901385/2015201 (ADAMS Accession No. ML15307A198) and IR 99901385/2014201 (ADAMS Accession No. ML14107A383). The enclosed report presents the results of this inspection. This NRC inspection report does not constitute NRC endorsement of your overall quality assurance (QA) or 10 CFR Part 21 programs.

During this inspection, the NRC inspectors found that the implementation of your QA program failed to meet certain NRC requirements imposed on you by your customers. Specifically, C&D failed to verify that an internal audit was performed by personnel not having direct responsibilities in the areas being audited. The specific finding and references to the pertinent requirements are identified in the enclosures to this letter.

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

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure(s), and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response, (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, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material is 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 will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information).

Sincerely,

*/RA/*

Terry W. Jackson, Chief  
Quality Assurance Vendor Inspection Branch-1  
Division of Construction Inspection  
and Operational Programs  
Office of New Reactors

Docket No.: 99901466

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TECHNOLOGIES, INC. REPORT NO. 99901466/2017-201 AND NOTICE OF  
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Dated: June 19, 2017

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**ADAMS Accession No.: ML17165A387** \*via email NRO-002

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<b>OFFICE</b>	NRO/DCIP/QVIB-1	NRO/DCIP	NRO/DCIP/QVIB-1
<b>NAME</b>	SSmith*	CWeber*	TJackson
<b>DATE</b>	06/14/2017	06/13/2017	06/19/2017

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## NOTICE OF NONCONFORMANCE

C&D Technologies, Inc. (C&D)  
Attica, IN

Docket No.: 99901466  
Inspection Report No.: 99901466/2017-201

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the C&D facility in Attica, IN, on May 1-5, 2017, certain activities were not conducted in accordance with NRC requirements that were contractually imposed on C&D by NRC licensees:

- A. 10 CFR Part 50, Appendix B, Criterion XVIII, "Audits," states, in part, that, "audits shall be performed in accordance with the written procedures or check lists by appropriately trained personnel not having direct responsibilities in the areas being audited." C&D Procedure BB-QOP- 8.2.2, "Internal Audit Procedure," Revision 5, establishes the process by which a system of planned audits shall be carried out to verify compliance with applicable aspects of the Quality Management System. Section 4.1.3 of the procedure states that auditors shall not have direct responsibility for areas being audited.

Contrary to the above, as of May 5, 2017, C&D failed to verify that internal audits were performed by personnel not having direct responsibilities in the areas being audited. C&D's quality assurance manual designated the quality system manager responsible for auditing the nonconformance and Part 21 programs. The NRC inspection team identified that during Internal Audit IA-BB-2015-01, dated April 23, 2015, the Corporate Quality Systems Manager audited areas for which he had direct responsibility and the satisfactory implementation of those areas was in question. Specifically, the nonconformance and Part 21 programs had known deficiencies identified by the NRC, as documented in the 2014 and 2015 NRC Inspection Reports 99901385/2014-201 (ML14107A383) and 99901385/2015-201 (ML15307A198).

This issue has been identified as Nonconformance 99901466/2017-201-01.

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

Because your response will be made available electronically for public inspection in the NRC's Public Document Room or through the NRC's Agencywide Documents Access and Management System, which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>, to the extent possible, it should not include any personal privacy, proprietary, or Safeguards Information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies

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

Dated this the 19<sup>th</sup> day of June 2017.

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

Docket No.: 99901466

Report No.: 99901466/2017-201

Vendor: C&D Technologies  
200 W Main St.  
Attica, IN 47918

Vendor Contact: Mr. Jeremy Link, Plant Manager  
jlink@cdtechno.com

Background: The C&D Technologies headquarters facility is located in Blue Bell, PA. C&D Technologies provides Class 1E batteries for safety-related applications to U.S. nuclear power plants. C&D's manufacturing facility is located in Attica, IN. The NRC has performed several inspections at C&D's headquarters location. However, this was the first inspection of C&D's manufacturing facility.

Inspection Dates: May 1-5, 2017

Inspection Team Leader: Stacy Smith NRO/DCIP/QVIB-1

Inspectors: Nicholas Savvoir NRO/DCIP/QVIB-1  
Jermaine Heath NRO/DCIP/QVIB-1  
Tania Martinez-Navedo NRR/DE/EEEE

Approved by: Terry W. Jackson, Chief  
Quality Assurance Vendor Inspection Branch-1  
Division of Construction Inspection  
and Operational Programs  
Office of New Reactors

## **EXECUTIVE SUMMARY**

C&D Technologies, Inc.  
99901466/2017-201

The U.S. Nuclear Regulatory Commission (NRC) conducted this vendor inspection to verify that C&D Technologies, Inc. (C&D) implemented an adequate quality assurance (QA) program that complies with the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," and 10 CFR Part 21, "Reporting of Defects and Noncompliance." In addition, the inspection assessed C&D's compliance with the confirmatory order (CO) issued on April 20, 2016 (ADAMS Accession No. ML16074A138).

This inspection specifically evaluated C&D's manufacturing and testing of batteries supplied to operating nuclear power plants. In addition, it assessed the corrective actions taken to close previously identified violations and nonconformances identified in inspection report (IR) 99901385/2015201 (ADAMS Accession No. ML15307A198) and IR 99901385/2014201 (ADAMS Accession No. ML14107A383). The NRC conducted this inspection at the C&D manufacturing facility in Attica, IN.

The following regulations served as the bases for this NRC inspection:

- Appendix B to 10 CFR Part 50;
- 10 CFR Part 21; and
- CO for Enforcement Action (EA) 15-212.

Inspection procedures (IPs) used for this inspection include IP 43002, "Routine Inspections of Nuclear Vendors;" IP 43004, "Inspection of Commercial-Grade Dedication Programs;" and IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance."

The information below summarizes the results of this inspection.

### **Confirmatory Order (EA-15-212)**

The NRC inspection team concluded that, with the exception of the two minor violations described in Section 1.b, "Observations and Findings," C&D is effectively implementing the requirements of the CO. No findings of significance were identified.

### **Internal Audits**

The NRC inspection team concluded that C&D has not implemented its audit program in accordance with the regulatory requirements of Criterion XVIII "Audits," of Appendix B to 10 CFR Part 50. The NRC inspection team issued Nonconformance 99901466/2017-201-01 for C&D's failure to verify that internal audits were performed by personnel not having direct responsibilities in the areas being audited.

### Design Control and Testing of Safety-Related Batteries

The NRC inspection team concluded that C&D is implementing its procedures that govern the procurement, design, assembly, qualification, testing, and commercial-grade dedication (CGD) of safety-related batteries consistent with the regulatory requirements of Appendix B to 10 CFR Part 50. No findings of significance were identified.

### Commercial-Grade Dedication

The NRC inspectors concluded that C&D is implementing its CGD program consistent with the regulatory requirements of Appendix B to 10 CFR Part 50. No findings of significance were identified.

### Nonconforming Materials, Parts, or Components and Corrective Action

The NRC inspection team concluded that C&D is implementing its program for nonconforming material parts, and components, and corrective action consistent with Criterion XV, "Nonconforming Materials, Parts, or Components," and Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

### Control of Purchased Material, Equipment, and Services

The NRC inspection team concluded that C&D is implementing its programs for governing the oversight of contracted activities consistent with the Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. No findings of significance were identified.



## REPORT DETAILS

### 1. Confirmatory Order (EA-15-212)

#### a. Inspection Scope

The NRC inspection team reviewed C&D's compliance with the CO issued on April 20, 2016 (ADAMS Accession No. ML16074A138). The CO addressed the following elements: 10 CFR 21, communications, work processes, and training. The inspectors reviewed corrective actions associated with these elements and current implementation of Appendix B and Part 21 programs. The documents reviewed by the inspectors are included in the attachment to this inspection report.

#### b. Observations and Findings

##### 10 CFR Part 21

The NRC inspectors reviewed the following to verify effective implementation of Section V.A., "Compliance with 10 CFR Part 21" of the CO.

- Section V.A.1 of the CO stated that C&D shall confirm that all outstanding 10 CFR Part 21 evaluations are complete and that all required interim reports are submitted in accordance with the timelines required by 10 CFR Part 21. The NRC inspectors reviewed Condition Report (CR) 16-39 to address this section of the CO. C&D did not identify any potential 10 CFR Part 21 reportable issues as a result of these reviews. In January 2017, C&D instituted an electronic database, PLM360, to log and track deviations from all sources, where they are then evaluated for Part 21 by the Corporate Quality Systems Manager and the Nuclear Safety Committee. The NRC inspectors independently reviewed a sample of the condition reports, nonconformances, and customer complaints for Part 21 reportability and determined that, for the sample selected, the evaluations were completed and submitted in accordance with Part 21 requirements. The inspectors consider Section V.A.1 of the CO as being effectively implemented.
- Section V.A.2 of the CO stated that C&D shall review and revise, as necessary, all policies and procedures to provide reasonable assurance that Part 21 evaluations are conducted in accordance with 10 CFR 50, Appendix B quality assurance program requirements. The NRC inspectors independently verified that C&D defined "discovery" in accordance with the CO in Procedure A-14, "Evaluation, Notification & Reporting Responsibilities in Accordance with USNRC 10CFR21 Regulations," Revision 12, dated June 23, 2016. However, the NRC inspectors identified that procedure A-14 failed to specify all deviations require a Part 21 evaluation. Therefore, contrary to the CO, Section V.A.2(b), C&D failed to revise Procedure A-14 to provide reasonable assurance that the evaluation process used for all deviations includes a documented technical evaluation and basis for why the identified deviation would or would not result in a substantial safety hazard, if left uncorrected. However, this was determined to be a minor violation since the NRC inspection team verified, through a sample of nonconformances, customer complaints, and condition reports, as noted in Section V.A.1 above, that implementation of Part 21 evaluations of deviations

was acceptable. In addition, C&D generated Condition Report 17-43 to address this issue and revised Procedure A-14 to reflect that all deviations require evaluation.

- Section V.A.3 of the CO stated that C&D shall contract an independent third party expert to conduct an assessment of the C&D corrective action program, and the administrative controls and management controls in place. The NRC inspectors reviewed CR-16-29 and the results of the independent third party assessment. The NRC inspectors consider Section V.A.3 of the CO as being effectively implemented.
- Section V.A. 4 of the CO stated that C&D shall report the completion of items A.1, A.2, and A.3, in writing to the Division of Construction Inspection Program Director no later than 75 calendar days from issuance of the CO. The NRC inspectors verified this action was completed in accordance with letters to Mike Cheok, DCIP Director, dated June 14, 2016 and December 2, 2016.

### Communications

The NRC inspectors reviewed the following to verify effective implementation of Section V.B, "Communications" of the CO.

- Section V.B.1 of the CO stated that C&D shall issue a letter and/or a video message from the President and CEO to employees in all C&D locations working with nuclear-related activities, outlining C&D's management's expectations, including a commitment that all nuclear-related activities are performed and documented in a complete and accurate manner in accordance with approved procedures. The NRC inspectors reviewed a letter from C&D President and CEO, Armand F. Lauzon Jr. to all employees, dated May 25, 2016, and determined it met the requirements of Section V.B.1 of the CO.
- Section V.B.2 of the CO stated that C&D senior management's commitment and expectations will be further reinforced through the use of conspicuously posted company-wide posters and/or other appropriate forms of communication. The NRC inspectors reviewed posters located throughout the facility and found that they met the requirements of Section V.B.2 of the CO.

### Work Processes

The NRC inspectors reviewed the following to verify effective implementation of Section V.C., "Work Processes" of the CO.

- Section V.C.1 of the CO stated that C&D shall ensure that the existing issue of procedure compliance has been entered into its corrective action program, and this issue shall be considered a significant condition adverse to quality. The NRC inspectors reviewed CR-16-39 to address this section of the CO and verified it was assigned a Significance Level A requiring a root cause analysis. The NRC inspectors reviewed C&D's root cause analysis and found it acceptable. The NRC inspectors consider Section V.C.1 of the CO as being effectively implemented.

- Section V.C.2 of the CO stated that C&Ds corrective action program shall be revised to have the ability to trend 10 CFR Part 21 related issues, such as failure to follow 10 CFR Part 21 procedure requirements or failure to enter a deviation into the 10 CFR Part 21 process. The NRC inspectors verified that C&D incorporated Part 21 evaluation and correction action trending ability into its electronic corrective action system. The NRC inspectors also verified that C&D management reviews the effectiveness of its Appendix B controls as part of its management review every 12 months in accordance with Procedure BB-QOP 5.6, “Management Review.” The inspectors consider Section V.C.2 of the CO as being effectively implemented.

### Training

The NRC inspectors reviewed the following to verify effective implementation of Section V.D., “Training” of the CO.

- Section V.D.1 of the CO stated that C&D shall develop a training program and submit it to the NRC for review and comments. The initial training shall then be conducted and documented for all current employees and supervisors no later than 30 calendar days from the NRC final approval date. The NRC’s final approval of the training was documented in an email to C&D on September 9, 2016. C&D sent an email to the NRC, dated October 31, 2016, stating that that initial training was completed for all employees. The NRC inspectors verified the training records of C&D employees. However, the NRC inspectors identified that about 20 employees had not received this training when the email was sent. In addition, at the time of this inspection, one employee still had not received the initial or follow-up training. Therefore, contrary to the CO, Section V.D.1, C&D failed to conduct and document initial training for all current employees and supervisors no later than 30 days from the NRC final approval date. However, this was determined to be a minor violation since the NRC inspectors verified that all employees, with the exception of one, had completed the required training at the time of the inspection. In addition, C&D generated CR-17-49 to investigate whether the one employee that remained untrained performs safety-related work.

### c. Conclusions

The NRC inspection team concluded that, with the exception of the two minor violations described in Section 1.b, “Observations and Findings,” C&D is effectively implementing the requirements of the CO. No findings of significance were identified.

## **2. Internal Audits**

### a. Inspection Scope

The NRC inspection team reviewed C&D’s policies and implementing procedures that govern the control of internal audits to verify compliance with the requirements of Criterion XVIII, “Audits,” of Appendix B to 10 CFR Part 50.

The NRC inspection team verified that C&D prepared and approved plans that identify the audit scope and applicable checklist criteria before the initiation of the audit activity. The NRC inspection team confirmed the audit reports contained objective evidence of the review of the relevant QA criteria of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed the disposition of audit findings for adequacy and timeliness. The NRC inspection team reviewed a sample of training and qualification records of C&D personnel confirm that auditing and inspection personnel had completed all the required training and had maintained qualification and certification in accordance with C&D's policies and procedures.

The NRC inspection team discussed the internal audit program with C&D's management. The documents reviewed by the inspectors are included in the attachment to this inspection report.

b. Observations and Findings

The NRC inspection team identified an issue associated with a C&D internal audit conducted on April 23, 2015. Specifically, the NRC inspection team identified that the C&D Corporate Quality Systems Manager audited the 10 CFR Part 21 and the nonconformance programs; areas under which he had direct responsibility.

In accordance with Section 5.6, "Management Review," of the C&D Quality Manual (QM), the Corporate Quality Systems Manager is responsible for maintaining controlled procedures for executing the 10 CFR Part 21 evaluation and reporting program. C&D Procedure AQOP-8.3, "Control of Nonconforming Product," Section 5.6, stated that all Management Review Board-dispositioned non-conformances are required to be sent to corporate Quality and Engineering for review by the Corporate Quality Systems Manager. C&D Procedure BB-QOP- 8.2.2, "Internal Audit Procedure," Revision 5, Section 4.1.3, stated that auditors shall not have direct responsibility for areas being audited.

Contrary to the above, C&D failed to verify that audits were performed by personnel not having direct responsibilities in the areas being audited. Specially, C&D's quality assurance manual designated the Corporate Quality Systems Manager responsible for the nonconformance and Part 21 programs. During C&D Internal Audit IA-BB-2015-01, dated April 23, 2015, the Corporate Quality System Manger audited the nonconformance and Part 21 programs. Both of these areas had known deficiencies identified by the NRC, as documented in the 2014 and 2015 NRC Inspection Reports 99901385/2014-201 (ADAMS Accession No. ML14107A383) and 99901385/2015-201 (ADAMS Accession No. ML15307A198).

c. Conclusion

The NRC inspection team concluded that C&D has not implemented their audit program in accordance with the regulatory requirements of Criterion XVIII "Audits," of Appendix B to 10 CFR Part 50. The NRC inspection team issued Nonconformance 99901466/2017-201-01 for C&D's failure to verify that internal audits were performed by personnel not having direct responsibilities in the areas being audited.

### **3. Design Control and Testing of Safety-Related Batteries**

#### **a. Inspection Scope**

The NRC inspection team reviewed C&D's policies and implementing procedures for the design, CGD, inspection, qualification, and testing of safety-related batteries to verify compliance with the regulatory requirements of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed design documentation to verify that applicable design inputs were translated correctly into specifications, drawings, procedures, or instructions. Additionally, the NRC inspection team reviewed the CGD process, qualification reports, and testing activities necessary to verify that safety-related batteries met the technical and quality requirements established by the specifications identified in their purchase orders (PO).

Specifically, the inspectors reviewed the POs, battery purchase specification reports, discharge testing sheets in support of qualification, measuring and test equipment (M&TE) records, applicable standards, and certificates of compliance.

The battery qualification packages related to the following POs were reviewed:

- PO 03017284 Duke Energy/Oconee to C&D, dated March 21, 2016,
- PO 0064437030 Talen Energy / Susquehanna Nuclear to C&D, dated June 16, 2016,
- PO 4500903058, Revision 0, PSE&G/Hope Creek to C&D, dated January 5, 2016,
- PO SNA10128792, Revision 1, Alabama Power/Farley to C&D, dated February 23, 2016, and
- PO 03014449, Revision 0, Duke Energy/Oconee to C&D, dated February 12, 2016.

The documents reviewed by the inspectors are included in the attachment to this inspection report

#### **b. Observations and Findings**

No findings of significance were identified.

#### **c. Conclusions**

The NRC inspection team concluded that C&D is implementing its procedures that govern the procurement, design, assembly, qualification, testing, and CGD of safety-related batteries consistent with the regulatory requirements of Appendix B to 10 CFR Part 50. No findings of significance were identified.

#### **4. Commercial-Grade Dedication**

##### **a. Inspection Scope**

The NRC inspection team reviewed C&D's policies and procedures governing the implementation of its CGD program to verify compliance with the regulatory requirements of Appendix B to 10 CFR Part 50.

The inspectors evaluated C&D's CGD procedure implementation for a sample of dedicated items. The inspectors evaluated the dedication plan, the criteria for the selection of critical characteristics, the basis for sample size, and the selection of acceptance methods to verify effective implementation of C&D's dedication process.

Specifically, the NRC inspection team chose the following random sample of dedicated items located in C&D's nuclear safety-related warehouse to verify compliance with regulatory requirements:

- Part No. PB00365, fasteners,
- Part No. PK02458, intercell connectors, and
- Part No PV00486, flame arrestors.

The documents reviewed by the inspectors are included in the attachment to this inspection report.

##### **b. Observations and Findings**

No findings of significance were identified.

##### **c. Conclusions**

The NRC inspectors concluded that C&D is implementing its CGD program consistent with the regulatory requirements of Appendix B to 10 CFR Part 50. No findings of significance were identified.

#### **5. Nonconforming Materials, Parts, or Components and Corrective Action**

##### **a. Inspection Scope**

The NRC inspection team reviewed C&D's policies and implementing procedures that govern the control of nonconformances and corrective actions 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 C&D's nonconformance and CR logs and selected a sample of reports to verify that C&D had implemented an adequate program to ensure that nonconforming items, conditions adverse to quality (CAQ), and significant conditions adverse to quality (SCAQ) were promptly identified and corrected.

The NRC inspectors verified that nonconforming items were properly identified, marked, and segregated when practical, to ensure they were not reintroduced into the manufacturing process. The NRC inspection team verified that, when applicable,

nonconformances had the appropriate technical justification for the selected disposition.

The NRC inspectors verified that CRs sampled provide: (1) adequate documentation and description of the SCAQ or CAQ, as applicable; (2) an appropriate analysis of the cause of the conditions and corrective actions taken to prevent recurrence for SCAQs; (3) direction for review and approval by the responsible authority; (4) a description of the current status of the corrective actions; and (5) the follow-up actions taken to verify timely and effective implementation of the corrective actions. The NRC inspection team also discussed the nonconformance and corrective action programs with C&D's management.

In addition, the NRC inspectors discussed corrective actions taken to close previously identified violations and nonconformances identified in IR 99901385/2015201 and IR 99901385/2014201. Although progress was noted with some of the past violations and nonconformances, the NRC inspectors were not able to verify closure of the open nonconformances during this inspection. This was a result of prioritizing effective implementation of CO requirements and difficulty verifying all actions associated with condition reports were completed satisfactorily.

The documents reviewed by the inspectors are included in the attachment to this inspection report.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that C&D is implementing its program for nonconforming material parts, and components, and corrective action consistent with Criterion XV, "Nonconforming Materials, Parts, or Components," and Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

**6. Control of Purchased Material, Equipment, and Services**

a. Inspection Scope

The NRC inspection team reviewed C&D's CGD of calibration services to verify compliance with Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed C&D's Quality Operating Procedures (QOP) AQOP-7.6, "Control of Monitoring and Measuring Equipment," Revision J, QAR-1000, "Quality Assurance Requirements," Revision 16, and CP001, "C&D Dedication Plan," Revision 1. In addition, the NRC inspection team reviewed a sample of POs associated with CGD of calibration services and engaged the QA manager in regards to implementation of the CGD process. The documents reviewed by the inspectors are included in the attachment to this inspection report.

b. Observations and Findings

No findings of significance were identified.

c. Conclusions

The NRC inspection team concluded that C&D is implementing its programs for governing the oversight of contracted activities consistent with the Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

**7. Entrance and Exit Meetings**

On May 1, 2017, the NRC inspection team presented the inspection scope during an entrance meeting with C&D personnel, including Mr. Jeremy Link, Plant Manager, of C&D. On May 5, 2017, the inspectors presented the inspection results during an exit meeting with Mr. Jeremy Link and C&D personnel.



**ATTACHMENT**

**1. PERSONS CONTACTED AND NRC STAFF INVOLVED:**

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>Entrance</b>	<b>Exit</b>	<b>Interviewed</b>
Jeremy Link	Plant Manager	C&D	X	X	X
Robert Malley	VP Quality and Process Engineering	C&D	X	X	X
Steve DiMauro	Corporate Quality System Manager	C&D	X	X	X
Mike Jordan	Manufacturing Manager	C&D	X	X	
Lisa Rainwater	Controller	C&D	X	X	
Shannon Banta	HR Manager	C&D	X		
Chris Adams	Quality Manager	C&D	X	X	X
Stefan Drawbaveau	Engineering Manager	C&D	X	X	
Jerry Schneider	EH&S Manager	C&D	X		
Megha Patel	Production Manager	C&D	X	X	
Larry Carson	Production Manager	C&D	X	X	
Jon Anderson	CTO	C&D	X	X	
Drew Heimer	Director Production Development	C&D	X	X	
Charbel Karomn	Executive VP	C&D	X	X	
Terry Jackson	Branch Chief	NRC		X	
Stacy Smith	Reactor Operations Engineer	NRC	X	X	
Tania Martinez	Electrical Engineer	NRC	X	X	
Jermaine Heath	Reactor Operations Engineer	NRC	X		
Nicholas Savvoir	Reactor Operations Engineer	NRC	X	X	

**2. INSPECTION PROCEDURES USED:**

IP 43002, "Routine Inspections of Nuclear Vendors"

IP 43004, "Inspection of Commercial-Grade Dedication Programs"

IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance"

**3. ITEMS OPENED, CLOSED, AND DISCUSSED:**

Item Number	Status	Type	Description
99901385/2017-201-01	OPEN	NON	Criterion XVIII
99901385/2014-201-02	DISCUSSED	NON	Criterion III
99901385/2014-201-03	DISCUSSED	NON	Criterion III
99901385/2014-201-04	DISCUSSED	NON	Criterion XVI
99901385/2014-201-05	DISCUSSED	NON	Criterion XV
99901385/2015-201-01	DISCUSSED	NON	Criterion XVI
99901385/2015-201-02	DISCUSSED	NON	Criterion I

**4. DOCUMENTS REVIEWED:**

Procedures

- BB-QOP 7.4.3, "Commercial Grade Dedication," Revision 7, dated June 17, 2016
- BB-WI 7.4.3-2, "Dedication Plans and The Receiving, Handing, and Dedication of Materials," Revision 5, dated September 10, 2010
- AQWI-0026, "1E Parts Traveler Action and Routing," Revision C, dated January 31, 2017
- AQWI-0007, "Dedication of Purchased Parts for 1E Nuclear Applicants," Revision G, dated January 30, 2017
- WI-7.3.6-1, "Standards Revision Review for Nuclear Qualifications," Revision 0, dated June 30, 2016
- Quality Operating Procedure (AQOP-7.6 Revision J) December 27, 2016 "Calibration Procedures" and "Calibration"
- Quality Work Instruction (AQWI-0035, Revision1) December 12, 2016 "SQDEC Board Procedure"
- C&D Method 1 Dedication Plan (CP0001, Revision 1) February 4, 2014
- Quality Assurance Requirements For Suppliers (QAR 1000, Issued 16) June 26, 2014
- Policy A-14, Evaluation. Notification & Reporting Responsibilities in Accordance with USNRC 10CFR21 Regulations, Revision 13, dated January 31, 2017
- BB-QOP 8.5.2, Condition Reporting (CR), Revision 7, dated January 13, 2016
- BB-QOP 5.6, Management Review, Revision 2, dated March 12, 2014
- BB-QOP-8.2.2, Internal Audit Procedure, Revision 7, dated June 24, 2016
- BB-WI-8.2.1-2, Customer Complaints, Revision 9, dated September 17, 2015
- AQWI-8.2.4.1, Nuclear Battery Assembly Verification, Revision F, dated May 17, 2010
- AQWI-0333, The Material Review Board Process, Revision 4, dated March 2, 2017

- AQOP-8.3, Control of Nonconforming Product, Revision N, dated April 11, 2016
- AQOP-8.3, Control of Nonconforming Product, Revision O, dated July 15, 2016
- AQOP-8.3, Control of Nonconforming Product, Revision P, dated March 28, 2017
- BB-WI-8.2.1-2, Customer Complaints, Revision 9, dated September 17, 2015
- BB-QOP-6.2.2, Competence, Awareness and Training, Revision 7, dated March 2, 2017
- Policy Number A-14, Evaluation, Notification & Reporting Responsibilities in Accordance with USNRC 10CFR21 Regulations, Revision 13, dated January 31, 2017
- C&D Quality Manual, QM 5.6, Management Review, Revision 7, dated October 31, 2016
- C&D Quality Manual, QM 8.2, Monitoring and Measurement, Revision 5, dated September 22, 2010

#### Commercial Grade Dedication Documents

- Dedication Plan No. 084/PB00365, Revision 0
- Drawing No. M09221 for Part No. PB00365, Revision 22, dated March 16, 2010
- Dedication Plan No. 268/PK02459, Revision 4
- Drawing No. M06488, Revision 66, dated June 12, 1990
- Dedication No. 077/PV00486, Revision 3
- C&D Dedication Plan 077/PV00486, Revision 3, dated September 22, 2014
- Dedication Plans of Calibration Services Electrical North Inc. (ENI):
  - ENI labs September 5, 2016
  - ENI labs September 21, 2016
  - ENI labs October 31, 2016
  - ENI labs July 1, 2016
  - ENI labs March 28, 2016

#### Material and Laboratory Reports

- V-02, "Silicone Treated Ceramic Vent Stones," Revision 1, dated April 11, 2014

#### Condition Reports Generated During the Inspection

- 17-40, "Procurement Document Control Error," dated May 4 2017
- 17-43, Incorrect wording in A-14 (Part 21) procedure," dated May 4, 2017
- 17-44, Prompt identification of corrective actions related to CAR 16-21 and CAR 16-22, dated May 5, 2017
- 17-45, calibration and dedication process, dated May 5, 2017
- 17-49, nuclear safety-related training, dated May 11, 2017

#### Condition Reports

- 16-21, NRC NON 99901385/2015-201-02, dated February 19, 2016
- 16-22, NRC NON 99901385/2015-201-01, dated February 19, 2016
- 16-29, Institute a third party A-14 and Appendix B audit program, dated March 21, 2016
- 16-39, NRC-Identified Procedural Noncompliance & Part 21 concerns, dated April 11, 2016

- 16-48, Internal audit-inadequate control of M&TE, dated November 28, 2016
- 16-54, NCRs-Part 21 required not checked off, dated August 15, 2016
- 16-87, Supplier audit not issued within required time frame, October 12, 2016
- 16-92, Improper dedication of M&TE used on 1E batteries, dated November 30, 2016
- 16-96, Clark testing-inadequate documentation of nonconformances, dated August 15, 2016
- 16-97, Clark testing-inadequate implementation of 10CFR21, July, 18, 2016
- 16-119, Supplier of Daramic not issued within required time frame, dated October 27, 2016
- 16-120, LCU-27 cells not tested correctly, dated September 15, 2016
- 16-143, Source surveillances not met, dated November 28, 2016
- 16-193, Inadequate control on nonconforming product, dated February 20, 2017
- 16-198, Production scales found out of calibration, dated April 5, 2017
- 17-19, Inadequate control of nonconforming material, dated March 20, 2017

#### Nonconformances

- 203-9501, Cell voltages recorded incorrectly, dated February 4, 2016
- 203-9964, Eight cells failed during 1 minute test, dated June 3, 2016
- 202-8268, Oven 11 had moisture separation above specification, dated November 2, 2016
- 204-0011, Helium testing, dated June 23, 2016

#### Audits

- Audit Report # IA-BB-2016-04 dated November 10, 2016
- Audit Report # IA-BB-2016-01a dated March 16, 2016
- Audit Report # IA-BB-2016-04 dated November 15-18, 2016
- Audit Report # IA-BB-2015-01 dated April 23, 2015

#### Procurement Documents

- PO 03017284 Duke Energy/Oconee to C&D, dated March 21, 2016
- PO 0064437030 Talen Energy / Susquehanna Nuclear to C&D dated June 16, 2016
- PO 4500903058, Revision 0, PSE&G/Hope Creek to C&D dated January 5, 2016
- PO SNA10128792, Revision 1, Alabama Power/Farley to C&D dated February 23, 2016
- PO 03014449, Revision 0, Duke Energy/Oconee to C&D dated February 12, 2016
- Calibration Services- Electrical North Inc. (ENI)
  - PO085495-00 September 3, 2015
  - PO086001-00 September 28, 2015
  - PO087870-00 December 1, 2015
  - PO090335-01 February 20, 2016
  - PO091533-02 March 29, 2016
  - PO091822-00 April 6, 2016
  - PO094325-01 June 22, 2016

- PO094567-01 June 28, 2016
- PO095548-01 July 28, 2016
- PO098322-02 October 11, 2016
- PO103424-00 March 14, 2017
- PO104532-00 April 21, 2017

#### Qualification Documents

- C&D Report QR-280631-01, Revision 0, "Environmental and Seismic Qualification Report of 125 Volt Vital Instrumentation and Control Batteries, Model LCU-27 and RD-903-28EP3 Two Step battery Racks for Duke Energy Corporation Oconee Nuclear Power Station Seneca, SC 29679," dated August 27, 1998.
- C&D Report QR-2461378, "Seismic & Environmental Qualification Report of 125 Volt DC LCU-27 Batteries for Units 1 & 2 Auxiliary Building 125 VDC Station Batteries Alabama Power Company, Farley Nuclear Plant, Columbia, AL 36319," dated August 17, 2016.
- C&D Report A-379-81-01, "Seismic Qualification Report of DCU-5, DCU-7, KC-19 and LC-25 Battery Racks and Cells for Susquehanna Steam Electric Station Units 1 and 2," dated May 20, 1981.
- C&D Report QR-2461605, "Seismic and Environmental Qualification Report of 125 VDC LCR-33 Batteries and RD-05234-28EP3 Battery Racks for Units 1, 2, and 3 125 VDC Vital Instrument & Control Batteries Oconee Nuclear Station, Seneca, SC," July 28, 2016.

#### Miscellaneous Documents

- Duke Energy Report OSS-0320.00-00-0025, "Purchase Specification for the VDC Class 1E Vital Instrumentation and Control Batteries (ONS Spec. Number OSS-0320.00-00-0025)," dated January 26, 2016.
- Email from Joe Stevens to Alfred Mitchell, "Re: Status Report for ONS Control Battery Replacement Project 5971," dated June 17, 2016.
- C&D Report ITP-2461605, "Inspection & Test Plan 2461605 1E Nuclear," dated June 8, 2016.
- C&D Report QR-280631-01, Revision 0, "Environmental and Seismic Qualification Report of 125 Volt Vital Instrumentation and Control Batteries, Model LCU-27 and RD-903-28EP3 Two Step battery Racks for Duke Energy Corporation Oconee Nuclear Power Station Seneca, SC 29679," dated August 27, 1998.
- C&D Report QR-2461378, "Seismic & Environmental Qualification Report of 125 Volt DC LCU-27 Batteries for Units 1 & 2 Auxiliary Building 125 VDC Station Batteries Alabama Power Company, Farley Nuclear Plant, Columbia, AL 36319," dated August 17, 2016.
- C&D Material Specification M-05, Revision 16, "Material: Calcium Lead Alloys ECR B15-0037/ECN14199," dated July 17, 2015
- Specification Report E-1055, Revision 2, "Nuclear Engineering Specification for 24-volt, 125-volt and 250-volt DC Batteries, Susquehanna Steam Electric Station, Units 1 and 2, Pennsylvania Power & Light Company, Allentown, Pennsylvania," dated June 2, 1999

- C&D Report A-379-81-01, "Seismic Qualification Report of DCU-5, DCU-7, KC-19 and LC-25 Battery Racks and Cells for Susquehanna Steam Electric Station Units 1 and 2," dated May 20, 1981.
- Training Roster Record: Nuclear 1E Safety Training (Attica)
  - Instructor: Richard Rasmussen Date: September 2016
  - Instructor: Bob Malley Date: November 22, 2016
  - Instructor: Chris Adams Date: January 27, 2017
  - Instructor: Chris Adams Date: February 29, 2017
  - Instructor: Chris Adams Date: March 31, 2017
  - Instructor: Chris Adams Date: April 14, 2017
  - Instructor: Chris Adams Date: April 20, 2017
  - Instructor: Chris Adams Date: April 21, 2017
  - Instructor: Chris Adams Date: April 28, 2017
- Letters and Emails:
  - To: Robert Malley  
From: Armand F. Lauzon Jr. President & CEO  
Date: May 25, 2016 (Letter)
  - To: Michael Cheok  
From: Robert Malley C&D Technologies  
Date: June 14, 2016 (Email)
  - To: Michael Cheok  
From: Robert Malley C&D Technologies  
Date: October 31, 2016 (Email)
  - To: Michael Cheok  
From: Robert Malley C&D Technologies  
Date: December 2, 2016 (Letter)

**6. ACRONYMS USED:**

ADAMS	Agencywide Documents Access and Management System
C&D	C&D Technologies, Inc
CGD	commercial grade dedication
CFR	<i>Code of Federal Regulations</i>
CO	Confirmatory Order
CR	Condition Report
DCIP	Division of Construction Inspection and Operational Programs
EA	Enforcement Action
IP	inspection procedure
IR	inspection report
M&TE	measuring and test equipment
NON	Notice of Nonconformance
NRC	(U.S.) Nuclear Regulatory Commission
NRO	Office of New Reactors
PO	purchase order
QA	quality assurance
QM	quality manual
QOP	quality operating procedure
QVIB	Quality Assurance Vendor Inspection Branch
U.S.	United States (of America)