January 8, 2016

EA-15-212

Armand Lauzon, President and CEO
1400 Union Meeting Road
Blue Bell, PA 19422-0858

SUBJECT: NUCLEAR REGULATORY COMMISSION INSPECTION OF C&D TECHNOLOGIES, INC. REPORT NO. 99901385/2015-201 AND NOTICE OF NONCONFORMANCE

Dear Mr. Lauzon:

From September 21 to September 25, 2015, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at the C&D Technologies, Inc. (C&D) facility in Blue Bell, PA. The purpose of this 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."

This inspection specifically assessed C&D's corrective actions to close previous NRC identified violations, an unresolved item, and other nonconformances identified in inspection reports 99901385/2009-201 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML093020260) and 99901385/2014-201 (ADAMS Accession No. ML14107A383). This NRC inspection report does not constitute NRC endorsement of your overall quality assurance (QA) or 10 CFR Part 21 programs.

Based on the results of this inspection, three apparent violations and two examples of nonconformances with purchase order requirements were identified. The apparent violations of NRC requirements are being considered for escalated enforcement in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html. The circumstances surrounding the apparent violations, the significance of the issues, and the need for lasting and effective corrective action were discussed with members of your staff during the inspection exit meeting held on September 25, 2015, in Blue Bell, PA, and the telephonic re-exit held on December 17, 2015, and are described in detail in the enclosed inspection report. The notices of nonconformance are included with this report.

The first apparent violation is related to multiple examples of C&D's failure to implement an adequate 10 CFR Part 21 program to perform timely and thorough evaluations of deviations to identify defects, which if left uncorrected, could result in substantial safety hazards. In particular, the NRC inspection team identified that C&D's initial evaluation of a deviation in station battery cell separators lacked an adequate technical basis to support closing the evaluation. When C&D completed a more thorough evaluation of this deviation, a defect in the

battery manufacturing process was identified. This defect was reported to the NRC per 10 CFR Part 21, however the report was made over two and a half years after the date of discovery. The second apparent violation is related to multiple examples of C&D's failure to provide an adequate technical justification to support closing the evaluations of deviations. The third apparent violation is related to multiple examples of C&D's failure to prepare and submit an interim report to the NRC as required when an evaluation cannot be completed within 60 days from the date of discovery.

Since the NRC has not made a final determination in this matter, a Notice of Violation is not being issued for these inspection findings at this time. The number and characterization of the apparent violations described in the enclosed inspection report may change as a result of further NRC review. You will be notified by separate correspondence of the results of our deliberations on this matter.

Before the NRC makes its enforcement decision, we are providing you an opportunity to either attend a Pre-decisional Enforcement Conference (PEC) or pursue Alternative Dispute Resolution (ADR). If a PEC is held, it will be open for public observation and the NRC will issue a press release to announce the time and date of the conference. Please contact either Timothy Frye, Senior Enforcement Coordinator at 301-415-3900 or Stacy Smith, Electrical Vendor Inspection Branch at 301-415-6025 within 10 days of the date of this letter to inform us of your choice to either participate in a PEC or pursue ADR. A PEC should be held within 30 days and an ADR session within 45 days of the date of this letter.

If you choose to participate in a PEC, the conference will afford you the opportunity to provide your perspective on these matters and any other information that you believe the NRC should take into consideration before making an enforcement decision. The decision to hold a PEC does not mean that the NRC determined that a violation occurred or that enforcement action will be taken. This conference would be conducted to obtain information to assist the NRC in making an enforcement decision. The topics discussed during the conference may include information to determine whether a violation occurred, information to determine the significance of a violation, information related to the identification of a violation, and information related to any corrective actions taken or planned.

In lieu of a PEC, you may choose to pursue an ADR session with the NRC in an attempt to resolve this issue. ADR is a general term encompassing various techniques for resolving conflicts using a third party neutral. The technique that the NRC employs is mediation. Mediation is a voluntary, informal process in which a trained neutral (the "mediator") works with parties to help them reach resolution. If the parties agree to use ADR, they select a mutually agreeable neutral mediator who has no stake in the outcome and no power to make decisions. Mediation gives parties an opportunity to discuss issues, clear up misunderstandings, be creative, find areas of agreement, and reach a final resolution of the issues. Additional information concerning the NRC's program can be obtained at http://www.nrc.gov/about-nrc/regulatory/enforcement/adr.html. The Institute on Conflict Resolution (ICR) at Cornell University has agreed to facilitate the NRC's program as a neutral third party. Please contact ICR at 877-733-9415 within 10 days of the date of this letter if you are interested in pursuing resolution of this issue through ADR.

In addition, the NRC inspectors also found that the implementation of your QA program in the areas of organization and corrective action failed to meet the requirements of 10 CFR Part 50, Appendix B imposed on you by your customers or NRC licensees. Specifically, C&D failed to identify and correct conditions adverse to quality and failed to prevent recurrence of a significant condition adverse to quality. In addition, C&D failed to ensure that portions of the QA program

were effectively executed, verify that activities affecting safety-related functions were correctly performed, and, that there was sufficient authority and organizational freedom to identify quality problems in accordance with regulatory requirements. The NRC is concerned with the extent and significance of these findings given that they were identified during a limited scope inspection. The specific findings and references to the pertinent requirements are identified in the enclosure 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 (NON). Where applicable, please include your assessment of deficiencies on the quality of previous work. We will consider extending the response time if you show good cause for us to do so.

It is important to note that the NRC inspection team performed a limited review of C&D's Part 21 and QA Program. Many of the deficiencies identified may also affect other areas of your QA and Part 21 programs that the NRC inspection team did not review. Therefore, C&D should extend its review, where applicable, beyond the specific examples identified by the inspection team, and apply corrective actions as appropriate.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response will be made available electronically for public inspection in the NRC's Public Document Room or through the NRC's document system, Agencywide Documents Access and Management System (ADAMS), 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, 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 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). If Safeguards Information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

Sincerely,

/RA/ (BAnderson for)

Mike Cheok, Director
Division of Construction Inspection
and Operational Programs
Office of New Reactors

Docket No.: 99901385

Enclosures:
1. Notice of Nonconformance
2. Inspection Report 99901385/2015-201 and Attachment

financial information). If Safeguards Information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

Sincerely,

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Division of Construction Inspection
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OFFICE	NRO/DCIP/EVIB	NRO/DCIP/EVIB	NRO/DCIP/QVIB
NAME	GLipscomb*	EHuang*	AArmstrong*
DATE	12/22/15	12/22/15	12/22/15
OFFICE	NRO/DCIP/EVIB	OE/EB	OGC/MLE
NAME	SSmith*	KHanley*	CHair*
DATE	01/04/16	12/09/15	12/09/15
OFFICE	NRO/DCIP	NRO/DCIP/EVIB	NRO/DCIP
NAME	TFrye*	RRasmussen	MCheok (BAnderson for)
DATE	01/04/16	12/09/15	01/08/16

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NOTICE OF NONCONFORMANCE

C&D Technologies, Inc. (C&D) Docket No.: 99901385
Blue Bell, PA Inspection Report No.: 99901385/2015-201

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the C&D facility in Blue Bell, PA, from September 21 to September 25, 2015, certain activities were not conducted in accordance with NRC requirements that NRC licensees contractually imposed on C&D:

A. Criterion XVI, "Corrective Action," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," states that "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management."

   C&D procedure BB-QOP 8.5.2, "Corrective Action Request (CAR)," Revisions 4 thru 6, dated February 26, 2014 to December 17, 2014:

   - Step 6.1.3 states, "If the issue is significant (Level A), determination actions required to address the root causes of the condition and actions to prevent recurrence."

   - Step 8.3 states that the corrective action will be closed after verification shows the actions are effective.

   - Step 8.4 states a responsible individual will verify that all actions have been completed, implemented, and are effective in elimination the recurrence of this condition.

   Contrary to the above, C&D failed to take measures to assure the prompt identification and correction of conditions adverse to quality and to take measures to preclude repetition of significant conditions adverse to quality as demonstrated through the following three examples.

   1) In corrective action report (CAR) 14-55, dated April 23, 2014, C&D identified a significant condition adverse to quality, but failed to take corrective action to preclude repetition. Specifically, C&D closed CAR 14-55 without correcting the failure to initiate their Part 21 procedure to evaluate deviations and without addressing the root cause to preclude repetition. As a result, C&D repeated the same failure to initiate their Part 21 process to evaluate the deviations identified in the CAR 14-55.

2) In CAR 15-37, dated April 23, 2014, C&D documented multiple examples identified in the 2014 NRC inspection where they failed to enter issues into their nonconformance process. C&D performed an extent of condition and identified additional improperly documented nonconformances; however, failed to correct the condition adverse to quality and enter any of the identified issues into their nonconformance process.

3) In CAR 14-16, dated April 23, 2014, C&D stated that "A procedure will be developed to ensure that as applicable IEEE standards are revised, the qualification is reviewed and the cross-reference document updated to reflect that review" to address an issue identified during the 2014 NRC inspection. However, C&D failed to correct the condition adverse to quality and did not develop a procedure to update and maintain the cross-reference document as stated in the CAR.

These issues are identified as Nonconformance 99901385/2015-201-01.

B. Criterion I, “Organization,” of Appendix B to 10 CFR Part 50 states, in part, that, the quality assurance functions are those of (1) assuring that an appropriate quality assurance program is established and effectively executed; and (2) verifying, such as by checking, auditing, and inspecting, that activities affecting the safety-related functions have been correctly performed. The persons and organizations performing quality assurance functions shall have sufficient authority and organizational freedom to identify quality problems; to initiate, recommend, or provide solutions; and to verify implementation of solutions. These persons and organizations performing quality assurance functions shall report to a management level so that the required authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety considerations, are provided.

Contrary to the above, from September 15, 2009, to September 25, 2015, C&D failed to ensure that portions of the QA program were effectively executed, and verify that activities affecting safety-related functions have been correctly performed. Specifically, C&D failed to take timely and effective corrective actions to address a significant condition adverse to quality. This included appropriately evaluating deviations in order to identify if reportable defects exists. Additionally, C&D failed to verify that conditions adverse to quality identified during the 2009 and 2014 NRC inspections were being identified and corrected in accordance with C&D procedural requirements and NRC regulatory requirements. In addition, C&D failed to ensure persons performing quality assurance functions have sufficient authority and organizational freedom. Specifically, C&D’s quality staff reports to operations, which does not provide sufficient authority and organizational freedom to identify quality problems. These examples occurred between September 2009 and September 2015, which indicates C&D did not effectively implement portions of their QA program during this time period.

This issue is identified as Nonconformance 99901385/2015-201-02.

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, Electrical Vendor Inspection Branch, Division of Construction Inspection and Operational Programs, Office of New Reactors, within 30 days of the date of the letter transmitting this notice of nonconformance. This reply should be clearly marked as a "Reply to a Notice of Nonconformance" and should include 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 8th day of January 2016.

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

Docket No.:	99901385
Report No.:	99901385/2015-201
Vendor:	C&D Technologies, Inc. 1400 Union Meeting Road Blue Bell, PA 19422-0858
Vendor Contact:	Steven DiMauro, Quality Systems Manager SDiMauro@cdtechno.com
Background:	The C&D facility is located in Blue Bell, Pennsylvania. This facility provides Class 1E batteries for safety-related applications to U.S. nuclear power plants. This inspection was the third at this C&D facility in Blue Bell, Pennsylvania, and focused on batteries being supplied to operating reactors, specifically closing out previous NRC findings in relation to these components.
Inspection Dates:	September 21-25, 2015
Inspection Team Leader:	Stacy Smith, NRO/DCIP/EVIB
Inspectors:	Aaron Armstong, NRO/DCIP/QVIB Eugene Huang, NRO/DCIP/EVIB George Lipscomb, NRO/DCIP/EVIB
Approved by:	Richard A. Rasmussen, Chief Electrical Vendor Inspection Branch Division of Construction Inspection and Operational Programs Office of New Reactors

EXECUTIVE SUMMARY

C&D Technologies, Inc.
99901385/2015-201

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."

This inspection specifically evaluated C&D's design, qualification, and commercial-grade dedication of safety-related batteries supplied to U.S. operating reactor plants. The NRC inspection team reviewed C&D's corrective action and 10 CFR Part 21 programs to verify closure of the violation and nonconformances identified in NRC inspection report (IR) 99901385/2009-201 (ADAMS Accession No. ML093020260) and the URI and nonconformances identified in IR 99901385/2014-201 (ADAMS Accession No. ML14107A383). The NRC conducted this inspection at C&D facility in Blue Bell, PA.

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

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

Inspection procedures (IP) used 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.

10 CFR Part 21

The NRC inspection team concluded that C&D has not implemented their Part 21 program in accordance with regulatory requirement 10 CFR Part 21. Three apparent violations of NRC requirements were identified and are being considered for escalated enforcement in accordance with the NRC Enforcement Policy. The first apparent violation is related to C&D's failure to report a defect in accordance with the requirements of 10 CFR Part 21. In particular, the NRC inspection team identified that C&D's initial evaluation of a deviation in station battery cell separators lacked an adequate technical basis to support closing the evaluation. When C&D completed a more thorough evaluation of this deviation, a defect in the battery manufacturing process was identified and reported. The second apparent violation is related to multiple examples of C&D's failure to provide an adequate technical justification to support closing an evaluation of a deviation. The third apparent violation is related to multiple examples of C&D's failure to prepare and submit an interim report to the NRC as required when an evaluation cannot be completed within 60 days from the date of discovery.

Corrective Actions

The NRC inspection team concluded that C&D has not implemented their programs to identify and correct conditions adverse to quality in accordance with regulatory requirement

Criterion XVI, “Corrective Action,” of Appendix B to 10 CFR Part 50. The inspectors issued Nonconformance 99901385/2015-201-01 for C&D’s failure to assure conditions adverse to quality are identified and corrected and to prevent recurrence of significant conditions adverse to quality in accordance with C&D procedural and NRC requirements.

Organization

The NRC inspection team concluded that C&D has not implemented their QA and Part 21 programs to in accordance with regulatory requirements in Criterion I, “Organization,” of Appendix B to 10 CFR Part 50. The NRC inspection team issued Nonconformance 99901385/2015-201-02 for C&D’s failure to ensure that: (1) portions of the QA program were effectively executed since 2009, (2) verify that activities affecting safety-related functions have been correctly performed, and (3) sufficient authority and organizational freedom to identify quality problems in accordance with regulatory requirements.

REPORT DETAILS

1. 10 CFR Part 21 Program

a. Inspection Scope

During the March 2014 inspection, documented in IR 99901385/2014-201 (ADAMS Accession No. ML14107A383), the NRC inspection team concluded that the unanalyzed deviations involving misaligned separators, battery qualification, and lead slags/foreign material within the batteries, and C&D's failure to file an interim report in accordance with Part 21 timelines, were an unresolved item pending C&D's evaluation of these deviations (Unresolved Item (URI) 99901385/2014-201-01). C&D captured these issues in corrective action report (CAR) 14-55, dated May 23, 2014.

To close this URI, the NRC inspection team reviewed CAR 14-55 and C&D's Part 21 evaluations of the deviations. Specifically, the team verified the action in CAR 14-55 to perform Part 21 evaluations for all issues identified during the March 2014 NRC inspection.

In addition, the NRC inspection team reviewed C&D's 10 CFR Part 21 program to verify closure of the violation identified in Nuclear Regulatory Commission (NRC) inspection report (IR) 99901385/2009-201 (ADAMS Accession No. ML093020260).

The NRC inspection team also reviewed C&D's policies and implementing procedures, including C&D's Part 21 procedure A-14, "Evaluation, Notification & Reporting Responsibilities in Accordance with US NRC 10 CFR 21 Regulations," dated August 9, 2014. The NRC inspection team sampled Part 21 evaluations, documented on RS-776 forms, to verify that C&D staff evaluated deviations and reported defects in accordance with Part 21 requirements.

b. Observations and Findings

The NRC inspection team reviewed the significant condition adverse to quality (SCAQ) in CAR 14-55 that addressed C&D's failure to formally initiate their Part 21 procedure to evaluate deviations identified by the NRC in the March 2014 NRC inspection. The NRC inspection team identified that one of the technical issues previously discussed in the March 2014 NRC inspection, was ultimately determined by C&D to be a defect, and therefore should have been originally reported to the NRC per the requirements of 10 CFR Part 21. This issue concerned misaligned separators and was identified as a defect on September 22, 2014, after being reevaluated as a result of the NRC inspection; the report was made over two and a half years after the date of discovery. (ML14274A052). C&D stated that if the misaligned separators had gone undetected, contact between battery plates may have occurred. This would affect the operability of the battery by reducing cell voltage and capacity.

This issue is being identified as the first apparent violation, from February 14, 2012, to September 22, 2014, for C&D's failure evaluate a deviation to identify a defect, and in doing so, failure to report a defect. It is being considered for escalated enforcement as it represents a defect that should have been reported to the NRC but was not.

C&D completed the evaluations for the other deviations identified in CAR 14-55 and

determined that no other defects existed. However, the NRC inspection team determined that C&D's evaluations were inadequate to make the determination that no other defects existed. In addition, the team noted that the Part 21 evaluations for these deviations were not done in accordance with C&D's Part 21 procedure. The failure of C&D to correct the SCAQ in CAR-14-55, and specially to repeat the same condition by not using their Part 21 program to evaluate the deviations identified in the CAR, is documented as Nonconformance 99901385/2015-201-01 and discussed in report Section 2, "Corrective Actions," Section b, "Observations and Findings," of this inspection report.

The NRC inspection team determined the following evaluations lacked the technical justification necessary to address whether or not the identified deviation could create a substantial safety hazard, were it to remain uncorrected.

- RS-776 No. 2015-14, dated June 17, 2015, for V.C. Summer

  This deviation was identified by the NRC inspection team as URI 99901385/2014-201-01 in IR 99901385/2014-201. C&D stated in the summary description of the deviation that the customer found foreign material on one cell of a 1E (safety-related) new battery. After C&D evaluated the deviation, they determined it not to be a defect per 10 CFR Part 21; however, the NRC inspection team found C&D's evaluation inadequate to determine if a defect exists.

C&D's evaluation stated the following:

  - If the foreign material (lead rundowns) touch two plates, and current flow between the plates does not heat up and melt the lead (similar to a wire in a fuse), then the plates will start to discharge.
  - C&D recommended that the licensee perform visual inspections more frequently due to the possibility of low short current flow between adjacent plates. C&D also recommended that the batteries be replaced at the next scheduled outage.

In addition, Part 21 evaluation RS-776 No. 2015-29 provided conflicting information. Specifically, this evaluation addressed lead rundowns for a non-safety battery for Clinton. C&D stated that for 1E products there is an additional inspection by quality personnel prior to release of the battery that prevents lead rundowns on 1E products and that is why a Part 21 report was not required for that issue. However, the NRC inspection team identified that C&D never addressed or evaluated the cause of the lead rundown for RS-776 No. 2015-14 and did not provide technical justification to show that lead rundowns would not result in a defect, were it to remain uncorrected.

- RS-776 No. 2015-18, dated June 17, 2015, for PSEG/Salem

  This deviation was identified by the NRC as URI 99901385/2014-201-01 in IR 99901385/2014-201. C&D stated in the summary description of the deviation that one battery cell had sediment build-up close to the plates. After C&D evaluated the deviation, they determined it not to be a defect per 10 CFR Part 21; however, the NRC inspection team found C&D's evaluation inadequate to determine if a defect exists.

Specifically, C&D attached a generic Part 21 evaluation that addressed sediment issues in a different battery product as the basis to determine why this deviation was not a defect. As identified by C&D in the generic evaluation, to form a hazard to the operation of the battery, the sediment level must be sufficient to assure permanent contact between the positive and negative plates. However, the evaluation for this deviation did not address how close the sediment was to the plates. The NRC inspection team noted that most other evaluations with sediment buildup were for batteries over 10 years old. However, the battery for RS-776 No. 2015-18 was only 4 years old with sediment build-up close to the plates. It is not clear how, if left uncorrected, the sediment level would not continue to build over the qualified life of the battery to the point that would assure permanent contact between the plates.

- RS-776 No. 2015-22, dated July 1, 2015, for Entergy/ANO

  The summary description of the deviation stated that C&D failed to provide documentation to show that the LCR-21 batteries were qualified under the most adverse conditions in accordance with customer PO specification IEEE 535-1979. This deviation was identified by the NRC inspection team as nonconformance 99901385/2014-201-02 in IR 99901385/2014-201. After C&D evaluated the deviation, they determined it not to be a defect per 10 CFR Part 21; however, the NRC inspection team found C&D's evaluation inadequate to determine if a defect exists.

Specifically, C&D's engineering evaluation did not substantiate the conclusion of acceptability of LCR-21 battery qualification testing. As a result, C&D failed to validate that original qualification testing and reports for L line batteries bound the qualification requirements of currently supplied Entergy/ANO batteries.

- RS-776 No. 2015-23, dated July 7, 2015, for K-Line Batteries

  The summary description of the deviation specified that the NRC inspection team stated that C&D did not adequately demonstrate that original type testing performed for K-line batteries envelop current customer qualification requirements. This deviation was identified by the NRC inspection team as nonconformance 99901385/2014-201-03 in IR 99901385/2014-201. After C&D evaluated the deviation, they determined it not to be a defect per 10 CFR Part 21; however, the NRC inspection team found C&D's evaluation inadequate to determine if a defect exists.

Specifically, C&D's engineering evaluation did not explain the conclusion of acceptability of K-Line battery qualification testing. C&D did not have a copy of the IEEE 535 version used in the original qualification of the batteries, IEEE 535 draft version 8. As a result, the NRC inspection team was unable to whether the customer's technical requirements listed in the purchase order requirements were bounded by the original qualification testing.

Furthermore, the NRC inspection team sampled additional Part 21 evaluations completed by C&D. The NRC inspection team identified four evaluations of deviations that C&D determined not to be a defect per 10 CFR Part 21; however, the NRC inspection team found C&D's evaluations inadequate to determine if a defect exists.

- RS-776 No. 2015-01, dated February 26, 2015, for Entergy/Grand Gulf
- RS-776 No. 2015-09, dated May 5, 2015, for TVA/Sequoyah
- RS-776 No. 2015-13, dated June 16, 2014, for Arkansas Nuclear One
- RS-776 No. 2015-20, dated June 24, 2015, for Exelon/LaSalle

In the four cases above, cover cracking was reported on multiple battery cells by each licensee. C&D's Part 21 evaluations addressed the battery cover's structural safety function; however, failed to address an open path for sparks or flames to the interior of the battery cell. Specifically, C&D reported a defect to the NRC in January 2014 (ML14034A189) that addressed an open pathway for sparks ultimately leading to failure of the batteries to discharge when required. This pathway was from a lack of positive seal between a vent assembly and battery cover. Since C&D determined that an open pathway could lead to battery failure for a lack of a positive seal between the vent assembly and the cover; it is not clear how cracks in batteries covers would not result in a similar failure mode. This was not addressed in C&D's Part 21 evaluations in order to identify why the deviations would not result in a defect, were they to remain uncorrected.

These deficiencies are identified as the second apparent violation, from March 7, 2014, to July 7, 2015, for C&D's failure to evaluate deviations in order to identify if a reportable defects exists.

In addition, the NRC inspection team reviewed the timeliness associated with C&D's Part 21 evaluations. The NRC inspection in 2009, IR 99901385/2009-201, identified two NOVs associated with C&D's failure to evaluate a deviation within 60 days of discovery and failure to have an adequate process to evaluate deviations in the timelines required by 10 CFR Part 21. The NRC inspection team reviewed the current revision of C&D's Part 21 procedure, A-14, "Evaluation, Notification & Reporting Responsibilities in Accordance with USNRC 10CFR21 Regulations," dated August 9, 2014, and determined that the procedure was adequate. The NRC inspection team reviewed a sample of Part 21 evaluations for timeliness and identified that the following deviations were not evaluated within 60 days of discovery, in accordance with A-14 and 10 CFR Part 21 requirements, and no interim reports were filed in accordance with Part 21 requirements:

- No. 2015-16 associated with COMP-2012-00234 Millstone
    - Date of Discovery: November 1, 2012
    - Evaluation documented as completed: June 17, 2015
- No. 2015-19 associated with COMP 2014-00044, pillars of sediment forming on battery cells for Prairie Island
    - Date of Discovery: March 7, 2014
    - Evaluation documented as completed: June 23, 2015
- No. 2015-24 associated with COMP 2014-00087 Millstone (Dominion) cell voltage drop
    - Date of Discovery: April 25, 2014
    - Evaluation documented as completed: July 7, 2015
- No. 2015-28 associated with COMP 2015-28, spacer missing for Hatch
    - Date of Discovery: May 6, 2015
    - Evaluation documented as completed: September 17, 2015
- No. 2015-29 associated with COMP 2014-00156 for PSEG Salem sediment accumulation
    - Date of Discovery: August 8, 2014

    - Evaluation documented as completed: July 10, 2015
- No Part 21 evaluation form completed for this issue; however,
    - Issue: Cracked KCR-13 jars for Indian Point
    - Date of Discovery: March 4, 2015.
    - Interim Report: May 29, 2015.

These deficiencies are identified as the third apparent violation, from November 1, 2012, to September 17, 2015, for C&D's failure to ensure that if an evaluation of an identified deviation cannot be completed within 60 days from discovery of the deviation, an interim report is prepared and submitted to the Commission. This is repetitive issue that was originally identified by the NRC inspection team in 2009 (NOV 99901385/2009-201-02).

c. Conclusions

The NRC inspection team concluded that C&D has not implemented their Part 21 program in accordance with regulatory requirement 10 CFR Part 21. Three apparent violations of NRC requirements were identified and are being considered for escalated enforcement in accordance with the NRC Enforcement Policy. The first apparent violation is related to C&D's failure to report a defect in accordance with the requirements of 10 CFR Part 21. In particular, the NRC inspection team identified that C&D's initial evaluation of a deviation in station battery cell separators lacked an adequate technical basis to support closing the evaluation. When C&D completed a more thorough evaluation of this deviation, a defect in the battery manufacturing process was identified and reported. The second apparent violation is related to multiple examples of C&D's failure to provide an adequate technical justification to support closing an evaluation of a deviation. The third apparent violation is related to multiple examples of C&D's failure to prepare and submit an interim report to the NRC as required when an evaluation cannot be completed within 60 days from the date of discovery.

2. Corrective Actions

a. Inspection Scope

The NRC inspection team reviewed the corrective actions that C&D performed to address previously identified violations and nonconformances identified in NRC IR 99901385/2009-201 (ADAMS Accession No. ML093020260) and IR 99901385/2014-201 (ADAMS Accession No. ML14107A383).

Specifically, the NRC inspection team reviewed C&D's policies and implementing procedures that were used to address previously identified deficiencies in Part 21, design control, procedures, nonconformances, and corrective actions. In addition, the NRC inspection team sampled additional corrective actions and customer complaints to verify that conditions adverse to quality were being promptly identified and corrected and, for SCAQ, that measures were taken to preclude repetition.

b. Observations and Findings

The NRC inspection team reviewed (CAR) 14-55, dated April 23, 2014, to address the failure of C&D to evaluate deviations in accordance with Part 21 requirements identified in the March 2014 inspection. This CAR was identified as a SCAQ by C&D.

The NRC inspection team reviewed BB-QOP 8.5.2, "Corrective Action Requests (CAR)," Revision 6, dated December 17, 2014, and noted the following:

- Step 6.1.3 states, "If the issue is significant (Level A), determination actions required to address the root causes of the condition and actions to prevent recurrence."
- Step 8.3 states that the corrective action will be closed after verification shows the actions are effective.
- Step 8.4 states a responsible individual will verify that all actions have been completed, implemented, and are effective in elimination the recurrence of this condition.
- Step 11.1.2 states that a Level A is a condition that severely affects the primary functionality of the product OR is significant condition adverse to quality for nuclear.

C&D determined that the root cause was that Part 21, "determinations were made on a case-by-case basis [and] Personnel failed to formally initiate procedure A-14 for those cases." However, the CAR did not contain actions to address the root cause or prevent recurrence as required by BB QOP 8.5.2 and Criterion XVI, "Corrective Action," of Appendix B.

In addition, C&D closed this CAR without correcting the issues identified in the CAR and repeated the same deficiency. Specifically C&D failed to follow procedure A-14 to evaluate the deviations identified in the CAR. The specific deviations that were not evaluated in accordance with A-14 are the deviations documented in NRC inspection report 99901385/2014-201:

- RS-776 No. 2015-22
  - Entergy/ANO, associated with NRC NON- 99901385/2014-201-02, was dated as July 1, 2015
- RS-776 No. 2015-23
  - K-line batteries, associated with NRC NON- 99901385/2014-201-03) was dated July 7, 2015
- RS-776 No. 2015-14
  - V.C. Summer COMP 2012-00007, associated with NRC URI 99901385/2014-201-01, was dated June 17, 2015
- RS-776 No. 2015-17
  - Xcel Energy / Monticello COMP 2014-00040, associated with NRC URI 99901385/2014-201-01, was dated June 17, 2015
- RS-776 No. 2015-18
  - PSEG/Salem COMP 2013-00113, associated with NRC URI 99901385/2014-201-01, was dated June 17, 2015

This is identified as the first example of nonconformance 99901385/2015-201-01 for C&D's failure to identify and correct conditions adverse to quality and prevent recurrence of a SCAQ. The failure to evaluate deviations in order to identify if a reportable defects exists is discussed in report Section 1, "10 CFR Part 21 Program," Section b. "Observations and Findings."

In addition, the NRC inspection team reviewed CAR 15-37, dated April 23, 2014, associated with NRC identified nonconformance 99901385/2014-201-05. The CAR addressed multiple examples where C&D failed to enter issues into their nonconformance process in accordance with C&D procedural requirements and Criterion XV, “Nonconforming Materials, Parts, or Components,” of Appendix B.

The NRC inspection team reviewed AQOP-8.3, “Control of nonconforming product,” Revision K, dated December 13, 2013, and noted the following:

- Section 8.3m.1, states the “records of the nature of nonconformities and any subsequent actions taken, including concessions obtained, are maintained...”

As part of the actions identified in CAR 15-37, C&D performed an extent of condition and identified additional improperly documented nonconformances; however, failed to enter and document the additional nonconformances identified, and the nonconformances identified by the NRC in the March 2014 inspection, into their nonconformance process.

This is identified as the second example of nonconformance 99901385/2015-201-01 for C&D’s failure to identify and correct conditions adverse to quality.

Furthermore, the NRC reviewed closed CAR 14-16, dated April 23, 2014, associated with NRC identified nonconformance 99901385/2014-201-03. The CAR states, "A procedure will be developed to ensure that as applicable IEEE standards are revised, the qualification is reviewed and the cross-reference document updated to reflect that review." However, the NRC inspection team determined that C&D closed this CAR and did not develop a procedure to update and maintain the cross-reference document.

This is identified as the third example of nonconformance 99901385/2015-201-01 for C&D’s failure to identify and correct conditions adverse to quality.

c. Conclusions

The NRC inspection team concluded that C&D has not implemented their programs to identify and correct conditions adverse to quality in accordance with regulatory requirement Criterion XVI, “Corrective Action,” of Appendix B to 10 CFR Part 50. The NRC inspection team issued Nonconformance 99901385/2015-201-01 for C&D’s failure to assure conditions adverse to quality are identified and corrected and to prevent recurrence of a SCAQ in accordance with C&D procedural and NRC requirements.

3. Organization

a. Inspection Scope

The NRC inspection team reviewed C&D’s quality program and discussed with C&D personnel organizational structure and functional relationships to verify implementation of Criterion I, “Organization,” of Appendix B to 10 CFR Part 50 requirements. Due to the issues identified from past NRC inspection reports and C&D’s corrective actions, the NRC inspection team verified whether C&D’s organizational structure could be contributing to the observed quality assurance issues.

b. Observations and Findings

Based on the corrective action deficiencies outlined in Section 2 of this report and repetitive violations identified in Section 1 of this report, the NRC inspection team determined that C&D failed to ensure that portions of C&D's QA program were effectively executed, and that activities affecting safety-related functions were correctly performed. Specifically, C&D failed to take timely and effective corrective actions to address a SCAQ. Additionally, C&D failed to verify conditions adverse to quality identified during the 2009 and 2014 NRC inspections were being identified and corrected in accordance with C&D procedural requirements and NRC regulatory requirements. These examples include the repetitive issues associated with C&D's failure to identify and evaluate Part 21 deviations in IRs 99901385/2009-201, 99901385/2014-201, and this IR, and, in addition, C&D's repetitive issues associated with C&D's failure to identify and correct conditions adverse to quality in IRs 99901385/2009-201, 99901385/2014-201, and this IR. C&D's organization places C&D's quality assurance staff under the direction of operations, which does not provide sufficient authority and organizational freedom to identify quality problems.

This is identified as nonconformance 99901385/2015-201-02 for C&D's failure to ensure that: (1) portions of the QA program were effectively executed, (2) verify that activities affecting safety-related functions have been correctly performed, and (3) sufficient authority and organizational freedom to identify quality problems in accordance with regulatory requirements.

c. Conclusions

The NRC inspection team concluded that C&D has not implemented their programs in accordance with regulatory requirements in Criterion I, "Organization," of Appendix B to 10 CFR Part 50. The NRC inspection team issued Nonconformance 99901385/2015-201-02 for C&D's failure to ensure that: (1) portions of the QA program were effectively executed since 2009, (2) verify that activities affecting safety-related functions have been correctly performed, and (3) sufficient authority and organizational freedom to identify quality problems in accordance with regulatory requirements.

4. Entrance and Exit Meetings

On September 21, 2015, the NRC inspection team presented the inspection scope during an entrance meeting with C&D personnel including Mr. Robert Malley, VP of Operational Excellence. On September 25, 2015, the NRC inspection team presented the inspection results during an exit meeting with Mr. Armand Lauzon, President and CEO, and C&D personnel. On December 17, 2015, the NRC inspection team had a telephonic re-exit with Mr. Armand Lauzon, President and CEO, and C&D personnel.

ATTACHMENT

1. PERSONS CONTACTED AND NRC STAFF INVOLVED:

Name	Title	Affiliation	Entrance	Exit	Re-Exit	Interviewed
Steve DiMauro	Quality Systems Manager	C&D	X	X	X	X
Robert Malley	VP of Operational Excellence	C&D	X	X	X	X
Jon Anderson	VP of New Technology and Battery Design	C&D	X	X	X	X
Drew Heimer	Director Product Development	C&D	X	X	X	X
Armand Lauzon	President and CEO	C&D		X	X	
Charbel Louis Karam	VP, Customer Service, Marketing and Product Mgmt.	C&D		X		
Larry Carson	Nuclear Product Manager	C&D		X	X	X
Jay Frankhouser	Director, Product Strategy	C&D		X	X	
Stacy Smith	NRC Team Leader	NRC	X	X	X	
Eugene Huang	Team Member	NRC	X	X		
George Lipscomb	Team Member	NRC	X	X	X	
Aaron Armstrong	Team Member	NRC	X	X		
Timothy Frye	Enforcement Coordinator	NRC			X	
Richard Rasmussen	Branch Chief	NRC		X	X	
Kyle Hanley	Enforcement Specialist	NRC			X	
Dave Anderson	VP General Counsel	C&D			X	
Jeremy Link	Plant Manager, Attica	C&D			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
99901385/2009-201-01	Closed	NOV	Part 21
99901385/2009-201-02	Closed	NOV	Part 21
99901385/2009-201-03	Closed	NON	Criterion XVI
99901385/2009-201-04	Closed	NON	Criterion III
99901385/2009-201-05	Closed	NON	Criterion V
99901385/2014-201-01	Closed	URI	Part 21
99901385/2014-201-02	Open	NON	Criterion III
99901385/2014-201-03	Open	NON	Criterion III
99901385/2014-201-04	Open	NON	Criterion XVI
99901385/2014-201-05	Open	NON	Criterion XV
99901385/2015-201-01	Open	NON	Criterion XVI
99901385/2015-201-02	Open	NON	Criterion I

4. DOCUMENTS REVIEWED:

Procedures

- AQWI-8.2.4.1, "Nuclear Battery Assembly Verification," Revision F, dated May 17, 2010
- Form #AQF-0003, "Nuclear Battery Assembly Verification Form," Revision 10
- Document #AOQI-00063, "Operator Quality Instruction," Revision 2, dated July 1, 2009
- BB-QOP 8.5.2, "Corrective Action Requests (CAR)," Revision 6, dated December 17, 2014
- A-14, "Evaluation, Notification & Reporting Responsibilities in Accordance with US NRC 10 CFR 21 Regulations," Revision 11, dated August 9, 2014
- LL-WI 7.4.3-4, "Nonconformance of tested material," Revision 2, dated April 27, 2015
- AQOP-8.3, "Control of nonconforming product," Revision K, dated December 13, 2013
- BB-WI-8.2.1-2, "Customer Complaints," Revision 9, dated September 17, 2015
- BB- QOP- 7.3.1, "New Product Development," Revision 2, dated November 1, 2011
- BB- QOP- 7.3.7a, "Engineering Change Control," Revision NEW, dated October 21, 2005
- BB WI 7.2.2-1, "Order Entry – Nuclear Orders," Revision 8, dated October 5, 2014
- BB- QOP- 7.4.3, "Commercial Grade Dedication," Revision 5, dated October 20, 2015
- BB-WI-8.2.1-2, "Customer Complaints," Revision 9, dated September 17, 2015

Part 21 Evaluations

- RS-776, "10CFR21 evaluation report for 2015-14," dated January 10, 2012
- 2015-23, 10 CFR 21 Evaluation report, dated July 7, 2015
- Part 21 Evaluation Report 2015-22, "Entergy/ANO PO 2393760 - Documentation of Battery Qualification IAW PO Specification IEEE 535-1979," dated March 5, 2014
- Part 21 Evaluation Report 2015-03, "Entergy/Indian Point Nuclear PO 4500536274 - KCR-13 Jar Crack," dated March 11, 2015
- 10 CFR 21 Evaluation Report No.2015-08, No dedication of the for the 3DCU-9 battery cover, dated March 31, 2015
- RS-776 No, 2012-01, dated March 5, 2012, Palisades

- RS-776 No. 2015-14, dated June 17, 2015, for V.C. Summer
- RS-776 No. 2015-29, for Clinton
- RS-776 No. 2015-18, dated June 17, 2015, for PSEG/Salem
- RS-776 No. 2015-22, dated July 1, 2015, for Entergy/ANO
- RS-776 No. 2015-23, dated July 7, 2015, for K-Line Batteries
- RS-776 No. 2015-01, dated February 26, 2015, for Entergy/Grand Gulf
- RS-776 No. 2015-09, dated May 5, 2015, for TVA/Sequoyah
- RS-776 No. 2015-13, dated June 16, 2014, for Arkansas Nuclear One
- RS-776 No. 2015-20, dated June 24, 2015, for Exelon/LaSalle
- RS-776 No. 2015-16 associated with COMP-2012-00234 Millstone
- RS-776 No. 2015-19 associated with COMP 2014-00044, pillars of sediment
- RS-776 No. 2015-24 associated with COMP 2014-00087 Millstone (Dominion)
- RS-776 No. 2015-28 associated with COMP 2015-28, spacer missing for Hatch
- RS-776 No. 2015-29 associated with COMP 2014-00156 for PSEG Salem sediment accumulation

Corrective Action Reports (CARs)

- CAR 14-55, dated April 23, 2014
- CAR 14-58 dated, April 23, 2014
- CAR 15-37, "NRC 2014 inspection RS-1037 14-18, URI 99901385/2014-201-05 nonconforming materials, parts or components," dated April 23, 2015
- CAR 14-57, "C&D's failed to adequately demonstrate that original type testing performed for K-line batteries envelop current customer qualification requirements," dated April 23, 2014
- CAR 14-56, "LCR-21 Battery Qualification," dated June 23, 2014
- CAR 14-15, "NRC Inspection 99901385/2014-201-02," dated April 23, 2014
- CAR 14-53, Commercial Grade Dedication of Calibrated services not being performed, dated January 16, 2014
- CAR 09-54, Corrective action for NRC inspection report 2009, dated October 8, 2009
- CAR 14-45, C&D commercial supplier testing services IMR has not been surveyed since 7/28/2009, dated January 9, 2014
- CAR 15-33, The Hollingsworth & Vose testing equipment missing calibration stickers or equipment is out of calibration, dated March 18, 2015
- CAR 15-61, Multiple examples of procedural noncompliance at the Attica facility, dated April 27, 2015
- CAR 15-41, Lord 406-19 adhesive is beyond the expiration date, dated March 31, 2015
- CAR 15-20, Calibration of measuring and test equipment in the R&D and shipping areas are not being controlled, dated February 27, 2015
- CAR 15-66, CARs open in access of 30 day as specified by C&D corrective action procedure, dated May 27, 2015
- CAR 06-060, Quality Assurance Records not developed per NQA-1 requirements, dated December 17, 2006
- CAR 15-65, Internal audit finding on internal audit procedure and record storage requirements, dated January 16, 2014
- CAR 15-17, Internal audit finding on internal audit procedure and record storage requirements, dated February 16, 2015
- CAR 14-31, 2014 Inspection finding of Commercial Grade Dedication on washers PO 10250122, dated March 6, 2014

- CAR 15-63, Nonconformance to control of nonconforming produce Form 1048 and1049, dated May 26, 2015
- CAR 15-84, RA02182-27 cable assembly order 2448989 failed min pull strength testing, or Components, dated August 19, 2015
- CAR 15-67, NUPIC Audit #23913 2015-01-04, dated May 27, 2015
- CAR 14-24, Incorrect electrolyte levels shipped to customer, dated March 18, 2014

Customer Complaints

- COMP 2010-00169, dated May 28, 2010
- COMP-2014-00092, dated May 5, 2014
- COMP-2010-00310, dated November 15, 2010

Drawings

- P-14, "ABS molding material for battery parts," Revision 8
- J-8290-16, "Support rod for "K" and "L" series batteries," dated June 7, 1966
- K7897, "Support rod for "K", "L", "M", & "Xth" series batteries, Revision 7
- K6583, "Rib block "K" series cells," dated April 27, 1982
- M6203, "Rib block 405, 407, 409 series containers," dated February 28, 1973
- M05989, ""L" single cell containers 13.14," dated July 28, 2003
- M5958, "Containers list 400 series," dated February 8, 1972

Procurement Documents

- PO 00501212, C&D to Clinton, dated May 15, 2013

Miscellaneous Documents

- QR-2360174, "Qualification report of 125 Volt DC PORV UPS batteries and racks for Exelon generation company, LLC. Braidwood and Byron steam generator PORV UPS project for PO 00472405" dated September 30, 2011
- VL-77-016, "IEEE 323 Qualification for 125 Volt Class 1E Batteries," dated June 8, 1979
- Unnumbered IEEE-323 qualification report for PO K-2988, Clinton Power Station, dated March 20, 1978
- 43291-1, "Seismic simulation test program on three KCY-23, three KCY-25 and two KC-19 battery contained in a type K battery rack," dated June 24, 1976
- 44466-1, "Seismic simulation test program on a two-step battery rack and KC-9, KC-13, KC-17 and KC-21 battery cells," dated March 12, 1979
- Spreadsheet of differences with IEEE revision
- CDT001-13-07-24105-1, dated August 28, 2013
- IMR report #201306717, dated August 23, 2013
- QR-1-72042, "Nuclear Environmental Qualification Report for Arkansas Nuclear One PO No. 81162 - LC-21 Battery Cells," Revision 0, dated February 7, 1983
- QR-2-07209, "Nuclear Environmental Qualification Report for Arkansas Nuclear One – Unit 1 PO No. 01013 – 125 Volt DC Station Battery," Revision 0, dated March 22, 1984
- Wyle Laboratory Report 43450-1, "Seismic Simulation Test Report," Revision 0, dated December 7, 1976
- Wyle Laboratory Report 44467-1, "Seismic Simulation Test Report," Revision 0, dated March 10, 1979

- "Hot Room Data Sheet for BL Test Number V78-14," Revision 0, dated March 30, 1978 to November 27, 1978
- Corporate Consulting and Development 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 Stations Units 1 and 2," Revision 0, dated May 20, 1981
- Excel spreadsheet, "Comparison of updated versions of IEEE-344, IEEE-323, and IEEE 535," (in-process)
- Engineering letter from Jon L. Anderson, "IEEE 323 Qualification L-series Lab Report PC Jar Qualification Analysis Review," dated September 24, 2015
- Engineering letter from Drew Heimer, "IEEE 535-1979 Qualification K&L-series Justification," dated September 24, 2015
- Interim Part 21 Report, "Cracking in KCR-13 Standby Battery Jars," Revision 0, dated December 20, 2013
- Interim Part 21 Report, "Cracking in KCR-13 Standby Battery Jars," Revision 0, dated April 28, 2014
- Final Part 21 Report, "Cracking in KCR-13 Standby Battery Jars," Revision 0, dated July 18, 2014
- Interim Part 21 Report, "Cracking in KCR-13 Standby Battery Jars," Revision 0, dated May 29, 2015
- Letter from B. Malley to J Anderson, "Engineering Evaluation – Flooded Battery Covers," dated May 16, 2014
- Dedication Plan #077/PC01291, Cover for 4LCY-7 NUC, Revision 02, dated December 12, 2012

6. ACRONYMS USED:

ADAMS	Agencywide Documents Access and Management System
AV	apparent violation
CA	corrective action
CAR	corrective action report
CGD	commercial grade dedication
CFR	*Code of Federal Regulations*
DCIP	Division of Construction Inspection and Operational Programs
ECO	Engineering Change Order
EVIB	Electrical Vendor Inspection Branch
IEEE	Institute of Electrical and Electronics Engineers
IP	inspection procedure
IR	inspection report
M&TE	measuring and test equipment
MRR	material review report
NON	Notice of Nonconformance
NOV	Notice of Violation
NRC	(U.S.) Nuclear Regulatory Commission
NRO	Office of New Reactors
NSR	nuclear safety related
PO	purchase order
QA	quality assurance
QOP	quality operating procedure
SCAQ	significant condition adverse to quality
URI	unresolved item
U.S.	United States (of America)
VP	vice president