

01/23/2014

U.S. Nuclear Regulatory Commission Operations Center Event Report

Page 1

Part 21 (PAR)

Event # 49749

<b>Rep Org:</b> C&D TECHNOLOGIES, INC.		<b>Notification Date / Time:</b> 01/21/2014 10:20 (EST)	
<b>Supplier:</b> NUKLEARNA ELEKTRARNA KRSKO		<b>Event Date / Time:</b> 11/15/2013 (EST)	
<b>Last Modification:</b> 01/21/2014			
<b>Region:</b> 1	<b>Docket #:</b>		
<b>City:</b> BLUE BELL	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b>		
<b>State:</b> PA			
<b>NRC Notified by:</b> CHRISTIAN RHEULT	<b>Notifications:</b> HAROLD GRAY	R1DO	
<b>HQ Ops Officer:</b> DANIEL MILLS	MICHAEL F. KING	R2DO	
<b>Emergency Class:</b> NON EMERGENCY	BLAIR SPITZBERG	R4DO	
<b>10 CFR Section:</b>	PART 21 GROUP	EMAIL	
21.21(a)(2)	INTERIM EVAL OF DEVIATION		

PART 21 - LOOSE BATTERY VENT ASSEMBLIES

The following (in part) was received via facsimile:

"The purpose of this letter is to provide the NRC preliminary notification in general conformity to the requirements of 10CFR Part 21.21 (a)(2). On November 15, 2013 C&D Technologies, Inc. (C&D) was informed by Nuklearna Elektrarna Krsko (NEK) of Slovenia that the vent assemblies in a lot 66 units of LCY-39 batteries were not engaging properly to form a seal between the vent assembly and the battery cover. This issue was detected and corrected prior to installation and use of the batteries.

"The vent assembly is a safety related component with the primary function of preventing spark or flame propagation back into the cell from external sources. Lack of engagement or seal between the vent assembly and cover may provide a path for flame or spark propagation. Subsequent evaluation of the design of the cover to vent assembly seal has shown that under certain combinations of assembly, gasket and cover dimensions a clearance fit is formed that may exist in installed batteries. To date no other user of LCY-35, 37, or 39 batteries that use these covers and vent assemblies has reported a similar situation, however, the possibility exists that this issue may exist in products used by US licensees. And may pose a safety hazard. Thus, C&D is submitting this report to the NRC and notifying C&D's customers that use LCY batteries of this report, and actions to be taken to eliminate the possible safety hazard.

"U.S. Licensees using batteries possibly containing the clearance fit have been notified of the filing of this report with recommendations that they inspect their batteries for any signs of problems. A procedure (attached) will allow users to detect clearance fits between the vent assembly and cover. Replacement parts will be provided by C&D for affected cells that will eliminate the possibility of clearance fits."

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01/23/2014

*U.S. Nuclear Regulatory Commission Operations Center Event Report*

Page 2

Part 21 (PAR)

Event # 49749

The affected US facilities are: Oconee Nuclear Station, Indian Point Energy Center, Arkansas Nuclear One, Beaver Valley Nuclear Generating Station, St. Lucie Nuclear Power Plant, Vogtle Electric Generating Plant, Edwin I. Hatch Power Plant, and Wolf Creek Generating Station.

The affected foreign facilities are: Bruce, Laguna Verde, Krsko and Pickering.

\*\*\*\*\*

JAN-21-2014 12:00 FROM C&amp;D TECHNOLOGIES LEGAL

TO 913018165151

P.01

**FAX: (215) 619-7841**

**DATE:** January 21, 2014

**TO:** Nuclear Regulatory Commission – Operations Center

**Fax:** 1-301-816-5151

**FROM:** Christian Rheault  
215-619-7852

**TOTAL NUMBER OF PAGES (INCLUDING COVER SHEET):6**

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~~NOTE: THIS FACSIMILE CONTAINS PRIVILEGED AND CONFIDENTIAL INFORMATION.~~

~~The information contained in this facsimile is intended only for the above addresses. If you are not the intended addressee, do not copy, disclose, distribute or take any action in reliance on the information contained in this facsimile transmission. Please notify the sender by telephone to arrange for the return of the information.~~

THIS IS THE ONLY FORM OF THIS TRANSMISSION YOU WILL RECEIVE

# **C&D TECHNOLOGIES, INC.**

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**Power Solutions**

1400 Union Meeting Road  
Blue Bell, PA 19422  
Phone: (215) 619-2700  
Fax: (215) 619-7887

January 21, 2014

VIA FACSIMILE  
Nuclear Regulatory Commission  
Operations Center  
301-816-5151

VIA REGULAR MAIL  
Document Control Desk  
US Nuclear Regulatory Commission  
Washington, DC 20555-0001

VIA OVERNIGHT DELIVERY  
US Nuclear Regulatory Commission  
11555 Rockville Pike  
Rockville, MD 20852-2746

Subject: Preliminary Notification – Krsko Vent Fitment

The purpose of this letter is to provide the NRC preliminary notification in general conformity to the requirements of 10CFR Part 21.21 (a)(2). On November 15, 2013 C&D Technologies, Inc. ("C&D") was informed by Nuklearna Elektrarna Krsko (NEK) of Slovenia that the vent assemblies in a lot 66 units of LCY-39 batteries were not engaging properly to form a seal between the vent assembly and the battery cover. This issue was detected and corrected prior to installation and use of the batteries.

The vent assembly is a safety related component with the primary function of preventing spark or flame propagation back into the cell from external sources. Lack of engagement or seal between the vent assembly and cover may provide a path for flame or spark propagation. Subsequent evaluation of the design of the cover to vent assembly seal has shown that under certain combinations of assembly, gasket and cover dimensions a clearance fit is formed that may exist in installed batteries. To date no other user of LCY-35, 37, or 39 batteries that use these covers and vent assemblies has reported a similar situation, however, the possibility exists that this issue may exist in products used by US licensees, and may pose a safety hazard. Thus, C&D is submitting this report to the NRC and notifying C&D's customers that use LCY batteries of this report, and actions to be taken to eliminate the possible safety hazard.

Required information as per 10CFR Part 21.21(d)(4) follows:

- (i) **Name and Address of the Individual or individuals informing the Commission**  
Christian Rheault (or Designee)  
President and Chief Executive Officer  
C&D Technologies, Inc.  
1400 Union Meeting Road  
Blue Bell, PA 19422-0858
- (ii) **Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States which fails to comply or contains a defect.**
- (iii) LCY-35, LCY-37, and LCY-39 Batteries

NRC Preliminary Notification  
January 21, 2013  
Page 2

- (iv) **Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.**

C&D Technologies, Inc.  
1400 Union Meeting Road  
Blue Bell, PA 19422-0858

- (v) **Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply.**

The identified defect is the lack of positive seal between the vent assembly and battery cover, leaving an open path for sparks or flames to the interior of the battery cell. Ignition of the internal gasses of the cells could result in container damage, drainage of electrolyte, and injury to nearby personnel and damage to nearby equipment. Loss of electrolyte will interrupt the circuit path in the battery string, leading to failure to discharge when required.

- (vi) **The date on which the information of such defect or failure to comply was obtained.**

November 15, 2013

- (vii) **In the case of a basic component which contains a defect or fails to comply, the number and location of these components in use at, supplied for, being supplied for, or may be supplied for, manufactured or being manufactured for one or more facilities or activities subject to the regulations in this Part.**

Utility	Plant Name	Battery Model
Bruce Power	Bruce	LCY-35 NUC
CFE	Laguna Verde	LCY-39 NUC
Duke Energy	Oconee	LCY-39 NUC
Entergy	Indian Point	LCY-39 NUC
Entergy	Arkansas Nuclear One	LCY-39 NUC
First Energy	Beaver Valley	LCY-39 NUC
Florida Power & Light	St. Lucie	LCY-39 NUC
Georgia Power	Vogtle	LCY-35, -37 and -39 NUC
Georgia Power	Hatch	LCY-35 NUC
NEK	Krsko	LCY-39 NUC
OPG	Pickering	LCY-35 NUC
WFNOC	Wolf Creek	LCY-39 NUC

- (viii) **The corrective action which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.**

1. **Engineering Change:** C&D has initiated an engineering change order to adjust the dimensions of the LCY cover in the area where it interfaces with the vent assembly. The cover dimensions will be changed to assure that an interference

NRC Preliminary Notification  
 January 21, 2013  
 Page 3

fit (and thus positive seal) exists under all conditions. This action is expected to be completed by January 24, 2014.

2. **Engineering Evaluation of Other Designs:** C&D has completed an engineering tolerance evaluation for all other C&D battery designs. No possibility of a clearance fit exists for the other battery types.
3. **Dedication Plans:** C&D commercial grade dedication plans will be reviewed and revised to assure that the critical dimensions for the vent seal are measured and in specification on all future builds. This will be completed by January 31, 2014.

- (ix) ***Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees.***

U.S. Licensees using batteries possibly containing the clearance fit have been notified of the filing of this report with recommendations that they inspect their batteries for any signs of problems. A procedure (attached) will allow users to detect clearance fits between the vent assembly and cover. Replacement parts will be provided by C&D for affected cells that will eliminate the possibility of clearance fits.

- (x) ***In the case of an early site permit, the entities to whom an early site permit was transferred.***

Not applicable

If you have any questions or wish to discuss this matter or this report, please contact:

Robert Malley  
 VP Quality and Process Engineering  
[rmalley@cdtechno.com](mailto:rmalley@cdtechno.com)  
 (215) 619-7830

Sincerely,



Christian Rheault  
 President and Chief Executive Officer  
 C&D Technologies, Inc.

Attachment – C&D Letter to Users "Possible Problem with LCY Vent Assembly Fit " Dated January 21, 2014

Cc: D. Anderson  
 J. Miller  
 R. Malley  
 S. DiMauro  
 L. Carson  
 J. Anderson

# C&D TECHNOLOGIES, INC.

Power Solutions

1400 Union Meeting Road  
Blue Bell, PA 19422  
Phone: (215) 775-1314  
Fax: (215) 619-7887

January 21, 2014

Customer Name and Address

Ref: Possible Problem with LCY Vent Assembly Fit

Dear Sir/Madam:

C&D Technologies, Inc. ("C&D") is filing a report with the NRC for an incident that occurred with a safety related product at Nuklearna Elektrarna Krsko (NEK) of Slovenia.

On November 15, 2013 C&D Technologies, Inc. ("C&D") was informed by NEK that several of the vent assemblies in a lot of 66 LCY-39 batteries were not engaging properly to form a seal between the vent assembly and the battery cover. This issue was detected and corrected prior to installation and use of the batteries.

The vent assembly is a safety related component with the primary function of preventing spark or flame propagation back into the cell from external sources. Lack of engagement or seal between the vent assembly and cover may provide a path for flame or spark propagation through the vent/gasket/cover seal area. Subsequent evaluation of the design of the cover to vent assembly seal has shown that under certain combinations of assembly, gasket and cover dimensions a clearance fit is formed that may exist in installed batteries. To date no other user of LCY-35, 37, or 39 batteries that use these covers and vent assemblies has reported a similar situation; however, there is no specific warning or notice in our past or current Installation and Operation manual to check for the presence of proper engagement. Thus the possibility exists that this issue may exist in installed products used by US licensees, and C&D is recommending that licensees take actions to eliminate the possible safety hazard.

**Vent Assembly Installation:** The vent assembly has a bayonet fitting. It is inserted into the vent hole on the cover, and twisted to form a seal against the cover. A gasket is used to seal the interface between the cover and vent assembly, preventing sparks or flames from entering the cell. (See Figure 1 for cross section of the assembled seal).

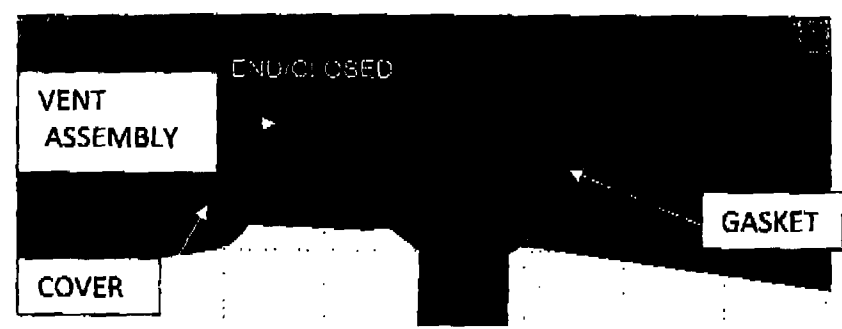


Figure 1

In the case of the NEK batteries the vents were installed, however, there was no resistance when the vent assembly was turned. This indicated that the gasket was not being compressed, and

that there may be a clearance fit that could provide a path for sparks or flames if the vent was disturbed (i.e., during seismic events, etc). A subsequent fit analysis of the LCY cover revealed that there were combinations of gasket, cover, and vent assembly dimensions that may allow clearance fits of up to 0.006", even when all parts were in tolerance. Similar analysis of all other safety related product lines (LCR, LCUN, KCR, 4LCY, DCU) showed that positive seals were present under all combinations of tolerances.

**Field History:** C&D has reviewed the warranty claims and customer complaints for all safety related products, and for all commercial products and has not had a reported instance similar to the NEK situation, however, since the issue was not identified as a critical characteristic in the I&O manual, there may be a possibility that an installer did not report a freely turning vent during receiving and installation.

**Recommended Action:** C&D recommends that users of LCY-35, LCY-37, and LCY-39 cells in safety related applications inspect their battery cells for the vent fit issue. The following process may be used to evaluate the seal:

1. Identify the LCY products in your facilities
2. Attempt to turn the vent assembly clockwise. Feel for resistance to turning in rotation. Due to the design, the resistance will build up and then drop off as the gasket is compressed and released.
3. If resistance is felt turn the assembly to the rotation producing the most resistance. This is the greatest interference fit and indicates that the gasket is compressed.
4. If the vent stone turns freely – no change in resistance through 360° rotation a clearance fit may exist.

Cells with resistance have properly engaged vent assemblies and do not need further attention.

If freely turning assemblies are found, or if the user has any doubt that a seal is being formed C&D will provide thicker replacement gaskets. The user should contact C&D at the numbers below for additional information.

**C&D Contacts:** Further information on this issue can be obtained from:

Larry Carson – Nuclear Product Manager  
Office Phone 215-775-1314  
Email: lcarson@cdtechno.com

Robert Malley – VP Quality and Process Engineering  
Office Phone 215-619-7830  
Email bmalley@cdtechno.com

Best Regards,

Larry Carson  
Nuclear Product Manager  
C&D Technologies, Inc.

cc: C. Rheault – President and CEO  
D. Anderson – VP General Counsel  
J. Miller – VP Operations  
R. Malley – VP Quality and Process Engineering  
J. Anderson – VP New Technology and Battery Design  
L. Carson – Nuclear Product Manager  
S. DiMauro – Quality Systems Manager