Part 21 (PAR) Event # 50272

Rep Org: NUCLEAR LOGISTICS INC		**Notification Date / Time:** 07/11/2014 14:15	(EDT)
Supplier: NUCLEAR LOGISTICS INC		**Event Date / Time:** 03/27/2014	(CDT)
		Last Modification: 07/11/2014	
Region: 4	**Docket #:**		
City: FT WORTH	**Agreement State:**	Yes	
County:	**License #:**		
State: TX			
NRC Notified by: TRACY BOLT	**Notifications:**	DAVID HILLS	R3DO
HQ Ops Officer: MARK ABRAMOVITZ		PART-21 GROUP	EMAIL
Emergency Class: NON EMERGENCY			
10 CFR Section:			
21.21(d)(3)(i) DEFECTS AND NONCOMPLIANCE			

PART-21 NOTIFICATION - ASSEMBLY ERRORS DURING BREAKER REFURBISHMENT

The following is a summary of the information provided via facsimile:

"On March 27, 2014, at Exelon-Dresden Station, plant personnel identified that breaker UTC # 1185084 (3B CCSW Pump Breaker) was in the CLOSED condition, but did not indicate CHARGED. The breaker was last CLOSED successfully on March 19, 2014. The breaker charges the closing springs after a CLOSE operation.

"The breaker was OPENED and removed from service on 3/28/14, Dresden notified [Nuclear Logistic, Inc.] NLI on 3/28/14 of the issue and the breaker was returned to NLI on RMA 351022093.

"NLI performed a failure analysis on the breaker. The spring clamp cam 12mm nylon insert lock nut was not properly tightened on either side, resulting in insufficient clamping force of the cam on the jackshaft. In addition to the lock nuts not being sufficiently tightened, the closing springs were installed on the wrong side. There is a left and a right spring as identified by a red mark on the left spring. The left side spring is the shorter spring, and it was installed on the right side. Further evaluation by NLI determined that this may have been a contributing factor to the failure after the closing spring clamp started to move off the jackshaft.

"The presence of the under torque nuts resulted in insufficient clamping force, allowing the clamp to move off the jackshaft. The springs being on the wrong sides began to exert excessive force to the cam as it rotated, and after many operations, it had slipped enough to become partially dislodged from the jackshaft. This bent the spring guide arms, preventing the rotation of the jackshaft to the CHARGED position and did not allow the motor cutoff switch to activate. The result was the breaker did not CHARGE and the motor continued to run until it burned up."

Several AHMG breakers (1200 and 2000A) for Dresden and Quad Cities were refurbished by Nuclear Logistics,

IE19 NRR

Inc from 2008 to March 2014. At least one breaker was found with insufficient cam nut spring torque and had the two closing springs installed improperly.

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FACSIMILE COVER SHEET

DATE: 7/11/2014

TO: Document Control Desk

COMPANY: Nuclear Regulatory Commission

FAX NO.: 301-816-5151

FROM: Tracy Bolt, Director of Quality Assurance

NO. OF PAGES INCLUDING COVER SHEET: 5

MESSAGE: The attached is a report of potential defect per 10CFR Part 21. Document No: P21-06172014

If there are any problems in the transmittal of this document please call 817-284-0077.

NUCLEAR LOGISTICS INC.

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Date: July 11, 2014

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Part 21 Report No: P21-06172014

Subject: Report of potential assembly error per 10CFR Part 21 on AMHG refurbished circuit breakers

Pursuant to 10CFR 21.21 (d) (3) (ii), AZZ|NLI is providing written notification of the identification of a potential assembly error. This letter is to notify you of a potential assembly error concerning closing springs on AMHG breakers (1200 and 2000A) refurbished by NLI.

The following information is required per 10CFR 21.21 (d) (4).

(i) Name and address of the individual or individuals informing the Commission.

Tracy Bolt, Director of Quality Assurance
Nuclear Logistics, Inc
7410 Pebble Drive
Ft. Worth, TX 76118

(ii) Identification of the facility, activity, or the basic component supplied for such facility or such activity within the United States which fails to comply or contains a defect.

The specific part which fails to comply or contains a defect:

AMHG-5-350-12 circuit breaker refurbished by NLI. On one identified circuit breaker, the closing spring operating cam nuts did not receive the proper torque, resulting in closing spring malfunction, component damage and spring charging motor failure.

(iii) Identification of the firm constructing or supplying the basic component which fails to comply or contains a defect.

The AMHG refurbishment was performed by NLI.

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

On March 27, 2014, at Exelon-Dresden Station, plant personnel identified that breaker UTC # 1185084 (3B CCSW Pump Breaker) was in the CLOSED condition, but did not indicate CHARGED. The breaker was last CLOSED successfully on March 19, 2014. The breaker charges the closing springs after a CLOSE operation.

The breaker was OPENED and removed from service on 3/28/14. Dresden notified NLI on 3/28/14 of the issue and the breaker was returned to NLI on RMA 351022093.

The breaker was supplied October 2008 under client PO 00074944, Release 222.

NLI performed a failure analysis on the breaker. The results of the analysis are summarized as follows:

The spring clamp cam 12mm nylon insert lock nut was not properly tightened on either side, resulting in insufficient clamping force of the cam on the jackshaft.

In addition to the lock nuts not being sufficiently tightened, the closing springs were installed on the wrong side. There is a left and a right spring as identified by a red mark on the left spring. The left side spring is the shorter spring, and it was installed on the right side. Further evaluation by NLI determined that this may have been a contributing factor to the failure after the closing spring clamp started to move off the jackshaft.

The presence of the under torque nuts resulted in insufficient clamping force, allowing the clamp to move off the jackshaft. The springs being on the wrong sides began to exert excessive force to the cam as it rotated, and after many operations, it had slipped enough to become partially dislodged from the jackshaft. This bent the spring guide arms, preventing the rotation of the jackshaft to the CHARGED position and did not allow the motor cutoff switch to activate. The result was the breaker did not CHARGE and the motor continued to run until it burned up.

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

On June 17, 2014, enough information was gathered from the evaluations being performed to determine the reportability of the defect that is the root cause for the event.

(vi) **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.**

This is a workmanship issue and not a defect in the design of the breaker. NLI has only supplied this type of refurbished breaker to Dresden and Quad Cities nuclear plants.
The AMHG type breakers refurbished by NLI from 2008 to March of 2014 are listed below.

Plant Name	UTC or Serial Number	Plant Name	UTC or Serial Number
Dresden	0000997135	Dresden	0000997126
Dresden	0000997100	Dresden	0000997114
Dresden	0001185094	Dresden	0000997097
Dresden	0002861736	Dresden	0000997122
Dresden	0001192853	Dresden	0000997140
Dresden	0000997107	Dresden	0000997106
Dresden	0000997102	Dresden	0000997099
Dresden	0000997113	Dresden	0000997121
Dresden	0000997130	Dresden	0000997098
Dresden	0001185096	Dresden	0000997125
Dresden	0000997103	Dresden	0002861737
Dresden	0000997108	Dresden	0000997120
Dresden	0000997105	Dresden	0000996976
Dresden	0001185088	Dresden	0001193854
Dresden	0000997093	Dresden	0000996977
Dresden	0000997127	Dresden	0000997137
Dresden	0000997115	Dresden	0000997117
Dresden	0000997110	Dresden	0000997132
Dresden	0001185087	Dresden	0000997138
Dresden	0000997129	Dresden	0000997133
Dresden	0000997111	Quad Cities	0002646678 (10239)
Dresden	0000997134	Quad Cities	(10331)
Dresden	0000997119	Quad Cities	0002938736 (10200)
Dresden	0000997104	Quad Cities	0002939006 (10158)
Dresden	0001185065	Quad Cities	0002945867 (10237)
Dresden	0001185089	Quad Cities	0002945868 (10194)
Dresden	0001185064	Quad Cities	0002949774 (10269)
Dresden	0000997101	Quad Cities	0002949775 (10242)
Dresden	0001185091	Quad Cities	0002951358 (10175)
Dresden	0001185085	Quad Cities	0002912833 (10211)
Dresden	0001185084	Quad Cities	0002867433 (10190)
Dresden	0001185092	Quad Cities	0002867434 (10341)
Dresden	0000997095	Quad Cities	0002751776 (10207)

(vii) **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.**

NLI has revised the NLI internal technical procedure, to include the proper torque value of 32 ft lbs (nominal) for the closing spring clamp nuts and proper closing spring orientation verification during assembly and final testing. Training has been administered to the appropriate personnel.

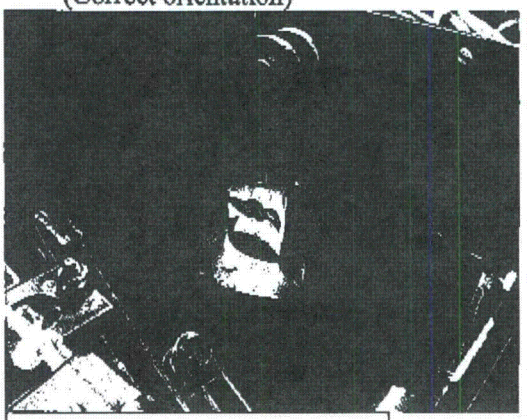
(viii) **Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees.**

NLI recommends that all breakers identified above be inspected at the next available interval (as determined by the plant) to verify the spring orientation and to verify proper torque of the closing spring clamp nuts.

If the inspection results determine that the springs are not oriented correctly (see Figure 1) but the nuts have been properly torqued, ensure that the cam is fully engaged on the jackshaft (see Figure 2), the breakers will perform as required. The spring orientation can be corrected at the next refurbishment interval.

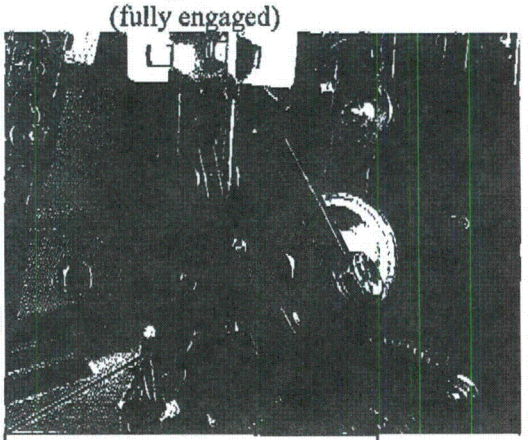
If the lock nuts do not exhibit the proper torque, then the breaker should be evaluated to determine that the cam on the jackshaft is in the proper location (see figure 2) and the proper torque should be applied.

Figure 1
(Correct orientation)



Correct orientation with the marked spring assembly on the left side of the mechanism.

Figure 2
(fully engaged)



Correct cam/jackshaft configuration. Typical for both sides of the mechanism.

Please contact me with any questions or comments.

Sincerely,

Tracy Bolt

Tracy Bolt
Director of Quality Assurance