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10CFR21

April 9, 2004

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Limerick Generating Station, Unit 1 and Unit 2
Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket No. 50-352 and 50-353

Subject: 10CFR21 Interim Report On ABB Model HK Circuit Breaker
Closing Spring Charging Malfunction

This interim report addresses a malfunction of the closing spring
charging function in ABB Model HK circuit breakers.

Report Number: NA
Revision: 00
Event Date: February 3, 2004
Discovered Date: February 13, 2004
Report Date: April 9, 2004

This interim is being submitted pursuant to the requirements of
10CFR21.21(a)(2).

If you have any questions or require additional information,
please do not hesitate to contact us.

Sincerely,



Ron J. DeGregorio
Vice President - Limerick

cc: H. J. Miller, Administrator Region I, USNRC
A. L. Burritt, USNRC Senior Resident Inspector, LGS

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SUMMARY OF EXELON NUCLEAR COMMITMENTS
LS-AA-117-1003 Rev.1

The following table identifies commitments made in this document by Exelon Nuclear. (Any other actions discussed in the submittal represent intended or planned actions by Exelon Nuclear. They are described to the NRC for the NRC's information and are not regulatory commitments.)

Commitment #1	Committed date (or "outage"):
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Complete the 10CFR Part 21 evaluation of the ABB Model HK closing spring charging and latching function failure.	6-1-04
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Description of the Deviation

On February 3, 2004, at 15:30 hours, the 1A Residual Heat Removal (RHR) pump was placed in suppression pool cooling. An equipment operator overheard a banging sound and traced it to the D11 Safeguard Bus room in which the 1A RHR pump 4kV breaker was located. The banging sound stopped as the operator entered the room and the operator observed that the charging springs were charged on the closed 1A RHR pump breaker. The breaker was determined to be operable since the closing springs were charged. At 20:54 hours the 1A RHR 4kV breaker was replaced and successfully tested.

The 1A RHR breaker is an Asea Brown Boveri (ABB) Model HK circuit breaker. The 1A RHR breaker was observed to have a light gauge six-turn spring installed between the secondary close latch and the primary trip latch. On February 11, 2004 the breaker was tested and observed to repeatedly charge the closing springs and then fail to latch the springs in the charged condition. The spring was replaced with a five-turn heavy gauge spring obtained from the storeroom. The light gauge six-turn spring had been provided in the approved breaker overhaul parts kits. Both of the springs meet the manufacturer's specification for the application.

An investigation was performed to determine if other breakers in the plant had the six-turn spring installed. Eighteen (18) breakers were identified as susceptible based on the timing of recently performed overhauls. One of the 4kV breakers was installed as the 201-D24 Safeguard Bus Feeder Breaker. This breaker was replaced on February 19, 2004. There are no 4kV breakers that are currently using the light gauge six-turn spring.

Prior to this event, on June 10, 2003, Limerick experienced an HK breaker spring charging cycling event during breaker maintenance and replaced the entire operating mechanism. On September 4, 2003 South Texas Project experienced an HK breaker spring charging failure event. On October 28, 2003 Limerick experienced a second HK breaker spring charging cycling event during breaker maintenance and replaced the latch spring with the five-turn spring. The failure mode was not clear at that time but the difference between the six-turn and five-turn latch springs was identified. It was also identified at this time that use of the five-turn spring precludes the cycling failure. The workers suspended installation of the six-turn spring during breaker overhauls following the second Limerick event.

Prior to these events ABB's spring sub-vendor implemented a change that replaced the heavy gauge five-turn spring with the

light gauge six-turn spring. The light gauge six-turn spring was provided in the ABB breaker rebuild kit number 716656T104.

When the breaker is in the closed position with the closing springs charged the breaker is capable of tripping, re-closing and tripping a second time without recharging the closing springs. The closing springs are recharged by the spring charging motor following a closure of the breaker. If the closing spring fails to latch then the charging spring motor continues to attempt to charge the closing springs until a successful latching occurs. If latching fails to occur the charging spring motor will run to failure. If the motor short circuits then actuation of the breaker 125 VDC control power fuses will clear the fault. If the motor fails open, as it did at South Texas Project, the closing springs will not charge and the failure will not be discovered until the next breaker close demand.

Discussion with the vendor indicated that a six-turn latch reset torsion spring was in use from 1970 through 1992 when the five-turn spring was introduced. In 2002 a redesigned six-turn spring was added as an equivalent replacement part and binned with the five-turn springs. As stated in the South Texas Project operating experience report, the five-turn spring provides 11 in-lbs of torque at 195 degrees and the six-turn spring provides 9 in-lbs of torque at 195 degrees.

The vendor stated that they have not observed any failures of the closing spring latch resulting from use of the "old" six-turn spring prior to factory refurbishment. No failures have been observed following factory refurbishment using the "new" six-turn spring. Also the vendor stated that South Texas Project did not observe another failure after replacing worn parts and re-using the "new" six-turn spring.

The vendor stated that the six-turn spring meets the design requirement for the application and attributes the observed failures to wear on additional parts in the operating mechanism that increase the load that the spring must overcome. However, the vendor has suspended issuance of the six-turn spring.

During the evaluation of the South Texas Project failed breaker the vendor identified that when the latch pivot pin and the manual charge lever assembly were replaced the six-turn spring provided adequate torque to latch the closing springs. At Limerick these parts are inspected as recommended by the vendor during breaker overhauls. Wear was not identified on either of these components during the breaker overhaul.

Further investigation is required to determine if the closing spring charging malfunction was caused by wear on other circuit breaker parts. A vendor-assisted inspection of the affected circuit breaker is planned to identify all of the degraded components that contributed to the malfunction.

The evaluation of the deviation will be completed by June 1, 2004.

Corrective Action Completed

The two affected 4kV breakers were replaced.

The other 4kV breakers that were overhauled during the affected period were walked down and verified to have the heavy gauge five-turn spring installed.

Administrative controls were placed on the breaker rebuild kits containing the light gauge six-turn spring to prevent use.

The site 4 kV breaker overhaul qualified personnel have been briefed regarding the vendor correspondence indicating wear on the latch pivot pin and the manual charge lever assembly could contribute to the failure mechanism.

Corrective Action Planned

A vendor-assisted investigation will be conducted to determine the cause of the closing spring charging and latching malfunction. This action will be complete by June 1, 2004.

A 10CFR Part 21 report will be submitted if the ongoing evaluation identifies a defect that could result in a substantial safety hazard.

Component data:

System:	EA	(Medium Voltage Power System, 35kV-600V)
Component:	52	(Circuit Breaker, AC)
Manufacturer:	258A	(Asea Brown Boveri)
Model:	5HK350	