General Information or Other (PAR) Event # 45651

Rep Org:	ABB INC. (MEDIUM VOLTAGE SERVICE)	**Notification Date / Time:**	01/23/2010 10:35 (EST)
Supplier:	ABB INC. (MEDIUM VOLTAGE SERVICE)	**Event Date / Time:**	01/23/2010 (EST)
		Last Modification:	01/23/2010
Region:	1	**Docket #:**	
City:	FLORENCE	**Agreement State:**	Yes
County:		**License #:**	
State:	SC		

NRC Notified by:	VICTOR ROMANO	**Notifications:**	MARVIN SYKES	R2DO
HQ Ops Officer:	BILL HUFFMAN		GREG WERNER	R4DO
Emergency Class:	NON EMERGENCY		S. PANNIER (E-MAIL)	NRR
10 CFR Section:			J. THORP (E-MAIL)	NRR
21.21	UNSPECIFIED PARAGRAPH		O.TABATABAI (E-MAIL)	NRO

CIRCUIT BREAKER CHARGING MOTOR CRANK DOES NOT MEET HARDNESS SPECIFICATIONS

The following information was received via facsimile:

"This letter provides notification of a failure to comply with specifications associated with ABB P/N 716532C00 Motor Crank procured as a commercial grade item from Sims Machining, and dedicated by ABB from a production run of 105 pieces produced October 21, 2009. These motor cranks are used in K-Line electrically operated circuit breakers with Ryobi or Wuxi motors. The motor crank is attached to the end of an electric charging motor. When the motor rotates the crank moves the charging pawl assembly in a cyclical manner. The cyclical movement of the charging pawl assembly in turn works with the ratchet pawls and converts the rotational torque produced by the charging motor into linear spring displacement. The linear spring displacement is used to charge the closing springs in the breaker mechanism.

"Myers Control Power LLC notified ABB Florence on November 25, 2009 of a hardness test failure of motor cranks supplied by ABB for commercial applications. An evaluation was performed by ABB and noted that the required heat treatment process was not performed on a lot quantity of 105 motor cranks received October 24, 2009 from Sims Machining. Of the 105 non-heat treated motor cranks, 100 have been accounted for. Five K-Line circuit breakers procured from ABB between 10/24/2009 and 1/06/2010 may have non-heat treated motor cranks installed. Work process errors allowed non-heat treated motor cranks to be used in manufacture of K-Line circuit breakers. The motor crank is heat treated to prevent the premature wear of the crank as the roller on the crank turns around the output shaft during the charging cycle. The failure to heat treat the motor crank can cause the output shaft of the crank to wear. This will result in the misalignment of the spring charging components or ultimate failure of the spring charging system during the charging cycle, leading to the inability to close the breaker more than once.

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NRR

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"ABB is taking, or has taken, the following corrective actions:

a. Notification of the potential existence of this deviation to affected customers (to complete 1/31/2010).
b. Review historical procurement and inspection records associated with the subject part, vendor and similar machined parts requiring heat treatment. (Action complete - no previous heat treatment process errors identified for both commercial and safety-related applications.)
c. Follow-up with Sims Machining to determine how future incidents can be prevented and other actions warranted to prevent recurrence. (Action complete - Vendor requires certificate of heat treatment prior to sending to approved supplier for plating services.)
d. Remove all non-heat treated motor cranks from inventory and work in progress for rework. (Action complete - 99 of 105 affected motor cranks reworked and 1 motor crank maintained for life cycle testing resulting in 5 suspect motor cranks escaping facility.)
e. Revise inspection process instructions to ensure heat treatment is identified as a critical characteristic for verification (to complete by 1/25/2010).
f. A cycle test is being performed to determine level of premature wear due to non-heat treatment. Results expected to be complete by 1/31/2010.

"Given the large number of applications for the affected circuit breakers, ABB (Medium Voltage Service) cannot determine if the potential for a substantial safety hazard exists at any licensee's facility if premature failure of the motor crank occurs. Licensees are requested to evaluate the history of circuit breaker operating cycles to determine if the circuit breaker motor crank should be replaced immediately, or to perform the replacement at the next convenient maintenance opportunity."

The HOO spoke to the point of contact for ABB on this issue and determined that the only two reactor licensees likely to have one of these discrepant breakers are Palo Verde and Surry.

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ABB

January 22, 2010

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001
FAX 301-816-5151

Subject: 10CFR Part 21 Notification of Deviation re. P/N 716532C00 Motor Crank

Dear Sir or Madam:

The notifying individual is Mr. William Conlon, General Manager, ABB Inc. (Medium Voltage Service), 2300 Mechanicsville Road, Florence, SC 29501.

Identification of the subject component is as follows: This letter provides notification of a failure to comply with specifications associated with ABB P/N 716532C00 Motor Crank procured as a commercial grade item from Sims Machining, and dedicated by ABB from a production run of 105 pieces produced October 21, 2009. These motor cranks are used in K-Line electrically operated circuit breakers with Ryobi or Wuxi motors. The motor crank is attached to the end of an electric charging motor. When the motor rotates the crank moves the charging pawl assembly in a cyclical manner. The cyclical movement of the charging pawl assembly in turn works with the ratchet pawls and converts the rotational torque produced by the charging motor into linear spring displacement. The linear spring displacement is used to charge the closing springs in the breaker mechanism. See photo of motor crank below:

Myers Control Power LLC notified ABB Florence on November 25, 2009 of a hardness test failure of motor cranks supplied by ABB for commercial applications. An evaluation was performed by ABB and noted that the required heat treatment process was not performed on a lot quantity of 105 motor cranks received October 24, 2009 from Sims Machining. Of the 105 non-heat treated motor cranks, 100 have been accounted for. Five K-Line circuit breakers procured from ABB between

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10/24/2009 and 1/06/2010 may have non-heat treated motor cranks installed. Work process errors allowed non-heat treated motor cranks to be used in manufacture of K-Line circuit breakers. The motor crank is heat treated to prevent the premature wear of the crank as the roller on the crank turns around the output shaft during the charging cycle. The failure to heat treat the motor crank can cause the output shaft of the crank to wear. This will result in the misalignment of the spring charging components or ultimate failure of the spring charging system during the charging cycle, leading to the inability to close the breaker more than once.

ABB is taking, or has taken, the following corrective actions:

a. Notification of the potential existence of this deviation to affected customers (to complete 1/31/2010).
b. Review historical procurement and inspection records associated with the subject part, vendor and similar machined parts requiring heat treatment. (Action complete – no previous heat treatment process errors identified for both commercial and safety-related applications.)
c. Follow-up with Sims Machining to determine how future incidents can be prevented and other actions warranted to prevent recurrence. (Action complete – Vendor requires certificate of heat treatment prior to sending to approved supplier for plating services.)
d. Remove all non-heat treated motor cranks from inventory and work in progress for rework. (Action complete – 99 of 105 affected motor cranks reworked and 1 motor crank maintained for life cycle testing resulting in 5 suspect motor cranks escaping facility.)
e. Revise inspection process instructions to ensure heat treatment is identified as a critical characteristic for verification (to complete by 1/25/2010).
f. A cycle test is being performed to determine level of premature wear due to non-heat treatment. Results expected to be complete by 1/31/2010.

Given the large number of applications for the affected circuit breakers, ABB (Medium Voltage Service) cannot determine if the potential for a substantial safety hazard exists at any licensee's facility if premature failure of the motor crank occurs. Licensees are requested to evaluate the history of circuit breaker operating cycles to determine if the circuit breaker motor crank should be replaced immediately, or to perform the replacement at the next convenient maintenance opportunity.

If you have any questions regarding this notice, please be so kind as to contact the quality manager, Mr. Victor Romano, directly at 843-472-0511.

Very truly yours,

W T Conlon

William Conlon
General Manager

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