UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555

December 15, 1989

NRC INFORMATION NOTICE NO. 89-86: TYPE HK CIRCUIT BREAKERS MISSING CLOSE LATCH ANTI-SHOCK SPRINGS

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

Information Notice No. 87-41, "Failures of Certain Brown Boveri Electric Circuit Breakers" (IN 87-41) was issued August 31, 1987. This information notice is intended to alert addressees of additional information regarding Type HK circuit breakers that may have been manufactured without a close latch anti-shock spring. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Background:

Type HK circuit breakers utilize a charging spring motor to charge (compress) the charging springs. At the end of the charging cycle, a close latch is engaged to hold the charging springs in the charged (compressed) position. The circuit breaker can then be closed (by spring force) on demand.

IN 87-41 highlighted instances at Limerick Unit 1 and Beaver Valley Unit 2 where Type HK circuit breakers inadvertently closed following completion of the charging cycle. Subsequent to the occurrence at Limerick Unit 1, the manufacturer indicated that this condition can be corrected by adding an anti-shock spring to the close latch. The manufacturer also indicated that this anti-shock spring was not included in Type HK circuit breakers manufactured prior to 1973 and from June 1975 to June 1977.

Description of Circumstances:

During the recent refueling outage at Fermi Unit 2, the licensee inspected both safety-related and non-safety-related Type HK circuit breakers. The close latch anti-shock springs were observed to be missing in approximately 40 safety-related Type HK circuit breakers that had been manufactured outside of the previously identified timeframes. (The identified circuit breakers

were manufactured in 1974.) Thus, the timeframes previously identified by the manufacturer (prior to 1973 and from June 1975 to June 1977) may not be totally inclusive. In addition, because of changes in corporate name, mergers, etc., Type HK circuit breakers may indicate manufacture by ITE, ITE Imperial, Gould, Brown Boveri, or a combination thereof. The current name of the manufacturer is ASEA Brown Boveri. Recipients may need to be cognizant of this when determining whether they utilize potentially affected equipment.

Discussion of Safety Significance:

Failure to close on demand or inadvertent closure of a Type HK circuit breaker could result in a circuit breaker not performing its intended function. This, in turn, could result in the loss of a power supply. For example, inadvertent closure of a Type HK circuit breaker onto a vital bus supplied by an emergency diesel generator, such as during load sequencing, could result in overloading the emergency diesel generator. This could occur at the end of a spring charging cycle on a Type HK circuit breaker which was tripped by a loss-of-offsite power signal, as typically happens just prior to load sequencing.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate NRR project manager.

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Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contact: Jack Ramsey, NRR
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Attachment: List of Recently Issued NRC Information Notices

LIST OF RECENTLY ISSUED NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
89-85	EPA's Interim Final Rule on Medical Waste Tracking and Management	12/15/89	All medical, academic, industrial, waste broker, and waste disposal site licensees.
89-84	Failure of Ingersoll Rand Air Start Motors as a Result of Pinion Gear Assembly Fitting Problems	12/12/89	All holders of OLs or CPs for nuclear power reactors.
89-83	Sustained Degraded Voltage on the Offsite Electrical Grid and Loss of Other Generating Stations as a Result of a Plant Trip	12/11/89	All holders of OLs or CPs for nuclear power reactors.
89-82	Recent Safety-Related Incidents at Large Irradiators	12/7/89	All NRC licensees authorized to possess and use sealed sources at large irradiators.
89-59, Supp. 1	Suppliers of Potentially Misrepresented Fasteners	12/6/89	All holders of OLs or CPs for nuclear power reactors.
89-81	Inadequate Control of Temporary Modifications to Safety-Related Systems	12/6/89	All holders of OLs or CPs for nuclear power reactors.
89-80	Potential for Water Hammer, Thermal Stratification, and Steam Binding in High-Pressure Coolant Injection Piping	12/1/89	All holders of OLs or CPs for nuclear power reactors.
89-79	Degraded Coatings and Corrosion of Steel Containment Vessels	12/1/89	All holders of OLs or CPs for LWRs.

OL = Operating License
CP = Construction Permit