

Jim McKnight

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

January 7, 1994

NRC INFORMATION NOTICE 94-02: INOPERABILITY OF GENERAL ELECTRIC MAGNE-BLAST BREAKER BECAUSE OF MISALIGNMENT OF CLOSE-LATCH SPRING

Addressees

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

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees that a misalignment of the close-latch reset spring (tension style) in 4.16 kV General Electric (GE) Magne-Blast circuit breakers could prevent the breaker from closing on demand. 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 are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

On April 7, 1993, the Arizona Public Service Company, licensee for the Palo Verde Nuclear Generating Station, notified the NRC that a safety-related 4.16 kV GE Magne-Blast breaker (Model AM-4.16-250-9H, 1200 ampere breaker with ML-13 mechanism) was found inoperable with the closing springs discharged. The inoperability was caused by misalignment of the close-latch reset spring. This misalignment resulted in the coils of the spring catching on the close-latch monitoring switch mounting plate. This prevented the close-latch monitoring switch from closing and prevented the charging motor from recharging the closing springs, which rendered the breaker inoperable. The condition was identified by an auxiliary operator who noticed that the clear control power/closing springs charged lamp was not illuminated on the front of the breaker cubicle. There was no indication of this problem in the control room.

Further details can be found in NRC Inspection Report 50-528; 50-529; and 50-530/93-11.

JDR-11C

9401030245

PDR I&E Notice 94-002

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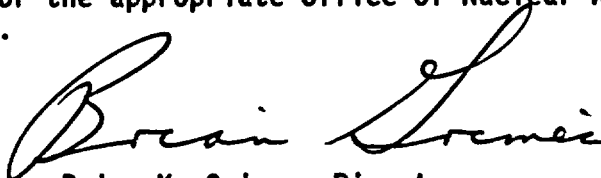
DISCUSSION

GE Magne-Blast breakers are used in many safety-related circuits throughout the nuclear industry. At Palo Verde, these breakers are used for numerous safety-related pumps (e.g., high-pressure safety injection, low-pressure safety injection, and containment spray) and in safety-related load centers. While this condition occurred in a 4.16 kV breaker, all GE Magne-Blast breakers equipped with the ML-13 mechanism having the tension style close-latch spring may be susceptible to this problem.

There are two different designs for the close-latch spring in the GE Magne-Blast breakers. The design that caused the problem was the tension-style spring that is positioned beside the close-latch monitoring switch. GE subsequently replaced this spring with a torsion-style spring, which surrounds the close-latch shaft and prevents the spring from catching on the mounting plate. GE considers this modification to be a design enhancement and has not issued a service advisory letter or instruction on this subject.

The failed condition described above may not be evident if a breaker racking operation is performed before the close-latch spring is inspected. The vibration associated with the racking operation may be sufficient to free the spring from the close-latch monitoring switch mounting plate. However, during subsequent breaker operation, the spring coils may catch and render the breaker inoperable. Although there would likely be local indication that the spring was not fully charged, there would be no control room indication of the inoperability of the breaker.

No specific action or written response is required by this information notice. If you have any questions regarding this matter, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.



Brian K. Grimes, Director
Division of Operating Reactor Support
Office of Nuclear Reactor Regulation

Technical contacts: J. Frederick Ringwald, RIV
(316) 364-8653

Kamalakar R. Naidu, NRR
(301) 504-2980

Attachment:
List of Recently Issued NRC Information Notices

LIST OF RECENTLY ISSUED
 NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
94-01	Turbine Blade Failures Caused by Torsional Excitation from Electrical System Disturbance	01/07/94	All holders of OLs or CPs for nuclear power reactors
93-101	Jet Pump Hold-Down Beam Failure	12/17/93	All holders of OLs or CPs for boiling-water reactors
93-100	Reporting Requirements for Bankruptcy	12/22/93	All U.S. Nuclear Regulatory Commission licensees.
91-29, Supp. 2	Potential Deficiencies Found During Electrical Distribution System Functional Inspections	12/22/93	All holders of OLs or CPs for nuclear power reactors.
93-99	Undervoltage Relay and Thermal Overload Setpoint Problems	12/21/93	All holders of OLs and CPs for nuclear power reactors.
93-98	Motor Brakes on Valve Actuator Motors	12/20/93	All holders of OLs and CPs for nuclear power reactors.
93-97	Failures of Yokes Installed on Walworth Gate and Globe Valves	12/17/93	All holders of OLs or CPs for nuclear power reactors.
93-96	Improper Reset Causes Emergency Diesel Generator Failures	12/14/93	All holders of OLs or CPs for nuclear power reactors.
93-95	Storm-Related Loss of Offsite Power Events due to Salt Buildup on Switchyard Insulators	12/13/93	All holders of OLs or CPs for nuclear power reactors located close to a large body of salt water.
93-94	Unauthorized Forced Entry into the Protected Area at Three Mile Island Unit 1 on February 7, 1993	12/09/93	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License
 CP = Construction Permit

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Original signed by
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*SEE PREVIOUS CONCURRENCE

OFFICE	*OGCB/DORS	*R/RIV	*TECH ED	*SC:DRSP/RV	*D:DRSP/RV
NAME	PCWen/vsb	FRingwald	DGable	HJWong	KEPerkins
DATE	10/05/93	10/05/93	10/05/93	10/08/93	10/08/93
*SC:RVIB/DRIL	*BC:RVIB/DRIL	*C:OGCB/DORS	*C:EELB/DE	D:DORS/NRR	
GCwalina	LNorrholm	GHEMarcus	CHBerliner	BKGGrimes	
10/06/93	10/06/93	10/13/93	12/08/93	01/3/94	

DOCUMENT NAME: 94-02.IN

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10/06/93	10/06/93	10/13/93	12/08/93	10/ /93	

DOCUMENT NAME: GEMGBRKR.PCW

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DATE	10/05/93	10/05/93	10/05/93	10/08/93	10/08/93

*SC:RVIB/DRIL	*BC:RVIB/DRIL	C:OGCB/DORS <i>DK</i>	D:DORS/NRR
GCwalina	LNorrholm	GHMarcus <i>for</i>	BKGrimes
10/06/93	10/06/93	10/13/93	10/ /93 <i>mlen</i>

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Notes:

- The Palo Verde PMs (Brian Holian and L. Tran) were provided with copies of this draft IN. They have no comments.
- GE was requested to comment on this draft IN (see attached ~~memo~~ *letter* from GHM to Robert Mitchell (GE), dated 10/6/93). GE has no comments.

Peter Wen
 10/13/93

CNB
 C: EELB/DE
 CHBerlinger
 12/8/93

[Handwritten signatures and notes]
 Supplement to CNB
 12/93-94

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PER TELECON WITH H. WONG 10/8/93.

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RVIB/DRIL	SC:RVIB/DRIL	BC:RVIB/DRIL	C:OGCB/DORS	D:DORS/NRR	
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