

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

December 21, 1994

NRC INFORMATION NOTICE 94-85: PROBLEMS WITH THE LATCHING MECHANISM IN
POTTER AND BRUMFIELD R10-E3286-2 RELAYS

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 to problems reported by C&D Charter Power Systems (C&D) in the latching mechanism of Potter and Brumfield R10-E3286-2 relays. 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 September 7, 1994, in accordance with Title 10 of the *Code of Federal Regulations*, Part 21, C&D reported a defect in the latching mechanism of some Potter and Brumfield R10-E3286-2 relays that were supplied by C&D to nuclear power plants. The relays are part of a C&D High Voltage Shut Down Alarm Assembly Printed Circuit Board (MBC-2920-E) and may be used in Class 1E safety-related C&D ARR Battery Chargers. C&D reported that the defect allows the relay to change state and cause an apparent high voltage shutdown of the battery charger terminating charging of the battery system until the relay is reset. Over a period of time, this would allow the batteries to become discharged if the relay is not reset.

C&D reported finding the defect in date code lots 9108 and 9242. These date codes indicate that lot 9108 was manufactured in February 1991 and lot 9242 was manufactured in October 1992. The date codes are located on the front of the relays. However, other code lots may be similarly affected.

Discussion

The relays discussed above are part of the C&D MBC-2920-E printed circuit board installed in C&D ARR Battery Chargers. C&D reported that the problem relays are susceptible to inadvertent changes in the state of the normally-open and normally-closed contacts. The cause of the problem appears to be a push-to-release push-button on the relay that may move outward, under shock or vibration, from the case of the relay allowing the contacts to

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updated on 12/21/94
PDR I&E Notice 94-085 941221 DR031
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change state and latch in an unwanted state. The relay must then be manually reset by pushing the push-button to release the latching mechanism and return the relay to its normal state.

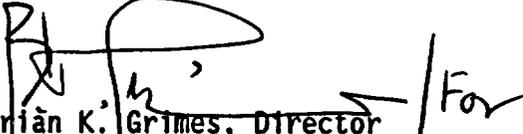
C&D indicated that they have been successful in detecting problem relays by manually pulling the relay reset push-button out and away from the case of the relay. According to C&D, if the push-button can be pulled out and away from the case of the relay by manually pulling on the push-button or twisting and rotating the push-button while pulling on it, then the relay is likely to be susceptible to an inadvertent change of state as described above.

C&D purchased the suspect lots of R10-E3286-2 relays as commercial grade and dedicated them for use on MBC-2920-E circuit boards. C&D supplied NRC with a list of utilities and one non-utility to which C&D had sold battery chargers or replacement circuit boards since February 1991 and which may have R10-E3286-2 relays from date code lots 9108 and 9242. The list included: Browns Ferry; Chin Shan (Taiwan); Cooper; Farley; Grand Gulf; Hatch; Kuosheng (Taiwan); Laguna Verde (Mexico); Limerick; Maanshan (Taiwan); Salem; San Onofre; Vermont Yankee; Vogtle; Waterford 3; and MKW Power Systems, Inc. (nonutility). MKW Power Systems, Inc. may have sold these circuit boards to nuclear utilities.

C&D reported that C&D intends to inform the above purchasers of the problem and advise them to check for defective relays on the MBC-2920-E circuit boards in use or in stock. C&D indicated that circuit boards with suspect relays may be returned to C&D for testing and repair or replacement.

The two relay code lots reported by C&D may not be the only code lots of Potter and Brumfield R10-E3286-2 relays (formerly sold commercially by Potter and Brumfield as R10H/R10K series relays) that are affected. At the present time, the NRC has only been informed that the suspect relays have been installed in MBC-2920-E circuit boards for use in C&D ARR Battery Chargers. However, the relays may have been supplied to nuclear facilities for other uses. Because other code lots may be affected and because the R10-E3286-2 relay may have been sold as commercial grade and subsequently dedicated for safety-related use, it is important for licensees to be aware of the potential for these relays to inadvertently change state and latch in an unwanted position.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, 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 Project Support
Office of Nuclear Reactor Regulation

Technical contacts: Virgil L. Beaton, NRR
(301) 504-2989

Bill H. Rogers, NRR
(301) 504-2945

Attachment:
List of Recently Issued NRC Information Notices

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LIST OF RECENTLY ISSUED
 NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
94-40, Supp. 1	Failure of a Rod Control Cluster Assembly to Fully Insert Following a Reactor Trip at Braidwood Unit 2	12/15/94	All holders of OLs or CPs for nuclear power reactors.
94-84	Air Entrainment in Terry Turbine Lubricating Oil System	12/02/94	All holders of OLs or CPs for nuclear power reactors.
89-25, Rev. 1	Unauthorized Transfer of Ownership or Control of Licensed Activities	12/07/94	All fuel cycle and material licensees.
94-83	Reactor Trip Followed by Unexpected Events	12/06/94	All holders of OLs or CPs for nuclear power reactors.
94-82	Concerns Regarding Essential Chiller Reliability during Periods of Low Cooling Water Temperature	12/05/94	All holders of OLs or CPs for nuclear power reactors.
94-81	Accuracy of Bioassay and Environmental Sampling Results	11/25/94	All U.S. Nuclear Regulatory Commission licensees.
94-80	Inadequate DC Ground Detection in Direct Current Current Distribution Systems	11/25/94	All holders of OLs or CPs for nuclear power reactors.
94-79	Microbiologically Influenced Corrosion of Emergency Diesel Generator Service Water Piping	11/23/94	All holders of OLs or CPs for nuclear power reactors.
94-78	Electrical Component Failure due to Degradation of Polyvinyl Chloride Wire Insulation	11/21/94	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License
 CP = Construction Permit

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Original signed by

B. D. Liaw

fw Brian K. Grimes, Director
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 List of Recently Issued NRC Information Notices

DOCUMENT NAME 94-85.IN

*See previous concurrence

OFFICE	OIP	OIP
NAME	KDBurke*	WUpshaw*
DATE	11/18/94	11/17/94

OFFICE	Tech Ed	EELB:DE	EELB:DE	C/EELB:DE	D/DE:NRR
NAME	JMain*	VLBeaston*	EWeiss*	CBerlinger*	BWSheron*
DATE	09/29/94	11/07/94	11/07/94	11/10/94	11/10/94

OFFICE	OECB:DOPS	OECB:DOPS	OECB:DOPS	C/OECB:DOPS	D/DOPS:NRR
NAME	JBirmingham*	RLDennig*	RJKiessel*	AEChaffee*	BKGrimes
DATE	11/15/94	11/29/94	11/29/94	11/29/94	12/16/94

Technical comment on this information notice was requested from C&D and from P&B by letter dated October 18, 1994. No comment has been received from either vendor as of November 15, 1994.

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DOCUMENT NAME S:\DOPS_SEC\PB_RELAY.JLB

*See previous concurrence

OFFICE	OIP	OIP
NAME	KDBurke	WUpshaw
DATE	11/ /94	11/ /94

OFFICE	Tech Ed	EELB:DE	EELB:DE	C/EELB:DE	D/DE:NRR
NAME	JMain*	VLBeaston*	EWeiss*	CBerlinger*	BWSheron*
DATE	09/29/94	11/07/94	11/07/94	11/10/94	11/10/94

OFFICE	OECEB:DOPS	OECEB:DOPS	OECEB:DOPS	C/OECEB:DOPS	D/DOPS:NRR
NAME	JBirmingham*	RLDennig*	RJKiessel*	AChaffee*	BKGrimes <i>gll</i>
DATE	11/15/94	11/29/94	11/29/94	11/29/94	11/ /94

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DATE	11/18/94	11/17/94

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DATE	11/15/94	11/29/94	11/29/94	11/29/94	11/ /94

Official Document Name G:\PB RELAY.JLB

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*See previous concurrence

OFFICE	Tech Ed	EELB:DE	EELB:DE	C/EELB:DE	D/DE/NRR
NAME	JMain*	VLBeaston ^{OEB}	EWeiss	CHBerlinger	BWSheron
DATE	09/29/94	11/07/94	11/7/94	11/10/94	11/10/94
OFFICE	OECB:DOPS	OECB:DOPS	OECB:DOPS	C/OECB:DOPS	D/DOPS:NRR
NAME	JBirmingham	RJKiessell	RLDennig	AEChaffee	BKGrimes
DATE	11/15/94	11/ /94	11/ /94	11/ /94	11/ /94

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Official Document Name G:\PB RELAY.JLB

Technical comment on this information notice was requested from C&D and from P&B by letter dated October 18, 1994. No comment was received from either vendor by the requested due date of October 31, 1994.

No response from vendor through 11-15-94 JLB

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NAME	JMain* <i>per Email</i>	JLBirmingham	AEChaffee	BKGrimes
DATE	09/29/94	11/ /94	11/ /94	11/ /94

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