

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

December 30, 1988

NRC INFORMATION NOTICE NO. 88-46, SUPPLEMENT 2: LICENSEE REPORT OF DEFECTIVE  
REFURBISHED CIRCUIT BREAKERS

Addressees:

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

Purpose:

This information notice supplement is being provided to present additional information regarding the supply of surplus or refurbished electrical equipment such as circuit breakers (CBs) to nuclear power plants as discussed in NRC Information Notice (IN) No. 88-46 including Supplement 1. It is expected that recipients will review this information for applicability to their facilities. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

Information Notice No. 88-46 discussed a report by Pacific Gas and Electric (PG&E) that defective refurbished CBs were supplied to PG&E's Diablo Canyon Nuclear Power Plant by a California electrical supplier. Supplement No. 1 to IN 88-46 provided a list of shipments of circuit breakers to nuclear power plants or nuclear utilities by five California companies that may have supplied defective refurbished electrical equipment.

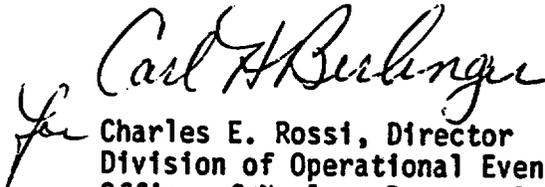
The NRC has conducted followup inspections and investigations at selected CB distributors and at companies suspected of selling used or refurbished circuit breakers. Additionally, nuclear utility sales information related to potentially refurbished CBs has been voluntarily provided to the NRC by distributors of electrical equipment. This information is summarized in Attachment 1. Several utilities identified in the Attachment have already been contacted by the NRC concerning specific licensee procurements and disposition of the equipment involved.

The NRC staff does not have any specific information on the condition of the equipment provided by these companies; however, the activities observed at some of the companies visited by the NRC were not considered sufficient to assure breaker functionality and quality.

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No specific action or written response is required by this information notice. If you have any questions about this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate regional office.



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Office of Nuclear Reactor Regulation

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Attachments:

1. Shipments of Circuit Breakers to Nuclear Power Plants or Nuclear Utilities
2. List of Recently Issued NRC Information Notices

ATTACHMENT 1

Shipments Of Circuit Breakers/Electrical Equipment To Nuclear Power Plants/Utilities

<u>Utility/Plant</u>	<u>Item Description</u> <sup>(1)</sup>	<u>Date of Transaction</u>	<u>Distributor</u>	<u>Supplying Company</u> <sup>(2)</sup>	<u>Comments</u>
Alabama Power (Farley)	GE AK 2A25 2	February 6, 1987	GE Supply	Rosen 5-711	Alabama Power Co. P.O. 62816
Arkansas Power and Light	SD KA 36200 1	April 6, 1988	Treadway Electric	CAL BKR 26530	
	ITE QJ2B200 1	March 30, 1988	Treadway Electric	CAL BKR 26357	Non nuclear application
Arizona Power (Palo Verde)	GE TEC 360S0 ST 12RA 1	January 31, 1986	GE Supply,	GEN BKR 22824	
(Palo Verde)	GE THED 136100WL 1	January 31, 1986	GE Supply	GEN BKR 23316	
(Palo Verde)	GE THED 136050WL 2	February 12, 1986	GE Supply	GEN BKR 22953	
(Palo Verde)	GE THED 136045WL 1	February 12, 1986	GE Supply	GEN BKR 25476	
	With Shunt Trip 1	February 12, 1986	GE Supply	GEN BKR 25476	

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(Palo Verde)	GE THFK 236070WL 2	March 24, 1988	GE Supply	CAL BKR	
Commonwealth Edison Company, Chicago (Quad Cities)	ITE EF 3B070	June 3, 1987	Graybar, Melrose Pk, Illinois	ATS I 10684	
	W EH 2020 4	January 13, 1986	WESCO Davenport, Iowa	HLC I 5348	
	W FA 3035 2	March 12, 1986	WESCO Davenport, Iowa	HLC I 09548	
	W EH 2050 3	January 18, 1988	WESCO Davenport, Iowa	HLC I 4673	
	W EH 2070 1	March 10, 1988	WESCO, Davenport, Iowa	GEN BKR	
	W EH 2070 4	March 10, 1988	WESCO, Davenport, Iowa	HLC 6752	
	W EH 2050 3	March 10, 1988	WESCO, Davenport, Iowa	HLC	
	W Model Unknown 5	October 22, 1986	WESCO, Davenport, Iowa	MCCB 3995	
(Dresden)	W FA 2100 2	December 4, 1987	WESCO Elmhurst, Illinois	HLC 14174	

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(Dresden)	W FA 2050 4	September 16, 1986	WESCO, Elmhurst, Illinois	HLC 08355	
	CH 10177H13 3	February 8, 1988	GE Supply, Shorewood, Illinois	AAKER 000668	
	CH 10177H21 Heaters 6	February 8, 1988	GE Supply, Sherwood, Illinois	AAKER 000668	
	CH 10177H32 Heaters 10	February 8, 1988	GE Supply Joliet, Illinois	AAKER 00666	
	CH 10177H1036 Heaters 7				
	CH 10177H1049 Heaters 6				
Commonwealth Edison (La Salle)	FED Pacific 2P125 6	January 15, 1987	GE Supply	Midwest	
Connecticut Yankee Atomic Power Plant (CYAPP)	W Starters A200MICAC 2	August 20, 1987	Economy Electric Manchester	HLC 12718	
	W HFB3050	August 12, 1987	Economy Electric Manchester	HLC 12585	

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Duke Power Company (Oconee)	GE TE122070 2	June 24, 1987	GE Supply	AAKER	
	ITE EH 313015 1	March 20, 1987	GE Supply	GEN BKR 2747	
Duke Power Company	W JA 2225	February 17, 1988	WESCO Charlotte, NC	MCCB 9084	
Florida Power Corp (Crystal River)	ITE JL3B070 1	March 28, 1985	Fife Florida Electric Tampa, Florida	MCCB 1450	
Florida Power and Light (St. Lucie)	W Starters 626B187G17 626B187G13 2	March 28, 1988	GE Supply Ft. Lauderdale	ROMAC 2-377	
Houston Light and Power (South Texas Project)	ITE JL3B150 2	April 8, 1988	GE Supply Oakbrook	GEN BKR 33186	
	ITE E43B015 150	November 21, 1986	GE Supply Houston, Texas	GEN BKR 26194	
Louisiana Power and Light (Waterford)	GE THED 136150WL 34	May 15, 1985	GE Supply Baton Rouge	CAL BKR 1641 1644	

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Louisiana Power and Light	GE THED136150 4	June 11, 1985	GE Supply Baton Rouge	MCCB 1803	
Sacramento Municipal Utility District (Rancho Seco)	GE THED 124015WL 2	February 12, 1987	GE Supply Sacramento	CAL BKR	
Carolina Power and Light	GE TFI36090 1	January 3, 1985		Voyten	CP&L P.O. #HRB 11503
Commonwealth Edison (Braidwood)	MFR Unknown 50DHP250 1	January 27, 1986	Liberty Motor Chicago, Illinois	Voyten	Reportedly used for training
Toledo Edison (Davis-Besse)	GE AK-3A-25 2	April 19, 1988		NSSS	Toledo Edison P.O. 016858ST
Niagara Mohawk Power Corp. (Nine Mile Point)	ITE Various types/sizes 475	Different Dates		NSSS	P.O.'s 59085, 59047, 59886 NSSS obtained breakers from several companies involved in refurbishment activities.
Duquesne Light Co.	W JL3-B125 4 JL3-8070 4	April 10, 1987	Stone & Webster	NSSS	Stone & Webster P.O. 2BV-66040

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Duquesne Light Company	JL3-B150 2 JL3-B200 2 JL3-B090 1 JL3-B100				
Philadelphia Electric (Peach Bottom)	W HFA, HFB, and FA 250	April 28, 1988		Spectrum Technologies	Philadelphia Electric P.O.# BW200893-ND and #200894-ND
Southern California Edison	Siemen Allis Motor INP 143T 1	June 24, 1988	ABCO Int. Sherman Oaks, California	Rosen	S.C.E. P.O. #8B117171
Southern California Edison	Siemen Allis Motor 10 HP 215T 1	January 28, 1988	ABCO Int. Shermon Oaks, California	Rosen	S.C.E. P.O. #8B117171
Southern California Edison	Jefferson 75KUA XFMR 2	July 31, 1987	Knickerhn Co. Los Angeles, California	Rosen	
Southern California Edison	Siemen & Allis Gauge Glasses PN 00-737-637-118 2	January 6, 1987	ABCO Int. Shermon Oak, California	Rosen	S.C.E. P.O. #8B107172
Illinois Power Co.	Unknown			MCCB	Listed as a customer on MCCB Customer list
Southern California Edison	Unknown			MCCB	Listed as a customer on MCCB customer list

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Niagara Mohawk Power Co.	W HLM3800T 2	November 6, 1987	MCCB	MCCB	Niagara Mohawk P.O. #349422LL
Pacific Gas and Electric	ITE 1193 60 amp 1	August 11, 1986	Graybar Oakland, California	Panelbd	
Yankee Electric	W F3100N 2	April 9, 1988	Panelbd	Panelbd	
South Carolina Electric and Gas	ITE EF2-B030 2	January 8, 1986	Capitol Electric Columbia, South Carolina	Rosen	
Pacific Gas and Electric	W MA3500 1	January 8, 1986	WESCO Sacramento, California	Rosen	
Sacramento Municipal Utility District	Unknown			Rosen	Listed as a customer on accounts receivable list
Toledo Edison	Unknown			Rosen	Listed as a customer on accounts receivable list
Yankee Electric	Unknown			Rosen	Listed as a customer on accounts receivable list
Southern California Edison	W EH2015 1	March 9, 1988		Luckow	
Southern California Edison	W EH2015 1	March 17, 1988		Luckow	

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Pacific Gas and Electric	Superior 246U-3 Powerstat 1	January 18, 1988	CED San Luis Obispo, California	Rosen	
Southern California Edison	ITE Contact Block 1	March 7, 1988		Rosen	P.O. #7031013
South Carolina Electric and Gas	ITE EF2-B030 2	October 6, 1988	Capitol Electric Columbia, South Carolina	Rosen	
Virginia Electric Power Company (Surry)	GE TF361050WL 1	July 12, 1987	GE Supply Richmond, Virginia	Rosen	
Duke Power (McGuire)	W LA3200 WL 10	September 9, 1987	WESCO Charlotte, North Carolina	MCCB	
	W HLA3200T 4	September 9, 1987	WESCO Charlotte, North Carolina	MCCB	
	W 2602058U9 Shunt Trip 5	September 9, 1987	WESCO Charlotte, North Carolina	MCCB	
	W HLB3200T 4	September 9, 1987	WESCO Charlotte, North Carolina	MCCB	
Duke Power (McGuire)	W 2602156G19 Shunt Trip 5	September 16, 1987	WESCO Charlotte, North Carolina	MCCB	

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Carolina Power and Light (Brunswick)	GE TED 113020 1	July 16, 1987	Graybar Wilmington, North Carolina	MCCB	
Duke Power (Catawba)	W EHB2100 1 1A,1B Aux Contact 1	November 13, 1987	WESCO Charlotte, North Carolina	MCCB	
Duke Power (Catawba)	W EHB2100 1  W 1A,1B Aux Contact (1)	November 12, 1987	WESCO Charlotte, North Carolina	MCCB	
Niagara Mohawk Power Company	W HL3800T 2	November 6, 1987		MCCB	
Sacramento Municipal Utility District (Rancho Seco)	GE TED 1360 OWL 1	February 3, 1988	GE Supply Sacramento, California	MCCB	
Florida Power	SD 999330 1	May 17, 1988	Muyer Electric Tampa, Florida	MCCB	

Notes

- (1) **Item Description** - includes identification of the manufacturer, model number of the CB, description of other equipment/accessories, if any, and the number of items in the transaction.
- (2) **Supplying Company** - identifies company which supplied the equipment and invoice number if known. The follow-up acronyms are used:

AAKER	- Aaker Electric Company
ATS	- ATS Circuit Breakers, Inc.
CAL BKR	- California Breakers, Inc.
HLC	- HLC Electric Supply Company
GEN BKR	- General Circuit Breakers and Electrical Supply, Inc.
LUCKOW	- Luckow Circuit Breakers
MCCB	- Molded Case Circuit Breakers
Midwest	- Midwest Company
ROSEN	- Rosen Electric Equipment
ROMAC	- Romac Supply Company
NSSS	- NSSS, Inc.
Panelbd	- Panelboard Specialties
Voyten	- Voyten Electric Company

LIST OF RECENTLY ISSUED  
 NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
88-101	Shipment of Contaminated Equipment between Nuclear Power Stations	12/28/88	All holders of OLs or CPs for nuclear power reactors.
88-100	Memorandum of Understanding between NRC and OSHA Relating to NRC-licensed Facilities (53 FR 43950, October 31, 1988)	12/23/88	All major nuclear materials licensees and utilities holding CPs and OLs.
88-99	Detection and Monitoring of Sudden and/or Rapidly Increasing Primary-to-Secondary Leakage	12/20/88	All holders of OLs or CPs for PWRs.
88-98	Electrical Relay Degradation Caused by Oxidation of Contact Surfaces	12/19/88	All holders of OLs or CPs for nuclear power reactors.
88-97	Potentially Substandard Valve Replacement Parts	12/16/88	All holders of OLs or CPs for nuclear power reactors.
88-96	Electrical Shock Fatalities at Nuclear Power Plants	12/14/88	All holders of OLs or CPs for nuclear power reactors.
88-95	Inadequate Procurement Requirements Imposed by Licensees on Vendors	12/8/88	All holders of OLs or CPs for nuclear power reactors.
88-94	Potentially Undersized Valve Actuators	12/2/88	All holders of OLs or CPs for nuclear power reactors.
88-93	Teletherapy Events	12/2/88	All NRC medical licensees.
88-92	Potential for Spent Fuel Pool Draindown	11/22/88	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License  
 CP = Construction Permit

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\*SEE PREVIOUS CONCURRENCE PAGE

OFC	: VIB: DRIS: NRR	: VIB: DRIS: NRR	: C: VIB: DRIS: NRR: D: DRIS: NRR	: BC: GCB: DOE A	: D: DOE A: NRR
NAME	: JJacobson: nrp	: UPotapovs	: EWBrach	: BKGrimes	: CBerlinger : CERossi :
DATE	: 12/13/88*	: 12/13/88*	: 12/14/88*	: 12/21/88*	: 12/22/88* : 12/27/88

*CRB*

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1. Shipments of Circuit Breakers to Nuclear Power Plants or Nuclear Utilities
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\*SEE PREVIOUS CONCURRENCE PAGE

*CHB*

OFC	:VIB:DRIS:NRR	:VIB:DRIS:NRR	:C:VIB:DRIS:NRR:D:DRIS:NRR	:BC:GCB:DOEA	:D:DOEA:NRR :
NAME	:JJacobson:nrp	:UPotapovs	:EWBrach	:BKGrimes	:CBerlinger : CERossi :
DATE	:12/13/88*	:12/13/88*	:12/14/88*	:12/21/88*	:12/17/88 :

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\*SEE PREVIOUS CONCURRENCE PAGE

OFC	: VIB: DRIS: NRR	: VIB: DRIS: NRR	: C: VIB: DRIS: NRR: D: DRIS: NRR	: BC: GCB: DOE A	: D: DOE A: NRR :
NAME	: JJacobson: nrp	: UPotapovs	: EWB <i>EWB</i>	: BK <i>BK</i>	: CBerlinger : CERossi :
DATE	: 12/13/88*	: 12/13/88*	: 12/14/88	: 12/14/88	: 12/ /88 :

*mkm*

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BC:GCB : *DOEA*  
BC:CBERLINGER  
12/ /88

OFC	:VIB:DRIS:NRR	:VIB:DRIS:NRR	:C:VIB:DRIS:NRR:D:DRIS:NRR	:D:DOEA:NRR	:
NAME	:JJacobson:nrr	:UPotapovs	:EWBrach	:BKGrimes	:CERossi
DATE	:12/13/88	:11/13/88	:12/ /88	:12/ /88	:12/ /88