



MORRISON-KNUDSEN COMPANY, INC.

MANUFACTURING GROUP
POWER SYSTEMS DIVISION

POST OFFICE BOX 1928
ROCKY MOUNT, NORTH CAROLINA 27802-1928
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FAX: (919) 448-3530



REPORT NO. 10CFR21-0054
May 17, 1990

**10CFR21 REPORTING OF DEFECTS
AND NON-COMPLIANCE**

COMPONENT: Immers. in Heater Contactor
Cutler-Hammer A10 Series, NEMA Size 1, 2, and 3
EMD #8455508

SYSTEM: Diesel-Generator Units with EMD Diesel Engines
and Immersion Heater System Used as Standby Power
Supplies for Nuclear Power Generating Stations.

CONCLUSION: Defect is Reportable to the NRC in Accordance
with the Requirements of 10CFR21.

PREPARED BY: Donald Galeazzi 5/18/90
Donald Galeazzi, Engineering Manager Date

APPROVED BY: M. Vann Mitchell 5/18/90
M. Vann Mitchell, Division Quality Manager Date

SUMMARY

Duquesne Light notified MK/PSD of failures with the contactor used on the diesel generator immersion heater (EMD #8455508). To date four (4) contactors have experienced failures. MK/PSD returned two (2) of the failed contactors to Cutler-Hammer (manufacturer for EMD) to determine the cause of the failure. The failure report from Cutler-Hammer indicated that dimensional problems existed in the contactor mold which caused an internal bind in the overload reset mechanism and intermittent circuitry on the overload contact. Cutler-Hammer corrected the problem in the 20th week of 1989.

The defect pertains to contactors manufactured between January 1, 1987 and May 15, 1989.

MK/PSD has reviewed its files and determined that there has been shipments of the contactors to nuclear plants which could contain defective contactors; therefore, all nuclear customers will be notified of the problem.

MK/PSD will inspect its inventory and remove any and all contactors with date codes 010187 through 051989.

COMPONENT(S)

The following contactors manufactured between January 1, 1987 and May 15, 1989 may contain defects:

EMD P/N 8455508 (Cutler-Hammer P/N A10DNYZ)
Cutler-Hammer A10 Series (NEMA Size 1, 2, and 3)

Contactors literature is contained in Attachment I.

CUSTOMERS AFFECTED

Attachment II contains a list of known nuclear customers which MK/PSD shipped the suspect contacts to. The list is valid from mid-1987 to current date. MK/PSD is unable to provide an accurate list before mid-1987; therefore, all nuclear customers will be notified.

DEFECT

Attachment III contains the failure report from Cutler-Hammer which indicates that two defects occurred:

- 1) An internal bind in the overload reset mechanism caused by dimensional problems on some internal parts. This could cause the overload to fail to reset properly.
- 2) Incorrect molding dimensions caused intermittent circuitry on the overload contact. This could cause the contactor to drop out during normal operation.

During conversations with Cutler-Hammer (Mr. Charles Wade at 502/782-1555 and Mr. Lynn Wallace at 414/449-7671) the following was ascertained:

- 1) The problem occurred sometime in 1987.
- 2) Dimensional changes were made in the 20th week of 1989 to correct both problems.
- 3) The problems exist not only in the EMD contactors, but also in all of the A10 series NEMA size 1, 2, and 3 contactors.

INSPECTION

Customer s should inspect the contactors for date codes 010187 through 051589. Contactors installed in diesel generator systems and those contained in customer stock should be checked. The date code is located on the right side of the contactor (see drawing in Attachment I).

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ATTACHMENT I

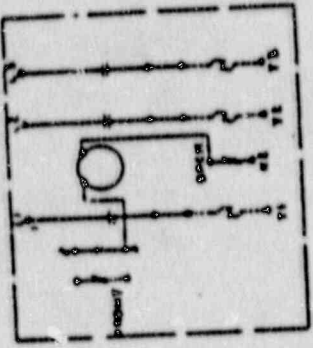
855508

CUTLER HAMMER CO.

9

REPRODUCED

COLLECTED

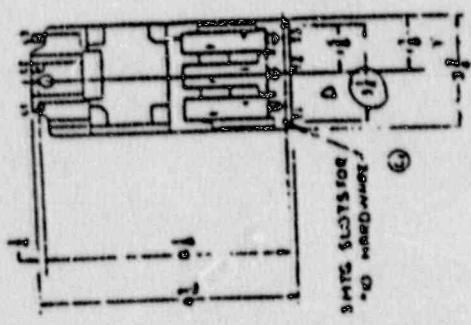
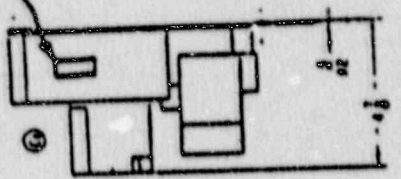


SCHEMATIC FRONT VIEW

15 HP AT 230V
25 HP AT 460V

CONTACTS: 3 N.O. - 90 AMPERES
 1 N.O. INTERLOCK - 10 AMPERES
 1 N.C. INTERLOCK - 10 AMPERES
 OPERATION: 110 V. A.C. 50/60 CYCLE - WORKING
 ② 110 V. A.C. 50/60 CYCLE - M.R. PICKUP
 HI-POT: COIL TO GROUND 1500V. RMS 60 CY 1 MINUTE.
 ALL CONTACTS TO POUNDING 1500V. RMS 60 CY 1 MINUTE.
 COIL TO CONTACTS 1500V. RMS 60 CY 1 MINUTE.
 E. H. D. N.C. 8655508 TO RPPERR ON CONTRACTOR

DATE CODE



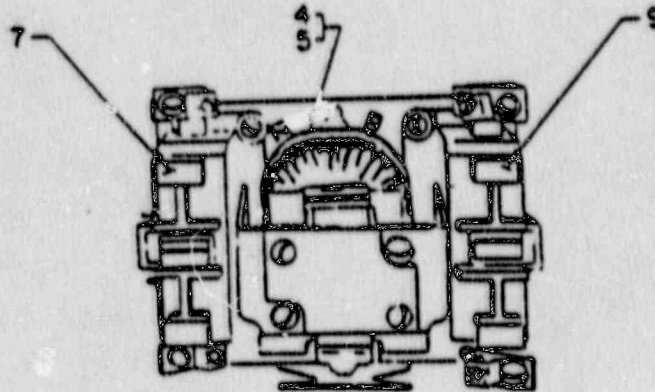
CUTLER HAMMER
 OPT. NO. 8100NYZ WITH COIL NO. 925261
 ② 5.0 OHMS @ 20°C. 110V.

NO.	DESCRIPTION	QTY.	UNIT	PRICE	TOTAL
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855508

CONTACTOR

Immersion Heater
S16E4G and M16E8 Units



Ref. Nos. 1 and 2
PLATE A5377-P-1

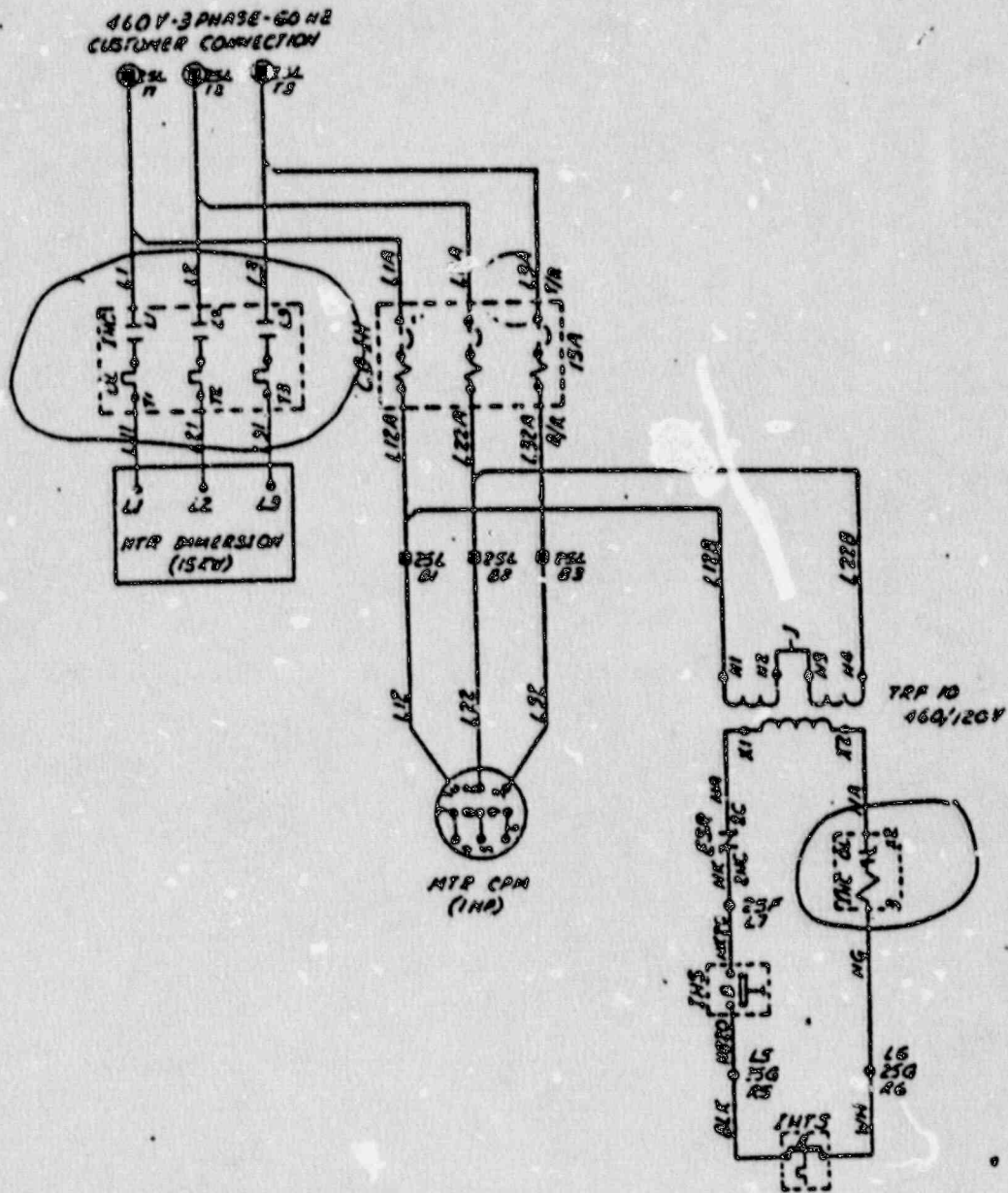
Ref. No.	Part Number	Qty. Req.			Description	Operation	Replaced By
		A	B	C			
1	8337043	1	.	.	CONTACTOR .. Immersion heater	110 V. - 50 Hz.	8455508
2	8305991	.	1	.	CONTACTOR .. Immersion heater	110 V. - 50/60 Hz.	8455508
3	8455508	.	.	1	CONTACTOR .. Immersion heater	110 V. - 50/60 Hz.	
4	8376417	1	.	.	COIL .. Magnet - 6.14 Ohms		
5	8338792	.	1	.	COIL .. Magnet - 15.3 Ohms		
6		.	.	1	COIL .. Magnet		
7	8360587	1	1	.	CASE ASSEMBLY .. Main contact - 1 N.O. contacts		
8	8360588	1	1	.	SPRING .. Compression - .404 I.D. x 1.175 free length		
9	8360589	1	1	.	CASE ASSEMBLY .. Main contact - 2 N.O. contacts		
10	8360588	1	1	.	SPRING .. Compression - .404 I.D. x 1.175 free length		
11	8360590	1	1	.	CONTACT ASSEMBLY .. Main case - Includes following parts: 3-Upper stationary contacts 3-Lower stationary contacts 3-Movable contacts 3-Movable contact springs 3-Contact mounting screws		
12	8360591	1	1	.	INTERLOCK ASSEMBLY .. Auxiliary - N.O. contacts		
13	8360592	1	1	.	CONTACT ASSEMBLY .. Aux: interlock - Includes following parts: 2-Stationary contacts 1-Movable contact 1-Movable contact spring 2-Contact mounting screw		
14		.	.	6	CONTACTS .. Stationary		
15		.	.	3	CONTACTS .. Movable		
16		.	.	3	SPRING .. Movable contacts		
17		.	.	3	RETAINER .. Spring		
18		.	.	1	RELAY .. Overload		
19		.	.	2	CLIP .. Terminal - Coil		

P6145, P7687

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ATTACHMENT II

IMMERSION
HEATER
CONTACTOR



TYPICAL APPLICATION
IMMERSION HEATER CONTACTOR

<u>SALES ORDER NUMBER</u>	<u>PART NO.</u>	<u>CUSTOMER</u>	<u>SALES ORDER DATE</u>
51110	8455508	Duquesne Light Co.	12/21/88
500822	A10DNOAB	Florida Power & Light Co.	11/17/89
501051	8455508	Duquesne Light Co.	1/02/90
3398	8455508	Duquesne Light Co.	9/13/89
50110	8455508	Virginia Electric Power Co.	5/5/88
30014	8455508	Duquesne Light Co.	1/31/90
50353	8455508	Florida Power & Light Co.	7/14/88
50493	A10DNOCB	Tennessee Valley Authority	8/23/88
500159	A10DNOAB	Tennessee Valley Authority	7/28/89
50600	A10DNOCB	Tennessee Valley Authority	9/13/88
501199	A10CNOA	Omaha Public Power District	1/23/90

LIST OF CUSTOMERS WITH SHIPMENTS
OF IMMERSION HEATER CONTACTORS

ATTACHMENT II

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ATTACHMENT III

SENT BY: Xerox Telecopier 7020 ; 4-17-90 11:02:33 AM

Warranty Claim Analysis

SPCO
SICD
SPO

W.C. 5
W.C. 6
W.C. 7

Return Tag #

Warranty Claim #

W.C. - 5885 U90

Miller-Hammer Products

Model No. of Description A10DNO

Qty. Req'd
2

Sales Group

Minor

Major

Mfg. Gr.
333

Customer Name/Address
MORRISON-KRUDSEN CO INC
PO BOX 1928
ROCKY MOUNT, NC 27802-1928

Installed at Address

Handwritten: 4500m

Contact Name/Phone
FRANK AMEND 919-977-2720

Date of Alleged Failure

Gov Source Inspected

Yes

No

Date of Installation

Date of Installation

Field Service Req'd

Yes

No

Liability Claim

Yes

No

Description of alleged problem and cause. Be specific and include all available data. Omissions will delay processing.

PLEASE SEE ATTACHED REPORT

PLEASE TEST, INSPECT AND SEND A COPY OF REPORT TO FRANK AMEND/MORRISON-KRUDSEN CO, INC

P.O. BOX 1928
ROCKY MOUNT, NC 27802-1928

Action Requested

Repair & Return

Replace

Credit

DM Issued?

Date 4/4/90

District Office
287 ROCKY MOUNT, NC
9310 DALLAS CSO

Sign *[Signature]*
This portion for plant Quality Assurance Dept.

Date Action Taken

Corrective Action & Failure Code if any

ES-1-A10D

Handwritten: IS dated 1888. The overload fails to reset properly because of an internal kind of the reset mechanism. Dimensions on some internal parts have been changed to prevent this condition since the manufacturing date of this starter is B/W 1-A10DN GAB dated 3/88. If 3 #1043 heaters installed. There is information that circuit on the overload contacts a change in making dimensions have been made to correct this condition since the date of manufacture of this starter.

Disposition Action:
 Replaced

Repaired & Returned

Returned As Rec'd

To Stock

Scrapped

Date

Amount Credit Issued

Alleged Failure Responsibility:
 Customer

Carrier

Sales

Mfg

Vendor

Design

Eng'g

Special Notes:

Handwritten: D.O. please advise if replacement of these starters are needed

This Copy will be returned to the D.O. When investigation is complete

Sign *[Signature]*
Dept *[Signature]* Date 4-17-90

Warranty Claim No. W.C. - 5885 U90