

PDR

MKW POWER SYSTEMS, Inc.

October 10, 1990

Ref. 10CFR21-0054

QA-VO-90-009

Mr. Thomas Murley
Director - Office of Nuclear Reactor Regulation
11555 Rockville Pike
Rockville, Maryland 20852

Subject: Potential 10CFR21 Finding
Immersion Heater Contactor
EMD Part Number: 8455508
Cutler-Hammer Contactor, NEMA Size 1, 2, and 3

Dear Sir:

The attached revised engineering report is being issued to correct the date code and to clarify the location and configuration of the code.

If additional information is required please contact Vann Mitchell at (919) 977-2720.

Sincerely,

MKW POWER SYSTEMS, INC.,

M. Vann Mitchell

M. Vann Mitchell
Quality Manager

MVM:msb

Enclosure: Engineering Report 10CFR21-0054
Revision 1, October 9, 1990

115

9011020133 901010
PDR PT21 EMVMK/MS
90 PNU

12/19
11

MORRISON-KNUDSEN COMPANY, INC.
MANUFACTURING GROUP
POWER SYSTEMS DIVISION

POST OFFICE BOX 1928
ROCKY MOUNT NORTH CAROLINA 27802-1928
PHONE (919) 977-2720 / TWX (510) 929-0725
FAX (919) 446-3630



REPORT NO. 10CFR21-0054

May 17, 1990

Revision 1, October 9, 1990

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

COMPONENT: Immersion 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

RECORD OF REVISIONS

<u>REVISION</u>	<u>DATE</u>	<u>PREPARED BY</u>	<u>APPROVED BY</u>
1	10/9/90	<i>Quinn Gallegos 10/9/90</i>	<i>MV Mitchell 10/9/90</i>

PAGES AFFECTED:

Pages 1 and 2. Added Date Code Location figure in Attachment I.

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 0187 through 1989.

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

Customers should inspect the contactors for date codes 0187 through 1989. 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 drawings in Attachment I). Use the 4 digit, stamped code, not the 6 digit code typed on the adhesive label found on some contactors. The first two digits refer to the week of the year, the last two digits refer to the year.

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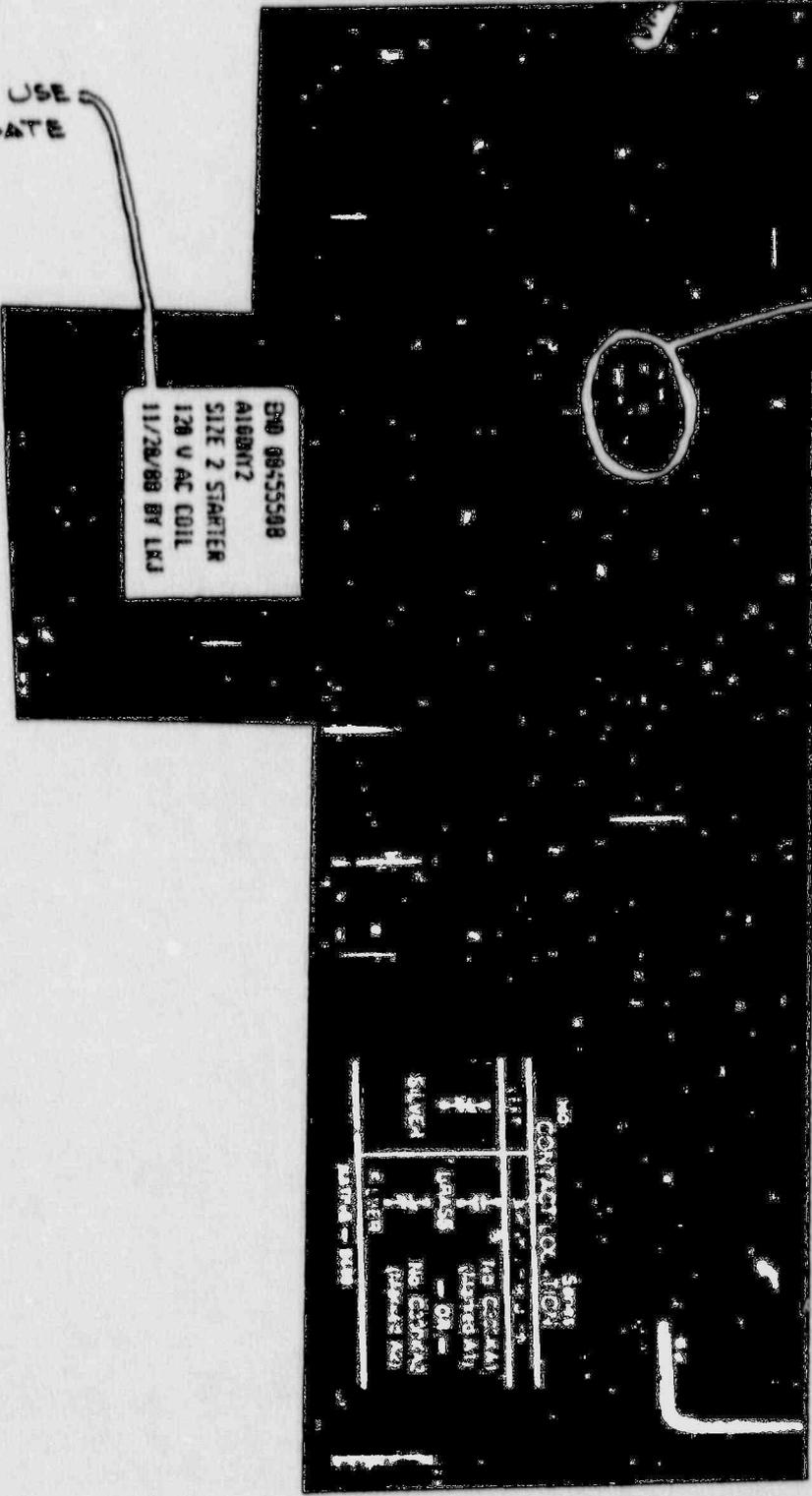
ATTACHMENT I

DO NOT USE
THIS DATE

END 08555508
A10BNZ
SIZE 2 STARTER
120 V AC COIL
11/28/88 BY LKJ

DATE CODE

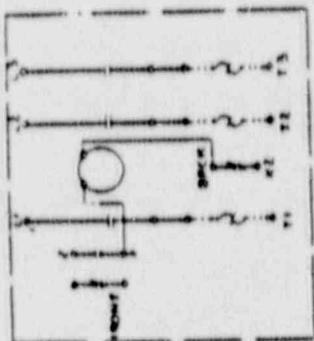
2888
28TH WEEK
OF
1988



NO. CONTRACTOR (10)	DATE	NO. COILS (10)
NO. COILS (10)	NO. COILS (10)	NO. COILS (10)
NO. COILS (10)	NO. COILS (10)	NO. COILS (10)
NO. COILS (10)	NO. COILS (10)	NO. COILS (10)

RIGHT SIDE VIEW

DATE CODE LOCATION

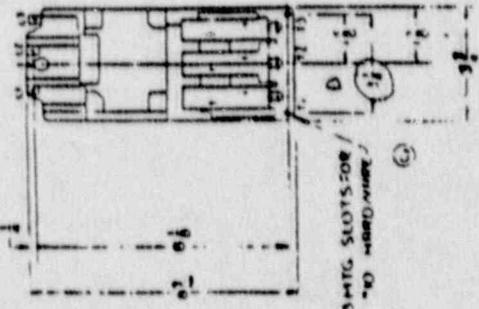
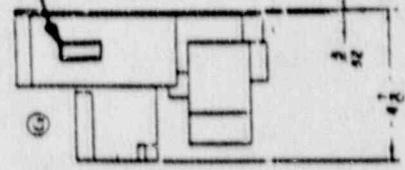


SCHEMATIC
 FRONT VIEW

15 HP FT 230V
 25 HP FT 460V

CONTRACTS: 3 N.O. - 50 AMPERES
 1 N.O. INTERLOCK - 10 AMPERES
 1 N.C. INTERLOCK - 10 AMPERES
 OPERATION: 110 V A.C. 50/60 CYCLE - WORKING
 ① 110 V A.C. 50/60 CYCLE - NO. 1 PICK-UP
 HI-POT: COIL TO GROUND 1500V RMS 60 CY 1 MINUTE.
 RUX CONTACTS TO MOUNTING 1500V RMS 60 CY 1 MINUTE.
 COIL TO CONTACTS 1500V RMS 60 CY 1 MINUTE.
 E.M.D. NO. 8455508 TO APPEAR ON CONTACTOR

DATE CODE



CUTLER HAMMER

① E.M.D. NO. 8455508 WITH COIL NO. 9-2524-1

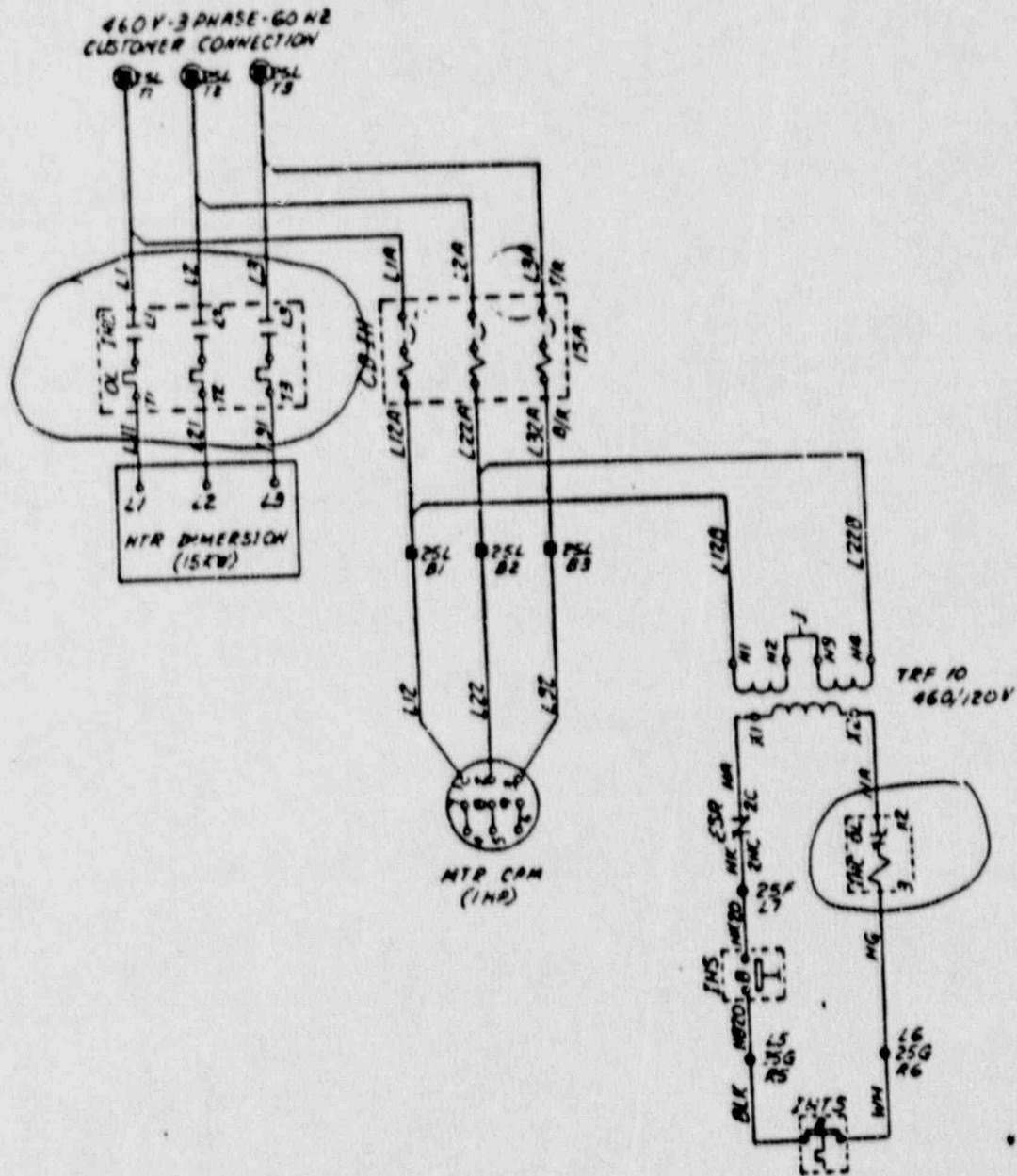
② 26.0 OHMS @ 20°C ± 15%

REV.	DATE	BY	CHKD.	DESCRIPTION
1				INITIAL DESIGN
2				REVISED TO SHOW DATE CODE
3				REVISED TO SHOW MOUNTING HOLE
4				REVISED TO SHOW CONTACTOR
5				REVISED TO SHOW DATE CODE
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100				REVISED TO SHOW CONTACTOR

8455508

240 246 250 252 254 256

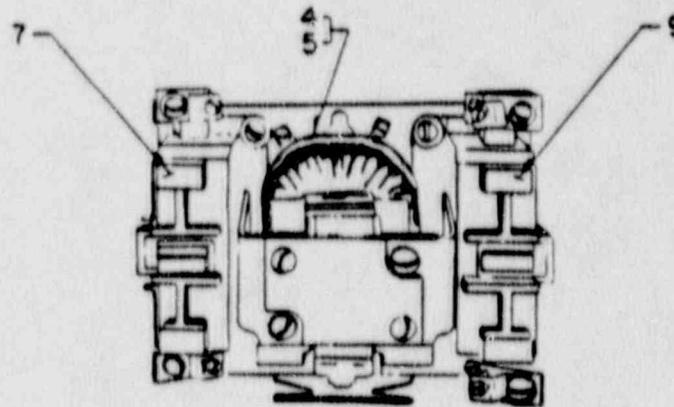
IMMERSION
HEATER
CONTACTOR



TYPICAL APPLICATION
IMMERSION HEATER CONTACTOR

CONTACTOR

Immersion Heater
S16E4G and MD16E8 Units



Ref. Nos. 1 and 2

PLATE A5377-P-1

Ref. No.	Part Numbr.	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 .. C. load		
• 19		.	.	2	CLIP .. Terminal - Coil		

P6145,P7687

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ATTACHMENT II

<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
3396	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
502073	8455508	Duquesne Light Co.	5/25/90
30031	8455508	Duquesne Light Co.	5/31/90
30037	A10DNOAB	Florida Power and Light Co.	8/3/90
30038	A10DNOCB	Tennessee Valley Authority	8/7/90
502476	8455508	Florida Power and Light Co.	8/31/90

LIST OF CUSTOMERS WITH SHIPMENTS
OF IMMERSION HEATER CONTACTORS

ATTACHMENT II

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ATTACHMENT III

T-N Warranty Claim Analysis

Return Tape: 33629 W
 Warranty Claim #: W.C. - 5885 U90

Miller-Hammer Products

City: Ret # 2
 Sales Group: 333

Model: M101
 Mfg. #

Chased: MORRISON-KNUDSEN CO INC
 PO BOX 1928
 ROCKY MOUNT, NC 27802-1928

Contact Name/Phone: FRANK AMEND 919-977-2720

Date of Alleged Failure: 4/17/90
 Date of Installation: 4/17/90

Field Service Req'd: Yes No

Gov't Source Inspected: Yes No

Liability Claim: Yes No

Handwritten:
 4/17/90
 4:50pm

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-KNUDSEN CO., INC
 P.O. BOX 1928
 ROCKY MOUNT, NC 27802-1928

Action Requested: Repair & Return Replace Credit DM Issued?

District Office: 292 RAYBORN F. S. 9210 DALLAS 559

Sign: *[Signature]* Date: 4/4/90

This portion for plant Quality Assurance Dept.

Corrective Action & Failure Code If Any:

Handwritten: FS-1-A10DNQAB dated 1888. The overload fails to reset properly because of an internal kind in the reset mechanism. Determining a new internal parts have been changed to prevent this condition since the manufacturing date of this starter. BWA-1-A10DNQAB dated 3988. 4/3, 4/4, 4/3 heaters installed. There is an intermittent circuit on the overload contacts. A change in manufacturing 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

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