AP 1001

Figure 1001-8

Three Mile Island Nuclear Station

Special Operating Procedure

SIDE 1

SOP No. Z-84
(From SOP Log Index)

Unit No. 2

Date ______

NOTE: Instructions and guidelines in AP 1001 must be followed when completing this form.

1. Title INSTALLATION of Temporary Isolation Transformer for Selected Pressurizer Heaters

2. Purpose (Include purpose of SOP)
To isolate ground faults on pressurizer heater Cables
Heaters to be selected by the Duty Electrical Engineer

3. Attach procedure to this form written according to the following format.
   - A. Limitations and Precautions
     1. Nuclear Safety
     2. Environmental Safety
     3. Personnel Safety
     4. Equipment Protection
   - B. Prerequisites
   - C. Procedure

   } per attached

4. Generated by RW Bensel Date 4-8-79

5. Duration of SOP - Shall be no longer than 90 days from the effective date of the SOP or (a) or (b) below — whichever occurs first.

   (a) SOP will be cancelled by incorporation into existing or new permanent procedure submitted by N/A ☐

   (b) SOP is not valid after ______ ☐
   (fill in circumstances which will result in SOP being cancelled)

6. (a) Is the procedure Nuclear Safety Related?
   If "yes", complete Nuclear Safety Evaluation. (Side 2 of this Form) . . . . Yes ☐ No ☐

   (b) Does the procedure affect Environmental Protection?
   If "yes", complete Environmental Evaluation. (Side 2 of this Form) . . . . Yes ☐ No ☐ N/A

   (c) Does the procedure affect radiation exposure to personnel? . . . . Yes ☐ No ☐

   NOTE: If all answers are "no", the change may be approved by the Shift Supervisor. If any questions are answered "yes", the change must be approved by the Unit Superintendent.

7. Review and Approval

NRC [signature] 4/9/79
B&W [signature] 4/9/79
NARA [signature] 4/9/79

Approved – Shift Supervisor	[signature]	4-9-79 Date
Reviewed – List members of PORC contacted	D.J. McKettrick	4/9/79 Date
THConnor	W. C. [signature]	4/9/79 Date
	J. Brummer (V-Chmn)	4/9/79 Date
Approved - Unit Superintendent	J.R. Floyd [signature]	4/9/79 Date
	[signature]	[illegible] Date

8. SOP is Cancelled

______ Shift Supervisor/Shift Foreman ______ Date

132 141

TMI-63 Rev. 8/77

A. Limitations & Precautions

1. Nuclear Safety - Insure that RCS degas operation is not in progress, before removing a heater group from service.

2. Environmental Safety - NA

3. Personnel Safety - Comply with Met Ed Safety Rules and AP 1002

4. Equipment Protection - Comply with AP 1002

B. Prerequisites

1. Obtain a list of heaters for which Isolation Transformers and 80 amps breakers are to be installed from the Duty Electrical Engineer.

C. Procedure

1. Obtain Shift Supervisor / Foreman approval prior to commencing work.

2. If the Shift Supervisor allows, de-energize the entire heater group for which the isolation transformers are to be installed.

3. Replace the (3) 70 amp heater breakers with 80 amps breakers as shown on the example per the attached ECN 3475-03

4. Install the Isolation transformer for the individual heater(s) selected using the attached ECN as a typical wiring diagram and close 132 142

5. Re-energize the heater group ~~and closing~~ the heater breakers for which ~~entire group~~ Isolation transformers are

... has been installed, or have acceptable Megger readings (ie no Caution tag, >7 Meg Ω typical).
... Take current readings to verify heater operation.
7. If the Heater Group, for the selected heater can not be taken out of service; INSURE the breaker for the selected heater is off. Then disconnect the heater leads and install the isolation transformer using the attached ECM as a typical wiring diagram.
8. Re-energize heater and take current readings to verify heater operation.

TMI UNIT NO. 2
BURNS AND ROE, INC.
ENGINEERING CHANGE MEMO
(REV 12/75)

COST EST.
B&R ______ DATE ______
GPU ______ DATE ______

SERIAL NO. ~~S-9209~~ ECM 3475-003
DISCIPLINE ELECTRICAL.
SUBJECT PRESSURIZER HEATERS
ATTACHMENTS 5

REFERENCES:

DWG NOS. 3032 E1
3032 E2
3022 SH 15

AREA:

+ FIELD SOLUTION

~~DISTRIBUTION~~
~~UE&C~~
~~JOB ENGINEER(2)~~
~~GEN SUPT.~~
~~SUPT. UNIT 2~~
~~QC SPVSR.~~
~~GPU~~
~~ASST. PROJ. MGR.~~
~~CONST. ENG. (2)~~
~~QC SPVSR.~~
~~B&R~~
~~SEE PP-74~~

CHANGE:

1. INSTALL ISOLATION TRANSFORMERS BETWEEN DISTRIBUTION PANELS AND PRESSURIZER HEATER AS SHOWN IN ENCLOSURES.
2. REPLACE 70AT EXISTING CIRCUIT BREAKERS BY 80AT CIRCUIT BREAKERS.
3. ADD NEW CABLES AS IDENTIFIED ON THE ENCLOSED SKETCHES.

+

DESIGNER APPROVAL ______ DATE ______

REASON OR CHANGE:

1. TO AVOID FREQUENT TRIPPING OF PRESSURIZER HEATER CIRCUIT BREAKERS ON SINGLE GROUND FAULT.
2. TO TAKE INTO ACCOUNT DERATING OF CIRCUIT BREAKER FOR HIGH AMBIENT CONDITIONS
3. TO CONNECT THE ISOLATION TRANSFORMERS.

[signature] ENGINEER | 4/7/79. DATE | [signature] PROJECT ENGINEER | [signature] Originator | 132 144 Final approval

NO DWGS TO BE REVISED AS THIS IS A TEMPORARY CHANGE.
FOLLOW-UP ACTION
REVISE SPEC. NONE
REVISE DWG. NONE.

ACKNOWLEDGEMENT:

______
UE&C - NAME

______
DATE

DISCIPLINE SUPERINTENDENT RESPONSIBLE FOR IMPLEMENTATION

NAME | DISCIPLINE

EXHIBIT A
TMI-008

TMI NUCLEAR STATION - UNIT #2
BURNS AND ROE NUCLEAR SAFETY REVIEW

ATTACHMENT TO:						
	PCN#		REV		DATE	
	FCR#		REV		DATE	
	ECM#	S-9200	REV	0	DATE	4/7/79
	EDR#		REV		DATE	

The TMI-2 plant design change, tests or experiments directed by the engineering document identified above, has been reviewed and found to involve the nuclear safety of the plant as follows:

1. Does it make a change to conditions as now described in FSAR? NO X YES ____

[If "NO", delete #2, 3 and 4 and complete #5
If "YES", proceed to #2.]

2. Does it involve a system, component or procedure that is Nuclear Safety Related? NO ____ YES X

[If "NO", delete #3 and 4 and complete #5.
If "YES", proceed to #3.]

3. Does it result in a change to:

(A) Design Criteria?	NO	X	YES	
(B) Engineering Specifications?	NO		YES	X
(C) Codes or Standards?	NO	X	YES	
(D) FSAR?	NO	X	YES	

[If all four are "NO", delete #4 and complete #5.
If any are "YES", provide brief of each in #4.]

4. Brief statement of extent of change and its effect on existing probability, consequences and margin of safety (or creation of new safety or accident conditions) compared to FSAR. If necessary continue remarks on additional sheets and attach them to this form.

a. To preclude tripping of circuit breakers on a single ground fault, Isolation transformers are being inserted in circuit between the distribution panels and pressurizer heaters.

b. Because of high ambient temperature near the distribution panels, new breakers with 80 A trip rating will be installed to take care of the derating of the circuit breakers.

5. It is found that it does not adversely affect nuclear safety, therefore it is not an "Unreviewed Safety Question" (per 10 CFR 50.59).

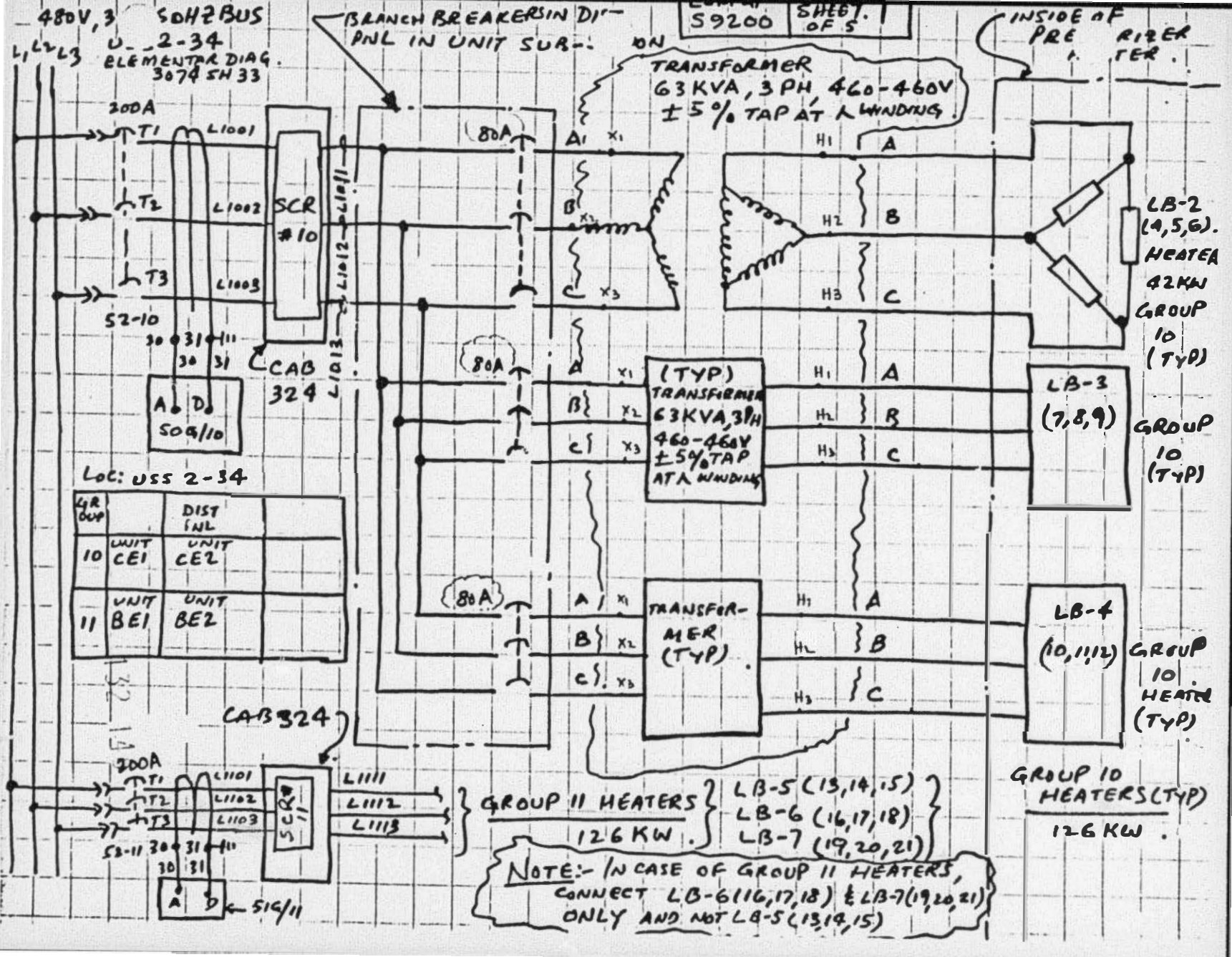
c. The above change(s) is temporary to bring the reactor to a cold stable condition by restoring grounded heater circuits to serviceable condition.

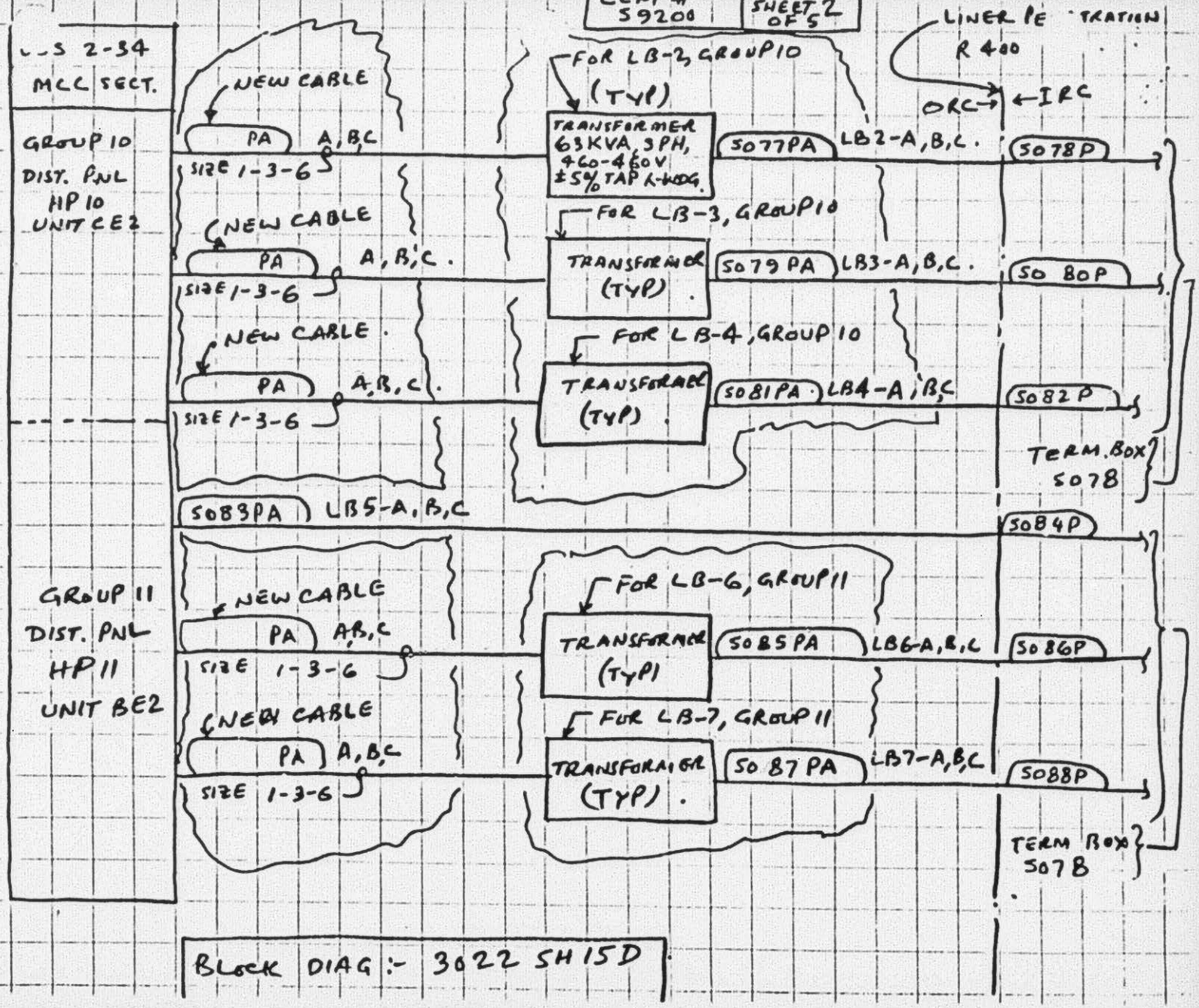
G. Maungar	[signature]	4/8/79
Reviewed (Cognizant Engineer)	Approved (Project Engineer)	Date

[If the statement of #5 is not true, do not sign this form. Return the entire package to Project Engineer who will convene design review conference with project personnel needed to complete further action.]

132 145

Distribution: Per PCN/FCR/ECM/EDR requirements and
R.A. Klingaman, Met-Ed, Reading, PA


480V, 3 50HZ BUS
U-2-34
ELEMENTAR DIAG. 3074 SH 33
L1 L2 L3
BRANCH BREAKERS IN DI- PNL IN UNIT SUB-
S9200
SHEET OF 5
INSIDE OF PRE RISER
TRANSFORMER 63 KVA, 3 PH, 460-460V ± 5% TAP AT Δ WINDING
200A
T1
T2
T3
L1001
L1002
L1003
SCR #10
L1011
L1012
L1013
52-10
30 31 11
30 31
CAB 324
A D
50A/10
80A
A1 X1
B X2
C X3
H1 A
H2 B
H3 C
LB-2 (4,5,6). HEATER 42KW GROUP 10 (TYP)
(TYP) TRANSFORMER 63KVA, 3PH 460-460V ± 5% TAP AT Δ WINDING
LB-3 (7,8,9) GROUP 10 (TYP)
Loc: US5 2-34
GROUP
DIST INL
10
UNIT CE1
UNIT CE2
11
UNIT BE1
UNIT BE2
TRANSFORMER (TYP)
LB-4 (10,11,12) GROUP 10 HEATER (TYP)
CAB 324
200A
T1
T2
T3
L1101
L1102
L1103
SCR #11
L1111
L1112
L1113
52-11
30 31 11
30 31
A D
51C/11
GROUP 11 HEATERS 126 KW.
LB-5 (13,14,15)
LB-6 (16,17,18)
LB-7 (19,20,21)
GROUP 10 HEATERS (TYP) 126 KW.
NOTE:- IN CASE OF GROUP 11 HEATERS, CONNECT LB-6 (16,17,18) & LB-7 (19,20,21) ONLY AND NOT LB-5 (13,14,15)

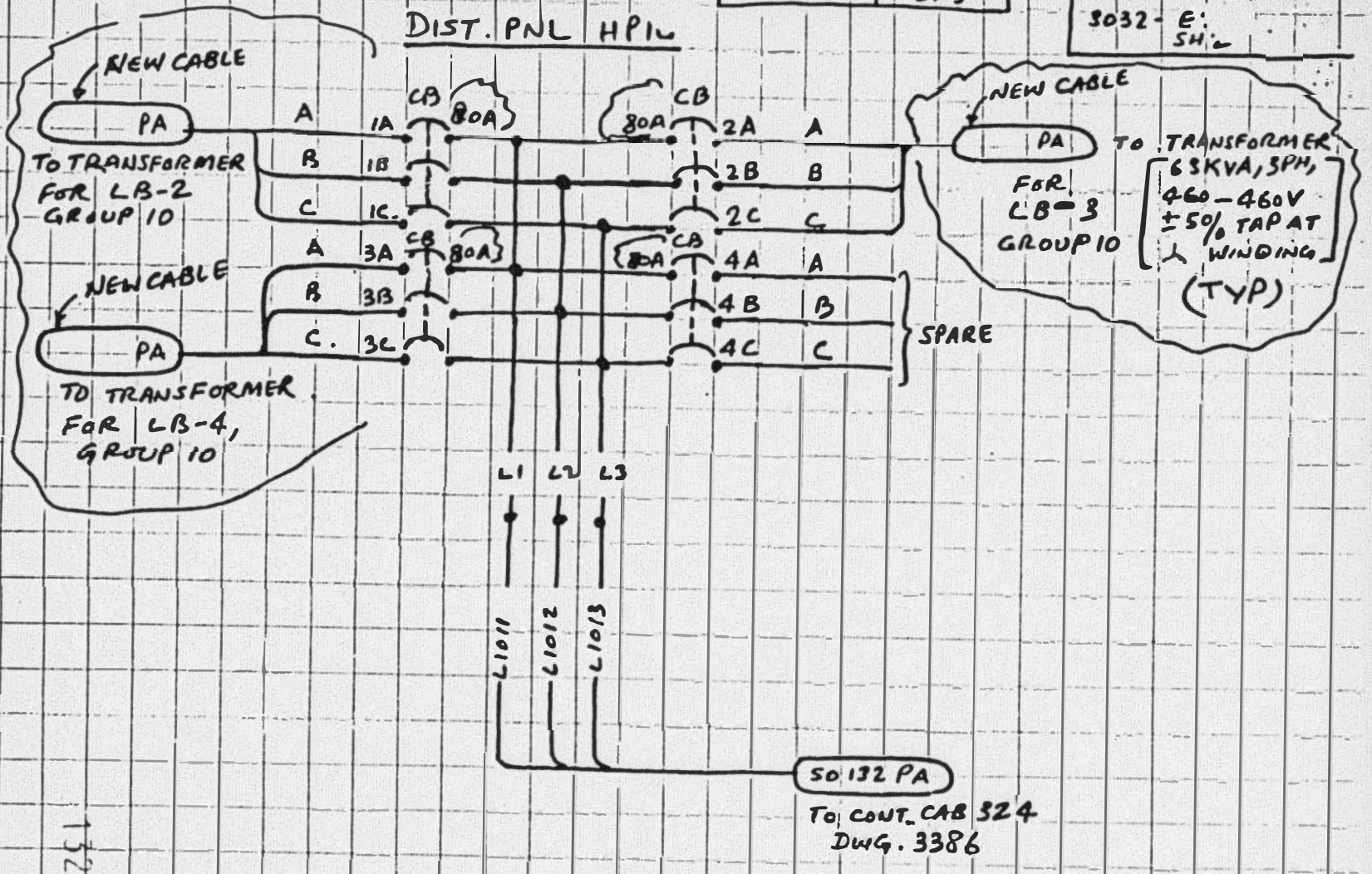


BLOCK DIAG :- 3022 SH 15D

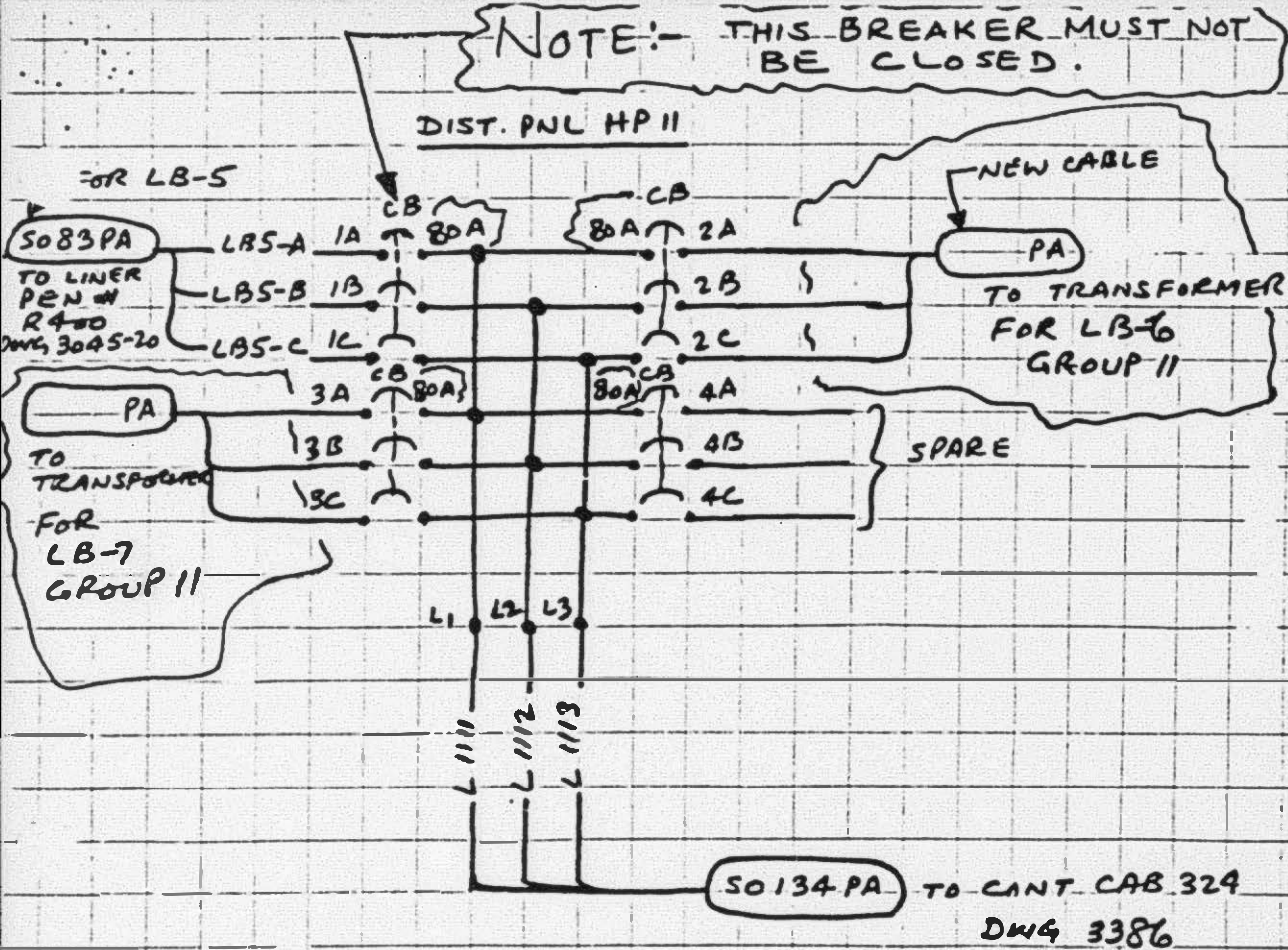
59200 | SHEET 3 OF 5

DWG:- 3032 - E: SH.

DIST. PNL HP1N



152 148

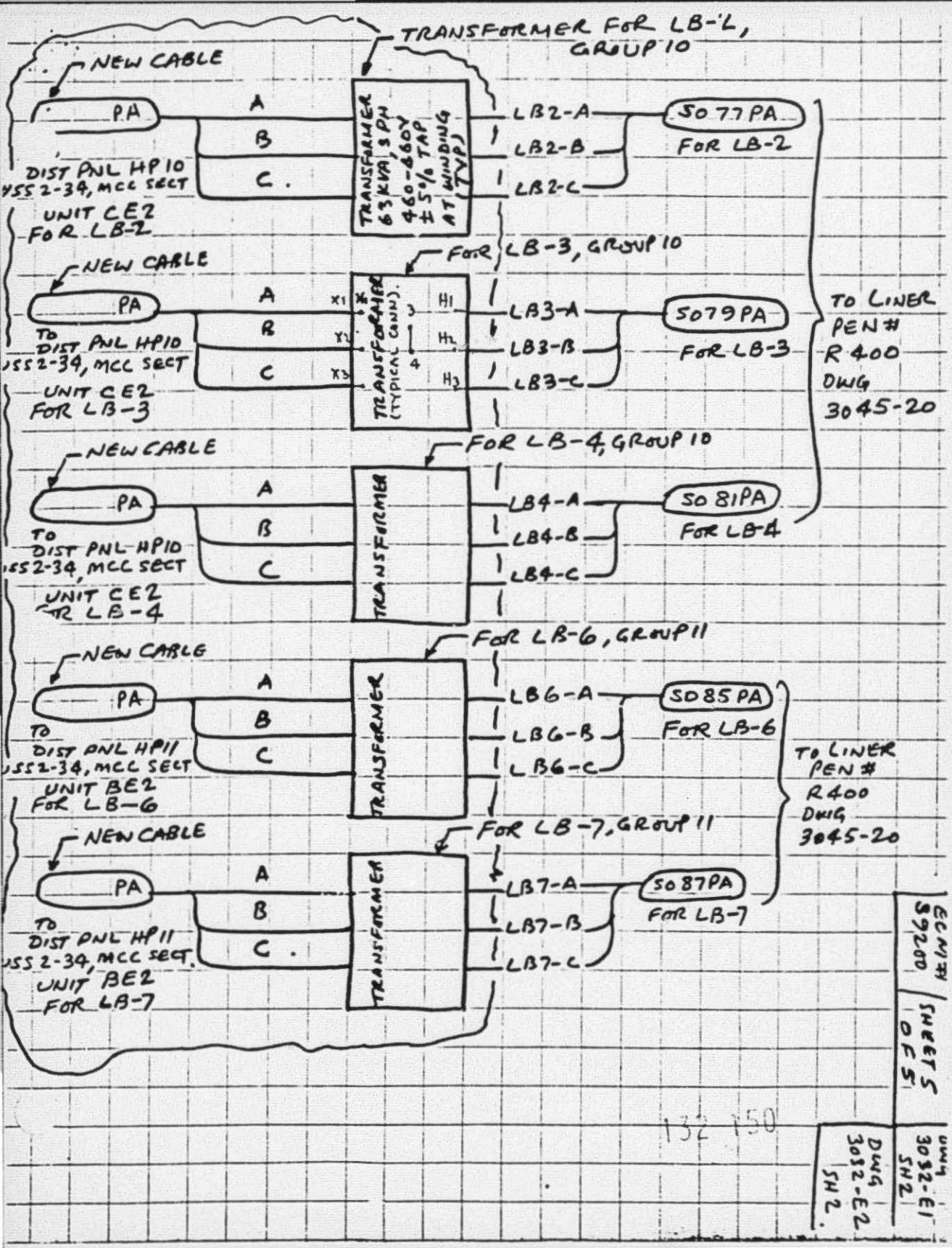


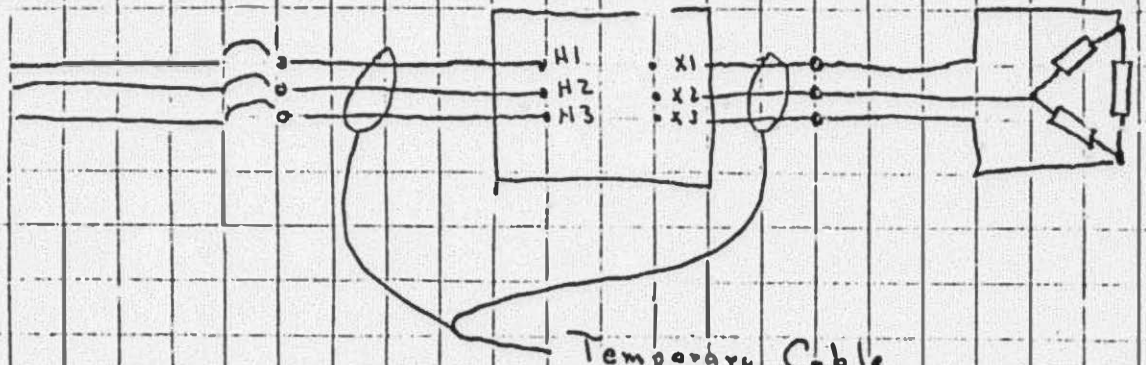
ECM# 59200

SHEET 4 OF 5

DWG 3052-C1 SH2

132 149


TRANSFORMER FOR LB-1, GROUP 10
NEW CABLE
PA
A
B
C
DIST PNL HP10
MCC SECT
UNIT CE2
FOR LB-2
TRANSFORMER 63 KVA, 3 PH 460-460V ±5% TAP AT WINDING (TYP.)
LB2-A
LB2-B
LB2-C
SO 77 PA
FOR LB-2
FOR LB-3, GROUP 10
NEW CABLE
PA
TO DIST PNL HP10
MCC SECT
UNIT CE2
FOR LB-3
TRANSFORMER (TYPICAL CONN.)
LB3-A
LB3-B
LB3-C
SO79 PA
FOR LB-3
TO LINER PEN # R400 DWG 3045-20
FOR LB-4, GROUP 10
NEW CABLE
PA
TO DIST PNL HP10
MCC SECT
UNIT CE2
FOR LB-4
TRANSFORMER
LB4-A
LB4-B
LB4-C
SO 81PA
FOR LB-4
FOR LB-6, GROUP 11
NEW CABLE
PA
TO DIST PNL HP11
MCC SECT
UNIT BE2
FOR LB-6
TRANSFORMER
LB6-A
LB6-B
LB6-C
SO85 PA
FOR LB-6
TO LINER PEN # R400 DWG 3045-20
FOR LB-7, GROUP 11
NEW CABLE
PA
TO DIST PNL HP11
MCC SECT.
UNIT BE2
FOR LB-7
TRANSFORMER
LB7-A
LB7-B
LB7-C
SO87PA
FOR LB-7
ECN# 89200
SHEET 5 OF 5
DWG 3032-E1 SH2
DWG 3032-E2 SH2.
132 150



Temporary Cable
Connection - Use Same Size As Presently Installed

Internally Connect 3 to 4

Heater Group	Breaker #
5	1
11	2

132 59