

**SURGE COUNTER RESET**  
NOTE 1- WHEN A SURGE IS  
SENSED T7 COUNTS FOR  
ONE MIN. FORTY-FIVE SEC.  
IF DURING THIS PERIOD  
THE COUNTER REGISTERS  
SURGES THE COMP. IS SHUT  
DOWN OTHERWISE T7-RID  
RESET COUNTER TO ZERO

KEY DIAGRAM  
BASIC PRINCIPAL OF OPERATION  
COMPRESSOR CONTROL PANEL

AMPOWER CANADA  
(1982) LTD.  
ST. CATHARINES, ONTARIO, L2M 6S9

DO NOT SCALE THIS DRAWING

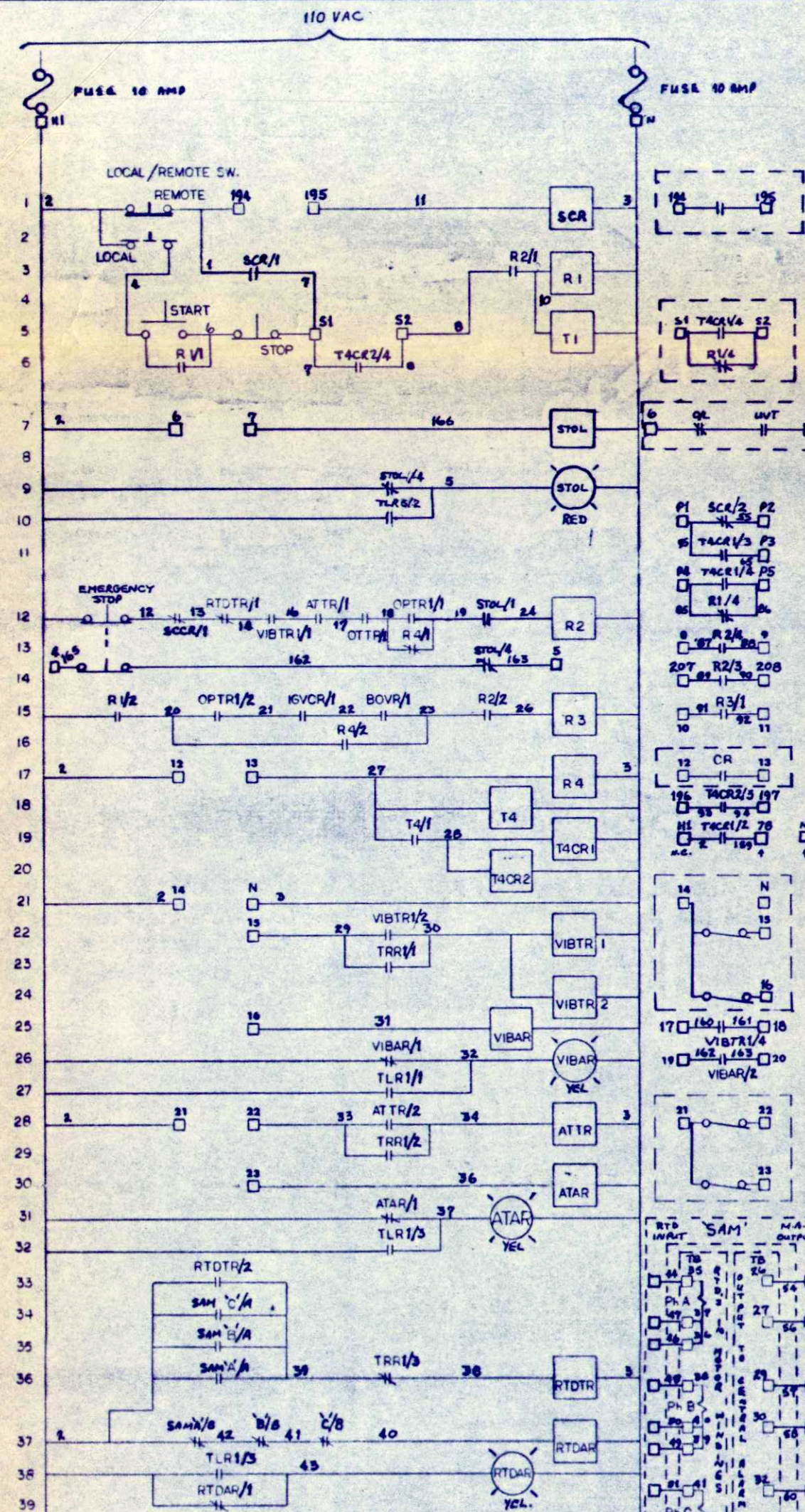
I	APR '87	EDITORIAL CHANGES	G	APR '86	LINE 120, TRR WAS NO NOW NC.
I	APR '87	LINE 109 REMOVE HOLD CONTACT NE1 ON ALARM HA	G	APR '86	LINE 110, ADDED TRR NC BTWN SILENCE NC AND HORN RELAY.
I	APR '87	LINE 137 & 138 ADD SURGE TRIP INDICATION	G	APR '85	LINE 105, SURGE SIGNAL SW BTWN 78 AND 79 WAS NC NOW NO.
I	APR '87	LINE 132 ADD HOLD CONTACT & RESET SCCE1/2 TRR1/2	G	APR '86	LINE 96, WAS 2/11 TO 72 NOW 2/12 TO 72
H	APR '81	LINE 134 ADD POWER SUPPLY FOR EAM (14VDC)	G	APR '86	TB 73 WAS 'CLOSE' SOLENOID NOW 'OPEN'.
H	APR '87	LINE 104 / 105 ADD CONTACT TCCR1/2 TO DOOR/CL	G	APR '86	LINE 94, TB. 70 WAS 'OPEN' SOLENOID NOW 'CLOSE' SOLENOID
H	APR '87	LINE 110 & 111 ALARM CONTACTS ADDED TO CENTRAL ALARM	G	APR '86	
G	APR '86	LINE 113 ATAR WAS NO NOW NC.			
G	APR '86	LINE 117, OTA WAS NO NOW NC.			

G	APR 86	LINES 93 TO 96: WIRING AND SOLENOID VALVES TITLED.
G	APR 86	LINE 55: TB'S 60-61 PRESURE SW WAS NO NOW NC.
G	APR 86	ALL LOCAL REMOTE AND MANUAL/AUTO SW'S (BEING 2 POS'N ONLY) ARE SHOWN IN REMOTE OR AUTO POS'N.
F	MAR 86	LINES 118 TO 136
No.	DATE	REVISIONS

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ARE EXHIBITED TO OTHERS WITH  
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WILL BE CONSIDERED CONFIDENTIAL  
AND NOT USED FOR  
MANUFACTURING WITHOUT  
FORMAL CONSENT FROM THE  
COMPANY.

JOB No.		DATE		CUSTOMER	
TITLE				AMPPOWER CANADA (1982) LTD. S.T. CATHARINES, ONTARIO, L2M 6S9	
KEY DIAGRAM BASIC PRINCIPAL OF OPERATION COMPRESSOR CONTROL PANEL					
SCALE	DATE	DRAWN BY	APPROVED BY	Dwg. No.	REV. I
	FEE 4,86	E C		E 39313 SHEET 2 OF 4	





FROM MAIN CONTROL PANEL  
SENSE START CONTACTS

FROM PORT COMP. CONTROL  
PANEL  
START SEQUENCING CONTACTS

FROM 4160V STARTER  
OVERLOAD & UNDERVOLTAGE  
TRIP SIGNAL

TO PORT COMP. CONTROL  
PANEL  
START SEQUENCING CONTACTS

TO CENTRAL ALARM SYSTEM  
SHT 4 LINE 110/113

TO MAIN CONTROL PANEL  
TRIP INDICATION

TO 4160V STARTER  
START/STOP CONTACTS

AUX CONTACTS FROM 4160V STARTER  
INDICATE STARTER CLOSED

REMOTE OUTPUT COMP. RUNNING

REMOTE OUTPUT VIBRATION WHEN  
COMP. RUNNING

VIBRATION SWITCH  
WIRED BY VENDOR

TRIP CONTACTS OPEN AT  
MM/SEC. DELAY SEC.

ALARM CONTACTS OPEN AT  
MM/SEC. DELAY SEC.

REMOTE OUTPUT VIBRATION TRIP

REMOTE OUTPUT VIBRATION ALARM

TO 33- DISCHARGE AIR TEMP.  
TRIP CONTACTS OPEN AT 120°C

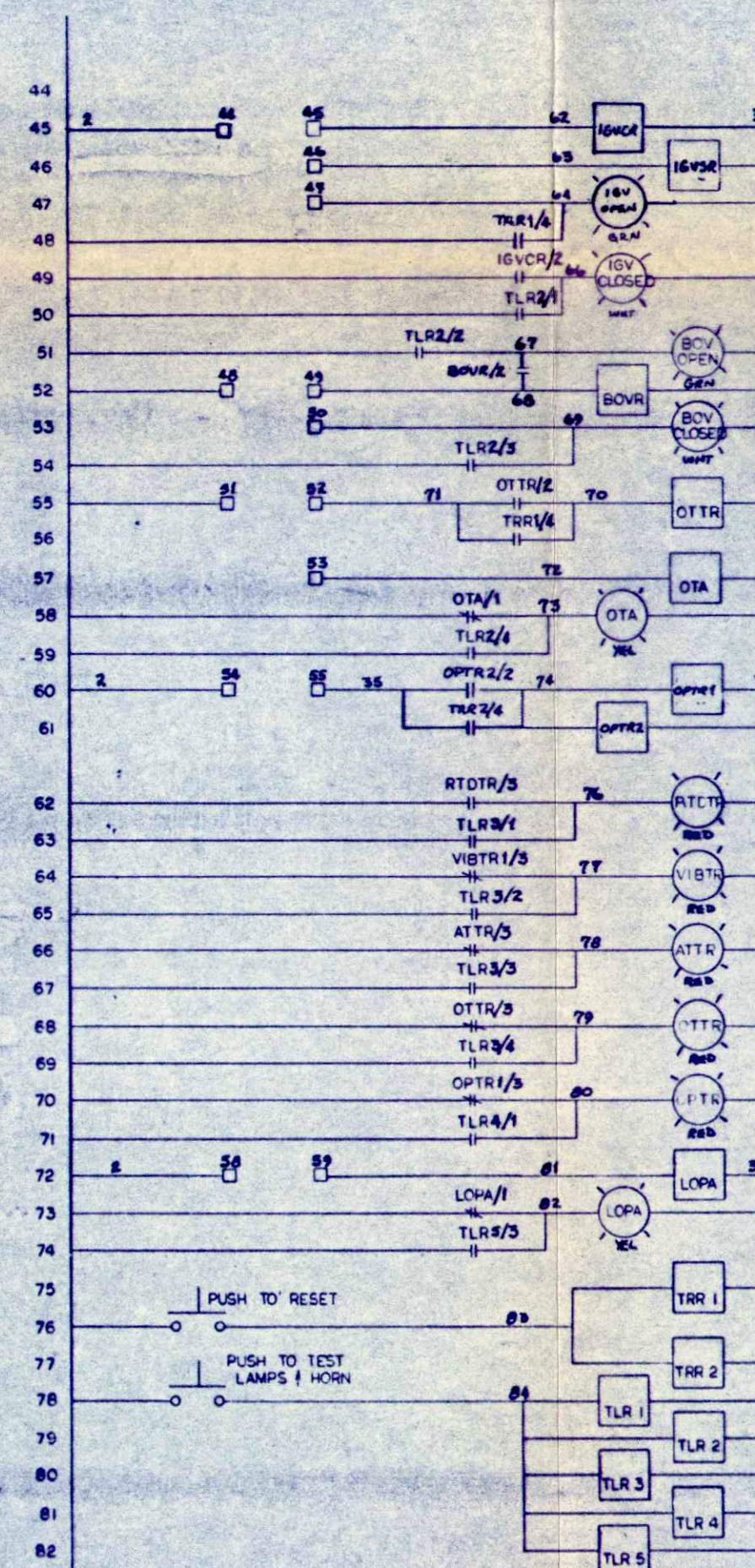
ALARM CONTACTS OPERATION  
TP-36 DISCHARGE AIR TEMP.

FOR CENTRAL ALARM SYSTEM  
SEPARATE ANALOGUE SENSOR  
SUPPLIED FOR DISCH. AIR  
TEMP. AUTONICA PT-100  
100 OHMS ± 0.1°C - RTD -

RTD RESISTANCE INPUT TO  
"SAM"

ANALOGUE OUTPUT TO CENTRAL  
ALARM SYSTEM  
OUTPUT IS 4 TO 20 MA. FOR  
0 TO 120°C

RES.	SAM	TEMP
120	4.0	0
160	8.0	50
200	12.0	100
224	16.6	130
241	19.8	160
291	25.0	200



NOTE:- THIS DRAWING RELATES TO THE ORIGINAL DRAW. NO. 239818 COMPASS REARVIEW U.K.  
PORT COMPRESSOR SHTS 162 OF 4  
STBD COMPRESSOR SHTS 364 OF 4

IGV LIMIT SWITCHES  
(WIRED BY VENDOR)

IGV CLOSED LSW 10  
MAKE WHEN IGV CLOSED

IGV OPEN LSW 11  
BREAK WHEN IGV 30° TO -10°

IGV OPEN LSW 12  
BREAK WHEN IGV -10°

BOV POSITION INDICATION  
SIGNAL FROM MAIN CONTROL  
PANEL

TS36 LUBE OIL TEMP. SW.  
TRIP CONTACTS OPEN AT 70°C

ALARM CONTACTS OPEN AT 65°C  
PS-38 LUBE OIL TEMP.  
FOR CENTRAL ALARM SYSTEM  
SEPARATE ANALOGUE SENSOR  
SUPPLIED - AUTONICA PT-100  
100 OHMS ± 0.1°C - RTD -

PS-38 LUBE OIL PRESS. SW.  
CONTACTS CLOSE 140 KPA RISING  
OPEN AT 80 KPA FALLING

TO MAIN CONTROL PANEL  
LUBE OIL PRESS. TRIP SIGNAL

LOW OIL ALARM PS 12  
(WIRED BY VENDORS)

CLOSES AT 140 KPA RISING  
OPENS AT 110 KPA FALLING

REMOTE OUTPUT LOW OIL PRESS.  
ALARM

PS-38 FOR CENTRAL ALARM  
SEPARATE ANALOGUE SENSOR  
SUPPLIED FOR OIL PRESS.  
AUTONICA PT-100. SENSOR  
677/20 24V - 45 MA. APPROX.  
OUTPUT 4-20 MA 0-250 KPA

1	APR 87	LINE 12 TEE 6-7 REMOVED STOL/1 ADDED	N	APR 87	LINE 48 ADD TLR1/4 LAMP TEST TO 10V OPEN	G	APR 86	LINE 12, EMERGENCY STOP TITLE ON SW.
2	APR 87	LINE 14 ADD CONTACTS TO EMERGENCY STOP/1/2	G	APR 86	LINE CO. BTWN 52 AND 53 PRESSURE SW WAS NC	G	APR 86	LINE 11, PRI BTWN S1 AND S2 WAS NO NOW NC.
3	APR 87	EDITORIAL NOTES REVISED	G	APR 86	NOW NC.	G	APR 86	LINE 9, DELETED CIRCUIT BTWN SSCR AND
4	APR 87	LINE 249 ADD RELAY STOL & STOL LAMP/1/2	G	APR 86	LINE 52, MAIN CONTROL PANEL CCT BTWN	G	APR 86	SR2, CONNECT SSCR TO S1 AND SR2 TO S2
5	APR 87	TERMINAL & WIRE NO'S TO PRODUCTION AS IS.	G	APR 86	279(275) AND 280(276) WAS NO NOW REQ'D NC.	G	APR 86	RESP. LINE 10.
6	APR 87	ADD AC LINE FUSES 110VAC @ 10 AMPS	G	APR 86	LINE 39 AND 39.	G	APR 86	ALL LOCAL/REMOTE AND MANUAL/AUTO SW'S
7	APR 86	LINE 32-RTDTR:64-VIBTR:66-ATTR:68-OTTR:	G	APR 86	ATAR TITLE ON LIGHT, LINE 37.	G	APR 86	(BEING ONLY 2 POS'N) ARE SHOWN IN REMOTE OR
8	APR 86	70-OPTR: TITLES ON LIGHTS.	G	APR 86		G	APR 86	AUTO POS'N.

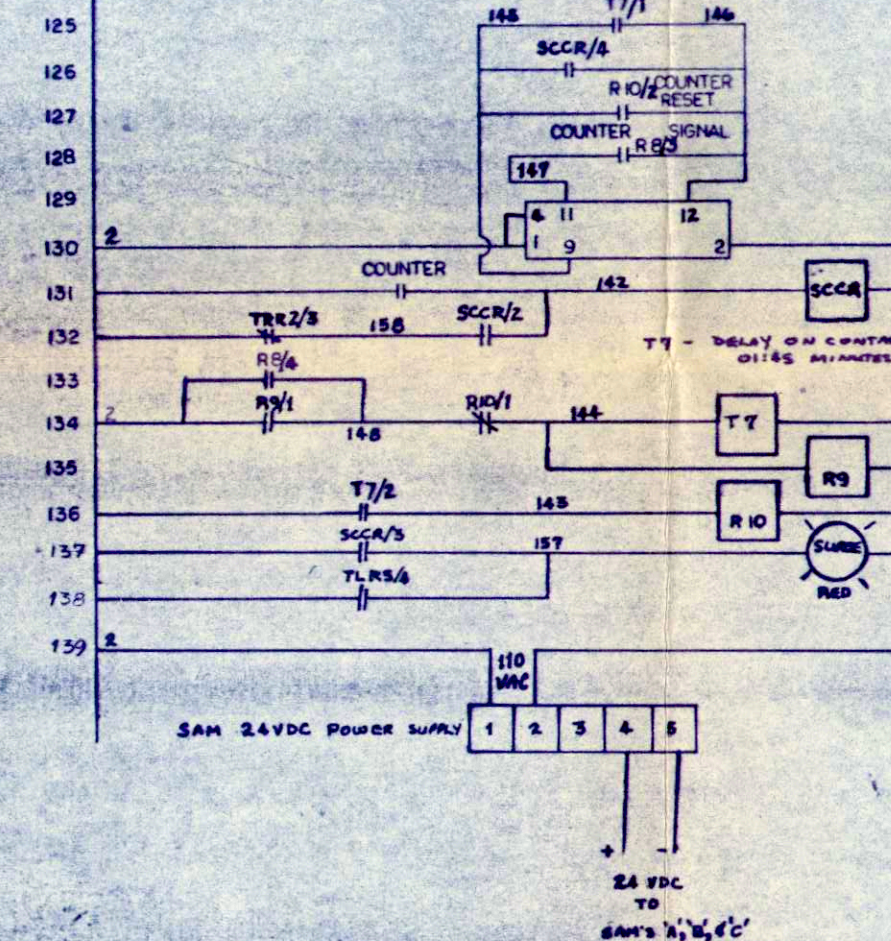
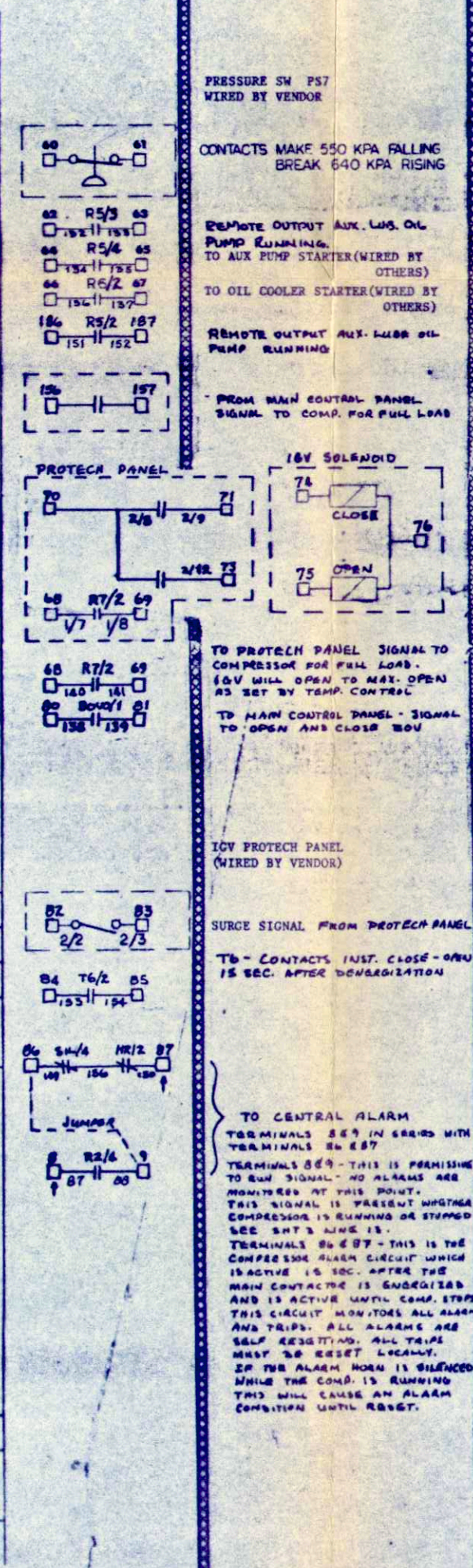
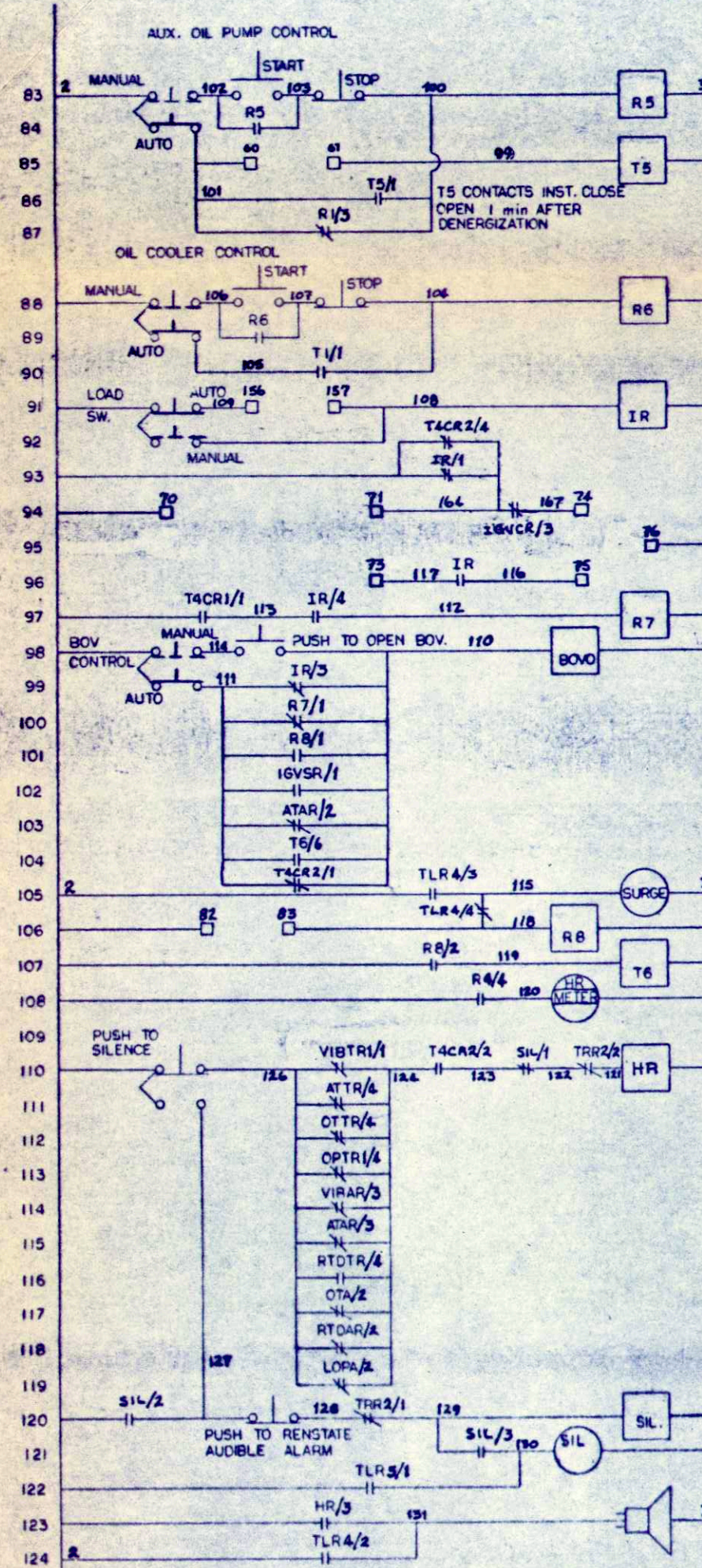
1	APR 87	PORT & STBD PANEL DRAWINGS REPRODUCED	N	APR 87	PORT & STBD CIRCUITS IDENTIFICATION	G	APR 86	BY BREAKS BTWN LINES 6-7 AND 11-12.
2	APR 87	PORT & STBD CIRCUITS IDENTIFICATION	G	APR 86	NOTE: REPORT AND STBD PANEL CCTS 4-CPN	G	APR 86	LINE 33 TO 39, 40 TO 43 DELETED.
3	APR 87	LINE 33 TO 39, 40 TO 43 DELETED.	F	MAR 86	REVISIONS	F	MAR 86	REVISIONS

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JOB No.	DATE	CUSTOMER
		AMPOWER CANADA (1982) LTD.
		ST. CATHARINES, ONTARIO L2M 6S9
TITLE	KEY DIAGRAM BASIC PRINCIPAL OF OPERATION COMPRESSOR CONTROL PANEL	
SCALE	DATE FEB. 4, 86	DRAWN BY E. C.
		APPROVED BY
		Dwg. No. E 39313
		SHEET 3 OF 4
		REV. 1

DO NOT SCALE THIS DRAWING





**SURGE COUNTER MODULE**  
5.5V PM 3 COUNT  
SURGE COUNTER TRIP RELAY

**T7-1**  
SURGE COUNTER RESET  
NOTE:- WHEN A SURGE IS  
SENSED T7 COUNTS FOR  
ONE MINUTE FORTY-FIVE SECS  
IF DURING THIS PERIOD THE  
COUNTER REGISTERS THREE  
SURGES THE COMP. IS SHUT  
DOWN OTHERWISE T7-R10  
WILL RESET COUNTER TO  
ZERO.

NOTE:- THIS DRAWING RELATES TO ORIGINAL DRWG. NO. E 89313 COMAME REVELL U.K.  
PORT COMPRESSOR SHTS 1 & 2 OF 4  
STD COMPRESSOR SHTS 3 & 4 OF 4

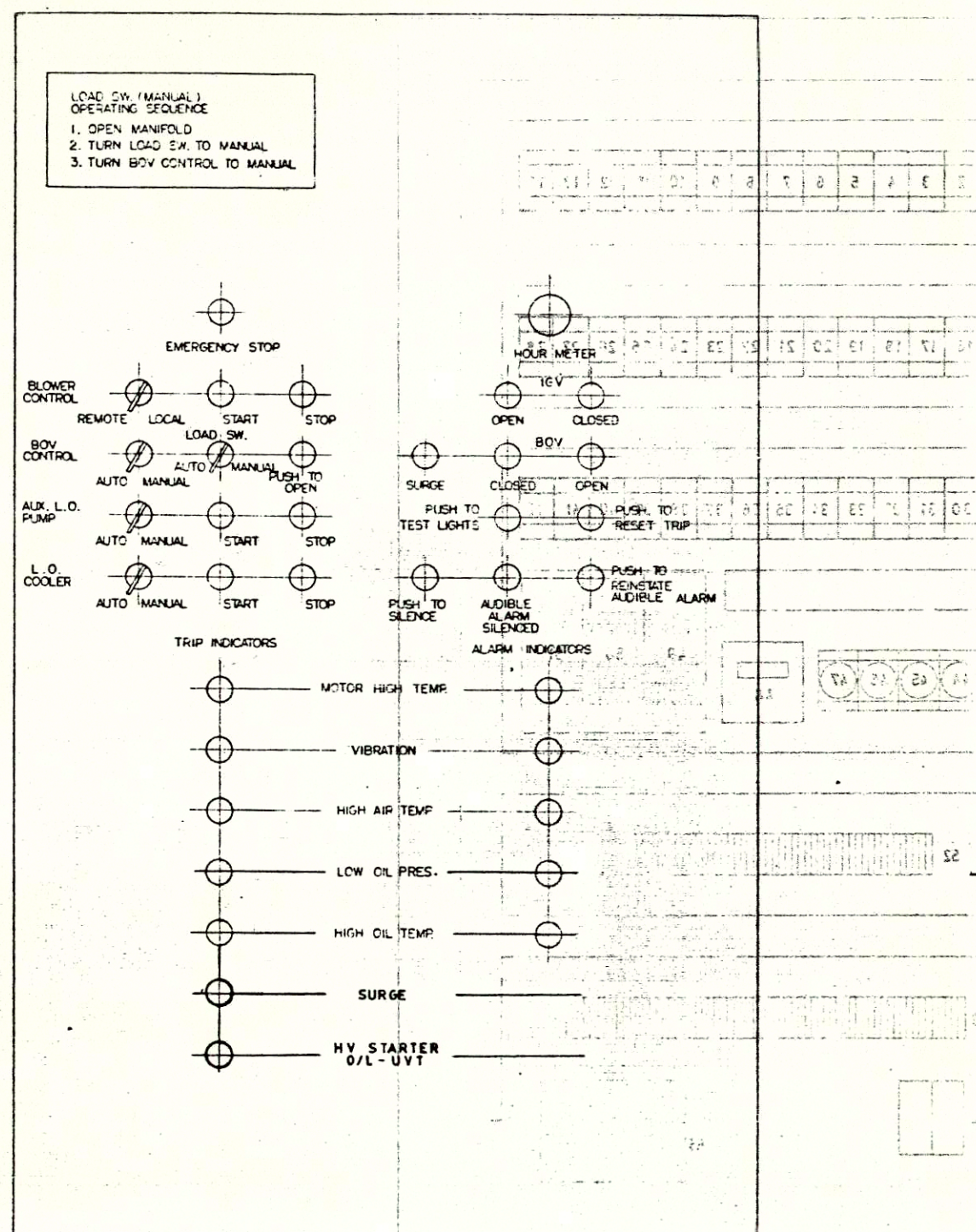
NO.	DATE	REVISIONS	JOB NO.	DATE	CUSTOMER
G	APR 86	LINE 120, TRR WAS NO NOW NC.			
G	APR 86	LINE 110, ADDED TRR NC BTWN SILENCE NC AND HORN RELAY.			
G	APR 86	LINE 106, SURGE SIGNAL SW BTWN 78 AND 79 WAS NC NOW NO.			
G	APR 86	LINE 96, WAS 2/11 TO 72 NOW 2/12 TO 72			
G	APR 86	TR 73 WAS 'CLOSE' SOLENOID NOW 'OPEN'.			
G	APR 86	LINE 94, TR 70 WAS 'OPEN' SOLENOID NOW 'CLOSE' SOLENOID.			
F	MAR 86	LINE 118 TO 136			
No.	DATE	REVISIONS	SCALE	DATE	APPROVED BY
				FEB 4, 86	E. C.

**AMPOWER CANADA**  
(1982) LTD.  
ST. CATHARINES, ONTARIO, L2M 6S9

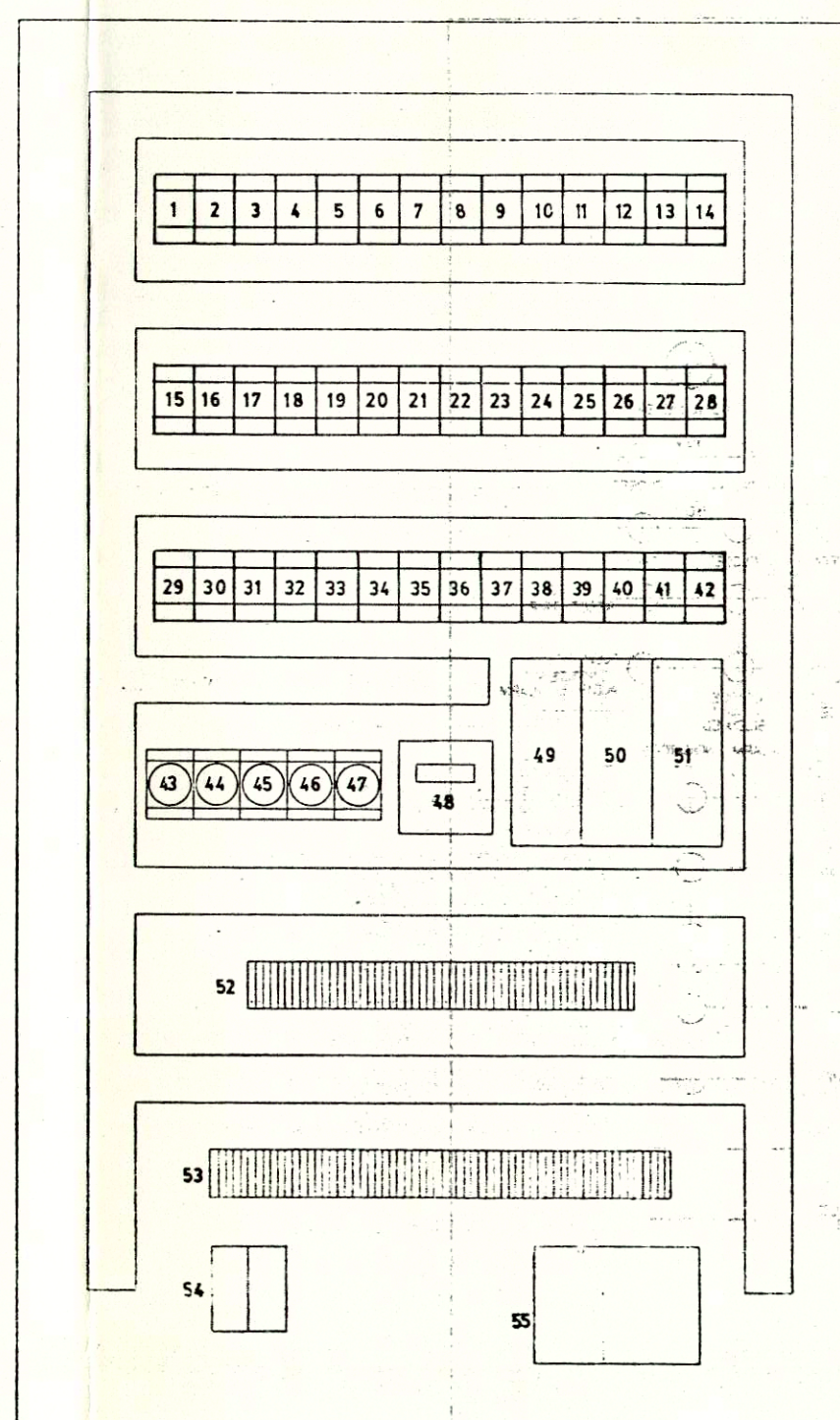
Dwg. No. E 39313  
SHEET 4 OF 4  
REV. I

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DOOR



PAN

# LEGEND

1. SCR START CONTROL RELAY
2. R1 RELAY ONE
3. R2 RELAY TWO
4. R3 RELAY THREE
5. T4CR1 TIMER FOUR CONTROL RELAY ONE
6. R4 RELAY FOUR
7. VICTR1 VIBRATION TRIP RELAY ONE
8. VICTR2 VIBRATION TRIP RELAY TWO
9. VIGAR VIBRATION ALARM RELAY
10. ATTP AIR TEMPERATURE TRIP RELAY
11. ATAP AIR TEMPERATURE ALARM RELAY
12. PTOTP MAIN MOTOR RTD TRIP RELAY
13. STAKE SPARE RELAY
14. PTODAR MAIN MOTOR ALARM RELAY
15. IGWCF INLET GUIDE VANE CONTROL RELAY
16. INWSP INLET GUIDE VANE SURGE RELAY
17. DOVR BLOW OFF VALVE RELAY
18. OTTR OIL TEMPERATURE TRIP RELAY
19. CTA OIL TEMPERATURE ALARM RELAY
20. OPTP1 OIL PRESSURE TRIP RELAY ONE
21. OPTP2 OIL PRESSURE TRIP RELAY TWO
22. LOPR LOW OIL PRESSURE ALARM RELAY
23. TRP1 TRIP RESET RELAY ONE
24. TRP2 TRIP RESET RELAY TWO
25. TLR1 LAMP TEST RELAY ONE
26. TLR2 LAMP TEST RELAY TWO
27. TLR3 LAMP TEST RELAY THREE
28. STOL STARTER OVERLOAD AND UNDERVOLTAGE RELAY
29. TLR4 LAMP TEST RELAY FOUR
30. TLR5 LAMP TEST RELAY FIVE
31. R5 RELAY FIVE
32. R6 RELAY SIX
33. IR COMPRESSOR FULL LOAD RELAY
34. R7 RELAY SEVEN
35. BOVO BLOW OFF VALVE OPEN RELAY
36. R8 RELAY EIGHT
37. HR HORN RELAY
38. SIL HORN SILENCE RELAY
39. SCCR SURGE COUNT CONTROL RELAY
40. R9 RELAY NINE
41. R10 RELAY TEN
42. T4CR2 TIMER FOUR CONTROL RELAY TWO
43. T1 TIMER ONE - LUBE OIL COOLER STARTER - DELAY OFF 10 MIN.
44. T4 TIMER FOUR - MAIN MOTOR CONTACTOR MADE - DELAY ON 15 SEC.
45. T5 TIMER FIVE - AUX. LUBE OIL PUMP STARTER - DELAY OFF 60 SEC.
46. T6 TIMER SIX - BLOW OFF V/V DELAY CLOSE ON SURGE - DELAY OFF 15 SEC.
47. T7 TIMER SEVEN - SURGE COUNTER RESET - DELAY ON 1 MIN 45 SEC
48. COUNTER DIGITAL COUNTER FOR SURGE
49. SAM'A MAIN MOTOR WINDING RTD AMPLIFIER PHASE 'A'
50. SAM'B MAIN MOTOR WINDING RTD AMPLIFIER PHASE 'B'
51. SAM'C MAIN MOTOR WINDING RTD AMPLIFIER PHASE 'C'
52. (52)PORT TERMINAL BLOCKS - LEFT TO RIGHT - PORT PANEL  
A.C.H1,N.H1,N.190,191,192,193,200,205,206,151,152,80,81,186,187,84,85,H1,N.H1,N.H1,N.P1,P2,P3,P4,P5,51,52,62,63,64,65,66,67,68,69,N,14,15,16,21,22,23,44,45,46,47,276,277,278
53. (53)PORT TERMINAL BLOCKS - LEFT TO RIGHT - PORT PANEL  
48,51,52,53,54,55,26,27,28,29,30,31,32,33,34,58,59,60,61,70,71,72,73,74,75,76,78,79,82,83,67,10,11,12,13,56,57,90,91,8,9,17,18,19,20,58,89,86,87,35,36,37,38,39,40,41,42,43,44,45,46,47,48
52. (52)STBD TERMINAL BLOCKS - LEFT TO RIGHT - STBD PANEL  
A.C.H1,N.H1,N.H1,N.194,195,196,197,203,204,207,208,156,157,80,81,186,187,84,85,90,91,N.H1,N.P1,P2,P3,P4,P5,51,52,62,63,64,65,66,67,14,15,16,21,22,23,44,45,46,47,48,55,56,51,52,53,54,55,60,61,58,59
53. (53)STBD TERMINAL BLOCKS - LEFT TO RIGHT - STBD PANEL  
35,36,37,38,39,40,41,42,43,26,27,28,29,30,31,32,33,34,68,69,70,71,72,73,74,75,76,77,78,79,82,83,67,10,11,12,13,56,57,8,9,17,18,19,20,86,87,88,89,4,5,6,7,10,11,12,13,56,57,8,9,17,18
54. F1 & F2 AC PANEL SUPPLY FUSES
55. 24VDC POWER SUPPLY FOR SAM'S 'A', 'B', & 'C'

4491 AB	1986	VERSATILE PACIFIC SHIPYARDS INC.	MILL 110
JOB NO.	DATE	CUSTOMER	
TITLE		AMPOWER CANADA (1982) LTD.	
LOCAL CONTROL PANEL LAYOUT		ST. CATHARINES, ONTARIO, L2M 6S9	
DOOR / PAN		Dwg. No. ACS-001-29 D	
SCALE		DATE	REV. 2
DRAWN BY		APPROVED BY	
CARMONA			
NO.		DATE	REVISIONS
2		APR 87	TERMINAL M CHANGES
2		APR 87	RED RELAYS STOL & SPARE
1		MAR 86	WARNING LABEL

DO NOT SCALE THIS DRAWING