

NEW FAX 3/85 NS0313

ED 7489

DWG. SH. NO.	DESCRIPTION	DESIGNATION	TYPE	RELAY CONTACTS/ SHOWN WITH DEVICE TERM. NO. AND TB. TERM. NO. IN ().								
		STANDARD WIRING										
E45B SH.1A	MFPT TRIP RELAY (0.13 SEC. ON-DELAY)	T1	AGASTAT 7012PAB 125VDC	TURBINE TRIP	SPARE	TRIP STATUS	SPARE					FUNCTION
		RS4DC		E45B, SH. 1A	—	E45B, SH. 1L	—					REF. DWG.
E45B SH.1A	MFPT HIGH PRESS TRIP RELAY (0.1 SEC ON-DELAY)	PSH582X/TDPU	AGASTAT 7012PA 125VDC	TURBINE TRIP	SPARE	SPARE	SPARE					FUNCTION
		RS4DC		E45B, SH. 1L	—	—	—					REF. DWG.
E45B SH.5B	MFPT TURN.GEAR FAILURE RELAY (5 SEC ON-DELAY)	62TG	AGASTAT 2412AD 120VAC	ENERGIZE TG/X RELAY	SPARE	SPARE	SPARE					FUNCTION
		RS4AC		E45B, SH. 5B	—	—	—					REF. DWG.

DWG. SH. NO.	DESCRIPTION	DESIGNATION	TYPE	RELAY CONTACTS/ SHOWN WITH DEVICE TERM. NO. AND TB. TERM. NO. IN ().								
		STANDARD WIRING										
E45B SH.1A	MFPT TRIP RELAY (0.13 SEC. ON-DELAY)	T2	AGASTAT DSC-XX-01-2-5-P-A-X-A-A 125VDC	TURBINE TRIP	SPARE	TRIP STATUS	SPARE	TEST CONNECTION	AUTO RESET CIRCUIT			FUNCTION
		RS60DC		E45B, SH. 1A	—	E45B, SH. 1L	—	—	E45B, SH. 1J			REF. DWG.

NOTES:

1. FOR GENERAL NOTES SEE DWG.E45B SH.10A.

SCALE NONE

DESIGNED ARRAS

DRAWN JOR

DATE 7-30-87

DAVIS-BESSE NUCLEAR POWER STATION
UNIT NO. 1
THE TOLEDO EDISON COMPANY

ELEMENTARY WIRING DIAGRAMS
#2 MFPT & AFPT CONTROL & AUXILIARIES
AUXILIARY RELAYS

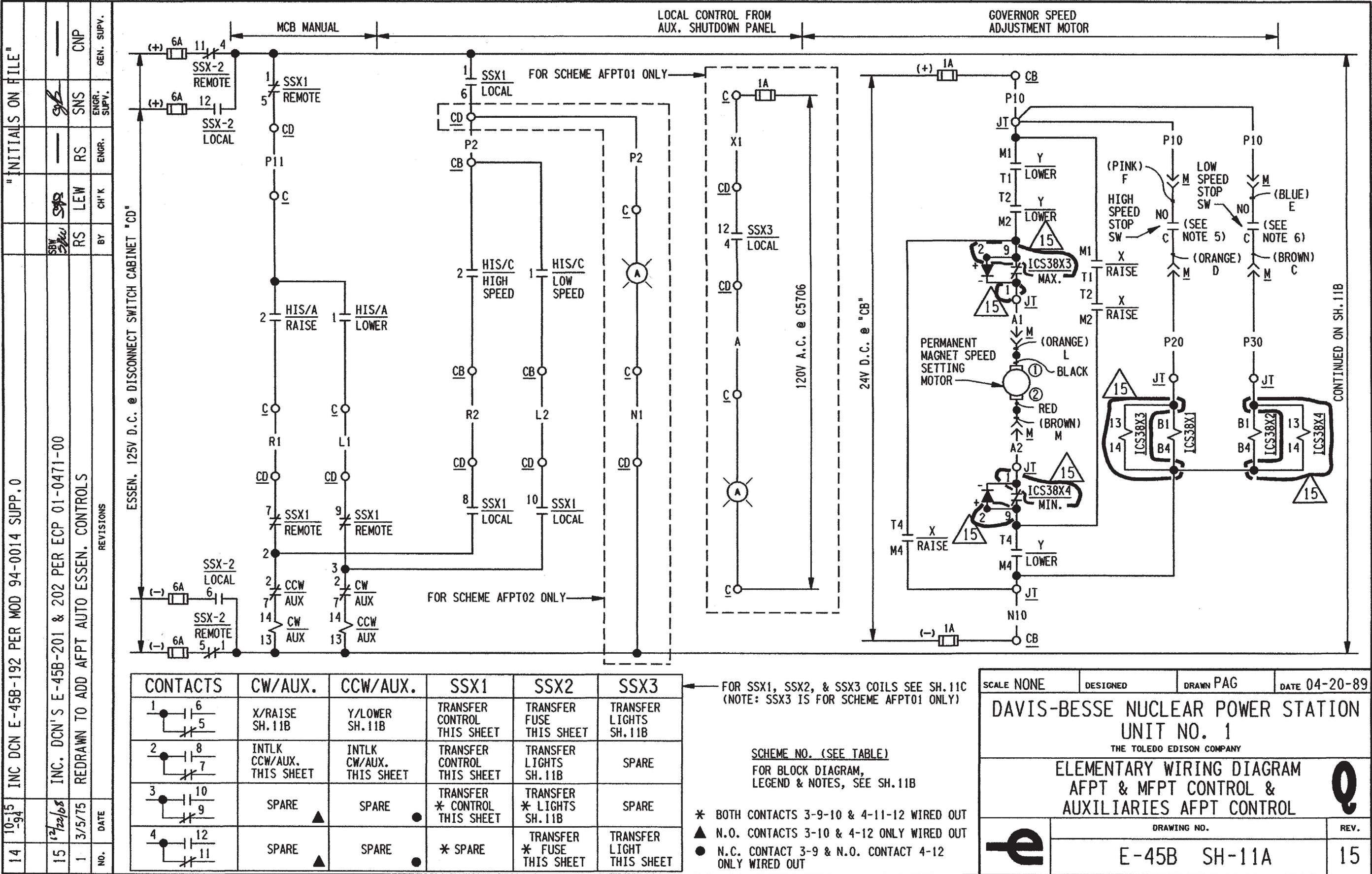
DRAWING NO.
E-45B SH.10J

REV.
0

DB 10-14-88

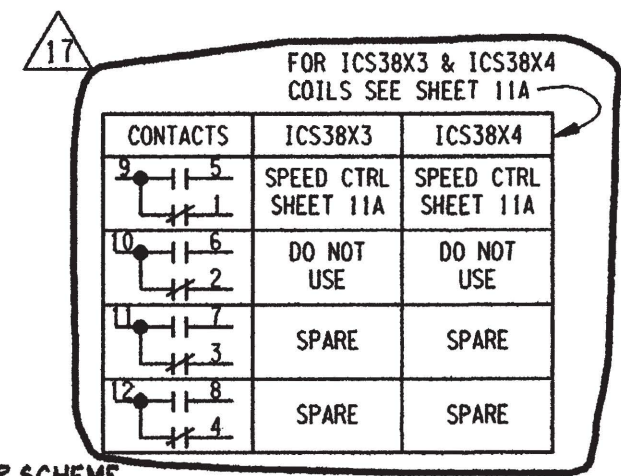
DFN-D1/EL/E45BSH10.DGN

I CERTIFY THAT THE IMAGE CONTAINED OF THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS. ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.



NOTES:

1. FOR GENERAL NOTES, SEE DWG. INDEX E-45B
2. FOR HIS/A SWITCH DEVELOPMENT SEE E-30B, SH. 11, FIG. 5
FOR HIS/C SWITCH DEVELOPMENT SEE E-30B, SH. 11, FIG. 5A
3. DELETED
5. TAG NUMBER FOR HIGH SPEED STOP LIMIT SWITCH
IS ZS-ICS30Q FOR CHANNEL 1 & ZS-ICS30S FOR
CHANNEL 2.
6. TAG NUMBER FOR LOW SPEED STOP LIMIT SWITCH
IS ZS-ICS38R FOR CHANNEL 1 & ZS-ICS38T FOR
CHANNEL 2.

[illegible]

DAVIS-BESSE NUCLEAR POWER STATION

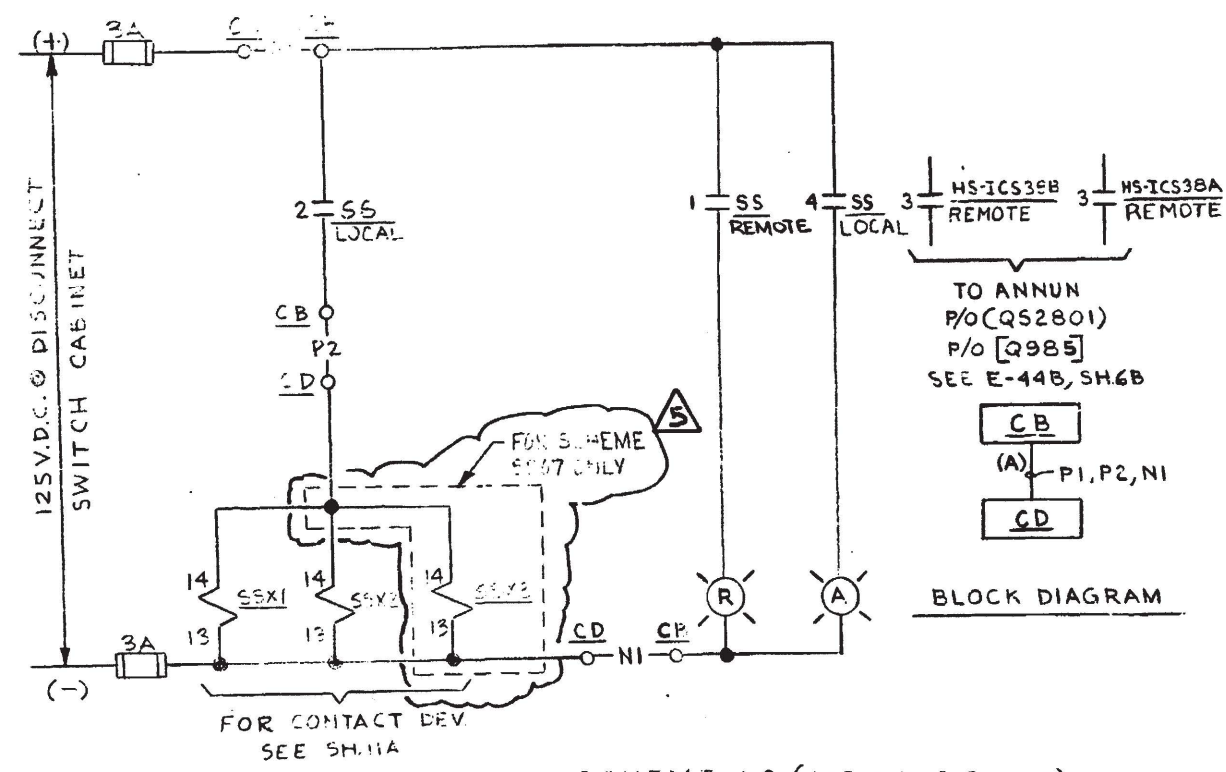
THE TOLEDO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY.

ELEMENTARY WIRING DIAGRAM

AFPT & MFPT CONTROL & AUXILIARIES

AFPT CONTROL

G-231-0	REV.	DESCRIPTION	DATE	DR	CHK	SUPV	PROJ	OWNER
	0	ISSUED FOR CONSTRUCTION	3/5/75	RS	LEW	SXS	AFB	AFB
	5	INC. DEN E-45B-194 PER MOD 94-0014 SUPP. 3	10/1/75	JOR	SBW	1/4	AFB	AFB
	4	AS-BUILT FOR MOD 87-1105, INC. DCN E-45B-125.	3/11/75	RAB	WRE	1/4	AFB	AFB



SCHEME NO. (SEE TABLE BELOW)

SCHEME NO.	START UP NO.	CHANNEL	SS	EQUIPMENT		DESCRIPTION
				CD	CB	
SD07	50	1	HS-ICS38B	CDEI2A-1	C3630	AFPT 1 GOV. CTRL. SEL. CRKT.
SD08	50	2	HS-ICS38A	CDFI2A-1	C3630	AFPT 2 GOV. CTRL. SEL. CRKT.

- NOTES:
- 1. FOR GEN. NOTES SEE DWG INDEX E-45B
 - 2. DELETED
 - 3. FOR SS SWITCH DEVELOPMENT SEE E-30B SH.11, FIG. 4A

DAVIS-BESSE NUCLEAR POWER STATION

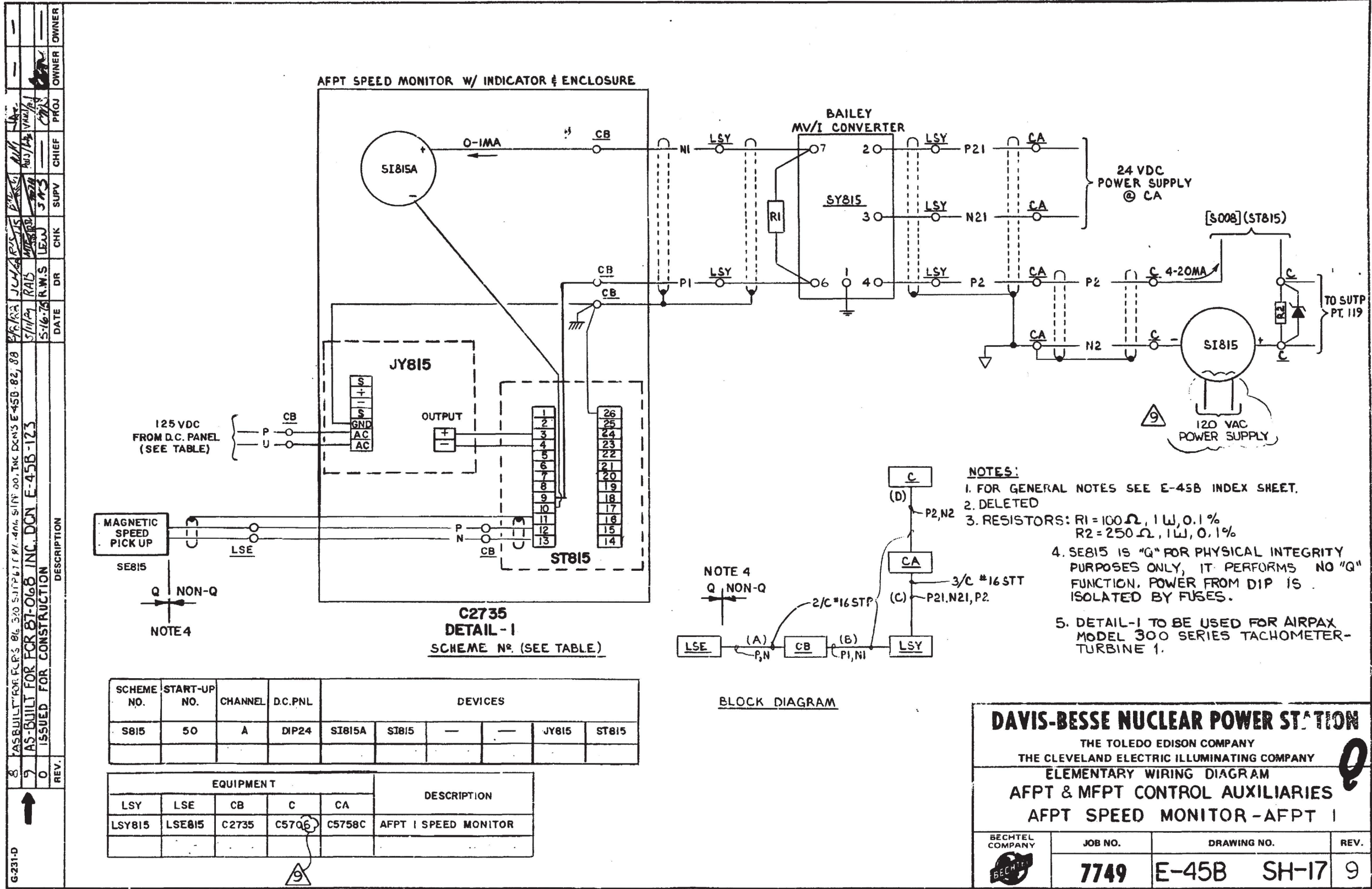
THE TOLEDO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

ELEMENTARY WIRING DIAGRAM
AFPT & MFPT CONTROL & AUXILIARIES
AFPT CONTROL

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-45B SH-11C	5

I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

DATE 12-1-94 OPERATOR *Donna Cunningham* 16X



I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

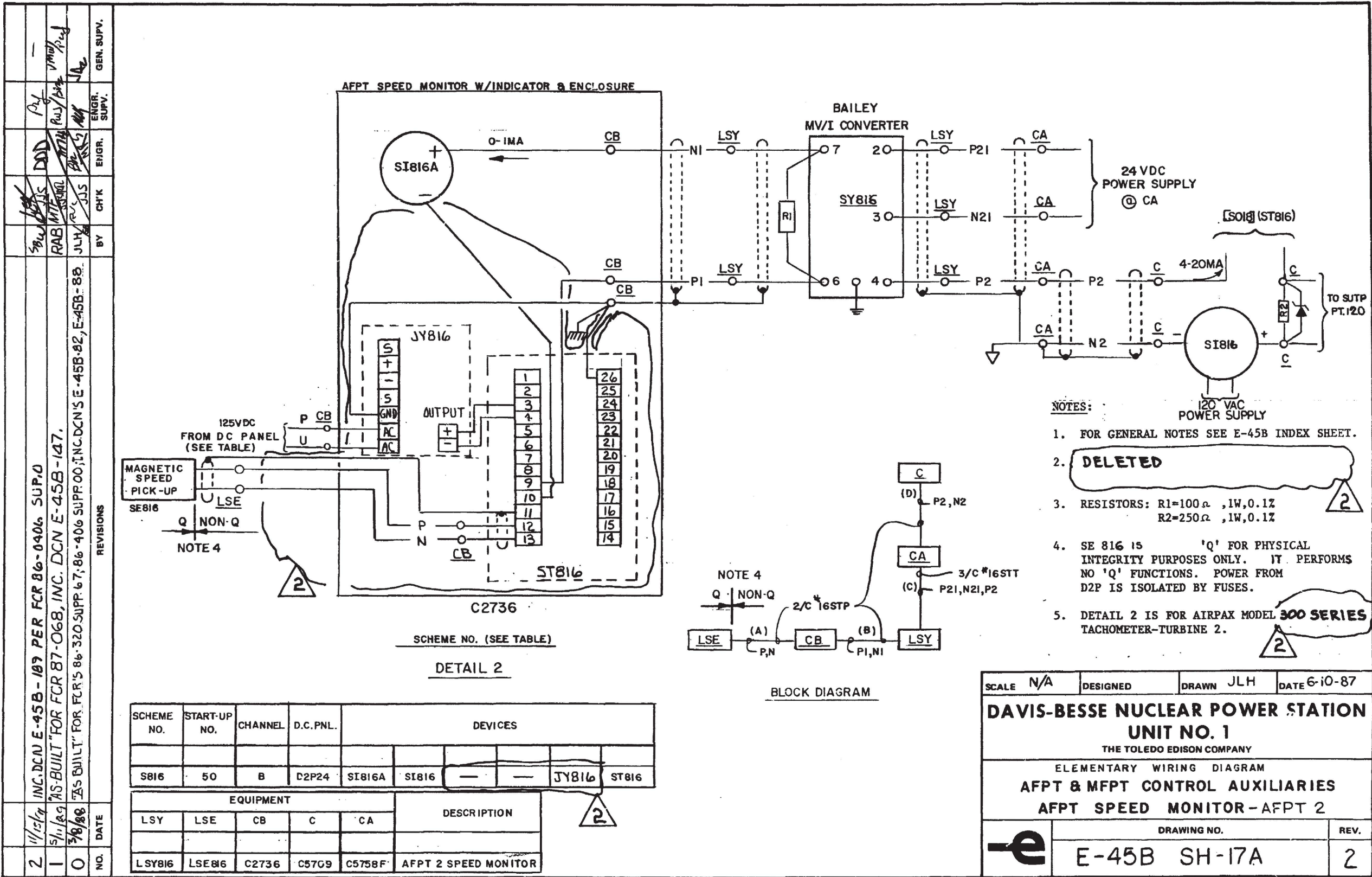
5-15-89

OPERATOR

8000 Series 16X

NEWFAK 3/85 N58313

ED 7489



I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

DATE 11-20-91 OPERATOR [Signature]

16X

INDEX			
SHEET NO.	LATEST REV.	DESCRIPTION	Q
1A	14	MAIN STM LINES ISOLATION VALVES (SOV)	Q
1B	17	MAIN STM LINES ISOLATION VALVES (SOV)	Q
1C	6	VOID	
1D	11	MAIN STM LINES ISOLATION VALVES (SOV)	Q
1E	9	MAIN STM LINES ISOLATION VALVES (SOV)	Q
1F	3	MAIN STM LINES ISOLATION VALVES (SOV)	Q
2	2	DELETED	
2A	1	DELETED	
2B	1	DELETED	
3	5	MAIN STM LINES WARM UP DRAIN VALVES (SOV)	Q
4A	25	AUX FEED PMPS TURBS MN STM IN ISO VLVS (MOV'S)	Q
4B	24	AUX FEED PMPS TURBS MN STM IN ISO VLVS (MOV'S)	Q
4C	3	DELETED	
5A	9	STEAM & CONDENSATE (MOV)	
5B	7	STEAM & CONDENSATE (MOV)	
6A	6	STEAM & CONDENSATE (COMBINED MOV'S)	
6B	7	STEAM & CONDENSATE (COMBINED MOV'S)	
6C	6	STEAM & CONDENSATE (COMBINED MOV'S)	
7A	8	MS EXTR TO MSR 2ND STAGE VALVES (MOV'S)	
7B	6	MS EXTR TO MSR 2ND STAGE VALVES (MOV'S)	
7C	3	MS EXTR TO MSR 2ND STAGE VALVES (MOV'S)	
8	4	DEMIN WATER TRANS PUMP DISCHARGE VALVE (MOV)	
9A	5	HEATER DRAIN PUMP MOTORS	
9B	6	HEATER DRAIN PUMP MOTORS	
10A	8	CONDENSATE PUMP MOTORS	
10B	9	CONDENSATE PUMP MOTORS	
11	6	CONDENSATE PUMPS RECIRC VALVE (SOV)	
12	7	HP EXTR DRAIN VALVES (SOV'S)	
13	6	LP EXTR DRAIN VALVES (SOV'S)	
14	6	FW HTR SU DRAIN VALVES (SOV'S)	
15	9	TURB STM SEAL DIVR VLV HP COND (SOV)	
16	5	CONDENSATE FLASH TANK VLV TO HTR 1-2 & 2-2 (SOV)	
94	5-6-12	REVISED SH. 4A (REV.25), REVISED SH.21, (REV.6), REVISED SH.46A (REV.21), & REVISED SH.54B (REV.19)	
96	9-17-19	REVISED SH.22 (REV.6), SH.66A (REV.5), SH.79A (REV.4) & SH.79B (REV.4)	
95	06-12-14	INC. DUN 08-0573-005-002 REV.00 & REVISED SH. 56 & 67 (REV.1) & SH.66A (REV.4)	
REV	DATE	DESCRIPTION	


GENERAL NOTES:

1. FOR EXPLANATION OF EQUIPMENT & WIRING NUMBERS SEE 7749-11A, ELECTRICAL NUMBERING SYSTEM.
2. FOR MOTOR INFORMATION SEE 7749-E-12B, ELECT. MOTOR LIST.
3. FOR CONTROL PANEL, MCC, DESCRIPTIONS SEE E-13B ELECT. EQUIPMENT LIST.
4. WIRE NUMBER PREFIX MUST BE ADDED TO FORM COMPLETE WIRE NUMBER FOR THOSE WIRES AT MAIN CONTROL BOARD.
5. AUX CONTROL RELAY IN SOLENOID OPERATED VALVE CONTROL CIRCUITS TO BE COUCH TYPE 4AP.
6. NUMBER IN BRACKETS [] REPRESENTS COMPUTER INPUT NUMBER. NUMBERS IN PARENTHESIS () REPRESENTS COMPUTER INPUT SOURCE NUMBER.

REFERENCE DRAWINGS:

- E-5 SH.1 THRU 5 - 480V MCC (NON-ESSENTIAL) ONE LINE DIAGRAM
- E-6 SH.1,2 - 480V MCC (ESSENTIAL) ONE LINE DIAGRAM
- E-10A - STANDARD NOTES AND SYMBOLS
- E-11A - ELECTRICAL NUMBERING SYSTEM
- E-12B - MOTOR LIST
- E-14B - SOLENOID VALVE LIST
- E-30B - GENERAL GUIDES - ELEMENTARY DIAGRAM

THIS DRAWING WAS REDRAWN ON CAD AND SUPERSEDES REVISION 64.

SCALE NONE	DESIGNED	DRAWN JLH	DATE 12-20-89
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAMS			
DRAWING INDEX			
	DRAWING NO.		REV.
	E-46B SH.1		96

FOR CONTINUATION OF INDEX SEE SH.2.

	"INITIALS ON FILE"	
SAP <i>CAP</i>	<i>ATC AL</i>	<i>JHR JHR</i>
	"INITIALS ON FILE"	
BY	CH'K	ENGR.
		ENGR. SUPV.
		GEN. SUPV.

INDEX

SHEET NO.	LATEST REV.	DESCRIPTION	Q
17A	7	CNDS DEMIN HOLD-UP TANK OUTLET VLV'S	
17B	3	CNDS DEMIN HOLD-UP TANK OUTLET VLV'S	
17C	1	CNDS DEMIN BKWASH STRNR AUX RELAY	
17D	4	CNDS DEMIN HOLD-UP TANK'S OUT VLV'S	
18	9	STEAM SOLENOID OPERATED VALVES	
19A	4	FW HTR SOLENOID OPERATED VLV'S	
19B	2	FW HTR SOLENOID OPERATED VLV'S	
19C	1	FW HTR SOLENOID OPERATED VLV'S	
20	7	DEAR HTR LP TURB EXT (SOV'S)	
21	6	MISC MOTOR OPERATED VALVES	
22	6	DEAR HTRS LP EXT DRN (SOV'S)	
23A	6	SG ATM STM VENT & SAMPLE VLV'S	Q
23B	9	SG ATM STM VENT & SAMPLE VLV'S	Q
24	5	MN STM LINES BEFORE STOP VLV'S WU VLV'S (SOV'S)	
25	4	MISC CHEMICAL PUMPS & MIXERS	
26	7	BACKWASH RECEIVING SUMP PUMPS	
27	12	MECH HOGGER 1-1 VAC PUMP 1-1	
28	6	MECH HOGGER COOLER CIRC PUMP 1-1	
29	10	STM HOGGER AUX STM INLET VALVE	
30	10	FW HTR SOLENOID OPERATED VALVES	
31	7	SUMP PUMPS	
32A	5	MAIN STM LINES ISO VALVES WU VALVES (SOV'S)	Q
32B	6	MAIN STM LINES ISO VALVES WU VALVES (SOV'S)	Q
33	15	STEAM GENERATOR DRAIN VLV	Q
33A	4	STEAM GENERATOR DRAIN VLV	Q
33B	0	STEAM GENERATOR DRAIN VLV	
33C	3	STEAM GENERATOR DRAIN VLV	
34	4	TURB BYPASS DESUPERHTNG VLV	
35	4	COND PIT FLOOD PMP 1-1 & 1-2	
36	2	CNDS PMPS RUNOUT VLV	
37	8	TURB BYPASS VLV & MN STM ATM VENT VLV	
38	4	CNDS POLISHING DEMIN HOLD UP PMP	
39A	2	CNDS POLISHING DEMIN MISC AGITATOR	
39B	6	CNDS POLISHING DEMIN MISC PMPS	
40	2	CNDS POLISHING DEMIN DUST EVACUATOR	
41A	5	VOID	
41B	5	FW HTR MOV'S	
42	1	LP COND MU & CNDS STRG IN VLV'S	


SHEET NO.	LATEST REV.	DESCRIPTION	Q
43	3	CNDS DEMIN WST DRUMMING OUT VLV	
44A	6	CNDS POL DEMIN WST XFER PMP'S	
44B	2	CNDS POL DEMIN WST XFER PMP'S	
45A	3	STEAM & CONDENSATE (COMBINED MOV'S)	
45B	3	STEAM & CONDENSATE (COMBINED MOV'S)	
45C	3	STEAM & CONDENSATE (COMBINED MOV'S)	
46A	21	SG AFP 1 ISO VLV	Q
46B	17	SG AFP 1 ISO VLV	Q
47	1	HTR DRAIN & COND PMPS COMPUTER CKTS	
48	3	CNDS DEMIN PRIMING VALVES	
49	4	VOID	
50	5	VOID	
51	6	VOID	
52	6	DELETED	Q
53	3	CNDS VACCUM PMP DISCHARGE RADIATION MNTR AUX RELAYS	
54A	14	AUX FD PMP TURB MN STM IN ISO VLV	Q
54B	19	AUX FD PMP TURB MN STM IN ISO VLV	Q
55A	2	MSR 2ND STAGE STEAM SUPPLY MOV	
55B	1	MSR 2ND STAGE STEAM SUPPLY MOV	
56	1	MSR AUX RELAYS	
57	0	MSR AUX RELAYS	
58	1	DELETED	
59	3	MSR DRAIN VALVES	
60	3	MSR DRAIN VALVES	
61	3	MSR DRAIN VALVES	
62	3	MSR DRAIN VALVES	
63	3	MSR DRAIN VALVES	

96

FOR GENERAL NOTES AND REFERENCE DRAWINGS
SEE DRAWING E-46B DRAWING INDEX SH.1.

FOR CONTINUATION OF INDEX SEE SH.3.

THIS DRAWING WAS REDRAWN ON CAD AND SUPERSEDES REVISION 64.

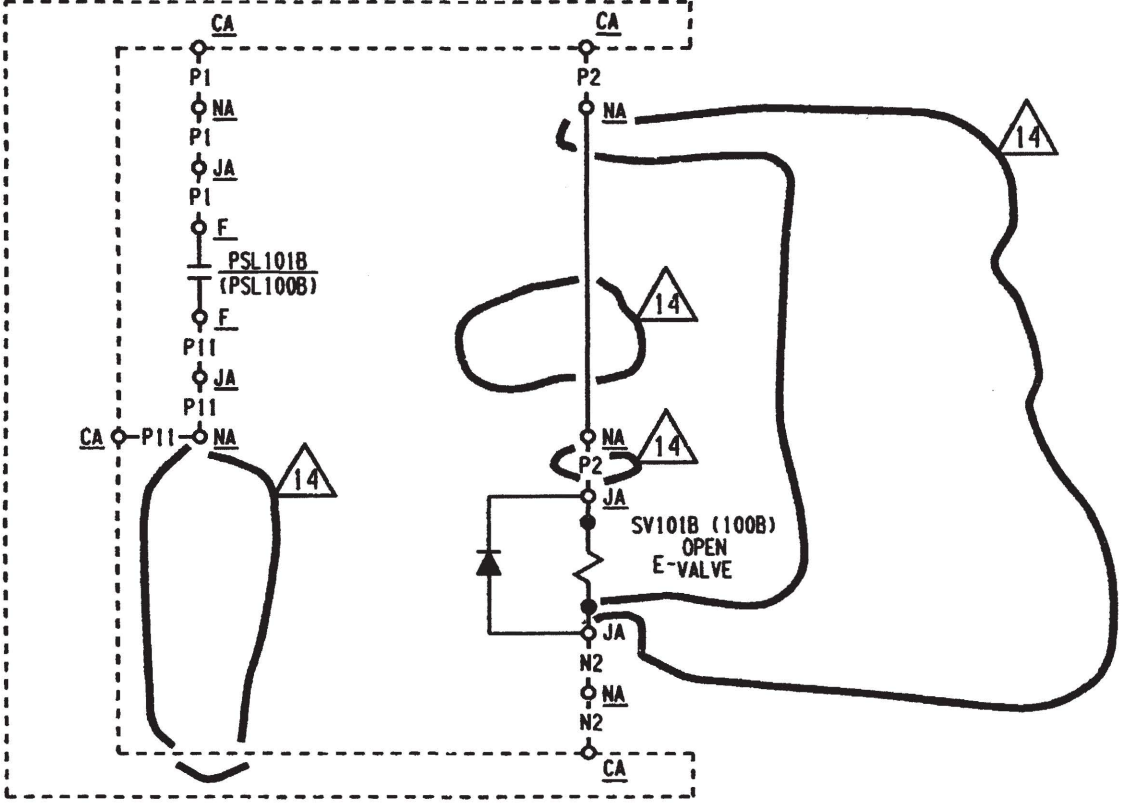
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DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAMS STEAM & COND. DRAWING INDEX			
	DRAWING NO.		REV.
	E-46B SH.2		96

NEWFAX 3/85 N58313

ED 7489

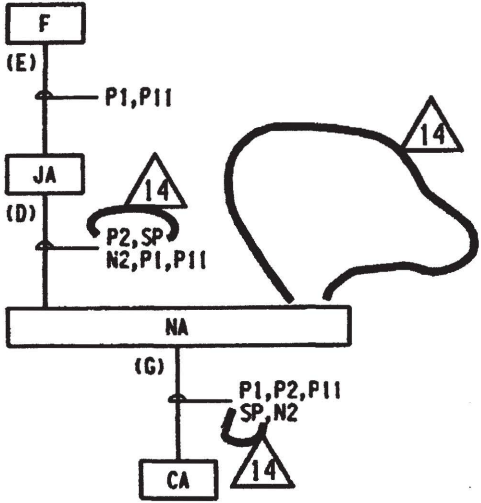
NO.	DATE	REVISIONS	BY	CHK	ENGR.	ENGR. SUPV.	GEN. SUPV.
14	8-24-96	INC. DCN E-46B-576 & 578 FOR MOD 93-0051-00	KNF	DVK	—	—	—
13	3/21/91	INC. DCN E-46B-361 PER DCR 89-0210					
12	9/18/89	"AS-BUILT" FOR FCR 87-063, INC. DCN E-46B-175 & 176; MOD 87-1107 SUPP.2, INC. DCN E-46B-232 & 233, SUPP.4, GEN. UPDATE, INC. DCN E-46B-300 "REDRAWN"					

SEE SF-0038 SH.9 (10)



SCHEME NO. (SEE TABLE)

SCHEME NO.	SU. NO.	CHANNEL	EQUIPMENT						DESCRIPTION
			JA	JB	NA	CA		F	
FV101B	83	1	JT6801		NSV101	C5762A		FPSL101B	MN. STM. LINE 1 VISO. VALVE
FV100B	83	2	JT6703		NSV100	C5792		FPSL100B	MN. STM. LINE 2 VISO. VALVE



BLOCK DIAGRAM (SEE NOTE 6)

NOTES:

1. FOR GENERAL NOTES, SEE E-46B INDEX SHEET.
2. DELETED
3. DELETED
4. DELETED
5. FOR CONTROL POWER, SFRCS LOGIC AND CONTROL SWITCH (CS) OPERATION SEE SF-0038 SH.9(10).
6. CABLES TO BE ROUTED DIFFERENTLY FROM SCHEMES FV101A(FV101B) ON SH. 1D.
7. PSL CONTACT OPENS ON LOW AIR PRESSURE TO PILOT SOLENOID (SOLENOID DE-ENERGIZED).

THIS DRAWING WAS REDRAWN ON CAD AND SUPERCEDES REVISION 11

SCALE NONE	DESIGNED	DRAWN JOR	DATE 05-31-89
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAM STEAM AND CONDENSATE MN STM LINE ISO VALVES			Q
DRAWING NO. E-46B SH.1A			REV. 14

DB 07-17-96 DFN= DBNPS/SCHEME/E46BS1A .DCN

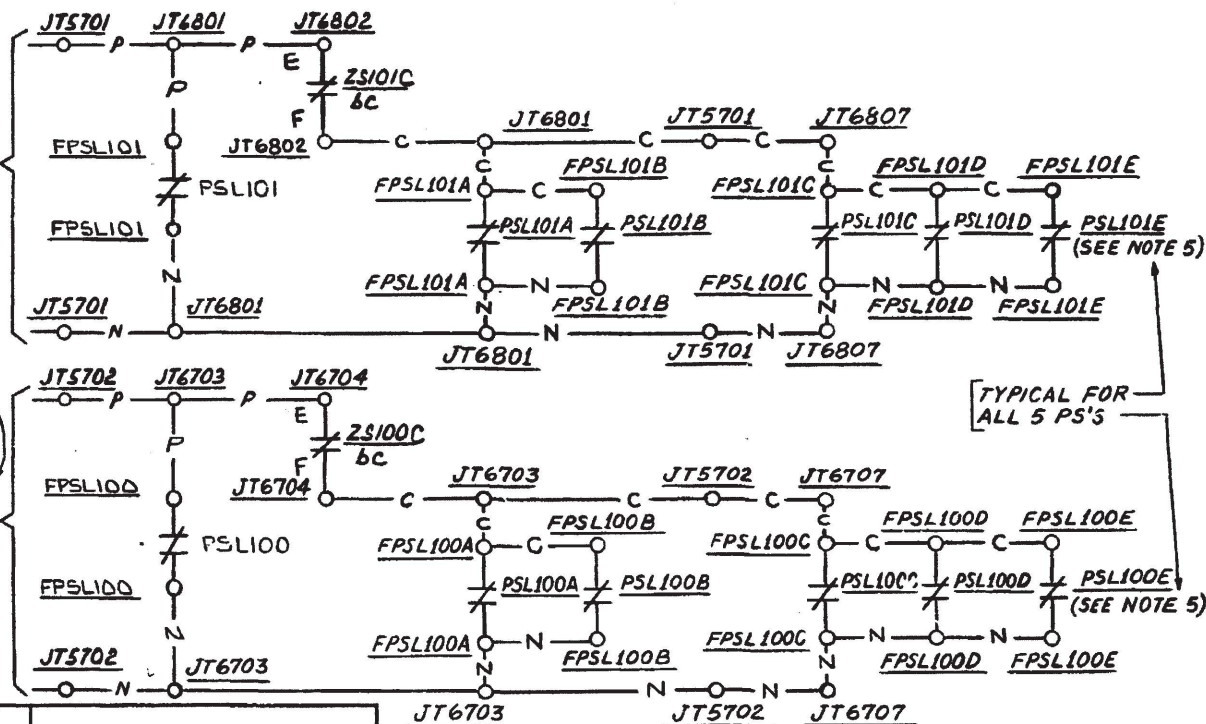
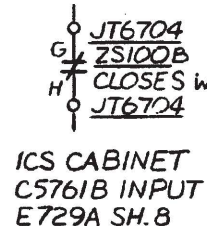
I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

DATE 8-30-96 OPERATOR Darcy Wiedle

16X



SCHEME NO.	SU. NO.	CH	WIRE PREFIX AT MN CTRL BD			CSI			EQUIPMENT				DESCRIPTION
			CSI						C	JT	JB	NA	
FV101	83	1	STA			HIS101			C5708	JT5721	JT6802	NSV101	MN STM LINE 1 150 VLV
FV100	83	2	STB			HIS100			C5708	JT5722	JT6704	NSV100	MN STM LINE 2 150 VLV



1. FOR GENERAL NOTES SEE DWG. E46B, INDEX SH.
2. DELETED
3. FOR TERMINAL BOX (JA & JB) INTERNAL WIRING
SEE ROCKWELL MFG., CO., DWG. PD-423882
(F.P. 7749-M-304-7)
4. FOR INDICATING LIGHTS SEE E-308, SH. 17, FIG. 4A & B.
5. PSL CONTACT CLOSSES, ON LOW AIR PRESSURE TO
PILOT SOLENOID (SOLENOID DE-ENERGIZED),
6. DELETED
7. IN LINE TERMINATION LOCATED IN JB5777 (CH. 1).
8. IN LINE TERMINATION LOCATED IN JB5776 (CH. 2).

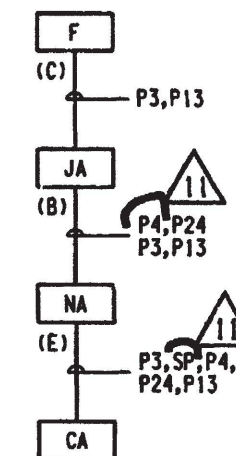
**ELEMENTARY WIRING DIAGRAM
STEAM AND CONDENSATE
MN STM LINE ISO VALVES**

BECHTEL COMPANY 	JOB NO.	DRAWING NO.	REV.
	7749	E 46 B SH1B	17

DATE 8.30.96 OPERATOR Dorothy Wick

16X

SCHEME NO.	SU. NO.	CHANNEL	EQUIPMENT						DESCRIPTION
			JA	NA		CA	F		
FV101A	83	1	JT6801	NSV101		C5762A	FPSL101A		MN. STM. LINE 1 ISO. VALVE
FV100A	83	2	JT6703	NSV100		C5792	FPSL100A		MN. STM. LINE 2 ISO. VALVE




BLOCK DIAGRAM
(SEE NOTE 5)

NOTES:

1. FOR GENERAL NOTES, SEE E-46B INDEX SHEET.
2. DELETED
3. DELETED
4. FOR CONTROL POWER, SFRCs LOGIC AND CONTROL SWITCH (CS) OPERATION SEE SF-003B SH.9(10).
5. CABLES TO BE ROUTED DIFFERENTLY FROM SCHEMES FV101B(FV100B) ON SH.1A.
6. PSL CONTACT OPENS ON LOW AIR PRESSURE TO PILOT SOLENOID (SOLENOID DE-ENERGIZED).

THIS DRAWING WAS REDRAWN ON CAD AND SUPERCEDES REVISION 9

SCALE NONE	DESIGNED	DRAWN JOR	DATE 05-31-89
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAM STEAM AND CONDENSATE MN STM LINE ISO VALVES			Q
	DRAWING NO.		REV.
	E-46B SH. 1D		11

I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

DATE 0-22-76 OPERATOR

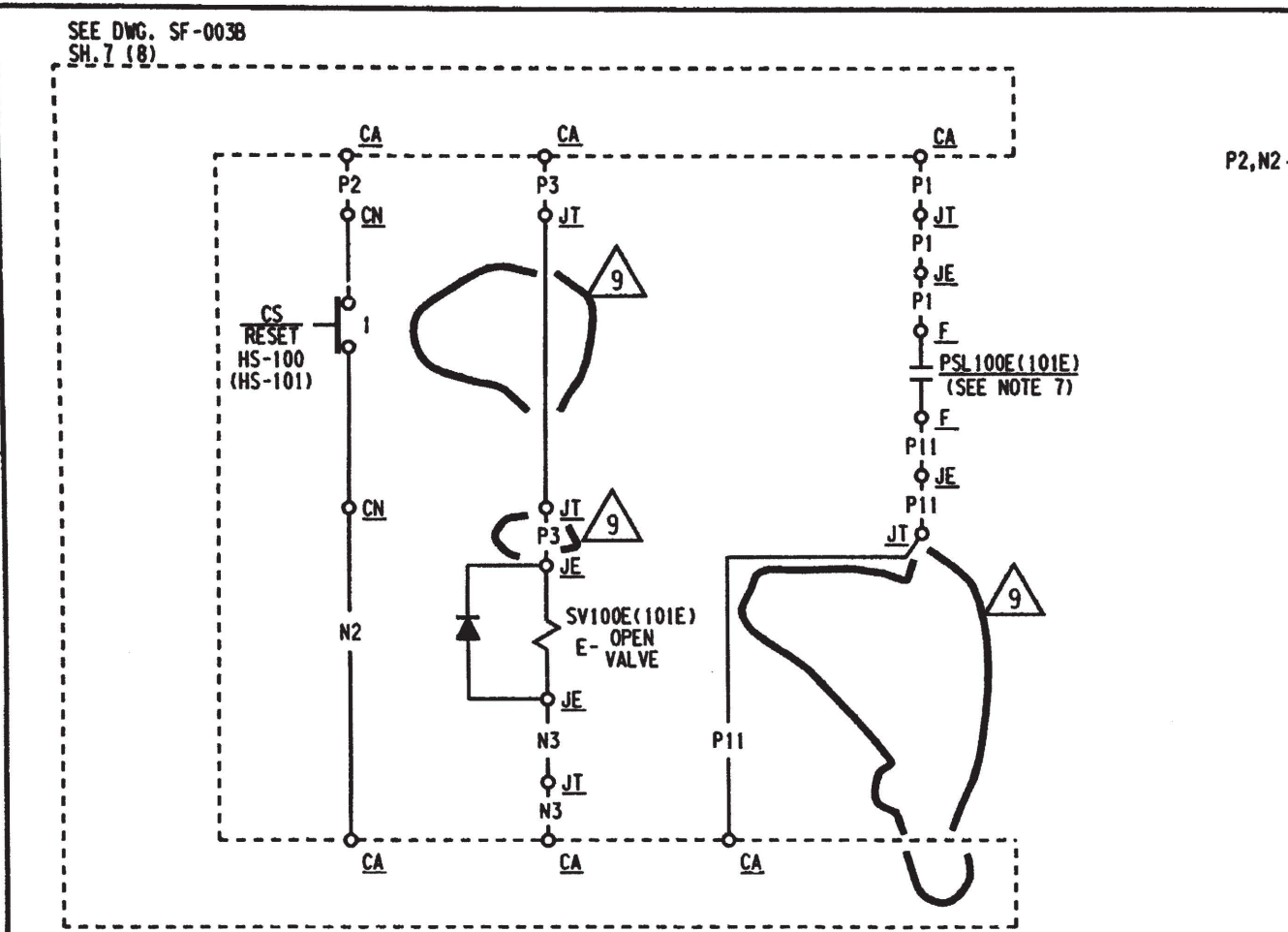
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NEI-AX 3/85 N50313

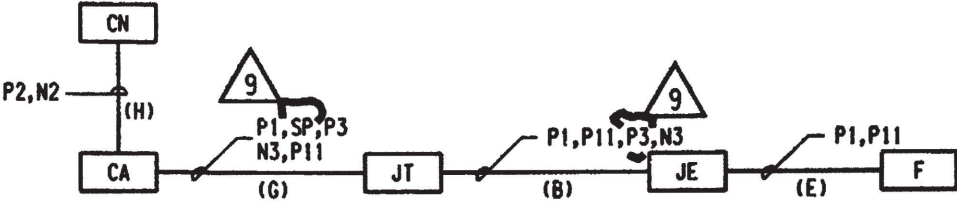
ED 7409

NO.	DATE	REVISIONS	BY	CHK	ENGR.	ENGR. SUPV.	GEN. SUPV.
9	8-26-89	INC. DCN E-46B-583 & 585 FOR MOD 93-0051-00	KNF	DVK	WLS		
8	9-18-89	"AS-BUILT" FOR: FCR 87-063, INC. DCN E-46B-189 & 190, SUPP. 0, INC. DCN E-46B-284 & 282; MOD 87-1107 SUPP. 2, INC DCN E-46B-236 & 237, SUPP. 4 GEN. UPDATE, INC. DCN E-46B-303 "REDRAWN"					



SCHEME NO. (SEE TABLE)

SCHEME NO.	SU. NO.	CHANNEL	EQUIPMENT						DESCRIPTION
			CN	CA	JT	JE		F	
FV100E	83	1	C5762N	C5762A	JT6717	JT6707		FPSL100E	MN. STM. LINE 2 ISO. VALVE
FV101E	83	2	C5792N	C5792	JT6811	JT6807		FPSL101E	MN. STM. LINE 1 ISO. VALVE



BLOCK DIAGRAM (SEE NOTE 5)

NOTES:

1. FOR GENERAL NOTES, SEE E-46B INDEX SHEET.
2. DELETED
3. FOR CONTROL POWER, SFRCS LOGIC AND CONTROL SWITCH (CS) OPERATION SEE DWG. SF-0038 SH. 7(8).
4. DELETED
5. CABLES IN SCHEMES FV100E(FV101E) ARE TO BE ROUTED DIFFERENTLY FROM THOSE IN SCHEMES FV100D(FV101D).
6. DELETED
7. PSL CONTACT OPENS ON LOW AIR PRESSURE TO PILOT SOLENOID (SOLENOID DE-ENERGIZED).
8. DELETED
9. DELETED
10. JT6717(6811) IS PHYSICALLY LOCATED INSIDE NSV100E (101E).

THIS DRAWING WAS REDRAWN ON CAD AND SUPERCEDES REVISION 7

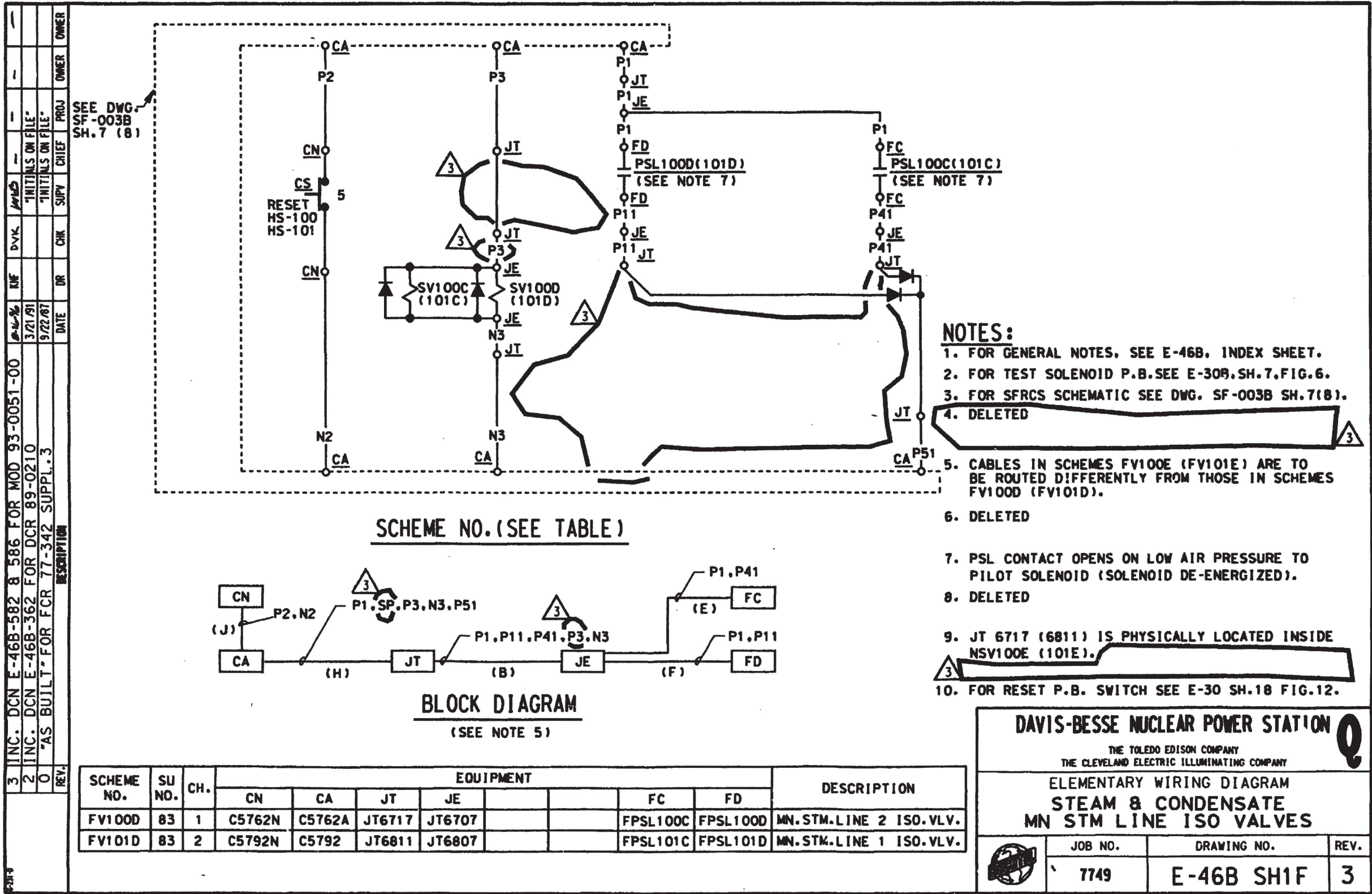
SCALE NONE	DESIGNED	DRAWN JCR	DATE 05-31-89
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAM STEAM AND CONDENSATE MN STM LINE ISO VALVES			Q
	DRAWING NO.		REV.
	E-46B SH.1E		9

DB 07-18-96 DFN= DBNPS/SCHEME /E46BS1E .DGN

I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

DATE 8-30-96 OPERATOR Darryl Wiedel

16X

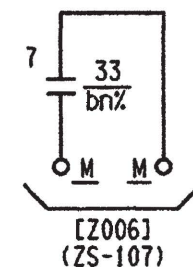
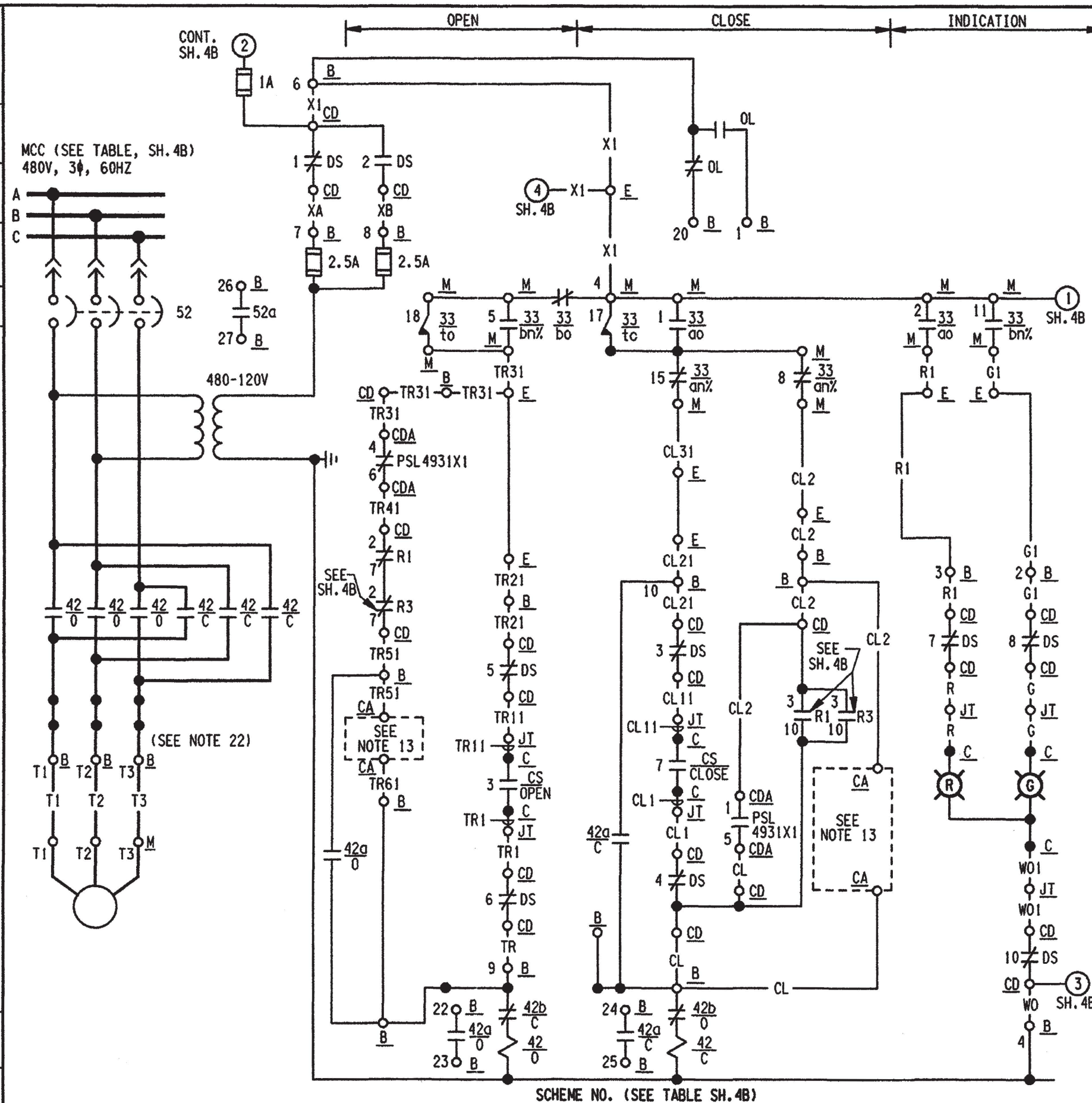




OPERATOR

9-19-87 OPERATOR *Sharon Smith* 16X


22	8/26/96	INC DCN E-46B-592 FOR DDR 95-2640 & E-46B-593 FOR MOD 93-0035-00		"INITIALS ON FILE"	
25	5.6.12	INC. DUN 11-0787-001-003 REV. 00	SAC <i>sm</i>	—	—
24	04-16-10	INC. DUN 09-0588-001-003 REV. 00		"INITIALS ON FILE"	
23	10-11-03	INC DCN E-46B-615 PER ECR 03-0026-00 REV.01 (CR 03-05956)		"INITIALS ON FILE"	
NO.	DATE	REVISIONS			
		BY	CH'K	ENGR.	ENGR. SUPV.
					GEN. SUPV.



1. FOR LEGEND & BLOCK DIAG. SEE DWG. E-46B, SH.4B.
2. FOR GENERAL NOTES, SEE E-46B INDEX SHEET.
3. FIELD TO ADJUST ROTOR 4 SUCH THAT CONTACT 15 WILL PROVIDE SPECIFIED TARGET THRUST ON SEATING.
4. FOR C.S. DETAILS SEE DWG. E-30B SH.7, FIG.7.
5. FOR VLV LIMIT SWITCH DEV. SEE DWG. E-30B SH.8E, FIG.H (ALSO SEE NOTES 3, 6, AND 10 THIS SHEET).
6. FIELD TO ADJUST ROTOR 3 SUCH THAT CONTACT 11 CLOSES WHEN VALVE IS CLOSED, (I.E. AFTER HARD SEAT CONTACT)
8. DELETED
9. PSL4931A CONTACT CLOSES ON LOW PRESSURE AT AFP SUCTION.
10. FIELD TO ADJUST ROTOR #2 WITH SWITCH CONTACTS 5 THRU 8 TO ACTUATE WHEN VALVE REACHES 20% OPEN $\begin{matrix} +5\% \\ -0\% \end{matrix}$
13. FOR SFRCS BLOCK SWITCH AND SCHEMATIC SEE DWG. SF-003B SH.14.

(NOTES CONT'D ON SH. 4B)

THIS DRAWING WAS REDRAWN ON CAD AND SUPERCEDES REVISION 16

SCALE NONE	DESIGNED	DRAWN JOR	DATE 05-31-89
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAM STEAM AND CONDENSATE AUX FD PMPS TURBS MN STM IN ISO VLVS			Q
	DRAWING NO.		REV.
	E-46B SH. 4A		25

NO.	DATE	REVISIONS	BY	CHK	ENGR.	ENGR. SUPV.	GEN. SUPV.
23	04-16-10	INC. DUN 09-0588-001-004 & 09-0588-003-004 BOTH REV.00					
22	2-18-05	INC. DCN E-46B-631 PER ECR 04-0431-00					
24	7/7/11	INC. DUN 11-0136-001-004 REV.00	SAG	SBW			

SCHEME NO.	SCHEME SHOWN ON SH. NO.	MCC	S.U. NO.	CHNL NO.	WIRE PREFIX AT MAIN CONT. BD	CS	EQUIPMENT										DESCRIPTION
								C		CD	CA	B	E	M	F1	CDA	
BF1124	4A	F11A	50	2	4A	HIS107A		C5709		CDF11A-2	C5792	BF1124	EV01070	MV01070	FPSL4931A	CDF11D	AUX FD PMP TURB2 MN ST IN ISO VLV
							EQUIPMENT										
							FA	FB	FC	FD	NCD	JT	EA	MA			
							FPSL107A	FPSL107B	FPSL107C	FPSL107D	NCDF11A	JT5722	EV0107A	MV0107A			

NOTES: (CONT'D FROM SHT. 4A)

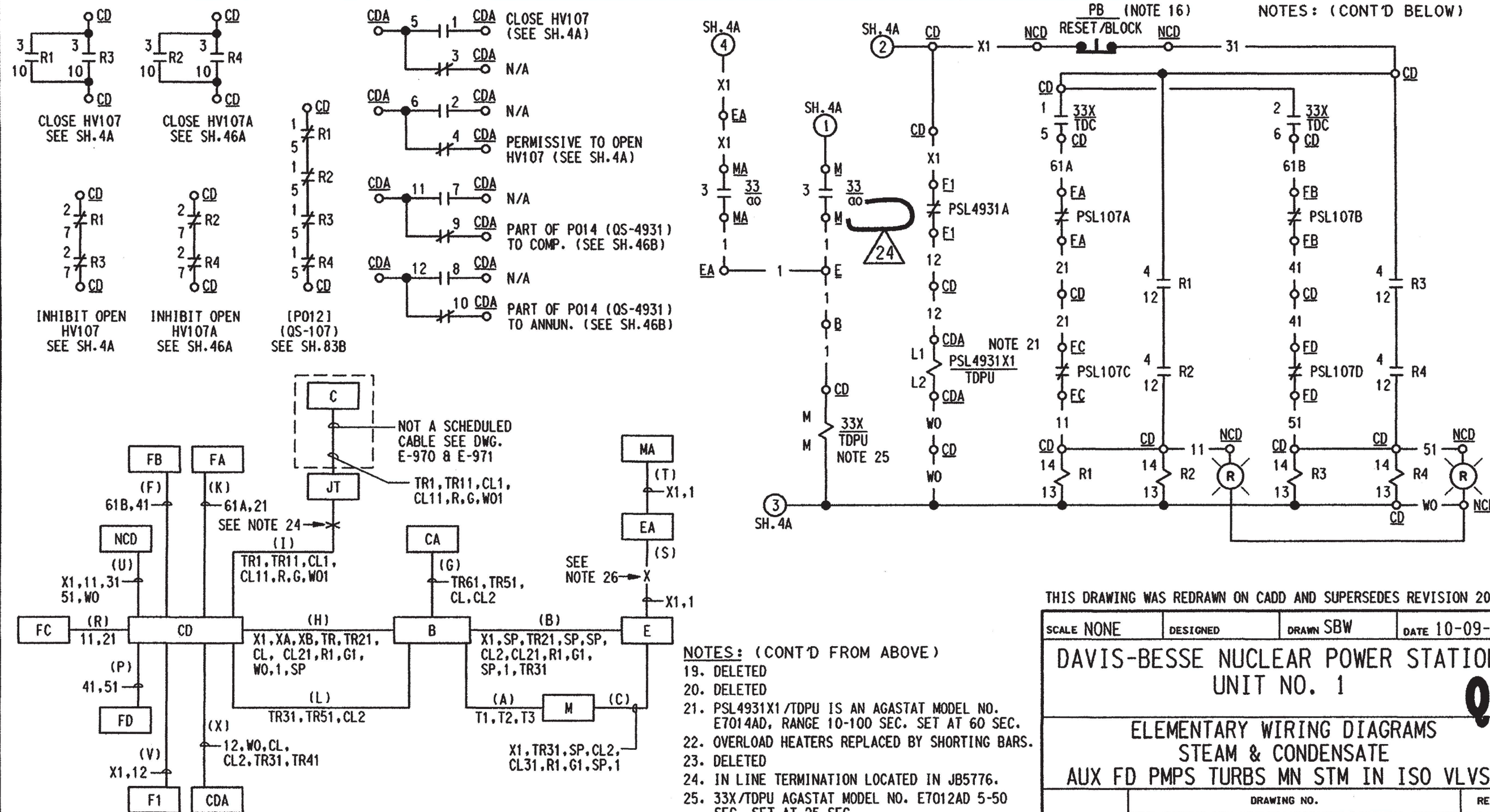
14. DELETED.

15. DELETED.

16. FOR PB/RESET/BLOCK SEE E-30B, SH.6B, FIG. 6, TYPE 8.

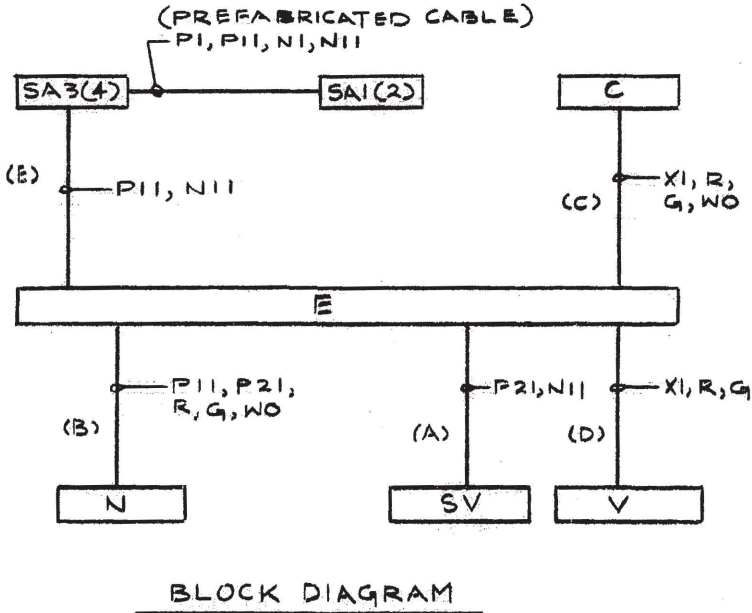
17. PSL107A, B, C, D CLOSE ON LOW STM PRESS.


18. FOR NCD INDICATING LIGHTS, SEE E-30B, SH.7, TYPE 14A.

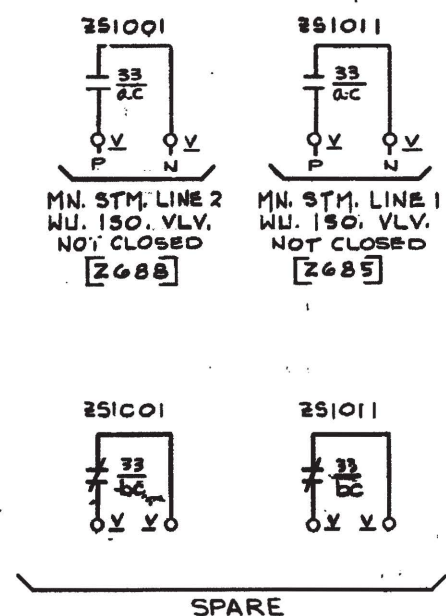


THIS DRAWING WAS REDRAWN ON CADD AND SUPERSEDES REVISION 20


SCALE NONE	DESIGNED	DRAWN SBW	DATE 10-09-03
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1			
ELEMENTARY WIRING DIAGRAMS STEAM & CONDENSATE AUX FD PMPs TURBS MN STM IN ISO VLVS			
DRAWING NO. E-46B SH.4B			REV. 24

[illegible]

<h1>DAVIS-BESSE NUCLEAR POWER STATION</h1> <p>THE TOLEDO EDISON COMPANY THE CLEVELAND ELECTRIC ILLUMINATING COMPANY</p>			
<h2>ELEMENTARY WIRING DIAGRAMS</h2> <p>STEAM & CONDENSATE SG ATM STM VENT & SAMPLE VLV'S</p>			
	JOB NO.	DRAWING NO.	REV.
	7749	E-46B SH.23B	9



1. FOR LEGEND & BLOCK DIAG. SEE DWG. E-46B, SH.32B.
2. FOR GENERAL NOTES SEE DWG. E-46B INDEX SH.
3. FOR DETAILS OF LOCAL PUSHBUTTON AND IND. LIGHTS SEE DWG. E-30B, SH.7, TYPES 4 & 6.
4. DELETED
5. FOR VALVE LIMIT SW. DESIG. SEE DWG. E-30B, SH.8.
6. FOR CONTROL POWER AND SPRCS LOGIC DWG. SF-003 SH. 11 (12).
7. DELETED
8. IN LINE TERMINATION LOCATED IN JB 5777 (CH.1)

<h1>DAVIS-BESSE NUCLEAR POWER STATION</h1> <p>THE TOLEDO EDISON COMPANY THE CLEVELAND ELECTRIC ILLUMINATING COMPANY</p>			
<h2>ELEMENTARY WIRING DIAGRAMS</h2> <h3>STEAM & CONDENSATE</h3> <h3>MN. STM. LINES WU. ISO. VLV'S.</h3>			
	JOB NO.	DRAWING NO.	REV.
	7749	E-46B SH.32A	5

DATE 9-19-89 OPERATOR

OPERATOR

1950

16X

BLOCK DIAGRAM

NOT A SCHEDULED
CABLE SEE DWG.
E970 & E971.

NOTES:
1. FOR NOTES SEE SHEET 32A

DAVIS-BESSE NUCLEAR POWER STATION

THE TOLEDO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

**ELEMENTARY WIRING DIAGRAMS:
STEAM & CONDENSATE
MN. STM. LINES WU. ISO. VLV'S.**

**BECHTEL
COMPANY**

JOB NO.

DRAWING NO.

REV.

7749

E-46 B SH.32 B

16

I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

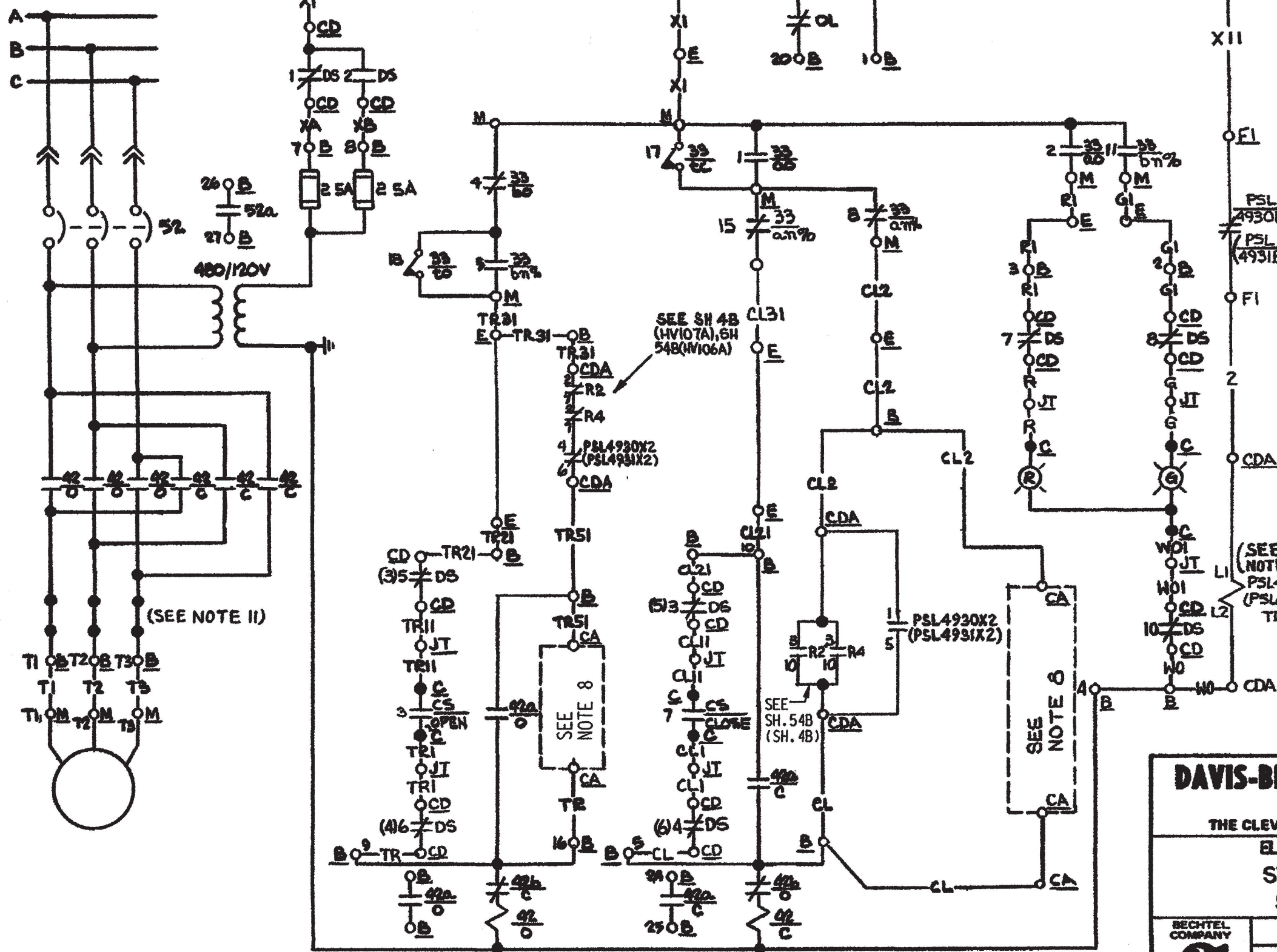
DATE **9-19-89**

OPERATOR

REPRODUCTION OF THE RECORD(S)
 COMMENT: Sharon Sutton 16X

5-4-12	7-7-11	6-9-75
DATE	DATE	DATE
OWNER	OWNER	OWNER
PROJ	PROJ	PROJ
CHIEF	CHIEF	CHIEF
SUPV	SUPV	SUPV
DR	DR	DR
DESCRIPTION	DESCRIPTION	DESCRIPTION
REV	REV	REV
21	INC. DUN'S 11-0787-001-001 & 12-0141-001-001 BOTH REV. 00	ISSUED FOR CONSTRUCTION
20	INC. DUN 11-0136-001-001 REV. 0 (REDRAWN)	
19		
18		
17		
16		
15		
14		
13		
12		
11		
10		
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5		
4		
3		
2		
1		
0		

MCC (SEE TABLE)
480V 3Ø 60HZ

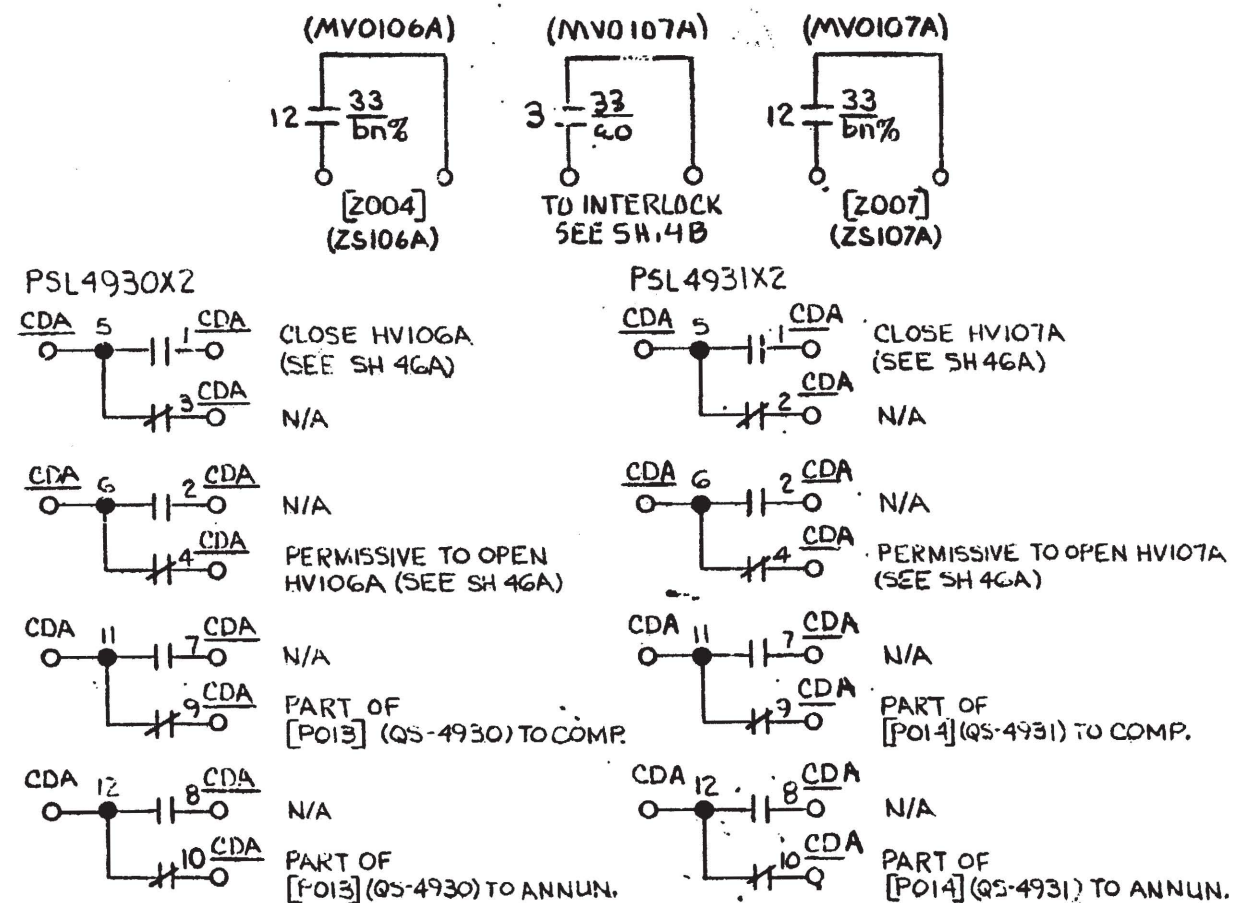


NOTES

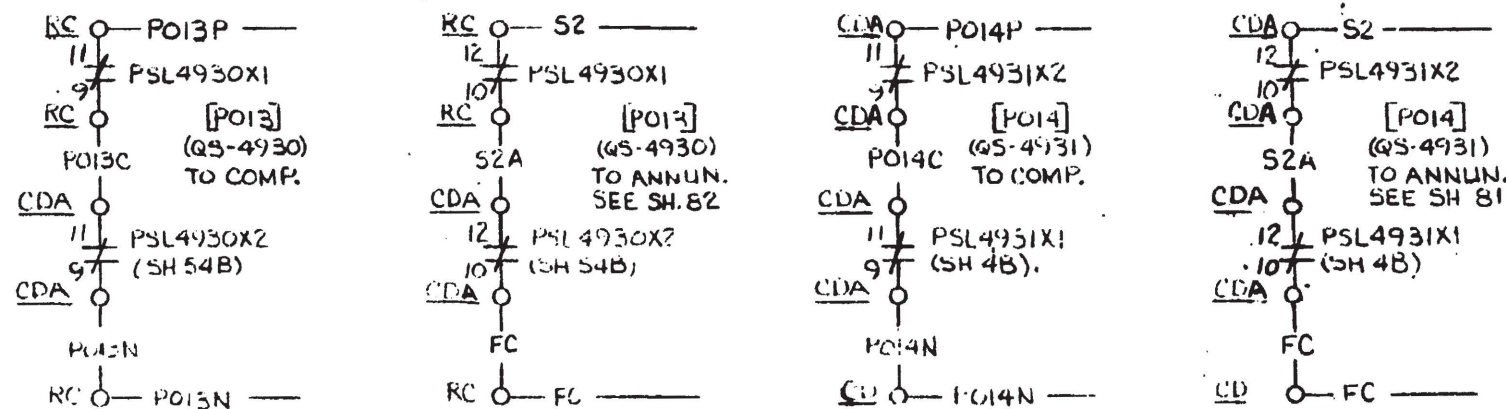
1. FOR SCHEME & BLOCK DIAGRAM SEE DWG. E-46B, SH.46B.
2. FOR GENERAL NOTES SEE DWG. INDEX E-46B.
3. FIELD TO ADJUST ROTOR 4 SUCH THAT CONTACT 15 WILL PROVIDE SPECIFIED TARGET THRUST ON SEATING.
4. FOR DETAILS OF CS SEE DWG. E-30B, SH.7, FIG.7.
5. FOR VALVE LIMIT SW DEVELOPMENT SEE DWG. E-30B, SH.8G, FIG.M, (ALSO SEE NOTES 3, 6, & 12 THIS SHEET).
6. FIELD TO ADJUST ROTOR 3 SUCH THAT CONTACT 11 CLOSES WHEN VALVE IS CLOSED, (I.E. AFTER HARD SEAT CONTACT).
8. FOR SFRCS BLOCK SWITCH & SCHEMATIC SEE SF-003B, SH.15 (16).
9. PSL4930X2/TDPU (PSL4931X2/TDPU) IS AN AGASTAT MODEL NO. E7014AD, RANGE 10-100 SEC. SET AT 60 SEC.
10. PSL4930B (PSL4931B) CONTACT CLOSING ON LOW PRESS AT AFP SUCTION.
11. OVERLOAD HEATER REPLACED BY SHORTING BARS.
12. FIELD TO ADJUST ROTOR #2 WITH SWITCH CONTACTS 5 THRU 8 TO ACTUATE WHEN VALVE REACHES 20% OPEN (+5%, -0%).
13. X-INDICATES IN-LINE TERMINATION APPLIES TO SCHEME BE1271 ONLY.


THIS DWG. WAS REDRAWN/SCANNED ON CAD AND SUPERSEDES REV.19.

DAVIS-BESSE NUCLEAR POWER STATION			
THE TOLEDO EDISON COMPANY			
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY			
ELEMENTARY WIRING DIAGRAM			
STEAM AND CONDENSATE			
SG AFPT ISO VLV			
BECHTEL COMPANY	JOB NO	DRAWING NO	REV
	7749	E46 B SH46A	21



SCHEME NO	MCC	SU NO	CH	WIRE PREFIX	CS	EQUIPMENT NUMBERS														DESCRIPTION
						C	CD	CDA	B	M	E		CA	FI	JT					
BE1271	E12B	50A	1	STM	HIS106E	C5706	CDE12B	CDF11C	BE1271	MVO106A	EVO106A		C5762A	PSL47430E	JT5721			SG2 TO AFPT 1 ISO VLV		
BF1188	F11B	50A	2	STN	HIS107E	C5709	CDF11B	CDF11A-2	BF1188	MVO107A	EVO107A		C5792	PSL4731B	JT5722			SG1 TO AFPT 2 ISO VLV		



DAVIS-BESSE NUCLEAR POWER STATION			
THE TOLEDO EDISON COMPANY			
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY			
ELEMENTARY WIRING DIAGRAM			
STEAM AND CONDENSATE			
SG AFPT ISO VLV			
 BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E46B SH46B	17

INDEX

SHEET NO.	LATEST REV.	DESCRIPTION	
1A	13	CIRCULATING WATER PUMP	
1B	15	CIRCULATING WATER PUMP	
1C	8	CIRCULATING WATER PUMP	
2A	6	CIRCULATING WATER PUMP DISCH. VLV'S	
2B	8	CIRCULATING WATER PUMP DISCH. VLV'S	
2C	10	CIRCULATING WATER PUMP DISCH. VLV'S	
3A	7	COOLING TOWER MAKE-UP PUMP	
3B	9	COOLING TOWER MAKE-UP PUMP	
4	9	COOLING TOWER MAKE-UP PUMP STRAINERS	
5	6	COOLING TOWER MAKE-UP PUMP BACK WASH VALVES	
6A	11	SERVICE WATER PUMP 1	Q
6B	13	SERVICE WATER PUMP 1 (AC 107)	Q
6C	5	SERVICE WATER PUMP 2	Q
6D	5	SERVICE WATER PUMP 2 (AD 107)	Q
7	15	SERVICE WATER PUMP STRAINERS 1-2	Q
7A	2	SERVICE WATER PUMP STRAINER 1-1	Q
7B	1	SERVICE WATER PUMP STRAINER 1-3	Q
8	13	SERVICE WATER PUMP STRAINERS 1-2 & 1-3 DRAIN VLV	Q
8A	1	SERVICE WATER PUMP STRAINER 1-1 DRAIN VLV	Q
9A	14	SW ISO VLV'S TO CLNG WTR (MOV'S) 1395	Q
9B	9	SW ISO VLV'S TO CLNG WTR (MOV'S) 1399	Q
10	1	DELETED	
11A	14	SERVICE WATER PUMP 3 CH.1	Q
11B	16	SERVICE WATER PUMP 3 (AC 109)	Q
11C	11	SERVICE WATER PUMP 3 XFER BRKR	Q
11D	6	SERVICE WATER PUMP 3 XFER BRKR	Q
11E	5	SERVICE WATER PUMP 3 CH.2	Q
11F	4	SERVICE WATER PUMP 3 (AD 109)	Q
12	6	CTMT AIR CLR'S 1-2 IN ISO VLV (MOV)	Q
12A	1	CTMT AIR CLR'S 1-1 IN ISO VLV (MOV)	Q
13	8	CTMT AIR CLR'S 1-1 & 1-2 OUTLET VLV'S (SOV'S)	Q
14A	8	CTMT AIR CLR'S 1-3 IN ISO VLV (MOV)	Q
14B	6	CTMT AIR CLR'S 1-3 IN ISO VLV (MOV)	Q
14C	7	CTMT AIR CLR'S 1-3 IN ISO VLV (MOV)	Q
15	12	ECCS RM CLR'S OUT VLV'S (MOV'S) DWG. VOID	Q
16	1	DELETED	

GENERAL NOTES:

1. FOR EXPLANATION OF EQUIPMENT, WIRING AND SCHEME NUMBERS SEE E-11A, ELECTRICAL NUMBERING SYSTEMS.
2. FOR MOTOR INFORMATION SEE E-12B, ELECTRICAL MOTOR LIST.
3. FOR CONTROL PANEL, JUNCTION BOX & TERMINAL BOX DESCRIPTION SEE E-13B, ELECTRICAL EQUIPMENT LIST.
4. WIRE NUMBER PREFIX MUST BE ADDED TO FORM COMPLETE WIRE NUMBER FOR THOSE WIRES AT MAIN CONTROL BOARD.
5. AUX. CONTROL RELAY IN SOLENOID OPERATED VALVE CONTROL CIRCUIT TO BE COUCH RELAY TYPE 4AP44-AF.
6. NUMBERS IN BRACKETS [] REPRESENTS COMPUTER INPUT NUMBER. NUMBER IN PARENTHESIS () REPRESENTS COMPUTER INPUT SOURCE NUMBER.

BLOCK DIAGRAM DESIGNATIONS:

- A - 4.16 KV SYSTEM SWITCHGEAR
- B - 480V SYSTEM MOTOR CONTROL CENTER
- C - MAIN CONTROL BOARD
- CA - LOCAL CONTROL CABINET
- E - LOCAL DISTRIBUTION TERMINAL BOX
- H - 13.8 KV SYSTEM SWITCHGEAR
- M - MOTOR
- N - LOCAL CONTROL STATION
- P - PENETRATION TERMINAL BOX
- RC - AUXILIARY RELAY CABINET

REFERENCE DRAWINGS:

- E-5 SH.1 THRU 5 - 480V MCC (NON-ESSENTIAL) ONE LINE DIAGRAM
- E-6 SH.1 & 2 - 480V MCC (ESSENTIAL) ONE LINE DIAGRAM
- E-10A - STANDARD NOTES AND SYMBOLS
- E-14B - SOLENOID VALVE LIST
- E-30B - GENERAL GUIDES - ELEMENTARY DIAGRAM

THIS DRAWING WAS REDRAWN ON CADD AND SUPERSEDES REVISION 64.

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-13-04
DAVIS-BESSE NUCLEAR POWER STATION			
UNIT NO. 1			
THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAMS			
LAKE WATER SYSTEM			
DRAWING INDEX			
DRAWING NO.			REV.
E-48B SH.1			75

FOR CONTINUATION OF INDEX SEE SH.2.

INDEX				INDEX			
SHEET NO.	LATEST REV.	DESCRIPTION		SHEET NO.	LATEST REV.	DESCRIPTION	
17	5	CLNG TWR MU PUMP DISCH VLV (SOV)		44	7	CTMT H2 PURGE FAN SW IN VLV'S	Q
18	7	CLNG TWR BLOWDOWN (SOV)		45	4	CLNG TWR ACID TK'S ACID CTRL VLV (SOV'S)	
19	6	LP COND 1-2 IN WTR BOXES X-OVER LINE VLV (MOV)		46A	5	ALARMS	
20	9	SCREEN WASH PUMPS		46B	7	ALARMS	
21	5	SCREEN WASH PUMPS STRAINERS		46C	1	TRAVELING WATER SCREEN ΔP REFLASH	
22	6	SCRN WASH STRNR'S BKWSH VLV'S		46D	1	TRAVELING WATER SCREEN TROUBLE ANNUNCIATION REFLASH	
23	5	TRASH TROUGH WATER SUPPLY LINE		47	2	CLNG TWR ACID TIMING CONTROL	
24	3	TRVLG SCRN'S IN VLV'S		48A	4	UNIT SETTLING BASIN SUMP PUMPS	
25A	5	SUMP PUMPS		48B	4	UNIT SETTLING BASIN SUMP PUMPS	
25B	5	SUMP PUMPS		49	0	DWG. VOID	
26	11	SW TO INTAKE FOREBAY VLV (MOV'S)	Q	50	6	BACK UP SERVICE WATER STRAINERS	
27	10	CTRL RM EMER COND UNITS OUT VLV'S (MOV'S)	Q	51	5	BACK UP SERVICE WATER STRNR'S DRN.	
28	13	SW TO COLLECTION BASIN VLV (MOV)	Q				
28A	0	SW TO INTAKE STRUCTURE VLV (MOV)	Q				
28B	0	SW TO CLNG. TWR. MU VLV (MOV)	Q				
29	7	CLNG WTR HX IN FRM CIRC WTR VLV (SOV)					
30	11	SW FRM CC HX'S 1 & 2 ISO VLV'S (SOV'S)	Q				
31A	13	SW FRM CC HX 3 ISO VLV (SOV)	Q				
31B	11	SW FRM CC HX 3 ISO VLV (SOV)	Q				
31C	1	DELETED					
32	5	SERVICE WATER PUMPS DISH VLV'S (SOV'S)					
33A	7	CTMT AIR CLR 1-3 OUT VLV	Q				
33B	4	CTMT AIR CLR 1-3 OUT VLV	Q				
33C	6	CTMT AIR CLR 1-3 OUT VLV	Q				
34	7	TRAVELING WATER SCREENS					
75 35	5	INTAKE CRIB AIR BUBBLER COMPRESSORS					
36	7	FD TO MCC EF12C	Q				
37A	6	DILUTION PUMP MOTOR					
37B	4	DILUTION PUMP MOTOR					
75 37C	1	BACK UP SERVICE WTR PUMP MOTOR					
37D	4	BACK UP SERVICE WTR PUMP MOTOR					
38	7	CLNG TWR LINES IN, BYPASS & DEICING VLV'S					
39	4	CLNG TWR ACID FD PMP'S DISCH VLV (MOV)					
40	1	DELETED					
41	4	CLNG TWR ACID SOLUTION EJECTION					
42A	5	CLNG TWR ACID INJ SYS AUX RELAYS					
42B	3	CLNG TWR ACID INJ SYS IND LIGHTS					
43	1	COMPUTER INPUT AUX CRKT'S					

THIS DRAWING WAS REDRAWN ON CADD AND SUPERSEDES REVISION 64.

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-13-04
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 <small>THE TOLEDO EDISON COMPANY</small>			
ELEMENTARY WIRING DIAGRAMS LAKE WATER SYSTEM DRAWING INDEX			
DRAWING NO. E-48B SH.2			REV. 75

FOR GENERAL NOTES AND REFERENCE
DRAWINGS SEE DRAWING E-48B DRAWING
INDEX SH.1.

FOR REVISION DESCRIPTION
SEE INDEX SH.3.

DB 08-14-19 DFN:/F/SCHEME/E48BIS01.DGN

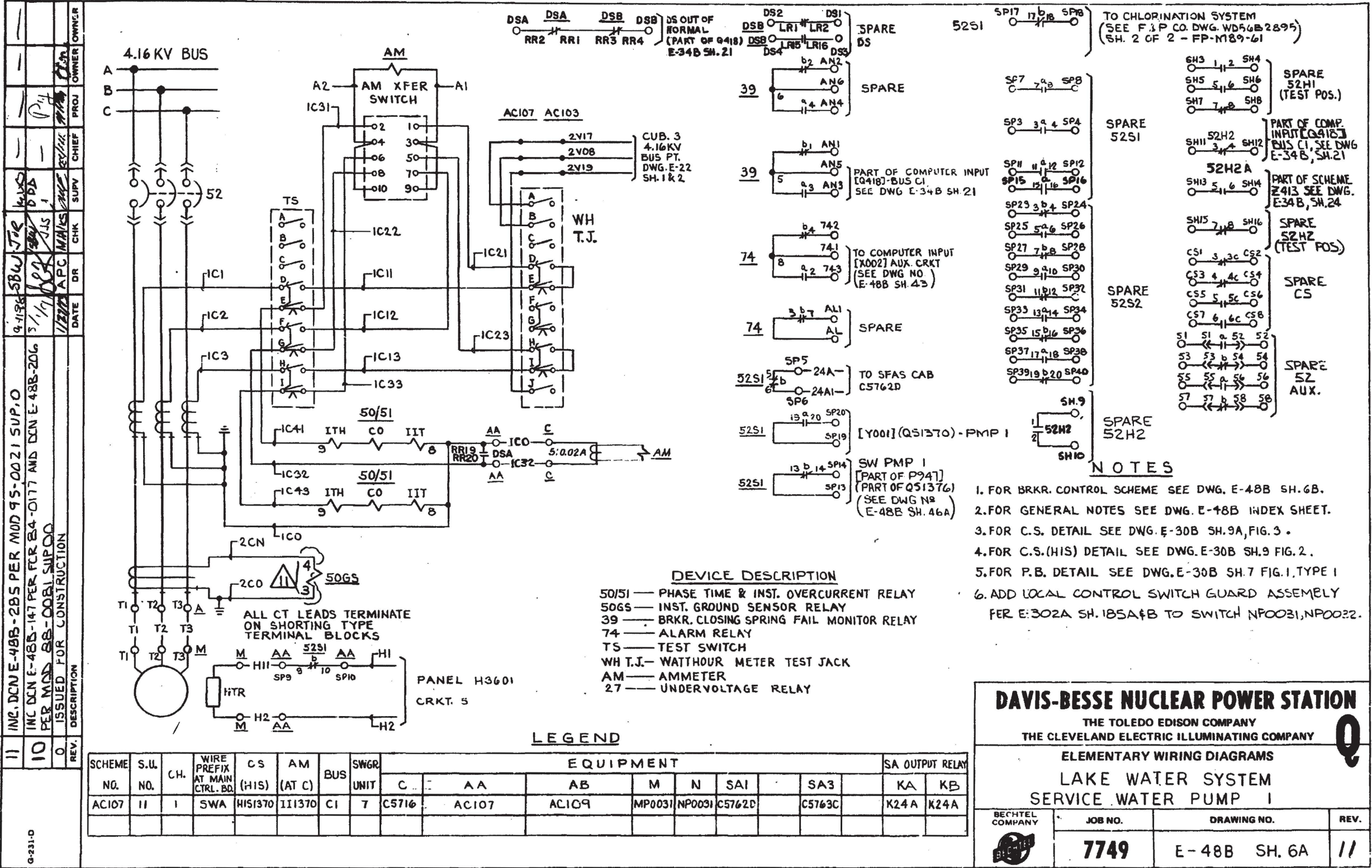
75	9-16-19	REVISED SH.35 (REV.5), SH.37C (REV.1) & SH.37D (REV.4)	SAP	RJC	—	9HR	—
74	05-12-16	REVISED SH.1A (REV.13), SH.12A (REV.1) & SH.34 (REV.7)			INITIALS ON	FILE	
73	02/08/14	REVISED SH.13 (REV. 8), SH.33A (REV.7), SH. 33C, 34 & 37A (REV. 6), & SH. 37D (REV. 3).			INITIALS ON	FILE	
72	08/15/13	REVISED SH.7 (REV.15), SH.7B (REV.1), SH.11C (REV.11), SH.37D (REV.2), SH.50 (REV.6) & SH.51 (REV.5) & GEN. UPDATE ADD SH.7B TO INDEX & CORRECT SH.7A (IND. SH.1) REMOVE 1-3, NOW ON NEW SH.7B BOTH PER REVIEW OF ASSOC. DWG. & FILENET			INITIALS ON	FILE	
71	8/14/12	REVISED SH.7 (REV.14), SH.7A (REV.2), SH.31A (REV.13), SH.33A (REV.6), SH.33B (REV.4) & SH.50 (REV.5)			INITIALS ON	FILE	
70	7/14/09	REVISED SH.7A & 8A (REV.1), SH.36 (REV.7) & SH.50 & 51 (REV.4)			INITIALS ON	FILE	
69	02/29/08	REVISED SH. 11C (REV.10), & SH. 19 (REV.6)			INITIALS ON	FILE	
68	05/22/06	REVISED SH. 38 (REV.7)			INITIALS ON	FILE	
67	02/20/06	REVISED SH'S. 13 (REV.7), 30 (REV.11), 33A (REV.5)& 33B (REV.3)			INITIALS ON	FILE	
66	09/15/05	REVISED SH'S. 1A & 31A (REV.12), SH.1B (REV.15), SH.1C (REV.8), SH.2C & 30 (REV.10), SH.9A (REV.14), SH.9B (REV.9) & SH.13 (REV.6)			INITIALS ON	FILE	
65	10/5/04	REVISED SH'S. 7, 8, 9A & 28 (REV.13); SH'S. 12, 14B, 36 (REV.6); SH'S. 9B & 14A (REV.8); SH'S. 14C, 18 & 46B (REV.7); SH. 35 (REV.4); SH'S. 50 & 51 (REV.3), AND GEN. UPDATE ADDED SH'S. 7A, 8A, 12A (REV.0) TO INDEX PER DWG. SPLIT FOR DCN UPDATE AND REVISED DWG. TITLE FOR SH'S. 7, 8, 9A, 9B, 12 & 28.			INITIALS ON	FILE	
REV	DATE	DESCRIPTION	BY	CH'K	ENGR.	ENGR. SUPV.	GEN. SUPV.

FOR GENERAL NOTES AND REFERENCE DRAWINGS
SEE DRAWING E-48B DRAWING INDEX SH.1.

THIS DRAWING WAS REDRAWN ON CADD AND SUPERSEDES REVISION 64.

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-13-04
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 <small>THE TOLEDO EDISON COMPANY</small>			
ELEMENTARY WIRING DIAGRAMS LAKE WATER SYSTEM DRAWING INDEX			
DRAWING NO. E-48B SH.3			REV. 75

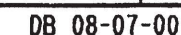




I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT, DAVIS-BESSE N.P.S.

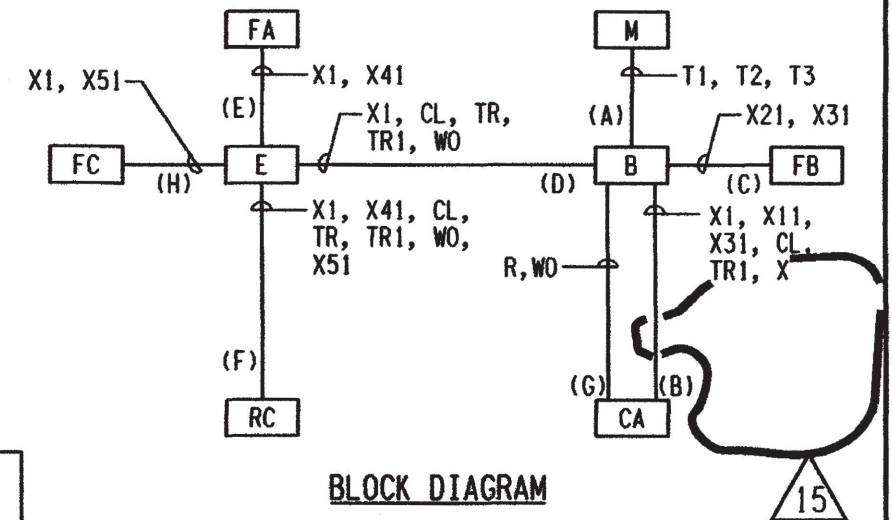
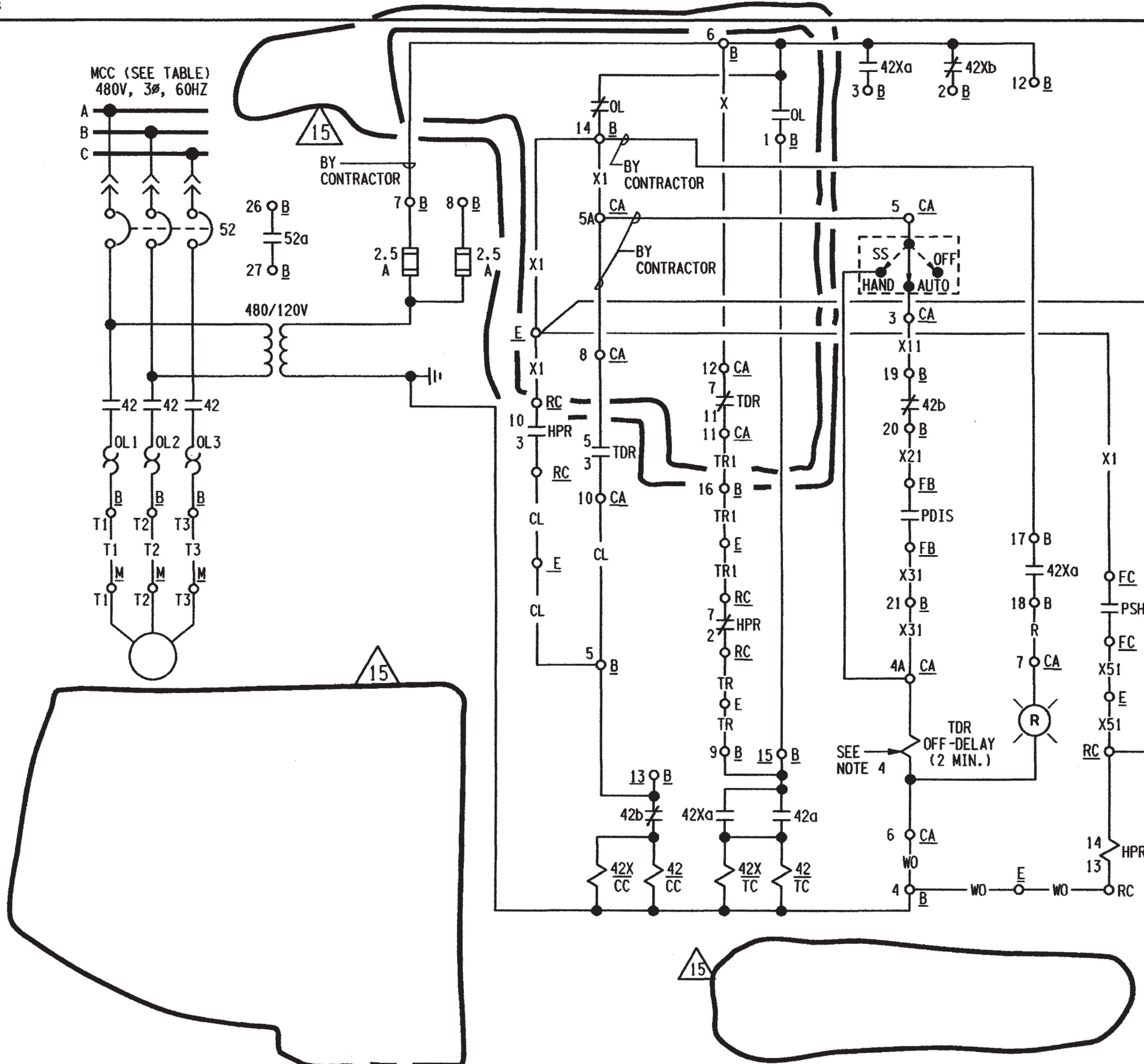
DATE: 10/10/00 OPERATOR: Dorothy Wiedle

16X

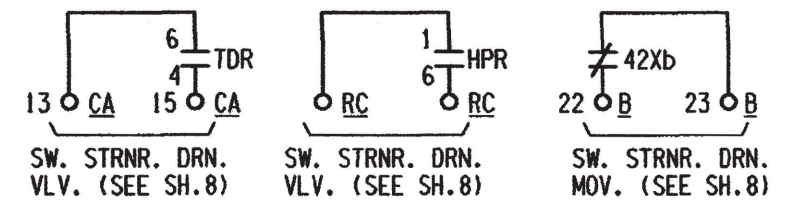


OR King's College 16X



[illegible]

BLOCK DIAGRAM



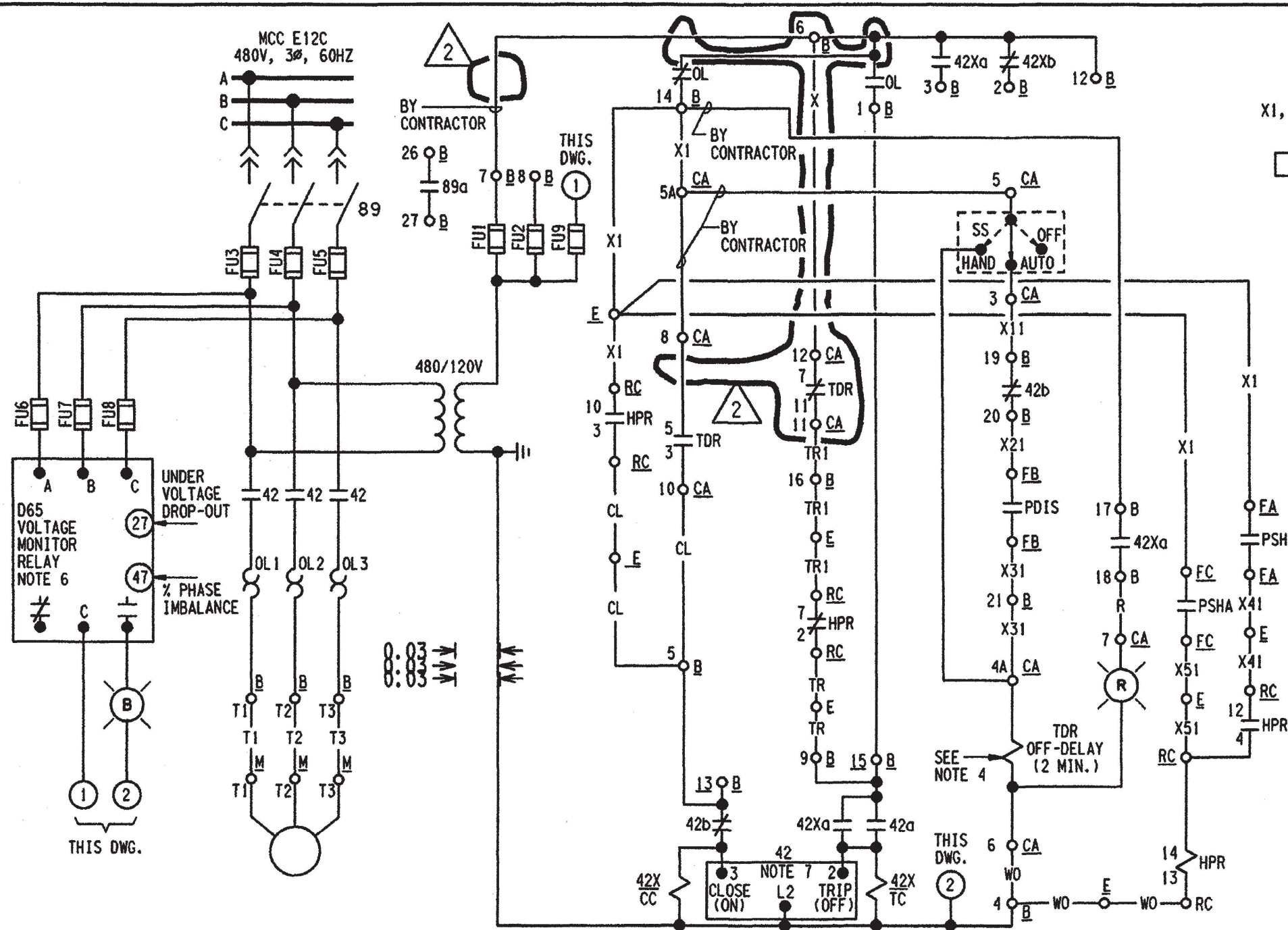
NOTES

1. FOR GENERAL NOTES SEE DWG. E-48B INDEX SHEET.
2. TDR CHANGES CONTACT POSITION ON HIGH DIFF. PRESS. ACROSS STRAINER ON "AUTO", RESETS AT NORMAL DIFF. PRESS.; PSH CONTACT OPENS ON DECREASING PRESS. AT STRAINER. PSHA CLOSSES ON INCREASING PRESS. ON STRAINER.
3. DELETED
4. DELETED
5. RELAY 42X IS A POTTER & BRUMFIELD MDR RELAY AND HAS 8 PDT CONTACTS. FOR SPARE CONTACTS SEE DWG'S. E-8-78 & E-8Q-165.
6. FOR SCHEME NO. BE1274 SERVICE WATER STRAINER 1-1 SEE DWG. E-48B SH.7A.
7. FOR SCHEME NO. BEF124 SERVICE WATER STRAINER 1-3 SEE DWG. E-48B SH.7B.

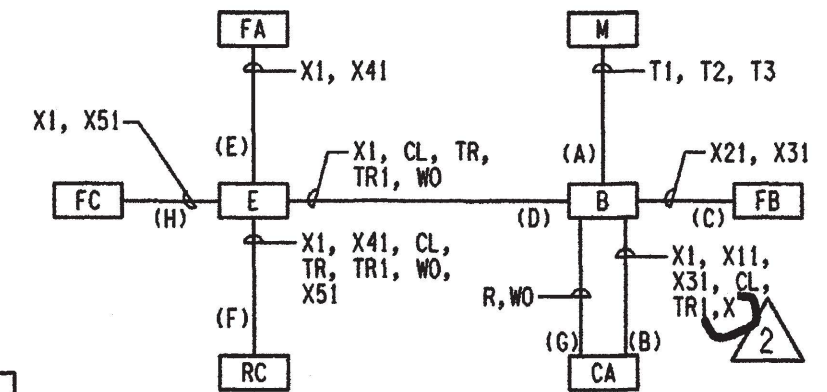
THIS DRAWING WAS REDRAWN ON CADD AND SUPERSEDES REVISION 12

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-15-04
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAM LAKE WATER SYSTEM SERVICE WATER PUMP STRAINERS 1-2			
	DRAWING NO.		REV.
	E-48B SH. 7		15

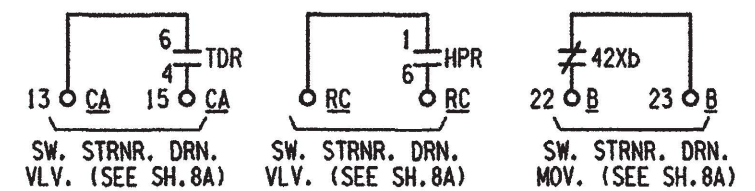
2	8/14/12	INC. DUN 10-0192-001-001 REV.00	SBW	SC	—	82	—
	7-15-04	GEN. UPDATE FOR ECR 03-0507-00 REV.1 PER DCN E-48B-440, ECR 03-0335-00 REV.4 PER DCN E-48B-438 AND ECR 03-0507-00 REV.2 PER DCN E-48B-478 (CR 03- 10201CA1) AND ADD NOTE 6 REF. IN D65 VOLTAGE MONITOR RELAY BOX FOR CLARITY.		INITIALS ON FILE			
0							
NO.	DATE	REVISONS	BY	CH'K	ENGR.	ENGR. SUPV.	GEN. SUPV.



SCHEME NO. BE1274



BLOCK DIAGRAM



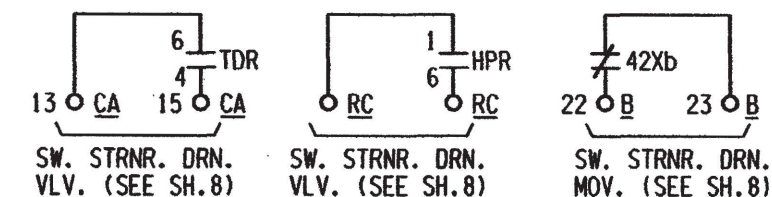
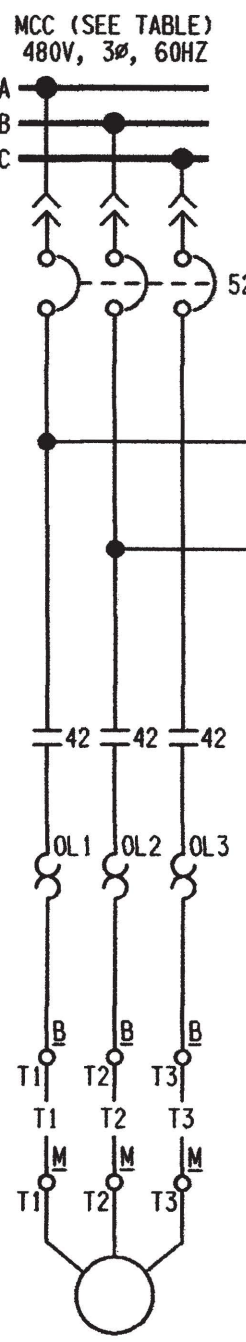
NOTES

1. FOR GENERAL NOTES SEE DWG. E-48B INDEX SHEET.
2. TDR CHANGES CONTACT POSITION ON HIGH DIFF. PRESS. ACROSS STRAINER ON "AUTO", RESETS AT NORMAL DIFF. PRESS.; PSH CONTACT OPENS ON DECREASING PRESS. AT STRAINER. PSHA CLOSING ON INCREASING PRESS. ON STRAINER.
3. DELETED
4. DELETED
5. RELAY 42X IS A CUTLER-HAMMER D26.
6. CONTACTS ARE SHOWN IN SHELF (DE-ENERGIZED) STATE. SEE RELAY SETTING MANUAL FOR SET POINTS. (ECR 03-0507-00)
7. REFERENCE E-008Q-00181 FOR STARTER INTERNALS.
8. 42 DEVICES CONTAIN CONTACTS THAT MAY CHATTER DURING A SEISMIC EVENT (SEE ECP 08-0709 FOR DETAILS).

SCHEME NO.	MCC	S.U. NO.	CHANNEL NO.	EQUIPMENT								DESCRIPTION
				B	M	CA	E	FA	FB	FC	RC	
BE1274	E12C	11	1	BE1274	MF0151	C3017	EV13790	FPSH2917	FPDIS1379A	FPSH2917A	RC3013	SW STRAINER 1-1


SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-28-04
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1			
ELEMENTARY WIRING DIAGRAM LAKE WATER SYSTEM SERVICE WATER PUMP STRAINER 1-1			
	DRAWING NO.		REV.
	E-48B SH.7A		2

1	8/15/2017	INC. DUN 10-0192-003-006 REV.00
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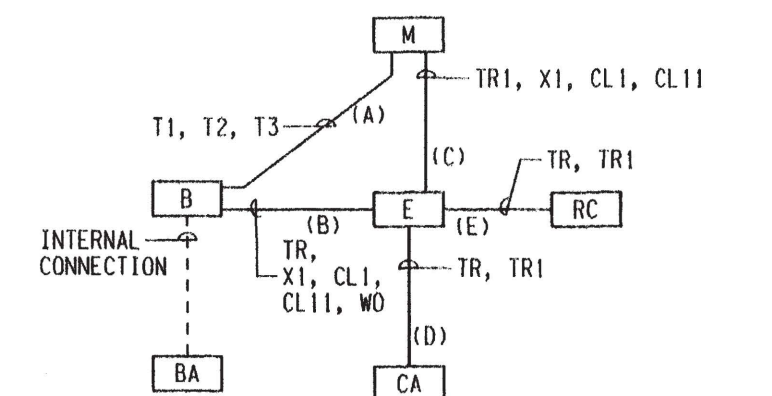


1. FOR GENERAL NOTES SEE DWG. E-48B INDEX SHEET.
2. TDR CHANGES CONTACT POSITION ON HIGH DIFF. PRESS. ACROSS STRAINER ON "AUTO", RESETS AT NORMAL DIFF. PRESS.; PSH CONTACT OPENS ON DECREASING PRESS. AT STRAINER. PSHA CLOSSES ON INCREASING PRESS. ON STRAINER.
3. DELETED
4. DELETED
5. RELAY 42X IS A POTTER & BRUMFIELD MDR RELAY AND HAS 8 PDT CONTACTS. FOR SPARE CONTACTS SEE DWG'S. E-8-78 & E-80-165.
6. FOR SCHEME NO. BE1274 SERVICE WATER STRAINER 1-1 SEE DWG. E-48B SH.7A.
7. FOR SCHEME NO. BF1274 SERVICE WATER STRAINER 1-2 SEE DWG. E-48B SH.7.
8. TDR RELAY ORIGINALLY AGASTAT MODEL 7022F. ANY FUTURE REPLACEMENT IS TO BE MODEL E-7024F. REF. NCR INFO. NOTICE 87-66 AND ECP 10-0192.

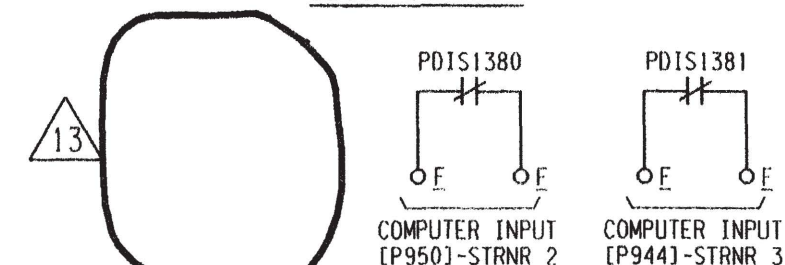
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SCALE NONE	DESIGNED	DRAWN SAS	DATE 05-03-10
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1			
ELEMENTARY WIRING DIAGRAM LAKE WATER SYSTEM SERVICE WATER PUMP STRAINER 1-3			
	DRAWING NO.		REV.
	E-48B SH.7B		1

INC. DCN E-48B-441 PER ECR 03-0507-00 REV.1 (NO DWG. CHANGE SEE SH.8A) AND GEN. UPDATE RELOCATE SCHEME BE1275 TO E-48B SH.8A, ADD NOTE 9, RELOCATE PDIS1379 DETAIL TO SH.8A AND ADJUST DWG. TITLE PER DWG. SPLIT (REDRAWN)



BLOCK DIAGRAM



NOTES

1. FOR GENERAL NOTES SEE DWG. E-48B INDEX SH.
2. FOR VALVE LIMIT SW. CONTACT DEVELOPMENT SEE DWG. E-30B SH.8 FIG.A (SEE NOTE 7 THIS SHEET).
3. FOR INTERNAL WIRING OF LOCAL PANEL CA SEE R.P. ADAMS DWG. 35405 (M234-11-1).
4. TDR CONTACT CLOSURES ON HIGH DIFF. PRESS. ON "AUTOMATIC" & HPR CONTACT CLOSURES ON HIGH PRESS. AT SERVICE WATER STRAINER.
5. CONTRACTOR SHALL ADD JUMPER BETWEEN TERMINALS 6 & 7 OF STARTER.
6. OVERLOAD HEATERS REPLACED BY SHORTING BARS.
7. FIELD TO ADJUST ROTOR #2 WITH SWITCH CONTACTS 5 THRU 8 TO ACTUATE WHEN VALVE REACHES 20% OPEN +5%, -0%.
8. THE 25W HEATER HAS BEEN REMOVED FROM MOTOR MV13800.
9. FOR SCHEME NO. BE1275 SERVICE WATER STRAINERS DRAIN SEE DWG. E-48B SH.8A.

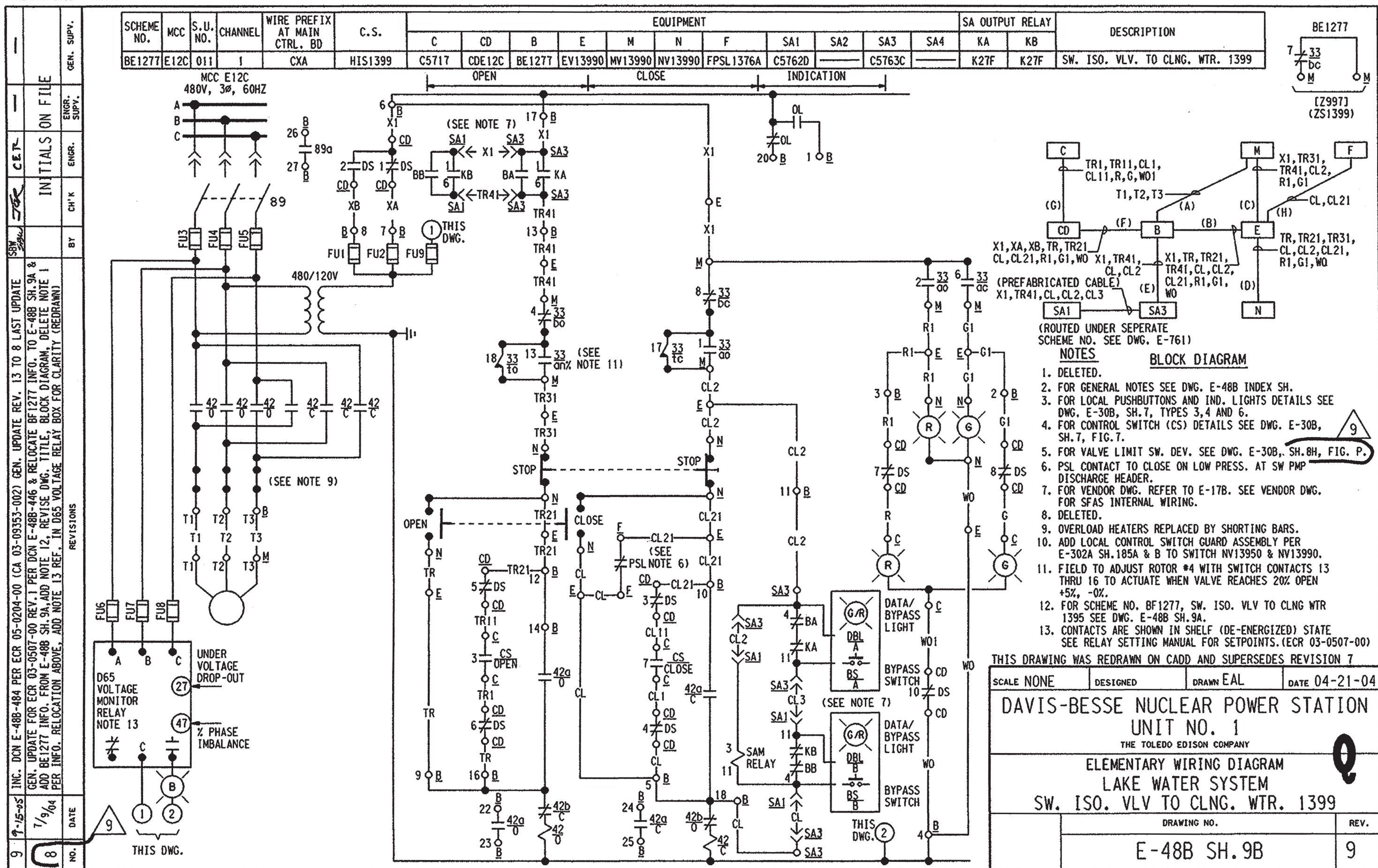
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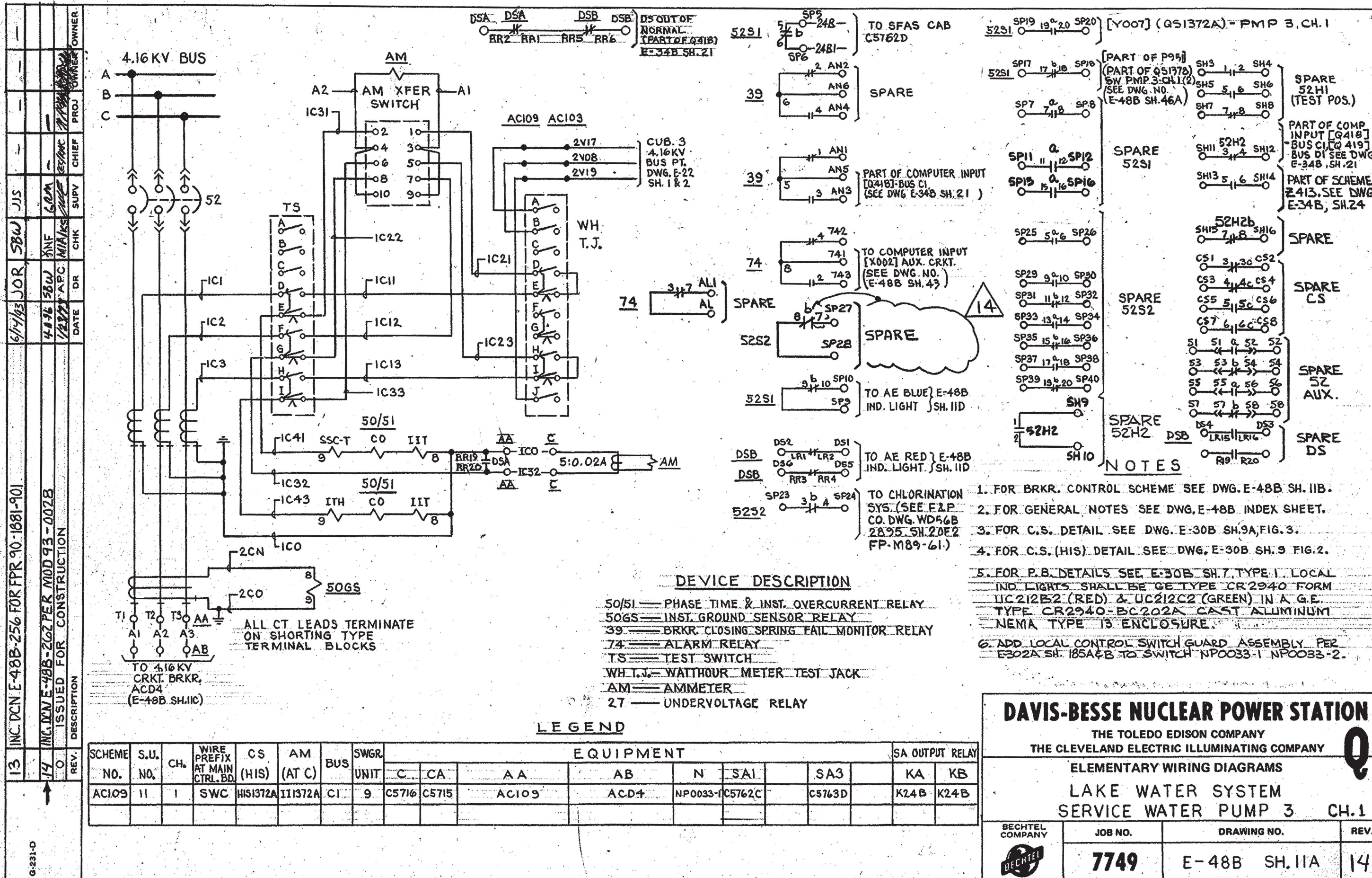
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SCHEME NO.	MCC	S.U. NO.	CHANNEL	EQUIPMENT						DESCRIPTION
				CA	B	E	M	BA	RC	
BF1275	F12C	11	2	C3018	BF1275	EV13800	MV13800	BF1274	RC3014	SERVICE WATER STRNR 1-2 DRAIN VLV
BEF125	EF12C	11	3	C3019	BEF125	EV13810	MV13810	BEF124	RC3015	SERVICE WATER STRNR 1-3 DRAIN VLV

DB 06-19-09 DFN= F:/SCHEME/E48BS8A.DGN

DB 08-19-05 DFN= F:/SCHEME/E48BS9A.DGN





DAVIS-BESSE NUCLEAR POWER STATION

THE TOLEDO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

ELEMENTARY WIRING DIAGRAMS

LAKE WATER SYSTEM
SERVICE WATER PUMP 3 CH.1

BECHTEL COMPANY



JOB NO.

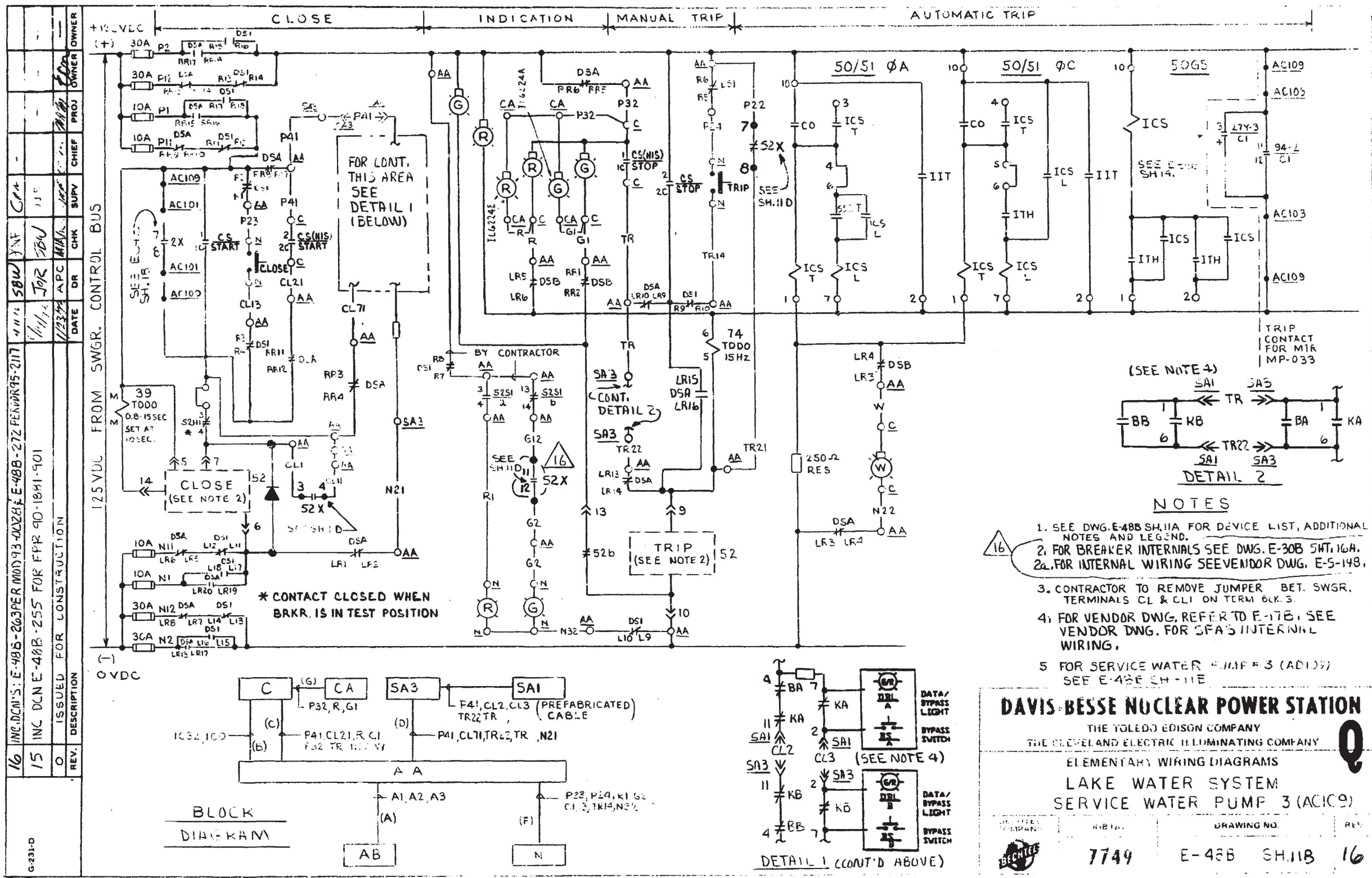
7749

DRAWING NO.

E-48B SH.11A

REV.

14

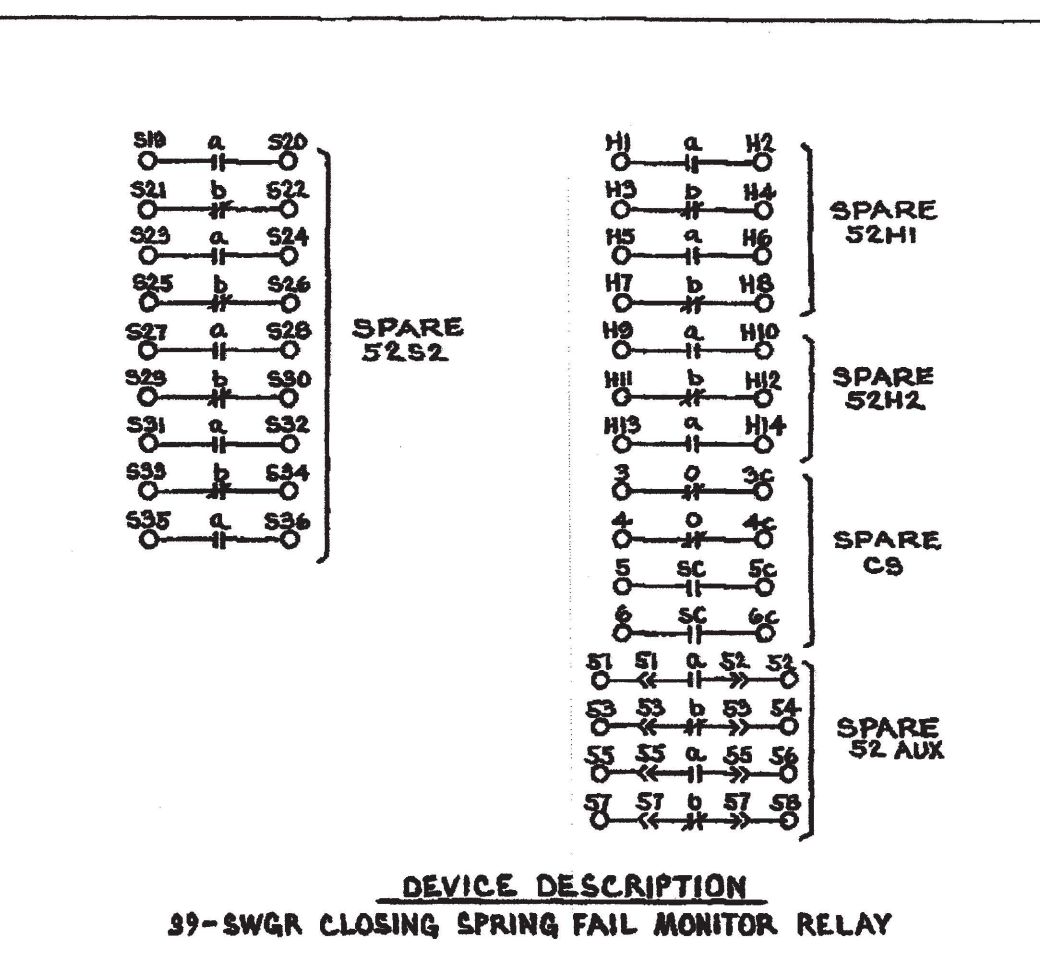
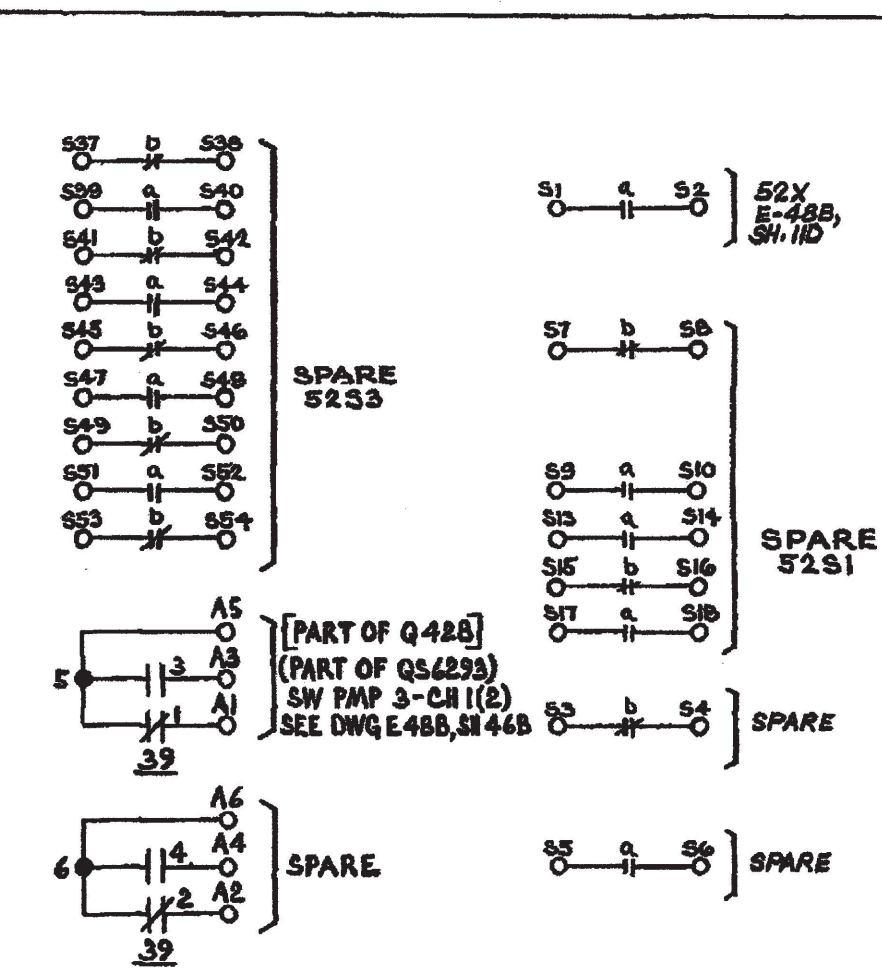
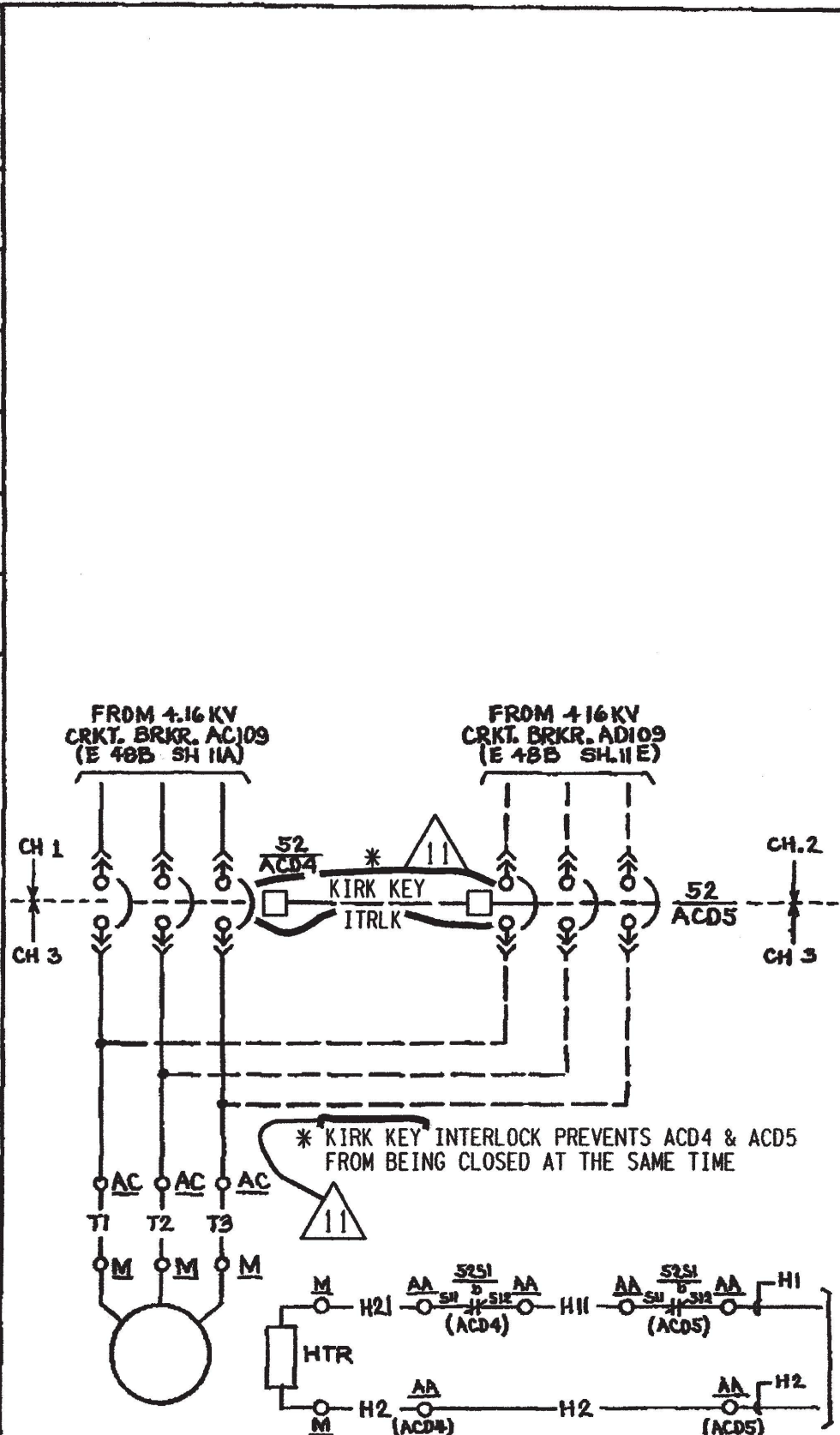


I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

DATE: 4.15.96 OPERATOR: Doty, Linda

16X

REV	DESCRIPTION	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
10	INC. DUN 07-0159-00-1 REV.0 (REDRAWN)	2-29-08						
11	INC. DUN 10-0044-002-003 REV.00	3/15/2013						
0	ISSUED FOR CONSTRUCTION	1/23/07						



39-SWGR CLOSING SPRING FAIL MONITOR RELAY

- NOTES
1. FOR BRKR. CONTROL SCHEME SEE DWG. E-48B, SH11D.
 2. FOR GENERAL NOTES SEE DWG. E-48B, INDEX SHEET.
 3. FOR C.S. DETAIL SEE DWG. E-30B, SH.10, FIG.2.
 4. FOR BREAKER INTERNALS SEE DWG. E-30B, SHT.16A.
 - 4a. FOR INTERNAL WIRING SEE VENDOR DWG.S E-38-3 AND E-38-4.

SCHEME NO.	S U. NO.	CH	EQUIPMENT					WIRE PREFIX AT MAIN CTRL BD
			CA	AA	AB	AC	M	
ACD4	11	1	C5715	ACD4	AC109	ACD6*	MP0033	CD3
ACD5		2	C5715	ACD5	AD109			CD4

* SWGR. UNIT NO 6 - MOTOR FEEDER TERMINAL COMPARTMENT TO WHICH THE COMMON BUS OF BRKR'S ACD4 & ACD5 OUTGOING LINE ARE CONNECTED

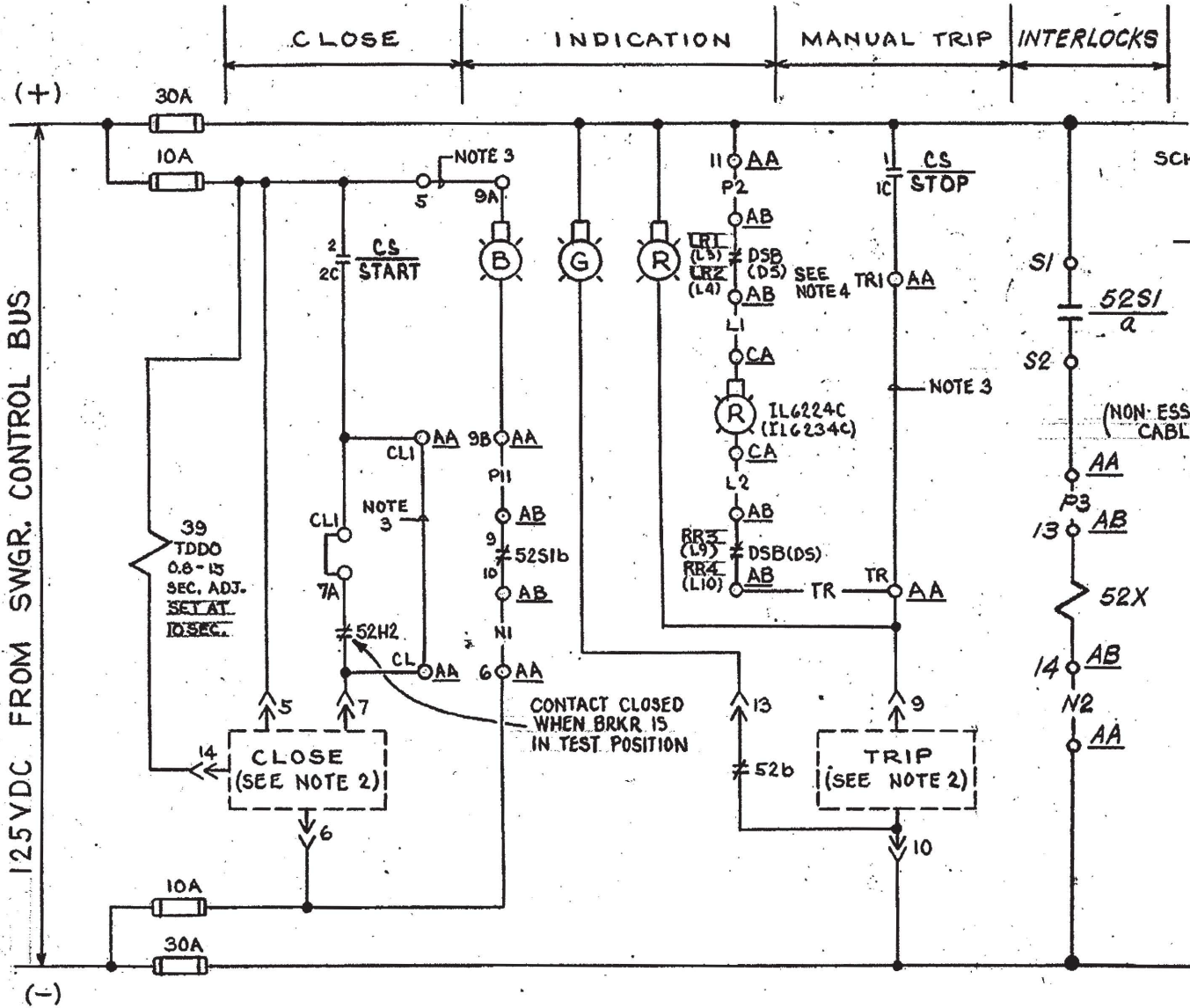
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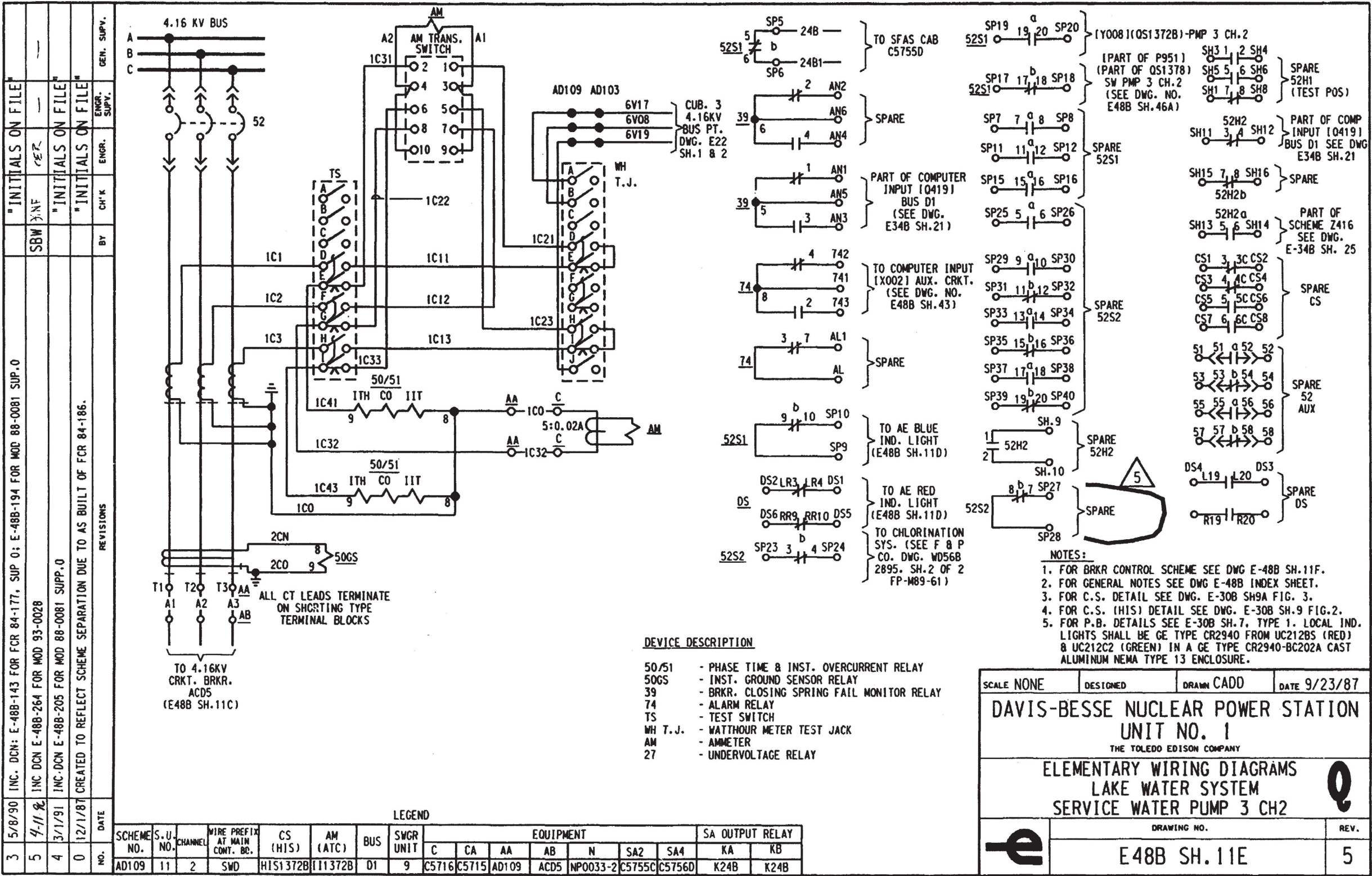
DAVIS-BESSE NUCLEAR POWER STATION
 THE TOLEDO EDISON COMPANY
 THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

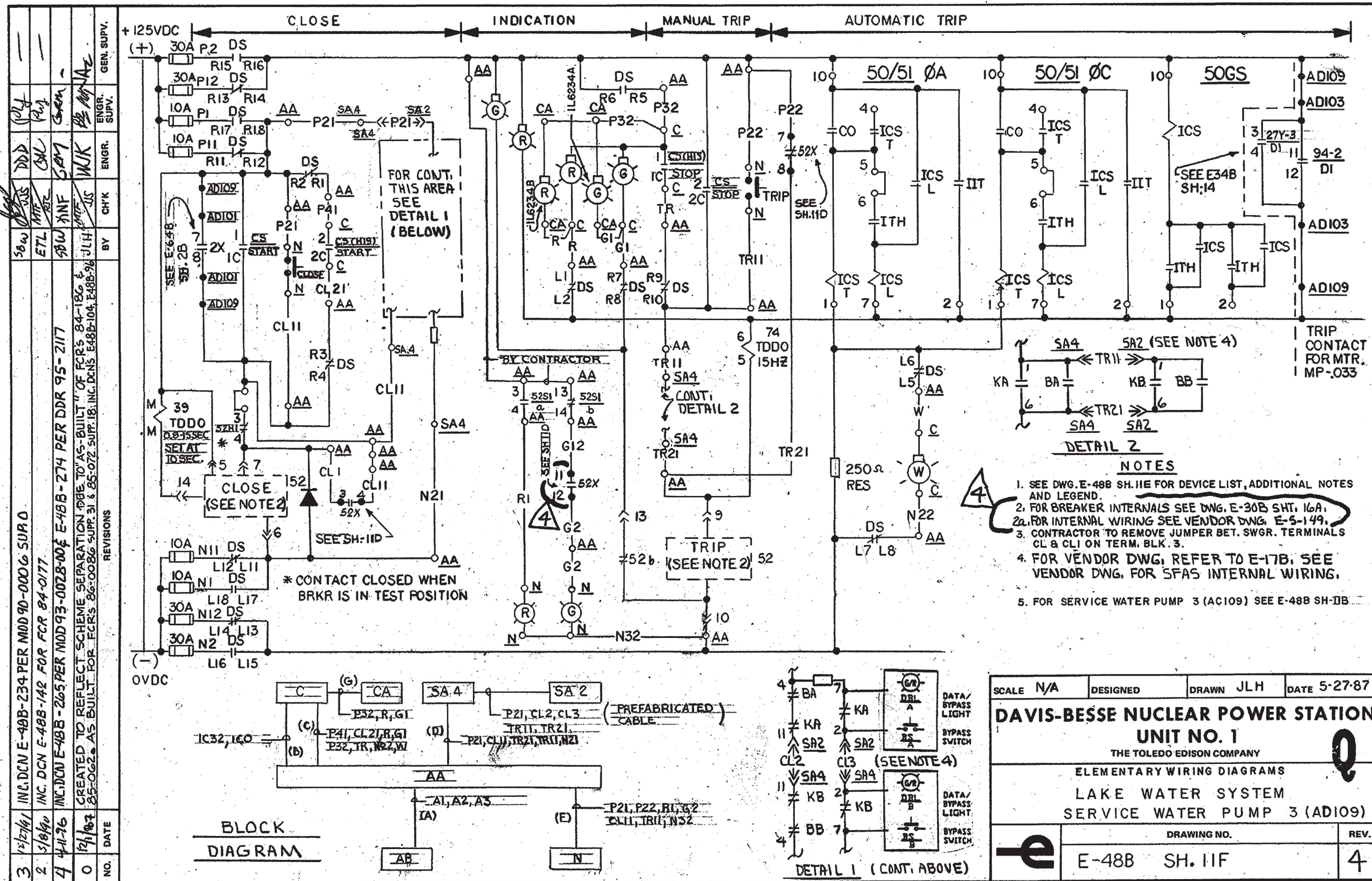
ELEMENTARY WIRING DIAGRAMS
 LAKE WATER SYSTEM
 SERVICE WATER PUMP 3 XFER BRKR

BECHTEL COMPANY	JOB NO	DRAWING NO	REV
	7749	E-48B SH.11C	11

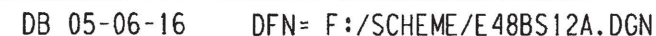
G-231-D	INC. DUN'S E-48B-264E-267 PER MOD 93-0029-00 AND E-48B-213 PER DOR 95-217	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
	INC. DCN E-48B-139 & 141 FOR PCR 84-0177	1/27/73	AFC	MW/MS				
	ISSUED FOR CONSTRUCTION							
	REV.							
	6							



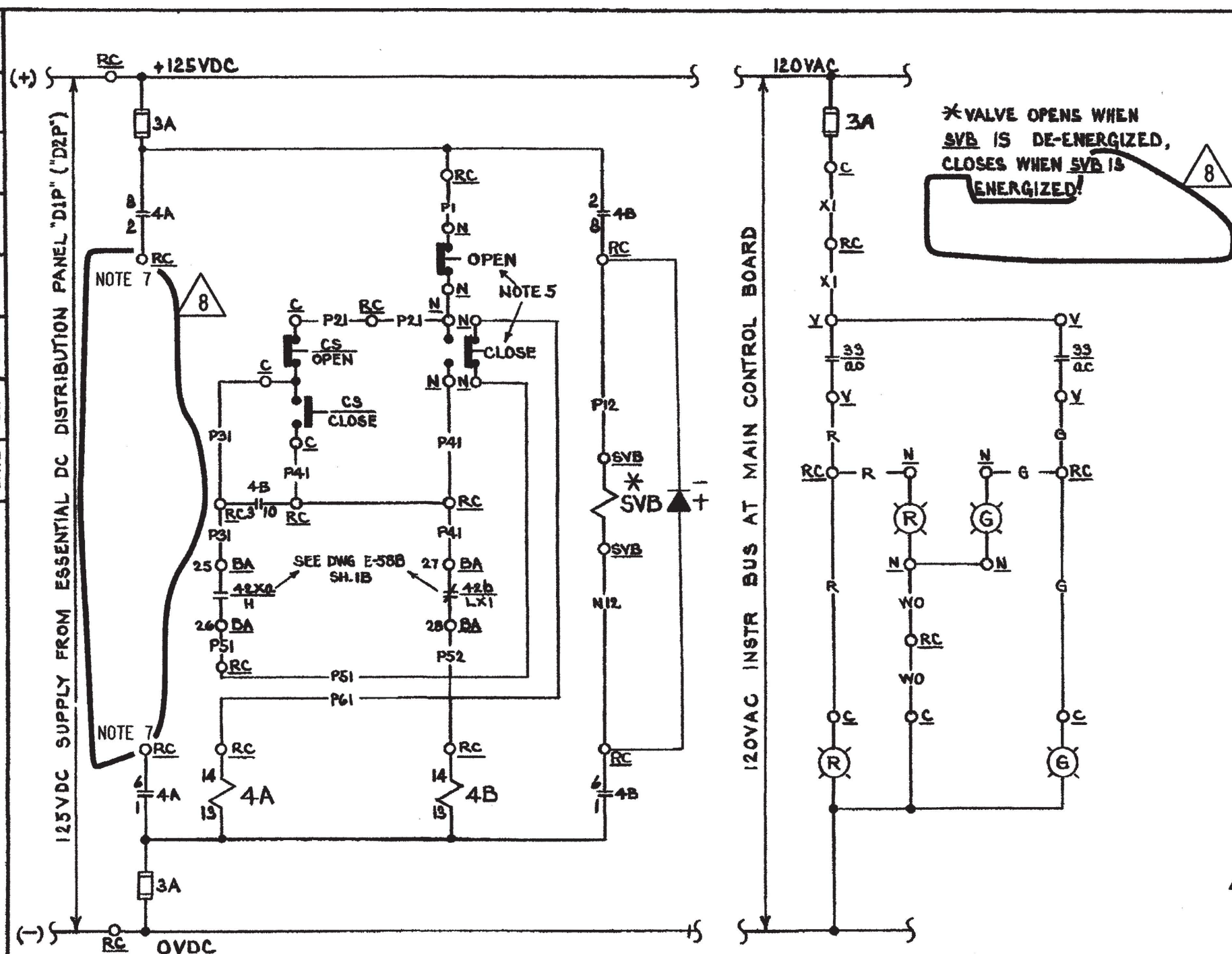








REV	DESCRIPTION	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
7	INC. DUN E-48B-467 PER ECR04-0033-00 REV. 0	2-8-74	SA	SA	SA	SA	SA	SA
8	INC. DUN 04-0272-001-010 & -002-010 BOTH REV. 00 (REDRAWN)	2-8-74	SA	SA	SA	SA	SA	SA
0	ISSUED FOR CONSTRUCTION							

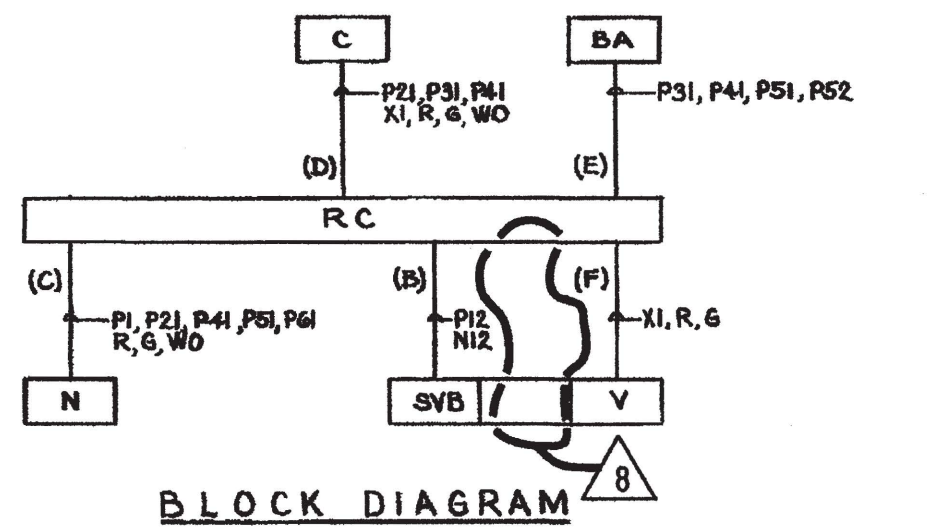


SCHEME NO. (SEE TABLE)

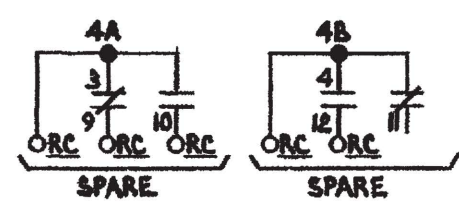
LEGEND

SCHEME NO	SU NO	CHANNEL	WIRE PREFIX AT MAIN CTRL BD	CS	EQUIPMENT						DESCRIPTION
					C	RC	SV A	SV B	N	BA	
V1356	11	1	AOA	H131356	C5716	RC3701	NOTE 7	SV1356B	NV1356	BE1401	CTMT AIR CLR 1-1 OUTLET
V1357	11	2	AOB	H131357	C5716	RC3702	NOTE 7	SV1357B	NV1357	BF1401	CTMT AIR CLR 1-2 OUTLET

■ CONTROLLED VALVE HAS THE SAME NO AS THE SCHEME NO.



BLOCK DIAGRAM



NOTES

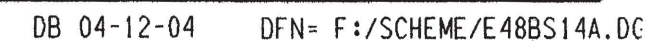
- FOR GENERAL NOTES SEE DWG E-48B INDEX SHEET
- FOR DETAILS OF CONTROL SW (CS) SEE DWG E-30B SH. 7 FIG 7C
- FOR DETAILS OF LOCAL INDICATING LIGHTS SEE DWG. E-30B SH 7 TYPES 4.
- FOR VALVE LIMIT SW CONTACT DESIGNATION SEE DWG E-30B SH. 8
- LOCAL PUSHBUTTONS SHALL BE REES CAT # 00294-002 FOR 'OPEN' P.B. AND CAT # 00294-003 FOR 'CLOSE' P.B.
- CONTROL SWITCH CS OPENS AND CLOSSES THE VALVE ONLY WHEN FAN IS OFF.
- SVA HAS BEEN REMOVED AND ITS CABLE HAS BEEN DETERMINATED AT THE RELAY CABINET AND VALVE JUNCTION BOX AND SPARED IN PLACE.

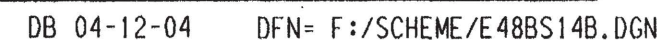
THIS DRAWING WAS REDRAWN/SCANNED ON CAD AND SUPERSEDES REV. 7.

DAVIS-BESSE NUCLEAR POWER STATION
 THE TOLEDO EDISON COMPANY
 THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

ELEMENTARY WIRING DIAGRAMS
LAKE WATER SYSTEM
CTMT AIR CLR'S 1-1 & 1-2 OUTLET VLV'S

BECHTEL COMPANY	JOB NO	DRAWING NO.	REV.
	7749	E-48B SH. 13	8





SCHEME NO.	MCC	S.U. NO.	CHANNEL	WIRE PREFIX AT MAIN CTRL. BD.	C.S.	EQUIPMENT									HS	DESCRIPTION
						C	CD	B	BB	M	N	BA	RCA	E		
BE1207	E12A	11	1	AIC	HIS1368A	C5716	CDE12A-1	BE1207	BE1501	MV13680	NV13680A	BEF128	RC3701	EV13680A	HSBE1207	ICTMT AIR CLR 1-3 IN ISO VLV
BF1224	F12A	11	2	AID	HIS1368B	C5716	CDF12A-1	BF1224	BF1501	MV13680	NV13680B	BEF129	RC3702	EV13680B	HSBF1224	ICTMT AIR CLR 1-3 IN ISO VLV

SCHEME NO. BE1207

SCHEME NO. BF1224

1. FOR GENERAL NOTES SEE DWG. E-48B INDEX SH.
2. FOR DETAILS OF LOCAL PUSHBUTTON & IND. LIGHTS SEE DWG. E-30B SH.7 TYPES 3,4 & 6 & SH.18A FIG.16.
3. FOR VALVE LIMIT SWITCH DEVELOPMENT SEE DWG. E-30B SH.8.
4. FOR DETAILS OF CONTROL SWITCH (CS) SEE DWG. E-30B SH.7 FIG.7.
5. FOR INTERLOCKS WITH CTMT CLR FAN 3 SEE DWG. E-58B SH'S 2A TO 2D.
6. OVERLOAD HEATERS REPLACED BY SHORTING BARS.
7. HS (REFILL LOGIC SWITCH) SHOWN IN "ENABLED" POSITION. SEE DWG. E-30B SH.18A FIG.17.
8. THE TIME SETTING FOR K3 IS NOMINAL. THE ACTUAL SETPOINT IS DETERMINED BY FLOW TESTING. THE AVERAGE OF THE FLOW READINGS DURING THE TEST SHALL BE 850 ± 50 GPM. INDIVIDUAL FLOW READINGS SHALL BE 700 TO 1000 GPM.

THIS DRAWING WAS REDRAWN ON CADD AND SUPERSEDES REVISION 6

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-13-04
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAM LAKE WATER SYSTEM CTMT AIR CLR 1-3 IN ISO VLV			
	DRAWING NO.		REV.
	E-48B SH.14C		7

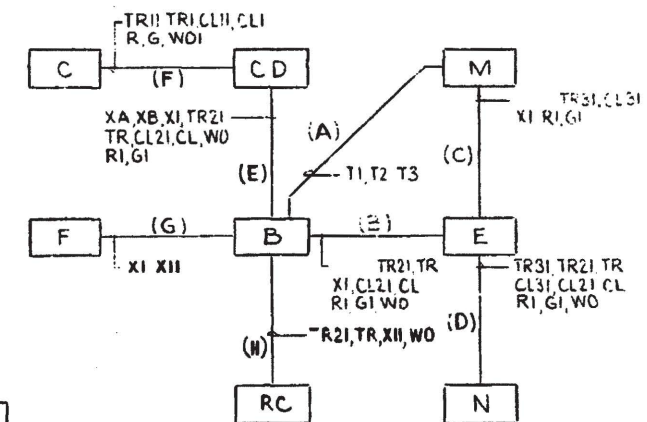


Diagram of the output section of the 2N2858A tube, showing four output stages. The first stage is a ZS2930 driver with a 1K resistor and 33pF capacitor, connected to an OM (Output Modulator) pin. The second stage is a PSHX/2930 driver with a 3K resistor and 9pF capacitor, connected to an RC (Resistor-Capacitor) pin. The third stage is a PSHX/2930 driver with a 2K resistor and 18pF capacitor, connected to an RC pin. The fourth stage is a PSHX/2930 driver with a 1K resistor and 5pF capacitor, connected to an RC pin. The output of the fourth stage is labeled SPARE. The diagram also shows the internal connections of the 2N2858A tube, including the 1K resistor and 33pF capacitor, and the 3K resistor and 9pF capacitor.

Labels below the diagram:

- [PART OF X009] (PART OF Q5293) SEE SM.46B
- [PART OF Z983] (PART OF Q52930A) SEE SM.46B
- SPARE

1. FOR GENERAL NOTES SEE DWG. E-48B INDEX SH.
2. FOR DETAILS OF LOCAL PUSHBUTTONS AND IND. LIGHTS, SEE DWG E-30B SH 7 TYPES 3, 4 & 6.
3. FOR VALVE LIMIT SW CONTACT DEVELOPMENT SEE DWG. E-30B SH.8. FIGURE A EXCEPT WITHOUT ROTOR 3 AND 4.
4. FOR DETAILS OF CONTROL SW (CS) SEE DWG. E-30B SH.7 FIG 7.
5. PSH CONTACT TO CLOSE ON HIGH PRESS AT INTAKE DISCHARGE HEADER.
6. OVERLOAD HEATER: REPLACED BY SH RT 1-F

SCHEME NO.	MCC	S.U. NO.	CHANNEL	WIRE PREFIX AT MAIN CTRL. BD	C.S.	EQUIPMENT								DESCRIPTION
						C	CD	B	E	M	N	F	RC	
BF12B1	F12C	11	2	IF	HIS2930	C5720	CDFI2C	BF12B1	EV29300	MV29300	NV29300	FPSH2930	RC3014	SW TO INTAKE FOREBAY VLV

LAKE WATER SYSTEM
SW TO INTAKE FOREBAY VLV

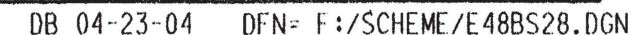
REV.

DATE: 7.15.76 OPERATOR:

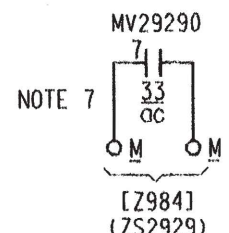
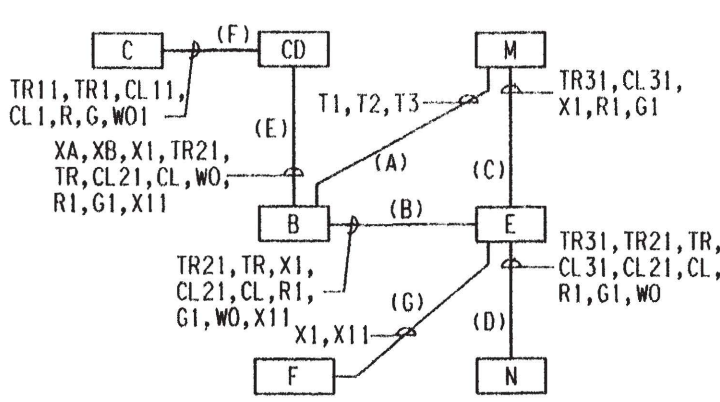
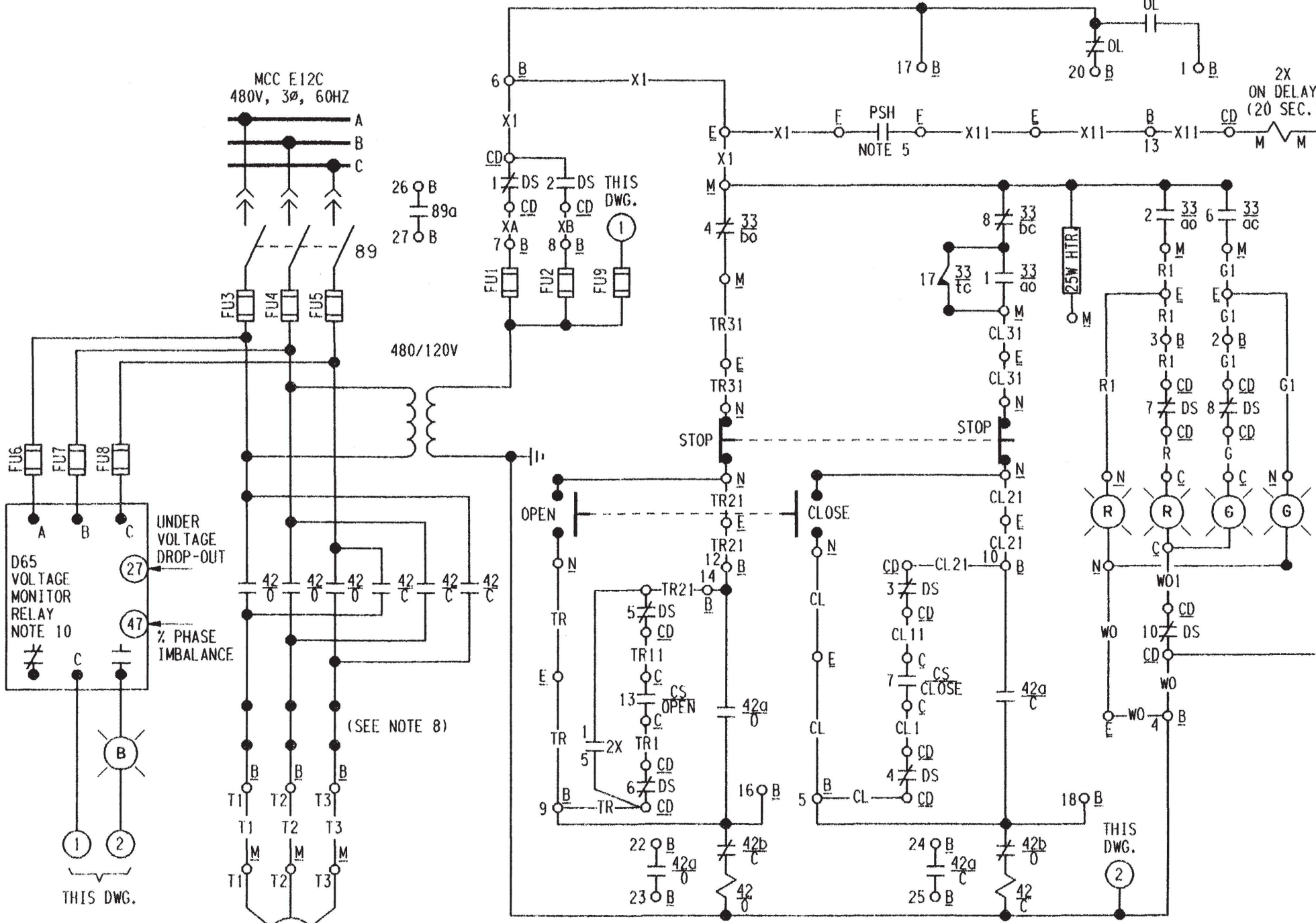
16 X

DATE 8-14-88 OPERATOR T. R. R. R.

16X



0	10/1/84	GEN. UPDATE FOR ECR 03-0507-00 REV. 1 PER DCN E-48B-442 & GEN. UPDATE ADD NOTE 10 REF. IN D65 VOLTAGE MONITOR RELAY BOX FOR CLARITY					EAL EAL	SPW	-	JRB	-
NO.	DATE	REVISIONS					BY	CH'K	ENGR.	ENGR. SUPV.	GEN. SUPV.



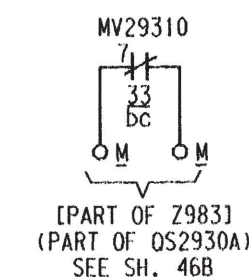
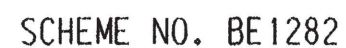
- NOTES**
1. FOR GENERAL NOTES SEE DWG. E-48B INDEX SH.
 2. FOR DETAILS OF LOCAL PUSHBUTTONS AND IND. LIGHTS SEE DWG. E-30B, SH.7 TYPES 3,4 & 6.
 3. DELETED.
 4. FOR DETAILS OF CONTROL SW. (CS) SEE DWG. E-30B SH.7 FIG.7.
 5. PSH CLOSING ON HIGH PRESSURE IN LINE.
 6. ON DELAY RELAY 2X SHALL BE AGASTAT MODEL NO. 7012AD.
 7. ROTOR #2, CONTACT NO.7 TO BE CONVERTED FROM 33/bc TO 33/ac.
 8. OVERLOAD HEATERS REPLACED BY SHORTING BARS.
 9. FOR VALVE LIMIT SW. CONTACT DEVELOPMENT SEE DWG. E-30B SH.8 FIG. A EXCEPT WITHOUT ROTOR 3 & 4.
 10. CONTACTS ARE SHOWN IN SHELF (DE-ENERGIZED) STATE. SEE RELAY SETTING MANUAL FOR SETPOINTS. (ECR 03-0507-00)

SCHEME NO. BE1281

SCHEME NO.	MCC	S.U. NO.	CHANNEL	WIRE PREFIX AT MAIN CTRL. BD.	C.S.	EQUIPMENT							DESCRIPTION
						C	CD	B	E	M	N	F	
BE1281	E12C	11	1	IS	HIS2929	C5720	CDE12C	BE1281	EV29290	MV29290	NV29290	FPSH2929	SW TO INTAKE STRUCTURE VLV.

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-29-04
DAVIS-BESSE NUCLEAR POWER STATION			
UNIT NO. 1			
THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAM			
LAKE WATER SYSTEM			
SW TO INTAKE STRUCTURE VLV.			
DRAWING NO.			REV.
E-48B SH.28A			0

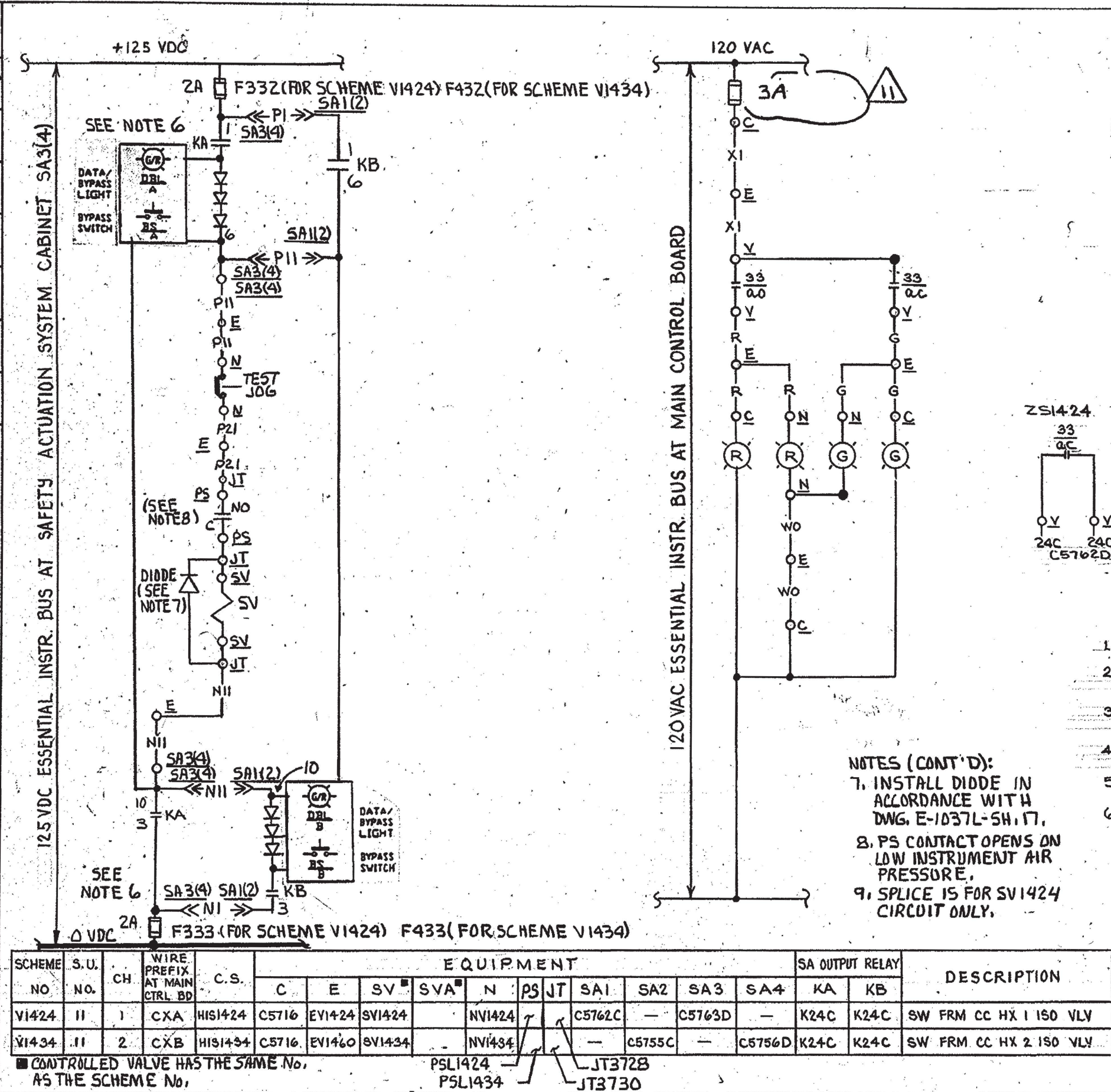
GEN. UPDATE FOR ECR 03-0507-00 REV.1 PER DCN E-48B-448 & GEN. UPDATE ADD NOTE 10 REF. IN D65 VOLTAGE MONITOR RELAY FOR CLARITY



1. FOR GENERAL NOTES SEE DWG. E-48B INDEX SH.
2. FOR DETAILS OF LOCAL PUSHBUTTONS AND IND. LIGHTS
SEE DWG. E-30B, SH.7 TYPES 3, 4 & 6.
3. FOR VALVE LIMIT SW. CONTACT DEVELOPMENT
SEE DWG. E-30B SH.8.
4. FOR DETAILS OF CONTROL SW. (CS) SEE DWG.
E-30B SH.7 FIG.7.
5. PSH CLOSES ON HIGH PRESSURE IN LINE.
6. ON DELAY RELAY 2X SHALL BE AGASTAT MODEL NO. 7012AD.
7. ROTOR #2, CONTACT NO.7 TO BE CONVERTED FROM 33/bc
TO 33/ac.
8. OVERLOAD HEATERS REPLACED BY SHORTING BARS.
9. DELETED
10. CONTACTS ARE SHOWN IN SHELF (DE-ENERGIZED) STATE.
SEE RELAY SETTING MANUAL FOR SETPOINTS.
(ECR03-0507-00)

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-29-04
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAM LAKE WATER SYSTEM SW TO CLNG. TWR. MU VLV.			
	DRAWING NO.		REV.
	E-48B SH.28B		0

REV.	DESCRIPTION	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
11	ISSUED FOR CONSTRUCTION	12/15/73	APC	MA/KS	WJ	WJ	WJ	WJ
10	REVISED PER ECR 04-0053-00 REV. 0	9-15-73	SBW	JOR	CER	CER	CER	CER
9	REVISED PER ECR 04-0053-00 REV. 0	12/15/73	SBW	JOR	CER	CER	CER	CER
8	REVISED PER ECR 04-0053-00 REV. 0	12/15/73	SBW	JOR	CER	CER	CER	CER
7	REVISED PER ECR 04-0053-00 REV. 0	12/15/73	SBW	JOR	CER	CER	CER	CER
6	REVISED PER ECR 04-0053-00 REV. 0	12/15/73	SBW	JOR	CER	CER	CER	CER
5	REVISED PER ECR 04-0053-00 REV. 0	12/15/73	SBW	JOR	CER	CER	CER	CER
4	REVISED PER ECR 04-0053-00 REV. 0	12/15/73	SBW	JOR	CER	CER	CER	CER
3	REVISED PER ECR 04-0053-00 REV. 0	12/15/73	SBW	JOR	CER	CER	CER	CER
2	REVISED PER ECR 04-0053-00 REV. 0	12/15/73	SBW	JOR	CER	CER	CER	CER
1	ISSUED FOR CONSTRUCTION	12/15/73	SBW	JOR	CER	CER	CER	CER



Block diagram showing the connection between the safety actuation system and the main control board. It includes a block diagram of the control system and a table of equipment and descriptions.

NOTES

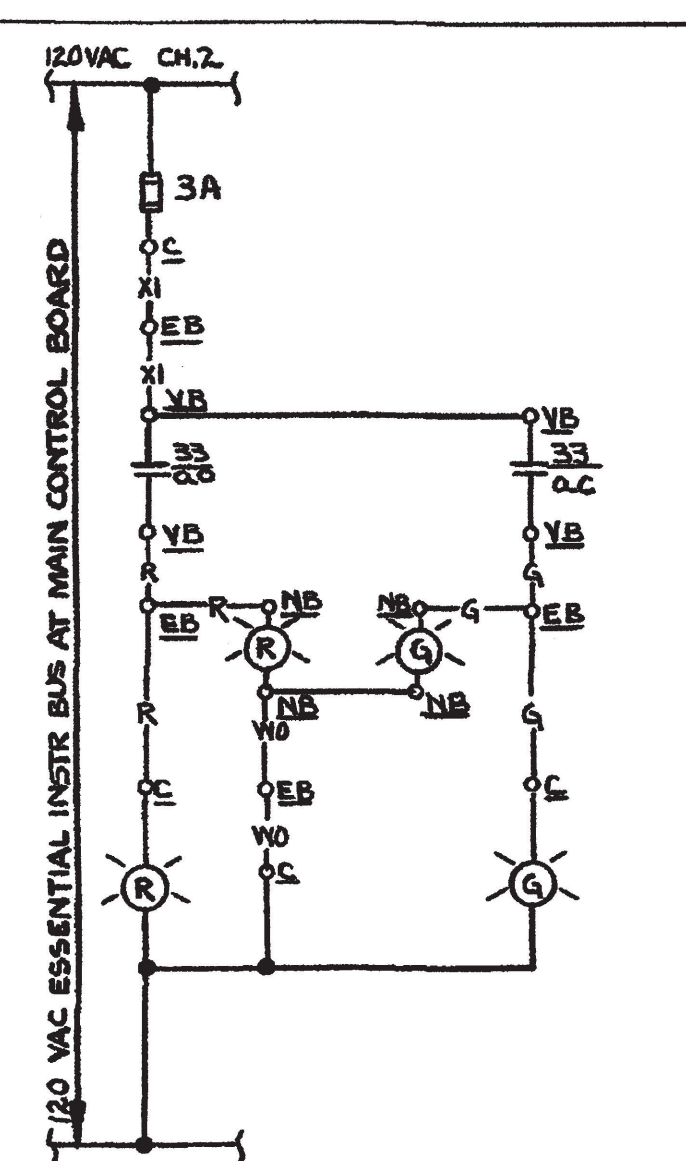
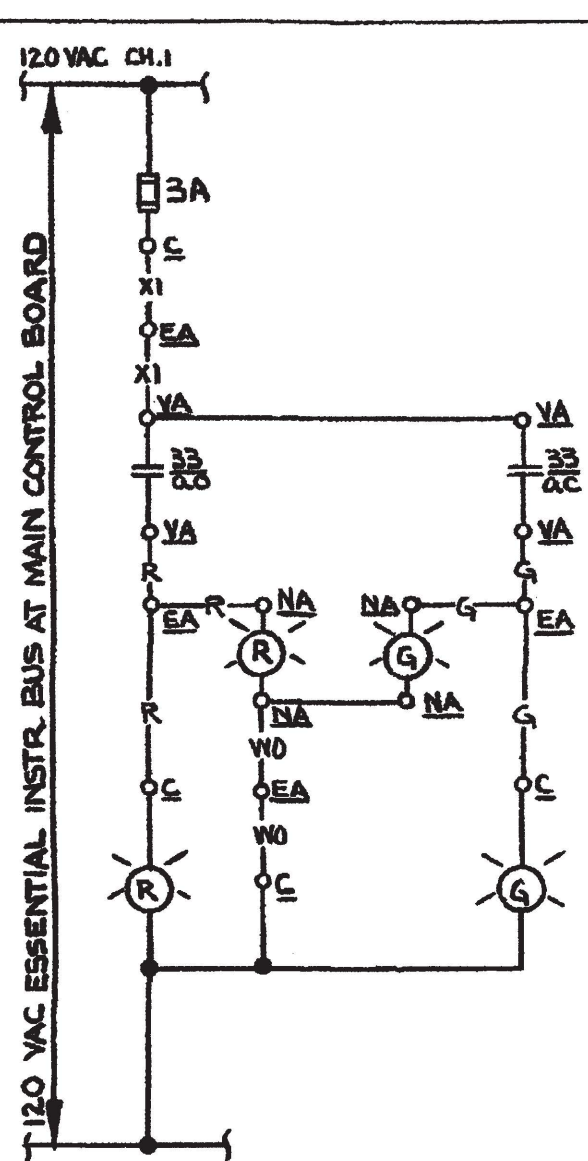
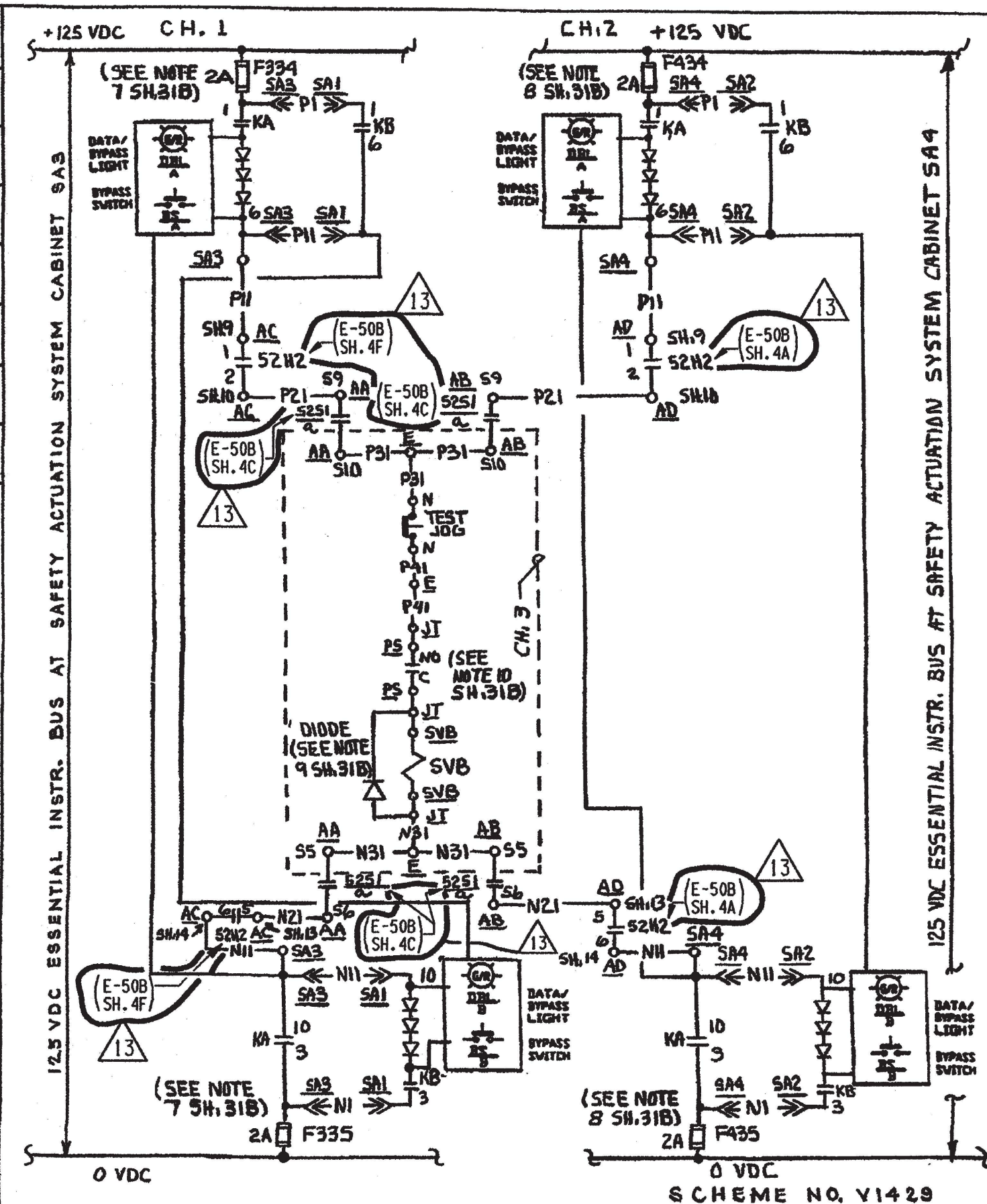
- FOR GENERAL NOTES SEE DWG E-48B INDEX SHEET.
- FOR DETAILS OF LOCAL PUSHBUTTON AND IND. LIGHTS SEE DWG. E-30B SH.7 TYPES 6 & 7 OFF W/O LOCAL PS SHALL BE REES CAT. NO. 03855-002
- FOR VALVE LIMIT SW CONTACT DESIGNATIONS SEE DWG. E-30B SH.8
- FOR DETAILS OF CONTROL SW (CS) SEE DWG. E-30B SH.7 FIG.7B.
- FOR REMOTE OPERATION FROM MAIN CONTROL BOARD SEE DWG. E-30B, SH.4.
- FOR VENDOR DWG. REFER TO E-17B, (SCHEME VI424 & VI434). SEE VENDOR DWG. FOR SFAS INTERNAL WIRING (SCHEME VI434).

DAVIS-BESSE NUCLEAR POWER STATION
THE TOLEDO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

ELEMENTARY WIRING DIAGRAMS
LAKE WATER SYSTEM
SW FRM CC HX'S 1 & 2 ISO VLV'S

BECHTEL COMPANY.	JOB NO.	DRAWING NO.	REV.
7749	E-48B	SH.30	11

13	INC. DUN 11-0593-001-014 REV.00 (REDRAWN)	REV. DESCRIPTION	DATE	CHK	SUPV	CHIEF	PROJ	OWNER
12	INC. DUN 11-0593-001-014 REV.00 (REDRAWN)	ISSUED FOR CONSTRUCTION	9-15-66	58 W	JOR	CER	WPA	WPA
0	INC. DUN 11-0593-001-014 REV.00 (REDRAWN)	ISSUED FOR CONSTRUCTION	9-15-66	58 W	JOR	CER	WPA	WPA



THIS DWG. WAS REDRAWN/SCANNED ON CAD AND SUPERSEDES REVISION 12.

DAVIS-BESSE NUCLEAR POWER STATION THE TOLEDO EDISON COMPANY THE CLEVELAND ELECTRIC ILLUMINATING COMPANY			
ELEMENTARY WIRING DIAGRAMS LAKE WATER SYSTEM SW FROM CC HX 3 ISO VLV			
BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-48B SH.31A	13

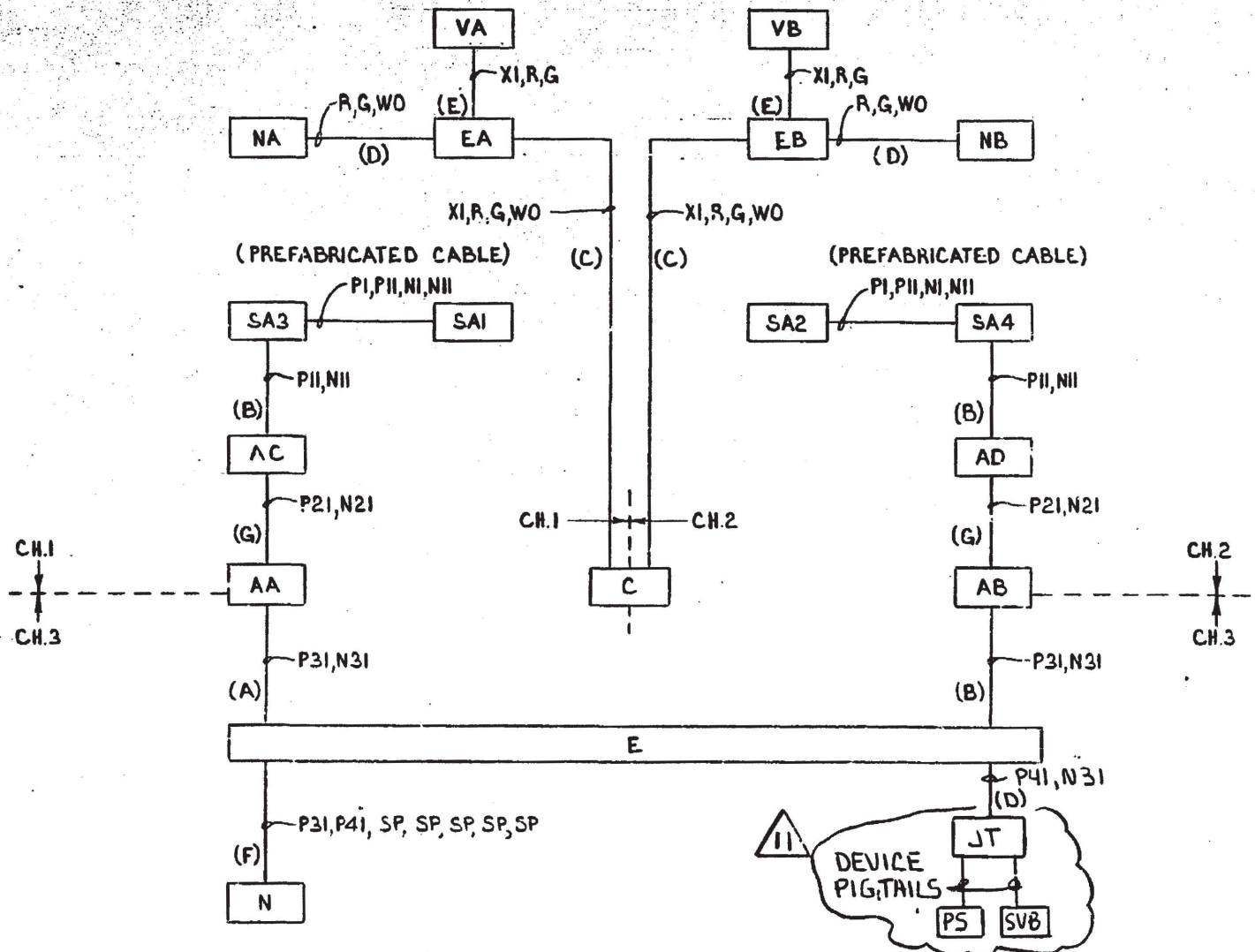
DB 07-31-12

DFN: F/SCHEME/E48BSH31A.DGN/TIF

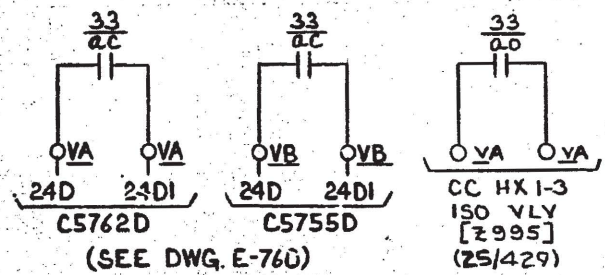
SCHEME NO.	S.U. NO.	CHANNEL	WIRE PREFIX AT MAIN CTRL BD	C.S.	EQUIPMENT												SA OUTPUT RELAY		DESCRIPTION	
					C	E	SVB	PS	N	AC	AD	AA	AB	SA1	SA2	SA3	SA4	KA		KB
Y1429	11	1	CXD	HIS1429B	C5716	EV1429	SV1429	PSL1429	NV1429	AC108	—	ACD2	—	C5762C	—	C5763D	—	K24D	K24D	SW FROM CC HX 3 ISO VLV
		2	CXC	HIS1429A	—	—	—	—	—	AD108	—	ACD3	—	C5755C	—	C5756D	K24D	K24D		

SCHEME NO.	CHANNEL	EQUIPMENT						
		VA	VB	NA	NB	EA	EB	JT
VI429	1	VI429 (ZSI429)	—	NVI429A	—	EVI424	—	JT3729
	2	—	VI429 (ZSI429A)	—	NVI429B	—	EVI460	

■ CONTROLLED VALVE IS DESIGNATED VI429



BLOCK DIAGRAM



NOTES

1. FOR GENERAL NOTES SEE DWG E-48B INDEX SHEET
2. FOR DETAILS OF LOCAL PUSHBUTTON AND IND. LIGHTS
SEE DWG E-30B SH 7 TYPES 644 OFF 40 LOCAL PB
SHALL BE REES CAT. NO. 03935-002
3. FOR VALVE LIMIT SW CONTACT DESIGNATIONS, SEE
DWG E-30B SH 8.
4. FOR DETAILS OF CONTROL SW (CS) SEE DWG E-30B
SH 7 FIG 7B.
5. FOR REMOTE OPERATION FROM CONTROL ROOM SEE
DWG E-30B SH 4.
6. FOR BREAKER INTERLOCK SEE E-30B SH 4 C & D
7. FOR VENDOR DWG, REFER TO E-17B.
8. FOR VENDOR DWG, REFER TO E-17B. SEE VENDOR
DWG. FOR SFAS INTERNAL WIRING.
9. TERMINATE DIODES IN ACCORDANCE WITH
DWG. E-1037L-SH. 17.
10. PS CONTACT OPENS ON LOW INSTRUMENT AIR PRESSURE.

DAVIS-BESSE NUCLEAR POWER STATION

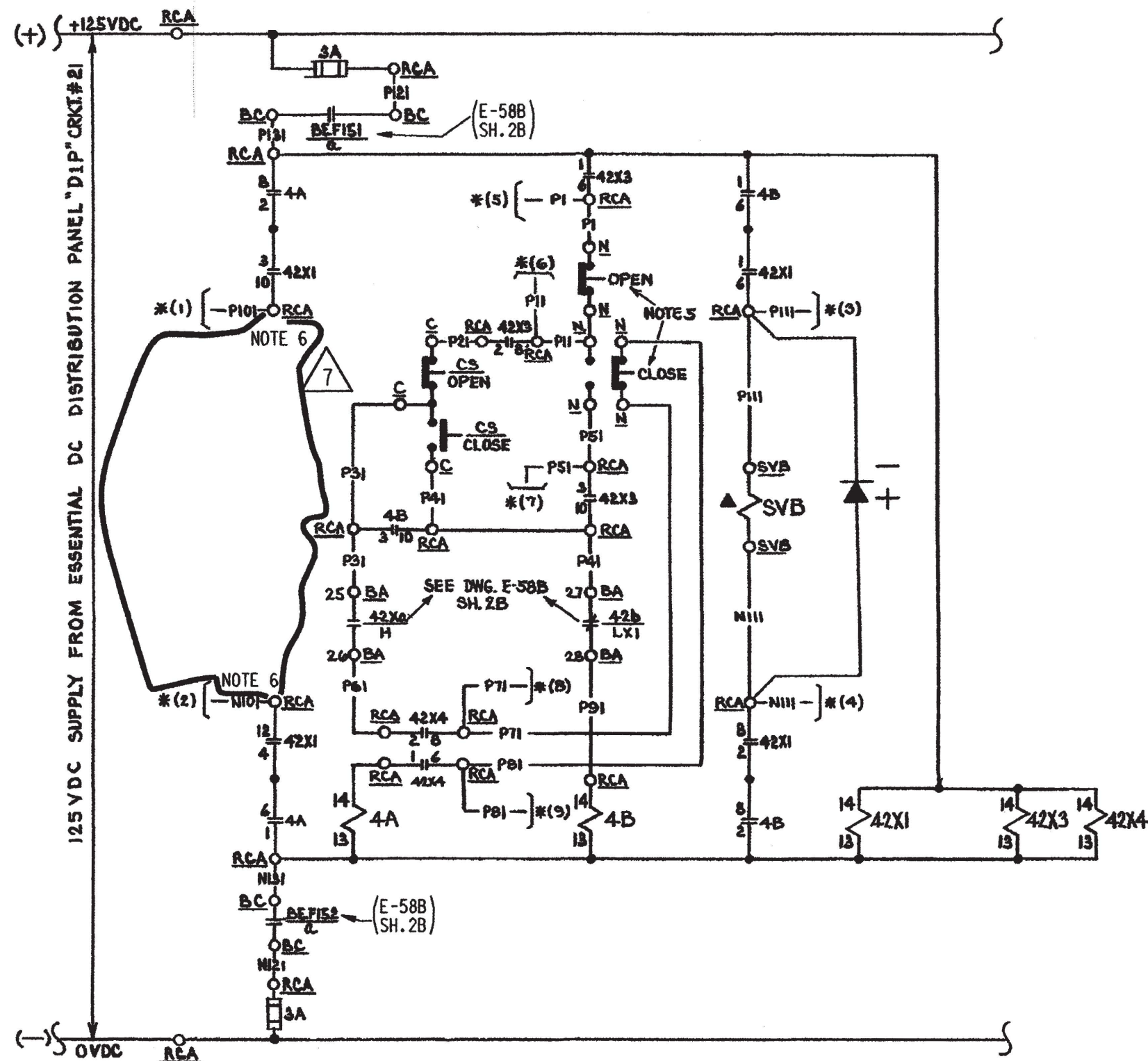
THE TOLEDO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

ELEMENTARY WIRING DIAGRAMS

LAKE WATER SYSTEM

SW FROM CC HX 3 ISO VLV

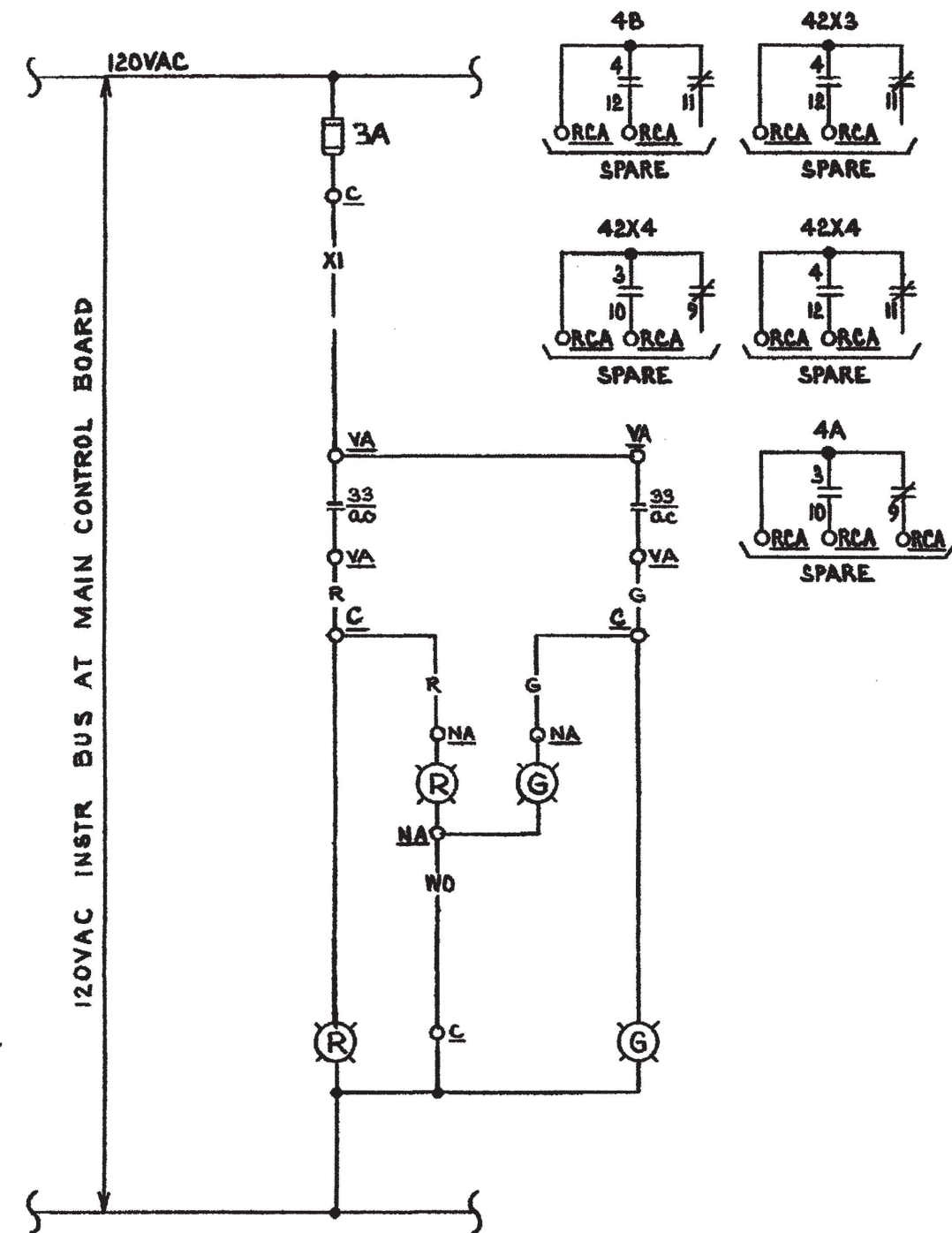
7	INC. DUN 04-0212-003-010 REV. 00	2-8-14	SAC	8/14/12	INITIALS ON FILE	APC	MS	4/3	CHIEF	PROJ	OWNER
6	INC. DUN 11-0140-001-005 REV. 00 (REDRAWN)	8/14/12	APC	MS	4/3	CHIEF	PROJ	OWNER			
0	ISSUED FOR CONSTRUCTION										
REV.	DESCRIPTION										
0-231-0											



* CONT'D ON DWG. E-48B SH.33B TO LINE MATCHING THE NUMBER IN PARENTHESIS (),

▲ VALVE OPENS WHEN SVB /S DE-ENERGIZED, CLOSING WHEN SVB IS ENERGIZED.

SCHEME NO. VI358A



FOR NOTES, LEGENDS, & BLOCK DIAGRAM SEE DWG E-48B SH.33C.

DAVIS-BESSE NUCLEAR POWER STATION

THE TOLEDO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

ELEMENTARY WIRING DIAGRAMS

LAKE WATER SYSTEM

CTMT AIR CLR I-3 OUT VLV

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-48B SH.33A	7

THIS DWG. WAS REDRAWN/SCANNED ON CAD AND SUPERSEDES REVISION 5.

DB 01-07-14

DFN: F/SCHEME/E48BSH33A.DGN/TIF

6 INC. DUN 04-0212-003-011 REV. 00 (REDRAWN)
5 "AS-BUILT" FOR FOR 79-280 REV. C SUPP. B AC DCN E-48B-111
0 ISSUED FOR CONSTRUCTION
REV DESCRIPTION
G-231-0

LEGEND

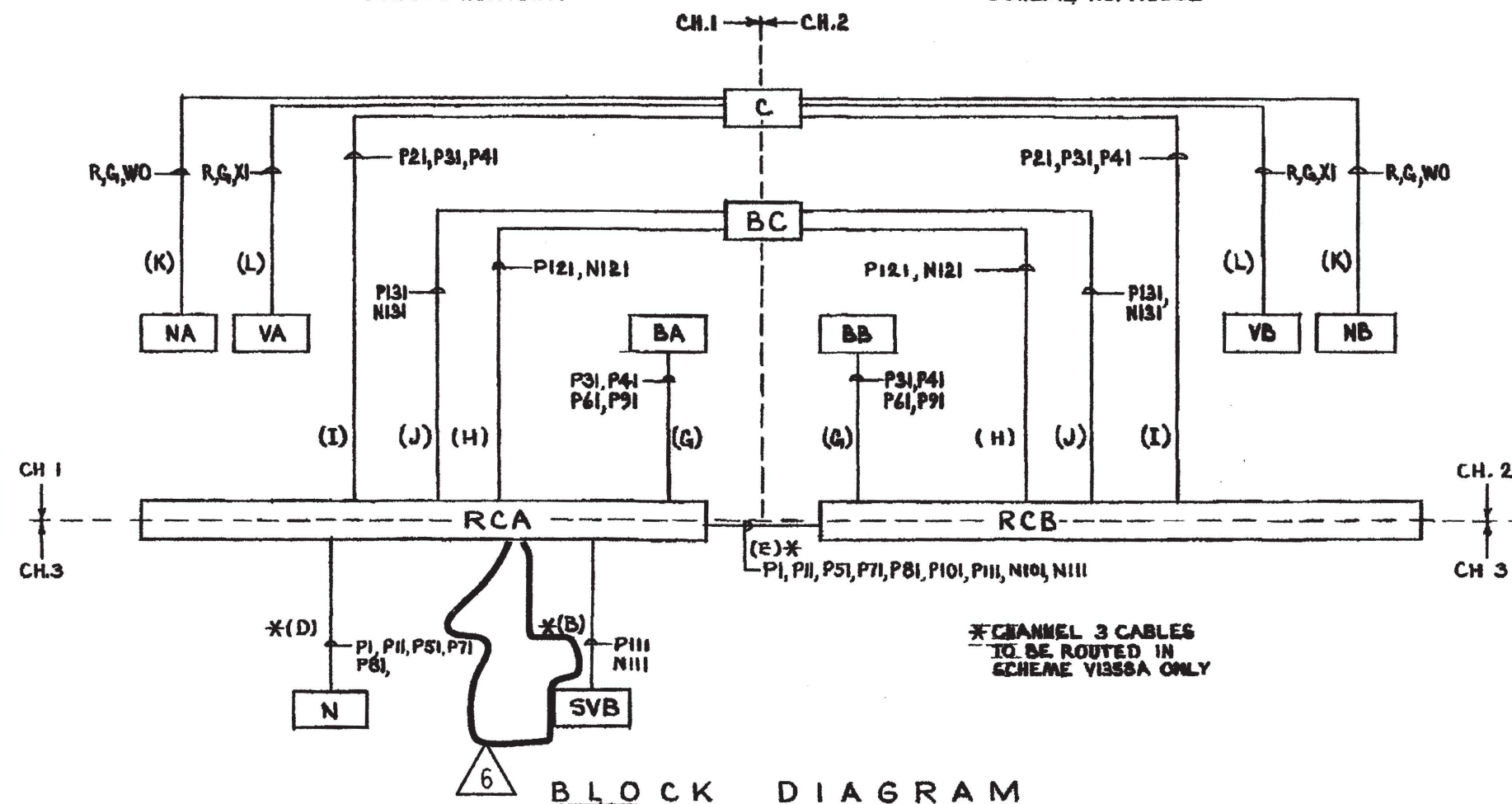
SCHEME NO	S U NO	CHANNEL	WIRE PREFIX AT MAIN CTRL BD	CS	EQUIPMENT														DESCRIPTION	
					C	RCA	RCB	SVA	SVB	N			BA	BB	BC	NA	NB	VA		VB
VI358A	11	1	AOC	HISI358A	C5716	RC3701	—	NOTE 6	SVI358B	NVI358			BE1501	—	BEF15	NVI358A	—	VI358 (ZS1358A)	—	CTMT AIR CLR I-3 OUTLET
VI358B		2	ADD	HISI358B		—	RC3702								—	BF1501	—	BEF15	—	

■ CONTROLLED VALVE IS DESIGNATED VI358

6

SCHEME NO. VI358A

SCHEME NO. VI358B



NOTES

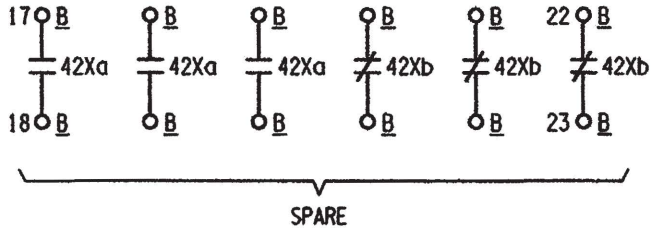
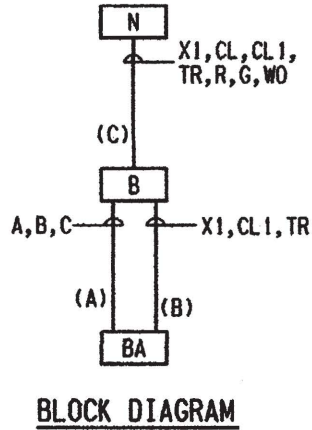
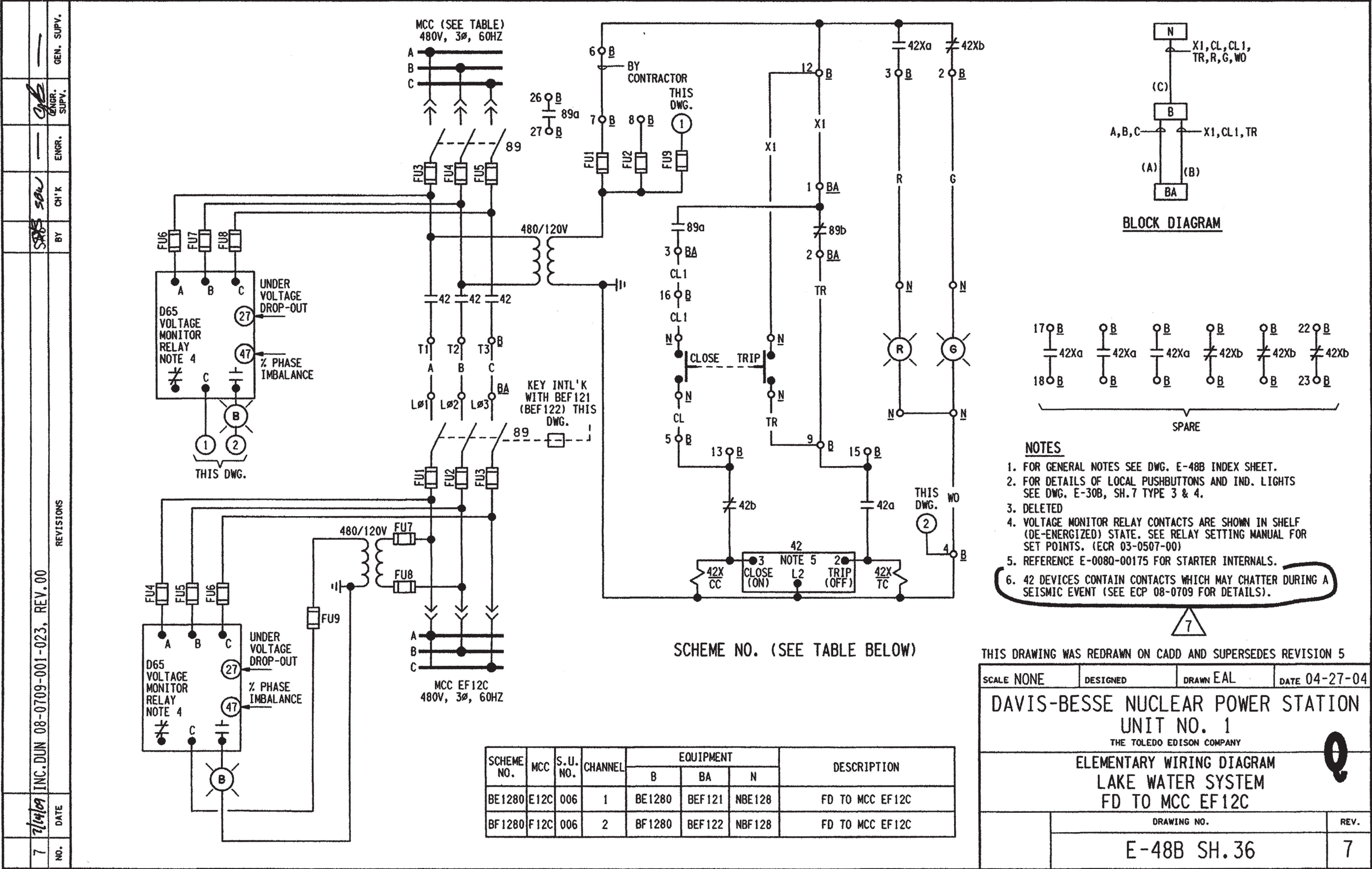
1. FOR GENERAL NOTES SEE DWG E-48B INDEX SHEET.
2. FOR DETAILS OF CONTROL SWITCH (CS) SEE DWG E-30B SH 7 FIG 7C.
3. FOR DETAILS OF LOCAL INDICATING LIGHTS SEE DWG E-30B SH.7 TYPES 4.
4. FOR VALVE LIMIT SWITCH CONTACT DESIGNATION SEE DWG. E-30B SH. 8
5. LOCAL PUSHBUTTONS SHALL BE REES CAT #00294-002 FOR 'OPEN' PB AND CAT #00294-003 FOR 'CLOSE' PB.
6. SVA HAS BEEN REMOVED AND ITS CABLE HAS BEEN DETERMINATED AT THE RELAY CABINET AND VALVE JUNCTION BOX AND SPARED IN PLACE.

6

THIS DWG. WAS REDRAWN/SCANNED ON CAD AND SUPERSEDES REVISION 5.

DAVIS-BESSE NUCLEAR POWER STATION
THE TOLEDO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
ELEMENTARY WIRING DIAGRAMS
LAKE WATER SYSTEM
CTMT AIR CLR I-3 OUT VLV

BECHTEL COMPANY	JOB NO.	DRAWING NO	REV.
	7749	E-48B SH. 33C	6



I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS. ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

OPERATOR

NO.	DATE	REVISIONS	BY	CHK	ENGR.	ENGR. SUPV.	INITIALS ON FILE
86	9/3/10	REVISED SHT. 54A (REV. 6), SHT. 54B (REV. 7), AND SHT'S. 54C, 54D & 54E (REV. 2)					
89	9-16-19	REVISED SH. 1B (REV. 22), SH. 10 (REV. 8) & SH. 30 (REV. 4)	SAP	APC			
88	09/17/13	REVISED SH. 42A (REV. 12)					
87	4/01/13	REVISED SH. 42B (REV. 11), SH. 46 (REV. 4), SH. 54E (REV. 3) & SH. 70B (REV. 2) & GEN UPDATE SHOW SH. 46 VOID ON INDEX SH. 2 PER RELATED DUN UPDATE					

INDEX			
SH. NO.	REV.	DESCRIPTION	
1A	20	MAKE-UP PUMPS (CHARGING)	0
1B	(22)	MAKE-UP PUMPS (CHARGING)	0
2	13	JOCKEY FIRE PUMP 1-1	
3	5	FIRE WATER STORAGE TANK RECIRCULATING PUMP 1-1	
4	11	MAKE-UP PUMP1-1 MAIN OIL PUMP 1-1-1	
4A	5	MAKE-UP PUMP1-2 MAIN OIL PUMP 1-2-1	
5	7	WATER TREATMENT FEED PUMPS	
6	4	WATER TREATMENT FEED PUMPS STRAINERS BKWASH VALVES (MOV'S)	
7	6	MISCELLANEOUS PUMPS	
8	5	LIME FEED PUMPS	
9	3	CLARIFIERS AGITATORS	
10	(8)	CLEARWELL TRANSFER PUMPS DISCHARGE DIVR (SOV)	
11	6	NEUTRALIZING TANK DISCHARGE PUMPS	
12	5	NEUTRALIZING TANK INLET VALVES (SOV'S)	
13	6	PRIMARY WATER TRANSFER PUMPS (DWG. VOID)	
14	9	DEMINERALIZED WATER STORAGE TANK RECIRC PUMP 1-1	
15	7	PRIMARY WATER STORAGE TANK INLET VALVE (SOV) (DWG. VOID)	
16	8	DEMINERALIZED WATER TRANSFER PUMPS	
17A	7	MISCELLANEOUS MOTOR OPERATED VALVES	
17B	3	MISCELLANEOUS MOTOR OPERATED VALVES	
17C	2	MU FLT 1-2 IN VLV	
18	12	RC LETDOWN COOLERS OUT ISOLATION VALVES (MOV'S)	0
19A	6	MISCELLANEOUS ISOLATION VALVES	0
19B	7	MISCELLANEOUS ISOLATION VALVES	0
19C	5	TREATED WATER MISCELLANEOUS ISOLATION VALVE	0
20	7	RCP STDP DEMINERALIZED WATER ISOLATION VALVE 6831A (SOV)	0
21	4	MAKE-UP TANK 1-1 VENT VALVE (SOV)	
22A	7	RC LETDOWN ISOLATION VALVE (SOV)	0
22B	2	DELETED	
22C	9	RC LETDOWN ISOLATION VALVE	0
23	8	RC MU TANK CHEMICAL SUPPLY VALVES (SOV'S)	

FOR CONTINUATION OF INDEX SEE SHEET 2

NOTES:

1. FOR EXPLANATION OF EQUIPMENT AND WIRING NUMBERS SEE 7749-11A ELEC. NUMBERING SYSTEM.
2. FOR MOTOR INFORMATION SEE 7749-E-12B, ELEC. MOTOR LIST.
3. FOR CONTROL PANEL M.C.C. DESCRIPTIONS SEE 7749-E-13B, ELECTRICAL EQUIPMENT LIST.
4. WIRE NO. PREFIX MUST BE ADDED TO FORM COMPLETE WIRE NO. FOR THOSE WIRES AT MAIN CONTROL BOARD.
5. NUMBER IN BRACKET [] REPRESENTS COMPUTER INPUT NUMBER. NUMBER IN PARENTHESIS () REPRESENTS COMPUTER INPUT SOURCE NUMBER.
6. AUXILIARY CONTROL RELAYS IN SOLENOID OPERATED VALVE CONTROL CIRCUITS TO BE COUCH TYPE 4AP44-AF.

REFERENCE DRAWINGS:


- E-5 480V M.C.C.(NON-ESENTIAL) ONE LINE DIAGRAM
- E-6 480V M.C.C.(ESSENTIAL) ONE LINE DIAGRAM
- E-10A STANDARD NOTES AND SYMBOLS
- E-12B MOTOR LIST
- E-14B SOLENOID VALVE LIST
- E-30B GENERAL GUIDES ELEMENTARY DIAGRAMS
- E-16 SAFETY FEATURES ACTUATION SYSTEM LOGIC
- E-17B SFAS ACTUATED EQUIPMENT TABULATION

SCALE NONE	DESIGNED	DRAWN BEW	DATE 11-13-88
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAMS TREATED WATER DRAWING INDEX			
	DRAWING NO.		REV.
	E-49B-SH. 1		89

INDEX (CONT.)			
SH. NO.	REV.	DESCRIPTION	
24	9	MU PUMPS AUXILIARY OIL PUMPS	
25	14	MU PUMP 1-1 AUXILIARY GEAR LUBE OIL PUMP	
25A	5	MU PUMP 1-2 AUXILIARY GEAR LUBE OIL PUMP	
26A	6	DELETED	
26B	10	SUMP PUMPS	
27	4	DEGASIFIER VACUUM PUMPS	
28	2	DEGASIFIED WATER TRANSFER PUMPS	
29	2	CAUSTIC STORAGE TANK TRANSFER PUMP 1-1	
30	4	ACID STORAGE TANK TRANSFER PUMP 1-1 (DRAWING VOID)	
31	7	CLEARWELL TRANSFER PUMP	
32	4	MISCELLANEOUS CHEMICAL FEEDERS	
32A	2	LIME TANK FEEDERS	
33	4	PH ACID CONTROL FEED PUMPS	
34	3	WT FEED PUMPS STRAINER	
35A	12	RC LETDOWN DIVERTING VALVE (MOV)	
35B	13	RC LETDOWN DIVERTING VALVE	
35C	4	MU TANK LEVEL SWITCH AUXILIARY RELAY	
36	10	RC MU BATCH STOP VALVE (MOV)	
37	2	DELETED	
38	7	FEEDER TO CONTAINMENT REFUELING SERVICES	
39	3	DELETED	
40	3	DEMINERALIZED WATER TRANSFER DISCHARGE HEADER VALVE (SOV)	
41	6	TREATED WATER CHLORINATION CONTROL	
41C	1	DELETED	
42A	12	ELECTRIC FIRE PUMP	
42B	11	ELECTRIC FIRE PUMP	
43	4	FIRE WATER DSL PUMP AUXILIARY	
44	5	DOMESTIC WATER TO AUXILIARY BUILDING (SOV)	
45	6	PRIMARY WATER STORAGE TANK OUTLET VALVE (SOV) (DWG. VOID)	
46	4	LABORATORY DEMINERALIZED WATER STORAGE TANK INLET VALVE (SOV) (DWG. VOID)	
47	6	RC MAKE-UP BATCH CONTROL	
48	2	ANTHRACITE FLT BACKWASH CONTROL VALVES (SOV'S)	
49	2	COMPUTER INPUT AUXILIARY CRKT.	
50A	10	RC LETDOWN COOLERS INLET VALVE (MOV)	Q
50B	6	RC LETDOWN COOLERS INLET VALVE	Q
51	3	SODIUM CHLORITE FEED PUMP 1-1 (DWG. VOID)	



FOR CONTINUATION OF INDEX SEE SHEET 3

FOR GENERAL NOTES AND REFERENCE DRAWINGS
SEE E-49B, DRAWING INDEX SHEET 1

SCALE NONE	DESIGNED	DRAWN BEW	DATE 11-13-88
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 <small>THE TOLEDO EDISON COMPANY</small>			
ELEMENTARY WIRING DIAGRAMS TREATED WATER DRAWING INDEX			
	DRAWING NO.		REV.
	E-49B SH. 2		89

INDEX (CONT.)			
SH. NO.	REV.	DESCRIPTION	
52	10	DELETED	
53	13	LOCAL ALARMS	
54A	6	FIRE PROTECTION DELUGE CONTROL PANELS	
54B	7	FIRE PROTECTION DELUGE CONTROL PANELS	
54C	2	FIRE PROTECTION DELUGE CONTROL PANELS XFMR X1	
54D	2	FIRE PROTECTION DELUGE CONTROL PANELS XFMR X01	
54E	3	FIRE PROTECTION DELUGE CONTROL PANELS XFMR X02	
55	14	TROUBLE ALARMS	
56	9	DOMESTIC WATER CHLOR. VALVE (DWG. VOID)	
57	4	CHILLED WATER SYSTEM VALVE CONTROL	
58	1	TREATED WATER SYSTEM DOMESTIC HOT WATER RECIRC. PUMP	
59	1	WATER TREATMENT BACKWASH SUMP PUMP AUTO-ALTR	
60	2	RC MU TANK H2 SUPPLY VALVE	
61	3	MU TANK H2 INLET VALVES	
62A	1	MAKEUP PUMP 1-1 DISCHARGE VALVE (MOV)	0
62B	1	MAKEUP PUMP 1-1 DISCHARGE VALVE	0
63A	0	MAKEUP PUMP DISCHARGE CROSS CONNECT LINE ISO. VALVE (MOV)	0
63B	0	MAKEUP PUMP DISCHARGE CROSS CONNECT LINE ISO. VALVE	0
64A	0	MAKEUP PUMP DISCHARGE CROSS CONNECT LINE ISO. VALVE (MOV)	0
64B	0	MAKEUP PUMP DISCHARGE CROSS CONNECT LINE ISO. VALVE	0
65A	1	BYPASS VALVE IN THE MU32 MINIFLOW LINE (MOV)	0
65B	0	BYPASS VALVE IN THE MU32 MINIFLOW LINE	0
66A	4	CONTAINMENT ISOLATION VALVE (MOV)	0
66B	3	CONTAINMENT ISOLATION VALVE	0
67A	5	CONTAINMENT ISOLATION VALVE (MOV)	0
67B	3	CONTAINMENT ISOLATION VALVE	0
68	2	MU SYS. RECIRC ISOLATION SOLENOID VALVE	0
69	2	MU SYS. RECIRC ISOLATION SOLENOID VALVE	0
70A	2	TREATED WATER RC MU PUMP SUCTION VALVE (MOV)	0
70B	2	TREATED WATER RC MU PUMP SUCTION VALVE	0
70C	2	TREATED WATER RC MU PUMP SUCTION VALVE (MOV)	0
70D	2	TREATED WATER RC MU PUMP SUCTION VALVE	0
70E	2	HI/LOW MAKEUP TANK LEVEL AUX. RELAYS	
70F	0	HI/LOW MAKEUP TANK LEVEL AUX. RELAYS	0
70G	0	HI/LOW MAKEUP TANK LEVEL AUX. RELAYS	0
70H	0	TREATED WATER CLEARWELL	

FOR GENERAL NOTES AND REFERENCE DRAWINGS
SEE E-49B, DRAWING INDEX SHEET 1.

SCALE NONE	DESIGNED	DRAWN BEW	DATE 11-13-88
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 <small>THE TOLEDO EDISON COMPANY</small>			
ELEMENTARY WIRING DIAGRAMS TREATED WATER DRAWING INDEX			
	DRAWING NO. E-49B SH. 3		REV. 89