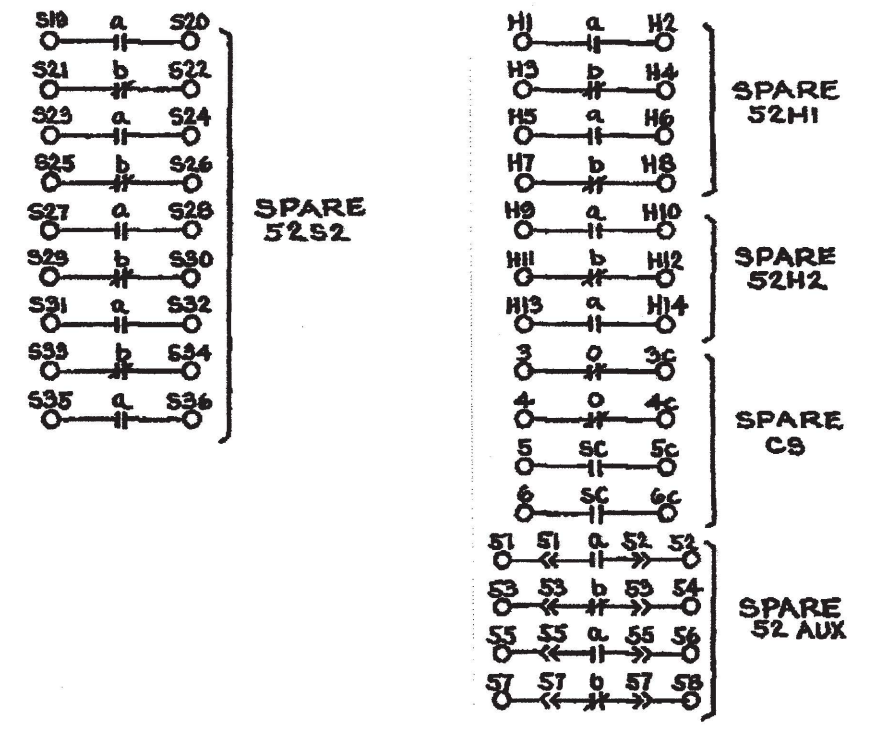
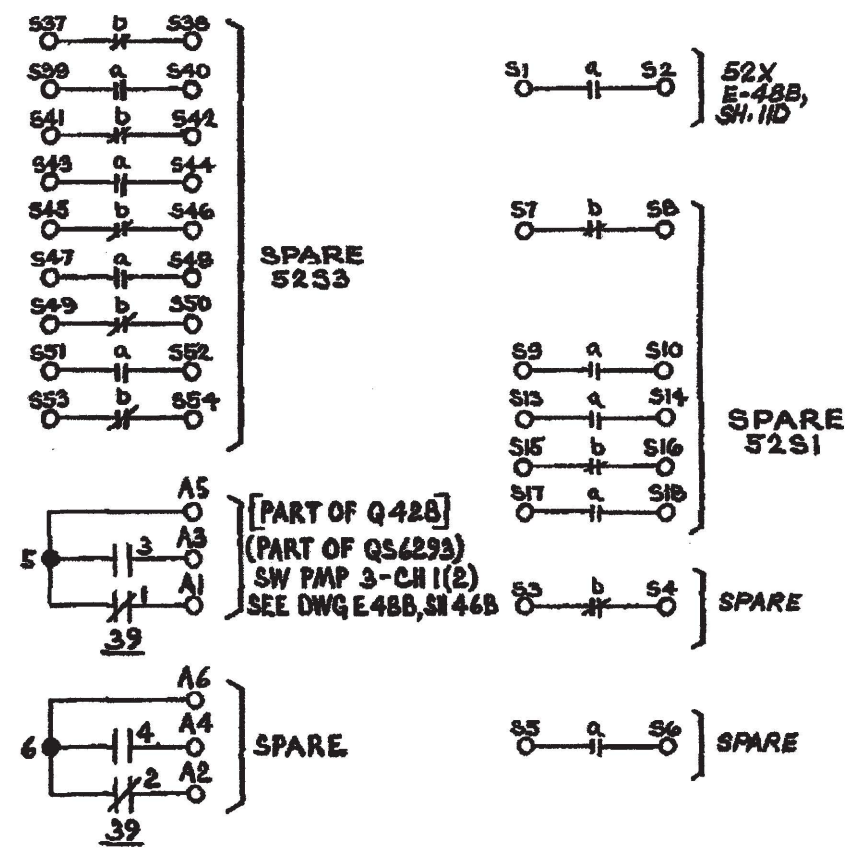
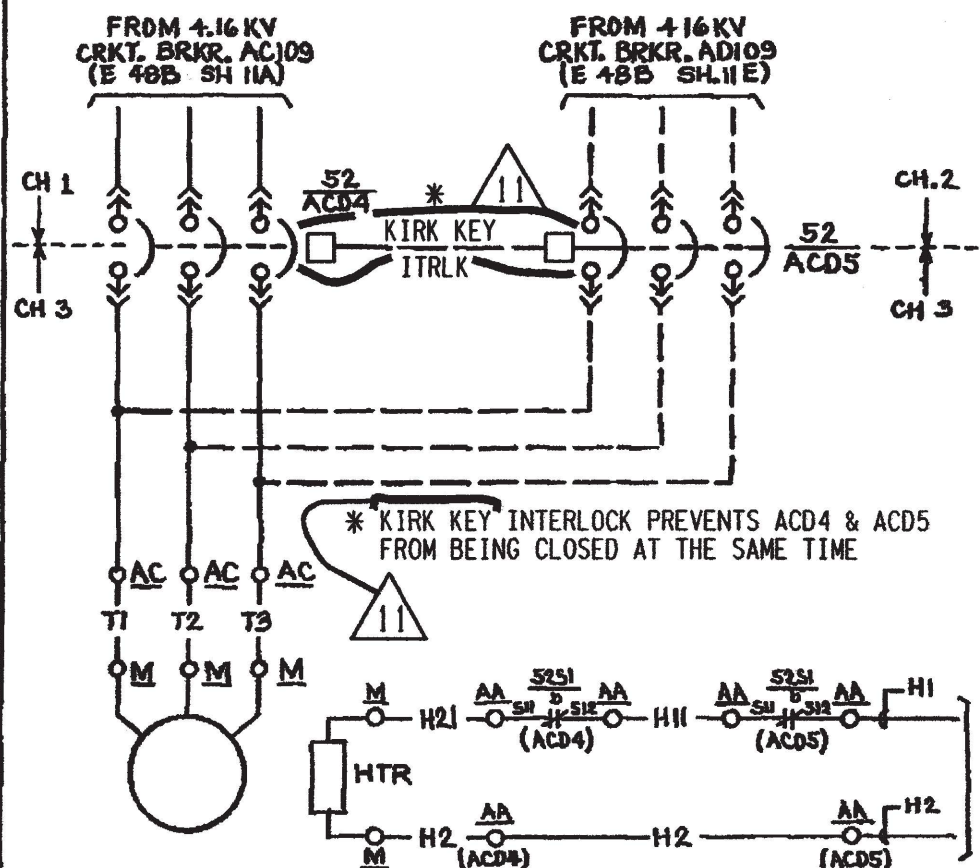


2-29-08	3/15/2017	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
INC. DUN 07-0159-00-1 REV. 0 (REDRAWN)	INC. DUN 10-0044-002-003 REV. 00	ISSUED FOR CONSTRUCTION						
10								
11								
0								



**DEVICE DESCRIPTION**  
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			CD3
ACD5		2	C5715	ACD5	AD109	ACD6*	MP0033	CD4

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

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

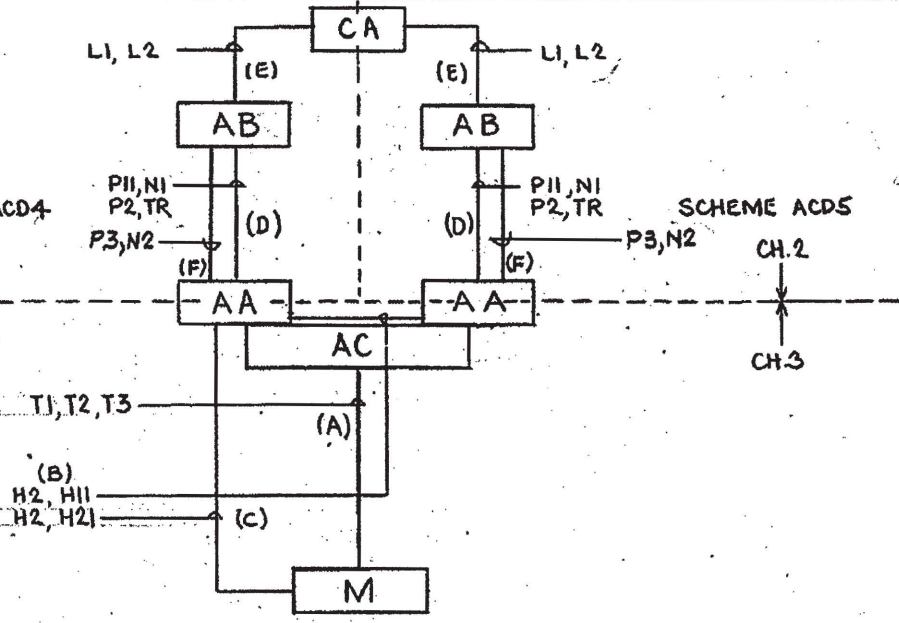
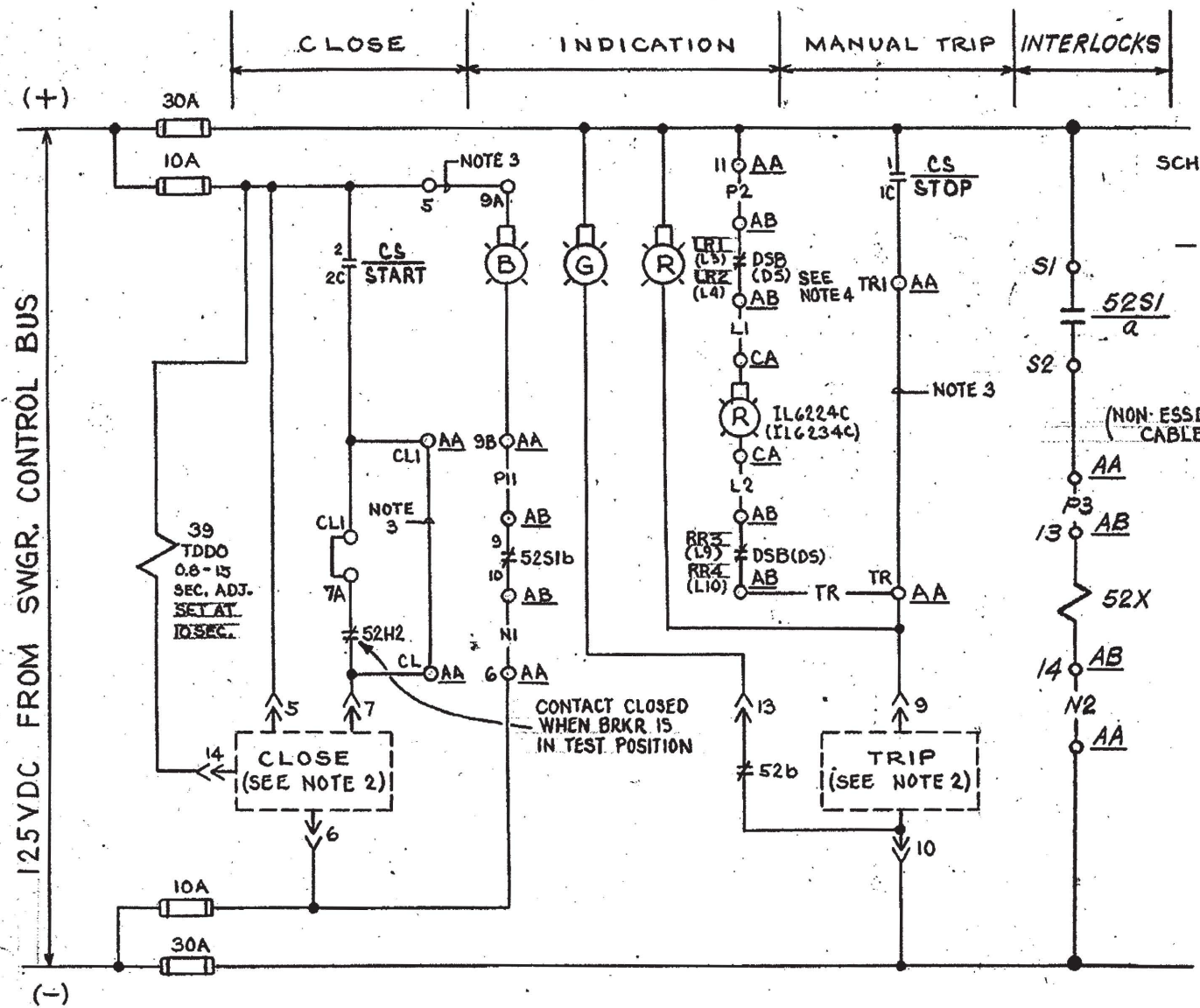
**ELEMENTARY WIRING DIAGRAMS**  
**LAKE WATER SYSTEM**  
**SERVICE WATER PUMP 3 XFER BRKR**

BECHTEL COMPANY	JOB NO	DRAWING NO	REV
	<b>7749</b>	E-48B SH.11C	<b>11</b>

THIS DWG. WAS REDRAWN/SCANNED ON CAD AND SUPERSEDES REV.9.



6	INC. DWG. E-48B-266-267 PER MOD 93-0029-00 AND E-48B-213 PER DR 95-217	ISSUED FOR CONSTRUCTION	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
5	INC. DCN E-48B-139 & 141 FOR PCR 84-0177		11/18/80	ETL	MAK	MAK	MAK	MAK	MAK
0			11/27/73	AFC	MAK	MAK	MAK	MAK	MAK

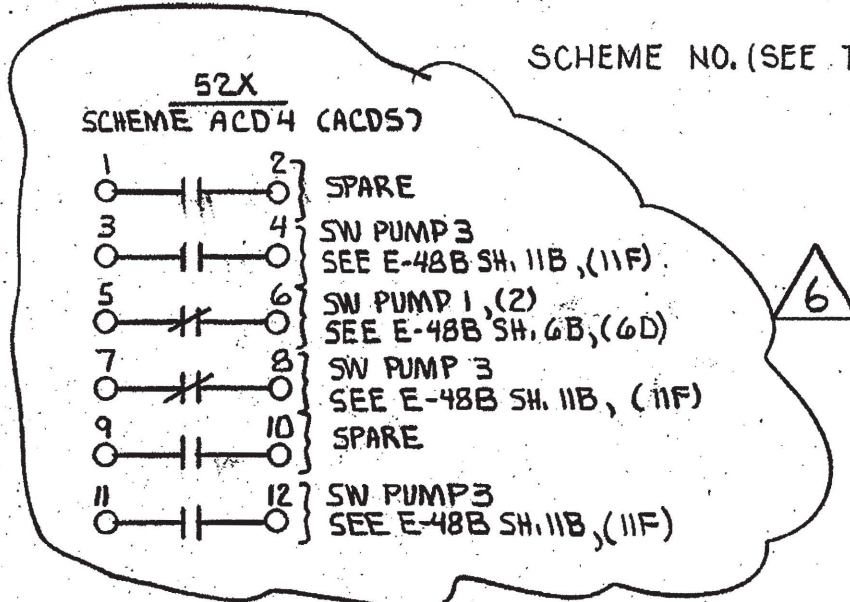


BLOCK DIAGRAM

NOTES

1. SEE DWG. E-48B SH. IIC FOR ADDITIONAL NOTES AND LEGEND.
2. FOR BREAKER INTERNALS SEE DWG. E-30B SH. 16A, 2a. FOR INTERNAL WIRING SEE VENDOR DWG. E-38-3 & E-38-4.
3. CONTRACTOR TO ADD JUMPER BET. SWGR. TERMINALS 5 & 9A, CL & CLI AND TR & TRI.
4. SWITCH AND CONTACTS IN PARENTESIS ARE FOR SCHEME AD109

SCHEME NO. (SEE TABLE ON SH. IIC)



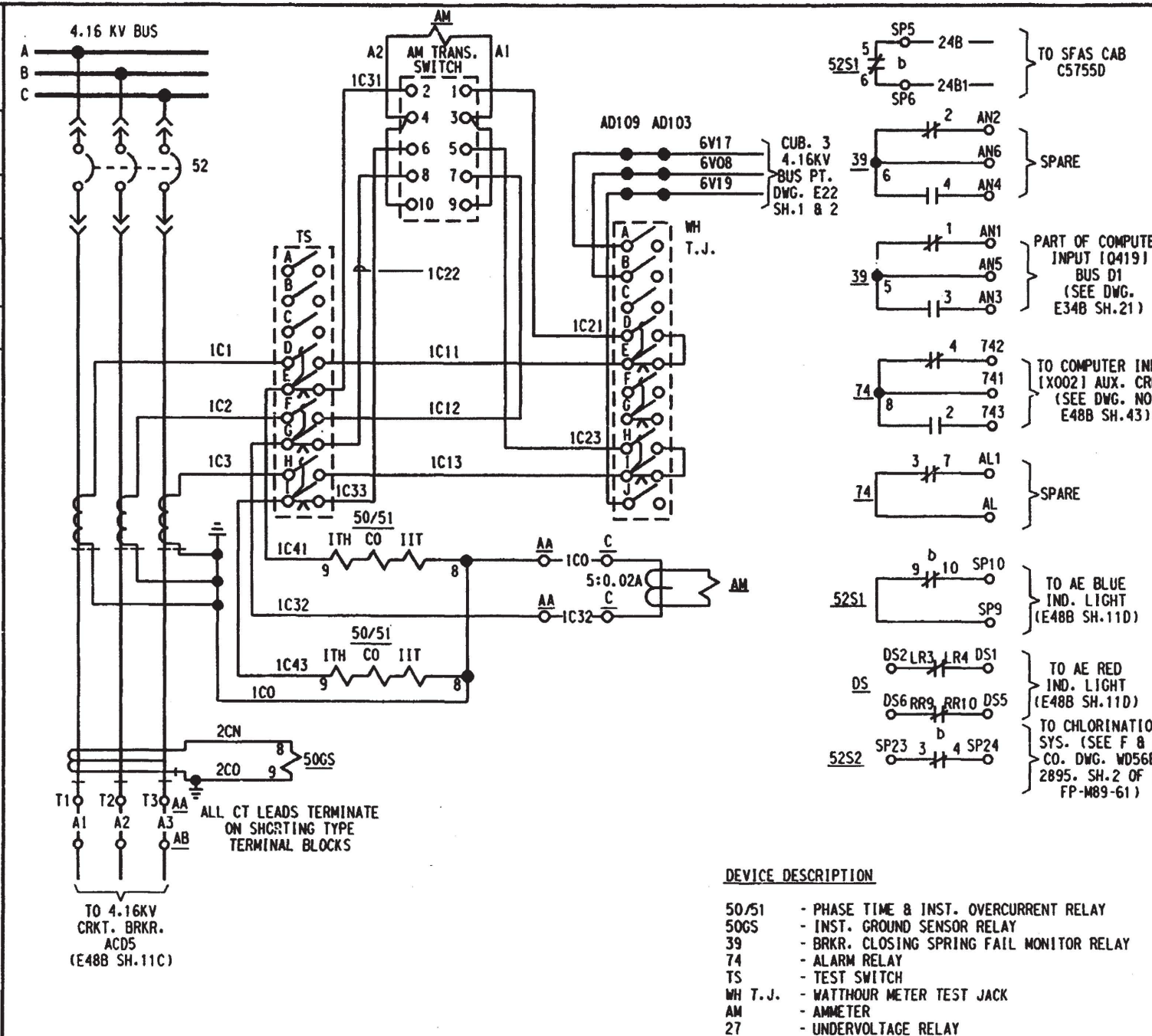
**DAVIS-BESSE NUCLEAR POWER STATION**  
 THE TOLEDO EDISON COMPANY  
 THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

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

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



INITIALS ON FILE	ENGR. SUPV.
SBW	
INITIALS ON FILE	ENGR.
	CH'K
INITIALS ON FILE	BY
REVISIONS	
NO.	DATE
3	5/8/90
5	4-11-91
4	3/1/91
0	12/1/87
CREATED TO REFLECT SCHEME SEPARATION DUE TO AS BUILT OF FCR 84-186.	
INC. DCN: E-48B-143 FOR FCR 84-177, SUP 0; E-48B-194 FOR MOD 88-0081 SUP.0	
INC. DCN E-48B-264 FOR MOD 93-0028	
INC. DCN E-48B-205 FOR MOD 88-0081 SUP.0	

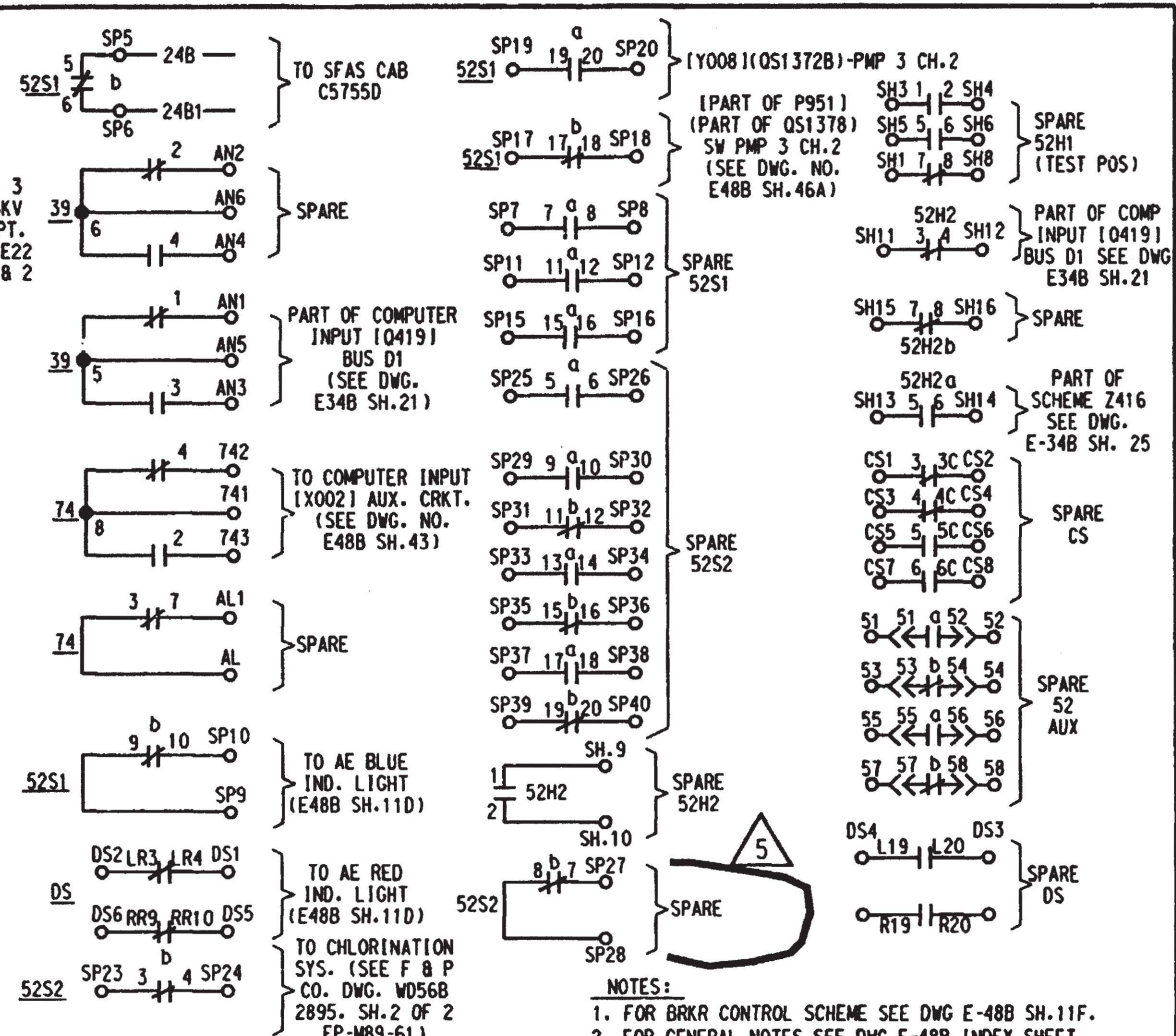


DEVICE DESCRIPTION

- 50/51 - PHASE TIME & INST. OVERCURRENT RELAY
- 50GS - INST. GROUND SENSOR RELAY
- 39 - BRKR. CLOSING SPRING FAIL MONITOR RELAY
- 74 - ALARM RELAY
- TS - TEST SWITCH
- WH T.J. - WATTHOUR METER TEST JACK
- AM - AMMETER
- 27 - UNDERVOLTAGE RELAY

LEGEND

SCHEME NO.	S.U. NO.	CHANNEL	WIRE PREFIX AT MAIN CONT. BC.	CS (HIS)	AM (ATC)	BUS	SWGR UNIT	EQUIPMENT						SA OUTPUT RELAY		
								C	CA	AA	AB	N	SA2	SA4	KA	KB
AD109	11	2	SWD	H1S1372B	I11372B	D1	9	C5716	C5715	AD109	ACDS	NP0033-2	C5755C	C5756D	K24B	K24B



SCALE NONE	DESIGNED	DRAWN CADD	DATE 9/23/87
<b>DAVIS-BESSE NUCLEAR POWER STATION</b>			
<b>UNIT NO. 1</b>			
THE TOLEDO EDISON COMPANY			
<b>ELEMENTARY WIRING DIAGRAMS</b>			
<b>LAKE WATER SYSTEM</b>			
<b>SERVICE WATER PUMP 3 CH2</b>			
DRAWING NO.			REV.
E48B SH.11E			5

DB 04-02-96

DFN=/DBNPS/SCHEME/E48BS11E.DGN

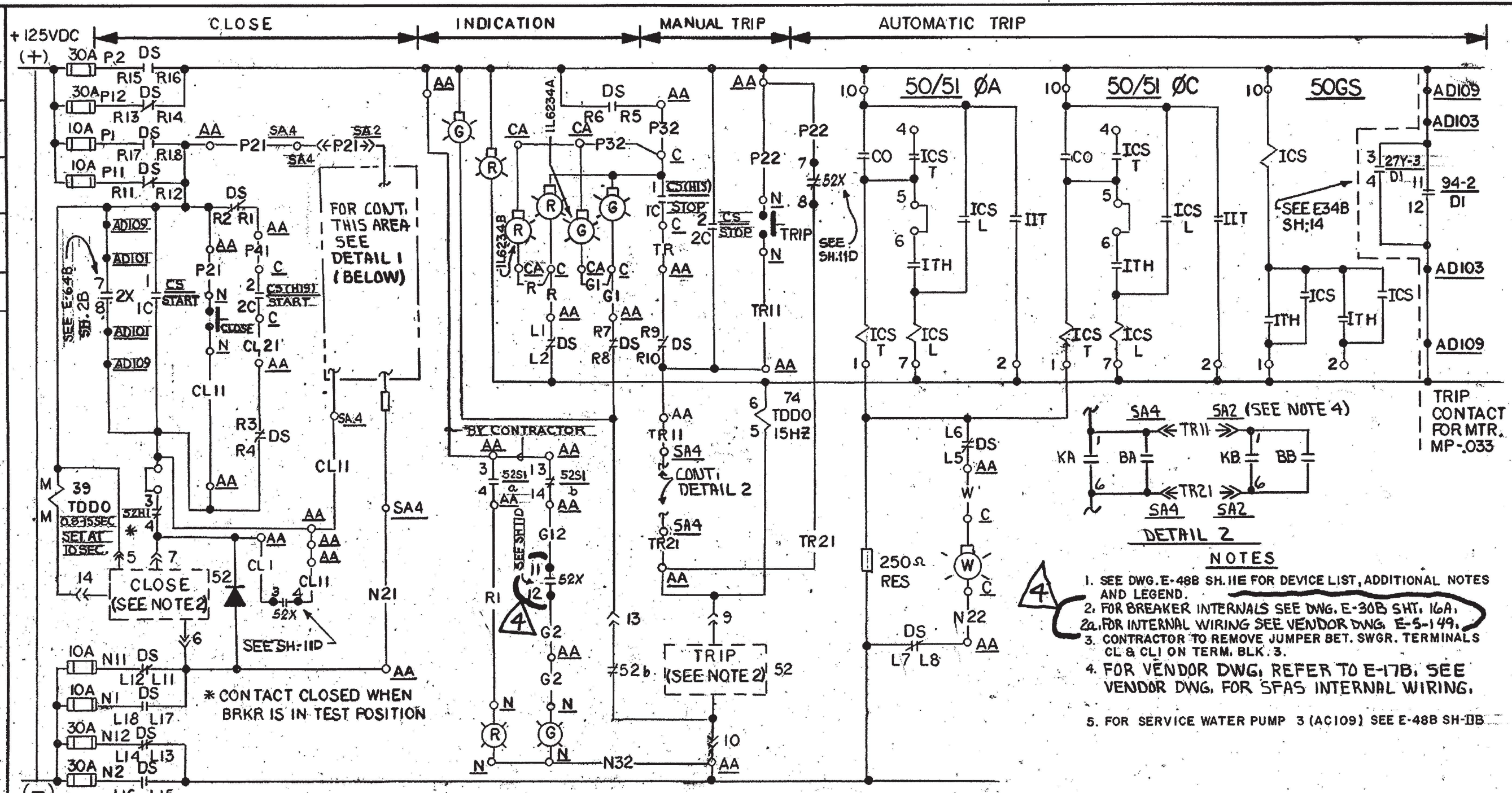
I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

DATE: 4.15.96 OPERATOR: [Signature]

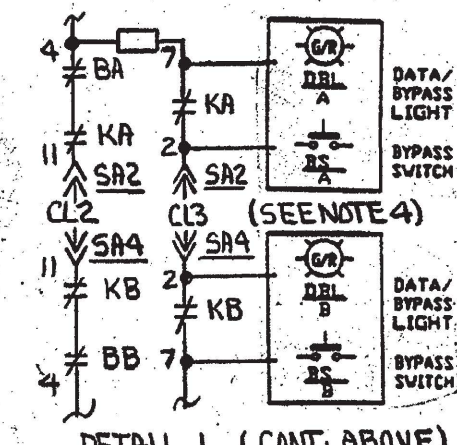
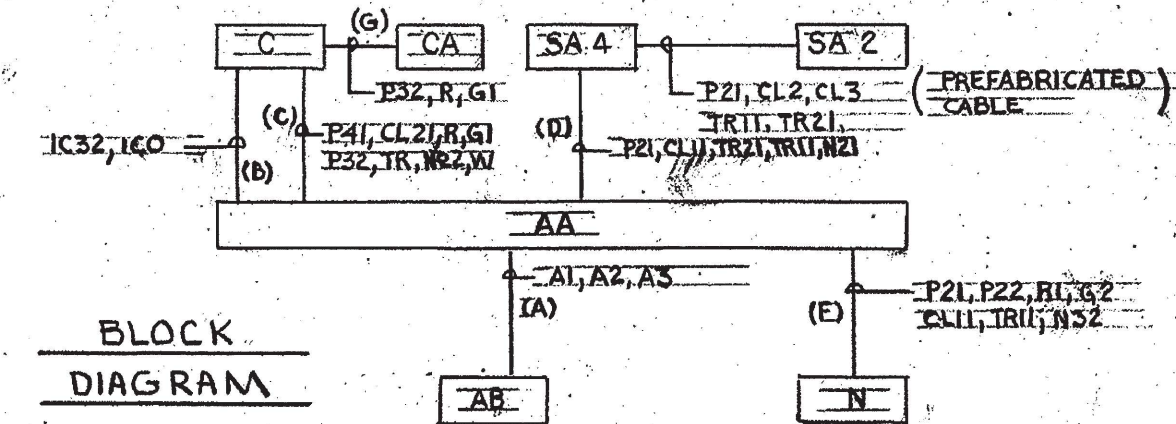
16X



3	12/27/81	INC.DCN E-48B-234 PER MOD 90-000 G SUPD	REVISIONS
2	5/18/80	INC.DCN E-48B-142 FOR FCR 84-0177	
4	4/1/76	INC.DCN E-48B-265 PER MOD 93-0028-004 E-48B-274 PER DDR 95-2117	
0	12/1/67	CREATED TO REFLECT SCHEME SEPARATION DUE TO AS-BUILT OF FCR'S 84-186 & 85-062 AS BUILT FOR FCR'S 86-0086 SUPP. 31 & 85-072 SUPP. 18. INC.DCN'S E-48B-104, E-48B-94	
	NO.	DATE	

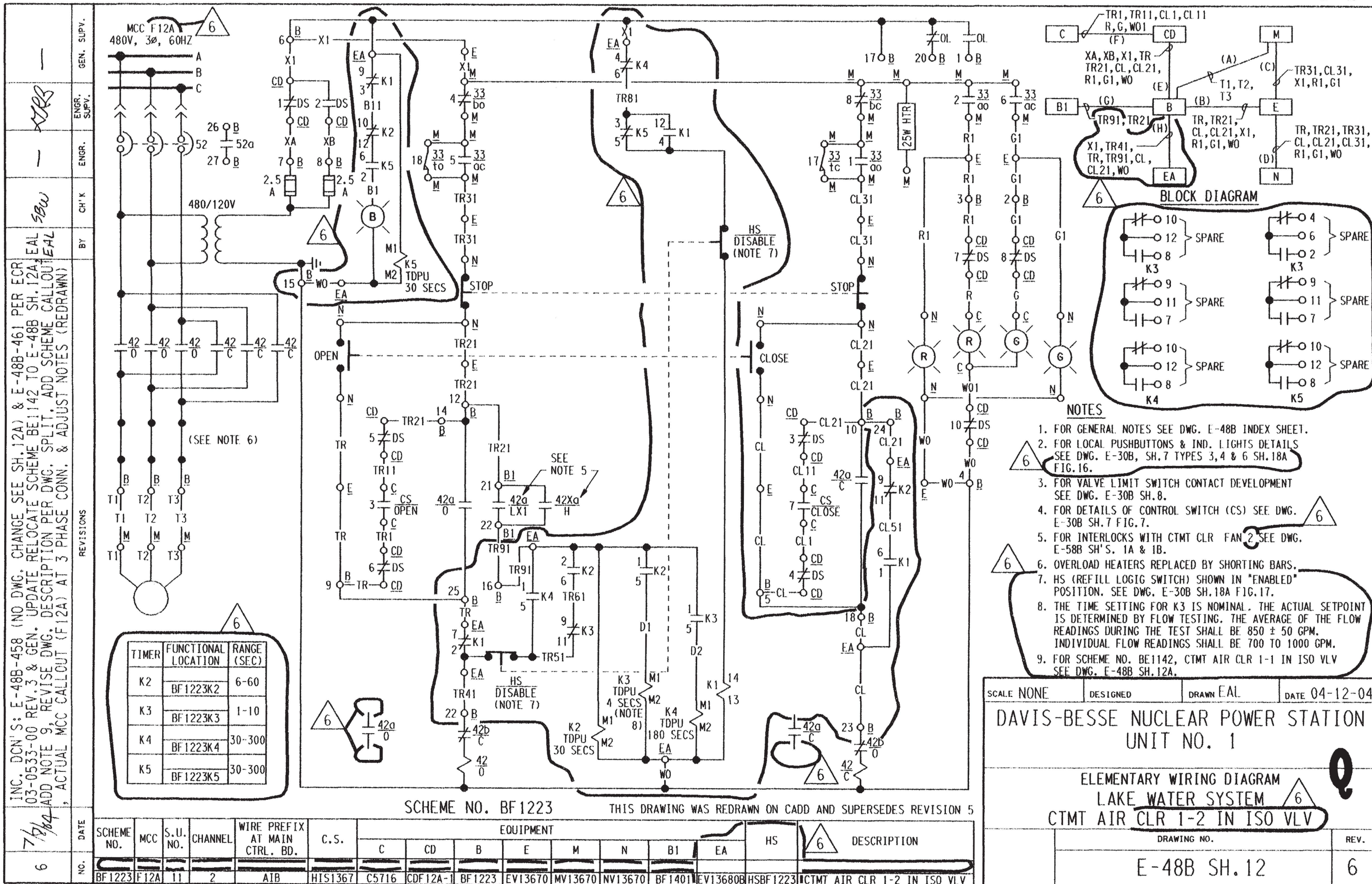


- NOTES**
- SEE DWG. E-48B SH. IIE FOR DEVICE LIST, ADDITIONAL NOTES AND LEGEND.
  - FOR BREAKER INTERNALS SEE DWG. E-30B SHT. 16A.
  - CONTRACTOR TO REMOVE JUMPER BET. SWGR. TERMINALS CL & CLI ON TERM. BLK. 3.
  - FOR VENDOR DWG, REFER TO E-17B, SEE VENDOR DWG. FOR SFAS INTERNAL WIRING.
  - FOR SERVICE WATER PUMP 3 (AC109) SEE E-48B SH-IB.



SCALE N/A	DESIGNED	DRAWN JLH	DATE 5-27-87
<b>DAVIS-BESSE NUCLEAR POWER STATION</b>			
<b>UNIT NO. 1</b>			
THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAMS			
LAKE WATER SYSTEM			
SERVICE WATER PUMP 3 (AD109)			
DRAWING NO. E-48B SH. IIF			REV. 4





INC. DCN'S: E-48B-458 (NO DWG. CHANGE SEE SH.12A) & E-48B-461 PER ECR 03-0533-00 REV.3 & GEN. UPDATE RELOCATE SCHEME BE1142 TO E-48B SH.12A, EAL ADD NOTE 9, REVISE DWG. DESCRIPTION PER DWG. SPLIT, ADD SCHEME CALLOUT EAL, ACTUAL MCC CALLOUT (F12A) AT 3 PHASE CONN. & ADJUST NOTES (REDRAWN)

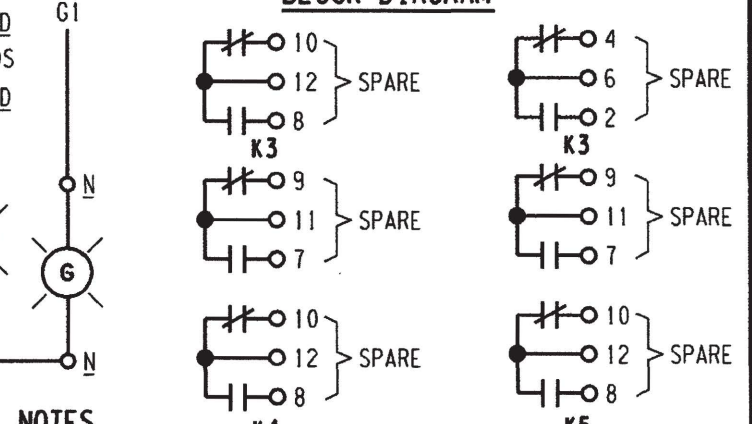
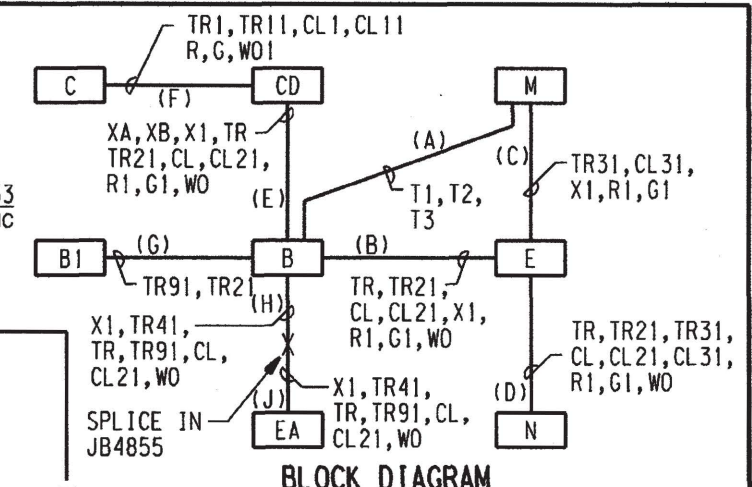
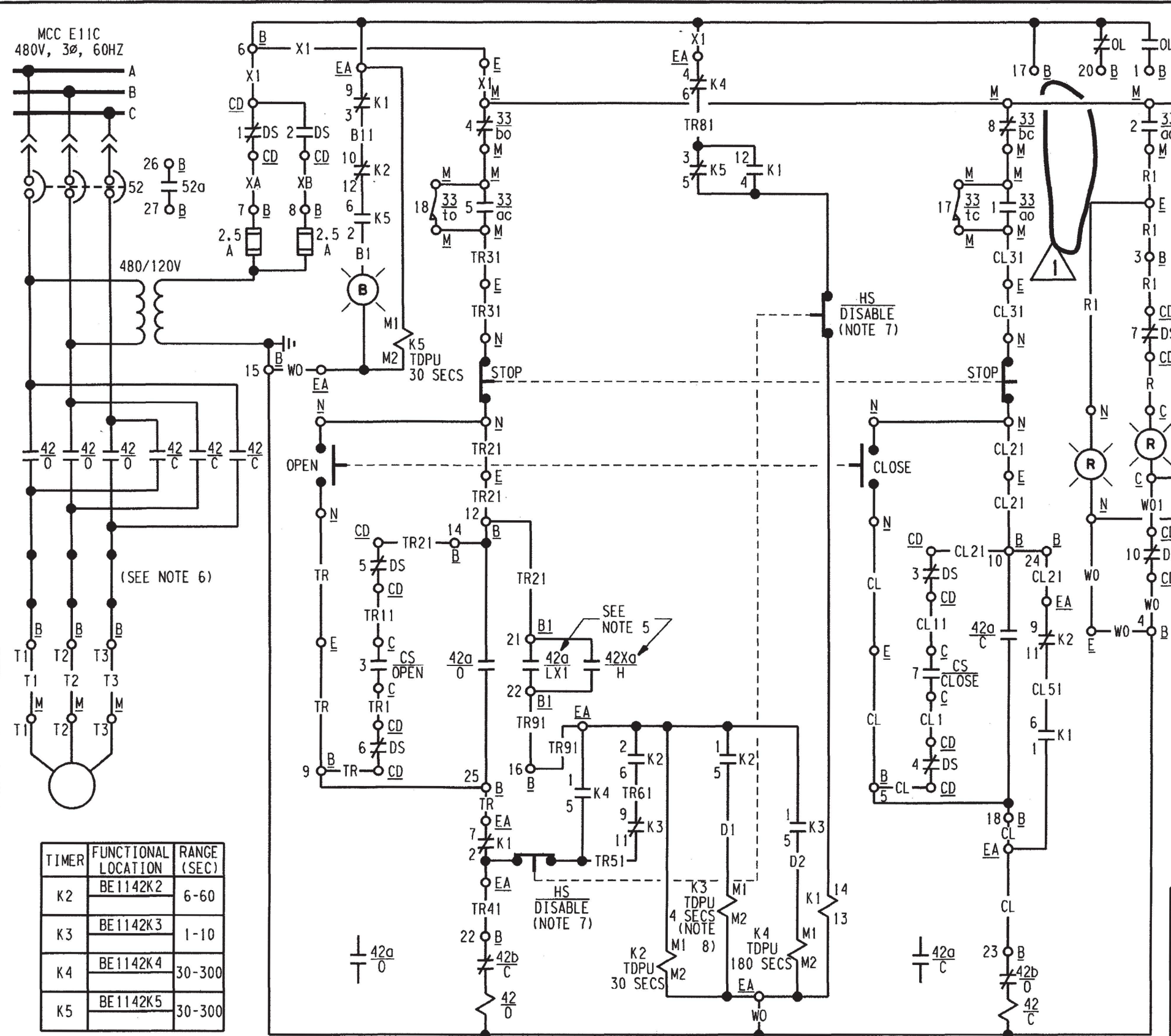
REVISIONS  
 BY CH'K ENGR. SUPV. GEN. SUPV.

- NOTES**
- FOR GENERAL NOTES SEE DWG. E-48B INDEX SHEET.
  - FOR LOCAL PUSHBUTTONS & IND. LIGHTS DETAILS SEE DWG. E-30B, SH.7 TYPES 3, 4 & 6 SH.18A FIG.16.
  - FOR VALVE LIMIT SWITCH CONTACT DEVELOPMENT SEE DWG. E-30B SH.8.
  - FOR DETAILS OF CONTROL SWITCH (CS) SEE DWG. E-30B SH.7 FIG.7.
  - FOR INTERLOCKS WITH CTMT CLR FAN 2 SEE DWG. E-58B SH'S. 1A & 1B.
  - OVERLOAD HEATERS REPLACED BY SHORTING BARS.
  - HS (REFILL LOGIC SWITCH) SHOWN IN "ENABLED" POSITION. SEE DWG. E-30B SH.18A FIG.17.
  - 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.
  - FOR SCHEME NO. BE1142, CTMT AIR CLR 1-1 IN ISO VLV SEE DWG. E-48B SH.12A.

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-12-04
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1			
ELEMENTARY WIRING DIAGRAM LAKE WATER SYSTEM CTMT AIR CLR 1-2 IN ISO VLV			
DRAWING NO.			REV.
E-48B SH.12			6



GEN. SUPV.	
ENGR. SUPV.	SML
ENGR.	
CH'K	
BY	
INITIALS ON FILE	
REVISIONS	
DATE	
NO.	



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

TIMER	FUNCTIONAL LOCATION	RANGE (SEC)
K2	BE1142K2	6-60
K3	BE1142K3	1-10
K4	BE1142K4	30-300
K5	BE1142K5	30-300

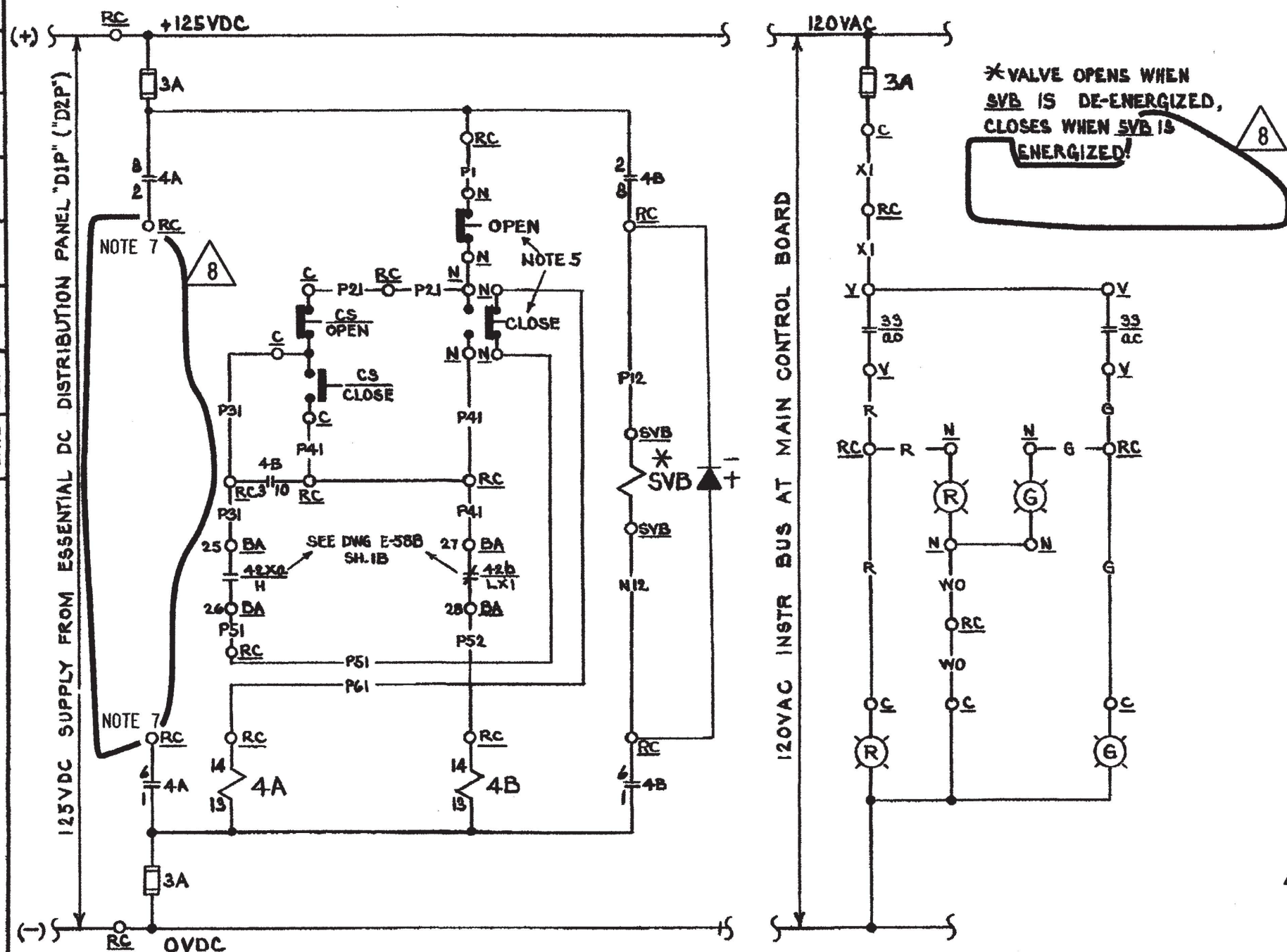
SCHEME NO. BE1142

SCHEME NO.	MCC	S.U. NO.	CHANNEL	WIRE PREFIX AT MAIN CTRL. BD.	C.S.	EQUIPMENT										HS	DESCRIPTION
						C	CD	B	E	M	N	B1	EA				
BE1142	E11C	11	1	A1A	HIS1366	C5716	CDE11C	BE1142	EV13660	MV13660	NV13660	BE1401	EV13660A	HSBE1142	CTMT AIR CLR 1-1 IN ISO VLV		

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-12-04
<b>DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1</b>			
<b>ELEMENTARY WIRING DIAGRAM LAKE WATER SYSTEM CTMT AIR CLR 1-1 IN ISO VLV</b>			
DRAWING NO.			REV.
<b>E-48B SH.12A</b>			<b>1</b>



INC. DUN. E-48B-467 PER ACRO4-003-00 REV. 0	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
INC. DUN 04-0272-001-010 & -002-010 BOTH REV. 00 (REDRAWN)	2-8-74	M/S	SA	SA	SA	SA	SA
ISSUED FOR CONSTRUCTION	2-8-74	APC	MA/KS	SA/S	SA/S	SA/S	SA/S
REV	DESCRIPTION						
7							
8							

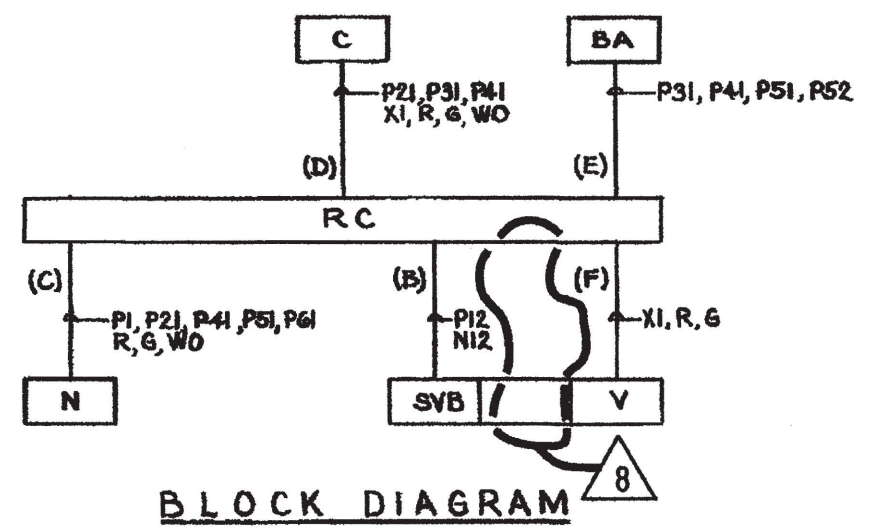


SCHEME NO. (SEE TABLE)

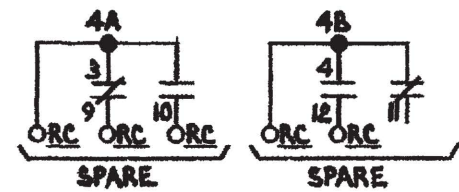
LEGEND

SCHEME NO	S U NO	CHANNEL	WIRE PREFIX AT MAIN CTRL BD	CS	EQUIPMENT				DESCRIPTION		
					C	RC	SVB	BA			
V1356	11	1	AOA	HIS1356	C5716	RC3701	NOTE 7	SV1356B	NV1356	BE1401	CTMT AIR CLR 1-1 OUTLET
V1357	11	2	AOB	HIS1357	C5716	RC3702	NOTE 7	SV1357B	NV1357	BE1401	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.

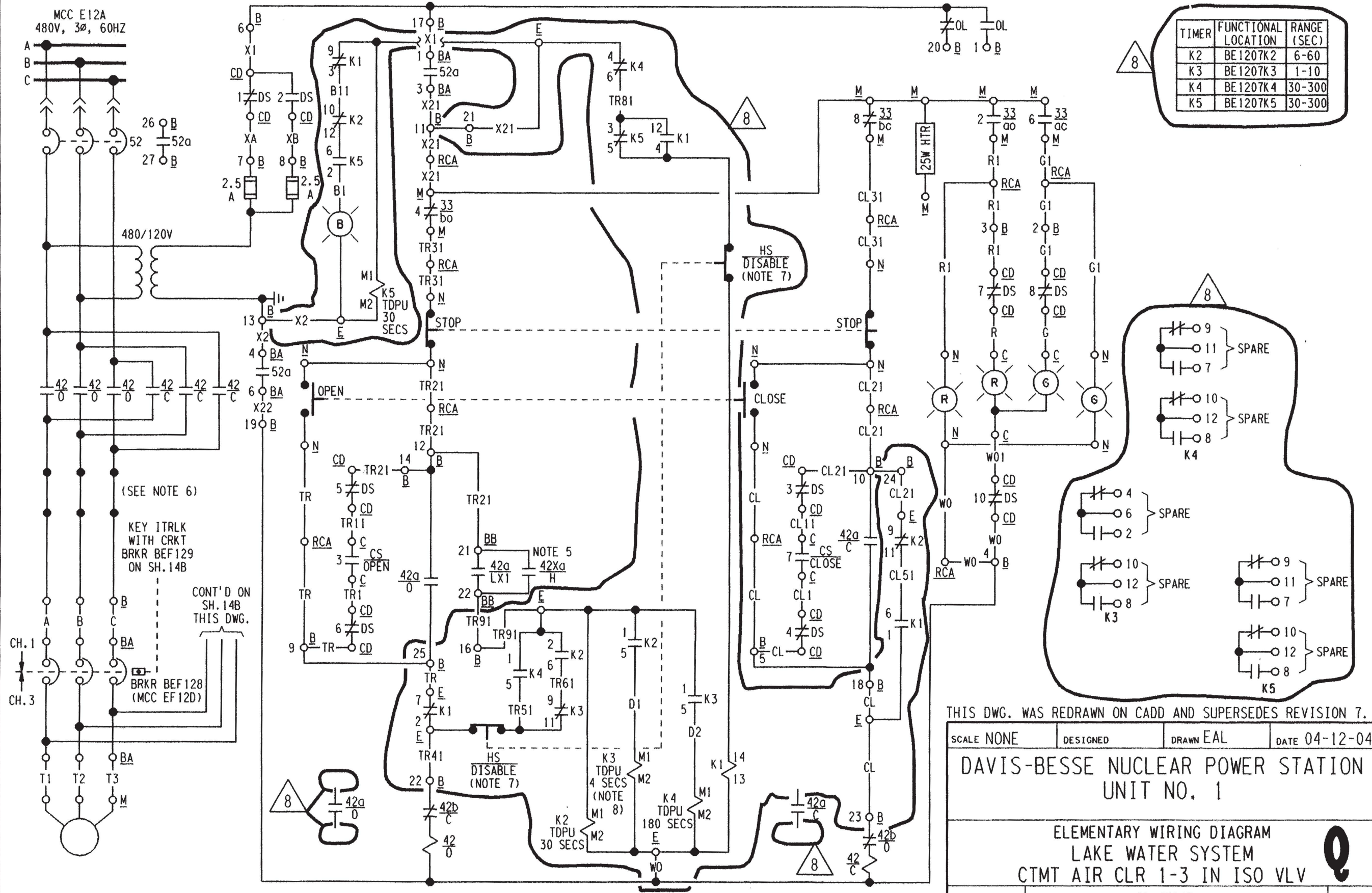
THIS DRAWING WAS REDRAWN/SCANNED ON CAD AND SUPERSEDES REV. 7.

**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.
	<b>7749</b>	<b>E-48B SH.13</b>	<b>8</b>





NO.	DATE	REVISED BY	CHK'D BY	ENGR. SUPV.	GEN. SUPV.
8	7/1/04	INC. DCN E-48B-459 PER ECR 03-0533-00 REV. 3 (REDRAWN)	EAL	SBLU	VPP

(SEE NOTE 6)

KEY ITRLK WITH CRKT BRKR BEF129 ON SH. 14B

BRKR BEF128 (MCC EF12D)

CONT'D ON SH. 14B THIS DWG.

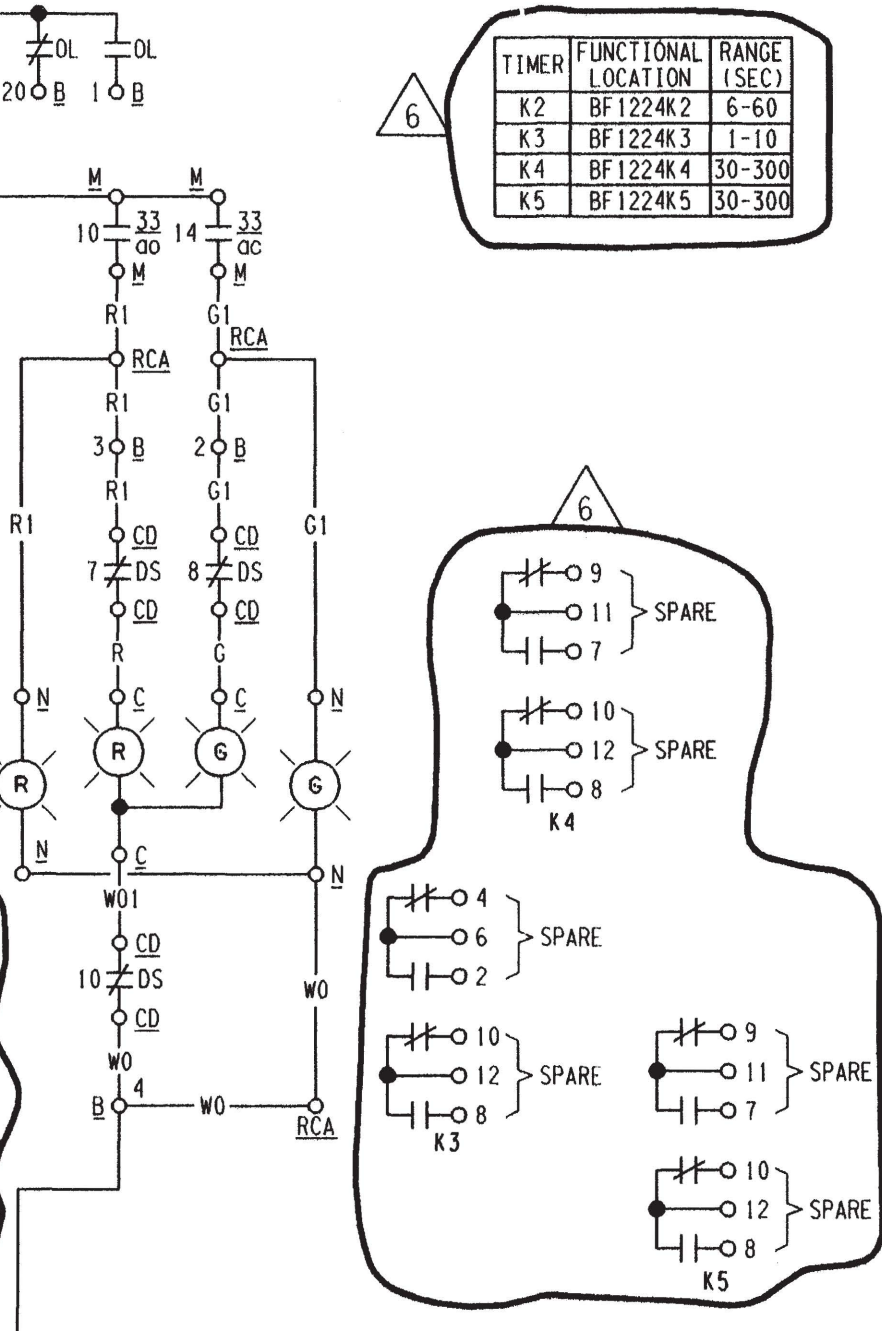
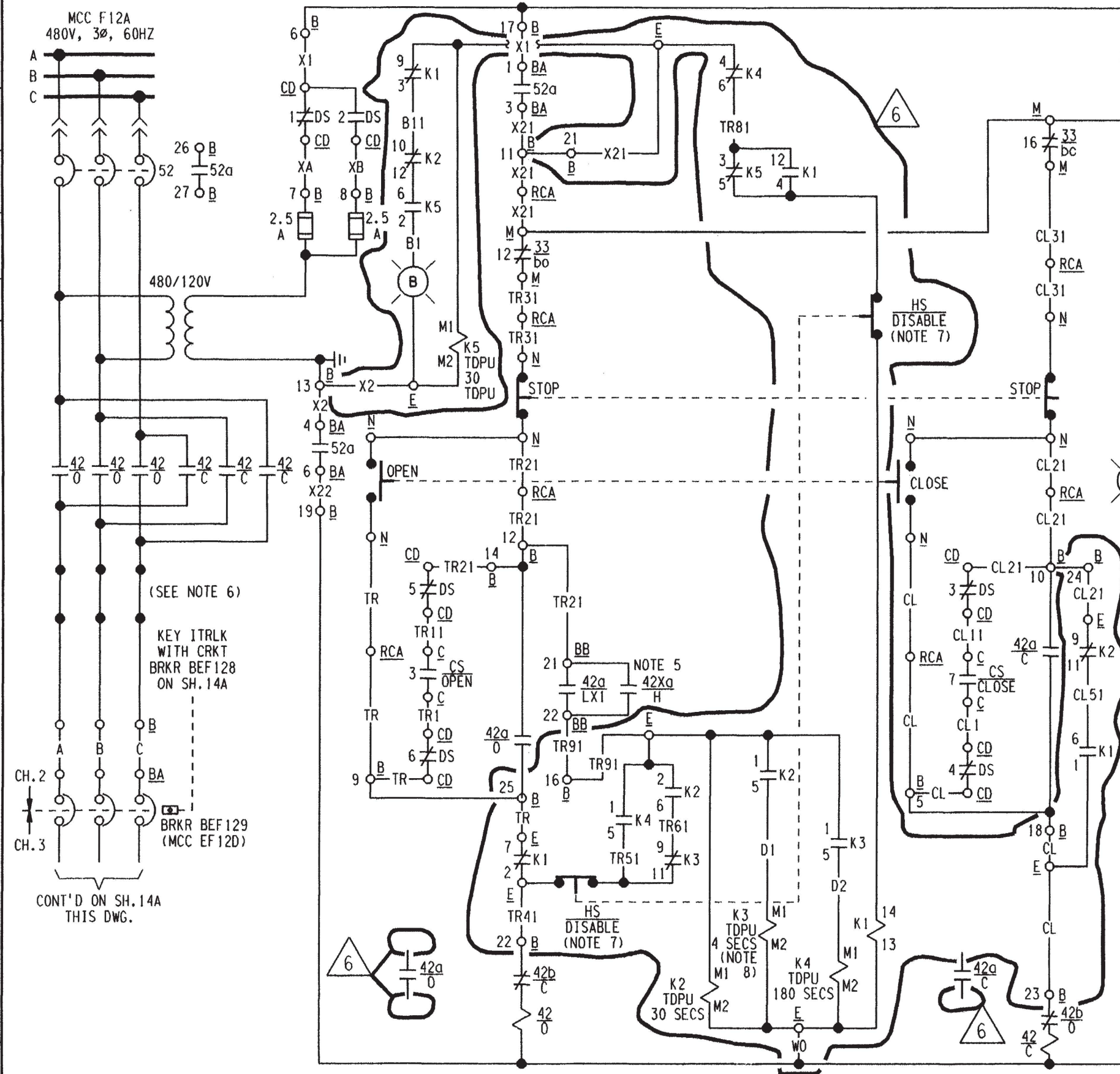
SCHEME NO. BE1207  
(FOR BLOCK DIAGRAM, LEGEND & NOTES SEE SH. 14C)

THIS DWG. WAS REDRAWN ON CADD AND SUPERSEDES REVISION 7.

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-12-04
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1			
ELEMENTARY WIRING DIAGRAM LAKE WATER SYSTEM CTMT AIR CLR 1-3 IN ISO VLV			
DRAWING NO. E-48B SH. 14A			REV. 8



			GEN. SUPV.
			ENGR. SUPV.
		CH'K	
		BY	
REVISIONS			
6	9/22/04	INC. DCN E-48B-460 PER ECR 03-0533-01 REV. 3 (REDRAWN)	
	NO.	DATE	



(SEE NOTE 6)

KEY ITRLK WITH CRKT BRKR BEF128 ON SH. 14A

CONT'D ON SH. 14A THIS DWG.

BRKR BEF129 (MCC EF12D)

SCHEME NO. BF 1224

(FOR BLOCK DIAGRAM, LEGEND & NOTES SEE SH. 14C)

THIS DWG. WAS REDRAWN ON CADD AND SUPERSEDES REVISION 5.

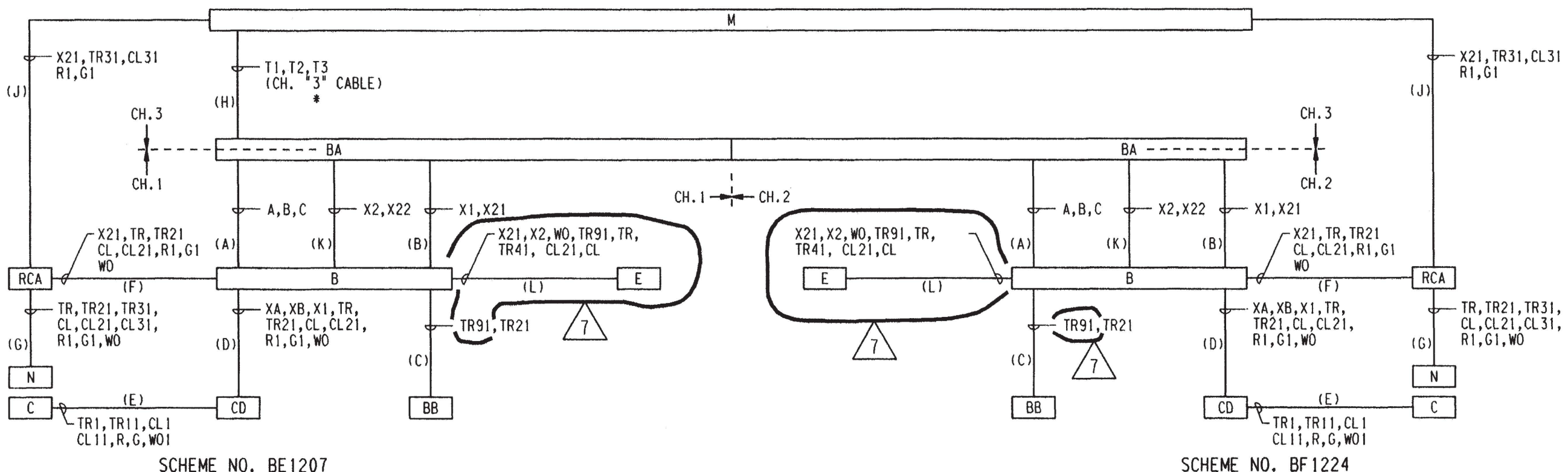
SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-12-04
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1			
ELEMENTARY WIRING DIAGRAM LAKE WATER SYSTEM CTMT AIR CLR 1-3 IN ISO VLV			
DRAWING NO.			REV.
E-48B SH. 14B			6



LEGEND

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

\* CHANNEL "3" CABLE TO BE ROUTED IN SCHEME BE1207



BLOCK DIAGRAM

NOTES

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. E-48B SH.14C			REV. 7

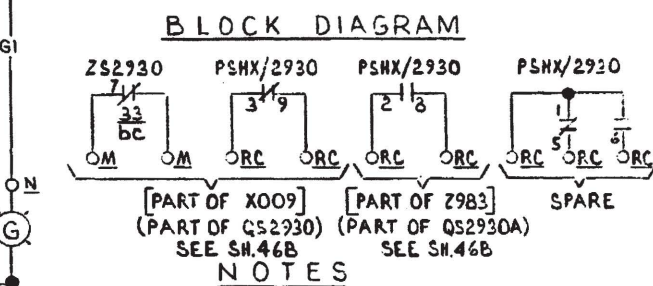
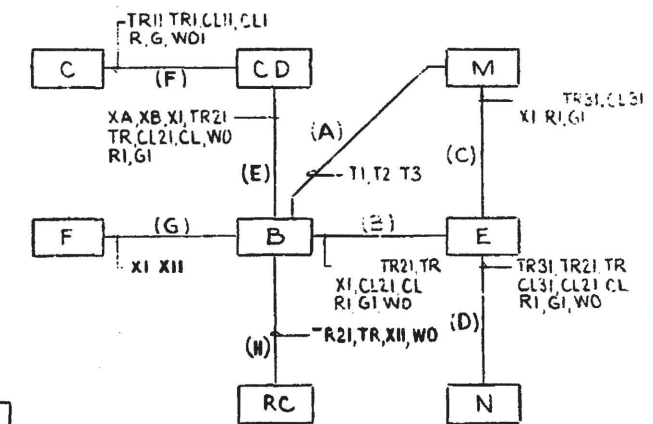
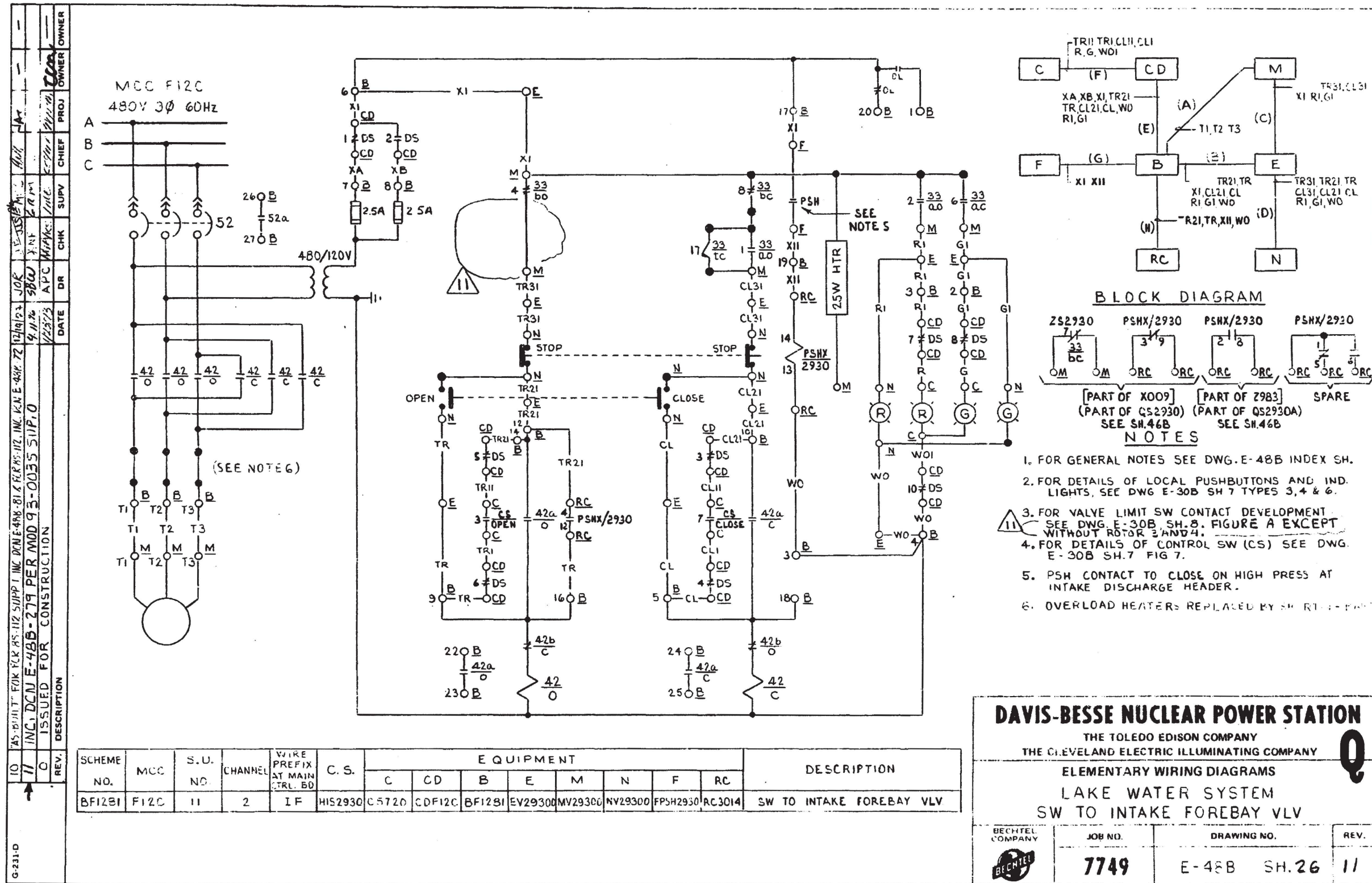
INC. DCN'S: E-48B-432 PER ECR 03-0533-01 REV.0, E-48B-433 PER ECR 03-0533-00 REV.3 (REDRAWN) 03-0533-00 REV.0, E-48B-462 & 463 PER ECR 03-0533-00 REV.3 (REDRAWN)

GEN. SUPV. -  
ENGR. SUPV. -  
ENGR. -  
CHK -  
BY EAL EAL

REVISIONS

NO.	DATE
7	10/1/04





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 2 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 HEATERS REPLACED BY SH. RT-1-100

10	11	11	2	IF	HIS2930	C5720	CD F12C	BF1281	EV2930	MV2930	NY2930	FP5H2930	RC3014	SW TO INTAKE FOREBAY VLV
----	----	----	---	----	---------	-------	---------	--------	--------	--------	--------	----------	--------	--------------------------

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

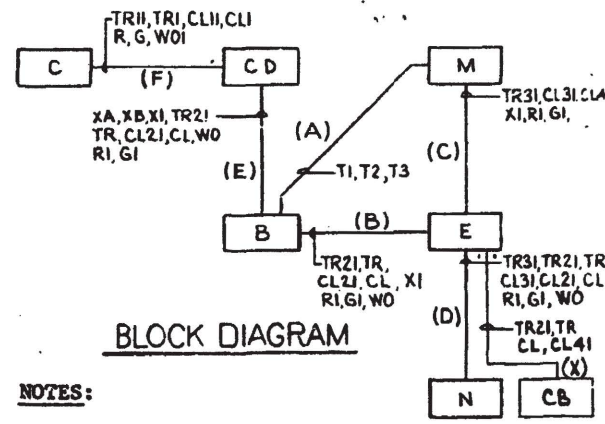
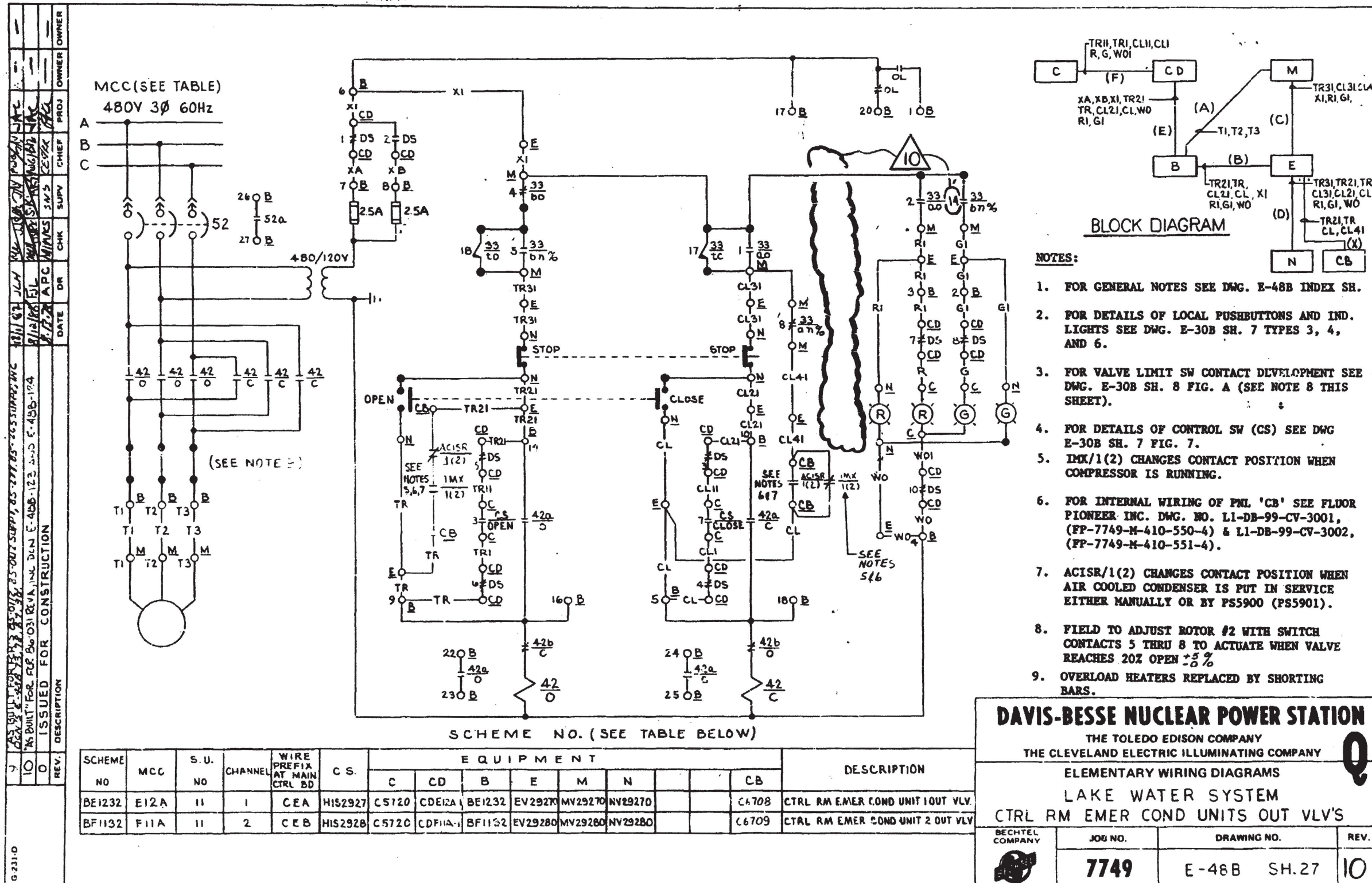
**ELEMENTARY WIRING DIAGRAMS**  
 LAKE WATER SYSTEM  
 SW TO INTAKE FOREBAY VLV

BECHTEL COMPANY  
 JOB NO. 7749  
 DRAWING NO. E-48B SH. 26  
 REV. 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: 4.15.96 OPERATOR: Dody Lindle





- NOTES:**
- FOR GENERAL NOTES SEE DWG. E-48B INDEX SH.
  - FOR DETAILS OF LOCAL PUSHBUTTONS AND IND. LIGHTS SEE DWG. E-30B SH. 7 TYPES 3, 4, AND 6.
  - FOR VALVE LIMIT SW CONTACT DEVELOPMENT SEE DWG. E-30B SH. 8 FIG. A (SEE NOTE 8 THIS SHEET).
  - FOR DETAILS OF CONTROL SW (CS) SEE DWG E-30B SH. 7 FIG. 7.
  - IMX/1(2) CHANGES CONTACT POSITION WHEN COMPRESSOR IS RUNNING.
  - FOR INTERNAL WIRING OF PNL 'CB' SEE FLOOR PIONEER INC. DWG. NO. L1-DB-99-CV-3001, (FP-7749-M-410-550-4) & L1-DB-99-CV-3002, (FP-7749-M-410-551-4).
  - ACISR/1(2) CHANGES CONTACT POSITION WHEN AIR COOLED CONDENSER IS PUT IN SERVICE EITHER MANUALLY OR BY PS5900 (PS5901).
  - FIELD TO ADJUST ROTOR #2 WITH SWITCH CONTACTS 5 THRU 8 TO ACTUATE WHEN VALVE REACHES 20% OPEN  $\pm 5\%$
  - OVERLOAD HEATERS REPLACED BY SHORTING BARS.

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

**ELEMENTARY WIRING DIAGRAMS**  
 LAKE WATER SYSTEM  
 CTRL RM EMER COND UNITS OUT VLV'S

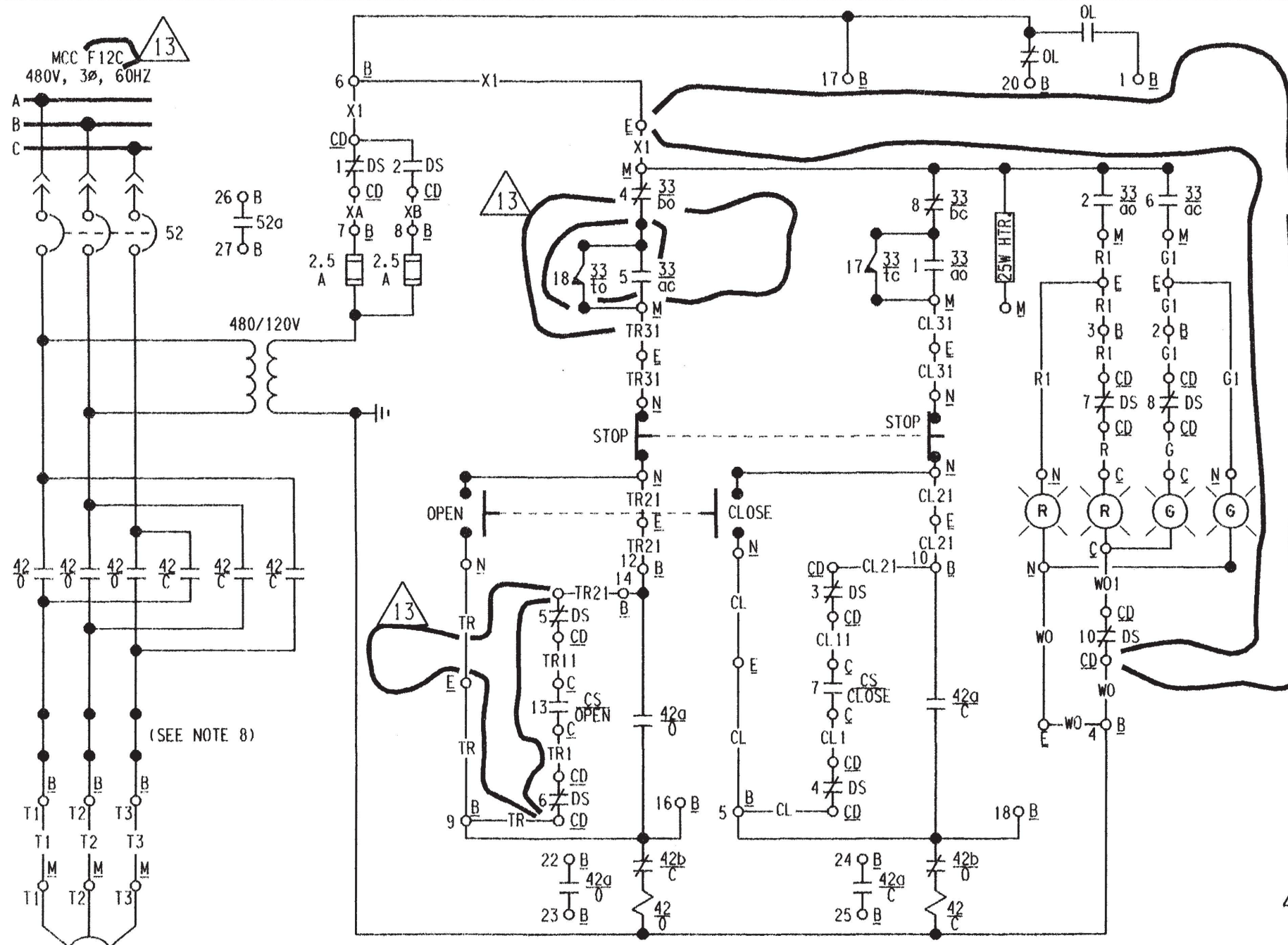
BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	<b>7749</b>	E-48B SH.27	<b>10</b>

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.

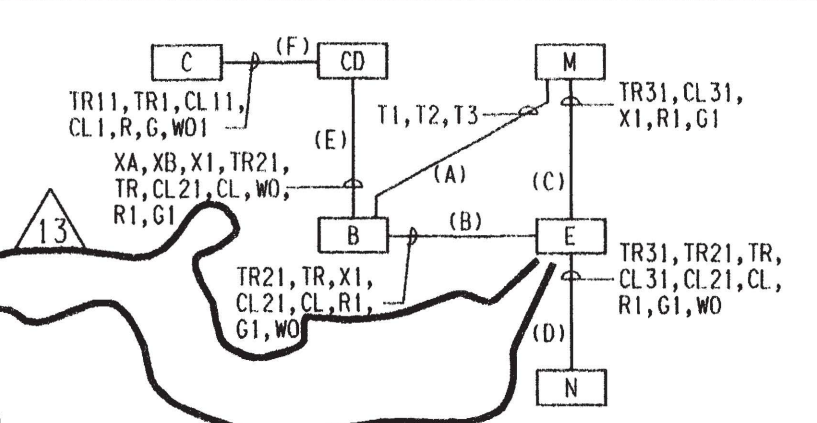
DATE **8-14-88** OPERATOR **D. R. Reiter** **16X**



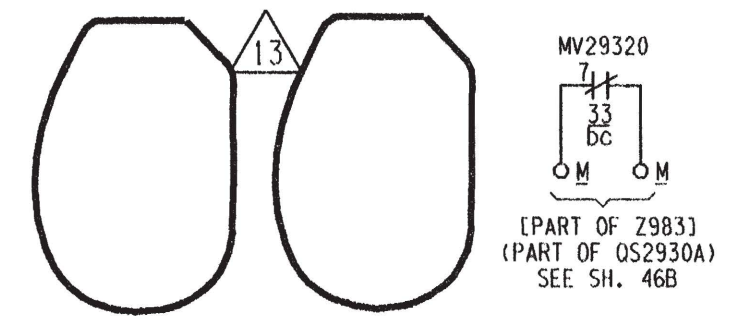
1	GEN. SUPV.
<i>[Signature]</i>	ENGR. SUPV.
1	ENGR.
<i>[Signature]</i>	CH'K
EAL	BY
INC. DCN'S: E-48B-442 & 448 PER ECR 03-0907-00 REV. 1 (NO DWG. CHANGE SEE SH. 28A & 28B) & GEN. UPDATE RELOCATE SCHEME BE1281 TO E-48B SH. 28A & SCHEME BE1282 TO E-48B SH. 28B, ADD NOTE 10, DELETE NOTE 9 (RELOCATE TO SH. 28A FOR BE 1281), ADD SCHEME CALLOUT, ACTUAL MCC CALLOUT (F12C) AT 3 PHASE CONN. & REVISE DWG. DESCRIPTION, ALL PER DWG. SPLIT. (REDRAWN)	
10/1/04	DATE
13	NO.



SCHEME NO. BF1282



BLOCK DIAGRAM



NOTES

- FOR GENERAL NOTES SEE DWG. E-48B INDEX SH.
- FOR DETAILS OF LOCAL PUSHBUTTONS AND IND. LIGHTS SEE DWG. E-30B, SH. 7 TYPES 3, 4 & 6.
- FOR VALVE LIMIT SW. CONTACT DEVELOPMENT SEE DWG. E-30B SH. 8.
- FOR DETAILS OF CONTROL SW. (CS) SEE DWG. E-30B SH. 7 FIG. 7.
- PSH CLOSES ON HIGH PRESSURE IN LINE.
- ON DELAY RELAY 2X SHALL BE AGASTAT MODEL NO. 7012AD.
- ROTOR #2, CONTACT NO. 7 TO BE CONVERTED FROM 33/bc TO 33/ac.
- OVERLOAD HEATERS REPLACED BY SHORTING BARS.
- DELETED
- FOR SCHEME BE1281 (SW TO INTAKE STRUCTURE VLV.) SEE DWG. E-48B SH. 28A, AND BE1282 (SW TO CLNG. TWR. MU VLV.) SEE DWG. E-48B SH. 28B

THIS DRAWING WAS REDRAWN ON CADD AND SUPERSEDES REVISION 12

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-23-04
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAM LAKE WATER SYSTEM SW TO COLLECTION BASIN VLV.			
DRAWING NO.			REV.
E-48B SH. 28			13

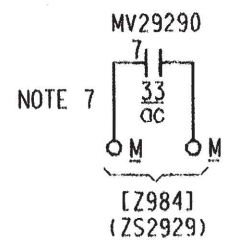
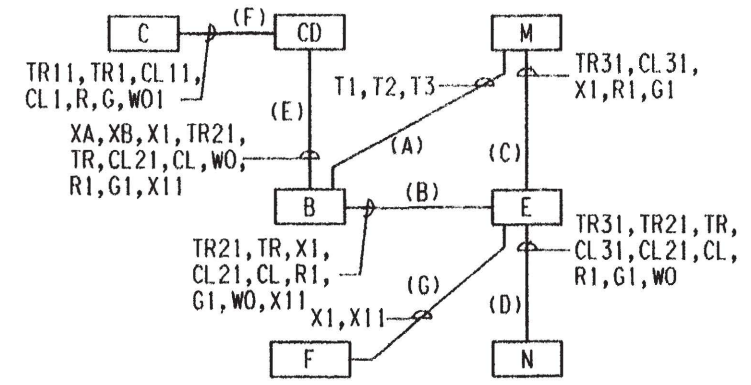
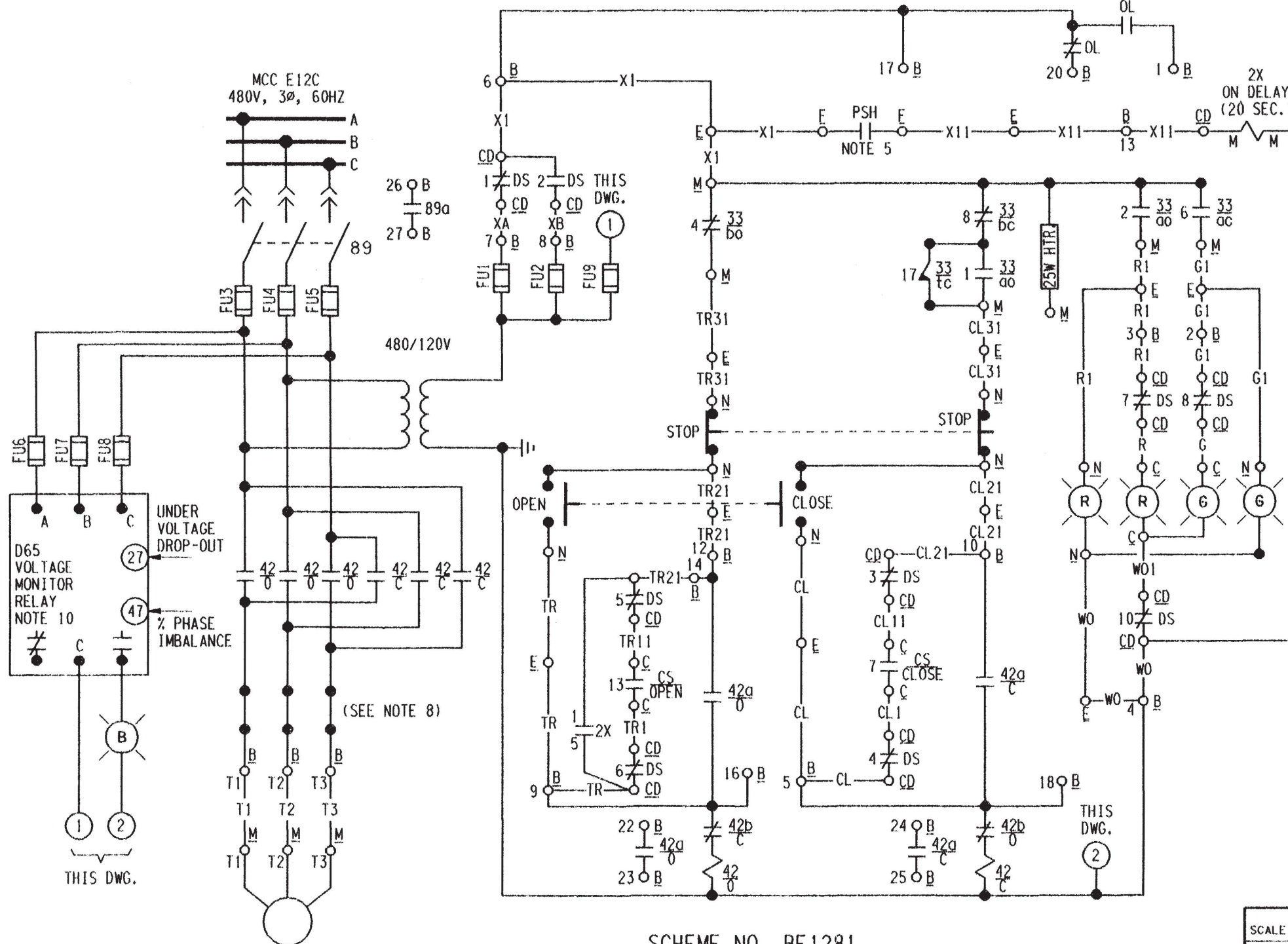
SCHEME NO.	MCC	S.U. NO.	CHANNEL	WIRE PREFIX AT MAIN CTRL. BD.	C.S.	EQUIPMENT						DESCRIPTION
						C	CD	B	E	M	N	
BF1282	F12C	11	2	CB	H1S2932	C5720	CD F12C	BF1282	EV29300	MV29320	NV29320	SW TO COLLECTION BASIN VLV.



1	GEN. SUPV.
<i>MS</i>	ENGR. SUPV.
1	ENGR.
<i>SBW</i>	CHK
<i>EAL</i>	BY

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

0	DATE
<i>10/1/04</i>	
	NO.



- 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 CLOSSES 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)

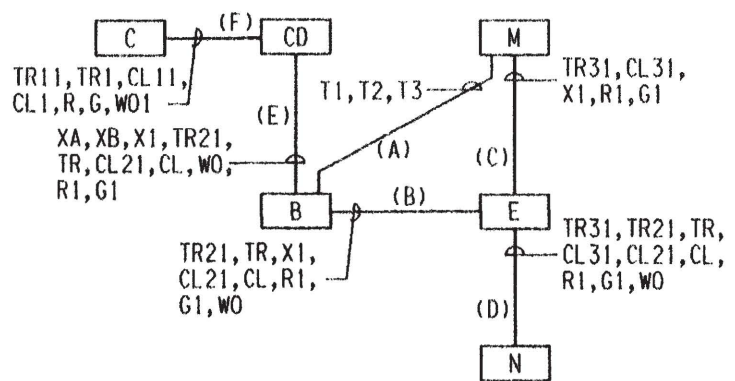
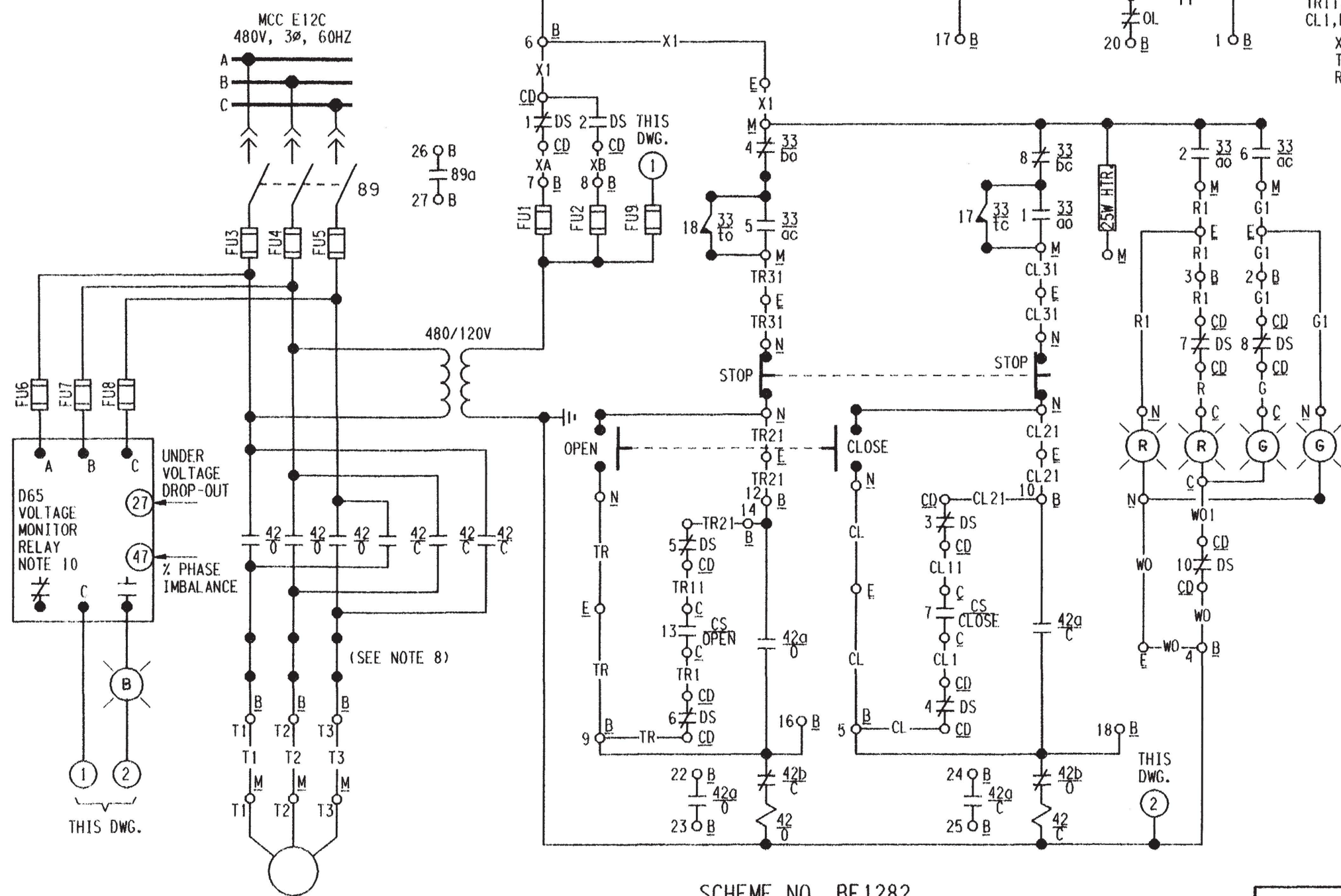
SCHEME NO. BE1281

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.

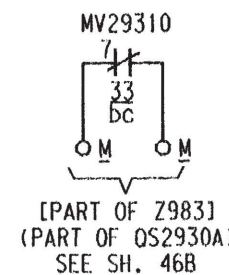
SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-29-04
<b>DAVIS-BESSE NUCLEAR POWER STATION</b> <b>UNIT NO. 1</b> <small>THE TOLEDO EDISON COMPANY</small>			
<b>ELEMENTARY WIRING DIAGRAM</b> <b>LAKE WATER SYSTEM</b> <b>SW TO INTAKE STRUCTURE VLV.</b>			
DRAWING NO.			REV.
E-48B SH. 28A			0



1	GEN. SUPV.	
	ENGR. SUPV.	
	ENGR.	
	CHK	
	BY	
EAL EXC.		
GEN. UPDATE FOR ECR 03-0507-00 REV. 1 PER DCN E-48B-448 & GEN. UPDATE ADD & GEN. UPDATE ADD NOTE 10 REF. IN D65 VOLTAGE MONITOR RELAY FOR CLARITY		
REVISIONS		
0	DATE	
10/1/84		



BLOCK DIAGRAM



NOTES

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

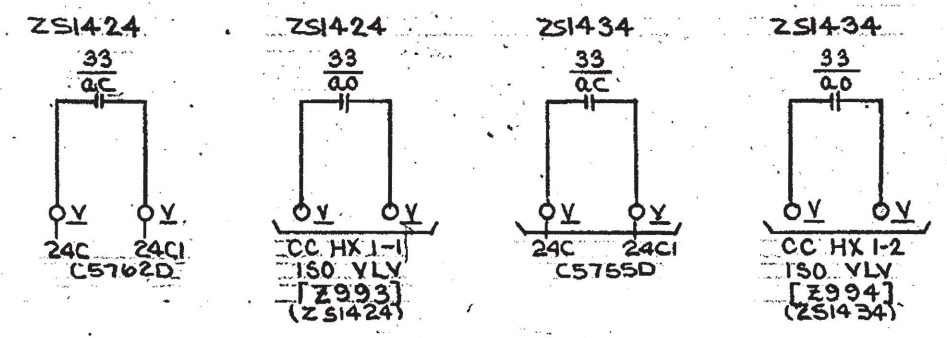
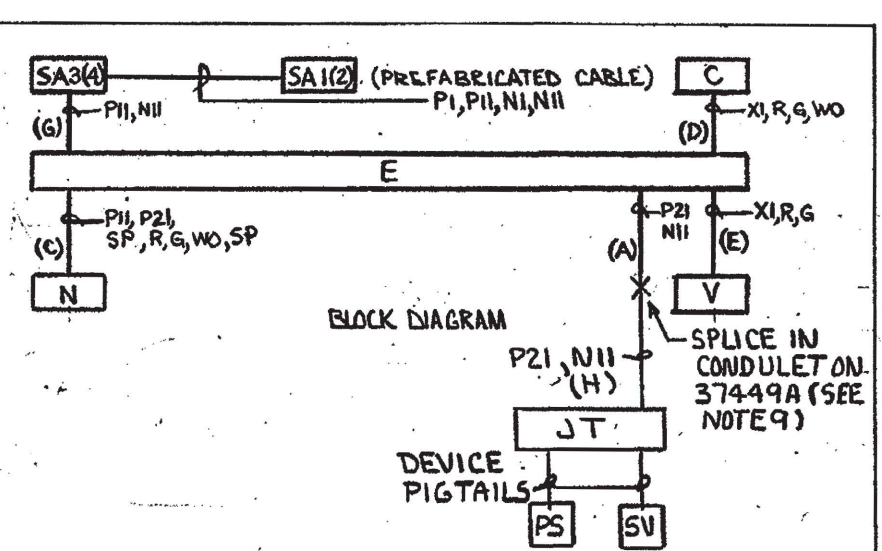
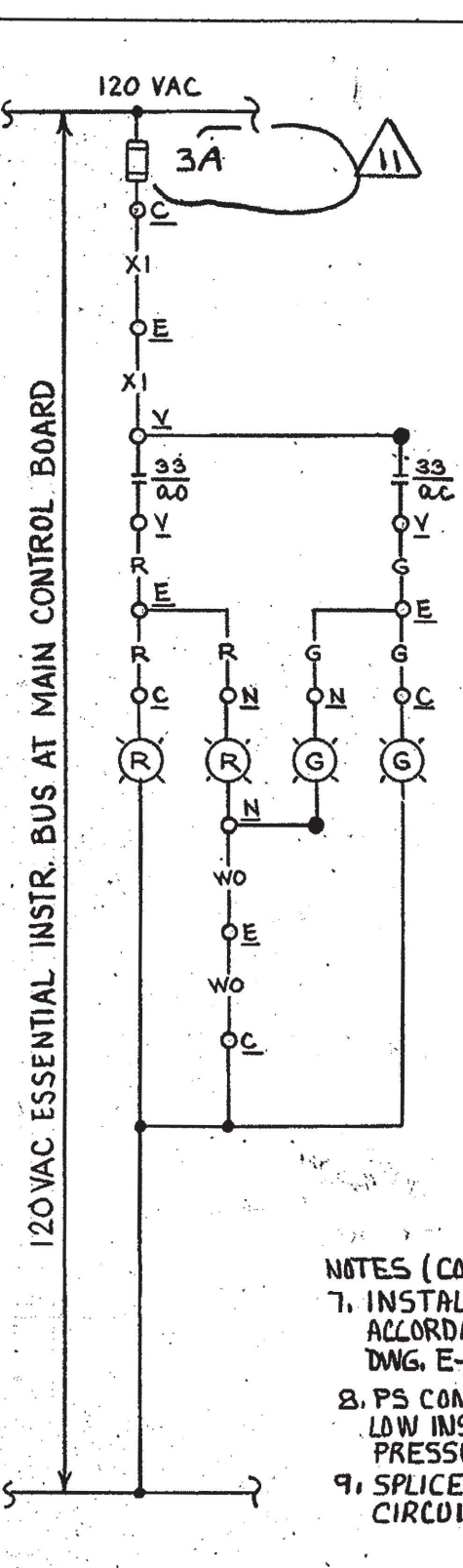
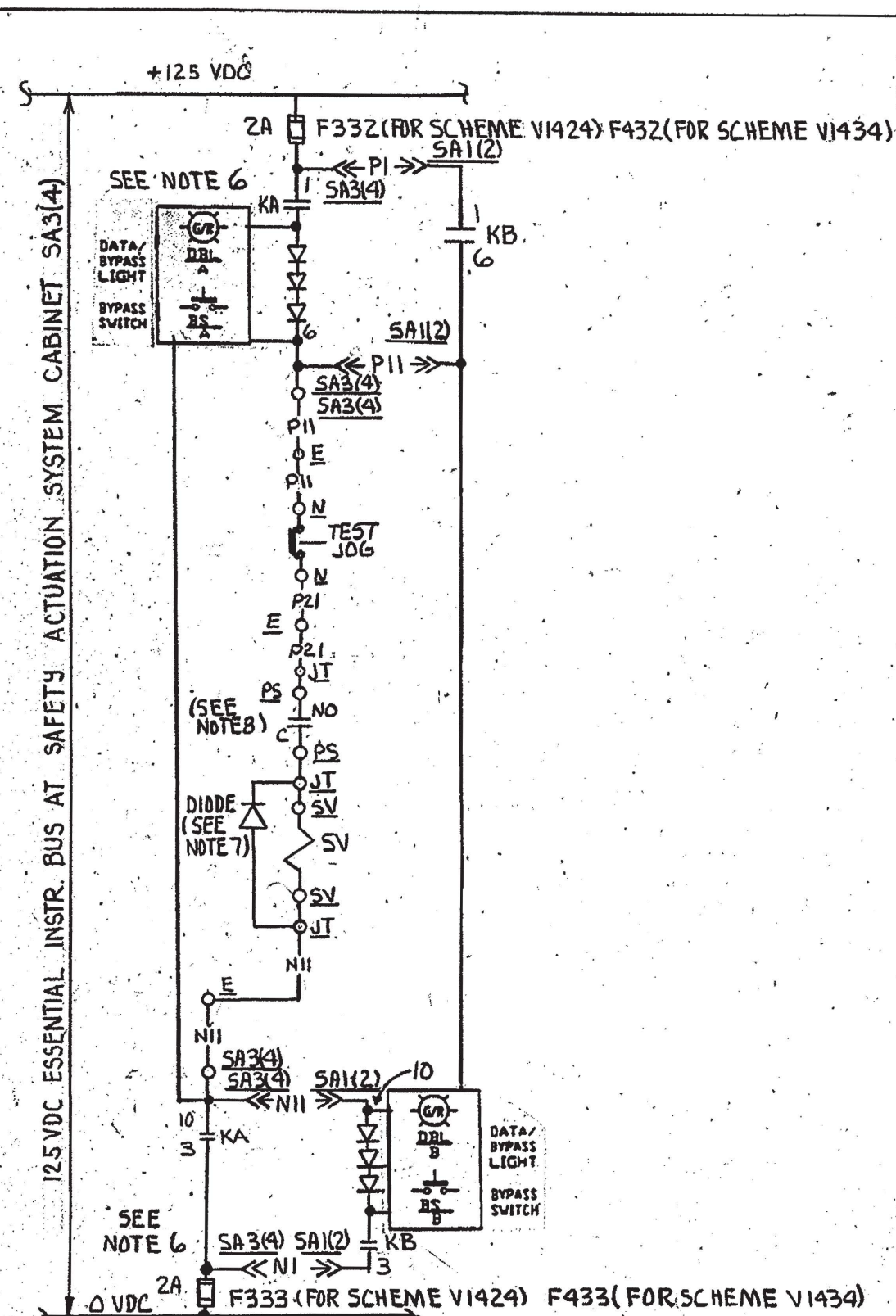
SCHEME NO. BE1282

SCHEME NO.	MCC	S.U. NO.	CHANNEL	WIRE PREFIX AT MAIN CTRL. BD.	C.S.	EQUIPMENT						DESCRIPTION	
						C	CD	B	E	M	N		F
BE1282	E12C	11	1	TM	HIS2931	C5720	CDE12C	BE1282	EV29290	MV29310	NV29310		SW TO CLNG. TWR. MU VLV.

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-29-04
<b>DAVIS-BESSE NUCLEAR POWER STATION</b> 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



11	INC. DN E-48B-469 PER ECR 04-0053-00REV 0	ISSUED FOR CONSTRUCTION	DATE	DR	CHK	SUPV	CHIEF	OWNER
10	INC. DN E-48B-468 PER ECR 04-0053-00REV 0	ISSUED FOR CONSTRUCTION	DATE	DR	CHK	SUPV	CHIEF	OWNER



**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).

- NOTES (CONT'D):**
- INSTALL DIODE IN ACCORDANCE WITH DWG. E-1037L-SH.17.
  - PS CONTACT OPENS ON LOW INSTRUMENT AIR PRESSURE.
  - SPLICE IS FOR SV1424 CIRCUIT ONLY.

SCHEME NO.	S.U. NO.	CH.	WIRE PREFIX AT MAIN CTRL. BD.	C.S.	EQUIPMENT										SA OUTPUT RELAY		DESCRIPTION	
					C	E	SV	SVA	N	PS	JT	SA1	SA2	SA3	SA4	KA		KB
VI424	11	1	CXA	HIS1424	C5716	EVI424	SVI424		NVI424			C5762C		C5763D		K24C	K24C	SW FRM CC HX 1 ISO VLV
VI434	11	2	CXB	HIS1434	C5716	EVI460	SVI434		NVI434				C5755C		C5756D	K24C	K24C	SW FRM CC HX 2 ISO VLV

■ CONTROLLED VALVE HAS THE SAME No. AS THE SCHEME No.  
 PSL1424 ————— JT372B  
 PSL1434 ————— JT3730

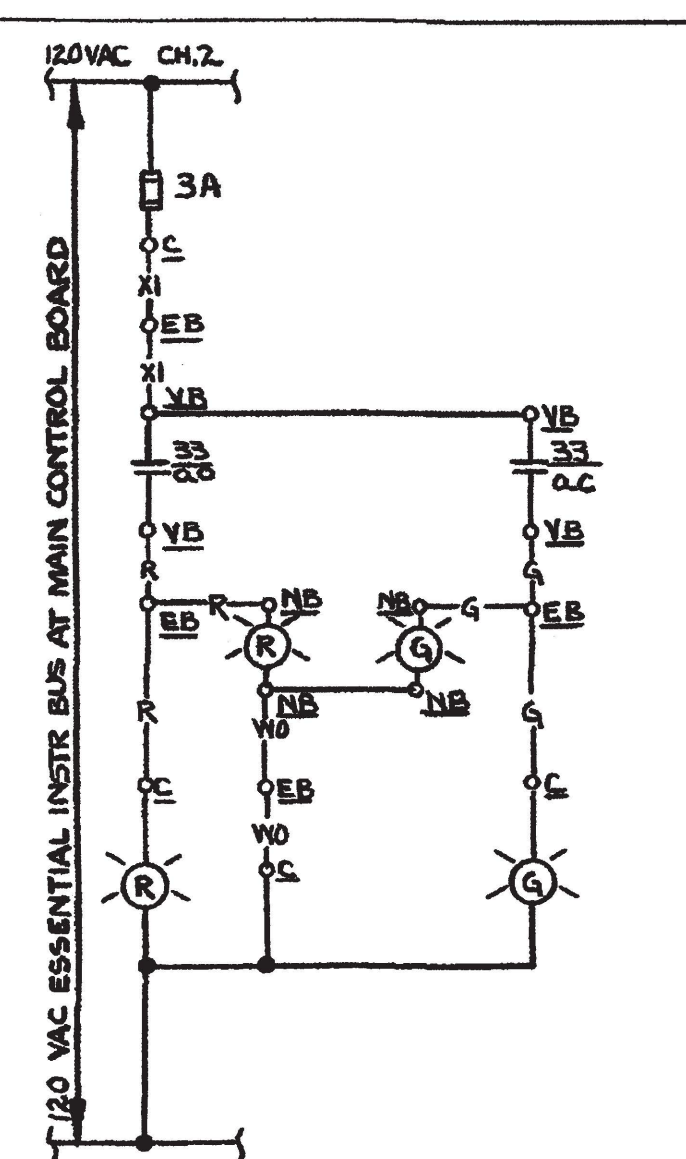
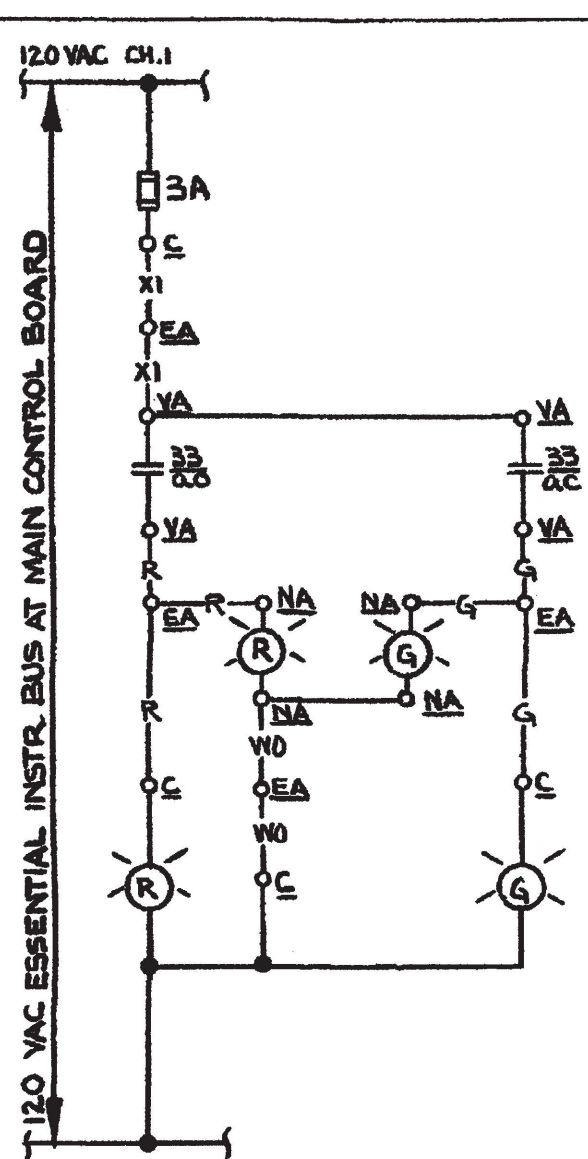
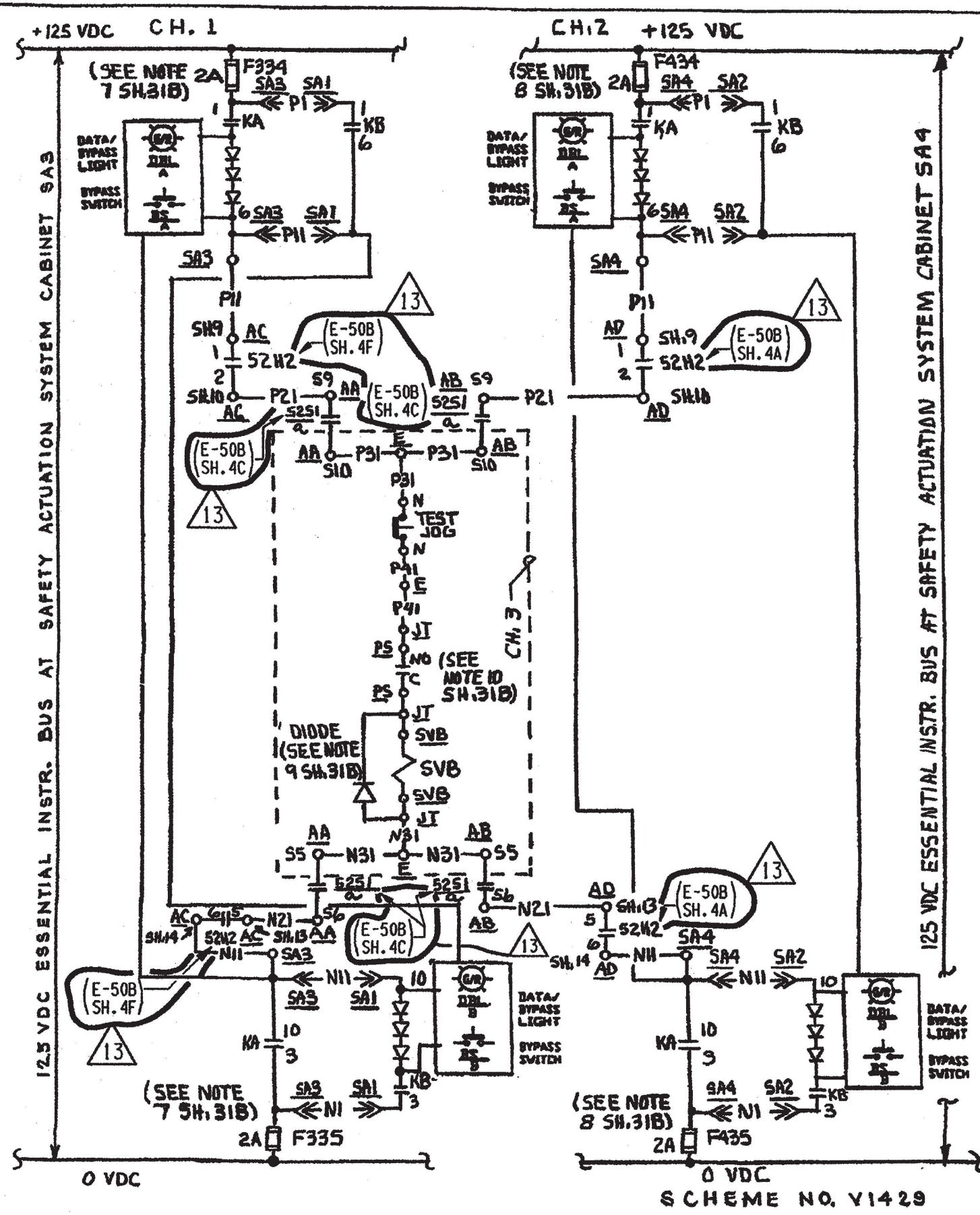
**DAVIS-BESSE NUCLEAR POWER STATION**  
 THE TOLEDO EDISON COMPANY  
 THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

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

BECHTEL COMPANY.	JOB NO.	DRAWING NO.	REV.
	<b>7749</b>	E-48B SH.30	11



13	INC. DUN 11-0593-001-014 REV.00 (REDRAWN)	DATE	CHK	SUPV	PROJ	OWNER
12	ISSUED FOR CONSTRUCTION	DATE	DR	CHK	CHIEF	OWNER
0	REV. DESCRIPTION	DATE	DR	CHK	CHIEF	OWNER



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

SCHEME NO. V1429

DB 07-31-12

DFN: F/SCHEME/E48BSH31A.DGN/TIF



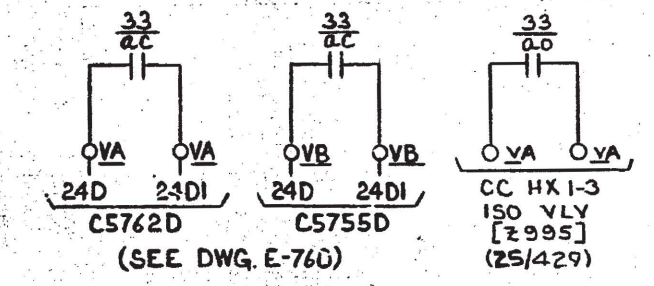
10	REV.	DESCRIPTION	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
11	0	ISSUED FOR CONSTRUCTION	1/14/73	APC	MARKS	SR	RAF	DDA	DDA
12	0	ISSUED FOR CONSTRUCTION	1/14/73	APC	MARKS	SR	RAF	DDA	DDA
13	0	ISSUED FOR CONSTRUCTION	1/14/73	APC	MARKS	SR	RAF	DDA	DDA

### LEGEND

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
VI429	11	1	CXD	HIS1429B	C5716	EVI429	SV1429	PSLI429	NVI429	ACIOB	---	ACD2	---	C5762C	---	C5763D	---	K24D	K24D	SW FROM CC HX 3 ISO VLV
		2	CXC	HIS1429A	---	---	---	---	---	---	ADIOB	---	ACD3	---	C5755C	---	C5756D	---	K24D	

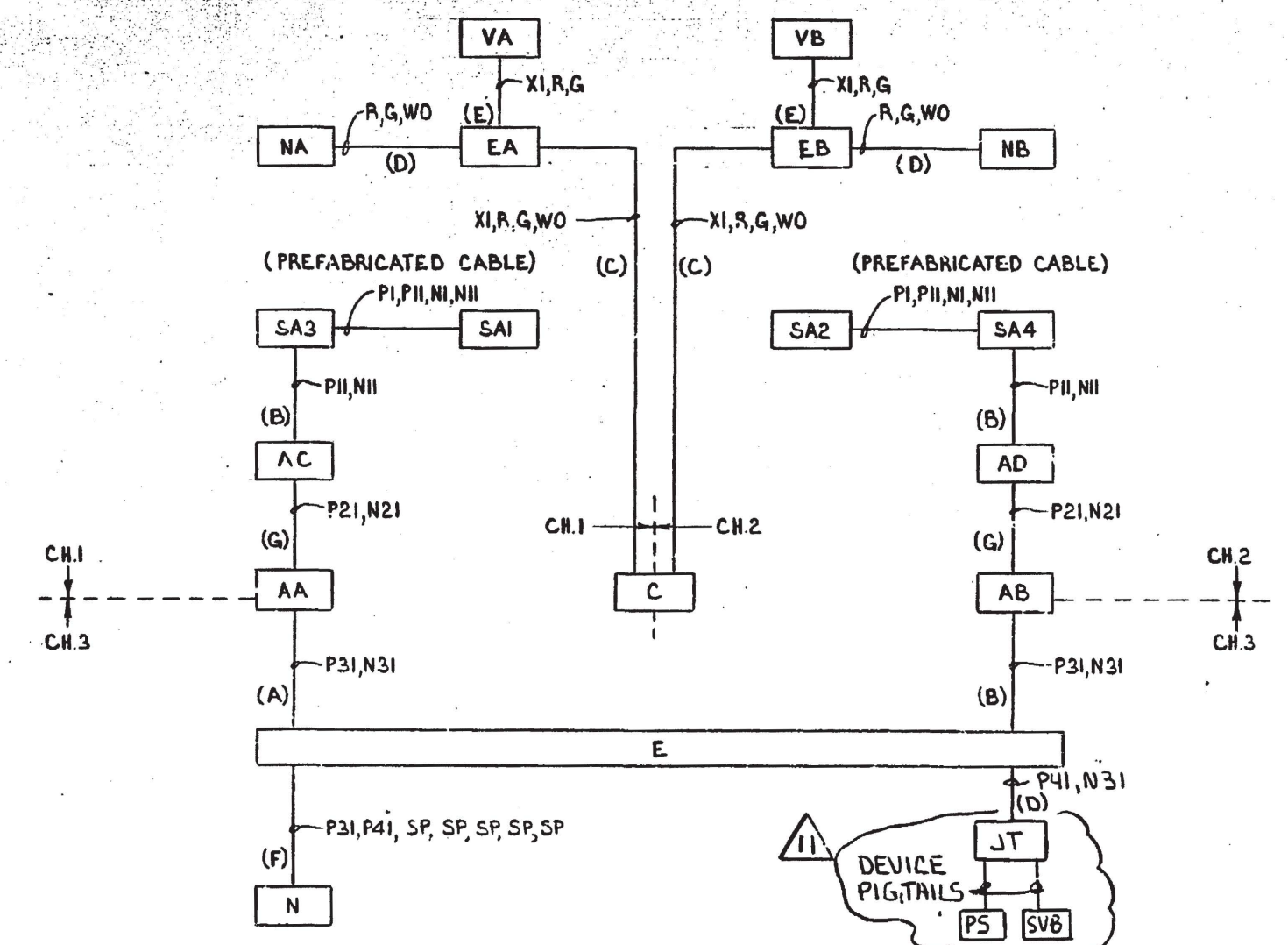
SCHEME NO.	CHANNEL	EQUIPMENT						
		VA	VB	NA	NB	EA	EB	JT
VI429	1	VI429 (ZSI429)	---	NVI429A	---	EVI424	---	JT3729
	2	---	VI429 (ZSI429A)	---	NVI429B	---	EVI460	---

■ CONTROLLED VALVE IS DESIGNATED VI429



### 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 644 OFF 40 LOCAL PB SHALL BE REES CAT. NO. 03935-002
- 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 CONTROL ROOM SEE DWG E-30B SH 4.
- FOR BREAKER INTERLOCK SEE E50B SH 4 & 5
- FOR VENDOR DWG. REFER TO E-17B.
- FOR VENDOR DWG. REFER TO E-17B. SEE VENDOR DWG. FOR SFAS INTERNAL WIRING.
- TERMINATE DIODES IN ACCORDANCE WITH DWG. E-1037L-SH. 17.
- PS CONTACT OPENS ON LOW INSTRUMENT AIR PRESSURE.



BLOCK DIAGRAM

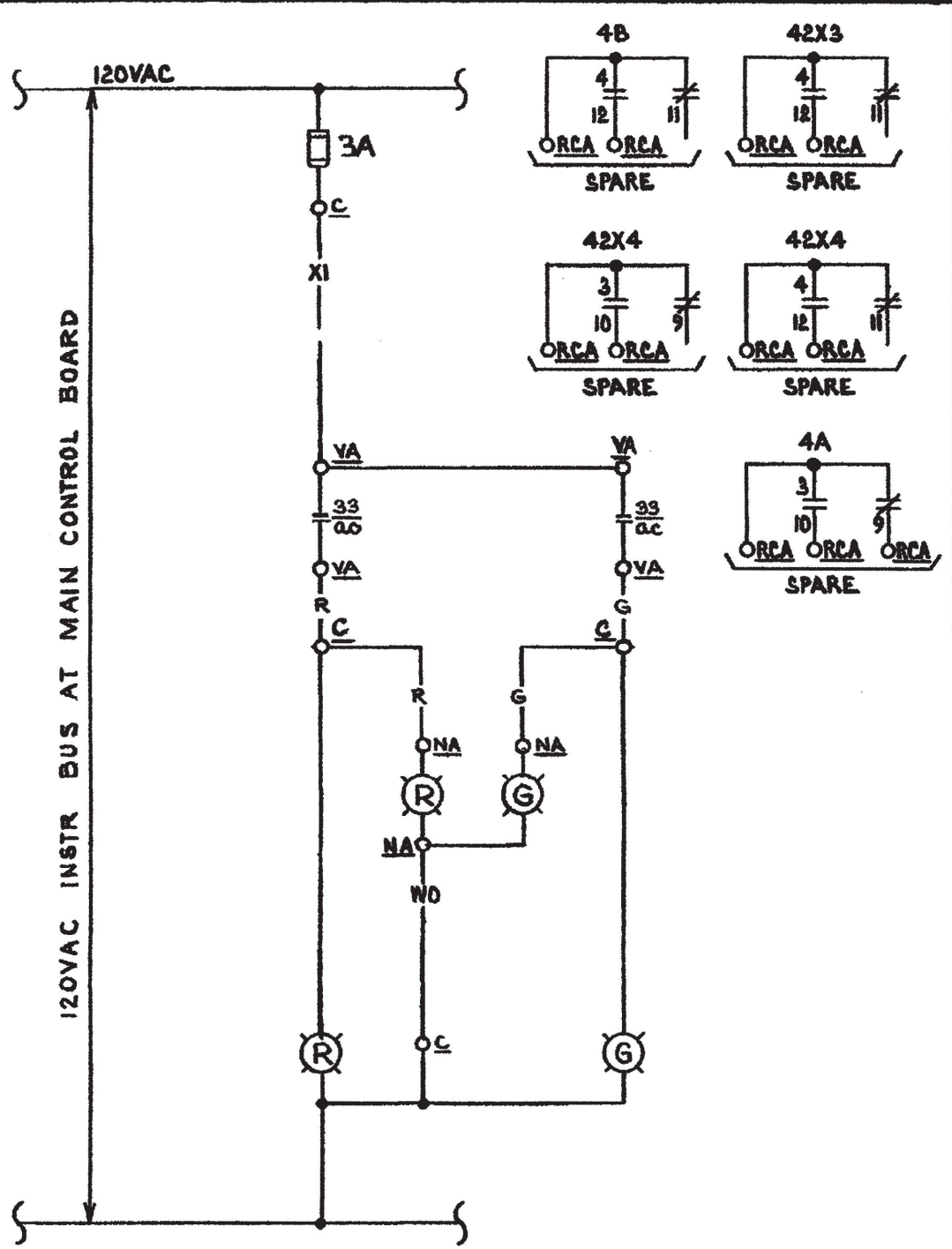
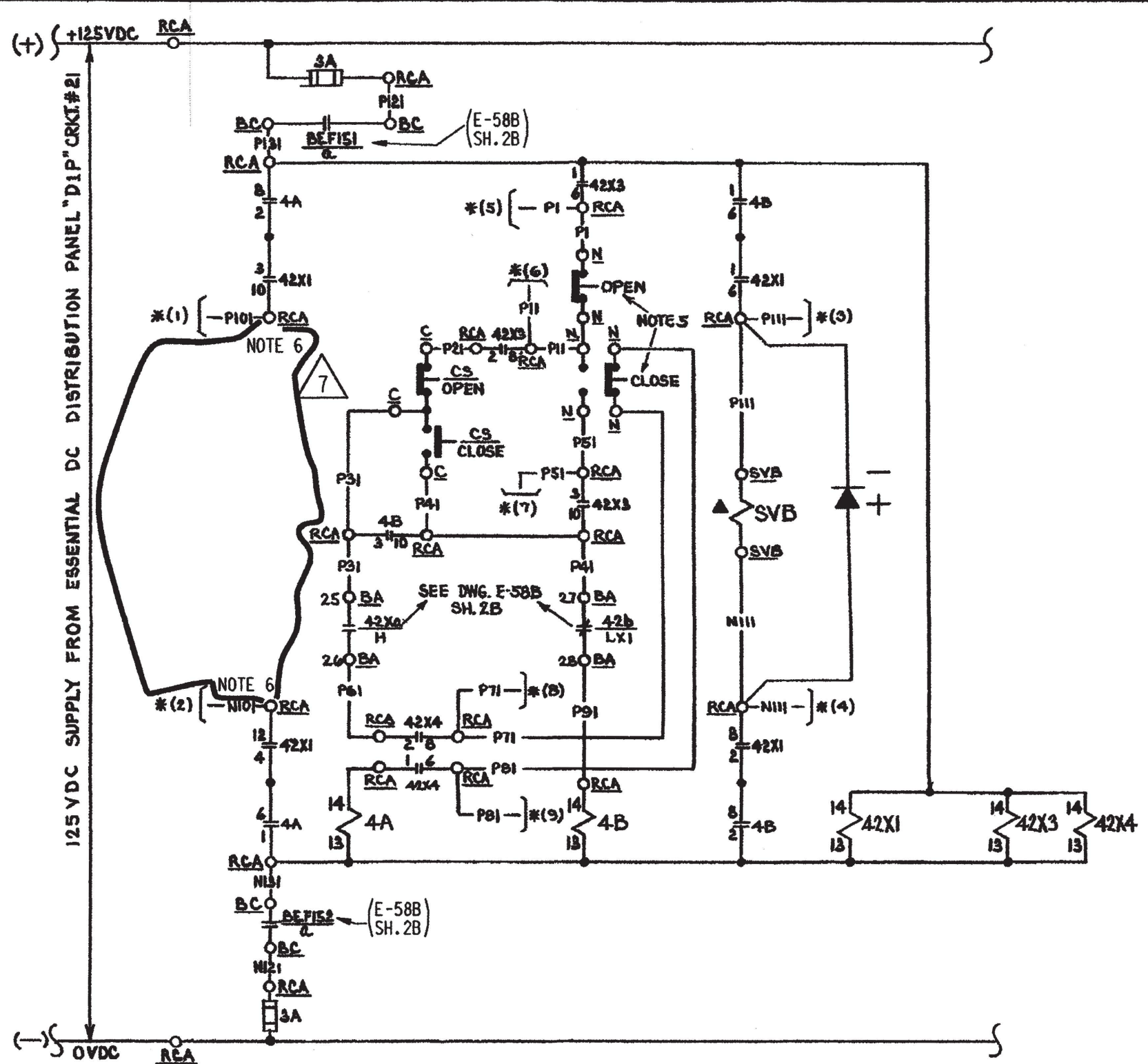
**DAVIS-BESSE NUCLEAR POWER STATION**  
 THE TOLEDO EDISON COMPANY  
 THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

ELEMENTARY WIRING DIAGRAMS  
 LAKE WATER SYSTEM  
 SW FROM CC HX 3 ISO VLV

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-48B SH. 31B	11



7	INC. DUN 04-0212-003-010 REV. 00	REV.	DESCRIPTION
6	INC. DUN 11-0140-001-005 REV. 00 (REDRAWN)		
0	ISSUED FOR CONSTRUCTION		



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

SCHEME NO. VI358A

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

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

**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

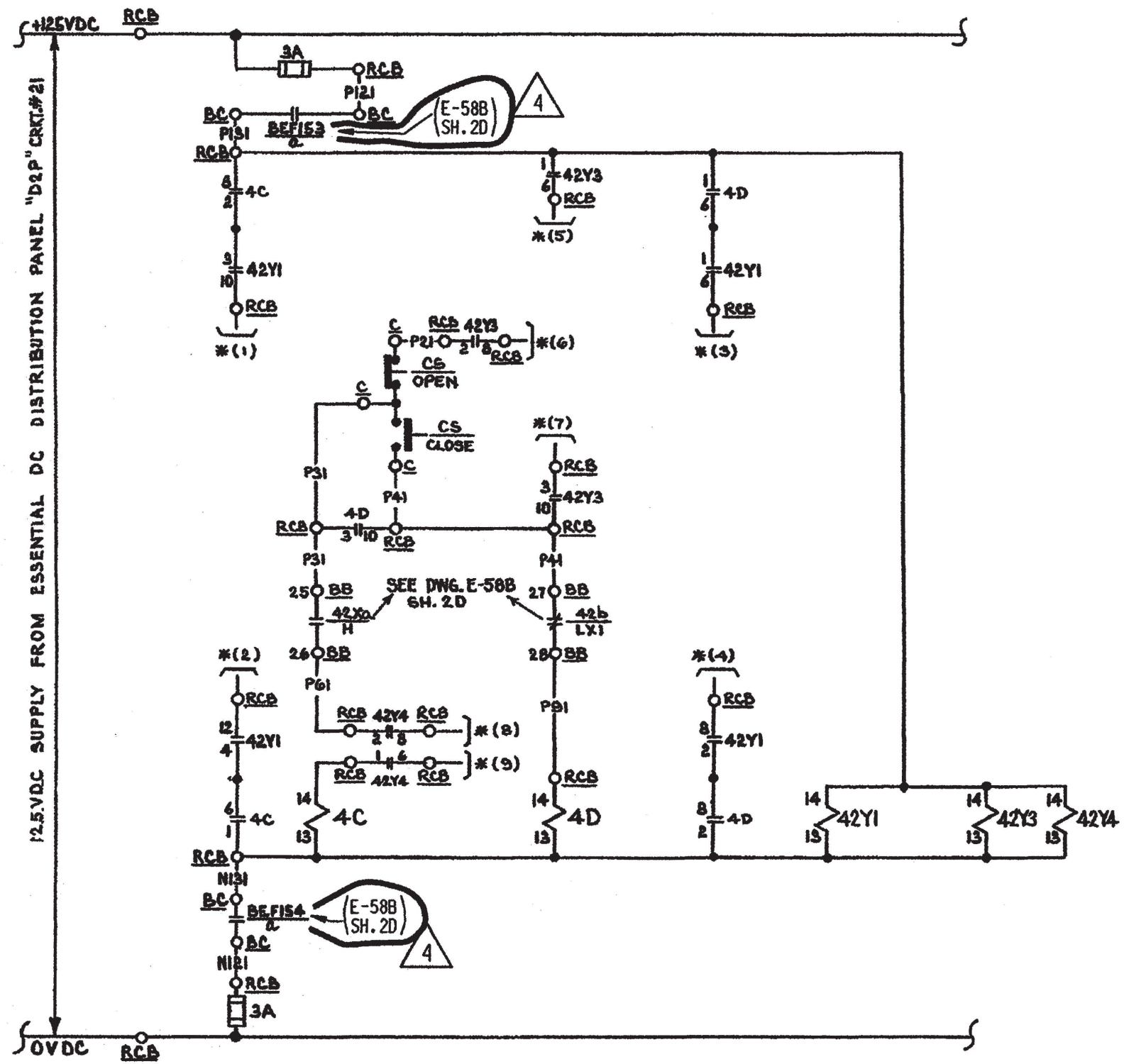
THIS DWG. WAS REDRAWN/SCANNED ON CAD AND SUPERSEDES REVISION 5.

DB 01-07-14

DFN: F/SCHEME/E48BSH33A.DGN/TIF

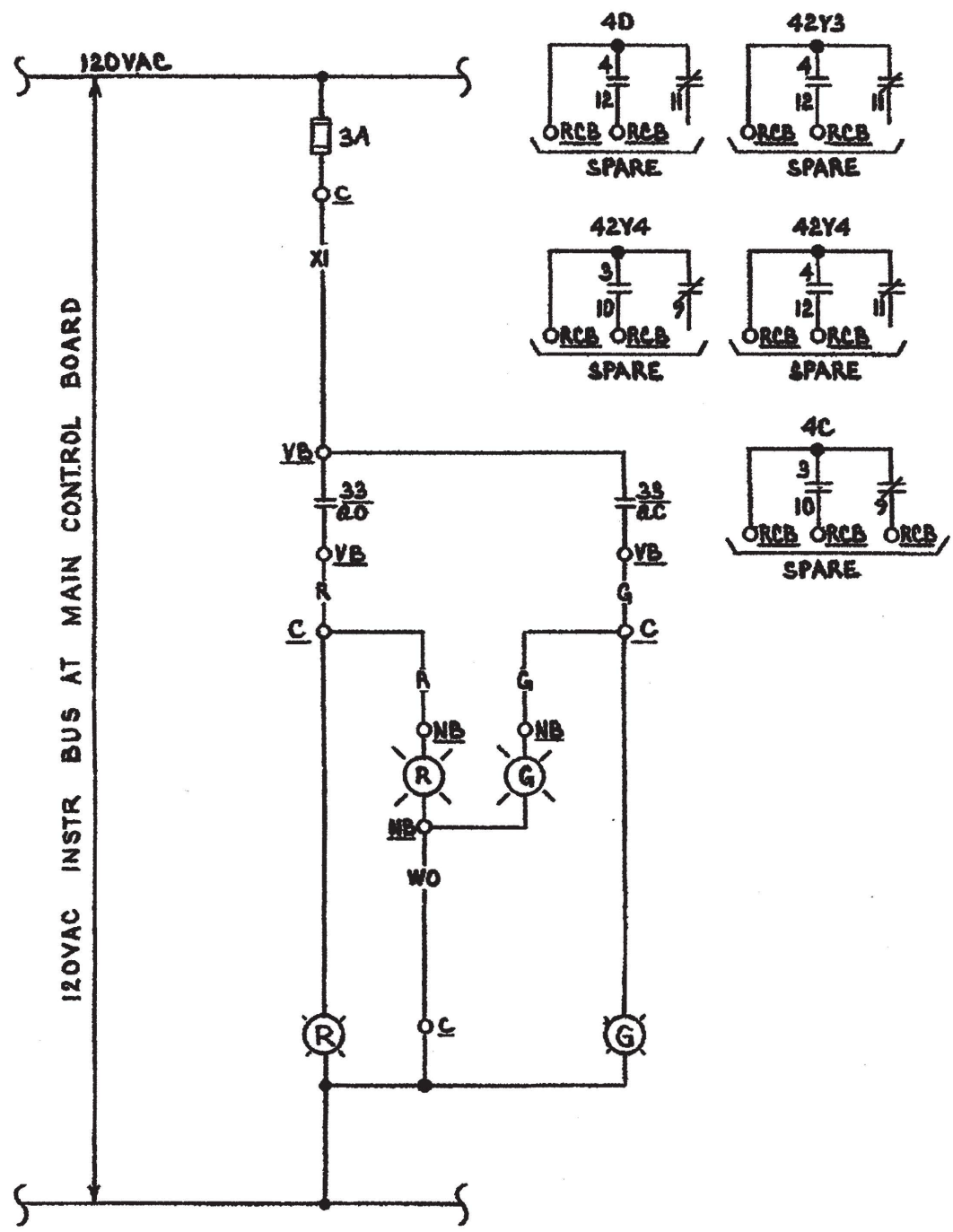


REV.	DESCRIPTION	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
4	INC. DUN 11-0140-001-006 REV.00 (REDRAWN)	8/1/72	SP	SP	SP	SP	SP	SP
3	INC. DUN E-48B-475 PER ECR 01-0053-00 REV.0	3/10/69	SAS	SP	SP	SP	SP	SP
0	ISSUED FOR CONSTRUCTION	8/7/72	APO	SP	SP	SP	SP	SP



\* CONT'D ON DWG. E48B SH.33A TO LINE MATCHING THE NUMBER IN PARENTHESIS ( )

SCHEME NO. V1358B



FOR NOTES, LEGEND & 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.33B	4

THIS DWG., WAS REDRAWN/SCANNED ON CAD AND SUPERSEDES REVISION 3.

DB 08-01-12

DFN: F/SCHEME/E48BSH33B.DGN/TIF



# LEGEND

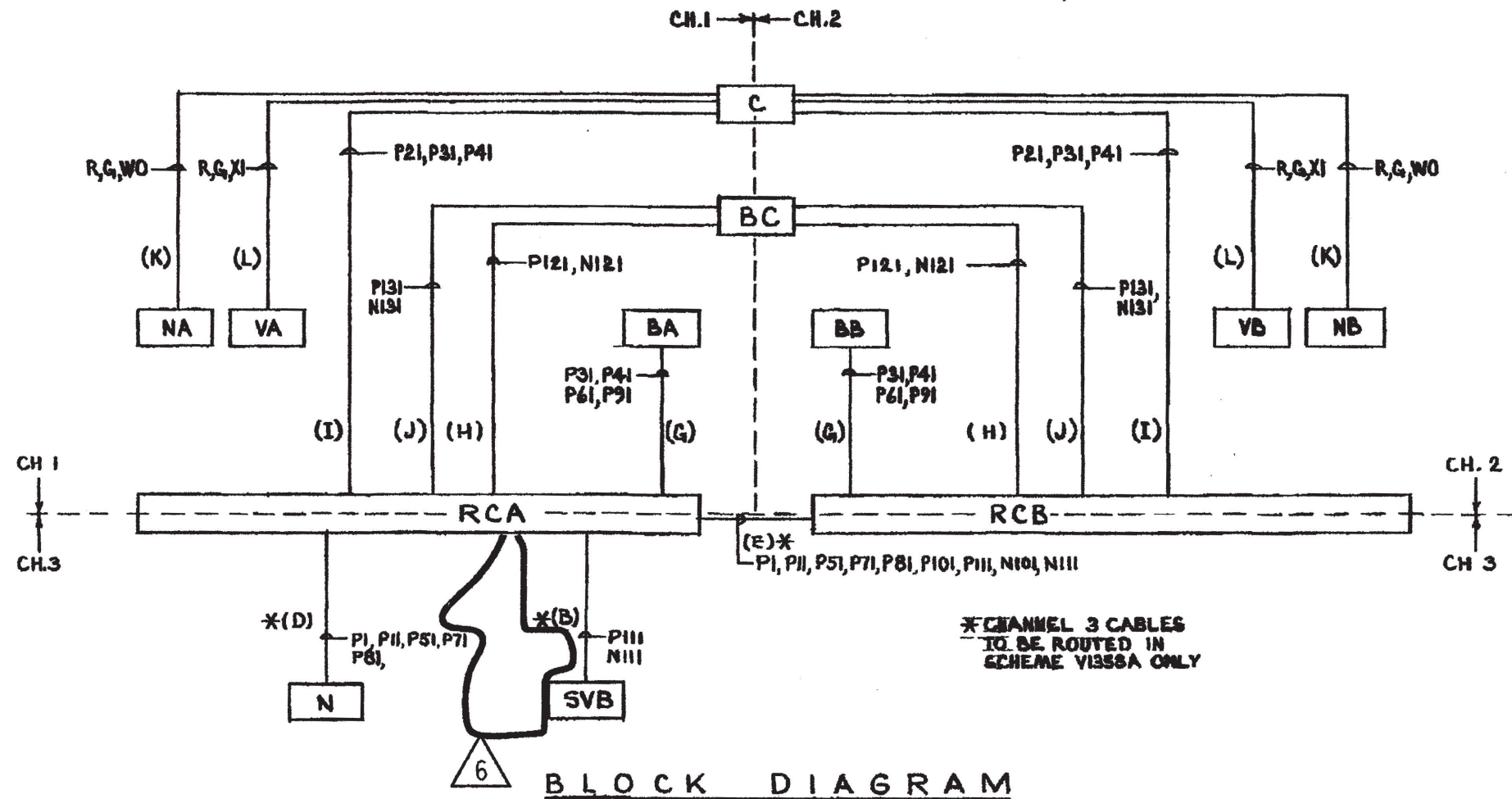
SCHEME NO	S U NO	CHANNEL	WIRE PREFIX AT MAIN CTRL BD	C S	EQUIPMENT													DESCRIPTION		
					C	RCA	RCB	SVA	SVB	N	BA	BB	BC	NA	NB	VA	VB			
VI358A	11	1	AOC	HIS1358A	C5716	RC3701	—	NOTE 6	SVI358B	NVI358B	—	—	—	BEI501	—	BEF15	NVI358A	—	VI358 (Z81358)	CTMT AIR CLR I-3 OUTLET
VI358B		2	ADD	HIS1358B		—	RC3702				—	—	—	—	—	—	—	—	BF1501	

■ 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

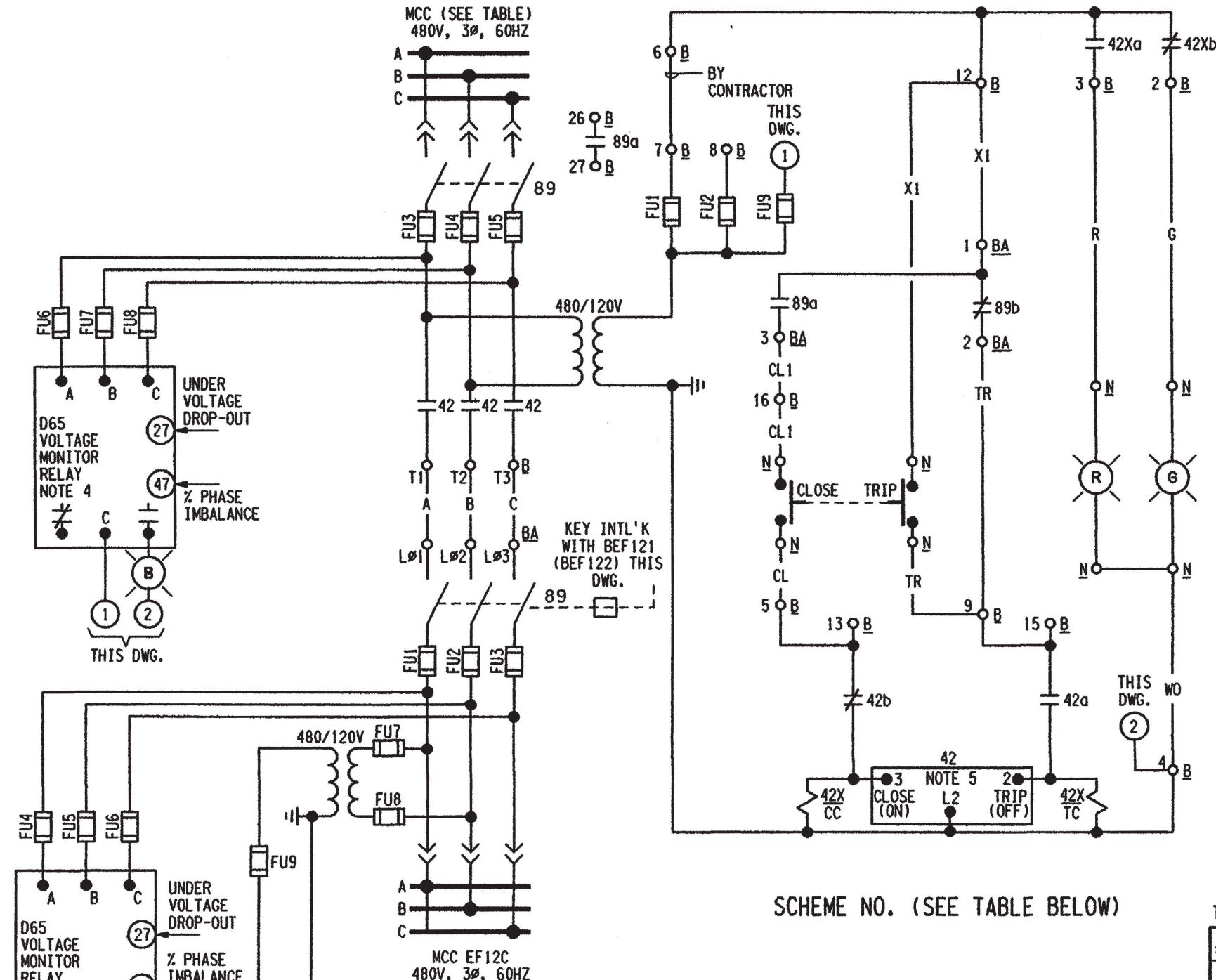
THIS DWG. WAS REDRAWN/SCANNED ON CAD AND SUPERSEDES REVISION 5.

<b>DAVIS-BESSE NUCLEAR POWER STATION</b>			
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. <b>7749</b>	DRAWING NO E-48B SH. 33C	REV. <b>6</b>

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

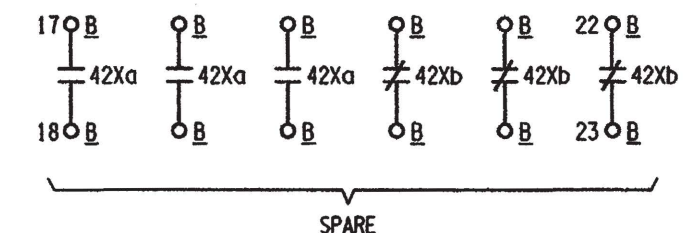
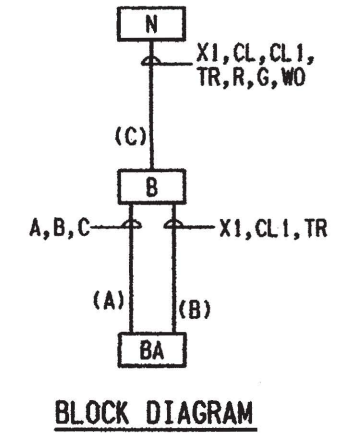


GEN. SUPV.	
ENGR. SUPV.	
ENGR.	
CHK	
BY	
REVISIONS	
INC. DUN 08-0709-001-023, REV. 00	
DATE	
NO.	



SCHEME NO. (SEE TABLE BELOW)

SCHEME NO.	MCC	S.U. NO.	CHANNEL	EQUIPMENT			DESCRIPTION
				B	BA	N	
BE1280	E12C	006	1	BE1280	BEF121	NBE128	FD TO MCC EF12C
BF1280	F12C	006	2	BF1280	BEF122	NBF128	FD TO MCC EF12C

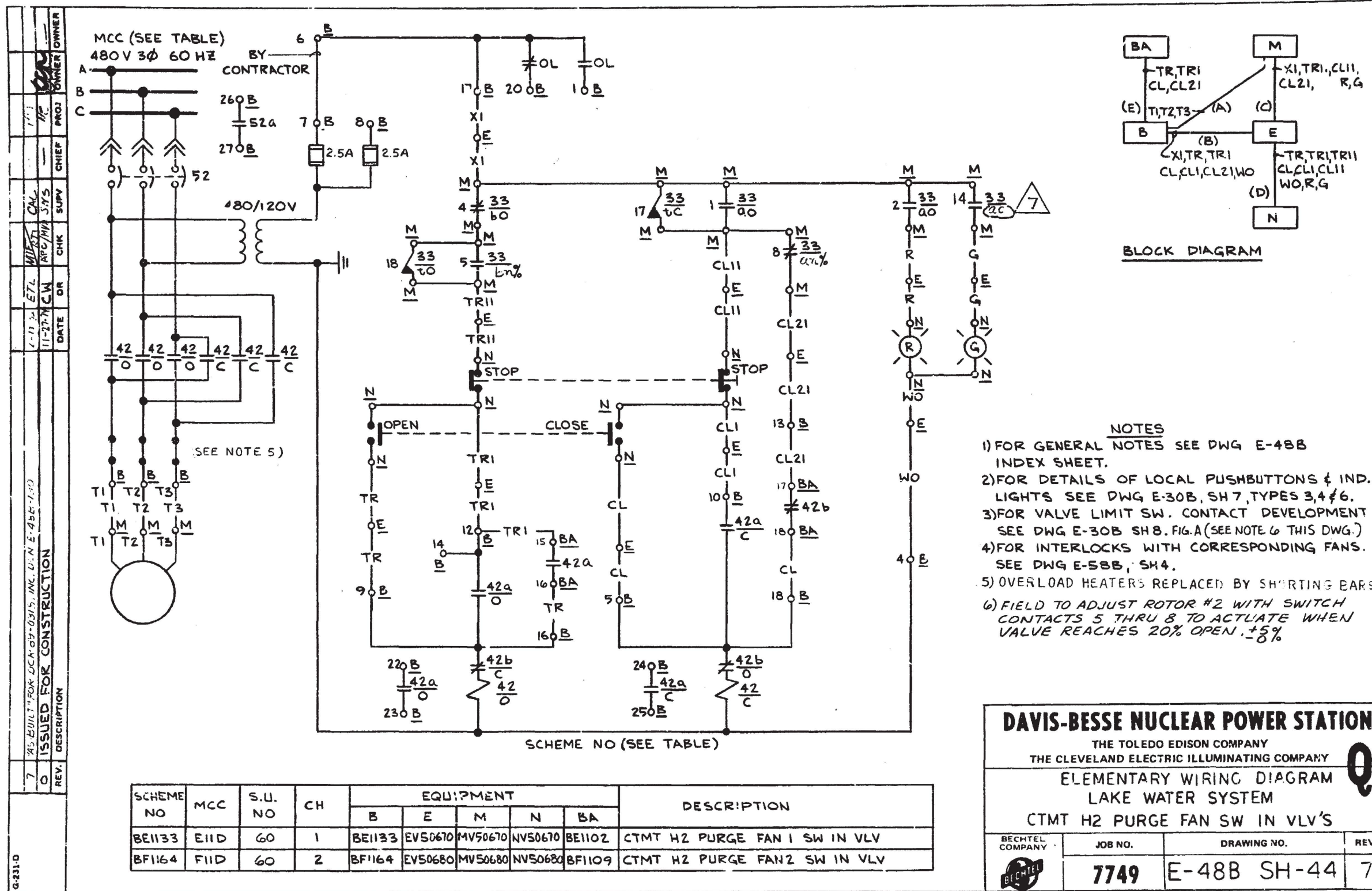


- NOTES**
1. FOR GENERAL NOTES SEE DWG. E-48B INDEX SHEET.
  2. FOR DETAILS OF LOCAL PUSHBUTTONS AND IND. LIGHTS SEE DWG. E-30B, SH.7 TYPE 3 & 4.
  3. DELETED
  4. VOLTAGE MONITOR RELAY CONTACTS ARE SHOWN IN SHELF (DE-ENERGIZED) STATE. SEE RELAY SETTING MANUAL FOR SET POINTS. (ECR 03-0507-00)
  5. REFERENCE E-0080-00175 FOR STARTER INTERNALS.
  6. 42 DEVICES CONTAIN CONTACTS WHICH MAY CHATTER DURING A SEISMIC EVENT (SEE ECP 08-0709 FOR DETAILS).

THIS DRAWING WAS REDRAWN ON CADD AND SUPERSEDES REVISION 5

SCALE NONE	DESIGNED	DRAWN EAL	DATE 04-27-04
<b>DAVIS-BESSE NUCLEAR POWER STATION</b> UNIT NO. 1 THE TOLEDO EDISON COMPANY			
ELEMENTARY WIRING DIAGRAM LAKE WATER SYSTEM FD TO MCC EF12C			
DRAWING NO.			REV.
E-48B SH.36			7





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

16X



INITIALS ON FILE	INITIALS ON FILE	INITIALS ON FILE	GEN. SUPV.
INITIALS ON FILE	INITIALS ON FILE	INITIALS ON FILE	ENGR. SUPV.
			ENGR.
			CH'K
			BY
9/3/10	7/14/09	1/17/13	4/01/13
86	85	88	87
NO.	NO.	NO.	NO.
REVISOR	REVISOR	REVISOR	REVISOR
REVISIONS	REVISIONS	REVISIONS	REVISIONS
REVISED SHT. 54A (REV.6), SHT. 54B (REV.7), AND SHT'S. 54C, 54D & 54E (REV.2)	REVISED SHT. 2 (REV.13), SHT. 17C (REV.2) & SHT. 24 (REV.9)	REVISED SH.42A (REV.12)	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
SBW	SBW	SBW	SBW

INDEX			
SH. NO.	REV.	DESCRIPTION	
1A	20	MAKE-UP PUMPS (CHARGING)	Q
1B	21	MAKE-UP PUMPS (CHARGING)	Q
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	7	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)	Q
19A	6	MISCELLANEOUS ISOLATION VALVES	Q
19B	7	MISCELLANEOUS ISOLATION VALVES	Q
19C	5	TREATED WATER MISCELLANEOUS ISOLATION VALVE	Q
20	7	RCP STDP DEMINERALIZED WATER ISOLATION VALVE 6831A (SOV)	Q
21	4	MAKE-UP TANK 1-1 VENT VALVE (SOV)	
22A	7	RC LETDOWN ISOLATION VALVE (SOV)	Q
22B	2	DELETED	
22C	9	RC LETDOWN ISOLATION VALVE	Q
23	8	RC MU TANK CHEMICAL SUPPLY VALVES (SOV'S)	

FOR CONTINUATION OF INDEX SEE SHEET 2

NOTES:

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

REFERENCE DRAWINGS:

- E-5 480V M.C.C. (NON-ESSENTIAL) 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			Q
DRAWING NO. E-49B-SH. 1			REV. 88



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	3	ACID STORAGE TANK TRANSFER PUMP 1-1
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/88	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	88



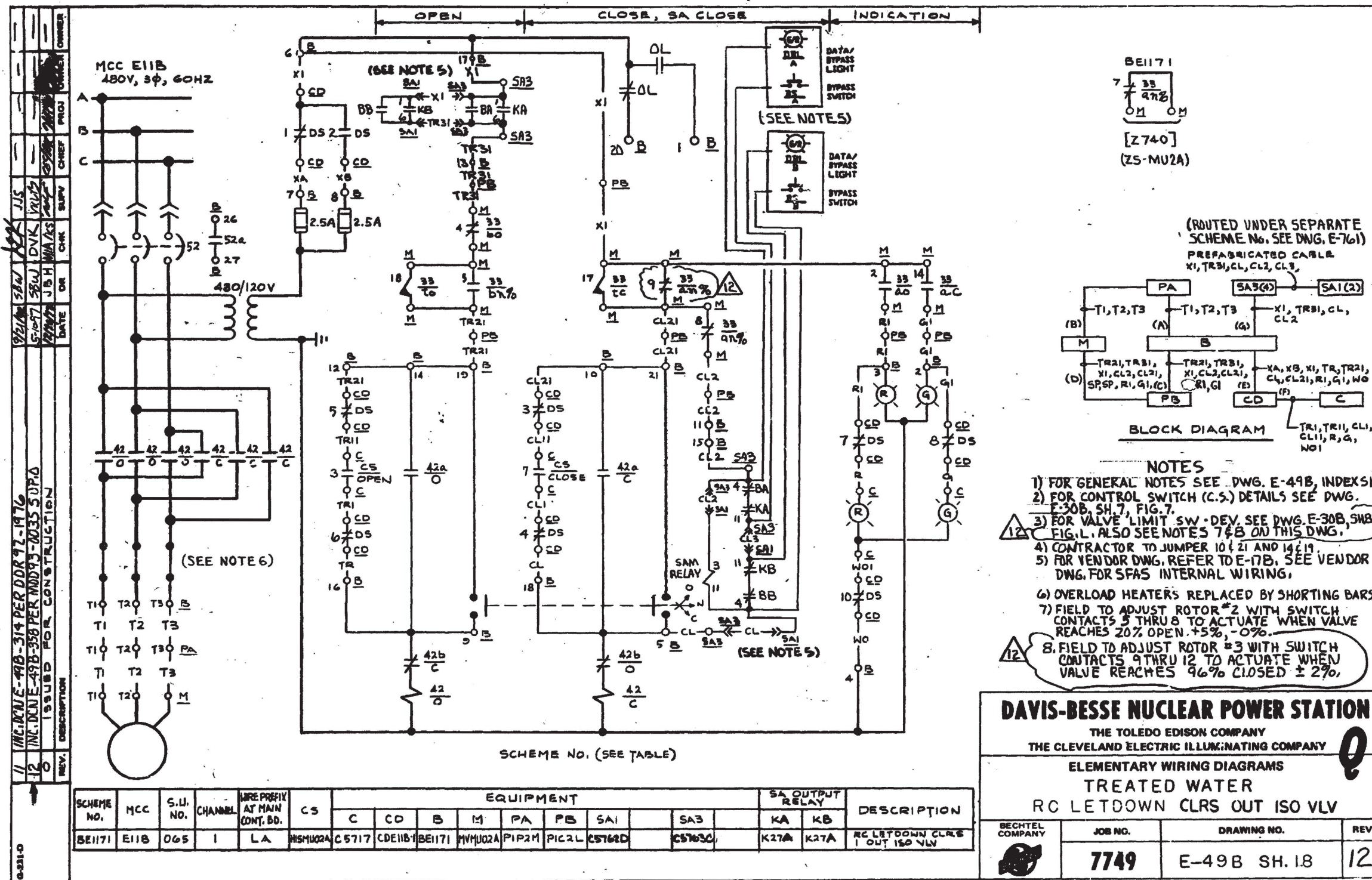
INDEX (CONT.)

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)	Q
62B	1	MAKEUP PUMP 1-1 DISCHARGE VALVE	Q
63A	0	MAKEUP PUMP DISCHARGE CROSS CONNECT LINE ISO. VALVE (MOV)	Q
63B	0	MAKEUP PUMP DISCHARGE CROSS CONNECT LINE ISO. VALVE	Q
64A	0	MAKEUP PUMP DISCHARGE CROSS CONNECT LINE ISO. VALVE (MOV)	Q
64B	0	MAKEUP PUMP DISCHARGE CROSS CONNECT LINE ISO. VALVE	Q
65A	1	BYPASS VALVE IN THE MU32 MINIFLOW LINE (MOV)	Q
65B	0	BYPASS VALVE IN THE MU32 MINIFLOW LINE	Q
66A	4	CONTAINMENT ISOLATION VALVE (MOV)	Q
66B	3	CONTAINMENT ISOLATION VALVE	Q
67A	5	CONTAINMENT ISOLATION VALVE (MOV)	Q
67B	3	CONTAINMENT ISOLATION VALVE	Q
68	2	MU SYS. RECIRC ISOLATION SOLENOID VALVE	Q
69	2	MU SYS. RECIRC ISOLATION SOLENOID VALVE	Q
70A	2	TREATED WATER RC MU PUMP SUCTION VALVE (MOV)	Q
70B	2	TREATED WATER RC MU PUMP SUCTION VALVE	Q
70C	2	TREATED WATER RC MU PUMP SUCTION VALVE (MOV)	Q
70D	2	TREATED WATER RC MU PUMP SUCTION VALVE	Q
70E	2	HI/LOW MAKEUP TANK LEVEL AUX. RELAYS	
70F	0	HI/LOW MAKEUP TANK LEVEL AUX. RELAYS	Q
70G	0	HI/LOW MAKEUP TANK LEVEL AUX. RELAYS	Q
70H	0	TREATED WATER CLEARWELL	

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

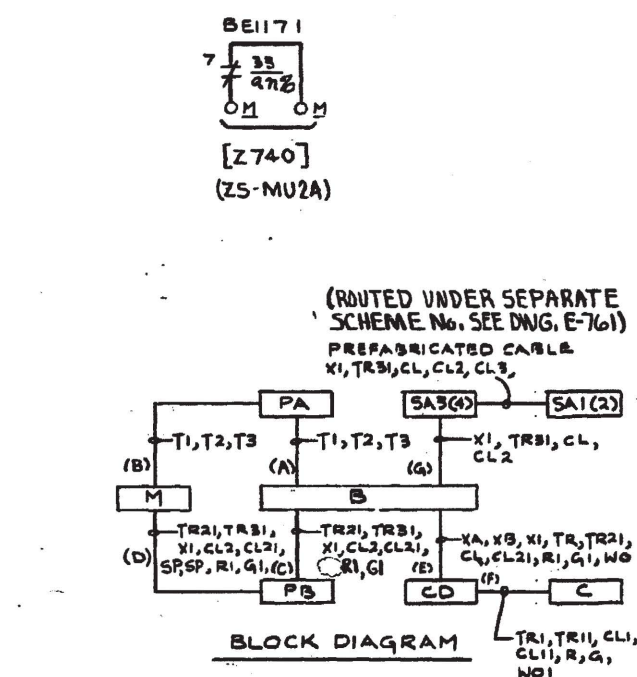
SCALE NONE	DESIGNED	DRAWN BEW	DATE 11-13-88
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1 <small>THE TOLEDO EDISON COMPANY</small>			
ELEMENTARY WIRING DIAGRAMS TREATED WATER DRAWING INDEX			
DRAWING NO.		REV.	
E-49B SH. 3		88	





REV.	DESCRIPTION	DATE	DR	CHK	SUPV	OWNER
11	INC. DUNE-498-314 PER DDR 92-1976	9/21/88	SWW	JJS		
12	INC. DUNE-498-358 PER MDD93-0035 SUPD	5-10-97	SWW	DVK	VULZ	
0	ISSUED FOR CONSTRUCTION	12/17/77	JSH	MIA/KS		

SCHEME NO.	MCC	S.U. NO.	CHANNEL	WIRE PREFIX AT MAIN CONT. BD.	CS	EQUIPMENT										DESCRIPTION
						C	CD	B	M	PA	PB	SA1	SA3	KA	KB	
BE1171	E11B	065	I	LA	MISMU02A	C5717	CDE11B	BE1171	MVMU02A	PIP2M	PIE2L	C5760	C5760	K27A	K27A	RC LETDOWN CLRS 1 OUT 150 VLV



- NOTES**
- 1) FOR GENERAL NOTES SEE DWG. E-49B, INDEX SH.
  - 2) FOR CONTROL SWITCH (C.S.) DETAILS SEE DWG. E-30B, SH. 7, FIG. 7.
  - 3) FOR VALVE LIMIT SW - DEV. SEE DWG. E-30B, SH. 8, FIG. 1. ALSO SEE NOTES 7 & 8 ON THIS DWG.
  - 4) CONTRACTOR TO JUMPER 10 & 21 AND 14 & 19.
  - 5) FOR VENDOR DWG. REFER TO E-17B. SEE VENDOR DWG. FOR SFAS INTERNAL WIRING.
  - 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) FIELD TO ADJUST ROTOR #3 WITH SWITCH CONTACTS 9 THRU 12 TO ACTUATE WHEN VALVE REACHES 96% CLOSED ± 2%.

**DAVIS-BESSE NUCLEAR POWER STATION**

THE TOLEDO EDISON COMPANY  
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

ELEMENTARY WIRING DIAGRAMS  
TREATED WATER  
RC LETDOWN CLRS OUT ISO VLV

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-49B SH. 18	12

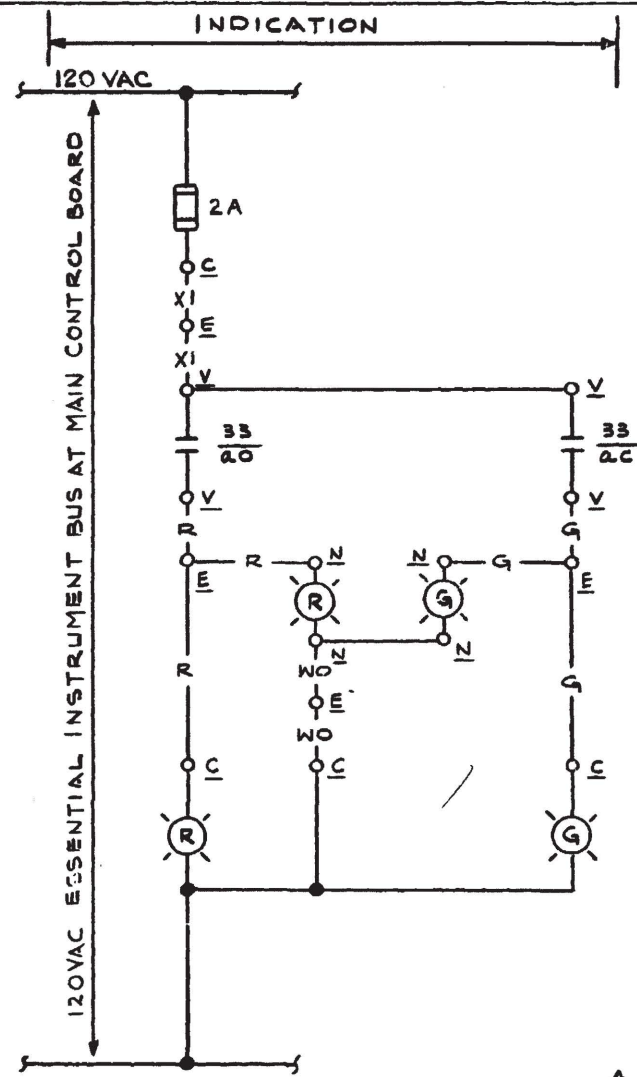
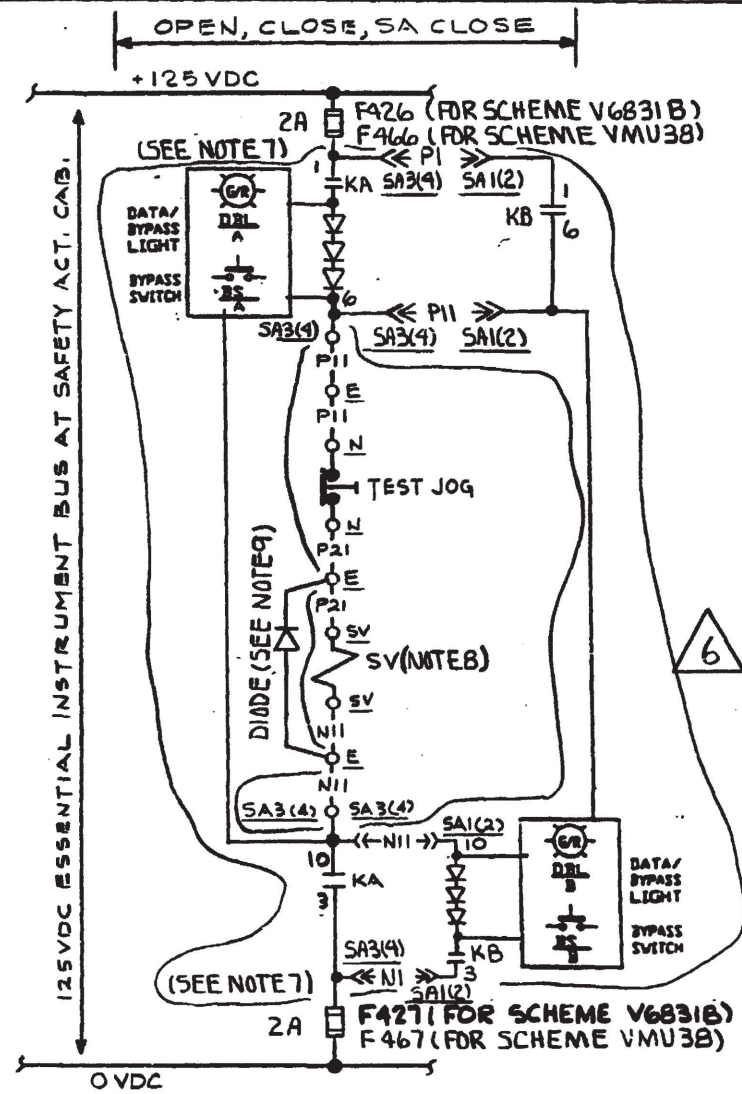
I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT - DAVIS-BESSE N.P.S.

DATE: 5-21-97 OPERATOR: Sue Martin

16X



6	INDICATOR: E-49B-293&296 PER MOD 30-006-006 E-49B-307&308 PER MOD 87-199-011/126 SBU	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
5	AS BUILT FOR 86-432 SUP. I. INC. DCN E-49B-145	12/28/86	GFB	WJH	M/A/KS	MJC	WJH	WJH
0	ISSUED FOR CONSTRUCTION	12/27/73	JBM	M/A/KS	MJC	WJH	WJH	WJH
REV. DESCRIPTION								



SCHEME NO. (SEE TABLE SH. 19B)

NOTES

1. FOR LEGEND, BLOCK DIAGRAM AND VALVE LIMIT SW. AUX. CONTACTS SEE DWG. E-49B, SH. 19B.
2. FOR GENERAL NOTES SEE DWG. E-49B INDEX SH.
3. FOR LOCAL PUSHBUTTON AND IND. LIGHTS DETAILS SEE DWG. E-30B, SH. 7, TYPES 4 & 6.
4. FOR CONTROL SWITCH (CS) DETAILS SEE DWG. E-30B, SH. 7, FIG. 7.
5. FOR VALVE LIMIT SWITCH DESIGNATION SEE DWG. E-30B, SH. 8.
6. FOR REMOTE CONTROL (CS) OPERATION SEE DWG. E-49B SH. 19C
7. FOR VENDOR DWG. REFERTO E-17B, SEE VENDOR DWG. FOR SFAS INTERNAL WIRING.

8. VALVES VMU38 & V6831B CLOSE ON SIMU38 & V6831B DE-ENERGIZING RESPECTIVELY

NOTES (CONT'D):  
9. INSTALL "DIODE" IN ACCORDANCE WITH DWG. E-1037L SH. 17.

**DAVIS-BESSE NUCLEAR POWER STATION**  
 THE TOLEDO EDISON COMPANY  
 THE CLEVELAND ELECTRIC ILLUMINATING COMPANY  
 ELEMENTARY WIRING DIAGRAMS  
 TREATED WATER  
 MISC ISO VLVS

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-49B SH. 19A	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.  
 DATE 8-25-92 OPERATOR [Signature]

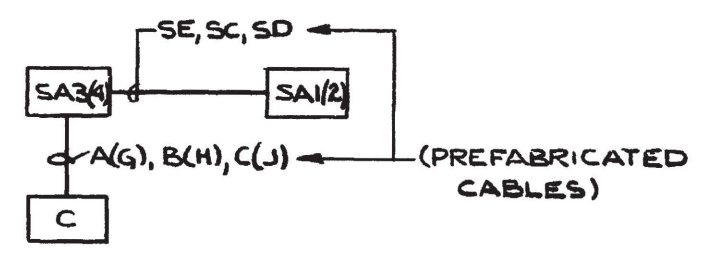
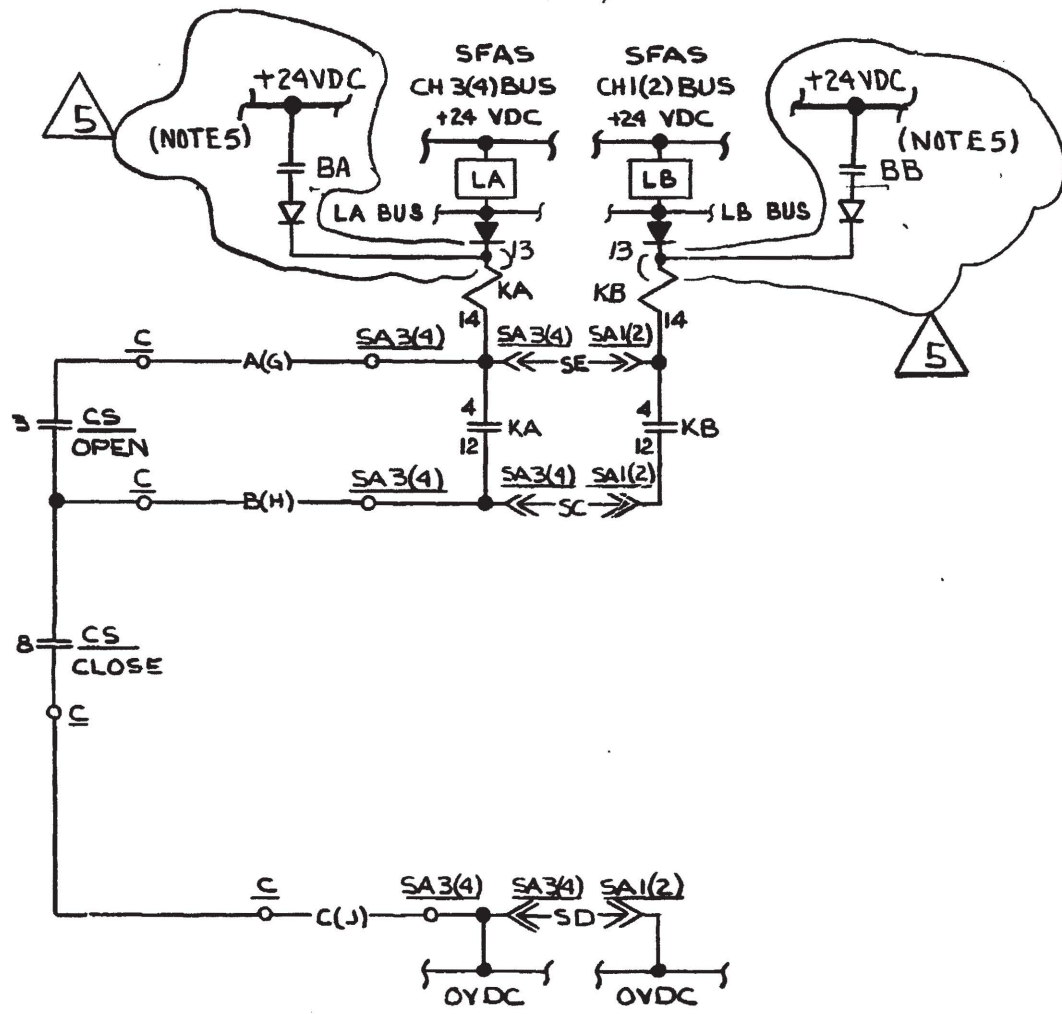
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DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
11-26-76	J.A.	CES	NI	S.M.C.	S/AS	
DESCRIPTION						
4 INC. DCN E-49B-251 PER MOD 89-0116 SUP. O						
5 INC. DCN E-49B-304 PER MOD 90-0006 SUP. O						
0 ISSUED FOR CONSTRUCTION						
REV.						



BLOCK DIAGRAM

NOTES :

- 5 1. FOR VENDOR DWG. REFER TO E-17B. SEE VENDOR DWG. FOR SFA'S INTERNAL WIRING.
- 2. FOR GENERAL NOTES SEE DWG E49B INDEX SHEET
- 3. FOR DETAILS OF CONTROL SWITCH (CS) SEE DWG E30B, SH.7 FIG.7
- 5 4. DELETED
- 5 5. BYPASS. VOLTAGE IS DERIVED FROM THE STATION BATTERY. SEE DWG. E-30-339.

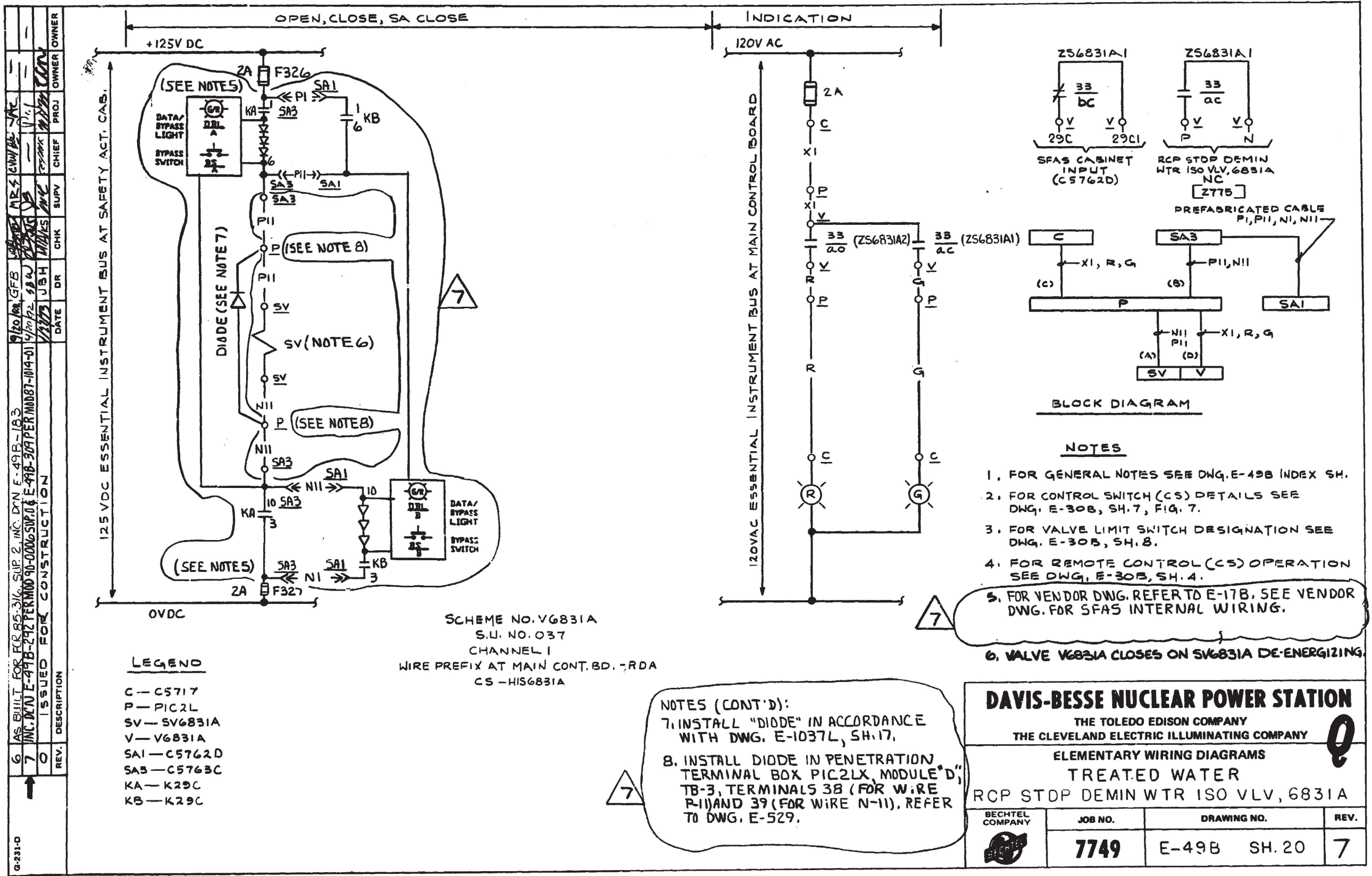
SCHEME NO.	SU. NO.	CH.	WIRE PREFIX AT MAIN CTRL BD	CS	EQUIPMENT						SA OUTPUT RELAY		DESCRIPTION
					C	F	SA1	SA2	SA3	SA4	KA	KB	
SF1747	05	2	R1	HISMU38	C5717			C5759C		C5756D	K33F	K33F	RCP SEAL RET ISO VLY

**DAVIS-BESSE NUCLEAR POWER STATION**  
 THE TOLEDO EDISON COMPANY  
 THE CLEVELAND ELECTRIC ILLUMINATING COMPANY  
 ELEMENTRY WIRING DIAGRAM  
 TREATED WATER  
 MISC ISOLATION VALVE

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-49B SH-19C	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 8-25-92 OPERATOR [Signature] **16X**





AS BUILT FOR ECR 85-316, SUP. 2, INC. DYN E-49B-183	DATE	CHK	SUPV	CHIEF	PROJ	OWNER
INC. DYN E-49B-242 PER MOD 90-0006 SUP. 0.4 E-49B-305 PER MOD 87-1014-01	DATE	DR				
ISSUED FOR CONSTRUCTION						
REV.						
6						
7						
0						

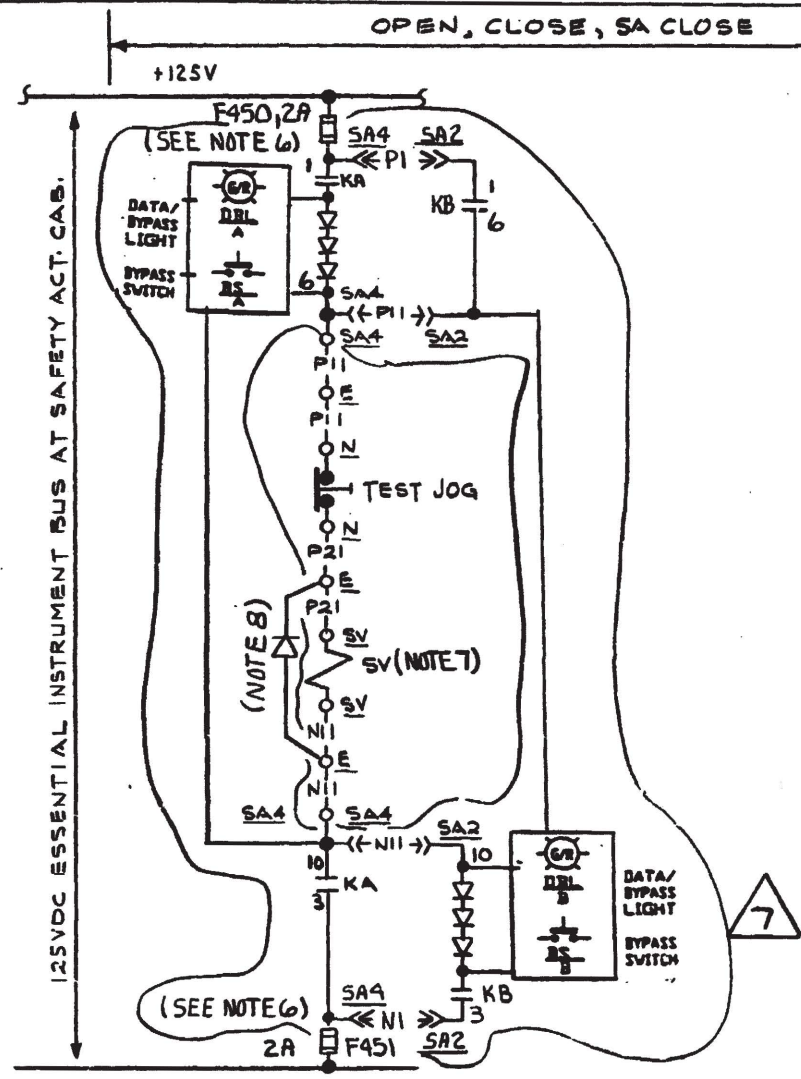
I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

DATE 8-25-92 OPERATOR D. J. [Signature]

16X



7	INC. D. V. E. 49B-294 PER MDD 90-0006 SUP. 14 E-49B-310 PER MDD 87-1014-01	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
6	ADDED NOTES 617 & REV. AS NOTED	1/26/78	JSH	MKS	RE			
0	ISSUED FOR CONSTRUCTION	1/27/78						

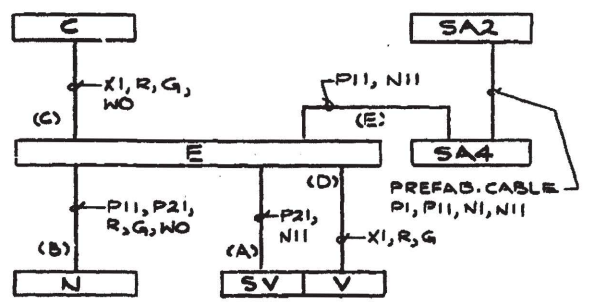
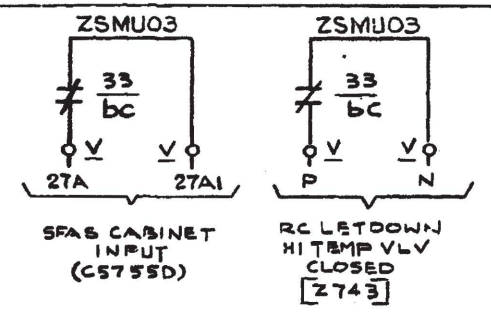
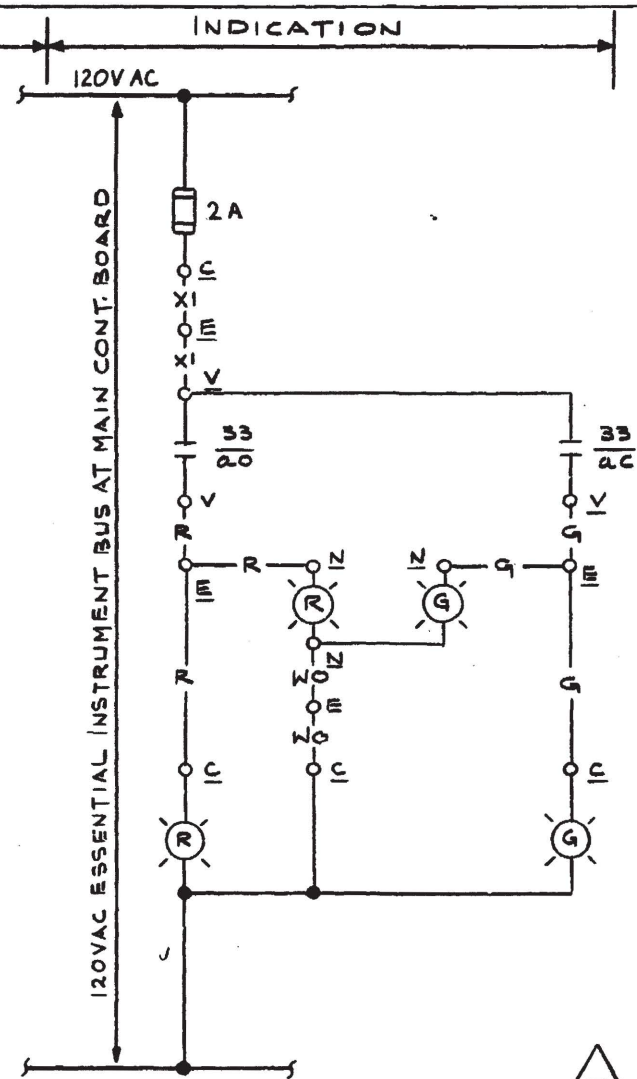


**LEGEND**

C - C5717  
 E - EVMU03  
 SV - SVMU03  
 V - VMU03  
 N - NVMU03

SA2 - C5755C  
 SA4 - C5756D  
 KA - K27A  
 KB - K27A

SCHEME NO. VMU03  
 S.I. NO. 065  
 CHANNEL 2  
 WIRE PREFIX AT MAIN CONT. BD. - LDI  
 CS - HIS MU03



**BLOCK DIAGRAM**

**NOTES**

1. FOR GENERAL NOTES SEE DWG. E-49B INDEX SH.
2. FOR LOCAL PUSHBUTTON AND IND. LIGHTS DETAILS SEE DWG. E-30B, SH. 7, TYPES 4 & 6.
3. FOR CONTROL SWITCH (CS) DETAILS SEE DWG. E-30B, SH. 7, FIG. 7.
4. FOR VALVE LIMIT SWITCH DESIGNATION SEE DWG. E-30B, SH. 8.
5. FOR REMOTE OPERATION FROM MAIN CONTROL BOARD SEE DWG. E-49B SH. 22C.
6. FOR VENDOR DWG. REFER TO E-17B. SEE VENDOR DWG. FOR SFAS INTERNAL WIRING.
7. VALVE VMU03 CLOSING ON SVMU03 DE-ENERGIZING.
8. INSTALL DIODE IN ACCORDANCE WITH E-1037L, SH. 17.

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

**ELEMENTARY WIRING DIAGRAMS**  
 TREATED WATER  
 RC LETDOWN ISOLATION VLV

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-49B SH. 22A	7

I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE 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.

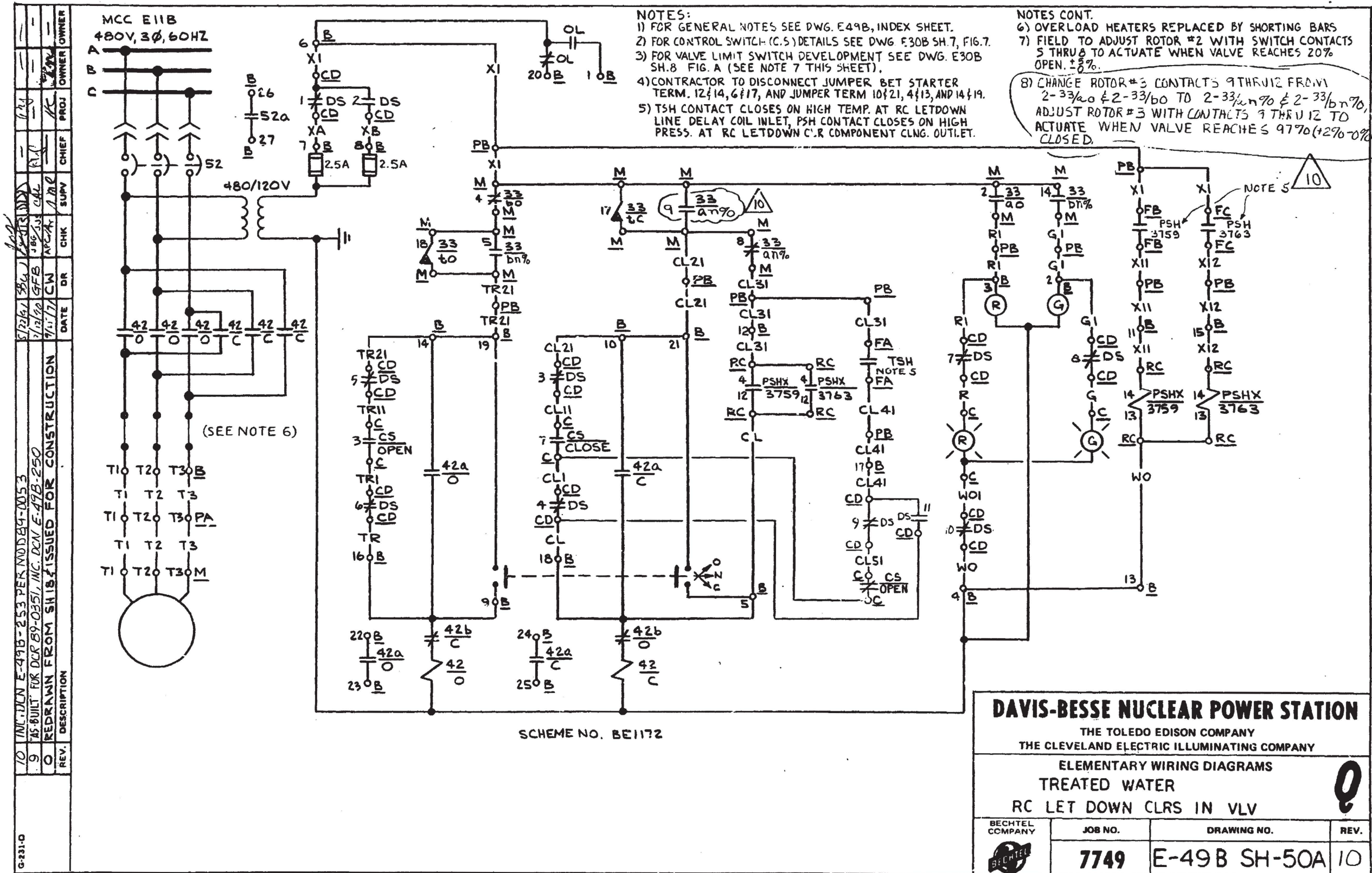
DATE 8-25-92 OPERATOR [Signature]

16X







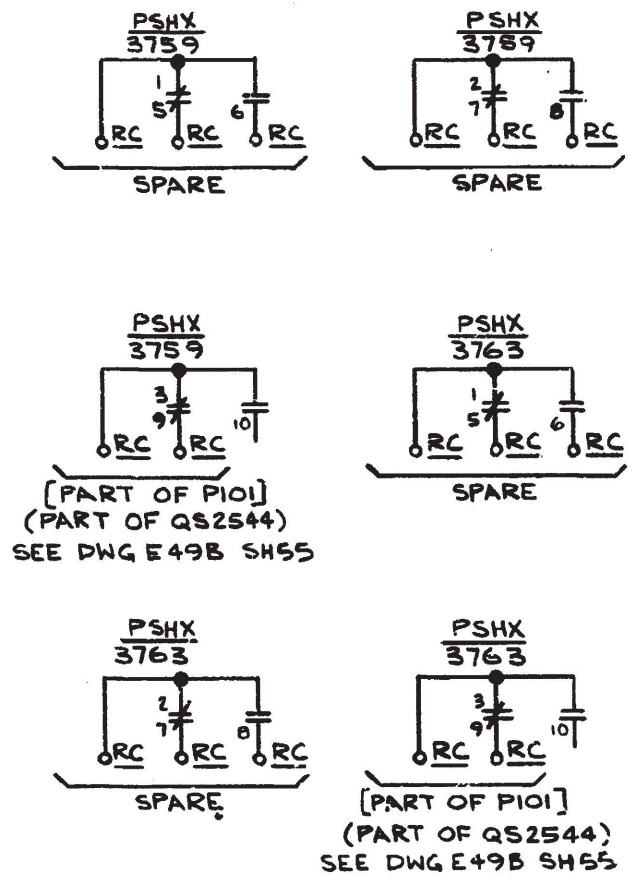
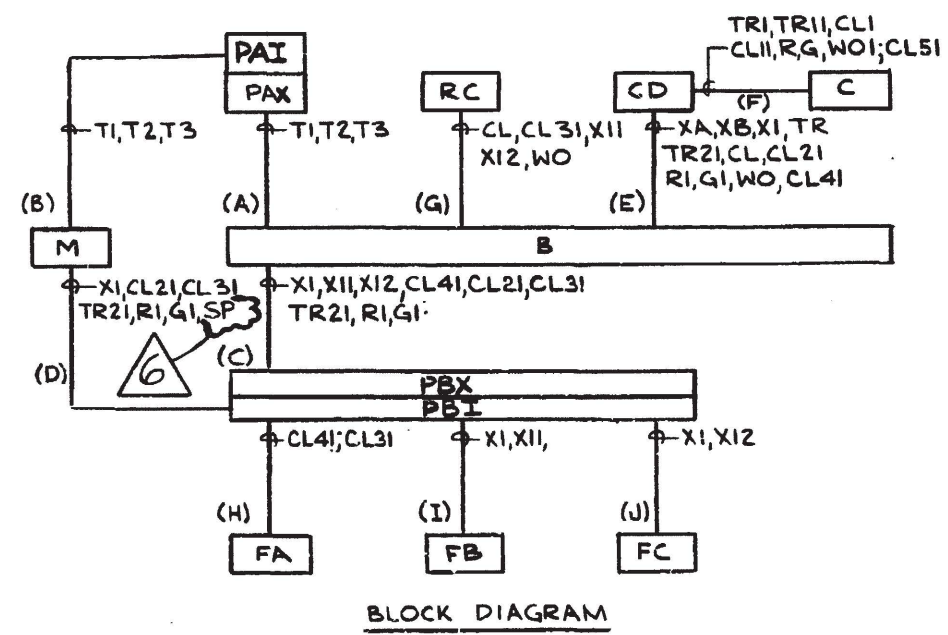


I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

B A 10 A B



6	"AS-BUILT" FOR E-49B-137	DATE	CHK	SUPV	CHIEF	PROJ	OWNER
5	"AS-BUILT" FOR E-49B-82	DATE	CHK	SUPV	CHIEF	PROJ	OWNER
0	REDRAWN FROM SH 18 & ISSUED FOR CONSTRUCTION	DATE	CHK	SUPV	CHIEF	PROJ	OWNER

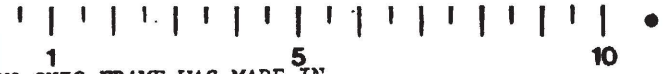


SCHEME NO.	MCC	S.U. NO	CHANN	WIRE PREFIX AT MAIN CONT. BD	CS	EQUIPMENT									DESCRIPTION	
						C	CD	B	M	PAX(I)	PAX(II)	RC	FA	FB		FC
BE1172	E11B	064	1	LB	MSMU02B	C5703	CDE11B-1	BE1172	MVMU02B	PIP2MX12	PK2LX12	RC3801	FTSH 3745B	FPSH 3759	FPSH 3763	RC LET DOWN CLRS IN VLV

**DAVIS-BESSE NUCLEAR POWER STATION**  
 THE TOLEDO EDISON COMPANY  
 THE CLEVELAND ELECTRIC ILLUMINATING COMPANY  
 ELEMENTARY WIRING DIAGRAM  
 TREATED WATER  
 RC LET DOWN CLRS IN VLV

BECHTEL COMPANY  
 JOB NO. **7749**  
 DRAWING NO. **E-49B SH-50B**  
 REV. **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.



B A B  
 3 4 10 16X 4 3



**INDEX**

SHEET NO.	LASTEST REV.	DESCRIPTION	
1A	5	COOLING WATER PUMP MOTORS.	
1B	5	COOLING WATER PUMP MOTORS.	
2	5	LOW LEVEL COOLING WATER TANK +1 FILL	
3A	18	CC PMP 2 (AD113)	Q
3B	18	CC PMP.2 (AD113)	Q
3C	11	CC PMP.1 (AC 113)	Q
3D	5	CC PMP.1 (AC 113)	Q
4A	19	CC PMP.3 (AD108)	Q
4B	17	CC PMP. 3 (AD108)	Q
4C	10	CC PMP. 3	Q
4D	10	CC PMP. 3	Q
4E	10	CC PMP. 3 (AC 108)	Q
4F	8	CC PMP.3 (AC 108)	Q
5A	2	DELETED	
5B	2	DELETED	
6A	9	CRD. CLR CIRC. PMP'S. 1 & 2	
6B	8	CRD. CLR CIRC. PMP'S. 1 & 2	
7A	12	CC IN 150 VLV. TO CRD 1567A.	Q
7B	6	CC IN 150 VLV TO CRD. 1567A.	Q
8A	13	CRDC BOOSTER PMP'S SUCTION VALVES	Q
8B	9	CRDC BOOSTER PMP'S SUCTION VALVES	Q

(FOR CONTINUATION OF INDEX, SEE SH. 2)

REV	DATE	DESCRIPTION	DR	CHK	SUBV.	OWNER
8	4-17-75	ISSUED FOR CONSTRUCTION SH'S 12B, 15B & 23A TO 27 (REV 0), REVISED SH'S 2B, 4B, 15A & 22 (REV 1), SH'S 3A, 4A, 4C, 4D, 5A, 5B, 9B, 10B, 13A, 13B & 21A (REV 2), SH'S 7A, 9A, 10A, 11, 12A, 16 & 19 (REV 3), SH'S 6A, 6B, 8A & 8B (REV 4)	JA	APC	SNS	JER
7	2/20/75	ISSUED SH 22 (REV 0), SH 1A, 2 (REV 3)	JA	APC	SNS	JER
6	12/2/74	ISSUED SH 1B (REV 2)	LWB	APC/AKA	SNS	JE
5	7/2/74	ISSUED FOR CONSTRUCTION SH 15, REVISED AS NOTED SH'S 1B, 7B, 9B, 10B, 14, 20, 21A & 21B REV 1, 1A, 2, 7A, 9A, 10A, 11, 12, 16, 17, & 19 REV 2, 6A, 6B, 8A, & 8B REV 3	DVB	APC/AS	SNS	JER
4	6-24-73	DELETED SH 18, REVISED AS NOTED SH'S 1A, 2, 3A, 4A, 4C, 4D, 5A, 5B, 7A, 9A, 10A, 11, 12, 17 & 19 ALL REV 1 & SH'S 6A & 6B REV 2	SJH	MARKS	SNS	JER
3	3/14/73	ISSUED FOR CONSTRUCTION SH'S 3A THRU 4D AND 21A & 21B ALL REV 0 REVISED AS NOTED SH'S 6A & 6B REV 1 AND 8A & 8B REV 2	SJH	MARKS	SNS	JER
2	2/16/73	ISSUED FOR CONSTRUCTION SH'S 5A, 5B, 6A, 6B & 16 THRU 20 ALL REV 0 REVISED AS NOTED SH'S 8A, 8B, 13A & 13B ALL REV 1	SJH	MARKS	SNS	JER
1	11/23/72	ISSUED FOR CONSTRUCTION SH'S 7A THRU 14 ALL REV 0	SJH	MARKS	SNS	JER
0	9/17/72	ISSUED FOR CONSTRUCTION SH'S 1A, 1B & 2 REV 0	SJH	MARKS	SNS	JER

**GENERAL NOTES.**

- 1- FOR EXPLANATION OF EQUIPMENT & WIRING NUMBERS SEE 7749-11A. ELECTRICAL NUMBERING SYSTEM.
- 2- FOR MOTOR INFORMATION SEE 7749-E-12B. ELECTRICAL MOTOR LIST.
- 3- FOR CONTROL PANEL, M.C.C., DESCRIPTIONS SEE E-18B ELECTRICAL EQUIP LIST.
- 4- WIRE NO PREFIX MUST BE ADDED TO FORM COMPLETE WIRE NO. FOR THOSE WIRES AT MAIN CONTROL BOARD.
- 5- AUX. CONTROL RELAY IN SOLENOID OPER. VALVE CONTROL CIRCUITS TO BE COUCH TYPE 4AP44-AF.
- 6- NUMBER IN BRACKETS [ ] REPRESENTS COMPUTER INPUT NUMBER. NUMBERS IN PARENTHESIS ( ) REPRESENT COMPUTER INPUT SOURCE NUMBER.

**REFERENCE DRAWINGS**

- E-5E- SH. 1 THRU 5. 480V MCC (NON-ESSENTIAL) ONE LINE DIAG.
- E-6E- SH. 1 & 2. 480V MCC (ESSENTIAL) ONE LINE DIAG.
- E-10A- STANDARD NOTES & SYMBOLS.
- E-14B- SOLENOID VALVE LIST
- E-30B- GENERAL GUIDES-ELEMENTARY DIAGRAMS.
- E-13B- ELECTRICAL EQUIPMENT LIST

THIS DWG. WAS REDRAWN/SCANNED ON CAD AND SUPERSEDES REVISION 50.

<b>DAVIS-BESSE NUCLEAR POWER STATION</b>			
THE TOLEDO EDISON COMPANY THE CLEVELAND ELECTRIC ILLUMINATING COMPANY			
ELEMENTARY WIRING DIAGRAMS <b>COOLING WATER SYSTEM DRAWING INDEX</b>			
BECHTEL COMPANY	JOB NO	DRAWING NO	REV.
	<b>7749</b>	E-50B	DWG INDEX SHEET 1
			<b>52</b>



INDEX

SHEET NO.	LATEST REV.	DESCRIPTION	
9A	9	CC OUTLET ISO VLV (INSIDE CTMT.)	Q
9B	6	CC OUTLET ISO VLV (INSIDE CTMT.)	Q
10A	9	CC OUTLET ISO VLV (OUTSIDE CTMT.)	Q
10B	5	CC OUTLET ISO VLV (OUTSIDE CTMT.)	Q
11	7	CC FRM DH. CLR'S OUT VLV'S	Q
12A	7	CC VLV TO MAKE UP PUMP	Q
12B	7	CC VLV TO MAKE UP PUMP	Q
13A	10	CC WTR TO LINE A(B)	Q
13B	4	CC WTR TO LINE A(B)	Q
14	4	CC SYSTEM MU VALVE	
15A	5	CC AUX EQUIP IN VLV	Q
15B	6	CC AUX EQUIP IN VLV	Q
16	7	DG JKT CLNG WTR HX'S OUT VLV'S	Q
17	5	CNDS VACM PMP. CLR IN VLV'S.	
18	1	DELETED	
19	9	RCP CLNG WTR RET. VLV'S TO CC WTR.	
20	5	CC SURGE TANK 1-1 TO ATMOSPHERE	
21A	11	CC IN ISO VLV TO CRD 1567B	Q
21B	4	CC IN ISO VLV TO CRD 1567B	Q
22	1	COMPUTER INPUT AUX CRKTS	
23A	7	CC IN ISO VLV (INSIDE CTMT)	Q
23B	4	CC IN ISO VLV (INSIDE CTMT)	Q
24A	7	CC IN ISO VLV (OUTSIDE CTMT)	Q
24B	3	CC IN ISO VLV (OUTSIDE CTMT)	Q
25	4	CC SURGE TK LVL SW AUX RELAYS	Q
26	7	ALARMS	
27	5	RCP CLNG WTR RET PRESS SW AUX RELAYS	
28	5	CC LINES 1 & 2 VLV'S AUX RELAYS	Q

FOR GENERAL NOTES AND REFERENCE DRAWINGS  
SEE DWG E-50B DWG INDEX SH. 1

52 FOR REVISION DESCRIPTION SEE INDEX SHT. 3

REV.	DATE	DESCRIPTION	DR.	CHK.	SUPV.	CHIEF	PROJ	OWNER	OWNER
17	3-7-76	REVISED SH'S 23A, 24A (REV.3); SH'S 13A, 21A (REV.5); SH'S 7A, 9A, 10A, 19 (REV.6); SH 8A (REV.7); SH 6A (REV.9)	JZH	IM	SMC	-	PPC	-	-
16	2-28-77	REVISED SH. 6B (REV.7); SH. 6A (REV.8)	R.W.S	JPC	SMC/IM	-	SNS	-	-
15	12-3-76	ISSUED FOR CONSTRUCTION SH. 28 (REV.0); REVISED SH. 13A (REV.4); SH'S 3B, 4B (REV.4); SH'S 3A, 4A (REV.7)	R.W.S	JPC	SMC	-	JW	CO	-
14	11/2/76	REVISED SH'S 1B, 14 (REV.3); SH'S 12B, 15B (REV.4); SH'S 3B, 4B, 4D, 16, 26 (REV.5); SH'S 3A, 4A (REV.6); SH. 6A (REV.7)	R.W.S	JPC	SMC/IM	-	SNS	CO	-
13	8-9-76	REVISED SH. 26 (REV.4); SH. 4C (REV.5); SH. 8B (REV.7)	R.W.S	JPC	SMC	-	SNS	-	-
12	6-16-76	REVISED SH. 27 (REV.2); SH'S 13A, 13B, 26 (REV.3); SH'S 2, 3B, 4B, 20 (REV.4); SH'S 3A, 4A, 19 (REV.5); SH'S 6A, 6B (REV.6)	R.W.S	JPC	SMC/IM	-	SNS	CO	-
11	4-30-76	REVISED SH'S 23A, 23B, 24A, 25 (REV.2); SH'S 7B, 12B, 15B (REV.3); SH'S 4C, 9B, 16, 21A (REV.4); SH'S 7A, 9A, 10A, 14 (REV.5); SH'S 8A, 8B (REV.6)	R.W.S	JPC	SMC/IM	-	SNS	-	-
10	10-24-76	REVISED SH. 25 (REV.1); SH'S 12B, 14, 15B, 26 (REV.2); SH'S 3B, 4B, 4C, 17, 20 (REV.3); SH'S 3A, 4A, 4D (REV.4); SH'S 6A, 6B (REV.5)	JA	JPC	SMC	-	SNS	-	-

THIS DWG. WAS REDRAWN/SCANNED  
ON CAD AND SUPERSEDES REVISION 50.

**DAVIS-BESSE NUCLEAR POWER STATION**  
THE TOLEDO EDISON COMPANY  
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY  
ELEMENTARY WIRING DIAGRAMS  
COOLING WATER SYSTEM  
DRAWING INDEX

BECHTEL COMPANY	JOB NO	DRAWING NO	REV.
	7749	E-50B	DWG. INDEX SHEET 2 52

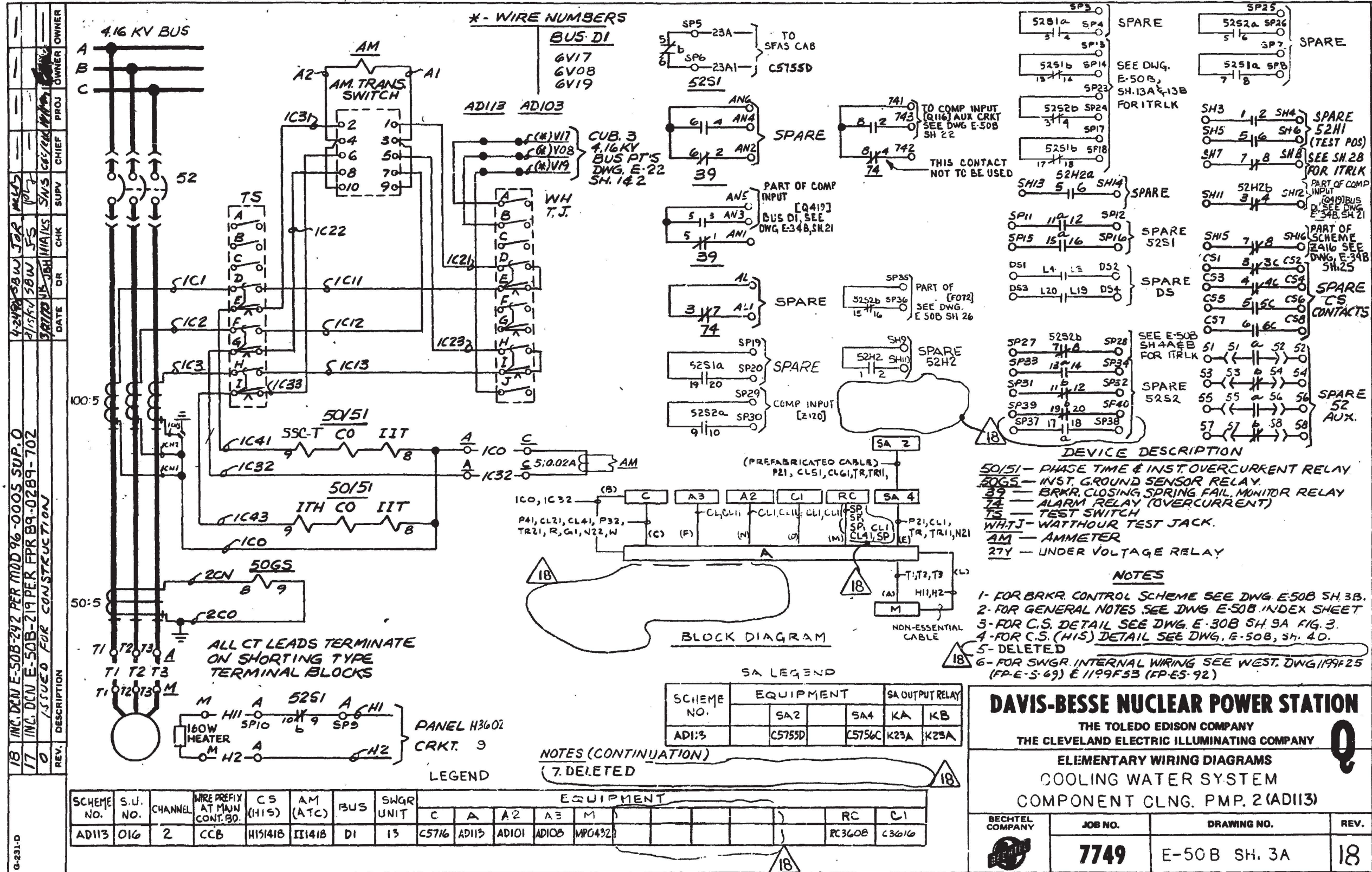


REV	DATE	DESCRIPTION	DR.	CHK	SUPV	CHIEF	PROJ	OWNER	OWNER
46	11/1/01	REVISED SH. 6B (REV. 8) AND SH. 16 (REV. 7)	SBW	JOR	PW				
45	5-17-00	REVISED SH. 3B (REV. 17), SH. 3C AND SH. 13A (REV. 10), SH. 26 (REV. 7) AND SH. 28 (REV. 4)	SBW	JOR	MLB				
44	9-11-98	REVISED SH. 3C (REV. 9) AND SH. 3D (REV. 5)	SBW	JOR	MLB				
43	4-24-98	REVISED SH'S 3A & 4A (REV. 18), SH. 3B (REV. 16), SH. 3C (REV. 8), SH. 3D (REV. 4), SH. 4B (REV. 15), SH. 4E (REV. 7), SH. 4F (REV. 6) & SH. 28 (REV. 3)	SBW	JOR	MLB				
42	5/22/96	REVISED SHT'S: 1B & 4F (REV. 5); SH. 3B (REV. 15); SH. 3C (REV. 7); SH. 4A (REV. 17); SH. 4B (REV. 14); SH. 4D (REV. 9); SH. 4E (REV. 6) AND SH. 28 (REV. 2)	SBW	DVK	CER				
41	10/9/94	REVISED SH. 3C (REV. 6)	FS	SBW	PW				
40	8/15/94	REVISED SH. 3A (REV. 17) AND SH. 3B (REV. 14)	SBW	FS	PW				
39	3/29/93	REVISED SH. 4C (REV. 8)	SBW	JBA	JIS				
38	9/10/92	REVISED SHT'S. 16 (REV. 6) & 25 (REV. 4)	JOR	SBW	N.R.B.				
37	4/11/92	REVISED SHT'S: 3B & 4B (REV. 13), 3C, 4E & 10B (REV. 5), 7A (REV. 11), 7B, 9B, 11 & 15B (REV. 6), 8A (REV. 12), 8B, 9A, 10A & 19 (REV. 9), 12A, 12B, 23A & 24A (REV. 7), 15A, 21B & 23B (REV. 4), 21A (REV. 10) AND 24B (REV. 3)	SBW	JIS	J				
36	7/31/91	REVISED SHTS 2, 5B, 17 & 20 (REV. 5), SHT. 12B (REV. 6), SHT 14 (REV. 4) AND SHT. 25 (REV. 3)	SBW	JIS	D				
35	4/9/91	INC. DCN E-50B-155 PER DCR 89-0359; REVISED SHT'S: 3A & 4A (REV. 10), 3B (REV. 12), 3C, 4E & 4F (REV. 4), 3D (REV. 3), 4D (REV. 2), 7A (REV. 10), 8A (REV. 11), 12A & 23A (REV. 6), 12B & 27 (REV. 5) AND 13A & 21A (REV. 9) GEN. UPDATE ADD REVISION NOTE TO INDEX SHT. 2	SBW	JIS	D				
34	5/19/90	REVISED SH. 3A & SH. 4A (REV. 15); SH. 4B (REV. 12); SH. 4C & SH. 4D (REV. 7); SH. 26 (REV. 6); SH. 4E & 4F (REV. 3)	ETL	MTP	SE				
33	10/26/89	REVISED SH. 4B (REV. 11)	GFB	MTP	MTH				
32	8/11/89	REVISED SH. 1A (REV. 5); SH. 3A, 4A (REV. 14); SH. 3B (REV. 11); SH. 3C (REV. 3); SH. 3D, 4E, 4F (REV. 2); SH. 4B (REV. 10); SH. 28 (REV. 1)	ETL	MTP	S.W.				
31	8/23/88	REVISED SH. 3A (REV. 18), SH. 3B & SH. 8A (REV. 10), SH. 3C (REV. 2), SH. 7B & SH. 12A (REV. 5), SH. 13A, SH. 19, & SH. 21A (REV. 8), SH. 10A (REV. 9), SH. 7A (REV. 7), SH. 3D (REV. 1)	FIL	MTP	B.F.				
30	6/24/88	REVISED SH'S 3A (REV. 12), 4A (REV. 13), 17 (REV. 4), 24A (REV. 6)	ETL	MTP	S.K.				
29	5/16/88	REVISED SHT. 3C (REV. 1); SHT. 4A (REV. 12); SHT. 4B (REV. 9); SHT. 4E (REV. 1); SHT. 4F (REV. 1)	JN	RK	S.K.				
28	5/4/88	REVISED SHT. 1B (REV. 4)	JN	LZ	JN				
27	12/21/87	REVISED; SH'S 3B, 9A, 10A (REV. 8), SH'S 7E, 10B, 18B (REV. 4), SH. 8A (REV. 9), SH'S 13A, 19, 21A (REV. 7), SH'S 7B, 23A, 24A (REV. 5), SH'S 21B, 23B (REV. 3), SH. 24B (REV. 2)	GFB	RK	JIS				
26	11/17/87	REVISED SH. 3A (REV. 11), SH. 3B (REV. 9), SH. 4A (REV. 11), SH. 4B (REV. 8), SH. 4D (REV. 6). ISSUED SH'S. 3C, 3D, 4E & 4F (REV. 0)	JAN	MTP	JIS				
25	9/30/87	REVISED SH. 27 (REV. 4)	Pib	SGP	hm				
24	7-12-85	REVISED SH. 27 (REV. 3)	LF	MTH	um				
52	3/4/84	REVISED SH. 4C (REV. 10) & SH'S. 15A & 28 (REV. 5)	SBW	SBW	RS				
51	1-23-8	REVISED SH. 4C (REV. 9) (REDRAWN)			INITIALS ON FILE				
50	1/19/07	REVISED SH. 3B (REV. 18), SH. 3C (REV. 11), SH. 4B (REV. 17), & SH. 4E (REV. 10)	SAS	SBW	ARC				
49	9/15/95	REVISED SHT. 4D (REV. 10), SHT. 7A (REV. 12), SHT. 8A (REV. 13), SHT. 11 (REV. 7) + SHT. 21A (REV. 11)	EAL	SBW	CER				
48	8-27-04	REVISED SH. 4E (REV. 9) & SH. 4F (REV. 8)	BT	SBW	MLB				
47	3-24-03	REVISED SH. 4A (REV. 19), SH. 4B (REV. 16), SH. 4E (REV. 8); SH. 4F (REV. 7)	JOR	SBW	ARC				
REV	DATE	DESCRIPTION	DR.	CHK	SUPV	CHIEF	PROJ	OWNER	OWNER

THIS DWG. WAS REDRAWN/SCANNED ON CAD AND SUPERSEDES REVISION 50.

<b>DAVIS-BESSE NUCLEAR POWER STATION</b>			
THE TOLEDO EDISON COMPANY THE CLEVELAND ELECTRIC ILLUMINATING COMPANY			
ELEMENTARY WIRING DIAGRAM COOLING WATER SYSTEM DRAWING INDEX			
BECHTEL COMPANY	JOB NO	DRAWING NO	REV.
	7749	E-50B DWG INDEX SHEET 3	52



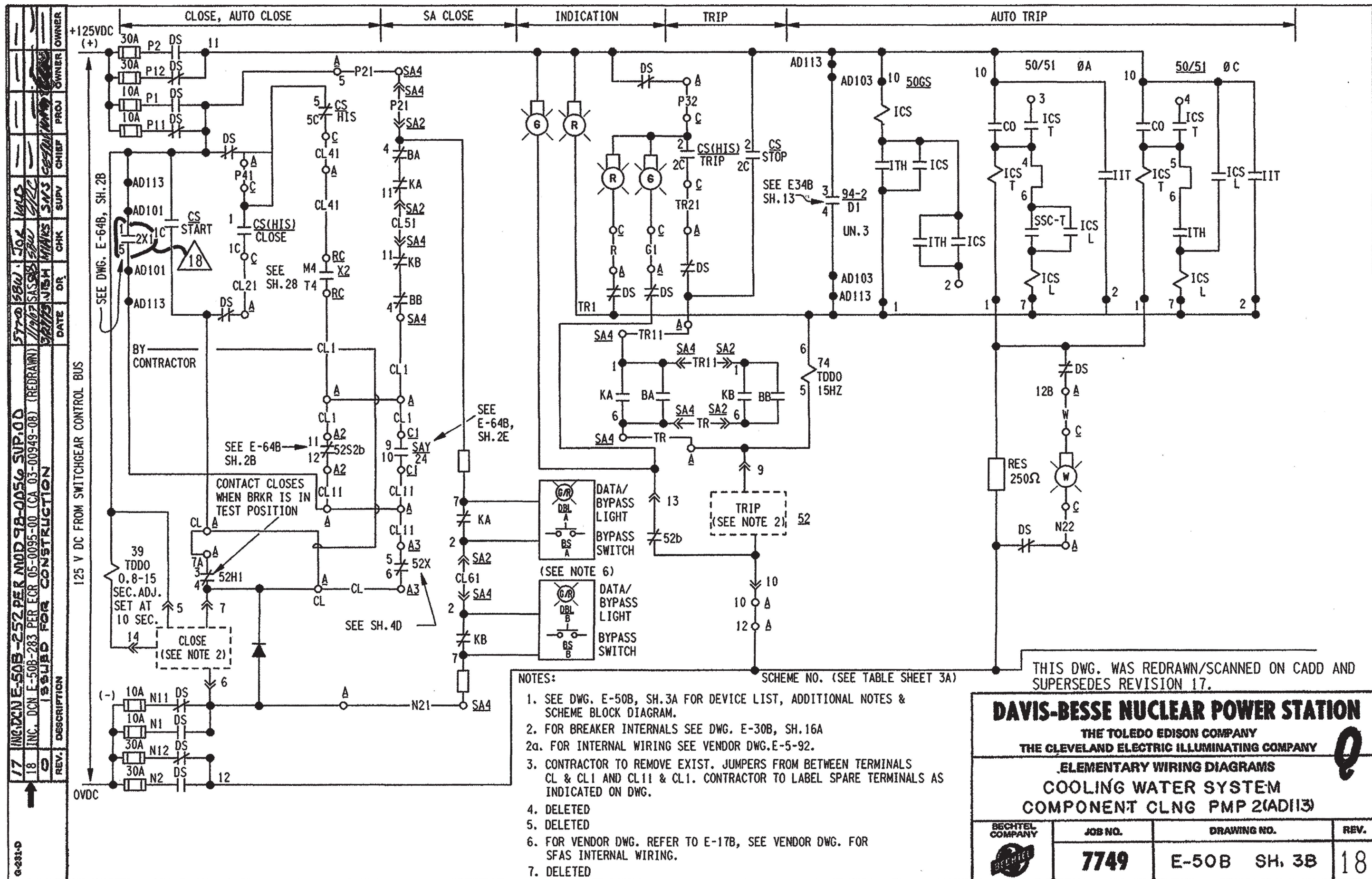


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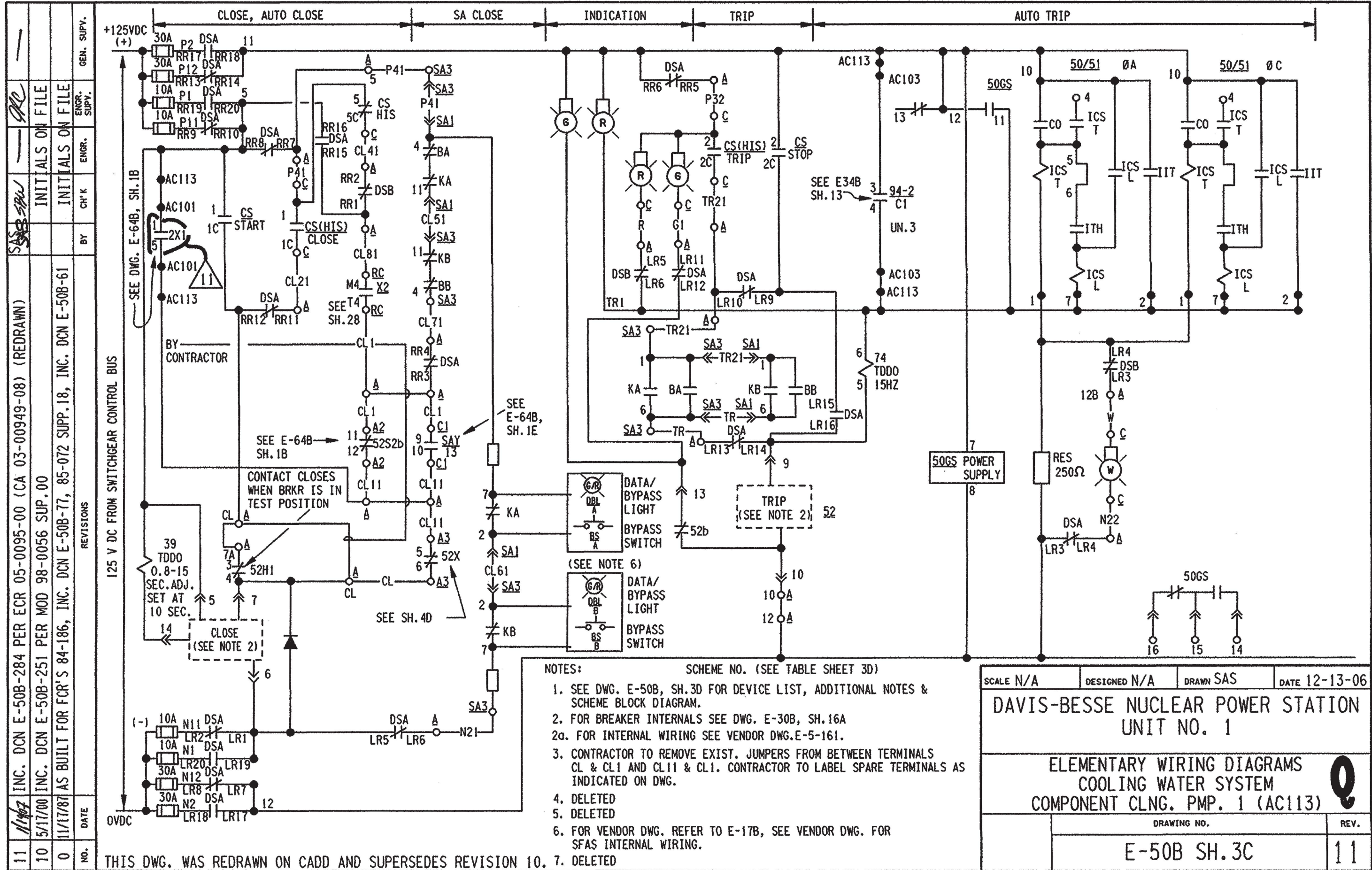
DATE **4-27-90** OPERATOR: **Dorothy Wiedle**

**16X**









11	11/17/87	INC. DCN E-50B-284 PER ECR 05-0095-00 (CA 03-00949-08) (REDRAWN)	BY	CH'K	ENGR.	GEN. SUPV.
10	5/17/00	INC. DCN E-50B-251 PER MOD 98-0056 SUP. 00				
0	11/17/87	AS BUILT FOR FCR'S 84-186, INC. DCN E-50B-77, 85-072 SUPP. 18, INC. DCN E-50B-61				

- NOTES:
- SEE DWG. E-50B, SH.3D FOR DEVICE LIST, ADDITIONAL NOTES & SCHEME BLOCK DIAGRAM.
  - FOR BREAKER INTERNALS SEE DWG. E-30B, SH.16A  
2a. FOR INTERNAL WIRING SEE VENDOR DWG.E-5-161.
  - CONTRACTOR TO REMOVE EXIST. JUMPERS FROM BETWEEN TERMINALS CL & CL1 AND CL11 & CL1. CONTRACTOR TO LABEL SPARE TERMINALS AS INDICATED ON DWG.
  - DELETED
  - DELETED
  - FOR VENDOR DWG. REFER TO E-17B, SEE VENDOR DWG. FOR SFAS INTERNAL WIRING.
  - DELETED

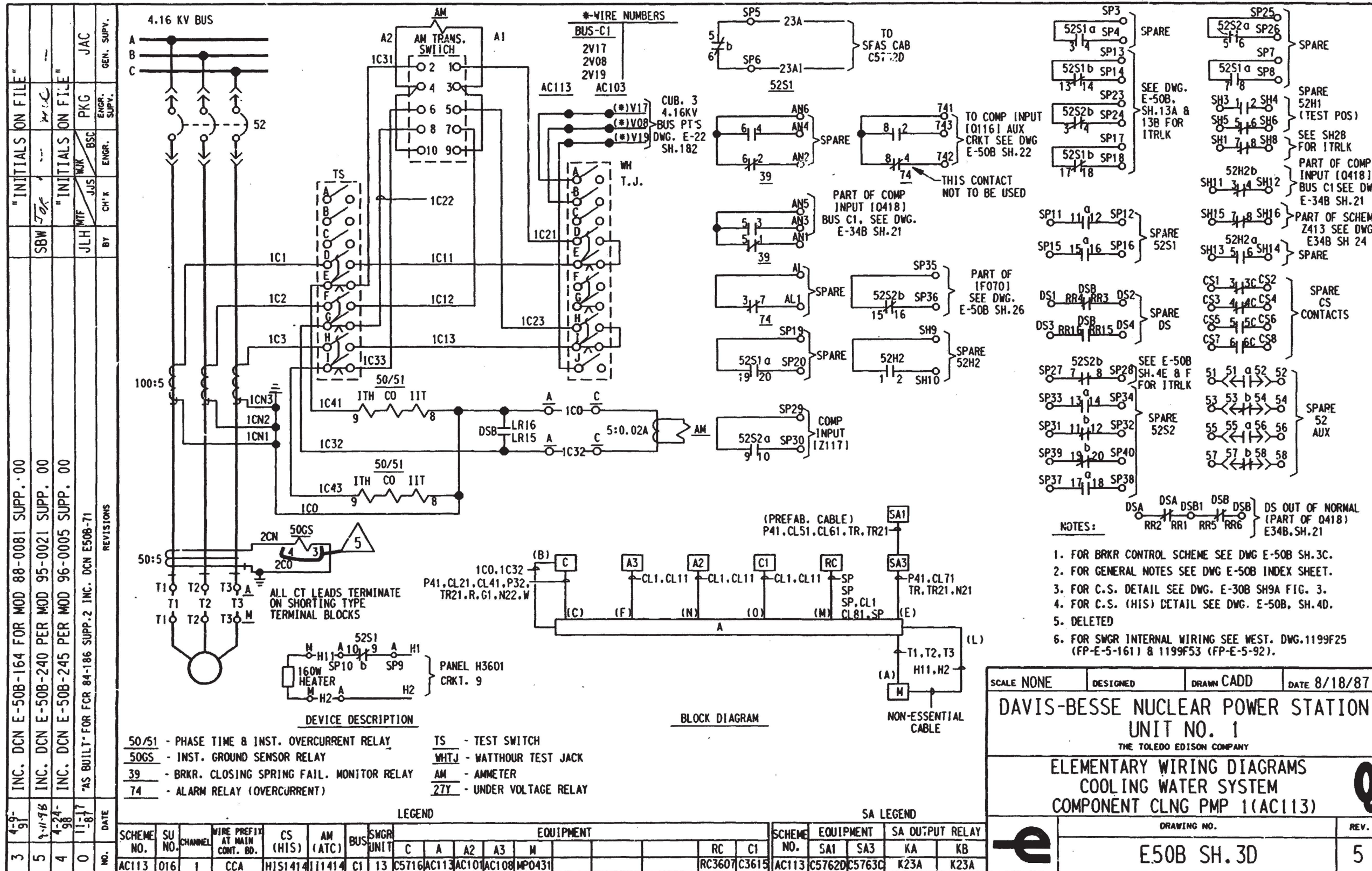
SCALE N/A	DESIGNED N/A	DRAWN SAS	DATE 12-13-06
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1			
ELEMENTARY WIRING DIAGRAMS COOLING WATER SYSTEM COMPONENT CLNG. PMP. 1 (AC113)			
DRAWING NO.			REV.
E-50B SH.3C			11

THIS DWG. WAS REDRAWN ON CADD AND SUPERSEDES REVISION 10. 7. DELETED



NEWFAX 3/85 N58313

ED 7489



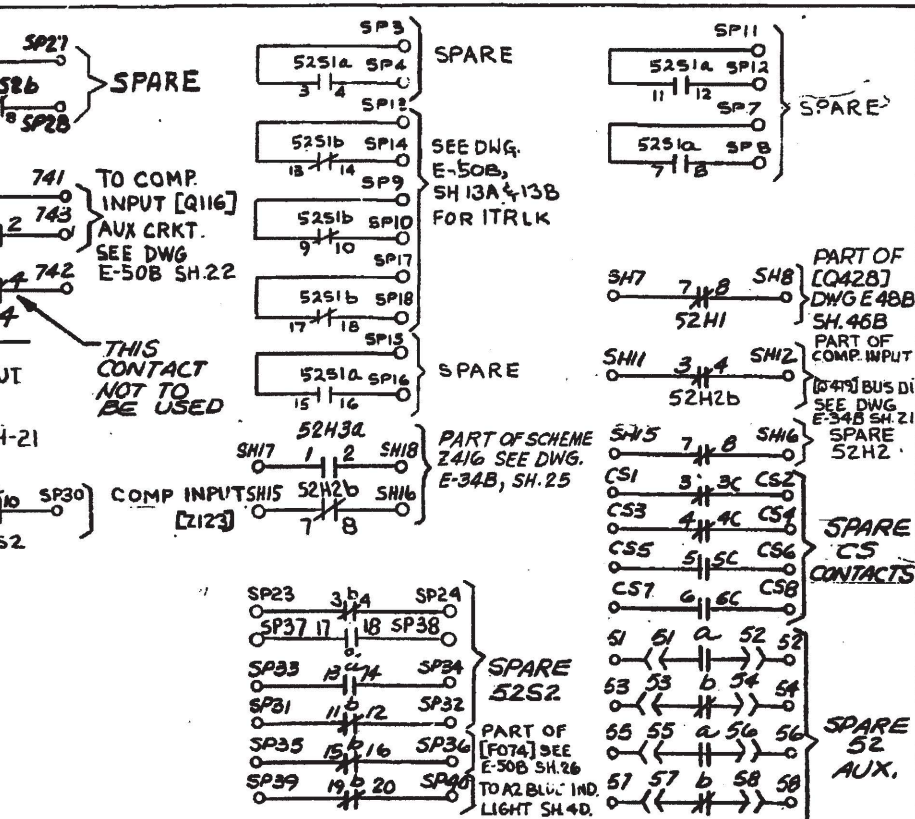
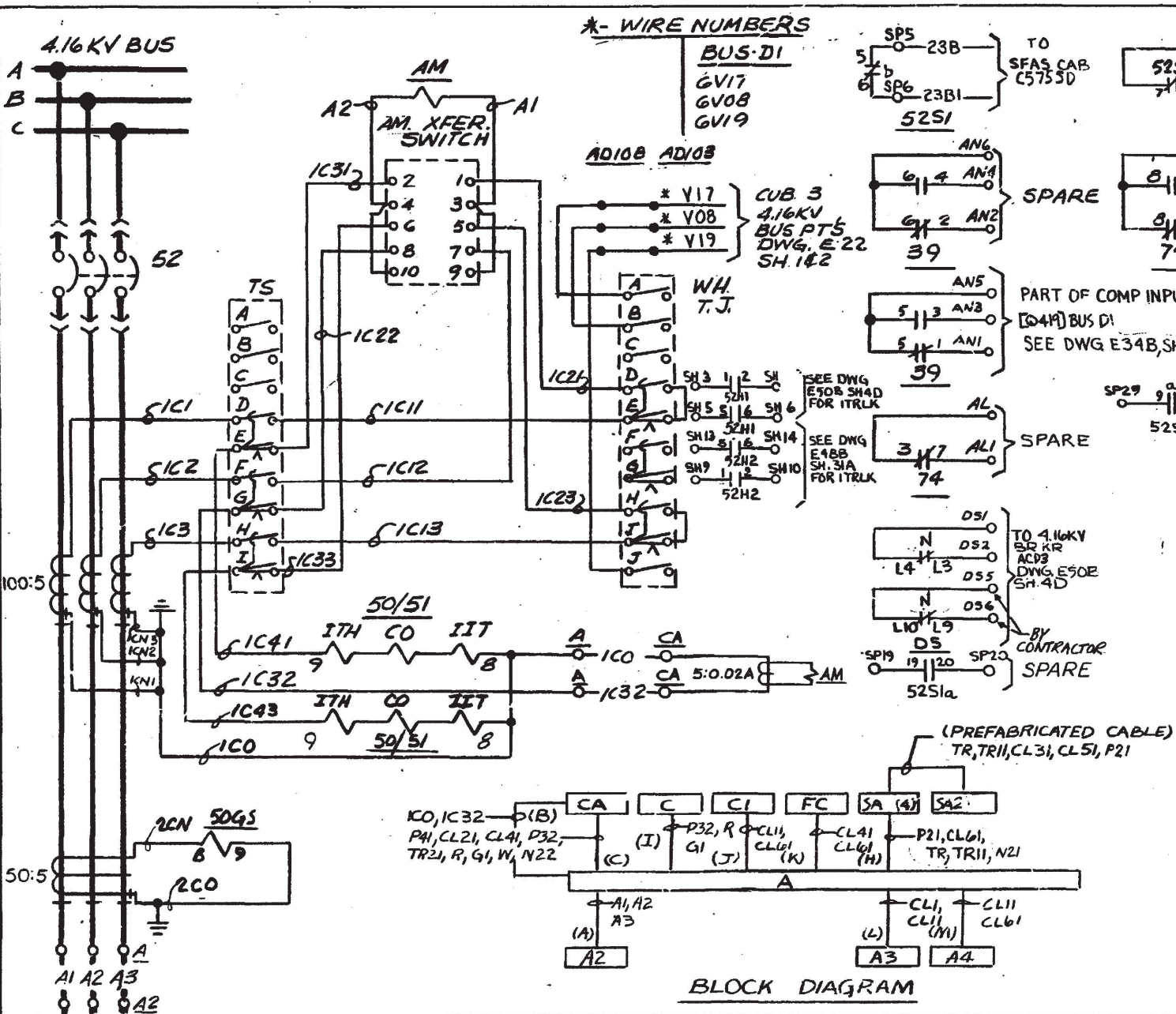
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DATE: 8/22/87 OPERATOR: Dorothy Wiedle

16X



REV.	DESCRIPTION	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
18	INC. DCN E-50B-246 PER MMD 96-0005 SUP.C	4-29-93	SBW	JOR	WLT			
19	INC. DCN E-50B-264 PER ECR 02-0517-00	3-24-93	JOR	SBW	WLT			
0	ISSUED FOR CONSTRUCTION	9-27-83	JOR	SBW	WLT			



**DEVICE DESCRIPTION**

50/51 - PHASE TIME & INST. OVERCURRENT RELAY  
50GS - INST. GROUND SENSOR RELAY  
39 - BRKR. CLOSING SPRING FAIL. MONITOR RELAY  
74 - ALARM RELAY (OVERCURRENT)  
TS - TEST SWITCH  
WH/TJ - WATT-HOUR TEST JACK  
AM - AMMETER

**NOTES**

1- FOR BRKR. CONTROL SCHEME SEE DWG E50B SH4B  
2- FOR GENERAL NOTES SEE DWG E50B INDEX SHEET  
3- FOR C.S. DETAIL SEE DWG E-50B SH 9A FIG. 3  
4- FOR C.S. (HIS) DETAIL SEE DWG. E-50B SH. 4D.  
5- DELETED  
6- FOR SWGR INTERNAL WIRING SEE WEST. DWG 11991-24  
(FP-E-5-66) & 1199F50 (FP-E-5-89).

SCHEME NO.	EQUIPMENT						SA OUTPUT RELAY	
	CI	FC	SA1	SA2	SA3	SA4	KA	KB
AD108	C3616	FF151422D		C5755D		C5756C	K23B	K23B

**NOTES (CONTINUATION)**  
7. DELETED

**LEGEND**

SCHEME No	SU No	CHANNEL	WIRE PREFIX AT MAIN CONT. PNL	CS (HIS)	AM (ATCA)	BUS	SWGR UNIT	EQUIPMENT							
								CA	C	A	A2	M	A3	A4	
AD108	016	2	CCD	HIS1416B	II1416B	D1	B	C5716	C5715	AD108	ACD3	WP043		AD113	AD101

**DAVIS-BESSE NUCLEAR POWER STATION**

THE TOLEDO EDISON COMPANY  
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

ELEMENTARY WIRING DIAGRAMS  
COOLING WATER SYSTEM  
COMPONENT CLNG. PMP. 3 (AD108)

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-50B SH. 4A	19

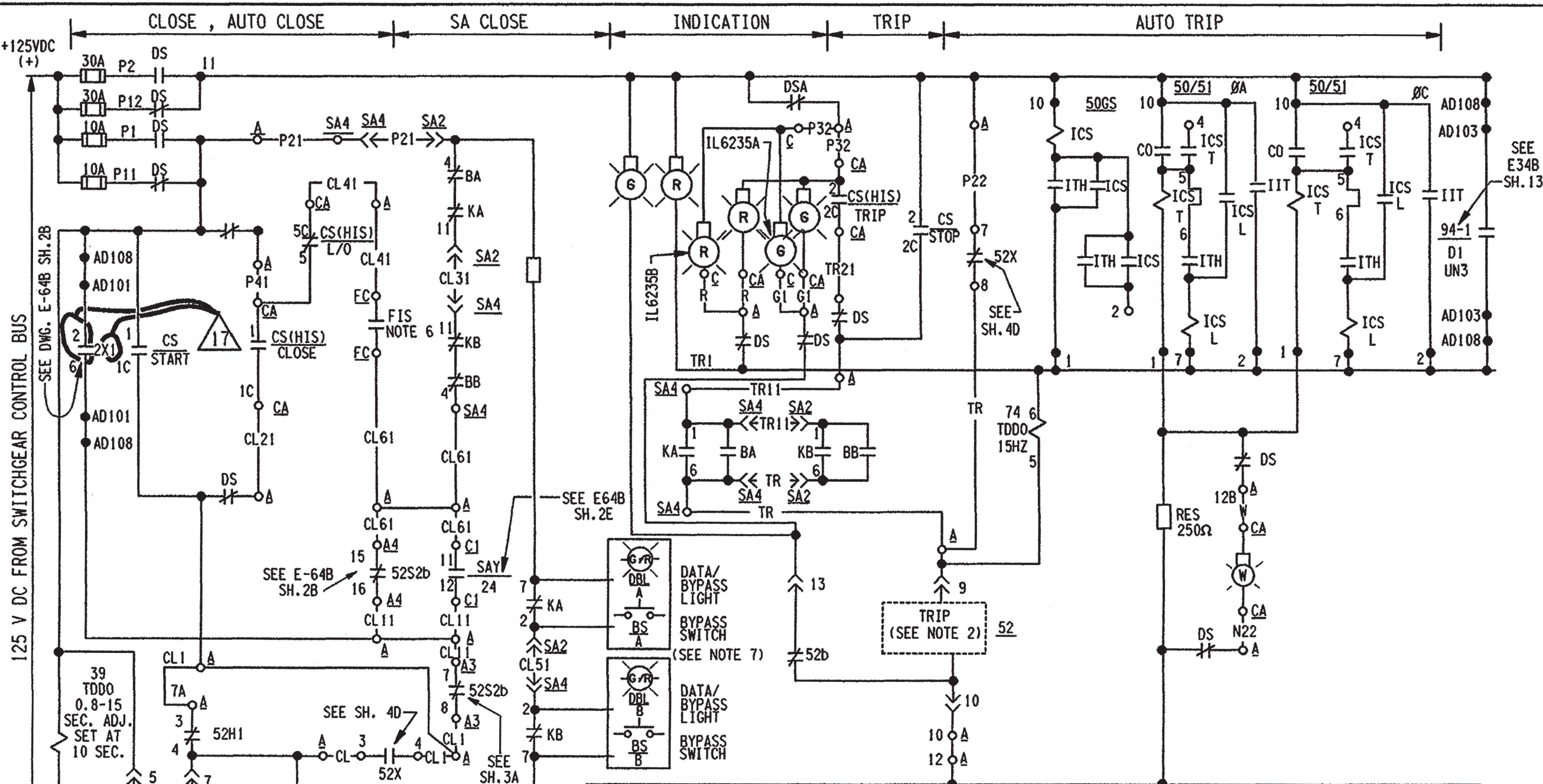
I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO THE RECORDS MANAGEMENT, DAVIS-BESSE N.P.S.

DATE: 3-27-03

16X



17	11/26/87	INC. DCN E-50B-285 PER ECR 05-0095-00 (CA 03-00949-08) (REDRAWN)	SAS	BY	ENGR.	ENGR. SUPV.	GEN. SUPV.
16	03-24-03	INC. DCN E-50B-265 PER ECR 02-0517-00	SAS	BY	ENGR.	ENGR. SUPV.	GEN. SUPV.
0	03-27-73	ISSUED FOR CONSTRUCTION					
NO.	DATE	REVISIONS	INITIALS ON FILE	INITIALS ON FILE			



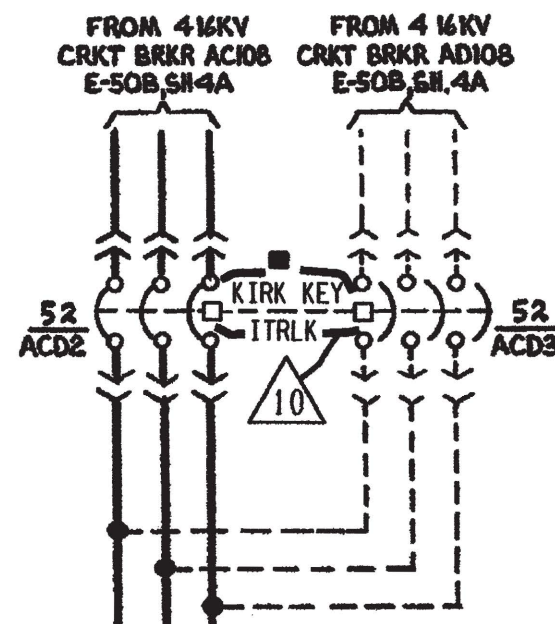
- NOTES:
1. SEE DWG. E-50B, SH. 4A, FOR DEVICE LIST, ADDITIONAL NOTES & SCHEME BLOCK DIAGRAM.
  2. FOR BREAKER INTERNALS SEE DWG. E-30B SHT. 16A.
  - 2a. FOR INTERNAL WIRING SEE VENDOR DWG. E-5-89.
  3. CONTRACTOR TO REMOVE EXIST. JUMPERS FROM BETWEEN TERMINALS CL & CL1 AND CL11 & CL1. CONTRACTOR TO LABEL SPARE TERMINALS AS INDICATED ON DWG.
  4. DELETED
  5. DELETED
  6. FIS CONTACT CLOSE ON LOW WTR. FLOW-MP0431.
  7. FOR VENDOR DWG. REFER TO E-17B. SEE VENDOR DWG. FOR SFAS INTERNAL WIRING.

THIS DWG. WAS REDRAWN/SCANNED ON CADD AND SUPERSEDES REVISION 16.

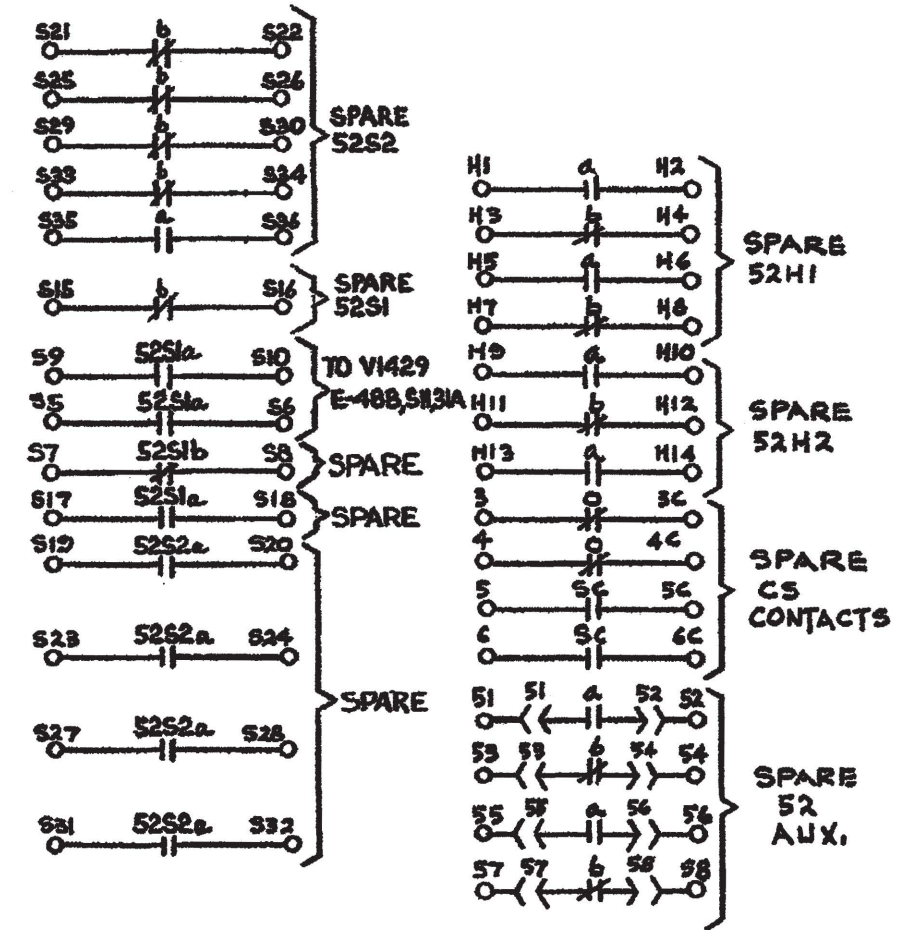
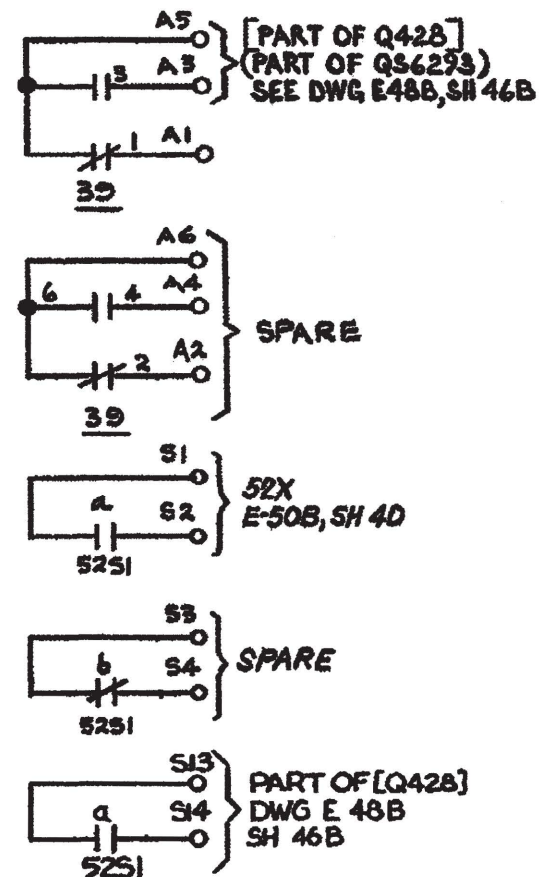
SCALE NONE	DESIGNED	DRAWN SAS	DATE 12-01-06
DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1			
ELEMENTARY WIRING DIAGRAM COOLING WATER SYSTEM COMPONENT CLNG PMP 3(AD108)			
DRAWING NO. E-50B SH. 4B			REV. 17



10	INC. DUN 10-0044-001-003 REV. 00	ISSUED FOR CONSTRUCTION	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
9	INC. DUN 07-0159-00-2 REV. 0 (REDRAWN)	ISSUED FOR CONSTRUCTION	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
8									



10  
 KIRK KEY INTERLOCK PREVENTS ACD2 & ACD3 FROM BEING CLOSED AT THE SAME TIME.



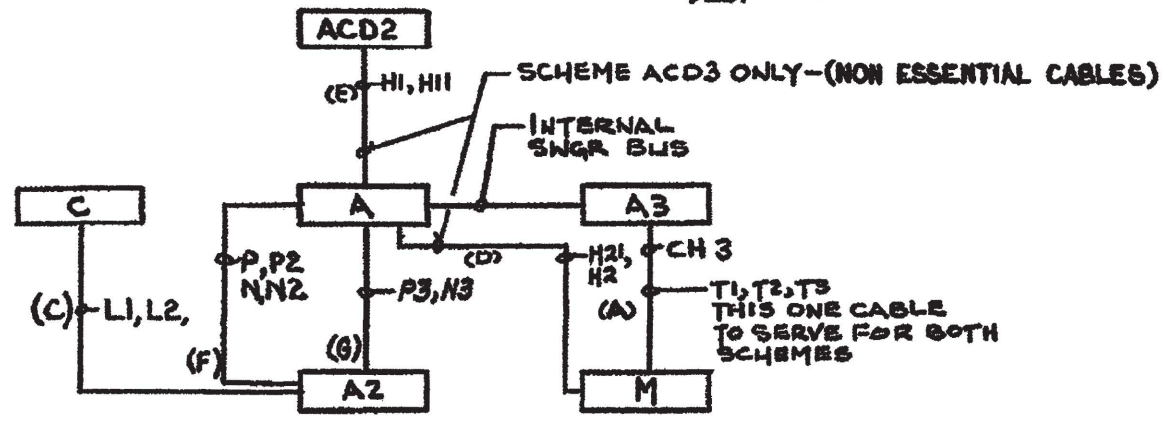
**DEVICE DESCRIPTION**

39 — SWGR CLOSING SPRING FAIL MONITOR RELAY.

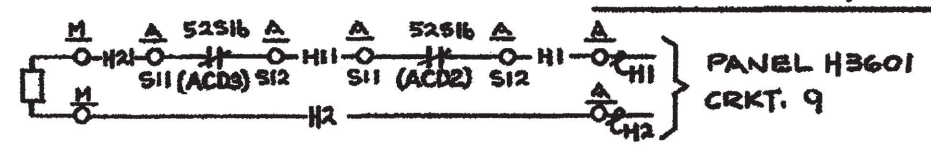
**NOTES**

1. FOR BRKR. CONTROL SCHEME SEE DWG. E-50, SH. 4D.
2. FOR GENERAL NOTES SEE DWG. E-50B INDEX SHEET.
3. FOR C.S. DETAIL SEE DWG. E-30B, SH. 10, FIG. 2.
4. FOR SWGR. INTERNAL WIRING SEE WEST DWG. 1208F69 (FP-E-38-3) & 1208F70 (FP-E-38-4).

THIS DWG. WAS REDRAWN ON CAD AND SUPERSEDES REVISION 8.



**BLOCK DIAGRAM**



**LEGEND**

SCHEME No	SIL No	CHANNEL	BUS	SWGR UNIT	WIRE FROM AT MAIN CONTR. PNL	IL	EQUIPMENT							
							C	A	A2	A3	M			
ACD2	016	1	C1	2	CD1	IL6225C	C5715	ACD2	ACIOB	* ACD1				
ACD3	016	2	D1	3	CD2	IL6235C	C5715	ACD3	ADIOB				MP0433	

\* — SWGR. UNIT NO 1. MOTOR FEEDER TERMINAL COMPARTMENT AT WHICH THE OUTGOING TERMINALS OF BRKRS ACD2 & ACD3 ARE TIED TOGETHER IN A COMMON BUS FROM WHICH THE MOTOR IS FED.

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

**ELEMENTARY WIRING DIAGRAMS**  
**COOLING WATER SYSTEM**  
**COMPONENT CLNG. PMP. 3**

BECHTEL COMPANY	JOB NO	DRAWING NO	REV
	<b>7749</b>	<b>E-50B SH. 4C</b>	<b>10</b>

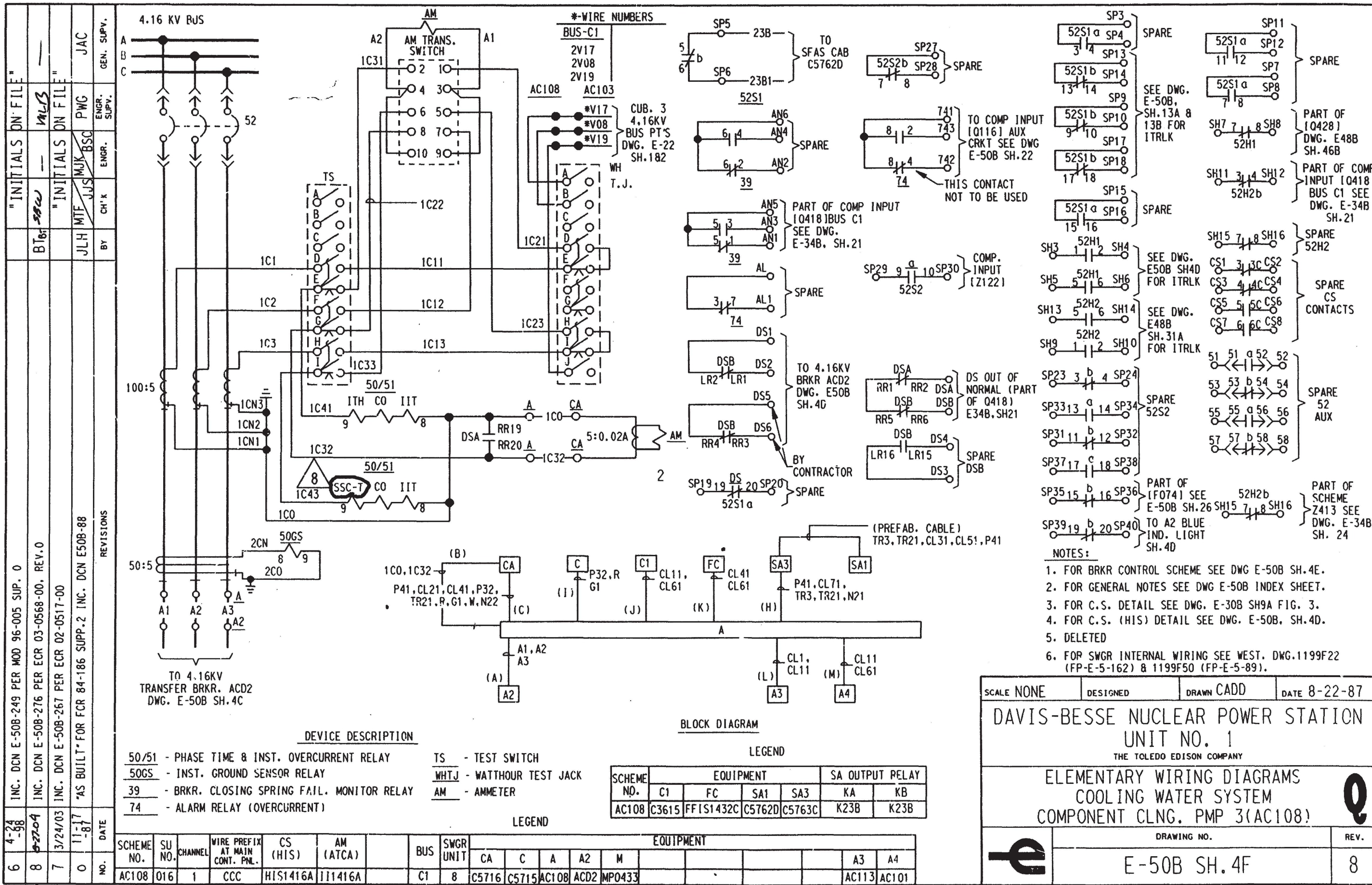






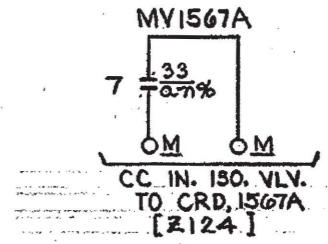
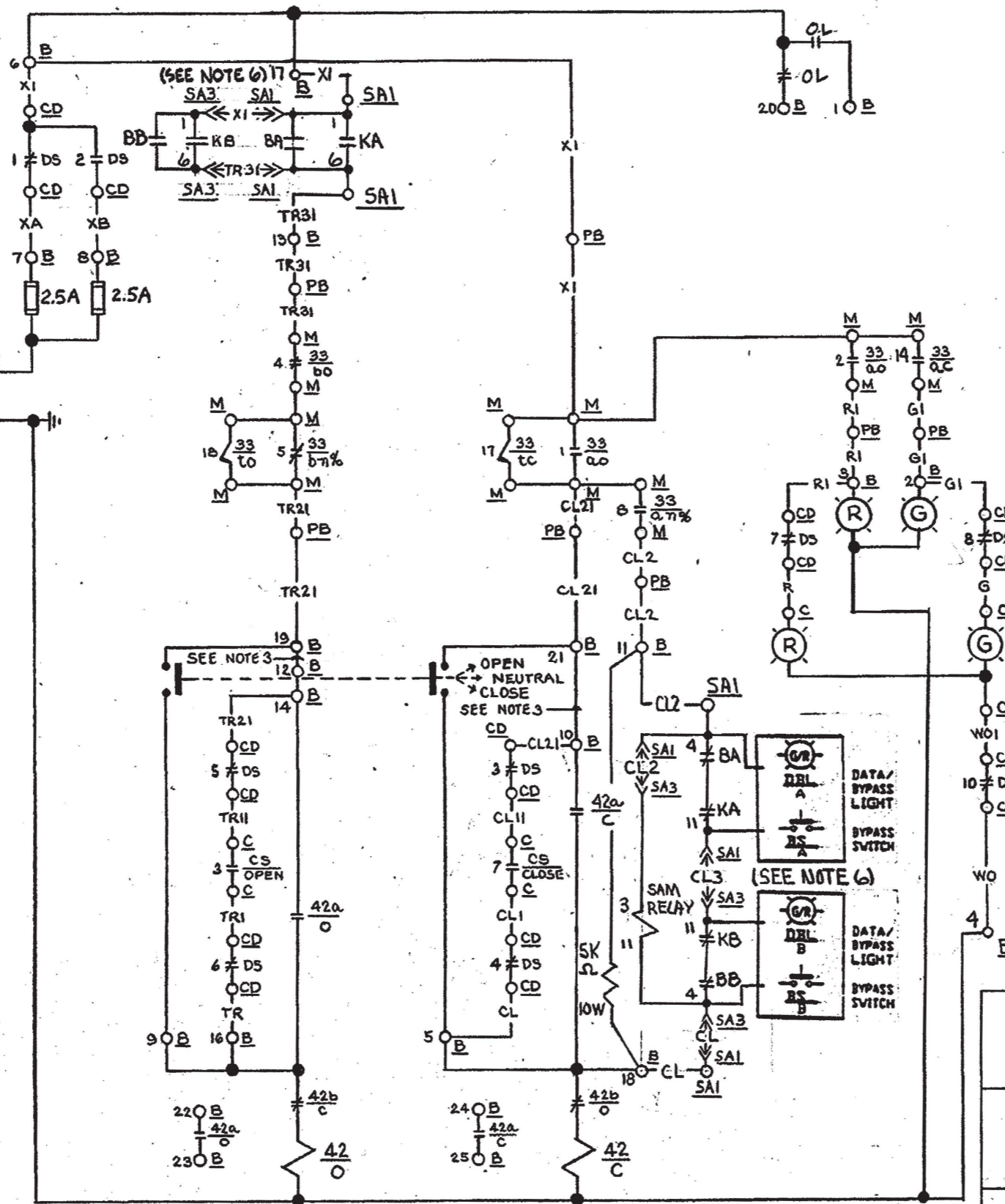
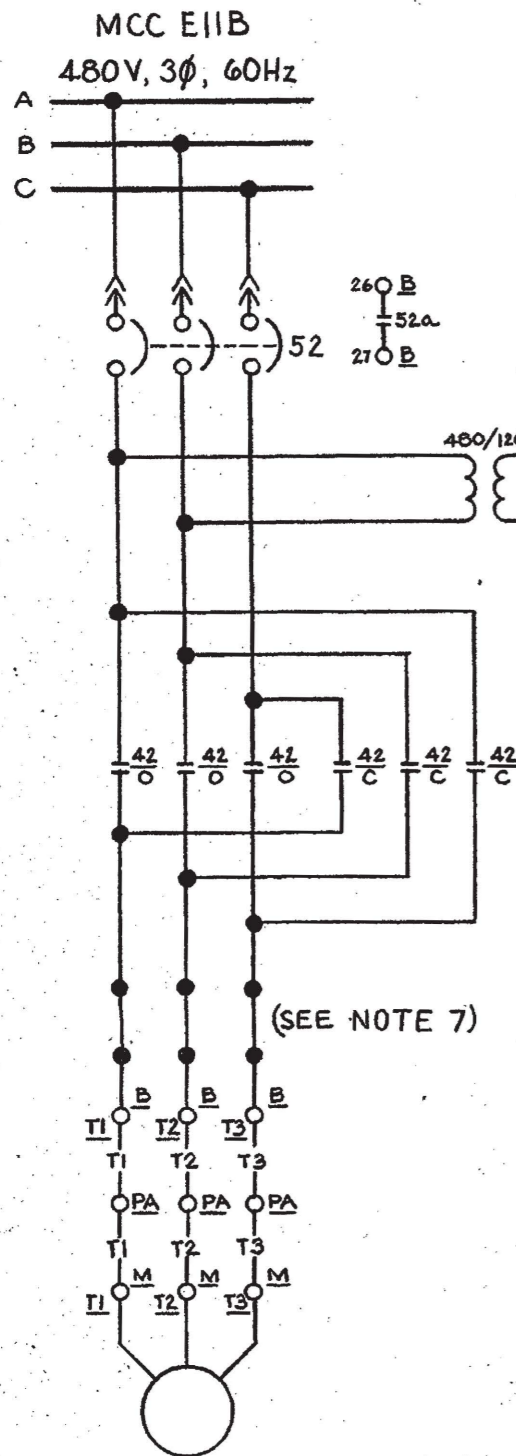








12	INC. DCN E-50B-282 PER ECROS-0204-00 (CAD3-09353-002)	ISSUED FOR CONSTRUCTION	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
11	INC. DCN E-50B-191E ZID PER MOD 90-0006 SUPD								
0									



**NOTES**

1. FOR LEGEND AND BLOCK DIAGRAM, SEE DWG. E-50B, SH. 7B.
2. FOR GENERAL NOTES, SEE DWG. E-50B INDEX SHEET.
3. CONTRACTOR TO CONNECT JUMPER BETWEEN STARTER TERMINALS 12 & 19 AND 10 & 21.
4. FOR DETAILS OF CONTROL SWITCH (C.S.) SEE DWG. E-30B, SH. 7, FIG. 7.
5. FOR VALVE LIMIT SW. CONTACT DEVELOPMENT SEE DWG. E-30B, SH. 8, FIG. Q. (SEE NOTE 8 THIS SH.)
6. FOR VENDOR DWG. REFER TO E-17B. SEE VENDOR DWG. FOR SFAS INTERNAL WIRING.
7. OVERLOAD HEATERS REPLACED BY SHORTING BARS.
8. FIELD TO ADJUST ROTOR #2 WITH SWITCH CONTACTS 5 THRU 8 TO ACTUATE WHEN VALVE REACHES 20% OPEN.  $\pm 5\%$

**DAVIS-BESSE NUCLEAR POWER STATION**  
 THE TOLEDO EDISON COMPANY  
 THE CLEVELAND ELECTRIC ILLUMINATING COMPANY  
 ELEMENTARY WIRING DIAGRAMS  
 COOLING WATER SYSTEM  
 CC IN ISO VLV TO CRD

SCHEME NO. BE1158

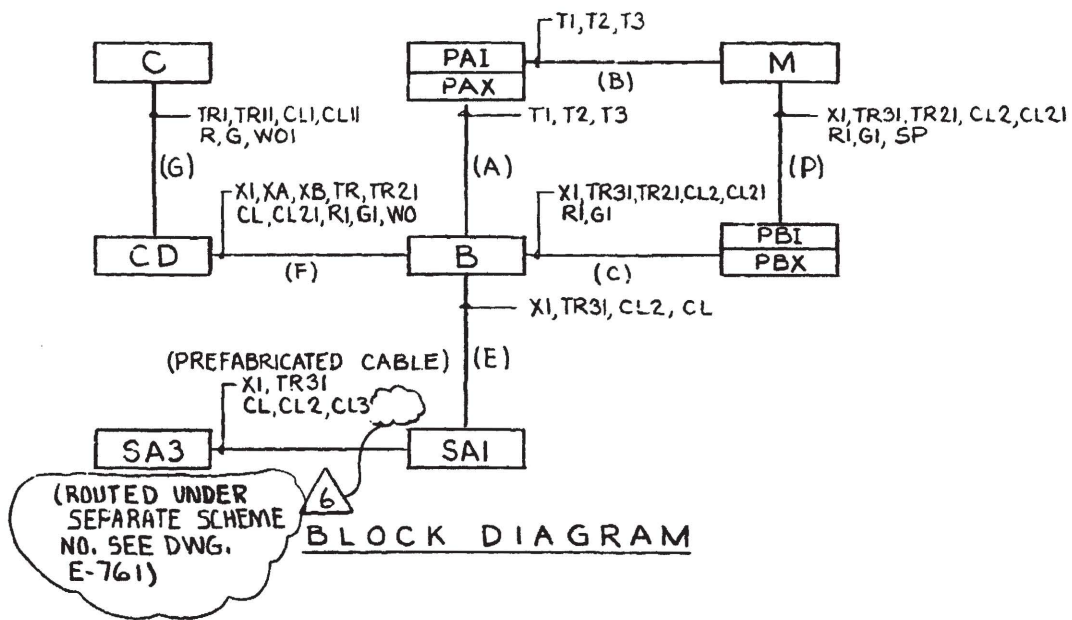
BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	<b>7749</b>	E-50B SH. 7A	<b>12</b>



4/1/91	DR	DATE	4/1/91	DR	DATE
1/1/91	CHK	DATE	1/1/91	CHK	DATE
1/1/91	SUPV	DATE	1/1/91	SUPV	DATE
1/1/91	CHIEF	DATE	1/1/91	CHIEF	DATE
1/1/91	PROJ	DATE	1/1/91	PROJ	DATE
1/1/91	OWNER	DATE	1/1/91	OWNER	DATE

LEGEND

SCHEME NO.	MCC	S. U. NO.	CHANNEL NO.	WIRE PREFIX AT MAIN CTRL. BD.	C.S.	EQUIPMENT							SA OUTPUT RELAY		DESCRIPTION	
						C	CD	B	PAX(I)	PBX(I)	M	SAI	SA3	KA		KB
BE1158	E11B	16	1	IVA	H151567A	C5717	CDEHB-1	BE1158	PIP2MX(1)	PIC2LX(1)	MY1567A	C5762C	C5763D	K42C	K42C	CC IN. ISO. VLV. TO CRD. 1567A



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

**ELEMENTARY WIRING DIAGRAMS**  
 COOLING WATER SYSTEM  
 CC IN ISO VLV TO CRD

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-50B SH.7B	6

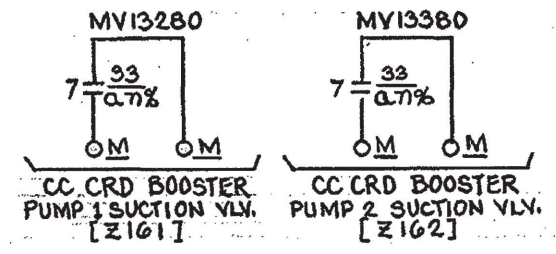
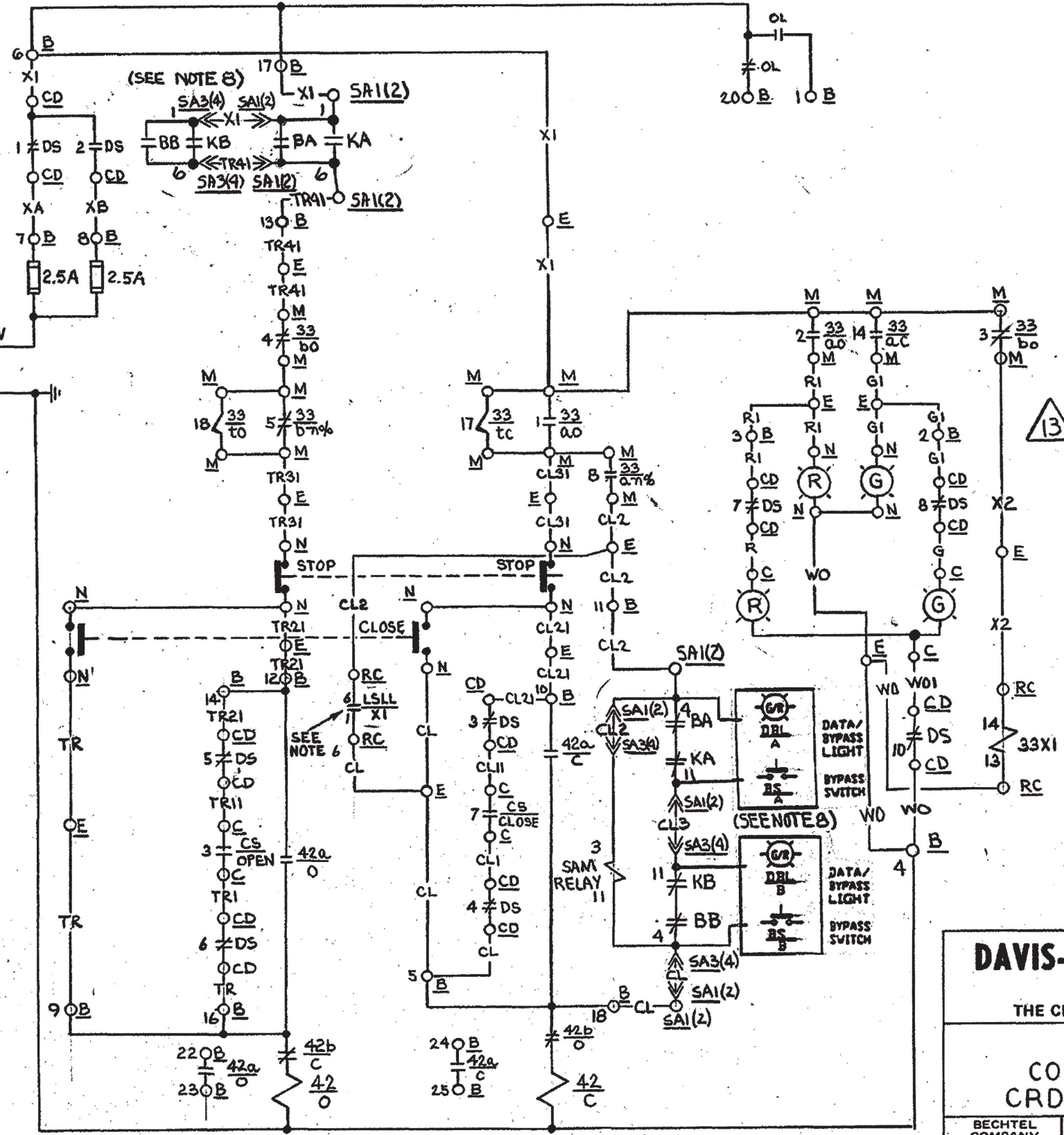
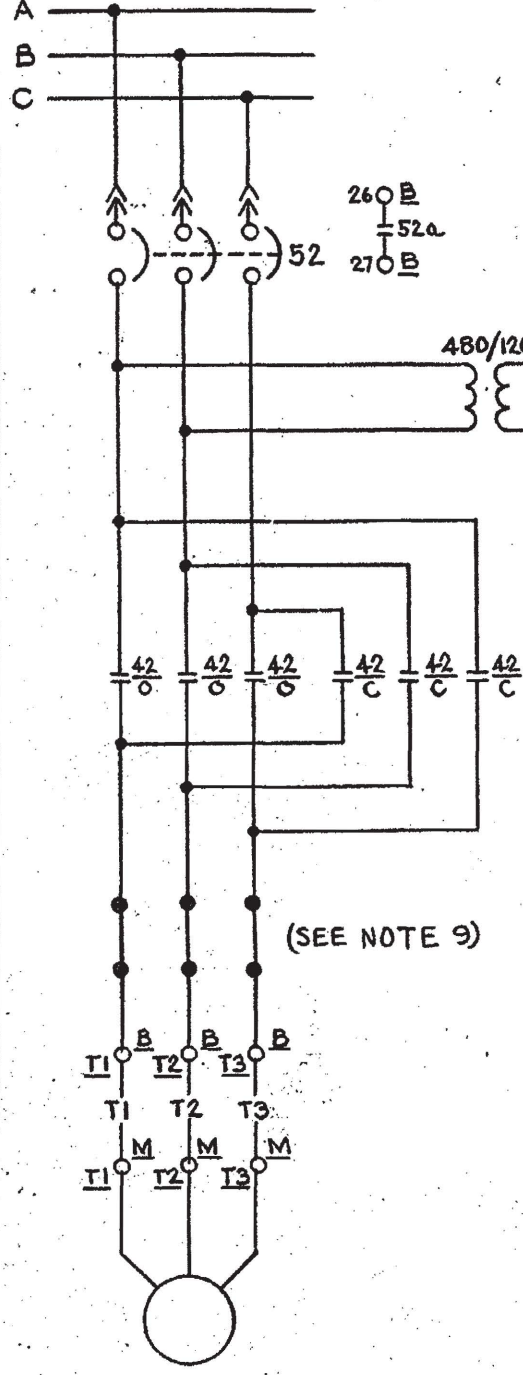
I CERTIFY THAT THE IMAGE CONTAINED ON THIS FRAME WAS MADE IN THE NORMAL AND REGULAR COURSE OF BUSINESS, ON THE DATE STATED BELOW AND THAT IT IS AN ACCURATE REPRODUCTION OF THE RECORD(S) SUBMITTED TO NUCLEAR RECORDS MANAGEMENT.

DATE: 4-24-92 OPERATOR: John Widdle 16X



12	INC. DCN'S E-50B-193 & 206 PER MOD 90-0006 SUP'D	DR	DATE	CHK	SUPV	CHIEF	PROJ	OWNER
13	INC. DCN'S E-50B-281 PER ECRO5-0204-00 (CAD3-07353)2	DR	DATE	CHK	SUPV	CHIEF	PROJ	OWNER
0	ISSUED FOR CONSTRUCTION	DR	DATE	CHK	SUPV	CHIEF	PROJ	OWNER

MCC (SEE TABLE SH. 8B)  
480Y, 3Φ, 60Hz



**NOTES**

1. FOR LEGEND AND BLOCK DIAGRAM, SEE DWG. E-50B, SH. 8B.
2. FOR GENERAL NOTES SEE DWG. E-50B INDEX SHEET.
3. FOR DETAILS OF LOCAL PUSHBUTTONS AND IND. LIGHTS, SEE DWG. E-30B, SH. 7, TYPES 3, 4 & 6.
4. FOR DETAILS OF CONTROL SWITCH (C.S.) SEE DWG. E-30B, SH. 7, FIG. 7.
5. FOR VALVE LIMIT SW. CONTACT DEVELOPMENT, SEE DWG. E-30B (SH. 8) FIG. 2 (SEE NOTE 10 THIS SHEET).
6. LSSL/XI AUX CONTACT CLOSES ON LOW LOW LEVEL AT CC SURGE TK. SEE SH. 25
7. CONTRACTOR TO REMOVE JUMPER BETWEEN STARTER TERMINALS #4 IS.
8. FOR VENDOR DWG. REFER TO E-17B, SEE VENDOR DWG. FOR SFAS INTERNAL WIRING.
9. OVERLOAD HEATERS REPLACED BY SHORTING BARS.
10. FIELD TO ADJUST ROTOR #2 WITH SWITCH CONTACTS 5 THRU 8 TO ACTUATE WHEN VALVE REACHES 20% OPEN ± 5%.
11. ADD LOCAL CONTROL SWITCH/GUARD ASSEMBLY PER E-302A SH. 185A & B TO SWITCH NV13380 & NV13280.

SCHEME NO. (SEE TABLE SH. 8B)

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

ELEMENTARY WIRING DIAGRAMS

COOLING WATER SYSTEM  
CRDC BOOSTER PUMPS SUCTION VLVS

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-50B SH 8A	J3







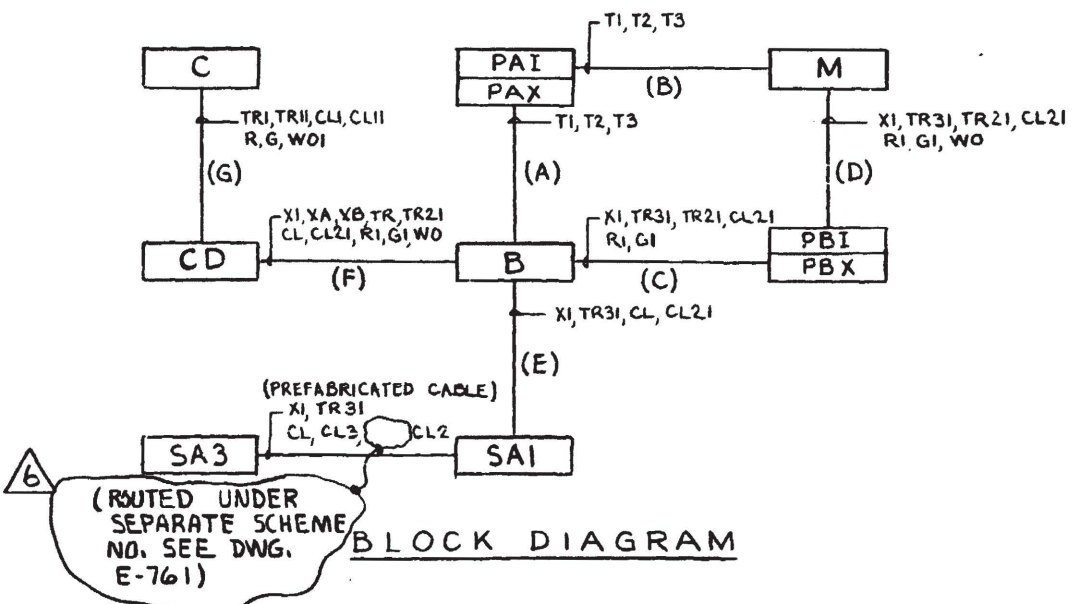




6	INC. DCN. E-50B-190 PER MOD 90-0006 SUP.D	DATE	11/14/84	CHK	SRW	DR	APC	CHIEF	PROJ	OWNER	OWNER
5	AS-BUILT FOR FCN 85-0112 SUPP 1, INC DCN. E-50B-51	DATE	11/12/84	CHK	GEB	DR	APC	CHIEF	PROJ	OWNER	OWNER
0	ISSUED FOR CONSTRUCTION	DATE	11/12/84	CHK	APC	DR	APC	CHIEF	PROJ	OWNER	OWNER

LEGEND

SCHEME NO.	MCC	S. U. NO.	CHANNEL NO.	WIRE PREFIX AT MAIN CTRL. BD.	C.S.	EQUIPMENT							SA OUTPUT RELAY		DESCRIPTION	
						C	CD	B	PAX(I)	PBX(I)	M	SAI	SA3	KA		KB
BE1173	E11B	16	1	COA	HIS1407A	C5717	CDE11B-2	BE1173	PIP2MX(I)	PIC2LX(I)	MV14-07A	C5762C	C5763D	K42B	K42B	CC OUT. ISO. VLV. FRM. CTMT., 1407A



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

ELEMENTARY WIRING DIAGRAMS  
 COOLING WATER SYSTEM  
 CC OUT ISO VLV (INSIDE CTMT)

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-50B SH.9B	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.

DATE: 4-24-92 OPERATOR: Fred Wiedle J6X



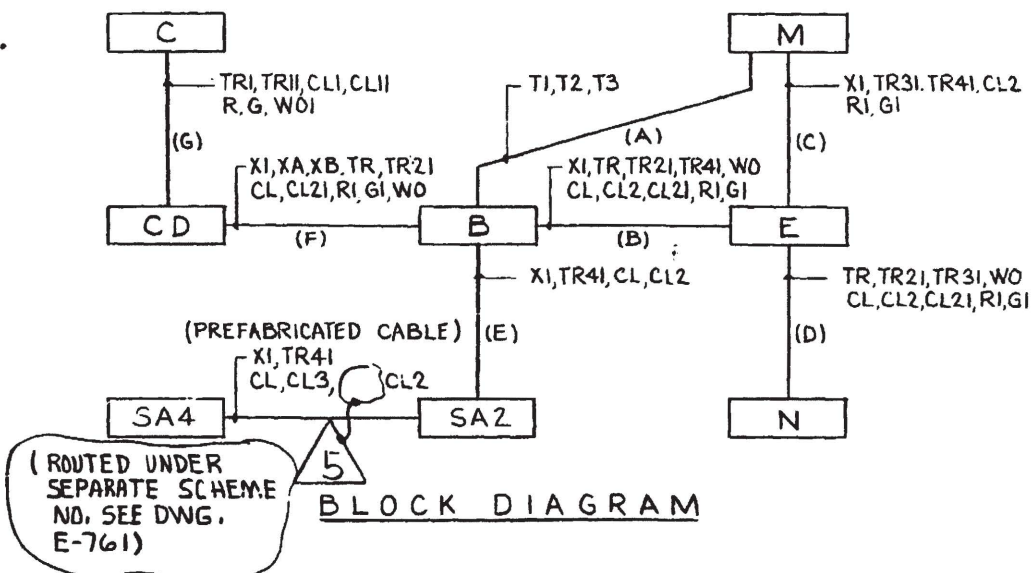




DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
11/27/77	APC	MR/MS	MR/MS	MR/MS	MR/MS	MR/MS
4/14/78	38W	MR/MS	MR/MS	MR/MS	MR/MS	MR/MS
4/21/78	GFB	MR/MS	MR/MS	MR/MS	MR/MS	MR/MS
4 AS BUILT FOR ECR 85-012, SUPP 1, INC. DCN. E-50B-49 5 INC. DCN E-50B-203 PER MOD 90-0006 SUP.D 0 ISSUED FOR CONSTRUCTION						
REV. DESCRIPTION						
G-231-D						

**LEGEND**

SCHEME NO.	MCC	S.U. NO.	CHANNEL NO.	WIRE PREFIX AT MAIN CTRL. BD.	C.S.	EQUIPMENT						SA OUTPUT RELAY		DESCRIPTION		
						C	CD	B	E	M	N	SAZ	SA4		KA	KB
BF1158	F11B	16	2	COB	HIS1407B	C5717	CDF11B	BF1158	EV1407B	MY1407B	NY1407B	C5755C	C5756D	K42B	K42B	CC OUT. ISO. VLV. FRM. CTMT., 1407B

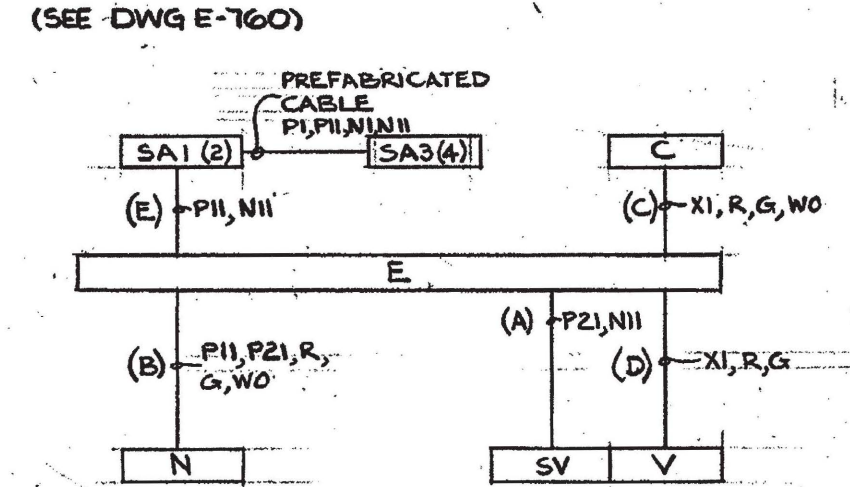
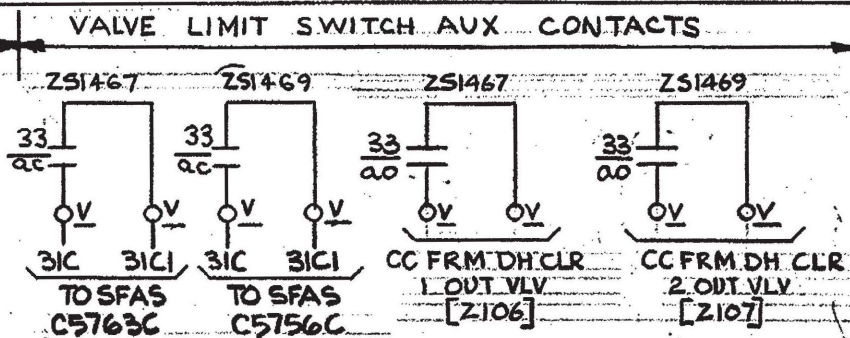
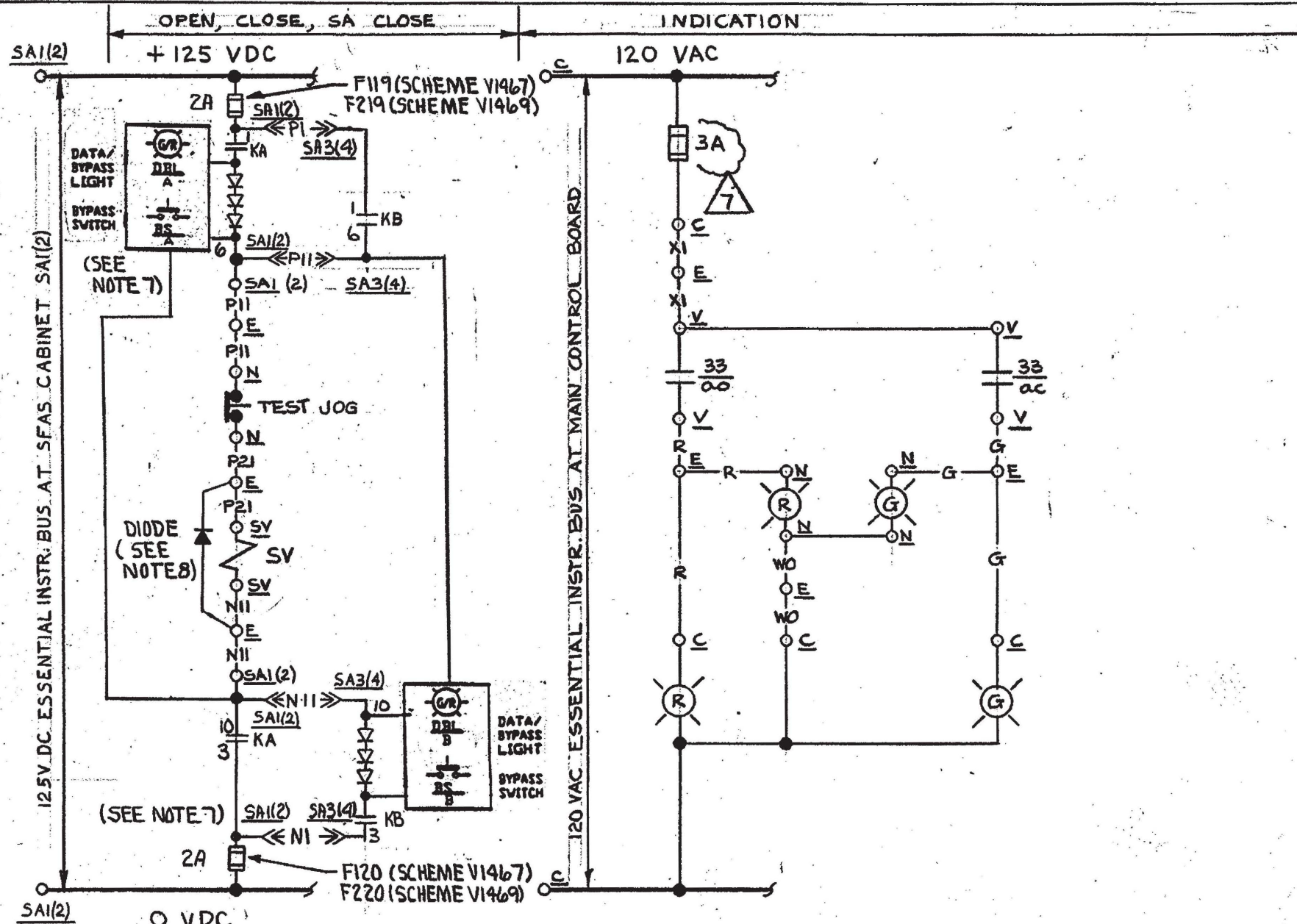


<b>DAVIS-BESSE NUCLEAR POWER STATION</b>			
THE TOLEDO EDISON COMPANY THE CLEVELAND ELECTRIC ILLUMINATING COMPANY			
ELEMENTARY WIRING DIAGRAMS COOLING WATER SYSTEM CC OUT ISO VLV (OUTSIDE CTMT)			
BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	<b>7749</b>	E-50B SH.10B	<b>5</b>

I CERTIFY THAT THIS 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.



INC. DCN'S E-50B-1844 PER MOD 90-0006 SUPD E-E-50B-2112 PER MOD 87-1014-01	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
INC. DCN'S E-50B-277+278 PER ECR 04-0053-00 REV. 0	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
ISSUED FOR CONSTRUCTION	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
REV. DESCRIPTION	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
6							
7							
0							



- NOTES**
- FOR GENERAL NOTES SEE DRAWING INDEX E-50B.
  - FOR DETAILS OF LOCAL PUSHBUTTONS AND IND. LIGHTS SEE DRAWING E-30B, SH-7, TYPE 4 & 6.
  - FOR DETAILS OF CONTROL SWITCH "CS" SEE DRAWING E-30B, SH-7, FIG. 7.
  - FOR VALVE LIMIT SW. DESIGNATIONS SEE DWG E-30B, SH-8.
  - VALVES V1467 AND V1469 OPEN ON SV1467 & SV1469 DE-ENERGIZING, RESPECTIVELY.
  - FOR REMOTE OPERATION FROM MAIN CONTROL PANEL SEE DWG E16 SH-1 FIG. 1
  - FOR VENDOR DWG. REFER TO E-17B; SEE VENDOR DWG. FOR SFAS INTERNAL WIRING.
  - INSTALL "DIODE" IN ACCORDANCE WITH DWG. E-1037L, SH.17

\* - CONTROLLED VALVE HAS SAME NUMBER AS SOLENOID VALVE EXCEPT PREFIX "SV" IS REPLACED WITH "V"

SCHEME NO (SEE TABLE)

SCHEME NO.	SU NO.	CH NO.	WIRE PREFIX	CS	EQUIPMENT								SA OUTPUT RELAY		DESCRIPTION
					C	E	SV *	N	SA1	SA2	SA3	SA4	KA	KB	
V1467	016	1	DCA	H1S1467	C5716	EVI467	SV1467	NV1467	C5762C		C5763D		K31C	K31C	CC.FRM.DH.CLR.1 OUT.VLV.
V1469	016	2	DCB	H1S1469	C5716	EVI469	SV1469	NV1469		C5755C		C5756D	K31C	K31C	CC.FRM.DH.CLR.2 OUT.VLV.

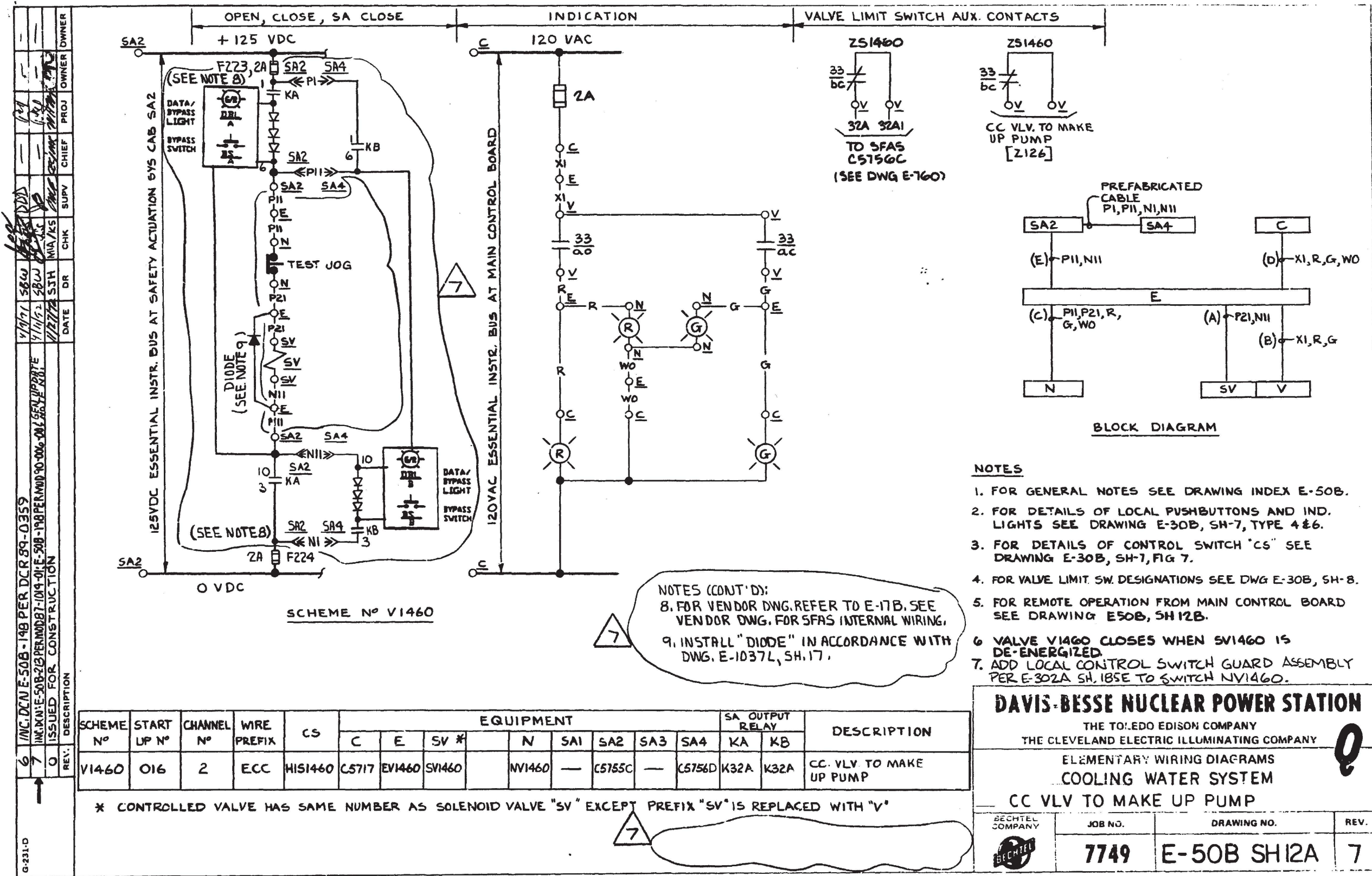
**DAVIS-BESSE NUCLEAR POWER STATION**

THE TOLEDO EDISON COMPANY  
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

ELEMENTARY WIRING DIAGRAMS  
COOLING WATER SYSTEM  
CC FRM DH CLR'S OUT VLV'S

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-50B SH-11	7





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

ELEMENTARY WIRING DIAGRAMS  
 COOLING WATER SYSTEM  
 CC VLV TO MAKE UP PUMP

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-50B SH12A	7

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: 4-24-92 OPERATOR: *John Widdle JFW*

B A B

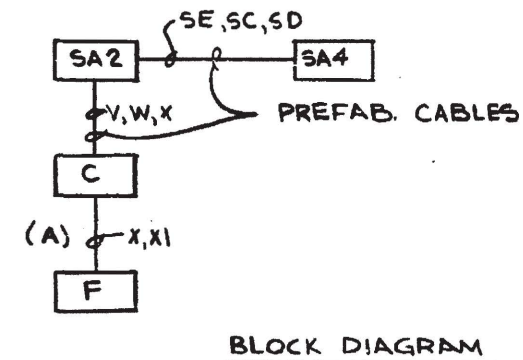
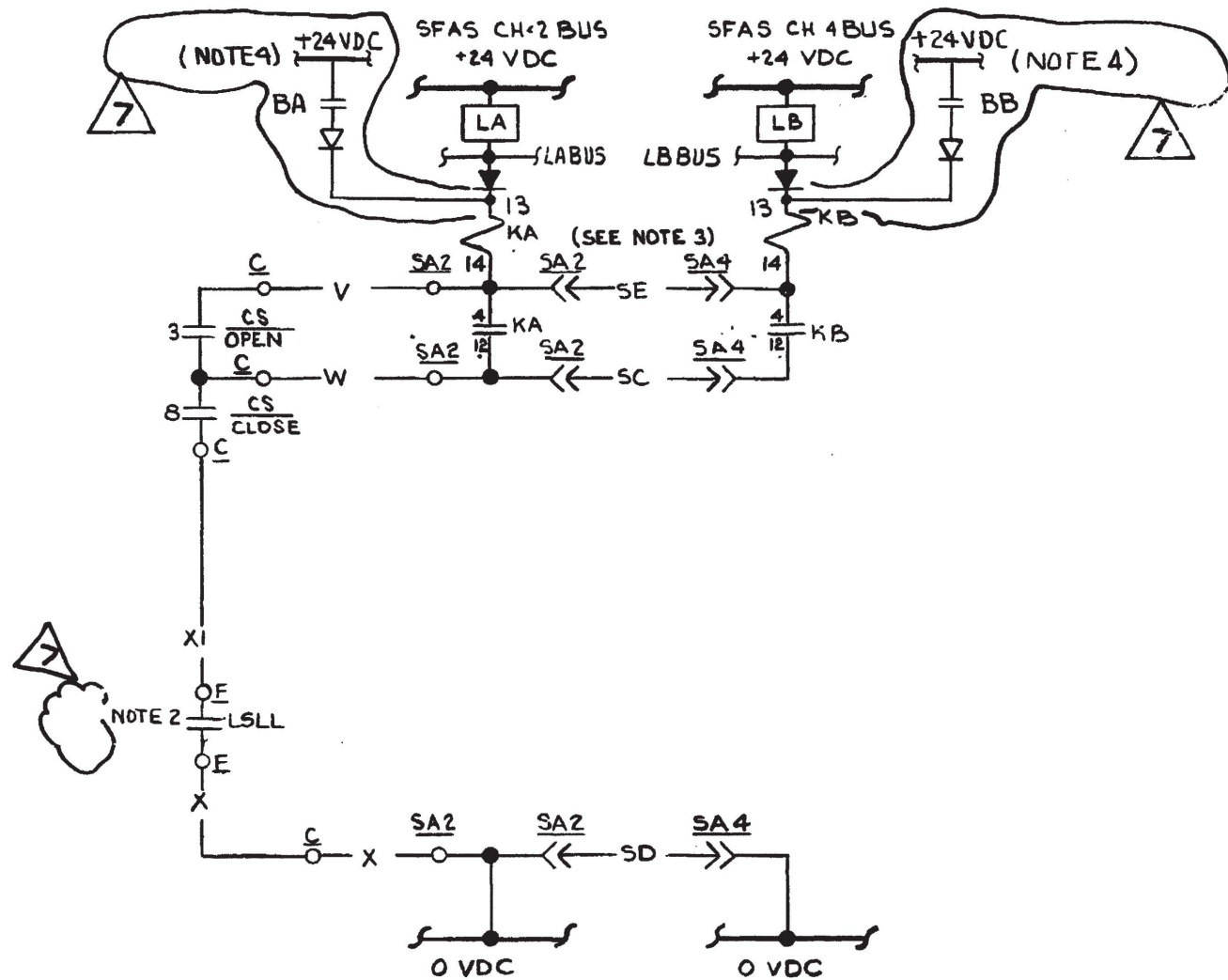
C t OI S



REV.	DATE	DR	CHK	SUPV	CHIEF	PROJ	OWNER
6	7/1/81	DR	DR	DR	DR	DR	DR
7	9/11/92	DR	DR	DR	DR	DR	DR
0	4-17-76	DR	DR	DR	DR	DR	DR

INC DCN E-50B-127 PER DCR 88-0552  
 INC DCN E-50B-208 PER MND 90-0006 SUP/D  
 ISSUED FOR CONSTRUCTION (INC SRN 27E)

G-231-D  
 N15138



**NOTES**

- 1) FOR GENERAL NOTES SEE DWG E 50B INDEX SHEET
- 2) LSSL CONTACT OPENS ON LOW LOW LEVEL AT COMPONENT CLNG SURGE TANK SEE LEVEL SETTING DIAGRAM M 558 SHEET 5 FOR LSSL SET POINTS.
- 3) FOR VENDOR DWG. REFER TO E-17B, SEE VENDOR DWG. FOR SFAS INTERNAL WIRING.
- 4) BYPASS VOLTAGE IS DERIVED FROM THE STATION BATTERY, SEE DWG. E-30-339,

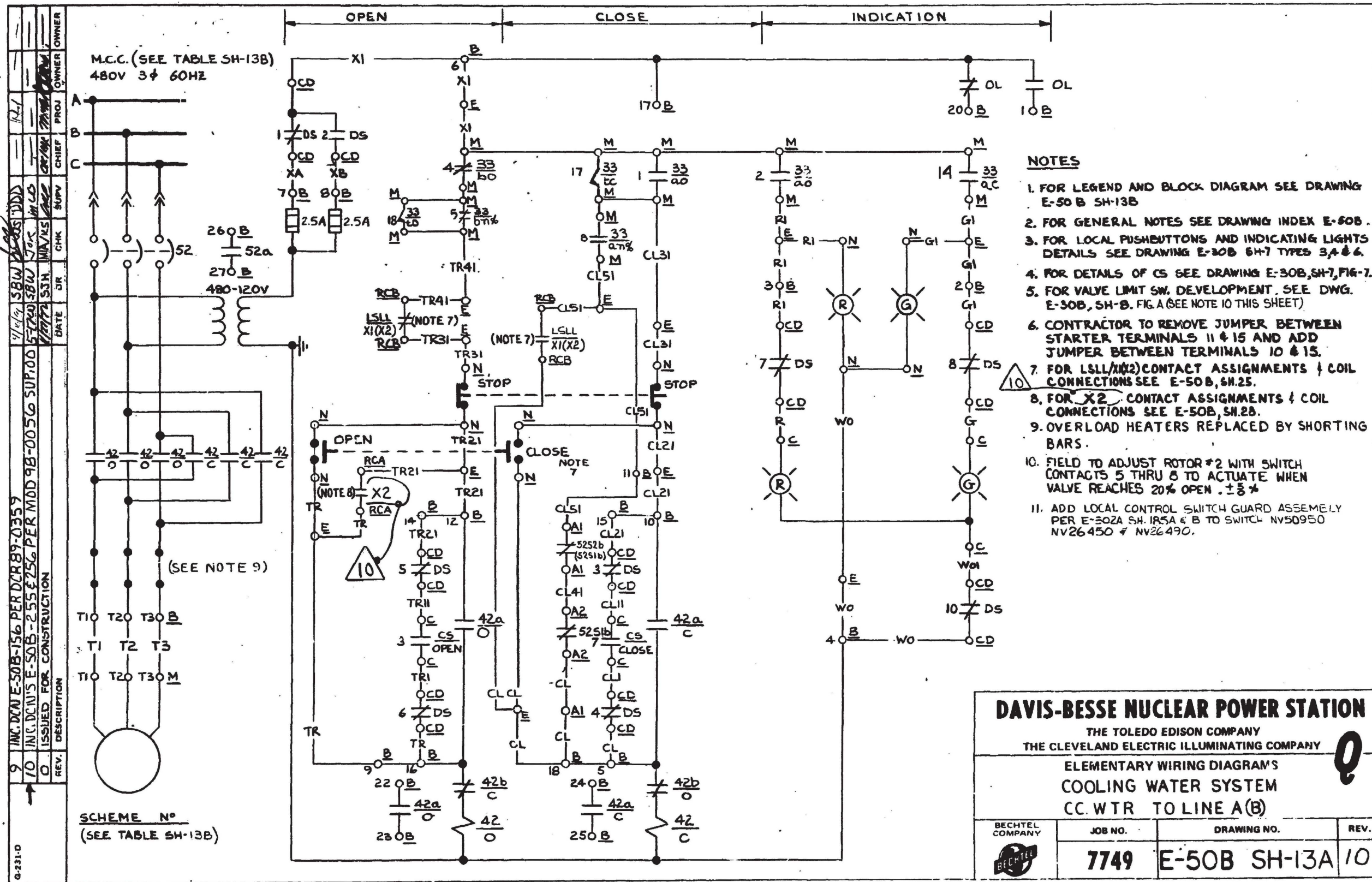
SCHEME NO.	S.U. NO.	CH	WIRE PREFIX AT MAIN CTRL BD	CS	EQUIPMENT				SA OUTPUT RELAY		DESCRIPTION
					C	F	SA2	SA4	KA	KB	
SF1724	16	2	ECC	H1S1460	C5717	LSSL375BA	C5755C	C5756D	K32A	K32A	CC VLV TO MAKE UP PUMP

**DAVIS-BESSE NUCLEAR POWER STATION**  
 THE TOLEDO EDISON COMPANY  
 THE CLEVELAND ELECTRIC ILLUMINATING COMPANY  
 ELEMENTARY WIRING DIAGRAM  
 COOLING WATER SYSTEM  
 CC VLV TO MAKE UP PUMP.

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E 50B SH12B	7

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 4-24-92 OPERATOR *John Wiedle* 16X





- NOTES**
1. FOR LEGEND AND BLOCK DIAGRAM SEE DRAWING E-50B SH-13B
  2. FOR GENERAL NOTES SEE DRAWING INDEX E-50B
  3. FOR LOCAL PUSHBUTTONS AND INDICATING LIGHTS DETAILS SEE DRAWING E-30B 6H-7 TYPES 3,4 & 6
  4. FOR DETAILS OF CS SEE DRAWING E-30B, SH-7, FIG-7
  5. FOR VALVE LIMIT SW. DEVELOPMENT. SEE DWG. E-30B, SH-8, FIG. A (SEE NOTE 10 THIS SHEET)
  6. CONTRACTOR TO REMOVE JUMPER BETWEEN STARTER TERMINALS 11 & 15 AND ADD JUMPER BETWEEN TERMINALS 10 & 15.
  7. FOR LSL/X1(X2) CONTACT ASSIGNMENTS & COIL CONNECTIONS SEE E-50B, SH.25.
  8. FOR X2 CONTACT ASSIGNMENTS & COIL CONNECTIONS SEE E-50B, SH.28.
  9. OVERLOAD HEATERS REPLACED BY SHORTING BARS.
  10. FIELD TO ADJUST ROTOR #2 WITH SWITCH CONTACTS 5 THRU 8 TO ACTUATE WHEN VALVE REACHES 20% OPEN. ± 3%
  11. ADD LOCAL CONTROL SWITCH GUARD ASSEMBLY PER E-302A SH. 1R5A & B TO SWITCH NV50950 NV26450 & NV26490.

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

ELEMENTARY WIRING DIAGRAM'S  
 COOLING WATER SYSTEM  
 CC. WTR TO LINE A(B)

BECHTEL COMPANY	JOB NO.	DRAWING NO.	REV.
	7749	E-50B SH-13A	10

9	INC. DCN E-50B-156 PER DCR 89-0359	DATE	DR	CHK	SUPV	PROJ	OWNER
10	INC. DCN'S E-50B-255 & 256 PER MDD 98-0056 SUP. 00	DATE	DR	CHK	SUPV	PROJ	OWNER
0	ISSUED FOR CONSTRUCTION	DATE	DR	CHK	SUPV	PROJ	OWNER

SCHEME NO  
(SEE TABLE SH-13B)

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.

16X