

ALL EQUIPMENT IS LOCATED IN FILTER PROTECTION CUBICLE =CWC36+EF4361 EXCEPT WHERE STATED

REFER 637EZ1Y04648 FOR FILE INDEX [70201]  
REFER [70202] FOR LOCATION AND DEVICE LIST

ISSUE	A	B	C
NAME	13	22	14
DATE	08	07	12
PRJ	08	07	08
RFR	07	07	08
PREM	07	07	08

**AS BUILT' DWG**  
14 APR 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 5/8/97  
SIGNED BTB

THIRD ANGLE PROJECTION  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPEC. STAND/023/PROG  
DRAWN JCP  
CHKD PNS  
APP'D RFR  
SCALE  
TRACKED  
DESIGN PRJ  
APP'D

FILE 7D207

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

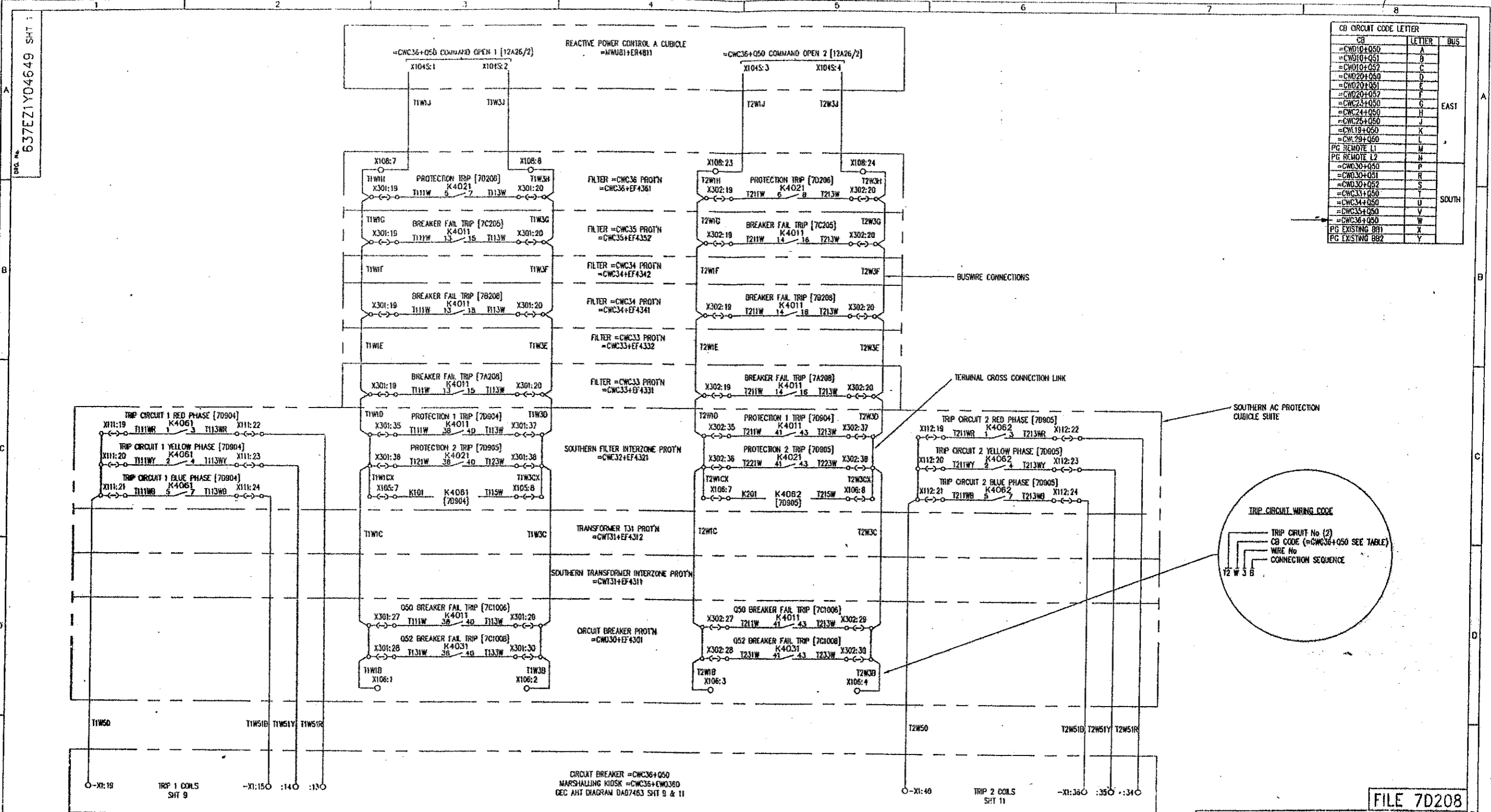
GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Delhi, India

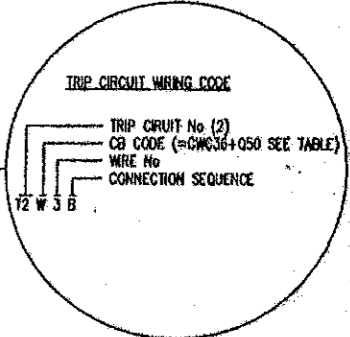
VISAKHAPATNAM  
AC HARMONIC FILTER =CWC36 PROTECTION  
CIRCUIT DIAGRAM FOR SER &  
BACK-UP ANNUNCIATOR SIGNALS

DRW. No. 637EZ1Y04648 SHT 1  
CURRENT ISSUE C

ORDER No. CF0136



CB	LETTER	BUS
=CWO10+Q50	A	EAST
=CWO10+Q51	B	
=CWO10+Q52	C	
=CWO20+Q50	D	
=CWO20+Q51	E	
=CWO20+Q52	F	
=CWC23+Q50	G	
=CWC24+Q50	H	
=CWC25+Q50	J	
=CWL19+Q50	K	
=CWL29+Q50	L	
PG REMOTE L1	M	SOUTH
PG REMOTE L2	N	
=CWO30+Q50	P	
=CWO30+Q51	R	
=CWO30+Q52	S	
=CWC33+Q50	T	
=CWC34+Q50	U	
=CWC35+Q50	V	
=CWC36+Q50	W	
PG EXISTING B91	X	
PG EXISTING B92	Y	



REFER 637E21Y04649 FOR FILE INDEX [70201]  
REFER [70202] FOR LOCATION AND DEVICE LIST

ISSUE	PRJ	DATE	BY	REVISION
C	A	13	PNB	REVISED TO ENDSPEC - 131 WAS SHOWN AS T1 IN EP4312
	B	26	JCP	REVISED TO ENDSPEC 131 WAS SHOWN AS T1 IN EP4312
		08		ADDED K4061 & K4062 CONTACTS TO T1W3C & T1W3D RELAY
		08		ADDED K4061 & K4062 RELAY TO T1W3C & T1W3D
		97		CHANGED INT DIA NO FROM DIA0270

**AS BUILT DWG**  
14 APR 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT: 739 DATE: 5/8/97  
SIGNED: BTB

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPECS. STAND/023/PROC

DRAWN: JCP  
CHKD: PNB  
APP'D: RFR  
SCALE:  
TRACED:  
DESIGN: PRJ  
APP'D:

**FILE 7D208**

**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

**GEC ALSTHOM**  
T&D

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
Balford, England

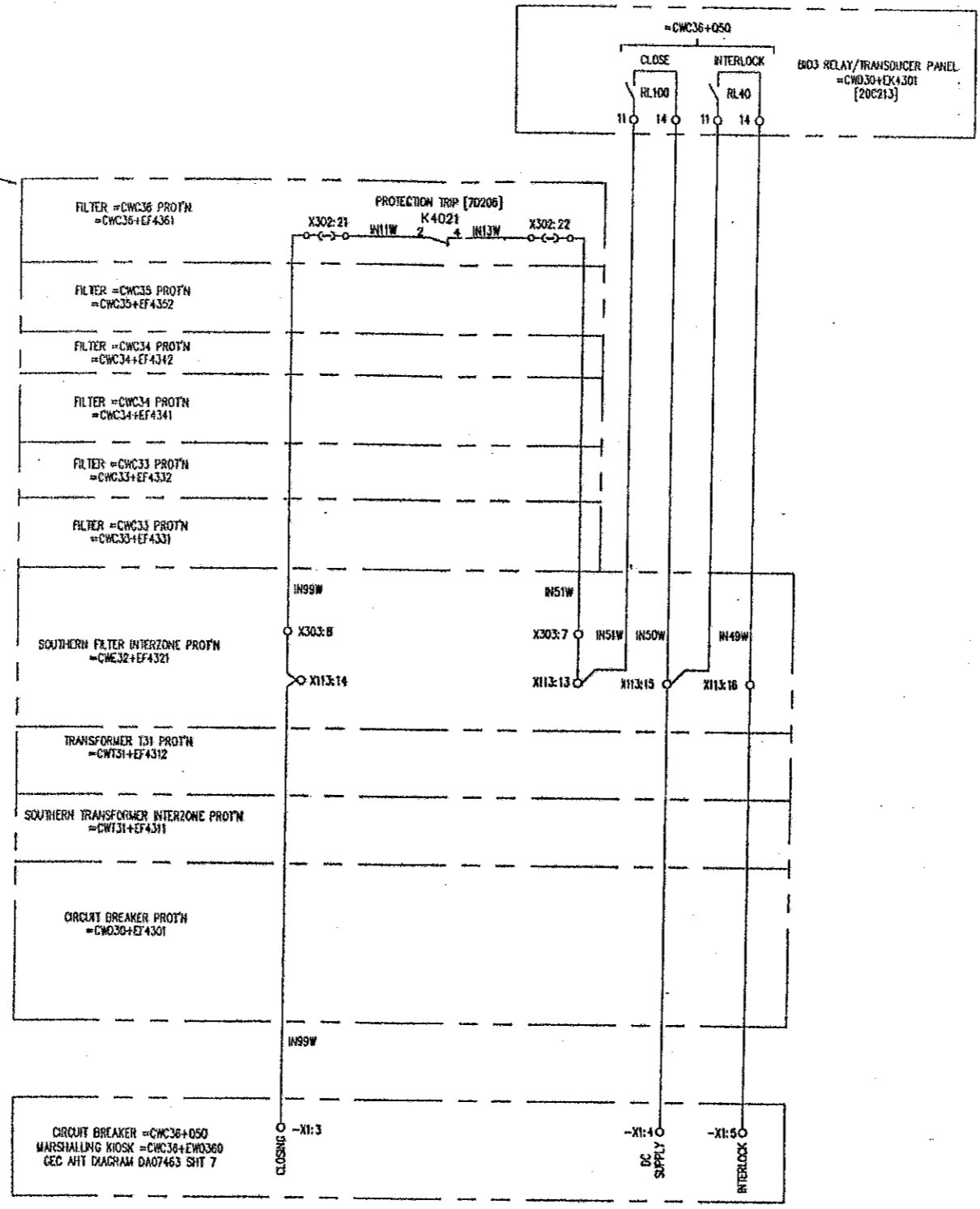
**VISAKHAPATNAM**  
AC HARMONIC FILTER =CWC36 PROTECTION  
CIRCUIT DIAGRAM FOR  
SIGNALS TO CIRCUIT BREAKER =CWC36+Q50

DRG. No. **637E21Y04649** SHT 1  
CURRENT ISSUE **C**

CUSTOMER: POWERGRID ORDER No. CF0136

637EZ1Y04649 SHT 2

SOUTHERN AC PROTECTION  
CUBICLE SUITE



CB	LETTER	BUS
=CWD10+Q50	A	
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWD24+Q50	G	
=CWD25+Q50	H	
=CWD25+Q51	J	
=CWD25+Q52	K	
=CWD28+Q50	L	
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWC33+Q50	T	
=CWC34+Q50	U	
=CWC34+Q51	V	
=CWC34+Q52	W	
=CWC36+Q50	X	
PG EXISTING BB1	Y	
PG EXISTING BB2	Z	

FILE 7D208/1

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited

VISAKHAPATNAM  
AC HARMONIC FILTER =CWC36 PROTECTION  
CIRCUIT DIAGRAM FOR  
SIGNALS TO CIRCUIT BREAKER =CWC36+Q50

DRG No. 637EZ1Y04649 SHT 2  
CURRENT ISSUE B

REFER 637EZ1Y04596 FOR FILE INDEX [7D201]  
REFER [7D202] FOR LOCATION AND DEVICE LIST

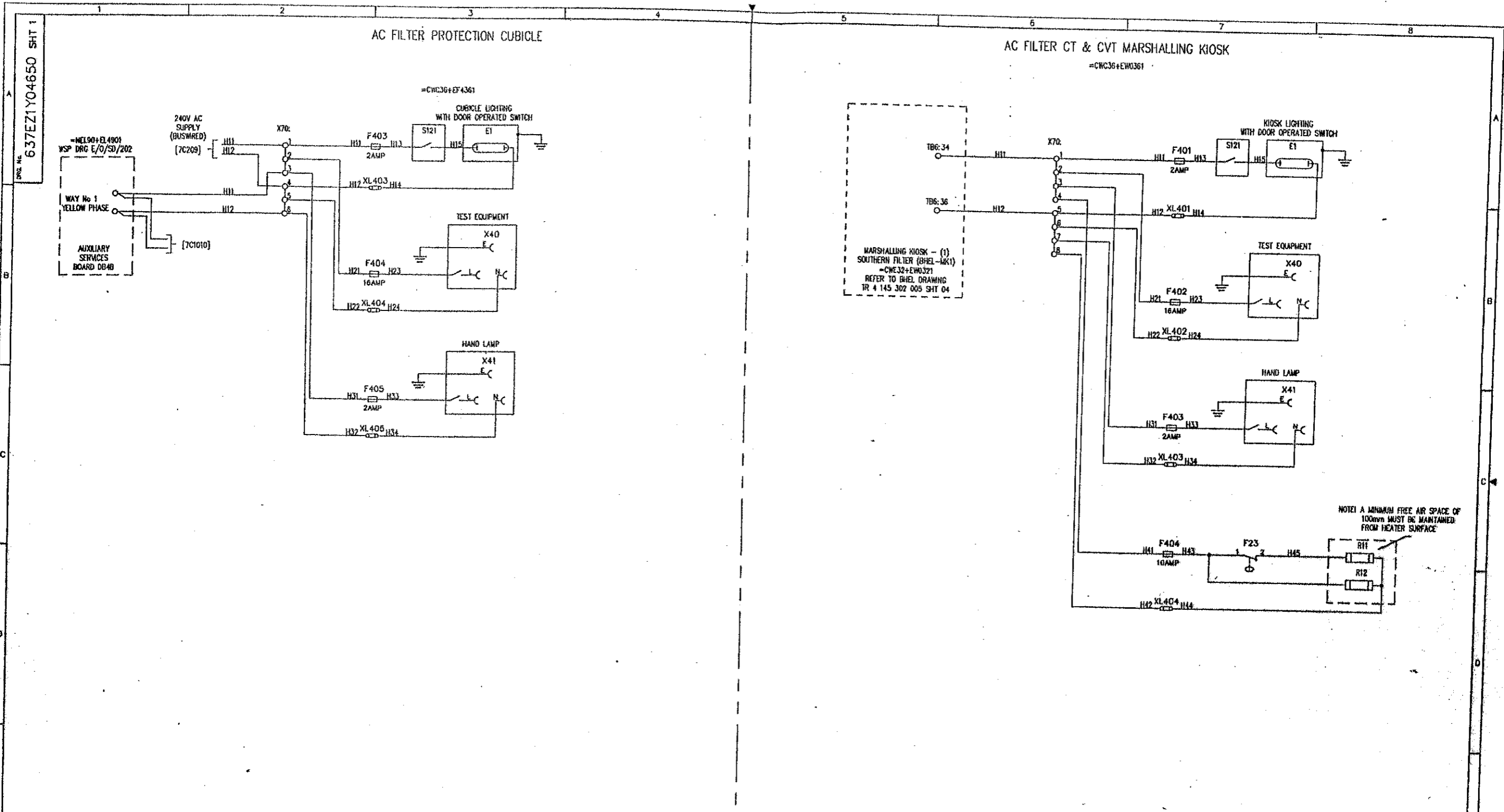
ISSUE	A
NAME	B
DATE	22/07/98
LOCATION	VISA3557

AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: BT BARRETT  
DEPT. 739 DATE: 15/07/98  
SIGNED: BT BARRETT

THIRD ANGLE PROJECTION  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BE SHOWN UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNFINISHED DIMENSIONS SEE SPEC. STAND/023/PROC  
DRAWN PREM: GFD RFR  
SCALE: RFR  
TRACED: RFR  
DESIGN APP'D: PRJ

DO NOT SCALE PRINT  
WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
CUSTOMER POWERGRID  
ORDER No. CF0136



MARSHALLING KIOSK - (1)  
SOUTHERN FILTER (BHEL-461)  
-CWC32+EW0321  
REFER TO BHEL DRAWING  
TR 4 145 302 009 SHT 04

NOTE: A MINIMUM FREE AIR SPACE OF  
100mm MUST BE MAINTAINED  
FROM HEATER SURFACE

REFER 637EZ1Y04596 FOR FILE INDEX [70201]  
REFER [70202] FOR LOCATION AND DEVICE LIST (PROTECTION CUBICLE)  
REFER [70202/A] FOR LOCATION AND DEVICE LIST (CT & CVT MARSHALLING KIOSK)

FILE 7D209

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited

TITLE  
VISAKHAPATNAM  
AC FILTER -CWC36 PROTECTION  
CIRCUIT DIAGRAM FOR  
AC SUPPLIES AND CUBICLE ILLUMINATION

DWG. No.  
637EZ1Y04650 SHT 1

CURRENT  
ISSUE  
C

ISSUE	PRJ	DATE	DATE
C	A	13	28
	B	08	07
		97	98

REVISIONS TO DRAWING:  
ADDED -CWC36+EW0321 & WAY  
NO. PHASE ON -NIELSCHLAGER  
REMOVED INSET A

REVISIONS TO DRAWING:  
ADDED TERM. Nos. TB:34 & 35  
& SHT. No. 04

AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

GEC ALSTHOM  
T&D  
CERTIFIED FOR  
MANUFACTURE  
NAME: B T BARRETT  
DEPT: 739 DATE: 5/8/97  
SIGNED: BTB

THIRD ANGLE  
PROJECTION  
ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED  
DRAWING TO BS5300  
UNLESS OTHERWISE STATED  
FOR THE STANDARD OF  
ACCURACY OF ALL  
DIMENSIONS SEE  
SPEC. STAND/025/PROO

DRAWN JCP  
CHKD PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN APP'D PRJ

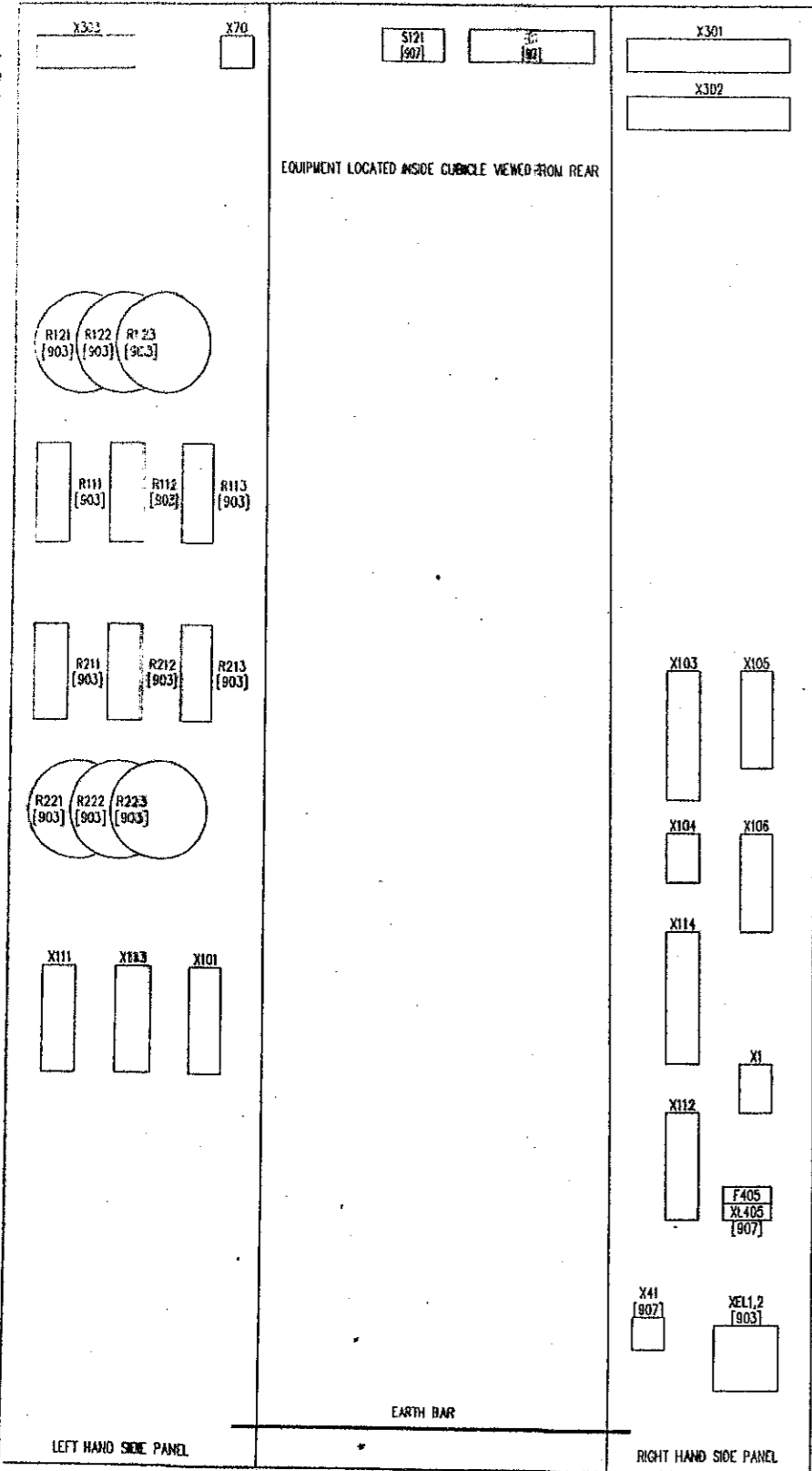
DO NOT SCALE PRINT

CUSTOMER POWERGRID  
ORDER No. CPO136

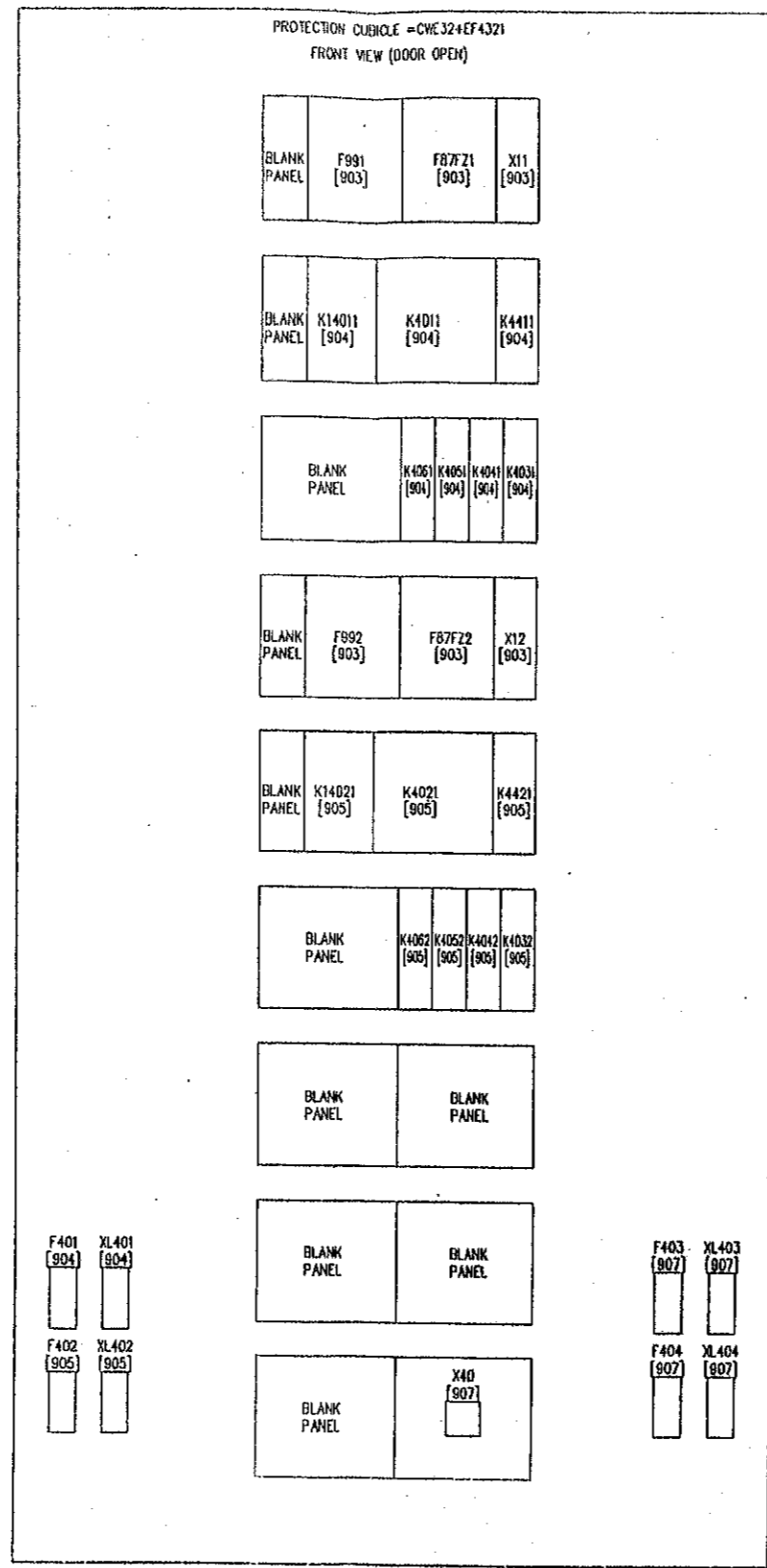


Dwg No. 637EZ1Y04589 SHT 2

EQUIPMENT LOCATED INSIDE CUBICLE VIEWED FROM REAR



PROTECTION CUBICLE =CWE32+EF4321  
FRONT VIEW (DOOR OPEN)



DEVICE REF	DESCRIPTION	TYPE
F991	PROTECTION No 1 BUSWIRE SUPERVISION RELAY	GECA MVIP31
F87F21	PROTECTION No 1 CIRCULATING CURRENT RELAY	GECA MCAG34
X11	PROTECTION No 1 CIRCULATING CURRENT TEST BLOCK	GECA NMLG01
K1401	PROTECTION No 1 TRIP RELAY AUXILIARY RELAY	GECA MVAAT4
K401	PROTECTION No 1 LOCKOUT TRIP RELAY	GECA MVAJ53
K4411	PROTECTION SUPPLY NO.1 SUPERVISION RELAY	GECA MVAX12
K403	=CWC33+050 TRIP RELAY 1	GECA MYAA16
K404	=CWC34+050 TRIP RELAY 1	GECA MYAA16
K405	=CWC35+050 TRIP RELAY 1	GECA MYAA16
K406	=CWC36+050 TRIP RELAY 1	GECA MYAA16
F992	PROTECTION No 2 BUSWIRE SUPERVISION RELAY	GECA MVIP31
F87F22	PROTECTION No 2 CIRCULATING CURRENT RELAY	GECA MCAG34
X12	PROTECTION No 2 CIRCULATING CURRENT TEST BLOCK	GECA NMLG01
K1402	PROTECTION No 2 TRIP RELAY AUXILIARY RELAY	GECA MVAAT4
K402	PROTECTION No 2 LOCKOUT TRIP RELAY	GECA MVAJ53
K4421	PROTECTION SUPPLY NO.2 SUPERVISION RELAY	GECA MVAX12
K4032	=CWC33+050 TRIP RELAY 2	GECA MYAA16
K4042	=CWC34+050 TRIP RELAY 2	GECA MYAA16
K4052	=CWC35+050 TRIP RELAY 2	GECA MYAA16
K4062	=CWC36+050 TRIP RELAY 2	GECA MYAA16
E1	CUBICLE LIGHTING	
F401	FUSE AND HOLDER 10A, PROTECTION SUPPLY No. 1, 48Vdc.	GECA SC32P
XL401	LINK AND HOLDER,	GECA SC32P
F402	FUSE AND HOLDER 10A, PROTECTION SUPPLY No. 2, 48Vdc.	GECA SC32P
XL402	LINK AND HOLDER,	GECA SC32P
F403	FUSE AND HOLDER, 2A, CUBICLE LIGHTING SUPPLY, 240V, 50HZ.	GECA SC32P
XL403	LINK AND HOLDER,	GECA SC32P
F404	FUSE AND HOLDER, 16A, SUPPLY FOR TEST EQUIPMENT 16A SOCKET, 240V, 50HZ	GECA SC32P
XL404	LINK AND HOLDER,	GECA SC32P
F405	FUSE AND HOLDER, 2A, FOR HAND LAMP SUPPLY 16A SOCKET, 240V, 50HZ.	WEIDMULLER KSK3F
XL405	LINK AND HOLDER,	WEIDMULLER KSK3F
R111, R112, R113	SETTING RESISTOR FOR RELAY F87F21 (0-5.6K Ohm)	WELWYN VB1609
R211, R212, R213	SETTING RESISTOR FOR RELAY F87F22 (0-5.6K Ohm)	WELWYN VB1609
R121, R122, R123	METROSL RESISTOR FOR RELAY F87F21	GECA TYPE 600A
R221, R222, R223	METROSL RESISTOR FOR RELAY F87F22	GECA TYPE 600A
S121	CUBICLE LIGHTING DOOR SWITCH	
X1	48VDC SUPPLY TERMINALS	WEIDMULLER RSF1
X20	BUSWIRE TERMINALS (240VAC SUPPLY)	WEIDMULLER SAK9H
X10	CT INPUT TERMINALS	WEIDMULLER RSF1
X103	SEQUENCE OF EVENTS RECORDER TERMINALS	WEIDMULLER SAKR
X104	BACK UP ANNUNCIATOR TERMINALS	WEIDMULLER SAKR
X105	TRIP CIRCUIT 1 TERMINALS	WEIDMULLER RSF2
X106	TRIP CIRCUIT 2 TERMINALS	WEIDMULLER RSF2
X11	TRIP COIL 1 TERMINALS	WEIDMULLER RSF2
X112	TRIP COIL 2 TERMINALS	WEIDMULLER RSF2
X113	INHIBIT CLOSING TERMINALS	WEIDMULLER RSF1
X114	SPARE RELAY CONTACTS TERMINALS	WEIDMULLER SAKR
X301	BUSWIRE TERMINALS (TRIP COIL 1 etc)	WEIDMULLER RSF2
X302	BUSWIRE TERMINALS (TRIP COIL 2 etc)	WEIDMULLER RSF2
X303	BUSWIRE TERMINALS (INHIBIT CLOSING etc)	WEIDMULLER RSF2
X40	TEST EQUIPMENT SWITCHED SOCKET.	
X41	HAND LAMP SWITCHED SOCKET.	
X412	EARTH LINK FOR PROTECTION RELAYS	KLIIPPON STLS

FILE 7D902

NOTES:  
REFER [7D901] FOR FILE INDEX

ISSUE	DATE	BY	REVISION
A	11/06/97	PRJ	REVISED TO ENR8443 & 8446 - ADDED RELAYS K403, K404, K405, K406, K407, K408, K409, K410, K411, K412, K413 & K4052
B	22/07/98	RFR	ADDED TERMINAL BOARDS X105, X106, X111, X112, X113 & X303. REVISED TO ENR8542 - REMOVED VALUE ON R111, R112, R113, R211, R212 & R213 WAS 3551 OHM
C	01/09/98	MCJ	REVISED TO ENR8545 - VALUE OF SETTING RESISTORS ADDED. SETTING RESISTORS WERE SUPPLIED WITH RELAYS.

**AS BUILT DWG**  
14 APR 2003  
**VISAKHAPATNAM**

<p>Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE</p> <p>NAME: B T BARNETT DEPT. 739 DATE: 9/8/97 SIGNED: BTB</p>	<p>THIRD ANGLE PROJECTION</p> <p>IF IN DOUBT ASK</p>	<p>ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED</p> <p>DRAWING TO BS308 UNLESS OTHERWISE STATED</p> <p>FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROC</p>	<p>DRAWN: JCP CHKD: PNS APP'D: RFR SCALE: TRACED: DESIGN: PRJ APP'D:</p>
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**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

**GEC ALSTHOM**  
T&D

**Power Electronic Systems Limited**  
Stilton, England

**VISAKHAPATNAM**  
SOUTHERN FILTER INTERZONE PROTECTION  
CUBICLE =CWE32+EF4321  
EQUIPMENT LOCATION AND DEVICE LIST

DRG. No. **637EZ1Y04589 SHT 2**

CURRENT ISSUE **C**

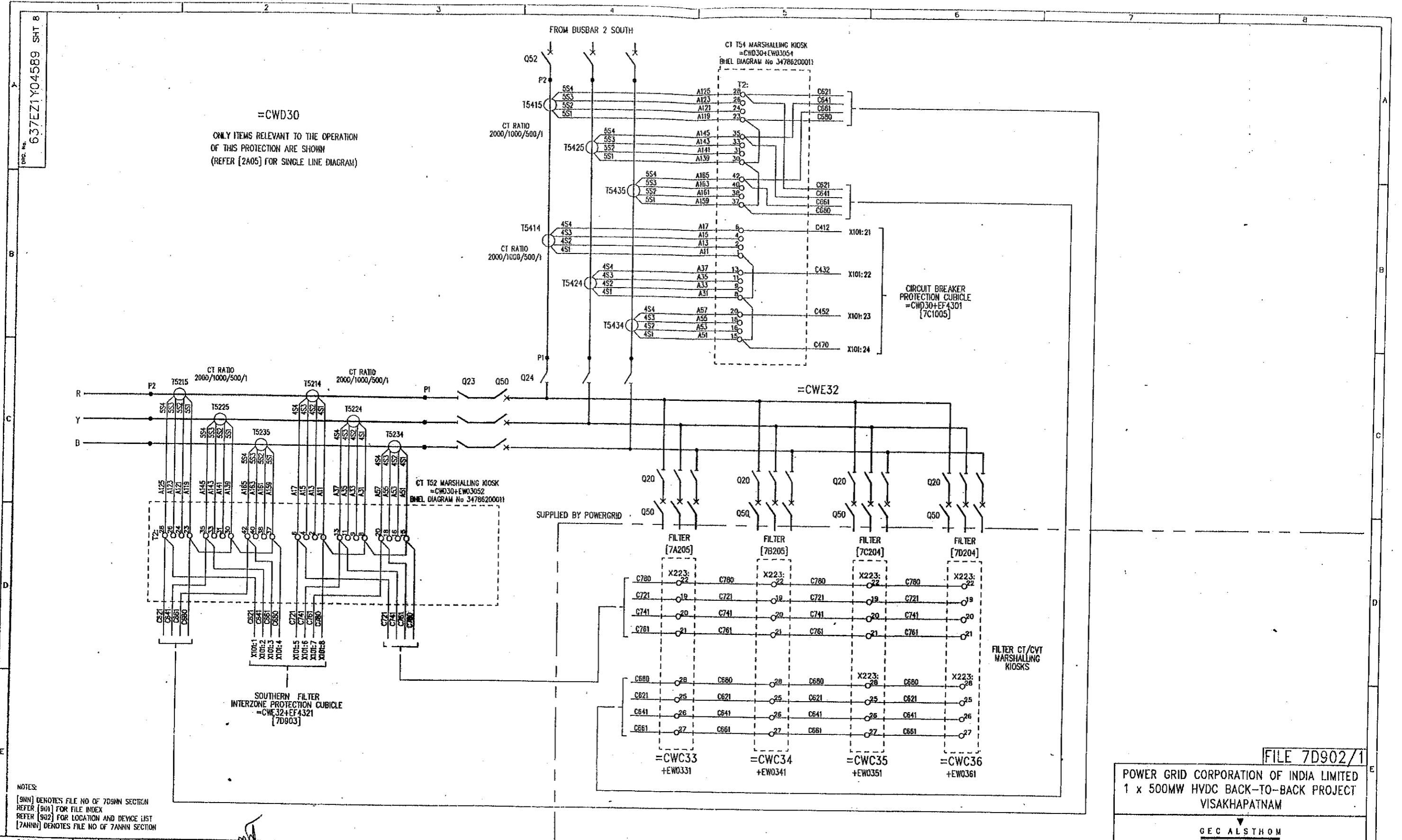
DO NOT SCALE PRINT

WHEN QUOTING DRG. No. STATE CURRENT ISSUE

CUSTOMER: POWERGRID ORDER No. CF0136

Doc. No. 637EZ1Y04589 SHT 8

=CWD30  
 ONLY ITEMS RELEVANT TO THE OPERATION  
 OF THIS PROTECTION ARE SHOWN  
 (REFER [2A05] FOR SINGLE LINE DIAGRAM)



NOTES:  
 [99N] DENOTES FILE NO OF 7099N SECTION  
 REFER [901] FOR FILE INDEX  
 REFER [902] FOR LOCATION AND DEVICE LIST  
 [7ANNV] DENOTES FILE NO OF 7ANNV SECTION

ISSUE	DATE	BY	REASON
A	11/06/97	RFR	REVISED TO E08424- ADDED MARSHALLING KIOSK =CWD30+EW03054 & +EW03052
B	22/07/98	RFR	REVISED TO E08424- CHANGED WIRE NOS C670 & C671 TO C680 & C681
C	18/08/98	RFR	REVISED TO E08424- CHANGED WIRE NOS C670 & C671 TO C680 & C681
D	01/09/99	MCC	REVISED TO E08424- RELEVANT WAS RELEVANT.
E	15/09/99	MCC	REVISED TO E08424- T521465 TERMINALS CORRECTED.

**AS BUILT DWG**  
 14 APR 2003  
**VISAKHAPATNAM**

GEC ALSTHOM ID  
 Power Electronic Systems Limited  
 CERTIFIED FOR  
 MANUFACTURE  
 NAME: B T BARRETT  
 DEPT: 739 DATE: 9/6/97  
 SIGNED: BTB

THIRD ANGLE  
 PROJECTION  
 ALL DIMENSIONS  
 IN MILLIMETRES  
 UNLESS OTHERWISE STATED  
 DRAWING TO BS308  
 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF  
 ACCURACY OF ALL  
 UNTOLERANCED DIMENSIONS  
 SEE SPEC. STAND/023/PROG

DRW: JCP  
 CHD: PNS  
 APP'D: RFR  
 SCALE:  
 TRACED:  
 DESIGN: PRJ  
 APP'D:

FILE 7D902/1

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Skifford, England

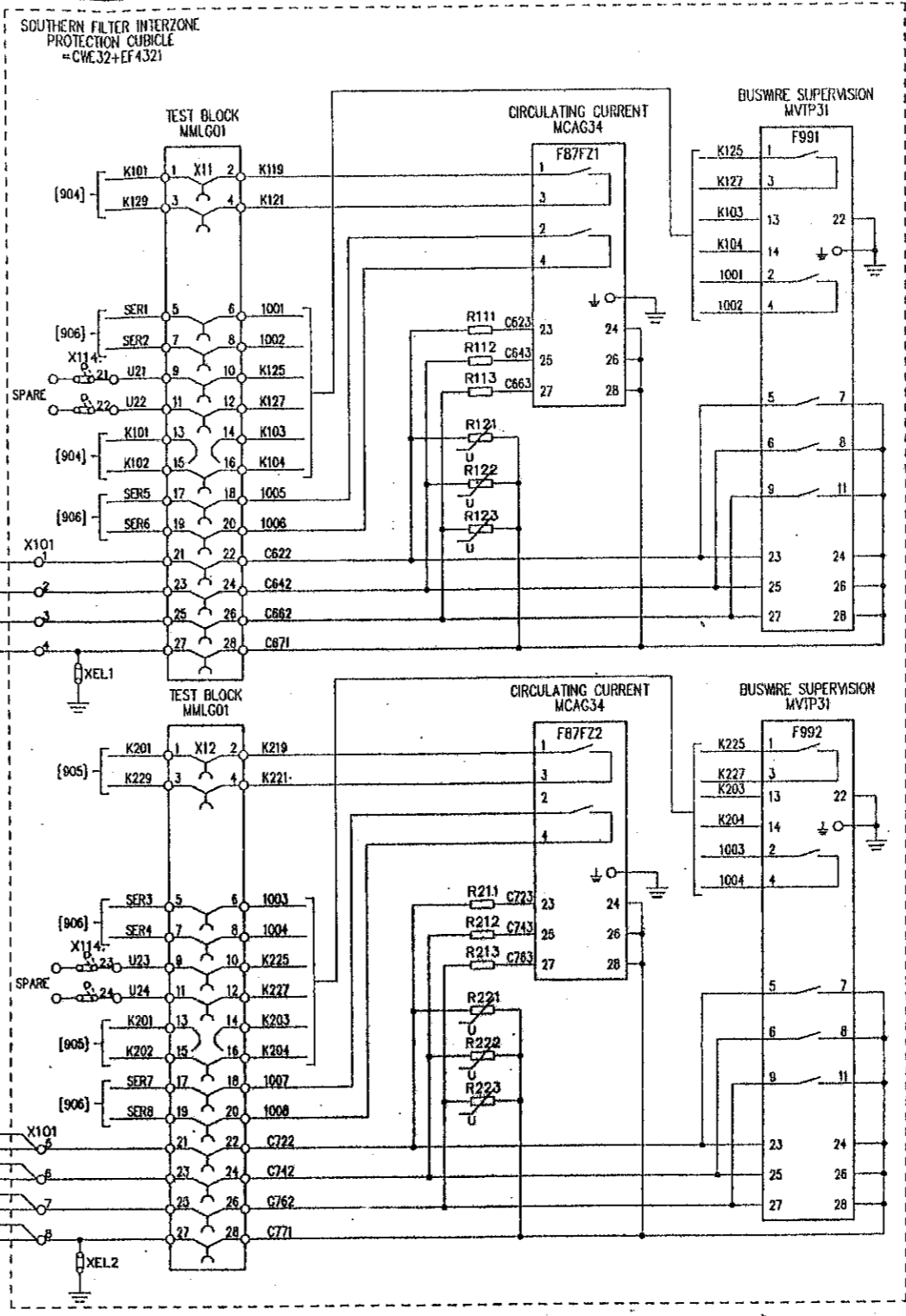
VISAKHAPATNAM  
 SOUTHERN FILTER INTERZONE PROTECTION  
 CUBICLE =CWE32+EF4321  
 SWITCHYARD AC CIRCUITS

DRG. No. 637EZ1Y04589 SHT 8  
 CURRENT ISSUE E

WHEN QUOTING DRG. No. STATE CURRENT ISSUE

CUSTOMER: POWERGRID ORDER No. CFO136

637EZ1Y04589 SHT 3



CT T52  
MARSHALLING KIOSK  
=CWC30+EW03052  
(7D902/1)

CIRCUIT BREAKER  
PROTECTION CUBICLE  
=CWC30+EF4301  
(7C1005)

NOTES:  
[999] DEMOTES FILE NO OF 7099N SECTION.  
REFER [901] FOR FILE INDEX  
REFER [902] FOR LOCATION AND DEVICE LIST  
[7ANN] DEMOTES FILE NO OF 7ANNH SECTION

FILE 7D903

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&O

GEC ALSTHOM T&O  
Power Electronic Systems Limited  
Sharnbrook, England

TITLE  
VISAKHAPATNAM  
SOUTHERN FILTER INTERZONE PROTECTION  
CUBICLE =CWE32+EF4321  
AC CIRCUITS

DRW. No. 637EZ1Y04589 SHT 3  
CURRENT ISSUE D

AS BUILT DWG  
14 APR 2003  
VISAKHAPATNAM

GEC ALSTHOM T&O  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 9 / 8 / 97  
SIGNED: BTB

THIRD ANGLE  
PROJECTION  
IF IN DOUBT  
ASK

ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED  
DRAWING TO BS308  
UNLESS OTHERWISE STATED  
FOR THE STANDARD OF  
ACCURACY OF ALL  
UNTOLERANCED DIMENSIONS  
SEE SPECN. STAND/030/PROG

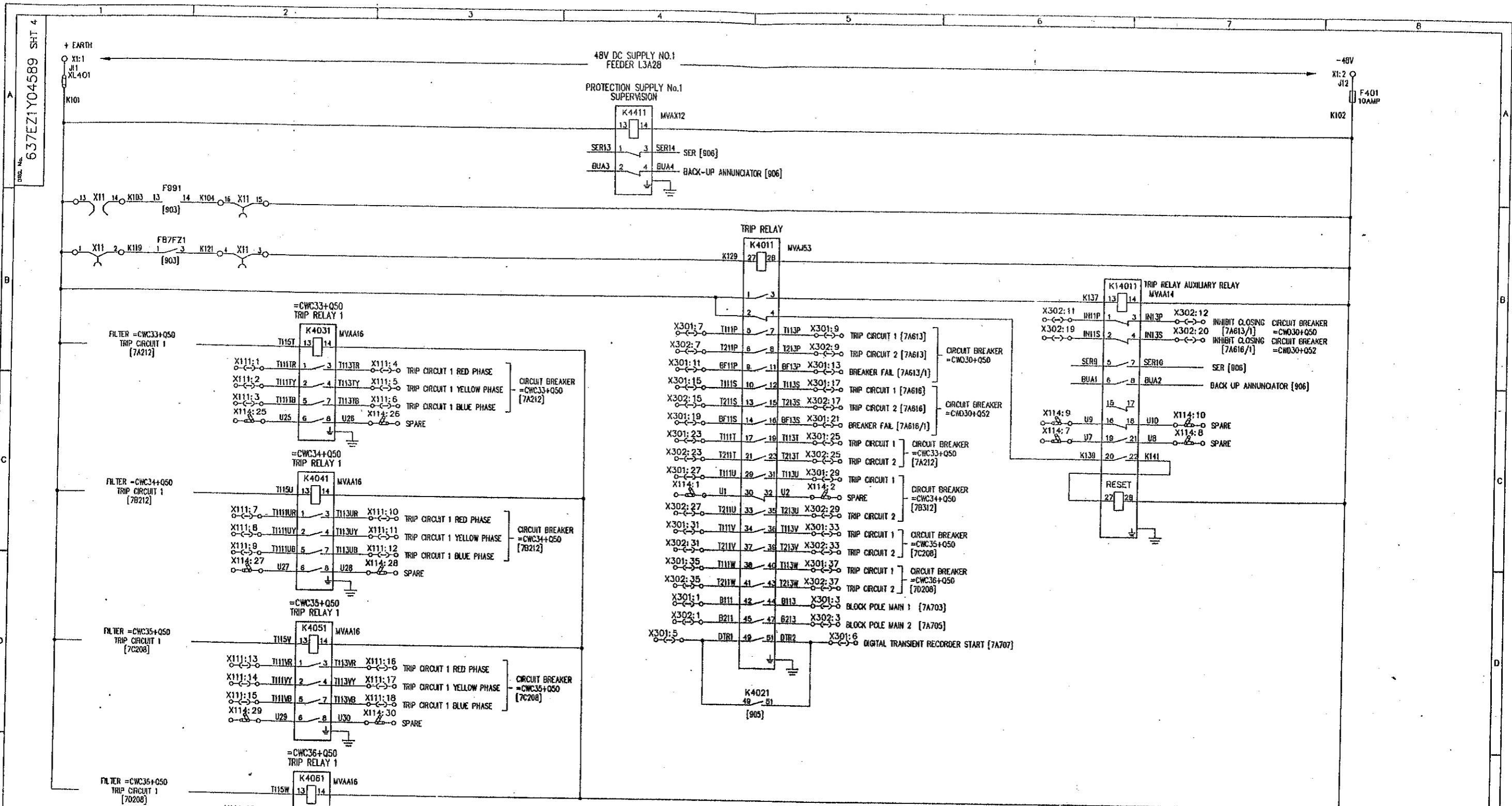
DRAWN JCP  
CWD PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN PRJ  
APP'D

DO NOT SCALE PRINT

WHEN QUOTING DRW. No. STATE CURRENT ISSUE  
CUSTOMER POWERGRID ORDER No. CF0136

ISSUE	D	PRJ	PRJ	PRJ	PREM
		A	B	C	
NAME		ISSUE	PNS	RFR	
LOCATION	MSA3085	DATE	11 / 06 / 97	11 / 07 / 98	

REVISOR: [Signature]  
REVISIONS:  
REVISED TO EDWARDS - RELAY TYPES ADDED & EARTH ADDED TO TERMINAL 22 OF MVTP31  
REVISED TO EDWARDS - ADDED FILTER SIGNALS FROM =CWC30+EW03052 & SIGNALS TO =CWC30+EF4301  
REVISED TO EDWARDS - CHANGED WIRE No'S C670 & C780 TO C680 & C780.



NOTES:  
 [9NN] DENOTES FILE NO OF 709NN SECTION  
 REFER [901] FOR FILE INDEX  
 REFER [902] FOR LOCATION AND DEVICE LIST  
 [7ANN] DENOTES FILE NO OF 7ANN SECTION

FILE 7D904

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&O

GEC ALSTHOM T&O  
 Power Electronic Systems Limited  
 Sharnbrook, England

TITLE  
 VISAKHAPATNAM  
 SOUTHERN FILTER INTERZONE PROTECTION  
 CUBICLE =CWE32+EF4321  
 DC CIRCUITS (PROTECTION SYSTEM 1)

AS BUILT DWG  
 14 APR 2000  
 VISAKHAPATNAM

GEC ALSTHOM TM  
 Power Electronic Systems Limited  
 CERTIFIED FOR  
 MANUFACTURE

NAME: B T BARRETT  
 DEPT. 739 DATE: 9/8/97  
 SIGNED: BTB

THIRD ANGLE  
 PROJECTION

IF IN DOUBT  
 ASK

ALL DIMENSIONS  
 IN MILLIMETRES  
 UNLESS OTHERWISE STATED

DRAWN: JCP  
 CVD: PNS

APPROVED: RFR

SCALE

TRACED

DESIGN: PRJ

APP'D

DRG. No. 637EZ1Y04589 SHT 4  
 CURRENT ISSUE: C

C.A.D. DATA  
 ISSUE: C  
 NAME: VISA2044

PRJ	ISSUE	DATE	BY	REVISION
A	11	08	08	07
B	08	08	07	78
C	06	08	07	78
	97			

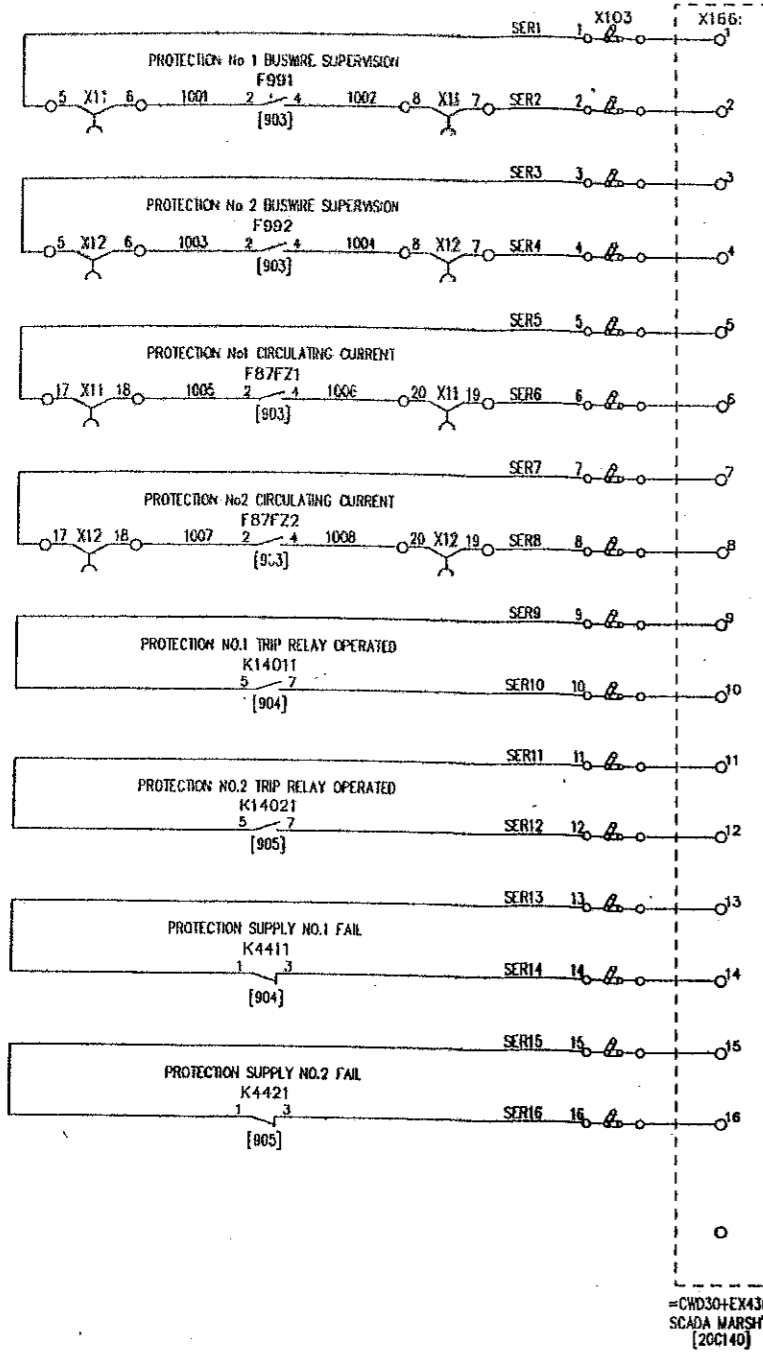
REVISIONS:  
 REVISION TO EDN8443 & 8466 - ADDED K4031, K4041, K4051 & K4061.  
 REVISION TO EDN8448 - CHANGED FILE REF'S FROM 7A613 & 7A616 ON X301:13, X302:12 & X301:21, X302:20.

DO NOT SCALE PRINT

CUSTOMER: POWERGRID ORDER No. CF0136

DRW. No. 637EZ1Y04589 SHT 6

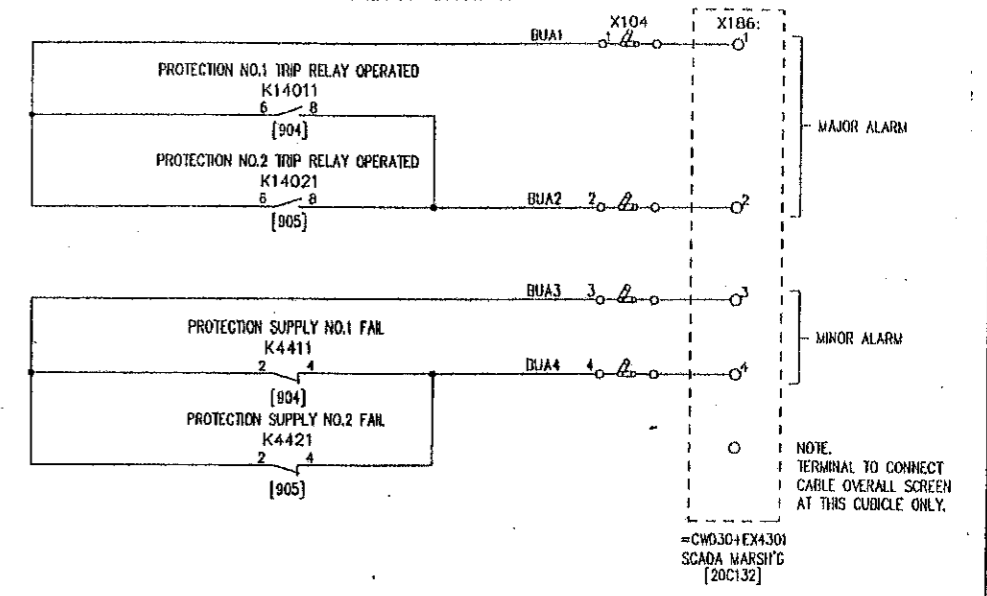
SEQUENCE OF EVENTS RECORDER ALARM SIGNALS



NOTE.  
TERMINAL TO CONNECT  
CABLE OVERALL SCREEN  
AT THIS CUBICLE ONLY.

=CWD30+EX4301  
SCADA MARS'YG  
[20C140]

BACK-UP ANNUNCIATOR ALARM SIGNALS



NOTE.  
TERMINAL TO CONNECT  
CABLE OVERALL SCREEN  
AT THIS CUBICLE ONLY.

=CWD30+EX4301  
SCADA MARS'YG  
[20C132]

NOTES:  
[SNN] DENOTES FILE NO OF 709NN SECTION  
REFER [901] FOR FILE INDEX  
REFER [902] FOR LOCATION AND DEVICE LIST  
[7ANN] DENOTES FILE NO OF 7ANNN SECTION

FILE 7D906

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Salford, England

TITLE  
VISAKHAPATNAM  
SOUTHERN FILTER INTERZONE PROTECTION  
CUBICLE =CWE32+EF4321  
SER AND RUA SIGNALS

DRG. No. 637EZ1Y04589 SHT 6  
CURRENT ISSUE D

PRJ	PRJ	PRJ	PRJ
A	B	C	D
ISSUE	PNS	RFR	PREM
DATE	DATE	DATE	DATE
11/06/97	26/08/97	22/07/98	15/01/99

REVISIONS:  
REVISED TO ECN0844 - K14011 & K14021 WERE SHOWN AS K14012 & K14022 RESPECTIVELY FOR BUA FUNCTION  
REVISED TO ECN0844 - ADDED TERMINAL NUMBERS TO SER AND RUA SIGNALS  
CHANGED RELAY REV FROM F87FZ1 & 2 TO F87FZ1 & 2  
REVISED TO ECN0844 - FILE NRS 20C132 & 20C140 WERE ZDALL

AS BUILT DWG  
14 APR 2003  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 9/6/97  
SIGNED BTB

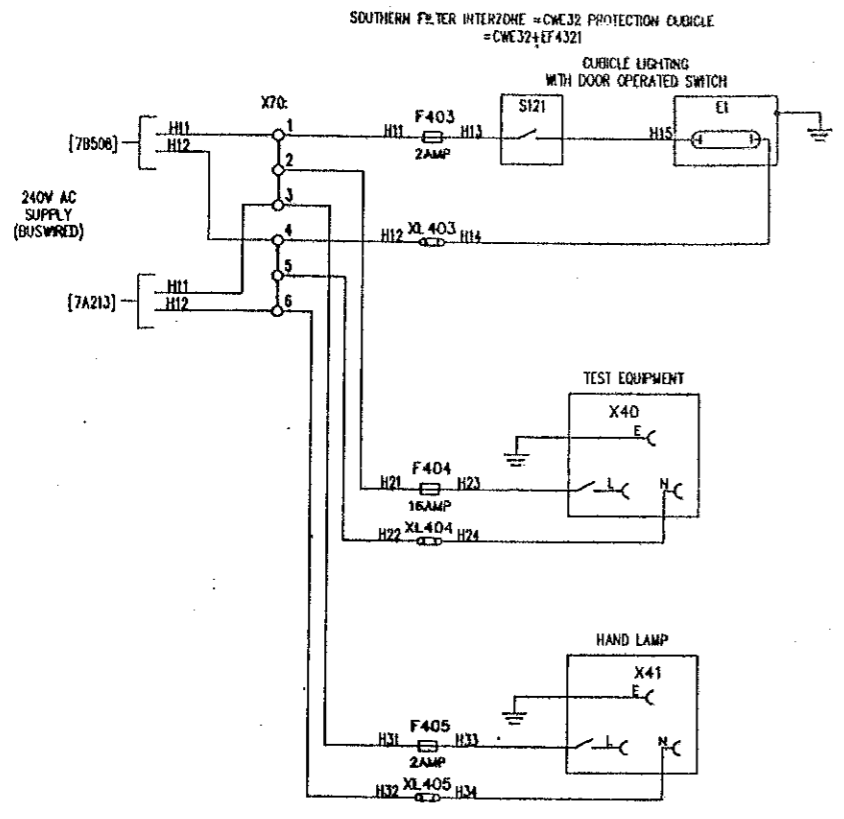
THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROC

DRAWN JCP  
CHKD PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN PRJ  
APP'D

DO NOT SCALE PRINT  
WHEN QUOTING DRG. NO. STATE CURRENT ISSUE  
CUSTOMER POWERGRID  
ORDER No. CF0136

Dwg No. 637EZ1Y04589 SHT 7



NOTES:  
 [9NN] DENOTES FILE NO OF 709NN SECTION  
 REFER [901] FOR FILE INDEX  
 REFER [902] FOR LOCATION AND DEVICE LIST  
 [7ANN] DENOTES FILE NO OF 7ANN SECTION

FILE 7D907

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited

TITLE  
 VISAKHAPATNAM  
 SOUTHERN FILTER INTERZONE PROTECTION  
 CUBICLE -CWE32+EF4321  
 AC SUPPLIES AND CUBICLE ILLUMINATION

DWG No. 637EZ1Y04589 SHT 7  
 CURRENT ISSUE A

C.A.D. DATA  
 TABLE A  
 NAME A  
 LOCATION VISA0340

ISSUE  
 DATE 11/06/97

AS BUILT DWG  
 14 APR 2000  
 VISAKHAPATNAM

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: BT Barrett  
 DEPT: 734 DATE: 9/6/97  
 SIGNED: BT Barrett

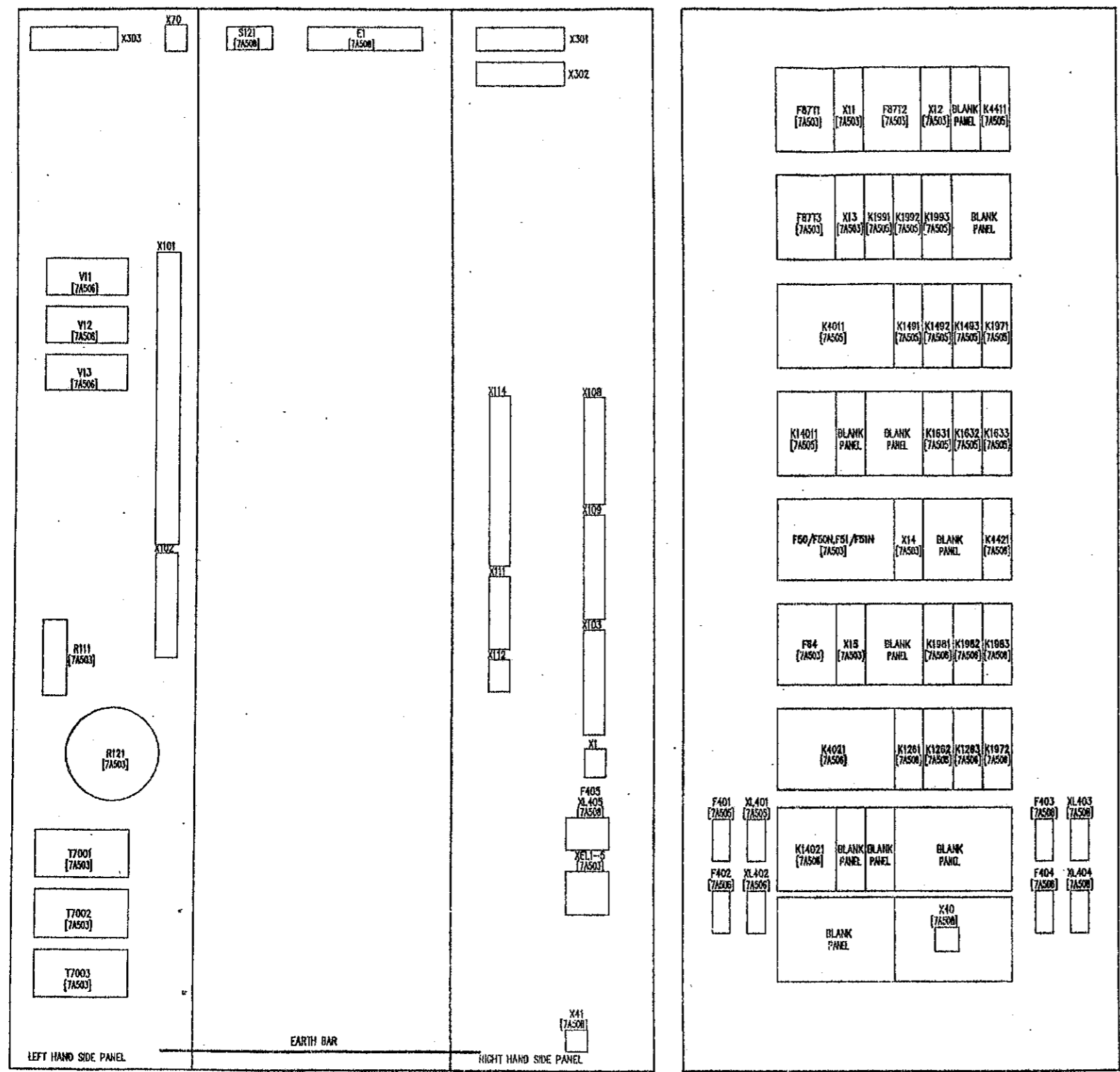
THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL INTOLERANCED DIMENSIONS SEE SPEC. STAND/033/PROG  
 DRAWN JCP  
 QTD  
 APP'D  
 SCALE  
 TRACED  
 DESIGN APP'D  
 IN DOUBT ASK  
 DO NOT SCALE PRINT

CUSTOMER POWERGRID  
 ORDER No. CF0136



637EZ1Y04620 SHT 1

PROTECTION CUBICLE = CWT11+EF4112



DEVICE REF	DESCRIPTION	TYPE
F87T1	BIASED DIFFERENTIAL RELAY, RED PHASE	GECA M8CH13
X11	BIASED DIFFERENTIAL TEST BLOCK, RED PHASE	GECA M8L601
F87T2	BIASED DIFFERENTIAL RELAY, YELLOW PHASE	GECA M8CH13
X12	BIASED DIFFERENTIAL TEST BLOCK, YELLOW PHASE	GECA M8L601
K4411	PROTECTION No.1 48Vdc SUPPLY SUPERVISION RELAY	GECA MVA112
F87T3	BIASED DIFFERENTIAL RELAY, BLUE PHASE	GECA M8CH13
X13	BIASED DIFFERENTIAL TEST BLOCK, BLUE PHASE	GECA M8L601
K1991	AUXILIARY RELAY - TAP CHANGER OIL SURGE, RED PHASE	GECA MCAAT1
K1992	AUXILIARY RELAY - TAP CHANGER OIL SURGE, YELLOW PHASE	GECA MCAAT1
K1993	AUXILIARY RELAY - TAP CHANGER OIL SURGE, BLUE PHASE	GECA MCAAT1
K4011	PROTECTION No.1 LOCKOUT TRIP RELAY	GECA MVA133
K1491	AUXILIARY RELAY - WINDING TEMPERATURE HIGH, RED PHASE	GECA MCAAT1
K1492	AUXILIARY RELAY - WINDING TEMPERATURE HIGH, YELLOW PHASE	GECA MCAAT1
K1493	AUXILIARY RELAY - WINDING TEMPERATURE HIGH, BLUE PHASE	GECA MCAAT1
K1971	AUXILIARY RELAY - FIRE PROTECTION	GECA MCAAT1
K14011	TRIP RELAY AUXILIARY RELAY	GECA MVAAT4
K1631	AUXILIARY RELAY - PRESSURE RELIEF DEVICE, RED PHASE	GECA MCAAT1
K1632	AUXILIARY RELAY - PRESSURE RELIEF DEVICE, YELLOW PHASE	GECA MCAAT1
K1633	AUXILIARY RELAY - PRESSURE RELIEF DEVICE, BLUE PHASE	GECA MCAAT1
F50/F50N/F51/F51N	OVERCURRENT AND EARTH FAULT RELAY	GECA MCG2B2
X14	OVERCURRENT AND EARTH FAULT TEST BLOCK	GECA M8L601
K4421	PROTECTION No.2 48Vdc SUPPLY SUPERVISION RELAY	GECA MVA112
F84	RESTRICTED EARTH FAULT RELAY	GECA MCA614
X19	RESTRICTED EARTH FAULT TEST BLOCK	GECA M8L601
K1981	AUXILIARY RELAY - BUCHHOLZ SURGE, RED PHASE	GECA MCAAT1
K1982	AUXILIARY RELAY - BUCHHOLZ SURGE, YELLOW PHASE	GECA MCAAT1
K1983	AUXILIARY RELAY - BUCHHOLZ SURGE, BLUE PHASE	GECA MCAAT1
K4021	PROTECTION No.2 LOCKOUT TRIP RELAY	GECA MVA133
K1281	AUXILIARY RELAY - OIL TEMPERATURE HIGH, RED PHASE	GECA MCAAT1
K1282	AUXILIARY RELAY - OIL TEMPERATURE HIGH, YELLOW PHASE	GECA MCAAT1
K1283	AUXILIARY RELAY - OIL TEMPERATURE HIGH, BLUE PHASE	GECA MCAAT1
K1972	AUXILIARY RELAY - FIRE PROTECTION	GECA MCAAT1
K14021	TRIP RELAY AUXILIARY RELAY	GECA MVAAT4
F401	FUSE AND HOLDER 10A, PROTECTION SUPPLY No. 1, 48Vdc	GECA SC32P
XL401	LINK AND HOLDER	GECA SC32P
F402	FUSE AND HOLDER 10A, PROTECTION SUPPLY No. 2, 48Vdc	GECA SC32P
XL402	LINK AND HOLDER	GECA SC32P
F403	FUSE AND HOLDER, 2A, CUBICLE LIGHTING SUPPLY, 240V, 50HZ	GECA SC32P
XL403	LINK AND HOLDER	GECA SC32P
F404	FUSE AND HOLDER, 16A, SUPPLY FOR TEST EQUIPMENT 16A SOCKET, 240V, 50HZ	GECA SC32P
XL404	LINK AND HOLDER	GECA SC32P
F405	FUSE AND HOLDER, 2A, FOR HAND LAMP SUPPLY 16A SOCKET, 240V, 50HZ	WIDMULLER KSKCF
XL405	LINK AND HOLDER	WIDMULLER KSKCF
X40	SWITCHED SOCKET	
X41	SWITCHED SOCKET	
E1	CUBICLE LIGHTING	
S121	CUBICLE LIGHTING DOOR SWITCH	
X1	48VDC SUPPLY TERMINALS	WIDMULLER RSE1
X70	BUSWIRE TERMINALS (240V AC SUPPLIES)	WIDMULLER SAKN
X101	CT INPUT TERMINALS	WIDMULLER RSP1
X102	PROTN SYSTEM 1 TERMINALS	WIDMULLER RSP2
X103	PROTN SYSTEM 2 TERMINALS	WIDMULLER RSP2
X104	=GND101-050 TERMINALS	WIDMULLER RSC1
X105	=GND101-051 TERMINALS	WIDMULLER RSC1
X111	SEQUENCE OF EVENTS RECORDER TERMINALS	WIDMULLER SAKR
X112	BACK UP ANNUNCIATOR TERMINALS	WIDMULLER SAKR
X114	SPARE RELAY CONTACTS TERMINALS	WIDMULLER SAKR
X301	BUSWIRE TERMINALS (PROTECTION 1 etc)	WIDMULLER RSP2
X302	BUSWIRE TERMINALS (PROTECTION 2 etc)	WIDMULLER RSP2
X303	BUSWIRE TERMINALS (MISC)	WIDMULLER RSP2
XEL-5	EARTH LINK FOR PROTECTION RELAYS	WIDMULLER S15
T7001-3	INTERPOSING CT FOR F87T1-3	GND101 B10
R111	SETTING RESISTOR FOR RELAY F64 (0-820 OHM)	MELVIN VR 1308
R121	METROH RESISTOR FOR RELAY F84	
V11-13	DIODE UNIT	P&B WEIR RFA-04900

FILE 7A502

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited

VISAKHAPATNAM  
CONVERTER TRANSFORMER T11 PROTECTION  
CUBICLE = CWT11+EF4112  
EQUIPMENT LOCATION AND DEVICE LIST

DRD. No. 637EZ1Y04620 SHT 1

REFER 637EZ1Y04597 FOR FILE INDEX [7A501]

EQUIPMENT LOCATED INSIDE CUBICLE VIEWED FROM REAR

FRONT VIEW (DOOR OPEN)

AS BUILT DWG  
14 APR 2003  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE

NAME: B T BARRET  
DEPT: 739 DATE: 19/2/97  
SIGNED: BTB



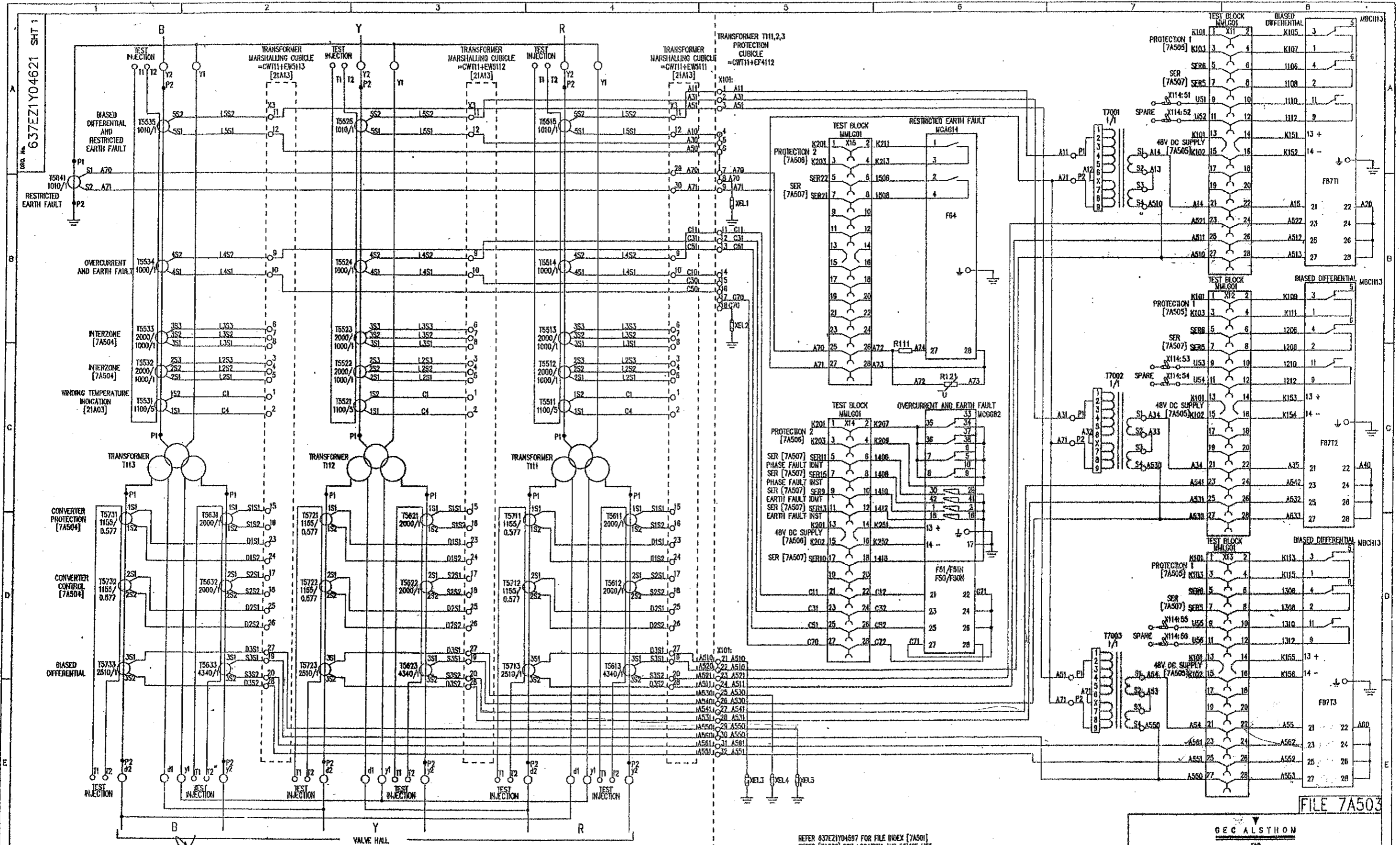
IF IN DOUBT  
ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARDS ACCORDANT OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/P403

DRAWN: PMS  
CHKD: PMS  
APP'D: RFR  
SCALE: N/A  
TRACED  
DESIGN: PRJ  
APP'D

DO NOT SCALE PRINT  
CUSTOMER: POWERGRID  
ORDER No. CE0136

PRJ	ISSUE	DATE	BY	REVISION
A	08	08	21	REVISION TO ENDSHIELDING SETTING & 0-820 OHM ADDED TO R111 DESCRIPTION & TYPE WAS SUPPLIED WITH RELAY.
B	08	08	21	REVISION TO ENDSHIELDING SETTING & 0-820 OHM ADDED TO R111 DESCRIPTION & TYPE WAS SUPPLIED WITH RELAY.
C	08	08	21	REVISION TO ENDSHIELDING SETTING & 0-820 OHM ADDED TO R111 DESCRIPTION & TYPE WAS SUPPLIED WITH RELAY.



ISSUE	A	B	PRJ	PNS
NAME	02	08	08	08
LOCATION	97	97		

**AS BUILT DWG**  
**14 APR 2000**  
**VISAKHAPATNAM**

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

REFER 637E21Y04621 FOR FILE INDEX [7A501]  
 REFER [7A502] FOR LOCATION AND DEVICE LIST

GEC ALSTHOM 180 Power Electronics Systems Limited CERTIFIED FOR MANUFACTURE		THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	BRANN PNS CFO PNS
NAME B T BARREY	DEPT. 739	DATE 19/2 /97	DRAWING TO BESON UNLESS OTHERWISE STATED	APPR. RFR
SIGNED BTB			FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPEC. STAND/023/PROO	SCALE
				TRACED
				DESIGN PRJ

**GEC ALSTHOM**  
T&D

**GEC ALSTHOM T&D**  
Power Electronics Systems Limited  
Stafford, England

**VISAKHAPATNAM**  
CONVERTER TRANSFORMER T11 PROTECTION  
CIRCUIT DIAGRAM FOR  
AC CIRCUITS

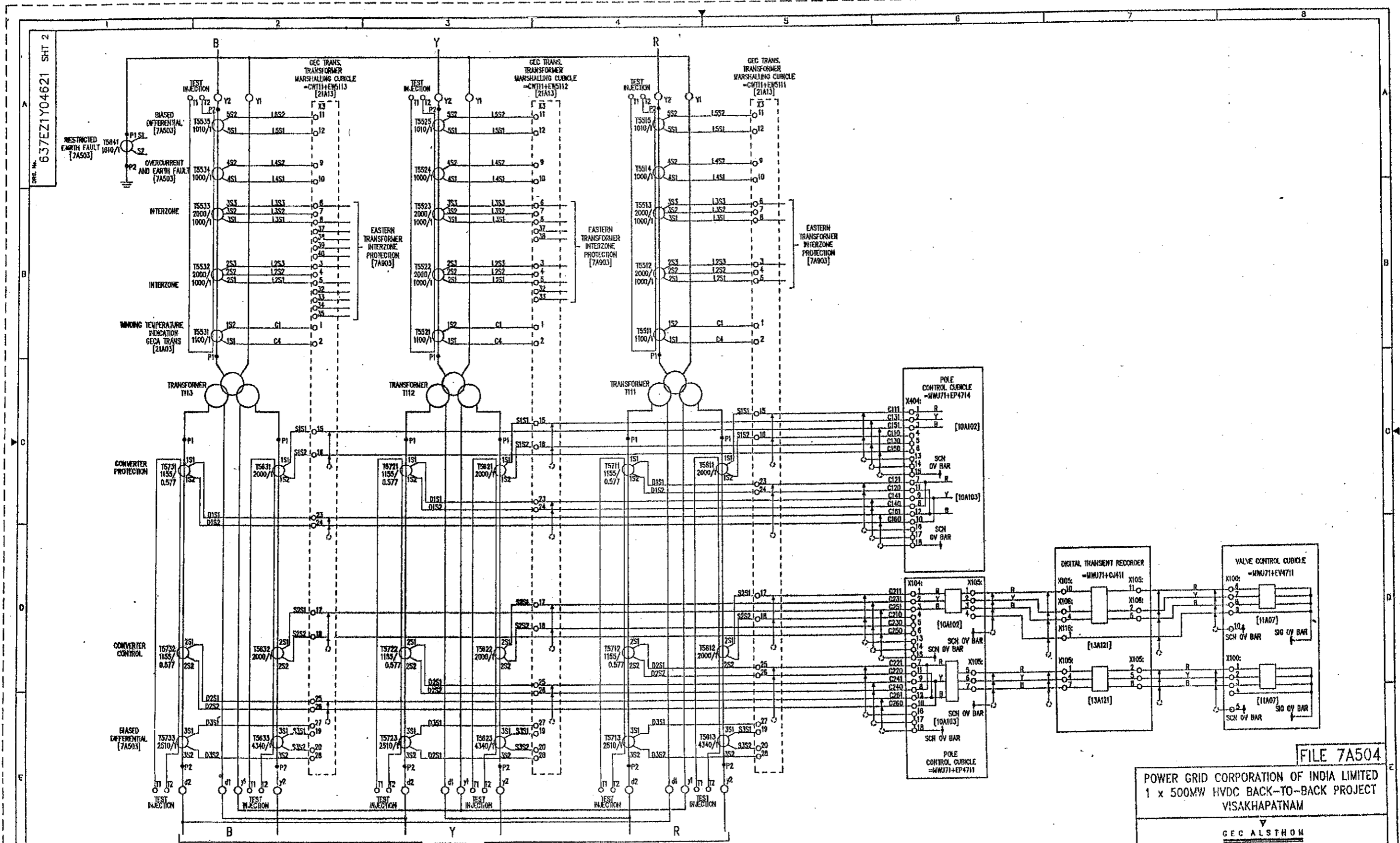
DRW. No. **637E21Y04621** SHT 1

CURRENT ISSUE  
C

FILE 7A503

DO NOT SCALE PRINT

CUSTOMER POWERGRID



REFER 637EZ1Y04597 FOR FILE INDEX [7A501]  
 REFER [7A502] FOR LOCATION AND DEVICE LIST

ISSUE	E
NAME	637EZ1Y04621
LOCATION	MSA3597

PRJ	PNB	LHT	PRJ	PRJ
JPC	JPC	JPC	PREM	PREM
02	02	19	23	23
06	06	08	07	07
97	97	97	98	98

REVISION TO ENDSHIS -  
 FROM REF. X1651 & FILE REF.  
 [13A121] ADDED.

**AS BUILT DWG**  
 14 APR 2000  
**VISAKHAPATNAM**

<b>GEC ALSTHOM T&amp;D</b> Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE NAME: B T BARRETT DEPT. 739 DATE: 10/2/97 SIGNED: BTB	THIRD ANGLE PROJECTION IF IN DOUBT ASK
---	---

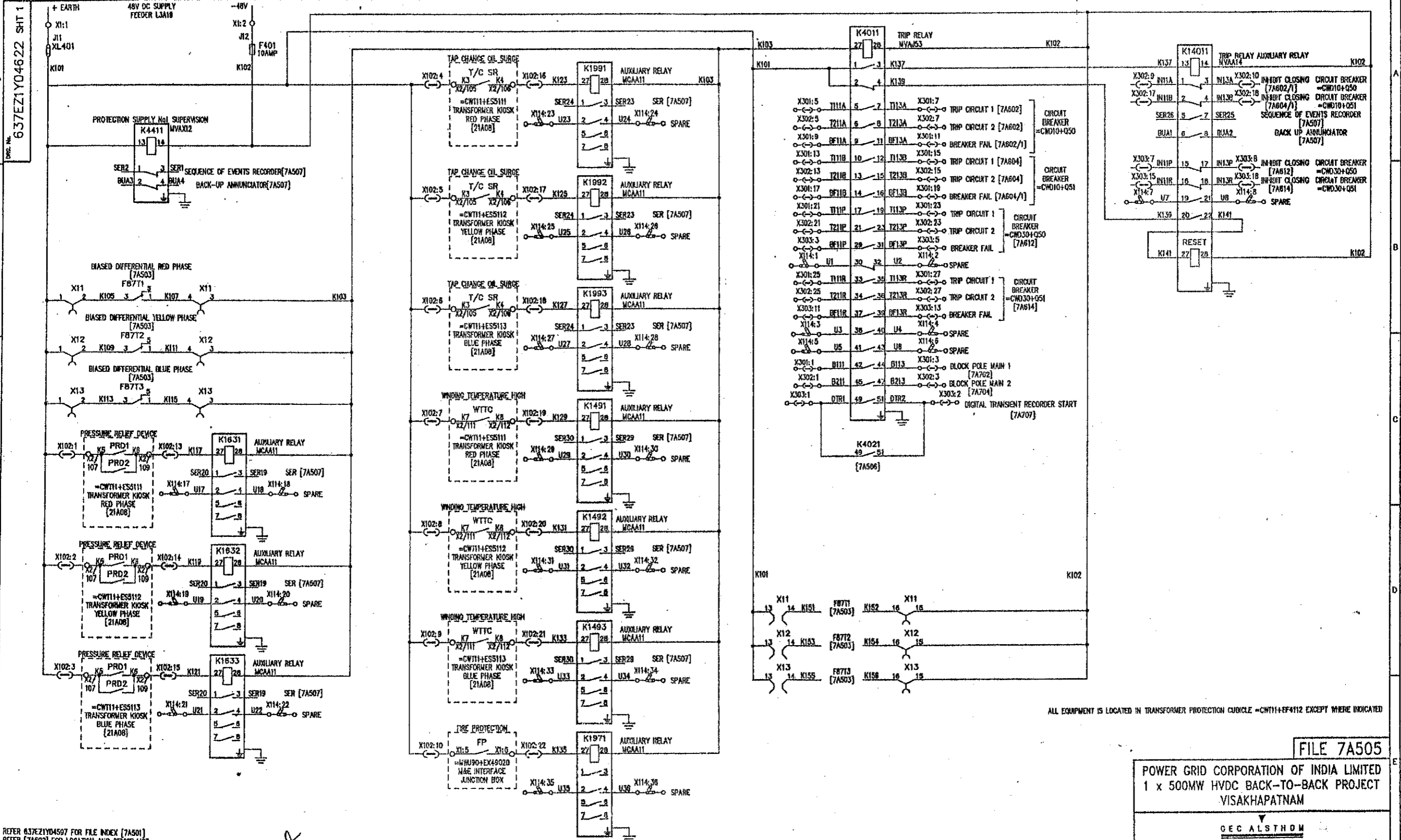
ALL DIMENSIONS  
 IN MILLIMETRES  
 UNLESS OTHERWISE STATED  
 DRAWING TO ISSUE  
 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF  
 ACCURACY OF ALL  
 UNTOLERANCED DIMENSIONS  
 SEE SPECN. STAND/D13/PROO

ONAM PNS GFD PNS APP'D RFR SCALE N/A TRACED DESGN APP'D PRJ	DRG. No. <b>637EZ1Y04621 SHT 2</b> WHEN QUOTING DRG. No. STATE CURRENT ISSUE	CURRENT ISSUE E
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**POWER GRID CORPORATION OF INDIA LIMITED**  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
**VISAKHAPATNAM**

**GEC ALSTHOM**  
 T&D  
**Power Electronic Systems Limited**  
 Sturton, England

PROJECT TITLE  
**VISAKHAPATNAM  
 CONVERTER TRANSFORMER T11 PROTECTION  
 CIRCUIT DIAGRAM FOR  
 AC CIRCUITS**



ALL EQUIPMENT IS LOCATED IN TRANSFORMER PROTECTION CUBICLE -CWT11-EF412 EXCEPT WHERE INDICATED

REFER 637EZ1Y04597 FOR FILE INDEX [7A501]  
REFER [7A502] FOR LOCATION AND DEVICE LIST

ISSUE	DATE	BY	CHKD	REASON FOR CHANGE
1	02/06/97			ISSUED FOR CONSTRUCTION
2	02/06/97			ISSUED FOR CONSTRUCTION
3	02/06/97			ISSUED FOR CONSTRUCTION

**AS BUILT DWG**  
14 APR 2003  
**VISAKHAPATNAM**

GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN PNS GFD PNS
NAME: B T BARRETT DEPT: 739 DATE: 19/2/97 SIGNED: BTB	IF IN DOUBT ASK	DRAWINGS TO SHOW ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPEC. STAND/023/P&D	APP'D RFR SCALE N/A TRACED
DO NOT SCALE PRINT		DESIGN APP'D PRJ	

**FILE 7A505**

**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

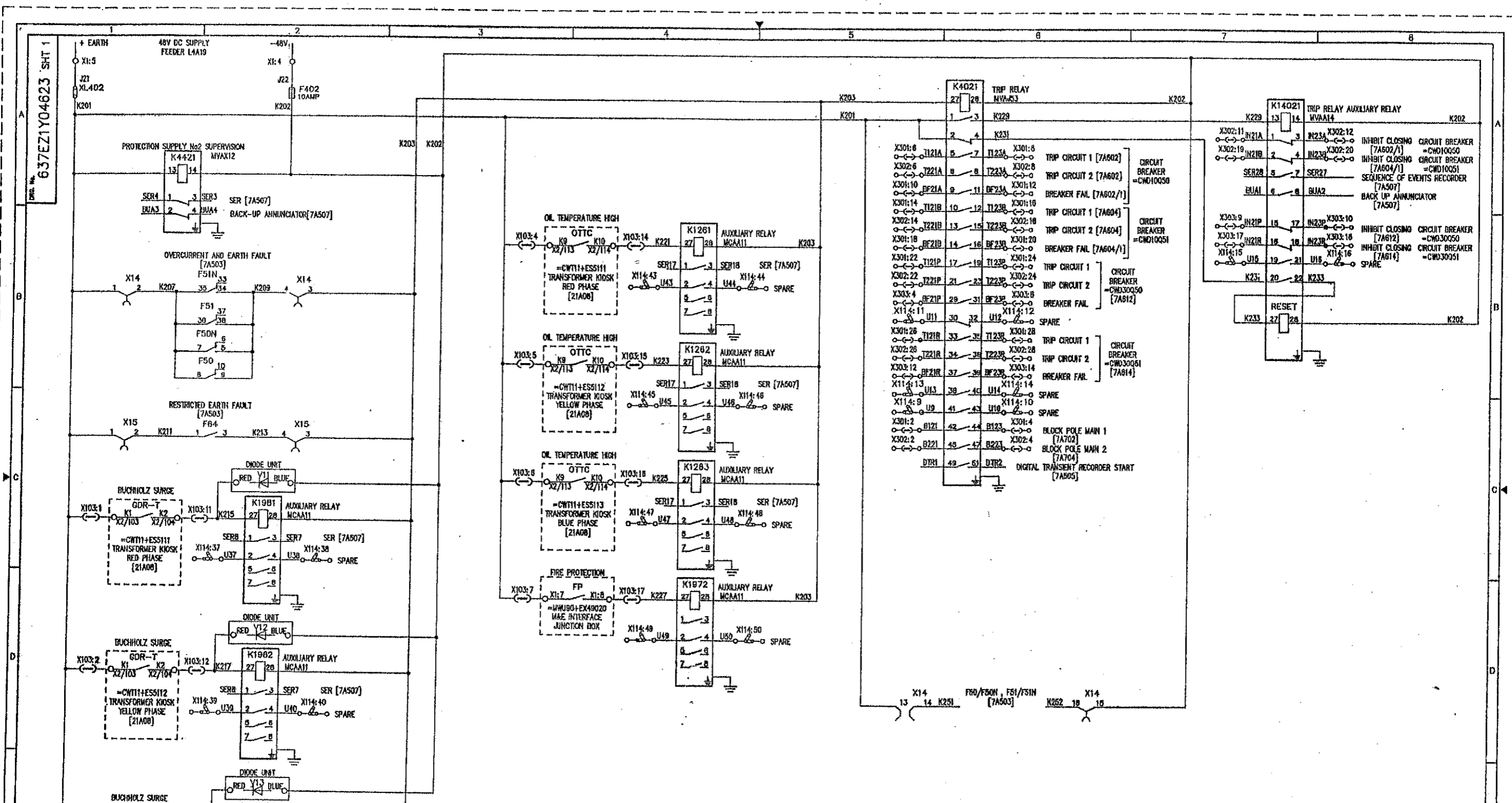
**GEC ALSTHOM**  
T&D

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
Bullfinch, England

TITLE: VISAKHAPATNAM CONVERTER TRANSFORMER T11 PROTECTION CIRCUIT DIAGRAM FOR DC CIRCUITS (PROTECTION SYSTEM 1)

DRG. No. 637EZ1Y04622 SHT 1

CUSTOMER POWERGRID



ALL EQUIPMENT IS LOCATED IN TRANSFORMER PROTECTION CUBICLE -CW111-EP4112 EXCEPT WHERE INDICATED

REFER 637EZ1Y04597 FOR FILE INDEX [7A501] REFER [7A502] FOR LOCATION AND DEVICE LIST				<b>FILE 7A506</b>	
<b>POWER GRID CORPORATION OF INDIA LIMITED</b> 1 x 500MW HVDC BACK-TO-BACK PROJECT VISAKHAPATNAM					
<b>GEC ALSTHOM</b>					
<b>GEC ALSTHOM T&amp;D</b> Power Electronic Systems Limited Sharnbrook, England					
<b>VISAKHAPATNAM</b> CONVERTER TRANSFORMER T11 PROTECTION CIRCUIT DIAGRAM FOR DC CIRCUITS (PROTECTION SYSTEM 2)					
DRG. No. <b>637EZ1Y04623 SHT 1</b>				CURRENT ISSUE <b>E</b>	
WHEN QUOTING DRG. No. STATE CURRENT ISSUE					
CUSTOMER POWERGRID				ORDER No. <b>CF0136</b>	

ISSUE	PRJ	PRJ	PRJ	PRJ	PRJ
A	B	C	D	E	F
21	02	08	07	23	09
02	06	08	07	07	09
97	97	97	98	98	98

CLASS DATA  
 NAME: 637EZ1Y04623  
 LOCATION: VISA3802  
 REVISIONS:  
 A: ISSUED FOR BLOCK POLE MAIN 2  
 B: REVISED TO EMBASAS & BASK FOR BLOCK POLE MAIN 2  
 C: CHANGED TO EMBASAS & BASK FOR BLOCK POLE MAIN 2  
 D: CHANGED FILE REF'S FROM 7A502 ON X301:12 & X302:12 FROM 7A604 ON X301:20 & X302:20  
 E: CHANGED TITLE OF K4421 FROM PROTECTION SUPPLY 2 TO SUPERVISION  
 F: REVISED TO EMBASAS & BASK FROM MAX. ADD'D TO M & E INTERFACE JUNCTION BOX

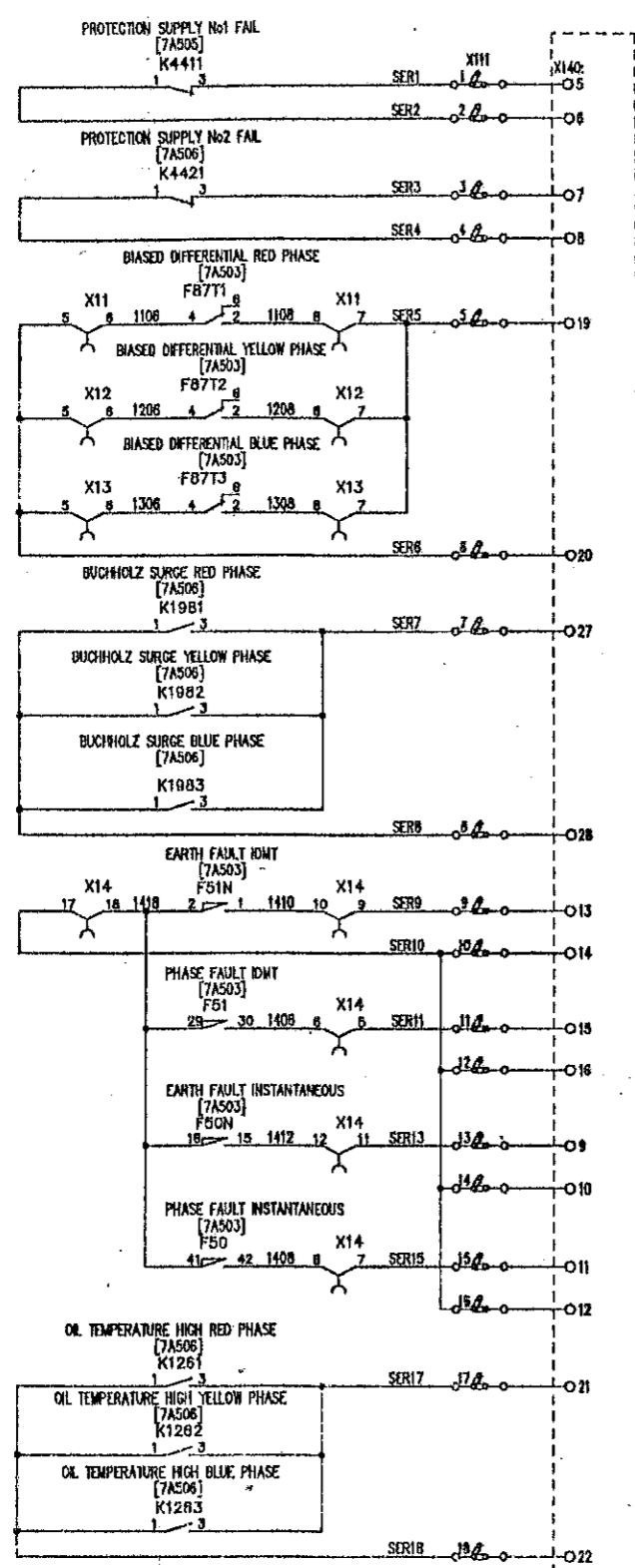
**AS BUILT DWG**  
14 APR 2009  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: B T BARRETT  
 DEPT: 739 DATE: 21/02/97  
 SIGNED: BTB

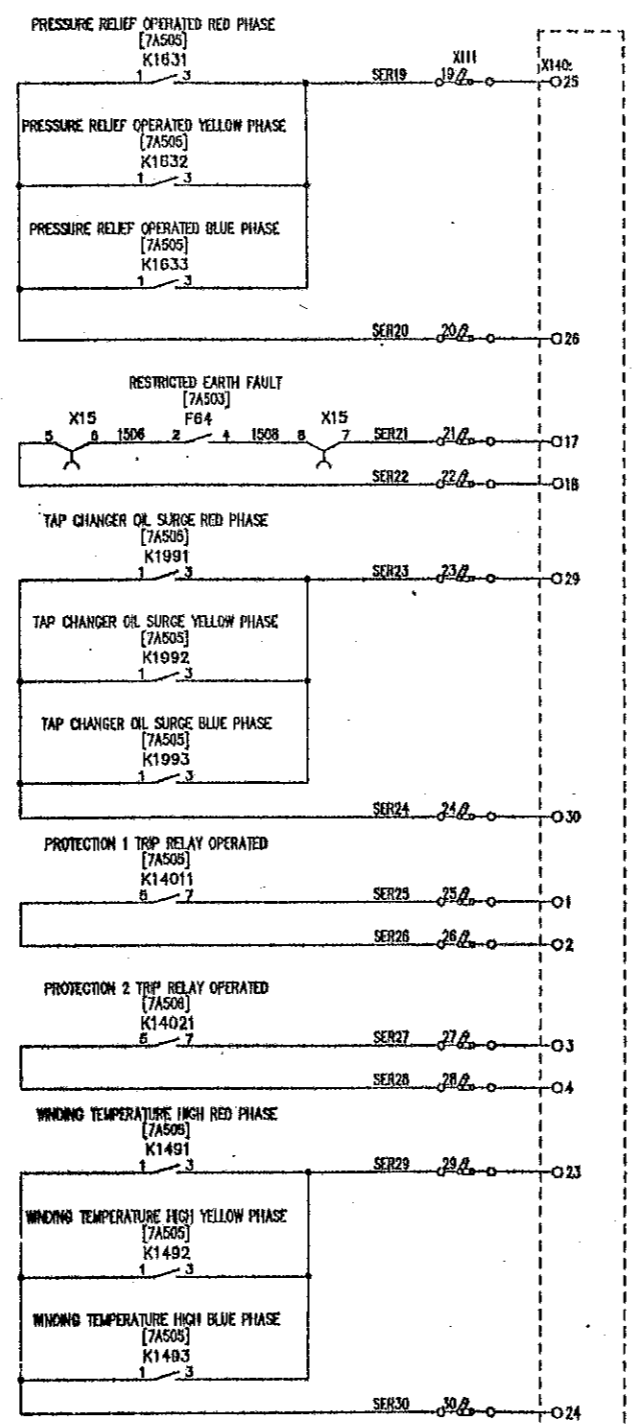
ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE STATED  
 DRAWING TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPEC. STAND/033/PROG  
 THIRD ANGLE PROJECTION  
 IF IN DOUBT ASK  
 DRAWN: PNS  
 C/D: PNS  
 APP'D: RFR  
 SCALE: N/A  
 TRACED:  
 DESIGNED: PRJ  
 DD NOT SCALE PRINT

Dwg. No. 637EZ1Y04624 SHT 1

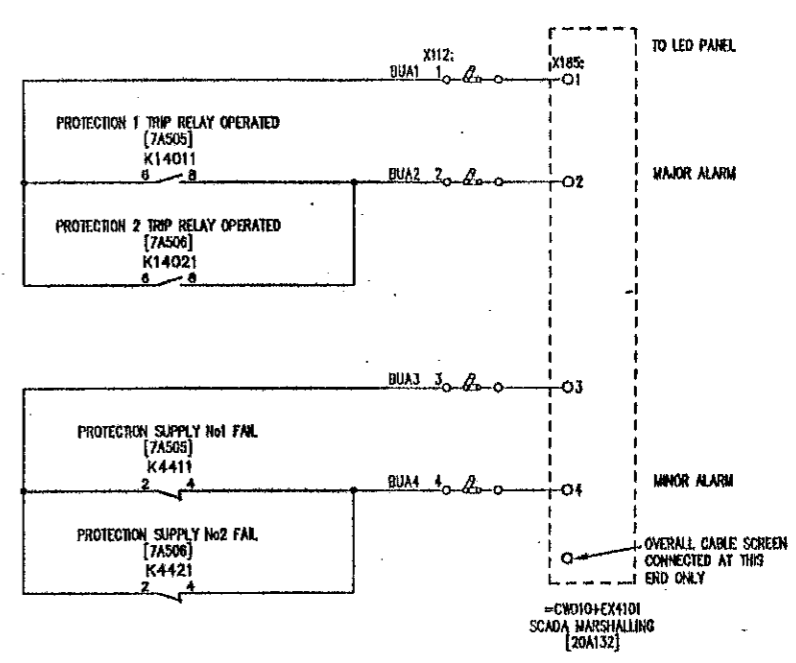
SEQUENCE OF EVENTS RECORDER ALARM SIGNALS



SEQUENCE OF EVENTS RECORDER ALARM SIGNALS



BACK-UP ANNUNCIATOR ALARM SIGNALS



REFER 637EZ1Y04597 FOR FILE INDEX [7A501]  
REFER [7A502] FOR LOCATION AND DEVICE LIST

=CWD10+EX4101  
SCADA MARSHALLING  
[20A124]

OVERALL CABLE SCREEN  
CONNECTED AT THIS  
END ONLY

=CWD10+EX4101  
SCADA MARSHALLING  
[20A124]

FILE 7A507

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Sharnbrook, England

TITLE  
VISAKHAPATNAM  
CONVERTER TRANSFORMER T11 PROTECTION  
CIRCUIT DIAGRAM FOR  
SIGNALS TO SER AND BACK-UP ANNUNCIATOR

DRG. No. 637EZ1Y04624 SHT 1

ISSUE	D
NAME	637EZ1Y04624
LOCATION	VISA3605

PRJ	PRJ	PRJ
A	B	C
ISSUE	ISSUE	ISSUE
DATE	DATE	DATE
21	02	23
02	06	07
97	97	98

REMOVED TO ENCL 1 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 2 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 3 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 4 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 5 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 6 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 7 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 8 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 9 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 10 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 11 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 12 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 13 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 14 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

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REMOVED TO ENCL 16 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 17 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 18 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 19 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

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REMOVED TO ENCL 21 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

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REMOVED TO ENCL 24 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 25 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 26 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 27 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 28 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

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REMOVED TO ENCL 42 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 43 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 44 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 45 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 46 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 47 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 48 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 49 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

REMOVED TO ENCL 50 - SCADA MARSHALLING ADDED FILE REF TO FOLLOW

AS BUILT DWG  
14 APR 2003  
VISAKHAPATNAM

GEC ALSTHOM TD  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE

NAME: B T BARRETT  
DEPT: 730 DATE: 18/2/97  
SIGNED: BTB

THIRD ANGLE  
PROJECTION

ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED

DRAWING TO BE  
ACCURATE TO  
UNLESS OTHERWISE STATED

FOR THE STANDARD OF  
ACCURACY OF ALL  
DIMENSIONS  
SEE SPEC. STAND. 023/97/00

DO NOT SCALE PRINT

DRAWN PNS  
CYD PNS  
APP'D RFR  
SCALE N/A  
TRACED  
DESIGN PRJ  
APP'D

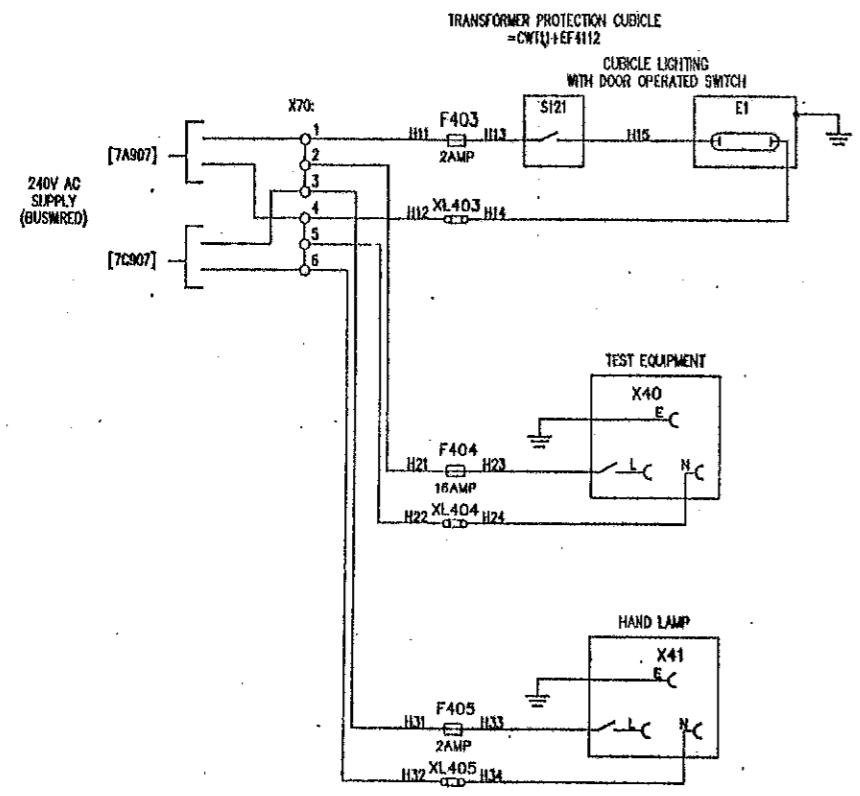
DRG. No. 637EZ1Y04624 SHT 1

CURRENT ISSUE D

ORDER No. CPO136

CUSTOMER POWERGRID

DRAW. No. 637EZ1Y04625 SHT 1



REFER 637EZ1Y04587 FOR FILE INDEX [7A501]  
REFER [7A502] FOR LOCATION AND DEVICE LIST

S.A.D. DATA	
ISSUE	A
DATE	21/02/97
LOCATION	VISA0315

**AS BUILT DWG**  
14 APR 2003  
**VISAKHAPATNAM**

SEE ELISTIAN ON Power Electronics, Systems Limited DRAWING FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN PNS CHKD <i>FB</i>
NAME: <i>BT Barrett</i> REV: <i>7/97</i> DATE: <i>19/2/97</i> BY: <i>BT Barrett</i>	IF IN DOUBT ASK	DRAWING TO BE SHOWN UNLESS OTHERWISE STATED	APP'D <i>RKH</i>
		FOR THE STANDARD L <sup>1</sup> ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROG	SCALE
			TRACED
			DESIGN APP'D

FILE 7A508	
POWER GRID CORPORATION OF INDIA LIMITED 1 x 500MW HVDC BACK-TO-BACK PROJECT VISAKHAPATNAM	
GEC ALSTHOM T&D	
GEC ALSTHOM T&D Power Electronic Systems Limited Belfast, England	
TITLE VISAKHAPATNAM CONVERTER TRANSFORMER T11 PROTECTION CIRCUIT DIAGRAM FOR AC SUPPLIES AND CUBICLE ILLUMINATION	
DRG. No.	637EZ1Y04625 SHT 1
CURRENT ISSUE	A
WHEN QUOTING DRG. No. STATE CURRENT ISSUE	
CUSTOMER POWERGRID	ORDER No. CF0136

DRG No. 637EZ1Y04615 SHT 1

FILE	DRAWING TITLE	DRAWING NUMBER
2A01	FILE INDEX OF SINGLE LINE DIAGRAMS	637EZ1Y04615 SH 1
2A02	SINGLE LINE DIAGRAM, EQUIPMENT & ZONE REFERENCES	637EZ1Y04526 SH 1
2A03	SINGLE LINE DIAGRAM	637EZ1Y04494 SH 1
2A04	SINGLE LINE DIAGRAM OF PROTECTION (EAST BB)	637EZ1Y04819 SH 1
2A04/1	SINGLE LINE DIAGRAM OF METERING (EAST BB)	637EZ1Y04619 SH 2
2A05	SINGLE LINE DIAGRAM OF PROTECTION (SOUTH BB)	637EZ1Y04619 SH 3
2A05/1	SINGLE LINE DIAGRAM OF METERING (SOUTH BB)	637EZ1Y04619 SH 4
2A06	TRANSFORMER PROTECTION BLOCK DIAGRAM	637EZ1Y04700 SH 1
2A07	COMBINED FILTER PROTECTION BLOCK DIAGRAM	637EZ1Y04700 SH 2
2A07/1	DOUBLE DAMPED FILTER PROTECTION BLOCK DIAGRAM	637EZ1Y04700 SH 7
2A08	BUSBAR PROTECTION BLOCK DIAGRAM	637EZ1Y04700 SH 3
2A09	TRANSFORMER INTERZONE PROTECTION BLOCK DIAGRAM	637EZ1Y04700 SH 4
2A10	FILTER INTERZONE PROTECTION BLOCK DIAGRAM	637EZ1Y04700 SH 5
2A11	CIRCUIT BREAKER PROTECTION BLOCK DIAGRAM	637EZ1Y04700 SH 6

FILE 2A01

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM

T&D

GEC ALSTHOM T & D  
Power Electronic Systems Limited  
*Stirling, England*

VISAKHAPATNAM  
FILE INDEX OF  
SINGLE LINE DIAGRAMS

DRG. No. 637EZ1Y04615 SHT 1

CURRENT  
ISSUE  
B

REFER TO DRG NO 637EZ1Y04589 FOR MAIN INDEX [1A01]

C.A.D. DATA  
ISSUE B  
NAME 637EZ1Y04615  
LOCATION VSA3787

ISSUE A B  
DATE 18/08/97  
26/01/99  
FILE 2A07 - TITLE MODIFIED.  
FILE 2A07/1 - ADDED.

AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE  
NAME: N.M.KIRBY  
DEPT. 611 DATE: 18/4/00  
SIGNED NMK

TWO ANGLE  
PROJECTION  
IF IN DOUBT  
ASK

ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED  
DRAWING TO BE308  
UNLESS OTHERWISE STATED  
FOR THE STANDARD OF  
ACCURACY OF ALL  
UNTOLERANCED DIMENSIONS  
SEE SPEC. STAB/003/PROG

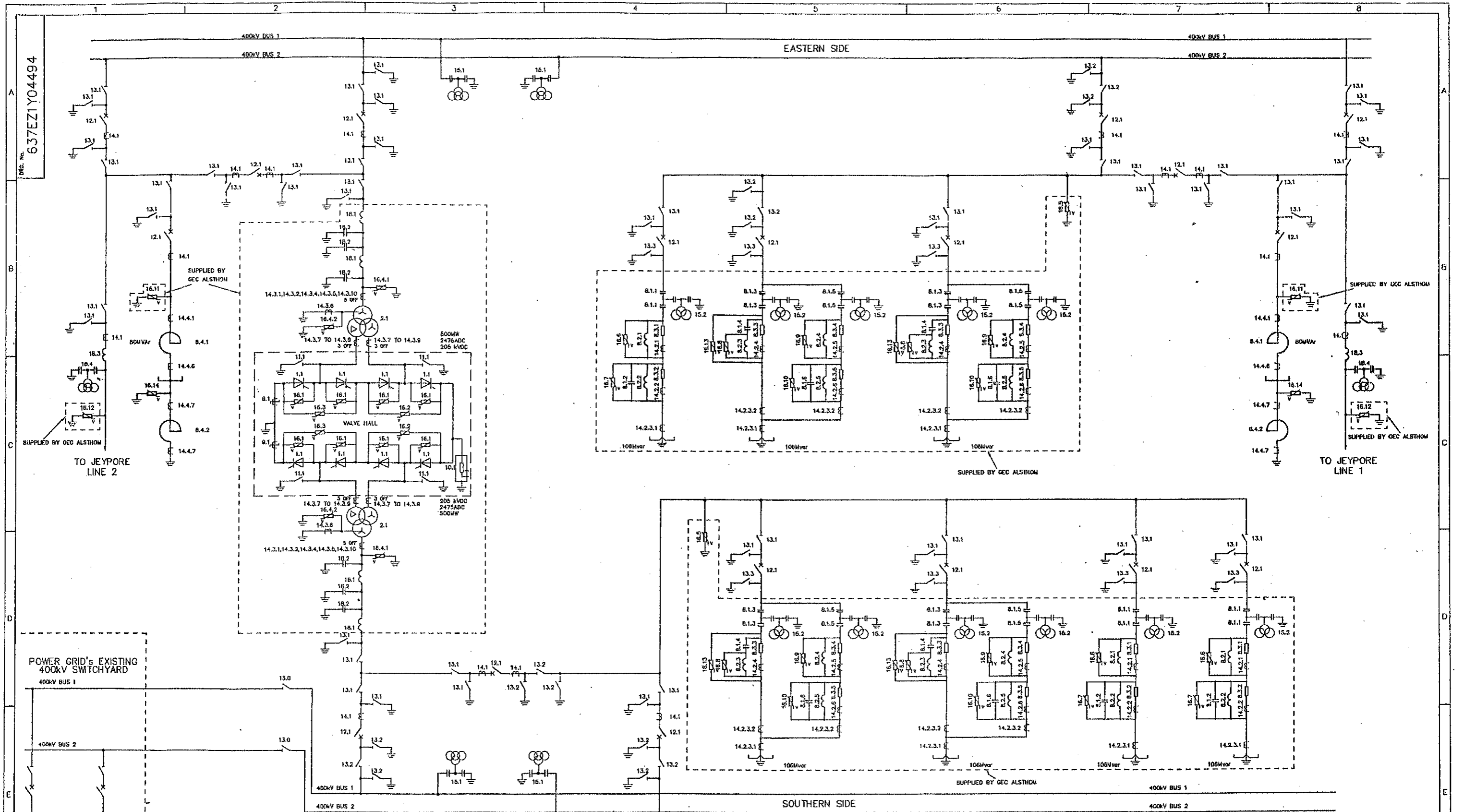
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CHKD PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN  
APP'D NMK

DO NOT SCALE PRINT

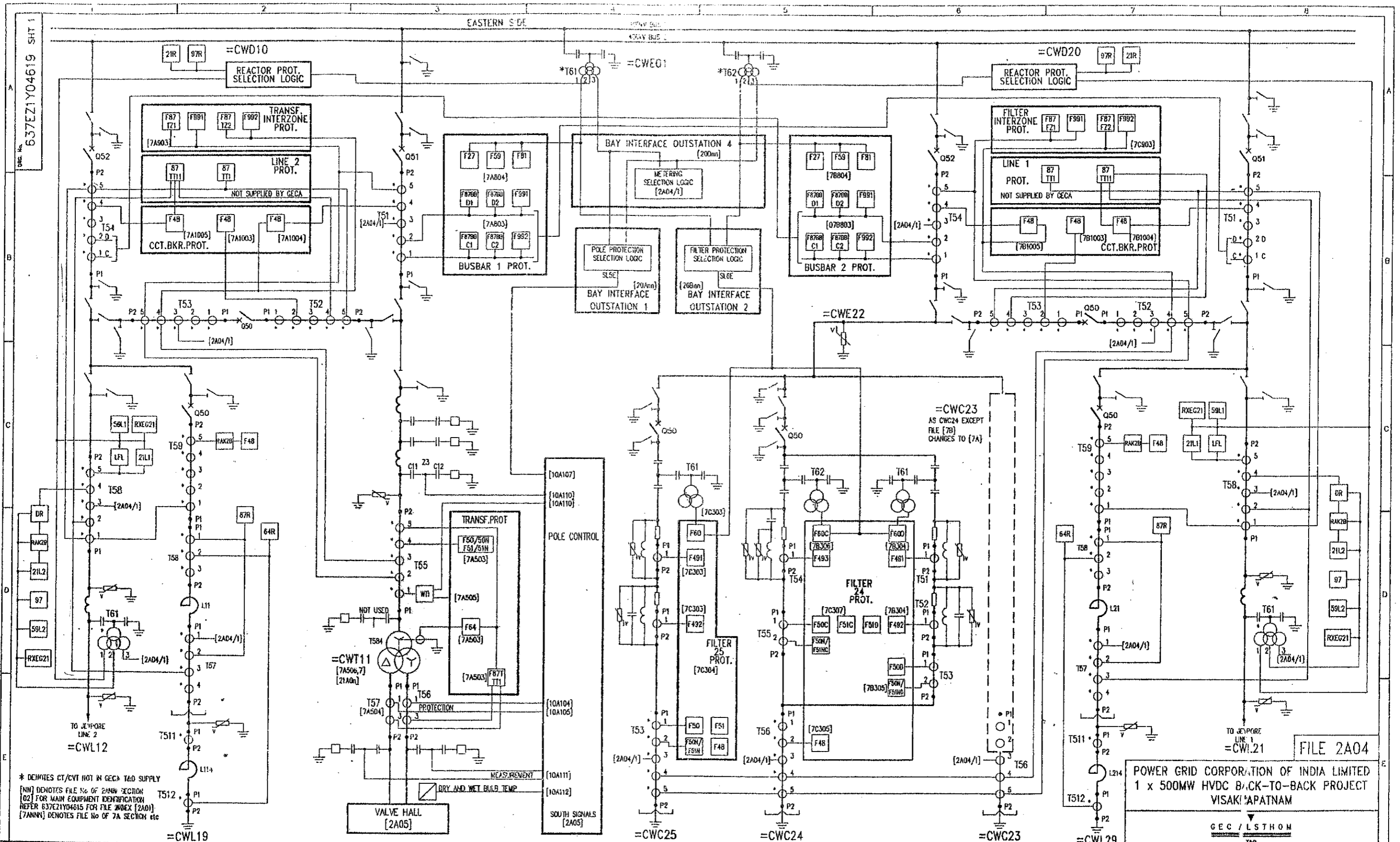
WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
CUSTOMER: POWERGRID

ORDER No. CF0136





C.A.D. DATA			FILE 2A03														
ISSUE <b>D</b>  NAME 637EZ1Y04494  LOCATION WSA1264	BTB	A	BTB	B	BTB	C	<b>AS BUILT DWG</b> 14 APR 2003 <b>VISAKHAPATNAM</b>				THIRD ANGLE PROJECTION 	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  DRAWING TO BS308 UNLESS OTHERWISE STATED  FOR THE STANDARD OF ACCURACY OF ALL UNTOUCHED DIMENSIONS SEE SPECN. STAND/023/PROC	DRAWN: DB CHD: DB APP'D: RDL SCALE: TRACED: DESIGN: BB APP'D:	<b>GEC ALSTHOM</b> T&D <b>GEC ALSTHOM T&amp;D</b> Power Electronic Systems Limited <i>Sharnah, England</i>	TITLE: <b>SINGLE LINE DIAGRAM FOR          VISAKHAPATNAM HVDC BACK TO BACK PROJECT          (1x500MW)</b>	DRG. No. <b>637EZ1Y04494</b>	CURRENT ISSUE <b>D</b>
	BTB	BTB	BTB	BTB	BTB	BTB	POWER GRID'S EXISTING 400kV SWITCHYARD 400kV BUS 1 400kV BUS 2 50MVA AT 420kV				DO NOT SCALE PRINT	WHEN QUOTING DRG. No. STATE CURRENT ISSUE					
	BTB	BTB	BTB	BTB	BTB	BTB						CUSTOMER POWER GRID CORP OF INDIA		ORDER No. CF0136			
	DATE 18 OCT 95			DATE 05 NOV 97			REVISIONS 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30				COPYRIGHT © 1995... GEC ALSTHOM T&D Power Electronic Systems Limited		GEC ALSTHOM T&D				



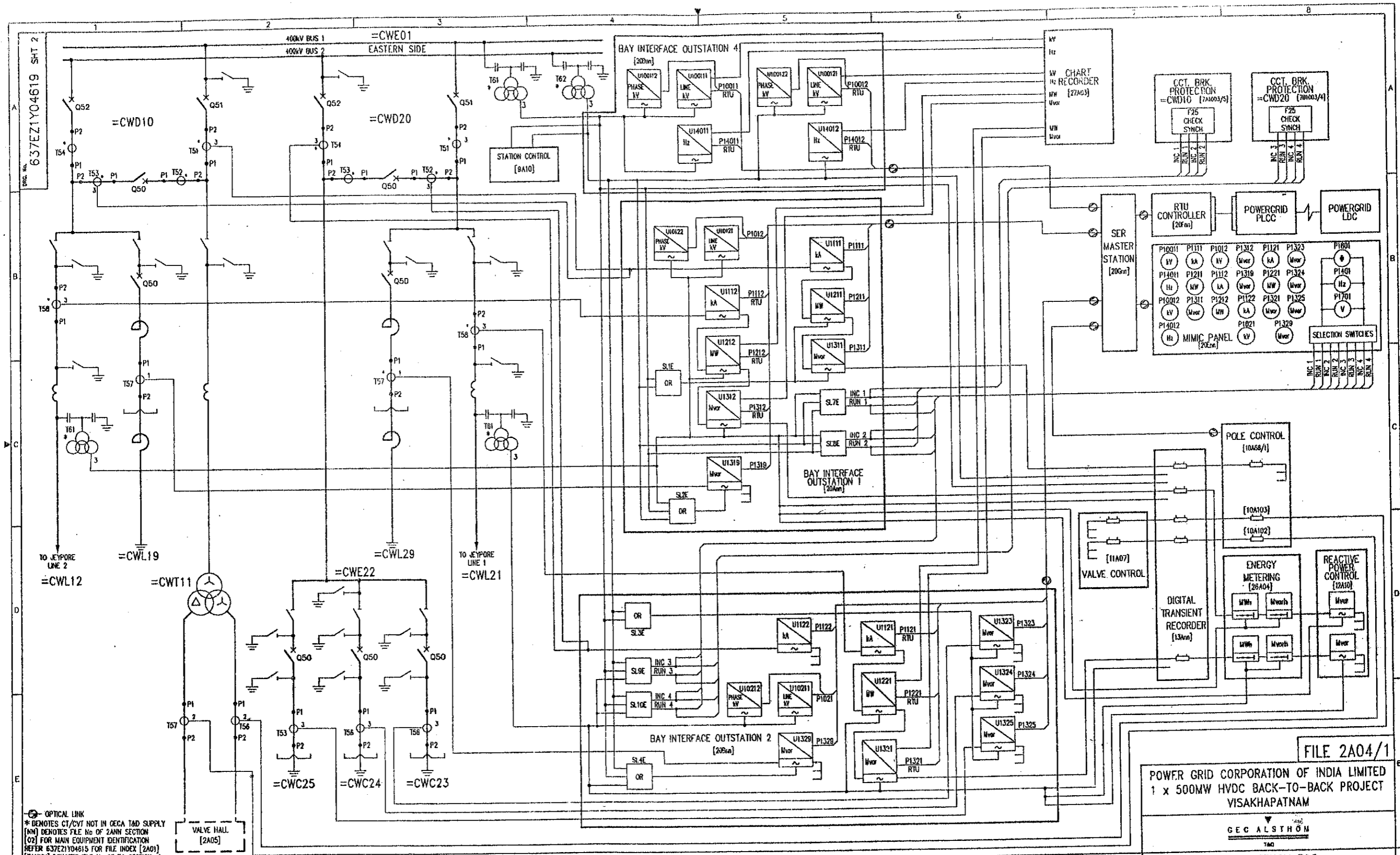
\* DENOTES CT/CVT NOT IN GECA T&D SUPPLY  
 [NIN] DENOTES FILE NO OF 2ANNV SECTION  
 [02] FOR MAIN EQUIPMENT IDENTIFICATION  
 REFER 637E21Y04615 FOR FILE 2A04X [2A01]  
 [7ANNV] DENOTES FILE NO OF 7A SECTION ETC

ISSUE	NO	DATE	BY	CHKD
E	18	04/11/96	AUC	

AS BUILT DWG  
 14 APR 2003  
 VISAKHAPATNAM

THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPEC. STAN/023/PROC

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM  
 GEC / LSTHOM  
 T&D  
 GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 VISAKHAPATNAM  
 SINGLE LINE DIAGRAM OF PROTECTION CT & CVT DISPOSITION EASTERN BUS  
 DRG. No. 637E21Y04619 SHT 1  
 CURRENT ISSUE E  
 DO NOT SCALE PRINT  
 WHEN QUOTING TO GC No. STATE CURRENT ISSUE  
 CUSTOMER POWERGRID [G-DNR No. CF0136]



OPTICAL LINK  
 \* DENOTES CT/CVT NOT IN GECA T&D SUPPLY  
 (NM) DENOTES FILE No OF 2ANN SECTION  
 (02) FOR MAIN EQUIPMENT IDENTIFICATION  
 REFER 637EZ1Y04615 FOR FILE INDEX (2A01)  
 (7ANN) DENOTES FILE No OF 7A SECTION etc

VALVE HALL  
 [2A05]

FILE 2A04/1  
 POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM  
 GEC ALSTHOM

ISSUE	A	B	C	D
DATE	18	27	26	03
BY	11	11	02	03
CHKD	98	98	99	99

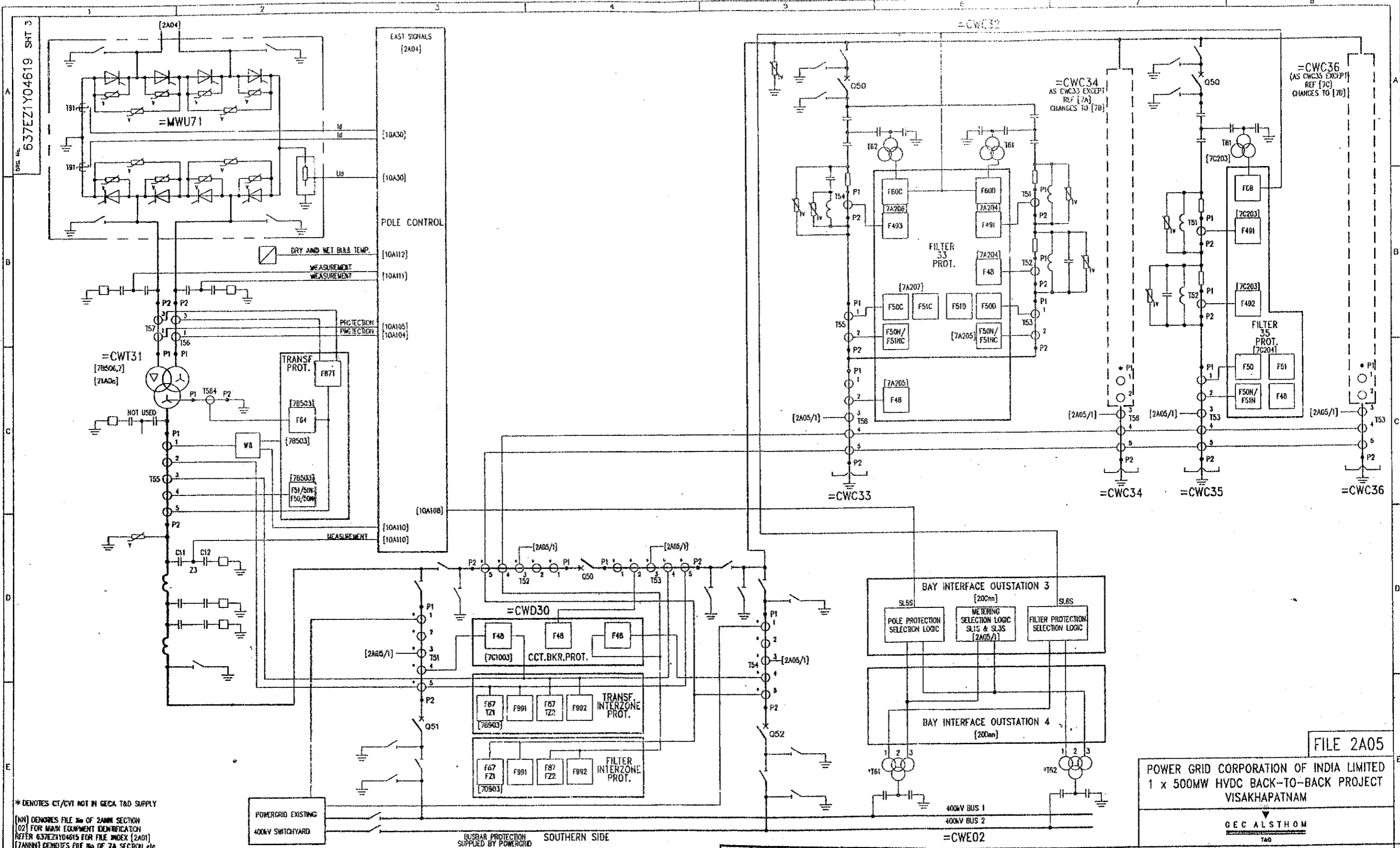
PK A B C D  
 PK 27 26 03  
 PK 11 11 02  
 PK 98 98 99

ISSUE D  
 NAME 637EZ1Y04619  
 LOCATION VISA3799

**AS BUILT DWG**  
 14 APR 2009  
 VISAKHAPATNAM

THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BE USED UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOUCHED DIMENSIONS SEE SPEC. STAB/023/PROC  
 DRAWN DB  
 CHD DB  
 APP'D RFR  
 SCALE  
 TRACED  
 DESIGN APP'D NMK

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 VISAKHAPATNAM  
 SINGLE LINE DIAGRAM OF METERING CT & CVT DISPOSITION EASTERN BUS  
 ORDER No. 637EZ1Y04619 SHT 2  
 CURRENT ISSUE D  
 DO NOT SCALE PRINT  
 CUSTOMER POWERGRID  
 ORDER No. CF0136



\* DENOTES CT/CVT NOT IN GECA T&D SUPPLY  
 (NN) DENOTES FILE NO OF 2ANN SECTION  
 (02) FOR MAIN EQUIPMENT IDENTIFICATION  
 REFER 637EZ1Y04619 FOR FILE INDEX [2A01]  
 (7ANN) DENOTES FILE NO OF 7A SECTION etc

ISSUE	A	B	C	PK
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637EZ1Y04619	11	ASJG	10	99
VSA#267	96	97	98	99

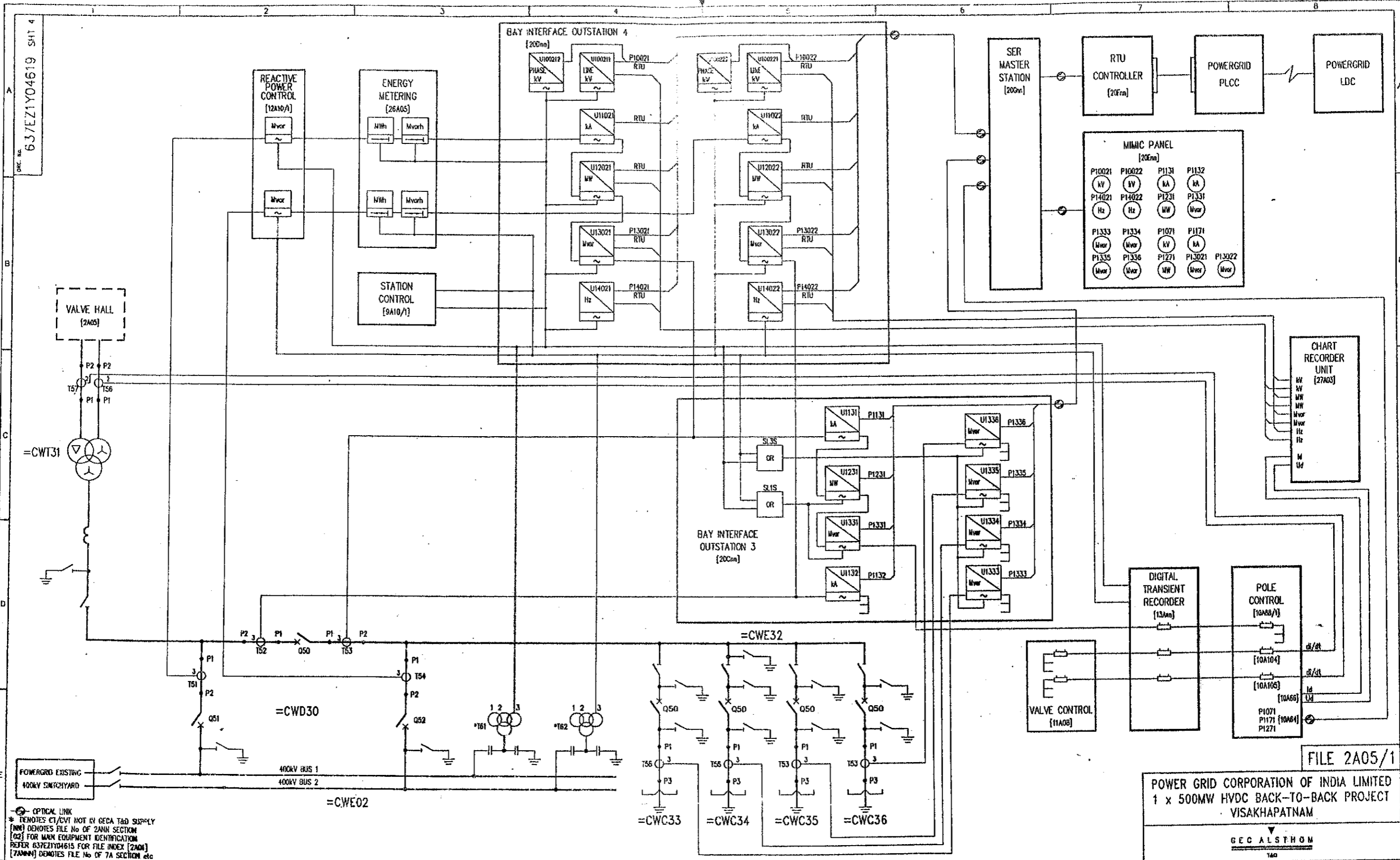
G.A.D. DATA  
 NMMK  
 PK  
 ISSUE DATE  
 NAME  
 LOCATION  
 VSA#267

POWERGRID EXISTING  
 400KV SWITCHYARD  
 BUSBAR PROTECTION  
 SUPPLIED BY POWERGRID  
 SOUTHERN SIDE  
 CWT31 [7B506,7] [21A0h]  
 TRANSF. PROT. [7B503]  
 F87 TZ1 [7B903]  
 F87 TZ2 [7B903]  
 F891 [7B903]  
 F892 [7B903]  
 TRANSF. INTERZONE PROT.  
 FILTER INTERZONE PROT.  
 CWD30 [7C1003]  
 CCT. BKR. PROT.  
 F48 [7C1003]  
 F48 [7C1003]  
 F48 [7C1003]

**AS BUILT DWG**  
 14 APR 2000  
**VISAKHAPATNAM**

THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO DB308 UNLESS OTHERWISE STATED  
 IF IN DOUBT ASK  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROG  
 DRAWN JCP  
 GFD PNS  
 APP'D RFR  
 SCALE  
 TRACED  
 DESIGN NMK  
 APP'D

FILE 2A05  
 POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM  
**GEC ALSTHOM**  
 T&D  
**GEC ALSTHOM T&D**  
 Power Electronic Systems Limited.  
 Visakhapatnam  
 SINGLE LINE DIAGRAM OF PROTECTION  
 CT & CVT DISPOSITION  
 SOUTHERN BUS  
 DRG. No. 637EZ1Y04619 SHT 3  
 CURRENT ISSUE D  
 CUSTOMER POWERGRID  
 ORDER No. CPO136



\* OPTICAL LINK  
 \* DENOTES CT/CVT NOT IN GECA T&D SUPPLY  
 [NM] DENOTES FILE No OF 2ANN SECTION  
 [02] FOR MAIN EQUIPMENT IDENTIFICATION  
 REFER 637EZ1Y04619 FOR FILE INDEX [2A04]  
 [7ANN] DENOTES FILE No OF 7A SECTION etc

CD. DATA	PK	PK	PK
ISSUE	A	B	C
DATE	18	27	10
	AUG	AUG	97
LOCATION	MSA3800		

**AS BUILT DWG**  
 14 APR 2000  
**VISAKHAPATNAM**

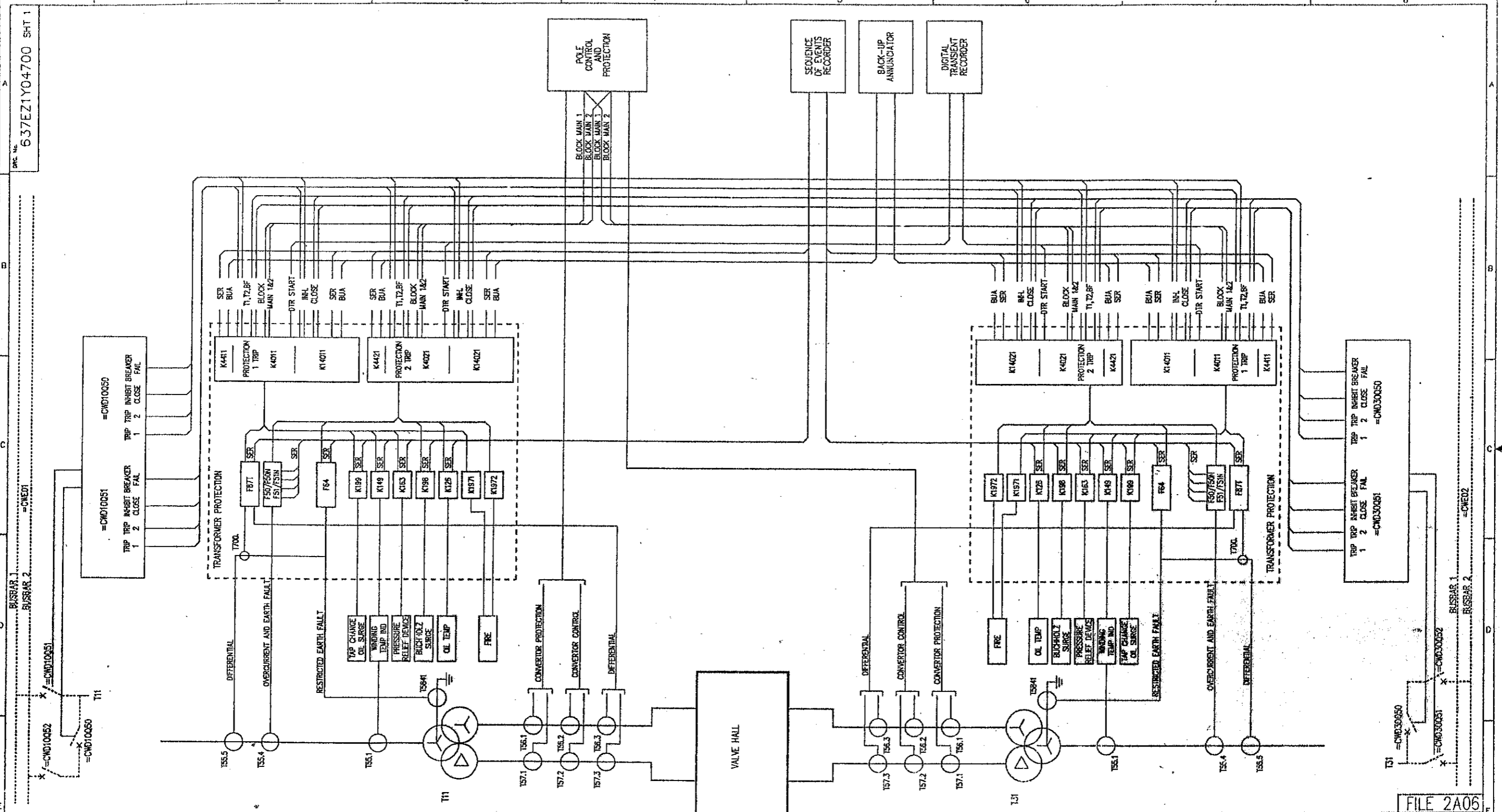
THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BE MADE UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/021/PROC  
 IF IN DOUBT ASK  
 DO NOT SCALE PRINT

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

**GEC ALSTHOM**  
 T&D  
**GEC ALSTHOM T&D**  
 Power Electronic Systems Limited  
 VISAKHAPATNAM  
 SINGLE LINE DIAGRAM OF METERING  
 CT & CVT DISPOSITION  
 SOUTHERN BUS

FILE 2A05/1

ORDER No. 637EZ1Y04619 .SHT 4  
 CUSTOMER: POWERGRID  
 ORDER No. CP0136



CAD. DATA	A	B
ISSUE	B	MCLM
NAME	637EZ1Y04700	
LOCATION	VSA3788	
ISSUE DATE	26 APR 97	01 99
DRAWING MODIFIED IN LINE WITH MARKED UP PRINT.		

**AS BUILT DWG**  
14 APR 2000  
**VISAKHAPATNAM**

THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN: DE
F IN DOUBT ASK	DRAWING TO BE MADE UNLESS OTHERWISE STATED	CHKD: DB
	FOR THE SIGNATURE OF AUTHORITY OF ALL UNITS/LEVELS DIMENSIONS SEE SPEC. STAND/G33/PROC	APP'D: RFR
		SCALE:
		TRACED:
		DESIGN APP'D: PRJ
		DR. NOT SCALE PRINT

FILE 2A06

**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
**VISAKHAPATNAM**

**GEC ALSTHOM**  
T&D

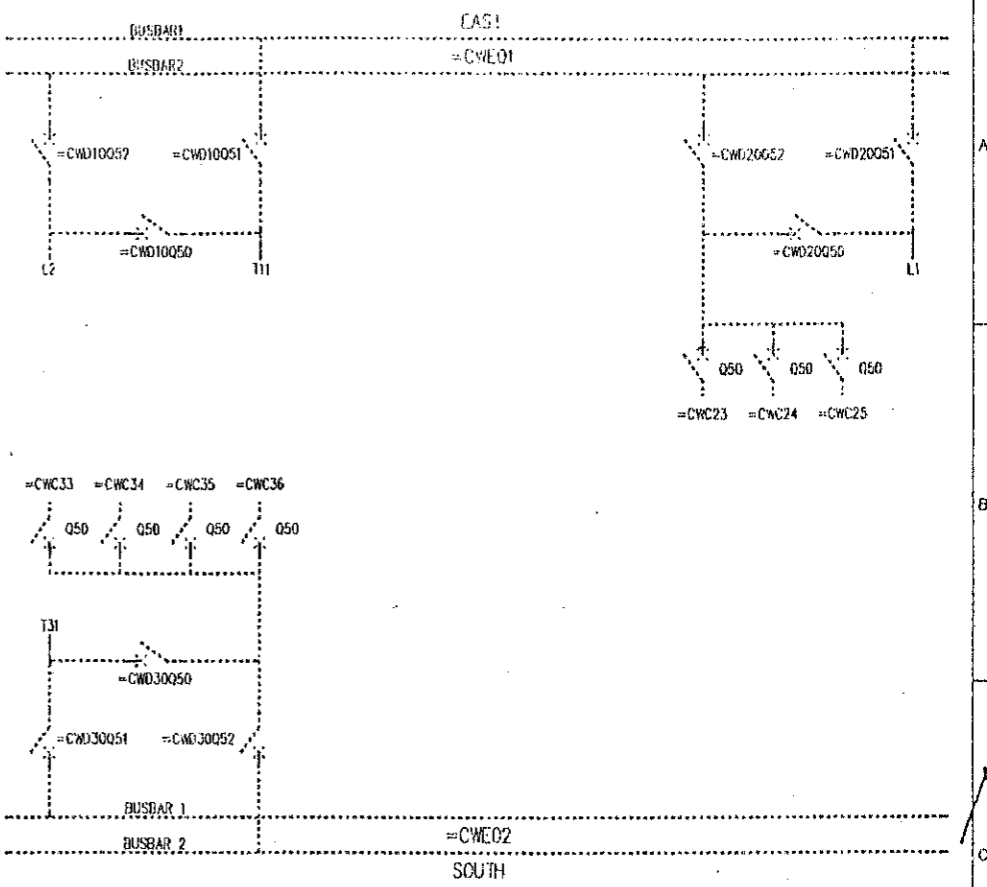
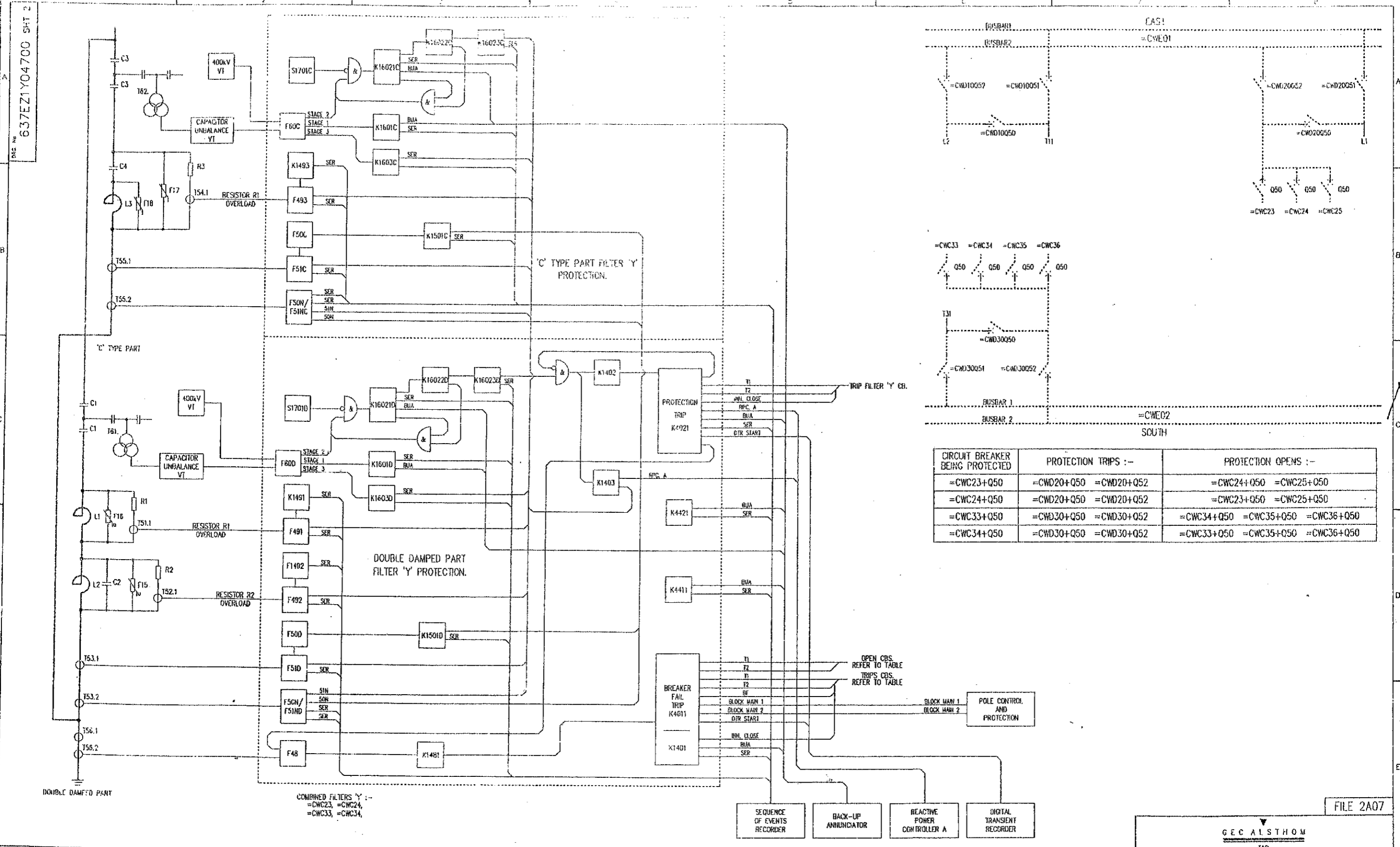
**GEC ALSTHOM T&D**  
Power Electronics Systems Limited  
Bardonia, England

**VISAKHAPATNAM**  
CONVERTOR TRANSFORMER PROTECTION  
BLOCK DIAGRAM

DRAWING NO. **637EZ1Y04700 SHT 1**  
CURRENT ISSUE **B**

CUSTOMER: POWERGRID CORP OF INDIA | ORDER NO. CPO138

Doc No. 637EZ1Y04700 SHT 2



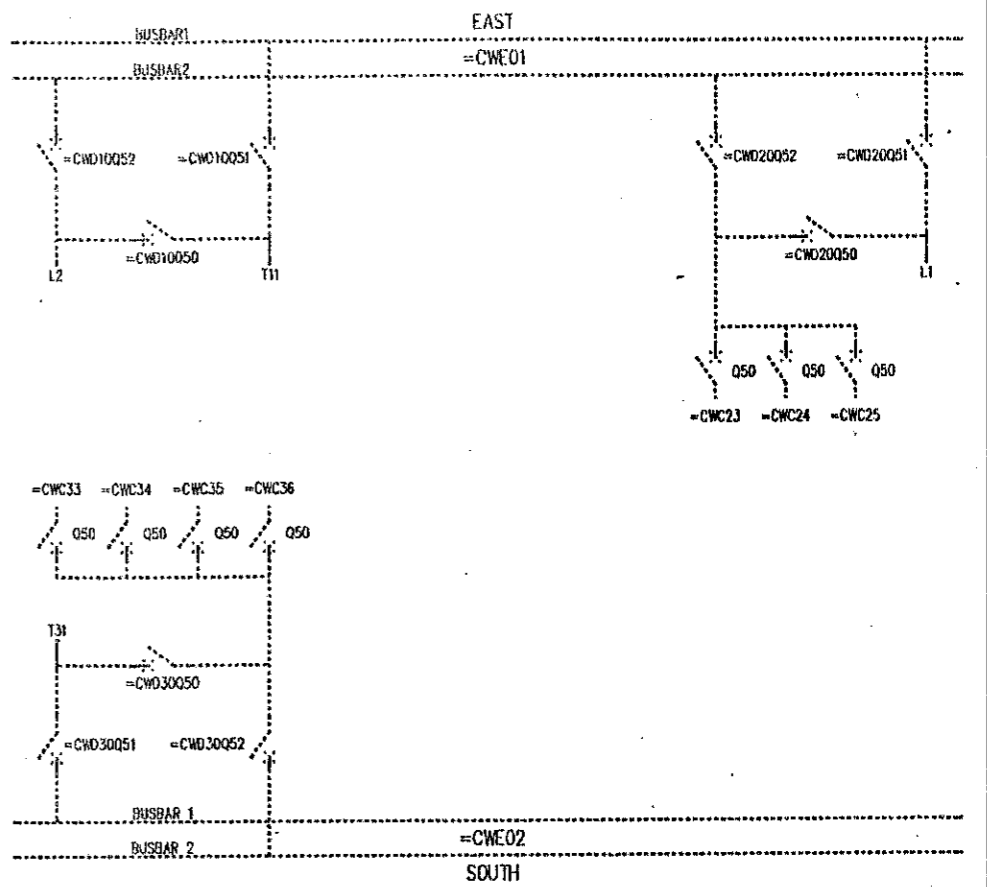
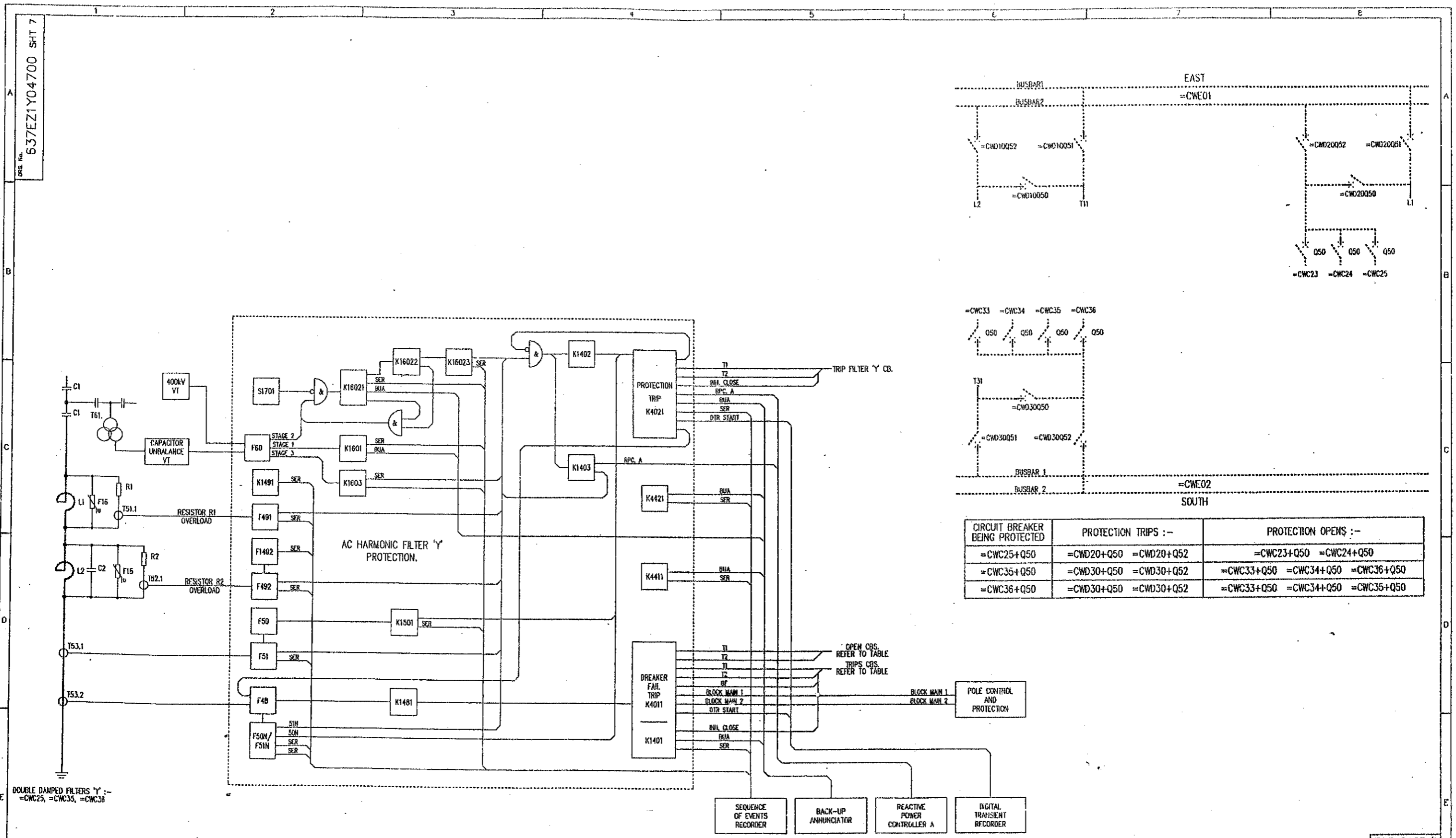
CIRCUIT BREAKER BEING PROTECTED	PROTECTION TRIPS :-	PROTECTION OPENS :-
=CWC23+Q50	=CWD20+Q50 =CWD20+Q52	=CWC24+Q50 =CWC25+Q50
=CWC24+Q50	=CWD20+Q50 =CWD20+Q52	=CWC23+Q50 =CWC25+Q50
=CWC33+Q50	=CWD30+Q50 =CWD30+Q52	=CWC34+Q50 =CWC35+Q50 =CWC36+Q50
=CWC34+Q50	=CWD30+Q50 =CWD30+Q52	=CWC33+Q50 =CWC35+Q50 =CWC36+Q50

- SEQUENCE OF EVENTS RECORDER
- BACK-UP ANNUNCIATOR
- REACTIVE POWER CONTROLLER A
- DIGITAL TRANSIENT RECORDER

FILE 2A07

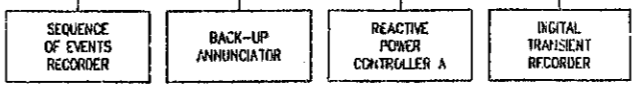
<b>C.A.D. DATA</b> ISSUE: A NAME: 637EZ1Y04700 LOCATION: VISA3699		<b>AS BUILT DWG</b> 14 APR 2000 <b>VISAKHAPATNAM</b>		<b>GEC ALSTHOM</b> T&D <b>GEC ALSTHOM T&amp;D</b> Power Electronic Systems Limited Shrired, England <b>VISAKHAPATNAM</b> COMBINED FILTER PROTECTION BLOCK DIAGRAM	
C.A.D. DATA ISSUE: A NAME: 637EZ1Y04700 LOCATION: VISA3699		<b>AS BUILT DWG</b> 14 APR 2000 <b>VISAKHAPATNAM</b>		<b>GEC ALSTHOM</b> T&D <b>GEC ALSTHOM T&amp;D</b> Power Electronic Systems Limited Shrired, England <b>VISAKHAPATNAM</b> COMBINED FILTER PROTECTION BLOCK DIAGRAM	
C.A.D. DATA ISSUE: A NAME: 637EZ1Y04700 LOCATION: VISA3699		<b>AS BUILT DWG</b> 14 APR 2000 <b>VISAKHAPATNAM</b>		<b>GEC ALSTHOM</b> T&D <b>GEC ALSTHOM T&amp;D</b> Power Electronic Systems Limited Shrired, England <b>VISAKHAPATNAM</b> COMBINED FILTER PROTECTION BLOCK DIAGRAM	

Doc. No. 637EZ1Y04700 SHT 7



CIRCUIT BREAKER BEING PROTECTED	PROTECTION TRIPS :-	PROTECTION OPENS :-
=CWC25+Q50	=CWD20+Q50 =CWD20+Q52	=CWC23+Q50 =CWC24+Q50
=CWC35+Q50	=CWD30+Q50 =CWD30+Q52	=CWC33+Q50 =CWC34+Q50 =CWC36+Q50
=CWC36+Q50	=CWD30+Q50 =CWD30+Q52	=CWC33+Q50 =CWC34+Q50 =CWC35+Q50

DOUBLE DAMPED FILTERS 'Y' :-  
=CWC25, =CWC35, =CWC36



ISSUE A  
NAME 637EZ1Y04700  
LOCATION WSA3785

ISSUE DATE 21/01/99

**AS BUILT DWG**  
14 APR 2000  
**VISAKHAPATNAM**

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PRG

DRAWN SF  
CHKD RV  
APP'D  
SCALE  
TRACED  
DESIGN  
APP'D

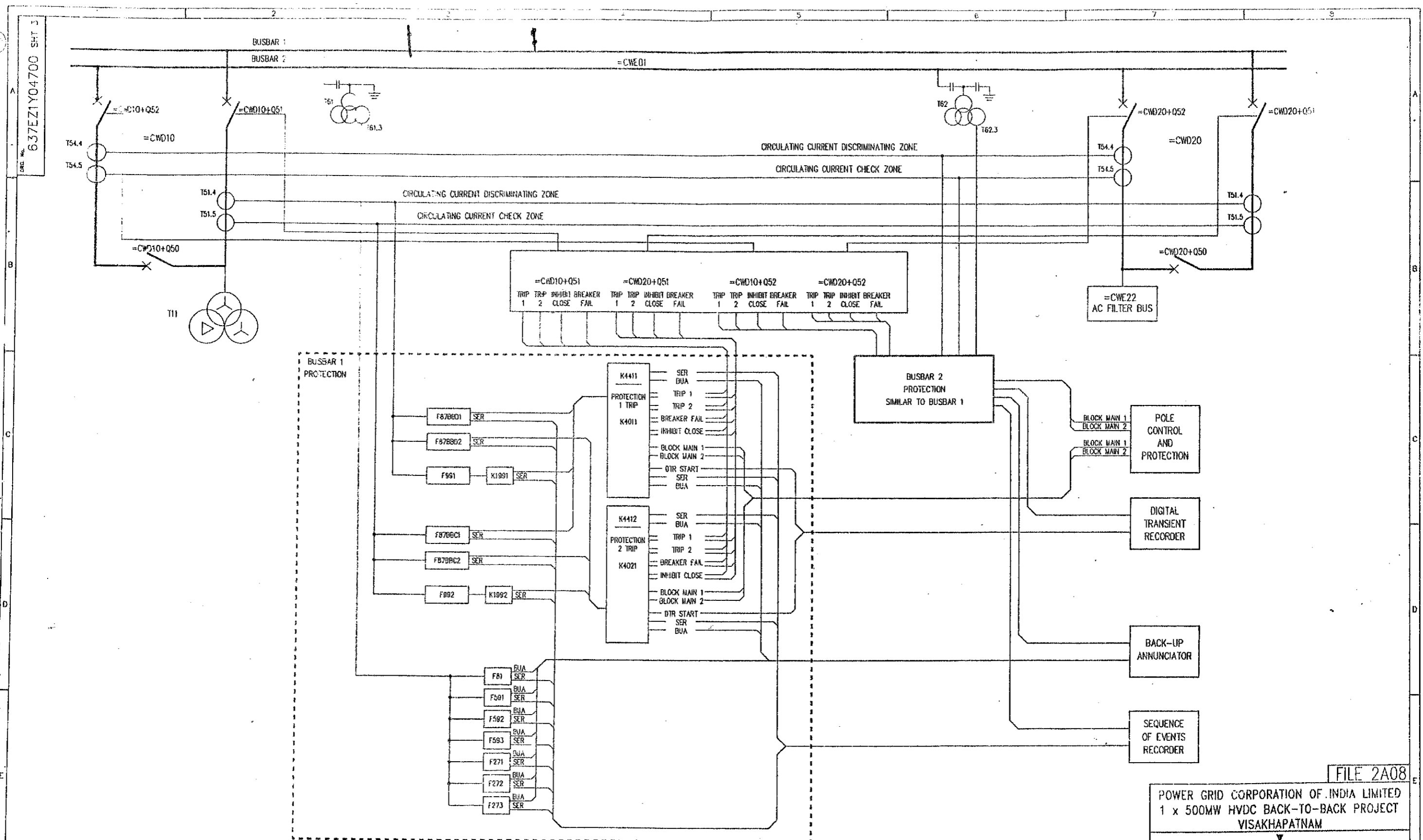
**GEC ALSTHOM**  
T&D  
**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
Stafford, England

**VISAKHAPATNAM**  
DOUBLE DAMPED FILTER PROTECTION  
BLOCK DIAGRAM

DRG. No. 637EZ1Y04700 SHT 7  
CURRENT ISSUE A

DO NOT SCALE PRINT  
WHEN QUOTING DRG. NO. STATE CURRENT ISSUE  
CUSTOMER POWERGRID  
ORDER No. CPO136

FILE 2A07/1



REFER 637EZ1Y04559 FOR MAIN INDEX (1A01)  
REFER (2A01) FOR FILE INDEX

FILE 2A08

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Sharnbrook, England

VISAKHAPATNAM  
EASTERN BUSBAR PROTECTION  
BLOCK DIAGRAM

DRG. No. 637EZ1Y04700 SHT 3  
CURRENT ISSUE B

CAD. DATA  
ISSUE B  
DATE 11 AUG 97  
LOCATION VISA4251

TRIP SIGNALS TO CHECKED BY  
# =CWD20+Q52 CORRECTED

ISSUE	A	B
DATE	11 AUG 97	23 SEP 99

AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

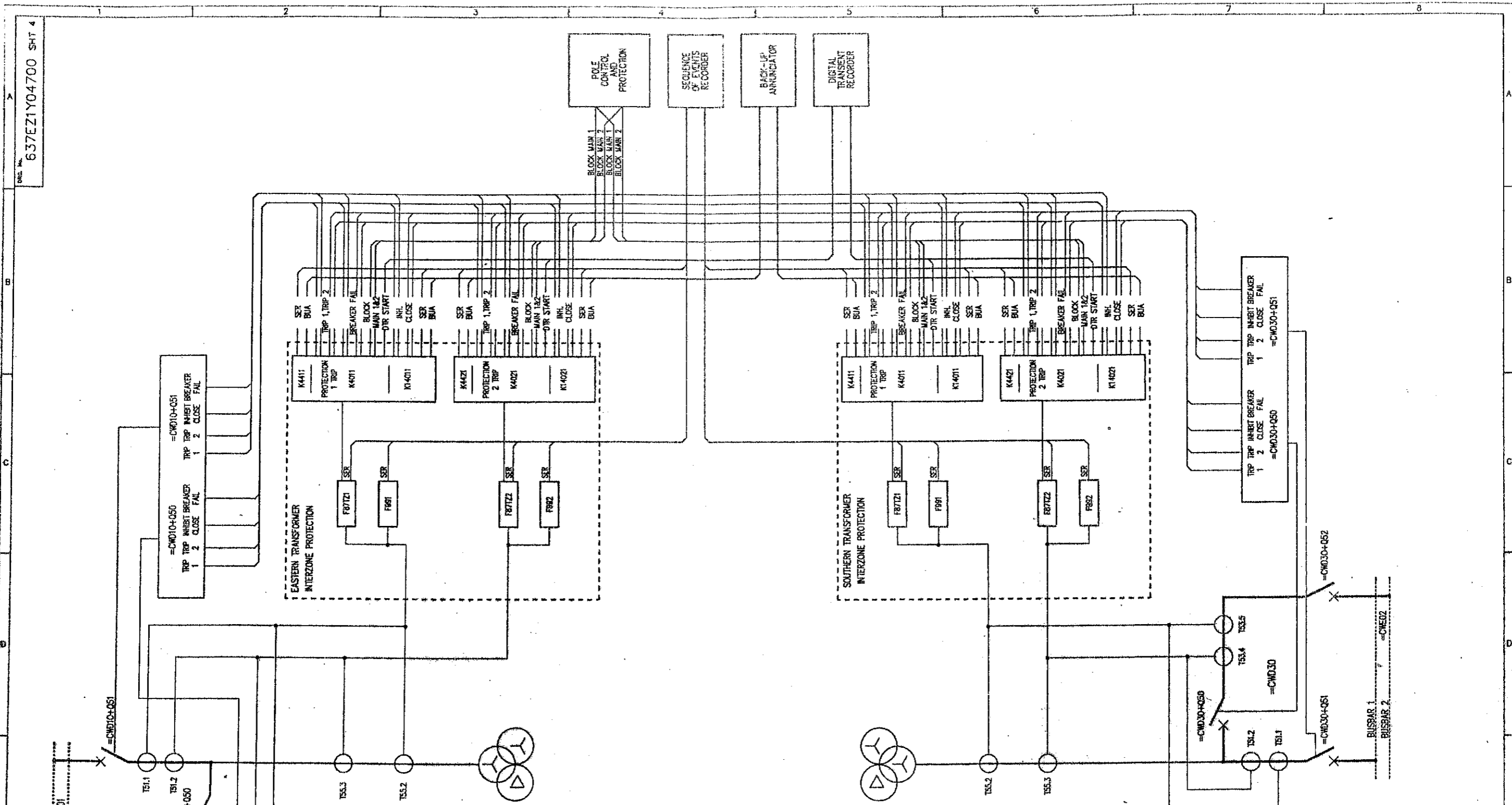
THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS208 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROC

DESIGN APP'D PRJ

DO NOT SCALE PRINT  
WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
CUSTOMER POWERGRID CORP. OF INDIA ORDER No. C-0135

DRG. No. 637EZ1Y04700 SH. 4



CAA DATA  
 ISSUE A  
 NAME 637EZ1Y04700  
 LOCATION VISA1474

ISSUE A  
 DATE 12 AUG 97

AS BUILT DWG  
 14 APR 2003  
 VISAKHAPATNAM

THIRD ANGLE PROJECTION  
 IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BE USED UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPEC STAND/023/PROG

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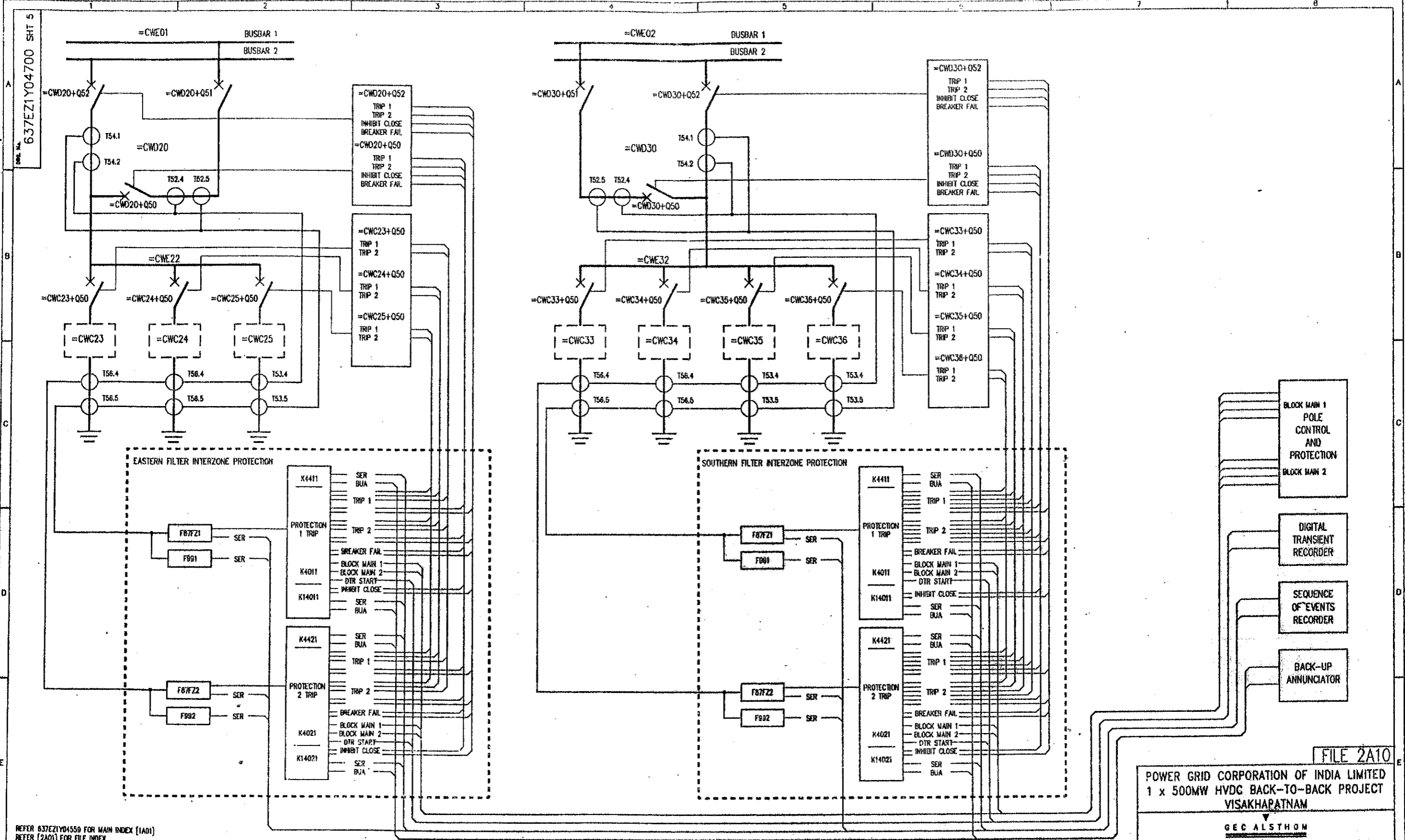
POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM T&D  
 Power Electronics Systems Limited  
 Hyderabad, Telangana

VISAKHAPATNAM  
 TRANSFORMER INTERZONE PROTECTION  
 BLOCK DIAGRAM

DRG. No. 637EZ1Y04700 SH. 4  
 CURRENT ISSUE A

FILE 2A09



REFER 637E21Y04559 FOR MAIN INDEX (1A01)  
REFER (2A01) FOR FILE INDEX

FILE 2A10

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

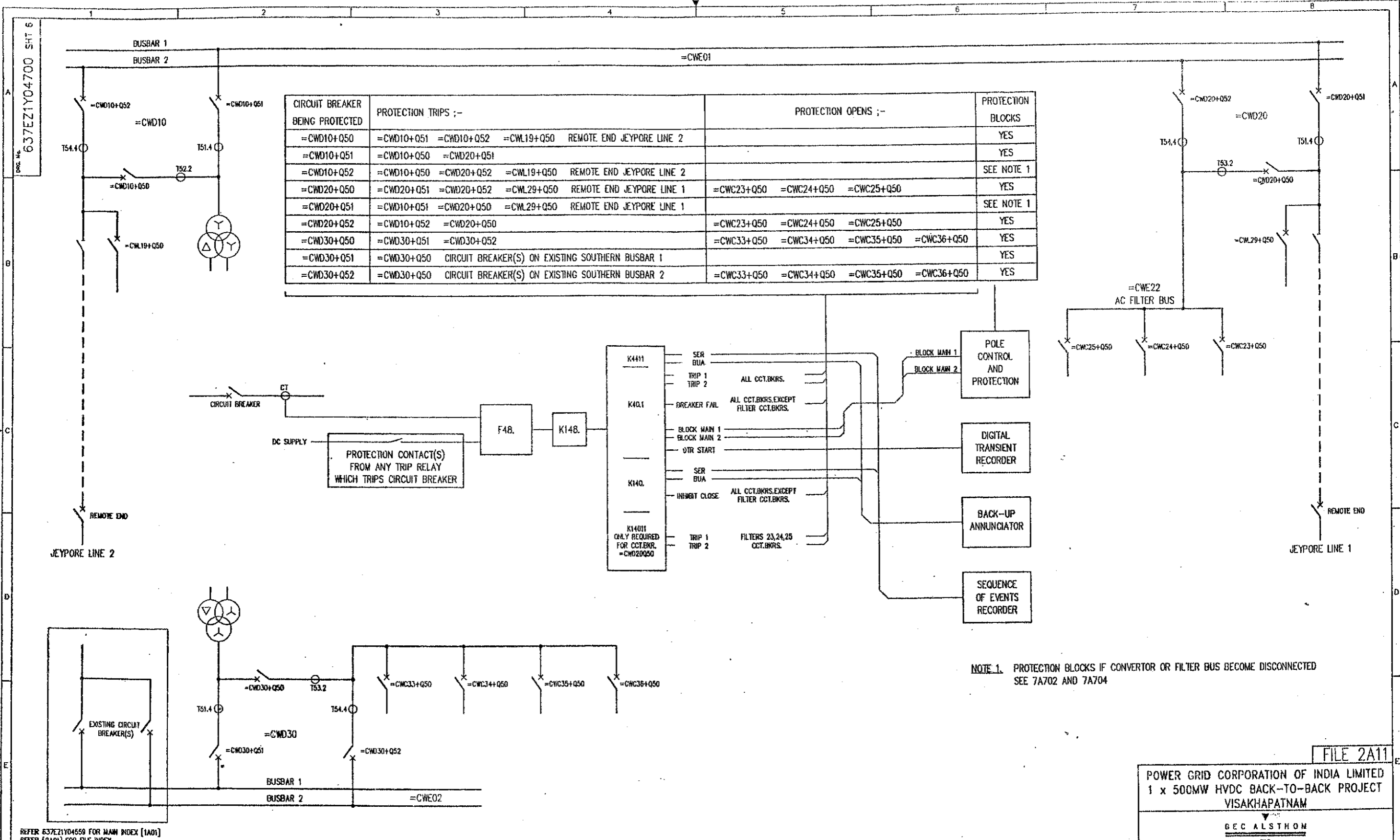
GEC ALSTHOM  
T&D

ISSUE	A
NAME	637E21Y04700
LOCATION	VSA1482
ISSUE DATE	18 AUG 07

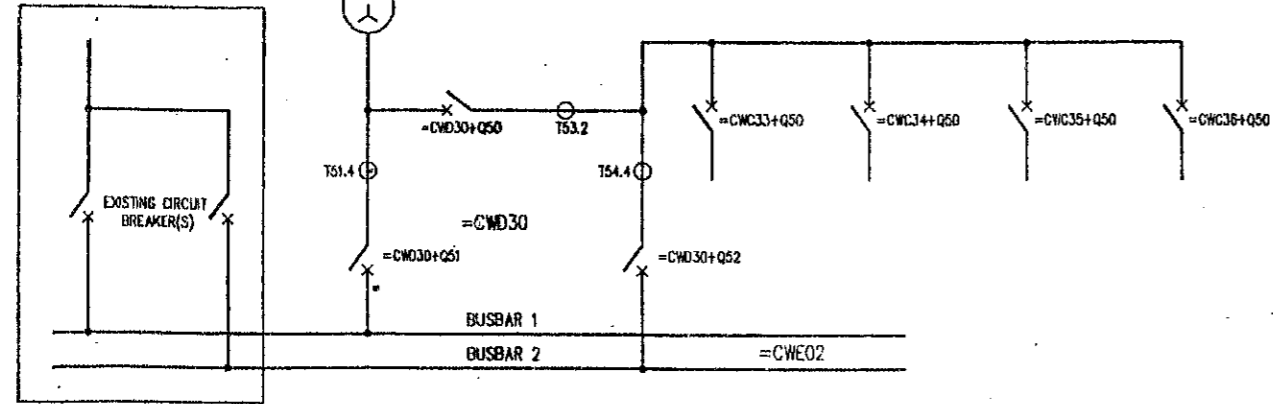
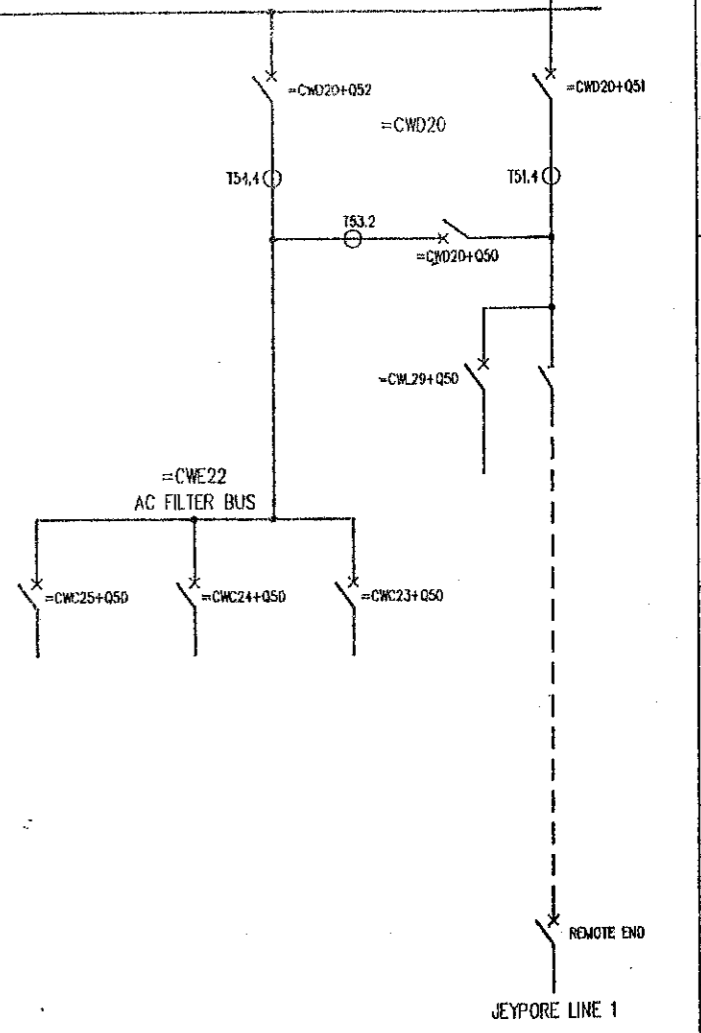
**AS BUILT DWG**  
14 APR 2003  
**VISAKHAPATNAM**

THIRD ANGLE PROJECTION  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BE USED UNLESS OTHERWISE STATED  
DRAWING TO BE USED UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPECIAL STANDARDS/PROC  
IF IN DOUBT, ASK

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
VISAKHAPATNAM  
FILTER INTERZONE PROTECTION  
BLOCK DIAGRAM  
DRAWING NO. 637E21Y04700 SHT 5  
CURRENT ISSUE A



CIRCUIT BREAKER BEING PROTECTED	PROTECTION TRIPS :-	PROTECTION OPENS :-	PROTECTION BLOCKS
=CWD10+Q50	=CWD10+Q51 =CWD10+Q52 =CWL19+Q50	REMOTE END JEYPURE LINE 2	YES
=CWD10+Q51	=CWD10+Q50 =CWD20+Q51		YES
=CWD10+Q52	=CWD10+Q50 =CWD20+Q52 =CWL19+Q50	REMOTE END JEYPURE LINE 2	SEE NOTE 1
=CWD20+Q50	=CWD20+Q51 =CWD20+Q52 =CWL29+Q50	REMOTE END JEYPURE LINE 1	YES
=CWD20+Q51	=CWD10+Q51 =CWD20+Q50 =CWL29+Q50	REMOTE END JEYPURE LINE 1	SEE NOTE 1
=CWD20+Q52	=CWD10+Q52 =CWD20+Q50	=CWC23+Q50 =CWC24+Q50 =CWC25+Q50	YES
=CWD30+Q50	=CWD30+Q51 =CWD30+Q52	=CWC33+Q50 =CWC34+Q50 =CWC35+Q50 =CWC36+Q50	YES
=CWD30+Q51	=CWD30+Q50	CIRCUIT BREAKER(S) ON EXISTING SOUTHERN BUSBAR 1	YES
=CWD30+Q52	=CWD30+Q50	CIRCUIT BREAKER(S) ON EXISTING SOUTHERN BUSBAR 2	YES



NOTE 1. PROTECTION BLOCKS IF CONVERTOR OR FILTER BUS BECOME DISCONNECTED SEE 7A702 AND 7A704

REFER 637EZ1Y04559 FOR MAIN INDEX [1A01]  
REFER [2A01] FOR FILE INDEX

ISSUE	A	B
NAME	11	27
DATE	AUG 97	AUG 98
LOCATION	VISA3789	

LOADING INDICATED TO MARGED UP  
PUBLI SEE LOCAL NUMBER 62L  
MC-11  
01  
98  
1514 WAS T5L3 (3 PLACES)  
1544 WAS T5L3 (3 PLACES)  
1548 WAS T5L3 (3 PLACES)  
1549 WAS T5L3 (3 PLACES)

**AS BUILT DWG**  
14 APR 2000  
**VISAKHAPATNAM**

TWO ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN DB
IF IN DOUBT ASK	DRAWING TO BE 3008 UNLESS OTHERWISE STATED	APP'D RFR
	FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPEC. STAB/025/PROO	SCALE
		TRACED
		DESIGN APP'D PRJ
		DO NOT SCALE PRINT

FILE 2A11

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

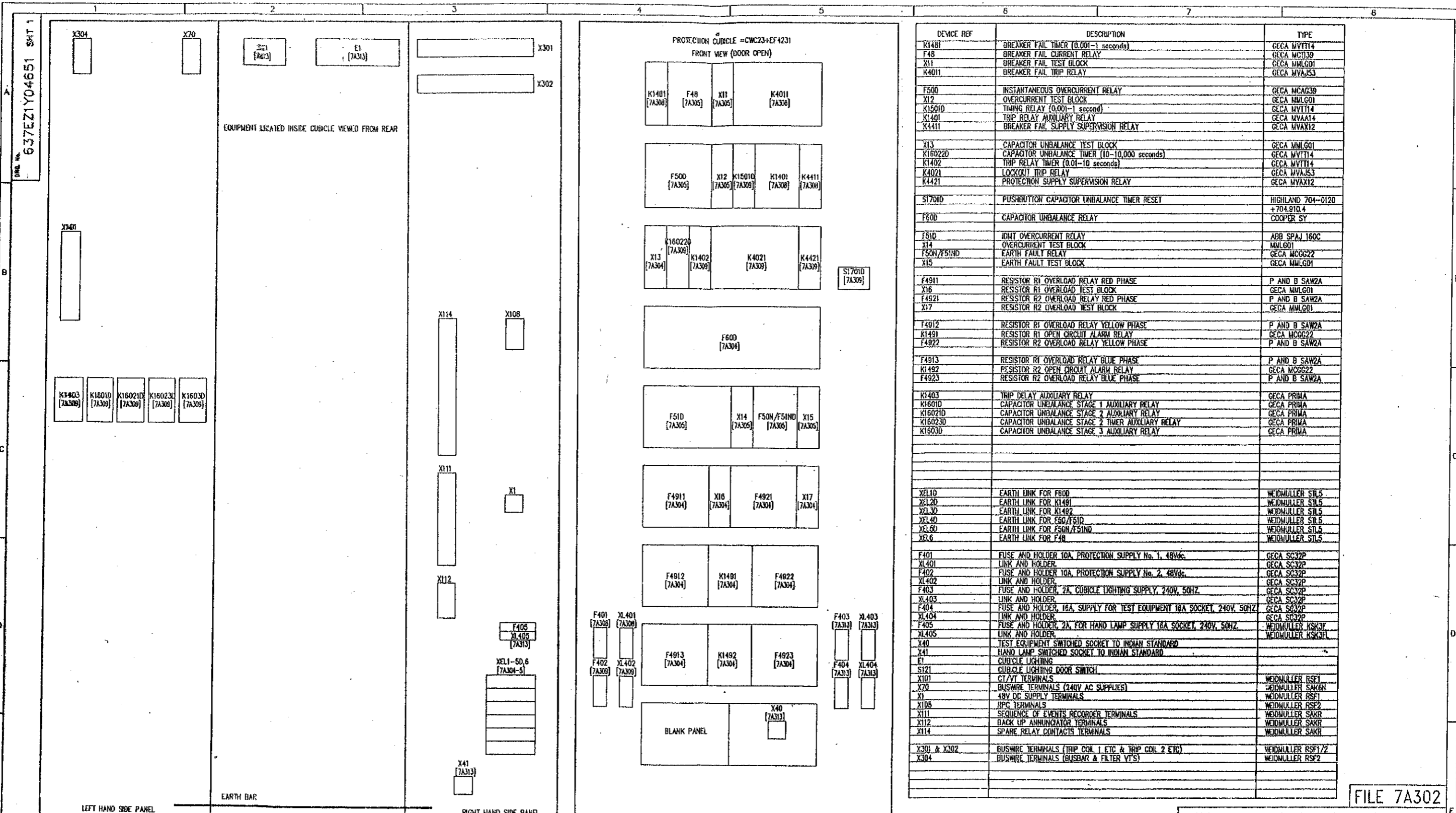
GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Shiford, England

TITLE  
VISAKHAPATNAM  
CIRCUIT BREAKER PROTECTION  
BLOCK DIAGRAM

DWG. No. 637EZ1Y04700 SHT 6  
CURRENT ISSUE C

CUSTOMER POWERGRID  
ORDER No. CP0136





DEVICE REF	DESCRIPTION	TYPE
K1481	BREAKER FAIL TIMER (0.001-1 seconds)	GECA MYTT14
F48	BREAKER FAIL CURRENT RELAY	GECA MCT139
X11	BREAKER FAIL TEST BLOCK	GECA MMLG01
K4011	BREAKER FAIL TRIP RELAY	GECA MVAJ53
F500	INSTANTANEOUS OVERCURRENT RELAY	GECA MCAG39
X12	OVERCURRENT TEST BLOCK	GECA MMLG01
K1501D	TIMING RELAY (0.001-1 second)	GECA MYTT14
K1401	TRIP RELAY AUXILIARY RELAY	GECA MVAJ14
K4411	BREAKER FAIL SUPPLY SUPERVISION RELAY	GECA MVAJ12
X13	CAPACITOR UNBALANCE TEST BLOCK	GECA MMLG01
K16022D	CAPACITOR UNBALANCE TIMER (10-10,000 seconds)	GECA MYTT14
K1402	TRIP RELAY TIMER (0.01-10 seconds)	GECA MYTT14
K4021	LOCKOUT TRIP RELAY	GECA MVAJ53
K4421	PROTECTION SUPPLY SUPERVISION RELAY	GECA MVAJ12
S1701D	PUSHBUTTON CAPACITOR UNBALANCE TIMER RESET	HIGHLAND 704-0120 +704.810.4 COOPER SY
F600	CAPACITOR UNBALANCE RELAY	ABB SPAJ 160C MMLG01
F51D	IDMT OVERCURRENT RELAY	ABB SPAJ 160C MMLG01
X14	OVERCURRENT TEST BLOCK	GECA MMLG01
F50N/F51ND	EARTH FAULT RELAY	GECA MCGG22
X15	EARTH FAULT TEST BLOCK	GECA MMLG01
F4911	RESISTOR R1 OVERLOAD RELAY RED PHASE	P AND B SAWZA
X16	RESISTOR R1 OVERLOAD TEST BLOCK	GECA MMLG01
F4921	RESISTOR R2 OVERLOAD RELAY RED PHASE	P AND B SAWZA
X17	RESISTOR R2 OVERLOAD TEST BLOCK	GECA MMLG01
F4912	RESISTOR R1 OVERLOAD RELAY YELLOW PHASE	P AND B SAWZA
K1491	RESISTOR R1 OPEN CIRCUIT ALARM RELAY	GECA MCGG22
F4922	RESISTOR R2 OVERLOAD RELAY YELLOW PHASE	P AND B SAWZA
F4913	RESISTOR R1 OVERLOAD RELAY BLUE PHASE	P AND B SAWZA
K1492	RESISTOR R2 OPEN CIRCUIT ALARM RELAY	GECA MCGG22
F4923	RESISTOR R2 OVERLOAD RELAY BLUE PHASE	P AND B SAWZA
K1403	TRIP DELAY AUXILIARY RELAY	GECA PRIMA
K1601D	CAPACITOR UNBALANCE STAGE 1 AUXILIARY RELAY	GECA PRIMA
K16021D	CAPACITOR UNBALANCE STAGE 2 AUXILIARY RELAY	GECA PRIMA
K16023D	CAPACITOR UNBALANCE STAGE 2 TIMER AUXILIARY RELAY	GECA PRIMA
K1603D	CAPACITOR UNBALANCE STAGE 3 AUXILIARY RELAY	GECA PRIMA
XEL1D	EARTH LINK FOR F600	WEIDMULLER STL5
XEL2D	EARTH LINK FOR K1491	WEIDMULLER STL5
XEL3D	EARTH LINK FOR K1492	WEIDMULLER STL5
XEL4D	EARTH LINK FOR F50/F51D	WEIDMULLER STL5
XEL5D	EARTH LINK FOR F50N/F51ND	WEIDMULLER STL5
XEL6	EARTH LINK FOR F48	WEIDMULLER STL5
F401	FUSE AND HOLDER 10A, PROTECTION SUPPLY No. 1, 48Vdc	GECA SC32P
XL401	LINK AND HOLDER	GECA SC32P
F402	FUSE AND HOLDER 10A, PROTECTION SUPPLY No. 2, 48Vdc	GECA SC32P
XL402	LINK AND HOLDER	GECA SC32P
F403	FUSE AND HOLDER, 2A, CUBICLE LIGHTING SUPPLY, 240V, 50HZ	GECA SC32P
XL403	LINK AND HOLDER	GECA SC32P
F404	FUSE AND HOLDER, 16A, SUPPLY FOR TEST EQUIPMENT 16A SOCKET, 240V, 50HZ	GECA SC32P
XL404	LINK AND HOLDER	GECA SC32P
F405	FUSE AND HOLDER, 2A, FOR HAND LAMP SUPPLY 16A SOCKET, 240V, 50HZ	WEIDMULLER KSK3F
XL405	LINK AND HOLDER	WEIDMULLER KSK3F
X40	TEST EQUIPMENT SWITCHED SOCKET TO INDIAN STANDARD	
X41	HAND LAMP SWITCHED SOCKET TO INDIAN STANDARD	
E1	CUBICLE LIGHTING	
S121	CUBICLE LIGHTING DOOR SWITCH	
X101	CT/PT TERMINALS	WEIDMULLER RSE1
X20	BUSWIRE TERMINALS (240V AC SUPPLIES)	WEIDMULLER SAKR
X1	48V DC SUPPLY TERMINALS	WEIDMULLER RSE1
X108	RPC TERMINALS	WEIDMULLER RSE2
X111	SEQUENCE OF EVENTS RECORDER TERMINALS	WEIDMULLER SAKR
X112	BACK UP AMMUNICATOR TERMINALS	WEIDMULLER SAKR
X114	SPARE RELAY CONTACTS TERMINALS	WEIDMULLER SAKR
X301 & X302	BUSWIRE TERMINALS (TRIP COIL 1 ETC & TRIP COIL 2 ETC)	WEIDMULLER RSE1/2
X304	BUSWIRE TERMINALS (BUSBAR & FILTER VT'S)	WEIDMULLER RSE2

FILE 7A302

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Stafford, England

TITLE  
VISAKHAPATNAM  
AC HARMONIC FILTER =CWC23 PROTECTION  
CUBICLE =CWC23+EF4231 EQUIPMENT & DEVICE LIST  
(DOUBLE DAMPED PART OF FILTER)

DRG. No. 637EZ1Y04651 SHT 1  
CURRENT ISSUE E

REFER 637EZ1Y04651 FOR FILE INDEX (7A301)

CLASS DATA	A	B	C	D
NAME	PRJ JCP	PRJ JCP	PRJ JCP	PRJ JCP
DATE	12/03/97	06/06/97	08/08/97	26/08/97
LOCATION	WISA2458			
		REVISED TO EGN 8251- V7 FUSES/LINKS REPLACED BY 500A	REVISED TO EGN 8315- DESCRIPTION OF K4411,2 CORRECTED	REVISED TO EGN 8350- X121 & X122 DELETED
			REVISED TO EGN 8444- DELETED R11, R12D, R13D, R14	PREM 28/07/98

AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE

NAME: B T BARRETT  
DEPT. 739 DATE: 5/3/97  
SIGNED: BTB

THIRD ANGLE  
PROJECTION

IF IN DOUBT  
ASK

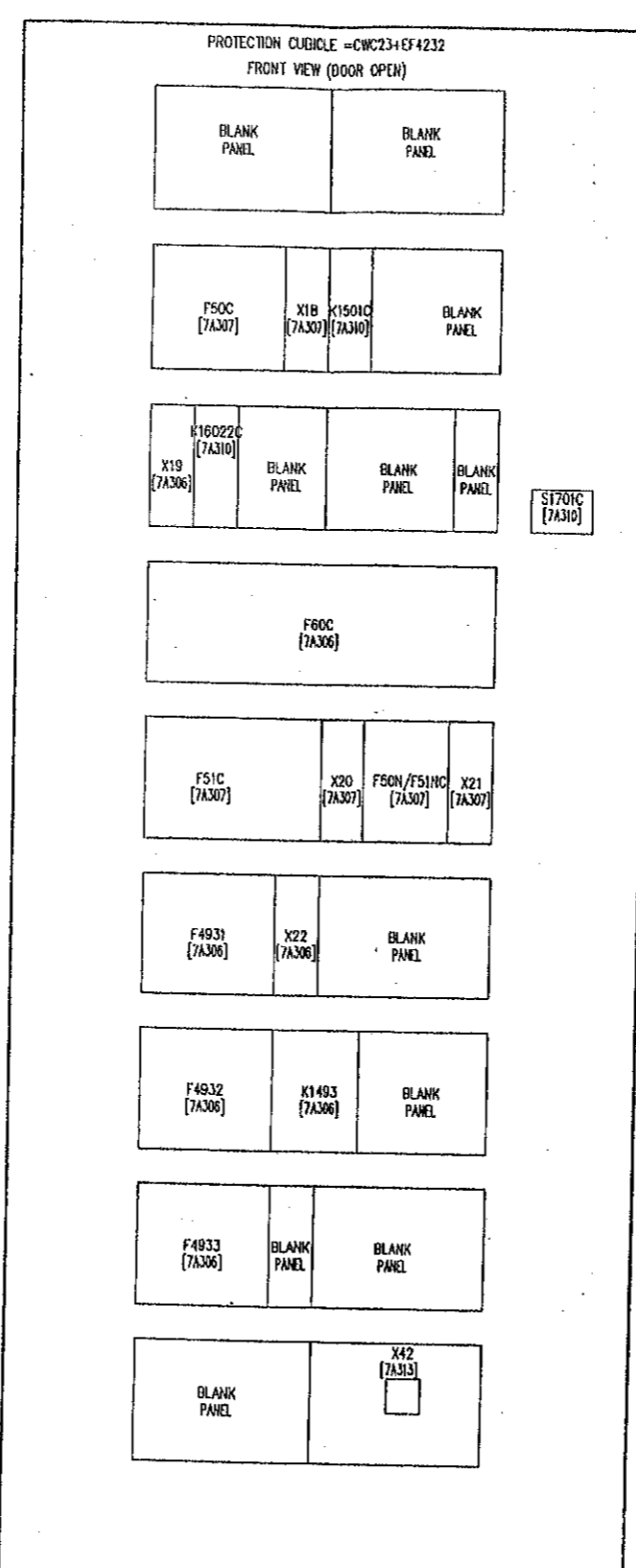
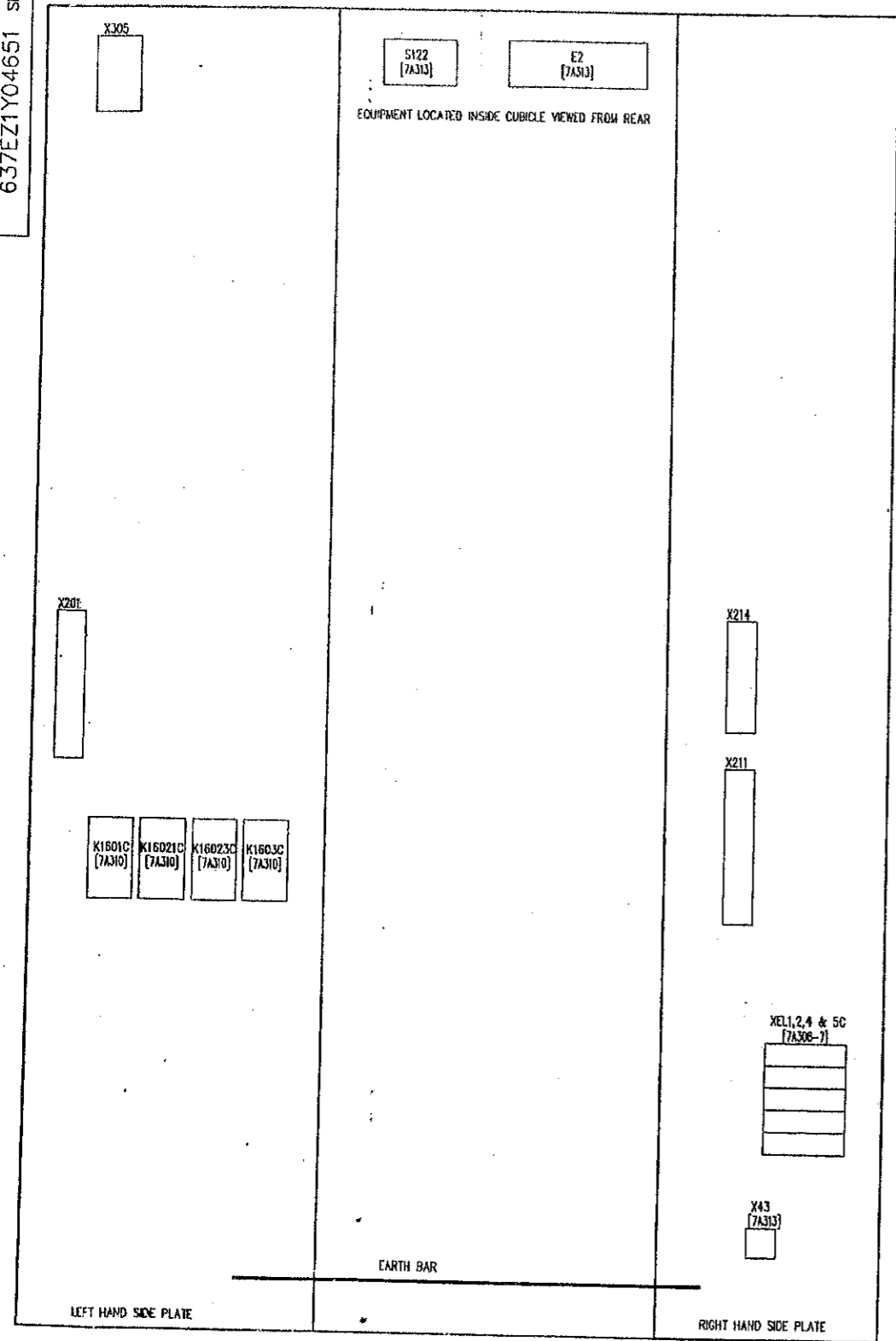
ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED

DRAWING TO BS308  
UNLESS OTHERWISE STATED

FOR THE STANDARD OF  
ACCURACY OF ALL  
UNSTANDARD DIMENSIONS  
SEE SPEC. STAND/923/PROC

DO NOT SCALE PRINT

637EZ1Y04651 SHT 2



DEVICE REF	DESCRIPTION	TYPE
F50C	INSTANTANEOUS OVERCURRENT RELAY	GCEA MCAG39
X18	OVERCURRENT TEST BLOCK	GCEA MMLG01
K1501C	TIMING RELAY (0.001-1 second)	GCEA MVT114
X19	CAPACITOR UNBALANCE TEST BLOCK	GCEA MMLG01
K16022C	CAPACITOR UNBALANCE TIMER (10-10,000 seconds)	GCEA MVT114
S1701C	PUSHBUTTON CAPACITOR UNBALANCE TIMER RESET	HIGHLAND 704-0120 +704,910.4
F60C	CAPACITOR UNBALANCE RELAY	COOPER SY
F51C	IDMT OVERCURRENT RELAY	ASEA SPAJ 160C
X23	OVERCURRENT TEST BLOCK	MMLG01
F50N/F51NC	EARTH FAULT RELAY	GCEA KCGG122
X21	EARTH FAULT TEST BLOCK	GCEA MMLG01
F4931	RESISTOR R3 OVERLOAD RELAY RED PHASE	P AND B SAWZA
X22	RESISTOR R3 OVERLOAD TEST BLOCK	GCEA MMLG01
F4932	RESISTOR R3 OVERLOAD RELAY YELLOW PHASE	P AND B SAWZA
X1493	FILTER AUXILIARY CIRCUIT FAULTY ALARM RELAY	GCEA KCGG122
F4933	RESISTOR R3 OVERLOAD RELAY BLUE PHASE	P AND B SAWZA
K1601C	CAPACITOR UNBALANCE STAGE 1 AUXILIARY RELAY	GCEA PRIMA
K16021C	CAPACITOR UNBALANCE STAGE 2 AUXILIARY RELAY	GCEA PRIMA
K16023C	CAPACITOR UNBALANCE STAGE 2 TIMER AUXILIARY RELAY	GCEA PRIMA
K1603C	CAPACITOR UNBALANCE STAGE 3 AUXILIARY RELAY	GCEA PRIMA
XEL1C	EARTH LINK FOR F60C	WEIDMULLER STL5
XEL2C	EARTH LINK FOR K1493	WEIDMULLER STL5
XEL4C	EARTH LINK FOR F50C/F51C	WEIDMULLER STL5
XEL5C	EARTH LINK FOR F50N/F51NC	WEIDMULLER STL5
X42	TEST EQUIPMENT SWITCHED SOCKET TO INDIAN STANDARD	
X43	HAND LAMP SWITCHED SOCKET TO INDIAN STANDARD	
E2	CUBICLE LIGHTING	
S122	CUBICLE LIGHTING DOOR SWITCH	
X201	CT/VT TERMINALS	WEIDMULLER RSE1
X211	SEQUENCE OF EVENTS RECORDER TERMINALS	WEIDMULLER RSE2
X214	SPARE RELAY CONTACTS TERMINALS	WEIDMULLER SAKR
X305	BUSWIRE TERMINALS (BUSBAR & FILTER VT'S)	WEIDMULLER RSE2

FILE 7A303

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

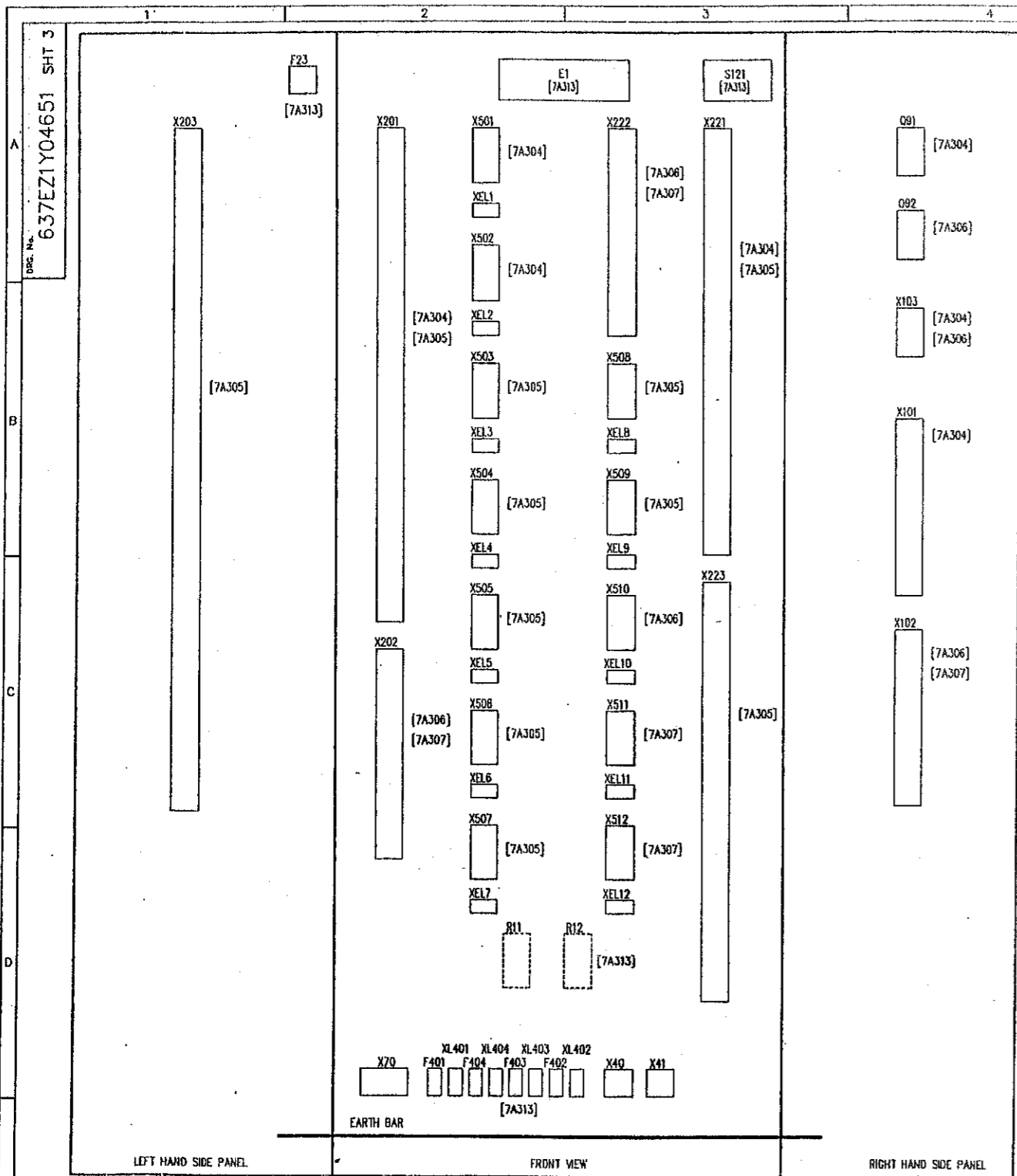
GEC ALSTHOM T&D  
Power Electronic Systems Limited

ISSUE	DATE	BY	REVISION
A	12/03/97	JCP	REVISED TO EON 8051-VT FUSES/JUNTS REPLACED BY X305
B	06/08/97	JCP	REVISED TO EON 8332-K1493 DESCRIPTION CHANGED
C	08/08/97	JCP	REVISED TO EON 8332-K1493 DESCRIPTION CHANGED
D	28/07/98	RFR	REVISED TO EON 8444-DELETED R121C, R131C
E	14/04/2003	JCP	REVISED TO EON 8444-DELETED R121C, R131C & DESCRIPTION CHANGED. ESO/ESINC TYPE CHANGED.

AS BUILT DWG  
14 APR 2003  
VISAKHAPATNAM

GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION IF IN DOUBT ASK	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED DRAWING TO BS308 UNLESS OTHERWISE STATED FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECN STAND/025/PROC	DRAWN JCP CHKD PNS APP'D RFR SCALE TRACED DESIGN APP'D PRJ
NAME: B T BARRETT DEPT. 739 DATE: 12/03/97 SIGNED BTB			

TITLE AC HARMONIC FILTER - CWC23 CUBICLE =CWC23+EF4232 EQUIPMENT & DEVICE LIST 'C' TYPE PART OF COMBINED FILTER	DRG. No. 637EZ1Y04651 SHT 2	CURRENT ISSUE E
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DEVICE REF	DESCRIPTION	TYPE	QTY
E1	CUBICLE LIGHTING		
S121	CUBICLE LIGHTING DOOR SWITCH		
Q91	CVT (D) MINATURE CIRCUIT BREAKER 1A, 3POLE (AUX CONTACTS)	KLOCKNER MOELLER FAZN C1-3 KLOCKNER MOELLER NRH 002-FAZ	
Q92	CVT (C) MINATURE CIRCUIT BREAKER 1A, 3POLE (AUX CONTACTS)	KLOCKNER MOELLER FAZN C1-3 KLOCKNER MOELLER NRH 002-FAZ	
X101	CVT (D) IN/OUT TERMINALS	WEIDMULLER RSF1	
X102	CVT (C) IN/OUT TERMINALS	WEIDMULLER RSF1	
X103	SER TERMINALS	WEIDMULLER SAKR	
X201	CT (D) IN TERMINALS	WEIDMULLER RSF1	
X202	CT (C) IN TERMINALS	WEIDMULLER RSF1	
X203	CT IN TERMINALS	WEIDMULLER RSF1	
X221	CT (D) OUT TERMINALS	WEIDMULLER RSF1	
X222	CT (C) OUT TERMINALS	WEIDMULLER RSF1	
X223	CT OUT TERMINALS	WEIDMULLER RSF1	
X501	CWC23+151.1 TEST BLOCK	WEIDMULLER SAKT2	
XEL1	EARTH LINK FOR 151.1	WEIDMULLER STL5	
X502	CWC23+152.1 TEST BLOCK	WEIDMULLER SAKT2	
XEL2	EARTH LINK FOR 152.1	WEIDMULLER STL5	
X503	CWC23+153.1 TEST BLOCK	WEIDMULLER SAKT2	
XEL3	EARTH LINK FOR 153.1	WEIDMULLER STL5	
X504	CWC23+153.2 TEST BLOCK	WEIDMULLER SAKT2	
XEL4	EARTH LINK FOR 153.2	WEIDMULLER STL5	
X505	CWC23+156.1 TEST BLOCK	WEIDMULLER SAKT2	
XEL5	EARTH LINK FOR 156.1	WEIDMULLER STL5	
X506	CWC23+156.2 TEST BLOCK	WEIDMULLER SAKT2	
XEL6	EARTH LINK FOR 156.2	WEIDMULLER STL5	
X507	CWC23+156.3 TEST BLOCK	WEIDMULLER SAKT2	
XEL7	EARTH LINK FOR 156.3	WEIDMULLER STL5	
X508	CWC23+156.4 TEST BLOCK	WEIDMULLER SAKT2	
XEL8	EARTH LINK FOR 156.4	WEIDMULLER STL5	
X509	CWC23+156.5 TEST BLOCK	WEIDMULLER SAKT2	
XEL9	EARTH LINK FOR 156.5	WEIDMULLER STL5	
X510	CWC23+154.1 TEST BLOCK	WEIDMULLER SAKT2	
XEL10	EARTH LINK FOR 154.1	WEIDMULLER STL5	
X511	CWC23+155.1 TEST BLOCK	WEIDMULLER SAKT2	
XEL11	EARTH LINK FOR 155.1	WEIDMULLER STL5	
X512	CWC23+155.2 TEST BLOCK	WEIDMULLER SAKT2	
XEL12	EARTH LINK FOR 155.2	WEIDMULLER STL5	
X70	240V AC SUPPLY TERMINALS	WEIDMULLER RSF1	
F401	FUSE AND HOLDER, 2A, CUBICLE LIGHTING SUPPLY, 240V, 50HZ.	WEIDMULLER KSK3F	
XL401	LINK AND HOLDER.	WEIDMULLER KSK3F	
F402	FUSE AND HOLDER, 16A, SUPPLY FOR TEST EQUIPMENT 16A SOCKET, 240V, 50HZ.	GECA L.V.E. SC32HD	
XL402	LINK AND HOLDER.	GECA L.V.E. SC32HD	
F403	FUSE AND HOLDER, 2A, FOR HAND LAMP SUPPLY 16A SOCKET, 240V, 50HZ.	WEIDMULLER KSK3F	
XL403	LINK AND HOLDER.	WEIDMULLER KSK3F	
F404	FUSE AND HOLDER, 10A, FOR HEATER SUPPLY, 240V, 50HZ.	WEIDMULLER KSK3F	
XL404	LINK AND HOLDER.	WEIDMULLER KSK3F	
R11, R12	CUBICLE HEATER THERMOSTATICALLY CONTROLLED (MID ON DOOR)	SAREL 17509 (90W)	
F23	THERMOSTAT	SAREL 17561	
X40	TEST EQUIPMENT SWITCHED SOCKET TO INDIAN STANDARD		
X41	HAND LAMP SWITCHED SOCKET TO INDIAN STANDARD		

(C) DENOTES 'C TYPE' PART OF COMBINED FILTER  
 (D) DENOTES 'DOUBLE DAMPED' PART OF COMBINED FILTER

REFER 637EZ1Y04590 FOR FILE INDEX [7A301]

C.A.D. DATA	A
ISSUE	A
NAME	
LOCATION	VISA1601
DATE	22/08/98

**AS BUILT DWG**  
 14 APR 2003  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: N.M.KIRBY  
 DEPT: 611 DATE: 18/4/00  
 SIGNED: N.M.K

THIRD ANGLE PROJECTION  
  
 IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECH. STAND/023/PRC

DRAWN JCP  
 CVD  
 APP'D  
 SCALE  
 TRACED  
 DESIGN  
 APP'D

FILE 7A303/1

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

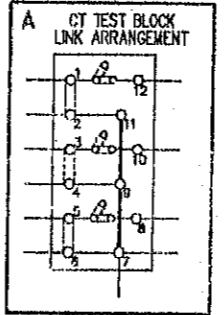
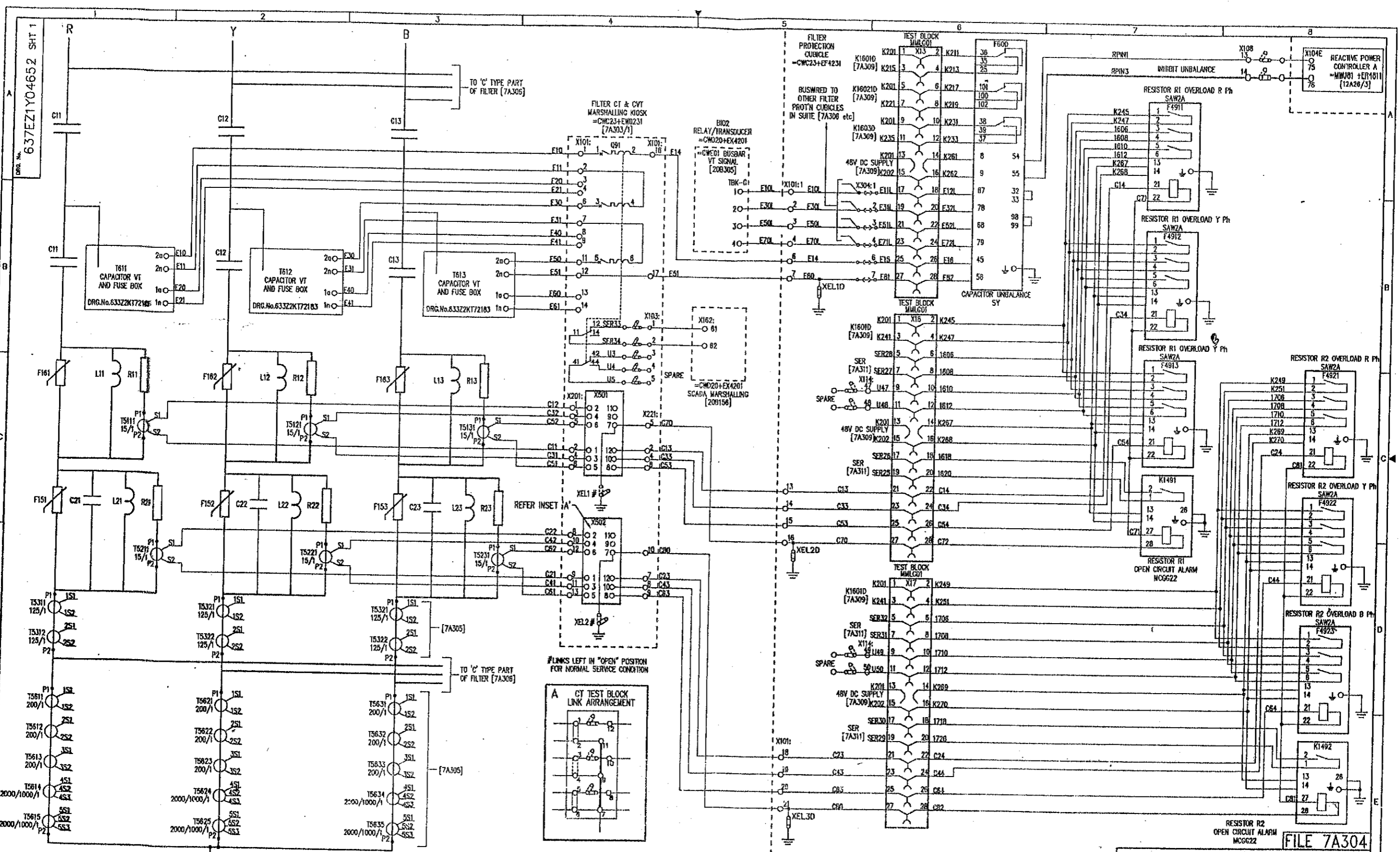
GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Wilford, England

VISAKHAPATNAM  
 AC HARMONIC FILTER =CWC23  
 CT & CVT MARSHALLING KIOSK =CWC23+EW0231  
 EQUIPMENT & DEVICE LIST

DRG. No. 637EZ1Y04651 SHT 3  
 CURRENT ISSUE A

WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
 CUSTOMER POWER GRID CORP OF INDIA ORDER No. CF0136



ISSUE	A	NK	B	PRJ	C	PRJ	D
NAME	12	06	08	08	08	28	07
DATE	03	06	08	08	08	07	08
LOCATION	97	06	08	08	08	07	08
MSA3561							

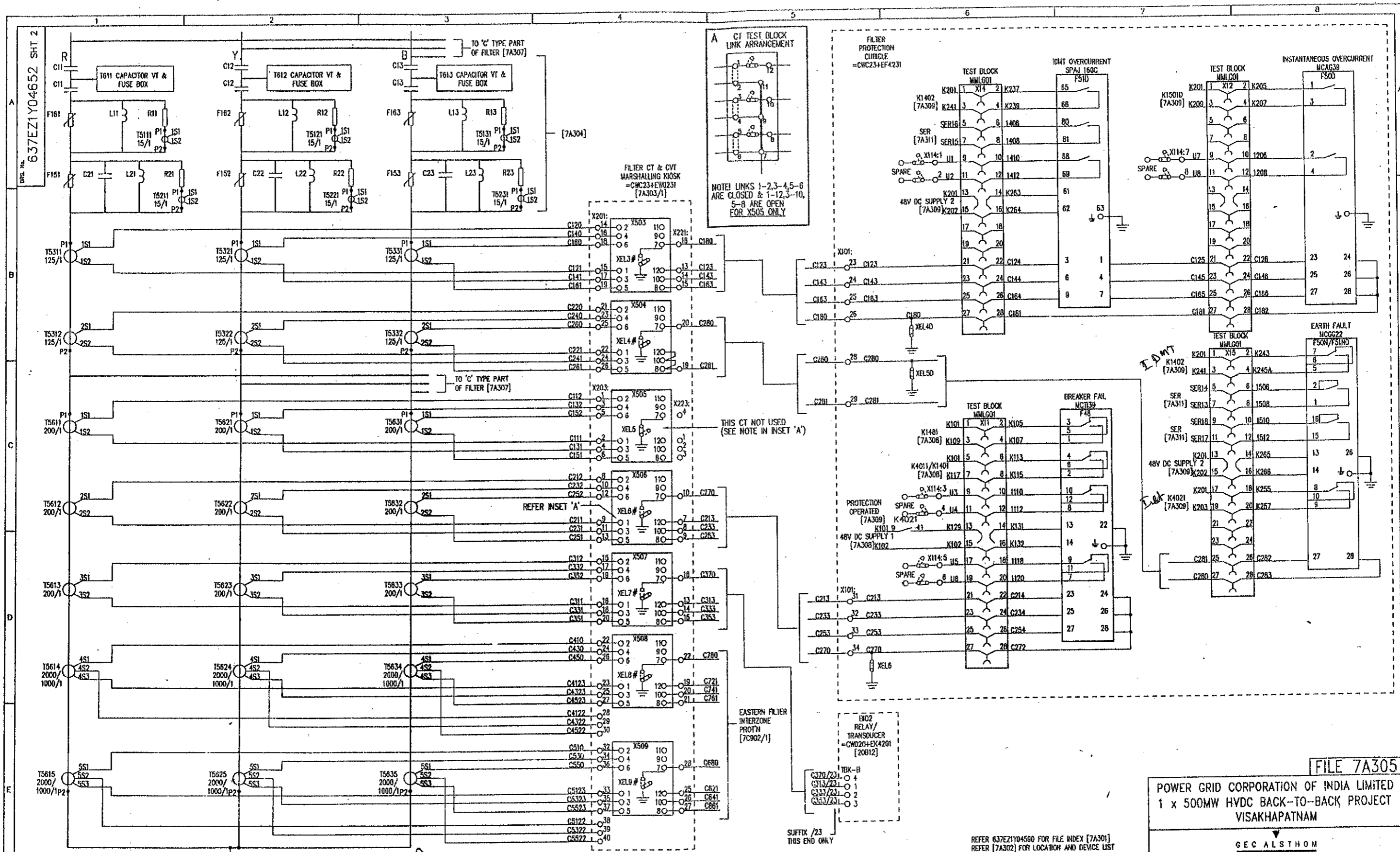
**AS BUILT DWG**  
14 APR 2000  
**VISAKHAPATNAM**

POWER GRID CORPORATION OF INDIA LIMITED  
500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

**GEC ALSTHOM**  
YAO  
CERTIFIED FOR  
MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 5/3/97  
SIGNED: BTB

**GEC ALSTHOM**  
T&D  
Power Electronic Systems Limited  
Suffolk, England

**VISAKHAPATNAM**  
AC HARMONIC FILTER - CWC23 PROTECTION  
CIRCUIT DIAGRAM FOR AC CIRCUITS  
(DOUBLE DAMPED PART OF COMBINED FILTER)



G.A.D. DATA	PRJ		PRJ		PRJ		PRJ		PRJ	
	A	B	C	D	E	F	G	H	I	J
ISSUE	12/03/97	06/08/97	08/08/97	26/08/97	28/07/98	07/07/98	28/07/98	07/07/98	28/07/98	07/07/98
NAME	<p>REVISIONS TO EGN 8251- TERMINALS 96/81 &amp; 88/69 INTERCHANGED ON FS10 DEVICE NO FOR MARSHFIO KIOSK DEVICES INTERCHANGED ON FS10. INTERCHANGED ON FS10. DEVICE NO FOR MARSHFIO KIOSK CHANGED</p> <p>REVISIONS TO EGN 8315- RELAY TYPES ADDED &amp; EARTH ADDED TO TERMINAL 22 OF MCT139 &amp; 25 OF MCT322</p> <p>REVISIONS TO EGN 8350- -CNC20+EK4201 WAS SHOWN AS -CNC20+EK4201</p> <p>REVISIONS TO EGN 8424 &amp; PAR- CHANGED CABLE CORE NO ON 2223/19-21 &amp; 25-28 FROM C413, 433, 451, 470 &amp; C513, 531, 553, 570. ALSO FILE PREP FOR EASTERN FILTER INTER FROM 70500. ADDED TERMINAL NUMBERS TO -CNC20+EK4201</p> <p>REVISIONS TO EGN 8580- CHANGED CABLE CORE NO ON 2223/22 &amp; 28 FROM C770 &amp; C570.</p>									
LOCATION	VISA3089									

**AS BUILT DWG**  
14 APR 2000  
**VISAKHAPATNAM**

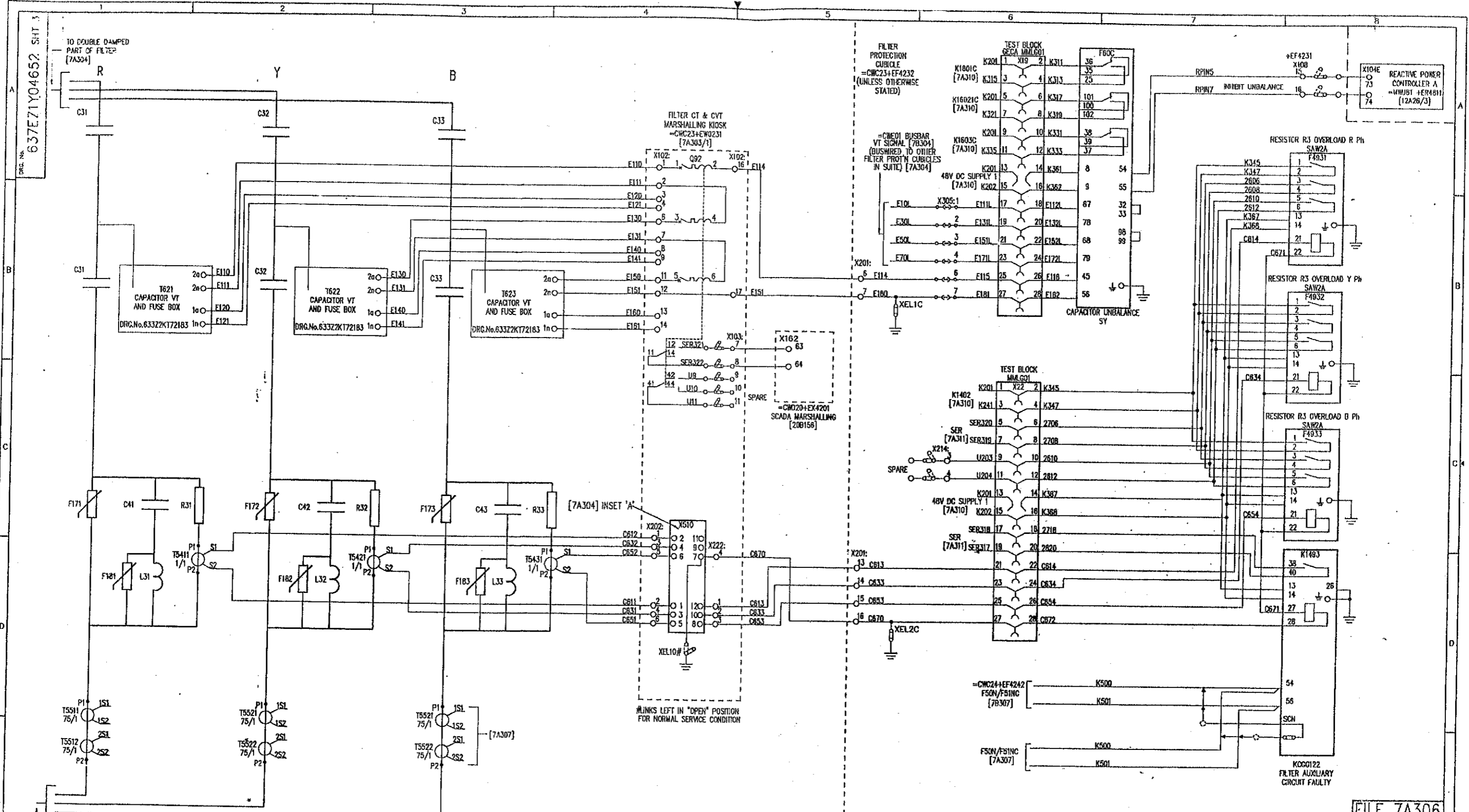
<b>GEC ALSTHOM IND</b> Power Electronics, Systems Limited CERTIFIED FOR MANUFACTURE NAME: B T BARRETT DEPT. 739 DATE: 5/3/97 SIGNED BTB		ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  DRAWING TO BE USED UNLESS OTHERWISE STATED  FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECN. STAND./223/PROG	DRAWN JCP C/D PNS APP'D RFR SCALE TRACED DESIGN PRJ APP'D	<b>GEC ALSTHOM T&amp;D</b> Power Electronics Systems Limited Sharnford, England  <b>VISAKHAPATNAM</b> AC HARMONIC FILTER =CWC23 PROTECTION CIRCUIT DIAGRAM FOR AC CIRCUITS (DOUBLE DAMPED PART OF COMBINED FILTER)	DRG. No. <b>637EZ1Y04652 SHT 2</b> CURRENT ISSUE F
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DO NOT SCALE PRINT

FILE 7A305

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM



REFER 637EZ1Y04590 FOR FILE INDEX [7A301]  
 REFER [7A303] FOR LOCATION AND DEVICE LIST  
 REFER [2A04] FOR PROT'N SINGLE LINE DIAGRAM

ISSUE	DATE	BY	CHKD	REVISION
F	12/03/97	JCP	PNS	REVISED TO ECR B201 - VT FUSES REPLACED BY MCB Q82 IN MARSHING KIOSK. ALSO X102 REVERSED, X103 ADDED AND VT DELTA NOW MADE IN MARSHING KIOSK. DEVICE NO FOR MARSHING KIOSK CHANGED.
A	06/06/97	JCP	PNS	REVISED TO ECR B201 - VT FUSES REPLACED BY X205 & X201 REVERSED IN PROT'N CIRCUIT. SCADA MARSHING DETAILS ADDED. DRG No. AT TOP LEFT CORRECTED.
B	08/08/97	JCP	PNS	REVISED TO ECR B201 - RELAY TYPES ADDED & EARTH ADDED TO TERMINAL 25 OF MCC222.
C	08/08/97	JCP	PNS	ALSO ECR B222 - X201 TERMINAL NO'S REVERSED. ECR B232 - K1483 RELAY DESCRIPTION REVERSED.
D	08/08/97	JCP	PNS	REVISED TO ECR B404 - ADDED X162, 63 & 64.
E	08/08/97	JCP	PNS	REVISED TO ECR B404 - RELAY X1483 CHANGED. WIRE Nos K500 & K501 ADDED.
F	08/08/97	JCP	PNS	REVISED TO ECR B705 - RELAY X1483 CHANGED. WIRE Nos K500 & K501 ADDED.

**AS BUILT DWG**  
 14 APR 2000  
**VISAKHAPATNAM**

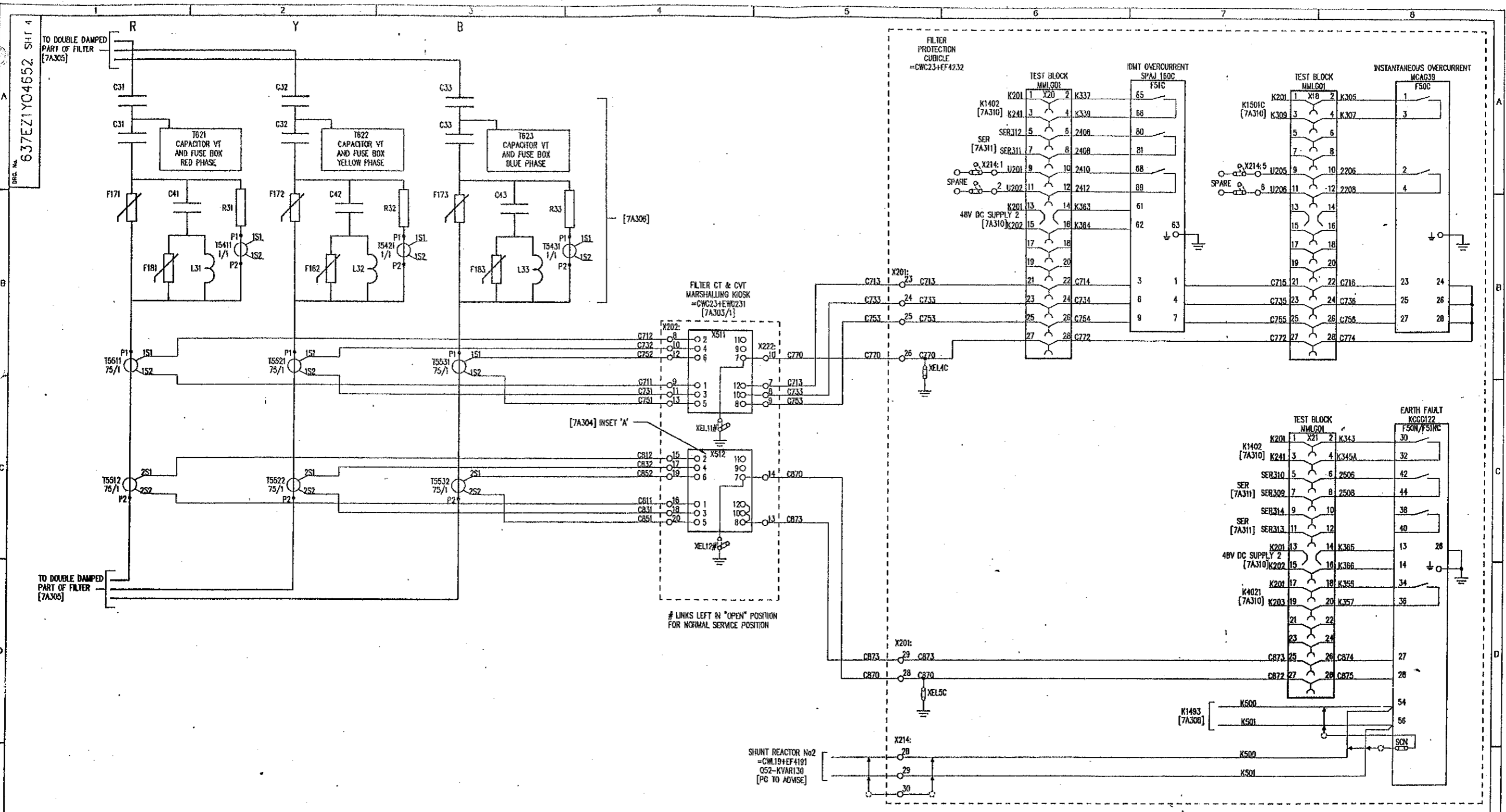
**GEC ALSTHOM**  
 T&D  
 CERTIFIED FOR  
 MANUFACTURE  
 NAME: B T BARRETT  
 DEPT. 739 DATE: 5/3/97  
 SIGNED: BTB

THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BE USED UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND./033/PROG  
 IF IN DOUBT ASK  
 DO NOT SCALE PRINT

**GEC ALSTHOM**  
 T&D  
**Power Electronic Systems Limited**  
 VISAKHAPATNAM  
 AC HARMONIC FILTER =CWC23 PROTECTION CIRCUIT DIAGRAM FOR AC CIRCUITS ('C' TYPE PART OF COMBINED FILTER)  
 DRG. No. 637EZ1Y04652 SH 3  
 CURRENT ISSUE F

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

FILE 7A306



REFER 637EZ1Y04590 FOR FILE INDEX [7A301]  
 REFER [7A303] FOR LOCATION AND DEVICE LIST  
 REFER [2A04] FOR PROTN SINGLE LINE DIAGRAM

ISSUE	DATE	BY	REVISION
A	08/06/97	JCP	REVISION TO ECU 8251-TERMINALS 80/81 & 88/89 INTERCHANGED ON F51C SERIES 2. WIRE NOS WERE 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.
B	08/06/97	JCP	REVISION TO ECU 8251-TERMINALS 80/81 & 88/89 INTERCHANGED ON F51C SERIES 2. WIRE NOS WERE 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.
C	08/08/97	JCP	REVISION TO ECU 8251-TERMINALS 80/81 & 88/89 INTERCHANGED ON F51C SERIES 2. WIRE NOS WERE 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.
D	08/03/98	JCP	REVISION TO ECU 8251-TERMINALS 80/81 & 88/89 INTERCHANGED ON F51C SERIES 2. WIRE NOS WERE 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

**AS BUILT DWG**  
 14 APR 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE NAME: B T BARRETT DEPT. 739 DATE: 5/3/97 SIGNED BTB	THIRD ANGLE PROJECTION IF IN DOUBT ASK	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED DRAWING TO BS308 UNLESS OTHERWISE STATED FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPECN. STAND/023/PROG	DRAWN JCP CHD PNS APP'D RFR SCALE TRACED DESIGN APP'D PRJ
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**FILE 7A307**

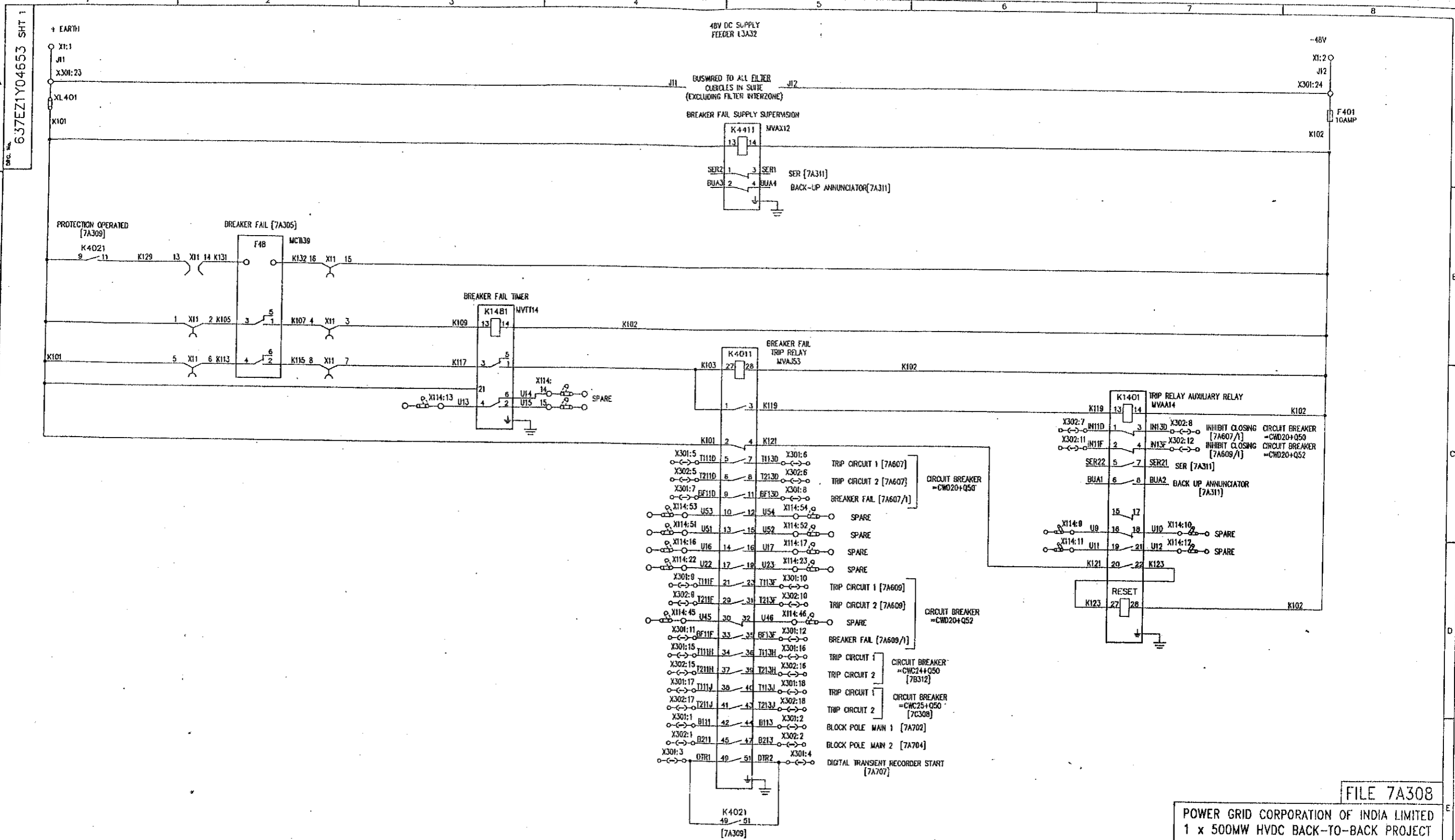
**POWER GRID CORPORATION OF INDIA LIMITED**  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

**GEC ALSTHOM**  
 T&D  
 Power Electronic Systems Limited  
 Staffed, Trained

**VISAKHAPATNAM**  
 AC HARMONIC FILTER =CWC23 PROTECTION  
 CIRCUIT DIAGRAM FOR AC CIRCUITS  
 ('C' TYPE PART OF MANUFACTURE)

DRG. No. **637EZ1Y04652** SHT 4 OF 4  
 CURRENT ISSUE **E**

WHEN QUOTING DRG. NO. STATE CURRENT ISSUE  
 CUSTOMER POWER GRID CORP OF INDIA ORDER No. CF0136



REFER 637EZ1Y04590 FOR FILE INDEX (7A301)  
REFER [7A302] FOR LOCATION AND DEVICE LIST

ALL EQUIPMENT IS LOCATED IN FILTER PROTECTION CUBICLE =CWC23+EF4231 EXCEPT WHERE INDICATED

FILE 7A308

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Sheffield, England

VISAKHAPATNAM  
AC HARMONIC FILTER =CWC23 PROTECTION  
CIRCUIT DIAGRAM FOR  
DC CIRCUITS (BREAKER FAIL PROTECTION)

DRG. No. 637EZ1Y04653 SHT 1  
CURRENT ISSUE D

C.A.D. DATA	PRJ A	PRJ B	PRJ C	PRJ D
	ISSUE	JCP	PNS	PSG
	DATE	06/03/97	08/06/97	08/09/97

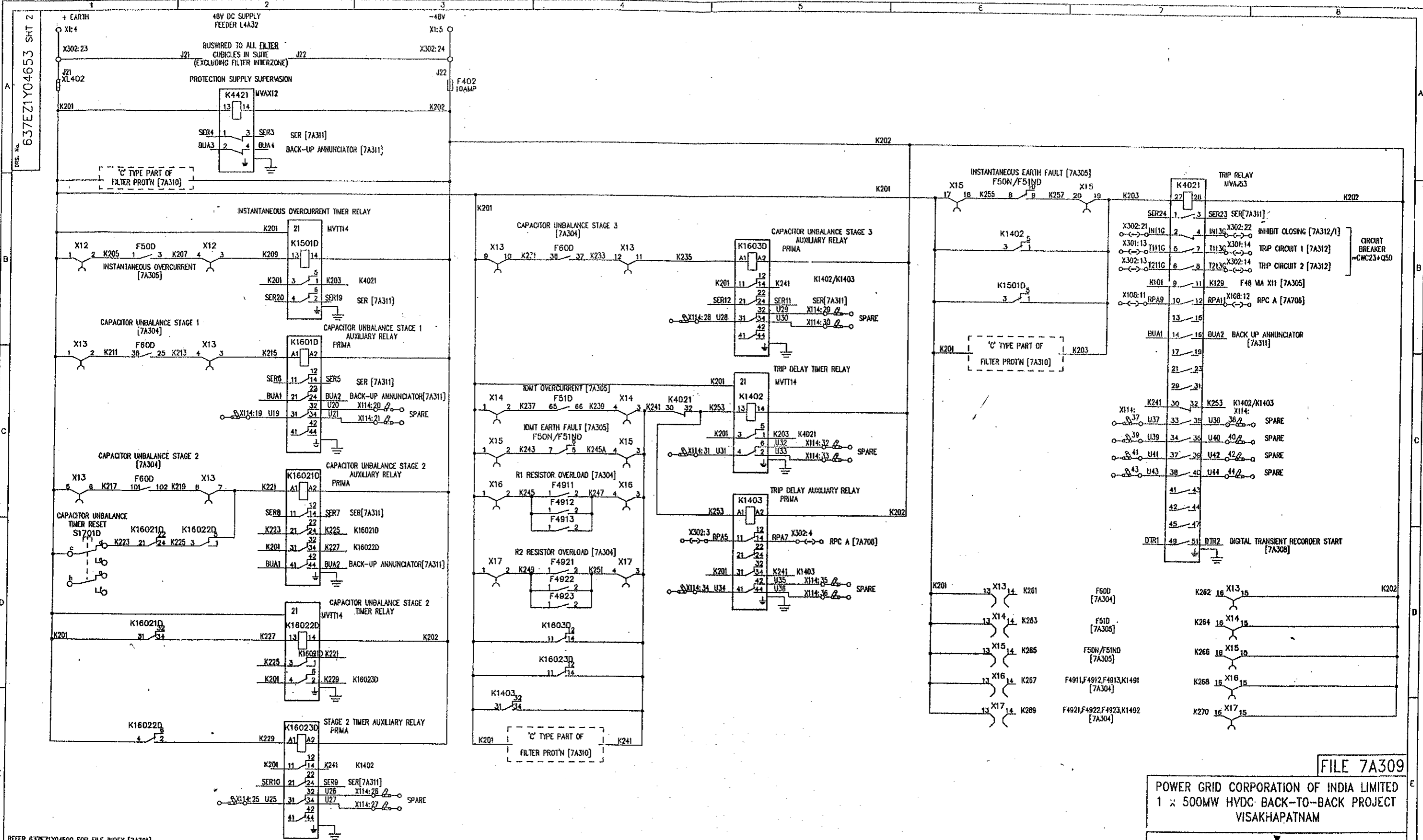
REVISION TO EQN 0251:- FILE INGS FOR BLOCK POLE CHANGED ON K4011  
REMOVED TO EQN 0402 & 0448- REMOVED BIT FROM K14B1 & CHANGED FILE REFS FROM 7A607 & 7A609 ON X301:8, X302:8 & X301:12, X302:12  
PREM  
7/21/98

AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 5/3/97  
SIGNED BTB

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECH. STAND/023/PROC  
DRAWN JCP  
CHKD PNS  
APPRD RFR  
SCALE  
TRACED  
DESIGN PRJ  
APPD



REFER 637E21Y04590 FOR FILE INDEX [7A301]  
 REFER [7A302] FOR LOCATION AND DEVICE LIST

ISSUE	DATE	ISSUE	DATE	ISSUE	DATE	ISSUE	DATE
D	12/03/97	A	06/06/97	B	06/06/97	C	08/08/97

C.A.D. DATA  
 PRJ A B C  
 JCP JCP JCP  
 PMS PMS PMS  
 PS6 PS6 PS6  
 PREM PREM PREM  
 28 07 18  
 REVISIONS:  
 1. REVISED TO EGN9443 & 8466 -  
 CHANGED FILE REF ON X302:22  
 2. REVISED TO EGN9402 -  
 REMOVED R1210, 1310, 141 &  
 WIRES K210, 228, 242.

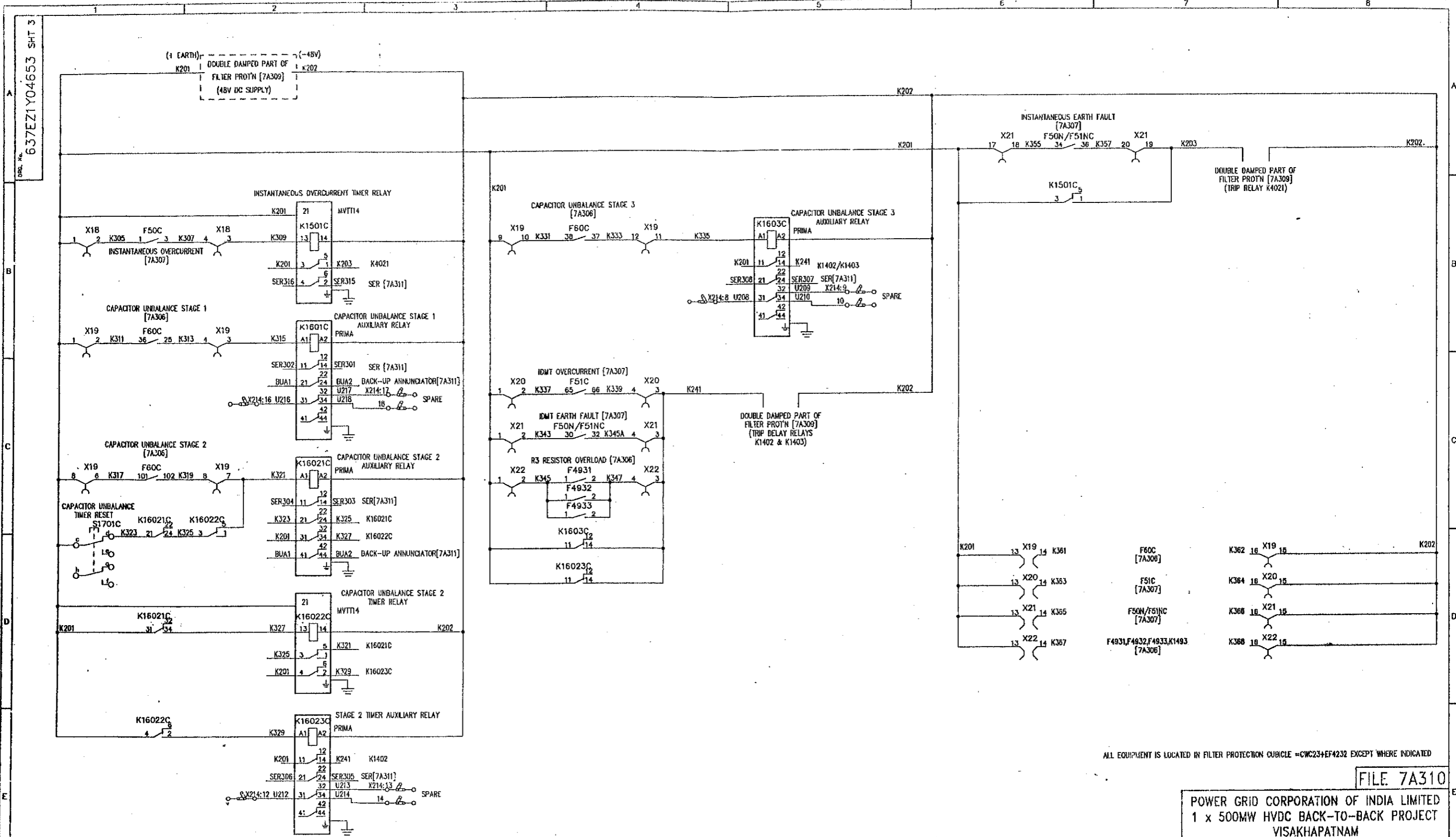
**AS BUILT DWG**  
**14 APR 2000**  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR  
 MANUFACTURE  
 NAME: B T BARRETT  
 DEPT. 739 DATE: 5/3/97  
 SIGNED BTB

ALL DIMENSIONS  
 IN MILLIMETRES  
 UNLESS OTHERWISE STATED  
 DRAWING TO BS308  
 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF  
 ACCURACY OF ALL  
 UNTOLERANCED DIMENSIONS  
 SEE SPEC. STAND/923/PROC

DRAWN JCP  
 CHTD PNS  
 APP'D RFR  
 SCALE  
 TRACED  
 DESIGN PRJ  
 APP'D

**FILE 7A309**  
**POWER GRID CORPORATION OF INDIA LIMITED**  
**1 x 500MW HVDC BACK-TO-BACK PROJECT**  
**VISAKHAPATNAM**  
**GEC ALSTHOM**  
**T&D**  
**Power Electronic Systems Limited**  
 Sheffield, England  
**VISAKHAPATNAM**  
**AC HARMONIC FILTER =CWC23 PROTECTION**  
**CIRCUIT DIAGRAM FOR DC CIRCUITS (PROTECTION)**  
**(DOUBLE DAMPED PART OF COMBINED FILTER)**  
 DRG. No. 637E21Y04653 SHT 2  
 CURRENT ISSUE D  
 WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
 CUSTOMER POWERGRID ORDER No. CF0136



ALL EQUIPMENT IS LOCATED IN FILTER PROTECTION CUBICLE =CWC23+EF4232 EXCEPT WHERE INDICATED

FILE 7A310

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&O

GEC ALSTHOM T&O  
Power Electronic Systems Limited  
Sturford, England

VISAKHAPATNAM  
AC HARMONIC FILTER =CWC23 PROTECTION  
CIRCUIT DIAGRAM FOR DC CIRCUITS (PROTECTION)  
(C TYPE PART OF COMBINED FILTER)

DRG. No. 637EZ1Y04653 SHT 3  
CURRENT ISSUE F

REFER 637EZ1Y04590 FOR FILE INDEX [7A301]  
REFER [7A303] FOR LOCATION AND DEVICE LIST

AS BUILT DWG  
14 APR 2003  
VISAKHAPATNAM

ISSUE	PRJ A	PRJ B	PRJ C	PRJ D	PRJ E
F	12/03/97	06/06/97	08/08/97	28/07/98	03/06/99
NAME	REVISIONS TO ECR 8251 - WIRE NO. K241 WAS K341				
LOCATION	REVISIONS TO ECR 8251 - RELAY TYPES ADDED.				
	REVISIONS TO ECR 8402 & B566 - ADVISED X21:17-20 & F50N/F51NC DELETED R121C, R131C & WERES K210, K228.				
	REVISIONS TO ECR 8706. F50N/F51NC TERMINALS 5,6,7,8,9 & TO BE REPLACED BY 30,32,34 & 35.				
	REVISIONS TO ECR 8823. BUJA2 WERE BUJA08.				

GEC ALSTHOM T&O Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE		THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN JCP CHKD PNS
NAME: B T BARRETT	DEPT. 739	DATE: 5/3/97	DRAWING TO BS308 UNLESS OTHERWISE STATED	APP'D RFR
SIGNED BTB			FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECH. STAND/023/PROC	SCALE
				TRACED
				DESIGN APP'D PRJ

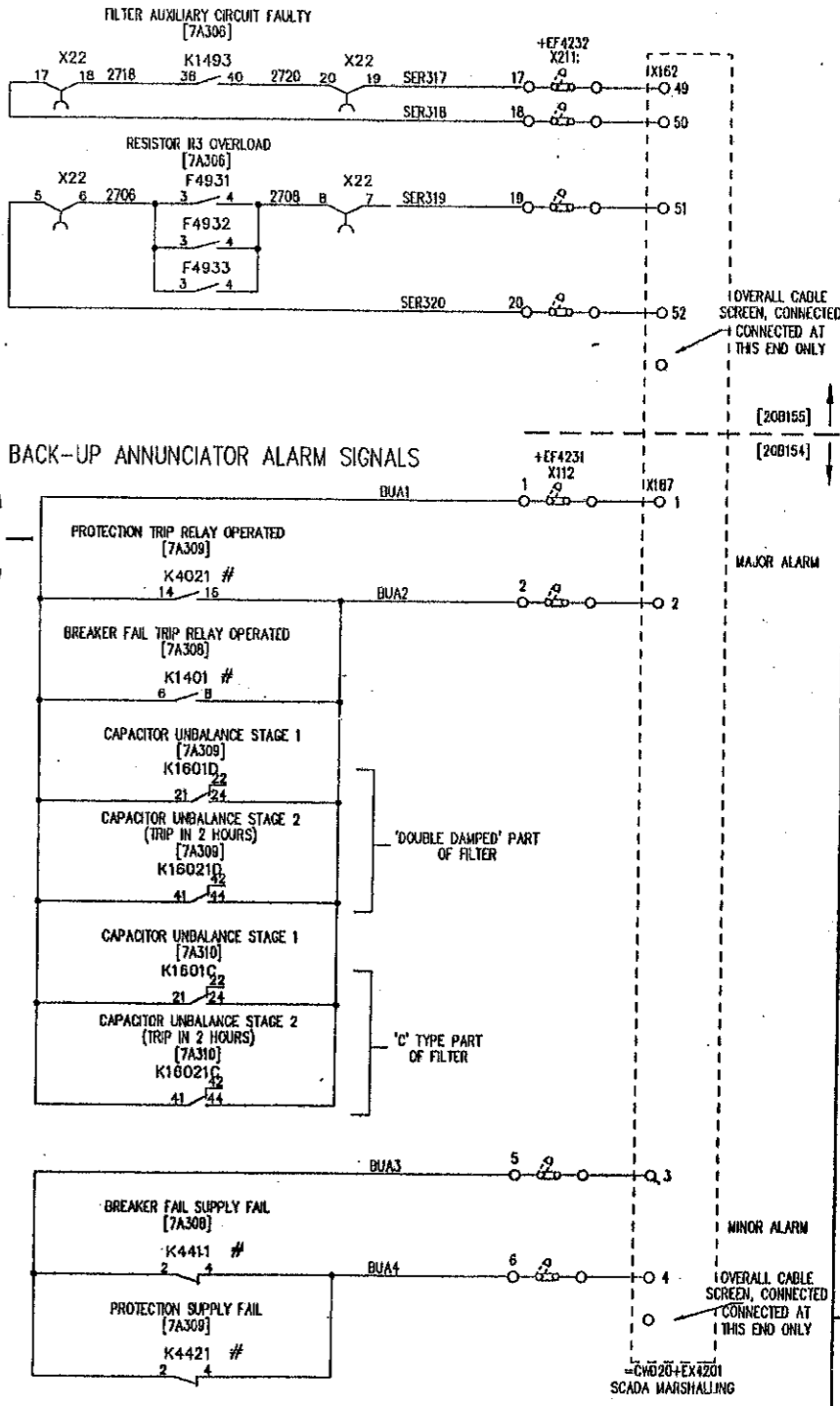
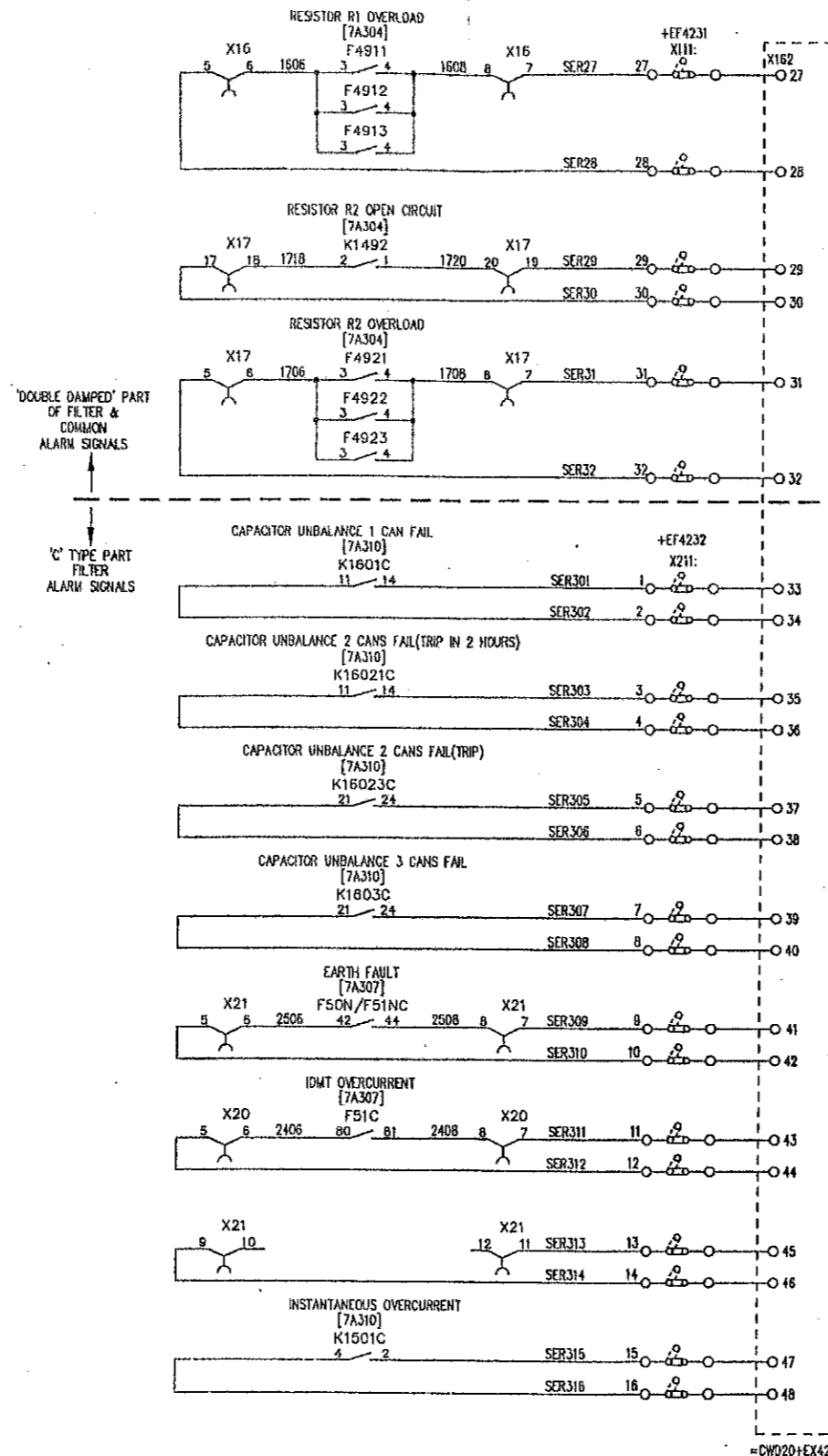
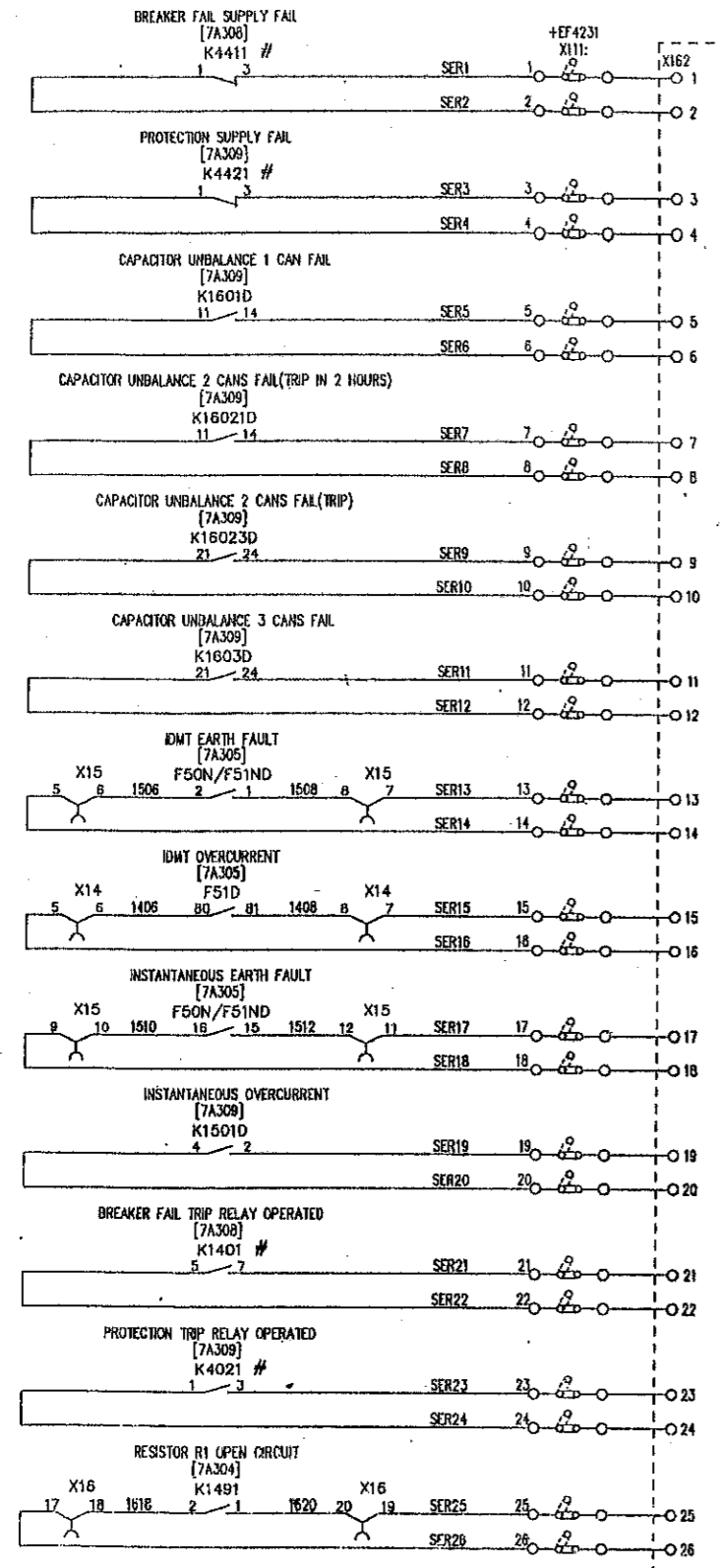
DO NOT SCALE PRINT  
WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
CUSTOMER POWERGRID ORDER No. CF0136

ISSUE F  
NAME  
LOCATION VISA4177

DRG. No. 637EZ1Y04653 SHT 3

DRG No. 637EZ1Y04654 SHT 1

SEQUENCE OF EVENTS RECORDER ALARM SIGNALS



# DENOTES COMMON FILTER ALARM  
 REFER 637EZ1Y04599 FOR FILE INDEX [7A301]  
 REFER [7A302] FOR LOCATION AND DEVICE LIST (DOUBLE DAMPED PART)  
 REFER [7A303] FOR LOCATION AND DEVICE LIST ('C' TYPE PART)

=CWD20+EX4201  
 SCADA MARSHALLING [20B154]

ALL EQUIPMENT IS LOCATED IN FILTER PROTECTION CUBICLE =CWC23+EF4231(2) EXCEPT WHERE STATED

**AS BUILT DWG**  
 14 APR 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE		THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN JCP CWD PNS
NAME: B T BARRETT	DEPT: 739	DATE: 5/3/97	DRAWING TO BE SHOWN UNLESS OTHERWISE STATED	APP'D RFR
SIGNED BTB			FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECN. STAND/023/PROC	SCALE
				TRACED
				DESIGN APP'D PRJ

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

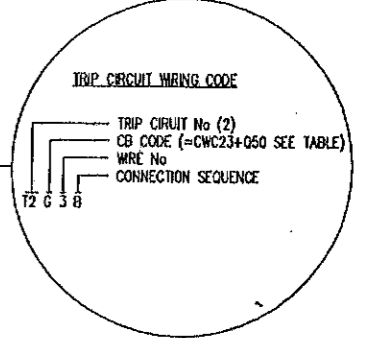
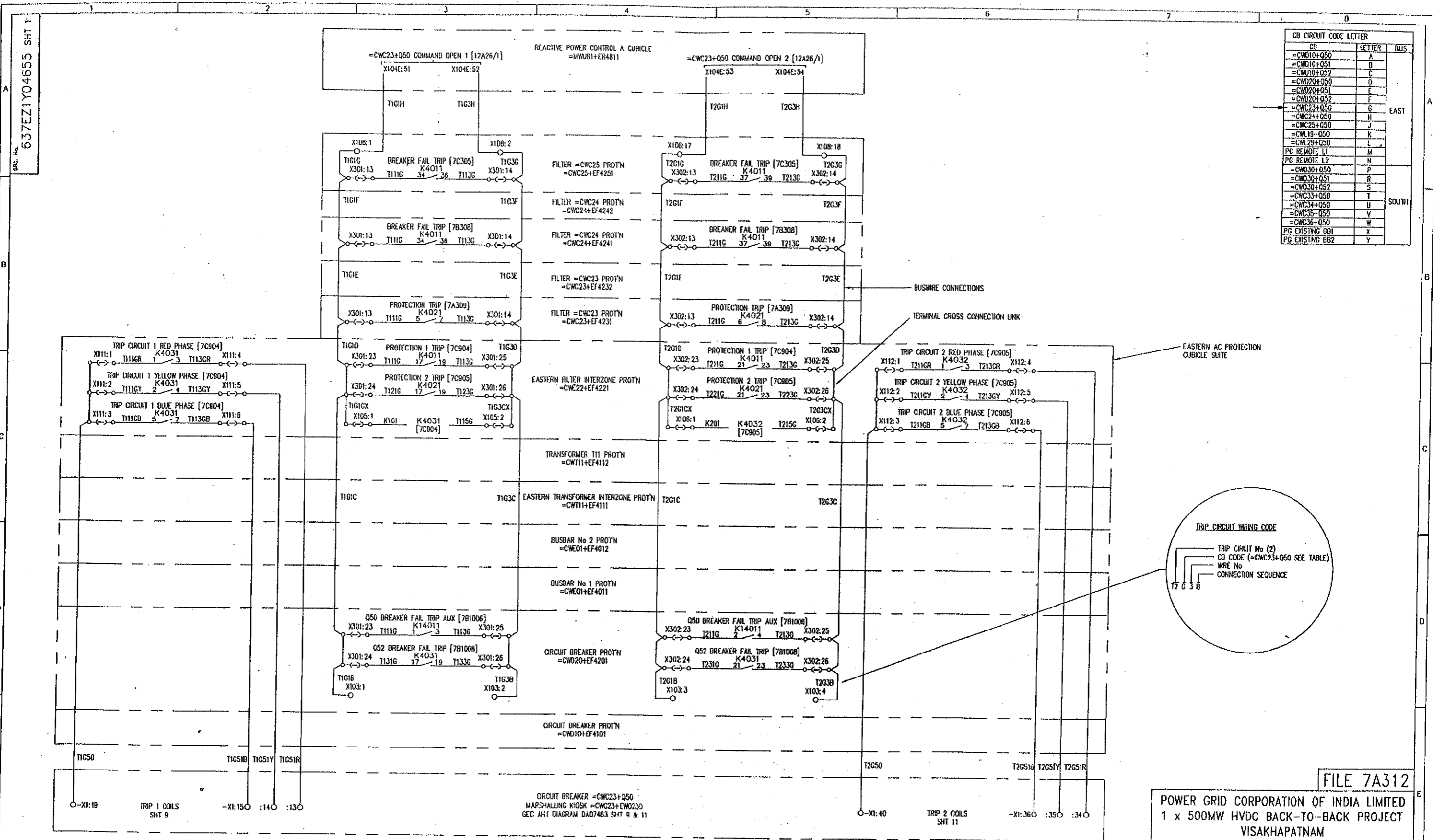
GEC ALSTHOM  
 T&D  
 Power Electronic Systems Limited

GEC ALSTHOM T&D Power Electronic Systems Limited		THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN JCP CWD PNS
NAME: B T BARRETT	DEPT: 739	DATE: 5/3/97	DRAWING TO BE SHOWN UNLESS OTHERWISE STATED	APP'D RFR
SIGNED BTB			FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECN. STAND/023/PROC	SCALE
				TRACED
				DESIGN APP'D PRJ

ISSUE	DATE	BY	REASON
F	12/03/97	JCP	REVISED TO ENR 8251-TERMINAL NOS REVISED ON PERC & D. SCADA MARSHALLING DETAILS ADDED
	06/08/97	PNS	REVISED TO ENR 8332-K1493 DESCRIPTION CHANGED
	07/08/98	RFR	REVISED TO ENR8484-ADDED TERMINAL X162 & X167
	08/08/98	JCP	REVISED TO ENR8485-ADDED FILE REFS [20B154 & 5]
	09/08/99	PNS	REVISED TO ENR8706-F50/F51NC: 142 CHANGED TO 44242, K1492: 1 & 2 CHANGED TO 40 & 30. WIRE NOS 2510 & 2512 DELETED. F50/F51NC: 15 & 16 DELETED. EARTH FAULT WAS IDMT EARTH FAULT.

DRG. No. 637EZ1Y04655 SHT 1

CB CIRCUIT CODE LETTER		
CB	LETTER	BUS
=CWD10+Q50	A	EAST
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWC23+Q50	G	
=CWC24+Q50	H	
=CWC25+Q50	J	
=CWA19+Q50	K	
PG REMOTE L1	L	SOUTH
PG REMOTE L2	M	
=CWD30+Q50	N	
=CWD30+Q51	P	
=CWD30+Q52	R	
=CWC33+Q50	S	
=CWC34+Q50	T	
=CWC35+Q50	U	
=CWC36+Q50	V	
PG EXISTING BB1	W	
PG EXISTING BB2	X	
	Y	



REFER 637EZ1Y04590 FOR FILE INDEX [7A301]  
REFER [7A302] FOR LOCATION AND DEVICE LIST

ISSUE	PRJ	PRJ	PRJ
DATE	JCP	PNS	JCP
12 06	06	26	26
03 06	06	08	08
97 06	97	97	97

REVISIONS:  
 1. REVISED TO EON 8251-K4031 TERMINALS CHANGED ALSO K14011 (T2) & X303 ADDED INEF4201, K4011 & K4021 INTERCHANGED IN EF4221  
 2. REVISED TO EON 8250- "EASTERN" ADDED TO TITLES IN -EF4111 & -EF4221  
 3. REVISED TO EON 8443 & BASE- ADDED K4031 & K4033 CONTACTS ADDED K4031 & K4032 RELAY CCT REF IN TRIP CTT WIRING.

**AS BUILT DWG**  
 14 APR 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D Power Electronic, Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN JCP CHKD PNS
NAME: B T BARRETT	IF IN DOUBT ASK	DRAWING TO DESOR UNLESS OTHERWISE STATED	APPRD RFR
DEPT. 739 DATE 5/3/97	SIGNED BTB	FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECN. STAND/023/PROC	SCALE TRACED DESIGN PRJ APPRD

DRG. No. 637EZ1Y04655 SHT 1	CURRENT ISSUE D
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FILE 7A312

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Sharnbrook, England

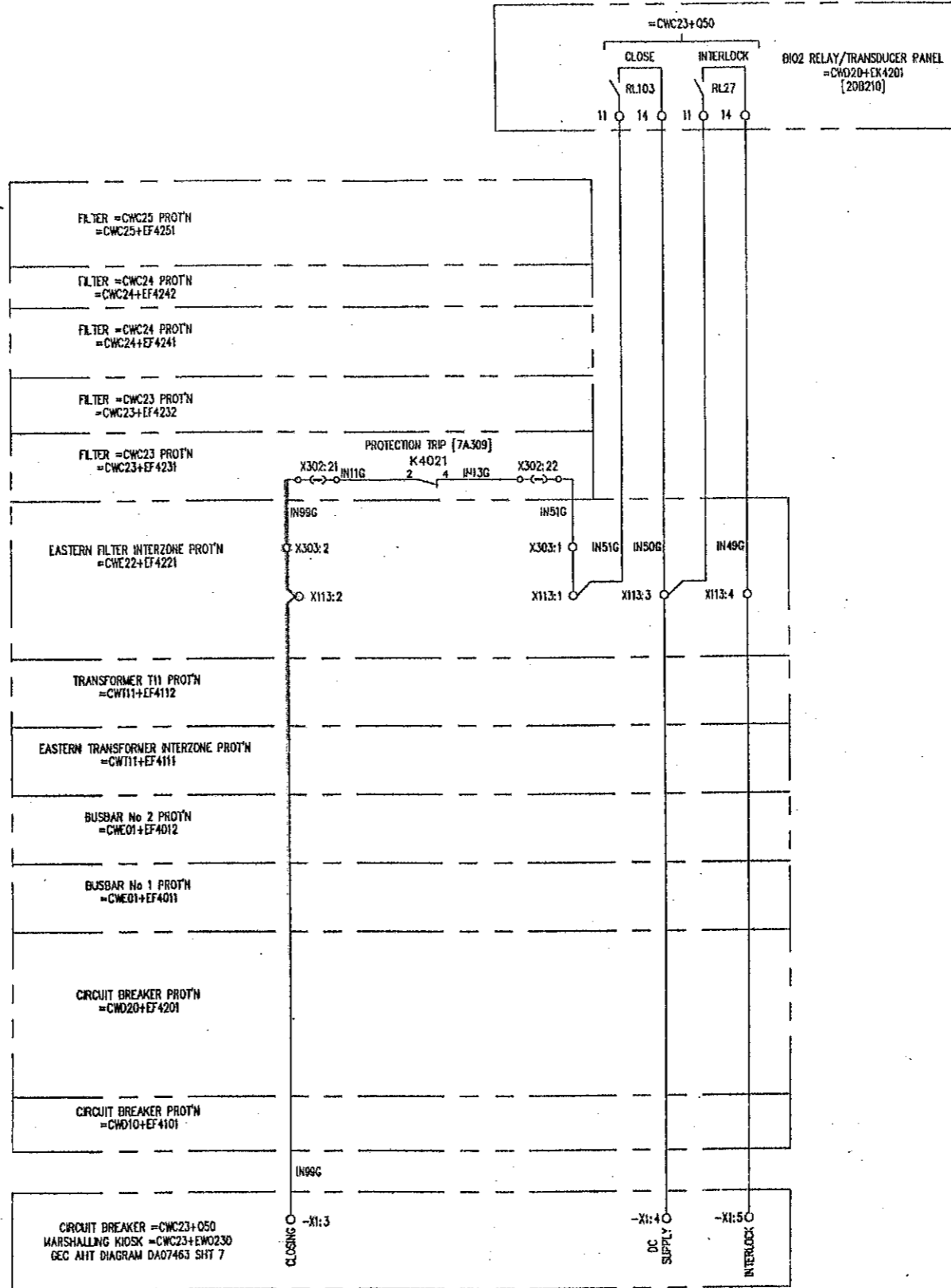
TITLE  
 VISAKHAPATNAM  
 AC HARMONIC FILTER =CWC23 PROTECTION  
 CIRCUIT DIAGRAM FOR  
 SIGNALS TO CIRCUIT BREAKER =CWC23+Q50

DO NOT SCALE PRINT

CUSTOMER POWERGRID ORDER No. CF0136

DWG No. 637EZ1Y04655 SHT 2

EASTERN AC PROTECTION CUBICLE SUITE



CB	LETTER	BUS
=CWC10+050	A	EAST
=CWC10+051	B	
=CWC10+052	C	
=CWC20+050	D	
=CWC20+051	E	
=CWC20+052	F	
=CWC23+050	G	
=CWC24+050	H	
=CWC25+050	J	
=CWC19+050	K	
=CWC28+050	L	
PG REMOTE L1	M	SOUTH
PG REMOTE L2	N	
=CWC30+050	P	
=CWC30+051	R	
=CWC30+052	S	
=CWC33+050	T	
=CWC34+050	U	
=CWC35+050	V	
=CWC36+050	W	
PG EXISTING B01	X	
PG EXISTING B02	Y	

REFER 637EZ1Y04590 FOR FILE INDEX (7A301)  
REFER (7A302) FOR LOCATION AND DEVICE LIST

FILE 7A312/1

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Melford, England

VISAKHAPATNAM  
AC HARMONIC FILTER =CWC23 PROTECTION  
CIRCUIT DIAGRAM FOR  
SIGNALS TO CIRCUIT BREAKER =CWC23+050

DRG. No. 637EZ1Y04655 SHT 2  
CURRENT ISSUE B

CUSTOMER POWERGRID  
WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
ORDER No. CF0136

ISSUE B  
NAME 637EZ1Y04655  
LOCATION VISA3566

ISSUE A  
DATE 22-07-98  
DUE TO E08843 & 8468 -  
REMOVED X003:28, 29, X103:5  
& 6 FROM =CWC20+EF4012.  
ADDED TERMINALS IN =CWC24+  
EF4221.  
DUE TO E08844a -  
ADDED =CWC20+EF4201  
98 17 14 6300  
DUE TO E08845 -  
REMOVED =WUUR+ER4811 &  
TERMS X104:55 & 56 & RELE  
VANT CIRCUITRY. ADDED RL27,  
RL103, TERMS 11 & 14, & FILE  
REF. [20B210]

AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE  
NAME: BT BARRETT  
DEPT. 739 DATE: 15/07/98  
SIGNED BT BARRETT

THIRD ANGLE  
PROJECTION  
IF IN DOUBT  
ASK

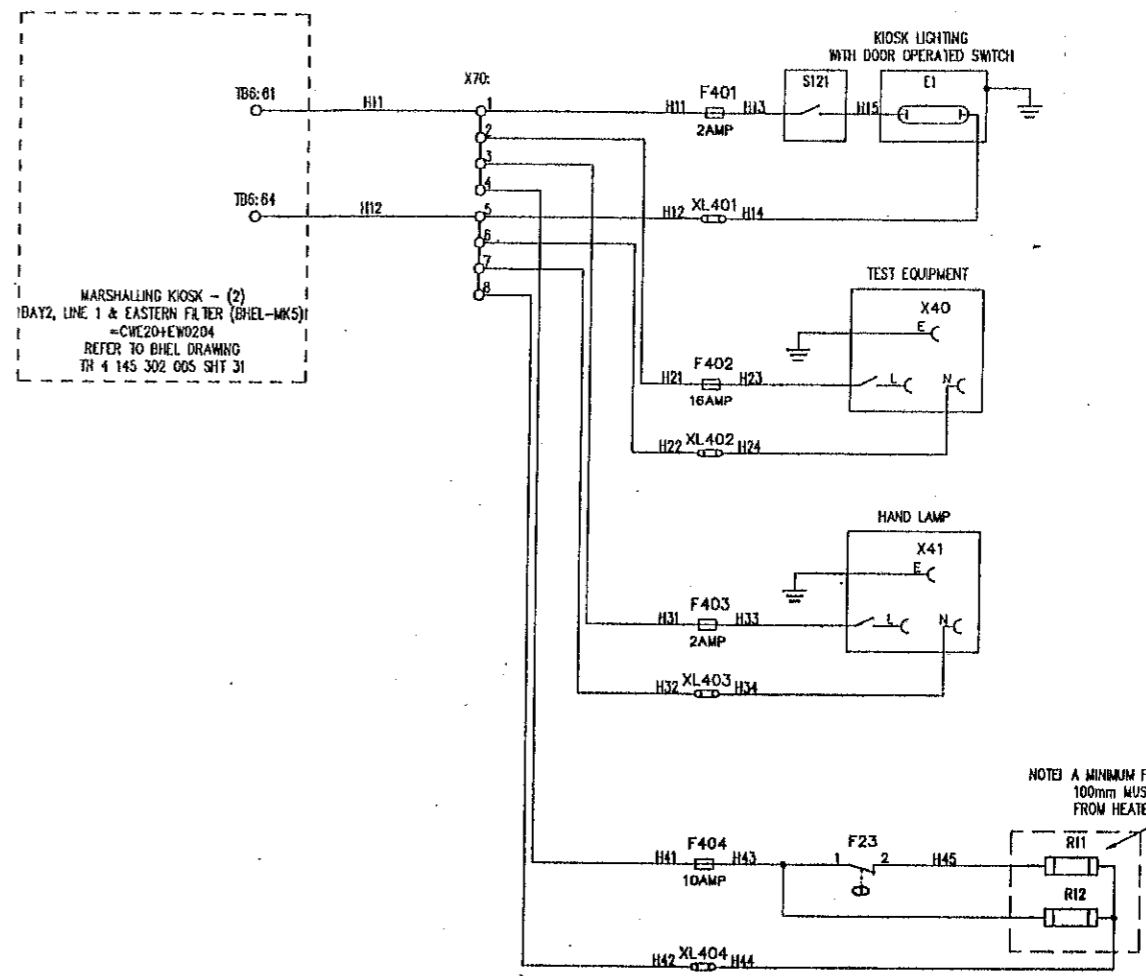
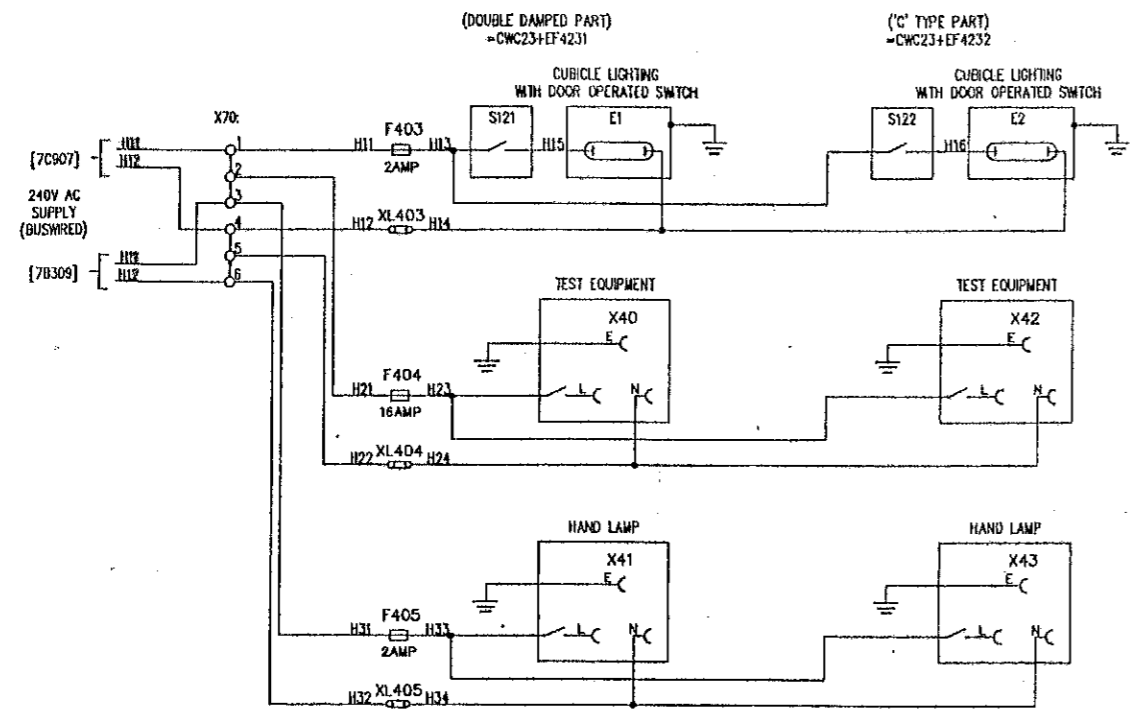
ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED  
DRAWING TO BS308  
UNLESS OTHERWISE STATED  
FOR THE STANDARD OF  
ACCURACY OF ALL  
UNTOLERANCED DIMENSIONS  
SEE SPEC. STAND/023/PROC

DRAWN PREM  
CH'D RFR  
APP'D RFR  
SCALE  
TRACED  
DESIGN PRJ  
APP'D PRJ

PRG. No. 637EZ1Y04656 SHT 1

AC FILTER PROTECTION CUBICLES

AC FILTER CT & CVT MARSHALLING KIOSK  
=CWC23+EW0231



REFER 637EZ1Y04590 FOR FILE INDEX [7A301]  
REFER [7A302] FOR LOCATION AND DEVICE LIST (DOUBLE DAMPED PART)  
REFER [7A303] FOR LOCATION AND DEVICE LIST (C' TYPE PART)  
REFER [7A303/1] FOR LOCATION AND DEVICE LIST CT & VT MARSHALLING KIOSK

FILE 7A313

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Bullford, England

TITLE  
VISAKHAPATNAM  
AC FILTER =CWC23 PROTECTION  
CIRCUIT DIAGRAM FOR  
AC SUPPLIES AND CUBICLE ILLUMINATION

DRG. No. 637EZ1Y04656 SHT 1  
CURRENT ISSUE E

ISSUE	DATE	BY	REASON
A	12/03/97	JCP	REVISED TO ECH 823H - MARSHALLING KIOSK CIRCUIT ADDED
B	08/08/97	JCP	REVISED TO ECH 823H - MARSHALLING KIOSK CIRCUIT ADDED
C	26/08/97	JCP	REVISED TO ECH 823H - MARSHALLING KIOSK CIRCUIT ADDED
D	28/07/98	PREM	REVISED TO ECH 823H - MARSHALLING KIOSK CIRCUIT ADDED
E	17/12/98	GGJ	REVISED TO ECH 823H - MARSHALLING KIOSK CIRCUIT ADDED

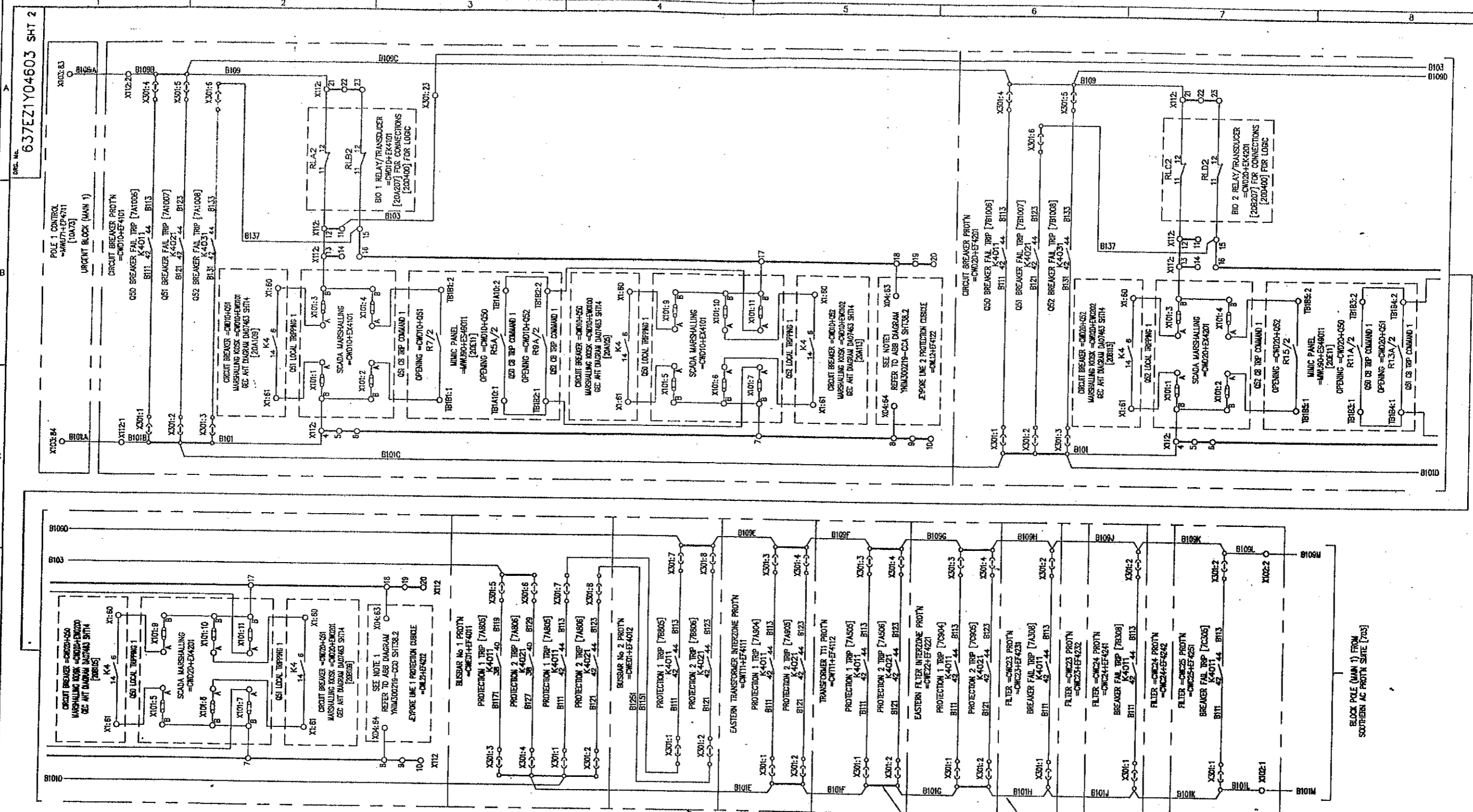
AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

GEC ALSTHOM  
T&D  
CERTIFIED FOR  
MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 5/3/97  
SIGNED BTB

THIRD ANGLE  
PROJECTION  
ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED  
DRAWING TO BS308  
UNLESS OTHERWISE STATED  
FOR THE STANDARD OF  
ACCURACY OF ALL  
DIMENSIONS  
SEE SPECH. STAND/023/PR00

DRAWN JCP  
CHKD PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN APP'D PRJ





FILE 7A702

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited

VISAKHAPATNAM  
CIRCUIT DIAGRAM FOR  
POLE BLOCKING (MAIN-1)  
FROM EASTERN AC PROT'N & SWITCHGEAR

637EZ1Y04603 SHT 2

NOTE 1:- THE RELAY CONTACTS BETWEEN THESE TERMINALS, ARE OPERATED BY LINE INTERZONE PROTECTIONS 1 AND 2, LINE PROTECTION 1 AND 2 AT BOTH THE LOCAL AND REMOTE ENDS OF THE LINE AND FROM THE CIRCUIT BREAKER FAIL FOR THE LINE REACTOR CIRCUIT BREAKER.

[7NN] DENOTES FILE No OF 7A7NN SECTION REFER [701] FOR FILE INDEX

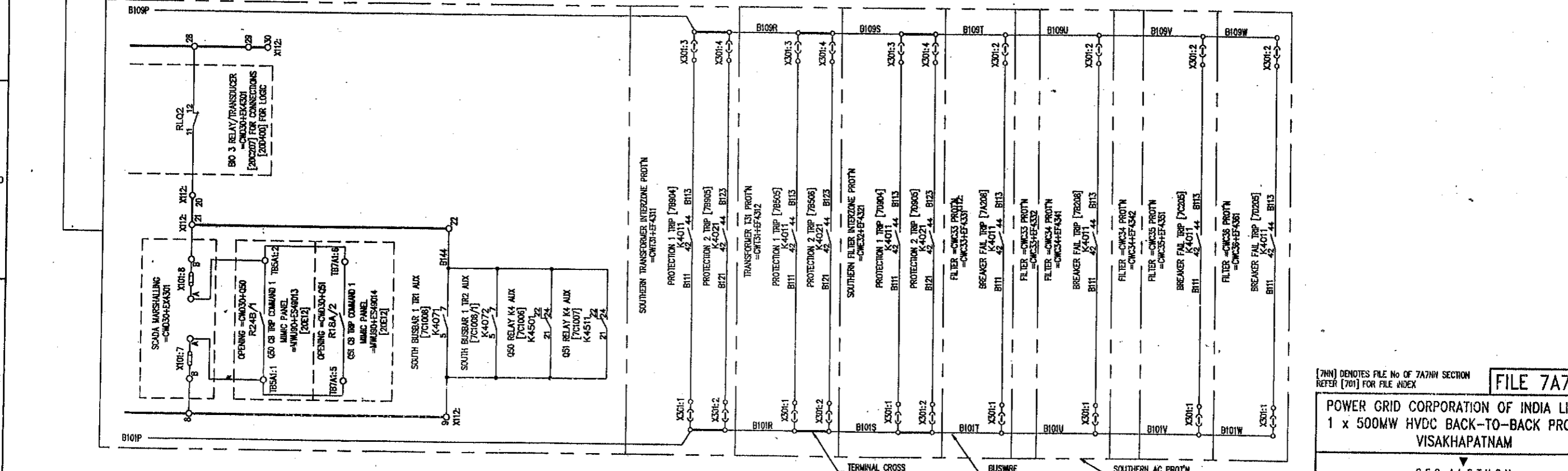
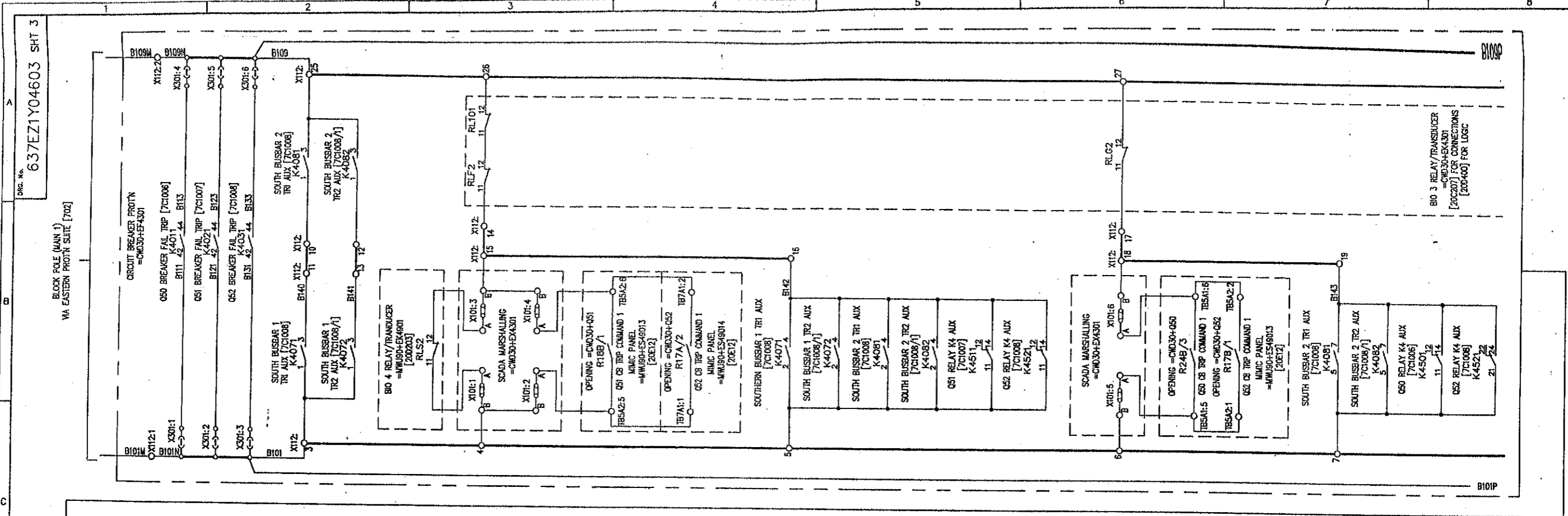
ISSUE	DATE	PRJ	REVISION
A	11/08/97	PNS JCP	REVISED TO EDN318- WIRE No B117(BAS) IN E7401.2 ALSO B115(BAS) IN E7401.2 ALSO X301:7,8 WERE 3,4 IN E7402
B	08/08/97	PNS JCP	REVISED TO EDN318- WIRE No B101E WAS CONNECTED TO X301:2 IN E7401
C	26/08/97	PNS JCP	REVISED TO EDN318- WIRE No B101E WAS CONNECTED TO X301:2 IN E7401
D	11/08/98	RFR PREM	REVISED TO EDN302- REMOVED INSETS & INSERTED CONTACTS INTO MAIN Ckt.
E	21/01/99	MCLU	REVISED TO EDN345- FILE REF'S ADDED IN LINE WITH MARKED UP PRINT.

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT: 739 DATE: 9/6/97  
SIGNED: BTB

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK  
FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS, SEE SPEC. STAND. 003/PRIC

DO NOT SCALE PRINT  
DRAWN JCP  
CHKD PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN APP'D PRJ



[7NN] DENOTES FILE No OF 7A7NN SECTION REFER [701] FOR FILE INDEX

FILE 7A703

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Methil, England

VISAKHAPATNAM  
CIRCUIT DIAGRAM FOR  
POLE BLOCKING (MAIN 1)  
FROM SOUTHERN AC PROT'N & SWITCHGEAR

DRG. No. 637EZ1Y04603 SHT 3

CURRENT ISSUE D

ISSUE D  
NAME 637EZ1Y04603  
LOCATION VISA4343

ISSUE	PRJ	PRJ	PRJ	PRJ
D	A	B	C	D
	ISSUE	RFR	JCP	MCW
	DATE	PREM		
	11/06/97	11/08/98	09/01/98	09/21/98
	REVISED TO CORRECT REMOVED INSERTS & INSERTED CONTACTS INTO MAIN CCL			
	REVISED TO CORRECT TERMINAL NUMBERS & FILE REFS ADDED IN LINE WITH MARKED UP PRINT.			
	REVISED TO CORRECT CONTACT RLOI ADDED.			

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE

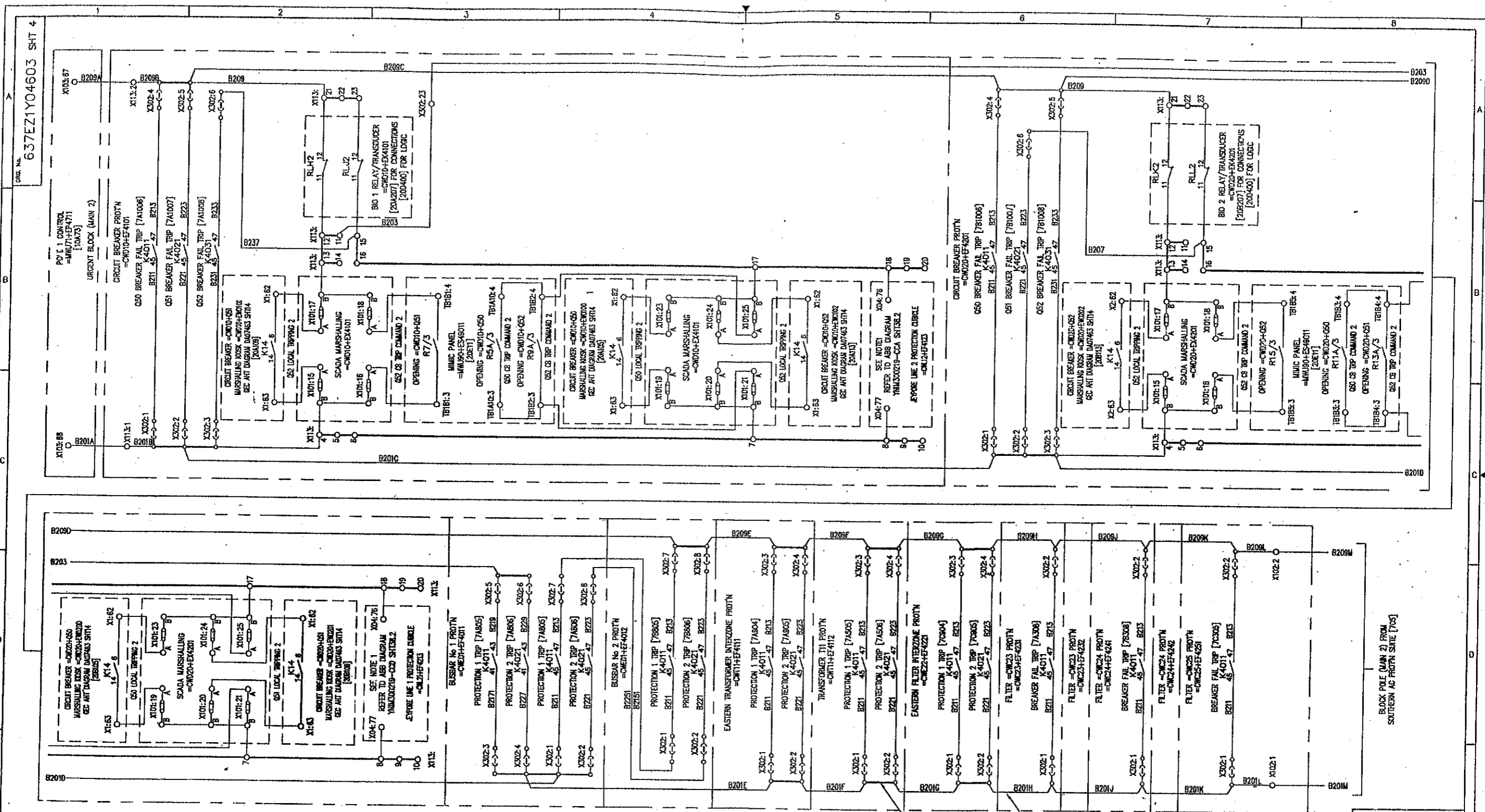
NAME B T BARRETT  
DEPT. 739 DATE 9/6/97  
SIGNED BTB

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND. 023/PROC

DRAWN JCP  
G'd/PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN PRJ  
APP'D

DO NOT SCALE PRINT



NOTE 1:- THE RELAY CONTACTS BETWEEN THESE TERMINALS, ARE OPERATED BY LINE INTERZONE PROTECTIONS 1 AND 2, LINE PROTECTION 1 AND 2 AT BOTH THE LOCAL AND REMOTE ENDS OF THE LINE AND FROM THE CIRCUIT BREAKER FAIL FOR THE LINE REACTOR CIRCUIT BREAKER.

[7NN] DENOTES FILE No OF 7A7NN SECTION REFER [701] FOR FILE INDEX

C.A.D. DATA	PRJ A	PRJ B	PRJ C	PRJ D	PRJ E
ISSUE	DATE	DATE	DATE	DATE	DATE
NAME	06/97	08/97	12/97	01/98	01/98
LOCATION	VISA3682				

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN JCP
NAME: B T BARRETT	IF IN DOUBT ASK	DRAWING TO BS308 UNLESS OTHERWISE STATED	CHKD PNS
DEPT. 739	DATE: 9/6/97	FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPECN. STAND/053/PROD	APP'D RFR
SIGNED BTB			SCALE
			TRACED
			DESIGN PRJ
			APP'D

**FILE 7A704**

**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

**GEC ALSTHOM**  
T&D

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
Stafford, England

**VISAKHAPATNAM**  
CIRCUIT DIAGRAM FOR  
POLE BLOCKING (MAIN 2)  
FROM EASTERN AC PROT'N & SWITCHGEAR

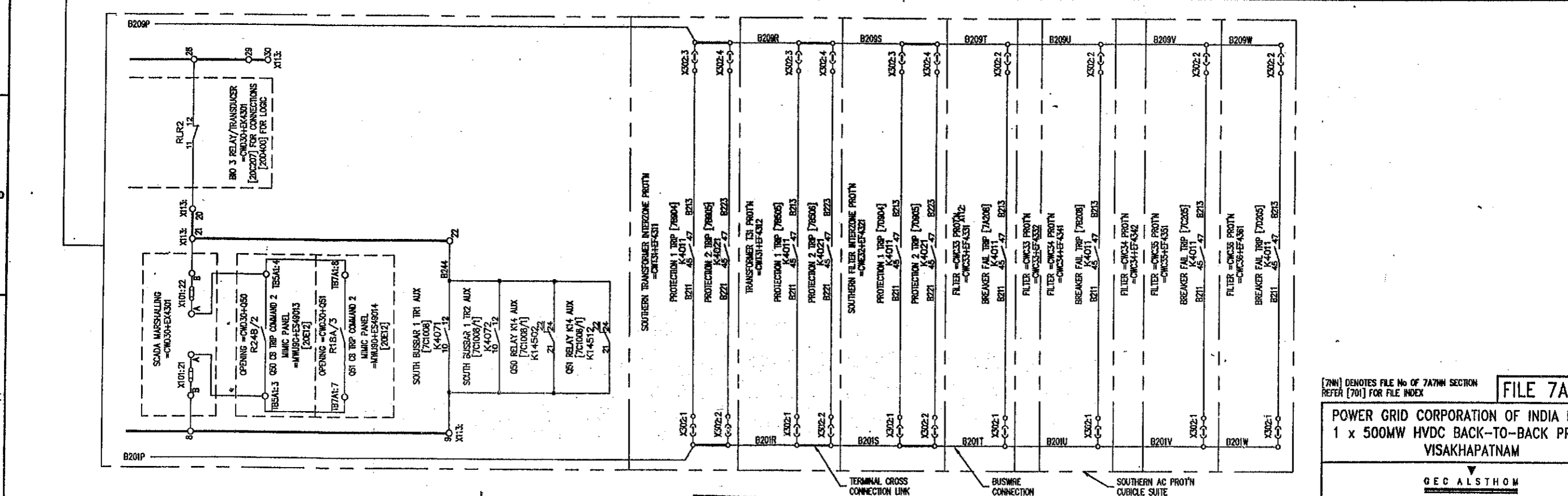
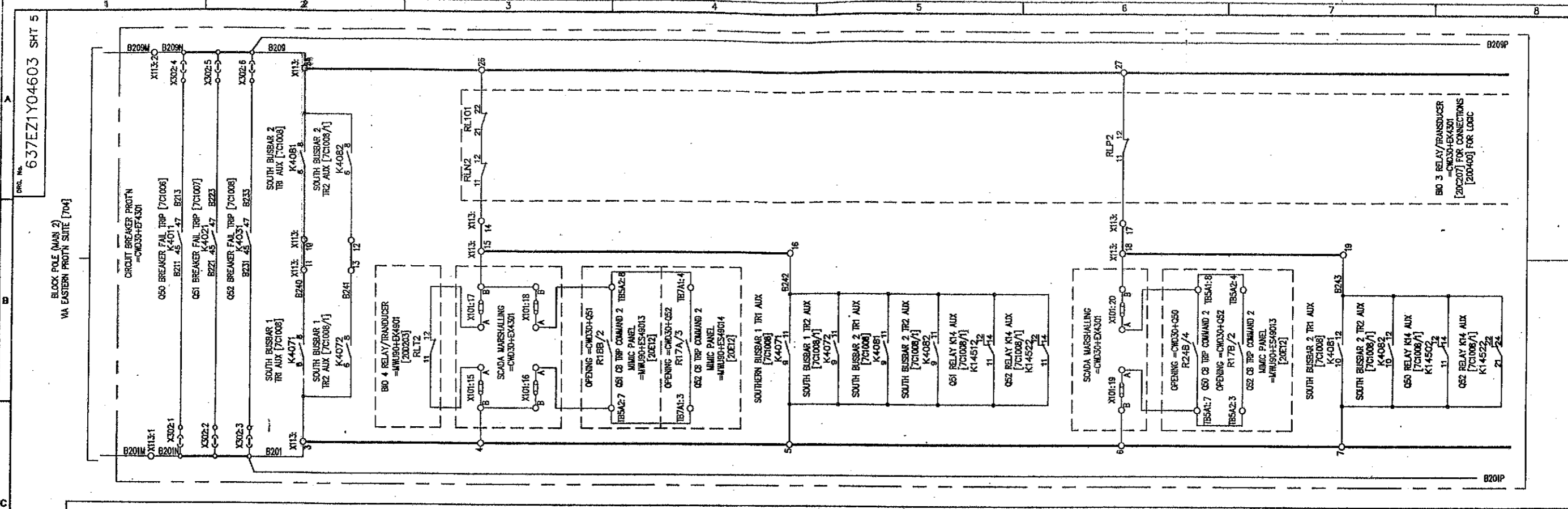
DRG. No. **637EZ1Y04603 SHT 4**

DO NOT SCALE PRINT

WHEN QUOTING DRG. No. STATE CURRENT ISSUE

CUSTOMER POWERGRID

ORDER No. CF0136



[704] DENOTES FILE No OF 7A704 SECTION REFER [701] FOR FILE INDEX

**FILE 7A705**

**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

**GEC ALSTHOM**  
TAO

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
Milton, England

TITLE  
VISAKHAPATNAM  
CIRCUIT DIAGRAM FOR  
POLE BLOCKING (MAIN 2)  
FROM SOUTHERN AC PROT'N & SWITCHGEAR

DRG. No.  
**637EZ1Y04603 SHT 5**

CURRENT ISSUE  
**D**

G.A.D. DATA	ISSUE	PRJ	PRJ	PRJ	PRJ
	D	A	B	C	D
NAME	637EZ1Y04603	ISSUE	RFR	PREP	CHK
	VISA4344	DATE	11/08/97	11/08/98	11/08/98
LOCATION	VISA4344	REVISION	1	2	3
		REVISION	1	2	3

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE

NAME: G T BARRETT  
DEPT. 739 DATE: 9/8/97  
SIGNED BTB

THIRD ANGLE PROJECTION

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

DRAWING TO BS308 UNLESS OTHERWISE STATED

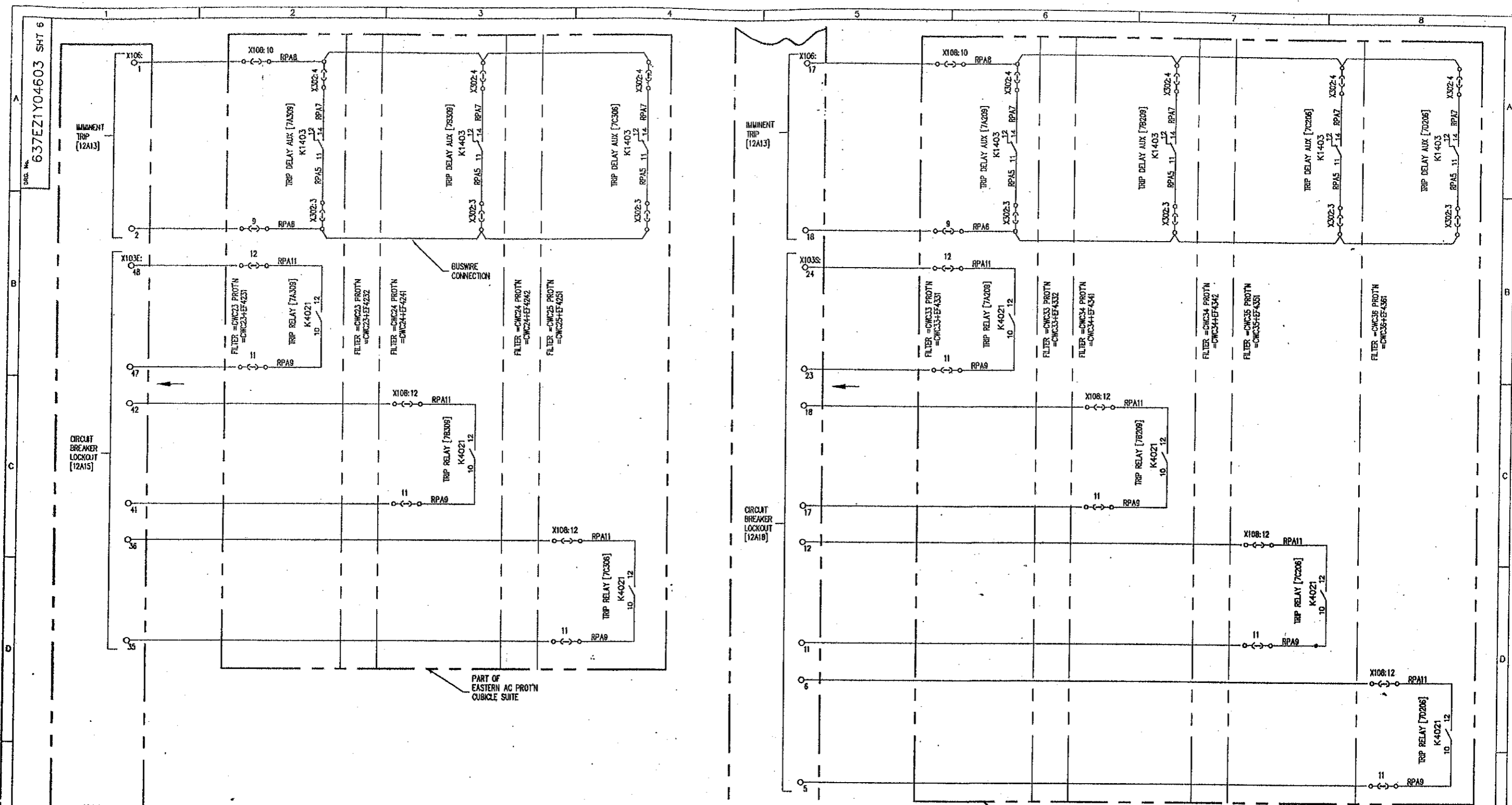
FOR THE STANDARD OF ALL UNTOUCHED DIMENSIONS SEE SPEC. STAND./CS/PROG

IF IN DOUBT ASK

DO NOT SCALE PRINT

CUSTOMER POWERGRID

OR. OR NO. CF0136



DRG. No. 637EZ1Y04603 SHT 6

FILE 7A706

[7A] DENOTES FILE No. OF 7A7M SECTION REFER [701] FOR FILE INDEX

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Warwick, England

TITLE  
VISAKHAPATNAM  
CIRCUIT DIAGRAM FOR  
RPC SIGNALS  
FROM EASTERN & SOUTHERN AC PROT'N SUITES

DRG. No. 637EZ1Y04603 SHT 6  
CURRENT ISSUE B

ISSUE B  
NAME  
LOCATION VISA2690

CAO DATA  
A  
ISSUE B  
DATE 11/06/97  
REVISED TO EQUIVALENT CORRECTED TEXT FROM EASTERN BUS & SOUTHERN BUS

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

GEC ALSTHOM IND  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 9/8/97  
SIGNED BTB

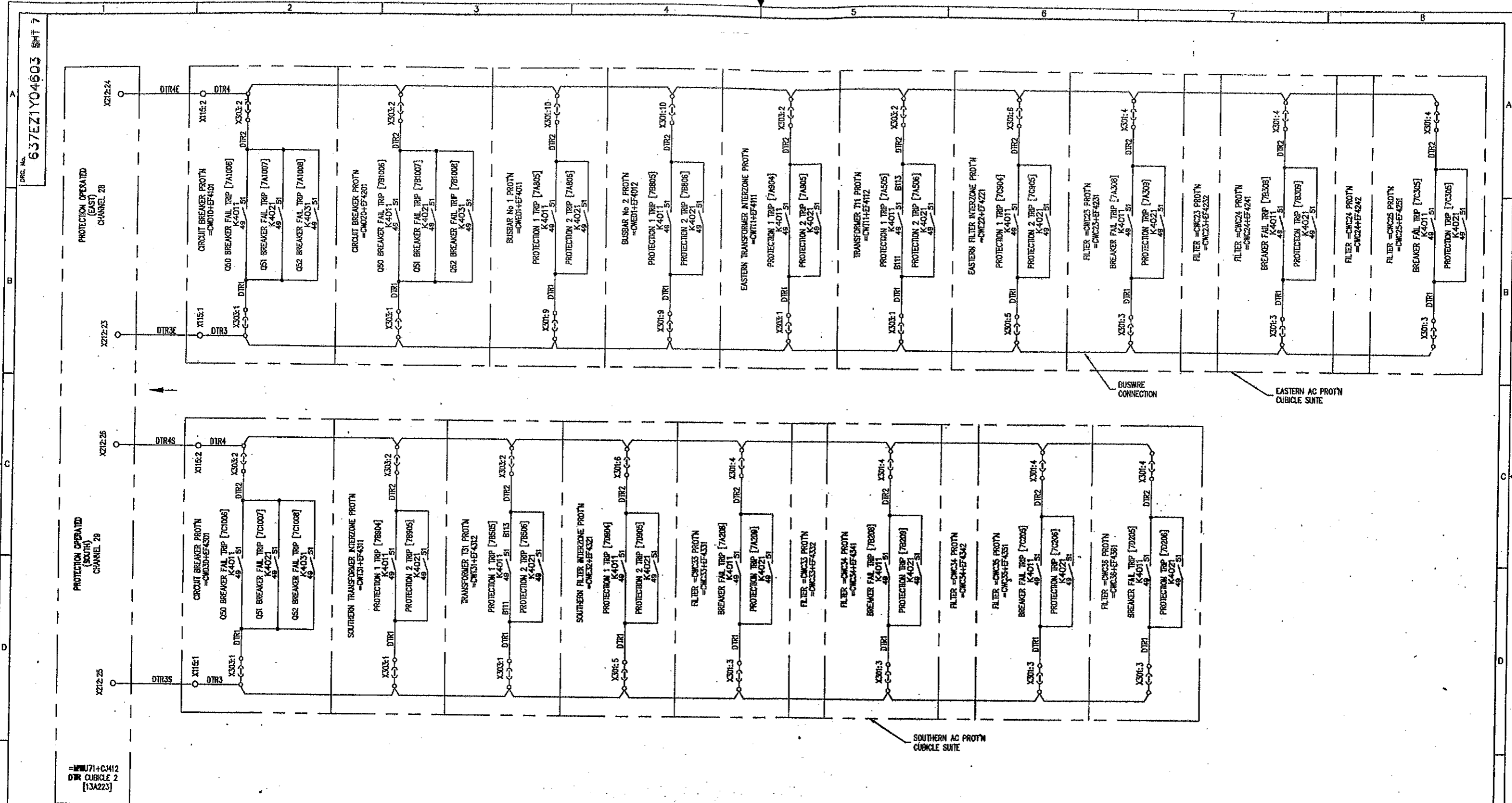
THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BE 300S UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECH. STAND/023/PROO

DRAWN JCP  
CHKD PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN PRJ  
APP'D

DO NOT SCALE PRINT

CUSTOMER POWERGRID ORDER No. CF0136



-MMU71+CJ412  
DTR CUBICLE 2  
(13A223)

ISSUE NAME	D
LOCATION	VISA3684
C.A.D. DATA	
PRJ	A
PNS	B
JCP	08
DATE	11/06/97
PRJ	C
RFR	11
PREM	08
DATE	08/09/97
REVISIONS	REVISED TO ECHS02 - X301:9,10 ADDED TERMINAL NO FOR DTR CUBICLE 81   08   11 81   09   10
REVISIONS	REVISED TO ECHS45 - MODIFIED IN LINE WITH MAP.

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

**GEC ALSTHOM TM**  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE

NAME: B T BARRETT  
DEPT. 739 DATE: 9/8/97  
SIGNED: BTB

**THIRD ANGLE**  
PROJECTION

ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED

DRAWING TO DESIG  
UNLESS OTHERWISE STATED

FOR THE STANDARD OF  
ACCURACY OF ALL  
UNTOLERANCED DIMENSIONS  
SEE SPEC. STAND. 025/PROC

IF IN DOUBT  
ASK

DRAWN: JCP  
CHKD: PNS  
APP'D: RFR  
SCALE:  
TRACED:  
DESIGN: PRJ  
APP'D:

[7A] DENOTES FILE No OF 7A7M SECTION  
REFER [80] FOR FILE INDEX  
**FILE 7A707**

**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

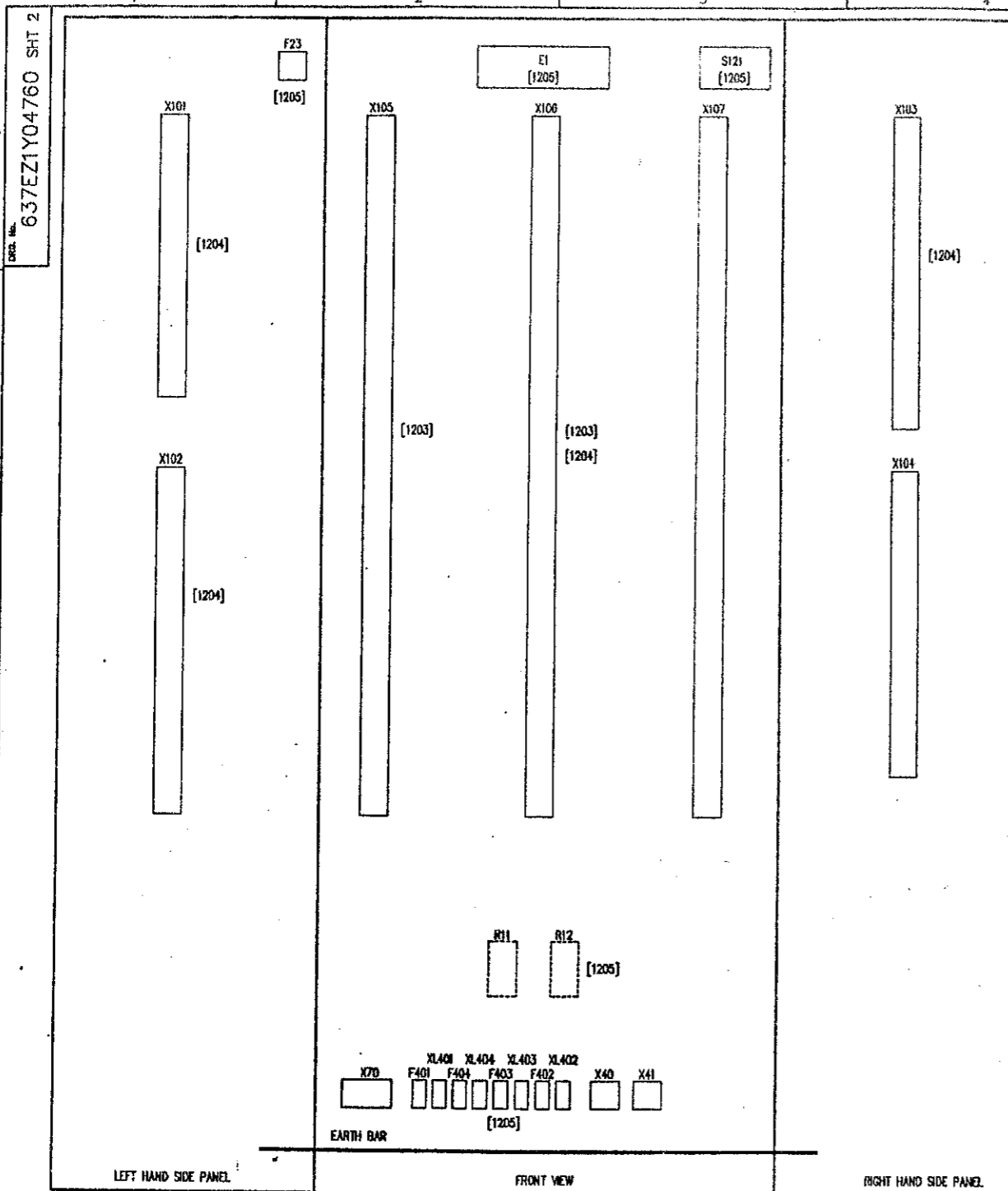
**GEC ALSTHOM**  
T&D

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
Waltham, England

**VISAKHAPATNAM**  
CIRCUIT DIAGRAM FOR  
DTR SIGNALS  
FROM EASTERN & SOUTHERN AC PROT'N SUITES

DWG No. **637EZ1Y04603 SHT 7**  
CURRENT ISSUE: D





DEVICE REF	DESCRIPTION	TYPE	QTY
E1	CUBICLE LIGHTING		
S121	CUBICLE LIGHTING DOOR SWITCH		
X101	PROTECTION TERMINALS (48V DC)	WEIDMULLER RSFT	
X102	PROTECTION TERMINALS (48V DC)	WEIDMULLER RSFT	
X103	PROTECTION TERMINALS (220V DC)	WEIDMULLER RSFT	
X104	PROTECTION TERMINALS (220V DC)	WEIDMULLER RSFT	
X105	CONTROL TERMINALS	WEIDMULLER SAKR	
X106	CONTROL TERMINALS	WEIDMULLER SAKR	
X107	CONTROL TERMINALS	WEIDMULLER SAKR	
X70	240V AC SUPPLY TERMINALS	WEIDMULLER RSFT	
F401	FUSE AND HOLDER, 2A, CUBICLE LIGHTING SUPPLY, 240V, 50HZ.	WEIDMULLER KSK3FL	
XL401	LINK AND HOLDER	WEIDMULLER KSK3FL	
F402	FUSE AND HOLDER, 16A, SUPPLY FOR TEST EQUIPMENT 16A SOCKET, 240V, 50HZ.	WEIDMULLER KSK3FL	
XL402	LINK AND HOLDER	WEIDMULLER KSK3FL	
F403	FUSE AND HOLDER, 2A, FOR HAND LAMP SUPPLY 16A SOCKET, 240V, 50HZ.	WEIDMULLER KSK3FL	
XL403	LINK AND HOLDER	WEIDMULLER KSK3FL	
F404	FUSE AND HOLDER, 10A, FOR HEATER SUPPLY, 240V, 50HZ.	WEIDMULLER KSK3FL	
XL404	LINK AND HOLDER	WEIDMULLER KSK3FL	
R11, R12	CUBICLE HEATER THERMOSTATICALLY CONTROLLED (MTD ON DOOR)	SABEL 17500 (80W)	
F23	THERMOSTAT	SABEL 17561	
X40	TEST EQUIPMENT SWITCHED SOCKET TO INDIAN STANDARD		
X41	HAND LAMP SWITCHED SOCKET TO INDIAN STANDARD		

FILE 7A1202

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM

GEC ALSTHOM T&D  
Power Electronic Systems Limited

VISAKHAPATNAM  
EXISTING SUBSTATION INTERFACE  
MARSHALLING KIOSK (MK10) - CWEDZLEW0021  
EQUIPMENT & DEVICE LIST

DWG. No. 637EZ1Y04760 SHT 2

(MININ) DENOTES FILE NUMBER OF 7ANNIN SECTION  
REFER 637EZ1Y04632 FOR FILE INDEX [7A1101]

ISSUE A  
NAME 637EZ1Y04760  
LOCATION VISA3221

ISSUE A  
DATE 23/09/98

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME BT Barrett  
DEPT. 739 DATE 28/9/98  
SIGNED BT Barrett

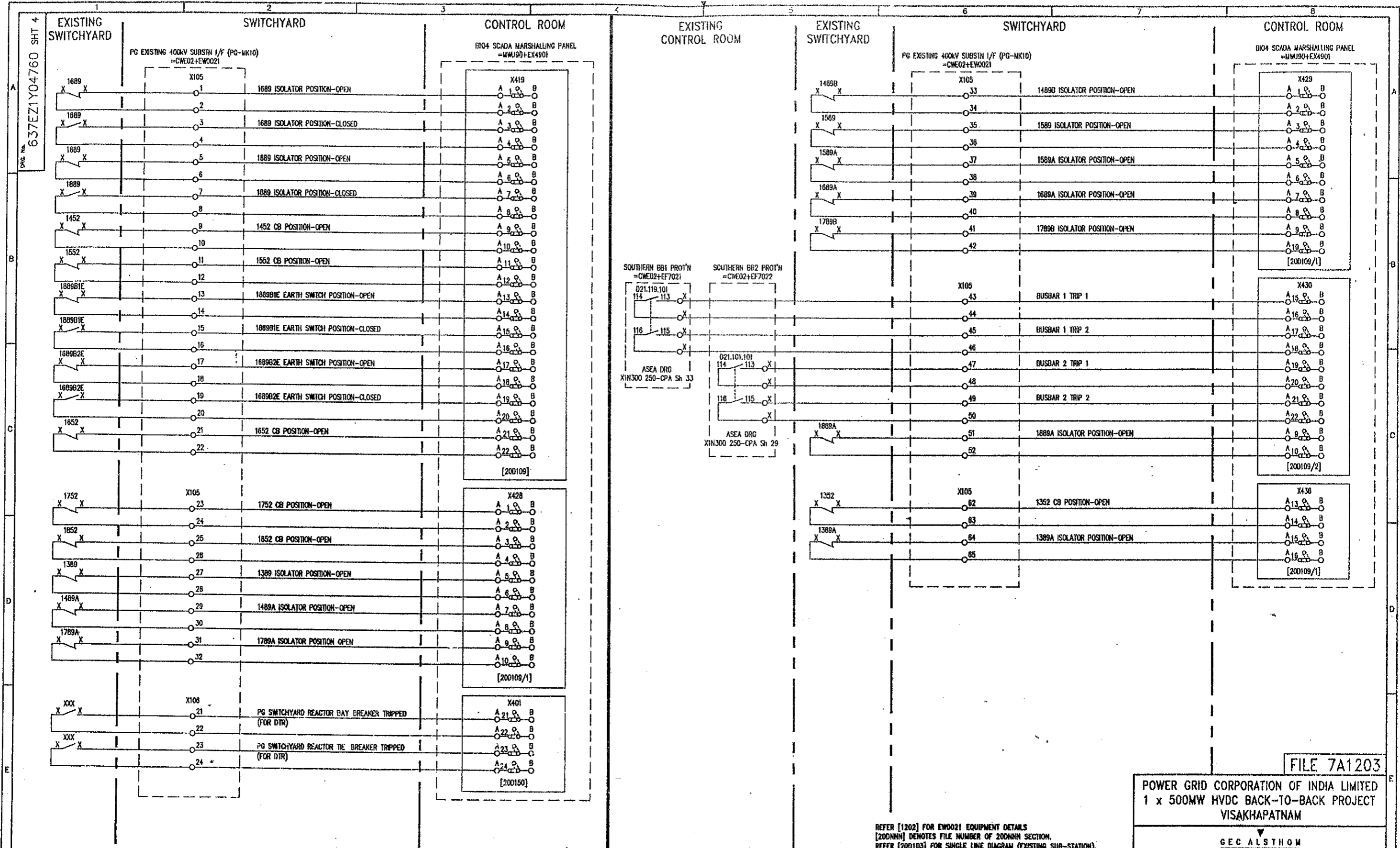
THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BE USED UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPEC. STAND/GGJ/PRG

DRAWN GGJ  
CHK JLP  
APP'D BTB  
SCALE  
TRACES  
DESIGN APP'D BTB

DO NOT SCALE PRINT

CUSTOMER POWER GRID CORP OF INDIA



ISSUE	A	PRJ	PRJ	PK	PK	PK	PK
NAME	F	JCP	RFR	21	21	21	21
DATE	09/09/98	JIB	01/04/99	07/09/99	07/09/99	07/09/99	07/09/99
LOCATION	VISA4345						

AS BUILT DWG  
16 MAY 2003  
VISA KHAPATNAM

GEC ALSTHOM IM  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 28/09/98  
SIGNED: B T B

THIRD ANGLE PROJECTION  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BE 3000 ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROO  
FOR THE STANDARDS OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROO

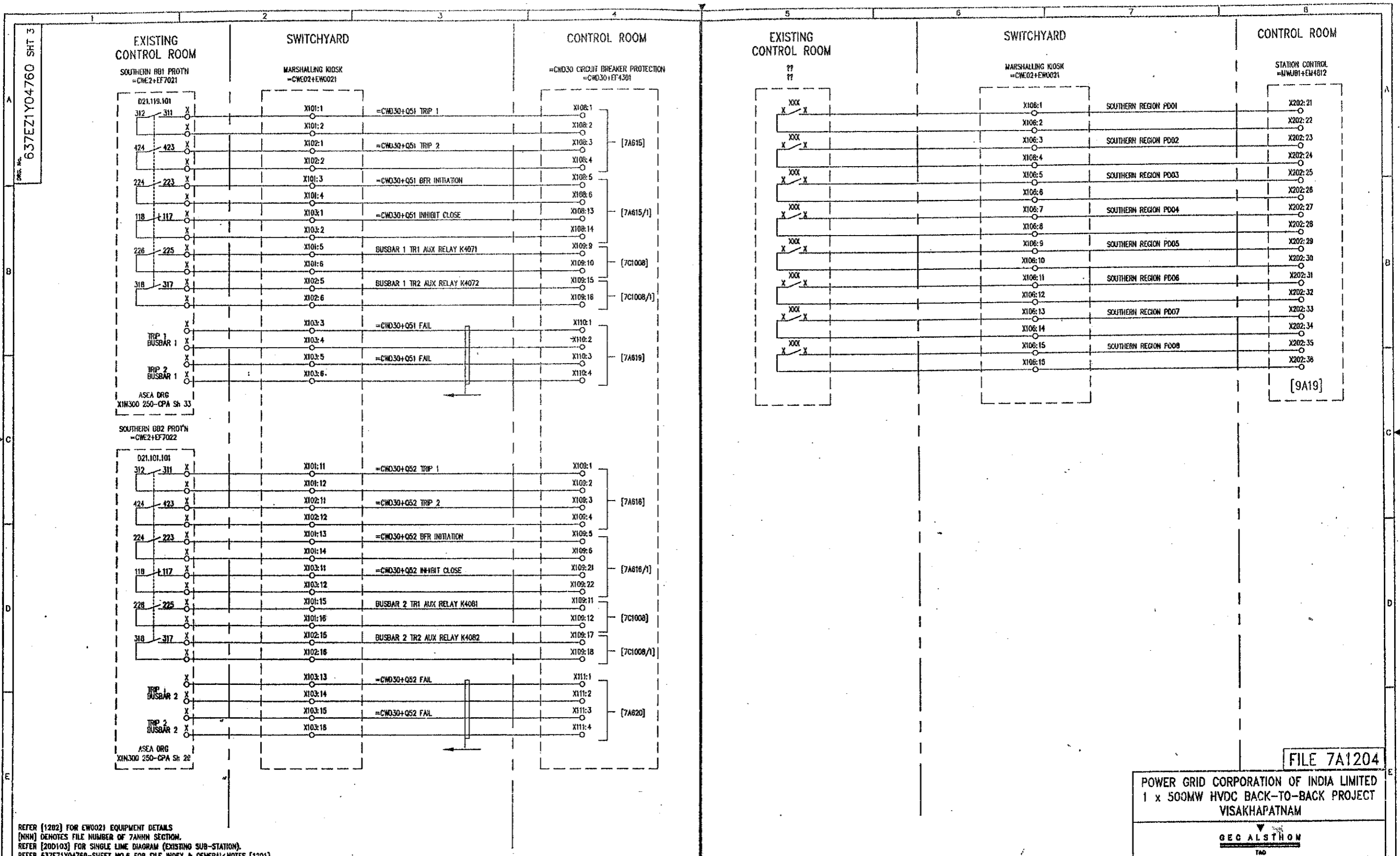
POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISA KHAPATNAM  
GEC ALSTHOM T&D  
Power Electronic Systems Limited  
VISA KHAPATNAM  
EXISTING SUBSTATION INTERFACE  
MARSHALLING KIOSK (MK10) =CWE02+EWO021  
SCADA I/O  
DRAWN: GJJ  
CHKD: JCP  
APP'D: RFR  
SCALE: N/A  
TRACED  
DESIGN: BTB  
APP'D: BTB  
DO NOT SCALE PRINT

FILE 7A1203  
GEC ALSTHOM T&D  
GEC ALSTHOM T&D  
Power Electronic Systems Limited  
VISA KHAPATNAM  
EXISTING SUBSTATION INTERFACE  
MARSHALLING KIOSK (MK10) =CWE02+EWO021  
SCADA I/O  
DRAWN: GJJ  
CHKD: JCP  
APP'D: RFR  
SCALE: N/A  
TRACED  
DESIGN: BTB  
APP'D: BTB  
DO NOT SCALE PRINT

CAD DATA  
ISSUE F  
NAME 637E12Y04760  
LOCATION VISA4345

REFER TO E.C.H. 8874 FOR BUSBAR TRIP INSTRUCTIONS FROM PG MWD 1102-43-50 NOW FORM INPUTS TO SCADA X432-15-22 SIGNALS FROM X432 & X389A ISOLATORS ADDED TOGETHER WITH THEIR TERMINATION DETAILS. X106 - TERMINALS 21 TO 24 WERE 1 TO 4 RESPECTIVELY.  
REFER TO E.C.H. 8874 FOR SOUTHERN BB1 PROTECTION RELAY DETAILS & DRG NO ADDED.  
REFER TO E.C.H. 8874 FOR X436 TERMINALS WERE 1 TO 4.

REFER [1202] FOR EWO021 EQUIPMENT DETAILS  
[200NNH] DENOTES FILE NUMBER OF 200NNH SECTION.  
REFER [200103] FOR SINGLE LINE DIAGRAM (EXISTING SUB-STATION).  
REFER 637E12Y04760-SHEET NO.6 FOR FILE INDEX & GENERAL NOTES [1201].



REFER [1202] FOR EW0021 EQUIPMENT DETAILS  
 [NNH] DENOTES FILE NUMBER OF 7ANNH SECTION.  
 REFER [200103] FOR SINGLE LINE DIAGRAM (EXISTING SUB-STATION).  
 REFER 637E21Y04760-SHEET NO.6 FOR FILE INDEX & GENERAL NOTES [1201].

ISSUE	A	B	PRJ	JCP
NAME	28	05	637E21Y04760	JCP
LOCATION	09	01	VISA3960	
	98	99		

REFER TO LOCAL 8645 TERMINALS X102-7, 8, 17 & 18 OMITTED. SIGNAL NAME OF CABLE FROM TERMINAL X102-8 & X102-15 REVERSED. TERMINAL REFS ON -CWE02+EF7021 SUITE.

REVISED TO EDWARDS-SOUTHERN DB PROT'N RELAY DETAILS & DRG NO ADDED

**AS BUILT DWG**  
 16 MAY 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED DRAWINGS TO BE308 UNLESS OTHERWISE STATED	DRAMA GGJ ORD JCP APPD RFR SCALE N/A TRACED DESIGN APPD BTB
NAME: B T BARRETT DEPT: 739 DATE: 28/09/99 SIGNED: B T B	IF IN DOUBT ASK	FOR THE STANDARDS OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROG	

FILE 7A1204

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D  
 Power Electronic Systems Limited  
 Harlow, England

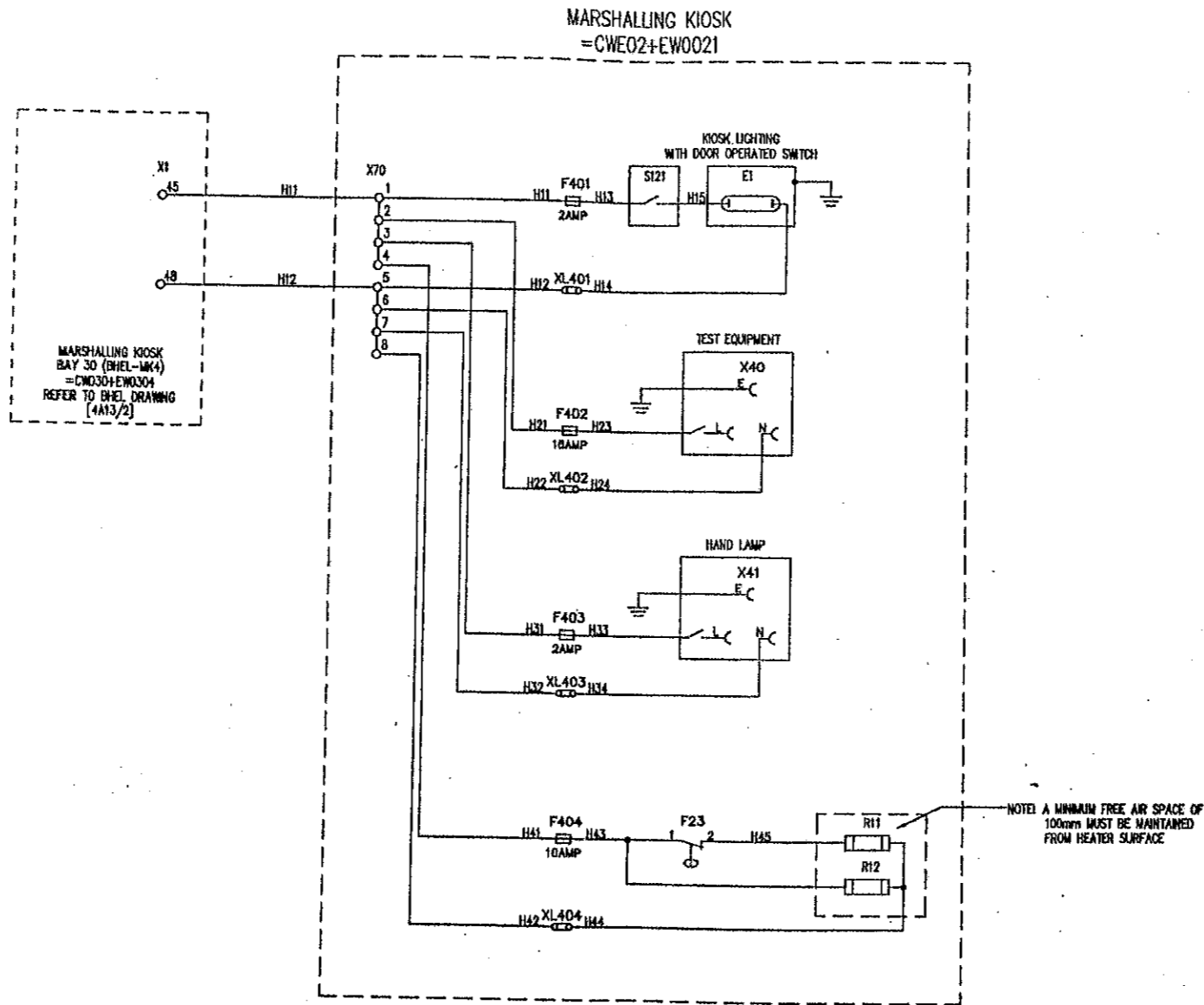
TITLE:  
 VISAKHAPATNAM  
 EXISTING SUBSTATION INTERFACE  
 MARSHALLING KIOSK (MK10) -CWE02+EW0021  
 PROTECTION 1/0

DRG. No. 637E21Y04760 SHY 3 C

WHEN QUOTING DRG. No. STATE CURRENT ISSUE

CUSTOMER POWERGRID CORP OF INDIA ORDER No. CF0136

637EZ1Y04760 SHT 1



MARSHALLING KIOSK  
BAY 30 (BHEL-1M4)  
=CW030+EWO304  
REFER TO BHEL DRAWING  
[4A13/2]

NOTE: A MINIMUM FREE AIR SPACE OF 100mm MUST BE MAINTAINED FROM HEATER SURFACE

FILE 7A1205

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM

GEC ALSTHOM T&D  
Power Electronic Systems Limited

EXISTING SUBSTATION INTERFACE  
MARSHALLING KIOSK(MK10) -CW02+EWO021  
AUXILIARY SUPPLIES

637EZ1Y04760 SHT 1

CUSTOMER POWERGRID

ORDER No. GFO136

REFER 637EZ1Y04760 SHS FOR FILE INDEX [7A1201]  
REFER [7A1202] FOR EQUIPMENT DETAILS

BOOK	A
NAME	
DATE	28/05/98
LOCATION	VISA3220

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

GEC ALSTHOM  
T&D  
CERTIFIED FOR  
MANUFACTURE

NAME: BT Barrett  
DEPT: 739 DATE: 28/5/98  
SIGNED: BT Barrett

THIRD ANGLE  
PROJECTION

ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED

IF IN DOUBT  
ASK

FOR THE SIGNATURE OF  
ACCURACY OF ALL  
DIMENSIONS  
SEE SPEC. STAND/ISS/PROG

DRAWN G.G.J.  
CHKD J.C.P.  
APP'D B.L.  
SCALE  
TRACED  
DESIGN  
APP'D B.T.B.

CLIPART  
SHEET  
A

DO NOT SCALE PRINT

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Dwg. No. 637EZ1Y04593 SHT 1

FILE	DRAWING TITLE	DRAWING NUMBER
7A201	AC HARMONIC FILTER -CWC33 PROTECTION INDEX OF CIRCUIT DIAGRAMS	637EZ1Y04663 SHEET 1
7A202	EQUIPMENT LOCATION AND DEVICE LIST ('DOUBLE DAMPED' PART)	637EZ1Y04663 SHEET 1
7A203	EQUIPMENT LOCATION AND DEVICE LIST ('C' TYPE PART)	637EZ1Y04663 SHEET 2
7A203/1	EQUIPMENT LOCATION AND DEVICE LIST (CT & CVT MARSHALLING KIOSK)	637EZ1Y04663 SHEET 3
7A204	CIRCUIT DIAGRAM FOR AC CIRCUITS ('DOUBLE DAMPED' PART)	637EZ1Y04664 SHEET 1
7A205	CIRCUIT DIAGRAM FOR AC CIRCUITS ('DOUBLE DAMPED' PART)	637EZ1Y04664 SHEET 2
7A206	CIRCUIT DIAGRAM FOR AC CIRCUITS ('C' TYPE PART)	637EZ1Y04664 SHEET 3
7A207	CIRCUIT DIAGRAM FOR AC CIRCUITS ('C' TYPE PART)	637EZ1Y04664 SHEET 4
7A208	CIRCUIT DIAGRAM FOR DC CIRCUITS (BREAKER FAIL PROTECTION)	637EZ1Y04665 SHEET 1
7A209	CIRCUIT DIAGRAM FOR DC CIRCUITS (PROTECTION- 'DOUBLE DAMPED' PART)	637EZ1Y04665 SHEET 2
7A210	CIRCUIT DIAGRAM FOR DC CIRCUITS (PROTECTION- 'C' TYPE PART)	637EZ1Y04665 SHEET 3
7A211	CIRCUIT DIAGRAM FOR SER & BACK-UP ANNUNCIATOR	637EZ1Y04666 SHEET 1
7A212	CIRCUIT DIAGRAM FOR SIGNALS TO CIRCUIT BREAKER -CWC33+050	637EZ1Y04667 SHEET 1
7A212/1	CIRCUIT DIAGRAM FOR SIGNALS TO CIRCUIT BREAKER -CWC33+050	637EZ1Y04667 SHEET 2
7A213	CIRCUIT DIAGRAM FOR AC SUPPLIES AND CUBICLE ILLUMINATION	637EZ1Y04668 SHEET 1
COMBINED FILTER PROTECTION BLOCK DIAGRAM [2A07]		637EZ1Y04700 SHEET 2
WIRING DIAGRAM FOR AC HARMONIC FILTER PROTECTION CUBICLE (DOUBLE DAMPED)		637EZ1Y02536 SHEETS 1-4
WIRING DIAGRAM FOR AC HARMONIC FILTER PROTECTION CUBICLE ('C' TYPE)		637EZ1Y02537 SHEETS 1-3
WIRING DIAGRAM FOR COMBINED FILTER MARSHALLING KIOSK		637EZ1Y02540

REFER 637EZ1Y04559 FOR MAIN INDEX [1A01]

FILE 7A201

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Sheffield, England

TITLE  
VISAKHAPATNAM  
AC HARMONIC FILTER -CWC33 PROTECTION  
INDEX OF CIRCUIT DIAGRAMS

DRG. No. 637EZ1Y04593 SHT 1  
CURRENT ISSUE C

ISSUE C  
NAME 637EZ1Y04593  
LOCATION VISA3510

ISSUE	PRJ	DATE	BY	REVISION
A	B	13/08/97	BTB	REVISED TO ECHS443 & 446G-1 ADDED NEW DIAGRAM FILE REF 7A212/1
B	RFR	13/07/98	BTB	REVISED TO ECHS443 & 446G-1 ADDED NEW DIAGRAM FILE REF 7A212/1
C	BTB	11/08/98	BTB	DRG No. 637EZ1Y02540 ADDED (EON8645)

AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 5/8/97  
SIGNED BTB

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECN. STAND/023/PROG

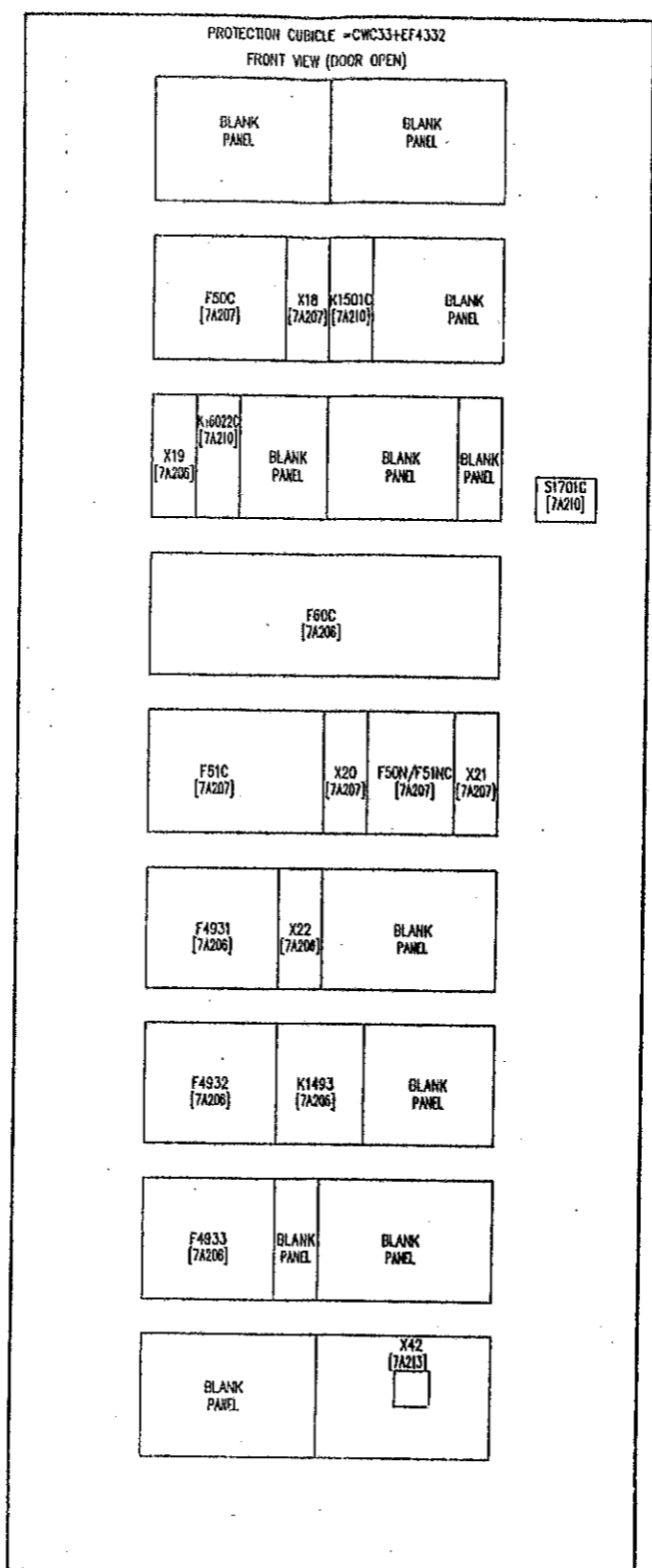
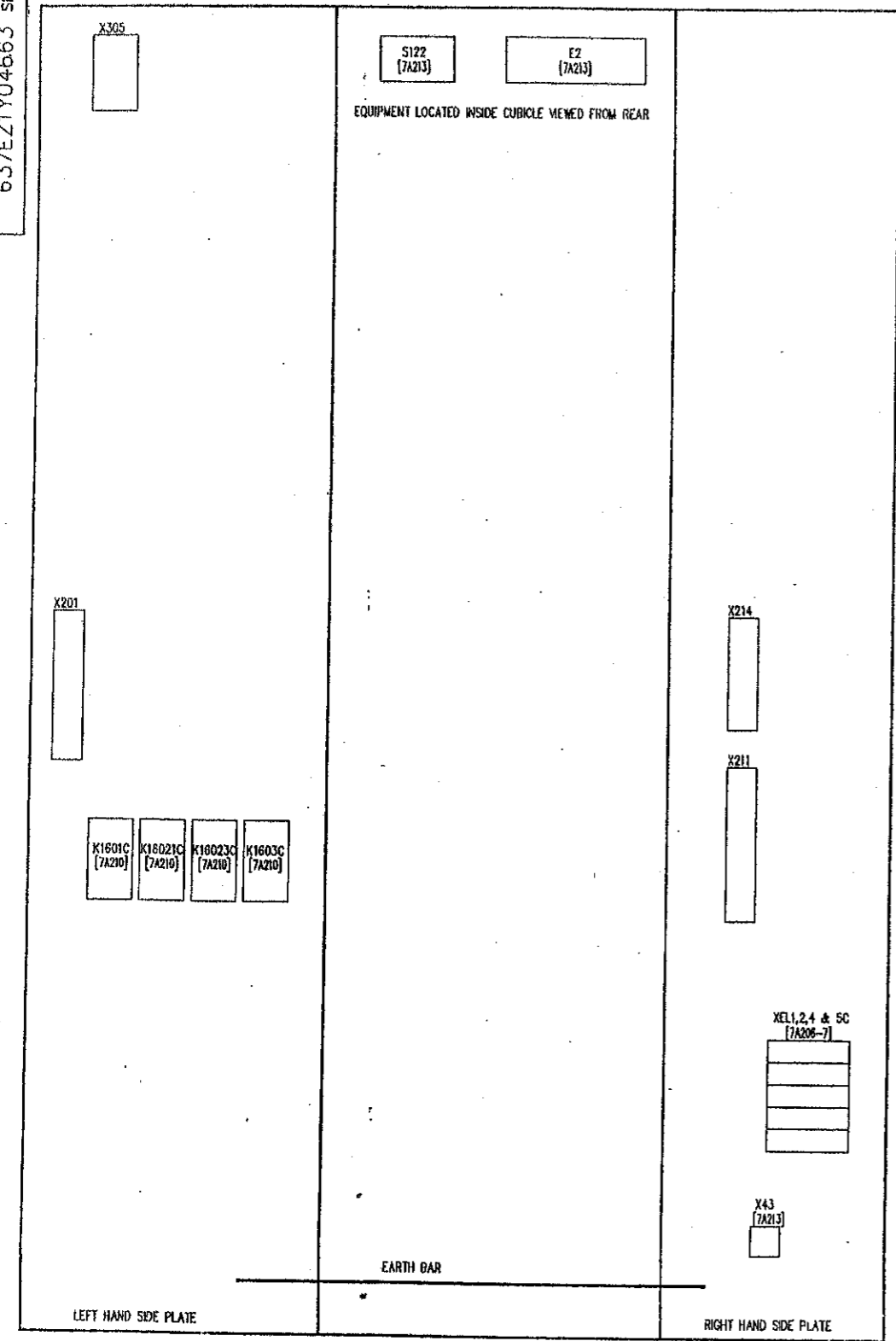
DRAWN JCP  
CHKD PNS  
APP'D RFR  
SCALE  
FRACED  
DESIGN APP'D PRJ

DO NOT SCALE PRINT

CUSTOMER POWERGRID  
ORDER No. DF0136  
WHEN QUOTING DRG. No. STATE CURRENT ISSUE



DRG. No. 637EZ1Y04663 SFT 2



DEVICE REF	DESCRIPTION	TYPE
F50C	INSTANTANEOUS OVERCURRENT RELAY	CECA MCAG30
X18	OVERCURRENT TEST BLOCK	CECA MMLG01
K1501C	TIMING RELAY (0.001-1 second)	CECA MY1114
X18	CAPACITOR UNBALANCE TEST BLOCK	CECA MMLG01
K16022C	CAPACITOR UNBALANCE TIMER (10-10,000 seconds)	CECA MY1114
S1701C	PUSHBUTTON CAPACITOR UNBALANCE TIMER RESET	HIGHLAND 704-0120 +704.910.4 COOPER SY
F80C	CAPACITOR UNBALANCE RELAY	ASEA SPAJ 160C
F51C	DMT OVERCURRENT RELAY	MMLG01
X20	OVERCURRENT TEST BLOCK	CECA KOGG122
F50N/F51NC	EARTH FAULT RELAY	CECA MMLG01
X21	EARTH FAULT TEST BLOCK	P AND B SAWZA CECA MMLG01
F4931	RESISTOR R3 OVERLOAD RELAY RED PHASE	P AND B SAWZA CECA MMLG01
X22	RESISTOR R3 OVERLOAD TEST BLOCK	
F4932	RESISTOR R3 OVERLOAD RELAY YELLOW PHASE	P AND B SAWZA CECA KOGG122
K1493	FILTER AUXILIARY CIRCUIT FAULTY ALARM RELAY	
F4933	RESISTOR R3 OVERLOAD RELAY BLUE PHASE	P AND B SAWZA
K1601C	CAPACITOR UNBALANCE STAGE 1 AUXILIARY RELAY	CECA PRIMA
K16021C	CAPACITOR UNBALANCE STAGE 2 AUXILIARY RELAY	CECA PRIMA
K16023C	CAPACITOR UNBALANCE STAGE 2 TIMER AUXILIARY RELAY	CECA PRIMA
K1603C	CAPACITOR UNBALANCE STAGE 3 AUXILIARY RELAY	CECA PRIMA
XEL1C	EARTH LINK FOR F80C	WEIDMULLER STL6
XEL2C	EARTH LINK FOR K1493	WEIDMULLER STL6
XEL4C	EARTH LINK FOR F50C/F51C	WEIDMULLER STL6
XEL5C	EARTH LINK FOR F50N/F51NC	WEIDMULLER STL6
X42	TEST EQUIPMENT SWITCHED SOCKET TO INDIAN STANDARD	
X43	HAND LAMP SWITCHED SOCKET TO INDIAN STANDARD	
E2	CUBICLE LIGHTING	
S122	CUBICLE LIGHTING DOOR SWITCH	
X201	CT/VT TERMINALS	WEIDMULLER RSE1
X211	SEQUENCE OF EVENTS RECORDER TERMINALS	WEIDMULLER RSE2
X214	SPARE RELAY CONTACTS TERMINALS	WEIDMULLER SAKR
X305	BUSWIRE TERMINALS (BUSBAR & FILTER VTS)	WEIDMULLER RSE2

FILE 7A203

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Sturford, England  
VISAKHAPATNAM  
AC HARMONIC FILTER -CWC33 PROTECTION  
CUBICLE -CWC33-EF4332 EQUIPMENT & DEVICE LIST  
'C' TYPE PART OF COMBINED FILTER

DRG. No. 637EZ1Y04663 SFT 2  
CURRENT ISSUE C

ISSUE	PRJ	REVISION	DATE
C	B	REMOVED TO EDWARDS- DELETED R212C, R213C & DESCRIPTION CHANGED.	13-08-97
B	A		07-07-98
A			13-07-98

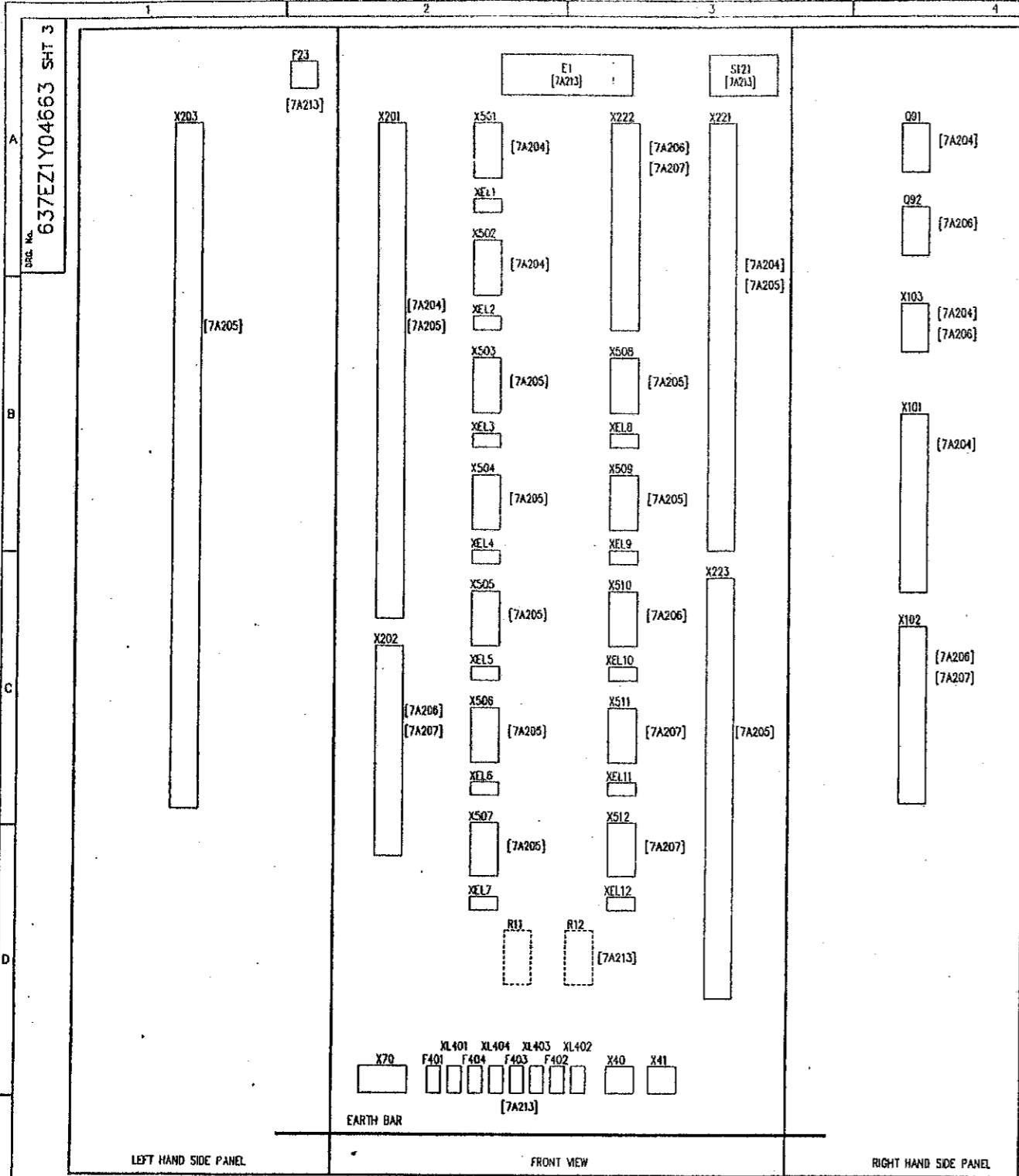
AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 5/3/07  
SIGNED: BTB

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROC

DRAWN: JCP  
CHKD: PNS  
APP'D: RFR  
SCALE:  
TRACED:  
DESIGN: PRJ  
APP'D:



DEVICE REF	DESCRIPTION	TYPE	QTY
E1	CUBICLE LIGHTING		
S121	CUBICLE LIGHTING DOOR SWITCH		
Q91	CVT (D) MINATURE CIRCUIT BREAKER 1A, 3POLE (AUX CONTACTS)	KLOCKNER MOELLER FA2N CI-3 KLOCKNER MOELLER NR1H 002-FAZ	
Q92	CVT (C) MINATURE CIRCUIT BREAKER 1A, 3POLE (AUX CONTACTS)	KLOCKNER MOELLER FA2N CI-3 KLOCKNER MOELLER NR1H 002-FAZ	
X101	CVT (D) IN/OUT TERMINALS	WEIDMULLER RSF1	
X102	CVT (C) IN/OUT TERMINALS	WEIDMULLER RSF1	
X103	SER TERMINALS	WEIDMULLER SAKR	
X201	CT (D) IN TERMINALS	WEIDMULLER RSF1	
X202	CT (C) IN TERMINALS	WEIDMULLER RSF1	
X203	CT IN TERMINALS	WEIDMULLER RSF1	
X221	CT (D) OUT TERMINALS	WEIDMULLER RSF1	
X222	CT (C) OUT TERMINALS	WEIDMULLER RSF1	
X223	CT OUT TERMINALS	WEIDMULLER RSF1	
X501	CWC33+T54.1 TEST BLOCK	WEIDMULLER SAKT2	
XEL1	EARTH LINK FOR T54.1	WEIDMULLER STL5	
X502	CWC33+T52.1 TEST BLOCK	WEIDMULLER SAKT2	
XEL2	EARTH LINK FOR T52.1	WEIDMULLER STL5	
X503	CWC33+T53.1 TEST BLOCK	WEIDMULLER SAKT2	
XEL3	EARTH LINK FOR T53.1	WEIDMULLER STL5	
X504	CWC33+T53.2 TEST BLOCK	WEIDMULLER SAKT2	
XEL4	EARTH LINK FOR T53.2	WEIDMULLER STL5	
X505	CWC33+T56.1 TEST BLOCK	WEIDMULLER SAKT2	
XEL5	EARTH LINK FOR T56.1	WEIDMULLER STL5	
X506	CWC33+T56.2 TEST BLOCK	WEIDMULLER SAKT2	
XEL6	EARTH LINK FOR T56.2	WEIDMULLER STL5	
X507	CWC33+T56.3 TEST BLOCK	WEIDMULLER SAKT2	
XEL7	EARTH LINK FOR T56.3	WEIDMULLER STL5	
X508	CWC33+T56.4 TEST BLOCK	WEIDMULLER SAKT2	
XEL8	EARTH LINK FOR T56.4	WEIDMULLER STL5	
X509	CWC33+T56.5 TEST BLOCK	WEIDMULLER SAKT2	
XEL9	EARTH LINK FOR T56.5	WEIDMULLER STL5	
X510	CWC33+T54.1 TEST BLOCK	WEIDMULLER SAKT2	
XEL10	EARTH LINK FOR T54.1	WEIDMULLER STL5	
X511	CWC33+T55.1 TEST BLOCK	WEIDMULLER SAKT2	
XEL11	EARTH LINK FOR T55.1	WEIDMULLER STL5	
X512	CWC33+T55.2 TEST BLOCK	WEIDMULLER SAKT2	
XEL12	EARTH LINK FOR T55.2	WEIDMULLER STL5	
X70	240V AC SUPPLY TERMINALS	WEIDMULLER RSF1	
F401	FUSE AND HOLDER, 2A, CUBICLE LIGHTING SUPPLY, 240V, 50HZ.	WEIDMULLER KSK3F	
XL401	LINK AND HOLDER.	WEIDMULLER KSK3FL	
F402	FUSE AND HOLDER, 16A, SUPPLY FOR TEST EQUIPMENT 16A SOCKET, 240V, 50HZ.	CECA L.V.F. SC32HD	
XL402	LINK AND HOLDER.	CECA L.V.F. SC32HD	
F403	FUSE AND HOLDER, 2A, FOR HAND LAMP SUPPLY 16A SOCKET, 240V, 50HZ.	WEIDMULLER KSK3F	
XL403	LINK AND HOLDER.	WEIDMULLER KSK3FL	
F404	FUSE AND HOLDER, 10A, FOR HEATER SUPPLY, 240V, 50HZ.	WEIDMULLER KSK3F	
XL404	LINK AND HOLDER.	WEIDMULLER KSK3FL	
R11, R12	CUBICLE HEATER THERMOSTATICALLY CONTROLLED (MID ON DOOR) THERMOSTAT	SAREL 17609 (90W) SAREL 17661	
X40	TEST EQUIPMENT SWITCHED SOCKET TO INDIAN STANDARD		
X41	HAND LAMP SWITCHED SOCKET TO INDIAN STANDARD		

(C) DENOTES 'C TYPE' PART OF COMBINED FILTER  
 (D) DENOTES 'DOUBLE DAMPED' PART OF COMBINED FILTER

FILE 7A203/1

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Sharnford, England

TITLE  
 VISAKHAPATNAM  
 AC HARMONIC FILTER = CWC33  
 CT & CVT MARSHALLING KIOSK = CWC33+EWO331  
 EQUIPMENT & DEVICE LIST

DRG. No. 637EZ1Y04663 SHT 3  
 CURRENT ISSUE A

CUSTOMER POWER GRID CORP OF INDIA ORDER No. CF0136

REFER 637EZ1Y04593 FOR FILE INDEX [7A201]

G.A.D. DATA  
 ISSUE A  
 NAME 637EZ1Y04663  
 LOCATION VISA2619

ISSUE DATE 22 05 98

AS BUILT DWG  
 14 APR 2001  
 VISAKHAPATNAM

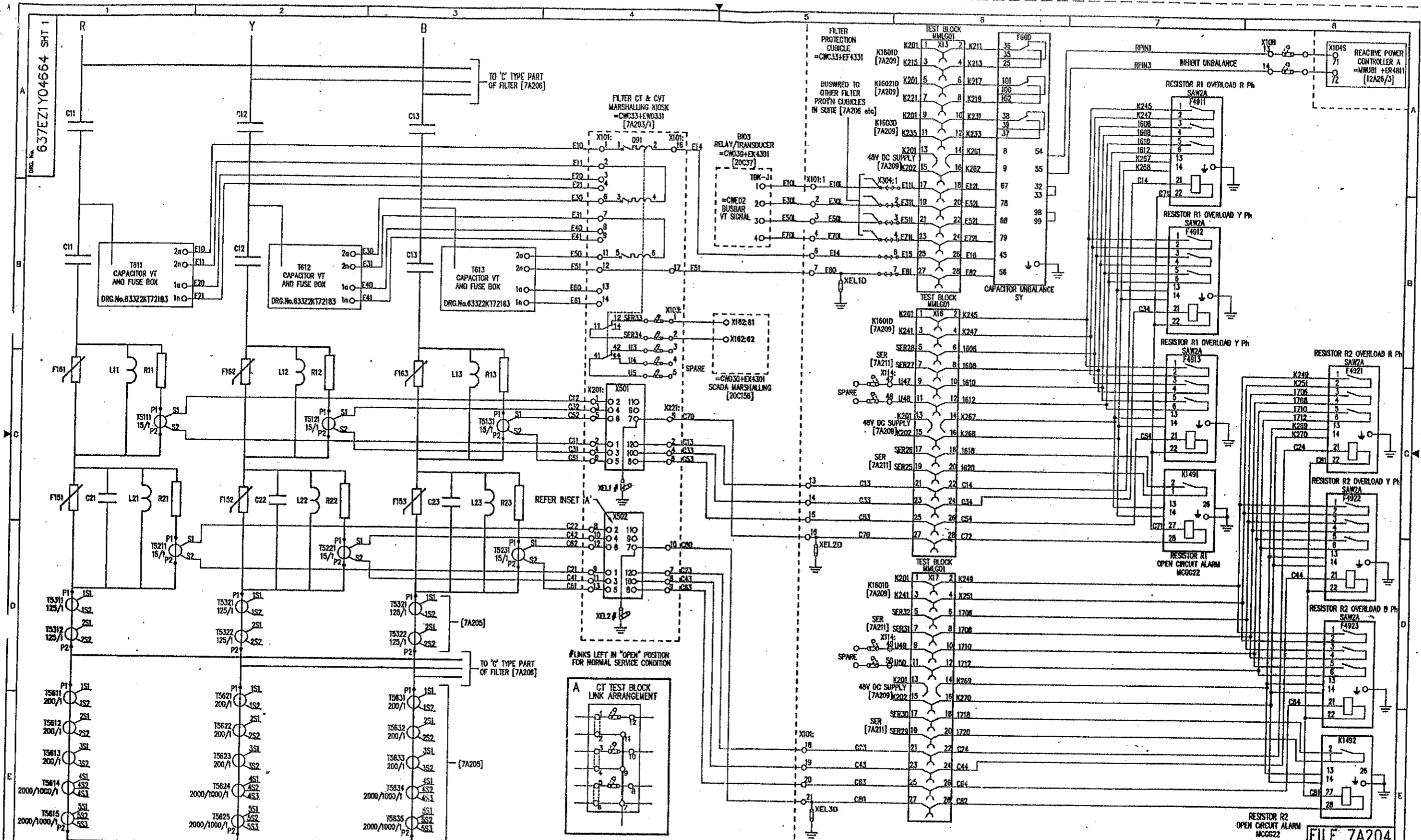
GEC ALSTHOM 180  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: N.M. KIRBY  
 DEPT. 61 DATE 18/4/00  
 SIGNED N.M.K.

THIRD ANGLE PROJECTION  
 IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWN TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROG

DRAWN VJC  
 CVD FBS  
 APP'D P.D.  
 SCALE  
 TRACED  
 DESIGNER P.W.  
 APP'D

DO NOT SCALE PRINT



C.A.D. DATA		PRJ A	PRJ B	PRJ C	PRJ D
ISSUE D	DATE 13/08/97	PNS JCP	28/08/97	RFR PREM	13/07/98
NO. 637EZ1Y04664		DESIGNED BY	28/08/97	REVISION TO	14/12/98
LOCATION VISA3513		CHECKED BY	07/08/98	APPROVED BY	12/12/98

**AS BUILT DWG**  
 14 APR 2000  
**VISAKHAPATNAM**

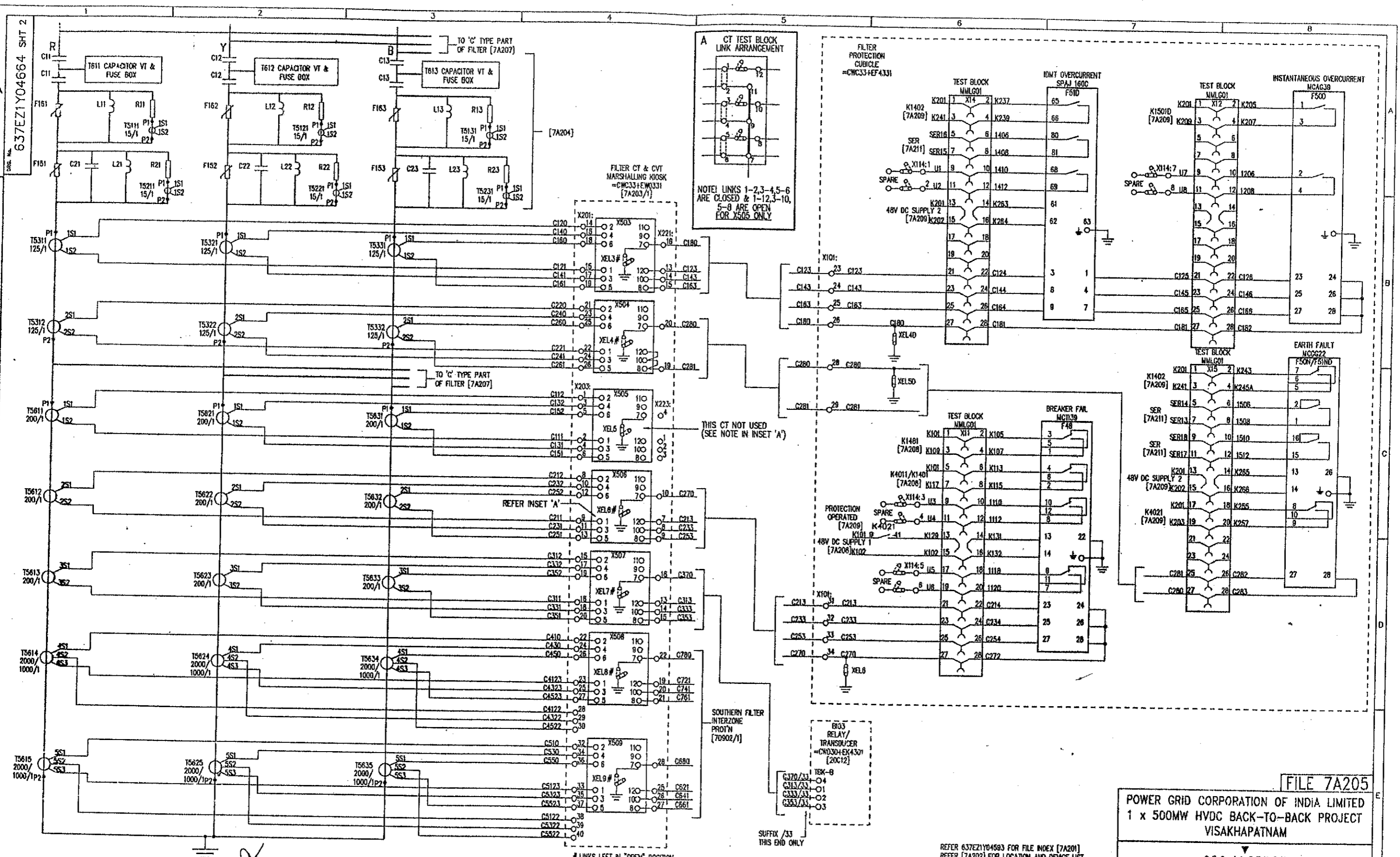
POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&O  
 CERTIFIED FOR MANUFACTURE  
 NAME: B T BARRETT  
 DEPT: 739 DATE: 5/8/97  
 SIGNED: BTB

REFER [7A202] FOR LOCATION AND DEVICE LIST  
 REFER 637EZ1Y04593 FOR FILE INDEX [7A201]  
 REFER [2A05] FOR PROTIN SINGLE LINE DIAGRAM

GEC ALSTHOM  
 T&O  
 DRAWN JCP  
 CVD PNS  
 APP'D RFR  
 SCALE  
 TRACED  
 DESIGNED PRJ  
 APPROV  
 THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BE SHOWN UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNBALANCED DIMENSIONS SEE SPEC. STAND. 023/PROV  
 IF IN DOUBT ASK  
 DO NOT SCALE PRINT

GEC ALSTHOM  
 T&O  
**GEC ALSTHOM T&D**  
 Power Electronic Systems Limited  
 Waltham, England  
 TITLE  
**VISAKHAPATNAM**  
 AC HARMONIC FILTER =CWC33 PROTECTION  
 CIRCUIT DIAGRAM FOR AC CIRCUITS  
 (DOUBLE DAMPED PART OF COMBINED FILTER)  
 DRG. No. 637EZ1Y04664 SH 1  
 CURRENT ISSUE D  
 CUSTOMER POWERGRID  
 ORDER No. CPO136



C.A.D. DATA

PRJ	A	B	C
PNS JCP	26	08	13
RFR PREM	07	07	07
DATE	13	08	97

REVISIONS TO ECH 84248 BAKK - CHANGED CABLE CORE NO ON X223-19-21 & 22-28 FROM C413, 433, 453, 470 & C513, 533, 553, 570. ALSO FILE REF FOR SOUTHERN FILTER INTERZONE FROM 70903. ADDED TERMINAL NUMBERS TO =CWC33-HEF4331. REVISED TO ECH 84248 BAKK - CHANGED CABLE CORE NO ON X223-22 & 28 FROM C770 & C870.

AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

# LINKS LEFT IN "OPEN" POSITION FOR NORMAL SERVICE POSITION

GEC ALSTHOM IND Power Electronics Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN JCP
NAME: B T BARRETT	IF IN DOUBT ASK	DRAWING TO BS308 UNLESS OTHERWISE STATED	CHKD PNS
DEPT: 739 DATE: 5/8/97	SIGNED BTB	FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECN. STAND/023/PROO	APP'D RFR
			SCALE
			TRACED
			DESIGN APP'D PRJ

FILE 7A205

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

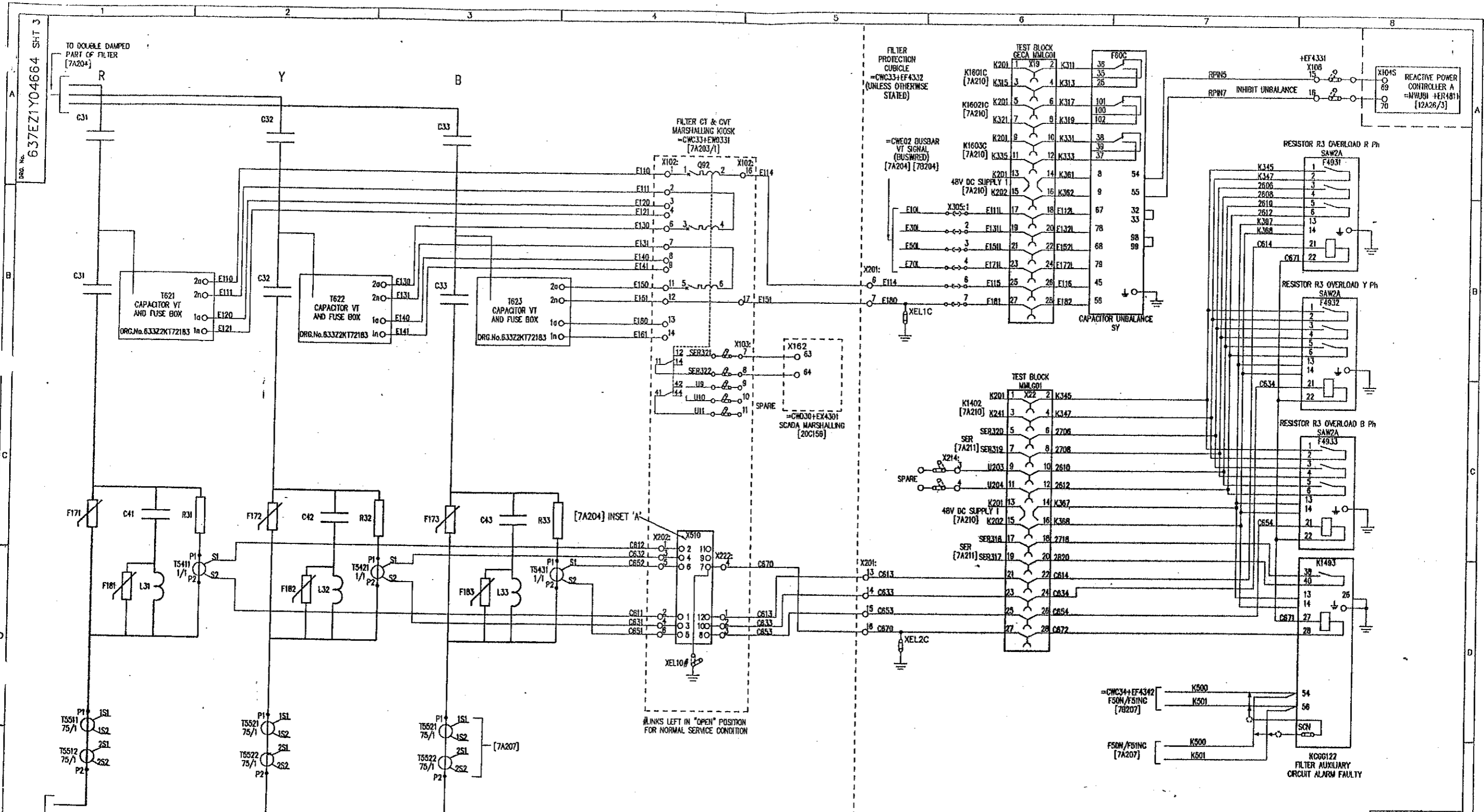
GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronics Systems Limited  
Widnes, England

VISAKHAPATNAM  
AC HARMONIC FILTER =CWC33 PROTECTION  
CIRCUIT DIAGRAM FOR AC CIRCUITS  
(DOUBLE DAMPED PART OF COMBINED FILTER)

DRG. No. 637EZ1Y04664 SHT 2

CUSTOMER POWERGRID



REFER 637EZ1Y04593 FOR FILE INDEX [7A201]  
 REFER [7A203] FOR LOCATION AND DEVICE LIST  
 REFER [2A05] FOR PROTN SINGLE LINE DIAGRAM

ISSUE	A	B	C	D	E
NAME	PRJ PNS JCP	PRJ RFR PREM	PRJ RFR PREM	PRJ RFR PREM	PRJ RFR PREM
DATE	13 08 97	28 08 97	13 07 98	11 12 98	11 12 98
LOCATION	VISA3974				

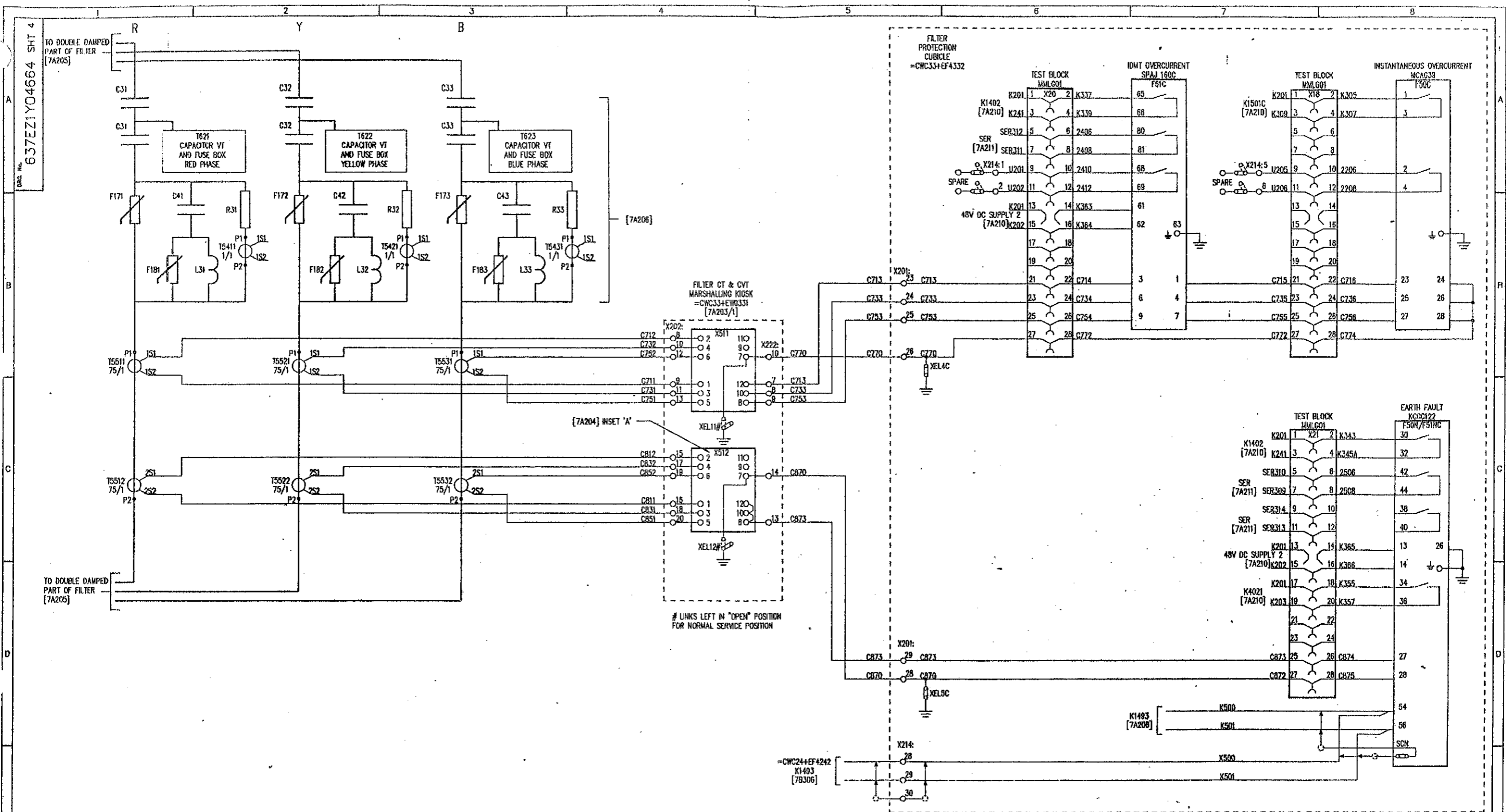
**AS BUILT DWG**  
 14 APR 2000  
**VISAKHAPATNAM**

**GEC ALSTHOM**  
 T&D  
 CERTIFIED FOR  
 MANUFACTURE  
 NAME: B T BARRETT  
 DEPT: 739 DATE: 5/8/97  
 SIGNED: BTB

THIRD ANGLE  
 PROJECTION  
 ALL DIMENSIONS  
 IN MILLIMETRES  
 UNLESS OTHERWISE STATED  
 DRAWING TO BS308  
 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF  
 ACCURACY OF ALL  
 UNTOLERANCED DIMENSIONS  
 SEE SPEC. STAND/D23/PROD

**GEC ALSTHOM**  
 T&D  
**Power Electronic Systems Limited**  
 Stafford, England  
 TITLE  
**VISAKHAPATNAM**  
**AC HARMONIC FILTER =CWC33 PROTECTION**  
**CIRCUIT DIAGRAM FOR AC CIRCUITS**  
**(C TYPE PART OF COMBINED FILTER)**  
 DRG. No.  
**637EZ1Y04664 SH 3**  
 CURRENT  
 ISSUE  
**E**

**FILE 7A206**  
**POWER GRID CORPORATION OF INDIA LIMITED**  
**1 x 500MW HVDC BACK-TO-BACK PROJECT**  
**VISAKHAPATNAM**



REFER 637EZ1Y04664 FOR FILE INDEX [7A201]  
 REFER [7A203] FOR LOCATION AND DEVICE LIST  
 REFER [2A05] FOR PHOTO SINGLE LINE DIAGRAM

ISSUE	DATE	BY	CHKD	REVISION
A	13/08/97	PSG	BNC	REVISED TO ECU 8708. RELAY FSAN/FSAN CHANGED. WIRE NOS 2500 & 2501 ADDED. WIRE NOS 2510 & 2512 DELETED.
B	03/06/99	PSG	BNC	REVISED TO ECU 8823. CT REFERENCES AMENDED.
C	06/09/99	BTB	ASK	REVISED TO ECU 8823. CT REFERENCES AMENDED.

**AS BUILT DWG**  
 14 APR 2000  
**VISAKHAPATNAM**

<b>GEC ALSTHOM T&amp;D</b> Power Electronic Systems Limited	<b>THIRD ANGLE PROJECTION</b>	<b>ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED</b>	<b>DRAWN JCP</b> CND PNS
<b>CERTIFIED FOR MANUFACTURE</b>		<b>DRAWING TO BS308 UNLESS OTHERWISE STATED</b>	<b>APP'D RFR</b>
NAME: BTB BARRETT	IF IN DOUBT: ASK	<b>FOR THE STANDARD OF ACCURACY OF ALL UNITS/BALANCED DIMENSIONS SEE SPECN. STAND/025/PROG</b>	SCALE:
DEPT. 739 DATE: 5/8/97			TRACED:
SIGNED: BTB			DESIGN APP'D: PRJ

**FILE 7A207**

**POWER GRID CORPORATION OF INDIA LIMITED**  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

**GEC ALSTHOM**  
T&D

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
Sheffield, England

**VISAKHAPATNAM**  
AC HARMONIC FILTER =CWC33 PROTECTION  
CIRCUIT DIAGRAM FOR AC CIRCUITS  
(C TYPE PART OF COMBINED FILTER)

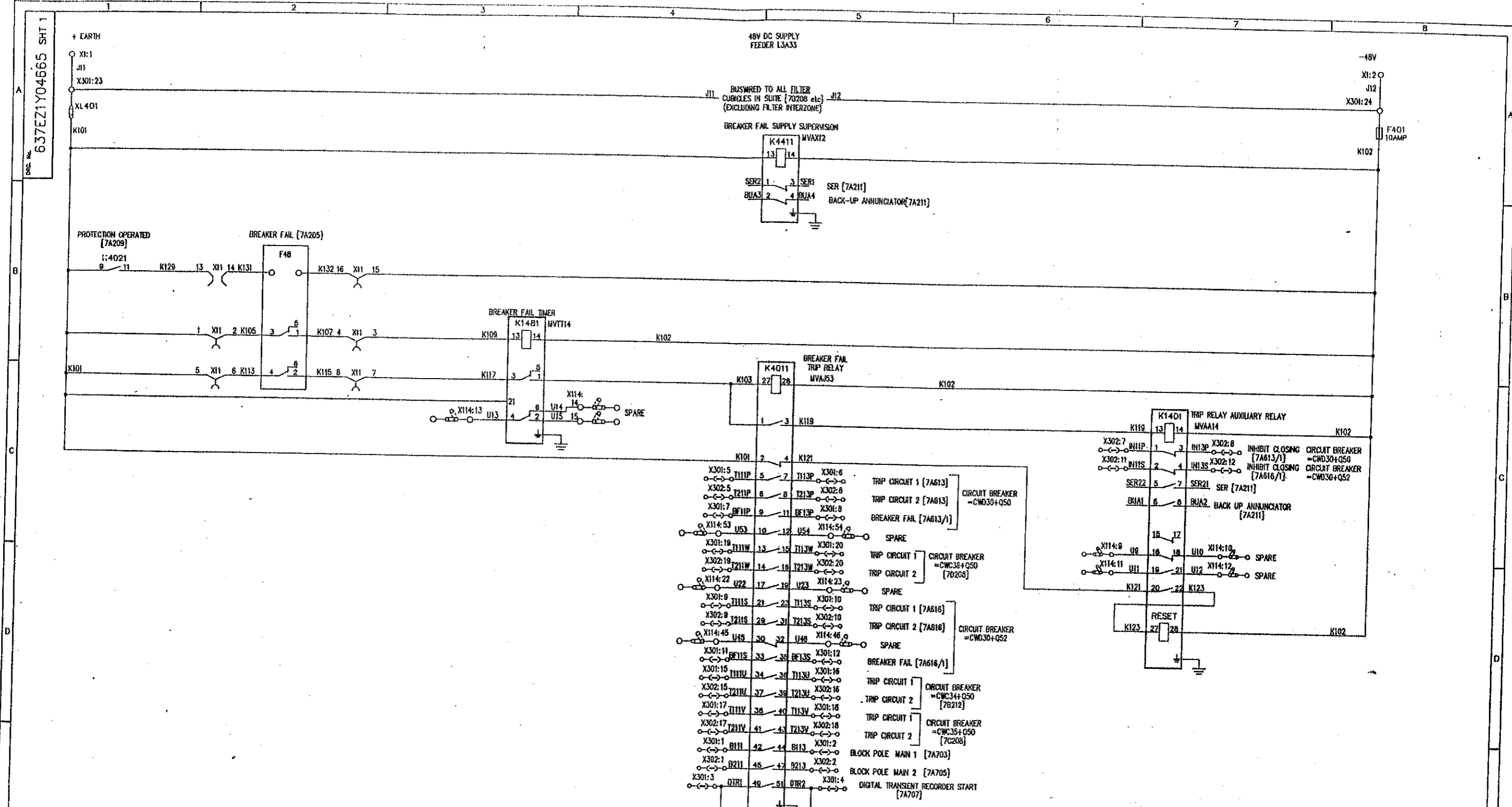
DRG. NO. **637EZ1Y04664** SHT 4 OF 4

CURRENT ISSUE: **C**

WHEN QUOTING DRG. NO. STATE CURRENT ISSUE

CUSTOMER: POWER GRID CORP OF INDIA ORDER NO. CF0136

DRG. No. 637EZ1Y04665 SHT 1



REFER 637EZ1Y04593 FOR FILE INDEX [7A201]  
REFER [7A202] FOR LOCATION AND DEVICE LIST

ISSUE NAME	A	
	ISSUE	13
	DATE	08 07 98
	LOCATION	VSA2260

REVISED TO EDWARD & BARR - REMOVED RPT FROM K14B1 - CHANGED FILE SETS FROM 7A205 & 7A211 ON X301, X302 & X301:12, X302:12

**AS BUILT DWG**  
14 APR 2000  
**VISAKHAPATNAM**

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT: 739 DATE: 5 / 8 / 97  
SIGNED: BTB

**THIRD ANGLE PROJECTION**  
IF IN DOUBT ASK  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLEANCED DIMENSIONS SEE SPECN, STAND/023/PROD

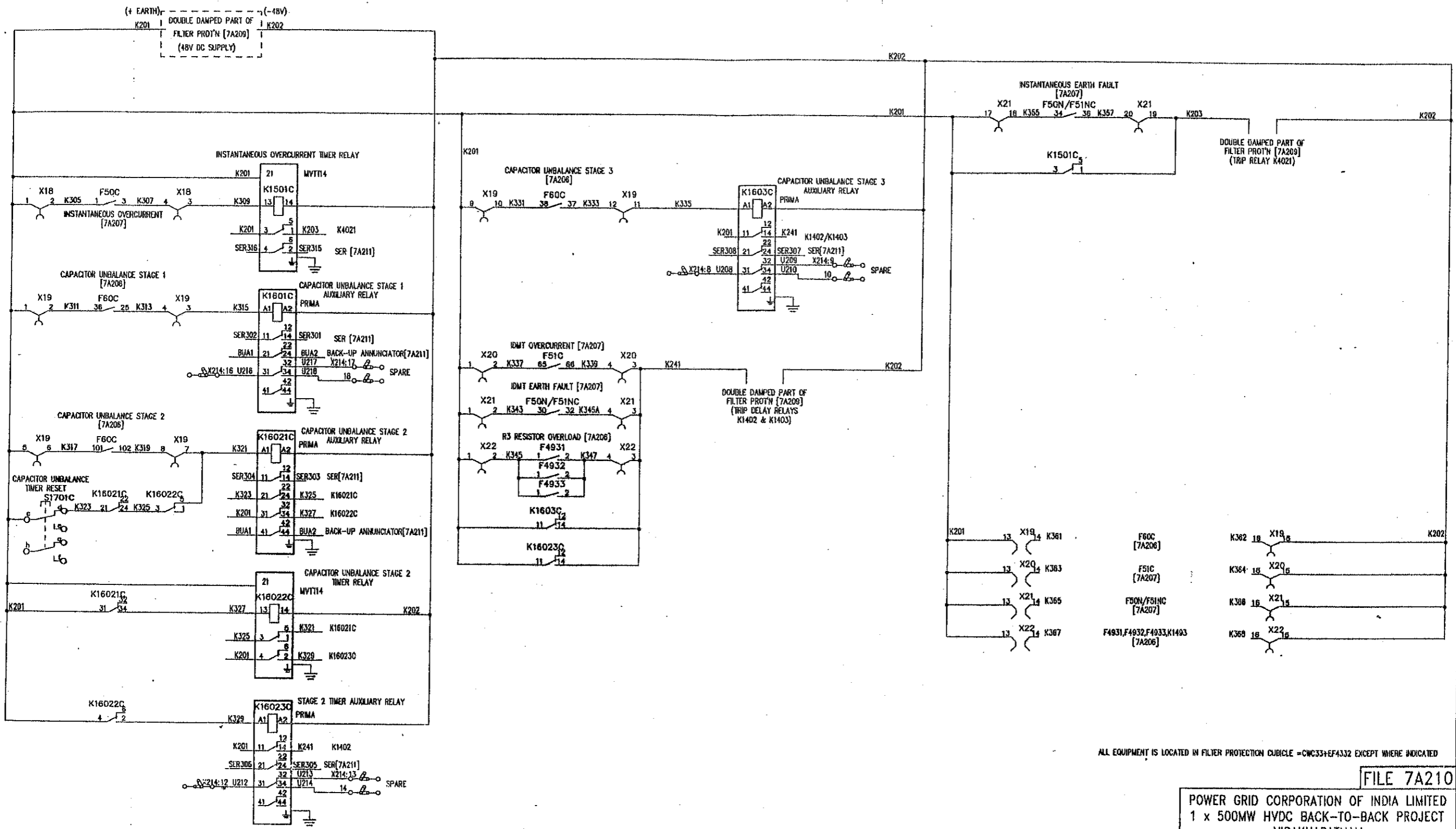
**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM  
**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
Shelford, England  
TITLE: VISAKHAPATNAM AC HARMONIC FILTER = CWC33 PROTECTION CIRCUIT DIAGRAM FOR DC CIRCUITS (BREAKER FAIL PROTECTION)  
DRG. No. 637EZ1Y04665 SHT 1  
CURRENT ISSUE B

ALL EQUIPMENT IS LOCATED IN FILTER PROTECTION CUBICLE = CWC33+EF4331 EXCEPT WHERE INDICATED

FILE 7A208



DRG. No. 637EZ1Y04665 SHT 3



ALL EQUIPMENT IS LOCATED IN FILTER PROTECTION CUBICLE -CWC331EF4332 EXCEPT WHERE INDICATED

FILE 7A210

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Sheffield, England

VISAKHAPATNAM  
AC HARMONIC FILTER -CWC33 PROTECTION  
CIRCUIT DIAGRAM FOR DC CIRCUITS (PROTECTION)  
( 'C' TYPE PART OF COMBINED FILTER)

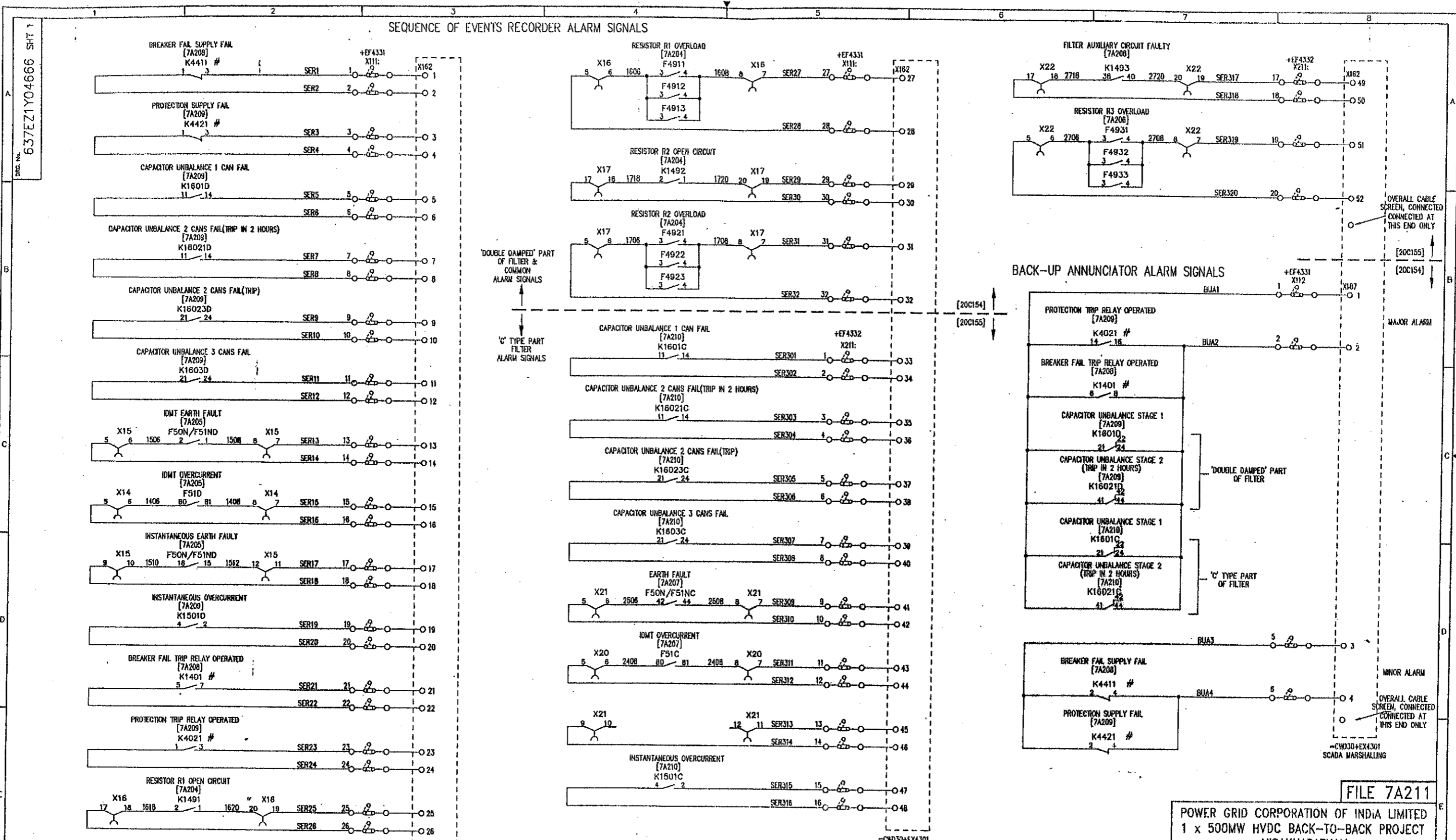
DRG. No. 637EZ1Y04665 SHT 3  
CURRENT ISSUE D

REFER 637EZ1Y04593 FOR FILE INDEX [7A201]  
REFER [7A203] FOR LOCATION AND DEVICE LIST

ISSUE	DATE	BY	REVISION
A	13/07/97	PREM BJC	REVISED TO EN6402 & 65866 - ADDED 22E17-20 & F50N/F51NC DELETED R121C, R131C & WIRES K210, K22E
B	07/07/98	PREM BJC	REVISED TO EN6402 & 65866 - ADDED 22E17-20 & F50N/F51NC DELETED R121C, R131C & WIRES K210, K22E
C	03/06/99	PREM BJC	REVISED TO EN6402 & 65866 - CHANGED TO 30, 32, 34 & 35
D	09/09/99	PREM BJC	REVISED TO EN6402 & 65866 - BUA1&2 WERE BUACKED

AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN JCP CHKD PNS
NAME: B T BARRETT DEPT: 730 DATE: 5/8/97 SIGNED BTB	IF IN DOUBT ASK	DRAWING TO BE JOB UNLESS OTHERWISE STATED	APP'D RFR SCALE TRACED
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECN. STAND/023/PROG		DESIGN PRJ	CURRENT ISSUE D



# DENOTES COMMON FILTER ALARM  
 REFER 637EZ1Y04593 FOR FILE INDEX [7A201]  
 REFER [7A202] FOR LOCATION AND DEVICE LIST (DOUBLE DAMPED PART)  
 REFER [7A203] FOR LOCATION AND DEVICE LIST ('C' TYPE PART)

=CWD30+EX4301  
 SCADA MARSHALLING  
 [20C154]

ALL EQUIPMENT IS LOCATED IN FILTER PROTECTION CUBICLE =CWD33+EF431(2) EXCEPT WHERE STATED

FILE 7A211

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM

ISSUE	DATE	PRJ RFR	PRJ JCP	PRJ GQJ	PRJ P5G	PRJ BJC	PRJ BUC
D	13-08-97	13-07-98	11-12-98	11-12-98	03-01-99	03-01-99	03-01-99

REVISIONS TO DRAWING:  
 1. P5G/F51NC1 & 2 CHANGED TO P50N/F51NC1 & 2 CHANGED TO 30&40.  
 2. K14&142 CHANGED TO 30&40.  
 3. WIRE NOS 2510 & 2512 DELETED.  
 4. EARTH FAULT WAS 10TH EARTH FAULT.

**AS BUILT DWG**  
 14 APR 2000  
**VISAKHAPATNAM**

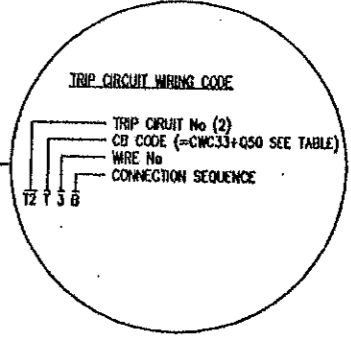
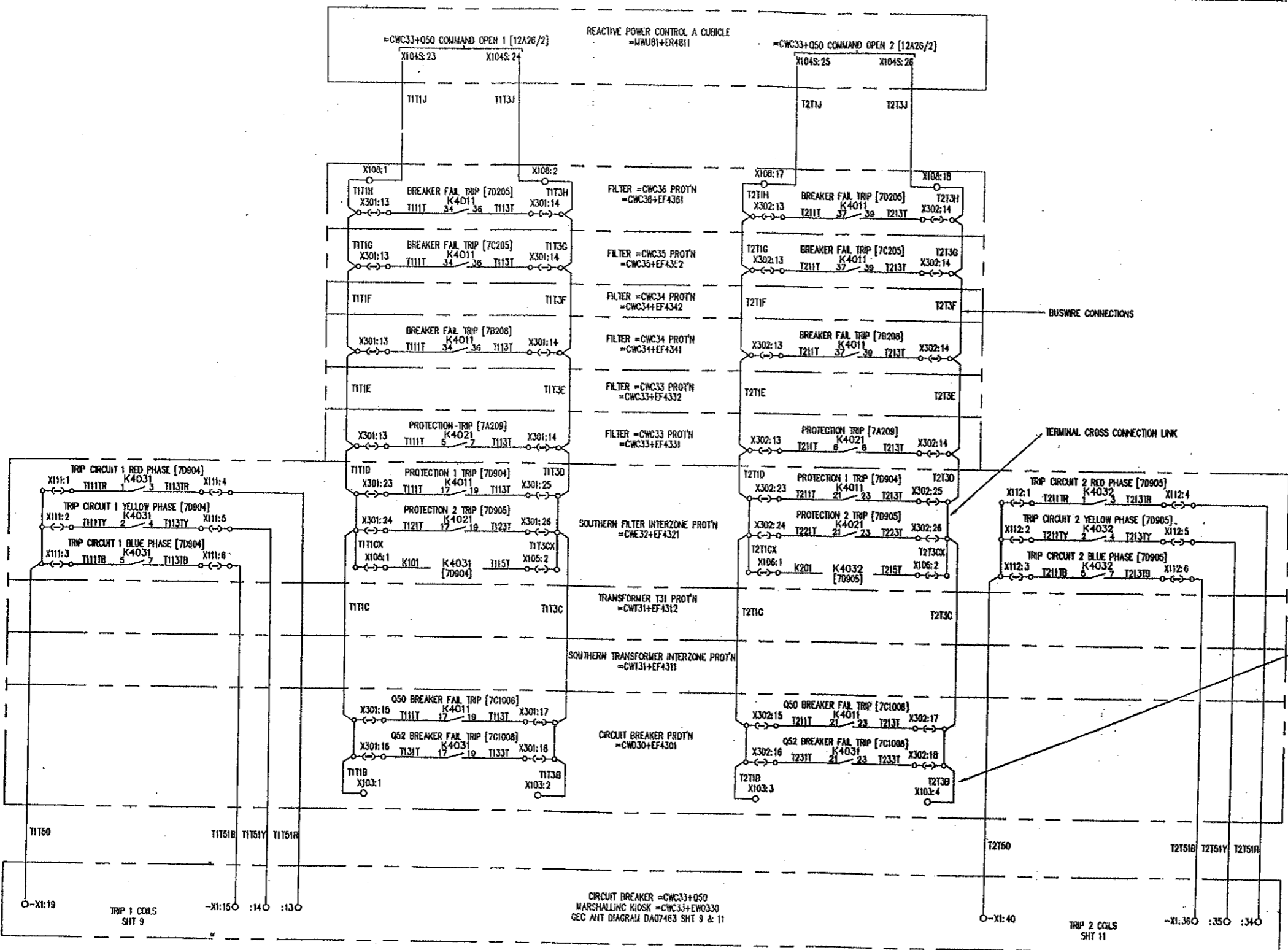
GEC ALSTHOM INC  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: B T BARRETT  
 DEPT. 739 DATE: 5/8/97  
 SIGNED BTB

THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAN/923/PROG  
 IF IN DOUBT ASK  
 DO NOT SCALE PRINT

DRAWN JCP  
 CWD PNS  
 APP'D RFR  
 SCALE  
 TRACED  
 DESIGN PRJ  
 DRG. No. 637EZ1Y04666 SHT 1  
 CURRENT ISSUE D  
 WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
 CUSTOMER POWERGRID ORDER No. CFO136

637EZ1Y04667 SHT 1

CB	LETTER	BUS
=CWC10+Q50	A	
=CWC10+Q51	B	
=CWC10+Q52	C	
=CWC20+Q50	D	
=CWC20+Q51	E	
=CWC20+Q52	F	
=CWC24+Q50	G	
=CWC24+Q51	H	
=CWC24+Q52	I	
=CWC25+Q50	J	
=CWC19+Q50	K	
=CWC29+Q50	L	
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWC30+Q50	P	
=CWC30+Q51	R	
=CWC30+Q52	S	
=CWC33+Q50	T	
=CWC34+Q50	U	
=CWC36+Q50	V	
=CWC36+Q51	W	
PG EXISTING DB1	X	
PG EXISTING DB2	Y	



CIRCUIT BREAKER =CWC33+Q50  
MARSHALLING KIOSK =CWC33+EW0330  
GEC ANT DIAGRAM DA07463 SHT 9 & 11

REFER 637EZ1Y04667 FOR FILE INDEX [7A201]  
REFER [7A202] FOR LOCATION AND DEVICE LIST

ISSUE	DATE	BY	REASON
D	13/08/97	BTB	REVISED TO ENDSHAW'S BASE - ADDED K4031 & K4032 CONTACTS ADDED K4031 & K4032 RELAY CTT REF IN TRIP CTT WIRING
C	11/12/98	JCP	REVISION TO ENDSHAW'S GEC ANT DIAGRAM WAS DA03708
B	07/07/98	RFR	REVISION TO ENDSHAW'S GEC ANT DIAGRAM WAS DA03708
A	13/08/97	PREM	ISSUE

**'AS BUILT DWG**  
14 APR 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN JCP
NAME: B T GARRETT	IF IN DOUBT ASK	DRAWING TO BE 3000 UNLESS OTHERWISE STATED	CHKD PNS
DEPT: 739 DATE: 5/8/97		FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROG	APP'D RFR
SIGNED BTB			SCALE
			TRACED
			DESIGN PRJ
			APP'D

**FILE 7A212**

**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

**GEC ALSTHOM**  
T&D

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
Bedford, England

**VISAKHAPATNAM**  
AC HARMONIC FILTER =CWC33 PROTECTION  
CIRCUIT DIAGRAM FOR  
SIGNALS TO CIRCUIT BREAKER =CWC33+Q50

DRG. No. **637EZ1Y04667 SHT 1**

CURRENT ISSUE **D**

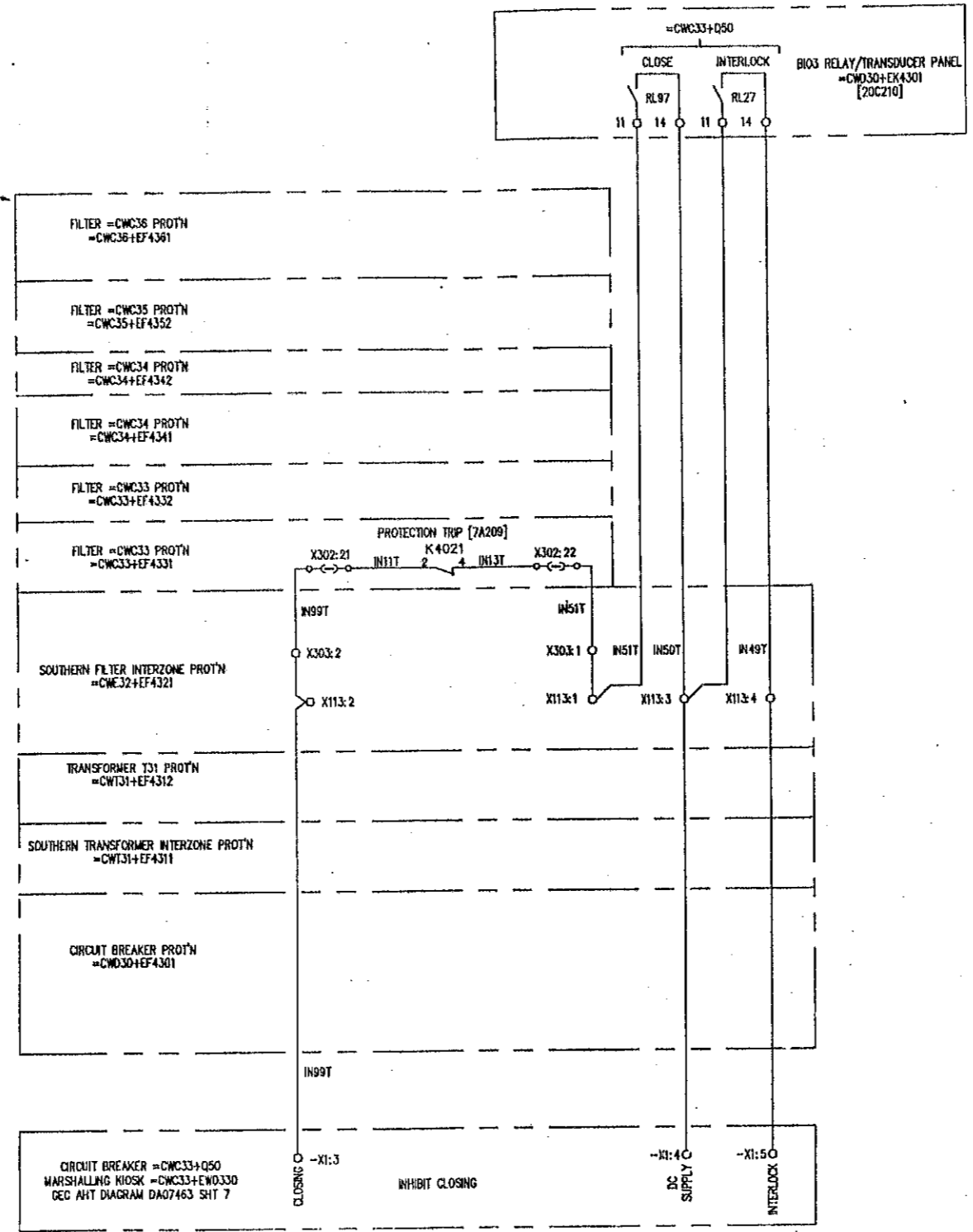
CUSTOMER **POWERGRID**

ORDER No. **CF0136**

DRG. No. 637EZ1Y04667 SHT 2

CIRCUIT CODE LETTER	LETTER	BUS
=CWO10+Q50	A	EAST
=CWO10+Q51	B	
=CWO10+Q52	C	
=CWO20+Q50	D	
=CWO20+Q51	E	
=CWO20+Q52	F	
=CWC23+Q50	G	
=CWC24+Q50	H	
=CWC25+Q50	J	
=CWC19+Q50	K	
=CWC29+Q50	L	SOUTH
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWO30+Q50	P	
=CWO30+Q51	R	
=CWO30+Q52	S	
=CWC33+Q50	T	
=CWC34+Q50	U	
=CWC35+Q50	V	
=CWC36+Q50	W	
PG EXISTING BB1	X	
PG EXISTING BB2	Y	

SOUTHERN AC PROTECTION CUBICLE SUITE



REFER 637EZ1Y04593 FOR FILE INDEX [7A201]  
REFER [7A202] FOR LOCATION AND DEVICE LIST

ISSUE	DATE	DESCRIPTION
A	13/07/98	ONE TO ENR445 & 8466 - REMOVED X303:28, 29, X103:5 & B FROM =CWC30+EF4301. ADDED TERMINALS IN =CWC32+EF4321. DUE TO ENR445 - ADDED =CWC30+EK4301
B	11/12/98	REMOVED TO ENR445 - REMOVED =CWC30+EF4301 & TERMS X103:27 & 28. GEC AHT DIAGRAM WAS DIAGNOSTIC. FILE REF. [20C210] ADDED.

**AS BUILT DWG**  
14 APR 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: BT BARRETT  
DEPT: 739 DATE: 15/07/98  
SIGNED: BT BARRETT

THIRD ANGLE PROJECTION  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECS. STAND/023/PROC  
IF IN DOUBT ASK  
DO NOT SCALE PRINT

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Stafford, England

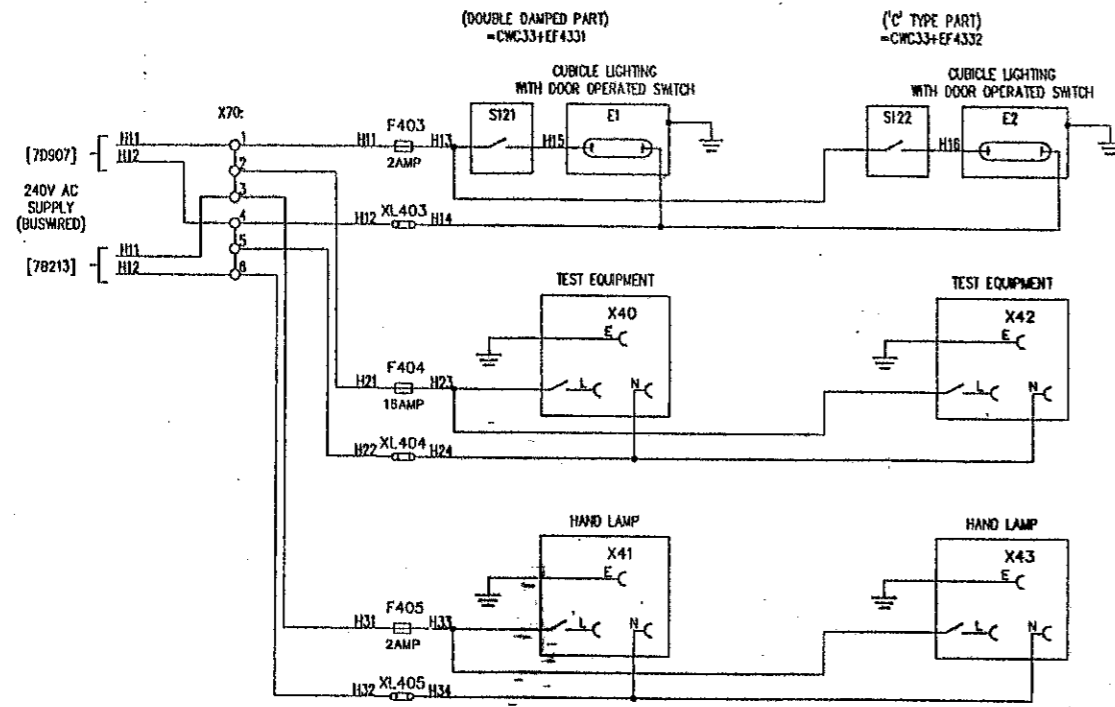
VISAKHAPATNAM  
AC HARMONIC FILTER =CWC33 PROTECTION  
CIRCUIT DIAGRAM FOR SIGNALS TO CIRCUIT BREAKER =CWC33+Q50

DRG. No. 637EZ1Y04667 SHT 2  
CURRENT ISSUE B

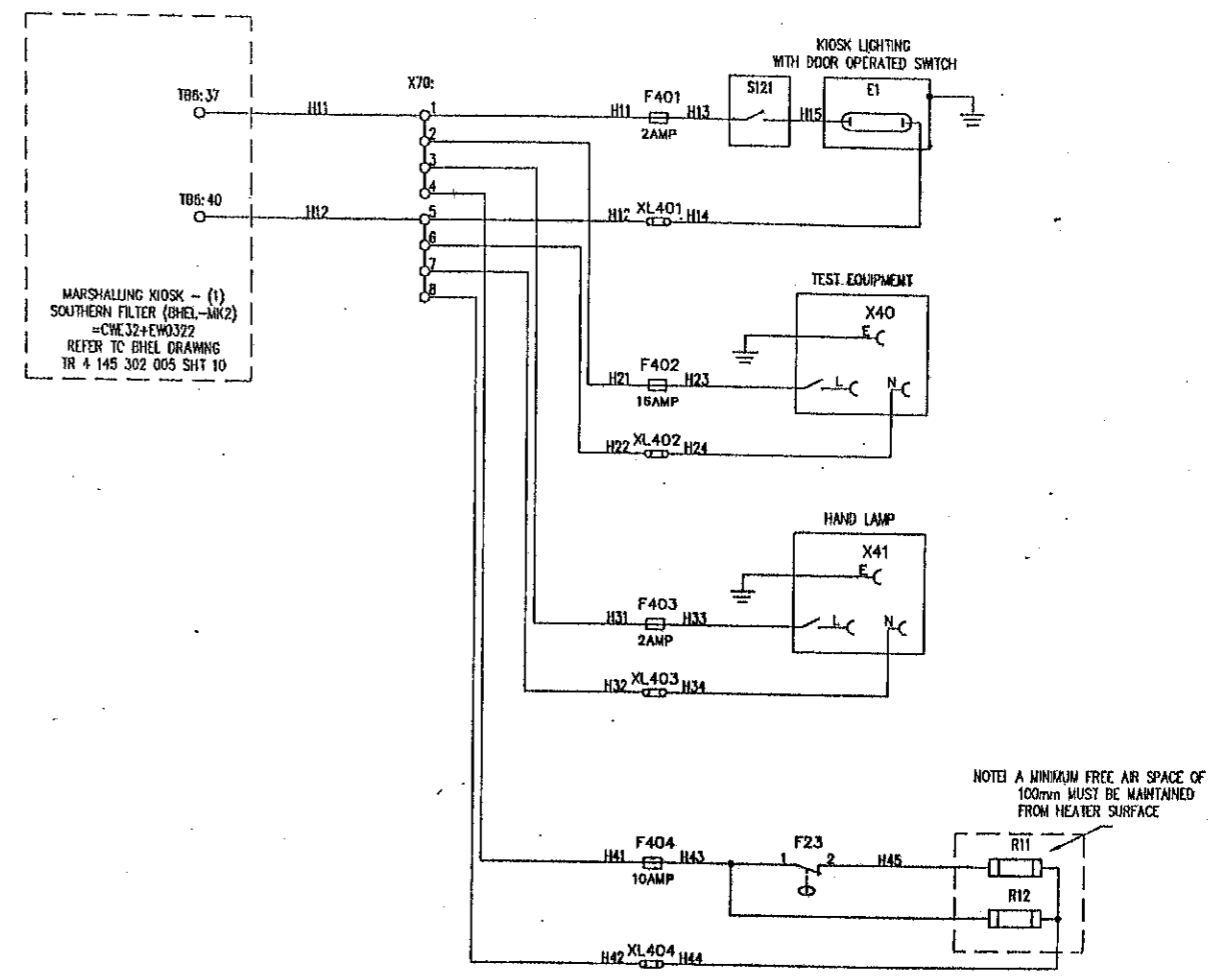
CUSTOMER POWERGRID  
ORDER No. CP0136

FILE 7A212/1

AC FILTER PROTECTION CUBICLES



AC FILTER CT & CVT MARSHALLING KIOSK  
=CWC33+EW0331



REFER 637EZ1Y04593 FOR FILE INDEX (7A201)  
REFER (7A202) FOR LOCATION AND DEVICE LIST (DOUBLE DAMPED PART)  
REFER (7A203) FOR LOCATION AND DEVICE LIST (C' TYPE PART)  
REFER (7A203/1) FOR LOCATION AND DEVICE LIST CT & CVT MARSHALLING KIOSK

ISSUE	PRJ	DATE	BY	REVISION
C	A	13/08/97	GGJ	REVISED TO ENHANCE - ADDED ONE-STEP-CHANGING REVISION INSET A
	B	13/07/98	GGJ	REVISED TO ENHANCE - ADDED ONE-STEP-CHANGING REVISION INSET A

**AS BUILT DWG**  
14 APR 2000  
**VISAKHAPATNAM**

<b>GEC ALSTHOM</b> T&D CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN JCP C/D PNS
NAME: B T BARRETT DEPT. 739 DATE: 5/8/97 SIGNED: BTB	IF IN DOUBT ASK	DRAWING TO BS308 UNLESS OTHERWISE STATED	APP'D RFR
		FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND. 023/1/000	SCALE
			TRACED
			DESIGN APP'D PRJ

FILE 7A213

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

**GEC ALSTHOM**  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Stafford, England

TITLE  
VISAKHAPATNAM  
AC FILTER =CWC33 PROTECTION  
CIRCUIT DIAGRAM FOR  
AC SUPPLIES AND CUBICLE ILLUMINATION

DWG. No. 637EZ1Y04668 SHT 1  
CURRENT ISSUE C

DO NOT SCALE PRINT  
WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
CUSTOMER POWERGRID  
ORDER No. CF0136

Dwg. No. 637EZ1Y04602 SHT 1

FILE	DRAWING TITLE	DRAWING NUMBER
7A601	GECA PROTECTION SIGNALS TO CIRCUIT BREAKERS INDEX OF CIRCUIT DIAGRAMS	637EZ1Y04602 SH 1
7A602	=CWD10+050 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 2
7A602/1	=CWD10+050 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 21
7A603	=CWD10+050 FROM SOUTHERN AC PROT'N SUITE	637EZ1Y04602 SH 3
7A604	=CWD10+051 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 4
7A604/1	=CWD10+051 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 22
7A605	=CWD10+051 FROM SOUTHERN AC PROT'N SUITE	637EZ1Y04602 SH 5
7A606	=CWD10+052 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 6
7A606/1	=CWD10+052 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 23
7A607	=CWD20+050 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 7
7A607/1	=CWD20+050 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 24
7A608	=CWD20+051 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 8
7A608/1	=CWD20+051 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 25
7A609	=CWD20+052 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 9
7A609/1	=CWD20+052 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 26
7A610	=CWL19+050 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 10
7A611	=CWL29+050 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 11
7A612	=CWD30+050 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 17
7A613	=CWD30+050 FROM SOUTHERN AC PROT'N SUITE	637EZ1Y04602 SH 12
7A613/1	=CWD30+050 FROM SOUTHERN AC PROT'N SUITE	637EZ1Y04602 SH 27
7A614	=CWD30+051 FROM EASTERN AC PROT'N SUITE	637EZ1Y04602 SH 18
7A615	=CWD30+051 FROM SOUTHERN AC PROT'N SUITE	637EZ1Y04602 SH 13
7A615/1	=CWD30+051 FROM SOUTHERN AC PROT'N SUITE	637EZ1Y04602 SH 28
7A616	=CWD30+052 FROM SOUTHERN AC PROT'N SUITE	637EZ1Y04602 SH 14
7A616/1	=CWD30+052 FROM SOUTHERN AC PROT'N SUITE	637EZ1Y04602 SH 29
7A617	GECA PROTECTION SIGNALS TO REMOTE CIRCUIT BREAKERS JEYPORE END LINE 1	637EZ1Y04602 SH 15
7A618	GECA PROTECTION SIGNALS TO REMOTE CIRCUIT BREAKERS JEYPORE END LINE 2	637EZ1Y04602 SH 16
7A619	GECA PROTECTION SIGNALS TO CIRCUIT BREAKERS EXISTING BUSBAR 1 SOUTH	637EZ1Y04602 SH 19
7A620	GECA PROTECTION SIGNALS TO CIRCUIT BREAKERS EXISTING BUSBAR 2 SOUTH	637EZ1Y04602 SH 20

REFER 637EZ1Y04559 FOR NAME INDEX [1A01]

ISSUE	A	B	C
NAME	DATE	BY	CHKD
637EZ1Y04602	11/06/98	BTB	BTB
LOCATION	VISA3618		

REVISED TO ENDS -  
FILES 7A602/1, 7A604/1, 7A605/1,  
7A607/1, 7A608/1, 7A609/1,  
7A613/1, 7A615/1, 7A616/1, ADDED  
7A610/1, 7A611/1, 7A614/1,  
7A617/1, 7A618/1, 7A619/1,  
7A620/1 DELETED.

**AS BUILT DWG**  
16 MAY 2003  
**VISAKHAPATNAM**

GEC ALSTHOM T & D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 9/8/97  
SIGNED BTB

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BE SHOWN UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNFINISHED DIMENSIONS SEE SPEC. STAND./DSD/PROG

DRAWN JCP	CHKD PNS	APPR RFR	SCALE N/A
TRACED	DESIGN APP'D PRJ	DWG No.	CURRENT ISSUE
DO NOT SCALE PRINT		637EZ1Y04602 SHT 1	C

FILE 7A601

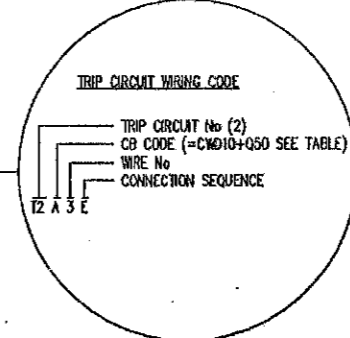
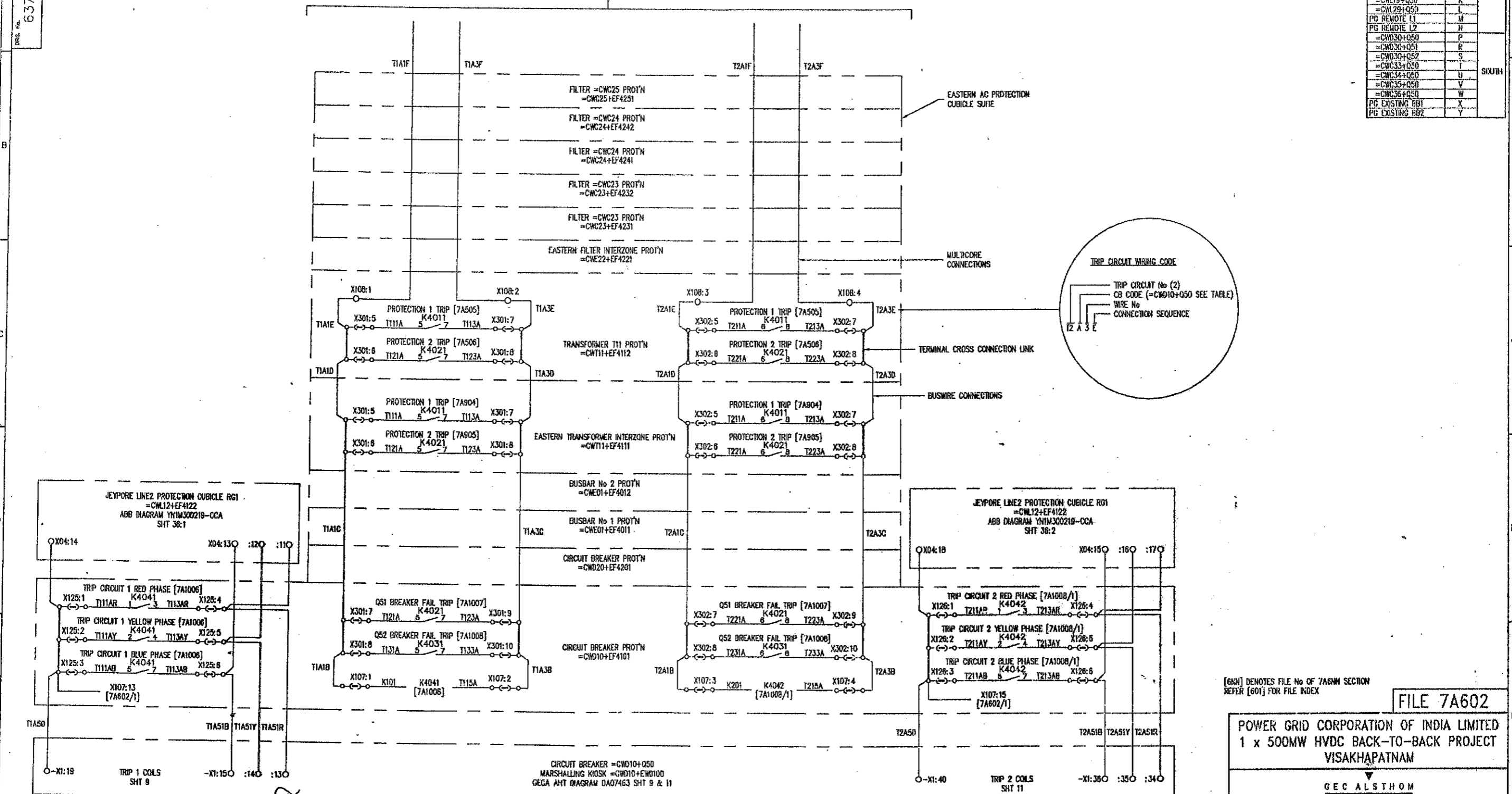
POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T & D  
Power Electronic Systems Limited

DRG. No. 637EZ1Y04602 SHT 2

CB CODE LETTER	LETTER	BUS
=CWD10+Q50	A	EAST
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWD23+Q50	G	
=CWD24+Q50	H	
=CWD25+Q50	J	
=CWL19+Q50	K	
=CWL29+Q50	L	SOUTH
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWD33+Q50	T	
=CWD34+Q50	U	
=CWD35+Q50	V	
=CWD36+Q50	W	
PG EXISTING BBI	X	
PG EXISTING BBI	Y	

CONT'D FROM SOUTHERN AC PROTECTION SUITE [603]



[60N] DENOTES FILE No OF 7A60N SECTION REFER [60I] FOR FILE INDEX

FILE 7A602

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM

ISSUE	DATE	ISSUE	DATE	ISSUE	DATE
A	11/08/97	B	21/08/97	C	30/07/98

REVISIONS:  
 A: REVISED TO ENDSAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 B: REVISED TO ENDSAS & B532 - ADDED K4041 & K4042 RELAYS & K4041 & K4042 CONTACTS CCT REF IN TRIP CTT WIRING & LEVYORE LINE2 CUBICLE  
 C: MOVED BREAKER FAIL & INHIBIT CLOSING CTS TO ANOTHER SET FILE REF 7A602/1  
 D: REVISED TO ENDSAS - CHANGED DAUGHTER FROM DIAGRAM 19183/1 TO 19183/2  
 E: REVISED TO ENDSAS - PGM WAS RCL

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

GEC ALSTHOM  
Power Electronic, Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT: 739 DATE: 9/6/97  
SIGNED: BTB

THIRD ANGLE PROJECTION  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BE USED UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNITS SPANDED DIMENSIONS SEE SPECIAL STAND/023/PROG

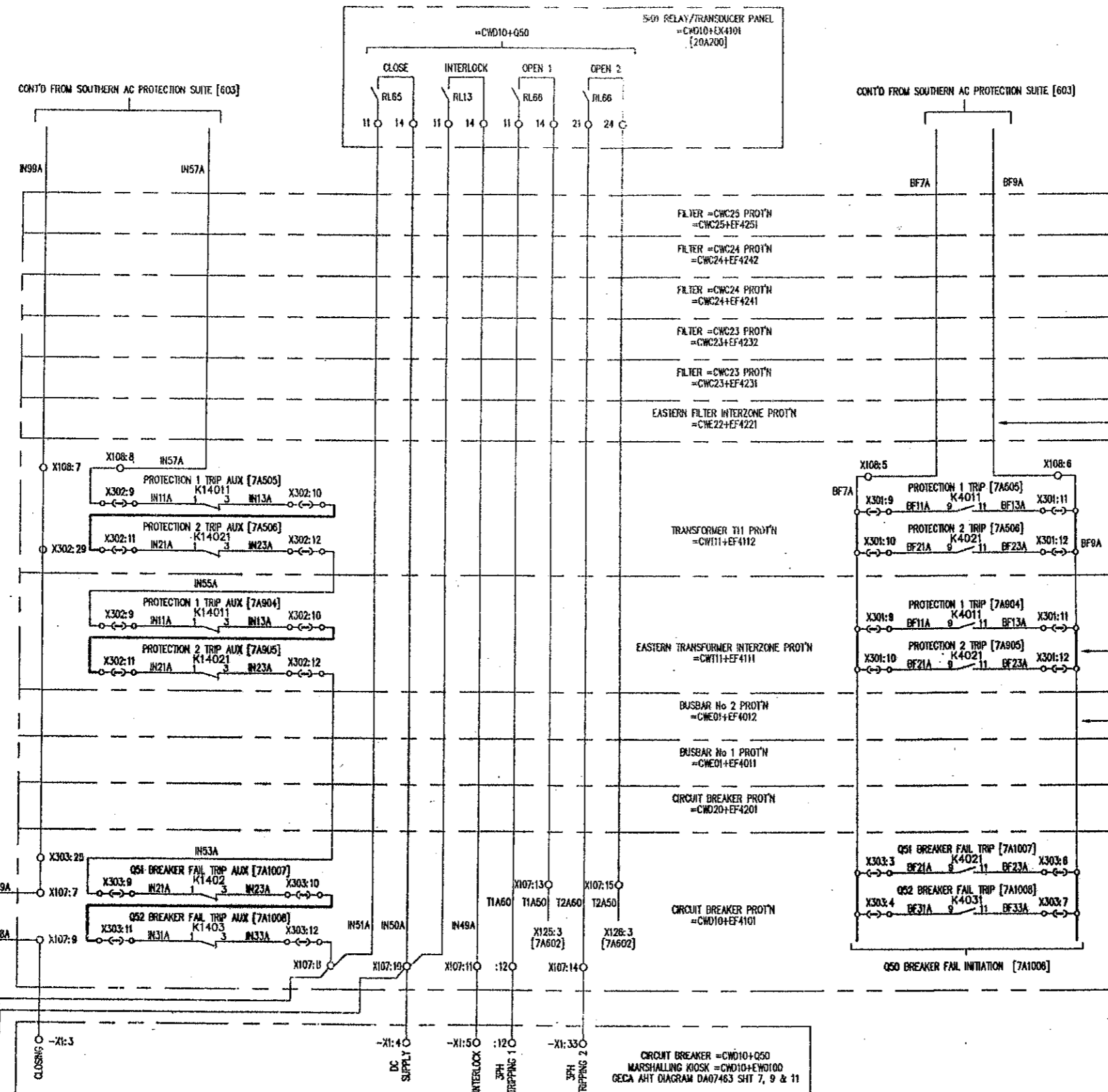
DESIGN JCP  
CWD PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN PRJ  
APP'D

TITLE: VISAKHAPATNAM CIRCUIT DIAGRAM OF BREAKER FAIL INITIATION & PROTECTION SIGNALS TO CIRCUIT BREAKER =CWD10+Q50

DRG. No. 637EZ1Y04602 SHT 2

Dwg. No. 637EZ1Y04602 SHT 21

CB	LETTER	BUS
=CWD10+Q50	A	
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWD23+Q50	G	
=CWD24+Q50	H	
=CWD25+Q50	J	
=CWL19+Q50	K	
=CWL29+Q50	L	
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWD33+Q50	T	
=CWD34+Q50	U	
=CWD35+Q50	V	
=CWD36+Q50	W	
PG EXISTING BBT	X	
PG EXISTING BBZ	Y	



EASTERN AC PROTECTION CUBICLE SUITE

MULTICORE CONNECTIONS

TERMINAL CROSS CONNECTION LINK

BUSWIRE CONNECTIONS

JAYPORE LINE 2 PROTECTION CUBICLE RC2  
=CWL12+EF4123  
ABB DIAGRAM  
YHM300219-CCA  
SHT 36.1

JAYPORE LINE 2 PROTECTION CUBICLE RC1  
=CWL12+EF4122  
ABB DIAGRAM  
YHM300219-CCA  
SHT 36.1

SHUNT REACTOR 2 PROTECTION CUBICLE RC3  
=CWL19+EF4191

Q50 CX1 (AUTO-RECLOSE)

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

[6NN] DENOTES FILE No OF 7A6NN SECTION REFER [601] FOR FILE INDEX

FILE 7A602/1

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited

VISAKHAPATNAM  
CIRCUIT DIAGRAM OF  
BREAKER FAIL INITIATION & PROTECTION  
SIGNALS TO CIRCUIT BREAKER =CWD10+Q50

DWG. No. 637EZ1Y04602 SHT 21  
CURRENT ISSUE D

ISSUE	DATE	BY	CHKD	REVISION
D	30/07/98	BT	BT	AS BUILT

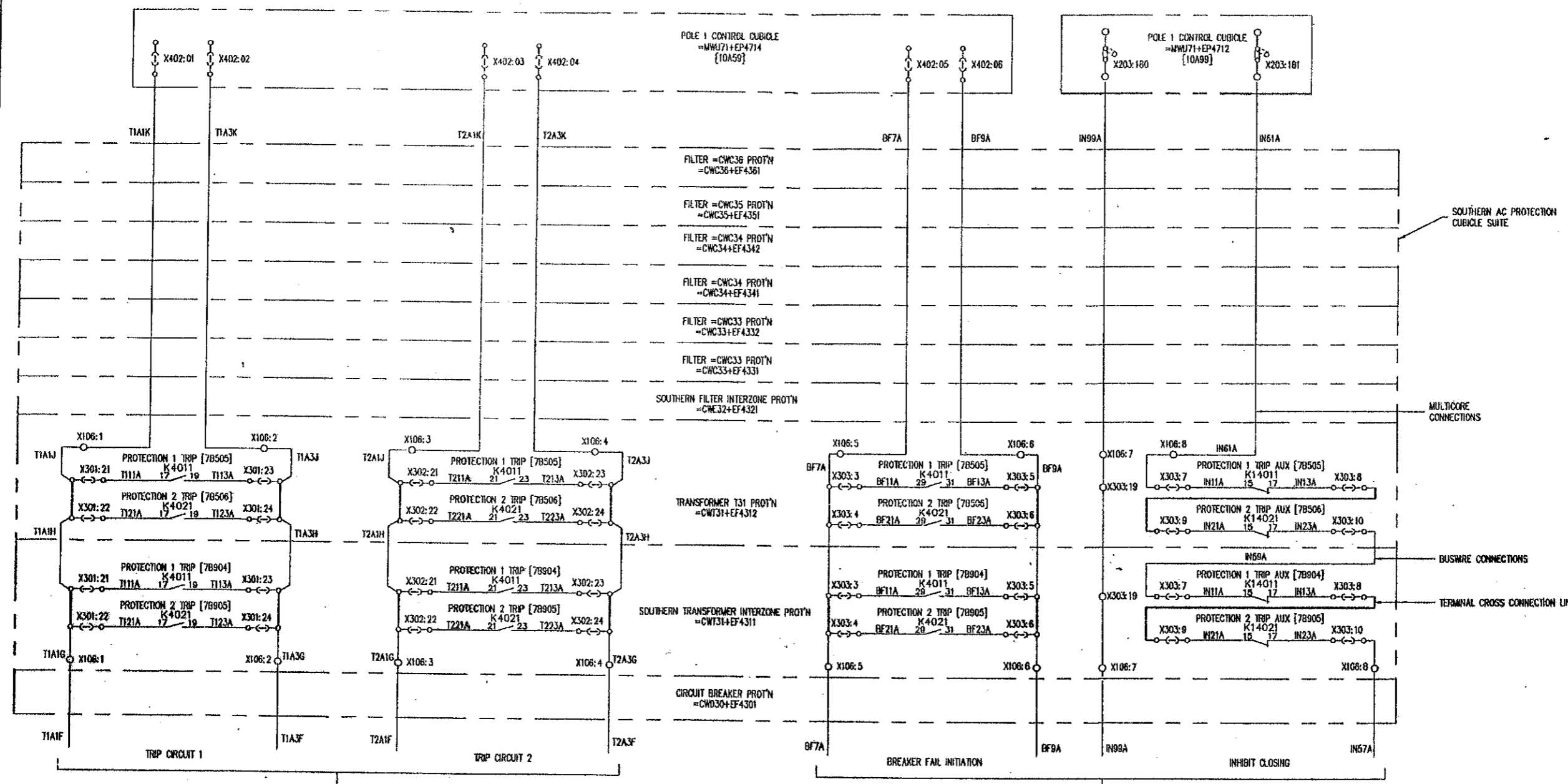
GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: BT BARRETT  
DEPT: 739 DATE: 30/07/98  
SIGNED: BT BARRETT

THIRD ANGLE PROJECTION  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BE USED UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND./223/PM00

DRAWN PREM  
CHKD RFR  
APP'D RFR  
SCALE N/A  
TRACED  
DESIGN APP'D PRJ

DO NOT SCALE PRINT  
WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
CUSTOMER POWERGRID  
ORDER No. CF0138

DRG. No. 637EZ1Y04602 SHT 3



CONT'D ON EASTERN PROTECTION SUITE [602]

CONT'D ON EASTERN PROTECTION SUITE [602/1]

[600] DENOTES FILE No OF TAGGIN SECTION REFER [601] FOR FILE INDEX **FILE 7A603**

**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

**GEC ALSTHOM**  
T&D

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited

**VISAKHAPATNAM**  
CIRCUIT DIAGRAM OF  
BREAKER FAIL INITIATION & PROTECTION  
SIGNALS TO CIRCUIT BREAKER =CWD10+Q50

DRG. No. **637EZ1Y04602 SHT 3** CURRENT ISSUE **C**

C.A.B. DATA  
ISSUE **C**  
NAME  
LOCATION **VISA2165**

PRJ	A
PNS	B
JCP	C
ISSUE	11
DATE	06
	08
	97

REVISIONS TO ENDSHEET:  
CONNECTION BETWEEN X303.19 & X303.7 (EASST) WAS SHOWN AS MULTICORE  
REVISED TO ECHS48-  
CHANGED FILE REF FROM 602 ON  
BREAKER FAIL INITIATION &  
INHIBIT CLOSING CONT'D ON  
BRACKET

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE  
NAME: **B T BARRETT**  
DEPT. 739 DATE: 9/8/97  
SIGNED: **BTB**

THIRD ANGLE  
PROJECTION  
IF IN DOUBT  
ASK

ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED  
DRAWING TO BS308  
UNLESS OTHERWISE STATED  
FOR THE STANDARD OF  
ACCURACY OF ALL  
UNTOLERANCED DIMENSIONS  
SEE SPECL. STAN/025/PROC

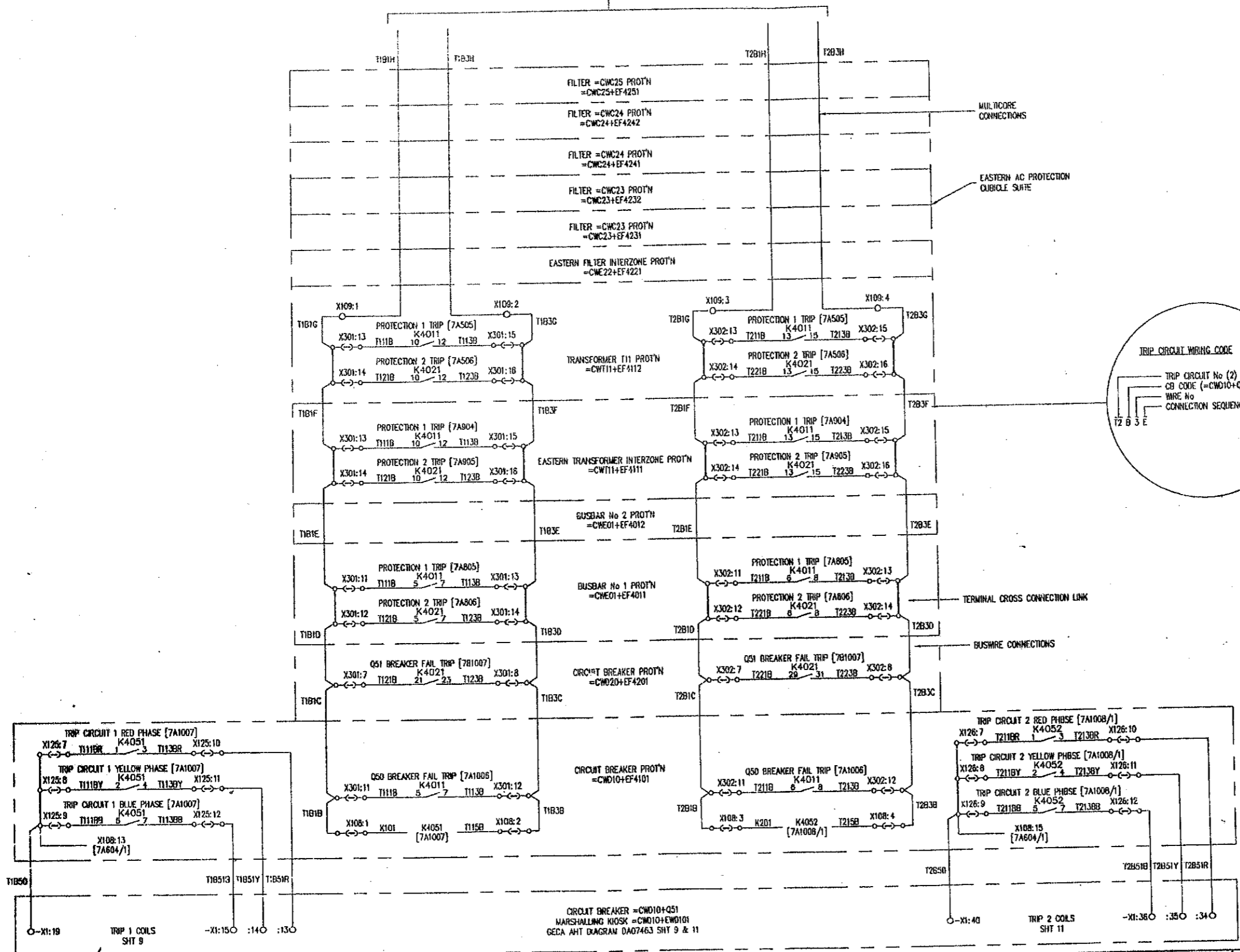
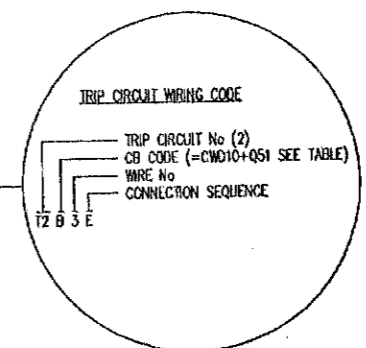
WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
CUSTOMER POWERGRID ORDER No. CF0136

DO NOT SCALE PRINT

DRG. No. 637EZ1Y04602 SHT 4

CONT'D FROM SOUTHERN AC PROTECTION SUITE (605)

CB	LETTER	BUS
=CWD10+Q50	A	
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWC23+Q50	G	
=CWC23+Q51	H	
=CWC23+Q52	J	
=CWL19+Q50	K	
=CWL29+Q50	L	
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWC33+Q50	T	
=CWC34+Q50	U	
=CWC35+Q50	V	
=CWC36+Q50	W	
PG EXISTING B01	X	
PG EXISTING B02	Y	



[SNN] DENOTES FILE No OF 7A6N SECTION REFER [S01] FOR FILE INDEX

FILE 7A604

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronics Systems Limited

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronics, Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 9/6/97  
SIGNED: BTB

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

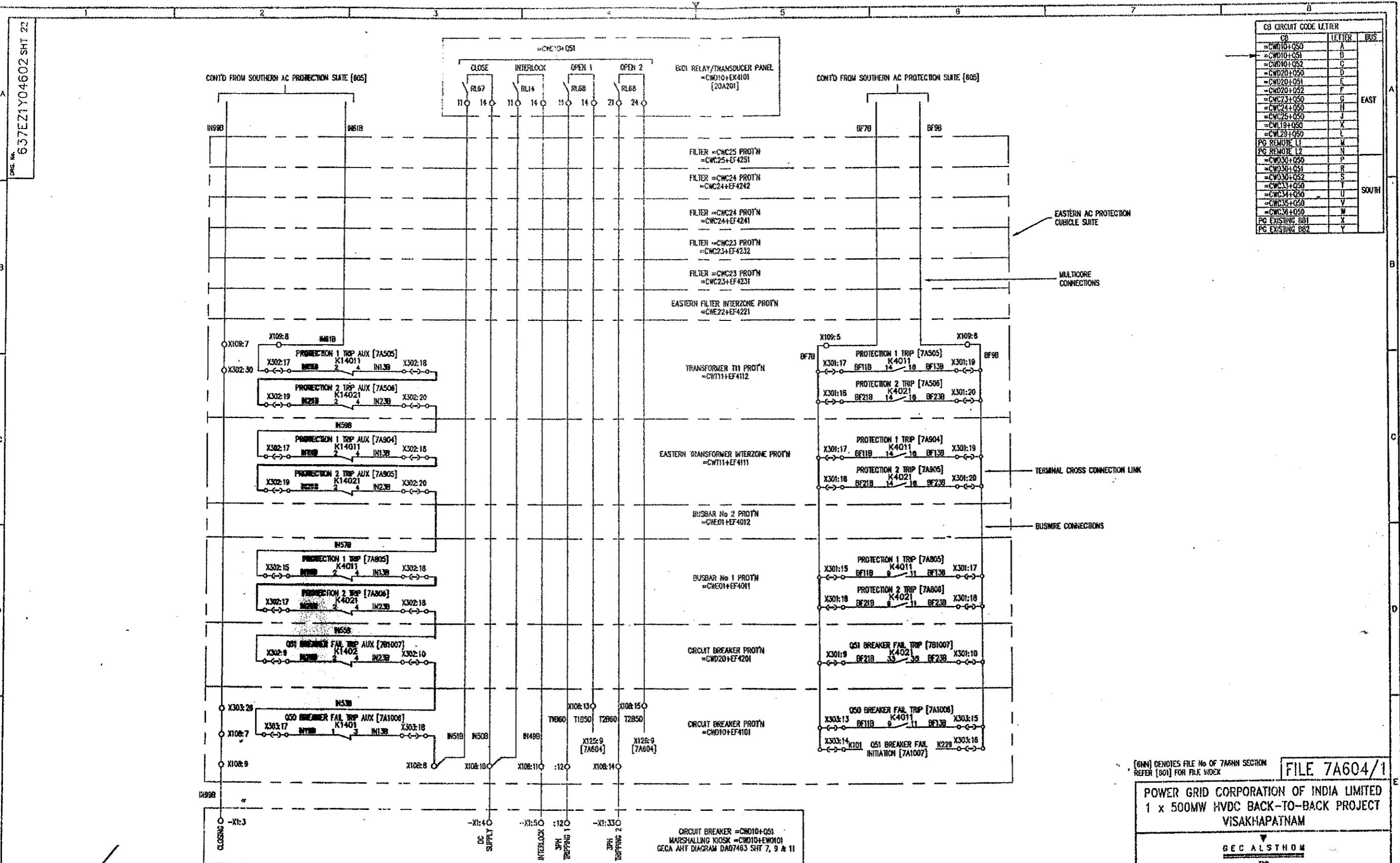
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNFOLDED DIMENSIONS SEE SPECIAL STAND/023/PROC

DRAWN: JCP  
CHKD: PNS  
APP'D: RFR  
SCALE:  
TRACED:  
DESIGN: PRJ  
APP'D:  
DRG. No. 637EZ1Y04602 SHT 4  
CURRENT ISSUE: B  
DO NOT SCALE PRINT  
CUSTOMER: POWERGRID  
ORDER No. CF0136

CLASS DATA  
ISSUE: B  
NAME:  
LOCATION: VISA2166

DATE: 11/08/97

REVISIONS:  
1. REVISION TO EASTERN AC PROTECTION SUITE - ADDED K4051 & K4052 CONTACTS AND K4051 & K4052 RELAY. COTI REF IN TRIP CCT WIRING. WOUND BREAKER FAIL & INHIBIT CLOSING COILS TO ANOTHER SHT FILE REF 7A604/1. CHANGED DIMENSIONS FROM DIALTYPE.



CB CIRCUIT CODE LETTER		
CB	LETTER	BUS
=CWD10+Q50	A	EAST
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWD24+Q50	G	
=CWD24+Q51	H	
=CWD25+Q50	J	
=CWD25+Q51	K	
=CWD29+Q50	L	SOUTH
PG REMOVE L1	M	
PG REMOVE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWD34+Q50	T	
=CWD34+Q51	U	
=CWD35+Q50	V	
=CWD35+Q51	W	
PG EXISTING B81	X	
PG EXISTING B82	Y	

[GNN] DENOTES FILE No OF 7A604 SECTION REFER [801] FOR FILE NOXX

FILE 7A604/1

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited

TITLE  
VISAKHAPATNAM  
CIRCUIT DIAGRAM OF  
BREAKER FAIL INITIATION & PROTECTION  
SIGNALS TO CIRCUIT BREAKER =CWD10+Q51

ORG. No.  
637EZ1Y04602 SHT 22

CURRENT ISSUE  
B

ISSUE	B
NAME	637EZ1Y04602
LOCATION	VSA3821
DATE	27-07-99
ISSUE	05-01-99

AS BUILT DWG  
16 MAY 2003  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE  
NAME: BT BARRETT  
DEPT: 739 DATE: 30/07/98  
DRAWN BY: BT BARRETT

TURD ANGLE  
PROJECTION  
IF IN DOUBT  
ASK

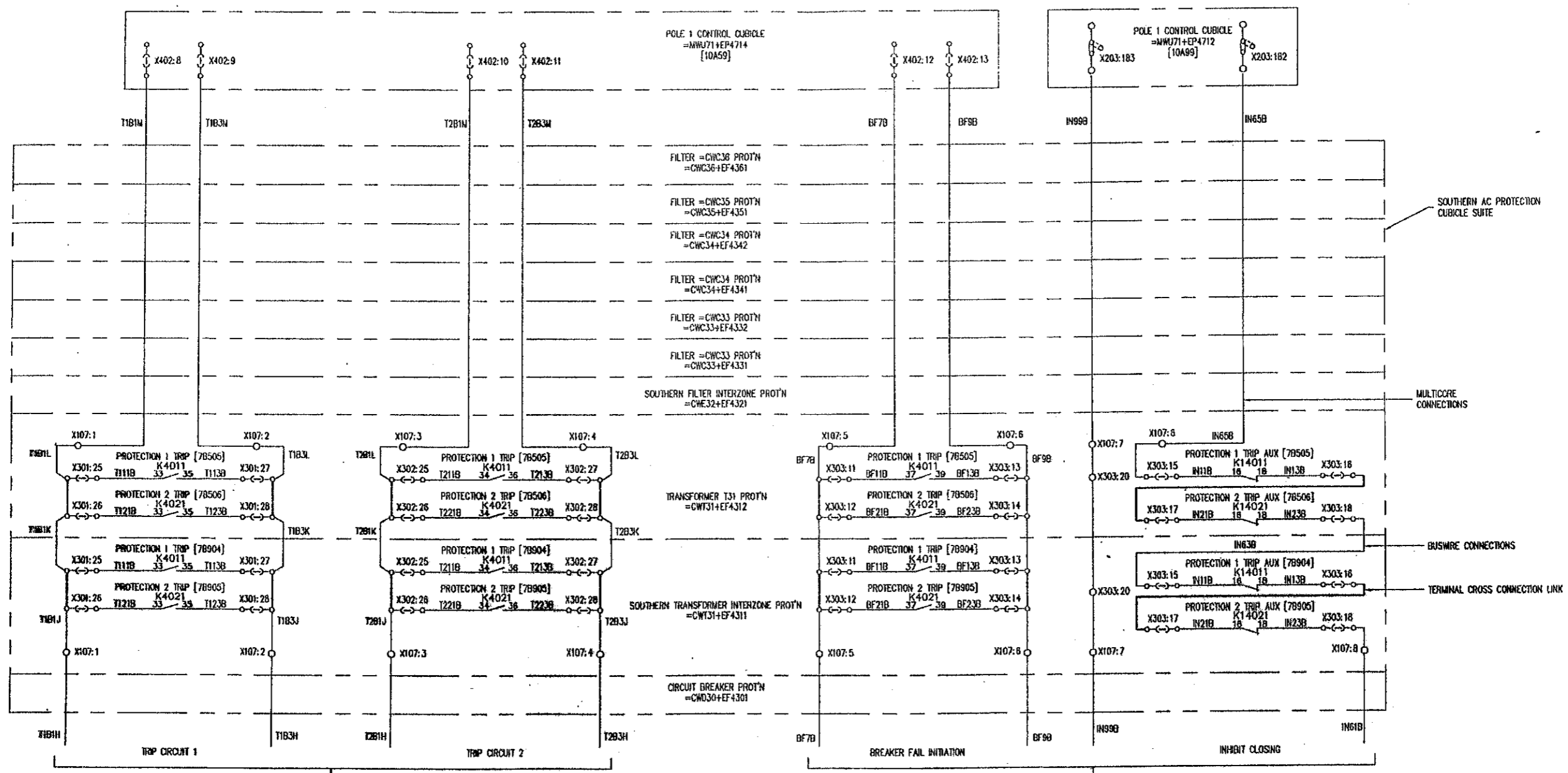
ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED  
DRAWING TO BS308  
UNLESS OTHERWISE STATED  
FOR THE STANDARD OF  
ACCURACY OF ALL  
UNTOLERANCED DIMENSIONS  
SEE SPEC. STAND/023/PROG

DRAWN PREM  
CITD RFR  
APPD RFR  
SCALE N/A  
TRACED  
DESIGN APPD PRJ

DO NOT SCALE PRINT

WHEN QUOTING ORG. No. STATE CURRENT ISSUE  
CUSTOMER: POWERGRID  
GECAL No. C60138

Dwg. No. 637EZ1Y04602 SHT 5



CONT'D ON EASTERN PROTECTION SUITE [804]

CONT'D ON EASTERN PROTECTION SUITE [804/1]

[6NN] DENOTES FILE No OF 7A6NN SECTION  
REFER [801] FOR FILE INDEX

**FILE 7A605**

**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

**GEC ALSTHOM**  
T&D

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited

**VISAKHAPATNAM**  
CIRCUIT DIAGRAM OF  
BREAKER FAIL INITIATION & PROTECTION  
SIGNALS TO CIRCUIT BREAKER =CWD10+Q51

C.A.D. DATA  
ISSUE B  
NAME  
LOCATION  
VISA2167

ISSUE A  
DATE 11-06-97  
REVISED TO CORRECT:-  
CHANGED FILE REF FROM 802  
OR BREAKER FAIL INITIATION &  
INHIBIT CLOSING CONT'D ON  
BRACKET

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 9/8/97  
SIGNED BTB

THIRD ANGLE  
PROJECTION  
IF IN DOUBT  
ASK

ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED  
DRAWING TO BS308  
UNLESS OTHERWISE STATED  
FOR THE STANDARD OF  
ACCURACY OF ALL  
UNTOLERANCED DIMENSIONS  
SEE SPECS. STAND/023/PROC

DRAWN JCP  
CHKD PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN APP'D PRJ

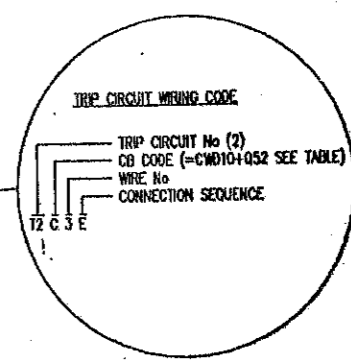
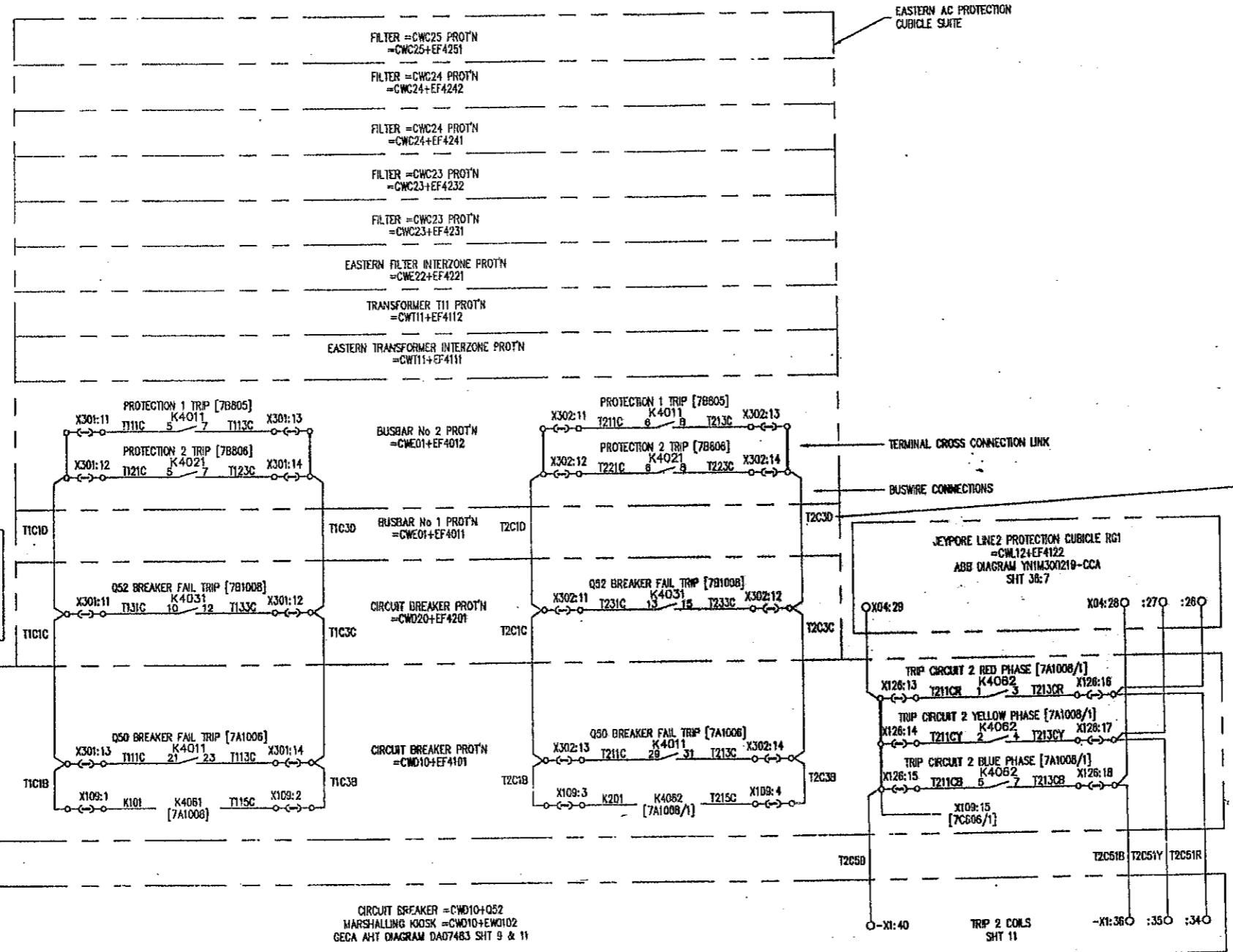
DRG. No. 637EZ1Y04602 SHT 5  
CURRENT ISSUE B

DO NOT SCALE PRINT

CUSTOMER POWERGRID ORDER No. CP0138

637EZ1Y04602 SHT 6

CB CIRCUIT CODE LETTER		
CB	LETTER	BUS
=CWD10+Q50	A	EAST
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWD23+Q50	G	
=CWD23+Q51	H	
=CWD23+Q52	I	
=CWD25+Q50	J	
=CWD19+Q50	K	SOUTH
=CWD29+Q50	L	
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWD33+Q50	T	
=CWD34+Q50	U	
=CWD35+Q50	V	
=CWD36+Q50	W	
PG EXISTING BBT	X	
PG EXISTING BBT	Y	



[GNN] DENOTES FILE No OF 7A606 SECTION REFER [G01] FOR FILE INDEX \* DETAILS TO FOLLOW

FILE 7A606

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM  
GEC ALSTHOM  
T&D

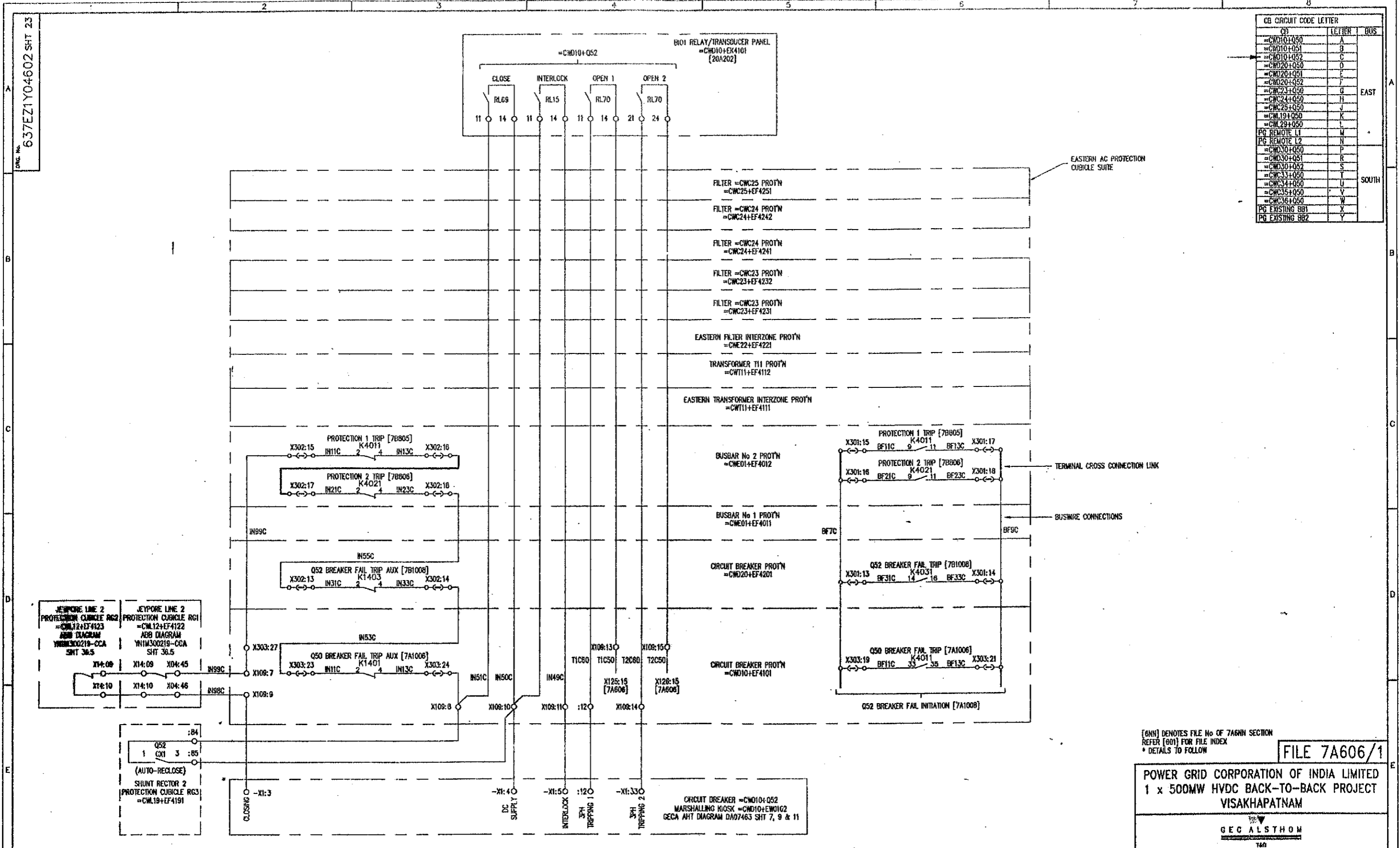
ISSUE	DATE	ISSUE	DATE	ISSUE	DATE
1	21/06/97	2	06/08/97	3	30/07/98

REVISIONS:  
 A: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 B: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 C: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 D: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 E: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 F: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 G: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 H: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 I: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 J: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 K: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 L: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 M: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 N: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 O: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 P: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 Q: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 R: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 S: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 T: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 U: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 V: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 W: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 X: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 Y: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 Z: REVISD TO ENCLAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

GEC ALSTHOM Power Electronics Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN JCP CHKD PNS APP'D RFR
NAME: B Y BARRETT DEPT: 739 DATE: 9/6/97 SIGNED: BTB	IF IN DOUBT ASK	DRAWING TO BS308 UNLESS OTHERWISE STATED	SCALE: TRACED: DESIGN PRJ APP'D:
FOR THE STANDARD OF ACCURACY OF ALL UNIFORMED DIMENSIONS SEE SPEC. STAND/O23/PROG		DO NOT SCALE PRINT	

GEC ALSTHOM T&D Power Electronic Systems Limited		TITLE VISAKHAPATNAM CIRCUIT DIAGRAM OF BREAKER FAIL INITIATION & PROTECTION SIGNALS TO CIRCUIT BREAKER =CWD10+Q52	
DRA. No. 637EZ1Y04602 SHT 6		CURRENT ISSUE D	
CUSTOMER POWERGRID		ORDER No. CP0136	



CB CIRCUIT CODE LETTER	LETTER	BUS
=CWD10+Q50	A	EAST
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWC23+Q50	G	
=CWC24+Q50	H	
=CWC25+Q50	J	
=CWL19+Q50	K	
=CWL29+Q50	L	SOUTH
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWC33+Q50	T	
=CWC34+Q50	U	
=CWC35+Q50	V	
=CWC36+Q50	W	
PG EXISTING 881	X	
PG EXISTING 882	Y	

[6NN] DENOTES FILE No OF 7A6NN SECTION  
 REFER [601] FOR FILE INDEX  
 \* DETAILS TO FOLLOW

FILE 7A606/1

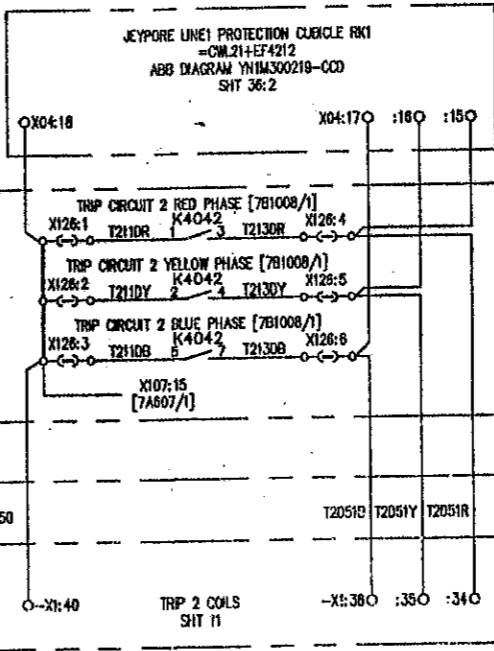
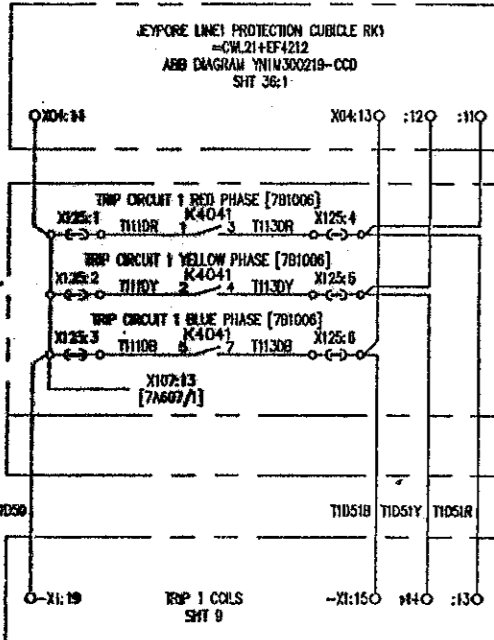
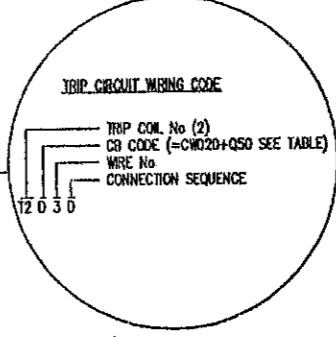
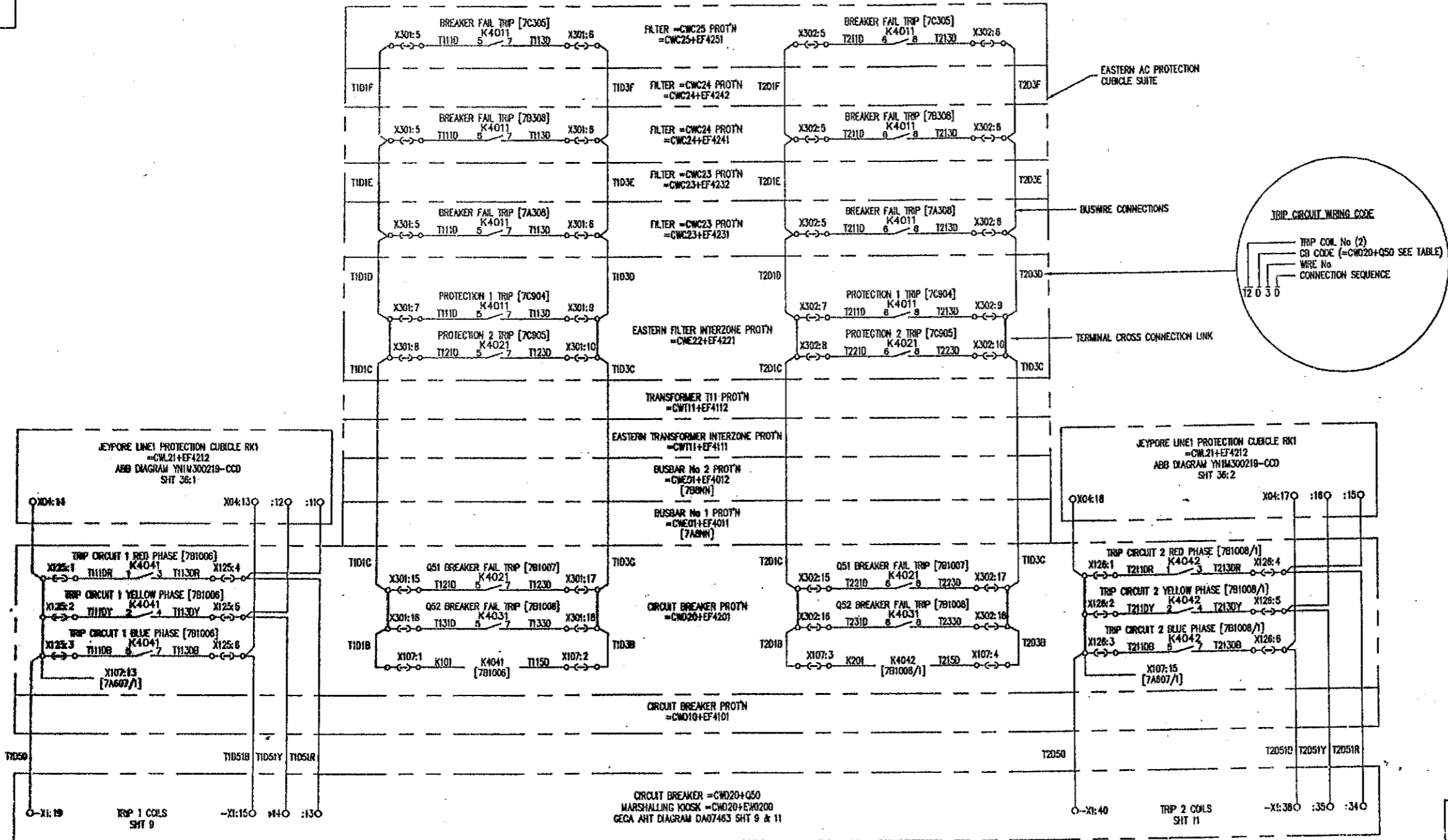
POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

G.A.D. DATA NAME D 637EZ1Y04602 LOCATION VISA4353	PRJ A DATE 30/07/98	PRJ B DATE 05/01/99	PRJ C DATE 25/08/99	REFER TO E.C.N. 8845 REFER TO E.C.N. 8874 AUTO RECLOSE TERMINAL NLS MODIFIED.	<b>AS BUILT DWG</b> <b>16 MAY 2000</b> <b>VISAKHAPATNAM</b>	GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE NAME: BT BARRETT DEPT. 739 DATE: 30/07/98 SIGNED: BT BARRETT	THIRD ANGLE PROJECTION IF IN DOUBT ASK	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED DRAWING TO BE 30% UNLESS OTHERWISE STATED FOR THE STANDARD OF ACCURACY OF ALL UNTOLEBERANCED DIMENSIONS SEE SPEC. STAND/023/PROG	DRAWN: PREM CH'D: RFR APP'D: RFR SCALE: TRACED: DESIGN: PRJ APP'D:	GEC ALSTHOM T&D Power Electronic Systems Limited VISAKHAPATNAM CIRCUIT DIAGRAM OF BREAKER FAIL INITIATION & PROTECTION SIGNALS TO CIRCUIT BREAKER =CWD10+Q52 DRG. No. 637EZ1Y04602 SHT 23 CURRENT ISSUE: D
	DO NOT SCALE PRINT CUSTOMER: POWERGRID ORDER No. CF0136									

637EZ1Y04602 SHT 7

CB	LETTER	BUS
=CWD10+Q50	A	EAST
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWD23+Q50	G	
=CWD23+Q51	H	
=CWD23+Q52	J	
=CWL19+Q50	K	
=CWL28+Q50	L	SOUTH
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWD33+Q50	T	
=CWD34+Q50	U	
=CWD35+Q50	V	
=CWD36+Q50	W	
PG EXISTING 891	X	
PG EXISTING 892	Y	



(891) DENOTES FILE No OF 7ASHN SECTION REFER (601) FOR FILE INDEX \* DETAILS TO FOLLOW

FILE 7A607

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited

VISAKHAPATNAM  
CIRCUIT DIAGRAM OF  
BREAKER FAIL INITIATION & PROTECTION  
SIGNALS TO CIRCUIT BREAKER =CWD20+Q50

ORIG. No. 637EZ1Y04602 SHT 7  
CURRENT ISSUE D

REV.	DATE	BY	CHKD.	DESCRIPTION
A	11/06/97			ISSUED FOR CONSTRUCTION
B	21/08/97			REVISION TO ENHANCE BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER
C	30/09/98			REVISION TO ENHANCE & ADD: ADDED K4041 & K4042 RELAYS & K4041/K4042 CONTACTS & COT REF IN TRIP COT WIRING & COT REF IN TRIP COT WIRING & JEYPORE UNCL CUBICLE CLOSING CTS TO ANOTHER SHT FILE REF 7A607/1
D	05/09/99			REVISED TO ENHANCE - CHANGED DIA/463 FROM DIA/376.

REFER TO E.C.A. 8645  
TERMINAL REFERENCES WITHIN  
P LINE 1 PROTECTION CUBICLE  
AMENDED

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

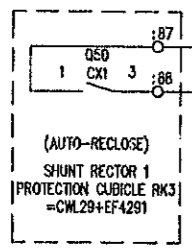
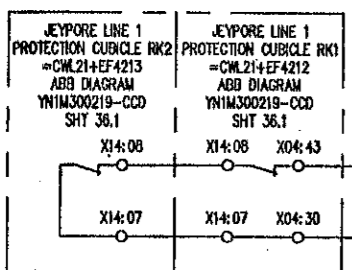
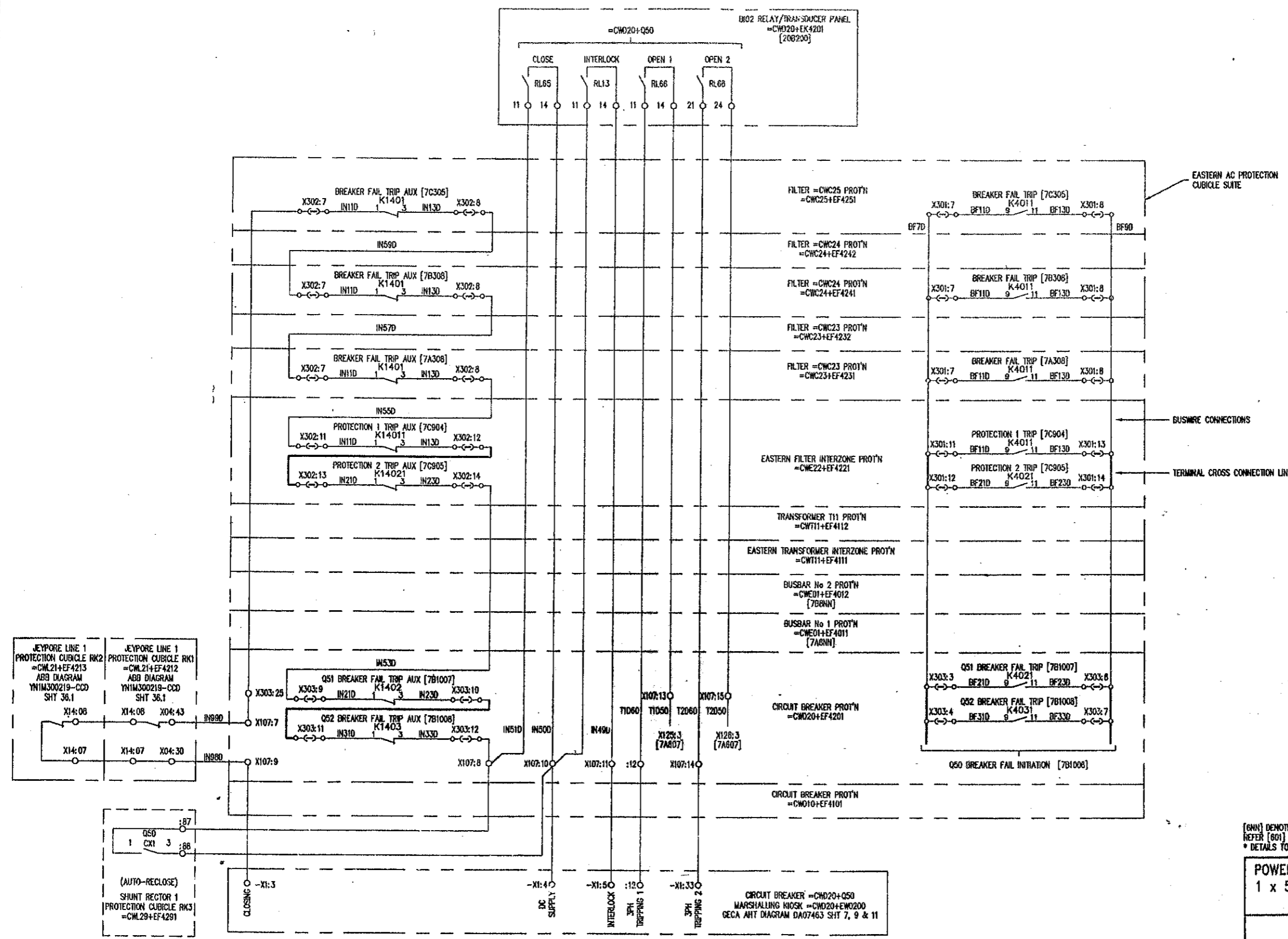
GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 9/8/97  
SIGNED: BTB

THIRD ANGLE  
PROJECTION  
IF IN DOUBT  
ASK  
ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED  
DRAWING TO BE  
UNLESS OTHERWISE STATED  
FOR THE STANDARD OF  
ACCURACY OF ALL  
UNLESS OTHERWISE STATED  
SEE SPEC. STATION/053/PROG

DRAWN JCP  
CFO PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN PRJ  
DO NOT SCALE PRINT  
CUSTOMER POWERGRID  
ORDER No. CPO138

DRG. No. 637EZ1Y04602 SHT 24

CB CIRCUIT CODE LETTER	LETTER	BUS
=CWD10+Q50	A	
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWC23+Q50	G	EAST
=CWC24+Q50	H	
=CWC25+Q50	J	
=CWC19+Q50	K	
=CWC29+Q50	L	
PG REMOTE I1	M	
PG REMOTE I2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWC33+Q50	T	SOUTH
=CWC34+Q50	U	
=CWC35+Q50	V	
=CWC36+Q50	W	
PG EXISTING B01	X	
PG EXISTING B02	Y	



[GNN] DENOTES FILE No OF 7A6NN SECTION  
REFER [801] FOR FILE INDEX  
\* DETAILS TO FOLLOW

FILE 7A607/1

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

ISSUE	PRJ	PRJ	PRJ	PRJ	PRJ	PRJ	PRJ	PRJ	PRJ
A	B	C	D	E	F	G	H	I	J
DATE	JCP	JCP	JCP	JCP	JCP	JCP	JCP	JCP	JCP
30/07/98	05/01/98	20/01/99	25/08/99	15/08/99	15/08/99	15/08/99	15/08/99	15/08/99	15/08/99

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

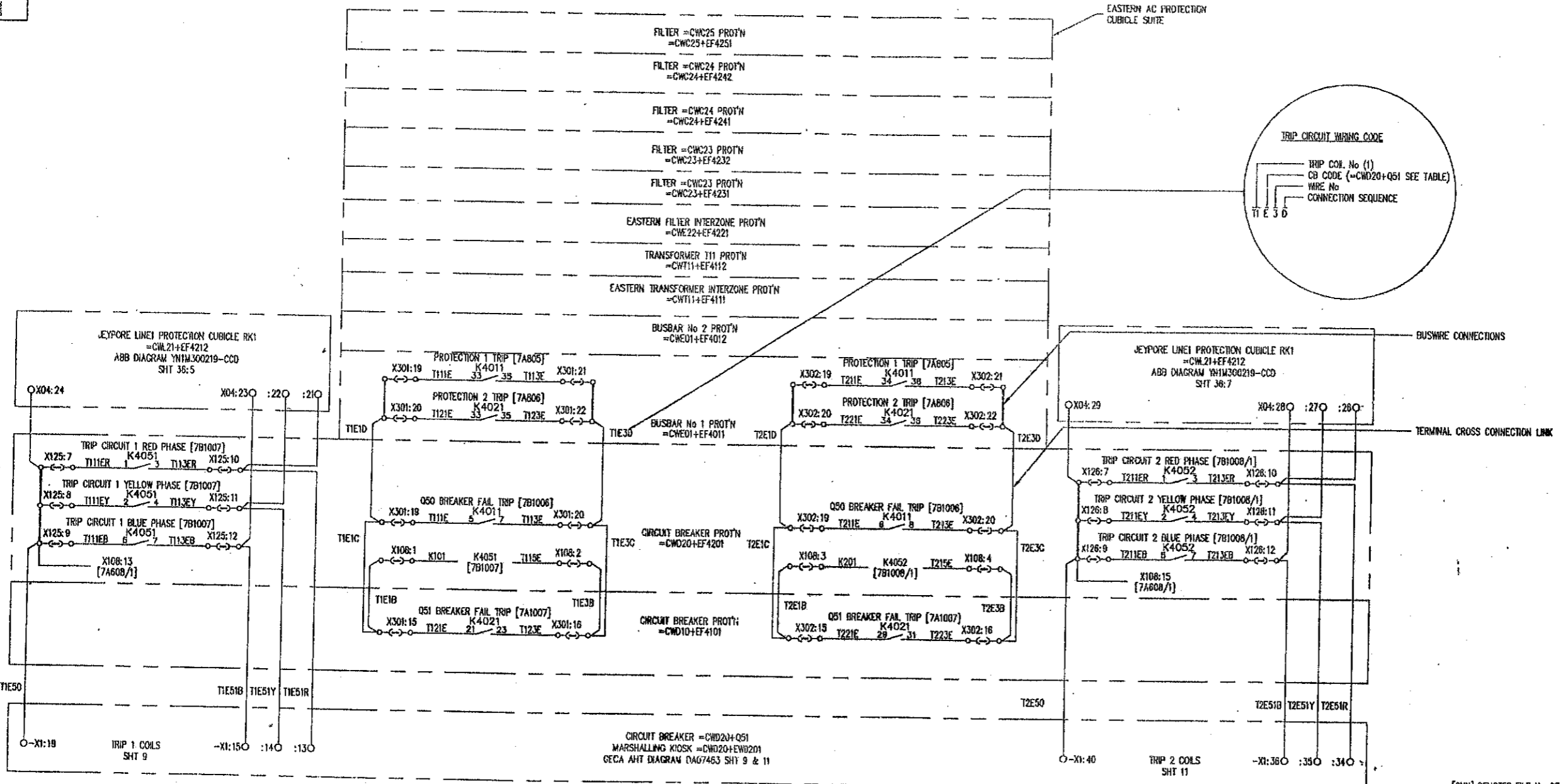
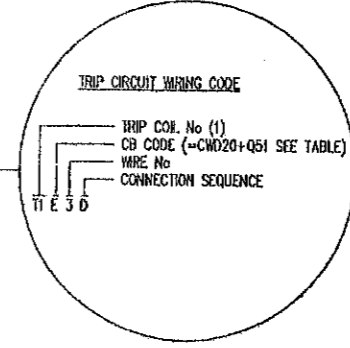
GEC ALSTHOM T&D  
Power Electronics Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: BT BARRETT  
DEPT. 739 DATE: 30/07/98  
SIGNED: BT BARRETT

THIRD ANGLE PROJECTION  
ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE STATED  
DRAWING TO BE 3D UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STABD/223/PW00  
DO NOT SCALE PRINT

GEC ALSTHOM T&D  
Power Electronics Systems Limited  
VISAKHAPATNAM  
CIRCUIT DIAGRAM OF  
BREAKER FAIL INITIATION & PROTECTION  
SIGNALS TO CIRCUIT BREAKER =CWD20+Q50  
DRG. No. 637EZ1Y04602 SHT 24  
CURRENT ISSUE E  
CUSTOMER POWERGRID ORDER No. CPO136

DRG. NO. 637EZ1Y04602 SHT 8

CBI CIRCUIT CODE LETTER		
CB	LETTER	BUS
=CWD10+Q50	A	
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWC23+Q50	G	EAST
=CWC24+Q50	H	
=CWC25+Q50	J	
=CWL19+Q50	K	
=CWL29+Q50	L	
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWC33+Q50	T	SOUTH
=CWC34+Q50	U	
=CWC35+Q50	V	
=CWC36+Q50	W	
PG EXISTING DB1	X	
PG EXISTING DB2	Y	



[GNN] DENOTES FILE No OF 7A6NN SECTION REFER [B01] FOR FILE INDEX \* DETAILS TO FOLLOW

FILE 7A608

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Stafford, England

VISAKHAPATNAM  
CIRCUIT DIAGRAM OF  
BREAKER FAIL INITIATION & PROTECTION  
SIGNALS TO CIRCUIT BREAKER =CWD20+Q51

DRG. No. 637EZ1Y04602 SHT 8  
CURRENT ISSUE D

ISSUE	PRJ	PRJ	PRJ
D	A	B	C
DATE	ISSUE	PNS	RFR
11/08/97	21/08/97	08/08/97	30/07/98

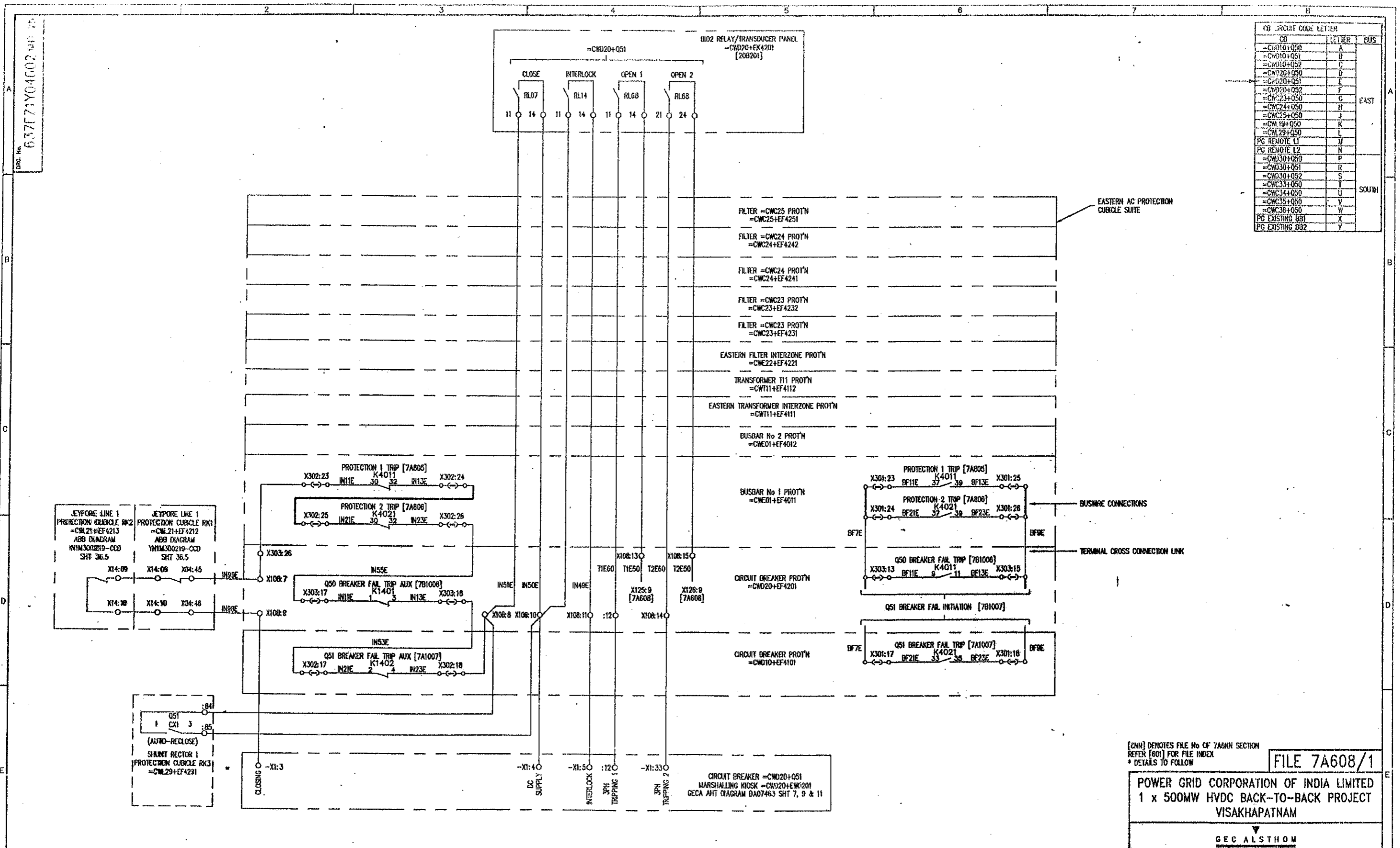
REVISOR: TO ENR343 - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER  
 REVISOR: TO ENR344 & ENR345 - ADDED K4051 & K4052 RELAYS & K4051, K4052 CONTACTS CCT REF IN TRIP CBT WIRING. JEYPORE LINE 1 CUBICLE MOVED BREAKER FAIL & INHIBIT CLOSING CTS TO ANOTHER SHIT FILE REF 7A608/1. REVISOR: TO ENR344 - CHANGED DA07463 FROM DA03706.  
 REVISOR: TO ENR343  
 REVISOR: TO ENR343  
 JEYPORE LINE 1 WAS JEYPORE LINE 2

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 9/6/97  
SIGNED: BTB

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BE USED UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECS. STAND/023/PROG

DRAWN: JCP  
CHKD: PNS  
APP'D: RFR  
SCALE:  
TRACED:  
DESIGN APP'D: PRJ  
DRG. No. 637EZ1Y04602 SHT 8  
CURRENT ISSUE D



CB	LETTER	BUS
=CWD10+Q50	A	EAST
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWD23+Q50	G	
=CWD24+Q50	H	
=CWD25+Q50	J	
=CWD29+Q50	K	
=CWD29+Q50	L	SOUTH
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWC33+Q50	T	
=CWC34+Q50	U	
=CWC35+Q50	V	
=CWC36+Q50	W	
PG EXISTING B01	X	
PG EXISTING B02	Y	

[CWN] DENOTES FILE No OF 7A608 SECTION REFER [601] FOR FILE INDEX \* DETAILS TO FOLLOW

FILE 7A608/1

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM T&D

<p>GEC ALSTHOM T&amp;D Power Electronic Systems Limited</p>	<p>THIRD ANGLE PROJECTION</p>	<p>ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED</p>	<p>DRAWN PREM CHKD RFR APP'D RFR SCALE TRACED</p>
<p>NAME: BT BARRETT DEPT: 739 DATE: 30/07/98 SIGNED: BT BARRETT</p>	<p>IF IN DOUBT ASK</p>	<p>DRAWING TO BE DONE UNLESS OTHERWISE STATED</p> <p>FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND. 023/PROJ</p>	<p>DESIGN APP'D PRJ</p>
<p>TITLE VISAKHAPATNAM CIRCUIT DIAGRAM OF BREAKER FAIL INITIATION &amp; PROTECTION SIGNALS TO CIRCUIT BREAKER =CWD20+Q51</p>			<p>DRG. No. 637EZ1Y04602 SHT 25 CURRENT ISSUE E</p>

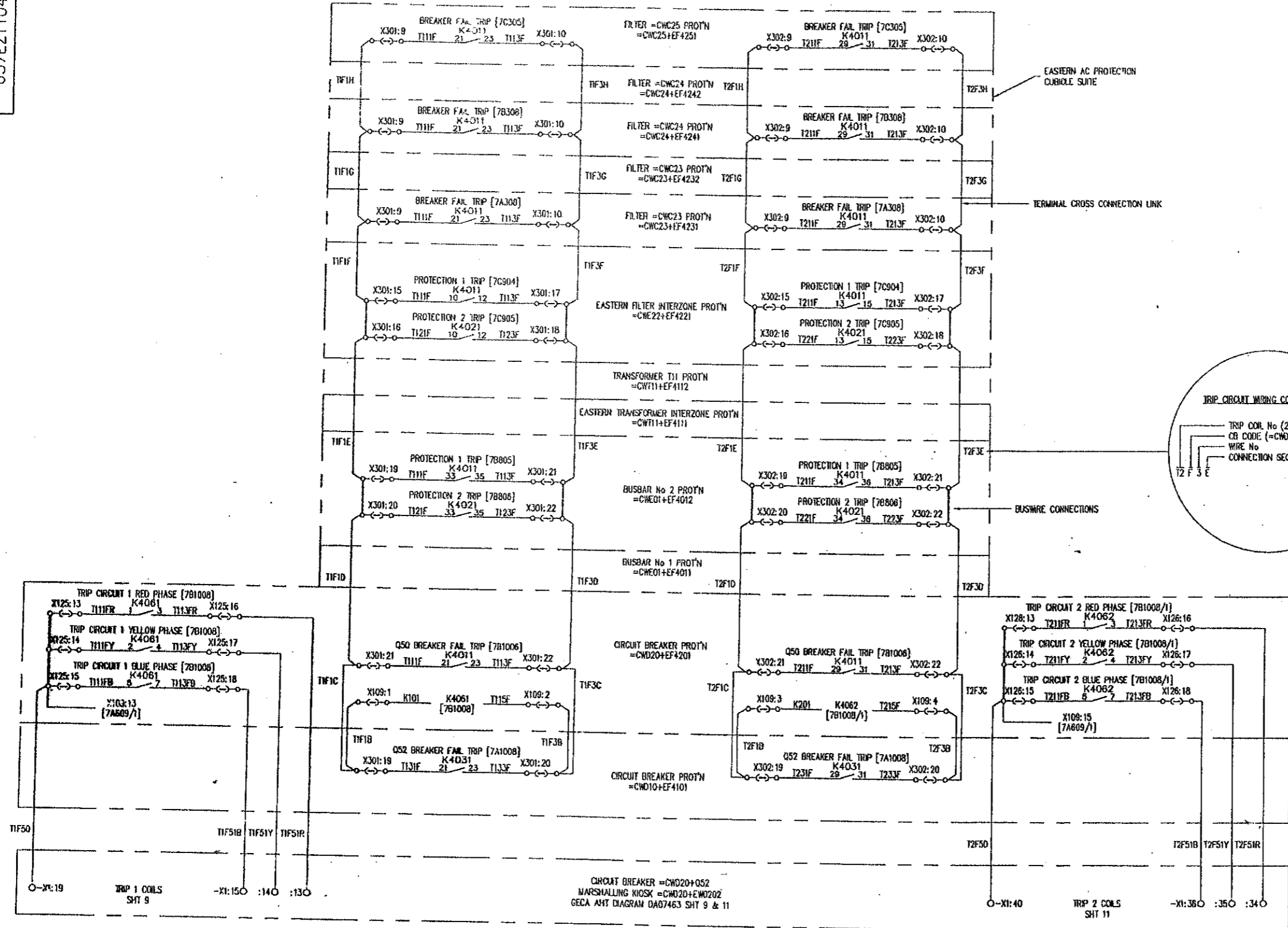
AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

ISSUE	PRJ	PRJ	PRJ	PRJ	PRJ	PRJ	PRJ	PRJ
A	B	C	D	E	F	G	H	I
DATE	ISSUE	DATE	ISSUE	DATE	ISSUE	DATE	ISSUE	DATE
30/07/98	05/01/99	20/01/99	25/08/99	08/08/99	08/08/99	08/08/99	08/08/99	08/08/99
637EZ1Y04602	REFER TO E.C.N. 0448 HIO2 RELAY DESIGNATIONS ADDED. SHUNT RECTOR 1 PROT CIRCULE DETAIL ADDED.	REVISED TO ECR0877- TERMINATIONS MODIFIED IN LINE WITH MARKED UP PRINT.	REVISED TO ECR0877- SHUNT RECTOR DETAILS AMENDED.	REVISED TO ECR0877- AUTO RECLOSE TERMINAL No.5 MODIFIED.				

C.A.B. SWTA  
ISSUE E  
NAME 637EZ1Y04602  
LOCATION VISA4358

DRG. No. 637EZ1Y04602 SHT 9

CB	LETTER	BUS
=CWD10+Q50	A	
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWC23+Q50	G	
=CWC24+Q50	H	
=CWC25+Q50	J	
=CWL19+Q50	K	
=CWL29+Q50	L	
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWC33+Q50	T	
=CWC34+Q50	U	
=CWC35+Q50	V	
=CWC36+Q50	W	
PG EXISTING 081	X	
PG EXISTING 082	Y	



[6NN] DENOTES FILE No OF 7A6NN SECTION  
REFER [601] FOR FILE INDEX  
\* DETAILS TO FOLLOW

**FILE 7A609**

**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
**VISAKHAPATNAM**

**GEC ALSTHOM**  
T&D

ISSUE	B
NAME	
LOCATION	WSA2234
CAD DATA	A
ISSUE	PREM
DATE	11/06/97
REVISIONS	<p>REVISED TO ENDSH48 &amp; BASH- ADDED K4081 &amp; K4082 CONTACTS CCT REF IN TRIP CCT WIRING. ADDED BREAKER FAIL &amp; INHIBIT CLOSING CCTS TO ANOTHER SHT FILE REF 7A609/A CHANGED DA07463 FROM DA03706.</p>

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE

NAME: B T BARRETT  
DEPT. 739 DATE: 9/6/97  
SIGNED: BTB

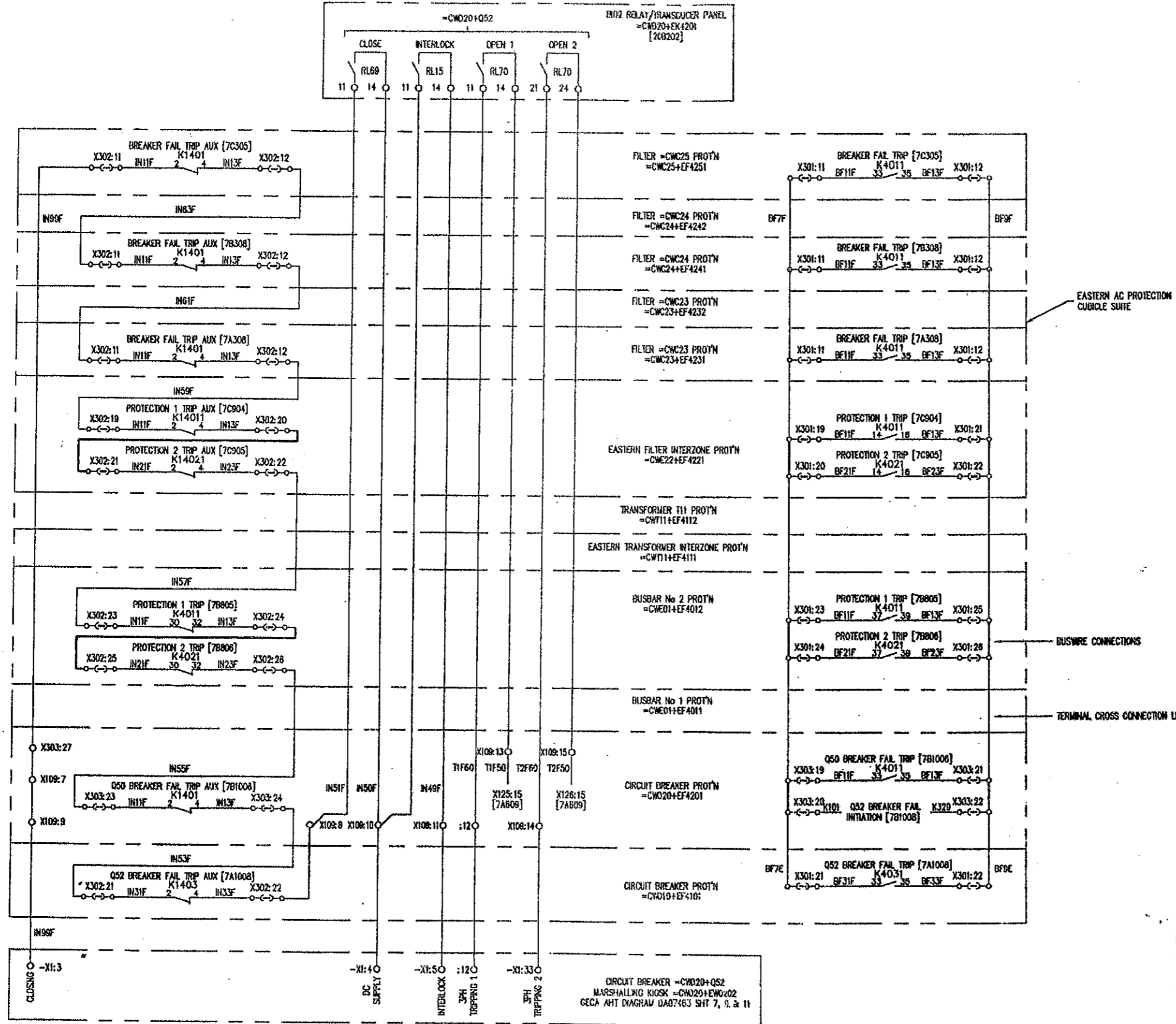
THIRD ANGLE PROJECTION  
IF IN DOUBT  
ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNFOOTNOTED DIMENSIONS SEE SPECIAL STAND/023/PROC

DRAWN JCP  
CND PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN APP'D PRJ  
DRO. No. 637EZ1Y04602 SHT 9  
CURRENT ISSUE B

637EZ1Y04602 SHT 28

CB CIRCUIT CODE LETTER	LETTER	BUS
=CWO10+Q50	A	
=CWO10+Q51	B	
=CWO10+Q52	C	
=CWO20+Q50	D	
=CWO20+Q51	E	
=CWO20+Q52	F	
=CWO23+Q50	G	EAST
=CWO24+Q50	H	
=CWO25+Q50	J	
=CWO19+Q50	K	
=CWO29+Q50	L	
PG REMOTE U1	M	
PG REMOTE T2	N	
=CWO30+Q50	P	
=CWO30+Q51	R	
=CWO30+Q52	S	
=CWO33+Q50	T	
=CWO34+Q50	U	
=CWO35+Q50	V	
=CWO36+Q50	W	
PG EXISTING B01	X	
PG EXISTING B02	Y	



[GNN] DENOTES FILE No OF 7699N SECTION REFER [S01] FOR FILE INDEX \* DETAILS TO FOLLOW

FILE 7A609/1

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM  
GEC ALSTHOM T&D

ISSUE	A
NAME	B
LOCATION	MSA3628

DATE	30/07/98
BY	BT
CHKD	BT
APP'D	BT
PRJ	BT

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

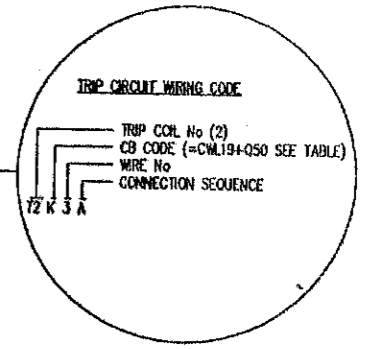
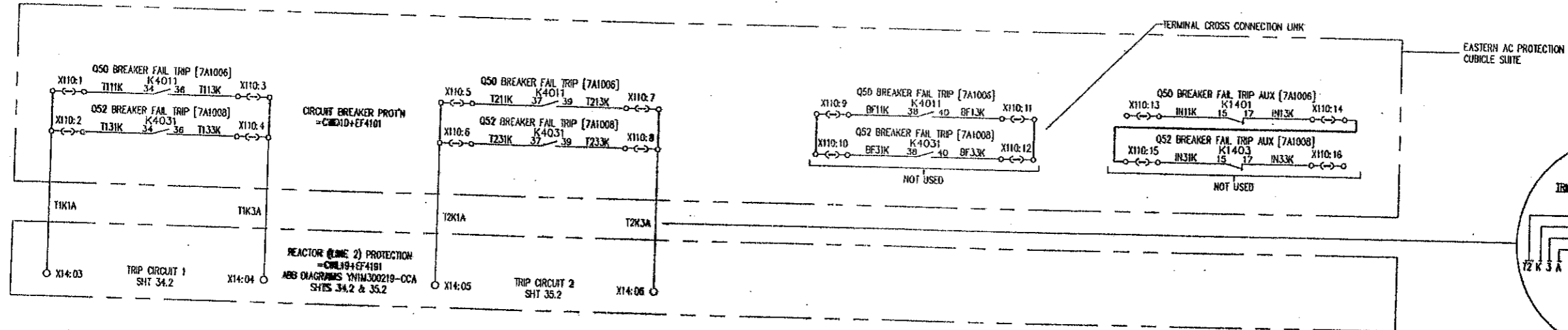
GEC ALSTHOM T&D  
Power Electronics, Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: BT BARRETT  
DEPT: 738 DATE: 30/07/98  
SIGNED: BT BARRETT

THIRD ANGLE PROJECTION  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BE 30% UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND. 003/PAGE 6  
IF IN DOUBT ASK  
DO NOT SCALE PRINT

DRWN PREM: GND RFR  
APP'D RFR: BT  
SCALE: 1:1  
TRADED: BT  
DESN APP'D: PRJ  
DRG. No: 637EZ1Y04602 SHT 28  
CURRENT ISSUE: B  
CUSTOMER: POWERGRID  
ORDER No: CPO136

DRG. No. 637EZ1Y04602 SHT 10

CB CIRCUIT CODE LETTER		
CB	LETTER	DVS
=CWL10+Q50	A	
=CWL10+Q51	B	
=CWL10+Q52	C	
=CWL20+Q50	D	
=CWL20+Q51	E	
=CWL20+Q52	F	
=CWL23+Q50	G	
=CWL24+Q50	H	
=CWL25+Q50	J	
=CWL19+Q50	K	
=CWL29+Q50	L	
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWL30+Q50	P	
=CWL30+Q51	R	
=CWL30+Q52	S	
=CWL33+Q50	T	
=CWL34+Q50	U	
=CWL35+Q50	V	
=CWL36+Q50	W	
PG EXISTING BB1	X	
PG EXISTING BB2	Y	



[GNN] DENOTES FILE No OF 7A6NN SECTION REFER [801] FOR FILE INDEX \* DETAILS TO FOLLOW

FILE 7A610

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D  
GEC ALSTHOM T&D  
Power Electronic Systems Limited

VISAKHAPATNAM  
CIRCUIT DIAGRAM OF  
BREAKER FAIL INITIATION & PROTECTION  
SIGNALS TO CIRCUIT BREAKER =CWL19+Q50

DRG. No. 637EZ1Y04602 SHT 10

CUSTOMER POWERGRID

C.A.D. DATA  
NO. B  
NAME  
LOCATION  
VISA2244

ISSUE  
DATE 11-06-97  
PREPARED BY  
CHECKED BY  
REVISIONS TO BE MADE -  
REVISION NO. / DATE / BY  
INITIATION CBT MADE NOT USED

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 9/6/97  
SIGNED BTB

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

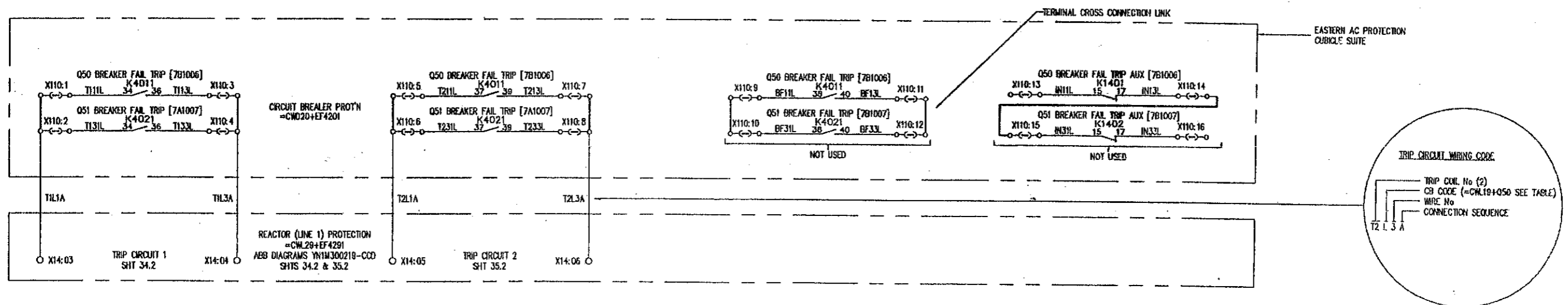
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BE USED UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECN. STAND. 023/PROC

DRAWN JCP  
CHKD PNS  
APP'D RFR  
TRACED  
DESIGN APP'D PRJ

DO NOT SCALE PRINT

637EZ1Y04602 SHT 11

CB CIRCUIT CODE LETTER		
CB	LETTER	BUS
=CWL10+Q50	A	EAST
=CWL10+Q51	B	
=CWL10+Q52	C	
=CWL20+Q50	D	
=CWL20+Q51	E	
=CWL20+Q52	F	
=CWL23+Q50	G	
=CWL24+Q50	H	
=CWL25+Q50	J	
=CWL19+Q50	K	
=CWL29+Q50	L	SOUTH
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWL30+Q50	P	
=CWL30+Q51	R	
=CWL30+Q52	S	
=CWL33+Q50	T	
=CWL34+Q50	U	
=CWL35+Q50	V	
=CWL36+Q50	W	
PG EXISTING B01	X	
PG EXISTING B02	Y	



[GWH] DENOTES FILE No OF 7AGWH SECTION  
REFER [G01] FOR FILE INDEX  
\* DETAILS TO FOLLOW

FILE 7A611

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Sturton, England

VISAKHAPATNAM  
CIRCUIT DIAGRAM OF  
BREAKER FAIL INITIATION & PROTECTION  
SIGNALS TO CIRCUIT BREAKER =CWL29+Q50

DRG. No. 637EZ1Y04602 SHT 11  
DRAWING ISSUE: B

G.A.D. DATA	
ISSUE	A
NAME	B
LOCATION	VISA2271
ISSUE DATE	11-06-97
ISSUE PREPARED BY	BTB
ISSUE CHECKED BY	BTB
ISSUE APPROVED BY	BTB
ISSUE REVISION	REVISED TO ENDS - WORKED - SUBJECT TO PART 1/ PARTIAL INITIATION CWT MADE NOT USED

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

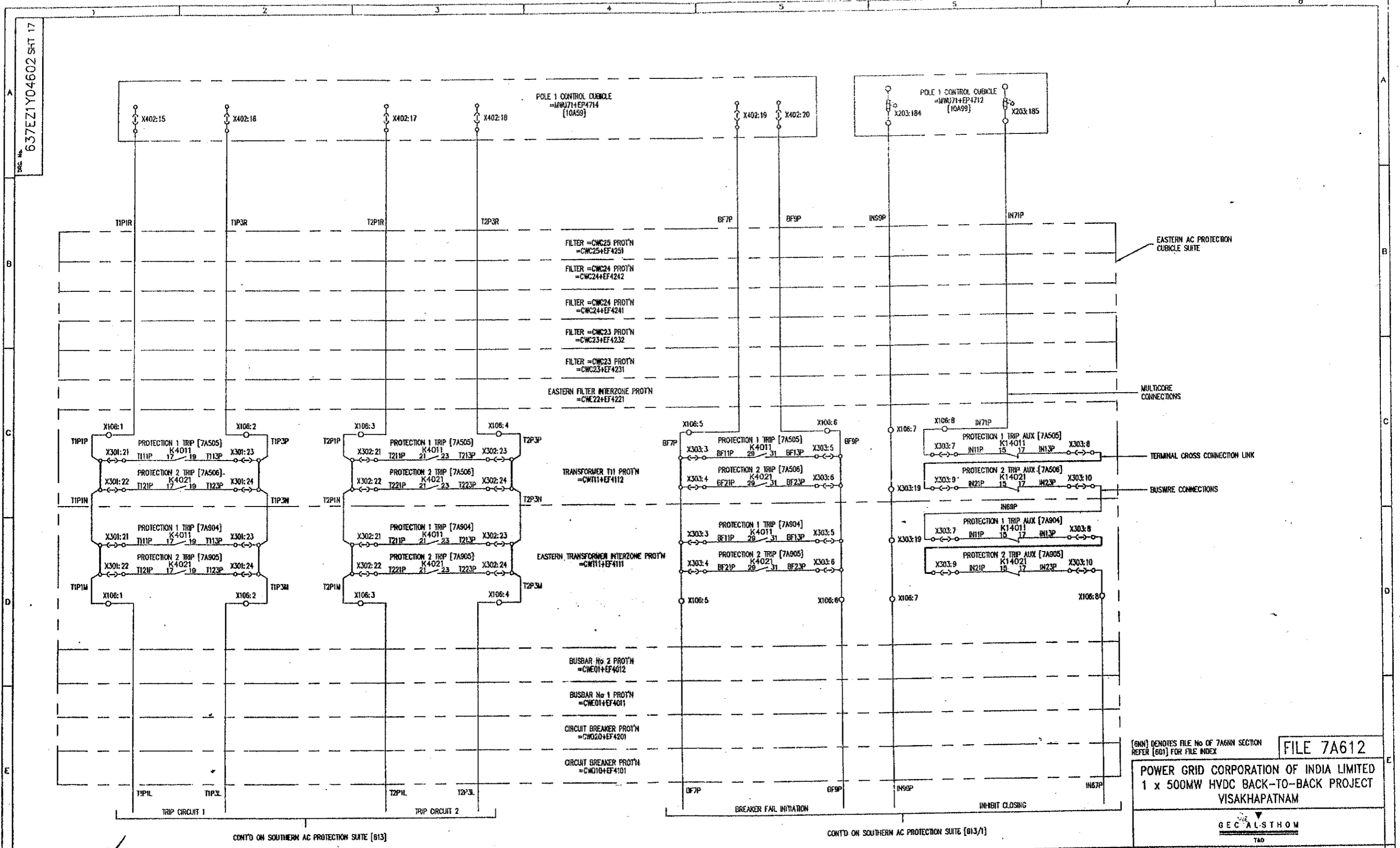
GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 9/6/97  
SIGNED: BTB

THIRD ANGLE PROJECTION  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPECIAL STAND/023/PROC

DRAM: JCP  
CHD: PNS  
APPD: RFR  
SCALE:  
TRACED:  
DESIGN APPD: PRJ

DO NOT SCALE PRINT  
CUSTOMER: POWERGRID  
ORDER No. CF0136

DRG. No. 637EZ1Y04602 SHT 17



CONTD ON SOUTHERN AC PROTECTION SUITE [813]

CONTD ON SOUTHERN AC PROTECTION SUITE [813/1]

[GNN] DENOTES FILE No OF 7A6NN SECTION REFER [601] FOR FILE INDEX **FILE 7A612**

**POWER GRID CORPORATION OF INDIA LIMITED**  
**1 x 500MW HVDC BACK-TO-BACK PROJECT**  
**VISAKHAPATNAM**

**GEC ALSTHOM**  
T&D

C.A.D. DATA  
 ISSUE B  
 NAME  
 LOCATION  
 VISA2251

ISSUE A  
 DATE 11/06/97  
 PREP 03/08/98  
 REVISION TO ECHS-48 - CHANGED SIGNAL NAME FROM TRIP COIL TO TRIP CIRCUIT & FILE REF. FROM 613 ON CONTD ON BRACKET.

**AS BUILT DWG**  
**16 MAY 2009**  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: B T BARRETT  
 DEPT. 739 DATE: 9/6/97  
 SIGNED: BTB

THIRD ANGLE PROJECTION  
 IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWN TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPEC. STAND/023/PROG

DRAWN JCP  
 CND PNS  
 APPD RFR  
 SCALE  
 TRACED  
 DESIGN APPD PRJ

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 VISAKHAPATNAM  
 CIRCUIT DIAGRAM OF BREAKER FAIL INITIATION & PROTECTION SIGNALS TO CIRCUIT BREAKER =CWD30+Q50  
 DRG. No. 637EZ1Y04602 SHT 17  
 CURRENT ISSUE B

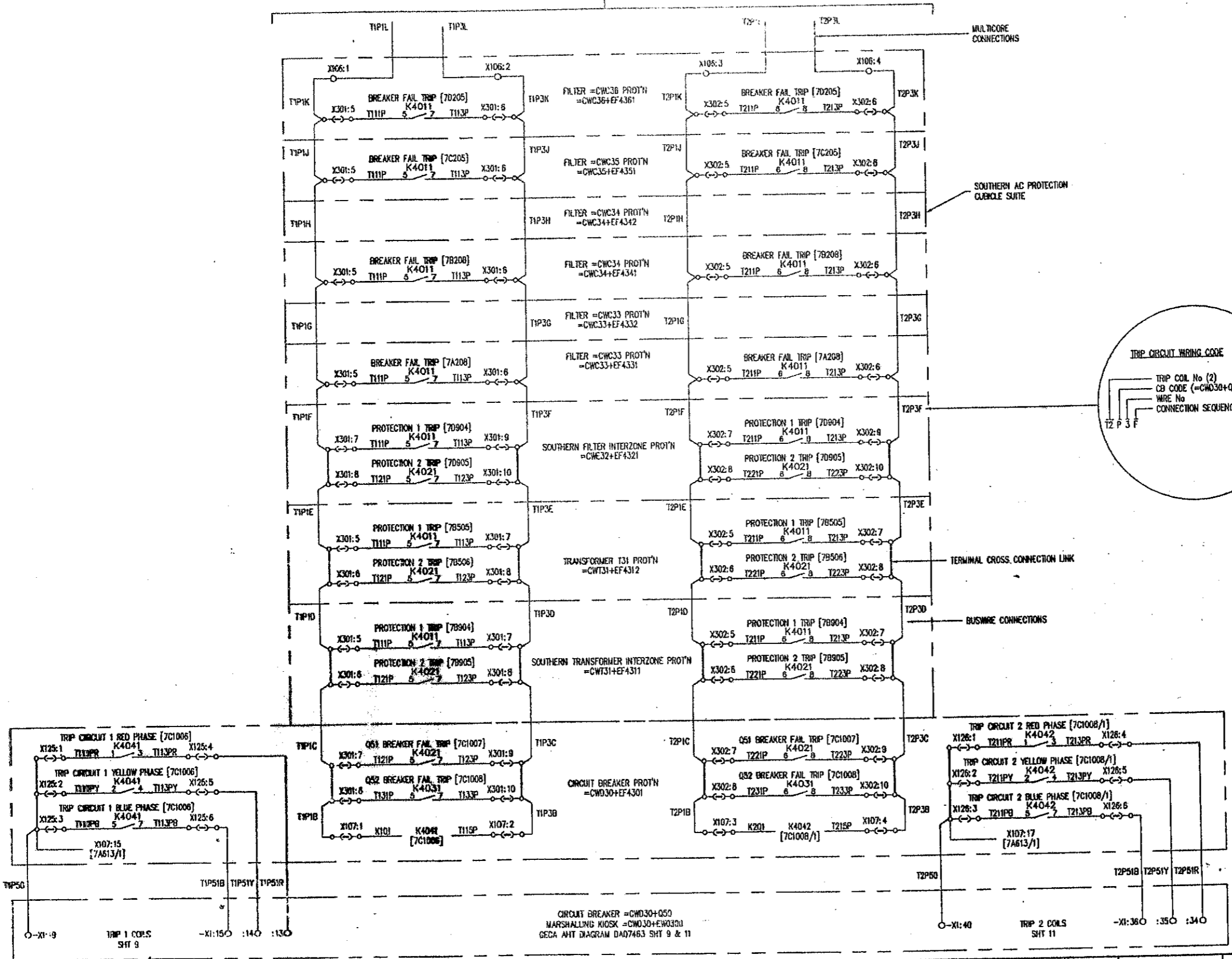
DO NOT SCALE PRINT

WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
 CUSTOMER POWERGRID ORDER No. CP0136

637EZ1Y04602 SHT 12

CONT'D FROM EASTERN AC PROTECTION SUITE (S12)

CB CIRCUIT CODE LETTER		
CB	LETTER	BUS
=CWD10+Q50	A	
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWC23+Q50	G	EAST
=CWC24+Q50	H	
=CWC25+Q50	J	
=CWL19+Q50	K	
=CWL29+Q50	L	
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWC33+Q50	T	SOUTH
=CWC34+Q50	U	
=CWC35+Q50	V	
=CWC36+Q50	W	
PG EXISTING BB1	X	
PG EXISTING BB2	Y	



NOTE: FOR CIRCUITS INDICATED THIS #, THE SEQUENCE OF CONNECTIONS MUST BE AS SHOWN  
 (8NN) DENOTES FILE No OF 7A6NN SECTION REFER [601] FOR FILE INDEX

FILE 7A613

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

C.A.D. DRAWN	A	PRJ	637EZ1Y04602
ISSUE	C	DATE	11/06/97
NAME		REVISION	1. REVISED TO ENHANCE ACCURACY OF ALL UNLATERANCED DIMENSIONS SEE SPECIAL STAND/022/PROG
LOCATION	VISA2253	FILE REF	7A613/1

**AS BUILT DWG**  
 16 MAY 2000  
**VISAKHAPATNAM**

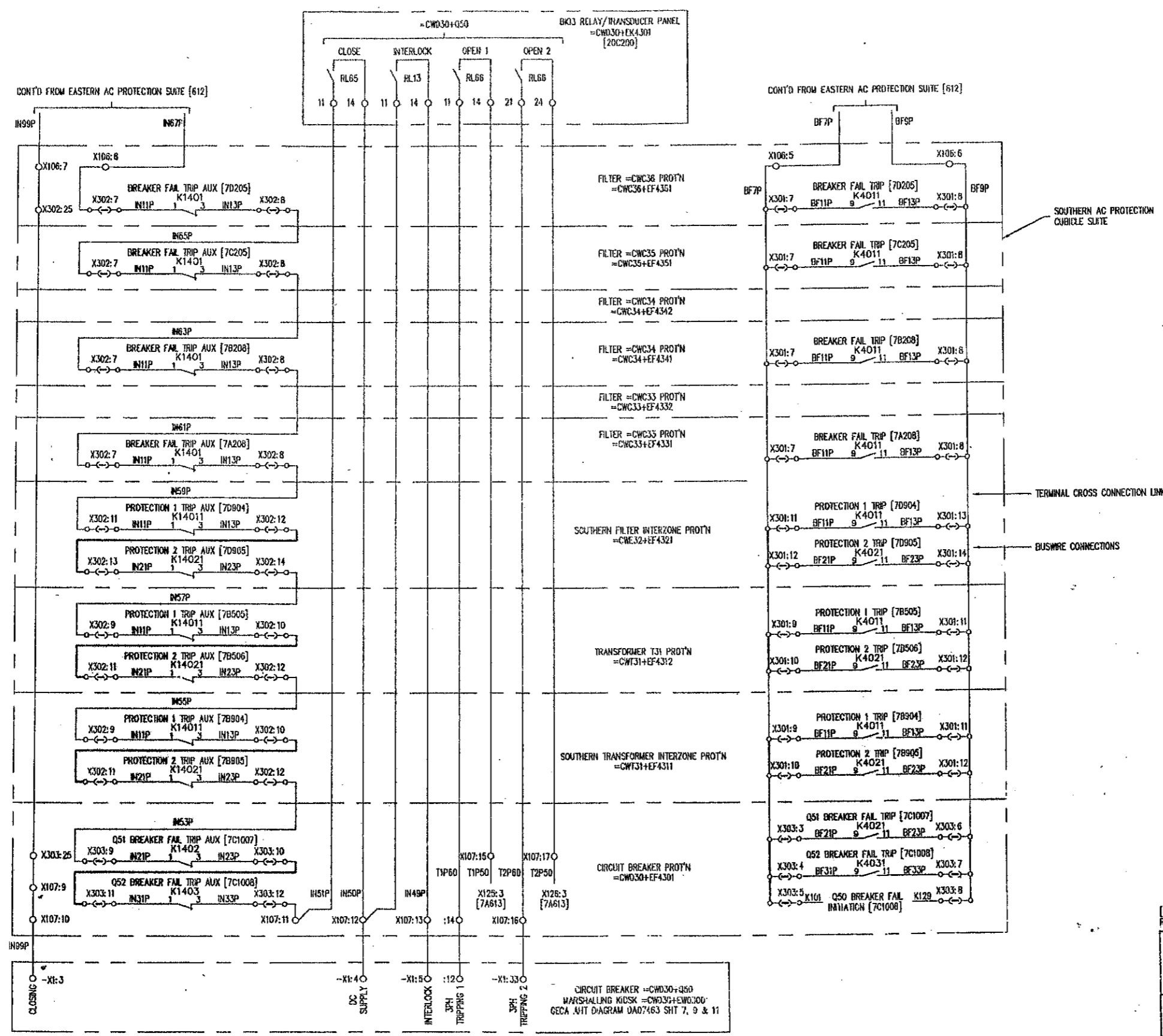
GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: B T BARRETT  
 DEPT. 739 DATE: 9/6/97  
 SIGNED: BTB

THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BE USED UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNLATERANCED DIMENSIONS SEE SPECIAL STAND/022/PROG  
 DO NOT SCALE PRINT

DRAWN	JCP	DRG. No.	637EZ1Y04602 SHT 12
CHKD	PNS	CURRENT ISSUE	C
APPRD	RFR	CUSTOMER	POWERGRID
SCALE		ORDER No.	CF0136
TRACED			
GENOM	PRJ		
APPD			

Dwg. No. 637EZ1Y04602 SHT 27

CIRCUIT CODE LETTER			
CD	LETTER	BUS	
=CWB19+Q50	A	EAST	
=CWB19+Q51	B		
=CWB19+Q52	C		
=CWB20+Q50	D		
=CWB20+Q51	E		
=CWB20+Q52	F		
=CWB24+Q50	G		
=CWB24+Q51	H		
=CWB24+Q52	I		
=CWB29+Q50	J		
=CWB29+Q51	K		
=CWB29+Q52	L		
PG REMOTE L1	M		SOUTH
PG REMOTE L2	N		
=CWB30+Q50	P		
=CWB30+Q51	R		
=CWB30+Q52	S		
=CWB33+Q50	T		
=CWB33+Q51	U		
=CWB33+Q52	V		
=CWB36+Q50	W		
PG EXISTING 0B1	X		
PG EXISTING 0B2	Y		



[601] DENOTES FILE No OF 7A6NN SECTION REFER [601] FOR FILE INDEX **FILE 7A613/1**

**POWER GRID CORPORATION OF INDIA LIMITED**  
**1 x 500MW HVDC BACK-TO-BACK PROJECT**  
**VISAKHAPATNAM**  
**GEC ALSTHOM**  
 T&D

C.A.B. DATA	PRJ	A	B
ISSUE	JCP	05	05
NAME	JIB	08	01
LOCATION	JIB	9B	99

REFER TO E.C.A. 8645  
 8603 R.P. RELAY DESIGNATIONS &  
 TERMINAL NUMBERS ADDED.

REFER TO E.C.A. 8623  
 =CWD30+EK4301 WAS  
 =CWD30+EK4201

**AS BUILT DWG**  
**16 MAY 2000**  
**VISAKHAPATNAM**

GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN PREM CND RFR
NAME: BT BARRETT DEPT. 739 DATE: 05/08/98 SIGNED: BT BARRETT	IF IN DOUBT ASK	DRAWING TO BS308 UNLESS OTHERWISE STATED	APP'D RFR
		FOR THE STANDARD OF ACCURACY OF ALL UNYMBOLISED DIMENSIONS SEE SPECIAL STANDARDS/PROC	SCALE
			TRACED
			DESIGN APP'D PRJ

**GEC ALSTHOM T&D**  
**Power Electronic Systems Limited**  
 Sharnford, England

**VISAKHAPATNAM**  
**CIRCUIT DIAGRAM OF**  
**BREAKER FAIL INITIATION & PROTECTION**  
**SIGNALS TO CIRCUIT BREAKER = CWD30+Q50**

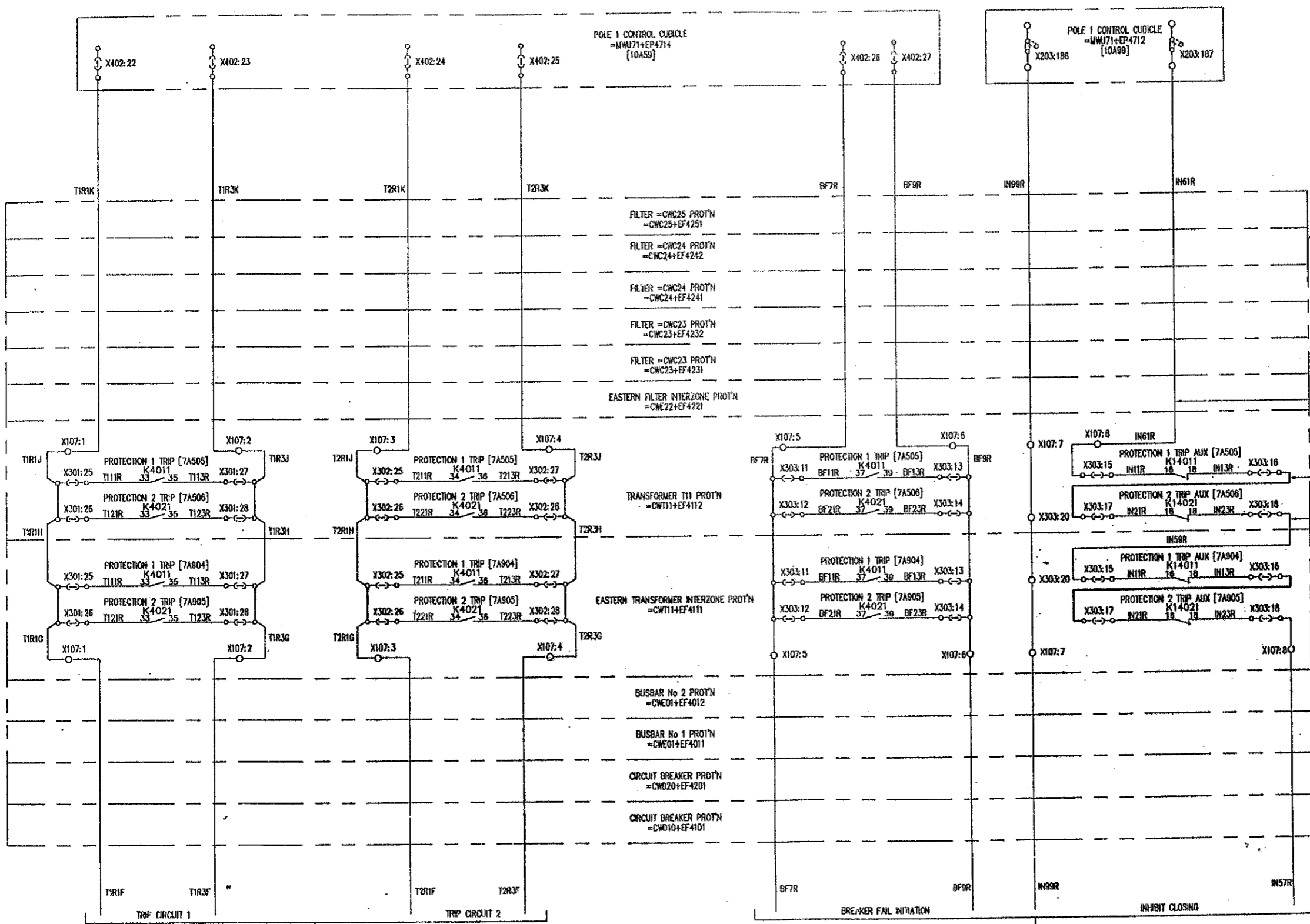
DWG. No. **637EZ1Y04602 SHT 27**  
 CURRENT ISSUE **C**

DD NOT SCALE PRINT

WHEN QUOTING DRG. No. STATE CURRENT ISSUE

CUSTOMER: POWERGRID ORDER No. CF0136

DRG. No. 637EZ1Y04602 SHT 18



EASTERN AC PROTECTION CUBICLE SUITE

MULTICORE CONNECTIONS

TERMINAL CROSS CONNECTION LINK

BUSWIRE CONNECTIONS

[RWH] DENOTES FILE No OF 7A6NN SECTION REFER [601] FOR FILE INDEX

FILE 7A614

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Stafford, England

VISAKHAPATNAM  
CIRCUIT DIAGRAM & PROTECTION  
SIGNALS TO CIRCUIT BREAKER = CWD30+Q51

DRG. No. 637EZ1Y04602 SHT 18  
CURRENT ISSUE B

WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
CUSTOMER: POWERGRID ORDER No. CF0138

CONT'D ON SOUTHERN AC PROTECTION SUITE (615)

CONT'D ON SOUTHERN AC PROTECTION SUITE (615/1)

C.A.D. DATA	ISSUE B	NAME	LOCATION
	ISSUE A	PREM	
	DATE 11/06/97		
VSA2273			

REMOVED TO ENCLAVE -  
CHANGED FILE REF 7A615  
ON CONTO BRACKET OF  
INITIATION & ARBIT SIGNALS.

AS BUILT DWG  
16 MAY 2003  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 9/6/97  
SIGNED: BTB

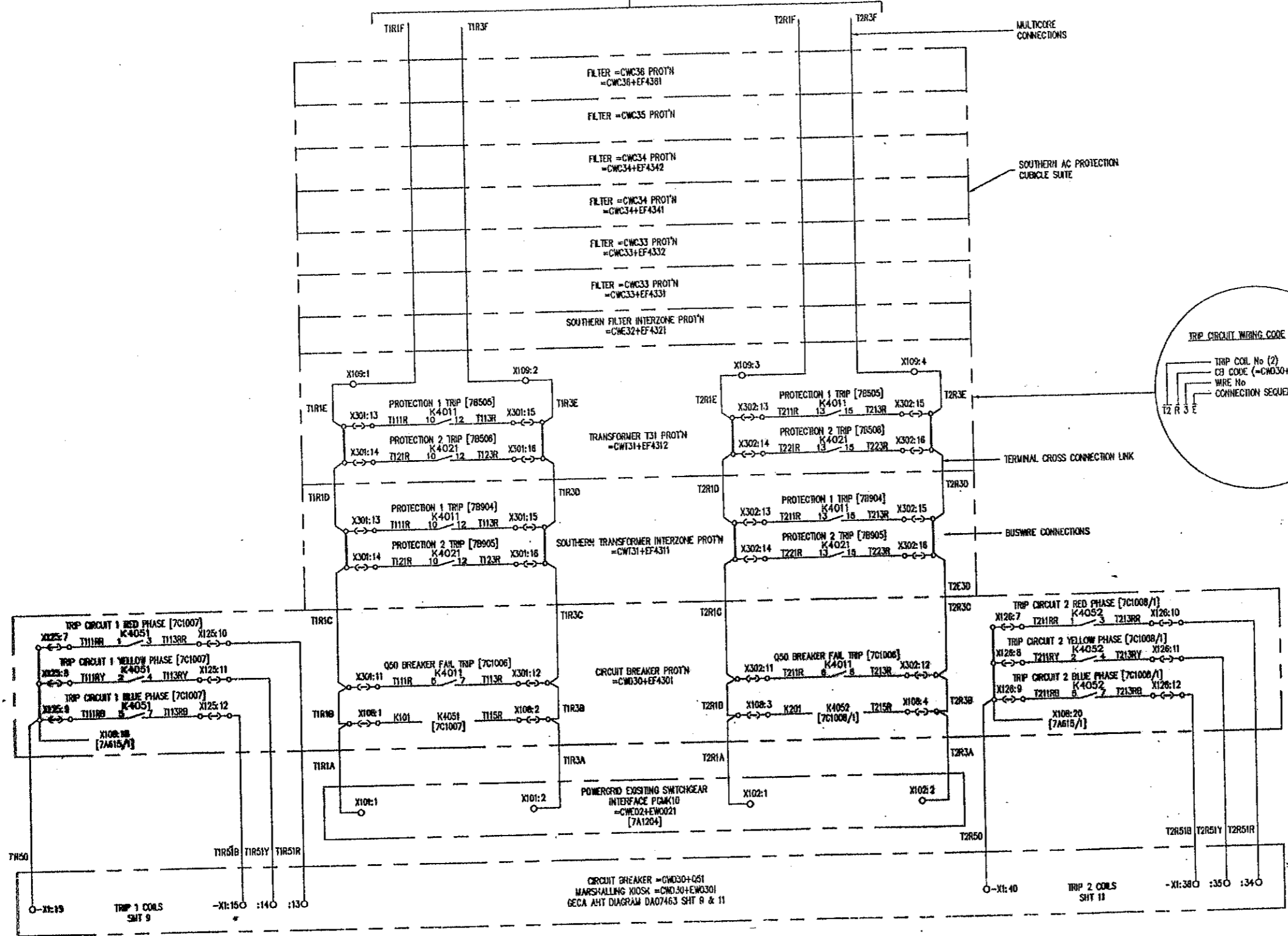
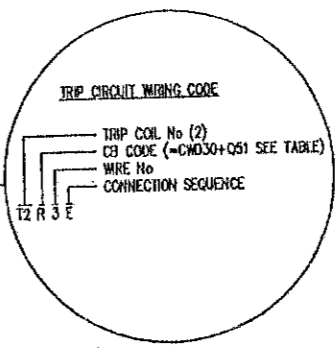
THIRD ANGLE PROJECTION  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BE FOR UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLENCED DIMENSIONS SEE SPEC. STAND./Q23/PROG  
DO NOT SCALE PRINT

GRANN JCP  
DWD PWS  
APP'D RFR  
SCALE  
TRACED  
DESIGN PRJ  
APP'D

637EZ1Y04602 SHT 13

CONT'D FROM EASTERN AC PROTECTION SUITE [614]

CB	LETTER	BUS
=CWD10+Q50	A	
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWD31+Q50	G	
=CWD31+Q51	H	
=CWD31+Q52	J	
=CWD34+Q50	K	
=CWD34+Q51	L	
=CWD34+Q52	M	
PG REMOTE L1	N	
=CWD30+Q51	P	
=CWD30+Q52	R	
=CWD30+Q53	S	
=CWD31+Q50	T	
=CWD31+Q51	U	
=CWD31+Q52	V	
=CWD38+Q50	W	
PG EXISTING 001	X	
PG EXISTING 002	Y	



[GNN] DENOTES FILE No OF 7ANN SECTION REFER [601] FOR FILE INDEX **FILE 7A615**

**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

**GEC ALSTHOM**

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited

**VISAKHAPATNAM**  
CIRCUIT DIAGRAM OF  
BREAKER FAIL INITIATION & PROTECTION  
SIGNALS TO CIRCUIT BREAKER =CWD30+Q51

DWG No. **637EZ1Y04602 SHT 13** | **D**

WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
CUSTOMER POWERGRID | ORDER No. **CF0136**

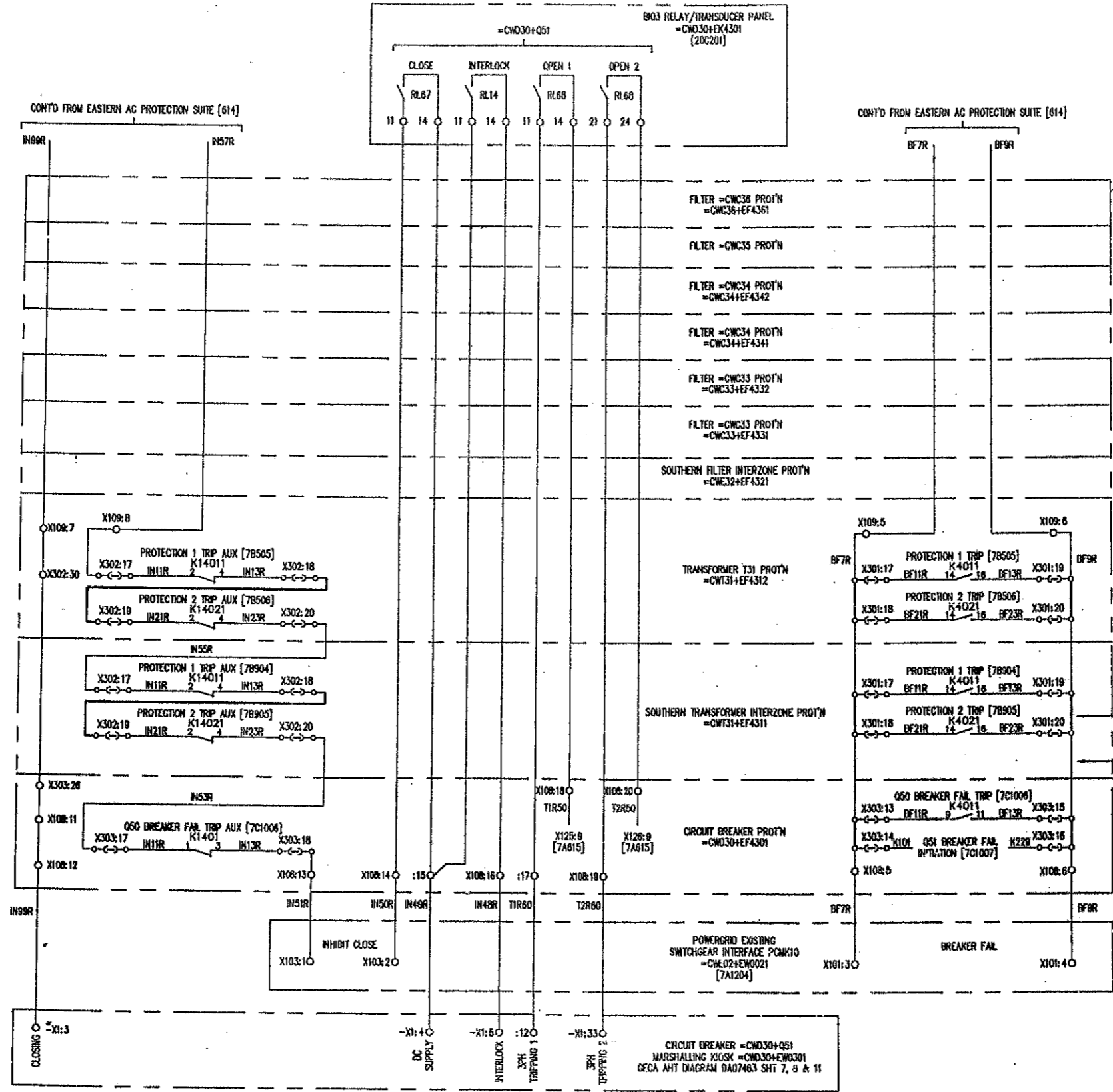
REV	DATE	BY	CHKD	DESCRIPTION
1	11/08/97	JCP		REVISED TO ENDSAS - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER
2	08/08/97	JCP		REVISED TO ENDSAS & ENDSAS - ADDED K4051 & K4052 CONTACTS - ADDED K4051 & K4052 RELAY - ADDED REF IN TRIP COIL WIRING - MOVED BREAKER FAIL & INHIBIT CLOSING COILS TO ANOTHER SHT - FILE REF 7A615/1
3	19/01/98	JCP		ADDED =CWD30+Q51
4	19/01/98	JCP		REVISED TO E.C.H. 98AS - TERMINALS NUMBERS ADDED TO PG WIRING (=CWD30+Q51), ALSO WAGO DRAWING REF ADDED.

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

<b>GEC ALSTHOM T&amp;D</b> Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN JCP
NAME: <b>B T BARRETT</b>	IF IN DOUBT ASK	DRAWING TO ISSOR UNLESS OTHERWISE STATED	CHKD PNS
DEPT: 739 DATE: 9/6/97		FOR THE STANDARD OF ACCURACY OF ALL UNFINISHED DIMENSIONS SEE SPEC. STAND./023/PROG	APP'D RFR
SIGNED BTB			SCALE
			DESIGN APP'D PRJ

DO NOT SCALE PRINT

Dwg. No. 637EZ1Y04602 SHT 28



C/C CIRCUIT CODE LETTER		
CB	LETTER	BUS
=CWO10+Q50	A	EAST
=CWO10+Q51	B	
=CWO10+Q52	C	
=CWO20+Q50	D	
=CWO20+Q51	E	
=CWO20+Q52	F	
=CWC23+Q50	G	
=CWC24+Q50	H	
=CWC25+Q50	J	
=CWC19+Q50	K	
=CWC29+Q50	L	
PG REMOTE L1	M	SOUTH
PG REMOTE L2	N	
=CWO30+Q50	P	
=CWO30+Q51	R	
=CWO30+Q52	S	
=CWC31+Q50	T	
=CWC34+Q50	U	
=CWC35+Q50	V	
=CWC36+Q50	W	
PG EXISTING DB1	X	
PG EXISTING DB2	Y	

[GPH] DENOTES FILE No OF 7ABIN SECTION REFER [601] FOR FILE INDEX

**FILE 7A615/1**

**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

**GEC ALSTHOM**  
T&D

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
Sturton, England

**VISAKHAPATNAM**  
CIRCUIT DIAGRAM OF  
BREAKER FAIL INITIATION & PROTECTION  
SIGNALS TO CIRCUIT BREAKER =CWO30+Q51

DRW. No. **637EZ1Y04602 SHT 28** CURRENT SCALE **B**

C.A.D. DATA  
ISSUE **B**  
NAME  
LOCATION **VSA3631**

ISSUE	<b>A</b>
DATE	<b>05/08/98</b>
BY	<b>BT</b>
CHKD	<b>BT</b>
APPD	<b>BT</b>

REFER TO EACH SHEET RELAY DESIGNATIONS & TERMINAL DESIGNATIONS & TERMINAL RELAY NO'S ADDED TO GND. RFP, ALSO FILE REF ADDED. TERMINAL RELAY'S ADDED TO PG MAP (CWO30+Q50/2) & ALSO FILE REF ADDED.

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

**GEC ALSTHOM T&D**  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: **BT BARRETT**  
DEPT. 739 DATE: **05/08/98**  
SIGNED: **BT BARRETT**

THIRD ANGLE PROJECTION  
IF IN DOUBT **ASK**

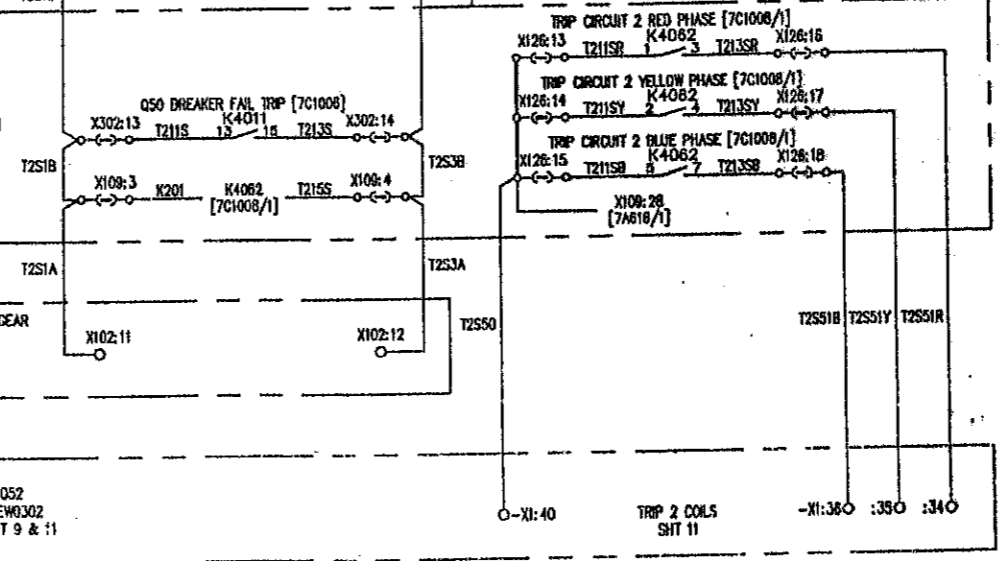
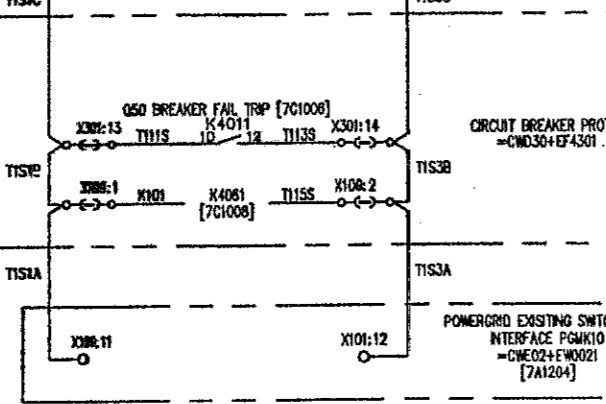
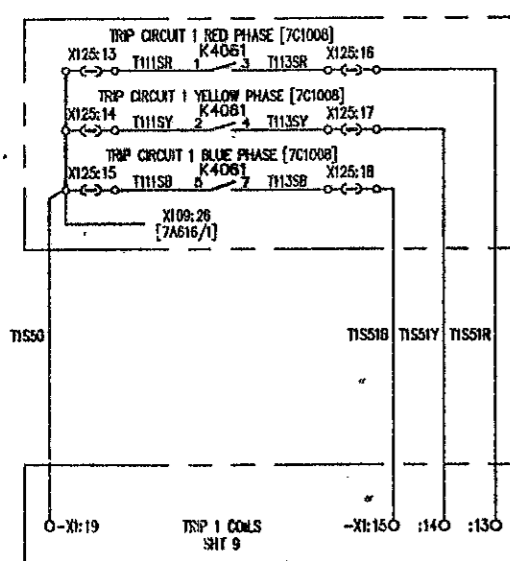
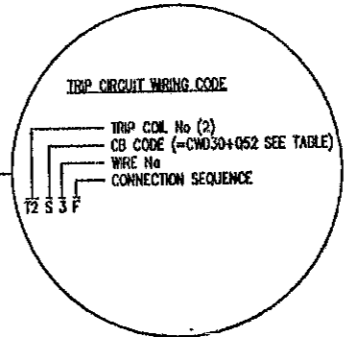
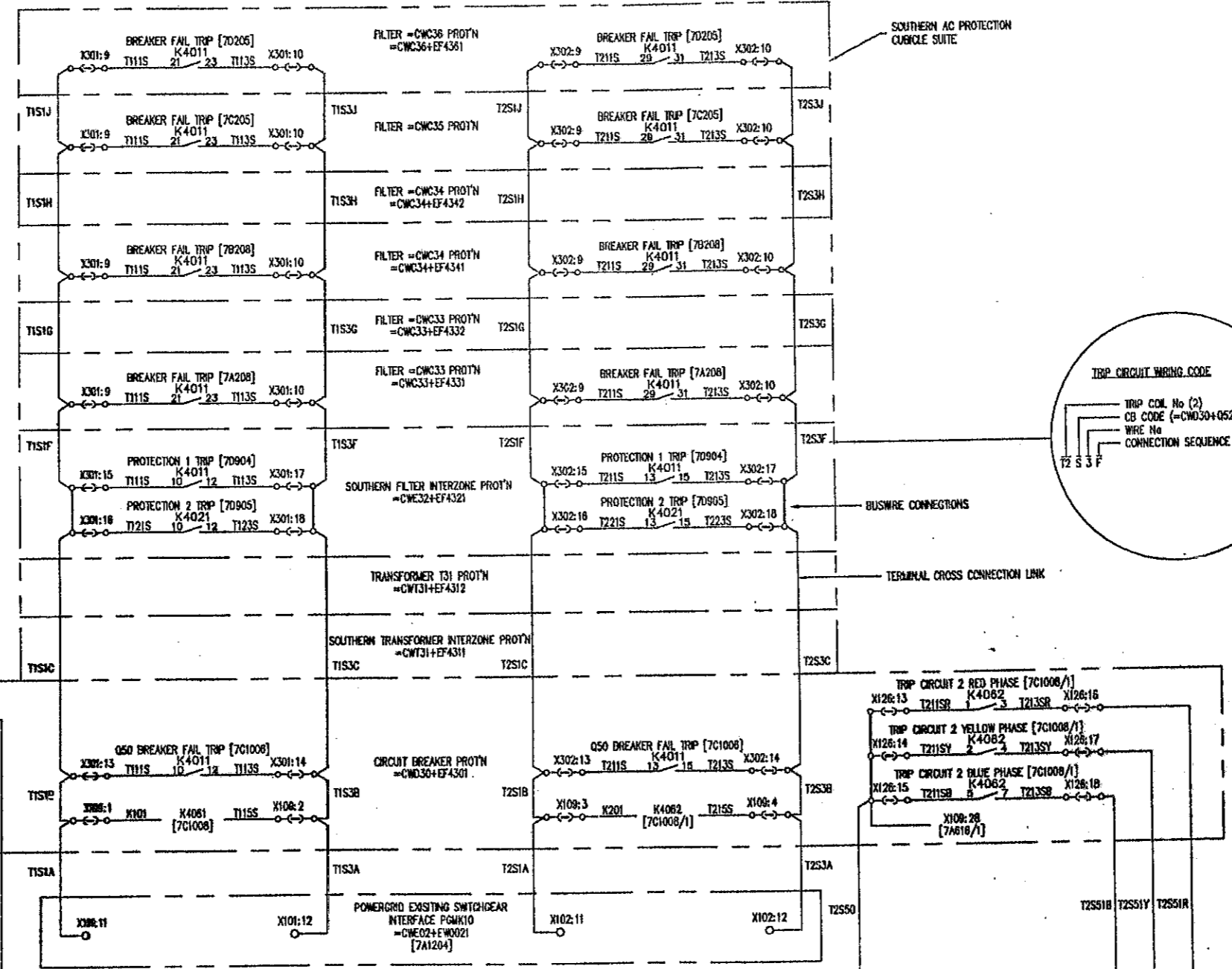
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DIMENSIONS TO BEING UNLESS OTHERWISE STATED  
FOR THE STANDARDS OF ACCURACY OF ALL UNLESS OTHERWISE STATED SEE SPECIAL STANDARDS/PROG

DRW. PREM  
C/D RFR  
APPD RFR  
SCALE  
TRADED  
DESN APPD  
PRJ

DO NOT SCALE PRINT  
WHEN QUOTING DWG. No. STATE CURRENT ISSUE  
CUSTOMER **POWERGRID** ORDER No. **CP0136**

DRG. No. 637EZ1Y04602 SHT 14

CB	LETTER	BUS
=CWO10+050	A	
=CWO10+051	B	
=CWO10+052	C	
=CWO20+050	D	
=CWO20+051	E	
=CWO20+052	F	
=CWO24+050	G	
=CWO24+051	H	
=CWO24+052	I	
=CWO18+050	J	
=CWO18+051	K	
=CWO18+052	L	
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWO30+050	P	
=CWO30+051	Q	
=CWO30+052	R	
=CWO33+050	S	
=CWO33+051	T	
=CWO33+052	U	
=CWO34+050	V	
=CWO34+051	W	
=CWO34+052	X	
PG EXISTING 881	Y	
PG EXISTING 882	Z	



[GWN] DENOTES FILE No OF 7A616 SECTION REFER [G01] FOR FILE INDEX

FILE 7A616

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited

VISAKHAPATNAM  
CIRCUIT DIAGRAM OF  
BREAKER FAIL INITIATION & PROTECTION  
SIGNALS TO CIRCUIT BREAKER =CWO30+052

DRG. No. 637EZ1Y04602 SHT 14

CUSTOMER POWERGRID

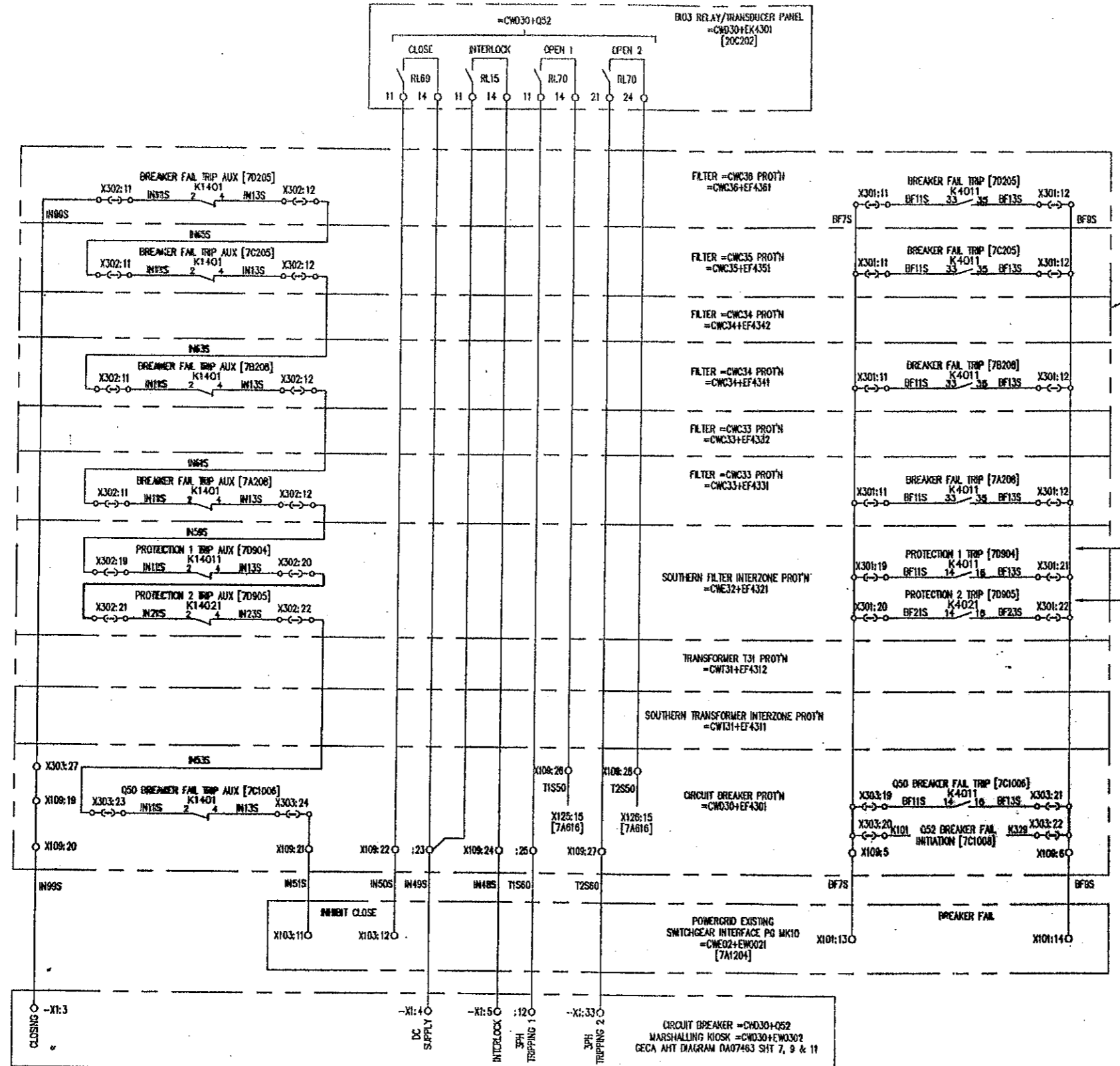
ISSUE	DATE	BY	REVISION
A	11/06/97	JCP	REVISED TO ENR348 - BREAKER FAIL CIRCUIT EXTENDED TO CIRCUIT BREAKER
B	21/08/97	JCP	REVISED TO ENR348 - ADDED K4061 & K4062 CONTACTS ADDED K4061 & K4062 RELAY MOVING BREAKER FAIL & INHIBIT CLOSING COILS TO ANOTHER SHT FILE REF 7A616/1
C	05/08/98	PREM	REVISED TO ENR348 - ADDED K4061 & K4062 CONTACTS ADDED K4061 & K4062 RELAY MOVING BREAKER FAIL & INHIBIT CLOSING COILS TO ANOTHER SHT FILE REF 7A616/1
D	05/09/99	PREM	REVISED TO ENR348 - TERMINAL REFS ADDED TO PG MISC (=CWO30+052) & ALSO FILE REF NUMBER.

**AS BUILT DWG**  
16 MAY 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED
NAME: B T BARRETT DEPT. 739 DATE: 9/8/97 SIGNED: BTB	F IN DOUBT ASK	DRAWING TO BS308 UNLESS OTHERWISE STATED
FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPECIAL STANDARDS/PROG		
DO NOT SCALE PRINT		

DRG. No. 637EZ1Y04602 SHT 29

CD CIRCUIT CODE LETTER	LETTER	BUS
=CWD19+Q50	A	EAST
=CWD19+Q51	B	
=CWD19+Q52	C	
=CWD19+Q53	D	
=CWD19+Q54	E	
=CWD19+Q55	F	
=CWD19+Q56	G	
=CWD19+Q57	H	
=CWD19+Q58	I	
=CWD19+Q59	J	
=CWD19+Q60	K	SOUTH
=CWD19+Q61	L	
PG REMOTE L1	M	
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWD30+Q53	T	
=CWD30+Q54	U	
=CWD30+Q55	V	
=CWD30+Q56	W	
PG EXISTING BBI	X	
PG EXISTING BB2	Y	



EASTERN AC PROTECTION CURICLE SUITE

TERMINAL CROSS CONNECTION LINK

BUSWIRE CONNECTIONS

[601] DENOTES FILE No of 7A616N SECTION REFER [601] FOR FILE INDEX

**FILE 7A616/1**

**POWER GRID CORPORATION OF INDIA LIMITED**  
**1 x 500MW HVDC BACK-TO-BACK PROJECT**  
**VISAKHAPATNAM**

**GEC ALSTHOM**  
T&D

**GEC ALSTHOM T&D**  
**Power Electronics Systems Limited**  
*Netherland, England*

**VISAKHAPATNAM**  
**CIRCUIT DIAGRAM OF**  
**BREAKER FAIL INITIATION & PROTECTION**  
**SIGNALS TO CIRCUIT BREAKER =CWD30+Q52**

DRG. No. **637EZ1Y04602 SHT 29** CURRENT ISSUE **B**

WHEN QUOTING DRG. No. STATE CURRENT ISSUE

CUSTOMER POWERGRID ORDER No. CF0136

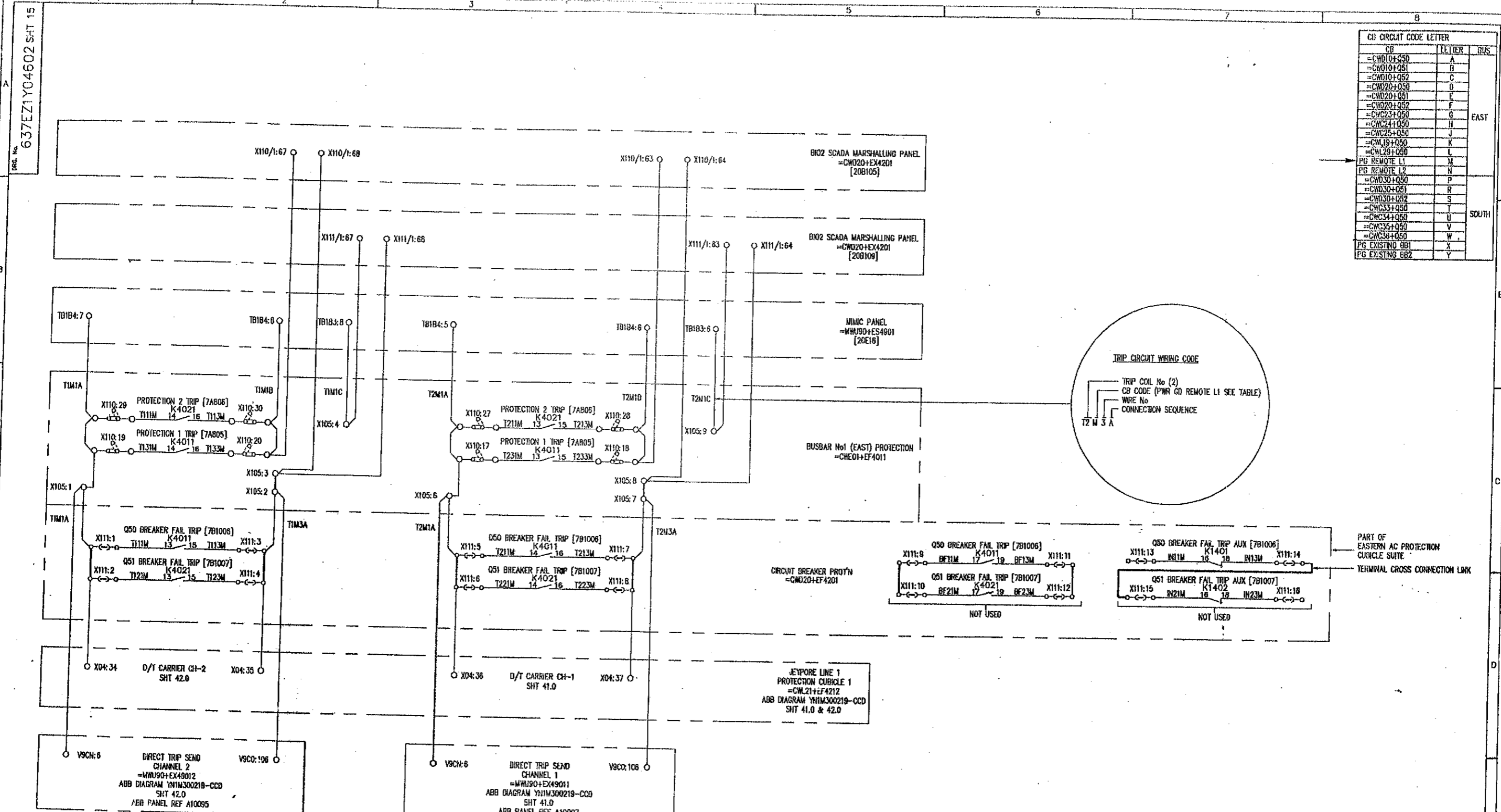
ISSUE	B
NAME	
LOCATION	VISA3633
DATE	05/08/98
BY	BT
CHECKED	BT
APPROVED	BT

REFER TO ECN. 8545  
 B03 RTP RELAY DESIGNATIONS &  
 B03 RTP RELAY DESIGNATIONS &  
 TERMINAL NUMBERS ADDED.  
 TERMINAL NUMBERS ADDED TO  
 PG MK10 (=CWD30+Q52). FILE  
 REF'S ADDED TO RTP & PG MK10.

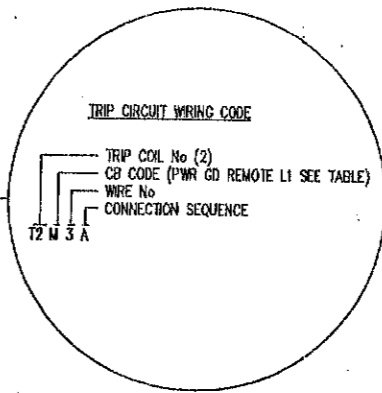
**AS BUILT DWG**  
**16 MAY 2000**

<b>GEC ALSTHOM T&amp;D</b> Power Electronics Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED DRAWING TO BS308 UNLESS OTHERWISE STATED	DRAWN PREM CHD RFR
NAME: BT BARRETT DEPT. 739 DATE: 05/08/98 SIGNED BT BARRETT	IF IN DOUBT ASK	FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPECK. STAND./033/PROG	APPR'D RFR SCALE TRACED DESIGN APP'D PRJ
DO NOT SCALE PRINT			CUSTOMER POWERGRID

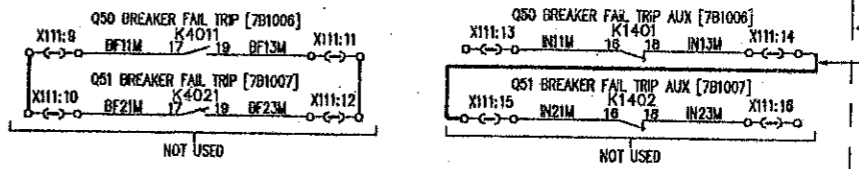
**VISAKHAPATNAM**



CB	LETTER	BUS
=CW010+Q50	A	EAST
=CW010+Q51	B	
=CW010+Q52	C	
=CW020+Q50	D	
=CW020+Q51	E	
=CW020+Q52	F	
=CWC24+Q50	G	
=CWC24+Q51	H	
=CWC25+Q50	J	
=CWC19+Q50	K	
=CWC19+Q51	L	
PG REMOTE L1	M	SOUTH
PG REMOTE L2	N	
=CW030+Q50	P	
=CW030+Q51	R	
=CW030+Q52	S	
=CWC33+Q50	T	
=CWC34+Q50	U	
=CWC35+Q50	V	
=CWC36+Q50	W	
PG EXISTING 001	X	
PG EXISTING 002	Y	



PART OF EASTERN AC PROTECTION CUBICLE SUITE  
 TERMINAL CROSS CONNECTION LINK



JEYPORE LINE 1 PROTECTION CUBICLE 1  
 =CWL21+EF4212  
 ABB DIAGRAM Y11M300219-CCD  
 SHT 41.0 & 42.0

DIRECT TRIP SEND CHANNEL 2  
 =MWA90+EX49012  
 ABB DIAGRAM Y11M300219-CCD  
 SHT 42.0  
 ABB PANEL REF A10095

DIRECT TRIP SEND CHANNEL 1  
 =MWA90+EX49011  
 ABB DIAGRAM Y11M300219-CCD  
 SHT 41.0  
 ABB PANEL REF A10097

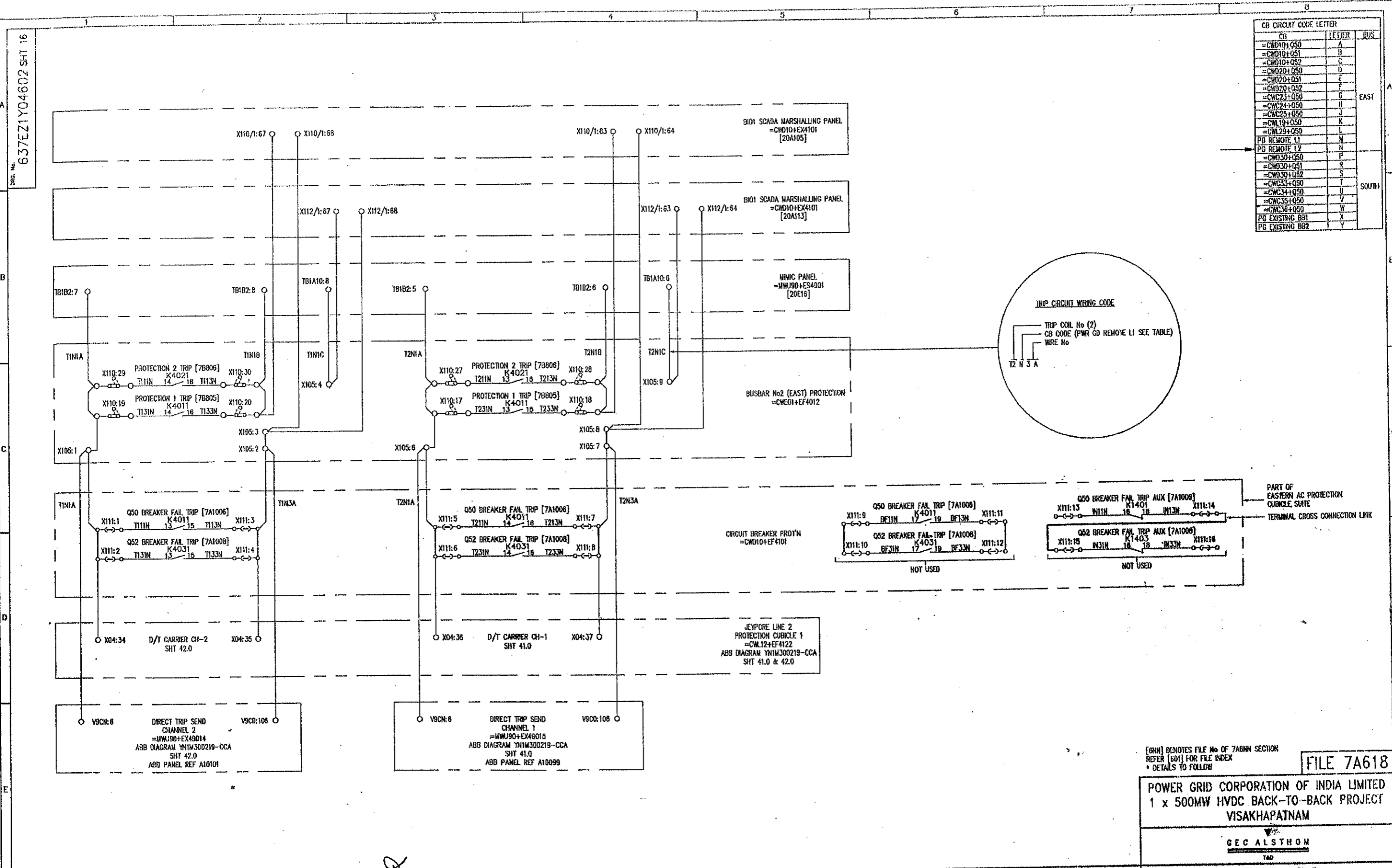
[GWH] DENOTES FILE No OF 7ABNM SECTION  
 REFER [601] FOR FILE INDEX  
 \* DETAILS TO FOLLOW

FILE 7A617

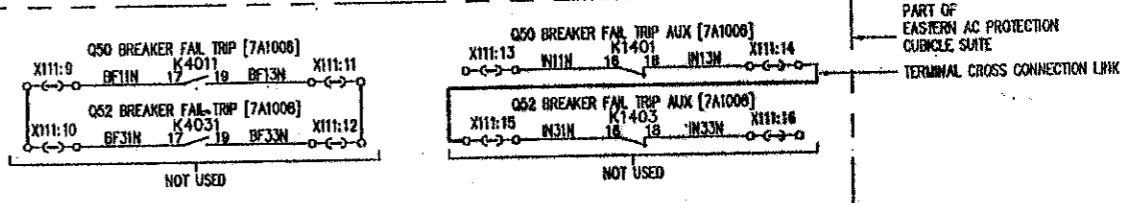
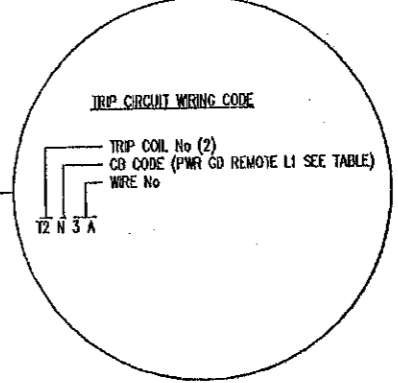
POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D  
 Power Electronic Systems Limited

C.A.D. DATA	PRJ A	PRJ B	PRJ C	PRJ D	PRJ E	AS BUILT DWG 16 MAY 2000 VISAKHAPATNAM	GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWING TO BE CORRECT UNLESS OTHERWISE STATED	FOR THE STANDARD OF ACCURACY OF ALL UNDIMENSIONED DIMENSIONS SEE SPEC. STAND/023/PROG	DRAWN JCP G/D PNS APP'D RFR SCALE TRACED DESIGN APP'D PRJ	DRG. No. 637EZ1Y04602 SHT 15	CURRENT ISSUE E
	ISSUE E	DATE 11/06/97	REMOVED TO ENBA48 & 8536- BREAKER FAIL INITIATION & INHERENT SIGNALS HAVE NOT BEEN USED. CHANGED NAME FROM TRIP COIL & 2 TO PLC PROTECTION CH1 & 2. ABB = CW020+EM200, HENKON = MW190+ES4901 & EX49011	REFER TO EACN 2545 TRIP SIGNALS NOW MARSHALLED VIA SCADA B02 07REL. TERMINAL REFS LOADED TO SCADA PANELS MIMIC PANEL & P 11	PROT CUBICLE 1 D/T CARRIER CH-1&2 WAS PLCC PROTECTION 1 & 2									



CB CIRCUIT CODE LETTER		
CB	LEADER	BUS
=CWD10+Q50	A	EAST
=CWD10+Q51	B	
=CWD10+Q52	C	
=CWD20+Q50	D	
=CWD20+Q51	E	
=CWD20+Q52	F	
=CWC23+Q50	G	
=CWC24+Q50	H	
=CWC25+Q50	J	
=CWL19+Q50	K	
=CWL29+Q50	L	
PG REMOTE L1	M	SOUTH
PG REMOTE L2	N	
=CWD30+Q50	P	
=CWD30+Q51	R	
=CWD30+Q52	S	
=CWC33+Q50	T	
=CWC34+Q50	U	
=CWC35+Q50	V	
=CWC36+Q50	W	
PG EXISTING B01	X	
PG EXISTING B02	Y	



JEYPORE LINE 2 PROTECTION CUBICLE 1  
=CW12+EF4122  
ABB DIAGRAM YN1M300219-CCA  
SHT 41.0 & 42.0

DIRECT TRIP SEND CHANNEL 2  
=MWJ90+EX46014  
ABB DIAGRAM YN1M300219-CCA  
SHT 42.0  
ABB PANEL REF A10101

DIRECT TRIP SEND CHANNEL 1  
=MWJ90+EX46015  
ABB DIAGRAM YN1M300219-CCA  
SHT 41.0  
ABB PANEL REF A10099

(GWN) DENOTES FILE No OF 7A618 SECTION  
REFER [601] FOR FILE INDEX  
\* DETAILS TO FOLLOW

FILE 7A618

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited

VISAKHAPATNAM  
CIRCUIT DIAGRAM OF  
PROTECTION SIGNALS TO REMOTE  
CIRCUIT BREAKERS JEYPORE END LINE 2

DRG. No. 637EZ1Y04602 SHT 16  
CURRENT ISSUE E

ISSUE	DATE	BY	REVISION
A	11/05/97	BTB	ISSUED FOR CONSTRUCTION
B	05/08/98	BTB	REMOVED TO ENHANCE & ADD BREAKER FAIL INITIATION & TRIP SIGNALS MADE COT NOT USED.
C	01/12/99	BTB	CHANGED NAME FROM TRIP COIL 1 & 2 TO PLC PROTECTION CH 1 & 2. ADDED =CWD10+Q50, =CWD20+Q50, =CWC23+Q50 & =CWC24+Q50.
D	02/08/99	BTB	REFER TO ECH BEZAS DIRECT TRIP SEND CHANNELS 1 & 2 - ABB PANEL REFS ADDED. EXAS014/5 WERE +EXAS012.
E	16/05/2003	BTB	REFER TO ECH BEZAS USZ WAS GST. [20016] WAS [20016]. VAD06 WAS VAD02.

**AS BUILT DWG**  
16 MAY 2003  
**VISAKHAPATNAM**

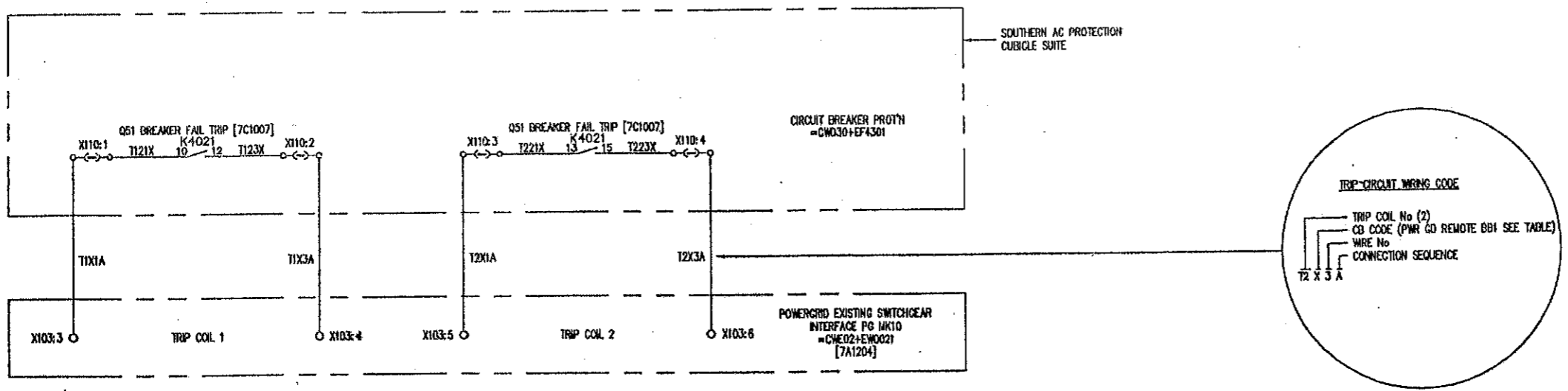
GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 9/8/97  
SIGNED BTB

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK  
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND./023/PROJ  
DO NOT SCALE PRINT

CUSTOMER POWERGRID ORDER No. CF0136

DRG. No. 637EZ1Y04602 SHT 19

CB CIRCUIT CODE LETTER		
CB	LETTER	BUS
=CW010+050	A	EAST
=CW010+051	B	
=CW010+052	C	
=CW020+050	D	
=CW020+051	E	
=CW020+052	F	
=CW030+050	G	
=CW030+051	H	
=CW030+052	I	
=CW030+053	J	
=CW030+054	K	
=CW030+055	L	
=CW030+056	M	
=CW030+057	N	
=CW030+058	O	
=CW030+059	P	
=CW030+060	Q	
=CW030+061	R	
=CW030+062	S	
=CW030+063	T	
=CW030+064	U	
=CW030+065	V	
=CW030+066	W	
=CW030+067	X	
=CW030+068	Y	
PG EXISTING BBI	X	SOUTH
PG EXISTING BB2	Y	



(GNN) DENOTES FILE No of 7A619 SECTION  
 REFER (B01) FOR FILE INDEX  
 \* DETAILS TO FOLLOW

FILE 7A619

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Bafra, Dubai

VISAKHAPATNAM  
 CIRCUIT DIAGRAM OF  
 PROTECTION SIGNALS TO  
 CIRCUIT BREAKERS, EXISTING BUSBAR 1 SOUTH

ISSUE	DATE	BY	REASON
A	11-08-97	BT	ISSUED FOR PRELIMINARY REVIEW
B	05-08-98	BT	REMOVED TO ENCLAVE - REMOVED FOR - CW030+EF4301 FAIL INITIATION & INHIBIT CLOSING
C	05-01-99	BT	CBT'S ADDED MARSHALLING KOSK
D	05-01-99	BT	REFER TO E.C.N. 8685
E	05-01-99	BT	TERMINAL REF'S ADDED TO PG MK10. FILE REF ALSO ADDED.

**AS BUILT DWG**  
 16 MAY 2003  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: B T BARRETT  
 DEPT. 739 DATE: 9/6/97  
 SIGNED: BTB

THIRD ANGLE PROJECTION  
  
 IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEECH, STAND/023/PROG

DRAWN JCP  
 CHD PNS  
 APP'D RFR  
 SCALE  
 TRACED  
 DESIGN PRJ  
 APP'D

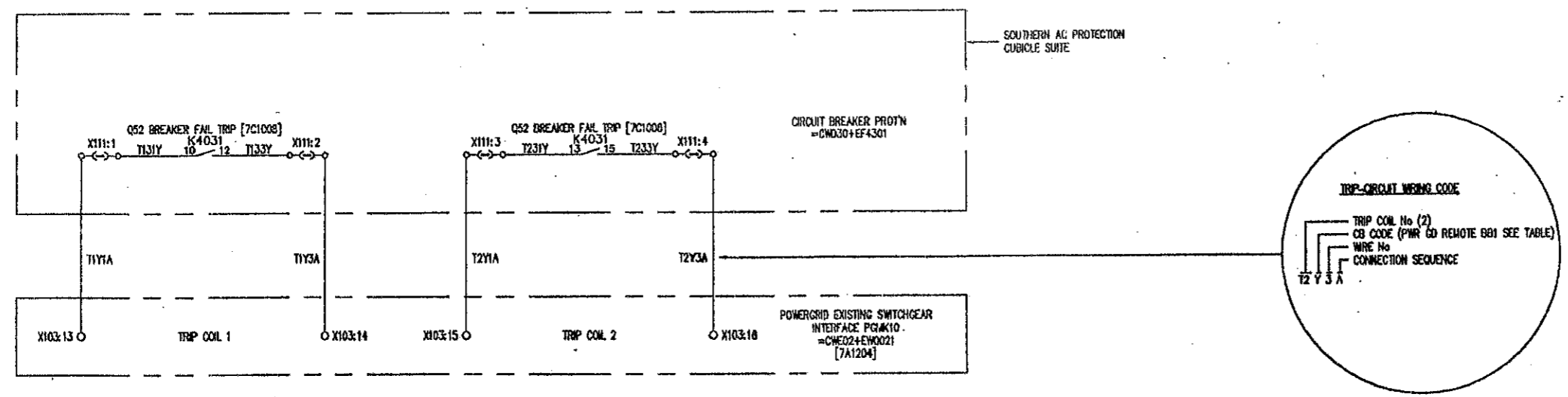
DRG. No. 637EZ1Y04602 SHT 19  
 CURRENT ISSUE B

DO NOT SCALE PRINT

CUSTOMER POWERGRID  
 ORDER No. CFO136

DRG. No. 637EZ1Y04602 SHT 20

CD CIRCUIT CODE LETTER		
CD	LETTER	BUS
=CWO10+050	A	EAST
=CWO10+051	B	
=CWO10+052	C	
=CWO20+050	D	
=CWO20+051	E	
=CWO20+052	F	
=CWC23+050	G	
=CWC24+050	H	
=CWC25+050	J	
=CWC19+050	K	
=CWC28+050	L	SOUTH
PG REMOTE 11	M	
PG REMOTE 12	N	
=CWO30+050	P	
=CWO30+051	R	
=CWO30+052	S	
=CWC34+050	T	
=CWC34+050	U	
=CWC35+050	V	
=CWC36+050	W	
PG EXISTING 881	X	
PG EXISTING 882	Y	



(8NN) DENOTES FILE No OF 766NN SECTION  
REFER [801] FOR FILE INDEX  
\* DETAILS TO FOLLOW

FILE 7A620

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

V  
GEC ALSTHOM  
T&D

ISSUE	A	PRJ	B
NAME	C	REFR	PREM
LOCATION	VISA3637	DATE	11/06/97
		DATE	05/08/98
		DATE	01/01/99

REVISION TO DRAWING -  
REMOVED FOR -CONSULTATION  
FAL INSTALLATION & MOUNTING CLIPPING  
CUTS ADDED MARSHALLING HOSE

REFER TO EACH ISSUE  
TERMINAL REF'S ADDED TO PG  
WIRING ALSO FILE REF ADDED

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE

NAME: B T BARRETT  
DEPT: 738 DATE: 8/8/97  
SIGNED: BTB

THIRD ANGLE  
PROJECTION

ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED

DRAWING TO DESIG  
UNLESS OTHERWISE STATED

FOR THE STANDARD OF  
ACCURACY OF ALL  
DIMENSIONS SEE  
SPEC. STAND/023/PROG

IF IN DOUBT  
ASK

DRAWN JCP  
CHKD PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN APP'D PRJ

TITLE  
VISAKHAPATNAM  
CIRCUIT DIAGRAM OF  
PROTECTION SIGNALS TO  
CIRCUIT BREAKERS, EXISTING BUSBAR 2 SOUTH

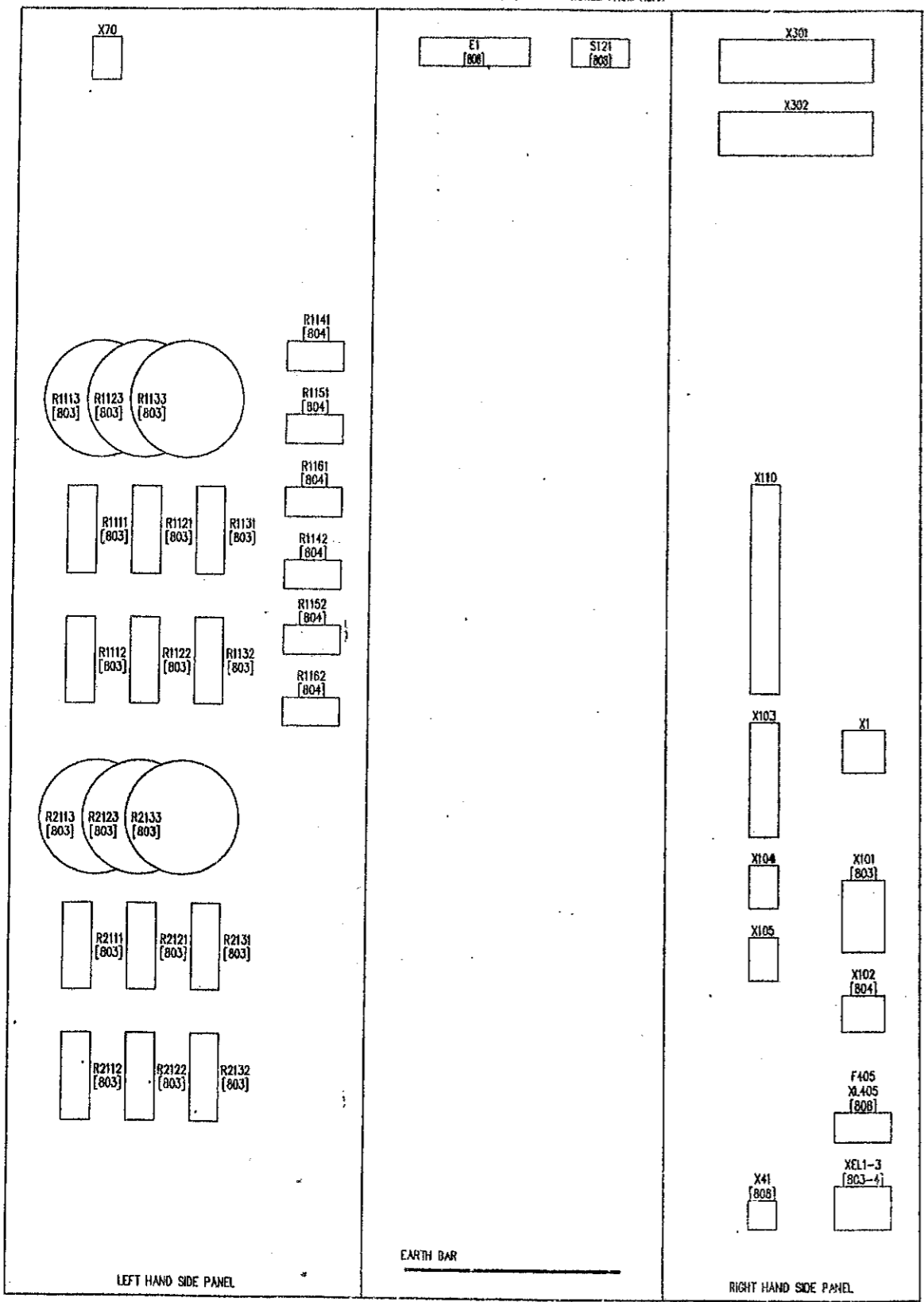
DRG. No.  
637EZ1Y04602 SHT 20

CURRENT  
ISSUE  
C

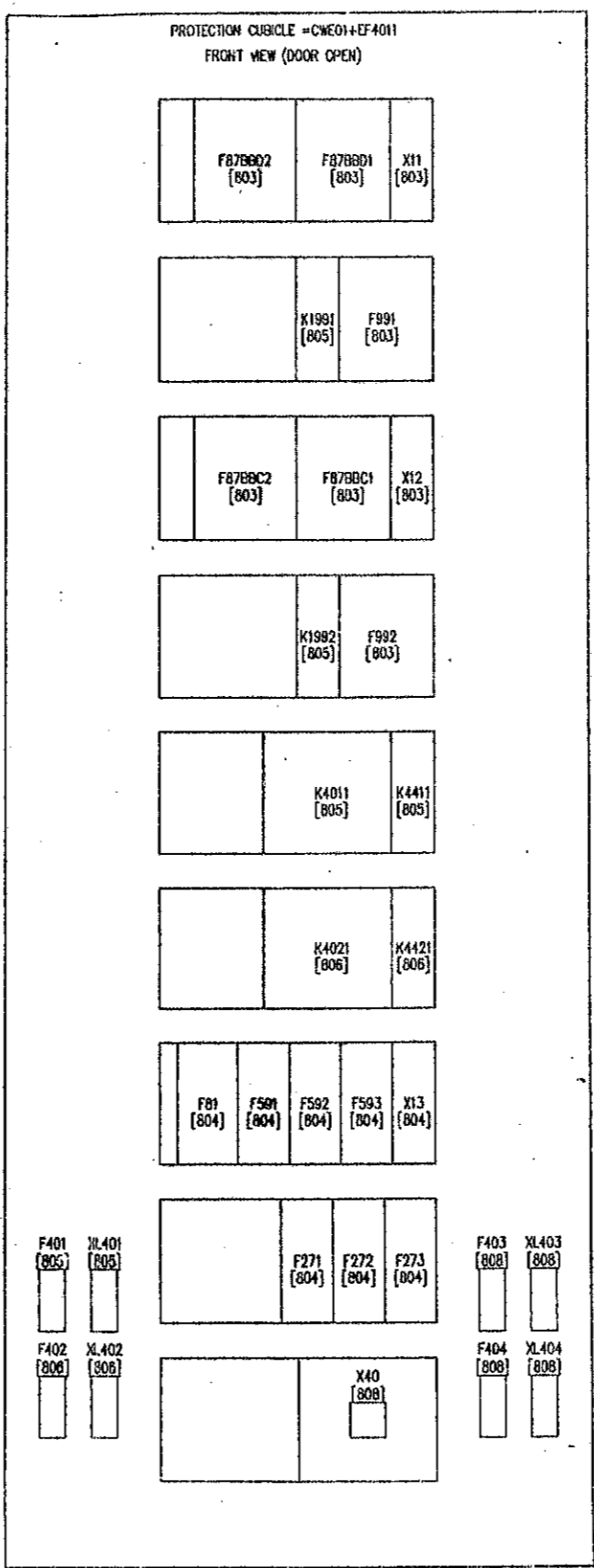


Dwg. No. 637EZ1Y04584 SHT 2

EQUIPMENT LOCATED INSIDE CUBICLE VIEWED FROM REAR



PROTECTION CUBICLE = CWC01+EF401  
FRONT VIEW (DOOR OPEN)



DEVICE REF	DESCRIPTION	TYPE
F878B02	DISCRIMINATING ZONE CIRCULATING CURRENT RELAY	GECA MCAG34
F878B01	DISCRIMINATING ZONE CIRCULATING CURRENT RELAY	GECA MCAG34
X11	DISCRIMINATING ZONE RELAY TEST BLOCK	GECA MMLG01
K1991	DISCRIMINATING ZONE BUSWIRE SUPERVISION AUXILIARY RELAY	GECA MVA411
F991	DISCRIMINATING ZONE BUSWIRE SUPERVISION RELAY	GECA MVIP31
F878B02	CHECK ZONE CIRCULATING CURRENT RELAY	GECA MCAG34
F878B01	CHECK ZONE CIRCULATING CURRENT RELAY	GECA MCAG34
X12	CHECK ZONE RELAY TEST BLOCK	GECA MMLG01
K1992	CHECK ZONE BUSWIRE SUPERVISION AUXILIARY RELAY	GECA MVA411
F992	CHECK ZONE BUSWIRE SUPERVISION RELAY	GECA MVIP31
K4011	PROTECTION NO.1 TRIP RELAY	GECA MVA453
K4411	PROTECTION SUPPLY NO.1 SUPERVISION RELAY	GECA MVA412
K4021	PROTECTION NO.2 TRIP RELAY	GECA MVA453
K4421	PROTECTION SUPPLY NO.2 SUPERVISION RELAY	GECA MVA412
F81	OVER/UNDER FREQUENCY RELAY	GECA MFA121
F591	OVER VOLTAGE RELAY RED/YELLOW PHASE	GECA MVU12
F592	OVER VOLTAGE RELAY YELLOW/BLUE PHASE	GECA MVU12
F593	OVER VOLTAGE RELAY BLUE/RED PHASE	GECA MVU12
X13	OVER/UNDER FREQUENCY RELAY TEST BLOCK	GECA MMLG01
F271	UNDER VOLTAGE RELAY RED/YELLOW PHASE	GECA MVU11
F272	UNDER VOLTAGE RELAY YELLOW/BLUE PHASE	GECA MVU11
F273	UNDER VOLTAGE RELAY BLUE/RED PHASE	GECA MVU11
E1	CUBICLE LIGHTING	
F401	FUSE AND HOLDER 10A, PROTECTION SUPPLY No. 1, 48Vdc.	GECA SC32P
X401	LINK AND HOLDER	GECA SC32P
F402	FUSE AND HOLDER 10A, PROTECTION SUPPLY No. 2, 48Vdc.	GECA SC32P
X402	LINK AND HOLDER	GECA SC32P
F403	FUSE AND HOLDER, 2A, CUBICLE LIGHTING SUPPLY, 240V, 50HZ.	GECA SC32P
X403	LINK AND HOLDER	GECA SC32P
F404	FUSE AND HOLDER, 16A, SUPPLY FOR TEST EQUIPMENT 16A SOCKET, 240V, 50HZ.	GECA SC32P
X404	LINK AND HOLDER	GECA SC32P
F405	FUSE AND HOLDER, 2A, FOR HAND LAMP SUPPLY 16A SOCKET, 240V, 50HZ.	WEIDMULLER KSK3F
X405	LINK AND HOLDER	WEIDMULLER KSK3F
R1111,R1121,R1131,	SETTING RESISTOR FOR RELAY F878B01 (0-5.6K Ohm)	WELWYN VHI609
R1112,R1122,R1132,	SETTING RESISTOR FOR RELAY F878B02 (0-5.6K Ohm)	WELWYN VHI609
R2111,R2121,R2131	SETTING RESISTOR FOR RELAY F878B01 (0-5.6K Ohm)	WELWYN VHI609
R2112,R2122,R2132	SETTING RESISTOR FOR RELAY F878B02 (0-5.6K Ohm)	WELWYN VHI609
R1113,R1123,R1133,	METROSIL RESISTOR FOR DISCRIMINATING ZONE RELAY F878B02	GECA TYPE 600A
R2113,R2123,R2133	METROSIL RESISTOR FOR CHECK ZONE RELAY F878B02	GECA TYPE 600A
R1141	220 OHM EXTERNAL RESISTOR FOR RELAY F591	SUPPLIED WITH RELAY
R1142	220 OHM EXTERNAL RESISTOR FOR RELAY F271	SUPPLIED WITH RELAY
R1181	220 OHM EXTERNAL RESISTOR FOR RELAY F592	SUPPLIED WITH RELAY
R1182	220 OHM EXTERNAL RESISTOR FOR RELAY F272	SUPPLIED WITH RELAY
R1161	220 OHM EXTERNAL RESISTOR FOR RELAY F593	SUPPLIED WITH RELAY
R1182	220 OHM EXTERNAL RESISTOR FOR RELAY F273	SUPPLIED WITH RELAY
S121	CUBICLE LIGHTING DOOR SWITCH	
X1	48VDC SUPPLY TERMINALS	WEIDMULLER RSF1
X70	240VAC SUPPLY TERMINALS	WEIDMULLER SAK6H
X101	CT INPUT TERMINALS	WEIDMULLER RSF1
X102	VT INPUT TERMINALS	WEIDMULLER RSF2
X103	SEQUENCE OF EVENTS RECORDER TERMINALS	WEIDMULLER SAKR
X104	BACK UP ANNUNCIATOR TERMINALS	WEIDMULLER SAKR
X105	JEPPORE LINE 1 REMOTE TERMINALS	WEIDMULLER RSF1
X110	SPARE RELAY CONTACTS TERMINALS	WEIDMULLER SAKR
X301	BUSWIRE TERMINALS (PROTECTION 1)	WEIDMULLER RSF2
X302	BUSWIRE TERMINALS (PROTECTION 2)	WEIDMULLER RSF2
X40	TEST EQUIPMENT SWITCHED SOCKET	
X41	HAND LAMP SWITCHED SOCKET	
XEL1-3	EARTH LINK FOR PROTECTION RELAYS	KUPPON STL5

NOTES:  
 [7ANN] DENOTES FILE NO OF 7ANN SECTION  
 REFER [801] FOR FILE INDEX  
 REFER [802] FOR LOCATION AND DEVICE LIST  
 [7ANN] DENOTES FILE NO OF 7ANN SECTION

ISSUE	DATE	BY	REVISION
E	10/02	JCP	REVISED TO EGN291 - VT FUSES DELETED & X101(2) REPOSITIONED F(X)Y05 SHOWN IN CUBICLE INTERIOR
	06/06	JCP	REVISED TO EGN376 - X105,67 DELETED & X101(2) REPOSITIONED
	02/09	JCP	REVISED TO EGN484 & 8536 - ADDED X105 REMOVED VALUE OF 4220 OHM FROM SETTING RESISTORS.
	08/08	JCP	REVISED TO EGN484 & 8536 - ADDED X105 REMOVED VALUE OF 4220 OHM FROM SETTING RESISTORS.
	08/08	JCP	REVISED TO EGN484 & 8536 - ADDED X105 REMOVED VALUE OF 4220 OHM FROM SETTING RESISTORS.
	08/98	JCP	REVISED TO EGN484 & 8536 - ADDED X105 REMOVED VALUE OF 4220 OHM FROM SETTING RESISTORS.

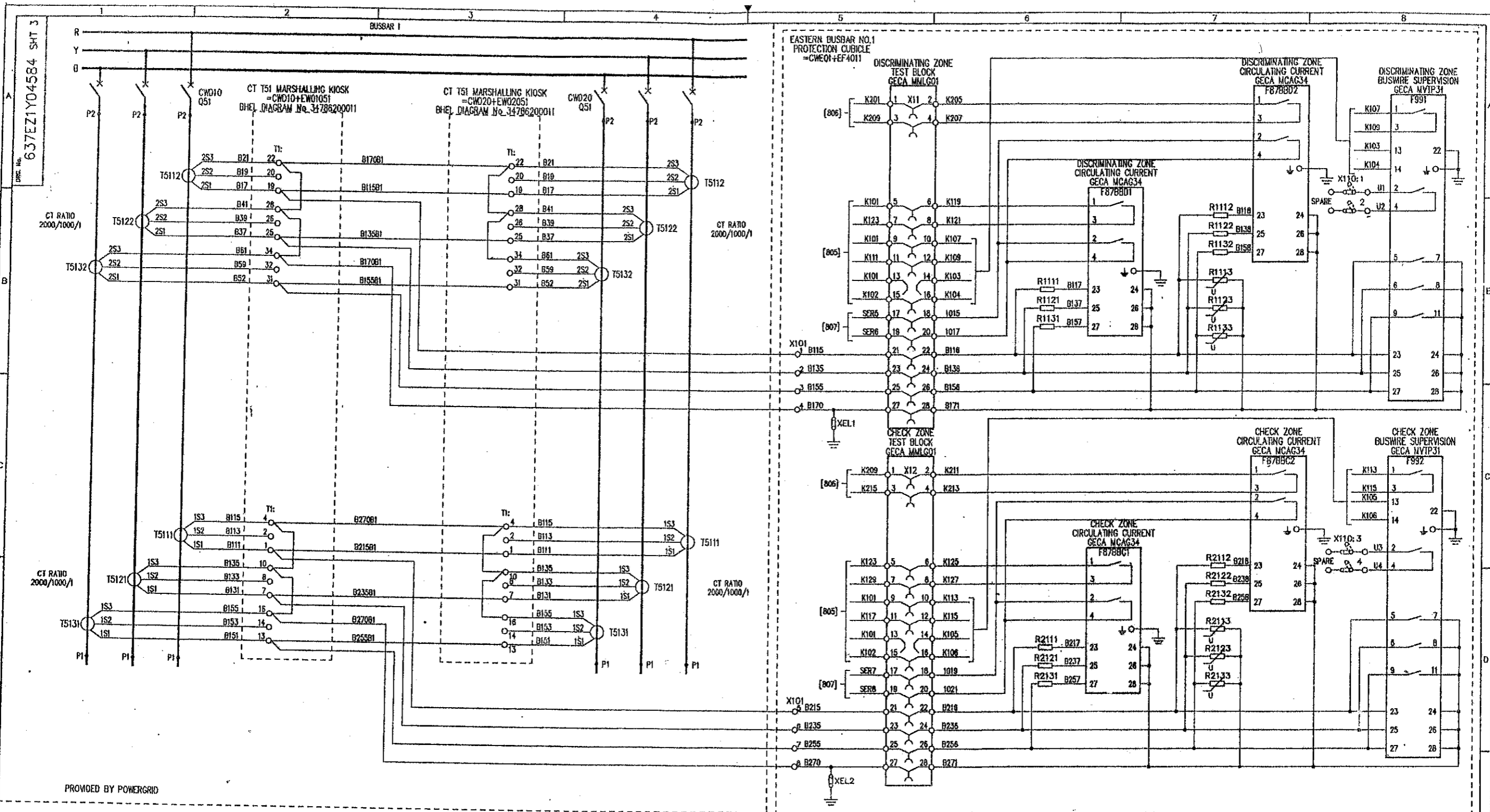
**AS BUILT DWG**  
 16 MAY 2000  
**VISAKHAPATNAM**

GEC ALSTHOM LTD  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: N.M. KIRBY  
 DEPT. 736 DATE: 24/01/97  
 SIGNED: NMK

THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECS. STAND. 003/PROC

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM  
**GEC ALSTHOM**  
 T&D  
**GEC ALSTHOM T&D**  
 Power Electronic Systems Limited  
 Slough, England  
 TITLE: VISAKHAPATNAM BUSBAR NO.1 (EAST) PROTECTION CUBICLE = CWC01+EF4011 EQUIPMENT LOCATION AND DEVICE LIST  
 DRG. No. 637EZ1Y04584 SHT 2  
 CURRENT ISSUE: E

FILE 7A802



NOTES:  
 [800] DENOTES FILE NO OF 7800 SECTION  
 REFER [801] FOR FILE INDEX  
 REFER [802] FOR LOCATION AND DEVICE LIST  
 [7800] DENOTES FILE NO OF 7800 SECTION

ISSUE	DATE	BY	REVISION
A	31/10/96	MDH	ISSUE
B	12/02/97	MDH	NOTE ADDED RE MARSHALLING KIOSK EARTH LINKS CT TERMINALS RENUMBERED COMMON WAS 22 ADDITIONAL TERMINALS SHOWN & WIRE NUMBERS CHANGED AS CONFIRMED IN VISAKHAPATNAM TITLE BLOCK ABOVE.
C	08/08/97	JCP	REVISED TO E080251 - WIRE SUPTX BT ADDED TO CIRCUITS BETWEEN MARSHG KIOSKS & WIRE SUPTX NOTE ADDED.
D	08/08/97	JCP	REVISED TO E080251 - EARTH ADDED TO TERMINAL 22 OF MVIP31
E	12/08/98	FR	REVISED TO E080251 - CHANGED CT RATIO TO 2000/1000/1 ADDED TERMINAL NUMBERS
F	15/01/99	JCP	REVISED TO E080251 - CT RATIO WAS '2015' - 2 PLACES.
G	16/05/2000	NMK	REVISED TO E080251 - CT RATIOS ADDED (4 PLACES).

**AS BUILT DWG**  
 16 MAY 2000

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR  
 MANUFACTURE  
 NAME: N.M.KIRBY  
 DEPT. 738 DATE: 22/10/98  
 SIGNED: NMK

THIRD ANGLE  
 PROJECTION  
 ALL DIMENSIONS  
 IN MILLIMETRES  
 UNLESS OTHERWISE STATED  
 DRAWINGS TO BS308  
 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF  
 ACCURACY OF ALL  
 UNTOLERANCED DIMENSIONS  
 SEE SPECS. STABD/022/PROG

DRAWN: MDH  
 CHD: PNS  
 APP'D: RFR  
 SCALE:  
 TRACED:  
 DESIGNED: PRJ  
 APP'D:  
 TITLE: VISAKHAPATNAM  
 BUSBAR NO.1 (EAST) PROTECTION  
 CUBICLE =CWE01+EF4011  
 AC CIRCUITS  
 DRG. No. 637EZ1Y04584 SHT 3  
 CURRENT ISSUE: G

FILE 7A803

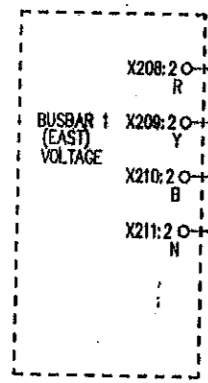
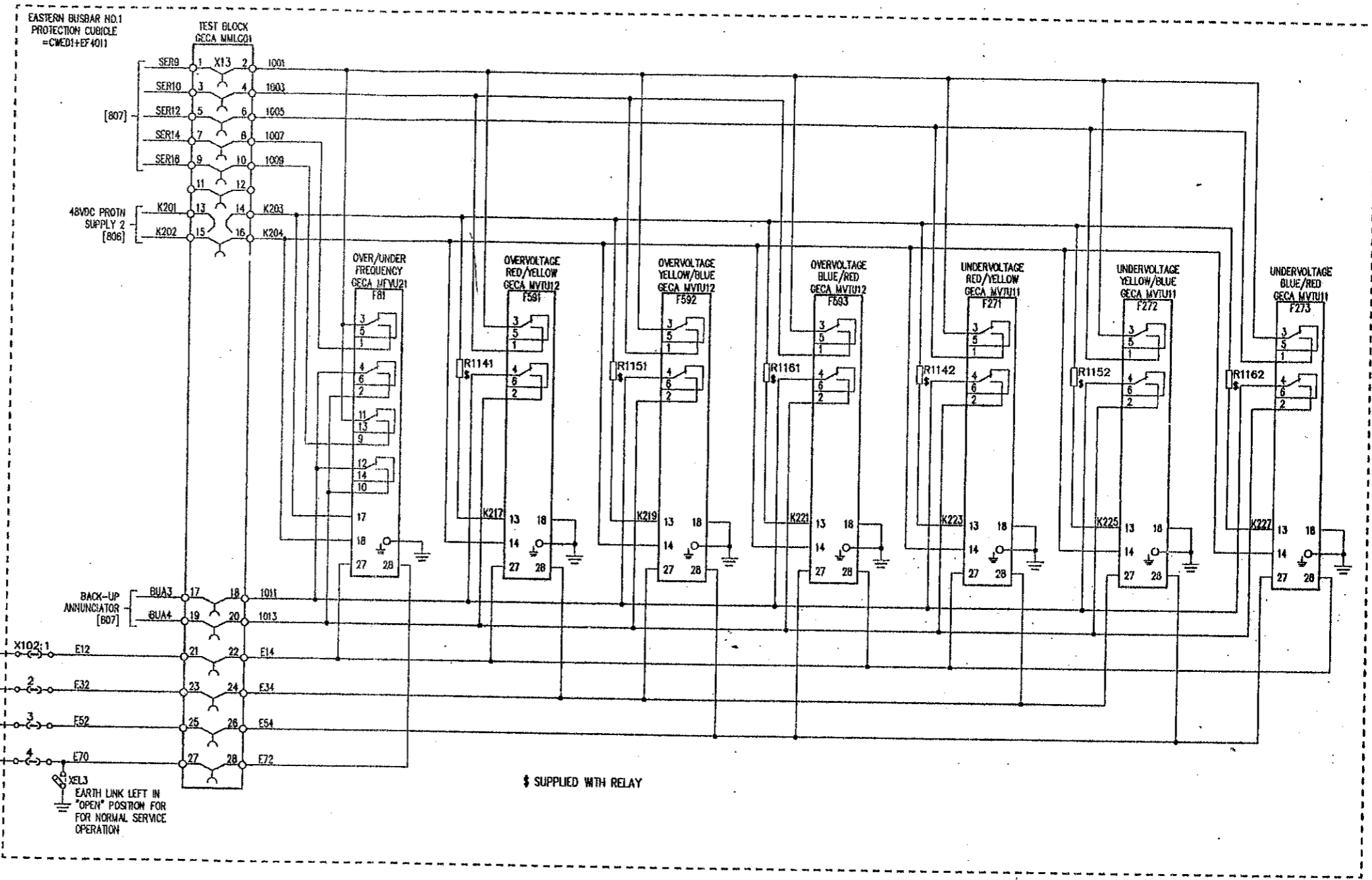
POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Shaftesbury, England

CUSTOMER: POWERGRID  
 ORDER No. CF0136

DRG. No. 637EZ1Y04584 SHT 4



SCADA MARSHALLING  
=MWU90+EX4901  
[200300]

\* DENOTES WIRE SUFFIX B1  
(AT SCADA MARSHALLING CUBICLE END ONLY)

§ SUPPLIED WITH RELAY

NOTES:  
[8NN] DENOTES FILE NO OF 7ANN SECTION  
REFER [801] FOR FILE INDEX  
REFER [802] FOR LOCATION AND DEVICE LIST  
[7ANN] DENOTES FILE NO OF 7ANN SECTION

FILE 7A804

POWER GRID CORPORATION OF INDIA LIMITED 1 x 500MW HVDC BACK-TO-BACK PROJECT VISAKHAPATNAM	
GEC ALSTHOM T&D	
GEC ALSTHOM T&D Power Electronic Systems Limited <i>Sharnford, England</i>	
TITLE VISAKHAPATNAM BUSBAR NO.1 (EAST) PROTECTION CUBICLE =CWE01+EF4011 AC CIRCUITS	
DRG. No. 637EZ1Y04584 SHT 4	CURRENT ISSUE F
ORDER No. CF0138	

AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE	THIRD ANGLE PROJECTION 	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  DRAWING TO BS308 UNLESS OTHERWISE STATED  FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROD	DRAWN MDH CHKD PNS APP'D RFR SCALE TRACED DESIGN APP'D PRJ
NAME N.M.KIRBY	IF IN DOUBT ASK		
DEPT. 736	DATE. 22/10/96		
SIGNED NMK			

ISSUE	A	B	C	D	E
NAME					
LOCATION					
VISA3675					

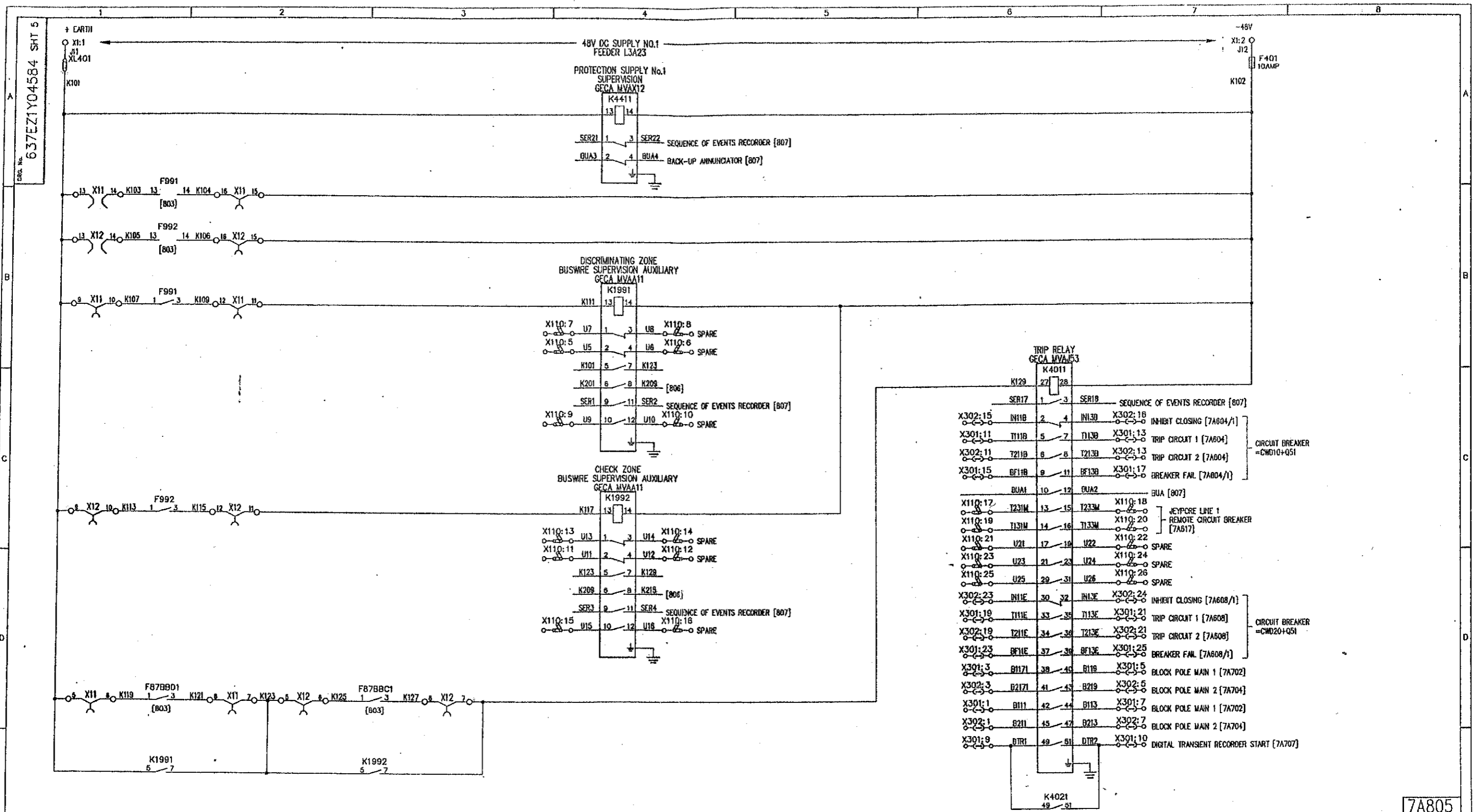
PRJ	PRJ	PRJ	PRJ	PRJ
A	B	C	D	E
ISSUE	PNS	JCP	PNS	RFR
DATE	MDH	JCP	JCP	PREM
31	10	02	08	12
10	02	06	08	08
96	97	97	97	98

WIRE NUMBERS 127-227 ADDED TO OVER & UNDERVOLTAGE RELAYS. VISAKHAPATNAM TITLE BLOCK ADDED.	REVISION TO TERMINAL 18 OF MWU111 ALSO EDMS332-88 VT & MARSHG BOX DELETED. SCADA MARSHG ADDED.	REVISION TO TERMINAL 18 OF MWU111 ALSO EDMS332-88 VT & MARSHG BOX DELETED. SCADA MARSHG ADDED.	REVISION TO TERMINAL 18 OF MWU111 ALSO EDMS332-88 VT & MARSHG BOX DELETED. SCADA MARSHG ADDED.	REVISION TO TERMINAL 18 OF MWU111 ALSO EDMS332-88 VT & MARSHG BOX DELETED. SCADA MARSHG ADDED.	REVISION TO TERMINAL 18 OF MWU111 ALSO EDMS332-88 VT & MARSHG BOX DELETED. SCADA MARSHG ADDED.	REVISION TO TERMINAL 18 OF MWU111 ALSO EDMS332-88 VT & MARSHG BOX DELETED. SCADA MARSHG ADDED.	REVISION TO TERMINAL 18 OF MWU111 ALSO EDMS332-88 VT & MARSHG BOX DELETED. SCADA MARSHG ADDED.	REVISION TO TERMINAL 18 OF MWU111 ALSO EDMS332-88 VT & MARSHG BOX DELETED. SCADA MARSHG ADDED.	REVISION TO TERMINAL 18 OF MWU111 ALSO EDMS332-88 VT & MARSHG BOX DELETED. SCADA MARSHG ADDED.
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DO NOT SCALE PRINT

CUSTOMER POWERGRID



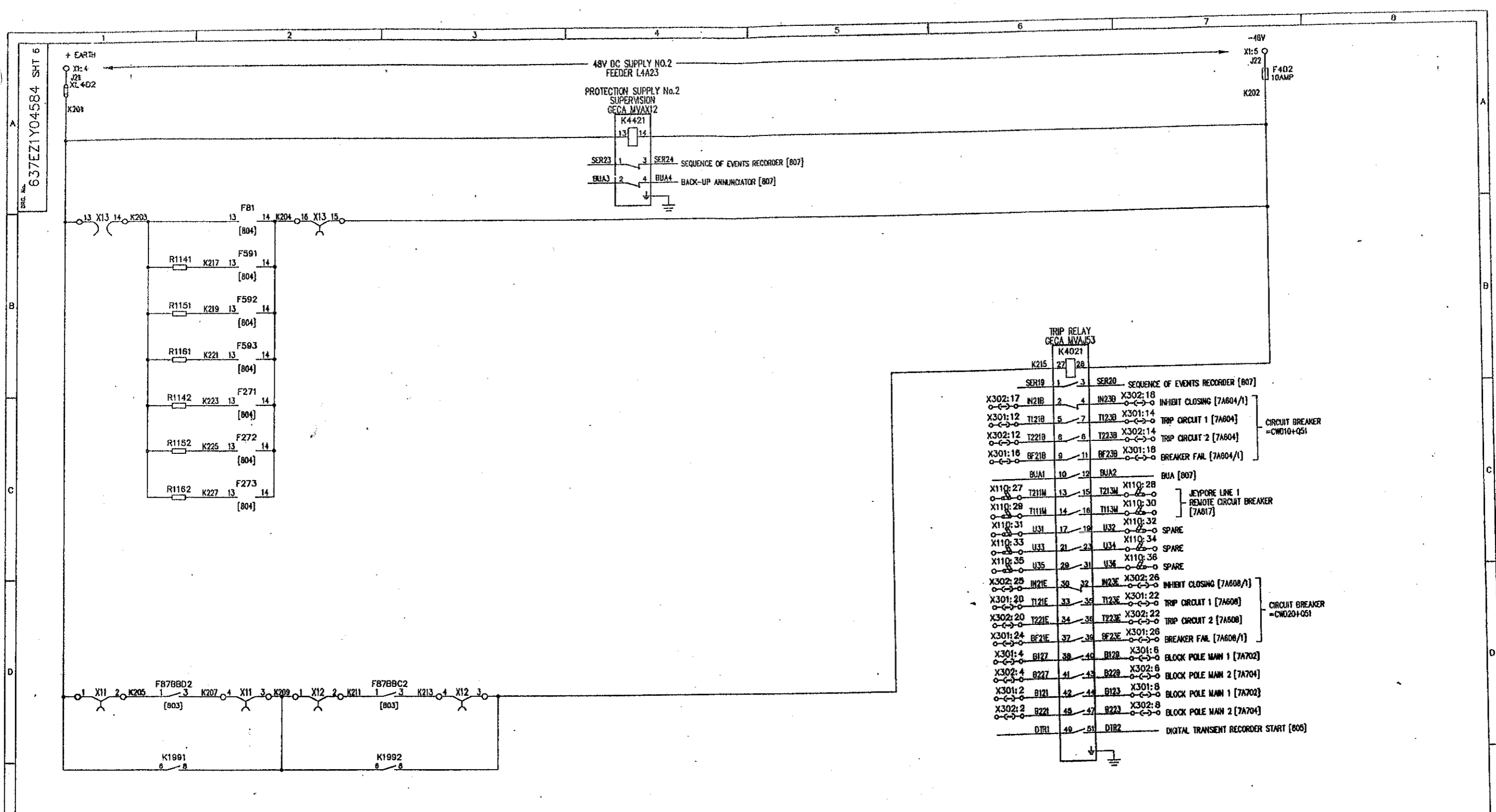
NOTES:  
 [800] DENOTES FILE NO OF 7A800 SECTION  
 REFER [801] FOR FILE INDEX  
 REFER [802] FOR LOCATION AND DEVICE LIST  
 [7A800] DENOTES FILE NO OF 7A800 SECTION

**7A805**

**POWER GRID CORPORATION OF INDIA LIMITED**  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

**GEC ALSTHOM**  
 T&D

C.A.D. DATA ISSUE F NAME 637EZ1Y04584 LOCATION VISA2195	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>PRJ A</th> <th>PRJ B</th> <th>PRJ C</th> <th>PRJ D</th> <th>PRJ E</th> <th>MF</th> </tr> <tr> <td>ISSUE</td> <td>PNS MDH</td> <td>JCP</td> <td>JCP</td> <td>JCP</td> <td>JCP</td> </tr> <tr> <td>DATE 31/10/96</td> <td>10/02/97</td> <td>02/06/97</td> <td>08/08/97</td> <td>08/08/97</td> <td>15/10/97</td> </tr> </table>	PRJ A	PRJ B	PRJ C	PRJ D	PRJ E	MF	ISSUE	PNS MDH	JCP	JCP	JCP	JCP	DATE 31/10/96	10/02/97	02/06/97	08/08/97	08/08/97	15/10/97	DETAILS OF BUSWIRE TERMINALS REVISIONS TO THIS DRAWING NO. DATE BY 1 10/02/97 [801] AS PER [802] 2 02/06/97 [801] AS PER [802] 3 08/08/97 [801] AS PER [802] 4 08/08/97 [801] AS PER [802] 5 15/10/97 [801] AS PER [802]	AS BUILT DWG 16 MAY 2000 VISAKHAPATNAM	GEC ALSTHOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE NAME: N.M.KIRBY DEPT: 736 DATE: 22/10/96 SIGNED: NMK	THIRD ANGLE PROJECTION ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED DRAWING TO BS308 UNLESS OTHERWISE STATED FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND./223/PROC	DRAWN: MDH CHTD: PNS APP'D: RFR TRACED: DESIGN: PRJ APP'D:	GEC ALSTHOM T&D Power Electronic Systems Limited VISAKHAPATNAM BUSBAR NO.1 (EAST) PROTECTION CUBICLE - CWC01-EF4011 DC CIRCUITS (PROTECTION SYSTEM 1) DRG. No. 637EZ1Y04584 SHT 5 CURRENT ISSUE F
PRJ A	PRJ B	PRJ C	PRJ D	PRJ E	MF																				
ISSUE	PNS MDH	JCP	JCP	JCP	JCP																				
DATE 31/10/96	10/02/97	02/06/97	08/08/97	08/08/97	15/10/97																				
DO NOT SCALE PRINT							CUSTOMER POWERGRID	ORDER No. CP0136																	



NOTES:  
 [BNN] DENOTES FILE NO OF 7ANN SECTION  
 REFER [809] FOR FILE INDEX  
 REFER [802] FOR LOCATION AND DEVICE LIST  
 [7ANN] DENOTES FILE NO OF 7ANN SECTION

G.A.D. DATA	PRJ	PRJ	PRJ	REVISIONS
	A	B	C	
ISSUE	DATE	ISSUE	DATE	BY
D	31	10	02	PREM
NAME	10	02	08	98
637EZ1Y04584	96	97	97	98
LOCATION	VISA2194			

DETAILS OF BUSHING TERMINALS:  
 1. ALL BUSHING TERMINALS IN THIS DRAWING ARE TO BE PROVIDED WITH THE FOLLOWING SPECIFICATIONS:  
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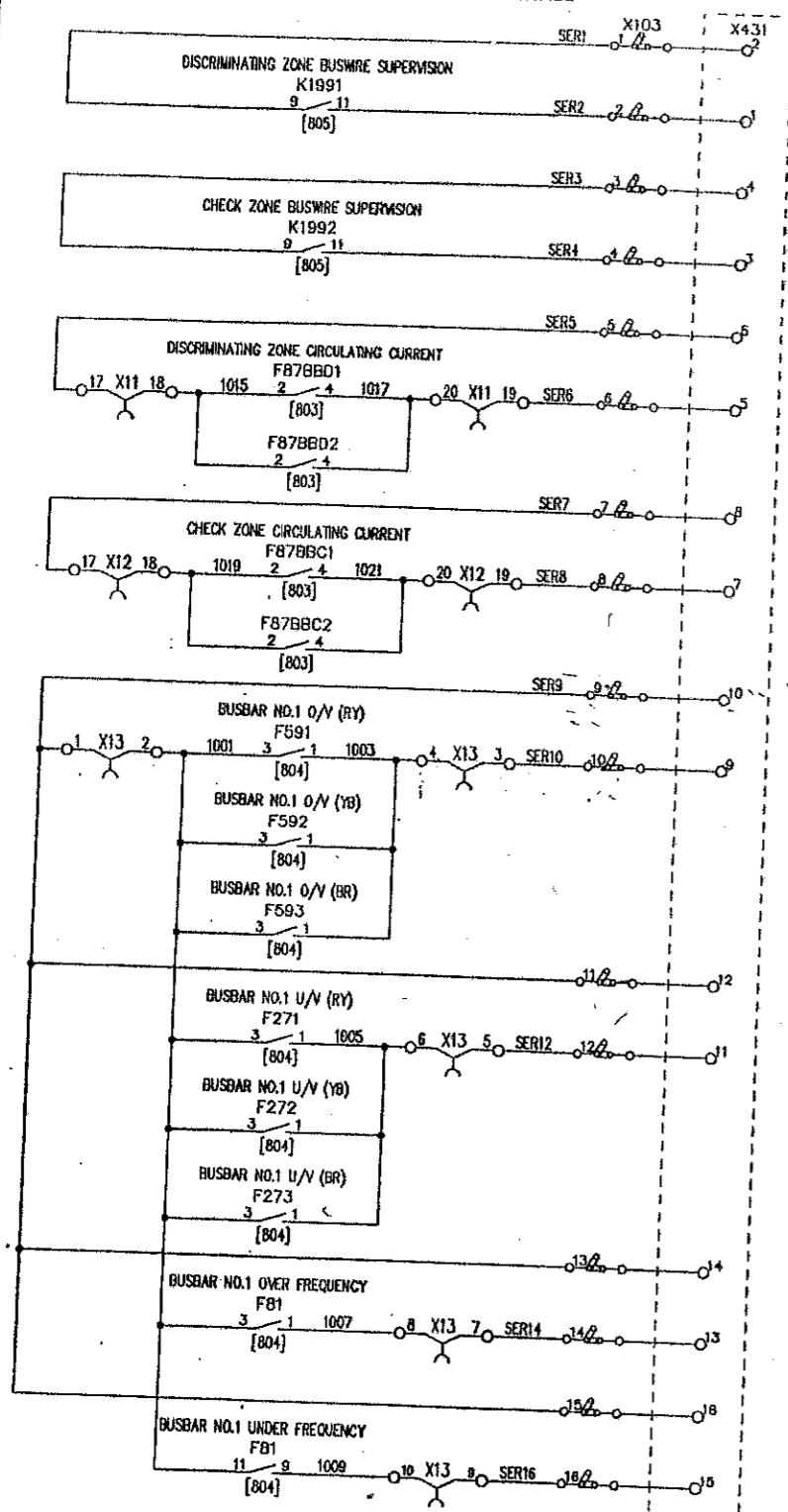
**AS BUILT DWG**  
 16 MAY 2000  
**VISAKHAPATNAM**

GEC ALSTHOM TAB Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE		THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN MDH
NAME: N.M.KIRBY	DEPT. 736	DATE: 22/10/96	IF IN DOUBT ASK	APP'D RFR
SIGNED NMK	FOR THE STANDARD OF ACCURACY OF ALL UNTOLENCED DIMENSIONS SEE SPECIAL STAND/013/PROC			SCALE
DO NOT SCALE PRINT				TRACED
DESIGN PRJ				DRG. No. 637EZ1Y04584 SHT 6
CURRENT ISSUE D				CUSTOMER POWERGRID

7A806  
**POWER GRID CORPORATION OF INDIA LIMITED**  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM  
**GEC ALSTHOM**  
 T&D  
**GEC ALSTHOM T&D**  
 Power Electronic Systems Limited  
 Vishakhapatnam  
**VISAKHAPATNAM**  
 BUSBAR NO.1 (EAST) PROTECTION  
 CUBICLE -CWE01-EF4011  
 DC CIRCUITS (PROTECTION SYSTEM 2)  
 DRG. No. 637EZ1Y04584 SHT 6  
 CURRENT ISSUE D  
 WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
 ORDER No. CP0136

Dwg. No. 637EZ1Y04584 SHT

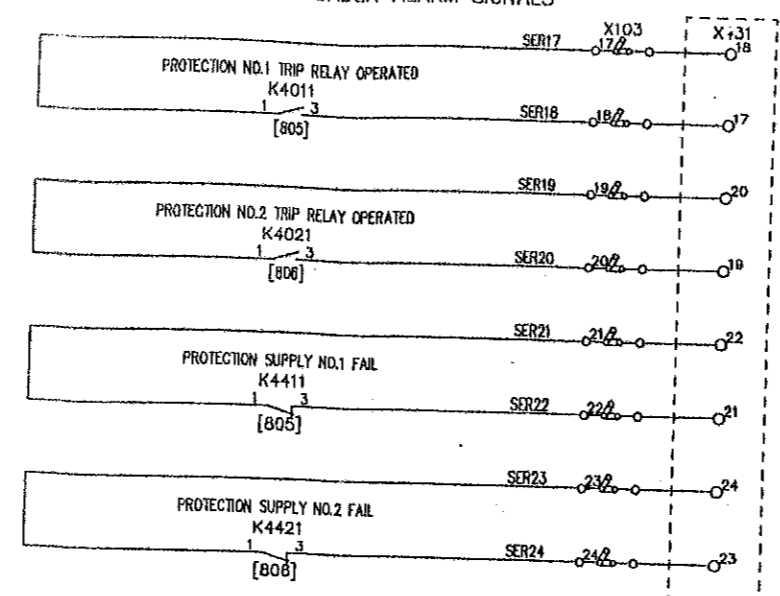
SEQUENCE OF EVENTS RECORDER ALARM SIGNALS



=MMWU0+EX4901  
SCADA MARSHALLING  
[200111]

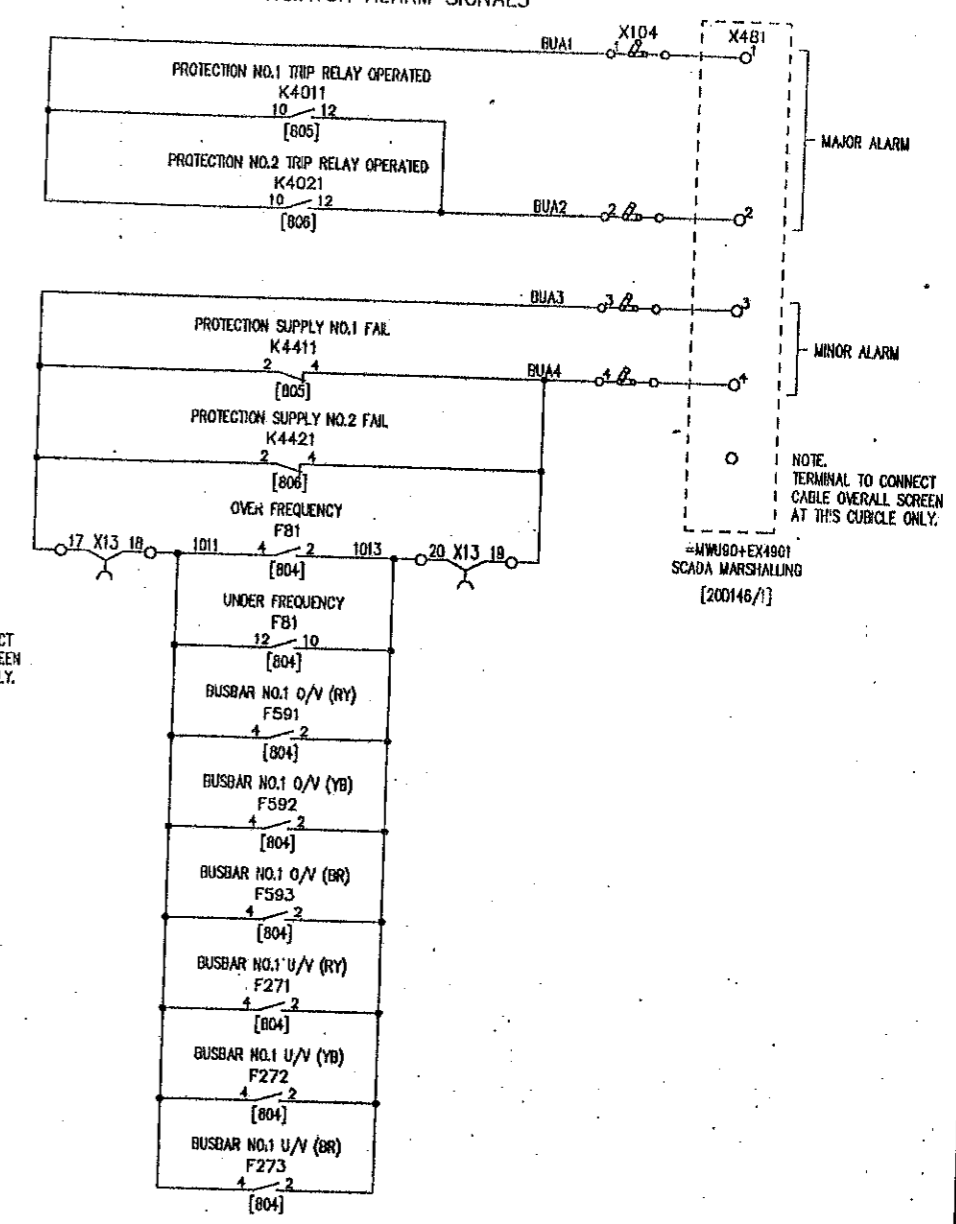
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REFER [B01] FOR FILE INDEX  
REFER [B02] FOR LOCATION AND DEVICE LIST  
[7ANNH] DENOTES FILE NO OF 7ANNH SECTION

SEQUENCE OF EVENTS RECORDER ALARM SIGNALS



NOTE:  
TERMINAL TO CONNECT  
CABLE OVERALL SCREEN  
AT THIS CUBICLE ONLY.  
=MMWU0+EX4901  
SCADA MARSHALLING  
[200111]

BACK-UP ANNUNCIATOR ALARM SIGNALS



NOTE:  
TERMINAL TO CONNECT  
CABLE OVERALL SCREEN  
AT THIS CUBICLE ONLY.  
=MMWU0+EX4901  
SCADA MARSHALLING  
[200146/1]

ISSUE	DATE	BY	REVISION
G	31/10/96	A	CONTACTS K4011 & K4021 WERE SWAPPED IN ORDER TO CORRECT CONTACTS MOUNTING WERE TERM Nos 45 & 47 AS ECN022 WERE FROM COMMON AT X103, X1315 VISAKHAPATNAM TITLE BLOCK ADDED.
	02/06/97	C	REVISED TO ECN021 - SCADA MARSHALLING DETAILS ADDED.
	08/08/97	D	REVISED TO ECN024 - PHASE DETAILS OF F81 & F27 RELAYS CORRECTED.
	15/10/97	E	REVISED TO ECN025 - X431 TERMINAL NUMBERS CHANGED.
	12/08/98	F	REVISED TO ECN026 - X431 TERMINAL NUMBERS CHANGED. FILES REF 200111 AND 200146/1 WERE 204.
	01/01/99	G	REVISED TO ECN027 - X431 TERMINAL NUMBERS CHANGED. FILES REF 200111 AND 200146/1 WERE 204.

**AS BUILT DWG**  
16 MAY 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE  
NAME: N.M.KIRBY  
DEPT: 738 DATE: 22/10/98  
SIGNED: NMK

THIRD ANGLE  
PROJECTION  
ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED  
DRAWING TO BS308  
UNLESS OTHERWISE STATED  
FOR THE STANDARD OF  
ACCURACY OF ALL  
DIMENSIONS  
SEE SPECN. STAND/023/PROG

DRAWN MDH  
CHKD PNS  
APPRD RFR  
SCALE  
TRACED  
DESIGN PRJ  
APPRD

FILE 7A807

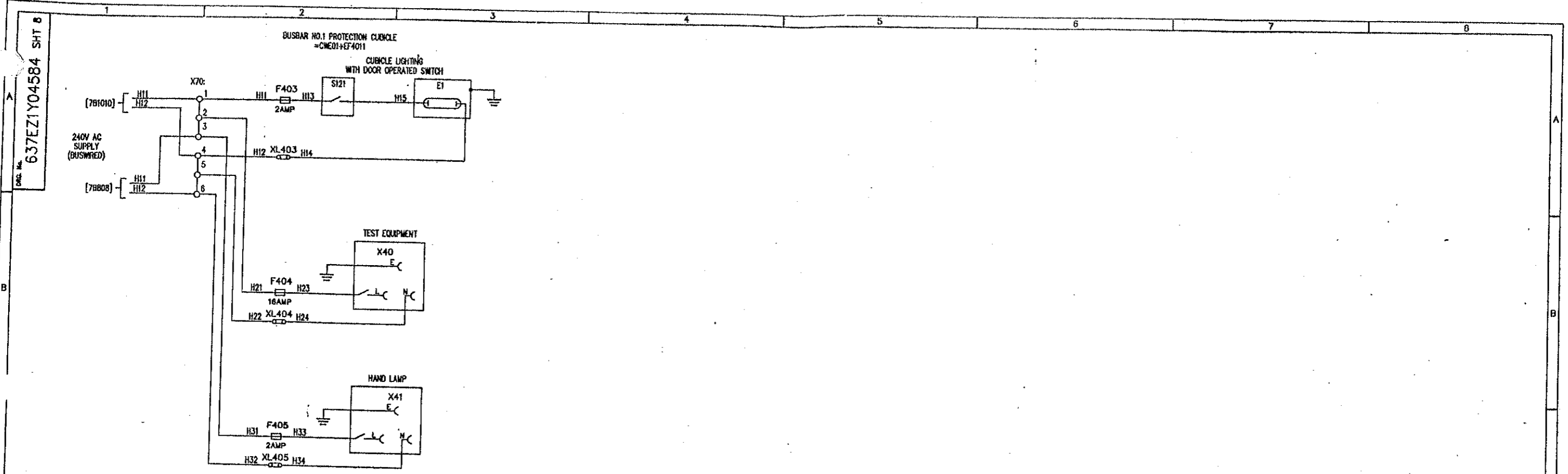
**POWER GRID CORPORATION OF INDIA LIMITED**  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

**GEC ALSTHOM**  
T&D  
**Power Electronic Systems Limited**  
Stafford, England

**VISAKHAPATNAM**  
BUSBAR NO.1 (EAST) PROTECTION  
CUBICLE =CWE01-EF4011  
SER AND BUA SIGNALS

DRG. No. **637EZ1Y04584 SHT 7**  
CURRENT ISSUE **G**

WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
CUSTOMER **POWERGRID** ORDER No. **CF0136**



NOTES:  
 [800] DENOTES FILE NO OF 7A800 SECTION  
 REFER [801] FOR FILE INDEX  
 REFER [802] FOR LOCATION AND DEVICE LIST  
 [7A800] DENOTES FILE NO OF 7A800 SECTION

7A808

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Sharnbrook, England

TITLE  
 VISAKHAPATNAM  
 BUSBAR NO.1 (EAST) PROTECTION  
 CUBICLE =CWE01+EF4011  
 AC SUPPLIES AND CUBICLE ILLUMINATION

DRG. No. 637EZ1Y04584 SHT 8  
 CURRENT ISSUE B

ISSUE	A	PRJ	
B	B	PNS	
NAME	MDH	MDH	
DATE	31	10	
10	02	97	
LOCATION	96	97	

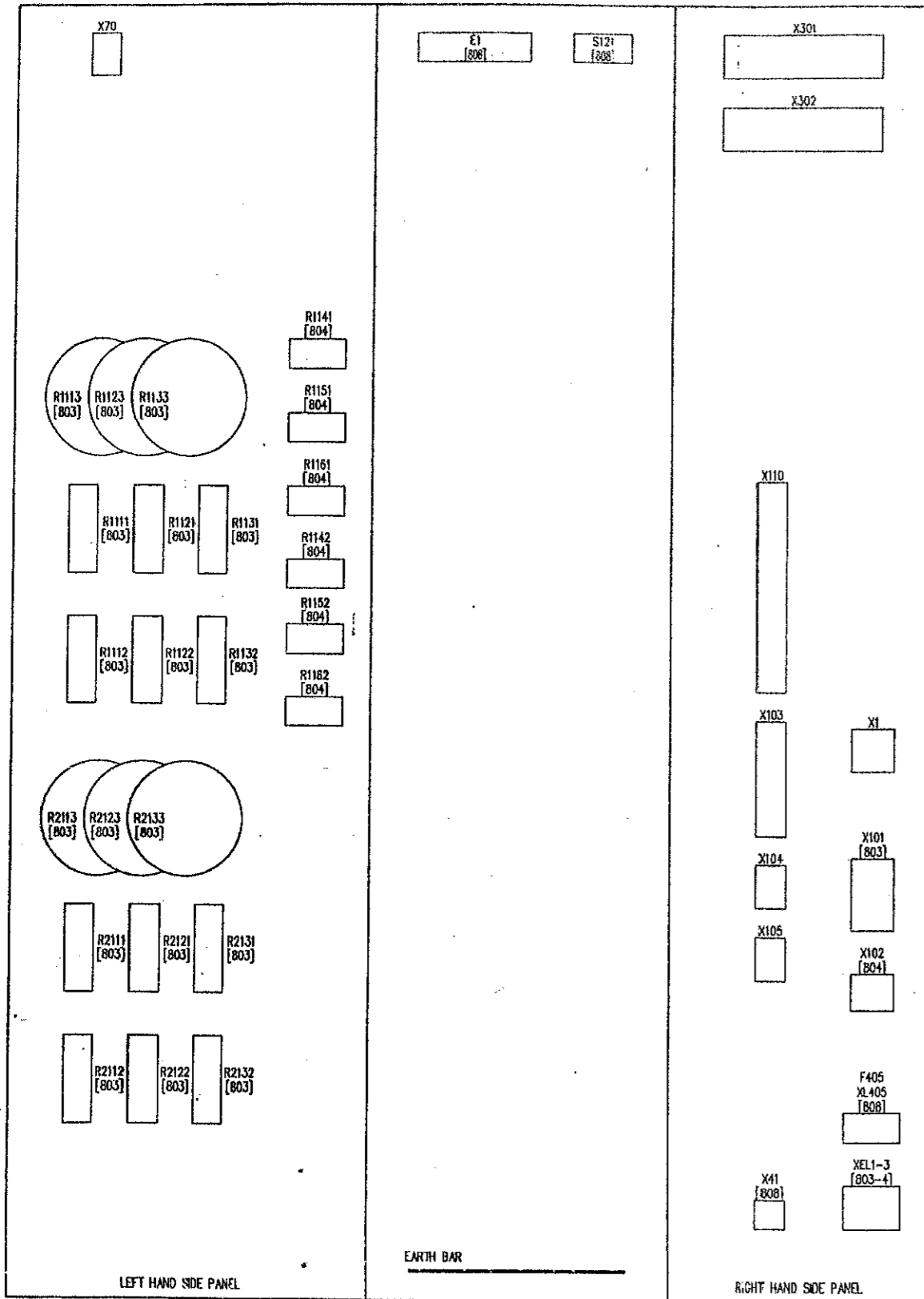
AS BUILT DWG  
 16 MAY 2000  
 VISAKHAPATNAM

THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN MDH
IF IN DOUBT ASK	DRAWING TO BE 3000 UNLESS OTHERWISE STATED	CHKD PNS
	FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROO	APP'D RFR
		SCALE
		TRACED
		DESIGN APP'D PRJ



637EZ1Y04585 SHT 2

EQUIPMENT LOCATED INSIDE CUBICLE VIEWED FROM REAR

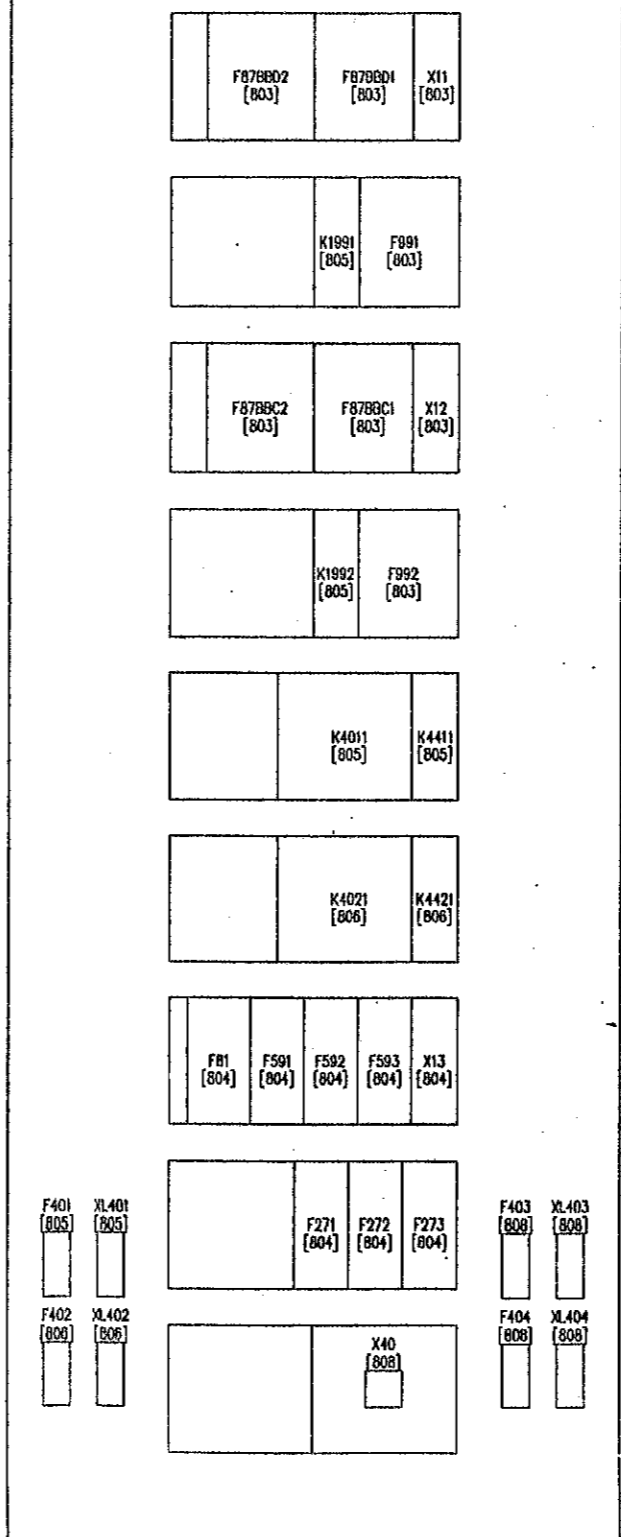


LEFT HAND SIDE PANEL

EARTH BAR

RIGHT HAND SIDE PANEL

PROTECTION CUBICLE =CWE01+EF4012  
FRONT VIEW (DOOR OPEN)

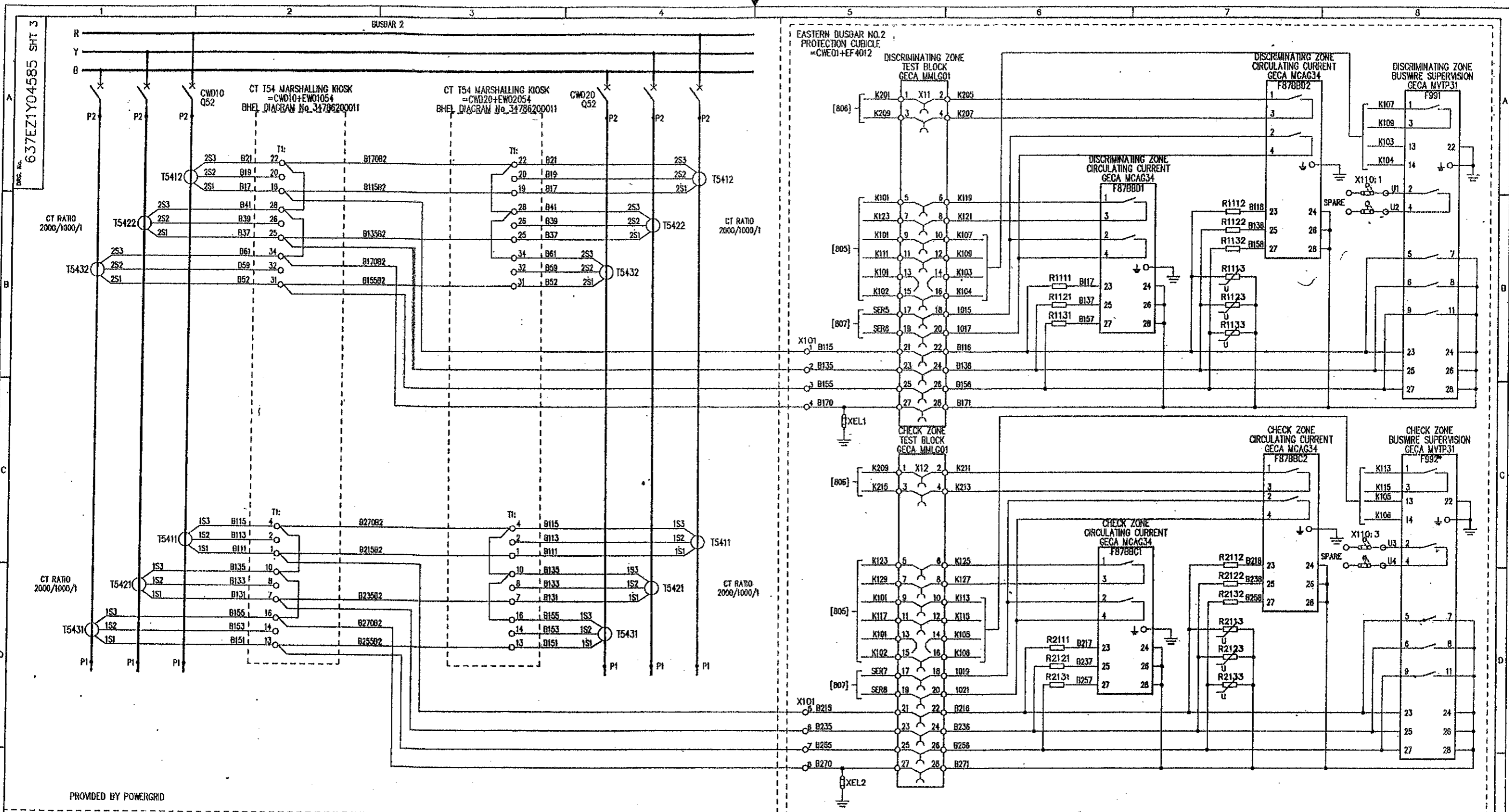


DEVICE REF.	DESCRIPTION	TYPE
F87BB02	DISCRIMINATING ZONE CIRCULATING CURRENT RELAY	GECA MCAG34
F87BB01	DISCRIMINATING ZONE CIRCULATING CURRENT RELAY	GECA MCAG34
X11	DISCRIMINATING ZONE RELAY TEST BLOCK	GECA MMLG01
K1991	DISCRIMINATING ZONE BUSWIRE SUPERVISION AUXILIARY RELAY	GECA MVA411
F891	DISCRIMINATING ZONE BUSWIRE SUPERVISION RELAY	GECA MVA1P31
F87BBC2	CHECK ZONE CIRCULATING CURRENT RELAY	GECA MCAG34
F87BBC1	CHECK ZONE CIRCULATING CURRENT RELAY	GECA MCAG34
X12	CHECK ZONE RELAY TEST BLOCK	GECA MMLG01
K1992	CHECK ZONE BUSWIRE SUPERVISION AUXILIARY RELAY	GECA MVA411
F892	CHECK ZONE BUSWIRE SUPERVISION RELAY	GECA MVA1P31
K4011	PROTECTION NO.1 TRIP RELAY	GECA MVAJ53
K4411	PROTECTION SUPPLY NO.1 SUPERVISION RELAY	GECA MVAJ12
K4021	PROTECTION NO.2 TRIP RELAY	GECA MVAJ53
K4421	PROTECTION SUPPLY NO.2 SUPERVISION RELAY	GECA MVAJ12
F81	OVER/UNDER FREQUENCY RELAY	GECA MFAJ21
F591	OVER VOLTAGE RELAY RED/YELLOW PHASE	GECA MVIU12
F592	OVER VOLTAGE RELAY YELLOW/BLUE PHASE	GECA MVIU12
F593	OVER VOLTAGE RELAY BLUE/RED PHASE	GECA MVIU12
X13	OVER/UNDER FREQUENCY RELAY TEST BLOCK	GECA MMLG01
F271	UNDER VOLTAGE RELAY RED/YELLOW PHASE	GECA MVIU11
F272	UNDER VOLTAGE RELAY YELLOW/BLUE PHASE	GECA MVIU11
F273	UNDER VOLTAGE RELAY BLUE/RED PHASE	GECA MVIU11
E1	CUBICLE LIGHTING	
F401	FUSE AND HOLDER 10A, PROTECTION SUPPLY No. 1, 48Vdc.	GECA SC32P
XL401	LINK AND HOLDER	GECA SC32P
F402	FUSE AND HOLDER 10A, PROTECTION SUPPLY No. 2, 48Vdc.	GECA SC32P
XL402	LINK AND HOLDER	GECA SC32P
F403	FUSE AND HOLDER, 2A, CUBICLE LIGHTING SUPPLY, 240V, 50HZ.	GECA SC32P
XL403	LINK AND HOLDER	GECA SC32P
F404	FUSE AND HOLDER, 16A, SUPPLY FOR TEST EQUIPMENT 16A SOCKET, 240V, 50HZ.	GECA SC32P
XL404	LINK AND HOLDER	GECA SC32P
F405	FUSE AND HOLDER, 2A, FOR HAND LAMP SUPPLY 16A SOCKET, 240V, 50HZ.	WEIDMULLER KSK3F
XL405	LINK AND HOLDER	WEIDMULLER KSK3F
R1113,R1123,R1133	SETTING RESISTOR FOR RELAY F87BB01 (0-5.6K Ohm)	WELWYN V61609
R1112,R1122,R1132	SETTING RESISTOR FOR RELAY F87BB02 (0-5.6K Ohm)	WELWYN V61609
R2113,R2123,R2133	SETTING RESISTOR FOR RELAY F87BBC1 (0-5.6K Ohm)	WELWYN V61609
R2112,R2122,R2132	SETTING RESISTOR FOR RELAY F87BBC2 (0-5.6K Ohm)	WELWYN V61609
R1113,R1123,R1133	METROSIL RESISTOR FOR DISCRIMINATING ZONE RELAY F87BB02	GECA TYPE 600A
R2113,R2123,R2133	METROSIL RESISTOR FOR CHECK ZONE RELAY F87BBC2	GECA TYPE 600A
R1141	220 OHM EXTERNAL RESISTOR FOR RELAY F591	SUPPLIED WITH RELAY
R1142	220 OHM EXTERNAL RESISTOR FOR RELAY F271	SUPPLIED WITH RELAY
R1151	220 OHM EXTERNAL RESISTOR FOR RELAY F592	SUPPLIED WITH RELAY
R1152	220 OHM EXTERNAL RESISTOR FOR RELAY F272	SUPPLIED WITH RELAY
R1161	220 OHM EXTERNAL RESISTOR FOR RELAY F593	SUPPLIED WITH RELAY
R1162	220 OHM EXTERNAL RESISTOR FOR RELAY F273	SUPPLIED WITH RELAY
S121	CUBICLE LIGHTING DOOR SWITCH	
X1	48VDC SUPPLY TERMINALS	WEIDMULLER RSE1
X70	240VAC SUPPLY TERMINALS	WEIDMULLER SAKN
X101	CT INPUT TERMINALS	WEIDMULLER RSE1
X102	VT INPUT TERMINALS	WEIDMULLER RSE2
X103	SEQUENCE OF EVENTS RECORDER TERMINALS	WEIDMULLER SAKR
X104	BACK UP ANNUNCIATOR TERMINALS	WEIDMULLER SAKR
X105	TELEPHONE LINE 2 REMOTE TERMINALS	WEIDMULLER RSE1
X110	SPARE RELAY CONTACTS TERMINALS	WEIDMULLER SAKR
X301	BUSWIRE TERMINALS (PROTECTION 1)	WEIDMULLER RSE2
X302	BUSWIRE TERMINALS (PROTECTION 2)	WEIDMULLER RSE2
X40	TEST EQUIPMENT SWITCHED SOCKET	
X41	HAND LAMP SWITCHED SOCKET	
XEL1-3	EARTH LINK FOR PROTECTION RELAYS	KUPPON SVA3

NOTES:  
 [####] DENOTES FILE NO OF 788NN SECTION  
 [####] DENOTES FILE NO OF 788NN SECTION  
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 [####] DENOTES FILE NO OF 788NN SECTION

ISSUE	PRJ	PRJ	PRJ	PRJ
DATE	JCP	RFR	PREM	PREM
11-08-97	08-08-97	12-08-98	08-08-98	08-08-98

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PROVIDED BY POWERGRID

NOTES:  
 [BNN] DENOTES FILE NO OF 780NN SECTION  
 REFER [801] FOR FILE INDEX  
 REFER [802] FOR LOCATION AND DEVICE LIST  
 [7ANN] DENOTES FILE NO OF 7ANN SECTION

FILE 7B803

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 VISAKHAPATNAM  
 BUSBAR NO.2 (EAST) PROTECTION  
 CUBICLE =CWE01+EF4012  
 AC CIRCUITS

ISSUE	PRJ	PRJ	PRJ
D	A	B	C
NAME	ISSUE	PNS	RFR
LOCATION	DATE	JCP	PREM
VISA3809	11/06/97	08/08/97	12/08/98
		REVISED TO EMBASE - EARTH ADDED TO TERMINAL 22 OF MVT31	REVISED TO EMBASE - CT RATIOS ADDED (4 PLACES)
		MC/JJ	MC/JJ
		09/02/99	02/02/99

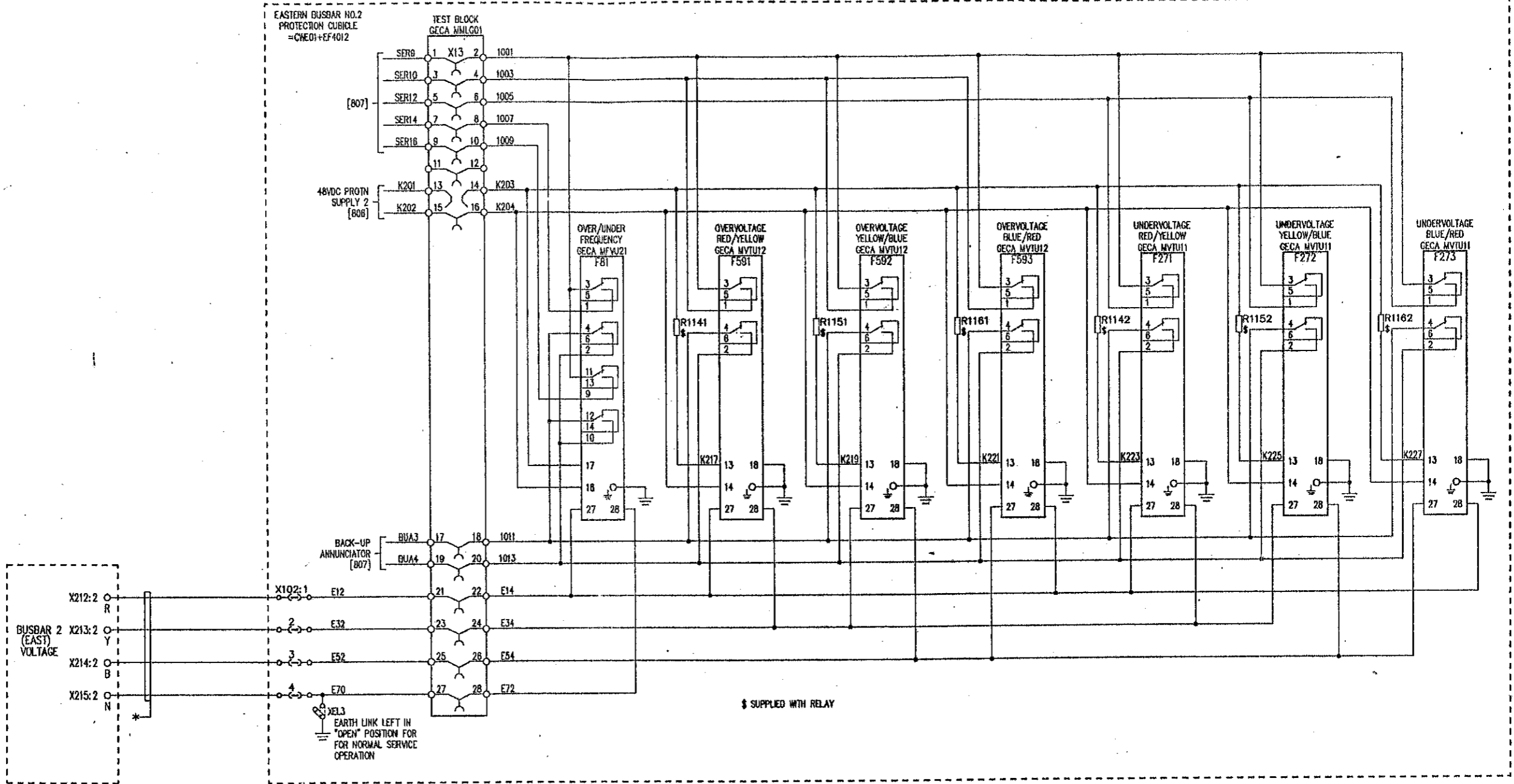
AS BUILT DWG  
 16 MAY 2000  
 VISAKHAPATNAM

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: B T BARRETT  
 DEPT. 739 DATE: 9/8/97  
 SIGNED: BTB

THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/CDS/PROC

DRAWN JCP  
 CTD PNS  
 APPD RFR  
 SCALE  
 TRACED  
 DESIGN APPD PRJ  
 DRD. No. 637EZ1Y04585 SHT 3  
 CURRENT ISSUE D

DRC No. 637EZ1Y04585 SHT 4



NOTES:  
 [8NN] DENOTES FILE NO OF 78NN SECTION  
 REFER [801] FOR FILE INDEX  
 REFER [802] FOR LOCATION AND DEVICE LIST  
 [7ANN] DENOTES FILE NO OF 7ANN SECTION

FILE 7B804

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Shiford, England

TITLE  
 VISAKHAPATNAM  
 BUSBAR NO.2 (EAST) PROTECTION  
 CUBICLE =CWE01+EF4012  
 AC CIRCUITS

DWG. No. 637EZ1Y04585 SHT 4  
 CURRENT ISSUE D

**AS BUILT DWG**  
 16 MAY 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: B T BARRETT  
 DEPT. 739 DATE: 9/6/97  
 SIGNED: BTB

THIRD ANGLE PROJECTION  
 IF IN DOUBT ASK

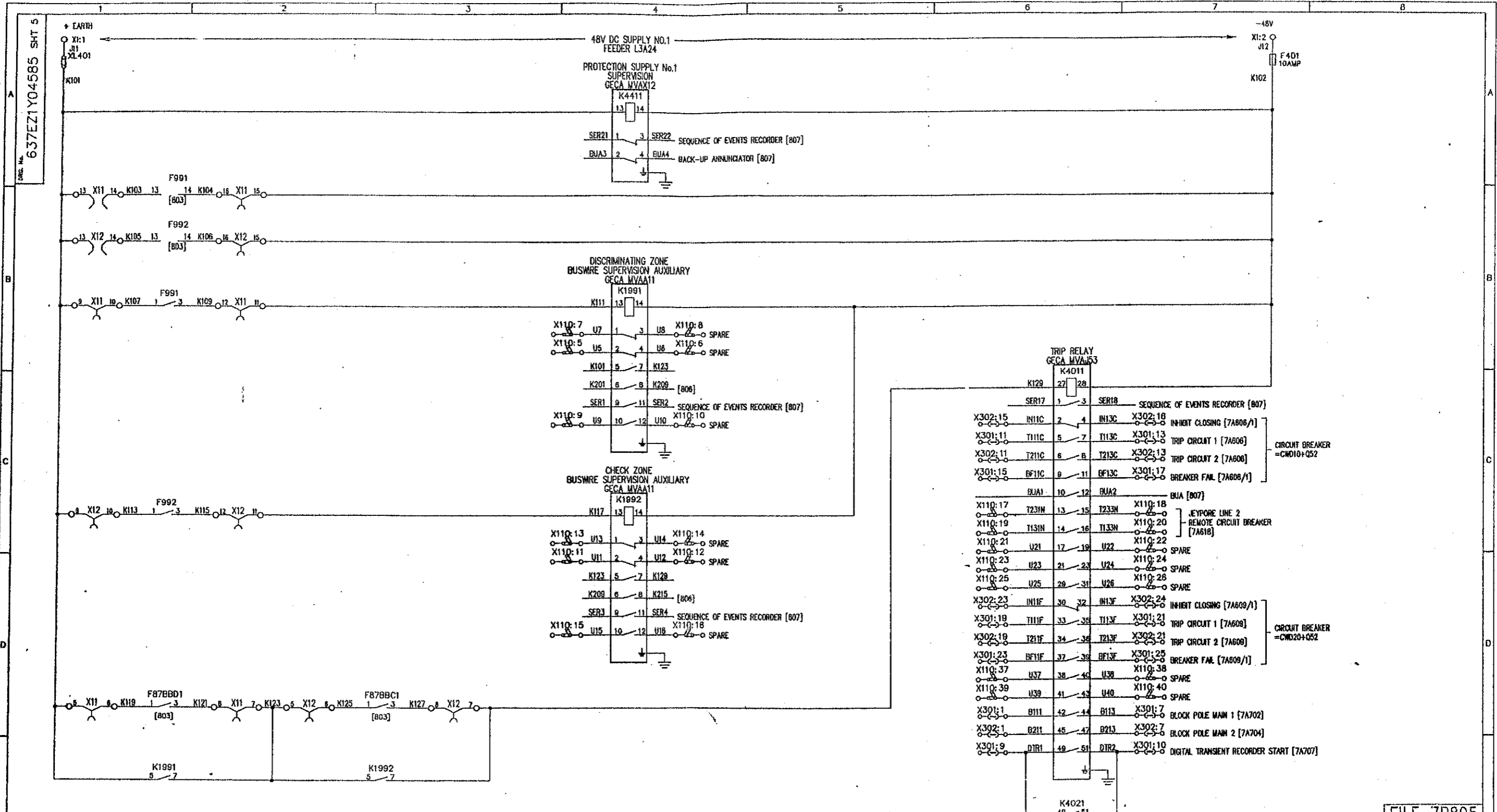
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPEC. STAND/023/PROC

DRAWN JCP  
 CHD PNS  
 APP'D RFR  
 SCALE  
 TRACED  
 DESIGN PRJ  
 APP'D

DO NOT SCALE PRINT  
 WHEN QUOTING DRG. NO. STATE CURRENT ISSUE  
 CUSTOMER POWERGRID  
 ORDER No. CP0136

C.A.D. DATA  
 ISSUE D  
 NAME  
 LOCATION VISA367B

PRJ	PRJ	PRJ	PRJ
A	B	C	D
ISSUE	PNS	RFR	PREM
11/06/97	08/08/97	12/08/98	15/01/99
	JCP	PREM	PREM
	REVISD TO ENHANCE - EARTH ADDED TO TERMINAL TB OF MVTU11 ALSO ENHANCED - 88 VT MVTU11 BOX DELETED, SCADA MARSHYIC ADDED.	REVISD TO ENHANCE - ADDED TO TERMINAL NUMBERS TO =MWS09+EX4901.	REVISD TO ENHANCE - FILE REF 200300 WAS ZON.



NOTES:  
 [BNN] DENOTES FILE NO OF 70BNN SECTION  
 REFER [801] FOR FILE INDEX  
 REFER [802] FOR LOCATION AND DEVICE LIST  
 [7ANN] DENOTES FILE NO OF 7ANN SECTION

FILE 7B805

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Shelton, England

VISAKHAPATNAM  
 BUSBAR NO.2 (EAST) PROTECTION  
 CUBICLE = CWD01+EF4012  
 DC CIRCUITS (PROTECTION SYSTEM 1)

DRG. No. 637EZ1Y04585 SHT 5  
 CURRENT ISSUE D

C.A.D. DATA  
 ISSUE D  
 NAME  
 LOCATION VISA2209

PRJ	MF	DATE	ISSUE	REVISION
A	C	11/06/97	08/08/97	15/10/97
B	PNS	08/08/97	08/08/97	12/09/98
C	JCP	08/08/97	08/08/97	09/09/98

REVISIONS:  
 REVISION TO ECN0334 - X301:7A TO WERE 3A36 & X302:7 WAS INTERCHANGED  
 REVISION TO ECN0334 - X301:7A WERE 6 N/O CONTACTS (SER & SPARE FUNCTIONS INTERCHANGED)  
 REVISION TO ECN0448 & 0536 - CHANGED REF'S FROM 7A06 & 7A09 ON X301:17, X302:18 & X301:25, X302:24, CHANGED FROM SPARE & RENUMBERED X110:17-20 & U17-20.

AS BUILT DWG  
 16 MAY 2000  
 VISAKHAPATNAM

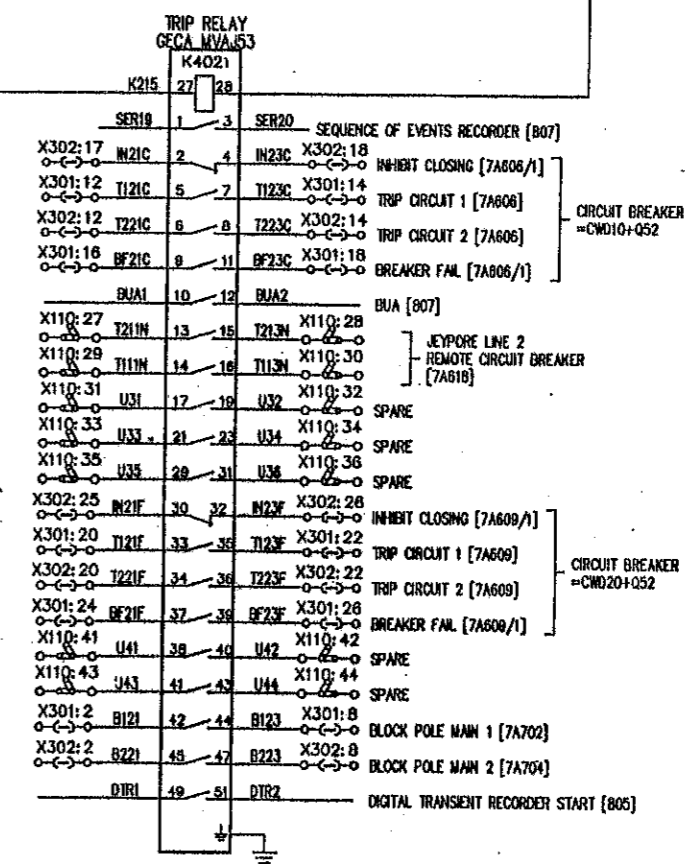
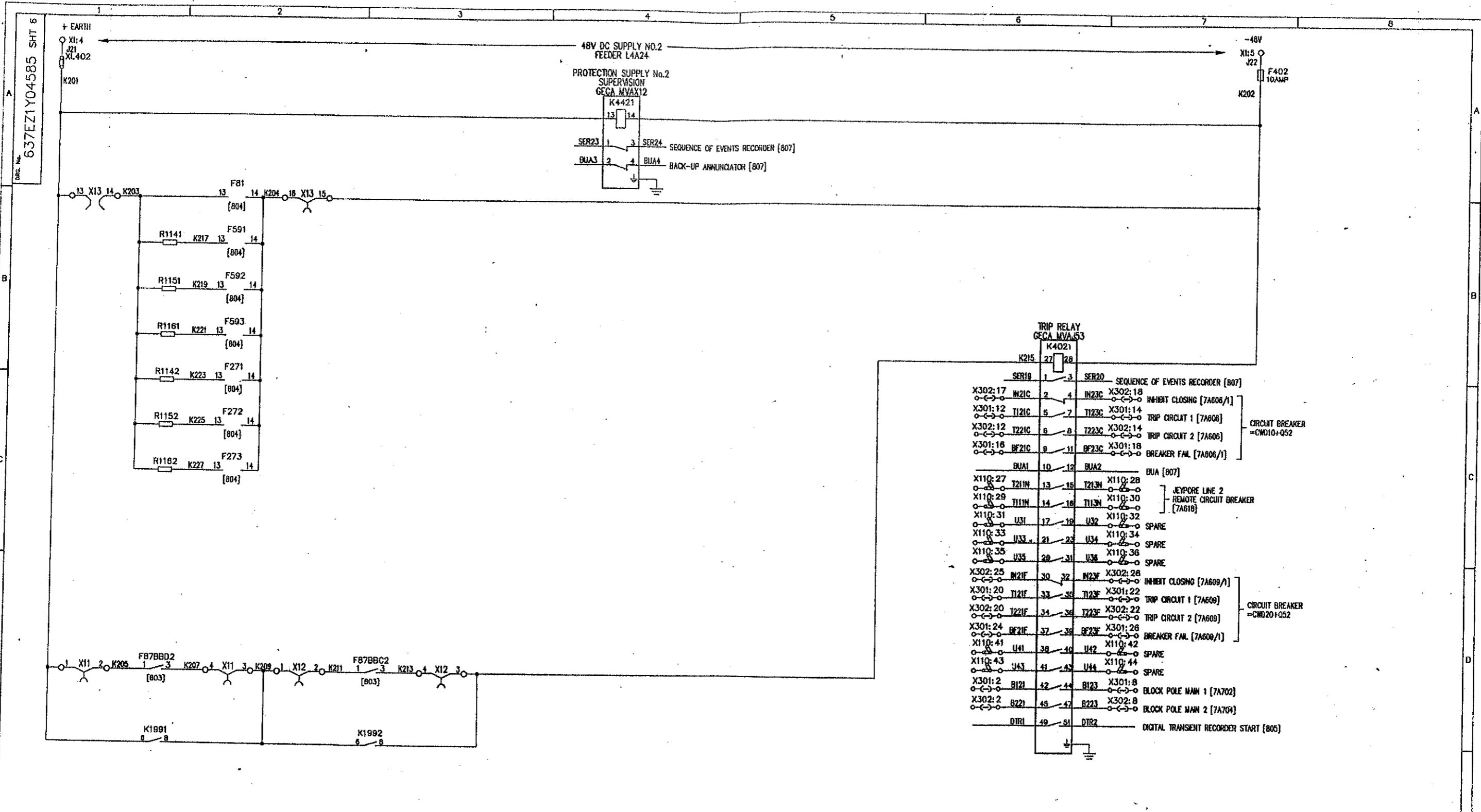
GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: B T BARRETT  
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 SIGNED: BTB

THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO DESIGN UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECIAL STAND/023/PROC  
 IF IN DOUBT ASK

DRAWN: JCP  
 CHT: PNS  
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 DESIGN: PRJ  
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DO NOT SCALE PRINT

CUSTOMER POWERGRID ORDER No. CF0136



NOTES:  
 [BNN] DENOTES FILE NO OF 78BNN SECTION  
 REFER [801] FOR FILE INDEX  
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 [7ANN] DENOTES FILE NO OF 7ANN SECTION

FILE 7B806

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Sharnford, England

VISAKHAPATNAM  
 BUSBAR NO.2 (EAST) PROTECTION  
 CUBICLE = CWE01+EF4012  
 DC CIRCUITS (PROTECTION SYSTEM 2)

AS BUILT DWG  
 16 MAY 2000  
 VISAKHAPATNAM

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR  
 MANUFACTURE  
 NAME: B T BARRETT  
 DEPT: 739 DATE: 9/8/97  
 SIGNED: BTB

THIRD ANGLE  
 PROJECTION  
 IF IN DOUBT  
 ASK

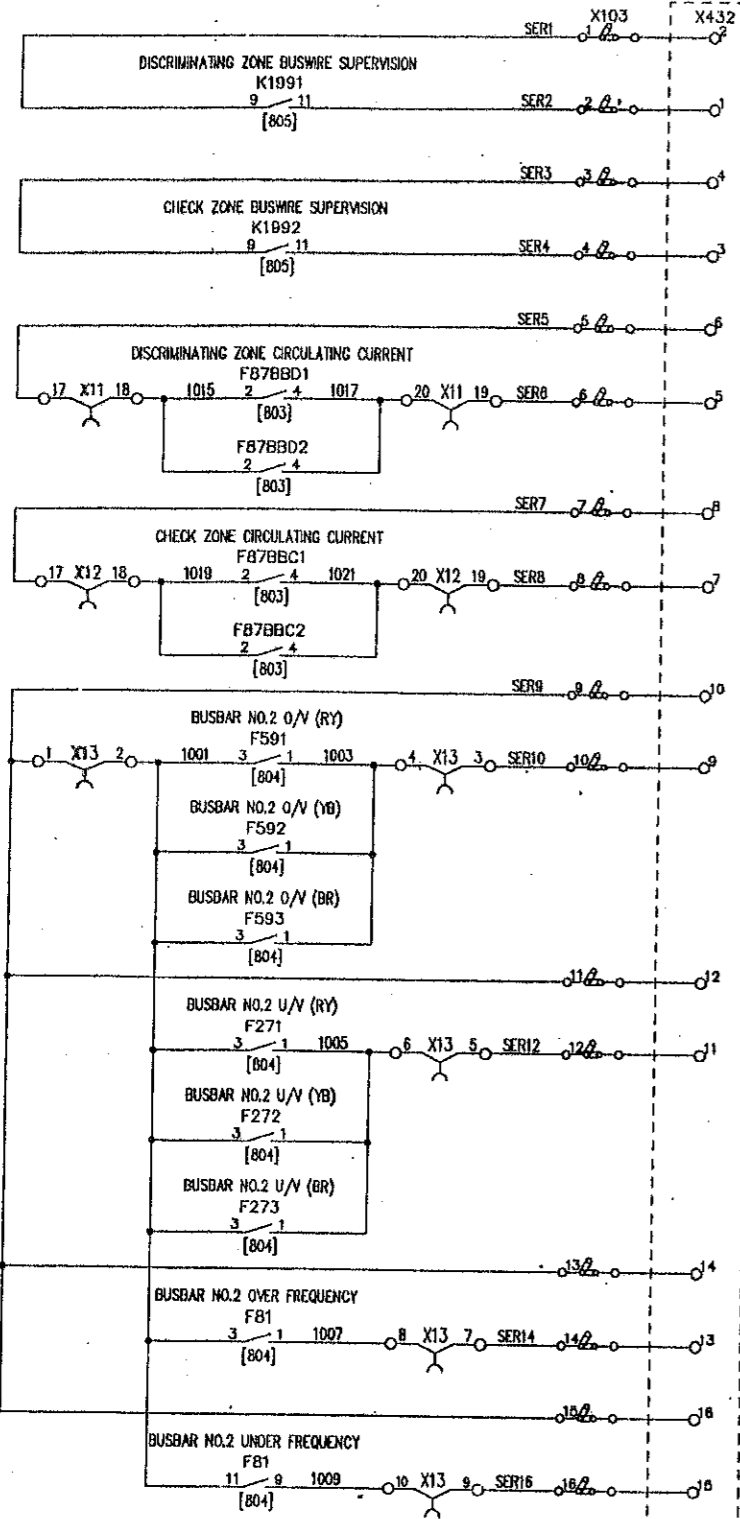
ALL DIMENSIONS  
 IN MILLIMETRES  
 UNLESS OTHERWISE STATED  
 DRAWING TO BS308  
 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF  
 ACCURACY OF ALL  
 UNFOLERANGED DIMENSIONS  
 SEE SPECH. STAND/023/PROG

DRAWN: JCP  
 GFD: PNS  
 APP'D: RFR  
 SCALE:  
 TRACED:  
 DESIGN: PRJ  
 APP'D:

DWG. No. 637EZ1Y04585 SHT 6  
 CURRENT ISSUE C

C.A.O. DATA		PRJ	PNB	PREM
ISSUE	A	B	PNS	JCP
NAME	637EZ1Y04585			
LOCATION	VISA2213			
DATE	11/06/97	08/07/97	08/08/97	12/08/97
REVISION	REVISED TO ECH848 & 8536 - CHANGED FILE REF'S FROM 7A506 & 7A609 ON X301:18, X302:18, X301:25, X302:25, CHANGED FROM SPARE & RENUMBERED X110:27-30 & U27-30			

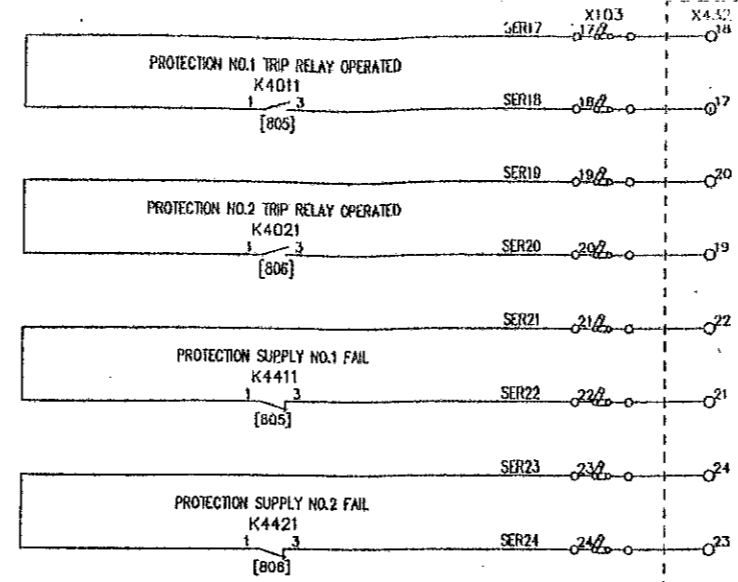
SEQUENCE OF EVENTS RECORDER ALARM SIGNALS



=MNU90+EX4901  
SCADA MARSHALLING  
[200112]

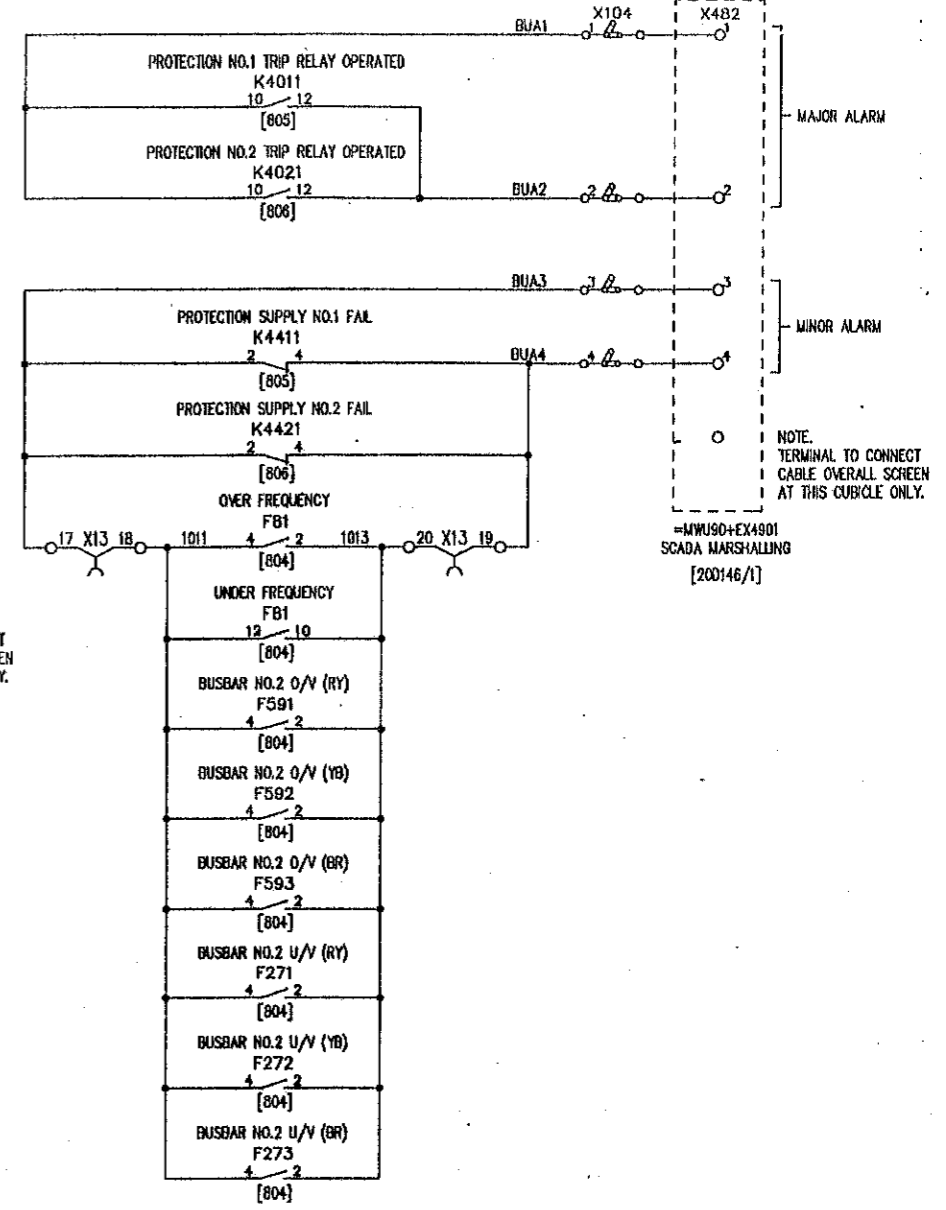
NOTES:  
[800] DENOTES FILE NO. OF 788HW SECTION  
REFER [801] FOR FILE INDEX  
REFER [802] FOR LOCATION AND DEVICE LIST  
[7ANNH] DENOTES FILE NO. OF 7ANNH SECTION

SEQUENCE OF EVENTS RECORDER ALARM SIGNALS



NOTE:  
TERMINAL TO CONNECT  
CABLE OVERALL SCREEN  
AT THIS CUBICLE ONLY.  
=MNU90+EX4901  
SCADA MARSHALLING  
[200112]

BACK-UP ANNUNCIATOR ALARM SIGNALS



NOTE:  
TERMINAL TO CONNECT  
CABLE OVERALL SCREEN  
AT THIS CUBICLE ONLY.  
=MNU90+EX4901  
SCADA MARSHALLING  
[200146/1]

FILE 7B807

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Stretton, England

VISAKHAPATNAM  
BUSBAR NO.2 (EAST) PROTECTION  
CUBICLE =CWE01+EF4012  
SER AND BUA SIGNALS

DRG. No. 637EZ1Y04585 SHT 7  
CURRENT ISSUE E

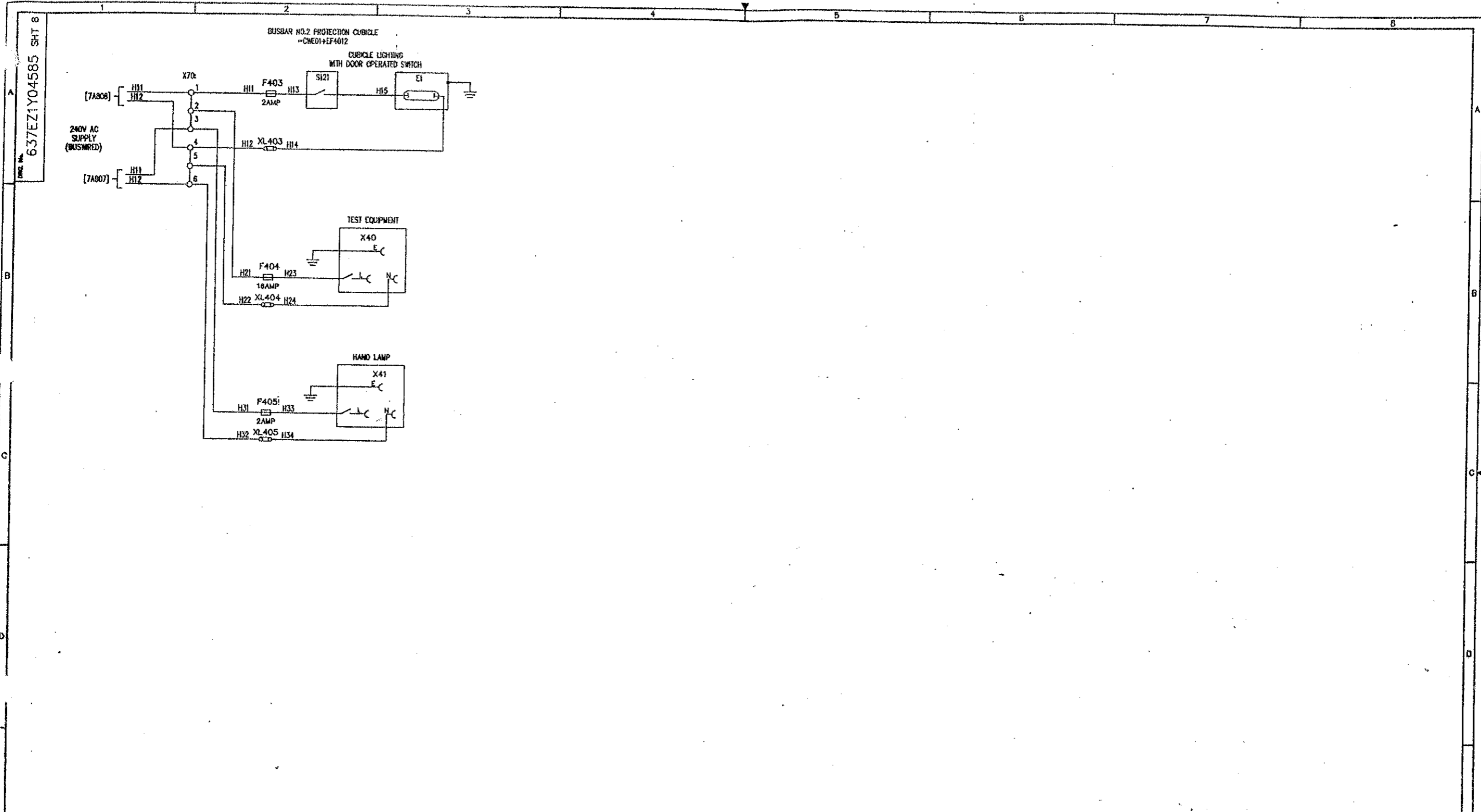
AS BUILT DWG  
16 MAY 2000  
VISAKHAPATNAM

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE  
NAME: B T BARRETT  
DEPT: 739 DATE: 9/6/97  
SIGNED: 8TB

THIRD ANGLE  
PROJECTION  
ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED  
DRAWING TO BS308  
UNLESS OTHERWISE STATED  
FOR THE STANDARD OF  
ACCURACY OF ALL  
UNTOLERANCED DIMENSIONS  
SEE SPECN. STAND. 023/PROG  
IF IN DOUBT  
ASK

DRAWN JCP  
CHKD PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN PRJ  
DD NOT SCALE PRINT  
WHEN QUOTING DRG. No. STATE CURRENT ISSUE

C.A.B. DATA		PRJ	MF	PRJ	REVISED TO ECN/BAK- ADDED TERMINAL NUMBERS TO =MNU90+EX4901.	REVISED TO ECN/BAK- ADDED TERMINAL NUMBERS TO =MNU90+EX4901. FILE REFS 200112 AND 200146/1 HERE 20A.
ISSUE	A	B	C	D	E	F
NAME	PNJ	PNS	PNS	RFR	MCJL	MCJL
LOCATION	DATE	DATE	DATE	DATE	DATE	DATE
VISA3679	11/08/97	08/08/97	15/10/97	12/08/98	15/01/99	15/01/99



NOTES:  
 [8NN] DENOTES FILE NO OF 788NN SECTION  
 REFER [801] FOR FILE INDEX  
 REFER [802] FOR LOCATION AND DEVICE LIST  
 [7ANN] DENOTES FILE NO OF 7ANN SECTION

FILE 7B808

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Sharnah, England

VISAKHAPATNAM  
 BUSBAR NO.2 (EAST) PROTECTION  
 CUBICLE =CWED1+EF4012  
 AC SUPPLIES AND CUBICLE ILLUMINATION

DRG. No. 637EZ1Y04585 SHT 8  
 CURRENT ISSUE A

G.A.D. DATA  
 ISSUE A  
 NAME  
 LOCATION VISA0307

ISSUE A  
 DATE 11/06/97

AS BUILT DWG  
 16 MAY 2000  
 VISAKHAPATNAM

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: BT Barrett  
 DEPT: 739 DATE: 9/16/97  
 SIGNED: BT Barrett

THIRD ANGLE PROJECTION  
 IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNDETAILED DIMENSIONS SEE SPECN. STAND/023/PROG

DRAWN JCB  
 CHK  
 APP'D  
 SCALE  
 TRACED  
 DESIGN APP'D

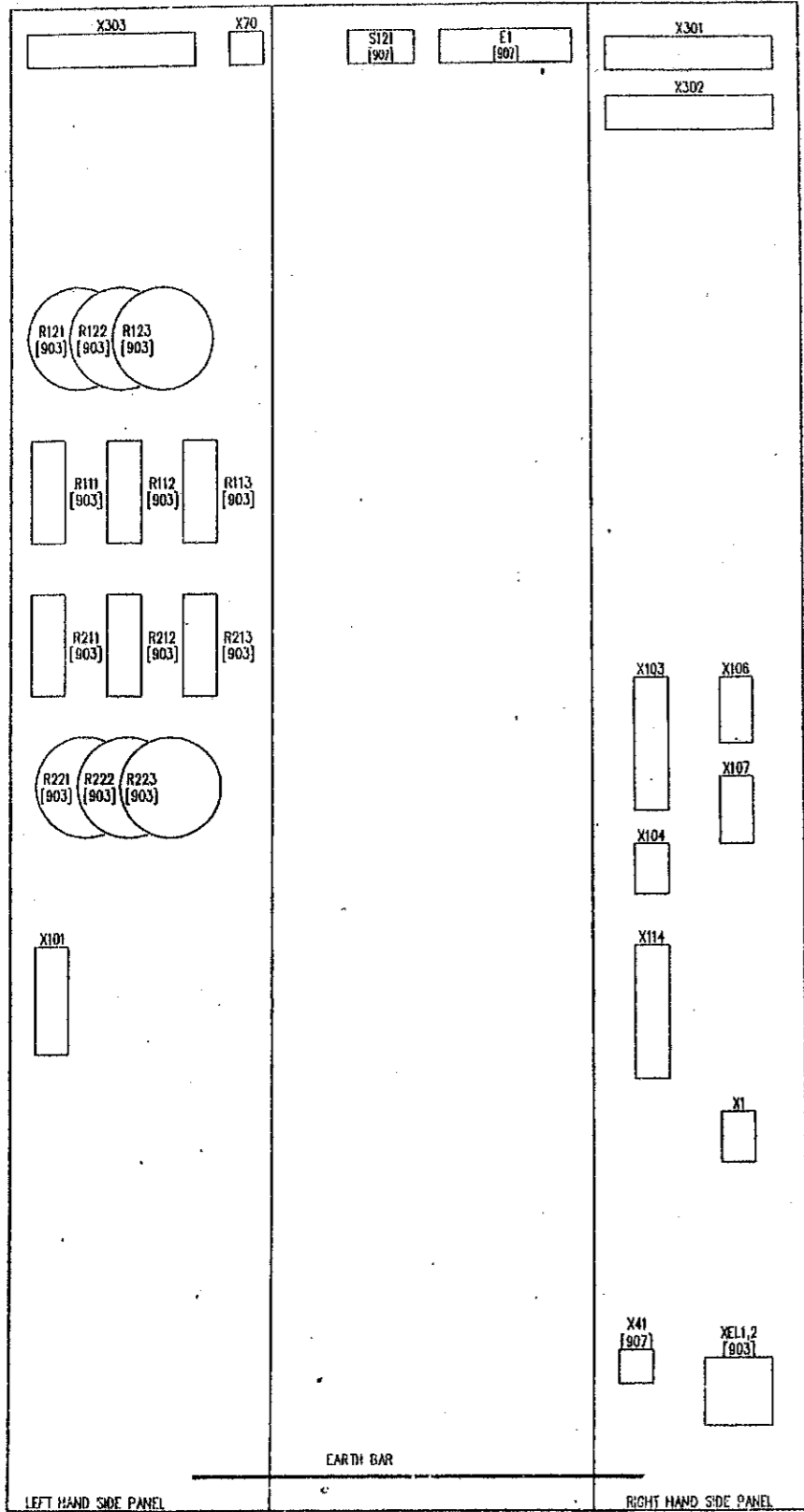
DO NOT SCALE PRINT

CUSTOMER POWERGRID  
 ORDER No. CP0138  
 ORIGINAL SIZE A1 - 294 x 414mm

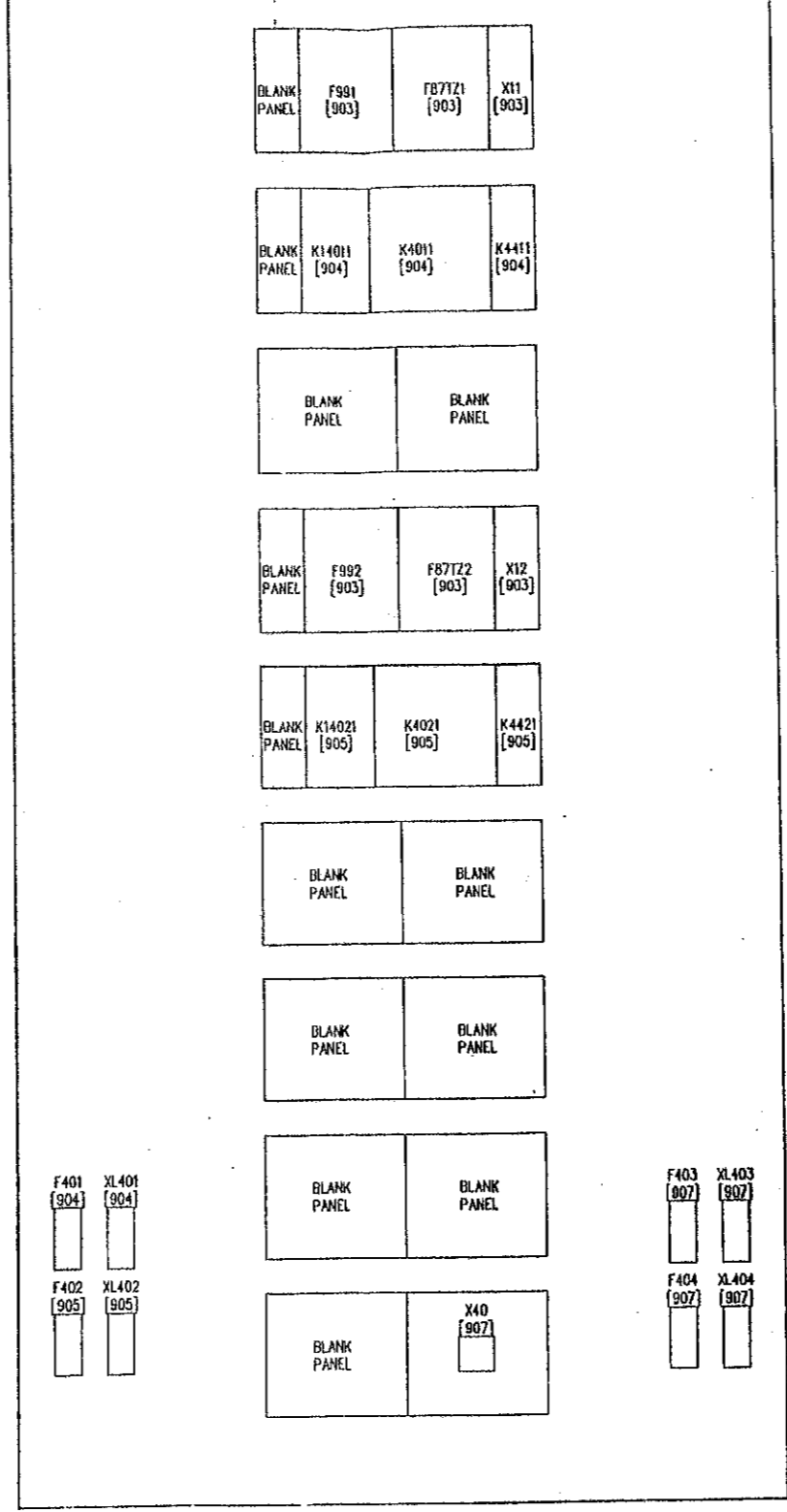


637E21Y04586 SH2

EQUIPMENT LOCATED INSIDE CUBICLE VIEWED FROM REAR



PROTECTION CUBICLE =CWT11+EF4111  
FRONT VIEW (DOOR OPEN)



DEVICE REF	DESCRIPTION	TYPE
F991	PROTECTION No 1 BUSWIRE SUPERVISION RELAY	GECA MVIP31
F871Z1	PROTECTION No 1 CIRCULATING CURRENT RELAY	GECA MCAG34
X11	PROTECTION No 1 CIRCULATING CURRENT TEST BLOCK	GECA MMLG01
K1401	PROTECTION No 1 TRIP RELAY AUXILIARY RELAY	GECA MVAAT4
K401	PROTECTION No 1 LOCKOUT TRIP RELAY	GECA MVAJ53
K441	PROTECTION SUPPLY NO.1 SUPERVISION RELAY	GECA MVAX12
F992	PROTECTION No 2 BUSWIRE SUPERVISION RELAY	GECA MVIP31
F871Z2	PROTECTION No 2 CIRCULATING CURRENT RELAY	GECA MCAG34
X12	PROTECTION No 2 CIRCULATING CURRENT TEST BLOCK	GECA MMLG01
K1402	PROTECTION No 2 TRIP RELAY AUXILIARY RELAY	GECA MVAAT4
K402	PROTECTION No 2 LOCKOUT TRIP RELAY	GECA MVAJ53
K442	PROTECTION SUPPLY NO.2 SUPERVISION RELAY	GECA MVAX12
E1	CUBICLE LIGHTING	
F401	FUSE AND HOLDER 10A, PROTECTION SUPPLY No. 1, 48Vdc.	GECA SC32P
XL401	LINK AND HOLDER	GECA SC32P
F402	FUSE AND HOLDER 10A, PROTECTION SUPPLY No. 2, 48Vdc.	GECA SC32P
XL402	LINK AND HOLDER	GECA SC32P
F403	FUSE AND HOLDER, 2A, CUBICLE LIGHTING SUPPLY, 240V, 50HZ.	GECA SC32P
XL403	LINK AND HOLDER	GECA SC32P
F404	FUSE AND HOLDER, 16A, SUPPLY FOR TEST EQUIPMENT 16A SOCKET, 240V, 50HZ	GECA SC32P
XL404	LINK AND HOLDER	GECA SC32P
F405	FUSE AND HOLDER, 2A, FOR HAND LAMP SUPPLY 16A SOCKET, 240V, 50HZ.	WEIDMULLER KSK3F
XL405	LINK AND HOLDER	WEIDMULLER KSK3F
R111,R112,R113	SETTING RESISTOR FOR RELAY F871Z1 (0-5.6K Ohm)	WELWYN VJ1809
R211,R212,R213	SETTING RESISTOR FOR RELAY F871Z2 (0-5.6K Ohm)	WELWYN VJ1809
R121,R122,R123	METROSIL RESISTOR FOR RELAY F871Z1	GECA TYPE 600A
R221,R222,R223	METROSIL RESISTOR FOR RELAY F871Z2	GECA TYPE 600A
S121	CUBICLE LIGHTING DOOR SWITCH	
X1	48VDC SUPPLY TERMINALS	WEIDMULLER RSP1
X70	BUSWIRE TERMINALS (240VAC SUPPLY)	WEIDMULLER SAK6N
X701	CT INPUT TERMINALS	WEIDMULLER RSP1
X103	SEQUENCE OF EVENTS RECORDER TERMINALS	WEIDMULLER SAKR
X104	BACK UP ANNUNCIATOR TERMINALS	WEIDMULLER SAKR
X106	=CWD304050 TERMINALS	WEIDMULLER RSP1
X107	=CWD304050 TERMINALS	WEIDMULLER RSP1
X114	SPARE RELAY CONTACTS TERMINALS	WEIDMULLER SAKR
X301	BUSWIRE TERMINALS (TRIP COIL 1 etc)	WEIDMULLER RSP2
X302	BUSWIRE TERMINALS (TRIP COIL 2 etc)	WEIDMULLER RSP2
X303	BUSWIRE TERMINALS (MISC)	WEIDMULLER RSP2
X40	TEST EQUIPMENT SWITCHED SOCKET.	
X41	HAND LAMP SWITCHED SOCKET.	
X41.2	EARTH LINK FOR PROTECTION RELAYS	KLIPPON STL5

FILE 7A902

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&O

GEC ALSTHOM T&O  
Power Electronic Systems Limited  
Stafford, England

TITLE  
VISAKHAPATNAM  
EASTERN TRANSFORMER INTERZONE PROTECTION  
CUBICLE =CWT11+EF4111  
EQUIPMENT LOCATION AND DEVICE LIST

DRG. No.  
637E21Y04586 SH2

CURRENT ISSUE  
D

CUSTOMER POWERGRID ORDER No. CFO136

NOTES:  
REFER [7A901] FOR FILE INDEX

ISSUE	A	B	C	D
NAME	DATE	ISSUE	DATE	ISSUE
37E21Y04586	12/03/97	08/08/98	13/08/98	15/09/98
LOCATION	REVISION	REVISION	REVISION	REVISION
VISA3656	REVISED TO EMBARCA-MOVED, X106,107 WERE X108,109	REVISED TO EMBARCA-MOVED, X106,107 WERE X108,109	REMOVED VALUE 2255 OHM FROM SETTING RESISTORS.	REVISED TO EMBARCA-MOVED, X106,107 WERE X108,109

AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

GEC ALSTHOM T&O  
Power Electronic Systems Limited  
CERTIFIED FOR MANUFACTURE  
NAME: B T BARRETT  
DEPT. 739 DATE: 12/3/97  
SIGNED: BTB

THIRD ANGLE PROJECTION  
IF IN DOUBT ASK

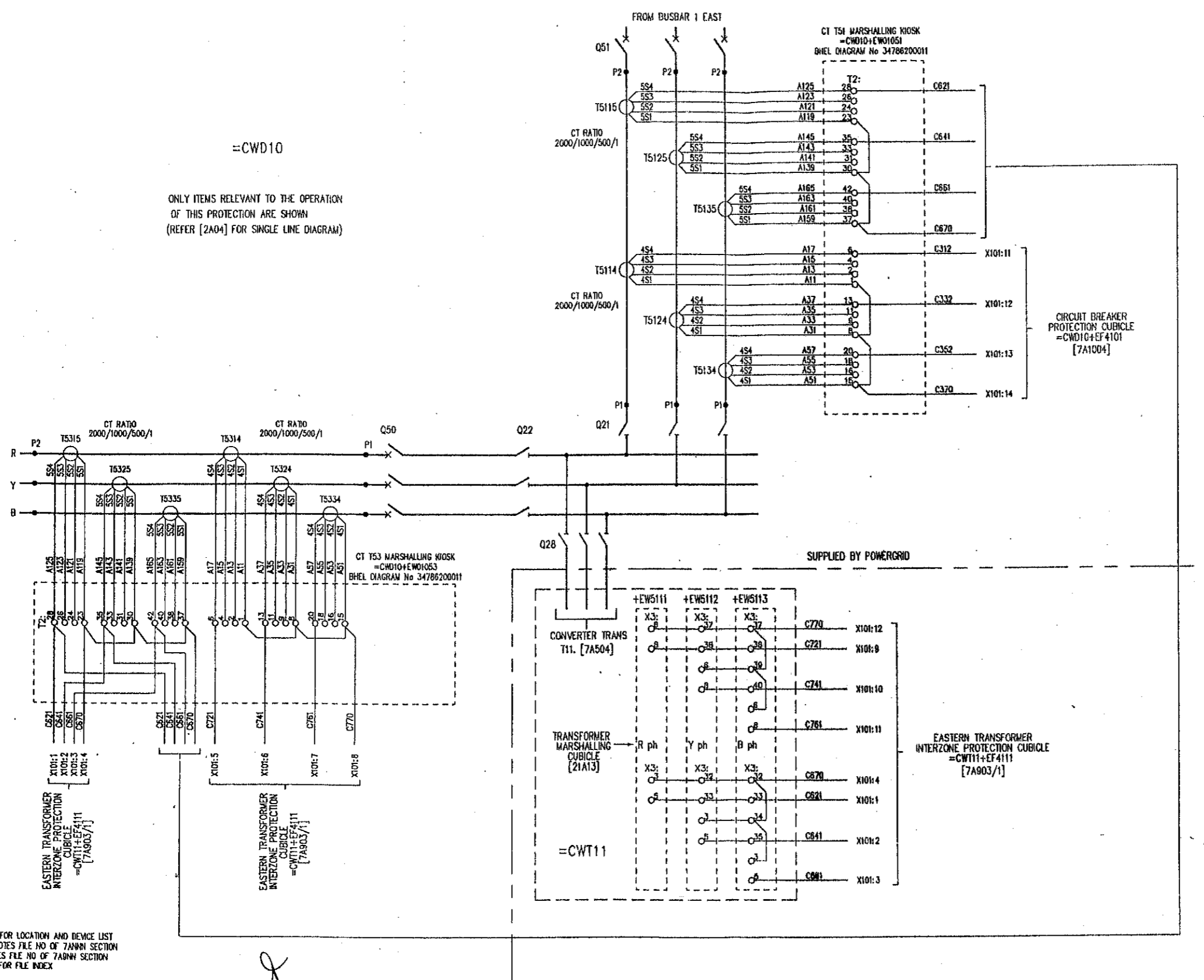
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
DRAWING TO BS308 UNLESS OTHERWISE STATED  
FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECN. STAN0/023/PROC

DRAWN JCP  
CHK'D PNS  
APP'D RFR  
SCALE  
TRACED  
DESIGN PRJ  
APP'D

DO NOT SCALE PRINT

FILE NO. 637EZ1Y04586 SHT 3

ONLY ITEMS RELEVANT TO THE OPERATION OF THIS PROTECTION ARE SHOWN (REFER [2A04] FOR SINGLE LINE DIAGRAM)



NOTES:  
REFER [902] FOR LOCATION AND DEVICE LIST  
[7AHNR] DENOTES FILE NO OF 7AHN SECTION  
[9NH] DENOTES FILE NO OF 7AHN SECTION  
REFER [901] FOR FILE INDEX

ISSUE	DATE	BY	CHKD	REVISION
E	12/03/97	JCP	PNS	REVISED TO ENDRS:- TERMINALS 9 & 11 ON TEST BLOCKS NOW USED FOR SPARE. ALSO ENDRS:- RELAY TYPES ADDED & EARTH ADDED TO TERMINAL 22 OF MVTR3
	08/08/97	JCP	PNS	REVISED TO ENDRS:- MOVED =CWT11-EF4111 TO 7A903/1. CHANGED TO MUP. T51, T53 CTS & MARSHALLING KIOSK.
	08/08/98	JCP	PNS	REVISED TO ENDRS:- RELEVANT WAS RELEVANT.
	01/01/99	JCP	PNS	REVISED TO ENDRS:- FILE REF ADDED FOR TRANSFORMER MARSHALLING CUBICLE.

**AS BUILT DWG**  
14 APR 2000  
**VISAKHAPATNAM**

GEC ALSTOM T&D Power Electronic Systems Limited CERTIFIED FOR MANUFACTURE		THIRD ANGLE PROJECTION	ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	DRAWN JCP
NAME: B T BARRETT	DEPT: 739	DATE: 6/3/97	DRAWING TO BS308 UNLESS OTHERWISE STATED	CHKD PNS
SIGNED BTB	IF IN DOUBT ASK	FOR THE STANDARD OF ACCURACY OF ALL UNFINISHED DIMENSIONS SEE SPEC. STANO/023/PRIC	APP'D RFR	SCALE
			DESIGN APP'D PRJ	TRACED

**FILE 7A903**

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTOM  
T&D

GEC ALSTOM T&D  
Power Electronic Systems Limited  
Staines, England

TITLE  
VISAKHAPATNAM  
EASTERN TRANSFORMER INTERZONE PROTECTION  
CUBICLE =CWT11-EF4111  
AC CIRCUITS

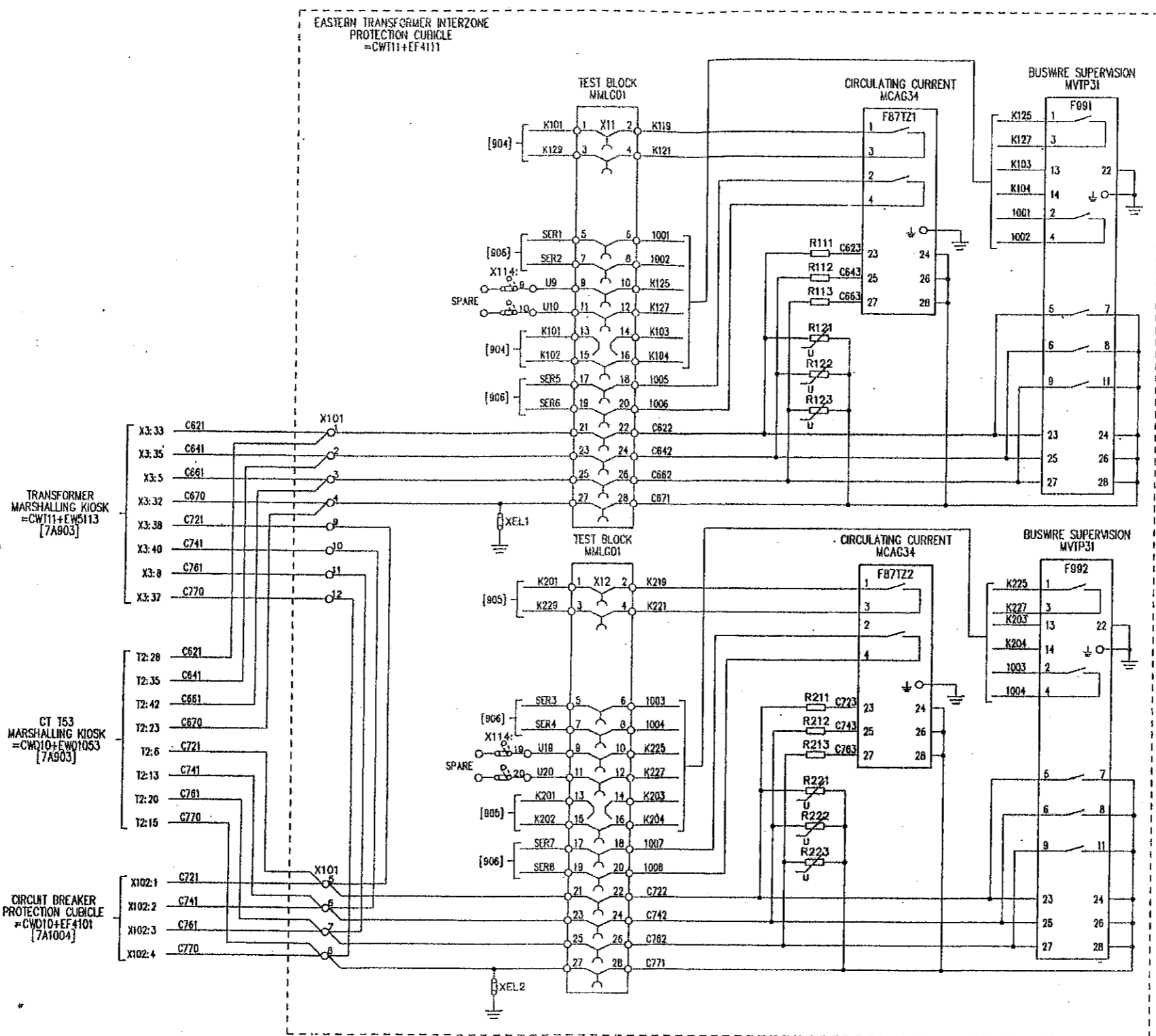
ORG. No. 637EZ1Y04586 SHT 3

CURRENT ISSUE E

CUSTOMER POWERGRID

ORDER No. CF0136

637EZ1Y04586 SHT B



NOTES:  
 [900] DENOTES FILE NO OF 7ASHN SECTION  
 REFER [901] FOR FILE INDEX  
 REFER [902] FOR LOCATION AND DEVICE LIST  
 [7ANNN] DENOTES FILE NO OF 7ANNN SECTION

FILE 7A903/1  
 POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Sharnbrook, England

TITLE  
 VISAKHAPATNAM  
 EASTERN TRANSFORMER INTERZONE PROTECTION  
 CUBICLE =CWT11+EF4111  
 AC CIRCUITS

DRG. No.  
 637EZ1Y04586 SHT B

CURRENT  
 ISSUE  
 A

ISSUE	A
NAME	
LOCATION	MSA2328
ISSUE DATE	12/08/00
REVISIONS	1. REVISED TO ENHANCE... 2. ADDED TERMINALS... 3. MOVED... 4. CORRECTED... 5. PASSED

AS BUILT DWG  
 14 APR 2000  
 VISAKHAPATNAM

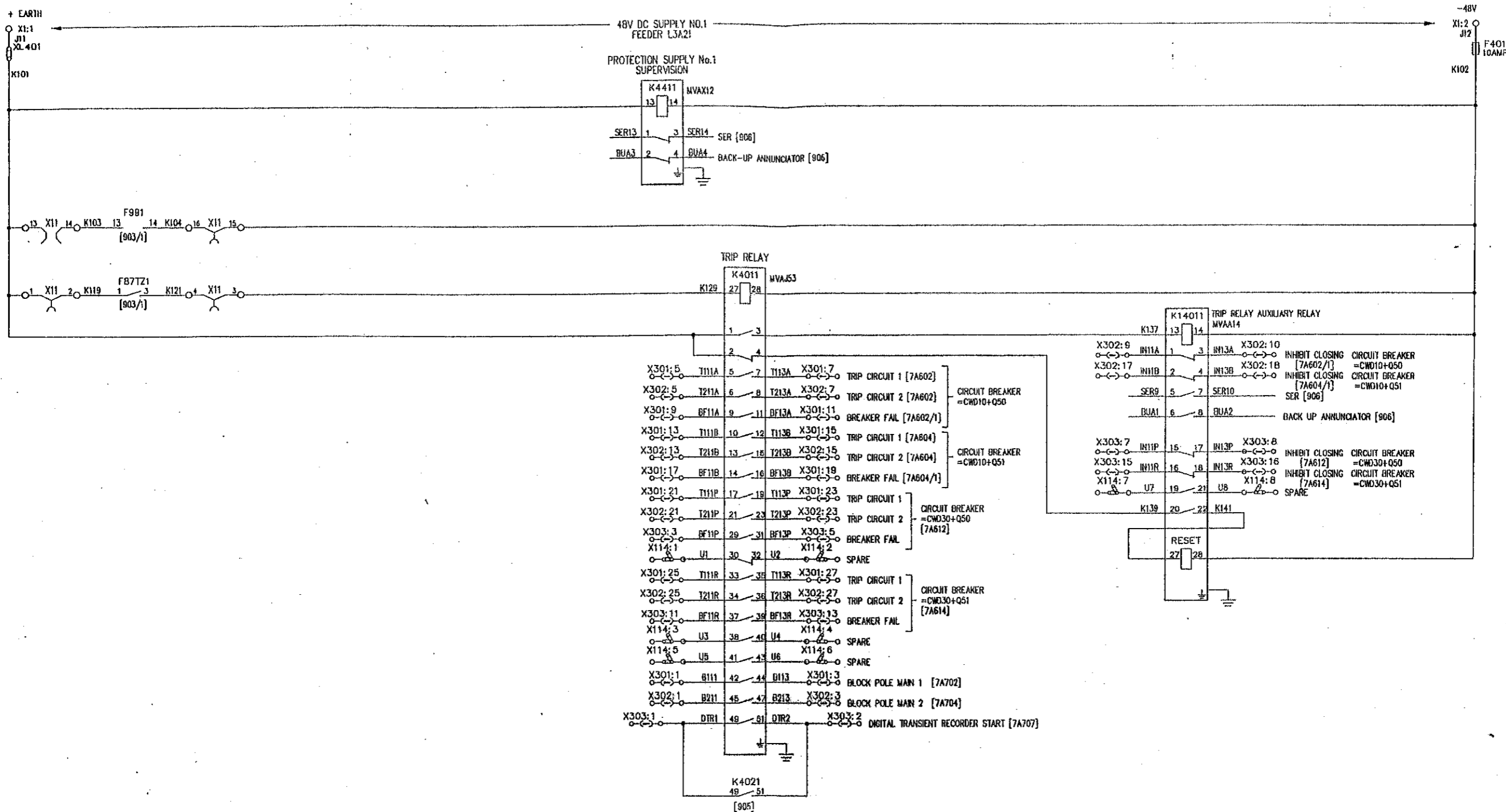
GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR  
 MANUFACTURE  
 NAME: N.M. KIRBY  
 DEPT. 736 DATE 12/08/00  
 SIGNED: [Signature]

THIRD ANGLE  
 PROJECTION  
 IF IN DOUBT  
 ASK

ALL DIMENSIONS  
 IN MILLIMETRES  
 UNLESS OTHERWISE STATED  
 DRAWING TO BS308  
 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF  
 ACCURACY OF ALL  
 UNTOLERANCED DIMENSIONS  
 SEE SPEC. STAND/023/PRD

DO NOT SCALE PRINT

DRG. No. 637EZ1Y04586 SHT 4



NOTES:  
 [SHN] DEMOTES FILE NO OF 7A9NN SECTION  
 REFER [901] FOR FILE INDEX  
 REFER [902] FOR LOCATION AND DEVICE LIST  
 [7A9NN] DEMOTES FILE NO OF 7A9NN SECTION

FILE 7A904

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Stafford, England

TITLE  
 VISAKHAPATNAM  
 EASTERN TRANSFORMER INTERZONE PROTECTION  
 CUBICLE = CWT11-FF-4111  
 DC CIRCUITS (PROTECTION SYSTEM 1)

DRG. No. 637EZ1Y04586 SHT 4  
 CURRENT ISSUE D

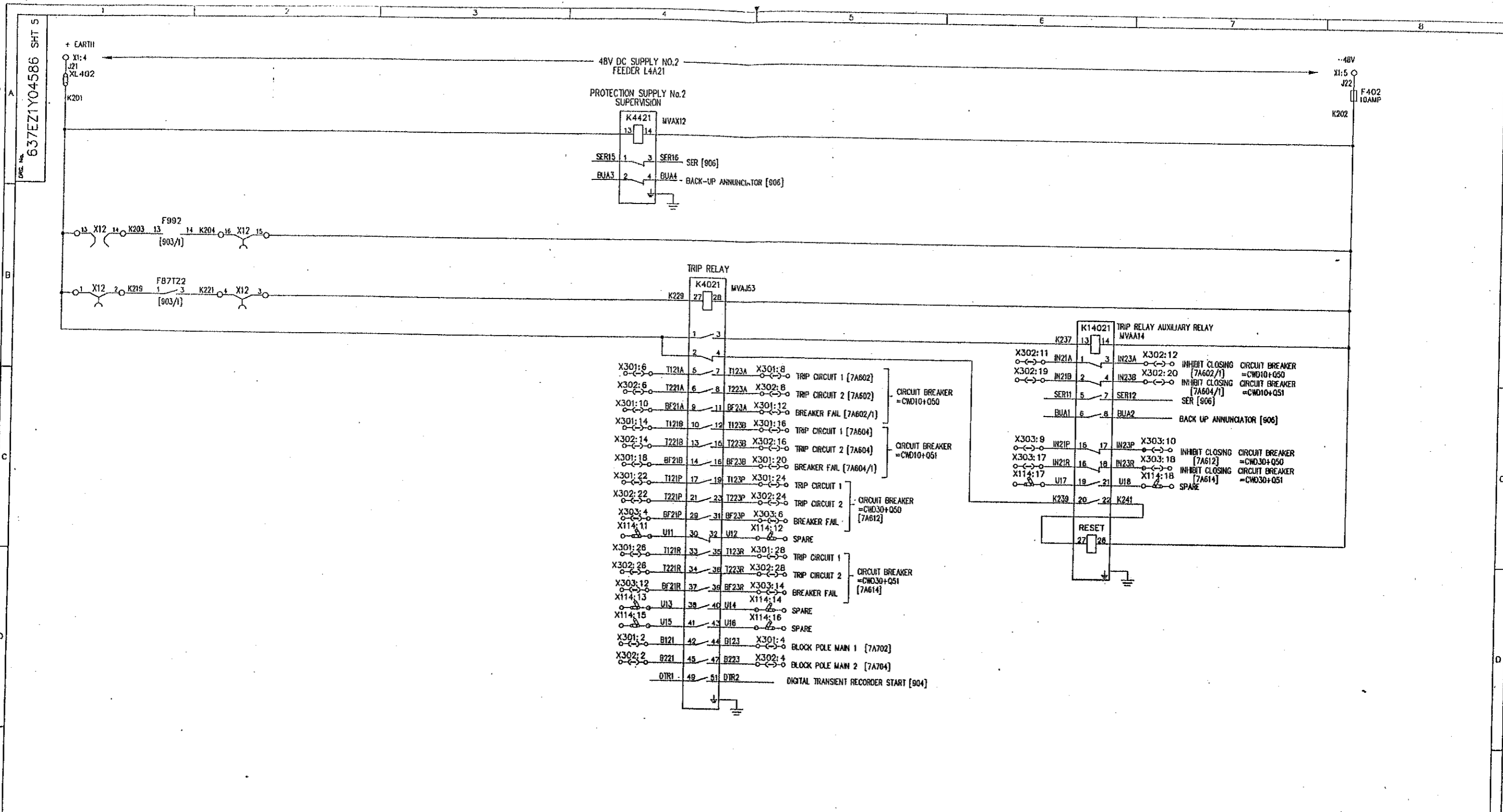
C.A.D. DATA	PRJ A	PRJ B	PRJ C	PRJ D
	PNS JCP	PNS JCP	RFR PREM	RFR PREM
	DATE 12/03/97	DATE 08/08/97	DATE 13/08/98	DATE 01/01/99
	REVISIONS: 1. REVISED TO CORRECT... FILE NOS FOR BLOCK POLE CHANGED, F901 DELETED FROM RIGHT COIL CIRCUIT, ALSO CONSISTS - RELAY TYPES ADDED 2. REVISED TO CORRECT... CHANGED FILE REF'S FROM 7A602 & 7A604 ON X301:11, X302:10 & X301:19, X302:18. 3. REVISED TO CORRECT... FILE REF 905/1 WAS 903 - 2 PLACES.			

AS BUILT DWG  
 14 APR 2000  
 VISAKHAPATNAM

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: B T BARRETT  
 CSPT. 739 DATE: 5/3/97  
 SIGNED: BTB

THIRD ANGLE PROJECTION  
 ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BS308 UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECN. STAND/023/PROG

DRAWN: JCP  
 CH'D: PNS  
 APP'D: RFR  
 SCALE:  
 TRACED:  
 DESIGN: PRJ  
 APP'D:  
 DD NOT SCALE PRINT  
 WHEN QUOTING DRG. No. STATE CURRENT ISSUE  
 CUSTOMER: POWERGRID  
 ORDER No. CF0136



NOTES:  
 [9NN] DENOTES FILE NO. OF 7ANN SECTION  
 REFER [901] FOR FILE INDEX  
 REFER [902] FOR LOCATION AND DEVICE LIST  
 [7ANN] DENOTES FILE NO. OF 7ANN SECTION

FILE 7A905

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Shelton, England

TITLE  
 VISAKHAPATNAM  
 EASTERN TRANSFORMER INTERZONE PROTECTION  
 CUBICLE = CWT11+EF4111  
 DC CIRCUITS (PROTECTION SYSTEM 2)

ORG. No.  
 637EZ1Y04586 SHT 5  
 CURRENT ISSUE  
 D

ISSUE	PRJ	PRJ	PRJ	PRJ
D	A	B	C	D
NAME	ISSUE	PNS	RFR	MCJ
	12-03-97	08-08-97	13-08-98	15-01-98
LOCATION	MCAJ			
VSA3660	REVISOR: BTB			

REVISOR: BTB  
 REVISION: 15-01-98  
 FILE REF 903/1 WAS 903 - 2 PLACES.

AS BUILT DWG  
 14 APR 2009  
 VISAKHAPATNAM

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR  
 MANUFACTURE  
 NAME: B T BARRETT  
 DEPT. 739 DATE: 6/3/97  
 SIGNED: BTB

THIRD ANGLE  
 PROJECTION  
 IF IN DOUBT  
 ASK

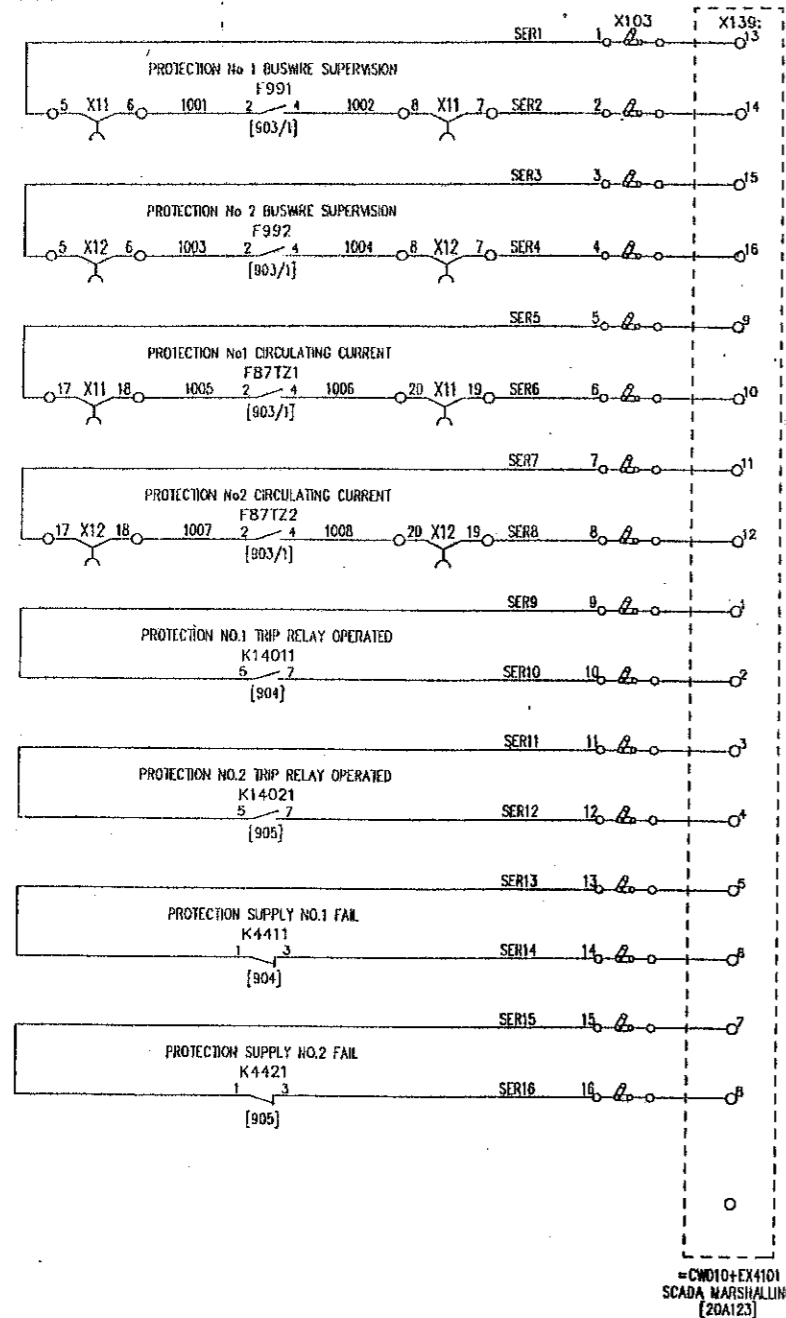
ALL DIMENSIONS  
 IN MILLIMETRES  
 UNLESS OTHERWISE STATED  
 DRAWING TO BS308  
 UNLESS OTHERWISE STATED  
 \* FOR THE STANDARD OF  
 ACCURACY OF ALL  
 UNDIMENSIONED DIMENSIONS  
 SEE SPEC. STAND/023/PROO

DO NOT SCALE PRINT  
 CUSTOMER POWERGRID

ORDER No. CF-0136

DPR No. 637EZ1Y04586 SHT 6

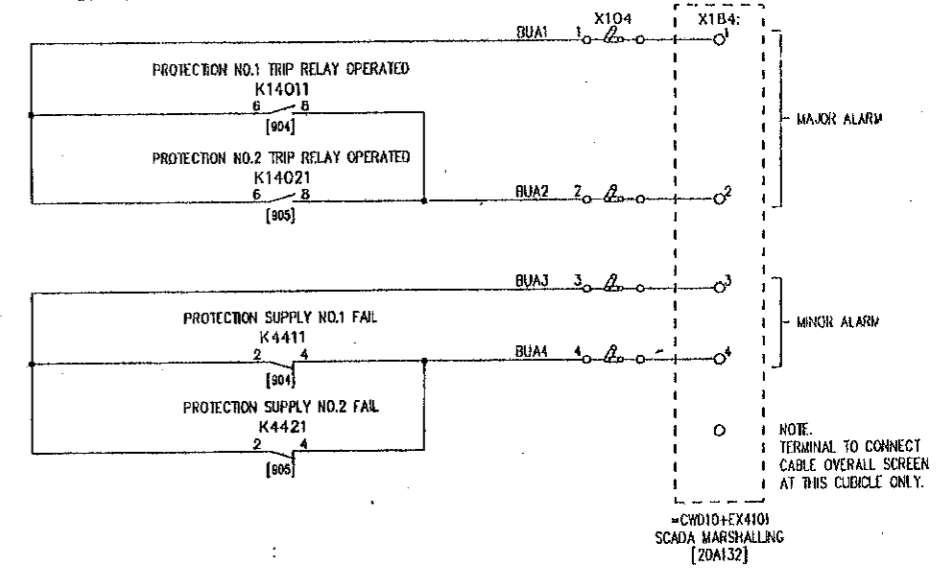
SEQUENCE OF EVENTS RECORDER ALARM SIGNALS



NOTE.  
TERMINAL TO CONNECT  
CABLE OVERALL SCREEN  
AT THIS CUBICLE ONLY.

=CWD10+EX4101  
SCADA MARSHALLING  
[20A123]

BACK-UP ANNUNCIATOR ALARM SIGNALS



NOTE.  
TERMINAL TO CONNECT  
CABLE OVERALL SCREEN  
AT THIS CUBICLE ONLY.

=CWD10+EX4101  
SCADA MARSHALLING  
[20A132]

NOTES:  
[99N] DENOTES FILE NO OF 7A99N SECTION  
REFER [901] FOR FILE INDEX  
REFER [902] FOR LOCATION AND DEVICE LIST  
[7ANN] DENOTES FILE NO OF 7ANN SECTION

FILE 7A906

POWER GRID CORPORATION OF INDIA LIMITED  
1 x 500MW HVDC BACK-TO-BACK PROJECT  
VISAKHAPATNAM

GEC ALSTHOM  
T&D

AS BUILT DWG  
14 APR 2000  
VISAKHAPATNAM

GEC ALSTHOM IND  
Power Electronic Systems Limited  
CERTIFIED FOR  
MANUFACTURE

THIRD ANGLE  
PROJECTION

ALL DIMENSIONS  
IN MILLIMETRES  
UNLESS OTHERWISE STATED

DRAWN JCP  
CHKD PNS

NAME: B T BARRETT  
DEPT. 739 DATE: 6/3/97  
SIGNED BTB

IF IN DOUBT  
ASK

FOR THE STANDARD OF  
ACCURACY OF ALL  
UNTOUCHED DIMENSIONS  
SEE SPECIAL STAND/023/PROG

DESIGN  
APP'D PRJ

DO NOT SCALE PRINT

GEC ALSTHOM T&D  
Power Electronic Systems Limited  
Suffolk, England

TITLE  
VISAKHAPATNAM  
EASTERN TRANSFORMER INTERZONE PROTECTION  
CUBICLE =CWT11+EF4111  
SER AND BUA SIGNALS

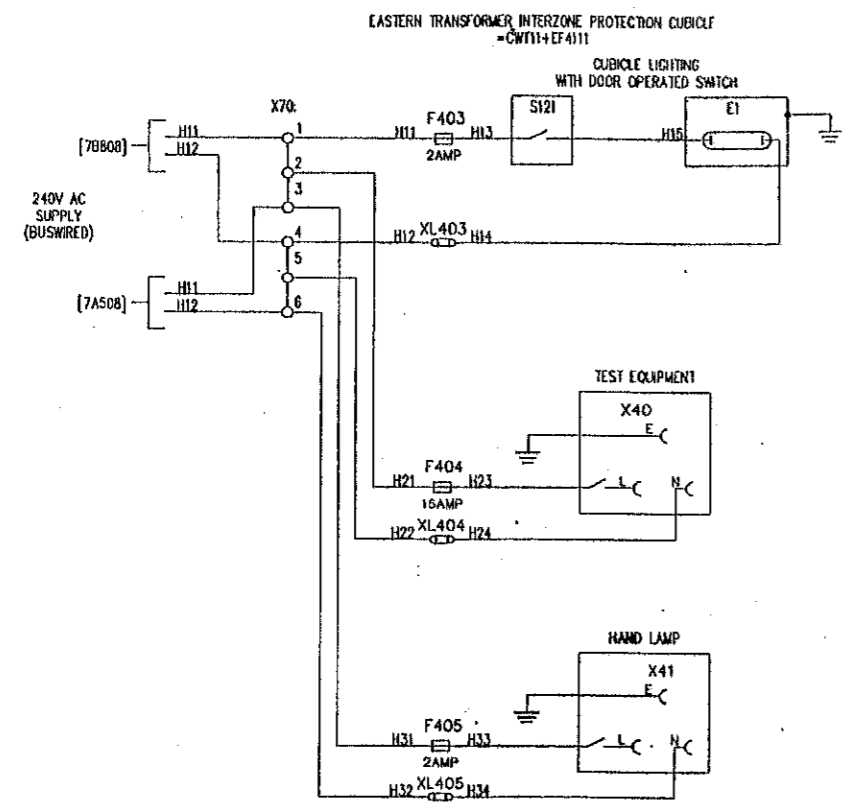
DRG. No.  
637EZ1Y04586 SHT 6

CURRENT  
ISSUE  
E

G.A.R. DATA		PRJ A	PRJ B	PRJ C	PRJ D	REVISED TO ECR484- ADDED TERMINAL NUMBERS TO =CWD10+EX4101.	REVISED TO ECR484- FILE REFS 20A123 & 20A132 WERE 20A.	REVISED TO ECR484- [903/1] WAS [903].
ISSUE	NAME	DATE	DATE	DATE	DATE	DATE	DATE	DATE
E		12/03/97	08/08/97	13/08/98	15/01/99	23/03/99	03/03/99	03/03/99
			REVISED TO ECR484- SCADA MARSHALLING ADDED (FILE REF TO FOLLOW)					

1 2 3 4 5 6 7 8

637EZ1Y04586 SHT 7



NOTES:  
 [5XXX] DENOTES FILE NO OF 7A9NN SECTION  
 REFER [901] FOR FILE INDEX  
 REFER [902] FOR LOCATION AND DEVICE LIST  
 [7ANN] DENOTES FILE NO OF 7ANN SECTION

FILE 7A907

POWER GRID CORPORATION OF INDIA LIMITED  
 1 x 500MW HVDC BACK-TO-BACK PROJECT  
 VISAKHAPATNAM

GEC ALSTHOM  
 T&D

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 Sharn, England

TITLE  
 VISAKHAPATNAM  
 EASTERN TRANSFORMER INTERZONE PROTECTION  
 CUBICLE =CWT11+EF4111  
 AC SUPPLIES AND CUBICLE ILLUMINATION

DRG. No. 637EZ1Y04586 SHT 7  
 ISSUE B

Q.A.D. DATA	A	B	REVISED TO ENGLISH - CUBICLE TITLE CORRECTED
ISSUE	12	03	97
DATE	12	03	97
LOCATION	VISA1290		

**AS BUILT DWG**  
 14 APR 2000  
**VISAKHAPATNAM**

GEC ALSTHOM T&D  
 Power Electronic Systems Limited  
 CERTIFIED FOR MANUFACTURE  
 NAME: B T BARRETT  
 DEPT. 739 DATE: 6/3/97  
 SIGNED: BTB

THIRD ANGLE PROJECTION  
  
 IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED  
 DRAWING TO BASIS UNLESS OTHERWISE STATED  
 FOR THE STANDARD OF ACCURACY OF ALL UNTOLERANCED DIMENSIONS SEE SPECH. STAND/023/PROC

DRAWN JCP  
 CH'D PNS  
 APP'D RFR  
 SCALE  
 TRACED  
 DESIGN APP'D PRJ

DO NOT SCALE PRINT

CUSTOMER POWERGRID ORDER No. CPD136

1 2 3 4 5 6 7 8