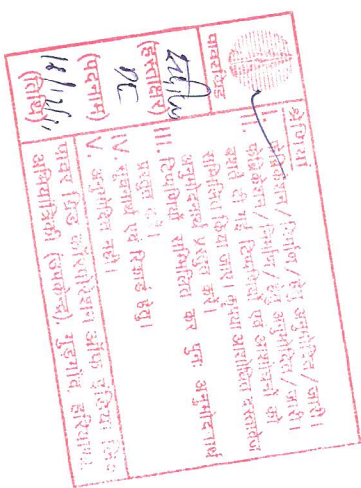




**SCHEMATIC DRAWING  
400KV CONTROL PANEL AUGMENTATION FOR BUS REACTOR  
PANEL TYPES: KD**

- 00 LIST OF DRAWINGS
- 01 LIST OF SYMBOLS
- 02 SINGLE LINE DIAGRAM
- 03 KEY DIAGRAM - 400KV LINE
- 04 KEY DIAGRAM - 400KV LINE
- 05 AC & DC DISTRIBUTION
- 06 METERING CIRCUIT
- 07 CIRCUIT BREAKER CONTROL CKT. (CISG)
- 08 ISOLATOR & E/S CONTROL CIRCUIT
- 09 ISOLATOR & E/S CONTROL CIRCUIT
- 10 ISOLATOR & E/S CONTROL CIRCUIT
- 11 ANNUNCIATION SCHEME
- 12 ANNUNCIATION SCHEME
- 13 SYNCHRONISING VT SELECTION
- 14 ISOLATOR INTERLOCK CIRCUIT

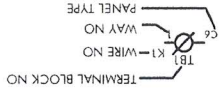
EXISTING PANEL GA DWG. REF: YN1M300225-AAE  
EXISTING PANEL LEGEND REF: YN1M300225-LAF  
EXISTING PANEL SCHEME DWG. REF: YN1M300225-CAE


  
 1. ...  
 2. ...  
 3. ...  
 4. ...  
 5. ...  
 6. ...  
 7. ...  
 8. ...  
 9. ...  
 10. ...  
 11. ...  
 12. ...  
 13. ...  
 14. ...

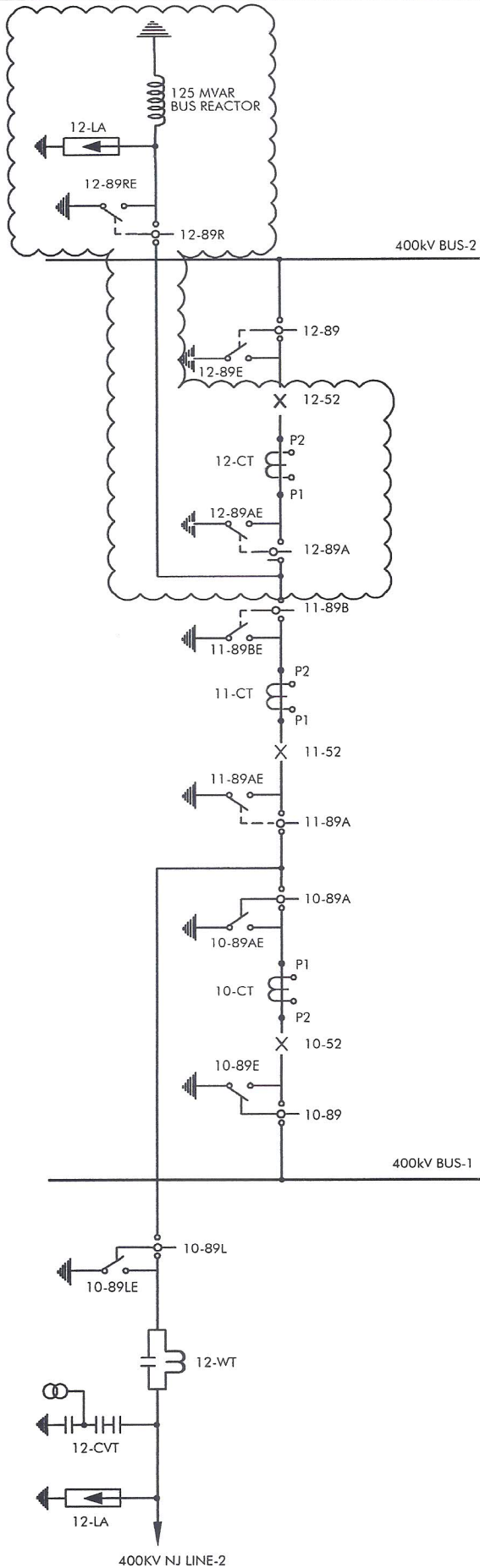
FOR AREVA REF:	ENGG REF NO.: KQ88	CUSTOMER: POWER GRID CORPORATION OF INDIA	LIMITED	SCHEMATIC DRAWING	PREPARED BY: MR	REVISION: A
SCHEME TYPE: BUS REACTOR		PROJECT: 400/220KV NALGAPARA SUB-STATION (EXTN)		PANEL TYPES: KD	CHECKED BY: JJK	DATE: 26.09.11
BASE FILE: EPC/PSC ENGINEERS PVT LTD		P.O.NO.: PSC/2010-11/217MKW/PB/070		TITLE: AUGUMENTATION OF CONTROL PANEL	APPROVED BY: SSS	SCALE: --
SALES ORDER: 3289015984		Dated 24.05.11	 <b>AREVA</b> AREVA INDIA LIMITED - AUTOMATION CS PALAVALURAM CHEMUNDA 600035	FILE: DD0881700		DRG. NO.: CPD KQ88 SC/17 SHT00 OF 14

SALES ORDER: 3269015984		FOR AREVA REF: ENG. REF. NO.: K088	
BASE FILE: EPC:P&C ENGINEERS PVT LTD		PROJECT: 400/220KV NALAGARH SUB-STATION (EXTN)	
P.O.NO.: PSC/2010-11/217/MKM/PB/070		Dated 24.05.11	
AREVA 1&D INDIA LIMITED - AUTOMATION CCS PALAVARAM CHENNAI 600043		AREVA LIMITED CUSTOMER: POWER GRID CORPORATION OF INDIA	
SCHEMATIC DRAWING PANEL TYPES: KD TITLE: AUGMENTATION OF CONTROL PANEL FILE: DQ881701			
DRG. NO.: CPD KQ88 SC17 SHT01 OF 14	APPROVED BY: SSS	CHECKED BY: JKK	REVISION: A
SCALE: -	DATE: 26.09.11	PREPARED BY: MR	

- NOTE:
1. SCHEMATIC SYMBOLS GENERALLY COMPLY WITH IEC STANDARDS.
  2. RELAY CONTACTS SHOWN WITH COIL DE-ENERGISED CONDITION.
  3. SHT NO. REPRESENTATION OF CROSS REFERENCES BETWEEN SHEETS.



SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MAKE CONTACT		RELAY COIL - GENERAL SYMBOL		BUSWIRE
	MAKE CONTACT - DELAYED DROP OFF		RELAY COIL - SLOW RELEASING		ELECTRIC HOOTER
	MAKE CONTACT - DELAYED PICKUP		RELAY COIL - SLOW OPERATING		ELECTRIC BELL
	MAKE CONTACT WITH BLOWOUT MAGNET		FLASHER RELAY		SEMAPHORE INDICATOR
	MAKE CONTACT - HAND RESET		RELAY COIL - RELAY COIL		INDICATING LAMP
	MAKE CONTACT - THYRISTOR		RELAY COIL - FLAG INDICATOR		CONTROL/SEL SW-TYPE ODS
	BREAK CONTACT		RELAY COIL - HAND RESET		METROSIL SURGE DIVERTOR
	BREAK CONTACT - DELAYED DROP OFF		RELAY COIL - DISCONNECTING TB AT C&R PANELS		STABILISING RESISTOR
	BREAK CONTACT - DELAYED PICKUP		RELAY COIL - TERMINAL BOARD AT C&R PANELS		RESISTOR
	BREAK CONTACT - HAND RESET		RELAY COIL - TERMINAL BOARD AT MARSHALLING KIOSK		TEST BLOCK - MPG
	BREAK CONTACT - CHANGE OVER CONTACT		RELAY COIL - TERMINAL BOARD AT ISOLATOR		LINK
	CHANGE OVER CONTACT - DELAYED DROP OFF		RELAY COIL - TERMINAL BOARD AT CT/VT KIOSK		FUSE
	CHANGE OVER CONTACT - DELAYED PICKUP		RELAY COIL - TERMINAL BOARD AT PLC PANEL		THERMOSTAT
	CHANGE OVER CONTACT - HAND RESET				POWER SOCKET
	CHANGE OVER CONTACT				HEATER SWITCH



FOR AREVA REF: ENGGR REF. NO.: KQ88  
 SCHEME TYPE: BUS REACTOR  
 BASE FILE: EPC:PSC ENGINEERS PVT LTD  
 SALES ORDER: 3299015984

CUSTOMER: POWER GRID CORPORATION OF INDIA  
 PROJECT: 400/220KV NALAGARH SUB-STATION (EXTN)  
 P.O.NO.: PSC/2010-11/217MKM/PB/070  
 Dated 24.05.11

LIMITED  
**AREVA**  
 AREVA 760 INDIA LIMITED - AUTOMATION CS  
 PALLAVARAM, CHENNAI 600043

SCHEMATIC DRAWING  
 PANEL TYPES: KD  
 TITLE: AUGUMENTATION OF CONTROL PANEL  
 SINGLE LINE DIAGRAM  
 FILE: DQ881702

PREPARED BY: MR	REVISION: A
CHECKED BY: JJK	DATE: 26.09.11
APPROVED BY: SSS	SCALE: --
DRG. NO.: CPD KQ88 SC17 SHT02	OF 14



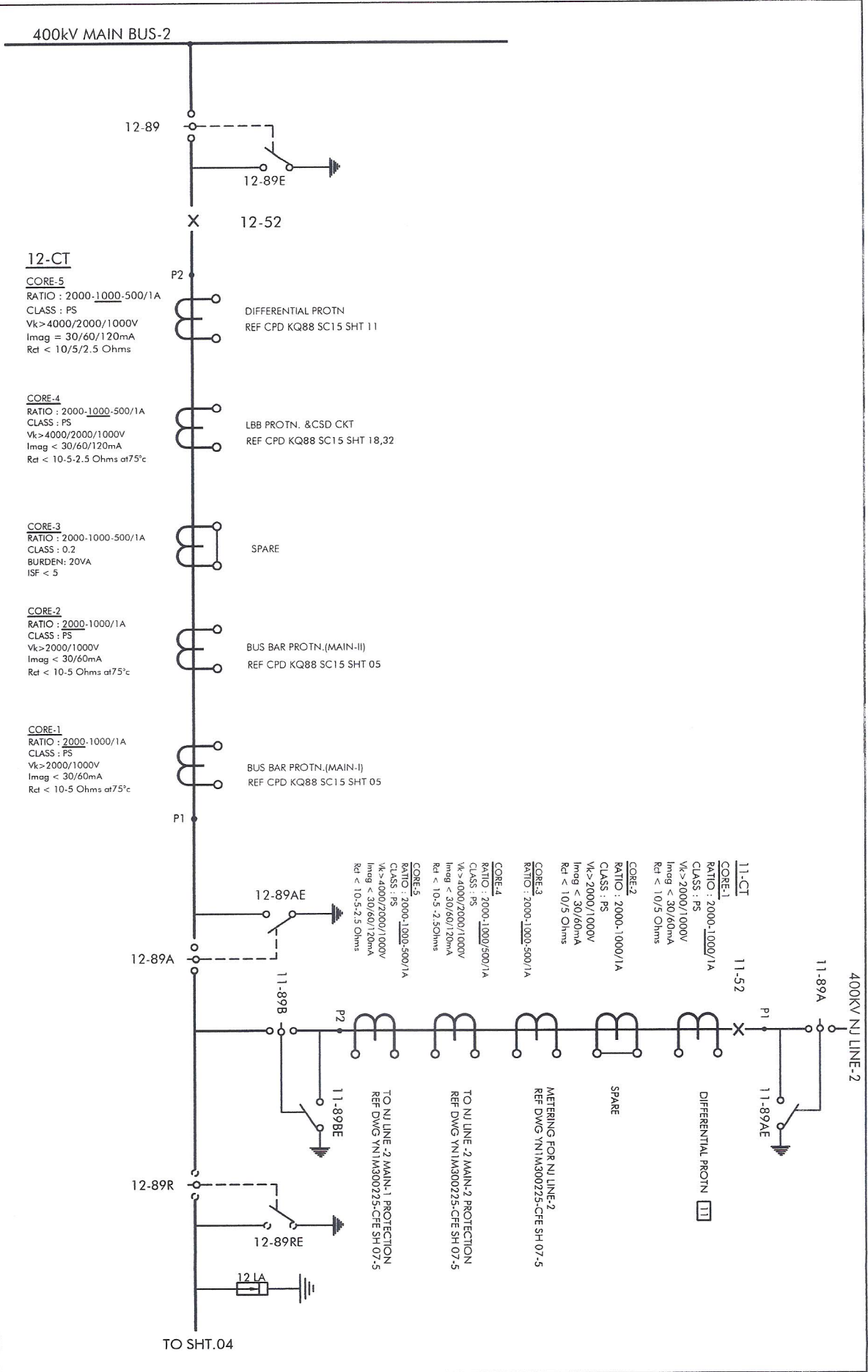
FOR AREVA REF: ENGGR REF. NO.: KQ88  
 SCHEME TYPE: BUS REACTOR  
 BASE FILE: EPC:PSC ENGINEERS PVT LTD  
 SALES ORDER: 3289015984

CUSTOMER: POWER GRID CORPORATION OF INDIA  
 PROJECT: 400/220KV MALAGARH SUB-STATION (EXTN)  
 P.O.NO.: PSC/2010-11/217MMK/PIB/070  
 Dated 24.05.11

AREVA  
 AREVA LTD INDIA LIMITED - AUTOMATION CS  
 PALLAVARAM CHENNAI 600035

SCHEMATIC DRAWING  
 PANEL TYPES: KD  
 TITLE: ARGUMENTATION OF CONTROL PANEL  
 KEY DIAGRAM - 400KV BUS REACTOR  
 FILE: DQ881703

PREPARED BY: MR  
 CHECKED BY: JJK  
 APPROVED BY: SSS  
 DRG. NO.: CPD KQ88 SC17 SHT03 OF 14  
 REVISION: A  
 DATE: 26.09.11  
 SCALE: --



FOR AREVA REF:	ENGG REF. NO.: KQ88	CUSTOMER: POWER GRID CORPORATION OF INDIA LIMITED	AREVA AREVA LTD INDIA LIMITED - AUTOMATION COS PALLAVARAI CHENNAI 600043	SCHEMATIC DRAWING	FILE: DQ881704	PREPARED BY: MR	REVISION: A
SCHEME TYPE: BUS REACTOR		PROJECT: 400/220KV NALAGARH SUB-STATION (EXTN)		PANEL TYPE: KD		CHECKED BY: JKK	DATE: 26.09.11
BASE FILE: EPC/PSG ENGINEERS PVT LTD		P.O. NO.: PSC/2010-11/217MM/MP/9/070		TITLE: AUGUMENTATION OF CONTROL PANEL		APPROVED BY: SSS	SCALE: --
SALES ORDER: 3269015984		Dated 24.05.11		KEY DIAGRAM - 400KV BUS REACTOR		DRG. NO.: CPD KQ88 SC17 SHT04	OF 14

FROM SHEET-03

BUSHING CT

CORE-1

RATIO : 200/1A  
CLASS : PS  
Imag = 30 mA AT 50V

REACTOR REF PROTECTION  
REF : DWG CPD KQ88 SC15 SHT.13

CORE-2

RATIO : 200/1A  
CLASS : PS  
Imag = 30 mA AT 50V

REACTOR BACKUP PROTIN  
REF : DWG CPD KQ88 SC15 SHT.15

CORE-3

RATIO : 200/1A  
CLASS : PS  
Imag = 30 mA AT 50V

SPARE

CORE-4

RATIO : 200/1A  
CLASS : 1.0  
BURDEN : 10VA

METERING CKT. 06

REACTOR

125MVAR, 420KV, Yn  
ONAN

BUSHING CT

CORE-4

RATIO : 2000-1000-500/1A  
CLASS : PS  
Vk > 1000/500/250V  
Imag = 30mA AT Vk/4  
Rd < 10/5/2.5 Ohms

DIFFERENTIAL PROTECTION  
REF : DWG CPD KQ88 SC15 SHT.11

CORE-3

RATIO : 2000-1000-500/1A  
CLASS : PS  
Vk > 1000/500/250V  
Imag = 30mA AT Vk/4  
Rd < 10/5/2.5 Ohms

SPARE

CORE-2

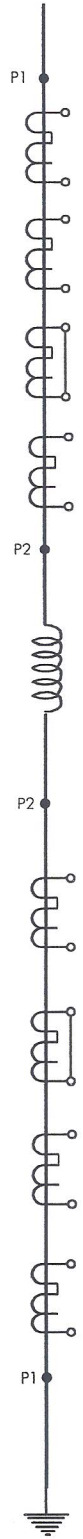
RATIO : 172/2A  
CLASS : 3  
BURDEN : 10VA

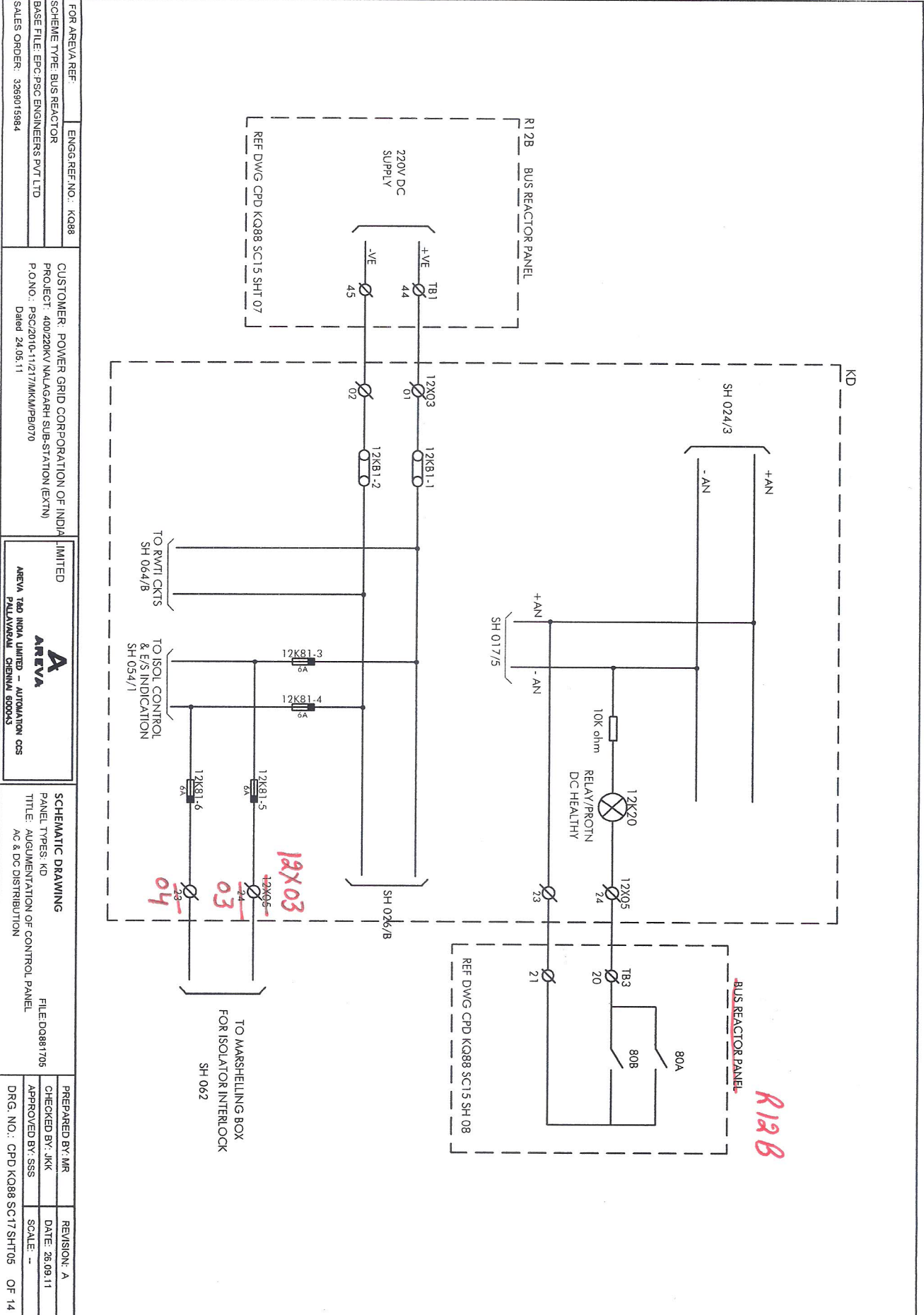
TO WTI & RTD

CORE-1

RATIO : 200/1A  
CLASS : PS  
Imag = 30 mA AT 50V

REACTOR REF PROTECTION.  
REF : DWG CPD KQ88 SC15 SHT.13





FOR AREVA REF: ENG.GREF.NO.: KQ88  
 SCHEME TYPE: BUS REACTOR  
 BASE FILE: EPC/PSC ENGINEERS PVT LTD  
 SALES ORDER: 3289015984

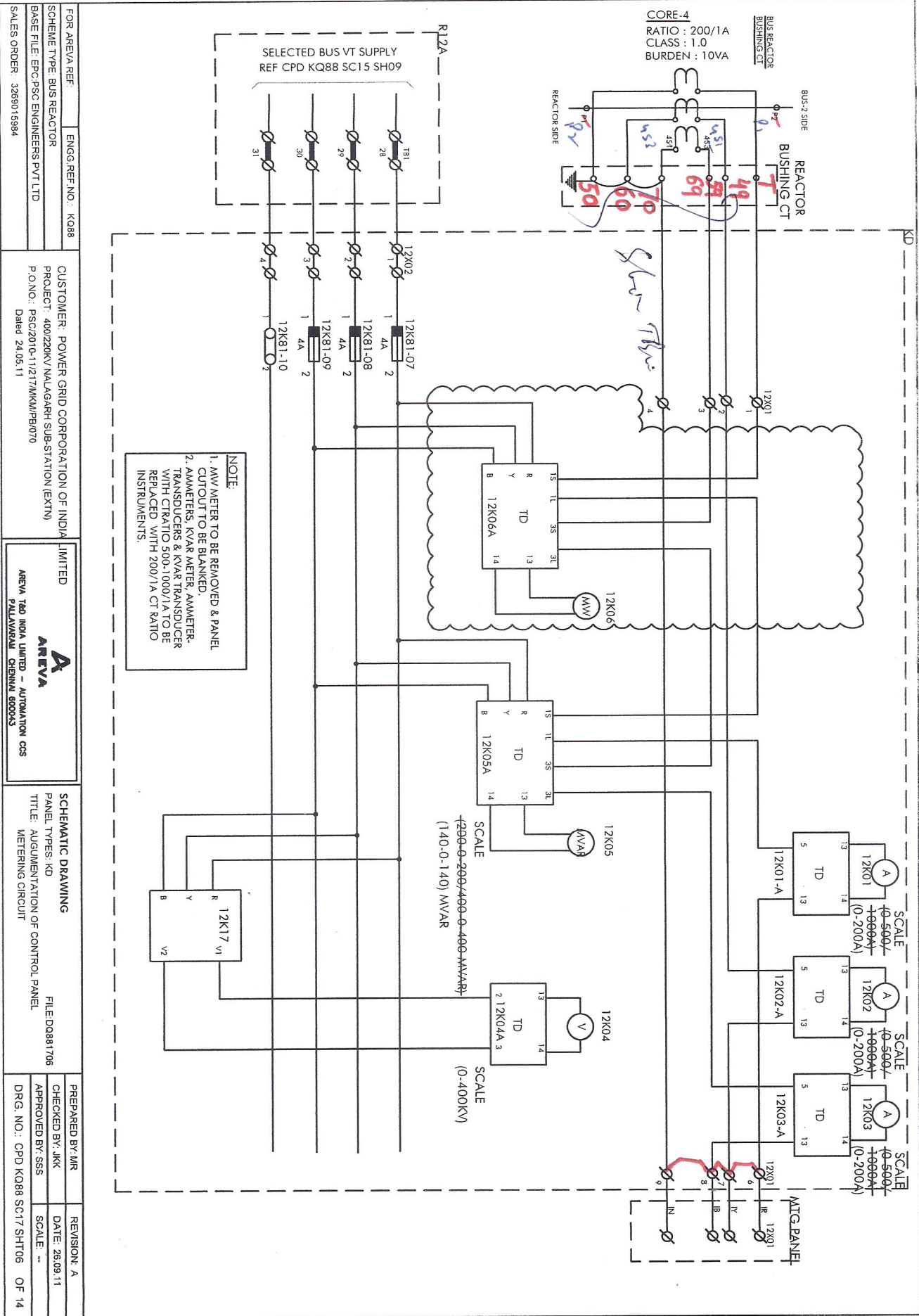
CUSTOMER: POWER GRID CORPORATION OF INDIA  
 PROJECT: 400/220KV NALAGARH SUB-STATION (EXTN)  
 P.O.NO.: PSC/2010-11/217/MK/MPB/070  
 Dated 24.05.11

LIMITED  
**AREVA**  
 AREVA T&D INDIA LIMITED - AUTOMATION CSS  
 PALAYANDURAM CHENNAI 600043

SCHEMATIC DRAWING  
 PANEL TYPES: KD  
 TITLE: AUGUMENTATION OF CONTROL PANEL  
 AC & DC DISTRIBUTION  
 FILE: DQ881705

PREPARED BY: MR  
 CHECKED BY: JKK  
 APPROVED BY: SSS  
 DRG. NO.: CPD KQ88 SC17 SHT05 OF 14

REVISION: A  
 DATE: 26.09.11  
 SCALE: --



FOR AREVA REF: ENG.GREF.NO.: KQ88  
 SCHEME TYPE: BUS REACTOR  
 BASE FILE: EPC/PSC ENGINEERS PVT.LTD  
 SALES ORDER: 3269015994

CUSTOMER: POWER GRID CORPORATION OF INDIA  
 PROJECT: 400/220KV NALAGARH SUB-STATION (EXTN)  
 P.O.NO.: PSC/2010-11/217MM/PS/070  
 Dated 24.05.11

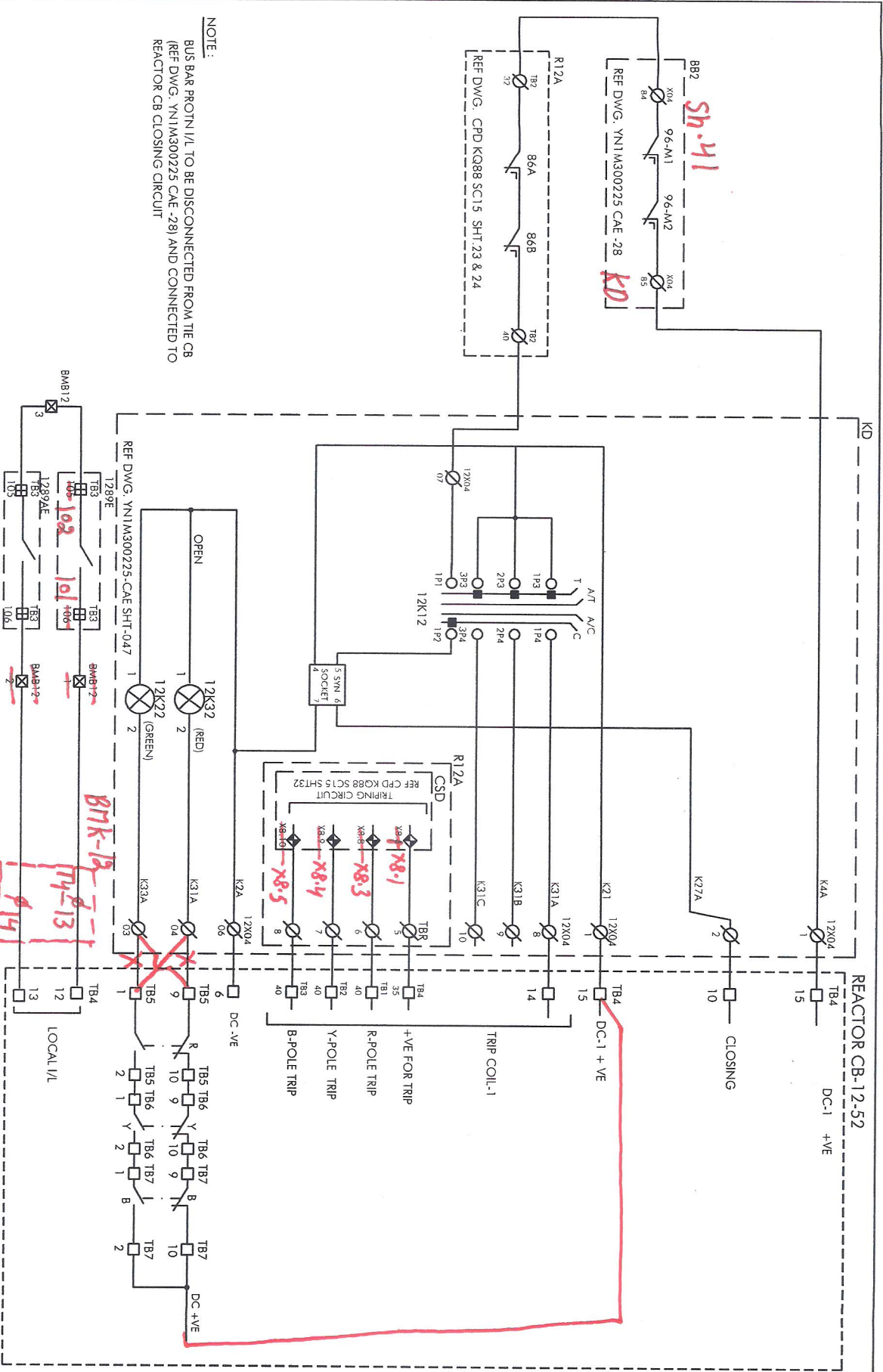
LIMITED  
**AREVA**  
 AREVA T&D INDIA LIMITED - AUTOMATION CSS  
 PALLAVARAM CHEMICAL ROAD

SCHEMATIC DRAWING  
 PANEL TYPE: KD  
 TITLE: AUGUMENTATION OF CONTROL PANEL  
 METERING CIRCUIT  
 FILE: DQ881706

PREPARED BY: MR  
 CHECKED BY: JKK  
 APPROVED BY: SSS  
 DRG. NO.: CPD KQ88 SC17 SHT06 OF 14

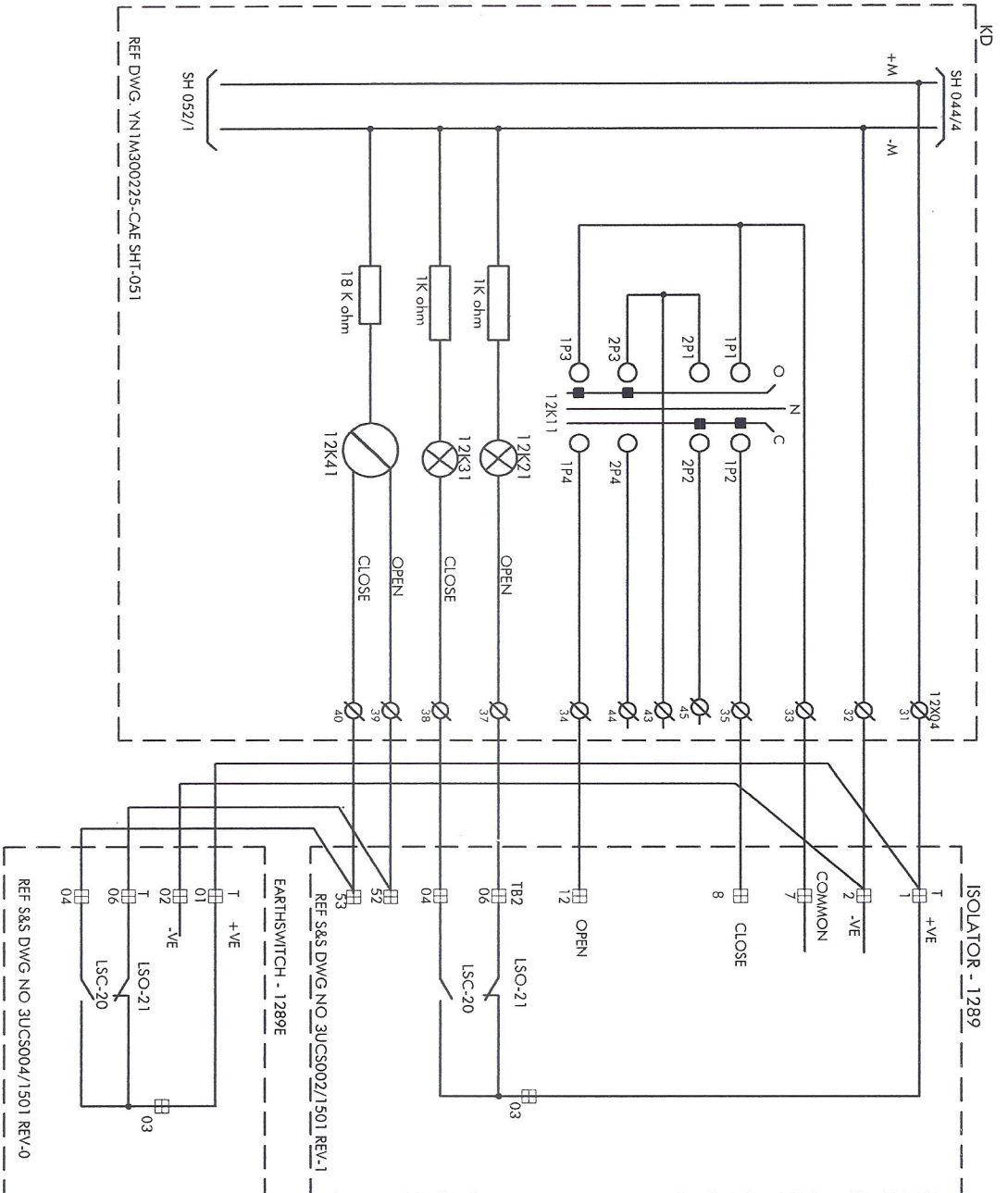
REVISION: A  
 DATE: 25.09.11  
 SCALE: --





NOTE:  
 BUS BAR PROTIN I/L TO BE DISCONNECTED FROM THE CB  
 (REF DWG. VN1M300225 CAE -28) AND CONNECTED TO  
 REACTOR CB CLOSING CIRCUIT

FOR AREVA REF:	ENGS REF. NO.: KQ88	CUSTOMER: POWER GRID CORPORATION OF INDIA LIMITED	AREVA	SCHEMATIC DRAWING	PREPARED BY: MIR	REVISION: A
SCHEME TYPE: BUS REACTOR		PROJECT: 400/220KV NALAGARH SUB-STATION (EXTN)	AREVA INDIA LIMITED - AUTOMATION CS	PANEL TYPES: KD	CHECKED BY: JKK	DATE: 28.09.11
BASE FILE: EPC/PC/ENGINERS PVT LTD		P.O.NO.: PSC/2010-11/217/MM/MB/070	AREVA PALUVARAI CHENNAI 600043	TITLE: AUGMENTATION OF CONTROL PANEL	APPROVED BY: SSS	SCALE: -
SALES ORDER: 3269015984		Dated 24.05.11		CIRCUIT BREAKER CONTROL CKT. (CSSG)	DRG. NO.: CPD KQ88 SCT7 SHT07	OF 14



FOR AREVA REF: ENG.G.REF.NO.: KQ88  
 SCHEME TYPE: BUS REACTOR  
 BASE FILE: EPC/PSC ENGINEERS PVT.LTD  
 SALES ORDER: 3269015984

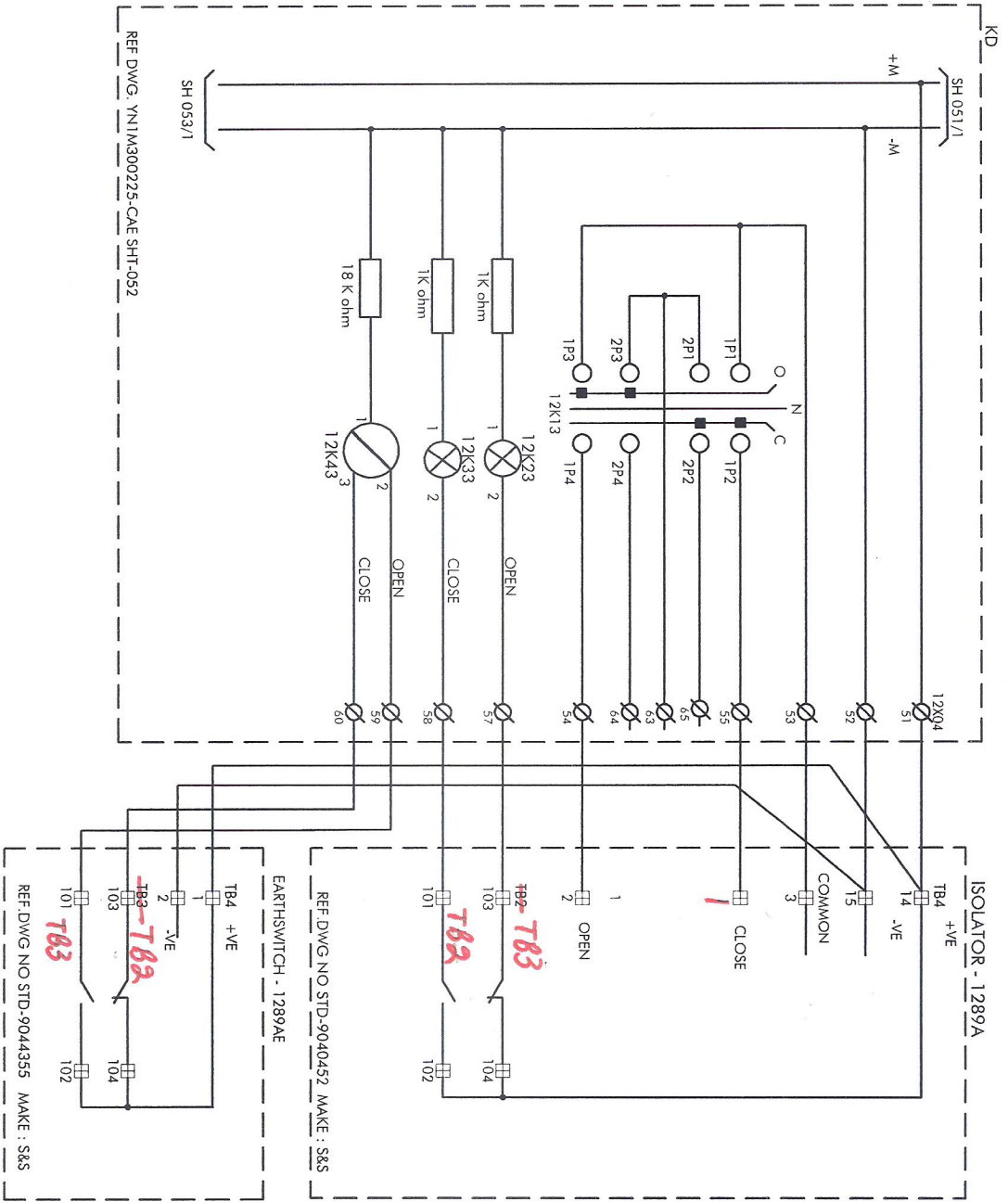
CUSTOMER: POWER GRID CORPORATION OF INDIA  
 PROJECT: 400/220KV NALAGARH SUB-STATION (EXTN)  
 P.O.NO.: PSC/2010-11/217MM/MP/070  
 Dated 24.05.11



SCHEMATIC DRAWING  
 PANEL TYPE: KD  
 TITLE: ALIGNMENT OF CONTROL PANEL  
 ISOLATOR & EIS CONTROL CIRCUIT  
 FILE: DQ881708

PREPARED BY: MR  
 CHECKED BY: JKK  
 APPROVED BY: SSS  
 DRG. NO.: CPD KQ88 SC.17 SH108 OF 14

REVISION: A  
 DATE: 28.09.11  
 SCALE: --



FOR AREVA REF: ENG.G. REF. NO.: KQ88  
 SCHEME TYPE: BUS REACTOR  
 BASE FILE: EPC:P&C ENGINEERS PVT.LTD  
 SALES ORDER: 3269015984

CUSTOMER: POWER GRID CORPORATION OF INDIA  
 PROJECT: 400/220KV NALAGARH SUB-STATION (EXTN)  
 P.O.NO.: PSC/2010-11/217MM/MP/070  
 Dated 24.05.11



SCHEMATIC DRAWING  
 PANEL TYPE: KD  
 TITLE: ALIGNMENT OF CONTROL PANEL  
 ISOLATORS & EIS CONTROL CIRCUIT  
 FILE: DQ881709

PREPARED BY: MR  
 CHECKED BY: JKK  
 APPROVED BY: SSS  
 DRG. NO.: CPD KQ88 SC.17 SHT09 OF 14

REVISION: A  
 DATE: 26.09.11  
 SCALE: --

FOR AREA/ REF: \_\_\_\_\_ ENGG. REF. NO.: KQ88

SCHEMATIC TYPE: BUS REACTOR

BASE FILE: EPC/PSC ENGINEERS PVT.LTD

SALES ORDER: 3269015984

CUSTOMER: POWER GRID CORPORATION OF INDIA

PROJECT: 400/220KV NALAGARH SUB-STATION (EXTN)

P.O.NO.: PSC/2010-11/217MMMPB/070

Dated: 24/03/11

LIMITED

**AREVA**

AREVA T&D INDIA LIMITED - AUTOMATION CSS

PALLAVARAI, CHENNAI 600043

SCHEMATIC DRAWING

PANEL TYPE: KD

TITLE: ALIGNMENT OF CONTROL PANEL

ISOLATORS & E/S CONTROL CIRCUIT

FILE: DQ881710

DRG. NO.: CPD KQ88 SC-17-SHT10 OF 14

PREPARED BY: MR \_\_\_\_\_

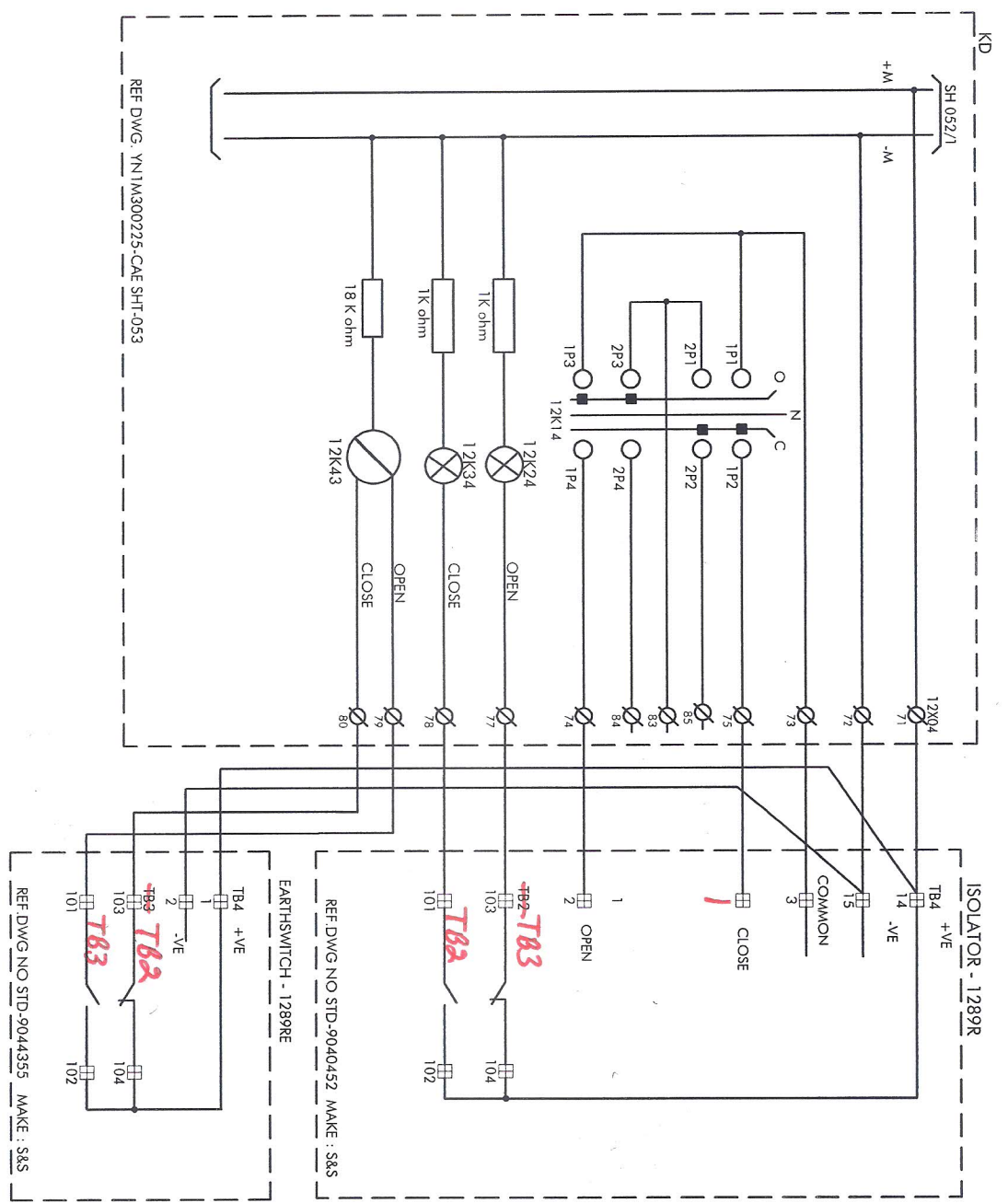
CHECKED BY: JKK \_\_\_\_\_

APPROVED BY: SSS \_\_\_\_\_

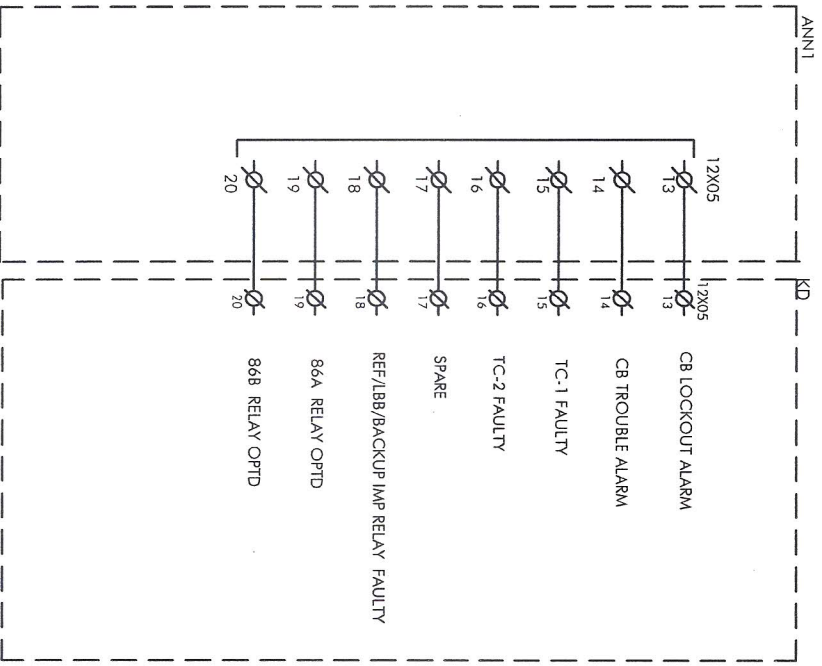
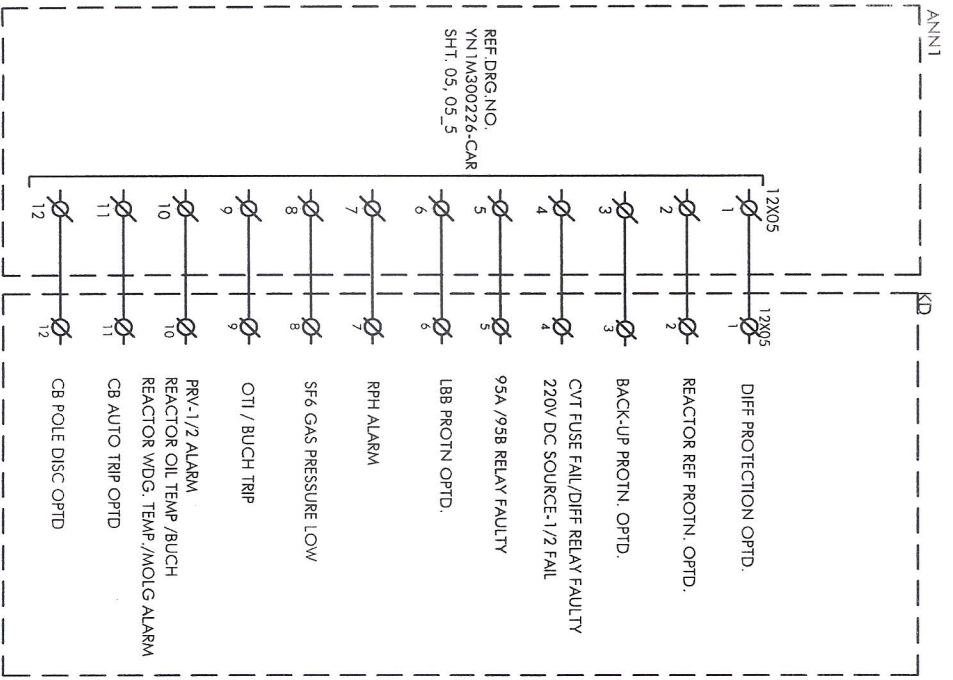
REVISION: A

DATE: 26.03.11

SCALE: -







REF DRG. NO.  
YN1M300226-CAR  
SHT. 05\_05\_5

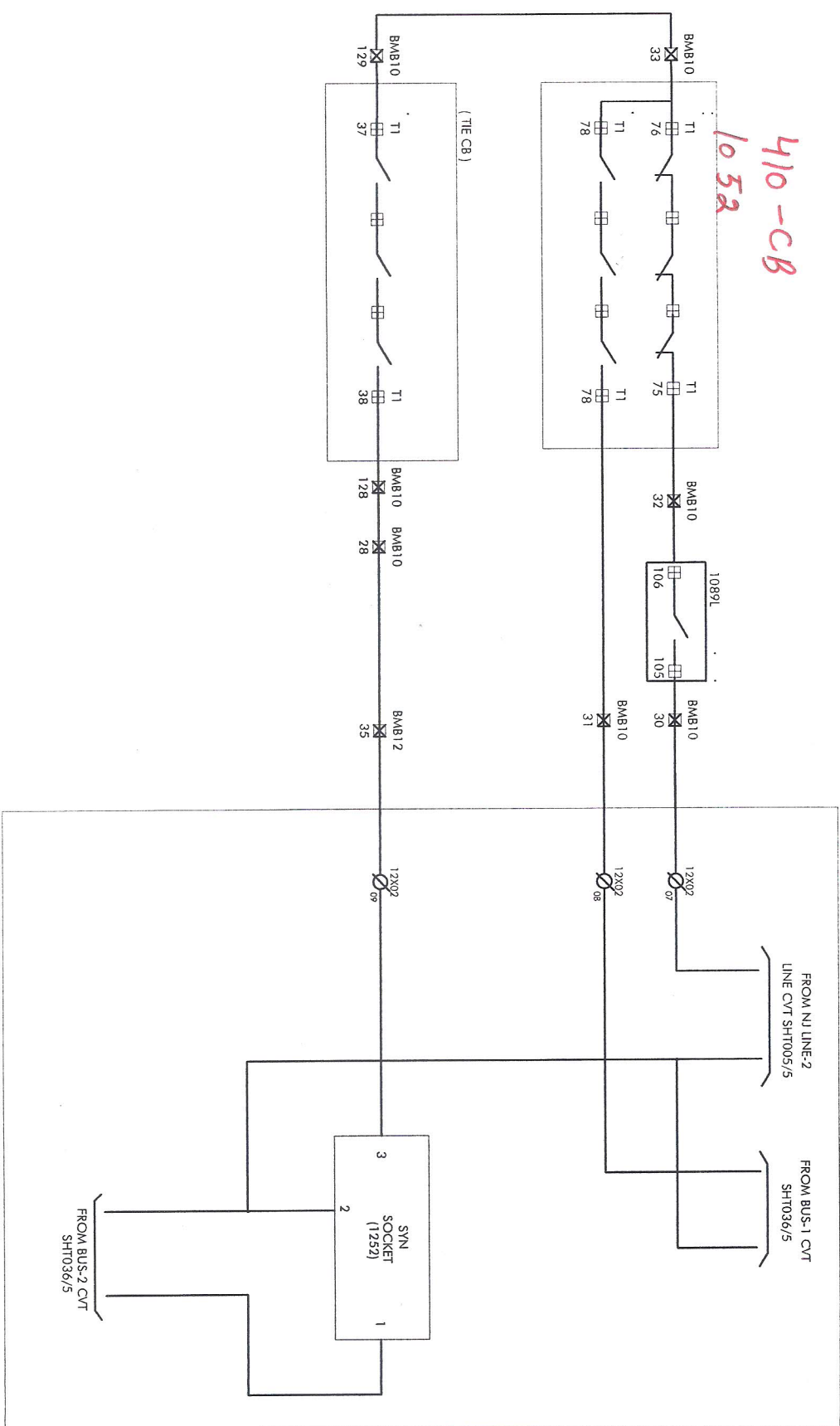
FOR AREVA REF:	ENGG. REF. NO.: KQ88	CUSTOMER: POWER GRID CORPORATION OF INDIA LIMITED	AREVA AREVA 180 INDIA LIMITED - AUTOMATION CSS PULAVAYALU CHENNAI 600043	SCHEMATIC DRAWING	FILE ID: Q0881711	PREPARED BY: MR	REVISION: A
SCHEME TYPE: BUS REACTOR		PROJECT: 400/220KV NALAGARH SUB-STATION (EXTN)		PANEL TYPE: KD		CHECKED BY: JKK	DATE: 26.09.11
BASE FILE: EPC/PSG ENGINEERS PVT LTD		P.O. NO.: PSC/2010-11/217MM/MP/070		TITLE: ASSIGNMENT OF CONTROL PANEL		APPROVED BY: SSS	SCALE: -
SALES ORDER: 3269015984		Dated 24.05.11		ANNUNCIATION SCHEME		DRG. NO.: CPD KQ88 SC17 SHT 11	OF 14

FACIA NO.	WAY NO	INITIATING CONTACT	REF DRG	FACIA INSCRIPTION				TRIP/ NON-TRIP
				FIRST LINE	SECOND LINE	THIRD LINE	FOURTH LINE	
FC	1	87R	REF DWG YN1M300226-CAR SH-5	REACTOR	DIFFERENTIAL	PROTN	OPTD	T
	2	64R		REACTOR	REF	PROTN	OPTD	T
	3	21R		REACTOR	BACKUP	PROTN	OPTD	T
	4	21R, 80A, 80B		REACTOR	CVT/DC SUPPLY	FAIL	ALARM	N/T
	5	95A, 95B		REACTOR	GROUP- A/B	RELAY	FAULTY	N/T
	6	50ZX		REACTOR	12-52-CB	LBB PROTN	OPTD	T
	16	RPH		REACTOR	RPH	TROUBLE	ALARM	N/T
	17	52X5		REACTOR	12-52-CB	LOSS OF SF6	ALARM	N/T
	18	30C/30G/30H		REACTOR	WTI/OTI/BUCH	TRIP	OPTD	T
	19	30A/B/E/F/D/I		REACTOR	PRV/OIL/BUCH/WDG	ALARM		N/T
	20	12-52		REACTOR	12-52-CB	AUTO TRIP	OPTD	N/T
	21	52X1		REACTOR	12-52-CB	POLE DISC	OPTD	N/T
	31	52X6		REACTOR	12-52-CB	LOCKOUT	ALARM	N/T
	32	52X2/X3/X4/X7/X8		REACTOR	12-52-CB	TROUBLE	ALARM	N/T
	33	195R/Y/B		REACTOR	12-52-CB	TC-1	FAULTY	N/T
	34	295R/Y/B		REACTOR	12-52-CB	TC-2	FAULTY	N/T
	35	SPARE		REACTOR	SPARE			N/T
36	87R/64/50Z	REACTOR	REF/LBB/BACKUP	RELAY	FAULTY	N/T		
46	86A	REACTOR	GROUP-A	TRIP RELAY	OPTD	N/T		
47	86B	REACTOR	GROUP-B	TRIP RELAY	OPTD	N/T		

NOTE:  
 1) 'T' DENOTES RED LABEL  
 2) 'N/T' DENOTES BLACK LABEL

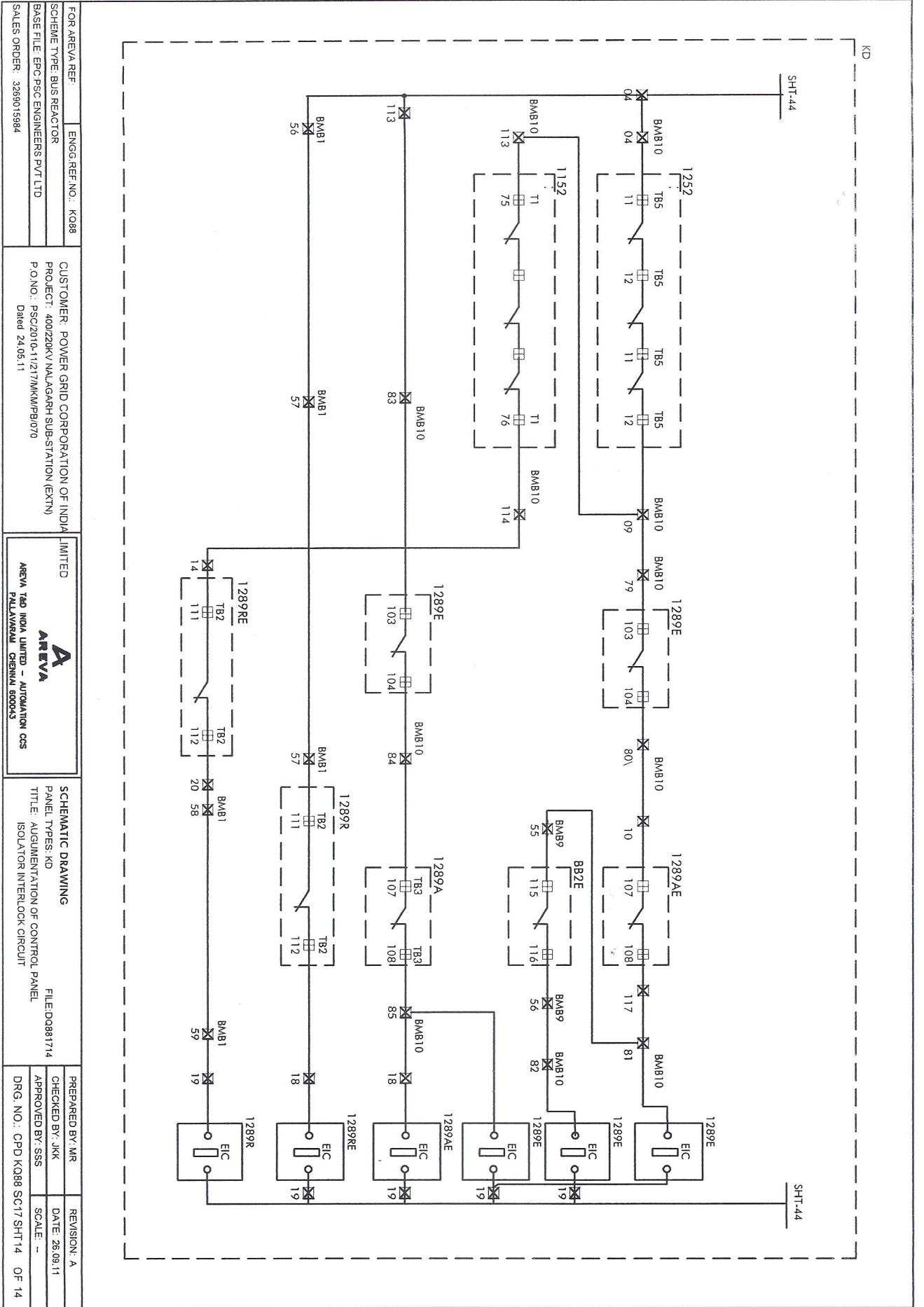
FOR AREVA REF:	ENGG REF NO.: KQ88	CUSTOMER: POWER GRID CORPORATION OF INDIA LIMITED	AREVA AREVA AREVA	SCHEMATIC DRAWING	FILE: DQ881712	PREPARED BY: MR	REVISION: A
SCHEME TYPE: BUS REACTOR		PROJECT: 400/20KV NALAGARH SUB-STATION (EXTN)	AREVA 760 INDIA LIMITED - AUTOMATION CCS	PANEL TYPES: KD		CHECKED BY: JKK	DATE: 26.09.11
BASE FILE: EPC/PSC ENGINEERS PVT LTD		P.O.NO.: PSC/2010-11/217MM/MP/070	PALUVASAL CHEMVA 800043	TITLE: AUGMENTATION OF CONTROL PANEL ANNUNCIATION SCHEME		APPROVED BY: SSS	SCALE: -
SALES ORDER: 3289015984		Dated 24.05.11				DRG. NO.: OPD KQ88 SC17 SHT12	OF 14

410-CB  
1052



KD

FOR AREVA REF:	ENGG REF. NO.: KQ88	CUSTOMER: POWER GRID CORPORATION OF INDIA LIMITED	AREVA	SCHMATIC DRAWING	FILE: DQ881713	PREPARED BY: MR	REVISION: A
SCHEME TYPE: BUS REACTOR		PROJECT: 400/220KV NALAGARH SUB-STATION (EXTN)	AREVA 780 INDIA LIMITED - AUTOMATION OSS	PANEL TYPES: KD		CHECKED BY: JKK	DATE: 26.08.11
BASE FILE: EPC/PSC ENGINEERS PVT LTD		P.O.NO.: PSC/2010-11/217MKM/PB/070	AREVA 780 INDIA LIMITED - AUTOMATION OSS	TITLE: AUGMENTATION OF CONTROL PANEL		APPROVED BY: SSS	SCALE: --
SALES ORDER: 3269015984		Dated 24.05.11	PALAVARAM, CHENNAI 600045	SYNCHRONISING VT SELECTION		DRG. NO.: CPD KQ88 SC17 SHT13	OF 14



FOR AREVA REF:	ENG. REF. NO.: KO88	CUSTOMER: POWER GRID CORPORATION OF INDIA	LIMITED	AREVA	SCHEMATIC DRAWING	FILE: DQ881714	PREPARED BY: N/R	REVISION: A
SCHEME TYPE: BUS REACTOR		PROJECT: 400/220KV/NALAGARH SUB-STATION (EXTN)	AREVA T&D INDIA LIMITED - AUTOMATION CCS		PANEL TYPES: KD		CHECKED BY: J/K	DATE: 28.08.11
BASE FILE: EPC/FSC ENGINEERS PVT LTD		P.O. NO.: FSC/2010-11/217/MK/MRP/070	AREVA PALAYANKAL CHENNAI 600043		TITLE: AUGMENTATION OF CONTROL PANEL		APPROVED BY: S/S	SCALE: -
SALES ORDER: 3289015984		Dated: 24.05.11			ISOLATOR INTERLOCK CIRCUIT		DRG. NO.: CPD KO88 SC17 SHT 14	OF 14



