

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN MM)

120-015-353-9D-BL ON 3RD

SCHEDULE OF EQUIPMENT(400KV)

S.NO.	DESCRIPTION	SYMBOL	ABR.	MAIN QTY. (IN NOS.)	SPARE QTY. (IN NOS.)
1	400/132/33 kV, 100MVA ICT		ICT	01	NIL
2	400KV CIRCUIT BREAKER (SF6 TYPE), 3150A WITHOUT PIR, 50 KA. FOR 1 SEC., PNEUMATIC/ELECTRICALLY SPRING CHARGED/ ELECTRO-HYDRAULIC MECHANISM OR A COMBINATION OF THESE, WITH SINGLE AND THREE PHASE HIGH SPEED AUTO RECLOSING.		(2)52	06	01
3	400KV CIRCUIT BREAKER (SF6 TYPE), 2000A WITH PIR, 50 KA. FOR 1 SEC., PNEUMATIC/ELECTRICALLY SPRING CHARGED/ ELECTRO-HYDRAULIC MECHANISM OR A COMBINATION OF THESE, WITH SINGLE AND THREE PHASE HIGH SPEED AUTO RECLOSING.		52	NIL	NIL
4	400KV CIRCUIT BREAKER (SF6 TYPE), 2000A WITHOUT PIR, 50 KA. FOR 1 SEC., PNEUMATIC/ELECTRICALLY SPRING CHARGED/ ELECTRO-HYDRAULIC MECHANISM OR A COMBINATION OF THESE, WITH SINGLE AND THREE PHASE HIGH SPEED AUTO RECLOSING.		52	07	NIL
5	400KV , 3150A, 50KA FOR 1 SEC.,HCB ISOLATOR WITH ONE EARTH SWITCH		(2)89	14	NIL
6	400KV , 2000A, 50KA FOR 1 SEC.,HCB ISOLATOR WITH ONE EARTH SWITCH		89	16	NIL
7	400KV , 2000A, 50KA FOR 1 SEC.,HCB ISOLATOR WITH TWO EARTH SWITCH		89	02	NIL
8	400KV , 3000A, 50KA FOR 1 SEC CURRENT TRANSFORMER (1-PH)		(2)CT	30	01
9	400KV , 2000A, 50KA FOR 1 SEC CURRENT TRANSFORMER (1-PH)		CT	39	NIL
10	BCT (FOR DETAILS OF BCT REFER R&D PLATE DWG. OF ICT & BUS REACTOR		BCT	-	-
11	390KV, 10KA CLASS-3 SURGE ARRESTER (1-PH)		SA	24	03
12	63MMAR BUS REACTOR		BR	01	-
13	400KV CAPACITIVE VOLTAGE TRANSFORMER (1-PH)		CVT	12	01

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COMPUTER DRG. PATH NAME :

INVENTORY NO. SIGN & DATE

- NOTES:-**
- 400KV

1. NOMINAL VOLTAGE : 400KV

2. HIGHEST SYSTEM VOLTAGE : 420KV

3. LIGHTING IMPULSE VOLTAGE : ±1425kVp

4. SWITCHING IMPULSE VOLTAGE : ±1050kVp

5. POWER FREQUENCY WITHSTAND VOLTAGE FOR 1 SEC. : 630kV (rms)

6. CREEPAGE : 10500mm

7. SHORT CIRCUIT CAPABILITY : 50KA FOR 1 SEC.

8. AC AUX. SUPPLY : 415V ±10%, 3-PH. 4-W, 50HZ ± 5%

9. DC AUX. VOLTAGE : 220V ±10%, 2-W, UNGROUNDED.

10. ALL EQUIPMENT SHALL BE RATED FOR 50 DEG CENTIGRADE AMBIENT AND OUTDOOR INSTALLATION.

11. THE PHASES ON WHICH LINE TRAPS ARE TO BE MOUNTED TO BE CONFIRMED BY APTRANSCO/SCCL. HOWEVER, FOUNDATIONS OF LINE TRAPS SHALL BE CASTED IN ALL THREE PHASES.

12. CUSTOMER TO INFORM FUTURE BAYS, IF ANY.
- 132KV

SCHEDULE OF EQUIPMENT(132KV)

S.NO.	DESCRIPTION	SYMBOL	ABR.	MAIN QTY. (IN NOS.)	SPARE QTY. (IN NOS.)
15	132KV CIRCUIT BREAKER (SF6 TYPE) SPRING/PNEUMATIC OPERATING MECHANISM W/O PIR, THREE PHASE, 1600 A, 31.5 KA FOR 1SEC, WITHOUT AUTO RECLOSING (FOR BUS COUPLER BAY)		52	01	01
16	132KV CIRCUIT BREAKER (SF6 TYPE) SPRING/PNEUMATIC OPERATING MECHANISM W/O PIR, THREE PHASE, 1250 A, 31.5 KA FOR 1SEC, WITH SINGLE AND THREE PHASE AUTO RECLOSING (FOR LINE BAYS)		(1)52	02	NIL
17	132KV CIRCUIT BREAKER (SF6 TYPE) SPRING/PNEUMATIC OPERATING MECHANISM W/O PIR, THREE PHASE, 1250 A, 31.5 KA FOR 1SEC, WITHOUT AUTO RECLOSING (FOR ICT BAY)		(2)52	01	NIL
18	132KV, 1250A, 31.5KA FOR 1 SEC.,HCB ISOLATOR WITHOUT EARTH SWITCH		89	03	NIL
19	132KV, 1250A, 31.5KA FOR 1 SEC.,HCB ISOLATOR WITH ONE EARTH SWITCH		89	04	NIL
20	132KV, 1250A, 31.5KA FOR 1 SEC.,HCB ISOLATOR WITH TWO EARTH SWITCH		89	02	NIL
21	132KV, 1600A, 31.5KA FOR 1 SEC.,HCB ISOLATOR WITH TWO EARTH SWITCH (FOR BUS COUPLER)		89	02	NIL
22	132KV, 1600A, 31.5KA FOR 1 SEC. CURRENT TRANSFORMER (1-PH)		(2)CT	03	01
23	132KV, 800A, 31.5KA FOR 1 SEC. CURRENT TRANSFORMER (1-PH)		CT	09	NIL
24	120KV, 10KA Class-3 SURGE ARRESTER (1-PH)		SA	09	01
25	132KV CAPACITIVE VOLTAGE TRANSFORMER (1-PH)		CVT	12	01
26	132KV, 1250A LINE TRAP, 31.5KA FOR 1SEC., 0.5mH (1-PH) PEDESTAL MOUNTING		WT	04	NIL

INDEX

SHT. No.	DESCRIPTION	REVISION AND DATE
01	INDEX,LEGEND AND SYSTEM DETAILS	00 01 02
02	400 KV AND 132 KV SWITCHYARD	30.11.11
03	CT / CVT DETAILS	30.11.11

REFERENCE DRAWING/ DOCUMENTS.

- 400KV SWITCHYARD SINGLE LINE DIAGRAM DWG. NO. 9596-001-POE-A-001 REV NO. A
- SINGLE LINE DIAGRAM ARRANGEMENT FOR START-UP POWER DWG. NO. SCCL-510-002 REV NO. 01
- ARRANGEMENT FOR START – UP POWER KEY PROTECTION SINGLE LINE DIAGRAM DWG. NO. SCCL-510-003 REV NO. 00

NTPC DRAWING NO. 9661-230-01TB-PVE-P-001

OWNER :
THE SINGARENI COLLIERIES COMPANY LTD.
(A Government Company)
POWER PROJECT DIVISION

CONSULTANT :
NTPC Limited
(A Government of India Enterprise)
CONSULTING WING

PROJECT :
SCCL COAL BASED THERMAL POWER PLANT
(2 x 600MW)

PACKAGE
BOILER TURBINE GENERATOR PACKAGE

CONTRACTOR
BHARAT HEAVY ELECTRICALS LTD.
TRANSMISSION PROJECTS DIVISION
NEW DELHI

SINGLE LINE DIAGRAM
LEGENDS & SYSTEM DETAILS

DRAWING NO. TB-DG-353-510-031
SHEET 1 OF 3 REV. 01

130-015-553-DG-BL DRG. NO.

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MM)

1

2

3

4

5

6

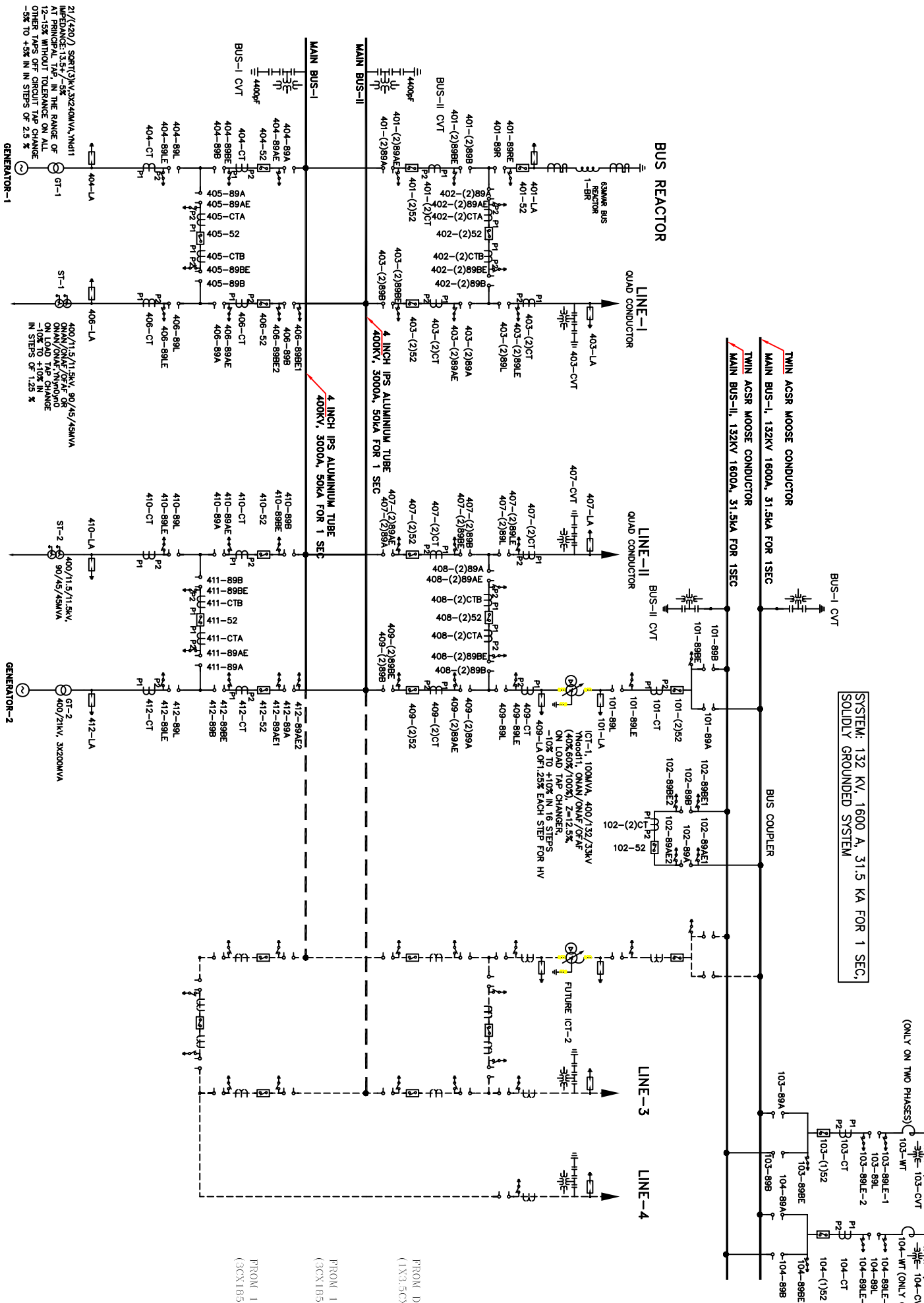
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COMPUTER DRG. PATH NAME :

INVENTORY NO. SIGN & DATE



SYSTEM : 400 KV, 3150A /2000 A, 50 KA FOR 1 SEC,
SOLIDLY GROUNDED SYSTEM

LEGEND:-

PRESENT SCOPE
FUTURE SCOPE

REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHECKED			CHECKED
		APPROVED			APPROVED
ZONE			ZONE		

W.O. No.	DEPT.	CODE
81009	TBEM	422

REV.	DATE	ALTERED
01	31.07.12	APPROVED DKA/RS

REVISED AS PER NTPC COMMENTS
AND AS PER PROGRESSIVE
TRANSFORMER YARD LAYOUT DRG. NO.
PE-05-381-100-E001 REV00

NTPC DRAWING NO. 9661-230-01TB-PVE-P-001

OWNER :

THE SINGARENI COLLIERIES COMPANY LTD.
(A Government Company)
POWER PROJECT DIVISION

CONSULTANT :

NTPC Limited
(A Government of India Enterprise)
CONSULTING WING

PROJECT :

SCCL COAL BASED THERMAL POWER PLANT
(2 x 600MW)

PACKAGE

BOILER TURBINE GENERATOR PACKAGE

CONTRACTOR	DEPT.	NAME	SIGN	DATE
BHARAT HEAVY ELECTRICALS LTD.	DRN	RK	SD/-	30.11.11
TRANSMISSION PROJECTS DIVISION	CHD	SK/YK	SD/-	30.11.11
NEW DELHI	APPD	DKA/RS	SD/-	30.11.11

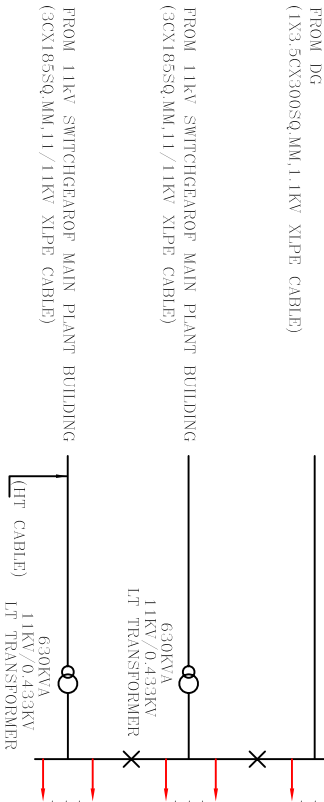
TITLE
SINGLE LINE DIAGRAM

400KV & 132KV SWITCHYARD

DRAWING NO.

TB-DG-353-510-031

SHEET 2 OF 3 REV. 01



FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN MM)

1	2	3	4	5	6	7
120-015-353-DG-BL ON DRG						

400kV 2000A CT DETAILS								
CT TYPE	CORE No.	APPLICATION	RATIO	BURDEN	KPV (MIN)	I _e (MAX)	R _{CT} (MAX AT 75 c)	ACCURACY CLASS
400kV CT	CORE 1	BUS DIFFERENTIAL	2000 /1A 1000 /1A	-	2000 V 1000 V	30mA ON 2000 /1 tap 60mA ON 1000 /1 tap	10 Ω 5 Ω	PS
	CORE 2	BUS DIFFERENTIAL	2000 /1A 1000 /1A	-	2000 V 1000 V	30mA ON 2000 /1 tap 60mA ON 1000 /1 tap	10 Ω 5 Ω	PS
	CORE 3	METERING	2000 /1A 1000 /1A 500 /1A	20VA 20VA 20VA	- - -	- - -	- - -	0.2S
	CORE 4	TRANSF. BACKUP /LINE BACKUP PROTECTION	2000 /1A 1000 /1A 500 /1A	-	4000 V 2000 V 1000 V	30mA ON 2000 /1 tap 60mA ON 1000 /1 tap 120mA ON 500 /1 tap	10 Ω 5 Ω 2.5Ω	PS
	CORE 5	TRANSF. DIFF. /LINE PROTECTION	2000 /1A 1000 /1A 500 /1A	-	4000 V 2000 V 1000 V	30mA ON 2000 /1 tap 60mA ON 1000 /1 tap 120mA ON 500 /1 tap	10 Ω 5 Ω 2.5Ω	PS

400kV 3000A (2)CT DETAILS

CT TYPE	CORE No.	APPLICATION	RATIO	BURDEN	KPV (MIN)	I _e (MAX)	R _{CT} (MAX AT 75 c)	ACCURACY CLASS
400kV (2)CT	CORE 1	BUS DIFFERENTIAL	3000 /1A 2000 /1A 500 /1A	-	3000 V 2000 V 500 V	20mA ON 3000 /1 top 30mA ON 2000 /1 top 120mA ON 500 /1 top	15 Ω 10 Ω 2.5Ω	PS
	CORE 2	BUS DIFFERENTIAL	3000 /1A 2000 /1A 500 /1A	-	3000 V 2000 V 500 V	20mA ON 3000 /1 top 30mA ON 2000 /1 top 120mA ON 500 /1 top	15 Ω 10 Ω 2.5Ω	PS
	CORE 3	METERING	3000 /1A 2000 /1A 500 /1A	20VA 20VA 20VA	- - -	- - -	- - -	0.2S
	CORE 4	TRANSF. BACKUP /LINE BACKUP PROTECTION	3000 /1A 2000 /1A 500 /1A	-	6000 V 4000 V 1000 V	20mA ON 3000 /1 top 30mA ON 2000 /1 top 120mA ON 500 /1 top	15 Ω 10 Ω 2.5Ω	PS
	CORE 5	TRANSF. DIFF. /LINE PROTECTION	3000 /1A 2000 /1A 500 /1A	-	6000 V 4000 V 1000 V	20mA ON 3000 /1 top 30mA ON 2000 /1 top 120mA ON 500 /1 top	15 Ω 10 Ω 2.5Ω	PS

Note: Intermediate tapping at 3000–2000 shall be suitable for use as 1000 /1 ratio.

CT TYPE	CORE No.	APPLICATION	RATIO	BURDEN	KPV (MIN)	I _e (MAX)	R _{CT} (MAX AT 75 c)	ACCURACY CLASS
132kV, 800A CT DETAILS	CORE 1	BUS DIFFERENTIAL	800-400 /1A	-	800-400 V	25 /50mA	8.0 /4.0 Ω	PS
	CORE 2	SPARE	800-400 /1A	-	800-400 V	25 /50mA	8.0 /4.0 Ω	PS
	CORE 3	METERING	800-400 /1A	20VA	-	-	-	0.2S
	CORE 4	TRANSF. BACKUP /LINE BACKUP PROTECTION	800-400 /1A	20VA	-	-	-	5P20
	CORE 5	TRANSF. DIFF. /LINE PROTECTION	800-400 /1A	-	800-400 V	25 /50mA	8.0 /4.0 Ω	PS

132kV, 1600A (2)CT DETAILS

CT TYPE	CORE No.	APPLICATION	RATIO	BURDEN	KPV (MIN)	I _e (MAX)	R _{CT} (MAX AT 75 c)	ACCURACY CLASS
132kV (2)CT	CORE 1	BUS DIFFERENTIAL	1600-800 /1A	-	1600-800 V	25 /50mA	8.0 /4.0 Ω	PS
	CORE 2	BUS DIFFERENTIAL	1600-800 /1A	-	1600-800 V	25 /50mA	8.0 /4.0 Ω	PS
	CORE 3	METERING	1600-800-400 /1A	20VA	-	-	-	0.2S
	CORE 4	SPARE	1600-800 /1A	20VA	-	-	-	5P20
	CORE 5	SPARE	1600-800 /1A	-	1600-800 V	25 /50mA	8.0 /4.0 Ω	PS

400kV CVT DETAILS (8800pF)

PARTICULARS	SEC 1	SEC 2	SEC 3
RATIO	$\frac{400kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}}$	$\frac{400kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}}$	$\frac{400kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}}$
APPLICATION	PROTECTION	PROTECTION	METERING
BURDEN	100 VA	100 VA	75 VA
ACCURACY CLASS	3P	3P	0.2

132kV CVT DETAILS (13200pF)

PARTICULARS	SEC 1	SEC 2	SEC 3
RATIO	$\frac{132kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}}$	$\frac{132kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}}$	$\frac{132kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}}$
APPLICATION	PROTECTION	PROTECTION	METERING
BURDEN	100 VA	100 VA	75 VA
ACCURACY CLASS	3P	3P	0.2

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	W.O. No.	DEPT.	CODE
		CHECKED			CHECKED			CHECKED	81009	TBEM	422
		APPROVED			APPROVED			APPROVED			
ZONE			ZONE			ZONE			REVISED AS PER NTPC COMMENTS AND AS PER PROGRESSIVE TRANSFORMER YARD LAYOUT DRG. NO. PE-DS-381-100-E001 REV00		

TITLE											
SINGLE LINE DIAGRAM											
CT & CVT DETAILS											
DRAWING NO. TB-DG-353-510-031											
SHEET 3 OF 3 REV. 01											

CONTRACTOR											
BHARAT HEAVY ELECTRICALS LTD.											
TRANSMISSION PROJECTS DIVISION											
NEW DELHI											
DEPT. NAME SIGN DATE											
DRN RK SD/- 30.11.11											
CHD SK/YK SD/- 30.11.11											
APPD DKM/RS SD/- 30.11.11											

PACKAGE											
BOILER TURBINE GENERATOR PACKAGE											
OWNER :											
THE SINGARENI COLLIERIES COMPANY LTD.											
(A Government Company)											
POWER PROJECT DIVISION											
CONSULTANT :											
POWER PROJECTS											
NTPC											
(A Government of India Enterprise)											
CONSULTING FIRM											
PROJECT :											
SCCL COAL BASED THERMAL POWER PLANT											
(2 x 600MW)											