

DRG. NO. TB-3-330-510-001

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LINE-1

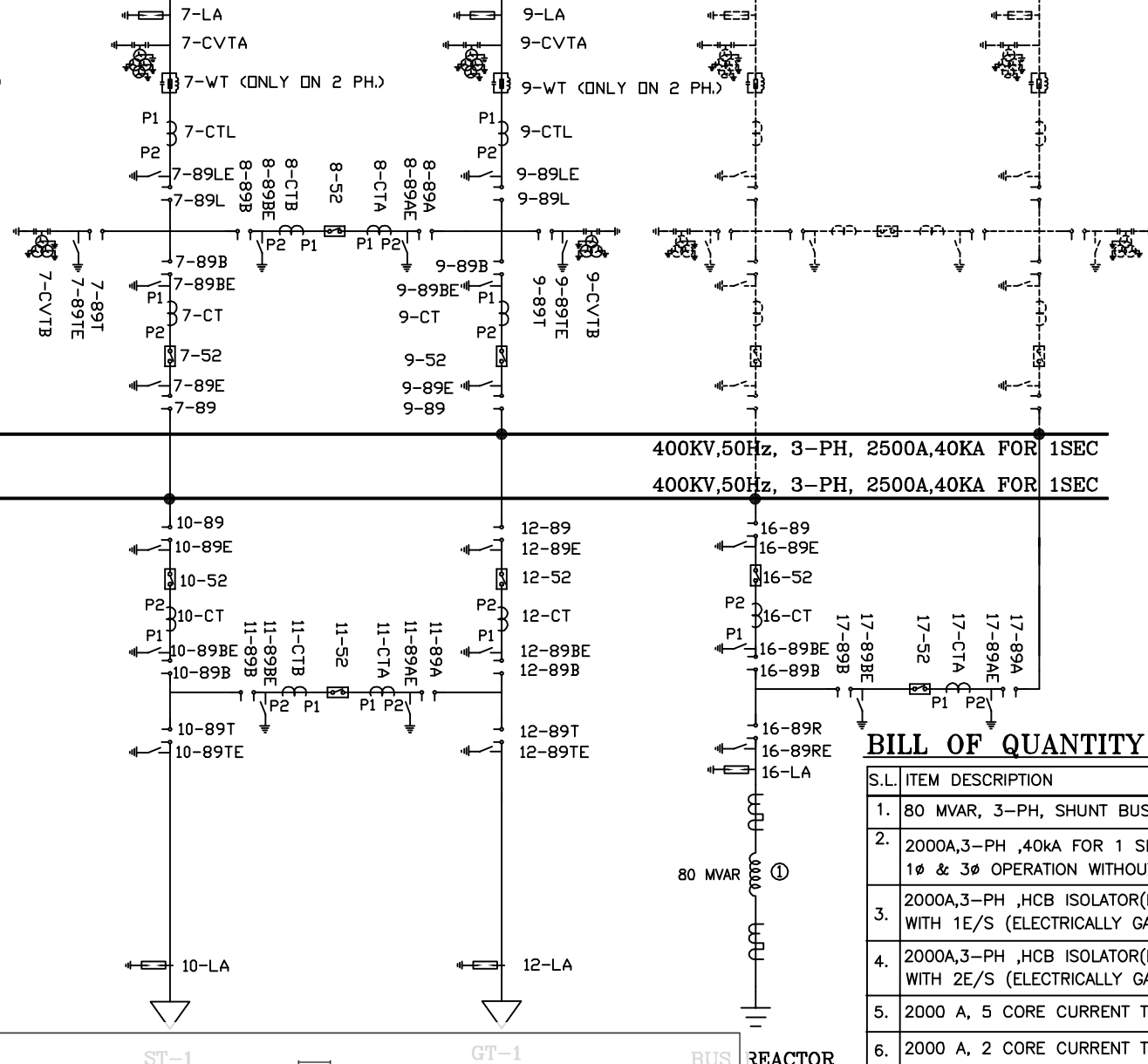
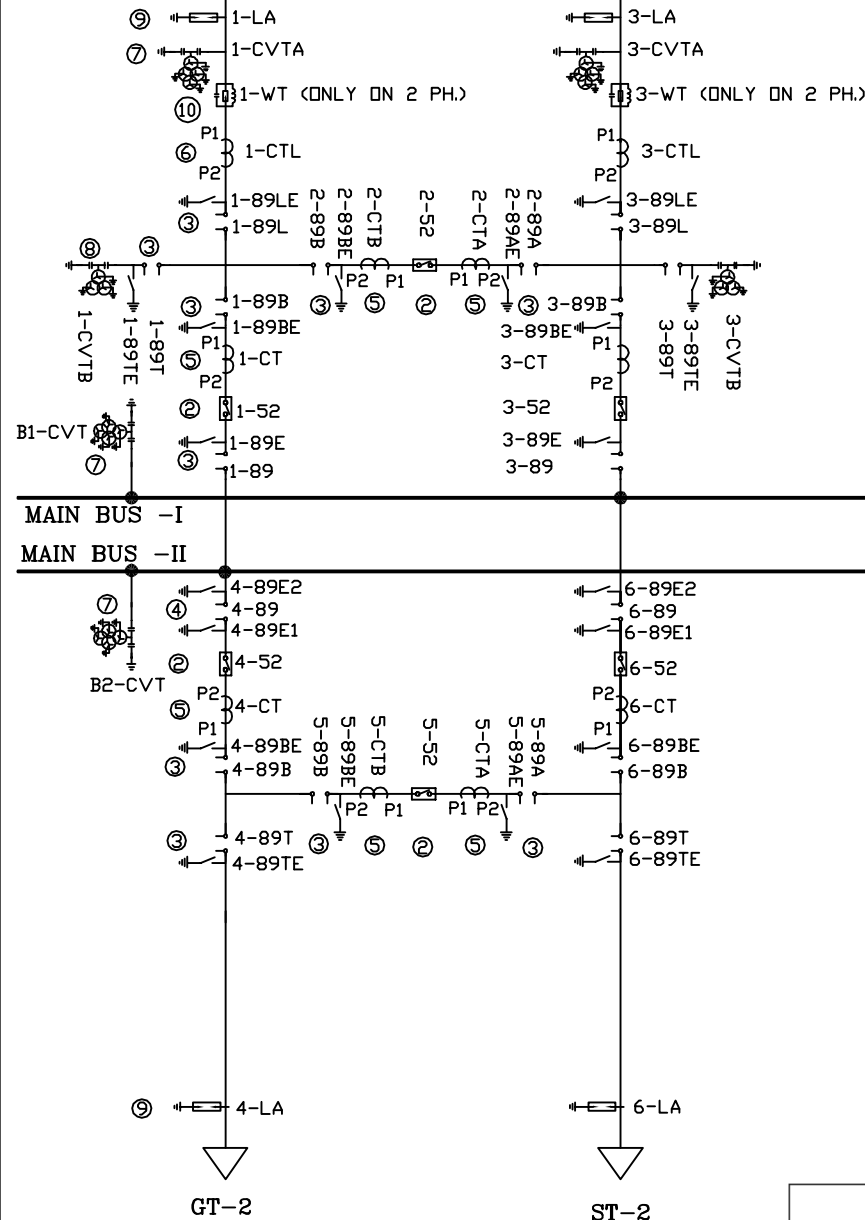
LINE-2

LINE-3

LINE-4

FUTURE LINE-1

FUTURE LINE-2

**NOTES : -**

- SYSTEM: 400KV 40KA FOR 1 SEC. SOLIDLY GROUND.
- WAVE TRAPS WOULD BE IN TWO PHASES ONLY.
- CREEPAGE: 35mm/kV.
- REFER SHEET NO.-2 FOR CT/CVT CORE DETAILS

BILL OF QUANTITY (MAIN EQUIPMENT)

S.L.	ITEM DESCRIPTION	kV	QTY.	SYMBOL
1.	80 MVAR, 3-PH, SHUNT BUS REACTOR WITH OIL FILLED	400	01	
2.	2000A,3-PH ,40ka FOR 1 SEC, SF6 CB SUITABLE FOR 1Ø & 3Ø OPERATION WITHOUT CLOSING RESISTOR.	400	14	
3.	2000A,3-PH ,HCB ISOLATOR(ELECTRICALLY GANGED MOTOR OPERATED) WITH 1E/S (ELECTRICALLY GANGED MOTOR OPERATED).	400	39	
4.	2000A,3-PH ,HCB ISOLATOR(ELECTRICALLY GANGED MOTOR OPERATED) WITH 2E/S (ELECTRICALLY GANGED MOTOR OPERATED).	400	02	
5.	2000 A, 5 CORE CURRENT TRANSFORMER,1 PH.	400	54	
6.	2000 A, 2 CORE CURRENT TRANSFORMER,1 PH.	400	12	
7.	4400 pF,3 CORE CVT 1PH.	400	18	
8.	4400 pF,2 CORE CVT 1PH.	400	12	
9.	SURGE ARRESTER(METAL OXIDE GAPLESS TYPE) 1-PH. 20KA CLASS-3	336	27	
10.	WAVE TRAP (2000A, 0.5mH), 1-PH	400	8	

APPROVED AS INDICATED BY ☒ BELOW

- ☒ CATEGORY - I APPROVED
- ☐ CATEGORY - II APPROVED;SUBJECT TO COMMENTS TO BE INCORPORATED
- ☐ CATEGORY - III NOT APPROVED, TO BE REVISED
- ☐ CATEGORY - IV FOR INFORMATION ONLY

☐ CATEGORY - IV-R FOR INFORMATION WITH COMMENTS

Contractor is responsible for Design, coordination, dimensions, quantities etc. Approval does not relieve the contractor of his responsibility for design and performance of the equipment / system / overall plant in accordance with the contract document.

MOTT MACDONALD PVT. LTD.

Job No. .284431.....

Checked by .SSU/AK.. Date .14.02.2011.....

PROJECT/CUSTOMER **HINDUJA NATIONAL POWER CORPORATION LTD.**
2X520MW VIZAG THERMAL POWER PLANT VISHAKHAPATTANAM

NAME OF CONSULTANT



BHARAT HEAVY ELECTRICALS LIMITED
TRANSMISSION BUSINESS GROUP

SINGLE LINE DIAGRAM FOR 400kV
VIZAG SUBSTATION

W.O. No 80003

DRG. No. TB-3-330-510-001

CARD CODE

NEXT SHEET **02**
 SHEET No. **01**

REV. **01**

Note:- Document approved subject to submission of
 CT VT Calculations & Approval of the Same by MottMacdonald

REV.	DATE	ALTD.	CHD.	APPD.	REV.	DATE	ALTD.	CHD.
					01	02.02.11	JUGENDRA	SK/SKS
SIGN.					SIGN.	JUGENDRA		

1. AS PER DISCUSSION WITH
 MOTT MACDONALD DATED 26.11.10
 2. INCLUSION OF TARIFF CVT &
 ISOLATOR

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The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED
it must not be used directly or indirectly in anyway detrimental to the interest of the company.

COMPUTER DRG. PATH NAME :

100-015-033-510-001

DRG. NO.

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DIAMETER CT DETAILS (BOQ. SL. NO. 5)

CORE No.	APPLICATION	RATIO	BURDEN	KPV (MIN)	I _E AT VK (MAX)	R _{CT} (MAX AT 75 C)	ACCURACY CLASS
CORE 1	BUS DIFFERENTIAL MAIN	2000/1A 1000/1A	—	2000 V 1000 V	30mA ON 2000/1 tap 60mA ON 1000/1 tap	30 Ω 60 Ω	PS
CORE 2	BUS DIFFERENTIAL CHECK	2000/1A 1000/1A	—	2000 V 1000 V	30mA ON 2000/1 tap 60mA ON 1000/1 tap	30 Ω 60 Ω	PS
CORE 3	METERING (BCU)	2000/1A 1000/1A 500/1A	20VA 20VA 20VA	— — —	— — —	— — —	0.2
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 2.5 Ω	PS
CORE 5	TRANSF. DIFFL./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 2.5 Ω	PS

TARIFF CT DETAILS (BOQ. SL. NO. 6)

CORE No.	APPLICATION	RATIO	BURDEN	KPV (MIN)	I _E AT VK (MAX)	R _{CT} (MAX AT 75 C)	ACCURACY CLASS
CORE 1	MAIN TARIFF METERING	2000/1A 1000/1A 500/1A	10VA 10VA 10VA	— — —	— — —	— — —	0.2S
CORE 2	CHECK TARIFF METERING	2000/1A 1000/1A 500/1A	10VA 10VA 10VA	— — —	— — —	— — —	0.2S

BUS & LINE (INDICATION METERING) CVT DETAILS(BOQ. SL. NO. 7)

	PARTICULARS	SEC 1	SEC 2	SEC 3
400kV CVT 4400pF	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	50 VA
	ACCURACY CLASS	3P	3P	0.2

NOTE:—SIMULTANEOUS BURDEN 50VA

LINE TARIFF METERING CVT DETAILS(BOQ. SL. NO. 8)

	PARTICULARS	SEC 1	SEC 2
400kV CVT 4400pF	RATIO	$\frac{400kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}}$	$\frac{400kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}}$
	APPLICATION	MAIN TARIFF METERING	CHECK TARIFF METERING
	BURDEN	10 VA	10 VA
	ACCURACY CLASS	0.2	0.2

NOTE:—SIMULTANEOUS BURDEN 20VA

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MOTT MACDONALD PVT. LTD.

Job No. 284431
Checked by SSU/AK Date 14-02-2011

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J.	CHD.	APPD.		NAME	SIGN.	DATE
IDRA	SK/SKS	AS/DS	DRAWN	JUGENDRA	JUGENDRA	21.10.10
IDRA			CHECKED	SK/SKS/BA	—SD—	21.10.10
MISSION WITH			APPROVED	DS/SN	—SD—	21.10.10
D DATED 26.11.10			DISTRIBUTION OF PRINTS			
TARIFF CVT &						



DEPT. TBEM
CODE 422

NAME OF PROJECT/CUSTOMER HINDUJA NATIONAL POWER CORPORATION LTD.
2X520MW VIZAG THERMAL POWER PLANT VISHAKHAPATTANAM

NAME OF CONSULTANT



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TRANSMISSION BUSINESS GROUP

CARD CODE

TITLE

SINGLE LINE DIAGRAM FOR 400kV
VIZAG SUBSTATION

NEXT SHEET —
SHEET No. 02

SCALE

W.O. No 80003

DRG. No.

TB-3-330-510-001

REV. 01