



सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली संचार विकास प्रभाग
Power System Communication Development

CEA Case No. : GUJ-875		
Induced Voltage (IV) calculation for PTCC proposal of 220 kV D/C line from GETCO 400/220kV Charal to TPL's 220kV Thaltej SS(37.402 km)- regd.		
S. No	Reference No.	Dated
(i)	Torrent Power: TPL/220kV CHARAL LINE/PTCC/6381	21.03.2024
(ii)	BSNL: IC/MBI/PTCC/GUJ-2953&2954/WGJ230420245759	27.05.2024
(iii)	Western Railway: SG.158/28/12/1381	28.03.2024
(iv)	Defense: B/46937/Sigs 7(b)/3831	04.06.2024

The PTCC proposal submitted vide reference (i) has been examined. The LF induction on communication circuits of BSNL and Western Railway with respect to details furnished vide above reference (ii) & (iii) respectively have been computed. The voltage likely to be induced on paralleling communication cables of BSNL and Western Railway under Single Line to Ground fault condition are enclosed at Annexure-I & II respectively. The screening factors as applicable have been considered. Vide reference (iv) above, DG Signals; MoD has issued No Objection Certificate (NOC) (enclosed as Annexure-III).

EPR Zones for proposed substations are mentioned below.

Name of the proposed SS	Half Diagonal Distance, D/2 (mts)	Fault Current, I (kA)	Resistance of earthmat, R (Ohms)	d (mts) at 430 V	d (mts) at 650 V	d (mts) at 7 kV	d (mts) at 10 kV
220/132/33 kV Thaltej (TPL)	56.92	28	0.26	907	581	2	NA

As per the details submitted by BSNL vide reference (ii) above, no telephone exchanges are falling in the EPR zone of the proposed substation.

Taking above into consideration, necessary action for issuance of PTCC route approval may be taken under intimation to this office.

Encl.: As above

Chief Engineer

To,

1.	Divisional Engineer (PTCC), Western Zone	QA & Inspection circle, 1 st floor, D- wing, BSNL Admin Bldg., Junu Tara Road, Santacruz (West), Mumbai-400054	
2.	GM (S&T)	Western Railway, O/o PCSTE, S&T Dept., 5 th Floor, Station Building, Church gate, Mumbai – 400020	
3.	Manager – EHV (Torrent Power)	Torrent Power Ltd, 5 th Floor, PSC Building, Sola cross Road, Naranpura Ahmedabad – 380013, Gujrat	Copy for information

ANNEXURE-I

CEA Case No.: GUJ-875		Map Scale : 1 cm= 500 m			
Name of the Power line: 220 kV D/C from GETCO's 400/220kV Charal SS to TPL's 220kV Thaltej SS		Total Length : 37.402 km			
		S.R. Value : 10000 Ohm-cm			
S.No.	Telecom. Details	Length of Parallelism in Km.	Mutual Coupling in Ohms.	Effective Fault current in Amps.	I.V in Volts.
BSNL Letter No.- IC/MBI/PTCC/GUJ-2953&2954/WGJ230420245759 Date: 27.05.2024					
1. MEMNAGAR EXCHANGE					
1A	Memnagar Exch. - Local - 1200*1+400*4+100*1+50*8				IV less than 430V
2A	Memnagar Exch. - Local - 1200*1+400*3+100*3 P				
3A	Memnagar Exch. - Local - 800*1+400*2+200*3+100*3 P				
4A	Memnagar Exch. - Local - 400*1+100*2+50*3 P				
5A	Memnagar Exch. - Local - 1200*1+400*3+100*10 P				
6A	Memnagar Exch. - Local - 1200*2+800*1+400*4+200*3+100*10+50*12 P				
2	SPT EXCHANGE				
1B	SPT Exch. Local - 1200*3+800*1+400*3+100*3+50*10				IV less than 430V
2B	SPT Exch. Local - 1200*3+800*1+400*3+100*3+50*10				
3B	SPT Exch. Local - 1200*3+800*1+400*3+100*3+50*10				
4B	SPT Exch. Local - 1200*3+800*1+400*3+100*3+50*10				
3	R3 MALL EXCHANGE				

1C	R3 Mall Exch. Local - 1200*3+800*3+200*4+100*5+50*8 P	IV less than 430V
2C	R3 Mall Exch. Local – 800*2+200*4+100*4+50*6 P	
4	NARANPURA EXCHANGE	
1D	NRP Exch. Local 1200*4+800*2+400*3+100*5+50*10	Out of Parallelism
2D	NRP Exch. Local 1200*4+400*2+100*4+50*6 P	
3D	NRP Exch. Local 1200*5+800*2+400*3+100*5+50*10	
4D	NRP Exch. Local 1200*3+400*2+10*9+50*10 P	
5D	NRP Exch. Local 1200*4+800*1+100*5+50*4 P	
6D	NRP Exch. Local 1200*1+10*10+50*6 P	
7D	NRP Exch. Local 800*1+100*4+50*6 P	
8D	NRP Exch. Local 1200*2+800*2+20*1+100*5+50*10	
9D	NRP Exch. Local 1200*1+800*2+400*1+100*4 P	
10D	NRP Exch. Local 1200*1+400*3+100*10+050*4 P	
11D	NRP Exch. Local 1200*2+800*1+100*5 P	
5	GHATLODIYA EXCHANGE	
1E	Ghatlodiya Exch. Local - 1200*1+400*3+200*4+100*4	Out of Parallelism
2E	Ghatlodiya Exch. Local – 1200*1+400*3+200*4+100*4	
3E	Ghatlodiya Exch. Local - 1200*1+800*1+200*2+100*5	
4E	Ghatlodiya Exch. Local - 1200*1+200*3+100*4	
6	CHANDLODIYA EXCHANGE	
1F	Chandlodiya Exch. Local – 800*2+400*2+100*2+50*5	

2F	Chandlodiya Exch. Local – 1200*1+200*6+100*5	Out of Parallelism
3F	Chandlodiya Exch. Local – 1200*2+400*4+200*4+100*10	
4F	Chandlodiya Exch. Local – 1200*2+800*1+400*2+200*2+100*10	
7	JAGATPUR EXCHANGE	
1G	Jagatpur Exch. Local – 400*1+200*1+50*2	Out of Parallelism
2G	Jagatpur Exch. Local – 400*1+100*2+50*4	
3G	Jagatpur Exch. Local – 1200*1+100*5+50*8	
4G	Jagatpur Exch. Local – 200*1+50*4	
8	SURDHARA EXCHANGE	
1H	Surdhara Exch. Local – 1200*4+800*4+100*2+50*4	Out of Parallelism
2H	Surdhara Exch. Local –400*4+200*4+50*6	
3H	Surdhara Exch. Local – 400*3+200*6+50*8	
9	CHANDRALOK EXCHANGE	
1I	Chandralok Exch. Local – 1200*3+400*1+200*2+100*4	Out of Parallelism
2I	Chandralok Exch. Local – 800*1+400*1+200*2+100*4	
3I	Chandralok Exch. Local – 400*1+200*1+50*4	
10	VASTRAPUR EXCHANGE	
1J	VSTR. Exch. Local – 1200*3+800*1+100*2+50*1	IV less than 430V
2J	VSTR. Exch. Local – 1200*3+800*1+400*2+100*3+50*3	
3J	VSTR. Exch. Local – 1200*3+800*1+200*1+100*4+50*2	
4J	VSTR. Exch. Local – 1200*3+800*2+600*2+400*1+100*5+50*1	

5J	VSTR. Exch. Local – 1200*3+800*1+400*1+100*3+50*2				
6J	VSTR. Exch. Local – 1200*2+800*1+200*1+100*4+50*5				
7J	VSTR. Exch. Local – 1200*3+800*1+100*6+50*4				
8J	VSTR. Exch. Local – 1200*3+800*2+400*1				
11	PNT EXCHANGE				
1K	PNT Exch. Local – 1200*2+200*1+100*5+50*1				
2K	PNT Exch. Local – 1200*2+100*4+50*2				
3K	PNT Exch. Local – 1200*3+200*1+100*3+50*3				IV less than 430V
4K	PNT Exch. Local – 1200*2+800*1+100*2+50*4				
5K	PNT Exch. Local – 1200*2+200*1+100*3+50*5				
12	BODAKDEV EXCHANGE				
1L	Bodakdev Exch. Local – 1200*2+100*3+50*4	1.45	0.028	1641	46
2L	Bodakdev Exch. Local – 1200*2+100*5+50*2				IV less than 430V
3L	Bodakdev Exch. Local – 1200*2+100*2+50*5				
4L	Bodakdev Exch. Local – 800*1+100*4+50*2				
13	JODHPUR EXCHANGE				
1M	Jodhpur Exch. Local – 1200*1+800*1+100*5+50*2				
2M	Jodhpur Exch. Local – 1200*1+800*1+100*3+50*3				IV less than 430V
3M	Jodhpur Exch. Local – 800*1+100*4+50*5				
14	SSNL EXCHANGE				
1N	SSNL Exch. Local - 1200*1+400*2+100*4+50*3				
2N	SSNL Exch. Local – 800*1+400*1+20*1+100*5+50*1				IV less than 430V
3N	SSNL Exch. Local – 400*1+100*2+50*3				
15	INFOTOWER EXCHANGE				

1O	Info Exch. Local – 1200*2+800*3+400*8+200*24+100*28+50*68	IV less than 430V			
2O	Info Exch. Local – 1200*3+800*12+400*15+200*37+100*42+50*69	1.6	0.049	563	28
3O	Info Exch. Local – 1200*2+800*4+400*10+200*30+100*28+50*71	IV less than 430V			
4O	Info Exch. Local – 1200*1+800*2+400*7+200*14+100*15+50*42				
5O	Info Exch. Local – 1200*3+800*10+400*17+200*34+100*35+50*61				
6O	Info Exch. Local – 1200*2+800*17+400*19+200*31+100*37+50*62				
7O	Info Exch. Local – 800*1+400*4+200*8+100*17+50*20				
8O	Info Exch. Local – 400*1+200*4+100*10+50*18				
16	THALTEJ EXCHANGE				
1P	Thaltej Exch. Local – 1200*1+800*2+400*8+200*16+100*17+50*41	IV less than 430V			
2P	Thaltej Exch. Local – 800*2+400*5+200*9+100*15+50*26				
3P	Thaltej Exch. Local – 400*3+200*12+100*19+50*27				
4P	Thaltej Exch. Local – 200*1+100*5+50*12				
17	NAVARANGPURA EXCHANGE				
1Q	NVP Exch. Local – 1200*4+800*3+400*2+200*2+100*4	IV less than 430V			
2Q	NVP Exch. Local – 1200*5+800*2+400*2+200*2+100*2				
3Q	NVP Exch. Local – 1200*3+800*2+400*2+200*2+100*3				

4Q	NVP Exch. Local – $1200*1+800*1+400*2+200*2+100*2$	
5Q	NVP Exch. Local – $800*1+400*1+100*2$	
6Q	NVP Exch. Local – $1200*2+800*1+400*1+200*2$	
7Q	NVP Exch. Local – $800*1+400*1+200*2+100*4$	
8Q	NVP Exch. Local – $1200*1+800*2+400*2+200*2+100*4$	
9P	NVP Exch. Local – $800*1+400*2+100*1+50*8$	
18	GBT EXCHANGE	
1R	GBT Exch. Local – $1200*3+800*3+400*2+200*4$	IV less than 430V
2R	GBT Exch. Local – $1200*1+800*2+400*2+200*3+100*2$	
3R	GBT Exch. Local – $1200*1+800*2+400*3+200*4$	
19	ELLISBRIDGE EXCHANGE	
1S	ELB. Exch. Local – $1200*3+800*4+200*5+100*8$	IV less than 430V
2S	GBT Exch. Local – $1200*4+800*3+400*4+200*4+100*3$	
3S	GBT Exch. Local – $1200*3+800*2+400*2+100*4$	
20	VADAJ EXCHANGE	
1T	Vadaj Exch. Kitli Circle – $1200*5$	Out of Parallelism
2T	Vadaj Exch. Bhimjipura – $1200*3+400*2+100*4+50*8$	
3T	Kitli Circle – Adani Gas – $400*1+200*1+100*4+50*8$	
4T	Kitli Circle – Local – $800*2+400*4+200*4+100*6$	
21	NIRNAYNAGAR EXCHANGE	
1U	NIRNAYNAGAR Exch. Local – $1200*3+200*2+100*6$	Out of Parallelism

2U	NIRNAYNAGAR Exch. Local – 1200*2+400*2+200*2+100*4	
22	KESHAVNAGAR EXCHANGE	
1V	Keshavnagar Exch. Local – 1200*4+800*1+400*4+200*6+100*8	Out of Parallelism
2V	Keshavnagar Exch. Local – 1200*2+800*1+400*2+200*3+100*3	
3V	Keshavnagar Exch. Local – 1200*2+800*1+400*2+200*3+100*3	
23	RANIP EXCHANGE	
1W	Ranip Exch. Local – 1200*+800*4+400*4+200*6+100*5	Out of Parallelism
2W	Ranip Exch. Local – 1200*2+400*5+200*5+100*6	
3W	Ranip Exch. Local – 1200*2+400*6+200*6+100*8	
4W	Ranip Exch. Local – 1200*2+800*1+400*4+200*5+100*6	
5W	Ranip Exch. Local – 1200*2+800*1+400*3+200*5+100*6	
6W	Ranip Exch. Local – 1200*2+800*1+400*4+200*6+100*7	
24	ASHRAMROAD EXCHANGE	
1X	Ahrmrd Exch. Local – 1200*2+800*2+400*1+200*3+100*2	IV less than 430V
2X	Ahrmrd Exch. Local – 1200*3+800*2+400*2+200*2+50*2	
3X	Ahrmrd Exch. Local – 1200*3+800*1+400*3+200*1+100*1	
4X	Ahrmrd Exch. Local – 1200*1+400*3+200*2+100*1+50*3	
5X	Ahrmrd Exch. Local – 1200*2+800*1+200*2+100*1	

25	BRAHMKSHTRIYA EXCHANGE	
1Y	BRHM. Exch. Local – 1200*1+800*2+400*2+200*1+100*2	IV less than 430V
2Y	BRHM. Exch. Local – 1200*1+800*1+400*2+200*1+100*2	
3Y	BRHM. Exch. Local – 1200*1+800*1+400*2+200*2+100*4	
4Y	BRHM. Exch. Local – 1200*1+400*3+200*2+100*4	
26	GEETABAG EXCHANGE	
1Z	Geetabag Exch. Local – 1200*1+800*1+400*2+200*1+100*4	IV less than 430V
2Z	Geetabag Exch. Local – 1200*1+800*1+400*2+100*4	
3Z	Geetabag Exch. Local – 1200*1+800*1+400*2+100*4	
4Z	Geetabag Exch. Local – 800*2+400*1+100*3	
5Z	Geetabag Exch. Local – 800*1+400*1+100*4	
27	MANEKBAG EXCHANGE	
1A1	Manekbag Exch. Local – 800*1+400*1+200*2+100*4	IV less than 430V
2A1	Manekbag Exch. Local – 400*1+200*1+100*2	
3A1	Manekbag Exch. Local – 1200*1+800*1+400*1+100*3	
4A1	Manekbag Exch. Local – 1200*1+800*1+200*1+100*4	
5A1	Manekbag Exch. Local – 800*1+400*1+100*2	
6A1	Manekbag Exch. Local – 1200*1+800*1+400*2+2*00*2+100*3	
7A1	Manekbag Exch. Local – 800*1+400*1+200*8+100*2	

8A1	Manekbag Exch. Local – 1200*1+800*1+400*1+200*2+100*4	
9A1	Manekbag Exch. Local – 800*1+400*1+200*1+100*2	
28	VASNA EXCHANGE	
1B1	Vasna Exch. Local – 1200*3+800*3+400*4+200*4+100*5	
2B1	Vasna Exch. Local – 1200*1+800*1+400*2+200*3+100*5	
3B1	Vasna Exch. Local – 800*1+400*2+200*2+100*3	
4B1	Vasna Exch. Local – 1200*2+800*1+400*2+200*2+100*4	
5B1	Vasna Exch. Local – 1200*1+800*1+400*1+200*1+100*2	
6B1	Vasna Exch. Local – 1200*2+800*1+400*3+200*2+100*4	
7B1	Vasna Exch. Local – 1200*2+800*1+400*2+200*2+100*3	
8B1	Vasna Exch. Local – 1200*4+800*2+400*3+200*3+100*4	
9B1	Vasna Exch. Local – 1200*5+800*2+400*4+200*2+100*4	
10B1	Vasna Exch. Local – 100*2+50*3	
11B1	Vasna Exch. Local – 1200*2+100*1+400*2+200*2+100*3	
12B1	Vasna Exch. Local – 1200*1+400*2+200*2+100*3	
13B1	Vasna Exch. Local – 1200*2+800*1+400*2+200*1+100*3	
14B1	Vasna Exch. Local – 1200*3+800*2+400*3+200*3+100*4	
15B1	Vasna Exch. Local – 1200*3+800*2+400*3+200*3+100*4	

IV less than 430V

16B1	Vasna Exch. Local – 1200*1+800*1+400*2+100*3	
17B1	Vasna Exch. Local – 1200*3+800*2+400*3+200*2+100*4	
18B1	Vasna Exch. Local – 1200*1+800*1+200*2+100*3	
19B1	Vasna Exch. Local – 1200*1+800*2+200*1+100*3	
29	SARKHEJ EXCHANGE	
1C1	Sarkhej Exch. Local – 400*2+200*4+100*5+50*4	IV less than 430V
2C1	Sarkhej Exch. Local – 1200*2+800*2+400*4+200*4	
3C1	Sarkhej Exch. Local – 400*2+200*2+100*3+50*5	
4C1	Sarkhej Exch. Local – 800*2+400*1+100*1+50*2	
5C1	Sarkhej Exch. Local – 400*2+200*4+100*5+50*4	
30	VEJALPUR EXCHANGE	
1D1	Vejalpur Exch. Local – 1200*8+800*8+400*8+100*8+50*8	IV less than 430V
2D1	Vejalpur Exch. Local – 1200*6+800*2+200*8+100*4+50*4	
3D1	Vejalpur Exch. Local – 1200*2+800*5+200*5+100*4+50*4	
4D1	Vejalpur Exch. Local – 800*1+400*3+200*3+100*4+50*3	
5D1	Vejalpur Exch. Local – 800*1+400*3+200*3+100*4+50*3	
31	BOPAL EXCHANGE	
1E1	Bopal Exch. Local – 800*1+400*3+200*9+100*13+50*17 P	

2E1	Bopal Exch. Local – 800*1+400*4+200*7+100*10+50*12 P	IV less than 430V
3E1	Bopal Exch. Local – 800*1+400*2+200*11+100*14+50*18 P	
4E1	Bopal Exch. Local – 800*1+400*3+200*7+100*11+50*19 P	
5E1	Bopal Exch. Local – 400*1+200*3+100*6+50*18 P	
6E1	Bopal Exch. Local – 400*1+200*4+100*7+50*16 P	
31	SANAND EXCHNAGE	
1F1	Sanand Exch. Godhavi Road – 400*1 P	IV less than 430V
2E1	Sanand Exch. Police Station – 800*1 P	
3F1	Sanand Exch. Godhavi Road – 48*1 P (Armour Cable)	

ANNEXURE-II

CEA Case No.: GUJ-875		Map Scale : 1 cm= 500 m			
Name of the Power line: 220 kV D/C from GETCO's 400/220kV Charal SS to TPL's 220kV Thaltej SS		Total Length : 37.402 km			
		S.R. Value : 10000 Ohm-cm			
S.No.	Telecom. Details	Length of Parallelism in Km.	Mutual Coupling in Ohms.	Effective Fault current in Amps.	I.V in Volts.
WESTERN RAILWAY Letter No.- SG.158/28/12/1381 Date: 28.03.2024					
1.	Ambli Road - Sanand	6.25	0.000076	15585	1
2.	Sanand – Chharodi	Out of Parallelism			
3.	Moraiya – Sarkhej	7.989	0.0003	12808	4
4.	Bavla - Moraiya	5.015	0.0004	14449	6
5.	Gandhigram - Sarkhej	7.436	0.002	21317	43
6.	Sabarmati D - Gandhigram	Out of Parallelism			
7.	Sabarmati F - Chandlodiya	Out of Parallelism			
8.	Chandlodiya – Ambli Road	1.1	0.00001	4329	0.04
9.	Chandlodiya - Khodiyar	Out of Parallelism			

Annexure III

E-mail: webstar@nic.in

Directorate General of Signals
Signals 7
General Staff Branch
Integrated HQ of MoD, (Army)
DHQ PO, New Delhi - 110011

GUS-875

B/46937/Sigs 7(b)/3831/

04 Jun 2024

Asst. General Manager
Torrent Power Limited
Regd. Office: "Samanvay", 600 Tapovan,
Ambawadi, Ahmedabad-380015, India

**SUBMISSION FOR PTCC APPROVAL OF 220KV M/C AL-59 ZEBRA
CONDUCTOR TOWER LINE FROM GETCO 400/220KV CHARAL SUBSTATION
TO TPL'S 220KV THALTEJ SUBSTATION**

1. Refer your letter No. TPL/220kV/CHARAL LINE/PTCC/6381 dt 21 Mar 2024 (copy att).
2. **No Objection Certificate (NOC) is accorded** based on inputs provided as per Map sheet received vide your letter mentioned above. However, the agency executing the project should ensure **no damage to Army communication network and carry out work under close coordination with Army Authority.**
3. Documents alongwith map sheets (in original) are returned herewith for your further necessary action.

(Signature)
(Puneet Lakhanpal)
Lieutenant Colonel
General Staff Officer Grade 1 (Communication)
for Additional Director General (Telecommunication)

Enclosures : As above

Copy to :-

✓ Chief Engineer, PSCD Division
Central Electricity Authority
Room No 702 (North Wing)
Sewa Bhawan, R.K. Puram, Sector-1
New Delhi-110066

- for information

The DET(PTCC), Northern Zone
Bharat Sanchar Nigam Limited
O/p/PGM (North), QA & Inspection Circle,
D-Tax Building, Eastern Court, Janpath
New Delhi-110001

Pls. file
31/5/24
26/06
Sh. Ravi

Central Electricity Authority
PCD Division

Diary No. 678
Date 26/6/24