

Central Electricity Authority
Power Communication Development Division

**Minutes of 106th Central PTCC meeting held at
Mahabaleshwar, Maharashtra on 25th May, 2018**

The 106th Central PTCC meeting was held in Mahabaleshwar, Maharashtra on 25th May, 2018. The meeting was hosted by Power Grid Corporation of India Limited (PGCIL), WR-I. The lighting lamp ceremony was performed by Shri Naresh Bhandari, Chief Engineer, CEA & Co-Chairman of CLPTCC, Shri B.K. Jog, Chief General Manager, BSNL, Inspection Circle, Jabalpur & Chairman, CLPTCC, Shri S.P. Abraham, Director (PTCC), CEA & Secretary (Power), CLPTCC, Sh. R.N Rai, GM, BSNL & Secretary (Telecom), CLPTCC and Sh. A.K Mishra, GM, WR-I, PGCIL. The meeting was attended by dignitaries from BSNL, CEA, Defense and State/Central Power Utilities.

The list of participants is enclosed at **Annex-I**.

Shri S.P. Abraham, Director (PTCC), CEA welcomed all officers on the dais and all other officers from BSNL, Defense, State and Central Power Utilities. He stated that Central Electricity Authority had processed 185 nos. of PTCC proposals from April 2017 to March 2018. This covers 4557 KMs of 765kV lines and 6724 KMs of 400kV lines; besides 220kV lines. During the same period, CEA had registered 172 new proposals for IV calculations. He stated that despite manpower constraints, efforts were made to process the computation of induced voltages, upon receipt of required details from BSNL, Defense and Railways.

Shri R.N. Rai, GM, BSNL welcomed all the participants, He stated that Power and Communication now a days are not luxury but necessity. Government of India has launched a large number of Power & Telecommunication Projects to reach out to people located at every nook and corner of the country. Nowadays, data communication has become the need of hour. Power is required by all and therefore Government of India has started emphasizing non-conventional energy sources like Solar, Wind etc. In all the developments, human safety is of prime importance. For that, coordination between telecom and power sectors is required. With opening up of communication and power sectors, many new private players have come up. Defense and Railway sectors are so far secured. PTCC has high responsibility since it involves coordination between four sectors - Power, Telecom, Railway and Defense.

Shri B.K. Jog, CGM, BSNL welcomed all the participants and stated that the forum has gathered to acknowledge the progress and status of various related issues which are pending before the Committee and also to decide and formulate the future course of action in the existing scenario. PTCC, an independent body was constituted by Government of India in 1949 and has been in existence for last 69 years. It plays a vital role in resolving various issues related to PTCC route approval and ensuring the safe co-existence of power and telecom sector. He stated that in the present scenario a lot of electrification works are being undertaken which the power companies have to complete in a time bound manner. Due to time constraints and other factors, power companies are sometimes reluctant to take PTCC approval and try to install and charge the lines without applying for route approval. Such cases, if noticed, should be brought into the notice of this forum for taking appropriate action against the defaulting power companies. A letter has also been issued to all CGMs Telecom circles for observing any such case and bring to the notice for taking suitable action. A review of the status of the issue as on date shows that the process of settlement of the PTCC Route Approval cases, compensations etc. has been streamlined to some extent by making the process online. The same is required to be developed further, by way of upgradation of server, making the users more familiar and accustomed to using the portal. To fasten the route approval process and for monitoring the status thereof, the ON LINE portal have been launched and is working. Till now, user ID has been created for around 535 users, including power utilities. All old cases have been entered on the portal through back end and the new cases are now being registered online. Total number of RACs uploaded on the portal is 906

till date. He stated that it is needless to say that CLPTCC has had very prestigious past and has worked throughout for safety of telecom equipment and life of personnels by ensuring safe co-existence of Power & Telecom sectors but still some firm decision is required to be taken at this forum for accomplishment of the pending and assigned works in a very planned, focused and time bound manner. He expressed that CLPTCC meeting will help to resolve pending issues and will be successful in taking a step forward towards the objectives, set forth at the time of formation of the Committee.

Shri A.K Mishra, GM, WR-I, PGCIL welcomed all the participants and thanked the forum for giving the opportunity for hosting the 106th CLPTCC meeting. He said that PTCC Approval is a must for the safety and security of data and communication. He expressed happiness that PTCC approvals are being received in a timely manner and wished for fruitful discussion.

Shri Naresh Bhandari, Chief Engineer, CEA & Co- Chairman, CLPTCC thanked PGCIL, WR- I for hosting the 106th CLPTCC meeting and for making suitable arrangements for the meeting. He welcomed all the participants and thanked them for having come to Mahabaleshwar. He stated that over the time telecom assets are being gradually changed from copper telecom to optical Fibre. Similarly, Power lines in congested areas of cities are moving from Overhead to Underground. But despite all this, PTCC role still do exist. CEA's Safety Regulation covers PTCC requirement for overhead lines. We need to improve PTCC process in such a manner that when a utility applies for PTCC, it should not feel burdened. It should be easy and time bound activity. In the last meeting, we revised time limits associated with PTCC approval for power lines linked to renewable generation. It was a progressive step as Government of India has set a target of 175 GW renewable generation for the year 2022. There has been an increase in number of PTCC cases associated with renewable evacuation, and this trend shall continue in future. He stressed that better coordination is needed to handle this increased load. In spite of the growing number of cases and other constraints, he expressed that he was glad to say that the PTCC cases are being processed and granted without unwarranted delays. He informed that there has not been a single case of power line whose charging got delayed due to PTCC. He wished that Central PTCC forum would take decisions and resolve issues brought out in agenda. He once again welcomed all the members.

A. Confirmation of Minutes

The Minutes of the 105th Central PTCC meeting held at Kochi on 10th Nov, 2017 were taken up for confirmation and all the members confirmed the minutes.

B. Follow up Action

B.1 Ensuring 'Zero Level' on unguarded power crossings

All DETs (PTCC), BSNL informed that there were no unguarded power crossings in their respective zones. In the last meeting, it was suggested that DETs during SLPTCC meetings might also go for random site visit to check this aspect. In this regard, DETs expressed that site visits could not be conducted due to logistic issues. It was decided that DETs would write letters to seek complete data of line crossings from the power utilities. For random site visits, Power Utilities were requested to provide logistic support.

(Action: All DETs, BSNL)

B.2 Computerization of PTCC Route Approval Process

Regarding use of existing ONLINE PTCC portal, power utilities expressed difficulties. Many utilities informed that they were not able to login at the portal. Sri. K. Raji Reddy, BSNL, Hyderabad, involved in the digitization of PTCC process informed that the present arrangement for the portal involves using a 2 GB RAM computer. This configuration is insufficient if multiple users try to log in the portal at the same time and hence results in hanging of the PC cum Server. He stated that the new Server would solve the issue. Chief Engineer, CEA suggested to arrange

a better configured PC to handle the load of Portal as an interim arrangement till new Server is put in place.

KPTCL representative suggested to send notifications to two mobile numbers, instead of one number at present. BSNL assured that they would try to incorporate two mobile numbers. Regarding KPTCL's suggestion of sending e-mail notification, BSNL informed that this aspect would be taken care when new Server is installed.

CGM, BSNL expressed that some problems are being faced in the portal like processing speed, limitation of uploading of certain documents like TOPO map etc. due to capacity constraints of the existing Server. The same would be taken care in the Version-2 of the software. For this, the procurement of high end Server was pending. He informed that procurement of the Server was processed two times through the GeM (Government E-Marketplace) portal but as the bids received were not meeting the technical specification requirement and those meeting, quoted very high rates as compared to the estimated cost, these bids were rejected. Again the procurement will be processed in this financial year through the GeM Portal and all-out effort will be made to procure and make the server functional before the next CLPTCC meeting.

Chief Engineer, CEA suggested that the feedback received from TSTRANSCO as enclosed in the agenda, may be considered by the Sub-Committee formed by BSNL. The Sub-Committee has members from CEA, BSNL, Railways, Defense and Power Utilities.

(Action: BSNL)

B.3 SLPTCC meetings

During discussion in the last meeting, it was decided that in every State Level PTCC meeting, the concerned State would furnish status of power lines already charged, as well as power lines under construction, along with their PTCC Route approval status. This shall be a permanent agenda.

CGM, BSNL stated that SLPTCC is the important forum where the issues related to resolution of various local issues like pending telecom details, IV Calculation, etc. should be addressed and sorted out for early issue of RAC. He said that SLPTCC meetings are not being conducted regularly at many places as per schedule, resulting in pendency of cases. The same needs to be expedited and resolved by conducting the SLPTCCs in a regular way.

OPTCL has informed that PTCC proposals have been sent for post facto approval. BSNL informed that marking of the telecom details was in progress.

(Action: BSNL)

B.4 Nomination of members from DISCOMs for SLPTCC meetings

DET(PTCC), Kolkata informed that Assam & West Bengal has not sent their nominations. PGM, Kolkata, BSNL informed that letters were written but still the response is awaited. Chief Engineer, CEA has suggested to write letters to higher ups in the department and still if there is no response, BSNL can inform to CEA so that CEA can take up the matter.

DET(PTCC), Delhi informed that meetings were not convening in Punjab and UP. Punjab representative promised to conduct the meetings regularly. The forum expressed that if the SLPTCC meetings are not conducted regularly, then CLPTCC will be overloaded. Chief Engineer, CEA suggested that roasters for SLPTCC meetings may be prepared and circulated in advance for regular conducting of the SLPTCC meetings.

(Action: BSNL)

B.5 Non submission of PTCC proposal of SLPTCC/CLPTCC by PTCUL

(i) Charging of transmission lines without PTCC Route Approval

PTCUL has informed that IV calculations were done for 12 nos. cases and have forwarded the details to BSNL. BSNL confirmed the same, and informed that the cases are being processed for issuing RAC.

Chief Engineer, CEA informed that PTCUL representatives visited CEA for IV computation training and he offered that if any Power utility has any issue in computation of Induced voltages, they can request CEA for training with advance notice. He assured that CEA would help in all possible way.

(Action: BSNL)

(ii) Other cases of non-submission of PTCC Proposals

DET, PTCC, BSNL, Northern Region informed that Himachal Pradesh has not been sending PTCC cases from quite some time. Chief Engineer, CEA asked BSNL to inform CEA the date from when Himachal Pradesh has stopped applying so that the matter could be taken up with higher ups. He also suggested all DETs to inform about the states which have stopped sending PTCC cases.

(Action: BSNL)

B.6 Non-submission of proposal / telecommunication details from Defense

Defense representative informed that seven zones have been identified. Each zone will have a nodal officer. He also informed that Defence has undertaken a project of "Network for Spectrum" being implemented by BSNL. This project would realign the existing communication system in Defence sector. Once this project is completed, Nodal officer will have the data of communication system in their respective zone. He assured that once this project is completed, then PTCC cases would be disposed of at nodal level without being requires to go to ground level for marking of Defence telecom details. He informed that delay in reply from Defence is attributed to frequent movement of personnel. Once the realignment project is completed then this issue would be solved as Nodal officers would have all the information regarding the communication systems.

Power utilities have expressed difficulty in contacting Defence department regarding PTCC cases. Defense representative informed that email id and official phone no. of the nodal officer would be given to all for contacting, after formation of zones. He assured that in a months' time, information on Zones would be furnished.

(Action: Defense)

B.7 Improper Submission of BSNL Details.

CEA pointed out that telecom details received from DET, North Zone are not in the prescribed format. DET, North Zone simply forwards the details received from concerned field officers. CGM, BSNL instructed DET, North Zone to furnish BSNL Telecom details to CEA in a proper manner, as being done by DET, South Zone.

(Action: DET, NZ, BSNL)

B.8 Scrutiny report issued by CEA

CEA is issuing scrutiny report of PTCC proposal received from power utilities and it was observed that the response to CEA scrutiny report was not encouraging. It was informed that if Power Utilities reply the queries raised by CEA in scrutiny report urgently then the delay in processing PTCC cases can be avoided.

(Action: Power Utilities)

B.9 Pending PTCC proposals

DET, Mumbai told that the Topo sheets submitted by some constituents are not proper and they are not attending SLPTCC meeting also. Therefore, interaction with such power utilities was required. In the meeting it was decided that the deficiencies of the proposal would be reported to Chief Engineer of the concerned utility with a copy to CMD.

DET, WZ, BSNL expressed difficulty in getting telecom details marked from their field units. To expedite this, it was decided for all DETs that in case telecom marking by field unit is not done in one months' time then they would inform the concerned GM, BSNL regarding pending Telecom details marking. The concerned GM, BSNL would pursue the matter with the field units to expedite TD markings. After one month, in case the TD marking is not done, then the concerned GM, BSNL would take up the matter with CGM, Inspection Circle, Jabalpur. The above decision is subject to the cooperation from the Power Utility. A gist of such cases would be prepared by each DET, and submit the report to subsequent CLPTCC.

(Action: BSNL)

B.10 Review of 'Time Limit' for various steps involved in PTCC clearance for Renewable Power Plants

In 105th CLPTCC meeting, time limits for various steps involved in PTCC clearance for the power lines associated with Renewable Generations and Traction were provisionally revised. As no feedback was received for the time limits, it was decided that these be treated as final for Renewable generations and Traction circuits for all for all future cases.

For 33 kV D/C and above up to 132 kV Power Lines (Central Cases)

Furnishing telecom details by P&T / Railway / Army	3 weeks
Scrutinizing the details, preparing copies& forwarding to concerned Electricity Board by DET PTCC	1 week
Furnishing I.V. calculations by Electricity Board and endorsing copies to all concerned	3 weeks
Furnishing recommendations by Railway /Army	2 weeks
Final examination & Issue of certificate	1 weeks
Total	10 weeks

For Approval of Power Lines above 132 kV (Central Cases)

Furnishing telecom details by P&T / Railway / Army	6 weeks
Scrutinizing the details, preparing copies& forwarding to concerned Electricity Board by DET PTCC	1 week
Furnishing I.V. calculations by Electricity Board and endorsing copies to all concerned	3 weeks
Furnishing recommendations by Railway /Army	2 weeks
Final examination & Issue of certificate	1 weeks
Total	13 weeks

It was decided to treat this item closed.

B.11 PTCC approval of HVDC Earth Electrode

Based on the decisions taken in 104th CLPTCC meeting a Sub-Committee comprising members from BSNL, CEA and PGCIL under the chairmanship of PGM, BSNL, EZ was formed. The Sub-Committee held its first meeting on 13/04/2018 (a copy of gist of discussions is enclosed at **Annex-IA**). It was decided that PGCIL would submit the PTCC proposal of 33 KM long transmission line constructed from Alipurduar HVDC station to the Earth Electrode station at Mathabhanga. CEA would compute induced voltage and inform that outcome in the next CLPTCC meeting.

PGCIL, SR-I raised his agenda of HVDC line. During discussions, it was decided that the Sub-Committee would also look into the agenda of PGCIL, SR-I. It was decided to include one representative each from CPRI/PRDC and PGCIL SR- I.

(Action: PGM, EZ, BSNL)

B.12 Charging of 33kV Power line from Pulwai to PDCIL, Gadwal, Mahboobnagar, Telangana

M/s Solar Arise, Mumbai erected and energized 33kV transmission line from Pulwai to PDCIL, Gadwal, Mahboobnagar, Telangana State without PTCC clearance. The line was opened on 04/08/2017 on the order issued by District Collector of the district of Jogulamba (Gadwal) due to damage in nearby BSNL Telecom Exchange. Later on, PTCC proposal was submitted by M/s Solar Arise and Induced voltage calculations were done by Southern Power Distribution Company of TS Limited and DET Chennai has issued Route Approval Certificate on 07/12/2017.

In the last meeting, a Sub-Committee comprising CEA, BSNL, TS SPDCL and M/s Solar Arise was formed to ascertain the damage to Gadwal TE due to charging of the Power line. In the first meeting of the Sub-Committee, TSSPDCL explained that many defects were noticed during a joint inspection of the 33kV line like defective insulators, improper earthing, improper laying of UG cables, improper clearances etc. It was also informed by TSSPDCL that a meeting was conducted in the chambers of the District Collector Jogulamba, Gadwal on 16/12/2017 with BSNL officials, TSSPDCL officials and M/s Solar Arise officials and discussed in detail about PTCC approval, induction effect to BSNL equipment. The District Collector Jogulamba, Gadwal has instructed BSNL officials and M/s Solar Arise officials to coordinate, check earth pits, complete the work by 17/12/2017. District Collector Jogulamba, Gadwal has instructed to charge the line. Accordingly, the SE/OMC/TS Transco/Mahboobnagar charged the line on 25/12/2017 at 13:37 Hrs.

In the CLPTCC meeting, it was decided that the DET (PTCC), BSNL, Chennai would replace Sh. S. Balakrishnan, SDE, PTCC, Chennai as convener of the Sub-Committee. The Sub-Committee would discuss the matter in detail in the next meeting.

(Action: CEA)

C. New Agenda items

C.1 Whether PTCC approval is needed for power Cables.

Regarding requirement of PTCC approval for Power Cables, CE, CEA informed about legal provisions. In the CEA Standards on Measures relating to Safety and Electric supply regulations, the relevant clause is as under,

Regulations-77

“The owner of every overhead power line of voltage level 11kV or higher shall submit proposal for obtaining Power and Telecommunication Co-ordination Committee clearance to ensure safety of the personnel and telecom equipment.”

Regulations-76

- (1) No underground power cable of voltage exceeding 33kV shall be laid without a minimum underground depth of 1.2 meters.
- (2) No underground telecommunication cable shall be laid without a minimum separation distance of .6 meters to the underground power cable of voltage exceeding 33kV.

So, in CEA's Safety Regulations, PTCC requirement is only for overhead lines.

In CEA regulations for Technical Standards for construction of Electrical plants and Electric Lines Regulations 2010, the Section 88(5) is:

"The owner shall arrange all required consents and approvals including those from Power and Telecommunication Co-ordination Committee(PTCC), and for civil aviation, road, river, canal or power line crossings, way leaves and environmental & forest clearances etc. from the concerned authorities/agencies."

At page-172 of PTCC Manual, the relevant extract is given below:

"Power cable should have the shortest length of parallelism with BSNL cables. When high voltage cables 11 kV and above, has a parallelism exceeding 0.8 Km with BSNL cable should be marked in the topo map for suitable recommendation, which implies power cables of length less than 0.8 Km need not be marked in the topo map. Hence for many power proposals of length less than 0.8 Km, Telecom details need not be called for, which considerably eases the work of both BSNL and EB authorities."

At page-170 - 171, guidelines for laying UG power cables is mentioned. It is also mentioned that BIS did not accept inclusion of PTCC Guidelines in their existing specifications of BIS. It is observed that in the guidelines, PTCC requirement is not indicated, and instead only required clearances are given.

In view of lack of clarity on the issue of requirement of PTCC approval for U/G power cables, it was decided that a Sub-Committee comprising representatives from CEA, BSNL, Power utilities, Manufacturers of cables and Discoms will be constituted to study the case further and report to CLPTCC.

(Action: CEA)

C.2 Agenda received from Madhya Pradesh Power Transmission Company limited (MPPTCL)

MPPTCL's agenda was about pending PTCC cases. The status is enclosed at **Annex-II**.

C.3 Agenda received from Kerala State Electricity Board Limited (KSEBL)

KSEB's agenda was about pending PTCC cases. The status is enclosed at **Annex-III**.

C.4 Agenda received from Damodar Valley Corporation (DVC)

All the cases in the agenda is 132kV level to be discussed in SLPTCC meeting.

C.5 Agenda received from APTRANSCO (Transmission Corporation of Andhra Pradesh Limited)

The induced voltage calculations in respect of 400 kV TMDC line from Sattenpally SS to Podili was issued on 31/05/2018.

C.6 Agenda received from Chhattisgarh State Power Transmission Company limited (CSPTCL)

CSPTCL's agenda was about pending PTCC cases. The status is enclosed at Annex-IV.

C.7 Agenda received from Rajasthan Rajya Vidyut Prasaran Nigam limited (RRVPL)

RRVPL's agenda was about pending PTCC cases. The status is enclosed at Annex-V.

C.8 Agenda received from Punjab State Transmissions Corporation limited (PSTCL)

PSTCL's agenda was about pending PTCC cases. The status is enclosed at Annex-VI.

D. Additional Agenda - I

D1. Agenda Points from PGCIL, SRTS-II

PGCIL SRTS-II agenda was about pending PTCC cases. The status is enclosed at Annex-VII.

D2. Agenda Points from PGCIL, SRTS-I

Already covered in B-11.

D3. Agenda Points from PGCIL, WRTS-II

PGCIL WRTS-II agenda was about pending PTCC cases. The status is enclosed at Annex-VIII.

D4. BSNL–Status in respect of items C2 to C8 of main agenda.

This was discussed in the meeting

D5. Telangana –Transco: Feedback on PTCC computerization

This was covered under item B.2.

E. Additional Agenda - II

E1. Agenda from GETCO

GETCO's agenda was about pending PTCC cases. The status is enclosed at Annex-IX.

E2. Agenda from Delhi Transco Ltd.

This was covered under item C.1.

F. Agenda raised with permission of Chair
--

As per PTCC Manual, when the induced voltage is between 430 V and 650 V, the protection cost is borne by BSNL. When the induced voltage is more than 650 V, the protection cost is borne by the lateral entrant. The charging permission is given by BSNL, after protection work is completed. KPTCL informed that there have been cases more than 4 years old where BSNL was to bear the protection cost, but till date charging permission is not given. Similarly, there have been cases when Power Utility has deposited money demanded by BSNL for protection when voltage exceeded 650 V, but still charging permission from BSNL remains pending.

After detailed discussions, following was decided:

Case-I (Induced voltage is between 430 V and 650 V, and protection cost is to be borne by BSNL)

The Power Utility would wait till 6 months from date of issue of RAC, and in case no charging permission is given by BSNL then it would be taken as deemed charging permission.

Case-II (Induced voltage is beyond 650 V, and protection cost is to be borne by Power Utility)

The Power Utility would wait till 6 months from date of deposit of money raised by BSNL demand note, and in case no charging permission is given by BSNL then it would be taken as deemed charging permission.

It was brought to the notice that some railway zones do not adhere to PTCC time limits for furnishing telecom details, and for issuing NOC. It was provisionally decided that in case Railway telecom details are not received within the time limit prescribed by PTCC Manual, CEA/Power utilities would compute IV from the available railway details in the topo map and would be considered as deemed Railway details. If NOC is not issued by Railway as per time limit prescribed in PTCC manual, then it will be considered as deemed NOC. CLPTCC observed that as these provisional decisions have been taken in the absence of any representative from Railways, so, it would be prudent that before implementation, these provisional decisions are conveyed to Railway Board with the request to send the representative in the next CLPTCC meeting.

106th Central Level Power and Telecommunication Coordination Committee (CLPTCC)**Meeting
LIST OF PARTICIPANTS**

SN	NAME	DESIGNATION	MOBILE NO.	E-MAIL ID
CEA				
1	Naresh Bhandari	Chief Engineer (PCD) & Co-Chairman CLPTCC	9899061449	celdntcea@gmail.com , nbnareshbhandari@gmail.com
2	S.P. Abraham	Director	8860217159	sunnyp2.cea@gov.in
3.	M.Srikant Reddy	Dy. Director	8447272084	adptcc@gmail.com
BSNL				
1	B.K.Jog	CGM & Chairman CLPTCC	9425801314	cgmtd@bsnl.com
2.	R.N.Rai	GM (HQ&A), Jabalpur	9450944955	dgmtsejb@gmail.com
3.	V. Ganesan	DGM ,Chennai	9444000450	dgmqainspcni@gmail.com
4.	Ch. Vijay Kumar	DGM, Vijayawada	9440000249	dgmopco.VJ@gmail.com
5	A K Jha	GM-(QA&INSP), Mumbai	9422528999	gmwest@bsnl.co.in
6.	Deepak Tayal	PGM(NNO-CFA) Bangalore	9483141555	pgmcfaop@gmail.com
7.	A.K. Sinha	PGM(QA&INSP),Kolkata	9433000085	gmeastbsnl@gmail.com
8.	P.K. Jain	AGM, Jabalpur.	9425803008	agmsw@rediffmail.com
9.	A.P. Singh,	SDE(PTCC), Mumbai	9423984033	sdeptcc123@gmail.com
10	H.L. Badgainya	SDE(PTCC) Jabalpur	9425801083	hlb_raj@rediffmail.com
11	I.S.S. Mishra	DE,PTCC, N.Z., BSNL	9868218082	deptccnd@gmail.com
12	A. Majumder	DET/PTCC, (ER) Kolkata	9433400096	detptccer@gmail.com
13	N.N. Kothari	DET/PTCC Mumbai	9423992040	deptccmbi@gmail.com
14	K. Raji Reddy	JTO A/T Hyderabad	9440000355	rajireddy.in@gmail.com
15	Yogendra Singh	SDE (PTCC),Bhopal	9425603387	sdeptccbpl@gmail.com
16	N.K. Ananda Rao	SDE, PTCC IC Bg.	9449858808	raonka58@gmail.com
PGCIL				
1	A.K. Mishra	GM, WR-I	8875026825	akmishra@powergridindia.com
2.	A.M. Bhuskat	DGM, WR-I	9422811685	bhuskat@powergridindia.com
3	D.V. Ramana	AGM, PGCIL	8331998356	dvramana@powergridindia.com
4	S.J. Lahiri	DGM (Engg.), PGCIL	9434742001	silahiri@powergridindia.com
5.	M.Dhayalan	Chief Manager, SR-II, PGCIL	9449599041	dhayalanm@powergridindia.com
6.	S. Balakumar	Chief Manager, PGCIL	9428504066	sbalakumar@powergridindia.com
7.	Sanju Kishan.P	Dy. Manager, PGCIL	9448284850	Sanju.kishan@powergridindia.com
KSEBL				
	Biju K.Ommen	AEE, KSEBL	9496001667	transgridsouth@gmail.com
Defense				
	Col. R.K. Choudhary	Col.Signals, HQ SC, Pune	9425320523	rajeshbhagalpur@gmail.com
PTCUL				
	Hitender Singh Hyanki	S.E. Power Transmission Corporation of Uttarakhand Limited	9758166605 7088117917	hitendra0107@gmail.com hs_hyanki@pitcul.org
MPPTCL				
	A.K. Tiwari	Executive Engineer, MPPTCL,	9425805157	mptransco@nic.in
TSTRANSCO				
	K.Vedaprakash	DE/construction/ TSTRANSCO	9490153076	detstransco@gmail.com
APTRANSCO				
1	S.Bajjamma	SE,400Kv,Construction	9440907401	se&m400kv@gmail.com

2	G.N.S. Malleswara Rao	DE/Construction	9490153079	delpmaptransco@gmail.com
Delhi Transco				
	Dinesh Singh	DGM (T), QA&I	9999533680	dineshsinghdt@gmail.com
KPTCL				
1.	R.V.Dilip Kumar	CE(ELE)SLDC, KPTCL,	0944847141 1	sldc.kptcl@gmail.com
2.	Kumar. Muddavvanavar	Asstt. Executive Engineer	0944899804 5	aeedcptcc@gmail.com
PSTCL				
1.	Brij Mohan Sethi	Sr.XEN/PSTCL	9646117821	Asc-ts2@pstcl.org
2.	Vardeep Singh Mander	Dy.C.E./TS(D)	9646117803	se-trd@pstcl.org
UPPTCL				
	H.N. Prasad	SE,UPPTCL	9412749804	cetw@upptcl.org
OPTCL				
	Pradeep Kumar Dash	DGM(EI)	9438907378	prdkdash@optcl.co.in
DVC				
	Rabin Mandal	SE€SPE,DVC, Kolkata	9903133058	rabin.mandal@dvc.gov.in
SOLAR ARISE				
	Bipin K. Singh	Operations Solar Arise	9999795570	bipinsingh@solararise.com
GETCO				
	S.R. Yadav	DE, GETCO	9925208096	eetr3.getco@gebmail.com
TATAPOWER				
	H.C. Sharma	GM.Tata Power Delhi Distt. Ltd.	0918100751	hc.sharma@tatapower-ddl.com
GOA ELECTRICITY DEPARTMENT				
	Pradip M.Naik	Asstt. Engineer	8380015059	pradip_mnaik@yahoo.co.in

**Gist of discussions held in the office of
Chief Engineer, CEA on 13th April, 2018 at New Delhi**

To examine the induction effects of HVDC transmission lines at nearby telecom circuits, a Sub-Committee comprising members from BSNL, CEA and PGCIL was formed. The 1st meeting of the Sub-Committee was held in the office of Chief Engineer, CEA on 13/4/18. Following officers attended the meeting:

BSNL

Sh. A.K. Sinha, PGM (East) - Chairman

CEA

Sh. Naresh Bhandari, Chief Engineer – Co-Chairman

Sh. S.P. Abraham, Director

Sh. Srikant Reddy, Assistant Director

PGCIL

Sh. S. J. Lahiri, DGM(Engg) – Member

Sh. M. Srinivasa Rao, AGM

Sh. M.K. Kirfania, CM

Sh. Mahesh Vardikar, Sr. Engineer

Sh. Parikshit Mishra, ACDE

While initiating the discussion, CE, CEA stated that in view of varying transient fault current in first pulse for around 10 milliseconds in case of HVDC lines, it was decided in the last CLPTCC meeting that BSNL authorities would collect the information from the vendors regarding the value of short term peak withstand current capacity (along with duration) of the copper telecom cables / end equipment. It was also decided that PGCIL would arrange field test in this regard during planned shutdown of HVDC line.

During discussion, BSNL informed that as per information received from M/s UM Cables, Silvasa that such parameters are not available by the Vendor. PGCIL informed that it was not possible to arrange field test. PGCIL shared CIGRE paper of year 1994, titled "DC side harmonics and filtering in HVDC transmission systems". PGCIL also shared an explanatory note on electrode line fault current and its effects (a copy enclosed at **Annex**).

PGCIL informed that transient fault current in worst condition in Alipuduar HVDC station would be around 12kA for 10 msec., which would be distributed between two electrodes with half magnitude. CE, CEA stated that during discussion with DGM, PGCIL in Corporate office at Gurgaon, it was informed that depending upon HVDC capacity, the fault current varies, and the maximum fault current is of the order of 18kA in first pulse for around 10 msec.

After detailed discussion, it was agreed that transient fault current for around 10 msec. exists in HVDC, and it would cause induction in the telecom circuits in the vicinity. Accordingly, it was decided that PGCIL would submit the PTCC proposal of 33KM long transmission line constructed from Alipuduar HVDC station to the earth electrode station at Mathabhanga. CEA would compute induced voltage. The values of induced voltage would be informed in the next CLPTCC.

Regarding PTCC proposal, PGCIL intimated that the same was already submitted to BSNL and a copy of the same is available at BSNL Local offices as well as Office of the DET(PTCC), Kolkata. PGCIL requested for expediting site report from BSNL to CEA for necessary calculation of the IV.

Explanatory Note On Electrode line fault current and its effects

Synopsis

There is an electrode line in 2xtwin zebra conductor of approx.33km length of 132kV voltage level connecting Mathabhanga with Alipurduar HVDC station. There is a possibility of DC line fault current flowing through this earth electrode station and thereon to electrode line, for voltage induction and/or electromagnetic effects on telecom equipment of other agencies. This shall be for very small duration . The purpose of this write-up is to fend off any apprehension in this regard, as the system has been designed in compliance with reputed international standards and it is safe and secure to operate under all possible operating conditions.

Design Extract:

The DC filters have been primarily designed to take care of induced electromagnetic voltages and resultant flowing disturbing currents in the electrode line under normal operating conditions.

4.11.3 PERFORMANCE REQUIREMENTS

The performance requirements are defined in terms of individual harmonic currents and in terms of the equivalent disturbing current. The requirements shall be met at all points along the route of the dc lines (dc pole and electrode lines) and at all power levels up to and including specified rated continuous power . The Contractor shall carry out resonant frequency study and provide remedial measures for HVDC and electrode line.

4.11.3.1 Definitions

The individual harmonic current, I_n , is defined as the pole or electrode line current actually flowing and shall be the instantaneous vector sum of the currents of a given harmonic order emanating from the converter stations at either end of the transmission. The equivalent disturbing current method is based on a concept whereby the total, composite interfering effect of all harmonic frequencies on a power line can be represented by an equivalent current at a single frequency which would produce the same interfering effect on adjacent or crossing wire line communication circuits.

The equivalent disturbing current shall be the psophometric weighted equivalent residual current of all harmonics of fundamental frequency between the 1st and 60th (i.e. 50-3000 Hz) according to the following formula:

$$I_e(x) = \sqrt{\sum_{n=1}^{n=60} \{I_e(n,x) * P(n) * H_f\}^2} \quad (\text{in mA})$$

where:

$I_e(n,x)$ is the magnitude of the equivalent residual rms current at each harmonic in milliamps,

$P(n)$ is the psophometric weighting as per CCITT value at harmonic "n" (e.g. $P(n) = 1$ at 800 Hz)

H_f is the coupling factor which represents the normalized frequency dependent effects of typical coupling impedances to open wire circuits. The values of H_f to be used in calculation is given at Table: 4.11.3.1

n denotes the harmonic number.

And pursuant to above criteria, the allowed limits for equivalent disturbing current are tabled as follows:

FOR THE ELECTRODE LINE	Current(mA)
At Biswanath Chariali and Siliguri (New) and Agra end :	
Balance Bipolar	1500
Monopolar Ground	2200

Note: For calculation of line impedance only earth resistivity may be assumed to be 250 Ω -m along the HVDC line and electrode lines.

Further, the obtained results under above stipulated criteria, after thorough studies are:

	U _s , kV	Maximum I _{eq} (mA)			Specified limit
		Pole lines	Any electrode line		
<u>Biswanath – Alipurduar - Agra</u>		Biswanath – Alipurduar	Alipurduar – Agra		
Bipolar ⁹¹	800	1476 (Al)	1330 (Ag)	1136 (Ag)	1500
Monopolar metallic return ⁹¹	800	2184 (Al)	1832 (Ag)	1377 (Ag)	2200
Monopolar ground return ⁹⁰	800	2074 (B)	2080 (Ag)	1317 (Al)	2200
<u>Biswanath - Agra</u>		Biswanath – Agra			
Bipolar	800	1143 (Ag)	-	1279 (Ag)	1500
Monopolar metallic return	800	1652 (Ag)	-	1959 (Ag)	2200
Monopolar ground return	800	1894 (Ag)	-	1460 (Ag)	2200
<u>Alipurduar - Agra</u>			Alipurduar – Agra		
Bipolar	800	-	1157 (Ag)	1228 (Ag)	1500
Monopolar metallic return	800	-	1718 (Ag)	1955 (Ag)	2200
Monopolar ground return	800	-	1852 (Ag)	1454 (Al)	2200

Discussion on results:

- For steady state:** The obtained current levels (disturbing) are well within the allowed limit of CCITT directives on Telecommunication interference, as can be seen in above table. (Ref: CIGRE Technical Brochure-92). **The international standard CIGRE wont dictate any limits on the transient currents on DC side possibly due to short period and low amplitude compared to AC side.**
- For transient conditions:** The DC line fault current due to worst condition is expected to be around 12kA for 10 msec which shall distribute between two electrode stations with half magnitude (6kA approx.) which is the highest magnitude of current of first peak. The same is supported by DPS study plot.
The equivalent one second thermal current for electrode lines of Alipurduar shall be 2.55 times lower ie $6/2.55=2.35kA$. It shall be noted that this is an AC current by behaviour though induced on DC side fault.

As could be seen, the magnitude of the fault current flowing is far less than even 33kV LT feeders of conventional power systems, which are atleast desgined for 25kA (rms) for one sec.

As such, any adverse effect on telecom equipment due to DC line fault current flowing through electrode current is summarily ruled out.

The above treatise is prepared from reference standards/papers/design documents as listed, which could be referred, in case of further clarification:

- DC filter Performance report +/-800kV North East-Agra HVDC project (Courtesy-ABB)
- Technical Brochure-92, CIGRE-Dc side Harmonics and Filtering in HVDC Transmission Systems

3. *Investigation of Transient Induced Voltage to a Communication line from an Overhead power transmission line-IEE proceedings Mar-1990*
4. *Longitudinal Induction Voltage measurement on Communication cables running parallel to Overhead lines/Power cables-A paper by one of cable manufacturer-2007*

Annexure - II

Madhya Pradesh Power Transmission Corporation Ltd.			
Sr. No.	Case No.	Name of Power Line	Status in CEA
1	MP-424	400 kV Seoni- Bhilai DCSS Line at proposed 400/132 kV S/S Kirnapur	BSNL and Railway details are pending.
2	MP-433	400 kV DCDS line from 400 kV S/s Ashta to 400 kV S/s Ujjain	BSNL, Railway and Defence details are pending
3	MP-403	220 kv DCDS line from 220 kV Rajgarh (Dhar) to 100 MW Wind Energy Power project of M/S Clean India Wind Power Ratlam PVT Ltd.. T/L	Railway Details are pending
4	MP-404	220 kV DCSS line from existing 220 kV S/S Shujalpur to 132 kV S/S Narsingharh (to be Upgraded to 220 kV)	Defence details are pending
5	MP-418	220 kV Inter connector between 220/132 kV S/S Betul (MPPTCL) to 400 kV S/S Betul (PGCIL)	IV calculation issued on 15.05.2018.
6	MP-419	LILO of both Circuits of Damoh-Sagar 220 kV Line at 400 kV S/s (PGCIL) Damoh.	IV calculation issued on 13.11.2017.
7	MP-421	LILO of both Circuits 220 kV Satna-Chhatarpur line at 400kV S/S (PGCIL) Satna PL 1.9 Km	BSNL details are pending
8	MP-422	LILO of One Circuit of 220 kV Bhopal-Hosangabad DCDS line at Proposed 220 kV S/s Adampur	IV calculation issued on 21.03.2018.
9	MP-420	LILO of both Circuits 220 kV Sarni-Pandhurna line at 400kV substation Betul (PGCIL)	IV calculation issued on 21.05.2018.
10	MP-425	LILO of 220 kV malanpur-Mehgaon DCDS line at 400/220 kV S/S CWRTL(Morena)	BSNL and Railway details are pending.
11	MP-427	220 kV DCDS line from 220 kV Sabalgarh to proposed 400/220 kV S/S, Morena CWRTL (Rithora)	Railway and Defence details are pending.
12	MP-426	LILO of Second circuit of 220 kV Birsinghpur-Amarkantak Line at 220 kV S/S Shahadol	Provisional IV calculation issued on 29.01.2018.BSNL, Railway and Defence details are pending
13	MP-423	220 kV DCDS line from Julwania (400 kV) to 132kV Sendwha (Being Upgraded to 220 kV)	BSNL and Railway details are pending
14	MP-431	220 kV DCDS line from Julwania (400 kV) to proposed 220 kv Kukshi 132kV (Being Upgraded to 220 kV)	BSNL and Railway details are pending
15	MP-430	LILO of both circuit of 220 kV Badnagar-Ratlam DCDS line at proposed 400 kV S/S Badnagar	BSNL and Railway details are pending

16	MP-429	LILO of 2nd Circuit of 220 kV Bansagar-I to Satna Line at 220 kV S/S Kotar	BSNL, Railway and Defence details are pending.
17	MP-428	220 kV DCDS line from 400 kV s/s Khandwa (PGCIL) To proposed 220 kV S/S Chhanera	BSNL details are pending.
18	MP-432	LILO of both circuit of 220 kV Badod-Bhanpura/Kota/Modak DCDS Line at proposed 220 kV S/S Suwasra	BSNL details are pending.

Annex- III

Kerala State electricity Board			
Sr. No.	Case No.	Name of Power line	Status in CEA
1	KER - 329	220/110 kV line from Brahmapuram to Thuthyoor and 220 kV Cable from Thuthyoor to Kaloor	Defence telecom details pending
2	KER - 330	220 kV D/C line through multi circuit Multi Voltage (220 kV and 110 kV) towers from proposed 220 kV substation Kothamangalam to a location Karukadam to connect the existing Moolamattom (Idukki) substation	Railway and Defence telecom details pending
3	KER - 326	Construction of 220 kV DC line from 400 kV PGCIL Pallikkara substation to proposed 220 kV substation Aluva	BSNL, Railway and Defence telecom details pending

Annex- IV

Chhattisgarh State Power Transmission Corporation Ltd.			
Sr. No.	Case No.	Name of Power Line	Status in CEA
1	CHH-24	400 kV D/C Line from Marwa TPP to Raipur (Raita S/s)	IV Issued on 26.04.2017.
2	CHH-25	400 kV D/C LILO Line from Korba (West)-Kheddamara line to Marwa TPP 2x 500 MW	IV Issued on 17.02.2017.
3	CHH-41	400kv D/C Korba (west) to Khedamara	IV issued on 02.05.2018.
4	CHH-71	400 kV DCDS Raita(Raipur)-Jagdalpur Line	Details from East Coast Railway are pending
5	CHH-12	220KV D/C line from 220KV CSPTCL Raigarh S/S to 400/220KV PGLIC Raigarh S/S.	IV calculation issued on 17.11.14.
6	CHH-13	220KV D/C line from 220KV Jindal Power Plant Tamner- 220KV CSPTCL Raigarh s/s	IV calculation issued on 16.04.14.
7	CHH-23	220KV D/C line from Chhuri- Mopka	IV calculation issued on 01.05.18.

Annex-V

Rajasthan Rajya Vidyut Prasaran Nigam Ltd.			
Sr. No.	Case No.	Name of Power line	Status in CEA
1	RAJ 600	400kV D/C Barmer – Bhinmal line	IV calculation sent on 24.04.2018
2	RAJ 590	400kV D/C Suratgarh TPS – Babai line	IV calculation sent on 06.06.2018
3	RAJ 604	220kV Bhiwadi-TSS Mundana of DFCC line	Railway details pending
4	RAJ 598	220kV S/C Kalisindh – Bhawanimandi line	IV calculation sent on 24.04.2018
5	RAJ 603	220kV S/C Ajmer – Bherunda line	Under process in CEA
6	RAJ 611	220kV D/C Bhadla – M/s SUCRL 220/33kV PSS1 Bhadla Solar Park phase III line	Railway and Defence telecom details pending

Annex- VI

Punjab State Transmission Corporation Ltd.			
Sr. No.	Case No.	Name of Power line	Status in CEA
1	PNB 309	400kV Ludhiana- 220kV Dorah S/C line on D/C towers	IV calculation sent on 23.02.2015
2	PNB 288	220kV S/C line from 400kV Mukatsar – 220kV Kotakpura (Sandhwan)	IV calculation sent on 13.11.2014
3	PNB-350	LILO of one ckt of 220kV GHTP- Talwandi Sabo at 220kV s/s Maur	BSNL and Defence telecom details pending
4	PNB-335	220kV from 400kV PGCIL Moga to 220kV Mehal Kalan	IV calculation sent on 16.05.2018
5	PNB-347	220kV LILO S/C Humbran – Ferozepur Road Ludhiana at Ladawal	IV calculation sent on 07.05.2018
6	PNB 301	220kV Goindwal Sahib – Botianwala D/C line	IV calculation sent on 28.03.2014
7	PNB 319	220kV D/C Makhu-Algon T/L	IV calculation sent on 29.12.2017
8	-----	220kV Abohar – Malout S/C on D/C	No such case registered in CEA
9	PNB-348	220kV D/C line from 400kV Nakodar to 220kV Ladawal	IV calculation sent on 21.05.2018
10	PNB-345	LILO of 1 ckt of 220kV BBMB Jalandhar – 220kV Pong D/C line at 220kV s/s Alwalpur	IV calculation sent on 04.12.2017
11	PNB-354	LILO of 220kV Himmatpura to Jagraon line at 220 kV s/s Ajitwal	IV calculation sent on 10.05.2018
12	PNB-353	LILO of 220kV line Moga – Himmatpura at Badni Kalan	IV calculation sent on 09.05.2018
13	-----	220kV line Talwandi Sabo – Maiser Khana (Railway Deposit work)	No such case registered in CEA

Annex- VII

Power Grid Corporation of India Ltd, SRTS-II			
Sr. No.	Case No.	Name of Power line	Status in CEA
1	KNK 879	400kV D/C Hiriya-Mysore line (Ultra Mega Solar Park-Phase 2)	BSNL telecom details pending
2	KNK 810	400kV D/C Madhugiri (Tumkur) – Yelahanka line (SRSS-13)	Southern Railway telecom details pending
3	TN 656	LILO of 230kV S/C Neyveli – Bahour line at Karaikal	Under process in CEA

Annex- VIII

Power Grid in WR-II Region			
Sr. No	Case No.	Name of Power Line	Status in CEA
1	MP-406	765 kV D/C Vindhyaachal Pooling substation to Jabalpur Pooling substation transmission line under system strengthening scheme associated with NTPC Vindhyaachal-V PL: 371.91 km	Defence Details are Pending.
2	GUJ-718	765 D/C Banashantha to Chittorgarh (Gujarat Portion) Green Energy Corridors	IV calculation dispatched on 07.05.2018.
3	GUJ-728	400kV D/C Mundra-Bhuj (Triple) S/S	Under Process in CEA.
4	GUJ-749	LILO of 220 kV Vapi Khadoli transmission line at Vagchipa substation associated with the UT of dadar of Nagar Haveli	Railway and Defence details are pending.
5	GUJ-740	400 kV D/C (Twin) Banaskatha (Radhanseda)-Banaskatha (PG) Transmission Line	IV issued on 17.05.2018.

Gujarat Electricity Transmission Corporation Ltd.			
Sr. No.	CEA Case No.	Name of Power Line	Status in CEA
1	GUJ-689	220KV D/C & M/C LILO Savarkundala –Otha line No.2.*	IV calculation issued on 18.02.15.
2	GUJ-672	220KV D/C Otha-Sagpara line	IV calculation issued on 11.09.14.
3	GUJ-687	220 kV LILO Tower line From Savarkundala -Vartej Line to BECL Plant	Provisional IV issued on 18.05.2018.
4	GUJ-686	220 kV D/C Tower line From BECL plant to 220 kV Sagapara S/S	Provisional IV issued on 18.05.2018.
5	GUJ-688	220 kV D/C line From BECL plant to 220 kV Botad S/S	Provisional IV issued on 21.05.2018.
6	GUJ-696	220 kV M/C and D/C Tower Line for evacuation of 300 MW Wind Farm Generation from Wind Farm of M/s Inox Renewables Limited(IWISL) S/S at Village:Sukhpur to 400 kV Amreli (GETCO) S/S,	Defence details are pending.
7	GUJ-706	220kV D/C Amreli to Dhasa Line No. 1 LILO at 220 kV Botad S/S	Provisional IV issued on 21.05.2018.
8	GUJ-734	220 kV LILO Line at 220 kV Rajula S/S from 220 kV GPPC-Dhokadava Line	BSNL, Railway and Defence details are pending
9	GUJ-624	400KV D/C Varsana-Hadala	IV calculation issued on 30.06.11.
10	GUJ-601	220KV D/C Lilo to Kukma from Anjar-Panandhro ccts no. 2	IV calculation issued on 30.06.09.
11	GUJ-644	400KV D/C Mundra-Zerda	IV calculation issued on 03.03.15.
12	GUJ-678	220 KV D/C LILO to PS-2(of SSNNL- Nani Hamirpar from 220 KV Shivilakha- Deodar line Tal-Rapar Dist.-Kachchh Gujarat.	IV calculation issued on 24.10.14.
13	GUJ-679	220 kV D/C Mokha to Varsana T/L from GETCO'S 220 kV Mokha	Provisional IV issued on 21.05.2018.
14	GUJ-667	220 KV D/C + 220 KV M/C tower line with AL-59 Conductor from 220 KV OPG Project Bhadeshwar - 400KV Varsana (Tappar)	Defence details are pending
15	GUJ-716	220 kV LILO line from 220 kV D/C Varsana to Jamanvada (Suzlon) line 1 & 2 at proposed 220 kV Bhachuda S/S on M/C Tower.	IV calculation issued on 21.05.2018.
16	GUJ-723	220 kV D/C LILO line at 220 kV Vondh (Bhachau) S/s from Existing 220kV Tappar-Hadala Line.	Railway and Defence details are pending
17	GUJ-735	220 kV LILO at 400 kV Bhachunda S/S from 220 kV Akrimota TPS- Nakhatrana Line No.-2	BSNL and Railway details are pending
18	GUJ-722	400 kV D/C Bhachunda to Varsava line on D/C Tower	BSNL details are pending.
19	GUJ-739	400 kV D/C Mundra-Zerda Line No.1	BSNL, Railway and Defence details are pending
20	GUJ-743	220 kV LILO of both circuits to proposed 220 kV Amod S/S from 220 kV D/C Mobha-Mangrol Line	BSNL, Railway and Defence are Pending.

21	GUJ-744	220 kV LILO of both circuits to proposed 220 kV Valenja S/S from 220 kV D/C Kim-GSEG-Mora line	BSNL, Railway and Defence are Pending.
22	GUJ-588	220KV D/C Kansari-Thavar line	IV calculation issued on 20.11.14.
23	GUJ-702	220 kV Tharad to Deodar line on D/C tower with ACSR Zebra Conductor	Proposal not received in CEA, but WR details received in CEA.
24	GUJ-741	400 kV LILO to 400 kV Veloda S/S from 400 kV Vadavi-Zerda Line.	Railway and Defence details are pending
25		220 kV Radhanpur-Sankhari Line	Proposal not received in CEA.
26	GUJ-756	400 kV LILO Charanaka line from existing 400 kV Mundra-Zerda Line No.2.	BSNL, Railway and Defence are Pending.
27	GUJ-708	220 kV M/C LILO Faredi Line From existing 220 kV D/C Kadana to Dhansura on M/C Tower	IV calculation issued on 21.05.2018.
28	GUJ-720	400 kV D/C Wanakbori TPS to Soja Line T/L	Railway and Defence details are pending
29	GUJ-752	220 kv d/c Vyankatpura - waghodia line	BSNL, Railway and Defence details are pending
30	GUJ-704	220 kV D/C Jamnagar Hadala	Railway and Defence details are pending.
31	GUJ-738	400 kV D/C LILO at Kalawad S/S from 400 kV Vadinar-Hadala Line on Twin moose conductor	BSNL and Railway details are pending
32	GUJ-731	220 kV D/C LILO at 400 kV Kalawad S/S from 220 kV Nyara-Tebhda line with AL-59 Conductor	BSNL and Railway details are pending.
33	GUJ-742	220 kV LILO of both circuits of 220 kV D/C Nyara-Tebhda line at 220 kV Motigop S/S with AL-59 conductor on M/C tower	BSNL, Railway and Defence are Pending.
34	GUJ-758	220 kv d/c line on tower structure with ACSR zebra conductor from 220 kv motipaneli S/s to 220 kv sardargadh S/s	BSNL, Railway and Defence details are pending
35	GUJ-676	220 KV D/C line from Halvad-Sadla.	IV calculation issued on 13.10.14.
36	GUJ-705	220 kV Halvad-Bhimasar line LILO at 400 kV Halvad S/S	Provisional IV issued on 21.05.2018.
37	GUJ-733	220 kV Line from 220 kV Shri Maruti Wind Park India Limited S/S to 220 kV Sadla S/S with AL-59 conductor	BSNL, Railway and Defence details are pending
38	GUJ-730	220 kV LILO Line from 220 kV Choraniya-Salejada Line	BSNL, Railway details are pending.
39	GUJ-703	220 kV D/C Sankhari to Jangral line on D/C tower with ACSR Zebra Conductor	Proposal not received in CEA but WR details received in CEA.
40	GUJ-714	LILO of 220 kV S/C Vadavi to Chhatral line at 220 kv Santej S/S	IV calculation issued on 27.04.18.
41	GUJ-712	220KV D/C line from Mitha – Becharaji s/s	IV calculation issued on 16.02.18.
42	GUJ-717	220 kV D/C Kheralu to Dharewada line	IV calculation issued on 27.04.18.
43	GUJ-713	220KV D/C line from Becharaji – Maruti Suzuki s/s	IV calculation issued on 15.02.18.
44	GUJ-719	220kv LILO of S/C Radhanpur to Mehsana line at 400kv Veloda S/s.	Provisional IV issued on 22.05.2018.

45	GUJ-737	400 kV LILO at Dehgam from 400 kV Wanakbori-Soja Line	BSNL, Railway details are pending.
46	GUJ-732	400 kV D/C Soja-Zerda Line	BSNL, Railway and Defence details are pending
47		220 kV LILO of one Circuit of 220 kV Gandhinagar-Chhatral D/C at 400 kV Vadavi S/S	Proposal not received in CEA.
48	GUJ-727	400kV D/C Vadavi-Halvad line on D/C Tower	Defence details are pending
49	GUJ-724	220 kV LILO of S/C Kasor Botad Line at Dhuvaran	Defence details are pending
50	GUJ-725	220 kV D/C line from 400 kV Kasor S/S to Proposed 220 kV DFCC Heranj Railway S/S.	Defence details are pending
51	GUJ-746	220 kV DC line from 400 kV Vadavi S/S to Proposed 220 kV DFCC Sanand Railway S/S with ACSR Zebra Conductor	BSNL and Railway as well as Proposal not received.
52	GUJ-747	220 kV LILO line of S/C of 220 kV D/C Karamsad-Ranasari Line at Barejadi S/S with ACSR Zebra Conductor	BSNL, Railway as well as Proposal not received.
53	GUJ-753	400 kV D/C line from 1st circuit of 400 kv D/c kosamba-choraniya line at 400 kv sanand-ii S/s [GIDC] with ACSR twin moose conductor	Railway and Defence details are pending
54	GUJ-751	400 kV D/C line from wanakbori TPS unit 8 to existing switchyard at wanakbori TPS [interlink between switchyard] with twin AI-59 conductor	BSNL, Railway and Defence details are pending
55		220KV D/C LILO to Vav-Ukai line for Mota	Proposal not received in CEA.
56		220KV D/C BHILAD TO PGCIL (Ambheti)	Proposal not received in CEA.
57	GUJ-651	220 KV Lilo from 220KV Navsari- Vav for 220KV Popada s/s.	IV calculation issued on 01.10.14.
58	GUJ-641	220KV D/C LILO Bhimasar from Morvi-Halwad line 2	IV calculation issued on 16.06.14.
59	GUJ-697	220 KV Makansar S/s from existing 220 KV M/C Sartanpar - Wankaner line	IV calculation issued on 29.03.17.
60	GUJ-736	220 kV LILO to 220 kV Wankaner S/S from 220 kV Hadala-Sartanpar Line	BSNL, Railway and Defence are pending.
61	GUJ-745	400 kV D/C Amreli-Vadinar Line with ACSR Twin moose Conductor	BSNL, Railway and Defence are Pending.
62	GUJ-750	LILO of 220 kV s/c lalpar-sartanpar line at prop. 220kv wankaner substation on M/C towers with ACSR zebra conductor	BSNL, Railway and Defence are pending.