



भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केंद्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली योजना एवं मूल्यांकन प्रभाग -II
Power System Planning & Appraisal Division-II

सेवा मे / To,

संलग्न सूची के अनुसार
As per list enclosed

विषय : पारेषण तंत्र पर पूर्वी क्षेत्र स्थायी समिति (ईआरएससीटी) की दूसरी बैठक का कार्यवृत्त ।
Subject: 2nd meeting of Eastern Region Standing Committee on Transmission (ERSCT) – Minutes.

महोदय(Sir)/महोदया(Madam),

पारेषण पर पूर्वी क्षेत्र स्थायी समिति (ईआरएससीटी) की दूसरी बैठक 5 जुलाई, 2019 को सिलीगुड़ी, पश्चिम बंगाल में आयोजित की गई थी। बैठक का कार्यवृत्त संलग्न है।

The 2nd meeting of Eastern Region Standing Committee on Transmission (ERSCT) was held on 5th July 2019 at Siliguri, West Bengal. Minutes of the meeting is enclosed herewith.

भवदीय/Yours faithfully,

(प्रदीप जिंदल/ Pardeep Jindal)

मुख्य अभियंता/ Chief Engineer

Copy for kind information to:

1) PPS to Member PS, CEA

File No.CEA-PS-12-15/2/2018-PSPA-II Division-Part(1)

List of addressee:

1. Member Secretary, Eastern Regional Power Committee, 14, Golf Club Road, Tollygange, Kolkata-700033. Tel. No. 033-24235199 Fax No.033-24171358	2. Managing Director, Bihar State Power Transmission Company, Vidyut Bhavan (4 th floor), Baily Road, Patna-800021. Tel. 0612-2504442 Fax No. 0612-2504557
3. Chairman-cum-Managing Director, Jharkhand Urja Sancharan Nigam Limited Engineering Building, H.E.C., Dhurwa, Ranchi-834004. Fax-0651-2400799	4. Chairman-cum-Managing Director, Orissa Power Transmission Corporation Ltd, Jan path, Bhubaneswar-751022. Tel. No. 0674-2540098 Fax No.0674-2541904
5. Principal Chief Engineer cum Secretary, Power Department Government of Sikkim, Sikkim. Tel. No. 03592-2022440 Fax No.03592-202927	6. Managing Director, West Bengal State Electricity Transmission Company Ltd, Vidyut Bhavan (8 th Floor), A-block, Salt Lake City, Kolkata-700091. Tel. No. 033-23370206
7. Superintending Engineer, Electricity Department C/O Secretary (GA) Andaman and Nicobar Administration, Secretariat, Port Blair (AN)	8. Chief Operating Officer, Central Transmission Utility (CTU), Power Grid Corporation of India “Saudamini” Plot No. 2, Sector-29, Gurugram-122001 Tel. No. 0124-2571816 Fax No.0124-2571932
9. Director (System Operations), POSOCO B-9, Qutub Institutional Area, Katwaria Sarai, New Delhi-110016 Tel. No. 26852843 Fax No. 2626524525, 26536901	

Special Invitees:

1. Chairman-cum-Managing Director, Damodar Valley Corporation DVC Towers, VIP Road, Kolkata-700054.	2. Director (Technical), NTPC Limited, Engineering Office Complex, A-8, Sector 24, Noida.
3. Shri Yogesh Juneja Executive Vice President PFC Consulting Ltd. (PFCCL) Odisha Integrated Power Ltd. 1 st Floor, Urjanidhi, 1, Barakhamba lane, Connaught Place, New Delhi 110001	4. Managing Director, Odisha Power Generation Corporation Ltd.(OPGC), Zone-A, 7th Floor, Fortune Towers, Chandrashekarapur,Bhubaneswar- 751023, Odisha.

**Minutes of 2nd meeting of Eastern Region Standing Committee on
Transmission held on 05th July 2019 at Siliguri, West Bengal**

List of the participants is enclosed at **Annexure-I**.

Member (PS), CEA welcomed the participants. He thanked POWERGRID for hosting the meeting at Siliguri. After brief introduction of the participants, he requested Chief Engineer, CEA to start the proceedings.

Chief Engineer (PSPA-II), CEA stated that number of agenda items have been received from ER constituents and most of them had been discussed in the joint study meeting held at CEA on 26-03-2019. He requested the members to have positive deliberations so that consensus could be reached on critical issues. Thereafter, he requested Director (PSPA-II), CEA, to take up the agenda items for deliberation.

1. Confirmation of the minutes of 1st meeting of Eastern Region Standing Committee on Transmission (ERSCT).

1.1 Director (PSPA-II), CEA informed that minutes of the 1st meeting of Eastern Region Standing Committee on Transmission (ERSCT) held on 16th July 2018 at Kolkata were circulated vide CEA letter No. CEA-PS-12-15/2/2018-PSPA-II Division-Part(1) dated 19th September, 2018. WBSETCL vide their letter No. CE/CPD/CEA/2450 dated 29.10.2018 has requested for amendment in item No. 17 of the Minutes. Accordingly, a corrigendum was issued by CEA vide letter No. CEA-PS-12-15/2/2018-PSPA-II Division-Part(1) dated 06th June, 2019 modifying para 17.7 of the minutes as under:

" 17.7 Representative of WBSETCL stated the following: .

(i) The order of CERC to give connectivity to IPCL by CTU is contradicting CERC's own Regulations since a Distribution Licensee doesn't qualify for grant of connectivity to ISTS as per the prevailing Connectivity Regulations/Detailed Procedure, 2009 of CERC.

(ii) Clarification given by CERC as "IPCL is connected to the ISTS through Transmission system of DVC" does not represents the true picture. Actually, IPCL is connected to the Distribution System (at 33 kV) of DVC as a consumer mode.

(iii) WBSETCL has filed a petition before CERC for review of the matter and is being heard by Hon'ble CERC.

Member noted the information."

1.2 Minutes of 1st meeting of ERSCT along with the corrigendum were confirmed.

Follow up issues of Previous Standing Committee Meetings

- 2. Termination of 400kV lines at Jeerat (WBSETCL) substation under the ERSS-XV and ERSS-XVIII schemes.**
- 2.1 Director (PSPA-II), CEA stated that following 400kV lines are existing / under construction at 400/220kV substation of Jeerat (WBSETCL):
- Existing:**
- (i) Jeerat (WBSETCL) – Baharampur/Farakka 400kV S/c line of POWERGRID
 - (ii) Jeerat (WBSETCL) – Rajarhat/Subhashgram 400kV S/c line of POWERGRID
 - (iii) Jeerat (WBSETCL) – Barkeshwar (WBSETCL) 400kV S/c line of WBSETCL
 - (iv) Jeerat (WBSETCL) – Kolaghat (WBSETCL) 400kV S/c line of WBSETCL
- Under Construction:**
- (v) LILO of Sagardighi – Subhashgram 400kV S/c line at Jeerat (WBSETCL) as a part of ERSS-XV by POWERGRID
 - (vi) Jeerat (New) – Jeerat (WBSETCL) 400kV D/c line (Quad) as a part of ERSS-XVIII being implemented under TBCB by POWERGRID Medinipur-Jeerat Transmission Ltd.
- 2.2 Due to RoW issue for termination of new 400kV lines being implemented under ERSS-XV and ERSS-XVIII at Jeerat (WBSETCL) S/s, following was decided in the 19th meeting of Standing Committee on Power System Planning of Eastern Region (SCPSPER):
- (i) Dismantling of dead end towers and termination of existing lines mentioned at 2.1 (i) to (iv) through GIS duct, at the existing 400kV Jeerat AIS S/s (WBSETCL) as ISTS.
 - (ii) The new lines mentioned at 2.1 (v) and (vi) can be directly terminated on separate double circuit towers at normal height (around 45 meters) to new GIS extension area.
 - (iii) Further, it was also acknowledged that implementation of LILO of Sagardighi-Subhasgram 400kV S/c line at Jeerat along with associated line bays shall get delayed due to addition of above mentioned GIS duct arrangement.
- 2.3 He further stated that in the in the 1st meeting of ERSCT held on 16.07.2018 it was also decided that *“after finalization of implementing agency for the work, a separate meeting in CEA with CTU, POWERGRID, WBSETCL and implementing agency will be held to discuss the extension of completion schedule of ERSS-XV & ERSS-XVIII schemes”*. In the 2nd meeting of ECT held on 06-08-2018, POWERGRID was entrusted with the works mentioned above at 2.2 (i) through RTM.
- 2.4 A meeting was held at CEA on 26-03-2019, wherein representative of CTU stated that the work has been awarded to JV of M/s Techno & M/s ABB in

November 2018 with expected commissioning schedule of 15 months (i.e. Feb 2020) from award. He requested to approve revised completion schedule of ERSS-XV scheme as Feb 2020.

2.5 After deliberations, the revised completion schedule of ERSS-XV was agreed as February 2020.

3. Replacement of existing SMT bus scheme with DM at 132kV level at Malda (POWERGRID) S/s in GIS along with new 132kV bays

3.1 Director (PSPA-II) stated that in the 1st meeting of ERSCT, replacement of existing Single Main & Transfer (SMT) scheme with Double Main (DM) scheme at 132kV level at Malda (POWERGRID) substation through GIS and to provide 2 no. of 132kV GIS line bays for Manikchak/Paranpur – Malda (POWERGRID) 132kV D/c line were agreed to be implemented as ISTS.

3.2 In 3rd meeting of Empowered Committee on Transmission held on 21-12-2018, it was decided that the scheme would be implemented by POWERGRID under RTM.

3.3 Representative of POWERGRID stated that the scheme is being implemented as ERSS-XXII.

3.4 Representative of WBSETCL stated that survey work for Malda (POWERGRID) – Manikchak/Paranpur 132kV D/c line has been completed and the lines are expected to be commissioned by December 2021. He also informed that due to RoW constraints cable might be required in some portion of the lines.

3.5 Members noted the information.

4. Conversion of 50MVAR bus reactor at Farakka generation switchyard to switchable line reactor under ERSS-15

4.1 Director (PSPA-II) stated that in the 19th meeting of SCPSPER held on 01-09-2017, conversion of 50MVAR (3x16.67) bus reactor at Farakka to switchable line reactor in one circuit of Farakka – Baharampur 400kV D/c line as ISTS was agreed. Subsequently, in the 2nd meeting of ECT it has been decided that the said works would be implemented by POWERGRID under RTM.

4.2 Representative of POWERGRID stated that the scheme has already been implemented by POWERGRID under the ERSS-XV scheme.

4.3 Members noted the information.

5. Interim connectivity to generation projects in ER through LILO arrangement

- 5.1 Director (PSPA-II), CEA informed that in few cases generation projects were commissioned ahead of the anticipated commissioning of the associated transmission system. In such cases, generation projects were given temporary connectivity through loop-in & loop-out (LILO) of nearby transmission lines so as to enable them connect with the grid. The temporary connectivity through LILO was to be withdrawn after commissioning of the associated transmission system. Associated transmission system of some of such generation projects have been commissioned and their temporary connectivity through LILO has been disconnected; however, some generators are still connected through LILO arrangement. CERC in its order dated 07-10-2015 on Petition No.112/TT/13 and dated 28-09-2016 in Petition no. 30/MP/2014 has directed that the interim (LILO) arrangement has to be removed.
- 5.2 The progress of associated transmission system of IPPs in Eastern Region, which are connected through interim arrangement is summarized below:

Generation Project in ER connected through temporary LILO arrangement					
Sl. No.	Generation Project	IC (MW)	Present Connectivity through LILO	Final Connectivity Arrangement	Anticipated Completion Schedule
1	Gati Infrastructure Ltd. (Chuzachen HEP)	2x55	LILO of Rangpo - Gangtok 132kV S/c line (granted in Nov'07)	Chuzachen - Rangpo 132kV D/c (with Zebra conductor)	Line completed. Project commissioned on interim arrangement. Representative of E&PD, Govt. of Sikkim stated that Line bays at Rangpo end would be ready by 15 th July 2019.
2	Sneha Kinetic Power Projects Pvt. Ltd. (Dikchu HEP)	2x48	LILO of one circuit of Teesta-III – Rangpo 400kV D/c line at Dikchu (granted in Dec'14 by CERC)	Dikchu – Dikchu Pool 132kV D/c	E&PD Sikkim proposed that final connectivity may be revised as LILO of 132kV Dikchu pool - Singhik line at Dikchu. The issue of implementing the LILO scheme in comprehensive scheme would be explored in a separate meeting at CEA.
3	Shiga Energy Pvt. Ltd. (Tashiding HEP)	2x48.5	LILO of one circuit of Rangpo-New Melli 220kV D/c line at Tashiding through Tashiding-New Melli 220kV D/c	Tashiding – Legship Pool 220kV D/c line	The issue would be discussed in a separate meeting at CEA

5.3 Members noted the status.

6. Status of downstream 220kV or 132kV network by STUs from the various commissioned and under-construction ISTS substations

6.1 Director (PSPA-II), CEA informed that numbers of ISTS sub-stations have been commissioned and some are under construction for which the downstream system is being implemented by the STUs. Based on the information provided by the states, updated information on planned/under-construction downstream system is as follows:

A. Existing substations:

(a) Rajarhat 400/220kV S/s

- i. Rajarhat (POWERGRID) – New Town AA3 220kV D/c – Commissioned
- ii. Rajarhat (POWERGRID) – New Town AA2 220kV D/c – June'20
- iii. Rajarhat (POWERGRID) – Barasat/Jeerat 220kV D/c – Dec'19

(b) Subashgram 400/220kV S/s

- i. Subashgram (POWERGRID) – Baraipur 220kV D/c line – Mar'20

(c) Pandiabil 400/220kV S/s

- i. Pratapsasan (OPTCL) – Pandiabil (POWERGRID) 220kV D/c – Dec'19

(d) Bolangir 400/220kV S/s

- i. LILO of one ckt of Sadeipalli – Kesinga 220kV D/c at Bolangir – Oct'19

(e) Keonjhar 400/220kV S/s

- i. Keonjhar (POWERGRID) – Turumunga (OPTCL) 220kV D/c – Jun '20

(f) Daltonganj 400/220/132kV S/s

- i. Daltonganj (POWERGRID) – Latehar 220kV D/c – Dec'19
- ii. Daltonganj (POWERGRID) – Garhwa 220kV D/c – Dec'19
- iii. Daltonganj (POWERGRID) – Chatarpur 132kV D/c – Aug'21

(g) Chaibasa 400/220kV S/s

- i. Chaibasa (POWERGRID) – Jadugoda (JUSNL) 220kV D/c – Nov'21

B. Under Construction substations:

(h) Sitamarhi 400/220/132kV S/s

- i. Sitamarhi (New) – Motipur (BSPTCL) 220kV D/c line
- ii. Sitamarhi (New) – Raxaul (New) 220kV D/c (Twin Moose) line
- iii. Sitamarhi (New) – Runni Saidpur 132kV D/c line
- iv. LILO of Benipatti – Pupri 132kV S/c at Sitamarhi (New)

(i) Saharsa 400/220/132kV S/s

- i. Saharsa (New) - Khagaria 220kV D/c line
- ii. Saharsa (New) - Begusarai 220kV D/c line
- iii. Saharsa (New) - Saharsa 132kV D/c line formed by LILO of Saharsa - Banmankhi and Saharsa - Uda Kishanganj 132kV S/c lines

(j) Chandauti 400/220/132kV S/s

- i. LILO of Gaya (POWERGRID) – Sonenagar 220kV D/c at Chandauti (New)
- ii. LILO of Chandauti (BSPTCL) – Rafiganj 132kV S/c at Chandauti (New)
- iii. LILO of Chandauti (BSPTCL) – Sonenagar 132kV S/c at Chandauti (New)

Representative of BSPTCL informed that the works under B. (h), (i) & (j) above would be completed from June 2020 to December 2020 progressively.

(k) Dhanbad 400/220kV S/s

- i. LILO of 220 kV Tenughat - Govindpur D/c line at Jainamore and Dhanbad — Jan' 20

7. Status of 400kV substations being implemented by STUs in ER under intra-state schemes

7.1 Director (PSPA-II), CEA informed that following 400kV substations have been approved in the previous meetings under intra-state strengthening schemes in ER. Respective STUs updated the expected commissioning schedule as mentioned below:

(a) Bihar (to be implemented by BSPTCL/BGCL)

- (i) **Naubatpur GIS:** 400/220/132/33kV, 2x500MVA + 2x160MVA + 2x80MVA – Jun'20
- (ii) **Bakhtiyarpur GIS:** 400/220/132kV, 2x500MVA + 2x160MVA – Mar'21
- (iii) **Jakkanpur GIS:** 400/220/132/33kV, 2x500MVA + 3x160MVA + 4x80MVA – Jun'20

(b) Odisha (to be implemented by OPTCL)

- (i) **Meramundali-B:** 400/220kV, 2x500MVA – Mar'20
- (ii) **Narendrapur (New):** 400/220kV, 2x500MVA – Dec'23
- (iii) **Khuntuni:** 400/220kV, 2x500MVA – Dec'21
- (iv) **Bhadrak:** 400/220kV, 2x500MVA – Dec'21
- (v) **Paradeep:** 400/220kV, 2x500MVA – Jan'22
- (vi) **Begunia:** 765/400kV, 2x1500MVA along with Angul-Begunia 765kV D/c line and LILO of Pandiabil – Narendrapur 400kV D/c line at Begunia – Searching for land
- (vii) **Narendrapur – Therubali – Jeypore** 400kV D/c line along with 400kV switching station at **Therubali** and 420kV, 1x125MVAr bus reactor – Dec'23

(c) Jharkhand (to be implemented by JUSNL)

- (i) **Jarsidih:** 400/220kV, 2x500MVA
- (ii) **Chandil (New):** 400/220kV, 2x500MVA
- (iii) **Koderma:** 400/220kV, 2x500MVA
- (iv) **Mander:** 400/220kV, 2x500MVA

(v) Dumka (New): 400/220kV, 2x500MVA

Representative of JUSNL informed that regulatory approval for the above projects is pending from JERC.

New Transmission system proposals

8. Augmentation of transformation capacity at Muzaffarpur (POWERGRID) S/s

8.1 Representative of BSPTCL stated that the load in Muzaffarpur area is growing very fast. The load demand in Muzaffarpur & adjoining areas is largely fed by Muzaffarpur (PG) with transformation capacity of 1x500+2x315 MVA. During peak hours following loadings are being observed:

SI. NO.	Lines	Maximum Load (MW)
1	Muzaffarpur (PG)-MTPS (D/C)	420
2	Muzaffarpur (PG)-Hazipur (D/C)	296
3	Muzaffarpur (PG)-Dhalkebar (Nepal) (400kV Transmission Line charged at 220kV)	150
	Total	866

8.2 In present scenario itself, Muzaffarpur (PG) is not able to fulfill N-1 criteria and in case of outage of any power transformer, the situation will be critical. Moreover, if the generation at Kanti (MTPS) reduces, the power supply position at Muzaffarpur 220kV level further aggravates under N-1 of ICTs.

8.3 He added that in future Amnor (Chappra) GSS(220/132/33 KV) will be connected to Muzaffarpur (PG) through 220 KV D/C lines as approved in 18th Standing Committee Meeting. Further Amnor has been proposed to be connected to Digha (new) GSS (220/132/33 KV) at 220 KV level. BSPTCL has also proposed one 220/132/33 KV GSS at Garaul (Dist. Vaishali) under State Plan, approved in the Bihar cabinet, is getting source at 220 KV level with D/C from Muzaffarpur(PG). Both proposed GSSs (Digha and Garaul) are likely to be commissioned in March-2020. In future the loading pattern on 220kV lines is expected to be as follows:-

SI. NO.	Lines	Maximum Load (MW)
1	Muzaffarpur (PG)-MTPS (D/C)	80
2	Muzaffarpur (PG)-Hazipur (D/C)	250
3	Muzaffarpur (PG)-Amnor (BGCL) (D/C)	300
4	Muzaffarpur (PG)-Goraul (Proposed) (D/C)	200
	Total	830

- 8.4 In view of the above, BSPTCL proposed for either replacement of 2x315MVA transformers by 2x500MVA or addition of one new 500MVA transformer at Muzaffarpur (PG) to ensure uninterrupted power to Muzaffarpur and adjoining areas in the event of outage of any transformer.
- 8.5 Director (PSPA-II), CEA informed that a meeting was held on 26.03.2019 at CEA it was suggested that additional one no. of 500MVA ICT may be installed to meet the load under N-1 criteria.
- 8.6 Representative of CTU (POWERGRID) informed that space is available for new 400/220kV, 500MVA ICT. The 400kV ICT bay could be implemented as AIS, however, 220kV ICT bay needs to be implemented as GIS along with 220kV cable from ICT to GIS bay.
- 8.7 After deliberations, installation of one additional 400/220kV, 500MVA ICT at Muazaffarpur (PG) was agreed for installation under ISTS. The 400kV ICT bay would be implemented as AIS & 220kV ICT bay would be implemented as GIS along with 220kV cable from ICT to GIS bay.

9. Additional 400kV connectivity at 400/220/132kV Saharsa (new) S/s being implemented under ERSS-XXI through TBCB

- 9.1 Representative of BSPTCL has informed that the present connectivity of upcoming 400/220/132kV Saharsa (New) GSS at 400kV level is LILO of Patna (PG) - Kishanganj (PG) 400kV D/C line and this work is being done by POWERGRID under TBCB route. Further, he stated that one of the feed to Saharsa (New) is from Patna (PG) which is having river crossing and probability of tower failure during floods is very high. He also stated that Kishanganj – Patna line during the last two monsoon seasons has suffered prolonged outage due to tower collapse at various locations during flood.
- 9.2 Therefore, to improve the reliability of Saharsa (New) S/S at 400 kV level, BSPTCL proposed to provide an additional source by making LILO of Darbhanga (DMTCL) - Kishanganj (PG) 400 kV D/C line at 400 kV Saharsa (New) S/S (approx. LILO length 8-10km).
- 9.3 Chief Engineer(PSPA-II), CEA enquired about the reasons for tower failures in the Ganga River crossing. Representative of POWERGRID replied that pile foundations have been damaged due to high flood level. Chief Engineer(PSPA-II), CEA suggested that the pile foundations should be designed/ constructed to withstand high flood level.
- 9.4 After the deliberations, LILO of Darbhanga (DMTCL) - Kishanganj (PG) 400 kV D/C line at 400 kV Saharsa (New) S/S along with 4 nos. of 400kV line bays at Saharsa (New) was agreed for implementation under ISTS.

10. Establishment of Goraul 220/132/33kV S/s and construction of Muzaffarpur (POWERGRID) – Goraul 220kV D/c by BSPTCL as intra state scheme.

10.1 Representative of BSPTCL stated that present load of Vaishali district is about 300MW and many Power Sub Stations (PSS) are proposed/under construction under various schemes of Central government and state plan. Now Bihar is planning to distribute the existing and proposed GSSs as per their geographical position so that losses can be minimized. Additionally, new PSS are also proposed, which will be connected with proposed / existing GSSs.

10.2 In view of the above BSPTCL proposed to establish one 220/132/33kV GSS of capacity 2x160+3x50 MVA near Goraul block in Vaishali district with following connectivity:

- (i) Muzaffarpur (PG) - Goraul 220kV D/c (Zebra conductor) line along with line bays at both ends
- (ii) Proposed GSS Tajpur to proposed GSS Goraul 220kV D/c (Zebra conductor).
- (iii) LILO of D/c Vaishali - Muzaffarpur 132kV tr. line at proposed GSS Goraul.
- (iv) 132kV D/C Mahanar GSS - Goraul proposed GSS

10.3 Director (PSPA-II), CEA informed that a meeting was held on 26.03.2019, wherein this proposal was discussed. In the meeting, representative of CTU (POWERGRID) stated that space is available for 2 nos. of 220kV GIS bays at Muzaffarpur (PG) for termination of proposed Muzaffarpur – Goraul 220kV D/c line.

10.4 After deliberations, the proposal for establishment of Goraul, 220/132/33kV, 2x160MVA + 3x50MVA GSS with connectivity as mentioned at para 10.2 was agreed for implementation under intra-state scheme of BSPTCL.

10.5 It was informed that M/s CPTC has implemented 2 no. 220kV line bays at Muzaffarpur for termination of Muzaffarpur – Dhalkebar (Nepal) 400kV D/c line (initially operated at 220kV). The line is expected to be operated at rated voltage level of 400kV. Upon 400kV operation, the two no. 220kV line bays would be vacant. Accordingly, it was suggested by CEA that BSPTCL could explore possibility of utilisation of the said 2 no. 220kV line bays of M/s CPTC. The commercial matters in this regard, if any, may be settled bilaterally between M/s CPTC and BSPTCL.

11. New 220kV and 132kV infrastructure in Bihar under intra-state project.

11.1 Representative of BSPTCL stated that they had carried out system studies for 2022 timeframe and identified requirement of three nos. of 400 KV & three nos. of 220 KV sub-station to cater to the enhanced load demand in the state. At present under different schemes of Central Government and State plan,

about 350 numbers of PSSs are under construction. Moreover segregation of the agriculture feeder is under process. Therefore, load demand on existing GSSs of 132/33kV level is increasing very rapidly. In this regard, BSPTCL is implementing two new 132kV GSSs as mentioned below:

Sl. no	Substation Name	Voltage levels & transformation capacity	132kV lines (S/c or D/c or S/c on D/c; conductor type; length in km)	Expected 33kV load demand (in MW)
1	Raghopur GSS	132/33 KV (3x50 MVA)	1. 220 kV Laukhi – Raghopur D/C, ACSR Zebra(charged on 132 kV): 48 km (tentative) 2. 220 kV Supaul – Raghopur D/C, ACSR Zebra (charged on 132 kV): 52 km (tentative)	90
2	Kerpa GSS	132/33 KV (3x50 MVA)	1. 132 kV Dehri – Kerpa S/C, ACSR Panther: 24 km 2. 132 kV Banjari – Kerpa S/C, ACSR Panther: 20 km	25

11.2 Further, he proposed establishment of 220/132/33kV substations at Digha (New) GIS, Tajpur, Thakurganj, Asthawan and 132/33kV substations at Board Colony GIS, Palasi.

11.3 Director (PSPA-II), CEA stated that a meeting was held on 26.03.2019 wherein following transmission system was agreed:

Sl. no	Substation Name	Voltage levels & transformation capacity	220kV lines (S/c or D/c or S/c on D/c; conductor type; length in km)	132kV lines (S/c or D/c or S/c on D/c; conductor type; length in km)
1	Digha (New) GIS	220/132/33 KV (2x200 + 2x80 MVA)	1. 220 kV Chapra(New) -Digha D/C, ACSR Zebra: 80 km <i>Note: BSPTCL would explore the possibility of 2nd 220kV feed to Digha for reliable power supply.</i>	1. 132 kV Digha (New) – Digha (Old) D/C, XLPE Cable: 1 km 2. 132 kV Digha (New) – Board Colony D/C, XLPE Cable: 7 km
2	Tajpur GSS	220/132/33 KV (2x160 + 3x50 MVA)	1. 220 kV Tajpur – Goraul D/C, ACSR Zebra: 60 km 2. 220 kV Samastipur (New) – Tajpur D/C, ACSR Zebra: 20 km	1. 132 kV LILO of Samastipur (Old) – Dalsingsarai S/C line at Tajpur [Samastipur (Old) – Tajpur S/C, ACSR Panther: 25 km & Dalsingsarai – Tajpur S/C, ACSR Panther: 27 km] 2. 132 kV Sahapur Patori – Tajpur D/C, ACSR Panther: 40 km
3	Thakurganj GSS	220/132/33 KV (2x160 + 3x50 MVA)	1. 220 kV Kishanganj (New) – Thakurganj D/C, ACSR Zebra: 50 km	1. 132 kV Thakurganj – Araria D/C, ACSR Panther: 80 km
4	Asthawan GSS	220/132/33 KV (2x160 + 3x50 MVA)	1. 220 kV Biharsarif- Asthawan D/C, ACSR Zebra: 20 km 2. 220 kV Sheikhpura (BGCL) – Asthawan D/C, ACSR Zebra: 15 km	1. 132 kV Asthawan – Rajgir S/C on D/C, ACSR Panther: 35 km 2. 132 kV Asthawan – Nalanda S/C on D/C, ACSR Panther: 25 km 3. 132 kV Asthawan – Barh S/C on D/C, ACSR Panther: 32 km
5	Board Colony GIS	132/33 KV (2x80 MVA)	-	1. 132 kV B Colony- Digha (New) D/C, XLPE Cable: 7 km

Sl. no	Substation Name	Voltage levels & transformation capacity	220kV lines (S/c or D/c or S/c on D/c; conductor type; length in km)	132kV lines (S/c or D/c or S/c on D/c; conductor type; length in km)
6	Palasi	132/33 KV (2x50 MVA)	-	1. 132 kV LILO of Forbisganj – Kishanganj S/C line at Palasi [Forbisganj – Palasi S/C, ACSR Panther: 75 km & Kishanganj – Palasi S/C, ACSR Panther: 53 km] 2. 132kV LILO of Thakurganj – Araria D/C line

11.4 Members noted the information provided in para 11.1. Further, the proposal of BSPTCL mentioned in para 11.3 was agreed for implementation as intra-state transmission scheme of BSPTCL.

12. Transmission system for power evacuation from Arun-3 (900MW) HEP, Nepal of M/s SAPDC

12.1 Director (PSPA-II), CEA stated that M/s SJVN Arun-3 Power Development Company Pvt. Ltd. (SAPDC) is establishing a 900MW HEP in Nepal. The power from the hydro project is proposed to be evacuated through Arun-3 – Dhalkebar (Nepal) – Muzaffarpur (POWERGRID) 400kV D/c (Quad) line. As per Power Development Agreement (PDA) signed by M/s SAPDC with Nepal, they have to build the Nepalese portion of above mentioned transmission system. In the 4th meeting of JSC/JWG held on 13th-14th Feb 2017, it was decided that the Indian portion of the cross-border line may be built by an Indian entity.

12.2 In the 2nd meeting of ECT held on 06.08.2018, the scheme was deferred for further deliberation with the stakeholders. In the 2nd meeting of NCT held on 04.12.2018, it was informed that this link is being further discussed in JTT meeting of India- Nepal and therefore would be put up to the NCT in its next meeting. In the third meeting of ECT held on 21.12.2018, ECT agreed with the decision of NCT to deliberate the matter in next NCT meeting.

12.3 In the 3rd meeting of NCT held on 01.03.2019, it was decided that Indian portion of Arun-III-Muzaffarpur 400 kV D/c line would be implemented through RTM. Before implementation of this transmission line, Arun III HEP in Nepal would sign requisite agreements including TSA/BPTA etc..

12.4 After deliberations, members agreed for construction of Indian portion of Dhalkebar (Nepal) – Muzaffarpur (POWERGRID) 400kV D/c (Quad) line along with 2 no. 400kV line bays at Muzaffarpur (POWERGRID). Members noted that the all charges for the said scope on Indian side would be completely borne by M/s SAPDC.

13. LILO in Odisha portion of ISTS line for connecting M/s JSW Utkal Steel Ltd.

- 13.1 Director (PSPA-II), CEA stated that OPTCL had sent a system study report for providing connectivity to JSW Utkal Steel Ltd. for 75MW load at 220kV level. In the report OPTCL has proposed two (2) alternatives through LILO arrangements of interstate line i.e.
- (i) LILO of Joda – JSPL – Jamsedpur 220kV S/C line at JSW Utkal (including replacement of existing conductor with HTLS conductor from Joda to JSPL)
 - (ii) LILO of Joda – Ramchandrapur 220kV S/C line at JSW Utkal.
- 13.2 Representative of OPTCL stated that they would now prefer option (i). He also stated that critical load of JSW would be small which can be met through DG.
- 13.3 Representative of DVC stated that tripping of Joda–JSPL section would cause overload on DVC system.
- 13.4 It was observed from studies that the load on the Joda-JSPL 220kV line section would be around 180MW, therefore re-conductoring with HTLS is not required for Joda-JSPL 220kV line.
- 13.5 On the query of Chief Engineer (PSPA-II), CEA about power flow on existing 220kV lines, OPTCL replied that usually 100MW power flows from Joda to JSPL then 40 MW from JSPL to Jamsedpur and 100 MW flows from Ramchandrapur(DVC) to Joda.
- 13.6 Chief Engineer(PSPA-II), CEA and MS, ERPC suggested that LILO of both the above mentioned lines would be a better option, as it would increase the reliability.
- 13.7 Representative of POSOCO stated that Joda – Ramchandrapur 220kV line is an important interstate line. Generally, performance standards are not being maintained for the LILOs of Generating plants & Bulk consumers, therefore these LILOs are not recommended.
- 13.8 Chief Engineer (PSPA-II), CEA suggested that instead of LILO of lines, a new line from Joda or JSW switchyard may be constructed. Further, SPS could be implemented if required.
- 13.9 Representative of OPTCL stated that space for 220 kV bay is not available at Joda.
- 13.10 After deliberations, following was agreed for implementation under intra-state scheme:
- (i) JSPL switchyard - JSW Utkal 220 kV S/c line
 - (ii) Implementation of SPS (tripping of JSW load on tripping of Joda - JSPL line).

14. Implementation of one 132kV line bay at Baripada (POWERGRID) S/s by OPTCL

14.1 Representative of OPTCL stated that OPTCL is having one no. of 132 kV Bay at Baripada (Kuchei) for Kuchei - Dhenkikote 132 kV S/C line. This line has been LILoed at Bangiriposi, Rairangpur and Karanjia. The loads of connected substation are Bangiriposi-8 MW, Rairangpur-28 MW, Karanjia-21 MW and Dhenkikote-10 MW. Thus, the 132 kV S/C line is loaded up to 67 MW. In case of outage at Joda, the load at Polasponga substation (around 40 MW) is also catered through this line, causes breaching of thermal limit of the line. This matter was discussed during the 153rd OCC meeting held at Kolkata wherein OPTCL was advised to submit the proposal to CEA for discussion in the standing committee.

14.2 OPTCL proposed to construct 132kV S/c line from Kuchei to Bangiriposi as intra-state scheme, to limit the line loading (Kuchei–Bangiriposi portion) as well as to meet the N-1 contingency criteria. Accordingly, he requested for providing one no. 132kV bay at Baripada (Kuchei).

14.3 Representative of CTU(POWERGRID) stated that space for 1 no. 132kV line bay is available at Baripada (POWERGRID) S/s.

14.4 After deliberations, construction of Baripada (Kuchei) - Bangiriposi 132kV S/c line with associated bays at both ends under intra-state scheme of OPTCL was agreed.

15. Establishment of 400/132 kV GIS at Laxmikantapur with 3x200 MVA ICTs by D/c LILO of HEL – Subhasgram (PG) 400 kV D/C line of CESC by WBSETCL.

15.1 Representative of WBSETCL stated that South 24 Parganas is a high population density district but transmission network in this region was not well developed due to geographical location. Present maximum demand of the district is around 1010 MVA which is met from Subhasgram 400 kV sub-station of POWERGRID through 220 kV Kasba, Subhasgram & Laxmikantapur sub-stations. Installed capacity of Subhasgram 400 kV sub-station is 2x315+1x500 i.e. 1115 MVA (additional 2x315MVA i.e. 630MVA belongs to CESC). Again, Laxmikantapur 220 kV sub-station (maximum demand already recorded as 407 MVA) has only one 220 kV D/C incoming line from Subhasgram. WBSETCL is constructing one 220 kV GIS at Baruipur and it will be connected with Subhasgram 400 kV sub-station by a 220 kV D/C line. The sub-station is expected to be commissioned by March 2020. Considering future load growth, another 400 kV sub-station in the district is urgently required for reliable power supply.

15.2 WBSETCL further stated that CESC had constructed 400 kV D/C line from HEL to Subhasgram (PG) 400 kV sub-station with installation of 2x315 MVA ICTs at Subhasgram and 220 kV D/C line from Subhasgram to EM 220 kV

sub-station of CESC for evacuation of power from HEL. The 400 kV D/C line passes through Laxmikantapur area in the southern part of 24 Paraganas (S) District. WBSETCL proposed establishment of one 400/132 kV GIS near Laxmikantapur by D/C LILO of HEL – Subhasgram (PG) 400 kV D/C line. Further, existing Laxmikantapur – Kakdwip 132 kV D/C and Laxmikantapur – Falta 132 kV D/C lines would be LILoed at the proposed 400/132 kV GIS.

15.3 He added that with the existing network, power is flowing through 400 kV line over Laxmikantapur to Subhasgram and again it is returned back at Laxmikantapur through 220 kV D/C line from Subhasgram to meet the demand. In the proposed arrangement, after meeting the demand of Laxmikantapur 220 kV sub-station, balance power will flow towards Subhasgram through 400kV line. Hence, transmission loss of the system will also be reduced and reliability of power supply will be improved.

15.4 Representative of CESC and Haldia Energy Limited (HEL) stated that they technically agree with the proposal. However, commercial issues, if any would be settled mutually with WBSETCL.

15.5 Representative of CTU(POWERGRID) stated that any new 400kV substation should have Reactive compensation to control the voltage, therefore, he suggested for Installation of 420kV, 2x125MVA bus reactors at Laxmikantapur (New) substation.

15.6 After deliberations, establishment of 400/132kV GIS at Laxmikantapur with following connectivity was agreed as intra-state scheme of West Bengal:

- (i) Establishment of 400/132kV, 2x315MVA GIS at Laxmikantapur (New) along with space for 3rd ICT
- (ii) Installation of 420kV, 2x125MVA bus reactors at Laxmikantapur (New)
- (iii) LILO of HEL – Subhasgram (PG) 400kV D/C line of CESC at Laxmikantapur (New)
- (iv) LILO of existing Laxmikantapur – Kakdwip 132kV D/C line at Laxmikantapur (New)
- (v) LILO of Laxmikantapur – Falta 132 kV D/C lines at Laxmikantapur (New)

16. Modification of construction of 220 kV D/C Barjora-Burdwan line of DVC

16.1 Representative of DVC stated that as per transmission system approved for 12th plan, there was a plan was to make a 220 kV D/C ring at lower valley viz. Jamshedpur – Gola – Mejia TPS – Barjora – Panagarh – Burdwan – Kharagpur – Mosabani with a view to provide reliable power supply (Mosabani & Jamshedpur to be connected through 400 kV D/C line). In that proposal, 220 kV Burdwan GIS substation was proposed to be fed from 220 kV Barjora substation (via Panagarh) and 220 kV Kharagpur substation. However, the

proposal could not be taken up due to postponement of other associated projects.

- 16.2 He added that as the 220 KV Barjora substation is radially connected from Mejia TPS by a 220 kV D/C line, the above proposal was also less reliable. Further, on implementation of original plan, power towards 132 kV lower valley links i.e., Burdwan – Belmuri – Howrah – Kolaghat – KGP – Mosabani – Jamshedpur would be mostly fed through 220 kV Mejia TPS – Barjora – Panagarh – Burdwan link causing over-loading of MTPS – Barjora line. Situation aggravated after unit after unit retirement of DTPS Unit-3 supplying power towards Burdwan through 132 kV D/C DTPS- Burdwan line.
- 16.3 In view of above, DVC proposed for connecting 220 kV Burdwan substation to 220 kV Parulia substation of DVC with a future provision of D/C LILO at Panagarh instead of connecting with 220 kV Barjora substation.
- 16.4 Chief Engineer (PSPA-II) stated that the proposal needs detailed examination and system study.
- 16.5 After deliberations, it was decided that the issue of modification in connectivity of 220 kV D/C Barjora – Burdwan line of DVC would be discussed in Joint study meeting. The recommendations of joint study would be put up before ERSCT in its next meeting for decision.

17. Connectivity/LTA/Evacuation System for OPGC Ib TPS(2x660MW) in Odisha

- 17.1 Representative of OPGC stated that Odisha Power Generation Corporation (OPGC) is constructing power project of 2x660MW (Ib Valley U-3 & 4). Connectivity of Unit-3 was to STU system through OPGC - Lapanga 400kV D/c line (with twin moose conductor of 85 deg. C rating) and Unit-4 to ISTS through OPGC-Sundargarh 400kV D/c ISTS line (with triple snowbird conductor, under TBCB route). The transmission system was planned with a bus sectionaliser in generation switchyard for the two units, i.e. U-3 and U-4, which was to be normally kept open. OPGC had taken connectivity and LTA for 660 MW (Unit-4) in ISTS, however, OPGC has few months back relinquished the LTA granted to them. He further, stated that the coal linkage for the project was cancelled due to coal blocks deallocation. Therefore, OPGC was compelled to purchase the coal from the state owned mining company (OCPL- Odisha Coal Private Limited). Odisha government while providing coal linkage from OCPL allocated total power of Unit 3 & 4 (1320MW) to GRIDCO, Odisha for a period of 25 years. OPGC requested for closing the bus sectionaliser between Unit-3 (connected to STU) and Unit-4 (connected to ISTS) and allow them for operating the system under common bus mode.

- 17.2 Representative of the GRIDCO, Odisha stated that as per PPA, OPGC has to deliver this power to GRIDCO at their switchyard using existing STU network or through augmentation of STU network.
- 17.3 Chief Engineer (PSPA-II), CEA stated that on this issue a meeting was held in CEA on 26.03.2019, wherein following were concluded:
- (a) The proposal of OPGC/GRIDCO regarding closing of bus sectionaliser between U-3 (connected to STU) and U-4 (connected to ISTS) is feasible, but with compromise in N-1 reliability.
 - (b) There is no constraint in evacuation of power from U-4 in the planned arrangement i.e. with sectionaliser kept as open.
 - (c) OPGC U-4 is connected with ISTS and they may seek Long term/Short term open access in the ISTS for scheduling their power to Odisha, as per their PPA.
 - (d) OPGC may approach CERC, if desired, for resolution of above technical/ commercial matters.
- 17.4 Representative of BSPTCL informed that they have sent comments on the minutes of meeting to CEA that CEA should ensure that any change in the existing OPGC evacuation system arrangement should not financially burden BSPTCL.
- 17.5 Represented of GRIDCO, Odisha stated that Odisha would pay the relinquishment charges and other charges, if any. It would not financially burden the other constituents. He requested to accord above proposal as commissioning of Unit-3 is completed and Unit-4 would be completed soon.
- 17.6 Chief Engineer(PSPA-II), CEA stated that as the transmission system planned for U#4 (viz. OPGC-Sundargarh 400kV D/c triple snowbird line as part of ISTS through TCB route) has been commissioned in December, 2017, there is no technical hindrance in respect of evacuation of power for commissioning of U#4 of OPGC.
- 17.7 Representative of BSPTCL stated that the relinquishment charges would not compensate for the constructed transmission system, therefore other constituents have to pay the remaining charges. Therefore, BSPTCL will not agree for the proposal. Representatives of the DVC and WBSETCL also supported the views of BSPTCL.
- 17.8 Accordingly, the proposal of OPGC for closing the bus sectionaliser between Unit-3 (connected to STU) and Unit-4 (connected to ISTS) could not be agreed by the ERSCT.
- 18. Connectivity of newly constructed 220/132/33 kV (2x150+2x50) MVA Grid Substation Giridih of JUSNL through LILO of 220 kV Giridih (DVC)-Koderma (DVC) Transmission Line.**

18.1 Representative of JUSNL informed that presently power to Giridih and nearby area of Jharkhand is fed through DVC network which is not sufficient to meet demand. In order to meet the power requirement of JUSNL has completed the construction work of 220/132/33 kV (2x150+2x50) MVA Grid Substation Giridih (JUSNL), 132/33 kV GSS at Jamua and 132/33 kV GSS at Saria.

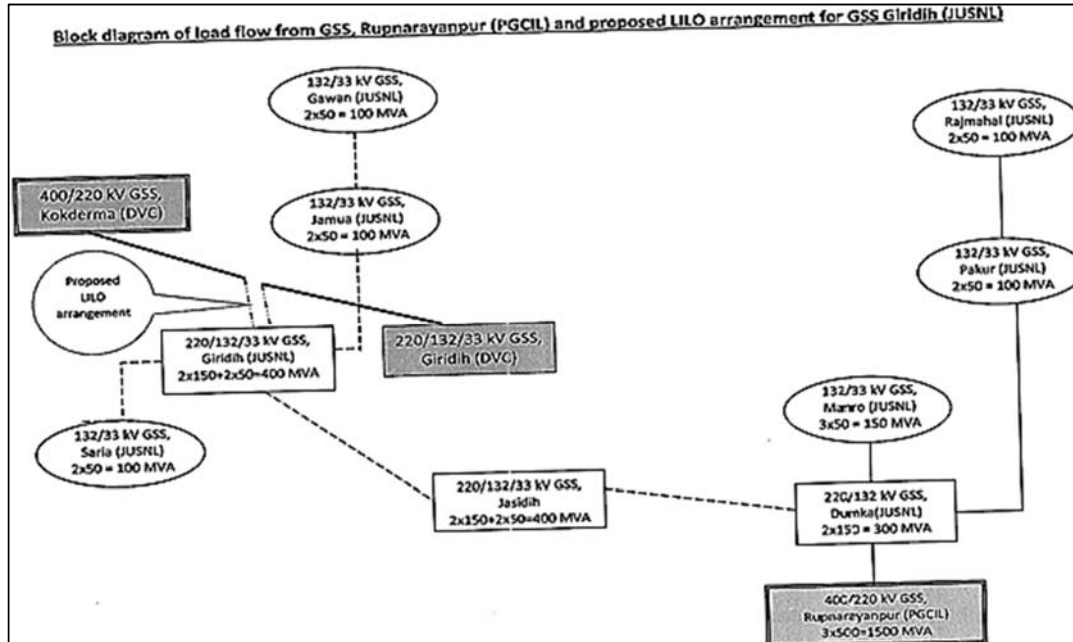
18.2 On the upstream, 220/132/33 kV Grid Substation Giridih(JUSNL) is to be connected to under-construction 220/132/33 kV GSS Jasidih through 220 KV D/C Giridih-Jasidih transmission line and 220/132/33 kV GSS Jasidih will be connected to existing 220/132 kV GSS at Dumka(Madanpur) through under construction 220 kV D/C Dumka-Jasidih Transmission line. As an alternate source to 220/132/33 kV GSS Jasidih, Jasidih will be connected to proposed 400/220kV GSS (TBCB mode) at Jasidih through 220kV D/C transmission line.

18.3 The details of the present status of the above plan are as follows:

Sr. No.	Transmission Element	Present Status
1	220/132/33 kV Giridih GSS	Ready for commissioning.
2	220/132/33 kV Jasidih GSS	Work is in progress and expected to be completed by May 2019.
3	220 kV D/C Giridih- Jasidih Transmission line	Work awarded but progress is slow and delayed due to delay in forest clearance.
4	220 kV D/C Dumka (Madanpur)- Jasidih Transmission line	Work awarded but progress is slow and delayed due to delay in forest clearance.
5	400/220 kV GSS Jasidih along with associated transmission line.	Under TBCB.Bidding process is going on. It will take approx. 3 years for completion.

18.4 However, till completion of 400/220 kV GSS Jasidih along with associated line upto 220/132 kV GSS Jasidih (which are under intra-state TBCB Scheme), the 220/132/33 kV GSS Giridih will remain on only one source i.e. 220/132 kV GSS Dumka, which receives power through 220 kV D/C Dumka — Maithon(PG) transmission line. The availability of power at Dumka will not be sufficient to meet the demand of Giridih, Jamua and Saria GSS in addition to Dumka region.

18.5 He proposed that for early commissioning of 220/132/33 kV Grid Substation Giridih, JUSNL has explored one possibility and considered the same as the most suitable option of connectivity of Giridih GSS through LILO of 220 kV Giridih (DVC) - Koderma (DVC) Transmission Line at present.



18.6 Further, after completion of 220 kV D/C Giridih- Jasidih Transmission line and 220 kV D/C Dumka(Madanpur)- Jasidih Transmission line, this LILO will also act as an alternate source to 220/132/33 kV GSS Giridih. Preliminary survey work for the above proposal has been carried out and the route length from existing tower No. KG-317 has been identified having length 19.30 km with no involvement of forest and railway crossing. After completion of this proposed LILO, commissioning of newly constructed 220/132/33 kV (2x150+2x50) MVA Grid Substation Giridih (JUSNL) would be done. Further after completion of downstream network of Giridih GSS, power may be extended to 132/33 kV GSS at Jamua and Sarla of JUSNL and power crisis to Jamua, Tisri, Gawan, Deori, Rajdhanwar, Birni, Sariya, Bagodar, Pirtand, Dumri and nearby villages will be resolved.

18.7 Chief Engineer(PSPA-II), CEA stated that the proposal was received late and it needs detailed study.

18.8 After, deliberations, it was agreed that the proposal of JUSNL would be discussed in joint study meeting and recommendations would be put up before ERSCT in next meeting.

19. Operational Feedback

19.1 Durgapur (POWERGRID) – Parulia (DVC) 220kV D/c line

19.1.1 Representative of POSOCO stated that Parulia (Durgapur) is a major load centre in DVC control area which was planned to be fed from internal generation of DVC embedded at 220kV and 132 kV level since inception. However, with decommissioning of DVC units (at Bokaro and CTPS) and low generation from internal plants particularly at Mejia and Waria, the load of

Parulia and nearby area is practically met through importing large quantum of power from Durgapur substation of PG through 220kV Durgapur(PG)-Parulia(DVC) D/C. This resulted in very high loading of above line and even crossed the N-1 security limit.

19.1.2 POSOCO suggested for reconductoring of 220kV Durgapur(PG)-Parulia(DVC) D/C line by DVC as one of the corrective measure.

19.1.3 It was decided that the issue need to be discussed in Joint study meeting. The recommendations of the joint study would be presented in next meeting of ERSCT.

19.2 **High voltage at Angul and Sundargarh (Jharsuguda) substations at 765kV level**

19.2.1 Representative of POSOCO stated that after commissioning of 765kV Angul-Sundargarh ckt-3 and ckt-4, the bus voltages at Angul and Sundargarh substations is quite high even after keeping all the line and bus reactors in service. He informed that Angul – Sundargarh (Jharsuguda) ckt-1, 3, and 4 were kept out of service for about 1380 hrs. in last year (ckt-4: 751hrs. 38min.; ckt-3: 521hrs. 28min.; ckt-1: 104hrs. 45min.). Accordingly, he proposed for installation of 765kV, 1x330MVAr bus reactor at Angul (POWERGRID) S/s.

19.2.2 Representative of BSPTCL enquired about the reasons for this over voltage at Angul and Sundargarh (Jharsuguda) substations. Chief Engineer(PSPA-II), CEA replied that many generation developers have applied for LTA and transmission system was built accordingly, however, most of them have not been commissioned. The under loaded EHV lines may cause high voltages.

19.2.3 It was decided that the issue need to be discussed in Joint study meeting. The recommendations of the joint study would be presented in next meeting of ERSCT.

20. **Scheme for limiting of fault current level at 400kV level at Farakka generation switchyard**

20.1 Director (PSPA-II), CEA stated that in the 19th meeting of SCSPER held on 01.09.2017 the issue of high fault level at Farakka TPS (NTPC) at 400kV bus was discussed, wherein members agreed that Durgapur – Farakka (150km) 400kV D/c and Farakka – Kahalgaon (95km) 400kV 1st D/c (ckt-1 & 2) lines may be bypassed outside the Farakka switchyard so as to form Durgapur – Kahalgaon 400kV D/c line as ISTS so as to limit fault level at Farakka generation switchyard.

20.2 Representative of CTU(POWERGRID) stated three phase fault level at Farakka TPS (NTPC) at 400kV bus in the present time-frame, is observed to be about 53kA (assuming split is operational at Maithon, Biharsharif,

Durgapur, and Kahalgaon). Moreover, the fault level of Farakka generation switchyard in 2022-23 time-frame is expected to be about 54.5kA.

- 20.3 Director (PSPA-II), CEA stated that the matter was discussed in a meeting held at CEA on 26-03-2019 (Minutes of meeting is at **Annexure-I**). In the meeting, CTU had proposed for splitting the 400kV Farakka bus using series reactor. With the proposed bus splitting arrangement and a series reactor of 12ohm between the bus sections, it was observed that maximum angular difference between the two sections is about 4-5 degrees. Representative of NTPC informed that auxiliary power supply for Farakka STPP is designed to derive station and backup power supply for plant auxiliaries from 400kV switchyard through 3 nos. Tie transformers (125MVA, 125MVA and 100MVA). Tie transformer#1 and 2 are fed from 400kV Bus#1 and Tie Transformer#3 is fed from 400kV bus#2. For Farakka STPP stage-1, 2 and 3, there is interconnection between the respective Tie transformers at 33kV, 11/6.6kV and 0.415kV levels. 2x100% / 3x50% redundant feeding configuration is provided at each load centre with two sources fed from different Tie transformers such that there is no loss of plant auxiliaries in case of outage of any one tie transformer. This provision has been kept by design in order to ensure reliability of supply to auxiliaries and avoid loss of generation on outage of Tie Transformer. In case of splitting the 400kV Farakka bus using series reactor arrangement, the phase angle difference between same voltage level buses would be more than 5 degree. Due to this, auxiliary power supply changeover may not take place or heavy circulating currents would flow, which may further trip some of the circuit breakers.
- 20.4 NTPC informed that even with 2.5 deg. angle between FSTPP split buses and around 50% loadings of the tie transformer, angular difference at 33kV level is more than 6 deg. which may result in blocking of changeover considering equipment safety. It is also pertinent to highlight here that as per load flow studies with paralleling at 415Volts level, high recirculating currents are observed in the LT system during paralleling which lead to overloading of the transformer and subsequent tripping of the incoming LT transformer. Changeover from one source to second source is not possible under this condition. Accordingly, it was decided that alternate solutions to limit fault current at Farakka would be studied.
- 20.5 Representative of CTU stated that following alternatives involving physically bypassing of 400kV D/c lines outside the generation switchyard have been studied:
- (a) Bypassing Kahalgaon ckt-1 & ckt-2 and Durgapur D/c (about 250km)
 - (b) Bypassing Kahalgaon ckt-3 & ckt-4 and Durgapur D/c (about 250km)
 - (c) Bypassing Kahalgaon ckt-3 & ckt-4 and Sagardighi D/c (about 160km)

The fault current has been observed as follows:

Case	Fault current at Farakka	Fault current at Sagardighi
(a)	44.16kA	41.85kA
(b)	41.76kA	41.13kA
(c)	43.16kA	41.64kA

20.6 From the above, it may be observed that alternative-(b) is the most suitable alternative as the 3-phase short circuit current reaches the lowest value. Only shortcoming of this alternative is Kahalgaon ckt-3 & ckt-4 lines (95km) are designed to operate till 85°C, whereas Durgapur lines (150km) are designed to operate till 75°C, which would result in underutilisation of Kahalgaon-Farakka section of resultant Kahalgaon-Durgapur line. Further, with 41.76kA fault level, most of the Circuit Breakers (CB) at Farakka switchyard are expected to experience fault current less than 40kA as the contribution from each of elements is mostly greater than 1.76kA, except contribution from 3x200MW generators, 2x315MVA ICTs and a few transmission line.

20.7 After deliberations, it was agreed that Durgapur – Farakka 400kV D/c and Farakka – Kahalgaon 400kV D/c (ckt-3 & 4) lines will be bypassed outside the Farakka switchyard so as to form Durgapur – Kahalgaon 400kV D/c line as ISTS scheme for limiting fault level at Farakka 400kV generation switchyard.

21. Modification in transmission system required for LTA from Darlipalli (2x800MW), NTPC

21.1 Representative of CTU(POWERGRID) informed that following LTAs have been granted from Darlipalli (2x800MW) generation project of NTPC Ltd.:

(a) Applicant: NTPC Ltd.

LTA quantum: 793.25MW (Bihar-154.13MW; West Bengal-283.75MW; Jharkhand-102.11MW; Sikkim-15.29MW; Unallocated-237.98MW)

(b) Applicant: GRIDCO Ltd.

LTA quantum: 748MW (Odisha)

21.2 Further, following transmission system was indicated as LTA system for above mentioned applicants:

- (a) Darlipalli – Jharsuguda (Sundargarh) 765kV D/c line.
- (b) Angul – Jharsuguda (Sundargarh) – Dharamjaygarh 765kV D/c (2nd) line.
- (c) Jharsuguda (Sundargarh) – Raipur Pool 765kV D/c line.

- (d) LILO of both circuits of Rourkela – Raigarh 400kV D/c (2nd line) at Jharsuguda (Sundargarh).
- (e) Addition of 2x1500MVA, 765/400kV ICT at Jharsuguda (Sundargarh).
- (f) Addition of 2x1500MVA, 765/400kV ICT at Angul.
- (g) Split bus arrangement at 400kV and 765kV buses in Angul substation.
- (h) Split bus arrangement at 400kV and 765kV buses in Jharsuguda (Sundargarh) substation.

21.3 The “Common Transmission System for Phase-2 generation projects in Odisha” was reviewed in the 19th meeting of Standing Committee on Power System Planning for ER held on 01-09-2017, wherein the elements mentioned at (f) and (g) above were deleted from scope of works. Accordingly, CTU informed that LTA to Darlipalli (2x800MW) generation project of NTPC Ltd. will be granted with following revised transmission system:

- (a) Darlipalli – Jharsuguda (Sundargarh) 765kV D/c line.
- (b) Angul – Jharsuguda (Sundargarh) – Dharamjaygarh 765kV D/c (2nd) line.
- (c) Jharsuguda (Sundargarh) – Raipur Pool 765kV D/c line.
- (d) LILO of both circuits of Rourkela – Raigarh 400kV D/c (2nd line) at Jharsuguda (Sundargarh).
- (e) Addition of 2x1500MVA, 765/400kV ICT at Jharsuguda (Sundargarh).
- (f) Split bus arrangement at 400kV and 765kV buses in Jharsuguda (Sundargarh) substation.

21.4 Members noted the above revised transmission system (as already agreed in 19th meeting of SCSPER) for LTA from Darlipalli (2x800MW) generation project of NTPC.

22. Modification in transmission system associated with North Karanpura (3x660MW) generation project of NTPC

22.1 Director(PSPA-II), CEA informed that the evacuation system for North Karanpura (3x660MW) generation project (of NTPC) and ERSS-XIX schemes together was to be implemented by M/s NKTL (subsidiary of Adani) under TBCB route with following scope of works:

- (a) North Karanpura – Gaya 400kV D/c (Quad) line
- (b) North Karanpura – Chandwa 400kV D/c (Quad) line
- (c) Establishment of 400/220 kV, 2x500 MVA sub-station at Dhanbad
- (d) LILO of both circuits of Ranchi-MaithonRB 400 kV D/c line at Dhanbad

22.2 However, the work was not progressed. CERC, in its order dated 20.03.2019 in Petition no. 194/MP/2017 has directed CEA to decide revised

Scheduled Commercial Date of Operation (SCoD) for execution of the transmission system in consultation with NTPC and the Petitioner.

22.3 Accordingly, a meeting was held at CEA on 23-04-2019, wherein the status of transmission system of NKTL was reviewed and following was agreed.

- i. Revised scope of the project:
 - a. NKSTPP – Common point would be 13 km multi circuit 400kV line (quad moose conductor).
 - b. Common point – Chandwa would be 25 km 400kV D/c line (quad moose conductor).
 - c. Common point – Gaya would be 98 km 400kV D/c line (quad moose conductor).
 - d. New 400/220kV, 2x500MVA Dhanbad Substation.
 - e. 1.2 km D/c LILO of Ranchi-Maithon RB 400kV D/c line at Dhanbad.
- ii. NKSTPP-Chandwa 400kV D/c line would be completed in 14 months, i.e. by June 2020 and NKSTPP-Gaya 400kV D/c line would be completed in 23 months, i.e. by March 2021. New 400kV Dhanbad S/s with 1.2 km D/c LILO of Ranchi-Maithon 400kV D/c line would be completed in about 18 months, i.e. by October 2020.
- iii. Representative of NKTL agreed for the above time lines subject to getting forest clearance for NKSTPP-Chandwa 400kV D/c line within 200 days and for NKSTPP-Gaya 400kV D/c line within 300 days.

22.4 Members agreed to the revised scope of works mentioned above at para 22.2, which is to be implemented by M/s NKTL within above mentioned revised Scheduled Commercial Date of Operation (SCoD).

23. Advance intimation for alternate transmission system for Rammam-III (3X40MW) project

23.1 Representative of NTPC informed that Rammam-III (3X40 MW) hydro project is being constructed on river Rammam in Darjeeling district of West Bengal. MoU in this regard was signed between NTPC and WBSEB. TEC for the project was granted by CEA on 12th Sep 2006 and revalidated on 1st Aug 2013. 73% of power generated from the project has been allocated to WB and 12% to Sikkim by MoP on 31st Jan 2011, 15% of power is yet to be allocated.

23.2 As per terms and conditions of MoU, following transmission system was to be developed by WBSEB/WBSETCL.

- (a) 132kV D/c Rammam III-New Jalpaiguri
- (b) LILO of 132kV Rammam-II HEP- North Bengal University line at Rammam III.

23.3 He further stated that construction work for the HEP has already started and first unit of project is scheduled to be synchronized by Dec'21 and subsequent units by Jan'22 and Feb'22. In spite of regular follow up with WBSEB/WBSETCL, construction work on associated transmission is yet to start. In view of above, he requested for exploring alternate evacuation scheme for the project.

23.4 Representative of WBSETCL stated that the MoU was signed between unbundled WBSEB and NTPC in November 2006 with a condition for termination of MoU in case the project does not come in 30 months. He added that the provisions of PPA need to be checked again.

23.5 After deliberations, it was suggested that NTPC and West Bengal may resolve the matter bilaterally. Further, if necessary, the issue may be discussed in forthcoming meeting of ERSCT.

24. Proposal for 132/33 kV sub-station at Nabinagar

24.1 Representative of BSPTCL stated that one 132/33 kV, 3x50 MVA GSS has been planned at Nabinagar, Dist. Aurangabad with connectivity at 132 kV level as LILO of one circuit of 132kV Sonenagar – Rihand line under intra-state scheme.

24.2 Director(PSPA-II), CEA stated that the issue was discussed in a meeting held on 26.03.2019 at CEA, wherein it was suggested that instead of said LILO, new 132/33kV S/s at Nabinagar may be feed radially from Nabinagar-II generation project (line length: about 15km) as requisite transformation capacity is available in the 400/132kV, 2x200MVA ICTs at the generation switchyard.

24.3 Representative of NTPC stated that technically the proposal is accepted. However, commercial issues of transformation loss need to be addressed.

24.4 After deliberations, it was agreed that the issue would be discussed in the joint study. The outcome of joint study would be presented in next meeting of ERSCT.

25. Transmission system for power evacuation of Odisha Integrated Power Ltd. (Odisha UMPP-4000MW) for Connectivity and LTA applications

25.1 Representative of CTU(POWERGRID) stated that Connectivity and LTA applications for 4000MW Odisha UMPP submitted by Odisha Integrated Power Ltd. (OIPL), wholly owned subsidiary of PFCCL, were pending since long (June'14) on account of non-firming of generation project implementation. He also mentioned that CERC vide Amendment dated 17-02-2016 has directed CTU not to hold any application in abeyance and process them within the timeline prescribed in Regulation 7 of the Connectivity Regulations.

25.2 In the 19th meeting of SCPSPER held on 01-09-2017, following transmission system was finalized for Odisha-UMPP:

- a) Split bus arrangement at Odisha UMPP (3x660MW in Section-A and 3x660MW in Section-B)
- b) LILO of Sundargarh-A – Dharamjaygarh 765kV D/c line at Odisha UMPP-A
- c) Odisha UMPP-B – Sundargarh-B 765kV D/c line
- d) Ranchi (New) – Gaya 765kV D/c line

25.3 However, M/s OIPL in their Connectivity and LTA applications, had not clarified the unit size of the generation project and has left the decision of choosing unit size to the successful bidder. Subsequently, M/s OIPL vide email dated 13-03-2018 informed the unit size as 5x800MW.

25.4 As the evacuation system was planned considering 6x660MW units with split bus arrangement at the UMPP bus (3x660MW in Section-A and 3x660MW in Section-B), revised studies for 2023-24 timeframe was carried out with 5x800MW capacity for Odisha UMPP and discussed in the 1st meeting of ERSCT. In meeting it was decided to review the transmission system proposed for Odisha UMPP by CEA, CTU, OPTCL and OIPL.

25.5 Accordingly, a meeting was held at CEA on 26-03-2019. No representative of M/s OIPL was present in the meeting. Revised system studies were carried out 2024 time-frame, with 5x800MW capacity for Odisha UMPP and without Ranchi-Gaya 765kV D/c line. It was observed that there are no constraints in power evacuation from Odisha UMPP. Accordingly, following evacuation system is proposed for Odisha UMPP for grant of Connectivity and LTA:

Transmission System for Connectivity:

- Split bus arrangement at Odisha UMPP with 3x800MW in Section-A and 2x800MW in Section-B. For connectivity of 5x800MW, bus sectionaliser should be kept closed.
- Odisha UMPP-B – Sundargarh-B 765kV D/c line

Transmission System for LTA

- Split bus arrangement at Odisha UMPP with 3x800MW in Section-A and 2x800MW in Section-B. The bus sectionaliser should be kept normally open.
- Odisha UMPP-B – Sundargarh-B 765kV D/c line
- LILO of both circuits of Sundargarh-A – Dharamjaygarh 765kV D/c line at Odisha UMPP-A

Note:

(a) Generation voltage to be stepped-up to 765kV

(b) Switchgears to be designed for short time current rating of 50kA (or higher) for 1sec

25.6 Chief Engineer(PSPA-II), CEA inquired about current status and beneficiaries of the UMPP project.

25.7 Representative of OIPL informed that land was acquired for Odisha UMPP. After finalization of revised Standard Bidding Documents (SBD) by Ministry of Power, it would take one year to award the project and 4 years thereafter for commissioning of first unit of the UMPP and each subsequent unit would be commissioned at an interval of 6 months thereafter. OIPL informed that the start date of connectivity and LTA may be considered as Unit-1: 01-04-2025 and each subsequent unit at an interval of 6 months thereafter. Further, the tentative allocation mentioned in MoP letter (year 2006) was as under:

Beneficiary	Quantum (MW)
Odisha	1300 MW
ER	1300 MW
Madhya Pradesh	400 MW
Chhattisgarh	200 MW
WR	600 MW
Tamil Nadu	300 MW
SR	300 MW
Rajasthan	400 MW
Uttarakhand	200 MW
Punjab	500 MW
Haryana	400 MW
Uttar Pradesh	300 MW
NR	1800 MW
Total	4000 MW

25.8 Member Secretary, ERPC opined that the allocation is very old and suggested that a fresh confirmation from the beneficiary states might be taken by OIPL.

25.9 Representative of OIPL stated that no beneficiary has withdrawn its share from this project. Further, he also stated that OIPL has spent around 200-300 Crores for this project and all the expenses has been intimated to all beneficiaries and no beneficiary has raised any objection for this.

25.10 Representative of CTU stated that once the Connectivity and LTA are granted, requisite agreements have to be signed among OIPL, beneficiaries and CTU within 1 month. In case of non-execution of this agreement by beneficiaries, M/s OIPL being the applicant will have to sign the agreements with CTU within 1 month of grant and also submit construction bank guarantee at rate of 5 lakh/MW within 3 months thereafter.

- 25.11 Representative of M/s OIPL opined that, in case, the agreement is sent to the beneficiaries, the beneficiaries would inquire about the schedule of the project, which is not yet known to M/s OIPL and it is being extended since 2006. Also, M/s OIPL is not in position to provide any bank guarantee.
- 25.12 After deliberations, M/s OIPL submitted that in light of the impending difficulties cited above, it is not in a position to utilize the Connectivity and LTA for 4000MW Odisha UMPP (Bhedabahal) even if the same are granted by CTU. Therefore M/s OIPL withdrew its Connectivity & LTA applications (both 4000MW).
- 25.13 However, M/s OIPL was advised to reapply for Connectivity and LTA in future upon firming up of commissioning schedule of the project.

26. Request for ISTS connectivity by Railways at Sasaram (Pasauli)

- 26.1 Representative of DFCIL(Railways) stated that Railway has planned to construct transmission network in Mughalsarai – Howrah and Ludhiana – Sonnagar in Eastern Sector for Rail transportation and requested CEA for connectivity at identified locations for which POWERGRID has already confirmed space availability for line bays. CEA was earlier requested for resolving the issue of ISTS connectivity at Abdullapur, Meerut and Sasaram (Pasauli). Further, a meeting was held on 21.07.17 in CEA wherein ISTS connectivity at Abdullapur & Meerut was agreed, however, the issue of connectivity at Sasaram (Pasauli) is still awaited. This issue of Railway's ISTS connectivity was also discussed in 19th Standing Committee on Power System Planning of Eastern Region held on 01.09.17 and Special meeting held at Kolkata on 16.07.18. He requested for providing ISTS connectivity to Mughalsarai – Howrah and Ludhiana – Sonnagar routes.
- 26.2 Representative of BSPTCL stated that there was not sufficient time to study the issue, as this agenda was not circulated in time.
- 26.3 Representative of ERPC, BSPTCL, OPTCL, DVC and West Bengal stated that the issues raised by them in the previous meetings, like underutilization of transmission assets, are yet to be resolved, therefore they raised objection for the ISTS connectivity to Railways in Mughalsarai – Howrah and Ludhiana – Sonnagar routes.
- 26.4 Further, as the agenda was received on the day of meeting, the above could not be analysed in detail. Therefore, the agenda would be placed in next meeting. In the meantime, Railways may send their response to the concerns raised by the States.

27. Low voltage problem in Jeerat, Subhasgram and Rajarhat areas

- 27.1 Representative of CTU(POWERGRID) informed that low voltages have been observed in recent months at 400kV levels in Jeerat, Subhasgram and

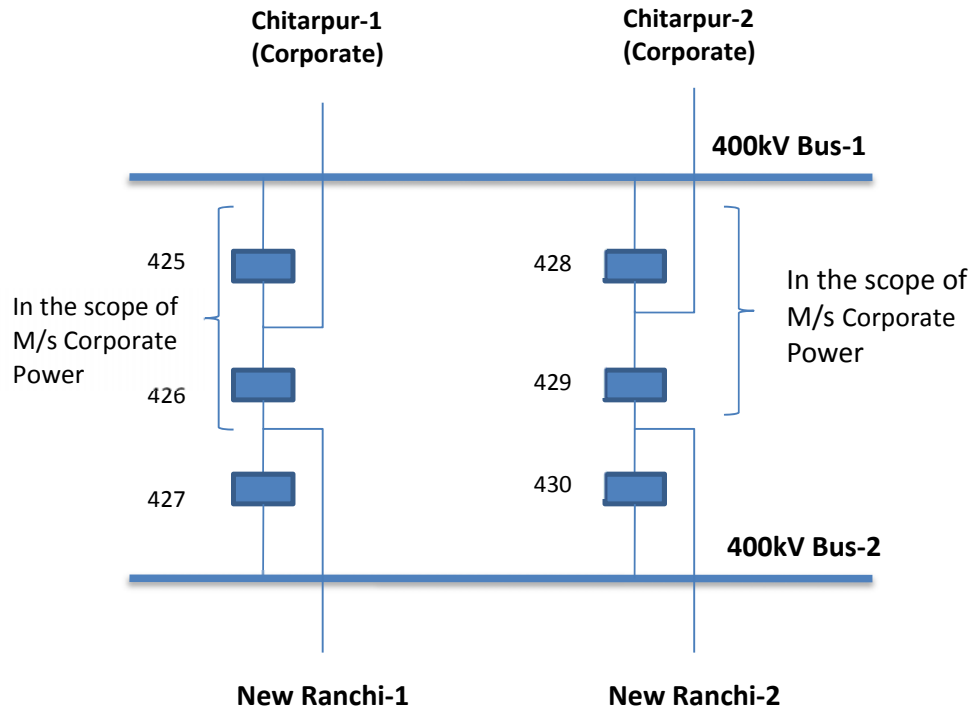
Rajarhat substation. The bus voltages at these substations have remained in the range of 350-360kV for all day long on some days in recent months. Momentary reliefs are observed only on the days of load throw-off due to inclement weather. Further, as per data published by ERLDC, it was observed that MW and MVAR demand of West Bengal in these areas has increased by 455MW and 238MVAR respectively YoY without any additional reactive compensation at lower voltage level by state. This has further aggravated low voltage scenario during peak load conditions.

- 27.2 He stated that short circuit level at Subhasgram, Rajarhat, and Jeerat substations are about 15kA, 19.2kA, and 20.9kA respectively. Further, from the studies carried out by them, it was observed that in case of TSC at Subhasgram S/s, the change in bus voltage at Subhasgram, Rajarhat, Jeerat substations with switching in of each bank of 125MVAR is about 5-6kV, 3-4kV, 2-3kV respectively. Similarly, with TSC at Rajarhat S/s, the change in bus voltage at Subhasgram, Rajarhat, Jeerat substations with switching in of each bank of 125MVAR would be about 3-4kV, 3-4kV, 2-3kV respectively. Accordingly, installation of (Thyristor Switched Capacitor-TSC) of adequate size (≥ 500 MVAR) either at Subhasgram or Rajarhat substation would improve the voltage profile in the area.
- 27.3 Chief Engineer(PSPA-II), CEA expressed concern over the low voltage profile in Subhasgram (POWERGRID), Rajarhat (POWERGRID), Jeerat (WBSETCL) 400kV substations. He inquired about the actions taken by WBSETCL to prevent the low voltages in these substations.
- 27.4 Representative of WBSETCL stated that shunt capacitors are being installed at the distribution substations. 10MVAR capacitors are being installed for each 50MVA load. After the implementation of Jeerat - Mednipur transmission system under ISTS and some other state transmission systems the voltage profile may be improve. Further, they were seeking reactive power support from state generators (like Bakreswar, Kolaghat, Haldia, Sagardighi etc.).
- 27.5 Representative of ERPC stated that the issue of over voltage at these substations were discussed in last OCC meeting also and a committee has been constituted to suggest the measures to improve the voltage profile.
- 27.6 Chief Engineer(PSPA-II), CEA suggested that reactive power support has to be provided near to load, therefore massive capacitor installation program at distribution substations has to be taken up by WBSETCL. The schedule of installation of capacitors by WBSETCL may be monitored by ERPC.
- 27.7 Some members opined that the agenda item was not circulated in time and they had not sufficient time to study the proposal.
- 27.8 After deliberations, it was decided that the proposal of installation of TSC in Subhasgram, Rajarhat, and Jeerat areas would be discussed in joint study

meeting and the findings would be placed before the ERSCT in its next meeting.

28. Commissioning of tie bays at Ranchi (POWERGRID) S/s associated with Corporate and Ranchi (New) 400kV D/c lines

28.1 Representative of CTU(POWERGRID) stated that 400kV Ranchi-New Ranchi ckt-I & II was commissioned on 30-03-2014 through its main bay (Bay no. 427 and 430 respectively) and connected to BUS-II only at 400/220kV Ranchi (POWERGRID) S/s.



28.2 The commissioning of Tie bays (bay nos. 426, 429) and Main bays (bay nos. 425, 428) connected to BUS-1 in the diameter of Ranchi-New Ranchi ckt.-I & II lines were in the scope of M/s Corporate Power Ltd. The party M/s Corporate Power Ltd. had commenced their work in the year of 2009 and after erection of switchyard equipment they left the site in the year 2012 citing bankruptcy of the company. As per information gathered, M/s Corporate Power Ltd. will not commission the bays for Chitarpur ckt-I & II lines viz. bay nos. 425,426, 428 & 429. Due to connection of 400kV Ranchi-New Ranchi I & II with BUS-2 only, reliability of the system is affected as in case of shutdown of main BUS-2, both the lines would remain out of service. Alternatively, in case of any fault in their main bay (427 & 430), both the lines would be out of service. Hence for improving the reliability of 400kV Ranchi-New Ranchi Ckt-I & II, it is necessary to complete the diameter for connectivity with Bus-1 at Ranchi S/s by charging both tie bays (426 & 427). Accordingly, the necessary works in this regard has already been carried out by POWERGRID.

28.3 Members noted the above and post facto approved the construction and charging of the said two tie bays i.e. bays nos. 426 and 429 to improve reliability of Ranchi-Ranchi (New) 400kV D/c ckt-I & II.

29. Extension of completion schedule for installation of ICT-2 at Farakka (NTPC) under ERSS-XII

29.1 Representative of CTU(POWERGRID) stated that in 19th meeting of SCSPER held on 01.09.2017, constraint in transportation of ICT-II at Farakka (NTPC) under ERSS-XII were discussed and it was recorded that:

“In case of transportation constraint at Farakka Switch Yard, the ICT may be transported through Farakka Feeder Cannel waterways at additional cost under ERSS-XII scheme”.

29.2 Subsequently in first meeting of ERSCT held on 16.07.2018 following was decided:

“After deliberation, following modification in ERSS-XII was agreed with extension in completion schedule by 18 months from the schedule COD”.

“... New ICT which is being procured to replace the burnt ICT, Patna to be diverted to Farakka for installation of ICT-II”.

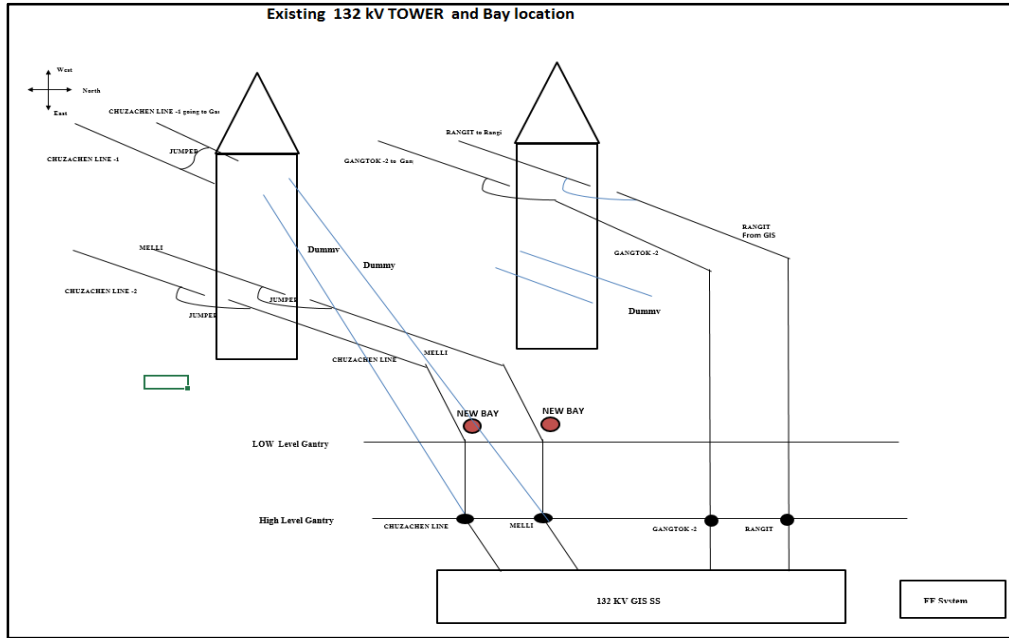
29.3 Based on decision on ERSCT meeting held on 26.07.2018, POWERGRID took procurement action for ICT and NOA for supplying new ICT for Farakka was placed in April 2019 with completion schedule of 12 months i.e up to April 2020.

29.4 However, considering shutdown constraint at NTPC and commission activities of bays & ICT, completion schedule of Installation of ICT-2 at Farakka (NTPC) under ERSS-XII may need to be extended till June 2020.

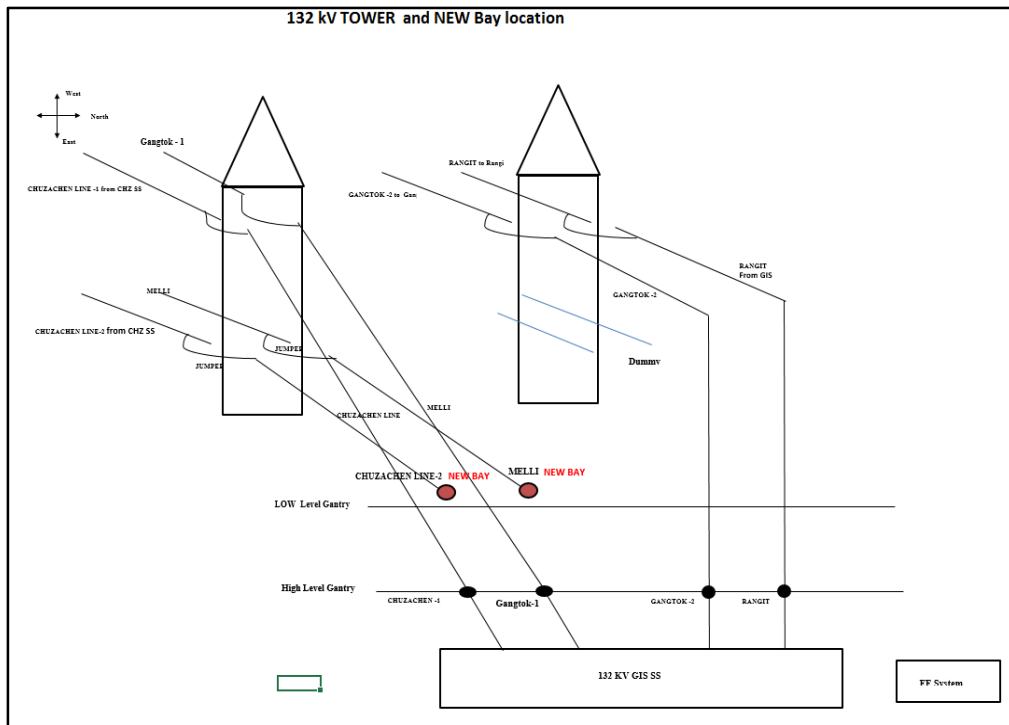
29.5 After deliberations, members agreed for extension of completion schedule of installation of ICT-2 (400/220kV, 315MVA) at Farakka (NTPC) under ERSS-XII till June 2020.

30. Realignment of existing 132kV configuration of Rangpo bus for facilitating termination of 132kV Rangpo-Chuzachen 132kV D/C line

30.1 Representative of CTU(POWERGRID) stated that E&P Dept., Govt. of Sikkim is constructing 132kV Rangpo-Chuzachen D/c line along with line bays at Rangpo GIS S/s. However, as 132kV GIS is having two tier gantry there are clearance issues in termination of the newly constructed 132kV Rangpo-Chuzachen D/c line. The present arrangement is shown below:



30.2 In view of the above, it was proposed to rearrange lines in four line bays (2 no. line bays of POWERGRID and 2 no. line bays of E&P Dept., Govt. of Sikkim) such that there are no clearance issues. For this, E&P Dept., Govt. of Sikkim would use one bay of POWERGRID for termination of its Chuzachen line and accordingly POWERGRID would utilise one of the bays of E&P Dept., Govt. of Sikkim for termination of Melli line. The revised arrangement is shown below:



30.3 CTU informed that necessary metering arrangement will also be implemented in consultation with ERLDC. Presently, 132kV Bus-I extension

is under implementation and shortly 132kV Bus-II, will also be completed and afterwards, HV testing will be conducted for both extension portion.

30.4 Members agreed for revised arrangement mentioned at para 30.2.

31. Transmission system for power evacuation from RE projects in NR, WR, and SR

31.1 Chief Engineer (PSPA-II), CEA stated that the transmission planning for potential Solar Energy Zones (SEZs) of about 50GW and Wind Energy Zones (WEZs) of about 16.5GW in seven Renewable Energy (RE) rich states in India is currently being carried out by CEA, CTU, STUs, and all the stakeholders. The transmission planning is bifurcated in two phases (29GW in Phase-I and 37.5 GW in Phase-II) in view of ease of implementation of transmission infrastructure. The brief details of planned and under planning transmission system for RE is as under:

Region	RE Phase-I (by Dec'20)		RE Phase-II (by Dec'21)		Total RE (Phase-I & Phase-II)	Transmission System agreed for RE till date (GW)	Transmission System under planning for RE (GW)
	Solar (GW)	Wind (GW)	Solar (GW)	Wind (GW)			
NR	10	-	10	-	20	8.9	11.1
WR	7.5	3	12.5	5	28	10.5	17.5
SR	2.5	6	7.5	2.5	18.5	10	8.5
Total	20	9	30	7.5	66.5	29.4	37.1
	29		37.5				

31.2 A major portion of the above 66.5GW of RE is expected to be consumed by beneficiaries in Eastern Region to meet Renewable Purchase Obligation (RPO), which is about 21% of Energy Demand. Accordingly, it is proposed that all states may provide details regarding their plan to meet their respective RPO (in 2021-22 time-frame), either from RE generations installed within that state or from those connected to ISTS. This shall be utilised for preparation of an All India Load Generation Balance Report (LGBR), based on which the joint system studies with STUs would be carried out to assess transmission system strengthening requirement in ISTS network.

31.3 Representative of CTU stated that about 3190MW LTA has already been granted to RE generators in other regions (SR, WR & NR) with drawl in ER. Out of this, about 2100MW LTA has been granted with ER as target region.

31.4 Representative of GRIDCO, Odisha suggested that a separate workshop would be beneficial to understand the issue.

31.5 Members noted the above.

32. 132kV substations at Bhore, Barahchatti, Daudnagar, Barari and Murliganj in Bihar

- 32.1 Representative of BSPTCL stated that due to load growth, existing source GSS are far from proposed PSS, large length of 33kV feeder, maintenance issues, space constraint in the existing GSS for new PSS and segregation of agriculture feeders, following 132/33kV Grid Sub-Stations are proposed under intra-state scheme of BSPTCL:

Sl. No.	Name of GSS	Load (MW)	Voltage level	Connectivity	Type of conductor
1	Barari (2*50 MVA)	40	132 kV	132 kV Sabour (New) - Barari transmission line DCDS	Panther
2	Daudnagar (2*50 MVA)	40	132 kV	LILO of 132 kV Sonenagar - Chandauti D/C	Panther
3	Barachatti (2*50 MVA)	50	132 kV	132 kV Chandauti (New) - Barachatti transmission line DCDS	Panther
				LILO of 132 kV Barhi - Rajgir S/C (L28)	
4	Murliganj (2*50 MVA)	50	132	132 kV Murliganj - Raghapur transmission line DCDS	Panther
				132 kV Murliganj - Uda Kishanganj transmission line DCDS	
5	Bhore (2*50 MVA)	50	132 kV	132 kV Gaya (BGCL) - Bhore transmission line DCDS	Panther
				LILO of 132 kV Barhi - Nalanda S/C (L29)	
				LILO of 132 kV Gaya (BGCL) - Bodhgaya S/C	

- 32.2 Chief Engineer(PSPA-II), CEA stated that the agenda for the above scheme was submitted at last moment by BSPTCL and needs detailed system studies.

- 32.3 It was agreed that the above proposals would be discussed in joint study meeting. Outcome of the studies would be placed before ERSCT in its next meeting.

33. Reconductoring of Purnea – Malda section of Bongaigaon – Malda 400kV D/c line

- 33.1 Representative of POSOCO stated that Bongaigaon – Malda 400kV line is an old line. It has been LILOed at Siliguri and Purnea. Purnea – Siliguri section has already been reconducted. Due to increased line loadings, it was proposed to reconductor Purnea – Malda section with HTLS conductor.

33.2 After deliberations, it was agreed that the proposal would be discussed in joint study meeting. The outcome of joint study would be placed before ERSCT in its next meeting.

Annexure-I

List of the participants of 2nd Meeting of Eastern Region Standing Committee on Transmission (ERSCT) held on 05.07.2019 at Siliguri, West Bengal

Sl. No.	Name	Designation
Central Electricity Authority (CEA)		
1.	P.S.Mhaske	Chairperson& Member (PS)-In chair
2.	Pardeep Jindal	Chief Engineer (PSPA-II)
3.	B.S. Bairwa	Director(PSPA-II)
4.	U.M.Rao.Bhogi	Deputy Director(PSPA-II)
Eastern Regional Power Commission (ERPC)		
1.	J.Bandopadhyay	Member Secretary
2.	J.G.Rao	Executive Engineer
POWERGRID(CTU)		
1.	Subir Sen	COO(CTU-Plg.)
2.	Ashok Pal	CGM (CTU-Plg.)
3.	S.K. Pramanik	CGM (AM)
4.	A.K. Maiti	CGM(Proj)
5.	S.K. Singh	Sr. G.M.(A.M.)
6.	Laxmi Kant	DGM (CTU-Plg)
7.	Sanjay Kumar Sahu	DGM
8.	Partha Ghosh	Ch. Mgr.
9.	Manish Ranjan Keshari	Dy. Mgr. (CTU-Plg)
10.	Anupam Kumar	Dy. Mgr. (CTU-Plg)
POSOCO		

Sl. No.	Name	Designation
1.	S.R. Narasimhan	Director (System Operation)
2.	Surajit Banerjee	GM
3.	Sudheer Talluri	Manager
BSPTCL		
1.	H.R. Panday	Director(proj)
2.	B. Sharma	Advisor
3.	Ravi S. Parsad	ESE/ P&E
4.	Abhishek Kumar	EEE/P&E
JUSNL		
1.	C M Sharma	GM(SLDC)
2.	Shailesh Prakash	DGM(operation)
3.	Ajit Kr. Bhagat	Sr. Manager
OPTCL		
1.	Anup Kumar Banerjee	AGM
2.	S.K. Harichandan	Sr GM
3.	C.R. Mishra	DGM
Sikkim (E&PD)		
1.	K.B. Kunwar	PCE-cum-Secy.
2.	R. Thapa	PCE(Elec)
3.	D. Kharel	ACE
4.	N. Tashi	EE
WBSETCL		
1.	Sabyasachi Roy	Director
2.	Shri A. Karmakar	CE(CPD)

Sl. No.	Name	Designation
3.	P.K. Kundu	CE,SLDC
	DVC	
1	S.K. Bose	CE-I(SPE)
2	Jayanta Dutta	Deputy Chief Engineer(SPE)
	Railways	
1	S.B. Agarwal	Manager(Elect.), DFCCIL(IR)
	NTPC	
1.	Subhash Thakur	Addl. GM(PE-E)
2	S. Bondyopadhyay	AGM
3	Deepshikha Yowzowe	Manager
	GRIDCO	
1	Manas Kumar Das	Director
	OPGC	
1	R. Mishra	GM
2.	K.C. Samantray	AGM
	PFCCL	
1	Yogesh Juneja	CEO
2	P.C. Hembram	GM
	CESC Ltd.	
1	Indranil Chatterjee	VP(CS)
2.	Sanjoy Mukherjee	VP(Dist Tech)
3.	Sandip Pal	VP(SO)
	Haldia Energy Ltd.(HEL)	
1	Bhaskar Ganguli	GM