Minutes
of
4th Meeting of Standing Committee on Transmission Planning for State sectors (SSCM)

Date: 10.06.2016
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

MINUTES OF 4TH MEETING OF STANDING COMMITTEE ON TRANSMISSION PLANNING FOR STATE SECTORS (SSCM) HELD ON 06.06.2016 (MONDAY) AT 11:00 HOURS AT ERPC, KOLKATA

List of participants is at **Annexure-A.** Member Secretary, ERPC welcomed all the participants to the 4th SSCM meeting. He informed that this meeting was convened on short notice mainly to discuss the agenda items of upcoming 18th SCM meeting for Central Sectors which is scheduled to be held on 13.06.2016. He requested all the members to take active participation in the deliberation for fruitful results so that the necessary inputs may be forwarded to SCM for central sectors. Thereafter he requested Shri Ravindra Gupta, Director, CEA to take up the agenda items in seriatim.

1.0: Confirmation of the minutes of 17th Standing Committee Meeting on Power System planning of Eastern Region

The minutes of the 17th meeting of the Standing Committee on Power System Planning held on 25th May, 2015 at NRPC, New Delhi were circulated vide CEA letter no. 66/5/2013-SP&PA/1367-1379 dated 06th June, 2015. ERPC vide its letter no. ERPC/MS/2015/1693-94 dated 16.06.2015 had submitted its comments and a corrigendum was issued by CEA vide letter no. 66/5/SP&PA- 2013/1413-25 dated 18.06.2015. Also, WBSETCL vide its letter no. CE/CPD/CEA/371 dated 27.07.2015 had submitted its comments and a corrigendum was issued by CEA vide letter no. 66/5/SP&PA-2013/ 227-239 dated 18.09.2015. BSPTCL has also requested some modifications in the minutes vide their letter no. H-IS-Cell-Misc-1151/2015/81 dated 13.10.2015 and a corrigendum was issued by CEA vide letter no. 66/5/PSP&PA-2015/556-568 dated 30.12.2015. Further, revised minutes of the 17th SCM including all corrigenda as mentioned above were uploaded on CEA website on 01-01-2016.

The revised minutes may please be confirmed.

Deliberation in the meeting

Members confirmed the minutes of 17th SCM with above amendment.

2.0: Status of progress of ISTS and TBCB schemes

Status of progress of various ISTS schemes under regulated tariff mechanism and under tariff based competitive bidding (TBCB) is given as under:

i) ISTS under regulated tariff mechanism - Annexure-I
ii) TBCB schemes under construction – Annexure-II
iii) TBCB schemes under bidding process – Annexure-III

Members may please note / may like to comment.

Deliberation in the meeting

Members noted.

3.0: Transmission System Strengthening in Indian System for Transfer of power from Mangdechhu Hydroelectric Project in Bhutan – Multi Circuit at Alipurduar end

The transmission system strengthening in Indian system for transfer of power from Mangdechhu HEP was approved in the 16th SCM of ER held on 02nd May 2014 and in the 27th TCC/ERPC held on 30th-31st May 2014 with following scope of works:

(a) Jigmeling – Alipurduar 400kV D/c (Quad) line (Indian Portion)
(b) Alipurduar – Siliguri 400kV D/c (Quad) line
(c) Kishanganj – Darbhanga 400kV D/c (Quad) line

As decided in the 33rd Empowered Committee Meeting, element (a) is being implemented by POWERGRID, whereas elements (b) and (c) are being implemented through tariff based competitive bidding (TBCB). The TBCB portion has already been awarded to M/s Kalpatru and procurement activities for POWERGRID portion has already commenced.

POWERGRID has informed that severe right of way problems are being faced for line entry at Alipurduar S/s. In view of the same, it is proposed to construct the Jigmeling – Alipurduar and Alipurduar – Siliguri 400 kV lines on Multi- Circuit (M/c) tower for about 5 km at Alipurduar end. The M/c portion would be built (along with conductor stringing in all four circuits), owned, operated and maintained by POWERGRID. The Alipurduar – Siliguri line being built under TBCB would be terminated at start of the M/c portion. Accordingly, the coordinates of starting point of M/c portion has been provided in RfP document for termination of Alipurduar – Siliguri line.

In view of the above, members may approve the construction, operation and maintenance of Jigmeling – Alipurduar 400kV D/c line and Alipurduar – Siliguri 400kV D/c (Quad) line on Multi-Circuit (M/c) tower for about 5km at Alipurduar end by POWERGRID along with stringing of conductors in all four circuits.

Deliberation in the meeting

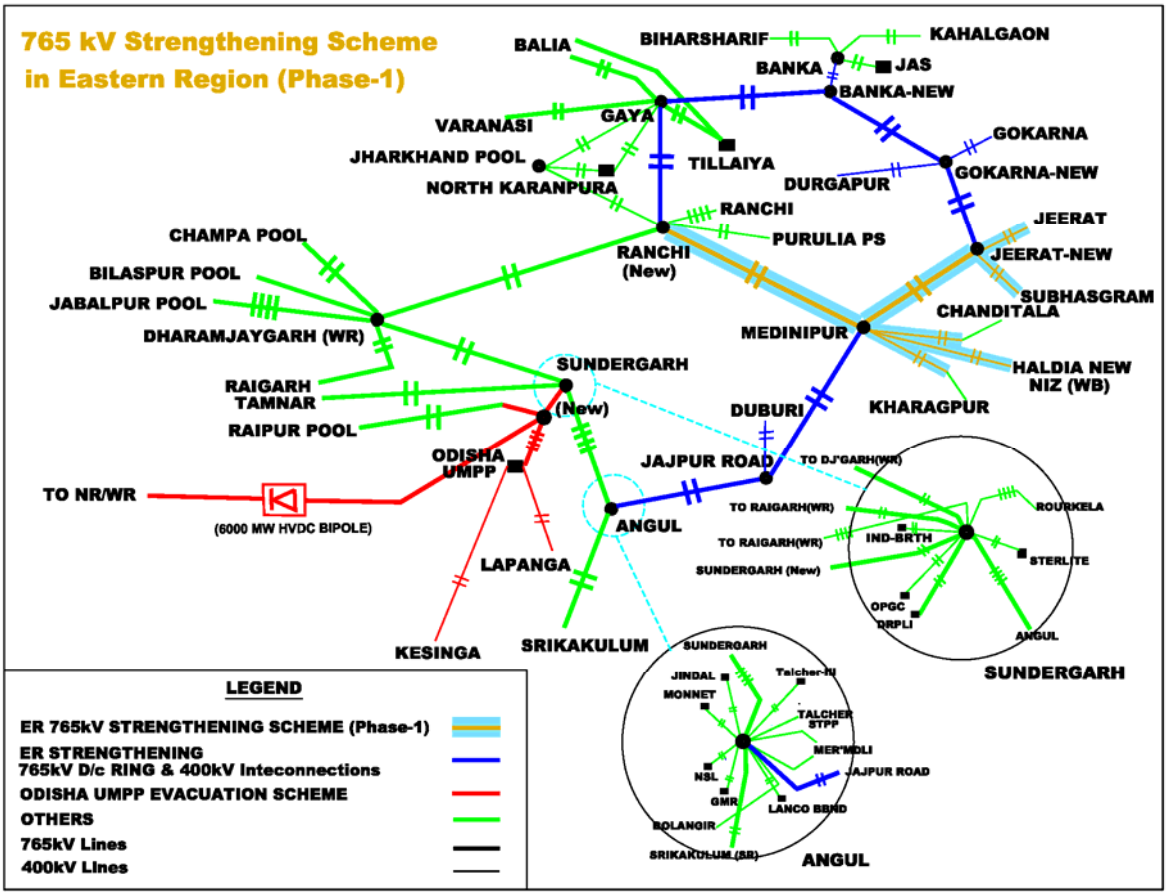
Members agreed the following:

- *The 400 kV D/C Alipurduar – Siliguri line being built under TBCB would be terminated at start of the Multi-Circuit portion.*
- *Construction of Jigmeling – Alipurduar 400kV D/c line and Alipurduar – Siliguri 400kV D/c (Quad) line on Multi-Circuit (M/c) tower for about 5km at Alipurduar end by POWERGRID along with stringing of conductors in all four circuits.*
- *Operation and maintenance of Multi-Circuit (M/c) tower for about 5km at Alipurduar end by POWERGRID.*

4.0: Change of scope of the scheme under Eastern Region Strengthening Scheme-XVIII (ERSS-XVIII):

ERSS-XVIII scheme: 765 kV System Strengthening in ER (Phase-I) was agreed in the 17th meeting of the Standing Committee of Power System Planning in Eastern Region (SCPSPER) held on 25th May, 2015 at New Delhi with the scope of works as given below:

i. Establishment of 765/400kV, 2x1500MVA substations at Medinipur and Jeerat (New)
ii. Ranchi (New) – Medinipur 765kV D/c line
iii. Medinipur – Jeerat (New) 765kV D/c line
iv. Medinipur – Haldia New (NIZ) (WBSETCL) 400kV D/c line (quad/HTLS)
v. LILO of Chandithala – Kharagpur 400kV D/c line at Medinipur
vi. Jeerat (New) – Subhasgram 400 kV D/c line (quad/HTLS)
vii. Jeerat (New) – Jeerat 400 kV D/c line (quad/HTLS)
viii. LILO of Jeerat (WB) – Subhasgram 400 kV S/c section at Rajarhat



Deliberation in the meeting

Members agreed the following:

- *Deletion of Medinipur-Haldia NIZ 400kV D/C line along with associated bays at Medinipur from the scope of ERSS-XVIII,*
- *Construction of GIS line bays at Jeerat (WBSETCL) for termination of Jeerat (New)-Jeerat (WBSETCL) 400 kV D/C line in view of space constraints at Jeerat (WBSETCL).*
- *Provision of one spare unit of 80 MVAr reactor at Medinipur and Jeerat New end of Ranchi- Medinipur 765 kV D/C line and Medinipur - Jeerat (New) 765kV D/c line,*

WBSETCL informed that the data of load growth has been submitted after the finalization of 19th EPS.

BSPTCL informed that the data of future load growth has been submitted to CEA.

5.0: Ranchi (New) – Purulia PSP 400kV D/c line under ERSS-VII

Ranchi (New) – Purulia PSP 400kV D/c line under ERSS-VII is being implemented through TBCB by M/s Purulia Kharagpur Transmission Company Ltd. (PKTCL) (a subsidiary of M/s Sterlite Grid). The line was approved for termination at GIS switchyard of Purulia PSP. However, WBSETCL informed that there are space constraints at Purulia PSP generation switchyard. WBSETCL also informed that they are establishing New Purulia 400 kV GIS near Purulia PSP generation project by LILO of one circuit of Purulia PSP-Arambagh 400 kV D/C line and has proposed to PKTCL to terminate the line at New Purulia GIS substation instead of earlier approved Purulia PSP generation switchyard. 400 kV line bays for termination of the line at both ends are under the scope POWERGRID. The change in location of the termination point at Purulia end has already been agreed in a meeting taken by Member (PS), CEA on 25-6-15.

Here, it is also to mention that line bays at New Purulia and Kharagpur substations are being implemented by WBSETCL as consultancy work of POWERGRID. The awarded cost of 2 nos. AIS line bays at Kharagpur is about Rs. 10 crore, whereas the awarded cost of 2 nos. GIS line bays at New Purulia is about Rs. 35 crore.

Further, in a meeting taken by Member (PS), CEA on 29-3-2016, WBSETCL informed that New Purulia GIS is expected to be commissioned by Nov., 2016. M/s Sterlite informed that the Ranchi-New Purulia 400 kV D/C line will be completed by May, 2016. In view of above, Ranchi-New Purulia 400 kV D/C cannot be charged because of want of 2 no. 400 kV GIS bays at New Purulia GIS. In order that the line does not remain unutilised for about six months or till the New Purulia GIS is commissioned, it was agreed that as an interim arrangement, Ranchi-New Purulia 400 kV D/C line will be connected with one circuit of Purulia PSP-Arambagh 400 kV D/C line at suitable location, so as to form Ranchi- Purulia PSP (about 115 km), Ranchi-Arambagh (about 327 km) and Purulia PSP-Arambagh 400 kV lines. This interim arrangement would be implemented by M/s Sterlite. M/s PKTCL may approach CERC for revision of tariff for the additional cost, if any, incurred.

In the above meeting, it was also informed that another line under ERSS-VII being implemented by M/s PKTCL i.e. Kharagpur (WB)-Chaibasa (PG) 400 kV D/C line is ready and the bays under the scope of POWERGRID at Kharagpur (WB) implemented by WBSETCL as deposit work are not ready. In order to avoid stranding of Kharagpur (WB)-Chaibasa (PG) 400 kV D/C line till the bays at Kharagpur (WB) are commissioned, termination of the line by LILO of one circuit of Kharagpur-Kolaghat 400 kV D/c line at Kharagpur end so as to form Kharagpur (WB)-Chaibasa (PG), Chaibasa (PG)-Kologhat and Kharagpur-Kolaghat 400 kV lines as an interim arrangement was also agreed in the meeting. This interim arrangement would be implemented by M/s PKTCL with no addition cost to be recovered as tariff, was also agreed in the meeting.

The decisions of the meeting are given below:

a) PGCIL shall submit following studies:

   i. Line charging studies indicating that the Ranchi – Arambagh circuit (317 km) can be charged without any constraints. However, if there are any constraints / conditions for charging, the same may be specified upfront in the studies.
   ii. DOV studies indicating that the dynamic over voltage remains within specified limit (i.e. 1.4 pu) during load throw-off. The studies may also indicate the loading assumed on the line prior to load throw-off and the maximum load throw-off admissible for the DOVs. (The lines in these studies is a combination of Ranchi-Purulia and Ranchi-Purulia-Arambag and accordingly all the three nodes i.e Ranchi, Purulia and Arambag would need to be represented while carrying out DOV studies)
   iii. It is understood that the line reactors (i.e. 50MVAr) at Ranchi end of this line do not have NGR. So, POWERGRID may also indicate that there would not be any problem during auto reclosing under single line to ground fault without the NGR.

b) M/s PKTCL would terminate their Ranchi-Purulia PSP 400 kV D/C line at New Purulia GIS of WBSETCL. This change in transmission scope would be finalised in the next meeting of SCPSPER and would got noted in the next Empowered committee meeting on Transmission.

c) In view of anticipated delay in commissioning of New Purulia 400 kV GIS by WBSETCL, M/s Sterlite Grid (PKTCL) may connect Ranchi-New Purulia 400 kV D/C line at a suitable location by LILO of one circuit of Purulia-Arambagh D/C line of WBSETCL as an interim arrangement till the commissioning of 2 no. 400 kV GIS bays at New Purulia. Based on the studies furnished by PGCIL (as mentioned above), the interim arrangement would also be formalized in the next meeting of SCPSPER and would got noted in the next meeting of the Empowered Committee on Transmission.

Regarding recovery of additional cost, if any, due to these changes, PKTCL may take up with CERC.

d) WBSEDCL and WBSETCL would submit SLD and general arrangement (GA) layout of the Purulia PSP and Arambag S/S respectively to CEA through E-mail.

e) PKTCL would interconnect their Kharagpur (WB)-Chiabasa (PG) 400 kV D/C line by LILO one circuit of Kharagpur (WB)-Kolaghat 400 kV D/C line near Kharagpur end as an interim arrangement till the 400 kV bays at Kharagpur (WB) are commissioned with no additional cost to be recovered as tariff. The interim arrangement would be formalized in next meeting of SCPSPER.

f) WBSETCL would furnish the load flow/system studies results in respect of New Purulia 400 kV s/s and associated transmission line to CEA, urgently, so that same could be taken in the forthcoming meeting of the SCPSP ER.

g) PKTCL will provide tower location and route alignments near the Purulia PSP and New Purulia for the (i) original Ranchi-Purulia PSP line (ii) re-alignment to New Purulia and (iii) alignment for terminating LILO in the Purulia PSP-Arambag line.

Deliberation in the meeting

After detailed deliberation, members agreed the following:

- *Termination of Ranchi (New) – Purulia PSP 400kV D/c line to New Purulia instead of Purulia PSP by M/s PKTCL,*
- *2 no. 400 kV GIS line bays at New Purulia in place of Purulia PSP for termination of Ranchi (New) – New Purulia 400kV D/c line by POWERGRID.*
- *WBSETCL will establish 400KV GIS at New Purulia by LILO of 400KV Purulia-Arambag 400 KV D/C line at New Purulia.*

WBSETCL informed that New Purulia GIS is expected to be commissioned by Nov, 2016.

It was informed that the Ranchi-New Purulia 400 kV D/C line will be completed by May, 2016. In view of above till the commissioning of 400 kV bays at New Purulia GIS, Ranchi-New Purulia 400 kV D/C line will be terminated at a suitable location by LILO of one circuit of Purulia-Arambagh D/C line of WBSETCL as an interim arrangement.

Further it was informed that Kharagpur (WB)-Chaibasa (PG) 400 kV D/C line is ready and the bays at Kharagpur (WB), under the scope of POWERGRID implemented by WBSETCL as deposit work are not ready. Therefore as an interim arrangement, Kharagpur (WB)-Chaibasa (PG) 400 kV D/C will be terminated by LILO of one circuit of Kharagpur-Kolaghat 400 kV D/c line at Kharagpur end so as to form Kharagpur (WB)-Chaibasa (PG), Chaibasa (PG)-Kolaghat and Kharagpur-Kolaghat 400 kV lines.

Both the above mentioned interim arrangements will be executed subject to clarification from CERC in the context of 4th Amendment of IEGC Grid Code which states under clause 6.3A as given below:

Quote

" 4. Date of commercial operation in relation to an inter-State Transmission System or an element thereof shall mean the date declared by the transmission licensee from 0000 hour of which an element of the transmission system is in regular service after successful trial operation for transmitting electricity and communication signal from the sending end to the receiving end:

Provided that:

…….

(i) In case of inter-State Transmission System executed through Tariff Based Competitive Bidding, the transmission licensee shall declare COD of the ISTS in accordance with the provisions of the Transmission Service Agreement.

(ii)……

(iii)……

(iv) In case a transmission system or an element thereof is prevented from regular service on or before the Scheduled COD for reasons not attributable to the transmission licensee or its supplier or its contractors but is on account of the delay in commissioning of the concerned generating station or in commissioning of the upstream or downstream transmission system of other transmission licensee, the transmission licensee shall approach the Commission through an appropriate application for approval of the date of commercial operation of such transmission system or an element thereof."

…….

Unquote

Concerned executors were requested to file petition before CERC for the purpose.

6.0: Termination of Banka(PG) – Deoghar 132 kV D/c line at Jasidih GSS – Proposal of JUSNL

Proposal of ERPC to establish Banka (PG) - Deoghar 132kV D/C line (about 40 kms) to feed Deoghar S/S(JSEB) for reliable and uninterrupted power supply to Railways load was approved in 1st-2014 (renamed as 16th) Standing Committees Meeting on Power System planning in Eastern Region held at NRPC, New Delhi on 02-05-2014. The above line has been entrusted to POWERGRID by MoP for implementation under compressed time-frame.

JUSNL vide letter no. 390/GM (T) dated 31-07-2015 has requested that the line may be terminated at Jasidih instead of Deoghar, because of space constraint at Deoghar. JUSNL has also informed that 220/132/33 kV Dumka GSS has been commissioned. Also proposal for construction of 220/132/33 kV Jasidih GSS, which is about 5 km from Deoghar GSS and Jasidih GSS – Deoghar GSS 132 kV D/C line is under tendering stage. Also the Jasidih GSS, has sufficient space for termination of line from Banka(PG) to Deoghar 132 kV D/c line

Deliberation in the meeting

BSPTCL informed that from 400/132 kV Banka (PG) S/s Bihar is already drawing power through six 132 kV feeders and if Deoghar is also connected then for fulfilling the (n-1) criterion there would be requirement of ICT augmentation. Now, 220 kV Dumka S/s has also been commissioned in Jharkhand so the possibility of 132 kV feeder from Dumka may be envisaged for reliable power to Railways.

Members also raised their concern about how the reliable power can be assured by terminating the line at Jasidih GSS which is still under proposal/construction stage. Also, whether JUSNL will be able to operate the Deoghar S/s with their bus-coupler in on condition.

JUSNL however assured that on commissioning of 220/132/33 kV Jasidih and 132 kV D/C Jasidih-Deoghar the Railways will get the reliable power. But no immediate solution to Railway supply from Deoghar was envisaged as both the S/S at Joshidih and D/C line from Joshidih are getting delayed.

After detailed deliberation, it was decided that the above proposal will be reviewed and alternative proposals could be placed in the SCM.

7.0: Common Transmission System for Phase-II generation project in Odisha

POWERGRID has informed that following transmission system to be implemented by POWERGRID was agreed in earlier SCMs, as a part of common transmission system for phase-II generation projects in Odisha:

(a) Addition of 2x1500MVA, 765/400kV ICTs with associated bays at Jharsuguda (Sundargarh)
(b) Addition of 2x1500MVA, 765/400kV ICTs with associated bays at Angul
(c) Split bus arrangement at 400 kV and 765 kV bus at both Angul and Jharsuguda (Sundargarh) substations [in GIS at Jharsuguda (Sundargarh)]
(d) LILO of both circuits of Rourkela - Raigarh 400kV D/c (2nd line) at Jharsuguda (Sundargarh) substation with associated line bays in GIS at Jharsuguda (Sundargarh) substation

During walk over survey for LILO of both circuits of Rourkela - Raigarh 400kV D/c (2nd line) at Jharsuguda (Sundargarh) S/s, severe RoW constraints have been observed due to large number of 400kV and 765kV lines being terminated at Jharsuguda. Additionally, forest involvement has also been envisaged. Accordingly, for the said LILO, about 17km of Multi-Circuit portion has been envisaged in the corridor.

Deliberation in the meeting

Members agreed the following:

- *LILO of both circuits of Rourkela – Raigarh 400kV D/c (2nd line) at Jharsuguda (Sundargarh) on multi-circuit tower for about 17km along with associated line bays in GIS at Jharsuguda.*
- *Implementation of associated bays at 400 kV and 765 kV levels in GIS for 2x1500MVA, 765/400kV ICTs at Jharsuguda S/s*
- *Members did not agree for keeping additional Spare single phase transformer unit (765/400kV, 500MVA) at Angul and Jharsuguda substations for 2x1500MVA ICTs.*

8.0: Eastern Region System strengthening Scheme – XVII (ERSS-XVII)

ERSS-XVII scheme was approved in the 17th standing committee meeting of ER held on 25th May 2015 with following scope of works:

(i) Augmentation of transformation capacity at POWERGRID substations:

(a) Installation of 3rd 400/220 kV, 1x315 MVA ICT at Durgapur Substation
(b) Replacement of 400/220 kV, 2x315MVA ICTs at Malda Substation with 400/220kV, 2x500 MVA ICTs
(c) Installation of 3rd 400/220 kV, 1x315MVA ICT at New Siliguri Substation
(d) Replacement of 400/220 kV, 2x315MVA ICTs at Jeypore
(e) Substation with 400/220 kV, 2x500MVA ICTs
(f) Replacement of 400/220 kV, 2x315MVA ICTs at Rourkela Substation with 400/220 kV, 2x500MVA ICTs
(g) Installation of 400/220 kV, 1x500 MVA ICT at Gaya Substation

Note: Out of 6 ICTs of 315MVA released after replacement at Malda, Jeypore and Rourkela substations, one each to be used for installation at Durgapur and New Siliguri substations. The other 4 would be utilized as regional spare. In case of space constraint GIS bays may be used wherever required.

(ii) Conversion of fixed line reactors to switchable Line reactor

(a) Lakhisarai – Biharsharif 400kV D/c: 50MVAr fixed line reactor at Biharsharif end to be converted to switchable line reactor
(b) Keonjhar – Rengali 400kV S/c: 63MVAr fixed line reactor at Rengali end to be converted to switchable line reactor

(iii) Additional scope of work at under construction 400/220kV Daltonganj (POWERGRID) substation (being implemented under ERSS-III)

(a) Creation of 132kV level at Daltonganj (POWERGRID) substation along with 2x160MVA, 220/132kV ICT and associated ICT bays
(b) 4 nos. of 132 kV line bays

(iv) Reconductoring of Maithon RB - Maithon 400kV D/c line

The existing Twin ACSR Moose line needs to be reconductored with Twin HTLS conductor of ampacity equivalent to that of Quad ACSR Moose: 4 x 798A (for 45°C ambient temperature and 85°C maximum conductor temperature)

(v) Bypassing arrangement of LILO of 400kV lines at Angul

LILO of Meramundali – Bolangir/Jeypore 400kV S/c line and LILO of one circuit of Talcher – Meramundali 400 kV D/c line has been done at Angul 765/400kV substation. It was proposed to establish a switching arrangement at Angul substation such that, the above 400kV LILOs may be operated either by-passing Angul substation or terminating at Angul sub-station as and when required depending upon the power flow condition.

The final scope of works for two parts of ERSS-XVII scheme shall be as follows:

- ERSS-XVII (Part-A)

  (i) 2x160MVA, 220/132kV ICT along with associated bays at Daltonganj sub-station
  (ii) 4 nos. of 132 kV line bays

- ERSS-XVII (Part-B)

  (i) Augmentation of transformation capacity atPOWERGRID substations:

  (a) Installation of 400/220 kV, 1x500 MVA ICT at Gaya S/s (400kV bay in AIS and 220kV bay in GIS)
  (b) Replacement of 400/220kV, 2x315MVA ICTs at Malda S/s with 400/220kV, 2x500 MVA ICTs
  (c) Installation of 3rd 400/220kV, 1x315MVA ICT at New Siliguri S/s: to be sourced from pool of spare ICTs (400kV bay in GIS and 220kV bay in AIS)
  (d) Installation of 3rd 400/220kV, 1x315 MVA ICT at Durgapur S/s: to be sourced from pool of spare ICTs
  (e) Installation of 400/220kV, 2x315MVA ICTs at Jeypore S/s (one each in parallel to the existing ICTs): to be sourced from pool of spare ICTs
  (f) Installation of 400/220kV, 2x315MVA ICTs at Rourkela S/s (one each in parallel to the existing ICTs): to be sourced from pool of spare ICTs

Note: For elements from (c) to (f) above, sourcing of old ICTs from pool of spare ICTs shall be as given below.

New location for installation of old ICTs	Source Location of Old ICT
New Siliguri (ICT-3)	Malda (ICT-3)
Durgapur (ICT-3)	Purnea (ICT-2)
Jeypore (ICT-3)	Patna (ICT-2)
Jeypore (ICT-4)	Sasaram (ICT-2)
Rourkela (ICT-3)	Ballabhgarh (ICT-1)
Rourkela (ICT-4)	Mandola (ICT-4)

(ii) Conversion of 63MVAr fixed line reactor at Rengali end of Keonjhar – Rengali 400kV S/c line to bus reactor

(iii) Reconductoring of Maithon RB - Maithon 400kV D/c line

The existing Twin ACSR Moose line needs to be reconductored with Twin HTLS conductor of ampacity equivalent to that of Quad ACSR Moose: 4 x 798A (for 45°C ambient temperature and 85°C maximum conductor temperature)

(iv) Bypassing arrangement of LILO of 400kV lines at Angul

LILO of Meramundali – Bolangir/Jeypore 400kV S/c line and LILO of one circuit of Talcher – Meramundali 400 kV D/c line has been done at Angul 765/400kV substation. It was proposed to establish a switching arrangement at Angul substation such that, the above 400kV LILOs may be operated either by-passing Angul substation or terminating at Angul sub-station as and when required depending upon the power flow condition.

Deliberation in the meeting

The followings were deliberated:

(i) Members agreed to the above proposal of ICT augmentation. However, Powergrid/CTU was advised to explore for space availability for two additional bays at 400 kV Jeypore and Rourkela S/s for augmentation of ICTs.
(ii) ERLDC expressed that the 63 MVAr line reactor of Keonjhar – Rengali 400kV S/c may be kept as fixed reactor at Rengali end.
(iii) Reconductoring of Maithon RB - Maithon 400kV D/c line was agreed.
(iv) CEA/CTU was advised to explain the by-passing arrangement of LILO of 400kV lines at Angul with SLD/ schematic diagram during SCM meeting and was further requested to implement the scheme at the earliest.

9.0: Installation of 400/220kV, 500MVA (4th) ICT at Biharsharif

POWERGRID has informed that the peak loading on 400/220kV, 3x315MVA ICTs at Biharsharif S/s has been constantly observed in the range of about 700-750MW in recent times. Further, bus split at Biharsharif is also under advance stage of implementation. Subsequent to bus splitting, one section would have only one ICT. Thus, keeping in view the loading of ICTs and the requirement of meeting the N-1 security criteria, it is proposed to install 400/220kV, 500MVA ICT at Biharsharif S/s in the bus section having one 315MVA ICT

Deliberation in the meeting

Members agreed to the proposal.

Members requested CEA/CTU to share the study results of the bus splitting arrangement at Maithon, Durgapur, Kahalgaon and Biharsharif with fault calculations.

BSPTCL expressed that in view of up-gradatiiion of 220 kV Biharshariff-Tenughat S/C line into 400 kV line and load growth of Bihar, there may be requirement of additional augmentation of 400/220 kV ICTs at Biharshariff S/s to fulfill the (n-1) criterion and requested CEA/CTU to look into the matter.

On query, JUSNL informed that the upgradation of 220 kV Biharshariff-Tenughat S/C into 400 kV line in under execution by Powergrid and will be completed after the clearance of payment which is expected to be cleared within a week.

10.0: Construction of Gaya (PG) – Sonenagar (new) 220 kV D/C line in Phase- 3 scheme of BRGF under 12th Plan by BSPTCL

BSPTCL has submitted that 220 kV GSS at Sonenagar and 220 kV D/C line between Gaya (PG) – Sonenagar GSS is being constructed under Backward Region Grant Fund (BRGF) Phase-III. This is a part of scheme covered in 12th Plan, duly concurred by CEA and sanctioned by Planning Commission. The funding is done through grant.

Construction of 02 nos. 220 kV line bays at Gaya (PG) is proposed to be implemented by POWERGRID as ISTS work. The line and GSS work at Sonenagar are being done by BSPTCL. BSPTCL may indicate the commissioning schedule of the line, so as to implement the line bays in matching time-frame of the line

Deliberation in the meeting

BSPTCL informed that the two nos of 220 kV bays for Gaya (PG) – Sonenagar (new) 220 kV D/C line at Gaya (PG) were already awarded under deposit work and are in advanced stage of construction. Therefore it was informed that the proposal for construction of 02 nos. 220 kV line bays at Gaya (PG) by POWERGRID under ISTS work would have been for other projects under BRGF scheme.

BSPTCL was advised to check and confirm the same in the SCM meeting.

Director (Projects), BSPTCL expressed that for all the 400/220/132 kV ISTS Sub-stations there should be provision for additional four 400 kV bays (For future ICTs and lines) and eight 220 kV bays (for ICT bays and future lines) as they were facing problem in getting drawl point at Patna and Gaya (PG) S/s.

Further, it was also mentioned that the construction, operation and maintenance of future bays at ISTS sub-stations may be carried out by the owner of the Sub-station as the owner of the line faces much difficulty in maintaining those bays.

Director, CEA informed that the precedence is coming since long for maintenance of bays at the premises of other utilities. Different utilities have their different philosophy for maintenance of their bay equipments; however a uniform practice may be adopted by the utilities by arriving a consensus decision in the forum of ERPC or SCM.

11.0: Establishment of 400/220/132kV Grid Sub-stations at potential load centres in Bihar – Agenda from BSPTCL

Chief Engineer (Transmission) BSPTCL vide letter dated 19-4-2016 has informed that CEA vide letter no. 69/1/2012-SP&PA-1203-05 dated 15-11- 2012 has agreed Transmission System requirement of Bihar for the 12th plan in three parts. Due to better convenience, the entire works covered under Part- 2 (Phase-2) i.e. Annexure-II (b) has been divided into two groups by Bihar Grid Company Ltd. (BGCL - a joint venture of BSP(H)CL and POWERGRID) under new head Phase-IV Part-I and Phase-IV Part-II. It is mentioned in the letter that the works covered under Phase-IV Part-I are under execution by BGCL. BSPTCL has forwarded the list of works covered under Phase-IV Part-I to CEA through E-mail, which is given below:

A: **Substation**

Sl. No.	Details of S/S work
01	Construction of 2x160 MVA + 2x50 MVA 220/132/33 kV new GIS S/S at Chapra
02	Construction of 2x160 MVA + 3x50 MVA, 220/132/33 kV new GIS S/S at Gaya (Manpur)
03	Construction of 2x160 MVA + 2x50 MVA, 220/132/33 kV new GIS S/S at Nawada
04	Construction of 2x160 MVA + 2x50 MVA, 220/132/33 kV new GIS S/S at Sheikhpura
05	Construction of 2x160 MVA + 2x50 MVA, 220/132/33 kV new GIS S/S at Hathidah
06	Construction of 2x160 MVA + 2x50 MVA, 220/132/33 kV new GIS S/S at Jamalpur
07	Construction of 2x160 MVA + 2x50 MVA, 220/132/33 kV new GIS S/S at Sabour

B: **LINES**

Sl. No.	Details of transmission work	Line Length (Km)
01	Chapra 220/132 kV new S/S – Chapra 132/33 kV S/S, 132 kV D/C line (Zebra conductor)	24
02	Hazipur 220/132 kV new S/S – Chapra 220/132 kV S/S, 220 kV D/C line	47
03	Chapra 220/132 kV S/S – Siwan, 132 kV D/C line	66
04	LILO of one circuit of 132 kV D/C Khagual-Digha line at Bihta	27
05	Patna (POWERGRID)-Khagaul, 220 kV D/C line	26
06	LILO of 220 kV D/C Biharsharif – Bodhgaya line at Gaya (new) (Manpur) S/S	14
07	LILO of 132 kV D/C Bodhgaya-Chandauti (ckt 3 & 4) at Gaya new (Manpur) S/S	Deleted
07.a	132KV D/C Gaya(new) – Jehanabad line	35
08	LILO of 132 kV S/C Bodhgaya-Wazirganj line at Gaya new (Manpur) S/ S	29
09	132 kV S/C (on D/C Tower) Gaya new (Manpur)-Hulasganj line	10
10	220 kV D/C (High Capacity) Gaya (POWERGRID)-Gaya new (Manpur) line	56
11	220 kV D/C (High Capacity) Nawada new-Gaya new (Manpur) line	55
12	132 kV D/C Sheikhpura(New) – Sheikhpura (Old) transmission line (High Capacity)	24
13	220 kV D/C Sheikhpura (New) – Nawada (New) transmission line (High Capacity)	51

14	220 kV D/C (High Capacity) Jamalpur new-Sheikhpura (New) transmission line	125
15	132 kV S/C (on D/C tower) Sheikhpura new – Biharsharif transmission line	40
16	132 kV D/C Nawada (New) – Nawada 132/33 kV (High Capacity) S/S	17
17	LILO of 220 kV Begusarai-Biharsharif line at 220 kV Hathidah	30
18	132 KV D/C Hathidah (New) –Hathidah (Old) transmission line (Zebra Conductor)	8
19	LILO of 132 kV D/C (High Capacity) Sultanganj-Lakhisarai transmission line at Jamalpur	44
20	132 kV D/C Jamalpur (New) – Jamalpur (Old) transmission line (Zebra Conductor)	34
21	132 kV D/C Sabour (New) – Sabour (Old) transmission line (Zebra Conductor)	13
22	LILO of 132 kV D/C Kahalgaon-Sultanganj line at Sabour	18
23	220 kV D/C (High Capacity) Sabour (New) – Jamalpur (New) transmission line	60
	Total	852

The works covered under Phase-IV Part-II which, interalia, includes transmission system associated with establishment of 3 no. 2x500 MVA 400/220 kV sub-stations around Patna under state sector at Bihta, Fatuha and Gaighat along with downlinking 220 kV & 132 kV system has been revised due to non-availability of land at these locations. In this context, the joint studies carried out by BSPTCL and POWERGRID for the 12th plan has been revised considering new substations at Naubatpur, Bakhtiyarpur and Jakkanpur in place of Bihta, Gaighat and Fatuha respectively. The revised system proposed by BSPTCL associated with above sub-stations along with power flows and other transmission works under Phase-IV part-II are given below:

a) Naubatpur 400/220/132/33 kV GIS S/s

i) Establishment of 2x500MVA+2x160 MVA+2x80 MVA 400/220/132 kV S/S at Naubatpur
ii) LILO of circuits 3 & 4 of Patna (PG)-Balia 400 kV D/c (Quad) line at Naubatpur 400 kV 2x D/C line
iii) LILO of both circuits of Ara (PG) – Khagaul (BSPTCL) line at Naubatpur (New) 220 kV 2xD/C
iv) Naubatpur (New)-Bihta (BSPTCL) 220 kV D/C line
v) Naubatpur (New)-Bhusaula (New) 220 KV D/C Transmission line

b) Bakhtiyarpur 400/220/132 kV GIS S/s

i) Establishment of 2x500 MVA +2x160 MVA 400/220/132 kV GIS S/S at Bakhtiyarpur
ii) LILO of both circuits of Barh – Patna (PG) 400kV D/c (Quad) line-1 at Bakhtiyarpur 400 kV 2xD/C
iii) Bakhtiyarpur (New) - Sheikhpura (New) 220 kV D/C line.
iv) Bakhtiyarpur (New) - Hathidah (New) 220 kV D/C line.
v) Bakhtiyarpur (New) - Fatuha (BSPTCL) 220 kV D/C line.
vi) Bakhtiyarpur (New) - Harnaut (BSPTCL) 132 kV D/C line
vii) Bakhtiyarpur (New) - Baripahari (BSPTCL) 132 kV D/C line. viii)132 kV D/C Bakhtiyarpur (New) - Baripahari (BSPTCL) line.

c) Jakkanpur 400/220/132/33 kV GIS S/s

i) Establishment of 2x500 MVA +3x160 MVA+3x80 MVA 400/220/132/33 kV GIS S/S at Jakkanpur
ii) LILO of both circuits of Nabinagar-II – Patna (PG) 400kV D/c at Jakkanpur 400 kV 2xD/C
iii) LILO of both circuits of Sipara (BSPTCL)-Bihta (BSPTCL) line at Jakkanpur (new) 2x220 kV D/C
iv) LILO of Khagaul (BSPTCL) - Sipara (BSPTCL) 220 kV S/C line at Jakkanpur (New) 220 kV D/C
v) LILO of both circuits of Jakkanpur-Sipara line at Jakkanpur New (being re-conductored with HTLS by BSPTCL) 2x132 kV D/C
vi) LILO of 132 KV S/C Jakkanpur/Mithapur-Fatuha line at Jakkanpur New (being re-conductored with HTLS by BSPTCL) 132 kV D/C

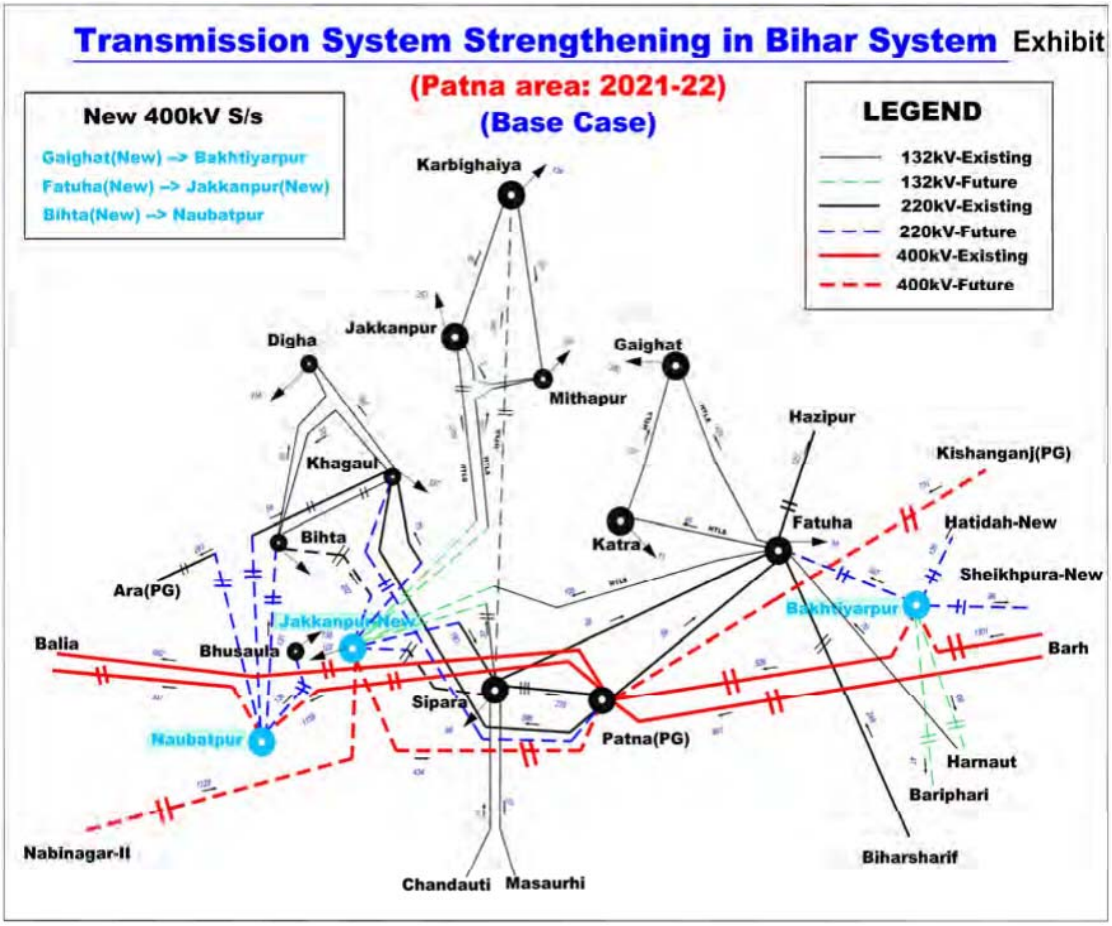
d) Bhusaula 220/33 kV GIS sub-station

i) Establishment of 2x100 MVA 220/33 kV GIS S/S at Bhusaula

e) Dumraon 220/132/33 kV GIS sub-station

i) Establishment of 2x160 MVA+2x80 MVA 220/33 kV GIS S/S at Dumraon
ii) LILO of both circuits of 220 kV Ara (PG)-Pusauli (PG) D/c line at Dumraon (New) 2x220 kV D/C
iii) Dumraon (New)- Dumraon (BSPTCL) 132 kV D/C
iv) Dumraon (New)- Buxarn (BSPTCL) 132 kV D/C
v) Dumraon (New)- Jagdishpur (BSPTCL) 132 kV D/C

f) LILO of one circuit of Purnea-Naugachia / Khagaria 132 kV D/C line at Katihar (BSPTCL) 132 kV D/C



Following are the observations of Base Case system studies of Bihar grid for 2021-22 time frame:
Observations:

Study results shows that a numbers of transmission lines and ICTs are overloaded in the following areas:

(i) West Champaran, East Champaran & Sitamarhi districts – Motihari & Sitamarhi areas
(ii) Gaya, Aurangabad, Rohtas & Bhabua districts – Gaya & Sasaram areas
(iii) Saharsa, Khagaria and Begusarai districts

Remedial measures:

(a) Establishment of three new 400kV substations have been proposed at Sitamarhi, Chandauti and Saharsa and three new 220kV substations have been proposed at Karmnasa, Motihari and Korha (near Katihar).
(b) The new three 400kV substations at Sitamarhi, Chandauti and Saharsa are proposed to be implemented as an ISTS scheme, whereas the three 220kV substations shall be implemented by BSPTCL.
(c) Snapshot of load flow study results (Base Case) of the Sitamarhi, Chandauti and Saharsa areas are shown.

The scope of works is proposed with three new ISTS substations in Bihar to meet 13th Plan end demand of the state along with down linking system is given below:

A. To be implemented through TBCB:

(1) Sitamarhi (New) S/s

i) 400/220/132kV, 2x500MVA + 2x200MVA new S/s at Sitamarhi
ii) Darbhanga – Sitamarhi (New) 400kV D/c (Triple Snowbird) line
iii) Sitamarhi (New) – Motihari 400kV D/c (Triple Snowbird) line
iv) 2x125MVAr, 420kV bus reactors along with bays
v) 400kV Line bays: 4 nos. for above lines
vi) 220kV Line bays: 4 nos. for Sitamarhi (New) – Motipur 220kV D/c and Sitamarhi (New) – Motihari (New) 220kV D/c lines (lines to be constructed by BSPTCL)
vii) 132kV Line bays: 4 nos. for Sitamarhi (New) – Sitamarhi 132kV D/c (Single Moose) and Sitamarhi (New) – Pupri 132kV D/c lines (lines to be constructed by BSPTCL)
viii) Space for
- 400/220kV, 2x500MVA ICT along with associated bays
- 220/132kV, 2x200MVA ICTs along with associated bays
- 400kV line bays (including space for line reactor): 6 nos.
- 220kV line bays: 4 nos.
- 132kV line bays: 4 nos.

(2) Chandauti (New) S/s

i) 400/220/132kV, 3x500MVA + 3x200MVA new S/s at Chandauti
ii) LILO of both circuits of Nabinagar-II – Gaya 400kV D/c (Quad) line of POWERGRID at Chandauti (New)
iii) 2x125MVAr, 420kV bus reactors along with bays
iv) 400kV Line bays: 4 nos. for above LILO lines
v) 220kV Line bays: 4 nos. for LILO of Gaya (POWERGRID) – Sonenagar 220kV D/c at both Bodhgaya (BSPTCL) and Chandauti (New) substations, so as to form Gaya (POWERGRID) – Bodhgaya (BSPTCL) – Chandauti (New) – Sonenagar 220kV D/c line (LILO to be done by BSPTCL)

vi) 132kV Line Bays: 4 nos. for LILO of Chandauti – Rafiganj and Chandauti – Sonenagar 132kV S/c lines (LILO to be done by BSPTCL)
vii) Space for
- 400/220kV, 2x500MVA ICT along with associated bays
- 220/132kV, 2x200MVA ICTs along with associated bays
- 400kV line bays (including space for line reactor): 6 nos.
- 220kV line bays: 4 nos.
- 132kV line bays: 4 nos.

Note: Under the scope of BSPTCL
(i) Reconductoring of Chandauti – Rafiganj – Sonenagar 132kV S/c line with HTLS conductor of 240MVA (ampacity - 1050A)
(ii) LILO of Chandauti – Rafiganj 132kV S/c line at Chandauti (New)
(iii) Reconductoring of Chandauti – Sonenagar 132kV S/c line with HTLS conductor of 240MVA (ampacity - 1050A)
(iv) LILO of Chandauti – Sonenagar 132kV S/c line at Chandauti (New)

(3) Saharsa (New) S/s

i) 400/220/132kV, 2x500MVA + 2x200MVA new S/s at Saharsa
ii) LILO of Kishanganj – Patna 400kV D/c (Quad) line of POWERGRID at Saharsa (New)
iii) 2x125MVAr, 420kV bus reactors along with bays
iv) 400kV Line bays: 4 nos. for above LILO lines
v) 220kV line bays: 4 nos. for Saharsa (New) – Begusarai 220kV D/c and Saharsa (New) – Khagaria (New) 220kV D/c lines (lines to be constructed by BSPTCL)
vi) 132kV line bays: 2 nos. for Saharsa (New) – Saharsa 132kV D/c (Single Moose) line (lines to be constructed by BSPTCL)
vii) Space for
- 400/220kV, 2x500MVA ICT along with associated bays
- 220/132kV, 2x200MVA ICTs along with associated bays
- 400kV line bays (including space for line reactor): 6 nos.
- 220kV line bays: 4 nos.
- 132kV line bays: 6 nos.

(4) Installation of 400/132kV, 315MVA (3rd) ICT at Motihari substations of Essel Infra

B. To be implemented by POWERGRID:

(1) Installation of 400/132kV, 315MVA (3rd) ICT at Banka and Lakhisarai substations of POWERGRID

Bihar shall ensure completion of downstream network from the above proposed three ISTS substations in matching time-frame of the substations for better utilisation.

Deliberation in the meeting

Members agreed to the above proposal.

12.0: Standardisation of OPGW in lieu of One Earth wire in all Transmission lines

The Power System requirement for Communication is increasing multi fold due to:

(a) Special Protection Scheme
(b) Ever increasing data reporting to Load Dispatch Centre
(c) Phasor measurements based data collection and reporting

(d) Remote monitoring/operation of sub-station/elements
(e) Differential protection on Lines

The practice of putting fibre in select lines leads to situation where station connectivity is held up due to identified line delay, LILO of under construction line etc.

OPGW installation on existing lines is taking long time/delayed due to shut down, ROW issues as well as capacity constraints of executing agencies.

It is proposed to include one 24 Fibre (OPGW) in all transmission lines which will ensure availability of wideband Communication from all substations to cater bandwidth for various power system application for which communication equipment (SDH– STM-16) shall be provided at all upcoming substations.

Members may discuss and approve.

Deliberation in the meeting

Members accepted the importance of the scheme but it was emerged that there will be fund constraints for implementation of the above.

CEA advised all the constituents to prepare the list of such lines and approach for PSDF funding as communication system is of utmost importance.

13.0: Downstream 220kV or 132kV system development by STUs from the various commissioned and on-going ISTS substations

Under the ERSS-III scheme, following new 400kV substations have been / are being implemented by POWERGRID:

- 2x200 MVA, 400/132kV S/s at Lakhisarai and Banka in Bihar
- 2x315 MVA, 400/220kV S/s at Chaibasa in Jharkhand
- 2x315MVA+2x160MVA, 400/220/132kV S/s at Daltonganj in Jharkhand
- 2x315 MVA, 400/220kV S/s at Bolangir & Keonjhar and 2x500 MVA, 400/220kV S/s at Pandiabil in Odisha

The substations at Lakhisarai, Banka, Chaibasa, Bolangir and Keonjhar have been commissioned and that at Pandiabil is expected to be commissioned shortly. Daltonganj S/s is expected by Mar'17. Following downlinking network along with expected commissioning schedule was informed by STUs in the previous meeting(s):

Additionally, Bihar and West Bengal may indicate status of downlinking network from following under construction ISTS substations:

(a) Kishanganj: 2x500MVA, 400/220kV – Bihar
  (i) Kishanganj (POWERGRID) – Kishanganj (BSPTCL) 220kV 2xD/c

(b) Darbhanga: 2x500MVA, 400/220kV – Bihar
  (i) Darbhanga (ISTS) – Darbhanga (BSPTCL) 220kV D/c
  (ii) Darbhanga (ISTS) – Motipur 220kV D/c
  (iii) Darbhanga (ISTS) – Samastipur New 220kV D/c (S/c strung)
  (iv) Darbhanga (ISTS) – Laukhi (earlier Supaul New) 220kV D/c

(c) Motihari: 2x200MVA, 400/132kV – Bihar

(i) Motihari (ISTS) – Motihari (BSPTCL) 132kV D/c
(ii) Motihari (ISTS) – Betiah 132kV D/c
(iii) Motihari (ISTS) – Raxaul 132kV D/c

(d) Alipurduar: 2x315MVA, 400/220kV – West Bengal

(i) Alipurduar (POWERGRID) – Alipurduar (State) 220kV D/c

States may also indicate the planned downlinking network from following under construction substations:

(a) Rajarhat 400/220kV S/s – West Bengal

(b) Dhanbad 400/220kV S/s – Jharkhand

Deliberation in the meeting

BSPTCL updated the list as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x200 MVA, 400/132 kV Banka sub-station**	
a.	LILO of 1st circuit of Banka (BSPTCL)-Sabour (BSPTCL) 132 kV D/C line at Banka (PG)	Charged.
b.	LILO of 2nd circuit of Banka (BSPTCL)-Sabour (BSPTCL) 132 kV D/C line at Banka (PG)	***Line & bays completed. Powergrid to terminate the line.***
c.	132 kV Banka (PG)-Sultanganj (BSPTCL) line-I	Completed
d.	132 kV Banka (PG)-Sultanganj (BSPTCL) line-II	Completed
2.	**The 2x200 MVA, 400/132 kV Lakhisarai sub-station**	
a.	132kV Lakhisarai(PG)-Lakhisarai(BSPTCL)D/C line	Charged
b.	132 kV Lakhisarai-Jamui (BSPTCL) D/C line	*Charged on 05.10.2015*

OPTCL updated the list as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x315MVA 400/220kV Bolangir S/s**	
a.	LILO of one circuit of Sadeipalli-Kesinga220 kV D/C line at Bolangir S/S	Only 7 towers left (Severe ROW problem). By Dec, 2016.
b.	LILO of one circuit of Katapalli-Sadeipalli220 kV D/C line at Bolangir S/S	**Charged on 04.05.16**
2.	**400/220 kV Keonjhar S/S**	
a.	Keonjhar (PG)-Keonjhar (OPTCL) 220 kV D/C line	By 2017.
b.	Keonjhar (PG)-Turumunga(OPTCL) 220kV D/C line	By 2019.
3.	**400/220kV Pandiabil Grid S/s: Expected by June'16**	
a.	Pratapsasan(OPTCL)-Pandiabil (PG) 220 kV D/C line	Dec, 2017.
b.	LILO of one circuit of Atri-Puri (Samangara) 220 kV D/C line at Pandiabil (PG)	**September, 2016**

JUSNL updated the list as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**Chaibasa 400/220kV S/s**	
a.	Chaibasa (POWERGRID) – Chaibasa (JUSNL) 220kV D/c	Completed.
b.	Chaibasa (POWERGRID) – Ramchandrapur (JUSNL) 220kV D/c	**September, 2016**
2.	**Daltonganj 400/220/132kV S/s: Expected by Mar'17**	
a.	Daltonganj (POWERGRID) – Latehar 220kV D/c	By 2017.
b.	Daltonganj (POWERGRID) – Garhwa 220kV D/c	**Matching with S/s**
c	Daltonganj (POWERGRID) – Daltonganj (JUSNL) 132kV D/c	**Matching with S/s**
d	Daltonganj (POWERGRID) – Chatarpur/Lesliganj 132kV D/c	**Matching with S/s**
3.	**Dhanbad 400/220 kV S/s: Awarded under TBCB**	
a.	Dhanbad – Dhanbad (Govindpur) (JUSNL) 220kV D/c	**Matching with S/s**

On query, Powergrid informed that 220 kV bays at 2x500MVA, 400/220kV Kishanganj S/s are expected by June-2016.

BSPTCL informed that all the down linking lines of 2x500MVA, 400/220kV Kishanganj & Darbhanga S/s and 2x200MVA, 400/132kV Motihari S/s were matching with the commissioning of Sub-stations and BSPTCL will be able to draw power from day one of the commissioning.

WBSETCL updated that

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x315MVA, 400/220kV Alipurduar sub-station**	
a.	Alipurduar (POWERGRID) – Alipurduar (WBSETCL) 220kV D/c (HTLS)	December, 2016.
2.	**2x500MVA, 400/220kV Rajarhat West Bengal S/S- Expected by Oct, 2016**	
a.	Rajarhat-N. Town-3 (WBSETCL) 220 kV D/C line	Matching
b.	Rajarhat-N. Town-2 (WBSETCL) 220 kV D/C line	*June, 2018*
c.	Rajarhat- Barasat (WBSETCL) 220 kV D/C line	*June, 2018*

14.0: 2 nos. 400kV line bays at Muzaffarpur for Muzaffarpur – Dhalkebar 400kV D/c line

The interconnection between India and Nepal through Muzaffarpur – Dhalkebar (Nepal) 400kV D/c (to be initially operated at 220kV) line has been recently commissioned and is being operated at 132 kV, due to delay in implementation of 220 kV S/S at Dhalkebar (Nepal. In the 2nd Joint Steering Committee meeting on India-Nepal Cooperation in Power Sector held on 29th Jan 2016 at Kathmandu, Nepal, it was decided to operate the line at 220kV level by Oct 2016 and at rated voltage level of 400kV by Dec 2017. To operate the line at 400kV, 2 nos. 400kV line bays shall be required at Muzaffarpur 400/220kV S/s and 400/220kV substation needs to be established at Dhalkebar (Nepal).

Accordingly, it is proposed to construct 2 nos. 400kV line bays at Muzaffarpur substation of POWERGRID for operation of Muzaffarpur – Dhalkebar 400kV D/c line (presently operated at 132kV) at its rated voltage level of 400kV. These line bays are proposed to be constructed by POWERGRID as part of ISTS.

Members may approve.

Deliberation in the meeting

CTU clarified that the proposed 400 kV bays at Muzaffarpur (PG) will be constructed by Powergrid on payment basis with funding by Nepal.

BSPTCL requested that on relinquishment of 220 kV bays after the commissioning of the Muzaffarpur – Dhalkebar 400kV D/c line, the same may be allotted to BSPTCL for drawing power from Muzaffarpur (PG) S/s.

Members agreed.

15.0: Re-conductoring of Rangpo – New Siliguri 400kV D/c (Twin Moose) line and new 220/132kV, 100MVA (4th) ICT at Rangpo

POWERGRID has informed that power from following generation project in Sikkim, is to be evacuated from Rangpo:

Sl. No.	Generation Project	Unit size (in MW)	Installed Capacity (in MW)	Pooling Point
Phase – 1				
1	Teesta Urja Ltd. / PTC (Teesta-III)	6x200	1200	Rangpo
2	Lanco Energy Pvt. Ltd. (Teesta-VI)	4x125	500	Rangpo
3	DANS Energy Pvt. Ltd. (Jorethang)	2x48	96	New Melli
4	JAL Power Corporation (Rangit-IV)	3x40	120	New Melli
5	Madhya Bharat Power Corporation Ltd. (Rongnichu)	2x48	96	Rangpo
6	Gati Infrastructure Ltd (Chuzachen)	2x49.5	99	Rangpo
7	Gati Infrastructure Bhasmey Power Pvt. Ltd. (Bhasmey)	2x25.5	51	Rangpo
		Sub-Total	2162	
Phase-2				
8	Shiga Energy Pvt. Ltd. (Tashiding)	2x48.5	97	Legship Pool
9	Sneha Kinetic Power Projects Ltd. (Dickchu)	2x48	96	Dikchu Pool
10	Panan Himagiri Hydro Energy Ltd.	4x75	300	Mangan
		Sub-Total	493	
Others				
11	Sikkim Hydro Power Ventures Ltd. (Rangit-II)	2x33	66	Legship Pool

Existing				
12	Teesta-V (NHPC)	3x170	510	Rangpo
		Total	3231	

Following transmission system is existing / under construction for power evacuation from above projects:

(a) Legship Pool – New Melli 220kV D/c

(b) New Melli – Rangpo 220kV D/c

(c) Dikchu Pool – Samardong – Rangpo 220kV D/c

(d) Rangpo – Siliguri 400kV D/c (Twin)
(Formed after LILO of Teesta-V – Siliguri 400kV D/c at Rangpo)

(e) Rangpo – Kishanganj 400kV D/c (Quad)
(Formed after LILO of Teest-III – Kishanganj 400kV (Quad) D/c at Rangpo)

Initially power from only two generation projects – Chuzachen and Bhasmey (total about 150MW) was planned to be pooled at Rangpo 132kV level and accordingly 3x100MVA was planned (considering N-1 security). Now, in view of modification in Sikkim Comprehensive scheme (of Govt. of Sikkim), power from Dikchu HEP will also be pooled at Rangpo at 132kV level.

In view of the above, about 250MW power from three generation projects viz. Chuzachen, Bhasmey and Dikchu would be injected at 132kV level at Rangpo S/s. In case of outage of one 220/132kV ICT at Rangpo during off-peak condition when drawl by Sikkim at Gangtok S/s is very less, the other two ICTs would get overloaded. Therefore, it is proposed to install new 220/132kV, 100MVA ICT at Rangpo.

Deliberation in the meeting

Members agreed the following:

- *Reconductoring of Rangpo – Siliguri 400kV D/c Twin Moose line with Twin HTLS conductor along with suitable modification in line bay equipment at both ends*
- *Installation of 4th 220/132kV, 100MVA ICT at Rangpo S/s*

16.0: Conversion of fixed line reactor at Purnea end of Kishanganj – Purnea 400kV D/c line to switchable line reactor

POWERGRID has informed that Siliguri – Purnea 400kV D/c (Quad) line is being LILO at Kishanganj S/s and the same is expected to be commissioned shortly. Presently, one circuit of Siliguri – Purnea 400kV D/c line has 63MVAr fixed line reactor at Purnea end. After LILO of the subject line at Kishanganj S/s, length of Kishanganj – Purnea section would be about 72km.

In view of the above, it is observed that the one circuit of Purnea – Kishanganj 400kV D/c (after LILO) is becoming over compensated (about 108%). Accordingly, it is proposed that the 63MVAr fixed line reactor at Purnea end in one circuit of Kishanganj – Purnea 400kV D/c (Quad) line may be converted to switchable line reactor.

Deliberation in the meeting

Members agreed to the proposal.

17.0: Transmission system for evacuation of power from Nabinagar-II STPP (1980MW) of NTPC

POWERGRID has informed that the transmission system for evacuation of power from Nabinagar-II STPP of NTPC is being implemented by POWERGRID with following scope of works:

(a) Nabinagar-II – Gaya 400kV D/c line with Quad moose conductor
(b) Nabinagar-II – Patna 400kV D/c line with Quad moose conductor
(c) Additional 1x1500MVA, 765/400kV ICT at Gaya

POWERGRID has informed that there are corridor constraints near Nabinagar-II generation project due to thick population in the area. Accordingly, about 7km Multi-Circuit section has been considered at Nabinagar-II end for both the evacuating lines.

In view of the above, members may approve construction of 7km Multi-Circuit section for both lines viz. Nabinagar-II – Gaya 400kV D/c (Quad) and Nabinagar-II – Patna 400kV D/c (Quad) at Nabinagar-II end..

Deliberation in the meeting

Members agreed to the proposal.

18.0: Talcher Stage-III (2x660MW): Application for Connectivity of 1320MW and Long Term Access (LTA) of 622.05MW

Connectivity & LTA application of NTPC for Talcher-III generation project was discussed in the 10th Connectivity and LTA meeting held on 25th May 2015, wherein following system was proposed for LTA:

- Talcher-III – Angul 400kV D/c line (HTLS equivalent to Quad Moose)

In the meeting, Odisha proposed construction of Talcher-III – Meramundli-B 400kV D/c line for drawl of its share. In view of Odisha's proposal, issue of paralleling of ISTS & STU (Odisha) network at Talcher-III generation switchyard was discussed and it was decided to resolve the matter in a separate meeting.

In view of the same, CEA convened a meeting on 04th Nov 2015 to resolve the issue of drawl of power by Odisha. In the meeting it was decided that, GRIDCO would apply for LTA of 622MW (Odisha's share) from Talcher-III project and OPTCL would submit details regarding drawl of Odisha's share. The same is still awaited. Further, in the meeting, it was decided that the evacuation system would be finalised in the Standing Committee Meeting on Power System Planning of Eastern Region.

For evacuation and transfer of power from Tacher-III to beneficiaries, it is proposed to connect the generation project to Angul S/s of POWERGRID through high capacity 400kV D/c line. Accordingly, it is proposed to grant LTA of 622.05MW to NTPC for Talcher-III generation project with following connectivity transmission line:

(i) Talcher-III – Angul 400kV D/c (Triple Snowbird)

Deliberation in the meeting

OPTCL informed that they are capable of drawing their 50% of Talcher-III with their own system and shown their unwillingness to the above proposal.

Member Secretary, ERPC recalled the views of NTPC as recorded in 32nd TCC and expressed that the this issue needs to be deliberated in the presence of NTPC, Powergrid, OPTCL and other beneficiaries of Talcher-III.

It was decided that the issue will be further deliberated in SCM meeting scheduled to be held on 13.06.2016.in presence of member from NTPC.

19.0: Interim connectivity to generation projects through LILO arrangement

A number of generation projects in were granted Connectivity / Long Term Access (LTA) with strengthening of transmission system. In few cases generation projects were to be 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 and commission their generation projects. 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 are still connected through LILO arrangement.

In this regard, it may be mentioned that there are number of generation projects in Eastern region connected / to be connected through temporary LILO arrangements. List of such generation projects along with anticipated time line as informed by project developers in various meetings is mentioned below:

Generation Project in ER connected through temporary LILO arrangement					
Sl. No.	Generation Project	Installed Capacity (in MW)	Present Connectivity through LILO	Final Connectivity Arrangement (not commissioned)	Anticipated Completion Schedule
1	Sterlite Energy Ltd.	4x600	LILO of one circuit of Rourkela-Raigarh 400kV D/c line (granted in Sept'09)	Sterlite - Jharsuguda 400kV 2xD/c	July'16
2	Ind Barath Energy (Utkal) Ltd.	2x350	LILO of one circuit of Jharsuguda - Raigarh 400kV D/c line (granted in Sept'09)	Ind Barath - Jharsuguda 400kV D/c	Apr'16
3	Gati Infrastructure Ltd. (Chuzachen)	2X49.5	LILO of Rangpo - Melli 132kV S/c line (granted in Nov'07)	Chuzachen - Rangpo 132kV D/c (with Zebra conductor)	EP&D Sikkim may update status of bay
4	DANS Energy Pvt. Ltd. (Jorethang)	2x49	LILO of one circuit of Rangpo- New Melli 220kV D/c line (granted in May'15)	Jorethang - New Melli 220kV D/c	Mar'16
5	Sneha Kinetic Power Projects Pvt. Ltd. (Dikchu)	2x48	(*) LILO of one circuit of Teesta- III – Rangpo 400kV D/c line (granted in Dec'14 by CERC)	Dikchu – Dikchu Pool 132kV D/c	

In line with the direction from CERC, the above matter needs to be discussed in Standing Committee meetings and timeline for replacement of LILOs of generation developer by dedicated transmission lines along with further course of action in case of default in meeting the deadlines is to be finalised.

Deliberation in the meeting

The committee discussed in detail and decided the following timeline for withdrawing the LILO:

Generation Project in ER connected through temporary LILO arrangement						
Sl. No.	Generation Project	Installed Capacity (in MW)	Present Connectivity through LILO	Final Connectivity Arrangement	Target date	Remrks
1	Sterlite Energy Ltd.	4x600	LILO of one circuit of Rourkela-Raigarh 400kV D/c line (granted in Sept'09)	Sterlite - Jharsuguda 400kV 2xD/c	**April'16**	***The LILO may be removed as the target date fixed by 31st & 32nd TCC/ERPC was not adhered to.***
2	Ind Barath Energy (Utkal) Ltd.	2x350	LILO of one circuit of Jharsuguda - Raigarh 400kV D/c line (granted in Sept'09)	Ind Barath - Jharsuguda 400kV D/c	**June'16**	***The LILO may be removed if the target was not adhered.***
3	Gati Infrastructure Ltd. (Chuzachen)	2X49.5	LILO of Rangpo - Melli 132kV S/c line (granted in Nov'07)	Chuzachen - Rangpo 132kV D/c (with Zebra conductor)	**EP&D Sikkim to update**	***The construction of bays at Rangpo is under the scope of Sikkim.***
4	DANS Energy Pvt. Ltd. (Jorethang)	2x49	LILO of one circuit of Rangpo- New Melli 220kV D/c line (granted in May'15)	Jorethang - New Melli 220kV D/c	**July'16**	***Expected to be completed within target date.***
5	Sneha Kinetic Power Projects Pvt. Ltd. (Dikchu)	2x48	(*) LILO of one circuit of Teesta- III – Rangpo 400kV D/c line (granted in Dec'14 by CERC)	Dikchu – Dikchu Pool 132kV D/c		***Expected to be completed in matching with generation.***

20.0: Tashiding HE Project, Sikkim: Evacuation of Power (Interim Arrangement) – Proposal of Shiga Energy Private Ltd.

Tashiding HEP in Sikkim is in advanced stage of construction and expected to be commissioned by December 2016. The power evacuation system for the project comprises of the following:

(i) Immediate Evacuation System (under scope of Gen. Developer)
- Tashiding - Legship 220kV D/c line (7km)

(ii) Common Transmission System (under scope of Govt. of Sikkim)
- Establishment of 220kV substation at Legship
- Legship - New Melli 220kV D/c with twin moose conductor

The Legship Pooling station and 220 kV D/C transmission line from Legship Pooling station to New Melli substation, with 2 number GIS bays at New Melli are being implemented by Department of Power, Govt. of Sikkim as a part of Comprehensive Scheme for strengthening of Transmission and Distribution system in Sikkim (being implemented by POWERGRID on consultancy basis).

In the meeting held in CEA with representatives from NLDC, CTU-PGCIL & Shiga Energy on 23.11.2015, it was agreed that in case of delay in Legship Pooling station, the transmission line from Tashiding HEP to Legship Pooling station and transmission line from Legship pooling station to New Melli substation may be directly connected bypassing the Legship Pooling station as an interim arrangement to ensure power evacuation.

In the above said meeting it was also agreed that POWERGRID would expedite the commissioning of 220 kV D/c line from Legship Pooling station to New Melli substation and associated GIS bays to match with the commissioning schedule of THEP (i.e. Dec., 2016). Therefore Shiga Energy has requested for taking the work related to 220 kV D/c transmission line from Legship pooling station to New Melli substation and associated 2 nos. GIS line bays at New Melli on top priority so that the power could be evacuated without any hold up.

In view of the above, members may approve interim connection of Tashiding HEP – Legship Pool and Legship Pool – New Melli 220kV D/c lines by bypassing Legship Pool substation till completion of Legship Pool S/s.

Deliberation in the meeting

The members agreed to the proposal.

21.0: Additional 400 kV D/C line from Derang (Generation project of JITPL) to Angul Pooling Station(PG) – Proposal of JITPL

JITPL has established a 2x600 MW generating plant at Derang, Odisha. Both the units have been declared under commercial operation and power is being evacuated through Derang-Angul (PG) 400 kV D/C line. M/s JITPL had applied for 1044 MW LTOA after considering drawl of 156 MW by Odisha (GRIDCO) from bus bar of the generating switchyard as per PPA signed with Odisha. Accordingly, M/s JITPL was granted Long Term Open Access (LTOA) of 1044 MW under CERC Regulation. However, POSOCO has granted NOC for 980 MW citing congestion in the transmission system. Therefore, an NOC of 980MW combined with the connectivity of 1044 MW instead of 1200 MW is resulting into under generation of about 220 MW by JITPL.

Further, Derang - Angul Pool 400 kV D/C line was to be designed for maximum conductor temperature of 95ºC as per the minutes of the meeting held on 8- 12-2008 and 15-12-2008 at POWERGRID office, Gurgaon regarding grant of LTOA for generation projects in advance stage in Odisha. However, the above dedicated line (Twin Moose with ACSR conductor) has been designed with maximum conductor temperature of 75ºC. Hence, in the event of N-1 contingency, the above dedicated line is not able to evacuate full power from the project

In this regard, a meeting was held in the CEA on 16.12.2015 with CEA, CTU, POSOCO & JITPL and JITPL was advised to construct an additional Derang - Angul 400 kV D/C line to meet the N-1 contingency criteria and to cater to the additional units planned at Derang as expansion in future.

Members may discuss.

Deliberation in the meeting

The members agreed to the proposal.

22.0: Installation of 400/220kV, 500MVA ICT (3rd) at Maithon

POWERGRID has informed that presently, there are 2 nos. 315MVA, 400/220kV ICTs at Maithon S/s of POWERGRID. The split bus arrangement has been made at Maithon sub-station at 400kV level and both the ICTs are located on one side of the bus sectionalizer. In view of growing ICT loading, transformation capacity augmentation by replacement of 2x315MVA ICTs with 2x500MVA ICTs along with addition of 1x125MVAr bus reactor was approved in the 14th SCM held in January-2013. The loading of Maithon ICTs has grown to more than 600MVA. Thus, even after replacement of ICTs, the N-1 criteria shall not be met during peak load condition.

Accordingly, members may discuss the installation of one more 400/220kV, 500MVA ICT (3rd) at Maithon S/s. Thus, the total transformation capacity at Maithon S/s shall be 3x500MVA.

Deliberation in the meeting

Members agreed to the proposal.

23.0: Replacement of 220/132kV, 1x50MVA ICT at Malda with 220/132kV, 200MVA ICT

POWERGRID has informed that at present, there are 220/132kV, 2x160MVA+1x50MVA ICTs at Malda S/s. During the last summer, a peak demand to the tune of 270MVA was observed against an installed transformation capacity of 370MVA. It may be noted that 50MVA ICT is getting heavily loaded during summer and tripping of any 220/132kV ICT would lead to cascaded tripping. Further, it may be noted that the existing 50MVA ICT is more than 20 years old. In view of the above, it is proposed to replace the existing 50MVA, 200/132 kV ICT at with new 200MVA, 220/132 kV ICT at Malda S/s.

Members may discuss.

Deliberation in the meeting

WBSETCL informed that a new 220kV Gajol S/s is being commissioned nearby Malda which will offload Malda S/s. The award of Gazol S/s is expected by Dec, 2016.

As the proposed replacement of ICT will take 2-3 years and 220kV Malda S/s is getting critically loaded, WBSETCL requested the following:

- *WBSETCL will lend a 400/220 kV 160 MVA ICT to Powergrid for replacing the existing 220/132 kV 50 MVA ICT at 220kV Malda (PG) S/s.*
- *The cost of replacement as well as allied equipment as per requirement, will be bourne by WBSETCL for the arrangement.*
- *It will be a temporary arrangement till the commissioning of the proposed ICT.*

Members agreed to the following:

- *Replacement of the existing 50MVA, 200/132 kV ICT with new 160MVA, 220/132 kV ICT at Malda S/s.*
- *The temporary arrangement as requested by WBSETCL to meet the demand of Malda till the commissioning of new 160 MVA ICT.*

24.0: Installation of 420kV, 1x125MVAR bus reactor at Subhasgram S/s of POWERGRID

POWERGRID has informed that in the recent past, high voltage (upto 430kV) has been observed at Subhasgram sub-station of POWERGRID. This has at times led to over voltage tripping of lines. Presently, there is no bus reactor at Subhasgram S/s and there is only one

50MVAR line reactor at Subhasgram end of Sagardighi – Subhasgram 400kV S/c line. Accordingly, it is proposed to install 1x125MVAR bus reactor at Subhasgram S/s of POWERGRID for better voltage management.

Members may discuss

Deliberation in the meeting

ERLDC informed that presently the voltage profile of Subhasgram S/s is improving and Bus reactor may be required in future to control the voltage.

WBSLDC expressed that at this juncture there is no requirement of Bus reactor at Subhasgram S/s. Moreover, study needs to be carried out for the exact capacity of Reactor.

25.0: Provision of 765kV, 80MVAr single phase spare reactor at Ranchi (New) substation of POWERGRID

POWERGRID has informed that the switchyard layout of 765/400kV Ranchi (New) S/s is Breaker and a half scheme. There are two bus reactors and one line reactor (in Ranchi-New – Dharamjaygarh 765kV S/c, ckt-1) of 765kV, 240MVAr capacity on one side (side-1) of the substation (total 10x80 MVAr single phase units including one 765kV, 80MVAr single phase spare reactor). There are 3 nos. of 240MVAr line reactors (1 no. with Ranchi New – Dharamjaygarh 765kV S/c, ckt-2 & 2 nos. with Ranchi New – Medinipur 765kV D/c line under ERSS-XVIII) on the other side (side-2). However, this side (side-
2) is not having any spare reactor unit.

The 765kV, 1-ph spare reactor is installed as ready standby along with 765kV auxiliary bus and 145kV neutral bus arrangement on side-1 such that in case of failure of any single phase reactor on that side the spare reactor can be taken into service in short span of time (without any physical movement of spare reactor). However, in case of failure of any single phase reactor on the side-2, there is no single phase spare reactor available for replacement.

In view of the above, members may discuss installation of 765kV, 1x80MVAr single phase spare reactor at Ranchi (New) substation of POWERGRID on the side-2 also

Deliberation in the meeting

Members agreed.

26.0: Modification in "Transfer of power from generation projects in Sikkim to NR/WR scheme (HCPTC-3)" for Phase-1 IPPs in Sikkim

POWERGRID has informed that the LILO of both circuits of Teesta-III – Kishanganj 400kV D/c at Rangpo was agreed as a part of transmission system associated with Sikkim Phase-I generation projects and the LILO lines i.e. 400kV 2xD/C are under construction. One 400kV D/c LILO line is expected to be commissioned shortly; however, the 2nd 400kV D/c LILO line has got delayed due to forest clearance issues. About 8km stretch of the 2nd LILO line involves Tandong Reserve forest. The matter was discussed in the 17th meeting of Standing Committee on Power System Planning in Eastern Region held on 25-05-2015 wherein POWERGRID informed that the 2nd 400 kV D/c LILO section is likely be completed by March, 2017.

POWERGRID site officials have indicated that obtaining forest clearance for 2nd 400kV D/c LILO may take substantial time and it may not be feasible to construct the same in near future.

Deliberation in the meeting

Members expressed that the 2nd LILO is also very much required for evacuation of Teesta-III (6x200 MW) power. Therefore, Powergrid was advised to explore for alternate ROW, if forest clearance issue were not resolved for completion of 2nd LILO to complete the scheme.

27.0: Construction of 01 no. 220 kV line bay at Darbhanga (400/220 kV) GSS under DMTCL (Darbhanga – Motihari Transmission Company Ltd.)

BSPTCL vide letter no. 2027/BSPTCL dated 06.04.2016 has requested for construction of 01 no. 220 kV line bay at Darbhanga (400/220 kV) GSS for termination of 2nd circuit of 220 kV Darbhanga (400/220 kV)-Samastipur (new) (220/132/33 kV) transmission line.

CEA vide letter no. 69/1/2012-SP&PA/1203-05 dated 15.11.2012 has cleared following transmission system of Bihar as a part of 12th plan transmission & sub- transmission system strengthening in Bihar-Phase-1 for delivery of power from Dharbanga 400/220 kV sub-sttaion:

i. 220kV D/C Darbganga (400/220 kV) –Bikhanpura new transmission line
ii. 220kV D/C Darbganga (400/220 kV) – Darbganga (220 kV BSPTCL) transmission line
iii. 220kV D/C Darbganga (400/220 kV) – Supoul (Laukahi) (220/132 kV) transmission line
iv. 220kV DCSS Darbganga (400/220 kV) – Samastipur (new) (220/132/33 kV) transmission line

BSPTCL has informed that 2nd circuit stringing of 220kV Darbhanga (400/220 kV) – Samastipur (new) (220/132/33 kV) DCSS transmission line is required to be done at this stage due to the following reasons-

a) To have extra source at 220 kV level from Darbhanga (400/220 kV).
b) To cater rising demand of electricity in future as demand is increasing exponentially due to implementation of different scheme of DISCOMS and PFA (24x7) scheme of GOI.
c) To avoid ROW, if this worked is delayed and taken up at later stage. ROW is increasing day by day. Presently sever ROW is being faced in construction of transmission lines.

Darbhanga 400/220 kV GSS is under construction by M/s DMTCL under TBCB route.
As per the scope of work given to M/s DMTCL, there is provision of 7 Nos. 220 kV line bays and space for 6 Nos. 220 kV future line bays.

The seven (7) no. of 220 kV line bays at Darbhanga are being utilized by BSPTCL for termination of the double circuit line to Motipur, Darbganga (BSPTCL) and Supoul (Laukahi), and 220 kV DCSS line to Samastipur (new). Beyond these 7 bays, M/s DMTCL is to provide only space for six (6) bays.

CEA has given no objection for construction of 01 no. 220 kV line bay at Darbhanga (400/220 kV) GSS for termination of 2nd circuit of 220 kV Darbhanga (400/220 kV)- Samastipur (new) (220/132/33 kV) transmission line. The cost of line bay will be borne by BSPTCL.

Members may take note of it.

Deliberation in the meeting

Members noted.

ADDITIONAL AGENDA ITEMS BY UTILITIES

28.0: Construction of 400/220 kV Substations and lines by OPTCL

i. Construction of 400/220kV S/s at Meramundali "B":

In 3rd SSCM, OPTCL informed with a presentation that as 400kV Angul-Meramundali is major contributor of fault current at Meramundali, there is some modification in the connectivity of Meramundali-B is needed. The proposed connectivity will be as follows:

- Construction of 400kV D/C TTPS Stage-III to Meramundali-B line for power evacuation from TTPS expansion
- Shifting of Duburi to Meramundali 400kV D/C line from Meramundali to Meramundali-B.
- Shifting of GMR to Meramundali B (shifting of GMR Odisha state dedicated unit connected to existing Meramundali bus to Meramundali-B)
- Shifting of Duburi to Meramundali 220kV D/C line from Meramundali to Meramundali-B.

On query, OPTCL informed that the Meramundali-B is being designed with fault level of 63 kA.

ii. Construction of 400/220kV S/s at Narendrapur with 400kV DC line from Pandiabil(PGCIL) to Narendrapur.

To cater to the normal load growth and also upcoming bulk loads in Narendrapur area the following was proposed in 2nd SSCM:

- 400kV D/C line from Pandiabil 400/220kV substation to Narendrapur
- New 220kV D/C line from Narendrapur 400/220kV substation to Aska 220/132kV
- LILO of both the circuits of existing 220kV D/C line from Therubali to Narendrapur at Narendrapur 400/220kV substation

In 3rd SSCM, OPTCL informed that Narendrapur S/s is also being constructed for completing the 400 kV ring of OPTCL system which, in future, will be connected to 400 kV Theruvali and Jayanagar S/s.

iii. Construction of 400/220kV Khuntuni S/s with LILO of 400kV D/C line from Meramundali-B to Dhubri.

In 3rd SSCM, OPTCL informed that the 2x500 MVA, 400/220 kV Khuntuni S/s is proposed between Meramundali and Mendhasal to cater the growing demand in the area. It will be a part of 400 kV ring of OPTCL system. The connectivity details as explained in the meeting are as given below:

- LILO of 400kV D/C Meramundali-B to Dhubri line
- LILO of Meramundali-Mendhasal 400kV D/C line
- 220kV DC line from Khuntuni to Dhenkanal New and Bidanasi
- 1X660 MW IPP of LANCO Babandh

OPTCL presented the load flow study considering all the above proposals. They explained that for study the TTPS generation is stepped up to 400kV and connected to 400kV bus of proposed Meramundali-B substation through 400kV D/C line. It is a part of Transmission Plan for the year 2015-16 to 2018-19. It is required to evacuate state share of 50% power i.e from one unit (660 MW). System Study has been done with connection of 1X660 at Meramundali “B”.

In 31st TCC, for all the above four proposals, CTU expressed that the latest developments in transmission and generation planning of Odisha system should be submitted for detailed study and also to arrive technically optimum scheme for evacuation of TTPS Stage III.

OPTCL informed that they already carried out the detailed study and the same along with the requisite information on transmission planning will be shared with CTU/CEA.

TCC advised CTU/CEA to carry out the detailed study and place before next SCM for further deliberation.

Deliberation in the meeting

OPTCL informed that the study results have already been forwarded to CEA/CTU.

On query, OPTCL clarified that these sub-stations are required to meet the growing demand of Odisha and has no link with the Talcher-III generation evacuation.

Members felt that Talcher-III evacuation system needs to be deliberated in detail in forth coming SCM meeting and these 400/220 kV Sub-stations will also be discussed in the 18th SCM for further decision.

29.0: Establishment of additional 400/220 kV Sub-stations at Ara (Bhojpur) & Munger under Central Sector Scheme -- Agenda by BSPTCL

BSPTCL has submitted the justification for having 400/220 kV Sub-stations at Ara and Munger with necessary details which is attached at **Annexure-29**. The load flow study will be done jointly with PGCIL and report will be submitted shortly.

Deliberation in the meeting

Director, CEA informed that these two additional 400/220 kV sub-stations at Ara & Munger will be discussed in next SCM after system study.

30.0: Connectivity of CESC system with Central Transmission Utility -CESC

CESC vide its letters dated 2/12/15 & 11/9/15 informed that considering the present peak demand & growth rate, it would require about 300MW power in the next 3 to 4 years and another 200 MW power in next 2 to 3 years.

In order to meet the future demand, CESC informed that it has placed the following proposal to CEA:

- Construction of 400/220kV substation at Rajarhat very close to PGCIL sub-station with 2x500MVA transformers
- For a connectivity to the 400/220kV Rajarhat (PGCIL) S/s for 500MW power
- 220kV underground D/C cable connection to the load centre (East Calcutta substation)

It was also informed that WBSETCL was already requested to give “No objection” for the above connectivity.

In 2nd SSCM, CTU informed that the proposal will be placed in next LTOA meeting.

The committee advised WBSETCL to consider the CESC proposal and give their official communication in this regard.

In 3rd SSCM, WESETCL informed that bilateral discussions were going on and it will be resolved at the earliest.

Deliberation in the meeting

WESETCL informed that in the joint meeting with CESC for their future requirement, CESC has not given any requirement of CTU connectivity.

Members felt that since CESC is a distribution licensee under WBSETCL control area therefore if WBSETCL feels CESC may be allowed to present their case in forthcoming SCM meeting.

31.0: Additional Agenda by JUSNL.

1) Stringing of 2nd circuit on 220 kV Farakka- Lalmatia Transmission line

On 220 kV D/C Farakka –Lalmatia Transmission Tower, single circuit line has been strung. For reliability of power and strengthening of source at Lalmatia to meet power requirement in Santhal Pargana region of Jharkhand state, JUSNL is planning for stringing 2nd circuit on the same tower. Further, it is to mention here that this line is very important as Farakka Super Thermal Power Station (FSTPS) is covered under islanding scheme in ER. Considering the above facts JUSNL proposes to take up the issue for discussion in SSCM for further guidelines / recommendations in this regard.

Deliberation in the meeting

It was informed that a case on 220 kV Farakka-Lalmatia System is pending before the Hon'ble Calcutta High Court.

Members felt that the above proposal may not be viable to deliberate at this juncture as the matter is sub-judicial,

2) Construction of LILO line from ckt-I of 132 kV Rihand-Sonenagar transmission line for traction power to Nagar Utari TSS.

On request of Railways a meeting was held at BSPTCL office Patna on 16.12.2015 regarding giving supply to Railways by constructing LILO line from Ckt-1 of 132kV Rihand-Sonenagar Transmission Line for traction power to Nagar Utari TSS. In view of MOM dtd. 16.12.2015 ERPC is requested to take up the matter for approval of Standing Committees of ER & NR as the line passes through Eastern and Northern regions. The MoM of the said meeting is attached at **Annexure-31**.

Deliberation in the meeting

Members felt that a special meeting with UPPTCL, NRPC, BSPTCL & JUSNL is required to resolve the issue and requested MS, ERPC to convene a special meeting.

3) Status of 132kV Rihand-Sonenagar D/C Line.

JUSNL vide letter dated 01.06.2016 intimated that the old 132kV Rihand-Sonenagar D/C T/L has been configured after creation of Jharkhand under mutual understanding of both the state of Bihar and Jharkhand in the following manner:

1. 132kV Rihand-Sonenagar Ckt-I is feeding power directly to Sonenagar but being maintained by JUSNL.
2. 132kV Rihand-Sonenagar Ckt-II has been made LILO at Garhwa and Japla and presently the T/L is in three segments i.e. 132kV Rihand-Garhwa S/C, 132kV Garhwa –Japla S/C and 132kV Japla-Sonnenagar S/C.

132kV Rihand-Sonenagar Ckt-I remains virtually idle charged for most of the time but maintenance is done by JUSNL because of being on the same tower. Palamu region of Jharkhand is solely dependent on Rihand and Sonenagar for getting power for Railway Traction & Distribution power for consumers. Right now Sonenagar (BSPTCL) has restricted power on account of mishappening of collapse of 9 towers.

Therefore, JUSNL through SLDC has placed the following proposal for sake of welfare of the state and in larger interest of uninterrupted, reliable power for railway traction (20-25MW).

1. The old double ckt of 132kV Rihand-Sonenagar T/L will be taken over by JUSNL because it is passing through the geographical area of Jharkhand (90% of the stretch of length) and is being maintained by JUSNL.
2. The 132kV Rihand-Sonenagar Ckt (Ckt-I) shall be LILO like Ckt-II at Garhwa & Japla and middle segment of the said T/L shall be connected to Garhwa and Japla. This will facilitate reliability of circuit and help in carrying out regular maintenance work.
3. Whenever BSPTCL will need emergency power, same may be extended from Japla to Sonenagar on as and when required basis.
4. In near future Garhwa G/S/S is going to be connected to 132kV G/S/S Daltonganj and adequate power from Ranchi may be extended in the Palamu region. At that time we will be in a position to extend power from Japla to Sonenagar on as and when required basis as presently is being fulfilled through 132 kV Rihand –Sonenagar Ckt-I.

JUSNL may explain. Members may discuss.

Deliberation in the meeting

Members felt that the issue should be deliberated after considering the views of BSPTCL.

Director (Projects), BSPTCL agreed to communicate their views on the issue at the earliest.

32.0: Consideration of 400kV lines/line segments owned and maintained by DVC as ISTS lines --Additional Agenda by DVC

DVC vide letter dated 26.05.2016 informed that the following 400kV lines/line segments carrying inter-state power are owned and maintained by DVC:

1. RTPS-Ranchi(PG) line
2. DSTPS-RTPS line
3. LILO part (10.5 km) upto RTPS of Ranchi (PG)-Maithon (PG)
4. Termination segment (3.5 km) at DSTPS of the Jamshedpur(PG) line

The lines under sl no. 1 shall be carrying inter-state power being directly connected with CTU, where id the lines under sl no. 3 & 4 are already a part of ISTS lines transmitting inter-state power being owned and maintained by CTU.

In case of lines under sl no. 2, the power flow through the RTPS-Ranchi(PG) line will be entirely of inter-state nature (natural power flow is from Ranchi(PG) to RTPS) in absence of any generation at RTPS and DSTPS, and even if DSTPS generation is considered, no power evacuation occurs through RTPS-Ranchi(PG).

In view of above, DVC requested for declaration of above 400kV lines/line-segments as ISTS lines.

Deliberation in the meeting

Committee advised DVC to apply to ERLDC/ERPC for identification of non-ISTS lines carrying ISTS power for further course of action.

Regarding maintenance of LILO portions as given below, members felt that the these sections should be maintained by Powergrid in line with the decision of 17th SCM for maintenance of LILO of Farakka-Subhasgram at Sagardighi TPS under item no. 27.

1) *LILO of Ranchi (PG)-Maithon (PG) at RTPS (10.5 km)*
2) *Termination segment of the Jamshedpur(PG)-Maithon (PG) line at DSTPS (3.5 km)*

Meeting ended with vote of thanks to the chair.

****

Annexure- A

Participants in the 4th SSCM meeting

Venue: ERPC Conference Hall, Kolkata   Time: 11:00 hrs   Date: 06.06.2016 (Monday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
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4	Ravinder Gupta	Director CEA	9968286184	ravindergupta_cea@rediffmail.com	[signature]
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18	Saurav K Sahay	Sr Engineer	9432013173	sahay.saurav@gmail.com	[signature]
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20	D.K. Bauri	EE, ERPC	9883617238	eeop.erpc@gov.in	[signature]

Participants in the 4th SSCM meeting

Venue: ERPC Conference Hall, Kolkata Time: 11:00 hrs Date: 06.06.2016 (Monday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
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33	[illegible]	L.O, [illegible]	9433035[illegible]	[illegible]	
34	RAJDEEP BHATTACHARJEE	EEE/RE BSPHCL KOLKATA	9830380689	rekolbsphcl@gmail.com	
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36	P.K.DE	EE, ERPC	9433125844	mpe.erpc@gov.in	
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38					
39					
40					

Annexure_I(B)

Status of Powergrid Projects: Sub Station

PART - II : सब स्टेशन SUBSTATION

क्रमांक Sl. No.	सब स्टेशन का नाम Name of the Sub -Station	एम.वी.ए अनुपात MVA Ratio	भा.स./नि.मं अनुमोदन GoI / BoD Approval	इरेकशन ठेकेदार Erection Contractor	संपूर्ति लक्ष्य Completion Tgt.		Remarks
					Schedule	प्रत्याशित/ वास्तविकAnt./ Act	
	EASTERN REGION						
1	**Transmission System for Development of Pooling Station in Northern region Part of West Bengal and Transfer of Power from BHUTAN to NR/WR.**		**April'10**		**Jan'15**	**Mar'17**	Compln. Sch. - * 57 months tentatively from the date of investment approval subject to CERC concurrence, such that additional Return on equit @05% is admissible.
1.1	400/220KV HVAC & 3000MW +/-800KV HVDC New Pooling Station in Alipurduar	2x315		ABB		Sep'16	Award placed in Mar'11. Supply, civil works & erection under progress. Land under acqurisation. Partly land acquired.
1.2	Extn. of +/- 800KV HVDC at Agra with 3000MW.			ABB		Sep'16	work under progress.
2	**Transmission System for Transfer of Power from Generation Project in SIKKIM to NR/WR Part - A.**		May'10		**Jan'13**	**May'16**	
2.1	400/220/33 KV Kishanganj Sub station (GIS)	2x315		Pinggao		May'16	Sub station commissioned alongwith ICT-I in Mar'16. ICT-II expected by May'16.

PROGRESS REPORT UP TO MARCH 2016

क्रमांक Sl. No.	सब स्टेशन का नाम Name of the Sub -Station	एम.वी.ए अनुपात MVA Ratio	भा.स./नि.मं अनुमोदन GoI / BoD Approval	इरेकशन ठेकेदार Erection Contractor	संपूर्ति लक्ष्य Completion Tgt.		Remarks
					Schedule	प्रत्याशित/ वास्तविक Ant./ Act	
3	**Eastern Region Strengthening Scheme - III**		**July'10**		**Nov'12**	**Mar'17**	**Compln. Sch. - 28 months from date of investment approval**
3.1	400/220 KV Daltonganj	2x315		Alstom		Mar'17	Award was placed on Alstom. Due to delay in handing over land, M/s Alstom not agree to take up the work. Re-tendering under progress. **Down stream network also not envisaged by JSEB.**
3.2	400/220 KV Bolangir	2x315		KEC		Oct'12	Sub station with ICT-I commissioned in Aug'12 & ICT-II in Oct'12.
3.3	400/220 KV Keonjhar	2x315		KEC		Feb'13	Sub station commissioned alongwith ICT-I in Jan'13 & ICT-II in Feb'13.
3.4	400/220 KV Chaibasa	2x315		EMC		Jan'15	Sub station commissioned alongwith ICT-I in Nov'14 & ICT-II commissioned in Jan'15.
3.5	400/220 KV Uttara (Pandiabil)	2x500		Hysoung		May'16	Alternate land acquired at Pandiyabil. Land handed over in Mar'13. Supply, civil works & erection under progres. Progress severly affected due to repeted ROW ereated by local.
3.6	400/132 KV Lakhisarai	2x200		GET		May'14	ICT-I commissioned in Mar'14. ICT-II commissioned in May'14.
3.7	400/132 KV Banka	2x200		GET		Dec'12	Sub station commissioned with ICT-I in Nov'12 & ICT-II in Dec'12.
3.8	Extn. at 400KV Sasaram S/stn.			GET		Dec'16	Award placed in Feb'11. Supply, civil works & erection under progress.
3.9	Extn. at 400KV Dubri & Mendhasal S/Stn. (OPTCL)			KEC		Aug'15	Reactor at Dubri commissioned in Mar'14. Mendhhasal scope deleted. Bay at Dubri commissioning in Aug'15.

PROGRESS REPORT UP TO MARCH 2016

क्रमांक Sl. No.	सब स्टेशन का नाम Name of the Sub -Station	एम.वी.ए अनुपात MVA Ratio	भा.स./नि.मं अनुमोदन GoI / BoD Approval	इरेकशन ठेकेदार Erection Contractor	संपूर्ति लक्ष्य Completion Tgt.		Remarks
					Schedule	प्रत्याशित/ वास्तविक Ant./ Act	
4	**Transmission System for Phase-I Gen. Projects in ORISSA - Part - A.**		**Sep'10 / Feb'15**		**Mar'13/ Jun'15**	**Jan'16**	**BPTA Schedule Mar'13.**
4.1	765/400KV Pooling Station at Jharsuguda	2x1500		Siemens		Jan'16	400KV (02 nos) bays charged in Mar'13. ICT-I Commissioned in Jul'14 & ICT-II commissioned in Oct'14. Balance work in Jan'16..
4.2	765/400KV Pooling Station at Angul	4x1500		Siemens		Jan'16	400KV (02 nos) bays charged in Mar'13. ICT-I commissioned in Mar'15, ICT-II in Apr'15 & ICT-III in May'15 & ICT-IV commissioned in Jan'16.
5	**Transmission System for Transfer of Power from Generation Project in SIKKIM to NR/WR Part - B.**		Mar'11		**Nov'13**	**Apr'16**	
5.1	400/220/132KV Rangpo Sub station (GIS)	16x105 3x100		Hysoung		Apr'16	Sub station alongwith ICT-I (3x105. 1 Ph, & 1x100, MVA) commissioned in Apr'14. ICT-II (3x105. 1 Ph. & 1x100,) commissioned in May'14. 400kv ICT-III & IV, 220kv ICT-III commissioned in Jun'14. 400kv ICT-V commissioned in Jul'14. Bay completion matching with line.
5.2	220KV Switching station New Melli (GIS)			Alstom		May'15	Sub station commissioned in May'15
5.3	Extn. at 400/220KV Kishanganj S/Stn.			Ping. / KEC		Mar'16	Commissioned in Mar'16.
5.4	Extn. at 400/220KV Patna S/Stn.			GET		Feb'15	Extn. commissioned in Feb'15
6	**Transmission System for Phase-I Generation Projects in Jharkhand and West Bengal - Part - A.**	-	**Oct'11**		**Nov'13**	**Jun'16**	
6.1	400KV GIS Pooling Station (Jharkhand Pool) near Essar			Hysoung & L&T		Jun'16	Land acquired in Apr'13. Engg., supply, civil works & erection under progress.

PROGRESS REPORT UP TO MARCH 2016

क्रमांक Sl. No.	सब स्टेशन का नाम Name of the Sub -Station	एम.वी.ए अनुपात MVA Ratio	भा.स./नि.मं अनुमोदन GoI / BoD Approval	इरेकशन ठेकेदार Erection Contractor	संपूर्ति लक्ष्य Completion Tgt.		Remarks
					Schedule	प्रत्याशित/ वास्तविक Ant./ Act	
7	**Split Bus Arrangement for avrious Sub Stations in Eastern Region**	-	**Mar'13/ Jan'16**		**Jun'14 / Mar'16**	**May'16**	
7.1	Spliting arrangement with tie line breaker for 400KV Maithon & Durgapur S/stn.			BHEL		Jan'16	Extn. at Durgapur completed in Oct'15. Balance work completed in Jan'16.
7.2	Spliting arrangement with tie line breaker for 400KV Biharshariff Sub station			BHEL		May'16	Award placed in Aug'13. Supply, civil works & erection under progress.
8	**Eastern Region Strengthening Scheme - VIII**		**Aug'13/ Jan'16**		**April'15/ Feb'16**	**Feb'16**	**RCE approved in Jan'16**
8.1	Installation of 2x125MVAR BR at Muzaffarpur (one replace by 63MVAR)			Siemens		Mar'15	Commissioned in Mar'15.
8.2	Installation of 1x125MVAR BR at Rourkela & Indrawati Sub station			Siemens		Aug'15	Reactor at Rourkela commissioned in Feb'15 & Reactor at Indrawati in Aug'15.
8.3	Installation of 2x125MVAR BR at Jaypore (replaceing by 63MVAR)			Siemens		Nov'15	Commissioned in Nov'15.
8.4	Additionl ICT at 400/220KV Subhashgram S/stn.	1x500		Siemens		Jan'15	ICT commissioned in Jan'15.
8.5	Shifting of 2x50MVAR LR from Patna end of 400KV Kahalgaon/Barh-Patna line to Balia end of 400KV Patna-Balia			Siemens		Feb'16	Commissioned in Feb'16.
9	**Eastern Region Strengthening Scheme-V**		**Oct'13**		**Apr'16**	**Oct'16**	Compln. Sch. - 30 months from date of investment approval
9.1	400/220KV Rajarhat S/Stn. (GIS)	2x500		Siemens		Oct'16	Supply, Civil works & erection under progress. Land acquired in Feb'14.
9.2	Extn at 400KV Farakka S/stn.			Sterling & Willsion		Jun'16	Award placed in Mar'15. Supply, Civil works & erection under progress.
9.3	Extn at 400KV Gokarna S/stn.					Jun'16	Award placed in Mar'15. Supply, & Civil works under progress.

PROGRESS REPORT UP TO MARCH 2016

क्रमांक Sl. No.	सब स्टेशन का नाम Name of the Sub -Station	एम.वी.ए अनुपात MVA Ratio	भा.स./नि.मं अनुमोदन GoI / BoD Approval	इरेकशन ठेकेदार Erection Contractor	संपूर्ति लक्ष्य Completion Tgt.		Remarks
					Schedule	प्रत्याशित/ वास्तविक Ant./ Act	
10	**Eastern Region Strengthening Scheme-IX**		**Feb'14**		**Feb'16**	**Jun'16**	Compln. Sch. - 24 months from date of investment approval
10.1	Installation of 125 MVAR Bus Reactor at Gazwaka (1 no.), Rengali (2 nos.), Maithon (1 no.), Biharshariff (1 no.), Jamshedpue (2 nos.), Rourkela (1 no.) and Durgapur (2 nos.) Converting 2x80 MVAR LR at Gorakhpur end of Barh-II - Gorakhpur 400KV D/C line to 2x80MVAR Switchable LR.			BHEL		Jun'16	Awarded in Jun'14. Engg., supply, Civil work & erection under progress. Completion delayed due to delay in manufacturing of Reactors by M/s BHEL. Yet to be taken up.
10.2	ICT at 400/220KV at Muzaffarpur S/S.	500		Toshiba		Dec'15	Commissioned in Dec'15.
10.3	ICT at 220/132KV at Ara S/stn.	160		Toshiba		Dec'15	Commissioned in Dec'15.
10.4	Repl. 2 nos. ICT's, 500MVA to 315 MVA at 400/220KV Maithon S/stn.	370		Toshiba		Jun'16	Award placed in Oct'14. Engg., supply, civil work & erection under progress.
10.5	Procur. 500MVA ICT at 765/400KV Gaya S/stn.			Alstom		Jun'16	Award placed in Jun'15.
11	**Eastern Region Strengthening Scheme-XII**	**2100**	**May'14**		**Nov'16**	**Nov'16**	Compln. Sch. - 30 months from date of investment approval
11.1	Installation of 125 MVAR Bus Reactor at Baripada (1 no.) & Maithon (1 no.) with GIS bays. Conversion of 50 MVAR LR, presently installed at Jeerat end of Baharampur - Jeerat 400KV line as BR in parallel with existing BR at Jeerat.			Hysoung & L&T		Nov'16	Award placed in Oct'14. Engg., supply, civil works & erection under progress.
11.2	Addition of 500MVA ICT at 400/220KV Baripada S/stn.	500		Alstom		Nov'16	Awarded in Jun'14. Engg., supply, civil work & erection under progress.
11.3	Repl. 2 nos. ICT's, 315MVA to 500MVA at 400/220KV Purnea S/stn.	370		Alstom		Nov'16	ICT- I commissioned in Jul'15. Balance work under progress.

PROGRESS REPORT UP TO MARCH 2016

क्रमांक Sl. No.	सब स्टेशन का नाम Name of the Sub -Station	एम.वी.ए अनुपात MVA Ratio	भा.स./नि.मं अनुमोदन GoI / BoD Approval	इरेकशन ठेकेदार Erection Contractor	संपूर्ति लक्ष्य Completion Tgt.		Remarks
					Schedule	प्रत्याशित/ वास्तविकAnt./ Act	
11.4	Repl. 2 nos. ICT's, 315MVA to 500MVA at 400/220KV Pusali S/stn.	370		Alstom		Nov'16	ICT- I commissioned in Mar'16. Balance woprk under progress.
11.5	Repl. 2 nos. ICT's, 315MVA to 500MVA at 400/220KV Patna S/stn.	370		Alstom		Nov'16	Awarded in Jun'14. Engg. civil works, supply & erection under progress.
11.6	Shifting 1 no. ICT, 315MVA to 500 MVA at 400/220KV Jamshedpur S/S.	185		Alstom		Nov'16	Awarded in Jun'14. Engg., supply & civil work under progress.
11.7	Shifting 1 no. ICT, 315MVA to 500 MVA at 400/220KV Farakka S/S.	185		Alstom		Nov'16	Awarded in Jun'14. Engg., supply, civil work & erection under progress.
11.8	Repl. 1 no. ICT's, 100MVA to160MVA at 220/132KV Siliguri S/stn.	60		Alstom		Jan'16	Commissioned in Jan'16.
11.9	Repl. 1 no. ICT's, 100MVA to160MVA at 220/132KV Purnea S/stn.	60		Alstom		Feb'16	Commissioned in Feb'16.
11.10	Repl. 1 no. ICT's, 100MVA to160MVA at 220/132KV Birpara S/stn.	60		Alstom		Dec'15	Commissioned in Dec'15.
11.11	Modification of 132KV Bus arrangement at 220/132 KV Siliguri & Purnea S/stn. with GIS bays.	-		Hysoung & L&T		Nov'16	Awarded in Oct'14.Supply, civil works & erection under progress.
11.12	Const. of 4 nos 220KV GIS line bays at Kishanganj S/stn.	-		Hysoung & L&T		Nov'16	Awarded in Oct'14.Supply, civil works & erection under progress.

PROGRESS REPORT UP TO MARCH 2016

क्रमांक Sl. No.	सब स्टेशन का नाम Name of the Sub -Station	एम.वी.ए अनुपात MVA Ratio	भा.स./नि.मं अनुमोदन GoI / BoD Approval	इरेकशन ठेकेदार Erection Contractor	संपूर्ति लक्ष्य Completion Tgt.		Remarks
					Schedule	प्रत्याशित/ वास्तविक Ant./ Act	
12	**Eastern Region Strengthening Scheme - XIII**		**Nov'14**		**Nov'16**	**Mar'16**	
12.1	Upgradation of Bays at Ferakka & Malda S/stn.			Alstom		Mar'16	Charged in Mar'16.
13	**Sub station extn. works associated with Eastern Region Strengthening Scheme - VII**		**Mar'15**		**Mar'17**	**Mar'17**	Compln. Sch. - 24 months from date of investment approval
13.1	Extn at 400KV bays at 400/220KV Purulia PSPP Sw.Yd., Kharagpur, Chaibasa and 765/400KV Ranchi S/stn. (02 nos. each)					Mar'17	Purulia & Kharagpur bays to be executed by West Bengal on deposit work basis. Bay at Purulia to be constructed in New S/S at Purulia (WBSETCL) due to space constraint. Interim arrangement to be made accordingly by WBSETCL. Work under progress.
13.2	Extn at 765/400KV Ranchi S/stn. end (2x50 MVAR LR) and 400/220KV Chaibasa S/stn. end (2x63 MVAR LR)			Empower		Mar'17	Award placed in Jun'15. Engg., supply & civil work under progress.
14	**Transmission System Associated with Darlipalli TPS**		**Jan'16**		**Jun'18**	**Jun'18**	Compln. Sch. - 29 months from date of IA
14.1	Extn. at 765KV at Jharsaguda (Sundergarh) Pooling Station.					Jun'18	Award under progress.

Annexure-II

Status of TBCB Transmission Projects

S. N.	SPV Name And Executing agency	Name of associated Project	BPC	Estd. Cost (Rs Cr)	Scope of works	Current Status
1		2	3	4	5	6
1	DMTCL (Essel Infraprojects Ltd.)	**Eastern Region System Strengthening Scheme-VI**	PFC	540		(i) LOI placed on 17.10.2013 (ii) Special Purpose Vehicle acquired on 10.12.2013 (iii) Tariff adoption approval issued by CERC on 20.5.2014 (iv) Transmission license received on 30.5.2014 (v) Clearance u/s 164 : received on 4/9/2014 (vi) Scheduled COD: Darbhanga Element : June 2016 Motihari Element : August 2016
					(i). 2x500 MVA, 400/220 kV GIS Substation at Darbhanga with space for future extension (500 MVA)	Land 100% Civil work 60% Equip Supply 40% (Structure material received at site. 400 kV and 220 kV GIS reached at port. Transformers under transit.) Equip. Erection 2%
					(ii). 2x200 MVA, 400/132 kV GIS Substation at Mothihari with space for future extension (200 MVA	• Land 100% • Civil work 35% • Equip Supply 10% (Transformers & 3 Reactors under transit.) • Equip. Erection 0% **Issues:** 1) Geological surprise at S/S land and ground improvement took approx. 5 months before commencing any foundation work. 2) Flooding of S/S land in Aug/Sep 2015. • Prohibition of sand mining in Bihar from 9th Feb 2016 to 3rd Mar 2016.

S. N.	SPV Name And Executing agency	Name of associated Project	BPC	Estd. Cost (Rs Cr)	Scope of works	Current Status
					(iii). Muzaffarpur(PG)- Darbhanga 400 kV D/c line with triple snowbird conductor	• Loc 178 • Fdn 155 • TE 131 • STG 87.2/126 (Ckm) **Forest** : Stage I approval received. **Power Line Crossings** : All approved. **RailwayLine Crossings** : Demand submitted. **National Highway Crossings** : Under approval. **PTCC** : Submitted in Nov 2015. **Issues:** 1) Involvement of forest (deviation from RFP). 2) Severe RoW issues in Darbhanga & Muzaffarpur Distts. 3) Very high no. of trees in the route due to which local resistance is very high. 4) Demand charges raised by PGCIL for under crossing of their 400 kV line. PGCIL yet to provide the guidelines under which demand is raised. • Prohibition of sand mining in Bihar from 9th Feb 2016 to 3rd Mar 2016.

S. N.	SPV Name And Executing agency	Name of associated Project	BPC	Estd. Cost (Rs Cr)	Scope of works	Current Status
					(iv). LILO of Barh –Gorakhpur 400 kV D/c line at Mothihari, 400kV 2xD/C quad	• Loc 210 • Fdn 197 • TE 158 • STG 62/152 (ckm) **Forest** : Under approval for stage I. FRA pending from Motihari Distt. **Power Line Crossings** : All approved. **RailwayLine Crossings** : Under approval **National Highway Crossings** : Under approval. **PTCC** : Submitted in Feb 2016. **Issues:** 1) Involvement of forest (deviation from RFP). 2) Flooding of Gandak river affecting construction of line. Prohibition of sand mining in Bihar from 9th Feb 2016 to 3rd Mar 2016.
2	PKTCL (Sterlite Grid Ltd.)	**Eastern Region System Strengthening Scheme-VII**	PFC	370	General Details	(i) LOI placed on 17.09.2013 (ii) Special Purpose Vehicle acquired on 09.12.2013 (iii) Transmission license granted by CERC (iv) Tarrif adoption done by CERC Scheduled COD: 09.03.2016.
					(i) Purulia PSP(WB) – Ranchi (PG) 400 kV D/C line	**Loc: 302** **Fnd:248** **Erec:168** **Stg: 30/370** Expected COD: **Aug'16**
					Chaibasa – Kharagpur 400 kV D/C line	**Loc: 426** **Fnd:422** **Erec:413** **Stg:290/332 ckm** Expected COD: **May'16**

S. N.	SPV Name And Executing agency	Name of associated Project	BPC	Estd. Cost (Rs Cr)	Scope of works	Current Status
3	**Sterlite**	Common Transmission system for phase-II generation projects in Orissa and immediate evacuation system for OPGC project (Orissa)		1587		➢ LOI placed on Jan-2016 ➢ Special Purpose Vehicle acquired on ➢ Transmission License granted on ➢ Tariff adoption approval on ➢ Clearance under Section 164 : Submitted on
					Jharsuguda – Raipur 765 kV D/C (hexa)	• Loc • Fdn • TE • STG 0/644 (Ckm) • Scheduled Completion:
					OPGC – Jharsuguda 400 kV D/C (triple)	• Loc • Fdn • TE • STG 0/110 (Ckm) • Scheduled Completion:
4.	TTCL(Reliance Power Transmission Company Ltd.)	Talcher-II Augmentation System	REC	1400	(i)Talcher II- Rourkela 400 kV D/C Quad line (ii)Talcher II – Behrampur 400 kV D/C line (iii)Behrampur-Gazuwaka 400 kV D/C line (iv)400/220 kV, 2x315 MVA Behrampur substation	LOI issued on 18-12-2009 SPV acquired by Reliance on 27-04-2010 (Effective date) Matter was in CERC for revision of tariff and extension of date of commissioning. TTCL filed an appeal in appellate tribunal challenging CERC order of 9.5.2013. Appellate Tribunal has given final judgment on 2.12.13 setting aside CERC order and allowing the appeal. TTCL is initiating steps for implementing of order. The judgment of Appellate Tribunal accepts delay in clearance under section-164 as force majeure. According TTCL have requested MoP to extend the validity of section 68 clearance vide their letter dtd 14.1.2014. Beneficiaries have appealed SC. **Work yet to start.**

S. N.	SPV Name And Executing agency	Name of associated Project	BPC	Estd. Cost (Rs Cr)	Scope of works	Current Status
5	Alipurduar Transmission Ltd. (Kalpataru Power Transmission Ltd.)	Transmission system strengthening in Indian system for transfer of power frem new HEP's in Butan	REC		(i) Alipurduar - Siliguri 400kV D/C line (2nd) with Quad moose conductor (ii) Kishanganj - Darbhanga 400kV D/C line	• LOI placed on : 29/10/2015 • TSA signed on: • Special Purpose Vehicle acquired on: 06/01/2016 • Tariff adoption approval issued by CERC: 22/03/2016 • Transmission license: 21/03/2016 • Clearance u/s 164 : Scheduled COD: 05/03/2019
					Alipurduar (PG) – Siliguri (PG)	• Loc • Fdn • TE • STG / (Ckm) • Scheduled Completion:
					Kishanganj (PG) – Darbhanga (DMTCL)	• Loc • Fdn • TE • STG / (Ckm) • Scheduled Completion:

Status of approved TBCB Tr. Projects

Annexure - III

S. No.	Name of the Project	BPC / Implementing Agency / Milestones	Scope of works	Current Status
1	Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha Estimated Cost as provided by Empowered Committee: Rs. 2748 crore	PFCCL **Milestones:** (i) MoP vide Gazette Notification dated 06.02.15 appointed PFCCL as BPC. (ii) SPV incorporated on 17.04.2015 (iii) RFQ notice published on 23.04.2015.	(i) OPGC (IB TPS) – Jharsuguda (Sundargarh) 400kV D/C line with Triple Snowbird Conductor 400 kV D/C Length- 50 KM (ii) Jharsuguda (Sundargarh)– Raipur Pool 765 kV D/C line 765 KV D/C Length- 350 KM	Under Bidding process
2	Immediate evacuation for North Karanpura (3x660MW) generation project of NTPC	REC TPCL **Milestones:** (i) MoP vide Gazette Notification dated 17.11.2015 appointed RECTPCL as BPC.	(i) North Karanpura – Gaya 400 kV D/C with quad moose conductor. (ii) North Karanpura – Chandwa (Jharkhand) Pooling Station 400 kV D/C with quad moose conductor.	Under Bidding process
3	Creation of 400/220 kV sub-station at Dhanbad - Proposal of JUSNL (ERSS-XIX)	REC TPCL **Milestones:** (i) MoP vide Gazette Notification dated 17.11.2015 appointed RECTPCL as BPC.	(i) Establishment of 400/220 kV, 2x500 MVA sub-station at Dhanbad (ii) LILO of both circuits of Ranchi-Maithon RB 400 kV D/C line at Dhanbad	Under Bidding process
4	765 kV System Strengthening Scheme in Eastern Region (ERSS-XVIII)	PFCCL **Milestones:** (i) MoP vide Gazette Notification dated 17.11.2015 appointed PFCCL as BPC.	(i)Establishment of 765/400kV, x1500MVA substation at Medinipur (ii)Establishment of 765/400kV, 2x1500MVA substations at Jeerat (New) (iii)Ranchi (New) – Medinipur 765kV D/C line with 2x330 MVAR switchable line rector at both ends (iv)Medinipur – Jeerat (New) 765kV D/C line (v)Medinipur – Haldia New (NIZ) (WBSETCL) 400kV D/C line (quad / HTLS) (vi)LILO of both circuits of Chandithala – Kharagpur	Under Bidding process

S. No.	Name of the Project	BPC / Implementing Agency / Milestones	Scope of works	Current Status
			400kV D/C line at Medinipur (vii) Jeerat (New) – Subhasgram 400 kV D/C line (quad/HTLS) viii) Jeerat (New) – Jeerat (WB) 400 kV D/C line (quad/HTLS) (ix) LILO of Jeerat (WB) – Subhasgram (PG) 400 kV S/C section at Rajarhat (PG) (x) 2 no. 400 kV line bays at Haldia New (NIZ) (WBSETCL) (xi) 2 no. 400 kV line bays at Jeerat (WBSETCL)	

The justification for Ara (Bhojpur) GSS and Munger GSS-

1. Name of proposed 400/220 KV Substation- Munger

Reason for 400 KV Sub-station-

In the study of transmission system planning for the 12th plan, creation of 400/220 KV Kajara Pool S/s was envisaged for evacuation of power from proposed Generation Station Pirpainti & Lakhisarai.

During study for 13th plan, 400/220 KV S/s has been proposed at Saharsa to meet load demand of 24X7. As per the studies, Kajara Pool is connected at 400 KV level with Saharsa and Darbhanga 400/220 KV GSS.

Munger is a suitable location for 400/220 KV sub-station as many 220/132 KV S/s are located around Munger (Sabour (new) (2X160) (U/C), Jamalpur (new) (2X160) (U/C), Khagaria (new) (2x160) (U/C), Sheikhpura(2X160)(U/C)). It therefore, appears appropriate to shift the location of Kajra Pool to Munger & retain the connectivity as it is. The distance between Kajara Pool & Munger is not much and therefore the studies result will hold good. This arrangement will also provide strong connectivity between North & South Bihar (Munger& Saharsa) at 400 KV level which otherwise has remained a matter of concern. Munger GSS may be connected at 400 KV level with ISTS line passing near to it.

2. Name of proposed 400/220 KV Substation- Bhojpur/Ara

Reason for 400 KV Sub-station-

1. In the absence of Buxar TPS, the power source for Dumraon GSS 220/132KV is from the LILO of both ckt. of Ara(PG) –Pusauli(PG). Pusauli(BSPTCL) is also getting power from LILO of both ckt. of Ara(PG) – Pusauli(PG). Karmanasa(New) 220/132 is getting power from Pusauli(BSPTCL). It can therefore be observed that above 220 KV GSS have inadequate source of power due to repeated LILO of same Ara(PG) –Pusauli(PG) 220 KV line.

. As part of Generation linked schemes, the power evacuation of Buxar TPS is through Naubatpur GSS at 400 KV level. At 220 KV level the power evacuation is through Dumraon, Pusauli(BSPTCL) and at Dehri GSS. Karmanasa(New) 220/132 is also getting power from Pusauli(BSPTCL). Hence Buxar TPS provides strong source to all the aforesaid 220 KV GSS.

To facilitate proper source to these GSS in the outage of Buxar TPS it is envisaged to create one 400/220 KV sub-station near Ara having connectivity with Buxar TPS and also with ISTS line at 400 KV level. All 220/132 KV GSS planned to be connected with Buxar TPS will be shifted to Ara 400/220 KV GSS. The power from Buxar TPS will be evacuated through Ara and Naubatpur 400/220/132/33 KV GSS. As such there will be no connectivity from Buxar TPS at 220 KV level. One sketch showing this arrangement is enclosed.

2. The existing and upcoming GSS within state capital would be on verge of saturation by 2019. One 400/220 KV S/S at Ara would greatly reduce the saturation and congestion for meeting demand of state capital.

3. This may also be integrated with generating project coming up at Buxar. Total land has been acquired for the TPS. The site works is in progress & it is expected to be commissioned by Yr. 2020.
4. The land requirement for 400/220 KV S/s would be considerable and would take time in acquisition. In view of development of Buxar, it is appropriate to go ahead and take up work of 400/220 KV Ara S/s which will ensure power dispersal to area near Patna also.

Therefore it seems appropriate to have 400/220 KV GSS at Ara.

Probable associated 400 KV line-

i) Ara GSS(400/220 KV) to upcoming Generation Projects i.e. Buxar TPS(2x660 MW)

ii) Buxar TPS 400/220 KV GSS to Naubatpur GSS(400/220/132/33 KV).

iii) LILO on 400 KV Patna (PG)- Balia (PG) (D/C) transmission line or LILO on 400 KV Biharsarf (PG)-Balia (D/C) transmission line

220 KV downlinking transmission line-

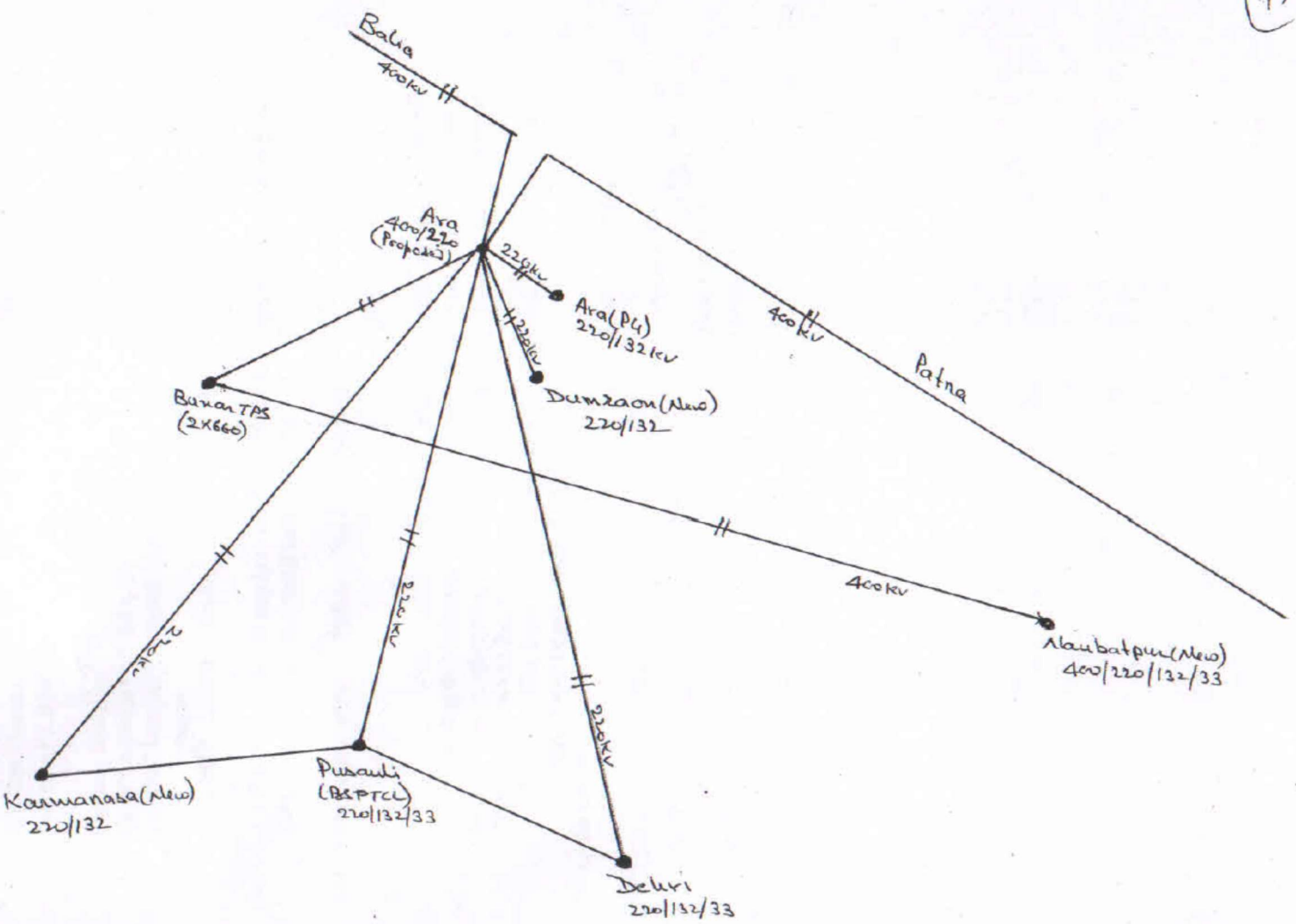
a)220 KV Ara GSS- Ara (PG) (D/C) transmission line.

b)220 KV Ara GSS - Dumroan (new) (D/C) transmission line.

c) 220 KV Ara GSS - Dehri (D/C) transmission line.

d) 220 KV Ara GSS – Pusauli (new) (D/C) transmission line.

e) 220 KV Ara GSS – Karmanasa (new) (D/C) transmission line.



New proposed connection with Ara-400/220kV GSS (proposed).

Minutes of meeting held on 16.12.2015 with Railway, ERPC, JUSNL and BSPTCL in the Conference Room Of Managing Director, BSPTCL regarding feeding power to Nagar-Utari tss through LILO of Rihand-Sonenagar (CKT-I) line of Nagar-Utari.

Presence -

Sr. no.	Name	Designation	Company/Organisation
1	Sri M. K. VERMA	Managing Director	BSPTCL
2	Sri B. SHARMA	Director Projects	BSPTCL
3	Sri G.K.CHOUBEY	Chief Engineer(Trans)	BSPTCL
4	Sri B.K.THAKUR	ESE	BSPTCL
5	Sri R.K.AMBASHTHA	EEE	BSPTCL
6	Sri M.K.SHARMA	AEE	BSPTCL
7	Sri S. KEJRIWAL	EE	ERPC,KOLKATA
8	Sri O.P.SINGH	GM-cum-CE	JUSNL
9	Sri A.K.SINGH	ESE	JUSNL
10	Sri G.P.KATIYR	Dy. CEE-II	RAILWAY
11	Sri.A.N.PRASAD	AEE	RAILWAY

The important points discussed during meeting are as follows:-

RAILWAY

(1) Railway has requested to supply Power to Nagar - Untari TSS through LILO of 132 KV Sonenagar-Rihand (Ckt-I).

(2) The Railway is ready to fulfill the commercial aspect in respect to payment to JUSNL and BSPTCL as per terms and condition applicable to rules JERC/BERC/CERC regulations.

JUSNL

(1) JUSNL informed that in such case there will be no monitoring/Control and Protection of the line from JUSNL. JUSNL representative will inform the matter to JUSNL HQ, to take suitable decision to safeguard interest of JUSNL and the same will be communicated to Railway and BSPTCL.

(2) The commercial aspect/issues may be discussed with Jharkhand Vitaran Nigam Ltd. and their consent is essential.

(3) JUSNL suggested Railway to feed power to Nagar Untari by constructing a Switching Station/Mini Grid at Nagar Utari with minimum 20 MVA Power Transformer 132/33 KV with suitable protection and control system.

ERPC

(1) Since the matter is related with Inter regional Transmission line (Eastern & Northern region),consent of Standing Committee of Power of ER and NR will be required.

BSPTCL

(1) BSPTCL, wants Railway to have long term open access agreement and make payment of all relevant open access changes in accordance with provision of BERC open access Regulation as amended through time to time.

(2) Drawal of power by Railway through the said line may be included in the drawal of power by JUSNL.