EASTERN REGIONAL POWER COMMITTEE

MINUTES OF 2ND MEETING OF STANDING COMMITTEE ON TRANSMISSION PLANNING FOR STATE SECTORS HELD ON 04.12.2015 (FRIDAY) AT 11:00 HOURS AT ERPC, KOLKATA

List participants is enclosed at **Annexure-A**.

PART – A

ITEM NO. A.1: Confirmation of minutes of 1st SSCM of ERPC held on 21.09.15

The minutes were circulated vide letter dated 07.10.15 to all the constituents and also uploaded in ERPC website.

Thereafter, an addendum for Agenda Item of BSPTCL under 'ITEM NO. B.6: ANY OTHER ITEM' is circulated vide letter dated 26-10-2015.

Members may confirm the minutes with above addendum.

Deliberation in the meeting

Members confirmed the minutes of 1st SSCM with above addendum.

ITEM NO. A.2: Constitution of Standing Committee on Transmission Planning for State Sector of Eastern Region

In line with decision taken in 30th ERPC meeting Standing Committee on Transmission Planning for State Sectors in Eastern Region was formed.

First meeting was held at ERPC, Kolkata on 21.09.2015 chaired by Director (Projects), BSPTCL. Salient Decisions taken in the meeting are as follows:

- Apart from STUs, one representative from each SLDC/CLD of ER and GM, ERLDC will be member of the Standing Committee.
- Powergrid (representatives from ER-I, ER-II and PG-Odisha) will also be members of the Standing Committee.
- CEA and CTU will also be invited for the meetings of Standing Committee and their System Study Group may be called as and when required by the Standing Committee.
- The meetings of the Standing Committee will be held on Quarterly basis. However, the meeting should be convened at least before the SCM for CTU planning as conducted by CEA/CTU.
- It was decided to focus the following points in the meeting:

    - STU evacuation system from 400 kV PG/CTU Substations for proper load anchoring.
    - STU network strengthening schemes.
    - Constraints/congestion experienced in STU networks.
    - Any agenda of SCM for central sector, which needs detailed deliberation by ER States.
    - Progress of all transmission schemes (CTU/STU schemes) of ER may be placed before the Standing committee for monitoring purpose.

In 31st TCC, JUSNL, Sikkim and Powergrid (ER-I, ER-II and PG-Odisha), CTU were advised to send the nomination before 2nd Standing Committee on State Sectors meeting scheduled to be held on 4th December, 2015.

TCC also advised all the STUs to nominate SLDC representative before 4th December, 2015.

JUSNL, Sikkim, STU and Powergrid/CTU may nominate their representatives.

Deliberation in the meeting

Following members were nominated:

- *CTU: Shri Ashok Pal, AGM*
- *Powergrid ER-II: Shri A. K. Rohtagi, AGM (AM)*
- *Powergrid Odisha: Shri G.C. Dhal, GM & Shri A. K. Behera, DGM*
- *WBSLDC: Shri, S. Roy, CE, WBSLDC*

DVC and BSPTCL agreed to send their nomination of SLDCs within a week.

JUSNL and Sikkim were not available for discussion.

Committee requested JUSNL, Sikkim, SLDCs and Powergrid ER-I to nominate their representative for fruitful deliberation in the meeting.

PART – B :: AGENDA ITEMS BY UTILITIES FOR DISCUSSION

ITEM NO. B.1: BSPTCL proposal in 1st SSCM

To cater the future power demand of the State and to comply 24 x 7 PFA objective of Government of India, BSPTCL In 1st SSCM placed the following proposal:

Construction of additional 400/ 220/132 KV S/s at Begusarai, Chapra & Saharsa in North Bihar and Bhojpur /Bikramganj and Munger in South Bihar under Central Sector Scheme. Power transmission capacity in these new sub-station will be required – 400/220 KV- 2x500 MVA & 220/132 KV- 2x160 MVA.

In view of above proposal, CEA opined vide letter dated 19.11.2015 (the letter is enclosed at **Annexure-B1**) that, for these five sub-stations no justification was provided by BSPTCL. CEA requested BSPTCL to provide the following information:

i. Interconnection of the proposed sub-stations with ISTS system.
ii. Down linking 220/132kV system proposed for drawal of power from these sub-stations.
iii. Present peak load and anticipated load at year 2018-19 to be fed from these sub-stations.

BSPTCL may elaborate and Members may discuss.

Deliberation in the meeting

BSPTCL explained that for meeting the growing demand of Bihar, BSPTCL is in very much need of these five 400/ 220/132 KV S/s sub-stations at Begusarai, Chapra & Saharsa in North Bihar and Bhojpur /Bikramganj & Munger in South Bihar.

*BSPTCL submitted the draft/tentative information as required by CEA for the above sub-stations which is given at **Annexure-B.1**. Further, BSPTCL informed that the complete details as required by CEA is under preparation and will be submitted soon to CEA & ERPC secretariat as well.*

ITEM NO. B.2: Agenda by WBSETCL

ITEM NO. B.2.1: 765 kV System Strengthening Scheme in Eastern Region

In the 17th Standing Committee Meeting on Power System Planning in Eastern Region held on 25.05.2015 at NLDC, New Delhi, implementation of 765 kV ring as Eastern Region Strengthening Scheme -18 (ERSS-18) : 765 kV System Strengthening in ER (Phase-I) with the scope of works was approved as given below :

a) *Establishment of 765 / 400kV, 2x1500 MVA substations at Medinipur & Jeerat (New)*
b) *Ranchi (New) –Medinipur 765 D/C line*
c) *Medinipur- Jeerat (New) 765 D/C line*
d) *Medinipur –Haldia New (NIZ) (WBSETCL) 400kV D/C line (quad /HTLS)*
e) *LILO of New Chanditala –Kharagpur 400kV D/C line at Medinipur*
f) *Jeerat (New)-Subhasgram 400kV D/C line (quad /HTLS)*
g) *Jeerat (New)- Jeerat 400kV D/C line (quad /HTLS)*
h) *LILO of Jeerat (WB)-Subhasgram 400kV S/C section at Rajarhat*

The scheme was ratified in the 30th ERPC held on 20.06.205 at Shimla. The present status regarding execution of the project is not known to stake holders. CTU shall be requested to prioritize the project and take necessary action for immediate implementation.

Simultaneously, it is proposed to take up the 765 kV ring from Jeerat –Gokarna (New)- Banka (New)-Gaya 765kV D/C corridor. This will facilitate strong 765kV ring in the region. When establishment of 765kV substation at Gokarna & Banka would be necessary, this line would be utilized.

In 1st SSCM, members agreed to forward the proposed scheme to CTU for their study so that the same may be explained by their Study Group in the next meeting of Standing Committee.

CTU may update.

Deliberation in the meeting

CTU explained with the diagram of 765 kV ring of ER that the above mentioned lines as approved in 17th SCM will be constructed in first phase of 765 kV strengthening scheme of ER under TBCB which is presently at RFQ stage.

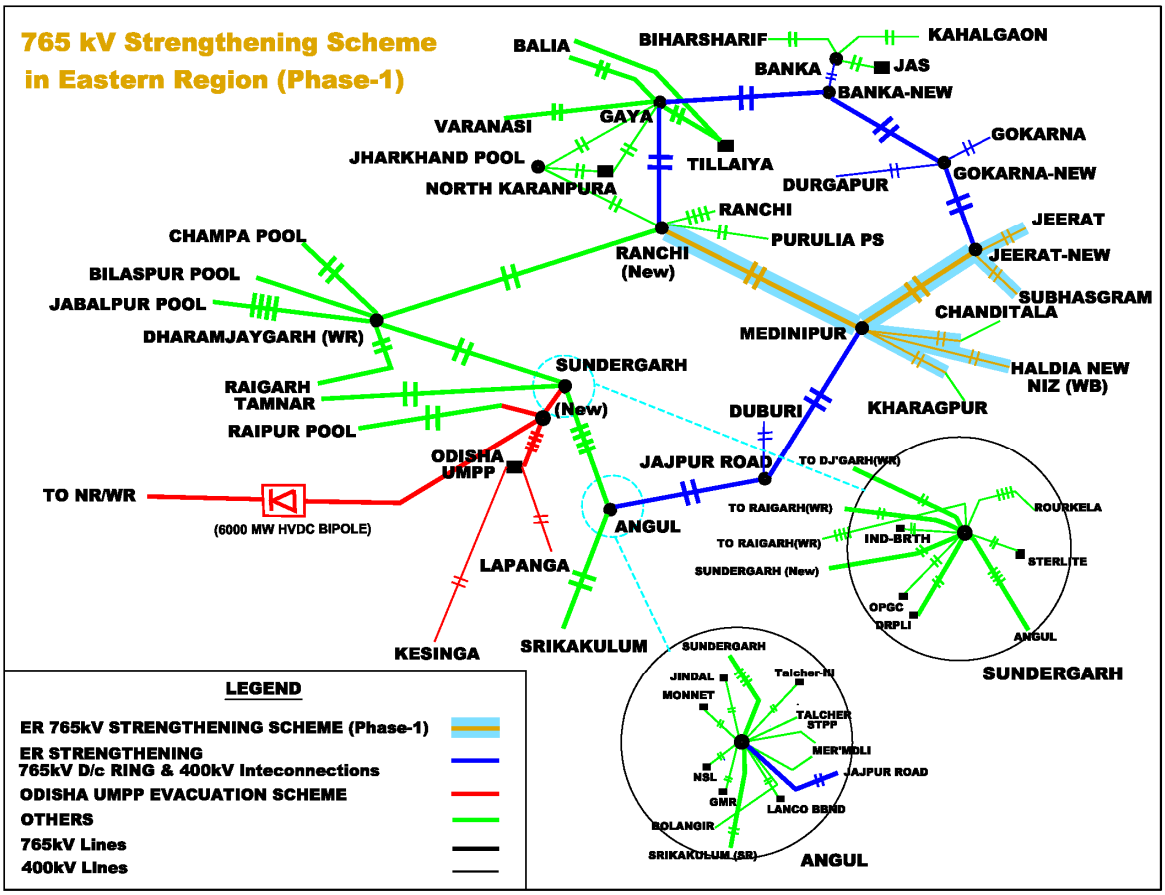
Further, CTU informed that the 765 kV ring from Jeerat –Gokarna (New)- Banka (New)-Gaya 765kV D/C corridor will be taken up in second phase after getting the exact schedule of UMPP Power Projects of Bihar (At Banka) and Jharkhand (At Chandwa).

However, committee felt that the 765 kV ring of ER should be completed for better stability and also in view of load growth of West Bengal, Bihar & Jharkhand.

Further, committee advised Bihar to furnish the status of Banka UMPP and load growth at adjoining areas to Banka.

West Bengal & Bihar were advised to give a forecast of future load growth in respective system.

West Bengal & Bihar agreed to submit the above information at the earliest.



ITEM NO. B.2.2: Construction of Haldia New (NIZ) 400/ 220 kV substation under Regional Scheme

WBSETCL planned to establish one 400 kV substation at of Haldia New (NIZ) with LILO of KTPS – Kharagpur 400 kV S/C line. WBSETCL has already identified around 15-16 Acres of private land which is suitable for construction of 400kV GIS.

In the 17th SCM on Power System Planning in Eastern Region held on 25.05.2015 at NLDC, New Delhi, 400 kV D/C from Medinipur to Haldia New(NIZ) was approved under Regional Scheme.

Main objective of this connectivity was to create a strong corridor namely Medinipur - Haldia New (NIZ) –HEL TPS –Subhasgram (PG) where in HEL TPS to Subhasgram 400 kV D/C line already commissioned by Haldia Energy Ltd. (HEL).

It was observed that after establishment of Medinipur -400 kV Haldia New (NIZ) 400kV D/C, proposed 400kV LILO of WBSETCL will be little help for Haldia New (NIZ) 400kV substation.

It is also to be noted that the proposed 400kV ring would help the 400kV grid of the region. All the connectivity of the proposed 400kV substation is with CTU system (with some portion of Private network).

In view of above, it is proposed to establish the 400 kV substation under Regional Scheme. The 220kV connectivity from the substation will be executed by WBSETCL in its cost.

In 1st SSCM, Members agreed to forward the proposal to CTU and SCM for central sector (18th SCM) for their study and further deliberation.

CEA, CTU may update.

Deliberation in the meeting

CTU informed that the said lines were already approved in SCM and are in much advance stage of execution (presently at RFQ stage). So now, the proposal of 400 kV substation at Haldia New (NIZ) is not possible to be taken under Regional Scheme. Otherwise, CTU further opined, the commissioning of Sub-station will not match with the line and there will be a huge mismatch.

Therefore, WBSETCL was advised by members to construct the S/S under state scheme.

ITEM NO. B.2.3: 220kV connectivity from Parulia 400kV substation of POWERGRID

WBSETCL has planned to up-grade its Ukhra 132kV substation to 220kV GIS to meet the growing demand in that area. Feasibility study for construction of 220kV GIS has been done. Line route survey is also in progress.

Initially there was 220kV connectivity in between Parulia (PG) and Durgapur. After conversion of the said connectivity at 400kV level, 220kV bays has become idle. It is proposed that POWERGRID shall provide two nos. 220kV bays at Parulia(PG). The 220kV line will be constructed by WBSETCL at its cost.

In 1st SSCM, ERLDC informed that if WBSETCL wants to draw power from 400/220 kV Durgapur (PG) S/s, considering the growing demand of DVC the 2x315 MVA ICTs may need to be Augmented to 2x500 MVA.

Members requested ERPC/ERLDC to carry out the system study for the above system and place the results in next meeting of SSCM. WBSETCL was advised to provide the load and connectivity details to ERPC/ERLDC for system study.

WBSETCL agreed.

ERLDC/ERPC may present the study results.

Deliberation in the meeting

ERLDC/ERPC presented the study results.

*The brief study results are enclosed at **Annexure-B.2.3**.*

It was observed that N-1 compliance may be getting adversely affected for 400kV Parulia-Bidhanagar D/C line with future loading of the West Bengal. Committee advised ERPC/ERLDC to check the loading of DVC network simultaneously for all the cases.

WBSETCL informed that 400kV Parulia-Bidhanagar D/C line is a short line and its conductor is also being replaced with HTLS or with other high capacity conductor. This will further facilitate the N-1 criterion of 400kV Parulia-Bidhanagar D/C line.

CTU informed that the two bays will be provided to WBSETCL subject to their confirmation in the next SCM for central sector.

WBSETCL informed that they will confirm the establishment of 220 kV Ukhra Sub-station after the completion of survey of ROW of the line.

ITEM NO. B.2.4: LILO of 132 KV Kolaghat – Kharagpur – Musaboni D/C line of DVC at Kharagpur and Debra of WBSETCL

The existing Jamshedpur – Musaboni – Hizlee (DVC) – Kolaghat (DVC) 132 kV D/C line passes through very close proximity of WBSETCL's Kharagpur 400/220/132 kV sub-station (around 1 Km) and Debra 132/33 kV sub-station (around 0.5 Km).

- WBSETCL proposed LILO of Musaboni – Hizlee (DVC) portion of this line at Kharagpur 400/220/132 kV sub-station of WBSETCL for injection of power which will lead injection of power in between and reduce the effective length of continuous 132 kV line from 240 Km to 160 Km.

- WBSETCL proposed LILO of Hizlee (DVC) – Kolaghat (DVC) portion of this line at Debra 132 kV sub-station of WBSETCL, which is around 0.5 Km away from the line, for drawal of around 50-60 MW power. This will set aside construction of around 25 Km 132 kV D/C line from Midnapur to Debra.

In 31st TCC, ERPC gave a brief presentation on WBSETCL proposal and explained that since 400kV system is getting connected at 132kV Kharagpur(DVC) S/s, it will improve the voltage in around Kharagpur during peak load hours.

DVC also delivered a presentation and informed that they have installed 220/132 kV ATRs at Durgapur (DVC) due to which the low voltage problem at 132kV Kharagpur(DVC) S/s is now resolved.

After detailed discussion, TCC decided that a threadbare deliberation is required at State Standing Committee (SSCM) with all details, Accordingly, TCC advised DVC and West Bengal to submit the details required for load flow study to ERLDC/ERPC before next SSCM meeting and advised ERPC and ERLDC to carry out detailed study.

Accordingly, ERPC/ERLDC has done detailed study based on the details received from WBSETCL and DVC.

ERLDC/ERPC may present the study results.

Deliberation in the meeting

ERLDC/ERPC presented the study results.

DVC raised certain observations and put forward certain cases under which non-compliance of N-1 contingencies were apprehended. After detailed discussion, the committee advised ERPC secretariat/ERLDC to make detailed study considering present and future network of the both DVC and West Bengal.

ITEM NO. B.2.5: 220kV connectivity from Balasore (Orissa) to Egra 220 kV substation of WBSETCL

WBSETCL is constructing 220kV GIS at Egra to up-grade the existing 132kV substation at Egra for reliable and adequate power supply in the district Midnapur. The incoming 220kV line is from Kharagpur 400kV substation. The project is expected to be completed by 2016 end.

Now, the 220 kV substation will be established with a radial line. There is no other source to put it in ring main to satisfy the Grid Code. Considering the physical location, the nearest 220kV grid is Balasore 220kV substation of OPTCL.

It is proposed for approval of 220 kV D/C ISTS line between Egra to Balasore under Regional Scheme for reliable grid operation.

In 1st SSCM, the committee was advised WBSETCL to discuss the issue bilaterally with OPTCL.

Thereafter, ERPC/ERLDC has done study with next 5 years planed network of WBSETCL, as per the data received from WBSETCL.

ERLDC/ERPC may present the study results.

Deliberation in the meeting

ERLDC/ERPC presented the study results. 10 % load growth is assumed for both DVC and West Bengal for complete system. Node wise data for West Bengal in vicinity of interconnection is considered as follows:

Substation	MVA	P	Q
Hijli 132 KV SS	114	108.3	35.6
Kharagpur WBIDC 132 KV SS	59	56.1	18.4
Egra 132 KV SS **	120	114.0	37.5
Jhargram 132 KV SS	103	97.9	32.2
Keshiary 132 KV SS # (Modeled at Kharagpur)	50	47.5	15.6
Bajkul 132 KV SS *	65	61.8	20.3
Contai 132 KV SS	113	107.4	35.3
Haldia 132 KV SS	58	55.1	18.1
New Haldia 220 KV SS	81	77.0	25.3
Debra 132/33 KV SS (Prop)	45	42.8	14.1
Ramnagar 132 KV SS (Prop)	56	53.2	17.5

It was observed that around 140 MW of power is being imported from Balasore to Egra resulting in high loading of 220 kV Baripada-Balasore D/C.

After detailed discussion, the committee advised for detailed study considering future network of the West Bengal and with direct connectivity between Baripada-Egra.

ITEM NO. B.2.6: Study report on System Improvement of State Transmission System of West Bengal

WBSETCL vide letter dated 23rd November, 2015 (enclosed at **Annexure-B2**) requested for study report of the following for onward submission to NLDC for PSDF funding:

- Scheme for relieving congestion in Intra-state transmission system which is incidental to the ISTS
- Scheme for R&M of transmission systems for relieving congestion
- Installation of shunt capacitors and other reactive energy generators for improvement of voltage profile

ERPC advised ERLDC to carry out the study for onward submission to NLDC.

ERLDC may present the study results.

Deliberation in the meeting

ERLDC informed that preliminary study was made but for detailed analysis additional information from WBSETCL and DVC are required.

ITEM NO. B.3: Agenda by OPTCL

i. Construction of 400kV DC line from TTPS to 400/220kV Meramundali "B" for power evacuation from TTPS expansion

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

iii. Status of 400/220kV S/s at Meramundali "B"

OPTCL may elaborate and place their justification for the proposal.

Deliberation in the meeting

*OPTCL has submitted the details (enclosed at **Annexure-B.3**) and informed that all the three schemes are in planning stage.*

Committee advised OPTCL to submit the relevant data of their proposals along with their study results, SLDs etc for further necessary study at ERLDC/ERPC. OPTCL agreed.

ITEM NO. B.4: AGENDA FROM DVC:

1. Patratu (DVC) – Patratu (JSEB) Tie-line is kept only charge from DVC end since long and if the same status is maintained for future also, then DVC is to find out alternate network arrangement and thus investment and similarly, for Kolaghat-Kolaghat tie line, this is out since June'12.

In 1st SSCM, JUSNL informed that 132 kV Patratu (DVC) – Patratu (JSEB) tie-line was kept out due to overloading of 220/132 kV ICT of Patratu (JSEB). The scenario may get changed after the commissioning of 220 kV Tenughat-Govindpur line.

The committee requested JUSNL to provide the details of their related schemes.

JUSNL agreed.

DVC and JUSNL may update.

Deliberation in the meeting

The issue could not be discussed as JUSNL representatives were not present in the meeting.

2. 132KV Barhi – Rajgir and Barhi – Bihasariff and 132KV Chandil-Manikui tie lines are also remain charged from DVC end only, which have no utility at present condition. Such tie lines are to be revived for stability of the grid.

In 1st SSCM, BSPTCL informed that four (4) tower were collapsed from Barhi end. The order for restoration work has been placed.

DVC and BSPTCL may update.

Deliberation in the meeting

BSPTCL informed that all the foundations were completed for 132KV Barhi – Rajgir and the line will be charged within a month. 132KV Barhi – Bihasariff line is in charged condition on ERS.

ITEM NO. B.5: Priority-based augmentation of ICT capacity

High loadings with consequent non-compliance of (n-1) security criterion were observed for the 400/220kV ICTs at Patna, Muzaffarpur, Maithon and Sasaram throughout July to October. Though the ICT capacities at these substations are scheduled for augmentation in a phased manner starting from Jan-16, in the interest of secure and unconstrained operation, an additional ICT or replacement of an existing 315 MVA ICT by a 500MVA ICT is required on priority basis by April 2016 i.e. before onset of next summer season.

Keeping in view the rapidly growing demand of Bihar and uncertainty of generation level within the 220kV system of DVC, POWERGRID may arrange for augmentation of ICT capacity as per the aforesaid priority.

In 31st TCC, Powergrid has given the schedule of commissioning as follows:

1. Patna- 1st ICT – Jan, 2016 & 2nd ICT- Mar, 2016
2. Muzaffarpur- Dec, 2015
3. Maithon- 1st ICT- Mar, 2016 & 2nd ICT- June, 2016
4. Sasaram- 1st ICT- Jan, 2016 & 2nd ICT- Mar, 2016

So all the ICTs will be available before Summer.

Director,BSPTCL informed that the up-gradation of 315 MVA ICT by 500 MVA ICT at Purnea was accomplished in less than 10 days and therefore thanked Powergrid.

TCC appreciated the effort of Powergrid and advised Powergrid to prepare a write up for early commissioning/up gradation of ICT which may be circulated in lower forum of ERPC for the benefit of ER constituents.

Powergrid may update.

Deliberation in the meeting

Powergrid informed that all the ICTs are as per the above schedule.

ITEM NO. B.6: Priority-based commissioning of bus reactor for control of high voltage during lean periods

With approach of winter season, the demand in E. Region and W. Bengal in particular has started reducing, thereby aggravating the high voltage problem at some of the 400kV S/Stns.

At Beharampur, the 400kV bus voltage is frequently exceeding 420kV, with corresponding rise of 400kV AC side voltage at HVDC B-t-B Bheramara. Persistent high voltage at Farakka and at Sagardighi power stations is also responsible for causing high voltage at Beharampur.

As the switching in/out of harmonic filter banks is dependent on HVDC power order and cannot be controlled manually, Bangladesh is often expressing difficulty in importing the full quantum of power scheduled from NTPC and W. Bengal, to avoid overvoltage tripping of any 400kV incoming circuit, on account of automatic switching in of additional filter bank.

Therefore an additional bus-reactor of 80MVAR or 125 MVAR capacity needs to be installed at

Beharampur on urgent basis to control the 400kV voltage below 420kV. In addition, bus reactor capacity also needs to be enhanced at Farakka to control the voltage

Further, the bus reactor of Jamshedpur (125 MVAR) and Biharshariff (125 MVAR) needs to be installed in order of priority, as early as possible.

In 31st TCC, Powergrid informed that for additional bus-reactor of 125 MVAR capacity at Beharampur, NIT will be done in Nov, 2015 and best efforts will be made for commissioning the same by Dec, 2016 even when commissioning schedule is Apr, 2017.

Regarding Bus reactor of Jamshedpur and Biharshariff, it was informed that the reactors will be available by April/May 2016 and will be commissioned in another 3 months.

TCC advised Powergrid to expedite the diversion of reactors from other regions/locations.

NLDC informed that additional bus reactor at Behrampur is urgently required as Bangladesh power is getting curtailed because of high voltage issues.

Powergrid informed that efforts are being made to divert 50 MVAR reactor from Rourkela which is kept as a spare to Beharampur and to commission by June 2016.

Powergrid may update.

Deliberation in the meeting

Powergrid informed that Jeypore reactor was commissioned in November, 2015 and rest all the reactors are as per the above schedule.

ITEM NO. B.7: Identification of non-ISTS carrying inter-state power

The CERC (Sharing of Transmission charges and Losses) (Third Amendment) Regulations, 2015 require the identification of STU lines carrying interstate power. The certification of such lines carrying interstate power are to be done by RPC in consultation with RLDC. List of lines proposed to be carrying interstate power had been sought from all the states, however, only WBSETCL and OPTCL have responded.

In a Suo-Motu Petition (Petition No-15/Suo-Motu/2012 dated 14.06.2012), CERC had observed thus:

6. As a first step towards inclusion of non-ISTS lines in the PoC transmission charges, the Commission proposes to include the transmission lines connecting two States, for computation of PoC transmission charges and losses. However, for the disbursement of transmission charges, tariff for such assets needs to be approved by the Commission in accordance with the provisions of Sharing Regulations. Accordingly, we direct the owners of these inter-State lines to file appropriate application before the Commission for determination of tariff for facilitating disbursement.

Many STU's have already filed their petitions (Petition No. 246/TT/2013 (Haryana), 232/TT/2013 (KSEB), 217/TT/2013 (MP), etc) before CERC for inclusion of STU lines connecting two states.

Constituents may confirm whether they have filed petitions before CERC for inclusion of transmission lines connecting two states.

Since some of the lines proposed by WBSETCL and OPTCL are in the nature of transmission lines connecting two states, ERPC may certify these as Inter State Lines for the purpose of inclusion for tariff recovery under PoC mechanism.

In case any intra state line is desired to be certified as carrying interstate power, the list of such lines may be sent to ERPC Secretariat and ERLDC for further necessary action.

In 31st TCC, it was informed that WBSETCL and OPTCL have filed petitions for inclusion of their lines as interstate lines. CERC vide their Order dated 08.06.15 (Pet No-259/TT/2013) has already considered the 400 kV Kharagpur-Baripada and 220 kV Santhaldih-Chandil lines of WBSETCL. However for OPTCL (petition No- 203/TT/2013) order may not have been issued by CERC as on date. BSPHCL and JUSNL informed that they are on the job of identifying the lines in their system.

It was also informed that as per CERC order lines connecting two states may be considered as natural ISTS. For such lines the constituents may directly approach the commission for adoption of SERC tariff or for determination of tariff in case SERC tariff was not available.

For balance lines TCC members were informed that Certification of non-ISTS lines carrying inter-State power, which were not approved by the RPCs on the date of notification of the Central Electricity Regulatory Commission (Sharing of Transmission Charges and Losses) Regulations, 2009, shall be done on the basis of load flow studies. For this purpose, STU shall put up proposal to the respective RPC Secretariat for approval. RPC Secretariat, in consultation with RLDC, using WebNet Software would examine the proposal. The results of the load flow studies and participation factor indicating flow of Inter State power on these lines shall be used to compute the percentage of usage of these lines as inter State transmission.

List of Lines considered by CERC in their Suo Motu order in petition No-15/Suo-Motu/2012 dated 14.03.12

Voltage (KV)	LINES		
400	Kolaghat	Baripada	WBSETCL-PG
220	Waria	Bidhannagar 1	DVC-WBSETCL
220	Waria	Bidhannagar 2	DVC-WBSETCL
220	Chandil	Santaldih	JSEB-WBSETCL
220	Patratu	BodhGaya 1	JSEB-BSEB
220	Patratu	BodhGaya 2	JSEB-BSEB
220	Patratu	BodhGaya 3	JSEB-BSEB
220	Tenughat	Biharshariff	JSEB-BSEB
220	Joda	Ramchandrapur	OPTCL-JSEB
220	Jindal	Jamshedpur	OPTCL-JSEB (DVC)

Lines carrying Inter State Power as Submited by WBSETCL

SL. NO.	Voltage (kV)	TIE LINE		REMARKS
1	132	BIRPARA (PG)	BIRPARA CKT 1	WBSETCL
2	132	BIRPARA (PG)	BIRPARA CKT 2	WBSETCL
3	132	NJP	NBU CKT 1	WBSETCL
4	132	NJP	NBU CKT 2	WBSETCL
5	132	MALDA (PG)	MALDA CKT 1	WBSETCL
6	132	MALDA (PG)	MALDA CKT 2	WBSETCL
7	400	JEERAT	BERHAMPORE CKT	PGCIL
8	400	JEERAT	SUBHASGRAM CKT	PGCIL
9	400	KHARAGPUR	BARIPADA CKT	WBSETCL

10	220	STPS	CHANDIL CKT	WBSETCL
11	220	BIDHANNAGAR	WARIA CKT 1	DVC
12	220	BIDHANNAGAR	WARIA CKT 2	DVC
13	132	RANGIT	RAMMAM CKT	WBSETCL
14	220	SUBHASGRAM(PG)	SUBHASGRAM CKT 1	WBSETCL
15	220	SUBHASGRAM(PG)	SUBHASGRAM CKT 2	WBSETCL
16	400	PARULIA	BIDHANNAGAR CKT 1	WBSETCL
17	400	PARULIA	BIDHANNAGAR CKT 2	WBSETCL
18	400	SGTPP	FARAKKA CKT	PDCL
19	400	SGTPP	SUBHASGRAM CKT	PDCL
20	400	SGTPP	PARULIA CKT 1	PDCL
21	400	SGTPP	PARULIA CKT 2	PDCL
22	220	DALKHOLA (PG)	DALKHOLA CKT 1	WBSETCL
23	400	SGTPP	PARULIA CKT 2	PDCL
24	132	KURSEONG	RANGIT CKT	PGCIL
25	132	KURSEONG	SILIGURI CKT	WBSETCL
26	220	SUBHASGRAM (PG)	EMSS (CESC) CKT 1	CESC
27	220	SUBHASGRAM (PG)	EMSS (CESC) CKT 2	CESC
28	220	SUBHASGRAM (PG)	BANTALA CKT	WBSETCL
29	220	SUBHASGRAM (PG)-	NEW TOWN CKT	WBSETCL
30	400	SUBHASGRAM (PG)	HEL CKT 1	HEL
31	400	SUBHASGRAM (PG)	HEL CKT 2	HEL
32	400	SGTPP	BERHAMPORE CKT 1	PGCIL
33	400	SGTPP	BERHAMPORE CKT 2	PGCIL

Sl.No 9, 10 have already been considered by CERC for inclusion in PoC vide Order dated 08.06.15 (Pet No-259/TT/2013)

Sl No 11,12,13 & 24 may be in the nature of natural ISTS lines as per CERC order dated 14.03.12 (petition No-15/Suo-Motu/2012)

Tie LINES MAINTAINED BY OPTCL & USED AS ISTS LINES as submitted by OPTCL				
SL.NO.	**Voltage (KV)**	**LINES**		**CIRCUIT**
1	400	INDRAVATI PH	INDRAVATI (PGCIL)	1
2	400	RENGALI PG	KOLAGHAT	1
3	220	BALIMELA PH	U SILERU	1
4	220	JAYANAGAR	JAYANAGAR (PGCIL)	2
5	220	BUDHIPADAR	KORBA DC	2
6	220	TARKERA	BISRA	2
7	220	JODA	RC PUR (JSEB)	1
8	220	JODA-JSPL	JAMSHEDPUR (DVC)	1
9	220	RENGALI (OPTCL)	RENGALI (PGCIL)	2
10	220	RENGALI PH	KANIHA	1
11	220	KANIHA	TTPS	1
12	220	KANIHA	MERAMUNDALI	2
13	220	KUCHEI	BALASORE	2
14	132	JODA	KENDUPOSI (JSEB)	1
15	132	KUCHEI	RAIRANGPUR	1
16	132	KUCHEI	BARIPADA	1

For Sl.No 5 CERC in order dated 29.05.15 (Pet No-185/TT/2013) has already directed that wheeling charges for the line are to be pooled in PoC w.e.f 01.07.2011.

Sl.No 2,3,7,8 &14 may be in the nature of natural ISTS lines as per CERC order dated 14.03.12 (petition No-15/Suo-Motu/2012)

All constituents were requested to provide the list of their lines with details of portion (in % and Km) under their ownership along with latest status of filing of petition/order of CERC to ERPC Secretariat for initiating action in this regard.

Members may update the respective status.

Deliberation in the meeting

*OPTCL has submitted the updated list of lines which is given at **Annexure-B.7**.*

Committee advised all the other STUs to submit the updated list of lines.

BSPTCL and WBSETCL agreed to submit within a week.

ITEM NO. B.8: Efficient Evacution of Power from 2x210 MW Tenughat TPS, Lalpania

Arrangement for evacuation of power from Tenughat TPS is through the following two transmission lines:

1) Tenughat TPS to Bihar Sharif(BSEB) S/S through 400 KV Single Circuit line.
2) Tenughat TPS to Patraru TPS through 400 KV Single Circuit line.

Both lines are operating at 220 kV due to non readiness of 400 KV S/S at terminating ends.

In 27th TCC, TVNL informed that, at TVNL end the up gradation to 400 kV level is in process. Accordingly, TCC also advised JSEB to deposit the requisite amount to Powergrid for up gradation/termination work entrusted to Powergrid for operation of the line at rated voltage. This will facilitate Tenughat-Biharshariff line to be operated at 400 kV and stability of the TVNL units.

In 21st PCC, TVNL informed that 2x250 MVA ICT is already available at TVNL and the erection work is in progress. TVNL reported that work will be completed by December, 2014 at TVNL end.

Powergrid informed that, up gradation related works at 400 kV Biharshariff S/s has now stalled due to some payment issues with JSEB. However, it is expected to complete the work by December, 2014, if in the mean time payment issues get settled at earliest.

In 29th TCC, Powergrid informed that payment of around 4.58 cr. Is pending from JUSNL for up gradation work at Biharsharif S/s and 2.3 cr. From TVNL for up gradation work at TVNL S/s.

JUSNL agreed to pay the amount by March, 2015 and TVNL agreed to clear the balance amount by February, 2015.

Powergrid informed that they will complete the work at respective ends within three months from the date of receipt of payments from JUSNL and TVNL.

TCC advised JUSNL, TVNL and PGCIL to ensure the schedule.

In 1st SCM, JUSNL informed that the payment will be released soon.

JUSNL/ CTU may update.

Deliberation in the meeting

The issue could not be discussed as JUSNL representatives were not present in the meeting.

ITEM NO. B.9: Status of Downstream Projects of Daltonganj and Chaibasa Sub-stations of JUSNL

In 1st SSCM, JUSNL updated the status; the same is given at ***Annexure- B.9.***

JUSNL/ Powergrid may update.

Deliberation in the meeting

The issue could not be discussed as JUSNL representatives were not present in the meeting.

ITEM NO. B.10: ANY OTHER ITEM.

1. A new 220KV, D/C Jamshedpur (PG) – Jamshedpur (DVC) line, if constructed by PGCIL would help DVC network from stability point of view, since the 220KV, S/C, Jamshedpur – Joda line has many limitations.

In 1st SSCM DVC informed that for stability in DVC network 220 kV Jamshedpur (PG)-Jamshedpur (DVC) line is very much required.

On enquiry, DVC informed that it will be around 8-10 km line from Jamshedpur (PG) and there will be power flow of 50-60 MW.

The committee agreed to forward the issue to CTU for further deliberation in next SCM for central sector.

Deliberation in the meeting

CTU/Powergrid informed that there is no scope of 220 kV bays in 400/220 kV Jamshedpur (PG) Sub-station as the 220 kV bus is on Ramchandrapur (JUSNL) side.

2. Construction of 132 kV Banka- Deoghar Line

CTU informed that the 132 kV Banka- Deoghar D/C line was approved in 16th SCM and it was agreed to be constructed by Powergrid. Recently, JUSNL vide their letter informed that there is no requirement of the said line as there is enough source is available at Deoghar.

Deliberation in the meeting

JUSNL representatives were not present in the meeting for their comments.

Committee however felt that this line was proposed for reliable power supply to Railways and should be constructed by Powergrid.

Committee however felt that issue of frequent tripping of power supplies to Railway from Deoghar grid S/S were deliberated on many occasions in the past in lower forum of ERPC and to provide Railways with uninterrupted quality power from Deoghar grid S/S proposal of 132 kV Banka-Deoghar D/C was placed before 16th Standing Committee. The issue was well deliberated in Standing Committee meeting. ERPC in its 27th TCC/ERPC Meeting subsequently ratified the decision of SCM & thereafter Powergrid was entrusted to construct the line. So, members expressed, at this juncture it would not be prudent to scrap this proposal.

3. Installation of Split Bus at 400 kV Parulia (PG) S/s.

Deliberation in the meeting

On enquiry Powergrid informed that the Parulia (PG) Split-Bus has been already installed.

Committee advised Powergrid to submit the details of lines allotted to each bus to ERLDC/ERPC.

4. 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)

Single line diagram of the proposal is enclosed at **Annexure-B10.4**.

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

Deliberation in the meeting

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.

Meeting ended with vote thanks to the chair.

****

Annexure-A

Participants in 2nd SSCM Meeting of ERPC

Venue: ERPC Conference Room, Kolkata Time: 11:00 hrs Date: 04.12.2015 (Friday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
1	A.K. Bandyopadhyay	US ERPC	9433068533	mserpc-power@nic.in	[illegible]
2	P.P. BANDYOPADHYAY	ERLDC	7044083323	path_bany@yahoo.co.in	[illegible]
3	G. Chakraborty	ERLDC	9433041815	e.goutam62@gmail.com	[illegible]
4	P.S. Das	ERLDC	9433041837	psdas-psd@yahoo.com	[illegible]
5	S. BANERJEE	ERLDC	9433041823	surajit.b@gmail.com	[illegible]
6	A.K. Behera	POWERGRID ODISHA	9437573628	akbehera1968@gmail.com	[illegible]
7	Ramchandra	CTU-Plg, Asst.GM POWERGRID, Gurgaon	9910378128	ramachand@powergridindia.com	[illegible]
8	Khaj Kumar	Asst Gm/ Power	9434738947	khajkumar@gmail.com	[illegible]
9	B. Pan	CE/SLDC/DVC	9903247102	brahmananda.pan@dvc.gov.in	[illegible] 4/12
10	D.K. Bauri	EE, ERPC	9883617236	eeop.erpc@gov.in	[illegible]
11	S. KEJRIWAL	EE, ERPC	9831919509	eecom2.erpc@gov.in	[illegible]
12	G.K. Choubey	CE, BSPTCL	77638-17705	ce.trans664@gmail.com	G.K.Choubey
13	RAJDEEP BHATTACHARJEE	RE, BSPHCL	9830380689	rekolbsphcl@gmail.com	[illegible]
14	A. Raichaudhuri	S.E | SLDC	9434910030	raichaudhuri2011@gmail.com	[illegible]
15	A. Ghosh	CE(CPD) WBSETCL	9434910019	cpd@wbsetcl.in amitava.ghosh@wbsetcl.in	[illegible]
16	S. Roy	A.C.E; SLDC	9434910123	sabya_60@yahoo.co.in	[illegible]
17	A. Kamaker	ACE: CPD	9434910080	asit.kamaker@wbsetcl.in	[illegible]
18	R.R. Panda	CGM (Const)	09438907377	cgm.con@optcl.co.in	[illegible] 4/12/15
19	C.R. Mishra	AGM (Elect.)	9438907305	ele.crmishra@optcl.co.in	CRmishra
20	M.R. Mohanty	Sr GM(PS) SLDC OPTC	9438907210	mrmohanty113@gmail.com	

"Coming together is a beginning, staying together is progress, and working together is success." –Henry Ford

Participants in 2nd SSCM Meeting of ERPC

Venue: ERPC Conference Room, Kolkata   Time: 11:00 hrs   Date: 04.12.2015 (Friday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
21	U.N. Mishra	CGM PP GRIDCO	9438907774	sgm.pp@gridco.co.in	[signature]
22	N. Khan	L.O, Gridco	9433035435	khannurnabi...@gmail.com	[signature]
23	G. Rao	AEE/ERPC	9547891353	ereb-cea@yahoo.com	[signature]
24	Bramhanand Verma	Engr/ERLDC	9903180731	bramhanand18@gmail.com	[signature]
25	R.P. Kundu	Engr/ERLDC	9903329597	raj.pratim@gmail.com	[signature]
26	Lenin B	AEE/ERPC	8335805671	lenin.nitc@gmail.com	[signature]
27	M. Rana	CE(SPE), DVC	9831954243	mukut.rana@dvc.gov.in	[signature]
28	J. DUTTA	SE OSUDVC	9431515717	jayanta.dutta@dvc.gov.in	[signature]
29					
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"Coming together is a beginning, staying together is progress, and working together is success." –Henry Ford

Annexure - B1

Government of India
Ministry of Power
Central Electricity Authority
Power System Planning & Appraisal Division-II
Sewa Bhawan, R. K. Puram, New Delhi-110066
Website: www.cea.nic.in

No. 69/5/2014-PSPA-II/ 379- 380 Dated: 19.11.2015

Director (Projects),
Bihar State Power Transmission Co. Ltd.,
Vidyut Bhawan, Bailey Road,
Patna-800021
Telefax: 0612-2504968

Sub: Addendum for minutes of 1st meeting of Standing Committee on Transmission Planning for State Sectors (SSCM) – reg.

Ref: ERPC letter No. ERPC/MS/2015 dated 26.10.2015

Sir,

Please refer to the addendum for minutes of 1st meeting of Standing Committee on Transmission Planning for State Sectors (SSCM) issued vide above referred letter. In the letter 5 nos. of 400/220/132 kV sub-stations at Begusarai, Chhapra, & Saharsa in North Bihar and Bhojpur/Bikramganj and Munger in South Bihar has been proposed to be taken up under central sector to cater the future power demand of the state. But no justification for the above proposed sub-stations has been provided.

In this connection, it is requested to provide the following information so that these proposals can be discussed in next Standing Committee of Power System Planning for ER :

i). Interconnection of the proposed sub-stations with ISTS system.

ii). Down linking 220 kV/132kV system proposed for drawal of power from these sub-stations.

iii). Present peak load and peak load at the end of 2018-19 anticipated at 220kV/132kV sub-stations to be fed from the above sub-stations..

Yours faithfully,
19.11.15
(Santosh Kumar)
Deputy Director (PSPA-II)

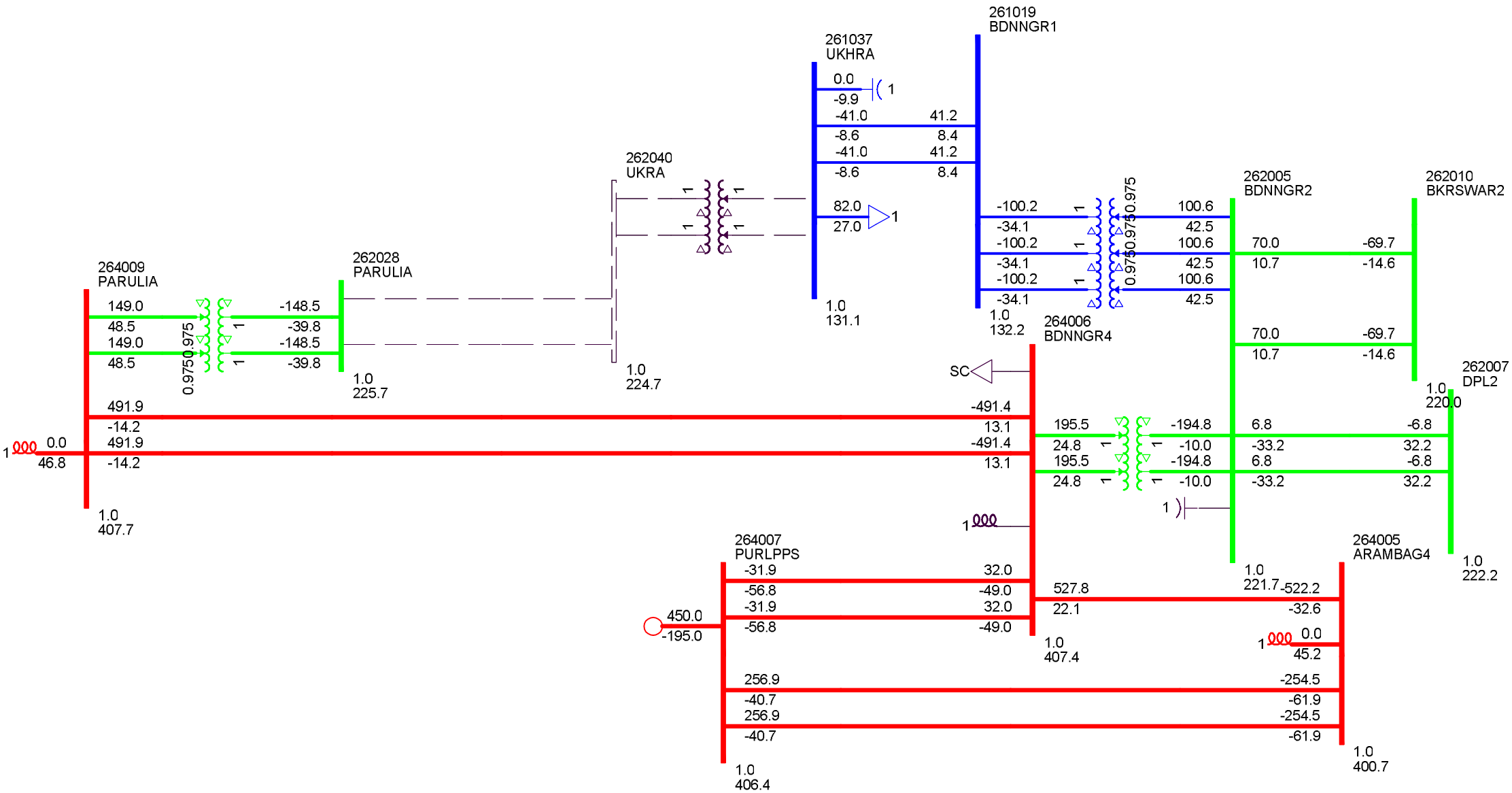
Copy to:

1. Member Secretary, ERPC,14, Golf Club Road, Tollygunge, Kolkata – 700033. Tel. No. 033-24235199, Fax No. 033-24171358

Ukhra Simulation Studies

Peak LGB Considerd

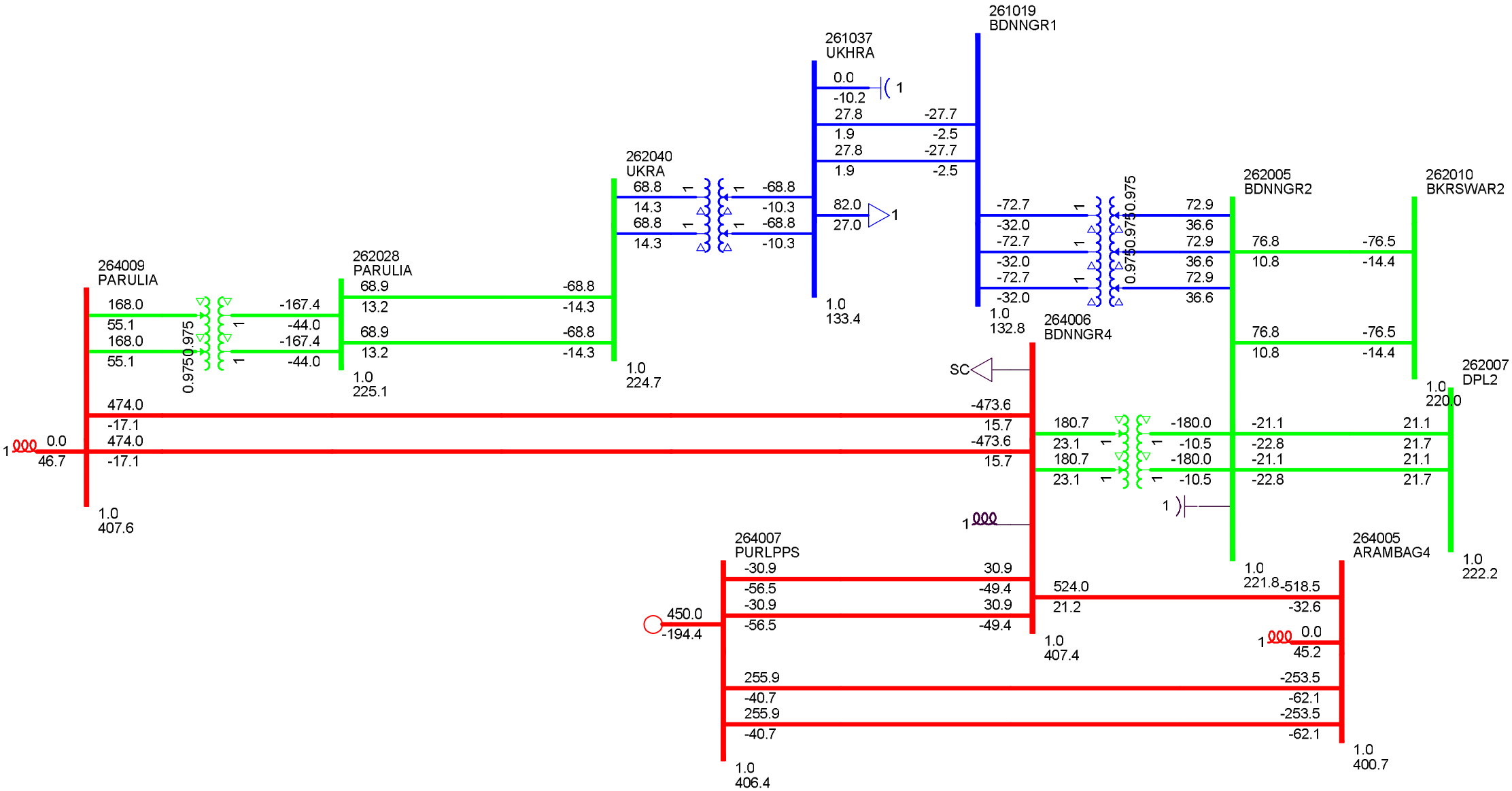
Present year base case W/O 220 kV Ukhra



Ukhra Simulation Studies

Peak LGB Considerd

Present year base case with 220 kV Ukhra

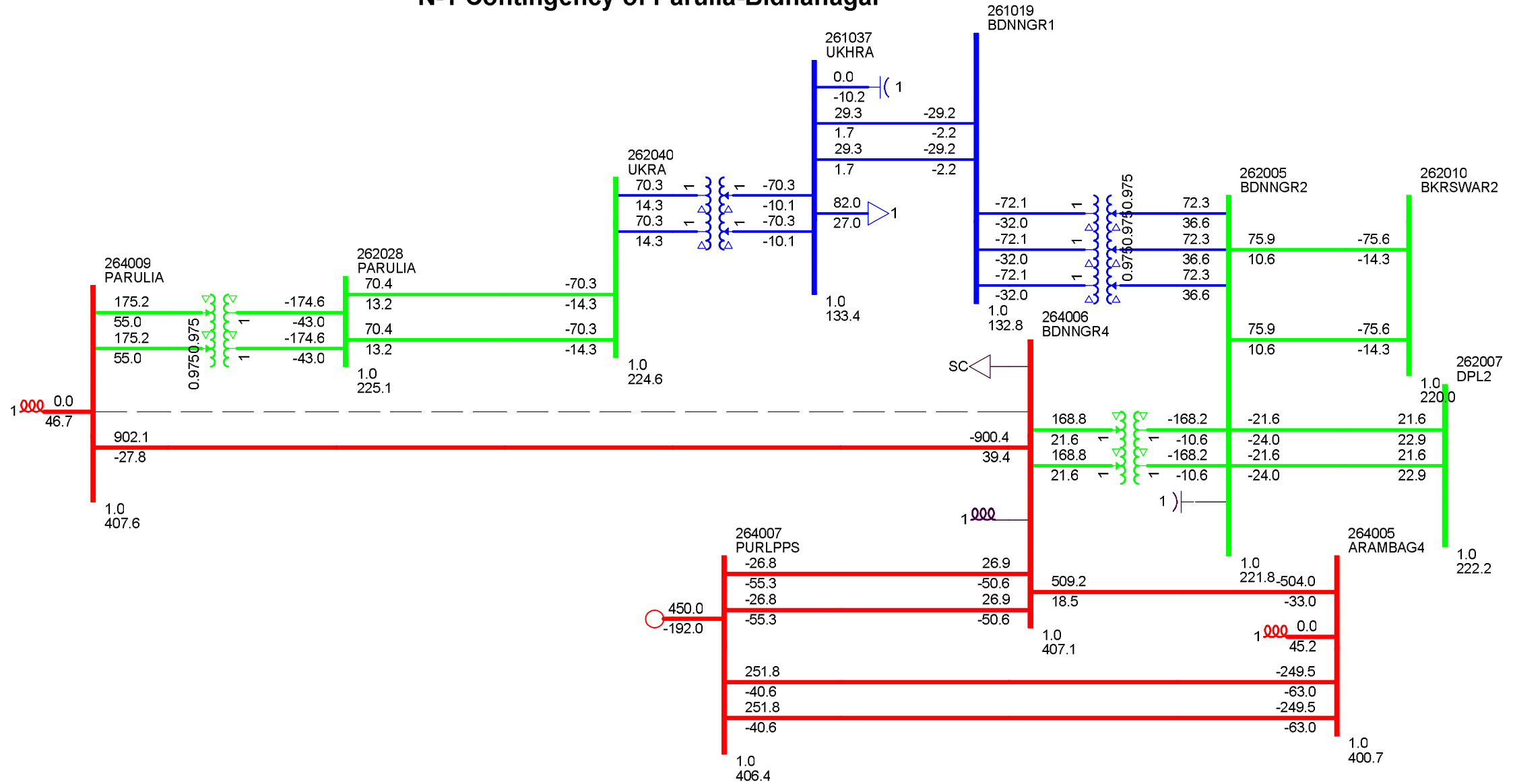


Ukhra Simulation Studies

Peak LGB Considerd

Present year base case with 220 kV Ukhra

N-1 Contingency of Parulia-Bidhanagar

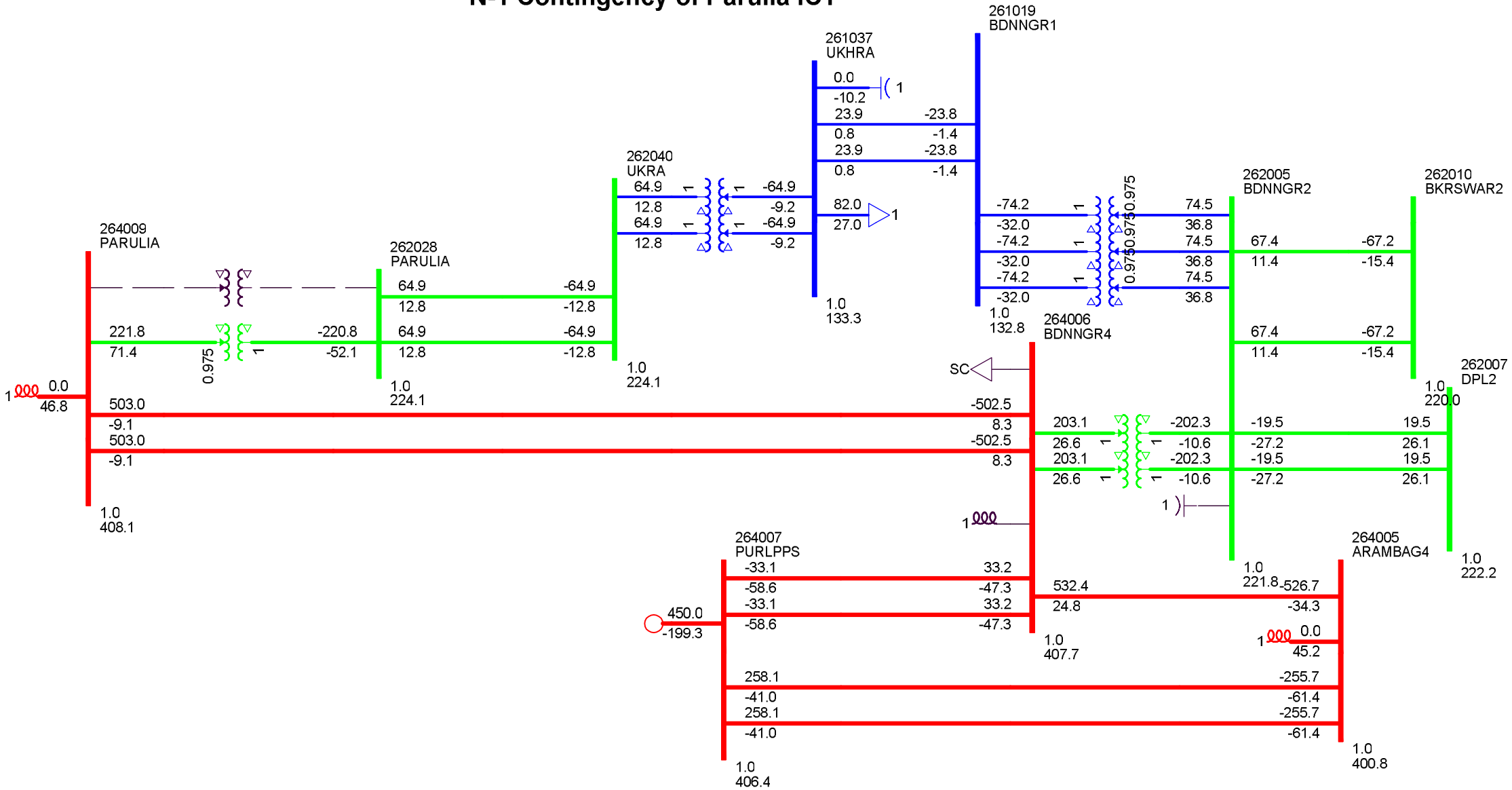


Ukhra Simulation Studies

Peak LGB Considerd

Present year base case with 220 kV Ukhra

N-1 Contingency of Parulia ICT

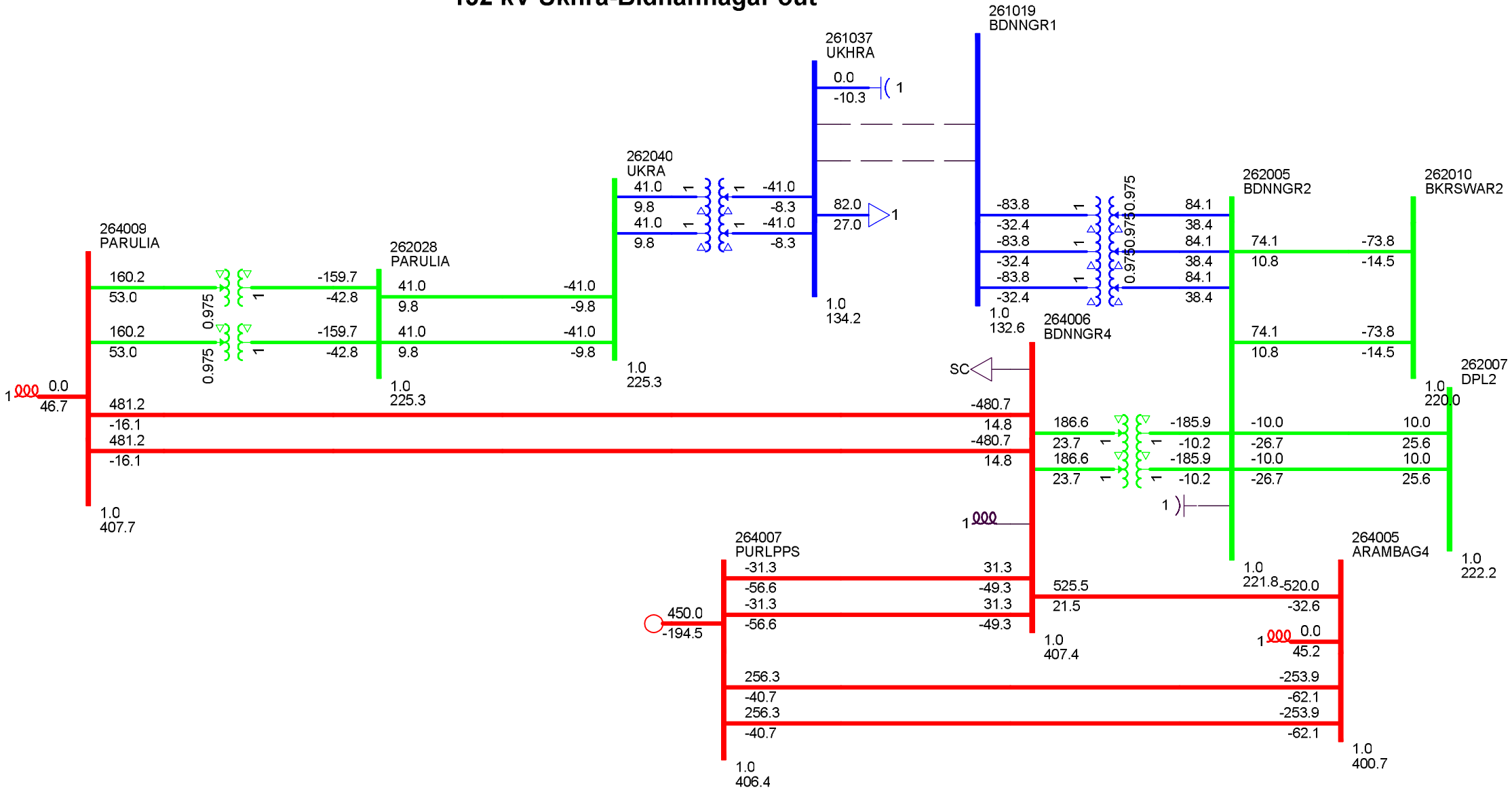


Ukhra Simulation Studies

Peak LGB Considerd

Present year base case with 220 kV Ukhra

132 kV Ukhra-Bidhannagar out

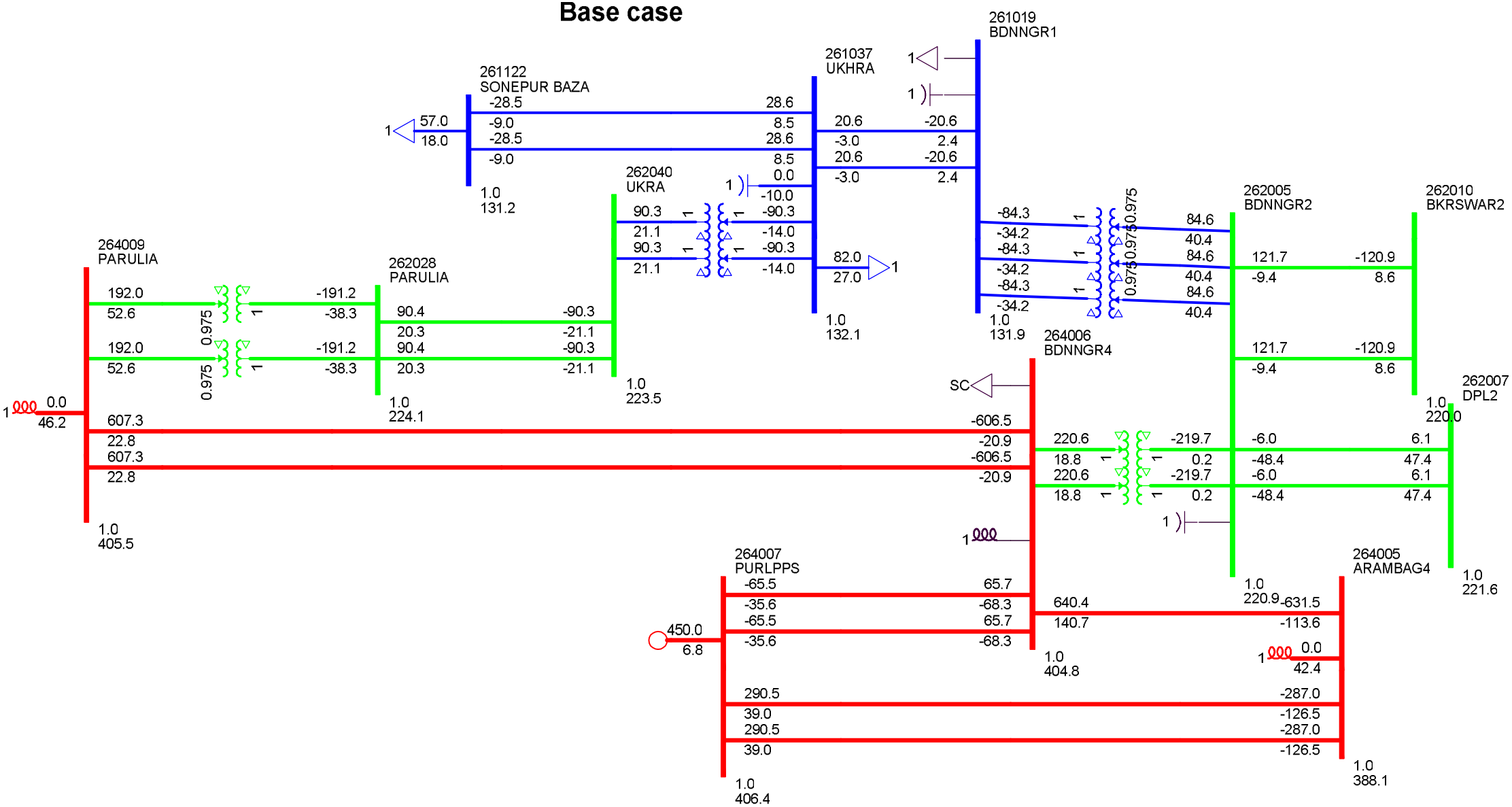


Ukhra Simulation Studies

Peak LGB Considerd

Future year base case with 220 kV Ukhra

Base case

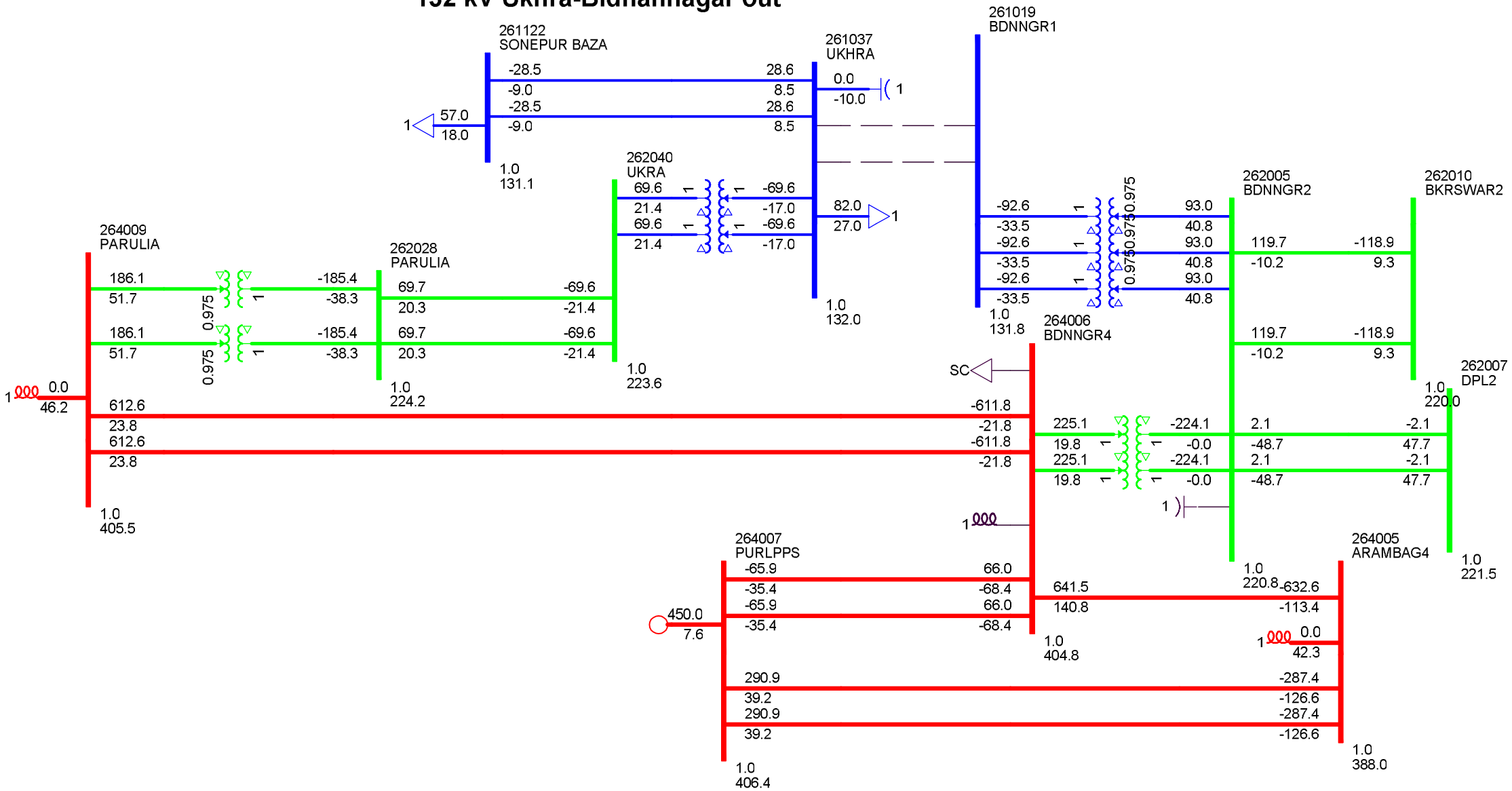


Ukhra Simulation Studies

Peak LGB Considerd

Future year base case with 220 kV Ukhra

132 kV Ukhra-Bidhannagar out

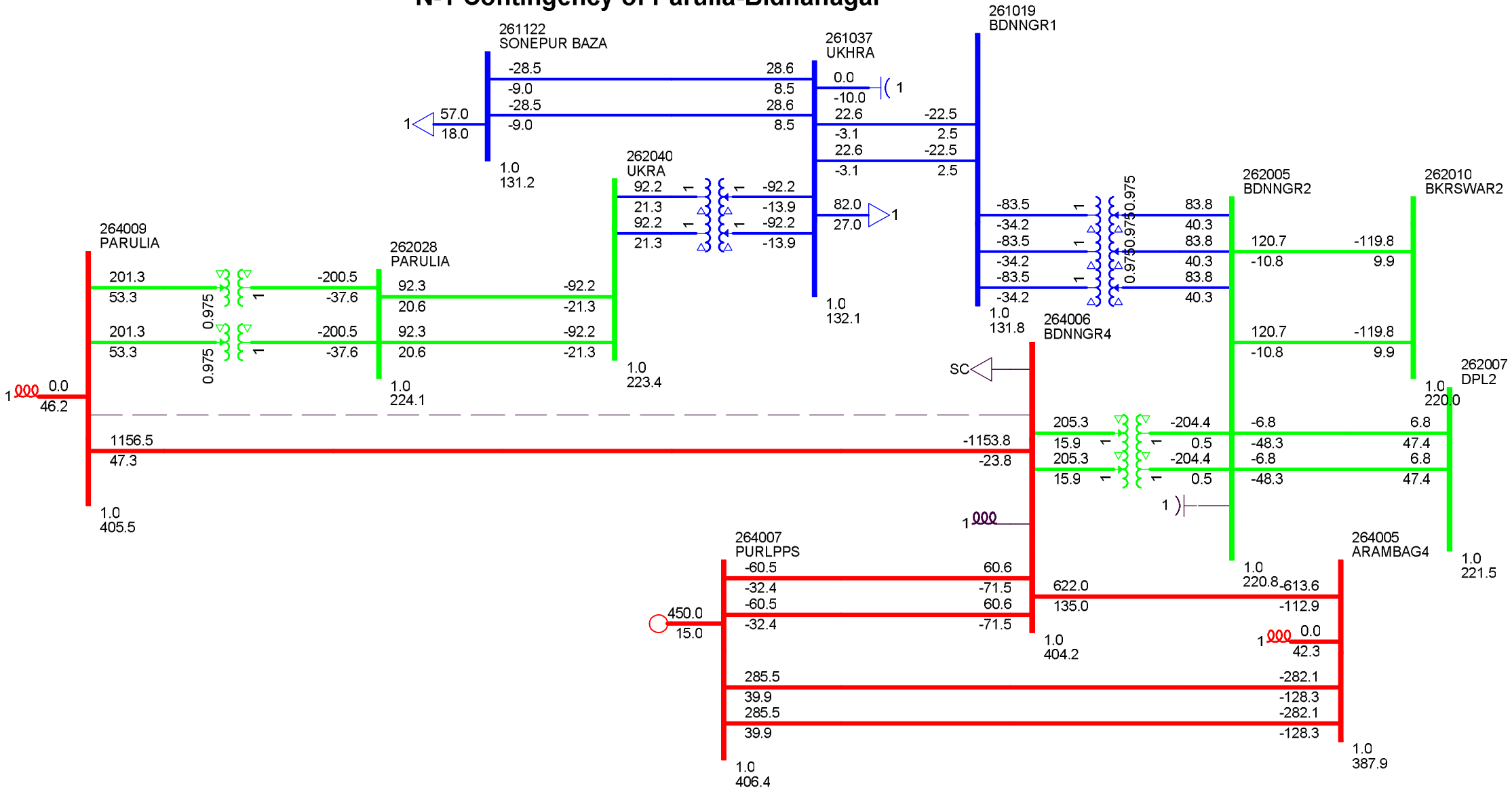


Ukhra Simulation Studies

Peak LGB Considerd

Future year base case with 220 kV Ukhra

N-1 Contingency of Parulia-Bidhanagar

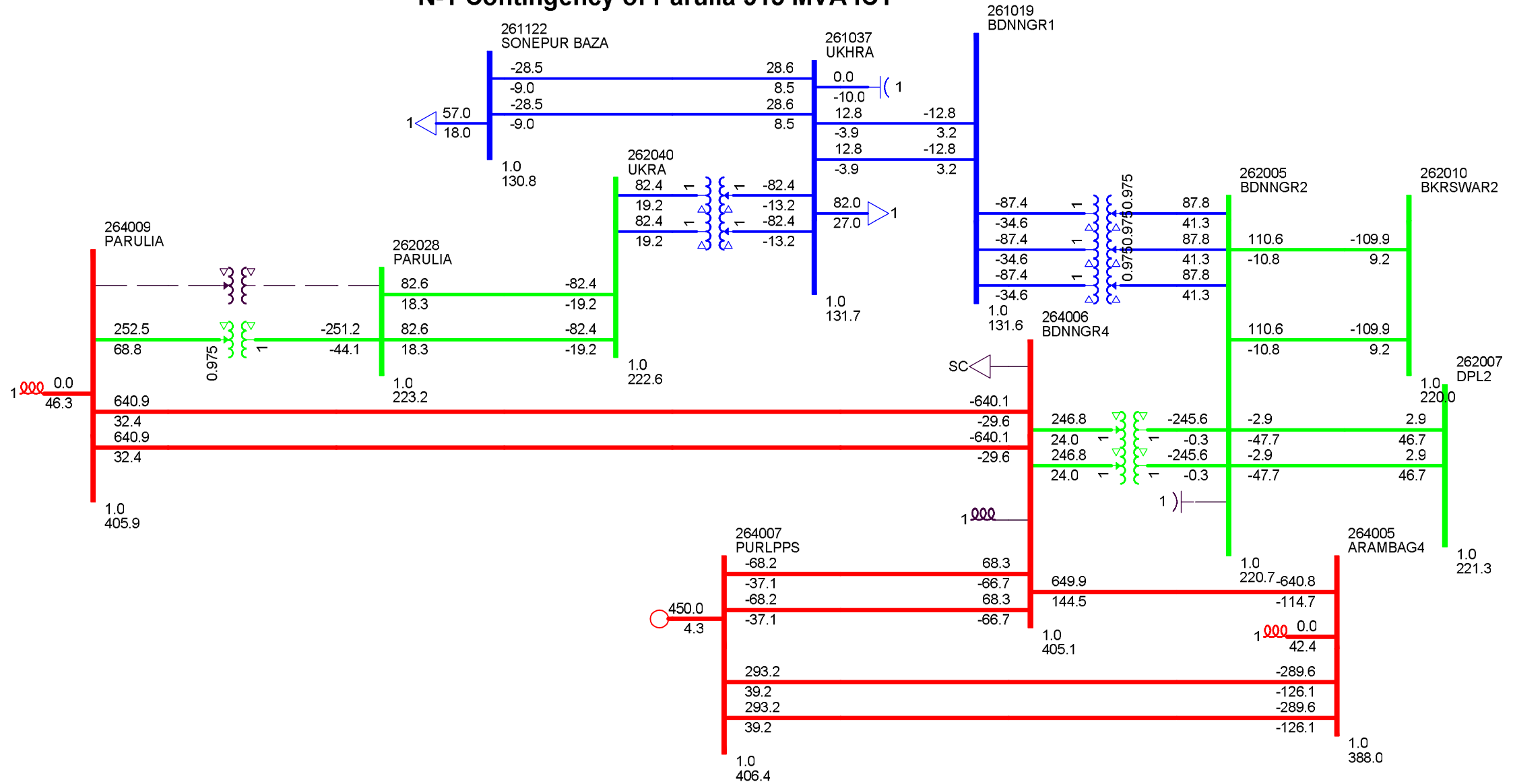


Ukhra Simulation Studies

Peak LGB Considerd

Future year base case with 220 kV Ukhra

N-1 Contingency of Parulia 315 MVA ICT



Annexure - B2

West Bengal State Electricity Transmission Company Ltd.

(A West Bengal Government Enterprise)
CIN : U40101WB2007SGC113474

Office of the Chief Engineer
Central Planning Department

FAX : 033 2359-1955
Telephones : 033 2359-2652, 033 2319-7359
E-Mail : cpd@wbsetcl.in ; cpd.wbsetcl@gmail.com

Vidyut Bhavan (9th Floor)
Block - DJ, Sector - II
Bidhannagar, Kolkata - 700 091

Ref. No. : CE/CPD/PSDF/ 605

Date : 23/11/2015

To
The Member-Secretary,
Eastern Regional Power Committee,
14, Golf Club Road, Tollygunje,
Kolkata – 700 033.

Sub. : Observation of the Techno-Economical Subgroup on the Scheme of West Bengal.

Sir,

This has reference to our letter no. CE/CPD/PSDF/321, date – 04/06/2015 (copy enclosed) wherein you were requested to submit Study report of ERPC for onward submission to NLDC regarding –

- *The congestion in the network, likely relief to be achieved after implementation of the scheme and its impact on the Inter-State system.*
- *Present voltage conditions in the network and improvement after installation of the capacitors.*

It is to remind that the same are still awaited. NLDC has further issued reminder letter for the same on 02/11/2015 (copy enclosed).

We may request you to furnish the same on priori[illegible] luation of the scheme by NLDC pl.

Enclo : as above.

Yours faithfully,

(Arundhati Ghosh)
Chief Engineer : CPD

West Bengal State Electricity Transmission Company Ltd.

(A West Bengal Government Enterprise)
CIN : U40101WB2007SGC113474

Office of the Chief Engineer
Central Planning Department

FAX : 033 2359-1955
Telephones : 033 2359-2652, 033 2319-7359
E-Mail : cped@cal3.vsnl.net.in ; cpd@wbsetcl.in

Vidyut Bhavan (9th Floor)
Block - DJ, Sector - II
Bidhannagar, Kolkata - 700 091

Ref. No. : CE/CPD/PSDF/

Date : 04/06/2015

To
The Member-Secretary,
Eastern Regional Power Committee,
14, Golf Club Road, Tollygunje,
Kolkata – 700 033.
Fax – 24171358, 24221802

Sub. : Observation of the Techno-Economical Subgroup on the Scheme of West Bengal.

Sir,

This is to inform you that WBSETCL had submitted a "System Improvement of State Transmission System" at an estimated cost of Rs.1211.43 Crore to the Nodal Agency of PSDF Committee for PSDF funding through letter dated 31/12/2014 (copy enclosed).

The proposed scheme was consisting of a) Scheme for relieving congestion in Intra-State transmission system which is incidental to the ISTS, b) Scheme for R&M of transmission systems for relieving congestion and c) Installation of shunt capacitors and other reactive energy generators for improvement of voltage profile in the Grid.

Now, the Convener, Techno Economic Subgroup & Consultant – NLDC has requested vide letter dated 19/05/2015 (copy enclosed) to submit Study report of ERPC & SLDC, West Bengal regarding –

- *The congestion in the network, likely relief to be achieved after implementation of the scheme and its impact on the Inter-State system.*
- *Present voltage conditions in the network and improvement after installation of the capacitors.*

In view of above, your kind co-operation is solicited for the same.

Enclo : as above.

Yours faithfully,

Sd/-
(Pradip Dev)
Chief Engineer : CPD

Memo No. : CE/CPD/PSDF/ 321(1)

Date : 04/06/2015

Copy to :

1. The Chief Engineer, SLDC, WBSETCL – *for information please. He is requested to provide the relevant reports as above please.*
   Enclo – Copy of DPR & CO

04/6/2015
Chief Engineer : CPD

Chief Engineer : Central Planning Department

From: "wbsldc wbsetcl" <wbsldc.pss@gmail.com>
Date: 09 July 2015 13:58
To: <posoconldc@gmail.com>; <nldc@posoco.in>
Cc: <cped@cal3.vsnl.net.in>; <cpd@wbsetcl.in>
Attach: Voltage_SubStn_withproposedcapbank_09.07.15.docx
Subject: WBSLDC study report regarding improvement of network voltages at WB STU after installation of proposed capacitors.

Attn. : Shri Rohit Anand.

Ref. : Your letter no. NLDC-PSDF/West Bengal/032/2015-16/97 dtd. 19.05.2015, addressed to the Chief Engineer (CPD), WBSETCL.

Sir,

With respect to Sl.No. (iii) within the referred above, a report regarding improvement of network voltages at different nodes of WB STU system after installation/addition of proposed capacitor banks is being sent to you in the attached file.

Necessary study i.r.o. Sl. No. (i) & (ii) could not be completed owing to non-availability of entire peripheral ER network relevant to the schemes from ERLDC. Once that network is available at this end, the study regarding congestion relief will be conducted and report will be sent to you subsequently.

Thanks & Regards,
-SLDC, W.B.

Present Peak-load Voltage Conditions in network and its improvement after installation of capacitors

Sl. No	Name of Sub Stn.	Present capacity of Cap bank (MVAR)	Bus Voltages with present capacity cap bank			Proposed capacity of Cap bank (MVAR)	Bus Voltages with proposed capacity cap bank			Remarks
			400 KV	220 KV	132 KV		400 KV	220 KV	132 KV	
1	Adisaptagram 132 KV									
	a) Adisaptagram 33 KV bus	20			130.3	30			131.1	
2	Gokarna 220 KV.			211.3				215.2		
	a) Gokarna 33 KV bus	0			123.3	30			127.5	
	b) Amtolla 33 KV bus	10			114.7	10			120.9	
	c) Berhampore 33 KV bus	30			117.2	50			123.2	
	d) Katwa 33 KV bus	32.4			121.3	32.4			125.8	
	e) Rampurhat 33 KV bus	10			116.2	20			122.1	
	f) Lalgola 33 KV bus	21			121.5	21			126	
	g) Kulli (GIS) 33 KV bus	0			121.3	0			125.6	
	h) Raghunathgunj 33 KV bus	30			119.1	30			123.7	
	i) Dhulian 33 KV bus	0			118	0			122.7	
3	Arambagh 400 KV		403.6	216.3			406.5	220.6		
	a) Arambagh 33 KV bus	10			128.6	30			132.1	
	b) Raina 33 KV bus	10			126.4	30			130.9	
	c) Birsingha 33 KV bus	0			127.1	20			131.3	
4	Asansol 220 KV			220.8				221.4		
	a) Asansol 33 KV bus	0			131.2	20			131.7	
5	Jeerat 400 KV		389.6	216.2			391.6	217.9		
	a) Jeerat 33 KV bus	0			132.3	0			132.9	
	b) Ashokenagar 33 KV bus	10			129.9	30			131.1	
	c) Basirhat 33 KV bus	10			127.1	10			128.2	
	d) Bongaon 33 KV bus	10			130.7	10			131.3	

Present Peak-load Voltage Conditions in network and its improvement after installation of capacitors

Sl. No	Name of Sub Stn.	Present capacity of Cap bank (MVAR)	Bus Voltages with present capacity cap bank			Proposed capacity of Cap bank (MVAR)	Bus Voltages with proposed capacity cap bank			Remarks
			400 KV	220 KV	132 KV		400 KV	220 KV	132 KV	
6	KTPS 132 KV				131				132.8	
	a) Bagnan(GIS) 33 KV bus	0			126.8	10			130	
	b) Uluberia 33 KV bus	10			126.4	30			129.7	
	c) Kolaghat 33 KV bus	10			130.8	10			132.6	
7	New Bishnupur 220 KV			**210.9**				**219.5**		
	a) New Bishnupur 33 KV bus	0			118.3	10			128.7	
	b) Bankura 33 KV bus	20			115.4	20			126.9	
	c) Bishnupur 33 KV bus	0			114	20			126.9	
	d) Raghunathpur 33 KV bus	0			113.6	0			125.3	
	e) Borjora 33 KV bus	0			116.8	0			127.4	
	f) Khatra 33 KV bus	0			111.9	0			125	
8	New Town AA-III 220 KV			**213**				**215.6**		
	a) New Town AAIII 33 KV bus	0			127.8	20			129.3	
	b) New Town AAI 33 KV bus	0			126.1	0			127.8	
	c) Barasat 33 KV bus	20			125.9	30			127.9	
	d) Sallake (GIS) 33 KV bus	0			127	10			128.7	
9	Laxmikantapur 220 KV			**206.8**				**211.8**		
	a) Laxmikantapur 33 KV bus	5			121.4	25			126.5	
	b) Behala 33 KV bus	22.4			119.1	22.4			125.2	
	c) Falta 33 KV bus	28.8			119.7	28.8			126.3	
	d) Serakol 33 KV bus	0			120.1	0			125.6	
	e) Kakdwip 33 KV bus	0			120	10			125.6	

Present Peak-load Voltage Conditions in network and its improvement after installation of capacitors

Sl. No	Name of Sub Stn.	Present capacity of Cap bank (MVAR)	Bus Voltages with present capacity cap bank			Proposed capacity of Cap bank (MVAR)	Bus Voltages with proposed capacity cap bank			Remarks
			400 KV	220 KV	132 KV		400 KV	220 KV	132 KV	
10	Durgapur 220 KV			221.7				221.8		
	a) Bolpur 33 KV bus	32.4			126.4	32.4			129.5	
	b) Sainthia 33 KV bus	30			125.1	30			129.2	
	c) Ukhra 33 KV bus	10			130.8	10			131.1	
	d) Mankad 33 KV bus	0			127.9	10			129.2	
	e) Mahachanda 33 KV bus	0			125.8	10			127.7	
11	Chanditala 132 KV									
	a) Chanditala 33 KV bus	20			122.4	20			124.1	
12	Midnapur 220 KV			214.6				220.6		
	a) Midnapur 33 KV bus	15			128.8	25			132.3	
	b) CK Road 33 KV bus	10			125	20			130	
	c) Jhargram 33 KV bus	0			126.7	10			130.9	
	d) Pingla 33 KV bus	20			124.3	40			129.8	
	e) Kharagpur WBIDC 33 KV bus	0			127.2	10			131.2	
	f) Balichak	0			125	0			129.8	
	g) Hiz TRN	0			128.3	0			132	
13	New Haldia 220 KV			215.8				217.1		
	a) New Haldia 33 KV bus	10			126.5	10			128.3	
14	Haldia 132 KV									
	a) Haldia 33 KV bus	5			126.3	5			128.1	
15	NIZ Haldia 132 KV									
	a) NIZ Haldia 33 KV bus	0			123.7	0			125.6	

Present Peak-load Voltage Conditions in network and its improvement after installation of capacitors

Sl. No	Name of Sub Stn.	Present capacity of Cap bank (MVAR)	Bus Voltages with present capacity cap bank			Proposed capacity of Cap bank (MVAR)	Bus Voltages with proposed capacity cap bank			Remarks
			400 KV	220 KV	132 KV		400 KV	220 KV	132 KV	
16	Tamluk 132 KV a) Tamluk 33 KV bus	10			121.8	10			123.7	
17	Contai 132 KV a) Contai 33 KV bus	0			120.5	20			122.8	
18	Egra 132 KV a) Egra 33 KV bus	10			123.2	30			124.5	
19	Hizli 132 KV a) Hizli 33 KV bus	0			130.8	20			133.3	
20	Krishnanagar 220 KV a) Krishnanagar 33 KV bus b) Debagram 33 KV bus c) Ranaghat 33 KV bus	 20 21.6 10		**209.7**	 123.4 122.1 120.8	 20 21.6 10		**211.4**	 124.5 123.2 122	
21	Dharampur 132 KV a) Dharampur 33 KV bus	10			132.3	40			132.9	
22	Domjur 220 KV a) Domjur 33 KV bus b) Jangipara 33 KV bus	 10 5		**211.9**	 127.2 126.5	 30 5		**216.1**	 129.6 129	
23	Satgachhia 220 KV a) Satgachhia 33 KV bus	20		**213.7**	129.2	40		**215.3**	130.3	
24	Kalna 132 KV a) Kalna 33 KV bus	0			127.2	10			129.6	
25	Kalyani 132 KV a) Kalyani 33 KV bus	5			131.7	25			132.3	
26	Khanyan 132 KV a) Khanyan 33 KV bus	10			130.4	10			130.9	

Present Peak-load Voltage Conditions in network and its improvement after installation of capacitors

Sl. No	Name of Sub Stn.	Present capacity of Cap bank (MVAR)	Bus Voltages with present capacity cap bank			Proposed capacity of Cap bank (MVAR)	Bus Voltages with proposed capacity cap bank			Remarks
			400 KV	220 KV	132 KV		400 KV	220 KV	132 KV	
27	KLC 220 KV a) KLC 33 KV bus	 10		**212.9**	 129.8	 30		**215.2**	 131	
28	Rishra 220 KV a) Rishra 33 KV bus	 30		**209.1**	 122.7	 30		**211.8**	 124.4	
29	Howrah 220 KV a) Liluah 33 KV bus	 20		**210.9**	 119.7	 20		**213.5**	 121.4	
30	Kasba 220 KV a) Sonarpur 33 KV bus b) Salt Lake 33 KV bus	 10 25		**210.3**	 131.8 131.1	 20 25		**211.7**	 132.5 131.7	
31	Tarakeswar 132 KV a) Tarakeswar 33 KV bus	 5			 128.4	 5			 130.8	
32	Bighati 132 KV a) Bighati 33 KV bus	 0			 122.4	 0			 124.1	
33	Belmuri 132 KV a) Belmuri 33 KV bus	 0			 129.1	 0			 130.7	
34	Hura 220 KV a) Hura 33 KV bus	 0		**219.5**		 0		**222.5**		
35	Purulia 132 KV a) Purulia 33 KV bus	 10			 127.2	 10			 130.7	
36	Subhashgram (PG) 400 KV		390.7	**212**			392.6	**213.6**		
37	Subhashgram(TCL) 220 KV a) Subhasgram 33 KV bus	 0		**211.8**		 0		**213.4**		
38	Kharagpur 400 KV		**405.1**	**218.8**	131.3		406.9	**222.4**	133.4	

Present Peak-load Voltage Conditions in network and its improvement after installation of capacitors

Sl. No	Name of Sub Stn.	Present capacity of Cap bank (MVAR)	Bus Voltages with present capacity cap bank			Proposed capacity of Cap bank (MVAR)	Bus Voltages with proposed capacity cap bank			Remarks
			400 KV	220 KV	132 KV		400 KV	220 KV	132 KV	
39	Durgapur 400 KV		407.7				408.3			
40	Coochbehar 132 KV a) Coochbehar 33 KV bus	5			124.6	25			128.1	
41	Alipurduar 132 KV	0			125.5	0			128.5	
42	Birpara 132 KV	0			133.7	0			135.1	
43	NJP 220 KV a) NJP 33 KV bus	0		225.4	132.3	0		225.5	132.3	
44	Moynaguri 132 KV a) Moynaguri 33 KV bus	10			126.1	10			126.1	
45	Chalsa 132 KV a) Chalsai 33 KV bus	0			127.2	0			127.3	
46	Dalkhola 220 KV a) Dalkhola 33 KV bus	20		222.5	132.6	20		222.5	132.6	
47	Malda 132 KV a) Malda 33 KV bus	10			131.8	10			131.9	
48	Khejuria 132 KV a) Khejuria 33 KV bus	0			131.4	0			131.4	
49	Samsi 132 KV a) Samsi 33 KV bus	10			127.7	10			127.7	
50	Raigunj 132 KV a) Raigunj 33 KV bus	10			128.3	10			128.3	
51	Gagarampur 132 KV a) Gangarampur 33 KV bus	14.4			124.9	14.4			124.9	

Present Peak-load Voltage Conditions in network and its improvement after installation of capacitors

Sl. No	Name of Sub Stn.	Present capacity of Cap bank (MVAR)	Bus Voltages with present capacity cap bank			Proposed capacity of Cap bank (MVAR)	Bus Voltages with proposed capacity cap bank			Remarks
			400 KV	220 KV	132 KV		400 KV	220 KV	132 KV	
52	Balurghat 132 KV a)Balurghat 33 KV bus	10			125.5	10			125.5	
53	NBU 132 KV a) NBU 33 KV bus	10			131.9	10			131.9	
54	Darjeeling 132 KV a) Darjeeling 33 KV bus	0			131.6	0			131.6	
55	Siliguri 132 KV a) Siliguri 33 KV bus	10			131.9	10			131.9	
56	Kurseong 132 KV a) Kurseong 33 KV bus	0			132.1	0			132.1	

Annexure-B3

AGENDA ITEM FROM OPTCL FOR 2ND STANDING COMMITTEE ON TRANSMISSION PLANNING FOR STATE SECTORS(SSCM)

BHUBANESWAR
04.12.15

BY
CGM(CONSTRUCTION)

NARENDRAPUR 400/220 kV SUBSTATION

District	Voltage level (kV)	Transformer capacity (MVA)	Connectivity
Ganjam	400/220	2x500	• 400kV D/C line from Pandiabil 400/220kV substation to Narendrapur 400/220kV substation. • New 220kV D/C line from Narendrapur 400/220kV substation to Aska 220/132kV substation. • LILO of both the circuits of existing 220kV D/C line from Therubali to Narendrapur at Narendrapur 400/220kV substation.

Requirement of Narendrapur substation
This substation is required to cater the normal load growth and also upcoming bulk loads in Narendrapur area. The system study has been done

MERAMUNDALI-B 400/220 kV GIS SUBSTATION

District	Voltage level (kV)	Transformer capacity (MVA)	Connectivity
Angul	400/220	2x500	• Shifting of STPS to Meramundali 400kV D/C line from Meramundali to Meramundali-B. • Shifting of Jeypore to Meramundali 400kV S/C line from Meramundali to Meramundali-B. • Shifting of Mendhasal to Meramundali 400kV D/C line from Meramundali to Meramundali-B. • 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.

Requirement of Meramundali-B substation

With IPP power injection and 400kV connectivity at existing Meramundali 400/220kV substation, the fault level at existing Meramundali 400kV bus exceeds the 40kA breaker capacity. Hence, Meramundali B is required to reduce the fault level at existing substation and also for drawl of state share of power from IPPs. After Commissioning of Meramundali "B", the fault level at Meramundali will come down from 40kA to 20.3kA. It is a part of Transmission Plan for the year 2015-16 to 2018-19.

TTPS expansion project

Location	No. of units x Unit capacity (MW)	Total capacity (MW)
Angul	2 x 660	1320

Evacuation scheme

Generation is stepped up to 400kV and connected to 400kV bus of proposed Meramundali-B substation through 400kV D/C line. System Study has been done with connection of 1X660 at Meramundali "B" and the flow diagram is attached. 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).

Annexure - B7

ODISHA POWER TRANSMISSION CORPORATION LIMITED
(A Government of Odisha Undertaking)
Regd. Office: Janpath, Bhubaneswar-751022, Odisha
Telefax: 0674-2542120, Website: www.optcl.co.in
CIN- U40102OR2004SGC007553

No. RT&C-PETITION NO.203/TT/2013/ 377 (5) Dt. 05.11.2015

To

The Chief General Manager (O&M)
OPTCL, Bhubaneswar

Sub: Petition filed by OPTCL in CERC for determination of tariff for natural inter-state transmission lines.

Ref: Your letter No. TB-SO-Misc-38/2010/1677(5) dated 15.10.2015.

Sir,

With reference to the above, it is to intimate that RT&C had filed one petition before CERC on 30.04.2012 seeking approval of the AFC (Annual Fixed Cost)/YTC (Yearly Transmission Charge) in respect of the OPTCL's transmission elements **(list enclosed)** being used for transfer of inter-state power. The list was finalised then by a Committee comprising officers from SLDC, GRIDCO, Finance (OPTCL), O&M and RT&C under guidance of CGM (Con.).The petition has been registered as Petition No. 203/TT/2013 by CERC. The last hearing was conducted by on 04.06.2015 and the order is reserved. Subsequently RT&C has submitted additional information to CERC as per requirement from time to time. CERC order is expected very soon. It is felt that as a first step, CERC will approve AFC/YTC in respect of lines connecting only two states like Kolaghat-Baripada, Joda-Ramchandrapur and Jindal-Jamshedpur. AFC/YTC for Budhipadar-Korba line has already been determined by CERC up to 31.03.2014 vide a separate petition of OPTCL (Petition No. 185/TT/2013). Other transmission elements will be considered after those are duly approved by ERPC and petition is to be filed by OPTCL including those approved elements.

It is observed from the agenda item no. B-21 **(copy enclosed)** of the ensuing 31st TCC meeting (to be held in Bhubaneswar on 13.11.2015) that

16 transmission elements (list probably provided to ERPC by O&M wing) have been proposed for approval by ERPC. After approval by ERPC, RT&C will file petition before CERC for determination of AFC/YTC.

Encl: As above

Yours faithfully,

CGM (RT&C) 05.11.15

CC along with enclosures to:

1. CGM (Con.), OPTCL, Bhubaneswar.
2. CGM (F), OPTCL, Bhubaneswar.
3. CGM (PP), GRIDCO, Bhubaneswar.
4. Sr. GM (PS), SLDC, Mancheswar.

Encl: As above

Modified Final List

CERC Petition No. 203/TT/

A. SUMMARY SHEET OF AFC CALCULATION FOR STU LINES BETWEEN TWO STATES

(In Rs Lakh)

Sl No	Name of Asset	AFC of Line	AFC of Bay	Total AFC
1	220kV Joda-Ramchandrapur (JSEB) S/C Line	71.36	67.96	139.32
2	220kV Joda-JSPL-Jamshedpur (DVC) S/C Line	147.31	67.96	215.27
3	220kV Budhipadar-Korba (Chatishgarh) D/C Line	440.60	152.61	593.21
4	400KV Baripada(PG)-Kolghat (WB) S/C Line	200.02	0.00	200.02
5	132kV Joda-Kenduposi (JSEB) S/C Line	179.75	89.22	268.97
	TOTAL	**1039.04**	**377.75**	**1416.79**

B. SUMMARY SHEET OF AFC CALCULATION FOR STU LINE CONNECTING TO CTU BAY

1	400KV Rengali (PG)-Baripada(PG) S/C Line	2014.01	0.00	2014.01
2	220kV Jayanagar-Jeypore (PG) D/C Line	56.76	152.61	209.37
3	400kV Indravati PH-Indrvati (PG) S/C Line	34.07	0	34.07
3	220kV TSTPS -Meramundali D/C Line	312.24	152.61	464.85
5	220kV TSTPS -TTPS S/C Line	158.82	0	158.82
6	220kV Rengali PH - TSTPS S/C Line	135.80	0.00	135.80
7	220kV Rengali (OPTCL)-Rengali (PG) D/C line	7.34	152.61	159.95
	TOTAL	**2719.04**	**457.83**	**3176.87**

C. SUMMARY SHEET OF AFC CALCULATION FOR CTU LINES CONNECTING TO STU BAY

1	220 kV Budhipadar-Korba PGCIL S/C Line	0.00	76.31	76.31
2	400kV Meramundali - Jeypore (PG) S/C Line	0.00	65.02	65.02
3	400kV Mendhasala -Baripada (PG) D/C Line	0.00	130.03	130.03
4	400kV Meramunali -TSTPS D/C Line	0.00	130.03	130.03
	TOTAL	**0.00**	**401.39**	**401.39**

③

D. SUMMARY SHEET OF AFC CALCULATION FOR STU LINES INCIDENTAL TO INTER-STATE POWER FLOW

1	220 kV Budhipadar-Tarkera D/C Line	800.43	1362.63	2163.06
2	220kV Balimela-JayanagarD/C Line	540.78	135.93	676.71
3	220kV Balimela-Jayanagar S/C Line	430.25	67.96	498.21
4	220 kV Upper Kolab-Jayanagar D/C Line	35.24	135.93	171.17
5	220kV TTPS-Joda D/C Line	904.50	135.93	1040.43
6	220 kV Rengali PH-Rengali (OPTCL) D/C Line	36.72	408.62	445.34
	TOTAL	**2747.92**	**2247.00**	**4994.92**

Report for Meeting on Status of Downstream Projects of Daltonganj and Chaibasa Substation to be Held on 21.09.2015 at 15:00 hrs. at ERPC , Kolkata

Power evacuation from 400/220 kV Daltonganj Grid Sub-Station (item No. 14 of records of discussion of 17th SCMPSP of ER)

Proposal of JUSNL (Jharkhand Urja Sancharan Nigam Limited) for provision of 220/132 kV Auto transformer in proposed 400/220 kV GSS of M/s POWERGRID at Daltonganj with provision of 02 nos. 132 kV bays for JUSNL

JUSNL has informed that due to land acquisition constraints at Daltonganj, it is not possible to create 220 kV level at Daltonganj. POWERGRID is constructing 2x315 MVA 400/220 kV S/S at Daltonganj. JUSNL has requested to provide 2x160 MVA 220/132 kV Auto transformer in the Daltonganj 400 kV S/S of POWERGRID along with necessary 132 kV bays. The existing 220 kV D/C Latehar – Daltonganj transmission line (presently charged at 132 kV level) of JUSNL is passing nearby Daltonganj of POWERGRID. JUSNL has proposed that line from Latehar to Daltonganj will be LILO at Daltonganj (PG) in such a way Daltonganj (PG)-Latehar would be operated at 220 kV and Daltonganj (PG)- Daltonganj (JUSNL) would be operated at 132 kV. JUSNL has also informed that they are constructing 220/132kV Garhwa Rd. S/S as well as Daltonganj Garwah Rd. 220kV line which would now be connected at Daltonganj (PG) substation.

Taking care of the reliability aspect of 220/132 kV ICT at Daltonganj, the following was proposed :
a) 2x160 MVA, 220/132 kV Auto transformer at Daltonganj substation along with 4 number of 132 kV line bays (under the scope of POWERGRID)
b) LILO of Daltonganj (JUSNL)-Latehar 220kV D/c (operated at 132kV) line of JUSNL at Daltonganj (PG) so that Daltonganj (PG)-Latehar D/c would be operated at 220 kV and Daltonganj (PG)-Daltonganj (JUSNL) would be operated at 132 kV. (Scope of JUSNL)
c) Daltonganj (PG) –Garwa Rd. 220kV D/c line along with 220/132kV S/s at Garwa Rd. (Scope of JUSNL)

Director (Projects), BSPTCL stated that cost of 220/132 kV ICT and associated bays should be borne by Jharkhand, as Jharkhand is the sole beneficiary. AGM, POWERGRID said that ISTS sub-stations are created for the drawl of power by the state and because of land acquisition constraint,
JUSNL is not able to construct 220/132 kV sub-station at Daltonganj.

CE (Trans), JUSNL informed that following transmission would be constructed by JUSNL for drawl of power at 220 kV and 132 kV level from Daltonganj (PG).
a) Daltonganj (PG)-Latehar (JUSNL) 220 kV D/C
b) Daltonganj (PG)-Garwa (JUSNL) 220 kV D/C
c) Daltonganj (PG)-Daltonganj (JUSNL) 132 kV D/C
d) Daltonganj (PG)-Chatrapur / Lesliganj (JUSNL) 132 kV D/C

After, further discussion, it was agreed to create 132 kV level at Daltonganj (PG) along with 2x160 MVA 220/132 kV ICT and 4 no. 132 kV line bays by POWERGRID as a part of Easter Region strengthening scheme-17 (ERSS-17).

In view of above land for 220/132KV GSS at Garhwa is being identified and the project has been included in 24x7 Power for all scheme.

Power evacuation from 400/220 kV Chaibasa Grid Sub-Station

Construction of 220/132/33 kV GSS at Chaibasa is already in progress & likely to be completed soon. This scheme is under consultancy projects awarded to M/s PGCIL Under Jharkhand Consultancy Project , under the same project following Transmission line is being constructed and status is as mentioned below:-

- 220KV D/C Chaibasa(JUSNL) to Chaibasa(PGCIL) Transmission line, -
  This transmission line has been completed only dead end terminations is to be done
- LILO of 220KV S/C Ramchanderpur-Joda Transmission line at 220/132/33KV GSS Chaibasa
  Completed
- 220KV Ramchanderpur-Chaibasa transmission line
  Foundation 111/130, Erection – 110/130 and Stringing 18.41/38Km Completed

For power evacuation at 132 kV level, following transmission lines are under construction by PGCIL under Jharkhand Consultancy from 220/132/33 kV GSS at Chaibasa:

a) 132 kV D/C, 3 phase Chaibasa – Manoharpur transmission line
   Foundation 295/337, Erection – 295/337 and Stringing 31.59/96Km Completed

b) 132 kV D/C, 3 phase Manoharpur – Simdega transmission line
   Foundation 280/319, Erection – 271/319 and Stringing 26.17/96Km Completed

For evacuation at 33KV Level one No. 33KV Feeder of 20MW load capacity has already been completed and another 2No. 33KV feeder is being constructed by JBVNL , which is likely to be completed within 45Days.

Also JUSNL have planned to construct following 132 kV D/C, 3 phase transmission line from 220/132/33 kV GSS at Chaibasa:

a) 220 kV D/C, 3 phase Chaibasa – Gua transmission line (SAIL DEPOSIT WORK).

Agenda has been approved BoD , JUSNL and requisition of fund has been made from M/s SAIL .

b) 132 kV D/C, 3 phase Chaibasa – Chakradharpur transmission line

b) 132 kV D/C, 3 phase Chaibasa – Noamundi transmission line

c) 132 kV D/C 3 Ph. Chaibasa -Rajkharsawan line with construction of 132 kV bay at 132/33 kV Rajkharsawan grid.

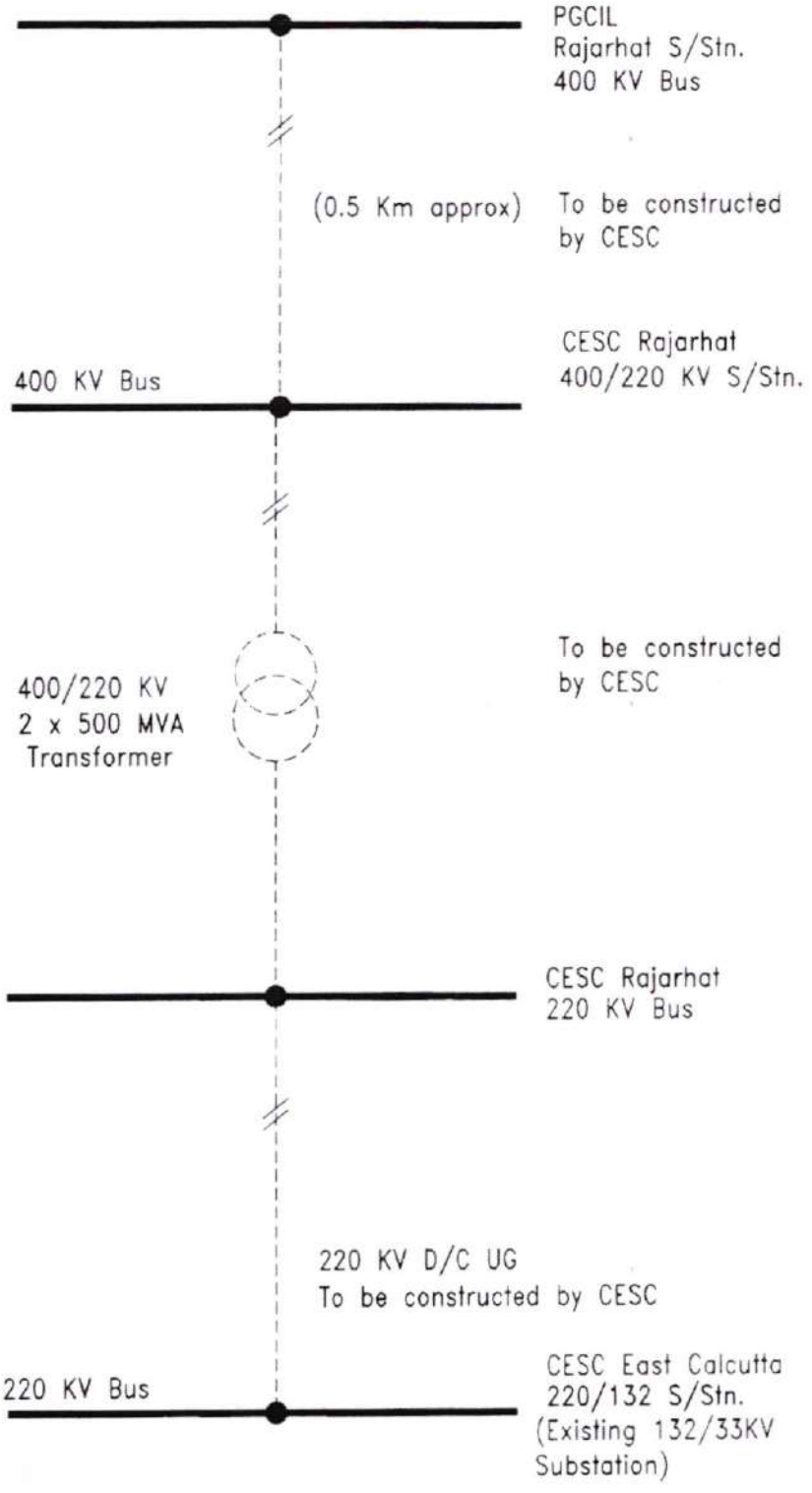
d) LILO of one Ckt Of 132 KV D/C 3 ph Noamundi- Chaibasa Transmission Line at132/33 KV GS/S Kendposi including with 2 nos. of 132 kV bay.

e) LILO of one Ckt Of 132 KV D/C 3 ph Chaibasa - Manoharpur Transmission Line at 132/33 KV GS/S at Goelkera including with 2 nos. of 132 kV bay.

Scheme from Sl. No. (b) to (f) could not be taken in financial year 2015-16 due to non-availability of fund from State Govt./ other sources. Efforts are being made to get funds from World Bank and other Financial institutions to implement these projects under 24x7 , Power for all . After availability of fund these scheme will be taken in financial year 2016-17 and onwards.

Annexure B10.4

SINGLE LINE DIAGRAM OF PROPOSED NETWORK



EASTERN REGIONAL POWER COMMITTEE

AGENDA FOR 3RD MEETING OF STANDING COMMITTEE ON TRANSMISSION PLANNING FOR STATE SECTORS TO BE HELD ON 28.01.2016 (THURSDAY) AT 11:00 HOURS AT ERPC, KOLKATA

PART – A

ITEM NO. A.1: Confirmation of minutes of 2nd SSCM of ERPC held on 04.12.15

The minutes were circulated vide letter dated 10.12.15 to all the constituents and also uploaded in ERPC website.

WBSETCL vide letter dated 15th January, 2016 requested for amendment for item no. B.2.6 which is as given below:

- *ERPC endorsed the reports of SLDC, WB regarding improvement of voltage profile after installation of the capacitors and ERPC shall communicate the same to PSDF Secretariat, NLDC.*
- *Regarding relieving congestion in intra-state transmission system which is incidental to the ISTS, ERLDC will made detail study for which additional information from WBSETCL and DVC are required.*

Members may confirm the minutes with above amendment.

ITEM NO. A.2: Constitution of Standing Committee on Transmission Planning for State Sector of Eastern Region

In line with decision taken in 30th ERPC meeting Standing Committee on Transmission Planning for State Sectors in Eastern Region was formed.

Salient Decisions taken in the First meeting are as follows:

- Apart from STUs, one representative from each SLDC/CLD of ER and GM, ERLDC will be member of the Standing Committee.
- Powergrid (representatives from ER-I, ER-II and PG-Odisha) will also be members of the Standing Committee.
- CEA and CTU will also be invited for the meetings of Standing Committee and their System Study Group may be called as and when required by the Standing Committee.
- The meetings of the Standing Committee will be held on Quarterly basis. However, the meeting should be convened at least before the SCM for CTU planning as conducted by CEA/CTU.
- It was decided to focus the following points in the meeting:

    - STU evacuation system from 400 kV PG/CTU Substations for proper load anchoring.
    - STU network strengthening schemes.
    - Constraints/congestion experienced in STU networks.
    - Any agenda of SCM for central sector, which needs detailed deliberation by ER States.
    - Progress of all transmission schemes (CTU/STU schemes) of ER may be placed before the Standing committee for monitoring purpose.

In 31st TCC, JUSNL, Sikkim and Powergrid (ER-I, ER-II and PG-Odisha), CTU were advised to send the nomination before 2nd Standing Committee on State Sectors meeting scheduled to be held on 4th December, 2015.

TCC also advised all the STUs to nominate SLDC representative before 4th December, 2015.

In 2nd SSCM, CTU, Powergrid ER-II, Powergrid-Odisha and SLDC WB were nominated their representatives.

DVC and BSPTCL agreed to send their nomination of SLDCs within a week.

Committee requested JUSNL, Sikkim, SLDCs and Powergrid ER-I to nominate their representative for fruitful deliberation in the meeting.

JUSNL, Sikkim, DVC, BSPTCL and Powergrid-Er-I may nominate their representatives.

ITEM NO. A.3: Draft agenda items of the upcoming Standing Committee meeting on transmission planning for ER for SSCM meeting

During 30th & 31st ERPC meeting it was decided that Standing Committee of ER on central sector before placing an agenda in SCM must circulate the same to respective constituents to facilitate reviewing and finalising at state level in Standing Committee on transmission planning for state sectors.

In this regard it is to mention that repeated correspondences (recent letters vide dated 05.01.2016, 14.01.2016 and 20.01.2016) were made to CEA for forwarding the draft agenda items of the upcoming meeting of Standing Committee on Power System planning for ER for placing the issues in 3rd SSCM for detailed deliberation. But the response from CEA is still awaited.

Members may discuss.

PART – B :: AGENDA ITEMS BY UTILITIES FOR DISCUSSION

ITEM NO. B.1: Construction of additional 5 nos. 400/220/132 kV Sub-stations under Central Sector Scheme in Bihar-- BSPTCL proposal in 1st SSCM

To cater the future power demand of the State and to comply 24 x 7 PFA objective of Government of India, BSPTCL In 1st SSCM placed the following proposal:

Construction of additional 400/ 220/132 KV S/s at Begusarai, Chapra & Saharsa in North Bihar and Bhojpur /Bikramganj and Munger in South Bihar under Central Sector Scheme. Power transmission capacity in these new sub-station will be required – 400/220 KV- 2x500 MVA & 220/132 KV- 2x160 MVA.

In view of above proposal, CEA opined vide letter dated 19.11.2015 that, for these five sub-stations no justification was provided by BSPTCL. CEA requested BSPTCL to provide the following information:

i. Interconnection of the proposed sub-stations with ISTS system.
ii. Down linking 220/132kV system proposed for drawal of power from these sub-stations.
iii. Present peak load and anticipated load at year 2018-19 to be fed from these sub-stations.

In 2nd SSCM, BSPTCL explained that for meeting the growing demand of Bihar, BSPTCL is in very much need of these five 400/ 220/132 KV S/s sub-stations at Begusarai, Chapra & Saharsa in North Bihar and Bhojpur /Bikramganj & Munger in South Bihar.

BSPTCL submitted the draft/tentative information as required by CEA for the above sub-stations. Further, BSPTCL informed that the complete details as required by CEA is under preparation and will be submitted soon to CEA & ERPC secretariat as well.

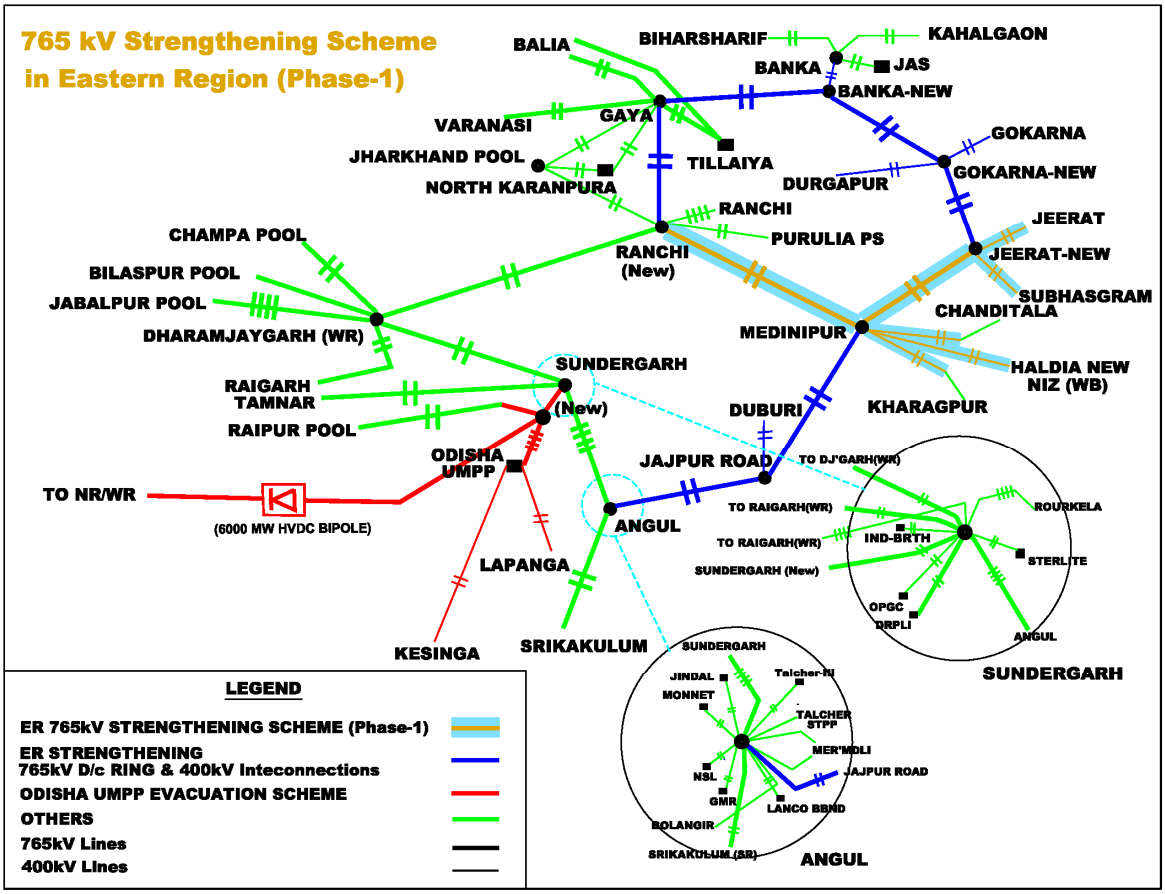
BSPTCL may update.

ITEM NO. B.2: Agenda by WBSETCL

ITEM NO. B.2.1: 765 kV System Strengthening Scheme in Eastern Region

In the 17th Standing Committee Meeting on Power System Planning in Eastern Region held on 25.05.2015 at NLDC, New Delhi, implementation of 765 kV ring as Eastern Region Strengthening Scheme -18 (ERSS-18) : 765 kV System Strengthening in ER (Phase-I) with the scope of works was approved as given below :

a) *Establishment of 765 / 400kV, 2x1500 MVA substations at Medinipur & Jeerat (New)*
b) *Ranchi (New) –Medinipur 765 D/C line*
c) *Medinipur- Jeerat (New) 765 D/C line*
d) *Medinipur –Haldia New (NIZ) (WBSETCL) 400kV D/C line (quad /HTLS)*
e) *LILO of New Chanditala –Kharagpur 400kV D/C line at Medinipur*
f) *Jeerat (New)-Subhasgram 400kV D/C line (quad /HTLS)*
g) *Jeerat (New)- Jeerat 400kV D/C line (quad /HTLS)*
h) *LILO of Jeerat (WB)-Subhasgram 400kV S/C section at Rajarhat*



The scheme was ratified in the 30th ERPC held on 20.06.205 at Shimla. The present status regarding execution of the project is not known to stake holders. CTU shall be requested to prioritize the project and take necessary action for immediate implementation.

Simultaneously, it is proposed to take up the 765 kV ring from Jeerat –Gokarna (New)- Banka (New)-Gaya 765kV D/C corridor. This will facilitate strong 765kV ring in the region. When establishment of 765kV substation at Gokarna & Banka would be necessary, this line would be utilized.

In 1st SSCM, members agreed to forward the proposed scheme to CTU for their study so that the same may be explained by their Study Group in the next meeting of Standing Committee.

In 2nd SSCM, CTU explained with the diagram of 765 kV ring of ER that the above mentioned lines as approved in 17th SCM will be constructed in first phase of 765 kV strengthening scheme of ER under TBCB which is presently at RFQ stage.

Further, CTU informed that the 765 kV ring from Jeerat –Gokarna (New)- Banka (New)-Gaya 765kV D/C corridor will be taken up in second phase after getting the exact schedule of UMPP Power Projects of Bihar (At Banka) and Jharkhand (At Chandwa).

However, committee felt that the 765 kV ring of ER should be completed for better stability and also in view of load growth of West Bengal, Bihar & Jharkhand.

Further, committee advised Bihar to furnish the status of Banka UMPP and load growth at adjoining areas to Banka.

West Bengal & Bihar were advised to give a forecast of future load growth in respective system.

West Bengal & Bihar agreed to submit the above information at the earliest.

CTU, West Bengal and Bihar may update.

ITEM NO. B.2.2: 220kV connectivity from 400kV Parulia (PG) substation

WBSETCL has planned to up-grade its Ukhra 132kV substation to 220kV GIS to meet the growing demand in that area. Feasibility study for construction of 220kV GIS has been done. Line route survey is also in progress.

Initially there was 220kV connectivity in between Parulia (PG) and Durgapur. After conversion of the said connectivity at 400kV level, 220kV bays has become idle. It is proposed that POWERGRID shall provide two nos. 220kV bays at Parulia(PG). The 220kV line will be constructed by WBSETCL at its cost.

In 1st SSCM, ERLDC informed that if WBSETCL wants to draw power from 400/220 kV Durgapur (PG) S/s, considering the growing demand of DVC the 2x315 MVA ICTs may need to be Augmented to 2x500 MVA.

Members requested ERPC/ERLDC to carry out the system study for the above system and place the results in next meeting of SSCM. WBSETCL was advised to provide the load and connectivity details to ERPC/ERLDC for system study.

In 2nd SSCM, ERLDC/ERPC presented the study results.

It was observed that N-1 compliance may be getting adversely affected for 400kV Parulia-Bidhanagar D/C line with future loading of the West Bengal. Committee advised ERPC/ERLDC to check the loading of DVC network simultaneously for all the cases.

WBSETCL informed that 400kV Parulia-Bidhanagar D/C line is a short line and its conductor is also being replaced with HTLS or with other high capacity conductor. This will further facilitate the N-1 criterion of 400kV Parulia-Bidhanagar D/C line.

CTU informed that the two bays will be provided to WBSETCL subject to their confirmation in the next SCM for central sector.

WBSETCL informed that they will confirm the establishment of 220 kV Ukhra Sub-station after the completion of survey of ROW of the line.

ERLDC/ERPC may present the study results for DVC network loading.

WBSETCL may update. Members may discuss.

ITEM NO. B.2.3: LILO of 132 KV Kolaghat – Kharagpur – Musaboni D/C line of DVC at Kharagpur and Debra of WBSETCL

The existing Jamshedpur – Musaboni – Hizlee (DVC) – Kolaghat (DVC) 132 kV D/C line passes through very close proximity of WBSETCL's Kharagpur 400/220/132 kV sub-station (around 1 Km) and Debra 132/33 kV sub-station (around 0.5 Km).

- WBSETCL proposed LILO of Musaboni – Hizlee (DVC) portion of this line at Kharagpur 400/220/132 kV sub-station of WBSETCL for injection of power which will lead injection of power in between and reduce the effective length of continuous 132 kV line from 240 Km to 160 Km.

- WBSETCL proposed LILO of Hizlee (DVC) – Kolaghat (DVC) portion of this line at Debra 132 kV sub-station of WBSETCL, which is around 0.5 Km away from the line, for drawal of around 50-60 MW power. This will set aside construction of around 25 Km 132 kV D/C line from Midnapur to Debra.

In 31st TCC, ERPC gave a brief presentation on WBSETCL proposal and explained that since 400kV system is getting connected at 132kV Kharagpur(DVC) S/s, it will improve the voltage in around Kharagpur during peak load hours.

DVC also delivered a presentation and informed that they have installed 220/132 kV ATRs at Durgapur (DVC) due to which the low voltage problem at 132kV Kharagpur(DVC) S/s is now resolved.

After detailed discussion, TCC decided that a threadbare deliberation is required at State Standing Committee (SSCM) with all details.

In 2nd SSCM, ERLDC/ERPC presented the study results.

DVC raised certain observations and put forward certain cases under which non-compliance of N-1 contingencies were apprehended. After detailed discussion, the committee advised ERPC secretariat/ERLDC to make detailed study considering present and future network of the both DVC and West Bengal.

ERLDC/ERPC may present the study results.

ITEM NO. B.2.4: 220kV connectivity from Balasore (Orissa) to Egra 220 kV substation of WBSETCL

WBSETCL is constructing 220kV GIS at Egra to up-grade the existing 132kV substation at Egra for reliable and adequate power supply in the district Midnapur. The incoming 220kV line is from Kharagpur 400kV substation. The project is expected to be completed by 2016 end.

Now, the 220 kV substation will be established with a radial line. There is no other source to put it in ring main to satisfy the Grid Code. Considering the physical location, the nearest 220kV grid is Balasore 220kV substation of OPTCL.

It is proposed for approval of 220 kV D/C ISTS line between Egra to Balasore under Regional Scheme for reliable grid operation.

In 1st SSCM, the committee advised WBSETCL to discuss the issue bilaterally with OPTCL.

Thereafter, ERPC/ERLDC has done study with next 5 years planed network of WBSETCL, as per the data received from WBSETCL.

In 2nd SSCM, ERLDC/ERPC presented the study results. 10 % load growth is assumed for both DVC and West Bengal for complete system.

It was observed that around 140 MW of power is being imported from Balasore to Egra resulting in high loading of 220 kV Baripada-Balasore D/C.

After detailed discussion, the committee advised for detailed study considering future network of the West Bengal and with direct connectivity between Baripada-Egra.

ERLDC/ERPC may present the study results.

ITEM NO. B.2.5: Study report on System Improvement of State Transmission System of West Bengal

WBSETCL vide letter dated 23rd November, 2015 requested for study report of the following for onward submission to NLDC for PSDF funding:

- Scheme for relieving congestion in Intra-state transmission system which is incidental to the ISTS
- Scheme for R&M of transmission systems for relieving congestion
- Installation of shunt capacitors and other reactive energy generators for improvement of voltage profile

ERPC advised ERLDC to carry out the study for onward submission to NLDC.

In 2nd SSCM, ERLDC informed that preliminary study was made but for detailed analysis additional information from WBSETCL and DVC are required.

ERLDC may update.

ITEM NO. B.3: Agenda by OPTCL

i. Construction of 400kV DC line from TTPS to 400/220kV Meramundali "B" for power evacuation from TTPS expansion:

Generation is stepped up to 400kV and connected to 400kV bus of proposed Meramundali-B substation through 400kV D/C line. System Study has been done with connection of 1X660 at Meramundali “B”. 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).

ii. Status of 400/220kV S/s at Meramundali "B":

With IPP power injection and 400kV connectivity at existing Meramundali 400/220kV substation, the fault level at existing Meramundali 400kV bus exceeds the 40kA breaker capacity. Hence, Meramundali B is required to reduce the fault level at existing substation and also for drawl of state share of power from IPPs. After Commissioning of Meramundali “B”, the fault level at Meramundali will come down from 40kA to 20.3kA. It is a part of Transmission Plan for the year 2015. The connectivity details as explained in 2nd SSCM are as given below:

- Shifting of STPS to Meramundali 400kV D/C line from Meramundali to Meramundali-B.
- Shifting of Jeypore to Meramundali 400kV S/C line from Meramundali to Meramundali-B.
- Shifting of Mendhasal to Meramundali 400kV D/C line from Meramundali to Meramundali-B.
- 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.

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

This substation is required to cater the normal load growth and also upcoming bulk loads in Narendrapur area. The system study has been done. The connectivity details as explained in 2nd SSCM are as given below:

- 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

2nd SSCM advised OPTCL to submit the relevant data of their proposals along with their study results, SLDs etc for further necessary study at ERLDC/ERPC. OPTCL agreed.

*OPTCL vide mail dated 18.01.2016 has submitted the SLD showing the connectivity details which is enclosed at **Annexure-B.3.** OPTCL also requested that 400/220kV Khntuni S/s may please be included for coming meeting.*

OPTCL may elaborate and place their justification for the proposal.

ITEM NO. B.4: AGENDA FROM DVC:

1. Patratu (DVC) – Patratu (JSEB) Tie-line is kept only charge from DVC end since long and if the same status is maintained for future also, then DVC is to find out alternate network arrangement and thus investment and similarly, for Kolaghat-Kolaghat tie line, this is out since June'12.

In 1st SSCM, JUSNL informed that 132 kV Patratu (DVC) – Patratu (JSEB) tie-line was kept out due to overloading of 220/132 kV ICT of Patratu (JSEB). The scenario may get changed after the commissioning of 220 kV Tenughat-Govindpur line.

The committee requested JUSNL to provide the details of their related schemes.

JUSNL agreed.

DVC and JUSNL may update.

2. 132KV Barhi – Rajgir and Barhi – Bihasariff and 132KV Chandil-Manikui tie lines are also remain charged from DVC end only, which have no utility at present condition. Such tie lines are to be revived for stability of the grid.

In 1st SSCM, BSPTCL informed that four (4) tower were collapsed from Barhi end. The order for restoration work has been placed.

In 2nd SSCM, BSPTCL informed that all the foundations were completed for 132KV Barhi – Rajgir and the line will be charged within a month. 132KV Barhi – Bihasariff line is in charged condition on ERS.

DVC and BSPTCL may update.

ITEM NO. B.5: Priority-based augmentation of ICT capacity

High loadings with consequent non-compliance of (n-1) security criterion were observed for the 400/220kV ICTs at Patna, Muzaffarpur, Maithon and Sasaram throughout July to October. Though the ICT capacities at these substations are scheduled for augmentation in a phased manner starting from Jan-16, in the interest of secure and unconstrained operation, an additional ICT or replacement of an existing 315 MVA ICT by a 500MVA ICT is required on priority basis by April 2016 i.e. before onset of next summer season.

Keeping in view the rapidly growing demand of Bihar and uncertainty of generation level within the 220kV system of DVC, POWERGRID may arrange for augmentation of ICT capacity as per the aforesaid priority.

In 31st TCC, Powergrid has given the schedule of commissioning as follows:

1. Patna- 1st ICT – Jan, 2016 & 2nd ICT- Mar, 2016
2. Muzaffarpur- Dec, 2015
3. Maithon- 1st ICT- Mar, 2016 & 2nd ICT- June, 2016
4. Sasaram- 1st ICT- Jan, 2016 & 2nd ICT- Mar, 2016

So all the ICTs will be available before Summer.

Director,BSPTCL informed that the up-gradation of 315 MVA ICT by 500 MVA ICT at Purnea was accomplished in less than 10 days and therefore thanked Powergrid.

TCC appreciated the effort of Powergrid and advised Powergrid to prepare a write up for early commissioning/up gradation of ICT which may be circulated in lower forum of ERPC for the benefit of ER constituents.

Powergrid may share the write up with members.

ITEM NO. B.6: Priority-based commissioning of bus reactor for control of high voltage during lean periods

With approach of winter season, the demand in E. Region and W. Bengal in particular has started reducing, thereby aggravating the high voltage problem at some of the 400kV S/Stns.

At Beharampur, the 400kV bus voltage is frequently exceeding 420kV, with corresponding rise of 400kV AC side voltage at HVDC B-t-B Bheramara. Persistent high voltage at Farakka and at Sagardighi power stations is also responsible for causing high voltage at Beharampur.

As the switching in/out of harmonic filter banks is dependent on HVDC power order and cannot be controlled manually, Bangladesh is often expressing difficulty in importing the full quantum of power scheduled from NTPC and W. Bengal, to avoid overvoltage tripping of any 400kV incoming circuit, on account of automatic switching in of additional filter bank.

Therefore an additional bus-reactor of 80MVAR or 125 MVAR capacity needs to be installed at Beharampur on urgent basis to control the 400kV voltage below 420kV. In addition, bus reactor capacity also needs to be enhanced at Farakka to control the voltage

Further, the bus reactor of Jamshedpur (125 MVAR) and Biharshariff (125 MVAR) needs to be installed in order of priority, as early as possible.

In 31st TCC, Powergrid informed that for additional bus-reactor of 125 MVAR capacity at Beharampur, NIT will be done in Nov, 2015 and best efforts will be made for commissioning the same by Dec, 2016 even when commissioning schedule is Apr, 2017.

Regarding Bus reactor of Jamshedpur and Biharshariff, it was informed that the reactors will be available by April/May 2016 and will be commissioned in another 3 months.

TCC advised Powergrid to expedite the diversion of reactors from other regions/locations.

NLDC informed that additional bus reactor at Behrampur is urgently required as Bangladesh power is getting curtailed because of high voltage issues.

Powergrid informed that efforts are being made to divert 50 MVAR reactor from Rourkela which is kept as a spare to Beharampur and to commission by June 2016.

In 2nd SSCM, Powergrid informed that Jeypore reactor was commissioned in November, 2015 and rest all the reactors are as per the above schedule.

Powergrid may update.

ITEM NO. B.7: Identification of non-ISTS carrying inter-state power

The CERC (Sharing of Transmission charges and Losses) (Third Amendment) Regulations, 2015 require the identification of STU lines carrying interstate power. The certification of such lines carrying interstate power are to be done by RPC in consultation with RLDC. List of lines proposed to be carrying interstate power had been sought from all the states, however, only WBSETCL and OPTCL have responded.

In a Suo-Motu Petition (Petition No-15/Suo-Motu/2012 dated 14.06.2012), CERC had observed thus:

6. As a first step towards inclusion of non-ISTS lines in the PoC transmission charges, the Commission proposes to include the transmission lines connecting two States, for computation of PoC transmission charges and losses. However, for the disbursement of transmission charges, tariff for such assets needs to be approved by the Commission in accordance with the provisions of Sharing Regulations. Accordingly, we direct the owners of these inter-State lines to file appropriate application before the Commission for determination of tariff for facilitating disbursement.

Many STU's have already filed their petitions (Petition No. 246/TT/2013 (Haryana), 232/TT/2013 (KSEB), 217/TT/2013 (MP), etc) before CERC for inclusion of STU lines connecting two states.

Constituents may confirm whether they have filed petitions before CERC for inclusion of transmission lines connecting two states.

Since some of the lines proposed by WBSETCL and OPTCL are in the nature of transmission lines connecting two states, ERPC may certify these as Inter State Lines for the purpose of inclusion for tariff recovery under PoC mechanism.

In case any intra state line is desired to be certified as carrying interstate power, the list of such lines may be sent to ERPC Secretariat and ERLDC for further necessary action.

In 31st TCC, it was informed that WBSETCL and OPTCL have filed petitions for inclusion of their lines as interstate lines. CERC vide their Order dated 08.06.15 (Pet No-259/TT/2013) has already considered the 400 kV Kharagpur-Baripada and 220 kV Santhaldih-Chandil lines of WBSETCL. However for OPTCL (petition No- 203/TT/2013) order may not have been issued by CERC as on date. BSPHCL and JUSNL informed that they are on the job of identifying the lines in their system.

It was also informed that as per CERC order lines connecting two states may be considered as natural ISTS. For such lines the constituents may directly approach the commission for adoption of SERC tariff or for determination of tariff in case SERC tariff was not available.

For balance lines TCC members were informed that Certification of non-ISTS lines carrying inter-State power, which were not approved by the RPCs on the date of notification of the Central Electricity Regulatory Commission (Sharing of Transmission Charges and Losses) Regulations, 2009, shall be done on the basis of load flow studies. For this purpose, STU shall put up proposal to the respective RPC Secretariat for approval. RPC Secretariat, in consultation with RLDC, using WebNet Software would examine the proposal. The results of the load flow studies and participation factor indicating flow of Inter State power on these lines shall be used to compute the percentage of usage of these lines as inter State transmission.

List of Lines considered by CERC in their Suo Motu order in petition No-15/Suo-Motu/2012 dated 14.03.12

Voltage (KV)	LINES		
400	Kolaghat	Baripada	WBSETCL-PG
220	Waria	Bidhannagar 1	DVC-WBSETCL
220	Waria	Bidhannagar 2	DVC-WBSETCL
220	Chandil	Santaldih	JSEB-WBSETCL
220	Patratu	BodhGaya 1	JSEB-BSEB
220	Patratu	BodhGaya 2	JSEB-BSEB
220	Patratu	BodhGaya 3	JSEB-BSEB
220	Tenughat	Biharshariff	JSEB-BSEB
220	Joda	Ramchandrapur	OPTCL-JSEB
220	Jindal	Jamshedpur	OPTCL-JSEB (DVC)

Lines carrying Inter State Power as Submited by WBSETCL

SL. NO.	Voltage (kV)	TIE LINE		REMARKS
1	132	BIRPARA (PG)	BIRPARA CKT 1	WBSETCL
2	132	BIRPARA (PG)	BIRPARA CKT 2	WBSETCL
3	132	NJP	NBU CKT 1	WBSETCL
4	132	NJP	NBU CKT 2	WBSETCL
5	132	MALDA (PG)	MALDA CKT 1	WBSETCL
6	132	MALDA (PG)	MALDA CKT 2	WBSETCL
7	400	JEERAT	BERHAMPORE CKT	PGCIL
8	400	JEERAT	SUBHASGRAM CKT	PGCIL
9	400	KHARAGPUR	BARIPADA CKT	WBSETCL
10	220	STPS	CHANDIL CKT	WBSETCL
11	220	BIDHANNAGAR	WARIA CKT 1	DVC
12	220	BIDHANNAGAR	WARIA CKT 2	DVC
13	132	RANGIT	RAMMAM CKT	WBSETCL
14	220	SUBHASGRAM(PG)	SUBHASGRAM CKT 1	WBSETCL
15	220	SUBHASGRAM(PG)	SUBHASGRAM CKT 2	WBSETCL
16	400	PARULIA	BIDHANNAGAR CKT 1	WBSETCL
17	400	PARULIA	BIDHANNAGAR CKT 2	WBSETCL
18	400	SGTPP	FARAKKA CKT	PDCL
19	400	SGTPP	SUBHASGRAM CKT	PDCL
20	400	SGTPP	PARULIA CKT 1	PDCL
21	400	SGTPP	PARULIA CKT 2	PDCL
22	220	DALKHOLA (PG)	DALKHOLA CKT 1	WBSETCL
23	400	SGTPP	PARULIA CKT 2	PDCL
24	132	KURSEONG	RANGIT CKT	PGCIL
25	132	KURSEONG	SILIGURI CKT	WBSETCL

26	220	SUBHASGRAM (PG)	EMSS (CESC) CKT 1	CESC
27	220	SUBHASGRAM (PG)	EMSS (CESC) CKT 2	CESC
28	220	SUBHASGRAM (PG)	BANTALA CKT	WBSETCL
29	220	SUBHASGRAM (PG)-	NEW TOWN CKT	WBSETCL
30	400	SUBHASGRAM (PG)	HEL CKT 1	HEL
31	400	SUBHASGRAM (PG)	HEL CKT 2	HEL
32	400	SGTPP	BERHAMPORE CKT 1	PGCIL
33	400	SGTPP	BERHAMPORE CKT 2	PGCIL

Sl.No 9, 10 have already been considered by CERC for inclusion in PoC vide Order dated 08.06.15 (Pet No-259/TT/2013)
Sl No 11,12,13 & 24 may be in the nature of natural ISTS lines as per CERC order dated 14.03.12 (petition No-15/Suo-Motu/2012)

Tie LINES MAINTAINED BY OPTCL & USED AS ISTS LINES as submitted by OPTCL				
SL.NO.	**Voltage (KV)**	**LINES**		**CIRCUIT**
1	400	INDRAVATI PH	INDRAVATI (PGCIL)	1
2	400	RENGALI PG	KOLAGHAT	1
3	220	BALIMELA PH	U SILERU	1
4	220	JAYANAGAR	JAYANAGAR (PGCIL)	2
5	220	BUDHIPADAR	KORBA DC	2
6	220	TARKERA	BISRA	2
7	220	JODA	RC PUR (JSEB)	1
8	220	JODA-JSPL	JAMSHEDPUR (DVC)	1
9	220	RENGALI (OPTCL)	RENGALI (PGCIL)	2
10	220	RENGALI PH	KANIHA	1
11	220	KANIHA	TTPS	1
12	220	KANIHA	MERAMUNDALI	2
13	220	KUCHEI	BALASORE	2
14	132	JODA	KENDUPOSI (JSEB)	1
15	132	KUCHEI	RAIRANGPUR	1
16	132	KUCHEI	BARIPADA	1

For Sl.No 5 CERC in order dated 29.05.15 (Pet No-185/TT/2013) has already directed that wheeling charges for the line are to be pooled in PoC w.e.f 01.07.2011.
Sl.No 2,3,7,8 &14 may be in the nature of natural ISTS lines as per CERC order dated 14.03.12 (petition No-15/Suo-Motu/2012)

All constituents were requested to provide the list of their lines with details of portion (in % and Km) under their ownership along with latest status of filing of petition/order of CERC to ERPC Secretariat for initiating action in this regard.

OPTCL has submitted the updated list of lines.

Committee advised all the other STUs to submit the updated list of lines.

WBSETCL, DVC, Bihar, Jharkhand and Sikkim may update the respective status.

ITEM NO. B.8: Efficient Evacution of Power from 2x210 MW Tenughat TPS, Lalpania

Arrangement for evacuation of power from Tenughat TPS is through the following two transmission lines:

1) Tenughat TPS to Bihar Sharif(BSEB) S/S through 400 KV Single Circuit line.
2) Tenughat TPS to Patraru TPS through 400 KV Single Circuit line.

Both lines are operating at 220 kV due to non readiness of 400 KV S/S at terminating ends.

In 27th TCC, TVNL informed that, at TVNL end the up gradation to 400 kV level is in process. Accordingly, TCC also advised JSEB to deposit the requisite amount to Powergrid for up

gradation/termination work entrusted to Powergrid for operation of the line at rated voltage. This will facilitate Tenughat-Biharshariff line to be operated at 400 kV and stability of the TVNL units.

In 21st PCC, TVNL informed that 2x250 MVA ICT is already available at TVNL and the erection work is in progress. TVNL reported that work will be completed by December, 2014 at TVNL end.

Powergrid informed that, up gradation related works at 400 kV Biharshariff S/s has now stalled due to some payment issues with JSEB. However, it is expected to complete the work by December, 2014, if in the mean time payment issues get settled at earliest.

In 29th TCC, Powergrid informed that payment of around 4.58 cr. is pending from JUSNL for up gradation work at Biharsharif S/s and 2.3 cr. From TVNL for up gradation work at TVNL S/s.

Powergrid informed that they will complete the work at respective ends within three months from the date of receipt of payments from JUSNL and TVNL.

TCC advised JUSNL, TVNL and PGCIL to ensure the schedule.

In 1st SCM, JUSNL informed that the payment will be released soon.

JUSNL/ CTU may update.

ITEM NO. B.9: Status of Downstream Projects of Daltonganj and Chaibasa Sub-stations of JUSNL

In 1st SSCM, JUSNL updated the status; the same is given at ***Annexure- B.9.***

JUSNL/ Powergrid may update.

ITEM NO. B.10: 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.

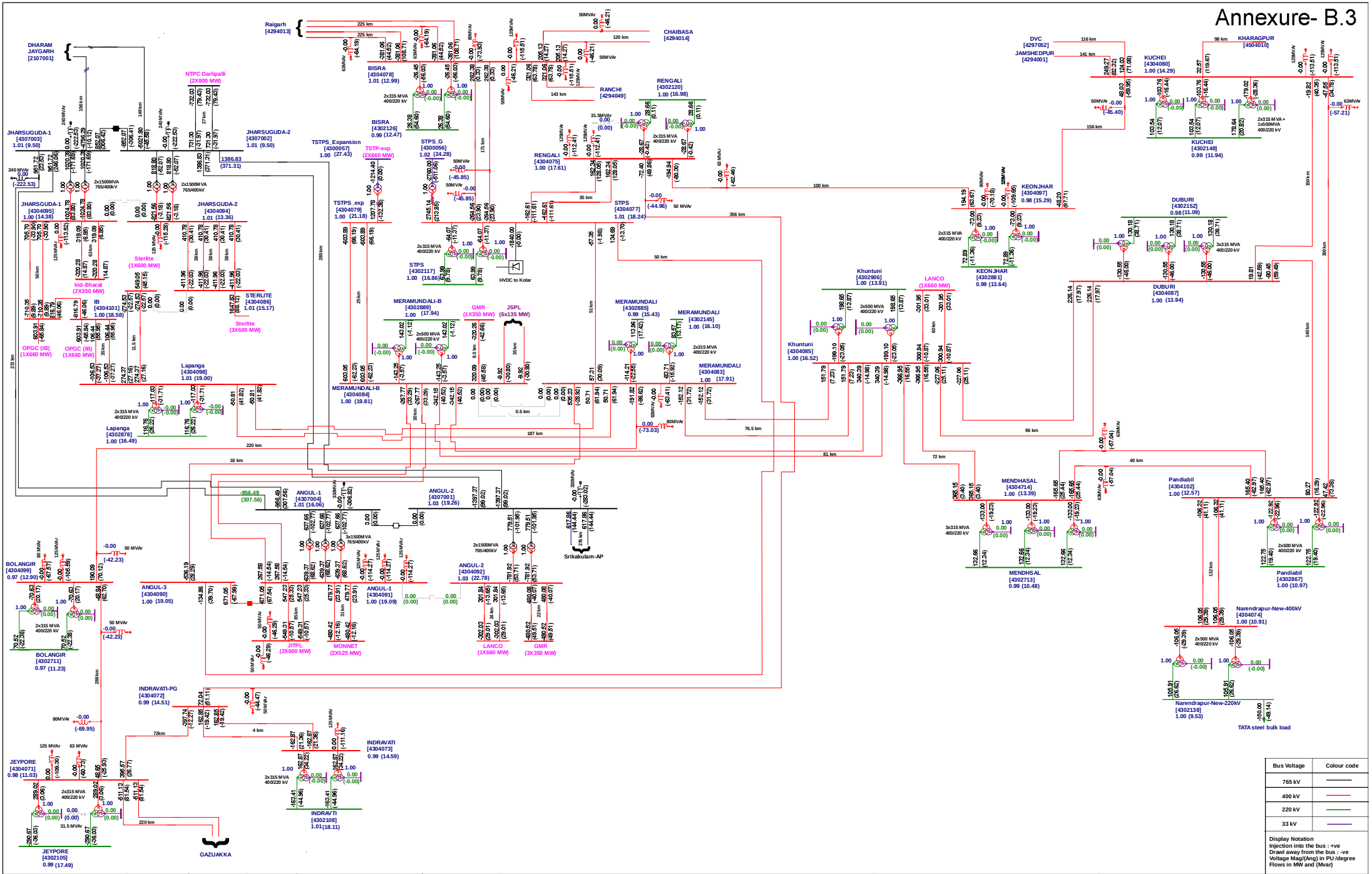
The committee advised WBSETCL to consider the CESC proposal and give their official communication in this regard.

WBSETCL/CESC may update.

ITEM NO. B.11: ANY OTHER ITEM.

****

Annexure- B.3



Bus Voltage	Colour code
765 kV	
400 kV	
220 kV	
33 kV	

Display Notation
Injection into the bus : +ve
Drawl away from the bus : -ve
Voltage Magl/(Ang) in PU /degree
Flows in MW and (Mvar)

DESCRIPTION	REV	DATE:	REMARKS
LFA	R6	14.01.2016	
LFA	R5	13.01.2016	
LFA	R4	12.01.2016	
LFA	R3	12.01.2016	
LFA	R2	11.01.2016	
LFA	R1	07.12.2015	
LFA	R0	05.10.2015	

APPROVED | REVEIWED | CHECKED | DRAWN

Load Flow Study Results - Case study

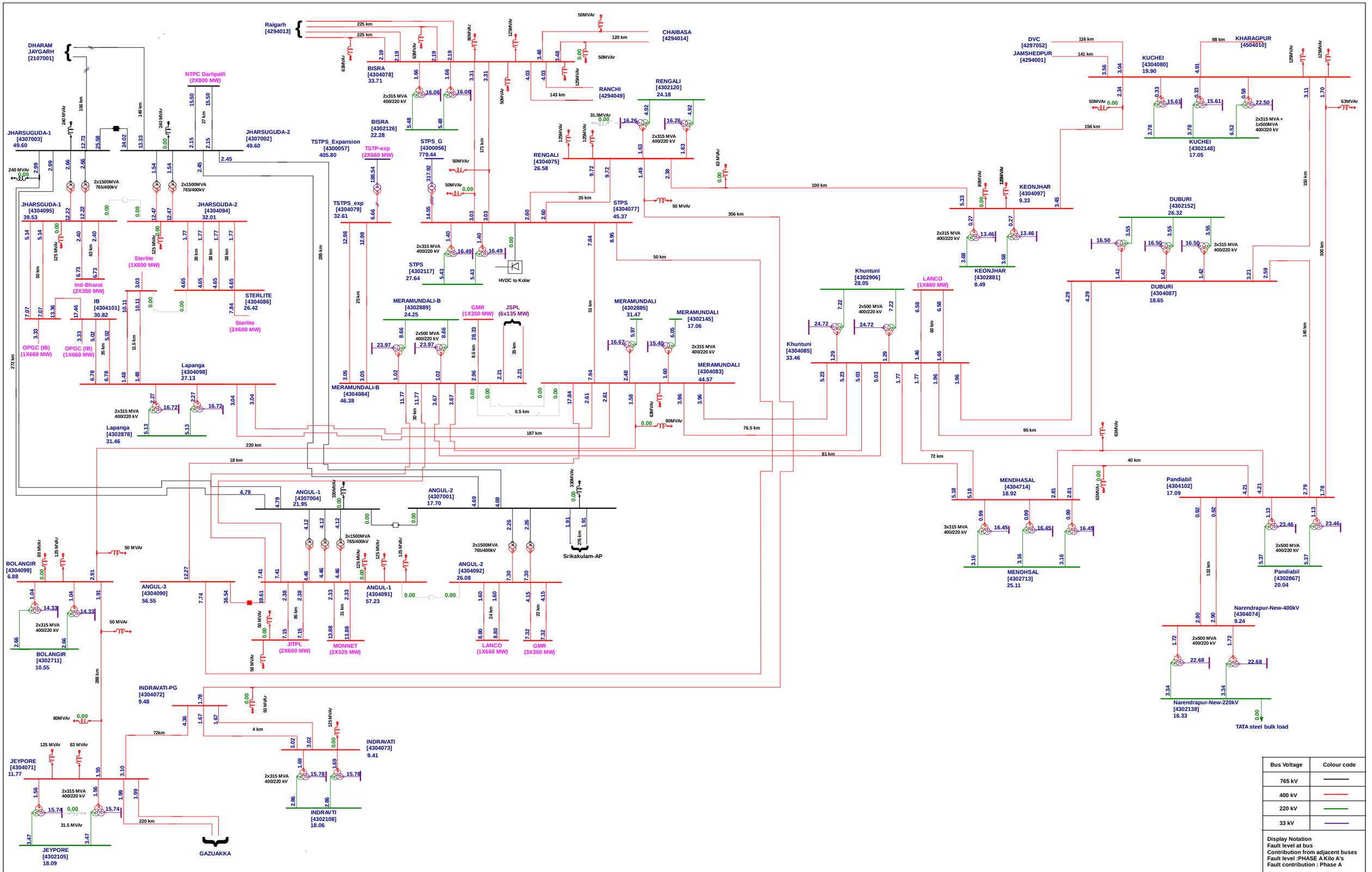
Single line diagram of 765kV and 400kV transmission network - Odisha State 2018-19 condition

Orissa Power Transmission Corporation Ltd.,
Registered Office: Janpath,
Bhubaneshwar-751022
Phone: (0674)-2541320/2542320

PO details: CP-12/2015/10043(8)/epc dated 17 October 2015.

Power Research & Development Consultants Pvt. Ltd.,
#5, 11th Cross, 2nd Stage,
West of Chord Road,
Bangalore- 560086, INDIA
Ph : +91-080-2319 2209,2159
Fax: +91-080-2319 2210
E-mail : prdc@vsnl.com

DRAWN IN : MiPower™ | DWG. NO : LFA\2018-19\765-400kV-Case study



Bus Voltage	Colour code
765 kV	
400 kV	
220 kV	
33 kV	

Display Notation
Fault level at bus
Contribution from adjacent buses
Fault level :PHASE A Kilo A's
Fault contribution : Phase A

				DESCRIPTION	REV	DATE:	REMARKS
				SCS	R6	14.01.2016	
				SCS	R5	13.01.2016	
				SCS	R4	12.01.2016	
				SCS	R3	12.01.2016	
				SCS	R2	11.01.2016	
				SCS	R1	07.12.2015	
				SCS	R0	05.10.2015	
APPROVED	REVEIWED	CHECKED	DRAWN				

Short circuit study results - Case study

Three phase to ground fault in kA.

Single line diagram of 765kV and 400kV transmission network - Odisha State 2018-19 condition

Orissa Power Transmission Corporation Ltd.,
Registered Office: Janpath,
Bhubaneshwar-751022
Phone: (0674)-2541320/2542320

PO details: CP-12/2015/10043(8)/epc dated 17 October 2015.

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Bangalore- 560086, INDIA
Ph : +91-080-2319 2209,2159
Fax: +91-080-2319 2210
E-mail : prdc@vsnl.com

DRAWN IN : MiPower™

DWG. NO : SCS-3PHG\2018-19\765-400kV-Case study

Report for Meeting on Status of Downstream Projects of Daltonganj and Chaibasa Substation to be Held on 21.09.2015 at 15:00 hrs. at ERPC , Kolkata

Power evacuation from 400/220 kV Daltonganj Grid Sub-Station (item No. 14 of records of discussion of 17th SCMPSP of ER)

Proposal of JUSNL (Jharkhand Urja Sancharan Nigam Limited) for provision of 220/132 kV Auto transformer in proposed 400/220 kV GSS of M/s POWERGRID at Daltonganj with provision of 02 nos. 132 kV bays for JUSNL

JUSNL has informed that due to land acquisition constraints at Daltonganj, it is not possible to create 220 kV level at Daltonganj. POWERGRID is constructing 2x315 MVA 400/220 kV S/S at Daltonganj. JUSNL has requested to provide 2x160 MVA 220/132 kV Auto transformer in the Daltonganj 400 kV S/S of POWERGRID along with necessary 132 kV bays. The existing 220 kV D/C Latehar – Daltonganj transmission line (presently charged at 132 kV level) of JUSNL is passing nearby Daltonganj of POWERGRID. JUSNL has proposed that line from Latehar to Daltonganj will be LILO at Daltonganj (PG) in such a way Daltonganj (PG)-Latehar would be operated at 220 kV and Daltonganj (PG)- Daltonganj (JUSNL) would be operated at 132 kV. JUSNL has also informed that they are constructing 220/132kV Garhwa Rd. S/S as well as Daltonganj Garwah Rd. 220kV line which would now be connected at Daltonganj (PG) substation.

Taking care of the reliability aspect of 220/132 kV ICT at Daltonganj, the following was proposed :
a) 2x160 MVA, 220/132 kV Auto transformer at Daltonganj substation along with 4 number of 132 kV line bays (under the scope of POWERGRID)
b) LILO of Daltonganj (JUSNL)-Latehar 220kV D/c (operated at 132kV) line of JUSNL at Daltonganj (PG) so that Daltonganj (PG)-Latehar D/c would be operated at 220 kV and Daltonganj (PG)-Daltonganj (JUSNL) would be operated at 132 kV. (Scope of JUSNL)
c) Daltonganj (PG) –Garwa Rd. 220kV D/c line along with 220/132kV S/s at Garwa Rd. (Scope of JUSNL)

Director (Projects), BSPTCL stated that cost of 220/132 kV ICT and associated bays should be borne by Jharkhand, as Jharkhand is the sole beneficiary**.** AGM, POWERGRID said that ISTS sub-stations are created for the drawl of power by the state and because of land acquisition constraint,
JUSNL is not able to construct 220/132 kV sub-station at Daltonganj.

CE (Trans), JUSNL informed that following transmission would be constructed by JUSNL for drawl of power at 220 kV and 132 kV level from Daltonganj (PG).
a) Daltonganj (PG)-Latehar (JUSNL) 220 kV D/C
b) Daltonganj (PG)-Garwa (JUSNL) 220 kV D/C
c) Daltonganj (PG)-Daltonganj (JUSNL) 132 kV D/C
d) Daltonganj (PG)-Chatrapur / Lesliganj (JUSNL) 132 kV D/C

After, further discussion, it was agreed to create 132 kV level at Daltonganj (PG) along with 2x160 MVA 220/132 kV ICT and 4 no. 132 kV line bays by POWERGRID as a part of Easter Region strengthening scheme-17 (ERSS-17).

In view of above land for 220/132KV GSS at Garhwa is being identified and the project has been included in 24x7 Power for all scheme.

Power evacuation from 400/220 kV Chaibasa Grid Sub-Station

Construction of 220/132/33 kV GSS at Chaibasa is already in progress & likely to be completed soon. This scheme is under consultancy projects awarded to M/s PGCIL Under Jharkhand Consultancy Project , under the same project following Transmission line is being constructed and status is as mentioned below:-

- 220KV D/C Chaibasa(JUSNL) to Chaibasa(PGCIL) Transmission line, -
  This transmission line has been completed only dead end terminations is to be done
- LILO of 220KV S/C Ramchanderpur-Joda Transmission line at 220/132/33KV GSS Chaibasa
  Completed
- 220KV Ramchanderpur-Chaibasa transmission line
  Foundation 111/130, Erection – 110/130 and Stringing 18.41/38Km Completed

For power evacuation at 132 kV level, following transmission lines are under construction by PGCIL under Jharkhand Consultancy from 220/132/33 kV GSS at Chaibasa:

a) 132 kV D/C, 3 phase Chaibasa – Manoharpur transmission line
   Foundation 295/337, Erection – 295/337 and Stringing 31.59/96Km Completed

b) 132 kV D/C, 3 phase Manoharpur – Simdega transmission line
   Foundation 280/319, Erection – 271/319 and Stringing 26.17/96Km Completed

For evacuation at 33KV Level one No. 33KV Feeder of 20MW load capacity has already been completed and another 2No. 33KV feeder is being constructed by JBVNL , which is likely to be completed within 45Days.

Also JUSNL have planned to construct following 132 kV D/C, 3 phase transmission line from 220/132/33 kV GSS at Chaibasa:

a) 220 kV D/C, 3 phase Chaibasa – Gua transmission line (SAIL DEPOSIT WORK).

Agenda has been approved BoD , JUSNL and requisition of fund has been made from M/s SAIL .

b) 132 kV D/C, 3 phase Chaibasa – Chakradharpur transmission line

b) 132 kV D/C, 3 phase Chaibasa – Noamundi transmission line

c) 132 kV D/C 3 Ph. Chaibasa -Rajkharsawan line with construction of 132 kV bay at 132/33 kV Rajkharsawan grid.

d) LILO of one Ckt Of 132 KV D/C 3 ph Noamundi- Chaibasa Transmission Line at132/33 KV GS/S Kendposi including with 2 nos. of 132 kV bay.

e) LILO of one Ckt Of 132 KV D/C 3 ph Chaibasa - Manoharpur Transmission Line at 132/33 KV GS/S at Goelkera including with 2 nos. of 132 kV bay.

Scheme from Sl. No. (b) to (f) could not be taken in financial year 2015-16 due to non-availability of fund from State Govt./ other sources. Efforts are being made to get funds from World Bank and other Financial institutions to implement these projects under 24x7 , Power for all . After availability of fund these scheme will be taken in financial year 2016-17 and onwards.

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

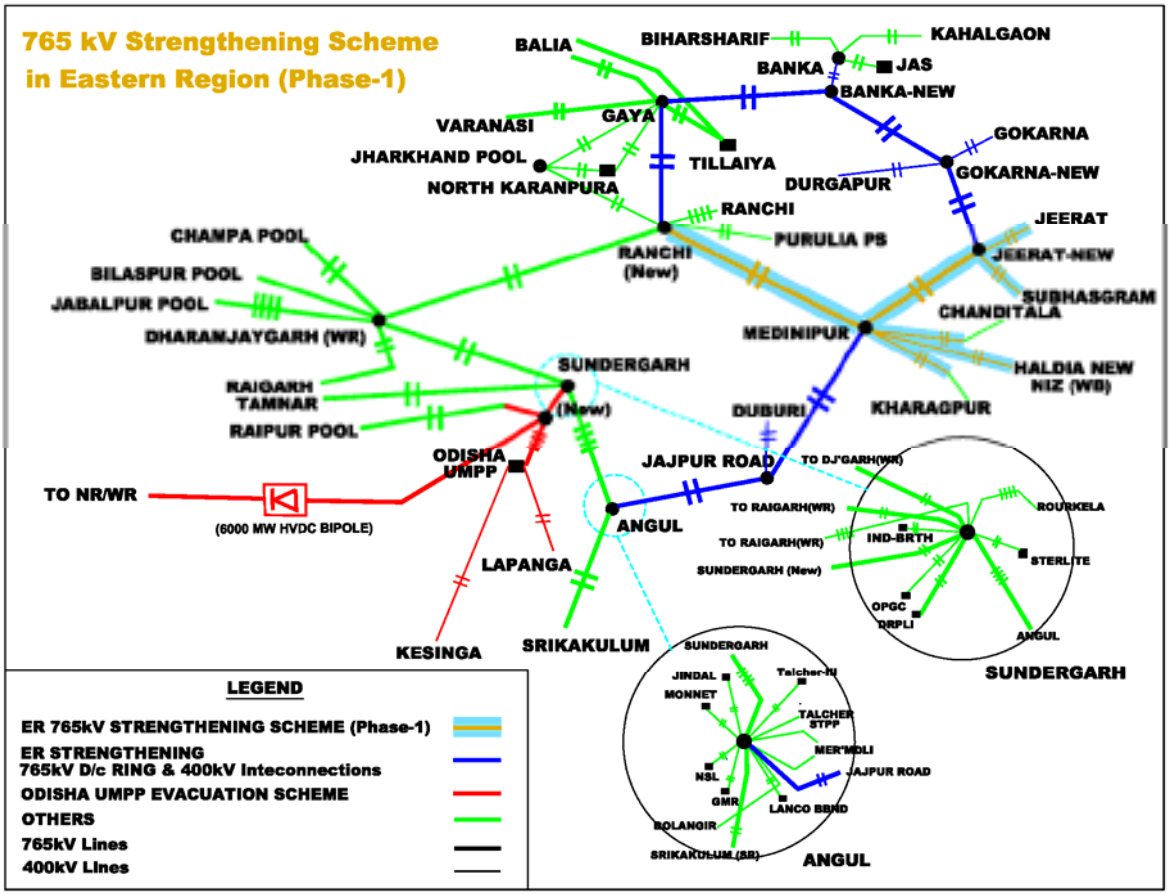
Members agreed the following:

- *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

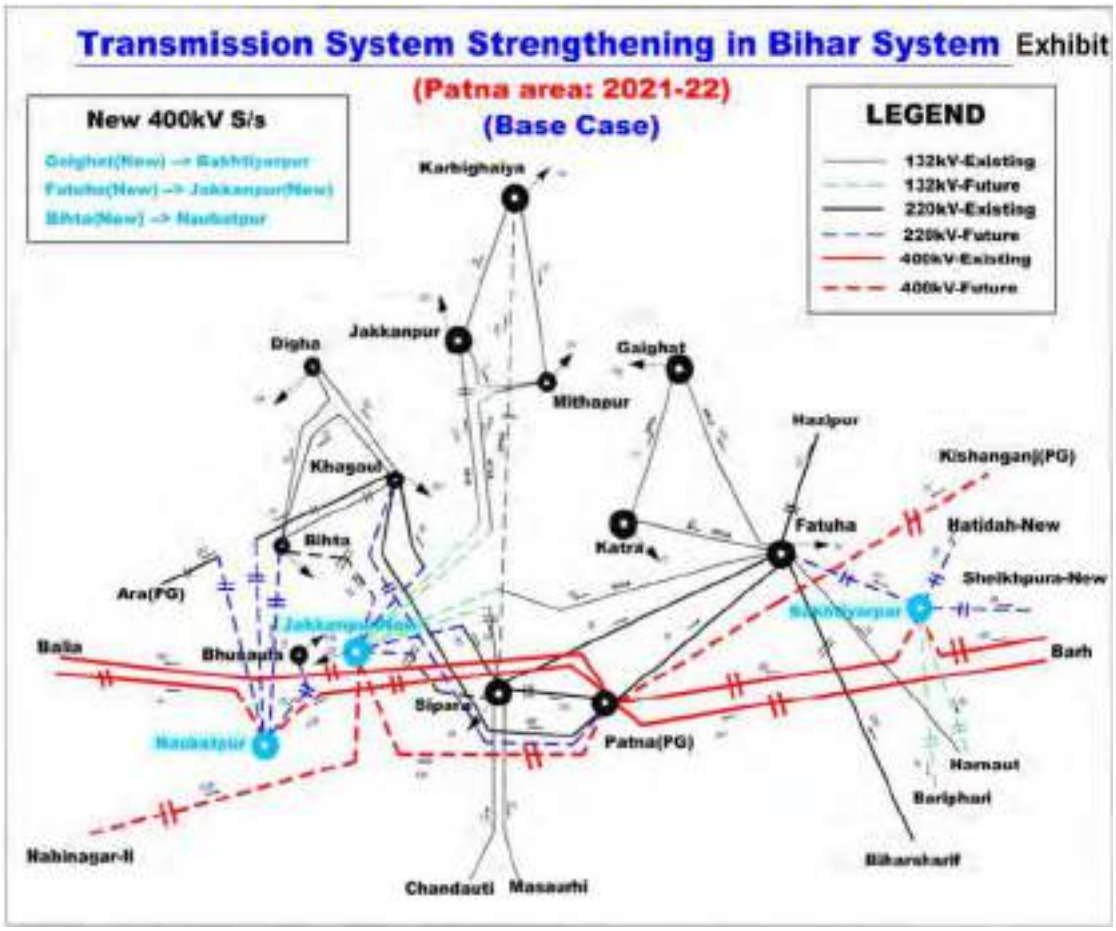
d) Bhusaula 220/33 kV GIS sub-station

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.

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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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Participants in the 4th SSCM meeting

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

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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/ वास्तविक Ant./ 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-

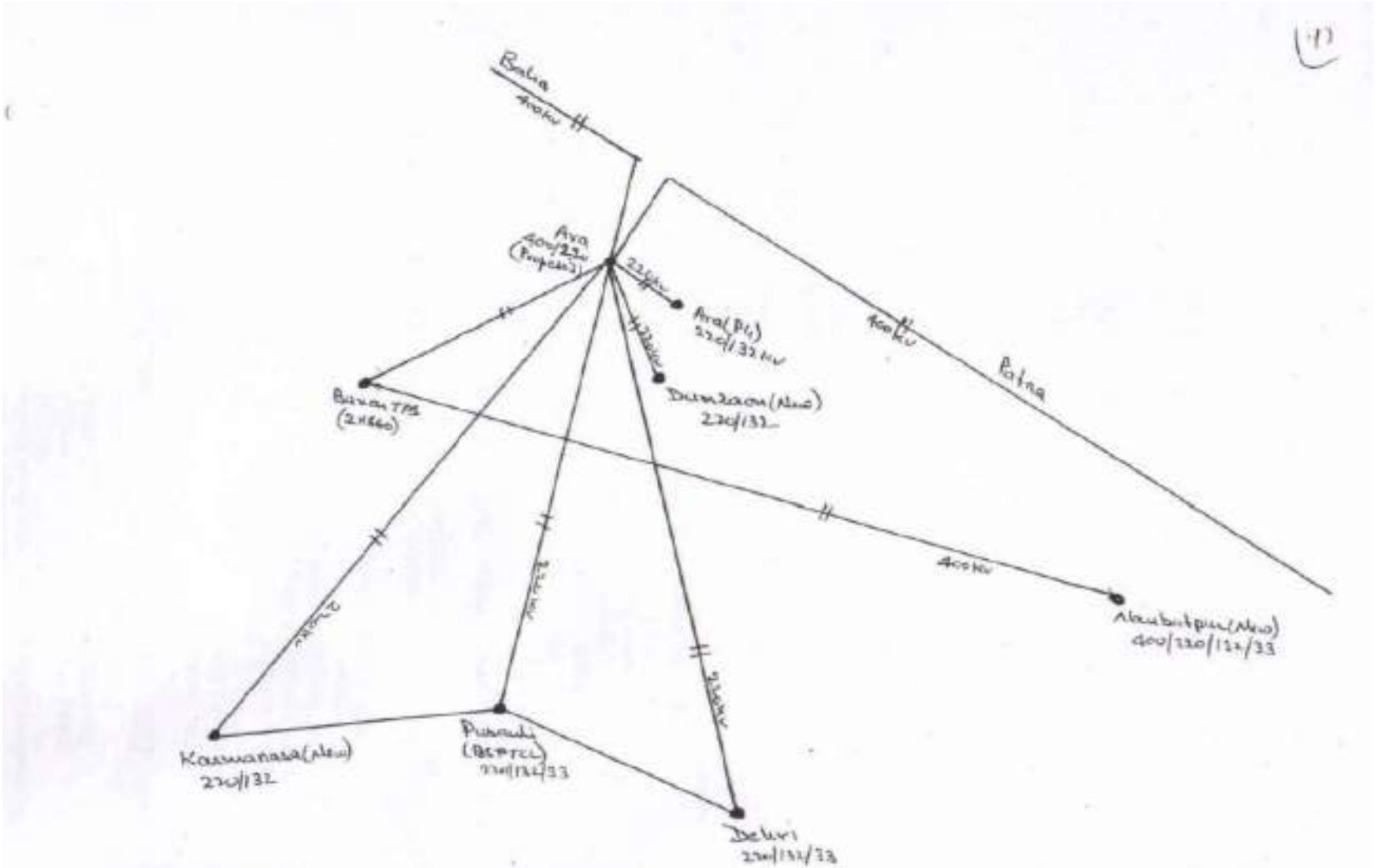
a)220 KV Ara GSS- Ara (PG) (D/C) transmission line.

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 Powet 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.

Minutes
of
5th Meeting of Standing Committee on Transmission Planning for State sectors (SSCM)

Date: 25.08.2016
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

MINUTES OF 5TH MEETING OF STANDING COMMITTEE ON TRANSMISSION PLANNING FOR STATE SECTORS HELD ON 03.08.2017 (THURSDAY) AT 11:00 HOURS AT ERPC, KOLKATA

List of participants is at **Annexure-A.**

PART – A

ITEM NO. A.1: Confirmation of minutes of 4th SSCM of ERPC held on 06.06.2016.

The minutes were circulated vide letter dated 10.06.16 to all the constituents and also uploaded in ERPC website.

No comments have been received till date.

Members may confirm the minutes.

Deliberation in the meeting

Members confirmed the minutes of 4th SSCM.

PART – B :: AGENDA ITEMS OF 19TH STANDING COMMITTEE MEETING

The agenda items for 19th Standing Committee Meeting on Power System Planning of Eastern Region was circulated by CEA on 13.07.2017 and already available in CEA and ERPC website. The same is placed at Annexure-B (text only) for discussion.

Members may discuss. CEA/CTU may place the study results and details.

Deliberation in the meeting

As CEA representative was not available in the meeting CTU was requested to elaborate the 19th SCM agenda. CTU representative explained the 19th SCM agenda in seriatim. The deliberations during the meeting are as placed below:

1.0 Confirmation of the minutes of 18th Standing Committee Meeting on Power System planning of Eastern Region.

1.1 The minutes of the 18th meeting of the Standing Committee on Power System Planning held on 13th June, 2016 at Kolkata were circulated vide CEA letter no. 66/5/SP7PA-2016/139-150 dated 19th August, 2016. ERPC vide their letter no. ERPC/MS/2016/767 dated 06.09.2016 and POWERGRID vide their letter no. C/CTU-Plg/E/SCM dated 23-09-2016 had submitted their comments and a corrigendum was issued by CEA vide letter No. CEA/PSPA-2/66/5/2016/265-275 dated 26.09.2016. Also, 2nd Corrigendum to the minutes issued to bring clarity were circulated vide CEA letter No. 66/5/PSPA-II/2016/344-355 dated 20.10.2016. WBSETCL has also requested some modifications to the minutes vide their letter no. No. CE/CPD/CEA/1136 dated 05.10.2016 and 3rd corrigendum was circulated vide CEA letter no. 66/5/PSPA-2/2016/413-423 dated 15.11.2016.

1.2 Members may confirm the minutes of 18th Standing Committee Meeting and the three corrigenda of the minutes.

Deliberation in the meeting

Members confirmed the minutes 18th Standing Committee Minutes along with the three corrigenda.

2.0 Termination of 400kV lines at Jeerat (WBSETCL) S/s under the ERSS-XV and ERSS-XVIII schemes

2.1 Ministry of Power had appointed PFC Consulting Ltd (PFCCL) as BPC for ERSS-XVIII scheme. PFCCL vide its letter No. 03/16-17/ITP-23/MJTL/RfQ dated 19.08.2016 intimated CEA that there was a RoW constraint for termination/interconnection of Jeerat(New) - Jeerat(WBSETCL) 400kV D/c (Quad) to be developed under TBCB at the proposed GIS location at existing Jeeart(WBSETCL) substation.

2.2 In order to address the RoW constraint, a joint team of officials of WBSETCL, CEA, CTU, PFCCL, POWERGRID (ER-II) visited the Jeerat substation of WBSETCL on 09th September, 2016. This was followed by a joint meeting of the above officials on 10th September, 2016 at WBSETCL office, Kolkata. Copy of minutes of meeting dated 10.09.2016 at **Annexure-2.1.**

2.3 Following 400kV lines are existing / under construction / planned at 400/220kV substation of Jeerat (WBSETCL) :

Existing:

(i) Jeerat (WBSETCL) – Baharampur/Farakka 400kV S/c line of POWERGRID

(ii) Jeerat (WBSETCL) – Rajarhat/Subhashgram 400kV S/c line of POWERGRID

(iii) Jeerat (WBSETCL) – Barkeshwar (WBSETCL) 400kV S/c line of WBSETCL

(iv) Jeerat (WBSETCL) – Kolaghat (WBSETCL) 400kV S/c line of WBSETCL

Under Construction:

(v) LILO of Sagardighi – Subhashgram 400kV S/c line at Jeerat (WBSETCL) as a part of ERSS-XV – by POWERGRID

Planned:

(vi) Jeerat (New) – Jeerat (WBSETCL) 400kV D/c line (quad) as a part of ERSS-XVIII – to be implemented as ISTS under tariff based competitive bidding route.

2.4 In the meeting, WBSETCL was requested to submit the detailed survey report regarding feasibility of overhead crossing of existing lines mentioned at 2.3(i) to 2.3(iv) by two D/c lines mentioned at 2.3(v) & 2.3(vi) for termination at GIS extension of Jeerat S/s of WBSETCL. WBSETCL vide its letter dated 05.10.2016 has submitted the detailed survey report, wherein WBSETCL mentioned that overhead crossing of the existing lines are not feasible as it requires huge height of crossing towers as well as considerable space for maintaining required tower falling height.

2.5 Further, a meeting was held on 14.12.2016 at CEA regarding the above issue. Copy of minutes of meeting issued vide letter dated 27.01.2017 is at **Annexure-**

2.2. In the meeting, it was agreed that dismantling the crossing portion of the existing lines (ISTS and State lines) and termination of the existing lines through GIS bus duct might be the appropriate option, as the new lines mentioned at 2.3(v) and 2.3(vi) can be directly terminated on separate double ckt towers at normal height (around 45 meters) to new GIS extension area. The following points were agreed in that meeting and **these needs to be ratified in this Standing Committee meeting**:

2.6 Following scope may be implemented at Jeerat S/s by POWERGRID as an additional scope under already approved ERSS-XV scheme:

(i) Dismantling of dead end towers and termination of existing lines mentioned at 2.3 (i) to 2.3 (iv) through GIS duct to the existing 400kV Jeerat AIS S/s (WBSETCL).

(ii) It was also agreed that the termination of the WBSETCL lines mentioned at 2.3 (iii) & 2.3 (iv) through GIS duct to the existing 400kV Jeerat AIS S/s (WBSETCL) shall be implemented as ISTS and included in the approved scope of ERSS-XV being implemented by POWERGRID and cost recovered by POWERGRID as ISTS transmission tariff .

(iii) Further, it was also acknowledged that implementation of LILO of Sagardighi-Subhasgram 400kV at Jeerat along with associated line bays shall get delayed by about one year due to addition of above mentioned GIS duct arrangement.

(iv) The new lines mentioned at 2.3 (v) and 2.3 (vi) can be directly terminated on separate double ckt towers at normal height (around 45 meters) to new GIS extension area.

2.7 WBSETCL vide letter dated 04.04.2017 (Enclosed at **Annexure-2.3**) informed that WBSETCL has considered and accepted the above mentioned scope *(Dismantling of dead end towers and termination through GIS Bus duct by POWERGRID under ISTS)* of the minutes of meeting held on 14.12.2016 at CEA.

2.8 Members may discuss.

Deliberation in the meeting

CTU explained the revised ERSS-XV scheme and informed that the scheme has been planned for strengthening the ER Grid and also to export additional 500MW power to Bangladesh.

Members agreed to the scheme.

ERLDC added that if the implementation of the scheme is delayed then how the additional power of 500MW will be exported to Bangladesh as per the schedule.

CTU informed that they will check the possibilities and place the details in standing committee meeting.

3.0 Creation of 220kV level at the under construction 400/132kV Motihari (TBCB) – Proposal of BSPTCL

3.1 400/132kV (2x200MVA) Motihari GIS substation is under construction through TBCB by M/s Essel Infra. BSPTCL had requested to create 220kV level in the 400/132kV Motihari GIS substation to avoid additional expenditure and time on creating a new 220/132kV Motihari (New) substation planned under intra-state strengthening scheme in 13th Plan. In this regard, a meeting was held at CEA on 18.01.2017 with

the representatives of CTU and BSPTCL. Copy of minutes of meeting is at **Annexure-3.1**. In the meeting it was decided that shifting of the new 220/132kV S/s from Motihari (New) to Raxaul (New) with the following scope of works would be better option.

Raxaul (New) S/s: 220/132kV, 2x200MVA (to be implemented by BSPTCL)

(a) Sitamarhi (New) – Raxaul (New) 220kV D/c (Twin Moose)

(b) Raxaul (New) – Gopalganj 220kV D/c (Twin Moose/ Single Zebra)

(c) LILO of Bettiah – Raxaul 132kV D/c line at Raxaul (New)

3.2 In the meeting, following was agreed:

(i) The available space in the Motihari substation is not adequate to accommodate the proposed 220kV extension of BSPTCL. Creation of 220kV level would restrict any future expansion plans at Motihari S/s. Load flow results also shows that Motihari (TBCB) – Raxaul and Motihari (TBCB) – Bettiah 132kV D/c lines are critically loaded, when 220kV level is created at Motihari (TBCB) S/s.

(ii) The new 220/132kV substation at Motihari is planned primarily to feed the loads of Gopalganj, Bettiah and Raxaul, it was decided to shift the planned substation towards Bettiah/Raxaul keeping the same connectivity. Based on the above observations and load flow studies, the new 2x200MVA, 220/132kV S/s may be created near Raxaul with Sitamarhi(New) – Raxaul(New) 220kV D/c (twin Moose) line and LILO of Bettiah – Raxaul 132kV D/c line.

(iii) Considering the lower projected load growth of Bihar in 19th EPS, it was suggested that the implementation of Raxaul (New) – Gopalganj 220kV D/c may be taken up at a later date.

(iv) BSPTCL may send their proposal on the basis of above discussion to CEA for taking up with forthcoming meeting of the Standing Committee (SCMPSPER) for finalization.

3.3 BSPTCL has sent agenda through their letter dated 28.03.2017 and the same is enclosed at **Annexure-3.2.** In its agenda BSPTCL proposed to construct a new GSS 220/132 kV, 2x200 MVA near Raxaul with the following scope of works to be implemented by BSPTCL.

i) Raxaul (New) S/s: 220/132kV, 2x200MVA
ii) Sitamarhi (New) – Raxaul (New) 220kV D/c (Twin Moose)
iii) * Raxaul (New) – Gopalganj 220kV D/c (Twin Moose/ Single Zebra)
iv) LILO of Bettiah – Raxaul 132kV D/c line at Raxaul (New)

*Note: * this line may be implemented at later date.*

The above is in place of Motihari new 220/132 kV, as proposed under 13th plan with the following scope of works.

i) Sitamarhi (New) – Motihari (New) 220kV D/c (Twin Moose)
ii) Motihari (New) – Gopalganj 220kV D/c (Twin Moose)
iii) Motihari (New) – Raxaul 132kV D/c
iv) Motihari (New) – Betiah 132kV D/c (Single Moose)

3.4 BSPTCL may present. Members may discuss.

Deliberation in the meeting

CTU explained the scheme and informed that this scheme is for intra-state system of BSPTCL.

Members felt that demand in Bihar system was considered as 11000 MW which is not realistic and also enquired about the use of twin moose conductor for 220 kV lines & single moose for 132 kV line.

BSPTCL explained that planning has been done based on the local load requirement in future, not based on total demand of Bihar.

BSPTCL clarified that twin moose conductor is being used for carrying more power through the same corridor as the availability of transmission corridor is very difficult now a days. Further, BSPTCL added that they will verify the load and decide the type of conductor.

Members advised BSPTCL to place the details in SCM.

4.0 Modifications/ additions in bay equipment of Maithon 400/220 kV sub- station of POWERGRID and generation switchyard of Maithon-RB

4.1 Reconductoring of Maithon RB - Maithon 400kV D/c with HTLS conductor was approved in 18th Standing Committee Meeting held on 13.06.2016. Along with line reconductoring, necessary modifications/ additions in bay equipment at Maithon 400/220kV sub-station of POWERGRID and at generation switchyard of Maithon-RB needs to be carried out by POWERGRID. It is intimated that approval under section-68 of Electricity Act-2003 has already been issued to POWERGRID on 07.02.2017 along with scope of requisite modifications/ additions in bay equipment at Maithon 400/220kV sub-station of POWERGRID and at generation switchyard of Maithon-RB. Copy of the approval is at **Annexure-4.1.**

4.2 Members may approve.

Deliberation in the meeting

Members felt that the corresponding bays at 400kV Maithon and Maithon-RB are to be modified and agreed to the modifications.

5.0 Revised dedicated transmission system for Lanco Babandh Power Pvt. Ltd. (2x660 MW)

5.1 Lanco Babandh generation project (4x660MW) was granted LTOA of 1600MW (NR-650MW & WR-950MW) by CTU vide its letter C/ENG/E/00/SEF/OA dated 14.05.2009 with the following dedicated transmission system.

a) 400kV Lanco Babandh TPS - 765/400 kV Angul Pooling station (PGCIL) 2xD/c lines with associated bays to be developed as a dedicated lines by the generation developer.

b) 3X1500 MVA, 765/400 kV ICTs at Angul with associated bays to be developed by the generation developer.

5.2 MoP vide its letter no. 11/2/2011-PG(LBPL) dated 09.06.2011 has granted prior approval of the Government under section 68 of the Electricity Act 2003 based on minutes of 11th meeting of Standing Committee Meeting on Power System Planning

in Eastern Region held on 20.09.2010 with the above scope of work. This approval expired on 08.06.2014 because the implementing agency did not start the construction works within 3 years from date of grant of Sec-68 approval.

5.3 Subsequently, Lanco Babandh Power Pvt. Ltd. (LBPPL) has relinquished its long term access to the tune of 800MW in line with CERC order dated 08.06.2013 in petition No: 118/MP/2012 due to non-implementation of Phase-II (2x660MW). Revision of LTOA from 1600MW to 800MW was issued to LBPL with allocation of NR-650MW & WR-150MW based on the minutes of 11th Connectivity and LTA meeting of ER held on 13.06.2016. The following revised dedicated transmission system was proposed by CTU vide its letter No. C/CTU-Plg/E/LTA/Lanco Babandh dated 19.10.2016 (Copy is at **Annexure-5.1**) based on the revised LTOA quantum of 800MW.

(a) Lanco Babandh Gen Switchyard - Angul 400kV D/c line (Equivalent to triple snow bird or higher)

(b) 2X1500 MVA, 765/400 kV ICT (7x500MVA single phase units) at Angul along with associated bays

5.4 Subsequently, Lanco vide letter dated 15-11-2016 requested for review of requirement of above mentioned revised dedicated system on mutually agreed terms in view of non-commissioning/non-implementation of certain generation projects at Angul. The revision of Lanco's dedicated system is being considered at its own request as also on its own risk and cost. Further, as Lanco had relinquished LTA for 800 MW under Petition No. 118/MP/2012 and is also presently contesting a petition (38/MP/2016) before CERC *inter alia* seeking abeyance of LTA, the revision discussed hereunder shall be without prejudice to the proceedings before CERC and to Lanco's liability(ies) towards payment of relinquishment/transmission charges as the case may be.

5.5 Considering the following existing/under-construction generation projects at Angul it is observed that margin is available in the existing 765/400kV, 4x1500MVA ICTs for power evacuation from Lanco.

Generation projects at Angul S/s						
Sl. No.	**Project**	**Original Capacity (MW)**	**Original LTOA (MW)**	**Revised Capacity (MW)**	**Revised LTOA/LTA (MW)**	**Schedule**
1	GMR Kamalanga Energy Ltd. (*3X350MW)	1050	800	700	647	Commissioned
2	Monnet Power Ltd. (2x525MW)	1050	900	1050	900	Uncertain
3	Jindal India Thermal Ltd. (2x600MW)	1200	1044	1200	95	Commissioned
4	Navbharat Power Pvt. Ltd. (2x525MW)	1050	720	0	0	Uncertain
5	Lanco Babandh Power Pvt. Ltd. (4x660MW)	2640	1600	1320	800	U-1: Sept'18 U-2: Jan'19
	Total	**6990**	**5064**	**4270**	**2442**	

*Note: * one unit has been connected to Odisha intra-state system.*

5.6 In view to the above, it is proposed to revise the dedicated transmission system of Lanco Babandh project as mentioned below:

- Lanco Babandh Gen Switchyard - Angul 400kV D/c line (triple snow bird)

5.7 In the 11th Joint Coordination Committee (JCC) meeting of CTU held on 27-12-2016 LBPPL has indicated its commissioning schedule as Mar 2018. LBPPL has neither awarded construction of its dedicated line nor the line bays at Angul.

5.8 Members may discuss.

Deliberation in the meeting

Members noted.

6.0 Evacuation of power from Patratu (3x800MW) TPS

6.1 Patratu Vidyut Utpadan Nigam Limited (PVUNL) (3X800+2X800MW) is a joint venture of NTPC Ltd. and the Jharkhand state government owned Patratu Thermal Power Station (PTPS).

6.2 A meeting regarding evacuation of power from Patratu (3x800MW) TPS was held on 20.01.2017 at CEA with NTPC, CTU and JUSNL. Copy of minutes of meeting is at **Annexure-6.1**. In the meeting, CTU representative informed that Patratu Vidyut Utpadan Nigam Ltd. (PVUNL) has applied for connectivity of 2400MW (Phase-I), to the ISTS system, from Dec, 2020 for their planned Patratu (3x800MW) TPS situated in Ramgarh District of Jharkhand.

6.3 PVUNL informed that 85% of power is allocated to Jharkhand state and 15% is kept as unallocated power. This matter was discussed and it was agreed that as majority of power of Patratu TPS is allocated to Jharkhand, it would be prudent that Patratu TPS is directly connected with JUSNL (Jharkhand STU) system**.** If remaining share (15%) of power of Patratu TPS is to be transferred outside Jharkhand, for which PVUNL may apply for ISTS Long Term Access to CTU (POWERGRID), as per CERC regulations.

6.4 Joint studies were carried out to evolve immediate evacuation system for Patratu (3x800MW) TPS. Studies are available at **Annexure-6.1.** and accordingly following power evacuation system from Patratu (3x800MW) TPS was evolved:

(a) Patratu gen. switchyard – Patratu (JUSNL) S/s 400kV (Quad Moose) D/c line

(b) Patratu gen. switchyard – Koderma (JUSNL) S/s 400kV (Quad Moose)D/c line

(c) Patratu gen. switchyard – New Chandil (JUSNL) S/s 400kV (Quad Moose) D/c line

(d) 420kV, 2x125MVAR bus reactors at Patratu gen. switchyard and 420kV, 1x125MVAR bus reactor at Patratu 400kV bus

(e) From Patratu 400/220/132kV substation:

(i) Patratu (JUSNL) S/s to Latehar 400kV D/c line (already under construction)

(ii) Patratu (JUSNL) to Ranchi (POWERGRID) 765/400kV S/s 400kV D/c line (already under construction) along with LILO of both circuits at Mandar 400/220kV S/s

6.5 In this way, Patratu generation would also get connected to strong ISTS pooling stations viz. (i) Ranchi (POWERGRID) 765/400kV through Patratu (JUSNL) and

(ii) Chandwa Pool (POWERGRID) through Patratu (JUSNL) & Latehar (JUSNL) substations of JUSNL.

6.6 Further, the connectivity of Patratu (3x800MW) TPS to Koderma (northern part of Jharkhand) and New Chandil (south-eastern part of Jharkhand) through 400kV high capacity (Quad Moose) double circuit lines would facilitate the transfer the power from Patratu TPS to different load centers in Jharkhand.

6.7 These interconnections would complete the 400kV high-capacity ring viz**. Patratu TPS – Koderma – Jasidih – Dhanbad (ISTS) – New Chandil – Patratu TPS** in Jharkhand, which shall improve reliability of power transfer within the state.

6.8 From the joint studies, it was also observed that three-phase fault level at both Patratu (3x800MW) TPS and Patratu (400/220kV) substation is about 50kA. Accordingly, it was decided that 400kV bus at Patratu generation switchyard as well as Patratu (400/220kV) substation (JUSNL) would be designed with 63kA fault level for 1sec.

6.9 JUSNL informed that construction is yet to start at Patratu (400/220kV) substation. Therefore, it was suggested that JUSNL would explore possibility of construction of 400kV and 220kV level at Patratu (400/220kV) substation with fault level of 63kA and 50kA respectively.

6.10 In view of the above, after the approval of the above system in this Standing Committee Meeting, ISTS Connectivity application of PVUNL for Patratu TPS shall be closed and PVUNL may apply for connectivity of its Patratu (3x800MW) TPS to JUSNL (STU of Jharkhand).

6.11 Members may discuss.

Deliberation in the meeting

Members noted. JUSNL representative was not available for discussion.

7.0 Perspective transmission plan of JUSNL up to 2021-22

7.1 JUSNL has informed that present power demand of Jharkhand is about 1855.5MW (JUSNL area has 1068MW load and DVC area has 787.5MW load). The total load projected for Jharkhand for the year 2021-22 is around 5613MW (4193MW for JUSNL area + 1420MW for DVC area).

7.2 Load flow studies were carried out for projected peak load of Jharkhand as 4193MW for the year 2021-22.

7.3 JUSNL had submitted draft report on perspective transmission plan of JUSNL up to 2021-22. In the meetings held on 26.10.2017 and 20.01.2017, some modifications were proposed by CEA and CTU to incorporate in the study. The copy of Minutes of meeting held on 20.01.2017 is at **Annexure-6.1**. JUSNL incorporated these changes and submitted the compliance report vide their email dated 01.02.2017. The compliance report is available in the minutes.

7.4 The following 400/220kV intra-state substations along with downstream connectivity mentioned at **Annexure-7.2** were agreed under perspective transmission plan of JUSNL up to 2021-22:

(i) Jasidih 400/220kV, 2x500MVA

(ii) New Chandil 400/220kV, 2x500MVA

(iii) Koderma 400/220kV, 2x500MVA

(iv) Mandar 400/220kV, 2x500MVA

(v) Dumka 400/220 kV , 2x500 MVA (with commissioning of Tenughat Ph-2 (1320 MW))

Note: *420kV, 2x125MVAR bus reactors may be installed at all of the above new 400kV substations of JUSNL for voltage control.*

7.5 The transmission system planned for JUSNL network along with evacuation system of PVUNL would create a high capacity 400kV ring **Patratu TPS – Koderma – Jasidih – Dhanbad (ISTS) – New Chandil – Patratu TPS** in Jharkhand, which would improve reliability of power transfer within the state. The intra-state system of Jharkhand would also get well interconnected at various ISTS points for smooth power exchange.

7.6 In the meeting, it was pointed out that 220kV D/C line considered from Chaibasa (JUSNL) to Ramchandrapur 220/132kV substation was earlier envisaged as Chaibasa (POWERGRID) to Ramchandrapur 220/132kV substation. In the 18th SCM of ER, JUSNL had informed following outlets for utilization of 4 no. 220kV line bays at Chaibasa (POWERGRID) substation:

(i) Chaibasa (POWERGRID) – Chaibasa (JUSNL) 220kV D/c

(ii) Chaibasa (POWERGRID) – Ramchandrapur (JUSNL) 220kV D/c line

7.7 However, as per detailed scope of work submitted by JUSNL, the line at (ii) above is proposed to be terminated at Chaibasa (JUSNL) substation and hence connectivity considered in revised draft report studies i.e. Chaibasa (JUSNL) – Ramchandrapur 220kV D/c line is retained.

7.8 Accordingly, it is imperative that JUSNL may plan a new outlet from Chaibasa (POWERGRID) to utilize the remaining 2 no. 220kV line bays already constructed.

7.9 Jharkhand may update on utilisation of remaining 2 no. 220kV line bays constructed at Chaibasa (POWERGRID).

7.10 Members may discuss.

Deliberation in the meeting

CTU informed that the above scheme is intra-state scheme of JUSNL. CTU explained that two bays at 220kV Chaibasa (PG) S/s will be vacant as 220kV Chaibasa (JUSNL) will be directly connected to 220kV Ramchandrapur (JUSNL).

Members referred the issue to SCM as JUSNL representative was not available in the meeting.

8.0 Transmission system for evacuation of power from Buxar Thermal Power Project (1320 MW) – Agenda of BSPTCL

8.1 BSPTCL vide their letter dated 25.10.2016 (copy at **Annexure 8.1**) requested CEA to examine their proposal for evacuation of power from Buxar Thermal Power Project. BSPTCL has proposed following evacuation system:

400 kV

- Buxar TPS - Naubatpur 400kV D/C

220 kV

- Buxar TPS - Dumraon new 220kV D/C (Twin Moose)
- Buxar TPS - Pusauli (BSPTCL) 220kV D/C (Twin Moose)
- Buxar TPS - Dehri 220kV D/C
- 2X500MVA 400/220kV ICT at Buxar generation switchyard-under the scope of respective generation project.

8.2 Members may discuss.

Deliberation in the meeting

Members agreed.

9.0 Connectivity of Railway TSS with ISTS network for Mughal Sarai – Howrah route

9.1 Railway Board vide its letter dated 09.09.2016 has requested for connectivity to Railways from various ISTS points to feed their TSS (Traction Sub Station) for Mughal Sarai(NR) – Howrah(ER) route (Copy enclosed at **Annexure-9.1**).

9.2 A meeting was held on 07.10.2016 in CEA to discuss the connectivity of Railways' TSS with ISTS network for two routes of Railways i.e. (i) Delhi (NR) – Bharuch (WR) route (ii) MughalSarai (NR) – Howrah (ER) route (MoM enclosed at **Annexure-9.2**). In the meeting, following ISTS substations were preliminarily identified for giving connectivity to the Railways TSS for its MughalSarai (NR) – Howrah (ER) route:

(i) Arah or Patna
(ii) Gaya or Chandoti
(iii) Maithon
(iv) Durgapur
(v) Lakhi Sarai
(vi) Subhashgram

9.3 M/s PGCIL was requested to furnish the information regarding the availability of space for 2 nos. 220 kV bays and margins in transformation capacity at each of the above substation. Railways were requested to provide information about its present connectivity (connectivity of TSS along this route) with STUs.

9.4 Railway board vide its letter dated 19.10.2016 has furnished the information about its TSS points and their present connectivity with state utilities.

9.5 A meeting was held on 20.04.2017 at CEA with STUs regarding connectivity of Railways with ISTS network for the Mughalsarai – Howrah. Minutes of the meeting enclosed at **Annexure-9.3**.

9.6 Members may discuss.

Deliberation in the meeting

Members enquired that weather railway can avail power directly from ISTS as railway is not a transmission licensee and what will be the future plan for existing transmission connectivity of Railway through the STU network.

Further, the State constituents have developed many transmission networks and sub-stations dedicated to Railways for reliable supply to them. If railways connect directly to ISTS through their dedicated lines the above STU system will become defunct and this will be a huge wastage of public money.

Also, the additional/future 220 kV bays at ISTS substations are meant for meeting the requirement of States. If these bays were used by Railways, how the future requirement of States will be addressed.

Further, the transmission corridor which will be developed to connect Railways directly to ISTS Substations will be redundant for Railways only and other constituents cannot utilize these lines. However, in present scenario getting another transmission corridor is much difficult task and corridors of railways will be underutilized which is also a national wastage.

Members felt that Railway should also present the economics of the proposed scheme and clarify their stands for different issues related to STU network.

Members felt that the issue should not be discussed in SCM without resolving the STU issues in lower forums of the ERPC.

10.0 Modification in - Common Transmission System for Phase-II generation project in Odisha- agenda by POWERGRID

10.1 In the 18th ER SCM, it was suggested to review the installation of 765/400kV, 2x1500MVA ICTs at Angul S/s in view of non-materialisation of some of the IPPs envisaged to be connected at Angul substation.

10.2 Accordingly, the matter has been reviewed by CTU (POWERGRID) and the following has been observed:

i) In view of uncertain commissioning of NSL (connectivity cancelled) and Talcher-III (connectivity and LTA applications closed) generation projects and non-materialisation of Navbharat (applicant has filed for relinquishment in CERC) generation project, the installation of 765/400kV, 2x1500MVA ICTS at Angul is not required.

ii) Accordingly, the spare 765/400kV, 500MVA ICT (single phase unit) at Angul S/s is also not required.

iii) The bus splitting at Angul at both 400kV and 765kV levels is not required at present as the fault level at Angul is found to be within rated limits.

iv) The split bus arrangement may be implemented in future under a different scheme upon firming of generation projects near Angul.

v) The spare 765/400kV, 500MVA ICT (single phase unit) at Sundargarh (Jharsuguda) S/s is not required.

10.3 In view of the above, following elements are proposed to be deleted from POWERGRID's scope under the scheme – "Common Transmission System for Phase-2 Generation Projects in Odisha":

(i) 2x1500MVA, 765/400kV ICTs at Angul S/s along with associated bays

(ii) Split Bus Arrangement at Angul S/s at 765kV & 400kV buses

(iii) 500MVA, 765/400kV single phase spare ICT unit each at Angul and Sundargarh (Jharsuguda) substations

10.4 Members may approve.

Deliberation in the meeting

Members agreed.

11.0 Termination of 220kV side of 400/220kV, 500MVA ICT-4 at Biharsharif (POWERGRID) substation under ERSS-XX- Agenda by POWERGRID

11.1 In the 18th ER SCM, installation of 400/220kV, 500MVA ICT-4 at Biharsharif (POWERGRID) substation by POWERGRID under ERSS-XX scheme was approved.

11.2 In this regard, it is to mention that there is no 220kV bus at Biharsharif (POWERGRID) S/s. Accordingly, 220kV side of the existing three ICTs is terminated at Biharsharif (BSPTCL) S/s which is adjacent to Biharsharif (POWERGRID) S/s. Similarly, for installation of 4th 400/220kV ICT, 220kV ICT bay needs to be constructed at Biharsharif (BSPTCL) S/s along with small 220kV interconnecting line section from 220kV ICT bushing to 220kV ICT bay.

11.3 Accordingly, termination of 220kV side of the 400/220kV, 500MVA ICT-4 at 220kV bus of Biharsharif (BSPTCL) S/s and laying of small 220kV interconnecting line section from 220kV ICT bushing to 220kV ICT bay under ERSS-XX is proposed by POWERGRID. This proposal has already been granted in principle approval by CEA vide our letter no. 77/7/PSPA- II/2017/12 dated 05-01-2017 (Copy at **Annexure-11.1**).

11.4 Members may approve.

Deliberation in the meeting

BSPTCL informed that due to space constraints at control room of 220kV Biharshariff (BSPTCL) S/s, installation of relay panels for the ICT may be an issue.

CTU agreed for site visit once again and update the status in SCM.

12.0 Baharampur (India) – Bheramara (Bangladesh) 2nd 400kV D/c line Agenda by POWERGRID

12.1 Cross border interconnection between India and Bangladesh through Baharampur (India) - Bheramara (Bangladesh) 400kV D/c line along with 500MW HVDC Back-to-Back terminal at Bheramara, was commissioned in Sept 2013. About 500MW of power is being transferred from India to Bangladesh through this link.

12.2 The capacity of Bheramara (Bangladesh) HVDC station is being upgraded from 500MW to 1000MW by Bangladesh. The system strengthening required in the Indian and Bangladesh side for transfer of about 1000MW from India to Bangladesh is already under implementation. In regard to N-1 reliability criteria for 1000MW export to Bangladesh, it was decided that during single circuit outage of Baharampur – Bheramara 400kV D/c line, Bangladesh would restrict/reduce the loading on the operating circuit to the permissible extent with the help of runback control /ramping down facility on the HVDC system.

12.3 Therefore, in order to ensure reliable supply of 1000MW power to Bangladesh from Baharampur, it was decided in the 12th India-Bangladesh Joint Steering Committee

(JSC) meeting (on 11th Dec 2016) to construct a 2nd 400kV D/c transmission line from Baharampur (POWERGRID) to Bheramara (Bangladesh) in matching time frame of 2nd 500MW HVDC terminal at Bheramara. Further, in the 12th JSC meeting it has also been decided that, the Indian portion of the line may be implemented by POWERGRID and the mechanism of sharing of transmission charges by Bangladesh for Indian portion of this link would be on same principles as for the first Baharampur – Bheramara link. Accordingly, MoP vide letter no. 9/5/2016-Trans-Vol-2 dated 01-03-2017 has granted approval for implementation of Indian portion of Baharampur (India) – Bheramara (Bangladesh) 2nd 400kV D/c line along with 2 no. 400kV line bays for termination of this line at Baharampur S/s through regulated tariff mechanism route.

12.4 Members may approve.

Deliberation in the meeting

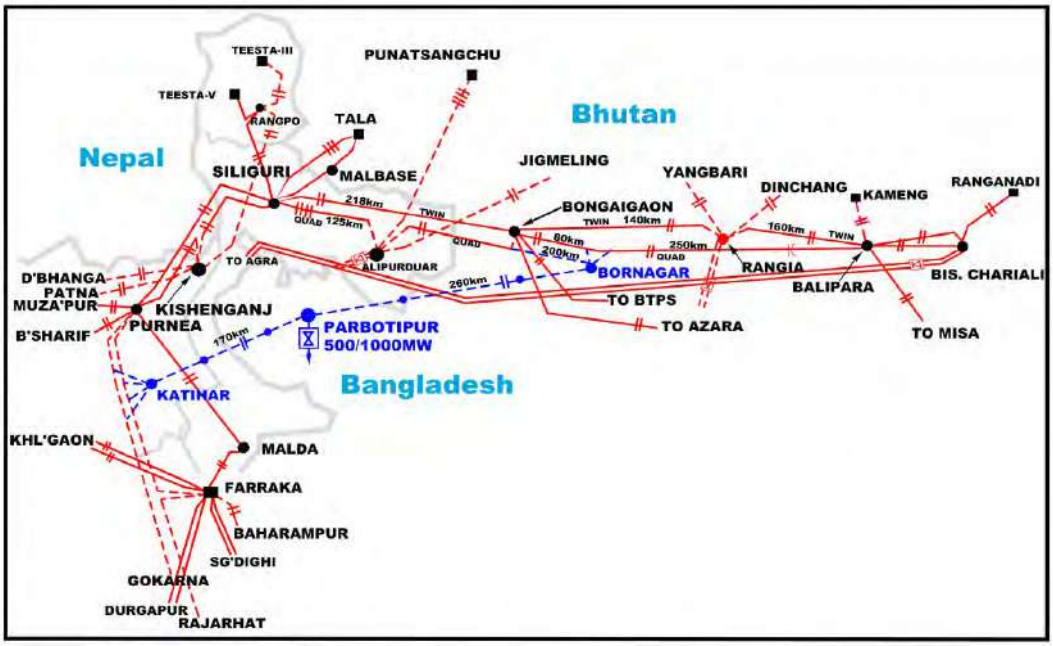
Members agreed.

13.0 High Capacity India-Bangladesh AC Corridor and Formation of second 400kV node in NER-ER Corridor- Agenda by POWERGRID

13.1 In the 5th SCM of NER, it was informed that at present the ER-NER corridor is connected mainly through 400/220 kV Bongaigaon S/s in NER. In case of any eventuality at Bongaigaon S/s, there is no second in feed to NER from NEW grid. Therefore, it was agreed that there is a need for 2nd 400kV AC node for interconnection with national grid. The same has been taken into account while planning new interconnection between India and Bangladesh.

13.2 The new interconnection between India and Bangladesh has been planned with high capacity AC link (765kV line to be initially operated at 400kV) to interconnect Bangladesh with Eastern Region (ER) and North Eastern Region (NER) of Indian grid. The scheme has been discussed in the 11th India-Bangladesh JSC/JWG meeting held on 13th July 2016. The scheme consists of establishment and interconnection of following substations in NER, ER and Bangladesh.

- **In NER:** In view of space constraint at Bongaigaon S/s and to provide a reliable take off point in NER, it was proposed to establish new 400kV substation (to be upgraded to 765kV level in future) at Bornagar in Assam, about 50km away from Bongaigaon, through LILO of Bongaigaon– Balipara 400kV D/c (quad) line and extension of Alipurduar-Bongaigaon 400kV D/c line to Bornagar substation. Bornagar substation would also act as alternative in-feed to NER in addition to Bongaigaon.
- **In ER:** A new 400kV substation (to be upgraded to 765kV level in future) was proposed as a probable take-off point at Katihar (near Purnea) in ER through LILO of both ckts of Rajarhat-Purnea D/c line (one ckt via Gokarna and other ckt via Farakka).
- **In Bangladesh:** A new 400/230kV substation at Parbotipur (to be upgraded to 765kV level in future) was proposed for the drawl of power by Bangladesh. The proposed interconnection has been planned to connect Parbotipur in Bangladesh to Katihar in Eastern Region and Bornagar in North Eastern Region through 765kV D/c line to be initially operated at 400kV for supply of 500MW power to Bangladesh in Phase-I.



- Bangladesh will draw the power at Parbotipur through HVDC back-to- back.
- In Phase-II, this interconnection would be upgraded to 765kV for transfer of about 1000MW power to Bangladesh along with upgradation of associated AC substations and augmentation of HVDC terminal at Parbotipur with another block of 500MW.

13.3 Accordingly, the following scope of work is proposed:

Phase-I

Indian Side:

- New 400kV substation (upgradable to 765kV at a later date) at Bornagar (Assam) with LILO of Balipara - Bongaigaon 400kV D/c (quad) line.
- Disconnection of Alipurduar-Bongaigaon 400kV D/c (quad) line from Bongaigaon and extension of the same to Bornagar with 400kV D/C (quad) line so as to form Alipurduar-Bornagar 400kV D/c (quad) line.
- New 400kV substation (upgradable to 765kV at a later date) at Katihar (Bihar) with LILO of both ckts of Purnea - Rajarhat 400kV D/c (triple snowbird) line (one ckt via Gokarna and other ckt via Farakka).

Common:

- Katihar (ER) - Parbotipur (Bangladesh) - Bornagar (NER) 765kV D/c line to be initially operated at 400KV

Bangladesh Side:

- 1x500MW, HVDC Back-to-back converter station at Parbotipur

Phase-II

Indian Side:

- Upgradation of Katihar and Bornagar substations from 400kV to 765kV
- Operation of Katihar - Parbotipur - Bornagar 765kV D/c line at its rated voltage
- Other system strengthening in ER and NER (to be identified at alter date)

Bangladesh Side:

- Augmentation of HVDC back-to-back substation at Parbotipur (Bangladesh) by another 1x500MW (total 2x500 MW) block
- Upgradation of Parbotipur substation from 400kV to 765kV

13.4 Detailed scope of works is at **Annexure-13.1**. This scheme has already been discussed and agreed in the 6th NER SCM held on 03rd Oct 2016 at Imphal. The project report of the above scheme was discussed in the 12th India- Bangladesh JWG/JSC meetings held on 10th-11th Dec 2016, wherein it has been agreed that the modalities of implementation and commercial arrangement etc. need to be worked out jointly by India and Bangladesh.

13.5 Member may discuss.

Deliberation in the meeting

CTU explained the scheme and informed that it is another inter-connection between ER-Bangladesh-NER. Members felt that provisions of drawl point may be kept at Katihar for STU interconnections.

BSPTCL informed that provision of additional bay must be kept at 400 kV & 220 kV level.

Members appreciated and agreed to the proposal.

14.0 Additional power supply to Nepal through Muzaffarpur-Dhalkebar transmission line

14.1 Presently, the Muzaffarpur-Dhalkebar 400kV line is being operated at 132kV in view of non-readiness of 220kV level at Dhalkebar by Nepal. For 132kV operation of the line and supply of about 80MW power to Nepal, one 100MVA, 220/132kV ICT was installed at Muzaffarpur by POWERGRID as an interim arrangement.

14.2 In view of low hydro scenario in Nepal in winters, Govt. of Nepal requested for installation of 2nd 220/132kV, 100MVA ICT at Muzaffarpur for additional power supply.

14.3 Accordingly, a meeting was held at CEA on 02-12-2016, wherein installation of 2nd 220/132kV, 100MVA ICT at Muzaffarpur (spare ICT obtained after replacement of ICT at Purnea) by POWERGRID as a goodwill gesture for supply of about 145MW power to Nepal was agreed with following SPS settings at Muzaffarpur S/s:

- *The power supply to Nepal would be disconnected by opening Muzaffarpur – Dhalkebar 132kV line in case,*

  (a) The power flow through any of the 400/220kV transformers (2x315 + 1x500MVA) at Muzaffarpur exceeds more than 310MW (for 315MVA) and 490MW (for 500MVA).

  Or

  (b) If power flow through Muzaffarpur – Dhalkebar 132kV line is more than 140MW.

- *There is no disruption of power supply to Bihar through the Muzaffarpur S/s.*

14.4 The said ICT has already been installed by POWERGRID and upto 145MW (170MVA) power is being supplied to Nepal though the cross-border link.

14.5 Accordingly, members may post facto approve utilisation of 220/132kV, 100MVA ICT released from Purnea for installation at Muzaffarpur (for supply of additional power to Nepal), till operation of Muzaffarpur – Dhalkebar line at 220kV, which is expected by September 2017.

Deliberation in the meeting

Members agreed.

BSPTCL informed that after the charging of Muzaffarpur – Dhalkebar line at 220kV level, the 220/132kV 100MVA transformer will become spare and they may like to utilize the same in their network.

15.0 Modification in - Transmission System for Transfer of power from generation projects in Sikkim to NR/WR (Part-B1)- Agenda by POWERGRID

15.1 In the 18th ER SCM, it was decided to delink the LILO of 2nd circuit of Teesta-III – Kishanganj 400kV D/c (Quad) line at Rangpo from Part-B of the scheme "Transmission System for Transfer of power from generation projects in Sikkim to NR/WR (Part-B)" and take it up as a separate part (Part- B1) of the same scheme as "Transmission System for Transfer of power from generation projects in Sikkim to NR/WR (Part-B1)".

15.2 LILO of first circuit of Teesta-III – Kishanganj 400kV D/c (Quad) line at Rangpo has been made using HTLS conductor. Accordingly, keeping in view the anticipated problems in construction due to hilly terrain as well as requirement of land for foundation, construction of 2nd LILO line with HTLS would be a better techno commercial solution.

15.3 The two 400kV LILO lines are being constructed on two separate D/c towers, however, in view of RoW constraints near Rangpo the two LILO lines are proposed to be terminated on a Multi Circuit tower at Rangpo end. Multi circuit has been considered along with LILO of first circuit.

15.4 In view of the above, members may approve the following:

(i) LILO of 2nd circuit of Teesta III – Kishanganj 400kV D/c (Quad) line at Rangpo with Twin HTLS conductor

(ii) 400kV multi circuit tower/line at Rangpo end for termination of LILO of both circuits of Teesta III – Kishanganj 400kV D/c (Quad) line at Rangpo.

Deliberation in the meeting

Members agreed.

16.0 Interim connectivity to generation projects through LILO arrangement - Agenda by POWERGRID

16.1 POWERGRID has informed that numbers of generation projects in different regions 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.

16.2 After hearing the tariff petition for one such case viz. transmission system associated phase-1 IPPs in Odisha (Petition No.112/TT/13), where two generation projects are still connected through temporary LILO arrangement, the Hon'ble CERC has passed the order dated 07.10.15 wherein the following direction has been given in para 65 of the order:

"The associated transmission lines were to be constructed by the generation developer matching with the transmission system to be developed by the petitioner and the LILOs constructed by generation developers which were temporary arrangement were to be replaced by the associated transmission system. It is noticed that some of the generation developers have not commissioned the dedicated lines and are continuing to evacuate power through the temporary LILO arrangements. We direct the petitioner to discuss the issue in the Standing Committee Meeting on Transmission and finalize the timeline for replacement of the LILOs of generation developer by dedicated transmission lines within a period of six months from the date of connection of LILO of the petitioner."

16.3 Further, CERC in its order dated 28-09-2016 in Petition no. 30/MP/2014 has directed that:

"CTU shall take up all the existing cases of connectivity on interim LILO with the RPC of respective regions within a period of one month from the date of issue of this order for review and decision on disconnection of the interim arrangements through LILO. All such interim arrangements through LILO shall be disconnected within a period of three months of the issue of this order unless the RPC grants extension for continuation of LILO keeping in view of all relevant factors."

16.4 The progress of dedicated transmission lines of IPPs in Eastern Region, which were connected through interim arrangement, was reviewed in the 18th SCM of ER on 13-06-2016 and subsequently in the 34th TCC/ERPC meeting held on 19-11-2016. Dikchu HEP of Sneha Kinetic Power Projects Pvt. Ltd. is expected to be shortly commissioned on interim arrangement. Therefore, it is proposed that status of dedicated transmission system of Dickhu HEP may also be monitored.

16.5 The latest status of the dedicated transmission lines as reported by IPPs in recent meetings and that of Dikchu HEP is summarized 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	Vedanta Ltd. (Sterlite Energy Ltd.)	4x600	LILO of one circuit of Rourkela - Raigarh 400kV D/c line *(granted in Sept'09)*	Sterlite - Jharsuguda 400kV 2xD/c	15-04-2017 (as per 35th TCC/ERPC)

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	LILO opened on 11-03-2017. The project is currently not connected to the Grid and IBEUL has placed order to increase the tower heights at 4 locations which shall be completed by Jun'17.
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)	Line completed. Commissioned on interim arrangement. Line bays by Govt. of Sikkim at Rangpo end are expected by Dec 2017 (as per 35th TCC/ERPC)
4	Sneha Kinetic Power Projects Pvt. Ltd. (Dikchu)	2x48	LILO of one circuit of Teesta-III – Rangpo 400kV D/c line at Dikchu *(granted in Dec'14 by CERC)*	Dikchu – Dikchu Pool 132kV D/c	($)To be informed by Sikkim and project developer

($) Dikchu Pool S/s is being implemented under Sikkim Comprehensive Scheme of Govt. of Sikkim (being implemented by POWERGRID on consultancy). The expected commissioning schedule of Dikchu Pool S/s and Dikchu – Dikchu Pool 132kV D/c line needs to be informed by Govt. of Sikkim and project developer respectively.

16.6 In view of the above, generation project developers may indicate the latest status regarding commissioning of their respective dedicated line.

16.7 Member may discuss and finalise the date for disconnection of interim arrangement.

Deliberation in the meeting

The removal of LILO of one circuit of Rourkela - Raigarh 400kV D/c line was continuously reviewed taking in consideration with OPTCL / GRIDCO connectivity with Vedanta in every OCC meetings. In the special meeting of 14.07.2017, the target date for charging the dedicated 400 kV Vedanta- Jharsuguda D/C line was given as 12th August, 2017. It was also decided that the LILO of Vedanta Ltd may be disconnected from 16th August, 2017.

Regarding LILO of one circuit of Jharsuguda - Raigarh 400kV D/c line at Ind-Barath, it was informed that the dedicated line had been charged and LILO was already been opened.

Status of line bays for Chuzachen line couldn't be reviewed as Govt. of Sikkim representative was not present in the meeting.

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

17.1 POWERGRID has informed that various ISTS sub-stations have been commissioned / expected to be commissioned shortly (under construction) for which the down linking system is being implemented by STUs. Following downlinking network along with expected commissioning schedule was informed by STUs in the previous meeting(s):

A. Existing substations

(a) Chaibasa 400/220kV S/s

(i) Chaibasa (POWERGRID) – Chaibasa (JUSNL) 220kV D/c [1st line] – ***Commissioned***

(ii) Chaibasa (POWERGRID) – Ramchandrapur 220kV D/c – ***JUSNL to update on the proposal***

(b) Bolangir 400/220kV S/s

(i) LILO of one ckt of Sadeipalli – Kesinga 220kV D/c at Bolangir – ***Oct'17***

(ii) LILO of one ckt of Katapalli – Sadeipalli 220kV D/c at Bolangir – ***Commissioned***

(c) Keonjhar 400/220kV S/s

(i) Keonjhar (POWERGRID) – Keonjhar (OPTCL) 220kV D/c – ***Dec'17***

(ii) Keonjhar (POWERGRID) – Turumunga (OPTCL) 220kV D/c – ***Mar'19***

(d) Pandiabil 400/220kV S/s

(i) Pratapsasan (OPTCL) – Pandiabil (POWERGRID) 220kV D/c – ***Oct'17***

(ii) LILO of one circuit of Atri – Puri (Samangara) 220kV D/c line at Pandiabil (POWERGRID) – ***Commissioned***

(e) Alipurduar 400/220kV S/s

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

(f) Subashgram 400/220kV S/s

(i) Subashgram – Baraipur 220kV D/c line – ***Dec'17***

(g) Darbhanga 400/220kV S/s

(i) Darbhanga (ISTS) – Darbhanga (BSPTCL) 220kV D/c – ***2 months after finalisation of gantry at Darbhanga (BSPTCL)***

(ii) Darbhanga (ISTS) – Motipur 220kV D/c – ***Commissioned***

(iii) Darbhanga (ISTS) – Samastipur New 220kV D/c (S/c strung) – ***Commissioned***

(iv) Darbhanga (ISTS) – Laukhi (earlier Supaul New) 220kV D/c – ***30-07-2017***

B. <u>Under Construction substations</u>

(h) Daltonganj 400/220/132kV S/s: Expected by Dec'17

(i) Daltonganj (POWERGRID) – Latehar 220kV D/c – ***Matching***

(ii) Daltonganj (POWERGRID) – Garhwa 220kV D/c – ***Matching***

(iii) Daltonganj (POWERGRID) – Daltonganj (JUSNL) 132kV D/c – ***Matching***

(iv) Daltonganj (POWERGRID) – Chatarpur/Lesliganj 132kV D/c – ***Matching***

(i) Rajarhat 400/220kV S/s: Expected by Sept'17

(i) Rajarhat – New Town AA3 220kV D/c – ***Oct'16***

(ii) Rajarhat – New Town AA2 220kV D/c – ***Oct'18***

(iii) Rajarhat – Barasat 220kV D/c – ***Jun'18***

(j) Motihari 400/132kV S/s: Expected by 15th July 2017

(i) Motihari (ISTS) – Motihari (BSPTCL) 132kV D/c – ***Completed.***

(ii) Motihari (ISTS) – Betiah 132kV D/c – ***Completed.***

(iii) Motihari (ISTS) – Raxaul 132kV D/c – ***15-07-2017***

(k) Dhanbad 400/220kV S/s: May'19

(i) Dhanbad – Jainamore 220 kV D/c – ***Matching***

(ii) Dhanbad – Govindpur 220 kV D/c – ***Matching***

17.2 STUs of Bihar, Jharkhand, Odisha and West Bengal may update the status of the under-construction downstream network.

Deliberation in the meeting

Members updated the status as follows:

A. Existing substations

(a) Chaibasa 400/220kV S/s

(i) Chaibasa (POWERGRID) – Chaibasa (JUSNL) 220kV D/c [1st line] – ***Commissioned***

(ii) Chaibasa (POWERGRID) – Ramchandrapur 220kV D/c – ***JUSNL to update on the proposal***

(b) Bolangir 400/220kV S/s

(i) LILO of one ckt of Sadeipalli – Kesinga 220kV D/c at Bolangir – ***Dec'17***

(ii) LILO of one ckt of Katapalli – Sadeipalli 220kV D/c at Bolangir – ***Commissioned***

(c) Keonjhar 400/220kV S/s

(i) Keonjhar (POWERGRID) – Keonjhar (OPTCL) 220kV D/c – ***Dec'17***

(ii) Keonjhar (POWERGRID) – Turumunga (OPTCL) 220kV D/c – ***Mar'19***

(d) Pandiabil 400/220kV S/s

(i) Pratapsasan (OPTCL) – Pandiabil (POWERGRID) 220kV D/c – **Dec*'17***

(ii) LILO of two circuits of Atri – Puri (Samangara) 220kV D/c line at Pandiabil (POWERGRID) – ***Commissioned***

(e) Alipurduar 400/220kV S/s

(i) Alipurduar (POWERGRID) – Alipurduar (State) 220kV D/c – ***Sep'17***

(f) Subashgram 400/220kV S/s

(i) Subashgram – Baraipur 220kV D/c line – ***Dec'18***

(g) Darbhanga 400/220kV S/s

(i) Darbhanga (ISTS) – Darbhanga (BSPTCL) 220kV D/c – ***Dec'17***

(ii) Darbhanga (ISTS) – Motipur 220kV D/c – ***Commissioned***

(iii) Darbhanga (ISTS) – Samastipur New 220kV D/c (S/c strung) – ***Commissioned***

(iv) Darbhanga (ISTS) – Laukhi (earlier Supaul New) 220kV D/c – ***Dec'17***

B. Under Construction substations

(h) Daltonganj 400/220/132kV S/s: Expected by Dec'17

(i) Daltonganj (POWERGRID) – Latehar 220kV D/c – ***Matching***

(ii) Daltonganj (POWERGRID) – Garhwa 220kV D/c – ***Matching***

(iii) Daltonganj (POWERGRID) – Daltonganj (JUSNL) 132kV D/c – ***Matching***

(iv) Daltonganj (POWERGRID) – Chatarpur/Lesliganj 132kV D/c – ***Matching***

(i) Rajarhat 400/220kV S/s: Expected by Sept'17

(i) Rajarhat – New Town AA3 220kV D/c – ***Completed***

(ii) Rajarhat – New Town AA2 220kV D/c – ***Oct'18***

(iii) Rajarhat – Barasat 220kV D/c – ***Jun'18***

(j) Motihari 400/132kV S/s: Expected by 15th July 2017

(i) Motihari (ISTS) – Motihari (BSPTCL) 132kV D/c – ***Completed.***

(ii) Motihari (ISTS) – Betiah 132kV D/c – ***Completed.***

(iii) Motihari (ISTS) – Raxaul 132kV D/c – ***Aug'17***

(k) Dhanbad 400/220kV S/s: May'19

(i) Dhanbad – Jainamore 220 kV D/c – ***Matching***

(ii) Dhanbad – Govindpur 220 kV D/c – ***Matching***

18.0 Connectivity and LTA application of Odisha Integrated Power Ltd. (Odisha UMPP) and transmission system for power evacuation- Agenda by POWERGRID

18.1 The 4000MW Connectivity and LTA applications for Odisha UMPP submitted by Odisha Integrated Power Ltd.(OIPL), wholly owned subsidiary of PFCCL, are pending since long (June'14) on account of non-firming of generation project implementation. In this regard, it is to mention that CERC vide Amendment dated 17-02-2016 has directed CTU not to hold any application in abeyance and process them within the timeline prescribed in Regulation 7 of the Connectivity Regulations.

18.2 Transmission system for Odisha UMPP was discussed in the 17th ER-SCM held on 25-05-2015, wherein it was decided to discuss the transmission system when the implementation of the generation project is firmed up. The said applications were also discussed in the 11th Connectivity and LTA meeting of ER held on 13.06.2016 wherein OIPL informed the commissioning schedule of Odisha UMPP as 2021-22 and it was decided that CEA shall convene a meeting to finalise the transmission system for Odisha UMPP. Subsequently, in association with CEA, various transmission system alternatives have been studied by CTU and a study report in this regard is enclosed at **Annexure-18.1**. As per the study report, following transmission system is proposed for Odisha UMPP:

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

Or

LILO of Sundargarh-A – Raipur Pool 765kV D/c line at Odisha UMPP-A

- Odisha UMPP-B to Sundargarh-B 765kV D/c line
- Ranchi (New) – Gaya 765kV D/c line

18.3 Further, OIPL is required to submit MoP letter regarding allocation of power to various beneficiaries from Odisha UMPP. In absence of the same, Application Bank Guarantee @ Rs. 5 lakh/MW shall be required to be submitted for further

processing. OIPL is also requested to confirm the generation project unit size and commissioning schedule.

18.4 It is proposed to grant Connectivity and LTA to OIPL for Odisha UMPP project (4000MW) with following transmission system:

Transmission System for Connectivity:

- Split bus arrangement at Odisha UMPP with 3x660MW in Section-A and 3x660MW in Section-B. For connectivity of 6X660 MW, bus sectionaliser should be kept closed.
- Odisha UMPP-B – Sundargarh-B 765kV D/c line

Transmisson System for LTA

- Split bus arrangement at Odisha UMPP with 3x660MW in Section-A and 3x660MW in Section-B. The bus sectionaliser should be kept normally open.
- LILO of Sundargarh-A – Dharamjaygarh 765kV D/c line at Odisha UMPP-A
- Ranchi (New) – Gaya 765kV D/c line

18.5 Upon grant of Connectivity and LTA, OIPL/beneficiaries need to sign requisite agreements for taking up the evacuation system for implementation, failing which the Connectivity and LTA intimations shall be liable for closure/cancellation.

18.6 Members may discuss.

Deliberation in the meeting

Members noted.

19.0 Additional feed to southern Odisha to improve power supply reliability and enable maximum utilisation of Guzuwaka Back-to-Back HVDC- Agenda by POWERGRID

19.1 POWERGRID has informed that, in the 18th SCM of ER it was noted that in absence of Talcher – Behrampur –Gazuwaka 400kV D/c line by M/s Reliance under TBCB, power flow though Gazuwaka 2x500MW HVDC is restricted under Low Hydro scenario in southern Odisha. Accordingly, it was decided that an additional scheme independent of Talcher – Behrampur – Gazuwaka may be planned and if in future Talcher – Behrampur – Gajuwaka 400kV D/c line is implemented, it would give additional strength to the southern Odisha transmission system and would also improve the low voltage problem in the area.

19.2 Accordingly, a meeting was held at CEA on 30-06-2016 among officials of CEA, CTU (POWERGRID) and OPTCL wherein following ISTS scheme was identified as an additional transmission system to improve reliability of power supply to southern Odisha and also to enable maximum utilisation of Guzuwaka Back-to-Back HVDC:

(a) Angul – Narendrapur (New) 400kV D/c (Triple Snowbird) line

(b) Narendrapur (New) – Gazuwaka 400kV D/c (Triple Snowbird) line

Note: *OTPCL would implement new 400/220kV, 2x500MVA Narendrapur (New) substation along with following transmission lines as an intra-state scheme:*

(i) Pandiabil – Narendrapur (New) 400kV D/c line
(ii) Narendrapur (New) – Aska 220kV D/c line
(iii) LILO of both the circuits of existing Therubali – Narendrapur 220kV D/c line at Narendrapur (New)

19.3 Load flow study results for the above system was included in the minutes of 18th ER SCM. The above Angul – Narendrapur (New) – Gazuwaka corridor is proposed to be implemented independent of Talcher – Behrampur – Gazuwaka corridor. As mentioned above, if in future 400kV D/c Talcher – Behrampur – Gajuwaka line comes, it would give additional strength to the Odisha transmission system and would also improve the low voltage problem in the area.

19.4 Members may discuss.

Deliberation in the meeting

OPTCL informed that Narendrapur – Jeypore via Theruvali 400kV D/c line (intra-state scheme) may be taken up instead of Angul – Narendrapur (New) – Gazuwaka (ISTS scheme). OPTCL also mentioned that both the lines viz. Talcher – Behrampur – Gazuwaka and Angul – Narendrapur (New) – Gazuwaka may not be required for system strengthening.

CTU requested OPTCL to discuss the newly proposed scheme with CEA and place their views in SCM.

20.0 Proposal for stepwise completion of Rajarhat – New Purnea 400kV D/c line under ERSS-V scheme- Agenda by POWERGRID

20.1 POWERGRID has informed that major transmission system under ERSS-V scheme is Rajarhat – New Purnea 400kV D/c (Triple Snowbird) line with LILO of one circuit at Gokarna (WBSETCL) and other circuit at Farakka (NTPC).

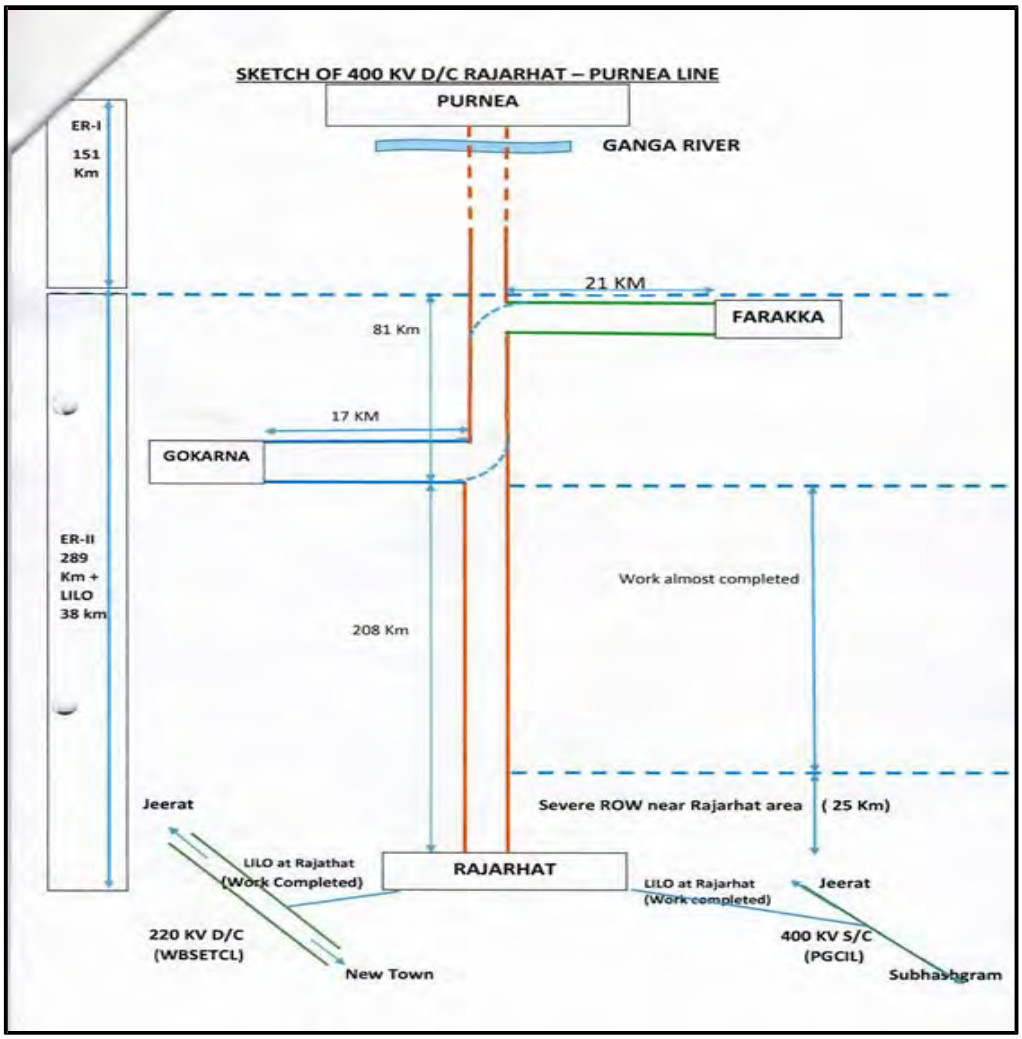
20.2 The construction work of 400/220kV GIS substation and 400kV transmission lines at Rajarhat end has been completely brought to a standstill condition due to agitation by local villagers. The West Bengal state administration has advised POWERGRID to stop construction activities at and near Rajarhat substation till further instructions.

20.3 It is likely that Rajarhat – Farakka transmission line at Rajarhat end may not be completed within FY 2016-17 due to volatile political situation. However, Farakka – Gokarna portion of the said line along with associated bays at Farakka may be completed within the FY 2016-17. Further, substation works at Gokarna viz. ICT (under scope of WBSETCL) and 400kV line bays including 80MVAR bus reactor (under scope of POWERGRID) are ready for commissioning. Accordingly, it is proposed to commission Farakka – Gokarna portion of Rajarhat – New Purnea line. Commissioning of Farakka – Gokarna portion would establish connection of Gokarna substation at 400kV level with ISTS enabling improvement of power situation in and around Gokarna and Baharampur area.

20.4 In view of the above facts, the Rajarhat – New Purnea line is proposed to be commissioned in steps as detailed below:

Sl. No.	Charging of elements
1	Farakka – Gokarna 400kV D/c portion of the Rajarhat – New Purnea line (including sections of LILO of one circuit of Rajarhat – New Purnea line at Farakka & other circuit at Gokarna) along with 80MVAr bus reactor at Gokarna and 80MVAr switchable line reactor at Farakka end
2	Rajarhat – Gokarna 400kV D/c portion of the Rajarhat – New Purnea line (resulting in formation of Farakka – Rajarhat and Farakka – Gokarna – Rajarhat 400kV S/c lines)
3	Farakka – New Purnea 400kV D/c portion of the Rajarhat – New Purnea line (resulting in formation of planned lines viz. New Purnea – Farakka – Rajarhat and New Purnea – Gokarna – Rajarhat 400kV S/c lines)

The schematic of Rajarhat – New Purnea line is shown below:



20.5 Farakka – Gokarna 400kV D/c section of the line has already been charged.

20.6 Members may discuss.

Deliberation in the meeting

It was informed that the scheme was already discussed and approved in 35th ERPC.

Members noted.

21.0 Programme for 11th/12th Plan augmentation of DVC System- Submission of revised plan for approval

21.1 DVC vide its letter dated 05.01.2017 (copy enclosed at **Annexure-21.1**) informed that approved 11th/ 12th Plan for network augmentation of DVC system, a 220kV new substation was proposed at Gola in Jharkhand with 220kV D/c lines connecting the new Gola S/s to Ramgarh(DVC), MTPS(DVC) and Ranchi(PGCIL) substations. Due to financial crunch and restriction imposed by MoP on investment in respect of DVC transmission System, the construction of new 220kV substation at Gola has been dropped by DVC. The above mentioned 220kV lines (proposed connecting Gola S/s with Ramgarh & MTPS substations of DVC and Ranchi-PG S/S) are complete/nearing completion. To utilize the upcoming 220kV lines to the best extent possible, a revised plan is proposed bypassing the Gola S/s (enclosed with the Annexure-22.1).

21.2 DVC also informed vide its e-mail dated 10.04.2017 (copy enclosed at **Annexure-21.2**) that load growth at Gola would be met by installation of third 31.5 MVA, 132/33kV power transformer.

21.3 DVC requested to approve the revised plan.

21.4 Members may discuss.

Deliberation in the meeting

DVC explained the revised plan to connect their under construction 220 kV lines after bypassing the Gola S/s and the lines will be:

1) *220 kV Ranchi- Ramgarh*
2) *220 kV Ranchi- Mejia &*
3) *220 kV Mejia- Ramgarh.*

Members agreed.

22.0 Installation of bus reactors at 400kV level at substations of STU

22.1 POWERGRID has informed that following 400kV intra-state substations were approved for implementation by respective STUs of Bihar and Odisha in the 18th ER Standing Committee Meeting:

(a) Bihar (to be implemented by BSPTCL)

(i) 2x500MVA+2x160MVA+2x80MVA, 400/220/132/33kV GIS S/s at Naubatpur

(ii) 2x500MVA+2x160 MVA, 400/220/132kV GIS S/S at Bakhtiyarpur

(iii) 2x500MVA+3x160MVA+4x80MVA, 400/220/132/33kV GIS S/s at Jakkanpur

(b) Odisha (to be implemented by OPTCL)

(i) 2x500MVA, 400/220kV sub-station at Meramundali-B

(ii) 2x500MVA, 400/220kV sub-station at Narendrapur (New)

(iii) 2x500MVA, 400/220kV sub-station at Khuntuni

22.2 With the above mentioned 400kV intra-state substations no bus reactors have been planned by BSPTCL and OPTCL. In order to keep operational flexibility/control over voltages, it is suggested to install suitable bus reactors at 400kV levels in STU system also like in ISTS system. Accordingly, it is proposed that OPTCL and

BSPTCL may install 420kV, 2x125MVAr bus reactors at above planned substations except Narendrapur (New) where 420kV, 2x80MVAr may be installed.

22.3 Members may discuss.

Deliberation in the meeting

OPTCL in principle agreed to the proposal and informed that keeping two reactors at each substation to meet N-1 criterion will not be economical.

OPTCL added that based on detailed study, they are installing one reactor at each 400kV Substations. OPTCL has placed the details as follows:

- *One 125 MVAr reactor at 400kV Meramundali, Mendhasal and New Duburi*
- *One 80 MVAr reactor at 400kV Meramundali-B, Khuntuni and Narendrapur*

BSPTCL agreed to the proposal of installation of 420kV, 2x125MVAr bus reactors under intra-state scheme at their Naubatpur, Bakhtiyarpur and Jakkanpur substations.

23.0 Constraint in transportation of ICT to Farakka (NTPC) under ERSS-XII- Agenda by POWERGRID

23.1 POWERGRID has informed that replacement of 400/220kV, 2x315MVA ICTs with 400/220kV, 2x500MVA ICTs was approved at Patna, New Purnea and Sasaram (Pusauli) substations in the 15th ER Standing Committee Meeting held on 27-08-2013. Therein, it was also decided to install one of the 315MVA ICT released from Patna, New Purnea and Sasaram after replacement at Farakka generation switchyard as 2nd ICT by POWERGRID. The said scopes are being implemented by POWERGRID as part of ERSS- XII scheme. One 400/220kV, 315MVA ICT released from Sasaram (Pusauli) was identified for installation at Farakka.

23.2 The 400kV & 220kV switchyard equipment and Control & Relay equipment associated with installation of 400/220kV ICT are in place at Farakka. While in transit the main ICT tank was stopped by CISF at Farakka Barrage Project (under Ministry of Water Resources). POWERGRID vide letter dated 19-08- 2016 requested permission from Farakka Barrage Project for transportation of the ICT. However, the Barrage Authority vide letter dated 05-09-2016 denied permission for the same. Subsequently, POWERGRID approached The Secretary, Ministry of Water Resources (apex body for Farakka Barrage Project) on 08-09-2016. However, the Ministry of Water Resources declined permission vide their letter dated 23-09-2016 and requested POWERGRID to explore for alternate routes. Previously, all other consignments were transported to Farakka generation project through this route only.

23.3 Accordingly, POWERGRID explored following routes for transportation of the ICT:

(a) *Via **NEW FARAKKA** where a **railway underpass (14 ft.) physically prevented the consignment of 17.5 ft. height.***

(b) *Via **DHULIAN-SHANKARPUR**, but one intermediate bridge on feeder canal of nearly 500 mtr length is **unfit for movement of even LMV**: very risky as the condition of the bridge is dilapidated.*

(c) *Via **PAKUR – BARHARWA – NTPC FARAKKA**: explored and physically surveyed by POWERGRID & transporter but found not feasible as **Major civil work are required***

for construction of road/bypass over bridges/culverts; *en-route, for Trailer with such dimension and weight.*

23.4 From above it emerges that the ICT can be transported to Farakka only through the road of Farakka Barrage Project, which has been denied by the apex body (Ministry of Water Resources).

23.5 Thus with no possible transportation options, the ICT has been diverted and stationed at Durgapur S/s of POWERGRID.

23.6 In the 18th ER Standing Committee Meeting held on 13-06-2016, installation of 3rd 400/220kV, 315MVA ICT at Durgapur (ICT-2 released after replacement at New Purnea S/s) was approved. This is being implemented by POWERGRID under ERSS-XVII (Part-B) scheme.

23.7 In view of the above mentioned transportation constraints it is proposed that ICT diverted from Sasaram S/s (identified for installation at Farakka under ERSS-XII) may be installed at Durgapur S/s as 3rd ICT (under ERSS-XVII Part-B).

23.8 Accordingly, the following modifications in the scope of ERSS-XII and ERSS-XVII (Part-B) schemes are proposed:

(a) Deletion of scope of installation of Sasaram (Pusauli) 400/220kV, 315MVA ICT-2 as 2nd 400/220kV, 315MVA ICT at Farakka generation switchyard from ERSS-XII scheme.

(b) Modification in ERSS-XVII (Part-B) scheme: Installation of above mentioned Pusauli 400/220kV, 315MVA ICT-2 as 3rd 400/220kV, 315MVA ICT at Durgapur instead of earlier approved New Purnea 400/220kV, 315MVA ICT-2.

(c) Shifting of New Purnea (ICT-2) to Durgapur under ERSS-XVII (Part-B) scheme is not required; hence the same may be kept as spare ICT at New Purnea itself.

23.9 Members may discuss.

Deliberation in the meeting

Members felt that 2nd ICT at 400kV Farakka is very much required.

Members advised CTU to explore the possibility for installation of three 1-phase units instead of 3-phase ICT which can be easily transported.

CTU agreed to consider.

BSPTCL informed that the ICT may be shifted to Patna where the loading is significant.

CTU informed that the proposal for 3rd ICT at Patna is under preparation and the same will be placed in SCM.

24.0 Conversion of 50MVAR (3x16.67) bus reactor at Farakka to switchable line reactor under the ERSS-XV due to space constraints in termination of Farakka – Baharampur 400kV D/c (Twin HTLS) line- Agenda by POWERGRID

24.1 POWERGRID has informed that ERSS-XV scheme inter alia includes construction of Farakka – Baharampur 400kV D/c (Twin HTLS) line. One spare future bay has been selected for termination of one circuit of Farakka – Baharampur D/c line at

400kV bus at Farakka generation switchyard, however, due to non-availability of adjacent bay for termination of the other circuit it is proposed to terminate the second circuit in the exiting 50MVAR bus reactor bay along with conversion of this reactor to switchable line reactor. This arrangement would result in connection of 50MVAR switchable line reactor in one circuit of Farakka – Baharampur 400kV D/c line at Farakka end.

24.2 Members may approve.

Deliberation in the meeting

Members agreed.

25.0 Modification in transmission system required for power evacuation from Sikkim IPPs and Operationalization of LTOA/LTA- Agenda by POWERGRID

25.1 **Sikkim Phase-1 IPPs**

25.1.1 POWERGRID has informed that following seven IPPs envisaged under Phase-1 in Sikkim, the High Capacity Power Transmission Corridor-III was planned:

Sl. No.	Name of the Developer/ Open Access Applicant	Commissioning Schedule (as per 12th JCC)	Installed Capacity (MW)	LTOA Quantum (MW)
1	Teesta Urja Ltd. / PTC (Teesta-III)	Commissioned	1200 (6x200)	1200
2	Lanco Energy Pvt. Ltd. (Teesta-VI)	U-1: Feb'20, U-2, 3 & 4: Mar'20	500 (4x125)	500
3	DANS Energy Pvt. Ltd. (Jorethang)	Commissioned	96 (2x48)	96
4	JAL Power Corporation (Rangit-IV)	U-1: Sep'19 U-2 & 3: Oct'19	120 (3x40)	120
5	Madhya Bharat Power Corporation Ltd. (Rongnichu)	U-1: Nov'18 U-2: Dec'18	96 (2x48)	96
6	Gati Infrastructure Ltd (Chuzachen)	Commissioned	99 (2x49.5)	99
7	Gati Infrastructure Bhasmey Power Pvt. Ltd. (Bhasmey)	U-1: Apr'18 U-2: May'18	51 (2x25.5)	51
		Total	**2162**	**2162**

Based on the decisions of various Standing Committee Meetings of ER and Connectivity & LTA meetings of ER, following common transmission system is being implemented under the High Capacity Power Transmission Corridor-III:

- **Substation**

(A) Establishment of new 400/220kV, 2x500MVA GIS S/s at Kishanganj
(B) Establishment of 400/220/132kV (400/220kV, 16x105 MVA, Single Phase transformers and 220/132kV, 3x100MVA) GIS S/s at Rangpo
(C) Establishment of 220kV GIS switching station at New Melli

- **Transmission Line**

(D) LILO of Gangtok – Melli 132kV S/c line at Rangpo
(E) LILO of Gangtok – Rangit 132kV S/c line at Rangpo
(F) Rangpo – New Melli 220kV D/c line (with single HTLS conductor)
(G) LILO of Siliguri – Dalkhola 220kV D/c line at Kishanganj
(H) LILO of New Siliguri – New Purnea 400kV D/c line (quad) at Kishanganj

(I) LILO of Teesta V – Siliguri 400kV D/c line at Rangpo
(J) Kishanganj – Patna 400kV D/c (quad) line
(K) Teesta III – Kishanganj 400kV D/c line (quad)
(L) LILO of both circuits of Teesta III – Kishanganj 400kV D/c line at Rangpo with Twin HTLS conductor

Note:

(i) Elements at (A) to (J): Commissioned by POWERGRID.
(ii) Element at (K): Being implemented by TPTL (JV of POWERGRID and Teesta Urja Ltd.). Teesta-III to Rangpo section has been commissioned and Rangpo to Kishanganj section is expected by Mar 2018 (as informed in 12th JCC of Eastern Region held on 27-03-2017).
(iii) Element (L): LILO of one circuit has been commissioned by POWERGRID.

25.1.2 The dedicated and above mentioned common transmission system associated with Phase-I generation projects in Sikkim (except Chuzchen which was granted LTA separately) were intimated by CTU vide letter dated 07-10-2015. Therein, the dedicated transmission system of Bhasmey HEP was modified from "LILO of one ckt of Chuzachen – Rangpo 132kV D/c line with Zebra conductor at Bhasmey along with associated line bays" to "Bhasmey – Rangpo 132kV D/c line along with associated line bays".

25.1.3 In the 18th Standing Committee Meeting of ER held on 13-06-2016, it was decided to delink the LILO of 2nd circuit of Teesta-III – Kishanganj 400kV D/c line at Rangpo from the scheme "Transmission System for Transfer of power from generation projects in Sikkim to NR/WR (Part-B)" for Phase-1 IPPs in Sikkim and take it up as a separate part (Part-B1) as "Transmission System for Transfer of power from generation projects in Sikkim to NR/WR (Part- B1)". From system studies it has been observed that power from the above mentioned Phase-I IPPs can be evacuated with LILO of one circuit of Teesta-III – Kishanganj line at Rangpo with N-1 security criteria (the original transmission system was planned keeping in view N-1 criteria). The 2nd LILO at Rangpo, which is required for meeting the N-1-1 reliability criteria is under DPR stage.

25.1.4 In view of the above, it is found that the following Transmission System for Transfer of power from generation projects in Sikkim to NR/WR from Phase-I Sikkim IPPs (without LILO of 2nd circuit of Teesta-III – Kishanganj 400kV D/c line at Rangpo) is capable of power evacuation from Phase-I Sikkim IPPs:

Common Transmission System (under scope of ISTS)

(a) Establishment of 2x500MVA, 400/220kV GIS sub-station at Kishanganj
(b) Establishment of 16x105MVA (single phase), 400/220kV and 3x100MVA, 220/132kV GIS substation at Rangpo
(c) Establishment of 220kV GIS switching station at New Melli
(d) Teesta-III – Kishanganj 400kV D/c line (quad)
(e) Kishanganj – Patna 400kV D/c (quad) line
(f) LILO of New Siliguri – New Purnea 400kV D/c line (quad) at Kishanganj
(g) LILO of Siliguri – Dalkhola 220kV D/c line at Kishanganj
(h) LILO of Teesta-V – New Siliguri 400kV D/c line at Rangpo
(i) LILO of one circuit of Teesta-III – Kishanganj 400kV D/c line (quad) at Rangpo (with Twin HTLS)
(j) Rangpo – New Melli 220kV D/c line (with Single HTLS)
(k) LILO of Rangit – Gangtok 132kV S/c line at Rangpo
(l) LILO of Gangtok – Melli 132kV S/c line at Rangpo

Dedicated Transmission System

	under scope of generation developer	
(a)	Teesta-VI	Teesta-VI – Rangpo 220kV D/c line with Twin Moose conductor along with associated line bays.
(b)	Jorethang	Jorethang – New Melli 220kV D/c line with Zebra Conductor along with associated line bays.
(c)	Rangit-IV	Rangit-IV – New Melli 220kV D/c line with Zebra Conductor along with associated line bays
(d)	Rongnichu	Rongnichu – Rangpo 220kV D/c line with Zebra conductor along with associated line bays
	under scope of generation developer / Govt. of Sikkim	
(e)	Chuzachen	Chuzachen – Rangpo 132kV D/c with Zebra conductor along with associated line bays
(f)	Bhasmey	Bhasmey – Rangpo 132kV D/c line along with associated line bays

25.1.5 Govt. of Sikkim and the project developers of Chuzachen and Bhasmey HEPs need to clarify regarding ownership of dedicated transmission lines (viz. Chuzachen – Rangpo and Bhasmey – Rangpo 132kV D/c lines) of the Chuzachen and Bhasmey HEPs.

25.1.6 All the elements of the above mentioned Common Transmission System(mentioned at Para 25.1.4) for Phase-I IPPs except Teesta-III – Kishanganj 400kV D/c (Quad) line has been commissioned. This line (under construction by TPTL) is expected by March 2018. With the completion of this line, the LTOA/LTA of Sikkim Phase-I IPPs shall be operationalised and the generation developers shall be liable for payment of applicable transmission charges. The 2nd LILO at Rangpo, which is under DPR stage would be commissioned at later stage.

25.2 From system studies it has also been observed that common transmission system identified for Phase-1 IPPs is also capable of evacuating power from Tashiding HEP (of Shiga Energy Pvt. Ltd.). Accordingly, it is proposed to modify the LTOA system of Tashiding HEP incorporating the common transmission system for Sikkim Phase-1 IPPs mentioned at Para 25.1.4 above.

25.3 Members may discuss and approve.

Deliberation in the meeting

Members agreed the proposal. However, members felt that the 2nd LILO of Teesta-III – Kishanganj 400kV D/c at Rangpo is also essential part for power evacuation of Sikkim HEPs and stressed for early commissioning.

26.0 Connectivity granted to Vedanta Ltd. (erstwhile Sterlite Energy Ltd.)- Agenda by POWERGRID

26.1 POWERGRID has informed that Vedanta Ltd. (4x600MW) was granted LTOA of 400MW along with other Phase-1 IPPs in Odisha and LTA of 1000MW along with Phase-2 IPPs in Odisha. For connectivity, Vedanta was to construct two 400kV D/c lines (one for 400MW LTOA and another for 1000MW LTA) from the generation switchyard to Sundargarh (Jharsuguda) S/s of POWERGRID. Subsequently, Vedanta Ltd. has relinquished its entire LT(O)A quantum of

1400MW (Phase-I: 400MW & Phase-II: 1000MW). The first dedicated line is still under construction, whereas the second dedicated line has not been taken up for implementation. Connection agreements have been signed between CTU (POWERGRID) and Vedanta Ltd. for both the dedicated transmission lines.

26.2 Vedanta has connected Unit-1, 3 & 4 of the generation project to ISTS system and Unit-2 to Odisha grid. In the 125th OCC meeting of ERPC held on 20-09-2016 under the agenda item no. B.7 – "Persistent under generation and inappropriate operational methodologies vis-à-vis grid requirements in operation of Vedanta, Jharsuguda", it has emerged that Vedanta has got converted the status of ISTS connected units from IPP to CPP. Accordingly, following was decided in the meeting:

(a) Vedanta has to get a fresh connectivity from CTU for their CPP units #1, 3 & 4 (as these units were converted from IPPs to CPPs) as per the decision of 11th Connectivity and LTA meeting of ER held on 13.06.2016.

(b) Vedanta has to get NOC from SLDC Odisha for scheduling of their units through ERLDC.

(c) Vedanta will be allowed to connect to CTU system only after submission of the above two documents.

(d) ERLDC will start scheduling Vedanta CPP Units #1, 3 & 4 only after getting a fresh NOC from SLDC Odissa and with grant of fresh connectivity by CTU.

(e) Till then Vedanta would be treated as an embedded customer under the jurisdiction of SLDC Odisha and may remain connected to grid through STU system only (as presently its units are connected to OPTCL system) and do their STOA transaction through SLDC Odisha.

(f) In view of all of above, the NOC granted to Vedanta would stand revoked and fresh NOC could be issued subject to fulfillment of the stated conditions

(g) Vedanta has to complete the dedicated line within the schedule (i.e. November, 2016) otherwise the LILO may be removed as per the decision of 33rd ERPC and the meeting convened by CEA held on 16.09.2016.

26.3 The matter related to Vedanta was subsequently discussed in a meeting at ERPC on 14-10-2016, wherein following was decided:

(a) Control area jurisdiction of Vedanta will be shifted from ERLDC to SLDC, Odisha.

(b) CPP units (unit #1, 3 &4) and IPP unit (#2) of Vedanta Ltd along with SEZ (smelter) load shall be kept at 400 kV bus of Vedanta Ltd Switchyard without bus splitting and shall be connected to STU network through 400 kV Vedanta Ltd- Meramundali D/C line.

There will be no need to operate the 400kV buses of Vedanta in split bus mode and they should be coupled by completing all the dias.

(c) One unit shall be kept as standby till the completion of 400 kV Sterlite- Jharsuguda D/C line.

(d) Vedanta Ltd shall be a State embedded entity for all purposes and requisite STU connection would be obtained by Vedanta Ltd i.r.o above.

(e) The CTU connectivity of Vedanta may be kept in abeyance. The same may be closed/withdrawn from the date of getting the STU connectivity.

(f) On change of control area jurisdiction the NOC granted by ERLDC to Vedanta Ltd

shall stand revoked.

(g) After changeover of control area jurisdiction, the LILO point of 400 kV Rourkela-Raigarh at Vedanta will be interface point of Odisha STU till 30th November, 2016.

(h) Subsequently, after the completion of 400kV Sterlite-Jharsuguda D/C line the interface point of Odisha STU will be shifted to Jharsugada.

(i) With the change of control area jurisdiction the status of 400kV Sterlite- Jharsuguda D/C line will no more be a dedicated line. So, Vedanta agreed to hand over the line to OPTCL which can be treated as an ISTS tie of OPTCL.

(j) Vedanta has to strictly adhere to the schedule for completion of 400kV Sterlite-Jharsuguda D/C line (i.e. 30th November, 2016) as per the decision of 33rd TCC/ERPC and decided in the meetings held in CEA on 16.9.16. In case 400kV Vedanta-Jharsuguda D/C line is not commissioned by that date, the LILO connection to Vedanta shall be withdrawn.

(k) Due to change of control area jurisdiction from ERLDC to SLDC Odisha. Vedanta Ltd has to settle the following:

(i) ERLDC fees and charges shall be paid by Vedanta Limited as applicable up to the cutoff date.

(ii) Previous dues up to cut off date of the pool accounts such as DSM charges along with interest, RTDA, any others has to be settled by Vedanta.

(iii) Henceforth, any deviation of Vedanta Limited will be treated as deviation of OPTCL.

(iv) After changeover of jurisdiction if in future it is found that any amount in pool account had remained unaccounted by mistake against Vedanta Limited, Vedanta Limited will have to pay the amount into the pool account.

(v) For calculation of POC charges and losses Vedanta Limited generation will be considered as generation of Odisha.

(vi) Vedanta Limited has to get registered afresh at each RLDC for Short Term Open Access as embedded entity in OPTCL.

(vii) Reconciliation of accounts is also required to be done up to the cutoff date by Vedanta.

(viii) OPTCL in coordination with Vedanta has to send weekly SEM data to ERLDC by Tuesday Noon.

26.4 For above mentioned deliberations of OCC and ERPC meetings, it emerges that ISTS connected units (Unit-1, 3 & 4) of Vedanta has been converted from IPP to CPP and the same shall now be kept connected with STU connected unit (Unit-2). This would result in connection of all four generation units, Vedanta – Meramundali 400kV D/c line (STU connection) and Vedanta – Sundargarh (Jharsuguda) 400kV D/c line (ISTS connection) to common 400kV bus. Further, it has been decided that Vedanta shall be embedded entity of Odisha upon completion of Vedanta – Sundargarh (Jharsuguda) line as Vedanta Ltd. has agreed to hand over the line to OPTCL. In such case, the status of the line would change from dedicated transmission line to STU line.

26.5 In regard to connectivity of Vedanta Ltd. with ISTS, interim connectivity arrangement through LILO of one circuit of Rourkela - Raigarh 400kV D/c line at generation switchyard was discussed in the 35th meeting of ERPC held on 25-02-2017 wherein Vedanta Ltd. was provided time extension till 15-04-2017 for completion of the dedicated line and it was decided to open the interim connectivity on 16-04-2017. Accordingly, CTU (POWERGRID) vide letter dated 11-04-2017 requested

ERLDC to initiate necessary actions regarding disconnection of the interim arrangement of M/s Vedanta Ltd as per decision of 35th EPRC meeting.

26.6 Member Secretary, ERPC vide email dated 25-04-2017 has informed that the above issue was discussed in 132nd OCC meeting held on 21.04.2017 at ERPC, Kolkata, wherein OCC agreed to extend the interim LILO connectivity till 30th June, 2017 in view of requirement of above mentioned LILO for OPTCL to meet peak summer demand.

26.7 It is understood that interim arrangement of Vedanta Ltd. is yet to be opened. Accordingly, CTU (POWERGRID) vide letter dated 11-05-2017 has requested Member Secretary, ERPC to take suitable necessary action.

26.8 In view of the above, the connection agreement of the first dedicated transmission line shall become null and void upon transfer of the line by Vedanta Ltd. to OPTCL. Accordingly, OPTCL or Vedanta Ltd. need to confirm regarding transfer of above mentioned asset from Vedanta Ltd. to OPTCL.

26.9 Further, with relinquishment of LTA of 1000MW (Phase-II) by Vedanta Ltd. the 2nd dedicated line viz. Vedanta generation switchyard – Sundargarh (Jharsuguda) 400kV D/c 2nd line may not be required.

26.10 Members may discuss.

Deliberation in the meeting

It was informed that the removal of LILO was continuously reviewed taking in consideration with OPTCL / GRIDCO connectivity with Vedanta in every OCC meetings. The information on extension for LILO opening was intimated to each of CERC/ CEA/ CTU/ ERLDC/ GRIDCO/OPTCL vide mail dated 12.04.2017 and subsequent letters dated 05.06.17 & 04.07.17.

Now the line is almost ready and expected to be commissioned by August, 2017 as updated in the special meeting of 14.07.2017.

Members advised OPTCL to take over the Vedanta-Jharsuguda line after the commissioning of the line as per the decision of 14.10.2016 and was also requested to intimate the same.

27.0 Dropping of Banka (PG) – Deoghar 132kV D/c line, which had proposed in 16th SCM-ER meeting

27.1 In the 16th SCM-ER meeting, ERPC had informed that the 132kV Deoghar S/S (JSEB) is being fed through 132kV line(s) from DVC source (132kV Maithon-Jamtara-Deoghar S/C) or from NTPC source (Lalmatia). There is also a feed from BSPTCL source through 132kV Sultanganj- Deoghar S/C line, which is normally kept open due to overloading in Kahalgaon-Sabour- Sultanganj section of BSPTCL system. The Deoghar & Jamtara sub-stations feed important railway loads of 10MW each to Shankarpur TSS & Jamtara TSS and loading on Maithon – Jamtara – Deoghar 132kV S/C line sometimes exceeds 75MW. The reliability of supply to railway loads is being affected. In view of above, it was agreed to provide an additional supply to Deoghar S/S (JSEB) from 400/132kV Banka S/S (PG) by creating a 132kV Banka- Deoghar D/C lines (about 40 Kms).

27.2 JUSNL vide their letter dated 30.07.2015 addressed to POWERGRID informed that termination of above line at Deoghar is not possible due to space

constraint. Further, JUSNL informed that after commissioning of 132kV Jasidih – Deoghar line (about 5km), Deoghar S/s will be able to receive 250MVA of power through Jasidih S/s and Dumka S/s, whereas the transformation capacity at Deoghar is only 150MVA. The matter was discussed in 18th SCMPSP(ER) meeting and it was decided to review the possible interconnections at Deoghar in a separate meeting at CEA with Railways & other stakeholders.

27.3 In regard to above, a meeting was held on 13.06.2017 (MoM is at **Annexure-27.1**), in which representative of CTU informed that POWERGRID has closed the ERSS-XVI project involving construction of Banka (PG) - Deoghar 132kV D/C line and the same was informed to CEA vide letter dated 27-10-2016.

27.4 Representative of BSPTCL stated that BSPTCL can supply power with exiting system to Deoghar (Jharkhand) through 132kV Sultanganj- Deoghar S/C line during off-peak hours only, as the bus bars capacity at Sultanganj is inadequate. However, supply during peak hours would be possible only after strengthening of bus bar at Sultanganj, which is likely to be completed in next 6 months.

27.5 Chief Engineer (PSPA-II), CEA expressed that in absence of representatives from JUSNL (Jharkhand) and Railways, it is difficult to assess the loading of the network in present situation.

27.6 The proposed Deoghar-Jasidih 132kV D/C line (by JUSNL) and strengthening of 132kV bus at Sultanganj (by BSPTCL) are likely to enhance the reliability of power supply to the Railways TSS at Deoghar. In view of above, it was decided to drop the proposal of construction of Banka (PG) - Deoghar 132kV D/C line.

27.7 Members may discuss.

Deliberation in the meeting

Members noted.

PART – C :: OTHER AGENDA ITEMS FOR DISCUSSION

ITEM NO. C1: Bus Splitting of Powergrid Sub-stations

As per decision of Standing Committee of ER CTU was entrusted to do Bus splitting at 400 kV Maithon, Durgapur & Biharsariff S/Ss or ER. The latest status on the same are:

- 400 kV Maithon ---Completed
- 400 kV Durgapur--Completed
- 400 kV Biharshariff— Completed

During third party protection of 400kV Maithon S/s on 18th May 2017, it was observed that bus splitting scheme at 400kV Maithon S/s has been commissioned but not in service.

Subsequently in 134th OCC, it was informed that the bus splitting scheme at 400 kV Maithon & Biharshariff will be operationalized after getting the consent from CTU.

CTU may place the action plan to commence the split bus operation.

Deliberation in the meeting

CTU informed that the a study for implementation of Bus-splitting scheme is in process in view of changed grid scenario and the action plan for commencing the bus-split operation will be placed in 19th SCM.

ITEM NO. C2: Bus and bay strengthening at Purnea (PG)

In 134th OCC, BSPTCL informed that reconductoring of 132 kV Purnea (PG)-Purnea (BSPTCL) (T/C) transmission line from Panther to HTLS conductor has already been completed and line is charged. Now each circuit capacity is 1000 Amp. i.e. 200 MW. .

It has been planned to test the line by its loading, which requires compatibility of 132 kV main bus bar, bay etc at either Purnea (PG) and Purnea GSS end.

In BSPTCL for Purnea GSS end order has been awarded for R&M of GSS, which includes the work of bus bar & bay strength. These works are expected to be completed by 30.6.17.

For drawing optimum power at Purnea (PG) end, bus & bay strength must remain sufficient to sustain load.

PGCIL is requested to confirm status of its 132 kV bus bar, bay etc.

Powergrid informed that 132kV bus bar and bay at Purnea (PG) are not equipped with desired loading 200 MW/ckt and no future argumentation was planned.

OCC advised BSPTCL to interact with CEA/CTU, so that the issue may be discussed in Standing Committee on Transmission Planning of ER.

BSPTCL may update.

Deliberation in the meeting

CTU informed that they will verify the ratings of Bus-bar and bay equipments at Purnea (PG) and place the confirmation in 19th SCM. CTU vide its letter and email dated 10-08-2017 has clarified that, in order to improve reliability of 132kV system at Purnea (POWERGRID) 220/132kV S/s, the 132kV bus scheme along with switchgear is already being upgraded under ERSS-XII scheme from Single Main & Transfer (AIS) to Double Main (GIS) with 132kV bay equipment and bus bar capable of handling 1250A and 2000A respectively.

ITEM NO. C3: LILO Connection of 132 KV Sonenagar-Rihand (UP,NR) Circuit-I at NPGC, Nabinagar for providing startup power to NPGC

In 131st OCC meeting of ERPC, BSPTCL informed that NPGC, Nabinagar has applied for 65 MVA start up power and initially they will draw around 5-10 MW power through 132 kV Sonenagar-Rihand-I line LILOed at NPGC, Nabinagar. It was also pointed that 132kV Sonenagar-Rihand (UP,NR) Circuit-I is lying idle charged since last 5-6 years and presently it remains charged on no load from Sonenagar end & open at Rihand (UP) end.

It was informed that NPGC, Nabinagar will only draw startup power for commissioning activities through the above LILO as an interim arrangement and injection of power/trial-run will be done after the completion of 400 kV ATS of NPGC, Nabinagar.

The issue was discussed also with CTU and CEA. CEA vide their letter 69/2/PSPA-II/2017/362, dated 8.5.17 communicated their no objection. CTU also expressed the same.

ERPC vide fax message dated no 259 dated 09.05.17 has given the confirmation to SLDC, UPPTCL with a copy to all other utilities that as per the decision of OCC, NPGC is going to start availing the start up power from BSPTCL by closing Sonnagar-NPGC 132KV LILO section of 132kV Sonnagar-Rihand-I line keeping the line open at Rihand end.

It was also mentioned that it is an interim arrangement subject to post facto approval of Standing Committee of ER in its forthcoming meeting.

Members may approve.

Deliberation in the meeting

Members recommended for 19th SCM approval.

ITEM NO. C4: AGENDA ITEMS BY OPTCL.

1. EVACUATION PLAN OF 2X660 MW OF IB POWER AT LAPANGA

OPGC plans to commission 2x660 MW of power by the end of year 2021-22. The system study has been done for evacuation of above quantum of power. The flow diagram is attached at **Annexure-C.4.1**. The flow in the connected lines are as follows:

CASE-I (WITH ADDITIONAL IB-LAPANGA DC AND LAPANGA-JHARSUGUDA DC)

IB-LAPANGA 400kV D/C line-1206 MW

LAPANGA-JHARSUGUDA 400kV D/C line - (TRIPLE SNOW BIRD)-611MW

STERLITE-LAPANGA 400kV D/C line -303 MW.

STERLITE- JHARSUGUDA 400kV D/C line (AL 59) 894 MW

LAPANGA-MERAMUNDALI 400 kV D/C line 574 MW

FLOW THROUGH LAPANGA ICT-324 MW.

CASE-II(WITH IB-JHARSUGUDA)

IB-LAPANGA 400kV D/C line-490 MW

IB-JHARSUGUDA 400kV D/C line - (TRIPLE SNOW BIRD)-715 MW

STERLITE-LAPANGA 400kV D/C line -397 MW

STERLITE- JHARSUGUDA 400kV D/C line (AL 59) 799 MW

LAPANGA-MERAMUNDALI 400 kV D/C line 568 MW

FLOW THROUGH LAPANGA ICT-320 MW.

Among the two cases CASE-I is commercially and technically viable.
Under both conditions, two no. of 400kV bays may be reserved at Jharsuguda(Kenapalli) 765/400kV S/S for GRIDCO for evacuation of IBTPS Stage-II power.

Deliberation in the meeting

OPTCL informed that OPGC is scheduled to commission the first unit of 2X660MW IBTPS Stage-II power by December, 2018 and as per the decision of Government of Odisha now GRIDCO will be the stake holder of almost whole quantum of power. Therefore, GRIDCO/OPTCL has planned for evacuation of full power from IB TPS Stage-II and requested for allocation of two 400kV bays at Jharsuguda S/s as per the above studies.

CTU informed that 400kV OPGC-Jharsuguda line (Triple snow bird) is being constructed by Sterlite under TBCB route and is almost at completion stage. CTU advised OPTCL to review the above proposal.

OPTCL informed that they are ready to take over the line by paying the construction cost in order to avoid PoC charges for evacuation of the OPGC stage-II power.

Members forwarded the proposal to SCM and advised OPGC and Sterlite to attend the meeting.

2. EVACUATION PLAN OF 3X800 MW POWER OF M/s OPTCL AT KAMAKHYANAGAR

M/s OPTCL plans to commission 3x800 MW thermal power station by the year 20121-22. The entire power of the S/S is to be availed by GRIDCO. OPTCL has planned to evacuate full power with the following transmission elements:

- 765 kV D/C connectivity with Angul PG.
- 765 kV D/C line from Kamakhyanagar to Begunia(proposed 765kV S/S by OPTCL)
- 765 kV Switching station at Kamakhyanagar.
- 765 kV /400kV substation at Begunia.
- 400 kV D/C connectivity with LILO of Mendhashal-Khuntuni line at Begunia.
- 400 kV D/C connectivity with LILO of Pandiabil-Narendrapur line at Begunia.

Power generated at OPTCL will be connected to Begunia through 765kV DC line from the proposed 765kV Switching Station at Kamakhyanagar to facilitate seamless transfer of power. It will be stepped down to 400kV at Begunia. This will be further connected to LILO of Mendhashal-Khuntuni D/C & LILO of Pandiabil-Narendrapur D/C line for evacuation of power to the load centres at Mendhashal, Khuntuni, Narendrapur & Duburi. The connectivity with Angul at 765kV will add stability to the evacuation plan.

The flow diagram is attached at **Annexure-C.4.2**. The flow in the connected lines are as follows:

Angul-Kamakhyanagar 765 kV line-	1200 MW
OPTCL-Begunia 765 kV line-	992 MW
Begunia-Khuntuni 400kV line -	506 MW
Begunia-Mendhashal 400kV line -	682 MW
Begunia-Narendrapur 400kV line-	54 MW
Begunia-Pandiabil 400kV line -	754 MW

Two nos. of 765kV Bays to be allotted to OPTCL at 765kV S/S at Angul.

Deliberation in the meeting

Members advised OPTCL to send the complete proposal to CEA/CTU for study and further review.

3. 400 kV Connectivity of OPTCL Substations.

400 kV LILO of one circuit of Kuchei-Pandiabil line at proposed 400kV Bhadrak S/S.

CEA in their 18th Standing Committee has approved in-principle the construction of 400/220kV S/S at Bhadrak and Paradeep.

THE CONNECTIVITY OF BHADRAK 400KV S/S

400/220kV Bhadrak S/S will be LILOed from one circuit of 400kV Kuchei-Pandiabil line.

THE CONNECTIVITY OF PARADEEP 400KV S/S

400/220kV Paradeep S/S will be connected through a 400kV D/C line from existing 400/220/33kV Duburi S/S of OPTCL.

So permission may be accorded for 400kV LILO of one circuit of 400kV Kuchei-Pandiabil line.

Deliberation in the meeting

OPTCL informed that the proposal was agreed in principle in the 18th SCM and requested members to consider the proposal.

Members agreed and referred the proposal to SCM.

ITEM NO. C5: ADDITIONAL AGENDA BY BSPTCL.

1. Modification under 13th Plan scheme.

In order to meet the future demand of Bihar by 2021-22, Sitamarhi, Chandauti and Saharsa (New) substations were approved to be implemented under ISTS in the 18th ER-SCM held on 13-06-2016. The scheme is being implemented through TBCB under ERSS-21 (under bidding stage). Therein scope of Sitamarhi (New) & Saharsa (New) S/s inter alia includes following:

1. Sitamarhi(New) S/s: 400/220/132kV, 2x500MVA + 2X200MVA
   (a) Darbhanga - Sitamarhi(New) 400kV D/c (Triple Snowbird)
   (b) Sitamarhi(New) * Motihari 400kV D/c (Triple Snowbird)
   (c) Sitamarhi(New) - Motipur 220kV D/c
   (d) Siramarhi (New) Sitamarhi 132kV D/c (Single Moose)
   (e) Sftamarhi(New) - Pupri 132kV D/c

2. Saharsa (New) 400/220/132kV S/s: 2x500MVA + 2x200MVA
   (a) LILO of Kishanganj - Patna 400kV D/c (Quad) at Saharsa (New)
   (b) Saharsa (New) - Begusarai 220kV D/c
   (c) Saharsa (New) - Khagaria (New) 220kV D/c
   (d) Saharsa (New) - Saharsa 132kV D/c (Single Moose)

However, due to space constraints for additional line bays and unavailability of corridor some modifications are required in the 13th plan scheme.

A joint load flow study has been carried out with POWERGRID and following modification is proposed (study results and SAV file are enclosed):

SN	400/200/132 kV New Sub-stn	Original Scope	Proposed Modification	Justification
1	Sitamarhi(New)	Sitamarhi (New) - Sitamarhi 132kV D/c (Single moose)	Sitamarhi (New) - Runnisaidpur 132kV D/c	Space is not available for new line bay as well as corridor is not available for line termination at 132 Kv Sitamarhi(old) GSS.

		Sitamarhi (New) - Pupri 132kV D/c	LILO of Benipatti - Pupri 132 kV S/c at Sitamarhi(New)	Severe ROWs and Densely populated area around Grid Substation, Pupri
2	New Line	Vaishali- Hazipur 132kV D/c	Vaishali – Chapra (New) (Amnour) 132 kV D/c	No corridor available at entry point of 220/132 kV GSS Hajipur and severe ROW problems due to dense population.
3	Saharsa (New)	Saharsa (New) -Saharsa 132kV D/c (Single Moose)	LILO of Saharsa (BSPTCL) - Banmankhi l32kV S/c line at Saharsa (New) 400/220/132kv	As reported by field office, Space is not available for new line bay at 132133 kV Saharsa (old) GSS of BSPTCL as well as corridor is not available
			LILO of Saharsa (BSPTCL) - Udakishanganj 132kV S/c line at Saharsa(New) 400/220/132kv	
		Stringing of 2nd circuit of Saharsa (Old) – Sonebarsa (formed after LILO of Madhupura - Sonebarsa 132kV S/c on D/c line at Saharsa (Old)) 132kV S/c on D/c line section	LILO of one of the circuit of Madhupura - Sonebarsa 132kV D/c line at Saharsa (New) 400/220/ 132 kV [one circuit is already being LILOed at Saharsa (BSPTCL), the other circuit is to be LILOed at Saharsa (New) 400/220/132 kv]	
4	Stringing of 2nd Circuit	Stringing of 2nd circuit of Muzaffarpur - SKMCH 132kV S/c on D/c	Reconductoring of 132kV S/c Muzaffarpur - SKMCH lines with HTLS of 240MVA (1050A ampacity)	The existing 132kV Muzaffarpur * SKMCH Tr. Line is single circuit single strung.

In the light of above, BSPTCL requested the following scopes for forthcoming meeting of the Standing Committee (SCMPSPER):-

I. Scope to be deleted:

1. Sitamarhi (New) - Sitamarhi 132kV D/c (Single Moose).
2. Sitamarhi(New) - Pupri 132kV D/c.
3. Vaishali - Hazipur 132kV Dlc.
4. Stringing of 2nd circuit of Muzaffarpur - SKMCH 132kV S/c on D/c.
5. Saharsa (New) - Saharsa 132kV D/c (Single Moose).
6. Stringing of 2nd circuit of Saharsa (Old) - Sonebarsa (formed after LILO of Madhupura - Sonebarsa 132kV S/c on D/c line at Saharsa (Old)) 132kV S/c on D/c line section.
7. Nos. of 132 kV Line bays at Saharsa (New) S/s: 2 nos.

   [2 no. for Saharsa elew) - Saharsa 132kV D/c (Single Moose) line]

II. Scope to be Added

1. 400/220/132 kv Sitamarhi (New) - Runnisaidpur 132kv D/c.
2. LILO of Benipatti - Pupri 132 kV S/c at Sitamarhi (New) 400/220/132 kV.
3. Vaishali - Chapra (New) (Amnour) 132kV D/c.
4. Reconductoring of 132kV S/c Muzaffarpur - SKMCH lines with HTLS of 240MVA (1050 A ampacity).
5. LIO of 132/33 kV Saharsa (Old) BSPTCL - Banmankhi 132kV S/c line at Saharsa (New) 400/220/132 kV .

6. LILO of 132/33 kV Saharsa (Old) BSPTCL - Udakishanganj 132kV S/c line at Saharsa (New) 400/220/132 kV.
7. LILO of one of the circuit of Madhupura - Sonebarsa 132kV D/c line at Saharsa (New) 400/220/132 kV.

   (one of the circuit is already being LILOed at Saharsa (BSPTCL), the other circuit is to be LILOed at Saharsa (New) 400/220/132 kV)
8. Nos. of 132 kV Line bays at Saharsa (New) S/s: 6 nos.

   [2 no. for LILO of each of the following 132kV lines at Saharsa (New):
   i. LILO of Saharsa (BSPTCL) - Banmankhi.
   ii. LILO of Saharsa (BSPTCL) - Udakishanganj.
   iii. LILO of one circuit of Madhupura- Sonebarsa.]

Deliberation in the meeting

BSPTCL informed that the proposal has also been sent to CEA. Members agreed and recommended for consideration in ensuing SCM.

Meeting ended with vote of thanks to the chair.

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ERPC::KOLKATA

Annexure- A

ATTENDANCE SHEET

5TH MEETING OF STANDING COMMITTEE ON TRANSMISSION PLANNING FOR STATE SECTORS (SSCM)

DATE: 03.08.2017(THURSDAY) TIME: 11:00 HRS

VENUE: ERPC CONFERENCE HALL

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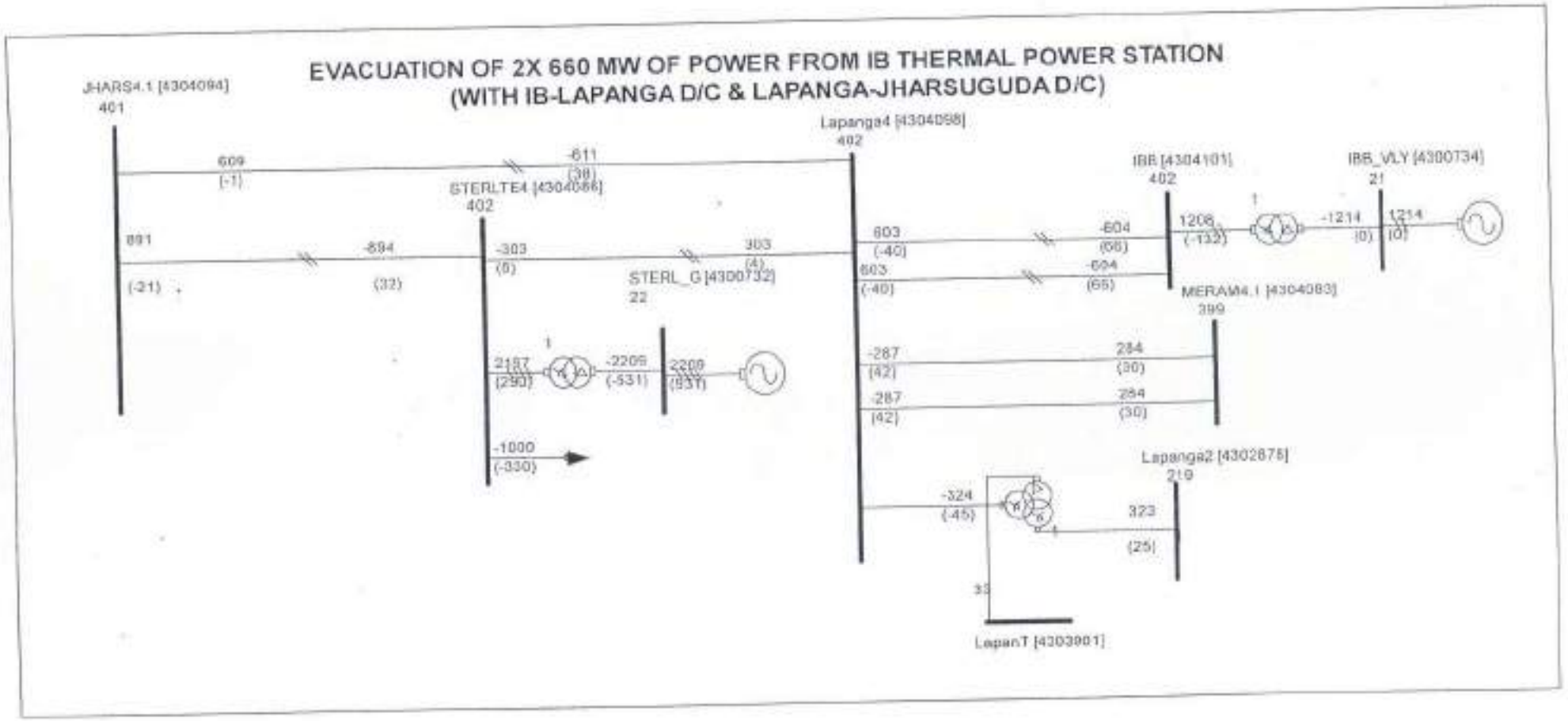
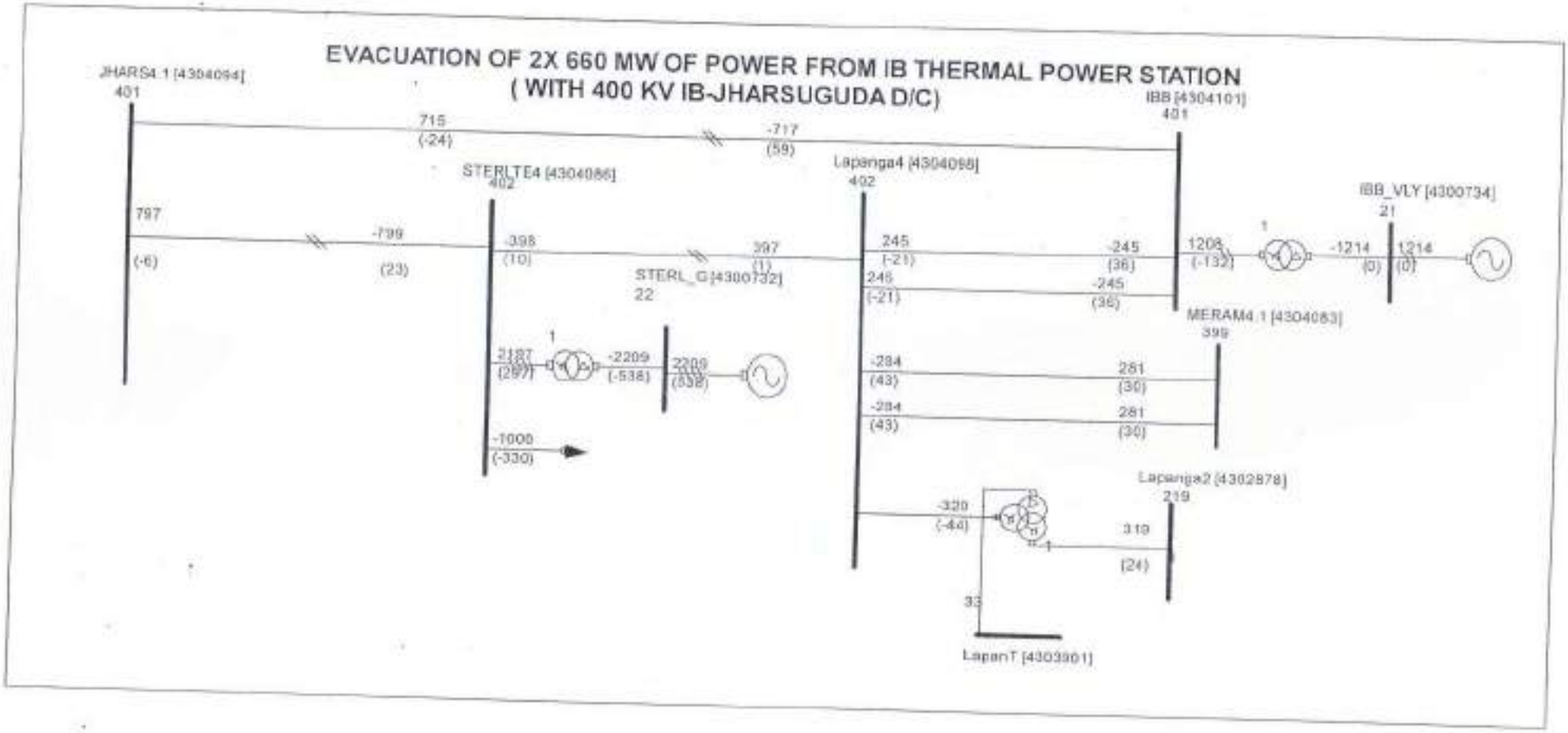
17	GRIDCO	U. N. Mishra CGM	9438907744	cgm.pp@gridco.co.in	[signature]
18	GRIDCO	U. K. Sahoo, DGM	9437185507	u.sahoo.puri@gmail.com	[signature]
19	OPTCL	N. C. Swain CGM	9438907901	cgm.cons.bbsr@optcl.co.in	[signature]
20	OPTCL	C. R. Mishra	9438907305	ele.crmishra@optcl.co.in	[signature]
21	OPTCL	A. K. Banerjee	9438907352	ele.akbanerjee@optcl.co.in	[signature]
22					
23					
24					

Annexure- C.4.1



Case II


EVACUATION OF 2X 660 MW OF POWER FROM IB THERMAL POWER STATION
(WITH 400 KV IB-JHARSUGUDA D/C)
JHARS4.1 [4304094]
401
715
(-24)
-717
(59)
IBB [4304101]
401
STERLTE4 [4304086]
402
Lapanga4 [4304098]
402
IBB_VLY [4300734]
21
797
(-6)
-799
(23)
-398
(10)
397
(1)
245
(-21)
-245
(36)
1208
(-132)
1
-1214
(0)
1214
(0)
STERL_G [4300732]
22
246
(-21)
-245
(36)
MERAM4.1 [4304083]
399
1
-2187
(297)
-2209
(-538)
2209
(538)
-284
(43)
281
(30)
-284
(43)
281
(30)
-1000
(-330)
Lapanga2 [4302878]
219
-320
(-44)
319
(24)
1
33
LapanT [4303901]

Annexure- C.4.2