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GOVERNMENT OF INDIA
MINISTRY OF POWER
EASTERN REGIONAL POWER COMMITTEE
14 Golf Club Road, Tollygunge, Kolkata 700033
www.erpc.gov.in, mserpc-power@nic.in

No. ERPC/TCC&Committee/14/2016/ H-4410-4477 Date: 3rd March 2016

To:

1. Members of Eastern Regional Power Committee.
2. Members of TCC.

Subject: Minutes of 32nd ERPC & TCC Meetings.

Sir,

The minutes of 32nd TCC & ERPC meetings held on 19th & 20th February 2016 at Ranchi are enclosed for information.

Yours faithfully,

(A.K. Bandyopadhyay)
Member Secretary

Encl. As above.

Distribution : ERPC Members

1. Chairperson, ERPC & Chairman & Managing Director, West Bengal State Electricity Distribution Company Ltd., Vidyut Bhavan, 7th Floor, Block-DJ, Sector-II, Bidhannagar,Kolkata-700091.
2. Managing Director, West Bengal State Electricity Transmission Company Ltd., Vidyut Bhavan, 8th Floor, Block-DJ, Sector-II, Bidhannagar,Kolkata-700091.
3. Chairman & Managing Director, West Bengal Power Development Corporation Ltd., Bidyut Unnayan Bhavan, 3/C, Block LA , Sector-III, Bidhannagar, Kolkata-700098.
4. Managing Director, Durgapur Projects Ltd., Administrative Building, Durgapur-713201, West Bengal.
5. Principal Chief Engineer-cum-Secretary, Energy & Power Department, Govt. of Sikkim, Kazi Road, Gangtok – 737101, Sikkim.
6. Chairman-cum-Managing Director, Odisha Power Transmission Corporation Ltd., Janpath, Bhubaneswar - 751022.
7. Chairman-cum-Managing Director, GRIDCO Ltd., Janpath, Bhubaneshwar-751022.
8. Chairman-cum-Managing Director, OHPC Ltd., Orissa State Police Housing & Welfare Corporation Bldg. Vanivihar, Janpath, Bhubaneswar- 751022.
9. Managing Director, OPGC Ltd., Zone-A, 7th Floor, Fortune Towers, Chandrasekharpur, Bhubaneswar-751023.
10. Chairman & Managing Director, Jharkhand Urja Vikas Nigam Limited , Engineering Building, HEC, Dhurwa, Ranchi-834004.
11. Managing Director, Jharkhand Urja Sancharan Nigam Limited , Engineering Building, HEC, Dhurwa, Ranchi-834004.
12. Managing Director, Jharkhand Bijli Vitaran Nigam Limited , Engineering Building, HEC, Dhurwa, Ranchi-834004.
13. Managing Director, Tenughat Vidyut Nigam Ltd., Hinoo, Doranda, Ranchi – 834002
14. Chairman & Managing Director, Bihar State Power Holding Company Ltd., Vidyut Bhavan , Bailey Road, Patna-800021.
15. Managing Director, Bihar State Power Transmission Company Limited, Vidyut Bhavan , Bailey Road, Patna-800021.
16. Managing Director, South Bihar Power Distribution Company Limited , Vidyut Bhavan , Bailey Road, Patna-800021.
17. Chairman, Damodar Valley Corporation, DVC Towers, VIP Road, Kolkata -700054.
18. Member (GO&D), Central Electricity Authority, Sewa Bhawan , R.K. Puram, New Delhi-110066.
19. Director (Commercial), NTPC Ltd., Core-7, SCOPE Complex, Lodhi Road, New Delhi -110003.
20. Director (Finance), NHPC Ltd., NHPC Office Complex, Sector-33, Faridabad, Haryana-121003.
21. Director (Operations), Power Grid Corporation of India Ltd., Saudamini, Plot No. 2, Sector-29, Gurgaon-122001.
22. General Manager, ERLDC, POSOCO, 14 Golf Club Road, Tollygunge, Kolkata – 700033.
23. Chief Executive Officer, POSOCO, National Load Dispatch Center,B-9, Qutab Institutional Area, Katwaria Sarai,New Delhi-110016.
24. Director (C&O), PTC India Ltd., 2nd floor, NBCC Tower,15 Bhikaji Cama Place, New Delhi-110066.
25. Chief Executive Officer, NTPC Vidyut Vyapar Nigam Limited, SCOPE Complex, Core-3, 7th Floor, Lodhi Road, New Delhi-110003.
26. Managing Director, Tata Power Trading Company Limited, C-43 Sector-62, 3rd Floor, Noida-201307, Uttar Pradesh.
27. Managing Director, CESC Ltd., CESC House, 1 Chowringhee Square, Kolkata-700001.
28. Chief Executive Officer, Maithon Power Ltd., MA-5, Gogna Colony, P.O.-Maithon Dam, Dist.-Dhanbad, Jharkhand-828207.
29. Managing Director, Adhunik Power & Natural Resources Ltd., Lansdowne Towers, 5th Floor, 2/1A Sarat Bose Road, Kolkata-700020.
30. Chief Operating Officer, 4x600 MW IPP, Vedanta Ltd., Bhurkahamunda, P.O.-Sripura, Jharsiuguda, Odisha-768202.
31. Director & COO, GMR Kamalanga Energy Ltd., 29 Satyanagar, Bhubaneswar-751007.
32. President & Director (Projects), Gati Infrastructure Private Limited, 268 Udyug Vihar, Pahse-IV, Gurgaon-122016, Haryana.
33. Chief Executive Officer, Jindal India Thermal Power Limited, Plot No-12, Sector-B1, Local Shopping Complex, Vasant Kunj, New Delhi-110070.

Distribution : TCC Members

1. Chairperson, TCC & Director (Operations), West Bengal State Electricity Transmission Company Ltd., Vidyut Bhavan, 8th Floor, Block-DJ, Sector-II, Bidhannagar, Kolkata-700091.
2. Director (R&T), West Bengal State Electricity Distribution Company Ltd., Vidyut Bhavan, 7th Floor, Block-DJ, Sector-II, Bidhannagar, Kolkata-700091.
3. Director (O&M), WBPDCL, Bidyut Unnayan Bhavan, 3C, Block-LA, Sector-III, Bidhannagar, Kolkata-700098.
4. Executive Director (Technical), Durgapur Projects Ltd., Administrative Building, Durgapur-713201, West Bengal.
5. Chief Engineer (HQ), Energy & Power Dept., Govt. of Sikkim, Kazi Road, Gangtok-737101.
6. Director (Engineering), Odisha Power Transmission Corporation Ltd., Janpath, Bhubaneswar - 751022.
7. Director (Commercial), GRIDCO Ltd., Janpath, Bhubaneswar-751022.
8. Director (Operation), Orissa Power Generation Corporation Ltd, Zone-A, 7th floor, Fortune Towers, Chandrasekharpur, Bhubaneswar-751023.
9. Director (Operation), Orissa Hydro Power Corporation Ltd, Orissa State Police Housing & Welfare Corporation Building, Vanivihar Chowk, Janpath, Bhubaneswar-751022.
10. Chairman & Managing Director, Jharkhand Urja Vikas Nigam Limited, Engineering Building, HEC, Dhurwa, Ranchi-834004.
11. Managing Director, Jharkhand Urja Sancharan Nigam Limited , Engineering Building, HEC, Dhurwa, Ranchi-834004.
12. Managing Director, Jharkhand Bijli Vitaran Nigam Limited , Engineering Building, HEC, Dhurwa, Ranchi-834004.
13. General Manager, Tenughat TPS, Lalpania, Dist- Bokaro, Jharkhand-829149.
14. Chairman & Managing Director, Bihar State Power Holding Company Ltd., Vidyut Bhavan , Bailey Road, Patna-800021.
15. Managing Director, Bihar State Power Transmission Company Limited, Vidyut Bhavan , Bailey Road, Patna-800021.
16. Director (Operation), South Bihar Power Distribution Company Limited , Vidyut Bhavan , Bailey Road, Patna-800021.
17. Executive Director (Commercial), Damodar Valley Corporation, DVC Tower, VIP Road, Kolkata-700054.
18. Chief Engineer (GM), CEA, Sewa Bhawan, R.K. Puram , New Delhi-110066.
19. Regional Executive Director (ER-I), NTPC Ltd., 2nd floor, Lok Nayak Jai Prakash Bhawan, Dak Bunglow Chowk, Patna-800001.
20. Regional Executive Director (ER-II), NTPC Ltd., 3rd Floor, OLIC Building, Plot No.N-17/2, Nayapalli, Bhubaneswar-751012.
21. Executive Director (O&M), NHPC Ltd., NHPC Office Complex, Sector-33, Faridabad-121003, Haryana.
22. Executive Director (ER-I), Power Grid Corporation of India Ltd, Alankar Place, Boring Road, Patna-800001.
23. Executive Director (ER-II), Power Grid Corporation of India Ltd, CF-17, Action Area-I, Newtown, Rajarhat, Near Axis Mall, Kolkata-700091.
24. General Manager, ERLDC, 14, Golf Club Road, Kolkata –700 033.
25. Chief Executive Officer, POSOCO, National Load Dispatch Center,B-9, Qutab Institutional Area, Katwaria Sarai,New Delhi-110016.
26. Executive Director (Marketing), PTC India Ltd., NBCC Tower, 15 Bhikaji Cama Place, New Delhi-110066.
27. General Manager (BD&IT), NTPC Vidyut Vyapar Nigam Limited, SCOPE Complex, Core-3, 7th Floor, Lodhi Road, New Delhi-110003.
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29. Executive Director (CS & SO), CESC Ltd, CESC House, 1 Chowringhee Square, Kolkata-700001.
30. Station Head & General Manager (O&M), Maithon Power Ltd., MA-5, Gogna Colony, P.O.-Maithon Dam, Dist.- Dhanbad, Jharkhand-828207
31. Director, Adhunik Power & Natural Resources Ltd., Lansdowne Towers, 5th Floor, 2/1A Sarat Bose Road, Kolkata-700020.
32. Sr. Vice President (Power), 4x600 MW IPP, Vedanta Ltd., Bhurkahamunda, P.O.-Sripura, Jharsiuguda, Odisha-768202.
33. Director & COO, GMR Kamalanga Energy Ltd., 29 Satyanagar, Bhubaneswar-751007.
34. Sr. General Manager (E), Chuzachen HEP, Gati Infrastructure Private Limited, Lower Bering Karabari, Pakyong, East Sikkim-737106.
35. Chief Executive Officer, Jindal India Thermal Power Limited, Plot No-12, Sector-B1, Local Shopping Complex, Vasant Kunj, New Delhi-110070.

MINUTES OF
32nd ERPC MEETING
of
EASTERN REGIONAL POWER COMMITTEE

Date: 20th February 2016

Place: Ranchi

Index for ERPC minutes

EASTERN REGIONAL POWER COMMITTEE

MINUTES OF THE 32nd ERPC MEETING

Date: 20th February 2016 **Place:** Ranchi

In Chair : Shri Rajesh Pandey, IAS, Chairman & Managing Director, WBSEDCL

Host: Jharkhand (JUVNL, JUSNL, JBVNL & TVNL)

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

Shri S.K.G. Rahate, Principal Secretary, Department of Energy, Govt. of Jharkhand and CMD, JUVNL, welcomed Shri Rajesh Pandey, Chairperson, ERPC and CMD, WBSEDCL, other distinguished members on dais, guests from Bhutan and all other participants to the 32nd ERPC meeting in Ranchi. He said Ranchi is a beautiful place surrounded by hills, waterfalls green forest and blessed with pleasant climate. He wished pleasant and comfortable stay of all the delegates. In his address he highlighted the following:

- Jharkhand is privileged to host this 32nd ERPC meeting. ERPC is a very important forum where technical and commercial issues of the States are discussed and coordinated with an integrated approach.
- By hosting this meeting the officers of Jharkhand got good exposure to the importance of this forum and got conditioned to the issues in the power sector of the region. This exposure will also ensure effective participation of Jharkhand at all levels of the forum.
- Jharkhand has embarked upon a very ambitious plan for growth in the power sector, 24x7 power, 100% electrification of villages, 100% household electrification. By the end of the financial year 2019 the total transformation capacity in Jharkhand at 132/33 kV level is envisaged to reach 7760 MVA from present level of 2290 MVA. The number of grid substations will increase to 84 from the present level of 30.
- This forum should address the regional as well issues of the States like construction 2nd circuit of 220 kV Farakka-Lalmatia line and the issues long pending with ECL. The deliberations in the meeting should endeavour to strengthen the power sector of the region.

Shri A.K. Bandyopadhyay, Member Secretary-ERPC, welcomed Shri Rajesh Pandey, Chairperon-ERPC and CMD-WBSEDCL, Shri S.K.G. Rahate, Principal Secretary, Department of Energy, Govt. of Jharkhand and CMD-JUVNL, other members on dais, TCC members, guests from Bhutan and all other participants to the 32nd ERPC meeting being held in Ranchi under aegis of the State Utilities of Jharkhand i.e. JUVNL, JUSNL, JBVNL and TVNL. He thanked the Jharkhand State Utilities for hosting the meeting in excellent manner. He said yesterday TCC had resolved number of issues. A few issues have been referred to ERPC for further deliberation and decision. Few matters on contribution, nominations, membership etc. have been directly placed before the ERPC for consideration. He was pleased to inform that ERPC Annual Report would be formally inaugurated today. In conclusion, he once again thanked Jharkhand State Utilities and wished the meeting a grand success.

Shri Rajesh Pandey, Chairperson-ERPC and CMD-WBSEDCL, welcomed Shri S.K.G. Rahate, Principal Secretary, Department of Energy, Govt. of Jharkhand and CMD-JUVNL, other members on dais, guests from Bhutan and all other participants to the 32nd ERPC meeting. He thanked Department of Energy and the Utilities Jharkhand for excellent arrangement for the meeting. He said yesterday TCC had deliberated on number of issues at length. Some of the issues were resolved by TCC with the active participation of constituents. Some issues have been referred to ERPC for further deliberation and decision. He brought the following issues to the the notice of the members:

- Lack of participation of constituent members in various sub-committee meetings
- Priority based augmentation/commissioning Interconnecting transformers / bus reactors in some sub-stations.
- Construction of 400 kV Sterlite-Jharsuguda double circuit line
- Signing of Transmission Service Agreement
- Construction of 132 kV Deoghar-Banka double circuit line for reliable power supply to Railways
- Bus splitting at 132 kV Rangpo Sub-station for unrestricted evacuation of power from Chzachen and Jorethang HEPs
- Evacuation plan for Talcher TPS Stage-III 660 MW unit
- Scheduling of power of Maithon Power Limited at par with other Inter State Generating Stations
- CERC order dated 29th January 2016 on availability of telemetry data and its compliance

He informed that ERPC Secretariat has undertaken number of capacity building programme. He said many new mandates are coming under regulatory regime. Govt. of India policy documents mandate Discoms to procure 8% of his total energy requirement from renewable sources by the year 2022, 24x7 power, universal electrification etc. He advised the Secretariat to organise deliberations on the emerging issues to further educate the members where are we heading to and how we can address the issues and challenges together. In conclusion, he once again thanked Govt. of Jharkhand and its utilities for hosting the meeting in excellent manner and wished that the deliberations in meeting would be fruitful and the issues would be resolved with the support of everybody.

Item No.A1: Confirmation of the Minutes of 31st ERPC meeting held on 14.11.2015 in Bhubaneswar

The minutes of the 31st ERPC meeting held on 14th November 2015 were circulated vide letter no.ERPC/TCC& Committee/14/2016/H3295-H3327 dated 6th January 2016.

No comments have been received from constituent members on the minutes of the meeting.

Members may confirm the minutes of 31st ERPC meeting.

Deliberation in the ERPC meeting

ERPC confirmed the minutes of 31st ERPC meeting.

PART B: ISSUES REFERRED TO ERPC BY TCC IN ITS 32nd MEETING HELD YESTERDAY

ITEM NO. B1:	**OPGW installation by PGCIL in DVC network**

DVC vide mail dated 18.01.2016 intimated that PGCIL has recently ordered 901KM of OPGW installation work for DVC network, out of which 137KM of OPGW is required to be included as additional for 3/4 nos line sections. It is learnt that such lines were initially included in the list forwarded to M/s PGCIL in 2012, but somehow M/s PGCIL has missed to include. The matter has already been taken up with M/s PGCIL by CE (Communication), DVC and M/s PGCIL has opined that they may include those lines provided the same is vetted by ERPC forum.

117th OCC agreed for the lines as given by DVC for inclusion of additional OPGW of 137 km. The details of lines etc are given at Annexure-B4.

Further, OCC referred the issue to 32nd TCC & ERPC for their concurrence.

TCC may concur.

Deliberation in the TCC meeting

TCC concurred and referred to ERPC for further approval.

ERPC may concur.

Deliberation in the ERPC meeting

ERPC approved.

ITEM NO. B2:	**Status of Bus Splitting schemes in Eastern Region**

A. Bus Splitting of Kahalgaon STPS Stage I&II, NTPC

In 11th SCM held on 20.09.2010 the bus-splitting arrangement with tie line breaker for the following 400kV substations in Eastern Region was agreed to contain the short circuit level below 40kA.

- Kahalgaon

In 24th ERPC meeting held on 27.04.2013, ERPC advised NTPC to go ahead with the bus-splitting scheme as it is a technical requirement for safe, secure operation of the grid.

In 31st TCC, NTPC informed that they are going ahead with the implementation of Bus Splitting of Kahalgaon STPS Stage I&II and the implementation is expected to be completed by December, 2018.

NTPC has given the schedule as follows:

- 400/132kV Switchyard package - bid opened. Award by another 2 months and completion time is 15 months for line bays and rest will be completed within 24 months.
- Site levelling – Site package awarded under execution.
- Transformer package – tendering under process and will be awarded in 4 months.

In view of increasing fault level at KHSTPP TCC advised NTPC to expedite the bus splitting.

NTPC may update.

Deliberation in the TCC meeting

NTPC informed that Kahalgaon Bus Splitting scheme will be completed by end of 2018.

Powergrid informed that the COD of 400kV Biharshariff-Kahalgaon III & IV (presently known as Banka- Kahalgaon I & II) line will be done within a month. Bay work for this at Kahalgaon under bus splitting scheme is not yet ready and expected to be completed by mid 2017.

Post COD, constituents has to bear the cost of the line.

Constituents viewed that since the delay pertains to NTPC, till completion of bay work at Kahalgaon under bus splitting scheme post COD cost should be levied upon NTPC.

TCC felt that NTPC did not execute the bus splitting scheme expeditiously even when the scheme was agreed upon in 11th SCM on 29.09.2010 with subsequent approval in TCC and ERPC well with in 2012. NTPC however pointed out that the delay is mainly due to finalisation of funding mechanism.

But on deliberation TCC pointed out the following decision of 24th ERPC Meeting:

Quote

"……..**ERPC advised NTPC to go ahead with the scheme. It was decided that initially constituents of ER will share their portion of cost as per tariff approved by CERC for this purpose, and subsequently if there is release of PSDF by CERC the same will be reimbursed to constituents accordingly.**"

Unquote

However, in view of increasing fault level at KHSTPP TCC again advised NTPC to expedite the bus splitting scheme.

Moreover, TCC opined that the projects constructed by different utilities needs to be monitored and coordinated properly to avoid unnecessary burden on constituents. It was informed that project monitoring group of CEA takes care of this.

ERLDC viewed that the bus splitting scheme arrangement and the line connectivity needs a fresh review on which TCC advised to do the same in lower forums of ERPC.

ERPC may guide.

Deliberation in the ERPC meeting

NTPC informed that Kahalgaon Bus Splitting scheme was got delayed due to non-clearance of funding mechanism. Now the funding mechanism is clear, so the work will be completed within the schedule.

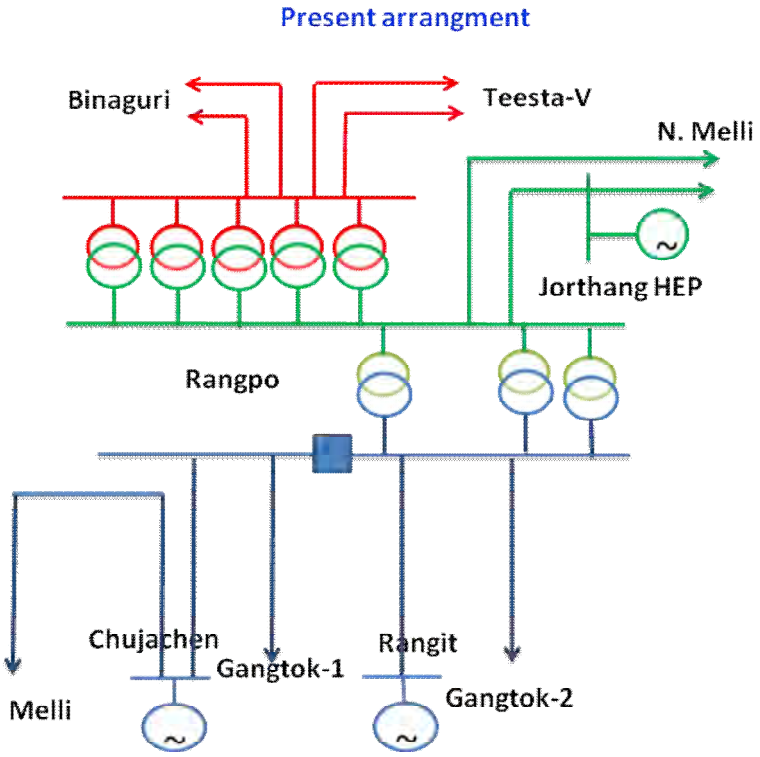
Further, NTPC clarified that the bid has already been opened for bays works and all efforts will be made to complete the respective bay work at the earliest.

On query, Powergrid informed that the LILO length is around 15 km and the additional cost for this is 25-26 Crores approximately.

In ERPC meeting concern of constituents was well considered but ERPC expressed that under present regulation CERC determined tariff will be shared by all.

ITEM NO. B3:	**Bus splitting of 132kV Rangpo for unrestricted evacuation of Chuzachen and Jorethang HEPs**

A part of Teesta-V and Jorethang generation get injected towards 132kV side of Rangpo under certain conditions such as non-availability of one circuit of 400kV Rangpo-Binaguri line. This causes congestion in evacuation of Rangit and Chuzachen generation. The present arrangement is as given below:



To relieve the congestion at Rangpo and to have optimum utilisation of the hydro generation potential a bus split scheme at 132 KV Rangpo was approved in OCC with subsequent ratification in 31st TCC/ERPC.

The matter was followed up in subsequent OCC meetings but till date concretised feasible proposal by engineering division of Powergrid is not yet placed.

OCC advised

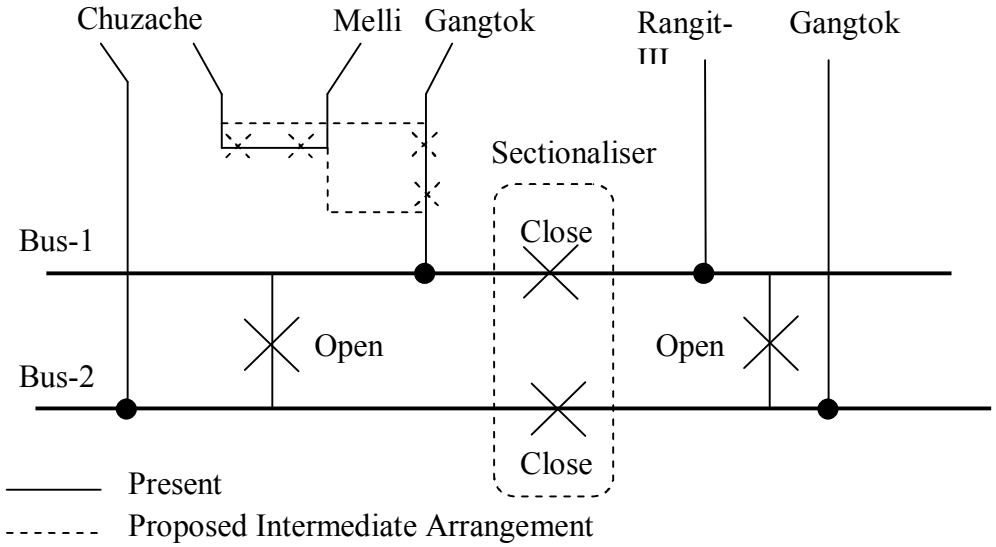
i) Powergrid to submit the study report along with the feasible solution at least prior to 32nd ERPC meeting so that the same may be placed before the Board.

ii) Cost of bus splitting is to be borne by Chuzachen and Jorthang HEP as they are being benefited with this SPS

Powergrid/CTU may update. TCC may decide

Deliberation in the TCC meeting

CTU explained the present and final arrangement of 132kV bus scheme of Rangpo S/s. During analysis it was observed that to avoid the critical loading of Rangpo - Melli line, the Rangit-III & Melli feeders need to be isolated from Chujachen & Gangtok feeders at 132kV bus of Rangpo. But it was explained that at present it is difficult to be implemented and the same would be taken care in the final arrangement with the commissioning of line bays for Chuzachen-Rangpo line. However, the same effect could be achieved with the opening of the bus coupler as shown below :



Powergrid informed that the Proposed Intermediate Arrangement will be implemented by March, 2016 and the cost will be borne by Chuzachen and Jhordang HEP.

Sikkim informed that commercially they are losing huge amount during peak time and requested Powergrid to complete the work on urgent basis.

TCC advised Powergrid to complete the work by 26th February, 2016.

Powergrid agreed to complete within the stipulated date, if Sikkim could supply the required materials immediately.

Sikkim agreed.

On enquiry, Sikkim informed that 132kV Melli-Sagbari line will be put in service within a week after replacing the CB.

ERPC may guide.

Deliberation in the ERPC meeting

ERPC agreed to the proposal and the cost will be borne by Chuzachen and Jhordang HEP.

Powergrid informed that they need at least three clear days to complete the job and assured to complete the work before next OCC (scheduled to be held on 26.02.2016) provided Sikkim arranges the required materials by 22.02.2016. Powergrid handed over the list of materials to Sikkim.

ERPC advised Sikkim to make available the materials to Powergrid by 22.02.2016.

Further, the matter was referred to OCC for monitoring the implementation.

ITEM NO. B4:	**Installation of polymer insulators on New Transmission lines**

ERPC in its 30th Meeting agreed to the proposal of Powergrid for installation of polymer insulators in new transmission lines and replacement of porcelain insulators with polymer insulators in existing transmission lines at no extra financial burden.

Powergrid informed that they require shutdown of transmission line for replacement of porcelain insulators with polymer insulators and requested to consider the replacement period as deemed availability (not attributable to Powergrid).

ERLDC agreed to accommodate the shutdown if there is no network constraint and advised Powergrid to place the request well before.

ERPC in principle agreed to consider the replacement period as per the provisions of existing regulations.

OCC advised Powergrid to submit the detail schedule inclusive of time required for replacement etc. so that the same may be put up for further discussion and approval.

Subsequently, in OCC meetings, Powergrid- ER-I, ER-II and PG-Odisha submitted their tentative schedule of replacement which is given at Annexure-B9.

Further, OCC decided to refer the commercial issues of line shutdowns for insulator replacements to next Commercial Committee meeting.

In 31st CCM, after detailed deliberation, members agreed to consider outage time for replacement of porcelain insulator with polymer insulator as Deemed Availability. CCM, however, decided that outage time as cleared and certified by OCC for this replacement work only will be considered for Deemed Availability and for which Powergrid is to place the shutdown request for this scheme in each OCC. Powergrid agreed.

TCC may guide.

Deliberation in the TCC meeting

TCC agreed to the proposal and advised Powergrid to place the shutdown proposals for insulator replacement in monthly OCC.

ERPC may approve.

Deliberation in the ERPC meeting

ERPC agreed to the proposal and it was agreed that the deemed availability will be allowed only for the period of insulator replacement work which will be decided & cleared in OCC meeting.

Powergrid shall submit the shutdown request for insulator replacement in OCC.

ITEM NO. B5:	Standing Committee on Transmission Planning for State Sectors

A. Draft agenda items of the upcoming Standing Committee meeting on transmission planning for ER for SSCM meeting

In 31st ERPC meeting ERPC requested CTU to share the SCM agenda before forwarding the same to CEA so that these agenda items can be deliberated upon in detail in State Sector SCM meeting and the constituent members could better prepare themselves for fruitful decision making at SCM meeting.

CTU assured to circulate the agenda items of Standing Committee Meeting to the concerned constituent members before forwarding the same to CEA"

But in spite of assurance from highest authorities and repeated persuasion, neither PSP&A-II Division, CEA nor CTU has yet forwarded the draft agenda items of the upcoming meeting of Standing Committee (SCM) on Power System planning for ER.

SSCM in its 3rd meeting decided that on receipt of agenda items of SCM a SSCM meeting needs to be called on short notice for threadbare deliberation with all the state constituents.

CTU may share the status of agenda being placed in next SCM meeting of ER & members may discuss and advise further course of action.

Deliberation in the TCC meeting

CTU informed that agenda is yet to be finalized by CEA and next SCM meeting may be held in the month of March, 2016.

TCC advised CEA/CTU to ensure the circulation of the agenda at least 15 days before the meeting.

It was also advised to convene a special SSCM meeting on circulation of SCM agenda.

ERPC may discuss.

Deliberation in the ERPC meeting

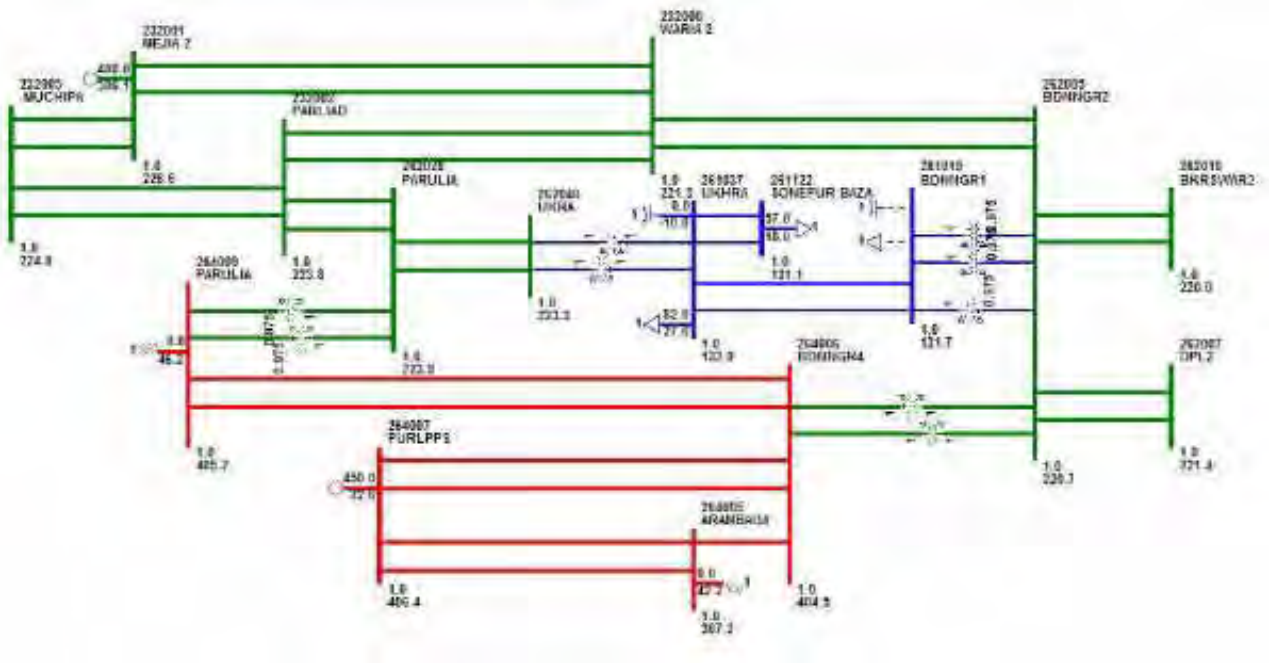
ERPC requested CEA and CTU to circulate the agenda of SCM well before the meeting so that the same can be deliberated in SSCM.

CEA representatives assured to take up the issue with PSP & A Division, CEA.

ITEM NO. B6:	220kV connectivity of Ukhra (WBSETCL) substation from 400kV Parulia (PG) S/s

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.

After conversion of the 220kV connectivity in between Parulia (PG) and Durgapur to 400kV level, 220kV bays have become idle.



In 2nd SSCM, during presentation of study results by ERLDC/ERPC, 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.

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

In 3rd SSCM, ERLDC and ERPC presented the load flow study. It was observed that with 220kV Ukhra-Parulia D/C line the loads at Ukhra and Bidhanngar are directly getting fed from 400kV Parulia(PG) and the 220kV lines Parulia(PG)-Parulia(DVC), Parulia(DVC)-Waria(DVC) and Waria(DVC)-Bidhannagar(WB) including 220/132kV ATRs at Bidhannagar are getting relief. The 315 MVA ICTs at Parulia(PG) and 400kV Parulia(PG)-Bidhannagar(WB) D/C lines are however getting loaded.

WBSETCL informed that the route for 220 kV Ukhra-Parulia (PG) was surveyed and under finalization subject to the clearance from ECL as the line passes through ECL coalmines area.

Further, WBSETCL informed that the 132 kV Bidhanagar-Ukhra line will be upgraded with HTLS conductor to meet the contingency of 220 kV Ukhra-Parulia line.

The proposal is accepted subject to the fulfillment of the following up-gradation/augmentation:

- 400 kV Parulia (PG)-Bidhannagar D/C line is required to be upgraded with HTLS conductor which is under consideration by WBSETCL.
- 400/220 kV ICTs at Parulia(PG) & Bidhannagar (WBSETCL) needs to be augmented. Parulia (PG) ICTs were under augmentation by PGCIL, WBSETCL to consider the augmentation of Bidhannagar ICTs.

- 400/220 kV ICTs at Maithon also needs to be augmented. Augmentation of these ICTs are in progress and expected to complete by June, 2016.

Committee advised to place the issue before 32nd TCC & ERPC meetings with the aforementioned recommendation.

TCC may discuss and opine.

Deliberation in the TCC meeting

WBSETCL informed that order has been placed for up gradation with HTLS conductor for 400 kV Parulia (PG)-Bidhannagar D/C. Also, the work of upgradation of 132 kV Bidhanagar-Ukhra D/C line with HTLS conductor is under implementation.

WBSETCL further informed that the line survey for construction of 220 kV Ukhra-Parulia (PG) line completed and most of the portion is passing through ECL coal mines area and the consent from ECL is required.

TCC approved the scheme subject to ECL concurrence for ROW.

ERPC may concur.

Deliberation in the ERPC meeting

ERPC agreed to the scheme subject to ECL concurrence for ROW.

ITEM NO. B7:	**Signing of Transmission Service Agreement: Independent Transmission Project (ITP) for "Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha"**

In 16th SCM for Transmission Planning of Eastern Region held on 02.05.2014 at NRPC, New Delhi the following Common Transmission System for Phase-II Generation Projects in Odisha along with immediate evacuation system which are to be implemented through Tariff based Competitive Bidding Route were approved.

S.N.	Transmission Scheme	Estimated Line Length (in km)
	Common transmission system	
i)	Jharsuguda (Sundargarh) – Raipur Pool 765 kV D/c line.	350 km
ii)	LILO of both circuits of Rourkela - Raigarh 400 kV D/c (2nd line) at Jharsuguda (Sundargarh)	2x400kV D/c line: each about 30 km
	Immediate Evacuation System for OPGC (1320 MW) Project	
i)	OPGC (IB TPS) – Jharsuguda (Sundargarh) 400kV D/c line with Triple Snowbird Conductor alongwith 2 no. 400kV line bays at Jharsuguda (Sundergarh) substation. Bays at OPGC end of the line would be under the scope of the generation developer.	50 km

(The scheme was approved in the meeting with constituents of Eastern Region regarding connectivity and LTA on 05-01-2013 and 24th TCC/ERPC meeting on 26-27 April, 2013)

The decisions of 16th SCM were ratified in 27th & 28th ERPC Meeting held on 31.05.2014 & 13.09.2014 respectively.

Subsequently Letter of Intent (LoI) was issued to the successful bidder M/s Sterlite Grid 3 Ltd on January 06, 2015 and the copy of the duly executed TSA is to be made available to the Successful Bidder before further proceedings on this project.

But it was informed that DVC, Sikkim, Jharkhand, SBPDCL-Bihar, NBPDCL-Bihar, WBSEDCL have not yet signed the TSA and a sanctioned project is getting delayed.

TCC members discuss and facilitate signing of requisite TSA.

Deliberation in the TCC meeting

Members questioned the reasoning behind signing of TSA when the beneficiaries cannot be definitely identified a priori. CTU informed that the transmission charges for the assets being commissioned on TBCB route would be recovered through the PoC mechanism. TCC members stated that in that case all DICs in the country should sign the TSA.

From the Secretariat side it was clarified that as the PoC mechanism had become operational in 2011 only at the time of finalization of Standard Bid Documents (SBD) the change in method of recovery of transmission charges could not be foreseen.

CTU clarified that as it was difficult to get all beneficiaries of the country to sign each and every TSA, it was decided that the beneficiaries of respective region could sign the TSA to fulfil the requirement of SBD. CTU also clarified that just as ER beneficiaries were required to sign the TSA for schemes identified in Eastern Region, beneficiaries in other regions were also signing TSA for schemes in their respective regions.

MS, ERPC emphasised that as this was a notified scheme of Ministry of Power and the schemes had been agreed to in past ERPC meetings also it may not be prudent to delay signing of the TSA at this juncture and offered to host a meeting for joint signing of the TSA at ERPC, Kolkata.

Members agreed for the joint meeting but requested secretariat to get clarification on TSA either from PFC and or from Competent Authority.

Issue referred to ERPC for further guidance.

Deliberation in the ERPC meeting

It was informed that a meeting was held on 24th June, 2013, chaired by Member (PS), CEA regarding implementation of Inter State Transmission Projects though tariff based competitive bidding route wherein the BPCs were advised to go ahead with the signing of TSA by the regional constituents in which the scheme is approved. It was further informed that in the said meeting, it was also decided that the transmission charges will be pooled on national basis and recovered through POC mechanism prescribed by CERC. The minutes of the meeting is enclosed at ***Annexure-B7.***

After detailed deliberation, members agreed for the joint meeting at ERPC, Kolkata on 25.02.2016 for clarification and signing of TSA with the successful bidder M/s Sterlite Grid 3 Ltd /PFC.

ITEM NO. B8:	Constitution of the Bid Evaluation Committees (BEC's) for the new Transmission schemes

In the 35th meeting of the Empowered Committee on Transmission (EC) held on 14th September, 2015, the following transmission schemes have been identified for implementation through tariff based competitive bidding (TBCB).

i. **Immediate evacuation for North Karanpura (3x660MW) generation project of NTPC & Creation of 400/220 kV sub-station at Dhanbad - Proposal of JUSNL (ERSS-XIX)**

ii. **765 kV System Strengthening Scheme in Eastern Region (ERSS-XVIII)**

Subsequently, MoP has notified the above schemes vide Gazette Notification dated 17.11.2015 and appointed REC Transmission Projects Company Limited as the Bid Process Coordinator (BPC) for scheme at Sl. No. (i) and PFC Consulting Ltd as the BPC for scheme at Sl. No. (ii), respectively.

As per the tariff based Competitive-Bidding Guidelines for Transmission Service notified by Govt. of India, nomination of at least two officers at Director level are sought for constituting the scheme specific Bid Evaluation Committee (BEC) for the above schemes. After receipt of nominations, BECs would be constituted with the approval of the Empowered Committee.

TCC may nominate officers for the BEC.

Deliberation in the TCC meeting

TCC decided that WBSETCL, JUSNL and DVC may nominate the officers for the BEC as above.

WBSETCL has nominated Director (Projects) as BEC member.

JUSNL and DVC agreed to communicate within a week.

ERPC may approve.

Deliberation in the ERPC meeting

ERPC approved one nomination each form WBSETCL, JUSNL and DVC for the above BECs.

Further, ERPC advised JUSNL and DVC to communicate their nominees at the earliest.

ITEM NO. B9:	Status of PLCC system installed in Eastern Region

In 30th TCC/ERPC, Powergrid agreed to restore the PLCC system at both ends (its own end as well as the constituent end) of a line wherein the other ends are not operational for some reasons or others as one time job.

For the same Powergrid has already submitted the constituent wise cost estimate which was circulated to all concerned in 115th OCC with a request to forward comments/suggestion/go-ahead signal.

In 115th OCC, all the constituents were requested to go through the details of their respective control area and give their comments/suggestion, if any, by next OCC.

In 117th OCC, OPTCL submitted that OPGW communication installation is under way and they are planning to implement carrier protection using OPGW. They will convene a joint meeting with Powergrid for finalization of scheme.

WBSETCL informed that they will have a separate meeting with the competent authority on the issue.

JUSNL informed that they have forwarded the cost estimate to their highest authority for approval.

No comments was received from BSPTCL till date.

Cost estimates are again enclosed in Annexure B17.

OPTCL, WBSETCL, JUSNL and BSPTCL may finalise.

Deliberation in the TCC meeting

OPTCL and BSPTCL informed that they are planning to implement carrier protection using OPGW.

WBSETCL informed that they will rectify the PLCC system on their own.

JUSNL informed that the amount has been sanctioned and the letter has been issued to Powergrid for rectification of PLCC system.

ERPC may concur.

Deliberation in the ERPC meeting

ERPC concurred that Powergrid will rectify the PLCC system for JUSNL only in this scheme.

ITEM NO. B10:	**OPGW on 400kV Ranchi-Maithon(RB) line**

Under ERSS-XIX transmission system new 400/220kV Sub-station at Dhanbad is proposed to be created through TBCB route with LILO of existing 400kV Ranchi-Maithon (RB) Transmission Line. OPGW is being proposed for communication connectivity in LILO portion alongwith construction of transmission line portion. Similarly, PMU, communication equipments and associated equipments for Dhanbad Substation are being covered in Substation Portion. The existing 400kV Ranchi-Maithon (RB) Transmission Line does not have OPGW presently and same is required to provide connectivity with OPGW in Dhanbad.

The issue was discussed in the 6th PRM (ULDC) meeting dated 29th December 2015 and it was agreed that OPGW would be laid by POWERGRID on 400kV Ranchi-Maithon (RB) (188Kms) line and recommended for ERPC approval.

Further in 31st ERPC meeting, requirement of OPGW in Barh-Gorakhpur (354Kms) and Rajarhat-Farakka (345Km) for connectivity of Rajarhat and Motihari substation respectively was approved.

The estimated cost of the implementation of the OPGW scheme of the above lines (887Kms) including communication equipments would be approx. Rs.23 crores. The cost shall be recovered as a tariff to be determined by CERC and shall become part of the commercial agreement signed by the constituents of Eastern Region in ULDC scheme.

TCC may approve.

Deliberation in the TCC meeting

Powergrid informed that the LILO of 400 kV Ranchi-Maithon (RB) line at Dhanbad S/s under TBCB route will be coming with OPGW but the existing line is not having OPGW. So, for connectivity of Dhanbad S/s this line must have OPGW.

TCC approved and referred to ERPC for further concurrence.

ERPC may concur.

Deliberation in the ERPC meeting

ERPC approved for additional OPGW installation of 400kV Ranchi-Maithon (RB) line (188Kms) along with the OPGW of Barh-Gorakhpur (354Kms) and Rajarhat-Farakka (345Km) as approved in 31st ERPC.

ITEM NO. B11:	**VDU in place of PDC for BSPTCL & JUSNL: Requirements under URTDSM Project**

Under URTDSM project, full-fledged PDC has been envisaged at SLDC's of Bihar and Jharkhand.'01' (One) PMU is to be installed at Muzaffarpur TPS in Bihar and '02' (Two) PMUs at Tenughat & Patratu in Jharkhand. The space constraints issue at BSPTCL SLDC and JUSNL was deliberated in the 5th PRM meeting of ERPC on 24.09.2015. It was agreed that PMUs of these power plants may be directly connected with ERLDC and Bihar and Jharkhand PDC may be deleted from the scope of URTDSM Project.

TCC may approve.

Deliberation in the TCC meeting

BSPTCL and JUSNL agreed for remote VDU in place of PDC under URTDSM project.

TCC approved and referred to ERPC for further concurrence.

ERPC may concur.

Deliberation in the ERPC meeting

ERPC approved for remote VDU in place of PDU at Bihar and Jharkhand.

ITEM NO. B12:	O&M of 220 kV Farakka –Lalmatia Transmission System (FLTS) -- Writ Petition (W.P.NO.17044 (W) of 2015) before Hon'ble High Court at Calcutta

220KV Farakka-Lalmatia transmission system caters an important role in the national grid. With an ISGS like FSTPS at one end, this line provides a very reliable source of supply to Lalmatia, Sahebganj, Dumka, Pakur, Deoghar etc. loads of Jharkhand. The line has a crucial role in successful islanding of FSTPS with matching load of Jharkhand, as per the defence plan formulated, in the event of severe grid contingency. This islanding scheme is designed on recommendation of the enquiry committee formed after grid disturbance of 2012. Moreover if there is a total blackout of KhSTPS or FSTPS, under exceptional conditions, this line would play a vital role in extending start-up power from one station to the other.

The background details on O&M of 220 kV Farakka –Lalmatia Transmission System (FLTS) are placed below:

- Rajmahal area of ECL receives power supply from Farakka Super Thermal Power Station of NTPC through 220 kV Farakka –Lalmatia Transmission System (FLTS) at its Dhankunda sub-station, Lalmatia, JUSNL.
- 220 kV Farakka –Lalmatia transmission system (FLTS) was constructed by NTPC for which the fund was provided by ECL, the owner of the line.
- Since inception NTPC has undertaken the operation & maintenance (O&M) of 220kV Farakka –Lalmatia transmission system along with its associated switchyard equipments and ECL is bearing the expenditure for the same.
- A major portion of the line was located earlier in undivided Bihar and on formation of Jharkhand the same now falls within the geographical boundary of Jharkhand.
- At present through Farakka – Lalmatia line, Jharkhand Urja Sancharan Nigam Limited (JUSNL) is not only giving power to Rajmahal area of ECL but also to district of Godda, Dumka.
- **NTPC had undertaken the construction of FLTS as per decision in a meeting with NTPC, CEA, Department of Coal, Department of Power held on 30-03-1985** & chaired by the then Hon'ble Union Minister (Coal, Steel & Mines), Shri Vesant Sathe. In the meeting ECL agreed to fund for the same with express stipulation that NTPC would supply power to ECL directly at concessional tariff.
- Subsequently, on interpretation of Indian Electricity Act, 1910 and Electricity Supply Act, 1948, it appeared that ECL being a consumer and not a Licensee could not own and operate & maintain FTLS as well as they could not get concessional tariff from NTPC.
- On power supply through FLTS in **a joint meeting** between Eastern Coalfields Limited (ECL), Bihar State Electricity Board (BSEB) & NTPC **held on 31.08.1990---**
  - i) BSEB desired that FLTS should be handed over to BSEB after proper documentation etc. and mentioned that they would take up the issue of O&M of this line only after FLTS is handed over to them.
  - ii) NTPC Clarified that since the line was made on behalf of ECL, they would hand over the line to ECL/BSEB on finalization of the issue between ECL & BSEB.

But the same was never materialised.

- Thereafter in view of exigencies, NTPC on request from ECL agreed to operate and maintain the FLTS till takeover of the same by the then BESB & power supply to ECL, Lalmatia through FLTS was commenced from 14.06.1990.
- NTPC & ECL continued the arrangement till recently on chargeable basis.
- **In 101st OCC meeting of ERPC held on 26.09.14**, NTPC expressed its inability to continue with the practice in vogue citing their incompetence in the transmission field.
- NTPC further informed that request was made to JSEB / PGCIL for operation & maintenance of 220kV Farakka –Lalmatia transmission system along with its associated switchyard equipments. NTPC ensured facilitating transfer of operation & maintenance contract of 220kV Farakka –Lalmatia transmission system. It was also informed that in a meeting between ECL- NTPC held on 16.06.14 M/S ECL has also consented for O & M agreement with JSEB / PGCIL.
- Further in 101st OCC, Jharkhand State Electricity Board (JSEB) also confirmed that a meeting was held with ECL on 26th & 27th Aug, 2014 wherein ECL in principle agreed to hand over O&M of the line to JSEB subject to approval of ECL board.
- **In 105th OCC held on 22.01.15**, NTPC informed that ECL management intends to hand over the line to Powergrid for O&M and it will sit with Powergrid to decide.
- **In 29th TCC/ERPC meetings held on 13th /14th February, 2015**, Powergrid expressed their unwillingness to take over the O&M of the line. JUSNL on the other hand placed their readiness to take the O&M part of the line and thereby TCC advised ECL to handover the O&M part of the line to JUSNL on chargeable basis keeping the ownership with them.
- 29th TCC/ERPC also advised both ECL and JUSNL to discuss the commercial and technical issues in lower forums of ERPC. TCC also advised secretariat to convene a special meeting with all concerned for final settlement of the issue.
- Accordingly, **a special meeting was convened on 11.03.2015** to settle the issue, wherein--

  i) ECL was requested to continue the maintenance contract with JUSNL with the payment of same amount as is being paid to NTPC so that emergency supply to coal mines is kept uninterrupted. JUSNL informed their willingness for taking over the maintenance of the 220 kV Farakka-Lalmatia Line at the same payment/rates as was being paid to NTPC by ECL;

  ii) But ECL raised certain commercial issues on which deliberations were not merged and forum decided for further deliberation with higher officials of JBVNL, JUSNL, ECL and NTPC.

- **A high level special meeting was convened on 24.03.2015 at Ranchi** under the Chairmanship of Shri S.K.G Rahate, IAS, Principal Energy Secretary, Govt. of Jharkhand and CMD, JUVNL. In the meeting after threadbare discussions in line with provisions of existing electricity act & regulations it was decided :

QUOTE ……

" i) ECL is to hand over the whole asset of Farakka-Lalmatia Transmission System (FLTS) to JUSNL within three months.

While handing over of the FLTS asset, it was decided that joint supervision is to be made by JUSNL, NTPC, ECL and other concerned parties.

Handing over of the asset will be in line with existing provisions of JSERC regulations/established practice and the asset should be in healthy and fully operational condition.

ii) On completion of taking over the asset, JUSNL is to file a tariff petition before JSERC.

iii) Afterwards, till tariff is declared by JSERC, ECL will be charged by JBVNL at its existing tariff of JBVNL and JBVNL will be charged by JUSNL at its existing tariff.

iv) On declaration of tariff by JSERC, ECL will be charged by JBVNL at approved tariff of JBVNL for their consumption of power as consumer of Jharkhand and JBVNL will be charged by JUSNL at their approved tariff.

v) Till handing over of asset by ECL to JUSNL, ECL is to carry out the O&M through NTPC as per present practice.

It was further decided that:

In case of non-compliance of decision (i) above, JUSNL should file a petition before JSERC seeking application of penal provisions of Electricity Act, 2003 on ECL.**"**

…… UNQUOTE

- The issue was again placed in the **30th TCC/ERPC meetings held on 19th /20th June, 2015** in which --

  i) Keeping in view of importance of this line and for the benefit of JUSNL, TCC advised JUSNL to place official request to ECL from their highest authority and arrange for joint survey at the earliest.

  ii) TCC also advised JUSNL to file a petition before JSERC as per the provisions, if ECL does not turn up for handing over the line.

  iii) Further, TCC advised ERPC Secretariat to take up the issue with CEA and CERC, if JUSNL fails to take any appropriate action by 31st July, 2015.

  iv) ERPC advised JUSNL to place a roadmap to ensure proper O&M of Farakka- Lalmatia Transmission system in line with the decision taken in the special meeting of 24.03.2015 within a week to ERPC Secretariat.

  v) ERPC also advised NTPC to continue the O & M of 220 kV Farakka –Lalmatia transmission system till the line is handed over to JUSNL.

- **In 110th OCC held on 29.06.2015**, JUSNL informed that ECL is not cooperating for joint survey of the line and therefore legal documents related to this line are being explored to file petition before JSERC.

- **Eastern Coalfields Limited (ECL) filed a Writ Petition (W.P.NO.17044 (W) of 2015)** under Article 226 of Constitution of India, inter alia, "**Challenging the purported resolution adopted in the meeting held on 24th March, 2015 of the Eastern Regional Power Committee**" before Hon'ble High Court at Calcutta, which was communicated by Sri Partha Basu, Solicitor & Advocate acting on behalf of Eastern Coalfields Limited vide his letter No.P/0030/16/H/NR dated 20.7.2015.

- ERPC vide letter dated 06.08.2015 communicated the issue to CEA and CERC for their guidance on the issue.
- For safe & secure operation of grid ERPC also requested NTPC to continue with the existing practice of O&M till final decision is taken by JSERC or other competent authorities on handing over of FLTS.
- **In 112th OCC held on 21.08.2015**, NTPC agreed to carry out the O&M of the above line till settlement of the issue.
- **No summon/court notice was received by ERPC secretariat.**
- **However as informed by** Sri Partha Basu, Solicitor & Advocate acting on behalf of Eastern Coalfields Limited **the petition was heard on 2nd February, 2016** before the Hon'ble Justice Dr. Sambuddha Chakrabarti (copy of the communication by ECL advocate is enclosed at Annexure- B25) in which ---
  - i) The Hon'ble Court was pleased to grant liberty to add Jharkhand Urja Nigam Limited, as a party respondent. The Hon'ble Court was further pleased to stay the resolution dated 24 March, 2015 for a period of 10 weeks from the date of the order.
  - **ii) The Hon'ble Court gave direction for filling the Affidavit in Opposition by 4 weeks from the date of the order, Affidavit in reply by 2 weeks thereafter and the matter to appear in the monthly list of April, 2016.**

Till date court order was not received.

JUSNL, NTPC may update the present status.

TCC may guide on the issue.

Deliberation in the TCC meeting

MD, JBVNL informed that they were eager to upgrade the 220 kV Farakka Lalmatia line to Double Circuit line. TCC advised that JUSNL may give an agenda in the ensuing Standing Committee meeting of CEA to which JUSNL agreed.

MS, ERPC stated that major concern of ERPC Secretariat was that the FLTS system should be maintained in a proper manner as the system is important for secure grid operation, Farakka evacuation as well as proposed Farakka Islanding Scheme. He further clarified that the issue of maintenance of 220 kV Farakka-Lalmatia System had arisen because NTPC had expressed its lack of qualified manpower for maintenance of Transmission Line. Now, since NTPC in 112th OCC meeting had agreed to continue maintenance of the line the issue becomes null and void. Therefore it was proposed the decision of 24.03.2015 could be kept in perpetual abeyance.

NTPC expressed that they could continue maintenance of the line only till such time as some other suitable agency could be identified by ECL. They however requested that the identification of suitable agency for maintenance of the 220 kV FLTS should be done expeditiously.

MD, JBVNL, informed that as the issue has been put up to the Hon'ble High Court of Calcutta, the minutes dated 24.03.15 may not be touched for now. MS, ERPC informed that in that case ERPC Secretariat would have to engage the services of a legal expert as ERPC Secretariat does not have a legal cell. Constituents agreed to the proposal of MS, ERPC for engaging the services of a legal expert for representing the Secretariat before the Hon'ble High Court of Calcutta. Constituents further agreed to share the legal expenses on equal basis.

MD, JUSNL felt that some methodology may be explored for resolution of issues involving non ERPC members/third parties.

ERPC may guide.

Deliberation in the ERPC meeting

ERPC endorsed the decision of TCC and authorised MS, ERPC for engaging the services of a legal expert for representing the Secretariat before the Hon'ble High Court of Calcutta. Constituents of ER agreed to share the consequent legal expenses.

NTPC re-iterated that suitable arrangement for O&M of FLTS system may be devised at the earliest as they are not having sufficient manpower with expertise in transmission maintenance.

ITEM NO. B13:	Workshop & Expenditure details

In accordance with the decision of TCC and ERPC, ERPC & ERLDC in coordination with GRIDCO organized two day workshop on 27.08.2015 and 28.08.2015 at Bhubaneswar focusing the power system operation and market operation including recent developments and best practices.

An expenditure of Rs. 6,11,681/- incurred for arranging the above workshop have been reimbursed to GRIDCO Ltd from Reactive account on 10.12.2015

Training cum Workshop on Power System Protection

Workshop at Talcher STPP on generator protection and HVDC protection was held form 23.11.2015 to 27.11.2015. The total expenditure is Rs. 2,62,404/- including faculty payments which was incurred by secretariat.

Members recommended to TCC for post facto approval for reimbursement of expenditure incurred for Bhubaneswar workshop to GRIDCO and expenditure incurred for Talcher workshop to NTPC & the expenditure incurred by ERPC secretariat towards faculty payments.

TCC may give post facto approval of the expenditure for Bhubaneswar workshop & for that of Training programme in Talcher.

Deliberation in the TCC meeting

TCC approved the expenditure of Rs. 6,11,681/- for Bhubaneswar Workshop and Rs. 2,62,404/- for Talcher Workshop and advised ERLDC to make re imbursements from ERPC Reactive Pool Account for the Talcher Workshop.

ERPC may approve.

Deliberation in the ERPC meeting

ERPC approved the expenditure for Bhubaneswar Workshop and Talcher Training cum Workshop programme.

3rd Training cum workshop on Power System Protection

In the 29th TCC/ERPC one week training once per quarter on protection related issues was approved. Subsequently, one week training programme on Transmission System Protection at ERPC, Kolkata and another on Generator Protection at TSTPS, Talcher were conducted in May, 2015 and November, 2015.

Further, it is proposed to organize one week **Training cum workshop on Transmission System Protection (Module-II)** during March/April, 2016 at ERPC, Kolkata for which the tentative programme is enclosed at Annexure- B27.

In a special meeting on Bihar issues held on 05.02.2016, BSPTCL appreciated Secretariat's initiatives and informed that protection engineers of Bihar got benefited from the last two training programmes on Power System Protection. Further, BSPTCL requested that some more training session of basic level Power System Protection may be imparted to their new protection engineers at Patna.

Members may note and ensure participation from respective control area in the next training programme.

Deliberation in the TCC meeting

Members noted with appreciation that third Training cum workshop on Power System Protection is being organized by ERPC Secretariat. JUVNL and WBSETCL also gave their in principal approval for hosting the next workshop/seminars. JUVNL/WBSETCL were requested to give their proposal to ERPC Secretariat at the earliest.

ERPC may concur.

Deliberation in the ERPC meeting

ERPC approved the third Training cum Workshop on Power System Protection proposal.

ERPC also advised WBSETCL and JUSNL to arrange workshop on emerging issues.

ITEM NO. B14:	Protection Committee visit to BSPTCL and JUSNL Sub-stations

In view of repeated uncoordinated trippings in BSPTCL and JUSNL systems, 31st TCC/ERPC formed a committee of following protection engineers to review the situation:

- Shri Sabyasachi Roy, ACE, WBSETCL,
- Shri L Nayak, GM, OPTCL
- Shri Jayanta Datta, SE, DVC
- Shri Surajit Bannerjee Asst GM, ERLDC,
- Shri Jiten Das, Asst GM, PGCIL
- Shri S. B. Prasad, ESE, BSPTCL
- Shri Vidyasagar Singh, ESE, JUSNL

The committee members met on 08.12.2015 & the following information was needed in respect of Chandil, Ramchandrapur, Adityapur and adjoining substations in Jharkhand and New Purnea, Madhepura, Biharshariff and adjoining substations in Bihar:

1. SLD of all the affected and surround Sub-station (with CT location)
2. Year of manufacture of all equipments
3. Comprehensive CT details along with name plate (with connected/adopted ratio)
4. VT details
5. Fault level- 3-phase as well as 1-phase (line length, conductor details and Transformer details for computing fault level)
6. Transformer detail (Rating, impedance)
7. Availability of Auto-Reclosure feature
8. Availability of carrier protection
9. Availability of Bus- differential and LBB Protection
10. Junction Box (JB) details
11. Cable details used for CT connections (Cross section/core of cable, Junction Box (JB) details & length of cable between JB & control panel)
12. Grid earthing resistance (With latest test report)
13. Breaker details (operating time)
14. CT/PT earthing details
15. Relay details (Relay type, model, settings, manufacturing, basis of settings)
16. Scheme adopted for protection settings for lines and transformers
17. DC system details with charger and battery

Subsequently, in a special meeting on Bihar issues held on 05.02.2016, BSPTCL submitted all information in desired formats.

The updated status of data submission by BSPTCL and JUSNL is enclosed at Annexure-C4.

The details have been forwarded to the team members for detail study. The further course of action will be planned after the detail study.

Deliberation in the TCC meeting

The protection team informed that the details have been received and more time is required to study these voluminous data.

TCC advised secretariat to convene a special meeting and settle further course of action.

In this connection it was further added that CERC order daterd04.02.2016 on Petition no. 16/SM/2014, regarding protection issues related to Jharkhand has directed to JUSNL to complete the work by 31.3.2016. Accordingly, JUSNL shall submit a complete report to ERPC in the first week of April 2016.

In case of failure to complete the work by 31.3.2016 as committed by JUSNL vide affidavit dated 18.12.2015, JUSNL shall be liable for action under Section 142 of the Act for non-compliance of the provisions of the Grid Code and order of the Commission.

So JUSNL to complete the rectification of PLCC system and Auto-reclosure scheme by March, 2016.

JUSNL informed that for PLCC rectification work is being allotted to PGCIL. Also it was informed that for PSDF funding towards improvement/development of protection system preparation of DPR is already in the process.

JUSNL was requested to submit official communication to CERC with a copy to ERPC.

ERPC may guide.

Deliberation in the ERPC meeting

ERPC advised JUSNL to complete all the work latest by 31.03.2016 and submit a report to ERPC Secretariat at the earliest.

ITEM NO. B15:	Optimal scheduling of hydro energy of Bhutan--Additional agenda item raised by ERLDC

The energy availability from Bhutan power system starts reducing from November and by January comes down to around 1 MU / day. It is therefore desirable that such scarce hydro generation be utilised in an optimal manner; to provide maximum support during peak hours.

Accordingly NLDC (India) vide letter dated 4-2-16 requested NLDC (BPC) to advise all the hydro stations of Bhutan to plan their day-ahead generation schedules in such a way that maximum possible power is injected in Indian grid during peak hours while honouring the total energy availability for the day. Subsequently, ERLDC vide email dated 8-2-16 also requested BPC to maintain maximum power injection to Indian grid during 06:00 – 08:00 Hrs and 17:00 – 21:00 Hrs.

However despite flexing the schedule of Bhutan stations, NLDC BPC maintained a nearly flat generation on 9th, 10th, 13th and 14th February.
ERLDC may further explain.

Deliberation in TCC

ERLDC displayed plots of Bhutan generation for some days to explain their point. They emphasised that if schedule of ERLDC could be followed by NLDC, Bhutan instead of flat generation profile at present maintained by them, then it would help Indian grid during peak hours. Bhutan representatives were requested to do the needful.

Deliberation in ERPC

ERLDC presented the crux of the problem again before the board. ERPC requested Bhutan representative to do the needful as per ERLDC guidance.

PART C: ERPC Matters

ITEM NO.C1: ERPC-ESTABLISHMENT FUND FOR THE YEAR 2015-16 & 2014-15

C1.1: For the year **2015-16** contribution of Rs.15 Lakh per member was approved by ERPC. Contributions are still due from

1. Adhunik Power & Natural Resources Limited (APNRL)
2. Gati Infrastructure Private Limited (Gati Infra)
3. South Bihar Power Distribution Company Limited (SBPDCL)
4. Jharkhand Urja Vikas Nigam Limited (JUVNL)
5. Jharkhand Bizli Vitaran Nigam Limited (JBVNL)

C1.2: For the year **2014-15** contribution of Rs.15 Lakh per member was approved by ERPC. Contributions are still due from

1. Bihar State Power Holding Company Limited (BSPHCL)
2. Jharkhand Urja Sancharan Nigam Limited (JUSNL)
3. Jharkhand Bizli Vitaran Nigam Limited (JBVNL)

The above members are requested to send their contributions to the ERPC Secretariat at an early date.

Deliberation in the ERPC meeting (Item No.C1 & C2 taken together)

Shri Bhaskar Sharma, Director (Projects), BSPTCL, informed as per the decision taken by appropriate authority the application made by North Bihar Power Distribution Company Limited (NBPDCL) for membership of ERPC stands withdrawn and the contributions made by NBPDCL may be booked as contribution of SBPDCL for the year 2015-16. He also informed that BSPHCL has already made payment for 2014-15 and agreed provide requisite document to ERPC Secretariat in support of the e-payment.

Shri Atul Kumar, Director(Projects), JUSNL, informed that JUSNL has already made payment for the year 2014-15 but inadvertently the credit has been given in the name of JUVNL. ERPC Secretariat informed credit was given to JUVNL since the documents provided in support of payment carried the name of JUVNL on the letter head. The Secretariat agreed to give credit in the name of JUSNL in place of JUVNL and informed in that case payment from JUVNL shall become due for the year 2014-15 also.

There was no representative from Gati Infra and APNRL.

Members requested the concerned constituents to make their payments at an early date.

ITEM NO.C2: ERPC FUND FOR THE YEAR 2015-16 & 2014-15

C2.1 For the year **2015-16** contribution of Rs.1 Lakh per member was approved by ERPC. Contributions are still due from

1. Adhunik Power & Natural Resources Limited (APNRL)
2. Gati Infrastructure Private Limited (Gati Infra)
3. South Bihar Power Distribution Company Limited (SBPDCL)
4. Jharkhand Urja Vikas Nigam Limited (JUVNL)
5. Jharkhand Bizli Vitaran Nigam Limited (JBVNL)

C2.2 For the year **2014-15** contribution of Rs.1 Lakh per member was approved by ERPC. Contributions are still due from

1. Bihar State Power Holding Company Limited (BSPHCL)
2. Jharkhand Urja Sancharan Nigam Limited (JUSNL)
3. Jharkhand Bizli Vitaran Nigam Limited (JBVNL)

The above members are requested to send their contributions to the ERPC Secretariat at an early date.

Deliberation in the ERPC meeting

Deliberations noted under Item No.C1 above.

ITEM NO.C3: ERPC-ESTABLISHMENT FUND FOR THE YEAR 2016-17

For the year 2015-16 contribution of Rs.15 Lakh per member was approved by ERPC. It is proposed to keep the contribution unchanged for the year 2016-17 i.e. Rs 15 Lakh per member. The fund is utilised for reimbursement of ERPC Secretariat expenditures to the Govt. of India and any other expenditures as per the approval of ERPC.

Members may approve contribution of Rs. 15 Lakh per member for the year 2016-17.

Deliberation in the ERPC meeting

Members approved contribution of Rs. 15 Lakh per member for the year 2016-17.

ITEM NO.C4: ERPC FUND FOR THE YEAR 2016-17

For the year 2015-16 contribution of Rs.1 Lakh per member was approved by ERPC. It is proposed to keep the contribution unchanged for the year 2016-17 i.e. Rs. 1 Lakh per member. The fund is utilised for holding various meeting, workshop, seminar etc. at the Secretariat and any other expenditures as per the approval of ERPC.

Members may approve contribution of Rs. 1 Lakh per member for the year 2016-17.

Deliberation in the ERPC meeting

Members approved contribution of Rs. 1 Lakh per member for the year 2016-17.

ITEM NO.C5: MEMBERSHIP OF DANS ENERGY PRIVATE LIMITED IN ERPC

Dans Energy Private Limited (DEPL) vide letter no.JLHEP/ERPC/2015-16 dated 18.01.2016 has informed DEPL is an IPP engaged in development two hydro projects on river Rangit in Sikkim. Jorethang Loop HEP (2x48 MW) has already been commissioned. Tashiding HEP (2x48.5 MW) is likely to be commissioned by December 2016. Vide above letter DEPL sought membership of ERPC.

Member Secretary, ERPC, vide letter dated 5th February 2016 had requested DEPL to convey their consent to contribute in the ERPC Establishment Fund and ERPC Fund at par with other members of ERPC before their proposal for membership is considered by ERPC. Confirmation from DEPL is still awaited.

In a similar case, in the past, ERPC had granted membership of Chuzachen HEP (2x55 MW) of Gati Infrastructure Private Limited.

ERPC may decide on the proposal of DEPL on membership of ERPC.

Deliberation in the ERPC meeting

DEPL was requested to confirm their willingness to contribute at par with other members of ERPC for considering their application for membership. Representative of DEPL informed that they would revert shortly on the matter.

Members authorized Member Secretary, ERPC, to grant membership to DEPL subject to confirmation of DEPL to pay at par with other members of ERPC.

ITEM NO.C6: NOMINATION IN TECHNICAL COORDINATION SUB-COMMITTEE (TCC) MEMBERS

Nomination of members in TCC is pending from the following organisations:

1. Bihar State Power Holding Company Limited (BSPHCL)
2. Bihar State Power Transmission Company Limited (BSPTCL)
3. Jharkhand Urja Vikas Nigam Limited (JUVNL)
4. Jharkhand Urja Sancharan Nigam Limited (JUSNL)
5. Jharkhand Bizli Vitaran Nigam Limited (JBVNL)
6. Jindal India Thermal Power Limited (JITPL)
7. Odisha Power Transmission Company Limited (OPTCL)
8. Durgapur Projects Limited (DPL)

Director (Engineering),OPTCL and Executive Director (Technical),DPL are the designated members from OPTCL and DPL respectively. But the posts are lying vacant for quite some time.

All the above organisations remain unrepresented in TCC meeting.

Members of ERPC from the above organisations are requested to nominate TCC members from their organisations.

Members may kindly note the following provision of Conduct of Business Rules of ERPC while nominating representatives:

"Technical Coordination Sub-Commitee (TCC): The representation shall be at the level of Member/ Director in State Utilities, and Executive Director/ General Manager in CPSUs, Technical Head of Distribution Company/ Traders/ IPPs, Heads of NLDC & ERLDC and Chief Engineer of CEA."

Deliberation in the ERPC meeting

ERPC members from the above organisations were requested to nominate TCC member and communicate to ERPC Secretariat at an early date.

ITEM NO.C7: NOMINATION OF CHAIRPERSON, ERPC FOR THE YEAR 2016-17

The incumbent Chairperson, ERPC i.e. Chairman & Managing Director, WBSEDCL, will complete his term on 31st March 2016.

As per GoI Resolution **"***Chairperson of ERPC would represent the States of the region by rotation in alphabetical order. Members of ERPC from the particular State would nominate the Chairperson of ERPC from amongst themselves. Term of Chairperson would be for a period of one year.***"**

The names of the States in alphabetical order are Bihar, Jharkhand, Odisha, Sikkim & West Bengal. Now it is the turn of Bihar. The following are the member of ERPC from Bihar :

i) Chairman-cum-Managing Director, Bihar State Power Holding Company Limited (BSPHCL)

ii) Managing Director, Bihar State Power Transmission Company Limited (BSPTCL)

iii) Managing Director, South Bihar Power Distribution Company Limited (SBPDCL)

Therefore, the members of ERPC from Bihar are requested to nominate the Chairperson, ERPC for the year 2016-17.

Deliberation in the ERPC meeting

The nomination process could not be completed in the meeting due to absence of ERPC members from Bihar i.e. CMD-BSPHCL, MD-BSPTCL and MD-SBPDCL. After brief deliberation it was decided that the Secretary, Department of Energy, Government of Bihar, would be requested to nominate the Chairperson, ERPC, for the year 2016-17. Member Secretary, ERPC, was advised to write to the Secretary, Department of Energy, Government of Bihar, for the nomination.

ITEM NO.C8: NOMINATION OF CHAIRPERSON, TCC FOR THE YEAR 2016-17

The incumbent Chairperson, TCC i.e. Director (Operations), WBSETCL, will complete his term on 31st March 2016.

As per TCC regulations, Chairperson, ERPC shall nominate the Chairperson, TCC from the TCC members from the same State for a period of one year.

Accordingly, the new Chairperson, ERPC, nominated for the year 2016-17 as above, may nominate the Chairperson, TCC for the year 2016-17.

Deliberation in the ERPC meeting

It was decided the nomination of Chairperson, TCC, would be taken up once the nomination of Chairperson, ERPC, is finalised.

PART D: HOSTING OF THE NEXT ERPC MEETING & OTHER MATTERS

Item No.D1: Finalisation of dates and venue for the next ERPC & TCC meetings

The roster for hosting of ERPC meetings is given below (as per CBR approved by ERPC) :

Sl. No.	Host Organisation
1.	WEST BENGAL
2.	DVC
3.	NHPC
4.	POWERGRID
5.	SIKKIM
6.	PTC
7.	ODISHA
8.	JHARKHAND
9.	**BIHAR**
10.	NTPC – hosted 30th ERPC Mtg.
11.	CESC
12.	APNRL
13.	MPL
14.	SESA STERLITE LTD.
15.	GMRKEL
16.	NVVN
17.	TPTCL
18.	GATI INFRA
19.	JITPL

Now, it is the turn of Bihar (BSPHCL, BSPTCL & SBPDCL) to host the next meeting. Members may decide about the dates and the venue for the next TCC & ERPC meetings.

Deliberation in the ERPC meeting

It was decided that the next (33rd) TCC & ERPC meetings would be hosted by Bihar (BSPHCL, BSPTCL & SBPDCL) in June 2016. BSPHCL was requested to take the lead and finalise the dates and venue in consultation with ERPC Secretariat.

PART E: ITEMS FOR INFORMATION

ERPC noted the following items:

ITEM NO. E1:	Charging of 220 KV Raigarh (PGCIL)- Budhipadar (OPTCL) line

WRPC informed that as per the study committee of WR's recommendations the LILO of 220 KV Raigarh(CSPTCL)-Budhipadar line at 400/200 KV PGCIL Raigarh s/s has been completed and to save theft incidents the LILO for both the section has been idle charged from 11.08.2015.

PGCIL is ready for charging both portion of above line from Raigarh(PGCIL) end. The charging of 220 KV Raigarh(CSPTCL)-220 KV Raigarh (PGCIL)- Budhipadar line will provide additional inter regional link in addition to existing inter regional link between 220 KV Korba (E) and Budhipadar in this section.

Further, both CSPTCL and PGCIL are ready with the Chhattisgarh section.

In 117th OCC, OPTCL, being the owner of the line, was advised to submit B1 to B5 formats to ERLDC and review the protection settings at Budhipadar end for charging the line.

The formats related to other section of line will be submitted by CSPTCL to WRLDC.

OPTCL/ERLDC may update.

Deliberation in the TCC meeting

OPTCL informed that only 60 km line belongs to them and they need some details such as protection settings, meter and communication details to fill B1 to B5 formats.

TCC advised OPTCL to coordinate with Powergrid and submit the formats and advised Powergrid to provide the relevant information to OPTCL.

ERPC Secretariat assured that charging of the line will be done shortly in interaction with WRPC/WRLDC.

Powergrid agreed to cooperate and resolve the issue. OPTCL agreed to submit.

ITEM NO. E2:	Construction of 132 kV D/C Deoghar – Banka line for reliable power supply to Railway TSS from 132 kV Deogarh (JSEB) S/S

132 KV Deogarh S/S of Jharkhand is an important feeding point to Railways. Issue of relieving the loading in critical overloaded lines from Deogarh was discussed in several OCC meetings and a study was carried out. As per the results of load flow under different contingencies, an additional feed through a 132 kV Deoghar-Banka D/C line was suggested to relieve the overloading of the lines during contingencies. Accordingly, ERPC Secretariat placed the issue along with results before 1st -2014 standing committee meeting of ER held on 2nd May, 2014. The issue was

discussed in the 16th Standing Committee meeting of ER held on 2nd May, 2014 and the 132 kV D/C Deoghar – Banka line was agreed as an interstate line.

The 27th TCC & ERPC concurred the decision of standing committee.

But in 2nd SSCM meeting, CTU informed that JUSNL is not interested for the said line on the plea that there is enough source available at Deoghar.

JUSNL representatives were never present in any of the SSCM meetings held so far.

State Standing 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.

For reliable power supply to Railways State Standing Committee decided to go with the decision of standing committee

CTU may update. TCC may guide.

Deliberation in the TCC meeting

JUSNL informed that there is a space constraint at Deoghar S/s for constructing bays for this line and proposed to shift this line to their new substation Jasidih in Deoghar area which is 5 km away from Deoghar S/s.

TCC felt that 132 kV Banka- Deoghar D/C line was placed before 16th Standing Committee and Powergrid was entrusted to construct the line after detailed deliberation. TCC expressed, at this juncture it would not be prudent to scrap this proposal.

JUSNL informed that Jasidih S/s is also located in Deoghar area and terminating Banka to Jasidih will not affect the reliability of power supply to the railway.

CTU informed that JUSNL proposal may be discussed at CEA and the best solution may be put forward.

TCC requested CEA to arrange the meeting to resolve the issue. CEA representative agreed to communicate to respective division for fixing a meeting in 1st week of March, 2016.

ITEM NO. E3:	Auto-Reclose (A/R) scheme of 400kV Jeypore- Gajuwaka D/C line

In the past many incidents of overvoltage tripping of 400kV lines emanating from Jeypore S/Stn had occurred. On detail examination, it was observed that most of these over voltage trippings were associated with SLG faults in 400kV Jeypore-Gajuwaka line.

In 33rd PCC meeting held on 21-07-15, it was clarified by PGCIL that for 400kV Jeypore-Gajuwaka line, 3-ph tripping and auto-reclosing scheme has been implemented at Gajuwaka end, whereas, at Jeypore 1-ph tripping and auto-reclosing would occur for any SLG fault (in Z-I).

PGCIL further explained that 3-phase tripping scheme had been adopted at Gajuwaka end on advice of OEM of HVDC, for avoiding commutation failure of the converter on AC side voltage unbalance & 3rd harmonics, which might occur with implementation of 1-ph tripping scheme.

Protection members of ERPC felt that 3-ph tripping scheme at Gajuwaka end and 1-ph tripping scheme at Jeypore end may trigger high voltage condition at Jeypore end with the two healthy phases of the 220km long line getting idle-charged during the dead time. PCC therefore advised PGCIL to consider implementing 3-ph tripping at Jeypore end also.

Powergrid agreed to implement 3-ph auto-reclosure for 400kV Jeypore- Gajuwaka D/C line. However, they requested ERLDC to carry out the study.

But since it's a CTU system, OCC requested PGCIL Odisha to implement the same auto-reclosure feature at both ends with immediate effect after doing proper study at their end.

The decision of OCC is not yet complied.

Powergrid/CTU may update. TCC may guide.

Deliberation in the TCC meeting

Powergrid informed that 3-ph auto-reclosure for 400kV Jeypore- Gajuwaka D/C line at Jeypore end has been implemented and refereed to CTU for further necessary study.

CTU expressed that the line may operate with 3-ph auto-reclosure for some time and if any abnormality observed in the future, the requisite study will be done.

ITEM NO. E4:	Status of Bus Splitting schemes in Eastern Region

A. Bus Splitting of Powergrid Sub-stations

In 11th SCM held on 20.09.2010 the bus-splitting arrangement with tie line breaker for the following 400kV substations in Eastern Region was agreed to contain the short circuit level below 40kA.

- Maithon
- Durgapur
- Biharshariff
- Kahalgaon

In 31st TCC held on 13.11.15, Powergrid updated the commissioning target of bus splitting scheme at the following 400kV substations as follows:

- Maithon - within 15 days
- Durgapur - Oct, 2016
- Biharshariff - Feb, 2016

In 38th PCC, Powergrid informed that segregation of bus 1 and 3 have been completed at Maithon and bus 2 and 4 would be completed by 2nd week of January, 2016.

Powergrid was advised to revise the protection settings as per the new bus bar scheme.

Powergrid/ERLDC may update.

Deliberation in the TCC meeting

Powergrid updated the status as follows:

- **Maithon** -- *Completed.*
- **Durgapur**-- *Completed.*
- **Biharshariff**--*Foundation work has been completed but they are not getting shutdown clearance form Bihar to complete the work. Bihar agreed to resolve the issue through bilateral discussion with Powergrid at Patna.*

ITEM NO. E5:	Status of construction of 400 kV Sterlite-Jharsuguda D/C sections

Several deliberations were held in this forum on the issue of construction of 400 kV Sterlite – Jharsuguda D/C dedicated line of Vedanta Ltd (formerly known as Sesa Sterlite Ltd).

In 31st TCC/ERPC followed by 115th OCC, Vedanta informed that out of 66 tower foundations, 21 have been completed and rest is expected to be completed by December, 2015. Commissioning of line is expected by 15 April, 2016.

TCC advised Vedanta to strictly adhere to the schedule.

In 116th OCC, Vedanta informed that forest clearance is still pending. However, it was informed that considerable progress has been made in tower foundations. Commissioning of line is expected by 15 April 2016.

In 117th OCC, Vedanta informed that 40 out of 66 foundations and installation of one tower have been completed. Vedanta informed that the target date of commissioning for the line is April, 2016.

Vedanta may update.

Deliberation in the TCC meeting

Vedanta informed that 41 out of 66 foundations and installation of four towers have been completed.

Vedanta shared that 3 units of IPP have been converted into CPP by OERC.

Vedanta mentioned that since they have to complete the 400kV IB TPS-Meramundali D/C line on priority basis, they could not concentrate on construction of 400kV Sterlite-Jharsuguda line.

Vedanta assured that they will commission the line by 15th July, 2016.

However, TCC advised Vedanta to strict to the target date given in the 31st TCC/ERPC Meeting i.e. April, 2016 and advised to update the schedule in OCC meetings.

ITEM NO. E6:	Status of construction of Chuzachen bay at Rangpo S/s.

Construction of bays at Rangpo S/s meant for evacuation of power from Chuzachen has been undertaken by Department of Power, Govt of Sikkim, under consultancy with Powergrid.

Subsequently MoU was signed between Sikkim and Powergrid in April, 2015 for this work.

The progress made on this issue has been deliberated upon in several OCC and TCC/ERPC forums.

In 117th OCC, Powergrid intimated that the cost estimate is already prepared and Department of Power, Govt. of Sikkim would do the tendering.

Sikkim, Powergrid may update.

Deliberation in the TCC meeting

Sikkim informed that the cost estimate from Powergrid was received recently and therefore after studying the same tendering will be done tentatively within a month.

TCC advised Sikkim to expedite the tendering work.

ITEM NO. E7:	Standing Committee on Transmission Planning for State Sectors

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

But unfortunately despite repeated persuasion, JUSNL, Sikkim and Powergrid ER-I have not yet sent their nominations till date.

JUSNL, Sikkim and Powergrid-ER-I may nominate their representatives.

Deliberation in the TCC meeting

JUSNL informed that they have nominated their representative.

Sikkim and Powergrid-ER-I agreed to send their nomination at the earliest.

TCC advised JUSNL, Sikkim and Powergrid-ER-I to attend SSCM.

A. Non-representation of CTU/Powergrid in State Standing Committee Meetings of Eastern Region

It has been observed that Powergrid/CTU representatives usually keep themselves at distance from attending meetings of State Standing Committee of ERPC even with persistent efforts from the Secretariat. The absence of Powergrid / CTU representatives in crucial SSCMs defeats the very purpose of such meetings.

TCC members from PGCIL/CTU may guide.

Deliberation in the TCC meeting

TCC viewed it seriously and advised Powergrid and CTU to ensure proper representation in SSCM for fruitful deliberation.

CTU informed that the planning of transmission system at central level is being done by CEA & CTU and therefore requested presence of CEA also in the same.

It was informed that in all the SSCM CEA was requested to participate. But never it was materialised.

TCC emphasised presence of CTU and CEA in SSCM and requested CEA representative in the meeting to communicate the views of TCC to the concern Chief Engineer.

ITEM NO. E8:	Construction of new 400 kV Sub-stations & lines by OPTCL

SLD showing the connectivity details is enclosed at Annexure-B12.

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

Station 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 MW 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).

In 3rd SSCM, OPTCL intimated that a meeting was held on 20.01.2016 with NTPC, PGCIL and GRIDCO to discuss the Connectivity and Long Term Access to TTPS Stage-III (2x660 MW). In the meeting three options were discussed:

1) Connectivity of the TTPS Stage-III with CTU and evacuation to be done at CTU system including State share of 50 %.

2) Connectivity of the TTPS Stage-III with STU (i.e. 400 kV D/C Talcher Stage-III SY to Meramundali-B GIS, OPTCL) and total power to be evacuated up to Meramundali by STU system including State share of 50 %. From Meramundali onwards CTU shall evacuate the balance 50 % power allocated to other beneficiary.

3) Connectivity through split bus arrangement system at the plant switchyard. This implies that one unit shall be connected to the STU, supplying 50 % towards State share of power whereas the other Unit shall be connected to CTU, evacuating rest 50 % power.

In that meeting NTPC (TTPS) expressed that they have no objection to any of the proposals as mentioned subject to approval of appropriate forum.

OPTCL, SLDC and GRIDCO are agreeable to option-2 for connectivity as it is commercially more prudent. Total power will be evacuated through 400 kV D/C TTPS Stage-III SY to Meramundali-B GIS, OPTCL and from Meramundali-B, CTU can evacute 50 % of power.

In 3rd SSCM, Powergrid representative was absent. Hence views of Powergrid on the above

proposal of OPTCL could not be taken.

Further, OPTCL added that if CTU wants they can construct 400 kV Meramundali-B to Angul Pooling station (PG) line also.

Committee took serious note of non-representation of Powergrid- Odisha in SSCM

TCC may advise Powergrid to regularly attend SSCM. Powergrid may submit their views.

OPTCL may explain. TCC may discuss.

Deliberation in the TCC meeting

NTPC expressed their reservation to option (3) as split bus arrangement may adversely affect the reliability of power evacuation from TTPS Stage-III. NTPC clarified that the other beneficiaries of TTPS Stage-III were states of ER only.

In case option (2) was agreed it was clarified that total power of TTPS Stage-III would get evacuated through the Odisha STU system. So, NTPC may have to apply for connectivity with STU for 100% ex bus generation of TTPS Stage-III. Also, for 50% non-Odisha share NTPC may have to approach the SLDC, Odisha for no ojection and pay applicable STU charges (which would be loaded to beneficiaries), etc.
CTU intimated that the latest Connectivity/transmission schemes/plan for evacuation of Generating Stations in Odisha were not available with them and requested Odisha to furnish the same along with any studies done by them to CEA/CTU so that the same could be analysed in SCM and integrated plan may be formulated. GRIDCO informed that for sharing details of latest transmission plan of Odisha, they had convened a meeting in May'15.

GRIDCO stated that as the lines conveying power from TTPS Stage-III through the state system to CTU system may be treated as lines carrying inter state power. ERLDC informed that for state lines not carrying more than 50% inter state power may not be considered as inter state line.

In case option (1) was agreed to then TTPS Stage-III would be connected directly to CTU. However, in that case Odisha would have to bear the PoC transmission charges for drawal of its share.

B. 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.

OPTCL may explain. TCC may discuss.

C. 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.

OPTCL may explain. TCC may decide.

D. 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".

OPTCL may explain. TCC may decide.

For all the above four (4) proposals, Committee requested ERLDC/ERPC to study the proposal of OPTCL and place the details in ensuing 32nd TCC & ERPC meetings. OPTCL was advised to forward the details of the connectivity and other data needed for study.

ERPC/ERLDC may present the study results. TCC may decide.

Deliberation in the TCC meeting

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.

ITEM NO. E9:	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 gave 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 were assured to be made available before Summer.

In 3rd SSCM, Powergrid, ER-II informed that for Maithon ICTs work is going as per scheduled.

The status of other ICTs could not be updated as Powergrid, ER-I & Odisha were not present in the meeting.

Powergrid may update the status.

Deliberation in the TCC meeting

Powergrid updated the status as follows:

Sl No.	Name of the Station	Element Name	Status
1.	Patna	1st ICT	*The ICT has been reached the site in January, 2016 and they are not getting shutdown for installation. It will be commissioned after installation of Pasauli ICT.*
		2nd ICT	*Mar, 2016*
2.	Muzaffarpur		*Dec, 2015*
3.	Maithon	1st ICT	*Mar, 2016*
		2nd ICT	*June, 2016*
4.	Sasaram (Pasauli)	1st ICT	*The ICT has been reached the site in January, 2016 and they are not getting shutdown for installation. BSPTCL informed that they will allow the shutdown if Sahupuri load is shifted to NR. Powergrid informed that arrangement has been done in past.*
		2nd ICT	*Mar, 2016*

Augmentation of ICTs at 400 kV Gaya (PG) S/s

In 17th SCM held on 25.05.2015, installation of additional 400/220 kV, 1x500 MVA ICT at Gaya Substation was approved.

The scheme of transformer augmentation was agreed as a part of Easter Region strengthening scheme-17 (ERSS-17). It was also decided that in case of space constraint, GIS bays may be used, wherever required.

In 39th PCC, BSPTCL informed that the load at Gaya would increase in the near future and suggested to install one more 500 MVA ICT at Gaya.

After detailed deliberation, PCC felt that additional 500 MVA ICT may be installed at 400kV Gaya S/s. Powergrid was advised to check the required space availability at Gaya S/Stn.

Powergrid informed that there is space for one dia at 400kV side but space availability at 220kV side needs to be explored by their Engineering wing.

In 3rd SSCM, it was decided to place the augmentation proposal before ensuing ERPC/TCC.

Powergrid may update. Members may settle.

Deliberation in the TCC meeting

Powergrid informed that the space is already available for 3rd 400/220kV ICT which has been approved in 17th SCM.

BSPTCL informed that there is immense load growth at Gaya in the near future and so there will be a requirement of 4th ICT.

CTU informed that a system study for Bihar system is in progress in consultation with BSPTCL. In this study all the coming proposals of BSPTCL along with future load growth will be studied and most optimum and technically feasible solution will be provided.

After that, it will be placed before the SCM for central sector planning.

ITEM NO. E10:	**Priority-based commissioning of bus reactor for control of high voltage during lean periods**

In winter season, the demand in E. Region and W. Bengal in particular reduces, thereby aggravates the high voltage problem at some of the 400kV S/Stns.

In 31st TCC meeting, the status of reactors which needs to be commissioned on priority basis to control the voltage of important sub-stations was reviewed. The status as updated in 31st TCC is as given below:

S.N.	Reactor	Status
1	125 MVAR reactor of Jeypore	By December, 2015
2	125 MVAR Bus reactor of Jamshedpur	Will be available by April/May 2016 and will be commissioned in another 3 months

3	125 MVAR Bus reactor of Biharshariff	
4	Additional bus-reactor of 125 MVAR capacity at Beharampur on urgent basis.	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.
5	50 MVAR at Behrampur on urgent basis by diverting from Rourkela which is kept as a spare	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.

In 3rd SSCM, Powergrid, ER-II informed that for 50 MVAR reactor from Rourkela is being shifted to Beharampur and will be installed as per schedule i.e. by June 2016. Regarding the installation of 125MVAR reactor it was informed that it is also as per schedule and will be installed by December, 2016. However, the status of 50 MVAR reactor after the commissioning of 125 MVAR could not be updated.

The status of other Reactors could not be updated as Powergrid, ER-I & Odisha were not present in the meeting.

Powergrid may update.

Deliberation in the TCC meeting

Powergrid updated the status as follows:

S.N.	Reactor	Status
1	125 MVAR reactor of Jeypore	*Commissioned*
2	125 MVAR Bus reactor of Jamshedpur	Will be available by June 2016 and will be commissioned in another 3 months.
3	125 MVAR Bus reactor of Biharshariff	
4	Additional bus-reactor of 125 MVAR capacity at Beharampur on urgent basis.	Will be made available for commissioning by Dec, 2016.
5	50 MVAR at Behrampur on urgent basis by diverting from Rourkela which is kept as a spare	By June, 2016. After commissioning of 125 MVAR reactor the 50 MVAR will be removed and kept spare.

ERLDC informed that there is severe high voltage problem at 400kV Jamshedpur and requested Powergrid to expedite.

TCC advised Powergrid to explore the possibility of diverting the reactor from the other schemes.

Powergrid agreed.

ITEM NO. E11:	ER -SCADA/EMS Upgradation Project

Under Eastern Region Up-garadtion Project, SCADA system of all SLDCs has been commissioned and operations have been shifted from ALSTOM to Chemtrols/OSI system. EMS testing at ERLDC has been completed and the testing at other centres is under progress. The same is being monitored in the monthly PRM meeting of ERPC. However following issues needs to be expedited:-

- Building readiness for backup Control Centre for WBSETCL.
- Air-conditioning for all communication equipment locations needs to be expedited on priority especially at BSPTCL locations namely Bodhgaya, Bihartshariff, BTPS, Fatwa, Jakkanpur, Samastipur, MTPS Kanti & Hajipur and Control centre of JUSNL.

Powergrid may update. Respective members may settle the issue.

Deliberation in the TCC meeting

Respective constituents updated the status as follows:

- *Building readiness for backup Control Centre for WBSETCL: will be completed by March, 2016.*
- *Air-conditioning for all communication equipment locations needs to be expedited on priority especially at BSPTCL locations namely Bodhgaya, Bihartshariff, BTPS, Fatwa, Jakkanpur, Samastipur, MTPS Kanti & Hajipur : will be provided by March, 2016.*
- *Air-conditioning for Control centre of JUSNL: In progress.*

ITEM NO. E12:	Non-availability of 48V Power Supply at RTU locations under EMS/SCADA Upgradation Package in JUSNL & BSPTCL Sector

48V DC is not available at 13 locations of JUSNL holding up the RTU commissioning andLDMS installation work. Name of the sites are Adityapur, Chakradharpur, Daltonganj, Dalbhumgarh,Dumka, Japla, Kamdara, Kanke,Manique ,Namkum,Nouamundi, Pakur, Sahebganj.

In 8 Nos. locations the R&M work is going on and the interfacing cables of the commissioned RTUs have been disconnected. Sites are Arrah, Sabour, Dumaraon, Sitamarhi, Karmanasa, Sonenagar, Pandaul, Muzaffarpur(Ramdayalu).

Powergrid may update. Members from Jharkhanad may ensure.

Deliberation in the TCC meeting

JUSNL informed that 48V DC in their respective locations will be available by April, 2016.

BSPTCL informed that they have ordered for 58 nos of 48V DC PS to PGCIL in 2013 and for the above 8 locations 48V DC PS may be included.

ITEM NO. E13:	Payment pending from JUSNL in RTU AMC since long time.

RTU AMC has been expired on 28.04.2015, but till date payment is not received from JUSNL. The issue has been discussed in last several meetings including SCADA meeting at ERLDC where

JUSNL committed for release of payment, but till date payment is not released. This is critically affecting further payment to the executing parties and closing of the contract. The details are as follows:

Details of RTU AMC Payment due from JUSNL			
Sl. No	**Qtr**	**Invoice no & date**	**Amount Payable**
1	17th	C/ER-II/JSEB/RTU/Maint-2014/17 dated 19.05.14	62043
		C/ER-II/JSEB/RTU/Maint over -2014/17 dated 19.05.14	10456
		Sub total for 17th quarter	72499
2	18th	C/ER-II/JSEB/RTU/Maint-2014/18 dated 01.08.14	62043
		C/ER-II/JSEB/RTU/Maint over -2014/18 dated 01.08.14	10456
		Sub total for 18th quarter	72499
3	19th	C/ER-II/JSEB/RTU/Maint-2014/19 dated 09.10.14	62043
		C/ER-II/JSEB/RTU/Maint over -2014/19 dated 09.10.14	10456
		Sub total for 19th quarter	72499
4	20th	C/ER-II/JSEB/RTU/Maint-2015/20 dated 05.03.15	62043
		C/ER-II/JSEB/RTU/Maint over -2015/20 dated 05.03.15	10456
		Sub total for 20th quarter	72499
		Total payment due	Rs.289996

Members from Jharkhanad may express their commitment.

Deliberation in the TCC meeting

JUSNL assured to clear the dues within a week.

ITEM NO. E14:	**Commissioning of 3X110 MVAR switchable line reactor at Sasaram of 765 kV S/C Sasaram – Fatehpur line as Bus Reactor (Part of Transmission System associated with DVC &Maithon RB Generation Projects- Common Scheme)**

The approved scope of the subject transmission system indicated 3X110 MVAR Switchable Line Reactor (for 765kV S/C Sasaram-Fatehpur line) at Sasaram sub-station. Keeping in view the voltage profile in ER, the 3X110 MVAR Switchable Line Reactor was commissioned as Bus reactor utilizing one no. 765kV Line Bay (for 765kV S/C Sasaram-Fatehpur line) till the time 765kV S/C Sasaram-Fatehpur line was commissioned.

However, CERC (vide Order No. 41/TT/2013) disapproved the commercial declaration of this switchable line reactor as Bus reactor from 01.03.2013 and deferred the same to 01.06.2013 (i.e. commissioning date of 765kV S/C Sasaram-Fatehpur line) citing non-approval in ERPC as the reason. Accordingly, constituents' approval for these reactors is required. The matter may be discussed and members may agree for post-facto approval of installation of Switchable line reactors of the subject mentioned line as bus reactors at Sasaram along with associated one no. 765kV line bay in view of delay in commissioning of 765kV S/C Sasaram-Fatehpur line.

Members may deliberate and approve.

Deliberation in the TCC meeting

After detailed deliberation, TCC felt that the issue should be deliberated in commercial committee meeting.

ITEM NO. E15:	SCADA data compliance — CERC directives

Petition No. 007/SM/2014 (Date of Hearing – 22.05.2014, Date of order – 29.01.2016) in matter of Non-compliance of Commission`s direction dated 26.9.2012 in Petition No.168/MP/2011: Telemetry petition:

1) Ref Order Dated 19.12.2013 in Petition No. 56/SM/2013
2) Ref Order Dated 25.4.2014 in Petition No. 56/SM/2013,

Some Excerpts of the Order dated 29.01.2016 is as placed below:

a) Perusal of the above data reveals that PGCIL has provided telemetry facilities in their all sub-stations. However, there is no satisfactory improvement in the intermittency of telemetry in the sub-stations of PGCIL. **In fact, in Eastern Region and North Eastern Region, the intermittency in telemetry has increased. We are not satisfied with the improvement in the intermittency in telemetred of PGCIL`s system. Despite our repeated instructions, PGCIL has not made sincere efforts to improve the problem of intermittency in its telemetry. We direct PGCIL to undertake effective monitoring of telemeter data and to minimize the intermittency in telemetry in all regions within six months from the issue of the order. NLDC is directed to submit status of PGCIL`s telemetry within one month thereafter.**

b) Under the Grid Code, it is the responsibility of all users, STUs and CTU to provide systems to telemeter power system parameters in line with interface requirements and other guideline made available by RLDC and associated communication system to facilitate data flow up to appropriate data collection point on CTUs system. Telemetry of on-line operational data is not only essential for effective monitoring of grid but also forms key input for effective running of State estimation and other EMS tools at RLDC and SLDCs, which are essential for reliable and secure operation of the grid. **In view of the critical importance of telemetry and associated communication system for ensuring reliability in operation of the grid and optimum utilization of the transmission system, there is an imperative need for all users to establish the telemetry and associated communication system in time bound manner so that the power system operation may be most reliable and optimum. Moreover, in view of the requirement of communication system for a generating station and sub-station, the planning should be done in advance by the generating company and transmission licensee to ensure that necessary system are in place before commissioning of generating station or sub-station to take care of the communication requirements even at the time of injection of power infirm by a generating station and sub-station during testing.**

c) Energy and Power Department, Govt. of Sikkim, Jharkhand State Electricity Board, Maithon Power Ltd., have not filed their replies to the show cause notice. We express our displeasure at the conduct of the respondents to ignore the directions of the Commission and NLDC, and non-compliance of the provisions of the Grid Code, especially in such a matter where grid security is involved. We once again direct the above mentioned utilities to up-date status of telemetry in their system within one month of this order with an advance copy to NLDC, respective RLDC and RPC. Based on the replies, respective RLDC will monitor the

implementation of telemetry and in case of any difficulty, the matter may be discussed and sorted out in the RPC meetings. If any of these entities does not submit the information, the concern RLDC may file application before the Commission against the said entities under Section 142 of the Act.

d) We further direct all the utilities/generating companies which have to still establish telemeter power system parameters as per details given in para11 above to provide data to RLDCs/SLDCs as per the provisions of the Grid Code and CEA Grid Standards Regulations by 31.7.2016. If the utilities/generating companies do not comply with our directions, it will be construed as non-compliance of the order of the Commission and appropriate proceedings under Section 142 of the Electricity Act, 2003 shall be initiated against such utilities/generating companies. NLDC is directed to submit user- wise latest status of telemetry, by 31.8.2016.

Every month, ER telemetry status is being posted in ERLDC website. Monthly status as submitted to CERC is placed at Annexure-B24 for reference.

Members may ensure compliance. TCC may give guidance.

Deliberation in the TCC meeting

ERLDC informed that Sikkim, JUSNL and MPL have not filed their replies to CERC show cause notice. CERC has directed the above mentioned utilities to up-date status of telemetry in their system within one month (i.e. by 29 February, 2016) NLDC, ERLDC and ERPC.

Further, it was informed that all the utilities/generating companies have to establish telemeter power system parameters to provide data to RLDCs/SLDCs as per the provisions of the Grid Code and CEA Grid Standards Regulations by 31.7.2016.

TCC advised all constituents to comply the CERC directive.

ITEM NO. E16:	**Repair of 03 no's 50 MVA (220/132) ICT**

In 29th TCC/ERPC meeting, it was placed that 03 no's 50 MVA, 220/132kV ICTs will be available as spare from Malda (02 Nos) & Birpara (01 No) after the augmentation by 160 MVA ICTs. These ICTs need to be repaired. The minimum cost for repairing comes to Rs. 3,63,34,950/- as per approved tendering procedure. After repairing all three transformers will be available as Regional Spares at Malda (02 Nos) & Birpara (01 No).

Discussion is to be held for sharing the cost of repairing for 03 no's transformers among constituents.

In the 117th OCC meeting, OCC felt that it is a commercial issue and refer the issue to Commercial Committee.

In 31st CCM, It was felt by the Commercial Sub Committee that there are no 50 MVA (220/132 kV) transformers in use in ER except in Sikkim perhaps. Therefore the proposal of repairing three old 50 MVA transformers was not financially prudent at this juncture. Instead members felt that procurement of one 160 MVA new transformer as regional spare under buyback scheme by

exchanging the three 50 MVA transformer could be a better proposal. Alternatively, Powergrid may scrap these transformers.

TCC may decide.

Deliberation in the TCC meeting

Powergrid informed that as the asset was decapitalized as per the CERC norms and they propose to scrap the three 50 MVA transformers.

TCC concurred.

ITEM NO. E17:	Installation of SEM at Haldia

SEM is placed only at Subhashgram(PG) end of 400 KV Haldia(CESC)-Subhashgram(PG) D/C. No standby SEM has been placed at Haldia end till now. In absence of Subhashgram end data; there is no back up meter available for accounting of the power flow through that Tie line.

In last CCM held on 16.09.15, it was decided that WBSETCL/SLDC will early resolve the issue with CESC authorities. Unfortunately, till now issue is not resolved.

In 31st CCM, WBSEDCL representative informed that they are not aware of any development on this issue.

It was decided to refer this issue to TCC for further guidance.

CESC may update.

Deliberation in the TCC meeting

CESC informed that they have already processed and requisite SEM meter will be positively installed by May'2016.

ITEM NO. E18:	Procurement of new SEM's and DCD/Laptops

In 30th ERPC meeting procurement of 965 no of SEM's and 110 nos of Laptop/DCD was approved. Further 31st TCC/ERPC approved the cost sharing mechanism of expenditure on SEM's and DCD/Laptops along with POWERGRID overhead charges @ 15% by the beneficiary constituents of Eastern Region in proportion to the share allocation for the month in which the proposal was approved in the ERPC meeting.

In 31st CCM, Powergrid informed that tendering was complete and LOA was expected to be issued by the end of this month.

Powergrid was requested to confirm whether bulk time correction and AMR facility are present in the meters to be procured. If those are not present Powergrid may discuss and get them incorporated before the award of tender.

Powergrid may update.

Deliberation in the TCC meeting

Powergrid intimated that order had been placed on 15.03.2016. It was clarified that these 965 SEM meters would have bulk time correction facility. For integrating AMR with these meters, the procedure being presently followed would continue.

ITEM NO. E19:	Non-release of payment towards service charges for maintenance of EMS/SCADA system

LTSA (Long term Service Agreement) contract for EMS/SCADA system installed at all control center has been awarded to M/s Alstom T&D Ltd. on 15th January 2010. Status of due payment to be received from JUSNL (erstwhile JSEB), DVC and BSPTCL is as follows:

Outstanding against EMS SCADA AMC as on 02.02.2016

Constituents	Total Outstanding (in Rs.)	Due date	For the quarter of
JUSNL	1453059	January 2015	4th Nov 15 – 3rd Feb 16
DVC	780227	16th October 2015	
BSPTCL	15327	14th November 2015	18th Jan 2015 to 17 th Apr 2015 (21st Qtr)

Besides the above Outstanding, service tax payment of Rs. 145149/- is also due from JUSNL since Oct 2014 onwards.

In 31st CCM, JUSNL representative was not present. DVC informed that they would release the payment within 2-3 days.

BSPTCL representative informed that they have made up to date payment of EMS-SCADA AMC. BSPTCL was requested to give the payment details to ERLDC for confirmation from their end.

ERLDC may update.

Deliberation in the TCC meeting

ERLDC informed that DVC had already settled their dues. JUSNL informed that the bill is under process and would be released within 15 days. BSPTCL informed that the outstanding would be cleared shortly.

ITEM NO. E20:	Re-conductoring of 400 kV D/C Farakka-Malda with HTLS

In 15th SCM held on 27.08.2013 re-conductoring of Farakka – Malda 400 kV D/c line with high ampacity HTLS conductor and upgradation/replacement of associated bay equipment was approved.

In 114th OCC, Powergrid informed that they need shutdown of 400KV Farakka-Malda Ckt-II for three months for HTLS conductor replacement.

After detailed discussion, OCC allowed the shutdown of 400KV Farakka-Malda Ckt-II for one month w.e.f. 25th October 2015 for HTLS conductor replacement.

It was also decided that the progress of the work will be reviewed in OCC meetings and accordingly the shutdown will be reviewed as per the prevailing grid condition.

Subsequently, in a special review meeting held on 01.02.2016, the status as on 31.01.2016 was reviewed which is---

Ckt-I: 26.334 ckt km
Ckt-II: 30.992 ckt km
Total balance: 25.674 km

After detailed deliberation, it was agreed that Powergrid will put in best efforts to bring the 400 kV Farakka-Malda D/C line by 15.02.2016 (The minutes of the said meeting is placed at Annexure- B31).

Powergrid may update on the latest developments.

Deliberation in the TCC meeting

Powergrid informed that 70% of the work has been completed and rest will be completed by March, 2016.

WBSETCL informed that they are facing severe low voltage at Dalkhola. To improve the voltage profile the bus reactor at 400kv Binaguri needs to be switched off. WBSETCL stressed that the line should be returned by February, 2016 as there will be election in March, 2016.

Powergrid agreed to switch off the reactor with appropriate direction from ERLDC and agreed to expedite the work at the earliest.

After detailed deliberation, it was decided that another 10days extension will be given to complete the work and after that it will be reviewed in lower forum.

ITEM NO. E21:	**Certification of DC of MPL --- WBSEDCL**

MPL on receipt of tariff order from CERC for the entire capacity of 1050 MW requested ERLDC in its letter dated 26th August 2015 to schedule its power and certify its availability as is done in case of other ISGS.

In 115th OCC the issue was placed.

DVC and WBSEDCL, as beneficiary of MPL, endorsed the request & responded that MPL is having LTA for full quantum of power and the tariff of whole plant (i.e. 1050 MW) was determined by CERC. So, scheduling of MPL may be done at par with other ISGS stations.

ERLDC/ERPC pointed that the allocation of MPL power is not in percentage-wise (like ISGS stations) rather it is in MW-wise. So it is difficult to calculate percentage-wise allocation for MPL units in case of any back down or shutdown of units.

OCC advised that MPL should approach CEA/CERC/MoP for further clarification on the issue along with percentage-wise allocation of MPL power. Further, OCC advised all the beneficiaries of MPL, if they want, to give their consent letters to ERPC secretariat so that it can be forwarded to CEA for issuing the percentage-wise allocation for MPL power.

Said letters from beneficiaries were not yet received by secretariat till date.

But issue for certification of DC of MPL units by ERLDC was again raised by MPL in 116th OCC meetings.

ERPC/ERLDC in 116th OCC again reiterated that MPL should approach CEA/CERC/MoP for percentage-wise allocation of MPL power.

Clarification from CEA/CERC/MOP is not yet received by ERPC/ERLDC.

By the time WBSEDCL is again placing this agenda.

MPL, DVC, WBSEDCL may update on the latest developments.

Deliberation in the TCC meeting

It was informed that DVC and WB have given their consent letter.

MPL informed that they have already prepared the documents for filing of the petition to CERC and the petition will be filed shortly.

ITEM NO. E22:	Agenda items submitted by NHPC

1) Non-opening of LC of requisite value :-

NBPDCL has opened Letter of Credit of amounting to Rs.2.10 Crs against requisite amount of Rs.6.65 Crs. Similarly, SBPDCL has opened Letter of Credit of amounting to Rs.2.90 Crs against requisite amount of Rs.8.44 Crs. Although BSPHCL has provided L.C amounting to ₹2.40 Crs which is valid upto 27.12.2016, it is intimated that respective discom i.e. NBPDCL & SBPDCL should provide L.C of requisite values and L.C provided by BSPHCL may be discontinued.

In 31st CCM, NHPC explained.

SBPDCL/NBPDCL representative informed that they were processing the case and the LC of requisite amount will be opened shortly.

2) Payment of outstanding dues for more than 60 days.

i) WBSEDCL

As per commitment, WBSEDCL had to pay arrear dues of TLDP-III in 10 (ten) nos. installments (for energy supplied up to Feb'2015). We were to receive seven installments till date but we have actually received only three installments (i.e. Rs. 66.03 Crs.) against arrear dues of Rs. 220.13 Crores.

As on date, an amount of Rs.154.09 Crs is still outstanding against arrear dues of Rs.220.13 Crores and surcharge amounting to Rs.24.39 Crs (up to 31.12.2015) is also outstanding. Further, an amount of Rs. 5.51Crs including surcharge of Rs. 0.95 Crs is outstanding for more than 60 days in respect of energy supplied from Rangit & Teesta-V Power Stations. We are regularly making request to WBSEDCL to clear all outstanding dues in respect of Rangit, Teesta-V and Teesta Low Dam-III power Stations.

ii) NBPDCL

An amount of **Rs.16.48 Crs** is outstanding for more than 60 days including surcharge of **Rs. 1.48 Crs**.

In 31st CCM, NHPC explained that WBSEDCL had cleared around 110 Crores already and requested for release of the balance outstanding of around 44 Cr. Further, he requested WBSEDCL to release the Rs.24 Cr surcharge. WBSEDCL representative informed that they would work out the surcharge and their management will take a decision.

NHPC informed that the outstanding of SBPDCL was around Rs.10.80 Cr and requested NBPDCL and SBPDCL to release their dues at the earliest. NBPDCL/SBPDCL informed that the bills are under process and payment would be released at the earliest.

3) Signing of BPSA in respect of Rangit & Teesta-V Power Stations.

Signing of BPSA is pending in respect of Rangit & Teesta-V Power Stations by JBVNL & GRIDCO. NHPC has requested beneficiaries of Rangit & Teesta-V Power Stations except WBSEDCL to give their consent for extension of existing PPA on same terms and conditions for 35 years from COD of last unit of respective power stations. But NHPC has not received the consent of either of the beneficiary till date.

In 31st CCM, GRIDCO informed that the issue was under active consideration of their management and by Feb'16-March'16 some outcome was expected.

4) Signing of PPA in respect of Teesta-IV H.E.Project.

Signing of Power Purchase Agreement is pending with Gridco, SBPDCL & NBPDCL in spite of regular follow up with these discoms. NHPC has to submit the status of execution of PPA by the discoms who have given consent to procure power from the said hydro-electric project, to MOP. Gridco, NBPDCL & SBPDCL may be requested to sign the long pending Power purchase agreement on priority**.**

In 31st CCM, NHPC informed that the capacity of Teesta-IV HEP was 520 MW.
GRIDCO requested NHPC to visit their office for settlement of the issue.
NBPDCL/SBPDCL informed that the issue was under consideration of their management.

5) Signing of PPA in respect of Tawang H.E.Project, Stage-I & II.

Signing of Power Purchase Agreement is pending with Gridco, SBPDCL, NBPDCL, WBSEDCL, Sikkim and JUVNL in spite of regular follow up with these discoms. All above discoms may be requested to sign the PPA at the earliest so that status of signing of PPA by the beneficiaries may be intimated to MOP.

In 31st CCM, NHPC informed that Tawang HEP Stage-I was of 600 MW capacity and Tawang HEP Stage-II was of 800 MW capacity.
GRIDCO requested NHPC to visit their office for settlement of the issue of signing PPA.
NBPDCL/SBPDCL, WBSEDCL informed that the issue was under consideration of their management.
JUVNL, Sikkim representative were not present.

NHPC may update.

Deliberation in the TCC meeting

NHPC explained their issues in detail. BSPHCL invited NHPC to their office for discussion and settlement of their outstanding issues. JUSNL informed that they have sent their comments. Gridco informed that they had raised some issues and after receipt of clarification from NHPC end they could sign the PPA.

NHPC clarified that for Rangit and Teesta-V they are willing to extend the PPA with the same terms and conditions. MS, ERPC requested NHPC to meet with the beneficiaries in one to one basis for early resolution.

ITEM NO. E23:	Study/ Analysis by the consultant to ensure Secure and Reliable Operation of National Grid

To conduct the study/analysis for ensuring secure and reliable operation of National Grid the consultancy was awarded to M/s Tractabel, Romania, M/s Tractabel, India and M/s Lehmeyer International Private Limited, India. The work is divided into two tasks.

- Task-I: covers the status of implementation of recommendations of enquiry committee on grid disturbance.
- Task-II: covers the study of the 762 third party protection audit reports and conduct on-site Protection Audit for 76 no. out of the 762 substations.

Task-I: To study the status of implementation of recommendations of enquiry committee by the Consultant

The consultant interacted with all ER constituents at ERPC, Kolkata from 31st August, 2015 to 4th September, 2015 and collected the latest status of implementation of recommendations of enquiry committee on grid disturbance.

Final report is yet to be received from the consultant.

Task-II: On-site Protection Audit by the Consultant to conduct the study/ Analysis to ensure Secure and Reliable Operation of National Grid

M/s Tractabel, Romania will carry out the on-site Protection audit of the 15 shortlisted substations of the Eastern Region under Task-II.

The consultant submitted the format of checklist and a format of bus bar and breaker failure protection details to be filled up by the respective constituents. The formats are already circulated to respective nodal officers vide letter dated 31-07-2015 and the softcopy of the format is also available in ERPC website www.erpc.gov.in.

Subsequently, Powergrid ER-I, Powergrid ER-II, WBSETCL, DVC, BSPTCL, OPTCL, OHPC, JUSNL and Powergrid-Odisha have already submitted the required data.

The consultant has submitted the details of some data missing from the constituents. ERPC Secretariat vide letter dated 29.01.2016 requested all the constituent members to furnish the missing data as per details given at Annexure- C5 at the earliest.

Members may submit the missing data.

Deliberation in the TCC meeting

It was informed that the consultants are going to start the on-site audit from March, 2016.

TCC advised all the respective constituents to furnish the missing data.

ITEM NO. E24:	Information for National Electricity Plan (NEP), 2015

National Electricity Plan (NEP), 2015 is under preparation in CEA. To make an effective plan concerned constituents have to place the following information related to their respective control area at the earliest.

Name of Station	No. of units	Rated Unit Capacity	Rated Station Capacity
Full load Station Heat Rate (Kcal/KWh) (Thermal plants)	Forced Outage Rate (%)	Capital Cost of Installation (Rs/MW) (new units only)	Operation and Maintenance cost (RS/KW/year)
Landed cost of fuel (Rs/tonne) & grade of coal (GCV)	Maintenance Schedule	Auxiliary Power Consumption	Annual Energy Limitation (GWh) (Hydro Plants)
RES Generation profile			

Constituents are requested to send the requisite information to Chief Engineer (IRP), CEA by e-mail: **ceirpcea@yahoo.com** with a copy to ERPC (e-mail: mserpc-power@nic.in).

Members may submit the requisite information along with their contributory suggestion for making the National Electricity Plan an effective one.

Deliberation in the TCC meeting

TCC advised all the respective constituents to submit the requisite information related to NEP to IRP Division, CEA at the earliest if not already submitted.

ITEM NO. E25:	Status of Bandel Islanding Scheme-Agenda submitted by WBPDCL

In 31st ERPC meeting Bandel Islanding Scheme was approved for implementation. WBPDCL informed that Bandel Islanding scheme has been taken up by them and would be implemented in right earnest. WBPDCL proposed for PSDF funding for implementation of Bandel Islanding Scheme.

Deliberation in TCC

It was informed that PSDF funding for such type of schemes may not be applicable. TCC felt that since other islanding schemes were funded from own source the same could be applied in this case also. TCC advised WBPDCL to fund the scheme from own source. WBPDCL agreed.

ITEM NO. E26:	Commercial operation of upgradation of 100 MVA #3 with 160 MVA ICT at Purnea-Additional Agenda by Powergrid.

Upgradation of 100 MVA ICTS of 220/132 kV Purnea S/s is being taken up by Powergrid in a phased manner and so far two ICTs have been upgraded and upgradation of third ICT is under progress. Out of this, replacement of one number 100 MVA ICT (ICT #3) is covered under ERSS XII. Investment approval for which was accorded by the board of directors of Powergrid on 19.05.14 with completion schedule of 30 months. However, keeping in view the load requirement BSPTCL had requested Powergrid for early replacement of the ICT with a spare ICT of ER which was approved by the members of OCC (96th OCC held on 24.06.2014). Accordingly the spare ICT was commissioned on 30.09.2014 as replacement of ICT #3 at Purnea which otherwise was scheduled for commissioning in September 2016. Since the spare transformer was used for replacement Commercial Operation of the Transformet could not be declared. Now, since the 160 MVA ICT ordered against the project has been delivered at site and in February 2016 and thus spare has been replenished. Powergrid would be declaring the Commercial Operation of upgradation of 100 MVA ICT#3 at Purnea S/s w.e.f February 2016.
Members may kindly note.

Deliberation in TCC meeting

TCC advised to discuss this agenda in the Commercial Sub Committee meeting of ERPC.

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MINUTES OF 32nd TCC MEETING of EASTERN REGIONAL POWER COMMITTEE

Date: 19th February 2016

Place: Ranchi

Index for TCC minutes

EASTERN REGIONAL POWER COMMITTEE

MINUTES OF 32nd TCC MEETING

Date: 19th February 2016	**Place:** Ranchi
In Chair : Shri M. Bandopadhyay, Director(Operations), WBSETCL	
Host: Jharkhand (JUVNL, JUSNL, JBVNL & TVNL)	
List of participants is at **Annexure-II.**	

Item No.A1: Confirmation of the minutes of 31st TCC meeting held on 13.11.2015 at Bhubaneshwar

The minutes of the 31st TCC meeting held on 13th November, 2015 were circulated vide letter no. ERPC/ TCC& Committee/14/2016/H3295-H3327 dated 6th January 2016.

No comments have been received from constituent members on the minutes of the meeting.

Members may confirm the minutes of 31st TCC meeting.

Deliberation in the ERPC meeting

TCC confirmed the minutes of 31st TCC meeting.

PART B: ITEMS FOR DISCUSSION

ITEM NO. B1:	**Charging of 220 KV Raigarh (PGCIL)- Budhipadar (OPTCL) line**

WRPC informed that as per the study committee of WR's recommendations the LILO of 220 KV Raigarh(CSPTCL)-Budhipadar line at 400/200 KV PGCIL Raigarh s/s has been completed and to save theft incidents the LILO for both the section has been idle charged from 11.08.2015.

PGCIL is ready for charging both portion of above line from Raigarh(PGCIL) end. The charging of 220 KV Raigarh(CSPTCL)-220 KV Raigarh (PGCIL)- Budhipadar line will provide additional inter regional link in addition to existing inter regional link between 220 KV Korba (E) and Budhipadar in this section.

Further, both CSPTCL and PGCIL are ready with the Chhattisgarh section.

In 117th OCC, OPTCL, being the owner of the line, was advised to submit B1 to B5 formats to ERLDC and review the protection settings at Budhipadar end for charging the line.

The formats related to other section of line will be submitted by CSPTCL to WRLDC.

OPTCL/ERLDC may update.

Deliberation in the TCC meeting

OPTCL informed that only 60 km line belongs to them and they need some details such as protection settings, meter and communication details to fill B1 to B5 formats.

TCC advised OPTCL to coordinate with Powergrid and submit the formats and advised Powergrid to provide the relevant information to OPTCL.

ERPC Secretariat assured that charging of the line will be done shortly in interaction with WRPC/WRLDC.

Powergrid agreed to cooperate and resolve the issue. OPTCL agreed to submit.

ITEM NO. B2:	**Construction of 132 kV D/C Deoghar – Banka line for reliable power supply to Railway TSS from 132 kV Deogarh (JSEB) S/S**

132 KV Deogarh S/S of Jharkhand is an important feeding point to Railways. Issue of relieving the loading in critical overloaded lines from Deogarh was discussed in several OCC meetings and a study was carried out. As per the results of load flow under different contingencies, an additional feed through a 132 kV Deoghar-Banka D/C line was suggested to relieve the overloading of the lines during contingencies. Accordingly, ERPC Secretariat placed the issue along with results before 1st -2014 standing committee meeting of ER held on 2nd May, 2014. The issue was discussed in the 16th Standing Committee meeting of ER held on 2nd May, 2014 and the 132 kV D/C Deoghar – Banka line was agreed as an interstate line.

The 27th TCC & ERPC concurred the decision of standing committee.

But in 2nd SSCM meeting, CTU informed that JUSNL is not interested for the said line on the plea that there is enough source available at Deoghar.

JUSNL representatives were never present in any of the SSCM meetings held so far.

State Standing 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.

For reliable power supply to Railways State Standing Committee decided to go with the decision of standing committee

CTU may update. TCC may guide.

Deliberation in the TCC meeting

JUSNL informed that there is a space constraint at Deoghar S/s for constructing bays for this line and proposed to shift this line to their new substation Jasidih in Deoghar area which is 5 km away from Deoghar S/s.

TCC felt that 132 kV Banka- Deoghar D/C line was placed before 16th Standing Committee and Powergrid was entrusted to construct the line after detailed deliberation. TCC expressed, at this juncture it would not be prudent to scrap this proposal.

JUSNL informed that Jasidih S/s is also located in Deoghar area and terminating Banka to Jasidih will not affect the reliability of power supply to the railway.

CTU informed that JUSNL proposal may be discussed at CEA and the best solution may be put forward.

TCC requested CEA to arrange the meeting to resolve the issue. CEA representative agreed to communicate to respective division for fixing a meeting in 1st week of March, 2016.

ITEM NO. B3:	**Auto-Reclose (A/R) scheme of 400kV Jeypore- Gajuwaka D/C line**

In the past many incidents of overvoltage tripping of 400kV lines emanating from Jeypore S/Stn had occurred. On detail examination, it was observed that most of these over voltage trippings were associated with SLG faults in 400kV Jeypore-Gajuwaka line.

In 33rd PCC meeting held on 21-07-15, it was clarified by PGCIL that for 400kV Jeypore-Gajuwaka line, 3-ph tripping and auto-reclosing scheme has been implemented at Gajuwaka end, whereas, at Jeypore 1-ph tripping and auto-reclosing would occur for any SLG fault (in Z-I).

PGCIL further explained that 3-phase tripping scheme had been adopted at Gajuwaka end on advice of OEM of HVDC, for avoiding commutation failure of the converter on AC side voltage unbalance & 3rd harmonics, which might occur with implementation of 1-ph tripping scheme.

Protection members of ERPC felt that 3-ph tripping scheme at Gajuwaka end and 1-ph tripping scheme at Jeypore end may trigger high voltage condition at Jeypore end with the two healthy phases of the 220km long line getting idle-charged during the dead time. PCC therefore advised PGCIL to consider implementing 3-ph tripping at Jeypore end also.

Powergrid agreed to implement 3-ph auto-reclosure for 400kV Jeypore- Gajuwaka D/C line. However, they requested ERLDC to carry out the study.

But since it's a CTU system, OCC requested PGCIL Odisha to implement the same auto-reclosure feature at both ends with immediate effect after doing proper study at their end.

The decision of OCC is not yet complied.

Powergrid/CTU may update. TCC may guide.

Deliberation in the TCC meeting

Powergrid informed that 3-ph auto-reclosure for 400kV Jeypore- Gajuwaka D/C line at Jeypore end has been implemented and refereed to CTU for further necessary study.

CTU expressed that the line may operate with 3-ph auto-reclosure for some time and if any abnormality observed in the future, the requisite study will be done.

ITEM NO. B4:	OPGW installation by PGCIL in DVC network

DVC vide mail dated 18.01.2016 intimated that PGCIL has recently ordered 901KM of OPGW installation work for DVC network, out of which 137KM of OPGW is required to be included as additional for 3/4 nos line sections. It is learnt that such lines were initially included in the list forwarded to M/s PGCIL in 2012, but somehow M/s PGCIL has missed to include. The matter has already been taken up with M/s PGCIL by CE (Communication), DVC and M/s PGCIL has opined that they may include those lines provided the same is vetted by ERPC forum.

117th OCC agreed for the lines as given by DVC for inclusion of additional OPGW of 137 km. The details of lines etc are given at **Annexure-B4**.

Further, OCC referred the issue to 32nd TCC & ERPC for their concurrence.

TCC may concur.

Deliberation in the TCC meeting

TCC concurred and referred to ERPC for further approval.

ITEM NO. B5:	Status of Bus Splitting schemes in Eastern Region

A. Bus Splitting of Powergrid Sub-stations

In 11th SCM held on 20.09.2010 the bus-splitting arrangement with tie line breaker for the following 400kV substations in Eastern Region was agreed to contain the short circuit level below 40kA.

- Maithon
- Durgapur
- Biharshariff
- Kahalgaon

In 31st TCC held on 13.11.15, Powergrid updated the commissioning target of bus splitting scheme at the following 400kV substations as follows:

- Maithon - within 15 days
- Durgapur - Oct, 2016
- Biharshariff - Feb, 2016

In 38th PCC, Powergrid informed that segregation of bus 1 and 3 have been completed at Maithon and bus 2 and 4 would be completed by 2nd week of January, 2016.

Powergrid was advised to revise the protection settings as per the new bus bar scheme.

Powergrid/ERLDC may update.

Deliberation in the TCC meeting

Powergrid updated the status as follows:

- **Maithon** -- *Completed.*
- **Durgapur**-- *Completed.*
- **Biharshariff**--*Foundation work has been completed but they are not getting shutdown clearance form Bihar to complete the work. Bihar agreed to resolve the issue through bilateral discussion with Powergrid at Patna.*

B. Bus Splitting of Kahalgaon STPS Stage I&II, NTPC

In 24th ERPC meeting held on 27.04.2013, ERPC advised NTPC to go ahead with the bus-splitting scheme as it is a technical requirement for safe, secure operation of the grid.

In 31st TCC, NTPC informed that they are going ahead with the implementation of Bus Splitting of Kahalgaon STPS Stage I&II and the implementation is expected to be completed by December, 2018.

NTPC has given the schedule as follows:

- 400/132kV Switchyard package - bid opened. Award by another 2 months and completion time is 15 months for line bays and rest will be completed within 24 months.
- Site levelling – Site package awarded under execution.
- Transformer package – tendering under process and will be awarded in 4 months.

In view of increasing fault level at KHSTPP TCC advised NTPC to expedite the bus splitting.

NTPC may update.

Deliberation in the TCC meeting

NTPC informed that Kahalgaon Bus Splitting scheme will be completed by end of 2018.

Powergrid informed that the COD of 400kV Biharshariff-Kahalgaon III & IV (presently known as Banka- Kahalgaon I & II) line will be done within a month. Bay work for this at Kahalgaon under bus splitting scheme is not yet ready and expected to be completed by mid 2017.

Post COD, constituents has to bear the cost of the line.

Constituents viewed that since the delay pertains to NTPC, till completion of bay work at Kahalgaon under bus splitting scheme post COD cost should be levied upon NTPC.

TCC felt that NTPC did not execute the bus splitting scheme expeditiously even when the scheme was agreed upon in 11th SCM on 29.09.2010 with subsequent approval in TCC and ERPC well with in 2012. NTPC however pointed out that the delay is mainly due to finalisation of funding mechanism.

But on deliberation TCC pointed out the following decision of 24th ERPC Meeting:

Quote

"……..**ERPC advised NTPC to go ahead with the scheme. It was decided that initially constituents of ER will share their portion of cost as per tariff approved by CERC for this purpose, and subsequently if there is release of PSDF by CERC the same will be reimbursed to constituents accordingly.**"

Unquote

However, in view of increasing fault level at KHSTPP TCC again advised NTPC to expedite the bus splitting scheme.

Moreover, TCC opined that the projects constructed by different utilities needs to be monitored and coordinated properly to avoid unnecessary burden on constituents. It was informed that project monitoring group of CEA takes care of this.

ERLDC viewed that the bus splitting scheme arrangement and the line connectivity needs a fresh review on which TCC advised to do the same in lower forums of ERPC.

ITEM NO. B6:	**Status of construction of 400 kV Sterlite-Jharsuguda D/C sections**

Several deliberations were held in this forum on the issue of construction of 400 kV Sterlite – Jharsuguda D/C dedicated line of Vedanta Ltd (formerly known as Sesa Sterlite Ltd).

In 31st TCC/ERPC followed by 115th OCC, Vedanta informed that out of 66 tower foundations, 21 have been completed and rest is expected to be completed by December, 2015. Commissioning of line is expected by 15 April, 2016.

TCC advised Vedanta to strictly adhere to the schedule.

In 116th OCC, Vedanta informed that forest clearance is still pending. However, it was informed that considerable progress has been made in tower foundations. Commissioning of line is expected by 15 April 2016.

In 117th OCC, Vedanta informed that 40 out of 66 foundations and installation of one tower have been completed. Vedanta informed that the target date of commissioning for the line is April, 2016.

Vedanta may update.

Deliberation in the TCC meeting

Vedanta informed that 41 out of 66 foundations and installation of four towers have been completed.

Vedanta shared that 3 units of IPP have been converted into CPP by OERC.

Vedanta mentioned that since they have to complete the 400kV IB TPS-Meramundali D/C line on priority basis, they could not concentrate on construction of 400kV Sterlite-Jharsuguda line.

Vedanta assured that they will commission the line by 15th July, 2016.

However, TCC advised Vedanta to strict to the target date given in the 31st TCC/ERPC Meeting i.e. April, 2016 and advised to update the schedule in OCC meetings.

ITEM NO. B7:	Status of construction of Chuzachen bay at Rangpo S/s.

Construction of bays at Rangpo S/s meant for evacuation of power from Chuzachen has been undertaken by Department of Power, Govt of Sikkim, under consultancy with Powergrid.

Subsequently MoU was signed between Sikkim and Powergrid in April, 2015 for this work.

The progress made on this issue has been deliberated upon in several OCC and TCC/ERPC forums.

In 117th OCC, Powergrid intimated that the cost estimate is already prepared and Department of Power, Govt. of Sikkim would do the tendering.

Sikkim, Powergrid may update.

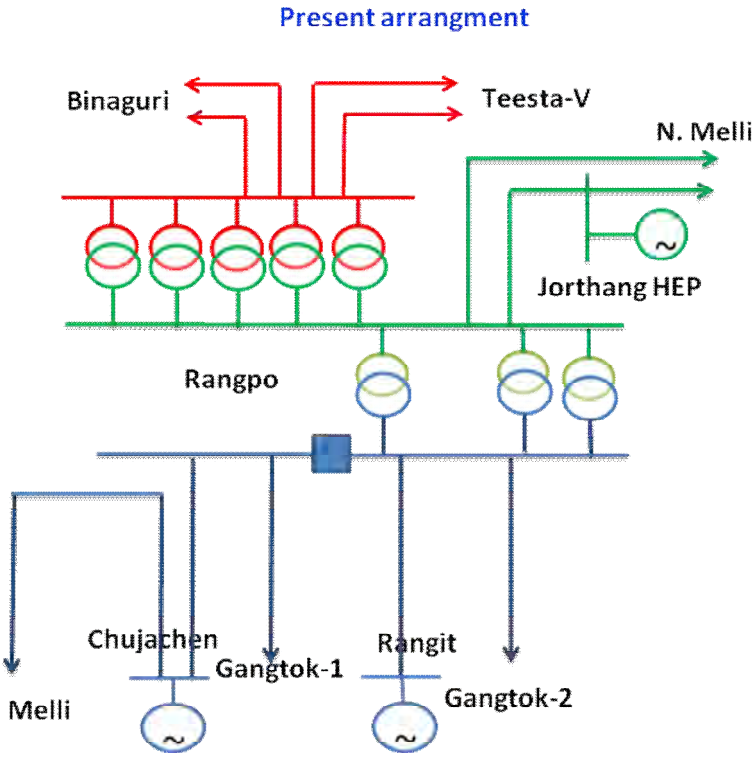
Deliberation in the TCC meeting

Sikkim informed that the cost estimate from Powergrid was received recently and therefore after studying the same tendering will be done tentatively within a month.

TCC advised Sikkim to expedite the tendering work.

ITEM NO. B8:	Bus splitting of 132kV Rangpo for unrestricted evacuation of Chuzachen and Jorethang HEPs

A part of Teesta-V and Jorethang generation get injected towards 132kV side of Rangpo under certain conditions such as non-availability of one circuit of 400kV Rangpo-Binaguri line. This causes congestion in evacuation of Rangit and Chuzachen generation. The present arrangement is as given below:



To relieve the congestion at Rangpo and to have optimum utilisation of the hydro generation potential a bus split scheme at 132 KV Rangpo was approved in OCC with subsequent ratification in 31st TCC/ERPC.

The matter was followed up in subsequent OCC meetings but till date concretised feasible proposal by engineering division of Powergrid is not yet placed.

OCC advised

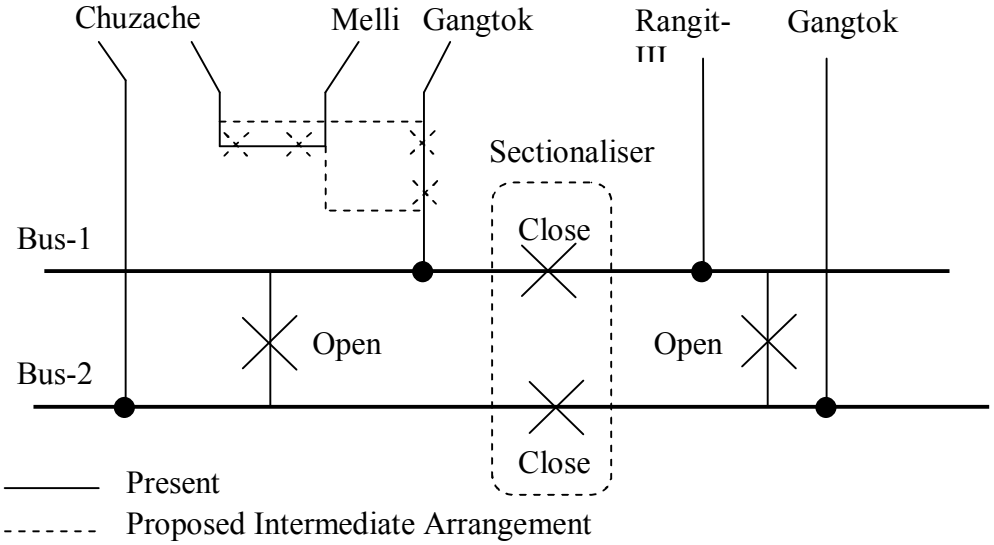
i) Powergrid to submit the study report along with the feasible solution at least prior to 32nd ERPC meeting so that the same may be placed before the Board.

ii) Cost of bus splitting is to be borne by Chuzachen and Jorthang HEP as they are being benefited with this SPS

Powergrid/CTU may update. TCC may decide

Deliberation in the TCC meeting

CTU explained the present and final arrangement of 132kV bus scheme of Rangpo S/s. During analysis it was observed that to avoid the critical loading of Rangpo - Melli line, the Rangit-III & Melli feeders need to be isolated from Chujachen & Gangtok feeders at 132kV bus of Rangpo. But it was explained that at present it is difficult to be implemented and the same would be taken care in the final arrangement with the commissioning of line bays for Chuzachen-Rangpo line. However, the same effect could be achieved with the opening of the bus coupler as shown below :



Powergrid informed that the Proposed Intermediate Arrangement will be implemented by March, 2016 and the cost will be borne by Chuzachen and Jhordang HEP.

Sikkim informed that commercially they are losing huge amount during peak time and requested Powergrid to complete the work on urgent basis.

TCC advised Powergrid to complete the work by 26th February, 2016.

Powergrid agreed to complete within the stipulated date, if Sikkim could supply the required materials immediately.

Sikkim agreed.

On enquiry, Sikkim informed that 132kV Melli-Sagbari line will be put in service within a week after replacing the CB.

ITEM NO. B9:	Installation of polymer insulators on New Transmission lines

ERPC in its 30th Meeting agreed to the proposal of Powergrid for installation of polymer insulators in new transmission lines and replacement of porcelain insulators with polymer insulators in existing transmission lines at no extra financial burden.

Powergrid informed that they require shutdown of transmission line for replacement of porcelain insulators with polymer insulators and requested to consider the replacement period as deemed availability (not attributable to Powergrid).

ERLDC agreed to accommodate the shutdown if there is no network constraint and advised Powergrid to place the request well before.

ERPC in principle agreed to consider the replacement period as per the provisions of existing regulations.

OCC advised Powergrid to submit the detail schedule inclusive of time required for replacement etc. so that the same may be put up for further discussion and approval.

Subsequently, in OCC meetings, Powergrid- ER-I, ER-II and PG-Odisha submitted their tentative schedule of replacement which is given at **Annexure-B9**.

Further, OCC decided to refer the commercial issues of line shutdowns for insulator replacements to next Commercial Committee meeting.

In 31st CCM, after detailed deliberation, members agreed to consider outage time for replacement of porcelain insulator with polymer insulator as Deemed Availability. CCM, however, decided that outage time as cleared and certified by OCC for this replacement work only will be considered for Deemed Availability and for which Powergrid is to place the shutdown request for this scheme in each OCC. Powergrid agreed.

TCC may guide.

Deliberation in the TCC meeting

TCC agreed to the proposal and advised Powergrid to place the shutdown proposals for insulator replacement in monthly OCC.

ITEM NO. B10:	Standing Committee on Transmission Planning for State Sectors

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

But unfortunately despite repeated persuasion, JUSNL, Sikkim and Powergrid ER-I have not yet sent their nominations till date.

JUSNL, Sikkim and Powergrid-ER-I may nominate their representatives.

Deliberation in the TCC meeting

JUSNL informed that they have nominated their representative.

Sikkim and Powergrid-ER-I agreed to send their nomination at the earliest.

TCC advised JUSNL, Sikkim and Powergrid-ER-I to attend SSCM.

A. Non-representation of CTU/Powergrid in State Standing Committee Meetings of Eastern Region

It has been observed that Powergrid/CTU representatives usually keep themselves at distance from attending meetings of State Standing Committee of ERPC even with persistent efforts from the Secretariat. The absence of Powergrid / CTU representatives in crucial SSCMs defeats the very purpose of such meetings.

TCC members from PGCIL/CTU may guide.

Deliberation in the TCC meeting

TCC viewed it seriously and advised Powergrid and CTU to ensure proper representation in SSCM for fruitful deliberation.

CTU informed that the planning of transmission system at central level is being done by CEA & CTU and therefore requested presence of CEA also in the same.

It was informed that in all the SSCM CEA was requested to participate. But never it was materialised.

TCC emphasised presence of CTU and CEA in SSCM and requested CEA representative in the meeting to communicate the views of TCC to the concern Chief Engineer.

B. Draft agenda items of the upcoming Standing Committee meeting on transmission planning for ER for SSCM meeting

In 31st ERPC meeting ERPC requested CTU to share the SCM agenda before forwarding the same to CEA so that these agenda items can be deliberated upon in detail in State Sector SCM meeting and the constituent members could better prepare themselves for fruitful decision making at SCM meeting.

CTU assured to circulate the agenda items of Standing Committee Meeting to the concerned constituent members before forwarding the same to CEA"

But in spite of assurance from highest authorities and repeated persuasion, neither PSP&A-II Division, CEA nor CTU has yet forwarded the draft agenda items of the upcoming meeting of Standing Committee (SCM) on Power System planning for ER.

SSCM in its 3rd meeting decided that on receipt of agenda items of SCM a SSCM meeting needs to be called on short notice for threadbare deliberation with all the state constituents.

CTU may share the status of agenda being placed in next SCM meeting of ER & members may discuss and advise further course of action.

Deliberation in the TCC meeting

CTU informed that agenda is yet to be finalized by CEA and next SCM meeting may be held in the month of March, 2016.

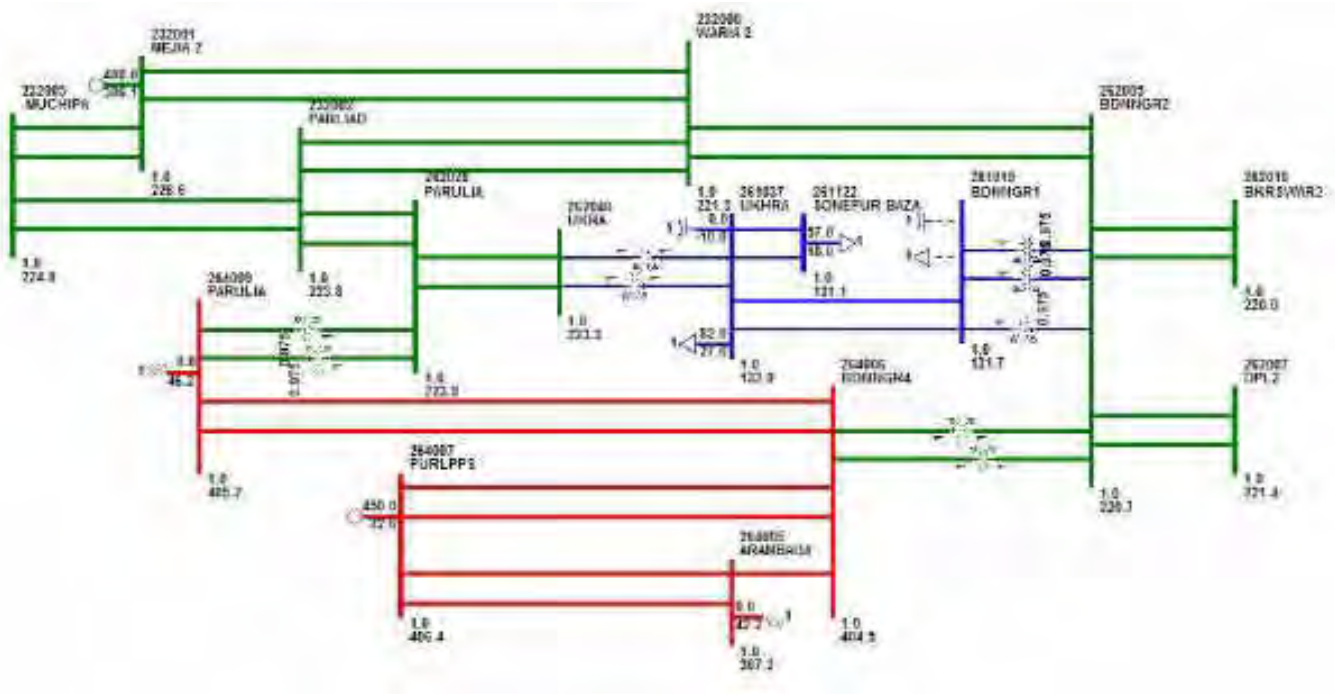
TCC advised CEA/CTU to ensure the circulation of the agenda at least 15 days before the meeting.

It was also advised to convene a special SSCM meeting on circulation of SCM agenda.

ITEM NO. B11:	**220kV connectivity of Ukhra (WBSETCL) substation from 400kV Parulia (PG) S/s**

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.

After conversion of the 220kV connectivity in between Parulia (PG) and Durgapur to 400kV level, 220kV bays have become idle.



In 2nd SSCM, during presentation of study results by ERLDC/ERPC, 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.

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

In 3rd SSCM, ERLDC and ERPC presented the load flow study. It was observed that with 220kV Ukhra-Parulia D/C line the loads at Ukhra and Bidhanngar are directly getting fed from 400kV Parulia(PG) and the 220kV lines Parulia(PG)-Parulia(DVC), Parulia(DVC)-Waria(DVC) and Waria(DVC)-Bidhannagar(WB) including 220/132kV ATRs at Bidhannagar are getting relief. The 315 MVA ICTs at Parulia(PG) and 400kV Parulia(PG)-Bidhannagar(WB) D/C lines are however getting loaded.

WBSETCL informed that the route for 220 kV Ukhra-Parulia (PG) was surveyed and under finalization subject to the clearance from ECL as the line passes through ECL coalmines area.

Further, WBSETCL informed that the 132 kV Bidhanagar-Ukhra line will be upgraded with HTLS conductor to meet the contingency of 220 kV Ukhra-Parulia line.

The proposal is accepted subject to the fulfillment of the following up-gradation/augmentation:

- 400 kV Parulia (PG)-Bidhannagar D/C line is required to be upgraded with HTLS conductor which is under consideration by WBSETCL.
- 400/220 kV ICTs at Parulia(PG) & Bidhannagar (WBSETCL) needs to be augmented. Parulia (PG) ICTs were under augmentation by PGCIL, WBSETCL to consider the augmentation of Bidhannagar ICTs.
- 400/220 kV ICTs at Maithon also needs to be augmented. Augmentation of these ICTs are in progress and expected to complete by June, 2016.

Committee advised to place the issue before 32nd TCC & ERPC meetings with the aforementioned recommendation.

TCC may discuss and opine.

Deliberation in the TCC meeting

WBSETCL informed that order has been placed for up gradation with HTLS conductor for 400 kV Parulia (PG)-Bidhannagar D/C. Also, the work of upgradation of 132 kV Bidhanagar-Ukhra D/C line with HTLS conductor is under implementation.

WBSETCL further informed that the line survey for construction of 220 kV Ukhra-Parulia (PG) line completed and most of the portion is passing through ECL coal mines area and the consent from ECL is required.

TCC approved the scheme subject to ECL concurrence for ROW.

ITEM NO. B12:	Construction of new 400 kV Sub-stations & lines by OPTCL

SLD showing the connectivity details is enclosed at **Annexure-B12.**

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

Station 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 MW 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).

In 3rd SSCM, OPTCL intimated that a meeting was held on 20.01.2016 with NTPC, PGCIL and GRIDCO to discuss the Connectivity and Long Term Access to TTPS Stage-III (2x660 MW). In the meeting three options were discussed:

1) Connectivity of the TTPS Stage-III with CTU and evacuation to be done at CTU system including State share of 50 %.
2) Connectivity of the TTPS Stage-III with STU (i.e. 400 kV D/C Talcher Stage-III SY to Meramundali-B GIS, OPTCL) and total power to be evacuated up to Meramundali by STU system including State share of 50 %. From Meramundali onwards CTU shall evacuate the balance 50 % power allocated to other beneficiary.
3) Connectivity through split bus arrangement system at the plant switchyard. This implies that one unit shall be connected to the STU, supplying 50 % towards State share of power whereas the other Unit shall be connected to CTU, evacuating rest 50 % power.

In that meeting NTPC (TTPS) expressed that they have no objection to any of the proposals as mentioned subject to approval of appropriate forum.

OPTCL, SLDC and GRIDCO are agreeable to option-2 for connectivity as it is commercially more prudent. Total power will be evacuated through 400 kV D/C Talcher Stage-III SY to Meramundali-B GIS, OPTCL and from Meramundali-B, CTU can evacute 50 % of power.

In 3rd SSCM, Powergrid representative was absent. Hence views of Powergrid on the above proposal of OPTCL could not be taken.

Further, OPTCL added that if CTU wants they can construct 400 kV Meramundali-B to Angul Pooling station (PG) line also.

Committee took serious note of non-representation of Powergrid- Odisha in SSCM

TCC may advise Powergrid to regularly attend SSCM. Powergrid may submit their views.

OPTCL may explain. TCC may discuss.

Deliberation in the TCC meeting

NTPC expressed their reservation to option (3) as split bus arrangement may adversely affect the reliability of power evacuation from TTPS Stage-III. NTPC clarified that the other beneficiaries of TTPS Stage-III were states of ER only.

In case option (2) was agreed it was clarified that total power of TTPS Stage-III would get evacuated through the Odisha STU system. So, NTPC may have to apply for connectivity with STU for 100% ex bus generation of TTPS Stage-III. Also, for 50% non-Odisha share NTPC may have to approach the SLDC, Odisha for no ojection and pay applicable STU charges (which would be loaded to beneficiaries), etc.

CTU intimated that the latest Connectivity/transmission schemes/plan for evacuation of Generating Stations in Odisha were not available with them and requested Odisha to furnish the same along with any studies done by them to CEA/CTU so that the same could be analysed in SCM and integrated plan may be formulated. GRIDCO informed that for sharing details of latest transmission plan of Odisha, they had convened a meeting in May'15.

GRIDCO stated that as the lines conveying power from TTPS Stage-III through the state system to CTU system may be treated as lines carrying inter state power. ERLDC informed that for state lines not carrying more than 50% inter state power may not be considered as inter state line.

In case option (1) was agreed to then TTPS Stage-III would be connected directly to CTU. However, in that case Odisha would have to bear the PoC transmission charges for drawal of its share.

B. 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.

OPTCL may explain. TCC may discuss.

C. 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.

OPTCL may explain. TCC may decide.

D. 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".

OPTCL may explain. TCC may decide.

For all the above four (4) proposals, Committee requested ERLDC/ERPC to study the proposal of OPTCL and place the details in ensuing 32nd TCC & ERPC meetings. OPTCL was advised to forward the details of the connectivity and other data needed for study.

ERPC/ERLDC may present the study results. TCC may decide.

Deliberation in the TCC meeting

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.

ITEM NO. B13:	**Signing of Transmission Service Agreement: Independent Transmission Project (ITP) for "Common Transmission System for Phase-II Generation Projects in Odisha and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha"**

In 16th SCM for Transmission Planning of Eastern Region held on 02.05.2014 at NRPC, New Delhi the following Common Transmission System for Phase-II Generation Projects in Odisha along with immediate evacuation system which are to be implemented through Tariff based Competitive Bidding Route were approved.

S.N.	Transmission Scheme	Estimated Line Length (in km)
	Common transmission system	
i)	Jharsuguda (Sundargarh) – Raipur Pool 765 kV D/c line.	350 km
ii)	LILO of both circuits of Rourkela - Raigarh 400 kV D/c (2nd line) at Jharsuguda (Sundargarh)	2x400kV D/c line: each about 30 km
	Immediate Evacuation System for OPGC (1320 MW) Project	
i)	OPGC (IB TPS) – Jharsuguda (Sundargarh) 400kV D/c line with Triple Snowbird Conductor alongwith 2 no. 400kV line bays at Jharsuguda (Sundergarh) substation. Bays at OPGC end of the line would be under the scope of the generation developer.	50 km

(The scheme was approved in the meeting with constituents of Eastern Region regarding connectivity and LTA on 05-01-2013 and 24th TCC/ERPC meeting on 26-27 April, 2013)

The decisions of 16th SCM were ratified in 27th & 28th ERPC Meeting held on 31.05.2014 & 13.09.2014 respectively.

Subsequently Letter of Intent (LoI) was issued to the successful bidder M/s Sterlite Grid 3 Ltd on January 06, 2015 and the copy of the duly executed TSA is to be made available to the Successful Bidder before further proceedings on this project.

But it was informed that DVC, Sikkim, Jharkhand, SBPDCL-Bihar, NBPDCL-Bihar, WBSEDCL have not yet signed the TSA and a sanctioned project is getting delayed.

TCC members discuss and facilitate signing of requisite TSA.

Deliberation in the TCC meeting

Members questioned the reasoning behind signing of TSA when the beneficiaries cannot be definitely identified a priori. CTU informed that the transmission charges for the assets being commissioned on TBCB route would be recovered through the PoC mechanism. TCC members stated that in that case all DICs in the country should sign the TSA.

From the Secretariat side it was clarified that as the PoC mechanism had become operational in 2011 only at the time of finalization of Standard Bid Documents (SBD) the change in method of recovery of transmission charges could not be foreseen.

CTU clarified that as it was difficult to get all beneficiaries of the country to sign each and every TSA, it was decided that the beneficiaries of respective region could sign the TSA to fulfil the requirement of SBD. CTU also clarified that just as ER beneficiaries were required to sign the TSA for schemes identified in Eastern Region, beneficiaries in other regions were also signing TSA for schemes in their respective regions.

MS, ERPC emphasised that as this was a notified scheme of Ministry of Power and the schemes had been agreed to in past ERPC meetings also it may not be prudent to delay signing of the TSA at this juncture and offered to host a meeting for joint signing of the TSA at ERPC, Kolkata.

Members agreed for the joint meeting but requested secretariat to get clarification on TSA either from PFC and or from Competent Authority.

Issue referred to ERPC for further guidance.

ITEM NO. B14:	Constitution of the Bid Evaluation Committees (BEC's) for the new Transmission schemes

In the 35th meeting of the Empowered Committee on Transmission (EC) held on 14th September, 2015, the following transmission schemes have been identified for implementation through tariff based competitive bidding (TBCB).

i. **Immediate evacuation for North Karanpura (3x660MW) generation project of NTPC & Creation of 400/220 kV sub-station at Dhanbad - Proposal of JUSNL (ERSS-XIX)**

ii. **765 kV System Strengthening Scheme in Eastern Region (ERSS-XVIII)**

Subsequently, MoP has notified the above schemes vide Gazette Notification dated 17.11.2015 and appointed REC Transmission Projects Company Limited as the Bid Process Coordinator (BPC) for scheme at Sl. No. (i) and PFC Consulting Ltd as the BPC for scheme at Sl. No. (ii), respectively.

As per the tariff based Competitive-Bidding Guidelines for Transmission Service notified by Govt. of India, nomination of at least two officers at Director level are sought for constituting the scheme specific Bid Evaluation Committee (BEC) for the above schemes. After receipt of nominations, BECs would be constituted with the approval of the Empowered Committee.

TCC may nominate officers for the BEC.

Deliberation in the TCC meeting

TCC decided that WBSETCL, JUSNL and DVC may nominate the officers for the BEC as above.

WBSETCL has nominated Director (Projects) as BEC member.

JUSNL and DVC agreed to communicate within a week.

ITEM NO. B15:	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 gave 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 were assured to be made available before Summer.

In 3rd SSCM, Powergrid, ER-II informed that for Maithon ICTs work is going as per scheduled.

The status of other ICTs could not be updated as Powergrid, ER-I & Odisha were not present in the meeting.

Powergrid may update the status.

Deliberation in the TCC meeting

Powergrid updated the status as follows:

Sl No.	Name of the Station	Element Name	Status
1.	Patna	1st ICT	*The ICT has been reached the site in January, 2016 and they are not getting shutdown for installation. It will be commissioned after installation of Pasauli ICT.*
		2nd ICT	*Mar, 2016*
2.	Muzaffarpur		*Dec, 2015*
3.	Maithon	1st ICT	*Mar, 2016*
		2nd ICT	*June, 2016*
4.	Sasaram (Pasauli)	1st ICT	*The ICT has been reached the site in January, 2016 and they are not getting shutdown for installation. BSPTCL informed that they will allow the shutdown if Sahupuri load is shifted to NR. Powergrid informed that arrangement has been done in past.*
		2nd ICT	*Mar, 2016*

Augmentation of ICTs at 400 kV Gaya (PG) S/s

In 17th SCM held on 25.05.2015, installation of additional 400/220 kV, 1x500 MVA ICT at Gaya Substation was approved.

The scheme of transformer augmentation was agreed as a part of Easter Region strengthening scheme-17 (ERSS-17). It was also decided that in case of space constraint, GIS bays may be used, wherever required.

In 39th PCC, BSPTCL informed that the load at Gaya would increase in the near future and suggested to install one more 500 MVA ICT at Gaya.

After detailed deliberation, PCC felt that additional 500 MVA ICT may be installed at 400kV Gaya S/s. Powergrid was advised to check the required space availability at Gaya S/Stn.

Powergrid informed that there is space for one dia at 400kV side but space availability at 220kV side needs to be explored by their Engineering wing.

In 3rd SSCM, it was decided to place the augmentation proposal before ensuing ERPC/TCC.

Powergrid may update. Members may settle.

Deliberation in the TCC meeting

Powergrid informed that the space is already available for 3rd 400/220kV ICT which has been approved in 17th SCM.

BSPTCL informed that there is immense load growth at Gaya in the near future and so there will be a requirement of 4th ICT.

CTU informed that a system study for Bihar system is in progress in consultation with BSPTCL. In this study all the coming proposals of BSPTCL along with future load growth will be studied and most optimum and technically feasible solution will be provided.

After that, it will be placed before the SCM for central sector planning.

ITEM NO. B16:	**Priority-based commissioning of bus reactor for control of high voltage during lean periods**

In winter season, the demand in E. Region and W. Bengal in particular reduces, thereby aggravates the high voltage problem at some of the 400kV S/Stns.

In 31st TCC meeting, the status of reactors which needs to be commissioned on priority basis to control the voltage of important sub-stations was reviewed. The status as updated in 31st TCC is as given below:

S.N.	Reactor	Status
1	125 MVAR reactor of Jeypore	By December, 2015
2	125 MVAR Bus reactor of Jamshedpur	Will be available by April/May 2016 and will be commissioned in another 3 months
3	125 MVAR Bus reactor of Biharshariff	
4	Additional bus-reactor of 125 MVAR capacity at Beharampur on urgent basis.	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.
5	50 MVAR at Behrampur on urgent basis by diverting from Rourkela which is kept as a spare	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.

In 3rd SSCM, Powergrid, ER-II informed that for 50 MVAR reactor from Rourkela is being shifted to Beharampur and will be installed as per schedule i.e. by June 2016. Regarding the installation of 125MVAR reactor it was informed that it is also as per schedule and will be

installed by December, 2016. However, the status of 50 MVAR reactor after the commissioning of 125 MVAR could not be updated.

The status of other Reactors could not be updated as Powergrid, ER-I & Odisha were not present in the meeting.

Powergrid may update.

Deliberation in the TCC meeting

Powergrid updated the status as follows:

S.N.	Reactor	Status
1	125 MVAR reactor of Jeypore	*Commissioned*
2	125 MVAR Bus reactor of Jamshedpur	Will be available by June 2016 and will be commissioned in another 3 months.
3	125 MVAR Bus reactor of Biharshariff	
4	Additional bus-reactor of 125 MVAR capacity at Beharampur on urgent basis.	Will be made available for commissioning by Dec, 2016.
5	50 MVAR at Behrampur on urgent basis by diverting from Rourkela which is kept as a spare	By June, 2016. After commissioning of 125 MVAR reactor the 50 MVAR will be removed and kept spare.

ERLDC informed that there is severe high voltage problem at 400kV Jamshedpur and requested Powergrid to expedite.

TCC advised Powergrid to explore the possibility of diverting the reactor from the other schemes.

Powergrid agreed.

ITEM NO. B17:	Status of PLCC system installed in Eastern Region

In 30th TCC/ERPC, Powergrid agreed to restore the PLCC system at both ends (its own end as well as the constituent end) of a line wherein the other ends are not operational for some reasons or others as one time job.

For the same Powergrid has already submitted the constituent wise cost estimate which was circulated to all concerned in 115th OCC with a request to forward comments/suggestion/go-ahead signal.

In 115th OCC, all the constituents were requested to go through the details of their respective control area and give their comments/suggestion, if any, by next OCC.

In 117th OCC, OPTCL submitted that OPGW communication installation is under way and they are planning to implement carrier protection using OPGW. They will convene a joint meeting with Powergrid for finalization of scheme.

WBSETCL informed that they will have a separate meeting with the competent authority on the issue.

JUSNL informed that they have forwarded the cost estimate to their highest authority for approval.

No comments was received from BSPTCL till date.

Cost estimates are again enclosed in **Annexure B17**.

OPTCL, WBSETCL, JUSNL and BSPTCL may finalise.

Deliberation in the TCC meeting

OPTCL and BSPTCL informed that they are planning to implement carrier protection using OPGW.

WBSETCL informed that they will rectify the PLCC system on their own.

JUSNL informed that the amount has been sanctioned and the letter has been issued to Powergrid for rectification of PLCC system.

ITEM NO. B18:	**OPGW on 400kV Ranchi-Maithon(RB) line**

Under ERSS-XIX transmission system new 400/220kV Sub-station at Dhanbad is proposed to be created through TBCB route with LILO of existing 400kV Ranchi-Maithon (RB) Transmission Line. OPGW is being proposed for communication connectivity in LILO portion alongwith construction of transmission line portion. Similarly, PMU, communication equipments and associated equipments for Dhanbad Substation are being covered in Substation Portion. The existing 400kV Ranchi-Maithon (RB) Transmission Line does not have OPGW presently and same is required to provide connectivity with OPGW in Dhanbad.

The issue was discussed in the 6th PRM (ULDC) meeting dated 29th December 2015 and it was agreed that OPGW would be laid by POWERGRID on 400kV Ranchi-Maithon (RB) (188Kms) line and recommended for ERPC approval.

Further in 31st ERPC meeting, requirement of OPGW in Barh-Gorakhpur (354Kms) and Rajarhat-Farakka (345Km) for connectivity of Rajarhat and Motihari substation respectively was approved.

The estimated cost of the implementation of the OPGW scheme of the above lines (887Kms) including communication equipments would be approx. Rs.23 crores. The cost shall be recovered as a tariff to be determined by CERC and shall become part of the commercial agreement signed by the constituents of Eastern Region in ULDC scheme.

TCC may approve.

Deliberation in the TCC meeting

Powergrid informed that the LILO of 400 kV Ranchi-Maithon (RB) line at Dhanbad S/s under TBCB route will be coming with OPGW but the existing line is not having OPGW. So, for connectivity of Dhanbad S/s this line must have OPGW.

TCC approved and referred to ERPC for further concurrence.

ITEM NO. B19:	VDU in place of PDC for BSPTCL & JUSNL: Requirements under URTDSM Project

Under URTDSM project, full-fledged PDC has been envisaged at SLDC's of Bihar and Jharkhand.'01' (One) PMU is to be installed at Muzaffarpur TPS in Bihar and '02' (Two) PMUs at Tenughat & Patratu in Jharkhand. The space constraints issue at BSPTCL SLDC and JUSNL was deliberated in the 5th PRM meeting of ERPC on 24.09.2015. It was agreed that PMUs of these power plants may be directly connected with ERLDC and Bihar and Jharkhand PDC may be deleted from the scope of URTDSM Project.

TCC may approve.

Deliberation in the TCC meeting

BSPTCL and JUSNL agreed for remote VDU in place of PDC under URTDSM project.

TCC approved and referred to ERPC for further concurrence.

ITEM NO. B20:	ER -SCADA/EMS Upgradation Project

Under Eastern Region Up-garadtion Project, SCADA system of all SLDCs has been commissioned and operations have been shifted from ALSTOM to Chemtrols/OSI system. EMS testing at ERLDC has been completed and the testing at other centres is under progress. The same is being monitored in the monthly PRM meeting of ERPC. However following issues needs to be expedited:-

- Building readiness for backup Control Centre for WBSETCL.
- Air-conditioning for all communication equipment locations needs to be expedited on priority especially at BSPTCL locations namely Bodhgaya, Bihar shariff, BTPS, Fatwa, Jakkanpur, Samastipur, MTPS Kanti & Hajipur and Control centre of JUSNL.

Powergrid may update. Respective members may settle the issue.

Deliberation in the TCC meeting

Respective constituents updated the status as follows:

- *Building readiness for backup Control Centre for WBSETCL: will be completed by March, 2016.*
- *Air-conditioning for all communication equipment locations needs to be expedited on priority especially at BSPTCL locations namely Bodhgaya, Biharshariff, BTPS, Fatwa, Jakkanpur, Samastipur, MTPS Kanti & Hajipur : will be provided by March, 2016.*
- *Air-conditioning for Control centre of JUSNL: In progress.*

ITEM NO. B21:	Non-availability of 48V Power Supply at RTU locations under EMS/SCADA Upgradation Package in JUSNL & BSPTCL Sector

48V DC is not available at 13 locations of JUSNL holding up the RTU commissioning andLDMS installation work. Name of the sites are Adityapur, Chakradharpur, Daltonganj, Dalbhumgarh,Dumka, Japla, Kamdara, Kanke,Manique ,Namkum,Nouamundi, Pakur, Sahebganj.

In 8 Nos. locations the R&M work is going on and the interfacing cables of the commissioned RTUs have been disconnected. Sites are Arrah, Sabour, Dumaraon, Sitamarhi, Karmanasa, Sonenagar, Pandaul, Muzaffarpur(Ramdayalu).

Powergrid may update. Members from Jharkhanad may ensure.

Deliberation in the TCC meeting

JUSNL informed that 48V DC in their respective locations will be available by April, 2016.

BSPTCL informed that they have ordered for 58 nos of 48V DC PS to PGCIL in 2013 and for the above 8 locations 48V DC PS may be included.

ITEM NO. B22:	**Payment pending from JUSNL in RTU AMC since long time.**

RTU AMC has been expired on 28.04.2015, but till date payment is not received from JUSNL. The issue has been discussed in last several meetings including SCADA meeting at ERLDC where JUSNL committed for release of payment, but till date payment is not released. This is critically affecting further payment to the executing parties and closing of the contract. The details are as follows:

Details of RTU AMC Payment due from JUSNL			
Sl. No	**Qtr**	**Invoice no & date**	**Amount Payable**
1	17th	C/ER-II/JSEB/RTU/Maint-2014/17 dated 19.05.14	62043
		C/ER-II/JSEB/RTU/Maint over -2014/17 dated 19.05.14	10456
		Sub total for 17th quarter	72499
2	18th	C/ER-II/JSEB/RTU/Maint-2014/18 dated 01.08.14	62043
		C/ER-II/JSEB/RTU/Maint over -2014/18 dated 01.08.14	10456
		Sub total for 18th quarter	72499
3	19th	C/ER-II/JSEB/RTU/Maint-2014/19 dated 09.10.14	62043
		C/ER-II/JSEB/RTU/Maint over -2014/19 dated 09.10.14	10456
		Sub total for 19th quarter	72499
4	20th	C/ER-II/JSEB/RTU/Maint-2015/20 dated 05.03.15	62043
		C/ER-II/JSEB/RTU/Maint over -2015/20 dated 05.03.15	10456
		Sub total for 20th quarter	72499
		Total payment due	Rs.289996

Members from Jharkhand may express their commitment.

Deliberation in the TCC meeting

JUSNL assured to clear the dues within a week.

ITEM NO. B23:	**Commissioning of 3X110 MVAR switchable line reactor at Sasaram of 765 kV S/C Sasaram – Fatehpur line as Bus Reactor (Part of Transmission System associated with DVC &Maithon RB Generation Projects- Common Scheme)**

The approved scope of the subject transmission system indicated 3X110 MVAR Switchable Line Reactor (for 765kV S/C Sasaram-Fatehpur line) at Sasaram sub-station. Keeping in view the voltage profile in ER, the 3X110 MVAR Switchable Line Reactor was commissioned as Bus reactor utilizing one no. 765kV Line Bay (for 765kV S/C Sasaram-Fatehpur line) till the time 765kV S/C Sasaram-Fatehpur line was commissioned.

However, CERC (vide Order No. 41/TT/2013) disapproved the commercial declaration of this switchable line reactor as Bus reactor from 01.03.2013 and deferred the same to 01.06.2013 (i.e. commissioning date of 765kV S/C Sasaram-Fatehpur line) citing non-approval in ERPC as the reason. Accordingly, constituents' approval for these reactors is required. The matter may be discussed and members may agree for post-facto approval of installation of Switchable line reactors of the subject mentioned line as bus reactors at Sasaram along with associated one no. 765kV line bay in view of delay in commissioning of 765kV S/C Sasaram-Fatehpur line.

Members may deliberate and approve.

Deliberation in the TCC meeting

After detailed deliberation, TCC felt that the issue should be deliberated in commercial committee meeting.

ITEM NO. B24:	**SCADA data compliance — CERC directives**

Petition No. 007/SM/2014 (Date of Hearing – 22.05.2014, Date of order – 29.01.2016) in matter of Non-compliance of Commission`s direction dated 26.9.2012 in Petition No.168/MP/2011: Telemetry petition:

1) Ref Order Dated 19.12.2013 in Petition No. 56/SM/2013
2) Ref Order Dated 25.4.2014 in Petition No. 56/SM/2013,

Some Excerpts of the Order dated 29.01.2016 is as placed below:

a) Perusal of the above data reveals that PGCIL has provided telemetry facilities in their all sub-stations. However, there is no satisfactory improvement in the intermittency of telemetry in the sub-stations of PGCIL. **In fact, in Eastern Region and North Eastern Region, the intermittency in telemetry has increased. We are not satisfied with the improvement in the intermittency in telemetred of PGCIL`s system. Despite our repeated instructions, PGCIL has not made sincere efforts to improve the problem of intermittency in its telemetry. We direct PGCIL to undertake effective monitoring of telemeter data and to minimize the intermittency in telemetry in all regions within six months from the issue of the order. NLDC is directed to submit status of PGCIL`s telemetry within one month thereafter.**

b) Under the Grid Code, it is the responsibility of all users, STUs and CTU to provide systems to telemeter power system parameters in line with interface requirements and other guideline made available by RLDC and associated communication system to facilitate data flow up to

appropriate data collection point on CTUs system. Telemetry of on-line operational data is not only essential for effective monitoring of grid but also forms key input for effective running of State estimation and other EMS tools at RLDC and SLDCs, which are essential for reliable and secure operation of the grid. **In view of the critical importance of telemetry and associated communication system for ensuring reliability in operation of the grid and optimum utilization of the transmission system, there is an imperative need for all users to establish the telemetry and associated communication system in time bound manner so that the power system operation may be most reliable and optimum. Moreover, in view of the requirement of communication system for a generating station and sub-station, the planning should be done in advance by the generating company and transmission licensee to ensure that necessary system are in place before commissioning of generating station or sub-station to take care of the communication requirements even at the time of injection of power infirm by a generating station and sub-station during testing.**

c) **Energy and Power Department, Govt. of Sikkim, Jharkhand State Electricity Board, Maithon Power Ltd., have not filed their replies to the show cause notice.** We express our displeasure at the conduct of the respondents to ignore the directions of the Commission and NLDC, and non-compliance of the provisions of the Grid Code, especially in such a matter where grid security is involved. We once again direct the above mentioned utilities to up-date status of telemetry in their system within one month of this order with an advance copy to NLDC, respective RLDC and RPC. Based on the replies, respective RLDC will monitor the implementation of telemetry and in case of any difficulty, the matter may be discussed and sorted out in the RPC meetings. If any of these entities does not submit the information, the concern RLDC may file application before the Commission against the said entities under Section 142 of the Act.

d) **We further direct all the utilities/generating companies which have to still establish telemeter power system parameters as per details given in para11 above to provide data to RLDCs/SLDCs as per the provisions of the Grid Code and CEA Grid Standards Regulations by 31.7.2016. If the utilities/generating companies do not comply with our directions, it will be construed as non-compliance of the order of the Commission and appropriate proceedings under Section 142 of the Electricity Act, 2003 shall be initiated against such utilities/generating companies. NLDC is directed to submit user- wise latest status of telemetry, by 31.8.2016.**

Every month, ER telemetry status is being posted in ERLDC website. Monthly status as submitted to CERC is placed at **Annexure-B24** for reference.

Members may ensure compliance. TCC may give guidance.

Deliberation in the TCC meeting

ERLDC informed that Sikkim, JUSNL and MPL have not filed their replies to CERC show cause notice. CERC has directed the above mentioned utilities to up-date status of telemetry in their system within one month (i.e. by 29 February, 2016) NLDC, ERLDC and ERPC.

Further, it was informed that all the utilities/generating companies have to establish telemeter power system parameters to provide data to RLDCs/SLDCs as per the provisions of the Grid Code and CEA Grid Standards Regulations by 31.7.2016.

TCC advised all constituents to comply the CERC directive.

ITEM NO. B25:	**O&M of 220 kV Farakka –Lalmatia Transmission System (FLTS) -- Writ Petition (W.P.NO.17044 (W) of 2015) before Hon'ble High Court at Calcutta**

220KV Farakka-Lalmatia transmission system caters an important role in the national grid. With an ISGS like FSTPS at one end, this line provides a very reliable source of supply to Lalmatia, Sahebganj, Dumka, Pakur, Deoghar etc. loads of Jharkhand. The line has a crucial role in successful islanding of FSTPS with matching load of Jharkhand, as per the defence plan formulated, in the event of severe grid contingency. This islanding scheme is designed on recommendation of the enquiry committee formed after grid disturbance of 2012. Moreover if there is a total blackout of KhSTPS or FSTPS, under exceptional conditions, this line would play a vital role in extending start-up power from one station to the other.

The background details on O&M of 220 kV Farakka –Lalmatia Transmission System (FLTS) are placed below:

- Rajmahal area of ECL receives power supply from Farakka Super Thermal Power Station of NTPC through 220 kV Farakka –Lalmatia Transmission System (FLTS) at its Dhankunda sub-station, Lalmatia, JUSNL.
- 220 kV Farakka –Lalmatia transmission system (FLTS) was constructed by NTPC for which the fund was provided by ECL, the owner of the line.
- Since inception NTPC has undertaken the operation & maintenance (O&M) of 220kV Farakka –Lalmatia transmission system along with its associated switchyard equipments and ECL is bearing the expenditure for the same.
- A major portion of the line was located earlier in undivided Bihar and on formation of Jharkhand the same now falls within the geographical boundary of Jharkhand.
- At present through Farakka – Lalmatia line, Jharkhand Urja Sancharan Nigam Limited (JUSNL) is not only giving power to Rajmahal area of ECL but also to district of Godda, Dumka.
- **NTPC had undertaken the construction of FLTS as per decision in a meeting with NTPC, CEA, Department of Coal, Department of Power held on 30-03-1985** & chaired by the then Hon'ble Union Minister (Coal, Steel & Mines), Shri Vesant Sathe. In the meeting ECL agreed to fund for the same with express stipulation that NTPC would supply power to ECL directly at concessional tariff.
- Subsequently, on interpretation of Indian Electricity Act, 1910 and Electricity Supply Act, 1948, it appeared that ECL being a consumer and not a Licensee could not own and operate & maintain FTLS as well as they could not get concessional tariff from NTPC.
- On power supply through FLTS in **a joint meeting** between Eastern Coalfields Limited (ECL), Bihar State Electricity Board (BSEB) & NTPC **held on 31.08.1990---**
  - i) BSEB desired that FLTS should be handed over to BSEB after proper documentation etc. and mentioned that they would take up the issue of O&M of this line only after FLTS is handed over to them.
  - ii) NTPC Clarified that since the line was made on behalf of ECL, they would hand over the line to ECL/BSEB on finalization of the issue between ECL & BSEB.

But the same was never materialised.

- Thereafter in view of exigencies, NTPC on request from ECL agreed to operate and maintain the FLTS till takeover of the same by the then BESB & power supply to ECL, Lalmatia through FLTS was commenced from 14.06.1990.
- NTPC & ECL continued the arrangement till recently on chargeable basis.
- **In 101st OCC meeting of ERPC held on 26.09.14**, NTPC expressed its inability to continue with the practice in vogue citing their incompetence in the transmission field.
- NTPC further informed that request was made to JSEB / PGCIL for operation & maintenance of 220kV Farakka –Lalmatia transmission system along with its associated switchyard equipments. NTPC ensured facilitating transfer of operation & maintenance contract of 220kV Farakka –Lalmatia transmission system. It was also informed that in a meeting between ECL- NTPC held on 16.06.14 M/S ECL has also consented for O & M agreement with JSEB / PGCIL.
- Further in 101st OCC, Jharkhand State Electricity Board (JSEB) also confirmed that a meeting was held with ECL on 26th & 27th Aug, 2014 wherein ECL in principle agreed to hand over O&M of the line to JSEB subject to approval of ECL board.
- **In 105th OCC held on 22.01.15**, NTPC informed that ECL management intends to hand over the line to Powergrid for O&M and it will sit with Powergrid to decide.
- **In 29th TCC/ERPC meetings held on 13th /14th February, 2015**, Powergrid expressed their unwillingness to take over the O&M of the line. JUSNL on the other hand placed their readiness to take the O&M part of the line and thereby TCC advised ECL to handover the O&M part of the line to JUSNL on chargeable basis keeping the ownership with them.
- 29th TCC/ERPC also advised both ECL and JUSNL to discuss the commercial and technical issues in lower forums of ERPC. TCC also advised secretariat to convene a special meeting with all concerned for final settlement of the issue.
- Accordingly, **a special meeting was convened on 11.03.2015** to settle the issue, wherein--

  i) ECL was requested to continue the maintenance contract with JUSNL with the payment of same amount as is being paid to NTPC so that emergency supply to coal mines is kept uninterrupted. JUSNL informed their willingness for taking over the maintenance of the 220 kV Farakka-Lalmatia Line at the same payment/rates as was being paid to NTPC by ECL;

  ii) But ECL raised certain commercial issues on which deliberations were not merged and forum decided for further deliberation with higher officials of JBVNL, JUSNL, ECL and NTPC.

- **A high level special meeting was convened on 24.03.2015 at Ranchi** under the Chairmanship of Shri S.K.G Rahate, IAS, Principal Energy Secretary, Govt. of Jharkhand and CMD, JUVNL. In the meeting after threadbare discussions in line with provisions of existing electricity act & regulations it was decided :

QUOTE ……

" i) ECL is to hand over the whole asset of Farakka-Lalmatia Transmission System (FLTS) to JUSNL within three months.

While handing over of the FLTS asset, it was decided that joint supervision is to be made by JUSNL, NTPC, ECL and other concerned parties.

Handing over of the asset will be in line with existing provisions of JSERC regulations/established practice and the asset should be in healthy and fully operational condition.

ii) On completion of taking over the asset, JUSNL is to file a tariff petition before JSERC.

iii) Afterwards, till tariff is declared by JSERC, ECL will be charged by JBVNL at its existing tariff of JBVNL and JBVNL will be charged by JUSNL at its existing tariff.

iv) On declaration of tariff by JSERC, ECL will be charged by JBVNL at approved tariff of JBVNL for their consumption of power as consumer of Jharkhand and JBVNL will be charged by JUSNL at their approved tariff.

v) Till handing over of asset by ECL to JUSNL, ECL is to carry out the O&M through NTPC as per present practice.

It was further decided that:

In case of non-compliance of decision (i) above, JUSNL should file a petition before JSERC seeking application of penal provisions of Electricity Act, 2003 on ECL.**"**

…… UNQUOTE

- The issue was again placed in the **30th TCC/ERPC meetings held on 19th /20th June, 2015** in which --

  i) Keeping in view of importance of this line and for the benefit of JUSNL, TCC advised JUSNL to place official request to ECL from their highest authority and arrange for joint survey at the earliest.

  ii) TCC also advised JUSNL to file a petition before JSERC as per the provisions, if ECL does not turn up for handing over the line.

  iii) Further, TCC advised ERPC Secretariat to take up the issue with CEA and CERC, if JUSNL fails to take any appropriate action by 31st July, 2015.

  iv) ERPC advised JUSNL to place a roadmap to ensure proper O&M of Farakka- Lalmatia Transmission system in line with the decision taken in the special meeting of 24.03.2015 within a week to ERPC Secretariat.

  v) ERPC also advised NTPC to continue the O & M of 220 kV Farakka –Lalmatia transmission system till the line is handed over to JUSNL.

- **In 110th OCC held on 29.06.2015**, JUSNL informed that ECL is not cooperating for joint survey of the line and therefore legal documents related to this line are being explored to file petition before JSERC.

- **Eastern Coalfields Limited (ECL) filed a Writ Petition (W.P.NO.17044 (W) of 2015)** under Article 226 of Constitution of India, inter alia, "**Challenging the purported resolution adopted in the meeting held on 24th March, 2015 of the Eastern Regional Power Committee**" before Hon'ble High Court at Calcutta, which was communicated by Sri Partha Basu, Solicitor & Advocate acting on behalf of Eastern Coalfields Limited vide his letter No.P/0030/16/H/NR dated 20.7.2015.

- ERPC vide letter dated 06.08.2015 communicated the issue to CEA and CERC for their guidance on the issue.
- For safe & secure operation of grid ERPC also requested NTPC to continue with the existing practice of O&M till final decision is taken by JSERC or other competent authorities on handing over of FLTS.
- **In 112th OCC held on 21.08.2015**, NTPC agreed to carry out the O&M of the above line till settlement of the issue.
- **No summon/court notice was received by ERPC secretariat.**
- **However as informed by** Sri Partha Basu, Solicitor & Advocate acting on behalf of Eastern Coalfields Limited **the petition was heard on 2nd February, 2016** before the Hon'ble Justice Dr. Sambuddha Chakrabarti (copy of the communication by ECL advocate is enclosed at **Annexure- B25**) in which ---
  - i) The Hon'ble Court was pleased to grant liberty to add Jharkhand Urja Nigam Limited, as a party respondent. The Hon'ble Court was further pleased to stay the resolution dated 24 March, 2015 for a period of 10 weeks from the date of the order.
  - **ii) The Hon'ble Court gave direction for filling the Affidavit in Opposition by 4 weeks from the date of the order, Affidavit in reply by 2 weeks thereafter and the matter to appear in the monthly list of April, 2016.**

Till date court order was not received.

JUSNL, NTPC may update the present status.

TCC may guide on the issue.

Deliberation in the TCC meeting

MD, JBVNL informed that they were eager to upgrade the 220 kV Farakka Lalmatia line to Double Circuit line. TCC advised that JUSNL may give an agenda in the ensuing Standing Committee meeting of CEA to which JUSNL agreed.

MS, ERPC stated that major concern of ERPC Secretariat was that the FLTS system should be maintained in a proper manner as the system is important for secure grid operation, Farakka evacuation as well as proposed Farakka Islanding Scheme. He further clarified that the issue of maintenance of 220 kV Farakka-Lalmatia System had arisen because NTPC had expressed its lack of qualified manpower for maintenance of Transmission Line. Now, since NTPC in 112th OCC meeting had agreed to continue maintenance of the line the issue becomes null and void. Therefore it was proposed the decision of 24.03.2015 could be kept in perpetual abeyance.

NTPC expressed that they could continue maintenance of the line only till such time as some other suitable agency could be identified by ECL. They however requested that the identification of suitable agency for maintenance of the 220 kV FLTS should be done expeditiously.

MD, JBVNL, informed that as the issue has been put up to the Hon'ble High Court of Calcutta, the minutes dated 24.03.15 may not be touched for now. MS, ERPC informed that in that case ERPC Secretariat would have to engage the services of a legal expert as ERPC Secretariat does not have a legal cell. Constituents agreed to the proposal of MS, ERPC for engaging the services of a legal expert for representing the Secretariat before the Hon'ble High Court of Calcutta. Constituents further agreed to share the legal expenses on equal basis.

MD, JUSNL felt that some methodology may be explored for resolution of issues involving non ERPC members/third parties.

ITEM NO. B26:	Repair of 03 no's 50 MVA (220/132) ICT

In 29th TCC/ERPC meeting, it was placed that 03 no's 50 MVA, 220/132kV ICTs will be available as spare from Malda (02 Nos) & Birpara (01 No) after the augmentation by 160 MVA ICTs. These ICTs need to be repaired. The minimum cost for repairing comes to Rs. 3,63,34,950/- as per approved tendering procedure. After repairing all three transformers will be available as Regional Spares at Malda (02 Nos) & Birpara (01 No).

Discussion is to be held for sharing the cost of repairing for 03 no's transformers among constituents.

In the 117th OCC meeting, OCC felt that it is a commercial issue and refer the issue to Commercial Committee.

In 31st CCM, It was felt by the Commercial Sub Committee that there are no 50 MVA (220/132 kV) transformers in use in ER except in Sikkim perhaps. Therefore the proposal of repairing three old 50 MVA transformers was not financially prudent at this juncture. Instead members felt that procurement of one 160 MVA new transformer as regional spare under buyback scheme by exchanging the three 50 MVA transformer could be a better proposal. Alternatively, Powergrid may scrap these transformers.

TCC may decide.

Deliberation in the TCC meeting

Powergrid informed that as the asset was decapitalized as per the CERC norms and they propose to scrap the three 50 MVA transformers.

TCC concurred.

ITEM NO. B27:	Workshop & Expenditure details

In accordance with the decision of TCC and ERPC, ERPC & ERLDC in coordination with GRIDCO organized two day workshop on 27.08.2015 and 28.08.2015 at Bhubaneswar focusing the power system operation and market operation including recent developments and best practices.

An expenditure of **Rs. 6.11681 Lacs** incurred for arranging the above workshop have been reimbursed to GRIDCO Ltd from Reactive account on 10.12.2015

Training cum Workshop on Power System Protection

Workshop at Talcher STPP on generator protection and HVDC protection was held form 23.11.2015 to 27.11.2015. The total expenditure is Rs. 2, 62,404 including faculty payments which was incurred by secretariat.

Members recommended to TCC for post facto approval for reimbursement of expenditure incurred for Bhubaneswar workshop to GRIDCO and expenditure incurred for Talcher workshop to NTPC & the expenditure incurred by ERPC secretariat towards faculty payments.

TCC may give post facto approval of the expenditure for Bhubaneswar workshop & for that of Training programme in Talcher.

Deliberation in the TCC meeting

TCC approved the expenditure of Rs. 6,11,681/- for Bhubaneswar Workshop and Rs. 2,62,404/- for Talcher Workshop and advised ERLDC to make re imbursements from ERPC Reactive Pool Account for the Talcher Workshop.

3rd Training cum workshop on Power System Protection

In the 29th TCC/ERPC one week training once per quarter on protection related issues was approved. Subsequently, one week training programme on Transmission System Protection at ERPC, Kolkata and another on Generator Protection at TSTPS, Talcher were conducted in May, 2015 and November, 2015.

Further, it is proposed to organize one week **Training cum workshop on Transmission System Protection (Module-II)** during March/April, 2016 at ERPC, Kolkata for which the tentative programme is enclosed at **Annexure- B27.**

In a special meeting on Bihar issues held on 05.02.2016, BSPTCL appreciated Secretariat's initiatives and informed that protection engineers of Bihar got benefited from the last two training programmes on Power System Protection. Further, BSPTCL requested that some more training session of basic level Power System Protection may be imparted to their new protection engineers at Patna.

Members may note and ensure participation from respective control area in the next training programme.

Deliberation in the TCC meeting

Members noted with appreciation that third Training cum workshop on Power System Protection is being organized by ERPC Secretariat. JUVNL and WBSETCL also gave their in principal approval for hosting the next workshop/seminars. JUVNL/WBSETCL were requested to give their proposal to ERPC Secretariat at the earliest.

ITEM NO. B28:	Installation of SEM at Haldia

SEM is placed only at Subhashgram(PG) end of 400 KV Haldia(CESC)-Subhashgram(PG) D/C. No standby SEM has been placed at Haldia end till now. In absence of Subhashgram end data; there is no back up meter available for accounting of the power flow through that Tie line.

In last CCM held on 16.09.15, it was decided that WBSETCL/SLDC will early resolve the issue with CESC authorities. Unfortunately, till now issue is not resolved.

In 31st CCM, WBSEDCL representative informed that they are not aware of any development on this issue.

It was decided to refer this issue to TCC for further guidance.

CESC may update.

Deliberation in the TCC meeting

CESC informed that they have already processed and requisite SEM meter will be positively installed by May'2016.

ITEM NO. B29:	Procurement of new SEM's and DCD/Laptops

In 30th ERPC meeting procurement of 965 no of SEM's and 110 nos of Laptop/DCD was approved. Further 31st TCC/ERPC approved the cost sharing mechanism of expenditure on SEM's and DCD/Laptops along with POWERGRID overhead charges @ 15% by the beneficiary constituents of Eastern Region in proportion to the share allocation for the month in which the proposal was approved in the ERPC meeting.

In 31st CCM, Powergrid informed that tendering was complete and LOA was expected to be issued by the end of this month.

Powergrid was requested to confirm whether bulk time correction and AMR facility are present in the meters to be procured. If those are not present Powergrid may discuss and get them incorporated before the award of tender.

Powergrid may update.

Deliberation in the TCC meeting

Powergrid intimated that order had been placed on 15.03.2016. It was clarified that these 965 SEM meters would have bulk time correction facility. For integrating AMR with these meters, the procedure being presently followed would continue.

ITEM NO. B30:	Non-release of payment towards service charges for maintenance of EMS/SCADA system

LTSA (Long term Service Agreement) contract for EMS/SCADA system installed at all control center has been awarded to M/s Alstom T&D Ltd. on 15th January 2010. Status of due payment to be received from JUSNL (erstwhile JSEB), DVC and BSPTCL is as follows:

Outstanding against EMS SCADA AMC as on 02.02.2016

Constituents	Total Outstanding (in Rs.)	Due date	For the quarter of
JUSNL	1453059	January 2015	4th Nov 15 – 3rd Feb 16
DVC	780227	16th October 2015	
BSPTCL	15327	14th November 2015	18th Jan 2015 to 17 th Apr 2015 (21st Qtr)

Besides the above Outstanding, service tax payment of Rs. 145149/- is also due from JUSNL since Oct 2014 onwards.

In 31st CCM, JUSNL representative was not present. DVC informed that they would release the payment within 2-3 days.

BSPTCL representative informed that they have made up to date payment of EMS-SCADA AMC. BSPTCL was requested to give the payment details to ERLDC for confirmation from their end.

ERLDC may update.

Deliberation in the TCC meeting

ERLDC informed that DVC had already settled their dues. JUSNL informed that the bill is under process and would be released within 15 days. BSPTCL informed that the outstanding would be cleared shortly.

ITEM NO. B31:	Re-conductoring of 400 kV D/C Farakka-Malda with HTLS

In 15th SCM held on 27.08.2013 re-conductoring of Farakka – Malda 400 kV D/c line with high ampacity HTLS conductor and upgradation/replacement of associated bay equipment was approved.

In 114th OCC, Powergrid informed that they need shutdown of 400KV Farakka-Malda Ckt-II for three months for HTLS conductor replacement.

After detailed discussion, OCC allowed the shutdown of 400KV Farakka-Malda Ckt-II for one month w.e.f. 25th October 2015 for HTLS conductor replacement.

It was also decided that the progress of the work will be reviewed in OCC meetings and accordingly the shutdown will be reviewed as per the prevailing grid condition.

Subsequently, in a special review meeting held on 01.02.2016, the status as on 31.01.2016 was reviewed which is---

Ckt-I: 26.334 ckt km
Ckt-II: 30.992 ckt km
Total balance: 25.674 km

After detailed deliberation, it was agreed that Powergrid will put in best efforts to bring the 400 kV Farakka-Malda D/C line by 15.02.2016 (The minutes of the said meeting is placed at **Annexure- B31)**.

Powergrid may update on the latest developments.

Deliberation in the TCC meeting

Powergrid informed that 70% of the work has been completed and rest will be completed by March, 2016.

WBSETCL informed that they are facing severe low voltage at Dalkhola. To improve the voltage profile the bus reactor at 400kv Binaguri needs to be switched off. WBSETCL stressed that the line should be returned by February, 2016 as there will be election in March, 2016.

Powergrid agreed to switch off the reactor with appropriate direction from ERLDC and agreed to expedite the work at the earliest.

After detailed deliberation, it was decided that another 10days extension will be given to complete the work and after that it will be reviewed in lower forum.

ITEM NO. B32:	**Certification of DC of MPL --- WBSEDCL**

MPL on receipt of tariff order from CERC for the entire capacity of 1050 MW requested ERLDC in its letter dated 26th August 2015 to schedule its power and certify its availability as is done in case of other ISGS.

In 115th OCC the issue was placed.

DVC and WBSEDCL, as beneficiary of MPL, endorsed the request & responded that MPL is having LTA for full quantum of power and the tariff of whole plant (i.e. 1050 MW) was determined by CERC. So, scheduling of MPL may be done at par with other ISGS stations.

ERLDC/ERPC pointed that the allocation of MPL power is not in percentage-wise (like ISGS stations) rather it is in MW-wise. So it is difficult to calculate percentage-wise allocation for MPL units in case of any back down or shutdown of units.

OCC advised that MPL should approach CEA/CERC/MoP for further clarification on the issue along with percentage-wise allocation of MPL power. Further, OCC advised all the beneficiaries of MPL, if they want, to give their consent letters to ERPC secretariat so that it can be forwarded to CEA for issuing the percentage-wise allocation for MPL power.

Said letters from beneficiaries were not yet received by secretariat till date.

But issue for certification of DC of MPL units by ERLDC was again raised by MPL in 116th OCC meetings.

ERPC/ERLDC in 116th OCC again reiterated that MPL should approach CEA/CERC/MoP for percentage-wise allocation of MPL power.

Clarification from CEA/CERC/MOP is not yet received by ERPC/ERLDC.

By the time WBSEDCL is again placing this agenda.

MPL, DVC, WBSEDCL may update on the latest developments.

Deliberation in the TCC meeting

It was informed that DVC and WB have given their consent letter.

MPL informed that they have already prepared the documents for filing of the petition to CERC and the petition will be filed shortly.

ITEM NO. B33:	Agenda items submitted by NHPC

1) Non-opening of LC of requisite value :-

NBPDCL has opened Letter of Credit of amounting to Rs.2.10 Crs against requisite amount of Rs.6.65 Crs. Similarly, SBPDCL has opened Letter of Credit of amounting to Rs.2.90 Crs against requisite amount of Rs.8.44 Crs. Although BSPHCL has provided L.C amounting to ₹2.40 Crs which is valid upto 27.12.2016, it is intimated that respective discom i.e. NBPDCL & SBPDCL should provide L.C of requisite values and L.C provided by BSPHCL may be discontinued.

In 31st CCM, NHPC explained.

SBPDCL/NBPDCL representative informed that they were processing the case and the LC of requisite amount will be opened shortly.

2) Payment of outstanding dues for more than 60 days.

i) WBSEDCL

As per commitment, WBSEDCL had to pay arrear dues of TLDP-III in 10 (ten) nos. installments (for energy supplied up to Feb'2015). We were to receive seven installments till date but we have actually received only three installments (i.e. Rs. 66.03 Crs.) against arrear dues of Rs. 220.13 Crores.

As on date, an amount of Rs.154.09 Crs is still outstanding against arrear dues of Rs.220.13 Crores and surcharge amounting to Rs.24.39 Crs (up to 31.12.2015) is also outstanding. Further, an amount of Rs. 5.51Crs including surcharge of Rs. 0.95 Crs is outstanding for more than 60 days in respect of energy supplied from Rangit & Teesta-V Power Stations. We are regularly making request to WBSEDCL to clear all outstanding dues in respect of Rangit, Teesta-V and Teesta Low Dam-III power Stations.

ii) NBPDCL

An amount of **Rs.16.48 Crs** is outstanding for more than 60 days including surcharge of **Rs. 1.48 Crs**.

In 31st CCM, NHPC explained that WBSEDCL had cleared around 110 Crores already and requested for release of the balance outstanding of around 44 Cr. Further, he requested WBSEDCL to release the Rs.24 Cr surcharge. WBSEDCL representative informed that they would work out the surcharge and their management will take a decision.

NHPC informed that the outstanding of SBPDCL was around Rs.10.80 Cr and requested NBPDCL and SBPDCL to release their dues at the earliest. NBPDCL/SBPDCL informed that the bills are under process and payment would be released at the earliest.

3) Signing of BPSA in respect of Rangit & Teesta-V Power Stations.

Signing of BPSA is pending in respect of Rangit & Teesta-V Power Stations by JBVNL & GRIDCO. NHPC has requested beneficiaries of Rangit & Teesta-V Power Stations except WBSEDCL to give their consent for extension of existing PPA on same terms and conditions for 35 years from COD of last unit of respective power stations. But NHPC has not received the consent of either of the beneficiary till date.

In 31st CCM, GRIDCO informed that the issue was under active consideration of their management and by Feb'16-March'16 some outcome was expected.

4) Signing of PPA in respect of Teesta-IV H.E.Project.

Signing of Power Purchase Agreement is pending with Gridco, SBPDCL & NBPDCL in spite of regular follow up with these discoms. NHPC has to submit the status of execution of PPA by the discoms who have given consent to procure power from the said hydro-electric project, to MOP. Gridco, NBPDCL & SBPDCL may be requested to sign the long pending Power purchase agreement on priority**.**

In 31st CCM, NHPC informed that the capacity of Teesta-IV HEP was 520 MW.
GRIDCO requested NHPC to visit their office for settlement of the issue.
NBPDCL/SBPDCL informed that the issue was under consideration of their management.

5) Signing of PPA in respect of Tawang H.E.Project, Stage-I & II.

Signing of Power Purchase Agreement is pending with Gridco, SBPDCL, NBPDCL, WBSEDCL, Sikkim and JUVNL in spite of regular follow up with these discoms. All above discoms may be requested to sign the PPA at the earliest so that status of signing of PPA by the beneficiaries may be intimated to MOP.

In 31st CCM, NHPC informed that Tawang HEP Stage-I was of 600 MW capacity and Tawang HEP Stage-II was of 800 MW capacity.
GRIDCO requested NHPC to visit their office for settlement of the issue of signing PPA.
NBPDCL/SBPDCL, WBSEDCL informed that the issue was under consideration of their management.
JUVNL, Sikkim representative were not present.

NHPC may update.

Deliberation in the TCC meeting

NHPC explained their issues in detail. BSPHCL invited NHPC to their office for discussion and settlement of their outstanding issues. JUSNL informed that they have sent their comments. Gridco informed that they had raised some issues and after receipt of clarification from NHPC end they could sign the PPA.

NHPC clarified that for Rangit and Teesta-V they are willing to extend the PPA with the same terms and conditions. MS, ERPC requested NHPC to meet with the beneficiaries in one to one basis for early resolution.

ITEM NO. B34:	**Status of Bandel Islanding Scheme-Agenda submitted by WBPDCL**

In 31st ERPC meeting Bandel Islanding Scheme was approved for implementation. WBPDCL informed that Bandel Islanding scheme has been taken up by them and would be implemented in right earnest. WBPDCL proposed for PSDF funding for implementation of Bandel Islanding Scheme.

Deliberation in TCC

It was informed that PSDF funding for such type of schemes may not be applicable. TCC felt that since other islanding schemes were funded from own source the same could be applied in this case also. TCC advised WBPDCL to fund the scheme from own source. WBPDCL agreed.

ITEM NO. B35:	Commercial operation of upgradation of 100 MVA #3 with 160 MVA ICT at Purnea-Additional Agenda by Powergrid.

Upgradation of 100 MVA ICTS of 220/132 kV Purnea S/s is being taken up by Powergrid in a phased manner and so far two ICTs have been upgraded and upgradation of third ICT is under progress. Out of this, replacement of one number 100 MVA ICT (ICT #3) is covered under ERSS XII. Investment approval for which was accorded by the board of directors of Powergrid on 19.05.14 with completion schedule of 30 months. However, keeping in view the load requirement BSPTCL had requested Powergrid for early replacement of the ICT with a spare ICT of ER which was approved by the members of OCC (96th OCC held on 24.06.2014). Accordingly the spare ICT was commissioned on 30.09.2014 as replacement of ICT #3 at Purnea which otherwise was scheduled for commissioning in September 2016. Since the spare transformer was used for replacement Commercial Operation of the Transformet could not be declared. Now, since the 160 MVA ICT ordered against the project has been delivered at site and in February 2016 and thus spare has been replenished. Powergrid would be declaring the Commercial Operation of upgradation of 100 MVA ICT#3 at Purnea S/s w.e.f February 2016.
Members may kindly note.

Deliberation in TCC meeting

TCC advised to discuss this agenda in the Commercial Sub Committee meeting of ERPC.

ITEM NO. B36:	Optimal scheduling of hydro energy of Bhutan--Additional agenda item raised by ERLDC

The energy availability from Bhutan power system starts reducing from November and by January comes down to around 1 MU / day. It is therefore desirable that such scarce hydro generation be utilised in an optimal manner; to provide maximum support during peak hours.

Accordingly NLDC (India) vide letter dated 4-2-16 requested NLDC (BPC) to advise all the hydro stations of Bhutan to plan their day-ahead generation schedules in such a way that maximum possible power is injected in Indian grid during peak hours while honouring the total energy availability for the day. Subsequently, ERLDC vide email dated 8-2-16 also requested BPC to maintain maximum power injection to Indian grid during 06:00 – 08:00 Hrs and 17:00 – 21:00 Hrs.

However despite flexing the schedule of Bhutan stations, NLDC BPC maintained a nearly flat generation on 9th, 10th, 13th and 14th February.

ERLDC may further explain.

Deliberation in TCC

ERLDC displayed plots of Bhutan generation for some days to explain their point. They emphasised that if schedule of ERLDC could be followed by NLDC, Bhutan instead of flat generation profile at present maintained by them, then it would help Indian grid during peak hours. Bhutan representatives were requested to do the needful.

PART C: ITEMS FOR INFORMATION

TCC members noted the following items with assurance to ensure needful for compliance, if any, pending.

ITEM NO. C1:	Poor- representation of constituent members in various sub-Committee meetings of ERPC

ERPC (Conduct of Business Rules), 2011 provides for functions, composition, periodicity and other procedures of all sub-committee meetings of ERPC like OCC, PCC, CC and other special meetings. But unfortunately it is being observed that on many occasions sub-committee meetings of ERPC are not being represented by some of our constituent members.

The issue was discussed in 27th TCC/ERPC meeting wherein all the constituents were advised to give proper representation in lower forums of ERPC for fruitful deliberation.

31st TCC advised all constituents to ensure proper representation in sub-committee meetings of ERPC.

31st ERPC endorsed the feelings of TCC and advised all constituents to ensure proper representation in sub-committee meetings of ERPC so that all the issues pertaining to grid as well as state control areas are nicely deliberated upon.

Non-representation in the recent past is placed below for ready reference:

Sl. No	Name of Meeting	Held on	Non-representation
1	115th OCC	20.11.15	MPL, Adhunik
2	116th OCC	23.12.15	APNRL
3	117th OCC	22.01.16	Sikkim, JITPL
4	37th PCC	19.11.15	Powergrid ER-I, Sikkim, Adhunik, Vedanta, JITPL, MPL,
5	38th PCC	28.12.15	Powergrid ER-I, Sikkim, Adhunik, Vedanta, JITPL, GMR,
6	39th PCC	21.01.16	Sikkim, Adhunik, Vedanta, JITPL, GMR,
7	6th PRM Meeting	29.12.15	Sikkim
8	LGBR meeting	30.12.15	JUSNL, Sikkim, WBSEDCL, WBPDCL, Vedanta, MPL, JITPL
9	2nd SSCM	04.12.15	JUSNL, Sikkim, Powergrid ER-I,
10	3rd SSCM	28.01.16	JUSNL, Sikkim, Powergrid ER-I, Powergrid-Odisha, CTU
11	31st CCM	08.02.16	JUSNL, Sikkim, APNRL, Vedanta, JITPL, Chuzachen

In many cases the non-availability of constituents like Powergrid ER-I and JUSNL creates major problems in coming to consensus conclusion and many times the issues remain pending.

Members assured for proper representation in sub-committee meetings of ERPC.

ITEM NO. C2:	Implementation of Zone settings as per Protection Philosophy of Eastern Region

The Protection Philosophy of Eastern Region was finalized in special PCC meeting held on 20th July, 2015 which is as given below:

Sl. No.	Zone	Direction	Protected Line Reach Settings	Time Settings (in Seconds)	Remarks
1	Zone-1	Forward	80%	Instantaneous (0)	As per CEA
2a	Zone-2	Forward	For single ckt- 120 % of the protected line	0.5 to 0.6 - if Z2 reach overreaches the 50% of the shortest line ; 0.35- otherwise	As per CEA
			For double ckt- 150 % of the protected line		As per CEA
2b	Zone-2 (for 220 kV and below voltage Transmission lines of utilities)	Forward	120 % of the protected line, or 100% of the protected line + 50% of the adjacent shortest line	0.35	As per CEA with minor changes
3	Zone-3	Forward	120 % of the (Protected line + Next longest line)	0.8 - 1.0	As per CEA
4	Zone-4	Reverse	10%- for long lines (for line length of 100 km and above) 20%- for shot lines (for line length of less than 100 km)	0.5	As per CEA

Note:

1) ***Zone-2:- Z2 Reach should not encroach the next lower voltage level.***
2) ***Zone-3:- If Z3 reach encroaches in next voltage level (after considering "in-feed"), then Z3 time must be coordinated with the fault clearing time of remote end transformer.***
3) ***Zone-4:- If utility uses carrier blocking scheme, then the Z4 reach may be increased as per the requirement. It should cover the LBB of local bus bar and should be coordinated with Z2 time of the all other lines.***
4) ***The above settings are recommended primarily (exclusively) for uncompensated lines.***

All the constituents agreed on the principles read with notes as above.

In 31st TCC, all the other constituents were advised to implement the revised zone settings and submit the settings to ERPC.

Till date DVC, WBSETCL, JUSNL, OPTCL, BSPTCL, Powergrid ER-I, II & Odisha, NHPC and GMR had submitted the zone settings which is appended at **Annexure-C2.**

NTPC and IPPs agreed to submit the revised zone settings data at the earliest.

ITEM NO. C3:	Reporting and Analysis of Disturbances in PCC Meeting—Submission of DR, EL and other relevant information.

It was observed that in most cases tripping/disturbance reports are not received within the stipulated time and also without complete details and supporting documents like DR and EL outputs. This leads to incomplete and/or delayed analysis of the incidents.

It is also observed that representatives from respective SLDCs are frequently not attending PCC meetings with detailed analysis of the disturbances occurred in the respective control area. As a result PCC is facing problem in giving proper recommendations towards protection coordination problems.

The issue was discussed in 28th TCC Meeting, wherein all the constituents were advised the following:

- Concern SLDC to give the preliminary reports of disturbance in their respective systems to ERLDC in time in specific format as per CERC guidelines along with relay flags, DR printout, pre-fault condition etc.
- Concern protection engineers to submit the detail analysis of the disturbance in respective system to ERLDC/ERPC at least 3/4 days ahead of monthly PCC meeting.
- Concern officer from SLDC and Protection wing to attend PCC meetings and analytically present the case with all the details including SLD.

In 31st TCC/ERPC, all constituents were advised to send the tripping reports in proper formats as well as DR, EL, SOE outputs etc. to ERPC/ERLDC stipulated time frame. TCC/ERPC also advised all constituents to send their concerned representative from protection wing including SLDC engineers to attend the PCC meetings of ERPC with the details of the tripping incidences in their respective control areas along with their analysis to facilitate PCC in finding solutions to prevent recurrence of un-coordinated trippings in system.

However on many occasions till date since 31st ERPC it has been observed that the decision of ERPC was not being complied. Few of such cases are placed below as ready reference:

Sl. No.	Disturbance	Information not furnished during/before the meeting	DR, EL, SOE Details	Utility
37th PCC Meeting				
1	Total power failure at 220kV Chandil S/s of JUSNL system on 01/10/15 at 10:50hrs	JUSNL failed to explain the tripping sequence & exact cause for un-coordinated trippings in proper manner and also the protection available for each element involved in the said disturbance.	JUSNL informed that the DR of the relays could not be downloaded as the relays were old and interfacing software is also not available with them.	JUSNL
2	Total power failure at 220kV Chandil S/s of JUSNL system on 21/10/15 at 00:15hrs			
3	Disturbance at 220kV Ramchandrapur S/s on 20/10/15 at 05:38hrs			
4	Disturbance at 220 kV Biharshariff (BSPTCL) S/s on 08/10/15 at 08:29hrs	BSPTCL failed to explain the exact cause for un-coordinated trippings in proper manner.	BSPTCL informed that their interfacing software has been corrupted; the same is being rectified. After the rectification of interfacing software the DR/EL will be furnished.	BSPTCL
5	Total Power failure in part of North Bihar on 10/10/15 at 17:46hrs			

38th PCC Meeting				
1	Total power failure at 220kV Chandil S/s of JUSNL system on 06/11/15 at 19:37hrs	PCC advised JUSNL to send the tripping report as per the format along with DR and EL for detail analysis of the tripping	JUSNL informed that they could not retrieve the DR and EL as the distance relay installed at Chandil end was old relay (SEL 311C). Subsequently SEL 311C relay was replaced by Micom P442 relay	JUSNL
2	Total Power failure in part of North Bihar on 11/11/15 at 19:57hrs	ERLDC informed that tripping report was not yet received from Powergrid ER-1. PCC took serious note of not submitting the tripping report by Powergrid ER-1 and non-representation in the meeting	Due to non-availability of tripping details, PCC could not conclude the tripping incidence	Powergrid ER-1
3	Total Power failure in part of North Bihar on 19/11/15 at 21:43 hrs			
4	Total power failure at 220/132kV Biharshariff S/s of BSPTCL system & 220kV Tenughat & Patratu S/S of JUSNL system on 23/11/15 at 13:11hrs			
5	Total power failure at 220kV Biharshariff S/s of BSPTCL system on 28/11/15 at 17:32hrs			
39th PCC Meeting				
1	Total power failure at 220kV Dehri S/s of BSPTCL system on 16.12.15 at 08:42 hrs	ERLDC informed that tripping report yet to be received from BSPTCL.		BSPTCL
2	Disturbance at 400/220kV Gaya S/s of PGCIL & BSPTCL system on 17.12.15 at 17:10hrs	It was informed that Powergrid ER-1 has submitted the report on 18th January, 2016		Powergrid ER-1
3	Total power failure at 220kV Arrah S/s of BSPTCL system on 23.12.15 at 23:06hrs	PCC advised BSPTCL to submit the report on tripping of 132kV lines with relay indications and sequence of operation		BSPTCL

Subsequently, in a special meeting on Bihar issues held on 05.02.2016, BSPTCL informed that they are strengthening their CRITL team for prompt reporting and detailed analysis of the disturbances. They assured that the grid disturbance report related to BSPTCL system will be submitted to ERPC / ERLDC within 3 days with all the relevant details like relay flags, DR/EL(wherever applicable) etc.

Further, it was also decided that in PCC meetings BSPTCL representatives will explain the tripping details with proper SLD of sub-station/grid and interconnected system in slides of presentation.

Therefore, all constituents are also requested to make a precedence to explain the tripping details with proper SLD of sub-station/grid and interconnected system in slides of presentation for better understanding and fruitful discussion.

ITEM NO. C4:	Protection Committee visit to BSPTCL and JUSNL Sub-stations

In view of repeated uncoordinated trippings in BSPTCL and JUSNL systems, 31st TCC/ERPC formed a committee of following protection engineers to review the situation:

- Shri Sabyasachi Roy, ACE, WBSETCL,
- Shri L Nayak, GM, OPTCL
- Shri Jayanta Datta, SE, DVC
- Shri Surajit Bannerjee Asst GM, ERLDC,
- Shri Jiten Das, Asst GM, PGCIL
- Shri S. B. Prasad, ESE, BSPTCL
- Shri Vidyasagar Singh, ESE, JUSNL

The committee members met on 08.12.2015 & the following information was needed in respect of Chandil, Ramchandrapur, Adityapur and adjoining substations in Jharkhand and New Purnea, Madhepura, Biharshariff and adjoining substations in Bihar:

1. SLD of all the affected and surround Sub-station (with CT location)
2. Year of manufacture of all equipments
3. Comprehensive CT details along with name plate (with connected/adopted ratio)
4. VT details
5. Fault level- 3-phase as well as 1-phase (line length, conductor details and Transformer details for computing fault level)
6. Transformer detail (Rating, impedance)
7. Availability of Auto-Reclosure feature
8. Availability of carrier protection
9. Availability of Bus- differential and LBB Protection
10. Junction Box (JB) details
11. Cable details used for CT connections (Cross section/core of cable, Junction Box (JB) details & length of cable between JB & control panel)
12. Grid earthing resistance (With latest test report)
13. Breaker details (operating time)
14. CT/PT earthing details
15. Relay details (Relay type, model, settings, manufacturing, basis of settings)
16. Scheme adopted for protection settings for lines and transformers
17. DC system details with charger and battery

Subsequently, in a special meeting on Bihar issues held on 05.02.2016, BSPTCL submitted all information in desired formats.

The updated status of data submission by BSPTCL and JUSNL is enclosed at Annexure-C4.

The details have been forwarded to the team members for detail study. The further course of action will be planned after the detail study.

Deliberation in the TCC meeting

The protection team informed that the details have been received and more time is required to study these voluminous data.

TCC advised secretariat to convene a special meeting and settle further course of action.

In this connection it was further added that CERC order daterd04.02.2016 on Petition no. 16/SM/2014, regarding protection issues related to Jharkhand has directed to JUSNL to complete the work by 31.3.2016. Accordingly, JUSNL shall submit a complete report to ERPC in the first week of April 2016.

In case of failure to complete the work by 31.3.2016 as committed by JUSNL vide affidavit dated 18.12.2015, JUSNL shall be liable for action under Section 142 of the Act for non-compliance of the provisions of the Grid Code and order of the Commission.

So JUSNL to complete the rectification of PLCC system and Auto-reclosure scheme by March, 2016.

JUSNL informed that for PLCC rectification work is being allotted to PGCIL. Also it was informed that for PSDF funding towards improvement/development of protection system preparation of DPR is already in the process.

JUSNL was requested to submit official communication to CERC with a copy to ERPC.

ITEM NO. C5:	**Study/ Analysis by the consultant to ensure Secure and Reliable Operation of National Grid**

To conduct the study/analysis for ensuring secure and reliable operation of National Grid the consultancy was awarded to M/s Tractabel, Romania, M/s Tractabel, India and M/s Lehmeyer International Private Limited, India. The work is divided into two tasks.

- Task-I: covers the status of implementation of recommendations of enquiry committee on grid disturbance.
- Task-II: covers the study of the 762 third party protection audit reports and conduct on-site Protection Audit for 76 no. out of the 762 substations.

Task-I: To study the status of implementation of recommendations of enquiry committee by the Consultant

The consultant interacted with all ER constituents at ERPC, Kolkata from 31st August, 2015 to 4th September, 2015 and collected the latest status of implementation of recommendations of enquiry committee on grid disturbance.

Final report is yet to be received from the consultant.

Task-II: On-site Protection Audit by the Consultant to conduct the study/ Analysis to ensure Secure and Reliable Operation of National Grid

M/s Tractabel, Romania will carry out the on-site Protection audit of the 15 shortlisted substations of the Eastern Region under Task-II.

The consultant submitted the format of checklist and a format of bus bar and breaker failure protection details to be filled up by the respective constituents. The formats are already circulated to respective nodal officers vide letter dated 31-07-2015 and the softcopy of the format is also available in ERPC website www.erpc.gov.in.

Subsequently, Powergrid ER-I, Powergrid ER-II, WBSETCL, DVC, BSPTCL, OPTCL, OHPC, JUSNL and Powergrid-Odisha have already submitted the required data.

The consultant has submitted the details of some data missing from the constituents. ERPC Secretariat vide letter dated 29.01.2016 requested all the constituent members to furnish the missing data as per details given at Annexure- C5 at the earliest.

Members may submit the missing data.

Deliberation in the TCC meeting

It was informed that the consultants are going to start the on-site audit from March, 2016.

TCC advised all the respective constituents to furnish the missing data.

ITEM NO. C6:	Under performance of Thermal Power Stations of Eastern Region

CEA indicated that few thermal power stations of Eastern Region are running on low PLF. The list of such Thermal Power Stations running under PLF less than the national average PLF of 60.90% is enclosed at **Annexure-C6**.

On advice from CEA in OCC meetings generators were requested to place their roadmap for improvement of PLF, Heat Rate, secondary fuel oil and auxiliary power consumption of their Thermal Power Stations.

Till date except TVNL and WBPDCL other generators of Eastern Region failed to place their road map.

Members noted for compliance.

ITEM NO. C7:	Information for National Electricity Plan (NEP), 2015

National Electricity Plan (NEP), 2015 is under preparation in CEA. To make an effective plan concerned constituents have to place the following information related to their respective control area at the earliest.

Name of Station	No. of units	Rated Unit Capacity	Rated Station Capacity
Full load Station Heat Rate (Kcal/KWh) (Thermal plants)	Forced Outage Rate (%)	Capital Cost of Installation (Rs/MW) (new units only)	Operation and Maintenance cost (RS/KW/year)
Landed cost of fuel (Rs/tonne) & grade of coal (GCV)	Maintenance Schedule	Auxiliary Power Consumption	Annual Energy Limitation (GWh) (Hydro Plants)
RES Generation profile			

Constituents are requested to send the requisite information to Chief Engineer (IRP), CEA by e-mail: **ceirpcea@yahoo.com** with a copy to ERPC (e-mail: mserpc-power@nic.in).

Members may submit the requisite information along with their contributory suggestion for making the National Electricity Plan an effective one.

Deliberation in the TCC meeting

TCC advised all the respective constituents to submit the requisite information related to NEP to IRP Division, CEA at the earliest if not already submitted.

ITEM NO. C8:	11KV Auxiliary power supply of Powergrid Substation.

a) 11KV Aux. power supply at 400/220KV Patna Substation:

In 112th OCC, BSPTCL informed that the issue is being considered and they are exploring to give 33 kV supply from 220/132/33 kV Sipara GSS with existing load of 420 KVA (which is lesser than 1000 KVA load for getting 33 kV supply) as a special case.

In the 116th OCC, Powergrid requested BSPTCL to give an official communication to PGCIL on minimum load restriction of 1000 kVA for getting 33kV supply for further course of action at PGCIL end.

In the 117th OCC, OCC advised Powergrid to interact with SBPDCL on the issue.

Subsequently, in a special meeting on Bihar issues held on 05.02.2016, BSPTCL informed that for getting supply at 33 kV level Powergrid has to pay for a minimum demand of 1000 kVA to SBPDCL as per BERC norms which is already available at BERC website. Powergrid should interact with SBPDCL on the issue.

b) Auxiliary power supply for 400KV Berhampore Powergrid Substation

Berhampore is a very important station of POWERGFRID, feedeing power to Bangladesh and West Bengal. The reliability and availability of 11KV auxiliary supply is very much essential for the reliable operation of Berhampore Substation.

As per Practice, 400KV Substation should have two nos auxiliary power supplies from two different sources. Accordingly, an application had been sent to WBSEDCL by Powergrid for arrangement of 11kV dedicated feeder from nearby Nabagram & Sagardighi Substations on deposit basis for the auxiliary supply of 400KV Berhampore Substation.

The construction of 11kV dedicated feeder from Nabagram has been completed and at present auxiliary power supply of Berhampore Substatiion is met from the said feeder. However, the reliability and availability of auxiliary supply from the Nabagram feeder is very poor.

WBSEDCL is to maintain the reliability and availability of 11KV Nabagram feeder used for supplying auxiliary supply to Berhampore Substatioon and construct the dedicated Sagardighi feeder as second source of auxiliary supply to Berhampore Substation.

In 117th OCC, Powergrid informed that they are facing frequent interruption of auxiliary supply at 400kV Behrampore S/s and the reliability of feeder is 40% (approx).

WBSETCL requested Powergrid to forward the interruption report along with duration and dates.

For second dedicated feeder, OCC advised Powergrid to interact with Director (Dist), WBSEDCL.

Subsequently, WBSEDCL vide letter dated 03.02.16 informed that the issue has been forwarded to Zonal Manager, Berhampore (D) zone to take necessary action for resolving the issue at the earliest.

ITEM NO. C9:	**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	lNDRAVATI PH	lNDRAVATI (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.

In 3rd SSCM BSPTL has submitted the list of inter-state lines which are as follow:

Sl. No.	**Tie-Line**	**State-I**	**State-II**	**Flow of Power Quantum**	**Remarks**
1	**132 KV level**				
i	Karmanasha- Shahpuri	Bihar	UP	Less than 50%	Sometimes on Emergency
ii	Karmanasha- Chandauli	Bihar	UP	Less than 50%	Sometimes on Emergency
iii	Sonenagar-Rihand	Bihar	UP	Less than 50%	Sometimes on Emergency

iv	Gharwa -Sonenagar	Bihar	Jharkhand	More than 50%	
v	Sabour-Lalmatia	Bihar	Jharkhand	Less than 50%	Sometimes drawn by Jharkhand
vi	Biharshariff- Barhi	Bihar	DVC	More than 50%	
vii	Sultanganj-Deoghar	Bihar	Jharkhand	Less than 50%	Sometimes on Emergency
2	**220 KV level**				
i	TTPS-Biharshariff	Bihar	Jharkhand	More than 50%	

In 31st CCM JUSNL, Sikkim and DVC were requested to give their list of intra state lines to be considered for carrying interstate power. It was informed that problem is being faced while running the webnet software & IIT Bombay was requested for a solution. But the problem is yet to be resolved at developers end. WRPC is also facing the same problem, it was informed in CCM. The same was also intimated to NLDC.

ITEM NO. C10:	**Payment/Receipt Status from various pool accounts in ER**

C10.1. Payment of Deviation Charges -- present status

As submitted by ERLDC, the status of Deviation Charge payment as on 01.02.2016 is enclosed at **Annexure – C10.1**.

The current principal outstanding Deviation Charge of BSPHCL & JUVNL is **Rs. 13.26 Cr & Rs. 9.42 Cr** respectively considering bill up to 10.01.2016. ERLDC have en-cashed the LC of M/s APNRL on 09.12.15. The en-cashed amount from LC has been utilized for payment of outstanding Deviation Charge to other recipient's constituents. Thus Principal amount payable by APNRL is **Rs. 47.35 Lac.** (bill up to 10.01.16).

In 31st CCM, ERLDC added that the interest outstanding against BSPHCL was around Rs. 90 Lakhs and against JUVNL was around Rs. 50 Lakhs. It was also informed that APNRL has recouped their LC and the outstanding would be encashed from the LC.

ERLDC requested BSPHCL not to wait for receivables for adjustment and instead pay their outstanding dues regularly.

C10.2. Reactive Energy Charges – present status.

As furnished by ERLDC, the updated position of Receipt/Payment of Reactive Energy Charges in the pool as on 01.02.2016 (considering bill up to 02.01.2015) is indicated in **Annexure – C10.2**. The total outstanding receivable on account of Reactive charges from WBSETCL/WBSEDCL and GRIDCO is **Rs. 2.68 Cr** and **0.72 Cr** respectively.

In 31st CCM, WBSEDCL representative informed that bills for Reactive energy charges, etc should be raised on WBSETCL/SLDC only. WBSETCL in turn would distribute the bills among the Discoms. However, WBSEDCL was requested to deliberate with WBSETCL/SLDC for release of current outstanding.

GRIDCO representative informed that the outstanding bill of 0.72 Cr is under process and would be released shortly.

C10.3. Congestion Account - Present Status

The status of congestion charge payment after full settlement is enclosed at **Annexure – C10.3**

C10.4. Status of PSDF

As informed by ERLDC, an amount **Rs. 8.0 Cr** from Reactive account & **Rs. 32.90 Cr** from Deviation Pool account have been transferred to PSDF after 30th Commercial sub-committee meeting held on 16.09.15. With this the total amount of **Rs. 847.25 Cr.** has been transferred to PSDF so far. The break up details of fund transferred to PSDF is enclosed in **Annexure-C10.4.**

C10.5. Reconciliation of Deviation Accounts

ERLDC have informed that at the end of 3rd quarter of 2015-16, the reconciliation statement (Period: 01.10.15 to 31.12.15) has been issued by ERLDC on 05.01.16 and statements had been sent to the respective constituents and uploaded the same at ERLDC website (www.erldc.org) on 05.01.2016. The constituents were requested to verify /check the same & comments if any on the same were to be reported to ERLDC by 20.01.2016. The status of reconciliation is enclosed in **Annexure-C10.5**.

BSPHCL, JUVNL, DVC, GRIDCO, SIKKIM, GMR and Ind Barath have not signed reconciliation statement for 3rd Qtr of 2015-16. Further BSPHCL, JUVNL, SIKKIM & Ind Barath have not signed reconciliation statement for more than last 3 quarters.

Constituents, who have not yet reconciled the account, are once again requested to submit the signed reconciliation statement at the earliest. If the confirmation is not received within 2 weeks from the date of issuance of the letters the statements issued by ERLDC have been deemed to be reconciled.

In 31st CCM, ERLDC informed that DVC had reconciled for their entire period.

BSPHCL representative informed that finance/revenue personnel were available in the meeting and they will sit together post meeting and get the statements reconciled.

GMR informed that they have already sent 2 days ago.

GRIDCO informed that they were processing and the statements would be reconciled shortly.

JUVNL and Sikkim representative were not present.

ITEM NO. C11:	**Short Term Open Access payment/receipts reconciliation**

I. For STOA payments made to SLDC / STU :

As informed by ERLDC, the reconciliation statements of STOA payments for the period Apr'15 to Dec'15 have been send to the DVC, OPTCL and WBSETCL for checking at their end and confirmation.

OPTCL has confirmed for entire period except for the month of Dec'15. WBSETCL is yet to confirm for the period of Oct'15 to Dec'15. As per clause 15.1 of CERC approved STOA bilateral procedure since the confirmations have not been received within 2 weeks from the date of issuance of the letters the statement issued by ERLDC have been deemed to be reconciled

In 31st CCM, GRIDCO informed that the issue was under consideration and statements would be reconciled soon.

WBSEDCL representative informed that they will discuss the issue with WBSETCL. ERLDC was requested to once again provide a copy of the statement to WBSETCL for reconciliation.

II. For payments received from STOA applicants:

ERLDC have intimated that the payment receipt statements of STOA for the period of Dec'12 to Mar'13, FY-2013-14 , FY-2014-15 and Apr'15-Dec'15 have been send to the BSEB, JSEB, JITPL, GRIDCO, WBSEDCL, SEL , TSL, GMRKEL for checking at their end and confirmation.

- Signed reconciliation statements have been received from BSEB for the period of Dec'12 to Mar'13 only.
- JSEB has not confirmed for the entire period of FY-2014-15 and Jul-15 to Sep-15.
- JITPL has confirmed and signed reconciliation statements for the entire period except Jul-15 to Sep-15.
- GMRKEL is yet to confirm for the period of Apr-15 to Jun--15 only.
- GRIDCO has confirmed and signed reconciliation statements for the entire period except Sep-14.
- WBSEDCL has confirmed and signed reconciliation statements for Nov'13, Dec'13, Jan'14, May-14 and Oct-14 only.

As per clause 15.1 of CERC approved STOA bilateral procedure since the confirmations have not been received within 2 weeks from the date of issuance of the letters the statement issued by ERLDC have been deemed to be reconciled.

The details is attached in the **Annexure-C11.**

In 31st CCM, BSPHCL finance/revenue personnel were present in the meeting. After the meeting they would sit together with ERLDC and get the statements reconciled.

JUSNL/JUVNL, JITPL representative was not present in the meeting.
GMREKL has confirmed for the entire period.

GRIDCO requested ERLDC to send a copy of the statement and the same would be reconciled at the earliest. ERLDC was also requested to give a copy of pending statements to WBSEDCL for early reconciliation.

ITEM NO. C12:	**Opening of LC by ER constituents for Deviation Charges Payments**

As submitted by ERLDC, the details of LC amount required to be opened in 2015-16 as per Clause 10 (4) of CERC Deviation Settlement Mechanism and related matters Regulations, 2014 by ER constituents is given in **Annexure – C12.**

Letters to this effect were issued by ERLDC to the defaulting entities viz, JUVNL, DVC, JITPL, and Ind Barath. Rest of the constituents which were required to open/recoup the LC, they have opened/recoup the LC.

In 31st CCM, JUVNL/JITPL representatives were not present. DVC informed that they have opened LC for 1.55 Cr and they would get the details sent by their banker to ERLDC banker as required by ERLDC.

ITEM NO. C13:	Time correction of SEMs in Eastern Region

The drifting of meter time is important in commercial terms since the reading for a block for a time drifted meter might not be true and lead to erroneous calculation of Deviation Charge for that constituent. Further, it was decided to keep this as a standing agenda in Commercial Sub Committee meetings for monitoring.

Based on discussions in 30th Commercial Committee meeting, Member Secretary had written a letter to ED (Engineering), PGCIL for a solution.

In the 31st CCM, Powergrid informed that for new meters to be procured they have kept the technical feasibility of bulk time correction facility. For existing meters however, no bulk time correction was technically feasible.

Members appreciated the development of introduction of bulk time correction of new meters.

ITEM NO. C14:	Implementation of Automatic Meter Reading in Eastern Region

AMRs have been installed at 97 locations in 1st phase and 25 locations in 2nd phase in Eastern region. Due to addition of new substations/generating stations/transmission lines in Eastern Region, 16 new locations have been added after 2nd phase of implementation of AMR project. These 16 new locations were required to be added under AMR project as 3rd phase of implementation. List of new locations with SEMs to be incorporated are enclosed in **Annexure-C14.**

Inclusion of new locations and total cost involvement(including 5 years of AMC) for AMR 3rd phase were last discussed in 31st TCC/ERPC OCC meeting held on 13.11.15/14.11.15 wherein TCC/ERPC approved the cost of approximately Rs. 1.29 Cr ± 10%.

In 31st CCM, Powergrid informed that the implementation of 3rd phase would take another 6 months. Meanwhile, Powergrid requested ERLDC to segregate the list based on (1) meters already included in AMR and having problems in data sending(to be considered in AMC) (2) Meters in new locations to be provided AMR and (3) new meters to be provided AMR in existing locations due to addition of new lines.

ITEM NO. C15:	Downstream 220kV system development of STUs (Bihar, Jharkhand & Odisha) from the various approved and ongoing sub-stations of PGCIL

Under the ERSS-III scheme, following new 400 kV sub-stations have been / are being commissioned by POWERGRID

- 2x200 MVA, 400/132 kV sub-stations at Lakhisarai & Banka in Bihar
- 2x315 MVA, 400/220 kV at Chaibasa & Daltonganj in Jharkhand
- 2x315 MVA, 400/220 kV at Bolangir, Keonjhar & Pandiabil in Odisha.

Lakisharai: 400/132KV Lakisharai Substation along with 200 MVA ICT, 80 MVAR Bus Reactor and line bay of Lakhisarai (PG) – Lakhisarai (BSPTCL) 132 kV D/c line has been charged at rated voltage and declared under commercial operation w.e.f. 01.04.2014.

The latest status as updated in 117th OCC as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**The 2x200 MVA, 400/132 kV Lakhisarai sub-station**	
a.	132 kV Lakhisarai (PG)-Lakhisarai (BSPTCL) D/C line	Charged.
b.	132 kV Lakhisarai-Jamui (BSPTCL) D/C line	Charged on 05.10.2015.
2.	**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 completed; bays material awaited. By Jan'16
c.	132 kV Banka (PG)-Sultanganj (BSPTCL) line-I	Completed
d.	132 kV Banka (PG)-Sultanganj (BSPTCL) line-II	Completed

Chaibasa: 400/220kV ICT-II and its associated bays at Chaibasa were already charged. After completion of both GSS i.e. 400/220 kV Chaibasa (PGCIL) and 220/132/33 kV GSS at Chaibasa (JUSNL) under consultancy projects awarded to M/s PGCIL, the above said grids will be connected by 220 kV D/C transmission line.

Daltonganj: 400/220kV Daltonganj S/s was expected to be commissioned by October, 2015. But it developed a land acquisition problem which has already been taken up by CTU with Jharkhand Govt. It is not yet resolved.

In 17th SCM held on 25.05.15----

Following transmission line 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

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 under regional strengthening scheme.

In 30th TCC, it was informed that land acquisition is in progress for Daltonganj (PG) S/s.

In 3rd SSCM, the status could not be updated as JUSNL representatives were not present.

Under the ERSS-III scheme, following new 400 kV sub-stations have been / are being commissioned by POWERGRID in Odisha

- **2x315 MVA, 400/220 kV at Bolangir, Keonjhar & Pandiabil in Odisha.**

In 117th OCC, OPTCL updated the completion schedule of down linking lines 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	5 out of 14 completed. (Severe ROW problem)
b.	LILO of one circuit of Katapalli-Sadeipalli220 kV D/C line at Bolangir S/S	One tower left due to forest clearance. End of March, 2016
2.	**400/220 kV Keonjhar S/S**	
a.	Keonjhar (PG)-Keonjhar (OPTCL) 220 kV D/C line	Work order to be issued in Feb'16
b.	Keonjhar (PG)-Turumunga (OPTCL) 220 kV D/C line	Yet to be awarded
3.	**400/220kV Pandiabil Grid S/s**	
a.	Pratapsasan(OPTCL)-Pandiabil (PG) 220 kV D/C line	It will take 1 year for completion.
b.	LILO of one circuit of Atri-Puri (Samangara) 220 kV D/C line at Pandiabil (PG)	***By May'16.***

ITEM NO. C16:	**Status of Transmission projects approved in various meetings**

The status as updated in 32nd TCC/ERPC meeting on transmission projects approved to various meetings is given below:

Sl No.	Scheme	ERPC/TCC Meeting	Latest status updated in 32nd TCC Meeting
1	Installation of 2x500 MVA, 400/220 kV ICTs instead of earlier approved 400/220 kV, 2x315 MVA + 1x500 MVA, ICTs at Kishanganj	28th ERPC Meeting	*At Kishenganj 1st ICT will be commissioned by March, 2016 and 2nd ICT by May, 2016.*
2	Construction of 132 kV D/C Deoghar – Banka line for reliable power supply to Railway TSS from 132 kV Deogarh (JSEB) S/S		To be discussed in empowered committee meeting conducted by CEA.
3	Modification of 132 kV Bus arrangement at 220/132 kV Birpara S/s of Powergrid from existing single main & transfer bus scheme to double main scheme.	28th ERPC Meeting	Powergrid informed that the NIT – Nov, 2015. Award March, 2016.
4	Change in proposed the Associated 765 kV System Strengthening Scheme in ER	28th ERPC Meeting	It was discussed and finalized in 17th SCM.
5	Conversion of 50 MVAR Line Reactor presently installed at Jeerat end of 400 kV Berhampur – Jeerat line to Bus Reactor in Parallel with existing Bus Reactor at Jeerat	26th ERPC Meeting	Powergrid informed that order has been placed and the work is expected to completed by March, 2016.
6	Retrofitting of pilot wire protection of 132 kV Purnea (PG) – Purnea (BSPHCL) feeders	26th ERPC Meeting	Powergrid informed that the scheme was covered in the scheme of modification of 132 kV Bus arrangement at 220/132 kV Purnea S/S of Powergrid under GIS package. The

			work has been awarded and expected to be completed by July, 2016.
7	Augmentation of existing 100MVA ICT with 160MVA at 220/132 kV Birpara and Siliguri S/S	25th ERPC Meeting	Birpara by March, 2016 & Siliguri by June, 2016. (Subject to the shutdown approval by WB.)
8	Transmission System for immediate evacuation of power from North Karanpura STPP (3x660 MW) to Chandwa and Gaya Pooling stations of Powergrid	25th ERPC Meeting	Powergrid informed that the scheme has been changed; fresh DPR is under preparation.
9	Addition of 1x125 MVAR Bus Reactor each at Baripada & Maithon 400 kV S/S	25th ERPC Meeting	Powergrid informed that the work has been awarded and expected to be completed by November, 2016.
10	Strengthening of Farakka – Malda corridor	25th ERPC Meeting	Powergrid informed that the work has been awarded and expected to be completed by November, 2016.
11	Procurement of two single phase spare ICT units (2x500 MW), 765/400 kV for Eastern Region - to be stationed at Angul & Jharsuguda S/S).	25th ERPC Meeting	Powergrid informed that work has been awarded on March, 2015 and expected to be completed by September, 2016.
12	Augmentation of Transformation Capacity at 400/220 kV Baripada S/S	25th ERPC Meeting	Powergrid informed that the work has been awarded and expected to be completed by November, 2016.
13	Augmentation of transformation capacity at the existing 400/220 kV Jamshedpur (PG) & Sasaram (PG) S/S	25th ERPC Meeting	*At Sasaram 1st ICT will be commissioned by March, 2016 and 2nd ICT by May, 2016 ,* *At Jamshedpur 315 MVA Transformer shall be shifted from Patna Substation after its Augmentation. Target for commissioning – June 16.*
14	Establishment of 220 kV MTPS (Extn.) – Muzaffarpur (PG) D/C line (3rd & 4th Circuits)	25th ERPC Meeting	Bay construction at Muzaffarpur to be done by Powergrid under consultancy projected. Expected to be completed by November, 2016.
15	Modification of 132 kV Bus arrangement at 220/132 kV Siliguri S/S (PG)	25th ERPC Meeting	Powergrid informed that the work has been awarded and expected to be complete by November, 2016.
16	Procurement of 110 MVAR, 765 kV Single Phase spare Reactor unit at Sasaram	25th ERPC Meeting	Powergrid informed that the work has been awarded on March, 2015 and expected to be delivered by March, 2016.
17	Establishment of Gazol 220/132 kV S/S in Malda by LILO of Malda-Dalkhola 220 kV D/C line of Powergrid	25th ERPC Meeting	WBSETCL assured that the scheme will be completed within 20 months from the date of LOA
18	Construction of down linking transmission network for drawal of power from Kishanganj 400/220 kV S/S of Powergrid	25th ERPC Meeting	Powergrid informed that four numbers of 220 kV bays at 440 kV Kishanganj (PG) for 2xD/C 220 kV Kishanganj (PG)-Kishanganj (BSPHCL) will be under regional scheme as informed by CEA. The work has been awarded on October, 2014 and expected to be completed by June, 2016.
19	Upgradation of the 3x100 MVA spare ICT at Purnea with 3x160 MVA ICT.	25th ERPC Meeting	*At Purnea two ICTs have been replaced. Replacement of third one is under progress. Target 20 March 16.*

20	Modification of 132 kV Bus arrangement at 220/132 kV Purnea S/S of Powergrid	25th ERPC Meeting	*Powergrid informed that the scheme will be implemented by July, 2016.*
21	Single phase spare converter transformer units of 1x234MVA for pole 1 and 1x201.2 MVA for pole 2 at 2x500 MW HVDC Back-to- Back station at Gazuwaka (one for each pole)	25th ERPC Meeting	Powergrid informed that preparation of DPR in in progress.
22	GIS bays for 400 kV, 125 MVAR Bus Reactor at Baripada	24th ERPC Meeting	Powergrid informed that the work has been awarded and expected to be complete by November, 2016.
23	Eastern Region Strengthening Scheme-XV: Construction of Farakka - Baharampur 400kV D/C (HTLS) line and subsequent modification of LILOs	17th SCM & 30th ERPC	
24	Installation of 3rd 400/220 kV, 1x315 MVA ICT at Durgapur & New Siliguri Substation	17th SCM & 30th ERPC	
25	Replacement of 400/220kV, 2x315 MVA ICTs at Malda , Jeypore and Rourkela Substation with 400/220 kV, 2x500 MVA ICTs	17th SCM & 30th ERPC	
26	Conversion of Fixed Line Reactor at Lakhisarai – Biharsharif 400 kV D/c & Keonjhar – Rengali 400 kV S/c into Switchable Line Reactor	17th SCM & 30th ERPC	*Expected in May 2016.(For Lakhisarai – Biharsharif 400 kV D/c)*
27	Commissioning of 2x160 MVA, 220/132 kV Auto transformer at Daltonganj substation along with 4 number of 132 kV line bays	17th SCM & 30th ERPC	*Under Engineering Stage.*
28	Extension of under construction 400kV D/C Latehar-Essar lines up to 400kV Chandwa Pooling station(PG), under the scope of JUSNL	17th SCM & 30th ERPC	
29	Establishment of 2x500 MVA 400/220 kV sub-station at Dhanbad by LILO of both circuits of Ranchi-Maithon RB 400 kV D/C line at Dhanbad	17th SCM & 30th ERPC	
30	Construction of 6 no. 400 kV line bays and bus splitting (765 kV & 400kV) arrangement at Jharsuguda (Sundargarh) as GIS	17th SCM & 30th ERPC	
31	Reconductoring of Maithon RB-Maithon 400 kV D/C line with HTLS conductor	17th SCM & 30th ERPC	
32	Installation of 3rd 400/220 kV 500 MVA transformer at Muzaffarpur	17th SCM & 30th ERPC	*Charged on Dated 30.12.15.*
33	Construction of North Karanpura – Gaya 400 kV D/c & North Karanpura – Chandwa (Jharkhand) Pooling Station 400 kV D/c	17th SCM & 30th ERPC	*Under DPR stage.*

ITEM NO. C17:	Status of Spare Transformers & Reactors approved in various meetings

The status updated as in 32nd TCC/ERPC meeting on Spare transformers & reactors to be commissioned by Powergrid for use in ER.

Sl No.	Spare transformer/reactor	Latest status updated in 32nd TCC Meeting
1	1 X 315 MVA, 400/220 KV AUTO TRANSFORMER Biharshariff	Used at Biharshariff in place of failed ICT. Procurement of new spare is under progress. NIT- Dec, 2015.
2	1 X 315 MVA, 400/220 KV AUTO TRANSFORMER Durgapur	Utilized at 400 kV Farakka. Procurement of spare ICT is under process. NIT – Dec, 2015.
3	1 X 80 MVAR SHUNT REACTOR AS O&M SPARE Rourkela Substation	Available at site.
4	2 X 500 MVA, 765/400 KV single phase ICTs at Angul & Jharsuguda.	Powergrid informed that the work has been awarded on March, 2015 and expected to be delivered by September, 2016.
5	1 X 110MVAr, 765KV single phase bus reactor at Sasaram	*The work has been awarded on March, 2015 and expected to be delivered by May, 2016.*
FOR MEMBER STATES:		
1	2 X 315 MVA 400/220 kv ICTs	Available at Jamshedpur & Rourkela
2	2 X 160/150 MVA 220/132 kv ICTs	One ICT utilised at Purnea S/s, 2nd ICT available at Siliguri S/s.
3	1 X 50 MVA 132/66 kv ICT	Available at Gangtok
SURPLUS FROM OLD AS SPARE		
1	3x 50 MVA, 220/132kV (to be released from Malda (2nos.) & Birpara (1no.) S/Ss	Replaced with 160MVA transformer.
2	2x100 MVA, 220/132kV (to be released from one at Birpara & one at Siliguri)	Yet to be taken out
3	2x100 MVA, 220/132kV (to be released from Purnea (2nos.) S/Stn.)	Yet to be taken out

ITEM NO. C18:	Commissioning of new elements in next 6 months-- PGCIL

Following elements are expected to be commissioned in the forthcoming months:

Sl	Name of element	Ant. commissioning	Latest status updated in 32nd TCC Meeting
1	LILO of Bishwanath Chariali - Agra HVDC line at New Pooling Station in Alipurduar	Jun'16	Work under progress. Commissioning matching with associated HVDC terminal.
2	LILO of 400KV D/C Bongaigaon - Siliguri line (Pvt. Sector line) at New Pooling Station in Alipurduar	Jun'16	Completion matching with Alipurduar PS.

3	LILO of 220KV D/C Birpara - Salakati line at New Pooling Station in Alipurduar	Jun'16	Completion matching with Alipurduar PS.
4	LILO of Siliguri (Existing) - Purnea 400KV D/C line (Q) at New Pooling station at Kishanganj	Feb'16	Completion matching with Kishenganj S/s.
5	LILO of Siliguri - Dalkhola 220KV D/C line at New Pooling station Kishanganj	Feb'16	Completion matching with Kishenganj S/s.
6	LILO of 400KV D/C Baripada - Mendhasal at Pandiabil (In place of 400KV D/C Mendhasal-Uttra line)	Mar'16	Completion matching with Pandiabil sub station.
7	400KV D/C Kishanganj - Patna line (Quad)	Feb'16	*Completion matching with Kishanganj S/S by March 16.*
8	LILO of Teesta-III - Kishanganj 400kV D/C (Q) at Rangpo(being constructed under JV route)	Mar'16 (Loop-in)	Work was held-up due to severe ROW problem issue. Now resolved. Completion of 01 no. LILO deferred to Mar'17.
9	400KV D/C Ranchi - Jharkhand Pooling Stn. line (Quad)	Mar'16	Testing under progress. Completion matching with Jharkhand Pool & Jharkhand Pool bay at line.
10	400KV D/C Jharkhand Pool - Gaya line (Quad)	Mar'16	Permission to work received in May'15. Repeated stoppage of work by extremists affecting progress.
11	400KV D/C trans. Line for swapping of Purneabaya (1&2) with Sasaram bays (#3&4) at Biharshariff S/Stn.	Mar'16	*ROW problem being encountered. Expected to be delayed.* *Expected to be commissioned in March 2016.*
12	400KV D/C trans. Line for reconfiguration of BiharshariffCkt III&IV from its present position to St.-II side of Kahalgaon Sw. yd. of NTPC	Mar'16	*Line Shall be completed by May 16.* *Bay at NTPC yet to be awarded.*
13	400KV D/C Rajarhat - Purnea line (Tripal)(with LILO of one ckt at Gokarana (WBSETCL) & other ckt at Farraka (NTPC).	Jun'16	
14	LILO of Subhashgram -Jeerat 400KV S/C line at Rajarhat	Jun'16	
15	400/220KV HVAC & 3000MW +/-800KV HVDC New Pooling Station in Alipurduar	Jun'16	Award placed in Mar'11. Supply, civil works & erection under progress. Land under acquisition. Partly land acquired.
16	400/220/33 KV Kishanganj Sub station (GIS)	Feb'16	*Erection & testing under progress. Target for commissioning March 2016*
17	400/220 KV Uttara (Pandiabil)	Mar'16	Alternate land acquired at Pandiabil. Land handed over in Mar'13. Supply, civil works & erection under progres. Progress severely affected due to repeated ROW.
18	400KV GIS Pooling Station (Jharkhand Pool) near Essar	Mar'16	*Target for Commissioning – April 16.*
19	400/220KV Rajarhat S/Stn. (GIS)	Jun'16	Supply & Civil works under progress. Land acquired in Feb'14. Progress hampered due to rains.

ITEM NO. C19:	HIGHLIGHTS & GRID PERFORMANCE FOR THE PERIOD FROM OCT' 2015 TO DEC' 2015

A) Real time operation:

During the period under review, power supply position in the region was as under:

	Oct-14	Nov-14	Dec-14	Oct-15	Nov-15	Dec-15
AvgFrq. (Hz)	49.97	50	49.98	49.98	49.99	49.98
PkDmd (MW)	17928	16611	16532	18268	17668	17120
Energy Consum. (MU/day)	342	315	310	377	341	333
ISGS Gen (MU)	3948	3425	3645	3963.64	3652.78	3555.62
Region Gen (MU)	12393	11185	11787	13749.6	12334	12459.1
% increase in Reg Gen.	10.75	0.68	6.44	10.9	10.3	5.7

B) System Operational Discipline during the period from Oct-15 to Dec-15

i) Frequency profile during the period under review improved considerably. The month-wise energy drawls of ER constituents were as given hereunder:

	Oct-15		Nov-15		Dec-15	
	SCH	ACT	SCH	ACT	SCH	ACT
BSPHCL	2051	2011	1848	1846	1914	1919
JUVNL	370	362	361	355	345	362
DVC	-411	-415	-259	-273	-366	-395
OPTCL	528	526	658	675	692	709
WBSETCL	1483	1465	861	855	689	697
SIKKIM	24	25	32	28	35	32

C) Frequency & Voltage

Frequency profile for the period during **Oct-15 to Dec-15** is given hereunder. The frequency mostly remained within the allowable range for the entire period

Month	% of time for which frequency			
	<49.9	**49.9-50.05**	**> 50.05**	**IEGC band 49.9-50.05**
Oct-15	14.1	69.6	16.4	**69.6**
Nov-15	11.5	67.1	21.5	**67.1**
Dec-15	16.4	66.1	17.6	**66.1**

Maximum and minimum voltages recorded at some important 400 kV sub-stations were as follows:

	Oct-15		Nov-15		Dec-15	
SUB-STATION/	MAX.	MIN	MAX.	MIN	MAX.	MIN
POWER STN.	(KV)	(KV)	(KV)	(KV)	(KV)	(KV)
FARAKKA	424	405	423	387	425	409
SUBHASGRAM	431	377	435	364	424	388
DURGAPUR	422	399	424	406	424	410
JEERAT	427	374	431	369	427	391
PURNEA	431	401	429	397	433	383
MUZAFFARPUR	426	388	430	380	422	377
JAMSHEDPUR	432	413	435	412	434	420
RENGALI	407	396	414	391	413	400
JEYPORE	426	378	428	381	428	381

D) Constituent-wise demand met is given below:

		Oct-14	Nov-14	Dec-14	Oct-15	Nov-15	Dec-15
BSPHCL	AVG MAX DMD(MW)	2637	2573	2536	3222	3211	3277
	MU/DAY	54	51	53	67	64	66
JUVNL	AVG MAX DMD(MW)	946	1011	1024	1083	1108	1079
	MU/DAY	21	22	23	24	24	24
DVC	AVG MAX DMD(MW)	2456	2357	2321	2500	2483	2497
	MU/DAY	57	56	55	58	58	59
ODISHA	AVG MAX DMD(MW)	3574	3559	3451	3930	3813	3609
	MU/DAY	73	70	67	79	73	68
W. BENGAL	AVG MAX DMD(MW)	7198	6540	5906	7258	6517	6087
	MU/DAY	137	115	112	149	123	116

E) Inter-regional energy exchange during the review period were as follows:

(Figures in MU)

Region	Oct-15		Nov-15		Dec-15	
	SCH	ACT	SCH	ACT	SCH	ACT
NER	59	136	73	-84	177	-75
SR	457	716	338	549	271	464
WR	-179	-111	-1	191	-0.4	274
NR	1481	980	1410	1163	1516	1223
TOTAL	**1817**	**1722**	**1820**	**1819**	**1964**	**1887**

F) Reservoir levels of important hydro stations in ER during Jun-15 to Sep-15 (as on last day of the month) is given below:

STATION	MDDL/ FRL	Oct-15	Nov-15	Dec-15
BURLA	590/630 FT	627.3	625.3	624.8
BALIMELA	1440/ 1516 FT	1501.1	1501	1497.9
RENGALI	109.7/ 123.5 MTR	119.2	118.6	118.2
U. KOLAB	844/ 858 MTR	856	856	855.9
INDRAVATI	625/ 641 MTR	635.3	634.9	635.0
MACHKUND	2685/ 2750 FT	2748	2746.1	2746.1

G) IMPORTANT EVENTS :

1. 132kV Lakhisarai(PG)-Jamui(BSPHCL)-I and II were charged for the first time at 16:02hrs and 16:29hrs of 05/10/15 respectively.
2. 400kV Bus sectionalizing breaker-II (between Bus-II and Bus-IV) at Durgapur was charged for the first time at 18:52hrs of 12/10/15.
3. 400kv Meramundali-New Duburi-I was charged for the first time at 20:20hrs of 19/10/15.
4. 400kV Jamshedpur-Rourkela-II(Looping upto dead end tower of Chaibasa) was charged for the first time at 19:46hrs of 31/10/15.
5. 220kV Chaibasa(PG)-Chaibasa(JUSNL)-1&2 were charged for the first time at 13:20hrs and 14:13hrs of 16/11/15 respectively and also 220kV Bus-1&2 at Chaibasa were charged for the first time at 14:43hrs and 14:49hrs of 16/11/15 respectively. Also 220/132 kV, 150MVA ICT-1&2 at Chaibasa were charged for the first time at 15:03hrs and 15:29hrs of 16/11/15 respectively.
6. 50MVA, 132/33kV ICT-1&2 at Chaibasa were charged for the first time at 18:11hrs and 17:34hrs of 17/11/15 respectively.
7. 80MVAR B/R at Chaibasa was charged for the first time at 13:17hrs of 24/11/15.
8. 125MVAR B/R at Jeypore was charged for the first time at 21:36hrs of 30/11/15.
9. 220kV 400kV Bus Sectionalizer Breaker-II at Maithon S/s first time charged at 20:15hrs of 08/12/15.
10. 765kV New Ranchi-Dharamjaygarh-II first time charged at 16:41hrs of 24/12/15.
11. 160MVA ICT-I at Birpara S/s first time charged at 22:58hrs of 28/12/15 on no load. But tripped at 00:35hrs of 29/12/156 on over flux and again charged at 09:15hrs of 29/12/15.
12. 400kV Meramundali-Sterlite-D/C first time charged at 19:33 and 19:34hrs respectively of 30/12/15 on no load from Meramundali end.
13. 400/220 kV, 500MVA ICT-III at Muzaffarpur S/s first time idle charged at 22:32hrs of 30/12/15 from 400kV side.
14. 220/132kV, 160MVA ICT-III at Arrah first time charged at 10:24hrs of 31/12/15.

ANNEXURES

ANNEXURE – I

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ANNEXURE – II

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55.	G.C. Dhal	General Manager , Odisha	9434742010 gcdhal@yahoo.com
56.	Ashok Pal	General Manager (CTU-Planning)	9910378105 ashok@powergridindia.com
57.	A.K.Behera	Dy. General Manager, Odisha	9437575638 akbehera1968@gmail.com
58.	S.K. Singh	Dy. General Manager (OS), ER-I	854401030 sksinghpg@gmail.com
59.	Sunil Kumar	DGM(LD & C), CC	9910045812 sunilkumar@powergridindia.com
NHPC			
60.	Chander Mohan	General Manager (Commercial)	9818039339 cmohan2k@gmail.com
61.	Rupak Jain	General Manager (O & M)	9560893701 rupakjain@hotmail.com rupakjain@nhpc.nic.in
62.	R.P. Singh	Manager (Mechanical)	rajuprasad@nhpc.nic.in
MPL			
63.	R.K. Dudani	Chief (O & M)	9263635922 rajesh.dudani@tatapower.com
64.	S. Dash	Group Head -Commercial	9204652869 sudipdash@tatapower.com
VEDANTA			
65.	Tanmoy Singh	AGM	8349201115 tanmay.sinha@vedanta.co.in
66.	D.K. Singh	AGM	9777451531 singh.deepak@vedanta.co.in
67.	Manas Kumar Panda	AGM	9937047045 manaskumar.panda@vedanta.co.in
GMRKEL			
68.	Haresh Satapathy	GM, Power Sales	haresh.satapathy@gmrgroup.in 07752020405
PTC			
69.	Harish Saran	Executive Director (Marketing)	9810394429 harishsaran@ptcindia.com
TPTCL			
70.	Bikram Singh.Guram	Head Marketing	9810626742 bikram.singh@tatapower.com
CEA			
71.	Moreshwar Dhakate	Director(GM)	9040087224, 9869874185 mmdhakate@nic.in
BHUTAN			
72.	Passang Dorji	Head, Corporate Planning	7044124205 Head-cpsd@drukgreen
73.	Tshewang Jamshto	Head, Operation, Tala	97517315227 Tshewang10@gmail.com
74.	Jigme Dorji	Engineer, BPC	97517661748 jigme_dorji @bpc.bit
75.	Ugyen Chophel	Engineer, Dept. of Hydropower	97517377018 uchophel@moea.gov.bt
76.	P.B. Rai	SE(E), RCO, BPC	97517564915 Purna @bpc.bt
ERLDC			
77.	U.K. Verma	General Manager	8902496220 ujwalkumar.verma@gmail.com

Sl. No.	Name S/Shri	Designation	Contact Number e-mail id
78.	G. Chakraborty	DGM	9433041815 goutamx@hotmail.com
79.	S. Banerjee	DGM	9433041823 surojitb@gmail.com
80.	S.P. Barnwal	Chief Manager	9433041812 sparnwal@gmail.com
81.	J.G.Das	Manager	9433041814 joy.gopal40773@yahoo.co.in
ERPC			
82.	A.K. Bandyopadhyay	Member Secretary	9433068533 mserpc-power@nic.in
83.	S.P. Datta	Addl. General Manager	9433067022 spdatta@rediffmail.com
84.	S. Paul	Executive Engineer	9051089897 eecom1.erpc@gov.in
85.	S. Kejriwal	Executive Engineer	9831919509 eecom2.erpc@gov.in
86.	D.K. Bauri	Executive Engineer	9883617326 eeop.erpc@gov.in
87.	P.K. De	Executive Engineer	9433125844 rpc.erpc@gov.in
88.	G. Rao	Assistant Director -I	9547891353 ereb_cea@yahoo.com

Sl. No.	Line Name	Voltage Level	Length (in km)	Action requested	Remarks
1	Ramgarh- Patratu	132	12	To be included	This line was under proposed 245km OPGW laying which was communicated to PGCIL in 2012 but somehow has been dropped from the list.
2	DTPS – Jamuria	132	30	To be included	-do-
3	LILO of Kalya – CTPS at Dhanbad	220	1	To be included	-do-
4	Ramgarh 220—Ramgarh 132	UGFO	2	***To be dropped***	Already completed
5	Giridih 220—Giridih 132	UGFO	2	***To be dropped***	Not required as 220 & 132kV Control rooms operate from same control room.
6	Durgapur (DVC) – Mejia	220	20	To be included	New addition, required for creation of ring network.
7	Dhanbad – Giridih	220	46	To be included	-do-
8	DTPS – Kalipahari	132	28	To be included	-do-

Total addition required = 137km
Total deletion required = 4 km
Awarded for = 901 km
Net Change = 133km (14.76%)

Annexure- B7

भारत सरकार / Government of India
विद्युत मंत्रालय / Ministry of Power
केंद्रीय विद्युत प्राधिकरण / Central Electricity Authority
प्रणाली योजना एवं परियोजना मूल्यांकन विभाग /
System Planning & Project Appraisal Division
सेवा भवन, आर के पुरम / Sewa Bhawan, R.K. Puram
नई दिल्ली / New Delhi – 110 066
वेबसाइट / Website : www.cea.nic.in

[ISO: 9001: 2008]

No. 100/3/2013-SP&PA/ 921 - 22 Dated: 27th June, 2013

To,

Shri Rajesh Kumar Shahi, VP
PFC Consulting Ltd., First floor
Urjanidhi, 1 Barakhamba Lane
Connaught Place
New Delhi- 110 001.
Fax.No. 23456170

Shri V.K. Singh
CEO
RECTL
Core-4, Scope Complex-7
Lodhi Road
New Delhi
Fax No. 26115329

Sub.:- Minutes of meeting held on 24th June 2013 chaired by Member (PS), CEA regarding implementation of Inter State Transmission projects through tariff based competitive bidding route

Sir,

Please find enclosed herewith the minutes of the subject cited meeting held on 24.06.2013. This is for your information and necessary action please.

Encl: As above.

Yours faithfully,

(K.K. Arya)
Chief Engineer (SP&PA)

Minutes of meeting held on 24th June 2013, Chaired by Member (PS),Central Electricity Authority, regarding implementation of Inter State Transmission Projects through tariff based competitive bidding route.

Present

CEA

1.Shri Ravinder, Member (PS)&
Member Secretary, Empowered Committee
2.ShriPardeep Jindal, Director (SP&PA)

BPCs

1.Shri V K Singh, ACEO, RECTPCL
2.Shri Rajesh Shahi, VP, PFCCL
3.Shri Sanjay Rai, VP, PFCCL

1. The meeting was held to discuss the way forward with existing SBD for procurement of transmission services so that development of ISTS is not hampered and delayed on account of non- availability of SBD aligned with POC mechanism of sharing of transmission charges prescribed by CERC.

2. The following decisions were taken :

2.1 The BPCs explained that they are using current SBD for existing / new projects allotted by MoP based on decision of Empowered Committee on transmission. With regard to payment of transmission charges in the POC mechanism, the charges are pooled at national level and shared as per applicable rates at different points. Since the current SBD pertains to regional postage stamp method for sharing of transmission charges, all the formats have been devised accordingly. Further, while using current SBD,the Transmission Service Agreement is required to be signed by regional beneficiaries (LTTCs).

CEA concurred with the views and advised BPCs to go ahead with signing of Transmission Service Agreement by the regional constituents in which the scheme is approved. However, it should be clarified to the Bidders by mentioning that transmission charges will be pooled on national basis and recovered through POC mechanism prescribed by the CERC.

2.2 The BPC stated that in the current SBD, there is no nodal agency for retaining CPG and CPG is to be provided by the selected bidder to various LTCCs in proportion to their allocated project capacity. In case of Vemagiri Transmission Project, the CPG in favour of LTTCs of Vemagiri Transmission Project was provided by the selected bidder and kept in custody of CTU.

The CEA was of the view that at present a new Chairperson is yet to be appointed for Empowered Committee and issue of CPG will arise at the time of issuance of LOI, therefore suitable instructions in this regard will be provided at that time.

2.3 The List of Long Term Transmission Customers for Northern Region and Eastern Region is attached at Annex-2.

2.4 It was agreed, after consultation with CTU, that the Lead LTTC in Northern Regionwill beUP Power Corporation Limited and Alternate Lead LTTC will be Punjab State Power Corporation Limited.

The BPCs were advised to take action based on above decisions.

The meeting ended with vote of thanks to the Chair.

Annex-2

[Sh 1 of 2]

List of Long Term Transmission Customers for Northern Region

For following Independent Transmission Projects

1. BairaSiulSarna 220 kV transmission line
2. ATS of Unchahar TPS
3. Northern Region System Strengthening Scheme XXIX
4. Northern Region System Strengthening Scheme XXXI (Part-A)
5. Northern Region System Strengthening Scheme XXXI (Part-B)
6. Transmission System for Patran 400 kV S/S
7. Part ATS of RAPP U – 7 & 8 in Rajasthan

Sr. No.	Name of LTTC
1	AD Hydro, Bhilwara Towers
2	Haryana Power Purchase Centre
3	Punjab State Power Corporation Limited
4	Himachal Sorang Power Pvt. Ltd.
5	Adani Power Limited, Mundra
6	Jaipur VidyutVitran Nigam Ltd
7	Ajmer VidyutVitran Nigam Ltd
8	Jodhpur VidyutVitran Nigam Ltd
9	LancoAnpara Power Limited
10	Lanco Green Power Pvt. Ltd.
11	Power Development Deptt., Govt. of Jammu & Kashmir
12	North Central Railway
13	Jaiprakash Power Ventures Ltd.,
14	BSES Yamuna Power Ltd. (Delhi Discoms)
15	BSES Rajdhani Power Ltd.
16	TPDDL, (Delhi DISCOMS)
17	New Delhi Municipal Corporation
18	UTC- Chandigarh
19	HVDC Dadri, Power Grid Corporation of India Limited
20	HVDC Rihand, Power Grid Corporation Of India Limited
21	U.P. Power Corporation Ltd.
22	PTC (Budhil), PTC India Limited,
23	PTC (Everest). PTC India Limited,
24	Uttranchal Power Corporation Ltd.
25	Himachal Pradesh State Electricity Board

[Note: While the bidding is being done on the basis of existing SBDs, and the list of LTTC is being provided as per the format of the existing SBDs, Bidders may however note that the transmission charges will be shared and recovered as

per the applicable CERC regulation and will be recovered by the CTU from the Designated ISTS customers (DICs) and disbursed to the TSPs as per the Revenue Sharing Agreement.]

List of Long Term Transmission Customers for Eastern Region

For the Independent Transmission Projects

1. Eastern Region System Strengthening Scheme VI
2. Eastern Region System Strengthening Scheme VII

S.No.	Name of LTTC
1.	Maithan Power Limited
2.	Grid Corporation of Orissa Ltd,
3.	Bihar State Electricity Board
4.	HVDC Pusauli, Power Grid Corporation of India Limited
5.	Damodar Valley Corporation
6.	Power Deptt., Govt. of Sikkim,
7.	Jharkhand State Electricity Board
8.	West Bengal State Electricity Distribution Company Ltd.

[Note: While the bidding is being done on the basis of existing SBDs, and the list of LTTC is being provided as per the format of the existing SBDs, Bidders may however note that the transmission charges will be shared and recovered as per the applicable CERC regulation and will be recovered by the CTU from the Designated ISTS customers (DICs) and disbursed to the TSPs as per the Revenue Sharing Agreement.]

Annexure-B9

EASTERN REGION TRANSMISSION SYSTEM- I

Road Map for Replacement of Disc Insulator With Polymer Insulator in Polluted area

Sl. No.	Voltage (KV)	Name of the Transmission line	Line Length (KM)	No of locations under polluted stretches		Polymer requirement (Capacity wise)		Remarks	Tentative replacemnet period
				Suspension	Tension	120 KN	420 KN		
1	765	Gaya-Fatehpur S/C (ER- I)	147.808	35	20	360	1100	Brick Kiln Area	20 Days
2	765	Gaya - Balia S/C	228.060	23	32	312	1628	Brick Kiln Area	20 Days
Total (String)						**672**	**2728**		

Sl. No.	Voltage (KV)	Name of the Transmission line	Line Length (KM)	No of locations under polluted stretches		Polymer requirement (Capacity wise)		Remarks	Tentative replacemnet period
				Suspension	Tension	120 KN	160 KN		
3	400	Patna - Balia-I & II	195.323	84	18	1026	864	Brick Kiln Area	25 Days
4	400	Biharsharif- Balia-I & II	241.786	92	14	1118	672	Brick Kiln Area	15 Days
5	400	Koderma- Biharsharif-I & II	110.719	15	5	185	240	Cruser Units	4 Days
6	400	Biharsharif-Sasaram - III & IV	198.773	20	8	248	384	Cruser Units	8 Days
7	400	Patna -Balia-III & IV	179.849	88	20	1076	960	Brick Kiln Area	25 Days
8	400	Barh - Patna - III & IV	68.650	0	5	5	240	Brick Kiln Area	2 Days
9	400	Barh - Patna - I & II	92.998	4	2	50	96	Brick Kiln Area	2 Days
10	400	Kahalgaon - Barh -I & II	217.240	7	3	87	144	Nearby NTPC	3 Days
11	400	Koderma - Gaya - I & II	124.497	25	5	305	240	Cruser Units	7 Days
12	400	Maithan - Gaya - I & II	276.954	36	15	447	720	Cruser Units	9 Days
13	400	Farakka - Kahalgaon - I & II	94.741	25	8	158	192	Nearby NTPC	5 Days
14	400	Kahalgaon - Biharsharif - I & II	201.467	25	10	160	240	Nearby NTPC	8 Days
15	400	Kahalgaon - Maithon - I & II	171.854	24	12	156	288	Nearby NTPC	6 Days
16	400	Jamshedpur - Rourkela S/C - I	151.120	32	14	206	336	Nearby TISCO	7 Days
17	400	Jamshedpur - Rourkela S/C - II	152.787						
18	400	Biharsharif - Sasaram - I & II	192.059	18	8	116	192	Brick Kiln Area	4 Days
19	400	Sasaram - Sarnath - Allahabad I & II	215.427	28	12	180	288	Brick Kiln Area	6 Days
20	400	Biharsharif - Muzaffarpur - I&II	129.983	23	9	147	216	Brick Kiln Area	6 days
21	400	Ranchi - Raghunathpur - Maithon-I&II	199.813	40	15	255	360	Cruser Units	8 Days
22	400	Ranchi - Sipat-I & II (ER Portion)	136.236	35	18	228	432	Cruser Units	8 days
23	400	Ranchi-Rourkela I & II	144.935	12	6	78	144	Cruser Units	3 Days
24	400	Farakka - Kahalgaon - III & IV	95.267	30	15	195	360	Nearby NTPC	7 Days
25	400	Maithon (RB) - Ranchi - I & II	187.642	40	15	255	360	Cruser Units	7 Days
26	400	Nabinagar - Sasaram - I & II	81.647	16	8	104	192	Brick Kiln Area	4 days
27	400	Jamshedpur - TISCO - Baripada - I&II	140.280	24	14	158	336	Nearby TISCO	5 Days
28	400	Kahalgaon - Banka-I & II	47.700	16	6	102	144	Nearby TISCO	4 Days
29	400	Banka-Biharsharif-I & II	184.540	12	4	76	96	Brick Kiln Area	3 Days
Total (String)						**7121**	**8736**		

Sl. No.	Voltage (KV)	Name of the Transmission line	Line Length (KM)	No of locations under		Polymer requirement		Remarks	Tentative replacemnet period
				Suspension	Tension	70 KN	120 KN		
30	220	Dalkhola - Purnea - I & II	40.292	90	17	557	204	Foggy & Decapping prone	12 Days
31	220	Purnea - New Purnea-I & II	1.083		3	3	36		1 Day
32	220	Sasaram-Ara I & II	112.136	22	6	138	72	Brick Kiln Area	4 Days
33	220	Ara-Khagaul - I & II	48.439	32	3	195	36	Brick Kiln Area	4 Days
34	220	Ranchi - Chandil - I & II (LILO portion)	8.065	5	5	35	60	Brick Kiln Area	2 Days
35	220	Ranchi - Patratu -I & II (LILO portion)	6.918	5	5	35	60	Brick Kiln Area	2 Days
36	220	Gaya - Dehri (LILO portion) - I & II	10.995	10	4	64	48	Cruser Units	2 Days
37	220	Gaya-Bodhgaya (LILO portion) - I & II	12.698	12	5	77	60	Cruser Units	3 Days
Total (String)						**1104**	**576**		

Annexure-B9

Sl. No.	Voltage (KV)	Name of the Transmission line	Line Length (KM)	No of locations under		Polymer requirement		Remarks	Tentative replacemnet period
				Suspension	Tension	70 KN	90 KN		
38	132	Dehri - Sasaram S/C	61.689	40	12	0	198	Brick Kiln Area	6 Days
39	132	Sasaram - Mohania - Karamnasa S/C	29.000	32	12	0	174	Brick Kiln Area	5 Days
40	132	Ara - ARA/ Dumraon (LILO Portion)	1.702		9	0	117	Brick Kiln Area	2 Days
41	132	Purnea - Purnea/Dalkola (LILO Portion)	0.500		3	0	39	Foggy area	1 Days
Total (String)						**0**	**528**		

Abstract of Polymer Insulator	420 KN	160 KN	120 KN	90 KN	70 KN	**Total**
String	2728	8736	8369	528	1104	**21465**

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)
पावरग्रिड

J-1-15, Block- EP, Sector-V, Salt Lake City, Kolkata – 700 091.
Tel. (033) 2357-2822, (033) 2357-2822 (Fax)

Ref : ER-II/KOL/AM/2015 **Date: 15.10.2015**

To,
The Member Secretary
Eastern Region Power Committee
14, Golf Club Road, Tollygunj,
Kolkata-700033

Sub: Tentative Programme for replacement of Porcelain insulators with Polymer insulators in the transmission lines of POWERGRID ER-II.

Dear Sir,

Attached e find here with the tentative schedule for repklacement of orcelain insulators with polymer insulators in the transmission lines of POWERGRID Eastern Region-II. This is for your kind information please.

Thanking you.

Yours faithfully

15/10/15
Jiten Das
Asst.GM (AM)

TENTATIVE SCHEDULE OF REPLACEMENT OF PORCELAIN INSULATORS WITH POLYMER INSULATORS IN THE LINES OF POWERGRID EASTERN REGION-II

Sl No.	Name of Line	Line Length (Km)	Voltage(KV)	Programme for replacement
1	220KV Birpara-Salakati D/C Line	157	220	Dec'15
2	220KV Birpara-Chukha D/C Line (Indian Portion)	36	220	April'16
3	220KV Birpara-Malbase (Indian Portion)	38	220	May'16
4	220KV Birpara-New Siliguri D/C line	80	220	June'16
5	220KV Siliguri-Dalkola D/C line	119	220	Aug'16
6	220KV Siliguri-New Siliguri D/C line	5.2	220	Oct'16
7	400KV New-Siliguri-Tala-I D/C line	98	400	April'16 to March'17
8	400KV New-Siliguri-Tala-II D/C line	116	400	
9	400KV New-Siliguri-Bongaigaon D/C line	216	400	
10	400KV New- Siliguri-Purnea D/C line (I & II)	168	400	
11	400KV Ne-Siliguri-Rangpo D/C Line	126	400	
12	400KV Rangpo-Teesta-V D/C Line	8	400	
13	132 KV Siliguri-Meli Line	92	132	
14	132KV Siliguri-Karsiang Line	31.3	132	
15	132Kv Karsiang-Rangit Line	61.2	132	
16	220KV Dalkola-Malda D/C line.	116	220	
17	400KV Malda-New-Purnea D/C line	167	400	
18	400KV Malda-Farakka D/C line	40	400	
19	400KV Farakka-Durgapur Ckt-I	150	400	
20	400KV Farakka-Durgapur Ckt-II	146	400	
21	400KV Farakka-Berhampore S/C line	74	400	
22	400KV Farakka-Sagardighi S/C line	55	400	
23	400Kl-Jamshedpur D/C lineV And	156.76	400	
24	400KV Durgapur-Jamshedpur S/C line	177	400	
25	400KV Maithon-Jamshedpur D/C line	153	400	
26	400KV Maithon-Mejia D/C line	59	400	
27	400KV Maithon-Durgapur D/C line	70.77	400	
28	400KV Maithon-Mejia Ckt-III	83	400	
29	400KV Maithon-Maithon(RB) D/C Line	31.5	400	

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)
पावरग्रिड

27, शहीद नगर, भुवनेश्वर (ओडिशा) - 751 007
दुरभाष: 2548586, 2548174, फैक्स: 0674-2548586
27, Saheed Nagar, Bhubaneswar (Odisha) - 751 007
Tel.- 2548586, 2548174, Fax. No. 0674-2548586

Ref. No: ER-II/ODP/AM/ **Date: 18.11.2015**

To

The Member Secretary,
Eastern Region Power Committee
14, Golf Club Road, Tollygunj,
Kolkata-700033

Sub: Tentative Programme for replacement of Porcelain insulators with Polymer insulators in the transmission lines of POWERGRID, Odisha.

Dear Sir,

Attached please find here with the tentative schedule for replacement of porcelain insulators with polymer insulators in the transmission lines of POWERGRID, Odisha. This is for your kind information please.

Thanking You.

Yours faithfully,

18/11/15
(A. K. Behera)
DGM(AM), Odisha

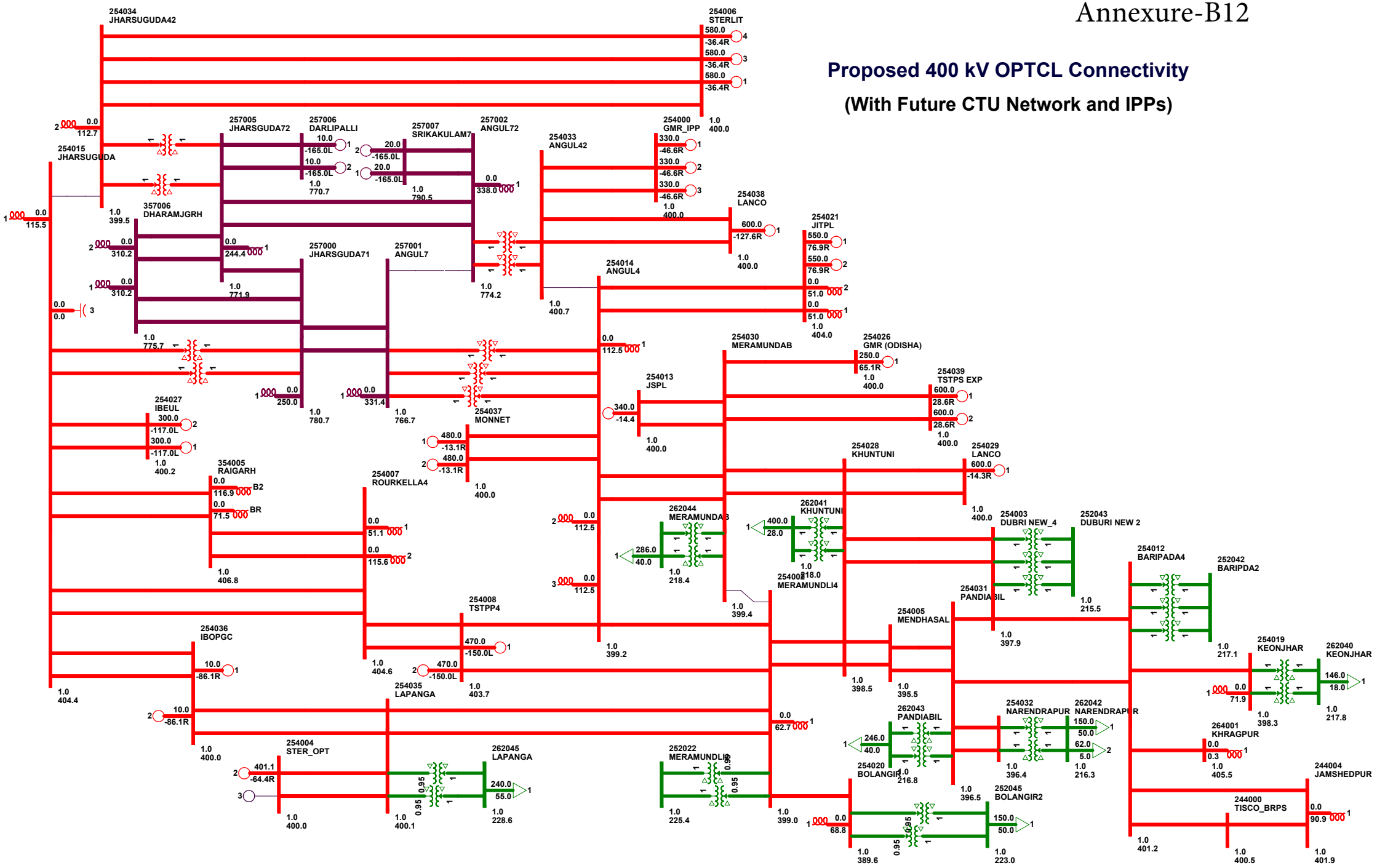
TENTATIVE SCHEDULE OF REPLACEMENT OF PORCELAIN INSULATORS WITH POLYMER INSULATORS IN THE LINES OF POWERGRID, ODISHA.

Sl. No.	Name of Line	Line Length (Km)	Voltage (kV)	Programme for Replacement
1	400kV Rourkela – Raigarh I & II D/C Line	187	400	Dec'15 – Mar'16
2	400kV Rourkela – Raigarh III & IV D/C Line	215	400	Dec'15 – Mar'16
3	400kV Jeypore – Indravati S/C Line	74.3	400	Dec'15 - Apr'16
4	400kV Jeypore – Bolangir S/C Line	309.5	400	Dec'15 - Apr'16
5	400kV Rengali – Indravati S/C Line	356	400	Jan'16 – May'16
6	400kV Talcher- Rengali D/C Line	25	400	
7	400kV Talcher – Rourkela D/C Line	171	400	
8	400kV Angul – Bolangir S/C Line	299	400	
9	400kV LILO at Bolangir	22	400	
10	± 500kV HVDC Talcher – Kolar Line	300	500	Jan'16 – Jan'17

Annexure-B12

Proposed 400 kV OPTCL Connectivity

(With Future CTU Network and IPPs)



पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)
पावरग्रिड

पूर्वी क्षेत्र पारेषण प्रणाली-I मुख्यालय : अलंकार प्लेस (द्वितीय, पाँचवा व छठा तल), बोरिंग रोड, पटना-800 001
दूरभाष : 0612-2231071, 2233140, फैक्स : 0612-2228984
Eastern Region Transmission System-I H.Q.: Alankar Place (2nd, 5th & 6th Floor), Boring Road, Patna-800 001
Tel.: 0612 - 2231071, 2233140 Fax : 0612 - 2228984

Ref. No.: ER-I/PAT/AM(ER-I)/ **Date : 09.10.2015**

To

Member Secretary,
Eastern Regional Power Committee,
14, Golf Club Road, Tollygunj, Kolkata-700033

Sub: **Tentative cost estimate for one time restoration of PLCC system of STUs Tie lines in Eastern Region-I.**

Dear Sir,

This is with reference to the letter ref. no. ERPC/MS/2015 Dated 05.10.2015 regarding cost estimate for one time restoration of PLCC system of 220 KV tie lines of STUs whose PLCC are non operational for some or other reason. As communicated earlier, following tie lines of STUs have been identified whose PLCC system at STU end are non operational.

1) 220KV Ranchi-Chandil-I&II
2) 220 KV Ranchi-Hatia-I&II
3) 220 KV Patna-Fathua
4) 220 kv Patna-Khagaul
5) 220 kv Gaya-Bodhgaya-I&II
6) 220 KV Gaya-Dehri-I&II

Accordingly a tentative cost estimate has been prepared based on the survey report by POWERGRID engineer of respective STUs substation. The total tentative cost for one time restoration of PLCC of BSPTCL system comes to Rs 8197000/- and for JUSNL system comes to Rs 468400/-. Details of tentative cost estimate are attached as annexure-I&II. However, actual expenditure for one time restoration of PLCC system will be based on the actual procurement/ work done as per POWERGRID standard practice and visit of service engineer of respective OEM.

This is for your kind information and further necessary action please.

Thanking you.

Yours faithfully,

09/X/15

(S.K.Singh)
DGM (AM)/ER-I

Annexure-I

ESTIMATE FOR ONE TIME RESTORATION OF PLCC OF BSPTCL

S.NO.	ITEM DESCRIPTION	UNIT	QTY	AMOUNT	REMARKS
BODHGAYA AND DEHRI S/S					
1	Supply, Erection and commissioing of 220KV CVT alongwith support structure.	NO.	4	1500000	02 NOS-DEHRI AND 02 NOS-BODHGAYA
2	Supply, Erection and commissioing of Wave trap alongwith support structure and BPI.	NO.	4	2500000	02 NOS-DEHRI AND 02 NOS-BODHGAYA
3	Supply and laying of HF CABLE	KM	1	250000	FOR BOTH DEHRI AND BODHGAYA
4	Supply, laying and termination of CABLE (5CX2.5 SQ MM) BETWEEN RELAY PANEL TO PLCC	KM	1	300000	FOR BOTH DEHRI AND BODHGAYA
5	CLAMPS AND CONNECTOR FOR CVT AND WAVETRAP	NO.	8	150000	04 NOS. CVT AND 04 NOS- WT
6	JUMPER CONDUCTOR	NO.	8	150000	04 NOS. CVT AND 04 NOS- WT
7	DEPUTATION OF RELAY ENGINEER	DAYS	6	300000	03 DAYS EACH FOR DEHRI AND BODHGAYA
8	DEPUTATION OF PLCC ENGINEER	DAYS	6	300000	03 DAYS EACH FOR DEHRI AND BODHGAYA
9	CVT FOUNDATION	NO.	2	400000	01 NOS-DEHRI AND 01 NOS-BODHGAYA
10	MISCELLANEOUS	LS		150000	
SUB TOTAL(A)				**6000000**	
KHAGAUL AND FATHUA S/S					
1	Supply, installation and commissioning of LMU	NO.	2	500000	01 NO.-KHAGAUL AND 01 NO. -FATHUA
2	DEPUTATION OF SERVICE ENGINEER	LS		300000	02 days for kahgaul and 02 days for fathua
3	REPAIR OF PLCC CARDS	LS		100000	
4	MISCELLANEOUS	LS		100000	
SUB TOTAL(B)				**1000000**	
SUB TOTAL (A+B)				**7000000**	
POWERGRID CONSULTANCY FEE@15%				**1050000**	
SERVICE TAX ON CONSULTANCY FEE				**147000**	
TOTAL EXCLUDING TAXES AND DUTIES OF EACH ITEM				**8197000**	

Annexure-II

ESTIMATE FOR ONE TIME RESTORATION OF PLCC OF JSUNL

S.NO.	ITEM DESCRIPTION	UNIT	QTY	AMOUNT	REMARKS
CHANDIL AND HATIA S/S					
1	Deputation of service engineer for PLCC	DAYS	6	300000	02 DAYS-HATIA AND 02 DAYS-CHANDIL
2	Miscellaneous	LS		100000	
SUB TOTAL				400000	
POWERGRID CONSULTANCY FEE@15%				60000	
SERVICE TAX ON CONSULTANCY FEE				8400	
TOTAL EXCLUDING TAXES AND DUTIES OF EACH ITEM				468400	

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)
पावरग्रिड

J-1-15, Block- EP, Sector-V, Salt Lake City, Kolkata – 700 091.
Tel. (033) 2357-2822, (033) 2357-2822 (Fax)

Ref : ER-II/KOL/AM/2015 **Date: 15.10.2015**

To,
The Member Secretary
Eastern Region Power Committee
14, Golf Club Road, Tollygunj,
Kolkata-700033

Sub: Tentative cost estimate for one time restoration of PLCC system of STUs Tie Lines in Eastern Region-II.

Dear Sir,

This has reference to the letter ref. no. ERPC/MS/2015 Dated 05.10.2015 regarding cost estimate for one time restoration of PLCC system of the tie lines of STUs, for which PLCC are non-operational/ not available for some or other reason.

The following tie lines of the STU systems were identified

WBSETCL System:

1. 132KV Siliguri-NBU line.
2. 132KV Siliguri-NJP line.
3. 132KV Siliguri-Karsiang line.
4. 132KV Malda-Malda D/C line.
5. 132KV Birpara-Birpara D/C line.

Sikkim System:

1. 132KV Siliguri-Meli line.

Accordingly, a tentative cost estimate has been prepared based on the survey report of POWERGRID engineer of respective STU station. The total tentative cost for one time restoration of PLCC of WBSETCL system comes to Rs. 2,91,50,141.00 and for Sikkim syetm comes to Rs. 57,41,469.00. Details of tentative cost estimate are attached as Annex-I & II. However, actual expenditure for one time restoration of PLCC system will be based on the actual procurement/ work done as per POWERGRID standard practice and visit of service engineer of respective OEM.

This is for your kind information and further necessary action please.

Thanking you.

Yours faithfully

Jiten Das 15/10/15
Asst.GM (AM)

Annexure - 1

ESTIMATE FOR ONE TIME RESTORATION OF PLCC OF WBSETCL

Sl No.	Items Description	Unit	Qty.	Amount	Remarks
A.	**132KV SILIGURI NBU LINE**				
1	Supply , Erection and Commissioning of PLCC Pane	NO	4	1411986.00	
2	Supply, Erection and Commissioining of 132KV CVT alongwith support structure	NO	2	470022.00	
3	Supply , Erection and Commissioning of Wave Trap support structure and BPI	NO	4	954504.00	
4	Supply and Erection of Coupling Device	No.	2	92241.00	
5	Supply and Laying of HF Cable	KM	2	271034.00	1km length SLG and 1km at NBU
6	Supply, Laying and termination of CABLE (14CX2.5Sqmm) between relay panel to PLCC	KM	1	336342.00	0.5 km length SLG and 0.5km at NBU
7	Clamps and Connector for Wave Trap & cvt	NO	6	112500.00	
8	Jumper Conductor	NO	6	112500.00	
9	Deputation of Relay Engineer	Days	6	300000.00	3days at SLG and 3 Days at NBU
10	Deputation of PLCC Engineer	Days	8	400000.00	4 Days at SLG and 4 Days at NBU
11	Supply, Erection and Commissioining of 48V Battery system	SET	1	123573.00	
12	Supply, erection and Commissioning of 48V Battery Charger	No.	1	363368.00	
13	CVT Foundation	Nos	2	200000.00	
14	Miscellaneous	LS		300000.00	
	Sub Total A			5448070.00	

B.	**132KV SILIGURI NJP LINE**				
1	Supply , Erection and Commissioning of PLCC Panel	NO	4	1411986.00	
2	Supply, Erection and Commissioining of 132KV CVT alongwith support structure	NO	2	470022.00	
3	Supply , Erection and Commissioning of Wave Trap support structure and BPI	NO	4	954504.00	
4	Supply and Erection of Coupling Device	No.	2	92241.00	
5	Supply and Laying of HF Cable	KM	2	271034.00	1km length SLG and 1km at NJP

6	Supply, Laying and termination of CABLE (14CX2.5Sqmm) between relay panel to PLCC	KM	1	336342.00	0.5 km length SLG and 0.5km at NJP
7	Clamps and Connector for Wave Trap & cvt	NO	6	112500.00	
8	Jumper Conductor	NO	6	112500.00	
9	Deputation of Relay Engineer	Days	6	300000.00	3days at SLG and 3 Days at NJP
10	Deputation of PLCC Engineer	Days	8	400000.00	4 Days at SLG and 4 Days at NJP
11	Supply, Erection and Commissioining of 48V Battery system	SET	1	123573.00	
12	Supply, erection and Commissioning of 48V Battery Charger	No.	1	363368.00	
13	CVT Foundation	Nos	2	200000.00	
14	Miscellaneous	LS		300000.00	
	Sub Total B			5448070.00	
C.	**132KV SILIGURI KERSIANG LINE**				
1	Supply , Erection and Commissioning of PLCC Panel	NO	4	1411986.00	
2	Supply, Erection and Commissioining of 132KV CVT alongwith support structure	NO	2	470022.00	
3	Supply , Erection and Commissioning of Wave Trap support structure and BPI	NO	4	954504.00	
4	Supply and Erection of Coupling Device	No.	2	92241.00	
5	Supply and Laying of HF Cable	KM	2	271034.00	1km length SLG and 1km at Kersiang
6	Supply, Laying and termination of CABLE (14CX2.5Sqmm) between relay panel to PLCC	KM	1	336342.00	0.5 km length SLG and 0.5km at Kersiang
7	Clamps and Connector for Wave Trap & cvt	NO	6	112500.00	
8	Jumper Conductor	NO	6	112500.00	
9	Deputation of Relay Engineer	Days	6	300000.00	3days at SLG and 3 Days at Kersiang
10	Deputation of PLCC Engineer	Days	8	400000.00	4 Days at SLG and 4 Days at Kersiang
11	Supply, Erection and Commissioining of 48V Battery system	SET	1	123573.00	
12	Supply, erection and Commissioning of 48V Battery Charger	No.	1	363368.00	
13	CVT Foundation	Nos	2	200000.00	
14	Miscellaneous	LS		300000.00	

	Sub Total C			5448070.00	
D.	**132KV MALDA-MALDA D/C LINE**				
1	Supply , Erection and Commissioning of PLCC Panel	NO	6	2256540.00	2 NO.PLCC PANEL WITH PROTECTION COUPLER AND 1 NO. PLCC WITH SPEECH AND DATA HAS BEEN CONSIDERED AT EACH STATION.
2	Supply, Erection and Commissioining of 132KV CVT alongwith support structure	NO	2	470022.00	
3	Supply , Erection and Commissioning of Wave Trap support structure and BPI	NO	4	954504.00	
4	Supply and Erection of Coupling Device	No.	2	92241.00	
5	Supply and Laying of HF Cable	KM	2	271034.00	1km length MALDA and 1km at MLD.
6	Supply, Laying and termination of CABLE (14CX2.5Sqmm) between relay panel to PLCC	KM	1	336342.00	0.5 km length MALDA and 0.5km at MLD.
7	Clamps and Connector for Wave Trap & cvt	NO	6	112500.00	
8	Jumper Conductor	NO	6	112500.00	
9	Deputation of Relay Engineer	Days	6	300000.00	3days at MALDAand 3 Days at MLD.
10	Deputation of PLCC Engineer	Days	8	400000.00	4 Days at MALDA and 4 Days at MLD.
11	Supply, Erection and Commissioining of 48V Battery system	SET	1	123573.00	
12	Supply, erection and Commissioning of 48V Battery Charger	No.	1	363368.00	
13	CVT Foundation	Nos	2	200000.00	
14	Miscellaneous	LS		300000.00	
	Sub Total D.			6292624.00	
E.	**132KV BIRPARA-BIRPARA D/C LINE**				
1	Supply , Erection and Commissioning of PLCC Panel	NO	6	2256540.00	2 NO.PLCC PANEL WITH PROTECTION COUPLER AND 1 NO. PLCC WITH SPEECH AND DATA HAS BEEN CONSIDERED AT EACH STATION.
2	Supply, Erection and Commissioining of 132KV CVT alongwith support structure	NO	2	470022.00	
3	Supply , Erection and Commissioning of Wave Trap support structure and BPI	NO	4	954504.00	
4	Supply and Erection of Coupling Device	No.	2	92241.00	

5	Supply and Laying of HF Cable	KM	2	271034.00	1km length BIRPARA and 1km at BRP.
6	Supply, Laying and termination of CABLE (14CX2.5Sqmm) between relay panel to PLCC	KM	1	336342.00	0.5 km length BIRPARA and 0.5km at BRP.
7	Clamps and Connector for Wave Trap & cvt	NO	6	112500.00	
8	Jumper Conductor	NO	6	112500.00	
9	Deputation of Relay Engineer	Days	6	300000.00	3days at BIRPARAand 3 Days at BRP.
10	Deputation of PLCC Engineer	Days	8	400000.00	4 Days at BIRPARA and 4 Days at BRP
11	Supply, Erection and Commissioining of 48V Battery system	SET	1	123573.00	
12	Supply, erection and Commissioning of 48V Battery Charger	No.	1	363368.00	
13	CVT Foundation	Nos	2	200000.00	
14	Miscellaneous	LS		300000.00	
Sub Total E				6292624.00	
Sub Total (A+B+C+D+E)				24893374.00	
POWERGRID CONSULTANCY FEE @ 15%				3734006.10	
SERVICE TAX ON CONSULTANCY FEE @ 14%				522760.85	
TOTAL EXCLUDING TAXES AND DUTIES OF EACH ITEM				29150140.95	

Annexe - II

ESTIMATE FOR ONE TIME RESTORATION OF PLCC PANEL OF SIKKIM

Sl No.	Items Description	Unit	Qty.	Amount	Remarks
1	Supply , Erection and Commissioning of PLCC Pane	NO	4	1411986.00	The protection panels available are old and obsolete. 1 no. PLCC panel with Speech+ data & 1 no. PLCC panel with Speech+ Data+ Protection coupler has been considered each at Siliguri & Melli.
2	Supply , Erection and Commissioning of Wave Trap support structure and BPI	NO	4	1154504.00	
3	Supply and Erection of Coupling Device	No.	2	92241.00	
4	Supply and Laying of HF Cable	KM	2	271034.00	1km length SLG and 1km at Melli
5	Supply, Laying and termination of CABLE (14CXE.35qmm) between relay panel to PLCC	KM	1	330342.00	0.3 km length SLG and 0.3km at Melli
6	Clamps and Connector for Wave Trap	NO	4	75000.00	
7	Jumper Conductor	NO	4	75000.00	
8	Deputation of Relay Engineer	Days	6	300000.00	3days at SLG and 3 Days at Melli
9	Deputation of PLCC Engineer	Days	8	400000.00	4 Days at SLG and 4 Days at Melli
10	Supply, Erection and Commissioning of 48V Battery system	SET	1	123573.00	
11	Supply, erection and Commissioning of 48V Battery Charger	No.	1	363368.00	
12	Miscellaneous	LS		300000.00	
Total				4903048.00	
POWERGRID CONSULTANCY FEE@15%				735457.2	
Service Tax on Consultancy Fee@14%				102964.008	
Total Excluding Taxes and Duties of Each Item				5741469.21	

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise) पावरग्रिड
27, शहीद नगर, भुवनेश्वर (ओडिशा)-751007
दूरभाष: (0674) 2548586, 2548174, फैक्स: 2548586
27, Saheed Nagar, Bhubaneswar (Odisha)-751007
Tel: (0674) 2548586, 2548174, Fax: 2548586

Ref : ER-II/ODP/AM/2015

Date: 06.11.2015

To,
The Member Secretary
Eastern Region Power Committee
14, Golf Club Road, Tollygunj,
Kolkata-700033

Sub: Tentative cost estimate for one time restoration of PLCC system of STUs Tie Lines in Odisha.

Dear Sir,
This has reference to the letter ref. no. ERPC/MS/2015 Dated 05.10.2015 regarding cost estimate for one time restoration of PLCC system of the tie lines of STUs, for which PLCC are non-operational/ not available for some or other reason.

The following lines of the STU systems (OPTCL) were identified:
1) 400KV Indravati(PG)-Indravati(OHPC) Line.
2) 220KV Jeypore(PG)-Jaynagar(OPTCL) D/C line.
3) 220KV Rengali(PG)-Rengali(OPTCL) D/C Line.
4) 220KV Rourkela(PG)- Tarkera(OPTCL) D/C line.
5) 132KV Baripada(PG)- Rairangpur(OPTCL) S/C line.
6) 132KV Baripada(PG)- Baripada(OPTCL) S/C line.

Accordingly, a tentative cost estimate has been prepared based on the survey report of POWERGRID engineer on PLCC of respective OPTCL lines. The total tentative cost for one time restoration of PLCC of OPTCL system comes to Rs.6,23,86,512.00. Details of tentative cost estimate are attached as Annex-I. However, actual expenditure for one time restoration of PLCC system will be based on the actual procurement/ work done as per POWERGRID standard practice and visit of service engineer of respective OEM.

This is for your kind information and further necessary action please.

Thanking you.

Yours faithfully

06/11/15

(A.K.Behera)
DGM (AM)

Encl : As above.

Annexure-I

ESTIMATE FOR ONE TIME RESTORATION OF PLCC OF OPTCL LINES CONNECTING POWERGRID S/S

SUMMARY

SL.NO.	NAME OF LINE	COST ESTIMATE (Rs.)
A	400KV INDRAVATI(PG) - INDRAVATI(OHPC) S/C LINE	7732249.00
B	220KV JEYPORE(PG) - JAYNAGAR(OPTCL) D/C LINE	10898188.00
C	220KV RENGALI(PG) - RENGALI(OPTCL) D/C LINE	11958591.00
D	220 KV ROURKELA(PG) - TARKERA(OPTCL) D/C LINE	10850453.50
E	132KV BARIPADA(PG)- RAIRANGPUR(OPTCL) S/C LINE	5918394.00
F	132KV BARIPADA(PG) - BARIPADA(OPTCL) S/C LINE	5918394.00
	TOTAL :	**53276269.50**
	POWERGRID Consultancy fee @15 % :	7991440.43
	Service tax on Consultancy fee @ 14 % :	1118801.66
	Grand Total Excluding taxes & duties of each item :	**62386511.58**

5/11/15
(S.K. Naik)
Ch. Mgr (AM)
Bhubaneswar.

ESTIMATE FOR ONE TIME RESTORATION OF PLCC OF OPTCL LINES CONNECTING POWERGRID S/S

Sl No.	Items Description	Unit	Qty.	Unit Rate	Amount	Remarks
A.	400KV INDRAVATI(PG) - INDRAVATI(OHPC) S/C LINE					
1	Supply , Erection and Commissioning of PLCC Panel.	NO	8	352996.5	2117979.00	2 NO.PLCC PANEL WITH PROTECTION COUPLER AND 1 NO. PLCC WITH SPEECH AND DATA HAS BEEN CONSIDERED AT EACH STATION.
2	Supply, Erection and Commissioning of 420KV CVT	NO	4	376253	1505013.00	2 NOS CVT AT EACH STATION FOR PHASE TO PHASE COUPLING.
3	Supply , Erection and Commissioning of 420KV Wave Trap	NO	4	268735	1074940.00	2 NOS WAVE TRAP AT EACH STATION FOR PHASE TO PHASE COUPLING.
4	Supply and Erection of Coupling Device	No.	4	92241	368964.00	2 NOS AT EACH STATION
5	Supply and Laying of HF Cable	KM	4	135517	542068.00	1km length at PG end and 3km at OHPC end
6	Supply, Laying and termination of CABLE (14CX2.5Sqmm) between relay panel to PLCC	KM	1	336345	336345.00	0.5 km length PG end and 0.5km at OHPC end
7	Clamps and Connector for Wave Trap & CVT	NO	8	18750	150000.00	
8	Jumper Conductor	NO	8	18750	150000.00	
9	Deputation of Relay Engineer	Days	6	50000	300000.00	3days at PG and 3 Days at OHPC end
10	Deputation of PLCC Engineer	Days	8	50000	400000.00	4 Days at PG end and 4 Days at OHPC end
11	Supply, Erection and Commissioning of 48V Battery system	SET	1	123573	123573.00	
12	Supply, erection and Commissioning of 48V Battery Charger	No.	1	363368	363368.00	
13	Miscellaneous (EARTHING FLAT, NUT BOLTS ETC)	LS		300000	300000.00	
	Sub Total (A) :				7732249.00	

ESTIMATE FOR ONE TIME RESTORATION OF PLCC OF OPTCL LINES CONNECTING POWERGRID S/S

Sl No.	Items Description	Unit	Qty.	Unit Rate	Amount	Remarks
B.	220KV JEYPORE(PG) - JAYNAGAR(OPTCL) D/C LINE					
1	Supply , Erection and Commissioning of PLCC Panel	NO	6	352986.5	2117979.00	2 NO.PLCC PANEL WITH PROTECTION COUPLER AND 1 NO. PLCC WITH SPEECH AND DATA HAS BEEN CONSIDERED AT EACH STATION
2	Supply, Erection and Commissioning of 245KV CVT	NO	8	283152	2265216.00	4 NOS CVT AT EACH STATION FOR PHASE TO PHASE COUPLING.
3	Supply , Erection and Commissioning of Wave Trap	NO	8	231717	1853736.00	4 NOS WAVE TRAP AT EACH STATION FOR PHASE TO PHASE COUPLING.
4	Supply and Erection of Coupling Device	No.	8	92241	737928.00	4 NOS AT EACH STATION
5	Supply and Laying of HF Cable	KM	6	135517	813102.00	2km length PG end and 4km at JAYNAGAR end
6	Supply, Laying and telmination of CABLE (14CX2.5Sqmm) between relay panel to PLCC	KM	1	336345	336345.00	0.5 km length PG end and 0.5km at JAYNAGAR
7	Clamps and Connector for Wave Trap & CVT	NO	16	18750	300000.00	
8	Jumper Conductor	NO	16	18750	300000.00	
9	Deputation of Relay Engineer	Days	8	50000	400000.00	4days at PG end and 4 Days at JAYNAGAR
10	Deputation of PLCC Engineer	Days	10	50000	500000.00	5 Days at PG end and 5 Days at JAYNAGAR
11	Supply, Erection and Commissioning of 48V Battery system	SET	2	143573	287146.00	
12	Supply, erection and Commissioning of 48V Battery Charger	No.	2	363368	726736.00	
13	Miscellaneous (EARTHING FLAT, NUT BOLTS ETC)	LS		300000	300000.00	
	Sub Total (B) :				10898188.00	

ESTIMATE FOR ONE TIME RESTORATION OF PLCC OF OPTCL LINES CONNECTING POWERGRID S/S

Sl No.	Items Description	Unit	Qty.	Unit Rate	Amount	Remarks
C.	220KV RENGALI(PG) - RENGALI(OPTCL) D/C LINE					
1	Supply , Erection and Commissioning of PLCC Panel.	NO	6	352986.5	2117979.00	2 NO PLCC PANEL WITH PROTECTION COUPLER AND 1 NO. PLCC WITH SPEECH AND DATA HAS BEEN CONSIDERED AT EACH STATION.
2	Supply, Erection and Commissioning of 245KV CVT alongwith support structure.	NO	8	300464	2403712.00	4 NOS CVT AT EACH STATION FOR PHASE TO PHASE COUPLING.
3	Supply , Erection and Commissioning of Wave Trap, support structure and BPI	NO	8	263895	2111160.00	4 NOS WAVE TRAP AT EACH STATION FOR PHASE TO PHASE COUPLING.
4	Supply and Erection of Coupling Device	NO	8	92241	737928.00	4 NOS AT EACH STATION
5	Supply and Laying of HF Cable	KM	5	135517	677585.00	2km length PG and 3km at OPTCL end
6	Supply, Laying and termination of CABLE (14CX1.5Sqmm) between relay panel to PLCC	KM	1	336345	336345.00	0.5 km length PG and 0.5km at OPTCL end.
7	Clamps and Connector for Wave Trap & CVT	NO	16	18750	300000.00	
8	Jumper Conductor	NO	16	18750	300000.00	
9	Deputation of Relay Engineer	Days	8	50000	400000.00	4days at PG and 4 Days at OPTCL
10	Deputation of PLCC Engineer	Days	10	50000	500000.00	5 Days at PG and 5 Days at OPTCL
11	Supply, Erection and Commissioning of 48V Battery system	SET	2	123573	247146.00	
12	Supply, erection and Commissioning of 48V Battery Charger	No	2	363368	726736.00	
13	CVT Foundation	Nos	8	100000	800000.00	
14	Miscellaneous (EARTHING FLAT, NUT BOLTS ETC)	LS		300000	300000.00	
	Sub Total (C) :				11958591.00	

ESTIMATE FOR ONE TIME RESTORATION OF PLCC OF OPTCL LINES CONNECTING POWERGRID S/S

Sl No.	Items Description	Unit	Qty.	Unit Rate	Amount	Remarks
D.	220 KV ROURKELA(PG) - TARKERA(OPTCL) D/C LINE					
1	Supply , Erection and Commissioning of PLCC Panel (single channel)	NO	6	352996.5	2117979.00	2 NO.PLCC PANEL WITH PROTECTION COUPLER AND 1 NO. PLCC WITH SPEECH AND DATA HAS BEEN CONSIDERED AT EACH STATION.
2	Supply, Erection and Commissioning of 245KV CVT	NO	8	283152	2265216.00	4 NOS CVT AT EACH STATION FOR PHASE TO PHASE COUPLING.
3	Supply , Erection and Commissioning of Wave Trap	NO	8	231717	1853736.00	4 NOS WAVE TRAP AT EACH STATION FOR PHASE TO PHASE COUPLING
4	Supply and Erection of Coupling Device	No.	8	92241	737928.00	4 NOS AT EACH STATION
5	Supply and Laying of HF Cable	KM	8	135517	1084136.00	4km length RKL and 4km at Tarkera end
6	Supply, Laying and termination of CABLE (14CX2.5Sqmm) between relay panel to PLCC	KM	1.5	336345	504517.50	0.5 km length RKL and 1 km at Tarkera
7	Clamps and Connector for Wave Trap & CVT	SET	16	18750	300000.00	
8	Jumper Conductor	NO	16	18750	300000.00	
9	Deputation of Relay Engineer	Days	8	50000	400000.00	4days at RKL and 4 Days at Tarkera
10	Deputation of PLCC Engineer	Days	10	50000	500000.00	5 Days at RKL and 5 Days at Tarkera
11	Supply, Erection and Commissioning of 48V Battery system	SET	1	123573	123573.00	
12	Supply, Erection and Commissioning of 48V Battery Charger	No	1	393360	393360.00	
13	Miscellaneous (EARTHING FLAT, NUT BOLTS ETC)	LS		300000	300000.00	
	Sub Total (D) :				10850453.50	

ESTIMATE FOR ONE TIME RESTORATION OF PLCC OF OPTCL LINES CONNECTING POWERGRID S/S

Sl No.	Items Description	Unit	Qty.	Unit Rate	Amount	Remarks
E.	132KV BARIPADA(PG)- RAIRANGPUR(OPTCL) S/C LINE					
1	Supply , Erection and Commissioning of PLCC Panel	NO	4	352966.5	1411986.00	1 NO.PLCC PANEL WITH PROTECTION COUPLER AND 1 NO. PLCC WITH SPEECH AND DATA HAS BEEN CONSIDERED AT EACH STATION.
2	Supply, Erection and Commissioning of 245KV CVT alongwith support structure	NO	4	235011	940044.00	2 NOS CVT AT EACH STATION FOR PHASE TO PHASE COUPLING.
3	Supply , Erection and Commissioning of Wave Trap support structure and BPI	NO	4	238626	954504.00	2 NOS WAVE TRAP AT EACH STATION FOR PHASE TO PHASE COUPLING.
4	Supply and Eraction of Coupling Device	No.	4	92241	368964.00	2 NOS AT EACH STATION
5	Supply and Laying of HF Cable	KM	5	139317	406551.00	1km length BARIPADA and 2km at RAIRANGPUR
6	Supply, Laying and termination of CABLE (14CX2.5Sqmm) between relay panel to PLCC	KM	1	336345	336345.00	0.5 km length BARIPADA and 0.5km at RAIRANGPUR.
7	Clamps and Connector for Wave Trap & CVT	SET	8	18750	150000.00	
8	Jumper Conductor	NO	8	18750	150000.00	
9	Deputation of Relay Engineer	Days	8	50000	400000.00	4 Days at BARIPADA and 4Days at BALASORE
10	Deputation of PLCC Engineer	Days	10	50000	500000.00	5 Days at BARIPADA and 5 Days at BALASORE
11	Miscellaneous	LS		300000	300000.00	
	Total (F) :				5918394.00	

P-7 of 7

ESTIMATE FOR ONE TIME RESTORATION OF PLCC OF OPTCL LINES CONNECTING POWERGRID S/S

Sl No.	Items Description	Unit	Qty.	Unit Rate	Amount	Remarks
F.	132KV BARIPADA(PG) - BARIPADA(OPTCL) S/C LINE					
1	Supply , Erection and Commissioning of PLCC Panel	NO	4	352996.5	1411986.00	1 NO PLCC PANEL WITH PROTECTION COUPLER AND 1 NO. PLCC WITH SPEECH AND DATA HAS BEEN CONSIDERED AT EACH STATION
2	Supply, Erection and Commissioning of 245KV CVT alongwith support structure	NO	4	235011	940044.00	2 NOS CVT AT EACH STATION FOR PHASE TO PHASE COUPLING
3	Supply , Erection and Commissioning of Wave Trap support structure and EPI	NO	4	238626	954504.00	2 NOS WAVE TRAP AT EACH STATION FOR PHASE TO PHASE COUPLING
4	Supply and Erection of Coupling Device	No	4	92241	368964.00	2 NOS AT EACH STATION
5	Supply and Laying of HF Cable	KM	3	135517	406551.00	1km length at PG end and 2km at OPTCL end.
6	Supply, Laying and termination of CABLE (14CX2.5Sqmm) between relay panel to PLCC	KM	1	336345	336345.00	0.5 km length at PG end and 0.5km at OPTCL end.
7	Clamps and Connector for Wave Trap & CVT	SET	8	18750	150000.00	
8	Jumper Conductor	NO	8	18750	150000.00	
9	Deputation of Relay Engineer	Days	8	50000	400000.00	4 Days at PG end and 4Days at OPTCL end.
10	Deputation of PLCC Engineer	Days	10	50000	500000.00	5 Days at PG end and 5 Days at OPTCL end.
11	Miscellaneous	LS		300000	300000.00	
	Total (G) :				5918394.00	

Details of Eastern Region

Annexure- B24

A. Telemetry not provided

A.1 Generating Stations

Sl. No.	User Name	Name of Generation Stations	Date of first sysnchonisation	Total Generation Capacity (in MW)	Remarks by constituentes / ERLDC 24.11.15
1	OPTCL	220KV Nalco (10 x 120 MW)		1200	Some Unit Generation polarity is still pending. Pending from site.
2	WBSETCL	CESC generating Generator : Budge Budge, Titagarh,Southern,New Cossipore		1255	Complete CESC Data is still not available . New ICCP link still not commissioned . OSI & CESC testing work in progres.
3	WBSETCL	Haldia (2 x 300)	Jan-15	600	ERLDC is not getting any real time data analog , status ,SOE from HEL except Unit site MW /MVAR. No response.
4	IPP	400 KV GMR (3X 350 MW)	Apr-13	1050	No LV side UNIT data along with all protection signals are available .GMR requested for Mid Jan 2016.
		Total (Non-telemetered stations)	**4**	**4105**	

A.2 Sub - Stations (765 & 400 kV)

Sl. No.	User Name	Name of sub-Stations	Voltage level	Date of first sysnchonisation	Remarks by constituentes / ERLDC 24.11.15
1	OPTCL	JSL (Meramundali -400)	400 kV	Sep'10	No Improvement . Site no responding.

A.3 Sub - Stations (220 kV & 132 kV)

Sl. No.	User Name	Name of sub-Stations	Voltage level	Target date as per User	Remarks by constituentes / ERLDC 24.11.15
1	OPTCL	OPTCL CPP : OCL, MSP, Mesrilal, ICCL , Hindalco, 220 KV BPSL	220 / 132 kV	Dec-13	MSP & Misrilal is not reporting . BPSL : KV ,line flow not available. Site no responding.
1	BSEB	Gopalganj	220 kV	Jun-14	No data available .No response .
2		Darbhanga	220 kV	Jun-14	
3		Kisanganj	132 KV	Jun-14	
4		Arrah	132 KV	Jun-14	
5		Rajgir	132 KV	Sep-13	
6		Jagdishpur	132 KV	Jun-14	
7		Sipara	220 KV	Dec-14	
8		Hajipur (New)	220 KV	Dec-14	
9		Madhepura	220 KV	Dec-14	
10		Banka	132 KV	Dec-14	
11		Pusauli	220 KV		
1	WBSETCL	CESC S/s: EM 220 kV	220 kV	Mar-14	No data available .No response .
2		CESC : S/s :Kasba-132 kV, EM-132 kV Jadavpur, Chakmir, Majerhat and CESC Belur.	132 KV	Mar-14	
1	JSEB	Hatia New	220 kV	No Time Schedule	No Data available .No response .
2		Manique (Chandil)	132 KV	No Time Schedule Given	
3		Japla	132 KV		
4		Dumka	220 KV		

B. Telemetry provided but not working / working intermittently

B.1 Generating Stations

Sl. No.	User Name	Name of Generation Stations	Total Generation Capacity (in MW)	Target date as per User	Remarks by constituentes / ERLDC 24.11.15
1	OPTCL	220 KV Vedanta (9X 135 MW)	1215	Dec-13	Improvement but Still Isolators and KV / HZ point yet to be provided.No response .
1	JSEB	220 KV Tenughat (2X 210 MW)	420	Time Schedule not submitted	Improvement .Data intermittent
2		220 KV Patratu (4x 50 + 2x100 + 4x110)	840	Time Schedule not submitted	Improvement .Data intermittent
1	NTPC	400 kV Farakka : (3x 200 + 2 x 500 MW + 600)* *MW,MVAR &kV on primary(LV) side of GT is not available.	1600	Time Schedule not submitted	Improvement. Still Unit-6 and Unit -5 LV side MW/MVAR not available . No Response .
2		BRBCL/Nabinagar TPP (4x250 MW)	2000	Time Schedule not submitted	None of data is availbale since 28th Dec 2014. No Response .
1	IPP	Sterlite Energy Limited (4 x 600)	2400	Sep 2015	None of data is available since May 2015 . No Response .
1	WBSETCL	Sagardighi TPS (2x 300)	600		RTU reporting intermittently . But no data from SAS due to which Baharampur line 1 & 2 data not available. No Response .
1	DVC	Raghunathpur TPS (2x 300)	600		No Response .

9075

B.2		Sub - Stations			Remarks by constituentes / ERLDC 24.11.15
Sl. No.	**User Name**	**Name of sub-Stations**	**Voltage level**	**Target date as per User**	Data not reporting
1	BSEB	Barauni	132 kV	Dec-14	Data not reporting
2		Dumraon	132 kV	Dec-14	Data not reporting
3		Khagaul	132 kV	Dec-14	Data not reporting
4		Siwan	132 kV	Dec-14	RTU not reporting.
5		Darbhanga	132 kV	Time Schedule not submitted	RTU reporting.Few Data available
6		Samastipur	220 kV	Time Schedule not submitted	RTU not reporting.
7		Valmikinagar	132 kV	Time Schedule not submitted	Data not available
1	DVC	Patherdiah	132 kV	Sep-13	Data not available
2		Kalipahari	132 kV	Mar-14	Data not available
1	JSEB	Jamtara	132 kV	Time Schedule not submitted	Data not available
2		Deoghar	132 kV	Time Schedule not submitted	Data not available
3		Garwah	132 kV	Time Schedule not submitted	Data not available
4		Goelkera	132 kV	Time Schedule not submitted	Data not available
5		Jaduguda	132 kV	Time Schedule not submitted	Data not available
6		Kendposi	132 kV	Time Schedule not submitted	Highly Intermittent
1	WBSETCL	Subhasgram	220 kV	Dec-13	Data integrated . Intermittent
2		Kalingpong	66 KV	Mar-14	Data integrated.Intermittent
3		Karseong	132 KV	Dec-13	Data integrated.Intermittent
1	SIKKIM	MELLI	66 KV		Data integrated.Intermittent
1	PGCIL	Jharsuguda	765 kV		Intermittent
2		Gaya	765 kV		Intermittent
3		Rangpo	400 kV		Highly Intermittent
4		Melli New	220 kV		Highly Intermittent
5		Baharampur	400kV		Highly Intermittent
6		Bheramara	400kV		Data highly Intermittent.
7		BIRPARA	220KV		

Annexure - B25

Partha Basu
SOLICITOR & ADVOCATE

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✆ 2248-4050, 2210-5176
Fax No. : 91033-2243-0770
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Residence : ✆ 2557-8224, 6521-9814

BY SPEED POST WITH A.D.

Ref. No. P/0030/16/H/NR 04.02.2016.

1. Eastern Regional Power Committee,
Through its Member Secretary,
14, Golf Club Road, Tollygunj,
Kolkata-700 033.
2. The Member Secretary,
Eastern Regional Power Committee,
14, Golf Club Road, Tollygunj,
Kolkata-700 033.
3. NTPC Limited,
NTPC Bhawan, Core – 7,
Scoop Complex, Institutional Area,
Lodhi Road, New Delhi – 110 003.
4. The Chairman, NTPC Limited,
NTPC Bhawan, Core – 7,
Scoop Complex, Institutional Area,
Lodhi Road, New Delhi – 110 003.
5. The General Manager Operation and (Maintenance),
Farakka Super Thermal Power Station,
NTPC Limited, P.O. Nabarun, District Murshidabad,
West Bengal, Pin 742236.
6. Central Electricity Regulatory Commission,
Through its Chairperson, 3rd and 4th Floor,
Chanderlok Building, 36, Janpath,
New Delhi-110001.
7. The Chairperson, Central Electricity Regulatory Commission,
3rd & 4th Floor, Chanderlok Building, 36, Janpath,
New Delhi-110001.
8. Union of India,
Through the Secretary,
Ministry of Power, Government of India,
Shram Shakkti Bhavan, New Delhi – 110001.
9. Jharkhand Urja Sancharam Nigam Limited,
Through the Managing Director, Engineering Building,
HEC, Dhurwa, Ranchi – 834004.

Re: W. P. No. 17044 (W) of 2015; Eastern Coalfields Ltd. & Anr. –vs- Eastern Regional Power Committee & Ors.

Dear Sirs,

The above writ petition was heard on February 2, 2016 before the Hon'ble Justice Dr. Sambuddha Chakrabarti when none appeared on your behalf when the Hon'ble Court was pleased to grant liberty to add Jharkhand Urjha Nigam Ltd., as a party respondent.

The Hon'ble Court was further pleased to stay the resolution dated March 24, 2015 for a period of 10 weeks from the date of the order. Since none on your behalf were present The Hon'ble Court directed us to communicate the gist of this order to all the respondents including the added respondent.
The Hon'ble Court gave direction for filing the Affidavit in Opposition by 4 weeks from the date of the order, Affidavit in Reply by 2 weeks thereafter and the matter to appear in the monthly list of April, 2016. A copy of the order dated February 2, 2016 will be forwarded as soon as the same is available.

In compliance of the aforesaid this communication is being made to all of you.

Yours faithfully,
For PARTHA BASU

SUDHAKAR PRASAD
Advocate

ac

Annexure- B27

TRAINING MODULE FOR PROTECTION ENGINEERS

DAY1:

TIME	PARTICULARS
10:30 AM	REGISRTATION
11:00 AM	INTRODUCTORY SPEECH REGARDING THE COURSE CONTENT AND PRESENT DAY APPLICATIONS
11:30 AM	SPEECH BY MEMBER SECRETARY, ERPC & OTHER HIGH DIGNITARIES
12:00-1:30 PM	**SUBSTATION EQUIPMENTS** BASIC POWER SYSTEM PROTECTION COMPONENTS
1:30 -2:30PM	LUNCH
2:30-3:45 PM	**Overview of Transmission line protection schemes (132 kV and above)**
3:45 PM	TEA
4:00-5:30 PM	**Distance Protection**

DAY-2

TIME	PARTICULARS
10:00AM-11:30PM	**DIFFERENT CARRIER AIDED PROTECTION** Case Study
11:45PM-1:15PM	**EARTHING SYSTEM OF SUB-STATION**
1:15PM-2:15PM	LUNCH
2:15PM- 5:30 PM	SUB-STATION MAINTAINANCE PRACTICES
3:45 PM	TEA
4:00-5:30 PM	SYSTEM (SPECIAL) PROTECTION SCHEMES ISLANDING SCHEMES

DAY3: SUBSTATION VISIT

- Familiarisation of Sub-station layout and Protection components
- Substation visit to show the numerical relay settings /Testing of CB
- Uploading relay settings and procedure to change settings
- Downloading disturbance data
- Trouble shooting

DAY 4:

TIME	PARTICULARS
10:00AM-11:30PM	ELECTRICAL BUS SYSTEM/SCHEMES Case Study
11:45PM-1:15PM	BUSBAR PROTECTION & LBB ANALYSIS
1:15PM-2:15PM	LUNCH
2:15PM-5:30 PM	ELECTRICAL INSULATOR TYPES OF ELECTRICAL INSULATOR – ADVANTAGES AND DISADVANTAGES
3:45 PM	TEA
4:00-5:30 PM	Demonstration & ANALYSIS

DAY 5:

TIME	PARTICULARS
10:00AM-11:30PM	DISTURBANCE REPORTING HANDLING OF DR/EL Demonstration & Analysis SEM & AMR
11:30PM-1:30PM	• Basics of PMU • Analysis of PMU data
1:30PM-2:30PM	LUNCH
2:30PM-3:30PM	INTERACTIVE SESSION WITH FILLING OF FEEDBACK FORMS
3:30PM-4:00PM	DISTRIBUTION OF PARTICIPATION CERTIFICATES & CLOSING SPEECH BY MEMBER SECRETARY, ERPC

Minutes of Special meeting for issues related to HTLS re-conductoring of 400 kV FSTPS – Malda held on 01.02.2016 at ERPC

Member Secretary, ERPC welcomed all the participants to the special meeting. The followings were discussed and agreed:

1. The latest status of the line was reviewed. Powergrid informed that out of 34 ckt km line (pending as on 22.01.2016), 7.2 ckt km has been completed till 31.01.2016. Detailed progress as on 31.01.2016 is as given below:

   Ckt-I: 26.334 ckt km

   Ckt-II: 30.992 ckt km

   Total balance: 26.674 km

2. Following shutdown related to the above task were required:
   a. Shutdown of 132 kV Malda-Khejuria D/C line—It was agreed to allow on 04.02.2016 (from 04:00 Hrs to 15:00 Hrs).
   b. Shutdown of 132 kV Farakka SY- Raghunathganj line: WBSETCL informed that joint inspection may be carried out for identification of the exact line section and accordingly the shutdown request may be placed and if possible it will be given on 14.02.2016.
   c. Shutdown of 33kV feeders: It was informed that the shutdown of 33kV feeders will be given by WBSEDCL. Powergrid informed that they will request WBSDCL for switching this 33 kV lines on cables for facilitating stringing for un-interrupted supply and will interact with WBSEDCL.
   d. Complete Shutdown of 400 kV Malda bus I & II: It was agreed to allow on 07.02.2016 (from 04:00 Hrs to 15:00 Hrs) subject to consent of Bihar for load restriction of 110 MW and for WBSETCL 100 MW. The issue will be discussed on 05.02.2016 in the special meeting with BSPTCL.
   e. Shutdown of 400 kV Farakka Bus (one by one) for stability test: It will be allowed as and when required.

Accordingly, Powergrid was advised to submit the consolidated list of all the shutdowns and by tomorrow (i.e. 02.02.2016).

3. After detailed discussion it was agreed that Powergrid will put in best efforts to bring the 400 kV Farakka-Malda D/C line by 15.02.2016 as suggested by stakeholders by completing the HTLS work with upgraded bays at both end except for line-I at FSTPP end as unit #3 shutdown would be required. This extension of re-conductoring of HTLS work is agreed upon provided there will be no load shedding/power cuts in West Bengal under normal condition.
4. WBSETCL suggested to explore hot line stringing as was carried out by other agencies like CESC wherever shutdown is not possible.
5. The next review meeting shall be held on 08.02.2016 at 11:00 Hrs at ERPC, Kolkata.

(L.K.Khajkumar)	(A.Raichudhuri)	(P.P.Bandyopadhyay)	(A. K. Bandyopadhyaya)
DGM, PGCIL	**CE, SLDC, WBSETCL**	**DGM, ERLDC**	**MS, ERPC**
(S.S.Choudhury)	(S.Banerjee)	(P.S.Das)	(D. K. Bauri)
DGM, PGCIL	**DGM, ERLDC**	**Asst GM, ERLDC**	**EE, ERPC**

Annexure- C2

BSPTCL

SL NO.	From Bus Name	To Bus Name	Length(kms)	Type of Conductor	Resistance (R) per km	Reactance (X) per km	Z total (Ohms) (Primary)	Distance Relay Settings							
								Z1 Ohm	Z2 Ohm	Z3 Ohm	Z4 Ohm Reverse	Tz1 Sec	Tz2 Sec	Tz3 Sec	Tz4 sec
220 kV Lines															
1	Sipara	Patna													
	Sipara		Directional O/C Protection												
	Patna		Directional O/C Protection												
	Setting as per Agreed Philosophy		0.5		0	0	0.00	0	0	0	0	0	0.3	1	1.2
2	Khagaul	Patna													
	Khagaul							7.344	11.02	36.42	1.8361	0	0.35	0.8	0.5
	Patna							9.913	18.59	38.759	2.478	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		22.6	Zebra	0.074875	0.39925	9.18	7.344	11.02	1.2*(Z+Za)	1.84	0	0.35	1	0.35
			30.5	Zebra	0.0749	0.3993	12.39	9.913	14.87	1.2*(Z+Za)	2.48	0	0.35	1	0.35
3	Fatua	Patna													
	Fatua							8.891	13.34	37.12	2.2228	0	0.35	0.8	0.5
	Patna						11.21	8.97	16.82	35.88	2.24	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		27.6	Zebra	0.074875	0.39925	11.21	8.969	13.45	1.2*(Z+Za)	2.24	0	0.35	1	0.35
4	BHRSHRF	TENGHAT													
	Tenughat Data							53.75	80.63	103.28	6.72	0	0.35	0.8	0.5
	Biharsariff Data						60.91	48.73	63.38	68.30	4.87	0	0.35	1	0.35
	Setting as per Agreed Philosophy		180	T. Moose	0.0311	0.372	67.19	53.75	80.63	1.2*(Z+Za)	6.72	0	0.35	1	0.35
5	Hazipur	Muzaffarpur													
	Hazipur							17.14	25.71	68.91	4.2855	0	0.35	0.8	0.5
	Muzaffarpur							17.14	32.14	51.43	4.29	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		52.75	Zebra	0.074875	0.39925	21.43	17.14	25.71	1.2*(Z+Za)	4.29	0	0.35	1	0.35
6	Dehri	Gaya													
	Dehri						39.89	31.85	47.77	128.33	7.96	0	0.35	0.8	0.5
	Gaya						39.81	31.85	59.71	95.54	7.96	0	0.5	0.8	0.5
	Setting as per Agreed Philosophy		98	Zebra	0.074875	0.39925	39.81	31.85	47.77	1.2*(Z+Za)	7.96	0	0.35	1	0.35
7	Bodgaya	Gaya													
	Bodgaya							3.90	5.85	119.35	0.97	0	0.35	0.8	0.5
	Gaya							5.52	10.36	47.28	1.38	0	0.5	0.8	0.5
	Setting as per Agreed Philosophy		17	Zebra	0.074875	0.39925	6.91	5.52	8.29	1.2*(Z+Za)	1.38	0	0.35	1	0.35
8	MTPS	Muzaffarpur													
	MTPS (Kanti)							7.80	14.62	37.41	1.95	0	0.35	0.8	0.5
	Muzaffarpur							7.80	14.62	79.94	1.95	0	0.5	0.8	0.5
	Setting as per Agreed Philosophy		24	Zebra	0.074875	0.39925	9.75	7.80	11.70	1.2*(Z+Za)	1.95	0	0.35	1	0.35

SL NO.	From Bus Name	To Bus Name	Length(kms)	Type of Conductor	Resistance (R) per km	Reactance (X) per km	Z total (Ohms) (Primary)	Distance Relay Settings							
								Z1 Ohm	Z2 Ohm	Z3 Ohm	Z4 Ohm Reverse	Tz1 Sec	Tz2 Sec	Tz3 Sec	Tz4 sec
9	Dehri	Pusauli													
	Dehri							20.8	31.2	144.96	5.1995	0	0.35	0.8	0.5
	Pusauli		64	Zebra	0.079	0.41	26.72	21.38	32.07	79.85	5.34	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		64	Zebra	0.074875	0.39925	26.00	20.80	31.20	1.2*(Z+Za)	5.20	0	0.35	1	0.5
10	Sahupuri	Pusauli													
	Sahupuri							23.40	35.10	124.44	5.85	0	0.35	0.8	0.5
	Pusauli		72	Zebra	0.079	0.41	30.06	24.05	36.08	85.95	6.01	0	0.5	0.8	0.5
	Setting as per Agreed Philosophy		72	Zebra	0.074875	0.39925	29.25	23.40	35.10	1.2*(Z+Za)	5.85	0	0.35	1	0.5
11	Arrah	Khagaul													
	Arrah		49	Zebra	0.0749	0.3993	19.91	15.93	29.86	47.78	3.98	0	0.5	0.8	0.5
	Khagaul		49	Zebra	0.0749	0.3993	19.91	15.93	29.86	78.98	3.98	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		49	Zebra	0.074875	0.39925	19.90	15.92	23.89	1.2*(Z+Za)	3.98	0	0.35	1	0.5
	132 kV Lines														
12	Kahalgaon(NTPC)	Kahalgaon(BSPTCL)													
	Kahalgaon(NTPC)		6					1.01	5.23	5.88	0.25	0	0.3	1	1
	Kahalgaon(BSPTCL)							1.667	2.5	37.26	0.4167	0	0.35	1	0.5
	Setting as per Agreed Philosophy		5	Panther	0.1545	0.387	2.08	1.667	2.5	1.2*(Z+Za)	0.42	0	0.35	1	0.5
13	Kahalgaon(NTPC)	Sabour(BSPTCL)													
	Kahalgaon(NTPC)							5.23	5.88	7.69	1.31	0	0.3	1	1
	Sabour(BSPTCL)							10	15	46.13	2.5002	0	0.35	1	0.5
	Setting as per Agreed Philosophy		30	Panther	0.1545	0.387	12.50	10	15	1.2*(Z+Za)	2.50	0	0.35	1	0.5
14	Kahalgaon(BSPTCL)	Lalmatia													
	Kahalgaon(BSPTCL)							15.53	23.3	59.71	3.8836	0	0.35	1	0.5
	Lalmatia							15.53	23.3	58.914	3.8836	0	0.3	1	1.2
	Setting as per Agreed Philosophy		46.6	Panther	0.1545	0.387	19.42	15.53	23.3	1.2*(Z+Za)	3.88	0	0.35	1	0.5
15	Japla	Sonnegar													
	Japla Data							16.52	24.79	37.77	4.13	0	0.3	1	1.2
	Sonnegar Data						22.5	16.52	24.79	70.06	4.1312	0	0.35	1	0.5
	Setting as per Agreed Philosophy		49.57	Panther	0.1545	0.387	20.66	16.52	24.79	1.2*(Z+Za)	4.13	0	0.35	1	0.5
16	Deoghar	Sultanganj													
	Deoghar Data							33.34	50	57.98	8.334	0	0.3	1	1.2
	Sultanganj Data						41.67	33.34	50	109.13	8.334	0	0.35	1	0.5
	Setting as per Agreed Philosophy		100	Panther	0.1545	0.387	41.67	33.34	50.00	1.2*(Z+Za)	4.17	0	0.35	1	0.5
17	Kataiya	Kushai (Nepal)													
	Kataiya						4.90	3.92	9.18	14.41	0.98	0	0.35	1	0.35
	Kushai (Nepal)														
	Setting as per Agreed Philosophy		16.5	ACCR	0.118	0.266	4.80	3.841	5.762	1.2*(Z+Za)	0.96	0	0.35	1	0.5
18	BHPC	Gandak (Nepal)													
	BHPC														

SL NO.	From Bus Name	To Bus Name	Length(kms)	Type of Conductor	Resistance (R) per km	Reactance (X) per km	Z total (Ohms) (Primary)	Distance Relay Settings							
								Z1 Ohm	Z2 Ohm	Z3 Ohm	Z4 Ohm Reverse	Tz1 Sec	Tz2 Sec	Tz3 Sec	Tz4 sec
18	Gandak (Nepal)														
	Setting as per Agreed Philosophy		0		0	0	0.00	0	0	1.2*(Z+Za)	0.00	0	0.35	1	0.5
19	Dehri	Kudra													
	Kudra							19.2	28.8	45.49	4.7993	0	0.35	1	0.5
	Dehri							13.49	20.24	60.7101	3.3728	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		40	Panther	0.1402	0.3976	16.86	13.49	20.24	1.2*(Z+Za)	3.37	0	0.35	1	0.5
20	Karmanasa	Sahupuri													
	Karmanasa		34	Panther	0.1622	0.3861	14.24	11.39	17.09	122.54	2.848	0	0.35	1	0.5
	Sahupuri														
	Setting as per Agreed Philosophy		34	Panther	0.1622	0.3861	14.24	11.39	17.09	1.2*(Z+Za)	2.85	0	0.35	1	0.5
21	Dalkhola (WB)	Kishangunj													
	Dalkhola (WB)														
	Kishangunj		32	Panther	0.1622	0.3801	13.4	10.72	16.08	26	2.68	0	0.3	1	0.35
	Setting as per Agreed Philosophy		32	Panther	0.1622	0.3801	13.22	10.58	15.87	1.2*(Z+Za)	2.64	0	0.35	1	0.5
22	Kishangunj	Purnea (PG)													
	Kishangunj (Farbisganj)							10.72	16.08	104.04	2.68	0	0.3	1	1.2
	Purnea (PG)							53.74	80.61	142.3874	117.98	0	0.5	0.8	0.5
			160.4	Panther	0.1622	0.3861	67.17	53.74	80.61	1.2*(Z+Za)	13.43	0	0.35	1	0.5
23	Purnea (Bihar)	Purnea (PG)													
	Purnea (Bihar)		0.825	Panther	0.1622	0.3861	0.35	0.28	0.42	0.7	0.07	0	0.3	1	0.35
	Purnea (PG)														
	Setting as per Agreed Philosophy		0.825	Panther	0.1622	0.3861	0.35	0.276	0.415	1.2*(Z+Za)	0.07	0	0.35	1	0.5
24	Barhi	Biharshariff	LILO at NALANDA												
	Barhi														
	Biharshariff		153	Panther	0.1622	0.3861	64.07	5.02	7.54	171.77	1.256	0	0.35	1	0.5
	Setting as per Agreed Philosophy		153	Panther	0.1622	0.3861	64.07	51.26	76.89	1.2*(Z+Za)	6.41	0	0.35	1	0.5
25	Barhi	Rajgir													
	Barhi						59.51	50.5	65.28	77.76	11.984	0	0.35	1	0.35
	Rajgir														
	Setting as per Agreed Philosophy		138	ACSR LARK	0.1619	0.4029	59.92	47.94	71.91	1.2*(Z+Za)	5.99	0	0.35	1	0.5
26	Arrah (BSPTCL)	Arrah (PG)													
	Arrah (BSPTCL)							0.708	1.062	74.33	0.1771	0	0.35	1	0.5
	Arrah (PG)		2.1	Panther	0.1622	0.3861	0.88	0.704	1.055	26.1833	1.0847	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		2.1	Panther	0.1402	0.3976	0.89	0.708	1.062	1.2*(Z+Za)	0.18	0	0.35	1	0.5
27	Dumraoa	Arrah (PG)													
	Dumraoa						25.93	20.74	31.11	89.25	5.1856	0	0.35	1	0.5
	Arrah (PG)		61.5	Panther	0.1622	0.3861	25.76	20.6	30.91	71.1112	5.1511	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		61.5	Panther	0.1402	0.3976	25.93	20.74	31.11	1.2*(Z+Za)	5.19	0	0.35	1	0.5
	Jagadishpur	Arrah (PG)													

SL NO.	From Bus Name	To Bus Name	Length(kms)	Type of Conductor	Resistance (R) per km	Reactance (X) per km	Z total (Ohms) (Primary)	Distance Relay Settings							
								Z1 Ohm	Z2 Ohm	Z3 Ohm	Z4 Ohm Reverse	Tz1 Sec	Tz2 Sec	Tz3 Sec	Tz4 sec
28	Jagadishpur (BSPTCL)						12.77	10.22	15.33	81.46	2.5546	0	0.35	1	0.5
	Arrah (PG)							10.22	15.33	40.4556	2.5546	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		30.5	Panther	0.1622	0.3861	12.77	10.22	15.33	1.2*(Z+Za)	2.55	0	0.35	1	0.5
29	Banka (BSPTCL)	Banka(PG)													
	Banka (BSPTCL)							4.216	6.324	90.14	1.054	0	0.35	1	0.5
	Banka(PG)							4.247	6.371	38.23	1.062	0	0.3	1	1.6
	Setting as per Agreed Philosophy		12.5	Panther	0.1402	0.3976	5.27	4.216	6.324	1.2*(Z+Za)	1.05	0	0.35	1	0.5
30	Sulthanganj (BSPTCL)	Banka(PG)													
	Sulthanganj (BSPTCL), Sabour							24.52	36.78	105.2	6.13	0	0.35	1	0.5
	Banka(PG)							24.71	37.07	69.487	6.176	0	0.3	1	1.6
	Setting as per Agreed Philosophy		72.7	Panther	0.1402	0.3976	30.65	24.52	36.78	1.2*(Z+Za)	6.13	0	0.35	1	0.5
31	Kudra	Pusauli(PG)													
	Dehri/Kudra							19.19	28.78	82.59	4.7969	0	0.35	1	0.5
	Pusauli(PG)							5.734	8.601	28.837	1.433	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		17	Panther	0.1402	0.3976	7.17	5.734	8.601	1.2*(Z+Za)	1.43	0	0.35	1	0.5
32	Mohania (BSPTCL)	Pusauli(PG)													
	Mohania (BSPTCL)						4.64	3.71	5.565	69.96	0.9275	0	0.35	1	0.5
	Pusauli(PG)							4.452	6.678	17.808	1.113	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		13.2	Panther	0.1402	0.3976	5.57	4.452	6.678	1.2*(Z+Za)	1.11	0	0.35	1	0.5
	Jamui (BSPTCL)	Lakhisrai(PG)													
	Jamui (BSPTCL)														
	Lakhisrai(PG)		26		0.1622	0.3861	10.8884	8.711	16.33	39.199	2.1777	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		26	Panther	0.1402	0.3976	10.96	8.769	13.15	1.2*(Z+Za)	2.19	0	0.35	1	0.5
	Lakhisrai (BSPTCL)	Lakhisrai(PG)													
	Lakhisrai (BSPTCL)														
	Lakhisrai(PG)		16		0.1622	0.3861	6.7006	5.36	10.05	48.2455	1.3401	0	0.35	0.8	0.5
	Setting as per Agreed Philosophy		16	Panther	0.1402	0.3976	6.75	5.396	8.095	1.2*(Z+Za)	1.35	0	0.35	1	0.5

DVC

SL NO.	From Bus Name	To Bus Name	Ckt	Length (kms)	Type of Conductor	Resistance (R) per km	Reactance (X) per km	Z total (Ohms) (Primary)	Distance Relay Settings							
									Z1 Ohm	Z2 Ohm	Z3 Ohm	Z4 Ohm Reverse	Tz1 Sec	Tz2 Sec	Tz3 Sec	Tz4 sec
	400 kV Lines															
1	Raghunathpur	Ranchi	SC													
	Raghunathpur			169.2	Twin moose	0.028	0.332		41.47	62.2	224.15	5.184	0	0.35	1	0.5
	Ranchi							56.39	45.11	84.58	84.584	11.278	0	0.3	1	1.6
	Setting as per Agreed Philosophy			169.17	Twin moose	0.028	0.332	56.36	45.09	67.64	1.2*(Z+Za)	5.64	0	0.35	1	0.5
2	Raghunathpur	Maithon	SC													
	Raghunathpur			52.94	Twin moose	0.028	0.315		14.11	21.16	101.13	3.527	0	0.35	1	0.5
	Maithon			52.94	Twin moose	0.029792	0.332	17.6467	14.12	21.18	46.05789	3.53	0	0.3	1	1.1
	Setting as per Agreed Philosophy			52.94	Twin moose	0.029792	0.332	17.65	14.12	21.18	1.2*(Z+Za)	3.53	0	0.35	1	0.5
3	Koderma	Gaya	DC													
	Koderma								29.94	56.15	142.84	3.743	0	0.35	1	0.5
	Gaya															
	Setting as per Agreed Philosophy			127	Quad Moose	0.0146	0.2509	31.92	25.53	47.88	1.2*(Z+Za)	3.19	0.00	0.35	1.00	0.5
4	Koderma	Biharshariff	DC													
	Koderma			110.7	Quad moose	0.0146	0.2509		22.13	41.5	131.12	2.767	0	0.35	1	0.5
	Biharshariff							27.82	22.26	41.73	56.478	5.5643	0	0.3	1	1.6
	Setting as per Agreed Philosophy			110.7	Quad moose	0.0146	0.2509	27.82	22.26	41.73	1.2*(Z+Za)	2.78	0	0.35	1	0.5
5	Mejia B	Maithon	DC													
	Mejia B			59	Twin moose	0.028	0.332		15.77	29.58	103.66	11.2	0	0.5	1	0.5
	Maithon			59		0.029792	0.332	19.6667	15.73	29.5	55.65678	3.93334	0	0.3	1	1.1
	Setting as per Agreed Philosophy			59	Twin moose	0.029792	0.332	19.67	15.73	29.5	1.2*(Z+Za)	3.93	0	0.35	1	0.5
6	Mejia B	Jamshedpur	SC													
	Mejia B			168	Twin moose	0.028	0.332		5.32	67.98	139.1	5.665	0	0.5	1	0.5
	Jamshedpur							55.45	44.36	83.18	84.28	11.09	0	0.3	1	1.6
	Setting as per Agreed Philosophy			168	Twin moose	0.02888	0.3288	55.45	44.36	66.54	1.2*(Z+Za)	5.55	0	0.35	1	0.5
7	DSTPS	Jamshedpur	DC													
	DSTPS(ANDAL)			161	Twin moose	0.028	0.332	53.45	40.7	76.32	132.68	5.088	0	0.5	1	0.5
	Jamshedpur							53.67	42.93	80.5	82.1102	10.733	0	0.3	1	1.6
	Setting as per Agreed Philosophy			161	Twin moose	0.029792	0.332	53.67	42.93	80.5	1.2*(Z+Za)	5.37	0	0.35	1	0.5
8	TISCO	Jamshedpur	DC													
	TISCO			40	Twin moose	0.028	0.332		10.4	15.6	86.4	2.6	0	0.35	1	0.5
	Jamshedpur							12.334	9.867	18.5	44.2787	2.4668	0	0.3	1	1.6
	Setting as per Agreed Philosophy			40	Twin moose	0.0288	0.307	12.33	9.867	18.5	1.2*(Z+Za)	2.47	0	0.35	1	0.5
9	TISCO	Baripada	DC													
	TISCO			115.3	Twin moose	0.028	0.332		38.43	46.12	156.77	7.687	0	0.35	1	0.5
	Baripada			115		0.0288	0.307		28.24	52.96	70.61	1.23	0	0.3	1	1.1
	Setting as per Agreed Philosophy			115	Twin moose	0.0288	0.307	35.46	28.37	53.19	1.2*(Z+Za)	3.55	0	0.35	1	0.5

SL NO.	From Bus Name	To Bus Name	Ckt	Length (kms)	Type of Conductor	Resistance (R) per km	Reactance (X) per km	Z total (Ohms) (Primary)	Distance Relay Settings							
									Z1 Ohm	Z2 Ohm	Z3 Ohm	Z4 Ohm Reverse	Tz1 Sec	Tz2 Sec	Tz3 Sec	Tz4 sec
220 kV Lines																
10	Kalyaneswari	Maithon	DC													
	Kalyaneswari								2.5	4.7	29.01	1.568	0	0.35	1.2	0.5
	Maithon			7.613	AAAC Zebra	0.0692	0.4169	3.21729	2.574	4.826	13.35173	0.32173	0	0.3	1	1.1
	Setting as per Agreed Philosophy			7.613	AAAC Zebra	0.0692	0.4169	3.22	2.574	3.861	1.2*(Z+Za)	0.64	0	0.35	1	0.5
11	Purulia	Durgapur(PG)	DC													
	Purulia			Pilot wire protection (HORM)					O/C, Curve SI 800 A 0.3 dial							
	Durgapur(PG)			1		0.06997	0.3971	0.20125	0.161	0.302	5.5241	0.0403	0	0.3	1	1.1
	Setting as per Agreed Philosophy			1	Zebra	0.06997	0.3971	0.40	0.323	0.484	1.2*(Z+Za)	0.08064	0	0.35	1	0.5
12	Danbad	Maithon	DC													
	Danbad			51	ACSR zebra	0.0827	0.4041		2.57	4.82	29.1	4.208	0	0.5	1	0.5
	Maithon			51.8	ACSR zebra	0.0827	0.4041	21.37	17.09	25.64	35.68161	4.27325	0	0.3	1	1.1
	Setting as per Agreed Philosophy			51	ACSR zebra	0.0827	0.4041	21.04	16.83	25.24	1.2*(Z+Za)	4.21	0	0.35	1	0.5
13	Jamshedpur	Jindal	SC													
	Jamshedpur								44.55	83.53	150.48	5.569	0	0.5	1	0.5
	Jindal															
	Setting as per Agreed Philosophy			135	ACSR zebra	0.0827	0.4041	55.68	44.55	66.82	1.2*(Z+Za)	5.57	0	0.35	1	0.5
14	Waria	Bidhanagar														
	Waria								5.696	10.68	69.43	3.56	0	0.35	1.2	0.5
	Bidhanagar								5.8	10.32	62.77	6.2	0	0.3	1	1
	Setting as per Agreed Philosophy			17.26	ACSR zebra	0.0827	0.4041	7.12	5.695	8.543	1.2*(Z+Za)	1.42	0	0.35	1	0.5
	132 kV Lines															
15	Patratu	Patratu(BASL) DVC														
	Patratu (BASL)DVC data			12.5					4.03	6.04	12.09	6.95	0	0.35	1	0.5
	Patratu JSEB data			6.5				2.71	2.17	3.25	5.92	0.54	0	0.3	1	1.2
	Setting as per Agreed Philosophy			12.5	Panther	0.1545	0.387	5.21	4.17	6.25	1.2*(Z+Za)	1.04	0	0.35	1	0.5
16	Purulia (DVC)	Purulia (WB)														
	Purulia (DVC)			THIS LINE IS NOW DEREGISTERED												
	Purulia (WB)			Only Directional O/C relay is provided												
	Setting as per Agreed Philosophy			0		0	0	0.00	0	0	0	0	0	0.3	1	0.5
17	Barhi	Biharshariff														
	Barhi							73.74	62.6	75.84	134.4	15.6				
	Biharshariff, LILO at Nalanda			DETAILS TO BE SUBMITTED BY BSEB REGARDING LILO AT NALANDA												
	Setting as per Agreed Philosophy			171	ACSR LARK	0.1619	0.4029	74.25	59.4	89.1	1.2*(Z+Za)	7.43	0	0.35	1	0.5
18	Barhi	Rajgir														
	Barhi								45.15	67.73	139.63	17.801	0	0.5	1	0.5
	Rajgir															
	Setting as per Agreed Philosophy			130	ACSR LARK	0.1619	0.4029	56.45	45.16	67.74	1.2*(Z+Za)	5.64	0	0.35	1	0.5
19	Barhi	Nalanda														
	Barhi								47.93	66.72	72.52	17.801	0	0.5	1	0.5
	Nalanda															
	Setting as per Agreed Philosophy			138	ACSR LARK	0.1619	0.4029	59.92	47.94	71.91	1.2*(Z+Za)	11.9842	0	0.3	1	0.5

SL NO.	From Bus Name	To Bus Name	Ckt	Length (kms)	Type of Conductor	Resistance (R) per km	Reactance (X) per km	Z total (Ohms) (Primary)	Distance Relay Settings							
									Z1 Ohm	Z2 Ohm	Z3 Ohm	Z4 Ohm Reverse	Tz1 Sec	Tz2 Sec	Tz3 Sec	Tz4 sec
20	Maithon	Jamtara														
	Maithon								10.42	15.63	48.35	8.25	0	0.35	1	0.5
	Jamtara															
	Setting as per Agreed Philosophy			30	ACSR LARK	0.1619	0.4029	13.03	10.42	15.63	1.2*(Z+Za)	2.61	0	0.35	1	0.5
21	Maithon	Sultangunj														
	Maithon			107.6	ACSR LARK	0.1619	0.4029	46.70	37.36	70.05	98.07	1.04				
				DETAILS TO BE SUBMITTED BY JSEB REGARDING LILO AT JAMTARA												
	Sultangunj															
	Setting as per Agreed Philosophy			107.6	ACSR LARK	0.1619	0.4029	46.72	37.38	56.07	1.2*(Z+Za)	4.67	0	0.35	1	0.5

ZONE SETTINGS OF INTER- STATE TRANSMISSION LINE OF JUSNL

SL NO.	From Bus Name	To Bus Name	Length (kms)	Type of Conductor	Resistance (R) per km	Reactance (X) per km	Z total (Ohms) (Primary)	Distance Relay Settings							
								Z1 Ohm	Z2 Ohm	Z3 Ohm	Z4 Ohm Reverse	Tz1 Sec	Tz2 Sec	Tz3 Sec	Tz4 sec
220 kV Lines															
1	BHRSHRF	TENGHAT													
	Tenughat Data							53.75	80.63	78.27	13.44	0	0.3	1.0	1.2
	Biharsariff Data							48.73	63.38	68.30	4.87	0	0.3	1.0	1.2
	Setting as per Agreed Philosophy		180	T. Moose	0.0311	0.372	67.19	53.75	80.63	1.2*(Z+Za)	6.72	0	0.35	1.0	0.5
2	JODA	RAMCHANDRAPUR													
	Ramchandrapur Data							42.42	54.74	123.60	5.30	0	0.35	1.0	0.5
	Joda Data							42.420	54.722	78.320	5.300	0	0.35	1.0	0.5
	Setting as per Agreed Philosophy		130	Zebra	0.074875	0.39925	52.81	42.25	63.37	1.2*(Z+Za)	5.28	0	0.35	1.0	0.5
3	CHANDIL2	RANCHI2													
	Chandil Data							30.55	45.81	60.09	7.64	0	0.35	1.0	0.5
	Ranchi Data							30.55	44.30	85.79	7.64	0	0.35	1.0	0.5
	OFF LINE MEASUREMENT		93.6	Zebra	0.074875	0.39925	38.02	30.42	45.63	1.2*(Z+Za)	7.60	0	0.35	1.0	0.5
4	CHANDIL2	SANTLDI													
	Chandil Data							31.98	47.97	92.83	7.99	0	0.35	1.0	0.5
	Santhaldih Data							31.98	44.05	86.15	7.96	0	0.35	1.0	0.5
	Setting as per Agreed Philosophy		98	Zebra	0.074875	0.39925	39.81	31.85	47.77	1.2*(Z+Za)	7.96	0	0.35	1.0	0.5
5	HATIA NEW	RANCHI2													
	HATIA NEW							11.42	17.13	55.27	2.85	0	0.35	1.0	0.5
	RANCHI2							11.42	17.13	34.66	2.85	0	0.35	1.0	0.5
	OFF LINE MEASUREMENT		35	Zebra	0.074875	0.39925	14.22	11.37	17.06	1.2*(Z+Za)	2.84	0	0.35	1.0	0.5
6	LALMATIA	FARAKKA													
	Lalmatia Data							27.73	41.61		6.93	0	0.35	1.0	0.5
	Farakka Data						34.54	27.73	41.61	80.76792	6.934	0	0.35	1.0	0.5
	Setting as per Agreed Philosophy		85	Zebra	0.0747	0.399	34.50	27.60	41.41	1.2*(Z+Za)	6.90	0	0.35	1.0	0.5

Za = Impedance of 100% of the adjacent longest line

Note:

1 . Figures marked in bold are to be updated by the respective constituents.

	132 kV Lines													
7	*JAMTARA	MAITHON	DVC to submit											
	Jamtara Data							10.00	15.00	35.00	2.50	0	0.35	1.0	0.5
	Maithon Data						13.03	10.42	15.63	48.35	8.25	0.00	0.35	1.0	0.50
	Setting as per Agreed Philosophy		30	Panther	0.1545	0.387	12.50	10.00	15.00	1.2*(Z+Za)	2.50	0	0.35	1.0	0.5
8	GARWHA	RIHAND													
	Garwha Data							35.34	53.00	**146.51**	4.40	0	0.35	1.0	0.5
	Rihand Data														
	Setting as per Agreed Philosophy		106	Panther	0.1545	0.387	44.17	35.34	53.00	1.2*(Z+Za)	4.42	0	0.35	1.0	0.5
9	CHNDLJS	MANIQUE													
	Chandil Data														
	Manique Data					O/C & E/F protection provided instead of distance protection as line is of very short length.									
	Setting as per Agreed Philosophy		0.5	Panther											
10	Patratu	Patratu(BASL) DVC													
	Patratu JSEB data							2.17	3.25	5.92	0.54	0	0.35	1.0	0.5
	Patratu (BASL)DVC data		12.5					4.03	6.04	12.09	6.95	0.00	0.35	1.0	0.50
	Setting as per Agreed Philosophy		6.5	Panther	0.1545	0.387	2.71	2.17	3.25	1.2*(Z+Za)	0.54	0	0.35	1.0	0.5
11	Kendposi	Joda													
	Kendposi Data							14.00	21.00	94.50	3.50	0	0.35	1.0	0.5
	Joda Data (OPTCL)							14.00	21.00		3.50	0	0.35	1.0	0.5
	Setting as per Agreed Philosophy		42	Panther	0.1545	0.387	17.50	14.00	21.00	1.2*(Z+Za)	3.50	0	0.35	1.0	0.5
12	Japla	Sonnegar													
	Japla Data							16.52	24.79	102.71	4.13	0	0.35	1.0	0.5
	Sonnegar Data						22.5	18	27		4.5	0	0.35	1.0	0.5
	Setting as per Agreed Philosophy		49.57	Panther	0.1545	0.387	20.66	16.52	24.79	1.2*(Z+Za)	4.13	0	0.35	1.0	0.5
13	Deoghar	Sultanganj													
	Deoghar Data							33.34	50.00	66.67	4.16	0	0.35	1.0	0.5
	Sultanganj Data						41.67	33.3	50			0	0.3	1.0	1.2
	Setting as per Agreed Philosophy		100	Panther	0.1545	0.387	41.67	33.34	50.00	1.2*(Z+Za)	4.17	0	0.35	1.0	0.5
14	Lalmatia	Khalgaon (BSEB)													
	Lalmatia Data							15.53	23.3	58.914	3.8836	0	0.35	1.0	0.5
	Khalgaon (BSEB) Data							15.54	23.3		3.884	0	0.35	1.0	0.5
	Setting as per Agreed Philosophy		46.6	Panther	0.1545	0.387	19.42	15.53	23.30	1.2*(Z+Za)	3.88	0	0.35	1.0	0.5
15	Lalmatia	Khalgaon STPS													
	Lalmatia Data		47.62					15.37	23.06	34.80	3.84	0	0.35	1.0	0.5
	Khalgaon STPS Data							16.86	20.2	47.6289	3.366	0	0.35	1.0	0.5
	Setting as per Agreed Philosophy		40.3	Panther	0.1545	0.387	16.79	13.43	20.15	1.2*(Z+Za)	3.36	0	0.35	1.0	0.5

Za = Impedance of the adjacent longest line.

DP RELAY SETTING IN RESPECT OF 400kV LINES PROVISIONAL)

PT Ratio= 400kV/.11kV | 3636

Sl.No.	Name of the Sub-Station	Line Sl.	Name of the Line	Lenghth in K.M	Type of Conductor	R1 inΩ per kM	X1 inΩ per kM	PRIMARY VALUE Zone 1 X1 in Ω	Zone 2 X2 in Ω	Zone 3 X3 in Ω	Zone 4 (Rev.) X4 in Ω	Relay Type Main-1	Main-2	Longest Line in kM	Transformer Impedance	Time Setting mSeconds
																T1 : 0
1	MENDHASAL	1	PGCIL-Baripada	273.507	TWIN MOOSE	0.0298	0.3320	72.6435	108.97	171.12	9.08	7SA522	REL670	156	31.74	T2 : 350
																T3 : 800
																T4 :500
2	MERAMUNDALI	1	ANGUL-1	25	TWIN MOOSE	0.0298	**0.3280**	6.5600	9.84	86.99	1.64	7SA522	7SA522	196		T1 : 0
		2	ANGUL-2	17	TWIN MOOSE	0.0298	**0.3280**	4.4608	6.69	83.84	1.12	7SA522	7SA522	196		T2 : 350
		3	RSTPS	52.3	TWIN MOOSE	0.0298	0.3067	12.8309	19.25	81.07	3.21	7SA522	7SA522	168		T3 : 800
																T4 :500
3	NEW DUBURI	1	PGCIL-Baripada	150	TWIN MOOSE	0.0298	0.3320	39.8400	59.76	121.91	4.98	7SA522	REL670	156	31.74	

DP RELAY SETTING IN RESPECT OF 220kV LINES PROVISIONAL)

PT Ratio= 220kV/.11kV | 2000

Sl.No.	Name of the Sub-Station	Line Sl.	Name of the Line	Lenghth in K.M	Type of Conductor	PRIMARY VALUE R1 inΩ per kM	X1 inΩ per kM	Zone 1 X1 in Ω	Zone 2 X2 in Ω	Zone 3 X3 in Ω	Zone 4 (Rev.) X4 in Ω	Relay Main-1	Main-2	Longest Line kM	Transformer impedance in Ω	Time Setting
1	MERAMUNDALI	1	Kaniha-2	45.00	ACSR Zebra	0.0706	0.3985	14.3474	21.52	36.35	3.59	7SA522	7SA522	31		T1 : 0
		2	Kaniha-1	45.00	ACSR Zebra	0.0706	0.3985	14.3474	21.52	36.35	3.59	7SA522	7SA522	31		T2 : 350
																T3 : 800
2	BUDHIPADAR	1	Korba -2	183	ACSR Zebra	0.06723	0.3840	56.2176	84.33	168.65	7.03	REL100	7SA522	183		T4 :500
		2	Korba -3	183	ACSR Zebra	0.06723	0.3840	56.2176	84.33	168.65	7.03	REL100	7SA522	183		
		3	Raigarh	77	ACSR Zebra	0.06723	0.3840	23.6544	35.48	83.87	5.91	REL100	7SA522	105		
3	JAYNAGAR	1	Jaypore PG-1	7.73	ACSR Zebra	0.06997	0.3971	2.4557	3.68	#REF!	0.61	REL100		7.73		T1 : 0
		2	Jaypore PG-2	7.73	ACSR Zebra	0.06997	0.3971	2.4557	3.68	#REF!	0.61	REL100		7.73		T2 : 350
																T3 : 800
4	TARKERA	1	PGCIL 1	15.3	ACSR Zebra	0.06723	0.3840	4.7002	7.05	14.10	0.59	7SA522		15.3		T4 :500
		2	PGCIL-2	15.3	ACSR Zebra	0.06723	0.3840	4.7002	7.05	14.10	0.59	7SA522		15.3		

5	JODA	1	JSL	14.7	ACSR Zebra	0.0749	0.3674	4.3200	6.48	42.19	1.08	REL670		81		T1 : 0
		2	Ramchandrapu	130	ACSR Zebra	0.0749	0.3993	41.5272	62.29	117.87	10.38	REL670		116		T2 : 350
																T3 : 800
6	BALASORE	2	220kV PGCIL-1	76.859	ACSR Zebra	0.0734	0.3950	24.2874	36.43	72.86	3.04	REL670		76.859		T4 :500
		3	220kV PGCIL-2	76.859	ACSR Zebra	0.0734	0.3950	24.2874	36.43	72.86	6.07	REL670	REL670	76.859		

DP RELAY SETTING IN RESPECT OF 132kV LINES PROVISIONAL)

PT Ratio= 132kV/.11kV : 1200

						PRIMARY VALUE										Time Setting
Sl.No.	Name of the Sub-Station	Line Sl.	Name of the Line	Lenghth in K.M	Type of Conductor	R1 inΩ per kM	X1 inΩ per kM	Zone 1 X1 in Ω	Zone 2 X2 in Ω	Zone 3 X3 in Ω	Zone 4 (Rev.) X4 in Ω	Relay Main-1	Relay Main-2	Longest Line kM	Transformer impedance in Ω	
1	JODA	1	Kenduposi	42.00	ACSR Panther	0.1545	0.3870	13.0032	19.50	45.98	3.25	REL670		57		T1 : 0
																T2 : 350
2	BARIPADA	1	PGCIL Baripada	11	ACSR Panther	0.1487	0.4145	3.6476	5.47	38.35	0.91			66.1		T3 : 800
																T4 :500
3	RAIRANGPUR	1	PGCIL Baripada	66.1	ACSR Panther	0.1487	0.4145	21.9188	32.88	61.38	5.48	REL670		57.3		

ZONE SETTINGS OF INTER- STATE TRANSMISSION LINE OF PG-Odisha

400kV **INTER STATE LINE DP DATA 400kV**

Sl. No.	From Bus Name	To Bus Name	Length (kMs.)	Type of Conductor	Resistance Ω per Km.	Reactance Ω per Km.	X total Primary Ω	Z total Primary Ω	Distance Protection Setting Primary Value							
									X_1	X_2	X_3	X_4 (Reverse)	T_1 Millisec.	T_2 msec	T_3 msec	T_4 msec
1	MENDHASAL	PGCIL - BARIPADA														
	MENDHASAL	Data							72.643	108.965	119.370	18.160	0	300	1000	1000
	PGCIL - BARIPADA	Data							72.643	118.050	119.860	5.780	0	500	1000	500
	Setting as per Agreed Philosophy		273.507	TWIN MOOSE	0.029792	0.3320	90.8043	91.16919	72.643	108.965	1.2*(X+Xa)	9.080	0	350	1000	500
2	MERAMUNDALI	PGCIL - ANGUL-I														
	MERAMUNDALI	Data							6.133	9.200	63.780	1.533	0	300	1000	2000
	PGCIL - ANGUL-I	Data			0.0288	0.328	8.2000	8.231549	6.564	9.836	51.964	1.636	0	500	1000	500
	Setting as per Agreed Philosophy		25	TWIN MOOSE	0.02872	0.3067	7.6667	7.70021	6.133	9.200	1.2*(X+Xa)	1.533	0	350	1000	500
3	MERAMUNDALI	PGCIL - ANGUL-II														
	MERAMUNDALI	Data						5.57	4.171	6.256	61.330	1.043	0	300	1000	2000
	PGCIL - ANGUL-II	Data			0.0288	0.328	5.9040	5.926715	4.727	7.091	49.200	1.182	0	350	1000	500
	Setting as per Agreed Philosophy		18	TWIN MOOSE	0.02872	0.3067	5.5200	5.544151	4.416	6.624	1.2*(X+Xa)	1.104	0	350	1000	500
6	INDRAVATI (OHPC)	INDRAVATI (PG)														
	INDRAVATI (OHPC)	Data														
	INDRAVATI (PG)	Data	4	TWIN MOOSE	0.0288	0.3280	1.3120	1.31636	1.054	1.581	33.061	1.003	0	350	1000	500
	Setting as per Agreed Philosophy															

220kV **INTER STATE LINE DP DATA 220kV**

Sl. No.	From Bus Name	To Bus Name	Length (kMs.)	Type of Conductor	Resistance Ω per Km.	Reactance Ω per Km.	X total Primary Ω	Z total Primary Ω	Distance Protection Setting Primary Value							
									X_1	X_2	X_3	X_4 (Reverse)	T_1 Millisec.	T_2 msec	T_3 msec	T_4 msec
1	BALASORE	PGCIL - BARIPADA														
	BALASORE	Data							24.312	36.468	45.585	7.598	0	300	1000	2000
	PGCIL - BARIPADA	Data							24.538	46.008	103.380	6.135	0	350	800	500
	Setting as per Agreed Philosophy		76.859	AAAC Zebra	0.0734	0.3954	30.3900	30.90924	24.312	36.468	1.2*(X+Xa)	6.078	0	350	1000	500
3	TARKERA	PGCIL - BISHRA														
	TARKERA	Data							4.777	7.165	8.957	1.493	0	300	1000	2000
	PGCIL - BISHRA	Data	15.34	ACSR Zebra	0.0697	0.3980	6.1053	6.1982	4.880	9.160	77.540	1.220	0	350	800	500
	Setting as per Agreed Philosophy		15.35	ACSR Zebra	0.0664	0.3890	5.9712	6.057489	4.777	7.165	1.2*(X+Xa)	1.194	0	350	1000	500
6	BUDHIPADAR	KORBA														
	BUDHIPADAR	Data							58.135	87.203	119.904	7.267	0	300	1000	1100
	KORBA	Data							58.135	87.203	109.004	14.534	0	500	1500	1500
	Setting as per Agreed Philosophy		181	ACSR Zebra	0.6723	0.3840	69.5040	140.1369	55.603	83.405	1.2*(X+Xa)	6.950	0	350	1000	500

8	JAYANANGAR	JAYPORE PG														
	JAYANANGAR	Data							2.443	3.664	4.580	0.763	0	300	1000	2000
	JAYPORE PG	Data							2.456	4.604	59.427	0.614	0	350	1000	500
	Setting as per Agreed Philosophy		7.73	ACSR Zebra	0.0734	0.3950	3.0534	3.105619	2.443	3.664	1.2*(X+Xa)	0.611	0	350	1000	500

132kV **INTER STATE LINE DP DATA 132kV**

Sl. No.	From Bus Name	To Bus Name	Length (kMs.)	Type of Conductor	Resistance Ω per Km.	Reactance Ω per Km.	X total Primary Ω	Z total Primary Ω	Distance Protection Setting Primary Value							
									X_1	X_2	X_3	X_4 (Reverse)	T_1 Millisec.	T_2 msec	T_3 msec	T_4 msec
1	BARIPADA	PGCIL - BARIPADA														
	BARIPADA	Data							3.648	5.471	6.839	1.140	0	300	1000	2000
	PGCIL - BARIPADA	Data							2.024	3.036	17.435	0.545	0	350	800	500
	Setting as per Agreed Philosophy		11	ACSR Panther	0.1487	0.4145	4.5595	4.844023	3.648	5.471	1.2*(X+Xa)	0.912	0	350	1000	500
2	RAIRANGPUR	PGCIL - BARIPADA														
	RAIRANGPUR	Data							21.919	32.878	41.098	6.850	0	300	1000	2000
	PGCIL - BARIPADA	Data							22.149	33.225	69.639	4.615	0	350	800	500
	Setting as per Agreed Philosophy		66.1	ACSR Panther	0.1487	0.4145	27.3985	29.10817	21.919	32.878	1.2*(X+Xa)	5.480	0	350	1000	500

RELAY SETTING FOR INTER-CONNECTED BETWEEN UTILITY LINES

Sr No	SUB-STN FROM	TO SUB-STN	VOLTAGE LEVEL(KV)	CONDUCTOR	ZONE-1(sec values)		ZONE-2(sec values)		ZONE-3(sec values)		ZONE-4(sec values)	
					MAGNITUDE (Ω)	TIME (S)	MAGNITUDE (Ω)	TIME (S)	MAGNITUDE (Ω)	TIME (S)	MAGNITUDE (Ω)	TIME (S)
1	KHARAGPUR	BARIPODA	400	TWIN MOOSE	14.46	0	21.69	0.35	53.59	1	3.62	0.5
2	KHARAGPUR	KTPP-1	400	TWIN MOOSE	11.73	0	17.6	0.35	47.3	1	2.93	0.5
3	KHARAGPUR	KTPP-2	400	TWIN MOOSE	14.42	0	21.63	0.35	51.326	1	3.6	0.5
4	JEERAT	KTPP	400	TWIN MOOSE	9.9	0	14.85	0.35	25.663	1	1.24	0.5
5	JEERAT	BKTPP	400	TWIN MOOSE	11.88	0	17.82	0.35	32.065	1	1.49	0.5
6	ARAMBAG	BKTPP	400	TWIN MOOSE	18.99	0	28.49	0.35	64.13	1	2.37	0.5
7	ARAMBAG	KTPP	400	TWIN MOOSE	11.44	0	17.16	0.35	46.86	1	2.86	0.5
8	ARAMBAG	DURGAPUR	400	TWIN MOOSE	18.19	0	27.28	0.5	67.98	1	2.27	0.5
9	ARAMBAG	PPSP 1&2	400	TWIN MOOSE	30.8	0	46.2	0.35	92.4	1	3.85	0.5
10	DURGAPUR	PPSP 1&2	400	TWIN MOOSE	27.13	0	40.7	0.35	86.9	1	3.39	0.5
11	DURGAPUR	PARULIA 1&2	400	TWIN MOOSE	1.16	0	3.02	0.35	43.52	1	0.4	0.5
12	AA3	SBG-PG	220	ZEBRA	2.920	0	4.39	0.35	9.08	1	0.73	0.5
13	KLC	SBG-PG	220	ZEBRA	2.470	0	3.71	0.35	8.4	1	0.62	0.5
14	NEW-HALDIA	KTPP 1&2	220	ZEBRA	7.280	0	13.64	0.35	24.55	1	1.82	0.5
15	HOWRAH	KTPP 1&2	220	ZEBRA	9.090	0	15.92	0.35	27.28	1	2.27	0.5
16	DURGAPUR	WARIA 1&2	220	ZEBRA	2.230	0	4.19	0.35	10.56	1	0.56	0.5
17	DURGAPUR	DPL 1&2	220	ZEBRA	1.040	0	1.95	0.35	3.118	0.8	0.26	0.5
18	DURGAPUR	BKTPP 1&2	220	ZEBRA	5.200	0	9.74	0.35	33.51	1	1.3	0.5
19	DURGAPUR	STPS	220	ZEBRA	12.990	0	20.46	0.35	41.11	1	3.25	0.5
20	ASANSOL	STPS	220	ZEBRA	8.060	0	14.29	0.35	33.714	1	2.01	0.5
21	HURA	STPS	220	ZEBRA	6.760	0	13.48	0.35	31.75	1	1.69	0.5
22	BISHNUPUR	STPS	220	ZEBRA	14.420	0	22.25	0.35	41.11	1	1.8	0.5
23	GOKARNA	SAGARDIGHI 1&2	220	ZEBRA	5.720	0	10.72	0.35	17.149	1	1.43	0.5

NOTE:

1	NJP	BINAGURI(PG)	220	BUS EXTENTION
2	DALHHOLA	DALHHOLA(PG)	220	LINE DIFFERENTIAL PROTECTION
3	SUBASHGRAM	SUBASHGRAM(PG)	220	SPACIAL PROTECTION SCHEME WITH EXTENDED ZONE-1

Zone Settings as submitted by PGCIL, ER-II

	LINES		Local End											
Sl No.	Functional Loc.	Line Length	Z1(Ohm)	Z1%	Z1t	Z2(Ohm)	Z2%	Z2t	Z3(Ohm)	Z3%	Z3t	Z4(Ohm)	Z4%	Z4t
1	A-GANTK-RANGP-ACL-C2	29	9.854	80	0	14.781	120	0.35	29.56	240	0.8	2.4635	20	0.5
2	A-SLGUR-MELLI-ACL-C1	92	32.013	80	0	48.02	120	0.5	66.3866	166	0.8	8.033	20	0.5
3	A-RANGP-CHUZA-ACL-C1	24	8.155	80	0	12.232	120	0.35	30.7323	301	0.8	2.0387	20	0.5
4	A-GANTK-RANGP-ACL-C1	24	8.835	80	0	13.252	120	0.35	28.0313	240	0.8	2.2086	20	0.5
5	A-RANGP-RANGIT-ACL-C1	54	18.349	80	0	27.523	120	0.35	59.6302	260	0.8	4.5872	20	0.5
6	A-SLGUR-KRSNG-ACL-C1	31.3	12.868	80	0	19.302	120	0.5	37.67	234	0.8	3.217	20	0.5
7	B-BIRPA-BNGUR-ACL-C1	80	25.806	80	0	48.387	150	0.5	116.6076	361	0.8	6.4516	20	0.5
8	B-BIRPA-BNGUR-ACL-C2	80	25.806	80	0	48.387	150	0.5	116.6076	361	0.8	6.4516	20	0.5
9	B-BIRPA-CHUKH-ACL-C1	70	22.645	80	0	42.459	150	0.5	67.933	240	0.8	5.6612	20	0.5
10	B-BIRPA-CHUKH-ACL-C2	70	22.645	80	0	42.459	150	0.5	67.933	240	0.8	5.6612	20	0.5
11	B-BIRPA-SALAK-ACL-C1	161	51.935	80	0	97.378	150	0.5	155.8	240	0.8	6.4919	10	0.5
12	B-BIRPA-SALAK-ACL-C2	161	51.935	80	0	97.378	150	0.5	155.8	240	0.8	6.4919	10	0.5
13	B-BNGUR-SLGUR-ACL-C1	9	2.925	80	0	5.484	150	0.5	48.4123	1324	0.8	1.0174	27.82	0.5
14	B-BNGUR-SLGUR-ACL-C2	9	2.925	80	0	5.484	150	0.5	48.4123	1324	0.8	1.0174	27.82	0.5
15	B-CHUKH-BIRPA-ACL-C3	38	13.559	80	0	25.423	150	0.5	35.23	208	0.8	3.3897	20	0.5
16	B-MALDA-DALKH-ACL-C1	116	37.771	80	0	70.821	150	0.5	79.688	169	0.8	4.7214	10	0.5
17	B-MALDA-DALKH-ACL-C2	116	37.771	80	0	70.821	150	0.5	79.688	169	0.8	4.7214	10	0.5
18	B-RANGP-NMELI-ACL-C1	26.1	7.106	80	0	10.659	120	0.35	17.764	200	0.8	1.776	20	0.5
19	B-RANGP-JHEPL-ACL-C1	25.845	7.106	80	0	10.659	120	0.35	17.764	200	0.8	1.776	20	0.5
20	B-NMELI-JHEPL-ACL-C1	10.067	2.69	80	0	4.03	120	0.35	10.08	300	1	0.67	20	0.5
21	B-SLGUR-DALKH-ACL-C1	119	38.387	80	0	71.975	150	0.5	122.6567	256	0.8	4.7983	10	0.5
22	B-SLGUR-DALKH-ACL-C2	119	38.387	80	0	71.975	150	0.5	122.6567	256	0.8	4.7983	10	0.5
23	C-BNGUR-PURNW-ACL-C1	168	53.283	80	0	99.905	150	0.5	191.65	288	1	6.6603	10	0.5
24	C-BNGUR-PURNW-ACL-C2	168	53.283	80	0	99.905	150	0.5	191.65	288	1	6.6603	10	0.5
25	C-BONGA-BNGUR-ACL-C1	216	53.282	80	0	99.905	150	0.5	191.6517	288	1	6.6603	10	0.5
26	C-BONGA-BNGUR-ACL-C2	216	53.282	80	0	99.905	150	0.5	191.6517	288	1	6.6603	10	0.5
27	C-BRMPR-BMARA-ACL-C1	101	24.914	80	0	46.715	150	0.5	74.737	240	1	3.1143	10	0.5
28	C-BRMPR-BMARA-ACL-C2	101	24.914	80	0	46.715	150	0.5	74.737	240	1	3.1143	10	0.5

Zone Settings as submitted by PGCIL, ER-II

29	C-BRMPR-FARAK-ACL-C1	73.27	19.299	80	0	28.948	120	0.5	94.935	394	1	4.8247	20	0.5
30	C-BRMPR-JERAT-ACL-C1	167.9	43.986	80	0	65.979	120	0.5	93.976	171	1	5.498	10	0.5
31	C-BRMPR-SGTPP-ACL-C1	26.1	5.047	80	0	9.463	150	0.5	54.85	869	1	1.2618	20	0.5
32	C-BRMPR-SGTPP-ACL-C2	26.1	5.047	80	0	9.463	150	0.5	54.85	869	1	1.2618	20	0.5
33	C-JERAT-SBSGR-ACL-C1	63	18.667	80	0	28	120	0.5	45.818	196	1	4.666	20	0.5
34	C-MALDA-FARAK-ACL-C1	40	10.24	80	0	19.199	150	0.5	32.8554	257	1	2.559	20	0.5
35	C-MALDA-FARAK-ACL-C2	40	10.24	80	0	19.199	150	0.5	32.8554	257	1	2.559	20	0.5
36	C-MALDA-PURNW-ACL-C1	167	44.532	80	0	83.498	150	0.5	94.87	170	1	5.566	10	0.5
37	C-MALDA-PURNW-ACL-C2	167	44.532	80	0	83.498	150	0.5	94.87	170	1	5.566	10	0.5
38	C-RANGP-BNGUR-ACL-C1	109.88	27.135	80	0	50.877	150	0.35	81.3975	240	1	3.3918	10	0.5
39	C-RANGP-BNGUR-ACL-C2	109.88	27.135	80	0	50.877	150	0.35	81.3975	240	1	3.3918	10	0.5
40	C-RANGP-TESTA-ACL-C1	12.32	3.039	80	0	5.698	150	0.35	9.1165	240	1	1.0044	26.444	0.5
41	C-RANGP-TESTA-ACL-C2	12.32	3.039	80	0	5.698	150	0.35	9.1165	240	1	1.0044	26.444	0.5
42	C-SAGAR-SBSGR-ACL-C1	246	68.347	80	0	102.52	120	0.5	116.57	136	1	8.5434	10	0.5
43	C-TALA_-BNGUR-ACL-C1	140.3	34.609	80	0	64.892	150	0.5	108.3822	251	1	4.3261	10	0.5
44	C-TALA_-BNGUR-ACL-C2	140.3	34.609	80	0	64.892	150	0.5	108.3822	251	1	4.3261	10	0.5
45	C-TALA_-BNGUR-ACL-C3	126.2	31.13	80	0	58.37	150	0.5	55.5752	143	1	3.8914	10	0.5
46	C-TALA_-BNGUR-ACL-C4	147.1	36.286	80	0	68.037	150	0.5	106.335	234	1	4.5358	10	0.5

Line - 1 (GMR - Angul Pooling station) Total line length 30kM / Double circuit - quad moose		
Distance protection setting		
Description	Protection line reach setting in Ohm	Time setting in milli second
Total line impedance	3.1375	
Z1 forward (80%)	2.51	Instantaneous
Z2 forward (150%)	4.706	350
Z3 forward 120% (protected line + next longest line).	7.53	1000
Z4 (20%)	0.6275	500

Line - 2 (GMR - Angul Pooling station) Total line length 30kM / Double circuit - quad moose		
Distance protection setting		
Description	Protection line reach setting in Ohm	Time setting in milli second
Total line impedance	3.1375	
Z1 forward (80%)	2.51	Instantaneous
Z2 forward (150%)	4.706	350
Z3 forward 120% (protected line + next longest line).	7.53	1000
Z4 (20%)	0.6275	500

Line - 3 (GMR - Meramundali) Total line length 8.796kM / single circuit- twin moose		
Distance protection setting		
Description	Protection line reach setting in Ohm	Time setting in milli second
Total line impedance	1.115	
Z1 forward (80%)	0.892	Instantaneous
Z2 forward (120%)	1.338	350
Z3 forward 120% (protected line + next longest line).	13.842	1000
Z4 (20%)	0.223	500

Annexure-C4

Status of data recieved from BSPTCL and JUSNL

		BSPTCL					JUSNL		
	Details required	**132kV Purnea**	**Madhepura**	**Biharshariff**	**Begusarai**	**Forbesgunj**	**Chandil**	**Ramchandrapur**	**Adityapur**
1	SLD of all the affected and surround Sub-station (with CT location)	√	√	√	√	√	√	√	√
2	Year of manufacturing of all equipments	√	√	√	√	√	√	√	√
3	Comprehensive CT details along with name plate (with connected./adopted ratio)	√	√	√	√	√	√	√	√
4	VT details	√	√	√	√	√	√	√	√
5	Fault level- 3-phase as well as 1-phase (line length, conductor details and Transformer details for computing fault level)	Recieved from ERLDC						√	Recieved from ERLDC
6	Transformer details (Rating, impedance)	√	√	√	√	√	√	√	√
7	Availabitity of Auto-Reclosure feature	Not active	Not active	Not active	Not active	Not active	Not active	Not active	Not active
8	Availability of carier protection	Not active	Not active	Not active	Not active	Not active	Not active	Not active	Not active
9	Availability of Bus- differential and LBB Protection	Not available	LBB	Not active	Not available	Not available	LBB	Bus bar and LBB	LBB
10	Junction Box (JB) details	ok	ok	ok	ok	ok	ok	ok	ok
11	Cable details used for CT connections (Cross section/core of cable, Junction Box (JB) details & length of cable between JB & control panel)	√	√	√	√	√	√	√	√
12	Grid earthing resistance (With latest test report)	√	√	√	√	√	√	Resistance is ≥ 1 ohm	√
13	Breaker details (operating time)	√	√	√	√	√	√	√	√
14	CT/PT earthing details	√	√	√	√	√	√	√	√
15	Relay details (Relay type, model, settings, manufacturing, basis of settings) *	√	√	√	√	√	√	√	√
16	Scheme adopted for protection settings for lines and transformers	Distance relay settings are implemented as per the ERPC recommended zone settings							
17	DC system details with charger and battery**	√	√	√	√	√	√	√	√
18	Details of transmission line protection as per the format	√	√	√	√	√	√	√	√
19	Details of transformer protection as per the format	√	√	√	√	√	√	√	√

* Last relay testing report (reach test/function test)is to be submitted

** positve/negative earth details

Annexure-C5

S. No.	Substations	Rev.	Date of revision	Inputs not submitted by the entity
1	Jeypore_400-220 kV S/S			Input data format incomplete
				Existing relays settings
				Abnormal trippings list if available
				Single/three pole autorecloser events if available
2	Bolangir_400-220 kV S/S			Existing relays settings
				Existing protection block diagram
				Abnormal trippings list if available
				Single/three pole autorecloser events if available
3	Biharshariff_220 kV S/S	0		
		1	2015.11.18	Single line diagram(SLD)
				shortcircuits currents
				parameters per phase/km primary value, length of 220 kV bays
				parameters of longest and shortest transmission lines
				Existing relay setings
				Missing informations regarding VT, ICT etc.
				Existing protection block diagram
				Abnormal trippings list if available
4	Jeerat_400-220 kV S/S	1	2015.11.18	Existing relay setings
				Missing SLD
				Existing protection block diagram
				Abnormal trippings list if available
5	Biharshariff_400-220 Kv S/S			Existing relays settings
				Existing protection block diagram
				Abnormal trippings list if available
				Single/three pole autorecloser events if available
6	Sasaram_400-220 kV S/S			We receive Pusauli SS input format it is the same SS?
				Existing relays settings
				Existing protection block diagram
				Abnormal trippings list if available
				Single/three pole autorecloser events if available
7	Maithon_400-220 kV S/S			Single Line Diagram
				Existing relays settings
				protection block diagrams
				Missing Breaker Failure/Bus Bar Differential Protection inputs
				Abnormal trippings list if available
				Single/three pole autorecloser events if available
8	New_Purnea_400-220 kV S/S			Existing relays settings
				Existing protection block diagram
				Abnormal trippings list if available
				Single/three pole autorecloser events if available
9	Chandil_220 kV S/S	0		
				Existing relays settings
				Existing protection block diagram
				Abnormal trippings list if available
				Single/three pole autorecloser events if available
		1	2015.11.18	We receive only SLD.
				We receive CKL but is almost empty. No input data regarding the bays, short circuits CT, vT...

10	**Arambag_400-220 kV S/S**	0		
		1	2015.11.18	Input data file incomplete Missing a lot informations regarding of parameters of longest and shortest transmission line(most of them are ARAMBAG) , CT, VT, ICT
				Existing relays settings
				Existing protection block diagram
				Abnormal trippings list if available
				Missing SLD
11	**Kalyaneswari_220 kV S/S**	0		
		1	2015.11.18	Existing relays settings
				Existing protection block diagram
				Abnormal trippings list if available
				Missing SLD
12	**Indravati - OHPC wich voltagen levels should be include in audit?**	1	2015.11.18	input data file is not complete
				Missing shortcircuit currents (short circuits curents , not SCC level of equipment)
				Missing parameter per phase primary value for 220 kV Theruvali-Feeder I, II, III, IV bays
				Existing relays settings
				Existing protection block diagram
				Abnormal trippings list if available
				please send us more clear single line diagram (PDF or picture)
13	**OPTCL - Joda wich voltagen levels should be include in audit?**	1	2015.11.18	Missing paramaters of longest and shortest transmission line (if is radial line please mark there Radial)
				Incomplete information regarding VT (we recive only the name of VT's)
				Existing relays settings
				Existing protection block diagram
				Abnormal trippings list if available
				Missing SLD
14	**OPTCL - Mendhasal wich voltagen levels should be include in audit?**	1	2015.11.18	General data not completed (Bbprotection BFP, DC ..)
				Existing relays settings
				Existing protection block diagram
				Abnormal trippings list if available
				Single line diagram
15	**OPTCL - Tarkeda wich voltagen levels should be include in audit?**	1	2015.11.18	Missing SLD
				input data format incomplet, missing short circuit curents, paramaters of longest and shortest transmission line of: Roukela 1, 2, 3, Rajganpur 1, 2, Budhipadara, Chhendl 1, 2, RSP1, 2(if is radial line please mark there Radial)
				Existing relays settings
				Existing protection block diagram
				Abnormal trippings list if available

No. CEA/GO&D/OPM/TPR/2015/
Government of India
Ministry of Power
Central Electricity Authority
OPM Division

Sewa Bhavan, R.K. Puram
New Delhi - 110066
Dated: 28.10.2015

Sub. : Under performance of Thermal Power Stations of Eastern Region-reg.

Reference is invited to the Monthly Generation Report (18 coloumn) for the month of September, 2015 published by CEA, which indicates the dismal performance of the Thermal Power Generating Stations of the country as a whole and Eastern Region in particular. The analysis of data and subsequent examination shows that the thermal power stations of Eastern Region are running on low PLF. The list of such Thermal Power Stations running under PLF less than the national average PLF of 60.90% may kindly be seen at Annexure. Looking into the Annexure it may be concluded that efforts could have been initiated for improvement of the operating parameters of these stations viz a viz PLF, Heat Rate, Secondary Fuel Oil consumption and Aux Power consumption as well as early rectification of the outages.

It is, therefore, suggested that a meeting may be called by ERPC at Kolkata of all the stake holders to discuss the reasons and possible remedies of the same. A convenient date and timing of such meeting may kindly be intimated to this division for attending the meeting. The agenda of the meeting would be as below:

The utilities may come out with a concrete proposal/action plan for the entire financial year for improvement of PLF, Heat Rate, secondary fuel oil and auxiliary power consumption of their Thermal Power Stations.

Encl. As above.

(Chandra Shekhar)
Chief Engineer (OPM)

Member Secretary, Eastern Regional Power Committee (ERPC), Kolkata
No.CEA/GO&D/OPM/Misc./2015/ dated 28.10.2015

Annexure

Central Electricity Authority
Operation Performance Monitoring Division
List of Power Stations of Eastern Region operating below the National Average PLF of 60.90

Name of the Station	Unit No.	Capacity	State	Utility	Date of Stabilization	Fuel	Comm PLF
PATRATU TPS	6	90	JHARKHAND	JSEB	17/12/1971	COAL	16.2
PATRATU TPS	10	110	JHARKHAND	JSEB	01/09/1986	COAL	56.62
MUZAFFARPUR TPS	1	110	BIHAR	NTPC Ltd.	01/03/1986	COAL	43.74
MUZAFFARPUR TPS	2	110	BIHAR	NTPC Ltd.	01/04/1987	COAL	36.81
TENUGHAT TPS	1	210	JHARKHAND	TVNL	01/04/1997	COAL	58.26
MAHADEV PRASAD STPP	1	270	JHARKHAND	ADHUNIK	01/02/2013	COAL	54.49
MAHADEV PRASAD STPP	2	270	JHARKHAND	ADHUNIK	01/06/2013	COAL	33.29
CHANDRAPURA(DVC) TPS	1	130	JHARKHAND	DVC	30/09/1964	COAL	56.94
DURGAPUR TPS	3	130	WEST BENGAL	DVC	31/05/1967	COAL	52.87
DURGAPUR TPS	4	210	WEST BENGAL	DVC	01/12/1982	COAL	17.94
BOKARO `B` TPS	1	210	JHARKHAND	DVC	01/05/1987	COAL	27.56
BOKARO `B` TPS	3	210	JHARKHAND	DVC	01/08/1994	COAL	17.61
MEJIA TPS	1	210	WEST BENGAL	DVC	01/04/1998	COAL	56.78
MEJIA TPS	2	210	WEST BENGAL	DVC	01/11/1999	COAL	45.42

MEJIA TPS	3	210	WEST BENGAL	DVC	01/06/2000	COAL	40.48
MEJIA TPS	4	210	WEST BENGAL	DVC	01/05/2005	COAL	3.87
MEJIA TPS	5	250	WEST BENGAL	DVC	01/10/2007	COAL	45.38
KODARMA TPP	1	500	JHARKHAND	DVC	01/08/2013	COAL	0
DURGAPUR STEEL TPS	2	500	WEST BENGAL	DVC	01/04/2013	COAL	32.52
STERLITE TPP	1	600	ORISSA	SEL	01/08/2011	COAL	25.1
STERLITE TPP	3	600	ORISSA	SEL	01/09/2011	COAL	30.61
STERLITE TPP	4	600	ORISSA	SEL	01/05/2012	COAL	34.72
KAMALANGA TPS	1	350	ORISSA	GMR ENERG	01/05/2013	COAL	59.42
DERANG TPP	1	600	ORISSA	JITPL	06/06/2014	COAL	59.48
DERANG TPP	2	600	ORISSA	JITPL	12/02/2015	COAL	45.97
BANDEL TPS	1	60	WEST BENGAL	WBPDC	30/11/1965	COAL	26.22
BANDEL TPS	2	60	WEST BENGAL	WBPDC	31/05/1966	COAL	37.31
BANDEL TPS	3	60	WEST BENGAL	WBPDC	30/11/1965	COAL	35.47
BANDEL TPS	4	60	WEST BENGAL	WBPDC	31/05/1967	COAL	39.26
BANDEL TPS	5	210	WEST BENGAL	WBPDC	01/04/1983	COAL	0.13

KOLAGHAT TPS	1	210	WEST BENGAL	WBPDC	01/03/1991	COAL	42.03
KOLAGHAT TPS	2	210	WEST BENGAL	WBPDC	01/10/1986	COAL	50.38
KOLAGHAT TPS	3	210	WEST BENGAL	WBPDC	01/04/1985	COAL	46.12
KOLAGHAT TPS	4	210	WEST BENGAL	WBPDC	01/10/1995	COAL	48.04
BAKRESWAR TPS	4	210	WEST BENGAL	WBPDC	01/07/2008	COAL	56.44
SAGARDIGHI TPS	1	300	WEST BENGAL	WBPDC	01/07/2008	COAL	56.99
SAGARDIGHI TPS	2	300	WEST BENGAL	WBPDC	01/02/2009	COAL	33.34
D.P.L. TPS	7	300	WEST BENGAL	DPL	01/06/2008	COAL	47.76
TITAGARH TPS	3	60	WEST BENGAL	CESC	01/08/1984	COAL	38.27
TITAGARH TPS	4	60	WEST BENGAL	CESC	01/08/1985	COAL	40.98
HALDIA TPP	2	300	WEST BENGAL	HEL	21/02/2015	COAL	46.73
FARAKKA STPS	4	500	WEST BENGAL	NTPC Ltd.	01/12/1996	COAL	56.69
FARAKKA STPS	6	500	WEST BENGAL	NTPC Ltd.	01/05/2012	COAL	58.17

Annexure - C10.1

SUMMARY OF DEVIATION CHARGE RECEIPT AND PAYMENT STATUS

BILL from 30.03.15 to 10.01.16 (upto Week - 41(A) of 2015 - 16)
Last Payment Disbursement Date - 29.01.16

Figures in Rs. Lakhs

CONSTITUENTS	Receivable	Received	Payable	Paid	Outstanding
WR	52602.44468	48345.56440	361.76347	463.49746	**4358.61427**
SR	26560.17406	26791.66012	2031.25794	2170.76912	**-91.97488**
NER	7921.64700	7036.99870	10944.38911	8776.09953	**-1283.64128**
NR	0.00000	0.00000	87790.98865	83772.84054	**-4018.14811**
BSPHCL	7346.64988	5389.25841	1014.96932	0.00000	**942.42215**
JUVNL	2051.51306	164.29730	867.34086	305.90152	**1325.77642**
DVC	654.99470	656.89385	3242.23426	3224.95324	**-19.18017**
GRIDCO	2761.17769	2919.42025	835.84546	981.33241	**-12.75561**
WBSETCL	6067.30869	6081.42893	678.45916	653.55497	**-39.02443**
SIKKIM	64.66049	0.00000	1303.32878	1185.49235	**-53.17594**
NTPC	10783.05050	10783.11321	904.06028	746.28827	**-157.83472**
NHPC	0.00000	0.00000	2449.83027	2427.40995	**-22.42032**
MPL	10.55998	57.51945	1058.66392	1088.34790	**-17.27549**
STERLITE	5377.16151	5200.28097	229.01211	229.69311	**177.56154**
APNRL	547.81928	221.09199	279.37810	0.00000	**47.34920**
CHUZACHEN (GATI)	260.86553	260.86553	409.65074	408.76506	**-0.88568**
NVVN (IND-BNG)	50.52228	50.52228	170.17900	167.12975	**-3.04925**
JITPL	948.02247	968.41920	1932.32442	2005.90010	**53.17895**
GMR	783.84118	806.05493	470.59050	491.40401	**-1.40024**
IND BARATH	221.14147	214.74041	9.56016	9.56016	**6.40106**
TPTCL(DAGACHU)	350.52273	352.03482	158.89037	160.40247	**0.00001**
JLHEP (DANS ENERG	36.65373	31.02340	146.02708	146.02708	**5.63033**
Pool Balance	0.00000	0.00000	-81.36436	42.08344	**123.44780**
Addl Deviation charge	8619.67736	6873.73570	0.00000	0.00000	**1745.94166**
IRE	0.00000	0.00000	-314.19340	0.00000	**314.19340**
TOTAL	**125400.73091**	**116331.18815**	**116893.18620**	**109457.45244**	

% Realization **92.77** **As on** **01.02.16**

Receivable: Receivable by ER POOL Payable Payable by ER POOL

Received Received by ER POOL Paid Paid by ER POOL

"- ve" Payable by ER pool "+ ve" Receivable by ER pool

Annexure - C10.2

STATUS OF REACTIVE CHARGES

RECEIVABLE IN ER POOL AS PER PUBLISHED A/C UPTO 10.01.16 (2015 -16)
AS ON 01.02.2016

CONSTITUENT	AMOUNT RECEIVABLE IN THE POOL (Rs.)	AMOUNT RECEIVED IN THE POOL (Rs.)	OUTSTANDING (Rs.)
WBSETCL	58543261	31731669	26811592
JUVNL	0	0	0
GRIDCO	72542254	65369716	7172538
SIKKIM	152983	152983	0
TOTAL	131238498	97254368	33984130

Annexure - C10.3

SUMMARY OF CONGESTION CHARGE RECEIPT AND PAYMENT STATUS

Bill upto 07.01.2013
Last Payment Disbursement Date - 13.05.2013

Figures in Rs. Lakhs

CONSTITUENTS	Receivable	Received	Payable	Paid	Outstanding
BSEB	0.67823	0.67823	0.39118	0.39118	0.00000
JSEB	16.37889	16.37889	2.61323	2.61323	0.00000
DVC	0.00000	0.00000	6.24040	6.24040	0.00000
GRIDCO	5.34488	5.34488	0.00000	0.00000	0.00000
WBSETCL	0.00000	7.42249	4.32834	11.75083	0.00000
SIKKIM	0.65609	6.20909	0.00000	5.55300	0.00000
NTPC	6.93152	6.93152	7.42249	7.42249	0.00000
NHPC	0.70445	0.70445	0.05875	0.05875	0.00000
MPL	4.81694	4.81694	0.85169	0.85169	0.00000
STERLITE	7.70504	7.70504	0.00000	0.00000	0.00000
Pool Balance	0.00000	0.00000	21.30996	21.30996	0.00000
TOTAL	**43.21604**	**56.19153**	**43.21604**	**56.19153**	0.00000

% Realization **As on 17.09.2013**

Receivable:	Receivable by ER POOL	Payable	Payable by ER POOL
Received	Received by ER POOL	Paid	Paid by ER POOL

"- ve" Payable by ER pool "+ ve" Receivable by ER pool

ANNEXURE- C10.4

DETAILS OF DISBURSEMENT TO POWER SYSTEM DEVELOPMENT FUND

Sl No	Nature of Amount	Amount transferred to PSDF	Date of Disbursement	Cheque No	Remarks
1	**Openeing Balance(upto 31.08.15**	**80634.61802**			**Addl Dev Charge**
2	Addl. Dev	511.74648	08.09.15		Addl Dev Charge 15-16
3	Addl. Dev	68.39639	11.09.15		Addl Dev Charge 15-16
4	Addl. Dev	129.22828	15.09.15		Addl Dev Charge 15-16
5	Addl. Dev	66.92997	22.09.15		Addl Dev Charge 15-16
6	Addl. Dev	205.31517	24.09.15		Addl Dev Charge 15-16
7	Addl. Dev	28.89591	28.09.15		Addl Dev Charge 15-16
8	Addl. Dev	72.28358	05.10.15		Addl Dev Charge 15-16
9	Addl. Dev	375.29925	07.10.15		Addl Dev Charge 15-16
10	Addl. Dev	126.75637	09.10.15		Addl Dev Charge 15-16
11	Addl. Dev	23.73515	14.10.15		Addl Dev Charge 15-16
12	Addl. Dev	144.94455	19.10.15		Addl Dev Charge 15-16
13	Addl. Dev	13.79365	23.10.15		Addl Dev Charge 15-16
14	Addl. Dev	8.71157	29.10.15		Addl Dev Charge 15-16
15	Addl. Dev	95.35424	03.11.15		Addl Dev Charge 15-16 & balance of Fy 14-15
16	Addl. Dev	397.93866	05.11.15		Addl Dev Charge 15-16
17	Addl. Dev	162.09969	09.11.15		Addl Dev Charge 15-16
18	Addl. Dev	4.92340	12.11.15		Addl Dev Charge 15-16
19	Addl. Dev	17.32557	17.11.15		Addl Dev Charge 15-16
20	Addl. Dev	0.61160	20.11.15		Addl Dev Charge 15-16
21	Addl. Dev	37.85621	24.11.15		Addl Dev Charge 15-16
22	Addl. Dev	7.13054	27.11.15		Addl Dev Charge 15-16
23	Addl. Dev	2.03185	01.12.15		Addl Dev Charge 15-16
24	Addl. Dev	3.72070	09.12.15		Addl Dev Charge 15-16
25	Addl. Dev	19.82318	11.12.15		Addl Dev Charge 15-16
26	Addl. Dev	16.16239	15.12.15		Addl Dev Charge 15-16
27	Addl. Dev	101.56644	17.12.15		Addl Dev Charge 15-16
28	Reactive Charge	350.00000	21.12.15		Reactive Energy Charge_15-16
29	Addl. Dev	86.57935	22.12.15		Addl Dev Charge 15-16
30	Addl. Dev	127.95858	28.12.15		Addl Dev Charge 15-16
31	Addl. Dev	32.14249	30.12.15		Addl Dev Charge 15-16
32	Addl. Dev	18.40442	01.01.16		Addl Dev Charge 15-16
33	Addl. Dev	16.46976	05.01.16		Addl Dev Charge 15-16
34	Addl. Dev	33.27577	07.01.16		Addl Dev Charge 15-16
35	Addl. Dev	19.11532	11.01.16		Addl Dev Charge 15-16
36	Addl. Dev	90.94357	14.01.16		Addl Dev Charge 15-16
37	Addl. Dev	19.04467	18.01.16		Addl Dev Charge 15-16
38	Addl. Dev	50.72543	20.01.16		Addl Dev Charge 15-16
39	Addl. Dev	11.10228	22.01.16		Addl Dev Charge 15-16
40	Addl. Dev	45.43206	27.01.16		Addl Dev Charge 15-16
41	Addl. Dev	96.62204	29.01.16		Addl Dev Charge 15-16
42	Reactive Charge	450.00000	02.02.16		Reactive Energy Charge_15-16
	Total	**84725.01454**			

Annexure-C10.5

	2014-15				2015-16		
Name of The Utility	**Q1 (01.07.14)**	**Q2 (08.10.14)**	**Q3 (05.01.15)**	**Q4 (07.04.15)**	**Q1 (01.07.15)**	**Q2(05.10.15)**	**Q3(05.01.16)**
Inter Regional							
WR	YES	YES	YES	YES	YES	NO	YES
SR	NO	NO	YES	YES	YES	YES	NO
NER	YES	YES	NO	YES	NO	NO	YES
NR	NO	NO	NO	NO	NO	NO	NO
Intra Regional							
BSPHCL	NO	NO	NO	NO	NO	NO	NO
JUVNL	YES	YES	YES	NO	NO	NO	NO
DVC	YES	YES	YES	YES	YES	YES	NO
GRIDCO	YES	YES	YES	YES	YES	YES	NO
WBSETCL	YES	YES	YES	YES	YES	YES	YES
SIKKIM	NO	NO	NO	NO	NO	NO	NO
NTPC	YES	YES	YES	YES	YES	YES	YES
NHPC	YES	YES	YES	YES	YES	YES	YES
MPL	YES	YES	YES	YES	YES	YES	YES
STERLITE	YES	YES	YES	YES	YES	YES	YES
APNRL	YES	NO	YES	YES	YES	YES	YES
CHUZACHEN(GATI)	YES	YES	YES	YES	YES	YES	YES
NVVN	YES	YES	YES	YES	YES	YES	YES
GMR	YES	YES	YES	YES	YES	NO	NO
JITPL	YES	YES	YES	YES	YES	YES	YES
INBEUL	N/A	N/A	YES	YES	NO	NO	NO
TPTCL (DAGACHU)	N/A	N/A	N/A	YES	YES	YES	YES
JLHEP(DANS ENERGY)	N/A	N/A	N/A	N/A	N/A	N/A	YES

Note:
(1)The dates in the bracket indicates the date of sending the Reconciliation statements by ERLDC to utilities.
(2) YES Indicates that signed reconciliation statement received by ERLDC
(3) NO Indicates that signed reconciliation statement is not received by ERLDC

Annexure-C11

Reconciliation Between Open Access department of ERLDC and CTU, SLDCs, STUs

Sl. No.	CTU / STUs / SLDCs Name	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
	Date of Issuance	28-May-14	17-Jun-14	11-Jul-14	19-Aug-14	15-Sep-14	16-Oct-14	12-Nov-14	17-Dec-14	15-Jan-15	19-Feb-15	16-Mar-15	16-Apr-15	18-May-15	16-Jun-15	16-Jul-15	12-Aug-15	18-Sep-15	19-Oct-15	12-Nov-15	14-Dec-15	15-Jan-16
1	West Bengal - SLDC and STU	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO
2	DVC - SLDC	YES	YES	YES	NA	YES	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NO	YES	YES	YES	YES	NO
3	OPTCL-SLDC and STU	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NA	YES	YES	YES	YES	YES	YES	YES	NO

Reconciliation Between Open Access department of ERLDC and Applicants

Sl. No.	Applicants Name	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Quarter-I(Apr-15-June-15)	Quarter-II(Jul-15-Sep-15)	Quarter-III(Oct-15-Dec-15)
	Date of Issuance	21-May-14	10-Jun-14	11-Jul-14	18-Aug-14	15-Sep-14	16-Oct-14	12-Nov-14	09-Dec-14	15-Jan-15	19-Feb-15	16-Mar-15	16-Apr-15	16-Jul-15	19-Oct-15	15-Jan-16
1	Bihar State Electricity Board	NA	NA	NA	NA	NA	NA	NA	NA	NA	NO	NA	NA	NA	NA	NO
2	GMR Kamalanga Energy Limited	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	NA
3	Jindal India Thermal Power Limited	NA	NA	YES	YES	YES	YES	YES	NA	NA	NA	YES	YES	YES	NO	YES
4	Jharkhand State Electricity Board	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NA	NO	NA
5	Sterlite Energy Limited	NA	NA	NA	NA	YES	YES	YES	YES	NA	NA	NA	NA	NA	NA	NA
6	SAIL Durgapur Steel Plant	YES	YES	YES	YES	NA	YES	NA	NA	NA	NA	NA	NA	NA	NO	NA
7	SAIL Rourkela Steel Plant	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	NO	NA	NA	YES	NO
8	TATA Steel - Discom	NA	YES	YES	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9	GRIDCO Limited	NA	NA	YES	YES	YES	NO	NA	NA	NA	NA	NA	NA	NA	NA	NA
10	West Bengal State Distribution Comp Ltd.	NA	YES	NO	NO	NO	NA	YES	NA	NA	NA	NA	NA	NA	NA	NA

Annexure-C12

Current Status of Letter of Credit (LC) amount against DSM charges for ER constituents

Figures in Lacs of Rupees

Sl No	ER Constituents	No. of weeks in which Deviavtion Charge payable	No of times payment was delayed during 2014-15	Total Deviation charges payable to pool during 2014-15	Average weekly Deviation Charge liability	LC Amount	Due date of expiry	Remarks
		(A)	(B)	(C)	(D)	(E)	(F)	(G)
1	**BSPHCL**	28	28	4659.91439	89.61374	98.57511	**03.01.2017**	Opened for 529.52000 Lac
2	**JUVNL**	32	32	3707.07118	71.28983	78.41881	**Already Expired on 16.09.2014**	**Not Opened**
3	**DVC**	33	3	7336.19874	141.08075	155.18882		**Not Opened**
4	**WBSETCL**	50	2	14085.93753	270.88341	297.97176	**08.09.2016**	Opened
5	**SIKKIM**	5	5	134.79305	2.59217	2.85139	**04.10.2016**	Opened for 2.85136 Lac
6	**MPL**	15	13	414.42411	7.96969	8.76666	**31.08.2016**	Opened
7	**STERLITE**	29	6	2068.14512	39.77202	43.74922	31.05.2016	Opened
8	**APNRL**	37	37	1657.059	31.86652	35.05317	20.04.2016	Opened for 87.04872 Lacs
9	**CHUZACHEN**	17	3	148.81229	2.86177	3.14795	31.03.2016	Opened for 0.24000 Lac
10	**JITPL**	41	7	4105.77792	78.95727	86.85299		**Not Opened**
11	**GMR**	16	10	1209.52649	23.26012	25.58614	15.07.2016	Opened
12	**IND-BARATH**	20	8	54.65274	2.73264	3.00590		**Not Opened**

Annexure-C14

S.No	MAKE	ERLDC_ID	OLD MTR NO	NEW MTR NO	LOCATION
1	L&T	TL-32		NP-7961-A	TALCHER SOLAR(NTPC)
2	L&T	TL-33		NP-7626-A	TALCHER SOLAR(NTPC)
3	L&T	TL-34		NP-7962-A	TALCHER SOLAR(NTPC)
4	L&T	TL-35		NP-7628-A	TALCHER SOLAR(NTPC)
5	L&T	TL-37		NP-7627-A	TALCHER SOLAR(NTPC)
6	L&T	TL-38		NP-5968-A	TALCHER SOLAR(NTPC)
7	L&T	OR-15		NP-7991-A	BALIMELA(GRIDCO)
8	L&T	OR-16		NP-7992-A	BALIMELA(GRIDCO)
9	L&T	EN-10		NP-7847-A	RANCHI NEW(PG)
10	L&T	EN-11		NP-7876-A	RANCHI NEW(PG)
11	L&T	EN-12		NP-7849-A	RANCHI NEW(PG)
12	L&T	EN-13		NP-7866-A	RANCHI NEW(PG)
13	L&T	EN-14		NP-7865-A	RANCHI NEW(PG)
14	L&T	EN-19		NP-7875-A	RANCHI NEW(PG)
15	L&T	EN-46		NP-7432-A	LAKHISARAI(PG)
16	L&T	EN-27		NP-7433-A	LAKHISARAI(PG)
17	L&T	EN-20		NP-7958-A	RANGPO(PG)
18	L&T	EN-21		NP-7959-A	RANGPO(PG)
19	L&T	EN-22		NP-7933-A	RANGPO(PG)
20	L&T	EN-23		NP-7955-A	RANGPO(PG)
21	L&T	EN-24		NP-7956-A	RANGPO(PG)
22	L&T	EN-25		NP-7957-A	RANGPO(PG)
23	L&T	TL-31	NP-7625-A	NP-7909-A	TALCHER SOLAR(NTPC)
24	L&T	TL-30	NP-7624-A	NP-5979-A	TALCHER SOLAR(NTPC)
25	L&T	EN-29		NP-7950-A	ANGUL(PG)
26	L&T	EN-30		NP-7558-A	ANGUL(PG)
27	L&T	EN-31		NP-7987-A	ANGUL(PG)
28	L&T	EN-32		NP-7988-A	ANGUL(PG)
29	L&T	EN-37		NP-7889-A	LAKHISARAI(PG)
30	L&T	TL-37	NP-7627-A	NP-7946-A	TALCHER SOLAR(NTPC)
31	L&T	TL-40	NP-7618-A	NP-7945-A	TALCHER SOLAR(NTPC)
32	L&T	EN-33		NP-7922-A	RANGPO(PG)
33	L&T	EN-34		NP-7923-A	RANGPO(PG)
34	L&T	EN-35		NP-7924-A	RANGPO(PG)
35	L&T	EN-36		NP-7623-A	RANGPO(PG)
36	L&T	EN-39		NP-7622-A	RANGPO(PG)
37	L&T	TL-39	NP-7614-A	NP-7631-A	TALCHER SOLAR(NTPC)
38	L&T	TL-41	NP-7615-A	NP-7633-A	TALCHER SOLAR(NTPC)
39	L&T	EN-38		NP-7621-A	RANGPO(PG)
40	L&T	EN-43		NP-7629-A	ANGUL(PG)
41	L&T	EN-44		NP-7949-A	ANGUL(PG)
42	L&T	EN-40		NP-7906-A	SUNDERGARH(PG)
43	L&T	EN-41		NP-7634-A	SUNDERGARH(PG)
44	L&T	EN-42		NP-7638-A	SUNDERGARH(PG)
45	L&T	TL-36	NP-7632-A	NP-7630-A	TALCHER SOLAR(NTPC)
46	L&T	EN-32	NP-7988-A	NP-7908-A	ANGUL(PG)
47	L&T	EN-26		NP-7885-A	LAKHISARAI(PG)
48	L&T	EN-47		NP-7886-A	LAKHISARAI(PG)
49	L&T	BI-50		NP-7869-A	KUDRA(BSPHCL)
50	L&T	EN-50		NP-7429-A	LAKHISARAI(PG)
51	L&T	EN-50		NP-7429-A	LAKHISARAI(PG)
52	L&T	EN-51		NP-7887-A	LAKHISARAI(PG)
53	L&T	EN-52		NP-7430-A	LAKHISARAI(PG)
54	L&T	BI-26		NP-8697-A	LAKHISARAI(BSPHCL)
55	L&T	BI-27		NP-8698-A	JAMUI(BSPHCL)
56	L&T	IB-01		NP-8792-A	IBEUL
57	L&T	IB-02		NP-8793-A	IBEUL
58	L&T	IB-03		NP-8795-A	IBEUL
59	L&T	IB-04		NP-8794-A	IBEUL
60	L&T	IB-05		NP-8783-A	IBEUL
61	L&T	IB-06		NP-8782-A	IBEUL
62	L&T	IB-07		NP-8784-A	IBEUL
63	L&T	IB-08		NP-8796-A	IBEUL
64	L&T	EN-54		NP-7619-A	RANGPO(PG)
65	L&T	EN-55		NP-7620-A	RANGPO(PG)
66	L&T	EN-56		NP-7883-A	JAMSHEDPUR(PG)
67	L&T	EN-57		NP-7907-A	SUNDERGARH(PG)
68	L&T	NB-01		NP-8700-A	NABINAGAR
69	L&T	NB-02		NP-8701-A	NABINAGAR
70	L&T	EN-58		NP-8678-A	CHAIBASA(PG)
71	L&T	EN-59		NP-8710-A	RANGPO(PG)
72	L&T	EN-60		NP-8711-A	RANGPO(PG)
73	L&T	WB-23		LT-0194-A	SAGARDIGHI(WBSETCL)
74	L&T	WB-24		LT-0191-A	SAGARDIGHI(WBSETCL)
75	L&T	NB-05		NP-8662-A	NABINAGAR
76	L&T	WB-25		NP-8724-A	SAGARDIGHI(WBSETCL)
77	L&T	WB-26		NP-8725-A	SAGARDIGHI(WBSETCL)
78	L&T	WB-27		NP-8723-A	SAGARDIGHI(WBSETCL)
79	L&T	WB-28		NP-8722-A	SAGARDIGHI(WBSETCL)
80	L&T	EN-68		NP-8721-A	BERHAMPORE(PG)
81	L&T	EN-69		NP-8726-A	BERHAMPORE(PG)

3rd Phase : 16 Locations

S.No	Location	Utility
1	CHAIBASA(CHB)	PG
2	RANGPO(RGP)	PG
3	NEW MELLI (NML)	PG
4	SAGBARI(SGB)	SIKKIM
5	GYALSHING(GSH)	SIKKIM
6	NABINAGAR(NBN)	NTPC
7	IND-BARATH (IBR)	IPPR
8	TALCHER SOLAR (TLS)	NTPC
9	KUDRA(KUD)	BIHAR
10	RANCHI NEW(RNC)	PG
11	LAKHISARAI(LKS)	PG
12	LAKHISARAI(LKK)	BIHAR
13	JAMUI(JMU)	BIHAR
14	KISANGANJ (PG)	PG
15	JINDAL(JITPL)	IPPR
16	BALIMELA(BLM)	GRIDCO

82	L&T	EN-63		NP-8780-A	ANGUL(PG)
83	L&T	EN-64		NP-8781-A	ANGUL(PG)
84	L&T	EN-65		NP-8785-A	ANGUL(PG)
85	L&T	EN-66		NP-8786-A	ANGUL(PG)
86	L&T	EN-67		NP-8637-A	CHAIBASA(PG)
87	L&T	TS-05	NP-5896-A	NP-8716-A	TEESTA
88	L&T	EN-77		NP-8778-A	ANGUL(PG)
89	L&T	EN-78		NP-8779-A	ANGUL(PG)
90	L&T	EN-79		NP-7636-A	SUNDERGARH(PG)
91	L&T	EN-80		NP-8714-A	RANGPO(PG)
92	L&T	EN-81		NP-8715-A	RANGPO(PG)
93	L&T	EN-82		NP-8777-A	ANGUL(PG)
94	L&T	SM-05		NP-8797-A	SAGBARI(SIKKIM)
95	L&T	SM-06		NP-8798-A	SAGBARI(SIKKIM)
96	L&T	SM-07		NP-8730-A	GYALSHING(SIKKIM)
97	L&T	EN-83		NP-8673-A	BANKA(PG)
98	L&T	EN-84		NP-8675-A	BANKA(PG)
99	L&T	FK-04	NP-7985-A	NP-8706-A	FARAKKA(NTPC)
100	L&T	AP-03	NP-7438-A	NP-8642-A	APNRL
101	L&T	EN-85		NP-8647-A	NEW MELLI(PG)
102	L&T	EN-86		NP-8640-A	NEW MELLI(PG)
103	L&T	RG-12		NP-8734-A	RANGIT(NHPC)
104	L&T	RG-13		NP-8733-A	RANGIT(NHPC)
105	L&T	RG-14		NP-8732-A	RANGIT(NHPC)
106	L&T	RG-15		NP-8736-A	RANGIT(NHPC)
107	L&T	RG-16		NP-8735-A	RANGIT(NHPC)
108	L&T	BI-28		NP-8653-A	SULTANGANJ(BSPHCL)
109	L&T	BI-29		NP-8672-A	SULTANGANJ(BSPHCL)
110	L&T	EP-18	NP-7471-A	NP-8660-A	GAYA(PG)
111	L&T	EP-20	NP-7407-A	NP-8645-A	ANDAL(DVC)
112	L&T	ER-47	NP-6494-A	NP-8738-A	BIRPARA(PG)
113	L&T	EN-87		NP-8727-A	MAITHON(PG)
114	L&T	EN-88		NP-8739-A	MAITHON(PG)
115	L&T	JS-09		NP-8695-A	DUMKA(JUVNL)
116	L&T	JS-10		NP-8774-A	DUMKA(JUVNL)