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AGENDA FOR 34th TCC MEETING of EASTERN REGIONAL POWER COMMITTEE

Date: 18th November, 2016

Venue: The Oberoi Grand, Kolkata

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EASTERN REGIONAL POWER COMMITTEE

AGENDA FOR 34TH TCC MEETING

Date: 18th November, 2016 (Friday) **Venue: Kolkata**

ITEM NO.A1:	CONFIRMATION OF THE MINUTES OF 33rd TCC MEETING

The minutes of the 33rd TCC meeting held on 24th June 2016 at Patna were circulated vide letter no. ERPC/TCC & Committee/14/2016/1H2264_H2333 dated 8th August, 2016.

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

Members may confirm the minutes of 33rd ERPC meeting.

PART B: ITEMS FOR DISCUSSION

ITEM NO. B1:	Status of projects funded under PSDF schemes

1. Projects approved/under consideration of PSDF appraisal committee

In the PSDF review meeting it was advised to RPCs to monitor the status of all the projects funded by PSDF. Therefore, in OCC meetings constituents were requested to update the status of projects which are being funded by PSDF in the desired format. The latest status as updated by ER constituents is as given below:

SN	Name of Constituent	Name of Project	Date of approval from PSDF	Target Date of Completion	Amount approved (in Rs.)	Amount drawn till date (in Rs.)	Status as updated in 126th OCC
1	WBSETCL	Renovation & up-gradation of protection system of 220 kV & 400 kV Substations in West Bengal	31-12-14		120.67 Cr	11.04 Cr.	95 % Supply Completed
2	WBSETCL	Transmission System lmprovement of WBSETCL					
3	OPTCL	Renovation & Up-gradation of protection and control systems of Sub-stations in the State of Odisha in order to rectify protection related deficiencies.	11.05.15	10.05.17	162.5 Cr.	4.91 Cr.+20 Cr	Erection work of the already procured equipment is going on. LOA for eight different types of Testing equipment already placed worth about Rs.4 Cr. Placement of LOA for balance equipment is under process.
4	ERPC	Creation & Maintenance of web based protection database and desktop based protection calculation tool for Eastern Regional Grid	17.03.16		20 Cr.	4.94 Cr.	1st Milestone completed

5	BSPTCL	Renovation and up-gradation of 220/132/33 KV GSS Biharsharif,Bodhgaya, Fatuha, Khagaul Dehri-on-sone & 132/33 Kv GSS Kataiya	11/5/2015	Feb'2017	64.22 crore	1.219 crore	Project is on going
6		Installation of capacitor bank at different 35 nos. of GSS under BSPTCL	5/9/2016		18.88 crore		Approved (triparty agreement among NLDC, Govt. of Bihar & BSPTCL is in under process)
7		Renovation & up-gradation of protection and control system of 12 nos. 132/33 KV GSS under BSPTCL.					Recommendation of appraisal committee is awaited. Estimated cost 54.69 crore.
8	*DVC*	*Renovation and upgradation of control & protection system and replacement of Substation Equipment of 220/132/33 kV Ramgarh Substation*					*Submitted on 30.03.16. Reply/comments of appraisal committee is awaited.*
9		*Renovation and upgradation of control & protection system including replacement of substation equipment at Parulia, Durgapur, Kalyaneshwari, Jamshedpur, Giridih, Barjora, Burnpur, Dhanbad and Burdwan Substation of DVC*					*Submitted on 27.07.16. Reply/comments of appraisal committee is awaited.*
10	*WBPDCL*	*Implementation of Islanding scheme at Bandel Thermal Power Station*					*Submitted on 22.06.16. In 126th OCC, WBPDCL was advised to submit the reply of queries to PSDF Secretariat at the earliest so that the project may be considered in next Appraisal Committee meeting*
11	*OHPC*	*Renovation and up-gradation of protection and control system of OHPC*					*Re-submitted. Reply/comments of appraisal committee is awaited.*

Subsequently, the DPR for following two additional projects were submitted by ERPC on 22.09.2016 for PSDF funding on concurrence by 125th OCC &46th PCC.

1) *Training for Power System Engineers*
2) *Training on Integration of Renewable Energy resources*

DPR for training on Power market trading at NORD POOL Academy for Power System Engineers of Eastern Regional Constituents is also under preparation.

126th OCC appreciated the initiatives taken by ERPC Secretariat and recommended for TCC approval for further submission to PSDF Secretariat.

TCC may approve the following:

I. Post facto approval for following projects DPR of which has already been submitted to PSDF Secretariat:

a. Training for Power System Engineers

b. Training on Integration of Renewable Energy resources

II. Approval for submission of the project "Training on Power market trading at NORD POOL Academy for Power System Engineers" to PSDF Secretariat

In 33rdTCC, JUSNL and Sikkim informed that they need funds for upgradation of protection system. TCC, therefore advised JUSNL and Sikkim to prepare DPR within a month for up gradation of protection system and send to NLDC for PSDF funding with intimation to ERPC Secretariat.

124th OCC, advised JUSNL to prepare a DPR for renovation and up-gradation of Protection & control system as per the recommendations of ERPC team report and submit their proposals to PSDF appraisal committee.

Subsequently, CE (Transmission), JUSNL vide mail dated 06.10.16 infromed that the for the DPR for protection system under PSDF scheme a tender has been floated and expected to be finalised by the end of this month (i.e. October, 2016). Final DPR to be submitted to Nodal Officer within 3-4 months post finalisation of tender.

Sikkim and JUSNL may update.

ITEM NO. B2:	**11KV Auxiliary power supply of 400KV Berhampore Powergrid Substation**

As per Practice, a 400KV Substation should have two nos auxiliary power supplies from two different sources. Accordingly, an application had been sent to WBSEDCLby PGCIL 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.

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.

In 116th OCC, Powergrid was advised to interact with Director (Dist), WBSEDCL.

In 118th OCC, Powergrid informed that even though duration of power cuts have been reduced but problem of frequent tripping of the line is still not resolved.
To maintain the reliability and availability of 11KV auxiliary supply to Berhampore Substatioon WBSEDCL is to construct the second dedicated line from Sagardighi expeditiously.

But on the same Powergrid informed that money has been deposited to WBSEDCL around two and half years back but there is no progress.

WBSEDCL assured to look into and resolve.

In 119th OCC. WBSEDCL informed that there is ROW issues in some portion of line and it will be resolved soon.

In 126th OCC it was informed that the issue was not yet solved and Berhampore Substatioon is suffereing from unreliable auxiliary supply.

TCC may guide and form a Roadmap for resolving the issue.

ITEM NO. B3:	Status of Bus Splitting schemes in Eastern Region

A. Bus Splitting of Powergrid Sub-stations

As per decision of Standing Committee of ER CTU was entrusted to do Bus splitting at Maithon, Durgapur & Biharsariff S/Ss or ER. The latest status on the same are:

- 400 kV Maithon ---Completed
- 400 kV Durgapur--Completed
- 400 kV Biharshariff—Foundation work has been completed but shutdown are yet to be received to complete the work.

33rd TCC advised BSPTCL to approve the shutdown as soon as the 220kV Tenughat-Biharshariff D/C line will be in service as the work is pending from long time.

The issue was deliberated on several OCC meetings but Bihar has not yet given their consent for shutdown for Biharshariff S/s.

TCC may advise BSPTCL.

Moreover 33rd TCC advised CTU to carry out a final study post bus-splitting and inform ERLDC and ERPC.

CTU is yet to submit the report.

CTU may place the report.

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

In 126th OCC, NTPC has given the present status as follows:

- 400/132kV Switchyard package - bid opened on 14.03.16. Awarded on 04.05.2016.
- Site levelling – Site levelling package awarded, expected to be completed by November, 2016.
- Transformer package and Shunt reactor– have been awarded.

NTPC may update.

ITEM NO. B4:	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 33rd ERPC meeting, Vedanta pleaded for extension of deadline for removal of LILO till November, 2016 as a last extension and assured that maximum efforts will be made to complete the line in schedule. It was also confirmed that deadline for 30th November was asked for after consideration of the ensuing rainy season into account.

ERPC felt that responsibility for the delay in construction of the dedicated system lies with Vedanta only. However, as a final measure, ERPC decided that Vedanta should give an undertaking in affidavit form to CTU and ERPC stating that the dedicated line will be completed by 30.11.2016. Failing which, CTU/ERLDC is authorized to open the LILO with effect from 01.12.2016.

Subsequently, Vedanta Ltd submitted a affidavit on 28th July, 2016 (Copy of the same is attachéd at **Annexure-B4**A).

Subsequently, a special meeting on the issues related to Vedanta Ltd. was held on 14.10.2016 in the presence of CEA, CTU, OPTCL, GRIDCO, Vedanta, ERLDC & ERPC (The minutes of the meeting is placed at **Annexure-B4B***).*

In 126th OCC Vedanta updated that that 59 out of 64 foundations and installation of 35 towers have been completed. They are planning to start the stringing work from this month and the line is expected to be completed by November, 2016. The latest weekly progress report as submitted on 07.11.2016 is attached at **Annexure B4C.**

Vedanta may update. TCC may decide.

ITEM NO. B5:	**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.

In 33rd ERPC, Sikkim placed the road map for construction of the bays as follows:

- Tender will be floated by July 2016
- Bid will be opened by August 2016
- Work will be awarded by September 2016
- Bay will be commissioned by December, 2017

In 126th OCC, It was informed that the tender has been floated by Sikkim on 07.10.2016 with opening date of 11.11.2016,

Sikkim may update. TCC may design a new roadmap.

ITEM NO. B6:	**Status of construction of 400 kV Ind-Barath-Jharsuguda D/C line.**

33rd TCC decided that in line with CERC order dated 07.I0.2015 on Petition No. 112/TT'/2013 the LILO may be removed if the target (i.e. July, 2016) is not adhered by Ind-Barath.

It was informed that only stringing of 600 m line is pending and the dedicated line will be commissioned within the schedule.

ERPC decided that on and from 1st August, 2016 IBEUL will not be permitted to do any transaction—Infirm or firm through the LILO

CERC vide order dated 31.05.16 on Petition No. 65/MP/2016 directed that IBEUL would not be allowed injection of infirm power beyond 31.7.2016 through LILO of 400 kV D/C Raigarh-Rourkela Ckt. 1 if the dedicated line is not completed such time.

In 125th OCC on concurrence from GRIDCO, OCC accepted the COD of Unit-1 of IBEUL with derated capacity of 339.6 MW with effective from 00.00 hours of 20.07.16.

Subsequently, CERC vide order dated 31.08.16 on petition No. 134/MP/2016 clarified the following:

Quote:

"……..The Commission allowed the petitioner to inject infirm power upto 31.7.2016 for the purpose of achieving COD of the unit. It is clarified that even infirm power shall not be allowed for injection after 31.7.2016, the petitioner is stated to have achieved COD on 19.7.2016.In our view, the petitioner should commission the dedicated transmission line at the earliest and inject commercial power through dedicated transmission line. From the point of view of grid security, we cannot allow the petitioner to inject firm power through LILO which was basically a temporary arrangement. "

Unquote

In 126th OCC, Ind-Bharath informed that the CEA inspection for the line has been completed on 17.10.16 and PLCC work is In progress. They are expected to complete the line in all respect by first week of November, 2016.

OCC advised IBEUL to submit all the clearances (CEA clearance etc) along with completion of line with readiness of co-ordinated protection and communication system so that a special meeting could be convened a week before commencement of commercial power transaction from IBEUL.

IBEUL may update.

ITEM NO. B7:	**Protection Committee visit to JUSNL Sub-stations**

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

Subsequently, the Protection team had visited 220/132 kV Chandil S/s, Ramchandrapur, Hatia-II & 132/33 kV Adityapur, Hatia-I of JUSNL from 11th to 12th May, 2016 and the final report with reccomendatins and reccomended relay settings of affected substations of JUSNL was published on 29.07.2016.

In 46th PCC, JUSNL informed that they have incorporated the recommended settings at 220 kV Chandil, Hatia-I and 132 kV Hatia-II sub-stations. 220 kV Ramchandrapur & 132 kV Adityapur Substations will be implemented by 1st week of September, 2016.

PCC advised JUSNL to submit a report on improvements observed in protection system performance after implementation of the recommended settings.

JUSNL may update the following:

i) **Status of implementation of recommended settings for lines and ICTs at 220 kV Chandil, Ramchandrapur & Hatia-II and 132 kV Hatia-I & Adityapur sub-stations.**

ii) **Behavior of protection system post –recommendation period.**

iii) Status of overall implementation of recommendations of the protection team.

iv) **Roadmap for implementation of balance recommendations of the protection team.**

ITEM NO. B8:	**Continuous tripping in 400kV Binaguri-Bongaigaon and 220kV CHPC-Birpara sections.**

Repeated tripping of 400kV Binaguri-Bongaigaon sections and 220kV CHPC-Birpara-I & II have been observed in the recent past. The details of trippings are indicated at the **Annexure-B8**.

In 48th PCC, Powergrid explained that it is a lightening prone area and repeated faults are being occurred due to insulators failure.

Powergrid informed that they will replace the porcelain insulators with polymer insulators up to Bhutan boarder.

PCC felt that Bhutan also has to take corrective action to prevent the number of trippings.

ENCIL/Bhutan may explain.

ITEM NO. B9:	**Frequent uncoordinated tripping in BSPTCL(Purnea, Biharshariff&Begusarai) and OPTCL systems (Mendhasal, Meramundali) System**

For the last few months, system disturbances as well as multiple elements tripping in the EHV network of OPTCL & BSPTCL are occurring frequently. These disturbances are mostly either related to protection system mal-operation or non-operation of protection system at OPTCL & BSPTCL system. Some of the instances of disturbance are:

A) At Bihar System

- Total Power failure at 220/132kV Purnea (BSPTCL) &Madhepura S/s on 31-07-16 at 09:45 hrs.
- Total Power failure at 220/132kV Purnea (BSPTCL) &Madhepura S/s on 14-08-16 at 12:32 hrs.
- Total Power failure at 220/132kV Purnea (BSPTCL) &Madhepura S/s on 19-08-16 at 17:11 hrs.
- Total Power failure at 220/132kV Purnea (BSPTCL) &Madhepura S/s on 31-08-16 at 19:53 & 22:12 hrs.
- Total Power failure at 220/132kV Purnea (BSPTCL) &Madhepura S/s on 12-09-16 at 22:40 hrs.
- Total Power failure at 220/132kV Purnea (BSPTCL) &Madhepura S/s on 27-09-16 at 19:00 hrs
- Multiple elements tripping at 400/220/kV Biharshariff (PG/BSPTCL) &Begusarai S/s on 24-06-16 at 00:15 hrs.
- Multiple elements tripping at 400/220/kV Biharshariff (PG/BSPTCL) &Begusarai S/s on 26-06-16 at 07:28 hrs.
- Multiple elements tripping at 400/220/kV Biharshariff (PG/BSPTCL) &Begusarai S/s on 07-09-16 at 03:57 hrs.
- Multiple elements tripping at 400/220/kV Biharshariff (PG/BSPTCL) &Begusarai S/s on 18-09-16 at 09:28 hrs.

B) At OPTCL System

- Disturbance at 400/220kV Mendhasal S/s of OPTCL System on 11-06-16 at 16:30 hrs.
- Disturbance at 400/220kV Meeramandali S/s of OPTCL System on 11-07-16 at 06:21 hrs
- Disturbance at 220kV BudipadarS/s of OPTCL System on 14-07-16 at 16:33 hrs

BSPTCL & OPTCL may kindly apprise TCC actions taken / planned to be taken to prevent unwanted tripping in respective system along with the expected date by which all protection related shortcomings would be eliminated.

TCC may please guide.

ITEM NO. B10:	Submission of detailed disturbance report for PCC Meeting

Constituents of Eastern Region on many occasions in the recent past have failed to provide requisite data and detailed timely report with DR., EL etc. to ERPC/ERLDC for disturbances in respective control area. Thereby PCC faced immense difficulties in meaningful analysis and concluding the incidences with remedial actions/suggestions for system improvement. As a result time and again same type of disturbances are plaugeing the grid. This is a serious concern for the eastern grid.

Therefore PCC in its last meeting (44th) held on 8.6.16 decided that from now onwards for all the disturbances constituents should submit a detailed disturbance report, at least 10 days before PCC meeting, containg the following information:

- **Single line diagram of the affected area/region**
- **Pre fault conditions**
- **Tripping incident details with proper relay indication**
- **Disturbance record**
- **Analysis of the tripping incident**
- **Conclusion**
- **Remedial measures taken**

These reports will be placed as agenda item of PCC meeting along with further queries by ERPC/ERLDC, if any.

Subsequently in PCC meeting concerned constituents have to place their incidences with all details.

Non-compliance of the above mentioned PCC decision will be taken a violation of clause 5.9 of IEGC and will be accordingly reported to CERC

Moreover even after repeated advice from TCC/ERPC, representatives from SLDCs are still not attending PCC meeting in most of the cases.

In 33rd TCC, after detailed deliberation, TCC advised all constituents to take serious actions to send the requisite information as bulleted in time. TCC decided that non submission of requisite information will be treated as non-compliance of clause 5.9 of IEGC and will be accordingly reported to CERC.

TCC also advised all constituents to send their SLDC personnel along with concerned officer from protection division to attend the monthly PCC in ERPC.

All constituents agreed to submit the requisite information in time and agreed to send their SLDC personnel along with concerned officer from protection division to attend the monthly PCC in ERPC.

ERPC advised secretariat to give regular feedback to board members on non-compliance.

The status of data submission by ER constituents is as given below:

Sl No	Name of the incidence	Status of the detailed disturbance report
	45th PCC Meeting:	
1.	Disturbance at 400/220kV Mendhasal S/s and 220kV Nayagarh of OPTCL System on 11-06-16 at 16:30 hrs	Submitted
2.	Disturbance at 400/220kV Indravati (PG) and 400/220kV Indravati (OPTCL) S/s on 11-06-16 at 19:59 hrs	Submitted
3.	Disturbance at Siliguri 220/132 kV (Powergrid) S/s on 11-06-16 at 01:39 hrs	Submitted
4.	Total Power failure at 220/132kV Biharsharif S/s of BSPTCL system on 24-06-16 at 00:15 hrs	**Disturbance record:** Not Submitted **Detailed analysis of tripping incident:** Not Submitted **Remedial action taken :** Not Submitted
5.	Total Power failure at 220/132kV Biharsharif S/s of BSPTCL system on 26-06-16 at 07:28 hrs	**Disturbance record:** Not Submitted **Detailed analysis of tripping incident:** Not Submitted **Remedial action taken :** Not Submitted
	46th PCC Meeting:	
6.	Disturbance at 400/220 kV Meramundali S/s on 11-07-16 at 06:21 hrs	Submitted
7.	Disturbance at 220/132kV Budhipadar S/s of OPTCL System on 14-07-16 at 16:33 hrs	Submitted
8.	Multiple elements tripping at 132kV Purnea (PG) and 132kV Purnea (BSPTCL) system on 31-07-16 at 09:45 hrs	Submitted
	47th PCC Meeting:	
9.	Disturbance at 220 kV Bakreswar (WBPDCL) S/s on 19-08-16 at 13:39 hrs	Submitted
10.	Disturbance at 220 kV Sasaram S/s on 28-08-16 at 10:38 hrs & 11:10 hrs	Submitted
11.	Disturbance at 220 kV Khagul (BSPTCL) S/s on 30-08-16 at 19:18 hrs	**Disturbance record:** Not Submitted
12.	Multiple elements tripping at 132kV Purnea (PG) and 132kV Purnea (BSPTCL) system on 19-08-16 at 17:11 hrs	**Disturbance record:** Not Submitted
13.	Tripping of 3 X 100 MVA, 220/132 kV ICT at Madhepura on 31-08-16 at 19:53 hrs	Submitted
14.	Tripping of 220 KV Purnea-Madhepura line I & II on 31-08-16 at 22:12 hrs	Submitted
15.	Multiple elements tripping at 132kV Purnea (PG) and 132kV Purnea (BSPTCL) system on 14-08-16 at 12:32 hrs	Submitted
	48th PCC Meeting:	
16.	Disturbance at 220/132 kV NJP System on 01.09.2016 at 09:40 hrs	Submitted
17.	Disturbance at 220kV Tarkera S/s on 22-09-16 at 15:38 hrs	Submitted
18.	Disturbance at 400kV Khahalgaon S/s on 28-09-16 at 06:50 hrs	Submitted

19.	Disturbance at 400 kV Baripada S/s on 28.09.16 at 10:08 hrs	Submitted
20.	Tripping of Tenughat U # 2, Patratu U # 10 and 400/220kV, 315 MVA ICT-I , II & III at Biharshariff S/s on 02.09.16, 19:32 hrs	Report not received from PGCIL, JUSNL & BSPTCL
21.	Disturbance at 400kV Biharshariff (PG) and 220 kV Biharshariff S/s (BSPTCL) on 07-09-16 at 03:59 hrs	Submitted
22.	Tripping of 220 KV Biharshariff - Begusarai D/C line on 18-09-16 at 09:28 hrs	Submitted
23.	Tripping of 220 KV Biharshariff - Fatuha D/c line on 20-09-16 at 15:44 hrs	Submitted
24.	Disturbance at 132 kV Purnea S/s on 12-09-16 at 22:40 hrs	**Disturbance record:** Not Submitted
25.	Disturbance at 132kV Purnea and 220kV Madhepura S/s on 27-09-16 at 19:00 hrs	**Disturbance record:** Not Submitted

TCC may advice.

ITEM NO. B11:	**Status of PCC recommendations**

Based on the deliberation in the meetings, PCC advised several recommendations for overall improvement of the protection system. The recommendations given by the PCC forum post 33rd TCC/ERPC meetings are as given below:

Name of the incidence	PCC Recommendation	Latest status
45th PCC Meeting:		
Disturbance at 400/220kV Mendhasal S/s and 220kV Nayagarh of OPTCL System on 11-06-16 at 16:30 hrs	PCC advised OPTCL to install PLCC system in following 220kV lines and make the auto reclose feature in to service: • 220 kV Mendasal Nayagarh • 220 kV Nayagarh – Bhanjanagar • 220 kV Mendasal – Bhanjanagar	
Disturbance at 400/220kV Indravati (PG) and 400/220kV Indravati (OPTCL) S/s on 11-06-16 at 19:59 hrs	*PCC advised the following:* • *OHPC should check and restore the bus bar protection at 220 kV Indravati (OHPC) S/s.* • *PCC felt that 400/220kV ICT-I&II should clear the fault on backup overcurrent protection before tripping of 400kV lines from PG end and advised OHPC to install directional O/C relays at both HV & LV side of 400/220kV ICT-I&II. Proper time coordination should be done with the adjacent line relays.* • *It was felt that since the fault was already cleared from 220kV Theruvali end on zone 2, Bhanjanagar end distance relay of 220 kV Theruvali-Bhanjanagar – II should not trip on zone 3. OPTCL was advised to check the zone 3 timing of Bhanjanagar end distance relay.* • *PCC felt that increasing zone 3 time at Jeypore end of 400KV Jeypore-Indravati line to 1.5 sec may delay the fault clearing time and advised PGCIL to*	

	implement the zone 3 time settings of respective relays as follows: o *Zone 3 time setting of 400KV Indravati(PG)-Indravati(OHPC) line at Indravati (PG) end -----0.8 sec* o *Zone 3 time setting of 400KV Jeypore-Indravati (PG) line at Jeypore end -1.1 sec*	*Complied*
Disturbance at Siliguri 220/132 kV (Powergrid) S/s on 11-06-16 at 01:39 hrs	*PCC felt that 132 kV Siliguri- Kurseong line should not trip on directional O/C, E/F protection from Siliguri end as the fault was in reverse direction and advised PGCIL to check the directional feature of the relay.*	
46th PCC Meeting:		
Multiple elements tripping at 132kV Purnea (PG) and 132kV Purnea (BSPTCL) system on 31-07-16 at 09:45 hrs	*PCC advised BSPTCL to check all the distance relays at Forbisganj end and take the appropriate action to restore the protection system.*	
Total Power failure at 220/132kV Biharsharif S/s of BSPTCL system on 24-06-16 at 00:15 hrs	*PCC advised BSPTCL to submit the schematic diagram and other connectivity details of REF protection of 150 MVA, 220/132kV ATR-I.*	
47th PCC Meeting:		
Disturbance at 220 kV Bakreswar (WBPDCL) S/s on 19-08-16 at 13:39 hrs	*PCC advised WBPDCL to check the CB at Bakreswar end of 220 kV Bakreswar – Gokhorno –I line.*	
Disturbance at 220 kV Sasaram S/s on 28-08-16 at 10:38 hrs & 11:10 hrs	*PCC advised the following—* ➢ *Any transmission line of 132 kV and above voltage level should not be made T-connection without any prior intimation to ERLDC/ERPC. BSPTCL should remove the T-connection of 132 kV Sasaram-Nadokhar at Kudra Substation at the earliest.* ➢ *The distance protection settings of 132 kV Sasaram- Nadokhar line need to be reviewed at both the end for the T-Connection of the line at Kudra S/s.* ➢ *BSPTCL was advised to review the E/F settings of lines and recommended to adopt directional feature with IDMT characteristics.* ➢ *BSPTCL was also advised to check the CB opening timings at Nadokhar end.*	
Disturbance at 220 kV Khagul (BSPTCL) S/s on 30-08-16 at 19:18 hrs	*PCC advised the following—* ➢ *The reverse zone protection may be implemented for all the 220 kV and 132 kV lines as per the Protection Philosophy of ER (In SEL311 the Z3 (reverse) may be used for Z4-Reverse zone protection & Z4 (forward) may be used for Z3 zone protection).* ➢ *To review the E/F settings of all 220 kV and 132 kV lines with recommendations to adopt directional feature with IDMT characteristics.*	

Tripping of 132kV BTPS-Bighati line-1 and subsequent tripping of BTPS Unit #1, 2, 4 & 5 at 11:05 hrs on 01.09.2016	*PCC advised WBSETCL and WBPDCL to review the relay settings of BTPS and Bighati end bilaterally with intimation to ERPC/ERLDC.*	
Special meeting convened on 18-04-2016 for blackout of Kanti TPS at ERPC, Kolkata		
Total station power failure (Blackout) incident at Kanti TPS on 07.04.16.	In the special meeting the following decisions were taken: a) As a temporary measure, zone 1 and zone 2 time setting of all 220kV and 132kV lines at Kanti TPS end should be changed to instantaneous and zone 3 time setting as 200ms in order to clear the downstream faults from Kanti TPS end. b) Powergrid was advised to change the zone 3 time settings at Muzaffarpur (PG) end as per protection philosophy of ERPC. c) NTPC and Powergrid were advised to activate the PLCC scheme for 220kV Muzaffarpur-Kanti D/C by 26th April, 2016 and give feedback in 42nd PCC Meeting. d) On activation of PLCC system, Powergrid is to change the zone 2 time setting at Muzaffarpur (PG) end as per protection philosophy of ERPC. e) BSPTCL was advised to check the clearance between cross arm and jumper and rectify if required. f) BSPTCL was advised to review the protection system and relay coordination of 220kV Gopalgunj, Darbhanga and Begusarai and all 132kV feeders in around Kanti. Therefore, BSPTCL was advised to submit their relay details to Powergrid by 22nd April, 2016 for review. Powergrid was requested to study the details and give feedback in 42nd PCC Meeting scheduled to be held on 27th April, 2016. g) It was decided that the above temporary measure will be followed, till BSPTCL protection system is full proof. Further course of action will be decided in PCC Meeting for relay coordination in BSPTCL system in and around Kanti TPS	In 42nd PCC, Kanti TPS, NTPC informed that zone settings at their end have been revised as per the recommendation. Regarding activation of PLCC scheme for 220kV Muzaffarpur-Kanti D/C line NTPC informed that cabling has been done but some parts in PLCC panels were defective and needs to be replaced. Powergrid informed that they have not yet revised the zone 3 time setting at Muzaffarpur (PG) end.

Respective constituents may update the latest status.

ITEM NO. B12:	Status of PLCC system installed in Eastern Region

a) Restoration of PLCC system of important lines of JUSNL

In 119th OCC, JUSNL informed that the following:

i) In 220 KV Chandil –Ramchandrapur line auto-reclosure has been enabled and linked with PLCC panels on 09.03.16.
ii) In 220 KV Chandil –Ranchi line auto-reclosure has been enabled and termination done in PLCC panels (Auto-reclosure will be in service after testing of PLCC scheduled on 22.03.16)
iii) In 220 KV Chandil –Santaldih line auto-reclosure has been enabled and termination done in PLCC panels at Chandil end but due to non-availability of PLCC panels at Santaldih(WBPDCL) end the A/R and PLCC scheme could not be activated.
iv) In 220 KV Ramchandrapur-Joda line auto-reclosure has been enabled and termination done in PLCC panels at Ramchandrapur end but due to non-availability of PLCC panels at Joda (OPTCL) end the A/R and PLCC scheme could not be implemented.

In 33rd ERPC, WBPDCL and OPTCL agreed to settle the issue bilaterally with JUSNL. JUSNL was advised to resolve the AMC related issues with West Bengal & Odissa. All are requested to inform the development to CERC.

In 126th OCC, OPTCL informed that the order has been placed for PLCC panels and supply is expected by December, 2016.

WBPDCL informed that PLCC panels are expected to be delivered by mid November, 2016 and installation by December, 2016.

JUSNL, OPTCL and WBPDCL may update.

b) Restoration of PLCC system of important lines of OPTCL and BSPTCL

The lates status of PLCC on the following important lines of OPTCL are:

1. Jeypore(PG)-Jayanagar (Commn. in OPGW exists)
2. Rourkela(PG)-Tarkera (Commn. in OPGW exists)
3. Rengali(PG)-Rengali S/Y (Proposal for Commn. in OPGW is pending)
4. 4.Indravati(PG)-Indravati(PH) (Proposal for Commn. in OPGW pending)
5. 5.Baripada(PG)-Baripada (Tendering in Progress for OPGW)
6. 6.Baripada(PG)-Rairangpur (Tendering in Progress for OPGW)

The lates status of PLCC on the following important lines of BSPTCL (as informed in 33rd TCC ERPC) are:

1. 220kV Patna-Fatua S/C line---Will commission the PLCC system within 3 months
2. 220kV Patna-Khagul S/C line---Will commission the PLCC system within 3 months
3. 220kV Gaya-Dehri D/C line---Will commission the PLCC system within 3 months
4. 220kV Gaya-Bodhgaya D/C line---The line is under breakdown. After coming of line in service, the work will be completed within another one month.

Further, in PCC meetings the need of PLCC system was felt for the following lines of BSPTCL:

1. *220kV Purnea (PG)-Madhepura line*
2. *220 kV Bihar shariff- Begusarai line*
3. *220 kV Bihar shariff- Bodhgaya line*

} *UNDER JURISDICTION OF BSPTCL*

OPTCL and BSPTCL may update.

ITEM NO. B13:	**Non-commissioning of PLCC / OPGW and non-implementation of carrier aided tripping in 220kV and above lines**

According to CEA technical standard for construction of electric plants and electric lines -Clause 43(4) (c), transmission line of 220 KV and above should have single-phase auto-reclosing facility for improving the availability of the lines. However, from the tripping details attached June-August, 2016 it is evident that the some of 220kV above Inter & Intra-Regional lines do not having auto-reclose facility either at one end or at both ends. Out of these for some of the lines even PLCC/OPGW is not yet installed and carrier aided protection including Autorecloser facility is not yet implemented. Based on the trippings of June- August, 2016 and PMU analysis a list of such lines has been prepared and as given below:

List of line where auto reclose facility is not available(Information based on PMU data analysis)

S. No	Transmission Lines name	Date of Tripping	Reason of Tripping	Owner Detail		Present Status	
				End-1	End-2	OPGW/PLCC Link available	AR facility functional
1	400 KV ANGUL -TALCHER	02.06.16	B-N FAULT	PGCIL	NTPC		
2	400 KV BIHARSARIFF-VARNASI-I	07.06.16	B-N FAULT	PGCIL	PGCIL		
3	400KV BIHARSARIFF - BANKA-II	12.06.16	Y - N FAULT	PGCIL	PGCIL		
4	220KV SASARAM-SAHUPURI	12.06.16	B - N FAULT	PGCIL	UPTCL		
5	400 KV TALA -BINAGURI -IV	13.06.16	B - N FAULT	Durk Green	PGCIL		
6	400 KV KODERMA-BOKARO-I	14.06.16	B-N FAULT	DVC	DVC		
7	400 KV FARAKKA-KAHALGAON-IV	15.06.16	R-N FAULT	NTPC	NTPC		
8	400 KV MUZAFFARPUR-BIHARSARIFF-II	17.06.16	Y-N FAULT	PGCIL	PGCIL		
9	400 KV MERAMUNDALI-NEWDUBRI - I	20.06.16	B-N FAULT	OPTCL	OPTCL		
10	400KV PATNA-BALIA-II	21.06.16	B-N FAULT	PGCIL	PGCIL		
11	400KV PATNA-KISHANGANJ-II	21.06.16	Y-N FAULT	PGCIL	PGCIL		
12	400KV PATNA-BALIA-I	21.06.16	R-N FAULT	PGCIL	PGCIL		

13	220KV BUDIPADAR-KORBA-II	23.06.16	Y-N FAULT	OPTCL	CSEB		
14	400 KV ARAMBAGH - BIDHANNAGAR	02.07.16	Y-N FAULT	WBSETCL	WBSETCL		
15	400 KV FARAKKA-DURGAPUR-I	06.07.16	Y-N FAULT	NTPC	PGCIL		
16	400 KV NEW RANCHI - CHANDWA - I	13.07.16	B-N FAULT	PGCIL	PGCIL		
17	220 KV TSTPP-RENGALI	17.07.16	EARTH FAULT	NTPC	OPTCL		
18	220KV BUDIPADAR-RAIGARH	21.07.16	EARTH FAULT	OPTCL	PGCIL		
19	400 KV KOLAGHAT-KHARAGPUR	03.08.16	Y-N FAULT	WBPDCL	WBSETCL		
20	220 KV FARAKKA-LALMATIA	03.08.16	B-N FAULT .	NTPC	JUNSL		
21	400 KV PURNEA-MUZAFARPUR-I	03.08.16	R-N FAULT	PGCIL	PGCIL		
22	400 KV GAYA - CHANDWA - II	04.08.16	B-N FAULT .	PGCIL	PGCIL		
23	220 KV MUZAFFARPUR - HAZIPUR - II	10.08.16	B-N FAULT	PGCIL	BSPTCL		
24	220 KV ROURKELA - TARKERA-II	11.08.16	B-N FAULT	PGCIL	OPTCL		
25	220 KV CHANDIL-SANTALDIH	25.08.16	R-N FAULT	JUSNL	WBPDCL		
26	400 KV MPL-RANCHI-II	02.09.16	R-N FAULT	MPL	PGCIL		
27	220 KV BIHARSARIF-TENUGHAT	07.09.16	B-N FAULT	BSPTCL	TVNL		
28	400KV MERAMANDALI-STERLITE-II	10.09.16	Y-N FAULT	OPTCL	SEL		
29	220 KV RAMCHANDRAPUR - CHANDIL	22.09.16	B-N FAULT	JUSNL	JUNSL		
30	400KV SEL - MERAMUNDALI-I	22.09.16	B-N FAULT	SEL	OPTCL		
31	400 KV KOLAGHAT - CHAIBASA	28.09.16	B-N FAULT	WBPDCL	PGCIL		

Respective members may update the status.

ITEM NO. B14:	**Non-commissioning / non-functional status of bus-bar protection at important 220 kV Sub-stations**

It has been observed that at many 220 kV substations particularly that of STU, bus-bar protection is either not commissioned or non-functional. The non-availability / non-functionality of bus bar protection, results in delayed, multiple and uncoordinated tripping, in the event of a bus fault.This in turn not only results in partial local black out but also jeopardises the security of interconnected national grid as a whole. The matter was also pointed out during the third party protection audit which is being carried out regularly. Constituents are required to meet the audit compliance and commission or made bus –bar protection functional where ever it is not available. A list of such important 220 kV sub-stations as per the first third party audit is placed below:

Bus Bar Protection not availble (reccord as per third party protection audit)

Bihar				
Sl No	**Name of Substation**	**Bus Bar protection status**	**Date of audit**	**Present Status**
1	220 kV Bodhgaya	Not available	28-Dec-12	
Jharkhand				
1	220 kV Chandil	Not available	29-Jan-13	
2	220 kV Ramchandrapur	Not available	29-Jan-13	
3	220 kV Tenughat	Not available	12-Apr-13	
DVC				
1	220 kV Jamsedpur	Not available	10-Apr-13	
Odisha				
1	220 kV Mermandali	Not functional	30-Dec-12	
West Bengal				
1	220 kV Arambah	Not available	24-Jan-13	
2	220 kV Jeerat	Not available	20-Dec-12	
3	220 kV Kolaghat	Not available	19-Dec-12	
4	220 kV Howrah	Not available	26-Mar-13	
Powergrid				
1	220 kV Silliguri	Not available	30-Mar-13	
2	220 kV Bolangir	Not available	31-Mar-13	

Members may discuss.

ITEM NO. B15:	**Reduced security of S. Odisha system due to non-availability of tie CB between 125MVAR Bus reactor and 400kV Indravati-Indravati and Indravati(PG) at Indravati(PG) 400kV S/Stn**

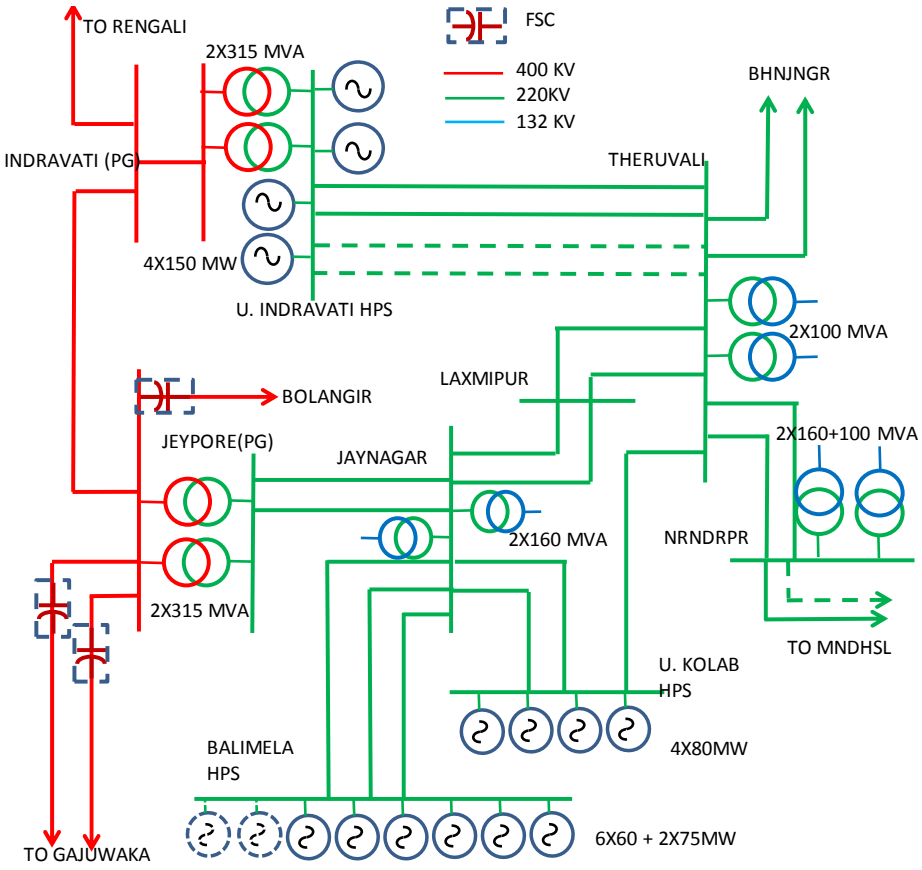
The aforesaid tie bay is under outage wef 18/03/16 due to bursting of R-Ph pole of the Tie CB. Due to non-availability of the tie bay, the 400kV buses at Indravati (PG) are coupled only via the tie bay of 400kV Rengali-Indravati and 400kVIndravati-Jeypore lines and outage of any of the lines would result in decoupling of the Buses.

In the forthcoming lean hydro season, the power requirement of S. Odisha system as well as of S. Region (through 400kV Jeypore-Gajuwaka D/C) is expected to remain high. Power flow towards Jeypore through the only other parallel 400kV link Angul-Bolangir-Jeypore S/C may also be high in view of the interconnection of OPTCL at Bolangir 400/220kV S/Stn.

Further, in a report submitted during the 48th PCC meeting, PGCIL has identified some shortcomings in and around Bolangir and Jeypore, which could be responsible for overvoltage tripping of 400kV lines from Jeypore, under certain conditions. Copy of the report is enclosed at **Annexure-B15**. A detail study to establish the exact reasons and identify the required remedial measures is under process.

The existing PDO to reduce power flow through HVDC Gazuwaka in the event of a contingency in S. Odisha, being 10 years old,certain modifications in the PDO were also suggested in earlier PCC / OCC meetings wherein other constituents were requested to furnish their valuable observations, if any.

In view of all the above factors, compliance to (n-1) security standards in S. Odisha system may not be ensured at all times.



TCC may guide for ensuring reliable operation of the grid under all conditions.

ITEM NO. B16:	Mock Blackstart of Chujachen HPS with Gangtok load in islanded mode

As per IEGC Section 5.8(b), hydro units with black-start facility need to carry out mock black start exercise twice in a year. Black-start or self-start feature is already implemented for the 2X55MW hydro units of Chujachen HPS. While finalizing the mock black start plan of hydro plants in Eastern Region it was agreed that, CHEP would idle-charge 132kV CHEP- Gangtok line from the station, pick-up radial load of Gangtok and run in islanded mode. As during the mock black start exercise load of Gangtok will be fed from black started unit of CHEP in radial mode, there will be interruption of power at Gangtok for 15 to 20 minutes in order to completely isolate the 132kV S/Stn from both Rangpo and CHEP, before extension of power from CHEP in islanded mode. To minimize the effect of the outage it is proposed that the exercise may be carried out in day off peak hours. As per the schedule of Mock Exercise in E.Region, CHEP needs to carry out the exercise in the month of December 2016.

Sikkim may accord their consent for the same.

TCC may decide a suitable date for carrying out this exercise.

ITEM NO. B17:	Mock Black start exercises in Eastern Region

The Black-start operation of Purulia Pump Storage Project (PPSP), WBESDCL was deliberated in several OCC meetings. Subsequently, WBSEDCL has applied to CERC for exemption from Black Start mode and RGMO operation

CERC vide order dated 04.07.13 on Petition No. 149/MP/2012 directed that WBSEDCL to provide black –start facility after finalizing a suitable scheme in consultation with ERLDC through WBSEDCL

Subsequently, APTEL vide order dated 21.11.2015 on the Appeal No. 60 (filed by WBSEDCL) directed CEA to submit a report on the feasibility of black start of PPSP units.

Further, APTEL vide order dated 31.05.16, based on CEA report dated 18.04.16, direcccted CERC to ensure implementation of the recommendations of CEA within 6 months of the date of order.

The relevant extracts of CEA report is as placed below:

Quote

9.2.1 Considering the DG facilities available in Purulia PSP, the black start – of machine and 400kV GIS bus charging is possible without any scheme modification. However, as far as charging of associated 400 kV transmission line is concerned, it would require changes, in protection scheme and CB trip logic, in view of high capacitive in rush current which exceeds the generator circuit breaker (GCB) capacitive current rupturing capability. As such the closing /opening/ tripping of GCB on 16.5 kV side shall have to be blocked during line charging mode of operation. The closing /opening/ tripping during line charging shall be provided on 400kV CB of unit & line side. To safequard against mal-operation of CB, it is suggested that both incoming & line side 400kV breakers may be used in main & back-up configuration. The safe switching scheme needs to be worked out by stakeholders in association with original manufacturer (OEM).

9.2.2 Implementation of scheme for black start of unit and subsequent line charging needs to be worked out in consultation with the manufacturers of respective equipment (Generator, Excitation, Protection, Controls, GCB and GIS), System Operator, State transmission utilities and ERPC.

9.2.3 Necessary field trial of scheme (starting with application of reduced voltage) shall be performed as per implementation protocol finalised among various stakeholders.

10.2.1 Black Start mode of operation scheme can be implemented, however, it would require changes in protection philosophy.

10.2.2 The various equipment connected with black start operation are supplied by M/s. Mitsui, Japan, as such the simulation studies and design changes in protection scheme must be done in consultation with OEM, system-operator, state transmission utilities (STU) and ERPC.

Unquote

WBSETCL vide letter dated 27.09.16 on the issue communicated the system modification around PPSP and requested for conducting studies regarding the Black start at PPSP with the proposed connectivity with all reactors as per the direction of CERC

In 126th OCC, ERLDC infrformed that the PPSP can be run into Black Start mode with the present loading scenario and the future modification of system network may bbe considered after the commissioning of future elements.

WBSETCL was advised to submit the reasons for not performing the black start operation of PPSP with all the justifications.

OCC refer the issue to TCC for further guidance.

WBSEDCL/WBSETCL may place the technical justification for not performing the black start operation of PPSP

TCC may guide.

ITEM NO. B18:	Interruption of real time data to all control centres in ER

There was a total failure of real time SCADA data to all control centres from 05:53 Hrs of 08-August-16. As an interim arrangement, real time SCADA data was restored on 10-August-16 at 03:19Hrs. The root cause was yet to be arrived and fixed.

In 124th OCC, Powergrid informed that there was some problem in Patna SLDC due to which one ICCP link failed which caused the interruption of data.

OCC advised Powergrid to provide redundancy for communication equipment system / route diversity of communication link / redundancy at both the control centres. Powergrid was also advised to submit a report on the incident and action taken.

In 125th OCC, Powergrid submitted the report which is enclosed at **Annexure-B18**.

OCC advised all the constituents to go through the report and give their feedback, if any.

In 126th OCC, it was raised that in case of failure of ICCP link/other communication equipment, the data availability needs to be assured at Back-up control centres.

OCC advised Powergrid to submit in 34th TCC their detail plan for data redundancy in case of failure of any one communication system at either of the control centres (Main & Back-up).

OCC referred the issue to TCC for guidance

Powergrid may update.

ITEM NO. B19:	Writ Petition on 220 kV Farakka-Lalmatia Transmission System [W.P.No. 17044 (W) of 2015 before Hon'ble High Court at Calcutta]

On a **Writ Petition [W.P.No. 17044 (W) of 2015 before Hon'ble High Court at Calcutta] field by ECL on issue of transferring 220 kV Farakka-Lalmatia Transmission System and its O&M,** ERPC Secretariat in line with decision of 32nd ERPC engaged a legal firm namely M/s Custos Legis, 2A Ganesh Chandra Avenue, 3A Second Floor, Commerce House, Kolkata-13 for the purpose.

Honerable Calcutta High court delivered the judgement on 23.09.2016 which is given in **Annexeure-B19** for information.

In line with decision of 32nd ERPC, the expenditure for the case was charged against ERPC establishment fund. Total expenditure incurred is Rs. 12,03,000/- (Rupees twelve lakh three thousand only)

Now it is placed before the TCC for accord of ex-post facto approval for the expenditure.

TCC may accord the Post facto approval for the balance expenditure.

ITEM NO. B20:	Consideration of 400kV lines/line segments owned and maintained by DVC as ISTS lines

DVC vide letter dated 11.08.2016 informed that the following 400kV lines/line segments owned by DVC and carrying inter-state power as ISTS lines:

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

The 400 kV lines under sl no. 1 & 2 are already a part of ISTS lines owned /maintained by CTU for transmitting inter-state power and hence liable to declared as ISTS lines.

In case of lines under sl no. 3 & 4 an in house study has been carried out by DVC in consultation with ERLDC to ascertain flow of ISTS Power through these linesunder different loading conditions and the preliminary study suggests that the 400 kV RTPS-Ranchi(PG) line is of vital importance in relieving the quantum of power transfer through the existing 400 kV Maithon (PG)- Ranchi(PG) line (D/C line with single ckt LILOed at RTPS, DVC) under different contingent conditions. Both the said lines also plays a vital role in evacuation of power from RTPS (2x600 MW) and DSTPS (2x500 MW) to the Central Grid relieving the existing ISTS lines from getting overloaded under contingent conditions, thereby bringing stability in the Eastern grid.

The matter was discussed in 4th SSCM held on 06.06.16 and as directed the details of above four lines along with findings on in-house study were submitted and given at **Annexure- B20**.

The issue was placed in 126th OCC wherin ERLDC explained that according to CERC regulation, for the certification of ISTS lines the load flow study should be done using WebNet software developed by IIT Bombay. As the present report submitted by DVC is not based on that software so it cannot be accepted.

DVC informed that at present time WebNet is not available to users due to some technical problem in software. So they performed the study using another software.

It was also informed that the lines of OPTCL and WBSETCL are also pending for declaration of ISTS lines because of study by WebNet software. So there should be some solution for carrying out study for declaration of ISTS lines.

OCC felt that this issue need deliberation in the presence of CTU and NLDC and referred the issue to next TCC.

TCC may guide.

ITEM NO. B21:	Payment of Deviation Charges -- present status

As informed by ERLDC, the status of Deviation Charge payment as on 24.10.2016 is enclosed at **Annexure—B21**. The current principal outstanding Deviation Charge of BSPHCL & JUVNL is **Rs. 19.98 Cr & Rs. 21.17 Cr** respectively considering bill up to 09.10.2016. Moreover, an interest amount of **Rs. 1.71 Cr** (as on 24.10.2016) is also payable by JUVNL due to delay payment of DSM charges. BSPHCL and JUVNL have not paid the deviation charge since 16.07.16 and 27.09.16 respectively.

In last CCM, JUVNL representative was absent.

ERLDC updated that BSPHCL had liquidated a substantial portion of outstanding of around 11.65 Cr. No payment had been received from JUSNL. ERLDC informed that there were substantial outstanding against Sterlite/Vedanta also.

BSPHCL representative assured that balance payment would be settled within a months time.

Members advised ERLDC to apply section 25 A of Short Term Open Access Regulations in line with previous approval of ERPC and deny STOA in case of non clearance of dues by constituents.

Further it was decided that as JUSNL representative was not present the issue of outstanding dues of JUSNL may be brought before the TCC.

TCC may advise.

ITEM NO. B22:	Workshop & Expenditure details

In accordance with the decision of 29th ERPC Meeting, ERPC Secretariat in co-ordination with ERLDC has organized Training cum Workshop on "Power System Protection" held from 30.05.16 to 03.06.16 at ERPC, Kolkata. An expenditure of **Rs. 4.05268 Lacs** incurred for arranging the above workshop have been reimbursed to ERPC from Reactive account on 08.07.2016.

In last CCM, members approved the expenditure of Rs. 4.05268 Lacs for Training cum Workshop on "Power System Protection" held from 30.05.16 to 03.06.16 and recommended to TCC for approval.

TCC may approve.

ITEM NO. B23:	Opening of LC by ER constituents for Deviation Charges Payments

Clause 10 (4) of CERC Deviation Settlement Mechanism and related matters Regulations, 2014 vide notification No. L-1/132/2013/CERC dated 6th January, 2014 to be implemented from 17.02.2014 is reproduced below:

Quote

All regional entities which had at any time during the previous financial year failed to make payment of Charges for Deviation including Additional Deviation Charges for Deviation within the time specified in this regulations shall be required to open a Letter of Credit (LC) equal to 110% of its average payable weekly liability for Deviations in the previous financial year, in favour of the concerned RLDC within a fortnight from the date these Regulations come into force.……..

……..Provided further that LC amount shall be increased to 110% of the payable weekly liability in any week during the year, if it exceeds the previous LC amount by more than 50%.

Unquote

The details of LC amount required to be opened in 2016-17 by ER constituents is given in **Annexure –B23.** Letters to this effect has already been issued by ERLDC to the defaulting entities viz, APNRL, JUVNL, GATI, Sikkim.

In last CCM, Members advised ERLDC to apply the provisions of Section 25A of Short Term open access regulations in case of non opening of LC of requisite quantum.

Referred to TCC for further guidance.

TCC may discuss.

ITEM NO. B24:	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, another 25 new locations required to be added under AMR project as 3rd phase of implementation.

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%. ERLDC furnished the list of meters already included in AMR and having problems in data sending(to be considered in AMC) along with new locations to be provided AMR and list of meters added in existing locations due to addition of new lines. Meanwhile due to addition of new substation/Generating station, number of new location has been increased to 32. List of new locations with SEMs and Future locations to be incorporated are enclosed in **Annexure-B24.** In 33rd TCC/ERPC**,** PGCIL informed that the order to the vendor was placed for 16 new locations, the required number of locations had increased and negotiations were going on with the vendor for costs.

In last CCM, PGCIL informed that the proposal for 25 new locations was approved at a tentative cost of Rs.1.29 Cr. However, the final requirement as placed was for 32 new locations. In view of the above, the new cost has come around Rs.1.72 Cr including 4years AMC. If approved the same may be put up to TCC for approval.

Members approved Powergrid proposal and recommended to TCC for approval.

ERLDC was requested to make a priority list for substations to be progressively integrated in AMR.

TCC may approve.

ITEM NO. B25:	Issue related to construction of Daltonganj 400/220/132kV S/s(PG)

POWERGRID is constructing Daltonganj 400/220/132Kv substation under ERSS III & ERSS XVII scheme. The construction work is in progress & location of 400Kv & 220Kv gantry tower have been finalised.

In the 1st Meeting of Standing Committee on transmission planning for state sector held on 21.09.15 at 11:00 am at ERPC, Kolkata, it has been discussed regarding connectivity at 220KV & 132KV (JUSNL) to Daltonganj 400/220/132kV S/s(PG) through the 220KV existing Daltonganj-Lathehar charged at 132KV. However the existing 220KV Daltonganj-Lathehar line is passing through Daltonganj (PG) S/s, LILO work of the said line is to be expedited by JUSNL, so that the work at Daltonganj (PG) S/s can be done without hindrance.

In last CCM, as JUSNL/JUVNL representative was not present and the matter pertained to Standing Committee, Member Secretary suggested that the issue may be taken up the ensuing TCC meeting.

JUSNL may update.

ITEM NO. B26:	Outstanding payment towards construction of bay at Biharsharif (PG) sub-station for 400kV Biharsharif-Tenughat line

Powergrid vide letter dated 12.10.2016 informed that in 30th TCC advised to take up the issue for earliest liquidation of payables by JUSNL for outstanding payment towards construction of bay at POWERGRID Biharsharif sub-station for up-gradation of 220kV Biharsharif-Tenughat line to 400 KV level.

JUSNL was requested to take up the matter on priority and release the outstanding payment for early completion of balance work at POWERGRID Biharsharif sub-station.

In 33rd ERPC, JUSNL informed that release of the payment will be made by another month time.

JUSNL may update.

ITEM NO. B27:	Priority-based commissioning of bus reactor for control of high voltage during lean periods

The status as updated in 32nd TCC is as given below:

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.

Powergrid may update the latest status.

ITEM NO. B28:	**Status of Transmission projects approved in various meetings**

The status as updated in 33rd TCC/ERPC meeting on transmission projects approved to various meetings is given below:

Sl No.	Scheme	ERPC/TCC Meeting	Latest status updated in 33rd 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.*

Powergrid may update the latest status.

ITEM NO. B29:	Status of Spare Transformers & Reactors approved in various meetings

The status updated as in 33rd 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 33rd 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

In 126th OCC, It was informed tthat under ERSS-XII package, 02 No's 220/132 KV, 100 MVA ICT has been upgraded by 160 MVA ICT at Birpara & Siliguri S/S. As off now both transformers are kept at respective S/S. If any constituents require the same the transformer may be refurbished for future use otherwise POWERGRID will decide alternatives.

OCC advised all the constituents to intimate Powergrid if there is any requirement of these ICTs

Powergrid may update the latest status.

ITEM NO. B30:	**Ratification of decisions of 18th Standing Committee Meeting on Power System Planning For Eastern Region**

The 18th meeting of Standing Committee on Power System Planning for Eastern Region convened by CEA, was held on 13.06.2016 at Kolkata. Various proposals for system strengthening schemes of Eastern Regional Grid were discussed and finalized. The minutes of the 18th Standing Committee Meeting on were issued vide CEA letter no.66/5/SP&PA-2016/139-150 dated 19.08.16.

As per the decision of 31st & 32nd TCC/ERPC the agenda items of the 18th SCM was deliberated in detail in 4th SSCM held on 06.06.2016 at ERPC, Kolkata. The deliberations of SSCM along with salient features on the important issues were placed before 33rd TCC/ERPC. The minutes is available at CEA (www.cea.nic.in/) and ERPC website (www.erpc.gov.in)

Subsequently, *ERPC vide letter dated 06.09.16 requested for amendments in the minutes of standing committee as per the deliberations of 4th SSCM.*

In response to the ERPC and Powergrid letters, two nos of corrigendum were issued vide CEA letter dated 26.09.2016 and 20.10.2016 respectively..

TCC may ratify the 18th SCM minutes along with the corrigendums.

PART C: ITEMS FOR INFORMATION

TCC may note the following items:

ITEM NO. C1 :	FSTPS Islanding Scheme, NTPC

In 118th OCC, NTPC informed that their part is ready for implementation.

Powergrid informed that the battery charger has been delivered and expected to complete the work by March, 2016.

In 33rd TCC, JUSNL informed that the required materials/works will be completed by 1st July 2016 and PGCIL will be informed accordingly.

TCC advised JUSNL to send an official letter to PGCIL confirming their readiness with a copy to ERPC.

PGCIL informed that they would mobilize the vendor within 10 days after receiving the official communication from JUSNL.

In 126th OCC, Powergrid informed that the PLCC PLCC installation work has been completed and commissioning will be done by 1st week of November, 2016.

NTPC informed that after the commissioning of PLCC, they may require another 30-40 days to complete the cable termination and integration work. After the completion of installation work a special meeting may be convened to co-ordinate the complete implenmentation of the Islanding scheme.

OCC decided that a special meeting may be convened after the completion of all installation and cable termination work by NTPC so that the Islanding scheme may be commissioned by December, 2016.

TCC may note.

ITEM NO. C2 :	Anticipated network constraints in the forthcoming low hydro period, due to non-availability of 400kV Purnea-Biharshaiff D/C and 400kV Patna-Kishanganj D/C lines

400kV Purnea-Biharshaiff D/C and 400kV Patna-Kishanganj D/C lines are under breakdown w.e.f. 23-08-2016 and 26.07.2016 respectively due to unprecedented floods in Ganga and Kankai rivers.

Due to continued inundation of the damaged areas of the above lines it is learnt from ENCIL and PGCIL that restoration of these lines would possibly not be possible in the forthcoming winter / low hydro season.

As power requirement of N. Bengal, N. Bihar, NR, NER, Nepal and Bhutan would be high during the same period, constraints may arise in meeting the full demand of these areas. ERLDC is in the process of carrying out simulation studies to assess the extent of constraints anticipated. Results would be shared with the constituents in the 34th TCC meeting.

TCC may please note

ITEM NO. C3 :	**Transfer capability declaration by the states of E. Region**

It was decided in the NPC meeting that power system study for assessment of operational limits / power transfer capability for each state will be done by the concerned RLDC in association with concerned SLDC. Monthly TTC /ATC will be uploaded by the SLDCs at their respective websites and also communicated to concerned RLDC & NLDC on regular basis, mentioning the assumptions, limiting constraints etc.

TCC members in the 33rd meeting held on 24-06-2016 felt that grid operator should have the information on how much power they can export and import and they should restrict to that figures in order to avoid major grid disturbances.
Accordingly, TCC advised all the constituents to place the details in monthly OCC meetings till they upload the information in their respective websites.
TCC also advised JUSNL to send their representatives to ERLDC so that they could get acquainted with the ATC/TTC calculation procedure.

Subsequently, OCC members in the 120th, 123rd and 124th meetings again advised all the SLDCs to mention the constraints along with ATC/TCC figures

SLDC JUSNL already acquainted themselves with the basic procedure of TTC calculation in the month of September, 2016, by deputing a team of 3 members to ERLDC.

The present status of various SLDCs in this regard is as follows:

- All the states are computing TTC/ATC except Sikkim and JUSNL.
- DVC is calculating their import/export TTC/ATC and uploading in DVC website, without mentioning the assumptions and limiting constraints
- BSPTCL is calculating their import TTC/ATC but neither uploading the information in their website nor declaring the same in OCC meetings.
- WBSLDC is calculating their import TTC/ATC but neither uploading the information in their website nor declaring the same in OCC meetings.
- OPTCL is calculating their import TTC / ATC and sending the detail calculations to ERLDC. They would start uploading the information in their website, after it is redesigned.

In order to ensure, safe and secure operation of the regional grid, it is essential that the states regularly carry out power system study for their operational planning and declare their power transfer capability w.r.t. ISTS through their respective transmission links with the rest of the grid for both peak and off-peak conditions on monthly basis.

Since declaration of TTC/ATC by states together with their respective assumptions and limiting constraints on regular basis is getting inordinately delayed, TCC may kindly pursue the matter with the states with topmost priority and finalize a date for publication of this important information by

all SLDCs either in their websites or in the OCC meeting. Further, SLDCs may also be advised to share their computations with ERLDC.

Members may please note.

ITEM NO. C4 :	**Reporting of Energy generated from renewable resources on daily basis**

As per directions of MOP, energy injected from the renewable generating plants into the grid also needs to be monitored on daily basis and incorporated in the daily reports published by RLDCs and NLDC, to determine the correct percentage of energy mix for the whole country on any particular day.

The subject was deliberated in the 126th as well as earlier OCC meetings. Energy data from 10MW NTPC solar plant at Kaniha is already being received at ERLDC.

Regional entity RE generators and all SLDCs are once again requested furnish following data for their respective control areas ondaily basis:

a) Grid connected RES whose scheduling and metering is done as regional entity:
Maximum generation (MW) with Time and energy injected(MWh) for the previous day (from the SEM meters on adaily basis through email, till the AMR is commissioned/working)

b) Grid connected RES which is under state purview:
Maximum generation (MW) with Time and energy injected(MWh) for the previous day. Concerned SLDCs tocompile station wise / connection point wise energy injected into the state grid and emailitRLDC on a daily basis.

A format for submitting RE generation data is enclosed at **Annexure-C4**. It is requested that the same may be filled up and emailed to **erldc.cal@gmail.com**and **mis.erldc@gmail.com**positively by 01:00hrs of the day for the previous day. This is essential as the power supply report of the previous day needs to be sent to NLDC and CEA by earlymorning hours of the next day.

Members may please note for compliance

ITEM NO. C5 :	**Non availability of line Reactor-1 of 400KV Malda-Purnea-I at Malda end**

The above reactor is essential to mitigate high voltage during low demand period of the coming winter season.

In 125th OCC, Powergrid informed that it will be commissioned by November, 2016.

PGCIL may kindly ensure availability of the reactor at the earliest.

ITEM NO. C6 :	Restricted Governor /Free Governor Mode Operation of generators in ER

Primary response (FGMO/RGMO) by generators (200MW and above thermal and 10MW and above hydro) is a fundamental requirement for maintaining the reliability of the bulk interconnected power system.

In the 123rd OCC meeting, it was emphasized that since the grid frequency is being maintained within the IEGC stipulated range (49.9 Hz – 50.05 Hz) for more than 70% of the time, concerned generators are not expected to face difficulty in providing primary response. Accordingly, it was decided to put the generators in FGMO/RGMO w.e.f. 15-08-2016.

In 124th OCC, DVC informed that all their units are in RGMO.
WBPDCL informed that Santaldih U#5 is in RGMO from 16th Aug 2016 and U#6 will be kept in RGMO after overhauling. WBPDCL added that other units are old and not capable to run in RGMO. In such cases, OCC advised the respective generators to approach CERC for exemption. *WBPDCL also clarified that KTPS units cannot be put into FGMO/RGMO as these units are not having Electro Hydraulic Governor (EHG) system.*
OCC requested WBPDCL to put Santaldih (U#6) and Sagardighi units on FGMO/RGMO.

In subsequent events of sudden frequency change / major load-generation imbalance, it was observed that *none of the ER generators is providing even 70% of the ideal response. However, some of the generators (FSTPS, KhSTPS, BkTPP) are giving responses below 37 % which is inadequate to restore the frequency within the band within the shortest possible time. This aspect was illustrated in the 125th OCC meeting.*

Moreover, except CESC, none of the utilities are sharing their unit responses as captured by their respective DCS, through the webgroup, as agreed in earlier OCC meetings.

In view of the need of compliance of the statutory provisions of IEGC and maintenance of grid security at all times, All concerned generating utilities may note the following

- ***strictly provide adequate primary response, whenever required***
- ***ensure availability of real time data from generator terminals (GT primary side) at ERLDC, at all times***
- ***share their unit responses as recorded by DCS, through the webgroup created for this purpose***

ITEM NO. C7 :	Zone-2 setting of long line followed by short line

As per ERPC/CEA protection guidelines Zone-2 time setting of two adjacent lines needs to be properly co-ordinated to avoid undesirable tripping on account of racing between relays. In the past major disturbances occurred due to lack of proper coordination in Zone-2 time setting.

For proper coordination of operation of Zone-2 Distance Protection, an effort has been made to list out the adjacent shortest line for 400 kV transmission lines, and all the lines whose Zone-2 reach is overlapping with that of adjacent lines have been highlighted. The details are given in **Annexure-C7**.

Concerned transmission utilities are requested to review the same and share the present Zone-2 time setting and update in case of mismatch. The matter was also discussed in 48th PCC meeting held on 20-10-16 at ERPC Kolkata.

TCC may please note.

ITEM NO. C8 :	**Line over voltage protection settings for 400 kV and 765 kV Lines in Eastern Region**

Last year over voltage protection setting for all 400 kV and above lines was collected from the constituents. However in the meantime many changes took place in the system, which includes commissioning of new lines as well as LILO of existing line. Further CEA guidelines suggest that the following should be considered while setting over voltage protection in transmission line.

FOR 400kV LINES: Low set stage (Stage-I) may be set in the range of 110% - 112% (typically 110%) with a time delay of 5 seconds. High set stage (Stage-II) may be set in the range 140% - 150% with a time delay of 100milliseconds.

FOR 765kV LINES: Low set stage (Stage-I) may be set in the range of 106% - 109% (typically 108%) with a time delay of 5 seconds. High set stage (Stage-II) may be set in the range 140% - 150% with a time delay of 100milliseconds.

However, for over voltage Stage-I protection, a time grading of 1 to 3 seconds may be provided between overvoltage relays of double circuit lines. Grading on overvoltage tripping for various lines emanating from a station may be considered and same can be achieved using voltage as well as time grading. Longest timed delay should be checked with expected operating time of Over-fluxing relay of the transformer to ensure disconnection of line before tripping of transformer.

It is desirable to have Drop-off to pick-up ratio of overvoltage relay better than 97% (Considering limitation of various manufacturers relay on this aspect).

Present overvoltage setting record available at ERLDC is given in **Annexure-C8**. Concerned transmission utilities are requested to provide the missing information and updated the exiting one (if any).The matter was also discussed in 48th PCC meeting held at ERPC Kolkata.

TCC may please note.

ITEM NO. C9 :	**Updated status on SCADA telemetry**

CERC order (7/SM/2014) dated 29.01.2016 regarding the telemetry CERC at sl. no. 18 of their order have mentioned that

"*NLDC and respective RLDC are directed to up-date the status of telemetry every month at their web-site and persistent non-availability of data from the generating stations/sub-stations be taken up in RPC meetings for appropriate direction and action*".

Accordingly, ERLDC is preparing the monthly telemetry status in the prescribed CERC format every month and it is being uploaded it in ERLDC website;http://erldc.org/telemetry.aspx

33rd TCC advised all the constituents to go through the ERLDC website on regular basis and take appropriate action to make the data available to ERLDC.

The latest status of data/telemetry is enclosed at **Annexure-C9.**

OCC advised all the respective constituents to ensure the availability of telemetry data to ERLDC.

TCC may note.

ITEM NO. C10 :	Payment/Receipt Status from various pool accounts in ER

1. Reactive Energy Charges – present status.

In accordance with Revised Reactive bill for Period: 30.11.15 to 06.12.15 of FY 2015-16 on 25.04.16 where GRIDCO supposed to get refund of **Rs** 92,24,476/- (Rupees Ninety Two Lakhs Twenty Four Thousand Four Hundred and Seventy Six only) has been refunded to GRIDCO from Reactive Account.

The updated position of Receipt/Payment of Reactive Energy Charges in the pool as on 24.10.2016 (considering bill up to 09.10.2016) is indicated in **Annexure—C10.1**. The total outstanding receivable on account of Reactive charges from WBSETCL/WBSEDCL is **Rs 7.20 Cr** and from **BSPHCL** is **Rs 0.94 Lac**.

In the last TCC/ERPC meetings WBSETCL had assured that the issue would be settled at the earliest.

In last CCM, WBSLDC representative informed that hon'ble state commission had come out with a order for sharing of reactive charges between intra state utilities. The order has come into effect w.e.f 04.01.2016. After the notification of WBERC order, w.e.f 04.01.2016 there are no outstanding. However, as the order is silent for the period prior to 04.01.2016 WBSDLC is unable to get the outstanding settled.
Member Secretary suggested that as the hon'ble commission had given a mechanism for sharing the same may be used by SLDC for settling outstanding prior to 04.01.2013 also.

WBSEDCL representative informed that it would be prudent to get the confirmation of the hon'ble commission in this regard.

Member Secretary proposed that ERPC secretariat may approach the commission for an early direction on this issue. Members agreed.

2. RRAS Account ----Present Status.

As furnished by ERLDC, the updated position of Payments to the RRAS Provider(s) from the DSM pool and Payments by the RRAS Provider(s) to the DSM pool as on 24.10.2016 (considering bill up to 09.10.2016) is indicated in **Annexure –C10.2.** So far Rs. 80.34 cr have been settled under RRAS in ER.

This is for information to the members.

3. Congestion Account - Present Status

The status of congestion charge payment after full settlement is enclosed at **Annexure – C10.3.**

Members may please note.

4. Status of PSDF

As informed by ERLDC, an amount of **Rs. 5.31 Cr** from Reactive account & **Rs. 1.71 Cr** from Deviation Pool account have been transferred to PSDF after 32st Commercial sub-committee meeting held on 10.06.16. With this the total amount of **Rs 890.40 Cr** has been transferred to PSDF so far. The break up details of fund transferred to PSDF (till 24.10.16) is enclosed in **Annexure—C10.4.**

This is for information to the members.

ITEM NO. C11 :	**Reconciliation of Commercial Accounts**

1. Reconciliation of Deviation Accounts.

ERLDC have informed that at the end of 2nd quarter of 2016-17, the reconciliation statement (Period: 01.07.16 to 30.09.16) has been issued by ERLDC on 03.10.16 and statements had been sent to the respective constituents and also uploaded the same at ERLDC website (www.erldc.org) on 21.10.2016. The constituents were requested to verify /check the same & comments if any on the same were to be reported to ERLDC by 20.04.2016. The status of reconciliation is enclosed in **Annexure-C11.1**.

- ⇨ Only DVC, GRIDCO, NTPC, NVVN & JITPL have signed reconciliation statement for 1st Qtr
- ⇨ GRIDCO, NVVN, MPL & JITPL have signed reconciliation for 2nd Qtr of 2016-17.

Rest of the constituents has not signed the reconciliation in 2016-17. Moreover JUVNL & Ind Barath have not signed reconciliation statement for more than last 6 quarters.

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.

Above constituents are once again requested to submit the signed reconciliation statement at the earliest.
In last CCM, ERLDC updated the house. JUVNL, Sikkim representative was not present. NHPC informed that they have sent the reconciliation statement recently. WBSETCL, BSPHCL and APNRL representative informed that they would complete the reconciliation shortly.

2. Reconciliation of Reactive Account

ERLDC have updated that at the end of 2nd quarter of 2016-17, the reconciliation statement (Period: 01.07.16 to 30.09.16) has also been issued by ERLDC on 03.10.16 and statements had been sent to the respective constituents. The constituents were requested to verify /check the same & comments if any on the same to be reported to ERLDC by 21.10.2016.

⇨ WBSETCL have not reconciled the Reactive account for last 2 quarter in 2016-17.

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 last CCM, WBSLDC representative informed that from 04.1.2016 onwards they will take care of the reconciliation. However, for the previous period hon'ble state commissions directions regarding sharing may be awaited. Further, ERLDC had adjusted the payments made by WBSLDC towards reactive charges from beginning of the outstanding generation whereas, the payments made by WBSLDC was for the period 04.01.2016 onwards. WBSLDC requested ERLDC to accordingly revise the reconciliation statement. ERLDC agreed.

OPTCL informed that they have already sent the reconciliation. ERLDC requested to forward the same again as they have not received it yet.

3. Disbursement of Interest due to delayed payment of deviation charges

ERLDC had recovered an amount of **Rs 246.85226 Lac** from JUVNL on 09.08.16 towards interest due to delayed payment of deviation charges in FY 2015-16. Deviation interest amount receivable by constituents of ER except NR pool and NHPC for FY 2015-16 has already been fully settled on 26.04.16. Interest amount of **Rs 2.80266 Lac** receivable by NR and **Rs 0.04947 Lac** receivable by NHPC from ER Pool due to delay payment by ER Pool during FY 2015-16 was paid on 11.08.16 and balance amount of **Rs 244.00013 Lac** was paid to NTPC towards Ancillary services for Week-16 (Period: 11.07.16 to 17.07.16).

With this, interest amount receivable/payable by constituents of ER for FY 2015-16 due to delayed payment of Deviation Charges is fully settled.

This is for information to the members.

4. RRAS Account

At the end of 2nd quarter of 2016-17, the reconciliation statement (Period: 01.07.16 to 30.09.16) has been issued by ERLDC on 03.10.16 and statements had been sent to the respective constituents and also uploaded the same at ERLDC website (www.erldc.org). RRAS Provider i.e NTPC was requested to verify /check the same & comments if any on the same were to be reported to ERLDC by 21.10.2016.

In last CCM, NTPC informed that they have signed the reconciliation statement.

5. Reconciliation for STOA payments made to SLDC / STU :

ERLDC have informed that the reconciliation statements of STOA payments for the period Apr'16 to Sep'16 have been send to the DVC, OPTCL and WBSETCL for checking at their end and confirmation.

⇨ WBSETCL is yet to confirm for the period of Jun'16 to Sep'16.

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 last CCM, WBSLDC representative informed that appropriate person of Commercial department of WBSETCL may be approached in this regard. However, a copy may also be provided to SLDC.

6. Reconciliation for payments received from STOA applicants:

The reconciliation statements of STOA payments for the period of Apr'16-Jun'16 have been send to DVC (Commercial Dept.) and for the period of Apr'16-Sep'16 have been send to GMRKEL, JUSNL/JUVNL (Commercial Dept.) and JITPL for checking at their end and confirmation.

- ⇨ DVC (Commercial Dept.) is yet to confirm for the period Apr-16 to Jun-16.
- ⇨ JUSNL/JUVNL is yet to confirm for the period Apr-16 to Sep-16.
- ⇨ GMRKEL and JITPL are yet to confirm for the period Jul-16 to Sep-16.

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-C11.6.**

Since there is a serious audit objection on non-signing of DSM, Congestion and STOA reconciliation statement it is once again requested that all regional pool members may check and sign the statement sent by ERLDC.

In last CCM, ERLDC updated that DVC and GMR had already confirmed. JUSNL/JUVNL and JITPL representative was not present.

ITEM NO. C12 :	**Meter readings related issues**

A. Erroneous Data/meter reading

i. Karamnasa (BSPTCL)

Karamnasa end meter NP-6018-B installed for 132 KV Sahupuri (UPPCL) line is recording around 50 % less as compared to Sahupuri end since 14.08.16. It was gathered that there had been some panel replacement work at Karamanasa creating problem to the meter data during shifting work at Karamnasa. The above problem was informed to BSPTCL and PGCIL on 18.08.16 with request to check CT and PT connection at Karamnasa end. At present accounting of ER-NR and BSPHCL is done with Sahupuri end meter with no back up meter and validation. The above matter was also discussed in 126th OCC wherein BSPTCL informed that matter will be resolved immediately. However problem is still persisting.

In last CCM, BSPHCL/BSPTCL representative assured to get the issue resolved at the earliest.

ii. Joda (OPTCL)

SEM data received from Joda(OPTCL) end of 220 KV Joda(OPTCL) – Ramchandarpur(JUVNL) line is showing erroneous(15-20% Less recording as compared to Ramchandarpur end) since 14.01.16. Matter was intimated to official of Joda OPTCL. In 119th OCC, OPTCL informed that SEM at Joda end needs to be checked and corrected. In 121st OCC, ERLDC suggested to place one meter at B/C and to check healthiness of existing SEM at Joda end of Ramchandarpur Line. Accordingly Meter at B/C has been installed and

details received at ERLDC end. Meanwhile OPTCL had measured the Current and Voltage input to the said meter on 21.10.16 and Voltage and current in each phase was found to be Ok. Joda(OPTCL) end meter has improved its recording and meter is recording around 7-8 % Less as compared to Ramchandarpur end meter.

In last CCM, ELRDC informed that the issue had been satisfactorily resolved.

iii. Bolangir(PG)

Bolangir end meter NP-8790-A installed for 220 KV Katapalli (OPTCL) line is recording around 40-45 % less as compared to Katapalli end since 22.09.16. The matter was informed to Bolangir (PG) requesting to rectify the problem. However problem is still persisting and accounting of OPTCL is done with standby meter at Katapalli end.

In last CCM, PGCIL representative informed that their personnel had been deputed today to resolve the issue.

iv. Reverse polarity of SEM installed at Sabour in BSPTCL

SEM is installed at both end of 132 KV Sabour-Banka(PG) Line-2. It is observed that Sabour end meter is showing reverse polarity. The matter was also reported to BSPTCL official. However as per the SEM data received from Sabour, the polarity of the Sabour end meter is still reversed and the problem persists.

In last CCM, BSPHCL/BSPTCL representative assured to get the issue resolved at the earliest.

B. Non Receipt of SEM data from Various Locations

i. Forbisganj at BSPTCL

Kishanganj (BSPTCL) end meter of 132 KV Purnea (PG) Line is not recording any flow compared to Purnea PGCIL end since 14:00 hrs of 29th June 2015. It was gathered that line is feeding load to Farbisganj at BSPTCL regularly through Transfer Bus of Kishanganj bypassing the SEM at Kishanganj. Accordingly 02 nos of SEM were installed at Forbesganj on 03.02.16 and DCD for downloading the data was handed over to BSPHCL. BSPHCL informed that due to installation problem of meter software, data is not being sent to ERLDC. 125th OCC advised PGCIL to provide necessary support in installing the software. Till now ERLDC has not received the SEM data.

In last CCM, BSPHCL/BSPTCL representative informed that by 13th of November the line would be shifted from transfer bus to main bus and there would no longer be any metering issue.

ii. Kudra at BSPTCL

SEM data of Kudra end of 132 KV Kudra –Pusauli line is not being sent by BSPTCL since last one and half month. Further the Kudra end meter is not connected in AMR system which is supposed to be covered in AMR 3rd phase. In absence of Kudra end meter, end to end Validation of SEM data at ERLDC end is not done. The matter is already informed to BSPTCL.

In last CCM, ERLDC informed that BSPHCL/BSPTCL have made a T connection without proper metering which is a violation of CEA metering regulations. Further meter data is also not being sent regularly. BSPHCL informed that the DCD is not functioning properly as the batteries have got fully discharged and requested to integrate Kudra in AMR. ERLDC informed that while integrating Kudra in AMR may take some time, it is the responsibility of BSPHCL/BSPTCL to send data regularly and DCDs may be borrowed from New Pusauli.

iii. 220 KV Sonnagar S/S at BSPTCL

220 KV Sonnagar(BSPTCL)- Gaya(PG) Line was charged and powers started flowing through the line since June 2016. SEM was installed at Sonnagar end. The SEM data of Sonnagar end of aforesaid Line is not being sent by BSPTCL since charging of the line. Further the Sonnagar end meter is not connected in AMR system which is supposed to be covered in AMR 3rd phase. In absence of data of Sonnagar end meter, end to end Validation of SEM data at ERLDC end is not done. The matter is already informed to BSPTCL.

In last CCM, BSPHCL again informed that the DCD is not functioning properly as the batteries have got fully discharged and requested to integrate Sonnagar in AMR. ERLDC informed thta while integrating Sonnagar in AMR may take some time, it is the responsibility of BSPHCL/BSPTCL to send data regularly and DCDs may be borrowed from Farbisgunj.

It came to light that after the integration of meters under AMR, constituents were not using DCD and neither keeping it under charged condition. Due to this, the DCD were not working in many substations.

Members felt that a comprehensive plant is to be designed for procurement/recharging of DCDs

iv. Installation of SEMs at KBUNL MTPS Stg-II

For Drawl of startup power & injection of Infirm/firm Power from 2X195 MW KBUNL MTPS Stg-II, SEM is required to be installed. As per CEA Metering regulation, Special Energy meter on GTs, STs, all 220 KV Outgoing Feeder along with 220/132 KV Transformers at KBUNL end are to be installed by PGCIL. Meanwhile KBUNL has already installed same type energy meter (L&T Make ER-300P) in all commissioned bays as well as GT, ST and ICT. List of meters installed at KBUNL is enclosed in **Annexure-C12B**. KBUNL had requested PGCIL to use the existing meters till the installation of new meters by PGCIL. The matter was also discussed in 126th OCC wherein it was decided that existing meter at KBUNL will be used for Drawl/Injection of KBUNL till PGCIL install new meter. Accounting of drawl/Injection of KBUNL will be done as per the Minutes of Special meeting for "Issues related to scheduling of KBUNL Stg-II" held on 26.05.2016 at ERPC.

In last CCM, ERLDC requested KBUNL representatives to complete the metering requirements with the help of Powergrid. Further, they requested KBUNL to start sending data so that the same could be checked at ERLDC before the final COD.

ITEM NO. C13 :	Time correction of SEMs in Eastern Region

The drifting of meter time was 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. List of Time drifted (more than 5-6 min) meters in ER as on 20.10.16 is enclosed in **Annexure-C13.**

In last CCM, ERLDC informed that due the integration of meters in AMR, constituents were not making any time correction in SEM. Further, due to non-use, the DCDs were also not working in many places. On a query it was informed that although data download was possible through laptops with software, time correction from laptops was not possible. Powergrid suggested that some quantity of spare DCD and L&T SEM meters may be procured. Spare meters could be used in highly drifted locations while the in service meters are sent to factory for bulk time correction.

Member Secretary opined that in absence of proper maintenance of DCD and non time correction by constituents, the problem would never be solved.

After much deliberation it was decided that all the constituents would give a list of DCD with them and their status so that an informed decision could be taken.

ITEM NO. C14 :	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 (in 111th OCC meeting) 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% to be shared by the beneficiaries constituents of Eastern Region in proportional to the share allocation for the month in which the proposal was approved in the ERPC meeting. In 32nd TCC/ERPC, Powergrid intimated that order had been placed on 15.03.2016. In 33rd TCC/ERPC, PGCIL informed that delivery is expected in six phases starting August'16.

In last CCM, Powergrid informed that the new meters were under inspection and scheduled to start delivery from 1st week of December.

ITEM NO. C15 :	Commercial issuesrelated to NHPC Stations

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

   (i) As per PPA, **NBPDCL** has to provide LC of **Rs. 6.65 Crs**. Similarly, **SBPDCL** has to provide Letter of Credit of **Rs. 8.44 Crs**. But NBPDCL has provided LC of **Rs.** 2.10 Crs and SBPDCL **Rs.** 2.90 Crs which are far short of requisite values.

In last CCM, BSPHCL representative opined that bilateral issues may not be discussed in common platforms. However, he informed that LC would be opened at the earliest opportunity.

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

i) NBPDCL

An amount of **Rs. 20.16 Crs** is outstanding for more than 60 days including surcharge of **Rs. 0.72 Crs**.

ii) SBPDCL

An amount of **Rs. 7.62 Crs** is outstanding for more than 60 days including surcharge of **Rs. 0.84 Crs**

In last CCM, BSPHCL representative opined that bilateral issues may not be discussed in common platforms. However, he informed that the payment to NHPC would be released at the earliest opportunity.

3) Signing of reconciliation statement.

Reconciliation statements are pending for 1st quarter for the F.Y 2016-17 in r/o NBPDCL, SBPDCL, DVC & JUVNL. All the above beneficiaries are requested to sign the reconciliation statements at the earliest. Reconciliation statements for 2nd quarter of 2016-17 have also been sent to all the beneficiaries which also need to be signed on priority.

In last CCM, BSPHCL representative informed that the reconciliation would be signed shortly.

4) Extension of BPSA in r/o Rangit & Teesta-V Power Stations

NHPC is regularly following-up with JUVNL & GRIDCO to extend the BPSA up to 35 years from COD of last unit of Rangit & Teesta-V Power Stations, on same terms and conditions.

NHPC requested to both beneficiaries to give consent for extension of BPSA at the earliest.

In last CCM, JUVNL representative was not present.

GRIDCO informed that they would get the BPSA extended shortly.

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

Signing of Power Purchase Agreement is pending with GRIDCO in spite of regular follow up with these discoms. As per the request of some of the discoms for withdrawal of 'Payment security Mechanism' in form of 'Default Escrow Arrangement', NHPC has withdrawn this clause from draft PPA in respect of future projects also. Now, GRIDCO may be requested to sign the PPA at the earliest.

In the 32ND CCM, GRIDCO representative informed that the matter was under consideration of management and would take some more time.

In last CCM, GRIDCO informed that they would require some more time fir finalization.

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

Signing of Power Purchase Agreement is pending with GRIDCO, JUVNL & WBSEDCL. As per the request of many beneficiaries for withdrawal of 'Payment security Mechanism' in form of 'Default Escrow Arrangement', NHPC has replaced this in the draft PPA by adopting L.C. as a payment security mechanism.

In last CCM, NHPC explained that constituents may give their response at the earliest so that otherwise power from Tawang HEP may be allocated to other needy states. JUVNL representative was not present. GRIDCO representative informed that they were studying the implications and could come back shortly. WBSEDCL representative informed that they were considering the feasibility of signing the PPA and would inform NHPC accordingly at the earliest.

7) Extension of PPA in r/o TLDP-III Power Station.

NHPC is regularly following-up with WBSEDCL to extend the PPA up to 35 years from COD of last unit of TLDP-III Power Station, on same terms and conditions as against the present PPA of 5 years from COD of first unit of TLDP-III power station.

In last CCM, WBSEDCL informed that they were studying the same and would come back in a short time.

8) Levy of Natural water tax by Department of Forest, Environment & Wild life Management, Govt. of Sikkim.

Department of Forest, Environment & Wild life Management, Govt. of Sikkim levied tax on all agencies using water from natural sources for commercial or industrial purpose. As per the notification Teesta-V & Rangit Power Station is liable to pay Natural Water Tax to said department @ Rs. 0.25/ Cum. NHPC has challenged imposition of Natural Water Tax in Hon'ble High Court of Sikkim. The next hearing in the case will be on 01.12.2016.

In last CCM, NHPC explained. WBSEDCL and GRIDCO representative informed that a copy of the petition should also be made available to them as they were the beneficiaries.

ITEM NO. C16 :	**Commercial issues related to Powergrid**

1) List of Assets commissioned

The list of transmission elements commissioned by Powergrid is at **Annexure-C16.1**

Members may please note.

2) Non Opening of LC requisite amount of LC :

Following constituents are required to enhance/ extend LC towards Payment Security Mechanism, as per CERC Regulations:

Amount(in Cr.)

Sl No	Present Value of LC	Value of LC Required
North Bihar Power Distribution Company Limited(NBPDCL)	**10.50**	**28.36**
South Bihar Power Distribution Company Limited(SBPDCL)	**14.50**	**39.67**
Bhartiya Rail Bijlee Company (BRBCL)	**LC expired on 31.05.16**	**3.06**
Ind-Barath Energy (Utkal) Limited	**LC expired on 07.08.16**	**14.38**

Non-availability of LC for requisite value and validity as per CERC Regulations is causing serious problem for POWERGRID to comply with the provisions of CERC Regulations and Loan Covenants.

In last CCM, BRBCL, IBEUL representatives were not present. BSPHCL/BSPTCL representative felt that the issues were bilateral in nature and may not be discussed in a common forum. However, it was informed that there were some regulatory issues which had been settled and the LC would be opened at earliest opportunity.

3) Payment of Outstanding dues more than 60 days :

Amount(in Cr.)

Sl No	Total Outstanding dues	Outstanding due more than 60 days
North Bihar Power Distribution Company Limited(NBPDCL)	**123.48**	**63.90**
South Bihar Power Distribution Company Limited(SBPDCL)	**196.97**	**113.58**
Bhartiya Rail Bijlee Company (BRBCL)	**20.42**	**17.39**
Ind-Barath Energy (Utkal) Limited	**31.62**	**15.10**

In last CCM, BRBCL, IBEUL representatives were not present. BSPHCL/BSPTCL representative felt that the issues were bilateral in nature and may not be discussed in a common forum. However, it was informed that the payments would be liquidated at earliest opportunity

4) Issue related to non-payment of Transmission charges & non-renewal of LC by Ind-Bharat(Utkal) Limited :

CTU has granted LTA to Ind Bharat Energy(Utkal) Limited for the transfer of 500 MW of power from their 700 MW(2x350 MW) at Shahajbahal in Jahrsuguda, Odisha to TANGEDCO on 22.07.15. After the grant of LTA, Ind Bharat opened Letter of Credit (LC) for an amount of Rs **27.73 Cr**. vide LC No 2273ILC011115 Dated 11.08.15 for one year, which had expired on **07.08.16.** LTA has started from Dec'15 & accordingly POWERGRID

has started raising the PoC charges bills to Ind Barath of their LTA allocation. Ind Barath had made directly payment of **Rs 5.92 Cr** against our bills raised during the month of February'16 only. After this payment, Ind Barath has not made any direct payment to POWERGRID. So after this, every month we have received the payment through LC against our transmission charges bills raised up-to the month of June'16.The total outstanding of Ind Bharat come to **Rs 31.62 Cr** & they had neither renewed our LC nor making direct payment to POWERGRID. Several reminders are given to IBEUL for establishing the LC & making payment in timely. In 33rd ERPC meeting it was also decided that**, *"from 1st August, 2016 IBEUL will not permitted to do any transaction – Infirm or firm through the LILO".***

In last CCM, IBEUL representative was not present.

Member secretary informed that prior to the commercial transactions of IBEUL units a special meeting is planned to be held in ERPC. The issue of outstanding dues of IBEUL towards transmission charges would be taken into account in that meeting before go ahead for COD.

5) Issue Related to non-payment of transmission charges of 400kV Nabinagar-Sasaram line by BRBCL :

400 kV D/C Nabinagar-Sasaram transmission line was constructed by PGCIL for evacuation of power from Nabinagar generating station. Unit no. 1 of the said generating station has been commissioned and synchronized on 20.03.2016 but commercial operation is yet to be declared. CERC vide order dated 21.06.2013 in Petition No.83/TT/2012, directed that the transmission charges of afore mentioned line are payable by BRBCL till commissioning of Unit-1 of BRBCL Nabinagar Thermal Power Project. On the basis of this order, BRBCL, owner of Nabinagar generating station has requested PGCIL to stop raising bill for the transmission charges of 400 kV D/C Nabinagar-Sasaram transmission line & associated system. Then the issue was represented in ***2nd Meeting of the Validation Committee of CERC held on 30.05.2016 at NRLDC conference room, New Delhi, wherein it was minuted that transmission charges of 400kV D/C Nabinagar-Sasaram transmission line to be paid by BRBCL till commercial operation of Unit#1 achieved (copy at Annexure-C16.5).*** In spite of decision taken in validation committee, BRBCL has not clear our outstanding dues which come to **Rs 20.42 Cr**. and neither renew our LC of Rs 3.06 Cr, which had expired on 31.05.16. Moreover start up power is being drawn by BRBCL which may be ascertained from SEM meter reading(from ERLDC website)

In last CCM, NTPC opined that since the original direction was given by the duly constituted central commission, the subsequent minutes could not modify the directions of the commission and requested Powergrid to approach the Commission for a clear direction on the matter. Powergrid agreed.

6) Collapse of One no Tower in 400KV D/C(Quad) Patna – Kishanganj TL due to river encroachment(This issue was discussed in 124th OCC meeting held on 23.08.16)

Due to unprecedented flash flood in Kankai river, one number of tower at location no.51(DD+18) of 400Kv Patna-Kishanganj D/C line near village Simalbari, Distt. Kishanganj, Bihar had collapsed on 26.07.2016 at about 12:00 hrs. The site of collapsed tower is fully submerged with water and very difficult to reach at the affected site.

Further the committee constituted to investigate the cause of collapse of tower and to suggest the remedial measures consisting of expert members of Powergrid and CEA, Delhi

they are not in a position to even visit the affected site due to severe flow of water in the Kankai River. The entire area is inundated with water. The flood situation in that area is worsen due to incessant rain in Nepal. The restoration of the said line shall be taken after receding the water at site.
In view of the above the said outage period may be treated as force majeure condition i.e beyond the control of Powergrid and outage shall be excluded for the purpose of availability up-to **Feb'17**.

In last CCM, Members agreed to the force majeure nature of the event as recommended in OCC. It was decided that the progress of construction could be monitored in subsequent OCC meetings for consideration of outage time.

7) The Following Powergrid assets commissioned with different transmission licences :

Sl No	Name of Asset	Date of Charging/DOCO	Status of Power Flow
01	2nos of 400kV line bays at Muzaffarpur sub-station for termination of Muzaffarpur(PG)-Darbhanga(TBCB) 400kV D/C (Triple Snowbird) line. (TBCB Line_Constructed by ESSEL Power Limited)	14/08/2016 & 31/08/16	Power Flow yet to started by Muzaffarpur-Darbhanga Transmission line.
02	2 nos 400 KV Line Bays alongwith 2x 50 MVAR Line Reactor at Ranchi under ERSS VII.(TBCB Line_ Constructed by Sterlite Power Limited)	15/10/16 & 17/1016	Power Flow yet to started by Ranchi-Purulia Transmission line. Constructed by ESSEL Power Limited
03	4 nos 220Kv GIS Line Bays at Kishanganj(GIS) under ERSS XII.(Line Constructed by BSPTCL)	03/10/16 & 20/10/16	Power flow started in only 2 nos of line bays & 2 nos of bays power flow yet to started.

ITEM NO. C17 :	**Collapse of four ENICL towers in Ganga river of 400kV Punea-Biharshariff line 1& 2 due to heavy flooding on 23rd August ,2016 at 06:51 Hrs**

Due to unprecedented flash flood in Ganga river, One tower at location 47/1 situated in the main stream of the river (at the Ganga river crossing near Begusarai) has apparently uprooted collapsed and washed away. Adjacent three towers (47/2,47/0 and 46/9) are severely damaged. The area is still unapproachable as it is completely submerged into water and flow of the water is very high. The site of collapsed tower is fully submerged with water and very difficult to reach at the affected area. The entire area is inundated with water. The flood situation in that area is worsen due to incessant rain in Nepal. The restoration of the said line shall be taken immediately after receding the water at site. In view of the above, ENICL requested that the said outage of the line may be treated as force majeure condition i.e. beyond the control of ENICL.
ENICL may update. Members may discuss.

In last CCM, Members agreed to the force majeure nature of the event as recommended in OCC. It was decided that the progress of construction could be monitored in subsequent OCC meetings for consideration of outage time.

ITEM NO. C18 :	Inspection of Under Frequency Relays (UFR)

The enquiry committee constituted by MoP after the major grid disturbances during 30th & 31st July'2012 recommended in its report (9.3) for ensuring proper function of defence mechanism like UFR etc. Also, as per section 5.2(n) IEGC, RPC Secretariat shall have to carry out periodic testing of UFR relays. In the 22nd TCC & ERPC meeting it was decided that UFR Audit of the ER constituents would be taken up by the UFR Audit group, nominated by the respective constituents. Till date ERPC audit team has completed the UFR inspection of the following substations in the year 2016-17:

Sl No	Substation/feeder inspected by the sub-group	Date of audit
1	132/33 KV Hatia of JUSNL	12.05.2016
2	132/33 KV Namkum of JUSNL	12.05.2016
3	132/33 KV Adityapur of JUSNL	11.05.2016
4	220/132/33 KV Ramgarh of DVC	13.05.2016
5	132/33 kV Bari Pahari of BSPTCL	02.11.2016
6	132/33kV Nalanda	02.11.2016
7	132/33kV Rajgir	02.11.2016

TCC May note.

ITEM NO. C19 :	HIGHLIGHTS & GRID PERFORMANCE FOR THE PERIOD FROM JUN' 2016 TO SEP' 2016

A) Real time operation:
During the period under review, power supply position in the region was as under:

	Jun-15	July-15	Aug-15	Sep-15	Jun-16	July-16	Aug-16	Sep-16
Avg Frq. (Hz)	50.01	49.99	49.98	49.94	49.99	50.01	50.00	50.00
PkDmd (MW)	17582	17268	17634	18171	19149	18974	18900	19168
Energy Consum. (MU/day)	363	356	372	384	399	393	388	390
ISGS Gen (MU)	3932	4508	4412	4096	4515	4846	4999	4567
Region Gen (MU)	13318	13550	13767	13437	14300	14999	14829	14280
% increase in Reg Gen.					7.37	10.69	7.71	6.27

B) System Operational Discipline during the period from Jun-16 to Oct-16

i) The month-wise energy drawls of ER constituents were as given hereunder:

	Jun-16		Jul-16		Aug-16		Sep-16	
	SCH	ACT	SCH	ACT	SCH	ACT	SCH	ACT
BSPHCL	**1960**	**1969**	**2082**	**2042**	**2116**	**2123**	**1990**	**2007**
JUVNL	**470**	**471**	**510**	**498**	**490**	**470**	**467**	**453**

DVC	**-935**	**-920**	**-763**	**-735**	**-573**	**-556**	**-806**	**-782**
OPTCL	**843**	**881**	**820**	**855**	**632**	**636**	**605**	**607**
WBSETCL	**1186**	**1222**	**1171**	**1229**	**1334**	**1427**	**1227**	**1281**
SIKKIM	**31**	**34**	**40**	**32**	**37**	**32**	**39**	**33**

C) Frequency & Voltage

i) Frequency profile for the period during **Jun-16 to Oct-16** 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**
Jun-16	7.63	74.09	18.28	74.09
Jul-16	3.94	72.34	23.72	72.34
Aug-16	5.87	73.07	21.06	73.07
Sep-16	5.84	75.15	19.00	75.15

ii) Maximum and minimum voltages recorded at some important 400 kV sub-stations were as follows:

SUB-STATION/ POWER STN.	**Jun-16**		**Jul-16**		**Aug-16**		**Sep-16**	
	MAX. (KV)	MIN (KV)	MAX. (KV)	MIN (KV)	MAX. (KV)	MIN (KV)	MAX. (KV)	MIN (KV)
FARAKKA	426	409	425	410	426	409	424	407
SUBHASGRAM	429	382	425	380	429	374	423	372
DURGAPUR	427	408	424	409	428	406	424	404
JEERAT	424	382	422	381	427	375	418	370
PURNEA	429	396	426	397	423	395	421	397
MUZAFFARPUR	418	386	418	386	418	386	422	387
JAMSHEDPUR	431	410	432	417	436	409	431	412
RENGALI	406	392	410	399	410	394	409	396
JEYPORE	425	376	423	378	414	375	421	380

D) Constituent-wise demand met is given below:

		Jun-15	**Jul-15**	**Aug-15**	**Sep-15**	**Jun-16**	**Jul-16**	**Aug-16**	**Sep-16**
BSPHCL	AVG MAX DMD(MW)	2791	2881	2999	3139	3313	3345	3431	3354
	MU/DAY	58	60	63	68	70	69	71	69
JUVNL	AVG MAX DMD(MW)	1000	998	1047	1028	1057	1083	1069	1058
	MU/DAY	22	21	23	22	22	23	22	22
DVC	AVG MAX DMD(MW)	2627	2546	2504	2574	2627	2640	2465	2548
	MU/DAY	62	59	59	61	62	62	59	62

ODISHA	AVG MAX DMD(MW)	3807	3832	3897	3682	3855	3986	3921	3885
	MU/DAY	72	73	75	78	80	80	78	77
W. BENGAL	AVG MAX DMD(MW)	6967	7113	7492	7111	7494	7729	7817	7964
	MU/DAY	148	143	152	155	165	159	158	160

E) Inter-regional energy exchange during the review period were as follows: (Figures in MU)

Region	Jun-16		Jul-16		Aug-16		Sep-16	
	SCH	ACT	SCH	ACT	SCH	ACT	SCH	ACT
NER	-138	43	-255	104	-63	498	-72	538
SR	431	298	431	288	647	526	733	421
WR	391	355	387	178	-354	-332	-709	-359
NR	1667	1502	1994	1906	2411	1724	2417	1616
TOTAL	**2350**	**2197**	**2557**	**2475**	**2641**	**2416**	**2369**	**2215**

F) Reservoir levels of important hydro stations in ER during Jun-16 to Oct-16 (as on last day of the month) is given below:

STATION	**MDDL/ FRL**	**Jun-16**	**July-16**	**Aug-16**	**Sep-16**
BURLA	590/630 FT	597.25	608.69	619.93	629.12
BALIMELA	1440/ 1516 FT	1477.10	1484.40	1496.80	1505.20
RENGALI	109.7/ 123.5 MTR	110.02	114.89	121.60	122.60
U. KOLAB	844/ 858 MTR	848.13	850.70	854.07	856.18
INDRAVATI	625/ 641 MTR	630.13	632.84	636.83	639.01
MACHKUND	2685/ 2750 FT	2712.40	2726.50	2737.80	2746.40

G) IMPORTANT EVENTS :

1) Newly constructed 400 kV Chaibasa- Kharagpur D/C line connected to 400KV Kharagpur-Kolaghat-I to form 400 kV Chaibasa- Kharagpur and 400 kV Chaibasa- Kolaghat lines. 400 kV Chaibasa- Kharagpur line along with 63 MVAr Line Reactor at Chaibasa end and 400 kV Chaibasa- Kolaghat line first time charged at 18:27 hrs and 20:27 hrs respectively of June 17, 2016.

2) 220kV Gaya-Sonenagar (through Bodhgaya-I bay at Gaya) first time charged from Gaya end only at 12:53 hrs of 27/06/16. Subsequently 220kV Gaya-Sonenagar loaded at 16:52 hrs of 27/06/16. Prior to this line charging, 220kV Gaya-Bodhgaya-I was charged using Dehri-I bay at Gaya at 21:36hrs of 26/06/16.

3) 400kV Pandiabili-Mendhasal-II(LILO of 400kV Baripada-Mendhasal at Pandiabili)first time charged at 00:48hrs of 29/06/16.

4) 80MVAR B/R at Pandiabili first time charged at 01:04hrs of 29/06/16.

5) 400kV Baripada (PG)-Pandiabili (PG) (LILO of 400kV Baripada-Mendhasal at Pandiabili) along with 63MVAr L/R at Pandiabili first time charged at 07:35hrs of 29/06/16.

6) 400 kV Main Bus- I & II at Pandiabili first time charged at 00:49 hrs and 00:50 hrs of June 29, 2016 respectively.

7) 400kV Mendhasal-Pandiabili- I and 500MVA, 400/220kV ICT-I at Pandiabili (from 400 kV side) first time charged at 19:55 hrs and at 15:41 hrs respectively of 01/07/16.

8) 400kV Pandiabili-New Duburi line and 63MVAr Line Reactor at Pandiabili end charged first time at 22:51hrs and at 23:49 hrs respectively of 01/07/16.

9) Sagardighi unit 3 of 500 MW declared under commercial operation w.e.f 01/07/16.

10) TLDP Stage IV Unit #3 (NHPC) of 40 MW first time test synchronized at 01:13 hrs of 03/07/16.

11) 220 kV Jeerat-Rishra –I first time LILOed at Dharampur S/Stn and formed as 220 kV Jeerat-Dharampur II and Dharampur-Rishra II. 220 kV Jeerat-Dharampur II and Dharampur-Rishra II lines first time commissioned at 14:44 hrs and 16:00 hrs respectively of 03/07/16.

12) 220 kV Vidyasagar Park GIS S/Stn and 220/132 kV 160 MVA Tr#1 first time commissioned at 19:35 hrs of 05/07/16.

13) 400kV Ranchi-Chandwa -I and 400kV Bus -I at Chandwa first time charged at 22:32 hrs of 10/07/16.

14) 125MVAr Bus Reactor-I and Bus- II at Chandwa first time charged at 21:49 hrs and at 22:36 hrs respectively of 10/07/16.

15) 400kV Gaya-Chandwa –I & II first time charged at 22:32 hrs and at 23:05 hrs respectively of 10/07/16.

16) 400kV New Ranchi-Chandwa -II and 125 MVAr B/R-II at Chandwa end, first time charged at 23:11 hrs and 23:29 hrs respectively of 10/07/16.

17) 500MVA ICT-II at Pandiabili first time charged at 16:06hrs of 11/07/16 from 400kV side only.

18) 400KV Biharsharif-Varansickt-I & II with 50MVAR line reactor at Biharshariff (formed after reconnecting Biharsharif-Sasaramckt-III & IV at Varanasi (NR)) first time charged at 21:05hrs and 21:38hrs of 19/07/16 respectively.

19) Ind-Bharat #1 (350 MW) has been declared under commercial operation w.e.f 0:00 hrs of 19/07/16.

20) 400kV Sarnath – Sasaram line shifted from NR Bus to ER Bus at Sasaram sub-station at 16:00hrs of 23/07/16.

21) TLDP unit #4 (40 MW) of Stage IV has been declared under Commercial Operation w.e.f 0:00 hrs of 19/08/2016.

22) 132 KV Kolaghat (WBSETCL) – Kolaghat (DVC) CKT-II LILOed at 132 KV Food Park (WBSETCL) S/Stn at 21:21 hrs of 17/08/16.

23) 50 MVAR line reactor of 400 KV Behrampur-Jeeratline at Jeerat end was reconnected as a bus reactor in parallel with the existing 50 MVAR Bus reactor at 21:20 hrs of 26/08/16. The bus reactor capacity of Jeerat 400 KV S/Stn is therefore now 100 MVAR.

24) 400/220kV, 315MVA ICT-I & II at Gokarna S/s (WB) were charged for the first time at 18:44Hrs and 19:02Hrs respectively of 15/09/16 from 220kV side no load.

25) 400/220kV, 500MVA ICT-II at New Purnea was charged for the first time on no load at 13:13Hrs of 20/09/16 from HV side and subsequently loaded at 19:58Hrs of 28/09/16.

26) 400/220kV, 500MVA ICT-I at Patna was charged for the first time on no load at 00:18Hrs of 21/09/16 from HV side and subsequently loaded at 02:02Hrs of 22/09/16.

27) Opening of LILO of 400kV Sasaram-Varanasi at Saranath and charging of 400kV Sasaram-Varanasi (direct ckt) was done at 16:17Hrs of 28/09/16.

28) 400/220kV, 500MVA ICT-III at Baripada was charged for the first time on no load at 14:28Hrs of 29/09/16 and subsequently loaded at 22:48Hrs of 30/09/16.

29) 125MVAr B/R-I at Maithon was charged for the first time at 19:59Hrs of 29/09/16.

30) 125MVAr B/R at Baripada was charged for the first time at 05:52Hrs of 30/09/16

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ANNEXURES

Annexure- B4A

28 JUL 2016

भारतीय गैर न्यायिक

दस रुपये

रु.10

भारत

TEN RUPEES

Rs.10

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL

SPECIAL ADHESIVE

NOTARY GOVERNMENT OF INDIA

Jagyneswar Acharya
Notary Govt. of India
Odisha, BBSR, Dist-Khurd
Regd No 7791/2009
Mob 9861006174

ଓଡ଼ିଶା ଓଡିଶା ODISHA

BEFORE THE NOTARY, BHUBANESWAR, ODISHA

31AA 768666

AFFIDAVIT

I, Shri Jayakrushna Mohanty aged about 55 yrs, Son of Shri Dambarudhar Mohanty, Resident of S 3 Vedanta Meadows, Jharsuguda-768202, working as Vice-President- Power at Vedanta Limited (formerly known as Sesa Sterlite Limited) at Jharsuguda unit having registered office at Sesa Ghor 20 EDC complex patto panjim Goa- 403001do hereby affirm as under:

1. That I am duly authorised to sign affidavits, agreements, letters, representation etc. vide power of attorney dated 16th July 2016 for and on behalf of the company.
2. That the ERPC Board has discussed and reviewed the construction of dedicated transmission line of 400 KV to the Pooling Station of PGCIL in the meeting held on 25th June 2016.
3. That the Board after due deliberation has given a target to the company to complete the said job by 30th November 2016 and has asked to give an undertaking in the form of affidavit to CTU and ERPC.
4. That I being authorised signatory of the Company do hereby inform that above work is under execution and being continuously monitored at our end on day to day basis.
5. That we are putting our best efforts for completion of transmission line as per the schedule.

NOTARY GOVERNMENT OF INDIA
JAGYNESWAR ACHARYA
REGD NO.-7791/2009
DIST.-KHURDA
BBSR, ODISHA
M-9861006174

Jagyneswar Acharya
Notary Govt. of India
Odisha, BBSR.
Regd

6. That accordingly undertakes on behalf of the Company that we would be able to complete the said work by 30th November, 2016.
7. Hence this affidavit.

DEPONENT

VERIFICATION:-

I, Jayakrushna Mohanty, the Deponent above named, do hereby verify that the contents of the above affidavit are true to the best of my knowledge and belief and based on records.

Verified at Bhubaneswar on this the 28th day of July 2016.

DEPONENT

Jagyneswar Acharya
Notary Govt. of India
Odisha, BBSR, Dist-Khurda
Regd No 7791/2009
Mob 9861006174

GOVERNMENT OF INDIA NOTARY
JAGYNESWAR ACHARYA
REGD NO:-7791/2009
DIST:- KHURDA
BBSR, ODISHA
M-9861006174

IDENTIFIED BY ME
28/7/16
ADVOCATE BBSR

Eastern Regional Power Committee, Kolkata

Minutes of Special Meeting on "Issues related to Vedanta Limited" held on 14th October, 2016 at ERPC, Kolkata

List of participants is at **Annexure-A.** Member Secretary, ERPC welcomed CEA, CTU, Vedanta, OPTCL, GRIDCO, ERLDC and all other participants to the special meeting. He informed that this special meeting was convened on short notice to deliberate the issues related to Vedanta Limited.

He briefed the house that in the 125th OCC meeting held on 20.09.16 the Vedanta related issues were raised and OCC in its capacity deliberated in detail and decided the following:

i) Vedanta has to get a fresh connectivity from CTU for their CPP units #1, 3 & 4 (as these units were converted from IPPs to CPPs) as per the decision of 11th Connectivity and LTA meeting of ER held on 13.06.2016.

ii) Vedanta has to get NOC from SLDC Odisha for scheduling of their units through ERLDC.

iii) Vedanta will be allowed to connect to CTU system only after submission of the above two documents.

iv) ERLDC will start scheduling Vedanta CPP Units #1,3,& 4 only after getting a fresh NOC from SLDC Odissa and with grant of fresh connectivity by CTU.

v) Till then Vedanta would be treated as an embedded customer under the jurisdiction of SLDC Odisha and may remain connected to grid through STU system only (as presently its units are connected to OPTCL system) and do their STOA transaction through SLDC Odisha.

vi) In view of all of above, the NOC granted to Vedanta would stand revoked and fresh NOC could be issued subject to fulfillment of the stated conditions

vii) Vedanta has to complete the dedicated line within the schedule (i.e. November, 2016) otherwise the LILO may be removed as per the decision of 33rd ERPC and the meeting convened by CEA held on 16.09.2016.

Deliberation in the meeting

Vedanta informed that they are actively perusing for the NOC from Odisha for the purpose of getting connectivity from CTU. Rounds of discussions were going on for with GRIDCO/ OPTCL officials on the terms and conditions for the NOC and it will be finalized within 2-3 days.

Further, Vedanta clarified that their present requirement is as follows:

- Getting connectivity for their 3x600 MW CPPs along with smelter load (Maximum of 2000 MW) from CTU, with provision to draw power upto 1000 MW (maximum).
- To meet their 900 MW (approx) smelter load from the CPPs.
- To supply 550 MW power to Odisha through STU network.
- Shifting of units from ISTS to STU system and vice versa are being done as per their convenience for supply of smelter load and power supply to Odisha.

Therefore, to meet their own requirement along with their commitment to supply Odisha as per terms of PPA between them, Vedanta is compelled to connect their three (3) units to STU network, keeping one unit as standby.

GRIDCO informed that several meetings are going on with Vedanta to sort out the issues related to NOC and power supply to Odisha. They were in a process to sign a modified PPA for getting power supply from Vedanta.

Further, OPTCL viewed that all CPP units (unit #1, 3 &4) and IPP unit (#2) of Vedanta Ltd along with SEZ (smelter) load shall be kept at 400 kV bus of Vedanta Ltd Switchyard without bus splitting and shall be connected to STU network through 400 kV Vedanta Ltd-Meramundali D/C line.

CTU clarified that as per connectivity regulations Vedanta can get connectivity either as 3x600 CPP generator provided their net exportable capacity is more than 250 MW or as a Bulk Consumer with load of 1000 MW. But connectivity for both injection of more than 250 MW and drawl of 1000 MW power is not permitted as per present CERC regulation on grant of Connectivity, LTA and MTOA.

Further, it was informed that for the purpose of scheduling Vedanta generation, the control area jurisdiction of Vedanta should be decided following the principle outlined in IEGC, i.e. if a generating station is connected both to ISTS and the State network, scheduling and other functions performed by the system operator of a control area will be done by SLDC, only if state has more than 50% Share of power .The role of concerned RLDC, in such a case, shall be limited to consideration of the schedule for inter state exchange of power on account of this ISGS while determining the net drawal schedules of the respective states. If the State has a Share of 50% or less, the scheduling and other functions shall be performed by RLDC.

During deliberation it emerged that Vedanta as a 4X600 MW plant has obligation to supply power more than 50% of its capacity within the home state of Odisha itself [900 MW (50% of 1800MW) for smelter load and 550 MW to Odisha state i.e. 1450MW total]. As such, it does not qualify to be a regional entity. Therefore even if Vedanta is connected to both CTU and STU system, it should be scheduled by Odisha SLDC. After detailed deliberation the followings were decided:

1. Control area jurisdiction of Vedanta will be shifted from ERLDC to SLDC, Odisha.
2. CPP units (unit #1, 3 &4) and IPP unit (#2) of Vedanta Ltd along with SEZ (smelter) load shall be kept at 400 kV bus of Vedanta Ltd Switchyard without bus splitting and shall be connected to STU network through 400 kV Vedanta Ltd-Meramundali D/C line.

   There will be no need to operate the 400kV buses of Vedanta in split bus mode and they should be coupled by completing all the dias.
3. One unit shall be kept as standby till the completion of 400 kV Sterlite-Jharsuguda D/C line.
4. Vedanta Ltd shall be a State embedded entity for all purposes and requisite STU connection would be obtained by Vedanta Ltd i.r.o above.
5. The CTU connectivity of Vedanta may be kept in abeyance. The same may be closed/ withdrawn from the date of getting the STU connectivity.
6. On change of control area jurisdiction the NOC granted by ERLDC to Vedanta Ltd shall stand revoked.
7. After changeover of control area jurisdiction, the LILO point of 400 kV Rourkela-Raigarh at Vedanta will be interface point of Odisha STU till 30th November, 2016.
8. Subsequently, after the completion of 400 kV Sterlite-Jharsuguda D/C line the interface point of Odisha STU will be shifted to Jharsugada.

9. With the change of control area jurisdiction the status of 400 kV Sterlite-Jharsuguda D/C line will no more be a dedicated line. So, Vedanta agreed to hand over the line to OPTCL which can be treated as an ISTS tie of OPTCL.
10. Vedanta has to strictly adhere to the schedule for completion of 400 kV Sterlite– Jharsuguda D/C line (i.e. 30th November, 2016) as per the decision of 33rd TCC/ERPC and decided in the meetings held in CEA on 16.9.16. In case 400kV Vedanta-Jharsuguda D/C line is not commissioned by that date, the LILO connection to Vedanta shall be withdrawn.
11. Due to change of control area jurisdiction from ERLDC to SLDC Odisha. Vedanta Ltd has to settle the following:

    I) ERLDC fees and charges shall be paid by Vedanta Limited as applicable up to the cutoff date.
    II) Previous dues up to cut off date of the pool accounts such as DSM charges along with interest, RTDA, any others has to be settled by Vedanta.
    III) Henceforth, any deviation of Vedanta Limited will be treated as deviation of OPTCL.
    IV) After changeover of jurisdiction if in future it is found that any amount in pool account had remained unaccounted by mistake against Vedanta Limited, Vedanta Limited will have to pay the amount into the pool account.
    V) For calculation of POC charges and losses Vedanta Limited generation will be considered as generation of Odisha.
    VI) Vedanta Limited has to get registered afresh at each RLDC for Short Term Open Access as embedded entity in OPTCL.
    VII) Reconciliation of accounts is also required to be done up to the cutoff date by Vedanta.
    VIII) OPTCL in coordination with Vedanta has to send weekly SEM data to ERLDC by Tuesday Noon.

Vedanta expressed that presently the 400 kV Vedanta- Meramundali D/C line is not stable and tripping frequently. Vedanta and OPTCL were advised to look into the matter and resolve the issues related to this line expeditiously. Till carrier aided distance protection scheme is implemented, entire length of the line should be covered in Zone-1 from both ends

ERLDC stressed that the SPS for restricting power flow in 400kV Vedanta – Rourkella or Vedanta-Raigarh line within 650 MW, should be kept in service. Vedanta agreed.

After changeover of the jurisdictional authority, it was felt that closed Bus operation would ensure greater reliability. In this regard CTU stated that with such a closed bus operation, the impact of increase of short circuit MVA levels at various buses would not be significant and would remain within limits. Further, it was decided that a system study may be carried out for the above arrangement and placed in the next OCC. It was also decided that the control area jurisdiction may be handed over to SLDC, Odisha w.e.f. 24.10.2016 as under the present circumstances Vedanta is not mandated to inject to the ISTS Grid and their NOC stands revoked w.e.f 24.10.16.

Meeting ended with vote of thanks to the chair.

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Annexure- B4C

Weekly Progress report on Construction of Dedicated Transmission Line:

As on dt.7th November, 2016

Name of Applicant: Vedanta Ltd

1.	Dedicated Connectivity Line	Vedanta Switchyard to PGCIL Pooling station Sundargarh. 400KV D/c Line
2.	Length of Dedicated Connectivity Line	20.345 KM
3.	Type of Conductor	AL 59
4.	Conductor configuration	Twin Conductor
5.	Total Nos. of Transmission line towers	64 Nos.
6.	Tower Foundations Completed	59 Nos
7.	Tower Erection Completed	38 Nos
8.	Stringing Completed	0 KM
9.	Completion Schedule of Dedicted transmission line along with the associated bay at Both ends.	30th Nov, 2016

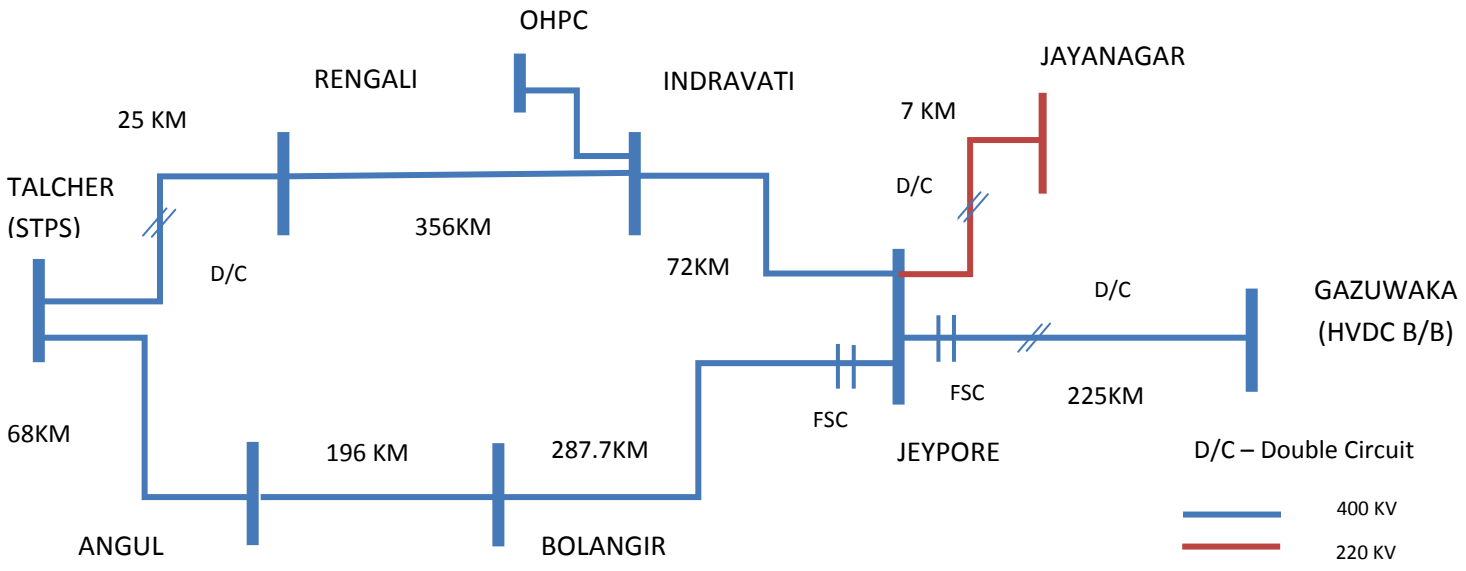
Annexure-B8

Sl No	NAME OF THE ELEMENT	TRIPPING DATE	TRIPPING TIME	REASON
1	400 kV BINAGURI-BONGAIGAON-I	02/08/2016	13:56	Y-N FAULT
2	400 kV BINAGURI-BONGAIGAON-I	11/08/2016	12:45	B-N FAULT,204.4 KM FROM BINAGURI END,F.C 1.59KA
3	400 kV BINAGURI-BONGAIGAON-III	13/08/2016	13:14	Y-N FAULT
4	400 kV BINAGURI-BONGAIGAON-IV	15/08/2016	22:26	R&B PH,(222.2 KM FROM BINAGURI END,Z-2,F.C.-R-PH-1.94kA,B-PH-2.025kA)(4.99kM FROM BONGAIGAON END, Z-1,F.C.-R PH-9.733KA,B PH-9.679KA)
5	400 kV BINAGURI-BONGAIGAON-IV	18/08/2016	20:41	Y-N FAULT
6	400 kV BINAGURI-BONGAIGAON-I	24/09/2016	23:30	R-B FAULT
7	400 kV BINAGURI-BONGAIGAON-II	24/09/2016	23:30	R-B FAULT
8	400 kV BINAGURI-BONGAIGAON-III	28/09/2016	17:27	Y-B-N FAULT @ BINAGURI,162KM,F.C.-Y PH -3.4 KA
9	400 kV BINAGURI-BONGAIGAON-II	03/10/2016	11:46	B-N FAULT
10	400 kV BINAGURI-BONGAIGAON-III	04/10/2016	11:25	R-Y-N FAULT, 119KM FROM BINAGURI
11	220kV CHUKHA-BIRPARA-I	25/08/2016	17:03	TRIPPED AT CHUKHA END ONLY(LBB OPERATED)
12	220kV CHUKHA-BIRPARA-II	25/08/2016	17:03	TRIPPED AT CHUKHA END ONLY(LBB OPERATED)
13	220kV CHUKHA-BIRPARA-II	04/09/2016	07:31	Y-B FAULT
14	220kV CHUKHA-BIRPARA-I	15/09/2016	12:47	R-Y FAULT
15	220kV CHUKHA-BIRPARA-II	15/09/2016	12:47	R-Y FAULT
16	220kV CHUKHA-BIRPARA-II	15/09/2016	14:54	Y-B FAULT
17	220kV CHUKHA-BIRPARA-II	16/09/2016	12:23	R-N FAULT
18	220kV CHUKHA-BIRPARA-II	19/09/2016	17:10	B-N FAULT
19	220kV CHUKHA-BIRPARA-I	19/09/2016	22:10	R-Y-B FAULT
20	220kV CHUKHA-BIRPARA-II	19/09/2016	22:10	R-Y-B FAULT
21	220kV CHUKHA-BIRPARA-I	21/09/2016	02:08	R-N FAULT
22	220kV CHUKHA-BIRPARA-I	25/09/2016	08:34	ALL LINES TRIPPED FROM CHUKHA END ONLY
23	220kV CHUKHA-BIRPARA-II	25/09/2016	08:34	ALL LINES TRIPPED FROM CHUKHA END ONLY
24	220kV CHUKHA-BIRPARA-I	03/10/2016	14:13	B-N FAULT, 1.55KA, 50.34KM FROM BIRPARA
25	220kV CHUKHA-BIRPARA-II	03/10/2016	14:13	B-N FAULT, 1.57KA, 59.39KM FROM BIRPARA

REPORT ON TRIPPINGS OCCURED ON 15.04.16 AT 12:17HRS AND SUBSEQUENT BUS VOLTAGE ZERO CONDITION AT JEYPORE

Background: On 15.04.16, Bus voltage at 400/220KV Jeypore substation has become zero after tripping of 400KV Rengali-Indravati Line at both ends. It has happened thrice in a year span i.e 1st on 21.05.15, 2nd on 10.03.16 and the present case. Further, it happens only when 400KV Indravati- Rengali line trips at Indravati s/s and power flow feed from Indravati-Jeypore line at Jeyporebecomes zero.In such case, only line left for feeding power to jeyporeis 400KV Jeypore-Bolangir line as no infeed from Jayanagar at Jeypore and OHPC at Indravati in summer. Further, after tripping of 400KV Rengali-Indravati Line, 400KV Jeypore-Bolangir line trips on over voltage after some time leading to bus dead condition at Jeypore s/s.

Connectivity diagram of Lines:



FSC- Fixed Series Compensation

Details of FSC:

1. 400KV Jeypore-Gazuwaka D/C line with 50% compensation/
2. 400KV Jeypore-Bolangir S/C line with 63%(approx) compensation. Earlier this line was connected at Meramundalifrom Jeyporewith a line length of 456KM and 40% compensation and now, it has aLILO at Bolangir (287.7KM) with no modification in FSC at Jeypore. As a result, now the compensation of this line is around 63%.

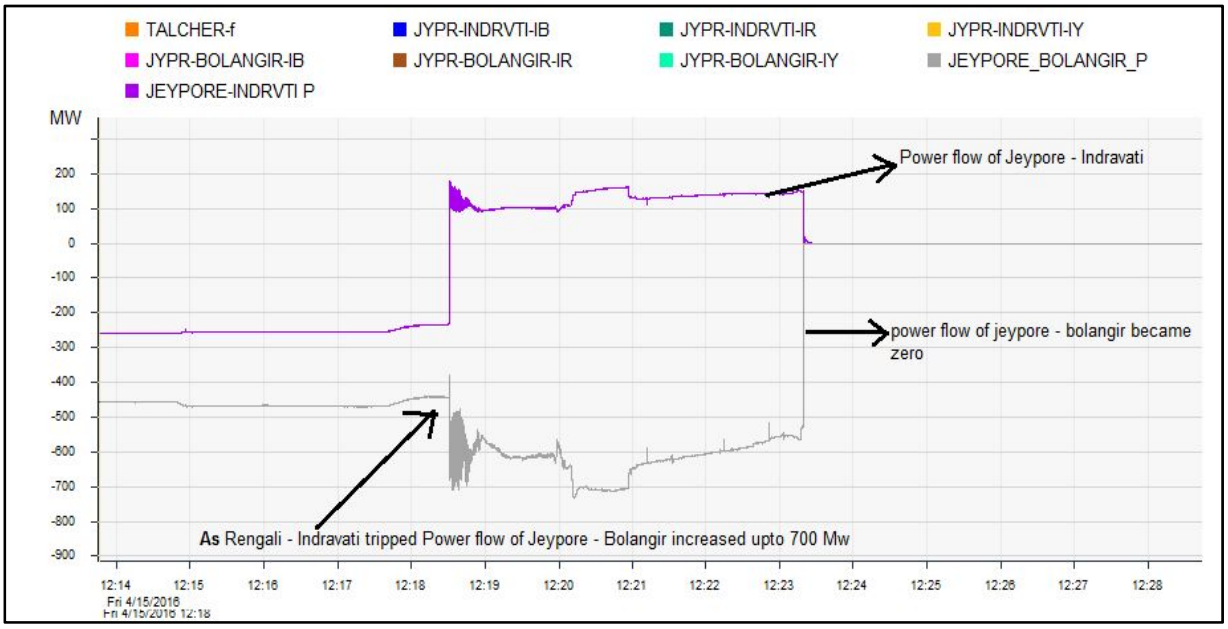
Sequence of Tripping occurred in present case:

SL NO	TIME OF TRIPPING	TRIPPED LINE	CAUSE OF TRIPPING	STAUS OF AUTO RECLOSE
01	12:17:31hrs	400KV Rengali–Indravatiline	***Transient Fault: 1.84kA, B-N , 222.32Km from Rengali.*** Subsequent over voltage immediately after tripping of one pole and prior to A/R caused three phase tripping at Rengali and sent DT to Indravati.	A/R Blocked due to Over Voltage.
02	12:23:19hrs	400KV Jeypore-Bolangir Line	Over Voltage stage-1	NA
04	12:29:32 hrs	400KV Jeypore-Gazuwaka Line - II	Tripped due to DT receipt as these lines were hand tripped at Gazuwaka-1&2 as informed by them.	NA
05	12:29:48 hrs	400KV Jeypore-Gazuwaka Line - I		NA
07	12:48:21 hrs	220KV Jeypore-Jayanagar-1&2	Hand Tripped	NA
07	12:43:21 Hrs	400KV Jeypore-Indravati line	Hand Tripped	NA

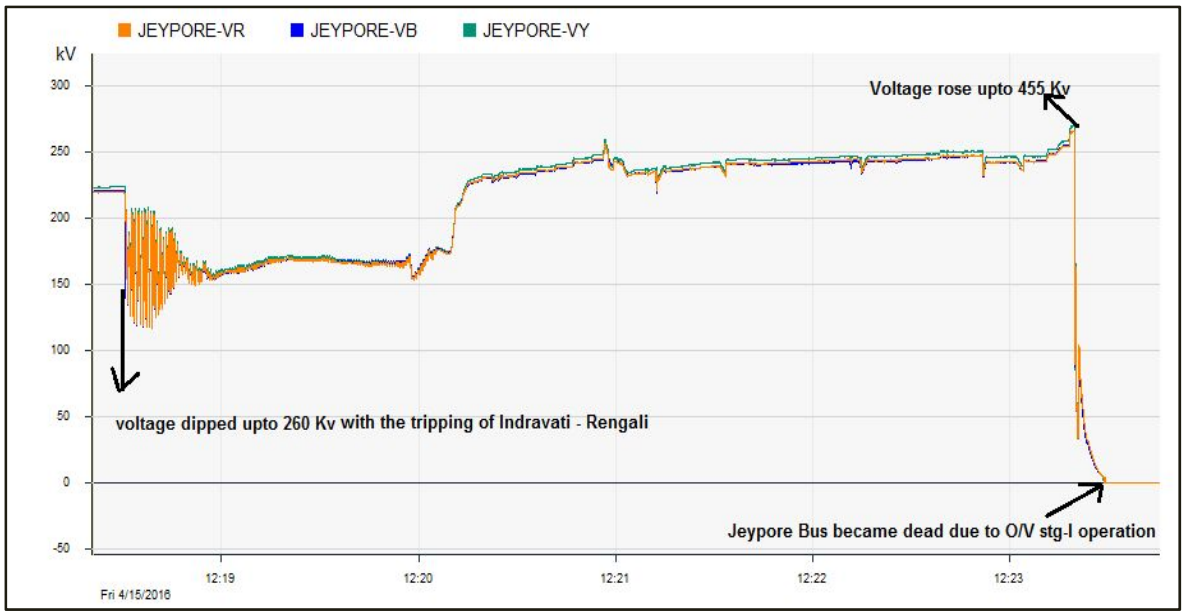
Analysis:

Based on the trip reports received from sites and collected PMU plots from ERLDC, the following analysis was done.

1. Initially, B-ph (RYB nomenclature) of 400KV Rengali- Indravati line tripped due to transient fault at a distance of 222.32 km from Rengali S/S and after few milliseconds, over voltage stage-2 (Inst.) operated in R-PH and tripped the line on over voltage sending a DT signal to Indravati S/S and blocking A/R operation. Tripping reports of Rengali&Indravati are enclosed for your reference.
2. The status of power flow as per PMU at Jeypore is shown below.



3. From the plot, there was a power import of around 450MW from Bolangir and around 270MW from Indravati and the total power was fed to SR-1 through 400KV Jeypore-Gazuwaka D/C line except some less power export (around 25MW seen from FHTR of Jeypore) to 220KV OPTCL lines before tripping of 400KV Rengali- Indravati line.
4. After tripping of 400KV Rengali- Indravati line, the flow in 400KV Jeypore-Bolangir line has increased to 700MW with some oscillation as shown in PMU plots below. At the same time, power flow in 400KV Jeypore-Indravati line has reversed and feeding OPTCL N/W loads at OHPC through Indravati S/S and the same is evident from above plot.
5. Bus Voltage profile at Jeypore S/S after tripping of Rengali - Indravati line as follows as per PMU plots. Voltage oscillations were observed in the plot. There was sudden dip in voltage due to sudden increase in loading of Jeypore-Bolangir line and later on, the rise in voltage observed.



6. After 5mins of Renagli-Indravati line tripping, 400KV Jeypore-Bolangir line tripped on over voltage satge-1. Hence, the total power infeed to jeypore has become zero as there is no power flow from 220KV OPTCL lines at Jeypore and OHPC at Indravati. The same can be seen in PMU plot of Jeypore power as shown above. The trip report of Bolangir line is enclosed.
7. Later, other lines at Jeypore&Indravatiwere hand tripped due to bus dead and no voltage.

Suspected reasons for Sudden Voltage rise:

It is suspected that the following factors may contribute for voltage rise in Jeypore-Bolangir line after tripping of 400KV Rengali-Indravati line and causing tripping of Jeypore-Bolangir line on voltage and making Bus voltage zero at Jeypore s/s.

a) Overcompensation of FSC in Jeypore-Bolangir line after LILO of Jeypore-Meramundali line at Bolangir. Earlier, compensation was 40% for 456 KM line length (Jeypore- Meramundali) and now it has become around 63% for 287.7 Km (Jeypore-Bolangir line).

b) Filter bank insertion at Gazuwaka to boost the voltage whenever voltage dips below 360KV. In the instant case, 80 KV Voltage dip was observed in Jeypore bus voltage after Bolangir

line is over loaded after Regali-Indravati line tripping. So, the filter bank cut off voltage values needs to be checked as it may contribute overvoltage if not bypassed once voltage normalized.**As per information gathered fromGazuwaka, there was no such abnormality observed during that period.**

c) Condition of R-Ph CVT of Bolangir Line at Jeypore as in all the cases over voltage observed in R-Ph only. But in the instant tripping, over voltage found to be observed in other phases also. **However, It has been checked at site and no abnormality has been found.**

d) Further, the frequent trippings on south bus at Gazuwaka HVDC B/B station due to pollution tracking maybethe reason for the possibility of pole blocking and consequent over voltage on Eastern bus.

FAULT FINDINGS&REMEDIAL ACTIONSTAKEN :

(1) The polarity of neutral CT used in NGR bypassing scheme of 50MVAR Line Reactor of 400KV Rengali-Indravati Line at Rengali was found to be reversed, which might have been triggering Reactor REF relay, thereby Reactor protection has been operated in case of thorough fault condition too and sending direct trip to remote end. This polarity reversal in NCT has been rectified.

(2) Proper assignment of Digital as well as Analogue signals in DR and EL done at Rengali, which was found to be mis-matching with actual signal due to NTAMC wirings and retrofitting works done for implementation of NTAMC. Due to this mismatching of signals, it was very difficult to identify the signals for which actual tripping occurred.

(3) The contact in auxiliary relay of Auto Reclosure Lock Out relay at Indravati was found to be burnt and chattering in case of A/R block action. Due to this in spite of receiving A/R lock out signal from remote end, A/R blocking did not occur and the line remained hanging from Indravati end. This auxiliary relay has been replaced with spare one.

The report is being submitted based on prevailing data available with us. Further study of the case is under process to avoid such incidents in future.

(S.K.Naik)
Ch.Mgr(AM)
POWERGRID
Bhubaneswar.

Enclosures:1.Tripping Reports of all substations as mentioned above
2. PMU Plots collected from ERLDC.

Annexure- B18

पावरग्रिड

Power Grid Corporation of India Limited

Communication Equipment Package IV- Eastern Region

Troubleshooting & Analysis of Ethernet Services

commtel NETWORKS

1 Introduction

PGCIL ER SDH transmission network is spread across 5 states of India (i.e. West Bengal, Orissa, Sikkim, Jharkhand and Bihar. The transmission network consists of STM-16 SDH equipment *i.e.* Coriant hiT 7080 (Qty: 43 Nos.) & STM-4 equipment *i.e.* Coriant hiT 7025 (Qty: 99 Nos.).

The SDH transmission network facilitates E1 2Mbit/s to interface with PDH equipment (*i.e.* Loop AM3440) installed at all the station. The PDH equipment provides the voice *(i.e.* 2/4 Wire E&M and FXO/FXS Subscriber dialling) and data services (*i.e.* V.24/V.28 & V.35). The SCADA RTU's communicates with SCADA Master System over the V.24/V.28 data links.

The SDH network also facilitates Layer-2 Ethernet services for point-to-point and point-to-multipoint Ethernet traffic. The ICCP data links, Video Conference, EPABX, VoIP, RTU and Phase Metering Unit data links from SLDC's reports to ERLDC Kolkata over Ethernet services of SDH.

The above E1 2Mbit/s and Ethernet services were running for more than a year.

2 Network Events

8th August 2016 05:30 AM.

Failure of ICCP data, VoIP, RTU and Phase Metering Unit data from SLDC's reporting to ERLDC Kolkata.

On 8th August 2016 5:30 AM, majority of Ethernet services like ICCP, VoIP, and RTU were not operational.

The team reached ERLDC and found that Ethernet services are not operational, however E1 2Mbit/s traffic is operational without any disruption. All other voice & data services configured on PDH system are functioning seamlessly. The RTU data is working acceptably over V.24/V.28 data links of PDH system.

There were no alarms in NMS on any of the Ethernet interface units of SDH system. The team tried to isolate the fault by switching paths of SLDC's.

Considering the urgency of the restoration of ICCP links, we decided to reconfigure the ICCP links from all SLDC to ERLDC. In the meantime we requested PGCIL to provide the standby telecom links for early restoration of ICCP links. PGCIL provided us the standby telecom links and ICCP data shifted on the standby telecom links. Concurrently the ICCP links from all SLDC's to ERLDC were reconfigured on SDH system and restored by 9th August 2016 midnight.

As the network is widely spread across 5 states and not linear in nature it was again adding to the difficulty in finding the exact fault location. While restoring the Ethernet services, our observations and analysis are as below:

3 Problem Analysis & Corrective Actions

- We performed Ethernet ping test on 10 Mbps link between ERLDC to Bhubaneshwar SLDC. The ping response was inconsistent and with high latency. We also observed request timed out frequently.
- Subsequently we performed RFC2544 Ethernet test on 10 Mbps link between ERLDC to Patna SLDC. We observed 60% throughput, high latency (i.e. ≥ 100 milliseconds) and high frame loss.
- The point-to-multipoint Ethernet services were not functioning consistently in Core ring (*i.e.* STM-16 equipment at Farakka, Durgapur, Jamshedpur, Chaibasa, Rourkela, Ranchi 400, Maithon CS and Kahalgaon).
- We observed that point-to-multipoint WAN aggregation performance is not consistent in STM-16 core-ring.
- We rebooted the Ethernet cards of all the STM-16 core-ring, but Ethernet services were inconsistent.
- At all hiT 7080 node of the STM-16 core-ring as well as STM-4 sub-rings, all the VLAN's (*i.e.* ICCP, EPABX, VoIP, RTU and PMU) were mapped on a single WAN of 100 Mbps bandwidth.
- At Farakka hiT 7080 junction node (with four STM-16 directions), the end-to-end WAN status of all four STM-16 directions was OK. In the Ethernet performance data, we observed the frame losses on WAN interfaces, WAN interface wasn't forwarding the Ethernet frames consistently.
- We observed it was creating the problem as all the VLAN services ICCP, VoIP, and PMU were mapped on the same WAN of 100 Mbps bandwidth.
- hiT 7080 at Farakka is very critical as it is a junction node with four STM-16 directions going towards ERLDC, Bhubaneshwar, Patna & Sikkim. Ethernet services across the STM-16 core-ring as well as STM-4 sub-ring were affected whenever they were added/dropped at this node. On the contrary, the services functioned properly when they were optically passed through Farakka.
- Hence, we reconfigured the Ethernet services across the network such that all the services (ICCP, VoIP, RTU, PMU, etc.) which were in a single WAN group earlier, were segregated into separate WAN groups.
- Considering the criticality of ICCP data, the main links for this service were configured as Point to Point channels so that in future, failure in any one of the link will not affect other working links.
- Subsequent to these network configuration changes, we monitored the Ethernet performance of WAN interfaces at other locations as well (*i.e.* and Durgapur, Jamshedpur, Chaibasa, Ranchi 400, Maithon CS, and Kahalgaon).

- Following these corrective actions, all point-to-point and point-to-multipoint Ethernet services started functioning steadily over the entire network even when the Ethernet traffic was added/dropped at Farakka. It is mentioned that no hardware fault was observed at any location and the system is working on the same equipment/cards/hardware on date.
- We observed the improvement in the latency which dropped from ≥ 100's of milliseconds to 20...25 milliseconds and zero frame loss.

4 Additional Observations and Suggestions

- It is observed that the additional ports configured in the networks on ad hoc request of Constituents are used for IT and ERP like services, which modifies the channel plan from the original design in an unplanned manner. It is recommended that such requests should go through proper approval of LD&C (Power Grid) for assessment of impact on the critical GRID operations traffic prior to configuration.
- Additional Standby links for very important services like ICCP etc. have to be configured from Telecom or using E1 to Ethernet converters at ERLDC and SLDC locations.
- Most of optical links were not available initially and the services have been configured through best available path. Availability of maximum optical link is very much essential to implement the Ethernet channel routing scheme in totality.

5 Preventive Actions for Future

- Periodic audit and streamlining of all Ethernet services reconfiguration in all the nodes of STM-16 core Ring and STM-4 based on future service requests.
- After adding/deleting any E1/ Ethernet traffic in the network, the node configuration backup will be taken for early restoration in the event of fault condition.
- While provisioning of new services/applications by an end-user, Ethernet patch Cables has to be inserted in designated ports of the SDH equipment only after end-to-end link testing has been performed by Commtel.
- All the services in the network are as per approved design document. No services addition or deletion or shifting has to be done without proper re-designing and approval by LD&C.

6 Conclusion

Prima facie it is observed that the network interruption incident of August 8th, 2016 occurred because Ethernet services were affected due to configuration of multiple services in one WAN. Whereas the exact network service/element affected the network could not be found, also no physical defect has been found in the hardware

as mention above. it is clearly seen that problems was found in Ethernet WAN services as one service has affect the other services shared by the same WAN, since no alarms were generated the exact reason for the malfunction in any one of the services in the Ethernet domain is very difficult to pin point. However We have addressed this issue of inter dependence of performance of various Ethernet applications by segregating the services on separate WANs, so that problems in any one service do not affect the remaining services which run over the Ethernet. Further preventive and suggested actions as delineated above have been identified so that such incidences do not occur in future.

for COMMTEL N/WS
PVT. LTD
14/07/2016.

Annexure- B19

DISTRICT: CALCUTTA

IN THE HIGH COURT AT CALCUTTA

CONSTITUTIONAL WRIT JURISDICTION

APPELLATE SIDE

W.P.NO. 17614 (W) OF 2015

In the matter of:-

An application under Article 226 of the Constitution of India;

And

In the matter of:-

A writ or in the nature of a Writ of Mandamus and/or Order or Orders and/or Direction or Directions in the nature thereof;

And

In the matter of: -

A writ or in the nature of a Writ of Certiorari and/or Order or Orders and/or Direction or Directions in the nature thereof;

And

In the matter of: -

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The Electricity Act, 2003 and the Regulations framed thereunder;

And

In the matter of: -

Minutes/ resolution adopted in the meeting dated 24th March, 2015 of the Eastern Regional Power Committee being illegal, arbitrary, unlawful, without jurisdiction and ultra vires of the provision of Section 29(5) of the Act of 2003;

And

In the matter of: -

Commercial looses suffered and/or to be suffered by the petitioner no. 1 company in view of Minutes/ resolution adopted in the meeting dated 24th March, 2015 of the Eastern Regional Power Committee being illegal, arbitrary, unlawful, without jurisdiction and ultra vires of the provision of Section 29(5) of the Act of 2003;

03/10/16

And

In the matter of: -

1. Eastern Coalfields Limited, (a subsidiary of Coal India Limited), Sanctoria, P.O. Dishergarh, District – Burdwan, Pin – 713333, West Bengal.

2. Chairman cum Managing Director, Eastern Coalfields Limited, (a subsidiary of Coal India Limited), Sanctoria, P.O. Dishergarh, District – Burdwan, Pin – 713333, West Bengal.

... Petitioners

Versus

1. Eastern Regional Power Committee, Government of India, Ministry of Power, service through its Member Secretary, having Office at 14, Golf Club Road, Tollygunj, Kolkata – 700 033.

03/10/16

2. The Member Secretary, Eastern Regional Power Committee, Government of India, Ministry of Power, having Office at 14, Golf Club Road, Tollygunj, Kolkata – 700 033.

3. NTPC Limited (a Government of India Enterprise), service through its Chairman, having registered Office at NTPC Bhawan, Core – 7, Scoop Complex, Institutional Area, Lodhi Road, New Delhi – 110 003.

4. The Chairman, NTPC Limited (a Government of India Enterprise), having registered Office at 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

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Station, NTPC Limited, P.O. Nabarun, District – Murshidabad, West Bengal Pin – 742 236.

6. Central Electricity Regulatory Commission, service through its Chairperson, having its Office at 3rd and 4th Floor, Chanderlok Building, 36, Janpath, New Delhi – 110 001.

7. The Chairperson, Central Electricity Regulatory Commission, having its Office at 3rd and 4th Floor, Chanderlok Building, 36, Janpath, New Delhi – 110 001.

... Respondents

8. Union of India, service through the Secretary, Ministry of Power, Government of India, having office at Shram Shakti Bhavan, New Delhi – 110 001.

... Proforma Respondents

9. Jharkhand Urja Sancharan Nigam Limited, Service through the Managing Director, having its office at Engineering Building, HEC, Dhurwa, Ranchi-834004.

... Added Respondent

Correction is done pursuant to Liberty granted by the Hon'ble Justice Dr. Sambuddha Chakrabarti today.

Partha Sarathi Roy
02-02-2016.

03/10/16

IN THE HIGH COURT AT CALCUTTA
Constitutional Writ Jurisdiction
Appellate Side

W.P. No. 17044 (W) of 2015

Eastern Coalfields Ltd. & Anr.
Vs.
Eastern Regional Power Committee & Ors.

For the petitioners:-	**Mr. Subir Sanyal** **Mr. Partha Basu** **Mr. S. Prasad**
For the Respondent No. 1 and 2:-	**Mr. Shyamal Sarkar, Sr. Adv.** **Mr. Shourjyo Mukherjee** **Mr. Suchetan Ghosh**
For the Respondent No.9:-	**Mr. Anirban Roy** **Mr. Tridib Bose** **Mr. Ashik Iqbal**
For the Respondent No. 3 to 5:-	**Mr. Uttam Kr. Mondal** **Mr. Soumabha Ghosh** **Mr. Biswajit Mal**
For the Union of India:	**Mr. Kaushik Chanda** **Ms. Ashima Roy Chowdhury**
Judgement On:	**23rd September, 2016**

I.P. MUKERJI, J.

DEVELOPMENTS

On 30th March, 1985, a meeting was held under the Chairmanship of Mr. Vasant Sathe, the then Minister of Steel, Mines and Coal. The Secretary, Department of Coal emphasised the need for an uninterrupted supply of power by NTPC, the respondent no. 3, from Farakka through an independent transmission line, to the Raj Mahal mine owned and operated by Eastern Coalfields Limited, (ECL), the writ petitioner, in Bihar, now in Jharkhand. The cost of laying this line would have to he borne by ECL. The Minister agreed. The Chairman of NTPC agreed to look into the matter.

The proposals made on 30th March, 1985 were put into effect.

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The transmission line was erected and, paid for by ECL. The cost was Rs. 17.86 crores. It was called the Farakka, Lalmatia Transmission System. It commenced supply of power to the Lalmatia (Raj Mahal) project of ECL from 14th June, 1990. It was a 220 KV 82.11 km. long line running from Farakka, for 9.5 km through West Bengal and 72.61 km. through Jharkhand to the Dhankunda substation of the distribution licensee, JUSNL, the respondent no. 9 and onward to the establishment of ECL, also the consumer through a distribution system also built by them.

In the minutes of another meeting held under the Chairmanship of the Additional Secretary (Coal), Government of India, on 23rd October, 1991, a concrete decision was taken that the ownership of the transmission line would remain with ECL. The system would be continued to be operated by NTPC.

In or about October, 1992 the Bihar State Electricity Board expressed an intention to take over this transmission system. They wrote to the Additional Secretary, Ministry of Coal on 7th October, 1992, to this effect. On 2nd November, 1992 the Additional Secretary replied that it would not be possible for ECL to handover the system to the Board. It was clarified that power would continue to be supplied from Farakka to the Raj Mahal open cast mine of ECL. However, ECL would have to pay for it at the same rate as they would have paid as if they received it from the Board.

So, upto today the Raj Mahal area of Eastern Coalfields Limited receives power supply from the Farakka Super Thermal Power Station of NTPC through the 220 KV Farakka, Lalmatia Transmission System. It is routed through the Dhankunda sub-station, Lalmatia which is under the JUSNL, the successor of Bihar State Electricity Board. NTPC is operating and maintaining this transmission system and the associated switchyard equipment.

This transmission line, through the JUSNL is giving power not only to Eastern Coalfields Limited at Raj Mahal but also to the areas of Sahebgunj, Dumka, Pakur, Deoghar, Godda etc. in Jharkhand.

NTPC said that they were an expert in power generation but did not have the expertise in the field of transmission of power. Hence, they were having some difficulty in

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operating and maintaining the line. On 13th and 14th February, 2015 meetings were held in Ranchi, followed by another on 11th March, 2015 in Kolkata and the final one on 24th March, 2015 in Ranchi. It was well represented by the Jharkhand Electricity Authorities, the Eastern Regional Power Committee, the respondent no. 1 (ERPC), ECL and NTPC. Here it was suggested that the operation and management of this line would be looked after by JUSNL upon payment of charges to them by ECL. ECL said that JUSNL would be using this transmission line to supply electricity to other consumers. Hence, ECL should get a special rate. ECL would have to hand over the entire Farakka, Lalmatia Transmission System to JUSNL. It was also proposed that joint supervision of the transmission system would be made by JUSNL, NTPC, ECL and other interested parties. Till the asset was handed over its operation and maintenance would be carried out by NTPC. There was also some discussion regarding payment of electricity tariff, which is not very important for the purposes of this case.

In the meeting held by ERPC on 24th March, 2015, they decided that ECL should hand over the entire Farakka, Lalmatia Transmission System (FLTS) to JUSNL. Till this handing over was made by ECL to JUSNL operation and maintenance would be carried out by NTPC.

Being aggrieved by this decision, ECL is before this court by filing the instant writ application under Article 226 of the Constitution of India.

SUBMISSIONS

Mr. Sanyal appearing for ECL made some very broad submissions.

First of all, he argued that ERPC had no jurisdiction to make this kind of an order. Nobody had given them the power to direct that the transmission system set up and owned by ECL should be transferred and handed over to JUSNL. Section 29 (4) of the Electricity Act, 2003 did not vest this power on them. ECL was the owner of the transmission system. It was part of the assets of the company. This asset had been acquired by making very substantial expenditure from the funds of the company. The asset was shown in its balance sheet. Without an order from a proper authority or a

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decision by the Board of Directors of the company or the Ministry of Coal. ECL could not hand over this asset to JUSNL merely on a decision taken by the respondent nos. 1 and 2. Moreover, a valuable asset of a Corporation could not be parted with without any consideration, it was submitted.

ERPC did not have the power to make the decision. Similarly the Central Electricity Regulatory Commission (CERC) did not have the power to hear an appeal from this kind of a decision. Moreover, Section 79 (f) of the said Act did not empower CERC to decide the instant dispute. There was no dispute between ECL and the ERPC that was referable to CERC on appeal, Mr. Sanyal argued.

Mr. Sanyal also said that Regulation 3.2.4 of the JSERC (Electricity Code) Regulations, 2005 provided that the dedicated distribution system, belonged to a distribution licensee but on a close scrutiny of the Act and the Regulations, Farakka, Lalmatia (Raj Mahal) Transmission System could not be called a distribution line or system. Mr. Sanyal supplemented his argument by citing various provisions of the Act and Regulations to which I will refer later on in this judgement.

Mr. Shyamal Sarkar, senior Advocate appearing for the ERPC submitted that the Jharkhand Electricity Regulatory Commission fixed tariff for this consumption of electricity. He referred me to Section 2 (72) of the Indian Electricity Act, 2003 which defined a Transmission System and also to Section 2 (19) which defined to the distribution system. He said that ECL did not receive power directly from NTPC but it received it, as distributed by JUSNL.

The power to frame regulations was contained in Section 50 of the said Act. Under Regulation 3.2.4 the dedicated facility belonged to the distribution licensee.

Mr. Sarkar cited **OTC India Ltd. v. Central Electricity Regulatory Commission,** through secretariat reported in **(2010) 4 SCC 603.** In that case the court was *inter alia* dealing with the power of the Central Commission under Section 178 of the said Act to make regulations. A regulation under Section 178 could even override existing contracts between the 'regulated' entities. Similar was a regulation by the State Commission under Section 181 of the said Act. He contended that Regulation 3.2.4

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was made by the State Commission of Jharkhand in lawful exercise of power and was binding on the petitioner. He also cited **Coastal Andhra Power Limited. V. Andhra Pradesh Central Power Distribution Company Limited** reported in **2012 SCC OnLine Del 3352** and **Gujarat Urja Vikas Nigam Ltd. v. Essar Power Ltd.** reported in **(2008) 4 SCC 755.** He submitted that the present dispute could be resolved by the adjudicator under Section 79 (1) (f) and Section 86 (1) (f) of the said Act. According to Mr. Sarkar ERPC had correctly directed handing over of the system by ECL to JUSNL as NTPC had expressed its lack of expertise to operate and maintain the system.

The Farakka, Lalmatia transmission line had been identified as an alternative system to supply electricity to the Eastern part of India in case of a National Grid Failure. Thus, a black out could be avoided, he added.

Mr. Tridib Bose for JUSNL said that his client was agreeable to supply ECL power at the same rate as NTPC.

MY VIEWS

Now, let us consider certain key provisions of the Electricity Act, 2003.

First, Section 14. It provides that the appropriate Commission i.e. the Central Commission or the State Commission, may on an application made to it, under Section 15 inter alia grant a licence to transmit electricity. The licensee is described as a transmission licensee.

Section 2 (72) defines "transmission lines". Very importantly the sub-section states that these transmission lines are not part of the distribution system. Transmission lines denote high pressure cables and overhead wires transmitting electricity from a generating station to inter alia a sub-station. Transmission lines include the transformers, switchgears and other things including buildings that are needed to house these equipments.

Now, let us see how the distribution system is defined.

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Section 2 (19) defines it as the connection network together with other facilities between delivery points on inter alia the transmission line and the point of connection to the "installation of the consumer".

It may also be necessary to notice the definition of "service line" in Section 2 (61) of the Act. It is a supply line through which electricity is supplied to a consumer or a group of consumers from a distributing main. Distributing main is defined in Section 2 (18) as any portion of any main line with which a service line is connected. Again "main" in Section 2 (42) means against any electricity supply line through which electricity is intended to he supplied.

Section 16 of the Electricity Act, 2003 provides that the Appropriate Commission may set down general or specific conditions under which the transmission or a distribution licensee would operate. Section 17 prohibits inter alia a transmission licensee to purchase or take over the utility of another licensee or to merge his utility with the utility of another, without the permission of the Appropriate Commission. Section 20 says that on revocation of a licence, under Section 19, the Appropriate Commission has the power to sell the utility of the licensee to the purchaser, without liabilities.

In my opinion, the provisions of Section 40 are most important. It casts a duty on the transmission licensee "to build, maintain and operate an efficient coordinated and economical inter-state transmission system or intra state transmission system as the case may be".

In exercise of powers conferred by Clause –x of sub-Section (2) of Section 181 read with Section 50 of the said Act, the Jharkhand State Electricity Regulatory Commission made the (Electricity Supply Code) Regulations, 2005 published on 28th July, 2005. The regulations apply to the distribution licensees in their respective licensed areas. This Court's attention was drawn by Mr. Sarkar to Regulation 2(5) which related to dedicated distribution facilities. They are described as a facility not including a service line, forming part of the distribution system of the licensee dedicated to the supply of electricity to a group of consumers.

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I was also shown 3.2.4 of these regulations which say that the service line and the dedicated distribution facility would be the property of the licensee, notwithstanding that it was paid for by the consumer.

Now, for the purposes of this case the business of generation transmission and distribution of electricity has to be seen as simply as possible. We have to imagine a tree with a firm trunk and many branches. When the roots of the tree start accumulating the absorbed water from the soil, it is similar to the process of generation of electricity. As this water is driven up the trunk of the tree, the trunk can be appropriately viewed as the transmission line. Section 2 (72) defines transmission lines inter alia as overhead lines transmitting electricity from a generation station to inter alia a sub-station The trunk of the tree branches out into main branches and subsidiary branches, forming a kind of a network. The water that is pumped up the trunk of the tree ultimately reaches the finest branches, then the leaves and the flowers. At the points where the main trunk branches out, we might visualise the location of the distribution system, as defined in Section 2(19). This subsection defines distribution system as a "system of wires and associated facilities between the delivery points on the transmission line..... "and the point of connection to the installation of the consumers." We might consider the leaves and flowers as the consumers.

Now, this 220 KV Farakka, Lalmatia transmission systems transmits electricity to the Dhankunda sub-station Lalmatia under JUSNL. It is not in dispute that from this sub-station, power is not only supplied to ECL but also to district Godda in Dumka and other places, as stated above. Therefore, the sub-station can be taken as the delivery point of the transmission system from which JUSNL is supplying electricity to ECL through a distribution system and "service line" as defined in Section 2(61). Therefore, from Farakka electricity is transmitted to the Dhankunda sub-station. From there it is inter alia distributed by JUSNL to ECL.

In my understanding of the subject it would not at all be proper to classify this entire network as a transmission system or a distribution system. It is partly transmission and partly distribution. It is a transmission system from Farakka upto Dhankunda sub-station. Thereafter, it is the distribution network which reaches electricity to ECL. I

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accept the submission of Mr. Sanyal of ECL that this entire transmission line, the part of the distribution system service line etc. through which this power generated at Farakka is transmitted to ECL has been built and paid for by ECL.

If one examines the above provisions of the said Act one will notice that electricity can be transmitted by a person upon grant of a licence by the appropriate commission. (see Section 12 and 14 of the said Act). Now there is no bar if this person is an individual or a body corporate, statutory body, government company and so on. Section 40 of the said Act says that it would be one of the duties of the transmission licensee to "build, maintain and operate" an interstate or intra state transmission system. In this case it is interstate because the transmission system runs partly through Bengal and partly through Jharkhand. Section 17 puts restrictions upon a licensee to acquire the utility of another licensee. Under Section 20 of the Act, the appropriate commission has the right to sell the utility of a licence, without liability.

If these provisions do not suggest anything else, they at least suggest that a transmission licensee has the right to build a system and the right to own it, till the licence is revoked.

Section 42 of the Act relating to distribution of electricity. It does not say that a distribution licensee has to build the distribution system including the service lines. The word "build" employed in Section 40 is omitted in Section 42. Hence, a distribution system could also be built and owned by a person other than the distributing licensee, even by a consumer. And the consumer could also own the service line taking the supply from the distribution main.

I am able to hold that the writ petitioner owns the transmission system from Farakka, Lalmatia and also owns a part of the distribution system from the Dhankunda sub-station to the points where it receives supply from JUSNL. ECL is also a consumer. It is also the owner of the service line from the distributing main to its establishment.

The (Electricity Supply Code) Regulations 2005 of the Jharkhand State Electricity Regulatory Commission, Ranchi is a piece of sub-ordinate legislation, subordinate to the Electricity Act, 2003. For the reasons above I am constrained to say that regulation

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3.2.4 is incompatible with the said provisions of the Act. Since there is no prayer in the petition to declare the Regulations ultra vires the said Act, I simply disapply the same. Regulation 3.2.4 has no application as far as the Farakka, Lalmatia transmission system is concerned.

To appreciate the defence of the first and second respondents that the writ petitioner should be relegated to an alternative remedy, one has to understand the reliefs prayed for in the writ. The principal relief claimed is that the Eastern Regional Power Committee had no power to direct ECL to hand over the Farakka, Lalmatia Transmission System to JUSNL by their direction dated 24th March, 2015. As an alternative, it is prayed that in case ECL is compelled to hand over the system to any other body, it should be suitably compensated for the cost incurred by it in setting up the system.

The Regional Power Committee is described in Section 2 (55) of the said Act in the following manner:-

> "2(55) 'Regional Power Committee' means a committee established by resolution by the Central Government for a specified region for facilitating the integrated operation of the power systems in that region."

Section 29 (4) gives the following power to this committee.

> "29(4) The Regional Power Committee in the region may, from time to time, agree on matters concerning the stability and smooth operation of the integrated grid and economy and efficiency in the operation of the power system in that region."

The Farakka, Lalmatia Transmission Line is undoubtedly an interstate transmission system. It has its own speciality. As I have said before, it is undisputedly set up and made operational by ECL and owned by it. ECL is also a consumer. There is also a distribution network through JUSNL, owned by ECL from Dhankunda sub-station to the establishment of the writ petitioner, as a consumer. It is a part of the distribution system of JUSNL. It is also admitted that JUSNL distributes this electricity to the district Godda in Dumka and other places. Therefore, ECL is the owner of the transmission line as well as a part of the distribution system of JUSNL. It is also a consumer.

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In this special position I do not find any provisions in the Act, far less Section 79 (1) (f) or Section 86 (1) (f) of the Act providing a remedy to ECL for its present grievances. It has far larger ramifications at the national level. It is not a dispute "involving" a transmission or a distributions licensee.

Let us not forget the basic elements of private law. ECL is a public limited company. Its major shareholding is held by the Central government. Nevertheless, it is a body corporate in the eye of law. This entire electricity network, owned by the company is part of its assets. Mr. Sanyal submitted, on being asked by this court, that, this system was shown in ECL's balance sheet as their asset. A company managed by prudent professionals is always conscious of its assets, and their value. The directors or managers as trustees of the company cannot allow its valuable assets to be taken over and that too without any consideration. There has to be a policy decision to do so and in case it is made, a proper procedure is to be adopted for transfer of the assets to another body. In my opinion, ECL bas rightly resisted the move of the Regional Power Committee to compel them to handover the system to JUSNL. I do not find any power in the Regional Power Committee to direct ECL to do so.

In my opinion, the decision taken by them in the meeting dated 24th March, 2015 directing ECL to hand over the system to JUSNL is totally dehors the law. Therefore, the said decision dated 24th march, 2015 is quashed.

We should also remember that it is an accepted position that operation and maintenance of a transmission system can be contracted out. It is in these circumstances NTPC is operating and maintaining the system upto this day. Since NTPC does not want to continue, there is an option to contract out these functions to an organization. In this regard JUSNL may be considered.

In that event, ECL may expect a return for building this line. They are entitled to, in my opinion, a special regulated rate of tariff for electricity, to recompense them for the money spent in laying the line.

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Since the transmission is inter-state and it also provides an alternative system to provide electricity to the entire region in case of National Grid failure, any dealing with the said transmission system should not be taken lightly by the authorities.

The entire modalities and paraphernalias of ensuring that there is a lawful transfer of this transmission line or the functions of maintenance and operation of it to an authority or body are to be carefully worked out by ECL, the various authorities under the Electricity Act, 2003, the Central and the respective State governments. In my opinion this impasse has to be resolved expeditiously. Till it is done, NTPC will continue to operate and manage the transmission system under the ownership of ECL. JUSNL will continue with the distribution of this electricity to the coal mines of ECL.

Therefore, this writ application is allowed only to the extent of the declarations claimed in prayers (a) and (b) of the writ petition. Other points not decided here are kept open.

Urgent certified photocopy of this Judgment and order, if applied for, be supplied to the parties upon compliance with all requisite formalities.

sd/- I. P. Mukerji J.

(I.P. MUKERJI, J.)

03/10/16

M-23910

1. Date of application for Certified Xerox Copy..... 29/9/16
2. Date of notifying the charge 03/10/16
3. Date of Putting in charge in Court Fee Stamps..... 03/10/16
4. Date of which the certified Xerox Copy was ready for delivery..... 03/10/16
5. Date of making over the Certified Xerox Copy of the application .....

Certified to be a true Copy
Soma Chakrabarty
Assistant Registrar/Section Officer
High Court, Appellate Side Calcutta
Authorised Under Section 76 of the
Indian Evidence Act, 1872
(Act-1 of 1872)
3/10/16

Annexure- B20

दामोदर घाटी निगम : Damodar Valley Corporation
विद्युत विभाग : ELECTRICITY DEPARTMENT
डीवीसी टावर्स, वीआईपी रोड : DVC TOWERS, VIP ROAD,
कोलकाता - 700 054 : KOLKATA – 700 054
दूरभाष/Tel : +91 33 23557939/0946 ; फैक्स/Fax : +91 33 23554841

Ref. No. ED(SYS)/PS/SPE - 10 Dated, August 11, 2016.

To

The Member Secretary,
Eastern Region Power Committee,
14 Golf Club Road,
Tollygunge, Kolkata - 700033.

Sub : Declaration of 400kV lines/line segment constructed, owned and maintained by DVC as ISTS line.
Ref : This office letter No. Dir(Sys)/PS/PSR- 05 dtd. 26.05.2016.

Dear Sir,

Kindly refer to our earlier communication wherein it was requested for arranging declaration of the following 400kV lines/line segments owned by DVC and carrying inter-state power as ISTS lines;

1. LILO part (10.5 KM) up to RTPS of the Ranchi PG – Maithon PG line.
2. Termination segment (3.5 KM) at DSTPS of the Jamshedpur PG line.
3. RTPS – Ranchi PG line.
4. DSTPS – RTPS line.

The 400kV line segments under Sl. 1 & 2 are already a part of ISTS lines owned/maintained by the CTU for transmission of inter-state power and hence, liable to be declared as ISTS lines outright.

In case of lines under Sl. 3 & 4, an in-house study has been conducted by DVC in collaboration with ERLDC to ascertain flow of ISTS power through these lines under different Loading conditions and the preliminary study suggests that the 400kV RTPS – Ranchi line is of vital importance in relieving the quantum of power transfer through the existing 400kV Maithon PG – Ranchi PG line (D/C Line with single ckt. LILO at RTPS, DVC) under different contingent conditions. Both the said lines also plays a vital role in evacuation of power from RTPS (2x600MW) and DSTPS (2x500MW) to the Central Grid relieving the existing ISTS Lines from getting overloaded, under contingent conditions, thereby bringing stability to the Eastern Grid.

The matter was discussed in the 4th. SSCM dated 06.06.2016 (Item 32.0) and as directed, details of the above 4 lines along with findings of in-house study are being submitted with a request to kindly arrange for declaration of the said lines as ISTS lines.

Yours faithfully,

Enclo : 1. DVC 400kV System.
2. 400kV Line data.
3. Finding of In-house study.

Executive Director (System)

CC : The Executive Director (Commercial), DVC, Kolkata.
CC : The Chief Engineer-I, SPE, DVC, Kolkata.

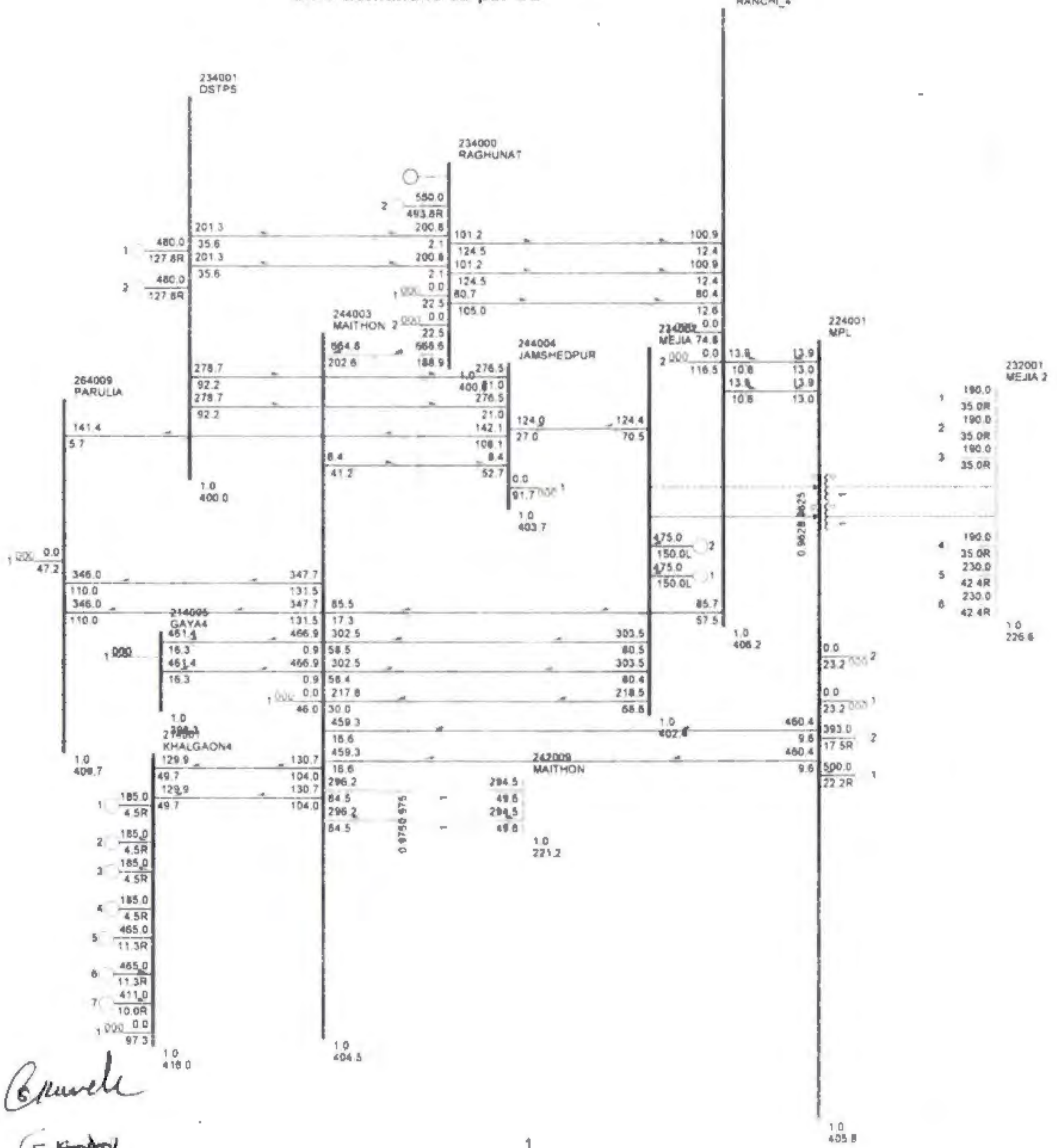
LINE DETAILS OF 400KV LINES					
Sl.No	NAME	LINE LENGTH	TYPE OF CONDUCTOR	NUMBER OF TOWERS	NUMBER OF CIRCUITS
1	LILO Part (10.5KM) upto RTPS of RANCHI {G - Maithon PG Line	10.5KM	Twin ACSR Moose	33	2
2	Termination Segment (3.5KM) at DSTPS of the DSTPS Jamshedpur Line	3.5KM	Twin ACSR Moose	14	2
3	RTPS - RANCHI PG Line	155KM	Quad ACSR Moose	437	2
4	DSTPS - RTPS Line	68.5 KM	Twin ACSR Moose	208	2

Line constants in %/km **(Base: 100 MVA & own voltage)**

tower config	conductor	r1	x1	b1	r0	x0	b0
PG 400KV	Twin ACSR Moose	0 001811	0.019946	0.603525	0.019183	0.068031	0.375422
PG 400KV	Quad ACSR Moose	0 000909	0.015551	0.759027	0.016694	0.062391	0 429811

1 unit at RTPS, 2 units at DSTPS and 400 kV RTPS-Ranchi D/C(Qd) in service

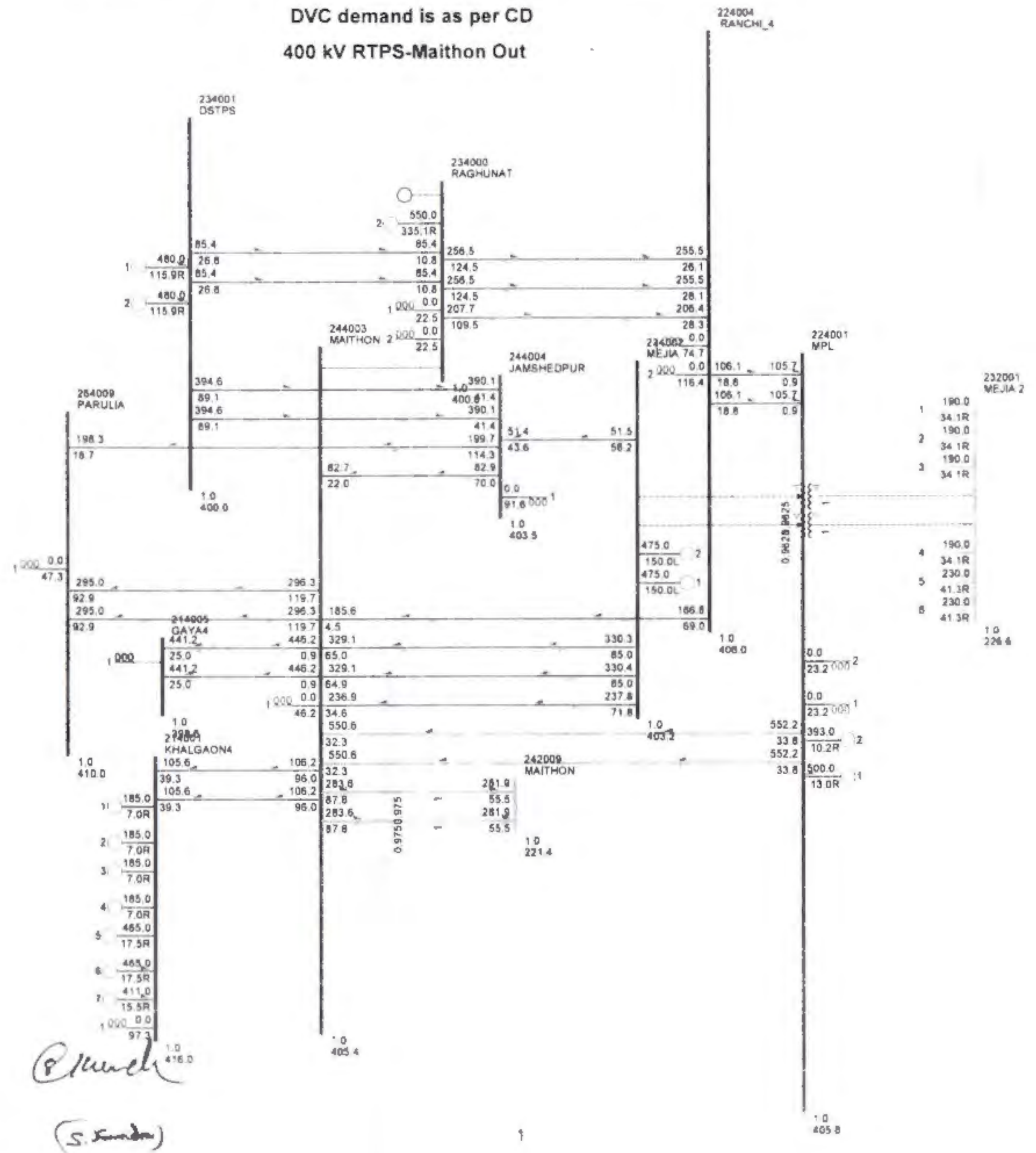
DVC demand is as per CD



1 unit at RTPS, 2 units at DSTPS and 400 kV RTPS-Ranchi D/C(Qd) in service

DVC demand is as per CD

400 kV RTPS-Maithon Out

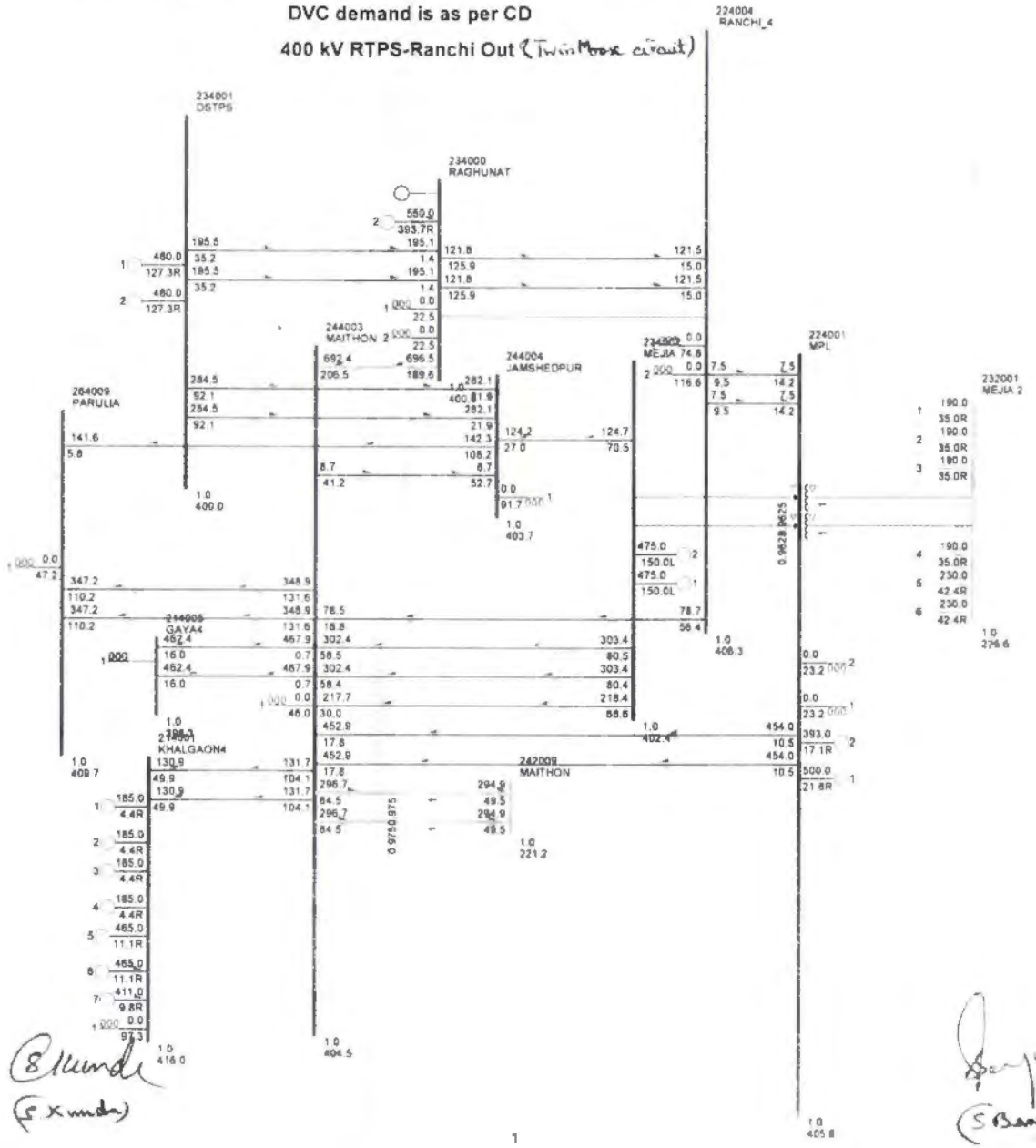


(S. Ghosh) (A. Maity) (S. Kundu) (S. Banerjee)

1 unit at RTPS, 2 units at DSTPS and 400 kV RTPS-Ranchi D/C(Qd) in service

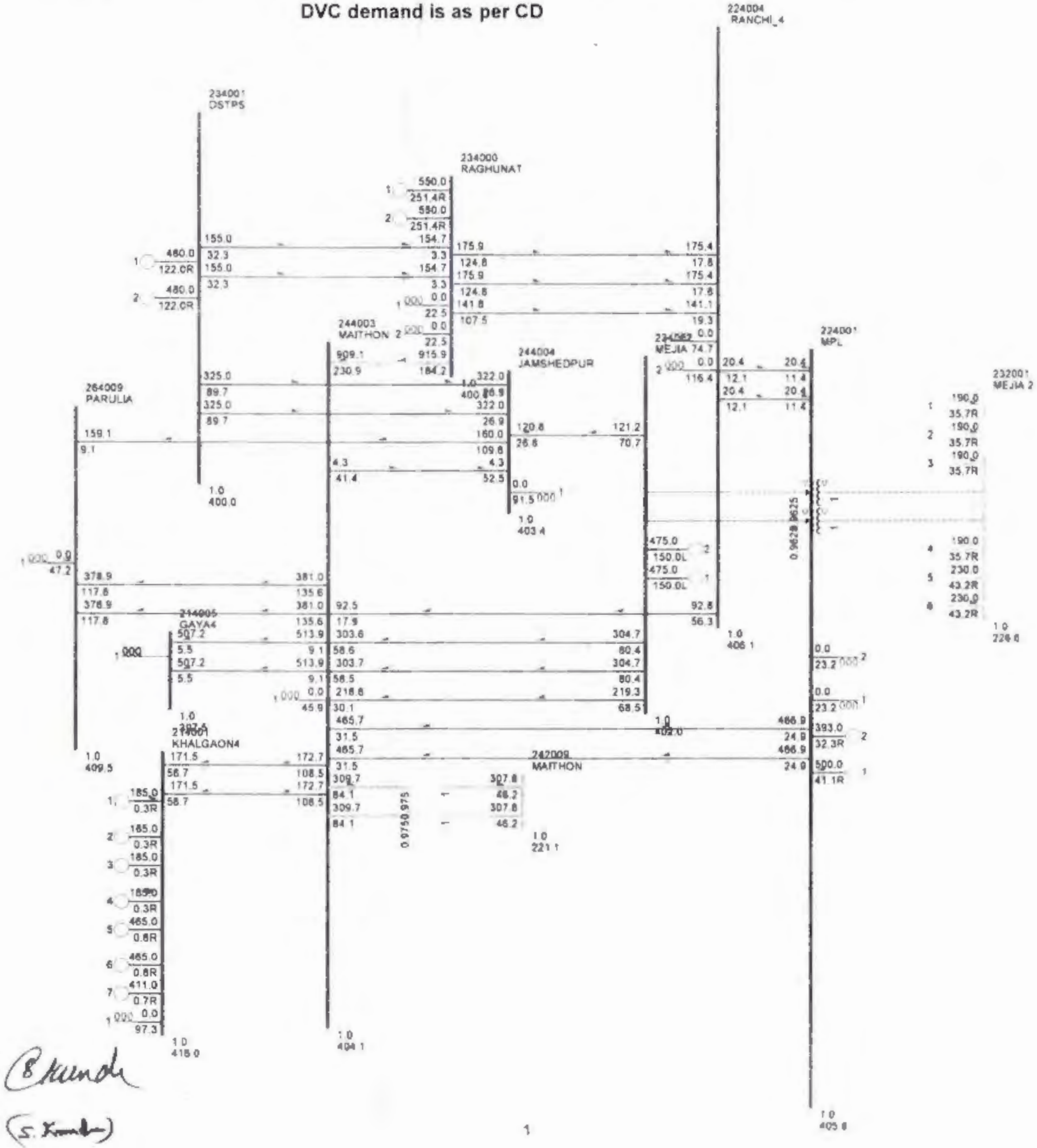
DVC demand is as per CD

400 kV RTPS-Ranchi Out (Twin Moose circuit)



2 units at RTPS, 2 units at DSTPS and 400 kV RTPS-Ranchi D/C(Qd) in service

DVC demand is as per CD



Annexure - B21

SUMMARY OF DEVIATION CHARGE RECEIPT AND PAYMENT STATUS

BILL from 28.03.16 to 09.10.16 (upto Week - 28 of 2016 - 17)

Last Payment Disbursement Date -19.10.16

Figures in Rs. Lakhs

CONSTITUENTS	Receivable	Received	Payable	Paid	Outstanding
WR	10926.31173	8135.00508	11799.31504	11799.31504	2791.30665
SR	1025.19928	1082.00881	18009.79708	13132.06137	-4934.54525
NER	49070.47391	43144.16013	148.66864	2867.28005	8644.92519
NR	223.58877	83.14544	48098.92823	40145.30225	-7813.18265
BSPHCL	5578.27126	3171.37389	409.16659	0.00000	1997.73078
JSEB	3863.53357	1294.61250	452.33933	0.00000	2116.58174
DVC	1145.63462	1160.33871	890.35694	867.75771	-37.30332
GRIDCO	1582.98317	1587.30113	807.53906	398.05103	-413.80599
WBSETCL	5378.48792	5331.10879	177.22284	444.51926	314.67555
SIKKIM	43.59053	0.00000	759.54726	534.98784	-180.96889
NTPC	7478.57313	6866.10868	0.00000	3.67096	616.13541
NHPC	0.00000	0.00000	1315.12405	1230.67944	-84.44461
MPL	43.37892	43.37892	447.53849	399.29187	-48.24662
STERLITE	5029.62048	4525.60393	0.00000	0.00000	504.01655
APNRL	343.14183	146.32986	123.17327	0.00000	73.63870
CHUZACHEN (GATI)	24.03633	24.03633	429.51833	397.24765	-32.27068
NVVN (IND-BNG)	182.04169	145.91805	82.23356	83.23362	37.12370
JITPL	1028.32671	1028.81886	545.69809	426.96076	-119.22948
GMR	321.59716	321.59716	582.69744	462.19819	-120.49925
IND BARATH	69.17259	35.60487	443.91325	432.14046	21.79493
TPTCL(DAGACHU)	1008.52668	992.83404	5.86148	6.03791	15.86907
JLHEP (DANS ENERGY)	285.33166	40.11075	128.07482	112.15935	229.30544
BRBCL(NABINAGAR)	131.03255	149.12165	0.00000	38.00000	19.91090
NVVN (IND-NEPAL)	354.08487	359.18911	29.47059	49.78834	15.21351
HVDC SASARAM	1.60348	0.00000	2.69459	0.00000	-1.09111
Pool Balance	0.00000	0.00000	-256.02044	0.00000	256.02044
Addl Deviation charge	7238.05777	9058.58605	0.00000	0.00000	-1820.52828
IRE	0.00000	0.00000	480.79540	0.00000	-480.79540
VAE	0.00000	0.00000	1986.83119	0.00000	-1986.83119
TOTAL	**95138.54284**	**79667.70669**	**87900.48512**	**73830.68310**	

% Realization **83.74** **As on** **19.10.16**

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-B23

Current Status of Letter of Credit (LC) amount against UI charges for ER constituents

Figures in Lacs of Rupees

Sl No	ER Constituents	No. of weeks in which Deviation Charge payable	No of times payment was delayed during 2015-16	Total Deviation charges payable to pool during 2015-16	Average weekly Deviation Charge liability	LC Amount	Due date of expiry	Remarks
		(A)	(B)	(C)	(D)	(E)	(F)	(G)
1	**BSPHCL**	42	42	9230.45609	177.50877	195.25965	03.01.2017	Opened for 529.52000 Lac
2	**JUVNL**	36	36	4060.64239	78.08928	85.89820	**Expired**	**Not Opened /Renewed**
3	**DVC**	11	N/A	1176.42772	22.62361	24.88597	17.11.2016	Opened for 155.18882 Lac
4	**SIKKIM**	5	5	75.76714	1.45706	1.60277	**Expired**	**Not Opened/Renewd**
5	**MPL**	7	2	34.59999	0.66538	0.73192	31.08.2017	Opened for 0.73192 Lacs
6	**STERLITE**	48	15	7892.76469	151.78394	166.96233	31.05.2017	Opened for 166.96233 Lacs
7	**APNRL**	24	24	741.51734	14.25995	15.68594	**Expired**	**Not Opened /Renewed**
8	**CHUZACHEN**	8	6	261.0675	5.02053	5.52258	31.03.2016	**Not Opened /Renewed**
9	**GMR**	19	7	929.588	17.87669	19.66436	15.07.2017	Opened for 19.66436 Lacs
10	**IND-BARATH**	46	16	248.75964	4.78384	5.26222	**Not Opened**	**Not Opened /Renewed**

3rd Phase : 32 Locations

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 (KSN)	PG
15	BALIMELA(BLM)	GRIDCO
16	JLHEP(DANS ENERGY)	IPPR
17	CHAIBASA(CHA)	JUVNL
18	SADIEPALI(SDP)	GRIDCO
19	KATAPALLI(KTP)	GRIDCO
20	NEW DUBRI (DBR)	GRIDCO
21	NEW PUSAULI (NPS)	BIHAR
22	FORBISGANJ (FBS)	BIHAR
23	NALANDA(NLN)	BIHAR
24	DUMKA(DUM)	JUVNL
25	BANKA(BNK)	PG
26	PANDIABILPNB)	PG
27	KISANGANJ (KIS)	BSPTCL
28	TEEST-III(TST)	TUL
29	BANGRIPOSHI(BGR)	GRIDCO
30	DIKCHU(DIC)	DICKCHU
31	DARBHANGA(DBG)	DMTCL
32	HALDIA(HAL)	WBSETCL

In Future

1	CHANDWA(CHW)	JUVNL
2	KESINGA(KES)	GRIDCO
3	KEONJHAR(KEO)	GRIDCO
4	ATRI(ATR)	GRIDCO
5	PURI(PUR)	GRIDCO

S.No	ERLDC_ID	OLD MTR	NEW MTR	LOCATION	S.No	ERLDC_ID	OLD MTR	NEW MTR	LOCATION
1	EN-29		NP-7950-A	ANGUL(PG)	86	ES-48		NR-4444-A	KISHANAGNJ(PG)
2	EN-30		NP-7558-A	ANGUL(PG)	87	ES-49		NR-4436-A	KISHANAGNJ(PG)
3	EN-31		NP-7987-A	ANGUL(PG)	88	ES-50		NR-4440-A	KISHANAGNJ(PG)
4	EN-32		NP-7988-A	ANGUL(PG)	89	ES-11		NP-8887-A	KISHANGANJ(PG)
5	EN-43		NP-7629-A	ANGUL(PG)	90	ES-12		NP-8885-A	KISHANGANJ(PG)
6	EN-44		NP-7949-A	ANGUL(PG)	91	ES-13		NP-8856-A	KISHANGANJ(PG)
7	EN-32	NP-7988-A	NP-7908-A	ANGUL(PG)	92	ES-14		NP-8886-A	KISHANGANJ(PG)
8	EN-63		NP-8780-A	ANGUL(PG)	93	ES-15		NP-8858-A	KISHANGANJ(PG)
9	EN-64		NP-8781-A	ANGUL(PG)	94	ES-16		NP-8889-A	KISHANGANJ(PG)
10	EN-65		NP-8785-A	ANGUL(PG)	95	ES-17		NP-8859-A	KISHANGANJ(PG)
11	EN-66		NP-8786-A	ANGUL(PG)	96	ES-18		NP-8855-A	KISHANGANJ(PG)
12	EN-77		NP-8778-A	ANGUL(PG)	97	ES-19		NP-8880-A	KISHANGANJ(PG)
13	EN-78		NP-8779-A	ANGUL(PG)	98	ES-20		NP-8888-A	KISHANGANJ(PG)
14	EN-82		NP-8777-A	ANGUL(PG)	99	ES-21		NP-8857-A	KISHANGANJ(PG)
15	ES-06		NP-8788-A	ANGUL(PG)	100	WB-29		NP-7381-A	KOLAGHAT(WB)
16	ES-05	NP-8787-A	NP-7995-A	ANGUL(PG)	101	BI-50		NP-7869-A	KUDRA(BSPHCL)
17	AP-03	NP-7438-A	NP-8642-A	APNRL	102	BI-26		NP-8697-A	LAKHISARAI(BSPHCL)
18	AP-02	NP-7462-A	NP-8643-A	APNRL	103	BI-30		NP-8670-A	LAKHISARAI(BSPTCL)
19	EN-93		NP-8742-A	ARA(PG)	104	BI-31		NP-8671-A	LAKHISARAI(BSPTCL)
20	EN-94		NP-8743-A	ARA(PG)	105	EN-46		NP-7432-A	LAKHISARAI(PG)
21	ES-02		NP-8860-A	ARA(PG)	106	EN-27		NP-7433-A	LAKHISARAI(PG)
22	OR-15		NP-7991-A	BALIMELA(GRIDCO)	107	EN-37		NP-7889-A	LAKHISARAI(PG)
23	OR-16		NP-7992-A	BALIMELA(GRIDCO)	108	EN-26		NP-7885-A	LAKHISARAI(PG)
24	BI-72		NP-8748-A	BANKA(BSPTCL)	109	EN-47		NP-7886-A	LAKHISARAI(PG)
25	EN-83		NP-8673-A	BANKA(PG)	110	EN-50		NP-7429-A	LAKHISARAI(PG)
26	EN-84		NP-8675-A	BANKA(PG)	111	EN-50		NP-7429-A	LAKHISARAI(PG)
27	ES-03		NP-8694-A	BANKA(PG)	112	EN-51		NP-7887-A	LAKHISARAI(PG)
28	ES-04		NP-8696-A	BANKA(PG)	113	EN-52		NP-7430-A	LAKHISARAI(PG)
29	BH-22		NP-7482-A	BARH(NTPC)	114	EN-89		NP-7887-A	LAKHISARAI(PG)
30	ES-45		NP-8074-A	BARIPADA(PG)	115	EN-90		NP-7430-A	LAKHISARAI(PG)
31	EN-68		NP-8721-A	BERHAMPORE(PG)	116	EN-51		NP-7888-A	LAKHISARAI(PG)
32	EN-69		NP-8726-A	BERHAMPORE(PG)	117	EN-52		NP-7431-A	LAKHISARAI(PG)
33	ES-22		NP-8790-A	BOLANGIR(PG)	118	EN-87		NP-8727-A	MAITHON(PG)
34	ES-23		NP-8789-A	BOLANGIR(PG)	119	EN-88		NP-8739-A	MAITHON(PG)
35	EP-99		NP-7560-A	BOLANGIR(PG)	120	ES-42		NP-7401-A	MAITHON(PG)
36	JS-11		NP-8865-A	CHAIBASA(JUVNL)	121	ES-27		NP-8775-A	MALDA(PG)
37	JS-12		NP-8866-A	CHAIBASA(JUVNL)	122	ES-28		NP-8776-A	MALDA(PG)
38	JS-13		NP-8867-A	CHAIBASA(JUVNL)	123	OR-20	NP-5983-A	NP-7498-A	MENDHASAL(GRIDCO)
39	EN-58		NP-8678-A	CHAIBASA(PG)	124	ES-01		NP-8874-A	MUZAFFARPUR(PG)
40	EN-67		NP-8637-A	CHAIBASA(PG)	125	ES-07		NP-8871-A	MUZAFFARPUR(PG)
41	EN-97		NP-8868-A	CHAIBASA(PG)	126	ES-08		NP-8873-A	MUZAFFARPUR(PG)
42	EN-98		NP-8869-A	CHAIBASA(PG)	127	ES-09		NP-8872-A	MUZAFFARPUR(PG)
43	ES-29		NP-7471-A	CHAIBASA(PG)	128	ES-43		NP-6077-A	MUZAFFARPUR(PG)
44	ES-30		NP-7467-A	CHAIBASA(PG)	129	ES-44		NP-6078-A	MUZAFFARPUR(PG)
45	EM-49		NP-7880-A	CHANDIL(JUVNL)	130	NB-01		NP-8700-A	NABINAGAR
46	DM-01		NP-8656-A	DARBHANGA(DMTCL)	131	NB-02		NP-8701-A	NABINAGAR
47	DM-02		NP-8719-A	DARBHANGA(DMTCL)	132	NB-05		NP-8662-A	NABINAGAR
48	OR-23		NP-7915-A	DUBURI(GRIDCO)	133	NB-07		NP-8892-A	NABINAGAR
49	JS-09		NP-8695-A	DUMKA(JUVNL)	134	NB-11		NP-8891-A	NABINAGAR
50	JS-10		NP-8774-A	DUMKA(JUVNL)	135	OR-22		NP-7916-A	NEW DUBURI(GRIDCO)
51	BI-34		NP-8883-A	FORBESGANJ(BSPTCL)	136	EN-85		NP-8647-A	NEW MELLI(PG)
52	BI-35		NP-8884-A	FORBESGANJ(BSPTCL)	137	EN-86		NP-8640-A	NEW MELLI(PG)
53	EP-18	NP-7471-A	NP-8660-A	GAYA(PG)	138	ES-31		NP-7442-A	PANDIABILI(PG)
54	ES-26		NP-8659-A	GAYA(PG)	139	ES-32		NP-7427-A	PANDIABILI(PG)
55	EP-19	NP-7470-A	NP-8658-A	GAYA(PG)	140	ES-33		NP-7454-A	PANDIABILI(PG)
56	SM-07		NP-8730-A	GYALSHING(SIKKIM)	141	ES-34		NP-7554-A	PANDIABILI(PG)
57	WB-60		LT-0307-A	HALDIA CESC(WB)	142	ES-35		NP-7438-A	PANDIABILI(PG)
58	WB-61		LT-0311-A	HALDIA CESC(WB)	143	ES-36		NP-7407-A	PANDIABILI(PG)
59	IB-01		NP-8792-A	IBEUL	144	ES-10		NP-8655-A	PATNA(PG)
60	IB-02		NP-8793-A	IBEUL	145	BI-32		NP-8664-A	PUSAULI NEW(BSPHCL)
61	IB-03		NP-8795-A	IBEUL	146	BI-33		NP-8665-A	PUSAULI NEW(BSPHCL)
62	IB-04		NP-8794-A	IBEUL	147	ES-40		NP-8692-A	PUSAULI(PG)
63	IB-05		NP-8783-A	IBEUL	148	ES-41		NP-8693-A	PUSAULI(PG)
64	IB-06		NP-8782-A	IBEUL	149	EN-10		NP-7847-A	RANCHI NEW(PG)
65	IB-07		NP-8784-A	IBEUL	150	EN-11		NP-7876-A	RANCHI NEW(PG)

66	IB-08		NP-8796-A	IBEUL
67	BI-27		NP-8698-A	JAMUI(BSPHCL)
68	BI-26		NP-8669-A	JAMUI(BSPHCL)
69	BI-27		NP-8668-A	JAMUI(BSPHCL)
70	OR-55	NP-0624-B	NP-5938-A	JODA(GRIDCO)
71	JL-01		NP-8737-A	JORETHANG(JLHEP)
72	JL-02		NP-8766-A	JORETHANG(JLHEP)
73	JL-03		NP-8762-A	JORETHANG(JLHEP)
74	JL-04		NP-8763-A	JORETHANG(JLHEP)
75	JL-05		NP-8764-A	JORETHANG(JLHEP)
76	JL-06		NP-8765-A	JORETHANG(JLHEP)
77	BI-68	NP-5064-A	NP-7398-A	KANTI(BSPHCL)
78	BI-69	NP-5065-A	NP-7452-A	KANTI(BSPHCL)
79	OR-17		NP-7561-A	KATAPALI(GRIDCO)
80	JS-50		NP-8644-A	KENDIPOSI(JUVNL)
81	WB-30		NP-7403-A	KHARAGPUR(WB)
82	BS-38		NR-4442-A	KISHANAGNJ(BSPTCL)
83	BS-39		NR-4445-A	KISHANAGNJ(BSPTCL)
84	ES-46		NP-7013-A	KISHANAGNJ(PG)
85	ES-47		NR-4614-A	KISHANAGNJ(PG)

151	EN-12		NP-7849-A	RANCHI NEW(PG)
152	EN-13		NP-7866-A	RANCHI NEW(PG)
153	EN-14		NP-7865-A	RANCHI NEW(PG)
154	EN-19		NP-7875-A	RANCHI NEW(PG)
155	EN-91		NP-8755-A	RANCHI NEW(PG)
156	EN-92		NP-8754-A	RANCHI NEW(PG)
157	EN-99		NP-8753-A	RANCHI NEW(PG)
158	RG-12		NP-8734-A	RANGIT(NHPC)
159	RG-13		NP-8733-A	RANGIT(NHPC)
160	RG-14		NP-8732-A	RANGIT(NHPC)
161	RG-15		NP-8736-A	RANGIT(NHPC)
162	RG-16		NP-8735-A	RANGIT(NHPC)
163	EN-20		NP-7958-A	RANGPO(PG)
164	EN-21		NP-7959-A	RANGPO(PG)
165	EN-22		NP-7933-A	RANGPO(PG)
166	EN-23		NP-7955-A	RANGPO(PG)
167	EN-24		NP-7956-A	RANGPO(PG)
168	EN-25		NP-7957-A	RANGPO(PG)
169	EN-33		NP-7922-A	RANGPO(PG)
170	EN-34		NP-7923-A	RANGPO(PG)
171	EN-35		NP-7924-A	RANGPO(PG)
172	EN-36		NP-7623-A	RANGPO(PG)
173	EN-39		NP-7622-A	RANGPO(PG)
174	EN-38		NP-7621-A	RANGPO(PG)
175	EN-54		NP-7619-A	RANGPO(PG)
176	EN-55		NP-7620-A	RANGPO(PG)
177	EN-59		NP-8710-A	RANGPO(PG)
178	EN-60		NP-8711-A	RANGPO(PG)
179	EN-80		NP-8714-A	RANGPO(PG)
180	EN-81		NP-8715-A	RANGPO(PG)
181			NP-7940-A	RANGPO(PG)
182			NP-7941-A	RANGPO(PG)
183	ES-24		NP-8712-A	RANGPO(PG)
184	ES-25		NP-8713-A	RANGPO(PG)
185	BI-07	NP-6074-A	NP-7825-A	SABOUR(BSPHCL)
186	BI-73		NP-8749-A	SABOUR(BSPHCL)
187	OR-18		NP-7944-A	SADEIPALI(GRIDCO)
188	WB-23		LT-0194-A	SAGARDIGHI(WBSETCL)
189	WB-24		LT-0191-A	SAGARDIGHI(WBSETCL)
190	WB-25		NP-8724-A	SAGARDIGHI(WBSETCL)
191	WB-26		NP-8725-A	SAGARDIGHI(WBSETCL)
192	WB-27		NP-8723-A	SAGARDIGHI(WBSETCL)
193	WB-28		NP-8722-A	SAGARDIGHI(WBSETCL)
194	SM-05		NP-8797-A	SAGBARI(SIKKIM)
195	SM-06		NP-8798-A	SAGBARI(SIKKIM)
196	WB-53	NP-6488-A	NP-7942-A	SANTALDIH(WB)
197	BI-28		NP-8653-A	SULTANGANJ(BSPHCL)
198	BI-29		NP-8672-A	SULTANGANJ(BSPHCL)
199	BI-61	NP-6019-B	NP-7400-A	SULTANGANJ(BSPHCL)
200	EN-40		NP-7906-A	SUNDERGARH(PG)
201	EN-41		NP-7634-A	SUNDERGARH(PG)
202	EN-42		NP-7638-A	SUNDERGARH(PG)
203	EN-57		NP-7907-A	SUNDERGARH(PG)
204	EN-79		NP-7636-A	SUNDERGARH(PG)
205	EN-95		NP-7635-A	SUNDERGARH(PG)
206	TL-32		NP-7961-A	TALCHER SOLAR(NTPC)
207	TL-33		NP-7626-A	TALCHER SOLAR(NTPC)
208	TL-34		NP-7962-A	TALCHER SOLAR(NTPC)
209	TL-35		NP-7628-A	TALCHER SOLAR(NTPC)
210	TL-37		NP-7627-A	TALCHER SOLAR(NTPC)
211	TL-38		NP-5968-A	TALCHER SOLAR(NTPC)
212	TL-31		NP-7909-A	TALCHER SOLAR(NTPC)
213	TL-30		NP-5979-A	TALCHER SOLAR(NTPC)
214	TL-37	NP-7627-A	NP-7946-A	TALCHER SOLAR(NTPC)
215	TL-40	NP-7618-A	NP-7945-A	TALCHER SOLAR(NTPC)
216	TL-39	NP-7614-A	NP-7631-A	TALCHER SOLAR(NTPC)

217	TL-41	NP-7615-A	NP-7633-A	TALCHER SOLAR(NTPC)
218	TL-36	NP-7632-A	NP-7630-A	TALCHER SOLAR(NTPC)

Annexure-C4

Format for Reporting RE Generation

Date: dd-mm-yyyy

Sl. No.	RE Plant Name	Capacity (MW)	Type (Solar/ Small Hydro/Bio-mass/ Wind)	Name of GSS at which it is connected	KV	Total Generation (MWh)	Own Consumption (MWh)	Net Injection to STU grid (MWh)
						X	Y	Z=(X-Y)
1								
2								
3								
4								

Annexure- C7

Over Voltage Relay settings in different 400KV & 765KV lines of Eastern Region

Name of the substation	NAME OF LINE	OVERVOLTAGE % SETTING						REMARK
		LOCAL END(STAGE-I)			REMOTE END(STAGE-I)			
		VOLTAGE GARDIENT(% setting)	TIME DELAY(sec)	Drop Off to Pickup ratio	VOLTAGE GARDIENT(% setting)	TIME DELAY(sec)	Drop Off to Pickup ratio	
Binaguri	400KV BINAGURI-RANGPO-I	110	5		112	7		
	400KV BINAGURI-RANGPO-II	112	5		112	7		
	400KV BINAGURI-TALA-I	110	5		105	5		
	400KV BINAGURI-TALA-II	112	5		105	5		
	400KV BINAGURI-MALABASE-III	110	5		105	5		
	400KV BINAGURI-TALA-IV	112	5		105	5		
	400 KV BINAGURI-PURNEA- I	110	5		112	5		
	400 KV BINAGURI-PURNEA- II	112	5		110	5		
	400 KV BINAGURI-KISHANGANJ- I	110	5		112	5		Need to be updated after LILO at Kishanganj
	400 KV BINAGURI-KISHANGANJ- II	112	5		110	7		
	400KV BINAGURI-BONGAIGAON-I	110	5		OTHER REGION			be submitted by ER - II, Power
	400KV BINAGURI-BONGAIGAON-II	110	6					
	400KV BINAGURI-BONGAIGAON-III	110	5					
	400KV BINAGURI-BONGAIGAON-IV	110	6					
Kishanganj	400 KV KISHANGANJ-PURNEA-I							
	400 KV KISHANGANJ-PURNEA-II							
	400 KV KISHANGANJ-BINAGURI-I							
	400 KV KISHANGANJ-BINAGURI-II							
	400 KV KISHANGANJ-PATNA-I							
	400 KV KISHANGANJ-PATNA-II							
Rangpo	400KV RANGPO-TEESTA-I	112	7		110	7		
	400KV RANGPO-TEESTA-II	112	7		112	5		
	400KV RANGPO-BINAGURI-I	112	7		110	5		
	400KV RANGPO-BINAGURI-II	112	7		112	5		
Tala	400KV TALA-BINAGURI-I	105	5		110	5		
	400KV TALA-BINAGURI-II	105	5		112	5		
	400KV TALA-MALABASE-III	105	5		110	5		
	400KV TALA-BINAGURI-IV	105	5		112	5		
Teesta	400KV TEESTA-RANGPO-I	110	7		112	7		
	400KV TEESTA-RANGPO-II	112	5		112	7		
PURNEA	400 KV PURNEA - MALDA - I	110	7		110	5		
	400 KV PURNEA - MALDA - II	112	5		110	6		
	400 KV PURNEA- BINAGURI - I	112	5		110	5		
	400 KV PURNEA- BINAGURI - II	110	5		112	5		
	400 KV PURNEA- KISHANGANJ - I	112	5		110	5		Need to be updated after LILO at Kishanganj
	400 KV PURNEA- KISHANGANJ - II	112	5		112	5		
	400 KV PURNEA-MUZAFFARPUR-I	110	7		110	7		
	400 KV PURNEA-MUZAFFARPUR-II	112	7		112	7		
	400 KV PURNEA-BIHARSHARIFF-I	110	5		110	5		
	400 KV PURNEA-BIHARSHARIFF-II	110	7		110	7		
MALDA	400 KV MALDA - PURNEA - I	110	5		110	7		
	400 KV MALDA - PURNEA - II	110	6		112	5		
	400 KV MALDA - FARAKKA - I	110	5		110	5		
	400 KV MALDA - FARAKKA - II	110	6		110	5		
FARAKKA	400 KV FSTPP-MALDA-I	110	5		110	5		
	400 KV FSTPP-MALDA-II	110	5		110	6		
	400 KV FSTPP-DURGAPUR-I	112	7		110	5		
	400 KV FSTPP-DURGAPUR-II	110	5		112	5		
	400 KV FSTPP-KhSTPP-I	110	5		110	5		
	400 KV FSTPP-KhSTPP-II	112	5		112	5		
	400 KV FSTPP-KhSTPP-III	110	7		110	7		
	400 KV FSTPP-KhSTPP-IV	112	7		112	7		
	400 KV FSTPP-BEHRAMPUR	110	12		110	6		
	400 KV FSTPP-SAGARDIGHI	112	7		140	0.1		
Behrampur	400 KV BEHRAMPUR-BHERAMARA -I	110	5		110	4		
	400 KV BEHRAMPUR-BHERAMARA -II	110	10		110	5		
	400 KV BEHRAMPUR - FARAKKA	110	6		110	12		
	400KV BERHAMPORE-SAGARDIGHI-I	110	5		110	5		
	400KV BERHAMPORE-SAGARDIGHI-II	110	6		110	7		
	400 KV BEHRAMPUR - JEERAT	110	7		110	7		
Jeerat	400KV JEERAT-SUBHASHGRAM	112	5		112	5		
	400 KV JERAT - BERHAMPUR	110	7		110	7		
	400 KV Jeerat-Bakreswar	110	5		110	5		
	400 KV Jeerat-Kolaghat	NOT INSTALLED AT BOTH ENDS						Present status may be updated
Subhashgram	400 KV SUBHASHSHGRAM-SAGARDIGHI	112	5		112	5		
	400KV SUBHASHGRAM-HALDIA-I	110	5		110	3		
	400KV SUBHASHGRAM-HALDIA-II	110	6		110	5		
	400 KV SUBHASHGRAM-JEERAT	112	5		112	5		
HALDIA	400KV HALDIA-SUBHASHGARM-I	110	3		110	5		
	400KV HALDIA-SUBHASHGRAM-II	110	5		110	6		
SAGARDIGHI	400 KV SAGARDIGHI - FARAKKA	140	0.1		112	7		
	400 KV SAGARDIGHI - DURGAPUR-I	110	5		110	5		
	400 KV SAGARDIGHI - DURGAPUR-II	110	6		110	6		
	400KV SAGARDIGHI-BERHAMPORE-I	110	5		110	5		

	400KV SAGARDIGHI-BERHAMPORE-II	110	7		110	6		
	400 KV SAGARDIGHI - SUBHASHGRAM	112	5		112	5		
Durgapur	400 KV DURGAPUR - SAGARDIGHI-I	110	5		110	5		
	400 KV DURGAPUR - SAGARDIGHI-II	110	6		110	6		
	400 KV DURGAPUR-FSTPP-I	110	5		112	7		
	400 KV DURGAPUR-FSTPP-II	112	5		110	5		
	400 KV DURGAPUR-MAITHON-I	110	5		110	5		
	400 KV DURGAPUR-MAITHON-II	110	6		110	6		
	400 KV DURGAPUR-JAMSHEDPUR	110	5		112	5		
	400 KV DURGAPUR - BIDHANNAGAR-I	110	5		110	5		
	400 KV DURGAPUR - BIDHANNAGAR-II	110	5		110	5		
BIDHANNAGAR	400 KV BIDHANNAGAR-PPSP-I	110	5		110	5		
	400 KV BIDHANNAGAR-PPSP-II	110	5		110	5		
	400 KV BIDHANNAGAR - DURGAPUR-I	110	5		110	5		
	400 KV BIDHANNAGAR - DURGAPUR-II	110	5		110	5		
	400 KV BIDHANNAGAR-ARAMBAG	110	5		110	5		
PPSP	400 KV PPSP-BIDHAN NAGAR-I	110	5		110	5		
	400 KV PPSP-BIDHAN NAGAR-II	110	5		110	5		
	400 KV PPSP-ARAMBAG-I	110	5		110	5		
	400 KV PPSP-ARAMBAG-II	110	5		110	5		
Arambag	400 KVARAMBAG-PPSP-I	110	5		110	5		
	400 KV ARAMBAG-PPSP-II	110	5		110	5		
	400 KV ARAMBAG -KOLAGHAT	110	5		KOLAGHAT END			Present status may be updated
	400 KV ARAMBAG-BAKRESWAR	110	5		110	5		
	400 KV ARAMBAG-BIDHANNAGAR	110	5		110	5		
BAKRESWAR	400 KV BAKRESWAR-JEERAT	110	5		110	5		
	400 KV BAKRESWAR-ARAMBAG	110	5		110	5		
KOLAGHAT	400 KV KOLAGHAT-JEERAT	NOT INSTALLED AT BOTH ENDS						Present status may be updated
	400 KV KOLAGHAT-ARAMBAG	NOT INSTALLED TA KOLAGHAT			110	5		Present status may be updated
	400 KV KOLAGHAT-KHARAGPUR-I	110	5		110	5		
	401 KV KOLAGHAT-CHAIBASA-I	110	5		110	5		Need to be updated after Chaibasa connectivity
KHARAGPUR	400 KV KHARAGPUR-KOLAGHAT-I	110	5		110	5		
	400 KV KHARAGPUR-CHAIBASA-I	110	5		110	5		Need to be updated after Chaibasa connectivity
	400KV KHARAGPUR-BARIPADA	110	5		112	7		
BARIPADA	400 KV BARIPADA-KEONJHAR	110	3		110	5		
	400 KV BARIPADA- TISCO(JAMSHEDPUR)	111	5		110	4		
	400 KV BARIPADA-N. DUBURI -I	112	6		110	5		Needs to be upgated after LILO at N. Duburi
	400 KV BARIPADA-PANDAIABILLI-I	112	6		110	5		Needs to be updated after LILO at Pandiabilli
	400 KV BARIPADA-KHARAGPUR	112	7		110	5		
	400 KV BARIPADA-JAMSHEDPUR	111	5		110	4		
Jamshedpur	400 KV JAMSHEDPUR-CHAIBASA - I	112	5		112	5		
	400 KV JAMSHEDPUR-CHAIBASA- II	110	7		110	6		
	400 KV JAMSHEDPUR - MEJIA	112	5		117	2.5		
	I	110	5		117	2.5		
	II	112	5		117	2.5		
	400KV JAMSHEDPUR - APNRL-I	110	5		115	5		
	400KV JAMSHEDPUR - APNRL-II	110	5		115	5		
	400 KV JAMSHEDPUR - DURGAPUR	112	5		110	5		
	400 KV JAMSHEDPUR - TISCO	112	7		112	7		
	400 KV JAMSHEDPUR-MAITHON	110	5		110	5		
	400 KV JAMSHEDPUR-BARIPADA	110	4		111	5		
CHAIBASA	400KV CHAIBASA-JAMSHEDPUR-I	112	5		112	5		
	400KV CHAIBASA-JAMSHEDPUR-II	110	6		110	7		
	400KV CHAIBASA-KHARAGPUR-II							Need to be updated after
	400KV CHAIBASA-KOLAGHAT-II							Need to be updated after
	400KV CHAIBASA-ROURKELA-I	112	7		110	5		
	400KV CHAIBASA-ROURKELA-II				110	6		
APNRL	400 KV APNRL-JAMSHEDPUR-I	115	5		110	5		
	400 KV APNRL-JAMSHEDPUR -II	115	5		110	5		
TISCO	400 KV TISCO-JAMSHEDPUR	112	7		112	7		
	400 KV TISCO-BIRPADA	110	4		111	5		
Maithon	400 KV MAITHON-RANCHI	112	5		112	5		
	400 KV MAITHON-KAHALGAON-I	110	5		112	5		
	400 KV MAITHON-KAHALGAON-II	110	6		110	5		
	400 KV MAITHON -MAITHON RB-I	110	5		110	7		
	400 KV MAITHON -MAITHON RB-II	112	5		112	7		
	400 KV MAITHON -GAYA - I	110	5		110	5		
	400 KV MAITHON -GAYA-II	110	6		110	5		
	400 KV MAITHON-JAMSHEDPUR	110	5		110	5		
	400 KV MAITHON -MEJIA- I	110	5		117	2.5		
	400 KV MAITHON -MEJIA- II	112	5		117	2.5		
	401 KV MAITHON -MEJIA- III	110	5		117	2.5		
	400 KV MAITHON - DURGAPURR - I	110	5		110	5		
	400 KV MAITHON - DURGAPURR - II	110	6		110	6		
	400 KV MAITHON -RAGHUNATHPUR	112	6		113	5		
	400 KV RANCHI-MAITHON	112	5		112	5		
	400 KV RANCHI-NEW RANCHI-I	110	5		110	5		

Ranchi	400 KV RANCHI-NEW RANCHI-II	110	5		110	5		
	400 KV RANCHI-NEW RANCHI-III	110	5		110	5		
	400 KV RANCHI-NEW RANCHI-IV	110	5		110	5		
	400 KV RANCHI-RAGHUNATHPUR	110	5		113	5		
	400 KV RANCHI-MAITHON RB-I	112	7		112	7		
	400 KV RANCHI-MAITHON RB-II	110	7		110	7		
	400 KV RANCHI - SIPAT - I	110	7		OTHER REGION			y be submitted by ER - I, Powerg
	400 KV RANCHI - SIPAT - II	112	5					
	400 KV RANCHI-ROURKELA- I	110	5		110	5		
	400 KV RANCHI-ROURKELA - II	112	7		110	6		
765/400 KV NEW RANCHI S/S	400 KV NEW RANCHI- RANCHI-I	110	5		110	5		
	400 KV NEW RANCHI- RANCHI-II	110	5		110	5		
	400 KV NEW RANCHI- RANCHI-III	110	5		110	5		
	400 KV NEW RANCHI- RANCHI-IV	110	5		110	5		
	400 KV NEW RANCHI- CHANDWA-I							
	400 KV NEW RANCHI- CHANDWA-II							
	DHARMJAYGARH-I	107	5		OTHER REGION			May be submitted by ER - I, Powergrid
	DHARMJAYGARH-II							
CHANDWA	400 KV CHANDWA-N.RANCHI-I							
	400 KV CHANDWA-N.RANCHI-II							
	400 KV CHANDWA-GAYA-I							
	400 KV CHANDWA-GAYA-II							
MAITHON RIGHT BANK	400 KV MAITHON RB-RANCHI-I	112	7		112	7		
	400 KV MAITHON RB-RANCHI-II	110	7		110	7		
	400 KV MAITHON RB-MAITHON-I	110	7		110	5		
	400 KV MAITHON RB-MAITHON-II	112	7		112	5		
DSTPS	400 KV DSTPS-JAMSHEDPUR-I	117	2.5		110	5		
	400 KV DSTPS-JAMSHEDPUR-II	117	2.5		112	5		
	400 KV DSTPS-RAGHUNATHPUR-I	117	2.5		113	5		
	400 KV DSTPS-RAGHUNATHPUR-II	117	2.5		113	5		
KODERMA	400 KV KODERMA-GAYA-I	113	5		110	5		
	400 KV KODERMA-GAYA-II	113	5		110	5		
	400 KV KODERMA-BIHARSHARIFF-I	113	5		112	7		
	400 KV KODERMA-BIHARSHARIFF-II	113	5		110	5		
	400KV KODERMA-BOKARO-A-I	113	5		110	6		
	400KV KODERMA-BOKARO-A-II	113	5		110	6		
BOKARO-A	400KV BOKARO-A-KODERMA-I	110	6		113	5		
	400KV BOKARO-A-KODERMA-II	110	6		113	5		
Mejia	400 KV MEJIA-MAITHON -I	117	2.5		110	5		
	400 KV MEJIA-MAITHON -II	117	2.5		112	5		
	400 KV MEJIA-MAITHON -III	117	2.5		110	5		
	400 KV MEJIA-JAMSHEDPUR	117	2.5		112	5		
RAGHUNATHPUR	400 KV RAGHUNATHPUR-MAITHON	113	5		112	6		
	400 KV RAGHUNATHPUR-RANCHI	113	5		110	5		
	400 KV RAGHUNATHPUR-DSTPS-I	113	5		117	2.5		
	400 KV RAGHUNATHPUR-DSTPS-II	113	5		117	2.5		
MENDHASAL	400 KV MENDHASAL-PANDIABILLI-I	110	5		112	6		Needs to be updated after LILO
	400 KV MENDHASAL-PANDIABILLI-II	110	5		112	6		Needs to be updated after LILO
	400 KV MENDHASAL-MEERAMUNDALI	110	5		110	5		
PANDIABILLI	400 KV PANDIABILLI-MENDASAL-I							
	400 KV PANDIABILLI-MENDASAL-II							
	400 KV PANDIABILLI-N.DUBURI							
	400 KV PANDIABILLI - BARIPADA							
N. DUBURI	400 KV N.DUBURI-PANDIABILLI							
	4OO KV N.DUBURI-BARIPADA							
	400 KV N.DUBURI-MERAMANDALI-I							
	400 KV N.DUBURI-MERAMANDALI-II							
MEERAMUNDALI	400 KV MEERAMUNDALI-TALCHER	110	5		110	5		
	400 KV MEERAMUNDALI-ANGUL-II	112	5		110	5		
	400 KV MEERAMUNDALI-JINDAL-I	110	5		110	5		
	400 KV MEERAMUNDALI-JINDAL-II	110	5		110	5		
	400 KV MEERAMUNDALI-ANGUL-I	112	5		110	5		
	400 KV MEERAMUNDALI-MENDHASAL	110	5		110	5		
	400KV MERAMUNDALI-GMR	110	5		110	5		
	400 KV MERAMUNDALI-STERLITE -I							
	400 KV MERAMUNDALI-STERLITE -II							
	400 KV MERAMUNDALI-N.DUBURI -I							
	400 KV MERAMUNDALI-N.DUBURI -I							
JINDAL	400 KV JINDAL-MEERAMUNDALI-I	110	5		110	5		
	400 KV JINDAL-MEERAMUNDALI-II	110	5		110	5		
GMR	400 KV GMR-ANGUL-I	110	2		110	5		
	400 KV GMR-ANGUL-II	110	2		110	6		
	400KV GMR-MERAMUNDALI	110	5		110	5		
ANGUL	400 KV ANGUL-MEERAMUNDALI-I	110	5		112	5		
	400KV ANGUL-BOLANGIR	110	5		110	5		
	400KV ANGUL-TSTPP	110	5		110	5		
	400 KV ANGUL-MERAMUNDALI-II	110	5		112	5		
	400 KV ANGUL-JITPL-II	110	5		110	5		
	400 KV ANGUL-JITPL-I	110	5		110	5		
	400KV ANGUL-GMR-I	110	5		110	2		
	400KV ANGUL-GMR-II	110	6		110	2		
	765kV Angul-Jharsuguda-I	110	4		110	4		
	765kV Angul-Jharsuguda-II	110	4		110	4		

JITPL	400 KV JITPL-ANGUL-I	110	5		110	5		
	400 KV JITPL-ANGUL-II	110	5		110	5		
BOLANGIR	400 KV BOLANGIR-ANGUL	110	5		110	5		
	400 KV BOLANGIR-JEYPORE	112	5		112	5		
Jeypore	400 KV JEYPORE-BOLANGIR	112	5		112	5		
	400 KV JEYPORE-GAZUWAKA-I	110	5		110	9		
	400 KV JEYPORE-GAZUWAKA-II	110	10		110	10		
	400KV JEYPORE-INDRAVATI	112	5		110	5		
INDRAVATI(PG)	400 KV INDRAVATI-JEYPORE	110	5		112	5		
	400 KV INDRAVATI-INDRAVATI	115	5		115	5		
	400 KV INDRAVATI-RENGALI	113	5		110	5		
INDRAVATI(GR)	400 KV INDRAVTI(GR)-INDRAVATI(PG)	115	5		115	5		
Rengali	400 KV RENGALI-INDRAVATI(PG)	110	5		113	5		
	400 KV RENGALI-KEONJHAR	110	5		110	5		
	400 KV RENGALI-TALCHER-I	110	5		110	5		
	400 KV RENGALI-TALCHER-II	110	6		112	5		
KEONJHOR	400 KV KEONJHAR-RENGALI	110	5		110	5		
	400 KV KEONJHAR-BIRPADA	110	3		110	5		
Talcher	400 KV Talcher-Rourkela-I	110	5		110	5		
	400 KV Talcher-Rourkela-II	112	5		110	6		
	400 KV Talcher-Rengali-I	110	5		110	5		
	400 KV Talcher-Rengali-II	112	5		110	6		
	400 KV Talcher-MERAMUNDALI	110	5		110	5		
	400 KV Talcher-ANGUL	110	5		110	5		
Rourkela	400 KV ROURKELLA-JHARSHUGUDA-I	110	5		110	10		
	400 KV ROURKELLA-JHARSHUGUDA-II	110	6		110	6		
	400 KV ROURKELLA-RAIGARH	112	5		OTHER REGION			May be submitted by Odisha Pr
	400 KV ROURKELLA-STERLITE-II	110	6		115	5		
	400 KV ROURKELA-TALCHER-I	110	5		110	5		
	400 KV ROURKELA-TALCHER-II	110	6		112	5		
	400 KV ROURKELA-CHAIBASA-I	110	5		112	7		
	400 KV ROURKELA-CHAIBASA-II	110	6					
	400 KV ROURKELA-RANCHI-I	110	5		110	5		
	400 KV ROURKELA-RANCHI-II	110	6		112	7		
STERLITE	400 KV STERLITE - ROURKELA - II	115	5		110	6		
	400 KV STERLITE - RAIGARH - II	115	5		OTHER REGION			May be submitted by Odisha Pr
	400 KV STERLITE-MERAMANDALI-I							
	400 KV STERLITE-MERAMANDALI-II							
Jharshuguda	400KV JHSUGUDA-ROURKELA-I	110	10		110	5		
	400KV JHSUGUDA-ROURKELA-II	110	6		110	6		
	400 KV JHARSHUGUDA-IBEUL	110	10		110	5		
	765kV Jharsuguda-ANGUL-I	110	4		110	4		
	765kV Jharsuguda-ANGUL-II	110	4		110	4		
	400 KV JHARSHUGUDA-RAIGARH -II	110	6		111	7		
Jharsguda 765KV S/s	765kv Jharsuguda-Dharmjaygarh-I	108	5		OTHER REGION			May be submitted by Odisha Pr
	765kv Jharsuguda-Dharmjaygarh-II	108	7		OTHER REGION			May be submitted by Odisha Pr
	765kV Jharsuguda-Angul-I	110	4		110	4		
	765kV Jharsuguda-Angul-II	110	4		110	4		
IBEUL	400kV IBEUL-Raigarh	110	5		OTHER REGION			May be submitted by Odisha Pr
	400kV IBEUL-Jharsuguda	110	5		110	10		
APNRL	400 KV APNRL-JAMSHEDPUR-I	115	5		110	5		
	400 KV APNRL-JAMSHEDPUR -II	115	5		110	5		
BIHARSHARIFF	400 KV BIHARSHARIFF-BANKA-I	112	7		112	7		
	400 KV BIHARSHARIFF-BANKA-II	110	6		110	6		
	400 KV BIHARSHARIFF - PUSAULI - I	110	5		110	5		
	400 KV BIHARSHARIFF - PUSAULI- II	112	5		112	5		
	400 KV BIHARSHARIFF - VARANASI- I	112	7		112	7		
	400 KV BIHARSHARIFF - VARANASI- II	110	7		110	7		
	400 KV BIHARSHARIFF - BALIA - I	110	5		OTHER REGION			y be submitted by ER-I, Powerg
	400 KV BIHARSHARIFF - BALIA - II	112	5					
	400 KV BIHARSHARIFF-KODERMA-I	112	7		113	5		
	400 KV BIHARSHARIFF-KODERMA-II	110	5		113	5		
	400 KV BIHARSHARIFF-PURNEA-I	110	5		110	5		
	400 KV BIHARSHARIFF-PURNEA-II	110	7		110	7		
	400 KV BIHARSHARIFF-LAKHISARAI-I	110	7		110	5		
	400 KV BIHARSHARIFF-LAKHISARAI-II	112	5		110	5		
	MUZAFFARPUR-I	110	5		110	5		
	MUZAFFARPUR-II	112	5		112	5		
Kahalgaon	400 KV KhSTPP-BANKA -I	110	6		110	6		
	400 KV KhSTPP-BANKA - II	112	7		112	7		
	400 KV KhSTPP - LAKHISARAI- I	110	7		110	7		
	400 KV KhSTPP - LAKHISARAI- II	112	5		112	5		
	400 KV KhSTPP-MAITHON -I	112	5		110	5		
	400 KV KhSTPP-MAITHON -II	110	5		110	6		
	400 KV KhSTPP-BARH - I	112	6		112	6		
	400 KV KhSTPP-BARH- II	112	6		112	6		
	400 KV KHSTPP-FSTPP-I	110	5		110	5		
	400 KV KHSTPP-FSTPP-II	112	5		112	5		
	400 KV KHSTPP-FSTPP-III	110	7		110	7		
	400 KV KHSTPP-FSTPP-IV	112	7		112	7		
	400 KV BARH-KAHALGAON-I	112	6		112	6		
	400 KV BARH-KAHALGAON-II	112	6		112	6		
	400 KV BARH - PATNA-I	112	6		112	6		

Barh	400 KV BARH - PATNA-II	112	7		112	7		
	400 KV BARH - PATNA-IIII	110	4		110	4		
	400 KV BARH - PATNA-IV	110	5		110	5		
	400 KV BARH - GORAKHPUR-I							
	400 KV BARH - GORAKHPUR-II							
PATNA	400 KV PATNA-BARH-I	112	6		112	6		
	400 KV PATNA-BARH-II	112	7		112	7		
	400 KV PATNA-BARH-III	110	4		110	4		
	400 KV PATNA-BARH-IV	110	5		110	5		
	400 KV PATNA-KISHANGANJ-I							
	400 KV PATNA-KISHANGANJ-II							
	400 KV PATNA - BALIA - I	110	4		OTHER REGION			y be submitted by ER-I, Powerg
	400 KV PATNA - BALIA - II	110	5					
	400 KV PATNA - BALIA - III	112	6					
	400 KV PATNA- BALIA - IV	112	7					
Sasaram	765KV SASARAM-FATEHPUR	108	5		108	5		
	400 KV PUSAULI - VARANASI	112	5		OTHER REGION			y be submitted by ER-I, Powerg
	400 KV PUSAULI - ALLAHABAD	112	7					
	400 KV PASAULI-BIHARSHARIFF-I	110	5		110	5		
	400 KV PASAULI-BIHARSHARIFF-II	112	5		112	5		
	400KV PUSAULI-NABINAGAR-I	110	5					
	400KV PUSAULI-NABINAGAR-II	110	6					
Gaya	400 KV GAYA-KODERMA-I	110	5		113	5		
	400KV GAYA-KODERMA-II	110	5		113	5		
	400KV GAYA-MAITHON-I	110	5		110	5		
	400KV GAYA-MAITHON-II	110	5		110	6		
	765 KV GAYA-VARANASI-I							
	765 KV GAYA-VARANASI-II							
	765 KV GAYA-BALIA	110	5		OTHER REGION			May be submitted by ER-I, Pow
BANKA	400 KV BANKA-BIHARSHARIFF-I	112	7		112	7		
	400 KV BANKA-BIHARSHARIFF-II	110	6		110	6		
	400 KV BANKA-KAHALGAON-I	110	6		110	6		
	400 KV BANKA-KAHALGAON-II	112	7		112	7		
Muzaffarpur	PURNEA - I	110	7		110	7		
	PURNEA - II	112	7		112	7		
	I	110	7		OTHER REGION			y be submitted by ER-I, Powerg
	II	112	5					
	BIHARSHARIFF - I	110	5		110	5		
	BIHARSHARIFF - II	112	5		112	5		
LAKHISARAI	400 KV LAKHISARI-BIHARSHARIFF-I	110	5		110	7		
	400 KV LAKHISARI-BIHARSHARIFF-II	110	5		112	5		
	400 KV LAKHISARAI-KAHALGAON-I	110	5		110	7		
	400 KV LAKHISARI-KAHALGAON-II	110	5		112	5		

Annexure- C8

SL No	Zone-2 timer setting at	For line	No of circuits	Length (km)	Zone-2 Reach in %	Zone-2 reach of protected line length (km)	Shortest line at remote end	Length (km)	Considering Ideal Zone-1 reach i.e Upto 80%			Considering Zone-1 under reaches by 30% i.e. Zone -1 reach is only upto 50% (as per ERPC/CEA		
									Zone-2 reach (Beyound 80% upto 120/150%) of the shortest line Starts at (km)	Zone -2 Overlap ?	Zone-2 Time setting	Zone-2 reach (Beyound 50% upto 120/150%) of the shortest line Starts at	Zone -2 Overlap ?	Zone-2 Time setting
1	Muzaffarpur	Gorakhpur	D/C	261	150%	392	Gorakhpur-Gorakhpur-UP D/C	46	37	Y	0.5 to 0.6	23	Y	0.5 to 0.6
		Biharshariff	D/C	133	150%	200	Biharsariff Lakhisarai D/C	89	71	N	0.35	45	Y	0.5 to 0.6
		Purnea	D/C	242	150%	363	Purnea-Kishanganj D/C	71	57	Y	0.5 to 0.6	36	Y	0.5 to 0.6
2	Purnea	Muzzafarpur	D/C	242	150%	363	Muzzafarpur-Biharsariff D/C	133	107	Y	0.5 to 0.6	67	Y	0.5 to 0.6
		Kishanganj	D/C	71	150%	107	Kishangaj-Purnea other ckt	71	57	N	0.35	36	N	0.35
		Biharsariff	D/C	231	150%	347	Biharsaiff-Lakhisarai D/C	89	71	Y	0.5 to 0.6	45	Y	0.5 to 0.6
		Malda	D/C	167	150%	251	Malda-Farraka D/C	40	32	Y	0.5 to 0.6	20	Y	0.5 to 0.6
		Binaguri	D/C	168	150%	252	Binaguri-Kishanhanj D/C	98	78	Y	0.5 to 0.6	49	Y	0.5 to 0.6
3	Kishanganj	Purnea	D/C	71	150%	107	Purnea Kishangaj other ckt	71	57	N	0.35	36	N	0.35
		Patna	D/C	348	150%	521	Patna-Barh D/C	69	55	Y	0.5 to 0.6	34	Y	0.5 to 0.6
		Binaguri	D/C	98	150%	147	Binaguri-Kishanhanj other ckt	98	78	N	0.35	49	N	0.35
4	Barh	Patna	D/C	93	150%	140	Patna-Barh D/C	69	55	N	0.35	34	Y	0.5 to 0.6
		Patna	D/C	69	150%	103	Patna-Barh other ckt	69	55	N	0.35	34	N	0.35
		Gorakhpur	D/C	349	150%	524	Gorakhpur-Gorakhpur-UP D/C	46	37	Y	0.5 to 0.6	23	Y	0.5 to 0.6
		Kahalgaon	D/C	217	150%	326	Khalgaon-BankaD/C	48	38	Y	0.5 to 0.6	24	Y	0.5 to 0.6
5	Patna	Kishanganj	D/C	348	150%	521	Kishangaj-Purnea D/C	71	57	Y	0.5 to 0.6	36	Y	0.5 to 0.6
		Barh	D/C	93	150%	140	Barh-Patna D/C	69	55	N	0.35	34	Y	0.5 to 0.6
		Barh	D/C	69	150%	103	Barh-Patna other ckt	69	55	N	0.35	34	N	0.35
		Balia	D/C	185	150%	278	Balia-Mau D/C	9	7	Y	0.5 to 0.6	5	Y	0.5 to 0.6
		Balia	D/C	195	150%	293	Balia-Mau D/C	9	7	Y	0.5 to 0.6	5	Y	0.5 to 0.6
6	Sasaram	Biharsariff	D/C	210	150%	315	Biharsaiff-Lakhisarai D/C	89	71	Y	0.5 to 0.6	45	Y	0.5 to 0.6
		Nabinagar	D/C	82	150%	123	Sasaram-Nabinagar D/C	82	66	N	0.35	41	N	0.35
		Varanasi	S/C	143	120%	172	Varansi-Saranathi S/C	70	56	N	0.35	35	N	0.35
		Allahabad	S/C	212	120%	254	Allahabad-Varanasi S/C	98	78	N	0.35	49	N	0.35
7	Gaya	Maithon	D/C	276	150%	414	Maithon-MPL D/C	32	25	Y	0.5 to 0.6	16	Y	0.5 to 0.6
		Chandwa	D/C	117	150%	176	Chandwa-N.Ranchi D/C	68	54	Y	0.5 to 0.6	34	Y	0.5 to 0.6
		Koderma	D/C	125	150%	188	Koderma-Bokaro D/C	100	80	N	0.35	50	Y	0.5 to 0.6
8	Biharsariff	Muzzafarpur	D/C	133	150%	200	Muzzafarpur-Biharsariff D/C	133	107	N	0.35	67	N	0.35
		Purnea	D/C	231	150%	347	Purnea Kishangaj D/C	71	57	Y	0.5 to 0.6	36	Y	0.5 to 0.6
		Sasaram	D/C	210	150%	315	Sasaram-Nabinagar D/C	82	65	Y	0.5 to 0.6	41	Y	0.5 to 0.6
		Lakhisari	D/C	89	150%	134	Lakhisarai-Biharsaiff Other ckt	89	71	N	0.35	45	N	0.35
		Banka	D/C	185	150%	277	Banka-Khalgaon D/C	48	38	Y	0.5 to 0.6	24	Y	0.5 to 0.6
		Koderma	D/C	111	150%	166	Koderma-Bokaro D/C	100	80	N	0.35	50	Y	0.5 to 0.6
		Balia	D/C	241	150%	362	Balia-Mau D/C	9	7	Y	0.5 to 0.6	5	Y	0.5 to 0.6
9	Lakhisari	Biharsariff	D/C	89	150%	134	Biharsaiff-Lakhisarai D/C	89	71	N	0.35	45	N	0.35
		Kahalgaon	D/C	145	150%	218	Khalgaon-BankaD/C	48	38	Y	0.5 to 0.6	24	Y	0.5 to 0.6
10	Banka	Biharsariff	D/C	185	150%	277	Biharsaiff-Lakhisarai D/C	89	71	Y	0.5 to 0.6	45	Y	0.5 to 0.6

10	Banka	Kahalgaon	D/C	48	150%	72	Khalgaon-BankaD/C	48	38	N	0.35	24	N	0.35
11	Kahalgaon	Lakhisari	D/C	145	150%	218	Lakhisarai-Biharsaiff D/C	89	71	Y	0.5 to 0.6	45	Y	0.5 to 0.6
		Banka	D/C	48	150%	72	Banka-Khalgaon Other ckt	48	38	N	0.35	24	N	0.35
		Farraka	D/C	95	150%	143	Farraka -Malda D/C	40	32	Y	0.5 to 0.6	20	Y	0.5 to 0.6
		Farraka	D/C	95	150%	143	Farraka -Malda D/C	40	32	Y	0.5 to 0.6	20	Y	0.5 to 0.6
		Maithon	D/C	172	150%	258	Maithon-MPL D/C	32	25	Y	0.5 to 0.6	16	Y	0.5 to 0.6
12	Farraka	Kahalgaon	D/C	95	150%	143	Khalgaon-BankaD/C	48	38	Y	0.5 to 0.6	24	Y	0.5 to 0.6
		Kahalgaon	D/C	95	150%	143	Khalgaon-BankaD/C	48	38	Y	0.5 to 0.6	24	Y	0.5 to 0.6
		Malda	D/C	40	150%	60	Malda-Farraka D/C	40	32	N	0.35	20	N	0.35
		Bahrampur	S/C	71	120%	85	Bahrampur-Sagardighi D/C	26	21	N	0.35	13	Y	0.5 to 0.6
		Sagardighi	S/C	72	120%	86	Sagardighi-Bahrampur D/C	26	21	N	0.35	13	Y	0.5 to 0.6
		Durgapur	D/C	146	150%	219	Durgapur-Bidhannagar D/C	11	9	Y	0.5 to 0.6	6	Y	0.5 to 0.6
13	Malda	Purnea	D/C	167	150%	251	Purnea Kishangaj D/C	71	57	Y	0.5 to 0.6	36	Y	0.5 to 0.6
		Farraka	D/C	40	150%	60	Farraka -Malda D/C	40	32	N	0.35	20	N	0.35
14	Binaguri	Purnea	D/C	168	150%	252	Purnea Kishangaj D/C	71	57	Y	0.5 to 0.6	36	Y	0.5 to 0.6
		Kishanganj	D/C	98	150%	147	Kishangaj-Purnea D/C	71	57	N	0.35	36	Y	0.5 to 0.6
		Rangpo	D/C	12	150%	18	Rangpo-Binaguri D/C	12	9	N	0.35	6	N	0.35
		Bongaigaon	D/C	218	150%	327	Bongaigaon-BTPS D/C	3.12	2	Y	0.5 to 0.6	2	Y	0.5 to 0.6
		Bongaigaon	D/C	221	150%	332	Bongaigaon-BTPS D/C	3.12	2	Y	0.5 to 0.6	2	Y	0.5 to 0.6
		Tala	D/C	145	150%	218	Tala -Malbase S/C	24	19	Y	0.5 to 0.6	12	Y	0.5 to 0.6
		Tala	S/C	140	120%	168	Tala -Malbase S/C	24	19	Y	0.5 to 0.6	12	Y	0.5 to 0.6
		Malbase	S/C	125	120%	150	Malbase -Tala S/C	24	19	Y	0.5 to 0.6	12	Y	0.5 to 0.6
15	Bahrampur	Farraka	S/C	71	120%	85	Farraka -Malda D/C	40	32	N	0.35	20	N	0.35
		Sagardighi	D/C	26	150%	39	Sagardighi-Bahrampur D/C	26	21	N	0.35	13	N	0.35
		Jeerat	S/C	165	120%	198	Jeerat-Subhasgram S/C	63	50	N	0.35	32	Y	0.5 to 0.6
		Bheramara	D/C	100	150%	150	heremara-Bahrampur other ck	100	80	N	0.35	50	N	0.35
16	Sagardighi	Farraka	S/C	72	120%	86	Farraka -Malda D/C	40	32	N	0.35	20	N	0.35
		Bahrampur	D/C	26	150%	39	Bahrampur-Sagardighi D/C	26	21	N	0.35	13	N	0.35
		Durgapur	D/C	128	150%	192	Durgapur-Bidhannagar D/C	11	9	Y	0.5 to 0.6	6	Y	0.5 to 0.6
		Subhasgram	S/C	246	120%	295	Subhasgram-Jeerat S/C	63	50	N	0.35	32	Y	0.5 to 0.6
17	Durgapur	Farraka	D/C	146	150%	219	Farraka -Malda D/C	40	32	Y	0.5 to 0.6	20	Y	0.5 to 0.6
		Sagardighi	D/C	128	150%	192	Sagardighi-Bahrampur D/C	26	21	Y	0.5 to 0.6	13	Y	0.5 to 0.6
		Bidhannagar	D/C	11	150%	17	Bidhannagar-Durgapur D/C	11	9	N	0.35	6	N	0.35
		Jamsedpur	S/C	177	120%	212	Jamsedpur - Adhunilk D/C	1	0	Y	0.5 to 0.6	0	Y	0.5 to 0.6
		Maithon	D/C	71	150%	106	Maithon-MPL D/C	32	25	Y	0.5 to 0.6	16	Y	0.5 to 0.6
18	Bidhannagar	Durgapur	D/C	11	150%	17	Durgapur-Bidhannagar D/C	11	9	N	0.35	6	N	0.35
		PPSP	D/C	185	150%	278	PPSP-Bidhannagar D/C	185	148	N	0.35	93	N	0.35
		Arambagh	S/C	114	120%	137	Arambag-Kolaghat S/C	64	51	N	0.35	32	N	0.35
19	PPSP	Bidhannagar	D/C	185	150%	278	Bidhannagar-Durgapur D/C	11	9	Y	0.5 to 0.6	6	Y	0.5 to 0.6
		Arambagh	D/C	210	150%	315	Arambag-Kolaghat S/C	64	51	Y	0.5 to 0.6	32	Y	0.5 to 0.6
20	Arambagh	Bidhannagar	S/C	114	120%	137	Bidhannagar-Durgapur D/C	11	9	Y	0.5 to 0.6	6	Y	0.5 to 0.6
		PPSP	D/C	210	150%	315	PPSP-Bidhannagar D/C	185	148	N	0.35	93	Y	0.5 to 0.6
		Bakreswar TPS	S/C	130	120%	156	Arambag-Bakreswar S/C	130	104	N	0.35	65	N	0.35
		Kolaghat TPS	S/C	64	120%	77	Kolaghat-Arambagh S/C	64	51	N	0.35	32	N	0.35
21	Bakreswar TPS	Arambagh	S/C	130	120%	156	Arambag-Kolaghat S/C	64	51	N	0.35	32	N	0.35

21	Bakreswar TPS	Jeerat	S/C	162	120%	194	Jeerat-Subhasgram S/C	63	50	N	0.35	32	Y	0.5 to 0.6
22	Jeerat	Bahrampur	S/C	165	120%	198	Bahrampur-Sagardighi D/C	26	21	Y	0.5 to 0.6	13	Y	0.5 to 0.6
		Bakreswar TPS	S/C	162	120%	194	Arambag-Bakreswar S/C	130	104	N	0.35	65	N	0.35
		Subhasgram	S/C	63	120%	76	Subhasgram-Jeerat S/C	63	50	N	0.35	32	N	0.35
		Kolaghat TPS	S/C	134	120%	161	Kolaghat-Arambagh S/C	64	51	N	0.35	32	N	0.35
23	Subhasgram	Sagardighi	S/C	246	120%	295	Sagardighi-Bahrampur D/C	26	21	Y	0.5 to 0.6	13	Y	0.5 to 0.6
		Jeerat	S/C	63	120%	76	Jeerat-Subhasgram S/C	63	50	N	0.35	32	N	0.35
		Haldia TPS	D/C	90	150%	135	Haldia-Subhasrgram other ckt	90	72	N	0.35	45	N	0.35
24	Kolaghat TPS	Arambagh	S/C	64	120%	77	Arambag-Kolaghat S/C	64	51	N	0.35	32	N	0.35
		Jeerat	S/C	134	120%	161	Jeerat-Subhasgram S/C	63	50	N	0.35	32	N	0.35
		Kharagpur	S/C	98	120%	118	Kharagpur-Baripada S/C	98	78	N	0.35	49	N	0.35
		Chaibasa	S/C	240	120%	288	Chaibasa-Jamsedpur S/C	46	37	Y	0.5 to 0.6	23	Y	0.5 to 0.6
25	Kharagpur	Kolaghat TPS	S/C	98	120%	118	Kolaghat-Arambagh S/C	64	51	N	0.35	32	N	0.35
		Baripada	S/C	98	120%	118	Baripada-Kharagpur S/C	98	78	N	0.35	49	N	0.35
		Chaibasa	S/C	161	120%	193	Chaibasa-Jamsedpur S/C	46	37	N	0.35	23	Y	0.5 to 0.6
26	Baripada	Kharagpur	S/C	98	120%	118	Kharagpur-Baripada S/C	98	78	N	0.35	49	N	0.35
		N. Duburi	S/C	190	120%	228	N. Duburi-Meeramandali D/C	90	72	N	0.35	45	N	0.35
		Pandiabilli	S/C	302	120%	362	Pandiabilli-Mendasal D/C	28	22	Y	0.5 to 0.6	14	Y	0.5 to 0.6
		Keonjhar	S/C	156	120%	187	Keonjhar-Rengali S/C	100	80	N	0.35	50	N	0.35
		Jamsedpur	S/C	108	120%	130	Jamsedpur - Adhunilk D/C	1	0	Y	0.5 to 0.6	0	Y	0.5 to 0.6
		TISCO	S/C	140	120%	168	TISCO-Baripada S/C	33	26	Y	0.5 to 0.6	16	Y	0.5 to 0.6
27	N. Duburi	Baripada	S/C	190	120%	228	Baripada-Kharagpur S/C	98	78	N	0.35	49	N	0.35
		Pandiabilli	S/C	143	120%	172	Pandiabilli-Mendasal D/C	28	22	Y	0.5 to 0.6	14	Y	0.5 to 0.6
		Meramandali	D/C	90	150%	135	Meramandali-GMR S/C	8	6	Y	0.5 to 0.6	4	Y	0.5 to 0.6
28	Pandiabilli	Baripada	S/C	302	120%	362	Baripada-Kharagpur S/C	98	78	N	0.35	49	Y	0.5 to 0.6
		N. Duburi	S/C	143	120%	172	N. Duburi-Meeramandali D/C	90	72	N	0.35	45	N	0.35
		Mendasal	D/C	28	150%	42	Mendasal Pandiabilli D/C	28	22	N	0.35	14	N	0.35
29	Mendasal	Pandiabilli	D/C	28	150%	42	Pandiabilli-Mendasal D/C	28	22	N	0.35	14	N	0.35
		Meramandali	S/C	98	120%	118	Meramandali-GMR S/C	8	6	Y	0.5 to 0.6	4	Y	0.5 to 0.6
30	Meramandali	Mendasal	S/C	98	120%	118	Mendasal Pandiabilli D/C	28	22	N	0.35	14	Y	0.5 to 0.6
		Angul	S/C	25	120%	30	Angul-Mermandali S/C	19	15	N	0.35	9	N	0.35
		Angul	S/C	19	120%	22	Angul-Mermandali S/C	19	15	N	0.35	9	N	0.35
		TSTPS	S/C	51	120%	61	TSTPS-Rengali D/C	24	19	N	0.35	12	N	0.35
		JSPL	D/C	38	150%	57	JSPL-Meramandali Other ckt	38	30	N	0.35	19	N	0.35
		GMR	S/C	8	120%	10		999	799	N	0.35	500	N	0.35
		SEL	D/C	220	150%	330	SEL-Meramandali Other ckt	220	176	N	0.35	110	N	0.35
31	Angul	Meramandali	S/C	25	120%	30	Meramandali-GMR S/C	8	6	N	0.35	4	Y	0.5 to 0.6
		Meramandali	S/C	19	120%	22	Meramandali-GMR S/C	8	6	N	0.35	4	N	0.35
		Bolangir	S/C	196	120%	235	Bolangir-Angul S/C	196	157	N	0.35	98	N	0.35
		TSTPS	S/C	68	120%	82	TSTPS-Rengali D/C	24	19	N	0.35	12	Y	0.5 to 0.6
		JITPL	D/C	80	150%	120	JITPL-Angul Other Ckt	80	64	N	0.35	40	N	0.35
		GMR	D/C	31	150%	47	GMR-Angul Other Ckt	31	25	N	0.35	16	N	0.35
32	Bolangir	Angul	S/C	196	120%	235	Angul-Mermandali S/C	19	15	Y	0.5 to 0.6	9	Y	0.5 to 0.6
		Jeypore	S/C	287	120%	344	Jeypore-Indravati S/C	71	57	Y	0.5 to 0.6	36	Y	0.5 to 0.6
		Bolangir	S/C	287	120%	344	Bolangir-Angul S/C	196	157	N	0.35	98	N	0.35

33	Jeypore	Indravati	S/C	71	120%	85	Indravati-Indravti (O) S/C	4	3	Y	0.5 to 0.6	2	Y	0.5 to 0.6
		Gazuwaka	D/C	220	150%	330	Gazuwaka-Jeypore other ckt	220	176	N	0.35	110	N	0.35
34	Indravati	Jeypore	S/C	71	120%	85	Jeypore-Indravati S/C	71	57	N	0.35	36	N	0.35
		Rengali	S/C	356	120%	427	Rengali-TSTPS D/C	24	19	Y	0.5 to 0.6	12	Y	0.5 to 0.6
		Indravati (o)	S/C	4	120%	4		999	799	N	0.35	500	N	0.35
35	Indravati (o)	Indravati	S/C	4	120%	4	Jeypore-Indravati S/C	71	57	N	0.35	36	N	0.35
36	Rengali	Indravati	S/C	356	120%	427	Indravati-Indravti (O) S/C	4	3	Y	0.5 to 0.6	2	Y	0.5 to 0.6
		Keonjhar	S/C	100	120%	120	Keonjhar-Rengali S/C	100	80	N	0.35	50	N	0.35
		TSTPS	D/C	24	150%	36	TSTPS-Rengali D/C	24	19	N	0.35	12	N	0.35
37	Keonjhar	Baripada	S/C	156	120%	187	Baripada-Kharagpur S/C	98	78	N	0.35	49	N	0.35
		Rengali	S/C	100	120%	120	Rengali-TSTPS D/C	24	19	Y	0.5 to 0.6	12	Y	0.5 to 0.6
38	TSTPS	Meramandali	S/C	51	120%	61	Meramandali-GMR S/C	8	6	Y	0.5 to 0.6	4	Y	0.5 to 0.6
		Angul	S/C	68	120%	82	Angul-Mermandali S/C	19	15	N	0.35	9	Y	0.5 to 0.6
		Rengali	D/C	24	150%	36	Rengali-TSTPS D/C	24	19	N	0.35	12	N	0.35
		Rourkela	D/C	171	150%	257	Rourkela-Chaibasa D/C	131	105	N	0.35	66	Y	0.5 to 0.6
39	Rourkela	TSTPS	D/C	171	150%	257	TSTPS-Rengali D/C	24	19	Y	0.5 to 0.6	12	Y	0.5 to 0.6
		Jharsuguda	D/C	145	150%	218	Jharsuguda-Rourkela S/C	63	50	Y	0.5 to 0.6	31	Y	0.5 to 0.6
		SEL	S/C	135	120%	162	SEL-Rourkela S/C	135	108	N	0.35	68	N	0.35
		Chaibasa	S/C	131	120%	158	Chaibasa-Jamsedpur S/C	46	37	N	0.35	23	Y	0.5 to 0.6
		Jamsedpur	S/C	182	120%	218	Jamsedpur - Adhunilk D/C	1	0	Y	0.5 to 0.6	0	Y	0.5 to 0.6
		Ranchi	D/C	144	150%	217	Ranchi-N.Ranchi D/C	79	63	Y	0.5 to 0.6	39	Y	0.5 to 0.6
		Raigarh	S/C	139	120%	167	Raigarh-Raigarg Polling D/C	6	5	Y	0.5 to 0.6	3	Y	0.5 to 0.6
40	Jharsuguda	Rourkela	D/C	145	150%	218	Rourkela-Chaibasa D/C	131	105	N	0.35	66	Y	0.5 to 0.6
		Raigarh	S/C	115	120%	137	Raigarh-Raigarh Polling D/C	6	5	Y	0.5 to 0.6	3	Y	0.5 to 0.6
		IBEUL	S/C	63	120%	75	IBEUL-Raigrah S/C	63	50	N	0.35	31	N	0.35
41	IBEUL	Jharsuguda	S/C	63	120%	75	Jharsuguda-Raigarh S/C	115	92	N	0.35	58	N	0.35
		Raigarh	S/C	91	120%	109	Raigarh-Raigarg Polling D/C	6	5	Y	0.5 to 0.6	3	Y	0.5 to 0.6
42	SEL	Raigarh	S/C	147	120%	176	Raigarh-Raigarg Polling D/C	6	5	Y	0.5 to 0.6	3	Y	0.5 to 0.6
		Rourkela	S/C	135	120%	162	Rourkela-Chaibasa S/C	131	105	N	0.35	66	N	0.35
43	Chaibasa	Kolaghat TPS	S/C	240	120%	288	Kolaghat-Arambagh S/C	64	51	N	0.35	32	Y	0.5 to 0.6
		Kharagpur	S/C	161	120%	193	Kharagpur-Baripada S/C	98	78	N	0.35	49	N	0.35
		Rourkela	S/C	131	120%	158	Rourkela-Chaibasa S/C	131	105	N	0.35	66	N	0.35
		Jamsedpur	S/C	46	120%	55	Jamsedpur - Adhunilk D/C	1	0	Y	0.5 to 0.6	0	Y	0.5 to 0.6
44	Jamsedpur	Durgapur	S/C	177	120%	212	Durgapur-Bidhannagar D/C	11	9	Y	0.5 to 0.6	6	Y	0.5 to 0.6
		Baripada	S/C	108	120%	130	Baripada-Kharagpur S/C	98	78	N	0.35	49	N	0.35
		Rourkela	S/C	182	120%	218	Rourkela-Chaibasa D/C	131	105	N	0.35	66	N	0.35
		Chaibasa	S/C	46	120%	55	Chaibasa-Jamsedpur S/C	46	37	N	0.35	23	N	0.35
		Mejia B	S/C	168	120%	201	Mejia B- Maithon D/C	59	47	N	0.35	30	Y	0.5 to 0.6
		Maithon	S/C	153	120%	184	Maithon-MPL D/C	32	25	Y	0.5 to 0.6	16	Y	0.5 to 0.6
		DSTPS	D/C	157	150%	235	DSTPS-Jamsedpur D/C	69	55	Y	0.5 to 0.6	35	Y	0.5 to 0.6
		TISCO	S/C	33	120%	39	TISCO-Baripada S/C	33	26	N	0.35	16	N	0.35
		Adhunik	D/C	1	150%	2	Jamsedpur - Adhunilk D/C	1	0	Y	0.5 to 0.6	0	Y	0.5 to 0.6
45	Mejia B	Jamsedpur	S/C	168	120%	201	Jamsedpur - Adhunilk D/C	1	0	Y	0.5 to 0.6	0	Y	0.5 to 0.6
		Maithon	S/C	84	120%	100	Maithon-MPL D/C	32	25	N	0.35	16	Y	0.5 to 0.6
		Maithon	D/C	59	150%	89	Maithon-MPL D/C	32	25	Y	0.5 to 0.6	16	Y	0.5 to 0.6

46	Maithon	Gaya	D/C	276	150%	414	Gaya-Chandwa D/C	117	94	Y	0.5 to 0.6	59	Y	0.5 to 0.6
		Kahalgaon	D/C	172	150%	258	Khalgaon-BankaD/C	48	38	Y	0.5 to 0.6	24	Y	0.5 to 0.6
		Durgapur	D/C	71	150%	106	Durgapur-Bidhannagar D/C	11	9	Y	0.5 to 0.6	6	Y	0.5 to 0.6
		Jamsedpur	S/C	153	120%	184	Jamsedpur - Adhunilk D/C	1	0	Y	0.5 to 0.6	0	Y	0.5 to 0.6
		Mejia B	S/C	84	120%	100	Mejia B- Maithon D/C	59	47	N	0.35	30	N	0.35
		Mejia B	D/C	59	150%	89	Mejia B- Maithon D/C	59	47	N	0.35	30	N	0.35
		MPL	D/C	32	150%	47	MPL-Maithon D/C	32	25	N	0.35	16	N	0.35
		Raghunatpur	S/C	55	120%	65	Raghunathpur-Maithon S/C	55	44	N	0.35	27	N	0.35
		Ranchi	S/C	200	120%	240	Ranchi-N.Ranchi D/C	79	63	N	0.35	39	Y	0.5 to 0.6
47	MPL	Maithon	D/C	32	150%	47	Maithon-MPL D/C	32	25	N	0.35	16	N	0.35
		Ranchi	D/C	188	150%	281	Ranchi-N.Ranchi D/C	79	63	Y	0.5 to 0.6	39	Y	0.5 to 0.6
48	DSTPS	Jamsedpur	D/C	157	150%	235	Jamsedpur - Adhunilk D/C	1	0	Y	0.5 to 0.6	0	Y	0.5 to 0.6
		Raghunatpur	D/C	69	150%	104	Raghunathpur-Maithon S/C	55	44	N	0.35	27	Y	0.5 to 0.6
49	Raghunathpur	Maithon	S/C	55	120%	65	Maithon-MPL D/C	32	25	N	0.35	16	N	0.35
		DSTPS	D/C	69	150%	104	DSTPS-Jamsedpur D/C	69	55	N	0.35	35	N	0.35
		Ranchi	S/C	166	120%	199	Ranchi-N.Ranchi D/C	79	63	N	0.35	39	N	0.35
50	Ranchi	Rourkela	D/C	144	150%	217	Rourkela-Chaibasa D/C	131	105	N	0.35	66	Y	0.5 to 0.6
		Maithon	S/C	200	120%	240	Maithon-MPL D/C	32	25	Y	0.5 to 0.6	16	Y	0.5 to 0.6
		MPL	D/C	188	150%	281	MPL-Maithon D/C	32	25	Y	0.5 to 0.6	16	Y	0.5 to 0.6
		Raghunatpur	S/C	166	120%	199	Raghunathpur-Maithon S/C	55	44	N	0.35	27	Y	0.5 to 0.6
		N. Ranchi	D/C	79	150%	118	N. Ranchi-Chandwa D/C	68	54	N	0.35	34	Y	0.5 to 0.6
		N. Ranchi	D/C	79	150%	118	N. Ranchi-Chandwa D/C	68	54	N	0.35	34	Y	0.5 to 0.6
		Sipat	D/C	405	150%	608	Sipat-Korba S/C	100	80	Y	0.5 to 0.6	50	Y	0.5 to 0.6
51	N. Ranchi	Ranchi	D/C	79	150%	118	Ranchi-N.Ranchi D/C	79	63	N	0.35	39	Y	0.5 to 0.6
		Ranchi	D/C	79	150%	118	Ranchi-N.Ranchi D/C	79	63	N	0.35	39	N	0.35
		Chandwa	D/C	68	150%	102	Chandwa-N.Ranchi D/C	68	54	N	0.35	34	N	0.35
52	Chandwa	Gaya	D/C	117	150%	176	Gaya-Chandwa D/C	117	94	N	0.35	59	N	0.35
		N. Ranchi	D/C	68	150%	102	N. Ranchi-Chandwa D/C	68	54	N	0.35	34	N	0.35
53	Koderma	Gaya	D/C	125	150%	188	Gaya-Chandwa D/C	117	94	N	0.35	59	Y	0.5 to 0.6
		Biharsariff	D/C	111	150%	166	Biharsaiff-Lakhisarai D/C	89	71	N	0.35	45	Y	0.5 to 0.6
		Bokaro	D/C	100	150%	150	Koderma-Bokaro D/C	100	80	N	0.35	50	N	0.35
54	Bokaro	Koderma	D/C	100	150%	150	Koderma-Bokaro D/C	100	80	N	0.35	50	N	0.35
55	Rangpo	Binaguri	D/C	110	150%	165	Binaguri-Kishanhanj D/C	98	78	N	0.35	49	Y	0.5 to 0.6
		Teesta V	D/C	12	150%	18	Rangpo-Teesta D/C	12	10	N	0.35	6	N	0.35
56	TISCO	Baripada	S/C	140	120%	168	Baripada-Kharagpur S/C	98	78	N	0.35	49	N	0.35
		Jamsedpur	S/C	33	120%	39	Jamsedpur - Adhunilk D/C	1	0	Y	0.5 to 0.6	0	Y	0.5 to 0.6
57	Teesta V	Rangpo	D/C	12	150%	18	Rangpo-Teesta D/C	12	10	N	0.35	6	N	0.35
58	GMR	Angul	D/C	31	150%	47	Angul-Meramandali S/C	19	15	Y	0.5 to 0.6	10	Y	0.5 to 0.6
59	GMR(0)	Meramandali	S/C	8	120%	10	Meramandali-Angul S/C	19	15	N	0.35	10	N	0.35
60	JITPL	Angul	D/C	80	150%	120	Angul-Meramandali S/C	19	15	Y	0.5 to 0.6	10	Y	0.5 to 0.6

Eastern Region summary sheet and details of current status of implementation of telemetry system

Annexure - C9

									Status as on :		**14.10.2016**		
Sl. No.	**User Name**	**Total Nos of Stations**		**Telemetry not Provided**			**Telemetry Intemittent**				**Total non-availability of data in % (Telemetry not provided plus Telemetry intermittency)**		
				Total nos of station		**Non-availability of data in % (wrt**	**Total nos of station**		**Non-availability of data due to intermittency in % (wrt total nos of stations)**				
		GS	**SS**	**GS**	**SS**	**GS**	**GS**	**SS**	**GS**	**SS**	**GS**	**SS**	
1	**OPTCL**	36	53	-	2	-	0	2	0%	4%	0%	8%	
2	**BSEB**	2	37	-	0	-	-	21	-	57%	-	57%	
3	**WBSETCL**	15	50	2	2	13%	3	8	20%	16%	33%	20%	
4	**DVC**	12	24	-	0	-	0	3	0%	13%	0%	13%	
5	**JSEB**	3	16	-	3	-	2	7	67%	44%	67%	63%	
6	**PGCIL**		39	-	-	-	-	7	-	18%	-	18%	
7	**SIKKIM**		2	-		-	-		-	0%	-	0%	
8	**NTPC**	6	1	-	-	-	2	1	33%	100%	33%	100%	
9	**NHPC**	2		-	-	-	0	-	0%	-	0%	-	
10	**IPP**	7		3	-	43%	1	-	14%	-	57%	-	
	TOTAL	**83**	**222**	**5**	**7**	**6%**	**8**	**49**	**10%**	**22%**	**16%**	**25%**	
	Total (over all)	**305**		**12**		**4%**	**57**		**19%**		**23%**		

Note:

1. Constituentswise details is as furnished by SLDC's / as available at RLDC.
2. Status considered above are grid substation and upto 132 KV voltage level.
3. 'GS' Generating Stations and 'SS' subStations

Details of Eastern Region

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 14/10/2016
1	WBSETCL	Haldia (2 x 300)	Jan-15	600	ERLDC is not getting any real time ISOLATOR status ,SOE from HEL except Line, Unit site MW /MVAR. No response.
2		Sagardighi (2 x 300 + 1 x 500)		1100	Unit 3 LV side not available., 400 kV Bus Voltage is erronious. (340kV)
1	IPP	400 KV GMR (3X 350 MW)	Apr-13	1050	As per ERLDC guidelines no express voice / VOIP phones.
2		400 JITPL (600 x 2)	Jun-14	1200	Data are highly instable . No alternate data channel and express voice commuincation integrated with ERLDC and its Exchange
3		IBEUL (2 x 350 MW)	Jul-16	700	No alternate data channel and as per ERLDC guidelines no express voice /VOIP phones provided . LV side data not available.
		Total (Non-telemetered stations)	**5**	**4650**	

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 14/10/2016
1	OPTCL	JSPL (Meramundali -400)	400 kV	Sep'10	Status are not reporting.

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 14/10/2016
1	OPTCL	OPTCL CPP : 220 KV BPSL,CONCAST,BSL,JSL,TSIL,VISSA	220 / 132 kV	Dec-13	CONCAST NO DATA , JSL NO KV/HZ. BSL NO HZ .BPSL NO Bus Kv .
1	WBSETCL	Foundary Park	220		Data not integrated at SLDC .
2		Hura	220		Data not integrated at SLDC.
1	JSEB	Hatia New	220 kV	Sept-16	No Data available . Target Missed
2		Japla	132 KV	Sept-16	No Data available . Target Missed
3		Dumka	220 KV	Sept-16	No Data available . Target Missed

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 14/10/2016
1	WBSETCL	TLDP (III) (4x 33)	132	Time Schedule not submitted	Data not available .
2		TLDP (IV) (2x 40)	80	Time Schedule not submitted	Data not stable
3		Kolaghat	1260	Time Schedule not submitted	Kolaghat Chaibasa (Kharagpur Line 1) line flow and status data not available.
1	JSEB	220 KV Tenughat (2X 210 MW)	420	Time Schedule not submitted	Data highly intermittent due to faulty communication link .
2		220 KV Patratu (4x 50 + 2x100 + 4x110)	840	Time Schedule not submitted	Data highly intermittent due to faulty communication link .
1	NTPC	400 kV Farakka : (3x 200 + 2 x 500 MW + 600) Unit-6 LV side MW/MVAR not available	2100	Time Schedule not submitted	Unit 5 LV side MW/MVAr is erroneous. Unit-6 LV side MW/MVAR not available.
2		BRBCL/Nabinagar TPP (4x250 MW)	1000	Time Schedule not submitted	Communication Link was restored on 15-09-16 but Complete SCADA data yet to be restored.. As per ERLDC guidelines no express voice /VOIP phones provided . Target date 30th Aug 2016.
1	Vedanta	SEL (4 x550 MW)	2200		. As per ERLDC guidelines no express voice /VOIP phones provided .
			5832		

B.2 Sub - Stations

Sl. No.	User Name	Name of sub-Stations	Voltage level	Target date as per User	Remarks by constituentes / ERLDC 14/10/2016 Data not reporting
1	BSPHCL	Dumraon	132 kV	Oct'16	R & M Work Completed,interfacing pending
2		Khagaul	132 kV	March'17	OPGW awarded by PGCIL
3		Dehri	220 KV	Nov'16	Data stopped due to collapse of tower
4		Sonenagar	220 kV	Oct'16	R & M Work Completed,interfacing pending
5		Sultangaunj	132 kV	Aug'16	RTU installed,end to end testing pending
6		Lakhisarai	132 KV	March'17	OPGW awarded by PGCIL
7		Karmanasa	132 KV	March'18	Under rennovation and modernization .
8		Kahalgaon	132 kV	March'17	OPGW awarded by PGCIL
9		Jamaui	132 KV	March'17	OPGW awarded by PGCIL
10		Banka	220 kv	March'17	OPGW awarded by PGCIL
11		Valmikinagar	132 kV	Aug'16	RTU installed,interfacing completedend to end testing in progress.
12		Koshi	132 kV	Aug'16	RTU installed,interfacing completedend to end testing in progress.
13		Gopalganj	220 kV	March'17	OPGW awarded by PGCIL
14		Kisanganj	132 KV	March'17	OPGW awarded by PGCIL
15		Arrah	132 KV	March'17	OPGW awarded by PGCIL
16		Rajgir	132 KV	March'17	OPGW awarded by PGCIL
17		Sipara	220 KV	March'17	OPGW awarded by PGCIL
18		Hajipur (New)	220 KV	March'17	OPGW awarded by PGCIL
19		Darbhanga	220 kV		RTU commissioned and data stopped reporting since 20-08-16
20		Jagdishpur	132 KV		RTU commissioned and data intermittent
21		Pusauli	220 KV	March'17	OPGW awarded by PGCIL
1	GRIDCO	Paradeep	220		Data not Available
2		Bidanasi	220		Most of the Status and Analog, kV data not available
1	JSEB	Jamtara	132 kV	Nov'16	RTU cards for replacement of faulty cards are not availabale.
2		Deoghar	132 kV	Nov'16	RTU cards for replacement of faulty cards are not availabale.
3		Garwah	132 kV	Nov'16	RTU cards for replacement of faulty cards are not availabale.communication link has been broken due to LILO at japla GSS.
4		Goelkera	132 kV	Nov'16	RTU cards for replacement of faulty cards are not availabale.
5		Jaduguda	132 kV	Nov'16	RTU cards for replacement of faulty cards are not availabale.
6		Kendposi	132 kV	Nov'16	RTU cards for replacement of faulty cards are not availabale.

7		Ramchandrapur	220 KV		Highly Intermittent
2	WBSETCL	Asansol	220		Highly Intermittent
3		Haldia NEW	220		Highly Intermittent
4		bantala	220		Highly Intermittent
5		Laxmikantapur	220		Highly Intermittent
6		New Town	220		Highly Intermittent
7		Subhasgram	220		Highly Intermittent
8		EM Bypass(CESC)	220		Bus Voltage and Frequency Not Available
1	POWERGRID	RANCHI	400		Highly Intermittent
2		Purnea 400	400 kV		RTU is getting Hanged frequently
3		Baripada	400 kV		Highly Intermittent
4		Gaya	765 kV		Highly Intermittent
5		Biharshariff	400 KV		Highly Intermittent
6		Angul	765 KV		Highly Intermittent
7		Muzaffarpur	400 KV		RTU is getting Hanged frequently
1	DVC	TISCO	400 KV		Data highly intermittent. In case of any problem data restoration time is too much high.
2		Parulia	220 kV		Data Not available
3		Raghunathpur	400 kV		Data not stable
1	NTPC	Lalmatia	220 kV	First week of September'16	Data stoppped reporting since Jan 2016

A. Station / Sub station

S. N	S/s Name	Orange Analog Phone: Hot line	OrangeVOIP: Hot line	Main ERLDC Kolkata data Link
1	Angul	Not Available	20330057	Available
2	Ara	20330539	20330039	Available
3	Baharampur	Not Available	20330031	Available
4	Banka CS	Not Available	20330044	Available
5	BARH NTPC *	Not Available	20330051	Available
6	Biharsarif 400kv	Not Available	20330034	Available
7	Birpara	Not Available	20330053	Available
8	Bolangir	Not Available	Not Available	Available
9	Chaibasa CS	Not Available	20330041	Available
10	Chandwa	20330559	20330059	Available
11	Dalkhola	20330549	20330049	Available
12	Daltonganj	Not Available	20330056	Available
13	Durgapur	20330528	20330028	Available
14	FSTPP *	Not Available	20330054	Available
15	Gangtok	Not Available	20330022	Available
16	Gaya	Not Available	20330037	Available
17	Indravati	Not Available	Not Available	Available
18	Jamshedpur CS	20330533	20330033	Available
19	Jeypore	Not Available	Not Available	Available
20	Jharsugura	Not Available	20330040	Available
21	Jorthang Power House	20330141		Available
22	Kalabadia	Not Available	Not Available	Available
23	Kahalgaon NTPC *	Not Available	20330043	Available
24	Keonjhar	Not Available	Not Available	Available
25	Kishanganj	Not Available	20330061	Available
26	Lakshisarai	Not Available	20330042	Available
27	Maithon	Not Available	20330026	Available
28	Malda	20330529	20330029	Available
29	MTHRB *	Not Available	20330027	Available
30	Mujaferpur	Not Available	20330050	Available
31	New Malli	20330140	20330021	Available
32	Pandiavali	Not Available	20330067	Available
33	Patna	Not Available	20330038	Available
34	Purnia 220 KV	20330530	20330030	Available
35	Purnia 400 KV	Not Available	20330025	Available
36	Ranchi 400 KV	Not Available	20330032	Available
37	Ranchi 765 KV	Not Available	20330035	Available
38	Rangit	Not Available	20330058	Available
39	Rangpo	20330139	20330020	Available
40	Rengali	Not Available	20330045	Available
41	Rourkela	20330536	20330036	Available
42	Sasaram	Not Available	20330046	Available
43	Siliguri 220	20330523	20330023	Available
44	Siliguri 400/220 (Binaguri)	20330524	20330024	Available
45	Subashgram	Not Available	20330015	Available
46	Teesta NHPC	Not Available	20330062	Available
47	TSTPP, Talcher NTPC *	Not Available	20330052	Available
48	GMR *	Not Available	Not Available	ICCP LINK
49	JITPL*	Not Available	Not Available	Available
50	SEL *	Not Available	Not Available	Available
51	Ind Bharat *	Not Available	Not Available	Available
52	BRBCL/Nabinagar TPP *	Not Available	Not Available	Not Available

Note :* Phone at Unit Control room is yet to provided.

B. SLDC /NLDC to ERLDC protection path not provided.

S.N.	Link	Main ERLDC Delhi		Backup ER
		Main Channel	Std By Channel (Route Diversity)	Main Channel
1	OPTCL -ERLDC	Yes	Not Available	Not Available
2	BSPTCL -ERLDC	Yes	Not Available	Not Available
3	JUSNL -ERLDC	Yes	Not Available	Not Available
4	WBSETCL -ERLDC	Yes	Not Available	Not Available
5	DVC -ERLDC	Yes	Not Available	Not Available
6	Sikkim -ERLDC	Yes	Not Available	Not Available
7	NLDC -ERLDC	Yes	Not Available	Yes

Annexure - C10.1

STATUS OF REACTIVE CHARGES

RECEIVABLE IN ER POOL AS PER PUBLISHED A/C UPTO 09.10.16 (2016 -17)
AS ON 24.10.2016

CONSTITUENT	AMOUNT RECEIVABLE IN THE POOL (Rs.)	AMOUNT RECEIVED IN THE POOL (Rs.)	OUTSTANDING (Rs.)
BSPHCL	378537	284950	93587
JSEB	1137688	1137688	0
DVC	357122	357122	0
GRIDCO	129566230	129566230	0
WBSETCL	221270594	149302044	71968550
SIKKIM	325817	325817	0
TOTAL	353035988	280973851	72062137

Note: (+ve) means payable by utility & (-ve) means receivable by utility

Annexure - C10.2

SUMMARY OF RRAS CHARGE RECEIPT AND PAYMENT STATUS

Bills from 08.08.16 to 09.10.16 (upto Week - 28 of 2016 - 17)
Last Payment Disbursement Date -19.10.16

Figures in Rs. Lakhs

CONSTITUENTS	Receivable	Received	Payable	Paid	Outstanding
FSTPP STG-I	195.38185	188.77179	1697.37260	1544.12840	**146.63414**
FSTPP STG-II	42.76301	42.76301	592.63082	592.63082	**0.00000**
KhSTPP STG-I	143.44117	133.28179	937.38932	906.71795	**20.51199**
KhSTPP STG-II	50.58785	46.89271	3808.80256	3609.94091	**195.16651**
TSTPP STG-I	110.94069	109.98086	337.76688	325.63161	**11.17544**
BARH STG-I	0.00000	0.00000	0.00000	0.00000	**0.00000**
BARH STG-II	198.19172	193.18916	1808.13266	1770.53448	**32.59562**
NTPC TOTAL	**741.30627**	**714.87931**	**9182.09483**	**8749.58415**	**406.08371**
RANGIT	0.00000	0.00000	0.00000	0.00000	**0.00000**
TEESTA-V	0.00000	0.00000	0.00000	0.00000	**0.00000**
NHPC TOTAL	**0.00000**	**0.00000**	**0.00000**	**0.00000**	**0.00000**
TOTAL	**741.30627**	**714.87931**	**9182.09483**	**8749.58415**	**406.08371**

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 31.05.2015**

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 (Rs in Lac)	Date of Disbursement	Cheque No	Remarks
1	**Opening Balance (upto 31.12.15)**	**83873.87922**			
2	Addl. Dev	18.40442	01.01.16		Addl Dev Charge 15-16
3	Addl. Dev	16.46976	05.01.16		Addl Dev Charge 15-16
4	Addl. Dev	33.27577	07.01.16		Addl Dev Charge 15-16
5	Addl. Dev	19.11532	11.01.16		Addl Dev Charge 15-16
6	Addl. Dev	90.94357	14.01.16		Addl Dev Charge 15-16
7	Addl. Dev	19.04467	18.01.16		Addl Dev Charge 15-16
8	Addl. Dev	50.72543	20.01.16		Addl Dev Charge 15-16
9	Addl. Dev	11.10228	22.01.16		Addl Dev Charge 15-16
10	Addl. Dev	45.43206	27.01.16		Addl Dev Charge 15-16
11	Addl. Dev	96.62204	29.01.16		Addl Dev Charge 15-16
12	Reactive Charge	450.00000	02.02.16		Reactive Energy Charge_15-16
13	Addl. Dev	69.01901	04.02.16		Addl Dev Charge 15-16
14	Addl. Dev	45.99429	11.02.16		Addl Dev Charge 15-16
15	Addl. Dev	50.44878	15.02.16		Addl Dev Charge 15-16
16	Addl. Dev	371.30972	17.02.16		Addl Dev Charge 15-16
17	Addl. Dev	91.04585	22.02.16		Addl Dev Charge 15-16
18	Addl. Dev	121.28575	24.02.16		Addl Dev Charge 15-16
19	Addl. Dev	40.83267	29.02.16		Addl Dev Charge 15-16
20	Addl. Dev	61.45400	02.03.16		Addl Dev Charge 15-16
21	Addl. Dev	16.51444	04.03.16		Addl Dev Charge 15-16
22	Addl. Dev	142.93695	09.03.16		Addl Dev Charge 15-16
23	Addl. Dev	55.54777	15.03.16		Addl Dev Charge 15-16
24	Addl. Dev	85.71223	17.03.16		Addl Dev Charge 15-16
25	Addl. Dev	58.13810	21.03.16		Addl Dev Charge 15-16
26	Addl. Dev	253.40681	23.03.16		Addl Dev Charge 15-16
27	Addl. Dev	25.92020	28.03.16		Addl Dev Charge 15-16
28	Reactive Charges	250.00000	28.03.16		Reactive Charges_15-16
29	Addl. Dev	83.33978	01.04.16		Addl Dev Charge 15-16
30	Addl. Dev	43.77416	05.04.16		Addl Dev Charge 15-16
31	Addl. Dev	31.83984	07.04.16		Addl Dev Charge 15-16
32	Addl. Dev	52.08622	11.04.16		Addl Dev Charge 15-16
33	Addl. Dev	107.23773	13.04.16		Addl Dev Charge 15-16
34	Addl. Dev	220.15330	19.04.16		Addl Dev Charge 15-16
35	Addl. Dev	76.84824	21.04.16		Addl Dev Charge 15-16
36	Addl. Dev	20.84026	26.04.16		DSM Interest 2014-15(Paid by APNRL)
37	Addl. Dev	10.01920	26.04.16		Addl Dev Charge 16-17
43	Addl. Dev	432.25696	28.04.16		Addl Dev Charge 16-17
44	Addl. Dev	117.08707	02.05.16		Addl Dev Charge 16-17
45	Addl. Dev	41.65418	04.05.16		Addl Dev Charge 16-17
46	Addl. Dev	114.33049	06.05.16		Addl Dev Charge 15-16 & 16-17
47	Deviation Interest	38.50018	06.05.16		Deviation Interest
48	Addl. Dev	35.54178	10.05.16		Addl Dev Charge 16-17
49	Addl. Dev	448.87953	31.05.16		Addl Dev Charge 16-17
50	Addl. Dev	170.51274	29.06.16		Addl Dev Charge 16-17
51	Reactive Charges	530.57497	28.09.16		Reactive Charges_15-16
	Total	**89040.05774**			

Status of Reconciliation of Deviation Pool Account

Annexure-C11.1

	2015-16				2016-17	
Name of The Utility	**Q1 (01.07.15)**	**Q2(05.10.15)**	**Q3(05.01.16)**	**Q4(05.04.16)**	Q1 (04.07.16)	Q2 (03.10.16)
Inter Regional						
WR	YES	NO	YES	YES	NO	NO
SR	YES	YES	YES	YES	YES	NO
NER	NO	NO	YES	YES	NO	NO
NR	NO	NO	NO	NO	NO	NO
Intra Regional						
BSPHCL	YES	YES	YES	YES	NO	NO
JUVNL	NO	NO	NO	NO	NO	NO
DVC	YES	YES	YES	YES	YES	NO
GRIDCO	YES	YES	YES	YES	YES	YES
WBSETCL	YES	YES	YES	YES	NO	NO
SIKKIM	YES	YES	YES	YES	NO	NO
NTPC	YES	YES	YES	YES	YES	NO
NHPC	YES	YES	YES	YES	NO	NO
MPL	YES	YES	YES	YES	NO	YES
STERLITE	YES	YES	YES	YES	NO	NO
APNRL	YES	YES	YES	YES	NO	NO
CHUZACHEN(GATI)	YES	YES	YES	YES	NO	NO
NVVN(Ind-Bng)	YES	YES	YES	YES	YES	YES
NVVN(Ind-Nep)	N/A	N/A	N/A	N/A	YES	YES
GMR	YES	YES	YES	YES	NO	NO
JITPL	YES	YES	YES	YES	YES	YES
INBEUL	NO	NO	NO	NO	NO	NO
TPTCL (DAGACHU)	YES	YES	YES	YES	NO	NO
JLHEP(DANS ENERGY)	N/A	N/A	YES	YES	NO	NO

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-C11.6

Reconciliation Between Open Access department of ERLDC and SLDCs, STUs							
Sl. No.	**STUs / SLDCs Name**	**Apr-16**	**May-16**	**Jun-16**	**Jul-16**	**Aug-16**	**Sep-16**
	Date of Issuance	**13-May-16**	**14-Jun-16**	**13-Jul-16**	**17-Aug-16**	**16-Sep-16**	**14-Oct-16**
1	West Bengal - SLDC and STU	YES	YES	NO	NO	NO	NO
2	DVC - SLDC	Not Applicable	YES	YES	YES	YES	NO
3	OPTCL-SLDC and STU	YES	YES	YES	YES	YES	NO

Reconciliation Between Open Access department of ERLDC and Applicants			
Sl. No.	**Applicants Name**	**Quarter-I(Apr-16-June-16)**	**Quarter-II(Jul-16-Sep-16)**
	Date of Issuance	**14-Jul-16**	**18-Oct-16**
1	Damodar Valley Corporation	NO	Not Applicable
2	GMR Kamalanga Energy Limited	YES	NO
3	Jindal India Thermal Power Limited	YES	NO
4	Jharkhand State Electricity Board	NO	NO

KBUNL-LIST OF SEM AS PROVIDED BY ERLDC.								
SL.NO.	FEEDER	METER SL.NO.	MODEL	MAKE	MFG.DATE	CTR	PTR	Remark
1	GT-1	LT-0135A	ER-300P	L&T	Sep-12	400/1A	220KV/110V	
2	GT-2	LT-0192A	ER-300P	L&T	Mar-14	400/1A	220KV/110V	
3	ST-1	LT-0129A	ER-300P	L&T	Sep-12	100/1A	220KV/110V	
4	ST-2	LT-0133A	ER-300P	L&T	Sep-12	100/1A	220KV/110V	
5	IBT-1 MAIN	LT-0093A	ER-300P	L&T	Dec-10	300/1A	220KV/110V	
6	IBT-1 Standby	LT-0127A	ER-300P	L&T	Sep-12	300/1A	220KV/110V	
7	IBT-2 MAIN	LT-0126A	ER-300P	L&T	Aug-12	300/1A	220KV/110V	
8	IBT-2 Standby	TP-0006A	ER-300P	L&T	Nov-07	300/1A	220KV/110V	
9	IBT-3 MAIN	LT-0132A	ER-300P	L&T	Sep-12	600/1A	220KV/110V	
10	IBT-3 Standby	LT-0130A	ER-300P	L&T	Sep-12	600/1A	220KV/110V	
11	BEGUSARAI-1 MAIN	Bay not commissioned	ER-300P	L&T		600/1A	220KV/110V	At both end
12	BEGUSARAI-1 CHECK	Bay not commissioned	ER-300P	L&T		600/1A	220KV/110V	
13	BEGUSARAI-2 MAIN	LT-0092A	ER-300P	L&T	Dec-10	600/1A	220KV/110V	At both end
14	BEGUSARAI-2 CHECK	LT-0128A	ER-300P	L&T	Sep-12	600/1A	220KV/110V	
15	DARBHANGA-1 MAIN	LT-0125A	ER-300P	L&T	Aug-12	600/1A	220KV/110V	At both end
16	DARBHANGA-1 CHECK	LT-0140A	ER-300P	L&T	Sep-12	600/1A	220KV/110V	
17	DARBHANGA-2 MAIN	Bay not commissioned	ER-300P	L&T		600/1A	220KV/110V	At both end
18	DARBHANGA-2 CHECK	Bay not commissioned	ER-300P	L&T		600/1A	220KV/110V	
19	GOPALGANJ-1 MAIN	LT-0131A	ER-300P	L&T	Sep-12	600/1A	220KV/110V	At both end
20	GOPALGANJ-1 CHECK	TP-0008A	ER-300P	L&T	Nov-07	600/1A	220KV/110V	
21	GOPALGANJ-2 MAIN	LT-0246A	ER-300P	L&T	Apr-15	800/1A	220KV/110V	At both end
22	GOPALGANJ-2 CHECK	LT-0219A	ER-300P	L&T	Apr-15	800/1A	220KV/110V	
23	GT-3	LT-0214A	ER-300P	L&T	Apr-15	800/1A	220KV/110V	
24	GT-4	LT-0242A	ER-300P	L&T	Apr-15	800/1A	220KV/110V	
25	ST-3	LT-0187A	ER-300P	L&T	Mar-14	200/1A	220KV/110V	
26	ST-4	LT-0215A	ER-300P	L&T	Apr-15	200/1A	220KV/110V	
27	Bus Sec-1 Main	Bay not commissioned	ER-300P	L&T		1A	220KV/110V	
28	Bus sec-1 Check	Bay not commissioned	ER-300P	L&T		1A	220KV/110V	
29	Bus Sec-2 Main	Bay not commissioned	ER-300P	L&T		1A	220KV/110V	
30	Bus sec-2 Check	Bay not commissioned	ER-300P	L&T		1A	220KV/110V	

REMARK :

1 PGCIL shall install four nos. of SEM at BSPTCL end of Begusarai-2, Darbhanga-1, Gopalganj-1 & 2.

List of Time Drifted SEMs in ER

Annexure-C13

SNO	LOCATION ID	METER SNO	FEEDER NAME	DCU TIME	METER TIME	TIME DIF(min
1	APNRL	NP-7884-A	400 KV JAMSHEDPUR(PG)-II	22:39:27	22:49:50	10
2	ARAH(BIHAR)	NP-6052-A	ARA END OF ARAH (PG)	23:48:25	23:59:27	11
3	BARIPADA(PG)	NP-5912-A	BARIPADA END OF RAIRANGPUR(GRIDCO)	09:04:44	09:13:40	9
4	BARIPADA(PG)	NP-5913-A	BARIPADA END OF BALASORE (GRIDCO) -2	09:01:56	09:16:43	15
5	BARIPADA(PG)	NP-5915-A	BARIPADA END OF BALASORE(GRIDCO)-1	09:01:01	09:11:38	10
6	BARIPADA(PG)	NP-5916-A	BARIPADA END OF BARIPADA(GRIDCO)	09:05:37	09:14:46	9
7	BARIPADA(PG)	NP-5971-A	BARIPADA END OF MENDHASAL(GRIDCO)-2	09:09:09	09:24:07	15
8	BARIPADA(PG)	NP-5974-A	BARIPADA END OF JAMSHEDPUR	09:10:54	09:26:08	16
9	BARIPADA(PG)	NP-5975-A	BARIPADA END OF MENDHASAL(GRIDCO)-1	09:08:17	09:22:35	14
10	BIDHANNAGAR	NP-5831-A	400 KV B NAGAR-1 LINE MAIN	09:16:51	09:30:15	14
11	BIHARSHARIFF(PG)	NP-6061-A	400 KV BIHARSHARIFF(ER)-BALIA (NR)-1	09:10:09	09:18:15	8
12	BIHARSHARIFF(PG)	NP-6062-A	400 KV BIHARSHARIFF(PG) - SASARAM (ER) -2	09:02:34	09:09:51	7
13	BIHARSHARIFF(PG)	NP-6064-A	400 KV BIHARSHARIFF(PG) - SASARAM (ER) -1	09:04:20	09:12:01	8
14	BIHARSHARIFF(PG)	NP-6065-A	400 KV BIHARSHARIFF(ER)-BALIA (NR)-2	09:03:27	09:12:48	9
15	BIHARSHARIFF(PG)	NP-7840-A	400 KV BIHARSHARIFF(PG)-PURNEA(PG) LINE-1	09:09:23	09:17:24	8
16	BIHARSHARIFF(PG)	NP-7841-A	400 KV BIHARSHARIFF(PG)-LAKHISARAI(PG) LINE-1	09:01:01	09:08:46	7
17	BIHARSHARIFF(PG)	NP-7842-A	400 KV BIHARSHARIFF(PG)-KAHALGAON(NTPC) LINE-2	09:01:48	09:10:29	9
18	BIHARSHARIFF(PG)	NP-7867-A	400 KV B SHARIFF(PG)-SASARAM(PG)-III	09:07:03	09:14:22	7
19	BIHARSHARIFF(PG)	NP-7868-A	400 KV B SHARIFF(PG)-GAYA(PG)	09:08:36	09:16:12	8
20	BIHARSHARIFF(PG)	NP-8640-A	400 KV BIHARSHARIFF(PG)-KODERMA(DVC)LINE-I	09:12:01	09:19:47	7
21	BINAGURI	NP-7917-A	BINAGURI END BONGAIGAON LINE - 3	09:12:24	09:29:32	17
22	BINAGURI	NP-7918-A	BINAGURI END BONGAIGAON LINE - 4	09:11:35	09:27:21	16
23	BINAGURI(PG)	NP-5086-A	BINAGURI END OF TALA (THP)-1	09:00:54	09:12:49	12
24	BINAGURI(PG)	NP-5087-A	BINAGURI END OF TALA (THP)-2	09:04:28	09:12:03	8
25	BINAGURI(PG)	NP-5088-A	BINAGURI END OF MALBASE(PG)	09:03:35	09:15:59	12
26	BINAGURI(PG)	NP-5090-A	BINAGURI END OF PURNEA-1	09:07:57	09:16:45	9
27	BINAGURI(PG)	NP-5091-A	BINAGURI END OF PURNEA-2	09:08:53	09:22:12	14
28	BINAGURI(PG)	NP-5092-A	BINAGURI END OF PURNEA-3	09:06:13	09:16:50	10
29	BINAGURI(PG)	NP-5093-A	BINAGURI END OF PURNEA-4	09:07:05	09:14:56	7
30	BINAGURI(PG)	NP-5881-A	BINAGURI END OF NEW JALPAIGURI (WBIHAR)-2	09:14:03	09:21:42	7
31	BINAGURI(PG)	NP-5882-A	BINAGURI END OF NEW JALPAIGURI (WBIHAR)-I	09:13:11	09:27:44	14
32	BINAGURI(PG)	NP-5884-A	BINAGURI END OF BONGAIGAON (NER)-1	09:01:50	09:11:23	10
33	BINAGURI(PG)	NP-5885-A	BINAGURI END OF BONGAIGAON (NER)-2	09:05:20	09:17:16	12
34	BINAGURI(PG)	NP-5886-A	BINAGURI END OF TEESTA-V-1	09:09:46	09:20:31	11
35	BINAGURI(PG)	NP-5887-A	BINAGURI END OF TEESTA-V-2	09:10:42	09:25:47	15
36	BINAGURI(PG)	NP-5888-A	BINAGURI END OF TALA (THP)-4	09:02:43	09:16:23	14
37	BIRPARA(PG)	NP-5892-A	BIRPARA END OF BIRPARA (WB)-1	23:46:51	00:22:24	36
38	BIRPARA(PG)	NP-6490-A	BIRPARA END OF MALBASE	23:51:21	23:43:24	-8
39	BIRPARA(WB)	NP-5893-A	BIRPARA END OF BIRPARA (PG)-2	22:48:22	23:11:10	23
40	BIRPARA(WB)	NP-6464-A	BIRPARA END OF CHUKHA (CHPC) -2	23:49:28	23:40:20	-9
41	BOLANGIR(PG)	NP-7537-A	BOLANGIR END OF JEYPORE-1	23:48:43	00:03:30	15
42	BOLANGIR(PG)	NP-7538-A	BOLANGIR END OF JINDAL(JDL)	23:50:59	00:07:28	17
43	CHANDIL(JKND)	NP-7434-A	CHANDIL END OF RANCHI (PG)	22:56:17	23:13:35	17
44	CHANDIL(JKND)	NP-7435-A	CHANDIL END OF HATIA(JSEB)	22:50:54	23:06:20	16
45	CHANDIL(JKND)	NP-7436-A	CHANDIL END OF SANTALDIH (WBIHAR)	22:55:29	23:12:12	17
46	CHANDIL(JKND)	NP-7461-A	CHANDIL END OF MANIQUE (DVC)	22:54:41	23:06:50	12
47	DALKHOLA(PG)	NP-5068-A	220 KV DALKHOLA (WB) LINE-2	09:00:49	09:23:56	23
48	DALKHOLA(PG)	NP-6477-A	220 KV DALKHOLA FDR1	09:05:03	08:52:45	-13
49	DALKHOLA(PG)	NP-6479-A	220 KV DALKHOLA FDR2	09:04:07	08:48:58	-16
50	DALKHOLA(PG)	NP-7969-A	220 DALKHOLA(WBSETCL) LINE-1	09:00:02	09:16:47	16
51	DALKHOLA(WB)	NP-8729-A	DALKHOLA(WB) END OF DALKHOLA LINE-1	23:54:51	00:03:01	9
52	DEHRI(BIHAR)	NP-6097-A	220 KV DEHRI (BSPHCL) - PUSAULII (PG)	23:47:45	23:58:51	11
53	DEHRI(BIHAR)	NP-6098-A	132 KV DEHRI (BSPHCL) - PUSAULI (PG)	23:53:13	00:07:46	14
54	DEHRI(BIHAR)	NP-7397-A	220 KV DEHRI (BSPHCL)-GAYA(PG) LINE-II	23:52:28	00:07:48	15
55	DEHRI(BIHAR)	NP-7449-A	220 KV DEHRI (BSPHCL)-GAYA(PG) LINE-I	23:51:43	00:07:02	16
56	DUMRAON(BIHAR)	NP-6067-A	132 KV DUMRAON (BSPHCL) - ARAH (PG)	22:48:59	22:59:53	11
57	FARAKKA(NTPC)	NP-5222-A	FARAKKA (NTPC)-DURGAPUR (PG)	09:10:47	09:18:33	8
58	GANGTOK(PG)	NP-6026-A	132 KV GANGTOK(PG) - RANGPO (PG)	22:47:12	22:56:55	9
59	GANGTOK(PG)	NP-6027-A	132 KV GANGTOK(PG) - RANGIT (NHPC)	22:48:12	22:59:46	11
60	GANGTOK(PG)	NP-6028-A	132 KV SIDE OF GANGTOK 132/66 KV ICT-2	22:50:02	23:06:32	16
61	GANGTOK(PG)	NP-6029-A	132 KV SIDE OF GANGTOK 132/66 KV ICT-1	22:49:07	22:59:22	10
62	GAYA(PG)	NP-7396-A	220 KV GAYA (PG)-BODHGAYA(BSPHCL) LINE-I	15:52:14	16:01:55	9
63	GAYA(PG)	NP-7473-A	GAYA- KODERMA LINE-1	15:32:47	15:43:42	11
64	GAYA(PG)	NP-7857-A	220 KV GAYA (PG)-DEHRI(BSPHCL) LINE-I	15:57:56	16:07:54	10
65	HATIA(JKND)	NP-6121-A	HATIA END OF CHANDIL (JSEB)	09:01:01	09:23:40	22
66	HATIA(JKND)	NP-6122-A	HATIA END OF RANCHI (PG)	09:00:02	09:14:49	14
67	JAMSHEDPUR(PG)	NP-6010-B	JAMSHEDPUR END OF JODA(GRIDCO)	23:45:59	00:18:15	33
68	JEYPORE(PG)	NP-5959-A	JEYPORE END OF INDRAVATI (PG)	23:30:15	00:09:33	39
69	JEYPORE(PG)	NP-5960-A	JEYPORE END OF M MUNDALI (GRIDCO)	23:31:05	00:13:18	42
70	JEYPORE(PG)	NP-5962-A	JEYPORE END OF GAJUWAKA (PG) -2	23:32:10	00:13:54	41
71	JITPL	NP-7604-A	400 KV JINDAL-ANGUL(PG) LINE-2 (MAIN)	23:45:13	23:54:02	9
72	JITPL	NP-7895-A	400 KV JINDAL-ANGUL(PG) LINE-1 (MAIN)	23:46:46	23:55:57	9
73	JODA(GR)	NP-5937-A	220 KV JODA (GRIDCO)-RAMCHANDRAPUR (JSEB)	22:49:39	22:57:17	8
74	KAHALGAON(BIHAR)	NP-6071-A	KAHALGAON END OF LALMATIA LINE-I	22:47:53	23:05:55	18
75	KAHALGAON(BIHAR)	NP-6076-A	KAHALGAON END OF KAHALGAON (NTPC)	22:50:37	23:04:55	14
76	KALIMPONG	NP-5849-A	66 KV Kalimpong	23:46:43	00:02:18	16
77	KEONJHAR(PG)	NP-7547-A	KEONJHAR END OF 400 KV BARIPADA(PG)	09:08:20	09:25:59	17
78	KEONJHAR(PG)	NP-7548-A	KEONJHAR END OF 400 KV RENGALI(PG)	09:02:48	09:18:04	16
79	KHAGUAL(BSPTCL)	NP-5833-A	KHAGAUL END OF PATNA	22:50:15	23:04:18	14
80	KHAGUAL(BSPTCL)	NP-6060-A	KHAGAUL END OF ARAH (PG)-2	22:49:21	22:58:23	9
81	KHL(NTPC)	NP-5258-A	400 KV KAHALGAON (NTPC)-FARAKKA(NTPC)-1	09:19:21	09:27:58	8
82	KHL(NTPC)	NP-5861-A	400 KV KAHALGAON-BANKA-2 (CHK)	09:08:58	09:15:35	7
83	KISHENGANJ(BIHAR)	NP-6085-A	KISHANGANJ END OF DALKHOLA (WBIHAR)	23:51:15	00:03:21	12
84	KOLAGHAT(DVC)	NP-6558-B	KOLAGHAT END OF KOLAGHAT (WBIHAR)	22:17:19	22:08:26	-9
85	K'SWARI(DVC)	NP-6561-B	KALNESHWARI END OF MAITHON (PG) -1n2(SUM)	22:51:45	22:43:21	-8
86	LALMATIA(JKND)	NP-6107-A	132 KV LALMATIA (JSEB) - KAHALGAON (BSPHCL)	09:00:02	09:15:27	15
87	LALMATIA(JKND)	NP-6108-A	132 KV LALMATIA (JSEB) - KAHALGAON (NTPC)	09:01:01	09:15:45	14
88	LALMATIA(JKND)	NP-6109-A	220 KV LALMATIA (JSEB) - FARAKKA (NTPC)	09:01:53	09:14:48	13
89	MAITHON(PG)	NP-5206-A	MAITHON END OF MEJIA(DVC) LINE-1	23:53:59	00:25:36	32

90	MAITHON(PG)	NP-5225-A	MAITHON END OF MEJIA(DVC) LINE-2	23:47:26	00:19:30	32
91	MAITHON(PG)	NP-6519-A	MAITHON END OF MAITHON RB (MPL)-1	23:52:59	23:44:22	-8
92	MAITHON(PG)	NP-6520-A	MAITHON END OF MAITHON RB (MPL)-2	23:52:01	23:45:00	-7
93	MAITHON(PG)	NP-7492-A	MAITHON END OF DURGAPUR(PG)-II	23:57:09	00:15:53	18
94	MAITHON(PG)	NP-7534-A	MAITHON END OF DURGAPUR(PG)-I	23:56:23	00:13:16	17
95	MAITHON(PG)	NP-7535-A	MAITHON END OF RTPS -2	23:58:40	00:17:07	19
96	MAITHON(PG)	NP-7550-A	MAITHON END OF KODERMA LINE-I	23:59:25	00:16:53	17
97	MAITHON(PG)	NP-7551-A	MAITHON END OF KODERMA LINE-II	21:00:17	21:16:56	16
98	MAITHON(PG)	NP-7902-A	MAITHON END OF RANCHI LINE	23:57:54	00:13:32	16
99	MAITHON(PG)	NP-7903-A	MAITHON END OF KAHALGAON LINE-1	23:55:38	00:12:14	17
100	MAITHON(PG)	NP-7904-A	MAITHON END OF KAHALGAON LINE-2	23:54:53	00:11:25	17
101	MALDA(PG)	NP-6478-A	132 KV MALDA WBSETCL2	09:00:02	08:46:27	-14
102	MALDA(PG)	NP-7555-A	132 KV MALDA WBSETCL1	09:01:47	09:20:06	19
103	MEJIA(DVC)	NP-5227-A	MEJIA(DVC) END OF MAITHON(PG)-2	22:51:51	23:10:24	19
104	MEJIA(DVC)	NP-6508-A	MEJIA(DVC) END OF JAMSHEDPUR (PG)	22:58:22	22:50:03	-8
105	MEJIA(DVC)	NP-6557-A	MEJIA(DVC) END OF DSTPS (DVC)	22:56:36	22:46:58	-10
106	MEJIA(DVC)	NP-6776-A	MEJIA(DVC) END OF DSTPP (DVC)	22:55:41	22:44:01	-11
107	MEJIA(DVC)	NP-7493-A	MEJIA(DVC) END OF JAMSHEDPUR (PG)	22:57:34	23:13:08	16
108	MEJIA(DVC)	NP-7494-A	MEJIA(DVC) END OF MAITHON(PG)-1	22:49:16	23:04:50	15
109	MEJIA(DVC)	NP-7495-A	MEJIA(DVC) END OF MAITHON(PG)-2	22:51:03	23:12:30	21
110	MEJIA(DVC)	NP-7531-A	400 KV MAITHON (PG) -2 (CHECK)	23:47:40	23:54:34	7
111	MUZAFFARPUR(PG)	NP-5062-A	400 KV MUZAFARPUR – PURNEA-2	09:03:42	09:12:29	9
112	MUZAFFARPUR(PG)	NP-5063-A	220 KV MUZAFARPUR(PG) - KANTI(BASEB)-1	09:10:04	09:17:33	7
113	MUZAFFARPUR(PG)	NP-5071-A	400 KV MUZAFARPUR (PG)-BIHARSHARIFF(PG)-1	09:05:31	09:13:36	8
114	MUZAFFARPUR(PG)	NP-5233-A	220 KV MUZAFFARPUR(PG)-HAJIPUR(BSPHCL) LINE-1	09:07:23	09:23:39	16
115	MUZAFFARPUR(PG)	NP-5234-A	220 KV MUZAFFARPUR(PG)-HAJIPUR(BSPHCL) LINE-2	09:08:19	09:21:47	13
116	MUZAFFARPUR(PG)	NP-7851-A	220KV MUZAFFARPUR -1 (PG)	09:00:02	09:17:07	17
117	MUZAFFARPUR(PG)	NP-7852-A	220KV MUZAFARPUR -2(PG)	09:00:49	09:15:33	15
118	MUZAFFARPUR(PG)	NP-9981-A	400 KV MUZAFARPUR (PG)-GORAKHPUR(NR)-2	09:04:38	09:13:54	9
119	NBU(WB)	NP-5939-A	132 KV JODA (GRIDCO)-KENDPOSI (JSEB)	22:48:38	22:56:23	8
120	NBU(WB)	NP-5953-A	NBU END OF SILIGURI(PG)-1	09:00:02	09:17:08	17
121	PANDIABILI(PG)	NP-7554-A	400 KV PANDIABIL(PG)-MENDHASAL(GRIDCO)-2	07:02:33	07:19:45	17
122	PATNA(PG)	NP-5272-A	400 KV PATNA - BARH-I	09:28:41	09:38:21	10
123	PATNA(PG)	NP-5273-A	400 KV PATNA (ER) - BALIA (NR)-2	09:31:32	09:43:16	12
124	PATNA(PG)	NP-5274-A	400 KV PATNA (ER) - BALIA (NR)-1	09:22:56	09:32:39	10
125	PATNA(PG)	NP-5832-A	220 KV PATNA(PG) - KHAGAUL(BSPHCL)	09:08:47	09:20:12	12
126	PATNA(PG)	NP-5865-A	220 KV PATNA - FATUA	09:00:02	09:12:54	12
127	PATNA(PG)	NP-7838-A	220 KV PATNA(PG)-SIPARA(BSPHCL) LINE-II	09:14:23	09:27:40	13
128	PATNA(PG)	NP-7850-A	220 KV PATNA (PG)	23:45:55	23:58:04	13
129	PATRATU(JKND)	NP-6003-B	PATRATU END OF PATRATU (DVC) TRANSFER BUS	09:01:51	09:17:44	16
130	PATRATU(JKND)	NP-6004-B	PATRATU END OF PATRATU (DVC) -1	09:00:55	09:22:46	22
131	PATRATU(JKND)	NP-6005-B	PATRATU END OF PATRATU (DVC) -2	09:00:02	09:20:27	20
132	PATRATU(JKND)	NP-6006-B	PATRATUU END OF PATRATU(JSEB)-12(SUM)	23:48:50	23:56:50	8
133	PURNEA(PG)	NP-6081-A	PURNEA END OF PURNEA (BIHAR) -1	09:00:02	09:13:27	13
134	PURNEA(PG)	NP-6082-A	PURNEA END OF PURNEA (BIHAR) -2	09:01:01	09:11:41	10
135	PURNEA(PG)	NP-6083-A	PURNEA END OF PURNEA (BIHAR) -3	09:01:54	09:16:44	15
136	PURNEA(PG)	NP-6084-A	PURNEA END OF KISHANGANJ (BIHAR)	09:02:46	09:09:45	7
137	PURNEA(PG)	NP-6088-A	PURNEA END OF PURNEA (PG) -1	08:53:46	09:04:28	11
138	PURNEA(PG)	NP-6089-A	PURNEA END OF PURNEA (PG) -2	20:53:41	21:02:26	9
139	PURNEA(PG)	NP-6090-A	PURNEA END OF PURNEA (PG) -3	22:52:00	23:03:42	11
140	PURNEA(PG)	NP-7419-A	PURNEA END OF DALKHOLA (PG) -2	09:04:25	09:22:55	18
141	PURNEA(PG)	NP-7420-A	PURNEA END OF DALKHOLA (PG) -1	09:03:38	09:21:45	18
142	PURNEA(PG)	NP-7421-A	PURNEA END OF MUZAFFARPUR -1	09:05:47	09:22:23	17
143	PURNEA(PG)	NP-7422-A	PURNEA END OF MUZAFFARPUR LINE-2	09:05:01	09:23:32	18
144	PURNEA(PG)	NP-7423-A	PURNEA END OF BINAGURI (PG)-2	09:02:23	09:21:33	19
145	PURNEA(PG)	NP-7424-A	PURNEA END OF BINAGURI (PG)-1	09:01:36	09:18:53	17
146	PURNEA(PG)	NP-7828-A	PURNEA END OF MADHEPURA(BSPHCL) LINE-1	09:00:49	09:13:12	13
147	PURNEA(PG)	NP-7829-A	PURNEA END OF MADHEPURA(BSPHCL) LINE-2	09:00:02	09:16:39	16
148	PURNEA(PG)	NP-7835-A	PURNEA END OF BIHARSHARIFF LINE-2	09:07:31	09:21:57	14
149	PURNEA(PG)	NP-7843-A	220 KV PURNEA (PG) LINE-2	23:47:41	23:56:57	9
150	PURNEA(PG)	NP-7844-A	220 KV PURNEA (PG) LINE-1	23:46:53	23:56:04	10
151	PUSAULI(PG)	NP-6092-A	220KV PUSAULI-SAHUPURI(NR)	09:13:35	09:20:46	7
152	PUSAULI(PG)	NP-6093-A	220KV PUSAULI-DEHRI(BSPHPL)	09:14:28	09:22:17	8
153	PUSAULI(PG)	NP-6096-A	765 KV SASARAM(ER)- FATEHPUR(NR)	09:06:35	09:13:42	7
154	PUSAULI(PG)	NP-6101-A	400 KV SASARAM (PG) NORTH BUS-1 SARNATH	09:00:54	09:10:55	10
155	PUSAULI(PG)	NP-7468-A	400 KV SASARAM (PG) NORTH BUS-3 BALIA	09:09:11	09:26:42	17
156	RANCHI	NP-5835-A	400 KV RANCHI-SIPAT-1 (WR)	09:14:07	09:23:17	9
157	RANCHI	NP-5836-A	400 KV RANCHI-SIPAT-2 (WR)	09:15:00	09:23:06	8
158	RANCHI	NP-5871-A	400 KV RANCHI(PG)-RTPS(DVC)	09:07:56	09:19:58	12
159	RANCHI	NP-5877-A	400 KV RANCHI-MAITHON	09:06:10	09:17:55	11
160	RANCHI	NP-5879-A	220 KV RANCHI - HATIA (JSEB)	09:01:01	09:09:37	8
161	RANCHI	NP-7402-A	400 KV RANCHI(PG)- RANCHI NEW(PG) LINE-3	09:17:29	09:36:52	19
162	RANCHI	NP-7837-A	400 KV RANCHI(PG)- RANCHI NEW(PG) LINE-1	09:15:56	09:31:19	16
163	RANCHI	NP-7839-A	400 KV RANCHI(PG)- MAITHON RB(MPL)-I	09:08:49	09:18:36	10
164	RANCHI	NP-7873-A	400 KV RANCHI(PG)- RANCHI NEW(PG) LINE-4	09:18:16	09:34:20	16
165	RENGALI(PG)	NP-5990-A	RENGALI END OF RENGALI (GRIDCO) -2	22:53:58	23:01:36	8
166	RENGALI(PG)	NP-7952-A	RENGALI END OF 400 KV TSTPP LINE-1	22:56:35	23:07:05	11
167	RENGALI(PG)	NP-7953-A	RENGALI END OF 400 KV TSTPP LINE-2	22:55:47	23:05:40	10
168	ROURKELA(PG)	NP-7898-A	400 KV ROURKELA(PG) LINE-1	23:37:02	23:53:54	16
169	SANTALDIH(WB)	NP-7942-A	SANTALDIH END OF CHANDIL (JSEB)	23:48:06	00:05:20	17
170	SONNENAGAR(BIHAR)	NP-6013-B	SONNAGAR END OF RIHAND(UPSEB)	22:49:37	23:10:09	21
171	SONNENAGAR(BIHAR)	NP-6015-B	132 KV SONENAGAR (BSPHCL)- JAPLA (JSEB)	22:48:42	23:10:02	22
172	SUBHASGRAM	NP-5080-A	SUBHASGRAM END OF SUBHASGRAM-1 (WB)	09:04:37	09:13:49	9
173	SUBHASGRAM	NP-5360-A	SUBHASGRAM END OF JEERAT (WB)	09:02:45	09:12:48	10
174	SUBHASGRAM	NP-5847-A	SUBHASGRAM END OF SUBHASGRAM-2 (WB)	09:03:41	09:14:57	11
175	SUBHASGRAM	NP-7935-A	SUBHASGRAM END OF EMBYPASS(WB) LINE-1	09:06:18	09:17:35	11
176	SUBHASGRAM	NP-7936-A	SUBHASGRAM END OF EMBYPASS(WB) LINE-2	09:07:04	09:16:43	9
177	SUBHASGRAM	NP-7937-A	400 KV HALDIA LINE 2	09:09:23	09:18:44	9
178	SUBHASGRAM	NP-7938-A	400 KV HALDIA LINE 1	09:08:37	09:20:57	12

179	TASRKERA(GR)	NP-5934-A	TARKERA END OF ROURKELA (PG) -1	09:00:02	09:10:11	10
180	TENUGHAT(JKND)	NP-6115-A	TENUGHAT END OF BIHARSARIFF(BIHAR)	22:47:53	23:02:20	15

Annexure- C16.1

Date of Commercial Operation(DOCO) of the Asstes

A	Split Bus arrangment for various substation in Eastern Region	DOCO	Approved Cost	Standing Committee Reference	RPC Meeting Reference	Sharing of Charges
01	400kV Transmission Line for Swapping of Purnea(1&2) bays with Sasaram(bays (3&4) AT Biharsharif Substation	21/07/16	Rs.135.16 Cr.(including IDC of Rs.5.14 Cr.).	SCM meeting of ER on 20.09.10.	15th ERPC meeting on 28.09.10	As per New Sharing methodology of PoC
B	**Transmission System for Phase-I Generation Projects in Jharkhand & West Bangal Part-A1**	**DOCO**	**Approved Cost**	**Standing Committee Reference**	**RPC Meeting Reference**	**Sharing of Charges**
01	400 kV D/C Ranchi(New)–Chandwa-Gaya line along-with associated bays at Ranchi,Chandwa & Gaya substation unde	12/07/16	Rs. 558.26 Cr. (including IDC of Rs. 26.30 Cr.).	SCM meeting of ER on 20.09.10.	16th ERPC Meeting on 18.12.10	As per New Sharing methodology of PoC
02	400kV,125 MVAR Bus Reactor I at Chandwa(GIS) substation and associated bay	12/07/16				
03	400kV,125 MVAR Bus Reactor II at Chandwa(GIS) substation and associated bay	12/07/16				
C	**Eastern Region Strengthening Scheme-VI**	**DOCO**	**Approved Cost**	**Standing Committee Reference**	**RPC Meeting Reference**	**Sharing of Charges**
01	2nos of 400kV line bays at Muzaffarpur sub-station for termination of Muzaffarpur(PG)-Darbhanga(TBCB) 400kV D/C (Triple Snowbird) line	31/08/16	Rs.12.50 Cr.(including IDC of Rs.0.69 Cr.).	SCM meeting of ER on 08.02.12 & 05.01.13.	21st ERPC Meeting at Kolkata on 21.04.14 & 24th ERPC meeting at Bhubaneswar on 27.04.13	As per New Sharing methodology of PoC
D	**Eastern Region Strengthening Scheme-XII.**	**DOCO**	**Approved Cost**	**Standing Committee Reference**	**RPC Meeting Reference**	**Sharing of Charges**
01	Replacement of existing 315 MVA, 400/220 kV ICT I with 500 MVA, 400/220 kV ICT I at Patna Sub-station	24/09/16	Rs.522.29 Cr.(including IDC of Rs.33.24 Cr.).	2nd 2013 SCM meeting of ER on 27.08.13.	25th ERPC Meeting on 21.09.13	As per New Sharing methodology of PoC
02	Replacement of existing 315 MVA, 400/220 kV ICT II with 500 MVA, 400/220 kV ICT II at Purnea Sub-station	30/09/16				
03	Conversion of 50 MVAR line reactor presently installed at Jeerat end of Baharampur-Jeerat 400kV line as Bus Reactor in parallel with existing Bus Reactor at Jeerat S/S	29/08/16				
04	Installation of 1 no of 1x125 MVAR Bus Reactor 400kV Maithan S/s with GIS bays	06/10/16				
05	1no 1x500 MVA,400/220 ICT at 400/220/132kV Baripada Sub-Station along-with GIS bays	02/10/16				
06	1no 1x25 MVAR,Bus Reactor at 400/220/132kV Baripada Sub-Station along-with GIS bays	02/10/16				
E	**Eastern Region Strengthening Scheme-IX**	**DOCO**	**Approved Cost**	**Standing Committee Reference**	**RPC Meeting Reference**	**Sharing of Charges**
01	Replacement of existing 315 MVA, 400/220 kV ICT with 500 MVA, 400/220 kV ICT I at Maithan Sub-station	18/09/16	Rs.196.58 Cr.(including IDC of Rs.10.65 Cr.).	SCM meeting of ER on 05.01.13.	22nd ERPC Meeting on 25.08.12 & 24th ERPC meeting on 27.04.13	As per New Sharing methodology of PoC
02	1 no of 1x125 MVAR Bus Reactor and associated bay at 400kV Maithan S/S	01/10/16				
F	**Transmisison system for transfer of Power from generation projects in Sikkim to NR/WR(Part A)**	**DOCO**	**Approved Cost**	**Standing Committee Reference**	**RPC Meeting Reference**	**Sharing of Charges**
01	400/220kV 500 MVA ICT - I with associated bays at Kishanganj (GIS) substation	05/10/16	Rs.250.03 Cr.(including IDC of Rs.19.03 Cr.).	27th SCM meeting of NR on 30.05.09 , 29th SCM of WR on 10.09.09 & SCM of ER on 20.09.10.	15th & 16th ERPC Meeting on 28.09.10 & 18.12.10 respectively	As per New Sharing methodology of PoC
G	**Eastern Region Strengthening Scheme-VII**	**DOCO**	**Approved Cost**	**Standing Committee Reference**	**RPC Meeting Reference**	**Sharing of Charges**
01	2 nos of 400kV line bays along-with 1x63 MVAR(Fixed) line reactor at Chaibasa under Substation extention	19/06/16	Rs.71.35 Cr.(including IDC of Rs.3.96 Cr.).	SCM meeting of ER on 08.02.12	21st ERPC Meeting at Kolkata on 21.04.14	As per New Sharing methodology of PoC

CENTRAL ELECTRICITY REGULATORY COMMISSION
3rd & 4th floor, Chanderlok Building, 36-Janpath,
New Delhi-110001

No. Engg/Tr.Pricing/Validation/L-1/44/2013/CERC Dated: 13/6/2016

To

Members of the Validation Committee
& Generating Companies
(As per list enclosed)

Subject: Minutes of the 2nd Meeting of Validation Committee for the Application Period from 1st July,2016 to 30th September, 2016 for implementation of CERC (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2010

Sir,

Please find enclosed here with minutes of the **2nd Meeting of** the Validation Committee for the **year 2015-16 (Application Period from 1st July,2016 to 30th September, 2016)** for implementation of CERC (Sharing of Inter-State Transmission Charges and Losses) **Regulations, 2010** held on 30.5.2016 in the NRLDC Conference Room at New Delhi for information and necessary action.

Yours faithfully,

S/d
(Shilpa Agarwal)
Dy. Chief (Engg)

Encl.: As above

Minutes of the 2nd Meeting of Validation Committee for the Application Period from 1st July,2016 to 30th September, 2016 held on 30st May, 2016 at NRLDC, New Delhi.

1. The Chairman of the Validation Committee, Shri S.C Shrivastava, Chief (Engg.), CERC welcomed the participants present in NRLDC Conference Room and also the other participants of RPCs, RLDCs, STUs and Generating Companies present at Conference Room of WRLDC, SRLDC, ERLDC, NERLDC, SLDCs of Chhattisgarh, Gujarat, Telangana, Maharashtra, Madhya Pradesh and Delhi through video conferencing. List of the participants is enclosed at ***Annexure-I.***

2. Chief (Engg.), CERC stated that the meeting is convened to discuss the Load Generation data for consideration of load flow studies for implementation of CERC (Sharing of Inter-State Transmission Charges and Losses), Regulations, 2010 for the second Quarter of 2016-17.

3. After deliberation among members, it was decided that the peak generation for new hydro units shall be considered at 100% since most of the hydro units will be able to generate at 100% load for the peak hours during July to September. For new coal based thermal units and new gas based stations, peak injectionwould be considered as 70% and 30% of ex-bus capacity, respectively.

4. Demand Projection for Q2 of Application Period from 1st July, 2016 to 30th September, 2016

4.1 Northern Region:

(i) Representative of Delhi SLDC suggested that demand projections of Delhi may be taken as 5,600 MW instead of 5,310 MW.

(ii) Uttar Pradesh has submitted demand projection as 15375 MW after the Validation Committee meeting..

4.2 Eastern Region:

(i) Members present at ERLDC suggested that the demand projections of Bihar and Jharkhand may be taken as 3,650 MW and 1,100 MW instead of 3,658 MW and 1,150 MW respectively.

4.3 Western Region:

(i) Representative of SLDC, Gujarat suggested that the demand projections of Gujarat may be taken as 15,500 MW instead of 16,062 MW. Later Gujarat has revised its demand quantum and informed the Implementing agency to consider 14570 MW for Q2 of 2016-17.

(ii) Members present at WRLDC suggested the following :

(a) Demand projections of Madhya Pradesh may be taken as 8,800 MW instead of 8,820 MW.

(b) Demand projections of Maharashtra may be taken as 19,000 MW instead of 21,226 MW.

(c) Demand projections of Goa may be taken as 480 MW (including 80 MW Goa SR).

4.4 North Eastern Region: Representative of NERPC mentioned that the demand and generation data had already been discussed in the last OCC meeting of NERPC and the demand projections for NER constituents as per presentation are in order.

4.5 Southern Region: SRLDC stated that demand projections in respect of Southern states are in order except in case of Karnataka which may be taken as 8,842MW instead of 8,247MW.

5. Generation Projection for Q2 of Application Period from 1st July,2016 to 30th September, 2016:

5.1 Northern Region:

(i) Representative of Delhi SLDC suggested that the generation from Delhi may be taken as 1,071 MW (including BTPS Generation) instead of 691 MW.

(ii) Uttar Pradesh has not submitted its generation till 01.06.2016. In view of this, Uttar Pradesh generation has been taken from LGBR available at NRPC as 8,675 MW and It was decided that only one unit of Lalitpur (660MW) is to be considered due to evacuation problem.
The generation figures as suggested above were agreed.

5.2 Western Region:

(i) Members present at WRLDCsuggested the following:

(a) Generation from DGEN may be taken as zero MW instead of 678 MW, because during this quarter DGEN is being operated with e-bid RLNG which shall not be available for next quarter.

(b) Generation from Tarapur APS may be taken as 733 MW (outage of one unit of 500 MW) instead of 1,233 MW.

(ii) Representative of Maharashtra SLDC suggested that the generation from Maharashtra may be taken as 14,500 MW (including wind generation) instead of 12,482 MW.

(iii) Representative of Gujarat SLDC suggested that the generation from BECL (Unit -1 of 250 MW) and Pipavav (unit-2 of 351 MW) may be considered. SLDC,Gujarat has submitted that generation from Gujarat may be taken as 11,415 MW

(iv) Representative of Madhya Pradesh stated that generation for Madhya Pradesh may be considered as 6,672 MW, which includes 1,300 MW of wind and solar generation.

The Generation figures as suggested above were agreed.

5.3 Eastern Region:

Members present at ERLDC suggested the following:

(a) Generation from Bihar may be considered as 190 MW instead of 216 MW.

(b) Generation form West Bengal may be taken as 5,000 MW instead of 4,565 MW.

(c) Generation from Jharkhand may be taken as 450 MW instead of 330 MW.

(d) Generation from Chujachan may be taken as 109 MW instead of 114 MW.

(e) Generation from Adhunik power may be taken as 430 MW instead of 403 MW.

(f) Generation from Bhutan may be taken as 1,475 MW instead of 1,574 MW.

(g) Generation from MPL may be taken as 990 MW instead of 1,019 MW.

(h) Generation from JITPL may be taken as 1,130 MW instead of 1,043 MW.

(i) Generation from Raghunathpur may be taken as 570 MW instead of 785 MW.

The generation figures suggested by ERLDC and NTPC were agreed.

5.4 North Eastern Region:

The generation figures suggested by NER region entities as shown in presentation during the meeting were agreed.

5.5 Southern Region:

Members present at SRLDC suggested followingchanges:

(i) Generation from Karnataka may be taken as 6,168 MW instead of 6,938 MW.

(ii) Generation from Kudankulam may be taken as 900 MW instead of 284 MW.

(iii) Generation form Andhra Pradesh may be taken as 5,866 MW (including NP Kunta generation as 100MW) instead of 5,766 MW.

(iv) Generation from IL&FS may be taken as 700 MW instead of 785 MW.

(v) Generation from MEPL and Coastal Energen may be taken as 250MW and 750 MW instead of 218 MW and 956 MW respectively.

The generation figures suggested by SRLDC were agreed.

7. HVDC Set Points :

(i) HVDC set points to be considered in the All India Base case for computation of PoC charges and Losses for July-September' 2016 period were projected by Implementing Agency based on last 3 years' maximum flow during the Application Period.

(ii) The following HVDC set points were finalised:

MW Values

HVDC Name	Set points To be considered in Base case
Mundra-Mahindergarh Pole-1	1250
Mundra-Mahindergarh Pole-2	1250

Talcher-Kolar Pole- 1	1000
Talcher-Kolar Pole- 2	1000
Rihand-Dadri Pole- 1	750
Rihand-Dadri Pole- 2	750
Balia-Bhiwadi Pole-1	500
Balia-Bhiwadi Pole-2	500
Bhadrawati_HVDC	1000
Vindhyachal_HVDC	250
Gajuwaka_HVDC	650
Pusauli HVDC	400
Chandrapur-Padghe Pole-1	750
Chandrapur-Padghe Pole-2	750
BiswanathChariali - Agra	500 (towards NR)

8. Other Issues:

A. **Issue regarding the 400 kV D/C Nabinagar-Sasaram Transmission Line associated with Transmission System for "immediate Evacuation System for Nabinagar TPS" in ER :** The representative of POWERGRID stated that the 400 kV D/C Nabinagar-Sasaram transmission line was constructed by PGCIL for evacuation of power from Nabinagar generating station. Unit no. 1 of the said generating station has been commissioned and synchronized on 20.03.2016 but commercial operation is yet to be declared. CERC vide order dated 21.06.2013 in Petition No.83/TT/2012, directed that the transmission charges of aforementioned line are payable by BRBCL till commissioning of Unit-1 of BRBCL-Nabinagar Thermal Power Project. On the basis of this order, BRBCL, owner of Nabinagar generating station has requested PGCIL to stop raising bill for the transmission charges of 400 kV D/C Nabinagar-Sasaram transmission line & associated system.

Chief (Engg.), CERC clarified that the transmission charges are to be paid by the generator till commercial operation of Unit no. 1 is achieved.

B. Issue regarding the submission of data by DICs, SLDCs and RLDCs to IA :

(i) The issue of submission of data by ISTS licensees and DICs/States was discussed and it was decided that all the data shall be submitted through email only. Email-id for data submission given by Implementing Agency was **implementingagency@posoco.in**. Chief (Engg.), CERC suggested that Implementing Agency may provide a contact number for the confirmation of data submission.

(ii) Implementing Agency pointed out that states were not providing updated network details upto 132kV/110kV which is resulting into incorrect system representation. In view of the above, all states were requested to provide updated network details upto 132kV/110kV in each quarter in PSS/E format. Further, all states were requested to provide any changes in the network separately, along with other data pertaining to the states.

C. <u>After the deliberations, following was concluded:</u>

(i) Peak generation of new hydro generation shall be considered at 100% of its capacity duly considering the fact that Q2corresponds to high hydro season and maximum generation from hydro stations during the peak hours of high season is expected to be of the order of 100% of its capacity.

(ii) In case of non-submission of data by the DICs, for the purpose of Basecase preparation:

(a) Peak Demand: Forecasted peak demand to be calculated from last 3 years' data taken from CEA website as per provisions of the Regulations.

(b) Peak Generation: Forecasted peak generation to be calculated from last 3 years' SEM/SCADA data available with RLDCs as per the provisions of the Regulations.

Preparation of final All India Basecase in PSS/E platform :

It may be mentioned that there would be variation in the validated generation and demand figures in the final all India Base case because of the following steps involved:

(i) Normalization with All India Forecasted Peak Demand figure.

(ii) Arriving at Load Generation Balance for convergence of the All India Base case.

(iii) Adjustment of Slack Bus Generation.