Agenda

for

137th OCC Meeting

Date: 21.09.2017

Eastern Regional Power Committee

14, Golf Club Road, Tollygunge

Kolkata: 700 033

Eastern Regional Power Committee

Agenda for 137th OCC Meeting to be held on 21st September, 2017 at ERPC, Kolkata

PART A

Item no. 1: Confirmation of minutes of 136th OCC meeting of ERPC held on 30.08.2017

The minutes of 136th OCC meeting were uploaded in ERPC website and circulated vide letter dated 18.09.2017 to all the constituents.

Members may confirm the minutes.

PART B: ITEMS FOR DISCUSSION

Item No. B.1: Commissioning of new transmission elements in Eastern Region

In 118th OCC, it was informed that the network diagram of eastern region needs to be updated on regular basis on account of commissioning of new elements in the CTU as well as STU networks.

OCC advised all the constituents to update the list of newly commissioned power system elements to OCC on monthly basis so that ERLDC/ERPC can update the network diagram on regular basis.

New Generators/Transmission Elements commissioned/charged during **August, 2017** as follows:

1. 400kV Barh- Motihari ckt-2 (LILO of 400kV Barh - GorakhPur 2 at Motihari) charged for the first time at 19:20Hrs 01/08/17
2. 315MVA ICT I at Motihari SS Charged for the first time at 20:52Hrs of 01/08/17
3. 125 MVAR BR I & II at Rengali Charged for the first time at 20:40Hrs and 21:12Hrs respectively of 01/08/17.
4. Bus Reactor I at Motihari SS Charged for the first time at 00:08Hrs of 02/08/17.
5. Bus Reactor II at Motihari SS Charged for the first time at 16:35Hrs of 03/08/17.
6. 132kV Motihari-Bettiah I & II Charged for the first time at 12:20Hrs and 12:21Hrs of 04/08/17.
7. 132Kv Motihari-Motihari(BSEB) II Charged for the first time at 15:41hrs of 04/08/17.
8. 315MVA ICT II at Motihari SS Charged for the first time at 18:09Hrs of 06/08/17.
9. 132Kv Motihari-Motihari(BSEB) I Charged for the first time at 15:41hrs of 06/08/17.
10. 400kV Gorakhpur- Motihari ckt-1 (LILO of 400kV Barh GorakhPur 1 at Motihari) charged for the first time at 12:14Hrs of 07/08/17
11. 400kV Barh- Motihari ckt-2 (LILO of 400kV Barh GorakhPur 2 at Motihari) charged for the first time at 15:55hrs of 07/08/17.
12. 132 KV Amnour (Chhapra New)-Siwan circuit-2 was in charged on its normal tower on 11.08.17. Earlier the line was in loaded condition on ERS (due to ROW problem) since 23.04.17.
13. 132 KV Amnour (Chhapra New)-Siwan circuit-1 was charged first time on 12.08.17.
14. **132 KV Raxaul-Parwanipur (Nepal), 22 KM was charged first time on 16.08.17. Charged on no-load from Raxaul end.**
15. 80MVAR Bus Reactor at New Chanditala SS charged for the first time at 19:07Hrs of 18/08/17.
16. 400kV DC RTPS-Ranchi (Ckt.- II & III) charged for the first time at 19:37hrs and 19:40Hrs of 28/08/17.

17. 220kV Biharsharif-Khizisarai= 50 Km, 220kV Khizisarai-Bodhgaya= 58 Km were charged first time on 06.08.17
18. 2*160 & 3*50 MVA ATRs at 220/132/33 KV Khizisarai GSS (GIS) charged first time on 06.08.17

Constituents may update.

Item No. B.2: Status of projects funded under PSDF schemes

In the PSDF review meeting, it was advised to RPCs to monitor the status of all the projects funded by PSDF. Therefore, constituents are requested to update the status of projects which are being funded by PSDF in the desired format.

SN	Name of Constituent	Name of Project	Date of approval from PSDF	Target Date of Completion	PSDF grant approved (in Rs.)	Amount drawn till date (in Rs.)	Status as updated in 135th OCC
1	WBSETCL	Renovation & up-gradation of protection system of 220 kV & 400 kV Substations in W. Bengal	31-12-14		120.67 Cr	11.04 Cr.	95 % Supply Completed
2		Transmission System improvement of WBSETCL	22-05-17				
3		Renovation & modernisation of transmission system for relieving congestion in Intra-State Transmission System.	22-05-17				
4		Installation of switchable reactor & shunt capacitors					
5	OPTCL	Renovation & Up-gradation of protection and control systems of Sub-stations in the State of Odisha in order to rectify protection related deficiencies.	10.05.15	10.05.17	162.5 Cr.	16.25 Cr + 8.91 Cr	***Total contract awarded for Rs. 51.35 Cr***
6	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. + 9.88 Cr.	1) Hardware supplied and installed. 2) SAT completed for pilot state 3) **Protection database management software (PDMS) put in live w.e.f. 30.03.17.** 4) ***Training on PDMS organised at ERPC, Odisha, Bihar, WBSETCL, Jharkhand and DVC.***
7	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	23.68 crore	Project is on going. ***Contract awarded for Rs.71.37 Cr till date.***
8		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)
9		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.
10	DVC	Renovation and upgradation of control & protection system and replacement of Substation Equipment of 220/132/33 kV Ramgarh Substation			25.96		Tendering in process.

11		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			140		Appraisal committee has recommended. It will be placed in next monitoring Committee meeting.
12	WBPDCL	Implementation of Islanding scheme at Bandel Thermal Power Station			1.39 Cr		***Award placed to ABB. Material delivery by Dec, 17.***
13		Upgradation of Protection and SAS			26.09		Approved by Ministry of Power
14	OHPC	Renovation and up-gradation of protection and control system of 4 nos OHPC substations.			***22.35 Cr***		**Tendering unde progress.**
15a	ERPC	Training for Power System Engineers					***The proposal was approved by Appraisal Committee. The approval from MoP, GOI is awaited.***
15b		Training on Power market trading at NORD POOL Academy for Power System Engineers of Eastern Regional Constituents					

In 35th ERPC meeting, CE-NPC, CEA informed that grant has been allotted to Powergrid for installation of STATCOM but no update on the progress have been received from Powergrid.

Powergrid informed that project has already been awarded and they will submit the details to PSDF Nodal Agency and NPC.

In 131st OCC, Powergrid informed that they will submit the details shortly.

Respective constituents may update.

Item No. B.3: OPERATIONAL LOAD FLOW STUDY FOR SUMMER-PEAK PERIOD

In 130th OCC advised PRDC to carry out another load flow study in the first week of May, 2017 tentatively for 4th and 5th May, 2017 for 19:00 and 20:00 Hrs. Therefore, all utilities have to record data for four instances.

OCC advised all the constituents to note the date and timings for recording the data and send it to ERPC/PRDC.

In 134th OCC, PRDC informed that as per the data received from ER constituents and ERLDC SCADA snapshot the demand of 20 Hrs of 4thMay, 2017 is observed as more appropriate for Peak load flow analysis.

OCC advised PRDC to carry out Peak load flow studies with the above data.

In 135th OCC, PRDC informed that load flow studies of Summer Peak Condition (4th and 5th May, 2017) for 19:00 and 20:00 hrs, some data is still pending from PGCIL and OPTCL.

OCC advised DVC, PGCIL and OPTCL to submit the pending data to PRDC with a copy to ERPC at the earliest.

Subsequently, PRDC informed that data from DVC and OPTCL has been received however; Powergrid data is yet to be received.

In 136th OCC, PRDC informed that the data is still pending from few substations.

OCC advised PRDC to consider SCADA data for pending substations and advised to finalize and

submit the report at the earliest.

PRDC may update.

Item No. B.4: Status of UFRs healthiness installed in Eastern Region

UFR Healthiness Certification for the month of August, 2017 has been received from OPTCL, CESC, JUSNL, WBSETCL, DVC, and BSPTCL.

Members may note.

Item No. B.5: Healthiness of SPS existing in Eastern Region

GMR, Vedanta, JITPL, CESC, Chuzachen, Powergrid(ER-II & Odisha) & NTPC (TSTPS) have submitted the healthiness certificate for the month of August, 2017.

In 136th OCC, members felt that healthiness certificate for SPS of 132 kV Muzaffarpur-Dhalkebar D/C line may also be submitted on monthly basis and advised Powergrid to submit the healthiness certificate in every OCC meeting.

Teesta-III, Jorethang & Dikchu may submit the healthiness certificate for Rangpo SPS as decided in special meeting of 21.06.2017.

Powergrid ER-I may submit the healthiness certificate for August 2017.

Item No. B.6: Electricity Generation Targets for the year 2018-19 – CEA

The annual exercise of assessment and finalization of the generation targets and the planned maintenance schedules of the generating units for the year 2018-19 is being initiated by CEA. Although the generation performance of the various stations and their planned & unscheduled outages are regularly monitored in CEA but it is felt that a more realistic projection of month-wise generation in the coming year could be made by the respective Station Authorities.

While monitoring the generation performance during the current financial year, it has been observed that power utilities are facing the problem of loss of generation due to no / low schedules, high fuel costs and other technical and commercial and transmission etc. issues. Accordingly, it is requested that the following inputs may kindly be submitted to this office as per the enclosed **formats (given at Annexure-B.6)**:

i) The unit wise yearly generation (with unit -wise monthly breakup) proposed during 2018-19 as per the format given along with the fuel availability, the anticipated loss of generation on account of various reasons such as grid constraint, low schedule/ reserve shut down due to high cost, poor quality coal/lignite etc, if any, may also be furnished (**Annex-I (1 to 5))**

ii) Utilities who have their Power Purchase Agreement (PPA) with various Discoms, Trader, States etc, details may be furnished in MW for Long, Medium and Short term to enable us to assess the expected generation for next year (**Annex –I (point no 6)**).

iii) The details of coal linkage from coal agencies and availability of secondary fuel oil/gas/ liq fuel may also please be furnished (**Annex- I (point no 7 (a) and (b)**).

iv) Production cost, Unit wise cost of generation and rate of sale of power may also be furnished. **(Annex – I (point 8))**

v) Details of unit-wise schedule of Planned Maintenance as approved by the respective RPCs (Regional Power Committees), unit-wise R&M planned to be carried out during 2018-19, may also be considered for deciding the generation targets (**Annex- II**).

The information may please be furnished electronically at the email address **targetopmcea@gmail.com, prathamkumar@gmail.com** with a copy to ERPC (e-mail: **mserpc-power@nic.in**).

For the convenience of the generating utilities, the input formats are also being made available at CEA website **http://www.cea.nic.in**. For any other query/ clarification any of the following officer may be approached.

1. Mr Pratham Kumar, Assistant Director, 011-26732666, Mob- 08252697842

Members may furnish the above data by 30th September 2017.

Item No. B.7: Furnishing of data for Merit Order Web Portal – CEA

During the Power Minister's Conference held on 3rd and 4th May 2017, at New Delhi, it was decided to develop a web portal/mobile app in about a month's time with a view to having transparency in Merit order scheduling & dispatch and ensuring most economic system operation.

In the conference Hon'ble Union Minister for Power requested all the States/UTs to submit the requisite data to CEA immediately.

On this regard, it is to inform that POSOCO has developed the facility for online uploading of monthly & daily data related to Merit Order Dispatch Portal, by the SLDCs. NLDC (POSOCO) has already communicated via email to all the SLDCs, their respective User IDs & Passwords and the procedure for online filling & uploading of data. All the SLDCs to start submitting the above data to NLDC online immediately.

In case of any doubt / clarification, Shri Harish Kr Rathour (NLDC) may be contacted at his Mobile No.9873918443. The procedure for online uploading of data for the portal is available in ERPC website.

Subsequently, CEA vide mail dated 4th July 2017 informed that for the ease of user, import from excel (in a predefined format) facility have also been implemented. Users are requested to follow following steps to upload data through excel:

1) Login to MERIT web portal (www.meritindia.in/login).
2) Select any date and click on "GO" button. After this, list of all station will be visible for that date with other information's, if already filled.
3) Click on "Export Data in Excel" to export the file in excel***. This would be a template file which is to be used for uploading the data***.
    a. Once you do not have any changes in the list of plants, this file can be used for data uploading and on daily basis user need not to download excel format again.
    b. In case updation in list of station is required (State owned stations), same can be modified through monthly page. At present this feature is disabled and very shortly it will be enabled.
    c. Initial two row has station ID and name of station, which should not be disturbed and data will be uploaded based on these only. Any changes in it may lead to wrong data uploading.
    d. User can select any file name to save and upload the data.
    e. Once you filled data click on "If you have data ready in Excel, CICK HERE to upload", select date for which you want to upload data, browse for the desired file and click on UPLOAD.
    f. If entire file has not been uploaded, you will get the file which will show list of stations not uploaded.
4) If new station to be added for state, user can add through monthly data upload pages. Once, it has added new EXCEL template to be downloaded again in order to fill data for new station.

5) User who wants to fill data directly through web-portal, would now have option to sort based on the various fields, which will help in filling data. Users who wants to fill on-line need not to click on "If you have data ready in Excel, CICK HERE to upload", they only select the date and simply click on "GO" button.

After submission of data, user can check directly on www.meritindia.in. It is once again requested to all to fill the monthly data (variable and fixed cost) because all visualization in first page is based on variable costs of the plants. In case of any doubt / clarification, Shri Harish Kr Rathour (NLDC) may be contacted at his Mobile No.9873918443.

Members may comply.

Item No. B.8: Status of Islanding Schemes of Eastern Region

B.8.1. Status of commissioned Islanding Schemes in Eastern Region

At present, the following islanding schemes are in service:

1. CESC as a whole Islanding Scheme, CESC
2. BkTPS Islanding Scheme, WBPDCL
3. Tata Power Islanding Scheme, Haldia
4. Chandrapura TPS Islanding Scheme, DVC
5. Farakka Islanding Scheme, NTPC

In 108th OCC meeting, respective constituents agreed to certify that the islanding schemes under their control area are in service on monthly basis.

In 134th OCC, JUSNL was advised to submit the healthiness certificate of the UFR and PLCC system related to Farakka islanding scheme at their end.

The healthiness certificate for Islanding Scheme for August, 2017 has been received from CTPS, DVC, NTPC, JUSNL, BkTPS, Tata Power and CESC.

Members may note.

B.8.2. Bandel Islanding Scheme, WBPDCL

As per the latest status available in PSDF web site the scheme was approved for an amount of Rs.1.39 crore by the Monitoring Committee on 10.04.2017.

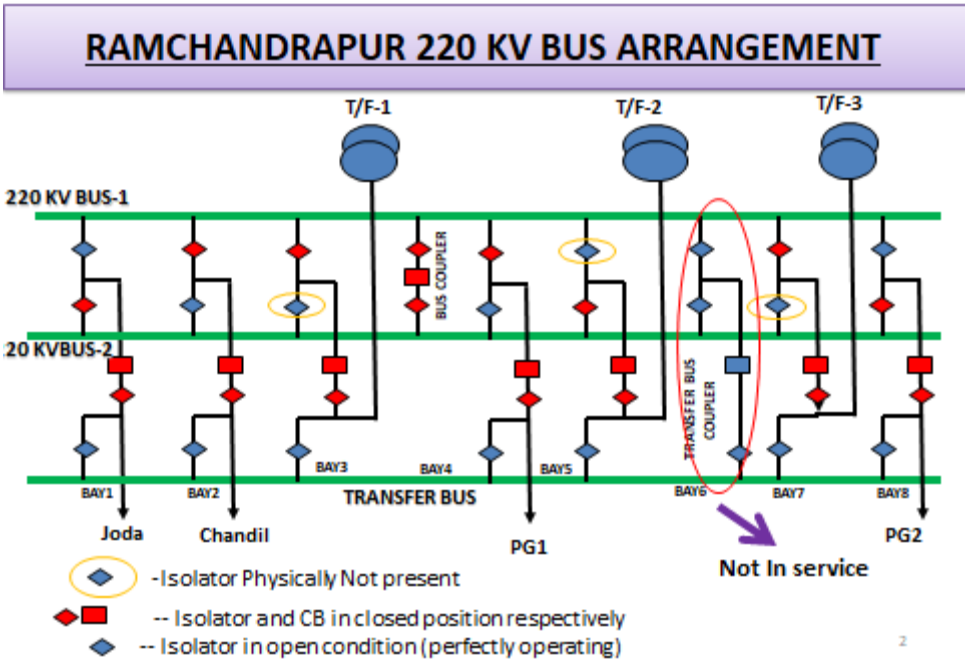
In 134th OCC, WBPDCL informed that MoP has issued the sanction letter for grant of PSDF.

In 135th OCC, WBPDCL informed that order has been placed to ABB for implementation of Bandel islanding scheme.

WBPDCL may update the latest status.

Item No. B.9: Difficulty in shifting of elements from one bus to another at 220 kV Ramchandrapur substation --ERLDC

220 kV Ramchandrapur substation of JUSNL is having two main transfer bus scheme. However during shutdown of one 400/220 kV 315 MVA ICT at Jamshedpur it was found that bus coupler between two main bus tripped due to high power flow through it. Later it was observed that the load and incoming feeders cannot be moved to same bus because of non-operation of bus coupler breaker and other isolator. SLD of 220 kV Ramchandrapur Substation is shown below:



From the SLD it can be seen that many of the isolator are physically not present or non-operational which causing constraints in system operation.

Apart from above the 3rd 400/220 kV ICT at Jamshedpur was charged once which later tripped on operation of differential protection. In absence of 3rd ICT every time when one ICT at Jamshedpur is taken into s/d, Joda line need to be disconnected. Keeping this in view commissioning of 400/220 kV 3rd ICT at Jamshedpur needs to be expedited.

PowerGrid and JUSNL may explain.

Item No. B.10: Flexible jumpering arrangement for bypassing substations, prone to inundation during monsoon, for ensuring continuity of important corridors and power evacuation from power stations--ERLDC

During the current monsoon season, quite a few substations in Eastern Region viz. Alipurduar(PG), Kishanganj(PG), Dalkhola(PG) and Motihari(DMTCL) had to be completely shutdown, due to massive waterlogging. Outage of Kishanganj S/Stn posed constraint in power evacuation of Sikkim generators and surplus power of NER while outage of Alipurduar S/stn weakened the inter-regional connectivity between ER and NER. Such substations typically have 2 nos incoming and 2 nos outgoing lines and lie either along a major intra/inter-regional corridor or along the evacuation route of a major power station.

Under the above mentioned situation, it is desirable that continuity of the transmission corridor be maintained by directly connecting the incoming and outgoing lines, bypassing the inundated substation. However, such network re-configuration is possible only if facility for jumpering conductors at appropriate locations is already in place. This practice is already being followed at a number of locations in Western Region.

Members may please identify the substations where the above proposed arrangement can be utilised for maintaining grid security under flood situations.

In 136th OCC, ERLDC explained that the flexible jumpering arrangement may be done for 400 kV Binaguri-Kisheenganj-N.Purnea D/C and 400kV Binaguri-Alipurduar-Bongaigaon D/C lines for bypassing the LILO points i.e. 400kV Kishanganj(PG) and Alipurduar(PG) S/s so that the same lines may be directly connected during the emergencies like flood situations at LILO points. The

possibility may be explored as these elements are very important in terms of hydro power evacuation and long outages of these elements may endanger the grid security. The other such elements (LILOed at Dalkhola, Motihari (DMTCL) etc) may also be explored which are under threat during flood and other emergencies.

OCC felt that such kind of bypassing arrangement will help the grid to improve the reliability during emergencies when substation is not available in service.

OCC advised Powergrid to explore the possibilities of implementing such bypassing arrangement for above elements and for other important elements, if any.

Powergrid agreed to do the survey and explore the possibilities.

Powergrid may update.

Item No. B.11: Concerned members may update the latest status.

B.11.1. Status of construction of 400 kV Sterlite-Jharsuguda D/C sections

In 36th TCC/ERPC, OPTCL informed that Vedanta will complete the line by 27th September 2017 and of 400 kV Vedanta-Meramundali D/C line will also brought into service by 25th September 2017.

TCC advised to commission 400 kV Sterlite –Jharsuguda D/C dedicated line by 30th September 2017 and the LILO will be opened from 1st October 2017.

OPTCL may update.

Special Protection Scheme(SPS) of Sterlite (VAL) –ERLDC

Sterlite has installed capacity of 4X600MW (2400MW) with smelter load of More than 1000MW grid-connected plant. In case of loss of smelter load or evacuation path units might trip due to mismatch of load and generation. Sterlite had already implemented SPS to minimize the impact of such major load generation mismatch on the grid. In an earlier OCC meeting VAL agreed to share their presently implemented SPS details. But thereafter, VAL did not submit anything to ERLDC/ERPC.

In 135th OCC, OPTCL was advised to submit the present SPS settings to ERPC and ERLDC within a week.

SLDC OPTCL and Vedanta may update.

B.11.2. Enabling of 3-Phase Auto Reclose at 132 kV North Bengal and Sikkim areas to minimize element outages due to transient faults -- Powergrid

During rainy season In North Bengal and Sikkim area, high element outages observed of 132 KV level. Mainly from past experience it is observed that 90% of the fault is of Single Phase to Ground fault and transient in nature. However as per general practice 132 KV level CB's are of mechanically ganged and any single phase fault also causing tripping of all three phases.

To make system more dynamic it is prudent to go for, three phase auto reclosure for any single phase Fault in the 132 KV lines. Only by introduction of A/R facility line availability may be increased in the tune of 90% i.r.o present situations. POWERGRID proposed to implement the same however other constituents as well as ERLDC may give respective views. Upon concurrence detailed road map for Implementation will be given.

In 132nd OCC, Powergrid informed that in North Bengal and Sikkim area most of the time the 132 kV lines were tripping on transient fault and the system can be saved by implementing 3-phase auto-reclosure scheme.

OCC discussed the matter in detail and agreed in principle for implementation of 3-pase auto-reclosure scheme for 132 kV lines. Further, it was decided that the implementation would start with North Bengal and Sikkim area.

Further, OCC advised Powergrid to submit a report on the status of PLCC/telemetry, A/R facility etc. for both ends of each 132 kV lines of North Bengal and Sikkim area.

In 134th OCC, Powergrid informed that the 3-phase auto-reclosure scheme for 132kV Rangpo-Gantok line will be implemented by July 2017.

In 135th OCC, Powergrid informed that Rangpo end relay will be installed within a week and replacing the relay at Gangtok end will take time.

In 136th OCC, Powergrid was advised to submit a report on the status of PLCC/telemetry, A/R facility etc. for both ends of each 132 kV lines of North Bengal and Sikkim area.

Powergrid may update.

B.11.3. Status of Installation of STATCOM in Eastern Region

In the 15th meeting of SCM it was agreed to install STATCOM in combination with mechanically switched Reactors (MSR) and Capacitors (MSC) and co-ordinated control mechanism of MSCs and MSRs at Ranchi, Rourkela, Jeypore and Kishanganj substations in Eastern Region.

The matter was again discussed in the 28th ERPC/TCC meeting held on 12th -13th September, 2014 at Goa, wherein, it was decided that POWERGRID may go ahead with implementation of the STATCOM project in Eastern Region with debt – equity ratio of 70:30 funding. The debt part should be refunded through PSDF and Equity Component (30%) to be funded by POWERGRID to be recovered through regulated tariff mechanism. CTU should initiate the process of availing fund from PSDF.

In 136th OCC, Powergrid updated the status as follows:

Sl No	Location /Sub-Station of POWERGRID in ER	STATCOM - Dynamic Shunt Controller (MVAr)	Mechanically Switched Compensation Sl. (MVAr)		Latest status
			Reactor (MSR)	Capacitor (MSC)	
1	Rourkela	±300	2x125		*Expected to complete by Mar 2018*
2	Kishanganj	±200	2x125		*Expected to complete by Jan 2018*
3	Ranchi(New)	±300	2x125		
4	Jeypore	±200	2x125	2x125	*Expected to complete by Jun 2018*

It was informed that Powergrid is not placing any details about PSDF grant taken for this scheme in monthly OCC meetings.

OCC advised Powergrid send the details to ERPC Secretariat within three days so that the same can be placed before 7th NPC meeting scheduled to be held on 8th September, 2017.

Powergrid agreed.

Powergrid may update.

B.11.4. 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— *Completed in May, 2017*.

In 134th OCC, it was informed that the bus splitting scheme at 400 kV Maithon & Biharshariff will be operationalized after the getting the consent from CTU.

CTU vide letter dated 11th September 2017 informed that they have carried out the study and the results suggested that bus splitting scheme at400 kV Maithon and Biharshariff may be operationalized at the earliest to limit the fault current. However, the bus sectionaliser may be kept closed or opened by POSOCO depending upon the system conditions and requirement.

CTU added that fault level at 400 kV Durgapur has almost reached the design limit, with the operationzation of split bus at 400kV Kahalgaon (expected by Dec 2018) and the Farakka bypass scheme (approved in 19th SCM), the fault current level at Durgapur reduces to 37 kA. Therefore, the bus splitting at Durgapur may be operationalized at a later date.

In 36th TCC/ERPC, ERLDC informed that they will carry out internal study and operationalize the bus splitting schemes at 400kV Maithon and Biharshariff one by one with close monitoring of the system behaviour.

ERLDC may update.

B.11.5. Bus Splitting of Kahalgaon STPS Stage I&II, NTPC

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

In 32nd TCC, NTPC informed that they are going ahead with the implementation of Bus Splitting of Kahalgaon STPS Stage I&II and the implementation is expected to be completed by December, 2018.

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 work has been completed.
- Transformer package and Shunt reactor– have been awarded.

In 35th TCC, NTPC informed that the work is in progress as per the schedule and the bus splitting will be completed by December, 2018.

In 136th OCC, NTPC informed that the bus splitting will be implemented by December, 2018.

NTPC may update.

B.11.6. 220 kV inter-connecting lines of OPTCL with 400/220 kV Bolangir (PG), Keonjhar & Pandiabil S/s

PGCIL has already commissioned the 2x315MVA 400/220kV Bolangir S/s by LILOing of 400kV Meramandali-Jeypore S/C line and 400/220 kV Keonjhar S/s with an objective of supplying power from ER grid to its adjoining areas in Odisha.

In 136th OCC, OPTCL updated the completion schedule of inter-connecting system as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x315MVA 400/220kV Bolangir S/s**	
a.	LILO of one circuit of Sadeipalli-Kesinga220 kV D/C line at Bolangir S/S	*Only 7 towers left (Severe ROW problem).* ***By Oct, 2017.***
2.	**400/220 kV Keonjhar S/S**	
a.	Keonjhar (PG)-Keonjhar (OPTCL) 220 kV D/C line	By 2017.
b.	Keonjhar (PG)-Turumunga(OPTCL) 220kV D/C line	By 2019.
3.	**400/220kV Pandiabil Grid S/s:**	
a.	Pratapsasan(OPTCL)-Pandiabil(PG) 220 kV D/C line	Dec, 2017.

OPTCL may update.

B.11.7. 220 kV inter-connecting lines of JUSNL with 2x315 MVA, 400/220 kV sub-stations at Chaibasa, Daltonganj & Dhanbad

In 136th OCC, JUSNL updated the latest status as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**Chaibasa 400/220kV S/s**	
a.	Chaibasa (POWERGRID) – Ramchandrapur (JUSNL) 220kV D/c	***commissioned on 25th August, 2017***
2.	**Daltonganj 400/220/132kV S/s:**	
a.	Daltonganj (POWERGRID) – Latehar 220kV D/c	By Dec, 2017.
b.	Daltonganj (POWERGRID) – Garhwa 220kV D/c	May, 2018
C	Daltonganj (POWERGRID) – Daltonganj (JUSNL) 132kV D/c	Dec, 2018
d	Daltonganj (POWERGRID) – Chatarpur/Lesliganj 132kV D/c	Matching with S/s
3.	**Dhanbad 400/220 kV S/s: Awarded under TBCB**	
a.	Dhanbad – Dhanbad (Govindpur) (JUSNL) 220kV D/c	Matching with S/s

JUSNL may update.

B.11.8. 220 kV inter-connecting lines of WBSETCL with 400/220 kV, 2x315 MVA Alipurduar & 2x500 MVA Rajarhat sub-stations

In 136th OCC, *WBSETCL updated the latest status as follows:*

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x315MVA, 400/220kV Alipurduar sub-station**	
a.	Alipurduar (POWERGRID) – Alipurduar (WBSETCL) 220kV D/c (***Twin moose***)	***October 2017***
2.	**2x500MVA, 400/220kV Rajarhat ---**	
a.	Rajarhat-N. Town-3 (WBSETCL) 220 kV D/C line	Matching
b.	Rajarhat-N. Town-2 (WBSETCL) 220 kV D/C line	June, 2018
c.	Rajarhat- Barasat (WBSETCL) 220 kV D/C line	June, 2018

WBSETCL may update.

Item No. B.12: BSPTCL Agenda

1. Restoration of power supply at Patna

According to present load scenario, load of Patna is increasing very fast. Supply of power to Patna is mainly dependent on the grid sub-station Patna (Sampatchak) of PGCIL. In case of tripping of transformers (ICTs) or lines connected with grid substation of PGCIL sub-station, the power supply to Patna gets highly affected, causing blackout at Patna and connected Substations.

Due to infructous or mal operation of the relay it has been observed that, though the system has to be taken in service within 10-15 minutes, the same is delayed due to process of taking code from ERLDC for loading/off loading. In order to fastest restoration of power supply to Patna the approval is solicited to allow Power Grid and BSPTCL to restore power in close association with each other and to seek post facto approval from ERLDC.

This approval may be granted for the conditions when restoration would be possible within 10-15 minutes after resetting of relays, load isolation/load management etc.

Members may discuss.

2. Standard operating procedure during contingencies

As a contingency plan for operations/load management to be done during the tripping scenarios, mainly at Patna (PG) {source} or BSPTCL, a standard of procedure has been prepared in association with PGCIL, Patna for restoration of supply or to avoid outages due to cascading effects. BSPTCL intends that the same is to be adopted in case of the contingencies defined under various conditions/outages. The approval of the proposed SOP may kindly be granted so that actions/load managements/sheddings as per availability of power could be done within shortest possible time with an objective to reduce restoration / outage time to bare minimum. Once approved, all operations shall be done by PGCIL/SLDC/Grid Sub Stations without waiting for further restrictions/codes either from SLDC/ERLDC. Procedure is enclosed at **Annexure-B12**. However all information shall be subsequently forwarded to ERLDC regarding the same event.

Members may discuss.

Item No. B.13: Early commissioning of 220 kV Patna-Sipara third ckt.—ERLDC

Major load of Capital city Patna is fed from 220 kV Sipara Substation, Further Sipara is conneted with Khagaul as well as well as Fatuah at 220 kV level. These are also major load centers normally fed in radial mode from Patna (except Fatuah, which is usually supplied radially from Bihartshariff). This causes very high loading of 220 kV Patna-Sipara D/C and it did not satisfy N-1 Contingeny criteria for most of the time in last quarter.

The third circuit of 220kV Patna-Sipara line is expected to be commissioned soon, which will help in relieving the loading on other two lines. Further with commissioning of 220 kV Patna-Sipara T/C 220 kV Khagul-Arrah-Pusauli loop may be kept close, which will help in improving system reliability and maintaining better voltage regulation in and around that area.

In view of above BSPTCL may expedite commissioning of 220 kV Patna-Sipara third ckt.

BSPTCL may update the latest status.

Item No. B.14: Third Party Protection Audit

1. Status of 1st Third Party Protection Audit:

The compliance status of 1st Third Party Protection Audit observations is as follows:

Name of Constituents	Total Observations	Complied	% of Compliance
Powergrid	54	37	68.52
NTPC	16	14	87.50
NHPC	1	1	100.00
DVC	40	26	65.00

WB	68	27	39.71
Odisha	59	38	64.41
JUSNL	34	16	47.06
BSPTCL	16	5	31.25
IPP (GMR, Sterlite and MPL)	5	5	100.00

The substation wise status of compliance are available at ERPC website (Observations include PLCC rectification/activation which needs a comprehensive plan).

In 118th OCC, all the constituents were advised to comply the pending observations at the earliest. All the STUs informed that most of the observations are related to funding from PSDF. DPRs have been submitted to PSDF committee.

OCC advised all specially JUSNL and BSPTCL to send the revised DPRs at the earliest after clarifying the queries if any.

Members may comply.

2. Schedule for 2nd Third Party Protection Audit:

The latest status of 2nd Third Party Protection audit is as follows:

1) Jeerat (PG) Completed on 15th July 2015
2) Subashgram (PG) Completed on 16th July 2015
3) Kolaghat TPS (WBPDCL)- Completed on 7th August 2015
4) Kharagpur (WBSETCL) 400/220kV - Completed on 7th August 2015
5) Bidhannagar (WBSETCL) 400 &220kV Completed on 8th September, 2015
6) Durgapur (PG) 400kV S/s Completed on 10th September, 2015
7) DSTPS(DVC) 400/220kV Completed on 9th September, 2015
8) Mejia (DVC) TPS 400/220kV Completed on 11th September, 2015
9) 400/220/132kV Mendhasal (OPTCL) Completed on 2nd November, 2015
10) 400/220kV Talcher STPS (NTPC) Completed on 3rd November, 2015
11) 765/400kV Angul (PG) Completed on 4th November, 2015
12) 400kV JITPL Completed on 5th November, 2015
13) 400kV GMR Completed on 5th November, 2015
14) 400kV Malda (PG) Completed on 23rd February, 2016
15) 400kV Farakka (NTPC) Completed on 24th February, 2016
16) 400kV Behrampur(PG) Completed on 25th February, 2016
17) 400kV Sagardighi (WBPDCL) Completed on 25th February, 2016
18) 400kV Bakreswar (WBPDCL) Completed on 26th February, 2016
19) 765kV Gaya(PG) Completed on 1st November, 2016
20) 400kV Biharshariff(PG) Completed on 3rd November, 2016
21) 220kV Biharshariff(BSPTCL) Completed on 3rd November, 2016
22) 400kV Maithon (PG) Completed on 18th May, 2017
23) 132kV Gola (DVC) Completed on 17th May, 2017
24) 132kV Barhi (DVC) Completed on 18th May, 2017
25) 132kV Koderma (DVC) Completed on 18th May, 2017
26) 132kV Kumardhubi (DVC) Completed on 19th May, 2017
27) 132kV Ramkanali (DVC) Completed on 19th May, 2017
28) 220kV Ramchandrapur (JUSNL) Completed on 1st June, 2017
29) 400kV Jamshedpur (PG) Completed on 1st June, 2017
30) 132kV Patherdih (DVC) Completed on 31st May, 2017
31) 132kV Kalipahari (DVC) Completed on 30th May, 2017
32) 132kV Putki (DVC) Completed on 31st May, 2017
33) 132kV ASP (DVC) Completed on 30th May, 2017
34) 132kV Mosabani (DVC) Completed on 2nd June, 2017
35) 132kV Purulia (DVC) Completed on 1st June, 2017

The list of observations for the above sub-stations is already available at ERPC website (www.erpc.gov.in). Respective constituents are requested to comply and submit the report to ERPC for regular update.

Members may note.

Item No. B.15: Inspection of Under Frequency Relays (UFR)

The proposed UFR audit schedule is placed below:

Sl No	Proposed Date	Substation/feeder inspected by the sub-group
1	Oct, 2017	220/132/33 KV Kalyaneswari of DVC
2		220/132/33 KV New Bishnupur of WBSETCL
3		132/33 KV Old Bishnupur of WBSETCL
4	Nov, 2017	BRS (Liluah S/Stn.) of CESC

Members may decide.

Item No. B.16: Preparation of crisis management plan for Cyber Security in Power Sector in line with CERT-IN.

The activity of the preparation of Crisis Management Plan for countering the cyber attacks and its implementation including the Mock Drills, audits etc. is being monitored by CEA regularly in line with crisis management plant of Ministry of Power. Power Utilities (including generation, transmission & distribution utilities) of eastern region are to furnish regularly the updated status to on the same to Chief Engineer, Distribution Planning & Development Division, CEA.

NTPC communicated their activity of the preparation of Crisis Management Plan for countering the cyber attacks vide letter dated 2nd August, 2013.

In 113th OCC, Member Secretary informed that during interaction with consultants of Grid Study Committee, NLDC agreed that they will plan for conducting workshops on crisis management plan for Cyber Security and few workshops will also be held in Eastern Region.

CESC vide letter dated 22.08.15 had furnished their status of the preparation of Crisis Management Plan (CMP) for Cyber attacks in their system.

Constituents may nominate.

Item No. B.17: Certification through BIS as per IS 18001:2007 to all generating/ transmission units.

In 84th OCC meeting all constituents were requested to interact with BIS with intimation to ERPC and get certified as per CEA direction.

As per the information received from the constituents the following generators certified with IS 18001:

- All NTPC stations in Eastern Region
- Teesta, NHPC
- All OHPC generating units
- All CESC generating units
- Bandel TPS, WBPDCL
- Kolaghat Generating station, WBPDCL
- Bakreswar Generating station, WBPDCL
- Sagardighi Thermal Power Project, WBPDCL
- DGPC units

Members may note and update the status.

Item No. B.18: Data of Peak Demand – Submission of hourly power cut data

The peak demand met figure calculated by CEA is a part of the monthly Power Supply Postion Report prepared by CEA, based on the data provided by five Regional Power committee (RPCs), who in turn collect the data from State / UTs and RLDCs. As per the present methodology being adopted for calculation of States /Regional peak demand met, the figure of peak demand met at any time in the month is taken as peak demand met for the month. For all India monthly peak demand met, the sum of five regional peaks met, which may occur at different points of time is taken.

The above methodology has been reviewed and it has been decided with the approval of Chairperson, CEA that Peak demand Met and Peak Demand in the country should be based on hourly all India demand data. The matter was taken up with POSOCO for getting the hourly data of peak demand met for each month in respect of all the regions in the country in the first week of following month and they have assured to furnish the same. To calculate the demand, data of hourly scheduled and unscheduled power-cuts / load shedding is also required, which is not available with POSOCO.

It is, therefore, requested that hourly figures of scheduled/ unscheduled power cuts/load shedding data may be collected from States / UTs and the same may be sent to CEA every month as per above schedule in the enclosed format, in spread sheet, so that hourly figures of peak demand can be calculated and incorporated in Power Supply Position report.

This data for a month may kindly be sent in the first week of each month, along with PSP data, starting from the data for the month of February, 2015. The format for sending the data of hourly scheduled and unscheduled power-cuts / load shedding has already been circulated.

In 110th OCC meeting, OCC advised all the concerned utilities (BSPTCL, JUSNL, OPTCL, WBSETCL & Sikkim) to send the data of hourly scheduled and unscheduled power-cuts / load shedding by mail to mserpc-power@nic.in latest by first week of each month.

OCC advised all constituents to submit the data also to ERLDC (erldcprotection@gmail.com).

For the month of August, 2017 data has been received from OPTCL, CESC, DVC, WBSETCL, BSPTCL.

JUSNL may submit.

Item No. B.19: Long outage of important transmission elements

a) Non availability of Line Reactor of 400KV Malda-Purnea-I

In 123rd OCC, Powergrid informed that order has been placed for Reactor-1 and it will be commissioned by September, 2016.

In 133rd OCC, Powergrid informed that the dispatch got delayed due to commercial issues and it will be dispatched by May, 2017 & commissioned by end of June, 2017.

In 134th OCC, Powergrid informed that the reactor is reached at site and will be commissioned by end of July, 2017 subject to availability of shutdown.

In 135th OCC, Powergrid informed that they are taking shutdown from today and the reactor will be commissioned by 15th August, 2017.

In 136th OCC, Powergrid informed that the reactor will be commissioned by 10th September, 2017.

Powergrid may update.

b) 220 kV Waria – Bidhannagar-II

The line is under outage wef 20.08.16 due to collapse of one no of tower collapse.

In 133rd OCC, DVC informed that the line will be restored by 15th June, 2017.

In 135th OCC, DVC informed that the line will be restored by 20th August, 2017.

In 136th OCC, DVC informed that because of sever rains and difficult site conditions the restoration of the line would be delayed by another one month.

DVC may update.

c) 50MVAR Bus Reactor-I at Farakka (alongwith main and tie bays)

Under shutdown wef 31/05/16 for dismantling from old bay and re-installation in new bay in the dia of FSTPP GT#3.

In 133rd OCC, Powergrid informed that the reactor will be in service by second week of June, 2017.

In 134th OCC, Powergrid informed that the reactor will be in service within a week.

In 135th OCC, Powergrid informed they are taking shutdown on 31st July 2017 to complete the work.

In 136th OCC, Powergrid informed that the reactor has been put in service but differential protection is getting operated because of some problem in the scheme.

Powergrid informed that the reactor would be brought into service after the rectification of the same which is expected by 10th September 2017.

Powergrid may update.

Item No. B.20: Failure of RTU data with the outage of ICTs of Patna and Biharshariff station --ERLDC

It has been observed on several occasions that with the tripping of all the ICTs at Patna and Biharshariff station, RTU stopped reporting to ERLDC, after restoring these ICTs, data again started reporting. It is to be appreciated that real time SCADA data should not be getting interrupted for any eventuality of the grid. The same was informed to POWERGRID several times but it is yet to be implemented and confirmed by them.

In 135th OCC, Powergrid informed that at Biharshariff the ULDC battery bank is under replacement. At Patna, the reason is yet to be identified.

ERLDC informed that the same problem has been observed in other substations also and requested Powergrid to ensure uninterrupted power supply to RTUs.

OCC advised ERLDC to submit the list of such substations to Powergrid. OCC advised Powergrid to ensure uninterrupted power supply to RTUs and send the updated status to ERPC.

*In 136th OCC, ERLDC placed the details of substations where the communication and telemetry is getting effected due to power supply failures. The list is enclosed at **Annexure-B20**.*

Powergrid agreed to look and resolve.

Members may update.

Item No. B.21: Shifting of communication links for PMUs reporting to ERLDC--ERLDC

Presently, PMUs locations at Farakka, Talcher, Jamshedpur, Ranchi, Binaguri, Durgapur, Rourkela & Jeypore are reporting through Alcatel Mux using E1 – Ethernet convertor at both end. In case of fibre cut between Kasba to ERLDC, all the 8 nos PMUs data stopped reporting to ERLDC (happened on 16/May/2017 from 04:25 Hrs to 12:49 Hrs). There is no redundant path provided for these communication links. So, it is requested POWERGRID to shift these PMUs' communication path / equipment so that the protection path of ULDC network would be used and this type of outage could be avoided. Communication link for Patna PMU is taken from PowerTel. It is also requested to POWERGRID that communication path may also be shifted for Patna PMU so that PowerTel communication could be removed.

In 134th OCC, ERLDC informed that work is not yet completed.

Powergrid informed that 8 PMUs communication system have been shifted to ULDC network.

OCC advised ERLDC to send the details of requirement to Powergrid.

Accordingly, ERLDC has sent the detailed requirement for shifting of communication link to POWERGRID ULDC on 14-07-2017.

In 135th OCC, Powergrid agreed to complete the work within a month.

In 136th OCC, ERLDC has placed the updated status. The status is enclosed at ***Annexure-B21****.*

Powergrid agreed to complete the work at the earliest.

PGCIL may update.

Item No. B.22: Update on status of telemetry

CERC vide order dated 28.02.2016 on Petition No. 007/SN/2014 directed NLDC and respective RLDCs to update the status of telemetry every month at their respective websites and take up the issue of persistent non-availability of data from Generating Stations/substations at RPC meetings for appropriate action.

In 120th OCC, ERLDC informed that every month they were updating the status and posting at ERLDC website.

136th OCC advised all the respective constituents to ensure the availability of telemetry data to ERLDC.

Members may update.

a) Frequent failure of JITPL data to ERLDC:

Real time SCADA data from JITPL is frequently failing (*May-17: 24% & June-17 (up to 18th): 62%*). It was observed that

- Microwave terminal equipment at Talcher HVDC end is getting hanged quite frequently causing failure of real time data to ERLDC.
- The direct line from JITPL to Angul 765/400 kV pooling station is available but real time SCADA data is yet to be diverted through this path.
- The voice connectivity from JITPL to ERLDC is yet to be provided / integrated with Hot Line Voice Communication installed by M/s Orange.

In 136th OCC, JITPL informed that presently they are communicating ERLDC with a radio link, which is an interim arrangement and is not reliable and they are trying hard to maintain it.

However, they had planned to make PLCC system operational for uninterruptable communication to ERLDC. But Powergrid is not allowing them to shift NSK modem of PLCC system from Bolangir(PG) S/s which is the property of JITPL.

JITPL added that they were in process of settling the commercial issues with Powergrid and requested Powergrid to cooperate.

OCC took serious note of the issue and felt Powergrid should not interrupt in establishing the proper communication system for SCADA/telemetry data to ERLDC. OCC felt that Powergrid should not take up commercial issue by staking the grid security and advised Powergrid to take up the commercial issue separately.

In 36th TCC, Powergrid agreed to allow JITPL to shift their PLCC modem from Bolangir S/s within a week.

JITPL informed that they will shift the modem within a week and they will commission the communication system in another 10 days subject to availability of OEM (ABB) engineers.

TCC advised JITPL to shift the modem as decided and update the status in forthcoming OCC meeting scheduled to be held on 21st September 2017.

JITPL may update.

Item No. B.23: Sustain Under-injection by ISGS generators during RRAS—ERLDC

During July and August 2017, NLDC triggered RRAS UP for ISGSs generators of Easter Region on several occasions. However it is observed that some of the ISGS failed to maintain their generation as per schedule and continuous under-injection was observed during the above mentioned period.

As per section 5.4 of Detailed Operating procedure of RRAS, “The continuity of the RRAS shall be ensured by the RRAS provider over the period of the despatch”. However, this was continuously violated by ISGS stations of ER.
As per clause 9.13 of Detailed Operating procedure of RRAS

Quote -
Sustained failure, i.e. failure to provide the RRAS (barring unit tripping) by RRAS Provider(s) more than three (3) times during a month shall be brought to the notice of the CERC
- **Unquote**

Detailed performance of ER ISGS from RRAS point of view would be presented during the meeting.
ISGSs are therefore requested to exercise due care while declaring their respective DCs, so that actual generation as per the total schedule issued, can be maintained by them.

In 136th OCC, ERLDC presented the performance of the RRAS provider generators during July & August 2017 and informed that in real time Barh, FSTPP stage I & II and KhSTPP stage I & II generators were failed to maintain their generation as per schedule.

OCC advised NTPC to follow the RRAS schedule strictly.

OCC advised ERLDC to monitor the status for one week and even if there is no improvement, the acion may be initiated as per the provisions of IEGC. Further, OCC advised ERLDC to place the status in next OCC meeting.

ERLDC may update.

Item No. B.24: Delineation of O&M responsibilities of various assets of the ISTS--ERLDC

With opening up of transmission sector for private participation and rapid addition of new ISTS elements through TBCB route, multiple transmission licensees are now involved, in so far as ownership and maintenance of the regional ISTS is concerned. A single transmission line may be partly owned by one licensee and partly by the other, while the bay equipment, panels etc. at each of the ends may be owned / maintained by two different transmission licensees. In the above backdrop, as the apex body to ensure integrated operation of the regional power system, it becomes essential for RLDCs to be accurately aware of the scope of responsibilities of each of the licensees, in order to discharge its responsibilities in a smooth and efficient manner.

A list of transmission elements in Eastern Region together with their ownerships as per information available with ERLDC is enclosed at **Annexure-B24.** It is requested to kindly go through the list and indicate the agencies responsible for maintenance of line, ensuring real time data, furnishing relay indication, DR etc. in respect of each of the elements and inform ERLDC wherever necessary updating / correction is required to be incorporated.

In 136th OCC, all the constituents were advised to update the status as given in the annexure and send it to ERPC and ERLDC within a week.

Members may update.

Item No. B.25: Transfer capability determination by the states -- Agenda by NPC

In order to ensure, safe and secure operation of the grid, the states should carry out the power system study for operational planning and power transfer capability through their respective transmission links with the rest of the grid.

It was decided in the NPC meeting that to begin with, 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 subsequently.

ATC/TTC declared by states for the month of September-2017 is given below:

Sl No	State/Utility	TTC import(MW)	RM(MW)	ATC (Import) MW
1	BSPTCL	4498	132	4366
2	JUSNL	750	100	650
3	DVC	264	52	212
4	OPTCL	1844	82	1762
5	WBSETCL	3807	300	3507
6	Sikkim			

In 136th OCC, OCC advised WBSETCL to share the details of inter tripping schemes at other substations, if any.

In WBSETCL informed that they are having one more inter tripping scheme at Arambag the details of the same would be furnished to ERLDC.

Members may update.

Item No. B.26: Installation of PMUs in Eastern Region under URTDSM project

LOA for installation of PMUs in Eastern Region under URTDSM project was awarded to M/s Alstom on 15th January 2014. The contract has to be completed in all respect within 24 months from the award. The status of implementation may be informed since PMU data is very much important to real time shift operator for analyzing the security of the grid.

OCC advised Powergrid to submit a report on latest status of implementation and advised to update the status on every OCC.

In 131st OCC, Powergrid submitted the latest status of PMU installation.

The updated status as furnished in 132nd OCC by Powergrid is given at **Annexure-B.26**.

In 136th OCC, Powergrid informed that space provided for PMU installation at Farakka is already occupied and requested NTPC to allot space for installation of PMU.

NTPC agreed to look into.

Powergrid pointed that they are facing some problem at 400 kV FSTPS & Kolaghat S/s for installation of PMUs.

NTPC and WBPDCL agreed to co-operate with Powergrid for installation of PMUs.

POWERGRID may update the status.

Item No. B.27: Status of Disturbance Recorder, Stand alone Event Logger and Time Synchronization equipment.

The status of DR/EL and GPS as updated in previous OCCs is enclosed at **Annexure-B.27**.

Constituents are also requested to furnish their list of new DR/EL which are not included in the list.

Members may update.

Item No. B.28: Status of Emergency Restoration System (ERS Towers) for Eastern Region constituents

The latest status of Emergency Restoration System (ERS towers) as well as the future plan of procurement was given at **Annexure- B.28**.

CEA vide letter dated 21.07.2017 requested to send the status of state-wise availability of ERS towers and requirement of ERS towers.

In 136th OCC, MS, ERPC informed that CEA vide letter dated 21.07.2017 has sought the latest status on ERS. Therefore, OCC advised all constituents to send the updated status to ERPC secretariat vide mail (mserpc-power@nic.in).

Members may update the latest status.

Item No. B.29: Time correction of SEMs in Eastern Region – Replacement of heavily drifted SEMs

The issue was discussed in 35th TCC/ERPC meetings and it was felt that the meters with severe drift greater than 10 min need to be replaced first and if replacement is done with Genus then readings are to be collected manually using Laptop till interfacing with AMR is completed.

35th ERPC advised Powergrid to replace the 10% of the heavily drifted SEMs with new Genus make meters and monitor the performance of the Genus meters. Powergrid should present this performance before constituents and subsequently the decision on replacement of the other time drifted meters will be taken up.

Subsequently, ERLDC has prepared a list of such SEMs.

In 133rd OCC, Powergrid informed that 22 meters were replaced except Purnea.

ERLDC informed that the performance of 22 newly installed meters are satisfactory and suggested that all other meters can be replaced.

OCC advised Powergrid to replace next 10% of heavily drifted meters as per the list.

*The list as shared by ERLDC is attached at **Annexure-B.29**.*

In 134th OCC, Powergrid informed that SEM at Purnea has been replaced and the replacement of SEMs as per the Annexure will be completed within 2 months.

OCC advised Powergrid to give the schedule for replacement of SEMs to ERPC and ERLDC.

In 135th OCC, Powergrid ER-II, and Powergrid-Odisha informed that they will replace the SEMs by 15th August, 2017.

Powergrid ER-I informed that they are doing the time correction and SEMs are not required to be replaced.

In 136th OCC, Powergird informed that they will replace all the time drifted SEMs as prepared by ERLDC by September, 2017.

Powergrid/ ERLDC may update.

Item No. B.30: Integration of Genus Make meter in AMR-- ERLDC

In Eastern Region, order for procurement of 965 no of SEM's was placed with M/s Genus Power. First Lot of the meters have already been delivered by Genus and 24 meters of Genus make meter has been installed in different substation in ER. Issue of Integration of Genus make meters in AMR system was discussed in different fora of ERPC since March,17.In 36th ERPC meeting Powergrid informed that a meeting will be held on 20th September 2017 wherein the interfacing issues would be resolved by M/s TCS and M/s Genus.

Powergrid may please update the status.

In order to accommodate intermittency and variability of around 175 GW Renewable energy, requirement of fast ramping of conventional generator is absolute necessity. In order to facilitate fast ramping of conventional generator, it is felt that ongoing 15 min scheduling, metering accounting and settlement methodology need to be shifted at 5 min interval level in near future. Keeping in view of Implementation of 5- Minute Scheduling, Metering, Accounting & Settlement, Technical specifications for "Interface Energy Meters (5-min compatibility) for Western region was approved by 34th TCC/WRPC on 27.07.17/28.07.17.

At present approximately 600 new meters are yet to be delivered by vendor M/s Genus for Eastern Region and inspection of those meters is not yet done. It is felt that the new meters should have the provision of giving data in parallel, in 5 min new coded format as well as old meters (present) coded format i.e in 15 min.

Member may please discuss.

Item No. B.31: Requirement of data from AMR for SEM Vs SCADA Comparison -- ERLDC

In Eastern Region, AMR is already implemented and successfully running. Provision of getting various reports like Load Curve, NPC report, time drift report, maximum & minimum flow reports etc already exist.

However, report of 15 minute tie line data from AMR is also required to be made available so that the same could be utilised for developing comparison / error checking for SCADA. ERLDC is planning to develop SCADA Vs SEM comparison report which can identify the error in SCADA or time drift in SEM. The same is planned to develop considering the view for improvement of the system. Accordingly, the concern will take necessary action to validate the SCADA / SEM.

In view of the above, it is requested to POWERGRID to take up the matter with TCS for implementation of the same.

Members may discuss.

Item No. B.32: Accounting of Tertiary Loading Arrangement at PGCIL s/station in ER

Auxiliary consumption of PGCIL EHV AC sub stations are usually met from HT feeders of the state Discom. In few substations of PGCIL, auxiliary consumption is met through tertiary winding (as alternate supply for reliability).

In 35th CCM, It was decided that the drawal of auxiliary power from tertiary winding by Powergrid substations would be treated as state drawl for inter-regional accounting. Powergrid and the states would make back to back commercial arrangements for this power. ERLDC requested Powergrid to submit the requisite information such as meter no, CTR, PTR, etc in respect of those meters and also make meter readings available ontime.

Status of meter details and receipt of their data at ERLDC from Powergrid ER-I, ER-II and Odisha project is as below:

ER-I								
S. No	**S/Station**	**Loc ID**	**Meter No**	**Make**	**CTR**	**PTR**	**Remarks**	**Data Receipt**
1	Banka	ES-88	NP-7458-A	L&T	50	33000/110		Yes
2	Lakhisarai	ES-94	NP-8870-A	L&T	50	33000/110		Yes
3	New Ranchi(765)	ES-87	NP-8752-A	L&T	50	33000/110		Yes
4	Ara(220)	ES-99	NP-8893-A	L&T	50	33000/110		Yes
5	Muzaffarpur	ET-02	NP-5231-A	L&T	1000	415/110		Yes
6	New Purnea	ES-98	NP-5249-A	L&T	50	33000/110		Yes
7	Pusauli	ET-06	NP-8646-A	L&T	50	33000/110		Yes
8	Gaya(765)	EM-99	NP-7472-A	L&T	50	33000/110		No
9	Kishanganj	ES-90	NP-8876-A	L&T	50	33000/110		No
10	Patna	ES-89	ER-1285-A	Genus	50	33000/110		No
11	Biharshariff	ET-01	NP-2355-A	SECURE	1000	415/110		No
12	Chaibasa						Detail not rcvd	No
13	Jamshedpur						Detail not rcvd	No
14	Ranchi(400/220)						Detail not rcvd	No
ER-II & Odhisa Project								
1	Angul	ES-95	NP-5942-A	L&T	1000	415/110		Yes
3	Pandiabili	ES-39	NP-7462-A	L&T	1000	415/110		Yes
4	Rangpo (33 kv TRF)	ES-96	NP-7940-A	L&T	1000	415/110		Yes
5	Rangpo (11 KV AUX TRF)	ES-97	NP-7941-A	L&T	1000	415/110		Yes
8	Sundergarh	ES-93	ER-1019-A	Genus	50	33000/110		Yes
9	Baripada	EM-69	NP-5909-A	L&T	1200	400/110		Yes
2	Bolangir	ET-03	NP-7951-A	L&T	50	33000/110		No
6	Durgapur	ET-04	NP-6024-B	L&T	200	400/110		No
7	Rengali	ET-05	NP-0629-B	Secure	200	415/110		No
10	Jeypore		NP-5695-A	L&T			Detail not rcvd	No
11	Keonjhar		NP-7921-A	L&T			Detail not rcvd	No
12	Maithon						Detail not rcvd	No
13	Birpara						Detail not rcvd	No
14	Siliguri						Detail not rcvd	No
15	Subhashgram						Detail not rcvd	No

In 136th OCC, ERLDC informed that for Ara and Muzaffarpur they have received only two months data thereafter they are not receiving the SEM data.

Powergrid was advised to check and resolve it.

Powergrid updated that tertiary at Birpara and Siliguri were not in charged condition. The meter at Subashgram is defective and the same will be changed.

Powergrid may update.

Item No. B.33: Determination of Tariff of 800kV BNC-Agra HVDC line – GRIDCO

PGCIL has filed a Petition No. 67/TT/2015 before CERC for determination of Tariff of +/- 800KV Biswanath Chariyali(NER) – Agra(NR) HVDC Transmission Line. This line has been constructed for evacuation of Power from Kameng HEP and Lower Subansiri HEP. CERC in Order dated 31.08.2017 disposed the above Petition with the direction that **the Assets of these Transmission System shall be treated as National Assets and its charges shall be borne by all DICs**.

It is pertinent to mention here that as per National Electricity Policy 2005 and National Tariff Policy 2016, **the transmission tariff should be sensitive to distance, direction and quantum of power flow**. Further as per CERC "Sharing of Inter-State Transmission Charges and Losses" Regulations 2010 and subsequent Amendments, **the Charges for HVDC systems shall be borne by the withdrawing DICs of region(s) for whom the asset has been created**.

GRIDCO has already moved to ATE against an interim order dated 07.02.2017 of CERC in Petition No. 67/TT/2015 in which CERC has extended the tariff for the above asset for 2017-18 F.Y.

In view of the above, it is suggested that all the constituents of ER may deliberate on the issue of paying PoC charges for the said asset for which they are not related. This should actually be paid by NR/WR/NER Constituents.

Members may discuss.

Item No. B.34: Mock Black start exercises in Eastern Region – ERLDC

i) The status of black start exercises

The tentative schedule of black-start exercises for F.Y 2017-18 is as follows :

Sl no	Name of Hydro Station	Schedule	Tentative Date	Schedule	Tentative Date
		Test-I		Test-II	
1	U.Kolab	Last week of May, 2017	*30th May 2017*	Last Week of January2018	
2	Maithon	1stweek of June 2017	Completed on 04.04.17	1stWeek of February2018	
3	Rengali	2ndweek of June 2017	November 2017	Last week of November 2017	
4	U. Indarvati	3rdweek ofJune 2017	November 2017	2ndweek of February2018	
5	Subarnarekha	1stweek of October 2017		1stweek of January2018	

6	Balimela	3rdweek of October 2017		1stweek of March 2018	
7	Teesta-V	2ndweek of Nov 2017		Last week of February2018	
8	Chuzachen	Last Week of May2017	May, 2017	January2018	
9	Burla	Last Week of June 2017	1st week of July, 2017	Last week of February2018	
10	TLDP-III	1stWeek of June 2017	After Mansoon	2ndWeek of January2018	
11	TLDP-IV	Last Week of June 2017	After Mansoon	1stWeek of February2018	
12	Teesta-III				

Members may update.

Testing of DG sets meant for Black start

Test run report of DG sets for blackstart has been received only from Odisha hydro units. The test run reports of other machines may be sent to erldc.cal@gmail.com and erldcoutage@gmail.com.

Constituents may kindly ensure compliance.

Item No. B.35: Restricted Governor /Free Governor Mode Operation of generators in ER

The latest status of units of ER under RGMO is available at ERPC website (http://www.erpc.gov.in/) under Operation>Important data.

*In 126th OCC requested all the generators to share their governor response with ERLDC in the group (**https://in.groups.yahoo.com/neo/groups/ er_gov_respons/info**). Members may also send their request for joining the group to **erldcprotection@gmail.com**.*

In 136th OCC, ERLDC informed that as per CERC order dated 31st July 2017 in Petition No. 84/MP/2015, the commission directed the following:

a) *Considering the fact that further measures have been put in place to facilitate desirable primary response, the Commission, starting from the month of September, 2017 shall be closely watching the primary response of ISGSs as reported by POSOCO/NLDCs. At the State level, SLDCs shall report the frequency response of intra-State generators to the concerned SERCs.*
b) *NLDCs and SLDCs through the assistance of POSOCO shall start the process of selecting independent third parties capable of undertaking periodic checkups to monitor the RGMO/FGMO response. To start with selected independent third parties shall be sent to the generating stations which are not providing the desired RGMO/FGMO response. Independent Third Parties shall ensure that the generator has not, in any way, prevented/disabled the governor from providing the desired response. In case, even after enabling the governors, units are not able to provide the desired response as per the provisions of the Grid Code, third parties, based on the submissions of the generators, shall bring out the technical constraints, if any, which limit the primary response of the units.*
c) *All ISGSs are directed to provide primary response compulsorily in terms of Regulation 5.2 (f), (g), (h) and (i) of the Grid Code failing which we would not hesitate in initiating action under Section 142 of Electricity Act, 2003 for not providing desired RGMO/FGMO response without any valid reasons.*

ERLDC had uploaded the unit wise responses in the group "er_gov_respons@yahoogroups.co.in." i.r.o the following events for monitoring of RGMO response of generator:

(1) On 16.08.17,at 12:18 Hrs, 400 kV Rangpo-Teesta (III) line tripped on B-N fault resulting in generation loss of 879 MW and 100 MW in Teesta and Dikchu stations respectively.

ERLDC may update.

CERC vide their letter dated 05-06-17 desired to know the present status of RGMO/FGMO response of all eligible thermal and hydro units. Accordingly ERLDC vide letter no.ERLDC/SS/FGMO/2017 dated 07-06-17 requested all concerned power stations and SLDCs to provide updated status of FGMO/ RGMO of units under their control.

134th OCC advised all the constituents to go through the list and update the latest status vide mail to ERPC/ERLDC.

ERPC vide letter dated 6th July 2017 advised all the generators to update the latest status of RGMO/FGMO.

*Updated status of the RGMO/FGMO of ER generators are enclosed in **Annexure-B35**. The list is also available in ERPC website.*

NHPC vide letter dated 7th September 2017 informed that as per 5th amendment 2017, the lower limit for hydro generators to provide RGMO/FGMO is 25 MW. Hence, Rangit units (3 x 20 MW) will not come under RGMO/FGMO.

Members may update.

Item No. B.36: Status of state owned units under long outage --ERLDC

Numbers of units of state sector were decommissioned during recent days/months. As per the letter received from DVC on date 08th August, 2017, CTPC U#2, BTPS U#1&2 are under the process of de-commissioning as they have crossed their useful life and compliance of prevailing pollution norms is not feasible and CTPS U#1 is already de-commissioned.

In 136th OCC, It was informed that DVC has already furnished their status.

OCC advised West Bengal and Odisha generating units to submit their status to ERLDC and ERPC.

All state sectors may update the latest status of units under de-commissioned or in the process of de-commissioning.

Item No. B.37: Reactive Power performance of Generators and optimisation of Transformer tap

Generating stations have been monitored for certain sample dates in the month of August,17.

Power Plant	Max and Min Voltage observed for August 17 (KV)	Date for monitoring (July 17)
Farakka STPS	424,404	13,26
Khalgaon STPS	423,404	13,1
Talcher STPS	410,398	19,2

Teesta	418,395	31,1
Bakreshwar TPS	411,391	20,19
Kolaghat TPS	423,394	13,1
Sagardighi TPS	425,406	2,27
MPL	420,407	1,27
Mejia-B	422,411	12,26
DSTPS	428,412	16,18
Adhunik TPS	426,410	2,21
Barh	433,411	12,1
JITPL	415,404	21,23
GMR	415,406	13,1
HEL	429,391	15,1
Kodarma	425,402	9,27

ERLDC may present the reactive performance.

a) Schedule for reactive capability tests

The following was status of regarding reactive capability testing:

a. Adhunik TPS(both units) –Yet to be confirmed by Adhunik
b. JITPL(both units) – After the emergent inspection of OEM(BHEL)
c. Barh TPS – December 2017
d. Raghunatpur – by December 2017
e. GMR (Three units)
f. Haldia TPS

The reactive capability test of HEL units were carried out on 6th September 2017. HEL informed the following:

1. Lagging reactive capability test done at full load. Leading reactive capability test could not be performed due to low 400 KV bus voltage.
2. At low load tests are pending due to unavailability of required load export schedule.

The report will be submitted after carrying out pending capability tests.

Members may update.

b) Transformer tap optimisation of Eastern Region :

1. Present tap position of 220/132KV, ICTs at Malda is 10(ten). Based on operational study, the voltage may be optimised by changing transformer tap from 10 to 8.
2. Tap position of 220/132KV, 160MVA ICT at Lalmatia is set to 5(five). For improvement of 132kV voltage, the tap position may be changed from 5 to 7(Seven).

In 136th OCC, it was decided to change the tap of 220/132 kV Malda ICTs from 10 to 8 and Lalmatia ICT tap on later stage.

Members may update.

PART C:: OPERATIONAL PLANNING

Item no. C.1: ER Grid performance during August, 2017

The average consumption of Eastern Region for August - 2017 was 407 Mu. Eastern Region has achieved record maximum energy consumption of 434 Mu on 26th August-17. Total Export schedule of Eastern region for August - 2017 was 2378 Mu, whereas actual export was 2166 Mu.

ERLDC may present.

Item no. C.2: OPERATION OF HYDRO POWER PROJECTS IN PEAKING MODE

CEA vide letter dated 18.07.17 informed that POSOCO has carried out operational analysis of various hydro stations in the country and observed that despite 40.6 GW of peaking hydro capacity only about 33 GW peak generation is carried out on all India basis. According to POSOCO, this is on account of a number of hydro stations, particularly in state sector, which are not being operated in peaking mode. In order to examine the above observation, a Sub-committee has been constituted by the MoP under Chiarperson, CEA with heads of POSOCO, NHPC, SJVN & THDC as members and Director (H), MoP as the Member Convenor. The Sub-Committee has held three meetings with the concerned hydro generating stations and concluded that there is scope for about 2000 MW additional power generation from hydro stations during peak hours.

It has been desired by the Chairperson that the matter of utilization of hydro stations in peaking mode be made a regular agenda item for discussion at the monthly OCC meetings while discussing operational planning for the month ahead and analyzing the operation in the previous month.

In 135th OCC, ERLDC presented the performance in peaking mode for hydro generations in Eastern Region.

OCC decided to review the performance of hydro generators in peaking mode in monthly OCC meetings

As informed by ERLDC, during review it was observed numbers of hydro units of state sectors were under outage due to various reasons and also some units were running at de-rated capacity compare to their installed capacity.

In this regards, it is requested to all State (through SLDC), ISGS and IPP owned hydro generators to update the status of the hydro units on bar, hydro units under outage along with reason to ERLDC and ERPC on daily basis in the following format. Hydro units which are unable to generate as per installed capacity may be intimated to RLDC and RPC on monthly basis.

Hydro unit outage status:

S.No	Station	Location	Owner	Unit No	Capacity	Reason(s) of Outage	Outage Date	Outage Time	Expected Revival Date
1.									
2.									
n.									

Hydro Units running at De-rated Capacity:

S.No	Station	Location	Owner	Unit No	Capacity	De-Rated capacity	Reason of operation at De-rated
1.							
2.							
n.							

In 136th OCC, all the hydro generators were advised to submit the requisite data to ERLDC and ERPC in the prescribed format on regular basis.

ERLDC informed that they have received daily hydro outage status report from SLDC, Odisha regularly. Daily outage reports from SLDC, WBSETCL & SLDC, JUSNL on daily basis to ERLDC is still pending. IPPs are also advised to send daily outage status report to ERLDC in case of outage of units at their respective stations.

SLDC, WBSETCL, JUSNL and IPPs may comply.

Item no. C.3: Anticipated power supply position during October'17

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of October'17 were prepared by ERPC Secretariat on the basis of Provisional LGBR for 2015-16 and feedback of constituents, keeping in view that the units are available for generation and expected load growth etc. is at **Annexure-C.3**.

Members may confirm.

Item no. C.4: Shutdown proposal of transmission lines and generating units for the month of October'17

Members may finalize the Shutdown proposals of transmission lines and generating stations for the month of October'17 as placed at **Annexure-C.4**.

ERLDC may place the transmission line shutdown. Members may confirm.

Item no. C.5: Prolonged outage of Power System elements in Eastern Region

(i) Thermal Generating units:

Sr. No	Generating Station	UNIT NO	CAP(MW)	REASONS FOR OUTAGE	OUTAGE DATE
1	GMR	2	350	COAL SHORTAGE	15-Aug-17
2	JITPL	1	600	COAL SHORTAGE	5-May-17
3	TENUGHAT	1	210	COAL SHORTAGE	5-Sep-17
4	SAGARDIGHI	4	500	COAL SHORTAGE	10-Sep-17
5	SAGARDIGHI	1	300	COAL SHORTAGE	15-Sep-17
6	BOKARO B	3	210	COAL SHORTAGE	24-Jun-17
7	ADHUNIK	2	270	FLAME FAILURE INITIALLY ,LATER GENERATOR VIBRATION	7-Sep-17
8	RAGHUNATHPUR	2	600	FURNACE PRESSURE HIGH	9-Aug-17
9	KOLAGHAT	6	210	STATOR EARTH FAULT	11-Jun-17
10	MEJIA	3	210	ROTOR EARTH FAULT	22-Aug-17

11	WARIA	4	210	BOILER TUBE LEAKAGE	26-Jul-17
12	IB THERMAL	1	210	BOILER TUBE LEAKAGE	14-Sep-17

(ii) Hydro Generating units:

Sr. No	Generating Station	UNIT NO	CAP(MW)	REASONS FOR OUTAGE	OUTAGE DATE
1	BURLA	5	37.5	R & M WORK	25.10.2016
2	BURLA	1	50	R & M WORK	05.08.2016
3	BURLA	6	37.5	R & M WORK	16.10.2015
4	CHIPLIMA	3	24	R & M WORK	15.10.2015
5	BALIMELA	1	60	R & M WORK	05.08.2016
6	U.KOLAB	2	80	Repair of MIV & Draft tube gate leakage	28.05.2017
7	RENGALI	5	50	Hoist gate problem	21.03.2017
8	RENGALI	1	50	Stator Earth fault	08.09.17
9	U.KOLAB	3	80	Generator stator problem & MIV tunnion leakage	19.04.2017

(iii) Transmission elements

Transmission Element / ICT	Agency	Outage Date	Reasons for Outage
220 KV BALIMELA - U' SILERU	OPTCL / APSEB	27.04.15	LINE IDLE CHARGED FROM UPPER SILERU END AT 12:42 HRS OF 25.01.17
400 KV STERLITE - MERAMUNDALI D/C	OPTCL	15.05.17	TOWER CROSS ARM DAMAGED
220 KV THERUVALI-INDRAVATI-III	OPTCL	16.07.17	TOWER COLLAPSE At loc 69 and loc70 due to flood
220 KV THERUVALI-INDRAVATI-IV	OPTCL	16.07.17	TOWER COLLAPSE At loc 69 and loc70 due to flood
400KV MOTIHARI-BARH-I & II	DMTCL	14.08.17	24 NO OF TOWERS IN GANDAK RIVER WHERE WATER LEVEL IS HIGH
132 PURNEA(PG)-KISHANGUNG(BSEB)	BSEB/PG	08.09.17	TO REDUCE LOADING OF 132 KV kishangunJ(new)-kishangunj(old) D/C.
400 KV ROURKELA-RAIGARH	POWERGRID	15.09.17	S/D TILL 25.09.17 FOR DIVERSION WORK FOR NEW RAILWAY LINE
400 KV JARSUGUDA-RAIGARH-I	POWERGRID	15.09.17	S/D TILL 25.09.17 FOR DIVERSION WORK FOR NEW RAILWAY LINE
PURNEA-MADHEPURA-II	BSEB/POWERGRID	17.09.17	Y-B-N FAULT/LINE UNDER PATROLLING.

(Reported as per Clause 5.2(e) of IEGC)

Members may update.

Item no. C.6: Status of commissioning of generating station and transmission elements

New generating units:

S.No.	Power Plant	Plant Size	Expected date

New transmission elements:

Sl No.	Name of Element	Expected date
1	400kV Rajarhat-Purnea D/C (with LILO of one circuit each at Farakka and Gokarno)	
2	Augmentation of 400kV Farakka-Malda D/C with HTLS conductor	
3	400kV Ind-Bharath-Jharsuguda D/C	
4	400kV Talcher-Bramhapur-Gazuwaka D/C	
5	400kv Talcher-Rourkella(2nd D/C-Quad)	
6	400kV Sterlite-Jharsuguda D/C	
7	765kv Anugul-Srikakulum D/C	
8	400kV Sasaram-Daltonganj D/C &Daltonganj S/Stn	
9	400 kV Ranchi-Raghunathpur D/C	
10	220 kV TLDP-IV – NJP ckt-2	
11	220 kV Bidhansai-Cuttack D/C	
12	220kV Gola- Ranchi	

Members may update.

PART D:: OTHER ISSUES

Item no. D.1: UFR operation during the month of August'17

System frequency touched a maximum of 50.20 Hz at 06:03 Hrs of 20/08/17 and a minimum of 49.65 Hz at 19:13 Hrs of 08/08/17. Hence, no report of operation of UFR has been received from any of the constituents.

Members may note.

Item no. D.2: Non-compliance of directions issued by SLDC

Vide clause no 5.5.1.(c)(h) of IEGC, non-compliance of SLDC directions by SEB/Distribution licenses/bulk consumers to curtail overdrawal are to be reported to ERLDC for incorporating the same in weekly report to be prepared and published by ERLDC.

All SLDCs are to inform ERLDC the instances of non–compliance of SLDC directions by SEB/Distribution licenses/bulk consumers to curtail overdrawal, within two days after the day of operation.

No report from any constituent has yet received. Hence, ERLDC would be considering 'Nil' report for all constituents for August'17.

Members may note.

Item no. D.3: Grid incidences during the month of August, 2017

Sr No	GD/ GI	Date	Time	S/S involved	Summary	Load loss (MW)	Gen loss (MW)
1	GD-I	01/08/2017	13:07	Meramundali	At 13:07 hrs, one mentally challenged person entered into the substation and tried to climb the switchyard tower. To avoid unwanted accident all the emanating lines / ICTs from 220KV Meramundali were hand tripped.	120	30
2	GD-I	03/08/2017	11:45	Hatia	220 kV Ranchi - Hatia D/C and 220 kV Patratu - Hatia D/C along with all 220/132 kV ATR at Hatia end tripped due to DC failure of Hatia S/S.	78	0
3	GD-I	04/08/2017	13:46	Dikchu	400 KV Teesta III-Dikchu S/C tripped at 13:46 Hrs due to operation of directional O/c relay at Teesta III end. Same line did not trip from Dikchu end. In PMU data, no voltage dip has been observed. As per Teesta III end DR of 400 kV Teesta III Dikchu S/C, Dir. O/C picked up at 13:46:27.677 hrs, B phase current was 1.3 kA. As per Teesta III end DR of Teesta III Rangpo Cable, B/up O/C and B/up E/F picked up at 13:46:27.462 hrs. Initially current was high (1.3 kA) in all three phases. Later B phase current reduced. (final f/C 1kA)	0	101
4	GD-I	11/08/2017	16:05	Bakreswar	At 16:05 hrs all elements connected to Bakreswar 220 kV bus - I along with unit #III & #IV tripped due to operation of bus bar protection (96A) and Bus bar differential (87C, Check zone). At the same time R-N fault has been reported at 0.5 km from Bakreswar in 220 kV Bakreswar - Sadaipur - II. In PMU data, no fault has been captured at 16:05 hrs. However a 23 kV voltage dip in R phase has been observed at 16:01 hrs, which was cleared within 80 ms.	0	284
5	GD-I	12/08/2017	14:51	Sasaram	While availing emergency s/d of 220 kV bus I (East side) at Sasaram, HVDC Sasaram B/B, along with 765/400 kV 1500 MVA ICT - I and 400/220 kV ICT - I & II tripped resulting tripping of all 220 kV feeders eliminating from Sasaram followed by total supply of failure at 220 kV switchyard at Sasaram. As per preliminary information, while transferring all elements to 220 KV Bus II from 220 kV bus I, flashover occurred in 220 kV Bus - I side isolator of 400/220 kV ICT-II. It is suspected that isolator wasn't properly switched off before closing the earth switch.	209	0
6	GD-I	14/08/2017	08:55	Purnea	132 kV Supaul - Phoolparas D/C, 132 kV Kataiya - Duhabi S/C and 132 kV Kataiya - Forbisgunj T/C were under breakdown due to flood condition. At 08:55 hrs 220 kV Purnea - Madhepura D/C tripped on Y-B-N fault causing power failure at Madhepura, Supaul & Kataiya.	60	0

7	GD-I	16/08/2017	12:18	Teesta III	At 12:18 Hrs, 400 KV RANGPO - TEESTA-3 S/C tripped on B-N fault (Rangpo end: B-N, Z-II, F/C 4.49 kA, 54.7 km; Teesta III end: B-N, Z-I) resulting in outage of units # I, II, III, IV, V & VI (879 MW) at Teesta - III and unit I & II at Dikchu (100 MW) due to loss of evacuation path. Attempt was taken to charge the line from Rangpo end at 12:41 hrs but it immediately tripped in SOTF.	0	979
8	GD-I	21/08/2017	13:50	Banka	At 13:04 Hrs, 132 KV Banka-Sultanganj D/C tripped due to B-N fault. While attempting charging of Ckt II at 13:30 Hrs, it tripped on SOTF. Along with this line, both 400/132 KV ICTs at Banka also tripped.	84	0
9	GD-I	27/08/2017	07:36	Waria	Due to massive fire hazard at 132/33/3.3 kV station transformer # III at Waria all 220 kV and 132 kV feeders are hand tripped resulting in total power failure at surrounding area. In Durgapur PMU data, delayed clearance (700 ms) of Y-B phase fault (15 kV voltage dip) has been observed at 07:35 hrs.	323	0
10	GD-I	28/08/2017	13:25	CTPS B	Due to bursting of R phase CT of U # VIII GT at CTPS B, 220 KV CTPS B-CTPS A-I, 220 KV CTPS B- Dhanbad-II, 220 KV CTPS B-Bokaro B-I & CTPS B unit # 7 and # 8 tripped along with bus - I at CTPS - B. Consequently 400/220 kV ICT at Bokaro A loading became more than 299 MW. After opening of 220 kV Bokaro B - Jamshedpur D/C and 220 kV Dhanbad - Giridih D/C at 13:30 hrs, ICT loading got reduced to 255 MW. Further at 15:15 hrs, 132 kV Bokaro - Konar S/C and 132 kV Bokaro - Bari S/C were opened to reduce 400/220 kV ICT loading.	0	406
11	GD-I	30/08/2017	05:15	Rangit	At 5:15 hrs. 132 KV Siliguri-Kurseong S/C, 132 KV Siliguri Melli S/C and 132 KV Rangit-Rangpo S/C tripped on R-B-N fault. As a result, all running units of Rangit(3 x 20 MW) tripped on over frequency and subsequently,132 KV Rangit-Kurseong S/C and 132 KV Rangit-Sagbari S/C were hand tripped.	2.5	60
12	GD-I	31/08/2017	00:39	Rangit	At 00:39 hrs. 132 KV Siliguri-Kurseong S/C, 132 KV Siliguri Melli S/C and 132 KV Rangit-Rangpo S/C tripped on R-B-N fault. As a result, all running units of Rangit(3 x 20 MW) tripped on over frequency and subsequently,132 KV Rangit-Kurseong S/C and 132 KV Rangit-Sagbari S/C were hand tripped.	3.5	60

Members may note.

Item no. D.4: Reporting of voltage deviation indices (VDI) for select S/Stns in ER

ERLDC submitted the Voltage Deviation Index (VDI) of selected 400 kV Sub-stations for August, 2017 of Eastern Region which is enclosed at **Annexure- D.4**.

Members may note.

Item no. D.5: Additional agenda

****

Station name

Organisation

Annex-I (1 of 2)

Unit wise yearly generation Program for the year 2018-19

1. Contact Details

Sr. no	Name	Designation	email	Phone no.	Fax. no.
1					
2					

2. Units existing on 31.03.2017

Unit No.	Capacity (MW)	Date of commissioning	2017-18 generation details (MU)				2018-19 generation details (MU)			Remarks
			Program for 2017-18	Total Anticipated Gen for Sept 17 to March 18 (MU)	Total Anticipated Gen for 2017-18 (MU)	Reason for low generation (if any)	Anticipated maximum Generation capability (MU)	Anticipated Generation (MU)	Reason for variation from Maximum Capability	

3. Units Commissioned during 2017-18

Unit No.	Capacity (MW)	Date of commissioning	2017-18 generation details (MU)				2018-19 generation details (MU)			Remarks
			Program for 2017-18	Total Anticipated Gen for Sept 17 to March 18 (MU)	Total Anticipated Gen for 2017-18 (MU)	Reason for low generation (if any)	Anticipated maximum Generation capability (MU)	Anticipated Generation (MU)	Reason for variation from Maximum Capability	

4. Units likely to be commisioned during 2018-19

Unit No.	Capacity (MW)	Expected date of commissioning	Expected Generation 2018-19 (MU)	Remarks

Note: Please furnish the month-wise break-up of yearly generation in a separate Sheet keeping the similar format.

5. Loss of Generation due to Grid Constraints/ Low schedules /fuel related issues during 2017-18

Transmission Constraints/ power evacuation problems/ low schedule/high fuel c

S No.	Details of the Constraint	Loss so far (Apr'17-Aug'17)		during 2017-18	
				Anticipated Period of constraint	Anticipated loss of generation (MU)

6. PPA details

Capacity (MW)	With DISCOM			With State Trading Cos.				With PTC / other trading cos.				Untied (MW)
	State of Discom	Quantum (MW)	Duration (Yrs)	Quantum (MW)	b/b PPA with Discom (name of Discom)	quantum of b/b PPA in MW	Duration of b/b PPA (Years)	Quantum (MW)	b/b PPA with Discom (name of Discom)	quantum of b/b PPA in MW	Duration of b/b PPA (Years)	

7(a)Coal Linkage for coal based plants

Unit No	Domestic linkage (MT)	Source	PLF from this coal linkage during the year (%)

7(b)Gas availibility for gas based stations

Varoius sources	Figures in MMSCMD	PLF from this gas availibility during the year (%)

8. Cost of Generation:

Unit No	Cost of Gen. (Paise/kwh)	Rate of Sale of Power (Paise/kwh)

Planned maintenance Schedules including R&M activities

A) **R&M of Units likely to be completed during 2017-18 & 2018-19**

Station name	Unit No.	Capacity (MW)	R&M Schedule	
			From date	To date

B) **Annual Overhaul/ Boiler overhaul**

Station name	Unit No.	Capacity (MW)	AOH Schedule	
			From date	To date

C) **Capital Overhaul**

Station name	Unit No.	Capacity (MW)	COH Schedule	
			From date	To date

D) **Other maintenance if not included above such as PG tests (new units) and Boiler inspection**

Station name	Unit No.	Capacity (MW)	Schedule		Reason
			From date	To date	

Annexure-B12

BIHAR STATE POWER TRANSMISSION COMPANY LTD: PATNA
Registered Office: 4th Floor, Vidyut Bhawan, Baily Road, Patna
Corporate Identity No. (CIN) U40102BR2012SGC018889Web site- www.bsptcl.in

Standard Operating Procedure (S.O.P.)

Case-I: In case of outage of 315 MVA ICT of Patna (PG) & 500 MVA ICT remaining in service

Action to be taken:

1. [illegible]s tripping of 220 kV Patna (PG) - Fatuha T/L may be done in Consultation with PG & SLDC [illegible] to avoid overloading of 500 MVA ICT, as recommended by PGCIL.
2. (a) Khagaul GSS will shed Bihta & Digha GSS immediately to get instant relief of approx 150 MW.
   (b) In case of synchronized state of 220 KV Patna(PG)-Khagaul-Ara (PG) loop, if 500 MVA ICT still gets overloaded after operation of (a) then incomer of 220 KV Patna (PG) & Sipara line will be isolated at Khagaul GSS **(in anticipation to post facto approval of ERLDC).**
   (c) In case of Khagaul is not synchronised with Ara (PG), SLDC will reduce load of Sasaram(PG)-Ara(PG) both ckt, subsequently ERLDC shall be requested for extending power from Khagaul to Arrah(PG) for synchronization. Then incomer of 220 KV Patna (PG) & Sipara will be isolated at Khagaul GSS **(in anticipation to post facto approval of ERLDC).**
   (d) Then Power to Khagaul will be available from Ara (PG)
   (e) SLDC will reschedule all connected GSS to ensure power availability at Khagaul GSS.
3. After stabilization of system at Khagaul, Khagaul will take action for reduction of rural load & restoration of PSS connected to Digha & Bihta etc. as per availability of power and in guidance of SLDC.

Case-II: In case of outage of 500 MVA ICT of Patna (PG) & 315 MVA ICT remaining in service

Action to be taken:

1. Simultaneous tripping of **220 KV Patna (PG)-Khagaul, 220 KV Sipara-Khagaul & 220 KV Patna (PG)-Fatuha** Trans. Lines may be done through relay, as recommended by PGCIL.
2. Under this condition power to 220 KV Khagaul will remain zero from Patna (PG) and Sipara (BSPTCL).
3. 250 MW power will be available at Patna (PG) which will be used for 132KV power supply to Jakkanpur, Mithapur & Karbigahiya. All 33 KV feeders at Sipara GSS will be disconnected.
4. Since, Khagaul is not synchronized with Ara (PG), SLDC will reduce load of Sasaram(PG)-Ara(PG) both ckt, subsequently ERLDC shall be requested for extending power from Arrah (PG) to Khagaul.
5. After stabilization of system at Khagaul, Khagaul will take action for restoration of its own load along with that of Digha, Bihta GSS & Traction load, as per availability of power in accordance with guidance of SLDC.

Case-III: In case of outage of both 315MVA & 500MVA ICT at Patna (PG)

Action to be taken:

1 Simultaneous tripping of **220 KV Patna (PG)-Khagaul, 220 KV Sipara-Khagaul & 220 KV Patna (PG)-Fatuha** Trans. Line may be done through relay, as recommended by PGCIL.
2 Under this condition, power to 220 KV Khagaul will remain zero from Patna (PG) and Sipara (BSPTCL).
3 Sipara will avail power from 220 KV Sipara- Fatuha line, then after transformation to 132KV it will be extended to Jakkanpur.
4 In case of unavailability of 220 kV Sipara-Fatuha line:
   (a) Isolate Fatuha power which is being feed to Masaudhi via transfer bus of Sipara.

(13)

(b) Fatuha will extend power to Sipara (up to 125 MW) and subsequently Sipara will extend it to Mithapur, Karbigahia & Jakkanpur.

5 The load allocation to Mithapur shall be done by SLDC considering the limit of loading of Biharsarif(PG) & associated 220KV Biharsarif(SG)-Fatuha transmission line.

6 Masaudhi & Jahanabad GSS will avail power from Gaya GSS (L-33) with suitable power allocation.

7 Isolation of rural load of Fatuha & Katra shall be done by respective GSS.

Case-IV: In case one ckt of 220 KV D/C Patna (PG)-Sipara goes under breakdown.

Action to be taken:

1. Simultaneous tripping of **220KV Patna (PG)-Khagaul & 220KV Sipara-Khagaul** line may be done through Relay.
2. Power to Khagaul from Patna(PG) will then be zero to avoid bulk load & tripping on overloading.
3. Then, Khagaul will avail power through 220 KV Patna (PG)-Khagaul line keeping Bihta and Digha GSS shaded.
4. After stabilization of system at Khagaul, Khagaul will take action for reduction of rural load & restoration of PSS connected to Digha & Bihta etc. as per availability of power and in guidance of SLDC.

Case-V: In case of 220KV D/C Patna (PG)-Sipara both goes under breakdown.

Action to be taken:

1. Simultaneous tripping of **220KV Patna (PG)-Khagaul & 220KV Sipara-Khagaul** line may be done through Relay.
2. Power to Khagaul from Patna (PG) will be zero to avoid tripping of line in overload due to bulk load and reverse power flow i.e. from Khgaul to Sipara (on single ckt of Patna(PG)-Khagaul).
3. Since, Sipara is powerless, it will avail power through 220 KV Sipara – Fatuha line then after transformation to 132KV it will be extended to Jakkanpur. Simultaneously, rescheduling of load at Fatuha, Katra, Gaighat, Jakkanpur, Mithapur & Karbigahiya will be done.
4. In case of unavailability of 220 kV Sipara-Fatuha line:
   (a) Isolate Fatuha power which is being feed to Masaudhi via transfer bus of Sipara.
   (b) Fatuha will extend power to Sipara (up to 125 MW) subsequently Sipara will extend it to Mithapur, Karbigahia & Jakkanpur.
5. The load allocation to Mithapur shall be done by SLDC considering the limit of loading of Biharsarif(PG) & associated 220KV Biharsarif(SG)-Fatuha transmission line.
6. Masaudhi & Jahanabad GSS will avail power from Gaya GSS (L-33) with suitable power allocation.
7. Isolation of rural load of Fatuha & Katra shall be done by respective GSS.
8. Then, Khagaul will avail power through 220 KV Patna (PG)-Khagaul line keeping Bihta and Digha GSS shaded.
9. After stabilisation of system at Khagaul, Khagaul will take action for reduction of rural load & restoration of PSS connected to Digha & Bihta etc. as per availability of power and in guidance of SLDC.

Case-VI: In case of 132KV D/C Sipara-Jakkanpur goes under breakdown.

Action to be taken:

1. Extend Mithapur Power to Jakkanpur via Karbigahia , The total load of Jakkanpur will be restricted to 70 MW only &33 kv Power for Karbigahia shall be regulated as per instruction of SLDC

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Case-VII: In case of 220KV D/C Biharsarif-Fatuha line goes under breakdown.

Action to be taken:

1. Isolation of Masaudhi & Jahanabad from Fatuha and shall be shifted on Gaya GSS with suitable power allocation.
2. GSS Katra, Gaighat & Fatuha shall be rescheduled by SLDC as per availability of power at Patna (PG).

Case-VIII: In case of either 13KV Fatuha-Gaighat or Fatuha-Katra line goes under breakdown.

Gaighat GSS & Katra GSS are interconnected at 132 KV level as such these grids can share load available at other end.

Case I:-In case 132 KV Fatuha-Gaighat lines goes under breakdown, Gaighat can draw full load from GSS Katra as the transmission line capacity of 132 Fatuha-Katra is 150 MW.

Case II:-In case 132 KV Fatuha-Katra line goes under breakdown, GSS Katra may avail load up to the extent load of Katra & Gaighat is 120 MW. As soon as load reaches peak of 120 MW, some rural feeder of Katra may be shaded or Katra PSS may be shifted on Fatuha GSS.

(Perwez Alam) ESE, Telecom & ULDC	(A. K. Choudhary) ESE, TC, Patna	(Premjeet Kumar) ESE, SLDC	(R. K.Gopal) ESE,Tr.(O & M)
18/09/17	18/9/17		18/9/17
(H. R. Panday) CE (SO)	(S.B. Prasad) CE, Trans (O &M)	(J.P. Singh) GM-cum-CE Trans Zone, Patna	

Item No:B20 Failure of RTU data with the outage of ICTs of Patna and Biharshariff station

- POWERGRID may update the status of extending UPS to RTUS for Patna and Biharshariff station.
- As per input from POWERGRID ,for following listed 17 nos of stations (having communication equipments) DCPS need to be replaced.

1. RSCC, Kolkata
2. CPCC, Durgapur
3. Kanchanpur
4. Barkot
5. Jamui
6. Maldah
7. Siliguri 400 kV
8. Jamshedpur 400 kV
9. Siliguri 220 kV
10. Rengali
11. Birpara
12. Rourkela
13. Purnea 220 kV
14. Indravati
15. Muzaffarpur 400 kV
16. Biharsharif 400 kV
17. Sasaram HVDC

– **The above list is also available in Report of RTU / SAS replacement in Eastern Region dated 10-08-2017**.

Item No B21: Shifting of communication links for PMUs reporting to ERLDC

- Updated status as on 29-08-2017

S/N	Location	Station type	Commmunicatio channel
1	**Binaguri**	400/220KV Substation	Shifted to POWERGRID ULDC wideband on 16 June,2017
2	**Biharshariff**	400/220KV Substation	Shifted to POWERGRID ULDC wideband on 24th November ,2015
3	**Patna**	400/220KV Substation	**2 MBPS PDT link from Patna to ERLDC , Kolkata**
4	**Farakka**	400 kV Generating Station.	**E1 link**
5	**Ranchi**	400/220KV Substation	**E1 link**
6	**Rourkela**	400/220KV Substation	**E1 link (In progress)**
7	**Talcher**	400 kV Generating Station.	**E1 link**
8	**Jeypore**	400/220KV Substation	**E1 link**
9	**Durgapur**	400/220KV Substation	**E1 link (In Progress)**
10	**Jamshedpur**	400/220KV Substation	**E1 link**
11	**Sasaram**	765/400/220 kV SubStation	Shifted to POWERGRID ULDC wideband on 24th November ,2015
12	**Rengali**	400/220KV Substation	Shifted to POWERGRID ULDC wideband on 17 April,2017

- POWERGRID is requested to update the status and action plan.

OWNERSHIP DETAILS

Annexure-B24

SL. NO	TIE-LINE	LINE OWNED BY	FROM END				TO END			
			Bay equip Ownership	Responsibility of maintaining bay eqp.	Responsibility of ensuring Real Time data	Responsibility of sending RI/DR/EL	Bay equip Ownership	Responsibility of maintaining bay eqp.	Responsibility of ensuring Real Time data	Responsibility of sending RI/DR/EL
A) 765 KV LINES										
1	GAYA-VARANASI	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
2	GAYA-BALIA	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
3	PUSAULI-FATEHPUR	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
4	RANCHI(NEW)-DHARAMJAYGARH	POWERGRID	POWERGRID(ER)				POWERGRID(WR)			
5	JHARSUGUDA-DHRAMJAYGARH	POWERGRID	POWERGRID(ER)				POWERGRID(WR)			
6	ANGUL-SRIKAKULAM	POWERGRID	POWERGRID(ER)				POWERGRID(SR)			
7	ANGUL-JHARSUGUDA	POWERGRID	POWERGRID				POWERGRID			
B) 400 KV LINES										
7	MUZZFARPUR-GOROKHPUR	POWERLINKS	POWERGRID(ER)				POWERGRID(NR)			
8	PATNA-BALIA	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
9	BIHARSHARIFF-BALIA	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
10	BIHARSHARIFF-VARANASI	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
	BARH-MOTIHARI	L(LILO)	POWERGRID(ER)				DMTCL			
	MOTIHARI-GOROKHPUR	L(LILO)	DMTCL				POWERGRID(NR)			
12	SASARAM(N) -SARNATH	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
14	SASARAM(N) -ALLAHABAD	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
15	BINAGURI-BONGAIGAON-I, II	POWERGRID	POWERGRID(ER)				POWERGRID(NER)			
16	AILPURDUAR-BONGAIGAON-I, II	**PGCIL(LILO)**	POWERGRID(ER)				POWERGRID(NER)			
20	TEESTA V-RANGPO	POWERGRID	NHPC				POWERGRID			
21	SEL-RAIGARH	POWERGRID & SEL	SEL				POWERGRID(WR)			
22	JHRASUGUDA-IBEUL	IBEUL	POWERGRID				IBEUL			
23	JHRASUGUDA-RAIGARH	IBEUL	POWERGRID(ER)				POWERGRID(WR)			
24	ROURKELA-RAIGARH	POWERGRID	POWERGRID(ER)				POWERGRID(WR)			
25	ROURKELA-SEL	POWERGRID & SEL	POWERGRID				SEL			
26	RANCHI -SIPAT	POWERGRID	POWERGRID(ER)				POWERGRID(WR)			
28	FARAKKA-BEHRAMPUR	POWERGRID	NTPC				POWERGRID			
29	FARAKKA-SAGARDIGHI	POWERGRID	NTPC				WBPDCL			
30	FARAKKA - MALDA	POWERGRID	NTPC				POWERGRID			
31	FARAKKA - PARULIA	POWERGRID	NTPC				POWERGRID			
32	KAHALGAON -BANKA	POWERGRID	NTPC				POWERGRID			
34	SAGARDIGHI-BEHRAMPUR	POWERGRID	WBPDCL				POWERGRID			
35	SAGARDIGHI-SUBHASGRAM	POWERGRID	WBPDCL				POWERGRID			
36	SAGARDIGHI-PARULIA	WBSETCL	WBPDCL				POWERGRID(ER)			
38	JEERAT-SUBHASGRAM	POWERGRID	WBSETCL				POWERGRID			
39	SUBHASGRAM(PG)-HALDIA	HEL	POWERGRID				HEL			
40	PARULIA-BIDHANAGAR	WBSETCL	POWERGRID				WBSETCL			
41	KHARAGPUR-BARIPADA	WBSETCL & OPTCL	WBSETCL				POWERGRID(ER)			
45	DSTPS - JAMSHEDPUR	POWERGRID	DVC				POWERGRID			
46	KODERMA-BIHARSARIFF	POWERGRID	DVC				POWERGRID			
51	RAGUNATHPUR-MAITHON	POWERGRID	DVC				POWERGRID			
52	JAMSEDPUR-AHUNIK	APNRL	POWERGRID				APNRL			
53	JAMSHEDPUR-TISCO	POWERGRID	DVC				POWERGRID			
55	JEYPORE-GAZUWAKA	POWERGRID	POWERGRID(ER)				POWERGRID(SR)			

58	INDRAVATI-INDRAVATI	OPTCL	POWERGRID(ER)				OPTCL				
59	TSTPP-MERAMUNDALI	POWERGRID	NTPC				OPTCL				
61	BARIPADA-NEW DUBURI	POWERGRID	POWERGRID(ER)				OPTCL				
62	MENDHASAL-NEW DUBURI	OPTCL	POWERGRID(ER)				OPTCL				
64	TSTPP - RENGALI	POWERGRID	NTPC				POWERGRID				
65	KHARAGPUR-CHAIBASA	PKTCL	WBSETCL				POWERGRID				
66	MENDHASAL-PANDIABILI	POWERGRID	OPTCL				POWERGRID				
67	BARIPADA – PANDIABILI	POWERGRID	WBSETCL				POWERGRID				
	NEW RANCHI-NEW PPSP	PKTCL	POWERGRID				WBSETCL				
71	FARAKKA-GOKARNO	POWERGRID	NTPC				WBSETCL				
72	DIKCHU-TEESTA-III	SKPPL+TPTL	DIKCHU				TEESTA-III				
73	RANGPO-TEESTA-III	POWERGRID+TPTL	POWERGRID				TEESTA-III				
2	BANKA-BIHARSARIFF	POWERGRID	POWERGRID				POWERGRID				
3	LAKHISARAI-BIHARSARIFF	POWERGRID	POWERGRID				POWERGRID				
4	KAHALGAON -LAKHISARAI	POWERGRID	NTPC				POWERGRID				
5	BIHARSHARIFF-PURNEA	ENICL	POWERGRID				POWERGRID				
6	MAITHON-GAYA	POWERGRID	POWERGRID				POWERGRID				
7	KAHALGAON -BARH	POWERGRID	NTPC				NTPC				
8	BARH -PATNA	POWERGRID	NTPC				POWERGRID				
9	PATNA- KISHANGANJ	POWERGRID	POWERGRID				POWERGRID				
10	PURNEA - BINAGURI I & II	POWERGRID	POWERGRID				POWERGRID				
11	PURNEA-KISHANGANJ	POWERGRID	POWERGRID				POWERGRID				
12	BINAGURI-KISHANGANJ	POWERGRID	POWERGRID				POWERGRID				
13	PURNEA - MUZAFFARPUR	POWERLINKS	POWERGRID				POWERGRID				
14	BIHARSHARIFF-MUZAFFARPUR	POWERGRID	POWERGRID				POWERGRID				
15	BIHARSHARIFF- PUSAULI	POWERGRID	POWERGRID				POWERGRID				
16	FARAKKA - KAHALGAON I & II	POWERGRID	NTPC				NTPC				
17	FARAKKA-KAHALGAON III & IV	POWERGRID	NTPC				NTPC				
18	BOKARO-KODERMA	POWERGRID	DVC				DVC				
19	MALDA - PURNEA	POWERGRID	POWERGRID				POWERGRID				
20	MERAMUNDALI - MENDASAL	OPTCL	OPTCL				OPTCL				
21	RENGALI-KEONJHAR	OPTCL	POWERGRID				OPTCL				
22	KEONJHAR- BARIPADA	OPTCL	POWERGRID				POWERGRID				
23	JEYPORE - INDRAVATI	POWERGRID	POWERGRID				POWERGRID				
24	INDRAVATI - RENGALI	POWERGRID	POWERGRID				POWERGRID				
25	TSTPP - ROURKELA	POWERGRID	NTPC				POWERGRID				
26	ROURKELA- JHARSIGUDA	POWERGRID	POWERGRID				POWERGRID				
27	JAMSHEDPUR - CHAIBASA	POWERGRID	POWERGRID				POWERGRID				
28	CHAIBASA- ROURKELA	POWERGRID	POWERGRID				POWERGRID				
29	KTPS - CHANDITALA	WBSETCL	WBPDCL				WBSETCL				
29	CHANDITALA - JEERAT	WBSETCL	WBSETCL				WBSETCL				
30	BAKRESWAR - JEERAT	WBSETCL	WBPDCL				WBSETCL				
31	BAKRESWAR - ARAMBAGH	WBSETCL	WBPDCL				WBSETCL				
	NEW PPSP - ARAMBAGH	WBSETCL	WBSETCL				WBSETCL				
	NEW PPSP - PPSP	WBSETCL	WBSETCL				WBSEDCL				
33	PPSP - BIDHANAGAR	WBSEDCL	WBPDCL				WBSETCL				
34	KTPS - ARAMBAGH	WBSETCL	WBPDCL				WBSETCL				
35	KTPS-KHARGPUR	WBSETCL	WBPDCL				WBSETCL				
36	KTPS-KHARGPUR	WBSETCL	WBPDCL				WBSETCL				
37	PARULIA - JAMSHEDPUR	POWERGRID	POWERGRID				POWERGRID				
38	MAITHON - JAMSHEDPUR	POWERGRID	POWERGRID				POWERGRID				
39	MAITHON - RANCHI	POWERGRID	POWERGRID				POWERGRID				
40	DSTPS-RAGHUNATHPUR I & II	DVC	DVC				DVC				
41	JAMSHEDPUR-BARIPADA	POWERGRID	POWERGRID				POWERGRID				
42	RANCHI-RANCHI NEW	POWERGRID	POWERGRID				POWERGRID				
43	RANCHI-ROURKELA-I&II	POWERGRID	POWERGRID				POWERGRID				
44	BINAGURI-RANGPO	POWERGRID	POWERGRID				POWERGRID				

45	NEW RANCHI-CHANDWA	POWERGRID	POWERGRID				POWERGRID			
46	GAYA- CHANDWA	POWERGRID	POWERGRID				POWERGRID			
47	AILPURDUAR-BINAGURI-I,II	**PGCIL(LILO)**	POWERGRID(ER)				POWERGRID(ER)			
48	MUZAFFARPUR-DARBHANGA	DMTCL	POWERGRID(ER)				DMTCL			
49	SEL- MEERAMANDALI	POWERLINKS	SEL				OPTCL			
50	BARIPADA-PANDIABILI	POWERGRID	POWERGRID				POWERGRID			
51	MEERAMUNDALI- NEW DUBURI	POWERGRID	OPTCL				POWERGRID			
	C) 220 KV LINES									
74	PATNA-SIPARA	BSPHCL	POWEGRID				BSPHCL			
76	PUSUALI-SAHUPURI	BSPHCL & UPPCL	POWERGRID				UPPCL			
78	PATNA-KHAGUAL	BSPHCL	POWERGRID				BSPHCL			
80	NEW SASARAM- ARRAH	POWERGRID	BSPHCL				POWERGRID			
81	BODHGAYA-GAYA(PG)	BSPHCL & PG	BSPHCL				POWERGRID			
82	DEHRI-GAYA(PG)	BSPHCL & PG	BSPHCL				POWERGRID			
83	MUZZFARPUR-KANTI	POWERLINKS	POWERGRID				BSPHCL			
84	MUZZAFFARPUR-HAZIPUR-I & II	BSPTCL	POWERGRID				BSPTCL			
87	BALIMELA-U.SILLERU	APTRANSCO	OPTCL				APTRASCO			
88	JINDAL-JAMSHEDPUR	OPTCL & DVC	OPTCL				DVC			
89	JODA-RAMCHANDRAPUR	OPTCL & JUSNL	OPTCL				JUSNL			
90	BUDHIPADAR-KORBA II & III	OPTCL & CSEB	OPTCL				CHATTISGARH			
91	BUDHIPADAR-RAIGARH I	POWERGRID	OPTCL				CHATTISGARH			
92	TSTPP-MERAMUNDALI	OPTCL	NTPC				OPTCL			
93	TSTPP-RENGALI HPS	OPTCL	NTPC				OPTCL			
94	BISRA(PG)-TARKERA(OPTCL)	OPTCL	POWERGRID				OPTCL			
95	JEYPORE(PG)-JAYNAGAR(OPTCL)	OPTCL	POWERGRID				OPTCL			
96	TSTPP-TALCHER	OPTCL	NTPC				OPTCL			
97	FARAKKA-LALMATIA	ECL	NTPC				NTPC			
98	RENGALI-RENGALI	OPTCL	POWERGRID				OPTCL			
99	BARIPADA-BALASORE	OPTCL	POWERGRID				OPTCL			
100	MAITHON(PG)-K'SWARI(DVC)	DVC	POWERGRID				DVC			
102	CHANDIL-SANTALDIH	WBSETCL & JUSNL	JUSNL				WBSETCL			
103	RANCHI-HATIA	JUSNL	POWERGRID				JUSNL			
105	TENUGHAT-BIHARSHARIF	BSPHCL & JUSNL	JUSNL				BSPHCL			
106	JAMSHEDPUR-RAMCHANDRAPUR	-POWERGRID	POWERGRID				JUSNL			
107	MAITHON(PG)-DHANBAD(DVC)	DVC	POWERGRID				DVC			
108	PARULIA(PG)-PARULIA(DVC)	DVC	POWERGRID				DVC			
109	WARIA-BIDHANNAGAR	DVC & WBSETCL	DVC				WBSETCL			
112	SUBH'GRM(PG) - NEWTOWN	WBSETCL	POWERGRID				WBSETCL			
113	SUBH'GRM(PG) - SUBH'GRM (WB)	WBSETCL	POWERGRID				WBSETCL			
114	SUBH'GRM(PG) - EMSS(CESC)	CESC	POWERGRID				CESC			
115	SUBH'GRM(PG) - BANTALA	WBSETCL	POWERGRID				WBSETCL			
118	BIRPARA- CHUKHA	POWERGRID	POWERGRID				POWERGRID			
119	BIRPARA-MALBASE	POWERGRID	POWERGRID				POWERGRID			
120	ALIPURDUAR-SALAKATI	POWERGRID	POWERGRID(ER)				POWERGRID(NER)			
122	NEW MELLI- JLHEP	DANS	POWERGRID				DANS			
124	DARBHANGA-MOTIPUR	BSPTCL	DMTCL				BSPTCL			
125	DARBHANGA-SAMASTIPUR(UJIYARPUR)	BSPTCL	DMTCL				BSPTCL			
127	BOLANGIR-KATAPALLI	OPTCL	POWERGRID				OPTCL			
128	BOLANGIR-SADHEPALLI	OPTCL	POWERGRID				OPTCL			
129	PANDIABILI-ATRI	OPTCL	POWERGRID				OPTCL			
130	PANDIABILI-SAMANGARA	OPTCL	POWERGRID				OPTCL			
52	BIHARSHARIFF-FATUAH	BSPHCL	BSPHCL				BSPHCL			
53	BIHARSHARIFF-BODHAGYA	BSPHCL	BSPHCL				BSPHCL			
54	BIHARSHARIFF-BEGUSARAI	BSPHCL	BSPHCL				BSPHCL			
55	MTPS-BEGUSARAI	BSPHCL	BSPHCL				BSPHCL			
56	MTPS-DARBHANGA	BSPHCL	BSPHCL				BSPHCL			
57	MTPS-GOPALGANJ	BSPHCL	BSPHCL				BSPHCL			

58	SASARAM-ARRAH	POWERGRID	POWERGRID				POWERGRID			
60	WARIA-PARULIA	DVC	DVC				DVC			
61	WARIA-MEJIA	DVC	DVC				DVC			
62	CTPS A-DHANBAD	DVC	DVC				DVC			
63	CTPS B-DHANBAD	DVC	DVC				DVC			
64	DHANBAD-GIRIDIH	DVC	DVC				DVC			
65	BOKARO-JAMSHEDPUR	DVC	DVC				DVC			
66	KASBA-EMBYPASS	CESC	WBSETCL				CESC			
67	KASBA-SUBHASGRAM(WB)	WBSETCL	WBSETCL				WBSETCL			
69	BOKARO-CTPS B	DVC	DVC				DVC			
70	KALYANESHWARI-MEJIA	DVC	DVC				DVC			
71	KALYANESHWARI-BURNPUR	DVC	DVC				DVC			
72	BURNPUR-MEJIA	DVC	DVC				DVC			
73	MEJIA-MUCHIPARA	DVC	DVC				DVC			
74	MEJIA-BARJORA	DVC	DVC				DVC			
75	PARULIA-MUCHIPARA	DVC	DVC				DVC			
76	BOKARO-RAMGARH	DVC	DVC				DVC			
77	PTPS -TENUGHAT	JUSNL	JUSNL				TVNL			
78	PATRATU-HATIA	JUSNL	JUSNL				JUSNL			
79	CHANDIL-RAMCHANDRAPUR	JUSNL	JUSNL				JUSNL			
80	JEYANAGAR-U.KOLAB	OPTCL	OPTCL				OHPC			
81	MERAMANDALI-NALCO	OPTCL	NTPC				NALCO			
82	MERAMUNDALI - BIDANASI	OPTCL	OPTCL				OPTCL			
83	MERAMUNDALI - DUBURI(OLD)	OPTCL	OPTCL				OPTCL			
84	KATAPALLI-BUDHIPADAR	OPTCL	OPTCL				OPTCL			
85	IBTPS - BUDHIPADAR	OPTCL	OPGC				OPTCL			
86	TARKERA-BUDHIPADAR	OPTCL	OPTCL				OPTCL			
87	TARKERA-CHANDIPOSH	OPTCL	OPTCL				OPTCL			
88	TARKERA-BARKOT	OPTCL	OPTCL				OPTCL			
89	RENGALI-CHANDIPOSH	OPTCL	OPTCL				OPTCL			
90	RENGALI-BARKOT	OPTCL	OPTCL				OPTCL			
91	U. KOLAB-THERUVALI	OPTCL	OHPC				OPTCL			
92	U. KOLAB-JAYANAGAR	OPTCL	OHPC				OPTCL			
93	BALIMELA-JEYNAGAR	OPTCL	OHPC				OPTCL			
94	TALCHER-MERAMUNDALI	OPTCL	NTPC				OPTCL			
95	MERAMUNDALI - BHANJNAGAR	OPTCL	OPTCL				OPTCL			
96	MENDHASAL -BHANJNAGAR	OPTCL	OPTCL				OPTCL			
97	MENDHASAL - NAYAGARH	OPTCL	OPTCL				OPTCL			
98	NAYAGARH - BHANJNAGAR	OPTCL	OPTCL				OPTCL			
99	THERUVALLI - BHANJNAGAR	OPTCL	OPTCL				OPTCL			
100	THERUVALLI - LAXMIPUR	OPTCL	OPTCL				OPTCL			
101	THERUVALLI - NARENDRAPUR	OPTCL	OPTCL				OPTCL			
102	MENDHASAL - NARENDRAPUR	OPTCL	OPTCL				OPTCL			
103	MENDHASAL - CHANDAKA	OPTCL	OPTCL				OPTCL			
104	JAYANAGAR - LAXMIPUR	OPTCL	OPTCL				OPTCL			
105	UIHEP-THERUVALI	OPTCL	OHPC				OPTCL			
106	KTPS-HOWRAH	WBSETCL	WBPDCL				WBSETCL			
107	BISHNUPUR-SANTALDIH	WBSETCL	WBSETCL				WBPDCL			
108	SANTALDIH-BIDHANNAGR	WBSETCL	WBDPCL				WBSETCL			
109	BIDHANNAGAR-DPL	WBSETCL	WBSETCL				DPL			
110	BIDHANNAGAR-BAKRESWAR	WBSETCL	WBSETCL				WBPDCL			
111	SATGACHIA-BAKRESWAR	WBSETCL	WBSETCL				WBPDCL			
112	KHARAGPUR- MIDNAPORE I&II	WBSETCL	WBSETCL				WBSETCL			
113	ARAMBAGH- MIDNAPORE	WBSETCL	WBSETCL				WBSETCL			
114	ARAMBAGH-N.BISHNUPUR	WBSETCL	WBSETCL				WBSETCL			
115	ARAMBAGH- DOMJUR	WBSETCL	WBSETCL				WBSETCL			
116	ARAMBAGH- RISHRA	WBSETCL	WBPDCL				WBSETCL			
117	JEERAT-NEWTOWN	WBSETCL	WBSETCL				WBSETCL			
118	JEERAT-SATGACHIA	WBSETCL	WBPDCL				WBSETCL			
119	SATGACHIA-KRISHNANAGAR	WBSETCL	WBPDCL				WBSETCL			
120	BAKRESWAR-SADAIPUR	WBSETCL	WBPDCL				WBSETCL			
120	SADAIPUR-GOKARNO	WBSETCL	WBPDCL				WBSETCL			

121	GOKARNO-SAGARDIGHI	WBSETCL	WBSETCL				WBPDCL			
122	GOKARNO-KRISHNANAGAR	WBSETCL	WBSETCL				WBPDCL			
123	SUBHASGRAM (WB)- LAKHIKANTPUR	WBSETCL	WBSETCL				WBSETCL			
124	DALKHOLA-PURNEA	POWERGRID	WBSETCL				WBSETCL			
125	BIRPARA-BINAGURI	POWERGRID	POWERGRID				POWERGRID			
	BINAGURI-SILIGURI	POWERGRID	POWERGRID				POWERGRID			
126	JEERAT-KASBA	WBSETCL	WBPDCL				WBSETCL			
127	JEERAT- DHARAMPUR	WBSETCL	WBPDCL				WBSETCL			
128	DHARAMPUR- RISHRA	WBSETCL	WBPDCL				WBSETCL			
	SILIGURI-KISHANGANJ	POWERGRID	POWERGRID				POWERGRID			
129	DALKHOLA-KISHANGANJ	POWERGRID	POWERGRID				POWERGRID			
130	DALKHOLA-MALDA	POWERGRID	POWERGRID				POWERGRID			
131	RANGPOO- NEW MELLI	POWERGRID	POWERGRID				POWERGRID			
132	ALIPURDUAR-BIRPARA	POWERGRID	POWERGRID(ER)				POWERGRID(ER)			
	C) 132 KV LINES									
131	MUZZAFARPUR- DHALKEBAR	Cross Border Power Trans. Ltd.	POWERGRID				NEPAL			
132	BARHI - B'SHARIFF	BSPHCL & DVC	DVC				BSPHCL			
133	BARHI-RAJGIR	BSPHCL & DVC	DVC				BSPHCL			
134	DEOGHAR-SULTANGANJ	BSPTCL & JUSNL	JUSNL				BSPHCL			
135	KAHALGAON-KAHALGAON	POWERGRID	BSPHCL				NTPC			
136	ARRAH-ARRAH	POWERGRID	BSPHCL				POWERGRID			
137	DUMRAON-ARRAH	POWERGRID	BSPHCL				POWERGRID			
138	PURNEA(PG)-PURNEA(BS)	BSPHCL	BSPHCL				POWERGRID			
139	PURNEA(PG)-KISANGANJ	BSPHCL	BSPHCL				POWERGRID			
140	DEHRI--PUSUALI	POWERGRID	BSPHCL				POWERGRID			
141	KARMANASA--PUSUALI	POWERGRID	BSPHCL				POWERGRID			
142	KARMANASA-SAHUPURI	BSPHCL & UPPCL	BSPHCL				UPPCL			
143	KARMANASA-CHANDAULI	BSPHCL & UPPCL	BSPHCL				UPPCL			
144	SONENAGAR - RIHAND	BSPHCL & UPPCL	BSPHCL				UPPCL			
145	MAITHON-JAMTARA	DVC & JUSNL	DVC				JUSNL			
146	KHARAGPUR-KHARAGPUR	DVC	DVC				WBSETCL			
147	KOLAGHAT-KOLAGHAT	DVC	DVC				WBSETCL			
148	MACHKUND-VIZAG	APTRANSCO	OPTCL				APTRANSCO			
149	JODA-KENDPOSI	OPTCL & JUSNL	OPTCL				JUSNL			
150	BARIPADA-BANGIRIPOSI	OPTCL	POWERGRID				OPTCL			
151	BARIPADA-BARIPADA	OPTCL	POWERGRID				OPTCL			
152	GARWA-SONENAGAR	BSPHCL & JUSNL	JUSNL				BSPHCL			
153	LALMATIA-SABOUR	BSPHCL & JUSNL	JUSNL				BSPHCL			
154	CHANDIL-MANIQUE	JUSNL & DVC	JUSNL				DVC			
155	PATRATU-PATRATU	JUSNL & DVC	JUSNL				DVC			
156	GARWA-RIHAND	JUSNL & UPPCL	JUSNL				UPPCL			
157	RANGIT-RAMMAM	POWERGRID	NHPC				WBSETCL			
158	KAHALGAON-SABOUR	POWERGRID	NTPC				BSPHCL			
159	KAHALGAON-LALMATIA	POWERGRID	NTPC				JUSNL			
160	BIRPARA-BIRPARA	WBSETCL	POWERGRID				WBSETCL			
161	MALDA-MALDA	WBSETCL	POWERGRID				WBSETCL			
162	SILIGURI-NBU	WBSETCL	POWERGRID				WBSETCL			
	SILIGURI - NJP	WBSETCL	POWERGRID				WBSETCL			
163	RANGIT -SAGBARI	SIKKIM	NHPC				SIKKIM			
164	ARHA-JAGDISHPUR	BSPHCL	POWERGRID				BSPHCL			
165	RANGIT-RANGPO	POWERGRID	NHPC				POWERGRID			
166	RANGIT-KURSEONG	POWERGRID	NHPC				WBSETCL			
167	RANGIT-SAGBARI	SIKKIM	NHPC				SIKKIM			
168	CHUJACHEN-GANGTOK	POWERGRID & GATI	GATI INFRA				POWERGRID			
169	BANKA-SABOUR	BSPTCL	POWERGRID				BSPTCL			
170	BANKA-BANKA	BSPTCL	POWERGRID				BSPTCL			

171	RANGPO-CHUJACHEN	GATI INFRA	POWERGRID				GATI INFRA			
172	NJP-MELLI	POWERGRID	POWERGRID				SIKKIM			
173	RANGPO- MELLI	POWERGRID+GATI INFRA	POWERGRID				SIKKIM			
174	NJP-MELLI	POWERGRID	POWERGRID				SIKKIM			
175	LAKHISARAI - JAMAUI	BSPHCL	POWERGRID				BSPHCL			
176	RANGIT - RABANGLA	POWERGRID	NHPC				SIKKIM			
177	KALINGPONG-MELLI	WBSETCL & SIKKIM	WBSETCL				SIKKIM			
178	BANKA-SULTANGUNJ	BSPTCL	POWERGRID				BSPTCL			

PMU Installation and commissioning status of ER as on 20.04.2017

Annexure- B.26

S.No	Region	State	Sub-Station	Owner/ Utility	S/S type	PMU	TOTAL PANEL QTY	PMU Delivery status	Cable Delivery status	Erection	Cable laying	CT/PT/DI termination	Commissioning	Integration	SAT	Remarks
			78			286	175	73	61	51	45	40	40	24	37	
1	ER-II	West Bengal	Arambagh	WBSETCL	CR	3	1	Yes	Yes	done	done	pending	pending	Pending	pending	CT/ PT/ DI interfacing pending due to permission issue.
2	ER-II	West Bengal	BAKRESHWAR TPS	WBSETCL	CR	4	1	Yes	Yes	done	pending	pending	pending	Pending	pending	Panel erected. Cable laying pending due to permission issue.
3	ER-II	West Bengal	Bidhannagar	WBSETCL	CR	3	1	Yes	Yes	done	done	pending	pending	Pending	pending	Panel erected. Cable laying and termination at PMU panel completed. CT/ PT/ DI interfacing pending due to permission issue.
4	ER-II	West Bengal	JEERAT	WBSETCL	CR	2	1	Yes	Yes	done	done	done	done	done	pending	SAT pending as customer didn't agree to witness SAT.
5	ER-II	West Bengal	Kolaghat TPS	WBSETCL	CR	4	1	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	
6	ER-II	West Bengal	KASBA	WBSETCL	CR	3	1	Yes	Yes	done	done	done	done	done	pending	SAT pending as customer didn't agree to witness SAT.
7	ER-II	DVC	DSTPS	DVC	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	Communication Link not available.
8	ER-II	DVC	Kodarma TPS	DVC	CR	3	1	Yes	Yes	done	done	done	done	Pending	done	Communication panel does not exist.
9	ER-II	DVC	MEJIA-B	DVC	CR	2	1	Yes	Yes	done	done	done	done	done	done	Integrated on 07.12.2016
10	ER-II	DVC	Maithon RB TPS	DVC	CR	2	1	Yes	Yes	pending	pending	pending	pending	Pending	pending	Work started on 04.07.2016. Panel shifted. Team demobilised due to access issue and panel location issue.
11	ER-II	DVC	Raghunathpur TPS	DVC	CR	3	1	Yes	Yes	done	done	done	done	Pending	done	Communication link was not available during work.
12	ER-II	DVC	MEJIA	DVC	CR	5	2	Yes	Yes	done	done	done	done	Pending	done	S/S couldn't be integrated because distance between PMU panel and SDH is more than 100 mtrs. Will be integrated on Mar 2017.
13	ER-II	DVC	Bokaro	DVC	CR	2	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 24.06.2016
14	ER-II	DVC	CTPS(Chanderpura)	DVC	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	S/S couldn't be integrated because distance between PMU panel and SDH is more than 100 mtrs. Will be integrated on Mar 2017.
15	Odisha	Orissa	Budhipadar	OPTCL	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
16	Odisha	Orissa	MENDHASAL	OPTCL	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	OPTCL is not providing CT/ PT connection for Meeramundali-2 feeder.
17	Odisha	Orissa	MERAMANDALI	OPTCL	CR	6	2	Yes	Yes	done	under progress	pending	pending	Pending	pending	
18	Odisha	Orissa	RENGALI	OPTCL	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	Integration delayed because CAT-6 cable is faulty.
19	Odisha	Orissa	U.KOLAB	OPTCL	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	
20	Odisha	Orissa	BALIMELA(H)	OPTCL	CR	3	1	Yes	Yes	done	done	partially done	pending	Pending	done	OPTCL denied to provide DC connection. CT/PT/DI interfacing pending due to permission issue.
21	ER-II	West Bengal	Durgapur	Powergrid	CR	5	2	Yes	Yes	done	done	done	done	done	done	PMU integrated on 30.05.2016.
22	ER-II	West Bengal	FARRAKA	NTPC	CR	5	2	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	
23	Odisha	Orissa	Indrawati	Powergrid	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	Communication Link not available.
24	Odisha	Orissa	Indrawati HPS	OPTCL	CR	1	1	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	OPTCL denied to provide DC connection.
25	Odisha	Orissa	JEYPORE	Powergrid	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	Communication Link not available.
26	ER-II	West Bengal	MAITHON	Powergrid	CR	7	2	Yes	Yes	done	done	done	done	done	done	PMU integrated on 21.06.2016.
27	ER-II	West Bengal	MALDA	Powergrid	CR	2	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 24.06.2016
28	Odisha	Orissa	Rengali	Powergrid	Kiosk	2	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 04.05.2016
29	Odisha	Orissa	ROURKELA	Powergrid	Kiosk	5	2	Yes	Yes	done	done	done	done	done	done	PMU integrated on 21.04.2016
30	ER-II	West Bengal	Binaguri	Powergrid	CR	7	2	Yes	Yes	done	done	done	done	done	done	PMU integrated on 28.07.2016
31	ER-II	West Bengal	SUBHASHGRAM	Powergrid	Kiosk	2	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 22.06.2016
32	Odisha	Orissa	Baripada	Powergrid	CR	3	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 30.01.2017.
33	Odisha	Orissa	Bolangir	Powergrid	CR+Kiosk	2	3	Yes	Yes	done	done	done	done	Pending	done	Communication Link not available.
34	Odisha	Orissa	ANGUL	Powergrid	Kiosk	10	11	Yes	Yes	done	done	done	done	done	done	PMU integrated on 24.03.2017.

PMU Installation and commissioning status of ER as on 20.04.2017

S.No	Region	State	Sub-Station	Owner/ Utility	S/S type	PMU	TOTAL PANEL QTY	PMU Delivery status	Cable Delivery status	Erection	Cable laying	CT/PT/DI termination	Commissioning	Integration	SAT	Remarks
35	Odisha	Orissa	Keonjhar	Powergrid	CR	2	3	Yes	Yes	done	done	done	done	done	done	PMU integrated on 18.01.2017.
36	Odisha	Orissa	Jharsuguda	Powergrid	Kiosk	8	9	Yes	Yes	done	done	done	done	done	done	PMU integrated on 29.07.2016
37	Odisha	Orissa	GMR	GMR	Kiosk	3	4	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	
38	ER-II	Sikkim	RANGPO	Powergrid	CR	4	1	Yes	Yes	done	done	done	done	Pending	done	S/S couldn't be integrated because distance between PMU panel and SDH is more than 100 mtrs. Will be integrated on Mar 2017.
39	ER-II	West Bengal	Baharampur	Powergrid	CR	2	3	Yes	Yes	done	done	done	done	done	done	PMU integrated on 10.05.2016
40	ER-II	West Bengal	Birpara	Powergrid	CR	4	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 15.07.2016.
41	ER-II	DVC	CTPS B	DVC	CR	3	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
42	ER-II	DVC	KALYANESWARI	DVC	CR	4	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 02.01.2017.
43	ER-II	DVC	PARULIA	DVC	CR	5	2	Yes	Yes	done	done	done	done	done	done	PMU integrated on 21.02.2017.
44	ER-II	West Bengal	Purulia PSP	WBSETCL	CR	2	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
45	ER-II	Jharkhand	Bokaro TPS	DVC	CR	1	1	Yes	Yes	done	pending	pending	pending	Pending	pending	
46	ER-II	West Bengal	Durgapur TPS	DVC	CR	3	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
47	Odisha	Orissa	TTPS(Talcher)	OPTCL	CR	3	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
48	Odisha	Orissa	TALCHER	NTPC	CR	5	2	No	No	N/A	N/A	N/A	N/A	N/A	N/A	NTPC is not allowing to deliver mterial.
49	ER-II	Sikkim	TEESTA	Powergrid	CR	1	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
50	Odisha	Orissa	Uttara	Powergrid	CR	2	1	Yes	Yes	done	done	done	done	Pending	pending	Communication link from s/s to ERLDC and NTAMC to be provided by PGCIL.
51	Odisha	Orissa	Jindal	JITPL	CR	2	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
52	Odisha	Orissa	Monnet	Monnet	CR	1	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
53	Odisha	Orissa	Strelite	Strelite	CR	3	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
54	Odisha	Orissa	Ind barath	Ind barath	Kiosk	1	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
55	ER-II	Sikkim	New Melli	Powergrid	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
56	ER-II	Sikkim	TT Pool	Powergrid	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
57	ER-II	West Bengal	Alipurduar	Powergrid	CR	6	7	Yes	Yes	partially done	partially done	pending	pending	Pending	pending	Work started on 22.12.2016. 4 PMU panels and network panel installed. Rest 2 PMU panels could not be erected because location not finalised. Cable laying and termination at PMU panel completed for 6 feeders. CT/PT interfacing pending due to unavailability of shutdown. PGCIL is asking to take DI points from field, which is not in scope. Work is held up. Team demobilised.
58	ER-II	West Bengal	Rajarhat	Powergrid	CR	2	1	Yes	Yes	done	pending	pending	pending	Pending	pending	Work withheld due to localite agitation issue.
59	ER-I	Jharkhand	JAMSHEDPUR	Powergrid	CR	6	2	Yes	Yes	done	done	done	done	done	done	PMU integrated on 14.02.2017
60	ER-I	BIHAR	Kahalgaon(KHSTPP)	NTPC	CR	6	2	Yes	Yes	done	done	pending	pending	Pending	pending	Work withheld due to gate pass issue.
61	ER-I	BIHAR	Purnea	Powergrid	CR	6	2	Yes	Yes	done	done	pending	pending	done	pending	PMU integrated on 13.04.2017
62	ER-I	BIHAR	PATNA	Powergrid	Kiosk	6	7	Yes	Yes	done	done	done	done	done	done	PMU integrated on 11.04.2017
63	ER-I	Jharkhand	RANCHI	Powergrid	Kiosk	12	13	Yes	Yes	done	under progress	pending	pending	Pending	pending	
64	ER-I	BIHAR	SASARAM(Pusauli)	Powergrid	CR+Kiosk	9	3	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	
65	ER-I	BIHAR	BARH	NTPC	CR	4	1	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	
66	ER-I	BIHAR	LakhiSarai	Powergrid	Kiosk	4	5	Yes	Yes	done	done	done	done	Pending	done	SAT completed. PMU not integrated because FO cable was not delivered due to road permit issue.
67	ER-I	BIHAR	BANKA	Powergrid	Kiosk	4	5	Yes	Yes	done	done	done	done	Pending	pending	SAT pending. PMU not integrated because switch was not delivered to site. Switch in transit.

PMU Installation and commissioning status of ER as on 20.04.2017

S.No	Region	State	Sub-Station	Owner/ Utility	S/S type	PMU	TOTAL PANEL QTY	PMU Delivery status	Cable Delivery status	Erection	Cable laying	CT/PT/DI termination	Commissioning	Integration	SAT	Remarks
68	ER-I	Jharkhand	Chaibasa	Powergrid	Kiosk	4	5	Yes	Yes	done	under progress	pending	pending	Pending	pending	
69	ER-I	BIHAR	765kv Gaya	Powergrid	Kiosk	11	12	Yes	Yes	done	done	done	done	done	done	PMU integrated on 24.02.2017
70	ER-I	Jharkhand	765/400kV Ranchi (N)	Powergrid	Kiosk	8	9	Yes	Yes	done	done	done	done	done	done	PMU integrated on 24.02.2017
71	ER-I	Bihar	Biharshariff	Powergrid	CR	9	3	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	
72	ER-I	Bihar	MUZAFFAPUR	Powergrid	CR	5	2	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
73	ER-I	Jharkhand	Daltonganj	Powergrid	Kiosk	2	3	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	Road permit for Switch is pending.
74	ER-I	Bihar	Kishanganj (karandegh	Powergrid	CR	4	1	Yes	Yes	done	done	done	done	Pending	done	S/S couldn't be integrated because distance between PMU panel and SDH is more than 100 mts.
75	ER-I	Jharkhand	Jharkhand Pool (Chan	Powergrid	Kiosk	4	1	Yes	Yes	done	done	done	done	Pending	done	S/S couldn't be integrated because distance between PMU panel and SDH is more than 100 mts.
76	ER-I	Jharkhand	Patratu	Jharkhand	CR	3	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
77	ER-I	Jharkhand	Tenughat	Jharkhand	CR	2	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
78	ER-I	Bihar	Barauni PP	Bihar	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.

ER PMU site activity Summary:

Sl. No.	Region	Utility	As per approved BOQ		Supplied		Installed		Commissioned		Integrated to ERLDC/ SLD	
			No. of Substations	No. of PMU	S/S	PMU	S/S	PMU	S/S	PMU	S/S	PMU
1	ER-I	Powergrid	15	94	15	94	11	69	8	47	5	37
2	ER-I	NTPC	2	10	2	10	1	6	0	0	0	0
3	ER-I	Jharkhand	2	5	2	5	0	0	0	0	0	0
4	ER-I	Bihar	1	0	0	0	0	0	0	0	0	0
	ER-I	**Total**	**20**	**109**	**19**	**109**	**12**	**75**	**8**	**47**	**5**	**37**
1	ER-II	Powergrid	13	42	11	42	10	39	8	33	7	29
2	ER-II	NTPC	1	5	1	5	0	0	0	0	0	0
3	ER-II	DVC	13	37	13	37	10	29	9	28	4	13
4	ER-II	WBSETCL	7	21	7	21	5	15	2	5	2	5
	ER-II	**Total**	**34**	**105**	**32**	**105**	**25**	**83**	**19**	**66**	**13**	**47**
1	Odisha	Powergrid	10	38	10	38	10	38	10	38	6	30
2	Odisha	OPTCL	8	19	6	16	5	15	3	6	0	0
3	Odisha	NTPC	1	5	1	5	0	0	0	0	0	0
4	Odisha	IPP	5	10	5	10	0	0	0	0	0	0
	Odisha	**Total**	**24**	**72**	**22**	**69**	**15**	**53**	**13**	**44**	**6**	**30**
	ER	**Total**	**78**	**286**	**73**	**283**	**52**	**211**	**40**	**157**	**24**	**114**

Status of PDS system Installation and commissioning at ER as on 20.04.2017

Sl. No.	Site Name	Work Progress
1	ERLDC	Installed, powered up, functioning and integrated with DVC, WBSETCL and OPTCL PDS system.
2	Backup-NLDC	POSOCO did not provide space for PDS system installation.
3	SLDC, Maithon	Installed, powered up, functioning and integrated with ERLDC PDS system.
4	SLDC, Bhubaneswar	Installed, powered up, functioning and integrated with ERLDC PDS system.
5	SLDC, Howrah (WBSETCL)	Installed, powered up, functioning and integrated with ERLDC PDS system.

Annexure – B.27

AVAILABILITY STATUS OF EVENT LOGGER, DISTURBANCE RECORDER & GPS

Sl. NO	Substation	Protection & Control System						Remarks
		Availability			Time Synchronization			
		EL	DR	GPS	Relay	DR	EL	
1	Subhasgram	Yes	Yes	Yes	Yes	Yes	Yes	
2	Maithon	Yes	Yes	Yes	Yes	Yes	Yes	
3	Durgapur	Yes	Yes	Yes	Yes	Yes	Yes	
4	Malda	Yes	Yes	Yes	Yes	Yes	Yes	
5	Dalkhola	Yes	Yes	Yes	Yes	Yes	Yes	
6	Siliguri	Yes	Yes	Yes	Yes	Yes	Yes	
7	Binaguri	Yes	Yes	Yes	Yes	Yes	Yes	
8	Birpara	Yes	Yes	Yes	Yes	Yes	Yes	
9	Gangtok	Yes	Yes	Yes	Yes	Yes	Yes	
10	Baripada	Yes	Yes	Yes	Yes	Yes	Yes	
11	Rengali	Yes	Yes	Yes	Yes	Yes	No	New EL would be implemented in BCU under NTAMC project by March'2015
12	Indravati (PGCIL)	Yes	Yes	Yes	Yes	Yes	No	EL is old one(model-PERM 200), provision for time synchronisation is not available. New EL would be implemented in BCU under NTAMC project by March'2015
13	Jeypore	Yes	Yes	Yes	Yes	Yes	Yes	EL is old and not working satisfactorily. New EL would be implemented in BCU under NTAMC project by March, 2015
14	Talcher	Yes	Yes	Yes	Yes	Yes	Yes	
15	Rourkela	Yes	Yes	Yes	Yes	Yes	Yes	
16	Bolangir	Yes	Yes	Yes	Yes	Yes	Yes	
17	Patna	Yes	Yes	Yes	Yes	Yes	Yes	
18	Ranchi	Yes	Yes	Yes	Yes	Yes	Yes	
19	Muzaffarpur	Yes	Yes	Yes	Yes	Yes	Yes	
20	Jamshedpur	Yes	Yes	Yes	Yes	Yes	Yes	
21	New Purnea	Yes	Yes	Yes	Yes	Yes	Yes	
22	Gaya	Yes	Yes	Yes	Yes	Yes	Yes	
23	Banka	Yes	Yes	Yes	Yes	Yes	Yes	
24	Biharsariif	Yes	Yes	Yes	Yes	Yes	Yes	
25	Barh	Yes	Yes	Yes	Yes	Yes	Yes	
26	Sagardighi	No	Yes	Yes	Yes	Yes	No	EL is under process of restoration with help from OEM, China
27	Kahalgaon	Yes	Yes	Yes	Yes	Yes	Yes	
28	Farakka	Yes	Yes	No	No	No	No	Time synchronization available for Farakka-Kahalgaon line-III & IV. The same will be implemented in rest of the lines by December, 2014.
29	Meramundali	Defunct	Yes	Yes	Yes	Yes	Yes	
30	Tisco	Yes	Yes	Yes	Yes	Yes	Yes	
31	Bidhannagar	No	Yes	Yes	No	No	No	Using DR & EL available in Numerical

								relays. GPS will be put in service by January, 2015.
32	Indravati (OHPC)	Yes	Faulty	No	No	No	No	Time synchronization will be done by Feb, 2015. ICT-I feeders using DR & EL available in Numerical relays. 400 kV ICT-II feeder is being maintained by PGCIL, Mukhiguda.Status may confirm from PGCIL
33	Kharagpur	No	Yes	Yes	No	No	No	Using DR & EL available in Numerical relays.
34	DSTPS	Yes	Yes	Yes	Yes	Yes	Yes	
35	Sterlite	Yes	Yes	Yes	Yes	Yes	Yes	
36	Mejia 'B'	Yes	Yes	Yes	Yes	Yes	Yes	
37	Mendhasal	Defunct	Yes	Yes	Yes	Yes	No	EL will be restored by March, 2015.
38	Arambagh	No	Yes	Yes	No	No	No	Using DR & EL available in Numerical relays
39	Jeerat	No	Yes	No	No	No	No	Using DR & EL available in Numerical relays. Procurement of new GPS is in progress.
40	Bakreswar	Yes	Yes	Yes	Yes	Yes	Yes	
41	GMR	Yes	Yes	Yes	Yes	Yes	Yes	
42	Maithon RB	Yes	Yes	Yes	Yes	Yes	Yes	
43	Raghunathpur	Yes	Yes	Yes	Yes	Yes	Yes	
44	Kolaghat	Yes	Yes	Yes	Yes	Yes	Yes	
45	Teesta V	Yes	Yes	Yes	Yes	Yes	Yes	
46	Koderma	Yes	Yes	Yes	Yes	Yes	Yes	
47	Sasaram	Yes	Yes	Yes	Yes	Yes	Yes	
48	Rangpo	Yes	Yes	Yes	Yes	Yes	Yes	
49	Adhunik	Yes	Yes	Yes	Yes	Yes	Yes	
50	JITPL	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	
51	765kV Angul	Yes	Yes	Yes	Yes	Yes	Yes	
52	Chuzachen	Yes	Yes	Yes	No	Yes	Yes	
53	New Ranchi 765kV	Yes	Yes	Yes	Yes	Yes	Yes	
54	Lakhisarai	Yes	Yes	Yes	Yes	Yes	Yes	
55	Chaibasa							
56	765kV Jharsuguda	Yes	Yes	Yes	Yes	Yes	Yes	All are in working condition. However a dedicated DR for 765KV Lines; make TESLA is not working. M/s Siemens has assured to commission the same by 31.01.15
57	Beharampur	Yes	Yes	Yes	Yes	Yes	Yes	
58	Keonjhar	Yes	Yes	Yes	Yes	Yes	Yes	

Eastern Regional Power Committee

The status of ERS towers in Eastern Region as submitted during ERS meeting held on 10.11.14 taken by Member (Power System), CEA is given below:

1) As per 100th OCC meeting held on 22.08.2014, the status of ERS towers as available in Powergrid is as given below:

Sl. No.	Name of S/S	No. of ERS towers available	ERS towers in use
1	Durgapur, ER-II	1 Set (8 towers)	
2	Rourkela, ER-II	3 towers incomplete shape	
3	ER-I (located at Jamshedpur)	15 towers (10 nos Tension tower and 5 nos suspension tower)	

2) As informed by OPTCL, the present status of ERS towers in OPTCL system is as follows:

- 220 kV ERS towers: 42 nos located at Mancheswar, Chatrapur & Budhipadar
- 400 kV ERS towers: 2 nos located at Mancheswar.
- 12 nos. of new 400 kV ERS towers have been approved by Board of Director for procurement in the current financial year. Purchase order has been placed.
- Another, 16 nos of 400 kV towers accompanied with 6 sets of T&P are required.

3) WBSETCL informed that they have placed order for 2 sets of ERS towers on 31.10.2014 and expected by June, 2015.

4) The 25th ERPC meeting held on 21.09.2014, the board concurred to the proposal of procurement of four sets of ERS and it was also informed that, the proposed four sets of ERS will be kept at Sikkim, Siliguri, Ranchi and Gaya and will be used by all constituents of ER during emergencies.

   Powergrid informed that four sets of ERS for Eastern Region will be procured.

5) Bihar informed that they have 10 sets of 220 kV ERS towers and 2 sets are under process of procurements.

6) DVC informed that they are in process of procuring two (2) sets of 400 kV ERS towers.

Annexure-B29

List of drifted meters to be replaced in Phase-II

SNO	LOCATION	METER SNO	FEEDER NAME
1	MUZAFFARPUR(PG)	NP-5074-A	400 KV MUZAFARPUR (PG)-GORAKHPUR(NR)-1
2	MUZAFFARPUR(PG)	NP-9981-A	400 KV MUZAFARPUR (PG)-GORAKHPUR(NR)-2
3	MEJIA(DVC)	NP-5226-A	MEJIA END OF MAITHON(PG)-1
4	MEJIA(DVC)	NP-5227-A	MEJIA END OF MAITHON(PG)-2
5	RANCHI(PG)	NP-5835-A	400 KV RANCHI-SIPAT-1 (WR)
6	RANCHI(PG)	NP-5836-A	400 KV RANCHI-SIPAT-2 (WR)
7	BINAGURI(PG)	NP-5884-A	BINAGURI END OF BONGAIGAON (NER)-1
8	BINAGURI(PG)	NP-5885-A	BINAGURI END OF BONGAIGAON (NER)-2
9	ROURKELLA(PG)	NP-5933-A	ROURKELA END OF TARKERA (GRIDCO)-2
10	KHARAGPUR(PG)	NP-7563-A	400 KV KHARAGPUR -BARIPADA(PG)
11	MPL	NP-7970-A	MAITHON RB END OF RANCHI (PG)-1 (MAIN)
12	MPL	NP-7971-A	MAITHON RB END OF RANCHI (PG)-2 (MAIN)
13	MPL	NP-7564-A	MAITHON RB END OF MAITHON (PG)-1 (MAIN)
14	MPL	NP-6518-A	MAITHON RB END OF MAITHON (PG)-2 (MAIN)
15	RANCHI NEW(PG)	NP-7847-A	765 KV RANCHI NEW -DHARAMJAYGARH-1
16	RANCHI NEW(PG)	NP-8753-A	765 KV RANCHI NEW -DHARAMJAYGARH-2
17	STERLITE	NP-7572-A	400 KV STERLITE - RAIGARH(WR)-II(MAIN)
18	STERLITE	NP-7372-A	400 KV STERLITE - ROURKELLA(PG)-II(MAIN)
19	ROURKELLA(PG)	NP-5928-A	400 KV ROURKELLA(PG)-RAIGARH(WR)
20	MIRAMUNDALI(OPTCL)	NP-5977-A	400 KV MIRAMUNDALI-ANGUL-1
21	MIRAMUNDALI(OPTCL)	NP-5976-A	400 KV MIRAMUNDALI-ANGUL-2
22	SUNDERGARH(PG)	NP-7634-A	765 KV SUNDERGARH-DHARAMJAYGARH-1
23	SUNDERGARH(PG)	NP-7638-A	765 KV SUNDERGARH-DHARAMJAYGARH-2

Annexure-B35

Details of stations/Units required to operate under RGMO/FGMO as per IEGC							Whether operating under RGMO	indicate in case of status is not available
Name of State	Type	Name of Uitlity	Sector (CS/SS/Private)	Name of Station	Name of Stage/ Unit	Installed capacity (MW)		
JHARKHAND	Thermal	TVNL	SS	Tenughat	1	210	No	Difficulties in implementing RGMO & exemption not
			SS		2	210	No	
	Hydro	JSEB	SS	Subarnrekha	1	65	Yes	
			SS		2	65	Yes	
WEST BENGAL	Termal	WBPDCL	SS	Bandel TPS	1	82.5	No	
			SS		2	82.5	No	
			SS		3	82.5	No	
			SS		4	82.5	No	
			SS		5	210	No	
			SS	Santaldih	5	250	No	Unit#6 could not be implemented because of some technical problem
			SS		6	250	No	
			SS	Kolaghat	1	210	No	Nil
			SS		2	210	No	Nil
			SS		3	210	No	Nil
			SS		4	210	No	Nil
			SS		5	210	No	Nil
			SS		6	210	No	Nil
			SS	Bakreshwar	1	210	Yes	
			SS		2	210	Yes	
			SS		3	210	Yes	
			SS		4	210	Yes	
			SS		5	210	Yes	
			SS	Sagardighi	1	300	No	Without OEM support it is not possible to put in FGMO/RGMO. At present OEM support is not
			SS		2	300	No	
	Hydro		SS	Raman Hydel	1	12.5	No	Station is not in RGMO. WBSETCL is pursuing with Rammam
			SS		2	12.5	No	
			SS		3	12.5	No	
			SS		4	12.5	No	
			SS	PPSP	1	225	Yes	In 134th OCC WBPDCL informed that the units are in RGMO/FGMO mode
			SS		2	225	Yes	
			SS		3	225	Yes	
			SS		4	225	Yes	
	Thermal	CESC	SS	Budge-Budge	1	250	Yes	
			SS		2	250	Yes	
			SS		3	250	Yes	
			SS	Haldia	1	300	Yes	
			SS		2	300	Yes	
	Thermal	DPL	SS	DPL	7	300	Yes	
Orissa		OPGC	SS	IB TPS	1	210	No	Not adequate response in RGMO
			SS		2	210	No	
	Hydro	OHPC	SS	Burla	1	49.5	No	
			SS		2	49.5	No	
			SS		3	32	No	
			SS		4	32	No	
			SS		5	37.5	No	
			SS		6	37.5	No	
			SS		7	37.5	No	
			SS	Chiplima	1	24	No	
			SS		2	24	No	
			SS		3	24	No	
			SS	Balimela	1	60	No	
			SS		2	60	No	
			SS		3	60	No	
			SS		4	60	No	
			SS		5	60	No	
			SS		6	60	No	
			SS		7	75	No	
			SS		8	75	No	
			SS		1	50	No	
			SS		2	50	No	

			SS	Rengali	3	50	No	
			SS		4	50	No	
			SS		5	50	No	
			SS	Upper Kolab	1	80	No	
			SS		2	80	No	
			SS		3	80	No	
			SS		4	80	No	
			SS	Indravati	1	150	No	
			SS		2	150	No	
			SS		3	150	No	
			SS		4	150	No	
			71					
			CS	Bokaro-B	1	210	No	RGMO mode of operation would not be possible for units1, 2 and 3. Because of non-availability of electro-hydraulic governor, digital voltage recorder and CMC.
			CS		2	210	No	
			CS		3	210	No	
			CS	CTPS	2	140	No	Machines are very old (under consideration for phase wise decommissioning)
			CS		3	140	No	
			CS		7	250	Yes	
			CS		8	250	Yes	
			CS	DTPS	4	210	No	
			CS	Mejia	1	210	No	there is no DCS for SG/TG package the possibility of implementing RGMO is to be explored
	Thermal		CS		2	210	No	
		DVC	CS		3	210	No	
			CS		4	210	No	Final tuning of RGMO is in progress
			CS		5	250	Yes	
			CS		6	250	Yes	
			CS	Mejia - B	7	500	Yes	
			CS		8	500	Yes	
			CS	DSTPS	1	500	Yes	
			CS		2	500	Yes	
			CS	KODERMA	1	500	Yes	
			CS		2	500	Yes	
Central Sector			CS	RTPS	1	600	Yes	
			CS		2	600	Yes	
			CS	Maithon	1	20	No	RGMO mode of operation would not be possible for units1, 2 and 3. Because of
			CS		2	20	No	
	Hydro		CS		3	23.2	No	
			CS	Panchet	1	40	No	RGMO mode of operation would not be possible for
			CS		2	40	No	
			CS	Farakka STPP-I	1	200	Yes	
			CS		2	200	Yes	
			CS		3	200	Yes	
			CS	Farakka STPP-II	1	500	Yes	
			CS		2	500	Yes	
			CS	Farakka-U#6		500	Yes	Kept in RGMO mode from April, 2014
			CS	Kahalgoan STPP	1	210	Yes	
			CS		2	210	Yes	
			CS		3	210	Yes	
			CS		4	210	Yes	
			CS		5	500	Yes	
			CS		6	500	Yes	
			CS		7	500	Yes	
			CS	Talcher STPP Stg-I	1	500	Yes	
			CS		2	500	Yes	
			CS	Barh	5	660	Yes	
			CS	Barh	6	660	Yes	
			CS	* Rangit	1	20	No	As per IEGC 5th Amendment 2017 the lower limit for Hydro is 25 MW
			CS		2	20	No	
	Hydro	NHPC	CS		3	20	No	
			CS	Teesta HEP	1	170	Yes	
			CS		2	170	Yes	
			CS		3	170	Yes	
			50					
			PS	Maithon RB TPP	1	525	Yes	
			PS		2	525	Yes	
			PS		1	600	Yes	

IPP	Thermal	IPP	PS	Sterlite	2	600	Yes	
			PS		3	600	Yes	
			PS		4	600	Yes	
			PS	Adhunik Power	1	270	Yes	
			PS		2	270	Yes	
	Hydro	IPP	PS	JLHEP	1	48	No	(RoR project with 3 hours pondage)
			PS		2	48	No	
			PS	Chujachen HEP	1	49.5	No	(RoR project with 3 hours pondage)
			PS		2	49.5	No	
			PS	Teesta Urja	1	200	No	could be put in RGMO mode but because of transmission evacuation constraint RGMO/FGMO is disabled
			PS		2	200	No	
			PS		3	200	No	
			PS		4	200	No	
			PS		5	200	No	
			PS		6	200	No	
			PS	Dikchu	1	48	No	(RoR project with 3 hours pondage)
			PS		2	48	No	

Annexure-C.3

Anticipated Power Supply Position for the month of
Oct-17

SL.NO		PARTICULARS	PEAK DEMAND MW	ENERGY MU
1		**BIHAR**		
	i)	NET MAX DEMAND	4000	2300
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	361	164
		- Central Sector	2745	1653
	iii)	SURPLUS(+)/DEFICIT(-)	-894	-483
2		**JHARKHAND**		
	i)	NET MAX DEMAND	1300	800
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	460	278
		- Central Sector	587	338
	iii)	SURPLUS(+)/DEFICIT(-)	-253	-184
3		**DVC**		
	i)	NET MAX DEMAND (OWN)	2720	1687
	ii)	NET POWER AVAILABILITY- Own Source	4971	2753
		- Central Sector	540	383
		Long term Bi-lateral (Export)	1300	967
	iii)	SURPLUS(+)/DEFICIT(-)	1491	482
4		**ORISSA**		
	i)	NET MAX DEMAND	4200	2492
	ii)	NET POWER AVAILABILITY- Own Source	3154	2079
		- Central Sector	1104	699
	iii)	SURPLUS(+)/DEFICIT(-)	58	286
5		**WEST BENGAL**		
5.1		**WBSEDCL**		
	i)	NET MAX DEMAND (OWN)	6035	3259
	ii)	CESC's DRAWAL	0	0
	iii)	TOTAL WBSEDCL's DEMAND	6035	3259
	iv)	NET POWER AVAILABILITY- Own Source	3564	2028
		- Import from DPL	166	0
		- Central Sector	2492	1413
	v)	SURPLUS(+)/DEFICIT(-)	187	182
	vi)	EXPORT (TO B'DESH & SIKKIM)	10	7
5.2		**DPL**		
	i)	NET MAX DEMAND	260	187
	ii)	NET POWER AVAILABILITY	426	187
	iii)	SURPLUS(+)/DEFICIT(-)	166	0
5.3		**CESC**		
	i)	NET MAX DEMAND	1950	984
	ii)	NET POWER AVAILABILITY - OWN SOURCE	750	489
		FROM HEL	530	339
		FROM CPL/PCBL	0	0
		Import Requirement	670	156
	iii)	TOTAL AVAILABILITY	1950	984
	iv)	SURPLUS(+)/DEFICIT(-)	0	0
6		**WEST BENGAL (WBSEDCL+DPL+CESC)** **(excluding DVC's supply to WBSEDCL's command area)**		
	i)	NET MAX DEMAND	8245	4430
	ii)	NET POWER AVAILABILITY- Own Source	4740	2704
		- Central Sector+Others	3692	1752
	iii)	SURPLUS(+)/DEFICIT(-)	187	26
7		**SIKKIM**		
	i)	NET MAX DEMAND	85	35
	ii)	NET POWER AVAILABILITY- Own Source	10	7
		- Central Sector+Others	130	84
	iii)	SURPLUS(+)/DEFICIT(-)	56	56
8		**EASTERN REGION** **At 1.03 AS DIVERSITY FACTOR**		
	i)	**NET MAX DEMAND**	19951	11744
		Long term Bi-lateral by DVC	1300	967
		EXPORT BY WBSEDCL	10	7
	ii)	**NET TOTAL POWER AVAILABILITY OF ER** **(INCLUDING C/S ALLOCATION)**	22495	12895
	iii)	**PEAK SURPLUS(+)/DEFICIT(-) OF ER** **(ii)-(i)**	1234	177

Annexure- C.4

Proposed Maintenance Schedule of Thermal Generating Units of ER during October, 2017
(as finalised in LGBR meeting)

System	Station	Unit	Size (MW)	Period		No. of Days	Reason
				From	To		
ODISHA	TTPS	1	60	23.10.17	21.11.17	30	Capital Maintenance
WBPDCL	KTPS	1	210	20.10.17	26.10.17	7	Boiler License
	Bakreswar	1	210	22.10.17	26.11.17	36	TG+TPR+(EHG+DAVR) Upgradation+GT O
NTPC	FSTPS	4***	500	01.10.17	04.11.17	35	Boiler, Turbine, Gen.
	TSTPS	1	500	21.10.17	14.11.17	25	Boiler+LPT+Gen.+CT Cell R&M

Annexure-D4

पावर सिस्टम ऑपरेशन कॉरपोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Government of India Enterprise)

पूर्वी क्षेत्रीय भार प्रेषण केन्द्र, 14, गोल्फ क्लब रोड, टालिगंज, कोलकाता - 700 033
दूरभाष : 033 2423 5867/5875, फैक्स : 033 2423 5809/5704/5029, ई-मेल : erldc@posoco.in / www.erldc.org
EASTERN REGIONAL LOAD DESPATCH CENTRE, 14, Golf Club Road, Tollygunge, Kolkata - 700 033
Tel. : 033 2423 5867/5875, Fax : 033 2423 5809/5704/5029, E-mail : erldc@posoco.in / www.erldc.org

ERLDC/SS & MIS/2017/VDI/ Date: 04-09-17

To,

Member Secretary
Eastern Regional Power Committee
14, Golf Club Road, Kolkata – 33

Sub: Reporting of voltage deviation indices (VDI) for selected Substations in ER, for August 2017.
वषय: August 2017 के लिए पूर्वी क्षेत्र में चयनित सबस्टेशन के लिए वोल्टेज विचलन सूचकांक (VDI) की

Sir/ महोदय,

Enclosed please find VDI for selected 765 & 400kV buses of Eastern Region, computed for the month of August, 2017, for deliberation in next OOC meeting of ERPC.

संलग्न ERPC OCC ए, August, 2017 गई
765 और 400 VDI

आपको धन्यवाद,

/ Yours faithfully,

(पी य) / (P Mukhopadhyay)
शक/ Executive Director

VDI of Selected 765 kV & 400 kV in Eastern Region in the month of August - 2017

Ranchi New			Jamshedpur			Muzaffarpur		
MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)
801	767	0.04	432	416	96.73	415	380	0.01

Bihar Sariff			Binaguri			Jeerat		
MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)
418	395	0.00	421	391	0.01	421	383	0.24

Rourkela			Jeypore			Koderma		
MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)
420	408	0.00	424	385	0.39	422	403	0.58

Maithon			Teesta			Rangpo		
MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)
420	405	0.00	419	393	0.00	417	390	0.00