Agenda

for

149th OCC Meeting

Date: 18.09.2018
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

Eastern Regional Power Committee

Agenda for 149th OCC Meeting to be held on 18th September, 2018 at ERPC, Kolkata

Item no. 1: Confirmation of minutes of 148th OCC meeting of ERPC held on 20.08.2018

The minutes of 148th OCC meeting were uploaded in ERPC website and circulated vide letter dated 03.09.2018 to all the constituents.

Members may confirm the minutes.

PART A : ER GRID PERFORMANCE

Item no. A1: ER Grid performance during August, 2018

The average consumption of Eastern Region for August- 2018 was 448 Mu. Eastern Region achieved maximum energy consumption of 488 Mu on 18thAug - 2018. Total Export schedule of Eastern region for August - 2018 was 1309.7 Mu, whereas actual export was 897Mu. The under export of Eastern Region is mainly due to over drawl of DVC, West Bengal and Odisha.

ERLDC may present the performance of Eastern Regional Grid covering the followings:

1. **Frequency profile**
2. **Over drawal/under injection by ER Entities**

Over drawl figure of DVC, West Bengal and Odisha from 21-08-2018 to 31-08-2018 are shown below:

	DVC		Odisha		West Bengal	
	Over Drawl (MU)	Max. Over Drawl (MW)	Over Drawl (MU)	Max. Over Drawl (MW)	Over Drawl (MU)	Max. Over Drawl (MW)
21-08-2018	5.198684	800.6511	5.391589	508.9596	2.02994	343.4269
22-08-2018	5.988573	449.2631	4.865006	519.5552	2.962561	369.5706
23-08-2018	5.386956	430.4671	2.888012	546.7861	6.095172	432.2557
24-08-2018	8.073212	611.5033	1.254641	357.1823	5.926758	610.1244
25-08-2018	8.082226	728.2807	2.337058	475.7424	4.319296	433.5736
26-08-2018	6.34714	384.6605	3.006029	594.2872	4.450009	1556.003
27-08-2018	5.990616	473.1445	3.141262	540.3314	1.733691	351.5935
28-08-2018	4.977168	437.5565	4.496704	542.6694	5.017212	660.4313
29-08-2018	6.620678	483.4719	2.459407	386.3548	5.051673	597.3283
30-08-2018	8.413661	800.181	2.800647	437.8613	6.335453	568.226
31-08-2018	5.484619	494.7026	2.524151	495.7537	3.388405	661.8689

West Bengal, DVC and Odisha may please deliberate the reason of continuous overdrawal and future action plan to mitigate such contingency situation. In DVC numbers of unit (RTPS U-1, Mejia U-2, 3, 7 and Waria U-4) were out on coal shortage. Total Generation capacity out on coal shortage was 1730 MW. DVC is requested to furnish action plan and schedule date for restoration of plants out on coal shortage.

3. **Performance of Hydro Power Stations during peak hours**
4. **Performance of ISGS during RRAS**
5. **Reactive Power performance of Generators**
6. **Restricted Governor /Free Governor Mode Operation of generators in ER**

The observed FRC of Eastern region generators for last 8 events as per SCADA data for the is as follows

Event No	Date	Time	Net Frequency Change
Generation loss at Kotra (Event 1)	23-04-18	10:42	0.287 Hz Dip
Generation loss at Lalitpur (Event 2)	06-05-18	16:50	0.055 Hz Dip
Generation loss at Andal (Event 3)	10-06-18	06:11	0.054 Hz Dip
Generation loss at Teesta III (Event 4)	10-07-18	08:14	0.062 Hz Dip
Generation loss at Teesta III (Event 5)	30-07-18	20:48	0.071 Hz Dip
Load loss at Chakan (Event 6)	06-08-18	13:06	0.062 Hz Dip
Generation loss at KSK (Event 7)	07-08-18	14:17	0.035 Hz Dip
Generation loss at Karcham (Event 8)	29-08-18	04:02	0.056 Hz Dip

Event	Farakka stage 1 & 2	Farakka stage 3	Kahalgaon Stage 1	Kahalgaon Stage 2	Talcher Stage 1	Barh	GMR	MPL	Adhunik	JITPL	BRBCL
Event 1	0%	0%	44%	0%	8%	2%	17%	6%	0%	1%	0%
Event 2	0%	0%	0%	0%	24%	0%	61%	0%	26%	0%	56%
Event 3	16%	0%	0%	22%	42%	0%	0%	0%	0%	0%	37%
Event 4	0%	0%	45%	9%	22%	0%	0%	0%	35%	0%	75%
Event 5	9%	78%	34%	0%	18%	2%	30%	50%	43%	0%	0%
Event 6	86%	24%	0%	15%	1%	35%	0%	50%	21%	0%	0%
Event 7	17%	0%	**270% (Suspected)**	14%	0%	0%	78%	102%	46%	15%	0%
Event 8	0%	0%	0%	13%	0%	0%		0%	0%	50%	0%
Average	**16%**	**13%**	**49%**	**9%**	**14%**	**5%**	**27%**	**26%**	**21%**	**8%**	**21%**

Based on above table inadequate response was observed from most of the power plants. For proper analysis high resolution data (1 sec) was requested from generator multiple times and generating plants agreed for submission of same in earlier OCC meeting. However even after repeated persuasion high resolution data is received only from MPL, Budge-Budge for the events occurred in the month of August 2018.

PART B: ITEMS FOR DISCUSSION

Item No. B.1: 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.

A. Projects approved:

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 (inRs.)	Latest status
1	WBSETCL	Renovation & up-gradation of protection system of 220 kV & 400 kV Substations in W. Bengal	31-12-14	April 2018	108.6 Cr	37 Cr.	100 % Supply is Completed 95 % Erection is completed
2		Renovation & modernisation of transmission system for relieving congestion in Intra-State Transmission System.	22-05-17	25 months from date of release of 1st instalment	70.13	21.03 Cr	Order has been placed for 96.44 Cr. Work is in progress.
3		Installation of switchable reactor at 400kV & shunt capacitors at 33kV	22-05-17	19 months from date of release of 1st instalment	43.37	6.59 Cr	Order has been placed and work is in progress.
4	WBPDCL	Implementation of Islanding scheme at Bandel Thermal Power Station	*10.04.17*	*March 2018*	1.39 Cr	1.25 Cr	*The implementation would be completed by July 2018.*
5		Upgradation of Protection and SAS			23.48	2.348 Cr	Bid opened
6	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	30.11.18	162.5 Cr.	37.79 Cr	Total contract awarded for Rs. 51.35 Cr
7		Implementation of OPGW based reliable communication at 132kV and above substations	15.11.17		25.61 Cr.		Agreement signed on 03.01.2018
8		Installation of 125 MVAR Bus Reactor along with construction of associated bay each at 400kV Grid S/S of Mendhasal, Meramundali& New Duburi for VAR control &stabilisation of system voltage	27.07.18		27.23 Cr		
9	OHPC	Renovation and up-gradation of protection and control system of 4 nos.OHPC substations.		*U.Kolab-March 19 Balimela-Feb 2019 U.Indravati-Jan 19 Burla-Nov 2018, Chiplima Dec 2018*	*22.35 Cr.*	2.235 Cr	Placed work order for Balimela.
10	BSPTCL	Renovation and up-gradation of 220/132/33 KV GSS Biharshariff, Bodhgaya, Fatuha, Khagaul, Dehri -on-sone& 132/33 kV GSS Kataiya	11/5/15	31.07.2018	64.02 crore	56.04 crore	85% of work has been completed. Contract awarded for Rs.71.37 Cr till date.
11		Installation of capacitor bank at different 35 nos. of GSS under BSPTCL	5/9/2016	12th March 2019	18.88 crore	Nil	Work awarded for all GSS.
12		Renovation & up-gradation of protection and control system of 12 nos. 132/33 KV GSS under BSPTCL.	02.01.17	31st March 2018	49.22 Cr.		75% work completed for seven no. GSS as part of R & M work. Revised DPR is to be submitted for rest 5 no. GSS.

13	JUSNL	Renovation and up-gradation of protection system	*September 2017*	*2 years*	*138.13 crores*		Board of Directors approval is pending for work award.
14	DVC	Renovation and upgradation of control & protection system and replacement of Substation Equipment of 220/132/33 kV Ramgarh Substation	02.01.17	01.06.2019	25.96 Cr	2.596 Crore on 01.06.2017	Work awarded for 28.07 Cr. Work is in progress.
15		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	27.11.17	24 Months from the date of release of fund.	140.5 Cr.	1st installment of 14.05 Cr. received on 21.12.2017	Work awarded for 6.45 Cr. Price bid opened for West Bengal portion and technical bid opened for Jharkhand portion.
16	POWERGRID	Installation of STATCOM in ER		June 2018	*160.28 Cr*	*16.028 Cr*	Work is in progress, expected to complete by June 2018. STATCOM at Rourkela has been commissioned.
17	ERPC	Creation & Maintenance of web based protection database and desktop based protection calculation tool for Eastern Regional Grid	17.03.16	Project is alive from 30th October 2017	20 Cr.	4.94 Cr. + 9.88 Cr.	1) Protection Database Project has been declared 'Go live' w.e.f. 31.10.17. 2) Pending training on PDMS at Sikkim and 3rd training on PSCT has been also completed at ERPC Kolkata.
18a	ERPC	Training for Power System Engineers	*27.07.18*		0.61 Cr.	Nil	Approved
18b		Training on Power market trading at NORD POOL Academy for Power System Engineers of Eastern Regional Constituents	*27.07.18*		5.46 Cr.	Nil	

B. Projects under process of approval:

SN	Name of Constituent	Name of Project	Date of Submission	Estimated cost (in Rs.)	Latest status
1	Sikkim	Renovation &Upgradation of Protection System of Energy and Power Department, Sikkim.	09-08-17	68.95 Cr	The proposal requires third party protection audit. Issue was discussed in the Monitoring Group meeting in Siliguri on 8.6.2018. Sikkim was asked to coordinate with ERPC.
2		Drawing of optical ground wire (OPGW) cables on existing 132kV & 66kV transmission lines and integration of leftover substations with State Load Despatch Centre, Sikkim	09-08-17	25.36 Cr	Scheme was approved by Appraisal Committee. It was sent to CERC for concurrence.
3	JUSNL	Reliable Communication & Data Acquisition System upto 132kV Substations.	23-08-17	102.31 Cr	Scheme was approved by Appraisal Committee. It was sent to CERC for concurrence.
4	OPTCL	Implementation of Automatic Demand Management System (ADMS) in SLDC, Odisha	22-12-17	3.26 Cr	Scheme was approved by Appraisal Committee. It was sent to CERC for concurrence.
5		Protection upgradation and installation of SAS for seven numbers of 220/132/33kV Grid substations (Balasore, Bidanasi, Budhipadar, Katapalli, Narendrapur, New-Bolangir&Paradeep).	12-03-18	41.1 Cr.	Scheme examined by TSEG on 20.03.2018. Inputs sought from the entity are awaited.
6	WBSETCL	Implementation of Integated system for Scheduling, Accounting, Metering and Settlement of Transactions (SAMAST) system in West Bengal	22-12-17	25.96 Cr	Scheme examined by TSEG on 20.03.2018. Inputs received on 24.05.2018. This scheme again reviewed by sub group meeting held on 24.07.2018.The entity was asked

					to provide the Interface meter details by depiction of interface points on grid network map with each intra-state entity.
7		Installation of Bus Reactors at different 400kV Substation within the state of West Bengal for reactive power management of the Grid	12-03-18	78.75 Cr.	Scheme examined by TSEG on 20.03.2018. Inputs received on 22.05.2018. Shall be examined in the next TESG meeting.
8		Project for establishment of reliable communication and data acquisition at different substation at WBSETCL.	10-05-18	80.39 Cr.	Scheme examined by TSEG on 24.07.2018. Inputs sought from entity.
9	BSPTCL	Implementation of Schedulling, Accounting, Metering and settlement of Transcation in Electricity (SAMAST)in SLDC Bihar.	27-02-18	93.76 Cr.	Scheme examined by TSEG on 20.03.2018 & 31.05.2018. Further inputs furnished by BSPTCL on 1.8.2018. Shall be examined in the next meeting of TESG.

Respective constituents may update the status.

Item No. B.2: Load Trimming Scheme on 400/132 kV Motihari ICTs.

400/132 kV Motihari substation is having a two ICTs each with 200 MVA capacity. It has been observed that due to higher load catering of Bihar along with Nepal, the ICTs are running without N-1 reliability. On 22nd August 2018 at 14:59 Hrs, the ICTs combined load increased to 280 MW and one ICT got tripped on mal-operation of OSR relay due to moisture ingress. This led to overloading of other ICT, which tripped in overcurrent protection. This led to the loss of 280 MW of Bihar and Nepal.

Such unreliable operation of ICTs due to higher load is not desirable and following action point may be desired:

1. Implementation of Load Trimming Scheme (LTS) on Motihari ICTs.
2. BSPTCL Long term plan to ensure the meeting such high demand in the areas.
3. Prevention of Tripping of Motihari ICT on OSR relay mis-operation during moisture ingress in rainy season.
4. Capacity augmentation for long term measures may be planned.

BSPTCL and DMTCL may kindly explain.

Item No. B.3: Charging of 132kV Purnea(PG)-Kishanganj(old)-Baisi-Dalkhola line in Synchronous mode-BSPTCL

In view of providing reliable power to Nepal and to resolve low voltage issues at Kishanganj, BSPTCL requested for charging of 132kV Purnea(PG)-Kishanganj(old)-Baisi-Dalkhola line in Synchronous mode. Details are given in **Annexure-B3**.

Members may discuss.

Item No. B.4: Proposal for drawing power at Laukhai(BSPTCL) from 400/220kV Darbhanga—BSPTCL

Presently 132kV Supaul – Phoolparas (D/C) transmission line is under breakdown due to collapse of two towers. For its restoration two nos of piles are required to be constructed. Right now due to flood & rainy season, pile construction is not possible and it can only possible by November/December 2018.

Due to B/D of the aforesaid line, no power is coming from Supaul to Phoolparas grid resulting power supply of all grids near Phoolparas (Jainagar, Jhanjharpur, Benipatti, Madhunbani & Sursand) from GSS Darbhanga (132/33 KV). Due to this excessive load shedding taking place along with low voltage existing in these GSS.

In light of above persisting situation, it has been planned to get power at 220/132/33 kV Laukahi GSS from Darbhanga (400/220kV) by 220kV Darbhanga(220/132kV) - Lukahi circuit -I. After power transformation to 132kV in GSS Laukhai, power will be fed to 132kV Laukahi- Supaul (incomplete under construction) line. From this line power will be fed in 220kV Laukahi-Darbhanaga (400/220kV) circuit –II by ERS. Details are given **Annexure-B4**.

220 kV (D/C) Darbhanga (400/220 kV) - Laukahi transmission lone passes near 132kV Phoolparas- Supaul (D/C) line. From 220kV Laukahi- Darbhanga(400/220kV) circuit-II, 132 kV power will be fed to 132kV Phoolparas- Supaul circuit by an another set of ERS. By this arrangement Phoolparas will be able to get around 70 MW power by one 132 kV.

So permission may be given for:-
(i) Drawing 220kV power from Darbhanga (400/220kV) to Laukahi by 220 kV Darbhanga (400/220 kV) – Laukahi circuit –I and
(ii) Utilising 220kV Darbhanga (400/220kv) – Laukahi circuit –II on 132kV to feed power power to 132/33 kV Phoolparas GSS by arrangement as shown in diagram. Circuit-II line will be remain off at Darbhanga(400/220kV) end.

Members may discuss.

Item No. B.5: Scheduling of Un-requisitioned Surplus (URS) power from ISGS – ERLDC

In 148th OCC meeting, NTPC and beneficiaries of ER are agreed that the decision of ERLDC in respect of scheduling & dispatch of URS power from the NTPC stations in the Eastern Region shall be binding on them and also indemnify ERLDC in all respects for this scheduling of URS power.

In line to this and as per the CERC vide order dated 17/10/2017 against Petition No. 16/SM/2015, ERLDC has given permission to the beneficiaries to punch their URS requisition from the respective generating station in ERLDC WBES portal using their login credentials. No real time approval/consent form NTPC Patna is required now onwards. URS scheduling methodology followed:

1. All day-ahead URS requisitions punched by various beneficiaries from a particular ISGS station till 19:00 Hrs are considered together and allocated on pro-rate basis.
2. 19:00 Hrs on ward for day-ahead schedule and real time schedule preparation, URS allocation is done on first cum first serve basis.
3. URS requisition of different beneficiaries punched for a particular generator for a particular block is scheduled on pro-rate basis.

Members may note.

Item No. B.6: Multiple Contingency due to the Tower Collapse of 400 kV Purnea-Biharsharif D/C and 400 kV Kishenganj-Patna D/C in the Eastern Region-ERLDC

On 01-09-18 400 kV Kishenganj-Patna D/C got tripped on Tower Collapse. With this tower collapse and already ongoing outage of 400 kV Purnea-Biharsharif D/C on tower collapse (since 10-08-18) the network in NR/ER/NER corridor has become significantly depleted. The high hydro generation scenario prevailing at Tala, Chukha, Sikkim and NER is causing high flow in the chicken neck corridor. Under such condition, it is pertinent to note that contingency of Purnea-

Muzaffarpur or Purnea-Malda D/C line will lead to islanding of Sikkim, Bhutan, N. Bengal, NERand the HVDC from the rest of the system.

In order to ensure the system reliability following actions have been taken:

1. All Poles of Agra-BNC-Alipurdwar multi-terminal HVDC are in service all the time in integrated mode along with reactive power in auto mode. In case one pole trips, power order will be compensated by other poles. Further inter stationcompensation at BNC and Alipurdwar are kept in service for automatic power transfer between rectifier stations in case of both poles tripping on substation internal fault.
2. The power order of Agra-BNC-Alipurdwar HVDC is being kept at 2000-2200 MW (APD-Agra: 1500 MW and BNC-Agra: 700 MW) so that in case of Purena substation outage, the system may survive through 220 kV Binaguri-NJP-Kishenganj-Dhalkhola-Malda. Depending on system condition, BNC-Agra HVDC power order will be increased to 1000 MW.
3. Voltage at Kishenganj is being kept at the higher side so that under contingency of complete outage of N. Purneasubstation, the voltage at 220 kV Kishenganj and Dhalkhola can sustain within the limit.
4. 220 kV Siliguri-Kishenganj-Dhalkoha-Malda / Purneais kept under closed loop so that a parallel path is available under contingency. The lines connected to Dalkhola(PG) 220kV S/Stn are distributed suitably between the two 220kV buses, so that in the event of high power flow resulting in tripping of bus-coupler CB, supply to WBSETCL s/stns would not be affected.
5. In view of grid security, all planned outage from Binaguri, Purnea, Malda, Farakka, Muzaffarpur, BNC,Balipara, Alipurdwar and Bongaigaon is being differed until the end of sept i.e. High Hydro season.
6. Any emergency outage in Chicken neck area, in ER-NER corridor, in Sikkim Area and in ER-NR corridor will be facilitated with close coordination with NLDC.
7. All Circuits in ER-NER, ER-NR and WR-NR corridor are kept in service with A/R enabled. FSCs of 400 kV Purnea-Mujaffarpur D/C to be kept in service.

Desired Actions from All Utilities in the Eastern region:

1. **ENCIL and PGCIL:**To expedite the restoration of 400 kV Purnea-Biharsharif D/C and 400 kV Kishenganj-Patna D/C on war footing basis.
2. **PGCIL:**
    a. Any untoward contingency of Kishenganj and Purnea substation to be informed to ERLDC/NLDC at the earliest and to be ready for handling any emergency like flood/equipment failure etc.
    b. Protection System at Binaguri, KishenganjandPurnea to be kept healthy. No unwanted tripping of transmission lines is desired from these substations because of protection mal-operation.
    c. Communication System along with SCADA data to ERLDC to be ensured at all points of time.
3. **All Utilities of the Eastern region:**
    a. Keeping the Lines/ICTs available all the time.
    b. Any outage at 220 kV level affecting the East Bihar, North Bengal and Sikkim to be done with prior information to ERLDC.
    c. All defense mechanism such as UFR, SPS and df/dt to be kept in service all the time.
4. **All SLDCs and Generators:** All constituents to adhere drawl according to their schedule to avoid any stress in the grid and corridor.

5. **All Generators of Eastern Region:** RGMO/FGMO for all eligible generating unit to be kept in service.
6. **All Hydro Generation of Sikkim/Bhutan:** Blocking of high-frequency tripping of Units in Hydro station of NER/Sikkim/Bhutan during the contingency of system separation and high Rate of change of frequency (3.5 to 4 Hz/sec).

Members may discuss.

Item No. B.7: Long Outage of transmission elements in Eastern Region

a) **400 kV Barh – Motihari – D/C :**

Line was out of service since 28/06/18 due to reduced clearance as water level in Gandak river has increased.

In 148th OCC, DMTCL informed that tower erection had been completed and stringing is in progress. DMTCL added that the line would be in service by 20th September 2018.

OCC observed that the restoration of this line was being delayed and DMTCL has deferring the schedule in every OCC.

OCC advised DMTCL to give a brief presentation on status of the line and restoration plan.

DMTCL may please update.

b) **400 kV Rangpo – Dikchu :**

Line was out of service from 06/07/18 due to ROW issue.

TPTL may please update restoration plan

c) **400kV Purnea-Biharsariff-DC**:

Line was out of service from 10/08/18 due to tower collapse as Ganga River has changed its course. ENICL informed that restoration of the line is in progress using a temporary arrangement and the restoration of the line would take 50 days approximately. ENICL may please update the current status and also submit fortnight status report to ERLDC/ERPC through mail.

ENICL may update.

d) 400 KV Patna – Kisanganj - D/C

Line was out of service from 01/09/18 due to tower collapse as Ganga River has changed its course. Powergrid ER-I may please update the current status and also submit fortnight status report to ERLDC/ERPC through mail.

Powergrid may update.

e) <u>Breakers at 400/220kV Indravati (OHPC) S/s</u>

In 141st OCC, it was explained that 3x105 MVA 400/220kV ICT-I tie breaker, 220kV Bus coupler and transfer bus breakers are not in service at 400/220kV Indravati (OHPC) S/s.

In 142nd OCC,OHPC submitted the action plan as follows:

1. *220kV Bus Coupler: CB and CT needed to be replaced. They would restore the Bus coupler by August 2018.*
2. *220kV Bus tie: CB and CT needed to be replaced. They would restore the Bus Tie by November 2018.*
3. *400kV Tie-1 Breaker: CB and CT needed to be replaced. They would restore the 400kV Tie-I by January 2019.*

In 148th OCC, OHPC informed that 220kV Bus Coupler would be restored by end of August 2018.

OHPC may please update.

Item No. B.8: Guidelines for the charging of Transmission line connecting two generating plants after tripping on fault or outage

There is a prevailing issue on the charging of transmission line connecting two generating complex after its outage/tripping. It has been observed sometimes that either of the utility is not ready for charging of the line from their end after its tripping on fault/outage. This results in the delay in the restoration of line and thus affecting the reliability of both the generating station. In view of this, there is a need of guideline on charging of such transmission lines.

List of such transmission lines is given below:

I. 400 kV Farakka-Kahalgaon Q/C.
II. 400 kV Kahalgaon-Barh D/C.
III. 400 kV Farakka-Sagardighi D/C.
IV. 400 kV RTPS-DSTPS D/C.

As a general guideline following may be considered

- If voltage difference between two system is more than 5 kV system which have lower voltage should charge the line
- In case voltage difference is less than 5 kV system which have higher fault level should charge
- If only one end has line reactor than the end which is not having the line reactor should attempt to charge first.

Members may decide.

Item No. B.9: WBSETCL Agenda:

1) GENUS make Energy m eters were installed at both ends of 400kv Farakka-SgTPP#2 and 400kv Jeerat-SgTPP line and conversion software of GENUS meters are not available with Energy Accounting sect on of WBSLDC. It is requested for arranging the above-mentioned software from PGCIL to WBSLDC.

2) As excessive reactive power is injected from 400kv BidhanNagar S/S to Parulia (PGCL) most of the time in a da , one no. 400kv PPSP-Bidhannagar line (185 km length) may be kept switched off (if loa ding is <l50 MW each) when remaining 3 nos. 400kv lines connected with PPSP is healthy. It will reduce MVar generation in WBSETL network and reduce bus voltage at BidhanNagar S/S.

Members may discuss.

Item No. B.10: Guidelines on Availability of Communication System

As per Regulation 7.3(i) of CERC (Communication System for Inter-State transmission of Electricity), Regulations, 2017 and CERC letter dated 27.06.2017, National Power Committee (NPC) has been entrusted to prepare Guidelines on Availabilit y of Communication System in consultation with RPCs, NLDC, RLDC and other stakeholders.

Accordingly, a Working group was constituted with Chief Engineer & Member Secretary (NPC) as Chairperson of the Working group and consisting of members from all the RPCs, PGCIL, POSOCO and few of the STUs. Three meetings of the Working group were held and a draft guidelines on Availability of Communication System was finalized in the 3rd meeting. Draft copy is enclosed at **Annexure-B10**.

Members requested to send their comments to cenpc-cea@gov.in with a copy to mserpc-power@nic.in.

Members may note and comply.

Item No. B.11: Review of Cyber Security Works/Activities

CEA vide letter informed that Secretary (Power) is going to review the cyber security related works /activities being carried out in Power Sector. In this regard, it is requested to provide the State wise status on following action points pertaining to cyber security at the earliest:

1. Appointment of organization-wise Chief Information Security Officers and its status
2. Identification of organization-wise Critical Infrastructure and its status
3. Preparation of organization-wise Crisis Management Plan and its status
4. Status of Cyber Security Mock Drill activity in coordination with CERT-In
5. Status of Training / Workshops on Cyber Security organized / participated by power sector entities
6. Status of action taken on CERT-In / NCIIPC advisories

Members may comply.

Item No. B.12: Commissioning of 4th 400/220KV, 500MVA ICT at Biharsharif SS under ERSS XX:

4th 400/220KV, 500MVA ICT at Biharsharif SS has been planned for installation under ERSS XX with schedule date of Commissioning in December'19.

However, M/S BSPTCL vide letter dtd 31.08.2018 have requested to expedite the commissioning of the said Transformer citing various constraint in grid condition and not fulfilling N-I criteria. To mitigate the said problems as mentioned by M/S BSPTCL, POWERGRID has been expedited the commissioning of the said Transformer with the executing party and expected commissioning for the Transformer is in January'19.

Kind attention of ERPC and the Constituent members are invited towards approval for preponement of commissioning of 500MVA ICT at Biharsharif SS before its schedule date.

Members may decide.

Item No. B.13: Commissioning of 2 nos 80MVAR line Reactors as Bus Reactor at New Purnea S/Stn.

New Purnea 400/220kV sub-station of POWERGRID is connected with 400kV Malda, Binaguri, Muzaffarpur, Kishenganj, Biharsharif with D/C lines with only two no 125MVAR bus reactor. The drawing of power from New Purnea SS during lean period of Hydel is very less. The 400kV voltage at New Purnea frequently rises above the acceptable limit (420KV) posing stress to the equipment and may cause system disturbance.

400KV New Purnea-Gokarna-Farakka D/C line is being constructed by POWERGRID with 80MVAR Line Reactor in each circuit. However, the commissioning of the said line will be delayed considerably due to forest clearance/ROW problem. In the mean time, 02 nos 80MVAR line reactors of the said line have arrived at site and commissioning is under progress.

Proposal : It is proposed that these 02 nos 80MVAR reactors may be installed & commissioned as Bus Reactor at New Purnea Sub-station to contain the voltage problems. **Till commissioning of said line, the Reactors shall be treated as elements (BR) as part of Eastern Regional Pool.** After completion of the said line, these Reactors will be commissioned along with the line as a Line Reactors.

The above contingency arrangement along with the commercial agreement for tariff may be deliberated for resolution.

Members may decide.

Item No. B.14: Upgradation of existing Auto Reclose Relays in different feeders of ER-II (From Static to IEC-61850 Compliant Numerical Relays).

In different feeders of ER-II existing A/R relay are of Conventional static type in nature. Mostly all the relays are found in S/S commissioned before 2010 are having such type of Relays. In recent past OEM of such relays (VARM of ALSTOM/GE & REXA/RAAM of ABB) declared end of life of the products. As such there will be no support available if the relays require any maintenance. Again this static type relays are non-communicable / Traceable remotely due to limitation of communications.

Considering above and to make the system more reliable, ER-II has planned for phase wise replacement of existing static type A/R relays by numerical A/R relays. In first phase few feeders are identified and planned for replacement in the month of October-Decmber'2018. Details S/D requisitions for different feeders are already available in S/D request for the month of October'18. Balance feeders at different S/S will be taken in coming months as per availability of relays.

As S/D of the elements taken for system improvement as well as increasing the reliability of the system, outage of the elements taken on account of A/R relay replacement may kindly be considered as deemed available as per the provisions of the regulation.

Members may decide.

Item No. B.15: Installation of additional Back-Up Impedance protection for Transformers to avoid unnecessary tripping due to problem in downstream.

In past we have seen different transformer tripping on account of downstream problem causing total outage or cascading tripping. In some cases it has been observed that back up O/C & E/F feature is not entirely proven to isolate faults in downstream. The matter has been considered by CC/Engineering and upcoming ICT's of POWERGRID will come with Back Up Impedance protection in addition with conventional protections.

Considering the importance of the protection in first phase ICT's of Rangpo & Gangtok has been considered for implementation with such feature. Details S/D requisitions for different feeders are already available in S/D request for the month of October'18.

As S/D of the elements taken for system improvement as well as increasing the reliability of the system, outage of the elements taken on account of installation of Back-Up impedance protection may kindly be considered as deemed available as per the provisions of the regulation.

Members may decide.

Item No. B.16: Installation of Line differential protection of short lines.

The subject agenda points already raised in different TCC/ERPC forums and in last ERPC meetings also it has been decided that short lines should be protected by means of Line differential units to increase the reliability. Accordingly lines having PG substation at both end s are identified and planned for implementation of such protection accordingly.

In first phase 220 KV Siliguri-Binaguri-D/C line is planned for installation of such protection. All necessary relays & communication equipment's has been procured and installation planned in October-2018. Details S/D requisitions for different feeders are already available in S/D request for the month of October'18.

As S/D of the elements taken for system improvement as well as increasing the reliability of the system, outage of the elements taken on account of installation of Line differential protection may kindly be considered as deemed available as per the provisions of the regulation.

Members may decide.

Item No. B.17: Data for preparation Load Generation Balance Report (LGBR) of ER for the year 2019-20

As per the IEGC, RPC Secretariat is responsible for finalization of the Annual Load Generation Balance Report (LGBR) for Peak as well as Off-peak scenarios and the annual outage plan for the respective region

To facilitate the preparation of LGBR of Eastern Region by ERPC Secretariat within the schedule period, the following data/information for the year **2019-20** in respect of the constituents/utilities of Eastern Region is urgently required:

i) The unit wise and station wise monthly energy generation proposed from existing units during 2019-20 (thermal/hydro/RES).
ii) Annual maintenance programme for each of the generating units (thermal and hydro both).
iii) Generating units under R&M / long outage indicating date of outage and reasons of outage and expected date of return (thermal and hydro both).
iv) Partial and forced outage figures (in %) of generating units for the last 3 years.
v) Month wise peak demand (MW) – restricted and unrestricted peak demand.
vi) Month wise off-peak demand (MW).
vii) Month wise energy requirement (in MU).
viii) Month wise & source wise power (both MU & MW) purchase and/or sale plan.
ix) Schedule of commissioning of new generating units during 2019-20 and unit-wise monthly generation programme (in MU).
x) Allocation of power from new generating units.
xi) Month wise and annual planned outage of transmission system (Transmission lines 220kV and above / ICTs / Reactors/ other elements.

Information may please also be submitted in the form of soft copy through email (mail ID: **mserpc-power@nic.in / erpcjha@yahoo.co.in**).

Members may furnish the above data at the earliest.

Item No. B.18: Installation of PMU for observation of the dynamic performance of STATCOMs--ERLDC

Four STATCOMs (Rourkela, Jeypore, Kishenganj, New Ranchi) are being commissioned in the Eastern Region to improve the dynamic var compensation in the grid and for the improvement of the transient stability. STATCOM is a dynamic VAR compensation device and provides the fast reactive support to the grid during transient as well steady state operation. In order to analyze the dynamic performance of STATCOM (STATCOM+ MSR /MSC) during day-to-day operation, it is desired to install PMU on the Coupling Transformer of the STATCOM as a part of the URTDSM project.

In the 37th ERPC meeting, the followings were decided:

i) Power Grid shall first explore the possibilities by diverting the unutilized PMUs under URTDSM project and would complete the work on urgent basis.
ii) If adequate no. of PMUs are not available under URTDSM project, balance PMUs will be implemented under project "Upgradation of SCADA / RTUs / SAS in the Central sector stations and strengthening of OPGW network".

In 147th OCC, ERLDC informed that spare connection was available at 765kV Ranchi S/s which could be used for integration of Ranchi STATCOM. Since PMUs available at Ind Bharat and Monnet S/s could not be shifted due prevailing administrative issues, PMUs at Tenughat and Patratu might be diverted for STATCOM integration at Rourkela, Jeypore and Kishanganj S/s.

ERLDC added that the same had been communicated to Powergrid.

Powergrid informed that they were exploring all possibilities to provide PMU on the Coupling Transformer of the STATCOM.

In 148th OCC, OCC decided to discuss the issue in a separate meeting with concerned members from ULDC Powergrid, ERLDC, ERPC, JUSNL and NTPC.

Members may update.

PART C: ITEMS FOR UPDATE

Item no. C.1: Status of UFRs healthiness installed in Eastern Region

UFR Healthiness Certification for the month of August, 2018 has been received from CESC, WBSETCL, DVC, OPTCL, BSPTCL and JUSNL.

Members may note.

Item no. C.2: Status of Islanding Schemes healthiness installed 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.

The healthiness certificate for Islanding Scheme for August, 2018 has been received from CTPS, DVC, NTPC, West Bengal, JUSNL and CESC.

WBPDCL may submit.

Item no. C.3: Status of Implementation of islanding schemes in ER

1. Islanding scheme at Bandel TPS-WBPDCL

In 145th OCC, WBPDCL informed that the implementation at Power station would be completed by May 2018. Implementation part at Substation for load segregation would be done by WBSETCL.

In 38th TCC Meeting, WBPDCL informed that the implementation at Power station has been completed.

In 147th OCC, WBSETCL informed that implementation part at Substation end for load segregation would be completed by end of July 2018.

In 148th OCC, WBPDCL and WBSETCL informed that islanding scheme had been implemented and it can be put in service.

WBPDCL and WBSETCL may update.

2. Islanding scheme at IbTPS- OPGC

The islanding scheme was discussed in 68th PCC Meeting held on 18-06-2018. PCC opined that the draft scheme submitted by Odisha was three years old and the draft scheme is needed to be reviewed with existing network configuration.

In 69th PCC Meeting, it was decided that ERLDC and ERPC would study and finalize the islanding scheme in next PCC Meeting.

Members may note.

Item no. C.4: Healthiness of SPS existing in Eastern Region

The Status of healthiness certificate for August, 2018 is given below:

Sl. No.	Name of the SPS	Healthiness certificate received from	Healthiness certificate not received from
1.	*Talcher HVDC*	*NTPC & JITPL*	*Powergrid, GMR,*
2.	*Rangpo*	*Chuzachen,*	*Dikchu, Dansenergy, Powergrid, Teesta-III*
3.	SPS of 132 kV Muzaffarpur-Dhalkebar D/C	*Nil*	*Powergrid*
4.	SPS in CESC system	*CESC*	*Nil*
5.	SPS for Power Export to Bangladesh	*Nil*	*Powergrid*
6.	SPS at Chuzachen	*Chuzachen*	*Nil*

In 148th OCC, Powergrid informed that 132 kV Muzaffarpur-Dhalkebar D/C line is now charged at 220kV level and the SPS would be modified accordingly.

Powergrid added that SPS for Power Export to Bangladesh would also be modified as per the new configuration.

For avoiding repeated operation of Rangpo SPS-2 and consequent total loss of Teesta-3 generation, it was, therefore, decided to modify the logic for SPS-2 so that it operates at a line flow of 900 MW instead of at 850 MW.

On the issue of enhancing the reliability of the existing SPS, representative of PGCIL informed that the logic of checking CB status at both ends of Rangpo-Binaguri line for operation of SPS-1 was already in the process of implementation, together with modernization of the PLC based system to a SAS based one. As regards use of DTPC for transmission of SPS signal to various generating stations from Rangpo, PGCIL assured to explore its feasibility at the earliest.

Members may update.

Item no. C.5: Implementation of Automatic Demand Management Scheme (ADMS)-ERLDC

The latest status along with proposed logic as follows:

Sl No	State/Utility	Logic for ADMS operation	Implementation status/target	Proposed logic (if different from under implementation logic)
1	West Bengal	F <49.7 AND deviation > 12 % or 150 MW	Implemented on 25.11.16	F <49.9 AND deviation > 12 % or 150 MW
2	DVC	F <49.7 AND deviation > 12 % or 150 MW	Implemented on 17.06.2016	
3	Bihar	F <49.7 AND deviation > 12 % or 150 MW	3 months Feeders identified. Implemented by June 2018	F <49.9 AND deviation > 12 % or 150 MW
4	Jharkhand	1. System Frequency < 49.9 Hz AND deviation > 12 % or 25 MW 2. System Frequency < 49.9 Hz AND deviation > 12 % or 50	9 Months Tendering for RTU installation is in progress. Implemented by May 2018	Condition 1: Block I feeders will be selected for load shedding Condition 2: Block I & II feeders will be selected for load shedding Condition 3: Block I, II & III feeders will be selected for load shedding

		MW 3. System Frequency < 49.9 Hz AND deviation > 12 % or 75 MW		
5	Odisha	1. System Frequency < 49.9 Hz 2. Odisha over-drawl > 150 MW 3. DISCOM over-drawl > (40 MW)	10 Months Sent for PSDF approval.	Logic 2 and 3 is AND or OR, in case it is AND then ADMS may not operated when discom are in schedule but GRIDCO is overdrawing due to less generation at state embedded generators
6.	Sikkim			Sikkim informed that they have submitted a proposal to PSDF Committee for installation of OPGW cables which is under approval stage. Sikkim added that ADMS scheme would be implemented after installation of OPGW.

In 142nd OCC, it was opined that uniform logic should be implemented for all the states. OCC decided to review the logic of ADMS after implementation of the scheme by all the states.

During the Month of August'18, several number of times ADMS criteria for the state got satisfied. The details for each state are given at **Annexure-C5.**

Members may update.

Item no. C.6: Repair/Rectification of tower at location 79 of 132kV Rangpo-Melli D/c line and Chuzachen(Rangpo)-Gangtok transmission lines - Powergrid

Powergrid informed that their patrolling team has observed bent in part of tower no. 79 of 132kV Rangpo-Melli D/c line and Chuzachen(Rangpo)-Gangtok transmission lines which may further degrade the condition of tower.

In 141st OCC, Sikkim informed that rectification of the tower has been taken up with Gati. The work would be completed by 2nd week of February 2018.

In 37th TCC, it was decided that Sikkim would give a comprehensive proposal to PGCIL within one week regarding handing over of the relevant segments of the line to PGCIL. Thereafter, PGCIL and Sikkim would sit together and sort out the issues involved therein.

In 145th OCC, Sikkim informed that the proposal had been sent to State Govt. for approval.

In 38th TCC, Sikkim informed that State Govt. for approval is pending.

Powergrid and Sikkim may update.

Item no. C.7: 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.

Powergrid updated the latest 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		*In service from March 2018.*
2	Kishanganj	±200	2x125		*70% civil work completed. 30% switchyard equipment supplied. Expected to complete by December 2018*
3	Ranchi(New)	±300	2x125		*Commissioned on 12th July 2018*
4	Jeypore	±200	2x125	2x125	*Commissioned on 30th June 2018*

Powergrid may update.

Item no. C.8: 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 last 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 December, 2018.***
2.	**400/220kV Pandiabil Grid S/s:**	
a.	Pratapsasan(OPTCL)-Pandiabil(PG) 220 kV D/C line	By Dec, 2018.
3.	**400/220 kV Keonjhar S/S**	
a.	Keonjhar (PG)-Keonjhar (OPTCL) 220 kV D/C line	By Sep, 2018.
b.	Keonjhar (PG)-Turumunga(OPTCL) 220kV D/C line	By 2019. The work is yet to be started.

OPTCL may update.

Item no. C.9: 220 kV inter-connecting lines of JUSNL with 2x315 MVA, 400/220 kV sub-stations at Chaibasa, Daltonganj&Dhanbad

In lastOCC, JUSNL updated the latest status as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**Daltonganj 400/220/132kV S/s:**	
a.	Daltonganj(POWERGRID)–Latehar220kVD/c	By April, 2019.
b.	Daltonganj (POWERGRID) – Garhwa 220kV D/c	The line expected to be completed by May, 2018 but – Garhwa 220kV is expected to be completed by Dec 2018.
C	Daltonganj (POWERGRID) – Daltonganj (JUSNL) 132kV D/c	The line charged as per original configuration on 26th July 2018.
D	Daltonganj (POWERGRID) – Chatarpur/Lesliganj 132kV D/c	Tendering is in progress. Expected to be completed by October 2019
2	**Chaibasa400/220kVS/s**	
A	Chaibasa(POWERGRID)–Noamundi220kVD/c	Not yet started

3	**Dhanbad400/220kVS/s**	
A	LILO of Govindpur–Jainamore/TTPS 220kVD/c at Dhanbad	ROW issues.Target date November 2018.

JUSNL may update.

Item no. C.10: 220 kV inter-connecting lines of WBSETCL with 400/220 kV, 2x315 MVA Alipurduar & 2x500 MVA Rajarhat sub-stations

In lastOCC, *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***)	*The line was commissioned on 6th June 2018.*
2.	**2x500MVA, 400/220kV Rajarhat---**	
a.	Rajarhat-N. Town-3 (WBSETCL) 220 kV D/C line	Matching, ROW problem
b.	Rajarhat-N. Town-2 (WBSETCL) 220 kV D/C line	ROW problem
c.	Rajarhat- Barasat (WBSETCL) 220 kV D/C line	ROW problem
3	**Subashgram400/220kVS/s**	
a	Subashgram–Baraipur220kVD/cline	Feb 2019, 50% of work has been completed.

WBSETCL may update.

Item no. C.11: 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.

Latest status is enclosed at **Annexure-C11**.

ERLDC may present. Members may update.

Item no. C.12: Failure of Real time telemetry from North Bengal and Sikkim to ERLDC

In 141st OCC meeting POWERGRID pointed out the alternate communication path could be established after installation of OPGW communication link between Purnea 400 kV to Biharshariff 400 kV. This link is owned by M/s East North Interconnection Company Limited (A subsidiary of Sterlite Power Transmission Limited).

In 142nd OCC, M/s East North Interconnection Company Limited (ENICL) informed that OPGW is already available in the line but laying of approach cable inside the POWERGRID sub-stations & termination at both end to communication Mux is pending. ENICL added that the same is under discussion at their end for early implementation of the same.

In 143rd OCC, ENCIL updated that termination of OPGW would be completed by end of June 2018.

Powergrid informed that the link would be in service by end of July 2018 subjected to termination of OPGW link.

In 148th OCC, ENCIL informed that that OPGW work was getting delayed because in some location hot line replacement of OPGW was to be done, some locations theft of OPGW noticed & work for the same is under process.

OCC advised ENCIL to put serious efforts to complete the work at the earliest.

ENCIL assured to complete the work by September 2018.

ENCIL &POWERGRID may update.

Item no. C.13: Transfer capability determination by the states

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.

Latest status of State ATC/TTC declared by states for the month of December -2018

Sl No	State/Utility	TTC import(MW)		RM(MW)		ATC (Import) MW		Remark
		Import	Export	Import	Export	Import	Export	
1	BSPTCL	--	--	--	--	--	--	Last available for Jan-18
2	JUSNL	1270	--	170	--	1100	--	
3	DVC	1477	3486	60	48	1417	3438	
4	OPTCL	1835	--	82	--	1753	--	Nov-18
5	WBSETCL	3820	--	300	--	3520	--	Nov-18
6	Sikkim	--	--	--	--	--	--	

BSPTCL has neither declared TTC nor has provided updated base case in last six months.

BSPTCL and Sikkim may update the status.

Item no. C.14: Replacement of GPRS communication with Optical Fiber for AMR

In ER, 80% meters are connected through Automated Meter Reading (AMR). At present the communication system used for data transfer from each location is GPRS. It has been observed that many locations are not communicating with AMR system due to poor/no GPRS signal. Many substations have their own optical fiber which is also used for the LAN network of respective stations. TCS has successfully connected 02 locations (Subhasgram-PG and Binaguri-PG) in ER-II with PGCIL intranet and these two locations are smoothly reporting to AMR system after connecting with PGCIL LAN. The proposed network will not only provide better communication but alsoreduce the cost of GSM.

In 147th OCC, POWERGRID informed that the replacement of GPRS communication of the Remaining 34 locations would be completed by August 2018.

POWERGRID may please update the progress.

Item no. C.15: Accounting of state drawl from Substation of PGCIL/ISTS Licensee in ER

As per Clause 7(1) (C) of CEA (Installation and Operation of Meters) Regulations, 2006 &its subsequent amendments, Main Meters for drawl computation through ICT should be installed on HV side of ICT and meters installed on LV side of ICT should be considered as Standby meters .

In view of the above it is proposed that Sate drawl from PGCIL/ISTS Licensee S/S may be computed by using the meter installed on HV side of ICTs in line with CEA regulation.

In 146th OCC, Powergrid informed that the SEM installation in ER-I stations has been completed and the same at ER-II stations would be completed by June 2018. Powergrid(Odisha) informed they will complete the SEM installation by July,2018.

However locations in ER-I for ex, Purnea, Banka, Lakhisarai, and Ranchi are still pending.

A List of Time drifted Meters installed at ICTs at PGCIL S/station in ER was prepared by ERLDC from AMR system and vide letter dated 04.07.18, PGCIL was requested for replacement of the same.

In 147th OCC, Powergrid informed that the list had been received from ERLDC and the replacement of SEMs is in progress.

However Meter at either side of ICTs at Purnea(2 nos of 220/132 ICT), Birpara (1 no of 220/132 ICT) and Baripada(2 nos of 400/220 ICT) is yet to be installed. Further Meters installation at IV side of many ICTs is also pending.

Powergrid may update.

Item no. C.16: Meter related issues

1. **Kahalgaon (BSPTCL)**

Kahalgaon (BSPTCL) end meter NP-6076-A installed at 132 KV Kahlagaon(NTPC) Line has reverse polarity since 14:00 Hrs of 17.08.2018. It was gathered that polarity was reversed by BSPTCL. After reversing the polarity, import power is showing as export which is not correct. BSPTCL was requested to restore the polarity to its original status. The CT polarity of the meter may be reversed at the earliest.

BSPTCL may please update the status.

2. **Daltonganj (JUSNL)**

Meter No ER-1198-A installed at Daltonganj JUSNL end of 132 KV Daltonganj PG Line-2 has reverse polarity as well as less recording. The CT polarity as well as issue of less of the meter may be corrected at the earliest. A communication from ERLDC was sent to JUSNL & PGCIL for the same.

JUSNL/Powegrid may please update the status.

3. **Non submission of Meter data to ERLDC**

As per IEGC, weekly SEM data has to be sent to ERLDC by respective utilities by every Tuesday as per IEGC. Weekly SEM data from following locations are not being submitted to ERLDC since Long.

i) Malbase(Bhutan) ii) Karamnasa(BSPTCL) iii) Fatua(BSPTCL) iv) Baisi(BSPTCL)

132 KV Kishanganj-Dalkhola Tie Line was made LILO at Baisi in BSPTCL and the power started flowing through 132 KV Baisi-Dalkhola Tie Line wef 21.08.2018. Meter of Kishanganj BSPTCL was shifted to Baisi but the Data is not being sent to ERLDC. The matter was informed to the respective substation to send the data to ERLDC. The said data is very much required for energy accounting and data validation.

Bhutan/BSPTCL may please update.

Item no. C.17: Mock Black start exercises in Eastern Region – ERLDC

Tentative Schedule for mock black start exercise for FY 2018-19 is given below:

Sl no	Name of Hydro Station	Schedule	Tentative Date	Schedule	Tentative Date
		Test-I		Test-II	
1	U.Kolab	Last week of May, 2018	*Completed on 8th June,2018*	Last Week of January2019	
2	Maithon	1stweek of June 2018	*Completed on 6th June,2018*	1stWeek of February2019	
3	Rengali	2ndweek of June 2018	*Done on 18th August,2018.*	Last week of November 2018	
4	U. Indarvati	3rdweek ofJune 2018	*Planned in Sep,2018.*	2ndweek of February2019	
5	Subarnarekha	1stweek of October 2018	*Done on 10th August,2018.*	1stweek of January2019	
6	Balimela	3rdweek of October 2018		1stweek of March 2019	
7	Teesta-V	2ndweek of Nov 2018	Done on 3rd May 2018	Last week of February2019	
8	Chuzachen	Last Week of May2018	In May 2018	2nd week of January2019	
9	Burla	Last Week of June 2018	*Completed on 7th June,2018*	Last week of February2019	
10	TLDP-III	1st Week of June 2018	After Monsoon	2ndWeek of January2019	
11	TLDP-IV	Last Week of June 2018	After Monsoon	1st Week of February2019	
12	Teesta-III	Last week of Oct 2018		First Week of March 2019	
13	Jorthang	First Week of May 2018		First Week of Feb 2019	
14	Tasheding	2nd Week of May 2018		2nd Week of Feb 2019	
15	Dikchu	3rd Week of May 2018		3rd Week of Feb 2019	

Members may update.

Item no. C.18: Schedule for reactive capability tests

In last OCC, Members updated the status and informed the schedule as follows:

- AdhunikTPS(both units) –Unit #2 would be in service from April 2018.
- JITPL(Unit #2) –Unit #2 testing would be done in Sep 2018
- Barh TPS – Vibration problems will be attended during overhauling. The testing would be done after overhauling in December 2019.
- Raghunathpur – Coal not available
- GMR (Unit #3) –

Members may update.

Item no. C.19: Implementation of Web based PSP report in ERLDC

Aftersuccessful parallel testing of Web based PSP and with continuous support from ER beneficiaries and generators, the web based PSP hassuccessfully migrated from excel based PSP reporting to Web based PSP reporting portal on 07th September 2018. However, some utilities are still not filling-in data in Web based portal regularly during night hours.It is once again requested to the parties to fill the 24hrs generated energy, energy exchange data in ERLDC portal by 02:00hrs on daily basis regularly for error free and in time publication of the report during night hour.

Members may comply.

Item no. C.20: Flexible Operation of thermal power stations- Identification of pilot projects--CEA

Central Electricity Authority vide letter dated 16th February 2018 informed that a special Task Force was constituted under IGEF Sub-Group-I for enhancing the flexible operation of existing coal-fired power plants. The committee has recommendd for implementation of measures for 50%, 40% and 25% minimum load in thermal power stations. The measures for 50% minimum load operation requires no investment or minimal investment. (Report is available on CEA website under TRM division)

Subsequently, a meeting was held under the chairmanship of Member (Thermal) on 8th February 2018 where in it was decided that 55% minimum load operation would be implemented nationwide in first phase. Furher, Six units, including two units of NTPC and one unit each from DVC, GSECL, APGENCO, MSPGCL, would be taken up for 55% minimum load operation on pilot basis as 55% minimum load operation in line with the CERC notification dated 6th April 2016 and 5th May 2017 (IEGC 4th Amendment).

In 142nd OCC, NTPC informed all the units of NTPC were capable of 55% minimum load operation. DVC informed that they were planning to implement at DSTPS.

In 37th TCC, DVC informed that they would demonstrate the capability of 55% minimum load operation for one unit of DSTPS by March 2018.

In 144th OCC, DVC informed that an exercise to test 55% minimum load operation had been conducted at DSTPS recently. The details of the test results, as and when received, would be shared with OCC members.

In 146th OCC, DVC informed that they could bring down their machine up to 60 % without oil support and with the available quality of coal.

In 38th TCC, DVC assured that the necessary demonstration to bring down their machine up to 55% would be done by July 2018.

DVC may update.

Item no. C.21: Issuance of TOC for DSTPS-RTPS OPGW link by DVC

In 19th SCADA O & M meeting held on 7th April 2017 at ERLDC, Kolkata, POWERGRID had informed that they were not able to complete the OPGW work in DSTPS – RTPS in DVC Sector under Microwave Replacement Package due to severe ROW issue. POWERGRID further informed that they had mobilized the team several times but work could not be completed due to heavy ROW / compensation issues related to TL construction resulting non-completion of 2 nos. OPGW drum (approx. 9 Km) out of total 69.182 Km. POWERGRID again informed that this issue

was discussed in various forums but the solution could not be provided by DVC. DVC informed that they are not able to resolve the issue as this was an old ROW / compensation issue related to TL construction. OPGW work in this link could not be completed due to ROW/Compensation issues since September-2013.

In 36th ERPC meeting, matter was deliberated and DVC informed that they would try to resolve ROW issues by 31st October-2017. Otherwise they would provide the necessary certificate.

In 20th SCADA O&M meeting held on 15th December-2017, POWERGRID informed that DVC had not yet issued TOC for this link. DVC confirmed that they will issue TOC and request for a letter from POWERGRID. POWERGRID issued the request letter on 20.12.2017. However, ToC is yet to be issued by DVC.

In 37th TCC, DVC informed that the ROW issue would likely to be resolved after the Panchayat Election of West Bengal.

In 38th TCC, DVC assured that the issue would be resolved by July 2018. In case the issue is not resolved MS, ERPC will take up the matter with DVC for early resolution of the issue.

In 147th OCC, DVC informed that they had taken up the issue with appropriate administration and the issue would be resolved soon.

DVC may update.

Item no. C.22: PSS tuning of Generators in Eastern region

Several Cases of Low frequency Oscillations have been observed in the Eastern Region. In view of this, it is desirable to have the PSS tuning of Generators in Eastern region to improve the system damping. It is mandatory as per existing CERC and CEA regulation to tune 100 MW and above generating units.

In view of that, Generating station may kindly update the following details to ERLDC/ERPC:

Name of Generating Power Plant:

Unit No	Type of Excitation System (Static/ Brushless /Other)	IEEE Model (IEEET1/ ESST1A/ Other)	Name of Excitation System Vendor (ABB/GE /Hitachi/ other)	Whether PSS is Tuned of not (If tuned Date of tuning	Whether Report of tuning Submitted or not.

In line with regulations, all generating power plant to take up the PSS tuning activities at earliest with their vendors and submit the report after PSS tuning for verification. The response data with PSS tuning also to be shared with ERLDC/ERPC for validation in either excel or .csv format. This will be monitored in OCC on regular basis.

OCC advised all the generators to submit the relevant data as per the format to ERLDC and ERPC.

Generators may kindly submit the details and inform the tentative plan for PSS Tuning.

Item no. C.23: Submission of Thermal Loading of Transmission line and associated terminal equipment by ISTS licensee

In line with the MoM of 4th NRCE Meeting dt.03-11-14 and "Operational Guidelines for determination Of TTC, ATC and TRM for the Short-Term Horizon (0-3 Months)" published by NRCE dt.20-02-15, thermal limit for transmission line has to be used for calculation of ATC/TTC. However, the thermal loading of transmission line depend on the Maximum Conductor Temperature, End equipment thermal rating. This has to be submitted by the Owner of the equipment. Further, the equipment owner also has to confirm that relay setting has been aligned so that the line can be operated up to its thermal limit. In the absence of complete details, ERLDC is utilising the data from the CEA Planning Criteria for thermal rating as given below :

Conductor Type	Ampacity per conductor(A)*	Thermal loading limit of line (MVA)
765 kV Quad ACSR_Bersimis	732	3880
765 kV HexaACSR_Zebra	560	4452
400 kV Twin ACSR_Moose	631	874
400 kV Quad ACSR_Moose	631	1749
400 kV Quad ACSR_Bersimis	732	2029
400 kV Triple Snowbird	630	1309
400 kV Twin ACSR_Lapwing	773	1071
220 kV Single AAAC_Zebra	557	212
220 kV Single ACSR_Zebra	560	213
220 kV Twin ACSR_Moose	631	481
132 kV Single ACSR_Zebra	560	128
132 kV Single ACSR_Panther	366	84

*Ambient and Maximum conductor temperature are taken as 45°C and 75°C respectively.
Apart from above specifically mentioned in CEA transmission planning criteria following loading limit is considered for HTLS line while calculating ATC/TTC

Conductor Type	Ampacity per conductor(A)*	Thermal loading limit of line (MVA)
400 kV Twin HTLS	1262	1750
220 kV Single HTLS	1020	390
132 kV Single HTLS	732	168

In view of this, it is desired that all ISTS Licensee and STU(for 400 kV and important 220 kV lines) may kindly submit the following details to ERLDC for utilisation in ATC/TTC calculation:

a) Transmission line wise Ampacity and Thermal loading along with Maximum Conductor Temperature and conductor type.
b) End Equipment Rating and

c) Confirmation whether the relay setting has been adopted in line with the thermal rating of the line
d) Any constraint during thermal loading of line

OCC advised all the ISTS licensees and STUs to submit the relevant data to ERLDC and ERPC.

Members may note and comply.

Item no. C.24: FLEXIBILITY IN GENERATION & SCHEDULING OF THERMAL POWER STATIONS TO REDUCE EMISSIONS-MOP, GOI ORDER

CEA vide letter dated 18th July 2018 informed that a committee has been constituted in CEA under Chief Engineer (TPRM) to develop a road map to enable flexible operation of thermal power stations for smooth integration of intermittent RES generation.

CEA requested for plant performance data as per the format enclosed at **Annexure-C24**. CEA requested to submit the hard copy and softcopy (in excel) to cetrmcea@yahoo.com.

OCC advised all the Generators to submit the plant performance data as per the format to CEA.

Members may note and comply.

PART D:: OPERATIONAL PLANNING

Item no. D.1: Anticipated power supply position during October'18

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of October 18 were prepared by ERPC Secretariat on the basis ofProvisional 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-D.1**.

Members may confirm.

Item no. D.2: Shutdown proposal of transmission lines and generating units for the month of October'18

Members may finalize the Shutdown proposals of transmission lines and generating stations for the month of October'18.

Shutdown proposals of generating stations:

System	Station	Unit	Size (MW)	Period		No. of Days	Reason
				From	To		
ODISHA	TTPS	5	110	29.10.18	04.11.18	7	Boiler License renewal
IPP	APNRL	1	270	13.10.18	06.11.18	25	Not Specified

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

1. Shutdown of 400kV Main Bus Darbhanga

In 148th OCC, Members approved the following shutdown:

400KV Main bus I (DMTCL): 10th September to 17th September 2018 – 8 days , 192 Hrs. For integration of Main Bus –I. Substation will remain charged on Main Bus – II

400KV Main bus II (DMTCL): 19th September to 26th September 2018 – 8 days, 192 Hrs. For integration of Main Bus –II. Substation will remain charged on Main Bus – I

BSPTCL informed that simultaneous shutdown of 400KV Main bus I (DMTCL) & 400KV Main bus II (DMTCL) from 28th September 2018 to 29th September 2018 for 2 days is not possible till 15 November 2018 and requested for clarification on simultaneous shutdown of both buses at Darbhanga.

Alipurduar Transmission Limited vide mail informed that All the three shut down are required simultaneously. With individual shutdown of Main BUS I & II, we will only be able to through connection between Main Bus I & II of KPTL with Main bus I & II of Essel. But we will not be able to complete activity like Bus bar augmentation & SCADA integration work.

Below is the work description provided by M/S Siemens, that will be carried out during the shutdown of both buses to perform the integration of bus bar protection.

Stepswise activity for BB augmentation - 6 nos. Main CBs to be out of service
Both bus bar are in de-energised condition
Both BB protection(87BB1 & 87BB2) are out of service

Sr.No	Activity	Shutdown requirement	Timeline 87BB1	Timeline 87BB2	Risk Factor	Prefer ability
1	Outdoor CT circuit wiring from LCC to BB panels TBs 1. 412LCC 2. 414 LCC	No	Nil	Nil	Low	Both the buses out of service. One time activity. Approximate 1.5 days shutdown required
2	Mounting and termination of the Test block for the present scope	No	Nil	Nil		
3	Outdoor cabling from respective LCC to BB panel TB (for BI/BO)	No	Nil	Nil		
4	Mounting of CMR relay for present scope	No	Nil	Nil		
5	Mounting of new modules in both the panels	Yes	Yes	Yes		
6	All internal wiring from Panel TBS to Relay modules	Yes				
7	All internal wiring for CMR relay, from Test blocks to IO modules	Yes				
8	Relay configuration for new added bays	Yes				
9	Testing of Relays for all the bays	Yes	Yes			

Shutdown of both the buses and both BB protection required. Yes

Alipurduar Transmission Limited may explain. Members may approve.

Item no. D.3: Prolonged outage of Power System elements in Eastern Region

(i) Thermal Generating units:

S.No	Station	Owner	Unit	Capacity	Reason(s)	Outage
			No	(MW)		Date
1	KOLAGHAT	WBPDCL	1	210	POLLUTION CONTROL PROBLEM	10-May-18
2	KOLAGHAT	WBPDCL	3	210	POLLUTION CONTROL PROBLEM	23-Feb-17
3	CTPS	DVC	3	130	TURBINE BLADE DAMAGE	30-Jul-17
4	ANDAL	DVC	2	500	ANNUAL OVERHAULING	5-Aug-18
5	BAKERSWAR	WBPDCL	2	210	ANNUAL OVERHAULING	25-Jul-18
6	SANTALDIH	WBPDCL	6	210	ANNUAL OVERHAULING	23-Aug-18
7	KODARMA	DVC	2	500	ANNUAL OVERHAULING	9-Sep-18
8	NABINAGAR	BRBCL	1	250	COAL FEEDING PROBLEM	13-Aug-18
9	APNRL	APNRL	1	270	LEAKAGE IN CONDENSER	9-Aug-18

10	VEDANTA	GRIDCO	2	600	PROBLEM IN BOILER	8-Feb-18
11	TENUGHAT	JUVNL	2	210	HYDROGEN LEAKAGE OCCURRED IN UNIT	8-Aug-18
12	JITPL	JITPL	2	600	COAL SHORTAGE	26-Jun-18
13	KBUNL STG-I	BSPHCL	2	110	COAL SHORTAGE	21-Aug-18
14	RAGHUNATHPUR	DVC	1	600	COAL SHORTAGE	1-Jun-18
15	MEJIA	DVC	3	210	COAL SHORTAGE	12-Aug-18
16	MEJIA	DVC	2	210	COAL SHORTAGE	6-Aug-18
17	WARIA	DVC	4	210	COAL SHORTAGE	26-Aug-18
18	KOLAGHAT	WBPDCL	5	210	COAL SHORTAGE	29-Aug-18
19	DPL	WBPDCL	7	250	COAL SHORTAGE	11-Jul-18
20	BAKERSWAR	WBPDCL	3	210	COAL SHORTAGE	4-Sep-18
21	MEJIA	DVC	7	500	COAL SHORTAGE	1-Sep-18

(ii) Hydro Generating units:

SL NO	Station	Owner	Unit No	Capacity	Reason(s)	Outage
1	BURLA	OHPC	1	37.5	R & M WORK	25.10.2016
2	BURLA	OHPC	2	37.5	R & M WORK	16.10.2015
3	BURLA	OHPC	5	37.5	R & M WORK	25.10.2016
4	BURLA	OHPC	6	37.5	R & M WORK	16.10.2015
5	BALIMELA	OHPC	1	60	R & M WORK	05.08.2016
6	U.KOLAB	OHPC	2	80	Repair of MIV & Draft tube gate leakage	28.05.2017
7	CHIPLIMA	OHPC	1	24	FLOOD CONTROL	21.7.18
8	CHIPLIMA	OHPC	2	24	FLOOD CONTROL	21.7.18
9	CHIPLIMA	OHPC	3	24	FLOOD CONTROL	21.7.18

It is therefore seen that about 362 MW hydro capacity in Odisha is under forced outage / R&M and therefore not available for providing the much needed peaking support in summer peak. SLDC / OHPC may please indicate restoration plan of the units.

(iii) Transmission elements

SL NO	Transmission Element / ICT	Owner	Outage From	Reasons for Outage
1	220 KV BALIMELA - U' SILERU	Odisha/AP	10.03.18	LINE ANTITHEFT CHARGED FROM UPPER SILERU ON 17-04-18
2	400 KV BARH-MOTIHARI-I	DMTCL	15.06.18	Y-N FAULT/CLEARNCE REDUCED AS WATER LEVEL IN GANDAK RIVER HAS INCREASED.
3	400 KV BARH-MOTIHARI-II	DMTCL	28.06.18	SWITCHED OFF DUE TO INCREASE IN LEVEL OF GANDAK RIVER

4	400 KV IBEUL-JHARSAGUDAD/C	IBEUL	29.04.18	TOWER COLLAPSE AT LOC 44,45
5	400 KV DIKCHU-RANGPO	TPTL	6.07.18	INITIALLY S/D AVAILED BY TVTPL/LINE COULD NOT BE CLOSED AFTER S/D DUE TO LOCAL ISSUES.
6	220 KV BUDHIPADAR – RAIGARH(Chhattisgarh)	OPTCL	24-08-18	UNDER SHUTDOWN FO LILO WORK AT RAIGARH PG.
7	400KV NEW PURNEA-BIHARSARIFF-D/C	ENICL	10.8.18	TOWER COLLAPSE AT LOC 47/0
8	400 KV PATNA-KISHANGANJ D/C	POWERGRID	1.9.18	TOWER COLLAPSE AT LOC 129. PILING DAMAGED
10	400 KV MAITHON-MEJIA III	POWERGRID	8.9.18	LINE CB VACCUM INTERRUPTER PROBLEM IN MEJIA SIDE AND CONSTRAINT TO PUT ON TRANSFER BUS

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

** Transmission licensees whose line were out due to tower collapse/ bend, may please update the detail restoration plan and as on date work progress status in OCC.

Also Monthly progress report to be submitted to ERLDC/ERPC till restoration of the element.

Members may update.

Item no. D.4: Additional agenda

PART E::ITEMS FOR INFORMATION

The following agenda items are placed for information and necessary compliance:

Item No. E.1: Restricted Governor /Free Governor Mode Operation of generators in ER

CERC vide their letter dated 05-06-2017 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.

The latest status of the RGMO/FGMO of ER generators is enclosed in **Annexure-E1**.

Generators may update.

Item No. E.2: 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.

In 142nd OCC, ERLDC informed that, in line with Enquiry Committee Recommendation, cyber security audit is being conducted on regular basis for SCADA system installed at ERLDC and SLDC as well but cyber security audit for telecom infrastructure installed in Eastern Region is not being carried out.

OCC advised all the constituents to conduct the cyber security audit on telecom infrastructure installed in Eastern Region. It is further advised that compliance / mitigation of the points observed during the audit should also be completed for improvement of the telecom infrastructure in ER.

In 37th TCC meeting, it was decided that a workshop would be conducted by CEA at ERPC for further benefit of ER Constituents.

In 144th OCC, ERLDC informed that they have already conducted a workshop with the help of NPTI, Durgapur on 21st March 2018.

A workshop on cyber security was conducted by CEA at ERPC, Kolkataon 09-05-2018.

As suggested by CEA, a format would be circulated among ER constituents for furnishing the information of the their respective systems for discussion in OCC Meeting. The format is enclosed at **Annexure-E2**.

OCC advised all the constituents to submit the information to ERPC as per Annexure-E2.

Item No. E.3: 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
- All units of WBPDCL
- DGPC units

Item No. E.4: 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-E.4**.

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

TeestaUrja Limited vide letter dated 8th September 2017 informed that Disturbance Recorder, Stand alone Event Logger and Time Synchronization equipments are available at Teesta III HEP.

Item No. E.5: Status of Emergency Restoration System (ERS Towers) for Eastern Region constituents

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).

Latest status is enclosed at **Annexure- E.5**.

In 138th OCC, WBSETCL informed that they are having total 10 ERS towers, 5 at Arambagh and 5 at Gokharno.

In 139th OCC, JUSNL informed that they are having eight 220/132kV ERS towers at following locations:

- Hatia – 3 nos
- Ranchi – 2 nos
- Dumka – 3 nos

Item No. E.6: 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	46	85.19
NTPC	16	14	87.50
NHPC	1	1	100.00
DVC	40	26	65.00
WB	68	49	72.06
Odisha	59	42	71.19
JUSNL	34	25	73.53
BSPTCL	16	5	31.25
IPP (GMR, Sterlite and MPL)	5	5	100.00

** Pending observations of Powergridare related to PLCC problems at other end.*

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.

Members may comply.

Item No. E.7: DATA FOR GEOSPATIAL ENERGY PORTAL OF NEETI AAYOG--CEA

NITI Aayog is developing a user friendly GIS based Energy Map of India, which would provide true locations of all energy resources in India including power plants, coal and oil reserves, transmission lines etc.

CEA sought the information of name, voltage level, capacity, longitude and latitude of 33kV and 66 kV substations and lines.

The information may be shared with CEA vide email: cedpd-cea@gov.in.

Members may comply.

Item No. E.8: Providing relevant data by Power Utilities I Stations in National Power Portal.

CEA vide letter dated 26th June 2018 informed that National Power Portal (NPP) (URL: npp.gov.in), has been launched by Hon'ble Minister of Power on 14th November, 2017. NPP is modified and more user-friendly data portal than the existing Information Management System (IMS) in CEA. Reports prepared from NPP are of vital importance for Power Sector data analytics in order to frame policies, regulations , future road-map for Power Sector etc. at Central as well as at State level. Accordingly, all power utilities have been issued user ID and password, either organisation-wise or station-wise, based on their request , for providing their data on NPP.

NPP has replaced IMS since 1st June, 2018. A Circular (which is available in Circular Section of CEA Website, i.e. cea.nic.in) has been issued by CEA to all power utilities/stations on 14.06.2018 for providing their data online in NPP only.

In this regard, letters/mails have been issued to Utilities to provide their data online through NPP. A letter dated 20.06.2018 was also issued to all SLDC, requesting them to direct the power utilities I stations under their purview for providing data on NPP.

Any issue/problem faced by utilities may kindly be communicated to itcea@nic.in, npp.support@gov.in, ceopm-cea@gov.in and if required, IT Division, CEA may be contacted on 011-26732368 or 011-26732303

CEA requested to pursue the power utilities *I* stations under their purview for providing data on NPP. Further, a workshop/presentation may be arranged if required in each region in which IT Division, CEA will provide a brief demonstration regarding data entering process and report generation into NPP.

Members may comply.

Item No. E.9: Commissioning of new transmission elements in Eastern Region

The details of new units/transmission elements commissioned in the month of August - 2018 based on information furnished by the constituents are depicted below:

Monthly commissioning List of Tansmission element and generators: August 2018					
SL NO	**Element Name**	**Owner**	**Charging Date**	**Charging Time**	**Remarks**
1	400kV Jeerat-Sagardighi	PGCIL	05-08-2018	19:20	400kV-Farakka-Baharampur-Jeerat reconfigured
2	Bays of 220kV Muzaffarpur(PG)-Kanti III & IV at Muzaffarpur end	PGCIL	14-08-2018	01:28	
3	220kV Muzaffarpur(PG)-Dhalkebar-1	PGCIL	16-08-2018	22:17	Earlier charged in 132 Kv level
4	220kV Muzaffarpur(PG)-Dhalkebar-2	PGCIL	16-08-2018	23:13	
5	Mainbay of 400kV New Purnea-Farakka	PGCIL	18-08-2018	18:57	
6	Mainbay of 400kV New Purnea-Gokarna	PGCIL	18-08-2018	18:56	
7	220 KV BTPS(old) -Hajipur T/L	BSPTCL	07.08.2018	0.625	
8	132kV Jainagar -jhanjharpur T/L	BSPTCL	07.08.2018	15:30	Charged on load by tapping in Jainagar - Phoolparas ckt-2 from jainagar GSS
9	132 kv Banka(new)-Jammui(new) D/C T/L	BSPTCL	08.08.2018	0.6125	
10	132 kV main bus, 10 MVA Power transformer (T&RIL make, Sl. No 1516/2005) and 33 kV main bus of 132/33 kV Grid substation, Jhanjharpur	BSPTCL	24.07.2018	21:25	
11	132/33kv GSS bakhri(begusarai)	BSPTCL	08.08.2018	0.777777778	charged on no load
12	220kV Madhepura-Kishanganj New ckt-1 T/L	BSPTCL	10.08.2018	0.418055556	Charged on no load from MadhepuraGss end upto AP 40/0
13	220kV Madhepura-Kishanganj New ckt-2 T/L	BSPTCL	10.08.2018	0.41875	Charged on no load from MadhepuraGss end upto AP 40/0
14	132 kvBiharsarif-Warsaliganj T/L(LILO in Biharsarif-Nawada	BSPTCL	11.08.2018	0.59375	Charged on no load from Bihar Sharif end up to Nawada through Warsaliganj LILO
15	220kV Begusarai-Purnea(PG) ckt-2 & ckt-1	BSPTCL	28.08.2018	15:28 & 15:30	Charged on no load from BegusaraiGss end up to tower no. 352.

Item No. E.10: Checklist for submission of updated data for Protection Database

The network data in Protection Database needs to be updated on regular basis on account of commissioning of new elements in the CTU as well as STU networks. Accordingly, a checklist has been prepared which is enclosed in **Annexure-E9**.

All the constituents are requested to submit the checklist on monthly bases in every OCC/PCC meetings.

In 139th OCC, all the constituents were advised to submit the data to ERPC vide mail (mserpc-power@nic.in) as per the checklist for last three months.

OCC advised all the constituents to submit the data to ERPC vide mail (mserpc-power@nic.in) as per the checklist for last three months.

Constituents may comply.

Item No. E.11: UFR operation during the month of August'18

System frequency touched a maximum of 50.26 Hz at 13:06 Hrs of 06/08/18 and a minimum of 49.62 Hz at 19:17Hrs of 28/08/18. Hence, no report of operation of UFR has been received from any of the constituents.

Item No. E.12: Grid incidences during the month of August, 2018

Sr No	GD/ GI	Date	Time	Affected System	Summary	Load loss (MW)	Gen loss (MW)
1	GD-I	08-08-2018	05:49	JUSNL	After 220 kV bus PT burst at Chandil, 220 kV STPS - Chandil S/C, 220 kV Ramchandrapur Chandil S/C and 220 kV Ranchi Chandil S/C were hand tripped leading to power interruption at Chandil	150	0
2	GD-I	12-08-2018	05:31	ISTS	400 kV Binaguri-Rangpo-II tripped on B-N fault at 05:31 hrs resulting operation of SPS - I which tripped all units except one unit at Teesta III, one unit at Tashiding, Dikchu, Chujachen and Jorethang. Even after successful operation of SPS-I SPS - II operated at 05:52 hrs causing tripping of 400 kV Teesta III Rangpo S/C which led to black out of Teesta III and Dikchu generation complex	0	1020
3	GD-I	15-08-2018	13:00	BSPTCL	220 kV Darbhanga - Motipur D/C tripped causing load loss at Sitamari, Dhaka and Siohar	103	0
4	GI-II	15-08-2018	13:35	BSPTCL	220 kV Darbhanga - Darbhanga - I tripped from Darbhanga end only causing load loss of 140 MW at Darbhanga, Madhubani, Pandual, Jainagar and Jaleswar.	98	0
5	GI-II	19-08-2018	15:26	ISTS	400 kV Farakka - Kahalgaon I & II tripped from Farakka end only. At same time, 400 kV Farakka - Sagardighi II tripped from Sagardighi end. It is suspected there was a B-N fault in 400 kV Farakka Kahalgaon I & II and auto reclose was successful at Kahalgaon end. Sagardighi end sensed the same fault in Z-III and tripped from Sagardighi end. As per PMU data, fault was cleared within 100 ms. Tripping of 400 kV Farakka Sagardighi II from Sagardighi end may be explained.	0	0

6	GI-II	19-08-2018	15:47	ISTS	400 kV MPL - Ranchi - II tripped from MPL end only. At same time, 400 kV MPL - Maithon D/C tripped from Maithon end. It is suspected there was a Y-N fault in 400 kV MPL - Ranchi - II and auto reclose was successful at Ranchi end. Maithon end sensed the same fault in Z-III and tripped from Maithon end. As per PMU data, fault was cleared within 100 ms. Tripping of 400 kV MPL - Maithon D/C from Maithon end may be explained.	0	0
7	GI-II	21-08-2018	18:13	ISTS	400 kV Bus - I at Bolangir S/S was under shutdown for connecting new bays of 125 MVAr B/R with existing bus through jumpering. At 18:13 hrs 400/220 kV both ICT I & II tripped on OTI, WTI & Bucholtz trip relay due to temporary DC Earth fault resulting loss of total power failure at 400 kV level as 400 kV lines were connected through main and tie bays of ICTs with bus II.	0	0
8	GI-II	22-08-2018	14:59	ISTS	At 15:00 hrs 400/132 kV ICT-II at Motihari tripped due to operation of OSR relay resulting tripping remaining ICT - I on overload current relay operation.	280	0
9	GD-I	31-08-2018	13:57	OPTCL	220 kV Joda Ramchandrapur S/C and 220 kV Bokaro Jamshedpur were not in service. 220 kV Joda - TTPS D/C tripped on Y-B-N fault resulting increase in power flow through 220 kV Jamshedpur Jindal S/C. As a result 132 kV Jamshedpur - Chandil D/C and 132 kV Purulia - CTPS D/C tripped due to overload.	450	0

Item No. E.13: 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 18.

****

BIHAR STATE POWER TRANSMISSION COMPANY LTD., PATNA
A subsidiary company of Bihar State Power (Holding) Company Ltd., Patna
CIN – U40102BR2012SGC018889
[SAVE ENERGY FOR BENEFIT OF SELF AND NATION]
Head Office, Vidyut Bhawan, Bailey Road, Patna – 800021

Letter No .....171...../ Dated 10/09/2018

From

G. K. Choubey;
Chief Engineer (System Operation)
BSPTCL, Patna

To

Sri Surojit Banerjee;
DGM (Operation);
ERLDC

Subject:- Synchronisation of 132 kV Purnea (PG) - Kishanganj (old) – Baisi – Dalkola (WB) transmission line.

Sir,

Presently BSPTCL GSS Baisi (2X20) MVA is drawing 4 MW radial power from 220/132/33 kV Dalkola station of West Bengal.

(2X160+2X50) MVA, 220/132/33 kV Kishanganj (new) is the source of power for BSPTCL & have four 132 kV circuits feed power to 132/33 kV Forbesganj GSS – two directly & two via 132/33 kV Kishanganj (old). Finally from 132/33 kV Forbesganj GSS power supply to 132/33 kV Kataiya GSS by three 132 KV circuits (SLD of this area enclosed).

Besides other loads, GSS Kataiya also feed power (max up to 132 MW) to Duhabi by 132 kV Kataiya - Duhabi (S/C) (ACCR conductor). Nepal also get power from GSS Kataya by 132 kV Kataya – Kusaha (S/C) (ACSR Panther conductor) – loading max. upto 80 MW. This power is drawn from GSS Supoul through 132 kV TB of Kataya GSS.

Presently out of the two circuits of 132 KV Kishanganj (new) - Kishanganj (old), one circuit feed power only to Kishanganj (old) & other circuit goes bypassing GSS kishanganj by ERS arrangement. Installed near Kishanganj (old) GSS. Due to this only three 132 kV circuit is left for Forbesganj. This reduces availability of power for Nepal. Power flow scenario from Kishanganj (new) is listed below:-

Sl No	Name of GSS	Peak Load (in MW)	Remarks
1	Kishanganj (old)	46	*
2	Forbisganj	55	
3	Baisi	4	*
4	Kataiya	27	
5	Kishnaganj (New)	11	33 kV load.

6	Nepal (Duhabi +Rajbiraj)	(120+12)=132	**Duhabi on 132 kV & Rajbiraj on 33 kV.**
7	Araria	11	
8	Barsoi	28	*
	Total	**314**	**Out of the 314 MW, except *89 MW power rest goes to Farbisganj.**

So (314-89*) i.e. 225 MW power flow through three 132 kV circuits – more than its capacity. It leads to load shedding in BSPTCL GSS for allowing full load to Nepal. Support from 132 kV Purnea – Triveniganj – Farbisganj at GSS Farbisganj remain very less (10/15 MW).

132 kV Purnea (PG) – Kishanganj (old) line is kept open as power received on very low voltage & on synchornising with Kishanganj (new) power flows towards Purnea (PG) side leading to reducing power availability at Kishanganj (old).

If power is drawn at Kishanganj (old) from 132 kV Purnea (PG) - Kishanganj (old) (S/C) line & this line is synchronised with 132 KV Dalkola (WB) – Baisi - Kishanganj (old) line then, one circuit of 132 kV Kishanganj (new) - Kishanganj (old) will be free, resulting optimum power supply to Nepal as well as BSPTCL GSS (Forbesganj, Kataiya).

Load flow study result in PSS@E on synchronising 132 kV Dalkola – Baisi – Kishanganj (old) with Purnea (PG) is detailed below (study result enclosed):-

Sl No	Line	Power flow (in MW)
1	132 kV Dalkola-Kishanganj transmission line	16
2	132 kV Purnea (PG)-Kishanganj transmission line	35

The study reveals that on synchronising 132 kV Purnea (PG) – Kishanganj (old) – Baisi - Dalkola transmission line, 15-16 MW power will be fed to BSPTCL system from Baisi through 132 kV Dalkola (WB) - Baisi transmission line & 35 MW power will be fed to Kishanganj (old) through 132 kV Purnea (PG) - Kishanganj transmission line. This power is less than the power (25-30 MW) agreed by WBSPTCL in last meeting. By this arrangement voltage at Kishanganj remains 129 kV & besides 132 kV Purnea (PG) – Kishanganj (old) also utilised. .

WBSPTCL is requested to allow the above synchronisation.

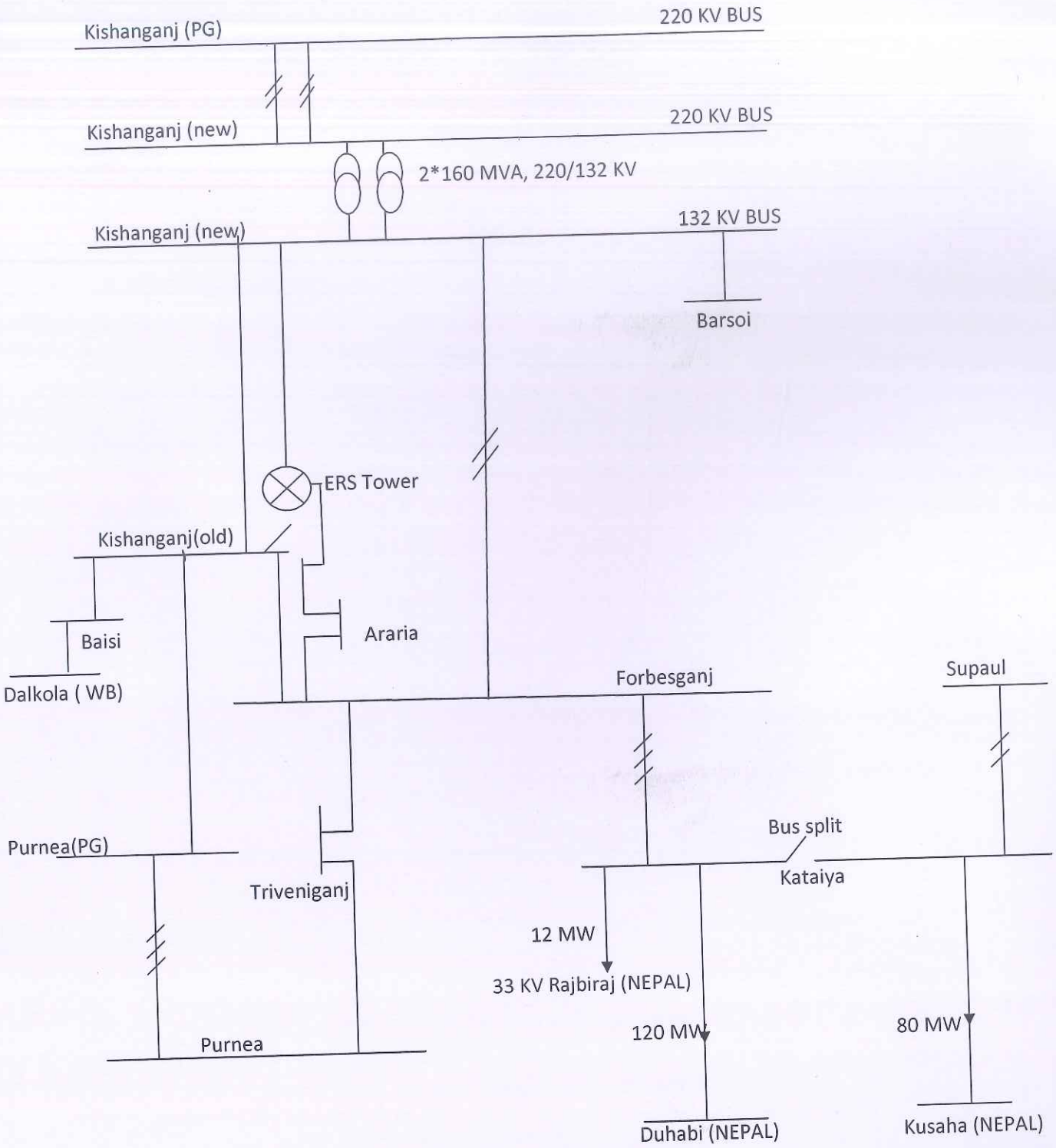
Encl:- As mentioned above.

G K Choubey
10.9.2018

(G. K. Choubey)
Chief Engineer
(System Operation)

CC:- Member Secretary, ERPC
For inclusion in 149th OCC meeting as an agenda item.

SYNCHRONISATION OF 132 KV PURNEA(PG) - KISHANGANJ (OLD) - BAISI - DALKOLA(WB) TRANSMISSION LINE



Annexure-B4

BIHAR STATE POWER TRANSMISSION COMPANY LTD., PATNA
A subsidiary company of Bihar State Power (Holding) Company Ltd., Patna
CIN – U40102BR2012SGC018889
[SAVE ENERGY FOR BENEFIT OF SELF AND NATION]
Head Office, Vidyut Bhawan, Bailey Road, Patna – 800021

Letter No ..... 172 ...../ Dated 10/09/2018

From

G. K. Choubey;
Chief Engineer (System Operation)
BSPTCL, Patna

To

Sri Surojit Banerjee;
DGM (Operation); ERLDC

Subject:- Making off 220 kV Darbhanga (400 kV) - Laukahi (D/C) transmission line Circuit-II at ISTS Darbhanga (400/220 kV) end.

Sir,

Presently 132kV Supaul – Phoolparas (D/C) transmission line is under breakdown due to collapse of two towers in river bed. For its restoration two nos of piles will be constructed. Right now due to flood & rainy season, pile construction is not possible and it can only possible by November/December 2018.

Three 132 kV circuits originate from 132/33 kV Darbhanga GSS (Darbhnaga 220 kV) getting power from one 220 kV circuit of the 220 kV Darbhanga (400 kV) – Darbhanga (220 kV) (D/C) line by connecting the line through one 220 kV circuit of 220 kV Musahari-Drbhanga (220 kV) (D/C) line, as 220 kV bay is not ready at Darbhanga (220 kV). One circuit of 220 kV Musahari - Darbhanga (D/C) line remain off at Musahari end (by which Darbhanga line is tapped) & other line remain charge from Musahari end & open at Darbhanga (220 kV) end. So total power availability at 220/132 kV Darbhanga GSS is 160/170 MW by one 220 kV circuit.

Power drawl arrangement of three 132 kV circuits from 132/33 kV Darbhanga GSS is detailed below:-

1. From One 132 kV circuit power is supplied to (2x50) MVA, 132/33 kV Gangawara GSS (56 MW) & it gets power from 132/33 kV GSS Samastipur through 132 TB of 132/33 kV Darbhanga GSS.
2. From second circuit two (2X50+1X20) MVA, 132/33 kV GSS Pandaul (53 MW) & (2X20) MVA, 132/33 kV Phoolparas (34 MW) get power, total 87 MW – utilising full capacity of the line. Some (10/15 MW) roasting is imposed in peak hrs.
3. Due to B/D of the 132 kV Supoul - Phoolparas (D/C) tr line, no power is coming from Supaul to Phoolparas grid resulting power supply of all grids near GSS Phoolparas (Jainagar, Jhanjharpur, Benipatti, Madhunbani & Sursand) from GSS Darbhanga (132/33 KV) by third 132 kV Darbhanga – Madhubani (S/C) transmission line (as shown in enclosed SLD diagram), having a capacity of 70 MW. Total load on this line is detailed below:-

Sl No	Name of GSS	Power transformer capacity (in MVA)	Peak load (in MW)	Remarks
1	Madhubani	(1X50+2X20)	30	
2	Benipatti	(2x20)	22	
3	Sursand	(2X2	25	
4	Jainagar	(3X20)	32	Including 33 kV load (7 MW) to Sirha (Nepal).
5	Jhanjharpur	(2X10)	10	
	Total		**119**	

So total roasting of (119-70) =49 MW. Also system voltage dips to 114 kV.

In light of above persisting situation & coming festivals – Durga Puja, Deepawal & Chath in October/November 2018, it has been planned to get power at (2X160+2X50) MVA, 220/132/33 kV Laukahi GSS from Darbhanga (400/220 kV) by 220 kV Darbhanga (220/132kV) - Laukahi circuit - I. After power transformation to 132 kV in GSS Laukhai (220/132 kV), power will be fed to one circuit of 132 kV Laukahi - Supaul (incomplete/under construction) (D/C) transmission line. From this line power will be fed in 220 kV Laukahi - Darbhanaga (400/220 kV) circuit – II by ERS (as shown in diagram).

220 kV (D/C) Darbhanga (400/220 kV) - Laukahi transmission line passes near 132 kV Phoolparas - Supaul (D/C) line. From 220 kV Laukahi – Darbhanga (400/220 kV) circuit – II, 132 kV power will be fed to 132 kV Phoolparas - Supaul one circuit circuit by an another set of ERS. By this arrangement 132/33 kV Phoolparas GSS will be able to get around 70 MW power by one 132 kV circuit & roasting mentioned above will be over.

So permission may be given for:-

(i) Drawing 220 kV power from Darbhanga (400/220kV) to Laukahi by 220 kV Darbhanga (400/220 kV) – Laukahi circuit – I and

(ii) Utilising 220kV Darbhanga (400/220kv) – Laukahi circuit – II on 132 kV (for very short section) to feed power to 132/33 kV Phoolparas GSS by arrangement as shown in diagram. Circuit - II line will be remain off at Darbhanga (400/220kV) end.

This arrangement likely to be put to service by 12.9.2018 & expected to be kept till permanent 132 KV Phoolparas – Supoul (D/C) transmission line is revived.

ERLDC is requested to pass on necessary instruction to ISTS Darbhanga (400/220 kV).

Encl:- As mentioned above.

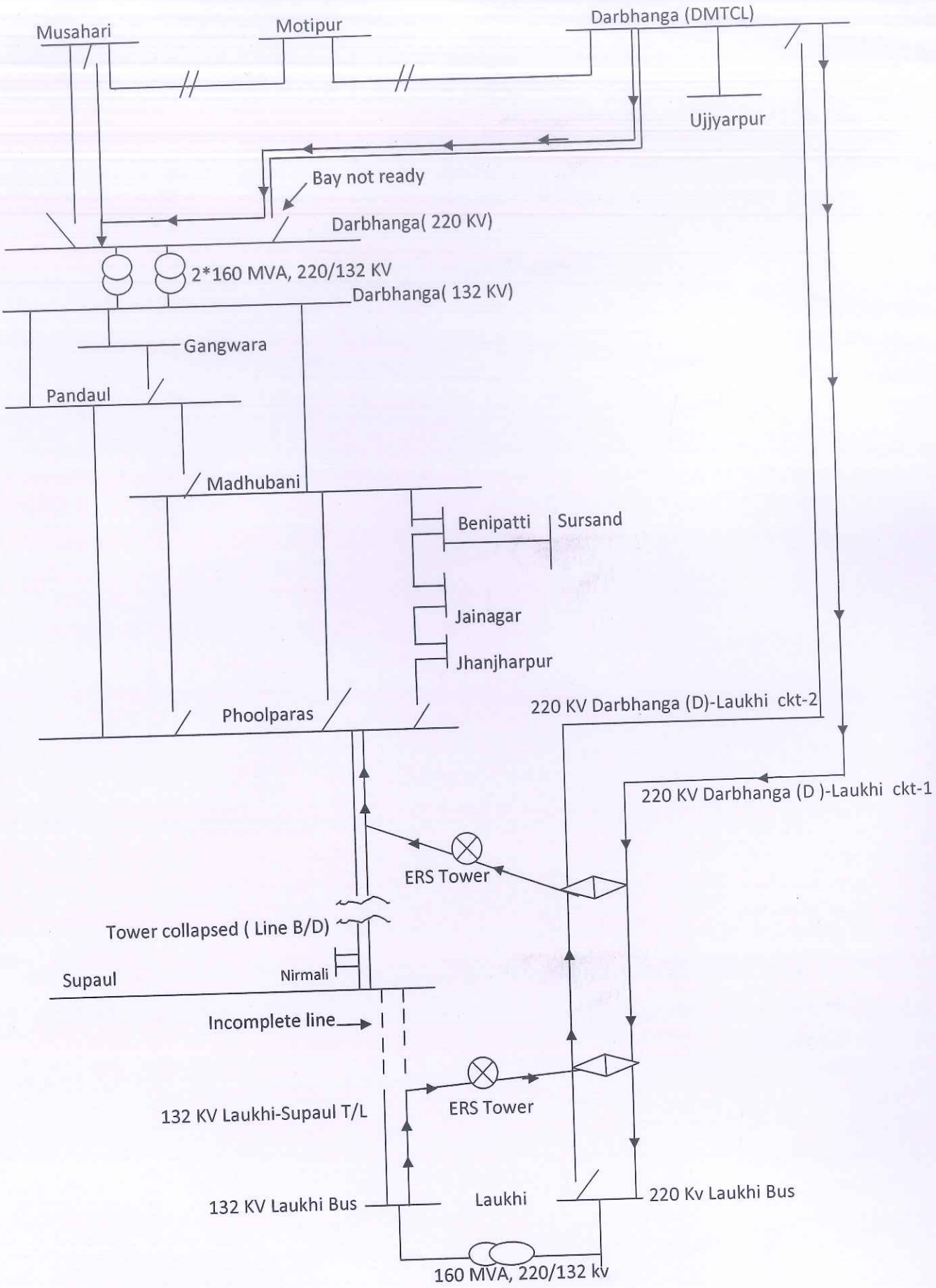
GKChoubey
10.9.2018

(**G. K. Choubey**)
Chief Engineer
(System Operation)

CC:- Member Secretary, ERPC

The work under this arrangement is likely to be over before 149th OCC meeting, scheduled on 18.9.2019. It is being send for information.

MAKING OF 220 KV DARBHANGA (400 KV) -LAUKHI CKT-2 AT DARBHANGA (DMTCL) END.



GUIDELINES ON AVAILABILITY OF COMMUNICATION SYSTEM FOR INTER-STATE TRANSMISSION OF ELECTRICITY

1. **INTRODUCTION**:

1.1 As per regulation 7.3 (i) of Central Electricity Regulatory Commission (Communication System for Inter-State transmission of Electricity), Regulations, 2017, National Power Committee (NPC) has been entrusted to prepare Guidelines on Availability of Communication System in consultation with RPCs, NLDC, RLDC and other stakeholders.

1.2 The relevant provisions in the CERC (Indian Electricity Grid Code) Regulations, 2010 and Central Electricity Authority (CEA) (Technical Standards for Connectivity to the Grid), Regulations, 2007 in respect of Communication System as follows:

1.2.1 **Regulation 4.6.2 of the Indian Electricity Grid Code (IEGC)** stipulates that *´Reliable and efficient speech and data communication systems shall be provided to facilitate necessary communication and data exchange, and supervision/ control of the grid by the RLDC, under normal and abnormal conditions. All Users, STUs and CTU shall provide Systems to telemeter power system parameter such as flow, voltage and status of switches/ transformer taps etc. in line with interface requirements and other guideline made available by RLDC. The associated communication system to facilitate data flow up to appropriate data collection point on CTU's system shall also be established by the concerned User or STU as specified by CTU in the Connection Agreement. All Users/STUs in coordination with CTU shall provide the required facilities at their respective ends as specified in the Connection Agreement. ´*

1.2.2 **Regulation 6(3) of the CEA (Technical Standards for Connectivity to the Grid)** stipulates that *'the requester and user shall provide necessary facilities for voice and data communication and transfer of online operational data, such as voltage, frequency, line flows and status of breaker and isolator position and other parameters as prescribed by the appropriate load dispatch centre.'*

2. DEFINITIONS:

2.1 Words and expressions used in this methodology shall have the same meaning assigned in the Electricity Act, Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulation ,2007, CEA (Technical Standards for Communication System in Power Sector) Regulations, 2018, CERC (Indian Electricity Grid Code) Regulations, 2010 & (Communication System for Inter-State transmission of Electricity), Regulations, 2017 and amendments thereof.

2.2 Other words have been explained as per the context in these guidelines.

3. SCOPE AND APPLICABILITY:

3.1 As per Regulation 5. (i) of CERC (Communication System for Inter-State transmission of Electricity), Regulations, 2017, "*These regulations shall apply to the communication infrastructure to be used for data communication and tele -protection for the power system at National, Regional and inter-State level and shall also include the power system at the State level till appropriate regulation on Communication is framed by the respective State Electricity Regulatory Commissions.*"

3.2 As such, in case of ISTS i.e. for the communication system to be provided at RLDCs/NLDC, these guidelines shall be applicable for CTU and in case of State Transmission System i.e. for the communication system to be provided at SLDC, these guidelines shall be applicable to the respective State Transmission Utility (STU).

[The CTU (or STU as the case may be) shall have back to back co-ordination/agreement with transmission licensees, generators, dedicated transmission line owners for providing power system communication on their network]

4. TREATMENT OF COMMUNICATION SYSTEM OUTAGES:

4.1 Outage time of communication system elements (i.e. channels) due to acts of God and force majeure events beyond the control of the communication provider shall be considered as deemed available. However, onus of satisfying the Member Secretary, RPC that element outage was due to aforesaid events shall rest with the communication provider.

4.2 Any outage of duration less than or equal to 1 minute in a time-block shall be treated as deemed available provided such outages are not more than 10 times in a day.

(Explanation: (a)If a channel is out for a duration of more than 1 minute in a time-block, the channel shall be considered out for the whole time-block. (b) If a channel is out for a duration up to 1 minute in a time-block, and such outages are more than 10 times in a day, then such outages shall not be exempted under 4.2 of the guidelines and all the time-blocks with such outages shall be considered outages).

5. METHODOLOGY FOR COMPUTATION OF AVAILABILITY OF COMMUNICATION SYSTEM:

5.1 Availability of Communication System **(A_{CS})** shall be calculated as under:

$$A_{CS} = \frac{\sum_{i=1}^{N}(A_i)}{N}$$

Where - N is total number of communication channels which is based on the requirement of RLDCs/NLDC and the same would be decided in consultation with respective RPCs/NPC.

- A_i is Availability of i^{th} Channel which shall be calculated as given in 5.2 (b)

5.2(a) If a channel is out for some time in a particular time-block as defined in IEGC (presently 15 minutes), for calculation of availability of communication system, it would be considered as not available during the whole block.

5.2(b) Availability of i^{th} Channel (A_i) shall be arrived as under:

$$A_i = \frac{B_T - B_{Ni}}{B_T} \times 100$$

Where B_T is Total number of time-blocks in a month

B_{Ni} is the total number of time-blocks, in which *i^{th} channel was not available after considering deemed availability status of 4.1.*

$B_{Ni} = B_{ANi} - B_{Gi}$,

Where-B_{ANi} is absolute number of time-blocks in which the i^{th} channel was 'not available' on account of any reason after due consideration of provisions under 4.2.

-B_{Gi} is Number of time-blocks out of B_{ANi}, in which *i^{th} channel was 'not available' on account of act of god as specified in 4.1 above.*

[For example, if there are 2880 time-blocks (B_T) in a month, and a particular channel is not available for a total of 70 (B_{ANi}) time-blocks; and out of this, this channel was not available for 20 (B_{Gi}) time-block due to act of god, then-B_{Ni}=70-20=50, and A_i = (2880-50)/2880 = 98.26%]

***

Annexure-C5

Automatic Demand Management System (ADMS) Performance in Eastern Region

A. West Bengal

Sl No	Date & Time	West Bengal O/D (MW)	Frequency (Hz)	ADMS Optd (Y/N)	Relief (MW)
1	04-08-2018 22:09	235	49.69467		
2	04-08-2018 22:10	249	49.6507		
3	04-08-2018 22:11	276	49.64582		
4	04-08-2018 22:12	298	49.67515		
5	07-08-2018 22:22	359	49.68002		
6	07-08-2018 22:24	372	49.69957		
7	09-08-2018 19:10	185	49.67515		
8	09-08-2018 19:11	195	49.66048		
9	09-08-2018 19:12	206	49.66048		
10	09-08-2018 19:13	188	49.62628		
11	09-08-2018 19:14	161	49.64582		
12	09-08-2018 19:15	158	49.63607		
13	24-08-2018 19:18	176	49.69957		

B. DVC

Sl No	Date & Time	DVC O/D (MW)	Frequency (Hz)	ADMS Optd (Y/N)	Relief (MW)
1	24-08-2018 19:18	224	49.69957		
2	24-08-2018 19:19	203	49.68491		
3	28-08-2018 19:18	158	49.6214		
4	28-08-2018 19:19	155	49.64583		
5	29-08-2018 06:14	221	49.68001		
6	29-08-2018 06:15	259	49.65559		
7	29-08-2018 06:16	161	49.65559		
8	29-08-2018 06:17	160	49.69468		

C. Orisaa

Date	Time	Orissa O/D (MW)	Frequency (Hz)

D. Bihar

Sl No	Date & Time	Bihar O/D (MW)	Frequency (Hz)
1	02-08-2018 06:18	197	49.68492
2	02-08-2018 06:19	178	49.66048
3	02-08-2018 06:20	163	49.67026
4	02-08-2018 06:21	176	49.65559
5	02-08-2018 06:22	168	49.68492
6	02-08-2018 06:23	171	49.68492
7	02-08-2018 06:24	177	49.69465

E. Jharkhand

Date	Time	Jharkhand O/D (MW)	Frequency (Hz)

NTPC

Talcher STPS: following data are unavailable.

Sl no	Feeder Name	Measurement
1	400kV Rourkella 1	MVAr
2	400/33 kV Station transformer #3	MVAR
3	400kV Bus Sectionalizer of Bus 2 of stage 1 and bus 2 of stage 2	MW and MVAr
4	220kV Meramaundali -2	MW
5	400/11kV Station transformer #4	MVAR
6	Rourkella 2 line Reactor	MVAR
7	400kV Talcher HVDC Ckt 4	MW

Farakka STPS:

- Unit 6 (Stage #3) , LV side MW and MVAr date yet to be integrated
- Farakka stage #3 SAS stopped reporting to ERLDC.

Lalmatia 220kV NTPC :

- stopped reporting since 01-01-2018

- Prolonged outage of SCADA Data:
  - DMTCL Motihari 400kV (since 01-07-2018)

    - Motihari – Barh PLCC is not in service. Will be restored with restoration of line.
- VOIP :
  - VOIP of DMTCL Dharbhanga is unavailable since 11-07-2018. Matter was informed to DMTCL. VOIP yet to be restored.

Non availability of SCADA data above 220 kV Level

WBSETCL

- Following 220 kV station data not available:
  - TLDP 4 220kV : Communication link failure.
  - TLDP 3 220kV :
  - Dharampur 220kV : Communication link issue.
  - Hura 220kV : Communication link issue.
  - Barasat 220 Communication link issue.
  - Egra 220 : Communication link issue.
  - Dalkhola 220kV
  - Bantala 220kV : Communication link issue.
  - Alipurduar 220kV: Communication link yet to be established.

Non availability of SCADA data above 220 kV Level

- **BIHAR**
  - Kishanganj 220kV : (OPGW termination issue)
  - Sonenagar 220kV : (Communication issue. Target data given as 30-09-2018)
- **Odisha**
  - Narsingpur 220kV Station commissioned on 24-08-2018. SCADA data yet to be integrated at Odissa SLDC end.
  - Nalco 220kV : Most of CB and Isolator data are not available
  - Jindal Steel and Power Limited (JSPL): Most of CB and Isolator data are not available
- **JHARKHAND**
  - Hatia New 220 : RTU not reporting to SLDC.
  - Dumka 220 : RTU not yet integrated at Jharkhand SLDC.
- **DVC**
  - TISCO 400kV : Not reporting since 14-07-2018.

S.No.	Name of Utility	Location	Name of Station	Unit No.	Capacity (MW)	COD Date (DD/MM/YYYY)	Boiler Make	Turbine Make	Mills Type	Coal Source (s)	Grade of Coal	ECR (Rs./kWh)	Average PLF of last one year	Average Heat Rate (kcal/kWh)	Average APC (%)	Minimum Load (MW) capability	Minimum Load (%) capability	Maximum Ramp Rate (MW/min) capability
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Annexure-D.1

Anticipated Power Supply Position for the month of
Oct-18

SL.NO		PARTICULARS	PEAK DEMAND MW	ENERGY MU
1		**BIHAR**		
	i)	NET MAX DEMAND	4700	2707
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	490	281
		- Central Sector	3224	1936
	iii)	SURPLUS(+)/DEFICIT(-)	-986	-490
2		**JHARKHAND**		
	i)	NET MAX DEMAND	1300	800
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	386	176
		- Central Sector	851	487
	iii)	SURPLUS(+)/DEFICIT(-)	-63	-137
3		**DVC**		
	i)	NET MAX DEMAND (OWN)	2900	1735
	ii)	NET POWER AVAILABILITY- Own Source	5147	2851
		- Central Sector	334	210
		Long term Bi-lateral (Export)	1410	1049
	iii)	SURPLUS(+)/DEFICIT(-)	1171	277
4		**ODISHA**		
	i)	NET MAX DEMAND	4200	2455
	ii)	NET POWER AVAILABILITY- Own Source	2931	1657
		- Central Sector	1285	752
	iii)	SURPLUS(+)/DEFICIT(-)	16	-46
5		**WEST BENGAL**		
5.1		**WBSEDCL**		
	i)	NET MAX DEMAND (OWN)	6354	3662
	ii)	CESC's DRAWAL	0	0
	iii)	TOTAL WBSEDCL's DEMAND	6354	3662
	iv)	NET POWER AVAILABILITY- Own Source	3577	2167
		- Import from DPL	214	0
		- Central Sector	2788	1503
	v)	SURPLUS(+)/DEFICIT(-)	225	8
	vi)	EXPORT (TO B'DESH & SIKKIM)	10	7
5.2		**DPL**		
	i)	NET MAX DEMAND	251	169
	ii)	NET POWER AVAILABILITY	465	192
	iii)	SURPLUS(+)/DEFICIT(-)	214	23
5.3		**CESC**		
	i)	NET MAX DEMAND	1990	989
	ii)	NET POWER AVAILABILITY - OWN SOURCE	750	504
		FROM HEL	540	348
		FROM CPL/PCBL	0	0
		Import Requirement	700	137
	iii)	TOTAL AVAILABILITY	1990	989
	iv)	SURPLUS(+)/DEFICIT(-)	0	0
6		**WEST BENGAL (WBSEDCL+DPL+CESC)** **(excluding DVC's supply to WBSEDCL's command area)**		
	i)	NET MAX DEMAND	8595	4820
	ii)	NET POWER AVAILABILITY- Own Source	4792	2862
		- Central Sector+Others	4028	1851
	iii)	SURPLUS(+)/DEFICIT(-)	225	-107
7		**SIKKIM**		
	i)	NET MAX DEMAND	85	35
	ii)	NET POWER AVAILABILITY- Own Source	2	0
		- Central Sector+Others	159	90
	iii)	SURPLUS(+)/DEFICIT(-)	77	55
8		**EASTERN REGION** **At 1.03 AS DIVERSITY FACTOR**		
	i)	**NET MAX DEMAND**	21145	12552
		Long term Bi-lateral by DVC	1410	1049
		EXPORT BY WBSEDCL	10	7
	ii)	**NET TOTAL POWER AVAILABILITY OF ER (INCLUDING C/S ALLOCATION)**	23629	13154
	iii)	**PEAK SURPLUS(+)/DEFICIT(-) OF ER (ii)-(i)**	1063	-454

Annexure-E1

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	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	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	Rengali	1	50	No	
			SS		2	50	No	
			SS		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	Indravati	3	150	No	
			SS		4	150	No	
			64					
Central Sector	Thermal	DVC	CS	Bokaro-A	1	500	Yes	
			CS	Bokaro-B	3	210	No	Not possible due to non availability of Electro hydraulic governing. The units will be decommissioned shortly.
			CS	CTPS	3	130	No	Not possible due to non availability of Electro hydraulic governing. The units will be decommissioned shortly.
			CS		7	250	Yes	
			CS		8	250	Yes	
			CS	DTPS	4	210	No	Not possible due to non availability of Electro hydraulic governing. The units will be decommissioned shortly.
			CS	Mejia	1	210	No	Not possible due to non availability of Electro
			CS		2	210	No	
			CS		3	210	No	Action has been initiated to put in RGMO, but testing is not yet completed.
			CS		4	210	Yes	
			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	
			CS	RTPS	1	600	Yes	
			CS		2	600	Yes	
	Hydro		CS	Panchet	1	40	No	RGMO mode of operation would not be possible for
			CS		2	40	No	
	Thermal	NTPC	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	
	Hydro	NHPC	CS	Teesta HEP	1	170	Yes	
			CS		2	170	Yes	
			CS		3	170	Yes	
			42					
IPP	Thermal	IPP	PS	Maithon RB TPP	1	525	Yes	
			PS		2	525	Yes	
			PS	Sterlite	1	600	Yes	
			PS		2	600	Yes	
			PS		3	600	Yes	
			PS		4	600	Yes	
			PS	Adhunik Power	1	270	Yes	
			PS		2	270	Yes	
			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		1	200	No	could be put in RGMO

	Hydro	IPP	PS	Teesta Urja	2	200	No	could be put in RGMO mode but because of transmission evacuation constraint RGMO/FGMO is disabled
			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	

Quarterly Preparedness Monitoring -AGENDA

(Status as on :)

S.No.	State	Sector (G/T/D)	Utilities	Status of CISO Nomination	Critical Infra Identified	Crisis management Plan Prepared	Status of CS mock drill	Status of Training/ Workshops organized/ participated by utility	Action taken on CERT-In/NCIIPC Advisories
1	Tamilnadu	T	TANGEDCO	Yes/No	Yes/No	Yes/No	Done on ____		

Annexure – E.4

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 updated in OCC meetings is given below:

1) ERS towers available in Powergrid S/s is as given below:

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

2) The present status of ERS towers in OPTCL system is as follows:

Sl. No.	Name of S/S	No. of ERS towers available
1	Mancheswar	2 nos, 400 kV ERS towers
2	Mancheswar, Chatrapur & Budhipadar	42 nos, 220 kV ERS towers

- 12 nos. of new 400 kV ERS towers have been recieved.
- Another, 16 nos of 400 kV towers accompanied with 6 sets of T&P are required which is under process

3) The present status of ERS towers in WBSETCL system is as follows:

Sl. No.	Name of S/S	No. of ERS towers available
1	Gokarna	2 sets
2	Arambag	2 sets

4) The present status of ERS towers in BSPTCL system is as follows:

Sl. No.	Type	Quantity	Remarks
1	Tension ERS Tower	12	New
2	Suspension ERS Tower	20	New
3	Old ERS Tower	10	1 no. is defective
Total		**42**	

- As informed in ERS meeting held on 10-11-2014 taken by Member (Power System), CEA; 2 sets (12 tension & 20 suspension) of ERS towers had been procured and currently available in BSPTCL system (as mentioned in above table with remarks “New”).
- Same ERS tower is used in both 220 kV and 132 kV circuits.

5) In 25th ERPC meeting held on 21.09.2014, E R P C 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) DVC informed that they are in process of procuring two (2) sets of 400 kV ERS towers.

Checklist for Submission of new transmission elements for updation in Protection Database

NAME OF ORGANISATION:
FOR THE MONTH OF:

SUBSTATION DETAIL:

Sl No	DETAILS OF ELEMENTS	DATA TYPE	Status of Submission (Y/N)	Remarks
1	TRANSMISSION LINE	LINE LENGTH, CONDUCTOR TYPE, VOLTAGE GRADE		
2	POWER TRANSFORMER	NAMEPLATE DETAILS		
3	GENERATOR	TECHNICAL PARAMETERS		
4	CURRENT TRANSFORMER	NAMEPLATE DETAILS		
5	VOLTAGE TRANSFORMER	NAMEPLATE DETAILS		
6	RELAY DATA	MAKE, MODEL and FEEDER NAME		
7	RELAY SETTINGS	NUMERICAL RELAYS: CSV or XML file extracted from Relay ELECTROMECHANICAL RELAYS: SNAPSHOT of RELAY		
8	REACTOR	NAMEPLATE DETAILS		
9	CAPACITOR	NAMEPLATE DETAILS		
9	UPDATED SLD			

SIGNATURE:
NAME OF REPRESENTATIVE:
DESIGNATION:
CONTACT:
E-MAIL ID:

VDI of Selected 765 kV & 400 kV in Eastern Region in the month of August - 2018

नई रांची / Ranchi New			जमशेदपुर / Jamshedpur			मुजफ्फरपुर / Muzaffarpur		
MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)
788	762	0.00	420	405	0.00	415	384	0.00

बिहार शरीफ / Bihar Sariff			बिनागुरी / Binaguri			जीरत / Jeerat		
MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)
420	396	0.01	414	393	0.00	418	372	0.17

राउरकेला / Rourkela			जयपोर / Jeypore			कोडरमा / Koderma		
MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)
412	403	0.00	415	402	0.00	421	404	0.16

मैथन / Maithon			तीस्ता / Teesta			रांगपो / Rangpo		
MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)
421	404	0.03	408	396	0.00	406	392	0.00