Agenda

for

157th OCC Meeting

Date: 20.05.2019
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

Eastern Regional Power Committee

Agenda for 157th OCC Meeting to be held on 20th May, 2019 at ERPC, Kolkata

Item no. 1: Confirmation of minutes of 156th OCC meeting of ERPC held on 25.04.2019

The minutes of 156th OCC meeting were uploaded in ERPC website and circulated vide letter dated 03.05.2019 to all the constituents.

Members may confirm the minutes.

PART A : ER GRID PERFORMANCE

Item no. A1: ER Grid performance during April, 2019

The average consumption of Eastern Region for April- 2019 was 452 Mu. Eastern Region energy consumption reached a monthly maximum of 499 Mu on 29th April 2019. Total Export schedule of Eastern region for March – 2019 was 1860 Mu, whereas actual export was1670Mu.

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

1. **Frequency profile**
2. **Over drawal/under injection by ER Entities**
3. **Performance of Hydro Power Stations during peak hours**
4. **Performance of ISGS during RRAS**
5. **Reactive Power performance of Generators**

Based on the P-Q and V-Q curve and real time data of many of the generating plants, it is observed that a few plants only start absorbing reactive power when voltage is going above 410 kV. The same is summarized in the table given below:

Unit Name	Voltage on HV Bus above which generating plant starts absorbing reactive power
Sagardighi Unit 1,2,3,4	> 410 kV
Kolaghat 4,5,6	> 420 kV
Barh 4,5	> 415 kV
Farakka Unit 1,2,3,4,5,6	> 415 kV
Kahalgaon Unit 1,2,3,4,5,6,7	> 415 kV
Santaldih Unit 5,6	> 232 kV

This may be due to the setting of their GT Tap which is presently allowing absorption of VAR only after voltages rise significantly which need to be coordinated so that generating unit start absorbing VAR whenever HV bus voltages rise above 405kV.

In view of the above it is desired that, generating units should set their GT tap in such a manner that they should be absorbing VAR when the voltage is exceeding 405 kV. In case of any

requirement of increasing this voltage limit (Generators located in low voltage pocket area), then that can be studied on case to case basis.

6. Restricted Governor /Free Governor Mode Operation of generators in ER

In the Month of April 2019, three FRC events occurred whose details are given below:

Event	Frequency Change	ER FRC
On 11 April 2019, at 13:00 hrs HVDC Talcher - Kolar pole-I got blocked due to emergency switch off signal from Kolar end. Load loss due to SPS operation in SR: 1123 MW.	50.07 Hz to 50.12 Hz	46.8 %
On 12 April 2019, At 15:25 hrs around 1500 MW generation loss occurred in Maharastra at Chandrapur and Dhariwal.	49.90 Hz to 49.77 Hz	2.2%
On 12 April 2019, At 23:55 hrs, around 1865 MW generation loss occurred in Sikkim Complex.	50.029 Hz to 49.928 Hz	22.3 %

The observation based on the analysis is similar to what has been observed for events of March 2019 and without any appreciable improvement even after holding detail discussions with power plant operators in a meeting at ERPC on 31st Jan 2019.

Generating Power Plants of Eastern Region and SLDC may kindly explain the following points:

1. Inadequate RGMO/FGMO response for such critical Contingency and Large Frequency Drop in the grid in line with IEGC5.2.f to 5.2.i.

2. Non-submission of data for RGMO Response in line with IEGC 5.2.r , IEGC 5.9.4.b, CEA Technical standards for connectivity to the Grid Regulation 6.4.d, CEA Grid Standard 15.3. Generation data/FRC is only received from Adhunik, MPL, Budge Budge and DVC SLDC. Other regional generating stations/SLDCs may furnish the reason for not sharing high resolution generation data/FRC at their control area. Even resolution of shared data may be increased in order to improve analysis of governor operation

3. Non-Receipt of Computed FRC from SLDC for their Control Areas as per the Approved FRC procedure by CERC (In line with CERC order 84/MP/2015 dated 31-07-17)

In Addition, ERLDC has also utilized the PMU data for calculating the Power Plant response based on summing the outgoing line power flow. Several new aspects have been observed for generators (**DTSPS, RTPS, APNRL, GMR and JITPL**) in regard to Governor Response which are summarized below:

1. Incorrect Tuning is resulting in oscillatory response of the generators Active power. (Giving response and its immediate withdrawal within 10 seconds)

2. The magnitude of oscillation is around 5-10 % of the generation.

3. Oscillatory response can result in hunting in other nearby units

In view of the above, these Units are advised to get their Governor Tuned immediately without any delay for the security of the grid and the respective neighboring units.

Governor Response Tuning as per IEGC: In the meeting on 31st Jan 2019 at ERPC, the generating station have confirmed that they will tune their Governor System for better RGMO response during AOH of the Units.

Name of Generating Units	Date of AOH	Whether Tuning of RGMO Completed or not
Kahalgaon Unit 1	**12-03-19**	
Barh Unit 4	**17-02-19**	
Mejia Unit-2	**08-05-19**	
Kahalgaon Unit-7	**21-04-19**	

Member may discuss.

PART B: ITEMS FOR DISCUSSION

Item No. B.1: Power Assistance at Manique GSS from DVC and at Kendposi GSS from OPTCL –JUSNL

JUSNL vide letter dated 8th February 2019 informed that they are planning shutdown of 132 KV D/C RCP-ADP line for erection of 05 nos. Multi Circuit Tower in place of existing transmission tower. Erection of Multi Circuit Tower is inevitable for new 132 KY RCP-Jadugoda transmission line due to limitation of vacant corridor.

In 154th OCC, JUSNL explained that they needed around 35 MW power from Manique (DVC) and 40 MW power from Joda (OPTCL) S/s during the shutdown of 132kV Ramchandrapur-Adityapur D/C line for 31 days.

DVC informed that, due to network constraints in DVC system, DVC would not be in a position to give power from Manique (DVC).

OPTCL informed that the ATRs at Joda are quite old and they are planning to augment the ATRs. Power could be extended to JUSNL only after completion of augmentation of ATR.

Underlining the need to facilitate the shut-down to JUSNL and at the same time, to ensure system integrity, OCC advised Member Secretary, ERPC to convene a special meeting at ERPC Secretariat to discuss the issue with JUSNL, DVC, OPTCL, ERPC and ERLDC to arrive at an acceptable solution.

Accordingly, a separate meeting was held on 1st March 2019. The minutes of the meeting are enclosed at **Annexure-B1**.

In 155th OCC, OPTCL informed that in view of Lok Sabha Elections, they had not taken the shutdown of 220/132kV ATR at Joda for augmentation work. OPTCL added that they would take the shutdown after the Elections.

In 156th OCC, JUSNL informed that they are ready to take the shutdown of 132 KV Ramchandrapur-Adityapur D/C line but they needed around 35 MW power from Manique (DVC).

It was informed by ERPC Secretariat that DVC vide mail had informed that power Assistance at Manique GSS through 132kV Chandil-Manique Tie would be provided after putting the ICT#2 at BTPS-A on load which may take few more days.

Members may discuss.

Item No. B.2: Multiple Tripping of 400 kV Rangpo-Kishanganj Quad Moose circuit in Month of April 2019—ERLDC

400 kV Rangpo-Kishanganj Quad Moose circuit which is a major transmission line for the evacuation of Sikkim Hydro complex has tripped on numerous occasions in the month of April 2019. The details of tripping are given below:

Date and Time	**Indication**
26-04-19 14:31	Tripped only from Kishanganj End (Reason Not submitted by PGCIL)
25-04-19 12:46	R-Y to earth fault, IR=1.5 kA, IY=1.4 kA, 84.79 km from Rangpo End
24-04-19 13:30	R-Y to earth fault, IR=2.46 kA, IY=2.2 kA, 86 km from Rangpo End
16-04-19 23:32	Y Phase to Earth Fault (High Impedance Fault)

14-04-19 02:52	R-Y to earth fault, IR=3.57 kA, IY=3.19 kA, 81.6 km from Rangpo End

It can be observed that on 14th, 24th and 25th April fault appeared at a nearby location and the nature of the fault is also similar. On 26th April 2019, the line tripped from Kishanganj end, but no tripping occurred from Rangpo end. While on 16th April, the fault was high impedance in nature and cleared after 1.5 seconds on directional earth fault protection at Kishanganj end. These events suggest the various issues associated with these lines which are quoted below:

1. Need for reviewing protection setting for the line in view of tripping on 12th and 26th April 2019. **(PGCIL ERTS-1 and TVTPL May reply)**
2. Ensuring healthiness of lines as so many phase to phase transient faults are occurring at the same location. **(TVTPL May Reply)**
3. Sharing the patrolling reports of transmission lines following a fault outage, in a proper format. **(TVTPL May Reply)**

Both TVTPL and PGCIL ERTS 1 may kindly submit the details and explain to OCC.

Item No. B.3: Blackout of Hydro stations in Sikkim on 12th April 2019 --ERLDC

On 12th April 2019, Blackout of Sikkim Hydro Complex including Gangtok load of Sikkim occurred. The report has already been shared with utilities. The suggested measure to ensure such events do not result in cascade events are as follows:

1. Checking of Protection setting and Logic at Kishanganj Substation and Carrying out a joint third-party Protection Audit. **(PGCIL ERTS 1)**
2. Ensuring the availability of Offline Fault Locator at all substations and with all ISTS licensee to find the exact location of the fault to reduce the outage duration as observed in this case. **(TVPTL at Kishanganj and Teesta3 end)**
3. Proper maintenance of the newly constructed Quad Circuit by TVPTL: One conductor snapping event on 400 kV Teesta3-Kishanganj circuit (12-04-19) and two Fault events on 400 kV Rangpo-Kishanganj circuit (14-04-19 and 16-04-19) has already occurred on the lines of TVTPL. Patrolling at a regular interval in addition to clearance of RoW needs to be done at regular interval especially with the onset of high hydro in Sikkim hydro complex. **(TVPTL)**
4. Proper information dissemination and patrolling as three attempts were taken to charge the faulty line and all failed even after confirmation of healthiness of line from ISTS licensee. This is not desirable both from the point of view of grid security and equipment safety. **(TVPTL).**
5. The generators in Sikkim Hydro complex would be evacuating power through only four circuits (400 kV Rangpo-Kishanganj& 400 kV Teesta3-Kishanganj Quad Moose and 400 kV Rangpo-BinaguriTwin moose circuit). The thermal overload limitation for each quad moose circuit is 1385 MVA (Due to Cable section rated at 2000 Amp) and each Twin Moose circuit is 874 MVA. In addition, the issue of high resistance fault on these circuits due to hilly terrain followed by likelihood of N-2 contingency, being on double circuit tower, poses as a challenge to the system reliability and security. The N-2 contingency on Quad Moose circuits with limitation of Angular stability in existing network configuration and voltage drop due to long haulage of a high amount of power also is a cause of concern. Thus, it is advisable that for the upcoming hydro season a suitable SPS scheme be implemented to ensure the system reliability with various contingencies.
6. Further, there is a need to coordinate the over frequency trip stage 1 and 2 settings for Sikkim hydro units so that in case of system islanding, the chances of survival of units can be enhanced (All Units would have different settings thereby avoiding simultaneous tripping under such events)

Members may discuss.

Item No. B.4: Non-Operation of Rangpo SPS on 16th April 2019 --ERLDC

On 16th April 2019 at 23:32 Hrs, 400 kV Rangpo-Kishanganj circuit tripped on Directional Earth Fault protection. The directional earth fault has led to lower power flow on 400 kV Rangpo-

Kishanganj circuit prior to tripping and thus it did not satisfy SPS triggering condition. This led to higher loading of 400 kV Teesta3-Kishanganj circuit exceeding its cable limit and tripping of Teesta3 one unit as per SPS condition. However, due to the long path for evacuation, the voltage of Teesta 3, Teesta 5 and Rangpo 400 kV has dropped to 370 kV and 4 Units of Teesta 3 tripped on Minimal Impedance Alarm after 5 Minutes of the line tripping.

Members may discuss.

Item No. B.5: Persistent Low Voltage at 400/220 kV Nodes in West Bengal System -- ERLDC

Low voltage chronic issues have been observed in few pockets of West Bengal System. These pockets include

1. 400 kV Rajarhat, 400 kV Shubhasgram, 400 kV Jeerat and their downstream area,
2. 132 kV Malda and downstream areas

To improve the voltages at 220/132 kV Malda, the Tap of 160 MVA 220/132 kV ICTs have been changed from 7 to 11. The chronic issue of low voltage around load centers poses a lot of challenge for the system operator and there is always a vulnerability to voltage collapse as observed in Punjab System in 2007. Last Year also, ERLDC raised this issue in the 146th OCC Meeting (Item: 7) and the MoM of the Meeting is given below:

"WBSETCL informed that they are planning to install 590 MVAR additional capacitor banks in distribution network to improve the voltage. Tendering has been completed. The work would be awarded after approval of high-level committee".

However, the present condition shows that there is no improvement and the voltage has more deteriorated compared to last year. The 400kV voltages of Rajarhat and Subhasgram dipped below 370kV on multiple occasions. Such chronic low voltage issue is not desirable in the grid and defense mechanism should be put in place till the capacitor banks have been installed.

In view of this following measures are suggested for implementation:

1. Immediate implementation of Under-Voltage Load Shedding (UVLS) at 220 and 132 kV levels in WBSETCL system to ensure whenever the 400kV voltage falls below 380 kV for 5 seconds, a good amount of load is shed automatically to improve voltage profile (Similar UVLS scheme are implemented in Maharashtra, MP, Punjab, UP, Uttarakhand and Delhi) at their load centers (West Bengal SLDC and WBSETCL to provide details) .
2. Status of Year-old Proposal on 590 MVAR Capacitor banks at EHV level and updating actions taken by DISCOMs on implementation of Capacitor bank at 33/11 kV Feeders (West Bengal SLDC and WBSEDCL to update the status of implementation).

Members may discuss.

Item No. B.6: Revised Overhauling Schedule proposal of NTPC ER-I stations--NTPC

In 156th OCC, OCC agreed for Farakka Unit 5 shutdown from 07.06.19 to 06.07.19.

In the meeting, NTPC informed that overhauling of unit #6 (500 MW) of FSTPS is due since long and it will not be safe to run the unit up to November 2019. NTPC requested to consider the shutdown of unit #6 also from 15.07.19 to 28.08.19.

WBSEDCL informed that in view of high demand during July and August 2019, it was not possible to allow the shutdown during this period. However, NTPC can avail the shutdown during low demand period during November 2019 to February 2020. WBSEDCL added that in case of emergency, the unit #6 may be taken in place of unit #5 in the month of June and July 2019.

OCC decided to review the overhauling schedule of unit #6 (500 MW) of FSTPS in next OCC Meeting.

NTPC requested for shutdown of unit 1 of TSTPS from 1st August 2019 for 45 days.

OCC decided to discuss the shutdown of unit 1 of TSTPS in next OCC Meeting and advised NTPC to interact with beneficiaries in the mean time.

Member Secretary, ERPC informed that the maintenance schedule finalized in the LGBR should be strictly adhered to and no deviation shall normally be allowed unless it is considered as an emergency. He added that the onus lies with the requester to prove the emergency condition.

NTPC informed that unit 1 (800 MW) and unit 2 (800 MW) of Darlipalli STPS would be declared under commercial operation by July 2019 and December 2019 respectively.

Thereafter, NTPC vide letter dated 14th May 2019 informed that capital overhauling of unit 6 is urgently required to enhance the unit reliability. They need 45 days shutdown from 7th June 2019 to 21st July 2019. Since Farakka unit 5 is also due for overhauling, NTPC requested to allow shutdown for 30 days after completion of unit 6 (from end of July 2019). Copy of the letter is enclosed at ***Annexure-B6****.*

Members may decide.

Item No. B.7: Connectivity for newly constructed 220/132/33 KV (2x150+2x50) MVA Grid Substation Giridih of JUSNL through LILO of 220 KV Giridih (DVC) – Koderma (DVC) Transmission Line.--JUSNL

JUSNL vide letter dated 25th April 2019 requested to consider the connectivity of Giridih GSS through LILO of 220 KV Giridih (DVC) - Koderma (DVC) Transmission Line to meet the demand of Durnka, Giridih, Jamua and Saria GSS. (copy of the letter is enclosed at **Annexure-B7**).

Members may discuss.

Item No. B.8: Flexibilisation of Thermal Power Plants-Units identified by WBPDCL

In view of large scale integration of renewable energy sources into the Grid, flexible operation of thermal generators is essential to balance the grid.

CEA vide letter dated 8th April 2019 informed that CEA had received confirmation from WBPDCL for conducting the pilot test for flexible operation in the units given below:

- Bakreswar unit 5 (210 MW)
- Sagardighi unit 3 (500 MW)

In a special meeting with BHEL at CEA, BHEL informed that they have adequate technical and managerial expertise to conduct the pilot tests.

Therefore, WBPDCL is requested to coordinate with BHEL for conducting the pilot tests and finalise the dates.

CEA also advised ERPC and POSOCO to support WBPDCL for providing appropriate schedule for flexible operation pilot tests.

In 156th OCC, WBPDCL informed that they had already interacted with BHEL and BHEL engineers are expected to visit the site in May 2019.

Members may discuss.

Item No. B.9: Operationalization of 400 kV Durgapur Bus Splitting Scheme

In 151st OCC Meeting, it was decided to discuss the issue in a separate meeting. In line with the OCC decision three meetings were held at ERPC, Kolkata on 26.12.2018, 17.01.2019 and 08.04.2019.

The minutes of the 3rd Special Meeting on "Operationalization of 400 kV Durgapur Bus Splitting Scheme" held at ERPC, Kolkata on 8th April 2019 at 11:00hrs is enclosed at **Annexure-B9**.

In 156th OCC, ERLDC informed that protection coordination with the adjacent substations should be completed before putting the bus splitting scheme in service.

It was informed that the protection coordination issues were discussed in 78th PCC Meeting held on 22nd April 2019. As per the decision, Powergrid had to coordinate with adjacent substations.

OCC advised NTPC, WBPDCL and WBSETCL to review the settings and submit the confirmation to ERPC and ERLDC by end of April 2019.

OCC decided to put the Bus Splitting Scheme at 400 kV Durgapur S/s in 1st week of May 2019.

Regarding utilization of 3rd ICT at Durgapur, it was informed that the Committee met on 10th April 2019. The report will be placed in next OCC meeting.

Members may update.

Item No. B.10: Erroneous Energy data of 220kV Balangir-Katapalli line at Bolangir ---- SLDC, Odisha

The agenda received from SLDC, Odisha is enclosed at **Annexure-B10**.

In 156th OCC, GRIDCO informed that they had incurred huge commercial loss in DSM charges because of the erroneous SEM reading at Bolangir and requested for modification of DSM accounts for the affected period.

OCC noted that the issue has been raised after a lapse of more than two years. OCC advised GRIDCO to establish the fact that the meter reading of SEM of Bolangir is erroneous and the other end readings are o.k. OCC advised to submit the relevant documents to ERPC Secretariat for scrutiny. After receiving the documents from GRIDCO, ERPC Secretariat would study the case and place the details in next OCC and Commercial Meeting.

Members may discuss.

Item No. B.11: REPLACEMENT OF OLD RTUS IN EASTERN REGION FOR REPORTING OF RTU/SAS TO BACKUP CONTROL CENTRES

In 39th ERPC Meeting, it was decided that,

i) ERPC approved the proposal of Power Grid for replacement of the old RTUs in the Eastern Region for reporting of RTU / SAS to backup control centres at an estimated cost of Rs. 88.57 Crore with an implementation time of 36 months.

ii) Power Grid shall place a proposal before PSDF Committee for financing the above project from PSDF.

In 40th TCC, Powergrid informed that the DPR for PSDF would be submitted by April, 2019.

Powergrid may update.

Item No. B.12: Guidelines for rationalized use of high performance conductors—CEA

CEA vide letter dated 9th April 2109 informed that use of high performance conductors is on rise to address issues of growing congestion in the existing network and to utilize ROW more effectively.

CEA has released a document titled "**Guidelines for rationalized use of high performance conductors"** to create awareness on use of the conductors. Softcopy of the document is available at: http://cea.nic.in/reports/others/ps/psetd/guidelines_conductors.pdf

Members may note.

Item No. B.13: Low Frequency Oscillation at DSTPS Power Plant on 24th April from 17:37-17:54 Hrs--ERLDC

The DSTPS Power plant is having two units each of 500 MW capacity. On 24th April 2019, on multiple occasions low frequency oscillation was observed at DSTPS Power plant from 17:37-17:54 Hrs. The time plot of the net generation of DSTPS power plant based on data recorded by PMUs installed on its evacuation lines is given below for this event. It is known that severe oscillation had been observed in the past also at DSTPS power plant due to hunting of governor in the year 2013 and tripping of Boiler Feed Pump Trip in the year 2018. All these three events of oscillation have led to grid-scale oscillation. ERLDC has gathered the details of last PSS tuning activity at DSTPS power Plant that was completed in the year 2016. In recent past, one major network change has occurred around DSTPS Power plant which involves splitting of 400 kV Maithon Bus. Thus, along with above cases of LFO, the network changes also necessitate review of the PSS tuning of the generating units at DSTPS.

DSTPS (DVC) may kindly submit the following details:

1. Reason for such oscillation observed in DSTPS power plant.
2. Performance of the Last PSS tuning Exercise (No Details submitted so far to ERLDC)
3. Firm Timeline for PSS tuning activity as per discussion in 31st Jan 2019 meeting and above agenda item and in compliance to IEGC 5.2.K and CEA (Technical standards for connectivity to the Grid) Regulation, 2007 6.g

Item No. B.14: Review of the PSS Tuning of Generators in Eastern Region

On 31st January 2019, PSS Tuning Meeting was held at ERPC. All generating utilities were advised to complete the PSS tuning of their plant at earliest for improvement of damping in the grid during transients. In addition, the tuning reports have also to be submitted to ERLDC/ERPC for their validation.

In line with this ERLDC has communicated to following utilities in view of the recent oscillation observed during various events:

Generating Power Plant	Remarks	Status of Action Plan to be informed to OCC
All Units of DVC Generating Plant	Oscillation Observed at DSTPS on 24th April 2019 and other Oscillation events in the past.	
Sikkim Hydro Complex (Teesta3, Teesta 5, Chujachen, Dikchu, Tashiding, Jorethang)	In view of Oscillation during the 16th April 2019 events and changes in Network configuration in Sikkim hydro Complex with augmentation of lines	
MPL Plant	Due to Change in Network	MPL Unit-2: 14th June-2019

	configuration dur to bus splitting at Maithon.	in the AOH. MPL Unit-1: Planned in the AOH on Nov-2019.
APNRL Plant	Oscillation with Low Damping during transient and switching observed at the plant	
Farakka NTPC Power Plant	With Augmentation of new lines and changes in network configuration with upcoming bus split at Kahalgaon.	
NPJC/BRBCL/KBUNL NTPC Power Plant	The new units have been commissioned however there is no details on the PSS tuning activity in line with Indian Electricity Grid Code and CEA Grid Connectivity Standards	

Detailed status of other Plants regarding their tuning/data submission and Validation of PSS Tuning Data given as Annexure B14.

Members may update.

Item No. B.15: Delay in Generation Backing down observed at JITPL for Talcher Kolar SPS operation --ERLDC

On 11th April 2019 at 1301 Hrs, Talcher Kolar Pole 1 got blocked due to ESOF while it was carrying 2000 MW power. Due to this pole tripping SPS operated and signal for generation backing down was extended to GMR and JITPL. It was observed that GMR backing down is immediate while JITPL backing down is occurring after a delay of more than 1 minutes. This either suggests that there is an intentional delay, or it is done manually. This issue had been raised in the past SPS operation of Talcher Kolar also and it was decided that JITPL will remove any such delay. However based on the recent event, it is observed that no action has been taken in this regard.

JITPL may update.

Item No. B.16: Ratification of Demand and Generation for calculation of POC of Q-2 2019-20--ERLDC

The projected Demand and Generation of ER constituents to be considered in the base case for POC transmission charge and loss calculations for Q2 (July 19-Sep 19) was circulated to all the concerned via email dated 8th May August 2019 for comments and verification.

Members may confirm.

Item No. B.17: Unavailability of Video Conference facility at Sikkim SLDC--Sikkim

Sikkim vide mail dated 15th May 2019 informed that their Video Conference unit was having problem of HDMI port since last two years and it was not attended by M/s Chemtrols until January 2019. After that they took entire VC unit for repair.

Sikkim added that they raised the issue in last SCADA meeting wherein M/s Chemtrol assured to get it repaired by 30.04.2019 but the same is not yet returned.

Members may discuss.

Item No. B.18: 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 Extended till March 2019	108.6 Cr	37 Cr.	Project has been completed. Final value of the project is 51.22 Cr.
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	63.12 Cr	Order has been placed . 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	11.69 Cr	Order had 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 islanding scheme had been implemented and in operation wef**15.11.2018***
5		Upgradation of Protection and SAS		April 2020	23.48	2.348 Cr	Bid opened and order has been placed. Work started.
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.	11.05.15	31.03.19	162.5 Cr.	37.79 Cr	90% work has been completed. Total expenditure may not exceed 68 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. Tender has been floated.
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		Tender has been floated.
9	OHPC	Renovation and up-gradation of protection and control system of 4 nos.OHPC substations.		*U.Kolab, Balimela, U.Indravati, Burla, Chiplima March 2019*	*22.35 Cr.*	2.235 Cr	Placed the work order.
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. The work would be completed by Feb 2019.
11		Installation of capacitor bank at different 35 nos. of GSS under BSPTCL	5/9/2016	31st March 2019	18.88 crore	Nil	Work awarded for all GSS. 90% supply and 60% of erection had been completed.
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*	*15 Months*	*138.13 crores*		LOA placed to Siemens on 28th Sep 2018.

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 would be completed by May 2019.
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 77.97 Cr.
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	Proposal recommended by Appraisal committee as communicated on 16.11.2018.
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.	Proposal recommended by Appraisal committee as communicated on 16.11.2018.

8		Project for establishment of reliable communication and data acquisition at different substation at WBSETCL.	10-05-18	80.39 Cr.	Proposal recommended by Appraisal committee as communicated on 16.11.2018.
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.19: Reliability Indices Submission by PGCIL ERTS-1/ERTS-2 to ERLDC in Line with CERC Regulation--ERLDC

As per the CERC (Standards of Performance of inter-State transmission licensees) Regulations, 2012 all ISTS Licensee must submit the reliability Indices to the POSOCO. These include Correct operation/Incorrect Operation/Unwanted Operation of protection system for ISTS lines. This data must be submitted along with the ISTS Monthly Availability Data as the same has to be reported by POSOCO on monthly basis to Commission as per the regulation. The extract of the regulation is given for necessary information.

IV. Data to be furnished by the inter-State Transmission Licensees to POSOCO

(1) The Dependability Index defined as $D = \frac{N_c}{(N_c+N_f)}$

where N_c is the number of correct operations during the given time interval and N_f is the number of failures to operate at internal power system faults.

(2) The Security Index defined as $S = \frac{N_c}{(N_c+N_u)}$

where N_u is the number of unwanted operations.

(3) The Reliability Index defined $R = \frac{N_c}{(N_c+N_i)}$

where N_i is the number of incorrect operations and is the sum of N_f and N_u.

(4) From above $\frac{1}{S}+\frac{1}{D}=\frac{1}{R}+1$

(5) The number of trippings of each transmission element. Five or more trippings of a transmission element in a month to be put on the website by the inter-State Transmission Licensees and reported to the Commission by POSOCO

Note:

1. The data for these indices are presently prescribed for collection by the System Operator.
2. These indices shall be computed by the POSOCO and furnished to the Commission on monthly basis.

All ISTS Licensee in Eastern region are providing these details along with their Transmission availability details on monthly basis except PGCIL ERTS-1 and ERTS-2. ERLDC has requested PGCIL ERTS-1/ERTS-2 to submit these details for ISTS lines of PGCIL on number of occasions however the same has not yet been furnished thus non-compliance of the regulatory provision as given above.

Powergrid may update.

Item No. B.20: Shutdown of 132kV Motanga Substation for construction of additional 132kV Bus --PTC

PTC informed that during the shutdown of 132kV Motanga Substation, the eastern grid will be disconnected from Rangia and Kurichhu Hydropower Plant (KHP) power can be evacuated via 132kV Gelephu - Salakati feeder only. To improve the reliability during the shutdown a temporary arrangement has been proposed which is enclosed at **Annexure-B20**.

Members may discuss.

Item No. B.21: Delay in issuance of various Accounts

ER constituent members have raised the issue of delay in issuance of weekly DSM, RRAS, FRAS & SCED accounts & frequent revision of weekly accounts.

This is to inform that issuing of the weekly accounts/revised accounts is delayed mainly due to delay in receiving the input data.

Members may discuss.

Item No. B.22: Additional agenda

PART C: ITEMS FOR UPDATE

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

UFR Healthiness Certification for the month of April, 2019 has been received from OPTCL, CESC, WBSETCL, DVC, 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
6. Bandel Islanding Scheme, WBPDCL

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 April, 2019 has been received from CTPS, DVC, NTPC, West Bengal, JUSNL, WBPDCL and CESC.

Members may note.

Item no. C.3: Healthiness of SPS existing in Eastern Region

The Status of healthiness certificate for April, 2019 is given below:

Sl. No.	Name of the SPS	Healthiness certificate received from	Healthiness certificate not received from
1.	*Talcher HVDC*	*NTPC,GMR, Powergrid,*	*JITPL,*
2.	*Rangpo*	*Chuzachen,*	*Dikchu, Dansenergy, Powergrid, Teesta-III*
3.	SPS in CESC system	*CESC*	*Nil*
4.	SPS at Chuzachen	*Chuzachen*	*Nil*

Members may update.

Item no. C.4: 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	They would place the order to Chemtrol for implementation.	F <49.9 AND deviation > 12 % or 150 MW
4	Jharkhand	1. System Frequency < 49.9 Hz AND deviation >	9 Months Tendering for RTU	Condition 1: Block I feeders will be selected for load shedding

		12 % or 25 MW 2. System Frequency < 49.9 Hz AND deviation > 12 % or 50 MW 3. System Frequency < 49.9 Hz AND deviation > 12 % or 75 MW	installation is in progress. Offer received from Chemtrol for implementation.	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
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.

In 40th TCC, ERLDC informed that in SCADA O&M Meeting held on 6th March 2019, Chemtrol has agreed to implement ADMS in Bihar and Jharkhand system without any additional charges. However necessary consent for making payment of Rs 4 lakhs (excluding GST) for remaining period of maintenance contract shall be given before implementing the same.

In the TCC Meeting both Bihar and Jharkhand gave consent for making necessary payment.

In 156th OCC, it was informed that in SCADA O&M Meeting held on 24th April 2019, Chemtrol had informed that ADMS had already been implemented in Bihar and testing was to be done. Chemtrol had added that, for implementation ADMS for Jharkhand, they needed the list feeders as per the blocks.

OCC advised Bihar and Jharkhand to do the needful to implement the ADMS.

Members may update.

Item no. C.5: 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 July, 2019.***
2.	**400/220kV Pandiabil Grid S/s:**	
a.	Pratapsasan(OPTCL)-Pandiabil(PG) 220 kV D/C line	***By July, 2019.***
3.	**400/220 kV Keonjhar S/S**	
a	Keonjhar (PG)-Turumunga(OPTCL) 220kV D/C line	By June 2020

OPTCL may update.

Item no. C.6: 220 kV inter-connecting lines of JUSNL with 2x315 MVA, 400/220 kV sub-stations at Chaibasa, Daltonganj&Dhanbad

In last OCC, 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 Dec, 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 June 2019.
c	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 April 2020.

JUSNL may update.

Item no. C.7: 220 kV inter-connecting lines of WBSETCL with 400/220 kV, 2x315 MVA Subashgram & 2x500 MVA Rajarhat sub-stations

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

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x500MVA, 400/220kV Rajarhat---**	
a.	Rajarhat-N. Town-2 (WBSETCL) 220 kV D/C line	ROW problem, August 2020
b.	Rajarhat- Barasat (WBSETCL) 220 kV D/C line	The line is charged from Rajathat and Jeerat. The line would be charged from Barasat end after completion of rest of the work by September 2020.
2	**Subashgram400/220kVS/s**	
a	Subashgram–Baraipur220kVD/cline	December 2019, 80% of work has been completed.

WBSETCL may update.

Item no. C.8: Bypassing arrangement of LILO of 400kV Lines at Angul

LILO of Meramundali-Bolangir/Jeypore 400 kV S/C line and LILO of one Ckt of TalcherMeramundali 400 kV D/C line has been done at Angul 765/400kV Sub-station. The bypass arrangement for these circuits were under implementation at Angul by Powergrid.

In 156th OCC, Powergrid informed that bypass arrangement would be completed by June 2019.

OPTCL may please inform the commissioning schedule of the 2nd circuit of 400kV Meramundali-Mendhasal line.

Powergrid and OPTCL may update.

Item no. C.9: 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.

Major issues are given below:

i. Regarding frequent intermittent of real time SCADA data from Talcher STPS Stage 1 & 2, NTPC agreed to provide additional ports by March 2019.
ii. Alternate path for Malda–Farakka OPGW link

In 153rd OCC, Powergrid was advised to implement alternate OPGW link through 400 kV Kishenganj- Darbhanga-Muzaffarpur lines.

In 40th TCC, it was informed that in SCADA O&M Meeting held on 6th March 2019, both DMTCL and KPTL agreed to extend the necessary support to implement the scheme. DMTCL has insisted on payment for extending the facility.

In the TCC Meeting, Powergrid clarified that as per the terms of TBCB project, DMTCL and KPTL are not entitled for any charges for using the OPGW for SCADA.

TCC advised Powergrid to implement the scheme within three months as indicated by Powergrid in SCADA O&M Meeting.

Members may update.

Item no. C.10: 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 August-2019

SlNo	State/Utility	TTC import(MW)		RM(MW)		ATC (Import) MW		Remark
		Import	Export	Import	Export	Import	Export	
1	BSPTCL	5092	--	100	--	4992	--	June-19
2	JUSNL	1107	--	60	--	1047	--	July-19
3	DVC	1152.6	3176.4	61.2	48.1	1091.4	3128.3	Aug-19
4	OPTCL	2238	--	88	--	2150	--	Jun-19
5	WBSETCL	4287	--	300	--	3987	--	May-19
6	Sikkim	--	--	--	--	--	--	

In 156th OCC, Sikkim informed that they needed one more training at ERLDC on computation of ATC and TTC.

ERLDC agreed to facilitate and advised Sikkim to give tentative dates for arranging the training.

Members may update.

Item no. C.11: 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 also reduce the cost of GSM.

In 156th OCC, Powergrid informed that optical fiber for AMR had been implemented at 35 locations and rest of the locations would be completed by May 2019.

POWERGRID may please update the progress.

Item no. C.12: Mock Black start exercises in Eastern Region – ERLDC

Mock black start date for financial year 2019-20 is as follows:

Sl no	Name of Hydro Station	Schedule	Tentative Date	Schedule	Tentative Date
		Test-I		Test-II	
1	U.Kolab	Last week of May, 2019		Last Week of January 2020	
2	Maithon	1stweek of June 2019		1st Week of February 2020	
3	Rengali	2ndweek of June 2019		Last week of November 2020	
4	U. Indarvati	3rdweek ofJune 2019		2nd week of February 2020	
5	Subarnarekha	1stweek of October 2019		1st week of January 2020	
6	Balimela	3rdweek of October 2019		1st week of March 2020	
7	Teesta-V	2ndweek of May 2019		Last week of February 2020	
8	Chuzachen	Last Week of Dec 2019		Last week of February 2020	
9	Burla	Last Week of June 2019		Last week of February 2020	
10	TLDP-III	1st Week of June 2019		2nd Week of January 2020	
11	TLDP-IV	Last Week of June 2019		1st Week of February 2020	
12	Teesta-III	Last Week of Oct 2019		First Week of March 2020	
13	Jorthang	First Week of May 2019		First Week of Feb 2020	
14	Tasheding	2nd Week of May 2019		2nd Week of Feb 2020	
15	Dikchu	3rd Week of May 2019		3rd Week of Feb 2020	

Format for Reporting of Mock Black Start Activity:

Mock drill on Black start is a continuous activity ongoing in the power system. In addition to black start mock drill, it is essential to monitor each black start to check the performance. ERLDC is in receipt of reports from various black start stations performing these activities from their respective SLDC however, many a times essential information pertaining to performance monitoring of the activities are missing. In view of this it is proposed that, for any mock drill on black start, SLDC must share the following details to access the performanceand the same need to be intimated one week before to ERLDC along with blackstart process. This will help in finding out any challenges and sharing of experiences with other utilities.

1. Name and Contact of Personnel available at SLDC:
2. Name and Contact of Personnel available at Generating Plant:
3. Name and Contact of Personnel available at Load Substation:
4. Single Line diagram of the mock drill:
5. Details of Steps taken for Mock Drill

Table 1: Performance monitoring of Mock Drill

Activity	Time (Minutes)
Time taken to start DG set after black out of Island	
Time taken to charge dead bus at Black start station	
Time taken to charge dead bus at Remote end by line charging	
Time taken to connect first load post a black out in the island	
Duration of stable island operation after successful black start and building up the of the island till synchronization with grid	
Time taken to synchronize the island with Grid	

6. Issues Observed:
7. Remedial Action Taken if Any for the challenges:
8. Any other details:

Members may update.

Item no. C.13: 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.

Members may update.

Item no. C.14: Summary of Status Update on Previous agenda items in OCC

OCC	Agenda	Decision	Status Update
152	**Item No. B3: Installation of PMUs for observation of the dynamic performance of STATCOMs**	Powergrid informed that M/s GE had agreed to supply and install of 4 no's PMUs for 4 STATCOMs in the Eastern Region within the quantity variation clause under the existing URTDSM Project.	Status of procurement & installation may be updated by PGCIL ERTS-1 and 2.
154	**Item No. B.18: Details of Capacitor bank**	OCC advised all the states to submit the updated capacitor	Bihar and Odisha have submitted the Details.

	installed in Distribution/Sub transmission network	bank list in their control area to ERLDC and ERPC.	Jharkhand does not have any capacitor bank installed. **West Bengal/ Sikkim/ DVC May kindly update the status**
155	**Item No. B.12: Load Trimming Scheme on 400/132 kV Motihari ICTs.**	OCC approved the load shedding scheme and advised Bihar to implement the scheme at the earliest.	Implementation Status may be updated by BSPTCL and DMTCL
155	**C.22: Collection of modeling data from Renewable as well as conventional energy generators: ERLDC**	OCC advised all the constituents to submit the details of renewable power plants of 5 MW and above.	All SLDC may kindly update the status.
156	**Low frequency Oscillation at MTDC BNC-ALP-Agra**	OSS Advised ERTS-2 to submit the analysis report to ERLDC/ERPC	PGCIL may kindly share the details.
156	**Item no. C.20: Updated Black Start and Restoration procedure of State--ERLDC**	DVC and Orissa have submitted the updated restoration procedure.	Jharkhand, West Bengal, Sikkim and Bihar May kindly share the details immediately for expeditious restoration of state grid, in the event of any exigency.
156	**Item No. B.12: Status of Auto-Reclosure on Lines from Tala and Chukha Hydro Power Plant (Bhutan)**	DGPC informed that an expert Committee was constituted to enable the autorecloser for transmission lines connected to Tala and Chuka hydro stations. The Committee hadrecommended forimplementation of the autorecloser at Tala and Chuka. DGPC added that they are planning to implement the autorecloser scheme for the transmissionlines connected at Chuka by May 2019. Based on the experience gained, they would implementthe autorecloser scheme for the transmission lines connected at Tala.	DGPC may kindly update.

Item no. C.15: Delay in furnishing information to ERLDC/ERPC regarding of Commissioning of new Transmission Elements/ Generating Units within State and integration of SCADA data with ERLDC--ERLDC

The above matter was deliberated in several past OCC meetings and format for data submission was also circulated. All states and transmission licensees agreed to submit the list of transmissions elements (ISTS & within state) synchronized **for the first time**during last month and new elements to be commissioned during next month, within 7th day of the current month to ERLDC through mail.

For the Month of April-2019, except Odisha no state and transmission licensee has submitted its list of transmission element /generators synchronised **in the previous Month** and List of Transmission element and generators expected to be synchronised during next Month.

The absence of updated information regarding new elements energized in the previous month and elements expected to be commissioned during the next month poses difficulty in integration of SCADA data of intra state lines in ERLDC SCADA system, which in turn severely impairs monitoring and supervising the regional grid – both in real time as well as off-line, at RLDC level. It is also observed that in ERLDC SCADA network and SLDC SCADA network some of the 220 and 132 kV transmission lines and substations are yet to be updated.

ERLDC is in the process of checking and updating the intra-state transmission network models of all states up to 132 KV using SCADA network availability at ERLDC and the transmission map available in the SLDC/STU website. Five groups (one for each state and one group for DVC & Sikkim) have already been formed at ERLDC to validate all state networks up to 132 kV level. In this regard all SLDCs are requested to nominate two executives(one from system operation and one from SCADA side) who shall help and coordinate with ERLDC executives during state network validation process for successful updating of SCADA and off-line models.

Members may please note and nominate two executives.

Item no. C.16: Implementation of Automatic Generation Control (AGC) in India (at Inter-State level)

The issue was discussed in 8th NPC Meeting held on 30th November 2018, it was decided that each RPC would submit the status of implementation of AGC to NPC.

In 40th TCC, NTPC informed that AGC at Barh STPS will be implemented by May, 2019.

DVC confirmed that unit#8 of Mejia TPS has been identified for AGC implementation as a pilot project.

The followings were decided in the TCC Meeting:

1. *Status of implementation of AGC shall be regularly monitored in OCC meetings.*
2. *An workshop shall be organised in ERPC wherein NLDC and NTPC will be invited to interact with the ER constituents regarding the experience they have gained in implementing the AGC in other regions.*

In 155th OCC, NTPC informed that implementation of AGC at Unit#4 & 5 of Barh STPS are in progress and was expected to completed by May 2019.

Odisha informed that unit#3 of OPGC had been selected for implementation of AGC.

WBPDCL informed that unit#5 of Bakreswar had been selected for implementation of AGC.

In 156th OCC, OCC decided to organize the workshop at ERPC in May 2019 wherein NLDC, NTPC and Siemens will be invited to interact with the ER constituents.

The workshop on AGC would be held on 31st May 2019 at ERPC, Kolkata.

Members may note.

Item no. C.17: Maintenance and support (AMC) renewal of PSSE software.

Siemens vide letter dated 20th March 2019 informed that the AMC for PSSE software has ended on 30th November 2018.

Siemens requested ERPC Secretariat to renew the maintenance and support period for all the existing supplied licenses of states for next five years.

In 156th OCC, All the SLDCs in the meeting agreed for renewal of the AMC of PSSE software for next five years and requested to take up the AMC contract jointly for all the states with the Siemens as it was done during the procurement of software.

OCC advised ERLDC to take up the issue with NLDC and CTU.

Members may update.

Item no. C.18: Availability of Auto-synchrocheck Relay Display for Substation Operators --ERLDC

As per 156th OCC Discussion, All SAS Based substations have to ensure the following in regard to the Auto-synchrocheck facility:

1. Availability of Auto-synchronization Display at Substation Operator Console as well as RTAMC.
2. Suitable wait time configuration for Auto-Synchronization facility reset (25 seconds) and synchronization condition monitoring (10 ms)
3. Possibility to use synchronization trolley in such substation for synchronization during black start activity.
4. Operator training for setting of auto-synchrocheck parameters setting as per the instruction of RLDC/SLDC operators and utilizing it during black start.

Details may kindly be shared on following email id :erldcprotection@posoco.in , chandan@posoco.in, saibal@posoco.in, saurav.sahay@posoco.in, akbasak@posoco.in, rajprotim@posoco.in

Members may update.

Item no. C.19: Black Start Mock Drill at PPSP Power Plant --ERLDC

As per directions of ERPC Board in its 39th Meeting held on 17-11-2018, a committee was formed for the study of the black start. Vide minutes of the meeting held on 08-02-19 the committee advised WBSEDCL to Submit their OEM reply along with the committee MoM to CEA/CERC immediately for their observation and further review on the subject matter. In addition, Committee also advised WBSEDCL to visit Pump Storage capable plants in Western Region (SSP) and Southern Region (Srisailam) to have an overview on how they are conducting the black start mock-drill without any difficulty.

WBSEDCL may kindly update.

PART D:: OPERATIONAL PLANNING

Item no. D.1: Anticipated power supply position during June 19

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of June 19 were prepared by ERPC Secretariat on the basis of Provisional LGBR for 2015-16 and feedback of constituents, keeping in view that the units are available for generation and expected load growth etc. is at **Annexure-D.1**.

Members may confirm.

Item no. D.2: Shutdown proposal of transmission lines and generating units for the month of June 19

In 151st OCC, it was observed that constituents had not submitting the shutdown requisition within stipulated time as a result ERLDC had been facing difficulty in properly analyzing the shutdown.

OCC decided the following procedure for submission of transmission elements outage requisition:

1. ***Shutdown of Intra Regional Lines*** *- Transmission licensee/SLDCs/Transmission Asset owners shall apply shutdown of their respective Intra Regional Lines for the next month to ERLDC strictly by **8th** of every Month. Based on this, ERLDC shall prepare the list which would be placed in OCC Agenda. Any shutdown requisition received after 8th of the month would not be normally considered for discussion in the OCC meeting unless it is considered to be an emergency requirement.*
2. ***Shutdown of Inter Regional Lines*** *- Transmission licensee/ SLDCs/Transmission Asset owners shall send their shutdown requisition of Inter Regional Lines for the next month directly to NLDC strictly by **5th** of every month with a copy to respective RLDCs.*

Generator shutdown for June 2019:

System	Station	Unit	Capacity (MW)	Period		No. of Days	Reason
				From	To		
DVC	Mezia TPS	7	500	14.05.19	18.06.19	18	COH (Blr,Turb,Gen.)
		3	210	25.06.19	30.07.19	6	COH (Blr-RLA,Turb-RLA,Gen.)
ODISHA	IB TPS	2	210	06.06.19	30.06.19	25	AOH
	Talcher TPS	2	60	25.06.19	09.07.19	6	AOH
WBPDCL	Bandel TPS	1	60	16.06.19	14.08.19	15	Capital Overhauling
	Kolaghat TPS	1	210	07.06.18	30.06.19	30	R&M
	BkTPS	5	210	24.06.19	30.06.19	7	Boiler License renewal
NTPC	FSTPS	5	500	07.06.19	06.07.19	24	Boiler+Gen+ESP R&M
IPP	MPL	2	525	15.06.19	14.07.19	16	AOH
	GMR	1	350	01.06.19	05.07.19	30	Turbine Overhauling

ERLDC may place the list transmission line shutdown discussed on 15th May 2019 through VC.

Members may confirm.

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

(i) Thermal Generating units:

S.No	Station	Location	Owner	Unit No	Capacity	Reason(s)	Outage		Expected Revival Date
							Date	Time	
1	KOLAGHAT	WEST BENGAL	WBPDCL	1	210	POLLUTION CONTROL PROBLEM	10-May-18	23:05	NO DEFINITE PROGRAM
2	KOLAGHAT	WEST BENGAL	WBPDCL	3	210	POLLUTION CONTROL PROBLEM	23-Feb-17	11:51	NO DEFINITE PROGRAM
3	CTPS	JHARKHAND	DVC	3	130	TURBINE BLADE DAMAGE	30-Jul-17	00:00	NO DEFINITE PROGRAM
4	MEJIA	WEST BENGAL	DVC	2	210	CAPITAL OVERHAULING	8-May-19	00:00	8-Jun-19
5	KAHALGAON	BIHAR	NTPC	7	500	ANNUAL OVERHAULING	22-Apr-19	00:59	23-May-19
6	JITPL	ODISHA	JITPL	2	600	COAL SHORTAGE	26-Jun-18	00:03	SUBJECT TO COAL AVAILABILITY
7	STERLITE	ODHISA	GRIDCO	2	600	DUE TO PROBLEM IN OLTC SYSTEM OF Unit Transformer	10-Apr-19	00:29	20-May-19
8	SAGARDIGHI	WEST BENGAL	WBPDCL	3	500	DESYN FOR SHORT MAINT.	16-Apr-19	23:58	16-May-19
9	BOKARO B	WEST BENGAL	DVC	3	210	PROBLEM IN HP ASH WATER PUMPS	26-Apr-19	16:27	14-May-19
10	RAGHNATHPUR	WEST BENGAL	DVC	1	600	PROBLEM IN SCANNER AIR FANS ASSOCIATED WITH FLAME STABILITY	30-Apr-19	16:31	18-May-19

Generators/ constituents are requested to update the expected date of revival of the units.

(ii) Hydro Generating units:

Members may update.

(iii) Transmission elements

SL NO	Transmission Element / ICT	Agency	Outage From		Reasons for Outage
			DATE	TIME (HRS)	
1	220 KV BALIMELA - U' SILERU	OPTCL / APSEB	10-03-2018	22:45	LINE ANTITHEFT CHARGED FROM UPPER SILERU ON 17-04-18
2	400 KV IBEUL JHARSAGUDA D/C	IBEUL	29-04-2018	17:30	TOWER COLLAPSE AT LOC 44,45
3	400KV NEW PURNEA-BIHARSARIFF(PG)-D/C	ENICL	10-08-2018	10:28	TOWER COLLAPSE AT LOC 47/0

4	400 KV PATNA KISHANGANJ- I	POWERGRID	01-09-2018	00:32	TOWER COLLAPSE AT LOC 129. PILING DAMAGED
5	220 KV NEW PURNEA BEGUSARAI - D/C	BSPHCL	05-02-2019	13:35	S/D AVAILED BY BIHAR FOR PILE FOUNDATION IN KOSHI RIVER AT KURSELA LOCATION NO 413 A
6	400KV FARAKKA - KAHALGAON- I	POWERGRID	06-03-2019	08:28	FOR TAKING UP BAY UP GRADATION WORK OF BAY-22
7	765 JHARSUGUDA -RAIPUR I	POWERGRID	05-04-2019	22:44	TO FACILITATE FIRST TIME CHARGING OF 765 JHARSUGUDA -RAIPUR LINE -II .DUE TO VOLTAGE CONSTRAINT LINE -I KEPT OPEN.
8	765 KV JHARSGUDA ANGUL III	POWERGRID	02-04-2019	01:08	R-Ph CT Blast in 765kV Angul-Jharsuguda #3 Tie Bay at Angul
11	400KV PANDIABILI -NEW DUBRI S/C	POWERGRID	03-05-2019	09:55	One no. of tower in LOC 717 of 400kV New Duburi-Pandiabili and 400kV Baripada-Pandiabili is reported to have been collapsed on 220KV CHANDAKA-MENDHASAL-I & II. Baripada-Pandiabili line has been restored on ERS on 10.05.19.
12	220KV MENDHASAL-CHANDAKA -I & II	OPTCL	03-05-2019	10:58	One no. of tower in loc-717 of 400kV New Duburi-Pandiabili and 400kV Baripada-Pandiabili is reported to have been collapsed on 220KV CHANDAKA-MENDHASAL-I & II. Also one no of tower collapse of 220KV Mendhasal-Chandaka-I & II. Ckt-II charged at 21:50Hrs on 07.05.19 with special arrangement.
13	220KV MENDHASAL-CHANDAKA -III	OPTCL	04-05-2019	00:28	1 no. Tower collapse reported at around 11.6 km from Mendhasal
16	220 KV PANDIABILI - SAMANGARA D/C	OPTCL	03-05-2019	11:10	49 nos of tower collapse
17	220 KV ATRI -Narendrapur D/C	OPTCL	03-05-2019	11:11	2 no of tower collapse
18	132KV Nimapara-Samangara-Puri	OPTCL	03-05-2019	11:00	6 nos of tower collapse
19	132KV KHURDA-SAMUKA-PURI	OPTCL	03-05-2019	11:00	14 nos of tower collapse
20	132KV BALUGAON -KHURDA	OPTCL	03-05-2019	11:00	TOWER COLLAPSE NEAR JANKIA
21	132KV CHANDAKA-NIMAPARA	OPTCL	03-05-2019	11:00	8 nos of tower collapse
22	132KV BIDANASI-CHOUDWAR	OPTCL	03-05-2019	11:00	1 no. tower collapse.
23	132KV PHULNAKHARA LILO LINE	OPTCL	03-05-2019	11:00	2 nos. tower collapse.PresentlyPhulnakhara - Cuttack portion of LILO charged at 18:47 hrs on 11.05.19.However, 132KV Phulnakhara-BBSR portion of LILO yet to be charged.
24	132KV KESURA LILO LINE	OPTCL	03-05-2019	11:00	2 nos. tower collapse.

(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.

PART E::ITEMS FOR INFORMATION

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

Item No. E.1: 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-E1**.

OCC advised all the constituents to submit the information to ERPC as per Annexure-E1.

Item No. E.2: 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.

Item No. E.3: Commissioning of new transmission elements in Eastern Region

The details of new units/transmission elements commissioned in the month of April-2019 based on the inputs received from beneficiaries

Monthly commissioning List of Transmission element and generators: April 2019					
SL NO	Element Name	Owner	Charging Date	Charging Time	Remarks
1	800 MW Darlipali unit 1 (G.T. 1)	NTPC	04-04-2019	09:02	
2	765 KV Jharsuguda- Raipur I	OGPTL	04-04-2019	21:12	
3	765kv Jharsuguda - Raipur-2	OGPTL	05-04-2019	23:32	
4	400/220kv 315MVA ICT-2 at Bokaro-1	DVC	25-04-2019	19:14	First time loading
5	LILO 132 KV Udala-Baripada SC line at Betanoti S/S	OPTCL	19-04-2019	14:02	arrangement(3.104 Kms) in existing
6	132KV BIHTA(New) – BIHTA(Old) circuit no. -2	BSPTCL	12.04.2019	17:10	Charged from Bihta(new) end
7	132KV BIHTA(New) – BIHTA(Old) circuit no. -1	BSPTCL	12.04.2019	17:30	Charged from Bihta(old) end , as bay is not ready at GSS Bihta (new)

Item No. E.4: UFR operation during the month of April '19

System frequency touched a maximum of 50.29 Hz at01:12Hrs of 07/04/19& 18:00 Hrs of 29/04/19and a minimum of 49.65 Hz at 23:03Hrs of 01/04/19. Hence, no report of operation of UFR has been received from any of the constituents.

Item No. E.5: Grid incidences during the month of April, 2019

Sr No	GD/ GI	Date	Time	S/S involved	Summary	Load loss (MW)	Gen loss (MW)
1	GD-I	05-04-2019	15:03	Santaldih	220 KV bus II at Santaldih S/S was under shutdown. At 15:03 hrs total power failure occurred at Santaldih S/S due to flash over at B phase isolator of ST-III resulting tripping all feeders connected to S/S	40	480
2	GI-II	11-04-2019	13:39	Talcher HVDC	On 11-04-19 at 13:01 hrs +/-500 KV Talcher Kolar HVDC Pole 1 got blocked due to Emergency switch off signal received from Kolar end resulting reduction of power flow from 2000 MW to 1000 MW. Pole 2 was operated in metallic return mode after the incident. Due to event generation back down	0	190

					occurred at GMR and at JITPL		
3	GD-I	12-04-2019	23:55	Kishangunj	400 kV Rangpo-Binaguri circuits were under planned outage for HTLS Reconductoring work. At 23:55 Hrs, R-Y phase to phase fault occurred on 400 kV Teesta 3-Kishanganj circuit resulting in its tripping. This led to evacuation of entire Sikkim hydro complex power through 400 kV Rangpo-Kishangunj single circuit. However, backup over current protection which was kept enabled for this circuit at Kishangunj end operated causing its tripping. This led to Isolation of Sikkim Hydro complex (1908 MW) with Gangtok Load (17 MW) and the island collapsed due to large load generation imbalance causing total blackout of 400/220/132 kV Rangpo, 400 kV Teesta V, 400 kV Teesta 3, 400/132 kV Dikchu, 220 kV Jorethang, 220 kV Tashiding, 132 kV Chujachen and 132 kV Gangtok substations. The large generation loss led to frequency drop by 0.15 Hz in the Indian grid (50.029 Hz to 49.859 Hz).	17	1908
4	GI-II	16-04-2019	23:30	Kishangunj, Teesta III	400 kV Rangpo-Binaguri circuits were under planned outage for HTLS Reconductoring work. At 23:32 Hrs, Resistive fault occurred in the Y phase on 400 kV Rangpo-Kishangunj circuit. This has led to tripping of circuit on Direction Earth Fault trip from Kishangunj end which has sent the direct trip to Rangpo end. With this fault, Dikchu 400/132 kV ICT tripped on Backup Overcurrent protection causing tripping of both its units. In addition, during this fault, Jorethang Unit 2 also tripped on generator protection. The SPS associated with this circuit did not operate at Rangpo End. With this, the entire power shifted on 400 kV Teesta 3-Kishnaganj circuit. The power evacuation through a long path has resulted in low voltage at Teesta3, Rangpo and Teesta 5 and 220 kV generating station connected. As the line loading on 400 kV Teesta3-Kishanganj circuit was 1538 MW with voltage going to 360 kV, the SPS for Line	0	1118

					overloading at Teesta 3 end operated tripping its unit 1. However, this did not reduce the loading on the line below the set limit of 2000 Amps. The low voltage persisted at Teesta 3 generating plant and after 5 minutes, the Teesta 3 Unit 2,3,4 and 6 tripped on minimal impedance stage 2 protection operation. After the loading on the 400 kV Teesta 3-Kishanganj circuit reduced to 747 MW and Voltage at Teesta3 has improved to 392 kV.		
5	GD-I	17-04-2019	10:16	TVNL	220 kV Ranchi – Hatia D/C was out of service. At 10:16 hrs 220 kV Biharshariff-Tenughat S/C tripped on R-N resulting into islanding of Hatia load with 2 running units of Tenughat and one unit of CPP Inland power. Island could not survive due to generation load unbalance (390MW of generation against load of 150MW) leading to the load loss of around 150 MW at Hatia/ Namkum/Lohardangha /Kamdara area in Jharkhand system and loss of two running units of Tenughat and 1 running unit of CPP Inland. 315 MVA ICT-I & II of Biharshariff tripped sensing the fault of 220 kV Biharshariff-Tenughat S/C. As per PMU data, fault was cleared within 200 ms.	165	390
6	GI-I	18-04-2019	10:16	Muzaffarpur	At 10:16 hrs 220 kV Muzaffarpur - Hazipur - II, 220 kV bus II at Muzaffarpur, 400/220 kV ICT -III at Muzaffarpur and 220 kV Muzaffarpur - Dhalkebar II tripped.	0	0
7	GD-I	27-04-2019	12:47	Khagul	220 kV Arrah Khagul D/C were out of service due to reduce the loading of 220 KV Patna Sipara S/C. 220 kV Khagul Sipara S/C was under breakdown prior to the incident. So Khagul was connected to only one source i.e. Patna. At 12:47 hrs 220 kV Patna Khagul S/C tripped on B-N fault resulting total power failure at Khagul S/C.	147	0
8	GD-I	29-04-2019	12:37	Patratu	At 12:37 Hrs, all lines emanating from 220 KV Patratu S/s tripped leading to a total power failure of the S/S	65	0

9	GI-II	30-04-2019	02:15	Jharsuguda	At 2:15hrs, 765 KV Bus I at Angul tripped on Bus bar protection due to B ph bursting of CT associated with Tie bay of 765 KV Angul Jharsuguda IV. At the same time,1500 MVA 765/400 KV ICT IV also tripped on back up O/C protection.	0	0

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Eastern Regional Power Committee, Kolkata

Minutes of Special Meeting on Power support at Manique GSS from DVC and at Kendposi GSS from OPTCL held at ERLDC, Kolkata on 1st March, 2019 (Friday) at 15: 00 hrs

OPTCL, SLDC Odisha, JUSNL and SLDC DVC attended the meeting through video conference.

At the start of the meeting, ERPC explained that in 154th OCC Meeting held on 21st February 2019, JUSNL informed that they needed around 35 MW power from Manique (DVC) and 40 MW power from Joda (OPTCL) S/s during the shutdown of 132kV Ramchandrapur-Adityapur D/C line for 31 days. OCC advised Member Secretary, ERPC to convene a special meeting at ERPC Secretariat to discuss the issue with JUSNL, DVC, OPTCL, ERPC and ERLDC to arrive at an acceptable solution. In line with OCC decision, this meeting had been called.

- OPTCL informed that 220/132kV ATRs at Joda are quite old and they are planning to augment one 100MVA 220/132kV ATR with 160 MVA. Power could be extended to JUSNL only after completion of the augmentation of ATR.
- OPTCL added that they are ready to take shutdown of one 100MVA 220/132kV ATR at Joda from next day to start the augmentation work and they needed 35 days to complete the work.
- DVC informed that unit #7 of Chandrapura TPS is under maintenance which would be in service from 20th March 2019 tentatively. DVC added that after bringing the unit #7 of Chandrapura into service they can give 35 MW during off peak and 25 MW during peak hours at Manique subjected to availability of unit #3 of Bokaro. DVC explained that at present unit #3 of Bokaro is in service but availability of the unit is uncertain.
- After detailed deliberation, the following were decided:
    1. OPTCL shall take shutdown of one 100MVA 220/132kV ATR at Joda from 2nd March 2019 to start the augmentation work
    2. After completion of augmentation of 220/132kV ATR at Joda, JUSNL shall avail the shutdown of 132kV Ramchandrapur-Adityapur D/C line tentatively from 6th April 2019.
    3. OPTCL shall provide additional 40 MW power from Joda (OPTCL) to fed Kendiposi loads during the shutdown period of 132kV Ramchandrapur-Adityapur D/C line
    4. DVC shall provide power support of 35 MW during off peak and 25 MW during peak hours at Manique subjected to availability of unit #3 of Bokaro during the shutdown period of 132kV Ramchandrapur-Adityapur D/C line

- OPTCL added that during shutdown of one 100MVA, 220/132kV ATR at Joda from 2nd March 2019, they can only give 20 MW power to Kendiposi during off peak hours and they cannot give any power during peak hours due to significant load growth in Joda area.
- Jharkhand agreed and requested to keep the 220kV Joda-Kendiposi line as idle charged condition so that they can draw railway power in case of any emergency.
- Odisha agreed but requested Jharkhand to avoid power drawal during peak hours.
- Jharkhand assured that they would draw power only during emergency after taking consent from OPTCL.
- It was opined that most of the JUSNL loads would be met by 220kV Chandil S/s during shutdown of 132kV Ramchandrapur-Adityapur D/C line. Jharkhand was advised to maintain the reliability of the 220kV Chandil S/s and ensure healthiness of the protection system at Chandil S/s.

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Annexure-B6

एनटीपीसी NTPC
एक महारत्न कम्पनी

FSTPS

Ref. No. FSTPS: 42: CGM (O&M) /03

Date: 14.05.2019

To
The Member Secretary
Eastern region Power Committee
14,Golf Club Road, Tallygunj
Kolkata-700033

Dear Sir,

With reference to the final LGBR of Eastern Region for the year 2019-20, vide No. ERPC/MS/LGBR/2019-20/985-1026 dated 30th April 2019 issued by the Hon'ble Member Secretary, ERPC; we would like to submit the following:

As per the LGBR, Overhauling of FSTPS U#5 and #6 have been scheduled from 07-Jun-2019 to 06-July-2019 for 30 days and from 01-Nov-2019 to 05-Dec-2019 for 35 days respectively.

It may be mentioned that the Unit#6 of FSTPS has been running with liabilities in turbine due to which we are unable to operate the unit at full load. The boiler has also not been overhauled since long. Capital overhauling of the unit is urgently required to enhance the unit efficiency & reliability in order to serve the grid with full capability in a safe manner. The job will require 45 days shutdown for replacement of HP module, overhauling of IP & LP turbine and Generator Capital overhaul.

It was discussed and recorded in the 156th OCC MOM dated 03.05.2019 that Unit#6 may be taken in place of Unit#5 (approved from 07-June-19 for 30 days) in the month of June and July in case of emergency.

It is, therefore, requested that overhauling of FSTPS Unit#6 may please be allowed from 07-June-2019 to 21-July-2019 in place of November'19 as per LGBR. Since FSTPS Unit#5 is also due for overhaul, it is also kindly requested to allow a shutdown for 30 days, after completion of Unit#6 overhaul (from end of July'19).

Thanking you in anticipation of your kind consideration and consent in this regard.

Regards,

D.S.G.S.S Babji
CGM (O&M)
FSTPS

Copy:

1) RED (ER-I) - for kind information please
2) E.D (O.S) -EOC NOIDA – for kind information please -
3) CGM (F) – for kind information please

JHARKHAND URJA SANCHARAN NIGAM LIMITED

(CIN No. – U40108JH2013SGC001704)
Regd. Office – 2nd Floor, JUSNL (SLDC) Building, Kusai Colony, Doranda, Ranchi-02
Fax No. – 0651 – 2400123 (E-mail–cetjusnl@gmail.com)

Letter No ....721.... **G.M., C&M (NWBP)/ JUSNL** **Dated** ..25-04-19
C.E. (Trans.)/1725/2017-18

From,

Amar Nayak
General Manager, Contracts & Materials (non W.B. Project)

To,

The Member Secretary,
Eastern Regional Power Committee,.
14, Golf Club Road Tollygunje
Kolkata-700033, Kolkata, West Bengal 700033 e-mail - mserpc-power@nic.in

Sub: **Request for placing agenda in OCC meeting of ERPC for Connectivity of newly constructed 220/132/33 KV (2x150+2x50) MVA Grid Substation Giridih of JUSNL through LILO of 220 KV Giridih (DVC) – Koderma (DVC) Transmission Line.**

Sir,

Presently Power to Giridih District of Jharkhand is fed through DVC network and is not sufficient to meet demand of Giridih and nearby area. In order to meet the power requirement of Giridih, Jamua and Sariya, JUSNL has completed the construction work of 220/132/33 KV (2x150+2x50) MVA Grid Sub Station Giridih (JUSNL), 132/33 KV GSS at Jamua and 132/33 KV GSS at Saria.

On the upstream ,220/132/33 KV Grid Sub Station Giridih(JUSNL) is to be connected to under construction 220/132/33KV GSS Jasidih through 220 KV D/C Giridih-Jasidih transmission line and 220/132/33KV GSS Jasidih will be connected to existing 220/132 KV GSS at Dumka(Madanpur) through under construction 220KV D/C Dumka-Jasidih Transmission line. As an alternate source to 220/132/33KV GSS Jasidih, Jasidih will be connected to proposed 400/220KV GSS (TBCB mode) at Jasidih through 220 KV D/C transmission line.

The details of the present status of the above plan are as follows:

Sr. No.	Transmission Element	Present Status
1	220/132/33 KV Giridih GSS	Ready for commissioning.
2	220/132/33 KV Jasidih GSS	Work is in progress and expected to be completed by May 2019.
3	220 KV D/C Giridih- Jasidih Transmission line	Work awarded but progress is slow and delayed due to delay in forest clearance.
4	220 KV D/C Dumka(Madanpur)- Jasidih Transmission line	Work awarded but progress is slow and delayed due to delay in forest clearance.
5	400/220 KV GSS Jasidih along with associated transmission line.	Under TBCB. Bidding process is going on. It will take approx. 3 years for completion

P.T.O.

Till completion of 400/220 KV GSS Jasidih alongwith associated line upto 220/132 KV GSS Jasidih (Which are under TBCB Scheme), the 220/132/33 KV GSS Giridih will remain on only one source i.e. 220/132KV GSS Dumka, which receives power though 220KV D/C Dumka – Maithon(PG) transmission line. The availability of power at Dumka will not be sufficient to meet the demand of Giridih, Jamua and Saria GSS in addition to Dumka region.

For early commissioning of 220/132/33 KV Grid Sub Station Giridih, JUSNL has explored one possibility and considered the same as the most suitable option of connectivity of Giridih GSS through LILO of 220 KV Giridih (DVC) – Koderma (DVC) Transmission Line at present (line diagram enclosed).

After completion of 220 KV D/C Giridih- Jasidih Transmission line and 220 KV D/C Dumka(Madanpur)- Jasidih Transmission line, this LILO will also act as an alternate source to 220/132/33 KV GSS Giridih.

Preliminary survey work for the above proposal has been carried out and the route length from existing tower No. KG-317 has been identified having length 19.30 Km with no involvement of forest and railway crossing.

After completion of this proposed LILO, Commissioning of newly constructed 220/132/33 KV (2x150+2x50) MVA Grid Substation Giridih (JUSNL) can be done. Further after completion of downstream network of Giridih GSS, power may be extended to 132/33KV GSS at Jamua and Saria of JUSNL and power crisis to Jamua, Tisri, Gawan ,Deori, Rajdhanwar, Birni, Sariya, Bagodar, Pirtand, Dumri and nearby villages will be resolved.

Concerned Utilities are DVC and JUSNL.

Agenda may be placed before OCC meeting of ERPC for recommendation to place the matter for discussion and decision.

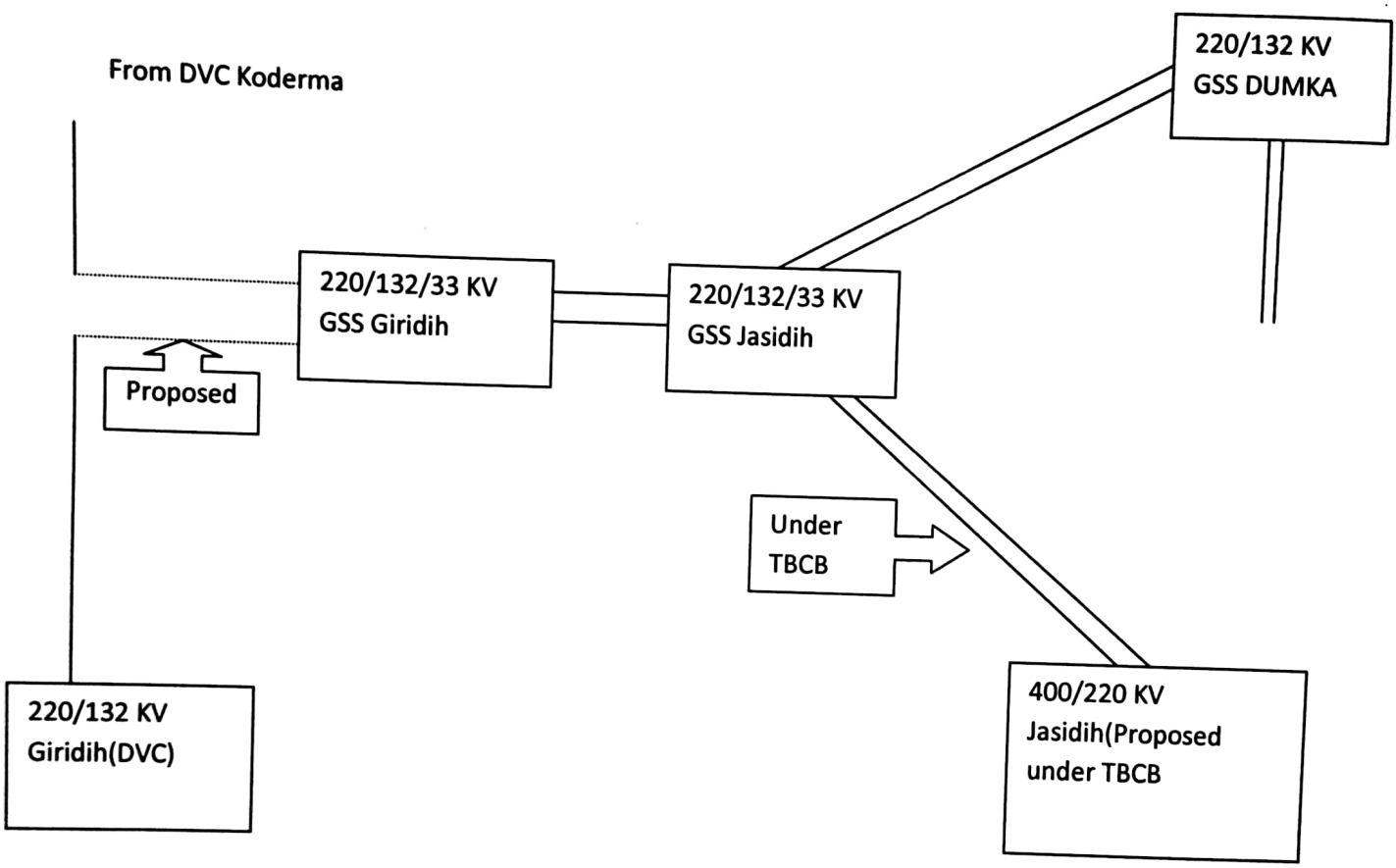
Yours faithfully

25/04/2017

Encl. As above.

General Manager, C&M (non W.B Project)

Proposed Connectivity of 220/132/33 KV GSS Giridih



Eastern Regional Power Committee, Kolkata

Minutes of 3rd Special Meeting on "Operationalization of 400 kV Durgapur Bus Splitting Scheme" held at ERPC, Kolkata on 8th April 2019 at 11:00hrs

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

In the second meeting on "Operationalization of 400 kV Durgapur Bus SplittingScheme" held on 17thJanuary 2019 at ERPC, it was decided to conduct a detailed study to find out any network constraint in DVC and West Bengal network after operationalization of 400 kV Bus Splitting scheme at Durgapur and utilization of 3rd 315 MVA, 400/220 kV ICT at Durgapur S/s. DVC and West Bengal were advised to submit the relevant details to ERLDC for carrying out the study.

1. **Operationalization of 400 kV Bus Splitting scheme at Durgapur**

ERLDC informed that they had received the details from DVC and West Bengal, however, the expected schedule of commissioning of new transmission elements was not available from the concerned utilities.

On query, DVC informed that they had submitted the details of transmission elements which are going to be commissioned in a year.

Members observed that there is no network constraint in DVC and West Bengal system after operationalization of 400 kV Bus Split at Durgapur except the N-1 reliability issues of 220kV Durgapur (PG)-Parulia (DVC) D/C line.

DVC informed that no cascade tripping of the transmission lines would occur during the tripping of any one line of 220kV Durgapur (PG)-Parulia (DVC) D/C line, as part of the power flow in the line would be diverted to other parallel paths i.e. 220kV Maithon-Kalyaneswar D/C line and 220kV Waria-Bidhannagar D/C line. DVC added that the loading of the healthy line in case of tripping any one line of 220kV Durgapur (PG)-Parulia (DVC) D/C line would be within the safe limit and no Special Protection Scheme would be required for that.

DVC further informed that 220kV Waria (DTPS)-Parulia (DVC) D/C line would be LILO'ed at DSTPS and it would be completed within a year. Thereafter, the loading of 220kV Durgapur (PG)-Parulia (DVC) D/C line would be reduced.

Members opined that the line distance protection settings at local and remote ends of 400kV Durgapur S/s are to be modified as per the new configuration after commencement of split bus operation. All the concerned constituents were advised to check the reach settings for both the cases (with and without bus splitting at Durgapur) and to review the Zone 2/zone 3 settings. The PLCC and carrier protection should be kept in healthy condition to ensure fault clearance in Zone 1 time and prevent uncoordinated line trippings. It was decided to communicate the decision to NTPC, WBPDCL, Powergrid ER-I for reviewing the reach settings of following lines:

- 400kV Sagardhigi-Durgapur line
- 400kV Bidhannagar-Durgapur line
- 400kV Farakka-Durgapur line
- 400kV Jamshedpur-Durgapur Lines.

After detailed discussion, Members agreed for operationalization of 400 kV Split Bus arrangement at 400kV Durgapur S/s and decided to place the issue in 156th OCC Meeting for further decision.

2. Utilization of 3rd 315 MVA, 400/220 kV ICT at Durgapur S/s

Powergrid informed that 3rd 315 MVA, 400/220 kV ICT at Durgapur S/s would be commissioned by end of April 2019.

DVC once again requested to conduct a detailed study on utilization of 3rd 315 MVA, 400/220 kV ICT at Durgapur S/sconsidering the present and future network conditions.

Members decided to form a committee with the following members for the above study:

1. S. Banerjee, SE(E), WBSETCL
2. Sandip Ghosh, SDE(E), SPE, DVC
3. Santhosh Kumar Panda, EE, SLDC, DVC
4. J G Rao, EE, ERPC
5. Members from ERLDC

It was decided that the committee members would meet on 10th April 2019 at 11:30 hrs at ERPC for detailed discussion.

Based on the report submitted by the Committee, utilization of 3rd 315 MVA, 400/220 kV ICT at Durgapur S/s would be referred to the appropriate forum for further decision.

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Annexure-B10

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OFFICE OF THE CHIEF LOAD DESPATCHER,SLDC

ODISHA POWER TRANSMISSION CORPORATION LIMITED
GRIDCO Colony, P.O.- Mancheswar Rly. Colony, Bhubaneswar-751017, FAX-0674- 2748509
CIN – U40102OR2004SGC007553

SGM(PS)-PL-419/2016/ 1137(5) Dtd...15/4/19

From

The Chief Load Despatcher,

SLDC, OPTCL Bhubaneswar-17

TO

THE MEMBER SECRETARY,

ERPC, Kolkata.

Ref.: - 1) This office letter No. SGM(PS)-PL-419/2016-1649 (5) dated 30/05/2018.

Sub: Regarding revision of weekly Deviation charge energy accounting of GRIDCO , due to erroneous less energy data reported at Bolangir PGCIL end SEM of 220kV Bolangir(PG)-Katapali line for the period from 04/05/2016 to 02/12/2018.

Sir,

With reference to the subject cited above, it was previously intimated to you that, the Bolangir PGCIL end SEM of 220kV Bolangir(PG)-Katapali(OPTCL) tie line was reported erroneous energy data as compared to Katapali(OPTCL) end SEM bearing SL.No. NP7561A from 04/05/2016 to 02/12/2018. Being a tie line, SEM at Bolangir(PG) is used for energy calculation at ERPC, Kolkata. There is a huge difference of energy data of both end meters and the net energy difference is calculated to **be 97281.8 MWh** approximately during the period from 04/05/2016 to 02/12/2018. The net energy comparison sheet of both side of SEM data for all the above weeks and 15 minutes energy data of Katapali OPTCL end SEM for the above period are attached herewith for your ready reference.

Further, it has been observed that the ICTs SEM at Bolangir PGCIL end are considered for energy accounting at ERPC, Kolkata from 02/12/2018 onwards and the above energy data was rectified after engagement of the above ICTs SEM at Bolangir PGCIL.

It is therefore requested to resolve the above matter on next OCC meeting at ERPC, Kolkata.

Encl: As above

Yours faithfully

15/4/19

CHIEF LOAD DESPATCHER

SLDC, BHUBANESWAR

CC to :

- **GM, ERLDC, Kolkata for information and necessary action.**
- **Director (Commercial), GRIDCO, Bhubaneswar**
- **Chief General Manager (PP), GRIDCO, Bhubaneswar**
- **Chief General Manager (O&M), OPTCL, Bhubaneswar**

A. The list of generators where PSS is not tuned however kept in service and no details have been provided for PSS tuning:

Power Plant	Unit No	PSS tuned (Yes/No)	PSS in Service (Yes/No)	Timeline and Plan for PSS tuning Activity
Kolaghat-WBPDCL	1	No	Yes	
Kolaghat-WBPDCL	2	No	Yes	
Kolaghat-WBPDCL	3	No	Yes	
Kolaghat-WBPDCL	4	No	Yes	
Kolaghat-WBPDCL	5	No	Yes	
DPL	8	No	Yes	
PPSP	1	No	Yes	
PPSP	2	No	Yes	
PPSP	3	No	Yes	
PPSP	4	No	Yes	
Bokaro A1	500 MW	No	Yes	

B. Generating Power Plants whose Excitation details or PSS tuning status or both have not been received at ERLDC/ ERPC:

Generating Utility	Unit		Generating Utility	Unit
WBSEDCL			**OHPC**	
TLDP III	4 x 33		Upper Indravati	1,2,3,4
TLDP IV	4 X 44		Balimela	6 X 60
DVC			Balimela	2 X 75
Bokaro -DVC	500 MW		Upper Kolab	4 X 80
Bokaro	3 X 210 MW		Rengali	4 X 50
Waria	4		**Orissa SLDC**	
Chandrapura B	2 X 250 MW		Sterlite	4 X 600
ISGS			**Jharkhand**	
Talcher Stage 1	1,2 (PSS tuning Received)		Subarnrekha	2 X 65
Nabinagar NPGC	1		**Bihar**	
BRBCL	1,2,3		KBUNL	1,2
KBUNL	3,4		**Bhutan**	
Rangit	3 x 20		Tala	6 X 170
			Chukha	4 X 84

C. Generating Power Plants where PSS is tuned and kept in service however, PSS Tuning report/plots/data have not been submitted to ERLDC/ERPC is as following:

Power Plant	Unit No		Power Plant	Unit No
Sagardighi-WBPDCL	3		Farakka NTPC	5
Sagardighi-WBPDCL	4		Farakka NTPC	6
Budge Budge-CESC	3		Talcher Stage 2	4
HEL-CESC	1		Talcher Stage 2	5
HEL-CESC	2		Talcher Stage 2	6
Mejia-DVC	4		Teesta-III	1
Mejia-DVC	5		Teesta-III	2
Mejia-DVC	6		Teesta-III	4
Mejia-DVC	7		Teesta-III	5
Mejia-DVC	8		Teesta-III	6
Durgapur-DVC	1		Tashiding	1
Durgapur-DVC	2		Maithon Power Limited	1
Koderma-DVC	1		Maithon Power Limited	2

Koderma-DVC	2		ADHUNIK	1
Farakka NTPC	1		ADHUNIK	2
Farakka NTPC	2		IB TPS	1
Farakka NTPC	3		IB TPS	2
Farakka NTPC	4			

D. Generators where PSS tuning has been done more than 3 years back:

Power Plant	Unit No	Last PSS Tuning Date	Whether Done in Last 3 Years	Timeline for Next PSS Tuning
Sagardighi-WBPDCL	4	Commissioning	No	
Budge Budge-CESC	1	2015	No	
Budge Budge-CESC	2	2015	No	
Budge Budge-CESC	3	2010	No	
HEL-CESC	1	2015	No	
HEL-CESC	2	2015	No	
Mejia-DVC	4			
Mejia-DVC	7	2010	No	
Mejia-DVC	8	2011	No	
Koderma-DVC	1			
Koderma-DVC	2			
Kahalgaon NTPC	4	2015	No	
Kahalgaon NTPC	5	2009	No	
Kahalgaon NTPC	6	2009	No	
Kahalgaon NTPC	7	2010	No	
Farakka NTPC	1	2008	No	
Farakka NTPC	2	2008	No	
Farakka NTPC	3	2008	No	
Farakka NTPC	4	2008	No	
Farakka NTPC	5	2008	No	
Farakka NTPC	6	2015	No	
Talcher Stage 1	1	2015	No	
Talcher Stage 1	2	2014	No	
Talcher Stage 2	3	No Details		
Talcher Stage 2	4	No Details		
Talcher Stage 2	5	No Details		
Talcher Stage 2	6	No Details		
Teesta V	1	2008	No	
Teesta V	2	2008	No	
Teesta V	3	2008	No	
Jorethang	1	2015	No	
Jorethang	2	2015	No	
Chuzachen HEP	1	2013	No	
Chuzachen HEP	2	2013	No	
ADHUNIK	1	2013	No	
ADHUNIK	2	2013	No	
GMR	1	2013	No	
GMR	2	2013	No	
GMR	3	2013	No	
IB TPS	1	2011	No	
IB TPS	2	2012	No	

E. Generators where PSS tuning has been done and have submitted the report and the observation

Name of the Unit	Intra Plant Mode (Hz)	Step Size of U_{ref}	Oscillation periodwith out PSS	Oscillation period with PSS	Whether PSS is effective as per step response test	Year of Tuning	Whether Recommended for Tuning
Kahalgaon Unit 1		3 %	3 cycle	1 cycle	Yes	2017	Yes after Bus Split
Kahalgaon Unit 2	1.5 Hz	3 %	3 cycle	1 cycle	Yes	2016	Yes after Bus Split
Kahalgaon Unit 3		6 %	-	-	Provided picture not clear to analyze response	2016	To be decided after explanation by NTPC, Also after bus split, returning is required
Kahalgaon Unit 4	1.876	3 %	5 cycle	3 Cycle	Yes	2015	Yes after Bus Split
Kahalgaon Unit 5		4 %			No Appreciable Response	2009	To be decided after explanation by NTPC, Yes after Bus Split
Kahalgaon Unit 6		4 %			No Appreciable Response	2019	
Kahalgaon Unit 7		2 %			Provided picture not clear to analyze response	2010	
Teesta V Unit 1		2 %	5 cycle	2 cycle	Yes	2008	Yes in view of changes in network
Teesta V Unit 2		2 %	5 cycle	1 cycle	Yes	2008	
Teesta V Unit 3		2 %	5 cycle	1 cycle	Yes	2008	
Talcher Unit 3		3 %	-	-	PSS is showing response but noappreciable change in active power is seen.		NTPC may explain the details after which requirement of retuning to be decided.
Talcher Unit 6		3 %	3 cycle	2 cycle	Yes	2008	No
Budge Budge 1		2 %	5 cycle	1 cycle	Yes (Tuned for various contingency)	2015	No
Budge Budge 2		2 %	5 cycle	1 cycle	Yes (Tuned for various contingency)	2015	No
JITPL Unit 1		5 %	-	-	No Appreciable Response	2016	JITPL to explain the response based on which it will be decided.
JITPL Unit 2		5 %	-	-	No Appreciable Response	2016	
Chujachen Unit 1		2 %	6 cycle	1 cycle	Yes	2013	Yes in view of changes in network
Chujachen Unit 1		2 %	6 cycle	1 cycle	Yes	2013	
Tashiding Unit 2	1.5 Hz	4 %	5 Cycle	1 Cycle	Yes	2017	Yes in view of changes in network
Bandel Unit 5	1.5 Hz	5 %	6 Cycle	3 cycle	Yes	2019	Adequate
Teesta 3 Unit 5		2 % and 3 %	3 Cycle	2 Cycle	Yes	2017	Retuning to be done due to network change

Talcher Unit 1		1 %	2 cycle	2 cycle	No Appreciable Response	2015	Yes (Either NTPC explain why there is no appreciable change in damping or better resolution data to be submitted if damping has been observed)
Talcher Unit 2		3 %	4 cycle	2 Cycle	Yes	2014	Adequate
Bakreshwar Unit 1		3 %	3 cycle	2 cycle	Yes	2019	Adequate
Bakreshwar Unit 2		3 %	4 cycle	4 cycle	No Appreciable Response	2019	Yes, Returning required as PSS signal is in phase with disturbance which is not good for unit.
Bakreshwar Unit 3		3 %	3 Cycle	4 cycle	Negative Response	2019	Yes, PSS response is negative which is highly undesirable
Bakreshwar Unit 4		3 %	No Change in Power	No Change in Power	No Response	2019	Yes, tuning to be done at reduced power level as at full load transient response is not observed which also need to be checked.
Bakreshwar Unit 5		3 %	No Change in Power	No Change in Power	No Response	2019	Yes, tuning to be done at reduced power level as at full load transient response is not observed which also need to be checked.
Santaldih Unit 5		3 %	3 cycle	2 cycle	Yes (more observable in Excel Data)	2019	Adequate
Santaldih Unit 6		3 %	3 cycle	2 cycle	Yes (more observable in Excel Data)	2019	Adequate
GMR Unit 1		3 %	3 cycle	1 cycle	Yes	2013	Yes, as done long time back
GMR Unit 2		3 %	4 cycle	1 cycle	Yes	2013	Yes, as done long time back
GMR Unit 3		3 %	3 cycle	1 cycle	Yes	2013	Yes, as done long time back

DrukGreen

DGPC/O&MD/23/2019/ 451 April 22, 2019

Executive Director (Marketing)
Power Trading Corporation of India Limited
2nd Floor, NBCC Tower
15 Bhikaji Cama Place
New Delhi – 110 066

Kind Attn: Mr. Harish Saran

Subject: Shutdown of 132kV Motanga Substation for construction of additional 132kV Bus

Dear Sir,

Bhutan Power Corporation (BPC) vide their letter No. 85/TD/BPC/2019/Vol-1/78 dated March 26, 2019 has written to DGPC regarding shutdown of 132kV Motanga Substation for about 2 months to construct an additional 132kV Bus for providing power to upcoming industries in the area. The shutdown is required immediately to enable BPC to extend the supply to industries. At present there are only two 132kV feeders emanating from Motanga Substation i.e. 132kV Motanga – Rangia Feeder and 132kV Feeder to supply power to SD Silicon Factory in Samdrup Jongkhar (eastern Bhutan)

This is to inform that during the shutdown of 132kV Motanga Substation, the eastern grid will be disconnected from Rangia and Kurichhu Hydropower Plant (KHP) power can be evacuated via 132kV Gelephu - Salakati feeder only. However, when there is any fault in any of the link between 132kV Nangkhor SS to Jigmeling section, the whole eastern region will be under blackout and would cause generation loss since KHP power cannot be evacuated.

Therefore considering the system reliability and huge generation losses, the following is proposed as temporary measures:

1. Connect both Silicon Factory as well as Rangia line from the ERS tower so that reliability of the eastern grid is not affected.

2. Since energy meter already exists at Deothang end for 132kV Deothang-Motanga line and also at Silicon Factory end, the energy exported to Rangia to be derived as:

   Energy exported to Rangia (E_R)= Energy recorded at Deothang end – Energy consumed by Silicon Factory

3. The relay settings at Rangia and Deothang needs to be changed accordingly.

The above arrangement will not only solve the reliability issue but also provide an alternative route for KHP power evacuation in the event of any trippings. The total line length between Deothang to Motanga is 10.5KM only, hence the line losses may be considered low and negligible during the temporary phase when the export energy to Rangia is calculated as above. We also wish to inform you that at Deothang end for 132kV Deothang-Motanga Line, main and check energy meters already

exists. However at the Silicon Factory end there is only one main energy meter and hence a check energy meter needs to be installed.

In consideration of above, we would like to request PTC to kindly accept the power evacuation to Rangia and energy accounting methodology as proposed above as temporary measure during the shutdown period of 132kV Motanga Substation. Upon confirmation of above, the exact date of shutdown will be intimated for joint recording of final readings from the energy meters as well as revision of relay settings at both ends before charging the line.

Thanking you,

Yours faithfully,

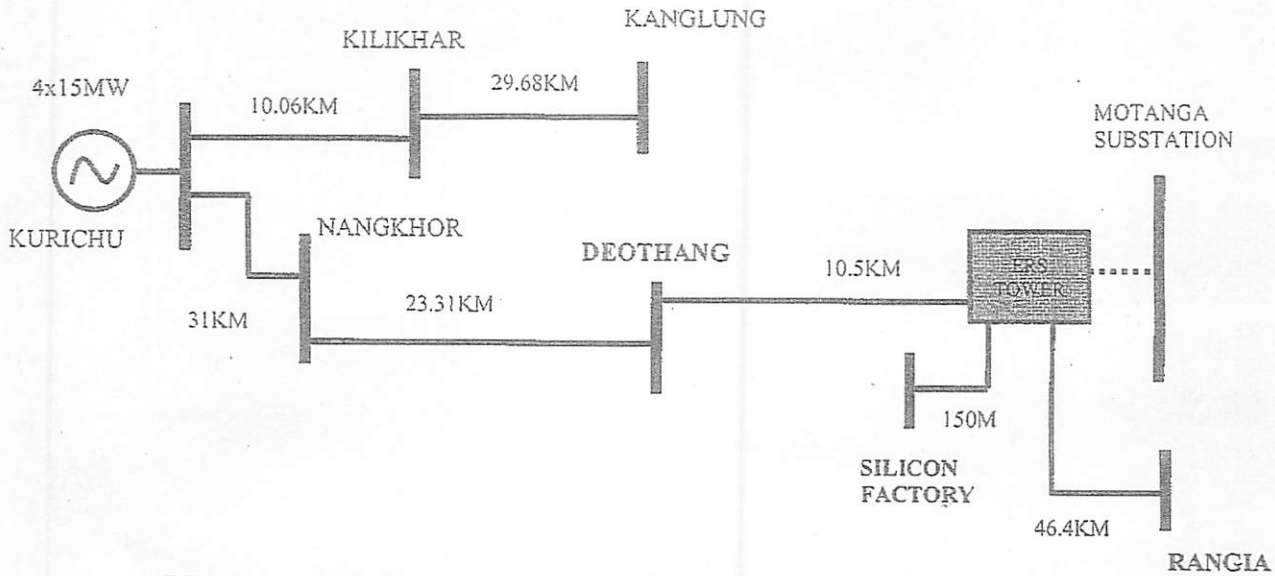
22/4/2019

Munna Prasad
Head, PMD
O&M Department

Copy to:

1. Superintending Engineer, KHP, Gyelpoizing.
2. General Manager, Transmission Department, BPC, Thimphu for kind information.

Connection Diagram of Rangia and Silicon Factory through ERS Tower



Energy Exported to be calculated as

$$E_{RANGIA} = E_{DEOTHANG} - E_{SILICON\ FACTORY}$$

Lines loss of Deothang – Motanga Line recorded for past one year:

Sl. No.	Month	Line Losses (%)
1	January, 2018	0.31
2	February, 2018	-0.01
3	March, 2018	0.02
4	April, 2018	0.08
5	May, 2018	0.22
6	June, 2018	0.33
7	July, 2018	0.45
8	August, 2018	0.44
9	September, 2018	0.44
10	October, 2018	0.26
11	November, 2018	0.11
12	December, 2018	-0.05

Annexure-D.1

Anticipated Power Supply Position for the month of
Jun-19

SL.NO		PARTICULARS	PEAK DEMAND MW	ENERGY MU
1		**BIHAR**		
	i)	NET MAX DEMAND	5100	2880
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	332	138
		- Central Sector	3944	2276
	iii)	SURPLUS(+)/DEFICIT(-)	-824	-466
2		**JHARKHAND**		
	i)	NET MAX DEMAND	1340	820
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	341	163
		- Central Sector	864	509
	iii)	SURPLUS(+)/DEFICIT(-)	-135	-149
3		**DVC**		
	i)	NET MAX DEMAND (OWN)	2960	1915
	ii)	NET POWER AVAILABILITY- Own Source	5207	2806
		- Central Sector	529	286
		Long term Bi-lateral (Export)	1731	1246
	iii)	SURPLUS(+)/DEFICIT(-)	1045	-69
4		**ODISHA**		
	i)	NET MAX DEMAND	4780	2905
	ii)	NET POWER AVAILABILITY- Own Source	3589	1521
		- Central Sector	1247	768
	iii)	SURPLUS(+)/DEFICIT(-)	57	-616
5		**WEST BENGAL**		
5.1		**WBSEDCL**		
	i)	NET MAX DEMAND (OWN)	6710	3837
	ii)	CESC's DRAWAL	84	60
	iii)	TOTAL WBSEDCL's DEMAND	6794	3897
	iv)	NET POWER AVAILABILITY- Own Source	4333	2007
		- Import from DPL	160	0
		- Central Sector	2408	1445
	v)	SURPLUS(+)/DEFICIT(-)	107	-445
	vi)	EXPORT (TO B'DESH & SIKKIM)	-103	-584
5.2		**DPL**		
	i)	NET MAX DEMAND	305	210
	ii)	NET POWER AVAILABILITY	465	222
	iii)	SURPLUS(+)/DEFICIT(-)	160	12
5.3		**CESC**		
	i)	NET MAX DEMAND	2260	1105
	ii)	NET POWER AVAILABILITY - OWN SOURCE	750	525
		FROM HEL	540	383
		Import Requirement	970	197
	iii)	TOTAL AVAILABILITY	2260	1105
	iv)	SURPLUS(+)/DEFICIT(-)	0	0
6		**WEST BENGAL (WBSEDCL+DPL+CESC)** **(excluding DVC's supply to WBSEDCL's command area)**		
	i)	NET MAX DEMAND	9275	5152
	ii)	NET POWER AVAILABILITY- Own Source	5548	2754
		- Central Sector+Others	3918	1828
	iii)	SURPLUS(+)/DEFICIT(-)	191	-570
7		**SIKKIM**		
	i)	NET MAX DEMAND	95	45
	ii)	NET POWER AVAILABILITY- Own Source	8	3
		- Central Sector+Others	158	99
	iii)	SURPLUS(+)/DEFICIT(-)	71	57
8		**EASTERN REGION** **At 1.03 AS DIVERSITY FACTOR**		
	i)	**NET MAX DEMAND**	22864	13717
		Long term Bi-lateral by DVC	1731	1246
		EXPORT BY WBSEDCL	-103	-584
	ii)	**NET TOTAL POWER AVAILABILITY OF ER (INCLUDING C/S ALLOCATION)**	25686	13151
	iii)	**PEAK SURPLUS(+)/DEFICIT(-) OF ER (ii)-(i)**	1194	-1229

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 ____		