AGENDA

FOR

175th OCC MEETING

Date: 20.01.2021

Eastern Regional Power Committee

14, Golf Club Road, Tollygunge

Kolkata: 700033

Eastern Regional Power Committee

PART A

Item No. A.1: Confirmation of Minutes of 174th OCC meeting of ERPC held on 21.12.2020.

The minutes of 174th OCC meeting were uploaded in ERPC website and circulated vide letter dated 07.01.2021 to all the constituents.

Members may confirm the minutes of 174thOCC meeting.

PART B: ITEMS FOR DISCUSSION

Item No. B.1 : Review of System Protection Scheme (SPS) of HVDC Talcher-Kolar Bipole—NLDC.

NLDC vide letter dated 21st October 2020 informed that the SPS associated with HVDC Talcher-Kolar Bipole was implemented long back in the year 2003 as per system requirements at that time. The addition of high-capacity AC lines in the corridor parallel to this HVDC link have strengthened the ER-SR &WR-SR corridors for exchange of power to/from southern region (SR). The newly commissioned HVDC Raigarh-Pugalur Pole-I has also been commissioned recently.Presently, in cases of HVDC Talcher-Kolar Pole blocking, SPS as per design operates with load disconnection in SR and generation backing down/outage in ER.

In view of strengthening of transmission system as stated above, the scheme has been reviewed in consultation with RLDC's. NLDC requested for ER constituent's view for finalization of the SPS scheme.

In the 173rd OCC Meeting, NLDC explained the revised SPS scheme in details and pointed the out followings:

- GMR and JITPL thermal power plants are radially connected to 765/400 kV Angul pooling station and 765/400 kV Angul station is strongly connected to western region and southern region through765 kV lines. The tripping of HVDC Talcher-Kolar does not cause any constraint inevacuation of GMR and JITPL. Therefore, the SPS for 600 MW generation backing down at thesestationswould not be required and the same may be disabled.
- During the study, it was observed that 400 kV Talcher-Meramundali D/C Lines are getting heavily loaded (beyond 874 MW) after the tripping of HVDC Talcher-Kolar in some cases.Therefore, the loading of 400 kV Talcher-Meramundali lines may also be included in the SPS logic (SPS 1000 and SPS 450) installed at Talcher STPS, NTPC. The proposed revised SPS logic in brief is as follows:

The flow on 400 kV Talcher-Meramundali-1 **(or)** 400 kV Talcher-Meramundali- 2 is more than 874 MW

(and)

SPS 1000 triggered **(or)** SPS 450 triggered

NTPC Talcher informed that, as per the existing SPS logic 800 MW generation backing down is happening by tripping one of the running unit and unloading two units by 150 MW each, when both the poles are getting blocked. NTPC requested to consider generation backing down of the generating units instead of tripping of the units.

NLDC explained that immediate response might not be achieved by generation backing down which would lead to cascade tripping of the transmission lines. Therefore, they have considered unit tripping instead of generation backing down for successful operation of SPS. NLDC further informed that since 400 kV Talcher-Meramundali Line loading has also been included in the SPS logic, chances of meeting the SPS criterion and its operation would be exceedingly rare.

SLDC Odisha informed that 400/220 kV ICTs at Meramundali S/s may get overloaded before increase in the loading of 400 kV Talcher-Meramundali Line. SLDC, Odisha requested to verify the ICT loading at Meramundali.

NLDC informed that according to the studies done for various scenarios, it was observed that the 400kV Talcher-Meramundali lines are getting overloaded first before the ICT loading. NLDC agreed to share the study details to SLDC, Odisha.

ERLDC informed that there is an issue with PLC logic which is supposed to generate the ground return mode of pole 2 at HVDC, Talcher. As a result, the SPS is not operating as per the logic.

After detailed deliberation OCC decided the following:

- The SPS logic for600 MW generation backing down at JITPL and GMR shall be disabled at JITPL and GMR.
- All the concerned constituents shall go through SPS logic given at Annexure-B1of 173rd OCC Minutes document and submit their comments, if any to ERPC and ERLDC within 15 days. The issues shall be placed for discussion in next OCC meeting.
- Powergrid and NTPC Talcher shall rectify the issue of PLC logic related to generation of ground return mode of pole 2 during the HVDC shutdown.

It was informed vide mail dated 15th Dec 2020 that the SPS logic at GMR and JITPL has been by-passed.

NLDC mentioned that the simulation study for proposed SPS have been carried out for high demand and low generation scenarios for Odisha and loading of 400/220 kV Meramundali ICTs have been found to be within limits. In addition to this, worst case scenario for Odisha internal network has also been studied and results for both the scenarios are given in **Annexure B1**.

***In the 174th OCC meeting**, OCC decided the followings:*

- *OCC in principle agreed forimplementation of the revised SPS for HVDC Talcher-Kolar Bipole.*
- *NTPC shall implement the revised SPS logic at Talcher STPS.*
- *The logic for the revised SPS scheme shall be prepared by ERLDC in consultation with NLDC and shall be shared with the concerned utilities for implementation of SPS.*
- *Powergrid in coordination with NTPC shall rectify the issue of PLC logic related to generation of ground return mode of pole 2 for proper integration of SPS logic.*

Powergrid vide mail dated 14.01.2021, informed that SPS system at HVDC, Talcher and Angul are healthy.

Members may update.

Item No. B.2 Review of System Protection Scheme (SPS) designed for NEW-SR grid integration: - NLDC.

The existing SPS on NEW-SR corridor (for 765 kV Solapur-Raichur lines) were implemented during the synchronization of SR grid with NEW grid in the year 2014. Over the years, SR grid has been integrated with NEW grid through many inter-regional lines apart from 765 kV Solapur-Raichur. The newly commissioned HVDC Raigarh (WR)-Puglur (SR) Bipole is very soon expected to be in operation which will further strengthen the network connecting Southern Region.

In view of above NLDC vide their letter dated 9th December 2020 proposed to review the existing SPS.

In the 174th OCC meeting,*NLDC informed that during the simulation study, it was being observed that the angular separation between Angul and Srikakulam was reaching 25 degrees. This may create problem during the charging of 765 KV Angul-Srikakulam D/C line. Therefore, NLDC explained that a SOP may be prepared to control the angular separation between Angul and Srikakulam to restore 765 KV Angul-Srikakulam D/C line smoothly.*

After detailed deliberation, OCC advised NLDC & ERLDC to prepare a SOP and communicate to respective RPCs. The SOP would be discussed and finalized in the OCC meeting after detailed deliberation.

ERLDC & NLDC may update.

Item No. B.3 Data for preparation of National Electricity Plan (NEP) 2022-27 and 2027-32.

Sub-committee 8 on "Transmission Planning" was constituted by the Committee for preparation of National Electricity Plan (NEP) 2022-27. The first meeting of the sub-Committee was held on 27.10.2020 wherein CEA requested STUs/Discoms to furnish the relevant data pertaining to their state within 30 days as per the format.

All states are requested to submit the relevant details to CEA with a copy to ERPC for preparation of the transmission planning. The relevant details as per the format may be send to the following mail addresses:

- cea-pspa1@gov.in
- mserpc-power@nic.in

CESC has submitted the relevant details for preparation of NEP for 2022-27 and 2027-32.

WBSETCL has submitted the details for preparation of NEP for 2022-27.

In the 174th OCC meeting, it was advised to all the states to submit the relevant details to CEA with a copy to ERPC & ERLDC at the earliest.

WBSETCL has submitted the NEP data for 2027-2032.

Members may update.

Item No. B.4 Outage of Important Transmission System.

1. 400 kV Barh-Motihari D/C and 400 kV Motihari -Gorakhpur D/C lines.

In the 173rd OCC Meeting, DMTCL informed that they hadresumed the work and they are planning to bring one circuit of 400kV Gorakhpur-Motihari line on ERS by 10th December 2020.
DMTCL added that they are putting out all efforts for permanent restoration of all the four circuits by 31st Mar 2021.

Regarding the issue of SCADA data of NTPC Barh, DMTCL informed that ABB engineer would visit the site on 26thNov 2020 to resolve the issue.

In the 174th OCC meeting*, DMTCL informed that one circuit of 400kV Gorakhpur-Motihari line was ready for charging and the line would be charged after getting clearance from CEA.*

ERLDC informed that there was a restriction of power flow of 350 MW in 400kV Barh-Motihari line therefore, 400kV Gorakhpur-Motihari line could not be charged simultaneously to avoid overloading of the line during

normal operation. 400kV Gorakhpur-Motihari line would be kept on anti-theft charging from one end and the line would be restoredfrom other end in case of tripping of 400kV Barh-Motihari line.

OCC opined that both the lines could be put in service on each bus by opening bus coupler at Motihari.

After detailed deliberation, OCC advised ERLDC to make suitable scheme for above subjected lines based on existing loading conditions at Motihari for reliable power supply to Bihar.

On query, DMTCL intimated that the permanent restoration of the lines would be completed by March 2021.

DMTCL vide e-mail dated 16th January, 2021 updated the progress of Barh-Motihari and Barh-Gorakhpur D/C lines which is given in **Annexure B4.1**.

DMTCL may update.

2. Reconductoring work of 400 kV Rangpo-Binaguri D/C lines.

In 167th OCC, Powergrid updated that reconductoring work of 38 km of both the circuits out of 110 km line had been completed and the line is in service.

Powergrid requested for shutdown of the line from 1st November 2020.

In the 172nd OCC Meeting, ERLDC requested Powergrid to complete the reconductoring work of one circuit at least before Monsoon for safe evacuation of hydro generation in Sikkim.

In the 173rd OCC meeting,Powergrid gave a presentationregarding progress of reconductoring work of 400 kV Rangpo-Binaguri D/C lines.

Powergrid was advised to prepare theshutdown listrequired for the line crossing and submit in advance to ERPC & ERLDC so that it could be discussed with concerned constituents.

ERLDC vide mail dated 2nd Dec 2020 informed that Powergrid ER-II had proposed to carry out the reconductoring work of 400KV D/C Rangpo - Binaguri TL in Sikkim portion from 07-12-20 to 12-12-20 (07-16 Hrs) ODB basis.

DANS Energy vide mail dated 3rd Dec 2020 requested to re-schedule the shutdown of 220 kV D/C Jorethang – New Melli lines in last week of January or first Week of February from 11:00 Hrs. to 16:30 Hrs. as during this particular time period Generation from 2 X 48 MW Jorethang Loop HEP will be Zero / Nil.

***In the 174th OCC meeting**, Powergrid informed that in West Bengal near about 25 km work has been completed and in total 65 kms out of 110 kms have been completed.*

OCC advised Powergrid to prepare the shutdown list required for the line crossing and submit in advance to ERPC & ERLDC so that it could be discussed with concerned constituents.

Powergrid may update.

3. 132kV Sagbari – Melli.

132 kV Melli-Sagabari-S/C was under outage since last 2 & half years due to breaker issue at Sagabari end. In absence of the said line, Melli is connected through 132 kV Siliguri – Melli and 132 kV Rangpo – Melli single ckts. However, during shutdown of 132 kV Rangit – Rangpo and 132 kV Rangit – Gangtok -2 due to damage in Multi circuit tower, the above two lines are reconfigured as 132 kV Rangit – Gangtok direct circuit and 132

kV Rangpo – Melli was kept open at Rangpo end on reliability issue. Thus, during above mentioned shutdown period Melli is fed from single source either from Siliguri or Rangpo depending upon the system condition. So, for reliable power supply to Melli restoration of 132 kV Sagbari - Melli is very much required.

In the 174th OCC meeting, *Sikkim informed that 132kVMelli-Sagabari S/C is under outage because of faulty breaker issue at Sagabari end. Sikkim informed that 132 kV Sagabari S/s is under DISCOM jurisdiction.*

OCC opined that restoration of 132 kV Melli-Sagabari S/C line is very important to ensure reliable supply to Sikkim during contingencies.

OCC advised SLDC Sikkim to take up the issue with DISCOM for rectification of the circuit breaker at Sagabari end of 132 kV Melli-Sagabari S/C line.

Sikkim may update.

4. 400KV tie bay of (GMR AND JSPL II) at Meramundali.

The tie bay was taken out of service for replacement of damaged R-Phase 408 Día 89TB tie isolator arm at Meramundali on 27/05/20. The element remains out of service.

In the 174th meeting, *SLDC Odisha informed that they are planning to replace the tie isolator in the first week of Jan 2021.*
GMR informed that bus 1 would be under outage during the replacement work and GMR generation of one unit connected to GRIDCO would not be evacuated during that period. GMR requested Odisha to plan the replacement work during February 2021 when this unit would be under shutdown for overhauling.

OCC advised Odisha to plan the isolator replacement work in coordination with GMR unit overhauling in February 2021.

OPTCL may update.

5. Main bay of Dikchu ICT.

Main Bay 405 connecting Dikchu ICT to Main Bus-2 remains out of service from 19th Feb' 20.

In the 174th OCC meeting, Dikchu informed that the work orders have been placed with the OEM. The materials would be procured by the end of Jan 2021 and the work would be completed by the end of Feb 2021.

Dikchu may update.

6. 400 KV main bay of Patna-1 at Kishanganj.

The said bay remains out of service due to problem in Y-ph CB mechanism from 10/04/20.

In the 174th OCC meeting, Powergrid informed that they had received the material but because of unavailability of service engineers from China they are unable to start the work.

Powergrid may update.

7. 400KV NEW PURNEA-GOKARNA & 400KV NEW PURNEA-FSTPP.

400 kV New Purnea Gokarna S/C and 400 kV New Purnea Farakka S/C were restored at 23:05 hrs on 26-12-2020 and 16:37 hrs on 27-12-2020 respectively.

It was reported that during restoration of 400 kV New Purnea Farakka S/C, PLCC channel between Farakka and Purnea could not be established due to problem in co-axial cable at Farakka end and the problem in signal generator card at Farakka end.

In view of importance of the line, 400 kV New Purnea Farakka S/C was charged with modified Zone – 2 timing at 200 ms at Farakka and New Purnea end with auto-reclose was enabled at both ends for zone – 2 tripping also.

Powergrid may update.

Item No. B.5 Short Term and Long-Term Transmission Plan for Intra state Constraints in Orissa--ERLDC

Based on January 2020-2021 Base case and real-time data, the following constraints have been observed in the State network which does not satisfy N-1 reliability criteria. The details are given below:

Transmission Lines having N-1 Reliability Issue	Present Actual Loading Observed (MW)	Loading observed in Simulation (MW)	Sensitivity of N-1 on Parallel Element	Action Plan by STU and SLDC	Remarks and Details from SLDC/STU
220 kV Rourkela-Tarkera D/C (Loading is low in Real time with High Injection by Vedanta)	24	120	80 %	OPTCL	
220 kV Vedanta-Buddhipadar D/C (High Loading in Injection by Vedanta)	155-160	0	100%	OPTCL	
220 kV Buddhipadar-Lapanga D/C (High loading in injection by Vedanta)	120-140	16	67 %	OPTCL	

In the 173rd OCC Meeting, OCC advised Odisha to study the loadingand share their action plan to ERPC and ERLDC.

In the 174th OCC meeting, ERLDC informed that the N-1 criteria is not being satisfied when the injection from Vedanta is above 130 or 140 MW.

OCC advised Odisha to submit the action plan for removing the constraints in above lines to ERPC and ERLDC.

Members may update.

Item No. B.6 Shutdown proposal of generating units for the month of February, 2021.

Generator shutdown for February 2021 is given below:

Proposed Maintenance Schedule of Thermal Generating Units of ER during 2020-21 in the month of Feb'2021 (as finalised in LGBR meeting for 2020-21)

System	Station	Unit	Capacity (MW)	Period		No. of Days	Reason	Revised Schedule (As given by system)
				From	To			
TVNL	Tenughat TPS	1	210	20.01.21	24.02.21	36	AOH	
DVC	CTPS	8	250	08.12.20	12.01.21	36	COH	06.01.21-15.02.21
	MTPS	8	600	08.01.21	07.02.21	36	AOH	
ODISHA	Talcher TPS	6	110	25.04.21	24.05.21	30	AOH	Before March'21
	IB TPS	1	210	10.11.20	30.11.20	21	AOH	1st Jan 21

	IB TPS	2	210	12.01.21	30.01.21	19	AOH	
WBPDCL	Kolaghat TPS	3	210	02.01.21	15.02.21	14	AOH/BOH	15.01.21-24.01.21
	Kolaghat TPS	4	210	01.02.21	10.02.21	10	BLR	
	Kolaghat TPS	5	210	17.02.21	16.03.21	28	AOH/BOH	
DPL	DPPS	7	300	01.01.21	10.01.21	10	Tit bit maintenance	
HEL	Haldia Energy Limited	2	300	06.01.21	19.02.21	45	AOH	27.12.20-04.02.21
NTPC	Farakka	1	500	27.12.20	09.02.21	45	BOH	
NTPC	Barh	5	660	15.02.21	05.05.21	80	Boiler Modification	
NTPC	MTPS-II	3	195	15.02.21	12.03.21	26	AOH	
IPP	GMR	2	350	06.01.21	04.02.21	30	Turbine OH	
	GMR	3	350	09.02.21	10.03.21	30	Turbine OH	
IPP	MPL	1	525	15.12.20	30.01.21	45	COH	11.01.21-24.02.21

In the 174th OCC meeting*, NTPC Farakka informed that they are planning to take the shutdown of unit-4 from 1st Mar 2021 for 30 days.*

OCC advised NTPC Farakka to take the shutdown from 15th Feb 2021.

NTPC informed that unit 1 would be under shutdown during February 2021 and it would be extremely difficult to carry out the overhauling of two units at a time. Overhauling of unit-4 could be possible only after restoration of unit-1. Moreover,NTPC Farakka may not be able to generate its maximum capacity due to less availability of water during the month of March 2021 hence shutdown of unit 4 may be allowed from 1st March 2021.

WBSETCL requested to restrict the shutdown of the units till 15th Mar 2021 to maintain availability in view of State Elections in West Bengal.

OCC decided to defer the issue to next OCC meeting.

Members may update.

Item No. B.7 Difficulty faced during charging of 400 kV Farakka-Sagardighi-1 line after return of Shutdown.--ERLDC

In line with decision taken in 150th OCC meeting, in case of a transmission line connecting two generating plants need to be charged then the following guideline has to be followed:

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

During return of Shutdown of 400 kV Farakka-Sagardighi-1 on 30-Dec-2020, following above condition line was to be charged from Farakka end and should be synchronized at Sagardighi end.

However, NTPC Farraka was reluctant to charge the line from their end, and finally it was charged from Sagardighi End.

NTPC Farakka may explain.

Item No. B.8 Dead bus charging requirement by NTPC Power Plants at the time of revival of unit after long outage.--ERLDC

In the past it was observed that, NTPC power plants particularly Barh, Kahalgoan and Farakka as for complete outage of one 400 kV bus at the time of synchronization of any unit after long outage. Such practice not only

reduces the reliability of that power plant but also the regional grid as a whole. If during such bus outage other bus also trips, then it may result in large scale disturbance.
The instances of dead bus charging are as follows:

Name of the Bus	Outage Date & Time		Reason	Restore Date & Time	
400KV MAIN BUS - 1 AT FSTPP	10-02-2020	01:25	FOR DEAD BUS CHARGING OF UNIT 3 AFTER OVERHAUL	10-02-2020	03:35
400KV MAIN BUS - 1 AT FSTPP	25-12-2020	08:25	dead bus charging	25-12-2020	10:38
400KV MAIN BUS - 3 AT KHSTPP	23-11-2020	10:37	dead bus charging of unit 6 after overhauling	23-11-2020	11:52

NTPC may explain.

Item No. B.9 : Frequent tripping of units of APNRL.--ERLDC

It has been observed that units of APNRL have tripped frequently in recent past. Such frequent tripping impacts load generation balance in real time & compromises reliable supply of power to its beneficiaries. A list citing instances of such frequent tripping in last one year is hereby attached.

Instances of tripping of units of APNRL since Jan 2019					
Element Name	**Tripping Date**	**Tripping Time**	**Reason**	**Revival Date**	**Revival Time**
ADHUNIK - UNIT 2	22/01/2020	10:29	FALME FAILURE	22/01/2020	12:06
ADHUNIK - UNIT 2	09/02/2020	7:10	ASH EVACUATION PROBLEM	17/02/2020	10:59
ADHUNIK - UNIT 1	22/02/2020	21:31	ESP HOPPER SUSPECTED CHOCKAGE & HIGH LEVEL	27/02/2020	10:35
ADHUNIK - UNIT 1	05/03/2020	5:16	TURBINE CONTROL VALVE MALFUNCTIONING	09/03/2020	7:57
ADHUNIK - UNIT 1	12/03/2020	23:29	CONDENSOR TUBE LEAKAGE	19/03/2020	23:54
ADHUNIK - UNIT 1	30/03/2020	14:10	ASH EVACUATION PROBLEM	12/05/2020	20:44
ADHUNIK - UNIT 2	01/05/2020	10:47	PA FAN-2B TRIPPED	01/05/2020	12:11
ADHUNIK - UNIT 2	25/05/2020	12:20	ROTOR EARTH FAULT CHECKING	25/05/2020	15:42
ADHUNIK - UNIT 2	07/06/2020	22:08	LUBE OIL LEAKAGE OF TURBINE LO PIPE LINE	05/07/2020	17:50
ADHUNIK - UNIT 1	09/06/2020	13:31	PA FAN TRIPPED	09/06/2020	14:56
ADHUNIK - UNIT 1	07/07/2020	15:04	CONDENSER TUBE LEAKAGE	16/07/2020	15:40
ADHUNIK - UNIT 2	12/07/2020	22:13	GT FANS TRIPPED,DETAILS UNDER INVESTIGATION	13/07/2020	0:15
ADHUNIK - UNIT 1	26/08/2020	7:23	FIRE PROTECTION-1 MALFUNCTION.	26/08/2020	9:33
ADHUNIK - UNIT 1	04/09/2020	23:44	BOILER TUBE LEAKAGE	12/09/2020	16:05
ADHUNIK - UNIT 1	22/09/2020	11:21	GT TIE EARTH FAULT	24/09/2020	20:08
ADHUNIK - UNIT 2	22/09/2020	11:21	GT TIE EARTH FAULT	22/09/2020	18:51
ADHUNIK - UNIT 2	15/10/2020	7:08	HPSU OIL REPLACEMENT WORK	17/10/2020	09:10

ADHUNIK - UNIT 1	27/10/2020	0:32	ASH EVACUATION PROBLEM AND ESP HOPPER LEVEL HIGH	11/12/2020	12:52
ADHUNIK - UNIT 2	22/12/2020	0:13	BTL	26/12/2020	09:17
ADHUNIK - UNIT 1	10/01/2021	15:19	APNRL UNIT 1 TRIPPED AT 15:19 HRS OF 10.01.2021 DUE TO BOTTOM ASH HOPER CHOCKED		
ADHUNIK - UNIT 2	10/01/2021	5:54	DUE TO BOTTOM ASH LEVEL HIGH.		

APNRL may explain.

Item No. B.10: Black Start and Restoration Procedure of Eastern Region.- -ERLDC

In compliance with clause 5.8 (a) and (b) of the present IEGC, The Restoration Procedure has to be developed and updated annually by RLDC in consultation with NLDC, all users STU, SLDC,CTU, RPC Secretariat of the region.
Draft copy of "Black Start and Restoration Procedure" was circulated earlier on 12th Jan 2020 for review and the updated 2021 procedure was circulated via email on 14th January, 2021 for feedback from stake holder. All stake holders are advised to review and give input on following:-

- Generating Station
    - Installed Capacity (MW)
    - De-rated Capacity (MW)
    - Survival Power(MW)
    - Minimum Aux. Power (MW)
    - Maxi-mum Aux. Power (MW)
    - DG Set Capacity (KW)
    - Maximum Motor size (MW)
    - Synchronization facility
- Transmission utilities
    - List of Substations where Synchronization facility is available
- SLDC
    - Restoration path
    - Nodes for supply of traction power
    - List of critical and important load points with minimum active and reactive power requirement in case large scale grid disturbance.
    - Under frequency relay setting and quantum of power

This is desired for the finalization of the procedure.

Members may discuss.

PART C: ITEMS FOR UPDATE

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

In the 174th OCC meeting, *OCC advised all the constituents to send the UFR healthiness data on monthly basis to ERPC.*

UFRs healthiness status have been received from WBSETCL, Jharkhand.

Members may update.

Item No. C.2: Status of Islanding Schemes healthiness installed in Eastern Region.

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

Details received from the constituents is as follows:

Sl. No	Name of Islanding Scheme	Confirmation from Generator utility	Confirmation from Transmission and load utility
1	CESC as a whole Islanding	Healthy	Healthy
2	BkTPS Islanding Scheme	Healthy	Healthy
3	Tata Power Islanding Scheme, Haldia	Healthy	Healthy
4	Chandrapura TPS Islanding Scheme, DVC	Not in service	
5	Farakka Islanding Scheme, NTPC		
6	Bandel Islanding Scheme, WBPDCL	Healthy	Healthy

NTPC Farakka may update.

Item No. C.3: Review of Islanding Scheme in Eastern Region--ERLDC

a. Islanding Scheme of Power plants/system.

Most of the islanding schemes in ER were designed and implemented after 2012 grid disturbance. However in the recent time many network changes has taken place, LGBR of the nodes considered in island also get changed due to natural load growth. In view of the above it is prudent to review all the islanding schemes in ER for enhancement of chances of survival in event of actual operation. A mail regarding the same was sent to all the concerned on 04th Jan 2021 highlighting criteria for successful islanding during the grid collapse.
Network changes that are like to affect the existing islanding scheme of eastern region were shared and same is highlighted in below table.

Sl No	Islanding Scheme	Review of Network change affecting the islanding logic post commissioning of Islanding scheme, (Major network Change)	Review of Load Generation Balance
1	Bakreswar	400/220 kV Gokarno commissioned ,220 kV Sadaipur Commissioned, 220 kV Rejinagar Commissioned.	Impact of change in Load Generation balance need to be analyzed
2	Bandel	No significant network change around the island	Impact of change in Load Generation

			balance need to be analyzed
3	Farraka	220 KV Lalmatia-Godda and 220 kV Godda-Dumka, 220 kV Dumka new commissioned	Impact of change in Load generation Balance need to be analyzed
4	CESC		Impact of change in Load generation Balance need to be analyzed

WBSLDC via their email dated 7th Jan 2021 informed that new UFRs are installed at different substations to take care of recent network change around Bakreswar and Bandel.

No input is received from Jharkhand, Farakka and CESC.

b. Islanding Scheme of CPPs

In line with power plant and system, a mail has also been sent for review of islanding scheme of CPP. However, input is received only from WBSLDC.

Members may update.

Item No. C.4: Review of Over Current Settings of Lines having HTLS Conductor—ERLDC

In 220 kV and 132 kV network many lines are re-conductored with HTLS conductor. However it is being observed that for some line(s) overcurrent setting modification is not done accordingly. This is leading to underutilization of asset below their thermal limit. Relay setting should not restrict the loadability of transmission line below its thermal loading limit or stability loading limit. The list of some of the lines having HTLS conductor is as follows:

i. 132kV Jeerat-Dharampur-1
ii. 132kV Jeerat-Dharampur-2
iii. 132kV-Bidhannagar-Ukhara-1
iv. 132kV-Bidhannagar-Ukhara-2
v. 132kV Titagarh-Dharampur-1
vi. 132kV Titagarh-Dharampur-2
vii. 132kV-Baharampur-Gokarna-1
viii. 132kV-Baharampur-Gokarna-2
ix. 132kV Malda-Malda-1
x. 132kV Malda-Malda-2
xi. 220kV Bakreswar-Saidaipur-1
xii. 220kV Bakreswar-Saidaipur-2
xiii. 220kV-Patna-Khagaul-2
xiv. 220kV-Patna-Khagaul-3

It is requested that all transmission licensees who have uprated their lines with HTLS conductor may furnish following data

Sl No	Name of line which is re-conductored	Thermal loading limit of line (Amps)	Thermal loading limit of End equipment (Amps)	Over Current Setting of line (Amps)

Members may update.

Item No. C.5: Primary Frequency Response Testing of Generating Units—ERLDC.

In the 173rd OCC Meeting, NTPC informed that Farakka has already plannedto carry out the teston1st of Feb 2021.Kahalgaon is planning to carry out test after 15th Jan 2021 and BRBCL is planning to carry out the test after Dec 2020.

MPL informed that they have placed the order with Siemens and the dates for testing would be finalized in coordination with ERLDC and Siemens.

OCC further, advised all the other Generators, especially theHydro-ElectricPlants to plan thePrimary Frequency Response Testing in thewinter season.

A presentation on Primary Frequency Response Testing was given by M/s Siemens on 11.12.2020.

NTPC Kahalgaoninformed that they had already placed the PO with M/s Solvinafor Primary Frequency Response Testing and it is expected that the testing will be done in the second fortnight of Jan-2021 as confirmed by the agency.

In the 174th OCC meeting, *ERLDC informed that testing has been started in other regions however, it is yet to be undertaken in Eastern Region.*

OCC advised all the generators to prepare the unit-wise schedule for testing and submit to ERPC & ERLDC at the earliest.

Respective Generators may update.

Item No. C.6: Testing of Primary Frequency Response of state generating units by third party agency--ERLDC

In the 171stOCC Meeting, OCC advised all the SLDC's to prepare the action plan for their state generators and submit the details to ERPC and ERLDC at the earliest.

DVC in a mail dated 6th Oct 2020 informed that the Primary Frequency Response Testing may be carried out for the following generating units:

Sl. No.	Name of the Units	Capacity (MW)
1	BTPS-A	500
2	CTPS Unit #7&8	2X250
3	DSTPS Unit#1&2	2X500
4	KTPS Unit # 1&2	2X500
5	MTPS Unit # 3 to 8	2 X 210 MW +2 X 250 MW + 2X 500 MW
6	RTPS Unit # 1 & 2	2 X 600 MW

However, at present the Primary Frequency Response Testing may not be possible for the following units of DVC:

Sl. No.	Name of the Units	Capacity (MW)	Remarks
1	BTPS-B U#3	210	The Governing system is of the Hydro-mechanical type and the Control system is a Solid-state Hardware/Relay based system.
2	DTPS U#4	210	The Governing system is of the Hydro-mechanical type and the Control system is a Solid-state Hardware/Relay based system

3	MTPS Unit # 1&2	2X210	C & I system of Unit 1 & 2 are originally supplied with a Solid-state Hardware-based system for SG & TG Package which is lacking in scalability and flexibility and the BOP Package is supplied with a primitive DCS system.

In the 173rd OCC Meeting, OPGC informed that for unit # 3 & 4, the order has been placed with M/s Siemens and approval is in process.

OHPC informed that in concurrenceto a meeting held with SLDC Odisha, they have planned to carry out the test at one unit of Indravati.

West Bengal informed that they are in discussion with their generators to carry out the primary Frequency response Testing.

DVC informed that both the agencies M/s Siemens & M/s Solvina have agreed to carry out the testing at pre agreed rates, terms & conditions.

In the 174th OCC meeting, *ERLDC clarified that as per the regulation vendors have already been finalized by POSOCO i.e., M/s Solvina& M/s Siemens for the generators which are under the jurisdiction of RLDCs. Regarding the generating stations which come under the control of SLDCs, it is the responsibility of the respective SLDCs to finalize the vendors for Primary Frequency Response Testing for their generating units. They can either go for the vendors selected by NLDC else they can selectany other vendors as per their procedure.*

OCC advised all the SLDCs interact with the vendors finalized by NLDC and take a suitable decision.

Members may update.

Item No. C.7: Transfer capability determination by the states.

Latest status of State ATC/TTC declared by states for the month of February-2021:

SL. No	State/Utility	TTC (MW)		RM(MW)		ATC Import (MW)		Remark
		Import	Export	Import	Export	Import	Export	
1	BSPTCL	5150	--	103	--	5047	--	Feb-21
2	JUSNL	1570	--	53	--	1517	--	Apr-21
3	DVC	1355	2995	65	51	1290	2944	Feb-21
4	OPTCL	2251	1432	74	54	2177	1378	Dec-20
5	WBSETCL	5191	--	400	--	4791	--	Feb-21
6	Sikkim	315	--	2.44	--	315.56	--	Feb-21

Declaration of TTC/ATC on SLDC Website

Sl No	SLDC	Declared on Website	Website Link	Constraint Available on Website	Type of Website Link
1	BSPTCL	Yes	http://www.bsptcl.in/ViewATCTTCWeb.aspx?GL=12&PL=10	Yes	Static Link-Table

2	JUSNL	Yes	http://www.jusnl.in/pdf/download/ttc_atc_nov_2020.pdf	Yes	Static link – pdf file
3	DVC	Yes	https://application.dvc.gov.in/CLD/atcttcmenu.jsp#	Yes	Static Link-Word file
4	OPTCL	Yes	https://www.sldcorissa.org.in/TTC_ATC.aspx	Yes	Static Link-pdf file
5	WBSETCL	Yes	http://www.wbsldc.in/atc-ttc	No (Not updating)	Static Link-Table
6	Sikkim	No	__	No	No link

***In the 174th OCC Meeting**, ERLDC mentioned that the states must furnish the updated ATC figures along with the transmission constraints as well as reliability margins on a regular basis. Also, states should intimate the changes in the ATC/TTC values well in advance to ERLDC.*

OCC advised all the states to send the ATC/TTC values on a regular basis as well update the changes in ATC/TTC values well in advance.

Members may update.

Item No. C.8: Mock Black start exercises in Eastern Region – ERLDC.

Mock black start date for financial year 2020-21 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 Oct 2020		Second Week of Feb 2021	
2	Balimela	Second week of Nov 2020		First Week of March 2021	
3	Rengali	Second week of Nov 2020	*Done on 23rd Nov 2020*	First Week of March 2021	
4	Burla	Second week of Nov 2020		First Week of March 2021	
5	U. Indravati	Last week of Oct 2020		Second Week of Feb 2021	
6	Maithon	Third Week of Nov 2020		First Week of March 2021	
7	TLDP-III	Second week of Nov 2020		Second Week of Feb 2021	
8	TLDP-IV	Third Week of Nov 2020		First Week of March 2021	
9	Subarnarekha	Second week of Nov 2020		Second Week of Feb 2021	
10	Teesta-V	Third Week of Nov 2020		Third Week of March 2021	
11	Chuzachen	Second week of Nov 2020		First Week of March 2021	
12	Teesta-III	Third Week of Nov 2020		First Week of March 2021	
13	Jorethang	Third Week of Nov 2020		First Week of March 2021	

14	Tasheding	Second week of Nov 2020		First Week of March 2021	
15	Dikchu	Second week of Nov 2020		Second Week of Feb 2021	

Members may update.

Item No. C.9: Operationalizing Bus splitting at Biharshariff—ERLDC.

In the 172nd OCC Meeting, OCC advised Bihar to share the plan for load trimming scheme with ERLDC at the earliest.

OCC decided to put the Biharshariff bus splitting scheme in service on 12th Nov 2020.
In the 173rd OCC Meeting, ERLDC informed that bus splitting scheme was put in operation on 18th November 2020 and the bus coupler was closed on 19th November 2020.

Bihar informed that uneven power flow through the ICTs was observed and they are in process of implementation of load trimming scheme.

OCC advised Bihar to send their queries, if any to ERPC and ERLDC within a week. OCC also advised Bihar to implement the load trimming scheme to avoid unwanted tripping of the transformers on overload.

Thereafter, BSPTCL submitted the following Load trimming Scheme based on internal discussion:

(A) By using a Bay Control Unit(BCU) to make logical tripping command by using Digital Input and Digital Output. This will be more technical and sophisticated way of implementation.

(B) By extending the tripping command to 220 KV Double Circuit Biharsharif-Fathua transmission line along with tripping of 500 MVA TRF-04 at Bihharsharif (PG).Fathua will avail power from Patna(PG) and Gaurichak without any load restriction.

In implementation of scheme under option (A) will take significant time (At least 18 Months),as such decision has been taken to implement option (B).Apart from implementation of scheme under option (B) following 132/33 KV GSS shall be shifted on other GSS which are having power source other than Biharsharif GSS.

(1)Hathidah GSS shall be shifted on Lakhisarai GSS.

(2) Wazirganj GSS shall be shifted on Khizirsarai GSS

Based on the inputs some queries were raised by ERLDC which are provided below for discussion:

1. BCU based SPS logic implementation may need more explanation. In general, multiple element input and status based SPS require PLC based SPS scheme as implemented in most of the schemes.
2. Present option B proposes 500 MVA ICT 4 tripping based SPS rather than 315 MVA ICT 2 (ICT which can overload in certain loading condition) which is the prime objective. The SPS logic of overloading of ICT 2 above 315 MVA would be more apt as it will consider the criteria and will also avoid any unnecessary tripping of 220 kV Bihar Sharif -Fatuah D/C with 500 MVA ICT 4 tripping when its outage is not causing any overload on ICT 2 as per demand scenario. BSPTCL is advised to review the scheme.
3. Bihar SLDC may share the impact of the 132 kV load shifting and their sensitivity on the ICT loading after split bus condition to ensure their impact.
4. Whether the issue of simultaneous 400/220 kV ICT 1 and 3 tripping on 400 kV line faults observed in the past due to wiring /old relay issue has been resolved by BSPTCL?
5. Any plan by STU for controlling 220 kV Fault level Bihar Sharif also need to be submitted.

In the 174th OCC Meeting, ERLDC stated that the above queries have been shared with BSPTCL.

Accordingly, OCC advised BSPTCL to submit their comments on the queries raised by ERLDC to ERPC and ERLDC.

BSPTCL may update.

Item No. C.10: ER Grid performance during December 2020.

The average and maximum consumption of Eastern Region and Max/Min Demand (MW), Energy Export for the month December – 2020 were as follows:

Average Consumption (Mu)	Maximum Consumption(mu)/ Date	Maximum Demand (MW)	Minimum Demand(MW)	Schedule Export	Actual Export
		Date/Time	Date/Time	(Mu)	(Mu)
356	381 MU 31-12-2020	19691MW 31-12-2020 19:10	11674 MW 06-12-2020 14:50	3813	3724

ERLDC may present Performance of Eastern Regional Grid.

Item No. C.11: PSS tuning of Generators in Eastern Region. –ERLDC.

The PSS tuning activity is mandatory in line with IEGC and CEA regulations. The Procedure of PSS tuning for helping utilities in getting this activity carried out has been approved in 171st OCC Meeting and shared with all concerned utilities. List of units where PSS tuning activities is pending is given at Annexure C11.

In 174th OCC, all the concerned generators were advised to submit the plan of PSS tuning to ERPC & ERLDC.

Members may update.

Item No. C.12: Performance primary frequency response of generating stations in Eastern Region for the event in the month of December 2020. –ERLDC.

Frequency response characteristics (FRC) have been analyzed pan India for one event of sudden frequency change that occurred in December 2020. The details of this event and the overall response of the Eastern region have been summarized in following table.

Event	Frequency Change	ER FRC
Event 1: On 26th December 2020 at 10:18:09 :560hrs., around 1000 MW generation loss occurred at Wanakbori in WR.	**50.042 Hz to 49.962Hz**. Later stabilized at 50.019Hz.	**66 %**

Summary of the analysis of these events are given below:

1. **In spite of repeated reminders, generation end data (generation output in MW and frequency/speed measured at generator end) and FRCs are yet to be received from few regional generating stations (ISGS and IPP) and SLDCs respectively**. List of such regional generating stations/SLDCs are shown below **(as per status on 10h January 2021)**.
    a. NTPC Farakka
    b. NTPC Kahalgaon
    c. NTPC Talcher
    d. NTPC Barh
    e. NTPC Darlipalli
    f. BRBCL
    g. GMR
    h. Adhunik
    i. Teesta III

j. Dikchu
k. Bihar SLDC
l. Jharkhand SLDC
m. GRIDCO SLDC
n. WB SLDC

2. Based on data received from regional generating stations & SLDCs and SCADA data archived at ERLDC, regional generating stations' and state control areas' performance have been analyzed and summarized in **table 2.**
3. Based on data received from state generating stations & SLDCs, the performance of state generating stations has been analyzed and summarized in **table 3.**

Table 1: performance of regional generating stations and state control areas for the events in December 2020.

Generating Station/ SLDC	**Response observed**
NTPC Farakka	**Non Satisfactory**(as per FRC calculated based on ERLDC SCADA data)
NTPC Kahalgaon	**Non Satisfactory for Stage 2; Satisfactory for Stage 1 (**as per FRC calculated based on ERLDC SCADA data**)**
NTPC Talcher	**Non Satisfactory for Stage 1; Satisfactory for Stage 2 (**as per FRC calculated based on ERLDC SCADA data**)**
NTPC Barh	**Non Satisfactory**(as per FRC calculated based on ERLDC SCADA data)
NTPC Darlipalli	**Non Satisfactory**(as per FRC calculated based on ERLDC SCADA data)
BRBCL	**Satisfactory** (as per FRC calculated based on ERLDC SCADA data)
NPGC Nabinagar	**Non Satisfactory**;
GMR	**Satisfactory** (as per FRC calculated based on ERLDC SCADA data)
JITPL	**Non Satisfactory**;
MPL	**Non Satisfactory**; Unit 1 was being run at installed capacity. No response has been observed. Around 50% of ideal response has been observed for unit 2.
Adhunik	**Non Satisfactory**(as per FRC calculated based on ERLDC SCADA data)
Teesta V HEP	Unit not in service
Teesta III HEP	**Satisfactory** (as per FRC calculated based on ERLDC SCADA data)
Dikchu HEP	**Non Satisfactory**(as per FRC calculated based on ERLDC SCADA data)
Bihar SLDC	**Non Satisfactory**(as per FRC calculated based on ERLDC SCADA data)
Jharkhand SLDC	**Satisfactory** (as per FRC calculated based on ERLDC SCADA data)
DVC SLDC	**Satisfactory**;
GRIDCO SLDC	**Satisfactory** (as per FRC calculated based on ERLDC SCADA data)
WB SLDC	**Non Satisfactory**(as per FRC calculated based on ERLDC SCADA data)

Table 2: performance of state generating stations for the events in December 2020 (Based on data received from SLDC/generating stations)

Generating Station	**Response observed**
HEL	Satisfactory
BBGS	**Non Satisfactory**; Unit was being run at more than installed capacity.

Remarks on the primary frequency response observed at generating stations

- **MPL**: Unit 1 was being run at installed capacity. Around 8 MW response has been observed for unit 2. Ideal response was around 16 MW for frequency loss event. As per IEGC section 5.2 (f) and 5.2 (g), power output of any unit can be increased up to 105% of installed capacity. MPL may share the

reason for non-providing any response for unit 1. Reason for non-adequate response of unit 2 may also be investigated.

- **HEL**: Response did not sustain for more than 30 seconds. Governor may be tuned for providing sustained response for at least 3-5 minutes.

Members may explain.

Item No. C.13: Updated Operating Procedure of Eastern Region, 2020.

The Operating Procedure of every region must be updated and revised annually by the concerned RLDC, in compliance to section 5.1(f) of the IEGC. The procedure is finalized and uploaded at ERLDC website by 20-07-2020, taking into consideration comments received till 18-07-20. To discuss the revised operating procedure of Eastern Region, one special meeting was held on 27-11-2020.

Based on the deliberation in the meeting, operating procedure of Eastern Region has been revised and the final procedure was shared with all regional utilities vide mail dated 04-01-2021. The final procedure is also uploaded on the ERLDC website.

Members may note.

PART D: OPERATIONAL PLANNING

Item No. D.1: Anticipated power supply position during February 2021.

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of February 2021 were prepared by ERPC Secretariat on the basis of LGBR for 2019-20 and feedback of constituents, keeping in view that the units are available for generation and expected load growth etc. is enclosed at Annexure D1**.**

Members may update.

Item No. D.2: Major Generating Units/Transmission Element outages/shutdown inER Grid (as on 13.01.2021).

SL .No	Station	Agency	Unit No	Capacity MW	Reason(s)	Outage Date
1	MPL	MPL	1	525	Annual Over Hauling	12-Jan-2021
2	CHANDRAPURA TPS	DVC	3	130	TURBINE BLADE DAMAGE	30-Jul-2017
3	HALDIA ENERGY LTD	HEL,CESC	2	300	ANNUAL OVERHAULING	22-Dec-2020
4	KOLAGHAT	WBPDCL	1	210	POLLUTION PROBLEM	10-May-2018
5	KOLAGHAT	WBPDCL	2	210	ESP FIELD MAINTENANCE	26-Dec-2019
6	MEJIA TPS	DVC	4	210	CAPITAL OVERHAULING	19-Nov-2020
7	MUZAFFARPUR TPS	BSPHCL	1	110	INITIALLY BTL LATER OUT DUE TO RSD/ LOW SYSTEM DEMAND	10-Aug-2020
8	MUZAFFARPUR TPS	BSPHCL	2	110	INITIALLY BTL LATER OUT DUE TO RSD/ LOW SYSTEM DEMAND	15-Aug-2020
9	ADHUNIK	APNRL	2	270	Due to Bottom ash level high.	10-Jan-2021
10	GMR	GMR-Infra	1	350	Scraper Chain Conveyors problem	12-Jan-2021
11	GMR	GMR-Infra	2	350	MFT	12-Jan-2021
12	JITPL	JITPL	2	600	GENERATOR ELECTRICAL PROTECTION	25-Sep-2020
13	KBUNL	NTPC,BSPHCL	1	195	Due to APH problem	09-Jan-2021
14	KHSTPP	NTPC	4	210	Ash dyke problem	07-Nov-2020
15	KHSTPP	NTPC	5	500	Ash dyke problem	07-Nov-2020

16	BARAUNI TPS	BSPHCL	6	110	ROTOR FAULT	09-Nov-2020
17	BARAUNI TPS	BSPHCL	8	250	Due to high GT phase bushing temperature	09-Jan-2021
18	DPL	WBPDCL	7	300	Due to APH- B problem	09-Jan-2021
19	IB.TPS	OPGC	2	210	Boiler bottom de-ashing issue	09-Jan-2021
20	MEJIA TPS	DVC	1	210	FURNACE PRESSURE V.LOW	12-Jan-2021
21	SAGARDIGHI	WBPDCL	2	300	AUXILLARY SUPPLY FAILED	18-Mar-2020
22	TTPS	NTPC	5	110	GENERATOR OIL LEAKAGE	10-Jan-2021
23	WARIA TPS	DVC	4	210	Taken out of Bar due to non receipt of Environmental Clearance	31-Dec-2020

All Generating stations are requested to update expected restoration time and outage reason to ERLDC/ERPC on weekly basis in case of any change at their end.

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

Major Generating stations Out on Reserve Shutdown due to low system demand

SL .No	Station	State	Agency	Unit No	Capacity MW	Reason(s)	Outage Date
1	BARAUNI TPS	BIHAR	BSPHCL	7	110	RSD/ LOW SYSTEM DEMAND	28-May-20
2	KOLAGHAT	WEST BENGAL	WBPDCL	3	210	RSD/LOW SYSTEM DEMAND	13-Jun-20
3	KOLAGHAT	WEST BENGAL	WBPDCL	4	210	RSD/ LOW SYSTEM DEMAND	15-Jul-20
4	KOLAGHAT	WEST BENGAL	WBPDCL	5	210	RSD/LOW SYSTEM DEMAND	15-Dec-20
5	MUZAFFARPUR TPS	BIHAR	BSPHCL	1	110	INITIALLY BTL LATER OUT DUE TO RSD/ LOW SYSTEM DEMAND	10-Aug-20
6	MUZAFFARPUR TPS	BIHAR	BSPHCL	2	110	INITIALLY BTL LATER OUT DUE TO RSD/ LOW SYSTEM DEMAND	15-Aug-20

Hydro Unit Outage report:

Sl No.	Station	State	Agency	Unit No	Capacity	Reason(s)	Outage Date
1	BALIMELA HPS	ODISHA	OHPC	1	60	R & M WORK	05-Aug-2016
2	BALIMELA HPS	ODISHA	OHPC	2	60	R & M WORK	20-Nov-2017
3	BURLA HPS/HIRAKUD I	ODISHA	OHPC	1	49.5	R & M WORK	14-Mar-2018
4	BURLA HPS/HIRAKUD I	ODISHA	OHPC	5	37.5	R & M WORK	25-Oct-2016
5	BURLA HPS/HIRAKUD I	ODISHA	OHPC	6	37.5	R & M WORK	16-Oct-2015
6	BURLA HPS/HIRAKUD I	ODISHA	OHPC	7	37.5	ANNUAL MAINTENANCE	06-Dec-2019
7	BALIMELA HPS	ODISHA	OHPC	4	60	SPARKING IN PMG	02-Mar-2020
8	BALIMELA HPS	ODISHA	OHPC	5	60	STATOR EARTH FAULT	13-Dec-2020
9	U.KOLAB	ODISHA	OHPC	3	80	GUIDE BEARING TEMPERATURE HIGH	07-Jan-2020

It is seen that about 482 MW hydro capacities in Odisha is under forced outage / planned outagein the period of peak monsoon and therefore not available for providing the much-needed peaking support during evening peak. SLDC / OHPC may please indicate restoration plan of the units.

Line Long Outage Report:

SL NO	Transmission Element / ICT	Agency	Outage DATE	Reasons for Outage
1	400 KV IBEUL JHARSUGUDA D/C	IBEUL	29-04-2018	TOWER COLLAPSE AT LOC 44,45
2	220/132 KV 100 MVA ICT I AT LALMATIA	FSTPP/JUSNL	22-01-2019	Failure of HV side breaker

	220 KV PANDIABILI - SAMANGARA D/C	OPTCL	03-05-2019	49 NOS OF TOWER COLLAPSED.AS REPORTED BY SLDC OPTCL, TOTAL 60 NOS OF TOWER IN BETWEEN 220KV PANDIABILI – SAMANGARA LINE IN WHICH 48 NOS TOWERS FULLY DAMAGED AND 12 NOS TOWERS PARTIALLY DAMAGED. WORK UNDER PROGRESS.presently charged from Pandiabilli end (loc 156) to loc 58
4	400 KV MOTIHARI(DMTCL)-GORAKHPUR-I	POWERGRID/DMTCL	13-08-2019	LINE SWITCHED OFF DUE TO ANTICIPATED TOWER COLLAPSE AT LOC 27/0(132) DUE TO CHANGE OF COURSE OF GANDAK RIVER.TOWER COLLAPSED REPORTED AT LOC 27/0(132) ON 15/08/19 AT 07:00 HRS. 400KV BARH -GORAKHPUR 1 CHARGED AT 18:57 HRS ON 05.02.20 AS INTERIM ARRANGEMENT BYPASSING LILO PORTION OF MOTIHARI.
5	400 KV MOTIHARI(DMTCL)-GORAKHPUR-II	POWERGRID/DMTCL	13-08-2019	Earlier reconfigured Barh - Gorokpur # II again LILOED back at Motihari and the portion beyond Motihari shall be termed as 400 KV MOTIHARI(DMTCL)-GORAKHPUR-II
6	400 KV BARH-MOTIHARI(DMTCL) -I	POWERGRID/DMTCL	04-09-2019	TOWER COLLAPSE AT LOCATION 26/0 AND 25/5. 400KV BARH -GORAKHPUR 2 CHARGED AT 10:06 HRS ON 31.01.20 AS INTERIM ARRANGEMENT BYPASSING LILO PORTION OF MOTIHARI. 400KV BARH -GORAKHPUR 1 CHARGED AT 18:57 HRS ON 05.02.20 AS INTERIM ARRANGEMENT BYPASSING LILO PORTION OF MOTIHARI.
7	220/132 KV 100 MVA ICT 3 at Chandil	JUSNL	30-04-2020	ICT BURST AND DAMAGED AFTER FIRE REPORTED
8	132 KV NEW KISHANGANJ - BARSOI S/C	BSPTCL	02-07-2020	Out due to heavy soil erosion atloc no 140 and 141 by river Kankai. line charged as 132 KV Purnea (PG) –Barsoiw.e.f 21.07.20 at 19:05 Hrs temporarily by suitable jumper arrangement at the crossing point of 132 kV Kisanganj(New) - Barsoi and 132 kV Purnea(PG) - Kisanganj (old).
9	132KV-PURNEA (PG)-KISHANGANJ(OLD) S/C	BSPTCL	02-07-2020	
10	220kV Barauni-Hajipur Ckt-1	BSPTCL	28-09-2019	Tower collapse at location 38 & 39. Ckt-2 is on ERS since 13.01.2020.
11	400KV-BINAGURI-RANGPO-1	PGCIL	01-11-2020	Re-conductoring work from twin moose to HTLS.
12	400KV-BINAGURI-RANGPO-2	PGCIL	01-11-2020	
13	400KV-BINAGURI-TALA-2	PGCIL/ Bhutan	18-12-2020	initially opened on Voltage Regulation. Later S/D taken on 31.12.20 12:13Hrs up to 31.01.21 for line maintenance work.
14	400KV-BINAGURI-TALA-1	PGCIL/ Bhutan	31-12-2020	To facilitate shutdown of ckt 2 to avoid induction
15	800KV HVDC ALIPURDUAR-AGRA-POLE-IV	PGCIL	20-11-2020	Voltage Regulation, at Alipurduar, 422 KV/419 KV
16	800KV HVDC ALIPURDUAR-AGRA-POLE-III	PGCIL	25-12-2020	Power flow direction Reversal (NR-NER)
17	400KV-ALIPURDUAR (PG)-JIGMELLING-2	PGCIL	28-12-2020	Voltage Regulation as requested by Bhutan/changeover done from ckt 1
19	400KV/220KV 315 MVA ICT 1 AT ROURKELA	PGCIL	26-12-2020	Erection Works related to Paralleling of ICTs
20	220kV Barauni TPS-Begusarai D/C	BSPTCL	30-12-2020	Tower collapse reported at location no. 41
21	220KV-NEW PURNEA-	BSPTCL	27-12-2020	Voltage Regulation

	MADHEPURA-1			
22	765KV-JHARSUGUDA-RAIPUR PS (DURG)-2	PGCIL	07-01-2021	Voltage Regulation
23	765KV-ANGUL-JHARSUGUDA-3	PGCIL	08-01-2021	Voltage Regulation
24	400KV/220KV 315 MVA ICT 3 AT MALDA	PGCIL	04-01-2021	Annual maintenance & testing of ICT-2 at NTPC Barh
25	400KV-MAITHON-MAITHON RB-1	PGCIL	09-01-2021	Re-conductoring work
26	400KV MAIN BUS - 1 AT JEERAT	WBSETCL	09-01-2021	Overhauling and maintenance of isolators connected to 400 KV Main Bus I

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

Transmission licensees/ Utilities are requested to update expected restoration date & work progress regarding restoration regularly to ERLDC/ERPC on monthly basis by 5th of each month so that status of restoration can be reviewed in OCC. Utilities are also requested to update outage of any elements within their substation premises like isolator/breaker to ERLDC/ERPC regularly.

Members may update.

Item No. D.3: Commissioning of new units and transmission elements in Eastern Grid in the month of December 2020.

The details of new units/transmission elements commissioned in the month of December-2020 based on the inputs received from beneficiaries:

SL. No.	Element Name	Owner	Charging Date	Charging Time	Remarks
1	400KV/220KV 315 MVA ICT 4 at Rourkela	PGCIL	03-12-2020	13:46	Parallel with existing ICT-2
2	400kV Gaya-Chandauti Ckt#2	PMTL	02-12-2020	18:41	LILO of 400kV Gaya-NPGC-DC at Chandauti
3	400 kV Chandauti – Navinagar (NPGC) # II	PMTL	03-12-2020	13:23	
4	400 KV Chandauti -Gaya #1	PMTL	11-12-2020	14:30	
5	400 KV Chandauti- Nabinagar #1	PMTL	11-12-2020	15:05	
6	220 kV Arrah (PG) - Dumraon New -1	BSPTCL	11-12-2020	11:40	LILO of 220 kV Arrah-Nadokhar at Dumraon New. LILO portion owned by BGCL
7	220 kV Arrah (PG) - Dumraon New -2	BSPTCL	11-12-2020	15:13	
8	220 kV Nadokhar (BSPTCL) -Dumraon New 1	BSPTCL	10-12-2020	17:02	
9	220 kV Nadokhar (BSPTCL) -Dumraon New 2	BSPTCL	11-12-2020	13:37	

Members may update.

Item No. D.4: UFR operation during the month of December 2020.

Frequency profile for the month is as follows:

Month	Max (Date/Time)	Min (Date/Time)	% Less IEGC Band	% Within IEGC Band	% More IEGC Band
December, 2020	50.26, 25-12-2020 14:02	49.66 16-12-2020 09:57	4.79	75.75	19.46

Hence, no report of operation of UFR has been received from any of the constituents.

Members may update.

****

Observations of POSOCO on Queries raised by Odisha SLDC on HVDC Talcher – Kolar SPS Review in 173rd ERPC (OCC) Meeting

- In the 173rd ERPC (OCC) meeting held 24th Nov 2020, the existing SPS for HVDC Talcher – Kolar was reviewed and proposed modifications by NLDC/ERLDC were deliberated.

- During the review, the issue of overloading of 400/220 kV Meramundali ICT (2X 315 MVA) under certain scenarios was highlighted by Odisha SLDC and it was requested to share the simulation based study for proposed SPS with ERPC and Odisha SLDC.

- In this regard, it is to inform that the simulation study for proposed SPS has been carried out for high demand and low generation scenario for Odisha and loading of 400/220 kV Meramundali ICTs have been found to be within limits. In addition to this, worst case scenario for Odisha internal network has also been studied and results for both the scenarios are given below.

- **Case-I: SPS Case**

  Study Assumptions and Results

  - Odisha Demand in study case – 5134 MW
  - Odisha Generation in study case - 3470 MW
  - Talcher Generation – 2x480 + 4x480 MW
  - TTPS – 415 MW
  - JSPL – 82 MW, OPGC (STU) – 425 MW, Sterlite – 415 MW, GMR (connected with Odisha network) – 0 MW

S. No.	HVDC Talcher - Kolar Power Order	400 kV Talcher - Meramundali (short line)	400 kV Talcher - Meramundali (long line)	400 kV Talcher - Meramundali under N-1 of other (long) line	400/220 kV Meramundali ICT (2x315MVA) loading	220 kV TSTPP - Meramundali D/C	400/220 kV Meramundali ICT (2x315MVA) loading under outage of 220 kV TSTPP - Meramundali D/C	400/220 kV Meramundali ICT (2x315MVA) loading under outage of TTPS (2x110 MW + 4x60 MW) generation
1.	2000	459	237	597	2X38	2x79	2x58	2x96
2.	1000	688	356	**895**	2x32	2x96	2x57	2x90
3.	500	802	415	**1044**	2x29	2x104	2x56.5	2x87
4.	250	**859**	445	**1118**	2x28	2x108	2x56.2	2x85.5
5.	X	**916**	474	**1193**	2x26	2x112	2x56	2x84

- **Case-II: Worst Case Scenario for Odisha internal network**

  Study Assumptions and Results

  - Odisha Demand in study case – 5134 MW
  - Odisha Generation in study case - 4465 MW
  - Talcher Generation – 2x480 + 4x480 MW
  - TTPS – 0 MW
  - JSPL – 800 MW, OPGC (STU) – 630 MW, Sterlite – 570 MW, GMR (connected with Odisha network) – 330 MW

S. No.	HVDC Talcher - Kolar Power Order	400 kV Talcher - Meramundali (short line)	400 kV Talcher - Meramundali (long line)	400 kV Talcher - Meramundali under N-1 of other (long) line	400/220 kV Meramundali ICT (2x315MVA) loading	220 kV TSTPP - Meramundali D/C	400/220 kV Meramundali ICT (2x315MVA) loading under N-1 of other ICT	400/220 kV Meramundali ICT (2x315MVA) loading under outage of 220 kV TSTPP - Meramundali D/C
1.	2000	218	113	284	2x145	2x90	187	2x168
2.	1000	447	231	581	2x139	2x105	180	2x167
3.	500	562	291	730	2x136.5	2x113	176	2x166
4.	250	619	320	805	2x135	2x117	174	2x166
5.	X	676	350	**879**	2x134	2x122	172	2x165

- From the study results of both the scenarios, it is evident that loading of 400/220 kV ICTs at Meramundali and other internal network in Odisha is within limits under normal as well as contingency scenarios. Further, additional load of 100 MW at Duburi and Bhanjnagar was also considered in Case:2 and loading were still observed to be within limits.

- Following are some major observations on network loading based on study results:-

  - Sensitivity of HVDC Talcher – Kolar on loading of 400/220 kV Meramundali ICTs – **0.5-0.6% on each ICT**
  - Sensitivity of HVDC Talcher – Kolar on loading of 220 kV TSTPP -Meramundali D/C – (-) **1.6% on each ckt**
  - Sensitivity of one ckt 220 kV TSTPP –Meramundali line on other ckt – **27%**
  - Sensitivity of generation in the vicinity on loading of 400/220 kV Meramundali ICTs (% sensitivity on each ICT)

    - GMR – 4.5%
    - JSPL - 4.5%
    - OPGC – 0.5%
    - Sterlite – 0.6%
    - TTPS (2x110MW) – (-) 15%

- It is to mention that the tripping or reduction in power order of HVDC Talcher – Kolar actually relieves the loading of 400/220 kV Meramundali ICTs. Also, there is very less sensitivity of HVDC on 220 kV TSTPP -Meramundali D/C as well as other internal elements in Odisha network. Further, the loading of ICTs is also highly sensitive to some of the generation in the vicinity.

- It is pertinent to mention that, if the loading of any element in Odisha internal network is already on the higher side then also very minor change would occur on Odisha state control area internal elements due to tripping of HVDC Talcher-Kolar. Therefore, Talcher-Kolar tripping would have impact on 400 kV Talcher - Meramundli line first and very minor impact on 400/220 kV transformers at Meramundli and thus 220 kV system of Odisha. Thus, the proposed SPS modification would suffice for.

Annexure-B4.1

Weekly Update - DMTCL LILO restoration status

by Darbhanga-Motihari Transmission Company Limited

14th January 2021

Weekly update (08th to 14th January 2021)

- **Current status of Temporary arrangement** – Power flow upto ~360 MW to North Bihar region through temporary restored Barh-Motihari line

- **Status of Permanent restoration**

  - Piling activity completed at all the balance locations in the last week. At location 26/3 one more pile cap completed, and further pile caps are in progress. Pile cap is to be casted 2 mtrs above NGL at 26/3 *(site pics attached in slide 4-5 for loc 26/0 and 26/3 for reference)*. Final stringing activity completed in one of the patches of Motihari- Gorakhpur line at Areraj end. Tower wise update for work progress is shared in next slide.

  - For providing redundancy to the Barh-Motihari line (single ckt single conductor), through charging Motihari-Gorakhpur line, work was completed, and approval was received from authorities, but while we progressed for doing the tapping (btw DMTCL and PGCIL towers) in order to charge line, team faced difficulty in terms of span length, which was faced in order to maintain proper clearances. DMTCL evaluated all the options like after stringing loading on the Towers, Hardware, clamp and connectors etc. but found, available options were not feasible as per site condition. Further, DMTCL has planned to release the shutdown received.

  - Pandemic remains a concern in the Bihar region. As per the MHA notification dated 28.12.2020, the guidelines issued by MHA for surveillance, containment and caution in relation to Covid-19 in November-20 is going to be in force upto 31.01.2021.

  - All efforts are being made to expedite the work progress and to complete the balance restoration/ strengthening work as soon as possible

Current status of restoration work

Tower No.	Current Status	Remarks
Barh-Motihari Line		
25/1 (G)	Completed	…..
25/2 (G)	Completed	…..
25/3 (G)	Completed	…..
26/0 (G)	All piles completed, pile cap work in progress	All piles completed at this location. Two Pile cap completed, further pile cap work is in progress
26/3 (A)	All piles and pile caps work completed	Tower erection and stringing to be done
26/4 (A)	Pile and pile cap work completed	Tower erection and stringing to be done
Motihari-Gorakhpur Line		
26/1 (G)	Completed	----
26/2 (G)	Completed	…..
26/3 (G)	All piles completed, pile cap work in progress	Two pile caps completed, further pile cap work is in progress
27/0 (R)	Completed	----
27/3 (A)	Completed	----
27/4 (A)	Completed	----

Pictures of site work progress

Pile cap work in progress

Pictures of site work progress

Pile cap and chimney work in progress

sekura

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Thank You

Sekura Energy Ltd. Is a portfolio company of Edelweiss Infrastructure Yield Plus

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The Management System of Sekura Energy Ltd. and DMTCL has been approved by Lloyd's Register to: ISO14001:2015, ISO 45001:2018

Annexure-C10

Power Plant	Unit No	Type of Exciter	Exciter Model and Vendor	PSS tuned (Yes/No)	PSS in Service (Yes/No)	Last PSS Tuning Date	Whether Done in Last 3 Years	Report Submitted (Yes/No)	Whether Next to be planned	Planned Next PSS Tuning
West Bengal										
Kolaghat-WBPDCL	1	Static	BHEL	No	Yes	Long Back	No	No	Yes	DAVR Order Place for replacement after that PSS tuning
Kolaghat-WBPDCL	2	Static	BHEL	No	Yes	Long Back	No	No	Yes	DAVR Order Place for replacement after that PSS tuning
Kolaghat-WBPDCL	3	Static	BHEL	No	Yes	Long Back	No	No	Yes	DAVR Order Place for replacement after that PSS tuning
Sagardighi-WBPDCL	2	Static	ABB Unitrol 5000	No	No	Long Back	No	No	Yes	Order to be placed
DPL	7	Static (through Carbon Brush)	Unitrol F 5000 ABB	No	No	N.A	No	Not App	Yes	
DPL	8	Brushless	WBS NO CE/0800-SH8-48-01 BHEL	No	Yes	No	No Detail	No	Yes	
PPSP	1	Thyristor type, full bridge	Digital AVRTOSATEX100, Vendor- Toshiba	No	Yes	2009	No	Not App.	Yes	
PPSP	2	Thyristor type, full bridge	Digital AVRTOSATEX100, Vendor- Toshiba	No	Yes	2009	No	Not App.	Yes	
PPSP	3	Thyristor type, full bridge	Digital AVRTOSATEX100, Vendor- Toshiba	No	Yes	2009	No	Not App.	Yes	

PPSP	4	Thyristor type, full bridge	Digital AVRTOSATEX100, Vendor- Toshiba	No	Yes	2009	No	Not App.	Yes	
TLDP III	4 x 33								Yes	
TLDP IV	4 X 44								Yes	
CESC										
Budge Budge-CESC	1	Static	R-R Industrial Controls Limited	Yes	Yes	2015	No	Yes	Yes	2021-22
Budge Budge-CESC	2	Static	R-R Industrial Controls Limited	Yes	Yes	2015	No	Yes	Yes	2021-22
DVC										
Bokaro A1	500 MW	Brushless	BHEL	No	Yes	2015	No	No	Yes	Jun-20
Bokaro B 210 MW	3						No Detail		Yes	Jun-20
Mejia-DVC	4	STATIC	BHEL	Yes	Yes	2009	No	Not App	Yes	
Raghunathpur-DVC	1	Brushless	Unitrol F 5000	No	No		No Detail	Not App	Yes	Feb-21
Raghunathpur-DVC	2	Brushless	Unitrol F 5000	No	No		No Detail	Not App	Yes	Jun-21
Koderma-DVC	1	Brushless	BHEL	Yes	Yes	2013	No	No	Yes	May-20
Waria	4	STATIC	BHEL	Yes	Yes	2008	No		Yes	Apr-20
ISGS										
Kahalgaon NTPC	1	Semi-Static	ABB 6800	Yes	Yes	Dual	Yes	Yes	Yes	Submitted plot does not show damping clearly so Retuning is suggested
Kahalgaon NTPC	2	Semi-Static	ABB 6800	Yes	Yes	Dual	Yes	Yes	Yes	Submitted plot does not show damping clearly so

										Retuning is suggested
Kahalgaon NTPC	3	Semi-Static	ABB 6800	Yes	Yes	2016	Yes	Yes	Yes	Submitted plot does not show damping clearly so Retuning is suggested
Kahalgaon NTPC	4	Semi-Static	BHEL	Yes	Yes	2015	No	Yes	Yes	Submitted plot does not show damping clearly so Retuning is suggested
Kahalgaon NTPC	6	Brushless	BHEL	Yes	Yes	2009	No	Yes	Yes	Apr-20
Talcher Stage 2	3	Brushless	BHEL	Yes	Yes	2016	Yes	Yes	Yes	
Talcher Stage 2	4	Brushless	BHEL	Yes	Yes	No Details	No Details	No	Yes	
Talcher Stage 2	5	Brushless	BHEL	Yes	Yes	No Details	No Details	No	Yes	
Talcher Stage 2	6	Brushless	BHEL	Yes	Yes	2016	Yes	Yes	Yes	
Barh NTPC	1								Yes	Mar-20
Barh NTPC	2								Yes	Mar-20
Teesta V	1	Static	ALSPA P320 Alstom	Yes	Yes	2008	No	Yes	Yes	Mar-20
Teesta V	2	Static	ALSPA P320 Alstom	Yes	Yes	2008	No	Yes	Yes	Mar-20
Teesta V	3	Static	ALSPA P320 Alstom	Yes	Yes	2008	No	Yes	Yes	Mar-20
BRBCL	1	Brushless	BHEL	No	Yes	Vendor to Do	No		Yes	Submitted plot does not show damping clearly so Retuning is suggested

BRBCL	2	Brushless	BHEL	Yes	Yes	2019	Yes	Yes	Yes	
BRBCL	2	Brushless	BHEL			Vendor to Do	No		Yes	
BRBCL	3	Brushless	BHEL	No	Yes	Vendor to Do	No		Yes	
KBUNL	1					2019	No		Yes	
KBUNL	2						No		Yes	
KBUNL	3						No		Yes	
KBUNL	4						No		Yes	
Rangit	3 x 20						No		Yes	
IPP										
Jorethang	1	Static	ALSPA CONTOGEN V3 P320 AVR, VENDOR - ALSTOM	Yes	Yes	2015	No	Yes	Yes	Mar-20
Jorethang	2	Static	ALSPA CONTOGEN V3 P320 AVR, VENDOR - ALSTOM	Yes	Yes	2015	No	Yes	Yes	Mar-20
Chuzachen HEP	1	Static	P320 AVR, ALSTOM	Yes	Yes	2013	No	Yes (issue with Time scale)	Yes	Dec-20
Chuzachen HEP	2	Static	P320 AVR, ALSTOM	Yes	Yes	2013	No	Yes (issue with Time scale)	Yes	Dec-20
ADHUNIK	1	Brushless	ST5B	Yes	YES	2013	No	No	Yes	Jul-20
ADHUNIK	2	Brushless	ST5B	Yes	YES	2013	No	No	Yes	Jul-20
JITPL	1	Brushless	BHEL	Yes	Yes	2016	Yes	Yes	Yes	

JITPL	2	Brushless	BHEL	Yes	Yes	2016	Yes	Yes	Yes	
GMR	1	Static	ABB-Unitrol	Yes	Yes	2013	No	Yes	Yes	Dec-20
GMR	2	Static	ABB-Unitrol	Yes	Yes	2013	No	Yes	Yes	Dec-20
GMR	3	Static	ABB-Unitrol	Yes	Yes	2013	No	Yes	Yes	Dec-20
Orissa										
IB TPS	1	Static	Model: Unitrol 5, BHEL	Yes	Yes	2011	No	No	Yes	Mar'2021
IB TPS	2	Static	Model: Unitrol 5, BHEL	Yes	Yes	2012	No	No	Yes	Mar'2021
Upper Indravati	1	Static (ST) Digital	Fuji Electric Co. Japan	Yes	No	2015	No	No	Yes	
Upper Indravati	2	Static (ST) Digital	Fuji Electric Co. Japan	Yes	No	2015	No	No	Yes	
Upper Indravati	3	Static (ST) Digital	Fuji Electric Co. Japan	Yes	No	2000	No	No	Yes	
Upper Indravati	4	Static (ST) Digital	Fuji Electric Co. Japan	Yes	No	2001	No	No	Yes	
Balimela	1 (60 MW)	Under R & M							Yes	
Balimela	2 (60 MW)	Under R & M							Yes	
Balimela	3 (60 MW)	Not Provided	Not Provided	No	No	Not tuned	No	No	Yes	
Balimela	4 (60 MW)	Not Provided	Not Provided	No	No	Not tuned	No	No	Yes	
Balimela	5 (60 MW)	Not Provided	Not Provided	No	No	Not tuned	No	No	Yes	
Balimela	6 (60 MW)	Not Provided	Not Provided	No	No	Not tuned	No	No	Yes	
Balimela	7 (75 MW)	Static	Not Provided	No	No	Not tuned	No	No	Yes	
Balimela	8 (75	Static	Not Provided	No	No	Not	No	No	Yes	

	MW)					tuned				
Upper Kolab	1	Static	Unitrol BHEL	Yes	Yes	2007	No	No	Yes	
Upper Kolab	2	Static	Unitrol BHEL	Yes	Yes	2007	No	No	Yes	
Upper Kolab	3	Static	Unitrol BHEL	Yes	Yes	2007	No	No	Yes	
Upper Kolab	4	Digital Static	Unitrol BHEL(Max-DNA Software)	Yes	Yes	2007	No	No	Yes	
Rengali	1	Digital Static	Unitrol BHEL	Yes	Yes	Not tuned	No	No	Yes	
Rengali	2	Digital Static	Unitrol BHEL	Yes	Yes	Not tuned	No	No	Yes	
Rengali	3	Digital Static	Unitrol BHEL	Yes	Yes	Not tuned	No	No	Yes	
Rengali	4	Digital Static	Unitrol BHEL (Max-DNA Software)	Yes	Yes	Not tuned	No	No	Yes	
Rengali	5	Static	Unitrol BHEL	No	Yes	Not tuned	No	No	Yes	
Sterlite	1									
Sterlite	2									
Sterlite	3									
Sterlite	4								Yes	
Jharkhand										
Tenughat	1	Static	Unitrol D	Yes	Yes	2017	Yes	No		
Tenughat	2	Static	Unitrol D	Yes	Yes	2017	Yes	No		
Subarnrekha	2 X 65									
Bihar										

BTPS	6 (110)									
BTPS	7 (110)									
BTPS	8									
BTPS	9									
Bhutan										
Tala	1	Static	ABB Unitrol (M/D)	No	Yes			No		
Tala	2	Static	ABB Unitrol (M/D)	No	Yes			No		
Tala	3	Static	ABB Unitrol (M/D)	No	Yes			No		
Tala	4	Static	ABB Unitrol (M/D)	No	Yes			No		
Tala	5	Static	ABB Unitrol (M/D)	No	Yes			No		
Tala	6	Static	ABB Unitrol (M/D)	No	Yes			No		
Chukha	1	Static	BHEL	No	Yes	2005	No	No	Yes	
Chukha	2	Static	BHEL	No	Yes	2005	No	No	Yes	
Chukha	3	Static	BHEL	No	Yes	2005	No	No	Yes	
Chukha	4	Static	BHEL	No	Yes	2005	No	No	Yes	
Mangdechu	1	Static	BHEL	No	Yes			No		
Mangdechu	2	Static	BHEL	No	Yes			No		
Mangdechu	3	Static	BHEL	No	Yes			No		
Mangdechu	4	Static	BHEL	No	Yes			No		

ANNEXURE D1

ANTICIPATED POWER SUPPLY POSITION FOR THE MONTH OF FEB-21

SL.NO		PARTICULARS	PEAK DEMAND IN MW	ENERGY IN MU
1		BIHAR		
	i)	NET MAX DEMAND	5150	2400
	ii)	NET POWER AVAILABILITY- Own	651	251
	iii)	Central Sector+Bi-Lateral	4607	2184
	iv)	SURPLUS(+)/DEFICIT(-)	108	34
2		JHARKHAND		
	i)	NET MAXIMUM DEMAND	1400	800
	ii)	NET POWER AVAILABILITY- Own Source	214	110
	iii)	Central Sector+Bi-Lateral+IPP	977	476
	iv)	SURPLUS(+)/DEFICIT(-)	-209	-214
3		DVC		
	i)	NET MAXIMUM DEMAND	3080	1810
	ii)	NET POWER AVAILABILITY- Own Source	5123	3029
	iii)	Central Sector+MPL	509	229
	iv)	Bi- lateral export by DVC	2268	1524
	v)	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	283	-75
4		ODISHA		
	i)	NET MAXIMUM DEMAND	3800	2262
	ii)	NET POWER AVAILABILITY- Own Source	3385	1659
	iii)	Central Sector	2029	947
	iv)	SURPLUS(+)/DEFICIT(-)	1614	344
5		WEST BENGAL		
5.1		WBSEDCL		
	i)	NET MAXIMUM DEMAND	6460	3000
	ii)	IPCL DEMAND	82	57
	iii)	TOTAL WBSEDCL's Energy Requirement (incl.B'Desh+Sikkim+IPCL)	6547	3060
	iv)	NET POWER AVAILABILITY- Own Source	4544	1971
	v)	Contribution from DPL	465	215
	vi)	Central Sector+Bi-lateral+IPP&CPP+TLDP	2547	1184
	vii)	EXPORT (TO B'DESH & SIKKIM)	5	3
	viii)	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	1009	309
5.2		CESC		
	i)	NET MAXIMUM DEMAND	1600	669
	ii)	NET POWER AVAILABILITY- Own Source	750	423
	iii)	FROM OTHER SOURCE (INCL. IPP/CPP-29-30 MU/M)	310	69
	iv)	IMPORT FROM HEL	540	177
	v)	TOTAL AVAILABILITY OF CESC	1600	669
	vi)	SURPLUS(+)/DEFICIT(-)	0	0
6		WEST BENGAL (WBSEDCL+DPL+CESC) (excluding DVC's supply to WBSEDCL's command area)		
	i)	NET MAXIMUM DEMAND	8142	3726
	ii)	NET POWER AVAILABILITY- Own Source	5759	2608
	iii)	CS SHARE+BILATERAL+IPP/CPP+TLDP+HEL	3397	1430
	iv)	SURPLUS(+)/DEFICIT(-) BEFORE WBSEDCL'S EXP.	1014	312
	v)	SURPLUS(+)/DEFICIT(-) AFTER WBSEDCL'S EXP.	1009	309
7		SIKKIM		
	i)	NET MAXIMUM DEMAND	122	65
	ii)	NET POWER AVAILABILITY- Own Source	2	1
		- Central Sector	182	70
	iii)	SURPLUS(+)/DEFICIT(-)	62	7
8		EASTERN REGION		
	i)	NET MAXIMUM DEMAND	21269	11062
	ii)	BILATERAL EXPORT BY DVC	2268	1524
	iii)	EXPORT BY WBSEDCL	5	3
	iv)	NET TOTAL POWER AVAILABILITY OF ER (INCLUDING CS ALLOCATION +BILATERAL+IPP/CPP+HEL)	26834	12994
	v)	ENERGY SURPLUS(+)/DEFICIT(-) OF ER AFTER EXPORT (v = iv - i -ii - iii)	3292	405