MINUTES
OF
177th OCC MEETING

Date:09.04.2021

Eastern Regional PowerCommittee
14, Golf Club Road, Tollygunge
Kolkata:700033

EASTERN REGIONAL POWER COMMITTEE

MINUTES OF 177TH OCC MEETING HELD ON 17.03.2021(WEDNESDAY) AT 10:30 HOURS

Member Secretary, ERPC chaired the 177th OCC Meeting. He welcomed all the participants to the meeting and outlined the performance of ER Grid during February-2021 in brief.

The meeting was conducted through Microsoft Teams online platform. List of participants is enclosed at **Annexure A**.

PART – A

ITEM NO. A.1: Confirmation of Minutes of 176thOCC Meeting held on 19th February 2021 through MS Teams.

The minutes of 176thOperation Sub-Committee meeting held on 19.02.2021 circulated vide letter dated 04.03.2021.

Members may confirm the minutes of 176th OCC meeting.

Deliberation in the meeting

Members confirmed the minutes of 176th OCC meeting.

PART B: ITEMS FOR DISCUSSION

ITEM NO. B.1: Action plans to meet the increasing demand of power

A meeting was taken by Hon'ble MoSP on 11.02.21 to discuss the plans to meet the increasing demand of power.

As per the demand duration curve of January 2020 and 2021, it is observed that demand has been persisting more than 180 GW for around 5% of the time during the month. Based on the trend of all India maximum, average and minimum demand, it is seen that the peaks are becoming sharper day by day. It has also been observed from the historical data that difference between maximum and minimum all India demand is increasing and touching around 65 GW.

In the meeting, the following action plans/measures were decided in order to meet the increasing demand of power.

a) All planned shutdowns of units (Thermal & Hydro) should be rescheduled to lean demand period. However, urgent/emergency shutdowns may be availed in coordinated manner.

b) Outage schedule of hydro generators should be rescheduled to lean season.

c) Periodical review of Forced Outage of generators.

Members may discuss.

Deliberation in the meeting

It was informed that LGBR 2021-22 has been prepared in line with the demand patterns and the plannedshutdown schedule of the generators had been finalized in line with the demand pattern of the region.

OCC advised all thermal as well as hydro generators to adhere to the shutdown schedule as finalized in LGBR and shall bring back their units on time.

Regarding periodical review of forced outage of generators, it was informed that the issue is being discussed in PCC meetings and in 100th PCC meeting, it was decided that a quarterly meeting is to be convened with all the concerned generators to discuss the forced outage of the units with the concerned generators and remedial actions thereof.

ITEM NO. B.2: Preparedness for meeting summer demand in 2021--ERLDC

This year, the mercury has started rising sharply from February end, which is a bit earlier than previous year and indicative of scorching summer that lies ahead. As per IMD forecast, higher Maximum temperature than usual is expected in Odisha, Jharkhand and Bihar in Eastern Region. With India's reasonably well fight back against COVID-19 and largest vaccination drive, this summer is likely to be extremely challenging for system operators to ensure reliable power supply, particularly to the remote corners of the region.

Therefore, very robust planning and preparedness is absolutely essential for meeting the system demand in a reliable manner. In view of this, dissemination of the following information and formulating action plans are extremely important:

Information:

1. Realistic forecast of peak and off-peak load to be met by each state for the months of April-21 to June-21.
2. Proper projection of availability of state internal generation
3. Anticipated network congestion in STU systems
4. Areas likely to experience low voltage in each state
5. Identification of nodes (at 132kV level) by each state, where very high amount of Air conditioning load is anticipated.

Action plan:

6. Ensuring maximum VAR support from all state generators as per their capability curve.

7. Ensuring timely completion of all over hauling maintenance activity of all generators and transmission elements and maintaining maximum possible resource adequacy.
8. Strengthening of network by restoring elements under long outage before April-21, where ever it is possible.
9. Timely Switching off/on of Bus reactors as per real time voltage as well as under RLDC instruction.
10. Monitoring the compliance of proper reactive power support by RE resources, as per CEA connectivity standard.
11. With higher maximum temperature higher sag of overhead transmission lines is expected. So regular tree cutting activity and preventing encroachment of vegetation in the corridor is extremely important. SLDCs to inform all transmission licensees under their respective jurisdiction, accordingly.

In addition to the above, SLDCs too may share their comprehensive summer preparedness plan.

Members may discuss.

Deliberation in the meeting

OCC advised all SLDCs to submit the required information to ERLDC by March' 2021.

ITEM NO. B.3: Sharing of information regarding LILO of 220 kV Waria-Parulia at DSTPS and loading of DSTPS ICT.--ERLDC

From power flow at DSTPS ICT, it appears that 400/220 kV ICT at DSTPS is loaded after LILO of 220 kV Waria-Parulia D/C at DSTPS. West Bengal has already expressed their concern in 2nd ERPCTP meeting that any change in intra-state network near the state boundary could affect the transmission network operation in the nearby state, therefore dissemination of information in regards of LILO of 220 kV Waria-Parulia D/C at DSTPS and loading of DSTPS ICT in very much important.

The following information may kindly be shared:

1. Date and time of LILO of 220 kV Waria-Parulia D/C at DSTPS and loading of 400/220 kV ICT at DSTPS.
2. Operation experience and constraints faced if any.
3. Network modification for safe operation of grid, if any.

DVC may update.

Deliberation in the meeting

ERLDC raised their concern for not receiving any information related to shutdown of 220 kV Waria- Parulia D/C and subsequent LILO of the line at DSTPS.

DVC informed that the LILO of 220 kV Waria- Parulia D/C at DSTPS had been operationalized on 15.02.2021 and the ICT at DSTPS was also charged on same day.

Further they informed that to avoid overloading of ICT, 220 kV DSTPS-Waria D/C hasbeen kept open.

WBSETCL informed that they also did not receive any information related to LILO of 220 kV Waria-Parulia D/C line. They informed that being a neighboring line to west Bengal system, any change in the network configuration in these lines may affect the load flow pattern in their own network and requested for prior intimation to them in real time before carrying out any changes in the network.

After detailed deliberation, OCC advised DVC to share the information of any change in network configuration of important elements within their control area at the earliest.

Further, OCC advised all the utilities to share the information of any change in network configuration within their control area in respect of important elements/ elements which affect the adjacent utilities to ERLDC. On receiving information from the utility, ERLDC may further inform other affected utilities for necessary action.

ITEM NO. B.4: Hand tripping of 66kV Melli-Kalimpong by Sikkim without any intimation--ERLDC

66kV Melli-Kalimpong was on charged condition on 5th March-2021 and west Bengal was drawing around 8-10MW through the line. Melli is the usual source of Kalimpong and it is kept radially fed from Melli. However, Sikkim hand-tripped the 66kV Melli-Kalimpong-line without providing any intimation to ERLDC and West Bengal at 12:30hrs of 5th March-2021 which causes total power failure at Kalimpong.

As 66 kV Melli –kalimpong line is an inter-state tie line, so any planned switching activities need switching on/off code from ERLDC before operation. Further, the entire district of Kalimpong power supply is fed from Melli source, so before opening of said line on emergency or other reason, Sikkim also need to inform West Bengal and ERLDC to shift essential loads to other sources.

SLDC Sikkim may explain.

Deliberation in the meeting

SLDC Sikkim explained as follows:

- *They informed that on 05th March'2021 during the incident, Sikkim was overdrawing from the grid to the tune of 60 MW.*
- *SLDC Sikkim instructed to Melli S/s for load shedding in order to control the overdrawal from the grid.*
- *However, due to some miscommunication between SLDC Sikkim and Melli S/s, the 66 kV Melli-Kalimpong was hand tripped at Melli end.*

SLDC West Bengal informed that Kalimpong is a district headquarter and Melli is the primary source of power supply to Kalimpong. Therefore, information shall be shared with them beforehand in such type of switching operation so that power interruption to Kalimpong can be avoided. They also requested for reliable supply of power from

Melli in view of current assembly election.

OCC advised Sikkim to share the information of any switching operation of 66 kV Melli-Kalimpong Line to ERLDC. OCC also advised Sikkim that during any kind of switching operation of this important tie line, the Melli S/s personnel shall exchange the information with their counterpart in Kalimpong S/s.

Further, OCC requested Sikkim to ensure reliable supply of power from Melli to Kalimpong during the ensuing Assembly Election at West Bengal.

ITEM NO. B.5: Proposed Pile Foundation at Location no. 52 of 400 kV Patna-Kishanganj D/C line.

Powergrid vide letter dated 10.03.21 informed that due to change in course of river Kankai and formation of a new water channel between Kankai to Dass river, the following actions are decided to be taken as a preventive measure to safeguard the line from future endangerment:

- A new pile foundation has planned to be constructed in place of present open cast foundation at loc. 52 situated at the banks of river Kankai.
- Relocation of tower no. 54 further away from the banks of river Daas.

The above work is likely to be completed before onset of monsoon.

Members may discuss.

Deliberation in the meeting

Powergrid informed that they have carried out a study on all river crossing towers by a constituting a committee and during the study it was found that tower at loc no. 52 of 400 kV Patna-Kishanganj line was just 35 meter away from edge of the Kankai river and in danger condition.

They further informed that the following actions are being taken up to safeguard the line from future endangerment.

- *A new pile foundation has planned to be constructed in place of present open cast foundation at loc. 52 situated at the banks of river Kankai.*
- *Relocation of tower no. 54 further away from the banks of river Daas.*

They added that they would require shutdown of the 400 kV Patna-Kishanganj line for 10 days(approximately)during the proposed work.

OCC advised to expedite the work and complete the same before onset of monsoon i.e. May'2021.

ITEM NO. B.6: Outage of Important TransmissionSystem.

1. Re-conductoring work of 400 kV Rangpo-Binaguri D/Clines.

In the 176th OCC meeting, Powergrid updated following:

- 96kms of reconductoring work have been completed for each circuit of 400 kV Rangpo-Binaguri D/C Line and currently work in 2.5 kms stretch for each circuit are under progress.
- Out of remaining stretch of 14 Kms, 9 kms belong to West Bengal area and rest in Sikkim area.
- They informed that total 3 nos. of power line crossing are left till date out of which work for one crossing wouldbe completed in Feb'21 and remaining two crossings would be completed in March'21'

They informed that the work is expected to be completed by 25th March, 2021 subject to weather conditions and the line wouldbe charged by 29th March'2021.

Power grid may update.

Deliberation in the meeting

Powergrid updated that reconductoring of 2.5 km of both the circuits out of 110 km is pending for completion. They informed that the line would be charged by 29th March, 2021.

2. 400KV/220KV 315 MVA ICT-3 atMalda S/s.

In the 176th OCC meeting, Powergrid informed that work has been delayed due to issue in dew point parameter during pre-commissioning testing and informed that ICT at Malda would be commissioned by 10th March,2021.

SLDC West Bengal raised serious concern on delay of commissioning of ICT-3 at Malda, and stated that further extension of shutdown would severely affect the reliabilityof power supply and security of the grid in that area in coming days due to gradual increase in demand in view of onset of summer, and scheduled assembly elections.

West Bengal requested Powergrid to explore all the possibilities to bring back the ICT at the earliest.

OCC advised Powergrid to submit a report regarding cause of delay in commissioning the ICT and detailed action plan of work for restoration of ICT by10th March' 2021 to ERPC secretariat, ERLDC & SLDC West Bengal immediately.

Powergrid may update.

Deliberation in the meeting

Powergrid informed that main tank oil circulation is in progress and it would be completed by 18.03.2021. The final oil circulation would be done on 20th March 2021.

Thereafter, from 21st to 24th March, 2021, testing would be done and the ICT will be ready for charging on 25th March, 2021.

West Bengal raised their concern for delaying in charging of ICT-3 at Malda and informed that ICT shall be brought back into service immediately in view of assembly election.

OCC advised Powergrid to bring back the ICT-3 along with both its main and tie circuit breaker by 25th March,2021.

ERLDC informed that on 13th March,2021, 400/220 kV ICT-5 got tripped due to sudden CB lockout and posed a great difficulty in maintaining the load during that time.

Regarding incident of tripping of ICT-5, OCC advised powergrid to take extra measures in ensuring the healthiness of all the remaining elements at Malda till the restoration of ICT-3.

3. 400 kV Maithon- Maithon RB D/C

400KV Maithon-Maithon RB D/C is under continuous shutdown from 12-01-21, for re-conductoring work.

In the 176th OCC meeting, Powergrid informed that 11.5 km of stringing has been completed out of 31 km for each circuit. They further informed that work related to major power line crossings are pending.

OCC advised Powergrid to submit a detailed plan for restoration of the line to ERPC secretariat/ERLDC at the earliest.

Powergrid may update.

Deliberation in the meeting

Powergrid submitted that 14 km of stringing has been completed out of 31 km for each circuit.

OCC advised powergrid to submit the detailed plan and timeline of restoration of the line to ERPC secretariat/ERLDC within a week.

4. 132KV Rangit-Rangpo-1 and 132KV Rangpo-Gangtok-2.

132KVRangit-Rangpo-1 and 132KV-Rangpo-Gangtok-2 is under continuous shutdown from 12-12-20 for rectification of Multi-circuit tower at loc-21 which got bent due to landslide during monsoon.

Powergrid informed that the work has been completed and the lines would be restored by 23rd Feb'2021.

OCC advised Powergrid to present a report in OCC regarding the event of occurrence,

reason behind the delay of the work, difficulties faced during restoration etc.

Power Grid may update.

Deliberation in the meeting

It was informed that the lines had already been restored in Feb' 21.

5. 400 kV Barh-Motihari D/C and 400 kV Motihari -Gorakhpur D/Clines.

In the 176th OCC meeting, DMTCL informed that all the tower erection has been completed except one special tower in 400 kV Motihari-Gorakhpur Section which is expected to be completed by Februray,2021. They added that stringing of conductors is also under progress and the lines will be restored by 2nd week of March,2021.

DMTCL vide e-mail dated 5thMarch, 2021 updated the progress of Barh-Motihari and Barh-Gorakhpur D/C lines which is given in Annexure B6.5.

DMTCL may update.

Deliberation in the meeting

DMTCL informed that the work could not be completed as per plan due to non availability of shutdown of 400 kV Barh-Gorakhpur line.

ERLDC informed that 400 kV Gorakhpur-Motihari-2 lines could not be charged due to pending PLCC and protection coordination confirmation from Gorakhpur end to NRLDC which resulted in delay of shutdown approval. They informed that shutdown would be allowed once the line healthiness of the 400 kV Gorakhpur-Motihari-2 line is confirmed under loaded condition and approval from SLDC Bihar.

On query, Powergrid ER-I informed that they would coordinate with their counterpart at Gorakhpur for early confirmation of PLCC work and Protection-coordination.

OCC advised DMTCL to coordinate with Bihar for necessary consent and complete the restoration work at the earliest after getting the required shutdown.

6. 132kV Sagbari –Melli.

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.

In the 176th OCC meeting, Sikkim informed that the circuit breaker issue has been resolved.

They further informed that as the line was under outage for more than two years, there were vegetation &RoW issues. They added that there is conductor snapping in the line

between loc. 20 and loc. 29.

They informed that the line will be charged within one month.

OCC advised Sikkim to expedite the work and restore the line at the earliest.

Sikkim may update.

Deliberation in the meeting

Sikkim informed that necessary RoW clearance has been received for 80% section of the line and it would take two more weeks to get the clearance for remaining section of the line.

7. 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.

In the 176th OCC meeting, Dikchu HEP informed that the materials have been received at site and the work would be completed by 1st week of March, 2021.

DikchuHEP may update.

Deliberation in the meeting

Dikchu HEP updated that the work had been completed on 08th March'21 and the ICT has beencharged on 09th March 2021.

8. 400 KV main bay of Patna-1 at Kishanganj S/s.

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

In the 176thOCC meeting, Powergrid informed that they are planning to carry out the work with in-house expertise and the restoration of bay is expected by April'21.

Power Grid may update.

Deliberation in the meeting

Powergrid informed that the bay would be restored by April'21.

9. 400KV New Purnea-Gokarna & 400KV New Purnea-FSTPP.

In the 175th OCC meeting, Powergrid informed that the line has already been restored.

Regarding PLCC work of 400 kV New Purnea-Farakka S/C, they informed that LOA has already been placed for new data card to be replaced at 400 kV Farakka end. The PLCC channel will be restored by Feb'21.

In the 176thOCC meeting, Powergrid informed that the permanent restoration of 400 kV New-

Purnea-Gokarna& 400 kV New Purnea-FSTPP is going to be completed by March-2021 and the PLCC issue would be resolved during the permanent restoration of the line.

Powergrid may update.

Deliberation in the meeting

Powergrid informed that two out of two pile foundations had been completed and tower erection is under progress along with one open cast foundation.

They further informed that they want to avail the shutdown of both the lines from 23rd March 2021 for the bypass arrangement from Farakka to Gokarna as discussed in 177th OCC Maintenance programme meeting.

OCC advised Powergrid to avail the shutdown by 23rd March 2021.

ITEM NO. B.7: Shutdown proposal of generating units for the month of April' 2021.

Generator unit shutdown schedule for April' 2021 is given in the table.

Members may update.

Deliberation in the meeting

The updated generating unit shutdown schedule is given below:

Approved Maintenance Schedule of Thermal Generating Units of ER in the month of April '21 as on 17.03.2021

System	Station	Unit	Capacity (MW)	Period (as per LGBR 2020-21)		No. of Days	Reason	Revised Period(As agreed in OCC Meeting)		Remarks
				From	To			From	To	
DVC	Mejia TPS	5	250	15.04.21	20.05.21	36	BOH	17.02.21	By end of March-21	preponed
Odisha	IB TPS	1	210	01.04.21	24.04.21	24	AOH	17.04.21	10.05.21	

ITEM NO. B.8: Agenda points from Talcher STPP

A. Restoration of 400 kV TSTPS-Meramunduli-2 to its original length.

Presently, the line length of 400KV TSTPS-Meramunduli-1 is shorter compared to 400KV TSTPS Meramunduli-2line (after the LILO arrangement at Angul). This causes lesser flow in Talcher-Meramunduli-2 circuit.

To address the issue, 400 kV Talcher-Meramundali-2 line may be restored to its original length i.e. prior to the LILO arrangement. By doing the same, 400KV TSTPS-Meramunduli 1 & 2 lne

length will be equal resulting equal loading during higher load flow requirement. This will be beneficial in the case of HVDC pole block, where post HVDC contingency load flow of Meramunduli lines will be higher leading to better grid stability.

TSTPP may elaborate. Members may discuss.

Deliberation in the meeting

TSTPP elaborated as follows:

- *400KV TSTPS-Meramunduli-1 is of 56 km length whereas the length of 400KV TSTPS-Meramunduli-2 is 86 km.*

- *They stated that due to mismatch in line length, overloading is being observed in 400KV TSTPS-Meramunduli-1 after tripping of the pole of HVDC Talcher. The loading of 400KV TSTPS-Meramunduli-2 remains at 60 % of 400KV TSTPS-Meramunduli-1 during such conditions.*

- *In view of above, they proposed to restore the 400KV TSTPS-Meramunduli-2 to its original length.*

Odisha informed that the bypass arrangement can be shifted from Anugul switchyard to starting point of the LILO section of 400KV TSTPS-Meramunduli-2 line so that the electrical length would be equal to its original length and the power flow would be equal for both the circuits.

ERLDC informed that the bypass arrangement of 400KV TSTPS-Meramunduli-2 at Anugul is necessary as it provides flexibility in real time grid operation during contingencies. They proposed that an additional line from Talcher STPS to Odisha system may be planned to resolve the issue.

It was also proposed by them to upgrade the capacity of existing 220 kV TSTPS-Meramundali line instead of building a new line.

After detailed deliberation, OCC opined that study need to be carried out by OPTCL regarding the proposal of constructing new line from Talcher STPP to Odisha system and decided to refer the issue to standing committee on transmission planning for further discussion.

B. Test synchronization TSTPP Unit #2 for commissioning of auto synchronizer of Generator circuit breaker.

TSTPP Unit#2 is under shutdown and is expected to be synchronized in the first week of April-2021 after overhauling.

During the overhaul, replacement of Auto Synchronizer of Generator Circuit Breaker is in progress which has to be commissioned during the recommissioning of the unit. However the commissioning activity of Auto Synchronizer is not possible with the first unit synchronization in one go.

In the process, GCB shall be kept in closed condition making forward charging of GT (Generator Transformer) and unit shall be synchronized to the grid at 400KV level through existing synchronizing relay. Then in the same time block, GCB shall be made off manually de-synchronizing the unit keeping GT in back-charged condition. The final synchronization shall be done with GCB after commissioning & tuning work of Auto-synchronizer in presence of OEM for reliable & smooth operation of the Auto Synchronizer.

The process of commissioning of Auto Synchronizer will take approximately 1 hr. This de-synchronization should not be treated as unit outage as this is a requirement for commissioning of the Auto Synchronizer. This may be allowed.

TSTPP may elaborate. Members may discuss.

Deliberation in the meeting

NTPC elaborated the issue of test synchronization of unit #2 and submitted that DC of the unit#2 would not be given during the intervening time of replacement of auto synchronizer of Generator circuit breaker. The DC would be given after final synchronization of the unit.

OCC agreed.

ITEM NO. B.9: 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 176th OCC Meeting, ERLDC informed that the draft SOP has been prepared which is enclosed at Annexure B.9.

OCC advised SLDC Odisha and others to go through the SOP and submit their comments/observation, if any,at the earliest.

Members may update.

Deliberation in the meeting

OCC advised SLDC Odisha to submit their comments to ERLDC within a week.

ITEM NO. B.10: 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

WBSETCL, CESC, DVC, BSPTCL & JUSNL have submitted the relevant details for preparation of NEP for 2022-27 and 2027- 32.

OPTCL may update.

Deliberation in the meeting

OPTCL informed that data for 2022-27 has already been prepared and preparation of data for 2027-32 is under progress.

OCC advised to submit the data for 2022-27 immediately and to expedite the preparation of data for 2027-2032.

ITEM NO. B.11: 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	155-160	0	100%	OPTCL	

Vedanta)					
220 kV Buddhipadar-Lapanga D/C (High loading in injection by Vedanta)	120-140	16	67 %	OPTCL	

In the 174th OCC meeting, ERLDC informed that the N-1 criteria are 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.

In the 176th meeting, SLDC Odisha informed that they would submit the action plan for removing the constraints in above lines within a week.

OPTCL may update.

Deliberation in the meeting

OCC advised OPTCL to submit the action plan by 23rd March 2021.

ITEM NO. B.12: Monthly Data on Category-wise consumption of electricity in states.

The data of category-wise consumption of electricity in the states/UTs, are being frequently referred to by CEA and Ministry of Power. In this regard, as advised by Member(GO &D), GM division of CEA has advised the following:

- The monthly data of category-wise consumption of electricity in the states/UTs may be discussed in the OCC meeting on regular basis with comparative analysis of the same for corresponding monthly data of previous years.
- In case the utilities have reservations on submitting unaudited data then the same may be mentioned in the data itself that these data are unaudited. In that case the data so received would be used only for the purpose of trend analysis and would not be used in any report of CEA.

In 176th OCC Meeting, OCC advised all SLDCs to take up the issue with their DISCOM(s) and submit the required data on monthly basis to ERPC secretariat.

Members may update.

Deliberation in the meeting

It was informed that data have not been received from any of the state utilities.

OCC advised all the SLDCs to furnish the up the issue with their DISCOM(s) and submit the required data on monthly basis to ERPC secretariat.

ITEM NO. B.13: Flexibility test runs in Unit no. 2 of MPL--ERLDC

Flexibility test runs are be conducted at Unit no. 2 of MPL, under Task Force Flexibility of Indo-German Energy Forum.
Summary of test schedule planned is as follows:

- The Full Load test for 6 hrs is planned on 11/3/21, 55% load test for 6 hrs on 12/3/21, 40% load test on 15/3/21 & 16/3/21 for which generation would be maintained <=55% of normative for 9 hrs on each of these days, including 3 hours of peak period.

- Although no test is scheduled on 17/3/21 but generation would again be maintained <=55% of normative for 9 hrs, as a preparatory measure for the tests scheduled on 18/3/21& 19/3/21.

Members may discuss.

Deliberation in the meeting

West Bengal informed that in view of upcoming assembly election reliability of power supply in West Bengal is very much important and the same may get hampered during the period as proposed for conducting the low load test at MPL. Therefore, they requested to defer the scheduled test to a date after the completion of assembly election process in West Bengal.

MPL representative informed that it would be difficult to reschedule the test as the logistics have already been mobilized for the test.

Member Secretary, ERPC stated that the concern of West Bengal would be communicated to CEA for review of the schedule for low load test.

PART C: ITEMS FORUPDATE

ITEM NO. C.1: ER Grid performance during February'2021.

The average and maximum consumption of Eastern Region and Max/Min Demand (MW), Energy Export for the month February- 2021 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)
393.4	414; 25-02-2021	20752 MW, 02-09-2021, 18:21 Hrs.	12953 MW, 02-01-2021, 03:14 Hrs.	3892	3777

ERLDC may present performance of Eastern Regional Grid.

Deliberation in the meeting

The presentation on the performance of Eastern Regional grid is given in Annexure C.1.

Members noted.

ITEM NO. C.2: Primary frequency response of ER generating units in February 2021

During February 2021, one event with sudden frequency change occurred. Detail of this event is shown in following table:

Event	Frequency Change	Power Number (ΔMW/Δf)	ER FRC
Event 1: On 19th February 2021 at 15:26:52.160 hrs, around 1300 MW generation loss occurred at Bhadla in NR.	**49.985 Hz to 49.854 Hz**. Later stabilized at 49.938 Hz	**9924**	**30 %**

Summary of the analysis of the event is 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 04th March 2021).
    a. NTPC Talcher
    b. BRBCL
    c. Bihar SLDC
    d. Jharkhand SLDC
    e. 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 February 2021*

Generating Station/ SLDC	Response observed
NTPC Farakka	**No response has been observed for unit 1, 2, 3, 5 & 6. Response has been observed for unit 4. But ramp rate of the response was very low.**
NTPC Kahalgaon	**Non Satisfactory**(Unit 3 and 4 was being run at more than installed capacity)
NTPC Talcher	**Non Satisfactory**(43% of ideal response as per ERLDC SCADA data)
NTPC Barh	**Non Satisfactory**(Almost zero response observed)
NTPC Darlipalli	Unit was not in service
BRBCL	**Satisfactory**(71% of ideal response as per ERLDC SCADA data)
NPGC Nabinagar	**Non Satisfactory**(Response did not sustain for more than 10 seconds. Unit were running at more than installed capacity.
GMR	**Satisfactory**
JITPL	**Non Satisfactory**(Response did not last for more than 10 seconds)
MPL	**Non Satisfactory for unit 2 (Unit was in VWO mode);** Unit 1 was not in service
Adhunik	**Satisfactory**
Teesta V HEP	Unit was not in service
Teesta III HEP	Unit was not in service
Dikchu HEP	Unit was not in service
Bihar SLDC	**Non Satisfactory**(as per ERLDC SCADA data)
Jharkhand SLDC	**Satisfactory**(as per ERLDC SCADA data)
DVC SLDC	**Satisfactory**
GRIDCO SLDC	**Non Satisfactory**
WB SLDC	**Satisfactory**(as per ERLDC SCADA data)

Table 2: performance of state generating stations for the events in February 2021 (Based on data received from SLDC/generating stations) **

Generating Station	Response observed
HEL	**Satisfactory**
BBGS	**Satisfactory for unit 1 and 2.** Response may be improved for unit 3

****Response of these generating stations are shown in Annexure 2**

Remarks on the primary frequency response observed at generating stations

- **MPL**: Unit 2 was being run at Valve wide open (VWO) condition. So no response has been observed in case of unit 2. As per section 5.2 (h) of IEGC, generating units are not to be run in VWO condition. **In compliance of IEGC, it is advised to avoid running unit in VWO condition**.
- **APNRL**: Governor may be tuned to reduce the time taken to provide full response of both the generating units.
- **Farakka**:During PFR testing, response was satisfactory for unit 2, 3, 4, 5 & 6. But no response has been observed at all the generating units during the event. Unit 2 was being run at more than Installed capacity. R**unning unit at more than installed capacity may be avoided as per IEGCC section 5.2 (h)**.
- **HEL**: Response did not sustain for more than 90 seconds. Governor may be tuned for providing sustained response for at least 3-5 minutes.
- **Budge Budge**: Governor may be tuned to reduce the time taken to provide full response of unit 3. Duration of sustained response may be improved.

Following may be discussed:

- NTPC Talcher, BRBCL, Bihar SLDC, Jharkhand SLDC and WB SLDC may share reason for non-sharing generator end data within the timeframe.
- During PFR testing, response observed at Farakka STPP units were satisfactory. But no response has been observed as per data shared by NTPC Farakka. Reason for non-satisfactory response may be shared by NTPC Farakka.

- NTPC Kahalgaon, NTPC Talcher, NTPC Barh, NPGC, JITPL, Bihar SLDC and GRIDCO SLDC may share the reason for non-satisfactory response.

- MPL may share the reason for running unit in Valve wide open mode.

Members may update.

Deliberation in the meeting

ERLDC stated that the some of the units were running at more than installed capacity or in valve wide open mode, as a result the primary frequency response during the event was absent from those units.

They further informed that data from BRBCL & NTPC Farakka have been received to them and as per the observation, the response of Unit 4,5,6 of Farakka were satisfactory whereas response of 200 MW units were not satisfactory. The report in this regard is attached at Annexure-C2.

OCC advised all the concerned utilities to submit the relevant data to ERLDC within the time frame and also to take necessary actions for ensuring desired RGMO response of the units.

OCC decided to convene a separate meeting to discuss the primary frequency response of the generating units in Eastern Region.

ITEM NO. C.3: 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 176th OCC Meeting, ERLDC informed that as per preliminary report received for units where PFR have been completed, the primary frequency response observed during testingwere satisfactory.

The updated status of the testing schedule for the generators is enclosed at Annexure C.3.

Respective Generators may update.

Deliberation in the meeting

ERLDC informed that information regarding testing schedule of JITPL & GMR has not been received.

OCC advised GMR & JITPL to share their schedule for PFR testing to ERLDC.

ITEM NO. C.4: Testing of Primary Frequency Response of state generating units by third party agency

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 videe-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

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 176th OCC meeting, BarauniTPS informed that PFR testing would be completed by March'2021.

OPGC informed that they would finalize the order with Siemens by end of Feb'2021.

OCC advised SLDC Odisha to coordinate with OHPC and submit the unit wise schedule for primary frequency response testing within a week.

SLDC, DVC informed that indent has been placed for PFR testing of their generating units.

SLDC, Jharkhand informed that they have intimatedTenughat in this regard. OCC advised to coordinate andsubmit the schedule for PFR testing.

On request from WBPDCL, OCC advised ERLDC to share all relevant documents related to selection of the vendor for PFR Testing along with contact details of the vendors to West Bengal SLDC for further sharing by them with their state generators.

Members may update.

Deliberation in the meeting

SLDC, Bihar informed that PFR testing for Barauni TPS would be completed by April '2021.

OHPC informed that PFR testing is being planned to be carried out for units of Indravati &Rengali. OCC advised OHPC to submit a schedule for testing to ERLDC/ERPC secretariat.

OCC advised SLDC DVC, SLDC West Bengal & SLDC Jharkhand to coordinate with their generators and submit the schedule of PFR testing.

ITEM NO. C.5: PSS tuning of Generators in Eastern Region

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.

In 176th OCC Meeting,

NTPC informed that PSS tuning schedule for BRBCL & Barh has been submitted. OCC advised NTPC to submit a complete schedule for PSS Tuning of all of their units to ERPC secretariat/ERLDC within two weeks.

OHPC informed that they have already taken up with OEM for PSS tuning of their units. OCC advised to submit a status report in this regard.

OCC advised all other generators to submit their plan for PSS tuning to ERLDC/ERPC secretariat at the earliest.

Members may update.

Deliberation in the meeting

DVC informed that PSS tuning of Unit#5 of Bokaro TPS had been completed.

WBSEDCL stated that the status of PSS tuning in PPSP units would be submitted shortly.

The updated schedule for PSS tuning of the units is attached at Annexure-C5.

ITEM NO. C.6: 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 on27-11-2020.

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.

In 176th OCC Meeting, after detailed deliberation on the comments submitted by Powergrid, the followings were concluded:

- Regarding First time charging procedure, OCC reiterated that the procedure as documented by NLDC shall be followed.
- Regarding clause 3.7, It was decided that ERLDC would share the relevant details/band details of STATCOM while issuing instruction to utility for changing of setpoint of STATCOM.
- It was found that remaining observations of Powergrid have already been addressed in the revised operating procedure circulated vide e-mail dated 04.01.2021.
- OCC advised Powergrid to go through the revised operating procedure and submit their comments, if any.

SLDC West Bengal requested for two weeks time to review the operating procedure in view of the changes in SLDC management due to recent transfer/retirement.

OCC agreed and advised all utilities to go through the revised document and submit their final observation/comments within two weeks.

Members may update.

Deliberation in the meeting

ERLDC informed that they have received comments from SLDC, West Bengal recently.

OCC opined that ERLDC should discuss those points with SLDC, West Bengal and the final outcome to be placed before next OCC

ITEM NO. C.7: Operationalizing Bus splitting atBiharshariff

In the 176th OCC meeting, BSPTCL informed that implementation of PLC based SPS logic is under consideration and the same would be implemented within one year. However, they

have completed hard-looping based scheme and informed that the load trimming scheme can be operationalized with the present arrangement of hard-looping scheme.

OCC advised ERLDC, Powergrid& BSPTCL to coordinate and operationalize the bus splitting scheme at Biharsharif S/s within one week.

BSPTCL may update.

Deliberation in the meeting

ERLDC informed that bus splitting at Biharshariff had been operationalized from 16.03.2021 along with the load trimming scheme as implemented by BSPTCL.

OCC advised BSPTCL to carryout necessary study for requirement of bus splitting at 220 kV level of Biharsharif substation.

ITEM NO. C.8: Status of UFRs healthiness installed in EasternRegion

UFRs healthiness status has been received from CESC&DVC..

Members may update.

Deliberation in the meeting

OCC advised concerned utilities to submit the UFR healthiness report at the earliest.

ITEM NO. C.9: Status of Islanding Schemes healthiness installed in EasternRegion

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 are as follows:

Sl. No	Name of Islanding Scheme	Confirmation from Generator utility	Confirmation from Transmission Utility end
1	CESC as a whole Islanding	Healthy	Healthy
2	BkTPS Islanding Scheme		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

Members may update.

Deliberation in the meeting

OCC advised WBPDCL to submit the healthiness status of Bakreswar islanding scheme.

ITEM NO. C.10: Review of Over Current Settings of Lines having HTLSConductor—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 load ability 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. 132kVJeerat-Dharampur-1
ii. 132kVJeerat-Dharampur-2
iii. 132kV-Bidhannagar-Ukhara-1
iv. 132kV-Bidhannagar-Ukhara-2
v. 132kVTitagarh-Dharampur-1
vi. 132kVTitagarh-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)

In 176th OCC Meeting, it was informed that details have been received from all the utilities except JUSNL & OPTCL.

OCC advised OPTCL & JUSNL to submit the details within a week.

Members may update.

Deliberation in the meeting

It was informed that details have been received from JUSNL.

OCC advised OPTCL to submit the details at the earliest.

ITEM NO. C.11: Transfer capability determination by thestates.

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

Sl No	State/Utility	TTC (MW)		RM(MW)		ATC Import (MW)		Remark
		Import	Export	Import	Export	Import	Export	
1	BSPTCL	6075	--	122	--	5953	--	May-21
2	JUSNL	1544	--	56	--	1488	--	May-21
3	DVC	1663	2925	67	53	1596	2872	May-21
4	OPTCL	2167	1340	88	61	2079	1279	April-21
5	WBSETCL	5283	--	400	--	4883	--	April-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	https://power.sikkim.gov.in/atc-and-ttc	No (Not updating)	Static Link-Excel file

It is necessary to highlight that the ATC/TTC declaration on website need to be updated in timely manner. It is suggested that along with PDF copies, a tabular format may also kindly be provided so that it can be utilized for preparing ERLDC portal on State ATC/TTC. In addition, ATC/TTC may be declared three months in advance and periodically reviewed based on any shutdown causing leading to any constraint.

Members may update.

Deliberation in the meeting

ERLDC informed that TTC/ATC with transnational boundary need to be declared as per the CEA guidelines. Accordingly, it is required that Bihar has to submit TCC/ATC for their lines connected to Nepal on regular basis.

SLDC Bihar agreed to submit the TTC/ATC declaration for connectivity with Nepal.

ITEM NO. C.12: 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	***Done on 12th Feb'21***
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.

Deliberation in the meeting

SLDC Odisha informed that mock black start exercise at Balimela has been planned in first week of April'21.

PART D: OPERATIONAL PLANNING

ITEM NO. D.1: Anticipated power supply position during April 2021.

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of March 2021 were prepared by ERPC Secretariat on the basis of LGBR for 2021-22 and feedback of constituents, keeping in view that the units are available for generation and expected load growth etc. is enclosed at Annexure.

Members may update.

Deliberation in the meeting

The updated anticipated power supply position for the month of April, 2021is given in Annexure D1.

ITEM NO. D.2: Major Generating Units/Transmission Element outages/shutdown in ER Grid (as on 08.03.2021).

(a) Outage of major Thermal Generating stations

S.No	Station	State	Agency	Unit No	Capacity MW	Reason(s)	Outage Date
1	JORETHANG	SIKKIM	DANS	1	48	ANNUAL MAINTENANCE	26-Feb-2021
2	RANGIT HPS	SIKKIM	NHPC	1	20	ANNUAL MAINTENANCE	24-Feb-2021
3	TEESTA HPS	SIKKIM	NHPC	1	170	ANNUAL MAINTENANCE	20-Feb-2021
4	TSTPP	ODISHA	NTPC	2	500	ANNUAL OVERHAULING	01-Mar-2021
5	BALIMELA HPS	ODISHA	OHPC	1	60	R & M WORK	05-Aug-2016
6	BALIMELA HPS	ODISHA	OHPC	2	60	R & M WORK	20-Nov-2017
7	BURLA HPS/HIRAKUD I	ODISHA	OHPC	5	37.5	R & M WORK	25-Oct-2016
8	BURLA HPS/HIRAKUD I	ODISHA	OHPC	6	37.5	R & M WORK	16-Oct-2015
9	BURLA HPS/HIRAKUD I	ODISHA	OHPC	7	37.5	ANNUAL MAINTENANCE	06-Dec-2019
10	CHANDRAPURA TPS	DVC	DVC	8	250	ANNUAL OVERHAULING	24-Feb-2021
11	CHIPLIMA HPS / HIRAKUD II	ODISHA	OHPC	2	24	ANNUAL MAINTAINANCE	05-Feb-2021
12	KOLAGHA	WEST	WBPD	1	210	ESP R & M	07-Jun-2018

	T	BENGAL	CL				
13	KOLAGHAT	WEST BENGAL	WBPDCL	2	210	ESP & Ash Handling R & M	26-Dec-2019
14	MEJIA TPS	DVC	DVC	5	250	TRIPPED ON GENERATOR CLASS A PROTECTION AND LATER TAKEN ON ANNUAL OVERHAULING	11-Feb-2021
15	RENGALI HPS	ODISHA	OHPC	5	50	ANNUAL MAINTENANCE WORK	16-Dec-2020
16	JITPL	ODISHA	JITPL	2	600	HIGH TURBINE VIBRATION	05-Mar-2021
17	KHSTPP	BIHAR	NTPC	1	210	Ash Dyke Problem	15-Feb-2021
18	BALIMELA HPS	ODISHA	OHPC	4	60	OIL LEVEL DROP IN GENERATOR THRUST BEARING OIL BATH	31-Dec-2020
19	BALIMELA HPS	ODISHA	OHPC	5	60	STATOR EARTH FAULT	13-Dec-2020
20	BARAUNI TPS	BIHAR	BSPHCL	6	110	ROTOR FAULT	09-Nov-2020
21	BOKARO' B'	DVC	DVC	3	210	INITAILLY OUT DUE TO ASH PONDAGE PROBLEM UPTO 31/12/21. LATER OUT DUE TO POLLUTION CLERANCE ISSUE	21-Oct-2020
22	OPGC	ODISHA	OPGC	4	660	Attending feed water line leakage	07-Mar-2021
23	Sterlite	ODISHA	SEL	2	600	ANNUAL OVERHAULING	28-Feb-2021
24	Sterlite	ODISHA	SEL	3	600	due to PA fan problem	06-Mar-2021
25	TTPS	ODISHA	NTPC	5	110	Boiler MS Stop Valve Leakage	24-Feb-2021
26	TTPS	ODISHA	NTPC	6	110	HAND TRIPPED DUE TO SMOKE IN GENERATOR	07-Mar-2021
27	WARIA TPS	DVC	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 reason outage 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.

b) **Major Generating stations Out on Reserve Shutdown due to low system demand: -**

S.No	Station	State	Agency	Unit No	Capacity MW	Reason(s)	Outage Date
1	BARAUNI TPS	BIHAR	BSPHCL	7	110	RSD/LOW SYSTEM DEMAND	03-Mar-2021
2	KOLAGHAT	WEST BENGAL	WBPDCL	5	210	RSD/LOW SYSTEM DEMAND	15-Dec-2020

c**) Hydro Unit Outage Report: -**

S.No	Station	State	Agency	Unit No	Capacity MW	Reason(s)	Outage Date
1	JORETHANG	SIKKIM	DANS	1	48	ANNUAL MAINTENANCE	26-Feb-2021
2	RANGIT HPS	SIKKIM	NHPC	1	20	ANNUAL MAINTENANCE	24-Feb-2021
3	TEESTA HPS	SIKKIM	NHPC	1	170	ANNUAL MAINTENANCE	20-Feb-2021
4	BALIMELA HPS	ODISHA	OHPC	1	60	R & M WORK	05-Aug-2016
5	BALIMELA HPS	ODISHA	OHPC	2	60	R & M WORK	20-Nov-2017
6	BURLA HPS/HIRAKUD I	ODISHA	OHPC	5	37.5	R & M WORK	25-Oct-2016
7	BURLA HPS/HIRAKUD I	ODISHA	OHPC	6	37.5	R & M WORK	16-Oct-2015
8	BURLA HPS/HIRAKUD I	ODISHA	OHPC	7	37.5	ANNUAL MAINTENANCE	06-Dec-2019
9	CHIPLIMA HPS / HIRAKUD II	ODISHA	OHPC	2	24	ANNUAL MAINTAINANCE	05-Feb-2021
10	RENGALI HPS	ODISHA	OHPC	5	50	ANNUAL MAINTENANCE WORK	16-Dec-2020
11	BALIMELA HPS	ODISHA	OHPC	4	60	OIL LEVEL DROP IN GENERATOR THRUST BEARING OIL BATH	31-Dec-2020
12	BALIMELA HPS	ODISHA	OHPC	5	60	STATOR EARTH FAULT	13-Dec-2020

It is seen that about 426.5 MW hydro capacities in Odisha is under forced outage / planned outage and therefore not available for providing the much needed peaking support during evening peak. SLDC / OHPC may please indicate restoration plan of the units.

d) 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
3	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 arrngement 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/220KV 315 MVA ICT 3 AT MALDA	PGCIL	04-01-2021	UPGRADATION OF 315MVA ICT# 3 AT MALDA BY 500MVA ICT UNDER ERSS – XVII-B.
14	400KV-ALIPURDUAR (PG)-JIGMELLING-1	PGCIL/ Bhutan	01-03-2021	Overvoltage at Bhutan end.
15	400KV-BINAGURI-TALA-4	PGCIL/ Bhutan	03-02-2021	VOLTAGE REGULATION; BINAGURI:412/410 KV. Later shutdown

				availed by Bhutan for AMP works at 11:15 Hrs on 08.02.2021
16	220KV-CHUKHA-BIRPARA-2	PGCIL/ Bhutan	01-03-2021	RoW clearing of few tower locations and Insulator replacement work UPTO 13/3/21 BY BHUTAN
17	800KV HVDC ALIPURDUAR-AGRA-POLE-IV	PGCIL	15-02-2021	BLOCKED DUE TO POWER FLOW DIRECTION REVERSAL (NR-NER)
18	800KV HVDC ALIPURDUAR-AGRA-POLE-III	PGCIL	15-02-2021	BLOCKED DUE TO POWER FLOW DIRECTION REVERSAL (NR-NER)
19	400KV-MAITHON-MAITHON RB-2	PGCIL	17-02-2021	FOR RE-CONDUCTORING WORK up to 02/03/2021 16:00 Hrs
20	400KV/220KV 315 MVA ICT 2 AT RANGPO	PGCIL	20-02-2021	SD For SF6 gas leakage rectification work in ICT-2 GIS Module up to 16/03/2021 16:00 Hrs
21	400KV/220KV 315 MVA ICT 2 AT Meeramandali	OPTCL	21-02-2021	Fire hazard
22	400KV-BINAGURI-TALA-1	PGCIL/ Bhutan	27-02-2021	Voltage Regulation

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.

Members may update.

Deliberation in the meeting

NHPC informed that Unit#1 of Teesta-V had been synchronized on 13th March' 21 and Unit#3 was under outage from 15th March'21 for annual maintenance work.

SLDC Odisha updated following:

Unit #5 of TTPS: synchronized on 08.03.21

Unit#4 of OPGC: synchronized on 08.03.21

Unit #2 of sterilite: synchronized on 24.02.2021.

Unit#1 of Burla HPS, OHPC: synchronized on 24.02.2021.

ITEM NO. D.3: Commissioning of new units and transmission elements in Eastern Grid in the month of February-2021.

The details of new units/transmission elements commissioned in the month of February -2021 based on the inputs received from beneficiaries:

SL No	Element Name	Owner	Charging Date	Charging Time	Remarks

1	400 KV Medinipur-Chanditala TL-1 (96.109 KM, Twin Moose) along with associated bays (Main Bay-409 & Tie Bay-408) at Medinipur SS.	PMJTL	5-Feb-21	14:49	LILO of 400kV Kharagpur-Chanditala-DC at Medinipur (PMJTL) SS. Only LILO portion is onwed by PMJTL. Rest of the portion is owned by WBSETCL
2	400 KV Medinipur-Chanditala TL-2 (96.109 KM, Twin Moose) along with associated bays (Main Bay-412 & Tie Bay-411) at Medinipur SS.	PMJTL	5-Feb-21	16:26	
3	400 KV Medinipur-Kharagpur TL-2 (115.15 Km, Twin Moose) along with associated 400 KV Bays (Main Bay-403 & Tie Bay-402) at Medinipur SS.	PMJTL	5-Feb-21	16:02	
4	400 KV Medinipur-Kharagpur TL-1 (115.15 Km, Twin Moose) along with associated 400 KV Bays (Main Bay-406 & Tie Bay-405) at Medinipur SS.	PMJTL	5-Feb-21	14:14	
5	400 kV Main Bus -1 (Type of Conductor-QUAD AAC Bull) at Medinipur SS.	PMJTL	6-Feb-21	14:52	
6	400 kV Main Bus – 2 (Type of Conductor-QUAD AAC Bull) at Medinipur SS.	PMJTL	6-Feb-21	14:23	
7	765/400/33 KV, 1500 MVA ICT-2 along with associated bays (Main Bay-712 at 765 KV & Main Bay-407 at 400 KV) at Medinipur SS.	PMJTL	6-Feb-21	18:17	
8	765/400/33 KV, 1500 MVA ICT-1 along with associated bays (Main Bay-709 at 765 KV & Main Bay-401 at 400 KV) at Medinipur SS.	PMJTL	6-Feb-21	13:23	
9	400 KV Bus Reactor-2 (125 MVAR) along with associated bays Main Bay-404) at Medinipur SS	PMJTL	7-Feb-21	11:58	
10	400 KV Bus Reactor-1 (125 MVAR) along with associated bays Main Bay-410) at Medinipur SS.	PMJTL	7-Feb-21	12:26	
11	765 kV Main Bay (Bay No-707) of Jeerat-1 & Tie Bay (Bay No-708) at Medinipur SS.	PMJTL	7-Feb-21	18:12	
12	765 kV Main Bay (Bay No-710) of Jeerat-2& Tie Bay (Bay No-711) at Medinipur SS.	PMJTL	7-Feb-21	18:19	
13	765 kV Bus Reactor Bank -2 (3 X 110 MVAR) along with Tie Bay (Bay 704 &705) at Medinipur SS	PMJTL	7-Feb-21	15:43	
14	765 kV Ranchi-Medinipur Transmission line-2 along with Switchable line Reactor (3 X 80 MVAR) and associated bays at Medinipur SS (Bay no- 706 & 706R)	PMJTL	7-Feb-21	15:04	
15	220KV Main Bay OF 400KV/220KV 315 MVA ICT 2 at DSTPS(ANDAL)	DSTPS	15-Feb-21	18:07	
16	400KV/220KV 500 MVA ICT 1 AT Chandauti (along with associated bay 213)	PMTL	16-Feb-21	12:07	
17	220KV Bus Coupler Bay at Chandauti	PMTL	17-Feb-21	15:40	
18	220KV Main Bay of 400KV/220KV 500 MVA ICT 1 at Chandauti	PMTL	17-Feb-21	15:34	

19	400KV/220KV 500 MVA ICT 3 AT Chandauti (along with associated bay 218)	PMTL	18-Feb-21	14:33	
20	400KV/220KV 500 MVA ICT 2 AT Chandauti (along with associated bay 216)	PMTL	20-Feb-21	15:40	
21	220KV Main Bay of Tashiding-1 AT New Melli (Bay No 213)	SIKKIM	20-Feb-21	07:28	
22	220KV Main Bay OF Tashiding-2 AT New Melli(Bay No 214)	SIKKIM	20-Feb-21	07:30	
23	220KV Main Bay OF 400KV/220KV 500 MVA ICT 2 at Chandauti	PMTL	22-Feb-21	17:01	
24	400KV/220KV 315 MVA ICT 3 AT Rourkela	PGCIL	28-Feb-21	18:52	ICT 3 is first time charged in parallel with ICT 1

Members may update.

Deliberation in the meeting

Members noted.

ITEM NO. D.4: UFR operation during the month of February 2021.

Frequency profile for the month is as follows:

Month	Max (Date/Time)	Min (Date/Time)	% Less IEGC Band	% Within IEGC Band	% More IEGC Band
February, 2021	50.31 Hz, 11-02-2021 18:01 Hrs.	49.60 Hz , 25-02-2021 06:54 Hrs	7.13	76.26	16.62

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

Members may note.

Deliberation in the meeting

Members noted.

ITEM NO. D.5: Additional Agenda

D.5.1: Implementation of Automatic Demand Management Scheme (ADMS)

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 25.11.2016	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 M/s Chemtrols for implementation.	F <49.9 AND deviation > 12 % or 150 MW
4	Jharkhand	1. System Frequency < 49.9 Hz AND > deviation 12 % or 25 MW < 2. System Frequency > 49.9 Hz AND deviation 12 % or 50 < MW > 3. System Frequency 49.9 Hz AND deviation 12 % or 75 MW	In service from 21st August 2019.	Condition 1: Block I feeders will be selected for load shedding Condition 2: Block I & II feeders will be selected for load shedding Condition 3: Block I, II & III feeders will be selected for load shedding
5	Odisha	1. System Frequency < 49.9 Hz 2. Odisha over- > drawl 150 MW 3. DISCOM over- > drawl (40MW)	10 Months Sent for PSDF approval. It was informed that tender for the work has been floated.	Logic 2 and 3 is AND or OR, in case it is AND then ADMS may not operate 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 42nd TCC, TCC opined that uniform logic and settings are to be implemented for all the states. TCC advised to discuss the issue in next OCC Meeting to formulate uniform logic and setting of ADMS.

In 165th OCC, ERLDC gave a presentation on the uniform logic. The proposed logic for ADMS operation is given below:

If frequency is less than 49.9 Hz for 3 minutes
and
Overdrawl/Under injection > 150 MW or 12 %

In 166th OCC, OCC agreed to the ERLDC proposed logic.

OCC advised all the states to implement above logic in ADMS. It was also decided that the performance of the ADMS would be analysed in monthly OCC Meetings, if necessary the logic would be reviewed.

In 168th OCC meeting SLDC DVC informed that revised settings of ADMS had been successfully implemented and detailed report had been mailed to ERPC and ERLDC.

In 169th OCC Meeting, SLDC Sikkim informed that OPGW work will resume from 1st August 2020 and ADMS would be implemented after installation of OPGW links.

Members may update.

Deliberation in the meeting

SLDC Jharkhand informed that revised settings had been implemented in their system.

SLDC Odisha informed that work order for implementation of ADMS would be placed by 15th April'2021.

SLDC Bihar informed that the testing of ADMS with revised settings has been planned in this week.

D.5.2.: Procurement of new SEMs

As per decision of 42nd TCC/ERPC meeting and 41st CCM, the testing and calibration of old and highly-time drifted SEMs are to be carried out by Powergrid and accordingly the priority list of 314 SEMs is prepared by ERLDC and sharedin 42nd TCC meeting.

In 168th OCC meeting, Powergrid informed that the matter regarding testing & calibration and time drifting has been taken up with concerned vendors involved in testing and calibration. Powergrid also informed that the vendors are ready for doing the testing however they are not ready to correct time drifting as it is only possible through OEM i.e. L&T. The matter has also been taken up with OEM (M/s L&T), who have confirmed that the heavily time drifted meter shall require to be sent to factory for time correction. Powergrid informed in 168th OCC meeting that time correction of old meters is not possible. Powergrid further added that testing and calibration of old SEMs would cost around Rs 9000 / unit whereas cost of new SEM would be around Rs 12000/ unit.

In 168th OCC meeting, it was decided that since time correction is not possible it would be better to buy new SEMs instead of going for calibration & testing also advised ERLDC to place the requirement of SEMs in next OCC meeting.Accordingly, ERLDC proposed to procure 300 energy meters and the details of the same is already shared in 42nd TCC meeting,

In 169th OCC, Powergrid informed that they have already placed the order for 300 energy meters as a repeat order. ERLDC also informed that all the energy meters will be consumed in 2020-21 and there would be a requirement of additional 300 energy meters approximately to replace the old and time drifted SEMs. Powergrid added that still there is a scope to place the repeat order for 180 SEMs in the existing contract. OCC advised Powergrid to process for purchase of 180 SEMs under the existing contract and recommended that post facto approval of the same may be taken in the next CCM/ERPC meeting.

In 43rd CCM, Commercial Sub-Committee members agreed in principle to the proposal for procurement of additional 120 SEMs as per requirement.

Powergrid may update.

Deliberation in the meeting

Powergrid informed that they have already awarded contract for procurement of additional 300 SEMs as per terms and condition of existing contract in Jan'2021 and delivery for the same is expected by August'2021.

Annexure-B6.5

Weekly Update - DMTCL LILO restoration status

by Darbhanga-Motihari Transmission Company Limited

11th March 2021

Weekly update (05th March to 11th March 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**

  - All the tower erection required for permanent restoration of both the lines is completed. Motihari-Gorakhpur line final stringing is done for both circuits. In Barh-Motihari line ckt-1 stringing is completed and in ckt-2 only 2.47 km stringing is balance (as currently ckt-2 is charged in single conductor configuration) *(site pictures are attached in slide 4-5 for reference)*.

  - For finalising the stringing of Barh-Motihari ckt-2, DMTCL has requested for shutdown. Further, provisional approval for charging of the Motihari –Gorakhpur line is received from CEA

  - As per the MHA notification dated 26.02.2021, the guidelines issued by MHA for surveillance, containment and caution in relation to Covid-19 in January-21 is going to be in force upto 31.03.2021

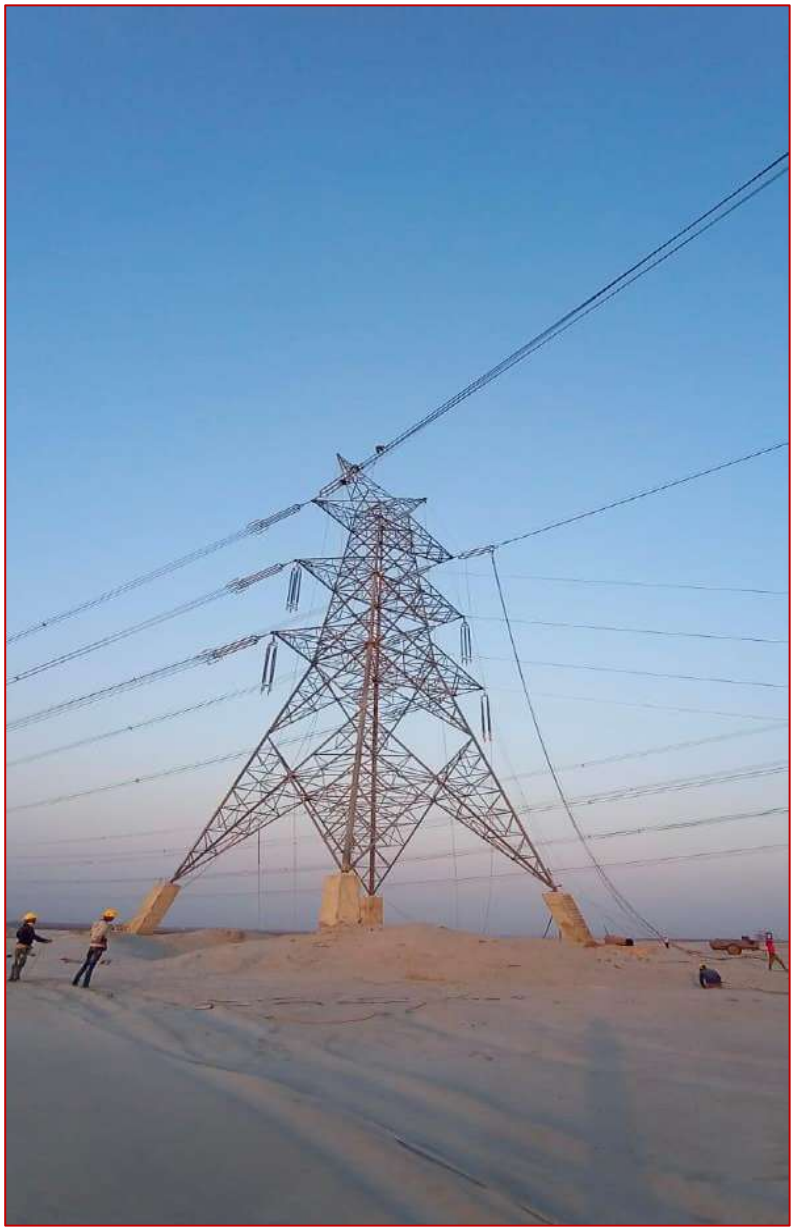
  - All efforts are being made to expedite the work progress and to complete the balance restoration/ strengthening work as soon as possible

Current status of restoration work

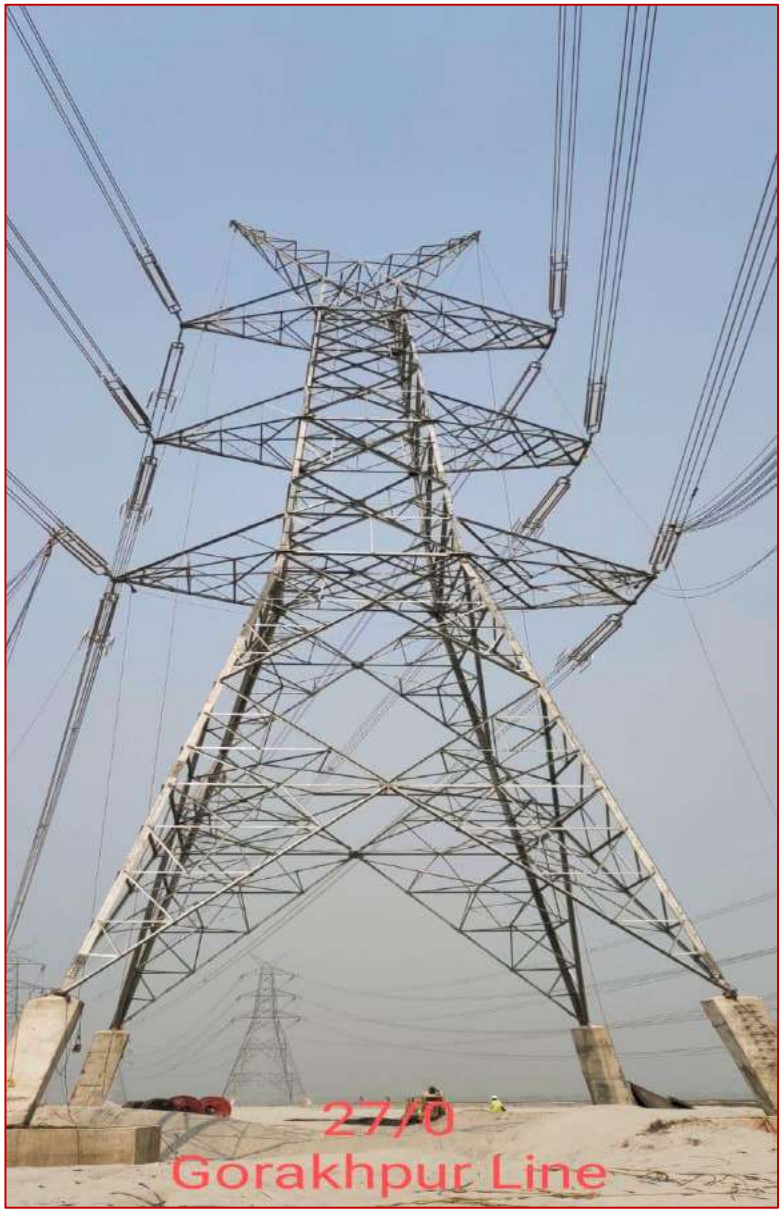
Tower No.	Current Status	Remarks
Barh-Motihari Line		
25/1 (G)	Completed	…..
25/2 (G)	Completed	…..
25/3 (G)	Completed	…..
26/0 (G)	Completed	…..
26/3 (A)	Completed	…..
26/4 (A)	Completed	…..
Motihari-Gorakhpur Line		
26/1 (G)	Completed	----
26/2 (G)	Completed	…..
26/3 (G)	Completed	…..
27/0 (R)	Completed	…..
27/3 (A)	Completed	----
27/4 (A)	Completed	----

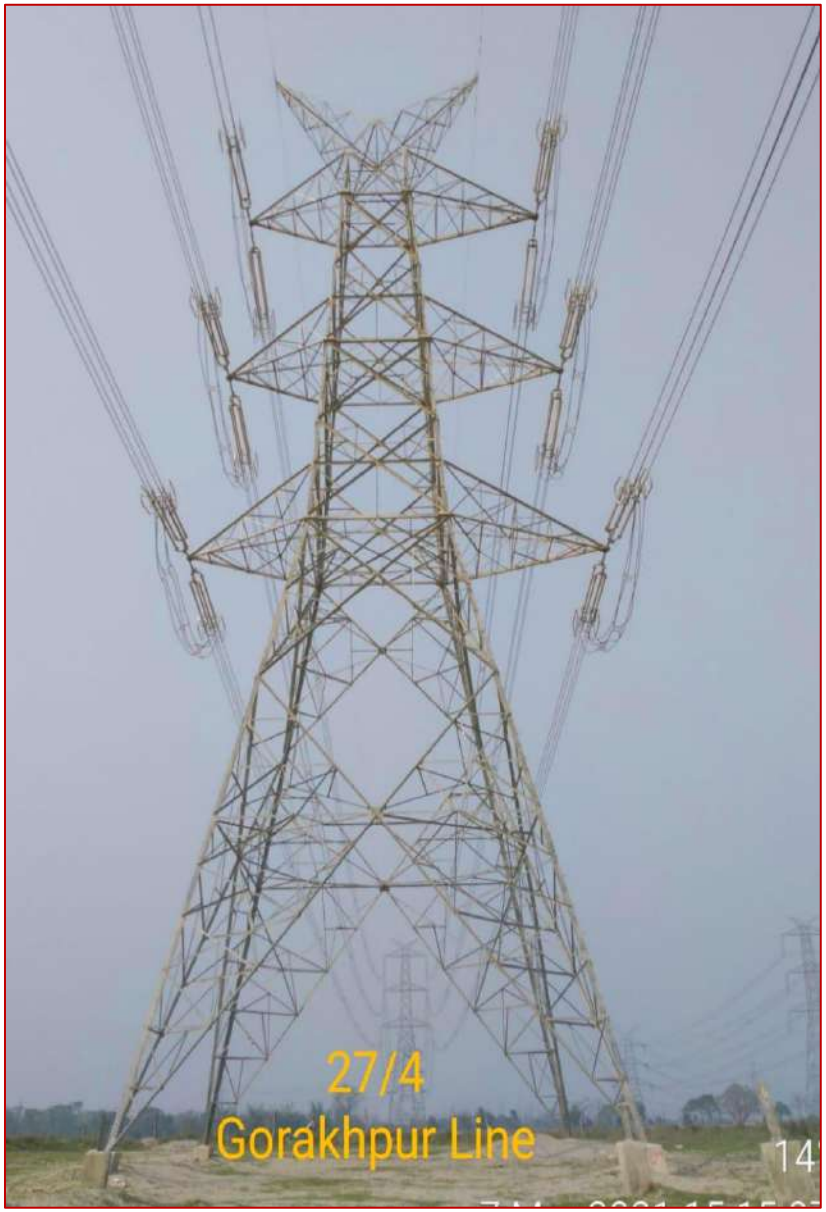
Note: Individual tower wise activities are completed. Final quad stringing activity is in progress for the restoration of both lines

Pictures of site work – Stringing activity in progress



Pictures of site work – Stringing completion Motihari-Gorakhpur Line





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DMTCL is a subsidiary of Sekura Energy Ltd.

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

Standard Operating Procedure(SoP) to be referred for restoration of 765 kV Angul – Srikakulam D/c in case high standing phase angle is observed

The existing Special Protection Scheme (SPS) on NEW-SR corridor (namely for 765kV Solapur-Raichur2x S/c lines & HVDC Talcher-Kolar Bipole) were implemented long back as per the system requirements. Over the years, the connectivity of Southern region with NEW grid has strengthened through many high capacity inter-regional lines.In view of strengthening of transmission system as stated above, both the aforesaid SPS schemes were reviewed in consultation with RPCs. NLDC communication dated 21st Oct 2020 for review of HVDC Talcher – Kolar Bipole & NLDC communication dated 09th Dec 2020 for review of SPS of 765kV Solapur-Raichur-2 X S/c lines was shared with all concerned RPCs. The copies of both the communication are enclosed as Annexure I. The proposal for review of SPS were discussed, deliberated and agreed in ERPC/SRPC. After deliberation at ERPC(174th and 175th OCC) /SRPC (38th TCC), it was agreed that Standard Operating Procedure need to be developed to tackle the issue of high Standing Phase Angle (SPA) between Angul and Srikakulam station in case of outage of 765 kV Angul-Srikakulam-D/C. The extracts of the NLDC communication dated 09th Dec 2020 is given below:

"The 765 kV Angul-Srikakulam-D/c is carrying 1583 MW each circuit in the limiting case with 13900 MW of import in SR. The line length is 276 kM and under high loading the angular separation between two buses may reach more than 25 degrees. Under N-1 scenario of tripping of one circuit of 765 kV Angul-Srikakulam-D/c, it is observed that loading on other circuit reaches 2606 MW. In case the double circuit line trips (a highly probable contingency since line crosses through the terrain near to Eastern Coast of India bordering Bay of Bengal which is prone to tropical cyclones with high speeds), the Standing Phase Angle (SPA) between Angul and Srikakulam station would become high. The high SPA would cause the delay in restoration and many a times would make it impossible for the smooth synchronisation of line. Therefore an Standard Operating Procedure need to be developed to tackle the issue and to minimise the possible delays in restoration."

The SoP in this regard is proposed for tackling this issue which may be implemented as per existing real time conditions in the system.

SoP Proposed: The standing phase angle between 765 kV Angul station (Eastern Region) and 765/400 kV Srikakulam station (Southern Region) has been observed to be very high in case of 765 kV Angul – Srikakulam D/C outage during high import by Southern Region. In order to reduce this angular separation and facilitate synchronization of lines, following actions need to be followed in real-time to restore 765 kV Angul – Srikakulam D/C after outage: -

1. HVDC towards southern region shall be maximized to the extent possible.

    a. HVDC Gazuwaka has the highest sensitivity (-0.87 degrees per 100 MW) on the angle between Angul and Srikakulam and power order of HVDC may be increased to 800 MW keeping in view the constraints of associated line loadings and voltages in Eastern/Southern region.

    b. Overload capacity of HVDC Talcher – Kolar and HVDC Raigarh – Pugalur may be utilized.

2. Import of SR shall be reduced to bring the angle within safe limits through increase in generation, reduction in load in southern region or a combination of both. The generation reduction may also be carried out in Eastern region.

    a. Generation in southern region shall be increased based on the existing system conditions. The generators in the vicinity of Srikakulam station such as Simhadri Stage-I & II, HNPCL, KTPS etc have higher sensitivity on the angle difference.

    b. Similarly, generation in eastern region may be reduced based on the existing system conditions. The generators in the vicinity of Angul station such as GMR (IPP), JITPL etc. have higher sensitivity on the angle difference.

    c. Load reduction in Southern region may be carried out based on the existing system conditions.

    The sensitivities of change in HVDC power orders, Generation Reduction/Increase in Eastern/Southern region and load reduction in Southern region on angular difference between Angul and Srikakulam stations are given as Table-1.

3. Based on the sensitivities of various actions as mentioned in Sl. No. 1 and 2 above and real time conditions, the suitable actions may be taken in real time to reduce the Standing Phase Angle.

Table-1

765 kV Angul - Srikakulam D/C Outage - Angle Sensitivity

S. No.	Description	Angular Separation (Deg) (Angul - Srikakulam)	Relief in Angle (Deg)	Relief in Angle (Deg) per 100 MW change in Power Order/Generation/Load
1	Base Case	11.25	-	
2	Base Case + N-1 of 765 kV Angul - Srikakulam S/C	18.99	-	
3	Base Case + N-1-1 of 765 kV Angul - Srikakulam D/C	56.17	-	
	Relief from change in HVDC Power Order			
1	HVDC Talcher - Kolar Bipole (+500 MW)	53.75	-2.42	-0.48
2	HVDC Gazuwaka (+150 MW)	54.87	-1.30	-0.87
3	HVDC Raigarh - Pugalur (+100 MW)	55.66	-0.51	-0.51
4	HVDC Bhadrawati (-200 MW)	57.03	0.86	+0.43
	Relief from change in Generation (ER)			
1	GMR IPP (-100 MW Generation)	55.87	-0.30	-0.30
2	JITPL (-100 MW Generation)	55.88	-0.29	-0.29
3	OPGC (-200 MW Generation)	55.99	-0.18	-0.09
4	Talcher Stage -II (-500 MW Generation)	55.83	-0.34	-0.07
5	Indarvati (-200 MW Generation)	56.03	-0.14	-0.07
6	Balimela (-100 MW Generation)	56.1	-0.07	-0.07
7	Odisha Generation (-500 MW Generation in Odisha)	55.64	-0.53	-0.11
	Relief from change in Generation (SR)			
1	Simhadri Stg-II (+100 MW Generation)	55.36	-0.81	-0.81
2	HNPCL (+100 MW Generation)	55.37	-0.80	-0.80
3	KTPS (+200 MW Generation)	55.57	-0.60	-0.60
4	AP Generation (+500 MW Generation in AP)	52.97	-3.20	-0.64
5	SR Generation (+500 MW Generation in SR)	53.42	-2.75	-0.55
	Relief from change in Load			
1	Srikakulam Load (-100 MW Load in Srikakulam Area)	55.23	-0.94	-0.94
2	Viz-Nagar Load (-100 MW Load in Vizianagaram Area)	55.26	-0.91	-0.91
3	Vishakhapatnam Load (-200 MW Load in Vizag Area)	54.47	-1.70	-0.85
4	AP Load (-500 MW Load in AP)	52.71	-3.46	-0.69
5	SR Load (-1000 MW Load in SR)	50.33	-5.84	-0.58

Assumptions: -

a) SR Limiting Case (13900 MW) considered for study purpose.

b) HVDC Power Orders in Limiting case: -

Talcher - Kolar: 2000 MW

Raigarh - Pugalur: 1500 MW

Bhadrawati: 1000 MW

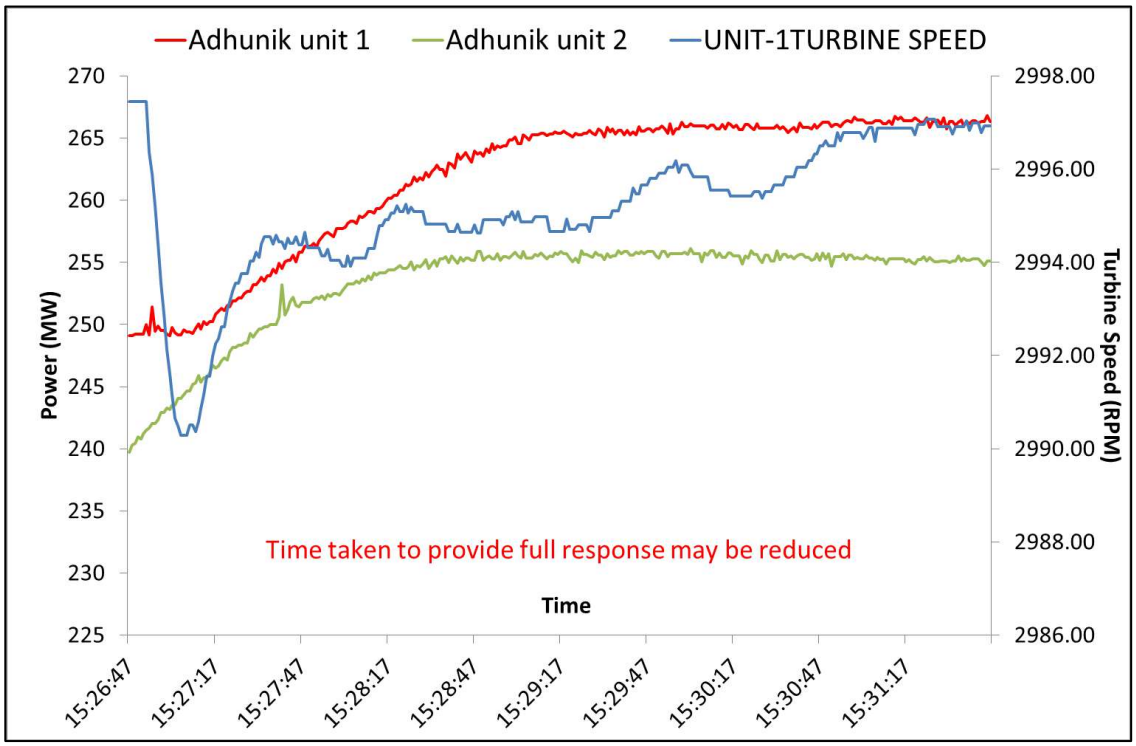
Gazuwaka: 650 MW

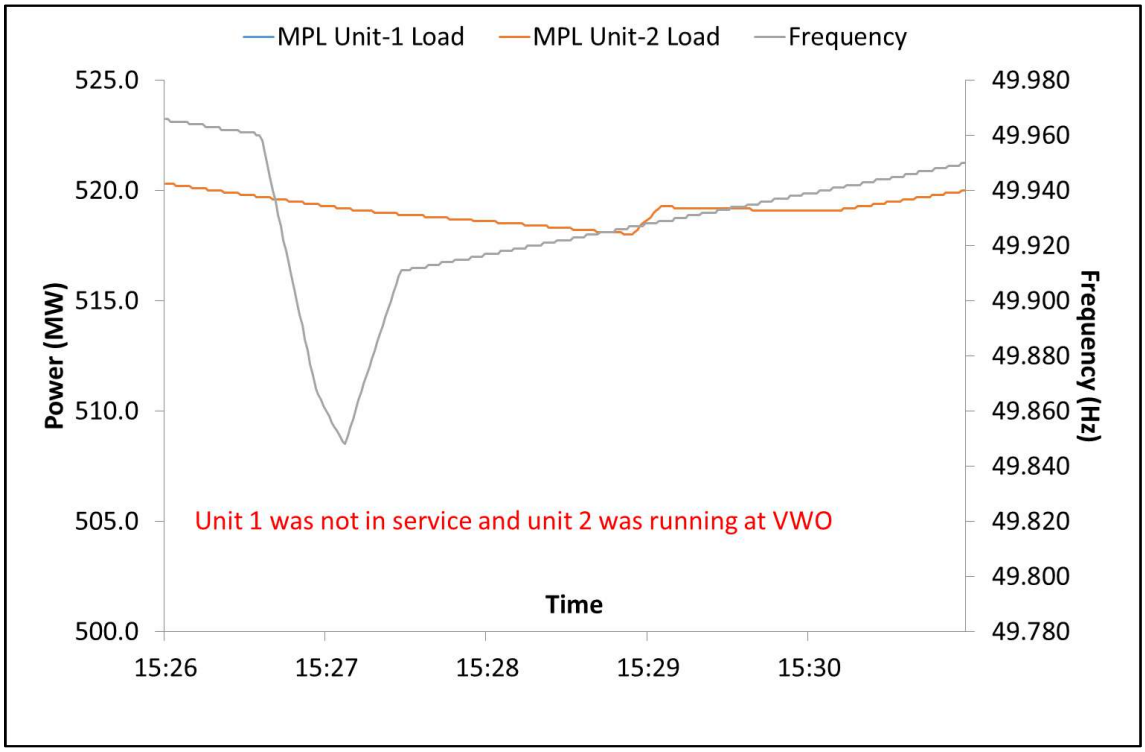
Annexure-C3

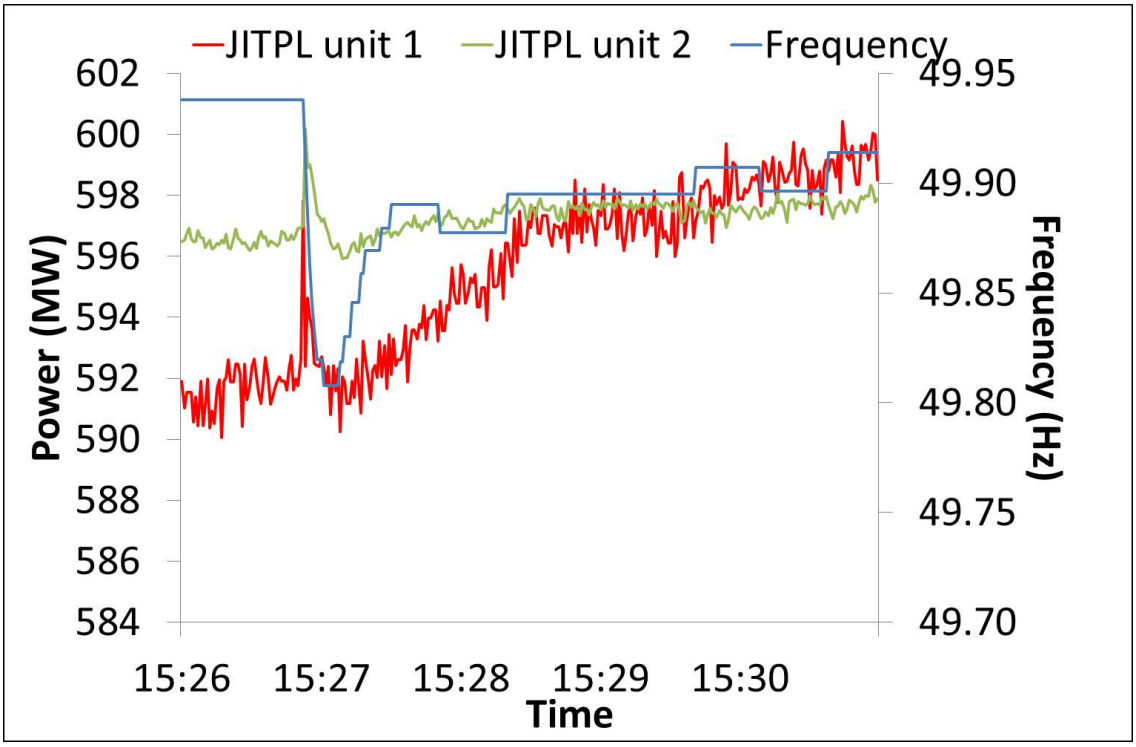
Date of PFR testing scheduled /completed for generating stations in ER

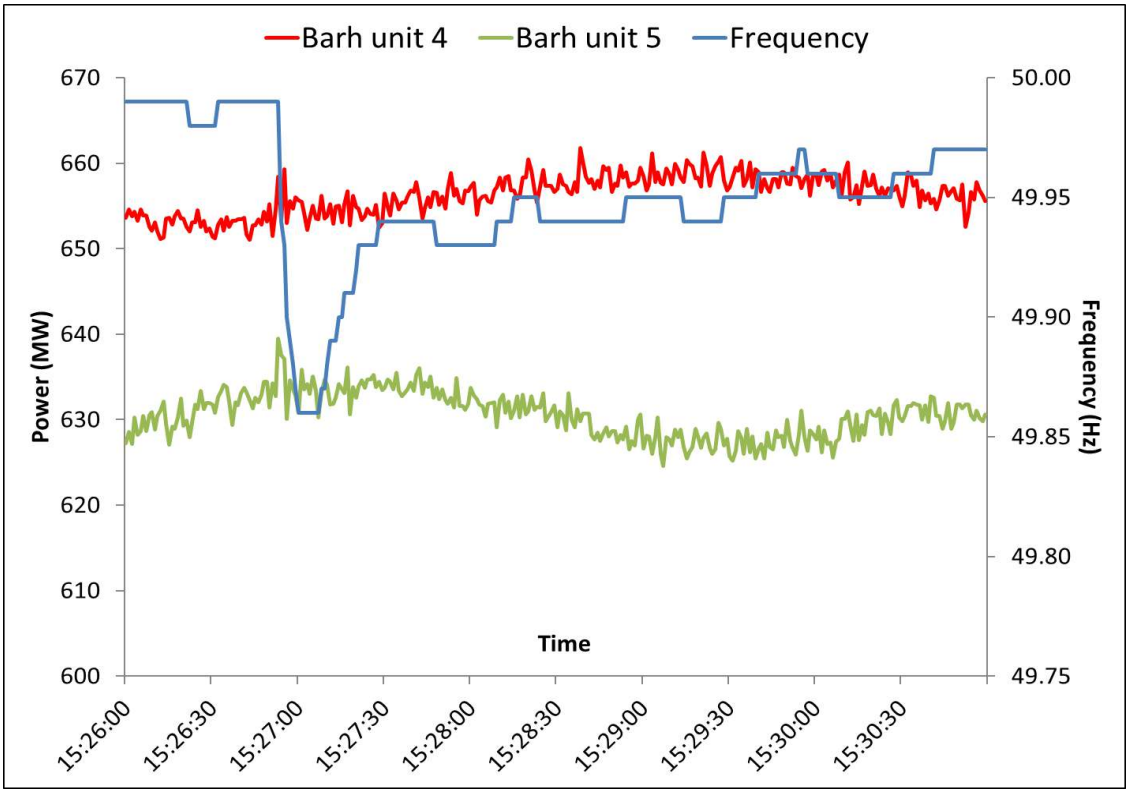
Sr. No	Station	Generating Unit	Test schedule	Remarks
1	TALCHER STAGE 2	3	Unit 3 - 5: 23-11-2020 to 28-11-2020	Testing for unit 6 yet to be conducted
2		4		
3		5		
4		6		
5	Farakka	2	01-02-2021 to 10-01-2021	Testing completed
6		3		
7		4		
8		5		
9		6		
10	Kahalgaon	1	23-02-2021 to 02-03-2021	Scheduled
11		5		
12		6		
13		7		
14	Barh	4	18-02-2021 to 21-02-2021	Scheduled
15		5		
16	Teesta V	1	07-01-2021 - 08-01-2021	Testing completed
17	Teesta III	1	30-01-2021 - 10-02-2021	Testing completed
18		2		
19		3		
20		4		
21		5		
22		6		
23	Dikchu	1	Unit#1: 6th & 7th April' 21 Unit#2: 8th & 9th April' 21	Scheduled
24		2		
25	MPL	1	11th – 20th March 2021	Scheduled
26		2		

Annexure 1: Variation of generation of regional generating units during frequency change (plotted based on data shared by generating station)

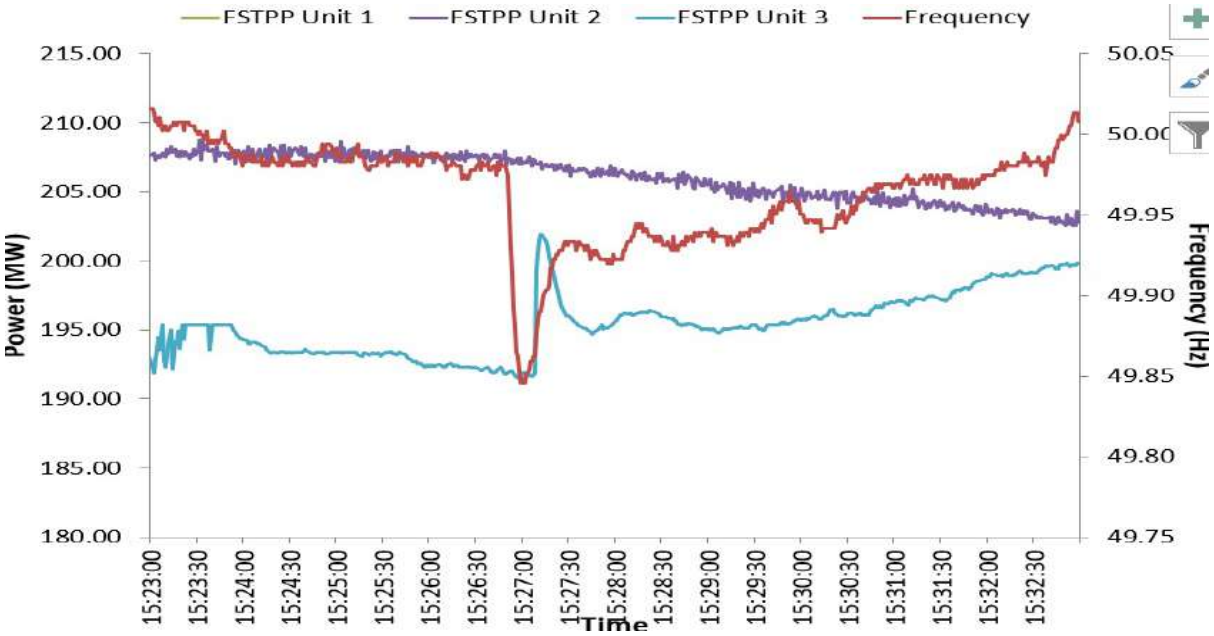


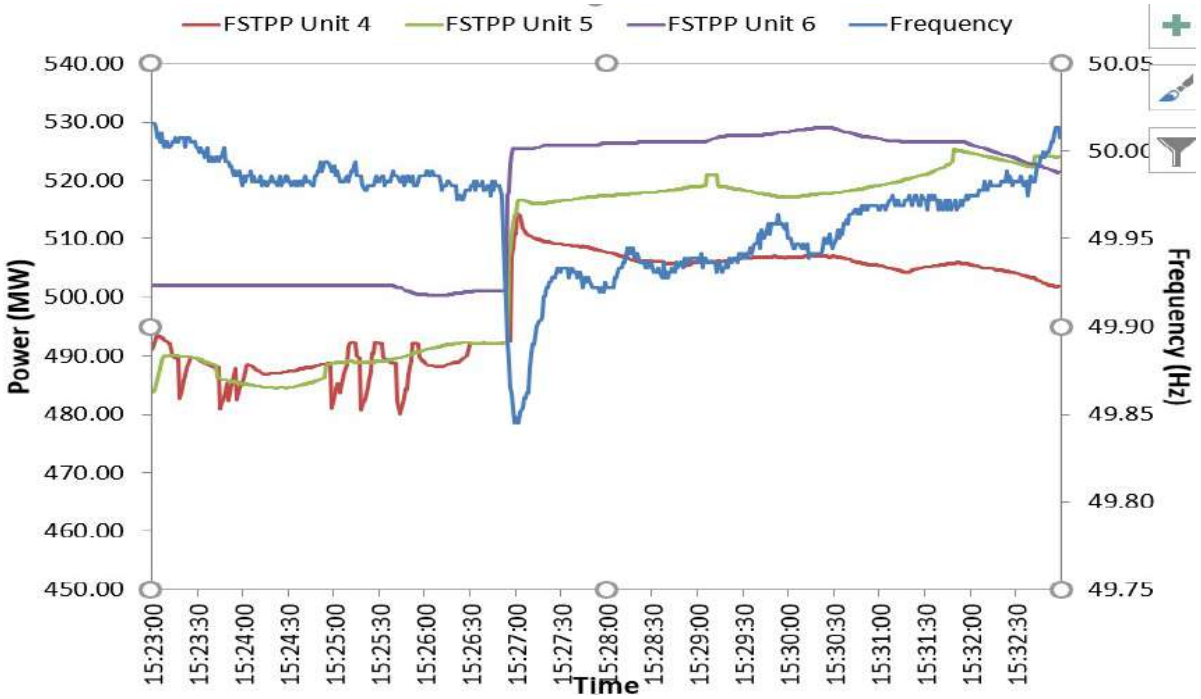



JITPL unit 1
JITPL unit 2
Frequency
602
600
598
596
594
592
590
588
586
584
Power (MW)
49.95
49.90
49.85
49.80
49.75
49.70
Frequency (Hz)
15:26
15:27
15:28
15:29
15:30
Time


Barh unit 4
Barh unit 5
Frequency
670
660
650
640
630
620
610
600
Power (MW)
50.00
49.95
49.90
49.85
49.80
49.75
Frequency (Hz)
Time
15:26:00
15:26:30
15:27:00
15:27:30
15:28:00
15:28:30
15:29:00
15:29:30
15:30:00
15:30:30

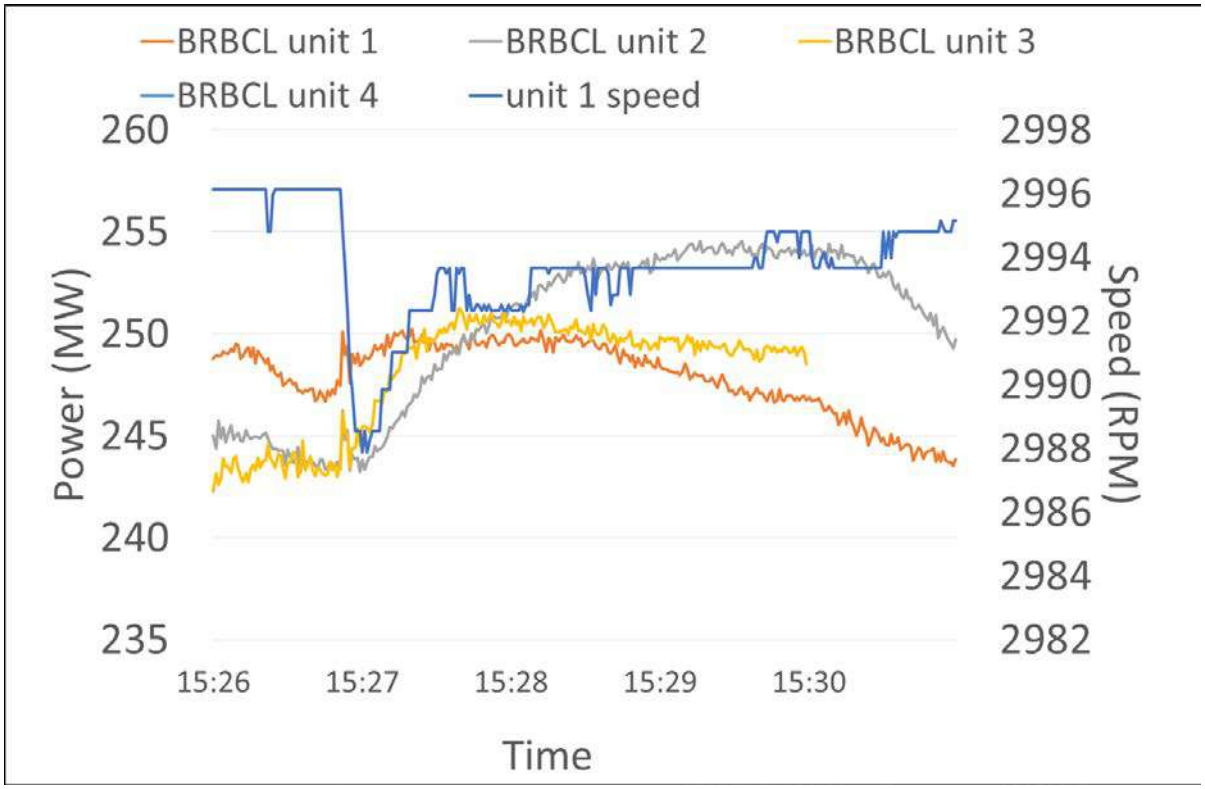
NTPC Farakka



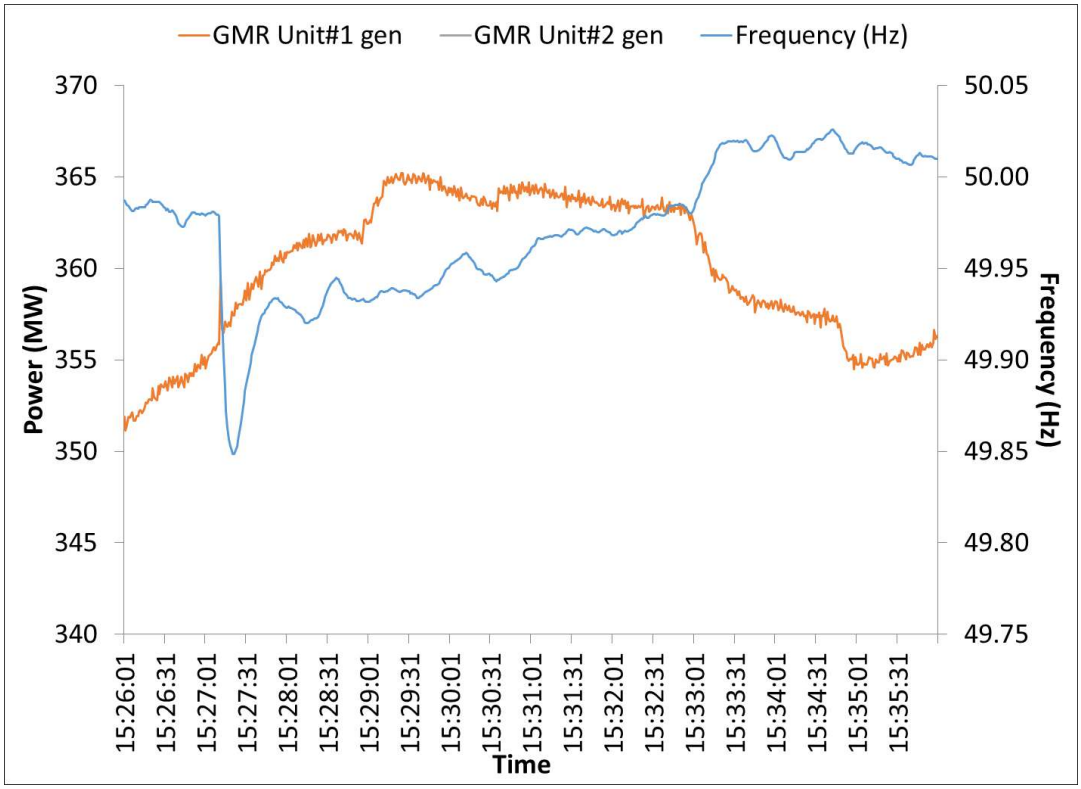


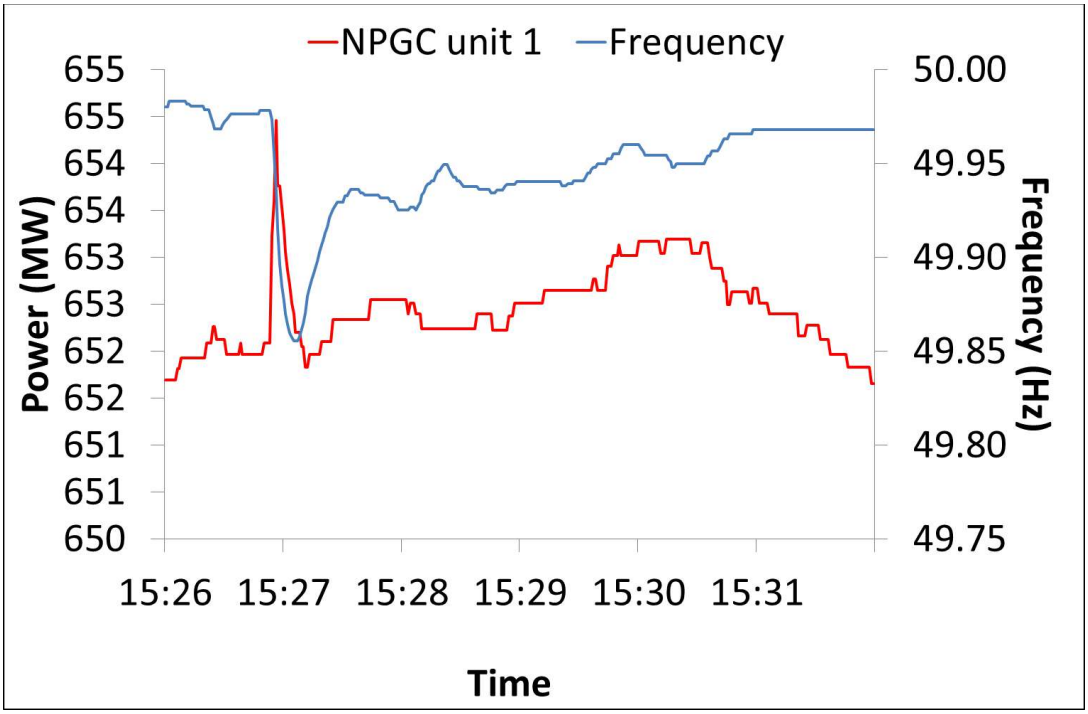
1. Satisfactory response has been observed for unit 4, 5 and 6 for February event and unit 6 for March event.
2. **Units are being run at installed capacity or more than installed capacity**. Running unit at more than installed capacity may be avoided.
3. 200 MW unit did not sustain for more than 30 seconds. Unit ramping down to original level at ramping rate more than 1% per min. This may be treated as violation of IEGC section 5.2 (g).

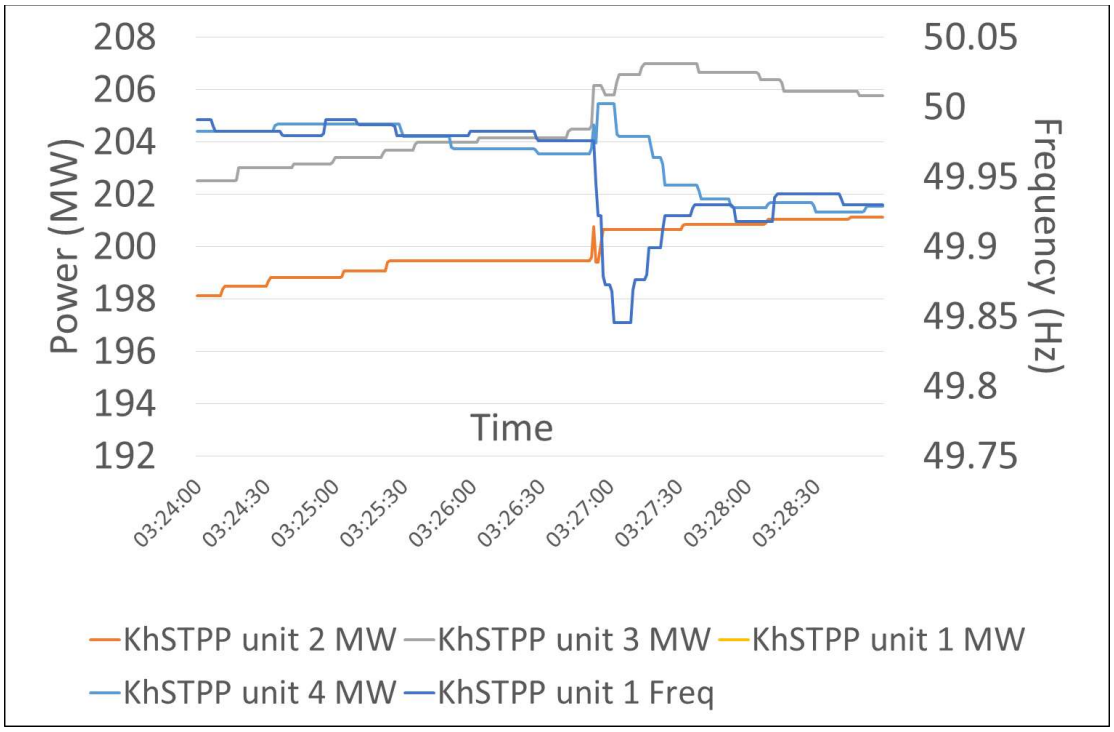
BRBCL

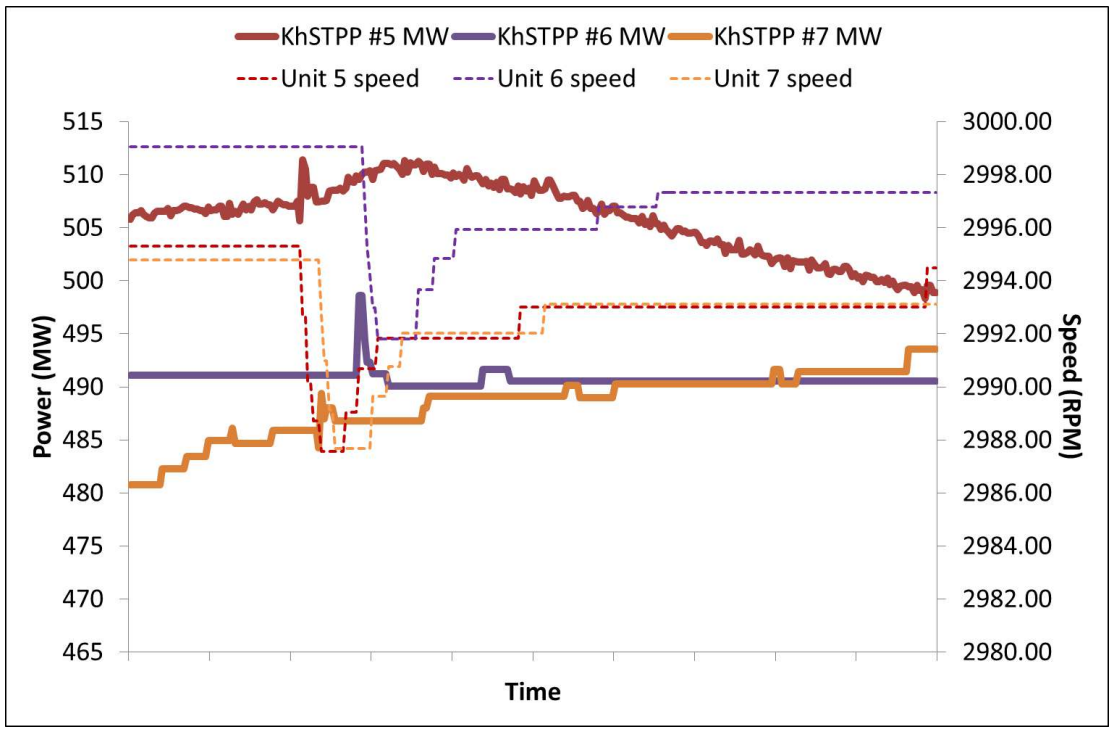


1. Response is non-satisfactory for unit 1 and unit 3
2. Governor may be tuned to reduce the time taken to provide full response of unit 2

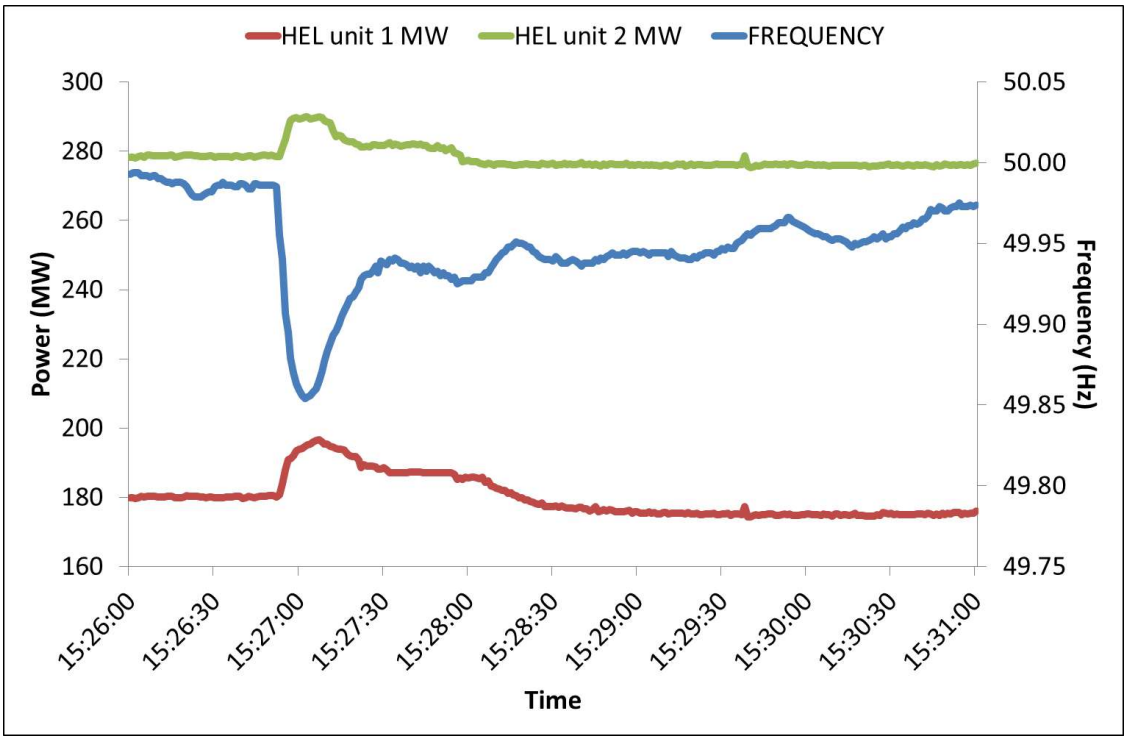

GMR Unit#1 gen
GMR Unit#2 gen
Frequency (Hz)
370
365
360
355
350
345
340
Power (MW)
50.05
50.00
49.95
49.90
49.85
49.80
49.75
Frequency (Hz)
15:26:01
15:26:31
15:27:01
15:27:31
15:28:01
15:28:31
15:29:01
15:29:31
15:30:01
15:30:31
15:31:01
15:31:31
15:32:01
15:32:31
15:33:01
15:33:31
15:34:01
15:34:31
15:35:01
15:35:31
Time

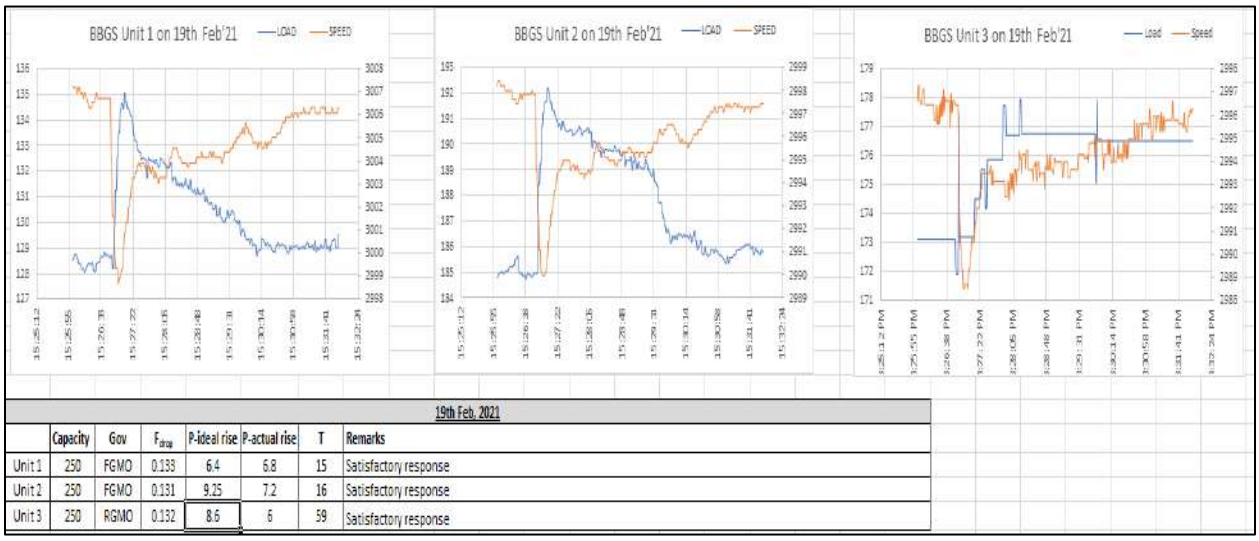

NPGC unit 1
Frequency
655
655
654
654
653
653
652
652
651
651
650
Power (MW)
50.00
49.95
49.90
49.85
49.80
49.75
Frequency (Hz)
15:26
15:27
15:28
15:29
15:30
15:31
Time


208
206
204
202
200
198
196
194
192
Power (MW)
50.05
50
49.95
49.9
49.85
49.8
49.75
Frequency (Hz)
Time
03:24:00
03:24:30
03:25:00
03:25:30
03:26:00
03:26:30
03:27:00
03:27:30
03:28:00
03:28:30
KhSTPP unit 2 MW
KhSTPP unit 3 MW
KhSTPP unit 1 MW
KhSTPP unit 4 MW
KhSTPP unit 1 Freq


KhSTPP #5 MW
KhSTPP #6 MW
KhSTPP #7 MW
Unit 5 speed
Unit 6 speed
Unit 7 speed
515
510
505
500
495
490
485
480
475
470
465
Power (MW)
3000.00
2998.00
2996.00
2994.00
2992.00
2990.00
2988.00
2986.00
2984.00
2982.00
2980.00
Speed (RPM)
Time

Annexure 2: Variation of generation of state generating stations during frequency change (plotted based on data shared by generating station)





19th Feb, 2021

	Capacity	Gov	F_{drop}	P-ideal rise	P-actual rise	T	Remarks
Unit 1	250	FGMO	0.133	6.4	6.8	15	Satisfactory response
Unit 2	250	FGMO	0.131	9.25	7.2	16	Satisfactory response
Unit 3	250	RGMO	0.132	8.6	6	59	Satisfactory response

Annexure 3: FRC shared by DVC SLDC

	Frequency Response Characteristic Calculation in Eastern		
	)0 MW generation loss occurred at Bhadla S/S. It led to the frequency drop from49.985 Hz to 49.8		
S No	Paricular s	Dimension	DVC Interchange
1	Actual Net Interchange before the Event (15:26:50)	MW	-2346
2	Actual Net Interchange before the Event (15:27:10)	MW	-2420
3	Change in Net Interchange (2 - 1)	MW	-74.0
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	0.0
5	Control Area Response (3 - 4)	MW	-74.0
6	Frequency before the Event	HZ	49.99
7	Frequency after the Event	HZ	49.94
8a	Change in Frequency (7 - 6)	HZ	-0.051
8	Effective change in Frequency considering RGMO *	HZ	-0.051
9	Frequency Response Characteristic (5 / 8)	MW/HZ	1440
10	Net System Demand met before the Event	MW	2630
11	Internal Generation before the Event (10 - 1)	MW	4976
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	105.2
13	Ideal generator response assuming 5% droop.....40% per Hz (40% of Row 11)	MW/Hz	1990.3
14	Composite ideal response (12 + 13)	MW/Hz	2095.5
15	Percentage of ideal response {(9/14)x100}	%	68.7%

Annexure 4: FRC shared by GRIDCO SLDC

Frequency Response Characteristic Calculation in GRIDCO control area												
S No	Paricular	Dimension	Balimela	Burla	Rengali	Indravati	Upper Kolab	IBTPS	GKEL #3	VAL IPP #2	IBTPS Stage 2	GRIDCO Interchange
1	Actual Net Interchange before the Event (15:26:50)	MW	-37	-30	0	-110	-23	-261	0	-406	-301	703
2	Actual Net Interchange after the Event (15:27:24)	MW	-40	-30	0	-110	-23	-261	0	-406	-301	711
3	Change in Net Interchange (2 - 1)	MW	-3.3	0.1	0.0	0.0	0.3	-0.2	0.0	0.0	0.3	7.9
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Control Area Response (3 - 4)	MW	-3.3	0.1	0.0	0.0	0.3	-0.2	0.0	0.0	0.3	7.9
6	Frequency before the Event	HZ	49.99	49.99	49.99	49.99	49.99	49.99	49.99	49.99	49.99	49.99
7	Frequency after the Event	HZ	49.93	49.93	49.93	49.93	49.93	49.93	49.93	49.93	49.93	49.93
8a	Change in Frequency (7 - 6)	HZ	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.054
8	Effective change in Frequency considering RGMO *	HZ	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.054
9	Frequency Response Characteristic (5 / 8)	MW/HZ	60	-1	0	0	-5	3	0	0	-6	-147
10	Net System Demand met before the Event	MW	0	0	0	0	0	0	0	0	0	2830
11	Internal Generation before the Event (10 - 1)	MW	37	30	0	110	23	261	0	406	301	2127
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	113.2
13	Ideal generator response assuming 5% droop.....40% per Hz (40% of Row 11)	MW/Hz	14.6	12.0	0.0	44.2	9.3	104.4	0.0	162.4	120.4	850.9
14	Composite ideal response (12 + 13)	MW/Hz	14.6	12.0	0.0	44.2	9.3	104.4	0.0	162.4	120.4	964.1
15	Percentage of ideal response {(9/14)x100}	%	411.9%	-10.8%	0.0%	0.0%	-55.6%	3.2%	0.0%	0.0%	-4.8%	-15.2%

Annexure-C5

Power Plant	Unit No	PSS tuned (Yes/No)	PSS in Service (Yes/No)	Last PSS Tuning Date	Whether Done in Last 3 Years	Whether Next to be planned	Planned Next PSS Tuning
West Bengal							
Kolaghat-WBPDCL	1	No	Yes	Long Back	No	Yes	Under retirement
Kolaghat-WBPDCL	2	No	Yes	Long Back	No	Yes	Under retirement
Kolaghat-WBPDCL	3	No	Yes	Long Back	No	Yes	When Unit will be on Bar
Sagardighi-WBPDCL	2	No	No	Long Back	No	Yes	When Unit will be on Bar
Bakreshwar-WBPDCL	2	Yes	Yes	2019	Yes	Yes	Retuning to be done as from plot response is not good
Bakreshwar-WBPDCL	3	Yes	Yes	2019	Yes	Yes	Retuning to be done as from plot response is not good
Bakreshwar-WBPDCL	4	Yes	Yes	2019	Yes	Yes	Retuning to be done as from plot response is not good
Bakreshwar-WBPDCL	5	Yes	Yes	2019	Yes	Yes	Retuning to be done as from plot response is not good
DPL	7	No	No	N.A	No	Yes	Planned in March 2021
DPL	8	No	Yes	No	No Detail	Yes	To be updated by WBPDCL/DPL
PPSP	1	No	Yes	2009	No	Yes	To be updated by WBSEDCL
PPSP	2	No	Yes	2009	No	Yes	To be updated by WBSEDCL
PPSP	3	No	Yes	2009	No	Yes	To be updated by WBSEDCL
PPSP	4	No	Yes	2009	No	Yes	To be updated by WBSEDCL
TLDP III	4 x 33			No Detail	No Detail	Yes	To be updated by WBSEDCL
TLDP IV	4 X 44			No Detail	No Detail	Yes	To be updated by WBSEDCL
CESC							
Budge Budge-CESC	1	Yes	Yes	2015	No	Yes	2021-22
Budge Budge-CESC	2	Yes	Yes	2015	No	Yes	2021-22
DVC							
Bokaro B 210 MW	3				No Detail	Yes	Unit Is out of Service
Mejia-DVC	4	Yes	Yes	2009	No	Yes	Jun-21
Raghunathpur-DVC	1	No	No		No Detail	Yes	Will be done after AOH
Raghunathpur-DVC	2	No	No		No Detail	Yes	Jun-21
Koderma-DVC	1	Yes	Yes	2013	No	Yes	Sep-21
Waria	4	Yes	Yes	2008	No	Yes	Unit Is out of Service

ISGS							
Kahalgaon NTPC	1	Yes	Yes	2017	Yes	Yes	Apr-21
Kahalgaon NTPC	2	Yes	Yes	2018	Yes	Yes	April 2021 (During AOH)
Kahalgaon NTPC	3	Yes	Yes	2016	Yes	Yes	Jul-21
Kahalgaon NTPC	4	Yes	Yes	2015	No	Yes	Mar-21
Kahalgaon NTPC	6	Yes	Yes	2009	No	Yes	Mar-21
Talcher Stage 2	3	Yes	Yes	2016	Yes	Yes	July 2021 (As per SRPC decision)
Talcher Stage 2	4	Yes	Yes	No Details	No Details	Yes	July 2021 (As per SRPC decision)
Talcher Stage 2	5	Yes	Yes	No Details	No Details	Yes	July 2021 (As per SRPC decision)
Talcher Stage 2	6	Yes	Yes	2016	Yes	Yes	July 2021 (As per SRPC decision)
Barh NTPC	4			2015		Yes	In Next AOH
Barh NTPC	5			During Unit commissioning		Yes	June 2021 (AOH)
Teesta V	1	Yes	Yes	2008	No	Yes	Jun-21
Teesta V	2	Yes	Yes	2008	No	Yes	Jun-21
Teesta V	3	Yes	Yes	2008	No	Yes	Jun-21
BRBCL	1	No	Yes	Vendor to Do	No	Yes	Jun-21
BRBCL	2	Yes	Yes	2019	Yes	Yes	Jun-21
BRBCL	3	No	Yes	Vendor to Do	No	Yes	Jun-21
KBUNL	1	Yes	Yes	2014	No	Yes	2021-22
KBUNL	2	Yes	Yes	2014	No	Yes	2021-22
KBUNL	3	Yes	Yes	Not Available	No	Yes	2021-22
KBUNL	4	Yes	Yes	Not Available	No	Yes	2021-22
Rangit	3 x 20			Not Available	No	Yes	To be updated by NHPC
IPP							
Jorethang	1	Yes	Yes	2015	No	Yes	Apr-21
Jorethang	2	Yes	Yes	2015	No	Yes	Apr-21
ADHUNIK	1	Yes	YES	2013	No	Yes	Mar-21
ADHUNIK	2	Yes	YES	2013	No	Yes	Mar-21
JITPL	1	Yes	Yes	2016	Yes	Yes	Jul-21
JITPL	2	Yes	Yes	2016	Yes	Yes	Jul-21
GMR	1	Yes	Yes	2013	No	Yes	May-21
GMR	2	Yes	Yes	2013	No	Yes	May-21
GMR	3	Yes	Yes	2013	No	Yes	May-21
Orissa							

IB TPS	1	Yes	Yes	2011	No	Yes	Mar'2021
IB TPS	2	Yes	Yes	2012	No	Yes	Mar'2021
Upper Indravati	1	Yes	No	2015	No	Yes	To be updated by OHPC
Upper Indravati	2	Yes	No	2015	No	Yes	To be updated by OHPC
Upper Indravati	3	Yes	No	2000	No	Yes	To be updated by OHPC
Upper Indravati	4	Yes	No	2001	No	Yes	To be updated by OHPC
Balimela	1 (60 MW)			No detail		Yes	To be updated by OHPC
Balimela	2 (60 MW)			No detail		Yes	To be updated by OHPC
Balimela	3 (60 MW)	No	No	Not tuned	No	Yes	To be updated by OHPC
Balimela	4 (60 MW)	No	No	Not tuned	No	Yes	To be updated by OHPC
Balimela	5 (60 MW)	No	No	Not tuned	No	Yes	To be updated by OHPC
Balimela	6 (60 MW)	No	No	Not tuned	No	Yes	To be updated by OHPC
Balimela	7 (75 MW)	No	No	Not tuned	No	Yes	To be updated by OHPC
Balimela	8 (75 MW)	No	No	Not tuned	No	Yes	To be updated by OHPC
Upper Kolab	1	Yes	Yes	2007	No	Yes	To be updated by OHPC
Upper Kolab	2	Yes	Yes	2007	No	Yes	To be updated by OHPC
Upper Kolab	3	Yes	Yes	2007	No	Yes	To be updated by OHPC
Upper Kolab	4	Yes	Yes	2007	No	Yes	To be updated by OHPC
Rengali	1	Yes	Yes	Not tuned	No	Yes	To be updated by OHPC
Rengali	2	Yes	Yes	Not tuned	No	Yes	To be updated by OHPC
Rengali	3	Yes	Yes	Not tuned	No	Yes	To be updated by OHPC
Rengali	4	Yes	Yes	Not tuned	No	Yes	To be updated by OHPC
Rengali	5	No	Yes	Not tuned	No	Yes	To be updated by OHPC
Sterlite	4 X 600			No detail		Yes	To be updated by SLDC Orissa
Jharkhand							
Tenughat	1	Yes	Yes	2017	Yes	Yes	No report has been submitted. So tuning to be planned
Tenughat	2	Yes	Yes	2017	Yes	Yes	No report has been submitted. So tuning to be planned
Subarnrekha	2 X 65					Yes	To be updated
Bihar							
BTPS	6 (110)					Yes	To be updated by BSPGCL
BTPS	7 (110)					Yes	To be updated by BSPGCL
BTPS	8					Yes	To be updated by BSPGCL
BTPS	9					Yes	To be updated by BSPGCL

Bhutan							
Tala	1	No	Yes			Yes	To be updated by BPC
Tala	2	No	Yes			Yes	To be updated by BPC
Tala	3	No	Yes			Yes	To be updated by BPC
Tala	4	No	Yes			Yes	To be updated by BPC
Tala	5	No	Yes			Yes	To be updated by BPC
Tala	6	No	Yes			Yes	To be updated by BPC
Chukha	1	No	Yes	2005	No	Yes	To be updated by BPC
Chukha	2	No	Yes	2005	No	Yes	To be updated by BPC
Chukha	3	No	Yes	2005	No	Yes	To be updated by BPC
Chukha	4	No	Yes	2005	No	Yes	To be updated by BPC
Mangdechu	1	No	Yes			Yes	To be updated by BPC
Mangdechu	2	No	Yes			Yes	To be updated by BPC
Mangdechu	3	No	Yes			Yes	To be updated by BPC
Mangdechu	4	No	Yes			Yes	To be updated by BPC

Annexure-D1

SL.NO	P A R T I C U L A R S	PEAK DEMAND IN MW	ENERGY IN MU
1	**BIHAR**		
i)	NET MAX DEMAND	5600	3090
ii)	NET POWER AVAILABILITY- Own	500	235
iii)	Central Sector+Bi-Lateral	5200	2493
iv)	SURPLUS(+)/DEFICIT(-)	100	-362
2	**JHARKHAND**		
i)	NET MAXIMUM DEMAND	1520	790
ii)	NET POWER AVAILABILITY- Own Source	375	199
iii)	Central Sector+Bi-Lateral+IPP	1071	516
iv)	SURPLUS(+)/DEFICIT(-)	-74	-75
3	**DVC**		
i)	NET MAXIMUM DEMAND	3115	2050
ii)	NET POWER AVAILABILITY- Own Source	5600	3083
iii)	Central Sector+MPL	240	99
iv)	Bi- lateral export by DVC	2500	1566
v)	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	-63	-435
4	**ODISHA**		
i)	NET MAXIMUM DEMAND(OWN)	4400	2779
ii)	NET MAXIMUM DEMAND(In Case,600 MW CPP Drawal)	5000	2851
ii)	NET POWER AVAILABILITY- Own Source	4052	2321
iii)	Central Sector	1533	887
iv)	SURPLUS(+)/DEFICIT(-) (OWN)	1185	429
v)	SURPLUS(+)/DEFICIT(-) (In Case, 600 MW CPP Drawal)	585	357
5	**WEST BENGAL**		
5.1	**WBSEDCL**		
i)	NET MAXIMUM DEMAND	7000	4000
ii)	IPCL DEMAND	130	84
iii)	TOTAL WBSEDCL's Energy Requirement (incl.B'Desh+Sikkim+IPCL)	7135	4088
iv)	NET POWER AVAILABILITY- Own Source	4674	2811
v)	Contribution from DPL	450	328
vi)	Central Sector+Bi-lateral+IPP&CPP+TLDP	2632	1261
vii)	EXPORT (TO B'DESH & SIKKIM)	5	4
viii)	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	621	312
5.2	**CESC**		
i)	NET MAXIMUM DEMAND	2100	920
ii)	NET POWER AVAILABILITY- Own Source	830	523
iii)	FROM OTHER SOURCE (INCL. IPP/CPP-29-30 MU/M)	730	67
iv)	IMPORT FROM HEL	540	330
v)	TOTAL AVAILABILITY OF CESC	2100	920
vi)	SURPLUS(+)/DEFICIT(-)	0	0
6	**WEST BENGAL (WBSEDCL+DPL+CESC)**		
	(excluding DVC's supply to WBSEDCL's command area)		
i)	NET MAXIMUM DEMAND	9100	5004
ii)	NET POWER AVAILABILITY- Own Source	5504	3662
iii)	CS SHARE+BILATERAL+IPP/CPP+TLDP+HEL	3902	1658
iv)	SURPLUS(+)/DEFICIT(-) BEFORE WBSEDCL'S EXP.	306	316
v)	SURPLUS(+)/DEFICIT(-) AFTER WBSEDCL'S EXP.	300	312
7	**SIKKIM**		
i)	NET MAXIMUM DEMAND	107	51
ii)	NET POWER AVAILABILITY- Own Source	8	1
	- Central Sector	182	85
iii)	SURPLUS(+)/DEFICIT(-)	83	35
8	**EASTERN REGION**		
i)	**NET MAXIMUM DEMAND**	**23735**	**13764**
ii)	**NET MAXIMUM DEMAND (In Case, 600 MW CPP Drawal of Odisha)**	**24335**	**13836**
iii)	**BILATERAL EXPORT BY DVC**	**2500**	**1566**
iv)	**EXPORT BY WBSEDCL**	**5**	**4**
v)	**NET TOTAL POWER AVAILABILITY OF ER**	**28167**	**15238**
	(INCLUDING CS ALLOCATION +BILATERAL+IPP/CPP+HEL)		
vi)	**SURPLUS(+)/DEFICIT(-) OF ER**	**1927**	**-96**
vii)	**SURPLUS(+)/DEFICIT(-) OF ER (In Case, 600 MW CPP Drawal of Odisha)**	**1327**	**-168**
	AFTER EXPORT (v = iv - i -ii - iii)		