Agenda

for

156th OCC Meeting

Date: 25.05.2019
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

Eastern Regional Power Committee

Agenda for 156th OCC Meeting to be held on 25th April, 2019
at Kahalgaon STPS, NTPC

Item no. 1: Confirmation of minutes of 155th OCC meeting of ERPC held on 25.03.2019

The minutes of 155th OCC meeting were uploaded in ERPC website and circulated vide letter dated 03.04.2019 to all the constituents.

Members may confirm the minutes.

PART A : ER GRID PERFORMANCE

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

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

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

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

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

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

In view of the above it is desired that, generating units should set their GT tap in such a manner that they should be absorbing VAR when the voltage is exceeding 405 kV. In case of any requirement of increasing this voltage limit (Generators located in low voltage pocket area), then that can be studied on case to case basis.

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

During the Month of March 2019, one event has occurred for which Frequency Response Characteristic has been analyzed pan India. The detail report based on response observed at

ERLDC SCADA data and data received from SLDC & generating stations is attached as **Annexure-A1.6**.

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

1. Inadequate RGMO/FGMO response in the event in March 2019 and action taken after RGMO meeting.
2. Non-Submission of data even after correspondence has been sent to all generators and SLDC.
3. NTPC to intimate the tuning of RGMO done after overhauling of KhSTPP #1 (12-03-19) and Barh #4 (17-02-19) Units.

Details of FRC and all data sharing with ERLDC on Governor response may kindly be shared on following email id : erldcprotection@posoco.in , chandan@posoco.in, saibal@posoco.in, saurav.sahay@posoco.in, akbasak@posoco.in, rajprotim@posoco.in

Member may discuss.

PART B: ITEMS FOR DISCUSSION

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

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

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

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

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

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

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

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

Members may discuss.

Item No. B.2: Review of Rangpo SPS in view of Shutdown of 400 kV Rangpo-Binaguri D/C ---ERLDC

In 155th OCC, Powergrid informed that they had taken the shutdown of 400 kV Rangpo-Binaguri D/C line from 20th March 2019 and the reconductoring work is in progress. Powergrid added that, because of hilly terrain, they had been facing severe problems in executing the reconductoring work and requested for extension of both line (400 kV Rangpo-Binaguri D/C line) shutdown from 31st March 2019 to 30th April 2019.

OCC agreed for shutdown of 400 kV Rangpo-Binaguri D/C line till 25th April 2019. OCC decided to review the progress in next OCC Meeting scheduled to be held on 25th April 2019.

Powergrid informed that SPS logic had been implemented as per the decision of the meeting held on 8th March 2019. Powergrid proposed that actuation of SPS signal with increase in power flow in 400 kV Rangpo-Kishanganj be included in the SPS logic.

Teesta III agreed to include the breaker status and power flow of 400 kV Teesta-III-Kishanganj line in the SPS logic.

Powergrid informed that they were planning to test the SPS scheme on 26th March 2019.

OCC advised Teesta III, Testa V, Chuzachen, Dansenergy and Dikchu to implement the SPS logic at their end and send the details to Powergrid and ERLDC before testing of the SPS.

In line with the discussion in 155th OCC meeting, Rangpo SPS with new logic and setting has been tested on 26 March 2019. The new logic implemented at Rangpo Substation included two conditions which are as:

1. Tripping of 400 kV Rangpo-Kishangunj S/C when it pre-tripping flow is > 650 MW (SPS Test 1)

OR

2. flow of 400 kV Rangpo-Kishangunj S/C crosses 1700 MW (SPS Test 2)

The observation for SPS Test 1 where limit kept at >800 MW (present limit 650 MW) is given below:

Event Description	Time(Hrs)	Delay(s)	Remarks
Rangpo end SPS signal triggered	14:59:30.775	--	
SPS signal received at Teesta III end	14:59:30.829	0.054	
CB opening time at Teesta III end	14:59:30.903	0.128	
SPS signal received at Dikchu end	--	--	Wiring for extension of SPS signal was in process; SPS signal was received at PLCC panel only
SPS signal received at Jorethang end	14:59:31.593	0.818	Jorethang to share the reason for delay in receiving SPS signal.
SPS signal received at Tashiding end	14:59:31.572	0.797	Tashiding to share the reason for delay in receiving SPS signal.
SPS signal received at Chujachen end	14:59:30.989	0.214	
SPS signal received at Teesta V end	14:59:30.821	0.046	

The observation for SPS Test 2 is given below:

Event Description	Time(Hrs)	Delay(s)	Remarks
SPS signal triggered at Rangpo end	15:32:31.975	--	
SPS signal received at Teesta III end	15:32:32.028	0.053	
SPS signal received at Dikchu end	15:32:33.331	1.356	As per verbal information received, delay was due to problem in GPS time stamping in SCADA system. Dikchu to take remedial action.
SPS signal received at Jorethang end	15:32:32.550	0.575	Jorethang to share the reason for delay in receiving SPS signal.
SPS signal received at Tashiding end	15:32:32.612	0.637	Tashiding to share the reason for delay in receiving SPS signal.
SPS signal received at Chujachen end	15:32:32.188	0.213	
SPS signal received at Teesta V end	15:32:32.021	0.046	

In addition to above SPS signal, two units (including the one unit identified for SPS operation) will trip at Teesta III end if flow of 400 kV Teesta-III-Kishangunj exceeds 2000 Amps (1385 MW).

Member may discuss.

Item No. B.3: Flexibilisation of Thermal Power Plants-Units identified by WBPDCL

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

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

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

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

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

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

Members may discuss.

Item No. B.4: Revised Overhauling Schedule proposal of NTPC ER-I stations--NTPC

NTPC vide letter dated 17th April 2019 informed that in view of short shutdowns availed by Barh Unit-4 and Kahalgoan Unit-1 with kind consent of our beneficiaries, ERPC & ERLDC, deferment of Farakka Unit-5 overhauling, recently cropped up liability and reliability concerns, following planned maintenance is proposed for approval in OCC meeting:

Station	Unit	LGBR/OCC approved		Proposed Revised schedule		Scope	Remarks
		Start date End date	Dur. days	Start date End date	Dur. days		
FSTPS	1	01.09.19 to 25.09.19	25	17.02.20 to 22.03.20	35	Boiler (acid cleaning) +DDCMIS R&M+ RLA of critical piping	Shifted from Sep'19 to Feb'20.
	3	20.07.19 to 23.08.19	35	01.11.19 15.12.19	45	Boiler (acid cleaning) +DDCMIS R&M + HPT+IPT+LPT+Gen	Unit-6 slot in LGBR to be used.
	4	11.03.20 to 05.04.20	26	No OH	0	No Overhauling in 2019-20.	Will be done in FY 2020-21.
	5	01.04.19 to 30.04.19	30	07.06.19 to 06.07.19	30	Boiler+Gen+ESP R&M	Not availed in Mar-Apr'19 as per water availability.
	6	01.11.19 to 05.12.19	35	15.07.19 to 28.08.19	45	Boiler+ HPT+ IPT+ LPT+ Gen.	Overhauling long due, it will not be safe to run upto Nov'19.
KhSTPS	1	27.08.19 to 30.09.19	35	No OH	0	Short shutdown availed earlier in Mar'19.	Unit-1 not proposed in 2019-20.
	2	10.11.19 to 09.12.19	30	10.11.19 to 09.12.19	30	Boiler+Gen+ESP R&M	No change, as per LGBR.
	4	25.07.19 to 23.08.19	30	15.06.19 to 14.07.19	30	Boiler+Gen+ESP R&M	Preponed, as Boiler license valid till 14.06.2019.
	7	22.04.19 to 16.05.19	25	22.04.19 to 21.05.19	30	Boiler	Duration extension by 5 days.
Barh	4	01.11.19 to 04.01.20	65	10.11.19 to 28.01.20	80	Boiler modification	Chhath is on 02.11.2019, so start date shifted.
	5	15.01.20 to 19.03.20	65	21.03.20 to 04.04.20	15	Short shutdown	Modification of only one Unit is planned in 2019-20.

The above proposal represented on time line is attached in **Annexure-B4**. In addition to above, Farakka Unit-4 / Unit-5 shutdown for 2 to 3 days will be required at different dates in May'19 to Jan'20 for each ESP pass to normalize / isolate the pass with dummy plate.

BSPHCL vide letter dated 20th April 2019 informed that, BSPHCL is procuring power on behalf of both the discoms NBPDCL and SBPDCL, do not agree any schedule maintenance by NTPC in the summer season as already few of the plants which were scheduled to be commissioned during summer are delayed. Therefore, the proposed timeline of overhauling of Farakka Unit 5 and 6 and Kahalgaon unit 4 may not be agreed to.

Members may discuss.

Item No. B.5: Overhauling of Unit 2 of MPL--MPL.

Maithon 2* 525 MW units receive water from Maithon Reservoir. In year 2018 due to overall deficit of 28% rainfall in Jharkhand district, DVC -Maithon reservoir level is in stressful condition. DVC being the water resource provider, requested MPL (vide letter no MRO/Water Tariff/Optimum utilization/MPL/127/192) to take the necessary steps towards optimizing the utilization of water to avoid crisis and fulfil the M&I demands in the coming dry situation.

DVC has clearly stated that water requirement for industrial usage of MPL may be curtailed during dry period in order to meet the basic need of the municipal water supply in the valley.

As approved in 40th TCC meeting, MPL unit-2 AOH is planned from 15th June to 16th July-2019. In case of water curtailment from DVC, MPL Unit-2 AOH will be preponed as per the situation.

Members may note.

Item No. B.6: Operationalization of 400 kV Durgapur Bus Splitting Scheme

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

The minutes of the 3rd Special Meeting on "Operationalization of 400 kV Durgapur Bus Splitting Scheme" held at ERPC, Kolkata on 8th April 2019 at 11:00hrs is enclosed at **Annexure-B6**.

Members may note.

Item No. B.7: Connectivity/Evacuation system for OPGC IBTPS thermal power project in Odisha----GRIDCO

The agenda received from GRIDCO is enclosed at **Annexure-B7**.

Members may discuss.

Item No. B.8: Erroneous Energy data of 220kV Balangir-Katapalli line at Bolangir ---- SLDC, Odisha

The agenda received from SLDC, Odisha is enclosed at **Annexure-B8**.

Members may discuss.

Item No. B.9: REPLACEMENT OF OLD RTUS IN EASTERN REGION FOR REPORTING OF RTU/SAS TO BACKUP CONTROL CENTRES

In 39th ERPC Meeting, it was decided that,

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

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

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

Powergrid may update.

Item No. B.10: Assistance of 40 MW power from Sahupuri(UP) to Karmnasa(BSPTCL)-- BSPTCL

BSPTCL informed that due to following reasons, there is loss of 250 MVA capacity at Dehri and Nadokar:

Sl. No.	Name of 220/132/33 KV GSS	Installed capacity of 220/132 KV Transformer	Present Capacity	Remarks
1	Dehri	(4x100) MVA	3x100 MVA	Out of four, one no. 100 MVA power transformer has become defective & send in works for repair. So present capacity is 300 MVA.
2	Nadokhar	(2x150) MVA	1x150 MVA	Out of two, one no. 150 MVA power transformer has become defective & in process of sending in works for repair. So present capacity is 150 MVA.

Even with shifting of 60 MW of Dehri load to Sonenagar New S/s, there would be shortage of 140 MW power.

Therefore, Bihar is planning to take 40 MW power from Sahupur(UP) to Karmnasa.

BSPTCL may explain.

Item No. B.11: Review of the PSS Tuning of Generators in Eastern Region

PSS tuning meeting was conducted by ERPC on 31st January 2019 where generators from Eastern Region have participated. The MoM of the meeting has been released by ERPC and is available on the website. During the PSS meeting following decision have been taken:

1. Generators who had already done the PSS tuning shall submit the details of the Excitation System, PSS tuning and its report. The generators shall submit the Generator terminal voltage, Field voltage, Real power, Reactive Power, Generator Speed, and PSS output in excel/.csv format for better analysis of the result.
2. Generators for which PSS tuning was not carried out shall take up the PSS Tuning with OEM immediately.
3. Generators for which PSS was not in service shall take up the issue with OEM immediately to bring the PSS into service.
4. For any future tuning, it was recommended to all generators to collect the response along with data in .csv/excel format.
5. All the generators where the PSS tuning was done and PSS not in service shall submit their action plan for PSS Tuning in line with IEGC and CEA standards before the next OCC meeting to ERPC/ERLDC.

In view of the same five categories have been made for comprehensive checkup and plan for PSS tuning for Eastern region Generating plants, which are given at **Annexure-B14.**

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

Members may update.

Item No. B.12: Status of Auto-Reclosure on Lines from Tala and Chukha Hydro Power Plant (Bhutan)--ERLDC

Auto-reclsoure on transmission lines is essential specially when it is connected with generating station as it ensures the availability of the feeders during any transient faults for safer evacuation of generation. In the previous OCC/PCC meeting the auto-reclosure on 400 kV Lines from Tala and 220 kV lines from Chukha has been discussed and Bhutan Representative ensure that they will into the feasibility of its implementation. Bhutan representative in the meeting have also informed that they have visited similar hydro plants on Indian side.

In view of this Bhutan Representative may kindly intimate the status of Auto-Reclosure on Lines from Tala and Chukha Hydro Power Plant for ensuring better evacuation security and reliability from these power plants.

Bhutan may update.

Item No. B.13: ERLDC Shutdown approval process flow and time line- ERLDC

On an average ERLDC has to clear shutdown of roughly 15 elements per day. Apart from the above, shutdown of emergency nature also needs to be processed at short notice. It has been observed that, due to lack of mutual consent/communication between two control areas/licensees, outage of transmission elements are getting delayed or denied due to which monetary loss may occur as well as health of that particular element may deteriorate. Keeping in view the above points ERLDC wants to draw the attention on the following points which are observed in Eastern Region constituents/licensees.

1. There is a shortage of designated outage coordinators in ER constituents /Transmission licensees. Sometimes it's difficult to establish communication with them.
2. E-mails sent from ERLDC are not reaching them in time (particularly in case of GRIDCO). Most of the time mails are checked when ERLDC informs them verbally over phone.
3. This also leads to delay in obtaining consent thereby delaying the whole shutdown process.
4. For the purpose of coordinated transmission element outage the need for an outage coordinator is absolutely undeniable. Sometimes SLDC control room person are coordinating shutdown which is not a good practice. Progress tracking of any outage will be lost once shift change occurs.
5. Planned outages are being requested on holidays also which is very difficult to process.
6. It has been seen that, in absence of designated outage coordinators (SLDC Howrah and SLDC Patna for example), OCC approved shutdowns are also getting cancelled/delayed.

To take care all the above difficulties following suggestions may be considered:

1. Every Transmission licensee, generators and SLDCs must nominate two dedicated outage co-coordinators along with contact information and mail-id dedicated for outage handling.
2. All the nominated outage coordinators list from respective SLDCs/Tr. Licensees/Generators shall be forwarded to ERLDC through mail id
    - erldcoutage@gmail.com
    - Contact Executives: Shri B. B. Bhoi (9432351830) & Shri D. Majumder(9903593500)
3. In absence of the designated outage co-coordinator, suitable substitute may be provided and the same shall be intimated to ERLDC.
4. All the indenting agencies are requested to communicate with their counterpart outage co-coordinator for smooth and speedy consent if it require.

5. Getting timely consent is very important. All the agencies, whose consent is required for a particular outage, are requested to adhere the time line given by ERLDC, failing which the outage may be cancelled or delayed or revised for a suitable date.
6. A whatsapp group for outage coordination will be opened to handle shutdown coordination and suitable information sharing for speedy outage processing.

Members may discuss.

Item No. B.14: Status of projects funded under PSDF schemes

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

A. Projects approved:

SN	Name of Constituent	Name of Project	Date of approval from PSDF	Target Date of Completion	PSDF grant approved (in Rs.)	Amount drawn till date (inRs.)	Latest status
1	WBSETCL	Renovation & up-gradation of protection system of 220 kV & 400 kV Substations in W. Bengal	31-12-14	April 2018 Extended till March 2019	108.6 Cr	37 Cr.	100 % Supply and Erection is Completed. Compilation of final bills is in progress.
2		Renovation & modernisation of transmission system for relieving congestion in Intra-State Transmission System.	22-05-17	25 months from date of release of 1st instalment	70.13	21.03 Cr	Order has been placed . Work is in progress.
3		Installation of switchable reactor at 400kV & shunt capacitors at 33kV	22-05-17	19 months from date of release of 1st instalment	43.37	6.59 Cr	Order had been placed and work is in progress.
4	WBPDCL	Implementation of Islanding scheme at Bandel Thermal Power Station	*10.04.17*	*March 2018*	1.39 Cr	1.25 Cr	*The islanding scheme had been implemented and in operation wef**15.11.2018***
5		Upgradation of Protection and SAS		April 2020	23.48	2.348 Cr	Bid opened and order has been placed. Work started.
6	OPTCL	Renovation & Up-gradation of protection and control systems of Sub-stations in the State of Odisha in order to rectify protection related deficiencies.	11.05.15	31.03.19	162.5 Cr.	37.79 Cr	90% work has been completed. Total expenditure may not exceed 68 Cr.
7		Implementation of OPGW based reliable communication at 132kV and above substations	15.11.17		25.61 Cr.		Agreement signed on 03.01.2018. Tender has been floated.
8		Installation of 125 MVAR Bus Reactor along with construction of associated bay each at 400kV Grid S/S of Mendhasal, Meramundali& New Duburi for VAR control &stabilisation of system voltage	27.07.18		27.23 Cr		Tender has been floated.
9	OHPC	Renovation and up-gradation of protection and control system of 4 nos.OHPC substations.		*U.Kolab, Balimela, U.Indravati, Burla, Chiplima March 2019*	*22.35 Cr.*	2.235 Cr	Placed the work order.
10	BSPTCL	Renovation and up-gradation of 220/132/33 KV GSS Biharshariff, Bodhgaya, Fatuha, Khagaul, Dehri -on-sone& 132/33 kV GSS Kataiya	11/5/15	31.07.2018	64.02 crore	56.04 crore	85% of work has been completed. Contract awarded for Rs.71.37 Cr till date. The work would be completed by Feb 2019.
11		Installation of capacitor bank at different 35 nos. of GSS under BSPTCL	5/9/2016	31st March 2019	18.88 crore	Nil	Work awarded for all GSS. 90% supply and 60% of erection had been completed.

12		Renovation & up-gradation of protection and control system of 12 nos. 132/33 KV GSS under BSPTCL.	02.01.17	31st March 2018	49.22 Cr.		75% work completed for seven no. GSS as part of R & M work. Revised DPR is to be submitted for rest 5 no. GSS.
13	JUSNL	Renovation and up-gradation of protection system	*September 2017*	*15 Months*	*138.13 crores*		LOA placed to Siemens on 28th Sep 2018.
14	DVC	Renovation and upgradation of control & protection system and replacement of Substation Equipment of 220/132/33 kV Ramgarh Substation	02.01.17	01.06.2019	25.96 Cr	2.596 Crore on 01.06.2017	Work awarded for 28.07 Cr. Work would be completed by May 2019.
15		Renovation and upgradation of control & protection system including replacement of substation equipment at Parulia, Durgapur, Kalyaneshwari, Jamshedpur, Giridih, Barjora, Burnpur, Dhanbad and Burdwan Substation of DVC	27.11.17	24 Months from the date of release of fund.	140.5 Cr.	1st installment of 14.05 Cr. received on 21.12.2017	Work awarded for 77.97 Cr.
16	POWERGRID	Installation of STATCOM in ER		June 2018	*160.28 Cr*	*16.028 Cr*	Work is in progress, expected to complete by June 2018. STATCOM at Rourkela has been commissioned.
17	ERPC	Creation & Maintenance of web based protection database and desktop based protection calculation tool for Eastern Regional Grid	17.03.16	Project is alive from 30th October 2017	20 Cr.	4.94 Cr. + 9.88 Cr.	1) Protection Database Project has been declared 'Go live' w.e.f. 31.10.17. 2) Pending training on PDMS at Sikkim and 3rd training on PSCT has been also completed at ERPC Kolkata.
18a	ERPC	Training for Power System Engineers	*27.07.18*		0.61 Cr.	Nil	Approved
18b		Training on Power market trading at NORD POOL Academy for Power System Engineers of Eastern Regional Constituents	*27.07.18*		5.46 Cr.	Nil	

B. Projects under process of approval:

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

		Scheduling, Accounting, Metering and Settlement of Transactions (SAMAST) system in West Bengal			committee as communicated on 16.11.2018.
7		Installation of Bus Reactors at different 400kV Substation within the state of West Bengal for reactive power management of the Grid	12-03-18	78.75 Cr.	Proposal recommended by Appraisal committee as communicated on 16.11.2018.
8		Project for establishment of reliable communication and data acquisition at different substation at WBSETCL.	10-05-18	80.39 Cr.	Proposal recommended by Appraisal committee as communicated on 16.11.2018.
9	BSPTCL	Implementation of Schedulling, Accounting, Metering and settlement of Transcation in Electricity (SAMAST)in SLDC Bihar.	27-02-18	93.76 Cr.	Scheme examined by TSEG on 20.03.2018 & 31.05.2018. Further inputs furnished by BSPTCL on 1.8.2018. Shall be examined in the next meeting of TESG.

Respective constituents may update the status.

Item No. B.15: Additional agenda

PART C: ITEMS FOR UPDATE

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

UFR Healthiness Certification for the month of March, 2019 has been received from OPTCL, CESC, WBSETCL, DVC, BSPTCL and JUSNL.

Members may note.

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

At present, the following islanding schemes are in service:

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

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

The healthiness certificate for Islanding Scheme for March, 2019 has been received from CTPS, DVC, NTPC, West Bengal, JUSNL, WBPDCL and CESC.

Members may note.

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

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

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

Members may update.

Item no. C.4: Implementation of Automatic Demand Management Scheme (ADMS)-ERLDC

The latest status along with proposed logic as follows:

Sl No	State/Utility	Logic for ADMS operation	Implementation status/target	Proposed logic (if different from under implementation logic)
1	West Bengal	F <49.7 AND deviation > 12 % or 150 MW	Implemented on 25.11.16	F <49.9 AND deviation > 12 % or 150 MW
2	DVC	F <49.7 AND deviation > 12 % or 150 MW	Implemented on 17.06.2016	
3	Bihar	F <49.7 AND deviation > 12 % or 150 MW	They would place the order to Chemtrol for implementation.	F <49.9 AND deviation > 12 % or 150 MW
4	Jharkhand	1. System Frequency < 49.9 Hz AND deviation >	9 Months Tendering for RTU	Condition 1: Block I feeders will be selected for load shedding

		12 % or 25 MW 2. System Frequency < 49.9 Hz AND deviation > 12 % or 50 MW 3. System Frequency < 49.9 Hz AND deviation > 12 % or 75 MW	installation is in progress. Offer received from Chemtrol for implementation.	Condition 2: Block I & II feeders will be selected for load shedding Condition 3: Block I, II & III feeders will be selected for load shedding
5	Odisha	1. System Frequency < 49.9 Hz 2. Odisha over-drawl > 150 MW 3. DISCOM over-drawl > (40 MW)	10 Months Sent for PSDF approval.	Logic 2 and 3 is AND or OR, in case it is AND then ADMS may not operated when discom are in schedule but GRIDCO is overdrawing due to less generation at state embedded generators
6.	Sikkim			Sikkim informed that they have submitted a proposal to PSDF Committee for installation of OPGW cables which is under approval stage. Sikkim added that ADMS scheme would be implemented after installation of OPGW.

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

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

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

Members may update.

Item no. C.5: 220 kV inter-connecting lines of OPTCL with 400/220 kV Bolangir (PG), Keonjhar&Pandiabil S/s

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

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

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

OPTCL may update.

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

In last OCC, JUSNL updated the latest status as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**Daltonganj 400/220/132kV S/s:**	
a.	Daltonganj(POWERGRID)–Latehar220kVD/c	By Dec, 2019.

b.	Daltonganj (POWERGRID) – Garhwa 220kV D/c	The line expected to be completed by May, 2018 but – Garhwa 220kV is expected to be completed by June 2019.
c	Daltonganj (POWERGRID) – Chatarpur/Lesliganj 132kV D/c	Tendering is in progress. Expected to be completed by October 2019
2	**Chaibasa400/220kVS/s**	
A	Chaibasa(POWERGRID)–Noamundi220kVD/c	Not yet started
3	**Dhanbad400/220kVS/s**	
A	LILO of Govindpur–Jainamore/TTPS 220kVD/c at Dhanbad	ROW issues.Target date November 2018.

JUSNL may update.

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

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

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

WBSETCL may update.

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

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

In 154th OCC, Powergrid informed that bypass arrangement would be completed by March 2019.

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

Powergrid and OPTCL may update.

Item no. C.9: Update on status of telemetry

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

Major issues are given below:

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

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

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

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

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

The latest status of telemetry as received from ERLDC is enclosed at ***Annexure-C9***.

Members may update.

Item no. C.10: Removal of Vedanta Towers(5 nos) for direct connectivity on permanent basis of 400kV Sundargarh-Raigarh ckt#4 and 400kV sundargarh-Raigarh ckt#2--Powergrid

Initially 02 nos LILO was made in 400kV Rourkela-Raigarh ckt-2 and Ckt-4 to evacuate power generation of Sterlite Energy Ltd(Now Vedanta Ltd),Jharsuguda. However, as per directives from ERLDC/ERPC LILO of 400kV Rourkela-Raigarh ckt-2(Now Sundargarh-Raigarh ckt-3) was opened in 2014 and LILO of 400kV Rourkela-Raigarh ckt-4(Now Sundargarh-Raigarh ckt-4) was opened in October 2017.

As a temporary measure to facilitate immediate disconnection of LILO and making the line direct PG clamps were used in Vedanta Towers. In this process 05nos of Vedanta Towers are there in the 400kv Sundargarh-Raigarh ckt-2 and 4. 03nos between Loc 298-299of 400kV Sundargarh-Raigarh ckt-4 and 02nos of Towers between Loc 834-833 of 400kV Sundargarh-Raigarh Ckt-3.The sketch showing the Vedanta Towers in both the circuits is enclosed for ready reference.

The matter for removal of Towers and making direct connectivity with Raigarh on permanent basis has been discussed several times with M/s Vedanta. But till date no action has been taken by M/s Vedanta for making the line direct after removal of Towers. Maintenance of the said Towers and corridor are not being done. Any outage of these lines due to issues in these towers and span shall not be attributed to POWERGRID.M/s Vedanta may be asked to restored the line as it was before making the Line LILO.

In 155th OCC, Odisha was advised to take up the issue with Vedanta.

Odisha agreed to take up the issue with Vedanta and place the details in next OCC Meeting.

OPTCL may update.

Item no. C.11: Transfer capability determination by the states

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

It was decided in the NPC meeting that to begin with, power system study for assessment of operational limits / power transfer capability for each state will be done by the concerned RLDC in association with concerned SLDC. Monthly TTC /ATC will be uploaded by the SLDCs at their respective websites and also communicated to concerned RLDC & NLDC subsequently.

Latest status of State ATC/TTC declared by states for the month of August-2019

Sl No	State/Utility	TTC import(MW)		RM(MW)		ATC (Import) MW		Remark
		Import	Export	Import	Export	Import	Export	
1	BSPTCL	5092	--	100	--	4992	--	June-19
2	JUSNL	1107	--	60	--	1047	--	July-19
3	DVC	1152.6	3176.4	61.2	48.1	1091.4	3128.3	
4	OPTCL	2238	--	88	--	2150	--	Jun-19
5	WBSETCL	4170	--	300	--	3870	--	April-19
6	Sikkim	--	--	--	--	--	--	

Members may update.

Item no. C.12: Replacement of GPRS communication with Optical Fiber for AMR

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

In 155th OCC, Powergrid informed that optical fiber for AMR had been implemented at 33 locations and rest of the locations would be completed by April 2019.

POWERGRID may please update the progress.

Item no. C.13: Mock Black start exercises in Eastern Region – ERLDC

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

Sl no	Name of Hydro Station	Schedule	Tentative Date	Schedule	Tentative Date
		Test-I		Test-II	
1	U.Kolab	Last week of May, 2018	*Completed on 8th June,2018*	Last Week of January2019	*Done on 27th Sep 2018*
2	Maithon	1stweek of June 2018	*Completed on 6th June,2018*	1stWeek of February2019	
3	Rengali	2ndweek of June 2018	*Done on 18thAugust,2018.*	Last week of November 2018	Done on 12th Feb 2019
4	U. Indarvati	3rdweek of une 2018	*Planned in Oct ,2018.*	2ndweek of February2019	*Done on 28th Dec 2018*
5	Subarnarekha	1stweek of October 2018	*Done on 10th August,2018.*	1stweek of January2019	Done on 9th Feb 2019
6	Balimela	3rdweek of October 2018	Done on 21st Dec, 2018	1stweek of March 2019	Done on 11th Mar 2019
7	Teesta-V	2ndweek of Nov 2018	Done on 3rd May 2018	Last week of February2019	
8	Chuzachen	Last Week of May2018	In May 2018	2nd week of January2019	Done on 15th Jan 19
9	Burla	Last Week of June 2018	*Completed on 7th June,2018*	Last week of February2019	Done on 7th Mar 2019

10	TLDP-III	1st Week of June 2018	After Monsoon	2ndWeek of January2019	Done on 10th Jan 2019
11	TLDP-IV	Last Week of June 2018	After Monsoon	1st Week of February2019	Done on 10th Feb 2019
12	Teesta-III	Last week of Oct 2018	Done on 30th Nov 2018	First Week of March 2019	
13	Jorthang	First Week of May 2018		First Week of Feb 2019	
14	Tasheding	2nd Week of May 2018		2nd Week of Feb 2019	
15	Dikchu	3rd Week of May 2018		3rd Week of Feb 2019	Mar 2019

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

Sl no	Name of Hydro Station	Schedule	Tentative Date	Schedule	Tentative Date
		Test-I		Test-II	
1	U.Kolab	Last week of May, 2019		Last Week of January 2020	
2	Maithon	1stweek of June 2019		1st Week of February 2020	
3	Rengali	2ndweek of June 2019		Last week of November 2020	
4	U. Indarvati	3rdweek ofJune 2019		2nd week of February 2020	
5	Subarnarekha	1stweek of October 2019		1st week of January 2020	
6	Balimela	3rdweek of October 2019		1st week of March 2020	
7	Teesta-V	2ndweek of Nov 2019		Last week of February 2020	
8	Chuzachen	Last Week of May2019		Last week of January 2020	
9	Burla	Last Week of June 2019		Last week of February 2020	
10	TLDP-III	1st Week of June 2019		2nd Week of January 2020	
11	TLDP-IV	Last Week of June 2019		1st Week of February 2020	
12	Teesta-III	Last Week of Oct 2019		First Week of March 2020	
13	Jorthang	First Week of May 2019		First Week of Feb 2020	
14	Tasheding	2nd Week of May 2019		2nd Week of Feb 2020	
15	Dikchu	3rd Week of May 2019		3rd Week of Feb 2020	

Format for Reporting of Mock Black Start Activity:

Mock drill on Black start is a continuous activity ongoing in the power system. In addition to black start mock drill, it is essential to monitor each black start to check the performance. ERLDC is in receipt of reports from various black start stations performing these activities from their respective SLDC however, many a times essential information pertaining to performance monitoring of the activities are missing. In view of this it is proposed that, for any mock drill on black start, SLDC must share the following details to access the performanceand the same need

to be intimated one week before to ERLDC along with blackstart process. This will help in finding out any challenges and sharing of experiences with other utilities.

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

Table 1: Performance monitoring of Mock Drill

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

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

Members may update.

Item no. C.14: Submission of Thermal Loading of Transmission line and associated terminal equipment by ISTS licensee

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

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

132 kV Single ACSR_Panther	366	84

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

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

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

a) Transmission line wise Ampacity and Thermal loading along with Maximum Conductor Temperature and conductor type.
b) End Equipment Rating and
c) Confirmation whether the relay setting has been adopted in line with the thermal rating of the line
d) Any constraint during thermal loading of line

In 152nd OCC, ERLDC informed they received the details only from DVC.

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

Members may note and comply.

Item no. C.15: Status of Emergency Restoration system (ERS) of respective Transmission Licencees

CEA vide mail dated 28-09-2018 has requested to provide Status of Emergency Restoration system (ERS) of respective Transmission Licencees in respective Regions as per the format.

OCC advised all the transmission licensees to submit the requisite information as per the format in the form of soft copy through email (mail ID: mserpc-power@nic.in).

The details have been received from the Transmission Licencees is as follows:

State-wise Emergency Restoration system				
Transmission Licensee	**Requirement of Total no of ERS in State**	**Number of ERS available in state**	**No of ERS to Be Procured**	**Remark if Any .**
WBSETCL	10	10	Nil	-
OPTCL	84	54	30	
JUSNL	13	8	5	
DVC	400kV – 2 nos	400kV- Nil	400kV – 2nos	
	220kV – 2 nos	220kV – 1 nos	220kV – 1 nos	
	132kV – 10 nos	132kV – 8 nos	132kV – 2 nos	
BSPTCL	40	40	Nil	

Members may note.

Item no. C.16: Delay in furnishing information to ERLDC/ERPC regarding of Commissioning of new Transmission Elements/ Generating Units within State--ERLDC

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

For the Month of March-2019, except Odisha no states and transmission licensees has submitted their List of Transmission element /generators synchronised **in the previous Month** and List of Transmission element and generators expected to be synchronised during next Month.

The absence of updated information regarding new elements energized in the previous month and elements expected to be commissioned during the next month poses difficulty in monitoring and supervising the regional grid – both in real time as well as off-line, at RLDC level.

Members may update.

Item no. C.17: Implementation of Automatic Generation Control (AGC) in India (at Inter-State level)

CERC in its order dated 13.10.2015 in Petition No. 11/SM/2015 reiterated the need for mandating Primary Reserves as well as enabling Secondary Reserves, through Automatic Generation Control (AGC) as follows:

"(a) All generating stations that are regional entities must plan to operationalise AGC along with reliable telemetry and communication by 1st April, 2017. This would entail a one-time expense for the generators to install requisite software and firmware, which could be compensated for Communication infrastructure must be planned by the CTU and developed in parallel, in a cost-effective manner.
(b) On the other hand, National/Regional/State Load Dispatch Centres (NLDC/RLDCs/SLDCs) would need technical upgrades as well as operational procedures to be able to send automated signals to these generators. NLDC /RLDCs and SLDCs should plan to be ready with requisite software and procedures by the same date.
(c) The Central Commission advises the State Commissions to issue orders for intra-state generators in line with this timeline as AGC is essential for reliable operation of India's large inter-connected grid."

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

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

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

The followings were decided in the TCC Meeting:

1. *Status of implementation of AGC shall be regularly monitored in OCC meetings.*

2. *An workshop shall be organised in ERPC wherein NLDC and NTPC will be invited to interact with the ER constituents regarding the experience they have gained in implementing the AGC in other regions.*

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

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

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

Members may update.

Item no. C.18: Maintenance and support (AMC) renewal of PSSE software.

Siemens vide letter dated 20th March 2019 informed that the AMC for PSSE software has ended on 30th November 2018. The letter is enclosed at **Annexure-C18**.

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

In 156th OCC, all the SLDCs were advised to send their comments to ERPC within a week.

Members may update.

Item no. C.19: Information regarding details of existing transmission system (220 kV and above AC & DC voltage level) in Eastern Region as on 31.12.2018

CEA vide letter dated 29/01/2019 intimated that MoP, GoI has desired information regarding details of state wise growth of transmission system (both interstate and intra state system) over the years to create database of existing transmission system.

Accordingly, it is requested that the information in respect of existing transmission system (both interstate and intra state system) as well as State Power Map and single line Diagram of transmission network including Powergrid (ISTS) and other Transmission Service Provider (TSPs) (as on 31.12.2018) may please be made available in the specified format attached at **Annexure –C19.I &II** to ERPC for onward transmission to CEA / MoP by 28.02.2019.

In 154th OCC, all the constituents were advised to submit the relevant information as per the format to ERPC Secretariat vide mail at the earliest.

The data has been received from Powergrid Odisha, Jharkhand and West Bengal.

Members may furnish.

Item no. C.20: Updated Black Start and Restoration procedure of State--ERLDC

As per clause IEGC 5.8(b)

"*Detailed plans and procedures for restoration after partial/total blackout of each User's/STU/CTU system within a Region, will be finalized by the concerned User's/STU/CTU in coordination with the RLDC. The procedure will be reviewed, confirmed and/or revised once every subsequent year."*

In 154th OCC all the SLDCs to were advised to submit the updated restoration procedure of their respective state.

However SLDCs are yet to submit the Black Start and restoration procedure for respective states.

SLDCs may update.

Item no. C.21: Details of Capacitor bank installed in Distribution/Sub transmission network --ERLDC

Details of capacitor installed in Eastern Region as a whole was last collected in year 2011. The last updated list is given in **Annexure-C21**. In the meantime, many utilities might have installed additional capacitor bank for better voltage regulation some has also applied for fund form PSDF for installation of capacitor banks.

Utilities are requested to provide the updated capacitor bank list for record purpose.

Members may submit the data.

Item no. C.22: Collection of modelling data from Renewable as well as conventional energy generators: ERLDC

As a National Grid operator, POSOCO is continuously working for ensuring reliability and security of the Grid. With penetration of more and more renewable energy source the task is becoming complicated day by day. An accurate dynamic modeling of the National Grid,needsmodelling of conventional as well as renewable / distributed generation sources. World Bank has engaged Digsilent as consultant for assisting POSOCO for building dynamic model of the Grid. A guideline for dynamic data collection has been developed in consultation with Digsilent Pacific team.

All the utilities are requested to collect data from the grid scale renewable power plants as well as from conventional power plants under their jurisdiction and submit the same to ERLDC/ERPC as early as possible.

In 153rd OCC, OCC advised all the constituents to submit the details of renewable power plants of 5 MW and above.

Members may comply.

Item no. C.23: Availability of Auto-synchrocheck Relay Display for Substation Operators --ERLDC

It is known that with increasing automation, synchronization at substation is now mostly done through auto-synchronization facility. This is a built-in facility within the relay and has similar setting facility as of manual synchrocheck trolley. The relay gets bus as well as line voltage (Voltage across the breaker) and by comparing them with set values of phase angle difference, voltage difference and frequency difference it provides the closing command. Unlike manual trolley, the auto synchrocheck relay works on two timers in the relay which are as:

1. Wait time for which Auto-Synchrocheck facility will be active after its activation
2. Minimum time required up to which the relay checks that all the criteria are met before giving breaker closing command after its activation.

If both these timers are set correctly, then auto-synchronization will be smooth.
In the recent black start mock drill activity of Teesta 3 power plant using 400 kV Teesta 3-Kishanganj circuit certain issues were observed. First, during the mock black start the synchronization of circuit was done manually rather than auto-synchronization which led to closing of breaker at Kishanganj end at high angle leading to severe voltage dip and high current resembling 3 phase fault. This caused tripping of the unit. In subsequent breaker closing attempt through auto-synchronization, it was observed that Kishanganj operator does not have any display to monitor the various parameters across the breaker as available in synchrocheck trolley. This led to non-closing of breaker and thus the black start mock drill could not be completed.

In view of the above discussion, it is now essential to ensure the following in the substation having SAS:

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

All 765/400/220 kV Substation which are having Substation Automation System along with auto-synchronization facility may kindly provide their input on the matter and based on that a uniform strategy on auto-synchronization facility may be adopted for better system security and crisis management.

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

Members may note.

Item no. C.24: Modification of First time charging documents for charging of new transmission elements--ERLDC

In reference to the recent notified “Terms & conditions of Tariff-2019-24” and past amendments in IEGC, some modifications has been done in annexure A1, A2 and B2 of first time charging documents for charging of new transmission elements.

ERLDC may explain.

Item no. C.25: Low frequency Oscillation at MTDC BNC-ALP-Agra --ERLDC

On 21st February 2019 from 03:46:28 Hrs to 03:47:15 Hrs (47 Seconds), Severe oscillation were observed across Indian grid. It was observed that oscillation were highly prominent near to the AC nodes connected with MTDC BNC-Alipurdwar-Agra i.e. Binaguri (Eastern Grid) Bongaigaon, Misa, Nehu, Badarpur, Imphal (All nodes in NER Grid) and Agra (Northern Grid). On Analysis, it was observed that there was a tripping of 400 kV Sikar-Bassi 1 on Single-phase fault which cleared in 80 ms (in Northern Region) and after which the HVDC Agra terminal started oscillating with 5 Hz. The 5 Hz oscillation was observed in DC power, Current and Voltage of MTDC as well as AC Current at Agra end. These oscillations were reflected more prominently in North Eastern region (All Locations) and Binaguri in eastern region. In addition, these oscillations also led to inert-area mode excitation in other regional grids. The Frequency, Voltage for various nodes from PMUs and TFR plot of Agra Node of MTDC is given below indicating the severity of oscillation.

Similarly, on 23rd February 2019 at 00:23:04 Hrs, Oscillation got triggered in the grid during tripping of 765kV Lalitpur-Fatehabad-1 on overvoltage protection and lasted for 7 seconds. The frequency of oscillation was 3.125 Hz and it was again more prominent at Binaguri (Eastern Grid) Bongaigaon, Misa, Nehu, Badarpur, Imphal (All nodes in NER Grid) and Agra (Northern Grid).
These oscillations are forced oscillation in nature and may impact reliability and security of the grid significantly as observed in earlier cases of forced oscillation deliberated in previous OCC like Kahalgoan Unit 6 (139th OCC) and Talcher Unit unit 3 and 6 (147th OCC). These events intensifies the need of proper PSS tuning of all generators in Eastern region as per the relevant regulation of CERC and CEA.

In view of these severe oscillations in the power system during MTDC Interaction with AC system, Powergrid may kindly explain the following:

1. Why the external system faults has led to oscillation in MTDC Agra terminal?
2. Whether there was any controller malfunction at MTDC agra which led to such widely varying quantities on HVDC?
3. Measures taken to ensure such events do not reappear in the system.

In 155th OCC, ERLDC informed that oscillations were significant in ER and NER compared to NR. Significant oscillations were also observed in HVDC power flow and current signals.

Powergrid explained that the oscillations were significant in ER and NER due to low inertia corresponding to availability of low hydro generation in these regions.

Powergrid added that their corporate office had been analyzing the disturbance in consultation with ABB and NLDC.

OCC advised Powergrid submit the details of findings to ERPC and ERLDC.

Members may update.

PART D:: OPERATIONAL PLANNING

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

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

Members may confirm.

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

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

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

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

Members may finalize the Shutdown proposals of transmission lines and generating stations for the month of May 19.

Generator shutdown:

System	Station	Unit	Capacity (MW)	Period		No. of Days	Reason
				From	To		
DVC	MTPS	7	500	14.05.19	18.06.19	36	COH (Blr,Turb,Gen.)
WBPDCL	Sagarighi TPS	3	500	01.05.19	07.05.19	7	Boiler License renewal

ERLDC may place the list transmission line shutdown discussed on 22nd April 2019 through VC.

Members may confirm.

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

(i) Thermal Generating units:

S.No	Station	Location	Owner	Unit No	Capacity	Reason(s)	Outage	
					(MW)		Date	Time
1	BARAUNI	BIHAR	BSPHCL	6	105	R & M WORK	17-Mar-12	13:15

2	KOLAGHAT	WEST BENGAL	WBPDCL	1	210	POLLUTION CONTROL PROBLEM	10-May-18	23:05
3	KOLAGHAT	WEST BENGAL	WBPDCL	3	210	POLLUTION CONTROL PROBLEM	23-Feb-17	11:51
4	CTPS	JHARKHAND	DVC	3	130	TURBINE BLADE DAMAGE	30-Jul-17	00:00
5	MEJIA	WEST BENGAL	DVC	3	210	INITIALLY ON STATOR EARTH FAULT,LATER ON CAPITAL OVERHAULING	4-Feb-19	22:15
6	JITPL	ODISHA	JITPL	2	600	COAL SHORTAGE	26-Jun-18	00:03
7	KAHALGAON	BIHAR	NTPC	5	500	TURBINE VIBRATIION HIGH	6-Apr-19	00:56
8	BOKARO B	JHARKHAND	DVC	3	210	ASH POND OVERFLOW	19-Mar-19	17:31
9	SAGARDIGHI	WEST BENGAL	WBPDCL	2	300	INITIALLY TAKEN OUT ON LOW DEMAND BUT PRESENTLY OUT DUE TO CONTROL VALVE PROBLEM SINCE 14/03/19	25-Feb-19	04:44
10	TENUGHAT	JHARKHAND	JUVNL	2	210	TO AVOID OVERLOADING IN 220 KV TENUGHAT PATRATU LINE .	5-Apr-19	00:02
11	MEJIA	WEST BENGAL	DVC	4	210	INITIALLY TRIPPED ON FLAME FAILURE BUT PRESENTLY OUT DUE TO STATOR EARTH FAULT	10-Apr-19	19:29
12	STERLITE	ODHISA	GRIDCO	2	600	DUE TO PROBLEM IN OLTC SYSTEM OF UAT	10-Apr-19	00:29

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

(ii) Hydro Generating units:

S.NO.	Station	Owner	Unit No.	Cap. (in MW)	Reason (s) of outage	Outage date from	Outage Time	Expected Revival Date
1	BHEP, Balimela	OHPC	UNIT-1	60	Renovation & Modernization Work (Planned)	08-05-2016		30/09/2019
			UNIT-2	60	Renovation & Modernization Work (Planned)	20/11/2017		30/09/2019
2	HHEP,Burla	OHPC	UNIT-1	49.5	Turbine & Generator Coupling Cover Water	14/03/2018	17:20	30/06/2019

					Leakage (Forced)			
			UNIT-5	37.5	Renovation, Modernization & Up Rating Work Work (Planned)	25/10/2016		12-09-2019
			UNIT-6	37.5	Renovation, Modernization & Up Rating Work Work (Planned)	16/10/2015		11-07-2019
			UNIT-4	32	Intake Gate Problem (Forced)	25/10/2018	19:00	20/05/2019
			UNIT-7	37.5	Gen. Cooler Problem	04-07-2019	16:25	18/04/2019
3	CHEP,Chiplima	OHPC	UNIT-3	24	Renovation & Modernization Work (Planned)	15/10/2015		30/04/2019
4	RHEP, Rengali	OHPC	UNIT-2	50	Capital Maintenance (Planned)	12-12-2018	09:05	05-10-2019
5	UKHEP,UpperKolab	OHPC	UNIT-4	80	Capital Maintenance (Planned)	02-01-2019	17:00:00	31/07/2019
			UNIT-3	80	Generator Stator Inter Turn/Earth Fault	28/03/2019	23:35	15/06/2019

(iii) Transmission elements

SL NO	Transmission Element / ICT	Agency	Outage From		Reasons for Outage
			DATE	TIME (HRS)	
1	220 KV BALIMELA - U' SILERU	OPTCL / APSEB	10-03-2018	22:45	LINE ANTITHEFT CHARGED FROM UPPER SILERU ON 17-04-18
2	400 KV IBEUL JHARSAGUDA D/C	IBEUL	29-04-2018	17:30	TOWER COLLAPSE AT LOC 44,45
3	400KV NEW PURNEA-BIHARSARIFF(PG)-D/C	ENICL	10-08-2018	10:28	TOWER COLLAPSE AT LOC 47/0
4	400 KV PATNA KISHANGANJ- I	POWERGRID	01-09-2018	00:32	TOWER COLLAPSE AT LOC 129. PILING DAMAGED
5	400 KV TALA BINAGURI - I	POWERGRID	01-04-2019	00:23	SUSPECTED CABLE FAULT NEAR TALA
6	400 KV TALA BINAGURI - IV	POWERGRID	26-03-2019	11:20	KEPT OPEN DUE TO OVERVOLTAGE AT TALA END
7	220 KV NEW PURNEA BEGUSARAI -D/C	BSPHCL	05-02-2019	13:35	S/D AVAILED BY BIHAR FOR PILE FOUNDATION IN KOSHI RIVER AT KURSELA LOCATION NO 413 A
8	400KV FARAKKA - KAHALGAON- I	POWERGRID	06-03-2019	08:28	FOR TAKING UP BAY UP GRADATION WORK OF BAY-22
9	400KV BINAGURI- RANGPO-D/C	POWERGRID	19-03-2019	11:23/ 11:25	FOR RE-CONDUCTORING WORK
10	400KV RANCHI-RAGHUNATHPUR-I	POWERGRID	20-03-2019	09:32	FOR REALIGNMENT WORK OF LINES AT DVC RTPS COAL FEEDING RAILWAY LINE
11	400KV MAITHON-RANCHI-SC	POWERGRID	20-03-2019	09:39	FOR REALIGNMENT WORK OF LINES AT DVC RTPS COAL FEEDING RAILWAY LINE
12	400KV BIHARSARIFF(PG)-VARANASI D/C	POWERGRID	03-04-2019	11:50	FOR REALIGNMENT WORKS OF MENTIONED ABOVE TR. LINE DUE TO CONSTRUCTION OF NEW RAILWAY LINE.

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

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

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

Members may update.

PART E::ITEMS FOR INFORMATION

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

Item No. E.1: Preparation of crisis management plan for Cyber Security in Power Sector in line with CERT-IN.

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

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

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

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

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

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

As suggested by CEA, a format would be circulated among ER constituents for furnishing the information of the their respective systems for discussion in OCC Meeting. The format is enclosed at **Annexure-E1**.

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

Item No. E.2: Status of 1st Third Party Protection Audit:

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

Name of Constituents	Total Observations	Complied	% of Compliance
Powergrid	54	46	85.19
NTPC	16	14	87.50
NHPC	1	1	100.00
DVC	40	26	65.00
WB	68	49	72.06
Odisha	59	42	71.19
JUSNL	34	25	73.53
BSPTCL	16	5	31.25
IPP (GMR, Sterlite and MPL)	5	5	100.00

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

The substation wise status of compliance are available at ERPC website (Observations include

PLCC rectification/activation which needs a comprehensive plan).

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

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

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

Monthly commissioning List of Transmission element and generators: March 2018					
SL NO	Element Name	Owner	Charging Date	Charging Time	Remarks
1	Main Bay of 400 KV Kishanganj-I at Darbhanga (Bay-412)	DMTCL	02-03-2019	19:09 hrs	
2	Tie Bay of 400 KV Kishanganj-I and Kishanganj-II at Darbhanga (Bay-413)	DMTCL	02-03-2019	19:15 hrs	
3	Main Bay of 400 KV Kishanganj-II at Darbhanga (Bay-414)	DMTCL	02-03-2019	19:09 hrs	
4	400 KV Darbhanga-Kishanganj-1	PGCIL	12-03-2019	03:31 hrs	
5	Bay of 50 MVaR L/R of 400KV Biharsharif-Lakhisarai-2 at Biharsharif end	PGCIL	12-03-2019	18:30 hrs	
6	125 MVaR B/R-1 at Rajarhat	PGCIL	15-03-2019	21:07 hrs	
7	765 KV Main Bay of GT-1 (Bay no-704) at Daripalli	NTPC	18-03-2019	15:50 hrs	
8	Tie bay of ICT-II & Future (Bay B-20) at NPGC	NPGC	19-03-2019		
9	NSTPP Unit-1 (660MW)	NPGC	23-03-2019	22:31 hrs	First time synchronization
10	125 MVaR B/R-2 at Rajarhat	PGCIL	29-03-2019	23:56 hrs	
11	80 MVaR L/R at Rajarhat for 400KV Rajarhat-Farakka line charged as B/R with main bay 404	PGCIL	30-03-2019	04:10 hrs	
12	IBTPS,OPGC Unit #3(660MW)	OPGC	30-03-2019	08:00Hrs	
13	240 MVaR L/R at Sundergarh for 765 KV Sundergarh-Raipur-2 charged as B/R	PGCIL	31-03-2019	00:12 hrs	
14	132 KV New_Aska -Purussotampur	OPTCL	31-03-2019	23:32 Hrs	
15	132 KV Aska -New_Aska	OPTCL	31-03-2019	23:32 Hrs	

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

System frequency touched a maximum of 50.30 Hz at 04:34Hrs of 01/03/19and a minimum of 49.64 Hz at 20:38 2Hrs of 10/03/19. Hence, no report of operation of UFR has been received from any of the constituents.

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

Sr No	GD/ GI	Date	Time	S/S involved	Summary	Load loss (MW)	Gen loss (MW)
1	GI-II	14-03-2019	13:39	SEL	At 13:39 hrs 400 kV SEL - Jharsuguda D/C and 400 kV SEL - Lapanga D/C tripped at 13:39 hrs. In PMU data, fault has been observed in R and Y phases. As per DR received DT received at Jharsuguda end.	0	0
2	GD-I	15-03-2019	11:59	Lapanga	400 kV bus I at Lapanga was out of service since previous day. At 11:59 hrs, bus II tripped due to isolator flashover of 400 kV Lapanga - Meramundali - II resulting total power failure at 400/220 kV at Lapanga s/s.	0	0
3	GI-II	27-03-2019	12:42	Binaguri	400 kV Alipurduar - Binaguri - II tripped at 11:34 hrs on B-N fault. This line was charged at 12:42 hrs from Alipurduar end. While closing breaker at Binaguri end, all main breakers connected to bus I tripped. 400 kV Purnea - Binaguri D/C also tripped at this event.	0	0

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Response Based on ERLDC SCADA Data (generation end data yet to be received)

Generating Station	Percentage of ideal response	Remarks	Action plans to be taken by generating stations/SLDCs as per decision taken in special meeting on 31-03-19 at ERPC
FSTPP I & II	-17%	Non-Satisfactory	DCS to be replaced in next overhauling for unit I, II & III; Fine tuning of logic for RGMO to be completed by March 2019.**NTPC to share the status of RGMO tuning, DCS replacement and reason for non-satisfactory response.**
FSTPP III	0 %	Non-Satisfactory	
KhSTPP I	73%	Satisfactory and response lasted for around 5 min	NTPC intimated that by 4th Feb 2019 the fine-tuning activity would be completed. **NTPC to share the status of RGMO tuning and reason for non-satisfactory response for stage – II.**
KhSTPP II	7%	Non-Satisfactory	
Talcher I & II	--	More data resolution is required for analysis	Fine-tuning of RGMO was going on and expected to be completed by Next Overhauling.**NTPC to share the status of RGMO tuning and response observed at the time of the event.**
Barh	50 %	Unit generation was being ramped up prior to the event	NTPC to take up the matter of data collection in .csv format and the issue of fine tuning of the RGMO with their OEM.**NTPC to share the status of RGMO tuning and the status of data collection in .csv format.**
GMR	80 %	Satisfactory and response lasted for more than 5 min	No representative from GMR attended the meeting.
Adhunik	70 %	Satisfactory	No representative from Adhunik attended the meeting.
Teesta V	44 %	Unit generation was being ramped up prior to the event	NHPC to take up the matter of data collection in .csv format and the issue of fine tuning of the RGMO with their OEM.**NHPC to share the status of RGMO tuning and the status of data collection in .csv format.NHPC to provide a detailed explanation with reason on the statement on no response during high hydro season.**
Teesta III &Dikchu	--	Unit not in service	Teesta III to fine-tune RGMO. No representative from Dikchu attended the meeting.**Teesta III &Dikchu to share the status of RGMO tuning.**
JITPL	7%	Non-Satisfactory	No representative from JITPL attended the meeting.**JITPL to share the status of RGMO tuning and reason for non-satisfactory response.**
BRBCL	24%	Non-Satisfactory	BRBCL to take up the issue of fine tuning of the RGMO with their OEM.**BRBCL to share the status of RGMO tuning and reason for non-satisfactory response.**
Jharkhand	-194%	Non-Satisfactory	Jharkhand SLDC to calculate FRC observed at the boundary of the control area and reason for non-satisfactory response.
WB	14%	Non-Satisfactory	WB SLDC to calculate FRC observed at the boundary of the control area and reason for non-satisfactory response. Format for calculation of FRC has been circulated.

Response calculated from High-Resolution Data recorded at generating stations/SLDCs *

Generating Station/ SLDC **	Responses observed	Action plans to be taken by generating stations/SLDCs as per decision taken in special meeting on 31-03-19 at ERPC
MPL	**Non-Satisfactory**; Generation reduced with reduction in frequency; resolution of data received is not suitable for analysis.	MPL to take up the issue of fine tuning of the RGMO with their OEM. **MPL to share the status of RGMO tuning and reason for non-satisfactory response.**
HEL	**Non-Satisfactory**; As per data received, 3 MW generation increase has been observed in place of RGMO influence of 6 MW. As per 5% droop characteristics, ideal response should be 21.84 MW.	**HEL to share reason for RGMO influence less than ideal response as per droop characteristics.**
Bakreswar TPS	**Non-Satisfactory**; Response of unit I, II & III cannot be analyzed due to non-availability of data in excel/csv format. In case of unit 4 & 5, unit generation was more than I/C and response was very less and did not last for more than 10 sec.	**WBPDCL to share the reason for non-satisfactory response along with remedial action to be taken.**
FRC shared by DVC	**Non-Satisfactory**; As per generation data received, primary frequency response is not observed.	DVC intimated in the meeting that they were going to have an internal meeting. **DVC to share the reason for non-satisfactory response along with remedial action to be taken.**
FRC shared by GRIDCO	**Non-Satisfactory** response for Balimela unit # 6 and #8, Burla, Indravati& U Kolab units. Below satisfactory response for Balimela #3 & #4. Data were not available for Rengali and IBTPS.	**GRIDCO to share the reason for non-satisfactory response along with remedial action to be taken**

**** Based on data received on or before 09-04-2019***

Eastern Regional Power Committee, Kolkata

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

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

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

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

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

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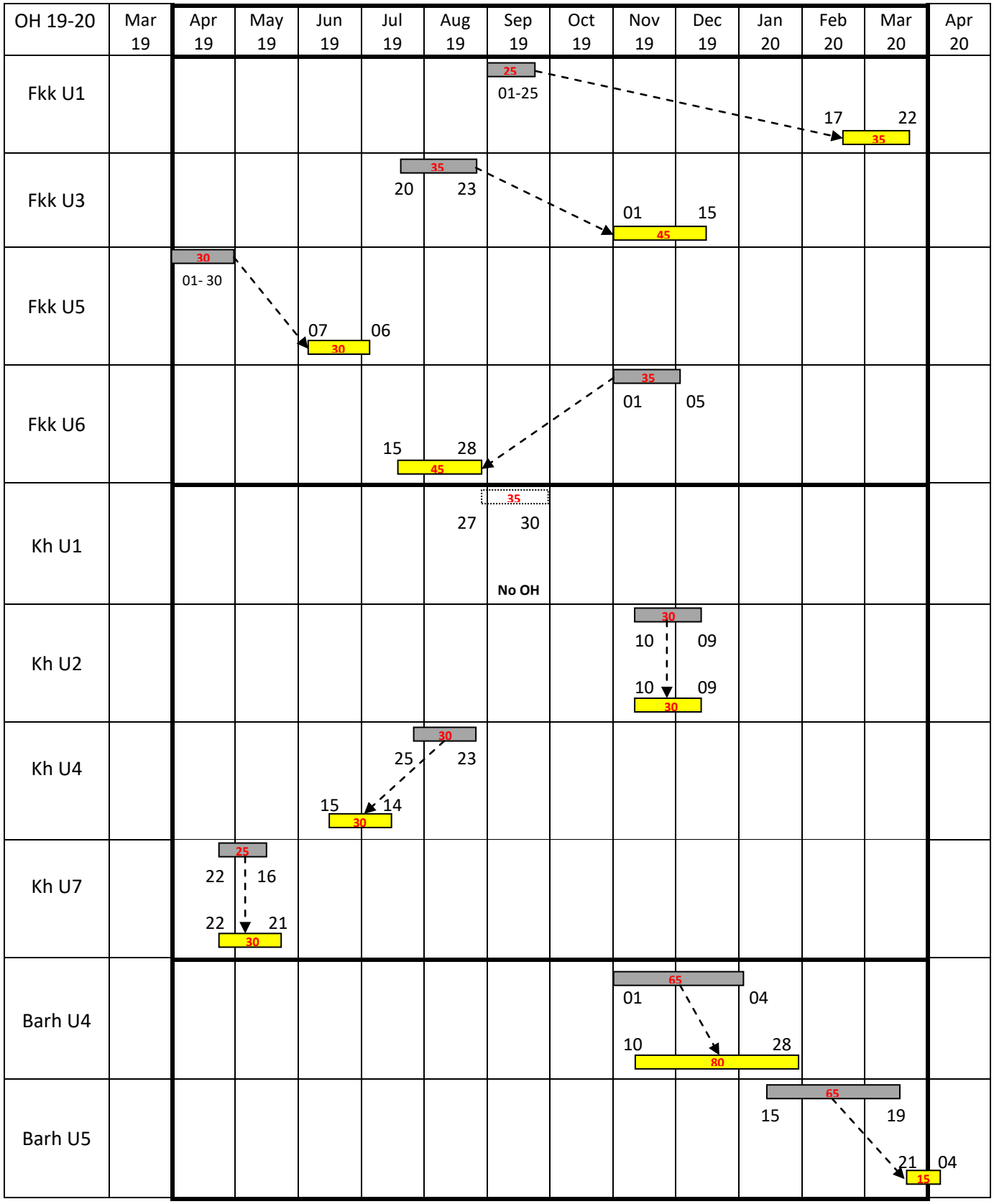
Annexure-B4

Annexure: Revision proposal for NTPC Farakka, Kahalgaon & Barh Units Overhauling 2019-20



Dussehra: 08.10.2019, Diwali:27.10.2019, Chhath : 02.11.2019

As per LGBR/OCC Revised proposal

Eastern Regional Power Committee, Kolkata

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

****

Agenda Item for 156th OCC Meeting to be held on 25.04.2019 at ERPC

Sub :- Connectivity /LTA/Evacuation system for OPGC IBTPS (2 X 660 MW) thermal power project in Odisha.

The subject matter was discussed in detail in the 153rd OCC Meeting under Item No.B.6 and it was decided as follows:

"OCC advised GRIDCO to submit the proposal to CEA for detail discussion in Standing Committee."

Subsequently both GRIDCO and OPGC approached CEA and a meeting was held at CEA, New Delhi on 26.03.2019 to review Connectivity /LTA/Evacuation system for OPGC IBTPS (2 X 660 MW) thermal power project in Odisha. The Minutes of Meeting drawn as per the discussion held is enclosed herewith for reference.

Based on the decision recorded in the said MoM dated 26.03.2019, it is clear that the operation of the Split Bus in OPGC Switchyard under closed condition of Bus Sectionalizer between Unit -3(connected to STU) and Unit-4 (connected to ISTS) i.e. operating the system under COMMON BUS mode is technically feasible.

It is to be mentioned here that, Unit-3(660 MW) has already been synchronised with STU on 15.04.2019 and both the Units of OPGC Expansion Project are expected to be commissioned by May-2019.

In view of the above facts, permission may be granted to proceed with operation under Common Bus Mode, so as to facilitate evacuation of power to GRIDCO through STU system.

In the meantime OPGC shall also be requested to approach CERC for resolution of commercial matters, as per the decision recorded in the aforesaid Minutes of Meeting.

XXXXXX

Annexure-B8

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OFFICE OF THE CHIEF LOAD DESPATCHER,SLDC

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

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

From

The Chief Load Despatcher,

SLDC, OPTCL Bhubaneswar-17

TO

THE MEMBER SECRETARY,

ERPC, Kolkata.

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

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

Sir,

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

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

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

Encl: As above

Yours faithfully

15/4/19

CHIEF LOAD DESPATCHER

SLDC, BHUBANESWAR

CC to :

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

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

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

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

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

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

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

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

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

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

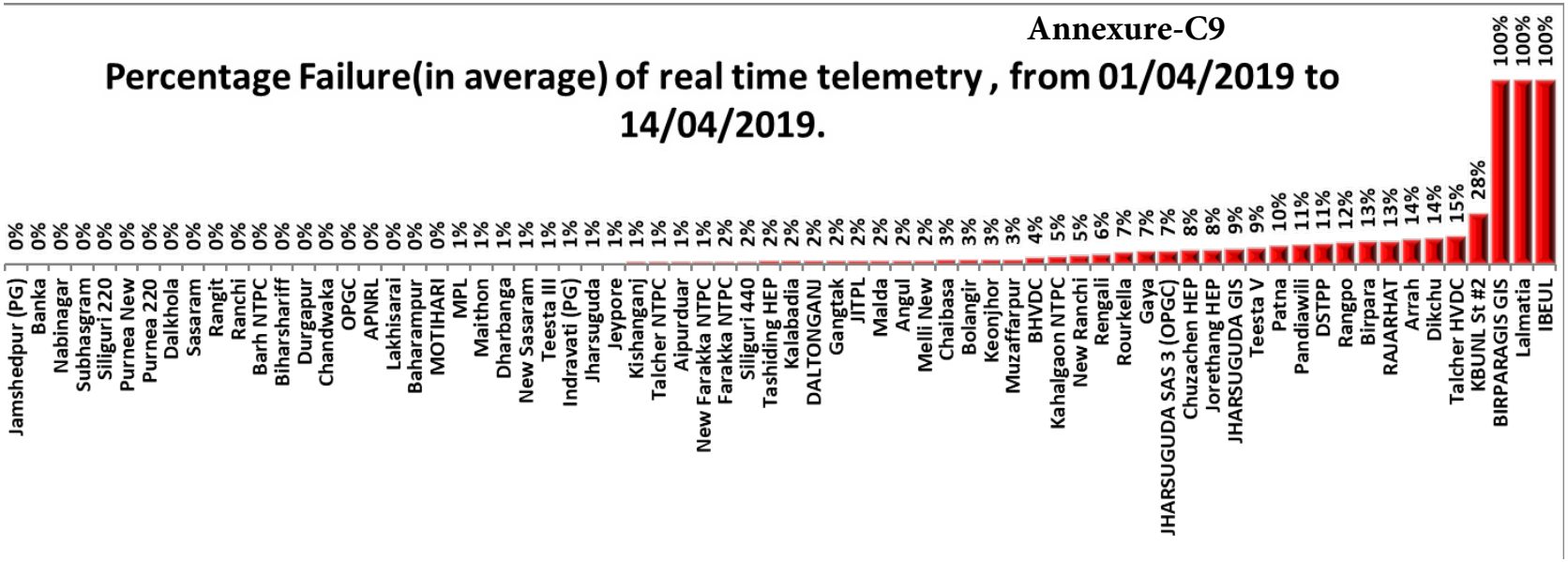
E. Generators where PSS tuning has been done and have submitted the report and the observation

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

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

Annexure-C9

Percentage Failure(in average) of real time telemetry , from 01/04/2019 to 14/04/2019.



Percentage failure in SAS/RTU data reporting for Central sector stations ▼

	14-Apr-19	13-Apr-19	12-Apr-19	11-Apr-19	10-Apr-19	9-Apr-19	8-Apr-19	7-Apr-19	6-Apr-19	5-Apr-19	4-Apr-19	3-Apr-19	2-Apr-19	1-Apr-19
JHARSUGUDA SAS	1%	0%	0%	0%	23%	1%	0%	0%	0%	1%	0%	0%	62%	14%
Chuzachen HEP	0%	0%	2%	21%	1%	0%	1%	0%	49%	35%	0%	0%	0%	0%
Jorethang HEP	23%	2%	4%	1%	3%	3%	3%	1%	1%	1%	3%	4%	2%	61%
JHARSUGUDA GIS	6%	15%	22%	15%	14%	7%	10%	9%	9%	8%	1%	1%	1%	2%
Teesta V	0%	89%	39%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Patna	9%	16%	8%	10%	15%	12%	9%	9%	9%	10%	8%	8%	9%	9%
Pandiawili	11%	20%	26%	17%	22%	11%	10%	10%	11%	11%	0%	0%	0%	1%
DSTPP	0%	0%	40%	0%	39%	68%	0%	0%	0%	1%	0%	0%	8%	1%
Rangpo	0%	0%	0%	0%	56%	100%	9%	0%	0%	0%	0%	0%	0%	0%
Birpara	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	78%	100%
RAJARHAT	0%	0%	0%	0%	33%	1%	0%	6%	9%	0%	0%	51%	64%	14%
Arrah	0%	0%	1%	7%	11%	13%	11%	2%	1%	2%	3%	2%	45%	99%
Dikchu	0%	0%	0%	0%	7%	0%	0%	0%	0%	25%	0%	46%	78%	44%
Talcher HVDC	0%	0%	0%	0%	0%	1%	0%	12%	12%	74%	43%	5%	26%	42%
KBUNL St #2	22%	25%	16%	64%	53%	25%	22%	31%	30%	30%	16%	16%	19%	25%
BIRPARA GIS	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Lalmatia	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
IBEUL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Talcher STPS related matter

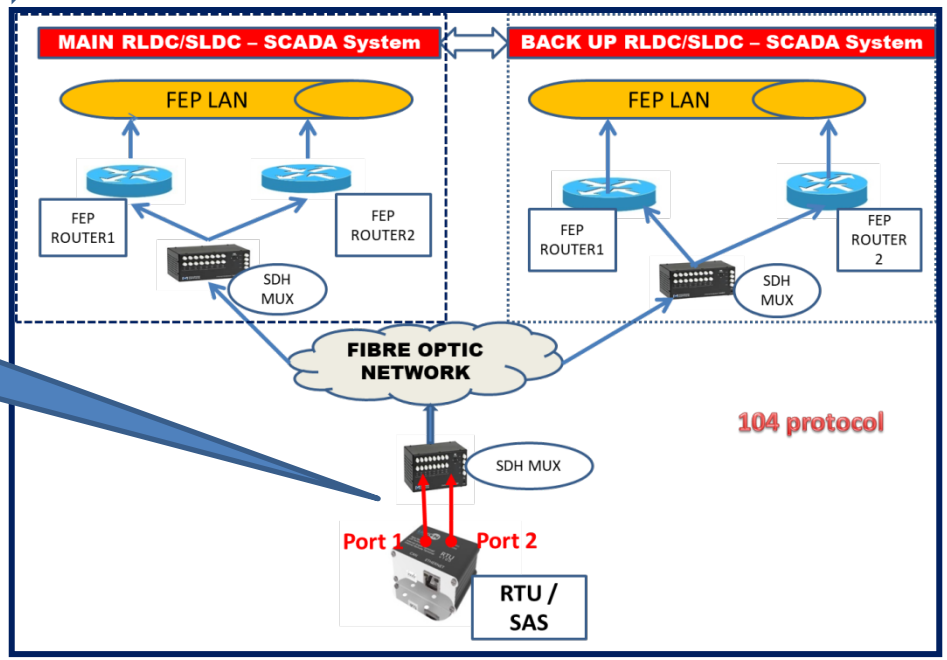
1. Non availability of elementary SCADA data

Sl No.	Feeder Name	Measurement	
1	400kv Rourkela -1	MVAr	
2	400/11 kV Station transformer #3	MVAr	→ Pending
3	400/11 kV Station transformer #4	MVAr	
4	400kvV Bus Sectionalizer of Bus 2 of stage 1 and Bus 2 of stage 2	MW & MVAr	
5	GT - 6 (UNIT-6)	MVAr	→ Pending

2. Stand by channel configuration.

Resolution:

1. **Port 1 & Port 2 should be dedicated for reporting to ERLDC Main CC and ERLDC Back up CC**



Non availability of SCADA data above 220 kV Level

WBSETCL

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

Non availability of SCADA data above 220 kV Level &132kV Station having tie lines

- **BIHAR**
  - Barauni TPS 220kV
  - Baisi 132kV.
- **Odisha**
  - Narsingpur 220kV Station commissioned on 24-08-2018. SCADA data yet to be integrated at Odissa SLDC end.
  - Nalco 220kV : Most of CB and Isolator data are not available
  - Jindal Steel and Power Limited (JSPL) 400kV: Most of CB and Isolator data are not available
- **JHARKHAND**
  - Hatia New 220 : RTU not reporting to SLDC.
  - Dumka 220 : RTU not yet integrated at Jharkhand SLDC.
  - Jamtara 132kV
  - Dalbhumgarh 132kV
  - Garwa 132kV
  - Deoghar 132kV
  - Kendposi 132 kV

Annexure-C18

SIEMENS

ENERGY MANAGEMENT

To
Eastern Region Power Committee
14, Golf Club Road , Tollygunge
Kolkata-700033

Name: Archik Byabortta
Designation: RC IN EM S ER
(Energy Management – Sales)
Mobile: 8910894204
Email: Archik.byabortta@siemens.com

Kind Attention: Mr J. Bandyopadhyay
Member Secretary

Date: 20/03/2019

Subject: Request for coordination of Maintenance & support (AMC) renewal of PSS®E supplied Licenses through Power grid for state transmission utilities (STU's), State load dispatch center's for Eastern Region.

Reference PGCIL Contract No: NO. CC-CS/357-CC/ITSW-1900/3/G2/CA/4394 DATED 13.8.2012 FOR PROCUREMENT OF UPGRADED VERSION OF POWER SYSTEM ANALYSIS SOFTWARE (PSS/E), IMPARTING EXPERT PRODUCT TRAININGS AND PROVIDING MAINTENANCE & SUPPORT - MAINTENANCE & SUPPORT RENEWAL & CC-CS/357-CC/ITSW-1900/3/G2/CA/4394/AMEND-1 DATED 30.04.2013.

Dear Sir,

As you are aware, Power grid had done One-time Capacity Building exercise for different stake holders under which 249 no's of PSS®E Licenses were distributed to Power grid, STU's, SLDC's RLDC's, CEA, CERC, SERC etc. in the year 2012 that includes 6 years of maintenance & Support for supplied licenses which has ended on 30th Nov,2018.

In this regard, we would like to request Regional Power Committees (RPC's) to act as an coordinator/aggregator and get the maintenance & support renewed of all the existing supplied licenses for the entities falling under your jurisdiction so that all these licenses can be upgraded with new features and we can continue to support seamlessly **the way they have been doing it on annual basis since Dec, 2012**

With ERPC playing the role of a coordinator/aggregator, following challenges can be avoided;

- Supporting PGCIL/CEA/NLDC **to have a common platform of PSS®E across all states and seamless integration of network models**. If all stakeholders are not current on M&S then they will not have same version of PSS®E which would **create difficulties to PGCIL/CEA/NLDC to synchronize with other state utilities because of version mismatch issues.**
- STU's and SLDC's would find it **difficult to justify & purchase M&S separately** as original contract was not decided by them.
- M&S price approval at each state (even for the interested states) would be a long-time process.
- **Conducting PSS®E UGM every year would be difficult** as only few entities would be current on M&S.
- The implementation of a **country wide network model management centrally** (for e.g. Model on Demand (MOD) kind of application) for long term planning across India becomes more challenging if other stakeholders are not current in M&S with the latest version of the software
- **PTI supporting entities by providing free training sessions across all regions (on quarterly basis)** thus supporting them -in the implementation of updates as well as other PSS®E related topics would not be possible if some STU's do not renew the M&S.
- Conducting quarterly webinars to resolve PSS®E specific user issues or highlighting new features would be difficult if some STU's do not renew the M&S

SIEMENS

Role of Maintenance & Support Programme for supplied PSS®E licenses.

The M&S program has its goal to seamless usage of PSS®E at PGCIL and other stakeholders for productive use by all its engineers in more than one hundred different locations spread across the country. Siemens is firmly committed to this and the comprehensive program offered to PGCIL goes well beyond the standard M&S components of software support and product upgrades. It is a comprehensive program intended to address the specific requirements of PGCIL and other stakeholders so that the continuous usage of updated PSS®E is ensured at PGCIL and other stake holders in the country.

Please note Maintenance & support is a full featured programme that provides significant additional value to the end users and majorly include the following inherent benefits which shall be covered as part of these services.

- Free Software subscription: This keeps PSS®E users current with the most up-to-date PSS®E features and functions. With this service PSS®E users automatically get the latest release of PSS®E with all its new features, models, and bug fixes. In addition, to the latest version releases, users who have reported a bug that needs to be fixed can download software patches. All new releases during the maintenance & support (M&S) period, **two new versions are released every year free of cost with enhanced features based on customer feedback.**
- Technical Support: Specific features include **free unlimited 24-hour access to Siemens PTI Support website for 24-hour web-based reporting and case tracking**, 24/7 technical support by expert product engineers with guaranteed response within 24 hours.
- **Direct link to product managers & roadmaps** through access to PSS® Ideas Portal (www.siemens.com/pss-ideas) community for submitting, voting, and commenting on PSS® product ideas.
- Beta test participant: Licensee may be invited to participate in Beta testing of future releases.
- **Free updates and patches to the current and previous versions of the program.**
- Access to the "users-only" area of our World Wide Website where you get details of all the updates of the software and details recently added new models (e.g. renewable) which can be directly downloaded
- **Conducting the Indian Users Group Meetings (UGM)** and address the key topics, issues, performance review and best practice. The following is included.

  Performance Review: This will include a meeting with a senior PSS®E support engineer on site in India. It will be an open forum discussion on the PSS®E product roadmap, and any PSS®E operational topics. Engineers will be able to engage with the PSS®E support expert to get many of their questions and issues resolved instantaneously.

  Best practice Check: This is an appraisal of all aspects of STU's implementation of PSS®E by experienced Siemens technical staff. This program is intended to help utilities establish best-in-class operational procedures and optimal use of PSS®E
- **Free License support even in case of broken dongles**
- A reasonable amount of support in the installation and operation of the program for the current revision and last previous revision of the program. Support requests are accepted via telephone or email or personnel visit

Additional M&S Support: Siemens PTI would also conduct a survey on an all-India basis where every stakeholder would be approached for any support and training needs for PSS®E software. However, Siemens PTI is committed to support the stakeholders as following:

- Siemens PTI to conduct **one basic PSS®E training per quarter in all 4 regions** across the country to cater to the needs of various regions on planning & operational planning studies.
- Siemens PTI to support entities who are currently not using PSS®E by providing the required support to migrate to PSS®E.
- Siemens PTI would also be in touch with Power Grid on a quarterly basis for addressing any issues in PSS®E and provide possible resolutions to the issues

SIEMENS

We would once again request ERPC to lead the M&S Renewal Contract for jurisdiction entities (as per below) and exploit the benefit of bulk pricing discount from Siemens.

Upon the confirmation of ERPC, we would submit a maintenance & support price considering the discount of a bulk order for below 20 no's licenses for next 5 years.

The list of PSS®E Licenses which were distributed in ER States will be as following:

S.No	Entity Name	Number of PSS®E licenses
1	Damodar Valley Corporation	2
2	Damodar Valley Corporation (SLDC)	2
3	Jharkhand State Electricity Board	2
4	Jharkhand State Electricity Board (SLDC)	2
5	Odisha Power Transmission Company Ltd	2
6	Odisha Power Transmission Company Ltd (SLDC)	2
7	West Bengal State Electricity Transmission Company Ltd	2
8	West Bengal State Electricity Transmission Company Ltd (SLDC)	2
9	Bihar State Power Transmission Company Ltd	4
Total: 20 Licenses		

(Name) Brajesh Malviya
(Designation) Regional Head- Sales
Siemens Limited

Existing Substations (220 KV and above) as on 31st December 2018

1. Intra- State:

S.no.	State	Name of Transmission Utility / Tr. Service Provider (TSP)	Substation name	Highest system voltage level (kV)	Transformation voltage Ratio (s)	Transformation Capacity (MVA) at each transformation level	Line reactors (in MVAR)			Bur Reactors (in MVAR)		
							765kV	400kV	220kV / 132kV	765kV	400kV	220kV / 132kV

For Example

1	*AP*	*APTRANSCO*	*X*	*765kV*	*765/400kV* *400/220kV*	*1500* *1000*	*480*	*126*	*-*	*660*	*205*	-

2. Inter-State

S.no.	State	Name of Transmission Utility / Tr. Service Provider (TSP)	Substation name	Highest system voltage level (kV)	Transformation voltage Ratio (s)	Transformation Capacity (MVA) at each transformation level	Line reactors (in MVAR)			Bur Reactors (in MVAR)		
							765kV	400kV	220kV / 132kV	765kV	400kV	220kV / 132kV

Existing Transmission Lines (220 KV & above) as on 31st December 2018

1. Intra- State:

s.no.	State	Transmission Utility	Transmission Line		Voltage Level (KV)	Length of Transmission Lines (**in Circuit Kms**)	S/C or D/C or S/C line on D/C towers or multi-circuit & multi voltage	No. of conducter(s)/ phase	Type & Name of conductor (ACSR/AAAC/AL59/ any other; Bersimis/ Lapwing/ Moose/ Zebra/Panther/ Dog/any other)
			From (End 1)	To (End 2)					

For example:

1	*Assam*	*AEGCL*	*A*	*B*	*220*	*150*	*D/C*	*1*	*ACSR Zebra*

2. Inter- State:

s.no.	From State	To State	Transmission Utility	Transmission Line		Voltage Level (KV)	Length of Transmission Lines **(in Circuit Kms)**	S/C or D/C or S/C line on D/C towers or multi-circuit & multi voltage	No. of conducter(s)/ phase	Type & Name of conductor (ACSR/AAAC/AL59/ any other; Bersimis/ Lapwing/ Moose/ Zebra/Panther/ Dog/any other)
				From (End 1)	To (End 2)					

ANNEXURE-E

CESC CAPACITORS DETAILS

List if 6/11kV Capacitor Bank

STATION	CAPACITY (MVAR)	STATION	CAPACITY (MVAR)
Alipur	3	Kamarhati	4
Amherst Street	4.5	Kankurgachi	4.8
Auckland	3	Kasba	4.482(11kV)
Akra	4	Kuthighat	4
Baranagar	4.84	Kidderpore	4.5
Bhatpara	4	Liloah	4
Bally	3	Majerjat	3
Barisha	4.5	Maheshtala	4
Barrackpore	6	New Ballygunge East	4
BBD Bag	4	Princep Street	4
Belur	3	Patuli	4(11kV)
Budge Budge	1.5	Rabindra Sadan	4
Budge Budge South	4.8	Rashbehari	4(11kV)
Canal	4.5	Ritchie	4.8
Central Avenue	4	Srerampur	4
Dhakuria	3	Science City	4.8(11kV)
Dum Dum	4.5	Shalimar	3(2x1.5)
Entally D/S	1+3	Sinthia	4.5
Foreshore	3	Southern (Voltas)	6
Fort Gloster	1.59	Southern (Voltas)	4.5
Gourhati	4	South City	4.8
Grey Street	3.6	Strand South	4.842
Howrah Central	3	Strand North	6
Howrah South	4.842	Talpukur	4
Howrah West	4.5	Taratala	4
Jessore West	3	Tollygunge	4.8 (11kV)
Jadavpur	4	**Total**	**215.656**
Jadavpur	4.8(11kV)		

List of 132kV Capacitor Bank

STATION	CAPACITY (MVAR)
Taratala	50
East Calcutta	50
Chakmir	50
Total	**150**

List of 33kV Capacitor Bank

STATION	CAPACITY (MVAR)	STATION	CAPACITY (MVAR)
BBD Bag	15	NCGS	2x10
KRS 33 KV ODY	30	SRS	2x15
KRS M1 SECTION	30	MAJ	2x15
KRS M3 SECTION	30	JAD M1 SECTION	2x15
MSS	20	JAD M2 SECTION	2x10
BRS	15	**Total**	**315**
PRS	30		
PLN	15		

Planned Installation of Capacitor Banks in 2010-11

STATION	CAPACITY (MVAR)	LEVEL
EMSS	50	132kV
Botanical Gardens S/s	30	33kV
6 and 11 KV Distribution Stations	15-20	6/11 kV

Connected Total MVAR = 680.656

BSEB

Capacitor Bank installation at different Grid sub-station of BSEB

Sl. No.	Name of Grid S / Stn.	No. of Capacitor Bank	Capacity
1	Jakkanpur	I	2x 12000 KVAR
		II	2x 12000 KVAR
		III	2x 12000 KVAR
2.	Fatuah	I	2x 12000 KVAR
		II	2x 12000 KVAR
		III	2x 12000 KVAR
3.	Khagaul	I	2x 12000 KVAR
		II	2x 12000 KVAR
		III	2x 12000 KVAR

WBSEDCL

Present Capacitor			Future Plan of Capacitive Compensation		
Sl. No.	Name of EHV S/Stn.	Exist Comp (MVAR)	Sl. No.	Name of EHV S/Stn.	Exist Comp (MVAR)
1	Adisaptagram	10.0	1	Adisaptagram	10.0
2	Bankura	10.0	2	Arambag	10.0
3	Barasat	10.0	3	Asokenagar	10.0
4	Joka	10.0	4	Balurghat	5.0
5	Berhampur	20.0	5	KLC	10.0
6	Bishnupur	10.0	6	Barasat	20.0
7	Bolpur	20.0	7	Basirhat	10.0
8	Ch. Kona Road	10.0	8	Joka	10.0
9	Debogram	20.0	9	Berhampur	10.0
10	Dharampur	10.0	10	Bongaon	10.0
11	Egra	10.0	11	Chanditala	10.0
12	Falta	20.0	12	Coochbehar	5.0
13	Gangarampur	14.4	13	Dalkhola	10.0
14	Gokarna	10.0	14	Dharampur	10.0
15	Kalyani	10.0	15	Domjur	10.0
16	Katwa	20.0	16	Haldia	5.0
17	Kolaghat	10.0	17	Jangipara	5.0
18	Krishnagar	28.8	18	Khanyan	5.0
19	Liluah	20.0	19	Lakhikantapur	5.0
20	Midnapur	10.0	20	Liluah	10.0
21	Moinaguri	10.0	21	Malda	10.0
22	NBU	10.0	22	Midnapur	5.0
23	Raghunathgunj	10.0	23	New Haldia	5.0
24	Rishra	30.0	24	Pingla	10.0
25	Sainthia	20.0	25	Purulia	10.0
26	Salt Lake	45.0	26	Raigunj	10.0
27	Samsi	10.0	27	Raina	10.0
28	Satgachia	20.0	28	Rampurhat	10.0
29	Titagarh	25.0	29	Ranaghat	10.0
	Total	463.2	30	Siliguri	10.0
			31	Sonarpur	10.0
			32	Tamluk	10.0
			33	Tarakeswar	5.0
			34	Titagarh	10.0
			35	Ukhra	10.0
			36	Uluberia	10.0
				Total	325

OPTCL

Annexure III

2 of 2

List of Capacitor Banks installed at different Grid S/Ss and proposed installation programme

Name of Sub Station	S/S Capacity (MVA)	Rating of capacitor units (MVAR)	No of units	Total installed Capacity (MVAR)
Aska	2x40	5	1	5
Balugaon	2x20	5	1	5
Berhampur	1x12.5+1x40+1x20	10	1	10
Bolangir	2x40+1x12.5	5	2	10
Bhubaneswar	3x40	5	1	5
Cuttack	2x40	5	2	10
Kendrapara	1x40+1x20+1x12.5	5	2	10
Khurda	3x40	5	2	10
Puri	2x31.5	5	1	5
Balasore	2x40+1x12.5	10	1	10
Baripada	2x31.5	5	2	10
Bhadrak	2x40	5	2	10
Jajpur Road	1x40+2x20	5	2	10
Total installed capacity				**110**
Proposed for installation				
Sonepur	2x12.5			10
Pattamundei	1x20+1x12.5			15
Kendrapara	1x40+1x20+1x12.5			20
Kharior	2x20			10
Jajpur Tpwn	1x40+2x20			20
Rairangapur	1x20+1x12.5			10
Puri	2x31.5			10
Ransingpur	2x40			10
Chandikhol	2x20			10
Choudwar	1x20+1x40+1x10			10
Cuttack	2x40			5
Nuapatna	1x12.5+1x20			15
Sunabeda	2x12.5+1x12.5			10
Jaleswar	2x20+1x12.5			10
Bhadrak	2x40			15
Paradeep	2x20			15
Balugaon	2x20			10
Berhampur	1x12.5+1x40+1x20			10
Khurda	3x40			10
Jagatsingpur	2x20			15
Balasore	2x40+1x12.5			15
Junagarh	2x12.5			10
Phulabani				10
Total capacity (Proposed)				**275**

Power Supply Position for May 2019

SL.NO	PARTICULARS	May-19 in MW	May-19 in MU
1	BIHAR		
i)	NET MAX DEMAND	5000	2800
ii)	NET POWER AVAILABILITY- Own+KBUNL	316	171
	Central Sector+Bi-Lateral	3596	2239
iii)	SURPLUS(+)/DEFICIT(-)	-1088	-390
2	JHARKHAND		
i)	NET MAX DEMAND	1400	825
ii)	NET POWER AVAILABILITY- Own Source	341	237
	Central Sector+Bi-Lateral+KBUNL	904	542
iii)	SURPLUS(+)/DEFICIT(-)	-155	-45
3	DVC		
i)	NET MAX DEMAND (OWN)	2980	1960
ii)	NET POWER AVAILABILITY- OWN SOURCE	5247	3254
	- Central Sector+MPL+KBUNL	552	316
	BI-LATERAL EXPORT BY DVC	1772	1318
iii)	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	1048	292
4	ODISHA		
i)	NET MAX DEMAND	5075	2944.8
ii)	NET POWER AVAILABILITY- OWN+IPP+CPP	3913	2498
	- Central Sector+KBUNL	1658	1054
iii)	SURPLUS(+)/DEFICIT(-)	495	608
5	WEST BENGAL		
5.1	WBSEDCL		
i)	NET MAX DEMAND (OWN)	6800	3678
ii)	IPCL DEMAND	86	64
iii)	TOTAL WBSEDCL's DEMAND (incl.B'Desh+Sikkim+IPCL)	7091	3895
iv)	NET POWER AVAILABILITY- Own Source	3690	2477
	- Import from DPL	155	111
	- Central Sector+Bi-lateral+IPP&CPP+TLDP+IPCL	2428	1449
v)	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	-819	142
vi)	EXPORT (TO B'DESH & SIKKIM)	205	153
5.2	DPL		
i)	NET MAX DEMAND	310	210
ii)	NET POWER AVAILABILITY	465	321
iii)	SURPLUS(+)/DEFICIT(-)	155	111
5.3	CESC		
i)	NET MAX DEMAND	2250	1103
ii)	NET POWER AVAILABILITY - OWN SOURCE	750	536
	IMPORT FROM OTHER SOURCE	960	176
	IMPORT FROM HALDIA ENERGY LTD.	540	391
iii)	TOTAL AVAILABILITY	2250	1103
iv)	SURPLUS(+)/DEFICIT(-)	0	0
6	WEST BENGAL (WBSEDCL+DPL+CESC+IPCL) (excluding DVC's supply to WBSEDCL's command area)		
i)	NET MAX DEMAND OWN (Excl. Export)	9446	5055
ii)	NET POWER AVAILABILITY- Own Source	4905	3334
iii)	CS SHARE+BILETARAL+IPP/CPP+TLDP+HEL	3928	2016
iv)	SURPLUS(+)/DEFICIT(-) BEFORE WBSEDCL'S EXP.	-614	295
v)	SURPLUS(+)/DEFICIT(-) AFTER WBSEDCL'S EXP.	-819	142
7	SIKKIM		
i)	NET MAX DEMAND	100	45
ii)	NET POWER AVAILABILITY- Own Source	8	3
	- Central Sector	171	99
iii)	SURPLUS(+)/DEFICIT(-)	80	57
8	EASTERN REGION At 1.03 AS DIVERSITY FACTOR		
i)	NET MAX DEMAND	23763	13630
ii)	BI-LATERAL EXPORT BY DVC	1772	1318
iii)	EXPORT BY WBSEDCL	205	153
iv)	NET TOTAL POWER AVAILABILITY OF ER (INCLUDING CS ALLOCATION +BILATERAL+CPP+HEL)	25540	15765
v)	PEAK SURPLUS(+)/DEFICIT(-) OF ER AFTER EXPORT (v = iv - i -ii - iii)	-200	664

Quarterly Preparedness Monitoring -AGENDA

(Status as on :)

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