

North Eastern Regional Power Committee

Agenda For

132nd OCC Sub-Committee Meeting

Time of meeting : 10:00 Hrs.

Date of meeting : 12th May, 2017 (Friday)

Venue : "Hotel Nandan", Guwahati.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 131st MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

The minutes of 131st meeting of Operation Sub-committee held on 12th April, 2017 at Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2016/4556-4591 dated 25th April, 2017.

MSPCL vide mail dated. 29.04.17 has sought modification on the minutes of Agenda Item D.27 :

Recorded:

Manager, SLDC, Manipur informed that the matter has been discussed bilaterally with NTPC, with problem mainly being mis-coordination/miscommunication. She requested that the agenda item be dropped.

To be Recorded: There was mutual discussion between all three parties i.e. NTPC, SLDC Manipur and also with NERLDC (AGM). In the discussion, NTPC and NERLDC agreed that it was issue of miscommunication and mis-coordination. Further, dropping of the agenda item was proposed from NERLDC.

The Sub-committee may confirm the minutes of 131st OCCM of NERPC with above modifications as no other comments/observations were received from the constituents.

ITEMS FOR DISCUSSION

B.1. ACTION TAKEN:

1. IMPLEMENTATION OF PROJECTS FUNDED FROM PSDF:

The status as informed in 131st OCC:

State	Protection System	ADMS	CAPACITOR INSTALLATION
Arunachal Pradesh	Approval from the Govt. is awaited. Requested NERPC to take up with Govt. of AP	DPR already submitted to CEA & NLDC	Study is in progress and the same will be submitted to NERPC for approval
Nagaland	LOAs already completed and works is likely to be completed by 30.09.2017	DPR already submitted to CEA & NLDC	DPR already submitted to CEA & NLDC

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Mizoram	By Mar'17 all LOAs would be issued.	DPR already submitted to CEA & NLDC	DPR already submitted to CEA & NLDC
Manipur	By June'17 all LOAs would be issued.	DPR will be submitted soon to CEA & NLDC	DPR preparation stage
Tripura	By June'17 all LOAs would be issued.	DPR will be submitted soon to CEA & NLDC	-
Assam	By June'17 all LOAs would be issued.	DPR will be submitted soon to CEA & NLDC	-
Meghalaya	MePTCL – All LOAs will be completed by April, 2017. MePGCI – by April, 2017	DPR to be prepared. SE, SLDC requested the survey firm to discuss with them for further action.	DPR to be prepared.

The status of implementation of the above schemes (physical as well as financial progress) may please be reviewed and the entities are requested to expedite implementation of the schemes. The entities may also be advised to furnish status as per format by first week of every month on regular basis to Member Convener, PSDF Project Monitoring Group (AGM, NLDC, POSOCO) with a copy to NPC & NERPC.

States may please intimate the latest status.

2. Long Outage of Important Grid Elements:

Name of the Element	Name of Utility	Status as informed in 131st OCC	Latest status
63MVAR Reactor at Byrnihat	MePTCL	SE, MePTCL informed that internal approval for DPR has been obtained. Director, NPC informed that since it is an old reactor, PSDF funding for replacement may be easily obtained. He requested MePTCL to send the proposal for replacement with upgradation to 80MVAR immediately to NLDC/NPC.	
400KV 80MVAR Bus Reactor at Palatana	OTPC	04 Nos bushing to be replaced. Work would be completed by OTPC itself. Tentative completion 31.10.2017.	

B.2. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING APRIL, 2017

As per the data made available by NERLDC, the grid performance parameters for April, 2017 are given below:

NER PERFORMANCE DURING APRIL, 2017

States	Energy Met (MU)		w.r.t. Mar,17 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. Mar,17 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In Apr,17
	Apr-17	Mar-17		Apr-17	Mar-17		
Ar. Pradesh	58.636	61.79	-5.10	59.486	62.66	-5.07	-1.43
Assam	619.101	654.02	-5.34	659.554	681.44	-3.21	-6.13
Manipur	67.792	65.84	2.96	69.185	66.85	3.49	-2.01
Meghalaya	120.821	207.24	-41.70	120.821	207.24	-41.70	0.00
Mizoram	41.775	44.46	-6.04	42.510	45.37	-6.30	-1.73
Nagaland	53.431	56.33	-5.15	54.334	57.29	-5.16	-1.66
Tripura	96.587	87.91	9.87	101.994	90.12	13.18	-5.30
Region	1058.143	1177.60	-10.14	1107.884	1210.97	-8.51	-4.49

States	Demand Met (MW)		w.r.t. Mar,17 % inc (+) /dec (-)	Demand in (MW)		w.r.t. Mar,17 % inc (+) /dec (-)	% inc (+) /dec (-) of Demand vs met. In Apr,17
	Apr-17	Mar-17		Apr-17	Mar-17		
Ar. Pradesh	129	138	-6.52	133	139	-4.32	-3.01
Assam	1399	1391	0.58	1414	1392	1.58	-1.06
Manipur	154	158	-2.53	155	160	-3.13	-0.65
Meghalaya	292	298	-2.01	293	298	-1.68	-0.34
Mizoram	85	94	-9.57	86	96	-10.42	-1.16
Nagaland	120	122	-1.64	121	123	-1.63	-0.83
Tripura	252	228	10.53	252	228	10.53	0.00
Region	2209	2200	0.41	2258	2236	0.98	-2.17

REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU

Month---->	Apr-17	Mar-17
Total Generation in NER (Gross)	1048.652	1215.95
Total Central Sector Generation (Gross)	754.168	943.25
Total State Sector Generation (Gross)	294.484	272.70
Inter-Regional Energy Exchange		
(a) NER-ER	124.49	159.36
(b) ER-NER	120.44	35.73
(c)NER-NR	114.88	0.00
(d)NR-NER	195.72	174.78
© Net Import	76.79	51.15

AVERAGE FREQUENCY (Hz)

Month---->	Apr-17	Mar-17
	% of Time	% of Time
Below 49.9 Hz	9.02	8.95
Between 49.9 to 50.05 Hz	74.20	73.55
Above 50.05 Hz	16.78	17.50
Average	49.99	49.99
Maximum	50.26	50.34
Minimum	49.66	49.66

C. OLD ITEMS

C.1 Status of Generating Units, Transmission Lines in NER:

During 132nd OCC meeting, the status as informed by different beneficiaries is as follows:

SN	Items	Status as given in 132 nd OCC Meeting	Status as given in 131 st OCC Meeting
a. New Projects			
1	Trial operation and CoD of Unit -II of Bongaigoan TPS of NTPC		CoD by 30.04.2017.
2	400/220kV, 2x315 MVA ICT of NTPC at Bongaigaon		1st 315 MVA ICT - DoCO 24.03.2017. 2nd 315 MVA ICT - Manufacturing stage
3	Kameng HEP of NEEPCO two units (2 x 150 MW) Next two units (2x150 MW)		Delay in dam construction. First unit by early 2018.
4	Pare HEP of NEEPCO (2 x 55 MW)		Delay in dam construction. First unit by early 2018.
5	400 kV D/C Silchar - Melriat line of PGCIL		June, 2017.
6	220kV Rangia - Salakati of AEGCL		December 2017 (30 km line idle charge from Salakati end)
7	132kV Monarchak – Surjamaninagar D/C of TSECL		September, 2017
8	132kV Pasighat – Aalong of Ar. Pradesh		Charged on 08.04.17. CoD yet to be done. POWERGRID may charge for testing purpose.
9	132kV Doyang– Wokha		April, 2017
10	220 kV, 20 MVAR Bus Reactor& bay at AGBPP		Charged on 21.03.2017
11	132kV Surjamaninagar Bay at OTPC		34 months from date of NIT
12	400kV D/C Balipara – Kameng of Ar. Pradesh		July 2017.

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13	RHEP 80 MVAR Bus Reactor		T.S. completed except for GIS bay.
14	SLDCs (Ar. Pradesh, Manipur, Mizoram, Nagaland)		Manipur – Completed, handover by Apr'17, Mizoram- Apr'17, Nagaland-Building ready and handed over, AP-SAT going on.
15	400/220 kV 315 MVA ICT-II at Bongaigaon		Manufacturing stage
16	220/132 kV, 2x160 MVA ICTs at Balipara		ICT -I - May'17 ICT-II By 31 st August 2017(LOA date).
17	220/132 kV, 1x160 MVA ICT with GIS Bay at Kopili		By 31 st August 2017(LOA date).
18	400/132 kV, 1x315 MVA ICT-III at Silchar		December, 2017(LOA date).
19	Replacement of 2x315 MVA ICTs with 2x500 MVA ICTs at Misa (PG)		December, 2017(LOA date).
20	400 kV Silchar – Misa D/C		M/s Sterlite Grid 4 Limited
21	1x125 MVAR Bus Reactor at 400 kV at Balipara		December, 2017(LOA date).
22	1x125 MVAR Bus Reactor at 400 kV Bongaigoan		December, 2017(LOA date).
23	Bays at Hailakandi & 132V Silchar-Hailakandi		June, 2017.
24	Tuirial HEP of NEEPCO		Unit #I - Oct'2017 Unit #II - Dec'2017
25	New Umtru HEP of MePGCL (2x20MW)		Unit #I- synchronization April'2017
b. Elements under breakdown/ upgradation			
26	63MVAR Reactor at Byrnihat of Me.PTCL		As recorded in item B.1.(2)
27	Up-gradation of 132 kV Lumshnong-Panchgram line		DPR submitted for board approval.
28	Switchable line Reactors at 400kV Balipara & Bongaigoan		Bongaigaon-May'17

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29	PLCC Panels at Loktak end of Loktak – Ningthoukhong 132 kV feeder and Loktak - Rengpang 132 kV feeder		May'2018
30	LILO of 132kV Ranganadi – Nirjuli at Pare of NEEPCO by PGCIL		Work given to KEC. Completion by May'2018
31	LILO of 132kV Ranganadi – Itanagar (Chimpu) at Pare of Ar. Pradesh		Bay 1 at RHEP for Pare: May'17 Bay 2 at RHEP for Itanagar: Mar'18
32	400KV 80MVAR Bus Reactor at OTPC Palatana		As recorded in item B.1.(2)

Concerned constituents may kindly intimate the status.

C.2 Furnishing of UFR Report and status of Implementation:

As per recommendation of enquiry Committee, the status of installation of UFR in NER was already circulated earlier. It is gathered that, 18.5 MW quantum is yet to be implemented in Arunachal Pradesh & Manipur.

The 123rd OCC forum decided that monthly report is not being furnished. As per clauses of relevant regulations, and Order of Hon'ble CERC in matter of Petition no. 113/MP/2014, NERLDC and NERPC are mandated to submit status of UFR operation and non-operation to CERC. SLDCs were thus requested to submit UFR operation details (feeder-wise quantum of load relief to be indicated) on monthly basis, and even if no UFR operated in particular month, it should indicated as NIL.

The latest status as informed by NERLDC in 131st OCC:

Arunachal Pradesh	Furnished for March'17
Assam	Furnished for March'17
Manipur	Furnished for March'17
Meghalaya	Furnished for March'17
Mizoram	Furnished for March'17
Nagaland	Furnished for March'17
Tripura	Furnished for Feb'17

In 131st OCC, NERPC informed the forum that a team will be formed before next OCC for inspection at 1st Stage. 1st stage will cover Arunachal Pradesh, Assam and Meghalaya. Team to discuss possibilities for mapping of feeders identified for UFR with SCADA.

NERPC/NERLDC may please inform the status.

D. NEW ITEMS

D.1 Generation Planning (ongoing and planned outages)

NEEPCO & NHPC may kindly intimate the availability for hydro stations:

Generating Station	Units running	MW	MU	Reservoir
Khandong				
Kopili				
Kopili-II				
Ranganadi			Subject to inflow	
Doyang				
Loktak				
AGBPP	-	-	-	-
AGTPP	-	-	-	-

Hydro planning

The outage of other generating stations may be approved considering the present water levels in reservoirs.

The Committee may discuss and approve the proposed shutdown by Generating Stations as given in Annexure – D.2 below.

D.2 Outage Planning Transmission elements

It was agreed in the 99th OCC meeting that shutdown will be availed only after approval is given by the OCC forum. It was also agreed that deferment/revision of outages elements other than already approved in OCC will be henceforth put/displayed in the website of NERPC (**under Operational Activities/OCC Approved shutdown**) as per CERC regulations/ CEA guidelines etc for ensuring smooth & secure grid operation.

Furnishing request of shut down of the element, which was approved by NERPC, by Indenting Agency (ISTS licensees/STUs/Generating Companies) to NERLDC: Planned shutdown approved by NERPC shall be considered for implementation by NERLDC on D-3 basis. If an outage is to be availed on say 10th of the month, the shutdown availing agency would reconfirm to NERLDC on 7th of the month by 10:00 Hr. This practice is necessary to ensure optimal capacity utilization and the time required for associated system study/coordination by/amongst RLDC/NLDC.

In 124th OCCM, SE(C&O) strongly opined that constituents should inform to NERPC/NERLDC in case shutdown is not avail as approved in the OCC meeting and should mention clearly the reason for not availing the shutdown. The full list of shutdown would be placed in the next OCC by NERLDC so that proper record can be made in future for generating units as well as transmission lines. All constituents endorsed the view of SE(C&O).

In 130th OCCM, Member Secretary opined strongly about non commitments of earlier decision by the constituents and stated that all proposed plan shutdowns and agenda for the next OCC meeting should be sent to NERPC Secretariat latest by 5th day of next month. He directed SE(C&O) that the decision should be strictly adhere to and no shutdowns or agenda will be entertained after that stipulated date.

The sub-Committee may kindly discuss and approve the transmission line outages proposed by Constituents for April, 2017 - May, 2017 at Annexure- D.2., which is available in the website of NERPC.

D.3 Estimated Transmission Availability Certificate (TAC) for the month of January 2017 & February, 2017:

NETC and POWERGRID have submitted the outage data for the month of January, 2017 & February 2017. So the attributability of outage of the said elements may please be finalized.

Members may please discuss.

D.4 Ratification of Technical and Commercial data for computation of PoC Charges and Losses for Q2 of 2017-18 (July 2017 – September 2017):

In the 3rd Validation Committee meeting for PoC application period Oct'15-Dec'15, held on 30th September 2015, at NLDC conference Hall, CERC had proposed a methodology for ratification of projected data at RPC form.

In line with the decision in the Validation Committee meeting, Demand and Generation projections w.r.t North Eastern Region constituents as given by Implementing Agency[as per **Annexure D.4** to be distributed during meeting] for ratification in 132nd OCC Meeting of NERPC.

During last validation committee meeting for Q1 of 2017-18 (April-June'17) held on 21st February'17, Hon'ble CERC has pointed out that there is a huge difference between projected and actual demand data.

In 130th OCCM, NERLDC requested all the states to give reason for the huge difference between projected and actual demand data for Q3 of 2016-17 (Oct-Dec'16) as pointed out by Hon'ble CERC.

Members are requested to ratify data for Q2 (2017-18).

D.5 Assessment of Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) by SLDC on respective Inter-State Transmission Corridor

Updated PSS/E Base Cases have been **mailed to all the SLDCs on 03.05.17**. All SLDCs are requested to assess the Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) for the month of May'17 using these cases, and submit the study cases and results to NERLDC by **19.05.17**.

NERLDC has assessed the state control area wise, state subsystem wise and group of control-area wise TTCs for NER Grid, on behalf of SLDCs of NER. The study results conducted by NERLDC **mailed to all SLDCs on 04.05.17**. SLDCs are requested to check the TTC of their control areas as computed by NERLDC and **give comments, if any, by 19.05.17**. The TTC figures for May'17 are as follows:

Name of States	Off Peak TTC in MW		Peak TTC in MW	
	N-0	N-1	N-0	N-1
Arunachal Pradesh	206	179	215	188
Assam	1527	1370	1680	1452
Manipur	280	261	317	203
Meghalaya	323	213	282	184
Mizoram	126	115	126	115
Nagaland	177	78	174	70
Tripura	337	140	300	177

If no comments received from any SLDCs of NER, TTC, ATC & TRM figures of State control area and group of control areas as assessed by NERLDC will be considered as final and may be uploaded on website.

As per discussions in 122nd OCC meeting of NERPC, all SLDCs of NER may host the assessed TTC / ATC / TRM figures on their website for information dissemination.

Members may please discuss.

D.6. Reporting of commissioned transmission elements for TARANG App.

TARANG (Transmission App for Real Time Monitoring and Growth) Mobile App & Web Portal has been developed by REC Transmission Projects Company Ltd (RECPTL) for progress monitoring of transmission systems on Pan-India basis, which was launched by Hon'ble Minister of State for Power on 17th August 2016. The app can be downloaded on smartphones or be accessed through its website (www.tarang.website).

As part of the responsibility charter, POSOCO has been assigned the responsibility to update the systems under operation in the 'Completed Transmission Systems' section of the app.

In order to provide this information to the Ministry of Power, it is requested to provide the details of commissioning of transmission elements in respective state for each month by the 3rd day of the next month to NERLDC.

In 130th OCCM, NERLDC informed that only MSPCL is mailing the report on commissioned elements. AEGCL requested that the details be perused from Progress Report, which is being mailed regularly. NERLDC informed that the progress report is being submitted by 20th of every month but the information about newly commissioned elements are to be passed on to NLDC by 5th of every month. MePTCL informed that the latest status of commissioned elements would be mailed within one week. Forum requested all SLDCs to submit the information of newly commissioned elements in the previous month by 3rd of every month to NLDC & copy to NERPC & NERLDC.

In 131st OCCM, NERLDC informed that new substations have been commissioned by AEGCL but details have not been submitted. Forum requested AEGCL to submit the details as early as possible.

NERLDC may please inform the status.

D.7. Installation of DAS to monitor FRC for generators:

In continuation to discussions in 125th OCC meeting on this matter, and letter from ED-NLDC dtd. 10th October'16, it is requested that all generators may take urgent action to ensure Primary response as per stipulation [As per Sec.1(4) of Part-II of CEA's Grid Connectivity standards, 0-10% droop for hydro generator governors ; 3-6% droop for Thermal generator governors].

Also, as per Section 11.2.(i) of CEA's Technical Standards for Construction, all generating stations must store important analog data in 1 seconds interval.

NEEPCO has informed that AGTPP and Ranganadi HEP have properly working DAS, that are capable of storing Machine side data like Voltage, frequency, Active power generation, Reactive power generation, Line currents, etc. Also, it was confirmed in last OCC that DAS at AGBPP is installed but not time-synchronized.

All generating stations may confirm that their governors are properly tuned for giving primary response as per regulations.

Also, NEEPCO may intimate the status of installation of DAS for their remaining generating stations.

In 130th OCCM, NERLDC informed that no data has been received till date. The forum requested all the concerned generating utilities to submit the data forthwith. NERLDC requested all generators to furnish data within 6 hours in case of an LFO event so that the matter can be properly analyzed within 24 Hrs.

In 131st OCCM, NERLDC informed that no data has been received for the above mentioned events. The forum noted the status of installation of DAS in generating station as under:

Name of Generating Station	Whether DAS installed
Palatana GBPP	Yes
BgTPP	Yes
AGTCCPP Extension	Yes
Ranganadi HEP	Yes
AGTCCPP	No
AGBPP	No
Khandong HEP	No
Kopili HEP	No
Doyang HEP	No
Loktak HEP	No

NERLDC also informed that on 03.04.2017, there was generation loss of 1300 MW in SR with frequency dip of 0.6 Hz. NERLDC requested ISGS to submit the data of the event at the earliest.

NEEPCO/NHPC/NERLDC may please inform the status.

D.8. Status of reactors under outage in NER Grid

400 kV Nodes in NER Grid are experiencing high voltage during Off-Peak hours. As per information available with NERLDC, the following reactors are under outage:

63 Mvar Line Reactor of 400 kV Balipara - Bongaigaon III line at Bongaigaon is under out since 12.11.16.

400 kV, 80 Mvar Bus Reactor at Misa is under outage since 03.12.16.

400 kV, 63 Mvar Bus Reactor at Byrnihat is under outage since 09.12.14

400 kV, 80 Mvar Bus Reactor at Palatana is under outage since 15.03.16

200 kV, 2x12.5 Mvar Bus Reactor at Samaguri is under long outage.

132 kV, 2x2 Mvar Bus Reactor at Dharmanagar is under long outage.

It is requested to inform the status of restoration of the above reactors at the earliest.

Apart from the above reactors, it is also requested to provide commissioning status of the following reactors:

20 Mvar Line Reactor of 220 kV AGBPP - New Mariani (PG) line at AGBPP

Conversion of line Reactors of 400 kV Balipara - Bongaigoan I & II lines at Balipara and Bongaigaon to Bus reactors (4 Nos.)

400 kV, 1x125 Mvar Bus Reactor at Balipara

400 kV, 1x125 Mvar Bus Reactor at Bongaigaon.

400 kV, 1x80 Mvar Bus Reactor at Ranganadi.

220 kV, 1x31.5 Mvar Bus Reactor at Mokokchung (PG).

In view the Critical voltage profile of NER Grid in Off-Peak hours, it is suggested no shutdown of Reactors in NER Grid shall be availed unless in case of Emergency.

The status of different reactors under outage as informed in 131st OCC is as follows:

Sl.No.	Name of element	Status on 131 st OCC Meeting
1.	63 Mvar Line Reactor of 400 kV Balipara - Bongaigaon III line at Bongaigaon	Within 30.05.17
2.	63MVAR bus reactor at Byrnihat	Pls refer to Item B.1.(2)
3.	80 Mvar Bus Reactor at Palatana	Within 31.10.2017 would be charged.
4.	2x12.5 Mvar Bus Reactor at Samaguri	Exact status to be informed by next OCC meeting
5.	2x2 Mvar Bus Reactor at Dharmanagar	De-commissioned
6.	20 Mvar Line Reactor of 220 kV AGBPP	Charged on 21.03.2017

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7.	400 kV, 1x125 Mvar Bus Reactor at Balipara	Pls refer to Item C.1.(22)
8.	400 kV, 1x125 Mvar Bus Reactor at Bongaigaon	Pls refer to Item C.1.(23)
9.	400 kV, 1x80 Mvar Bus Reactor at Ranganadi.	Pls refer to Item C.1.(14)
10.	220 kV, 1x31.5 Mvar Bus Reactor at Mokokchung (PG).	December'17

AEGCL/TSECL/MeECL/NERTS may please inform the latest status.

D.9. Delay in restoration of Manipur system after partial collapse:

On 03/02/2017 at 10.05 hrs Manipur system collapsed partially affecting around 50 MW of load in surrounding areas of Imphal(MA). Ningthoukhong, Jiribam(MA) loads were not affected. As reported by SLDC, Imphal, the reason for the disturbance was bursting of one 33kV Cable & Bus PT at Imphal S/S of Manipur. This fault resulted in tripping of following lines-

- 1) 132 kV Dimapur – Imphal(PG) from Dimapur end
- 2) 132 kV Loktak – Imphal(PG)from Loktak end
- 3) 132 kV Silchar – Imphal(PG) I & II from Silchar end
- 4) 132 kV Dimapur – Imphal from Dimapur end

Despite of best efforts the system restoration took considerable time and only at 1144 Hrs power could be extended to Imphal(MA) from Imphal(PG).

Concerned authorities are requested to please elaborate the reasons for delay as well as unwarranted trippings of above lines due to internal faults in Manipur system.

In 129th OCCM, MSPCL representative informed that on 03.02.2017 faulty cable feeder was charged multiple times from Imphal(PG) end without communicating with SLDC, Manipur.

DGM (AM), NERTS informed that a detailed investigation would be carried and forum would be apprised. MSPCL informed that due to non-availability of persons at Imphal (PG) restoration was delayed. The forum expressed concerned about the incident and requested NERTS to avoid the same in future.

In 130th OCCM, DGM(AM),NERTS informed that investigation is still underway. The forum expressed concerned on NERTS for the delay in investigation. EE, SLDC, Ar. Pradesh opined that the delay in restoration in most of the cases is due to mis-coordination. Administrative problems like these should be sorted out bilaterally. However, in this regard for delay in addressing the issue on NERTS part, is not appreciated. Members unanimously approved his opinion.

In 131st OCCM, DGM(AM),NERTS informed that delay in restoration was primarily due to mis-coordination between RLDC/SLDC. After detailed deliberation forum decided that committee of concerned personnel (RLDC/SLDC-Imphal /Imphal (PG) involved in operation on that particular day would file a report for future corrective measures.

NERTS may please intimate the status.

D.10. FOLD Working Group on Hydro:

NERLDC informed that during 18th FOLD (Forum of Load Despatcher) held on 21st November'17 at New Delhi formation of Working Group on Hydro for studying various aspects of Hydro Stations was discussed. Letter from CEO, POSOCO (Letter No. POSOCO/NLDC/AASO/2017/1325 dated 16th Feb'17) regarding circulation of a Questionnaire was presented and discussed. Questionnaire was circulated among the constituents.

NERLDC informed the following status in 131st OCC meeting:

AEGCL	Submitted
NEEPCO Stations	Submitted
NHPC	Submitted
MePTCL	Submitted
Mizoram	Pending
Nagaland	Pending
Tripura	Submitted

NERLDC informed that details of stations with capacity less than 10 MW are also to be indicated in the questionnaire. NERLDC informed the forum that Working Group on Hydro for studying various aspects of Hydro Stations was formed and a meeting is going to be held on 18th Apr'17 regarding finalization of Hydro Report. Letter from FOLD Secretary (Letter No. POSOCO/NLDC/FOLD/20177 dated 11th April'17) regarding the same was circulated during the meeting). NERLDC requested SLDCs of NER, NEEPCO and NHPC to attend the meeting on 18th April'17.

NERLDC may please inform the status.

D.11. Windy Weather Preparedness:

All states of North Eastern Region usually experience heavy windy weather from mid of March and this prevails till last of April. As a result of this weather condition, chances of load crashes in the state system as well as tripping of critical grid elements that can lead to Grid Disturbances are high. Last year, in March there were 24 Grid Disturbances and 3 load crashes reported while in April, number of Grid disturbances increased to 45 and load crashes to 15 Nos.

As a part of this preparedness, NERLDC has given an activity list that is to be followed to all states of NER.

During windy season, most of the tripping of lines are due to lack of proper vegetation clearance especially due to bamboos coming to the vicinity of line as observed in previous years. So it is very much necessary to clear all vegetation to avoid unwanted tripping at the earliest.

As per CERC Order in Petition number 9/SM/2014 dated 14.06.16, in the matter of Investigation of tower collapse and load crash in Northern Region on 30.5.2014, Hon'ble CERC has directed PGCIL to install Anemometer in its all sub-stations to record wind speed.

Members may discuss. It is requested POWERGRID to furnish status of installation of Anemometers.

In 130th OCCM, the forum approved the activity list and recommended that it is to be strictly followed by all the utilities. AEGCL informed that Point 5 in Activity list is important to Assam grid, particularly w.r.t. Kathalguri. NERLDC informed the forum that huge margin was observed between actual absorption of MVAR and capability limits in case of AGBPP units & BgTPP unit where high voltage problem persists. Sr. Manager, NEEPCO informed that AVR takes care of reactive compensation automatically. Further with commissioning of 20 MVAR reactor at Kathalguri the situation would improve to a large extent.

The forum requested to all generators to absorb reactive power to maintain voltage profile.

Member Secretary, NERPC explained the importance of installation of anemometer in POWERGRID substations and requested POWERGRID to furnish status of installation of anemometers in the next OCC meeting.

In 131st OCCM, DGM(AM),NERTS agreed to revert back in the next OCC meeting on the matter.

NERLDC informed the forum that Ministry of Power had reviewed Power supply Position and preparedness for summer, 2017 on 31st Mar'17. Press release of the meeting is available at <http://pib.nic.in/newsite/PrintRelease.aspx?relid=160307> NERLDC also informed that IMD had forecasted for less rain this year.

NERTS may please inform the status.

D.12. Calculation of Voltage Deviation Index at State Level:

NERLDC is calculating Voltage Deviation Index, Frequency Deviation Index and System Reliability Index on a daily, weekly and monthly basis at ISTS level and these are reported to all constituents for taking proper actions at their end. These VDI, FDI & SRI figures are submitted to CERC on yearly basis.

There is a need of calculation of VDI in state level by all SLDCs to limit the voltage parameter within IEGC band. Over voltage issue is predominant in 400 kV levels but low voltage issue also to be taken care in state level.

It is requested to all states to identify the critical stations where VDI to be calculated and SLDCs may instruct generators to respond as per voltage scenarios.

In 130th OCCM, NERLDC informed the forum that practice of calculation of VDI figures will help states to identify the nodes where capacitor banks/reactors are to be put in place. Members appreciated the NERLDC proposal and requested all SLDCs to adopt the suggestions. Forum requested NERLDC to circulate an example calculation of VDI among all SLDCs.

In 131st OCCM, forum requested AEGCL to calculate VDI of important 132kV nodes in addition to 400/220kV nodes. NERLDC requested all the SLDCs to present a report

on calculated VDI in next OCC meeting. NERLDC also informed the forum that Daily, Weekly and Monthly Frequency Deviation Report, Voltage Deviation Report and System Reliability report is being mailed to all utilities for taking corrective actions. The same is also uploaded in NERLDC website.

NERLDC may please inform the status.

D.13. Reliability of Auxiliary Supply to substations:

Reliable auxiliary power supply is of absolute necessity for smooth operation of control and protection system. Recent CERC order against Petition No. 133/MP/2014 stresses on reliability as well as commercial aspects of auxiliary supply to substations.

Healthiness of DG sets is critical during restoration after a partial/total black out. As per clause no 5.8(b) of IEGC, Diesel Generator set for black start operation would be tested on weekly basis and test results are to be sent to RLDC on quarterly basis.

It is requested to all constituents to furnish DG set test results to NERLDC on quarterly basis and list of source of supply to auxiliary requirement to sub-stations.

In 131st OCCM, NERLDC informed the forum that format for Auxiliary Supply details have already been mailed to all the utilities on 24th March'17.

NERLDC informed the following status in 131st OCC meeting:

Name of utility	DG healthiness report	Auxiliary supply details
NEEPCO	No	Yes
NERTS	No	No
NTPC	No	No
NHPC	No	No
OTPC	No	No
Arunachal Pradesh	No	No
AEGCL	No	No
MSPCL	No	No
MePTCL	No	No
Mizoram	No	No
Nagaland	No	No
TSECL	No	No

NERLDC may please intimate the status.

D.14. Installation of 80MVAR, 1x400KV GIS Bus Reactor/ Bay Addition at RHEP

As discussed in several OCC meetings there is requirement of bus reactor to be installed at RHEP switchyard to control over voltage in the NER system. Against agenda no. C.10. of 109th OCC meeting after detail deliberations, Member Secretary

suggested NEEPCO to work out the tentative estimate for above cost and intimate in next PCC meeting so that the matter can be taken up for funding from PSDF since the matter is for the benefit of the region.

Accordingly, vide letter no. NO: NEEPCO/ED(O&M)/RHEP-09/2015-16/2646 dtd. 13/01/2016 NERPC was intimated a cost estimate of Rs. 3698.965 Lakh for procurement & installation of Bus Reactor at 400KV Ranganadi Switchyard.

In the MOM of 17th TCC meeting held on 04/10/2016 circulated on 26/10/2016 through e-mail it was observed that under item no. B.12 the proposal for installation 80MVAR Bus Reactor at RHEP SY has been approved in the 6th SCM and recommended in the TCC and RPC forum.

For open tendering process for procurement and installation of the Bus Reactor, the modalities of funding from PSDF as intimated in the 109th OCC meeting may please be discussed.

In 131st OCCM, Director, NPC informed that reactor installation for improvement of voltage profile of the grid may be funded from PSDF. However in this case approval has been obtained differently. DGM (AM), NERTS opined that since SCM approval has been accorded, no separate CERC approval is required and NEEPCO may directly file tariff petition. The forum requested NERPC to clarify from CEA/NLDC about funding from PSDF or execution by CTU.

NERPC may please intimate the status.

D.15 Maintenance of 220 KV Kathalguri- Deomali radial feeder and healthiness of Protection System

220 KV Kathalguri- Deomali radial feeder belongs to DOP, A.P. and feeding power from 220 KV Switchyard of AGBP through its 220 KV bay maintained by DOP, A.P.

Most of the time, 220 KV line Circuit breaker is found to be non-operational for remote closing, spring charging mechanism and trip and closing circuit. Breaker needs to be maintained properly for its smooth operation / function.

Periodic testing and calibration of the protective relays need to be carried out.

In 131st OCCM, after detailed deliberation it was decided that a team comprising of officials from NERTS/NEEPCO/DoP Ar. Pradesh would visit Kathalguri at the earliest to check the healthiness of the relays/protection system.

NEEPCO may please deliberate.

D.16 Implementation of Automatic Meter Data Reading (AMR) system at various locations of NER

In the 15th TCC & 15th NERPC Meeting held at Guwahati on 20th & 21st August 2015, approval was given for installation of Automated Meter Data Reading (AMR) system at various locations in North Eastern Region.

The estimated cost of the project was Rs 17124319.00, to which all the constituents agreed in the 6th Metering Sub Committee Meeting held at Guwahati on 17.06.15.

The above estimation was carried out based on a similar work order placed on M/S TCS by Eastern Region —II in the year 2012. Also the estimation was for 260 SEMs installed in 92 locations.

Now CTU/POWERGRID has to execute the project for 350 SEMs installed in approx. 92 locations and the lowest budgetary offer received for the same is Rs 43821500.00.

The revised estimated cost of Rs 4,38,21,500.00 (Rupees four crore thirty eight lakhs twenty one thousand five hundred only) is therefore put up in the 131st OCC Meeting for fresh consideration, of the constituents and develop a recovery mechanism for the same.

In 131st OCCM, NERTS stated that any cost revision has to be approved by TCC/RPC.

Regarding the point raised by NERTS on recovery mechanism, DGM (MO), NERLDC requested NERTS to furnish recovery mechanism of the cost of SEMs being followed by them. NERTS representative stated that same would be furnished in the next meeting. DGM(MO) stated that accordingly consent of forum for reviewed cost estimate as well as recovery mechanism could be decided in the next OCC/Metering meeting. He further stated that the project has already been delayed inordinately and there has to be a conclusive decision whether to go ahead with the project.

Forum agreed to take a decision in the next meeting.

Members may please discuss.

AGENDA FROM DoP Mizoram:

D.17 Shifting of bays for 132kV Shimui-Melriat(PG) D/C at Shimui:

It is informed by P&E dept., Mizoram that at Shimui (Substation of P&E dept., Mizoram) due to congestion of many incoming ckts, final termination of 132 KV Shimui – Melriat (PG) D/C T/L in to the Pre assigned bays are not possible. P&E dept., requested Powergrid to terminate the ckts into a temporary bays (2 nos.) of state. Further, the same would again be shifted to new location of bays as newly allotted for Powergrid as per **Annexure D.17**.

DoP Mizoram may please deliberate.

AGENDA FROM NERPC:

D.18 Work done by Utilities during scheduled shut down of lines and Generators:

It is seen that any scheduled shut down of either Generating Stations or Transmission lines are deliberated and approved in OCC meetings of NERPC. But details of work memo/works done actually are not appraised in subsequent OCC meetings. APDCL requests the Forum to include the agency wise work done details, particularly of central agencies in the following OCC meeting for appraisal of the Beneficiaries.

In 32nd CCM, Director/SE, NERPC stated that the matter may be raised in the OCC meeting and as suggested by Assam, Utilities availing shutdown may be asked to furnish the details of work done during the period of shutdown.

The subcommittee decided to refer the matter to OCC forum for implementation.

Members may please discuss.

AGENDA FROM AEGCL:

D.19 Pending issues with NTPC regarding vacation of land etc and failure of NTPC to honour the commitment:

NTPC has not yet vacated the 32M extended portion (32 x 248) of the plot of land which has prevented AEGCL from constructing the 132kv APM (Jogighopa) Bay. This vacation was agreed upon by NTPC — but has not materialized till date.

Boundary wall for AEGCL was supposed to be constructed by NTPC which has not yet been constructed by them even after more than three years of their commitment.

AEGCL has not been allowed to operate the entrance gate (constructed by AEGCL) as the CISF personnel of NTPC continue to .keep the lock and key of the same thereby causing acute difficulties for entry and exit of AEGCL personnel — so much so that AEGCL personnel are sometimes even prevented from entering the switch yard for attending to emergency operational problem in switch yard/control room. Separate entry gate for AEGCL should immediately be allowed to be operated.

Even after their commitment, the Guest House for AEGCL as agreed upon has not yet been constructed by NTPC.

In all these issues the NTPC authorities have been unexpectedly insensitive and no cooperative.

AEGCL may please deliberate.

AGENDA FROM NERLDC:

D.20 Weather Website for North Eastern Region

Weather Website of North Eastern Region has been made operational from 29th April 2017[informed earlier by mail] at <http://amssdelhi.gov.in/NERLDC/MAIN.html>. The same is also available in WEATHER tab in NERLDC website.

The Website covers weather related information of all the Seven States of North Eastern Region. Summarized contents of the Website are follows:

1. Regional Summary: Regional Forecast, Weather Bulletin, Daily and Weekly Weather
2. Now-cast for Guwahati, Dibrugarh, Jorhat, Dhubri, Silchar & North Lakhimpur

3. Warning: District Level, State Level & Cyclone
4. Mateogram @ 3 hourly, 10 days forecast for 33 locations in the Region: Assam-19, Arunachal Pradesh -4, Meghalaya-3, Nagaland-3, Tripura-2, Manipur and Mizoram 1 each.
5. Radar Products for two Locations updated @10 Minutes: Agartala & Mohanbari
6. Satellite Image updated @ 30 minutes from INSAT 3 D.

For kind information and feedback of members

D.21 Transformer Tap optimization

System study was conducted by NERLDC considering load, generation and network pattern of May, 2017 during Peak & Off Peak periods. Suggested taps position of important transformers in NER for maintaining bus voltages within permissible limit as well as to minimize system losses are attached at **Annexure D.21**.

This is for information & necessary action please.

D.22 Updated List of Important Grid Elements of NER, May 2017 (Draft):

As per Clause No 5.2.c of IEGC, List of Important Grid Elements of NER May 2017 (Draft) prepared. Updated List of Important Grid Elements of NER May 2017 (Draft) was e-mailed to regional entities of NER and also available in NERLDC website.

It is requested to furnish data required for finalization of List of Important Grid Elements by 20th May'17 as this document will be finalized by 25th May'17. The document is password protected. Password may be collected from SOII department of NERLDC.

Members may discuss.

D.23 Transients observed in +/- 800 kV HVDC Biswanath Charali-Agra pole-I

After commissioning of +/- 800 kV HVDC Biswanath Charali - Agra Bipole link in October,2015, few incidents of transients in HVDC have been observed which have been persisted for quite some time and have been eliminated by reducing the HVDC power flow set point/blocking of pole.

Sl No	Date	Time (Start)	Time (End)	Duration (mm:ss)	Power Flow Fluctuation (MW)	Voltage Fluctuation (kV)	Action Taken by operator
1	04.12.2015	10:38:50	10:39:05	00:15	50	5	Power order reduced to 450 MW to 700 MW

Agenda for 132nd OCC Meeting to be held on 12th May, 2017

2	05.01.17	11:40:00	11:42:00	02:00	50	1 to 2	Pole-I blocked out of Bipole
3	20.04.17	14:00:00	14:10:00	10:00	60	7	Pole-I carrying 500 MW blocked
4	22.04.17	17:24:00	17:37:00	13:30	50	6	Pole-I carrying 500 MW blocked

HVDC may please furnish detailed report along with proposed corrective actions to NLDC with a copy to NERLDC.

NERLDC may please deliberate.

D.24 Grid Disturbance at 19:10 Hrs on 28th April,2017

At 19:10 Hrs on 28th April'17, 400 kV Silchar - Byrnihat line & 220 kV Misa-Byrnihat D/C lines tripped (400 kV Silchar - Azara line tripped at 18:42 Hrs on 28.04.17. 400 kV Bongaigaon-Byrnihat line tripped at 18:58 Hrs on 28.04.17).

This led to overloading of 132 kV Haflong - Jiribam line, 132 kV Badarpur - Khleihriat line & 132 kV Dimapur - Imphal line and subsequently tripped on over current.

Due to tripping of these lines, Southern Part of NER comprising of Tripura, Mizoram, Manipur, South Assam, Meghalaya, Palatana, AGTPP, Loktak & Bangladesh (South Comilla load) systems was separated from rest of NER grid and subsequently collapsed due to load generation mismatch.

Due to operation of LBB at 220 kV Misa substation, all 220 kV lines from Misa except 220 kV Misa-Mariani (AS) & 220 kV Misa-Kopili 3 lines tripped.

Antecedent NER Demand Met: 1751 MW

Antecedent NER Generation: 1763 MW

Total Load Loss: 689 MW (Tripura-211, Bangladesh-154, Manipur-136, Mizoram-45, South Assam-81, Meghalaya-216)

Generation Loss: 845 MW (Palatana-515, AGTPP-78, Loktak-105, Monarchak-72, Rokhia-55, Baramura-20, LHEP-126, Umiam Stg II-7, Umiam Stg I-12)

CEA Category: GD-IV

Members may please discuss

D.25 Disturbance in Palatana & Tripura System(including Bangladesh South Comilla load) on 25th & 26th April,2017

At 13:05 hrs on 25.04.17, 400 kV Silchar-Palatana II line tripped(Silchar :DP, Y-B,Z1, 187.5 km; and Palatana-DP, B-E, Z1, 57.55 km). 400 kV Silchar-Palatana line I was under Shutdown as per 131st OCC Meeting.

Units of Palatana,AGTPP, Rokhia and Monarchak tripped subsequently along with following lines:

1. 132 kV AGTPP-Agartala I & II
2. 132kV AGTPP-Kumarghat
3. 132 kV Palatana-Udaipur
4. 132 kV Palatana-SM Nagar:
5. 132 kV Kamalpur-Dhalabil
6. 132 kV Ambassa-Teliamura(Gamaitilla)

Due to operationof SPS-I at Palatana,132 kV Silchar-Srikona D/C.132 kV Silchar-Panchgram lines and 132 kV Badarpur-Panchgram line got tripped. Due to blackout at 132 kV Surajmaninagar Substation, 132 kV Comilla-SM Nagar Line I & II was hand tripped.

Due to the tripping of above lines, total load loss was 283 MW (Tripura- 103 MW, South Assam-61 MW and Bangladesh 119 MW)

Generation Loss was 680 MW (Palatana-556 MW, AGTPP- 62 MW, Monarchak-60 MW & Rokhia -26MW) respectively.

P.K Bari, Gournagar(Kailashar), Kamalpur and Ambassa Substations survived during the grid disturbance.

At 12:51 hrs on 26.04.17, 400 kV Silchar-Palatana II line tripped (Silchar: DT Received, and Palatana-details awaited)

400 kV Silchar-Palatana line I was under Shutdown as per 131st OCC Meeting Units of AGTPP, Rokhia and Monarchak tripped subsequently along with following lines:

1. 132 kV AGTPP-Agartala I & II
2. 132kV AGTPP-Kumarghat
3. 132 kV Palatana-Udaipur
4. 132 kV Palatana-SM Nagar
5. 132 kV Dhalabil-Agartala

132 kV Baramura-Jirania was under S/D.

Due to blackout at Surajmaninagar, 132 kV Comilla-SM Nagar I & II was hand tripped.

Due to the tripping of above lines, total load loss was 151 MW (Tripura- 45 MW and Bangladesh-106 MW)

Generation Loss was 172 MW (AGTPP- 48 MW, Monarchak-69 MW & Rokhia -55MW) respectively.

P.K Bari, Gournagar (Kailashar), Kamalpur, Dhalabil, Ambass, Teliamura and Baramura Substations survived during the grid disturbance.

Members may please discuss.

D.26 IEGC 5th Amendment

CERC has issued 5th Amendment of IEGC on 12.04.17 which has become effective from 01.05.2017. The major changes have been made in Scheduling procedure, URS allocations/sale, Primary response, FGMO, Spinning reserves. NERLDC sent communications to all the concerned utilities before the implementation of various provisions.

Members may please deliberate and extend full co-operation.

D.27 Over drawal by constituents

It has been observed that despite repeated requests for maintaining drawal within schedules, especially when BgTTP & Palatana generations are not available, some of the constituents namely Tripura persistently overdraws from the grid resulting in violation of inter-regional ATC on many occasions. Constituents, especially Tripura, are requested to please adhere to the real time advice of NERLDC for maintaining grid security & reliability. In this regard constituents are also requested to please make advance planning for meeting their demands considering contingency situations of generations outages.

NERLDC may please deliberate.

D.28 Deviation Charges Outstanding of APDCL – Curtailment of Open Access

Outstanding deviation charges of APDCL is Rs. 50.84 Cr and deviation interest payable is Rs. 0.13 Cr as on 05.05.2017 (Till week -3 of FY 2017-18) out of which Rs. 26.30 Cr is outstanding for a period of more than last 13 weeks.

NERLDC may highlight the issue in details.

APDCL is required to liquidate the outstanding dues at the earliest to avoid curtailment of OA as per Regulations

AGENDA FROM OTPC:

D.29 Tripping of OTPC Both Block Due to Grid Black Out

OTPC Both Block Tripped on 25/04/2017 at 13:05 hrs, Startup delayed on 26/04/2017 due to grid disturbance OTPC Both Block Tripped on 28/04/2017 at 19:10 hrs

OTPC may please deliberate.

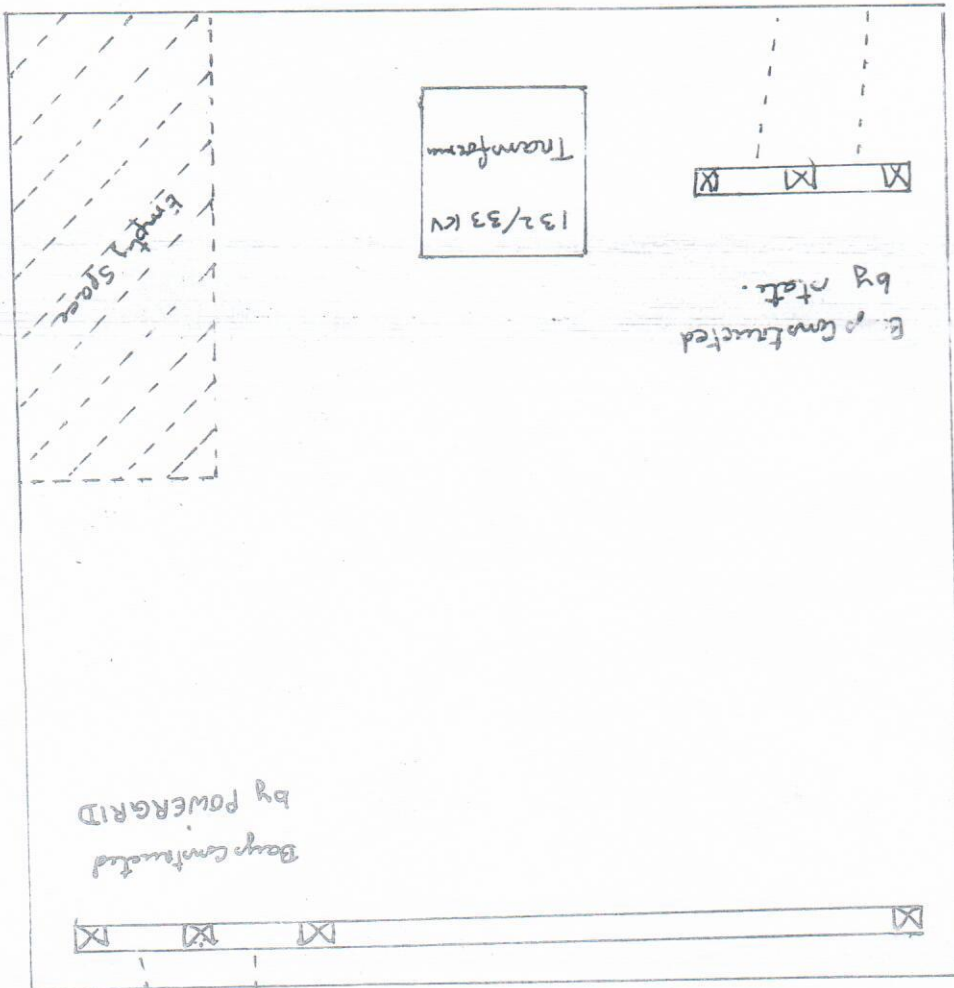
Any other item:

Date and Venue of next OCC

It is proposed to hold the 133rd OCC meeting of NERPC on second week of June, 2017. The date & exact venue will be intimated in due course.

In future not all empty space of the ROUGERID Line. In the empty space for terminated in the ROUGERID Line.

The line will be temporarily terminated here



Original scope

Original scope

Bays constructed by POWERGRID

Bays constructed by stat.

Transformer 132/33 KV

Empty Space

Transformer Tap Optimisation Study

Senario : May 2017

03-May-17

Sl. No.	Substation	Voltage Ratio (kV)	Transformer No.	Capacity in MVA	Controlled Bus	Tap Step (%)	Total Tap Positions	Nominal Tap	Present Tap	Voltage Profile				Optimised Tap Changer Position
										Off-Peak			Peak	
										Nominal Taps	Present Tap setting	After Optimisation	After Optimisation	
1	Balipara	400/220	1	315	400kV	1.25	17	9	9	427	424	415	402	NO (9)
		400/220	2	315	400kV	1.25	17	9	9					NO (9)
		220/132	1	50	132kV	1.25	17	9	9	142	142	135	129	NO (9)
		220/132	2	50	132kV	1.25	17	9	9					NO (9)
2	Bongaigaon	400/220	1	315	400kV	1.25	17	9	12	425	423	416	406	NO-7 (2)
3	Salakati	220/132	1	50	132 kV	1.25	17	9	13	141	131	134	130	NO+7 (16)
		220/132	2	50	132 kV	1.25	17	9	16					NO+7 (16)
4	Misa	400/220	1	315	400kV	1.25	17	9	5	428	422	416	406	NO+7 (11)
		400/220	2	315	400kV	1.25	17	9	5					NO+7 (11)
5	Ranganadi HEP	400/132	1	360	400 kV	2.5	17	9	9	424	420	412	400	NO-2 (7)
		400/132	2	360	400 kV	2.5	17	9	9					NO-2 (7)
6	Azara	400/220	1	315	400kV	1.25	17	9	8	425	423	414	404	NO+1 (10)
		400/220	2	315	400kV	1.25	17	9	8					NO+1 (10)
7	Biswanath Chariali (PG)	400/132	1	200	400 kV	1.25	17	9	8	428	425	418	400	NO (9)
		400/132	2	200	400 kV	1.25	17	9	8					NO (9)
8	Silchar	400/132	1	200	400 kV	1.25	17	9	9	421	422	408	402	NO (9)
		400/132	2	200	400 kV	1.25	17	9	9					NO (9)
9	Byrnihat	400/220	1	315	400 kV	1.25	17	9	9	430	431	416	406	NO-4 (5)
		400/220	2	315	400 kV	1.25	17	9	9					NO-4 (5)
		220/132	5083/1	160	132 kV	1.25	17	9	9	147	148	140	135	NO + 4 (13)
		220/133	5083/1	160	132 kV	1.25	17	9	9					NO + 4 (13)
10	Palatana	400/132	1	125	400 kV	1.25	17	9	9	420	421	408	408	NO (9)
		400/132	2	125	400 kV	1.25	17	9	9					NO (9)
11	BgTPP	400/220	2	125	220 kV	1.25	17	9	9	425	423	416	406	NO-7 (2)

Note : a) NO indicates Nominal Tap position, b) NO-1 when HV bus is controlled bus, indicates transferring MVAR from HV bus to LV bus to reduce voltage of the HV bus and increase voltage of LV bus