भारत सरकार Government of India
विद्युत मंत्रालय Ministry of Power
उत्तर पूर्वी क्षेत्रीय विद्युत समिति
North Eastern Regional Power Committee
एन ई आर पी सी कॉम्प्लेक्स, डोंग पारमाओ, लापालाङ, शिल्लोंग-७९३००६, मेघालय
NERPC Complex, Dong Parmaw, Lapalang, Shillong - 793006, Meghalaya

Ph. No: 0364 - 2534039
Fax No: 0364 - 2534040
Website: www.nerpc.nic.in

No. NERPC/SE (O)/OCC/2019/***905-942*** Dated: May 27, 2019

To,

1. Managing Director, AEGCL, Bijuli Bhawan, Guwahati – 781 001
2. Managing Director, APDCL, Bijuli Bhawan, Guwahati – 781 001
3. Managing Director, APGCL, Bijuli Bhawan, Guwahati – 781 001
4. Director (Generation), Me. PGCL, Lumjingshai, Short Round Road, Shillong – 793 001
5. Director (Distribution), Me. ECL, Lumjingshai, Short Round Road, Shillong – 793 001
6. Director(Transmission), Me. PTCL, Lumjingshai, Short Round Road, Shillong – 793 001
7. Managing Director, MSPDCL, Secure Office Bldg. Complex, South Block, Imphal – 795 001
8. Managing Director, MSPCL, Electricity Complex, Keishampat, Imphal – 795 001
9. Director (Tech.), TSECL, Banamalipur, Agartala -799 001.
10. Director (Generation), TPGCL, Banamalipur, Agartala -799 001.
11. Chief Engineer (WE Zone),Department of Power ,Govt. of Arunachal Pradesh, Itanagar- 791111
12. Chief Engineer (EE Zone),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
13. Chief Engineer (TP&MZ),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
14. Engineer-in-Chief (P&E), Department of Power, Govt. of Mizoram, Aizawl – 796 001
15. Chief Engineer (P), Department of Power, Govt. of Nagaland, Kohima – 797 001
16. CGM, (LDC), SLDC Complex, AEGCL, Kahilipara, Guwahati-781 019
17. Group General Manager, NTPC, Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
18. ED, NERTS, PGCIL, Dongtieh-Lower Nongrah, Lapalang, Shillong -793 006
19. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
20. ED (Commercial), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
21. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad,Haryana-121003
22. Vice President (Plant), OTPC, Badarghat Complex, Agartala, Tripura - 799014
23. GM, NERLDC, Dongtieh, Lower Nongrah, Lapalang, Shillong -793 006
24. Member Secretary, ERPC, 14 Golf Club Road, Tollygunge, Kolkata-700033
25. Chief Engineer, GM Division, Central Electricity Authority, New Delhi – 110066
26. Chief Engineer (NPC), NRPC Complex, Katwaria Sarai, SJSS Marg., New Delhi - 110016

Sub: Minutes of 156th OCC Meeting.

Sir/Madam,

Please find enclosed herewith the minutes of 156th OCC Meeting held at Guwahati on the **15th May, 2019** for your kind information and necessary action. The minute is also available on the website of NERPC, **www.nerpc.nic.in**.

Any comments/observations may kindly be communicated to NERPC Secretariat at the earliest.

Encl: As above

भवदीय/Yours faithfully,

बि. लिंगखोइ / B. Lyngkhoi
निदेशक / **Director/ SE**

Copy to:

1. CGM, AEGCL, Bijuli Bhavan, Guwahati - 781001
2. CGM, APGCL, Bijuli Bhavan, Guwahati - 781001
3. CGM, DISCOM, Bijuli Bhavan, Guwahati - 781001
4. Head of SLDC, Me.ECL, Lumjingshai, Short Round Road, Umjarain, Shillong – 793 022
5. Head of SLDC, Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
6. Head of SLDC, Department of Power, Dimapur, Nagaland
7. Head of SLDC, Electricity Department, Govt. of Manipur, Keishampat, Imphal – 795 001
8. Head of SLDC, Department of Power, Govt. of Mizoram, Aizawl – 796 001
9. Head of SLDC, TSECL, Agartala – 799 001
10. Chief Engineer(Elect), Loktak HEP,Vidyut Vihar, Kom Keirap, Manipur- 795124
11. Addl. GM (EED), NTPC Ltd., Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
12. DGM (C&M), OTPC, 6th Floor, A-Wing, IFCI Tower -61, Nehru Place, New Delhi – 110019.

निदेशक / **Director/ SE**

North Eastern Regional Power Committee

MINUTES OF THE 156th OPERATION COORDINATION SUB-COMMITTEE MEETING OF NERPC

Date : 15/05/2019 (Wednesday)

Time : 10:00 hrs

Venue : "Hotel Nandan", Guwahati.

The List of Participants in the 155th OCC Meeting is attached at **Annexure – I**

Shri P.K. Mishra, Member Secretary, NERPC welcomed all the participants to the 156th OCC meeting. He apprised the members regarding the severity of the Grid Disturbances on 03rd April, 2019 and 20th April 2019 and informed that Special Meeting to discuss the issue in thread bear was convened on 02nd May,2019 at Palatana and also on 14th May,2019 at Shillong to finalise the Root Cause Analysis for the disturbances along with SPS modifications. The same would be highlighted and further discuss in the meeting on 16.05.19. Further, he mentioned that installation of Tara devices in NER have been completed by CDAC and requested NERLDC to facilitate the SAT for this project so that the remaining 10% can be released by NERPC. Regarding WBES integration, he requested to take up the issue separately.

Thereafter, Member Secretary requested Shri B. Lyngkhoi, Director (O&P) to take up the agenda for discussion.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 155th MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

The minutes of 155th meeting of Operation Sub-committee held on 10th April, 2019 at Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2016/4556-4591 dated 22nd April, 2019.

OTPC vide mail dated. 04.05.2019 has requested for the following amendments:

C. 16 Reactive power capability/injection of generating stations:

The following response of OTPC may please be added:

OTPC informed that their generators are varying the MVAR as per the Grid voltage requirement and the data for the same was submitted by OTPC; however, as per

NERLDC; OTPC generators are absorbing very less MVAR during High voltage. OTPC also informed that their EMD team is working on it and in consultation with OEM, further, they informed that OTPC is planning to reduce the TAP position of its Gas Turbine generation transformers.

NERLDC stated that the statement of OTPC and NERLDC is contradictory, so common view of the forum may be recorded as the reactive absorption/generation of OTPC units is inside capability curve but that is not as per grid requirement as it was shown in presentation by NERLDC in 155th OCC Meeting that OTPC is operating in MVAR generation mode at almost all of the time in the entire year of 2018-2019.

OTPC representative stated that the absorption is very less. So OEM for DAVR i.e. BHEL has been contacted. OTPC will look into the matter upon consultation with BHEL because settings have to be changed.

C. 17 Metering Status Review:

OTPC raised the requirement of SEM for OTPC, OTPC representative again forwarded the mail communication done by Mr. Mitangshu on 15th March 19.
Due to less no of spare meters, SEM will be provided to OTPC only after repairing of defective meters or after purchase of new meters.

D.4 RGMO performance analysis of events:

OTPC Response: OTPC informed to forum that OTPC generators are responding well during frequency transients and data for the same was submitted by OTPC previously, However OTPC is keeping his stand on the issue same as given in previous OCC (154th OCC).
Also, NERLDC vide mail dated. 07.05.2019 has requested for the following modifications:

C.4. Extended C Band VSAT for power system communications in NER:

In deliberation of the sub-Committee, first sentence "CGM, NERLDC informed that the pilot project has been awarded to M/s KPTCL and is slated for completion in May'2019" may please be replaced as below:

"After detailed deliberation in 155th OCC meeting, the OCC decided that since the project was a pilot one, the order may be given to M/s KPTCL. Accordingly, CGM-NERLDC was requested to convey the same to M/S KPTCL".

The Sub-committee may confirm the minutes of 155th OCCM of NERPC with the above amendments as no other comments/observations were received from the constituents.

I T E M S F O R D I S C U S S I O N

B.1. ACTION TAKEN:

1. IMPLEMENTATION OF PROJECTS FUNDED FROM PSDF:

The status as informed in 156th OCC:

State	R&U scheme	ADMS	Capacitor Installation	SAMAST **	Line Differential Protection
Ar. Pradesh	Pkg#I tendering done Pkg#II tender not done due to MCC As soon as election over tender would be floated. **	Tender to be published by April'19	-	TESG queries submitted.	-
Nagaland	Could not be updated due to absence of DoP Nagaland representative		To re-submit proposal to NERPC for Study.	TESG queries **to be submitted**.	Lines identified. Under DPR preparation stage.
Mizoram	Could not be updated due to absence of P&ED Mizoram representative		To re-submit proposal to NERPC for Study.	TESG queries submitted.	Lines not yet identified. To be taken up in Sub-group.
Manipur	LOAs issued. Completion by Jun'19.		Submitted to NERPC for Study before sending to NPC/NLDC.	TESG queries **to be submitted**.	Lines not yet identified. To be taken up in Sub-group.
Tripura	90% completed. Remaining by May'19		To submit proposal to NERPC for Study.	TESG queries submitted.	Lines not yet identified. To be taken up in Sub-group.
Assam	LOAs issued. Completion by Jun'19.		-	Appraisal Committee approved.	Lines identified. Under DPR preparation stage.

Meghalaya	MePTCL LOAs Completed Related Works target for completion by Jun'19. MePGCL – Erection complete by Mar'19		-	Appraisal Committee approved.	DPR already submitted and awaited approval.

Deliberation of the sub-Committee:

Director, NERPC once again reiterated that station wise status is to be furnished by all utilities with the LOA target date to be mentioned item wise per station.

Further, he informed the following regarding ADMS project:

NIT floated on: 19th April 2019

Bid opening: 22nd May, 2019

Tender evaluation and Demo: 24th May, 2019

He requested officers from all the state utilities especially SLDCs, DISCOMs to be present on 24th May, 2019 for Demo & Technical Evaluation.

EE, SLDC, DoP Ar. Pradesh informed that all the officers have been assigned election duty. Still he assured that at least one officer would be deputed for the same. AEE, DoP Nagaland informed that the details of the officer would be informed to NERPC.

ADMS payment mechanism

Member Secretary informed that as agreed in NERPC meeting a common Tender will be floated for all the states. In future when LOA will be given then further technical role would be limited. Subsequently in the matter of payment, the PSDF fund has been assigned to individual states. However prompt payment is required for successful completion of the project.

CGM, NERLDC opined that it is better to create a special account and Constituents may pool the money in that specific account subject to clearance of finance. The signing authority may be determined with members from the states for disbursement from that specific account and payment may be released subject to consent from the states.

Sr. GM(AM) NERTS opined that paying authority should be individual states, since the ToC and UC is also involved. Further, he suggested to discuss the issue with Accounts of constituents before finalizing.

Director, NERPC informed that NIT has been floated and requested all the NER States to take necessary steps viz. signing of Tripartite Agreement, opening of separate PFMS linked bank account for ADMS project, etc., and request fund from NLDC at the earliest since funds are getting depleted in PSDF.

After detailed deliberation, it was decided that after opening of financial bid a committee would be formed to decide the payment mechanism.

SAMAST

Director, NERPC stated that as per 49th TESG minute, only Assam & Meghalaya has been considered with approved cost of Rs. 10.25Cr & 8.48Cr respectively. For remaining NER States he informed that the TESG has asked for the views of NLDC in this regard. He requested NERLDC to facilitate in this regard after consultation with NLDC.

CGM, NERLDC opined that utilization of allocated funds to be done immediately and hence requested NERPC that NIT may be published as early as possible for above two States.

Regarding Capacitor bank installation Director, NERPC informed that the projects for Manipur & Mizoram has been kept in abeyance by TESG and will be taken up in next Meeting.

He also mentioned about the excessive MVAr drawal by Bangladesh & Tripura which is very dangerous to grid security and hence requested Tripura once gain to provide all node-wise MW & MVAR data to NERLDC within a week for the Capacitor bank study as decided during the special meeting at Agartala on 02.05.2019.

The Sub-Committee noted as above.
Action: All state utilities/NERPC.

2. Outage of Important Grid Elements:

Name of the Element	Name of Utility	Status as informed in 155th OCC	Latest status
63MVAR Reactor at Byrnihat to replace with 80MVAR Reactor	MePTCL	NERPC will write to CEA for inclusion in NERSCT's MoM.	To be taken up with CEA

132kV Dimapur - Imphal (*out since 25.07.18*)	NERTS	The completion schedule can only be provided once the ROW issue of Kohima portion is resolved by Nagaland.	*
220kV Sonabil-Samaguri-I	AEGCL	LOA by March, 2019	Tender in May'19** specific issues may be highlighted
420kV 63 MVAR Line Reactor at 400 kV Bongaigaon S/S for 400kV Bongaigaon- Azara(out since Nov'18)	NERTS	Testing of Reactor is completed. Clearance from OEM is awaited. Expected to be charged by 15th April'19	Completed on 14.04.2019

*Director, NERPC informed that dismantling of 132kV Dimapur-Imphal line was decided in the Special Meeting on 20th October 2018 to facilitate construction of Dimapur-Kohima highway. Further, it was decided that POWERGRID would restore the line by January'2019 subject to clearing of RoW issues by Nagaland State Administration. Since the line has not yet been restored, Manipur expressed their reservation for allowing availability to POWERGRID for indefinite period.

Sr. GM(AM) NERTS stated that the said line was dismantled based on the decision of the special meeting dtd. 20th October 2018. Further, he stated that first set of clearances for ROW was resolved in March'2019, subsequent to which POWERGRID could take up the job. The present status of the work is as follows:

a. Under Kohima District: 13 towers (RoW assessment done for 9 towers, amount towards compensation has already been deposited with District Administration. The same is yet to be disbursed to beneficiaries. For balance 4 locations, till now assessment & finalization of compensation is pending. Further, assessment of surface damage for the entire line section under Kohima District is pending.

b. Under Dimpaur District: 15 towers (ROW assessment done & amount towards compensation has already been deposited with District Administration). Work is presently in progress with foundation & Erection activities nearing completion.

He stated that even if all RoW issues are cleared immediately, then at least 2 months will be required for completion of foundation & erection activities & hence restoration of the line subject to weather conditions. He suggested that a meeting of Nagaland &

Manipur government representatives specially the administrative officials be convened immediately in order to expedite clearing of RoW issues.

Regarding Transmission Availability, he stated that the situation was a force majeure condition as POWERGRID was forced to dismantle the line.

CGM, NERLDC opined that Govt. of Manipur & Nagaland has to facilitate clearing of the RoW issues considering criticality of the transmission line for grid security.

After detailed deliberation, it was decided that Special meeting will be arranged by NERPC with Administration of Nagaland & Manipur for early resolution of RoW issues & completion of the line.

The Sub-Committee noted as above.
Action: All concerned utilities & NERPC.

3. Submission of various data pertaining to reliable operation of the grid:

Details of the data required	Name of Utility	Status of submission as per 155th OCC
Primary response testing of generators: The make, vintage, kind of governor and whether facility for simulated signal input to governor is there or not	NTPC, NHPC	Received to be dropped
Data for Wind Turbine Generator	All SLDCs	CERC matter. Not received reply *

* NERLDC to circulate the formats once again.

B.2. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING APRIL, 2019

As per the data made available by NERLDC, the grid performance parameters for April, 2019 are given below:

NER PERFORMANCE DURING APRIL, 2019

	Energy Met (MU)		w.r.t. Mar,19 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. Mar,19 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In Apr,19
States	Apr-19	Mar-19		Apr-19	Mar-19		
Ar. Pradesh	66.12	60.49	9.31	66.47	60.87	9.20	-0.53
Assam	708.86	656.48	7.98	766.33	679.52	12.78	-7.50
Manipur	66.84	67.51	-0.99	67.86	68.13	-0.40	-1.50

Meghalaya	159.74	172.78	-7.55	169.77	173.24	-2.00	-5.91
Mizoram	53.14	49.37	7.64	53.58	49.80	7.59	-0.82
Nagaland	53.71	57.29	-6.25	54.16	58.48	-7.39	-0.83
Tripura	120.04	89.94	33.47	121.50	90.25	34.63	-1.20
Region	**1228.44**	**1153.87**	**6.46**	**1299.66**	**1180.30**	**10.11**	**-5.48**

	Demand Met (MW)		**w.r.t. Mar,19 % inc (+) /dec (-)**	Demand in (MW)		**w.r.t. Mar,19 % inc (+) /dec (-)**	**% inc (+) /dec (-) of energy reqr vs met. In Apr,19**
States	**Apr-19**	**Mar-19**		**Apr-19**	**Mar-19**		
Ar. Pradesh	136	131	3.82	139	133	4.51	-2.16
Assam	1667	1508	10.54	1712	1539	11.24	-2.63
Manipur	188	199	-5.53	197	204	-3.43	-4.57
Meghalaya	337	357	-5.60	336	357	-5.88	0.30
Mizoram	113	105	7.62	116	108	7.41	-2.59
Nagaland	131	125	4.80	157	127	23.62	-16.56
Tripura	291	249	16.87	292	249	17.27	-0.34
Region	**2780**	**2535**	9.66	**2848**	**2540**	12.13	-2.39

REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU

Month---->	**Apr-19**	**Mar-19**
Total Generation in NER (Gross)	1292.409	1240.164
Total Central Sector Generation (Gross)	1022.260	977.118
Total State Sector Generation (Gross)	270.149	263.046
Inter-Regional Energy Exchange		
(a) NER-ER	**369.78**	**312.59**
(b) ER-NER	**12.19**	**5.13**
(c)NER-NR	**0.00**	**0.00**
(d)NR-NER	**433.00**	**381.85**
© Net Import	75.41	74.39

AVERAGE FREQUENCY (Hz)

Month---->	**Apr-19**	**Mar-19**
	% of Time	% of Time
Below 49.9 Hz	7.48	7.23
Between 49.9 to 50.05 Hz	74.66	70.92
Above 50.05 Hz	19.99	21.85
Average	50.00	50.00
Maximum	50.29	50.26
Minimum	49.65	49.68

Deliberation of the sub-Committee:

NERLDC gave a presentation on the grid performance for the month of April'19 **(Annexure-B.2-a).** NERLDC also highlighted that Daily, Weekly and Monthly Voltage Deviation Report, Frequency Deviation Report and System Reliability Report for April'19 was already mailed to all the constituents for necessary actions. Further, it was informed that members may access these reports from NERLDC website under the tab CERC KPI Reports. NERLDC informed the forum about the number of lines kept open on high voltage. NERLDC again requested for early restoration of reactors which are under long outage and commissioning of new reactors at the earliest as

mentioned in Sl. No. B.1.2 and C.1 and support from Generator to control voltage so that it does not require to open lines for maintaining voltage profile within IEGC band.

NERLDC informed that 400kV BNC-RHEP-I&II line(s) had to be kept open for many hours in April'19 due to persisting high voltage and an average of 3 nos. of 400 kV lines had to be kept open due to over voltage every day in the month of May 2019

Statistics for line shutdown(s) in April'19:

Total shutdown in April'19	OCC		Emergency	NERPC approved
	Approved	Availed		
124	79	57	31	14

The forum requested all entities to reduce the number of non-availed OCC approved shutdowns and emergency shutdown. The forum also requested NERLDC to highlight the reasons for non-availing OCC approved shutdown in subsequent OCCMs.

NERLDC informed that total No. of Line tripping(s) was 208 out of which 132kV line tripped 167times and 400kV lines 26times. The forum requested all utilities to do proper preventive maintenance of the lines so that the number of tripping may be reduced in future.

NERLDC informed that in April'19 Telemetry data availability was 48%. Further NERLDC has written to CERC with percentage availability of telemetry for all utilities. The forum requested NERLDC that prior to sending data availability to CERC data points is to be mutually agreed by the utility and NERLDC. The Telemetry Availability Status at NERLDC from Constituents as on 03-05-2019 is as follows:

SN	Name of the constituents	Total Analogue Data points	Total Digital Data points	Total Data Points	Analogue Data points Reporting	Digital Data Points Reporting	Total Reporting	Total Percentage of data Availability
1	Ar. Pradesh	108	150	258	8	11	19	7.36%
2	Assam	1313	1904	3217	672	940	1612	50.1%
3	Manipur	180	255	435	58	99	157	36.1%
4	Meghalaya	409	386	795	221	53	274	34.46%
5	Mizoram	71	50	121	9	9	18	14.87%
6	Nagaland	237	270	507	0	0	0	0%
7	Tripura	524	715	1239	163	172	335	27.03%
8	PGCIL	658	1184	1842	459	890	1349	73.2%
9	NEEPCO	205	295	500	122	171	293	58.6%
10	NTPC	21	44	65	21	40	61	93.85%
11	OTPC	41	78	119	41	78	119	100%
12	NHPC	20	36	56	17	30	47	84%
	NER	3787	5367	9154	1791	2493	4284	46.79%

DGM, SLDC MSPCL informed that 5nos RTU have been reporting through BSNL GPRS. In Apr'19 & May'19 telecommunications were severely disrupted so percentage low.

NERLDC informed that all future official communications with NERLDC may kindly be marked to the CGM, NERLDC: hor_nerldc@posoco.in and the communications with particular departments may also be sent to nerldcso1@posoco.in, nerldcso2@posoco.in, nerldcmo@posoco.in, nerldcsl@posoco.in for System Operation I department, System Operation II department, Market Operation department and System Logistics department respectively in addition to the personal mail ids along with a copy to Head of the Region.

The Sub-Committee noted as above.

I T E M S F O R D I S C U S S I O N

C. OLD I T E M S

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

During 156th OCC meeting, the status as informed by different beneficiaries is as follows:

SN	Items	Status as given in 155th OCC Meeting		Status as given in 156th OCC Meeting	
		Timeline for completion	**Furnishing of detail parameters**	**Timeline for completion**	**Furnishing of detail parameters**
a. New elements					
1	250 MW BgTPP Unit #III	DoCO on 26.03.2019	To be submitted to NERLDC.	**To be drooped & deleted**	
2	400/220kV, 315 MVA ICT-1 of NTPC at Bongaigaon	By Apr'19	To be submitted to NERLDC.	By May,2019	Application will be submitted immediately
3	Kameng HEP of NEEPCO two units (2 x 150 MW) Next two units (2x150 MW)	By July'19	Already submitted.	July'19** detailed breakup for targets to be given	CEA clearance available
4	132kV Monarchak – Surjamaninagar D/C of TSECL	by Jun'19	To be submitted to NERLDC.	Jun'19	To be submitted to NERLDC.

5	220/132 kV, 160MVA ICT-II at Balipara	July'19	To be submitted to NERLDC.	Uncertain due to transportation issues i.r.o. damaged ICT. PG to revert back with exact schedule	To be submitted to NERLDC.
6	220/132 kV, 1x160 MVA ICT with GIS Bay at Kopili	July'19	To be submitted to NERLDC.	ICT July'19 Connected in GIS by Dec'19	To be submitted to NERLDC.
7	Dedicated 33kV feeder at Khliehriat Substation from Lumshnong.	To be taken up with MePDCL. SLDC to kindly meditate.	Not applicable.	A date will be fixed NERPC, MeECL and NERTS will visit	Not applicable.
8	Replacement of 315 MVA ICT-II with 500 MVA ICT at Misa (PG)	ICT – II Expected by June'19	ICT-I submitted	June'19	To be submitted to NERLDC.
9	220kV Balipara-Sonabil-2	AEGCL will intimate the status in next OCC Meeting	-	Estimate under process tendering after MCC removed	To be submitted to NERLDC.
10	Bay at Agia S/S for 132kV Agia-Nangalbibra Ckt#II by AEGCL	LOA by May'19	To be submitted to NERLDC.	LOA by June'19	To be submitted to NERLDC.
b. Elements under breakdown/upgradation					
10	Up-gradation of 132 kV Lumshnong-Panchgram line	DPR sent to NLDC/NPC	Not applicable.	Queries to be submitted by AEGCL and MeECL	Not applicable.
11	PLCC Panels at Loktak end of Loktak – Ningthoukhong 132 kV feeder and Loktak - Rengpang 132 kV feeder	May'19	Not applicable.	Aug'19.	Not applicable.
12	Replacement of CTs and installation of Bus Bar Protection at 220 kV Misa	Expected Completion : Apr'19	Not applicable	CTs replaced.Bus bar protection by June'19	Not applicable
13	Upgradation of 132 kV Bus Bar at Umiam Stg- III to ACSR Zebra	DPR will be submitted soon.	Not applicable	DPR submitted. Other upgradation works to be included in DPR	Not applicable

14	220/132 kV 30 MVA ICT at Mokokchung	Mar'19(LOA date) to be reviewed later on.	To be submitted to NERLDC	ICT by Sep'19. DoCO after GIS commissioning in 2020.	To be submitted to NERLDC

Sr. Manager, NEEPCO stated that the delay in commissioning of 132kV Monarchak-Surjamaninagar resulted in repeated trippings of Monarchak machines due to unavailability of evacuation path.

Further, he intimated the forum that the existing SST for Kopili power station is in 132kV AIS bus. Dismantling and connecting the same to GIS immediately would render unreliable station supply for Kopili PH. A 5MVA ICT has been arranged by NEEPCO which will be delivered at site by July'19.

Sr.GM(AM), NERTS informed about issues regarding the 33kV supply at Mariani(PG). The estimated money has been deposited with APDCL Mariani but still now 33kV power has not been extended to PG Mariani. He requested APDCL to kindly take necessary action in this regard and also refund any additional amount based on utilization.

CGM, NERLDC enquired about the status of 132kV BTPS-Rangia T/L. CGM,SLDC, Assam informed that RoW problems have been resolved and work has already resumed and will be completed by June'19. The forum decided to monitor the status of 132kV BTPS-Rangia under item C.1.

The Sub-Committee noted as above.

C.2. <u>Update on Real Time Energy Assessment for Effective Grid Management:</u>

In 155th OCC meeting, the following were decided:

- CDAC to complete installation of TARA devices for replaced SEMs by 30.04.2019.
- Integration of WBES schedule & SMS alert app to be deployed by CDAC by April'19

Server in all SLDCs and RLDC. Space constraint SLDC not installed. NERLDC may give SAT for CDAC project.

Integration with WBES schedule & SMS alert should not be linked with the SAT.

<u>Deliberation of the sub-Committee:</u>

The forum requested NERLDC & NERPC to co-ordinate for the SAT of CDAC project by 1st week of June'19.

The Sub-Committee noted as above.
Action: NERLDC/NERPC/All state utilities

C.3. Ensuring proper functioning of Under Frequency Relays(UFR) & df/dt Relays:

In 7th NPC meeting held on 08.09.17 it was agreed that mock test is good enough to test the healthiness of the UFR & df/dt relays. The frequency of site inspection was proposed to be upto six months. RPC may carry out periodic inspection, in line with provisions of IEGC and furnish inspection reports to NPC.

Discussions as per previous meetings:-

- Inspection for Mawphlang completed.
- Inspection for Baghjap, Sankardevnagar and Sipajhar under Assam would be tentatively done by Apr'19.

UFR inspection and testing was carried out for 132kV Sankardevnagar on 29.04.19 and for 132kV Rangia and 132kV Rowta on 30.04.19.

In the next stage UFR inspection may be done for Tripura in the following locations:

i) Badarghat ii)Rabindranagar iii)79Tilla.

UFR Tripura date to be intimated

Deliberation of the sub-Committee:

Director, NERPC thanked NERLDC, NERTS and AEGCL for extending support and active participation in the UFR testing of Assam. He opined that in view of the recent disturbances testing of UFR in Tripura system is of paramount importance. He requested TSECL to inform suitable date(s) for UFR inspection.

The Sub-Committee noted as above.
Action: TSECL

C.4. Extended C Band VSAT for power system communications in NER:

The 155th OCCM decided that since the project was a pilot one, the order may be given to M/s KPTCL. Accordingly, CGM-NERLDC was requested to convey the same to M/S KPTCL

Deliberation of the sub-Committee:

CGM, NERLDC informed that KPTCL has committed to go ahead with the Pilot Project. The readiness for immediate execution of the same will be communicated.

MePTCL raised apprehensions regarding the possibility of Cyber Security breach at Killing as a fallout of this pilot. NERLDC informed that the same has already been taken care of, which will be addressed by GM(SL), NERLDC.

The Sub-Committee noted as above.

Action: NERLDC

C.5. DIMAPUR_PG telemetry out since Feb'18.

In 155th OCCM NERTS informed that voice communication is available at the moment and telemetry would be made available by July'2019.

Deliberation of the sub-Committee:

NERTS informed that the work has been awarded and target completion is Aug'19 as LOA.

The Sub-Committee noted as above.
Action: NERTS

C.6 Update on PDMS:

As per deliberation in the previous meeting(s) the following status/decisions:-

- SAT for Assam system
- One representative from each of the states and NEEPCO, NERTS, NERLDC and NERPC.
- Operational load flow feedback to be given by the SLDCs and NERLDC by 30.04.19.

Deliberation of the sub-Committee:

Director, NERPC informed that the SAT for Assam System has been completed in Mar'19. He requested NERLDC & all SLDCs to submit Operational Load flow feedback by 1st week of Jun'19

The Sub-Committee noted as above.
Action: NERLDC/All SLDCs

C.7 Non-availability/ Non-functioning of synchronization facility at numerous stations

As per deliberations in the previous meetings the following is the status for synchronization facility at stations of different utilities:

- AEGCL – Sync check not available for 132kV stations. Procurement of synchronizing trolley and associated equipments(sockets etc.) to be completed. LOA date to be intimated by AEGCL. ***AEGCL status -*** Tender in May'19

- DoP Ar. Pradesh – Sync check not available at Lekhi and Chimpu. Would be in place by Sep'19. ***DoP Ar. Pradesh no representative.***

Deliberation of the sub-Committee:

Sr. DGM, NERTS stated that when both side frequency is different during GD/system are isolated, synchroscope is required. Hence the requirement of synchronizing

trolley/synchroscope. GM, NERTS further clarified that NR sync check relay is for AR, wiring not for CB closing while Synchroscope can close the CB.

AGM, SLDC, AEGCL intimated the latest status that report has been sought from MRT wing regarding availability of synchronizing facility. He further informed that AEGCL would revert back with the exact status in 15 days and forward the report to NERPC & NERLDC.

DoP Ar. Pradesh representative stated that for Lekhi S/S no Sync check relay is available while for Chimpu relay is available. The procurement for trolley/synchroscope is being initiated and exact date for implementation would be intimated later on. But, they will have Synchronization facility latest by Oct 2019.

Forum decided that for important stations like Lekhi & Chimpu synchronising trolley is required and requested Ar. Pradesh to procure the same at the earliest.

The Sub-Committee noted as above.
Action: AEGCL/DoP Ar. Pradesh

C.8 Phase shift errors in PMU:

In 155th OCCM Director, NERPC informed that in the Sub-group meeting held on 05.04.19, it was agreed that the matrix of phase comparison for each of the stations vs Bongaigaon will be prepared by NERLDC. NERLDC informed that work is underway and would be completed by April'19.

Deliberation of the sub-Committee:

NERLDC informed that the matrix has been prepared, with deviations being categorized in three groups: (i) +120 deviation,(ii)-120 deviation, (iii) matching w.r.t Bongaigaon.

Sr.GM(AM), NERTS informed that for some ASEB stations 90 deg deviation is present which has to be checked

Within one week the data w.r.t. connection changes will be collected by NERTS in conjunction with AEGCL and rectification would be completed by May'19 for substations with +/- 120 degree and planning of activities to correct the phase shift of -90 or +150 degree group shall be made by May 2019.

The Sub-Committee noted as above.
Action: AEGCL/NERTS

C.9 Compensation for Heat Rate degradation and Auxiliary Energy Consumption in case of gas based power plants:

In 154th OCCM it was decided that a Special Meeting would be convened prior to discuss the Heat Rate Degradation and Compensation Calculation for Thermal Power Plants.

Deliberation of the sub-Committee:

Director, NERPC informed that prevalent practice for compensation calculation i.r.o Gas Power Plants in other RPCs has been sought and a meeting in this regard would be convened prior to the next OCCM.

The Sub-Committee noted as above.
Action: NERPC

C.10 Operation of RHEP units in Synchronous condenser mode

In 155th OCCM, Sr. Manager, NEEPCO informed that there has been no response from BHEL in this regard. He requested NERPC to intervene in the matter with BHEL. Member Secretary assured that the matter would be taken up strongly with BHEL through CEA.

Deliberation of the sub-Committee:

It was informed that Member Secretary has requested CEA to intervene. Sr. Manager, NEEPCO informed that ED(O&M), NEEPCO has discussed with ED, BHEL, Bhopal, who had assured that offer would be sent. However, till now no such offer has been received. Director, NERPC requested NEEPCO to intimate the details of appropriate authority of BHEL so that the matter may be pursued at the highest level.

The Sub-Committee noted as above.
Action: NEEPCO, NERPC

C. 13 Tentative schedule for Black Start & Restoration Procedure Mock exercise in NER during the year 2019

In 155th OCCM the mock black start schedule was agreed as below:

AGTCCPP completed

LOKTAK to be decided

Khandong 07-05-19

KOPILI 06-05-19

RHEP 1st week of June'19

DOYANG 2nd week of June'19 exact date will be discussed with plant

Deliberation of the sub-Committee:

NERLDC informed the following w.r.t Black Start of Kopili and Khandong HEP:

Mock black start Khandong on 09th May,2019

11:19 Unit started

12:35 Unit #I synchronized with grid

12:37 Bus Coupler of Bus A&B closed

Total time elapsed for successful Black Start: 1hr 16min

It was clarified that the high time for successful Black start was due to repeated tripping of the machine on reverse power protection. Later on governor was turned off and the exercise was carried out, resulting in successful synchronising of the machine. NERLDC requested NEEPCO to learn from the steps, which were followed during the final successful synchronization, and follow the same when need for black start of Khandong units arises during any future restoration after a disturbance.

Mock Black start Kopili on 06th May,2019

11:30 Unit #III started

11:46 Unit #III synchronized

11:49 Bus coupler closed

Total time elapsed for successful Black Start: 16min

It was decided to repeat the exercise in lean hydro season.

It was decided that Black Start capability of Loktak would be tested on any day from 20th may to 23rd May, 2019.

Regarding RHEP it was decided that in lean season testing is better which may be in Oct-Nov'19. EE, DoP Ar. Pradesh stated that Ar. Pradesh need to be intimated 2 days in advance. Mock Black Start Exercise at Doyang HEP shall be carried out as per schedule.

The Sub-Committee noted as above.
Action: NEEPCO, NHPC, NERLDC

C. 14 DVAR and PSS at AGTCCPP:

In 155th OCCM Sr. Manager, NEEPCO informed that AGTCCPP Unit#4 would be returned by the end of April'19. Subsequently old AVR will be replaced with DAVR along with PSS tentatively by June 2019 as minimum 10 days required for installation of DAVR per unit.

Deliberation of the sub-Committee:

NEEPCO informed that installation and commissioning would be complete by July'19.

The Sub-Committee noted as above.
Action: NEEPCO

C. 15 Bus Configuration issues for various sub-stations:

In 155th OCC Meeting Director, NERPC stated that communication regarding bus configuration has been sent to TSECL, NHPC and NEEPCO vide letter dated. 01.04.19. Sr.GM(AM), NERTS once again reiterated that at Surjamaninagar only matching of phases between the buses needs to be done prior to connection. The forum requested TSECL to immediately complete the work since it requires minimum time and effort. This matter will be reviewed in Meeting of 2nd and 3rd May, 2019 at Agartala, in presence of members from NERPC, NERLDC, Power grid, Tripura, and other states. Manager, NHPC informed that CEA Inspection Application has been done for the 132kV Transfer Bus. NEEPCO stated that the work would be completed by 30.04.19.

Deliberation of the sub-Committee:

Sr. Manager, NEEPCO informed that letter has been received and forwarded to HoP RHEP for action. Further, he informed that Bus-A can be connected through isolator. But protection via Bus coupler won't be in place since Bus coupler breaker is not functioning.

After detailed deliberation, it was decided that a Committee would be formed by NERPC to visit RHEP and decide the reasons for non-commissioning of Bus A prior to next OCCM.

The forum once again requested TSECL to immediately commission the second bus at Surjamaninagar and divide the feeders amongst the two buses.

The Sub-Committee noted as above.

Action: NEEPCO/TSECL/NERPC

C. 16 Reactive power capability/injection of generating stations:

As per discussion in previous meeting(s) the following needs to be updated:

- Reactive power capability testing date for Pare HEP to be confirmed by NEEPCO.
- OTPC to inform roadmap for improvement in reactive power generation/absorption.
- OTPC to inform status of reducing tap position of GTG generation transformers.

Deliberation of the sub-Committee:

NEEPCO informed that there is high MVAR generation from AGTCCPP due to excess MVAR drawal by Tripura. This is stressing the machines and further threatens grid security since the machines are operating at the limit of the capability curve.

NERLDC mentioned that as discussed in 155th OCC Meeting on 10.04.2019 a procedure for Reactive power capability testing of generators has been made by NERLDC in line with procedure of such testing being followed in all other Regions of the country. All ISGSs were requested to give their feedback on the procedure by end of May 2019, after which the procedure shall be finalized and a schedule for reactive power capability testing of all ISGS of NER Region shall be prepared & the testing shall be carried out. All ISGS mentioned that they will have to consult the respective OEM regarding changing of reference voltage (Vref) and confirmed that they shall give the feedback after consultation with OEM within May 2019.

It was decided that a schedule for Reactive Capability Testing would be prepared by NERLDC and circulated after finalization of the above mentioned procedure.

Sr. Manager, NEEPCO informed that PG Test reports for Pare would be circulated. If NERLDC not satisfied then NERLDC may go for Reactive Capability Testing. Because salient points of testing have to be ratified by OEM. If no setting change then NERLDC may go ahead for testing for reactive capability.

OTPC informed that OEM feedback would be given by May'19

Sr.GM(AM), NERTS informed that a study has been conducted by CTU regarding MVAR control by tap changing of transformers(report attached at **Annexure C.16**).
The forum requested members to peruse the same and revert back with suggestions.

The Sub-Committee noted as above.

Action: NEEPCO/OTPC

C.17 Status review of upcoming projects by Sterlite Grid 4 for strengthening of Southern part of NER Grid by July'19

1. 400 kV Misa – Silchar D/C
2. 400 kV P K Bari(Sterlite) - Surjamaninagar(Sterlite) D/C
3. 400/132 kV, 2x315 MVA ICTs at P K Bari (Sterlite)
4. 400/132 kV, 2x315 MVA ICTs at Surjamaninagar (Sterlite)
5. 132 kV AGTPCCPP – P K Bari(TSECL) D/C

Also, review of upcoming projects by TSECL for strengthening of Southern part of NER Grid:-

1.132 kV P K Bari (TSECL) - P K Bari (Sterlite)

2.132 kV Surajmaninagar(TSECL) - Surajmaninagar(Sterlite)

Deliberation of the sub-Committee:

Director, NERPC stated that in view of the repeated Grid disturbances in Southern part of NER primarily due to unreliable evacuation system of Palatana, the completion of the above lines is of utmost necessity. He informed that M/s STERLITE has nominated nodal officer for above projects who will attend subsequent OCCMs and update the forum regarding progress of works.

Scope of work under POWERGRID(CTU):

For 400kV Silchar-Misa D/C line:

- CTU to provide 2 no. of 400kV line bays each at Silchar (PGCIL) and Misa (PGCIL)
- CTU to provide 80 MVAR bus reactor at Misa (PG) along with GIS bay
- CTU to provide Switchable line reactors, 1x80 MVAR at Misa ends of the each circuit of the Silchar– Misa 400kV D/C line

Sr.GM(AM), NERTS informed that NERTS(Construction Division) would revert back to NERPC with the exact status.

The Sub-Committee noted as above.

Action: STERLITE/KEC/NERTS.

C.18 Status of CT upgradation:

Name of the line	CT Ratio at either end (current)		CT Ratio at either end (required)		No. Of CTs required		Latest status
	Stn A	Stn B	Stn A	Stn B	Stn A	Stn B	
132 kV Jiribam-Aizwal	400/1	400/1	600/1	600/1	3 by PGCIL	4 by PGCIL	July'19
132 kV Jiribam-Haflong	400/1	400/1	600/1	600/1	3 by PGCIL	4 by PGCIL	July'19
132 kV Khandong - Umrangso-Haflong	300/1	400/1	600/1	600/1	3 at Khandong by NEEPC 3 at Umrangso by AEGCL	3 at Umrangso by AEGCL, 3 at Haflong by PGCIL	AEGCL-Arranged from other station not procured

132 kV D/C Doyang - Dimapur	300/1	600/1	600/1	600/1	3 by PGCIL & 6 by NEEPCO		PGCIL- July'19 NEEPCO- By Mar'20
132 kV Khandong - Khliehriat- I	300/1	300/1	600/1	600/1	3 by NEEPCO	3 by PGCIL	PG done NEEPCO- By Mar'20
132 kV Khandong – Kopili I & II	300/1	300/1	600/1	600/1			PG done NEEPCO- By Mar'20
132 kV Dimapur- Dimapur	600/1	1200/1	600/1	600/1		6nos by DoP ,Nagaland Plugged at 600/1 20% error new procurement will be done	PGCIL- completed, DoP Nagaland - Jul'19

The Sub-Committee noted as above.

Action: NERTS, NEEPCO, DoP Nagaland

C. 19 <u>Metering Status Review:</u>

Ref	***Agenda Description***	***Anticipated Date***	***Status as per 156th OCC***
153th OCC	Replacement of 1 no of SEM at NTPC	Yet to be installed	Completed.
20th Metering meeting, dated:14.09.16	Procurement of additional 70 Laptops	As per 155 th OCC: LOA for software (laptops) would be issued by Apr'19. Laptops would be distributed by 15th May'19.	Software has been installed and laptops are ready for despatch. To be distributed as per list of NERLDC.

The Sub-Committee noted as above.

Action: NERLDC

D. I T E M S FOR DISCUSSION

D.1 Generation Planning (ongoing and planned outages)

a. Present per day MU and projected number of days of operation.

Plants	Reservoirs level in meter	MU content	Present DC (in MU)	No of days as per current generation
Khandong + Kopili stg II	723.35	39.75	1.578	25
Kopili	600.15	191.5	4.07	47
Doyang	311.05	7	0.1096	64
Loktak	769.21	250	1.0005	250

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

The Sub-Committee discussed and approved the proposed shutdown by Generating Stations as given in Annexure – D.2 which is available in NERPC website.

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 the Special Meeting held at Palatana, OTPC on 02.05.19 it was decided that no shutdown would be granted to utilities not submitting DR/EL regularly.

The sub-Committee discussed and approved the transmission line outages proposed by Constituents for May, 2019 - June,2019 which is available in the website of NERPC.

D.3 Estimated Transmission Availability Certificate (TAC) for the month of January, 2019 - March, 2019:

NETC and POWERGRID have submitted the outage data for the month of January, 2019 - March, 2019. So the attributability of outage of the said elements may please be finalized.

The Sub-Committee noted as above.

D.4 RGMO performance analysis of events

In 155th OCCM, NERLDC highlighted the even on 12.03.2019. GTG 1 & STG 2 of OTPC Palatana and Unit I of BGTPP were found to be giving response less than the desired response, whereas, GTG 2 & STG 1 of OTPC Palatana and Unit 2 of BGTPP were found to be giving negative response. GM, NTPC informed that CMG tuning is being done by Honeywell and the subsequently errors would be rectified. Representatives from the generating utilities voiced in unison the concern that RGMO response is posing difficulties in maintaining the ZCV restrictions.

Kopili informed that for the event dated 5/2/19 since the RGMO was triggered 5min, prior to the event response in the opposite direction had started. So a negative response is noticed during the event.

The forum requested NEEPCO to give a presentation in the next OCCM on the logic of its units for RGMO along with case study for event dated 5/2/19 NHPC to give presentation on the impact of ZCV on RGMO.

Deliberation of the sub-Committee:

Manager, NEEPCO gave a presentation on RGMO operation in plants of NEEPCO (attached at **Annexure-D.4**). The salient points of the presentation are as follows:

- All hydro generators of NEEPCO have Digital governors
- Ripple filter is set at 0.03Hz.
- When one RGMO cycle is in operation governor does not respond to frequency change till completion of 10min.
- On 5th February, 2019 at 11:55 AM RGMO was triggered due to ripple(which brought frequency) inside the band.

- At 11:57AM the event occurred while RGMO was in operation and generation was fixed.
- While generation was supposed to ramp up it did not do so and was fixed for 5min till 12:00hrs.
- At 12:00hrs the generation started to ramp down as per RGMO characteristics.
- The system averages the frequency every 15sec. If change in average is greater than 0.03Hz the system gives pulse to set to new average frequency.

Since any event that causes a change of 0.02Hz in frequency is analysed and recorded, NERLDC contended that it is highly unlikely that any such event had occurred 30 seconds prior to 11:55hrs on 5th February, 2019. The forum requested NERLDC to scan the PMU records for the event.

NERLDC highlighted the event on 12th April,2019 at 23:55Hrs where a drop of 0.09 Hz occurred in grid Frequency.

It was informed that all units of OTPC Palatana and BgTPP Unit 1 & Unit 3 have given positive response but their response is less than the desired response. BgTPP Unit 2 has given negative response. The RGMO performance of all units on bar at the time of the event is shown below:

	Palatana GTG 1	Palatana STG 1	Palatana GTG 2	Palatana STG 2	BGTPP U 1	BGTPP U 2	BGTPP U 3
Actual Response (MW)	0.45	0.25	0.14	0.12	0.56	-1.15	0.52
Desired Response (MW)	9.57	9.74	5.15	5.32	8.65	8.06	11.70

GM, NTPC clarified that prima facie it appears to be a mechanical problem (Turbine Issue). The same would be rectified during shutdown. However, DAS data in this regard would be submitted to NERLDC. They also informed that they shall be further tuning the RGMO control so that all their units can give better performance in future events.

Manager, OTPC informed that governor droop characteristics and rate of change of frequency shall affect the quantum response. NERLDC informed that both governor droop characteristics and rate of change of frequency has been considered in calculation of "desired response" in the RGMO analysis shown for 12th April, 2019. For OTPC the droop setting has been considered as 4 % while for BgTPP the same is considered as 5 %.

The Forum requested all the generating stations to do detailed analysis and take necessary actions to:

i) Give Positive response during all future events.
ii) Improve their response quantum such that it is as close as the desired response

The Sub-Committee noted as above.

Action: NTPC, NEEPCO.

D.5 Assessment of TTC, TRM & ATC by SLDC on respective Inter-State Transmission Corridor

The forum requested all the SLDCs to carry out the TTC/ATC calculations and decided that SLDC Ar. Pradesh would give presentation in the next OCC.

NERLDC intimated that State-wise ATC/TTC calculated by NERLDC on behalf of SLDCs was mailed to all utilities on 09.04.19.

Deliberation of the sub-Committee:

NERLDC informed that state-wise ATC/TTC was mailed on 13.05.19 to all SLDCs. CGM, NERLDC stated that henceforth ATC/TTC for all states would be calculated on a quarterly basis by NERLDC on behalf of SLDCs the next 3 months together from now onwards so that SLDCs will get enough time to review the results. In addition, SLDC Manipur and SLDC AP requested for a training in modelling in PSSE for inclusion of new sub-stations/elements. It was decided that two days training program will be organized by NERLDC via video conferencing as per convenience of these SLDCs. EE,SLDC, DoP Ar. Pradesh stated that Arunachal Pradesh would present the ATC/TTC calculations in next OCCM.

The Sub-Committee noted as above.

Action: All SLDCs.

D.6 Reliable power supply to Manipur system

The following status was informed in the 155th OCCM:-

a.132 kV Jiribam – Jiribam (MA) – Rengpang – Loktak link - By April'19

b. Restoration of 132 kV Dimapur – Imphal line – Can be ascertained after resolve of ROW issue by Nagaland

c. Upgradation of 132 kV Kohima – Karong – Imphal (MSPCL) link - Upgradation of 132kV Karong-Kohima by July'19.

Deliberation of the sub-Committee:

(a) 132 kV Jiribam – Jiribam (MA) – Rengpang – Loktak link: In service.

b) Restoration of 132 kV Dimapur – Imphal line – Pls refer to discussion in item **B.1(2).**

(c) Upgradation of 132 kV Kohima – Karong – Imphal (MSPCL) link : Presently 132kV Imphal - Karong is being upgraded with ACSR panther. The work would be completed by July'19. For upgradation of 132KV Karong-Imphal link, Manipur will be availing shutdown on 29/05/19 for approximately 3 Months. It was brought to notice that the flow in the 132kV karong-Kohima is being limited (at 20MW from Karong to Kohima) via relay settings at Karong. The forum noted that this would lead to unwanted trippings of the line and requested MSPCL to review the same.

SDO, DoP Nagaland clarified that 132kV Karong-Kohima is normally kept open because in the event of tripping of 132kV Dimapur-kohima line, the former would get overloaded.

The Sub-Committee noted as above.

Action: MSPCL, DoP Nagaland.

D. 7 <u>Overloading of 132kV Pare-Lekhi line:</u>

To limit the overloading of 132kV Pare-Lekhi line, 132kV Itanagar-Lekhi line has to be kept closed. As reported by SLDC Arunachal Pradesh during real time, they are unable to close the 132kV Itanagar-Lekhi line. Status review of CT ratio of 132kV Itanagar-Lekhi (Study results enclosed as Annexure-D.7)

<u>Deliberation of the sub-Committee:</u>

AEE, DoP Ar. Pradesh informed that the CT ratio at Lekhi S/S is 150/1 which can cater about 34MW. Further 132kV Lekhi-Chimpu line is stringed with Lyynx conductor 350A current limit, 50 MW thermal loading (assuming age of the conductor and other parameters). He informed that DoP AP is in the process of upgrading the CT ratio to 600/1.

Further, he informed that Lekhi bus is handling 74MW on ACSR Lynx conductor. This has to be upgraded at the earliest. A proposal regarding upgradation of CT to 600/1 and reconductoring of line has been put up with optimistic completion by Mar'2020.

Sr.GM(AM), NERTS opined that presently many 300/1 CT are being replaced. Out of these 4CTs may be diverted to Lekhi S/S. This would bring immediate relief and lead to close to optimum loading of the line.

Director, NERPC opined strongly that the CT ratio may be upgraded to 600/1 as proposed by Ar. Pradesh as this would cater for future load growth in that area. He also apprised that congestion of line comes under the ambit of PSDF and requested DoP Ar. Pradesh to put up a proposal for funding from PSDF.

The Sub-Committee noted as above.

Action: DoP Ar. Pradesh.

D.8 <u>Accurate Load forecasting by SLDCs as per IEGC c1.5.3 for better system operation</u>

In 155th OCCM NERLDC presented the RMSE for the month of Feb'19:

% Error with Actual Data (Forecasted by States)							
	Ar Pradesh	**Assam**	**Manipur**	**Meghalaya**	**Mizoram**	**Nagaland**	**Tripura**
Median	**10**	**8**	**11**	**12**	**10**	**12**	**8**

Forum decided that load forecast error will be monitored in OCC Meeting till the RMSE comes below 5%

CGM, NERLDC informed that presently NERLDC is pursuing Industry - Academia partnership for better load forecasting. SLDCs may also join since the facility would not entail any expenditure on their part.

<u>Deliberation of the sub-Committee:</u>

RMSE for Mar'19:

% Error with Actual Data (Forecasted by States)							
	Ar Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Tripura
Median	11	12	11	11	14	11	10

NERLDC requested all the states to ensure proper forecasting in order to bring the RMSE percentage to below 5.

The Sub-Committee noted as above.

Action: All SLDCs.

D.9 <u>Shutdown related to upgradation of 132kV Motonga Sub-station in Bhutan:</u>

PTC has informed vide letter dated. 23.04.2019(attached at **Annexure D.9**) that shutdown (for two months) of 132kV Motonga Substation would be taken by Bhutan for additional 132kV Bus. This would necessitate shutdown of 132kV Rangia-Motonga for shifting to ERS so that 132kV Rangia-Dothang line is through.

<u>Deliberation of the sub-Committee:</u>

Director, NERPC informed the forum that the delegation from Bhutan could not attend the OCC for reasons beyond control.

He appraised the forum about the background of the issue and requested the views of members on the following three points:

1) Date for ERS shifting - nature and duration of shutdown.
2) Protection settings at Rangia
3) Metering & Accounting issues

After detailed deliberation, the followings were decided:

1) Date for ERS shifting - nature and duration of shutdown.

For erecting on ERS 2-3 days continuous shutdown of 132kV Rangia-Motonga is required. The date(s) may be intimated so that shutdown can be approved accordingly.

2) Protection settings at Rangia

Line parameters are already available with NERTS/POWERGRID for the 132kV Rangia-Deothang. The parameters for the line from Tee point to Silicon factory has to be provided by Bhutan. During shutdown NERTS would visit and revise the settings.

3) Metering & Accounting issues

NERLDC stated that presently meter reading at Rangia end is used for Accounting purpose and SEM at Motonga is used for verification. In the revised configuration similar arrangement would be followed with Rangia end is used for Accounting purpose and SEM at Deothang/SILICON factory used for verification.

However, the meters at Deothang end & Silicon factory end are ABT compliant or not, is to be confirmed. NERLDC also requested the forum regarding sample meter readings of Deothang and Silicon Factory meters for verification purpose. It was decided that NERTS would visit Deothang/Silicon factory and verify the same including collection of IR during the time of shutdown.

The forum requested NERPC to communicate the decisions to Bhutan accordingly.

The Sub-Committee noted as above.

Action: NERTS, NERLDC

D.10 Shutdown related to 132kV Bus Extension Works at AGTCCPP, NEEPCO by M/s STERLITE:

M/s STERLITE vide letter dated. 20.03.2019 has requested for Shut Down of existing 132kV Main Bus I & II at AGTCCPP, NEEPCO sequentially each for maximum 2 hours to fix hardware & Insulators with arrangement of Stringing Twin Bull AAC from the Low-Level Bus Towers preferably within shortest possible time.

Shut Down is required for 2 hours for each Bus either on the same day or on consecutive days by sharing load from one Bus or complete shut down as deemed fit

Deliberation of the sub-Committee:

Sr. Manager, AGTCCPP, NEEPCO informed that Bus -1 shutdown is required because Unit#I Bus isolator has jamming problem. During repair the Machine will be kept in FSNL, if required. AGTCCPP shall accordingly reduce their DC during the period of above shutdown. After repair of isolator the shutdown of Bus -1 would be returned.

Subsequently all the feeders/units would be brought to Bus-1 and then shutdown of Bus-2 would be taken.

The forum accordingly approved the shutdown of Bus-1 on 28.05.2019 (10:00hrs to 12:00hrs) and shutdown of Bus-2 on 28.05.2019 (13:00hrs to 15:00hrs).

The Sub-Committee noted as above.

Action: STERLITE/NEEPCO

D.11 Maintenance of coal stock at BgTPP:

MoP vide letter dated. 07.02.2019 has informed that "in view of expected increased power demand in the next few months upto monsoons, all Pithead generation and consequently coal and rake supply (as needed) should be maximized immediately for meeting the needs of the current year/next few months and all pit head plants be given full priority in coal and rake allotment for full PLF irrespective of their ACQ/FSA, in this period."

Deliberation of the sub-Committee:

GM, NTPC, BgTPP informed that the coal stock is presently 2lakh ton with full generation from 3 units for 27 days. He further stated that BgTPP is trying to improve the coal stock further.

The Sub-Committee noted as above.

Action: NTPC

D.12 Replacement of GO CBs by Single Pole CBs in 132kV System:

Proposal to replace gang operated circuit breaker by single pole circuit breaker in 132 kV ISTS lines for reliable grid operation. Eg: 132 kV Palatana - Surajmaninagar line (Gang operated CB at Palatana), 132 kV lines emanating from 132 kV Kumarghat (PG), 132 kV Jiribam (PG) etc.

Deliberation of the sub-Committee:

Manager, OTPC informed that the 132kV Palatana-Surjamaninagar line would be converted to 400kV in 1-2yr. Sr.GM (SO-II), NERLDC stated that single phase auto recloser scheme will enhance reliable operation of the grid. Sr.GM(AM), NERTS opined that (i) In Numerical Relay single & 3ph adopted. If 1ph fault then also AR command

will be given to GO CB, (ii) In integrated system 3 pole AR is implemented with success rate of 68%, (iii)replacing all the GO breakers with 1 pole CBs would entail huge expenditure.

After detailed deliberation the forum decided that since the item involves a change in philosophy, the matter was referred to the Sub-group to determine requirement.

The Sub-Committee noted as above.

Action: NERPC.

D.13 Ratification of PoC data:

Ratification of Technical and Commercial data for computation of PoC Charges and Losses for Jul to Sep'19 (Q2 of 2019-20) –To be ratified by utilities.

Deliberation of the sub-Committee:

The Sub-Committee ratified the PoC data for Q2 with the following change(s):

Tripura demand changed to 458MW. The ratified PoC Data is as follows:

	Data given by DICs (MW)	For Ratification at 156th OCCM(MW)
Ar. Pradesh	156	156
Assam	1850	1850
Manipur	190	190
Meghalaya	342	342
Mizoram	99	99
Nagaland	139	139
Tripura	360	458

The Sub-Committee noted as above.

Metering Agenda

Laptops list forwarded to D.Paul

D.14 METER ERRORS:

Pair checks error observed in following locations, CT / PT error at State end suspected.

a. 132 kV Pare-Lekhi feeder, Lekhi end reading lower by 20% : SEM installed in 4th of April'19 error not consistent no problem in multi error, 3SEM data for last week data to be given a s/d proposed during that CT control cable will be changed if problem persist

b. 132 kv Imphal-Ningthoukhong, Ningthoukhong end reading very low, less than 10%. Connection end checked no problem. Also sign reversal problem exists at Kopili end of Misa-Kopili III.

c. Sign reversal observed at Kohima end of 132 kv Kohima-Dimapur (Misa – Kopili-III at Kopili end signed reversal issue: communication after change to NERTS

Jiribam (Man) end of Jiribam(PG)feeder, Jiribam(Man) end reading low, error more than 15%. MAN- connection own end no problem

a. Dimapur(s) end of Dimapur (pg) I line, Dimapur(s) end reading less than 20%.

b. Dimapur(s) end of Dimapur (pg) II feeder, Dimapur(s) end reading less than 20%.

Deliberation of the sub-Committee:

NERLDC requested all concerned constituents to check the above errors and make necessary rectification works if the problem still exists.

D.15 High SEM Time Drift:

Time drift in SEMs may result in computational errors in Regional energy accounts & Weekly Loss. All constituents in whose premises the meters are installed are required to take corrective action for time correction whenever meter time drift > 1minute and submit weekly compliance report of the same to NERLDC.

The compliance report of many locations as detailed in Annexure A, are not received by NERLDC and Annexure B provides location details of Drift correction action not being done / weekly SEM data not sent.

AGBPPP high time drift issue

Deliberation of the sub-Committee:

NERLDC requested all constituents to make necessary time drift corrections on a regular basis and also to provide time drift report regularly. NERLDC also requested Tripura and Assam to send weekly SEM data of Udaipur(Tr) and Sonabil(As) sub stations.

The Sub-Committee noted as above.

D.15.I ADDITIONAL MEETERING AGENDA

a) Repairing of replaced SEM meter:

Regarding repairing of defective SEM meters decision regarding repairing or procurement of new SEM may be deliberated.

Deliberation of the sub-Committee:

The list of defective meters to be repaired and list of meters to be replaced will be provided by NERLDC.

The Sub-Committee noted as above.

b) GST Certificate and Address of proof for creation of new vendor:

As intimated by Regional F&A (POWERGRID) new vendor code has to be created for all vendors against payment related to SEM, Laptops etc. Hence all the constituents are requested to furnish the GST certificate and address proof of respective customers so that requisite template for creation of new vendor may be completed.

Deliberation of the sub-Committee:

The Sub-Committee noted as above.

c) OTPC meters

Deliberation of the sub-Committee:

SEMS are in shortage only 15spare SEMs are there, will be diverted after repaired meters are returned

The Sub-Committee noted as above.

d) SEM data not provided from Udaipur

Deliberation of the sub-Committee:

Laptop provided but software not installed

The Sub-Committee noted as above.

D.16 Voltage fluctuation of 132kV Khandong-Haflong line

AGM, SLDC, AEGCL informed that Calcom unit tripped 21 times in the month of April'19. Particularly VFD tripped at Calcom Umrangso. It was also brought to notice that there were Incidents involving no tripping of line but drive tripped at Calcom.

After detailed deliberation the forum recommended less sensitive protection system to be adopted at Umrangso Calcom.

The Sub-Committee noted as above.

D.17 Restoration of SCADA for control and annunciation:

The SCADA for control and annunciation of 132 kV Kopili Khandong Feeder II and 220/132 kV, 160 MVA ICT is not in operation since a long period of time leading to difficulty in monitoring and operation. POWERGRID may be requested to restore the same or separate control and monitoring panel for the feeder at the earliest.

The C&R panel as well as SCADA to be restored in control room for 132kV Kopili-Khandong-II & ICT

Deliberation of the sub-Committee:

NERTS assured that SCADA, C&R panel will be restored ASAP possibly by May'19

The Sub-Committee noted as above.

Action: NERTS

D.18 Telemetry status of bays at Kopili:

The transmission of the telemetry status of the following bays which will be shifted to the under construction GIS by PGCIL needs to be arranged by POWERGRID to transmit it separately through new RTU or by making additional arrangement in NEEPCO's existing RTU panel.

160 MVA ICT I, 160 MVA ICT II, 5 MVA Tfr, 132 KV Bus, 132 kV Kopili Khandong Feeder I, 132 kV Kopili Khandong Feeder II

Will be arranged by NERTS

3x20MVA ICT decommissioned to be removed from data points.

Deliberation of the sub-Committee:

Sr. DGM, NERTS assured that telemetry for the following bays would be arranged by NERTS:

160 MVA ICT I, 160 MVA ICT II, 5 MVA Tfr, 132 KV Bus, 132 kV Kopili Khandong Feeder I, 132 kV Kopili Khandong Feeder II.

Sr. Manager, NEEPCO requested NERLDC to remove the 3x20MVA 220/132kV ICTs from the list of data points since those have been decommissioned.

The Sub-Committee noted as above.

Action: NERTS

Date & Venue of next OCC meeting

It is proposed to hold the 157th OCC meeting of NERPC on first week of June, 2019. However, the exact date and venue will be intimated in due course.

The meeting ended with thanks to the Chair.

*****

Annexure-I

List of participants in the 156th OCC Meeting on 15th May, 2019			
SN	**Name & Designation**	**Organization**	**Contact No.**
Arunachal Pradesh			
1	Sh. Sange Phunso, EE, SLDC	DoP, AP	9436041217
2	Sh. Moli Kamki, AEE	DoP, AP	9774033738
ASSAM			
1	Sh. Bimal Ch. Borah, AGM, SLDC	Assam	9435111248
2	Sh. Dipesh Ch. Das, AGM, SLDC	Assam	9954110254
3	Sh. Deepankar Deka, CGM	Assam	9854015609
Manipur			
1	Ms. Khoisnam Stela, DGM, SLDC	Manipur	-
2	Ms. Athokpam Sujata Devi, Mgr. SLDC	Manipur	-
Meghalaya			
1	Sh. B. Nikhla, EE(SP)	Meghalaya	9436314163
2	Sh. T. Gidon, EE, SLDC	Meghalaya	6009094044
3	Sh. W. Khyriem,EE (GSPD)	Meghalaya	9856007107
4	Sh. Kitboklang Myrthong, AE	Meghalaya	-
5	Sh. Alokesh Koch, AE	Meghalaya	-
6	Sh. K. Kynjing, AE (MRT)	Meghalaya	9481170070
Nagaland			
1	Sh. Rokobeito Iralu, S.D.O (trans)	Nagaland	9436832020
Tripura			
1	Sh. Anil Debbarma, DGM	Tripura	9612589250
NERTS			
1	P. Kanungo, Sr. GM (AM)	PGCIL	-
2	H. Talukdar, DGM	PGCIL	-
NERLDC			
1	Sh. V. Suresh, CGM	NERLDC	-
2	Sh. Amaresh Mallick, Sr. GM	NERLDC	-
3	Sh. Ankit Jain,(manager)	NERLDC	-
4	Sh. Keshab Borah, Engineer	NERLDC	-
5	Sh. Jerin Jacob, Dy Manager	NERLDC	-
6	Sh. Bornali Nath, Engineer	NERLDC	-
7	Sh. Sourav Mondal, Engineer	NERLDC	-
NTPC			
1	Sh. R.K. Panda, GM(o)	NTPC	-

2	Sh. Kangkan Paul	NTPC	-
OTPC			
1	Sh. Subhajit Ganguly	OTPC	-
2	Sh. Narendra kumar Gupta	OTPC	-
NEEPCO			
1	Sh. Suranjan Sarkar, Sr. Manager	NEEPCO	8974009294
2	Sh. Joypal Roy, Sr. Manager E/M	NEEPCO	9435577726
3	Sh. Ashim Kr. Sarmah, DM (E/M)	NEEPCO	9435078866
4	Sh. Milton Das	NEEPCO	9436120260
NHPC			
1	Sh. Deepak Sanaygadh, Sr. Manager	NHPC	-
NERPC			
1	Sh. P.K. Mishra, MS	NERPC	9968380242
2	Sh. B. Lyngkhoi, Director/SE(O&P)	NERPC	9436316419
3	Sh. S. Mukherjee, AD-I	NERPC	8794277306

उ.पू.क्षे ग्रिड प्रदर्शन

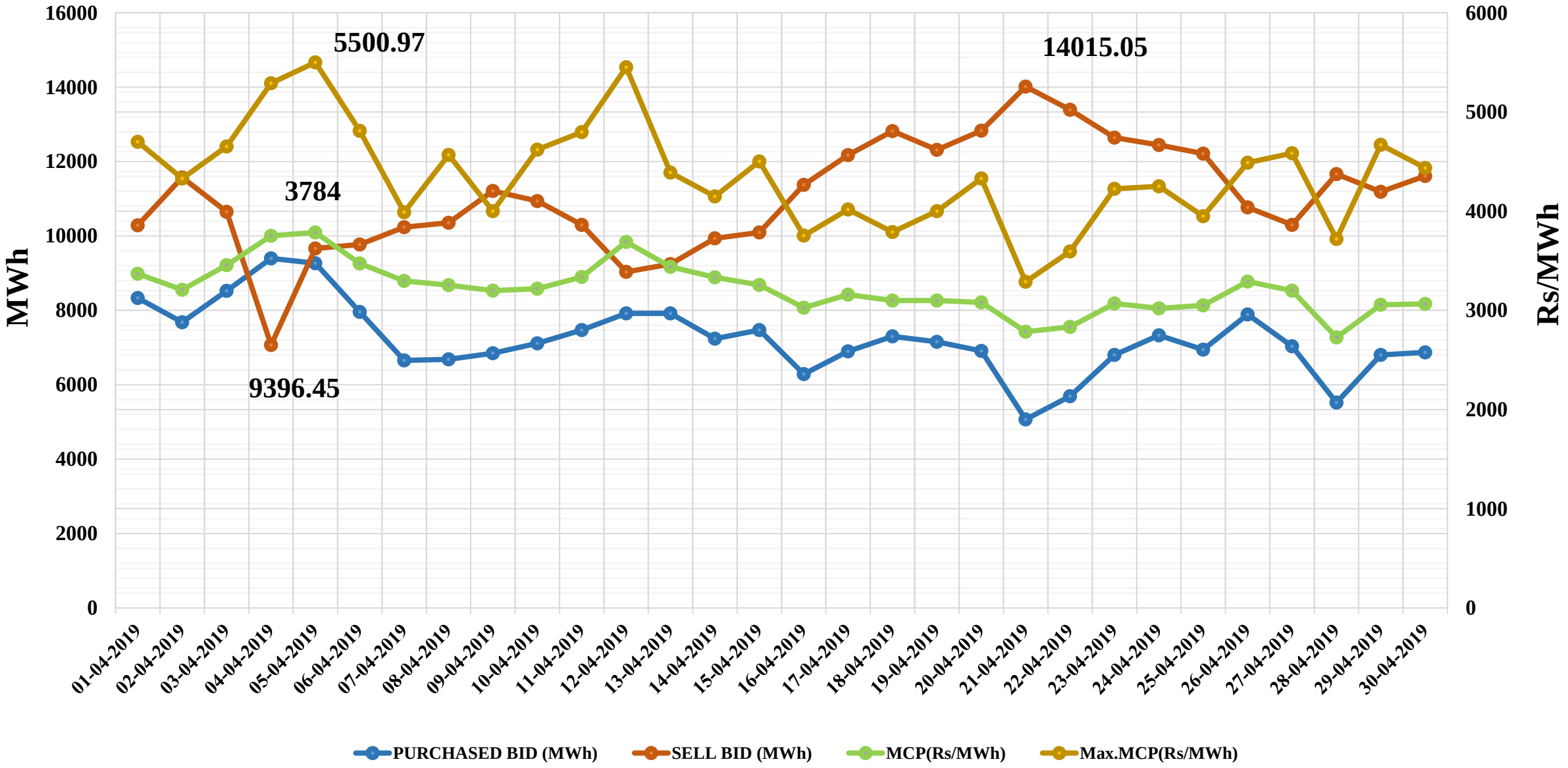
NER GRID PERFORMANCE

For the month April, 2019

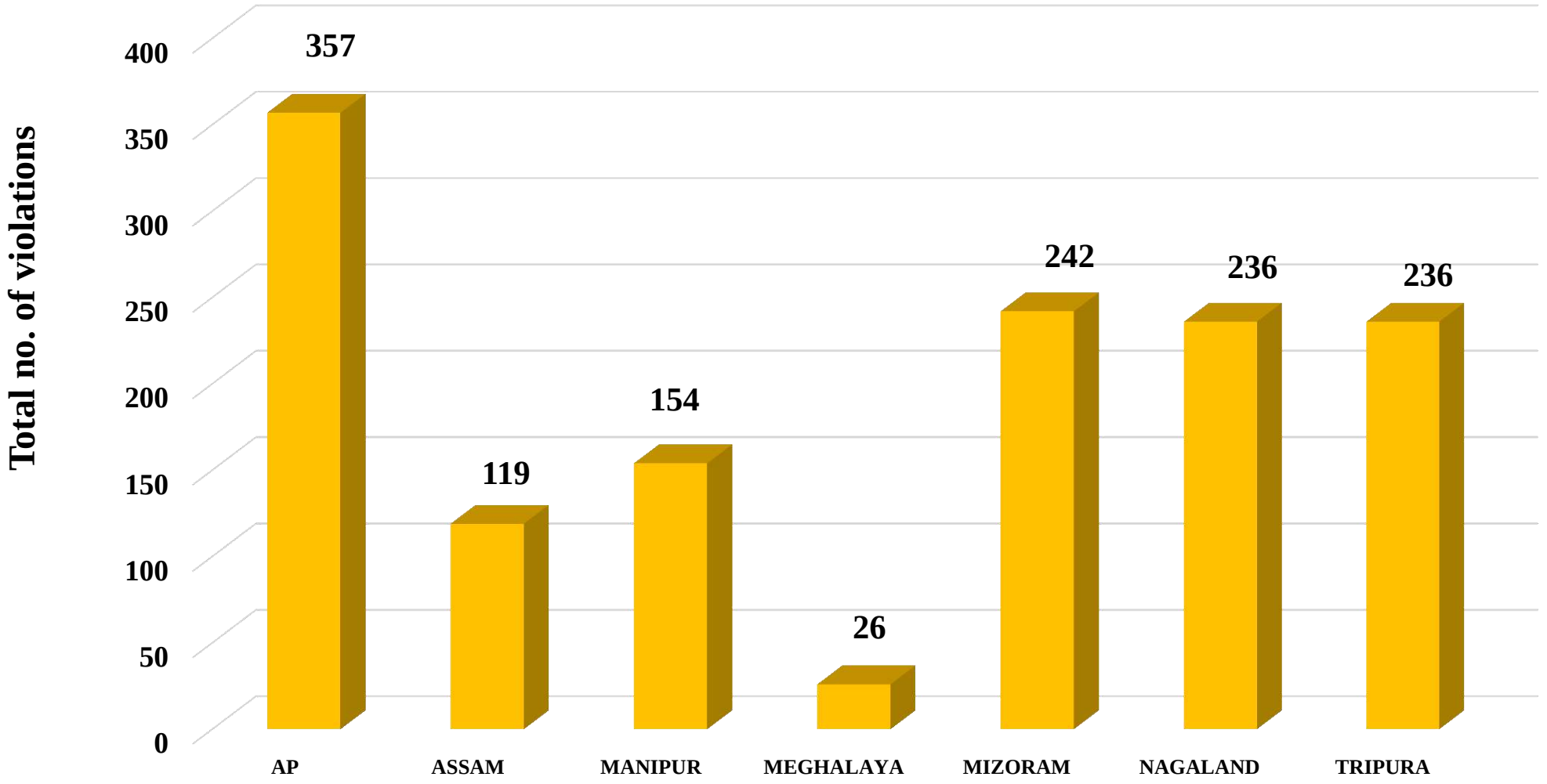
North Eastern Regional Load Despatch Centre

POSOCO, Shillong

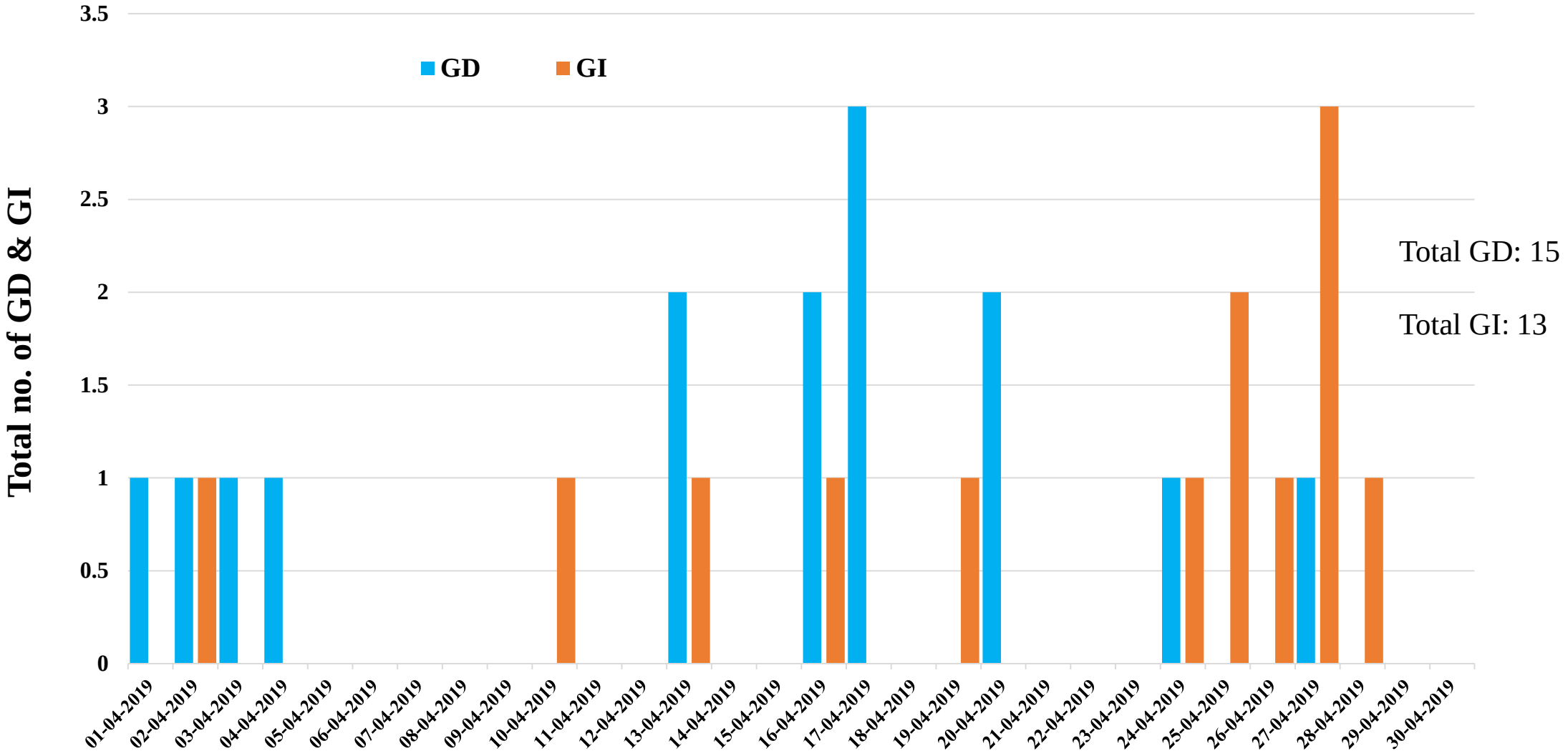
Power Exchange Price during April'19



Zero Crossing Violation - NER States during April, 2019



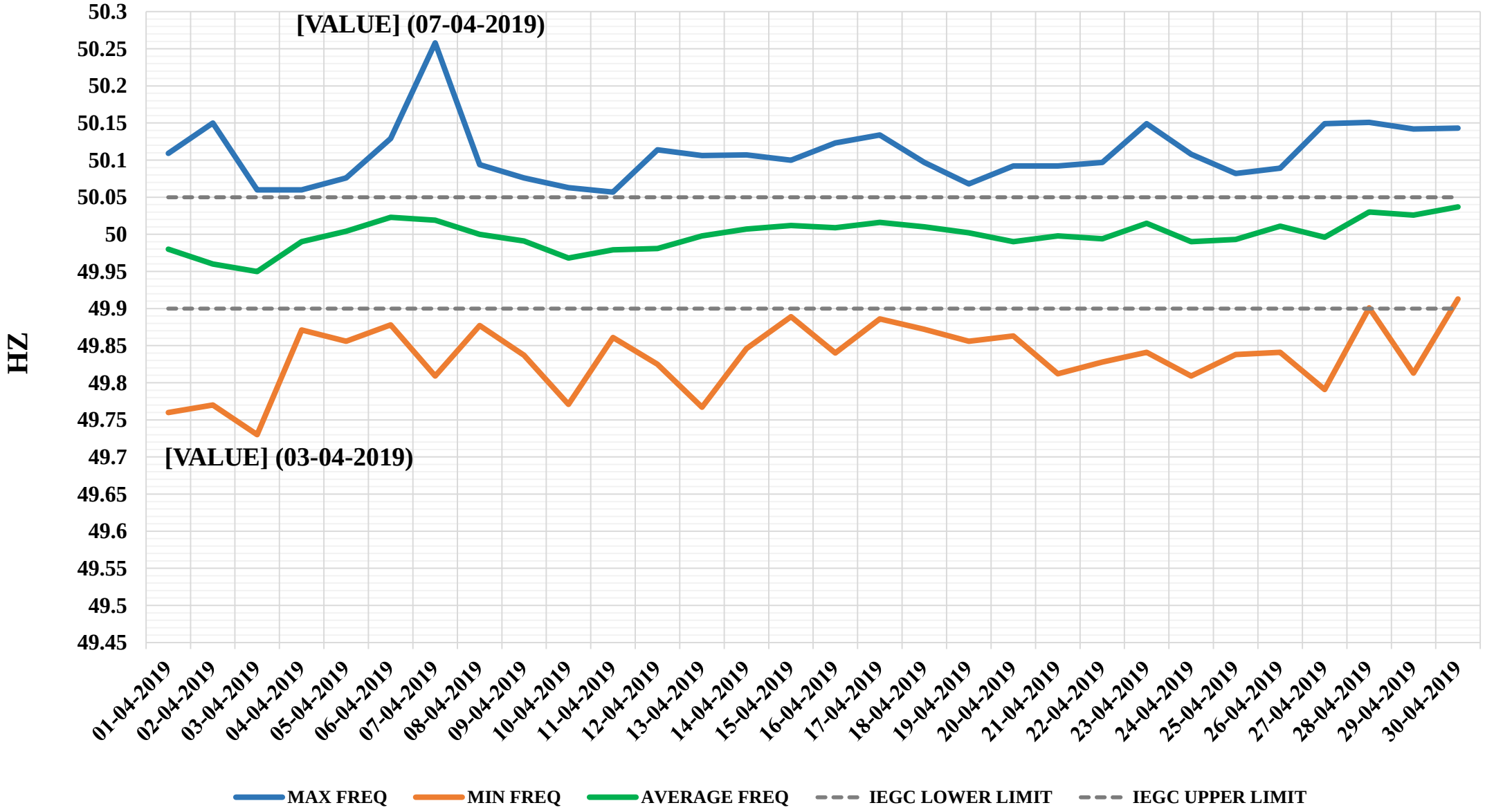
Grid Disturbances and Grid Incidences of April'19



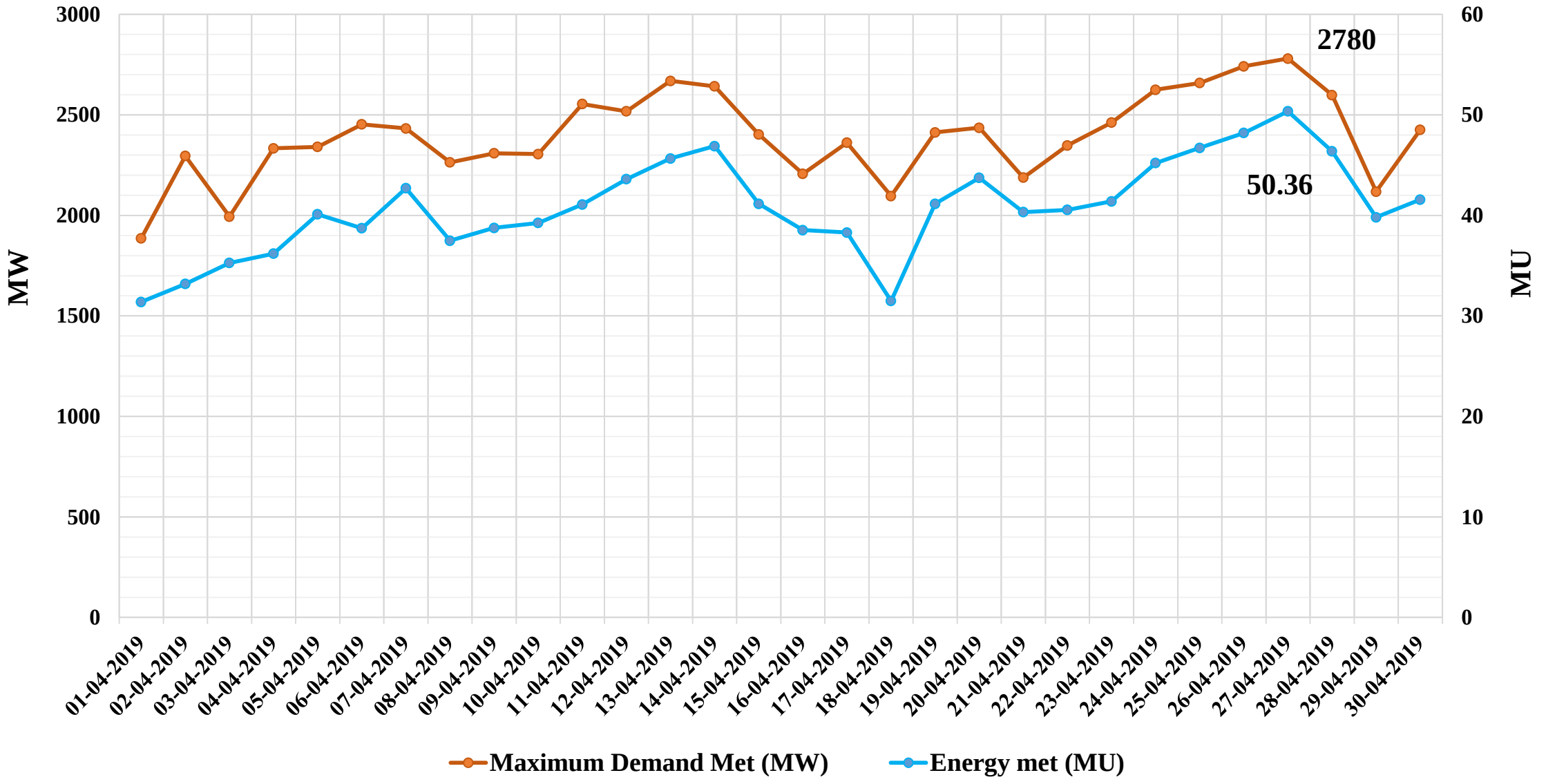
Total GD: 15

Total GI: 13

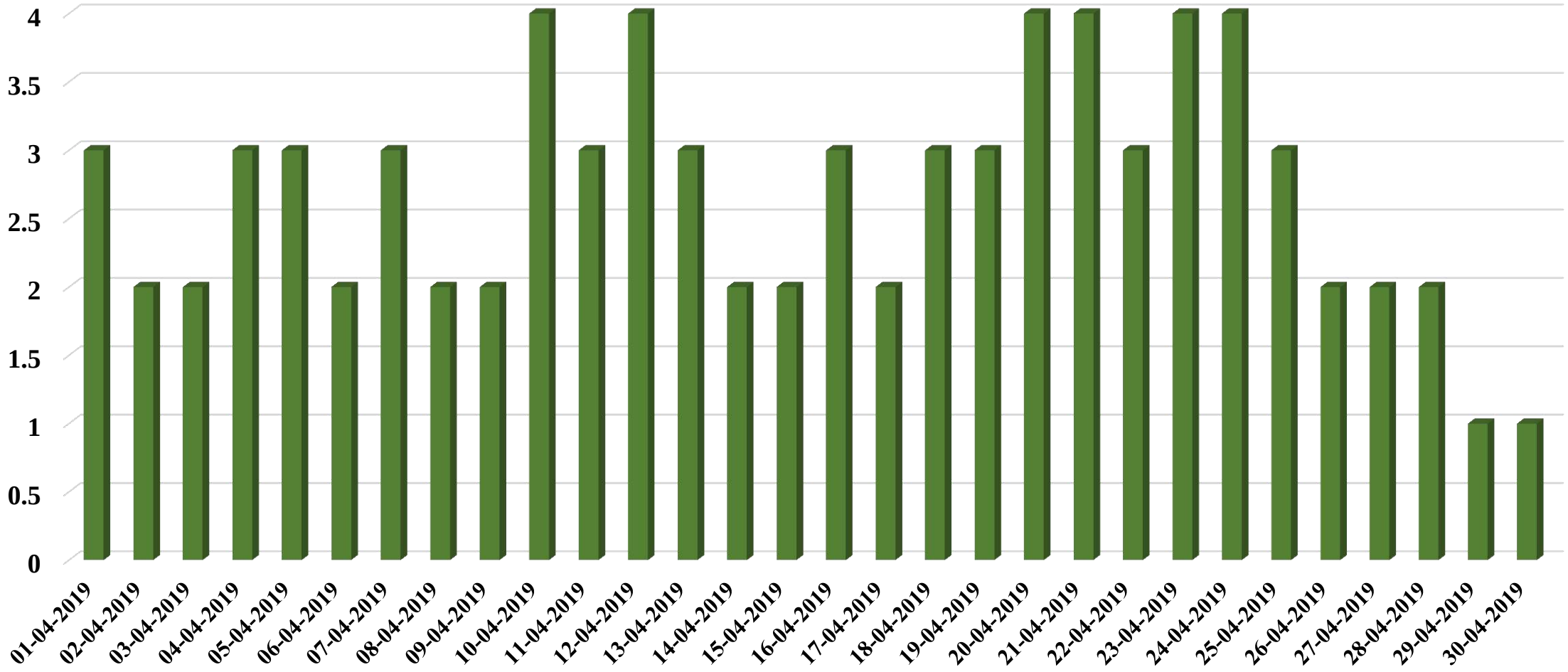
FREQUENCY PROFILE OF APRIL'2019



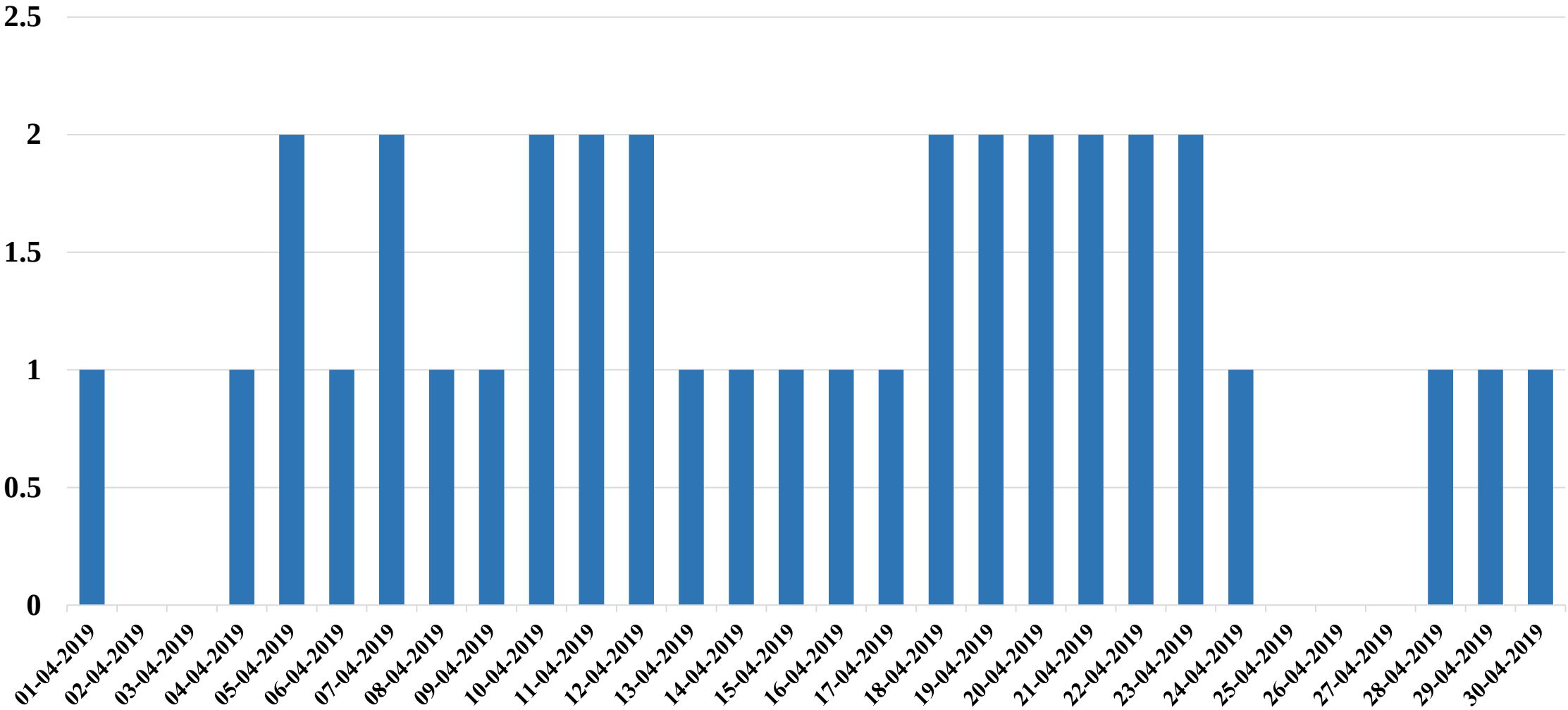
Energy Met and Maximum Demand Met during April, 2019



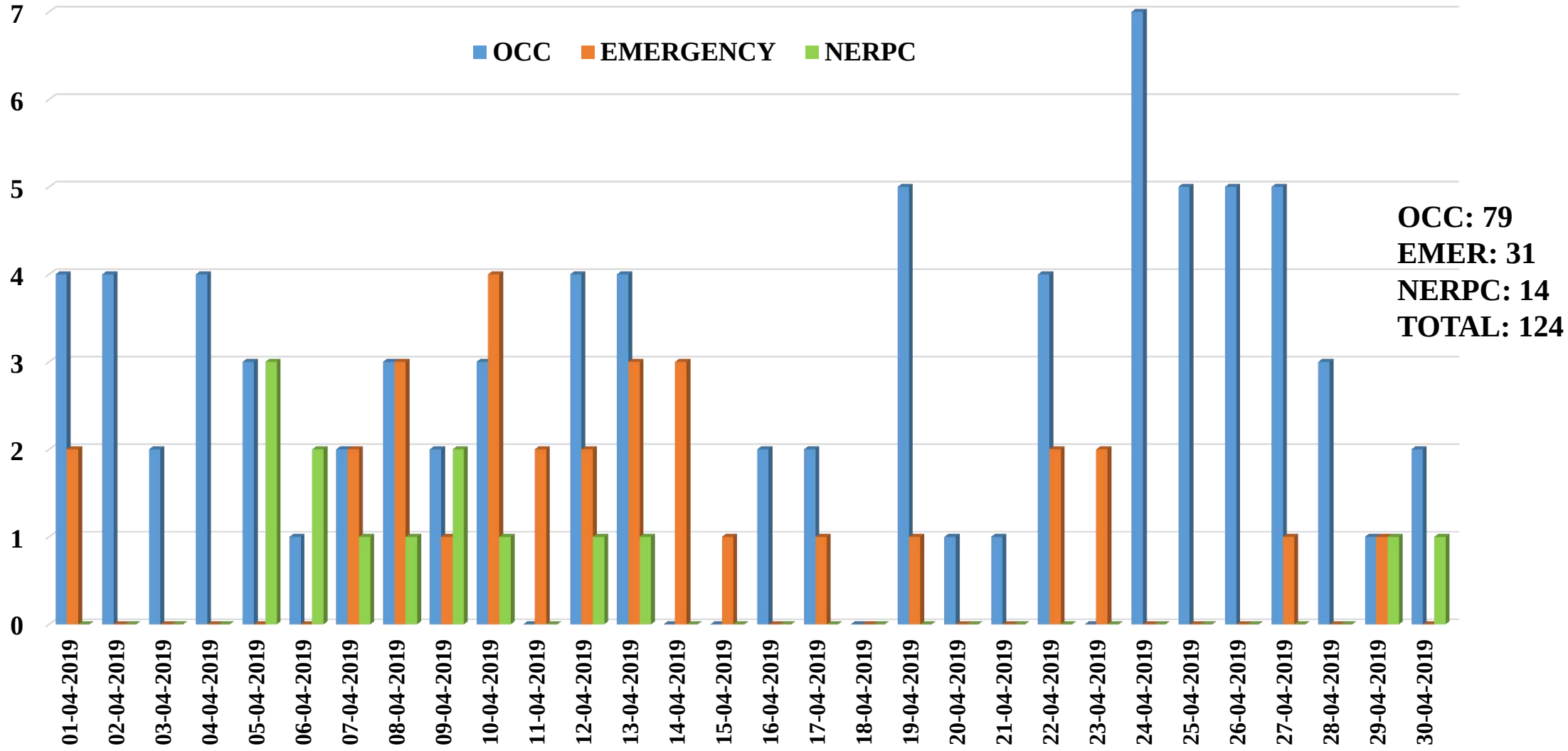
Number of 400 kV line openings due to Over- voltage during April'19



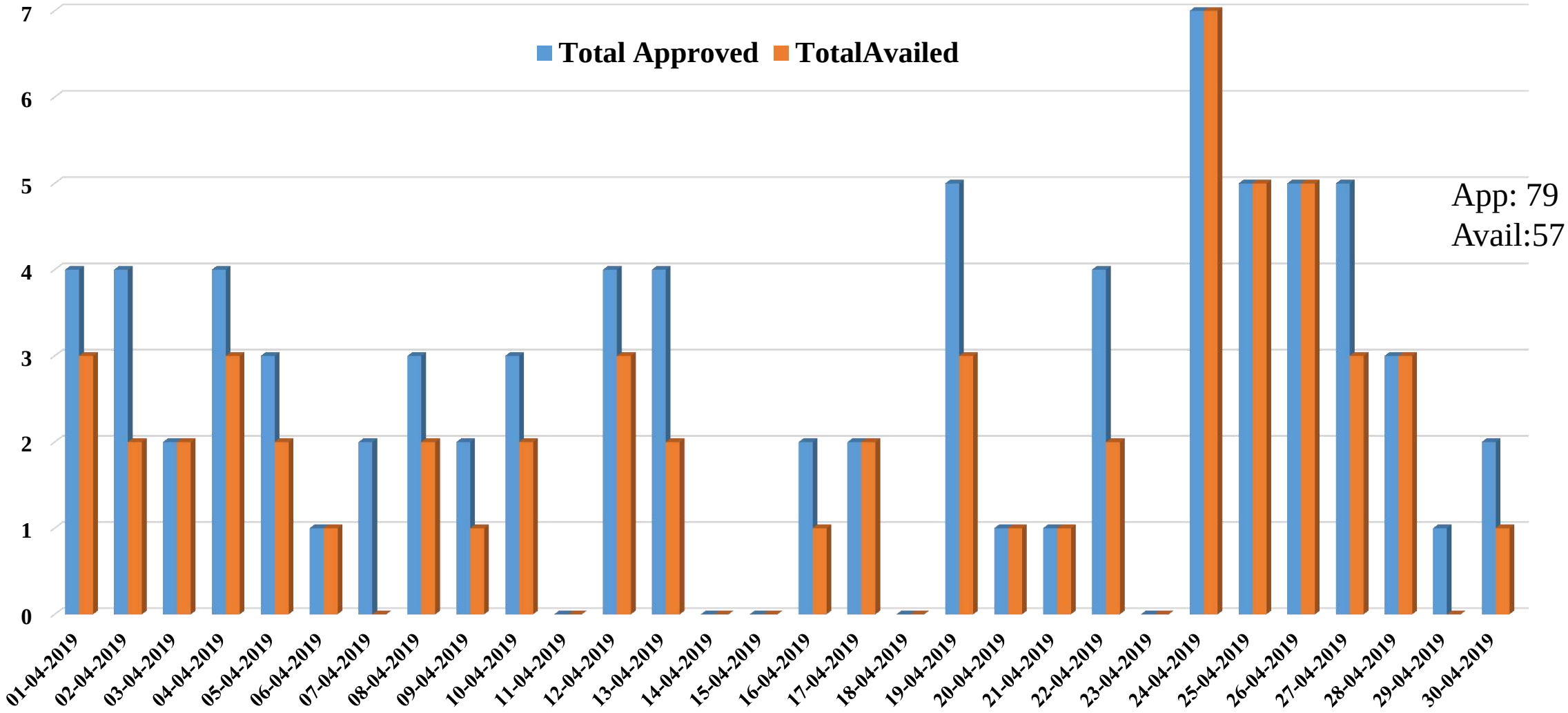
No. of opening of 400 kV BNC-Ranganadi Circuit I & II during April'19



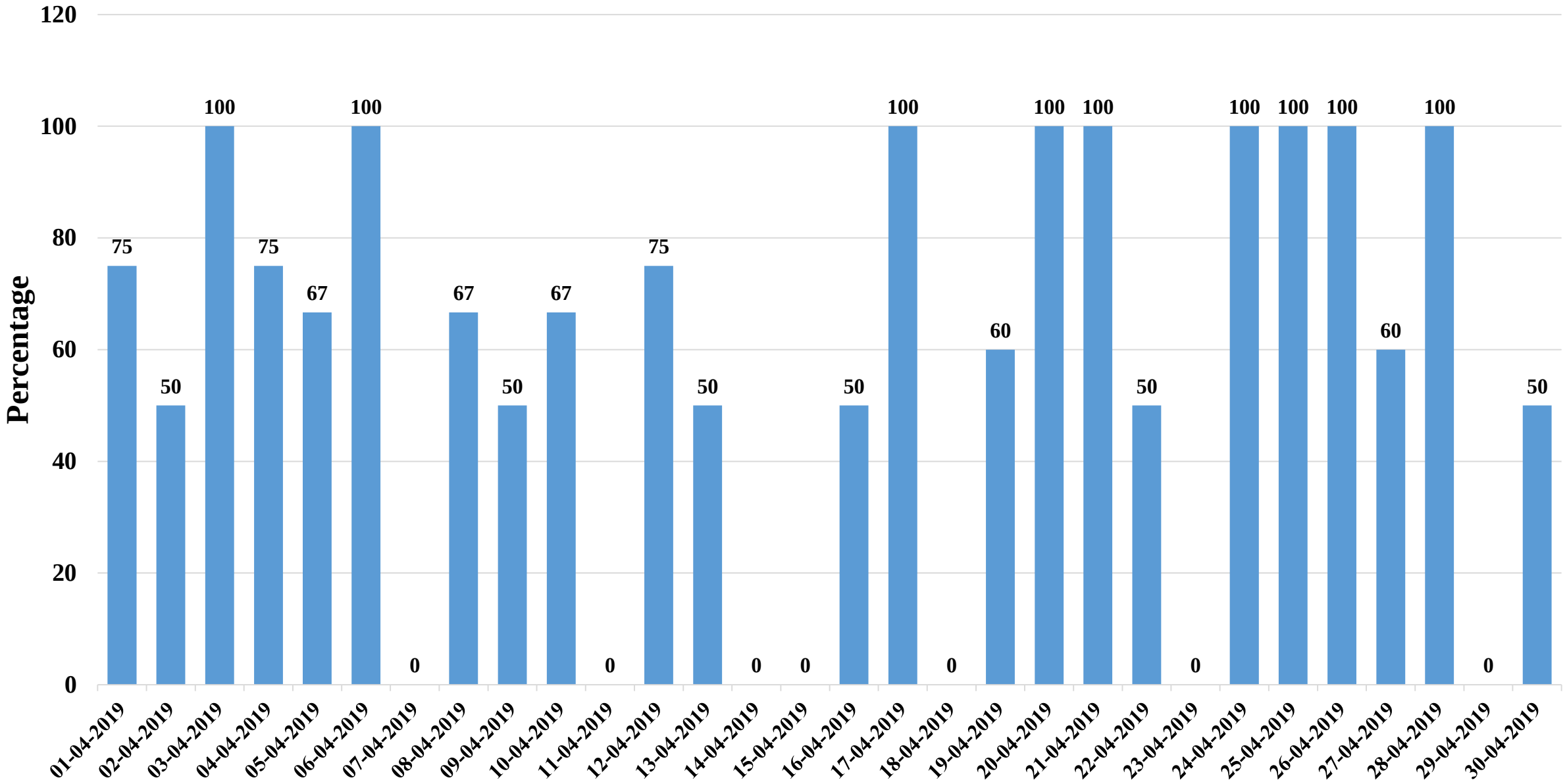
Total Approved Shutdown during April, 2019



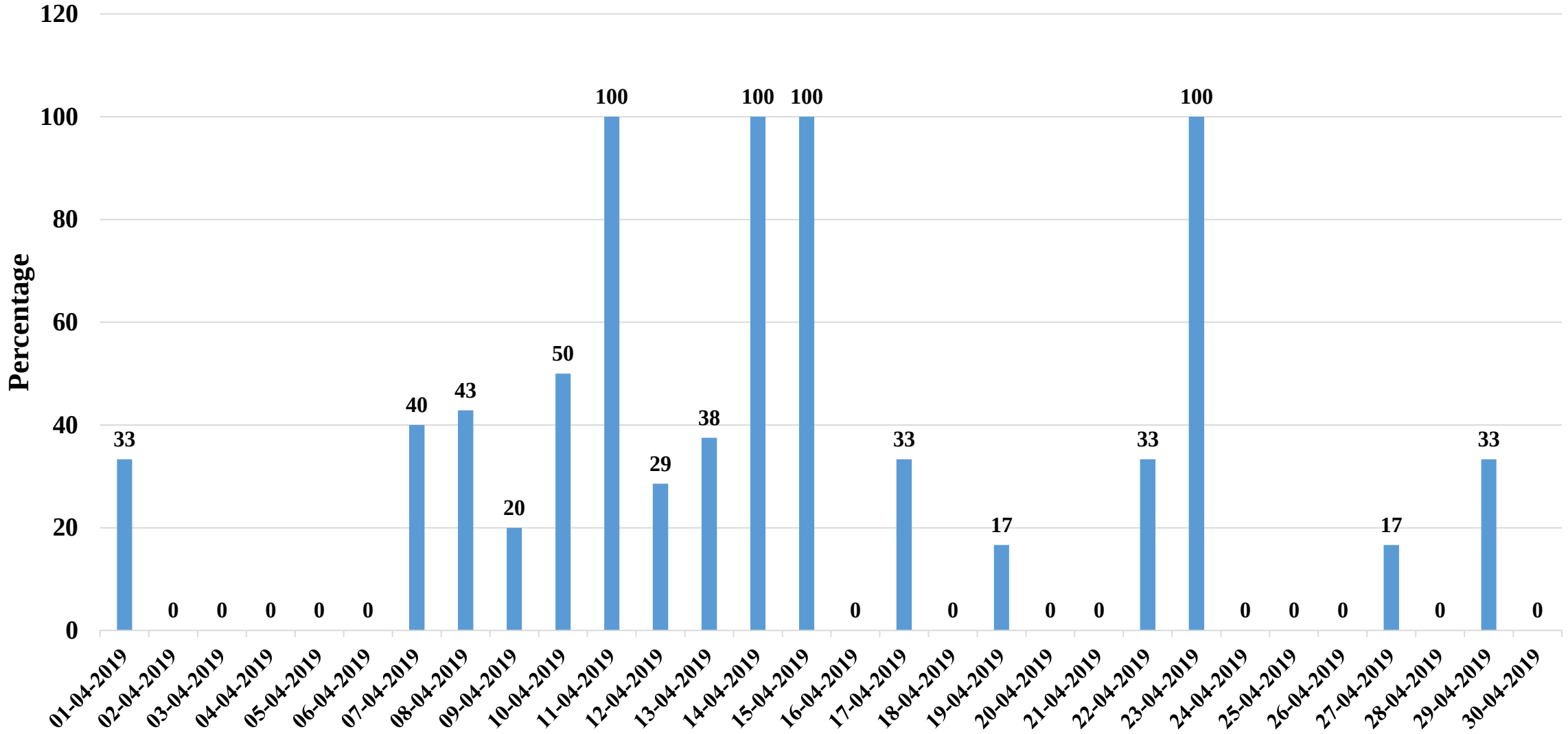
Approved shutdown Vs Availed shutdown



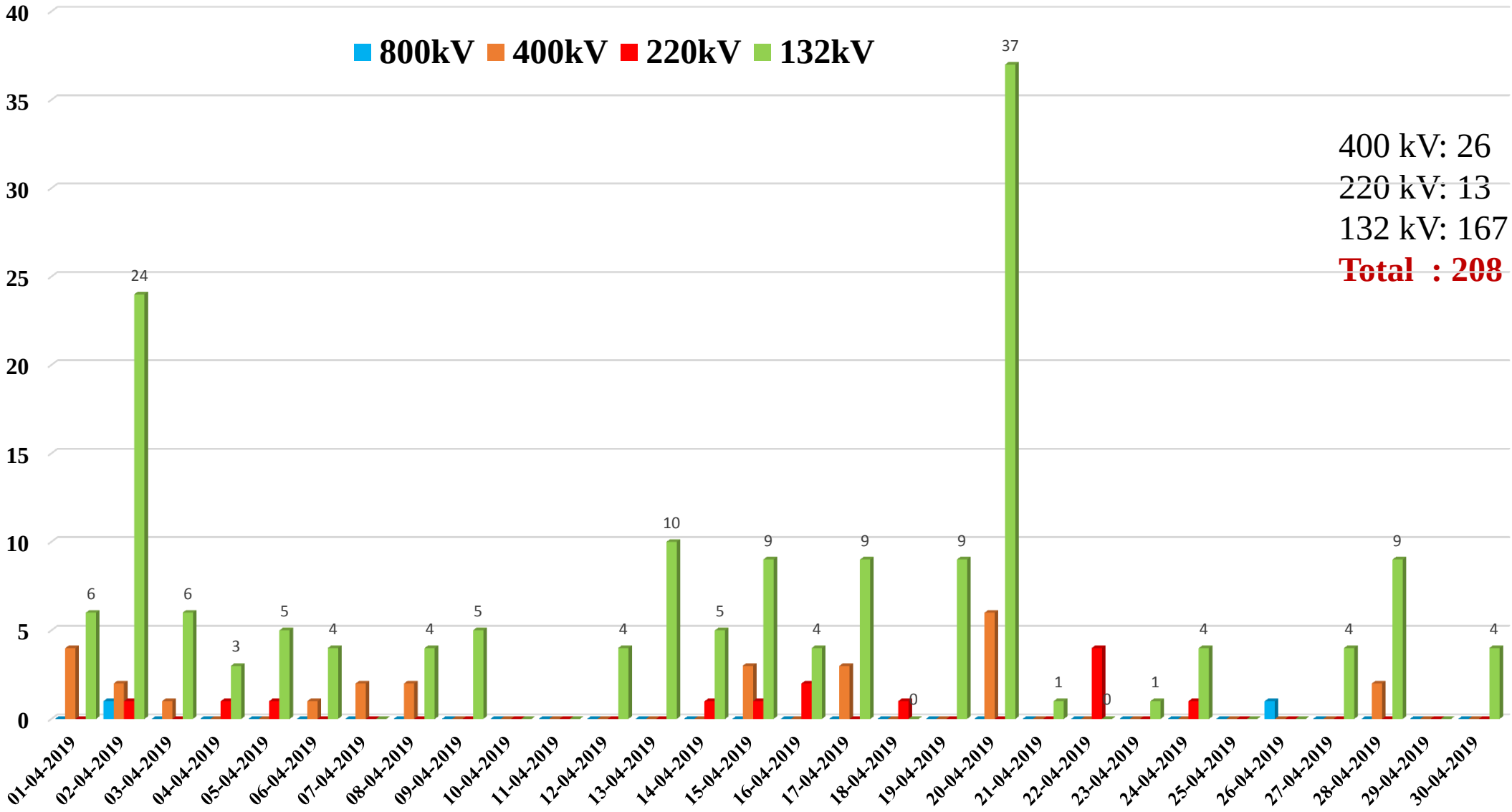
Availed shutdown (%) of Approved shutdown



Emergency shutdown(%) of OCC Approved



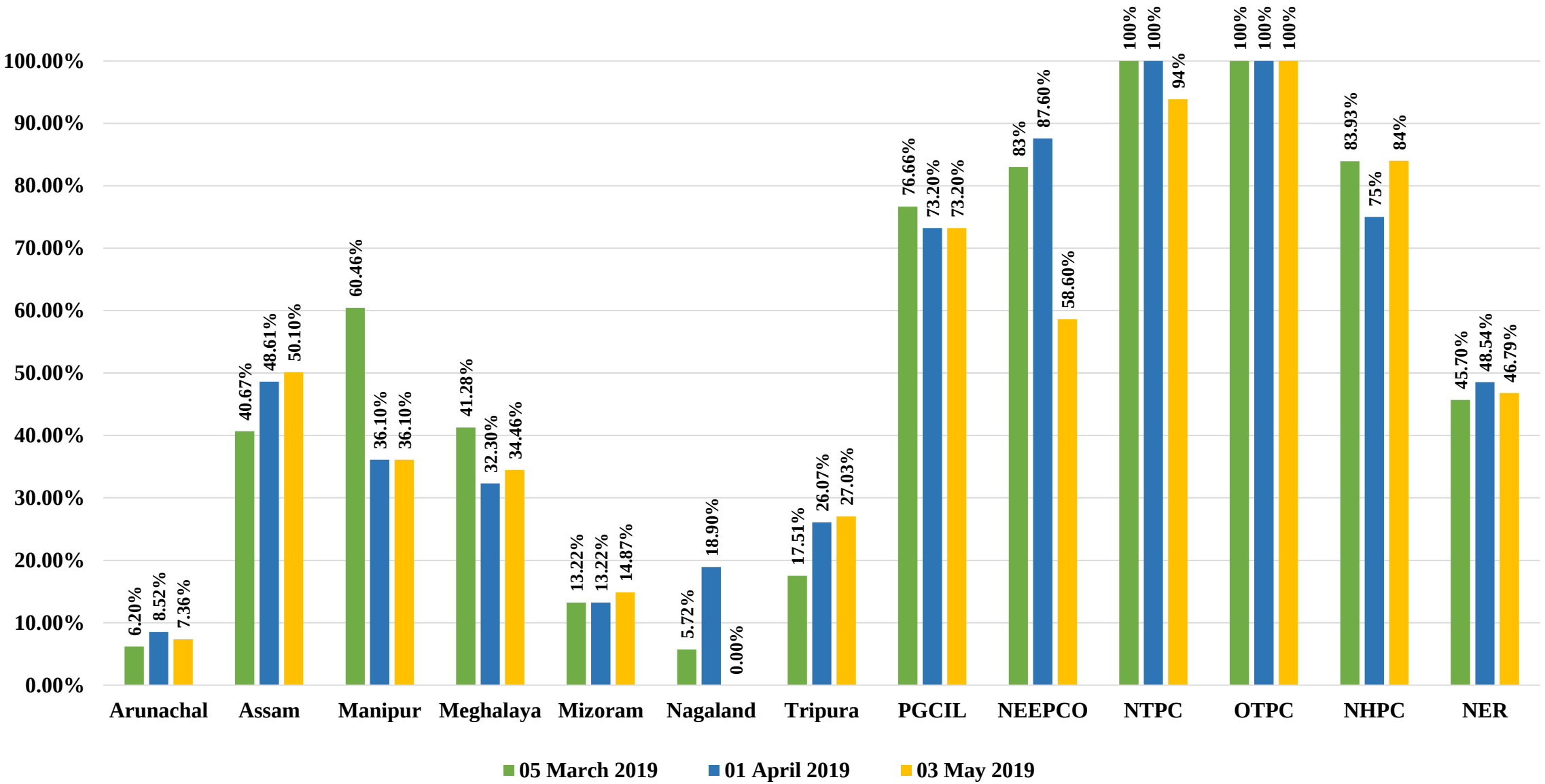
Line Trippings during April'19



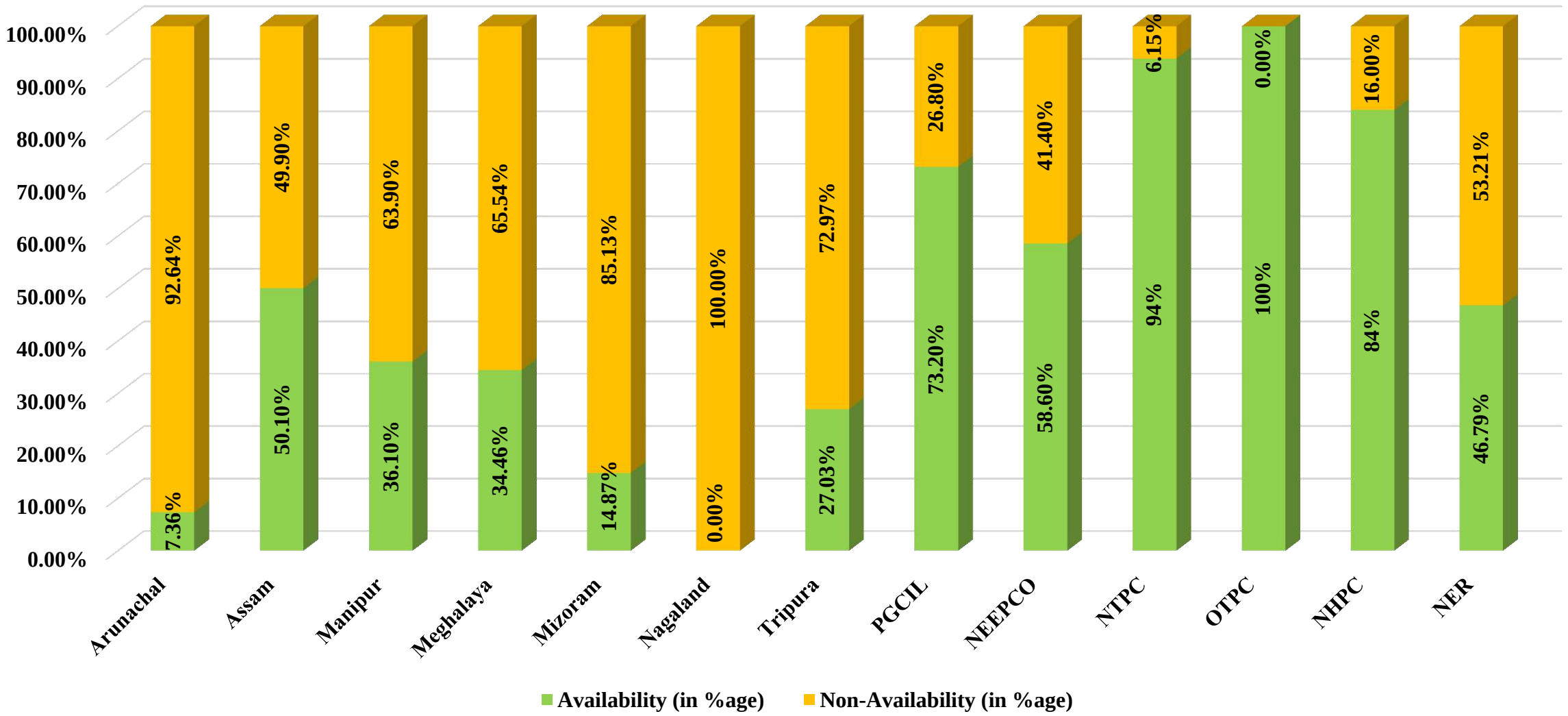
Present per day MU and projected number of days of operation

Plants	Reservoir Level in meters (as on 13/05/19)	MU Content	Present DC (MU)	No of days as per current Generation
Khandong + Kopili STG II	723.35	39.75	1.076+0.50225 1.57825	25
Kopili	600.15	(32.5+ 4x39.75) 191.5	4.07	47
Doyang	311.05	7	0.1096	64
Loktak	769.21	250	1.0005	250

Comparsion of Telemetry Availabilty Statistics



TELEMETRY STATISTICS (as on 03.05.19)



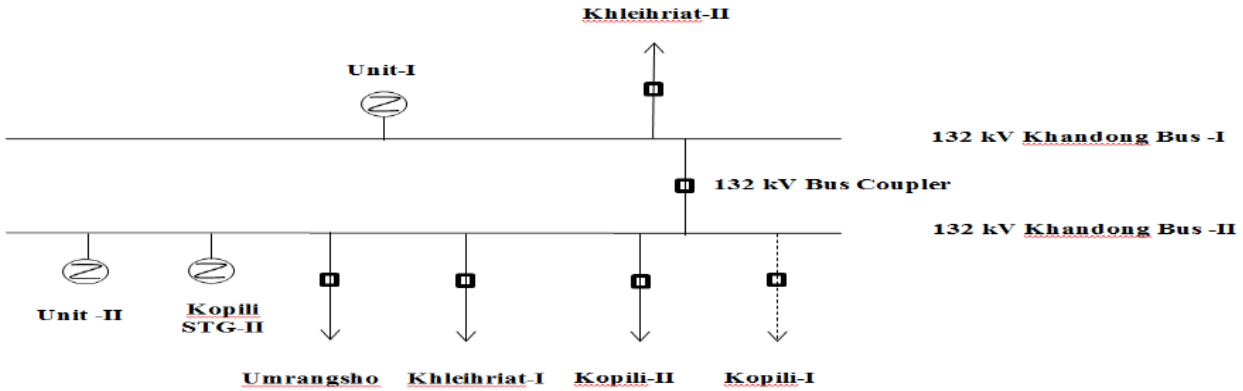
Department Mail IDs of NERLDC for official Communication

Sl. No.		Email ID
1.	Departmental Communication	i) nerldcso1@posoco.in ii) nerldccr@posoco.in iii) nerldcso2@posoco.in iv) nerldcmo@posoco.in v) nerldcsl@posoco.in
2.	Head of The Region	i) hor_nerldc@posoco.in

- In addition to the personal mail ids the official communications to NERLDC has to be given to respective department mail IDs along with a copy to Head of the Region.

MOCK BLACK START EXERCISE AT KHANDONG HEP ON 09TH MAY 2019

- Bus Configuration at 132 kV KHANDONG S/S before the mock exercise.

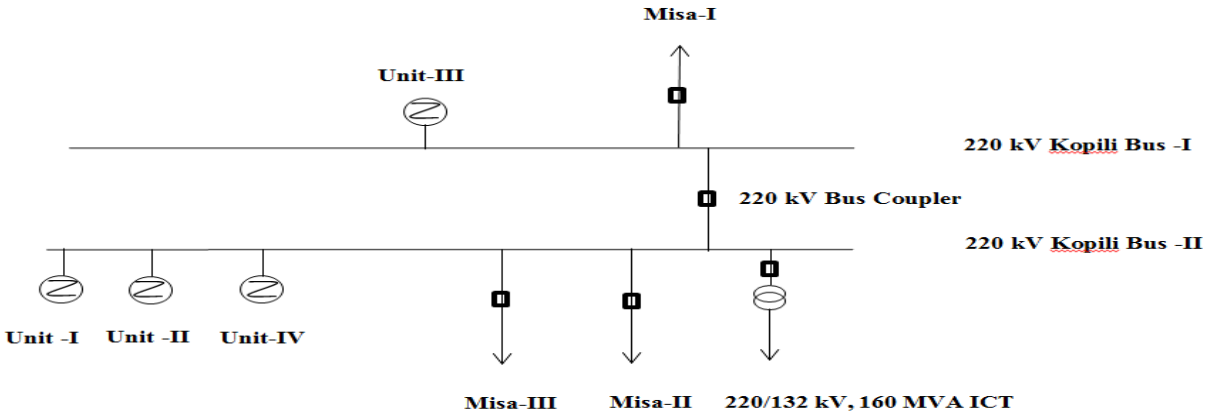


Time	Sequence of Events Recorded	Remarks
11:19	Khandong HEP U # I	Unit started
11:21	Khandong HEP U # I	Rated speed of 330 rpm was achieved
12:17	Khandong HEP U # I	Field breaker closed
12:23	132 kV Bus # A	Dead Bus charged by closing Gen. Breaker
12:26	132 kV Khandong - Khliehriat # II line	CB closed at Khandong end
12:35	132 kV Khandong - Khliehriat # II line	CB closed at Khliehriat end and thus, Unit #1 was synchronised with NER Grid.
12:37	Bus coupler of Bus # A and Bus # B	Closed

- Four unsuccessful attempts were made to synchronise with dead Bus-A of Khandong HEP U # 1. The unit CB tripped in every time due to OF & UF
- **Mock Black start exercise was successfully completed within a duration of 21 minutes**.

MOCK BLACK START EXERCISE AT KOPILI HEP ON 10TH MAY 2019

- Bus Configuration at 220 kV Kopili S/S before the mock excercise



Time	Sequence of Events Recorded	Remarks
11:30	Kopili HEP U # III	Unit started
11:31	Kopili HEP U # III	Rated speed of 600 rpm was achieved
11:37	Kopili HEP U # III	Field breaker closed
11:41	Governor mode	Changed from Auto to Manual
11:43	220 kV Bus # A	Dead Bus charged by closing Gen. Breaker
11:46	220 kV Kopili - Misa # I line	CB closed at Misa end and thus, Unit # III was synchronised with NER Grid.
11:49	Bus coupler of Bus # A and Bus # B	Closed

- **Mock Black start exercise was successfully completed within a duration of 16 minutes.**

THANK YOU

Palatana-Udaipur 132kV S/c

Palatana-Surajmaninagar 132kV S/c

400/132kV, 2x125MVA ICTs

2x363MVA generation project

Assumptions: - MVAr limits of Palatana generation units are locked.

- Tap position changed in both ICTs (simultaneously and to same setting)

ICT MVAr flows (per ICT):

400kV voltage	132kV voltage	400kV tap	132kV tap	MVAr into 132kV bus (measured at 132kV end)
404.91	129.52	1.04	1	-10.47
403.22	129.81	1.03	1	-7.45
401.62	130.13	1.02	1	-4.24
400.03	130.45	1.01	1	-0.96
398.4	130.77	1	1	2.36
398.07	131.77	0.99	1	4.07
398.06	132.94	0.98	1	5.42
397.3	133.77	0.97	1	7.66
395.69	134.21	0.96	1	10.89
394.06	134.65	0.95	1	14.18
392.4	135.1	0.94	1	17.52
390.69	135.54	0.93	1	20.89

NEEPCO

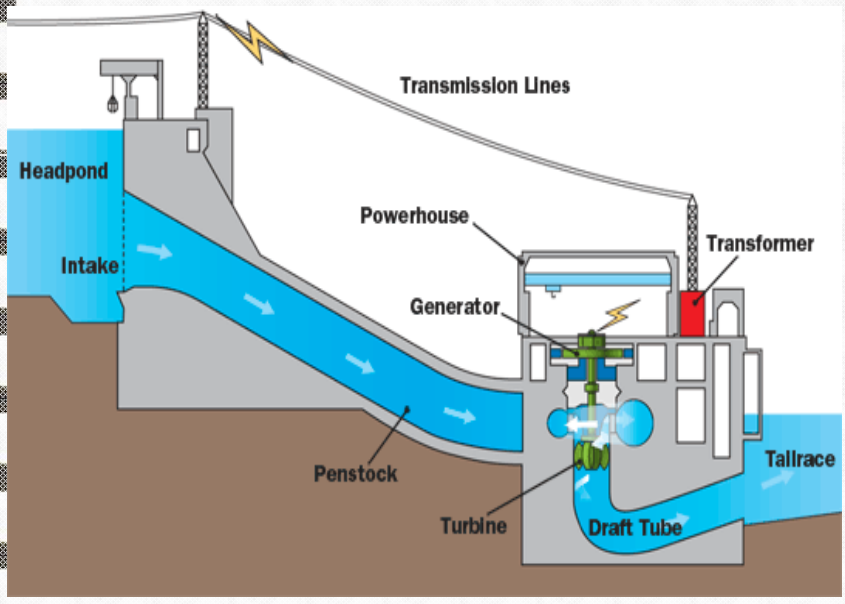
An Introduction to RGMO working Procedure of hydro generator

A Mini Ratna CPSU

Presented by:

Sri Ashim Kumar Sarmah
Dy. Manager (E/M)
NEEPCO

General Procedure of Operation (HYDRO)



Governing System

Electro Hydraulic Governor (EHG)

Governing system as per IEEE std. -75 includes following.

a) Speed sensing elements
b) Governor control actuators
c) Hydraulic pressure supply system
d) Turbine control servomotors-(part of turbine)

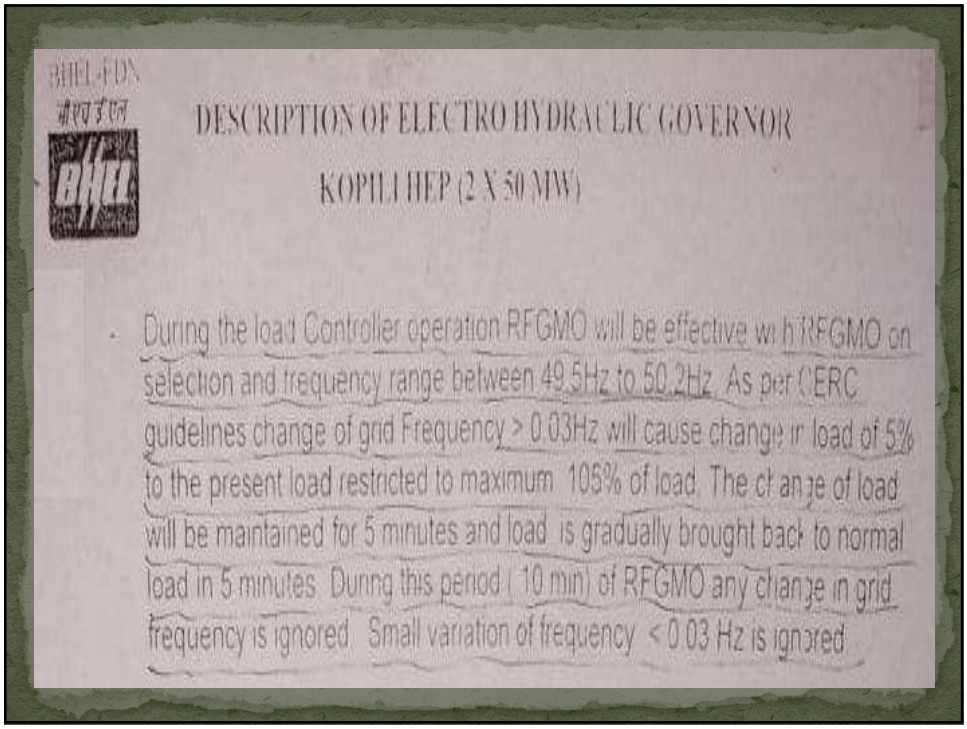
Governing System

Hydro Mechanical cubicle (HMC)

- All Hydro Governors of NEEPCO have been up-graded to Digital Governors

MODE OF OPERATION

1. Free Governing Mode of Operation
2. Restricted Governing Mode of Operation



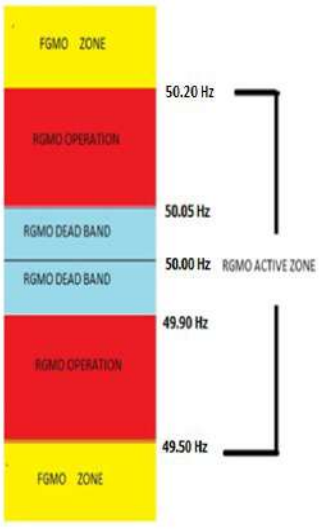
DESCRIPTION OF ELECTRO HYDRAULIC GOVERNOR

KOPILI HEP (2 X 50 MW)

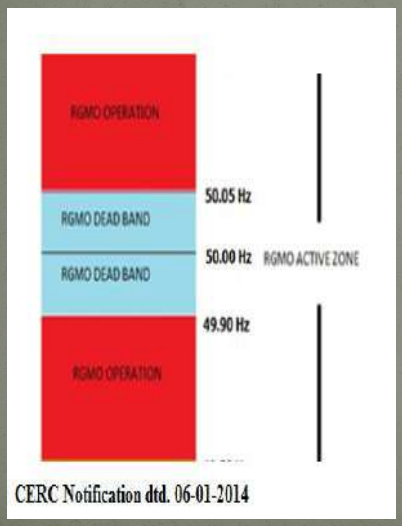
During the load Controller operation RFGMO will be effective with RFGMO on selection and frequency range between 49.5Hz to 50.2Hz. As per CERC guidelines change of grid Frequency > 0.03Hz will cause change in load of 5% to the present load restricted to maximum 105% of load. The change of load will be maintained for 5 minutes and load is gradually brought back to normal load in 5 minutes. During this period (10 min) of RFGMO any change in grid frequency is ignored. Small variation of frequency < 0.03 Hz is ignored

✓Frequency sampling taken at each second and averaging at 15 seconds and continuously Monitored
✓Minimum Frequency Response is ±0.03 Hz required
✓ Active in the frequency range of 50.2 Hz to 49.5 Hz band, beyond that the logic shifts to Free Governing Mode
✓Between 50.05 Hz and 49.90 Hz RGMO doesn't respond to Change in Frequency (Dead Band)
✓Between 50.05 Hz to 50.2 Hz, if frequency Goes up by 0.03 Hz (or more) and sustains for 30 seconds, RGMO triggers itself and decrease the load by 5% of Load Set
✓It sustains there for 5 minutes and then ramp up load in equal rate for next five minutes till the Set load point
✓Similarly in the lower RGMO zone under similar circumstances load is increased and reduced in steps in a 10 minute cycle.
✓In the upper RGMO band, RGMO doesn't respond to decrease in frequency and in lower band to Increase in Frequency
✓When one RGMO cycle is in operation, the Governor doesn't respond to any change in frequency till the completion of 10 minutes cycle.

RGMO OLD LOGIC



RGMO regulations.....

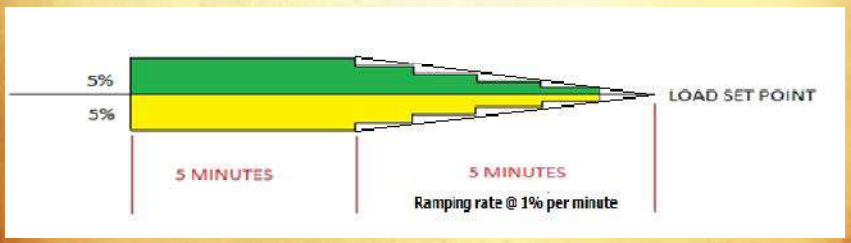


CERC Notification dtd. 06-01-2014

CERC Notification dtd. 12-04-2017

Issue with load raise

✓When one RGMO cycle is in operation, the Governor doesn't respond to any change in frequency till the completion of 10 minutes cycle.



D.4 RGMO performance analysis of events

In 153rd OCCM, NERLDC presented a report on RGMO performance for an event on 05th Feb 2019 at 11:57 Hrs when load loss of aprrox. 869 MW occurred in Northern Region wherein the following generators have not given the desired response:

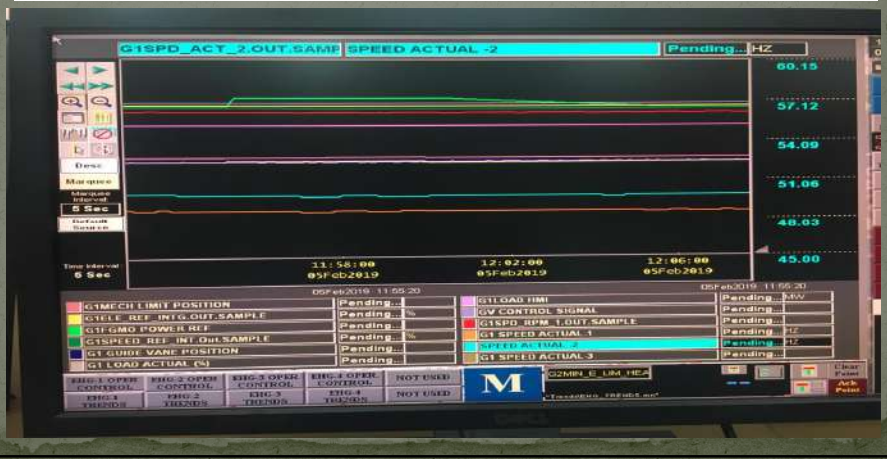
-Palatana GTG-I -BgTPP Unit – II

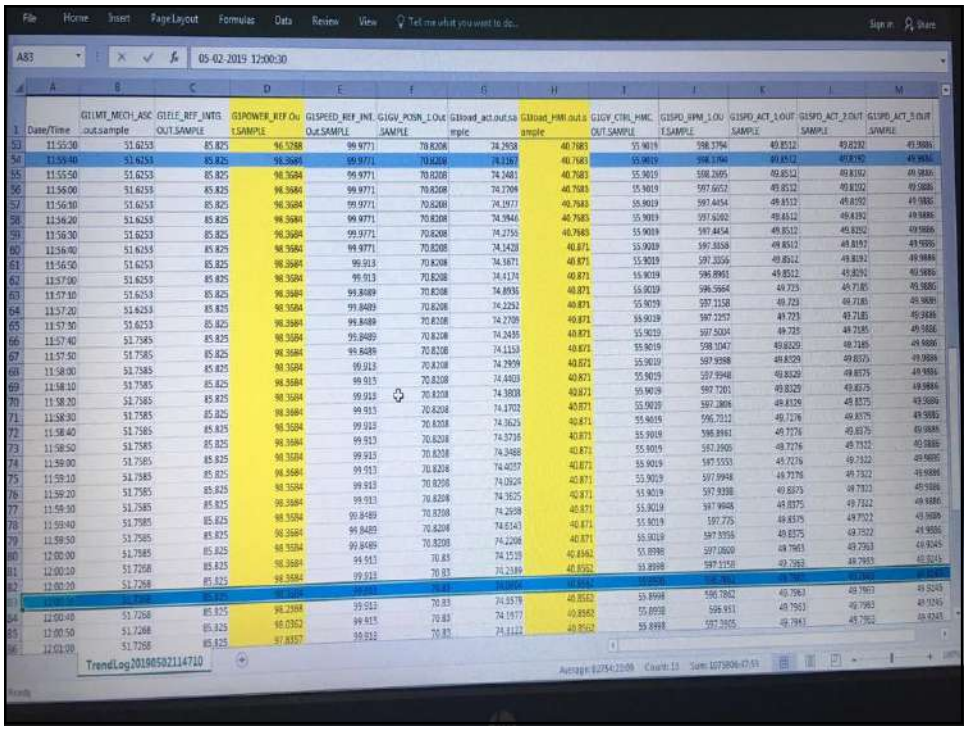
And the following generators have given negative response:

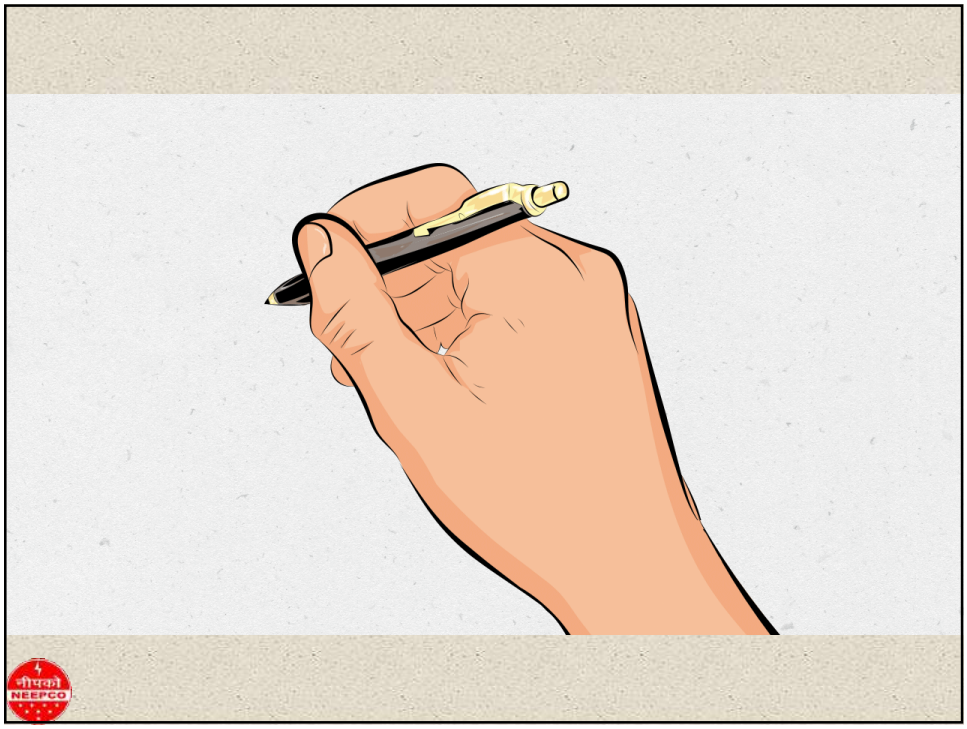
-Palatana GTG-II, STG-I/II -Kopili Unit#I

-BgTPP Unit #I

In 154th OCCM, OTPC informed that it operation of plant in RGMO is very difficult and the same has been informed in earlier OCC meeting also. Further, they stated that increasing generation in fraction of second is very difficult as corresponding amount of gas is not supplied automatically. ONGC is operating the pipeline manually and night time is even impossible.

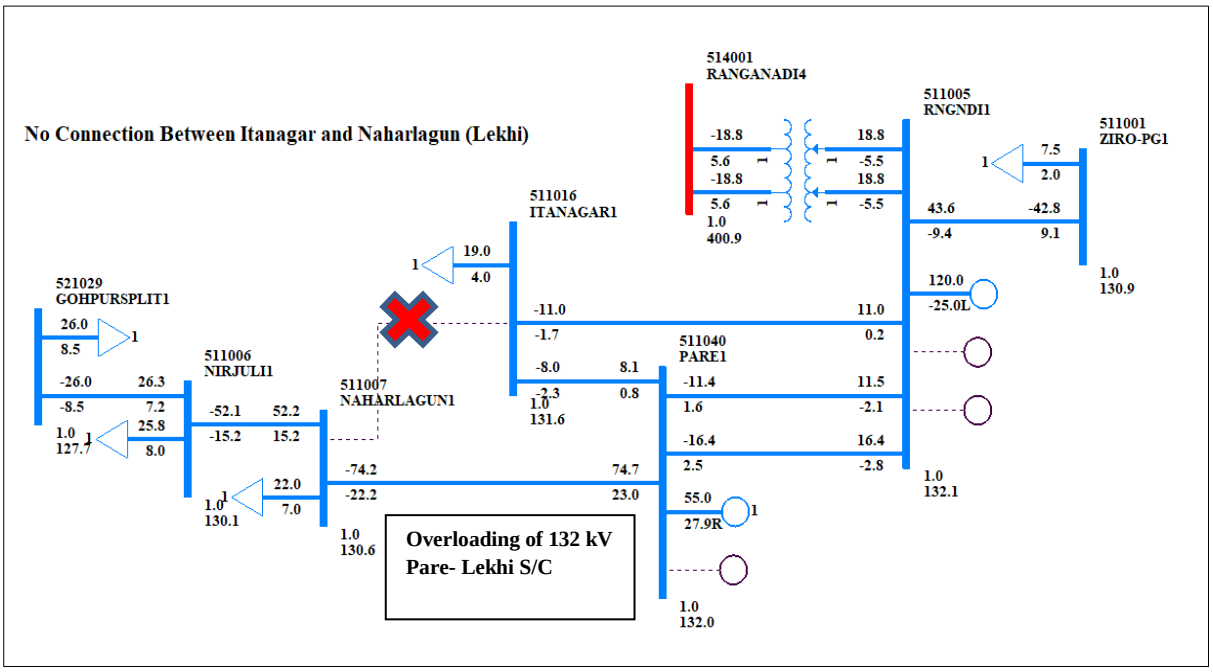






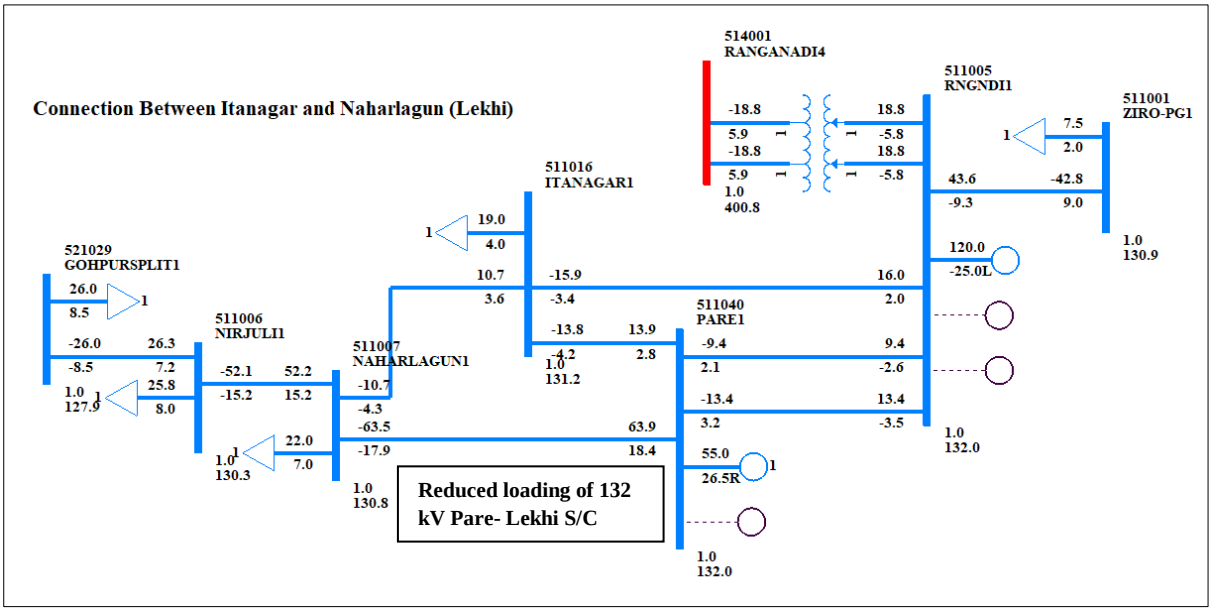
Study for Connection of 132 kV Itanagar – Lekhi (Naharlagun) S/C

132 kV Itanagar – Lekhi (Naharlagun) S/C is kept open which leads to overloading of 132 kV Pare- Lekhi S/C under various conditions.



Connecting 132 kV Itanagar – Lekhi (Naharlagun) S/C leads to decrease in loading of 132 kV Pare – Lekhi by about 11 MW, the same power being transferred from 132 kV Itanagar to 132 kV Lekhi.

Also, in case of tripping of 132 kV Pare – Lekhi S/C, 132 kV Itanagar – Lekhi will act as an alternate path for power supply to Lekhi Area of AP Power system, thereby increasing the reliability of the grid.



It is therefore desired to kept the link 132 kV Itanagar – Lekhi (Naharlagun) closed in all conditions

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PTC India

PTC/MTFG/ERPC & NERPC/ 206 – 09

23rd April 2019

To,

The Member Secretary,
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge, Kolkata- 700033

The Member Secretary,
North Eastern Regional Power Committee Complex, Dong Parmaw
Lapalang, Shillong – 793006 (Meghalaya)

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

Dear Sir,

Druk Green Power Corporation Limited (DGPC) vide letter no. DGPC/O&MD/23/2019/451 dated 22nd April 2019 has informed that Bhutan Power Corporation (BPC) has written to DGPC regarding shutdown of 132 kV Motanga Substation for 2 months to construct an additional 132 kV Bus for providing power to upcoming industries in the area. The shutdown is required immediately to enable BPC to extend the supply to industries. The said letter from DGPC is enclosed herewith which is self -explanatory.

We request you to kindly advice in the matter so that DGPC may be intimated accordingly.

Thanking you,

Yours faithfully,

Harish Saran
Executive Director (Marketing)

CC:
The Executive Director,
Power Grid Corporation of India Limited,
North East Region Transmission System,
Dongtiah, Lower Nongrah, Lapalang, Shillong – 793006.

The General Manager (O&M),
Power Grid Corporation of India Limited,
North East Region Transmission System,
Dongtiah, Lower Nongrah,
Lapalang, Shillong – 793006.

PTC India Limited
(Formerly known as Power Trading Corporation of India Limited)
CIN : L40105DL1999PLC099328
2nd Floor, NBCC Tower, 15 Bhikaji Cama Place New Delhi - 110 066 Tel: 011-41659138, Fax: 011-41659142
E-mail: harishsaran@ptcindia.com Website: www.ptcindia.com

DGPC/O&MD/23/2019/ ५९१

April 22, 2019

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

Kind Attn: Mr. Harish Saran

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

Dear Sir,

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

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

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

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

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

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

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

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

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

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

Thanking you,

Yours faithfully,

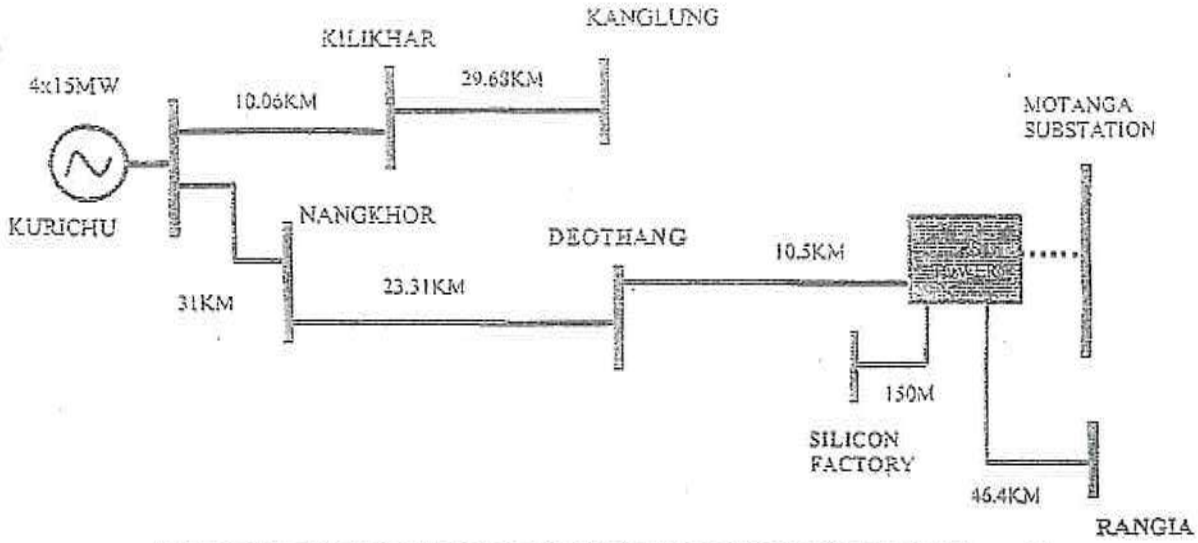
22/4/2019

Munna Prasad
Head, PMD
O&M Department

Copy to:

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

Connection Diagram of Rangia and Silicon Factory through ERS Tower



Energy Exported to be calculated as

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

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

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