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

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No. NERPC/SE (O)/OCC/2019/***2513-2550*** Dated: July 22, 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 158th OCC Meeting.

Sir/Madam,

Please find enclosed herewith the minutes of 158th OCC Meeting held at Guwahati on the **12th July, 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,

B. Lyngkhoi
Member Secretary I/C

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.

Member Secretary I/C

North Eastern Regional Power Committee

MINUTES OF THE 158th OPERATION COORDINATION SUB-COMMITTEE MEETING OF NERPC

Date : 12/07/2019 (Friday)

Time : 10:00 hrs

Venue : "Hotel Nandan", Guwahati.

The List of Participants in the 158th OCC Meeting is attached at **Annexure – I**

NERPC intimated the forum that Shri B. Lyngkhoi has assumed the charge of Member Secretary, NERPC with effect from 28th June, 2019. NERTS felicitated Member Secretary (I/C), NERPC on assumption of charge.

Member Secretary (I/C), NERPC requested for co-operation of all. Also requested sincerity, hard works and commitment of the officers from all utilities for the benefit of the region.

Thereafter, Member Secretary requested AEE, NERPC to take up the agenda for discussion.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 157th MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

The minutes of 157th meeting of Operation Sub-committee held on 4th June, 2019 at Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2016/4556-4591 dated 14th June, 2019.

The Sub-committee may confirm the minutes of 157th OCCM of NERPC as no 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 158th OCC:

State	R&U scheme	ADMS	Capacitor Installation	SAMAST **	Line Differential Protection

Ar. Pradesh	Station-wise status to be updated *	Could not be updated due to absence of DoP Ar. Pradesh representative	-	Not approved by TESG.	-
Nagaland	Station-wise status to be updated *	TPA, A/C opening & Contract agreement by July'19.	-	Not approved by TESG.	Lines identified. Under DPR preparation stage.
Mizoram	Station-wise status to be updated *	TPA, A/C opening & Contract agreement by July'19.	To reply to TESG queries.	Not approved by TESG.	Lines not yet identified. To be taken up in Sub-group.
Manipur	Station-wise status to be updated *	TPA, A/C opening & Contract agreement by July'19.	To reply to TESG queries.	Not approved by TESG.	Lines not yet identified. To be taken up in Sub-group.
Tripura	Station-wise status to be updated *	TPA, A/C opening & Contract agreement by July'19.	Study to be carried out in consultation with NERLDC.	Not approved by TESG.	Lines not yet identified. To be taken up in Sub-group.
Assam	Station-wise status to be updated *	TPA, A/C opening & Contract agreement by July'19.	-	Appraisal Committee approved.	Lines identified. Under DPR preparation stage.
Meghalaya	MePTCL Station-wise status updated Attached at **Annexure - B.1(1)** MePGCL – Station-wise status to be updated *	TPA, A/C opening complete. Contract Agreement by July'19	-	Appraisal Committee approved.	Tendering in progress

- ***Station wise status to be sent to NERPC/NERLDC as per format used by MePTCL***

Deliberation of the sub-Committee:

SAMAST

Sr. Manager, TSECL requested that all the 7 states should be included in SAMAST project and common tendering should be done.

Member Secretary, NERPC stated that as per TESG observation NLDC has to substantiate the need for SAMAST in case of all the states.

CGM, NERLDC informed that the basic purpose of SAMAST is intra-state ABT implementation. Wherever the bifurcation or trifurcation with corporatisation not happened, TESG has reservations. POSOCO has given clarification that scheduling, accounting and other works have been assigned to different divisions, though under the same vertical. After that TESG has reverted that the matter would be considered favourably.

Member Secretary, NERPC informed that he will take up again with NPC so that remaining States may also be considered. He also clarified that tendering would most likely be done in two phases i.e. Phase-I &II.

After detailed deliberation it was decided that the agenda would be put up in the next TCC/RPC meeting.

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

2. Long Outage of Important Grid Elements:

Name of the Element	Name of Utility	Status as informed in 156th OCC	Latest status
63MVAR Reactor at Byrnihat to replace with 80MVAR Reactor	MePTCL	To be taken up with CEA	SCM approval given. DPR to be submitted to NLDC/NPC.
132kV Dimapur - Imphal (*out since 25.07.18*)	NERTS	Completion tied to clearing of RoW issues for Kohima section.	In some locations ROW issue there. Rain impediment to construction works.
220kV Sonabil-Samaguri-I (under outage since 07.08.18)	AEGCL	Tender in May'19. specific issues may be highlighted	Revised estimate submitted on 25.05.19. River crossing stringing to be done. Detailed steps taken to be submitted

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

3. Follow up of recommendations of PCC/Sub-group:

SN	Name of element	Actions to be taken	Concerned Utilities	Current status	Status as informed in the 158th OCC Meeting
1	132 kV AGTCCPP - Agartala D/C on 31.03.18	Installation of Line Differential in 132 kV AGTCCPP - 79 Tilla D/C & Review of impedance setting of both ends as a temporary measure.	NERTS/ NEEPCO	LDP installation by Jun'19	Tender opening 20th July'19
2	132kV AGTCCPP-Kumarghat	GPS to be procured and time synchronization of relay to be done	NEEPCO	By Aug'19	LOA by Jul'19
3	132kV BNC-Pavoi	Provision of alarm, anunciation at Pavoi S/Sn	AEGCL	July'19	Panel belongs to NERTS. Completed on 08.07.19.

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

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

Details of the data required	Name of Utility	Status of submission as per 156th OCC	Status as informed in the 158th OCC Meeting
Data for Wind Turbine Generator	All SLDCs	CERC matter. Not received reply. NERLDC to circulate formats again.	All SLDCs except Assam & Meghalaya to submit the data.

The Sub-Committee noted as above.
Action: All SLDCs except Meghalaya & Assam.

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

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

NER PERFORMANCE DURING JUNE, 2019

States	Energy Met (MU)		w.r.t. May,19 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. May,19 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In June,19
	June-19	May-19		June-19	May-19		
Ar. Pradesh	66.30	63.86	3.82	66.67	64.24	3.78	-0.55
Assam	923.50	738.39	25.07	970.97	819.22	18.52	-4.89
Manipur	72.13	72.19	-0.08	72.65	72.70	-0.07	-0.72
Meghalaya	168.51	159.02	5.97	168.84	167.32	0.91	-0.20
Mizoram	55.41	54.80	1.11	55.74	55.16	1.05	-0.59
Nagaland	64.97	64.40	0.89	65.42	64.94	0.74	-0.69
Tripura	149.23	170.42	-12.43	159.49	172.78	-7.69	-6.43
Region	**1500.05**	**1323.08**	**13.38**	**1559.78**	**1416.36**	**10.13**	**-3.83**

States	Demand Met (MW)		w.r.t. May,19 % inc (+) /dec (-)	Demand in (MW)		w.r.t. May,19 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In June,19
	June-19	May-19		June-19	May-19		
Ar. Pradesh	144	138	4.35	146	140	4.29	-1.37
Assam	1791	1673	7.05	1844	1753	5.19	-2.87
Manipur	182	181	0.55	188	183	2.73	-3.19
Meghalaya	367	325	12.92	367	329	11.55	0.00
Mizoram	99	100	-1.00	101	102	-0.98	-1.98
Nagaland	140	128	9.38	144	130	10.77	-2.78
Tripura	311	295	5.42	320	297	7.74	-2.81
Region	**2861**	**2674**	**6.99**	**2922**	**2758**	**5.95**	**-2.09**

REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU

Month---->	June-19	May-19
Total Generation in NER (Gross)	1725.726	1822.984
Total Central Sector Generation (Gross)	1348.785	1464.987
Total State Sector Generation (Gross)	376.941	357.997
Inter-Regional Energy Exchange		
(a) NER-ER	**5.06**	**257.68**
(b) ER-NER	**337.23**	**103.77**
(c)NER-NR	**370.47**	**174.76**
(d)NR-NER	**0.00**	**0.00**
© Net Import	-38.3	-328.67

AVERAGE FREQUENCY (Hz)

Month---->	June-19	May-19
	% of Time	% of Time
Below 49.9 Hz	10.08	8.43
Between 49.9 to 50.05 Hz	71.83	74.15
Above 50.05 Hz	20.21	19.55
Average	50.00	50.00
Maximum	50.31	50.33
Minimum	49.63	49.65

Deliberation of the sub-Committee:

NERLDC gave a presentation on the grid performance for the month of June'19 **(Annexure-B.2).** NERLDC highlighted the Demand Met and Energy Met of July2019.

Frequency profile for July 2019 along with an event which occurred on 05.07.2019 leading to the frequency drop from 49.817Hz to 49.765Hz (Nadir Frequency). The all India Frequency Response Characteristic and NER response in it was shown. The frequency Response for Palatana and BgTPP was highlighted. Both the mentioned Generators ramped back to the original level within 20, 30 seconds respectively which was not desirable. Also RGMO response for all the ISGS units and a comparison between desired and actual governor response was shown.

NERLDC then showed the Voltage Issues of the Region covering the MVAR Vs Voltage pattern for July 2019 of Palatana, BgTPP, AGTCCPP. It was shown that Palatana was constantly injecting MVAR instead of high bus voltage while AGTCPP was injecting MVAR to the limit in the normal condition to maintain the Voltage. Also the Voltage Profile of Tripura was highlighted and the High MVAR drawal of Bangladesh and low p.f pattern was shown. Further NERLDC informed the forum about the number of lines kept open on high voltage and also the line tripping details for 2019 and comparison with 2018 was shown. NERLDC highlighted the states affected by Grid Disturbance and also the multiple interruption of Internal load of Bangladesh. The water level Comparison from 2018 and also the Number of Days as per Current Hydro Generation was shown. NERLDC also highlighted the Telemetry Availability Statistics of all the utilities.

Sr. Manager, TSECL informed that of late Bangladesh has been refusing to abide by SLDC instructions asking to redirect communications via NLDC. Any load curtailment even though immediately required is not possible. CGM, NERLDC stated that though Bangladesh is a consumer of Tripura at present, power supply through international links are monitored by NLDC. This issue related to power supply to Bangladesh could be discussed by TSECL in the upcoming Operational Co-ordination Committee Meeting. Further, he informed that as per discussions had with NLDC a visit to Bangladesh for SPS and other Operational issues has been agreed for NER constituents.

Regarding the matter whether Bangladesh load is to be considered as load of the region, the forum unanimously agreed that since Bangladesh is a consumer of Tripura/TSECL, the Bangladesh load is to be considered as load of the region henceforth

The Sub-Committee noted as above.

C. ITEMS- STATUS REVIEW

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

During 157th OCC meeting, the status as informed by different beneficiaries is as follows:

SN	Items	Status as given in 157th OCC Meeting		Status as given in 158th OCC Meeting	
		Timeline for completion	Furnishing of detail parameters	Timeline for completion	Furnishing of detail parameters
a. New elements					
1	400/220kV, 315 MVA ICT-1 of NTPC at Bongaigaon	By May,2019	Application will be submitted immediately	July'19	Application will be submitted immediately
2	Kameng HEP of NEEPCO two units (2 x 150 MW) Next two units (2x150 MW)	July'19** detailed breakup for targets to be given	CEA clearance available	Delayed due to rain. First two units by Oct'19	CEA clearance available
3	132kV Monarchak – Surjamaninagar D/C of TSECL	Jun'19	To be submitted to NERLDC.	Delayed By Oct'19 To be referred to next TCC/RPC	To be submitted to NERLDC.
4	220/132 kV, 160MVA ICT-II at Balipara	Uncertain due to transportation issues i.r.o. damaged ICT. PG to revert back with exact schedule	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.
5	220/132 kV, 1x160 MVA ICT with GIS Bay at Kopili	ICT July'19 Connected in GIS by Dec'19	To be submitted to NERLDC.	ICT July'19 Connected in GIS by Dec'19	To be submitted to NERLDC.
6	Dedicated 33kV feeder at Khliehriat Substation from Lumshnong.	A date will be fixed NERPC, MeECL and NERTS will visit	Not applicable.	A date will be fixed NERPC, MeECL and NERTS will visit	Not applicable.
7	Replacement of 315 MVA ICT-II with 500 MVA ICT at Misa (PG)	June'19	To be submitted to NERLDC.	By 31.08.2019	To be submitted to NERLDC.
8	220kV Balipara-Sonabil-2	Estimate under process tendering after MCC removed	To be submitted to NERLDC.	Estimate under process	To be submitted to NERLDC.

9	Bay at Agia S/S for 132kV Agia-Nangalbibra Ckt#II by AEGCL	LOA by June'19	To be submitted to NERLDC.	LOA issued on 27.06.19. By Sep'19	To be submitted to NERLDC.
10	220kV BTPS-Rangia T/L	By June'19	-	Jul'19	-
b. Elements under breakdown/upgradation					
11	Up-gradation of 132 kV Lumshnong-Panchgram line	Queries to be submitted by AEGCL and MeECL	Not applicable.	Queries to be submitted by AEGCL and MeECL	Not applicable.
12	PLCC Panels at Loktak end of Loktak – Ningthoukhong 132 kV feeder and Loktak - Rengpang 132 kV feeder	Aug'19.	Not applicable.	Aug'19.	Not applicable.
13	Replacement of CTs and installation of Bus Bar Protection at 220 kV Misa	CTs replaced. Bus bar protection by June'19	Not applicable	Completed. **To be dropped**	Not applicable
13	Upgradation of 132 kV Bus Bar at Umiam Stg- III to ACSR Zebra	DPR submitted. Other upgradation works to be included in DPR	Not applicable	DPR submitted. Other upgradation works to be included in DPR	Not applicable
14	220/132 kV 30 MVA ICT at Mokokchung	ICT by Sep'19. DoCO after GIS commissioning in 2020.	To be submitted to NERLDC	ICT by Sep'19. DoCO after GIS commissioning in 2020.	To be submitted to NERLDC
15	Upgradation of 132kV Yurembam-Karong by MSPCL	July'19	-	WIP. By July'19	-
16	Upgradation of 132kV Lekhi-Chimpu and Lekhi bus by DoP Ar.Pradesh	Mar'2020	-	Mar'2020	-
17	Upgradation of CT at Lekhi for 132kV Lekhi-Chimpu by DoP Ar.Pradesh	Mar'2020	-	Mar'2020	-

The Sub-Committee noted as above.

Action: All utilities as above.

C.1. Update on Real Time Energy Assessment for Effective Grid Management:

The status as updated till the 157th OCC meeting are:

- CDAC to complete installation of TARA devices for replaced SEMs by 30.04.2019. *Already completed*
- Integration of WBES schedule & SMS alert app to be deployed by CDAC by April'19
- Installation & commissioning certificate for Server and associated systems in NERLDC issued and final 10% to be disbursed.

Deliberation of the sub-Committee:

AE, SLDC, MeECL informed that after TARA devices are connected the SEMs hung. It was decided that NERPC would write to CDAC for Test Bench Study in this regard. Sr.GM(SO-I), NERLDC opined that the operational issues pertaining to the project be discussed in the future meetings. It was also decided that data availability reports are to be given by all SLDCs prior to the OCC meeting henceforth.

The Sub-Committee noted as above.

Action: All SLDCs

C.2. 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.

Deliberations in the previous meetings:-

- Inspection for Mawphlang completed.
- Inspection for Sankardevnagar, Rangia and Rowta under Assam was completed in April'2019.
- UFR Inspection and Testing for TSECL Stations as well as UFRs under Islanding Scheme No.2, would be carried out for TSECL Stations from 24.06.19 to 28.06.19.

Deliberation of the sub-Committee:

DGM, SLDC, TSECL informed the following status:

For all existing UFR except SMNagar	To be replaced by Sep'19
UFR at SMNagar	By Aug'19
Additional UFR under Islanding Scheme-II	Planning to be complete by Aug'19

Member Secretary, NERPC informed that Manipur/Nagaland would be completed in the next phase of UFR inspection.

The Sub-Committee noted as above.

Action: TSECL, NERPC.

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

In 156th OCCM 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 fallout of this pilot. NERLDC informed that the same has already been taken care of, which will be addressed by GM(SL), NERLDC. In 157th OCCM, CGM, NERLDC informed that the queries have already been addressed by NERLDC. He also informed that Cyber Security aspects are taken care by the firewall. MePTCL requested that the same may be intimated to EE, Killing.

Deliberation of the sub-Committee:

As informed in the 14th NETeST meeting, the Pilot project work is underway. EE, Killing, MePTCL would resolve the issues with ABB at the earliest. The proposal would be put up in the next TCC/RPC meeting.

The Sub-Committee noted as above.

Action: NERLDC, MePTCL

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

In 156th OCCM NERTS informed that the work has been awarded and target completion is Aug'19 as LOA.

Deliberation of the sub-Committee:

NERTS informed that LOA was placed on 06.05.2019. The target for completion is Nov'19.

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 completed. Data collection for Meghalaya underway.

- One representative from each of the states and NEEPCO, NERTS, NERLDC and NERPC.
- NERLDC & all SLDCs to submit Operational Load flow feedback by 1st week of Jun'19

Deliberation of the sub-Committee:

NERLDC highlighted that details of transmission lines, Bus Reactors and Line Reactors mentioned in the report seem to vary from the data available with NERLDC. NERLDC agreed to submit the detailed report to NERPC by July'19.

The Sub-Committee noted as above.

Action: NERLDC

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 –Report has been sought from MRT wing regarding availability of synchronizing facility. AEGCL would revert back with the exact status in 15 days.
- DoP Ar. Pradesh –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.

Deliberation of the sub-Committee:

AEGCL informed that as per report from MRT division CR panels has check-sync facility available and no separate procurement of synchroscope is necessary. NERLDC suggested that for any one circuit shutdown may be given and synchronisation of the line with grid may be done. The forum agreed.

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.

In 156th OCCM, 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.

In 157th OCCM Sr. GM(AM), NERTS assured that the complete schedule of works would be prepared by 14th June,2019. The forum requested AEGCL to do likewise.

Deliberation of the sub-Committee:

NERTS informed that schedule of works has been prepared and the works would be completed by Aug'19. AEGCL was requested to prepare the schedule of works in consultation with NERTS.

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 156th OCCM 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.

Deliberation of the sub-Committee:

Member Secretary, NERPC informed that the meeting could not be held due to unavoidable circumstances. He informed that the procedure being followed in other RPCs have been sought. After receipt of the same the meeting would be convened immediately.

The Sub-Committee noted as above.

Action: NERPC

C.10 Operation of RHEP units in Synchronous condenser mode

In 156th OCCM, 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.

Deliberation of the sub-Committee:

Sr. Manager, NEEPCO informed that there has been no response from BHEL. Member Secretary, NERPC stated that at present it seems that Synchronous Condenser operation of RHEP seems unlikely. After detailed deliberation it was decided that the Final Estimate for 80MVAR Bus Reactor at RHEP is to be prepared by NEEPCO immediately and put up for approval in the next TCC/RPC meeting.

The Sub-Committee noted as above.

Action: NERPC

C. 11 Tentative schedule for Black Start & Restoration Procedure Mock exercise in NER during the year 2019

In 156th OCCM the mock black start schedule was agreed as below:

AGTCCPP completed

LOKTAK After commissioning of 132kV Bus-A – 15.07.19 CEA inspection by July'19 will be done

Khandong completed

KOPILI completed

RHEP to be done in lean season

DOYANG 12th of June'19

AGBPP – NEEPCO to revert back on Black Start using DG.

Deliberation of the sub-Committee:

NERLDC informed that during mock black start of Doyang HEP on 12.06.2019, synchronisation of Doyang Uni-III at Dimapur Substation after black start was not possible due to non-functioning of synchronisation facility at the Powergrid substation. Rather, there was attempt at Dimapur to close the line without synchronisation facility resulting in tripping of the Units.

NERLDC intimated that verbal confirmation was taken for RTAMC-Powergrid regarding availability of synchronisation facility at Dimapur before proceeding with the activity. Also, the mock black start procedure was circulated to all concerned well in advance.

Sr.GM NERTS expressed his regret over the incident and stated that the synchronisation facility has been rectified and set right. He intimated that in future correct information would be provided regarding availability of sync facility well in advance in case of mock black start operation in future.

Member Secretary (I/C), NERPC also expressed regret over the incident and requested all concerned to exercise due caution before carrying out such activities in future.

Sr. Manager, NEEPCO informed that Out of step synchronisation with the line during start-up, the Unit #III tripped on heavy voltage jerk and there was high noise generated.

Regarding AGBPP, NEEPCO informed that Black Start is not possible using DG as there is no other backup available. CGM, NERLDC requested NEEPCO for confirming the Black Start test and also give a schedule for the same within August/September 2019.

The Sub-Committee noted as above.

Action: NEEPCO, NHPC, NERLDC

C. 12 DVAR and PSS at AGTCCPP:

In 156th OCCM Sr. Manager, NEEPCO informed that installation and commissioning would be complete by July'19.

Deliberation of the sub-Committee:

Sr. Manager, NEEPCO informed that the work would start from July'19, during s/d of Unit 4. Since Unit #4 is having Coupling problem the DVAR & PSS installation is expected to be complete for Unit #4 by Oct'19. For other units the installation would be done subsequently.

The Sub-Committee noted as above.

Action: NEEPCO.

C. 13 Bus Configuration issues for various sub-stations:

Status as on 156th OCC Meeting:

- 132kV Transfer Bus at Loktak HEP - CEA Inspection Applied For.
- 400kV Bus A at RHEP - Letter sent to NEEPCO. A Committee would be formed by NERPC to visit RHEP and decide the reasons for non-commissioning of Bus A prior to next OCCM.

- 132kV Bus-2 at Surjamaninagar - Charged on 17.05.2019. Feeders divided amongst the two buses as: (i) 132kV Main Bus-I =>Palatana feeder, Bangladesh Feeder-1, 79Tilla Grid Feeder-1, Bodhjungnagar Feeder-1, 62.5MVA, 132/33kV ICT-1, (ii) 132kV Main Bus-II => Bangladesh Feeder-2, 79Tilla Feeder-2, Bodhjungnagar Feeder-2, 62.5MVA, 132/33kV ICT-2.

Deliberation of the sub-Committee:

Sr. Manager, NEEPCO informed that Pantograph and Bus Coupler CB problems still remain, which is delaying the commissioning of Bus-A. The forum decided that a team comprising of members from NERTS, NERLDC & NERPC would visit RHEP in July'19 to assess the works required for commissioning of Bus-A.

Regarding the distribution of feeders among the two buses at Surjamaninagar, Sr. Manager, TSECL informed that the Bus Coupler CT connector got burnt on 18.06.2019. After repair of the same the original configuration would be reverted by July 2019.

NERTS informed that the 132kV Bus Coupler at Pavoi has not been commissioned and the same would be done by July'19.

The Sub-Committee noted as above.

Action: NEEPCO.

C.14 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 by KEC
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

Auxiliary Power at SMMnagar & PKBari:

Sterlite to take from tertiary of ICT. Meter to be placed and similar arr

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

a. 132kV P K Bari (TSECL) - P K Bari (Sterlite)

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) wip
- CTU to provide 80 MVAR bus reactor at Misa (PG) along with GIS bay wi[
- CTU to provide Switchable line reactors, 1x80 MVAR at Misa ends of the each circuit of the Silchar– Misa 400kV D/C line
- 132 kV Surajmaninagar(TSECL) - Surajmaninagar(Sterlite)

Deliberation of the sub-Committee:

Sr.GM(SO-I), NERLDC informed that upon their visit to Assam & Tripura it was observed that Sterlite projects are in an advance stage. Member Secretary, NERPC informed that STERLITE and KEC presence in the next OCC would be ensured.

Regarding 132kV P.K.Bari-P.K.Bari it was decided that NERPC would write to CMD, TSECL with reference to SCM MoM and also a letter would be sent to CEA/CTU requesting for clarification.

NERTS informed that the Work order for 132kV Surjamaninagar - Surjamaninagar would be placed alongwith diversion of 400kV Palatana-Surjamaninagar. The forum requested NERPC to write to POWERGRID for matching the schedule with Surjamaninagar substation of STERLITE.

The Sub-Committee noted as above.

Action: STERLITE, NERTS, KEC, TSECL.

C.15 Review of relay settings at Karong:

In 156th OCCM 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.

Deliberation of the sub-Committee:

AM, SLDC, MSPCL informed that the restriction of flow via the 132kV Karong-Kohima line was due to the delayed commissioning of 132kV Imphal-Imphal-Ckt#III. CGM, NERLDC requested MSPCL to give load flow studies for limiting load to Kohima by July'19.

The Sub-Committee noted as above.

Action: MSCPL.

C.16 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.

In 157th OCCM Sr.GM(AM), NERTS informed that due to miscommunication the target was wrongly given as May'19. He stated that temporary arrangement for Annunciation would be done by June'19 while the full-scale SCADA integration is linked to GIS target for full-scale SCADA integration would be informed later on.

Deliberation of the sub-Committee:

NERTS informed that the temporary anunciation and alarms have been provided at Khandong HEP for 132kV Kopili-Khandong-II. **The forum decided to drop the agenda** item.

The Sub-Committee noted as above.

C.17 Shutdown related to upgradation of 132kV Motonga Sub-station in Bhutan:

Deliberations in the 156th OCCM	**Status as informed in the 157th OCCM**	**Status as informed in the 158th OCCM**
1) 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.	NERTS to visit Rangia on 05.06.19. DR standardization & settings to be revised.	Settings and DR standardization at Rangia completed. Sample DR output to be submitted to NERLDC for verification. MS, NERPC informed that settings at Deothang would be be revised ASAP as has been communicated by Bhutan.

The Sub-Committee noted as above.

Action: NERPC/BPC.

C. 18 Status of recommendations reg GD-Vs on 03rd & 20th April,2019:

Recommendations	**Status as informed in the 157th OCCM**	**Status as informed in the 158th OCCM**
Review of negative phase sequence relay settings for GBC motor at Monarchak	Settings send to BHEL. No reply yet. Expected by June'19	Settings send to BHEL. No reply yet. NEEPCO to collect

(Scope of NEEPCO)		necessary motor parameters from BHEL for verification of settings
Identification of weak joints for 400kV Palatana-Silchar D/C (Scope NERTS)	Sample of failed conductor to be sent to the manufacturer by NETC for RCA as the conductor suffered mechanical breakage. There was no issue with joints.	Sample of failed conductor sent to NTH(National Testing House) for verification.
Study for reactive compensation in Tripura System(scope of TSECL)	NERLDC informed that node wise MVAR data of 33 kV system is required to carry out the studies. TSECL informed that MVAR data at 33 kV level is not available at SLDC. Forum requested TSECL to monitor & record MVAR data at 33 kV nodes for 1 month and submit the data for study.	SLDC to submit nodewise MVAR data of 33 kV system as per calculation procedure it deems fit.
Identification of feeders for additional UFR based load shedding under Islanding Scheme-II(Scope of TSECL)	List attached at **Annexure-C.18**	Identification completed upon visit of team to Tripura.
Standalone EL for integration of relay at AGTCPP by Oct'19(Scope of NEEPCO)	AGTCCPP - Oct'19. Standalone EL at RHEP completed in June'19	AGTCCPP - Oct'19. Standalone EL at RHEP completed in June'19
All stations to confirm DR downloading facility and it's healthiness at respective stations. A consolidated undertaking by the respective utility in this regard is to be submitted prior to each OCCM.	To be made into permanent agenda item wherein compliance from all utilities to be recorded. It was decided that all utilities to submit the declaration by 2nd of the month to NERPC & NERLDC.	No declaration submitted as intimated by NERLDC except OTPC. The forum decided that shutdown would not be accorded to utilities not submitting the declaration.
NHPC to procure standalone EL for Loktak HEP	Dec'2020 because no budget provisions	Next year supply will be done linked with R&M
NERTS would explore options in consultation with OEM regarding time synchronization issues at Silchar	Undergoing. Referred the case to OEM	The problem is suspected to be specific to a make of GPS time synchronizer. The GPS Time Synchroniser at Sichar is replaced with a different make on 03.07.19 and is under observation.

Upon SPS-2 activation 132kV Bus Coupler Breaker to be opened at Palatana. Old scheme of opening of HV side CBs of ICTs to be disabled/removed (Scope of OTPC)	Not implemented. OTPC informed that By Opening of Bus Coupler would will lead to blackout of Palatana. To be discussed during visit of UFR Inspection team to Palatana.	Original Scheme involving tripping of HV side of ICT to be kept in service.
Revised SPS-3 scheme offer sought from GE by NERTS	Technical offer Received from GE. Once technical clearance is given to GE, they will submit the commercial offer.	The forum approved the technical offer and requested NERTS to acquire the Budgetary offer so that the same may be approved in the next TCC/RPC.
Line defects in 400kV Silchar - Azara & 400kV Silchar-Byrnihat T/L to be attended(Scope of NETC)	To be executed in the next shutdown	To be executed in the next shutdown
Impedance measurement for 400kV Paltana-Silchar D/C, 400kV Silchar-Azara, 400kV Silchar – Byrnihat	On opportunity	On opportunity
Line parameters to be matched at Silchar, Azara and Byrnihat.	To be informed	Shall be done by 15.07.19
Spare relay REL 670 to be installed at Byrnihat for 400kV Silchar-Byrnihat(Scope of MePTCL)	S/d postponed. By June'19	By July'19
NERTS and AEGCL to jointly visit Azara and check exact cause for delay in appearance of voltage input to relay when charged via Tie Breaker	To be informed	Shall be done during July'19

The Sub-Committee noted as above.

Action: All utilities as above.

C.19 <u>Installation of Anemometer:</u>

As per CERC Order in Petition number 9/SM/2014 dated 14.06.16, Hon'ble CERC has directed PGCIL to install Anemometer in all its sub-stations to record wind speed. In 132nd OCCM, DGM (AM), NERTS informed that installation of anemometers is being carried out in SR-1. After satisfactory performance, anemometers will be

installed in other regions. In 142nd OCCM, NERTS was requested to present Action Taken Report for installation of anemometers.

In 157th OCCM CGM, NERLDC informed that IMD would install 150 nos AWS in NER. IMD proposed to set up AWS in substations of NER which will require around 10x10 space and they are ready to share data with NERLDC & SLDCs which will be beneficial for load forecast.

The forum agreed in-principle and requested IMD to give presentation in the next OCCM.

Deliberation of the sub-Committee:

Pls refer to discussion in item No.D.9.

The Sub-Committee noted as above.

C.20 Status review of upcoming projects for strengthening of Southern part of NER Grid:

Kalparatu by July'20:

a. 400 kV Imphal – New Kohima D/C
b. 400 kV New Kohima – Mariani (PG) D/C
c. 400/220 kV, 2x500 MVA ICTs at New Kohima (Kalpataru)

POWERGRID

d. 400/220 kV, 2x 500 MVA ICTs at Mariani
e. Upgradation of Misa – Mariani D/C at 400 kV
f. Upgradation of S M Nagar (TBCB) – Palatana D/C at 400 kV
g. Upgradation of P K Bari (TBCB) – Silchar D/C at 400 kV
h. LILO of S M Nagar (TSECL) – Palatana D/C at S M Nagar (TBCB)
i. LILO of P K Bari (TSECL) - Silchar D/C at P K Bari (TBCB)

Deliberation of the sub-Committee:

Member Secretary, NERPC requested NERTS to submit the status at the earliest. He also stated that the exact status from the erstwhile M/s Kalpataru is difficult to obtain since the company has disbanded. However, the status would be obtained from CEA.

The Sub-Committee noted as above.

Action: POWERGRID, NERPC.

C. 21 Metering Status Review:

Agenda Description	Completed	Remarks	Latest status
Distribution of 70 Laptops	NERTS informed in 157th OCC Meeting that Laptops under distribution to all identified locations.	Status of Distribution and progress may be discussed.	**
Correction of Meter error at Pare, Ningthoukhong, Kohima , Jiribam(MN), Dimapur(s).	YET TO BE CORRECTED.	Status and progress may be discussed.	**

Deliberation of the sub-Committee:

**** Distribution of 70 Laptops**

NERTS have distributed laptops in some locations of Manipur, Nagaland, Mizoram and Arunachal Pradesh as per the list given by NERLDC. Laptops at other locations involving Assam, Meghalaya ,Tripura will be distributed soon as informed by NERTS. It was deliberated by NERLDC that constituents while receiving laptops from NERTS should see the features of the software loaded in the laptops for downloading the SEM readings.

Sr. GM, NERTS requested that the GSTIN number and mapped name be given by all the state utilities. This is required urgently since bills pertaining to laptop and DCD procurement has to be raised in the concerned names. All the utilities agreed to submit the data by 15th July,2019.

****Correction of Meter error at Pare, Ningthoukhong, Kohima , Jiribam(MN), Dimapur(s).**

The following meter errors are still persisting –

1) **Sign reversal problem at following locations** –
   a) Lekhi end of 132 kV Pare-Lekhi line.
   b) Kohima end of 132 kV Dimapur-Kohima line.

2) **Low meter reading Problem at following locations** –
   a) Ningthoukhong end of 132 kV Imphal-Ningthoukhong line.
   b) Jiribam(S) end of 132 kV Jiribam(PG)-Jiribam(S) line.

c) Dimapur(S) end of both 132 kV Dimapur(PG)-Dimapur(S) ckt I & II lines.

d) Kohima end of 132 kV Karong-Kohima line.

NERLDC requested the concerned to take necessary corrective action at the earliest.

The Sub-Committee noted as above.

Action: NERTS/All other utilities

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	723.95	39.75	1.608	25
Kopili	606.8	237.5	4.608	52
Doyang	308.84	2.65	1.1871	2
Loktak	766.53	13	1.019	13

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.

For shutdown of 400kV Palatana-Silchar Ckt#I or Ckt#II OTPC agreed to back down generation by 300MW subject to good weather conditions and sharing of study results.

Also NERLDC informed the Forum that S/D application to be submitted strictly by D-6. Where, D is the date of OCC meeting. And no further applications will be entertained for the applications/revisions.

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

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

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

The Sub-Committee noted as above.

Action: NERTS/NETC.

D.4 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.

The Sub-Committee noted as above.

Action: DoP Ar. Pradesh

D.5 RGMO performance analysis of events

Decisions in the previous meetings:

- NERLDC to scan PMU records for any event prior to 11:55hrs on 05.02.2019 resulting in droop of frequency by more than 0.03 Hz.
- BgTPP Unit #II mechanical problem in Turbine to be rectified.
- NERLDC may highlight any additional events.

Deliberation of the sub-Committee:

NERLDC informed that on 05th June,2019 the frequency dipped from 49.89Hz to 49.76Hz at 03:26:50 Hrs due to sudden outage of Akal wind generation loss of 1500MW.

FRC analysis based on SCADA data by NERLDC:

Palatana and BgTPP initially gave response but couldn't sustain and decrease generation within 20-30 sec. In 1 min analysis it was observed that No response was given by any generators. Moreover, negative response received from Palatana GTG-1,STG-1

CGM, NERLDC quoting IEGC Cl.5.2(h) remarked that such response from CSGS is undesirable:

"*.....After an increase in generation as above, a generating unit may ramp back to the original level at a rate of about one percent (1%) per minute, in case continued operation at the increased level is not sustainable. Any generating unit not complying with the above requirements, shall be kept in operation (synchronized with the Regional grid) only after obtaining the permission of RLDC.*"

The forum requested all the CSGS to submit DAS data for the event dated 05.06.19.

The Sub-Committee noted as above.

Action: NTPC, NEEPCO, OTPC

D. 6 Reactive power capability/injection of generating stations:

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

- PG Test Reports of Pare - NERLDC to confirm sufficiency.
- Procedure for reactive capability testing to be discussed and finalised.
- OTPC has informed that the procedure for reactive capability testing is feasible as corroborated by BHEL.

Deliberation of the sub-Committee:

NERLDC stated since the reactive power capability testing is finalized the testing may be carried out periodically for all generators. After detailed deliberation it was decided that by Aug 1st week reactive capability testing would be done for Palatana and subsequently schedule for testing for other ISGS will be prepared.

The Sub-Committee noted as above.

Action: NERLDC

D.7 Accurate Load forecasting by SLDCs as per IEGC c1.5.3 for better system operation

In 158th OCCM NERLDC presented the RMSE for June'19:

% Error with Actual Data (Forecasted by States)							
	Ar Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Tripura
Median	26	29	11	59	24	12	84

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

Deliberation of the sub-Committee:

NERLDC informed that the RMSE % has increased by a staggering amount due to the load crash and disturbances. The forum requested all SLDCs to analyse the reasons for the increase in forecasting error.

The Sub-Committee noted as above.

Action: All SLDCs.

D.8 Patrolling protocols/guidelines:

Finalization of patrolling protocols/guidelines for NER as per CERC order No 146/MP/2013 with I.A. 36/2013.

In 157th OCCM members were requested to submit their comments by June'19.

Deliberation of the sub-Committee:

After detailed deliberation it was decided that a common format would be prepared by NERPC/NERLDC and circulated for comments from all transmission utilities. NERLDC mentioned that patrolling report of elements declared as Important Grid Elements to be submitted on monthly basis. List of Important Grid Elements is available at NERLDC website at http://nerldc.in/IE.aspx.

The Sub-Committee noted as above.

Action: All transmission utilties/NERLDC/NERPC.

D.9 Better weather forecasting for power sector by IMD:

During the interaction of NERLDC with IMD, Guwahati, they requested to set up observatories in appropriate substations covering all important locations of NER states, which will be beneficial for power utilities of NER.

Also, NERLDC in coordination with IMD, Guwahati proposes to conduct one-hour knowledge sharing session on "Meteorological requirements of Power System Operation" in next OCC Meeting.

In 157th OCCM it was decided that IMD would present their offering for the power sector in the next OCCM.

Deliberation of the sub-Committee:

Dr. Sanjay O' Neil Shaw, Scientist E/Dy Director General of Meteorology, Regional Meteorological Centre, IMD, Guwahati gave a presentation on the IMD offering for the

power sector of NER. The forum thanked IMD for the offer and approved of the weather station requirements. Further it was decided that a list of stations would be prepared by NERLDC in consultation with the constituents of NER and submitted to IMD for feasibility check. Constituents of NER are requested to send name, address, mobile no, email id of nodal person of each constituents to NERLDC by 31st Jul19.

The Sub-Committee noted as above.

Action: All SLDCs/NERLDC.

D.10 Islanding Formation of Monarchak:

Island formation of Monarchak in case of tripping of both lines (132 kV Monarchak-Udaipur & 132 kV Monarchak- Rokhia) affecting the evacuation of generation at TGBPP & scheme for safe evacuation of Monarchak generation in case of tripping of any one line (132 kV Monarchak-Udaipur or 132 kV Monarchak- Rokhia).

A team from NERLDC, NERTS & NERPC visited Monarchak/Rabindranagar on 27.06.19 to understand the practical feasibility of the Islanding Scheme. The salient observed points are:

- Island formation with Rabindranagar load is possible. However the average loading pattern is around 3-8MW.
- Sufficient isolation at Rabindranagar is present between 66kV/33kV/11kV loads and the 132/11kV loads. There is no chance of back feeding and tripping of the Monarchak generation.

Deliberation of the sub-Committee:

TSECL representative informed that at 132kV Rabindranagar future load is being planned viz. Melaghar, Rani and one more feeder. The prospective load addition in Peak hours would be 15MW and Off-peak would be 10MW. He stated that these would be done by Dec'19. NEEPCO took note of the same and agreed to revert back with the OEM comments. It was decided that further options would be reviewed in Oct'19.

The Sub-Committee noted as above.

Action: TSECL/NEEPCO

D.11 Tripping of all units of BgTPP:

On 23/05/2019 Units I, II, III of BgTPP tripped at 03:06 hrs, 03:37 hrs, 03:56 hrs respectively. This caused a generation loss of around 615 MW. Also, 29 nos. of trippings of BgTPP units occurred due to various reasons since April

2018.NERLDChad requested BgTPPto send a root-cause analysis report of event dated 23/05/2019 vide letter no. NERLDC/SO-I/NTPC/2019/20/396 dated 23/05/2019, but no such report has been received from BgTPP even after reminder from NERLDC vide letter no.NERLDC/SO-I/NTPC/2019/39/544 dated 17/06/2019.

Deliberation of the sub-Committee:

NTPC gave a detailed presentation on tripping of the three units on 23.05.2019(attached at **Annexure-D.11**). The suggested recommendations by NTPC are as follows:

Sl. No.	Recommendation	Status
1	Proper sealing of marshalling boxes to be ensured.	Complied
2	Unit -1 unit bus incomer breaker to restored at the earliest	Next Shutdown
3	Providing alternate cooling water source to compressors	Next Shutdown

The forum thanked NTPC for the quick restoration of the units and approved the above recommendations.

The Sub-Committee noted as above.

Action: NTPC

D.12 Delay in Restoration after Grid Disturbance on 11-06-2019 at 17:21 Hrs by Pare HEP:

There was a significant delay in dead bus charging by Pare HEP during restoration. Further, communication issue and SCADA data issue at Pare HEP escalated the problem. NERLDC vide letter no. NERLDC/S.O-1/Pare/2019/33/531dated 12/06/2019 and NERLDC/S.O-1/Pare/2019/38/536 dated 14/06/2019 had asked Pare for reason of delays, but no reply has been received so far.

Deliberation of the sub-Committee:

Sr. Manager, NEEPCO informed that for 132kV RHEP-Pare-1 at Pare controller hanging issue is there, so power could not be taken from RHEP. After power from 132kV RHEP-Pare Ckt-2 was drawn then unit could be started up.

Further, he assured that the Operational problems would not be repeated since VOIP phone has been made operational.

NERLDC requested all utilities must ensure proper coordination with NERLDC during time of restoration after GD via. ULDC phone/ Landline/ Mobile/ Whatsapp group. All activities during restoration to be carried out only after getting permission from NERLDC. In this event Pare tried to close a faulty line without communicating NERLDC and this caused multiple tripping of their units and thus delay in Restoration of Arunachal System.

The Sub-Committee noted as above.

D.13 Non-functioning of synchronization trolley at Dimapur S/S:

On 12/06/2019, during the mock black start exercise at Doyang HEP,due to non-availability of the synchronization facility at Dimapur S/S, the 132 kV Doyang – Dimapur -1 line was reportedly closed without any synch. Check, causing tripping of Doyang Unit # 3.

Deliberation of the sub-Committee:

Pls refer to discussion in item No. **C.11.**

The Sub-Committee noted as above.

D.14 Blackout of Agartala (79 Tilla) sub-station at 08:21hrson 02-06-2019:

Blackout was subsequent to a fire incident that took place in 132/33 kV transformer 6 at Agartala (79 Tilla) sub-station. All lines connected to Agartala sub-station were hand tripped. NERLDC had requested SLDC Tripura to furnish the reason of hand tripping vide letter no. NERLDC/SO-1/Tripura/2019/40/543 dated 17/06/2019, but no reply has been received.

Deliberation of the sub-Committee:

Pls refer to discussion in 53rd PCC

The Sub-Committee noted as above.

Action: TSECL

D.15 Non Compliance of NERLDC instructions by SLDC Tripura:

Following are the summary of instances when the instructions of NERLDC were not complied with by TSECL/SLDC Tripura. Separate letters indicating individual non compliances are also attached in **Annexure D.15.a, D.15.b:**

a. On 22-06-2019, 132 kV Agartala- Rokhia-II and 132 kV Monarchak-Rokhia lines were closed at 13:44 Hrs. and 13:30 Hrs. respectively without intimation to NERLDC.

b. On 27-06-2019, NERLDC had advised SLDC at 08:01 Hrs. to close Agartala – S.M.Nagar –II after patrolling and declaring healthiness. SLDC closed the line at 09:30 Hrs. without intimation to NERLDC.

c. On 28-06-2019, after the incident of dead bus at Rokhia at 05:29 Hrs. NERLDC had advised SLDC to ensure through checking of 132 kV Rokhia- Monarchak line before closing as it tripped on DPR, Z-I. SLDC closed the line at 05:55 Hrs

Also, during restoration on 22-06-2019, Surajmaninagar S/S was restored after delay of around 20 minutes which caused delay in the whole restoration process of Tripura System with Bangladesh load.

Deliberation of the sub-Committee:

After detailed deliberation TSECL agreed to comply with all instructions of NERLDC w.r.t. Grid Operation in the future.

The Sub-Committee noted as above.

Action: TSECL

D.16 SPS for RHEP:

Proposal to design and implement SPS (System Protection Scheme) related to safe and reliable evacuation of generation from RHEP. NERLDC vide its letter to NERPC dated 20.06.19 requested to form a committee comprising of members from NERPC, NERLDC, POWERGRID and NEEPCO to design & implement an SPS.

Deliberation of the sub-Committee:

The matter was referred to the PCC Sub-group

The Sub-Committee noted as above.

Action: NERPC

D.17 Requirement of additional ICT at RHEP:

Requirement of additional 400/132 kV ICT at Ranganadi Power Station to prevent interruption of power supply to the State of Arunachal Pradesh as well as tripping of multiple units at Ranganadi – Pare Complex.

Deliberation of the sub-Committee:

The forum agreed to the requirement of 3rd 400/132kV ICT at RHEP. The matter was referred to the next NERSCT.

The Sub-Committee noted as above.

Action: NERPC

D.18 Frequent Disturbances in Tripura System:

Frequent instances of Grid Disturbance occurred in the month of Jun'19 in Tripura Power System resulting in tripping of major generating units and interruption of power supply to Comilla load of Bangladesh Power System, state capital as well as other parts of the state. NERLDC vide its letter to TSECL dated 21.06.19 requested to look into the matter on urgent basis and ensure strict compliance of mandated O&M practices, protection relay setting / co-ordination.

Deliberation of the sub-Committee:

Pls refer to discussion in 53rd PCC

The Sub-Committee noted as above.

Action: TSECL

D.19 Transformer Tap Optimization Study:

NERLDC has conducted Transformer Tap Optimization studies considering High Hydro Scenario in North Eastern Region. Suggested taps position of important transformers in NER for maintaining bus voltages within permissible limit as well as to minimize system losses is attached as **Annexure-D.19.a, Annexure-D.19.b**

Deliberation of the sub-Committee:

NERLDC requested members to give their comments by 31.07.19.

The Sub-Committee noted as above.

Action: All utilities.

Metering Agenda

D.20 METER ERRORS:

Pair check error observed in following location, CT / PT error suspected

- Sign Reversal observed at Deothang end of 132 kV Rangia Feeder as well as in Silicon Factory end. (Shut down proposed by Bhutan on 9th july for polarity correction).
- Dimapur end of 132 KV bokajan, Dimapur end reading erratic.

Deliberation of the sub-Committee:

- It was deliberated that the S/D as proposed by Bhutan on 9th July was not availed. NERTS was requested to look at the matter on an urgent basis.

- Regarding 132 kV Dimapur- Bokajan line ,NERTS informed that the problem at Dimapur end has been rectified.

The Sub-Committee noted as above.

Action:. NERTS

D.21 <u>High</u> <u>SEM Time Drift:</u>

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 D.21.a**, are not received by NERLDC and **Annexure D.21.b** provides location details of Drift correction action not being done / weekly SEM data not sent.

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

It was discussed that due to time drift problem, constituents may result with huge financial losses, which can be avoided by taking corrective action. NERLDC requested all concerned to do time drift corrections and also to send time drift report on regular basis.

After detailed deliberation, it was decided that NERPC would write to higher management giving cost implication for time drift and correction procedures.

The Sub-Committee noted as above.

Action: All utilities.

D.22 <u>SEMs to be repaired:</u>

List of SEM requirement for the next two years has been prepared considering precarious stock position of Spare SEMs. It has been assessed that 178 SEMs would be required for the next two years. Accordingly, in 156th OCC Meeting, it was proposed to procure 100 SEMs and 20 DCDs and in the 157th OCC Meeting, a list of 78 SEMs were proposed to be repaired.

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

NERLDC has already provided the list of 78 SEMs to be repaired to NERTS in June 2019.Two separate list were given to NERTS in which one priority list of SEM

repairment was given. NERLDC requested NERTS to do the necessary repairing works at the earliest keeping in view of less no of spare meters in the region.Also 100 SEMs and 20 DCDs were asked to be procured by NERTS (15 minute meters).NERTS informed that the works related to repairing of meters has started. NERTS informed that M/S Aradhna Agency has been identified for collection of the defective meters at Misa S/S from various locations and then for further sending the meters to L&T for repairing.

The Sub-Committee noted as above.

Action: NERTS

ADDITIONAL AGENDA ITEM

D.23 SEMs & DCDs to be procured:

After detailed deliberation the forum decided that 100SEMs and 20DCDs will be procured.

The Sub-Committee noted as above.

Action: NERTS/NERLDC.

D.24 RSD of Units for short duration

On 26-6-2019, BgTPP unit # 1 was taken under RSD at 0940 hrs as per communication received from NERLDC. Unit was again put on bar at 1025 hrs after withdrawal of RSD. However available DC was reduced to 472.5 MW (for two units) in NERLDC site from 1900 hrs of the same day. Also on 29-6-19 one unit has been put under RSD from 8 am for short duration.

Such short duration shutdowns puts unnecessary stress on the machine because frequent start ups / shut downs are not good for the health of a thermal power unit. Considering a RSD of 8 hours duration, the boiler fire is killed for 4 hours only since it takes around 4 hours from Boiler light up to synchronizing the machine back with the grid.

Asking for reserve shut down of a coal based unit for demand management by constituents for such a short duration may not be in the true spirit of CERC regulation clause of reserve shutdown as it may affect the life of the plant. NTPC BgTPP always comes forward to help the grid in case of any emergency and does not hesitate in taking out units as directed by NERLDC. But for demand management of

the constituents by putting one unit of coal based plant under reserve shut down for a short duration of 8 hours (4 hours only for Boiler) is not desirable. Frequent start up/ shutdown is possible only in gas based or hydro power plants.

In view of the above, the duration of reserve shutdown may please be reviewed in OCC forum.

Deliberation of the sub-Committee:

GM(Plant), BgTPP intimated that NTPC cannot predict the duration of SD. From 08:00hrs RSD start and by 4PM bringing back the units is not feasible. He suggested that planning is required from demand side so that RSD is maintained for 3 days. To avoid stress on the boiler this is desired.

Further he informed that if the barring gear is stalled(after s/d the probability increases) at least 2-3 days is required to bring back the machine. This gives huge stress on the machine.

Sr.GM(SO-I),NERLDC informed that NERLDC is following the requisition given by the states. If requisition is such that one unit may be taken into RSD for 3 days then the shutdown may be staggered amongst the 3 units. But the present requisition is such that all 3 units are required in the evening peak.

CGM, NERLDC informed that Kudgi plant of NTPC is coming in the same day. However knowing that states can plan requisition such that for evening peak hours power may be taken from the market. NERLDC mentioned that the CERC approved RSD procedure will be followed in case of start/stop of units going on RSD and Units under RSD may be called back any time after minimum period of 8 hours

APDCL representative informed that no planning on day ahead basis for Power plants. Due to sudden load crash and uncertain hydro generation the under-requisition happens. Also weather data is unreliable and cannot be correlated to the load pattern exactly. As an example he highlighted that on 29.06.19 RHEP came suddenly and under-requisition from BgTPP was given. Also the Intraday market opens after 3hrs.

Member Secretary, NERPC stated that the matter has already debated in CERC. The technical minimum may go down further and generators should be prepared as such, since CGM has highlighted that plants operating below 55% would be given incentive in the future.

NTPC requested that the matter be referred to the next TCC/RPC meeting so that atleast 24hrs RSD may be ensured for BgTPP units.

The Sub-Committee noted as above.

Action: NERPC/NTPC.

ADDITIONAL AGENDA ITEM FROM DoP NAGALAND

D.25 Connectivity of Kohima from Imphal through 132kV Dimapur - Imphal :

On the subject cited above, it is to bring to your kind notice that the above mentioned transmission tower has been severely affected and is on the verge of collapse any moment due to National highway-29 four laning activity. 132 kV Dimapur(PG)-Kohima line will not be in a condition for charging till the tower location 116A and Tower location 109 is shifted to a new location. In this regard, during the shutdown period Nagaland may be allowed to avail power supply from 132kV of Dimapur – Imphal PGCIL line for a period of 6 months with termination at 132kv Kohima sub-station. At present, 132 kV Karong is drawing power from Kohima.

Deliberation of the sub-Committee:

Member Secretary, NERPC informed that the arrangement was done previously and may be repeated. The forum agreed and requested DoP Nagaland to apply to NERTS. Based on the application NERTS would apply for RIO clearance and subsequently the line may be charged.

The Sub-Committee noted as above.

Action: NERTS/DoP Nagaland.

ADDITIONAL AGENDA ITEM

D.26 Optical Cable issue at Agia S/S of Assam

Due to optical cable issue at Agia, Agia S/S of Assam has not sent SEM meter readings in the last three weeks. NERLDC asked NERTS to look at the issue and solve the problem at Agia S/S of Assam at the earliest.

The Sub-Committee noted as above.

Action: NERTS/ASSAM

D.27 Meter Problem at Sarusajai S/S of Assam

Assam mentioned that meter at Sarusajai end of 132 kV Sarusajai –Umtru ckt II is out of order and requested NERTS to look at the matter at the earliest.

The Sub-Committee noted as above.

Action: NERTS/ASSAM

D.28 Furnishing of Technical and Commercial data for computation of PoC Charges and Losses for Q3 of 2019-20 (Oct 2019 – Dec 2019)

All the power utilities were requested to furnish Technical and Commercial data for computation of PoC Charges and Losses for Q3 of 2019-20 (Oct 2019 – Dec 2019) by 19.07.19.

The Sub-Committee noted as above.

Action: All utilities.

Date & Venue of next OCC meeting

It is proposed to hold the 159th OCC meeting of NERPC on second week of August 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 158th OCC Meeting held on 12th July, 2019

SN	Name & Designation	Organization	Contact No.
	No Representatives	**Ar. Pradesh**	
1.	Sh. Deepankar Deka,CGM, AEGCL	Assam	09435119248
2.	Sh. Dipesh Ch. Das, AGM (LDC)	Assam	09954110254
3.	Sh. Indrajit Tahbildar, AGM, APDCL	Assam	09954110254
4.	Sh. Bimal Ch. Borah, AGM, SLDC	Assam	09435119248
5.	Sh. Jayela Wahengbam, Asst.Manager (Syst.Opt.), SLDC	Manipur	-
6.	Sh. B.Nikhla, EE	Meghalaya	09436314163
7.	Sh. C.W.Chen, AEE	Meghalaya	09863093311
8.	Sh. R.Kharmawphlang, AE	Meghalaya	-
9.	Sh. M.N.Tariang, JE	Meghalaya	07005620013
10.	Sh. Malsawmdawngliana.EE (Com)	Mizoram	09436153594
11.	Sh. Chubatansu Ao, SDO	Nagaland	08729921754
12.	Sh. Rokobeito Iralu, SDO (Trans.)	Nagaland	09436832020
13.	Sh. Anil Debbarma, DGM, SLDC	Tripura	09612589250
14.	Sh. Mrinal Paul, Sr.Manager, SLDC	Tripura	09436137022
15.	Sh. Joypal Roy, DGM	NEEPCO	09435577726
16.	Sh. Ashim Kr. Sarmah, Manager	NEEPCO	09435078860
17.	Sh. Krishna Kant Rai, Manager	NEEPCO	09436581230
18.	Sh. V. Suresh, CGM	NERLDC	09449599156
19.	Sh. R. Sutradhar , DGM (SO-I)	NERLDC	09436302714
20.	Sh. Amaresh Mallick, Sr. GM (SO-II)	NERLDC	09436302720
21.	Sh. Jerin Jacob, Dy. Manager (SO-II)	NERLDC	09402120113
22.	Sh. M.P. Nath, Chief Manager (MO)	NERLDC	09436335374
23.	Sh. Ankit Jain, Manager(MO)	NERLDC	09436335381
24.	Sh. Sourav Mandal, Dy Manager	NERLDC	07005803329
25.	Sh. Keshab Borah, Engineer	NERLDC	07002323608
26.	Miss. Bornali Nath, Engineer	NERLDC	8414927752
27.	Sh. U.Kataki, Sr. GM (AM)	PGCIL	-

28.	Sh. H.Talukdar, Sr.DGM	PGCIL	-
29.	Sh. N.Yugandhar, Sr. Manager, Loktak	NHPC	09800003819
30.	Sh. Smruti Ranjan Das, Manager	OTPC	09612400784
31.	Sh. Ramakanta Panda, GM (O)	NTPC	09650991355
32.	Sh. Rakesh Kumar, GM	NTPC	09435503167
33.	Sh. Sajeev Mohandas, DGM	NTPC	09496006403
34.	Sh. Ratan Singh Basnet, Manager	NETC	08811072489
35.	Sh. B. Lyngkhoi, MS I/C	NERPC	09436163419
36.	Sh. S. Mukherjee, AD	NERPC	08794277306
37.	Sh. S.Imam, AD	NERPC	08986666366

उ.पू.क्षे ग्रिड प्रदर्शन

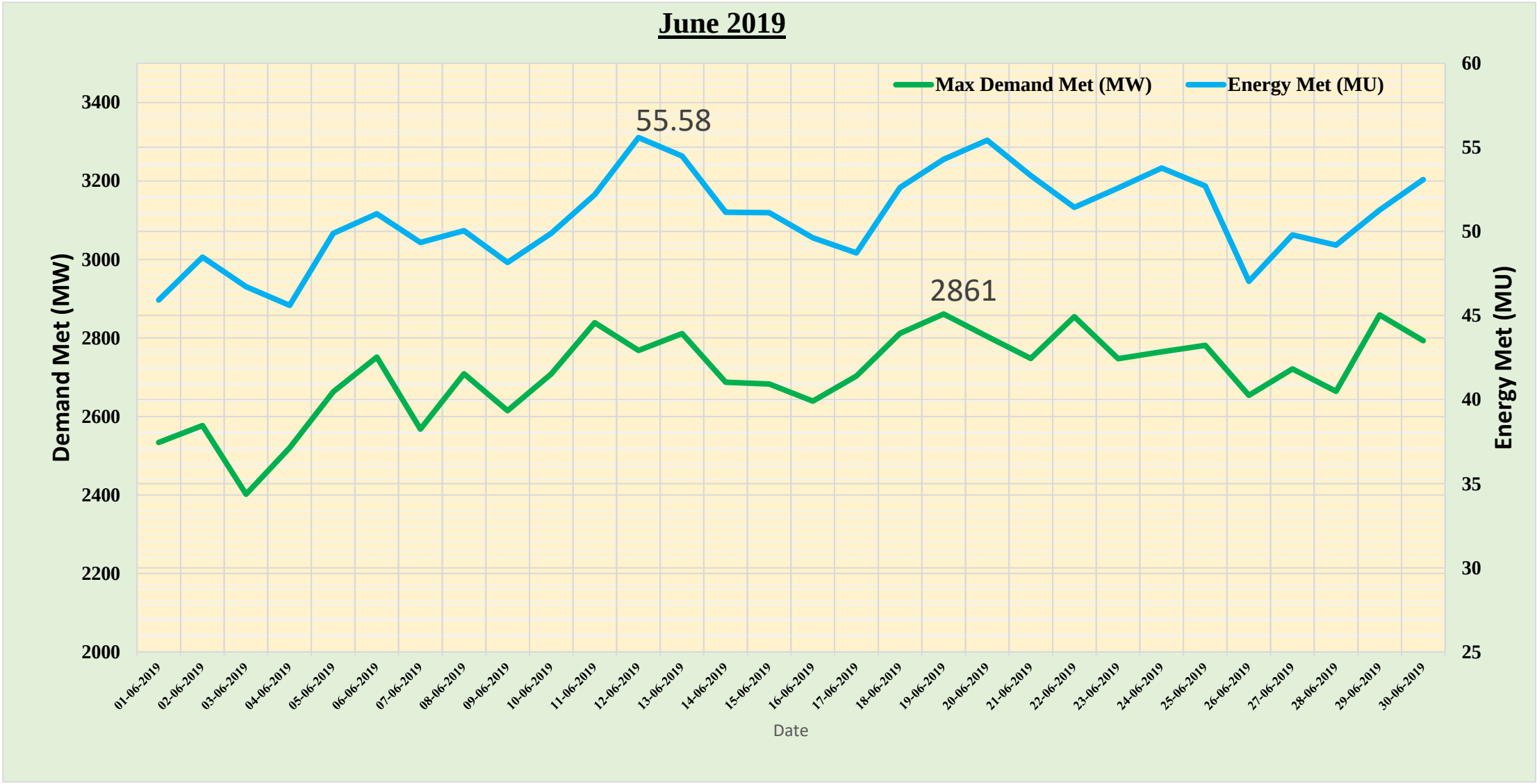
NER GRID PERFORMANCE

For the month June, 2019

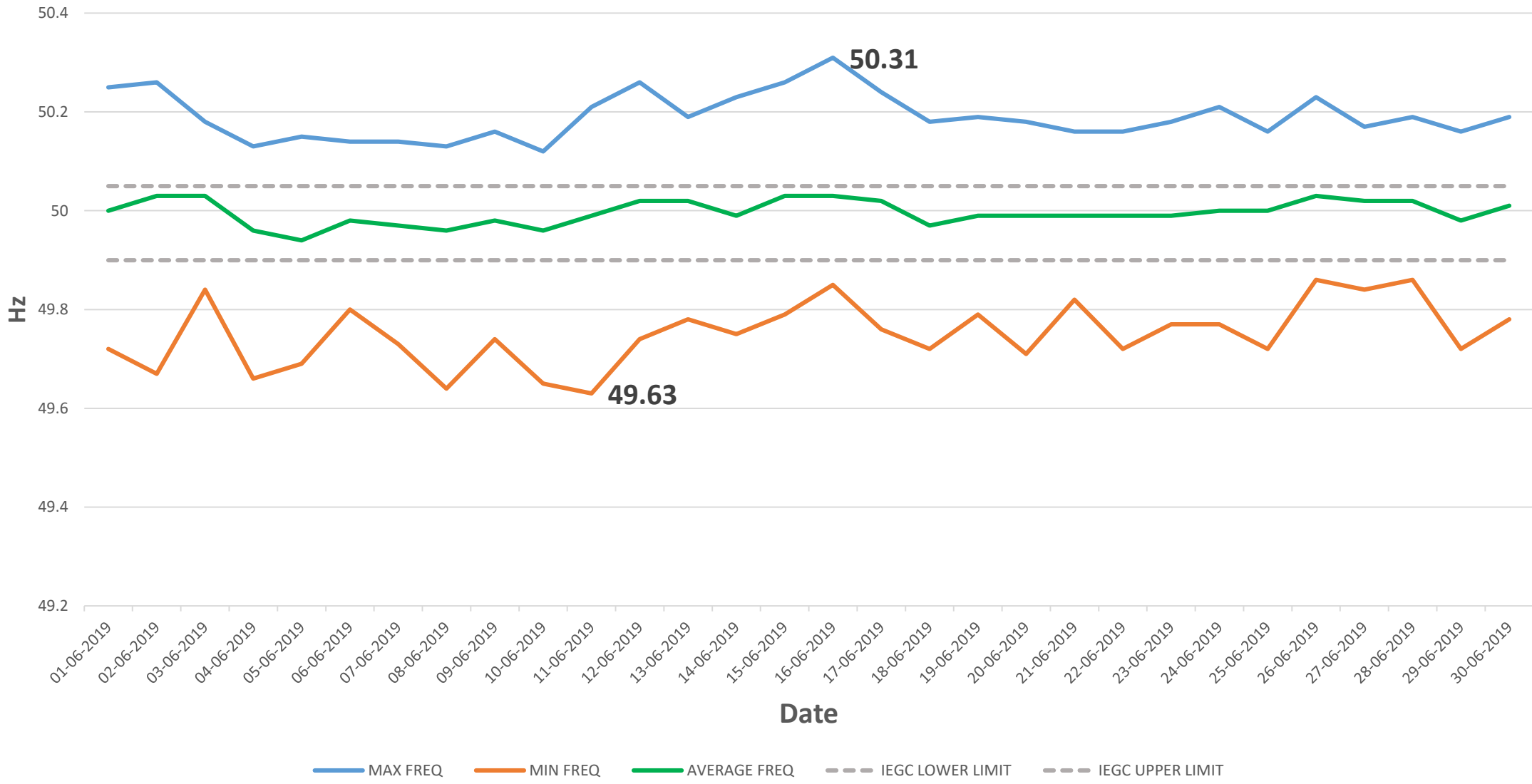
North Eastern Regional Load Despatch Centre

POSOCO, Shillong

Maximum MW and MU in NER: June 2019

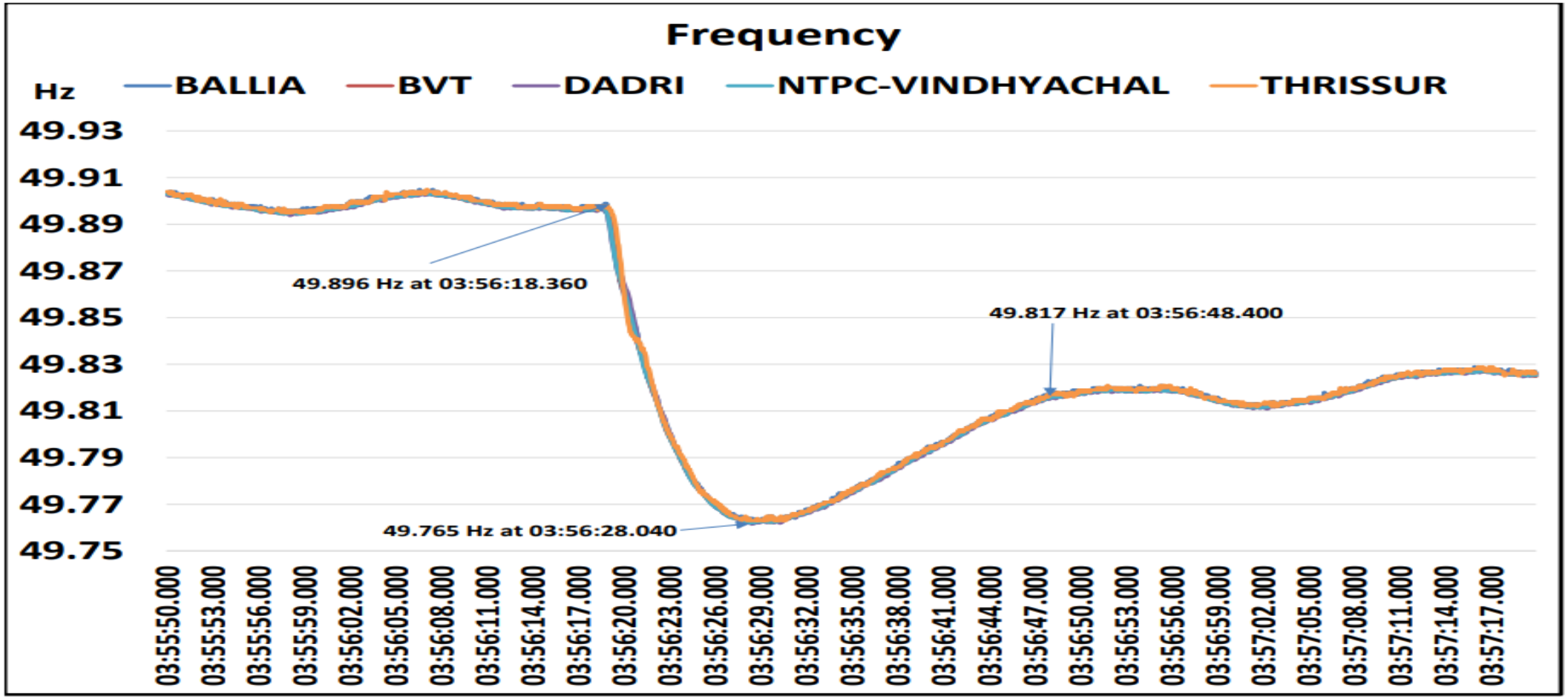


Frequency Profile



Frequency Response Characteristic (FRC)

- On 05th June 2019, at 03:56:20 hrs Wind generation loss in Akal station as per SCADA data is 1500 MW.



Frequency Response Characteristic Calculation for All India based on NLDC SCADA Data

EVENT:	On 05th June 2019, at 03:56:20 hrs C phase jumper of 220 KV Akal- Bhu Line-I snapped and fallen on 220 KV Bus-I at Akal station as reported by Rajasthan SLDC. It led to the tripping of 220 KV Akal-Bhu Line-I & II, 220 KV Akal- Dangri-I and 400/220 KV ICT-I & II at Akal station. The fault clearing time as per PMU was 680 ms and Wind generation loss in Akal station as per SCADA data is 1500 MW. After 2 minutes of incident, 400 KV Akal-Kankani-I & Akal - Ramgarh-II tripped on over voltage as reported and Wind generation loss at Akal station at this second incident was 300 MW as per SCADA data. The FRC has been calculated for the first incident when generation loss was 1500 MW.

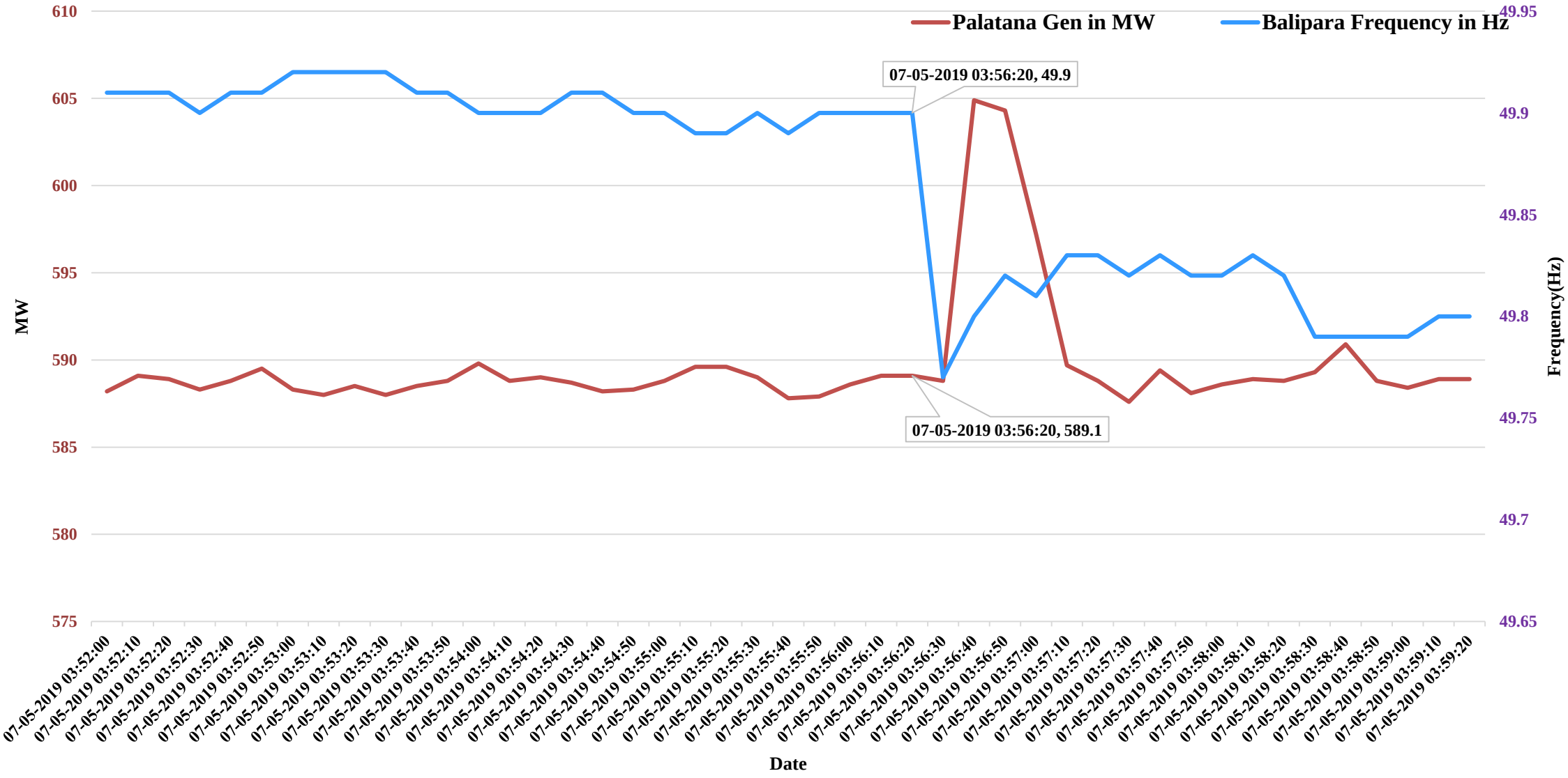
S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (03:56:30)	MW	12373	-3070	-12674	265	3479
2	Actual Net Interchange after the Event (03:57:30)	MW	13030	-3209	-13076	241	3063
3	Change in Net Interchange (2 - 1)	MW	657	-139	-402	-24	-417
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	1500	0	0	0	0
5	Control Area Response (3 - 4)	MW	-843	-139	-402	-24	-417
6	Frequency before the Event	HZ	49.896	49.896	49.896	49.896	49.896
7	Frequency after the Event	HZ	49.817	49.817	49.817	49.817	49.817
8	Change in Frequency (7 - 6)	HZ	-0.079	-0.079	-0.079	-0.079	-0.079
9	Frequency Response Characteristic (5 / 8)	MW/Hz	10671	1758	5085	304	5272
10	Net System Demand met before the Event	MW	55624	19544	39226	2331	35180
11	Internal Generation before the Event (10 - 1)	MW	43251	22614	51900	2066	31701
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	2225	782	1569	93	1407
13	Ideal generator response assuming 5% droop.....40% per Hz (40% of Row 11)	MW/Hz	17300	9045	20760	827	12680
14	Composite ideal response (12 + 13)	MW/Hz	19525	9827	22329	920	14088
15	Percentage ideal response	%	54.7%	17.9%	22.8%	33.0%	37.4%

(*) - Data may be constant/suspected during the event

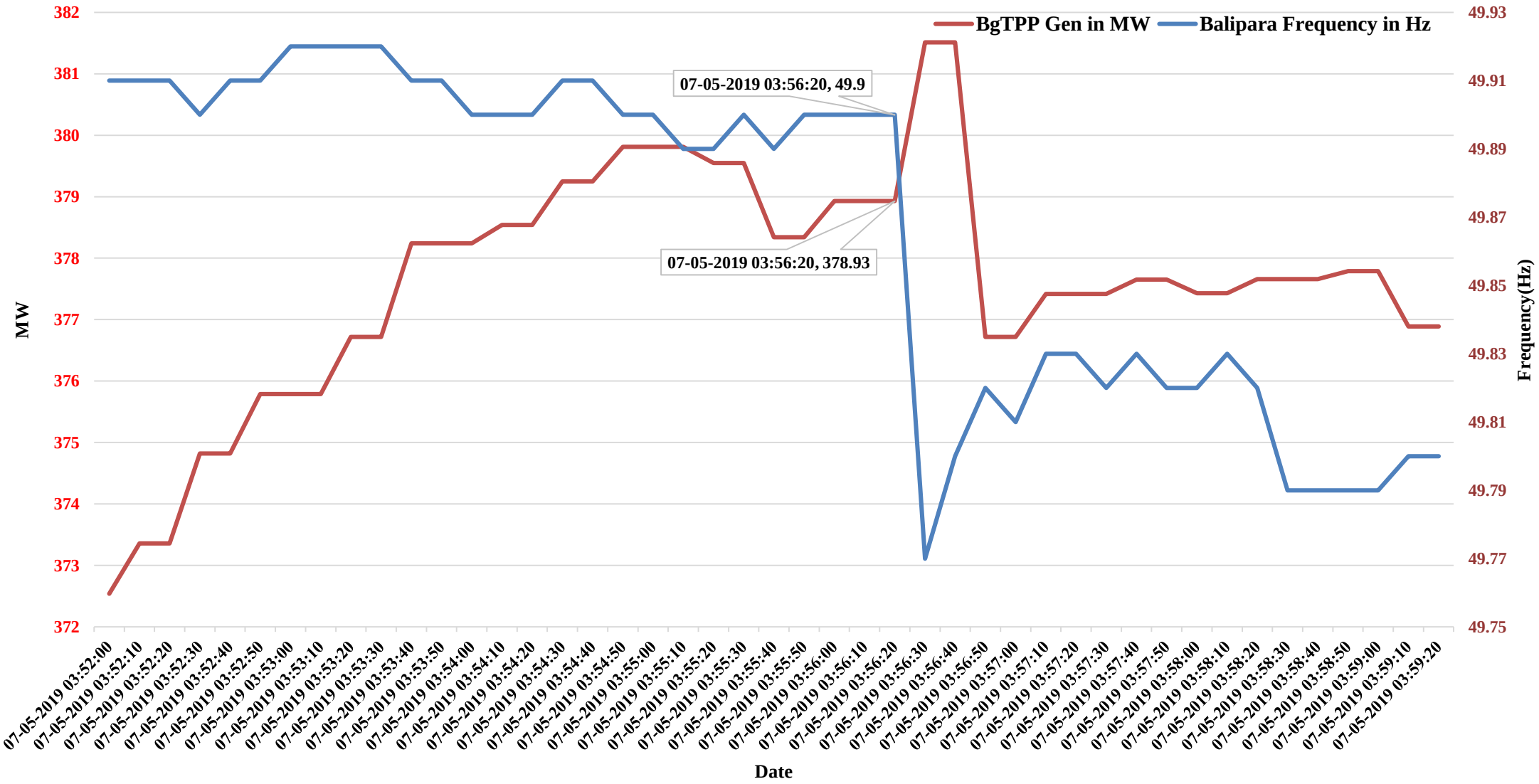
Note: +ve exchange=> import ; (-)ve exchange => export

Total Change in (MW)	1500
FRC for NEWS GRID (dp/df) MW/Hz	**18987**
Grid Inertia(net change in MW/maximum change in frequency)	**11450**

FRC analysis of Palatana for 05.07.2019

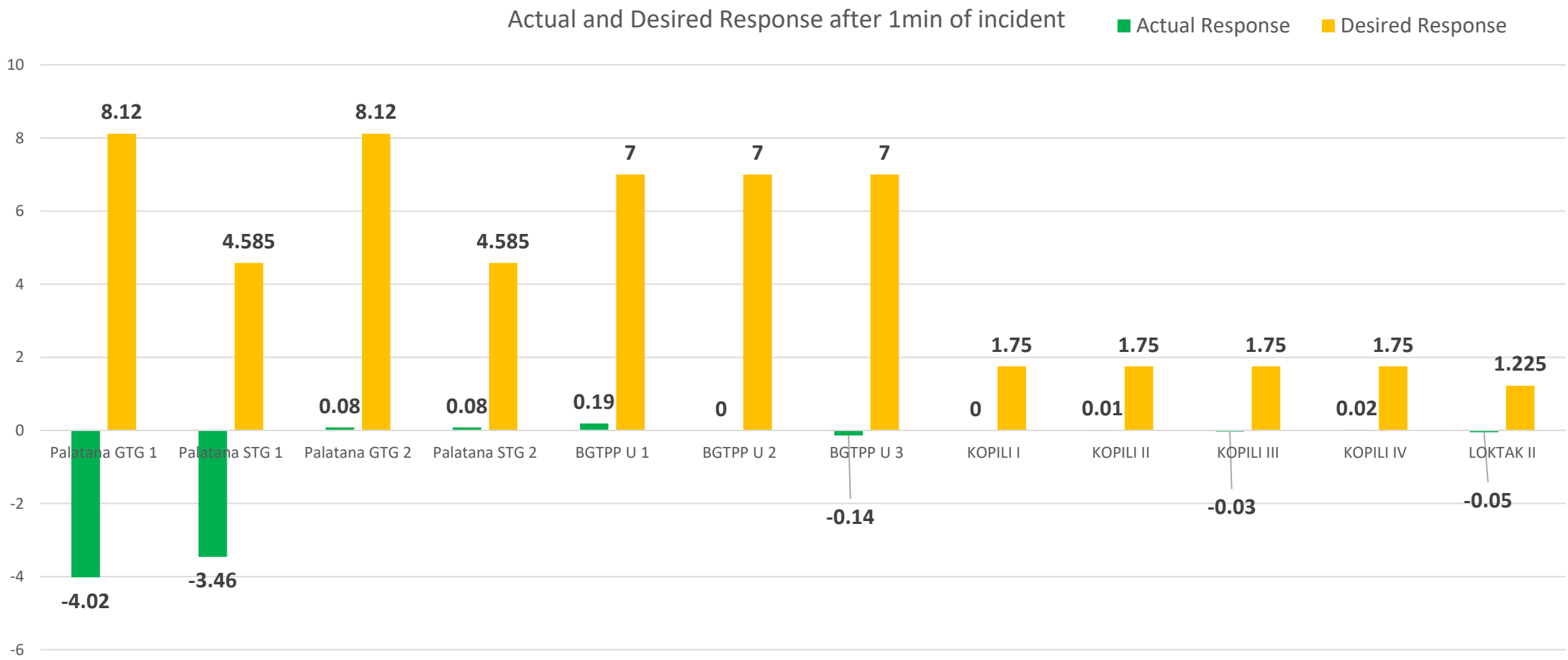


FRC analysis of BgTPP for 05.07.2019

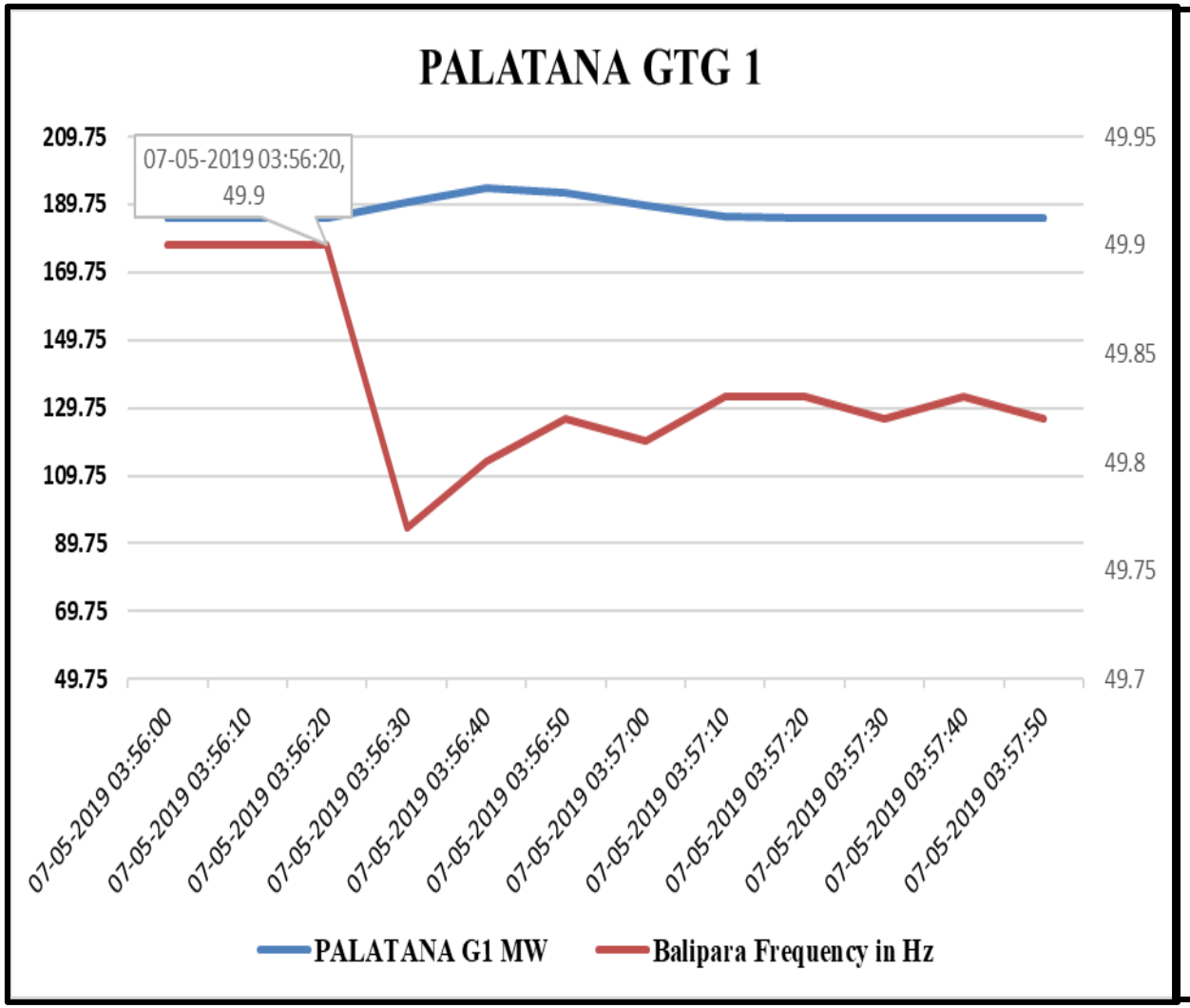


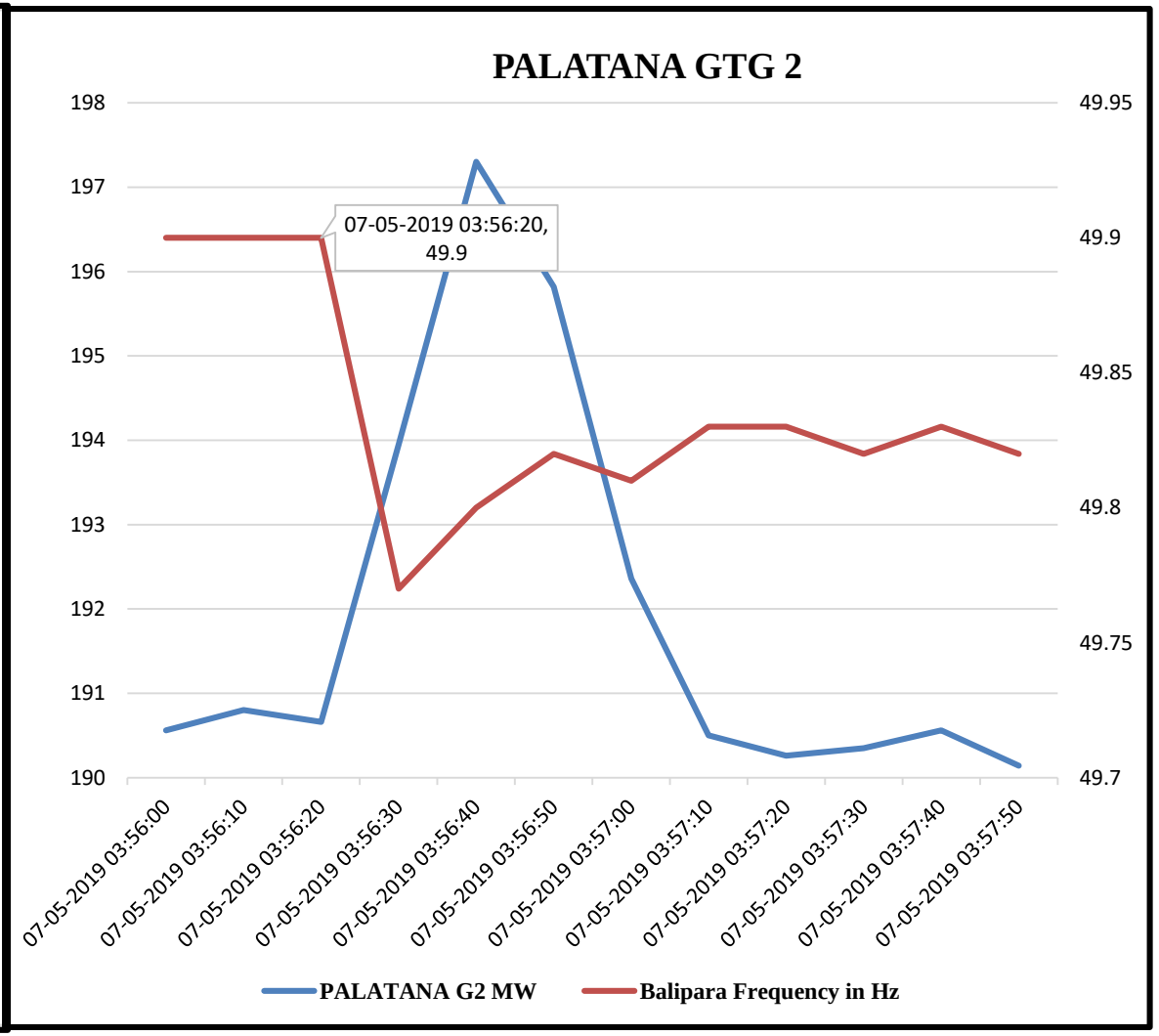
FRC of North-Eastern Region

RGMO Analysis

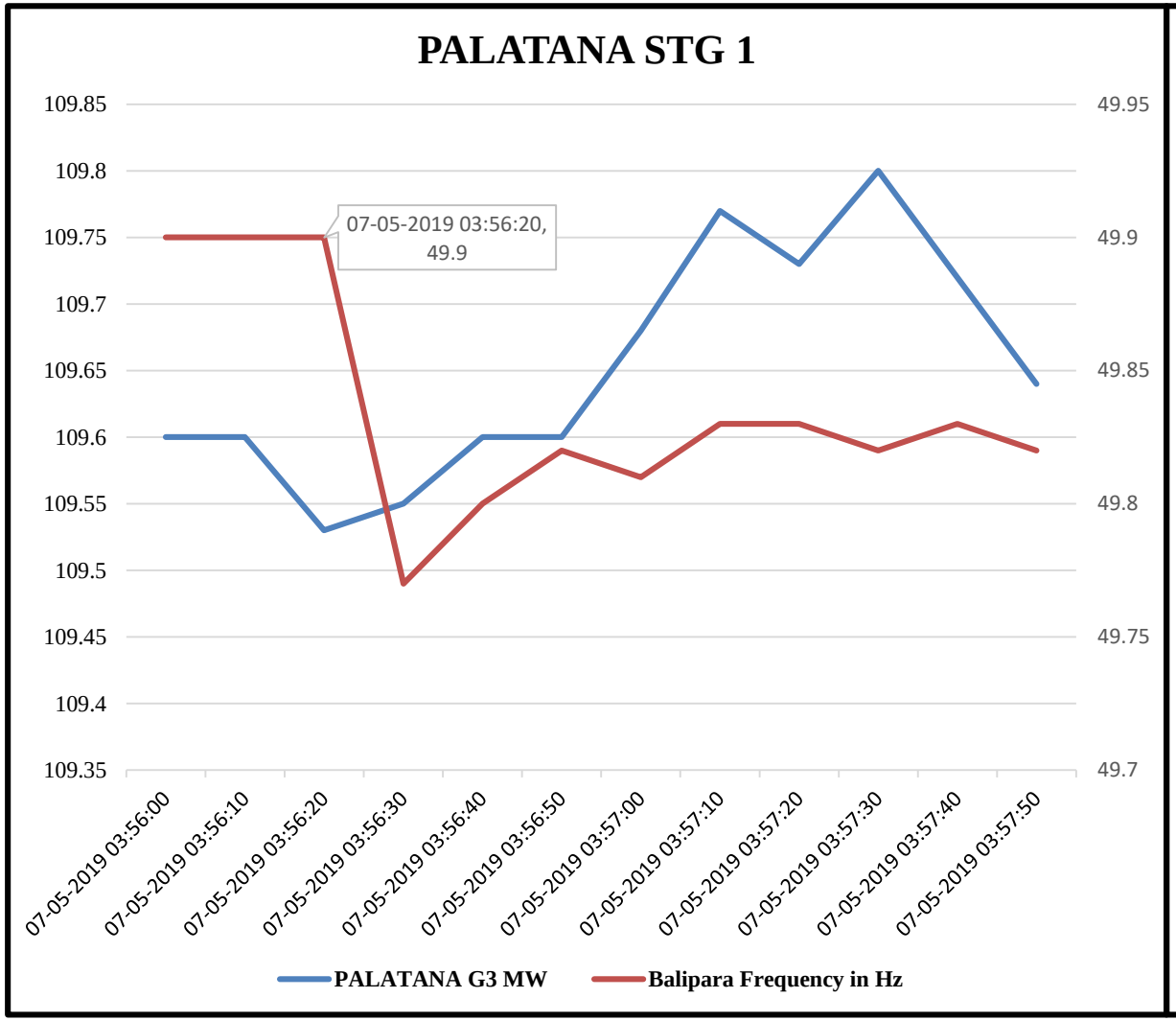


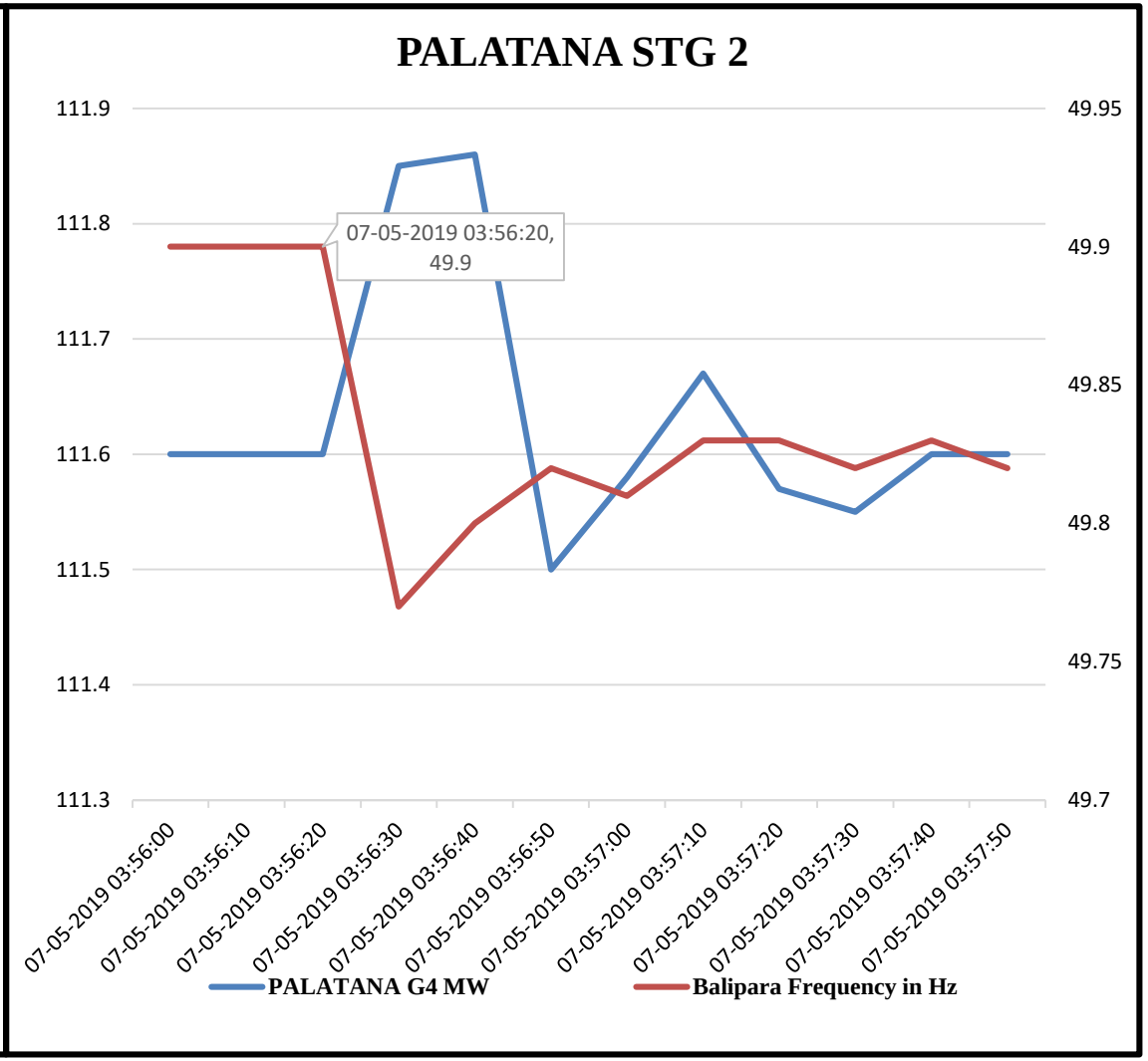
RGMO Analysis of Palatana



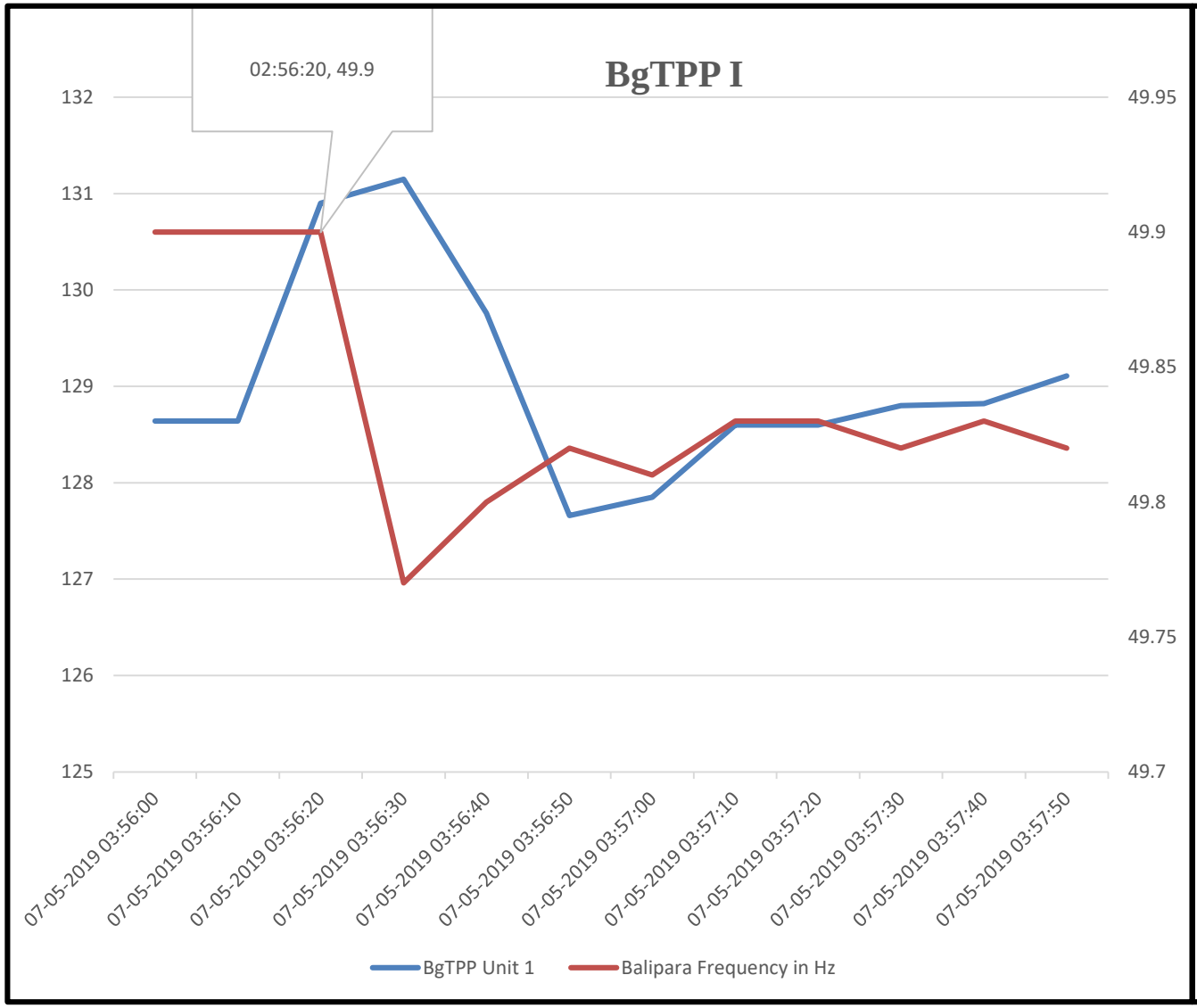


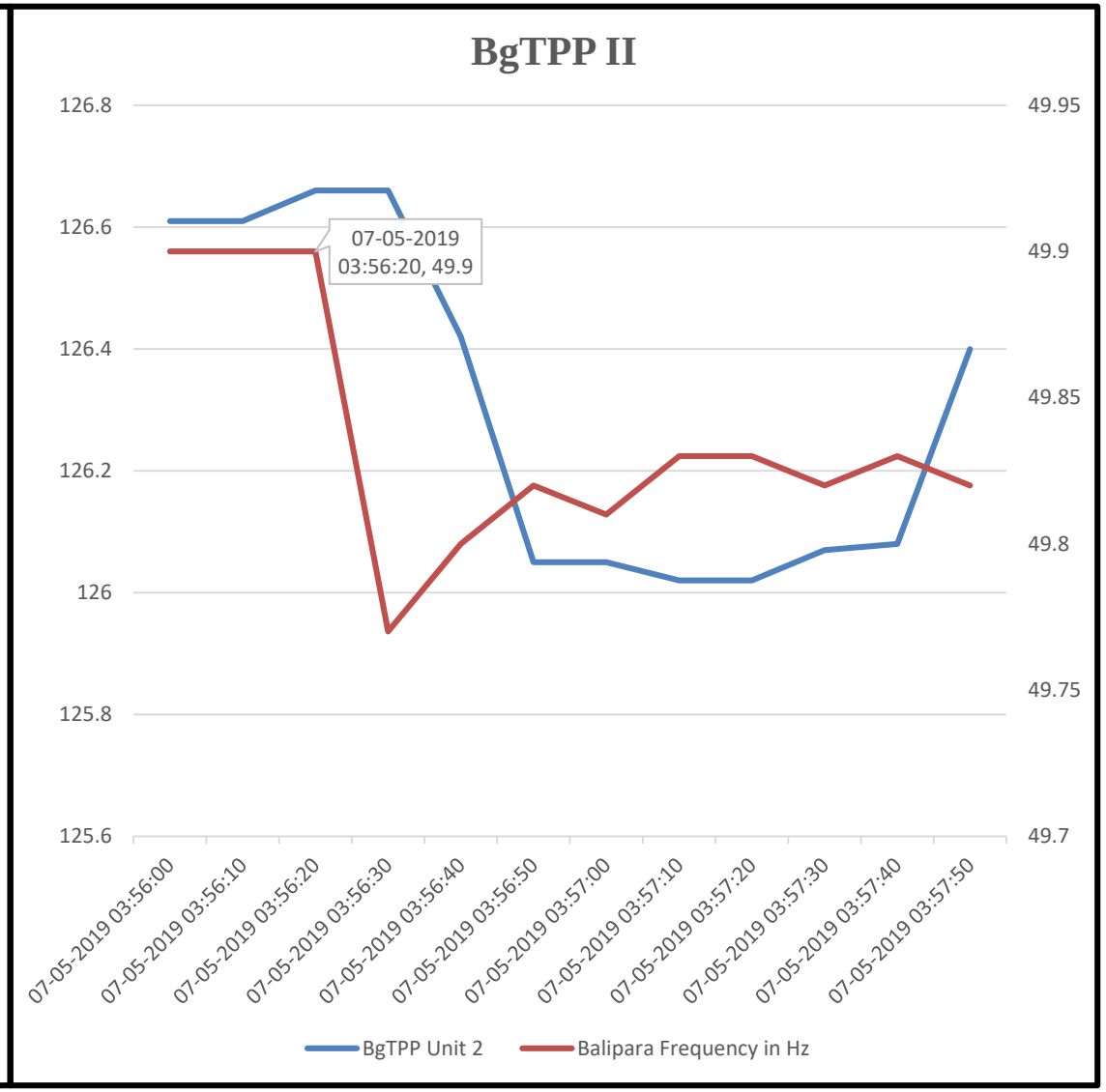
RGMO Analysis of Palatana



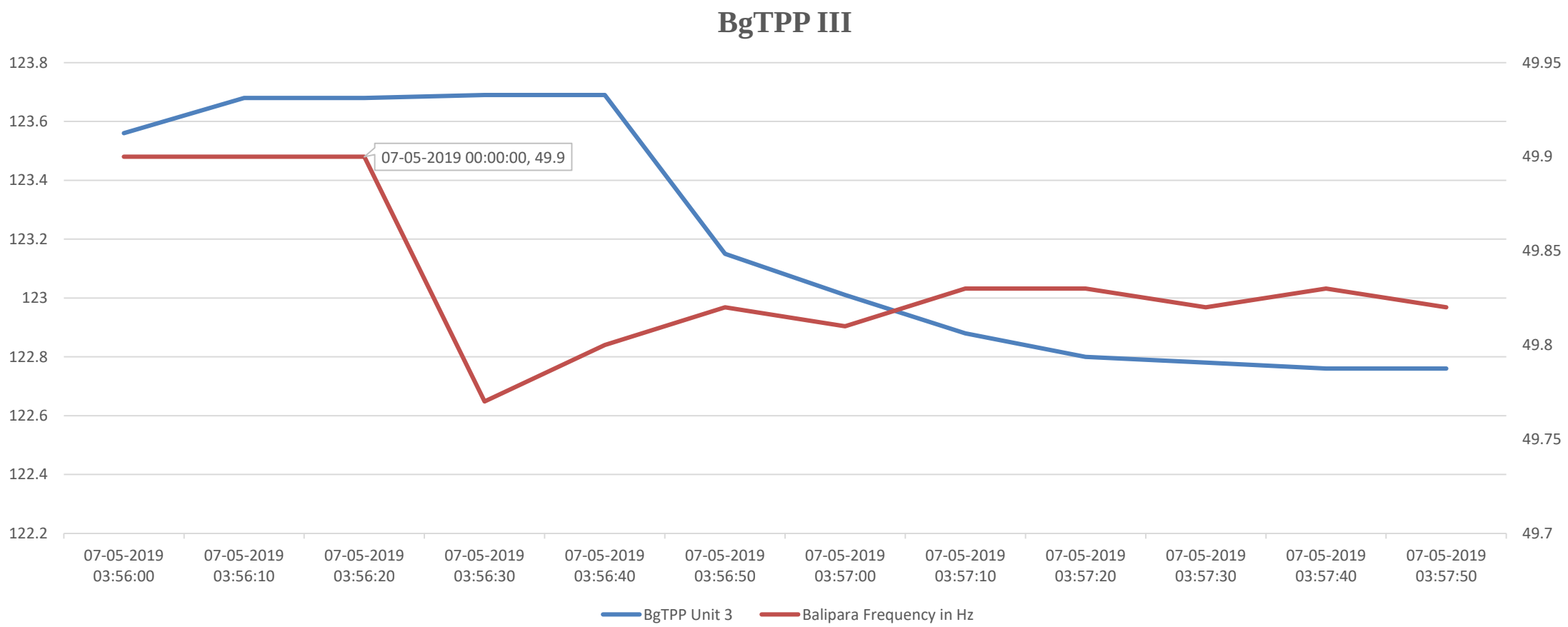


RGMO Analysis of BgTPP

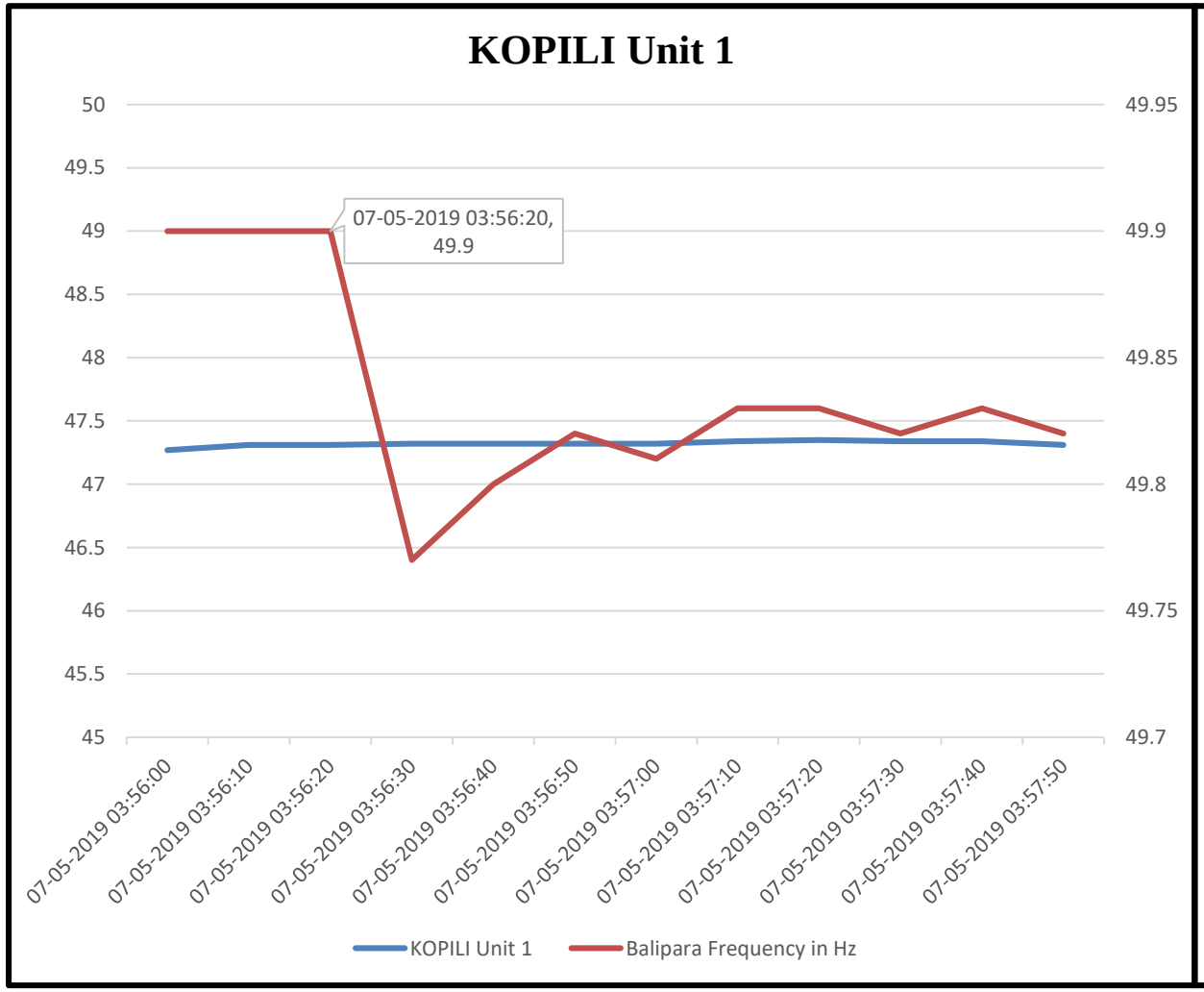


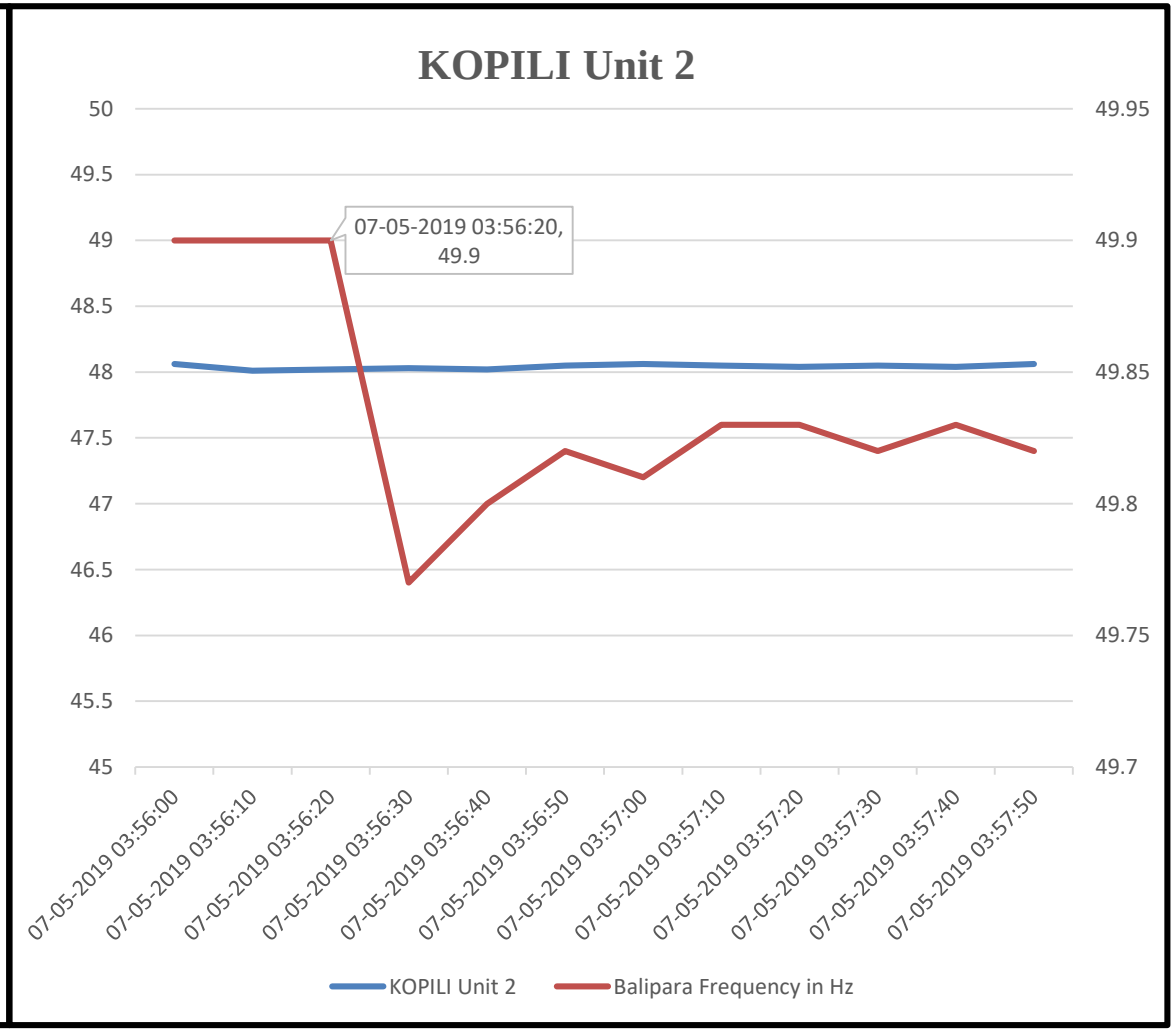


RGMO Analysis of BgTPP

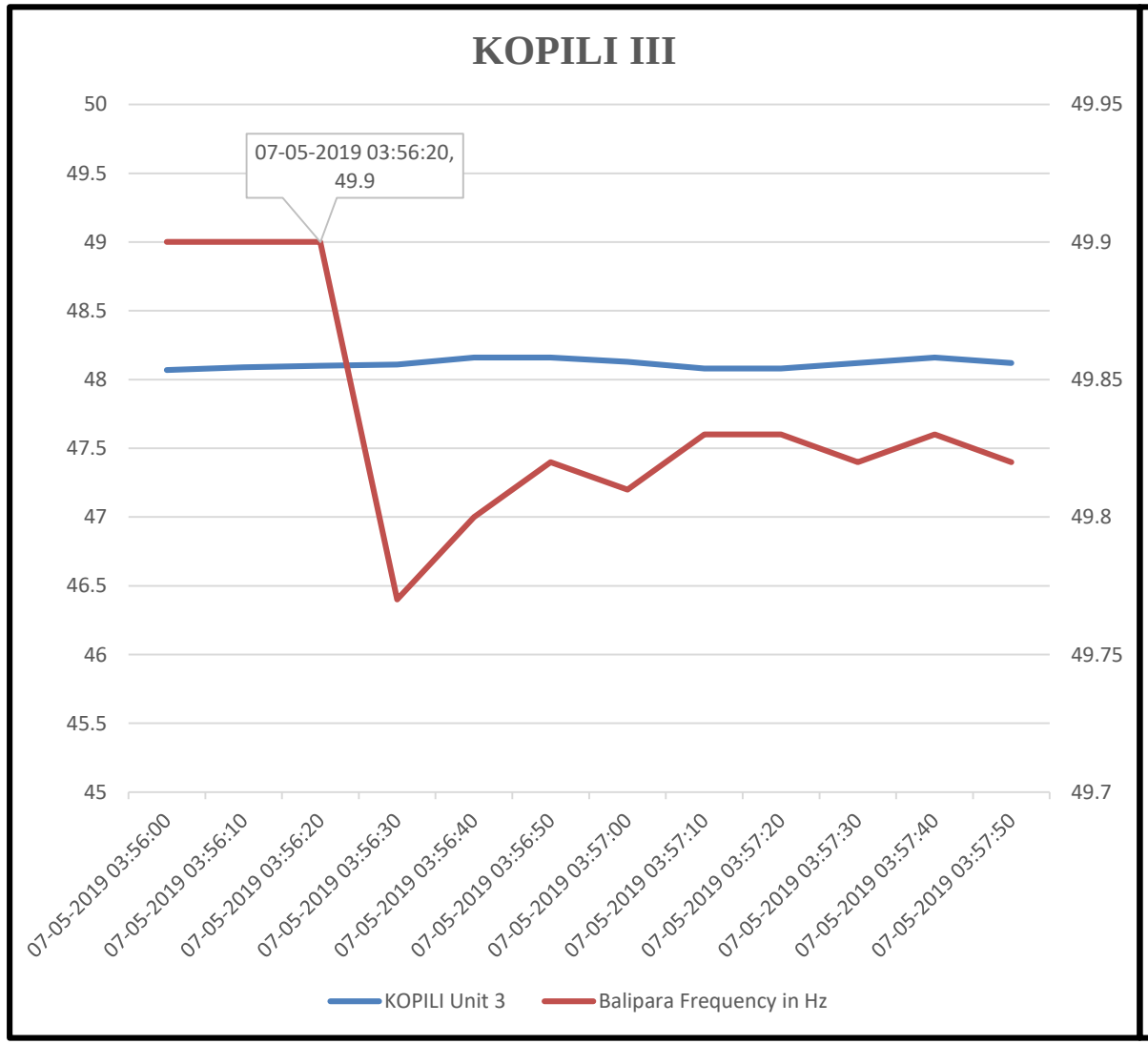


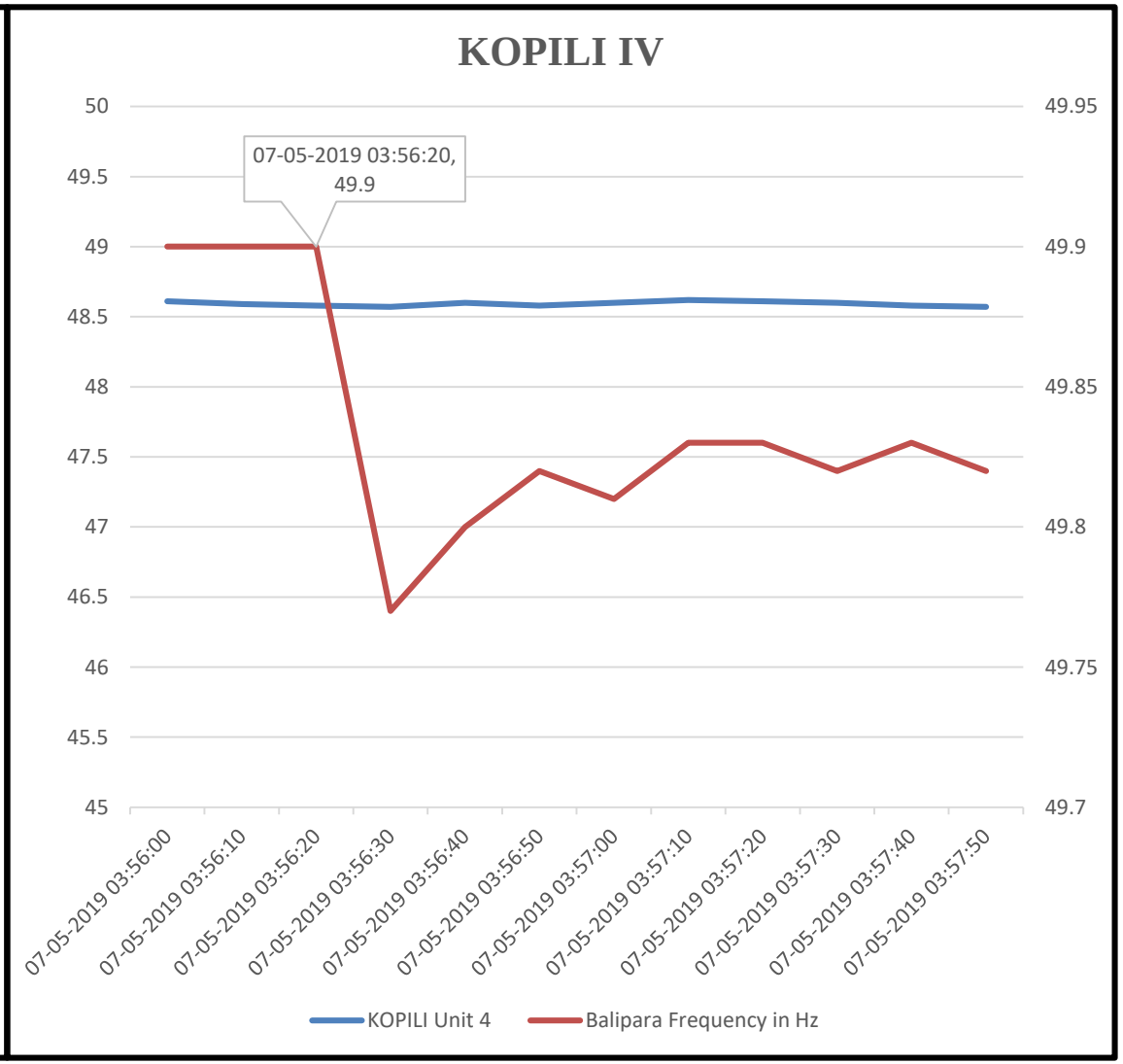
RGMO Analysis of Kopili



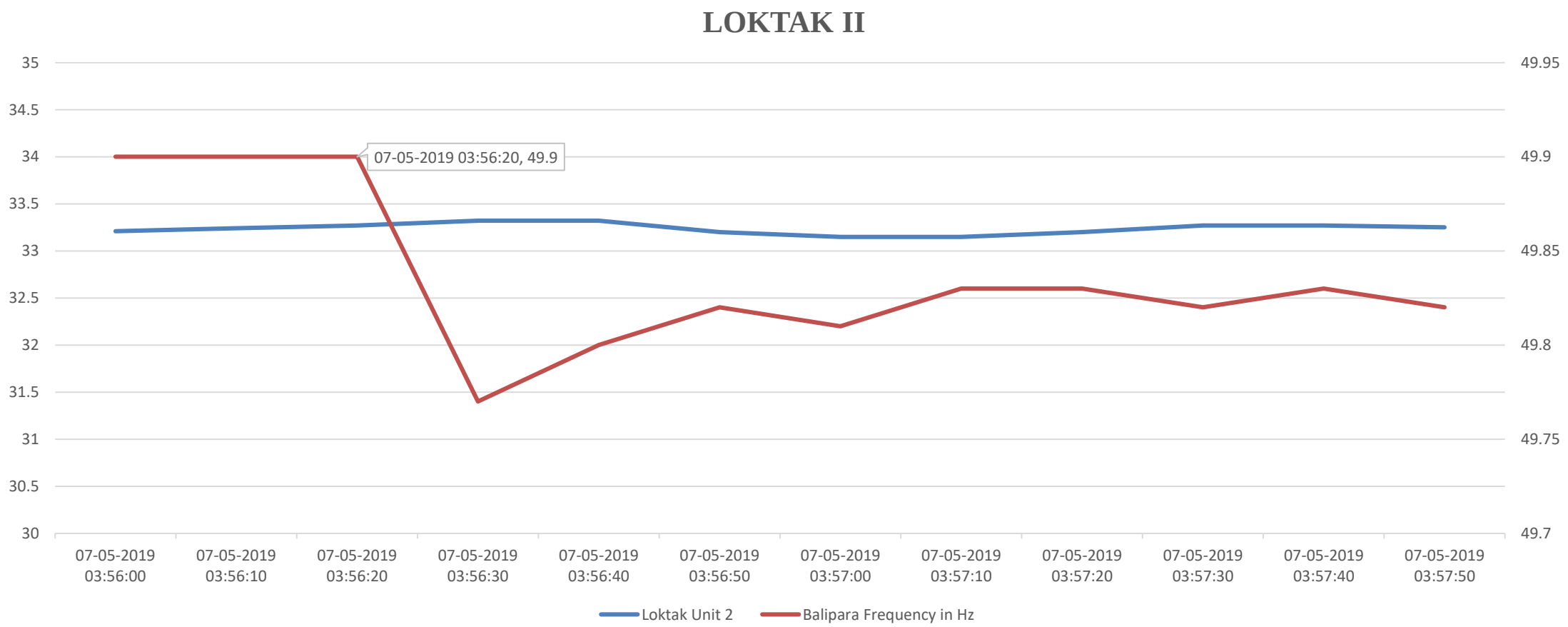


RGMO Analysis of Kopili





RGMO Analysis of Loktak

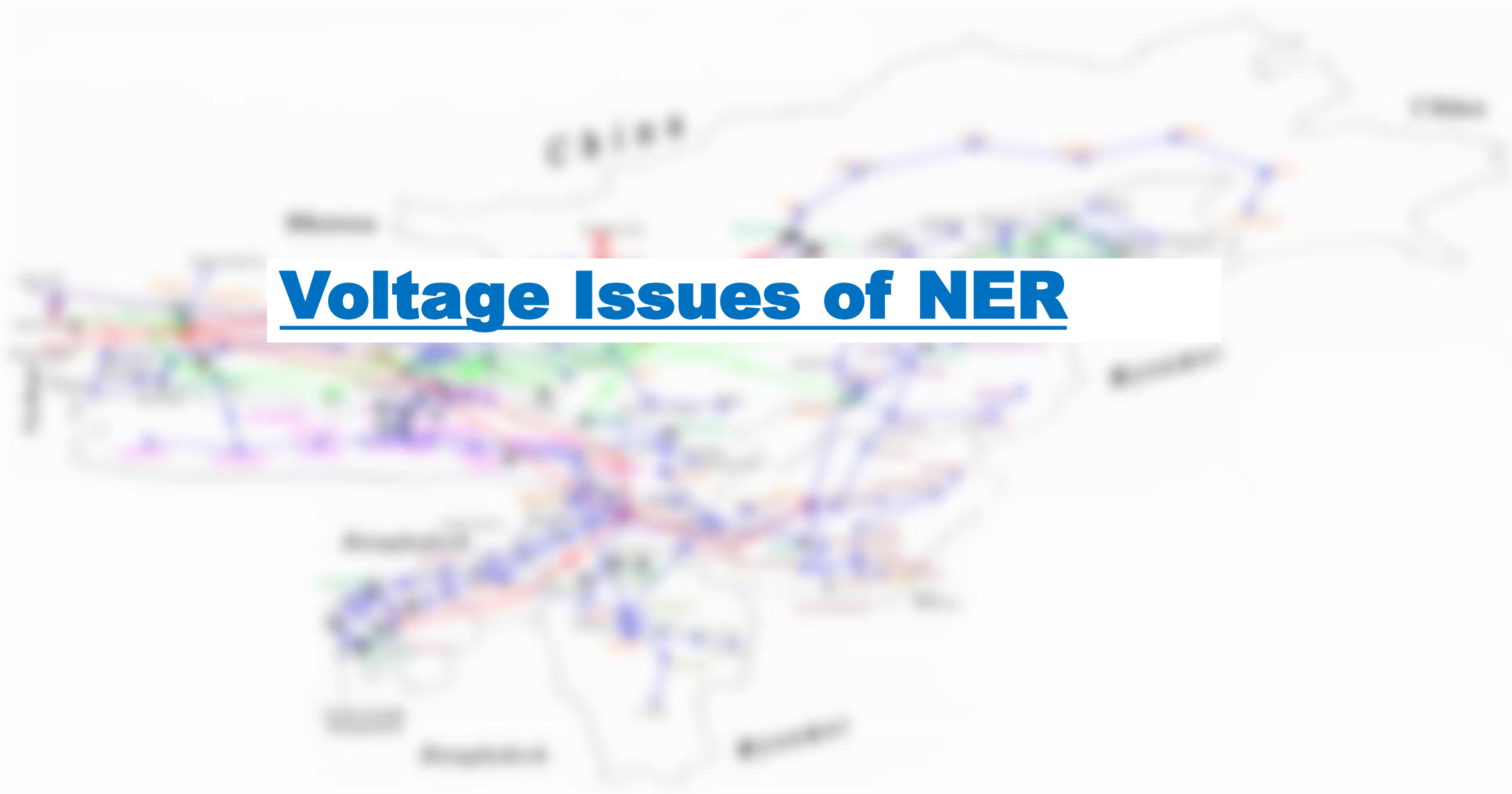


Frequency Issue

- As per IEGC clause no. 5.2.(h), after an increase in the generation, a generating unit may ramp back to the original level at a rate of about one percent per minute, in case continued operation at the increased level is not sustainable.

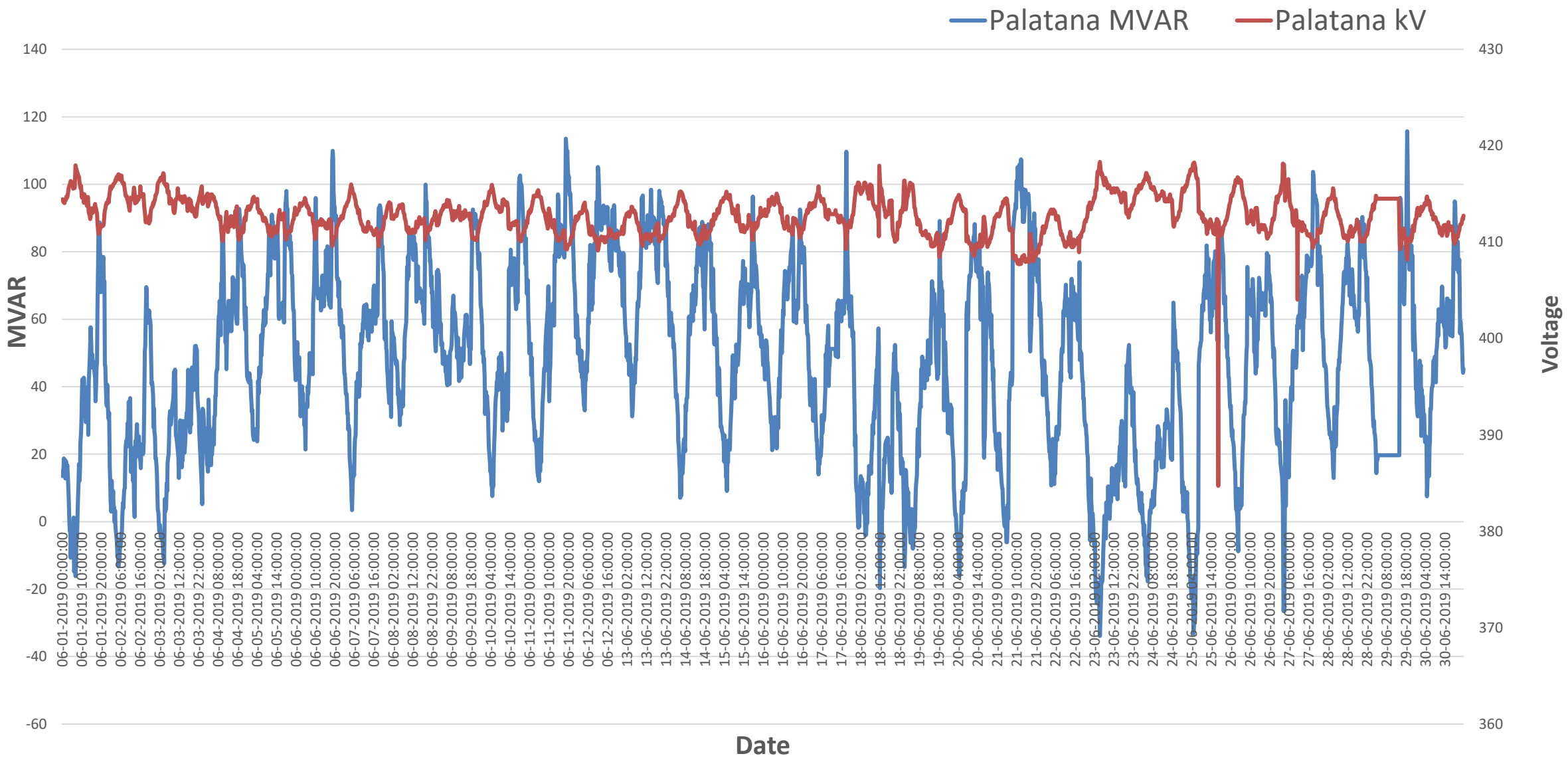
- In both the above cases for BgTPP and OTPC the generation ramped back to the original level within 20, 30 seconds respectively which is not desirable.

- The response was also much less than ideal for all the Power Stations.

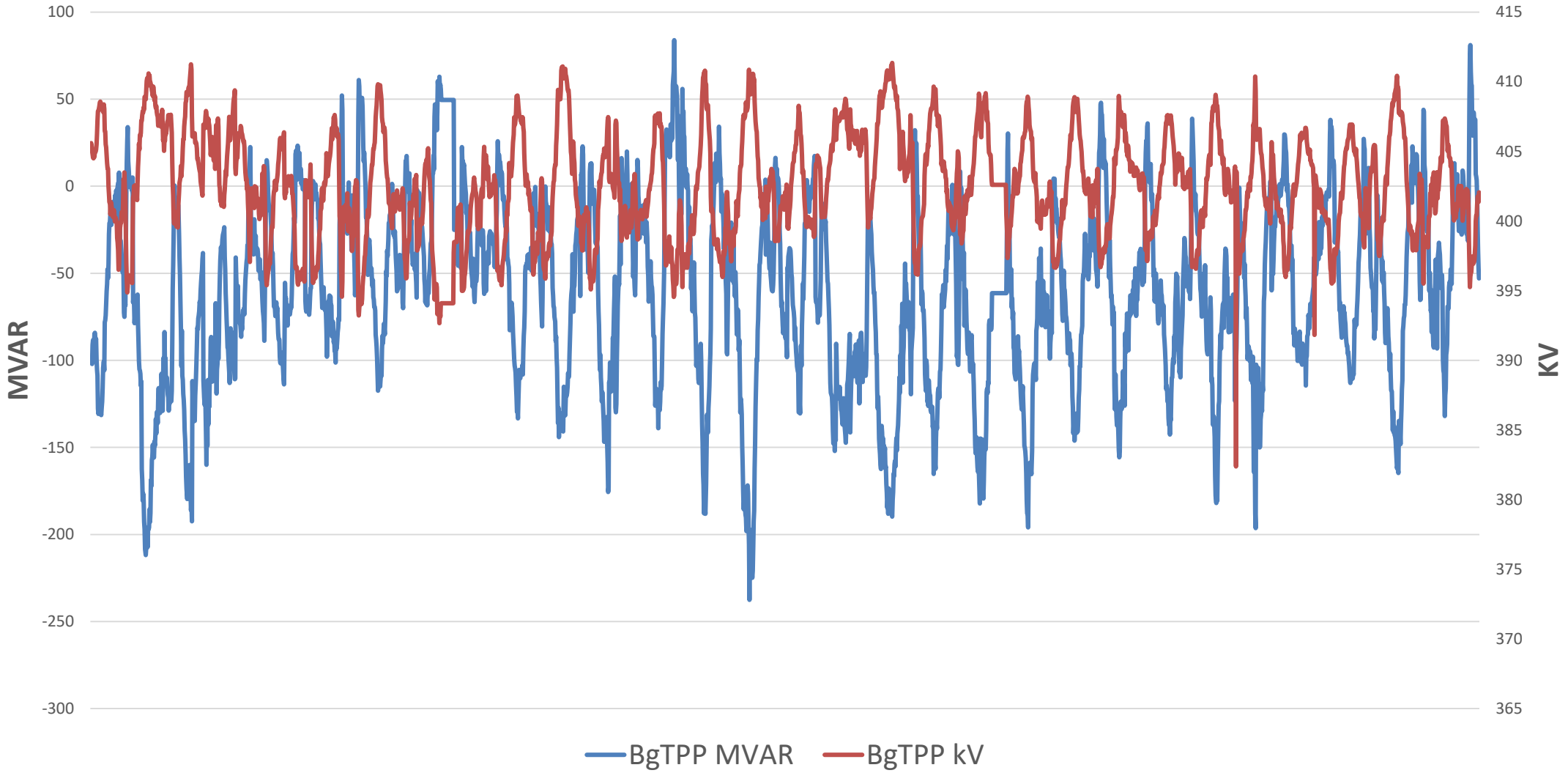


Voltage Issues of NER

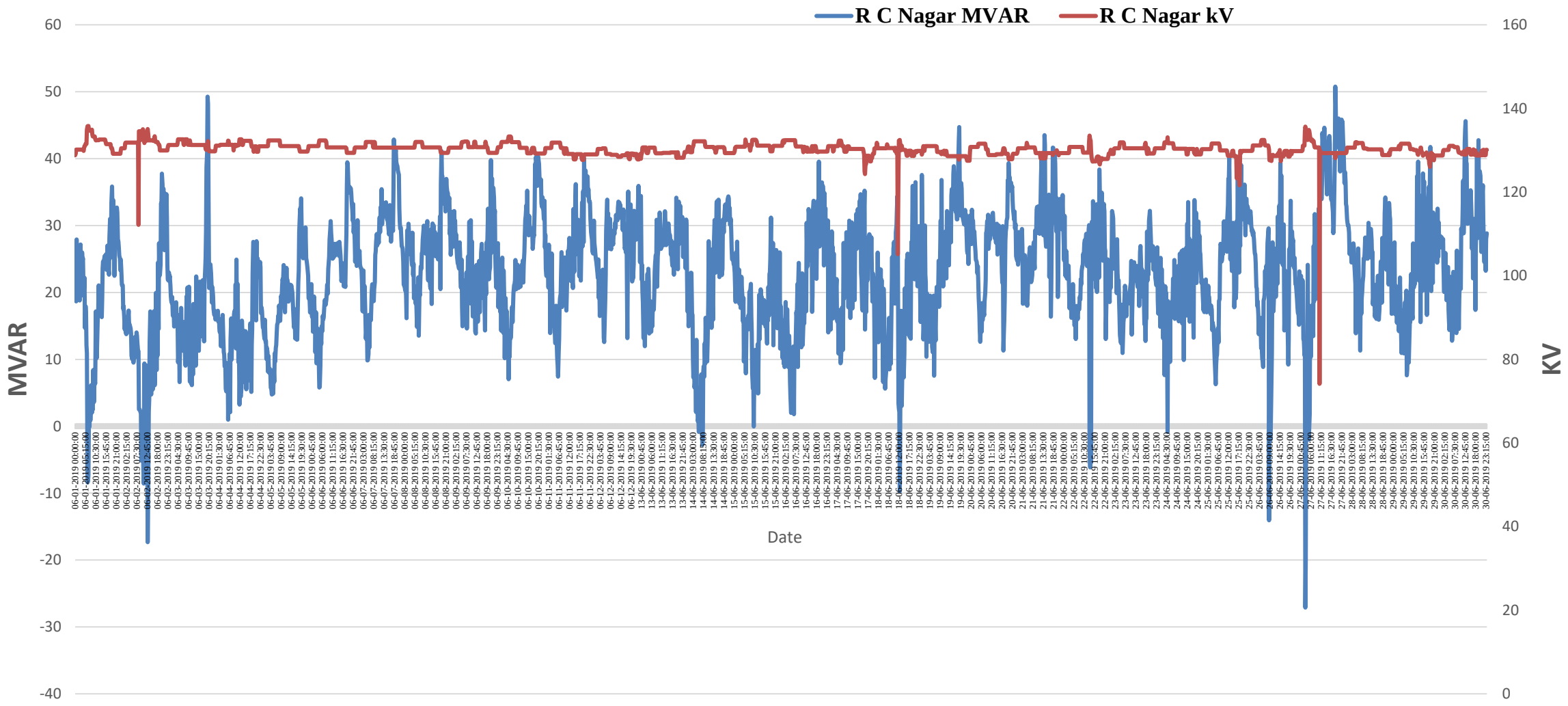
Voltage Vs MVAR generation of Palatana



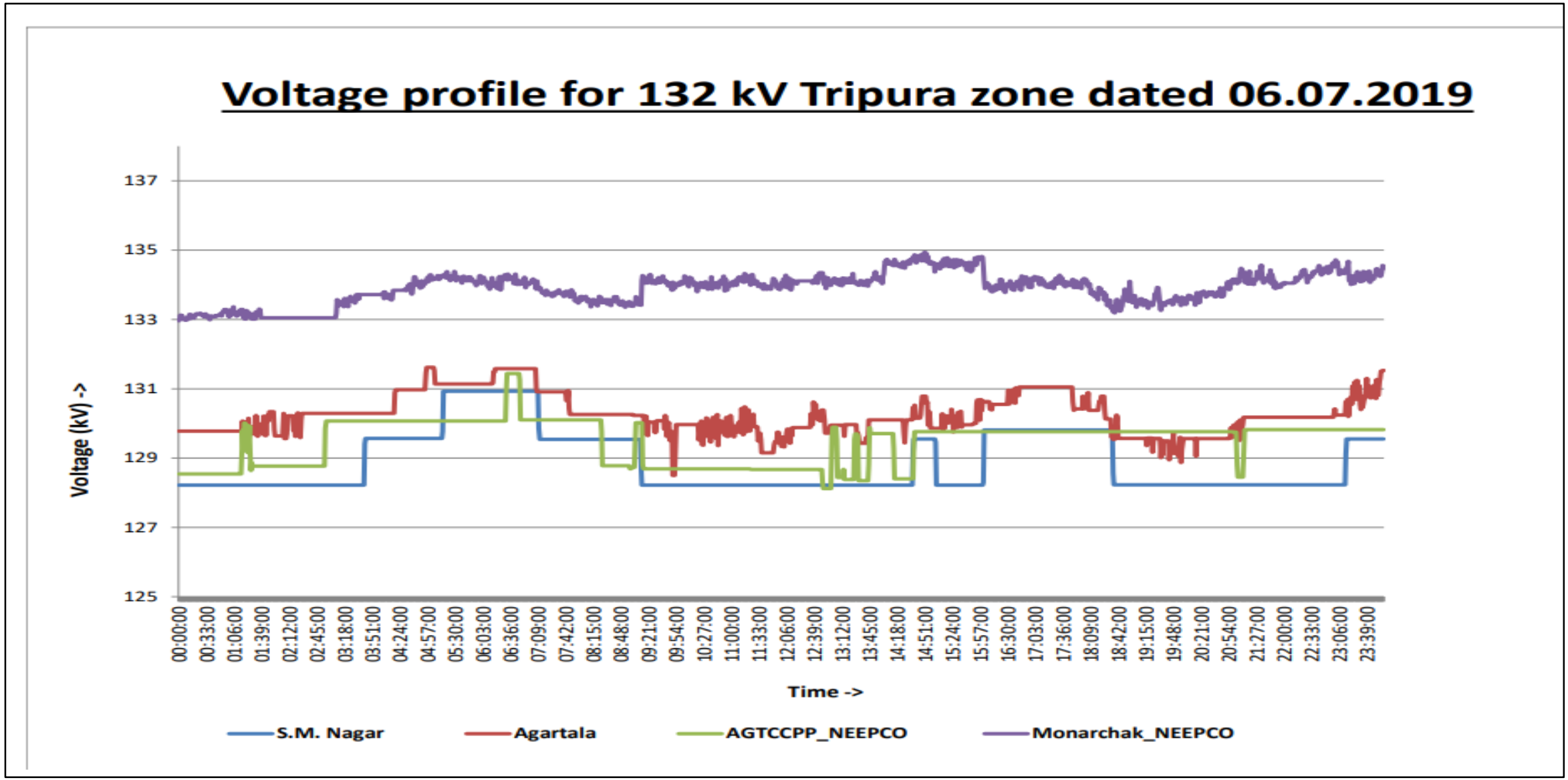
Voltage Vs MVAR generation of BgTPP



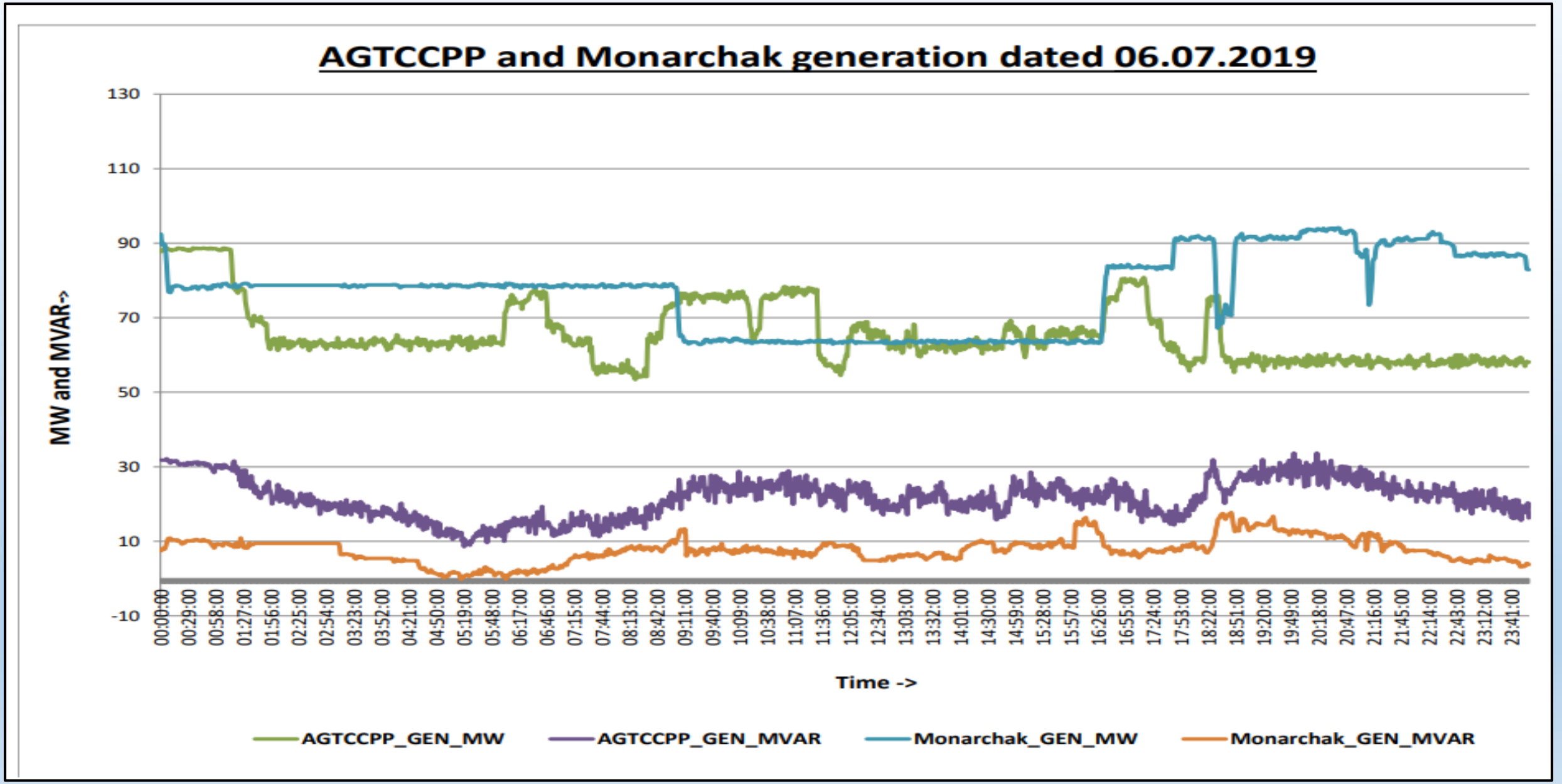
Voltage Vs MVAR generation of AGTCCPP



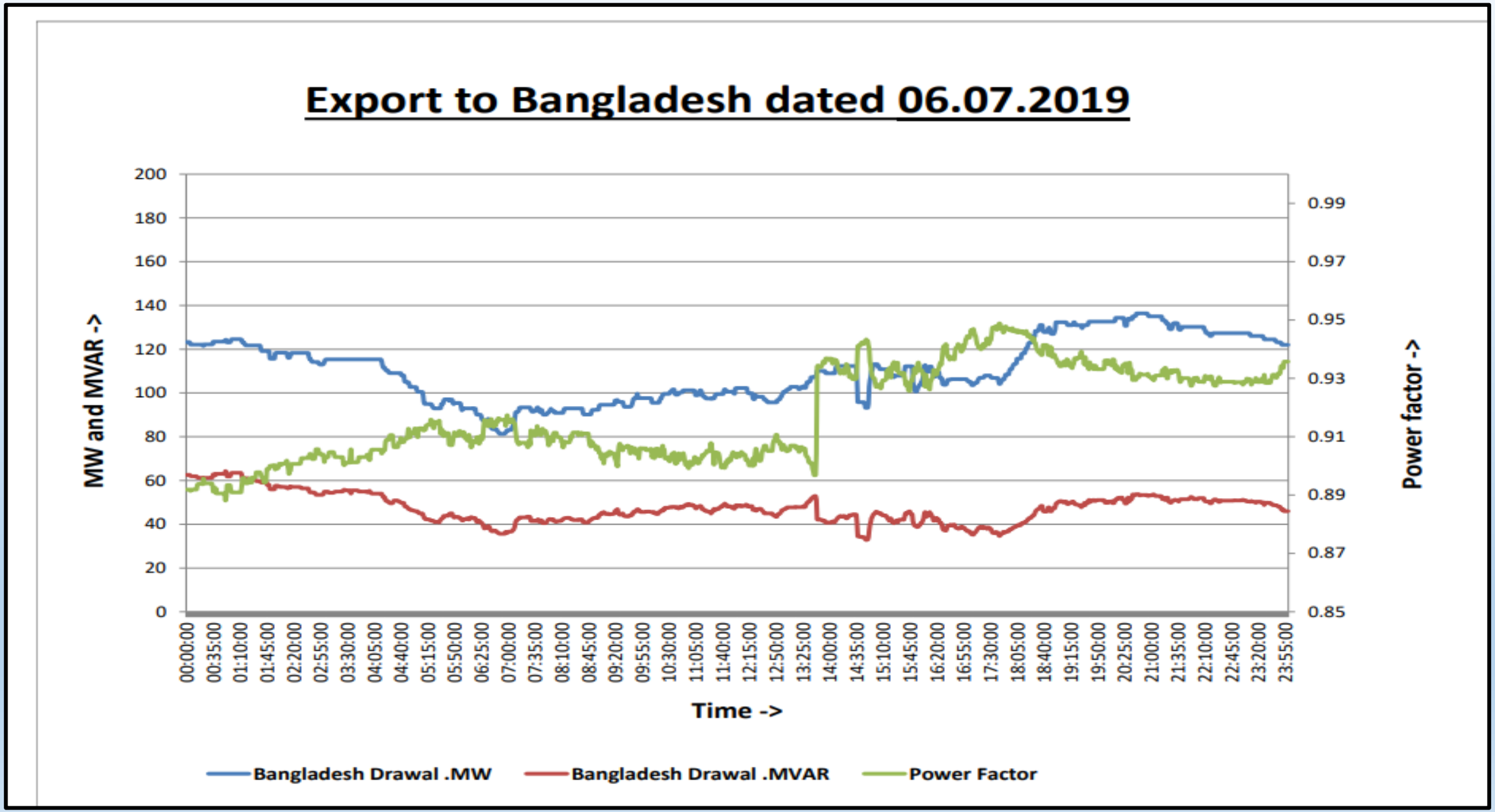
Voltage Profile with AGTCCPP and Monarchak MW&MVAR Generation



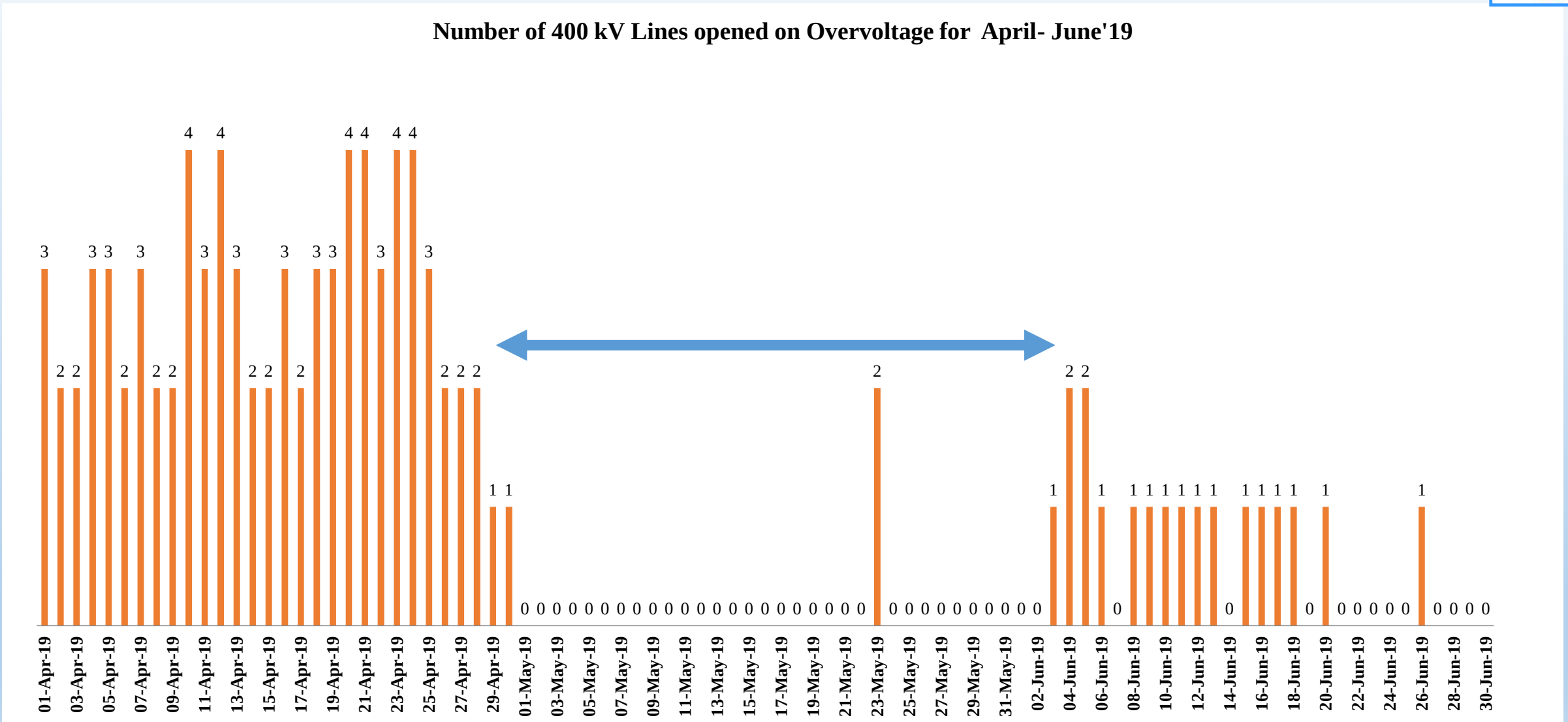
MW & MVAR generation of AGTCCPP, Monarchak



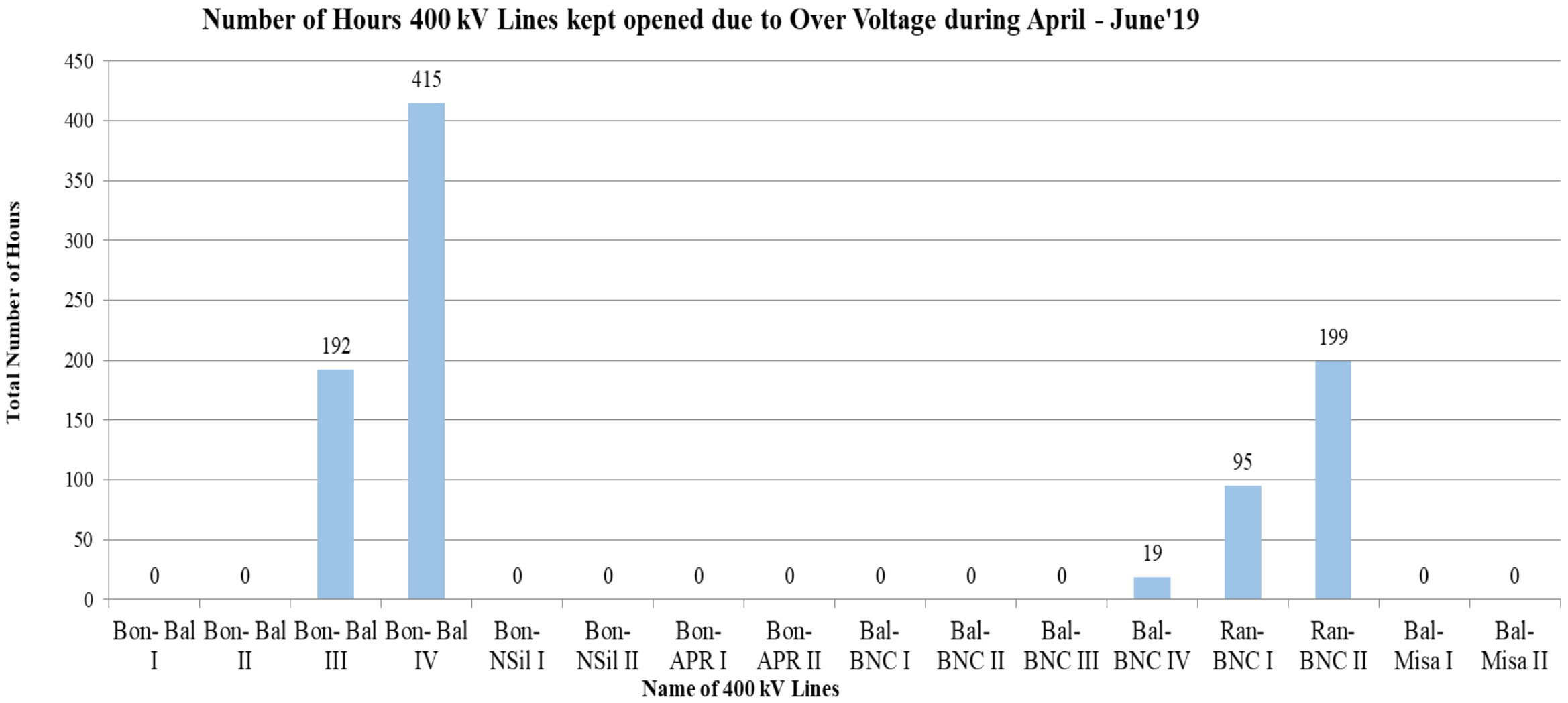
MW & MVAR drawal of Bangladesh along with P.F



Lines kept open due to Overvoltage



Number of hours Lines kept open for Overvoltage



Bon-Bongaigaon,Bal-Balipara,Ran-Ranganadi,BNC-Biswanath Charali,APD-Alipurduar, NSil- NewSilliguri

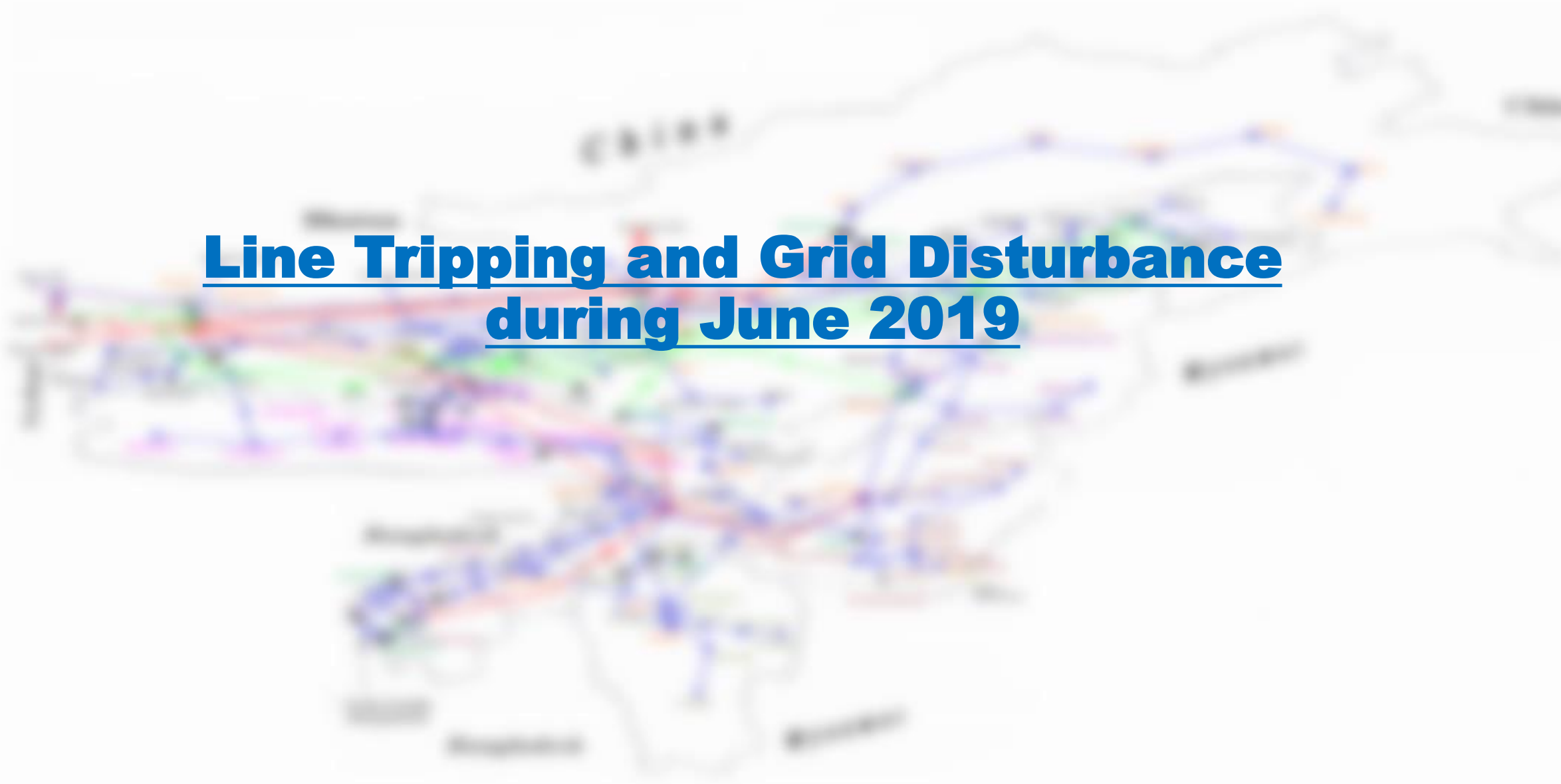
Voltage Issues

High Voltage

- Palatana is injecting MVAR even when the voltage in the 400kV Bus is higher.
- Many number of lines are being opened on daily basis to maintain the voltage - Affecting the reliability of NER grid.
- Synchronous Condenser operation of RHEP is still pending.

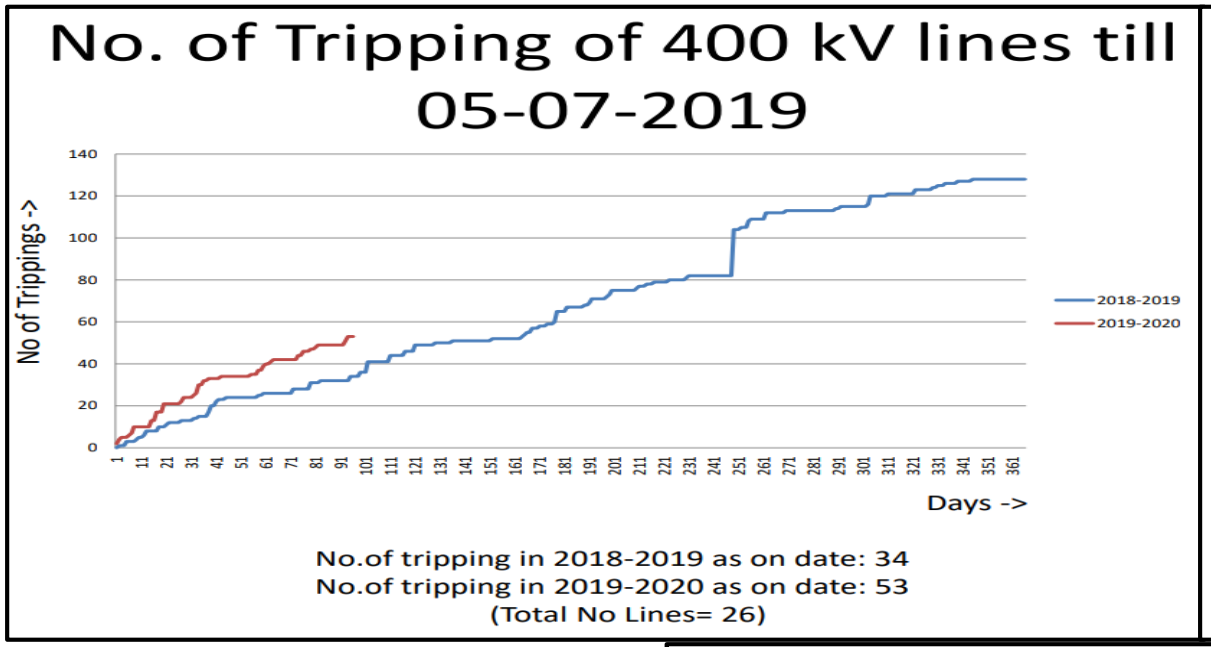
Low Voltage

- Extremely low voltage profile in Southern part of NER Grid. AGTCCPP injecting reactive power close to limit.
- Installation of Capacitor Bank or SPS in Bangladesh for improvement for voltage in Southern part of NER grid.

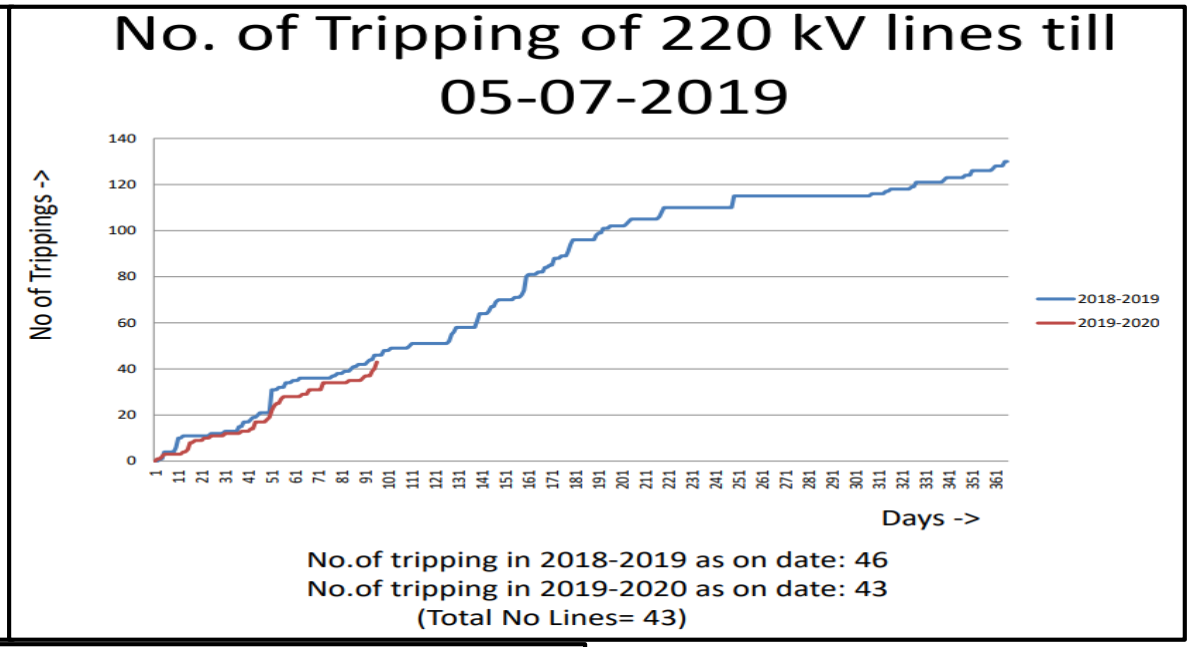


Line Tripping and Grid Disturbance during June 2019

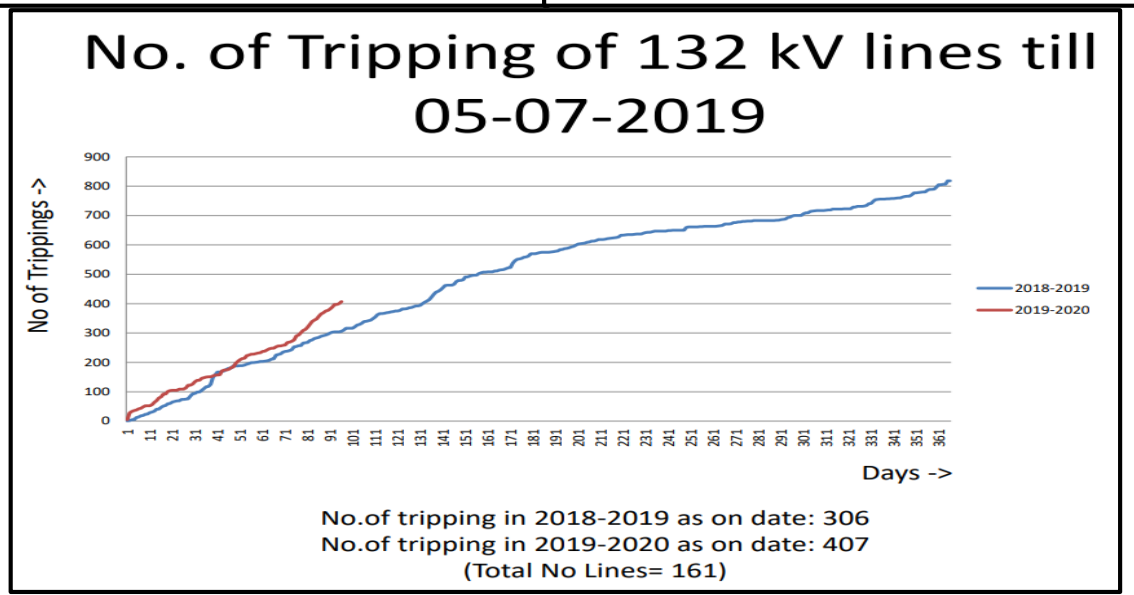
Line Tripping Comparison



No.of tripping in 2018-2019 as on date: 34
No.of tripping in 2019-2020 as on date: 53
(Total No Lines= 26)

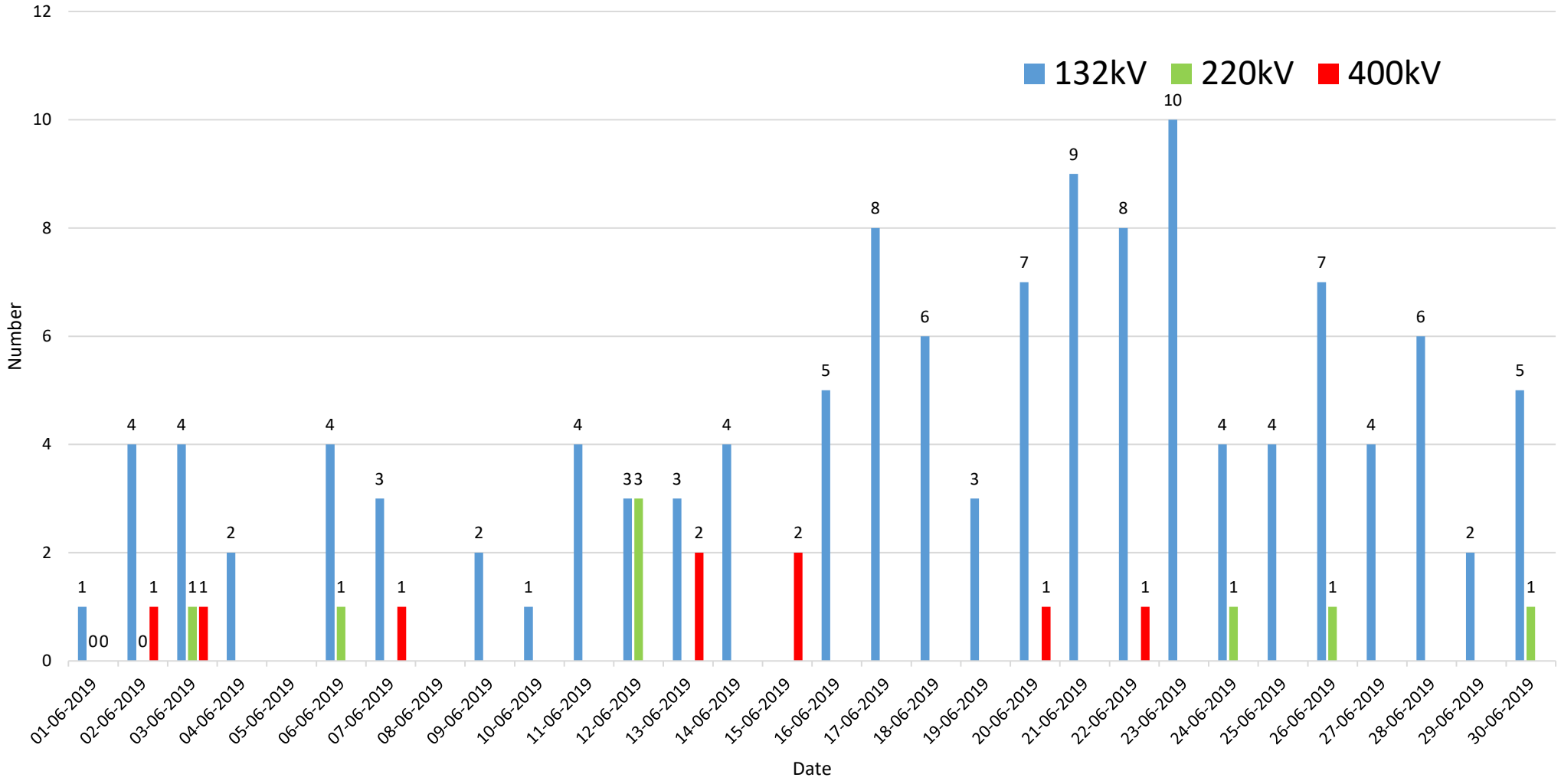


No.of tripping in 2018-2019 as on date: 46
No.of tripping in 2019-2020 as on date: 43
(Total No Lines= 43)



No.of tripping in 2018-2019 as on date: 306
No.of tripping in 2019-2020 as on date: 407
(Total No Lines= 161)

Line Tripping Details for June 2019

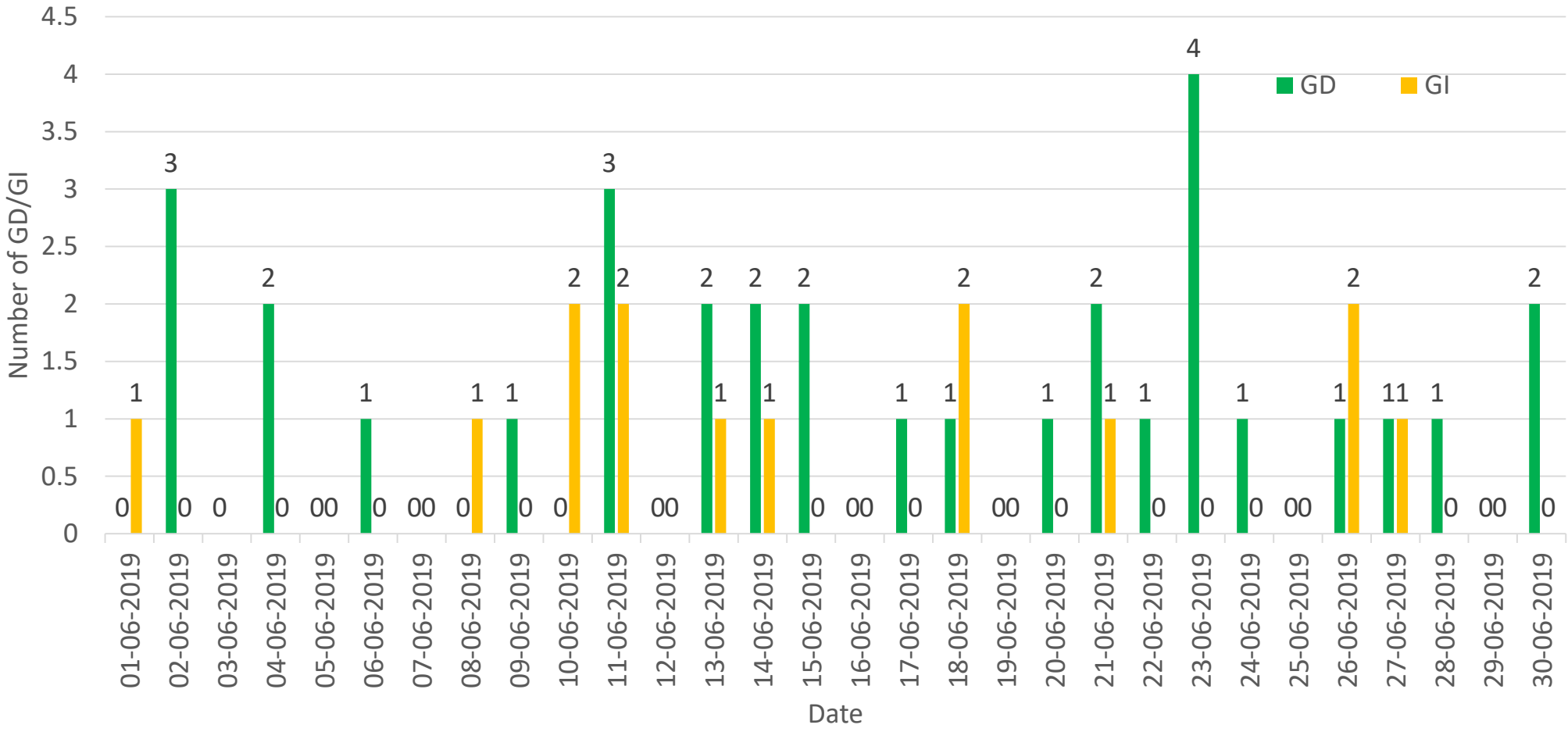


Total
400 kV: 9
220 kV:8
132 kV:123

Line Tripping Issues

- ✓Improper protection co-ordination. Malfunctioning of Protection devices and associated equipments.
- ✓Time to time patrolling of the lines following patrolling guidelines will help in addressing vegetation problems near the transmission lines.
- ✓Attention of transmission licensees required.

GD & GI Count for June 2019

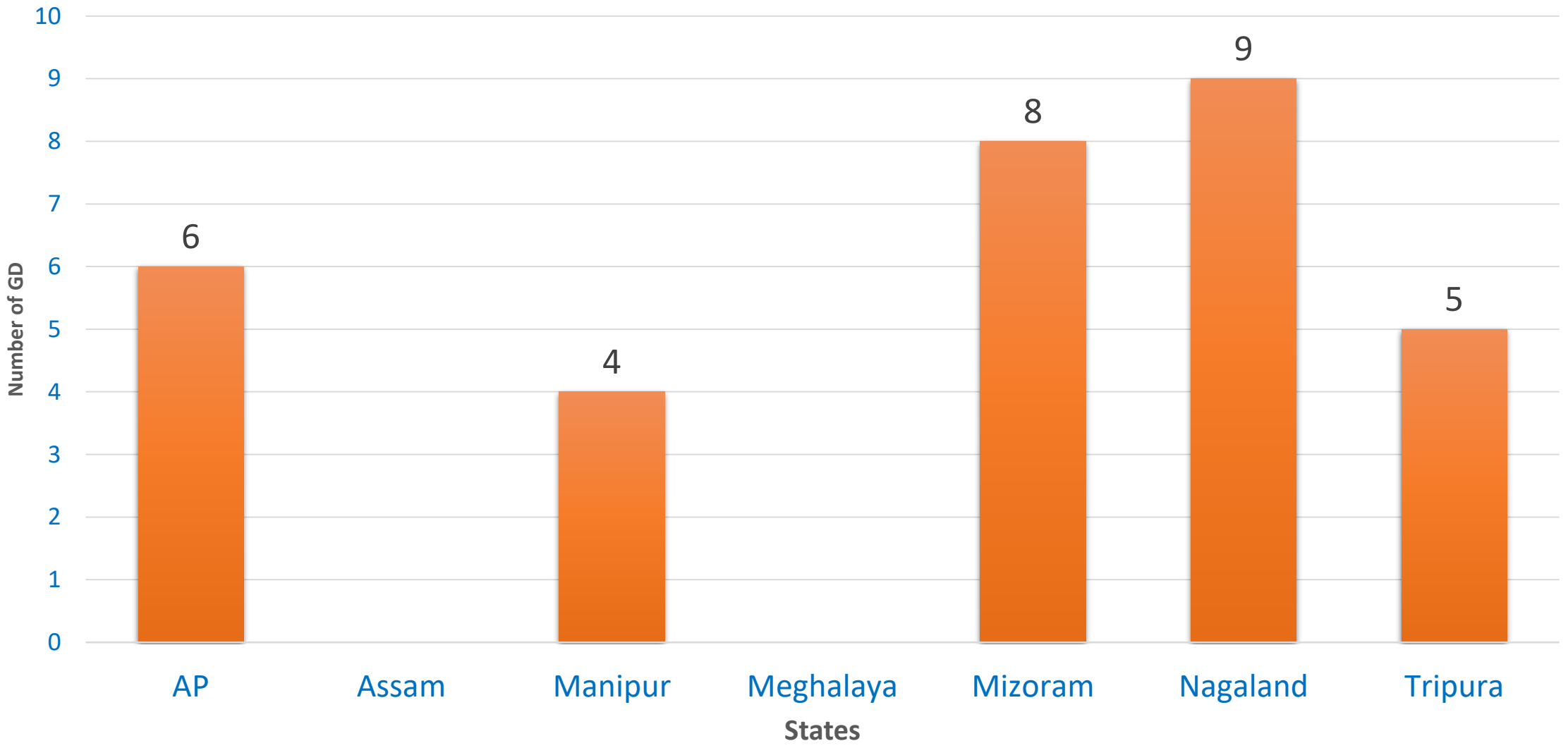


Total GI-14

Total GD-32

Note: 31 GDs are in the category of GD1 and 1 GD is in GD 2 category

Location of source of GD



Issues on Grid Disturbances

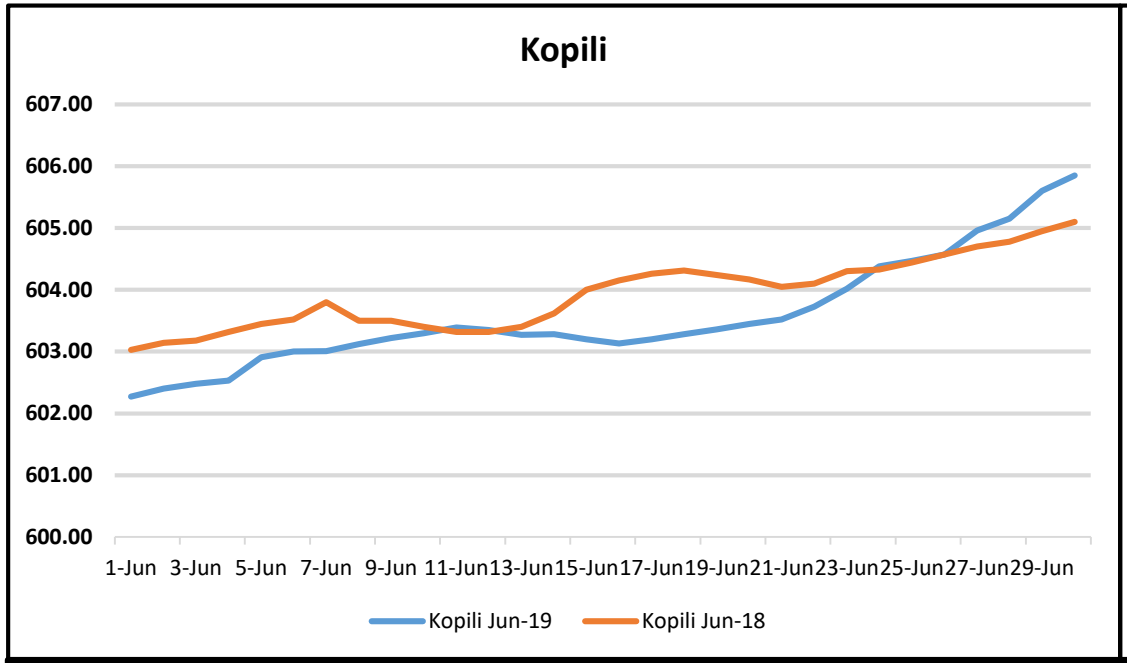
- Frequent Grid Disturbance in the States like AP, Tripura, Mizoram, Nagaland.
- Multiple interruption of International Power supply to Bangladesh .
- Multiple interruption in state capitals like Itanagar, Kohima, Aizawal and Agartala.
- Simultaneous Tripping of two ISGS- RHEP and Pare .
- Repeated Trippings of AGTCCPP units.
- Long Outage of 132kV Dimapur-Imphal leading to disturbances in Nagaland.

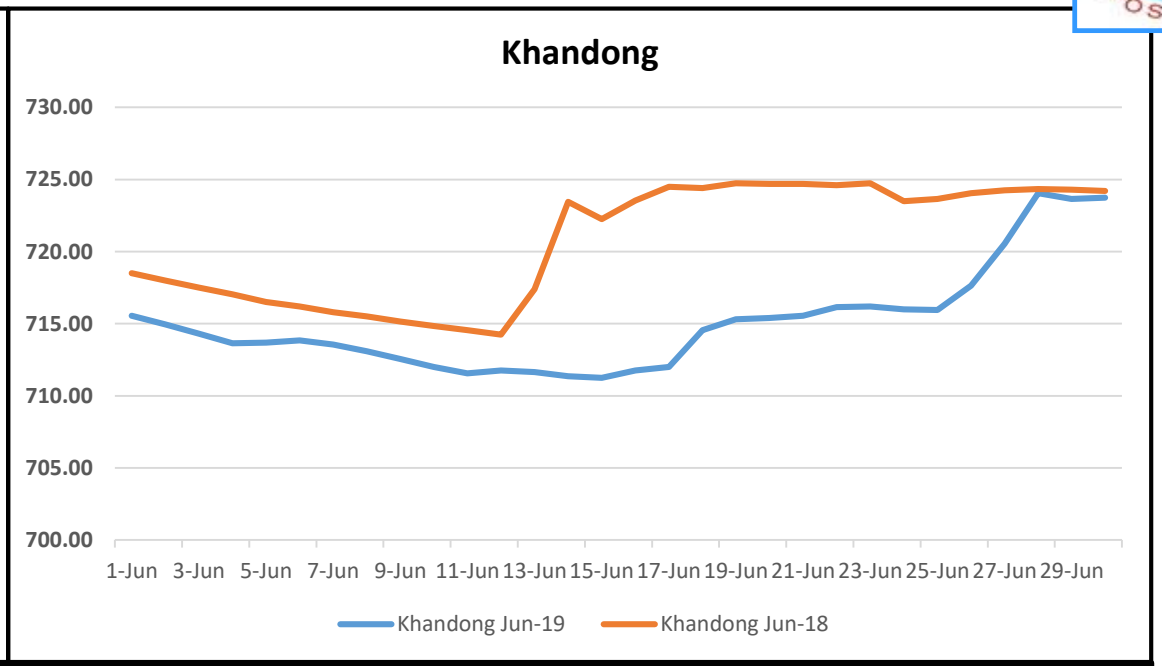
- General noncompliance of NERLDC instructions have been observed while opening and closing of lines during GD.
- Communication issue with Pare and AGBPP.

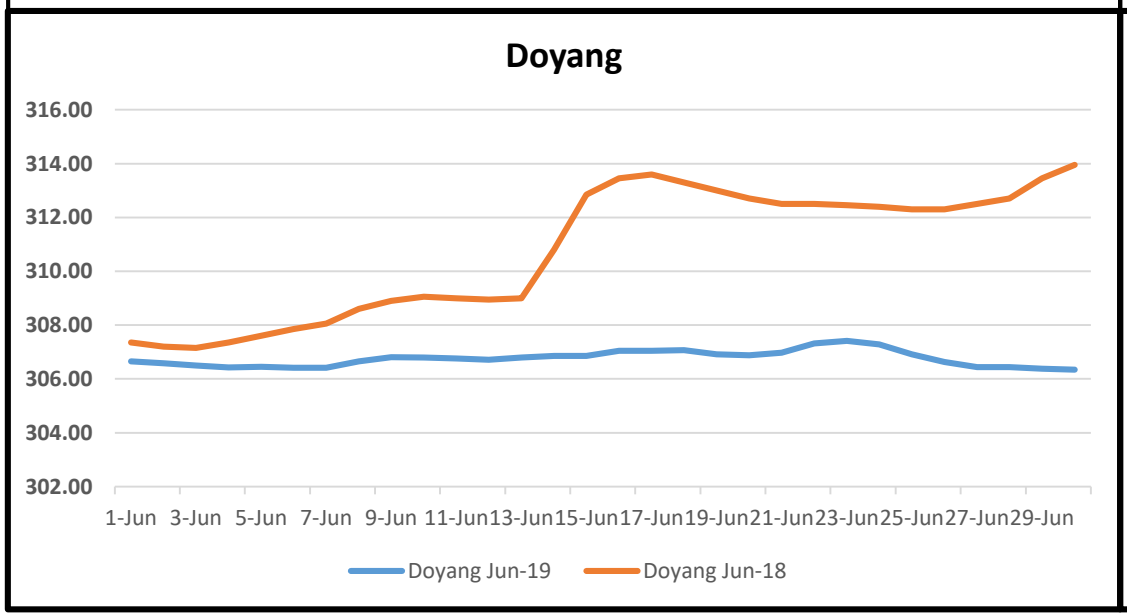
Number of Days as per Current Hydro Generation

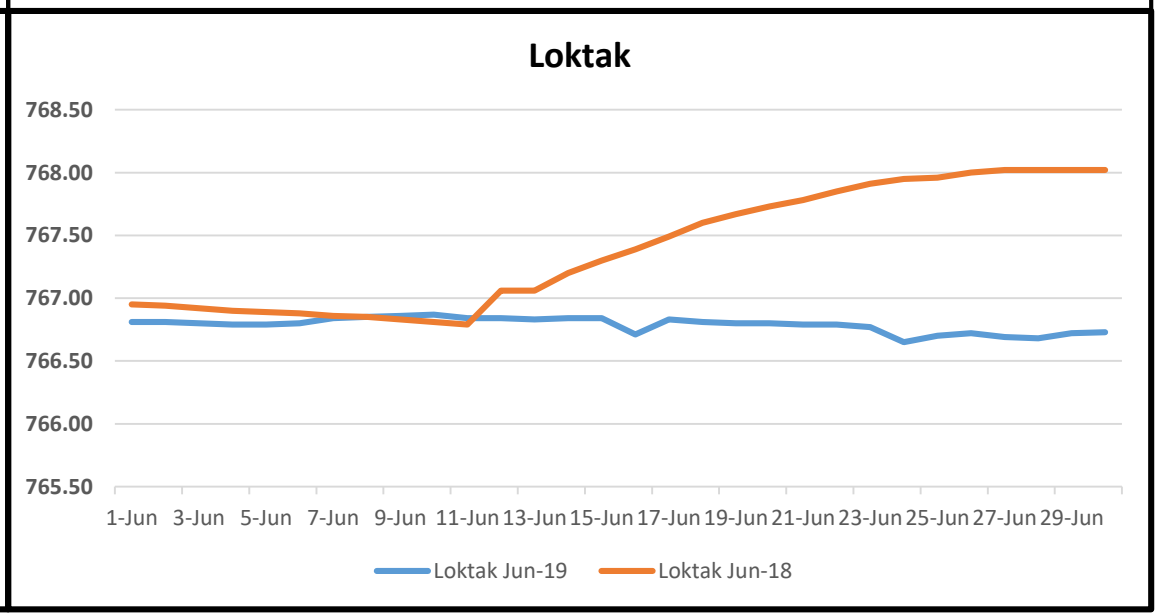
Plants	Reservoir Level in meters (as on 08/07/19)	MU Content	Present DC (MU)	No of days as per current Generation
Khandong + Kopili STG II	723.95	39.75	1.080+0.528 1.608	25
Kopili	606.8	(78.5+ 4x39.75) 237.5	4.608	52
Doyang	308.841	2.65	1.1871	2
Loktak	766.53	13	1.019	13

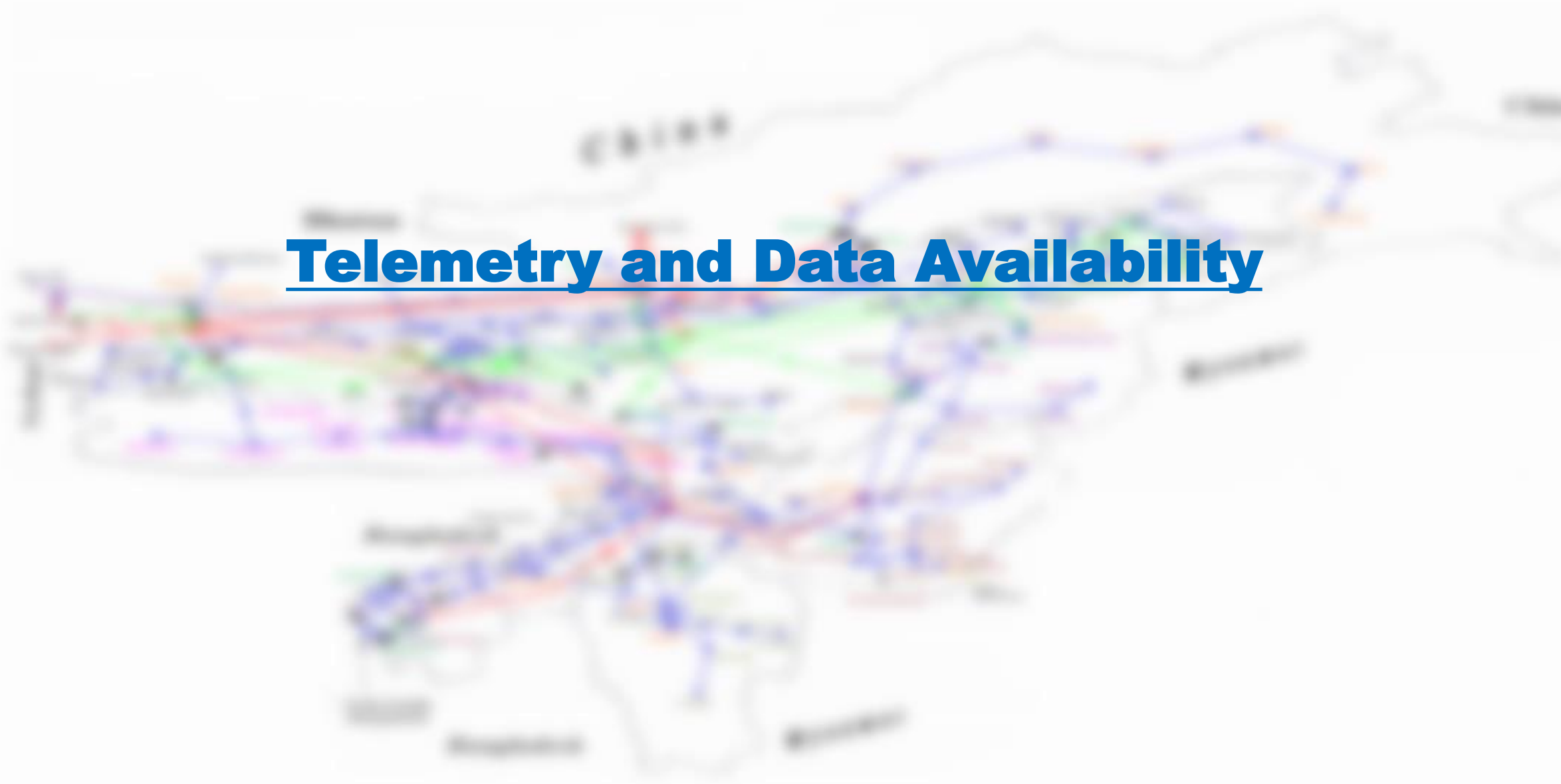
Reservoir Level





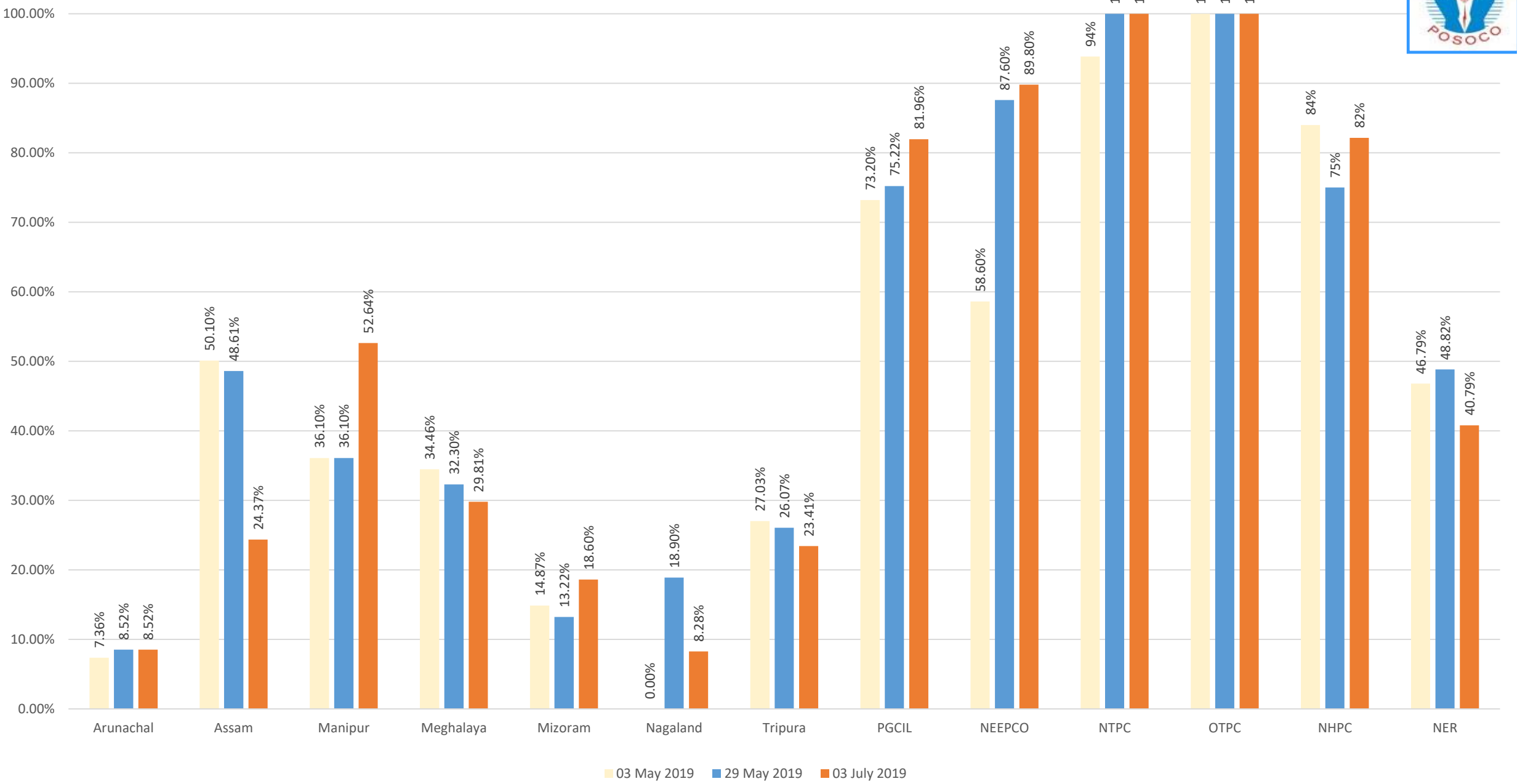




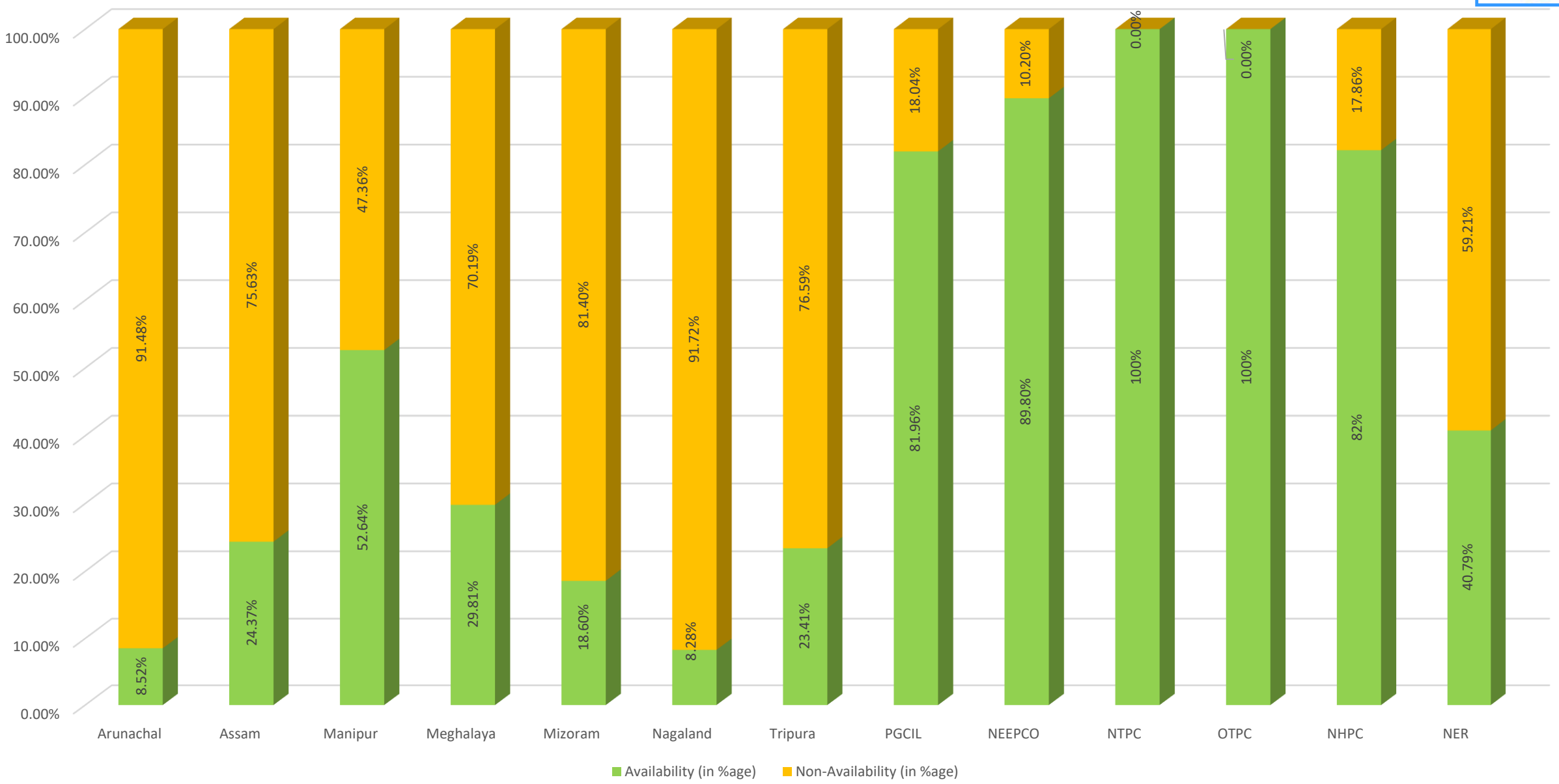


Telemetry and Data Availability

Comparsion of Telemetry Availabilty Statistics



TELEMETRY STATISTICS (as on 03.07.19)



Thank You

Annexure-C.18

Summary of UFR Inspection & identification of additional feeders for UFRof Tripura Power System - 24.06.19 to 27.06.19

Background:

Grid Disturbance of category GD-V occurred in NER grid on 20.04.19 affecting the power System of Manipur, Mizoram, South Assam, Part of Meghalaya, Tripura including Bangladesh (along with South Comilla load). Simultaneous tripping of 400 kV Silchar – Byrnihat line & 400 kV Silchar – Azara line occurred at 11:50 Hrs. Subsequently, SPS-3 operated at Palatana which in turn tripped HV side CB of GT-1 at 11:50:55.241 Hrs and GT-2 at 11:50:55.236 Hrs.GT-1 went to house load at 11:50:55.241 Hrs and finally tripped on Gas purge fault trip at 11:51:18.356 Hrs. Similarly, GT-2 went to house load at 11:50:55.246 Hrs.These tripping resulted in overloading of 132 kV Byrnihat-EPIP -II D/C lines of Meghalaya and tripped on operation of overcurrent at 11:50:56.729 Hrs.

Due to tripping of these lines, power System of Manipur, Mizoram, South Assam, Part of Meghalaya, Tripura including Bangladesh (along with South Comilla load)separated from the main grid and sudden dip in frequency was observed at 132 kV Agartala PMU.

132 kV Agartala frequency dropped from 50.07 Hz to 48.16 Hz within 1 sec & touched 45.30 Hz from 48.16 Hz within 3 seconds (Fig-1).

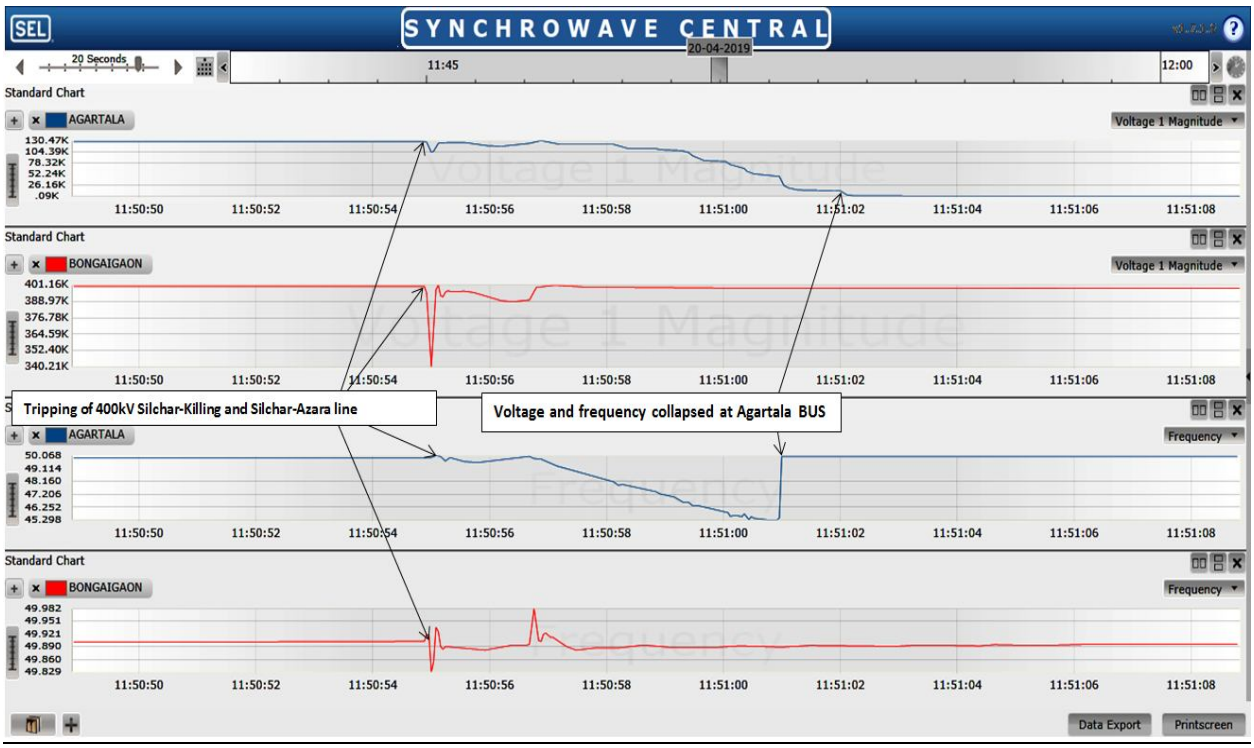


Fig 1: PMU Plot of 132 kV Agartala frequency for the grid disturbance on 20.04.19

It was reported that 132 kV Palatana-Udaipur line and 132 kV Palatana-SM Nagar line tripped at Palatana on operation of under frequency relay for island-2 formation.Operation of other UFRs for island scheme-2 formation was not reported.

No UFR operation was reported by SLDC, Tripura. As decided in OCC meeting, team comprising of members from NERTS, TSECL, NERLDC & NERPC carried UFR inspection from **24th Jun'19 to 27th Jun'19**.

Summary of testing of existing UFR is given below:

Date of Testing	Name of Substation	Name of feeder	Existing Setting	Summary of testing	Load relief at Peak(MW)	Recommendations if any
24.06.19	132/33 kV 79 Tilla	1. 33 kV Mohanpur	49.0 Hz, 300 msec	UFR operated. However, relay operating time is on the higher side (60-90 msec).Also, upon reducing time delay beyond 150 msec results in undesired & abnormal tripping of the feeder	9	Relay operating time should be minimum & time delay should be 0 msec (instantaneous). Matter to be taken up with OEM at the earliest.
		2. 33 kV Durjoynagar	49.0 Hz, 300 msec		7.5	
		3. 33 kV College Tilla	48.8 Hz, 300 msec		11.5	
		4. 33 kV Banamalipur	48.6 Hz, 300 msec		18	
26.06.19	66/33/11 kV Badarghat Substation	1. 33 kV Bishalgarh	49.2 Hz, 150 msec		6	
		2. 33 kV Stadium	48.8 Hz, 200 msec		12	
26.06.19	132/33 kV Surjamaninagar	1. 33 kV Jungalia (Bishalgarh)	49.2 Hz, 150 msec	UFR test operation unsuccessful. Tripping not issued by relay	16.4	Relay to be replaced
27.06.19	132/66/33/11 kV Rabindranagar	1. 33 kV Melaghar	49.2 Hz, 150 msec	UFR operated. However, relay operating time is on the higher side (60-90 msec).Also, upon reducing time delay beyond 150 msec results in undesired & abnormal tripping of the feeder	3.65	Relay operating time should be minimum & time delay should be 0 msec (instantaneous). Matter to be taken up with OEM at the earliest.

Summary of testing of UFR for islanding scheme-2 is given below:

Date of Testing	Name of Substation	Name of feeder	Existing Setting	Summary of testing	Recommendations if any
26.06.19	400/132 kV Palatana	1. 132 kV Udaipur	48.8 Hz, 500 msec	Relay operated correctly.	-
		2. 132 kV SMNagar		Testing could not be done as shutdown was not accorded	Testing shall be done on next opportunity S/D & report to be submitted to NERPC by OTPC
25.06.19	132 kV Kumarghat	1. 132 kV AGTCCPP			Testing shall be done on next opportunity S/D & report to be submitted to NERPC by NERTS
		2. 132 kV P.K Bari			
-	400/132 kV Silchar	1. 132 kV P.K Bari 1 Line		-	
		2. 132 kV P.K Bari 2 Line		-	

Summary of inspection & identification of additional feeders for installation of UFR for islanding scheme

Date of inspection	Name of Substation	Feeders identified	Load Relief		Recommended UFR settings
			Peak	Off Peak	
25.06.19	132/33/11 kV Ambassa	1. 33 kV Gandacherra	3.48	3	48.8 Hz, 500 msec
		2. 33 kV Salema	2.2	1.7	
		3. 33 kV Manu	6.2	5.5	
		4. 7.5 MVA, 132/33/11 kV Transformer	3	2	
25.06.19	132/33/11 kV P.K Bari	1. 132 kV Silchar(PG) - P.K Bari D/C at Silchar(PG)			
		2. 33 kV Kanchanpur	3.1	2.1	
		3. 11 kV Darchawi	2.3	1.1	
		4. 11 kV Fatikroy	1.3	1.1	
		5. 11 kV kanchanbari	1.1	0.89	
25.06.19	132/33/11 kV Dhalabil	1. 33 kV kalyanpur	2.6	0.13	
		2. 33 kV Tulashikar	2.6	2.3	
		3. 33 kV Ampura	1.09	1.35	
		4. 15 MVA, 132/11 kV Transformer	5.9	2.3	

26.06.19	132/66/33/11 kV Udaipur	1. 66 kV Bagafa	9.1	6	
		2. 33 kV Udaipur Town	4	3.6	
		3. 33 kV Rani	7.1	4.8	
		4. 33 kV Killa	0.95	0.5	
27.06.19	132/66/11 kV Rokhia	1. 66 kV Badarghat	5.8	4	
		2. 66 kV Rabindranagar	20.5	13.5	
		3. 66 kV Boxanagar	3.8	2	
Total identified load			86.12	57.87	
Total Load to be identified as decided in PCC			100	70	

Sd / -

Station Blackout at BgTPP

(Analysis, Recommendation & Implementation)

A Maharatna Company

Sajeev Mohandas, DGM-EEMG

About Us:

Total Capacity	750 MW (3*250 MW)	Date of COD
Unit 1	250MW	01.04.2016
Unit 2	250MW	01.11.2017
Unit 3	250MW	26.03.2019

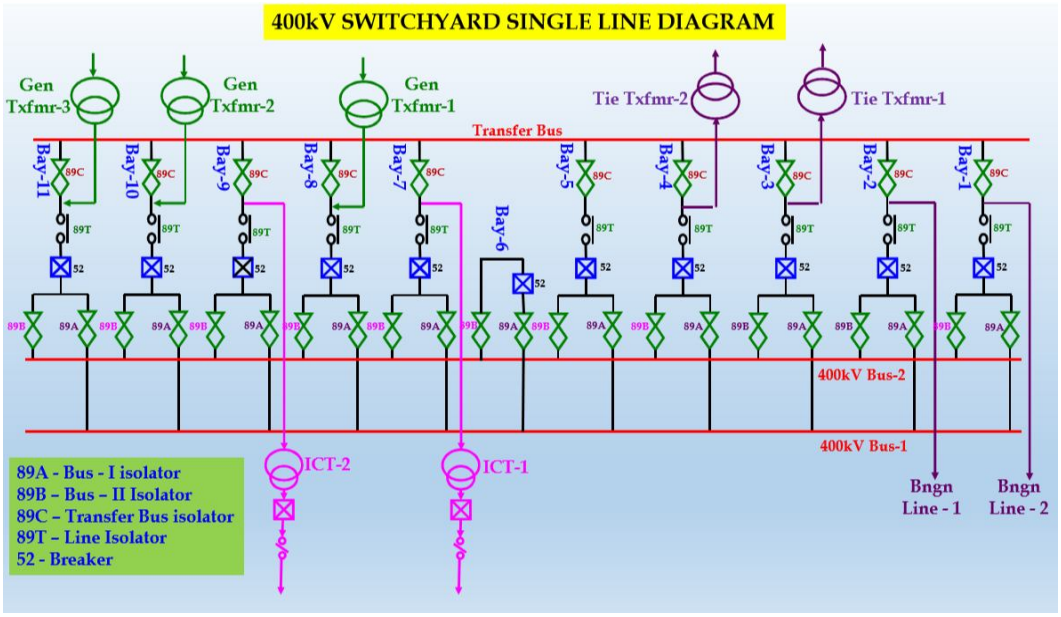
Fuel Used : Coal.
Source of Fuel : ECL, NECL, CCL.
Water Source : Champamathi River.

Tripping Sequence:

Date of tripping	23.05.2019	
Time	Unit -1	03:06 hrs
	Unit -2	03:37 hrs
	Unit-3	03:56 hrs

Status before unit tripping:

Sl no	Parameters	Unit 1	Unit 2	Unit 3
1	Unit load	220	194	207
2	Mills in service	5	5	4
3	No. of Oil guns in service	Nil	Nil	Nil
4	No of BFP's	2	2	2
5	No of CEP's	2	2	2
6	No of ID fans	2	2	2
7	No of FD fans	2	2	2
8	No of PA fans	2	2	2
9	No of CW pumps	2	2	2



First up protection acted :

Unit -1	: All FD fans tripped – Boiler tripped on Master Fuel Trip.
Unit -2 &3	: Steam Turbine Condenser vacuum Low-Low

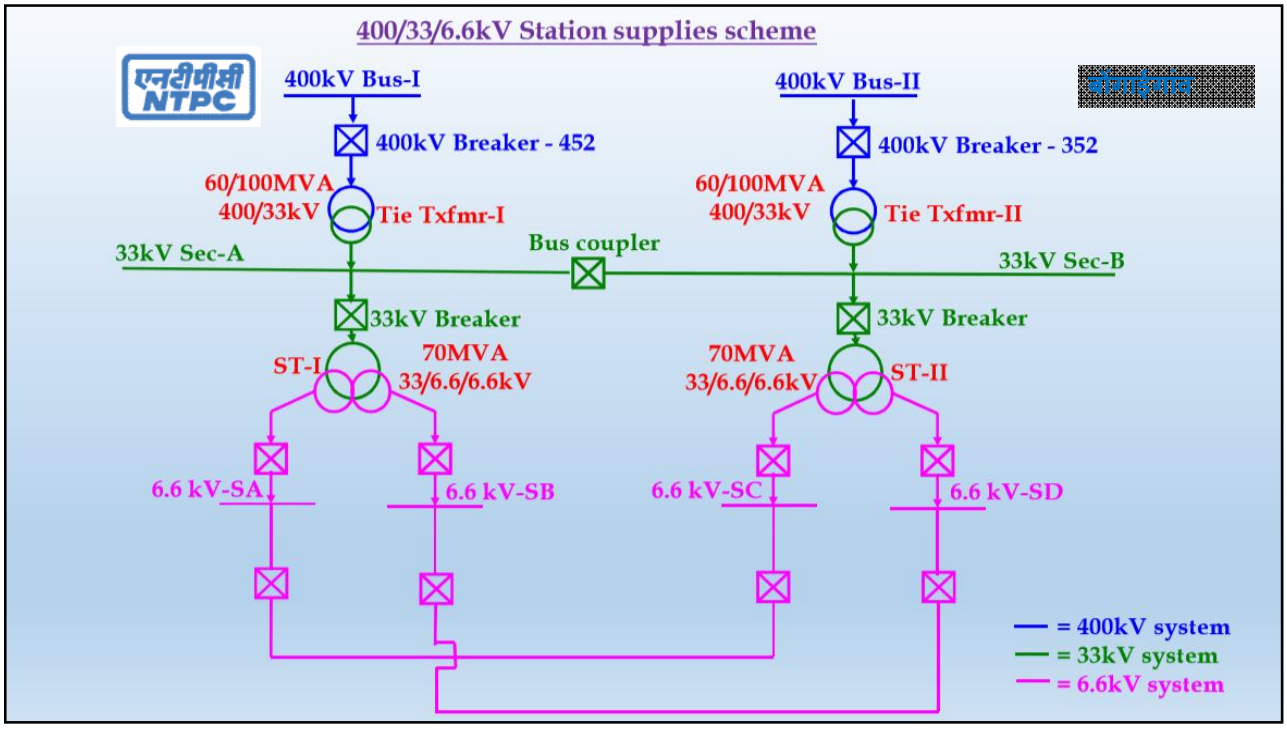
Any Operation Done Prior to tripping : Nil

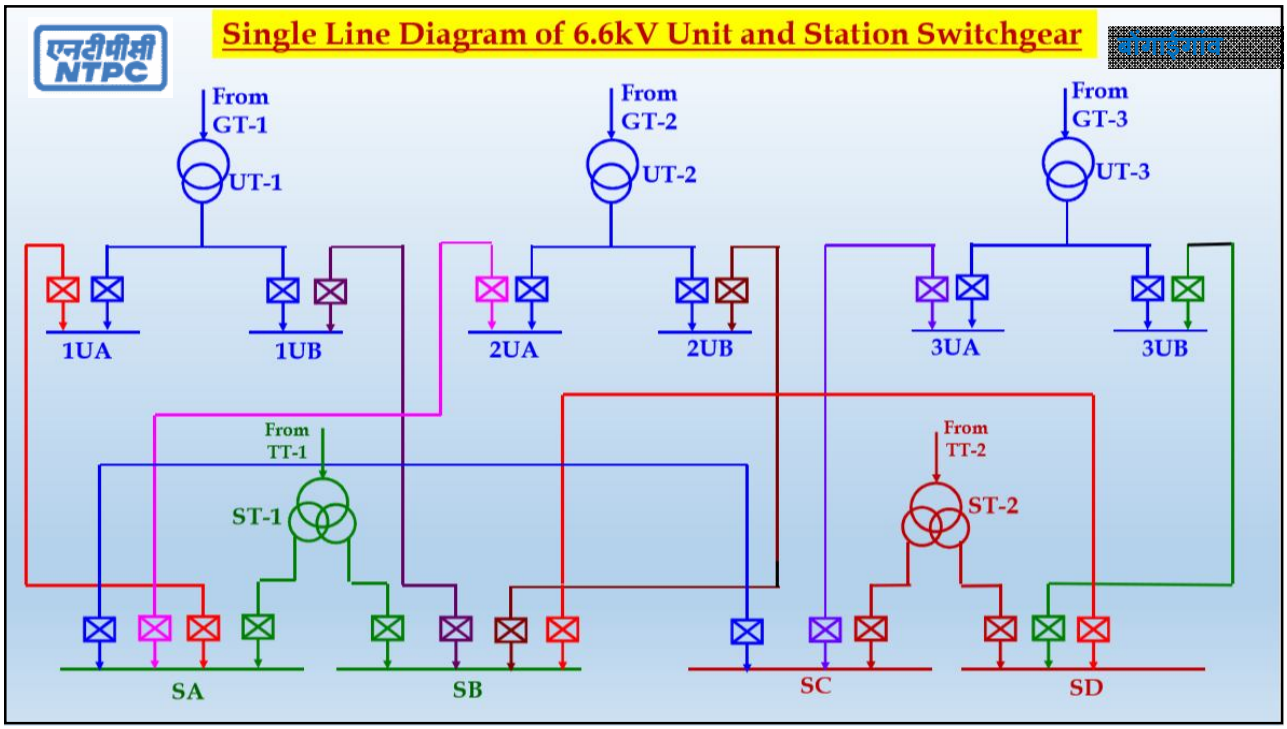
Brief Details of the Incident :

- ✓ On 23.05.2019 During heavy Rains all 3 running units were tripped one after the other.
- ✓ Unit -1 tripped on tripping of both FD fans @ 03:06 hrs.
- ✓ Unit 2&3 were tripped subsequently at 03:37 and 03:56 hrs on low condenser vacuum .
- ✓ Unit -1 was synchronised @14:45 hrs of the same day
- ✓ Unit 2&3 could be synchronised only on 26.05.2019 as the barring was stalled in both units.

Tripping analysis :

- ➢ At 03:05 hrs station transformer-1 tripped on PRV relay malfunction, due to moisture ingress into marshalling box during heavy rains.
- ➢ On tripping of the above 2 out of 4 station buses (6.6 kV) went dead.
- ➢ Unit Bus-B of generator -1 was already tied with Bus –B of station transformer as its normal breaker is out.
- ➢ So all equipment's connected to GT-1 unit bus B also tripped.
- ➢ In addition to this, during this disturbances VFD of ID fan-A in the other unit bus - A also tripped resulted in unit -1 tripping.


400/33/6.6kV Station supplies scheme
400kV Bus-I
400kV Bus-II
400kV Breaker - 452
400kV Breaker - 352
60/100MVA
400/33kV
Tie Txfmr-I
60/100MVA
400/33kV
Tie Txfmr-II
33kV Sec-A
Bus coupler
33kV Sec-B
33kV Breaker
33kV Breaker
ST-I
70MVA
33/6.6/6.6kV
70MVA
33/6.6/6.6kV
ST-II
6.6 kV-SA
6.6 kV-SB
6.6 kV-SC
6.6 kV-SD
= 400kV system
= 33kV system
= 6.6kV system


Single Line Diagram of 6.6kV Unit and Station Switchgear
From
GT-1
UT-1
From
GT-2
UT-2
From
GT-3
UT-3
1UA
1UB
2UA
2UB
3UA
3UB
From
TT-1
ST-1
From
TT-2
ST-2
SA
SB
SC
SD

Tripping analysis :

- Unit -1 total AC supply failed as both station and unit supplies were not available.
- DG sets and DC drives came into service.
- Station was running with 6 cooling water pumps in an interconnected system.
- Unit-1 black out tripped 2 CW pumps, but its discharge valve and valves to condenser failed to closed due to lack of supply.
- Due this condenser vacuum of unit 2 and 3 were started coming down.
- Both units load were reduced below 200 MW to mange the vacuum.

Tripping Analysis :

- Station has 3 instrument air compressors for operation of its pneumatic valves.
- Cooling water for compressors can be charged from all the 3 units.
- On the day of incident the same was charged from Unit-1.
- Total power failure in Unit-1 tripped the cooling water to air compressors and it tripped on lub oil temperature high.
- Cooling water from other units were lined up but it couldn't sustain and compressors were tripped again.

Tripping analysis :

- Meanwhile instrument air header pressure dropped from 6.2 ksc to 2.0 ksc.
- On drop in instrument air pressure vacuum pumps inlet valve closed and unit-2 &3 tripped on low vacuum.
- Unit -2 &3 Turbine came to barring speed and later stalled.

Factors Lead to Multiple Tripping:

1) Heavy rain and moisture entry into station transformer marshalling box resulted in shorting of PRV contacts .
2) Unavailability of GT-1 unit Bus-B incomer breaker.
3) Non closure of CW pumps discharge valves on unit blackout.
4) Failure of cooling water to compressor during unit black out.

Root Cause of station blackout:

Moisture ingress in ST-1 marshalling box during heavy rains resulting in tripping of ST-1 on PRV protection

Units Restored:

	Unit 1	Unit 2	Unit 3
Boiler light up	23.05.19	25.05.19	26.05.19
	07:40 hrs	18:09 hrs	15:00 hrs
Synchronised	23.05.19	26.05.19	26.05.19
	14:45 hrs	01:47hrs	19:23 hrs

Recommendation and its status :

Sl. No.	Recommendation	Status
1	Proper sealing of marshalling boxes to be ensured.	Complied
2	Unit -1 unit bus incomer breaker to restored at the earliest	Next Shutdown
3	Providing alternate cooling water source to compressors	Next Shutdown

Thank You

पावर सिस्टम ऑपरेशन करपोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Government of India Enterprise)

उत्तर पुर्वी क्षेत्रीय भार प्रेषण केंन्द्र : लोअर नँगरा, लापालांग, शिलांग-793006, (मेघालय)
North Eastern Regional Load Despatch Centre: Lower Nongrah, Lapalang, Shillong - 793006, (Meghalaya)
Ph : 0364-2537470, 2537427, Fax - 2537486 Website : www.nerldc.org, Email - nerldc@posoco.in, CIN : U40105DL2009GOI188682

सदंर्भ/Ref: NERLDC/SO-1/Tripura/2019/

दिनांक/Date :27-06-2019

To,
Dy. General Manager,
System Operation Division
SLDC
79 Tilla, Agartala,
Tripura 799006

विषय/SUB: एन ई आर एल डी सी को बिना सूचना दिये 132 k.V. अगरतला-सुरजमानीनगर- II लाइन का समापन/Closing of 132 kV Agartala – S.M.Nagar II line without intimation to NERLDC on 27-06-2019 at 09:30 Hrs

Sir,

On 27-06-2019 a Grid Disturbance occurred in Tripura System at 03:01 hrs which resulted in blackout of Surajmaninagar sub-station, Rokhia sub-station and Agartala sub-station of Tripura.

NERLDC had advised SLDC Tripura to close 132 kV Agartala- S.M.Nagar II only after declaring healthiness as it tripped on DPR, Z-I through email at 08:01 Hrs.

Whereas, TSECL closed the line at 09:30 Hrs without any intimation to NERLDC and intimated verbally afterwards. Even after reminder email from NERLDC at 10:51 Hrs, requesting to provide root cause analysis of the same, no response from SLDC Tripura has been received yet.

It is requested to take up the event seriously as it is a violation of NERLDC instruction. Necessary response may please be furnished at the earliest and avoid repeat of the same in future.

Yours sincerely,

27/6

(आर. सूत्रधार/ R. Sutradhar)
व. महाप्रबंधक (एस.ओ-I)/Sr. GM (S.O-I)
उ.पू.क्षे.भा.प्रे.के/NERLDC.

Copy To:
1) सदस्य सचिव, उपूक्षेविस/ MS, NERPC
2) अध्यक्ष और प्रबंध निदेशक /CMD, TSECL

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Government of India Enterprise)

उत्तर पुर्वी क्षेत्रीय भार प्रेषण केंन्द्र : लोअर नँगरा, लापालांग, शिलांग-793006, (मेघालय)
North Eastern Regional Load Despatch Centre: Lower Nongrah, Lapalang, Shillong - 793006, (Meghalaya)
Ph : 0364-2537470, 2537427, Fax - 2537486 Website : www.nerldc.org, Email - nerldc@posoco.in, CIN : U40105DL2009GOI188682

सदंर्भ/Ref: NERLDC/SO-1/Tripura/2019/

दिनांक/Date :22-06-2019

To,
The Dy. General Manager,
System Operation Division
SLDC
79 Tilla, Agartala,
Tripura 799006

विषय/Subject: **Delay in restoration of Surajmaninagar sub-station and closing of 132 kV Agartala – Rokhia II line and 132 kV Monarchak – Rokhia Line without intimation to NERLDC during restoration process after Grid Disturbance on 22-06-2019 at 13:03 Hrs**

Sir,

On 22-06-2019 a Grid Disturbance occurred in Tripura Power System at 13:03 Hhrs which caused blackout of Surajmaninagar sub-station, Rokhia sub-station and Agartala sub-station of Tripura. During the restoration process, the following issues were faced:

1) **Delayed restoration of of Surajmaninagar sub-station:**
Power supply was extended to Surajmaninagar from Palatana at 13:28 Hrs. But it was learned that Surajmaninagar was not ready as outgoing feeders from Surajmaninagar were not opened after Grid Disturbance. 132 kV Surajmaninagar – Palatana line was closed at Surajmaninagar after delay of around 20 minutes which caused delay in restoration of Tripura Power System and South Comilla of Bangladesh.

2) **Closing of 132 kV Agartala – Rokhia II line and 132 kV Monarchak – Rokhia Line**
132 kV Agartala – Rokhia II line and 132 kV Monarchak – Rokhia Line were closed at 13:44 Hrs & 13:30 Hrs respectively without intimation to NERLDC. During the time of restoration process, NERLDC has bigger picture of the grid and is in best position to take appropriate decision. Thus, any action on restoration should be taken only on receipt of advice from NERLDC.

It is requested to take up the matter seriously so that affected part of NER Grid may be restored quickly.

Yours sincerely,

अमरेश 22.06.19

(अमरेश मल्लिक / Amaresh Mallick)
व. महाप्रबंधक (एस.ओ-II)/Sr. GM (S.O-II)
उ.पू.क्षे.भा.प्रे.के/NERLDC

Copy To:
1) सदस्य सचिव, उपूक्षेविस/ MS, NERPC
2) अध्यक्ष और प्रबंध निदेशक /CMD, TSECL

Transformer Tap Optimisation Study

17-Jun-19

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 Optimisaton	After Optimisaton	
1	**Balipara**	400/220	1	315	400kV	1.25	17	9	9	399	421	417	404	NO+8 (17)
		400/220	2	315	400kV	1.25	17	9	9					NO+8 (17)
		220/132	1	50	132kV	1.25	17	9	9	134	142	129	132	NO+5 (14)
		220/132	2	50	132kV	1.25	17	9	9					NO+5 (14)
2	**Bongaigaon**	400/220	1	315	400kV	1.25	17	9	12	404	417	412	404	NO+5 (14)
		400/220	2	315	400kV	1.25	17	9	12					NO+5 (14)
3	**Salakati**	220/132	1	50	132 kV	1.25	17	9	13	135	128	124	133	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	401	421	420	406	NO+4 (13)
		400/220	2	315	400kV	1.25	17	9	5					NO+4 (13)
5	**Ranganadi HEP**	400/132	1	360	400 kV	2.5	17	9	9	399	422	417	404	NO+2 (11)
		400/132	2	360	400 kV	2.5	17	9	9					NO+2 (11)
6	**Azara**	400/220	1	315	400kV	1.25	17	9	8	405	420	412	405	NO (9)
		400/220	2	315	400kV	1.25	17	9	8					NO (9)
7	**Biswanath Chariali (PG)**	400/132	1	200	400 kV	1.25	17	9	8	401	423	417	407	NO-2 (7)
		400/132	2	200	400 kV	1.25	17	9	8					NO-2 (7)
8	**Silchar**	400/132	1	200	400 kV	1.25	17	9	9	409	424	414	407	NO-2 (7)
		400/132	2	200	400 kV	1.25	17	9	9					NO-2 (7)
		400/132	2	200	400 kV	1.25	17	9	9					NO-2 (7)
9	**Byrnihat**	400/220	1	315	400 kV	1.25	17	9	9	413	430	412	411	NO-3 (6)
		400/220	2	315	400 kV	1.25	17	9	9					NO-3 (6)
		220/132	5083/1	160	132 kV	1.25	17	9	9	139	140	137	137	NO + 1 (10)
		220/133	5083/1	160	132 kV	1.25	17	9	9					NO + 1 (10)
10	**Palatana**	400/132	1	125	400 kV	1.25	17	9	9	408	408	408	408	NO + 1 (10)
		400/132	2	125	400 kV	1.25	17	9	9					NO + 1 (10)
11	**BgTPP**	400/220	2	125	220 kV	1.25	17	9	9	404	417	412	403	NO + 5 (14)
10	**Imphal (PG)**	400/132	1	315	400 kV	1.25	17	9	9	409	425	414	408	NO-3 (6)
		400/132	2	315	400 kV	1.25	17	9	9	409				NO-3 (6)

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

Wnd 1 Ratio (pu or kV)
1
1
1
1
1
1
1.0625
1.0625
1.1
1.1
1
0.975
0.975
1
1
1.0625
1.0625
1
1
1
1.0625
1
1
1
1
1
1
0.9625
0.9625
1
1
1
1
1.0125
1.0125
0.9625
0.9625
1
1
1
1
1
0.9375
0.9375
1
1
1
1
1
1
1

1
1.0125
1.0125
1
1
1
1.025
1.025
1
1.05
1.0875
1
1
1
1
1
1
0.975
0.975
1.0125
1
1
1
1
1
1
1
1
1
1
1
1
1

Transformer Tap Optimisation Study

17-Jun-19

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 Optimisaton	After Optimisaton	
1	**Balipara**	400/220	1	315	400kV	1.25	17	9	9	399	421	417	404	NO+8 (17)
		400/220	2	315	400kV	1.25	17	9	9					NO+8 (17)
		220/132	1	50	132kV	1.25	17	9	9	134	142	129	132	NO+5 (14)
		220/132	2	50	132kV	1.25	17	9	9					NO+5 (14)
2	**Bongaigaon**	400/220	1	315	400kV	1.25	17	9	12	404	417	412	404	NO+5 (14)
		400/220	2	315	400kV	1.25	17	9	12					NO+5 (14)
3	**Salakati**	220/132	1	50	132 kV	1.25	17	9	13	135	128	124	133	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	401	421	420	406	NO+4 (13)
		400/220	2	315	400kV	1.25	17	9	5					NO+4 (13)
5	**Ranganadi HEP**	400/132	1	360	400 kV	2.5	17	9	9	399	422	417	404	NO+2 (11)
		400/132	2	360	400 kV	2.5	17	9	9					NO+2 (11)
6	**Azara**	400/220	1	315	400kV	1.25	17	9	8	405	420	412	405	NO (9)
		400/220	2	315	400kV	1.25	17	9	8					NO (9)
7	**Biswanath Chariali (PG)**	400/132	1	200	400 kV	1.25	17	9	8	401	423	417	407	NO-2 (7)
		400/132	2	200	400 kV	1.25	17	9	8					NO-2 (7)
8	**Silchar**	400/132	1	200	400 kV	1.25	17	9	9	409	424	414	407	NO-2 (7)
		400/132	2	200	400 kV	1.25	17	9	9					NO-2 (7)
		400/132	2	200	400 kV	1.25	17	9	9					NO-2 (7)
9	**Byrnihat**	400/220	1	315	400 kV	1.25	17	9	9	413	430	412	411	NO-3 (6)
		400/220	2	315	400 kV	1.25	17	9	9					NO-3 (6)
		220/132	5083/1	160	132 kV	1.25	17	9	9	139	140	137	137	NO + 1 (10)
		220/133	5083/1	160	132 kV	1.25	17	9	9					NO + 1 (10)
10	**Palatana**	400/132	1	125	400 kV	1.25	17	9	9	408	408	408	408	NO + 1 (10)
		400/132	2	125	400 kV	1.25	17	9	9					NO + 1 (10)
11	**BgTPP**	400/220	2	125	220 kV	1.25	17	9	9	404	417	412	403	NO + 5 (14)
10	**Imphal (PG)**	400/132	1	315	400 kV	1.25	17	9	9	409	425	414	408	NO-3 (6)
		400/132	2	315	400 kV	1.25	17	9	9	409				NO-3 (6)

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

Annexure D-21.a

Time Drift Report status

SL NO	PGCIL	STATUS
1	PGCIL SALAKATI	REPORT NOT SENT/ACTION NONE
2	PGCIL NIRJULI	REPORT SENT BUT ACTION NONE
3	PGCIL BONGAIGAON	IRREGULAR REPORTING
4	PGCIL BADARPUR	REPORT NOT SENT/ACTION NONE
5	PGCIL AIZAWL	REPORT NOT SENT/ACTION NONE
6	PGCIL SILCHAR	REPORT NOT SENT/ACTION NONE
7	PGCIL BNC	REPORT NOT SENT/ACTION NONE
8	PGCIL HAFLONG	REPORT NOT SENT/ACTION NONE
9	PGCIL MARIANI	REPORT NOT SENT/ACTION NONE
10	PGCIL MOKOKCHANG	REPORT NOT SENT/ACTION NONE
	ASSAM	
11	AZARA-BONG	ACTION NONE
12	AZARA-SIL	ACTION NONE
13	132 KV AGIA FEEDER	ACTION TAKEN
14	SAMAGURI END OF MISA-I FDR	ACTION TAKEN
15	SARUSAJAI S/S	NO ACTION/REPORT NOT SENT
16	TINSHUKIA S/S	NO ACTION/REPORT NOT SENT
17	UMRANGSOO S/S	NO ACTION/REPORT NOT SENT
18	SONABIL S/S	NO ACTION/REPORT NOT SENT
19	KAHELIPARA S/S	NO ACTION/REPORT NOT SENT
20	DULLAVCHERRA	REPORT SENT BUT ACTION NONE
	ARUNACHAL	
21	CHIMPU S/S	NO ACTION/REPORT NOT SENT
	TRIPURA	
22	79 TILLA S/S	NO ACTION/REPORT NOT SENT
23	SURJAMANI NAGAR S/S	NO ACTION/REPORT NOT SENT
24	UDAIPUR	NO ACTION/REPORT NOT SENT
	MIZORAM	
25	Kolasib s/s	NO ACTION/REPORT NOT SENT
	NAGALAND	
26	KOHIMA S/S	NO ACTION/REPORT NOT SENT
	GENERATORS	
27	DOYANG	REPORT NOT SENT
28	RHEP	REPORT NOT SENT
29	NTPC	REPORT SENT BUT ACTION NONE

Annexure D-21.b

Time Drift Corrective Action Not taken

SL NO	ENTITY	LOCATION	TIME DRIFT STATUS(MIN)	REMARKS
1	ASSAM	AZARA-BONG	-3:55	Meter replaced due to high time drift but due to inaction drift >3
2	ASSAM	AZARA-SIL	-4:24	Meter replaced due to high time drift but due to inaction drift >4
3	ASSAM	DULLAVCHERRA	+2:20	No action taken

Locations not sending weekly SEM data

SL NO	LOCATION NOT REPORTING	STATUS
1	UDAIPUR (TR)	DATA NOT SENT
2	MOKOKCHANG (NG) - DOYANG FDR	DATA NOT SENT
3	SONABIL(AS)	DATA NOT SENT

Status of "Fibre Optic Cable Package for NR fibre optic expansion (additional requirements) and NER fibre optic expansion under establishment of Fibre Optic Communication system in Northern Region"

Sl No	Link Name	Status as per 13th NETeST	OPGW Stringing status	End Equipment Status	Overall reporting of end stations to NERLDC/ SLDC
	Central Sector				
1	132kV Melriat (PG) ~ Silchar (PG)	Data and voice reported dtd 31.03.2019. SAT Pending	Complete	Complete	Data and voice reported dtd 31.03.2019. SAT Pending
2	132kV Khandong~Halflong (PG)	July19	Complete	I&C-WIP	August-19
3	132kV Dimapur (PG)~ Doyang (NEEPCO)	July19	-do-	I&C-WIP	August-19
4	132kV Doyang (NEEPCO)~ Mokokchung (State)	July19	-do-	I&C-WIP	August-19
5	220kV Mokokchung (PG)~ Mariani (PG)	July19	-do-	I&C-WIP	August-19
6	400kV Mariani (PG)~ Kathalguri (NEEPCO)	July19	-do-	I&C-WIP	August-19
7	400kV Surajmaninagar (TSECL) ~ Pallatana (OTPC)	July19	Stringing Completed: 27.967/36.714 Km	I&C-WIP	August-19
8	132kV Badarpur(PG) ~ Jiribam(PG)	Sept-19	Stringing Completed: 48/67.166 Km	I&C-WIP	Sept-19
9	Bongaigaon (PG-400 kV) ~ 220kV Salakati-220 kV BTPS	Sept-19	0/4.5 Km	I&C-WIP	Sept-19
10	400kV Mirza (Azara) ~ Byrnihat	Aug-19	0/47.208 Km	I&C-WIP	Sept-19
11	400kV Silchar ~ Pallatana	Dec-19	Stringing Completed: 61.146/247.409 Km/ROW	I&C-WIP	Dec-19

			issue		
12	132kV Agartala(TSECL) ~ RC Nagar (NEEPCO)	July19	Complete	Pending due Space Constraint	01 month after space is provided by NEEPCO
13	132kV Jiribam (PG) (Manipur) ~ Loktak (NHPC)	Dec-19	0/82.461Km	I&C-WIP	Dec-19
14	132kV Loktak (NHPC) ~ Imphal (PG)	July19	Complete#	I&C-WIP	August-19
15	PK Bari (TSECL)--LILO of (NETCL) Belonia	Dec-19	0/10.441Km	I&C-WIP	Dec-19
16	132kV Parey ~ Chimpu	Dec-19	0/31Km	I&C-WIP	Dec-19
	Manipur State Sector				
1	132kV Yurembam ~ Yaingangpokpi	Jul-19	Complete#	I&C-WIP	August-19
2	132kV Yaingangpokpi ~ Kongba	Jul-19	Complete#	I&C-WIP	August-19
3	132kV Kongba ~ Kakching with LILO at Thoubal	Jul-19	Complete#	I&C-WIP	August-19
4	132kV Imphal(State) ~ Karong	Jul-19	45.4/60Km. WIP	I&C-WIP	Aug-19
5	132kV Kakching ~ Churachandpur	Jul-19	19.60/38 Km. WIP	I&C-WIP	Aug-19##
6	132kV Loktak(NHPC) ~ Ningthoukhong	Jul-19	Complete#	I&C-WIP	August-19
7	132kV Yaingangpokpi ~ Hundung	Jul-19	14.5/30Km	I&C-WIP	Aug-19
8	132kV Kakching ~ Chandel	Jul-19	16.37/25Km	I&C-WIP	Aug-19
9	132kV Loktak(NHPC) ~ Rengpang	Jul-19	0/47Km	I&C-WIP	Dec-19
10	132kV Jiribam ~ Jiribam state	Jul-19	0/1Km	I&C-WIP	Sept-19
11	132kV Ningthoukhong ~ Churachandpur	Jul-19	16.80/32Km	I&C-WIP	Aug-19##
Tripura State Sector					
1	132kV Agartala(TSECL) ~ Barumura(GTP)	Data and voice reported dtd 31.03.2019. SAT Pending July19	Complete	Complete	Data and voice reported dtd 31.03.2019. SAT Pending July19
2	66kV 79 Tilla Grid (TSECL) ~ Badharghat	-do-	-do-	-do-	-do-

3	132kV Surajmaninagar(TSECL) ~ Budhungnagar	-do-	-do-	-do-	-do-
4	132kV Agartala(TSECL) ~ SM Nagar (TSECL)	-do-	-do-	-do-	-do-
5	132kV Pallatana(OTPC) ~ Udaipur(TSECL)	July19	-do-	I&C-WIP	August-19
6	132kV Udaipur(TSECL) ~ Rokhia GTP	July19	-do-	I&C-WIP	August-19
7	66kV Udaipur(TSECL) ~ Gumti HEP	July19	-do-	I&C-WIP	August-19
8	66kV Gumti HEP ~ Amarpur(TSECL)	July19	-do-	I&C-WIP	August-19
9	66kV Satchand(TSECL) ~ Sabroom(TSECL)	July19	-do-	I&C-WIP	August-19
10	132kV 79 Tilla Grid (TSECL) ~ Dhalabil(TSECL)	July19	-do-	I&C-WIP	August-19
11	132kV Rokhiya (GBPP) ~ Surajmaninagar(TSECL)	Front Not Ready	Supply Complete. Front Not ready (TL under constructio n)		Link to be deleted. Supply material isto be handed over to TSECL. DOCO will be done with consent from TSECL
12	132kV Surajmaninagar(TSECL) ~ Monarchak (NEEPCO)	Front Not Ready	-do-		
	Meghalaya State Sector				
1	132kV Nehu ~ Neigrihms	July19	0/7.7Km	I&C-WIP	Aug-19
2	132kV Khliehriat(PG) ~ Khlehriat (State)	July19	Complete#	I&C-WIP	Aug-19
3	132kV Khliehriat(State) ~ MyntduLeshka-HEP	July19	24/24.932 Km	I&C-WIP	Aug-19
4	132kV Khliehriat(PG) ~ Lumshnong (S/C)	July19	2/25.19Km	I&C-WIP	Aug-19
	Nagaland State Sector				
1	132kV Kohima (132KV) ~ Kohima (220KV)	July19	0/25Km	I&C-WIP	Dec19
2	132kv Kohima ~ Wokha	Dec19	0/58Km	I&C-WIP	Dec19
3	132kV Doyang (NEEPCO) ~ Sanis	Dec19	0/10Km	I&C-WIP	Dec19
	Mizoram State Sector				
01	Aizawl~Zemabawk I	July19	0/1Km	I&C-WIP	Sept-19

#-Laying of approach cable is pending

##- The stringing delayed due to tower collapse between the link

Note: The completion date mentioned above are subject to clear front availability

STATUS OF "ESTABLISHMENT OF FIBRE OPTIC COMMUNICATION SYSTEM IN LIEU OF EXISTING ULDC MW LINKS IN NORTH EASTERN REGION"

(equipment are clubbed with NER FO Expansion)

SN	Link Name	Status as per 13th NETeST	OPGW Stringing status	End Equipment Status	Overall reporting of end stations to NERLDC/ SLDC	Remarks (wrt terminal equipments)
1	132KV Silchar-Srikona	Complete	Complete	Complete	Data reporting	
2	132KV Mariani-Mariani	Complete	Complete	-do-	Data and voice reported dtd 31.03.2019. SAT Pending/Jun19	
3	132KV Nirjuli-Ranganadi with Parey	03 months after ROW is resolved	ROW issue	Supply and Installation over. SAT/Commissioning Pending.	** 03 months after ROW is resolved	MW Vac-Nirjuli, Ranagnadi&Parey
4	Imphal(PG)-Imphal (State)	June-19	Complete	I&C-WIP	August-19	MW Vac - Imphal PG FO Exp - Imphal State
5	132KV LILO of Aizawl-Zemabawk-II at Melriat SS	Data and voice reported dtd 31.03.2019. SAT Pending/June19	Complete	Complete	August-19	MW Vac-Melriat
6	132KV Melriat-Shimui	June-19	Complete	I&C-WIP	August-19	MW Vac-Melriat FO Exp-

						Shimui
7	132KV Mokokchung (PG) - Mokokchung (state)	June-19	Complete	I&C-WIP	August-19	FO Exp- Mokokchung PG &Mokokchung State
8	Ranganadi-Gohpur (Part-I)	Data and voice reported dtd 18.01.2019 . /june19	Complete	Complete	Data and voice reported dtd 18.01.2019.	
9	Ranganadi-Gohpur (Part-II)		Complete	Complete		
10	Aizawl-Zemabawk-II	June-19	Complete	I&C-WIP	August-19	MW Vac- Aizawl FO Exp- Zemabawk II
11	Dimapur-Dimapur	June-19	Complete	I&C-WIP	August-19	MW Vac- Dimapur FO Exp- Dimapur State
12	132kV Ranganadi-Ziro	June-19	Complete	I&C-WIP	August-19	MW Vac- Ranganadi FO Exp- Ziro
13	132KV Lekhi-Itanagar / Chimpu SLDC	June-19	Complete	I&C-WIP	August-19	MW Vac- Itanagar SLDC FO Exp- Lekhi
14	132KV LILO of Nirjuli-Ranganadi at Lekhi	03 months after ROW is resolved	ROW issue	I&C-WIP	03 months after ROW is resolved	MWVac- Nirjuli, Ranagnadi FO Exp- Lekhi

Note: Above mentioned communication links got delayed due to certain unavoidable situation like;

1) **Strike & Protest in Northeast due to GST Amendment bills**
2) **Strike, Curfew in Ar Pradesh in the month of Feb-19**

3) **Strike, Curfew in Meghalaya in the month of May-Jun-18**
4) **Floods in Assam & Manipur –July 17**
5) **ROW issues (paddy field/ asking additional compensation)**
6) **Supply Containers are subjected additional checks on transit (from China to Destinations/of India) in last 1year after doklam**

URTDSM PROJECT STATUS

SN	Equip.	Scope		Status				Status / Remarks
		Nos.	Location	Erection	SAT	Reporting/ Commission	Data Validation	
1	SPDC		NERLDC	1	1	1	NA	Completed26.3.19/PTOC issued after SAVT
2	PDC		Assam	1	1	1	NA	Completed26.3.19/PTOC issued after SAVT
3	PDC		Meghalaya	1	1	1	NA	Completed26.3.19/PTOC issued after SAVT
4	PDC		Arunachal	0	0	0		A.12 (By Aug19) Diversion under process Materials delivered in Tripura. Work is targeted completed by 2months(SAT)
	Total	**4**						
5	PMU	3	Salakati	3	3	2	3	Completed
6	PMU	6	Balipara	6	6	6	6	Completed
7	PMU	6	Bongaigaon	6	6	6	6	Completed
8	PMU	4	BNC	4	4	4	4	Completed
9	PMU	4	Silchar	4	4	4	4	Completed
10	PMU	7	Misa	7	7	7	6	Completed
11	PMU	3	Mariani	3	3	3	3	Completed
12	PMU	5	Dimapur	5	5	5	3	Completed

13	PMU	1	RHEP - NEEPCO	1	1	1	0	By 15.02.2019
14	PMU	2	Kopili - NEEPCO	2	2	2	2	Completed
15	PMU	4	Samaguri – Assam	4	4	4	4	Completed
16	PMU	2	Agia - Assam	2	2	2	2	Completed
17	PMU	2	Mariani – Assam	2	2	2	2	Completed
18	PMU	2	Tinsukia - Assam	2	2	2	2	Completed
		51		**51**	**51**	**50**	**47**	

Over all Target(for CS PDC & associated system as diverted to Tripura& UPS:Sept'19. Other parts completed including analytical

NOTE-2:

1. **All concerned stations (State or ISTS/ISGS) where End equipment being installed are to provide**
   a) **AC environment for equipment under LD&C packages ULDC packages**
   b) **PDH space within 20meter of RTU/Gateway if data path is serial type**
   c) **SDH pace within 15-20meter of PDH & SDH is to be placed within 15-20 meter**
   d) **Respective station owner has to arrange of their own-**
      a) **2wire normal telephone (along with telephone wire from control desk/control room up table) to the PDH/SDH**

         to be provided by user
      b) **For RTU data also, necessary cable is to be provided by RTU-owner/owner of station.**

         e.g. one Ethernet cable(shielded) for serial data(if K 101) reporting by RTU & one Ethernet cable(shielded) to be laid & connected (between RTU/GATEWAY up to the Communication equipment-SDH/PDH for data &) by use/owner RTU station

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