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

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

No. NERPC/SE (O)/OCC/2018/***1515-1552*** Dated: June 28, 2018

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 145th OCC Meeting.

Sir/Madam,

Please find enclosed herewith the minutes of 145th OCC Meeting held at Guwahati on the **19th June, 2018** for your kind information and necessary action. The minute is also available on the website of NERPC, **www.nerpc.nic.in**.

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

Encl: As above

भवदीय/Yours faithfully,

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

Copy to:

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

निदेशक / **Director/ SE**

North Eastern Regional Power Committee

MINUTES OF THE 145th OPERATION COORDINATION SUB-COMMITTEE MEETING OF NERPC

Date : 19/06/2018 (Tuesday)

Time : 11:00 hrs

Venue : "Hotel Novotel", Guwahati.

The List of Participants in the 145th OCC Meeting is attached at **Annexure – I**

Shri P.K. Mishra, Member Secretary, NERPC welcomed all the participants to the 145th OCC meeting. He expressed satisfaction about large number of participation and stated that the trend should continue so that issues can be resolved through dialogue. Further, he informed that PDMS NIT is almost ready for tendering and with the implementation of this software protection related issues can be analyzed further for improvement of grid reliability in the region

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

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 144th MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

The minutes of 144th meeting of Operation Sub-committee held on 11th May, 2018 at Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2016/4556-4591 dated 21st May, 2018.

The Sub-committee confirmed the minutes of 144th 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 145th OCC:

State	Protection System	ADMS	Capacitor Installation	SAMAST**

Arunachal Pradesh	A/C opened. NIT to be floated soon.	Revised DPR submitted	-	DPR submitted for Techno-Economic Appraisal.
Nagaland	Pack-A: completed Pack-B: Aug'18 Pack-C: Aug'18 Pack-D: Completed.	Revised DPR yet to be submitted	To re-submit proposal to NERPC for Study.	DPR will be submitted shortly.
Mizoram	LOAs completed. First tranche of funds requisitioned.	Revised DPR submitted	Appraisal Committee is yet to approve	DPR submitted for Techno-Economic Appraisal
Manipur	LOAs issued.	Revised DPR submitted	Submitted to NERPC for Study before sending to NPC/NLDC.	DPR submitted for Techno-Economic Appraisal
Tripura	Could not be updated due to absence of officials.	Revised DPR submitted	To submit proposal to NERPC for Study.	DPR submitted for Techno-Economic Appraisal
Assam	PLCC- tender evaluation complete. LOA to be one after approval. Substation auxiliary and diagnostics tools - Tendering in process. All LOAs by Jul'18.	Revised DPR submitted	-	DPR submitted for Techno-Economic Appraisal
Meghalaya	MePTCL- All LOAs awarded. Earthing Package Tendering in Progress. Balance items by July'18 MePGCL – Erection complete. UC by 30.06.2018.	Revised DPR submitted	-	DPR submitted for Techno-Economic Appraisal

Deliberation of the sub-Committee:

It was informed that as per PSDF Secretariat, following DPRs of SAMAST had been received:

Sr. No	State	Proposal No
1	Manipur	218
2	Arunachal Pradesh	228
3	Nagaland	229
4	Mizoram	230
5	Assam	231
6	Meghalaya	232
7	Tripura	233

DGM(MO), NERLDC congratulated the members for their ardent efforts and applauded the guidance and support provided by Director/, NERPC especially. He intimated that the next step would be preparation of Tender documents and detailed technical specs. He further stated that during meeting of SAMAST Group with Assam Electricity Regulatory Commission, Chairman-AERC suggested to follow QCBS (Quality and cost based system) for selection of bidder in SAMAST project to achieve desired level of technical excellence and advised SAMAST Group to initiate action in this regard. Member Secretary-NERPC stated that he would convene a meeting to decide further course of action before putting-up to TCC and NERPC.

EE (System Protection), MePTCL, requested the chair for clarifications on the funding pattern to be adopted for funding of the scheme "Reliable Communications & Data Acquisition" under PSDF. He also informed that the clarifications is very vital for MePTCL for obtaining approval of the revised DPR incorporated with the observations of Techno Economic Sub Group during the meeting held on 16.11.2017 at New Delhi and submission of the same to NERPC. Director/SE (O&P), NERPC assured that the matter would be taken up in the next TCC/RPC meeting.

EE (System Protection), MePTCL also informed the chair that due to bad network, the telephonic discussion between him and NLDC on 28.05.2018 through Director/ on the observations for the approved revised DPR on Line Differential Protection submitted by MePTCL was not clearly audible. He requested the chair for an email on the observations for further necessary action by MePTCL.

Further it was decided that NERPC/NERLDC would conduct studies for installation of capacitor bank in case of Tripura presently.

The Sub-Committee noted as above.

Action: All state utilities/NERPC.

2. Outage of Important Grid Elements:

Name of the Element	Name of Utility	Status as informed in 145th OCC
63MVAR Reactor at Byrnihat to replace with 80MVAR Reactor	MePTCL	SCM MoM yet to be issued.
400KV 80MVAR Bus Reactor at Palatana	OTPC	Insulation level very low. By Aug'18**
DHEP Unit 2	NEEPCO	In service w.e.f. 24.05.2018.
400/220 kV, 315 MVA ICT-II at BgTPP	NTPC	In service w.e.f. 05.06.2018.
Repairing of R-ph bushing of 63MVAR L/R at Balipara for 400kV Balipara-Bongaigaon -II (*out since 17.02.18)*	NERTS	By Nov'18

**AM, OTPC informed that Hot Oil circulation is being carried out to remove moisture, but ppm is increasing at higher temperature. DGM(AM),NERTS opined that just by oil circulation heavy moisture cannot be removed from winding and thus, vacuum and nitrogen cycle with external heating is required to dryout the unit. The forum requested OTPC to consider its views and resolve the issue at the earliest.

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

3. Furnishing of various data for reliable grid operation:

<table>
<tr><td>Data regarding</td><td>Status as of 145th OCC</td></tr>
<tr><td>DAS output for FRC calculation</td><td>Event Date: 10.05.18; OTPC, DHEP and RHEP provided information.
NERLDC once again requested all generators to provide DAS data at the earliest for FRC calculation.</td></tr>
<tr><td>Operating Procedures</td><td>
<table>
<tr><th>Items</th><th>Data submitted by</th></tr>
<tr><td>OP of States</td><td>Submitted only by AEGCL, MePTCL and TSECL</td></tr>
<tr><td>OP of Transmission System</td><td>Not submitted by any constituents</td></tr>
<tr><td>OP of Generating Stations</td><td>Not submitted by any generators</td></tr>
</table>
</td></tr>
</table>

	OP of GIS: Not submitted by any constituents	
Data related to Power Map.	**Items**: Communication (PLCC/OPGW/GPRSVSAT/Satellite) — **Data submitted by**: NERTS, Meghalaya, Assam & Mizoram provided the data.	
Patrolling report(s) for T/L**.	**No constituents have furnished the report**	

The Sub-committee noted as above.

Action: All utilities as above.

4. Monitoring of Corrective actions as decided in PCC forum:

Name of the Element	Action to be taken	Name of Utility	Status as of 145th OCC
132 kV Dimapur - Doyang 1 & 2 Lines	Installation of Numerical Relay at Doyang	NEEPCO	By Dec'18
AGTCCPP- LFO	AVR replacement	NEEPCO	By Oct'18
132kV AGTCCPP-Kumarghat	N/R to be replaced at AGTCCPP. To have check sync facility	NEEPCO	**
132kVPK Bari-Kumarghat	Installation of Line differential relay	NERTS	By Dec'18
132kV AGTCCPP-Agartala D/C.	Line differential relay to be installed	NERTS	By Dec'18
132kV PKBari	Installation of Numerical Relay under R&M (*high priority).* TSECL to divert NR to AGTCCPP.	TSECL	By Aug'18
132kV Rokhia-79Tilla D/C	DPR to be installed	TSECL	By Aug'18

Deliberation of the sub-Committee:

** Sr. Manager, NEEPCO clarified that MiCOM P442 relay is installed at AGTCPPP end of 132kV AGTCCPP-Kumarghat which does have A/R facility. After the detailed deliberation, forum decided to refer earlier PCC / Sub-group recording to decide upon the requirement.

The Sub-committee noted as above.

Action: All utilities as above.

B.2. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING MAY, 2018

As per the data made available by NERLDC, the grid performance parameters for May, 2018 are given below:

NER PERFORMANCE DURING MAY, 2018

	Energy Met (MU)		w.r.t. Apr,18 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. Apr,18 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In May,18
States	**May-18**	**April-18**		**May-18**	**April-18**		
Ar. Pradesh	64.83	62.59	3.58	65.75	63.82	3.02	-1.40
Assam	711.96	664.32	7.17	752.57	699.90	7.53	-5.40
Manipur	65.95	63.35	4.10	66.97	64.51	3.81	-1.52
Meghalaya	144.44	132.99	8.61	144.44	132.99	8.61	0.00
Mizoram	50.36	47.86	5.22	51.16	48.80	4.84	-1.56
Nagaland	62.87	56.85	10.59	71.21	65.19	9.23	-11.71
Tripura	107.28	107.27	0.01	112.51	111.40	1.00	-4.65
Region	**1207.70**	**1135.24**	**6.38**	**1264.62**	**1186.61**	**6.57**	**-4.50**

	Demand Met (MW)		w.r.t. Apr,18 % inc (+) /dec (-)	Demand in (MW)		w.r.t. Apr,18 % inc (+) /dec (-)	% inc (+) /dec (-) of Demand vs met. In May,18
States	**May-18**	**Apr-18**		**May-18**	**Apr-18**		
Ar. Pradesh	123	125	-1.60	138	138	0.00	-10.87
Assam	1596	1503	6.19	1626	1533	6.07	-1.85
Manipur	172	186	-7.53	179	193	-7.25	-3.91
Meghalaya	368	307	19.87	371	307	20.85	-0.81
Mizoram	87	89	-2.25	96	98	-2.04	-9.38
Nagaland	119	127	-6.30	147	156	-5.77	-19.05
Tripura	276	265	4.15	276	269	2.60	0.00
Region	**2611**	**2552**	**2.31**	**2709**	**2600**	**4.19**	**-3.62**

REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU

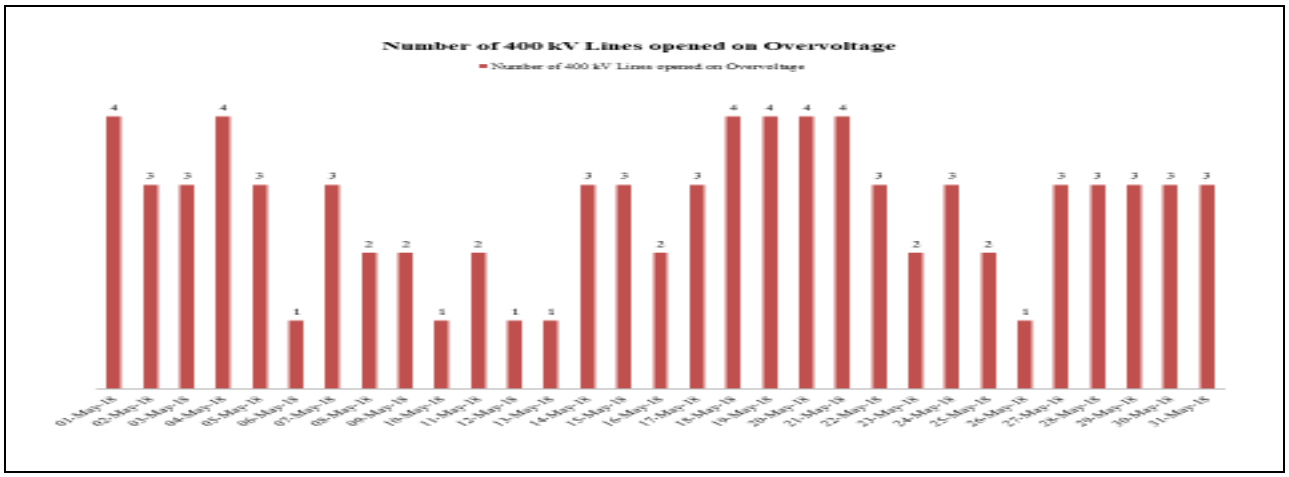
Month---->	**May-18**	**Apr-18**
Total Generation in NER (Gross)	1450.399	1157.530
Total Central Sector Generation (Gross)	1149.117	906.296
Total State Sector Generation (Gross)	301.282	251.234
Inter-Regional Energy Exchange		
(a) NER-ER	**113.72**	**29.127**
(b) ER-NER	**192.00**	**271.839**
(c)NER-NR	**185.91**	**155.498**
(d)NR-NER	**0.00**	**74.889**
© Net Import	-107.63	162.103

AVERAGE FREQUENCY (Hz)

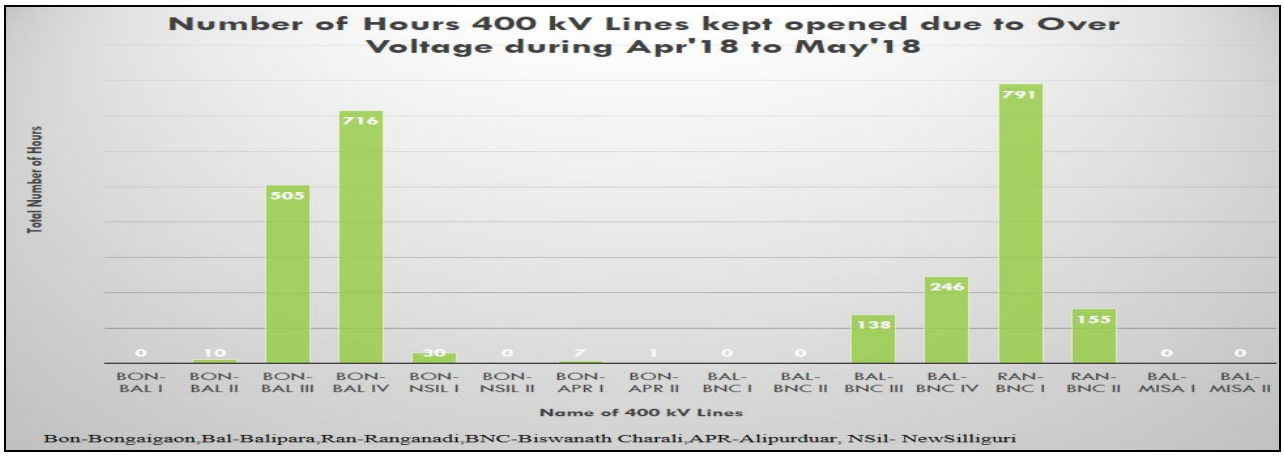
Month---->	**May-18**	**Apr-18**
	% of Time	% of Time
Below 49.9 Hz	22.52	13.16
Between 49.9 to 50.05 Hz	70.06	79.25
Above 50.05 Hz	7.43	7.59
Average	49.95	49.97
Maximum	50.22	50.21
Minimum	49.57	49.62

Deliberation of the sub-Committee:

NERLDC gave a presentation on the grid performance for the month of May'18. NERLDC also highlighted that Daily, Weekly and Monthly Voltage Deviation Report, Frequency Deviation Report and System Reliability Report for May'18 are already mailed to all the constituents for necessary actions. Further it was informed that members may access these reports from NERLDC website under the tab CERC KPI Reports. NERLDC informed the forum about the number of lines kept open on high voltage. Forum express concern about the same and requested the generators to absorb MVAR. NERLDC again requested for early restoration of reactors which are under long outage and commissioning of new reactors at the earliest as mentioned in Sl. No. B.1.2 and C.1 so that it does not require to open lines for maintaining voltage profile within IEGC band. The plots of 400 kV lines opened for maintaining voltage profile within IEGC band during May'18 is mentioned below:



Outage Hours: For 400 kV Lines



The Sub-Committee noted as above.

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

C. OLD I T E M S

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

During 145th OCC meeting, the status as informed by different beneficiaries is as follows:

SN	Items	Status as given in 144th OCC Meeting	Status as given in 145th OCC Meeting	
			Timeline for completion	Furnishing of detail parameters**
a. New Elements				
1	400/220kV, 315 MVA ICT-1 of NTPC at Bongaigaon	Delayed due to construction issues. By June'18	By June'18	To be submitted to NERLDC.
2	Kameng HEP of NEEPCO two units (2 x 150 MW) Next two units (2x150 MW)	Sep'18	Dec'18	Already submitted.
3	Pare HEP of NEEPCO (2 x 55 MW)	Unit #II - Trial run 15.05.18 Unit #I - CoD by May'18	Unit#II - DoCO 21.05.2018 Unit #I - DoCO 28.05.2018.	Not applicable.
4	400 kV D/C Silchar - Melriat line of PGCIL	June, 2018.	Aug'2018	To be submitted to NERLDC.
5	132kV Monarchak – Surjamaninagar D/C of TSECL	Severe RoW issues. To be referred to next SCM for resolution of bay issue at Palatana.	SCM MoM yet to be issued.	To be submitted to NERLDC.
6	SLDCs (Ar. Pradesh, Manipur, Mizoram, Nagaland)	Nagaland-DoCO to be finalized Ar. Pradesh, Manipur - CoD Mizoram-ToC date to be confirmed.	Nagaland-DoCO to be finalized Ar. Pradesh**, Manipur - CoD Mizoram-ToC date to be confirmed. Except DG set(WIP), all other works are completed. Additional supply of	Not applicable.

			RTUs & minor pending works by 4months.	
7	400/220 kV 315 MVA ICT-II at Bongaigaon	Tied up with GIS. By Aug'18.	Modification required in GIS Hall. Oct'2018	To be submitted to NERLDC.
8	220/132 kV, 160MVA ICT-II at Balipara	ICT#II - delayed, Sept''18	ICT#II - delayed, Sept''18	To be submitted to NERLDC.
9	220/132 kV, 1x160 MVA ICT with GIS Bay at Kopili	Sept, 2018.	Sept, 2018.	To be submitted to NERLDC.
10	400/132 kV, 1x315 MVA ICT-III at Silchar	June, 2018.	By June-18 through Bus #2	To be submitted to NERLDC.
11	Replacement of 2x315 MVA ICTs with 2x500 MVA ICTs at Misa (PG)	ICT-I : Jun'18 ICT-II : Aug'18	ICT-I : Nov'18 ICT-II : Dec'18	To be submitted to NERLDC.
12	400 kV Silchar – Misa D/C	2019	2019	To be submitted to NERLDC.
13	1x125 MVAR Bus Reactor at 400 kV at Balipara	Sept, 2018(LOA date).	Sept, 2018(LOA date).	~~Not applicable.~~ To be submitted to NERLDC.
14	1x125 MVAR Bus Reactor at 400 kV Bongaigoan	Sept, 2018(LOA date).	Sept, 2018(LOA date).	To be submitted to NERLDC.
15	Tuirial HEP of NEEPCO	Voice and data connectivity upto SLDC to be ensured for DoCO.	Agreed date of Commercial operation - 27.04.2018 for Unit#I&II	Already submitted to SLDC Mizoram.
16	33kV bay at 220kV Mariani(AS) S/Sn	Take up with APDCL. Load security payment is under process. APDCL will install meter.	Security Paid. Agreement made. Meter to be installed by ASEB.	Not applicable.
17	33kV Tezu-Tezu(AP)	-	Completed long back. Item to be dropped	Not applicable.
18	33kV bay for 132kV Badarpur(PG) S/Sn	APDCL submitted estimate to PG_Badarpur recently.	APDCL to submit revised estimate as earlier estimate was based on 33kV feeder from same source.	Not applicable.

19	Dedicated 33kV feeder at Khliehriat Substation from Lumshnong.	To be taken up by NERTS with MePDCL.	MePDCL requires ROW clearance certificate from POWERGRID. PGCIL taken up with district authority.	Not applicable.
20	Construction of 132 kV Imphal (PG) - Yurembam III & IV lines with high capacity conductor by MSPCL	-	RoW problem. Tentative Completion: Jul'18	To be submitted to NERLDC.
21	LILO of 132kV Aizawl-Jiribam at Tipaimukh by MSPCL	-	Completed.	Not applicable.
22	132kV Ranganadi - Chimpu S/C	-	June'18	Already submitted
23	132kV Tezu - Namsai S/C	-	Charged. CoD by June'18	Already submitted
24	MW Vaction OPGW project		All nodes are reporting. Srikona-Silchar-Badarpur-Kolashib-Aizwal completed.DOCO 01.04.18. Rectification by Sept18.	Not applicable.
25	VOIP Exchange Project under NER FO exp / Add coom OPGW		All SLDC & NERLDC is now connected over VOIP Exchange. Completed in 31.03.2018	Not applicable.
26	NER FO Expansion / Add req of OPGW		Present Status: Out of the list as per 18th RPC: WIP: Silchar-Melriat, SMN-Palla, SM-79T, 79Tila-rc Nagar, Badarpur-Jiribam, Completed OPGW: Khandong-Haflong, Doyang-Dimapur, Doyang-Mokokchung(St) Mok-Mariani, Mariani-PG-Kathalguri. Equip: Supplied/ Comm pending	Not applicable.

b. Elements under breakdown/upgradation				
27	Up-gradation of 132 kV Lumshnong-Panchgram line	To be approved by Techno-Economic sub-group for funding from PSDF.	To be approved by Techno-Economic sub-group for funding from PSDF.	Not applicable.
28	Switchable line Reactors at 400kV Balipara & Bongaigoan	Aug'18	Aug'18	To be submitted to NERLDC.
29	PLCC Panels at Loktak end of Loktak – Ningthoukhong 132 kV feeder and Loktak - Rengpang 132 kV feeder	Oct'2018	Oct'2018	Not applicable.
30	LILO of 132kV Ranganadi – Itanagar (Chimpu) at Pare of Ar. Pradesh	Bay 1 at RHEP for Pare: Delayed Bay 2 at Pare for Itanagar: Delayed	Erection works at Ranganadi, Pare and Chimpu complete. Tentative CoD June'18	To be submitted to NERLDC.
31	Re-conductoring of 132kV Umiam Stg#I - Umiam Stg-III	DPR prepared and submitted for approval	DPR prepared and submitted for approval	Not applicable.
32	Upgradation of ULDC FO node	Target completion : June 2018	Target completion : June 2018	Not applicable.
33	Upgradation of 132kV Silchar-Imphal to 400kV	-	August'18	To be submitted to NERLDC

Deliberation of the sub-Committee:

**EE,SLDC, DoP Ar. Pradesh informed that SLDC Ar. Pradesh will be shifted to new building w.e.f. 01.07.2018. Further he intimated the forum that the SLDC would be inaugurated tentatively in the period 15.07.2018 - 20.07.2018. He requested that NERLDC depute some engineers beforehand, so that SLDC personnel may get adequate basic training. DGM(MO), NERLDC conveyed acquiescence. The former also requested other SLDCs/RPC to attend the inaugural function physically or via VC.

The Sub-Committee noted as above.

Action: All state utilities/central utilities/NERPC.

D. NEW ITEMS

D.1 Generation Planning (ongoing and planned outages)

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

Generating Station	Units running	MW	MU	Reservoir
Khandong	2		6.02	707.15
Kopili-II	1			
Kopili	4		52.98	599.63
Ranganadi	2		Subject to inflow	
Doyang	2		7.00	311.20
Loktak	3		24.66	766.94
Pare	-	-	-	-

Hydro planning

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

Deliberation of the sub-Committee:

The Committee discussed and approved the proposed shutdown by Generating Stations and the same has already been uploaded in the website of NERPC.

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 134th OCCM, it was decided that all communication related shutdown be approved in OCC forum only.

In 142nd OCCM, Director/SE(O&P), NERPC suggested that henceforth shutdown list may be prepared under following categories:

(i) New Construction Related Shut Down
(ii) Existing System Improvement Related Shut Down.
(iii) Existing System Normal Maintenance Related Shut Down
(iv) Communication Related Shutdown
(v) R&U works Related Shut Down under PSDF

The forum further decided that the modalities of communication related shutdown should be finalized. Members requested NERPC to invite POWERGRID telecom in next OCCM alongwith with officials (handling communication issues) from all utilities for this purpose.

In 143rd OCCM, , NERPC once again reiterated that shutdowns which are not being availed will not be entertained in the following month and would only be accorded in the next to next month. He hoped that in view of greater complexity in grid operation due to communication issues, the list of important links would be finalized by NERLDC very soon. He also requested NERTS to impress upon POWERGRID Telecom to attend the next OCCM positively.

Deliberation in the Meeting:

NERLDC highlighted that OCC forum approves the S/D after lots of discussion but it is observed that some of the shutdowns are not being availed. Details of Shutdown not availed and shutdowns applied on D-3 basis is as below:

Total S/D approved	Total S/D availed	Total S/D not availed	Total S/D availed on D-3 basis	Total S/D not applied on D-3 basis
106	85	21	63	43

NERLDC highlighted that the inordinate delay in revival of elements under S/D for ISTS licensees is coming very high which is affecting the secure operation of the grid. Details for the month of May'18 are as below:

Transmission Licensee	Total Delay	Avg. Delay	Max. Delay
POWERGRID	72 Hrs 1 Min	2 Hrs 15 Min.	18 Hrs 34 Min on 31st May'18 for 132 kV Aizwal-Jiribam
NETC	7 Hrs 58 Min	1 Hrs 48 Min	3 Hrs 44 Min on 5th May'18 for 400 kV Azara – Bongaigaon line
ENICL	Nil	Nil	Nil

NERLDC requested ISTS licensees to return the element under shutdown as per approved schedule.

NERLDC also informed the forum that from Shutdowns which are not applied on D-3 basis shall not be allowed henceforth. The forum agreed to the same.

The sub-Committee discussed and approved the proposals received from the constituents regarding transmission elements and generating units for June, 2018 - July,2018 and the same has already been uploaded in website of NERPC.

D.3 Estimated Transmission Availability Certificate (TAC) for the month of November, 2017 to January, 2018:

NETC and POWERGRID have submitted the outage data for the month of November, 2017 to January, 2018. So the attributability of outage of the said elements may please be finalized.

In 141st OCCM, DGM (MO), NERLDC stated that outages would be made attributed to respective transmission licensees due to absence of documentary evidence during verification stage. NERPC secretariat would take due care accordingly. After detailed deliberation it was decided that Transmission Licensees (POWERGRID, NETC etc) would provide the relevant documents during verification process itself and no plea would be honoured after that.

For streamlining the process of Verification of Transmission Element Availability, a draft Procedure is prepared by NERLDC and NERPC.

Constituents of NER are requested to send comment and suggestion for this document by 28th Mar'18. This document will be finalized by 31st Mar'18.

In 142nd OCCM, NERLDC informed the forum that the draft procedure has been prepared and the same shall be circulated shortly. NERPC and NETC were requested to provide their comments on the draft Procedure by 31st March'18. The forum once again advised NETC & POWERGRID to submit data in a time bound manner as decided previously.

In 143rd OCCM, it was decided that an element-wise cumulative tripping details attributable to the licensees for the current FY has to be submitted by the respective transmission utilities on monthly basis along with outage data. Then after all prudence checks by NERLDC/NERPC, once the outage is certified by NERPC, final cumulative tripping details attributable to the transmission licensee would be published by NERPC.

In 144th OCC meeting , NERPC asked POWERGRID and NETC to comment on the procedure attached in **Annexure D.3.1.** The procedure will be finalized in the next meeting.

Member Secretary, NERPC informed the forum that 3 times reminder may be sent for any document for which comments were sought. If no comments are still received, the document will be considered as final.

Deliberation in the Meeting:

NERLDC informed that since no comments have been received from the constituents for streamlining the process of Verification of Transmission Element Availability, the document may be considered final and approved. Members consented.

The Sub-Committee noted as above.

Action: Concerned transmission utilities/NERLDC/NERPC

D.4 Assessment of Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) by SLDC on respective Inter-State Transmission Corridor

Updated PSS/E Base Cases have been mailed to all the SLDCs on 04.06.18. All SLDCs are requested to assess the Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) for the month of June'18 using these cases, and submit the study cases and results to NERLDC by 25.06.18.

NERLDC has assessed the state control area wise, state subsystem wise and group of control-area wise TTCs for NER Grid, on behalf of SLDCs of NER. The study results

will be presented in the meeting. SLDCs are requested to check the TTC of their control areas as computed by NERLDC and give comments, if any, by 25.06.18.

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

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

Deliberation in the meeting

NERPC informed that SLDC, Nagaland would give presentation on ATC/TTC Calculation in the 146th OCC.

NERLDC has assessed TTC of each state control area of NER, each state subsystem on behalf of SLDCs of NER and group of control-area wise TTCs for NER Grid for the month of July'18:

States	Off-peak		Peak	
	N-0	N-1	N-0	N-1
Arunachal	218	188	220	190
Assam	1743	1572	1803	1593
Manipur	333	256	332	254
Meghalaya	315	160	290	160
Mizoram	127	116	127	116
Nagaland	183	161	186	164
Tripura (including Bangladesh)	309	82	292	73

The Sub-Committee noted as above.

Action: All SLDCs.

D.5. SPS mock testing & existing SPS scheme related:

The 138th OCC forum requested NERTS to prepare a draft sequence of operation for each SPS and present in next OCC for ratification. The date for SPS 2 and SPS 3 mock testing will also be finalized in next OCC Meeting.

The 140th OCC forum opined that NERPC/NERLDC may find some experts from the region to solve this long pending issue and if not, the same may be called from other

region. The forum requested OTPC to intimate the details of their action plan for addressing the issues at their end pertaining to the successful operation of SPS-2 & 3 at the earliest.

NERPC vide letter dated. NERPC/SE(O)/OCC/2018 dated 08.02.2018 has requested OTPC to implement the changes as early as possible.

OTPC vide mail dated. 26.02.18 has intimated that Modified SPS-2&3 has been taken into service w.e.f. 26.02.18(10:45hrs) with 15ms time delay at OTPC end.

Since both SPS-2& 3 are operational within the stipulated time delay the forum may approve that grant of any shutdown related to Palatana ATS would be unconditional of generation backing down at Palatana GBPP.

In 142nd OCC GM,NERLDC informed that though currently s/d of Palatana ATS is being allowed without generation backing down, a mock test would be very fruitful. The forum after detailed deliberation requested NERPC to schedule mock test with representatives from NERTS, TSECL, OTPC, NERLDC & NERPC at the earliest.

In 143rd OCCM, NERPC informed that testing would be carried out tentatively in the first week of May,2018. He requested AEGCL, MeECL, NERTS, OTPC and NERLDC to depute concerned personnel for the said purpose.

In the Special Meeting on SPS-3 (MoM attached at **Annex.D.5**) held at NERPC Shillong on 03.05.2015, the matter of mock testing was discussed. Members suggested that after implementation of the procedure on 07.05.2018, the date of mock testing may be finalized in the 144th OCCM.

In 144th OCCM DGM, OTPC informed that on 10.05.2018 SPS-3 signal on particular PLCC panel was received 40 times consecutively. Generator outage could be averted because SPS-3 was turned off at Palatana end. He stated that repeated receipt of spurious signals at OTPC end indicates non-reliability of SPS-3 and requested the forum to allow OTPC to turnoff SPS-3 till RCA for the spurious signals are identified and resolved.

DGM(AM), NERTS informed the following:-

- The incident on 10.05.2018 was not spurious at Palatana end as increment was recorded in Silchar also. The exact reason will be intimated to NERPC/NERLDC shortly.
- The events preceding 10.05.2018 were spurious as signals were only received at Palatana with no counter increment at Silchar. From 07.05.2018 scanner has

been put in service by interchanging the permissive and DT Inter-trip channels with SPS 3 disconnected at Palatana end. The channel is kept on observation for any spurious signal for further needful.

- He assured that the issue of DT being sent due to BCU restart will be attended shortly once OEM visits the site.

GM, NERLDC further informed that Palatana GBPP tripped around 08:50hrs on 11.05.2018 due to triggering of SPS-2. This is supposedly due to fault in the both the 400kV Palatana-Silchar-I&II. However the exact cause is yet to be ascertained. He requested that timeline for SPS-3 activation at Palatana be decided by the forum.

After detailed deliberation it was decided that by 30.05.2018 NERTS would resolve the issues leading to generation of anomalous SPS-3 signal from Silchar. Subsequently after confirmation OTPC would turn on SPS-3 at Palatana. NETC was requested to increase patrolling and regular maintenance operation(s) for Palatana evacuation corridor(i.e. 400kV Palatana-Silchar I&II, 400kV Silchar-Byrnihat and 400kV Silchar-Azara). Further it was decided that in the intervening period 400kV Silchar-Byrnihat and 400kV Silchar-Azara shutdown would be decided on a case to case basis.

On 15.05.2018 NERTS while working on some filter logic implementation at Silchar S/S (for SPS-3), DT for 400kV Palatana-Silchar -II was sent to Palatana. This happened while Line-I was under approved shutdown, resulting in SPS-2 operation at Palatana. Subsequently NERTS informed that any rectification works for SPS-3 at Silchar S/S under live line conditions would result in the following:-

1. Sending of DT signals of Individual line(Palatana-1 &2).

2. Sending of SPS2 signal.

All these undesired events are possible due to congested wiring of all Signal wiring in Palatana 2 relay panels and Palatana 1 Ch- 2 PLCC panels at Silchar substation.

To resolve the stalemate a meeting was held at NERPC (minutes attached at **Annexure-D.5**).

Deliberation in the meeting

Director/SE(O&P), NERPC stated that creation of separate asset would streamline the scheme and prevent any untoward incident in the future. The approximate cost of ₹ 90 lakhs may be shared by all Utilities of NER.

Members accorded in-principle approval to the suggestion of Director/SE(O&P), NERPC and requested NERPC to take up the matter in next TCC/NERPC Meetings for cost sharing. However, for speedy implementation the forum requested OTPC to procure on behalf of all the beneficiaries, the cost of which would be reimbursed later on. OTPC requested POWERGRID, NERTS to provide technical support, if required, for the same and POWERGRID agreed.

NERLDC highlighted about the disturbance in Southern part of NER due to tripping of 400 kV Silchar-Azara and 400 kV Silchar- Byrnihat and requested the forum to switch ON SPS-3 at Palatana end. NERLDC also told that due to rainy seasons, the 400 kV Silchar-Azara and 400 kV Silchar- Byrnihat is prone to trippings which can again lead to disturbance.

The forum decided that until procurement of new assets, SPS will be in OFF condition and requested to expedite the procurement of new assets.

The Sub-Committee noted as above.

Action: OTPC/NERTS/NERPC/NERLDC.

D.6. <u>Update on Real Time Energy Assessment for Effective Grid Management:</u>

In 139th OCCM, CDAC representative stated that they would require the proprietary protocol from the meter manufacturer(s) to proceed further with the Project. DGM(MO), NERLDC explained that as per practice followed in other Regions like NR, ER etc., AMR provider, Meter manufacturer and Powergrid sign a tripartite agreement to enable passing of the protocol to AMR provider. A sample of draft agreement in ER (TCS is AMR provider) was provided to CDAC and it was advised that CDAC should initiate process and circulate a draft agreement for the present case. CDAC agreed to do the needful and stated that they would develop protocol converter accordingly.

CDAC has furnished the draft tripartite agreement which is to be signed between CDAC, POWERGRID-NERTS and meter manufacturer(s).

In 140th OCCM, NERPC intimated that the process of signing tripartite agreement between CDAC, POWERGRID and L&T was in progress. He requested NERTS to expedite the matter.

In 141st OCCM, all the SLDCs confirmed the receipt of server at their premises. DGM,SLDC,AEGCL informed that static IP and SIMs have been procured by them.

In 143rd OCCM, ,NERPC informed that tripartite agreement has been signed and protocol would be handed over by 21.04.2018.

In 144th OCCM, Director/SE(O&P), NERPC informed that the protocol has been handed over and CDAC has initiated subsequent works.

Deliberation in the meeting

Director/SE(O&P), NERPC informed that CDAC would start field trials for Assam by June'18.

The Sub-Committee noted as above.

Action: CDAC.

D.7. Recording of operational instructions over VOIP in RLDC:

As per 139th OCC discussion establishment of recording system for all real time instructions and conversations thro' VOIP network was supposed to be established within Feb'18. It is very important to establish the recording system at the earliest as all verbal communication/ conversations among RLDCs, SLDCs and stations are getting lost. Recording status at SLDC also may be discussed.

In 142nd OCCM, Manager, NERTS informed that re-tendering for DONGLE is in process and order would be placed by Mar'18/ April'18. Delivery would be by May'18/ June'18.

In 143rd OCCM, NERTS informed that LOA would be done by May'18 and supply by June'18/July'18.

In 144th OCCM, NERTS informed that LOA for DONGLE (facilitating voice recording facility in existing VOIP Exchange console at NERLDC) would be done by May'18 and supply by June'18/July'18.

Deliberation in the meeting

NERTS informed that LOA has been placed and supply would be done by Aug'18.

The Sub-Committee noted as above.

Action: NERTS

D.8. Integration of new RTUs at RHEP:

GE supplied RTU at RHEP will be provided for accommodating the two new 132 kV extension bays being constructed by us at RHEP in the first-second week of March 2018. Integration of new RTU with existing RTU at RHEP and NERLDC control centre shall be required. Hence special permission may be required through appropriate forum in this regard.

In 142nd OCCM, Sr. Manager, NEEPCO informed that RTU procurement is under tendering process and would be commissioned by Dec'18.

In 143rd OCCM, Sr. Manager, NEEPCO informed that as per discussion in 9th NETeST forum for 132kV RHEP-NDTL line, a team from NERLDC, NERTS would visit RHEP on 24.04.18 to sort out the RTU problem. For 132kV RHEP-Chimpu line he informed that RTU is under procurement and same would be installed by Dec'18. However NERLDC requested to install RTU at RHEP at the earliest possible time as current RTU is not reliable, hence creating grid monitoring problem.

A team from NERLDC and NERTS visited RHEP on 27.04.2018 and made the following recommendations:-

- The S900 RTU may be replaced with new C264 RTU or existing bays may be integrated with installed C264 RTU.
- The old transducers for existing bays are to be replaced with MFTs.

NEEPCO has agreed to integrate the existing bays with installed C264 RTU.

In 144th OCCM DGM(SO-I), NERLDC informed the forum that at present CB position & other data are reporting from RHEP. However the present S900 RTU is not reliable and needs resetting frequently, therefore he requested NEEPCO to expedite the work of integrating existing bays with installed C264 RTU. Sr. Manager, NEEPCO informed that due process has been initiated and work is expected to be complete latest by Dec'18. The forum requested NEEPCO to finish the works by Aug'18.

Deliberation in the meeting

Sr. Manager, NEEPCO informed that works are going on at an accelerated pace and tentative completion is Oct'2018. NERLDC requested that integration be completed as early as possible, since Ranganadi is a very important station and unavailability of data impairs grid operation.

The Sub-Committee noted as above.

Action: NEEPCO

D.9. 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.

In 142nd OCCM, ,NERPC informed that as mandated periodical inspection of UFR needs to be carried out. In this regard he requested help of NERTS by providing suitable kits.

DGM(AM),NERTS stated that Frequency Injection Kit is available in PGCIL stations and any logistical help may be provided. He further requested that an action plan in this regard may be devised and handed over for future course of action.

In 144th OCCM DGM(AM), NERTS requested that a detailed schedule be prepared and circulated to concerned constituents for nomination of members. , NERPC stated that the detailed schedule location wise would be prepared and circulated by NERPC forthwith.

A detailed schedule has been prepared location wise and is attached at **Annexure-D.11.** Utilities may kindly nominate members and finalize date(s) for inspection.

In 144th OCCM Sr. Manager, NEEPCO informed that AGTCCPP Extn only has PSS but it is not enabled. The same would be done while commissioning of DAVR for AGTCCPP-GTGs. He requested NERPC to modify the schedule accordingly.

DGM(AM), NERTS opined the following w.r.t. UFR and PSS inspection:-

- Testing procedure is to be finalized beforehand. If the scheme is integrated in NR then relay to be taken out of service. Further OMICRON kit is required, which is available in select locations only and is not recommended for movement over longer distances.
- Dates need to be assigned location wise. This would enable nomination from all utilities.
- Also protection audit may be combined for fruitful outcome.

After detailed deliberation the forum decided that NERPC would in consultation with NERTS & NERLDC prepare the completed schedule and procedure. In the Special Meeting at NERPC(MoM attached at **Annexure-D.9**) on 28.05.2018 the UFR inspection procedure was finalized.

Deliberation in the meeting

DGM(AM), NERTS opined that 1/3 rd UFR nos may be inspected by covering Assam, Meghalaya and Tripura in July'18 itself. The forum requested NERTS would arrange all logistics and transport for the inspection. The forum approved the suggestion and requested NERPC to draw up a fresh schedule and circulate the same forthwith.

Regarding provision of OMICRON Relay Testing Kit, each of the transmission utilities of Assam and Tripura were requested to confirm availability.

NERLDC requested the forum to conduct third party audit of the substations which will be visited during the inspection also. The members agreed to the same.

The Sub-Committee noted as above.

Action: NERPC/NERTS/NERLDC/AEGCL/MePTCL/TSECL.

D.10. Audit of PSS:

In the Special Meeting held at NERPC on 28.05.2018 the following were decided:-

- Members noted that PSS inspection would be futile and recommended that SRT may be submitted by all plants who have not done since last 3 years, at the moment.
- As per prevalent regulations only units above 50 MW are supposed to activate PSS mandatorily.

The MoM is attached at **Annexure-D.9.**

Deliberation in the meeting

Members approved the suggestions given by Sub-Group. Sr. Manager, NEEPCO informed that SRT reports for Pare, Ranganadi and Monarchak have already been submitted and the suitability of the same may be confirmed. NERPC/NERLDC agreed to revert back. The forum requested BgTPP and Palatana GBPP to also provide their SRTs at the earliest. NTPC representative informed that since BgTPP was commissioned in 2016 the SRTs available at the time of commissioning may be accepted, which will be submitted shortly.

The Sub-Committee noted as above.

Action: NTPC/OTPC/NERPC/NERLDC.

D.11 Geospatial Energy Portal for NITI Aayog:

NITI Aayog is developing a user friendly GIS based Energy Map of India, which would provide true locations of all energy resources in India including power plants, coal and oil reserves, transmission lines, refineries, etc.

Ministry of Power (MoP), GoI has designated Central Electricity Authority (CEA) as the nodal agency to collect all the required data/information pertaining to the Power Sector of India by collecting it from different Utilities of Power Sector and submit it to NITI Aayog for early development of the Geospatial Energy Map of India.

Accordingly, CEA vide letters dated 09.02.2018 and 01.05.2018 requested Heads of DISCOMs/Power Departments to furnish the information regarding the name, voltage level, capacity, longitude and latitude of 33 kV and 66 kV Substations and lines as per proforma. However, information is still awaited from most of the utilities

Non furnishing of above information by DISCOM was discussed in a meeting taken by Chairperson, CEA on 26.04.2018, wherein it was advised that all RPCs may be requested to take up the issue in the OCC meetings for furnishing the information in a time bound manner.

The details of the sub-stations required are attached at **Annexure-D.17.** Corresponding utilities are requested to provide the missing details in the annexure at the earliest.

In 144th OCCM, Director/SE(O&P), NERPC informed that the required data is for national interest and requested all utilities to submit the same. NERLDC requested that the name of substations and transformation capacity given in Annexure D.17 may also be verified and sent to NERPC and NERLDC.

Deliberation in the meeting

Director/SE(O&P),NERPC informed that the data has already been submitted by P&ED Mizoram and MePDCL. He thanked SLDC Meghalaya and SLDC Mizoram for the prompt action. He requested all remaining utilities to submit the same by 26th June'18.

The Sub-Committee noted as above.

Action: DoP Ar. Pradesh, APDCL, MSPDCL, DoP Nagaland, TSECL.

D.12 Transformer Tap Optimization

System study regarding Transformer Tap Optimization was conducted by NERLDC considering high & lean hydro scenarios on half yearly basis. In line of the above, NERLDC has conducted 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 will be shared during the meeting.

In 144th OCCM, NERLDC informed the forum that studies have been conducted for Transformer Tap Optimization of Transformers in Mizoram after obtaining data from them. The study results are attached at Annexure. D.21(circulated in 144th OCCM). NERLDC requested P&ED, Mizoram to go through the study results and to provide their comments.

Deliberation in the meeting

EE, SLDC, P&ED Mizoram informed that higher management has been apprised of the recommendation and in-principle approval has already been given. However operators have to be trained for tap-changing frequently which is a risky exercise. The forum decided to drop the agenda in the mean time and the same may be reviewed after proper training of operators are given by P&ED, Mizoram.

The Sub-Committee noted as above.

Action: P&ED Mizoram.

D.13 Non-availability of SOE records of Biswanath Chariali, Ranganadi, Dimapur & Bongaigaon:

The SOE records of both BNC and RHEP do not appear for any breaker operations in any of the elements of both the stations. This causes lack of proper visibility for the system operators in real time and causes hindrance in proper & quick decision making.

In 144th OCCM, NERLDC requested the forum to restore the CB status and SOE data of HVDC,BNC as well as RHEP at the earliest as both the stations are very important for NER grid management.

NERLDC has also informed that SOE and Alarm records for Dimapur and Bongaigaon(Interregional links and others) do not appear for any breaker operation in any of the elements of the stations.

Deliberation in the meeting

DGM(AM), NERTS informed the following w.r.t. different stations:

- *Dimapur :* NTAMC Integration work in progress. After completion of the work Dimapur SOE will be available. Completion by : November-2018.
- Bongaigaon : All Data OK as per Site.(Details given in Anex) For resolving the issue better, joint visit(PGCI & RLDC) at respective site is proposed
- HVDC BNC : All Data OK as per Site.(Details given in Anex) For resolving the issue better, joint visit(PGCI & RLDC) at respective site is proposed

- RHEP : RTU configuration is not in POWERGRID Scope. RLDC may contact respective concern utility.

The Sub-Committee noted as above.

Action: NERTS/NERLDC/NEEPCO.

D.14 Poor Governor Response during sudden drop of frequency

On 23.04.2018 at 10:42 Hrs, there was a sudden decrease of frequency from 50.02 HZ to 49.72Hz in which Palatana has shown an increase of 49MW instantly. Whereas the other NER generators has shown almost a NIL response. Reasons may be intimated.

In 144th OCCM, NERLDC informed the forum that on 23.04.2018 at 10:42 Hrs, there was a sudden decrease of frequency from 50.02 HZ to 49.72Hz. During calculation of Frequency Response, it has been observed that most of the generators in NER has shown NIL response except for Palatana.

Sr. Manager, NEEPCO informed that TGBPP responded very well with GTG contributing 7MW and STG almost 2MW. He also informed that Kopili reservoir was very low but still increased generation by 0.75MW inspite of LFO issues. Further the vanes were at full capacity. For AGBPP, he informed that the unit(s) were in temperature control mode which did not allow to respond due to dip in frequency. The forum requested NHPC and NTPC to revert back with the reasons for poor response.

Deliberation in the meeting

NERLDC gave a detailed presentation(attached at **Annexure-D.14**). It was stated by NERLDC is regularly carrying out calculation of FRC to ascertain governor response. It was explained that non-response by Governor would be treated as a violation of IEGC provision.

Sr. Manager, NEEPCO informed that Khandong & Kopili-Stg-II were running at full capacity, while AGTCCPP did not have any reserve capacity for generation. Manager, NHPC informed that Loktak HEP was generating at full capacity. NTPC agreed to revert back on the governor non-operation **during the event at 1651 Hrs on 06.05.2018**.

The Sub-Committee noted as above.

Action: NERLDC/NTPC.

D.15 Disruption in Agartala PMU Data

PMU Data of Agartala got disrupted on (i) 04:53 hrs of 30/04/2018 to 20:00 Hrs of 01/05/2018; and (ii) 16:41 Hrs of 02/05/2018 to 10:32 Hrs of 03/05/2018. On enquiry it was found out that the 132 KV Dhalabil-Agartala S/C Line was under shut down on these period.

This indicates that the CVT input for agartala PMU has been taken from line CVT of Dhalabil-Agartala S/C Line. To avoid any such disruption in future, it is required to shift the CVT input of PMU to Bus CVT of Agartala.

In 144th OCCM, NERLDC informed the forum that PMU Data of Agartala got disrupted on 04:53 hrs of 30/04/2018 to 20:00 Hrs of 01/05/2018; and 16:41 Hrs of 02/05/2018 to 10:32 Hrs of 03/05/2018. On both the occasion, it was found out that the 132 KV Dhalabil-Agartala S/C Line was under shut down on these period.

After detailed deliberation it was surmised that line CVT of 132kV Dhalabil-Agartala is being used for PMU. NERLDC requested TSECL to shift the connection to 132kV Bus. TSECL agreed to do the needful by May'18.

Deliberation in the meeting

The status could not be updated due to absence of TSECL representative.

The Sub-Committee noted as above.

Action: TSECL.

D.16 Slow progress in URTDSM implementation

NERLDC has submitted the approved location of workstations to be installed, but the cabling and installation work is still pending. The work progress for integration of PMUs even after link availability (e.g, MISA & Bongaigaon) to NERLDC is very slow. Further, installation & commissioning of 9 PMUs in 3 substations were pending as per last status.

POWERGRID may please update about the current status and expedite the work.

In 144th OCCM DGM(AM), NERTS informed that supply has been completed for all stations. In case of Biswanath Chariali and Ranganadi commissioning work has already been started and would be completed by July'18. NERLDC requested NERTS to expedite the commissioning works.

Deliberation in the meeting

URTDSM

Status :Supply & Installation completed:13/14 location

18nos. PMUs in 4 locations integrated

After detailed deliberation members decided to refer the item to NETeST forum

The Sub-Committee noted as above.

Action: NERPC.

D.17 DC corrected By NERLDC on dated 25/04/2018, for block 82.

On dated 25/04/2018 gas flow was increased by ONGC and DC was revised by OTPC accordingly, for block 82 DC was sent 716 MW according to current Ambient Temp (24°C) however NERLDC given corrected DC 708 MW by taking reference of forecasted temperature (27.2°C) sent with DC (R-0) on dated 24th April 2018.

In 144th OCCM DGM(MO),NERLDC informed that NERLDC has been adopting the day ahead temperature based correction because IMD temperature is unavailable for Udaipur. Further he clarified that the DC provided by OTPC is being considered for Accounting (PAF) purposes, while the one calculated on day ahead temperature basis is used only for scheduling purpose. DGM, OTPC requested that real time temperature should be used for scheduling purpose also. After detailed deliberation it was decided that procedure may be modified after discussion amongst NERPC & NERLDC, which would be communicated in the next OCCM.

Deliberation in the meeting

A detailed procedure(attached at **Annexure-D.17**) was presented by NERPC in the meeting. The procedure provisions for four revisions in a day. OTPC agreed to the revised procedure. The forum decided that if required the procedure may be implemented for all gas based power plants with effect from 01.07.2018.

The Sub-Committee noted as above.

D.18 Requisition of spare 10 MVA 132/33 KV transformer from Nirjuli 132 KV substation for Pare HEP

The 2 X 55 MW Pare Hydro Electric Project, NEEPCO has been commissioned in May'2018 and COD of Unit-1 and Unit-2 are commenced from 28.05.18 and 21.05.18 respectively. Presently both the units are generating as per the ISGS of NERLDC.

Unfortunately, the SST (Station Service Transformer, 7.5 MVA, 132/33 KV) tripped due to "Neutral over current" on 22.05.18. While checking it was found major damages in the winding of the transformer, since then the transformer is under break down and shall require major repairing.

Presently, the station power supply is being drawn through one 33 KV Hoj-Sopo transmission line, which is not reliable.

It is learnt that one spare 10 MVA 132/33 KV transformer is available with Powergrid at Nirjuli (132 KV Sub-Station). We intent to receive and utilize this spare transformer on returnable basis/ or on rental basis till restoration of damaged SST after repair, or purchase of a new transformer.

Deliberation in the meeting

Sr. Manager, NEEPCO informed that on 22.05.18 the 7.5MVA Station Transformer failed. Subsequently OEM has been contacted; however repair would be time consuming. Since Pare HEP is already commissioned he requested that Spare 10MVA transformer be handed over to NEEPCO to tide over the crisis. , NERPC stated that the 10MVA 132/33kV Transformer at Nirjuli is Regional Spare and any handing over temporarily has to follow the modalities approved by the 17th TCC/RPC held on 03.10.2016. Members unanimously approved the requisition of regional spare 10MVA 132/33kV transformer by NEEPCO.

The Sub-Committee noted as above.

Action: NEEPCO/NERTS.

D.19 Construction Power for GIS bay at Kopili Switchyard:

PGCIL is taking power from NEEPCO for construction of GIS bay at Kopili SY. During its operation, auxiliary AC supply will also be drawn from Kopili Power Station which will increase normative auxiliary consumption of 1% of Kopili Power Station. Hence this issue also to be discussed in the OCC meeting.

Providing auxiliary ac supply to the newly constructed PGCIL owned GIS substation at kopili SY, from the allowable 1% of the generation on chargeable basis or any other recovery mechanism that the forum may decide.

Deliberation in the meeting

After detailed deliberation the forum requested NEEPCO to explore the following:

- The approximate power consumption for GIS O&M activities.
- Whether the consumption is within the allowable 1% APC.

NEEPCO agreed to revert back.

The Sub-Committee noted as above.

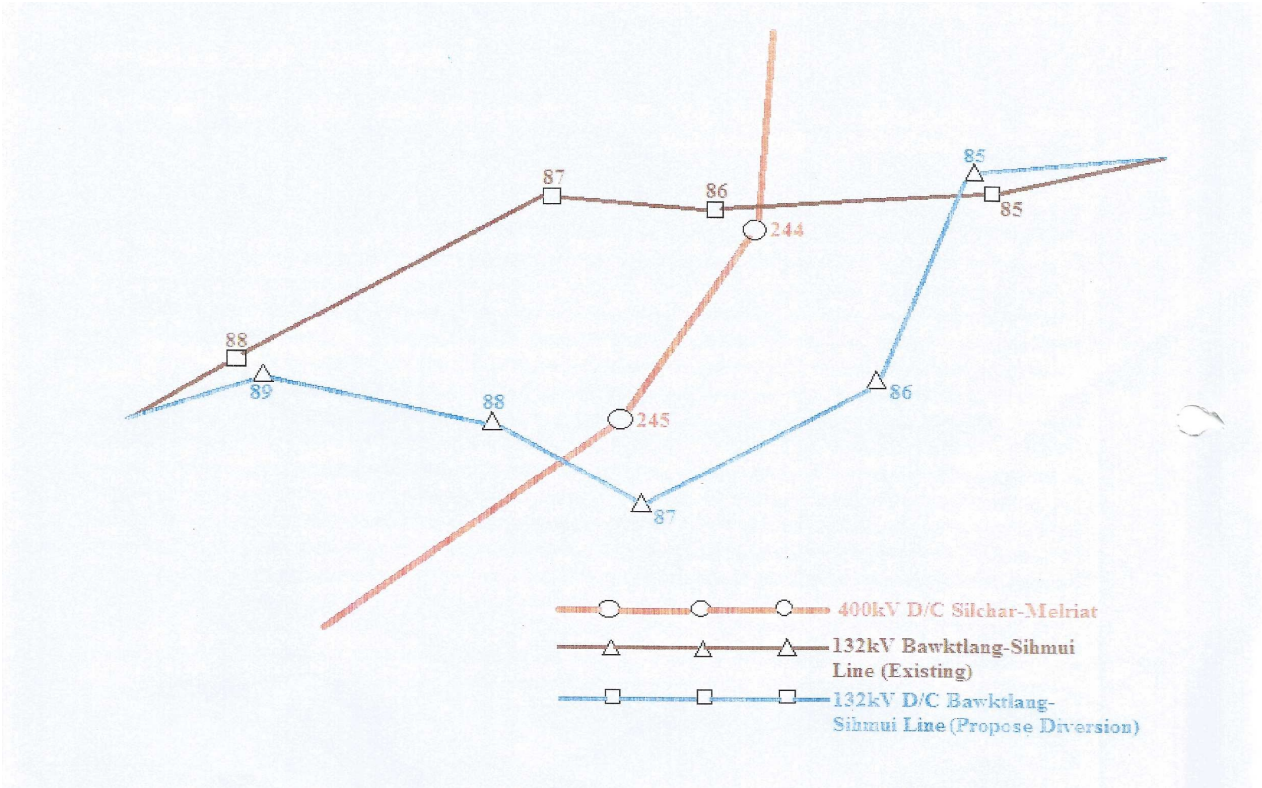
Action: NEEPCO.

D.20 Crossing of 400 kV D/C Silchar-Melriat and 132 kV D/C Bawktlang - Sihmui Line

POWERGRID is constructing 400 kV D/C Silchar —Melriat Line as part of Pallatana Transmission Sytem. During check survey, it has been observed that this line has to cross the 132 kV D/C Bawktlang-Sihmui line already constructed by P&E Department, Govt. of Mizoram. As per the proposed route alignment, the Loc No. 244 of the 400 kV line has to be erected at 10m distance from the Loc No. 86 of the 132 kV Line, which is not possible. Also there is no suitable place to relocate the Loc 244.

A number of possibilities have been explored jointly with P&E Deptt., Mizoram to divert either of the two lines and the only feasible option has been intimated to Mizoram vide our letter No. NEAZL/CONST/P&E/2018 dtd. 21.05.18, in which 4 Nos towers of the 132 kV Line are to be diverted by erecting 5 Nos new towers. POWERGRID proposes to bear the cost of this diversion. A sketch of the propose arrangement is attached here with for kind reference.

It may please be noted that the matter is being pursued with P&E Deptt. Mizoram since January'2017 and a number of joint verification have been carried out but a consensus is yet to be reached.



Deliberation in the meeting

DGM(AM), NERTS informed that 400kV Silchar - Melriat commissioning works are going on at an accelerated pace, and the diversion is an utmost necessity. Sr.

Executive Engineer, P&ED Mizoram informed that in principle concurrence of P&ED Mizoram is there to the shifting of 132kV Bawktlang-Sihmui D/C. He also stated that estimate is being prepared by Executive Engineer(Trans), Kolasib and the same once approved would be given to NERTS. DGM (AM), NERTS requested Mizoram to allow POWERGRID to carry out the job immediately in parallel to approval of estimate to avoid delay in completion of the project.

The Sub-Committee noted as above.

Action: P&ED Mizoram.

D.21. Reporting of grid disturbance by RLDCs:

NPC vide letter dated. 16.05.2018 drew attention to reporting of grid disturbances by RLDCs to NPC.

'*Kind attention is invited to Regulation 13(2) of Central Electricity Authority (Grid Standards). Regulations, 2010 which provide that: "**The grid disturbance resulting in failure of power supply to large areas in a State shall also he reported by the Regional Load Despatch Centre to the Authority within twenty-four hours of the occurrence of the grid disturbance.**"*

The work related to grid disturbances on regional/national basis in CEA is being dealt in the National Power Committee (NPC) Division. It is therefore, requested that any occurrence of the grid disturbance may please be sent to NPC Division. CEA with a copy to Member (GO&D), CEA. This report may also be sent to the following e-mail Id:

(i) cenpc-cea@gov.in
(ii) cenpccea@gmail.com

Deliberation in the meeting

NERLDC informed the forum that NERLDC will inform NPC for events GD-III and above. NERPC requested to give a copy to them.

The forum decided to drop the agenda item.

The Sub-Committee noted as above.

Action: NERLDC.

D.22. Registration of all existing and upcoming electricity generating units of the country of capacity 0.5 MW and above under National Level Data Registry System

Under the National Level Data Registry System, all the existing and upcoming electricity generating units of the country of capacity 0.5 MW and above would

have to get registered with CEA and get a unique registration number from CEA For this impose, a detailed framework(attached at **Annexure-D.22**) was prepared by CEA and the same has been approved by Ministry of Power, Government of India.

For implementing the aforementioned National Level Data Registry System, CEA is preparing a E-Registration Portal and operationalization of E-Registration Portal may take 2 to 3 months time . Once the E-Registration Portal of CEA is ready, all the stakeholders would be informed accordingly by CEA for registering and feeding the data. It is therefore, requested to nominate a nodal officer and intimate the name, mobile, email, address of the same to the undersigned at the e-mail address pslfcea@yahoo.com It is further intimated to keep the concerned officer in readiness for doing the needful.

Till the E-Registration Portal of CEA is operationalized, all the existing procedure of furnishing data will continue as per existing provisions and laws.

Accordingly all generating utilities may please submit the relevant details of the nodal officer.

Deliberation in the meeting

Director/SE(O&P), NERPC apprised the members of the novel initiative of MoP to create a National Data Registry for generating stations. He requested members to peruse the annexure and comply accordingly.

The Sub-Committee noted as above.

Action: All generating utilities.

D.23. OTPC Station Outage from 23rd Aug 2018 to 09th Sept 2018:

ONGC asked the Total Gas S/D from 23rd Aug 2018 to 09th Sept 2018 for augmenting gas processing capacity from 2.2 to 2.7 MMSCMD, however if gas provided by ONGC, OTPC will run one unit during the period, which is yet to confirmed by ONGC.

Deliberation in the meeting

Asst. Manager, OTPC informed that ONGC would take shutdown of pipeline from 23.08.2018 to 09.09.2018 for upgradation works, after confirmation of the same OTPC would revert back to the forum. , NERPC thanked OTPC for taking shutdown during high hydro season as per previous requests made by the forum.

The Sub-Committee noted as above.

D.24. Tripping of OTPC both Unit on dated 11th May and 15th May 2018 due to SPS -2 protection:

RCA required for Tripping of Both 400 KV Palatana –silchar line. Discussion requested on modification proposal regarding SPS-2 sent by OTPC.

Deliberation in the meeting

AM, OTPC informed that as per current scheme upon SPS-2 operation ICT is being tripped while one generator is running in motoring mode feeding the other generator, which is harmful for the generators. He requested the forum to grant necessary permission to OTPC to trip the generator breakers also. The forum agreed unanimously. Regarding tripping of 400kV Palatana-Silchar D/C lines OTPC requested NERTS/NETC to conduct regular patrolling and undertake vegetation clearance activities. AGM, NERTS informed that the said lines pass through the troubled Karimganj area, where it's very difficult to carry out maintenance activities. He even cited the lack of empathy of the police and district administration to the plight of POWERGRID in maintenance activities. The forum requested NERPC to take up the matter in RPC meeting.

The Sub-Committee noted as above.

Action: NERPC.

D.25. Ratification of projected demand and generation for Q2 of 2018-19 (Jul'18 to Sep'18)

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

Projected demand and generation of NER constituents to be discussed in the validation committee meeting for POC transmission charge and loss calculations for Q2 (Jul'18-Sep'18) will be presented in the meeting for ratification by the constituents. Ratification is required due to generation addition of Pare HEP & LRPP and significant difference observed between actual data (actual data of Apr'18 & May'18) and projected data by DICs for Q1.

Deliberation in the meeting

NERLDC highlighted the projected demand figures and forecast figs given by SLDCs. For example in case of Assam projected demand for Q2 is 1887MW while fig of SLDC is 1680MW. AGM, SLDC, Assam informed that necessary clarifications would be given in Validation Committee meeting on 20.06.2018.

After ratification, following are the changes made:

- Pare 110 MW added,
- Assam Generation 281 MW,
- Meghalaya Demand 320 MW and Generation 307 MW.

NERLDC informed the forum that Validation Committee Meeting is scheduled on 20th June'18 and requested all the utilities to attend the same.

The Sub-Committee noted as above.

Action: All utilities.

D.26. Updated Operating Procedures of NER July 2018 (Draft)

Updated Operating Procedures of NER July 2018 will be available in NERLDC website for comments and suggestions from regional entities of NER.

Power utilities of NER are requested to send comment and suggestion for this document by 30th June'18. This document will be finalized by 10th July'18.

The document is password protected. Password may be collected from SO-II department of NERLDC (mail id: *nerldcso2@posoco.in*).

Deliberation in the meeting

NERLDC informed the forum that Draft Updated Operating Procedures of NER July 2018 is available in NERLDC website for comments and suggestions from regional entities of NER. Password was shared among the members.

The Sub-Committee noted as above.

D.27. Updated Power Map of NER July 2018 (Draft)

Updated Operating Procedures of NER July 2018 will be available in NERLDC website for comments and suggestions from regional entities of NER. It will cover all the elements under operation, execution & planning stage.

Power utilities of NER are requested to submit comment and suggestion and check the line length, capacity etc. for this document by 30th June'18. This document will be finalized by 10th July'18

The document is password protected. Password may be collected from SO-II department of NERLDC (mail id: *nerldcso2@posoco.in*).

Deliberation in the meeting

NERLDC informed the forum that Draft Updated Power Maps of NER July 2018 is available in NERLDC website for comments and suggestions from regional entities of NER. Password was shared among the members.

The Sub-Committee noted as above.

D.28. Regional Committee for Load Forecasting

In 20th FOLD meeting held on 25th January 2018, members agreed about the Industry-Academia partnership for the load forecasting. The most important benefit of SLDC academia association shall promote capacity building at SLDC level on load forecasting leading to development of in-house capability.

Further, it was also decided that a competition among LDCs on daily load forecast would be organized. A committee may be constituted comprising members from SLDCs, RLDCs and NLDC, to evaluate the forecast by each LDC, based on a pre-defined performance matrix.

In view of the discussion in 20th FOLD meeting, a committee for NER region to evaluate the performance of the LDCs on load forecasting will be formed and the committee will comprise the following members:

a. One member from NERLDC
b. One member from at least 2 SLDCs of the NER region

The committee will evaluate the accuracy of the day ahead forecast (based on the Root Mean Square Error) of the participating LDC on monthly basis till 31st Mar'19.
Subsequent to evaluation at Regional Level, a committee at National Level comprising members from NLDC, RLDCs and SLDCs will be formed for evaluation of the winner(s).

Based on the details received from LDCs, and the accuracy of the forecasting model, the committee after the completion of the FY 2018-19, will decide the award(s) to be given to the concerned LDCs.

Deliberation in the meeting

NERLDC informed the forum as decided during 20th FOLD Meeting, it was requested to approach academic institutions for developing Load Forecast Model. A competition will be held and a committee will be formed to analyze the results. After detailed deliberation the forum decided to form a committee to spearhead the load forecasting initiative:-

- Smt. Momai Dey, Sr.Engineer, NERLDC
- Shri T. Gidon, Executive Engineer, SLDC Meghalaya
- Smt. Barsha Kashyap, DM SLDC Assam

The committee was requested to submit a monthly report on the activities undertaken to improve load forecasting.

The Sub-Committee noted as above.

Action: All SLDCs/NERLDC.

D.29. Primary Frequency Response – Periodic checking by Third Party

The Hon'ble Central Commission notified the 5th amendment regulation to IEGC on 12th April 2017 which came into force with effect from 1st May 2017. In the section 5, sub para 9, it is mentioned that

"*The following proviso shall be added at the end of Regulation 5.2 (g) of Part 5 of the Principal Regulations: "Provided that periodic check-ups by third party should be conducted at regular interval once in two years through independent agencies selected by RLDCs or SLDCs as the case may be. The cost of such tests shall be recovered by the RLDCs or SLDCs from the Generators. If deemed necessary by RLDCs/SLDCs, the test may be conducted more than once in two years*."

In consideration of the present IEGC regulations, NLDC has compiled a list of generators which are under purview of primary frequency response. A summary of the generators is listed in table below:

Generating Machines under purview of RLDCs for primary frequency response					
S. No.	**Region**	**No. of Utilities**	**No. of stations**	**No. of Units**	**Capacity(MW)**
1	NR	10	27	113	21,192
2	WR	23	38	110	42,110
3	SR	9	15	47	19,228
4	ER	10	13	40	13,256
5	**NER**	**4**	**10**	**29**	**2,247**
	Total	**56**	**103**	**339**	**98,033**

As per IEGC regulation, the tests are to be carried out by independent third party agencies to be selected by RLDCs or SLDCs. Selection of independent third party agencies separately by each RLDC would be duplication of effort. In order to have ease and uniformity in procurement, NLDC on behalf of RLDCs would procure the services for conducting the Primary Frequency Response tests involving RLDCs/NLDC.

Regarding payment mechanism to be adopted, Hon'ble commission has notified that "The cost of such tests shall be recovered by the RLDCs or SLDCs from the Generators." Pursuant to implementation of GST, modalities for placement of award were analysed. In the case when agency is paid by POSOCO and recovery of amount from generator on a later date by POSOCO would cause unnecessary repetition of same process and transaction. After further analysis, it emerged that recovering costs from generators, after making payment to agencies by POSOCO would result in double taxation. In view of the same, Generators would place the award on the agencies based on the rates finalized by POSOCO and the problem of double taxation for same transaction may be avoided. After completion of this task the payment to the agency will be made by owner of generator, which will be done after a detailed report on testing is submitted by agency to POSOCO. The draft report on testing will be shared with POSOCO for comments. The payment process will be initiated only after approval of testing report by POSOCO is done.

Deliberation in the meeting

NERLDC informed the forum that as per IEGC regulation, the tests are to be carried out by independent third party agencies to be selected by RLDCs or SLDCs. NERLDC also informed that recovering costs from generators, after making payment to agencies by POSOCO would result in double taxation. In view of the same, Generators would place the award on the agencies based on the rates finalized by POSOCO. After completion of this task the payment to the agency will be made by owner of generator, which will be done after a detailed report on testing is submitted by agency to POSOCO. The draft report on testing will be shared with POSOCO for comments. The payment process will be initiated only after approval of testing report by POSOCO is done

After detailed deliberation the forum decided that due procedure may be followed to comply with CERC directives.

The Sub-Committee noted as above.

D.30. Blackout of 220 kV Misa(PG) and Kopili HEP on 21st May'18

220 kV Misa Bus and Kopili Power Station were connected with rest of NER Grid through 220 kV Misa-Dimapur 1 & 2 Lines, 220 kV Misa-Byrnihat (Killing) 1 & 2 Lines, 220 kV Misa-Samaguri 1 & 2 Lines, 220 kV Misa-Mariani (PG) Line, 400/220 kV, 315 MVA ICT 1 & 2 at Misa Substation, 220 kV Misa-Kopili 1, 2 & 3 Lines, 132 kV Kopili-Khandong 1 Line and 132 kV Bus-Coupler of Khandong Substation. 132 kV

Khandong - Kopili 2 line and Khandong U 1 & 2 were connected with Bus B and 132 kV Kopili - Khandong 1 Line, 132 kV Khandong - Khleihriat 1 & 2 Lines and 132 kV Khandong - Umrangshu Line were connected with Bus A.

At 15:31 Hrs on 21.05.2018, 220 kV Misa-Dimapur 1 & 2 Lines, 220 kV Misa - Byrnihat (Killing) 1 & 2 Lines, 220 kV Misa - Samaguri 1 & 2 Lines, 220 kV Misa-Mariani (PG) Line, 400/220 kV, 315 MVA ICT 1 & 2 at Misa substation, 220 kV Misa-Kopili 1, 2 & 3 Lines, 132 kV Kopili - Khandong 1 Line and 132 kV Bus-Coupler of Khandong Substation tripped.

Due to tripping of these elements, 220 kV Misa Bus and Kopili Power Station were separated from rest of NER Grid and subsequently Kopili Power Station and 220 kV Misa were blacked out.

At first 220 kV Misa Bus-A charged through ICT-I at Misa at 16:08 Hrs and following lines connected to Bus-A restored progressively.

- 132 kV Khandong - Khliehriat I at 15:59 Hrs.
- 220 kV Misa- Kopili I at 16:12 Hrs.
- 220 kV Misa- Samaguri I at 16:16 Hrs.
- 220 kV Misa- Dimapur II at 16:21 Hrs.
- 220 kV Misa- Byrnihat II at 16:29 Hrs.

While charging the lines connected to Bus-B by shifting to Bus-A; at 16:34 Hrs, the total restored lines got tripped once again resulting voltage failure of 220 kV Misa Bus.

After detailed inspection, restoration of lines started at 17:18 Hrs through 400/220 kV ICT-I at Misa.

Following issues may be discussed:

a. Reason of Fault ~ R-E fault evolved in to R-Y-B-E fault

b. Reason for delayed fault clearance (~3480 msec)

c. Reason for Tripping of all elements in both 220 kV Bus-A & Bus – B at Misa(PG)

- POWERGRID is requested to intimate the how 220 kV elements were distributed (elements connected to 220 kV Bus-A & 220 kV Bus-B prior to disturbance)

d. Reason for tripping of 220 kV Samaguri – Sarusajai-2 line

e. Reason for tripping of 132 kV Khandong – Khiehriat -1 line

f. Reason for tripping of restored elements emanating from 220 kV Misa at 16:34 Hrs

g. Reason for LFO observed

Deliberation in the meeting

NERLDC gave presentation on the incident **(attached in Annexure D.30).** DGM (AM), NERTS stated that the detail analysis and findings to be done by sub group immediately after the occurrence any GD – III & above level grid disturbance and place the recommendation to OCC for implementation by concerned agencies. In this case sub group analysis and findings yet to be placed. Members requested NERPC to hold a Protection Sub-group meeting at the earliest for RCA.

The Sub-Committee noted as above.

Action: NERPC.

D.31. Overloading Problem of 132 kV Pare-Ranganadi I and 132 kV Pare – Lekhi Lines

After commissioning of two units of PARE HEP (NEEPCO), the generation with full capacity is 110 MW and the power evacuation is through 132 kV Pare-Ranganadi and Pare-Lekhi lines. Whenever 132 kV Nirjuli-Gohpur line remains closed and the Gohpur load (14-18MW) is fed radially from Nirjuli, it creates overloading of 132 kV Pare-Lekhi line (90-95 MW) during peak hours and during off peak hours, overloading takes place at 132 kV Pare-Ranganadi line (90-94 MW). Hence to avoid any tripping due to overloading, load management/generation reduction has become the daily issues in real time condition.

Deliberation in the meeting

NERLDC representative explained the overloading in 132 KV Pare-Ranganadi line mainly during evening peak load hours. It was felt that commissioning of Ranganadi-Pare-Chimpu lines would provide solution to the issue. Ar. Pradesh representative stated that the line(s) were ready for charging, only signing of connection agreement between NEEPCO and Ar. Pradesh was to be done. He stated that matter was pending with State Govt. and was expected any time. He agreed to pursue with State Govt.

Till that time, it was agreed to control overloading with load management at Gohpur. It was also agreed not to supply Gohpur from Nirjuli during peak load hours.

The Sub-Committee noted as above.

Action: AEGCL/ DoP Ar.Pradesh.

D.32. High MVAR Drawl by Bangladesh

It has been observed mostly during peak hours that, Bangladesh drawal reaches 190 MW with reactive power consumption of 60-70 MVAR and sometimes even more. Any generation outage at Tripura during these periods (say outage of Monarchak/ Rokhia)

causes severe low voltage issue at Agartala and hence AGTCCPP Units /132 kV system are compelled to supply very high quantum of MVAR to maintain Agartala Bus voltage which is not desirable for safety of the grid system. To prevent such issues, action needs to be taken to restrict MW/MVAR drawal by Bangladesh

Deliberation in the meeting

Director/SE(O&P, NERPC informed the forum that the issue would be discussed with CEA/NLDC how to resolve the issues pertaining to power supply from Tripura. The detail would be communicated subsequently.

The Sub-Committee noted as above.

D.33. Doyang Realtime data/status not available since 15th January'18

DOYANG realtime data and status are not available since January'18. This causes low visibility for the system operators in real time and affects proper grid management for taking quick decisions. POWERGRID/NEEPCO may apprise the status and intimate why it takes so long to restore the system.

Deliberation in the meeting

Sr. Manager, NEEPCO informed that the RTU & LDMS at Doyang are working perfectly. He suggested that RTU port/PLCC problem might be there. After detailed deliberation the forum requested NERTS to check the end to end channel for Doyang and referred the item to NETeST for monitoring.

The Sub-Committee noted as above.

Action: NERTS/NERPC.

D.34. Communication problem with Nagaland during night time

It has been observed that in case of any tripping for instance like 132 kV Doyang-Sanis-Wokha line tripped on 4th June 18 at 01:35 hrs & restored at 0648hrs on 4th June 18 taking more than 5 hrs to restore of lines in Nagaland system. During odd night time, nobody receives phone call including SLDC thus resulting in abnormal delay in restoration of the line/system.

Deliberation in the meeting

NERLDC representative highlighted the communication issues with Ar. Pradesh and Nagaland. Nagaland representative stated that he would look into the issue and also he was pursuing with POWERGRID-NERTS for early commissioning of SLDC, Dimapur.

Ar. Pradesh representative stated that SLDC at Chimpu was expected to be commissioned by second week of July'18 by Hon'ble Chief Minister-Ar. Pradesh. He requested presence of NERLDC, NERPC so that the event can be organized smoothly. He stated that he would co-ordinate and intimate exact schedule once it is finalized.

The Sub-Committee noted as above.

Action: NERLDC/DoP Nagaland.

D.35. LILO of 132 kV Jiribam-Aizawl at Tipaimukh S/S charged without following normal procedures.

S/D for LILO work of 132 kV Jiribam-Aizawl line (PG) at Tipaimukh S/S (Manipur) was taken on 1st June 2018 by Manipur. The same LILO Tipaimukh S/S (Manipur) was charged for the first time from Jiribam end on 3rd June 2018 at 1017 hrs and finally closed successfully at 11:34 hrs. However, this was allowed as a special case so that reliability of power supply to Mizoram is not affected. Till date, Telemetry data (RTU) & Voice communication systems are yet to be made available as mandated by IEGC. Manipur is requested to complete all formalities at the earliest possible.

Deliberation in the meeting

NERLDC representative stated that Telemetry data (RTU) & Voice communication systems are yet to be made available as mandated by IEGC at Tipaimukh Substation by MSPCL. MSPCL representative agreed to the same.

NERLDC also requested all concerned to follow the prescribed procedure as stipulated by CERC in case of first time charging of any new element.

The Sub-Committee noted as above.

D.36. Normative DC implemented for Hydro Power Plants as per 5th Amendments of IEGC, CERC

As per 5th amendment in IEGC and SOR on 5th amendment dated 13th April'2018, restriction on Hydro plants to keep its schedule below On bar Installed Capacity less Auxiliary Consumption has been imposed. As per CERC order it is the prerogative of the generators to intimate the DC including overload capacity but the schedule to the beneficiaries would be restricted to installed capacity(IC) minus normative auxiliary consumption or the DC by generator whichever is less. A letter in this matter has been issued to concerned Utilities vide Ref No:NERLDC/SO-I/9185-96/489 dated 31/05/2018. Small ppt is kept ready for presentation.

Deliberation in the meeting

NERLDC representative stated that the procedure has been implemented in line with SOR on 5th. Amendment dated 13th. April, 2018 (copy of presentation at Annexure-**D.36**).

On an enquiry from NEEPCO, it was explained that during non-monsoon period when reservoir is not spilling, ex-PP schedule of hydro ISGS would be restricted to Installed Capacity less normative aux. consumption while honoring the daily energy as submitted by the Station.

The Sub-Committee noted as above.

Action: All concerned utilities.

D.37. Scheduling related issues

Schedule related issues discussed in the forum.

As per suggestion of the forum, RLDC has been sending R0 and R1 schedules through email to all SLDCs apart from uploading it in the website. Also we have been sending all partial related schedules to concerned SLDCs along-with verbal telephonic intimation. But none of the SLDCs has responded to our mails so far. All Constituents Heads (SLDCs) are requested to kindly take note of the issue and sensitise to all shift personals to response.

Deliberation in the meeting

NERLDC representative stated that the States were being requested regularly in OCC meetings to check the R0 and R1 schedules. He stated that regular checks by all SLDCs would ensure eliminating error(s), if any before start of actual day of operation. SLDCs agreed to do the needful.

The Sub-Committee noted as above.

Action: All SLDCs.

D.38. Pare unit is not synchronising as per schedule especially during morning peak

As per CERC, all Hydro stations are to declare their DC at least for 3 hrs/12block. But PARE HEP is declaring DC for 10 block only which may create problem for calculating DC.

As per demand curve of NER, NERLDC is scheduling the PARE generation during morning hours (from 06-10) and peak hours (16-22). But almost every day they are delaying the synchronising time from schedule time for 15min to 30 min, thereby

attracting DSM charges and resulting in NER load gen mismatch/more power input from ER.

Deliberation in the meeting

NERLDC representative stated that there were some initial concerns which have been addressed by Pare HEP. DGM(MO), NERLDC stated that during visit of NERLDC team to Pare on 24.05.2018, various operational issues including putting the governor in auto mode were discussed with DGM, NEEPCO, Pare HEP and resolved.

The Sub-Committee noted as above.

D.39. Telemetry and Voice Communication issues

ULDC connection to each Generation plant and SLDCs is highly required as at the hour of crisis effective communication is a must. It has been observed that communication with AP SLDC, ASSAM SLDC and few other plants is a time taking process during critical time.

Latest Tabular format attached in **Annexure-D.39**.

Deliberation in the meeting

Director/SE(O&), NERPC requested NERTS to check important links especially ICCP and ensure their availability at all times. He also requested NERLDC to circulate via mail the data outage of important stations in line with decisions in NETeST forum.

The Sub-Committee noted as above.

Action: NERTS/NERLDC.

D.40. Procurement of additional 70 Laptops:

Revised Target as intimated by NERTS in 144th. OCC:

e-RA: completed.
LOA: June'18
Supply: August'18

Deliberation in the meeting

NERTS-POWERGRID explained the following:

Procurement of laptop had two parts a) Laptops b) M S Office std.2016 paper License. However, bidder has indicated that MS office std.2016 paper licenses are out of date and cannot be supplied.

As such further process for placement of award could not be moved. Forum may decide: --

(i) Whether to go for procurement of Laptops only through the current NIT which is under evaluation and procurement of M S office through a separate tender.

OR

(ii) Whether to cancel the current NIT under evaluation and go for fresh tendering for both LAPTOP and MS Office.

On enquiry, DGM(AM), NERTS informed that procurement of MS Office through separate tender would take little time.

Accordingly, OCC agreed for option (i) for procurement of Laptops through current tender under evaluation and separate procurement of MS Office through separate tendering.

POWERGRID was advised to complete entire activity within Sept'18.

The Sub-Committee noted as above.

Action: NERTS.

D.41. Installation of new L&T SEMs in NER:

In 144th. OCC meeting, NERTS intimated that 86 SEMs out of the total of 131 have been installed. The balance would be completed by Jun'18.

Deliberation in the meeting

NERTS-POWERGRID intimated the following:

"Installation of SEM meters at different sites already taken up.
Balipara : Work in Progress. Completion by 19.06.2018

For other location: SEM meters are being dispatched/collected by different location from central store. Installation will be completed by 31.06.2018 as per target.

Note: On 14-06-2018, installation of 2 nos. of SEMs at Chimpu end is completed as desired by POSOCO.

As installation of SEMs will be completed soon. Hence POSOCO may please suggest whether to proceed with the installation as New SEMs will require new DCD or new software with USB/Optical data cord. If utilities fail to provide laptop/desktop for software installation, collection of SEM will not be possible till procurement/issue of new DCDs which are under procurement."

DGM(MO), NERLDC stated that taking into account above factor, early procurement of Laptop and DCDs would be crucial. He requested NERTS to stick to the timeline for both the activities and till then, any further installation of new Meters in new locations has to be in consultation with NERLDC.

The Sub-Committee noted as above.

Action: NERTS.

D.42. AMR in NER:

QR: by 30.04.18
Bid sale: till 08.06.18
OBD: 15.06.18
LOA: 30.06.18

NERTS provided the web-link for the tender as under:

www.pgcileps.buyjunction.in

Deliberation in the meeting

NERTS intimated that so far no response received from any party even after extension of bid sale date. Extended bill sale date in 20.06.2018 and OBD by 28.06.2018. Based on response from the party further schedule for LOA will be provided.

The Sub-Committee noted as above.

Action: NERTS.

D.43. Testing of SEMs at accredited laboratory:

In the 142nd. OCC meeting, Manager, NERTS informed that current estimate is based on all 234 SEMs in NER with appx. Cost being INR 22lakhs(@8140/meter). DGM(MO), NERLDC clarified that testing is required only for meters which have been in service for more than 5yrs but less than 10yrs. NERTS was requested to obtain fresh estimate on finalization of number of Meters to be tested. Accordingly, no. of meters to be tested has been worked out. In 143rd OCCM, Manager, NERTS informed that the revised estimate has worked out to be appx. Rs.15.96 lakhs. In 144th. OCC meeting, NERTS informed that the testing of SEMs is under tendering process.

Deliberation in the meeting

NERTS intimated the tender documents were under preparation and gave the following tentative schedule:

Tentative Bid Sale: July-2018

Tentative OBD: September-2018

Tentative LOA : October-2018

The Sub-Committee noted as above.

Action: NERTS.

D.44. Procurement of DCD:

In the 142nd. OCC meeting, NERTS representative intimated that LOA for the DCDs would be issued by May'18.

In 143rd OCCM, NERTS informed that the DCDs recently supplied by the agency M/s L&T are presently not available in view of enhancement of memory capacity subsequent to introduction of new version. POWERGRID taken up with the DCD supplier to provide the new versions at the same rate and terms and conditions so that procurement action can be taken up on repeat order basis vis-à-vis the contract recently awarded to M/s L&T for supply of SEM, DCD and Laptops. On confirmation from M/s L&T necessary action would be taken up by POWERGRID for procurement of DCD. In 144th. OCC, NERTS informed that the Technical Specifications have been changed due to up-gradation of DCD with higher memory capacity and the same has been communicated to M/s L&T.

Deliberation in the meeting

NERTS intimated that the procurement would have to be made under quantity variation to existing LOA which involve GST amendment to the old LOA also.

The schedule: -

Tentative date of issue of Amendment: 14.07.2018

Tentative date for GST LOA: 07.08.2018

Tentative supply: September-2018

The Sub-Committee noted as above.

Action: NERTS.

D.45. Erratic reading of SEM:

1. Dullavcherra end of 132 KV Dullavcherra-Dharmanagar feeder
2. Jiribam(PG) end of 132 kV Jiribam(PG)-Jiribam(Manipur)
3. Dimapur(PG) end of 132 Dimapur(PG)-Bokajan(Assam)

Deliberation in the meeting

a. For Dullavcherra end details checking done by POWERGRID and report submitted. Phase marking at site could not be traced. Phase association of current and voltage is suspected which requires permission from MRT Dept. of SEM as intimated by site. Hence MRT Deptt may confirm correct phase association to the SEMs.

SLDC, Assam agreed to look into and do the needful.

b. Jiribam end checked again and no problem found.

NERTS was requested to check and confirm CT, PT ratio and correctness of connections.

c. Dimapur end SEM checked and voltage /Current inputs were found proper.

In case of Dimapur, it was observed that the Meters turned erratic after incident of Fire. Hence, it would be desirable to replace all meters by new L&T Meters. The erratic meters should be sent to L&T works for rectification.

The Sub-Committee noted as above.

Action: NERTS.

D.46. Commissioning of RS-485 scheme in all ISGS of NER:

In 144th. OCC meeting, DGM(AM), NERTS informed that for total of 28 locations and 300 SEMs NERTS would go for tendering. The timeline would be intimated by next OCC.

Deliberation in the meeting

NERTS intimated following:

Tentative Bid Sale: July-2018
Tentative OBD: September-2018
Tentative LOA: October-2018

The Sub-Committee noted as above.

Action: NERTS.

D.47. Installation of SEM for 33/11 KV Bhutan feeder in Assam system

In 143rd. OCC meeting, NERTS was requested to provide APDCL with one SEM on returnable basis for installation at 33/11kV Bhutan feeder.

NERTS has reported the following:

As decided in the OCC meeting , representative of POWERGRID has visited Bhairabkund (Bhutan Border) on 02.06.2018 along with APDCL officials for installation of energy meter in 11KV Rawta - Bhutan feeder.

The following activities were done during the visit:-

1. Installation of new energy meter in place of old energy meter.

The details of new energy meter installed as follows :
Sl. No. NP9527-A Make : L&T

CT Ratio : -/1, Imax : 2 Amp.
The CT and PT ratio provided are 200/5 A and 11KV/ 110V respectively.

2. The new VINPLUS software installed in LAPTOP provided by APDCL representatives.

3.One no. Optical- USB data cord handed over to APDCL representative.

4. Demonstration given to APDCL representative for extraction of data from energy meter to LAPTOP using VINplus software and optical-USB data cord.

5. Final reading of old meter and initial reading of new meter handed over to APDCL.

After successful installation of meter and demonstration of data extraction POWERGRID representative left the site on 02.06.18 evening.

Deliberation in the meeting

APDCL thanked NERTS for the cooperation in this regards.

Director/SE(O), NERPC intimated that a meeting with ERPC would be scheduled on this.

The Sub-Committee noted as above.

Action: NERTS.

D.48. Time drift in SEMs.

Status of large time drift is as below:

a) NTPC-BgTPP (main meters time drift of about 8 minutes)

b) Bongaigaon (PG) (in the range of 10 minutes)

c) Dimapur (PG)

d) Imphal (Manipur) (in the range of 10-12 minutes)

e) 79 tilla (Tripura) (in the range of 10-12 minutes)

f) Silchar (PG) (in the range of 10-12 minutes)

g)Rangia / Motonga (in the range of 10-12 minutes)

h) Nirjuli(PG) (in the range of 15-25 minutes)

i) Agartala (in the range of 10-12 minutes)

Deliberation in the meeting

NERTS intimated as below:

Bongaigaon (PG): Regularly being done.

Dimapur (PG): Drift correction started.

Nirjuli (PG): Drift correction regularly carried out.

Rangia/Motonga: Correction will be started from this week.

Regarding Silchar (PG), as Elster meters were there and time correction cannot be done, it was agreed that all meters would be replaced by L&T make after procurement of DCDs.

Regarding NTPC-BgTPP, it was agreed that POWERGRID-Bongaigaon would extend one-time assistance in providing guidance for time correction of SEMs.

It was agreed that the two large time drifted main meters in 400 KV BgTPP-Bongaigaon D/C lines would be replaced by new Meters. Also two Elster make check meters in these lines would be replaced by L&T make meters.

The Sub-Committee noted as above.

Action: NERTS.

D.49 Replacement of SEMs.

2 SEMs at Palatana are reported faulty and the same need to be replaced.

Deliberation in the meeting

It was agreed that two defective SEMs at OTPC, Palatana would be replaced by new Meters. It was also agreed that one spare SEM would be provided to OTPC to enable quick replacement in case of any malfunctioning while providing time correction command.

The Sub-Committee noted as above.

Action: NERTS.

ADDITIONAL AGENDA ITEM

AGENDA ITEM FROM OTPC

D.50 Providing Power Supply to OTPC Plant Colony from Palatana Plant-Installation of SEM thereof

The housing colony of Palatana Plant is under construction and is likely to be completed within a year or so. The colony is situated around 7 (Seven) kilometer away from Palatana plant. For a reliable power supply to the colony, it is proposed that power supply to the colony be arranged from Palatana Plant itself. The total power consumption of the Colony is expected to be around 2 (Two) MW. It is proposed to draw power from 6.6 kV station bus of Palatana Plant to the Colony. The Colony power consumption shall be treated as drawal of TSECL and TSECL shall raise bill to

OTPC as per their applicable Tariff structure. OTPC and TSECL shall finalize the modalities of construction of line, billing etc. through mutual discussion and agreement.

This agenda is placed before the Operation Co-ordination Committee for discussion and approval for installation of SEMs so that colony power drawal shall reflect in REA as consumption of TSECL.

Deliberation in the meeting

GM, OTPC informed the forum that due to paucity of land in the power plant complex the colony had to be constructed about 7km away. For reliable power supply to the colony; OTPC is planning to lay 6.6kV cable from power plant, which will be fed via Station Transformer. He also stated that OTPC plans to become consumer of Tripura and upon installation of SEM, bills may be raised by the latter.

APDCL representative raised the following issues:-

- Installation of distribution line and operation by generating company.
- Billing issue.
- whether TSECL is able to supply power to the colony

Members further opined that CEA and CERC clarification is required so that no existing regulations are violated.

DGM(MO), NERLDC stated the following:-

- TSECL is to confirm.
- Protection issues to be sorted out because a generator would be connected to distribution consumer.
- As per current regulations metering is upto 132kV level (However, in NER, as an exception, it is done for 33 KV also in case of old legacy lines of Assam-AP, Assam-Nagaland, Assam-Bhutan) So regulatory modifications/guidelines are required before installation of SEM.

The forum agreed in-principle drawal of power by OTPC township directly from the power plant, subject to views and decision of CEA and CERC in this regard. It was decided that the NERPC would take up the matter with CERC and would be resolved within 30.06.2018.

The Sub-Committee noted as above.

Action: TSECL/NERPC/OTPC.

AGENDA FROM NERLDC

D.51 Billing for SEMs / DCDs / Accessories procured by POWERGRID-NERTS

It was agreed that POWERGRID-NERTS would raise bills to all the States of NER in proportion to weighted average entitlement from NER ISGS. For procurement during a particular year, weighted average entitlement as on 31st. March of the year would be considered. For example, for all procurement during 2016-17, weighted average entitlement as indicated in the REA of March'17 would be taken for billing.

POWERGRID, NERTS has procured following quantities of SEMs, DCDs and Laptops against which the bills have not been raised.

S. N	LOA Ref no.	Quantity (nos.)			Amount
		SEM	DCD	Laptops	
1	NESH/CSM/1500-167/LOA/3546 dated 29/02/2012	4	NIL	NIL	Rs. 90,600.00
2	NESH/CSM/1500-161/LOA/1719 dated 08/10/2012	116	50	NIL	Rs. 37,93,180.00
3	NESH/CSM/1500-362/LOA/8 dated 23/06/2015	50	10	NIL	Rs. 14,39,000.00
4	NESH/CSM/1500-408/LOA/355 dated 18/11/2016	266	17	14	Rs.75,45,050.00

The Bills against the above quantities will be raised by POWERGRID to all the NER beneficiaries in proportion to weighted average entitlement as per monthly REA during the period of procurement as raised earlier.

The Sub-Committee noted as above.

Action: NERTS.

D.52 Surplus in NER and backing down of hydro ISGS:

It was stated that due to sudden rains resulting in spillage in Ranganadi HEP coupled with load crash in States, all NER States were drawing much less than their schedule during early hours of 13.06.2018. This resulted in export to ER to the tune of 800 MW against schedule of around100 MW. NERLDC took action by coordinating with States and all thermal units were reduced to Technical minimum level. In-spite of that still

there was deviation in inter-Regional schedule and one unit of BgTPP was sent under Reserve Shutdown wef 1230 Hrs on 13.06.2018. Also the reservoir based hydro Stations which were not spilling were asked to reduce generation.

NERLDC requested all the States and Generators to cooperate in such situation to maintain Grid Security. The States were advised to explore the option of intra-day market in such a situation of sustained underdrawal, this would be beneficial to the States in view of shortage in other Regions during Summer season.

NTPC-BgTPP stated that it would be preferable for them to go under RSD rather than running in part load close to 55%. NERLDC clarified that once U-3 of BgTPP is commissioned, backing down would be frequent during monsoon and NTPC units would be needed during peak load hours only. Accordingly, NTPC may opt to operate the units accordingly by preferring the option of RSD.

NEEPCO representative stated that hydro units should not be asked to back down in monsoon when there is spilling like situation. NERLDC clarified that respective generating station would have to declare spilling backed up by water level data and in such a case generator would not be asked by NERLDC to back down.

In case of Loktak, it was agreed that Power Channel water level would be considered by NERLDC.

It was apprehended that with the commissioning of Pare HEP and probable commissioning of BgTPP U-3 and Kameng HEP, there would be substantial surplus during monsoon mainly in off-peak and proper planning would be required by beneficiary States and generators to tackle such situation.

Member Secretary-NERPC stated that this item may be kept as agenda in next OCC also.

The Sub-Committee noted as above.

Action: All SLDCs, DISCOM, ISGS.

D.53 <u>Increase of Reliability of Power Flow to Bangladesh</u>

At present, power is fed to Bangladesh through 132 kV Suryamaninagar – Comilla D/C (400 kV charged at 132 kV). At Suryamaninagar end, adopted CT ratio is 1000:1, Overcurrent Plug Setting Multiplier (PSM) is 0.8. This calculates to a power flow of about 183 MVA (1.7321*Voltage*CT Ratio * PSM) in single circuit.

With the above settings and in high power flow scenario to Bangladesh (~192 MW as contracted), in case of tripping of one circuit of 132 kV Suryamaninagar – Comilla D/C, the reliability is greatly reduced as the other circuit will not able to cater the power flow. Changing the PSM value at Suryamaninagar to "1" will allow power flow of about 229 MVA via single circuit of 132 kV Suryamaninagar – Comilla D/C.

For safe and reliable power transfer to Bangladesh, it is propose the set the PSM at Suryamaninagar to a higher value so that full contracted power flow to Bangladesh can be transferred even if one circuit trips.

Members may discuss the PSM value to be set at Suryamaninagar and restrictions, if any, at Comilla end.

Deliberation in the meeting

Director/SE(O&P), NERPC took strong note of the unilateral action of TSECL to increase power flow to 160MW without intimating the forum. Since bays at Surjamaninagar are being maintained by NERTS, any increase in power flow ordains changes to be made in protection settings. DGM(AM), NERTS opined that changing PSM would be futile since it is meant for O/C protection of particular line. He suggested that Overload Relay with higher time setting may be installed. Members approved the suggestion and requested NERPC to take up the matter with NPC/NLDC/MoP regarding uncontrolled load pattern of Bangladesh.

The Sub-Committee noted as above.

Action: NERTS/NERPC.

D.54 Disturbance in Southern Part of NER on 18th Jun'18

Disturbance occurred in Southern Part of NER Grid on 18.06.18 at 01:39 Hrs comprising of the following Power Systems:

a. Tripura
b. South Assam
c. Manipur
d. Mizoram
e. Part of Meghalaya
f. Bangladesh (South Comilla)

These Power Systems were connected with rest of NER Grid through the following links:

a. 400 kV Silchar - Azara line
b. 400 kV Silchar - Byrnihat line
c. 132 kV Khliehriat(ME) - Mustem line & 132 kV Khliehriat (ME) - NEIGRIHMS line

d. 220 kV Bus Coupler at Kopili (Bus A: 160 MVA ICT; Bus B: Misa 1, 2 & 3 lines, Unit 1,2,3 & 4) and
e. 132 kV Dimapur – Imphal line

At 01:39:43.925 Hrs, 400 kV Silchar – Byrnihat tripped and at 01:39:43.930 Hrs, 400 kV Silchar – Azara line tripped. Due to tripping of these lines, entire power flow in these lines shifted to low capacity (132 kV lines) parallel corridor.

Subsequently, 132 kV Khliehriat(ME) - Mustem line, 132 kV Khliehriat (ME) - NEIGRIHMS line, 220 kV Bus Coupler at Kopili and 132 kV Dimapur – Imphal line tripped due to over current.

Due to tripping of these lines, Southern part of NER grid including South Comilla (Bangladesh load) was separated from rest of NER Grid and subsequently collapsed due to Load Generation Mismatch.

Load Loss: 200 MW
Load loss of Bangladesh: 104 MW
Generation Loss: 793 MW

Restoration process was started by charging 400 kV kV Bongaigaon - Byrnihat Line at 01:51 Hrs. Power was exntended to Khleihriat area through 132 kV Mustem – Khliehriat Line at 01:56 Hrs. Power was extended to Manipur Power System through 132 kV Imphal – Imphal I Line at 02:14 Hrs. Power was extended to Tripura Power System through 132 kV Silchar -P.K. Bari I Line at 02:14 Hrs. Power was extended to South Assam Power System through 132 kV Silchar - Srikona I Line at 02:16 hrs. Power was extended to Mizoram Power System through 132 kV Melriat - Zuangtui Line at 02:30 Hrs. Power was extended to Bangladesh (South Comilla) Power System through 132 kV SM Nagar - Comilla I Line at 03:10 Hrs.

Deliberation in the meeting

NERLDC gave a presentation **(attached in Annexure D.54)** and highlighted about the disturbance in Southern part of NER due to tripping of 400 kV Silchar-Azara and 400 kV Silchar- Byrnihat. After detailed deliberation the members referred the matter to the PCC forum.

The Sub-Committee noted as above.

Action: NERPC.

AGENDA FROM NERPC:

D.55 Allocation of Power from Mangdecchu HEP:

Director/SE(O&P), NERPC informed the forum that Mangdecchhu HEP will commence commercial operation shortly. However till date only Assam has requested to get the share allocation from this project. He enquired from other NER States about the status of their willingness to get the power allocation from this project. Remaining NER States informed that power allocation from Mangdechhu HEP is not required by them.

requested the remaining 6 (Six) States of NER to communicate the same to IRP Division, CEA with a copy to NERPC Secretariat on this matter.

The Sub-Committee noted as above.

Action: All SLDCs.

D.56 Review of Reserve Shutdown Mechanism :

Director/SE(O&P), NERPC intimated the forum that CERC has requested to review the Reserve Shutdown Procedure and the Compensation Mechanism in totality by the respective RPCs. In particular it was requested to provide views on the paradigm procedure of WRPC. NERLDC from the operational viewpoint has made a comparison of the WRPC procedure and existing procedure.

Present Scheme	WRPC Scheme
1. RLDC to see that if at any block Schedule is < Tech Min. Then Advise State and ISGS accordingly	1. A Nodal State will take lead and inform RLDC about surplus and further process for RSD
2. If RSD is done ,Requisition of some Beneficiary from the Plant may be curtailed, Although it may be very Rare.	2. There is a Provision of RSD quota and also provide the remaining quantum from next cheaper plant. Modality not very clear.
3. Minimum Period of RSD would be 8 hours or less in case of grid requirement	3. Minimum Period of RSD would be 3 Days.
4. Notice Period depends upon Plant Hot, Warm, Cold Start timings	4. Notice Period of 24 Hours.

- Present scheme provides more flexibility to beneficiaries in terms of time periods.
- In WRPC scheme, state would have to take more proactive role and one lead state is to be decided with whom RLDC have to interact with.
- More clarity is required to understand the accounting philosophy.

Members remarked that the requirement of a nodal state entails operational difficulties. Further it will be very cumbersome for the nodal SLDC/DISCOM to carry out this exercise. The forum requested NERPC to communicate its views to CERC.

The Sub-Committee noted as above.

Action: NERPC.

D.57 Flexibility in generation and scheduling of thermal power station to reduce emissions:

Director/SE(O&P), NERPC informed that MoP vide letter dated 05.04.2018 has informed of the policy regarding 'Flexibility in generation and scheduling of thermal power station to reduce emissions'. He also explained the backdrop of the unique proposed procedure:-

- The concept of Flexible utilization of coal by the generating companies was introduced in 2016. This has resulted in usage of coal within own basket to the nearby generating stations.
- Thus has reduced unnecessary transportation costs and reduction in power generation cost.
- Now after large scale integration of renewables the burden of renewables obligation has fallen on DISCOMs. This would be counteractive in balancing the grid.
- So in order for generators to share the responsibility this framework is being introduced. After feedback from all the concerned utilities this would be made operational.

The detailed framework is attached at **Annexure-D.57.**

NERPC requested the members especially generating utilities to provide their comments ASAP.

The Sub-Committee noted as above.

Action: All generating utilities, all DISCOMS, SLDCs/RLDC.

Date & Venue of next OCC meeting

It is proposed to hold the 146th OCC meeting of NERPC on second week of July, 2018. However, the exact date and venue will be intimated in due course.

The meeting ended with thanks to the Chair.

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Annexure-I

List of Participants in the 145th OCC Meetings held on 19th June, 2018

SN	Name & Designation	Organization	Contact No.
1.	Sh. N. Perme, EE, SLDC	Ar. Pradesh	9436288643
2.	Sh. Z.A. Choudhury, CGM, SLDC	Assam	09435371734
3.	Sh. Dipesh Ch. Das, AGM (LDC)	Assam	09954110254
4.	Sh B.C. Borah, AGM, SLDC	Assam	09435119248
5.	Sh. Atul Boro, AGM (TRC), APDCL	Assam	08473049492
6.	Sh. K. Goswami, Consultant, APDCL	Assam	08638487200
7.	Sh. S. Kripachariya Singh, Manager (Trans)	Manipur	08413948551
8.	Sh. F.E. Kharshiing, SE, MeECL	Meghalaya	098630 66960
9.	Sh. B. Wankhar, EE (MO), SLDC	Meghalaya	09436105914
10.	Sh. W. Khyriem, EE, GSPD, MePGCL	Meghalaya	09856007107
11.	Sh. B. Nikhla, EE, SP, MePTCL	Meghalaya	09436314163
12.	Sh. D.J. Lyngdoh, EE (SM), MePTCL	Meghalaya	-
13.	Sh. M. Tariang, AEE	Meghalaya	-
14.	Sh. J.H. Laithangliana, Sr.E.E	Mizoram	09436143705
15.	Sh. Benjamin L. Tlumtea, Sr. E.E	Mizoram	09436151424
16.	Sh. Nitovi A. Wotsa, EE (Trans.), DMR	Nagaland	09436004928
17.	Sh. D.Chakraborty, S.D.O. (SLDC)	Nagaland	07577950317
	No Representatives	**Tripura**	**-**
18.	Sh. Joypal Roy, Sr. Manager (E/M)	NEEPCO	09435577726
19.	Sh. B.K. Chakraborty, DGM (E), KHEP	NEEPCO	09436309730
20.	Sh. R. Sutradhar , DGM (MO)	NERLDC	09436302714
21.	Smt. Momai Dey, Sr. Engineer	NERLDC	09436302716
22.	Sh. Ankit Jain, Sr. Engineer	NERLDC	09436335381
23.	Smti. Bornali Nath, Asst. Engineer	NERLDC	08414927752
24.	Sh. Debashish Mondal, Engineer	NERLDC	09402120102
25.	Sh. P.Kanungo, DGM (AM)	PGCIL	09436302823
26.	Sh. U. Kataki, AGM	PGCIL	09435505418
27.	Sh. Akhil Ch.Deka, Manager	NHPC	-
28.	Sh. Pulak Deka, DM (M)	NHPC	09435187838
29.	Sh. Arup Ch. Sarma, GM	OTPC	09871839502
30.	Sh. Alokesh Hazarika, Asst. Manager	OTPC	08787606131
31.	Sh. Kangkan Paul, Dy. Manager	NTPC	09435029230
32.	Sh. P.K.Mishra, Member secretary	NERPC	09968380242
33.	Sh. B. Lyngkhoi, Director/S.E (O&P)	NERPC	09436163419
34.	Sh. S. Mukherjee, AEE	NERPC	08794277306

Annexure-3.1

Procedure for verification of Transmission Availability Certificate

As per Terms and Conditions of Tariff Regulations of 2014 of CERC, Transmission system availability factor for a calendar month (TAFM) shall be calculated by the respective transmission licensee, got verified by the concerned RLDC and certified by the MemberSecretary, Regional Power Committee of the region concerned, separately for each AC and HVDC transmission system and grouped according to sharing of transmission charges.

For streamlining the process of Verification of Transmission Element Availability, a Procedure is prepared by NERLDC and NERPC.

1. Transmission Licensees shall submit the monthly outage data of previous month by 5th of every month. (say data for the month of January18 shall be submitted by 5th of February18)
2. Transmission Licensees shall also submit following details/documents along with monthly outage data against each outage due to tripping, which are claimed as non - attributable:
    a. Relevant clause no. of Terms and Conditions of Tariff Regulations of 2014 of CERC
    b. Relay Indications at each end
    c. Disturbance Recorder (DR) output, Event Logger (EL) output & FIR(First Information Report)
    d. Reason for outage
    e. Weather Condition
    f. Other relevant documentary evidences (photograph, patrolling report, LA/PLCC counter reading of pre and post event, etc) wherever required.
3. Submitted Disturbance Recorder (DR) output shall contain all digital &analog channels as per standard, DR file name, date and time of tripping, Name of the Substation and Name of the transmission element tripped and Event Logger (EL) output shall contain all relay operations, breaker, earth switch and isolator

operations& other relevant information (Status of DC Supply, Trip Circuit etc) related to the respective outage.

4. In case of non-submission of Disturbance Recorder (DR) output & Event Logger (EL) output against outage due to element tripping, reason for non-submission is to be clearly stated by the Transmission Licensees.
5. Submitted documentary evidences shall be properly named and marked so that stated reason for outage can be inferred from the evidence. (example: In case of outage due falling of trees from outside corridor, photographs shall be submitted showingclearly the trees fell from outside corridor,adjacent tower numbers and name of phase).
6. If NERLDC/NERPC feels that evidences submitted by Transmission Licensee are not sufficient to conclude an outage as non-attributable, respective transmission licensee shall submit evidencesrequiredby NERLDC/NERPC within 7 days of communication from NERLDC/NERPC failing which corresponding outages shall be considered as attributable to respective Transmission Licensee.
7. In case of any mismatch (mismatch in outage time, missing outages etc.) in monthly outage submitted by Transmission Licensee and NERLDC outage register, necessary corrections shall be done and modified monthly outage document along with clarification shall be submitted by Transmission Licensee within 3 days of communication from NERLDC/NERPC failing which these mismatches shall be considered as attributable to respective Transmission Licensee.
8. NERLDC shall verify the monthly outage document within 15 days of submission of all relevant documents by Transmission Licensee (20th of February18, in case of all necessary data submitted within 5th February by Transmission Licensee)and submit the monthly outage document along with necessary comments to NERPC.
9. NERLDC/NERPC shall place the monthly outage document of Transmission Licensees in the latest available OCC meeting/PCC meeting (2nd week of March18, say by 14th March) for comments from NER constituents.
10. NERPC shall certify the monthly outage document within 15 days after discussion in OCC meeting& PCC Meeting (say by 29th March18).

Record of discussion held at NERPC , regarding hurdles faced for implementation of SPS-3 scheme.

An meeting was organized at NERPC, chaired by Sh. B.Lynkhoi (Director,NERPC) and attended by H.Talukdar , CM (POWERGRID) , Sh. Pinak Nandi (POWERGRID) and S.Mukherjee (NERPC) for discussing the hurdles faced in implementation of SPS-3 scheme.

Sh. B.Lynkhoi (Director,NERPC) asked representative of POWERGRID , regarding the implementation schedule of SPS-3 at POWERGRID Silchar substation so that SPS-3 scheme could be brought into service .

Representative of POWERGRID presented two possible ways for implementation of SPS-3 scheme:

CASE 1: (Modification in the existing scheme)

With reference to SPS 3 maloperation incident on 21st April and 30th April , POWERGRID representative confirmed that , there has no incident of SPS 3 trigger incident at silchar Substation (neither in BCU events nor in PLCC events) . So, the reason of maloperation is still unknown.

With reference to the mal -operation of SPS3 due to BCU restart of Pallatana 2 on 08th Feb 2018 and and also generation of mutiple SPS 3 DT signals to OTPC pallatana on 10th May 2018 , POWERGRID has analysed the events recorded in BCU and PLCC and has proposed for implementation of some filtering logics in SPS 3 scheme at Silchar substation , for avaoiding maloperation for actuation of similar conditions / events. However, implementation of these filtering logic shall require rewiring in BCU , protection relays (of Pallatana 2 Ckt) and PLCC panels (of Pallatana 1 Ckts.) at Silchar end. POWERGRID also informed that there is always a potential risk of working in the live panel and undesired tripping events are possible due to congested wiring of all Signal wiring in Palatana 2 relay / BCU panels and Palatana 1 Ch- 2 PLCC panels at Silchar substation.

Further it is to inform you that the associated possible tripping while working in live line may be as follows:

1. Sending of DT signals of Individual line (Palatana-1 & 2) resulting in tripping.

2. Sending of SPS2 signal to palatana .

Accordingly , POWERGRID requested for shutdown of both Palatana 1 and Palatana 2 circuits for 03 hrs for the rewiring work.

POWERGRID also informed that , POWERGRID cannot guarantee spurious free system , since the existing special protection scheme is using the common substation DC and BCU, and actuation of DC earth fault anywhere in the substation may or may not interfere with the Special protection scheme implemented.

Also, POWERGRID informed that, the existing SPS schemes is implemented via Palatana –I PLCC panels only . And hence, during shutdown of Palatana – I circuit , if nature of work necessitates local earthing , than PLCC coulper shall be out of service rendering the SPS scheme out also.

CASE 2: (Creating a new asset for SPS scheme at silchar and palatana)

POWERGRID representative informed following benefits for creation of separate asset for special protection scheme at silchar and pallatana :

- working in live system becomes easy and risk free.
- requirement of shutdown during future modification necessities becomes less.
- Least chances of spurious signals due to earthfaults in DC system of substation (since substation DC system covers a large area) .
- Least chances of generation of spurious SPS signals due to maloperation of somes specific BCU /relays /assets.
- Uniformity of assets and architecture at both ends (i.e Silchar and palatana). Hence getting OEM support for complete resolution of maloperation issues becomes easier.
- Since presently , existing SPS scheme is implemented in Palatana 2 and srikona BCU and relays , hence Maintenance of these assets during annual maintenance schedule becomes impossible. Creating a separate asset shall resolve this issue.
- Better monitoring of SPS operation events in SCADA and filteration of unnecessary substation events.
- Creation of PLCC redundant path for SPS DT exchange. Hence, no issues shall be faced during shutdown of either Palatana 1 or Palatana 2 circuits.

POWERGRID informed that , following new assets shall be required at both silchar and palatana for execution of CASE 2 senerio.

1. 01 no. of BCU /RTU at both ends. (Approx cost : 15 lakhs for both ends)
2. 01 no. of local SCADA at both ends. (Approx cost : 15 lakhs for both ends)
3. 02 no. of PLCC panels at both ends for Pallatana 1 and Pallatana 2 circuits. (Approx cost : 40 lakhs for both ends)
4. 100AH Battery alongwith AC –DC charger for separate DC system. (Approx cost : 10 lakhs for both ends)
5. Required communication, Control and Power Cables . (Approx cost : 10 lakhs for both ends)

ANNEXURE-D.14

Frequency Response Characteristic in North-Eastern Region

Event	On 06.05.2018 at 16:51 Hrs, there was generation loss of 1100 MW on account of tripping of Lalitpur Unit-I ,II& III due to loss of evacuation path.
Date and Time of Event	06.05.18, 16:51 Hrs

			NER ISGS GENERATION								
Serial No.	Particulars	**Dimension**	**Palatana**	**AGBPP**	**AGTPP**	**Khandong + stg II**	**Kopili**	**Doyang**	**RHEP**	**Loktak**	**BgTPP**
	DC	**MW**	**476**	**200**	**85**	**24**	**48**	**18**	**0**	**102**	**455**
1	Actual Net Interchange before the Event (16:49:50)	**MW**	495.7	197.09	84.65	25.0	50.0	18.0	0.0	105.7	287.8
2	Actual Net Interchange after the Event (16:50:50)	**MW**	489.6	197.01	84.66	25.1	50.0	18.0	0.0	105.8	287.5
6	Frequency before the Event	**HZ**	49.89	49.89	49.89	49.89	49.89	49.89	49.89	49.89	49.89
7	Frequency after the Event	**HZ**	49.84	49.84	49.84	49.84	49.84	49.84	49.84	49.84	49.84
15	Percentage ideal response (9/14)	**%**	-62%	-2%	1%	0%	0%	0%	0%	0%	-5%

Frequency Response Characteristic in North-Eastern Region

Event	**On 10.05.2018 at 06:12 Hrs, there was generation loss of 900 MW on account of tripping of DSTPS unit I & II due to loss of evacuation path.**
Date and Time of Event	**10.05.18, 06:12 Hrs**

			NER ISGS GENERATION								
Serial No.	Particulars	**Dimension**	**Palatana**	**AGBPP**	**AGTPP**	**Khandong + stg II**	**Kopili**	**Doyang**	**RHEP**	**Loktak**	**BgTPP**
	DC	**MW**	**476**	**165**	**82**	**57.5**	**148**	**18**	**0**	**102**	**455**
1	Actual Net Interchange before the Event (06:11:50)	**MW**	476.1	162.57	85.20	60.6	147.8	18.0	0.0	106.6	465.2
2	Actual Net Interchange after the Event (06:12:50)	**MW**	474.8	163.03	83.42	60.7	147.9	18.0	0.0	106.3	462.1
6	Frequency before the Event	**HZ**	49.91	49.91	49.91	49.91	49.91	49.91	49.91	49.91	49.91
7	Frequency after the Event	**HZ**	49.87	49.87	49.87	49.87	49.87	49.87	49.87	49.87	49.87
15	Percentage ideal response (9/14)	**%**	-17%	18%	-131%	0%	0%	0%	0%	0%	-42%

Annexure-D.17

Temperature based IC Adjustment for Gas based Generation:

As per Regulation 5.2 (h) of Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Fifth Amendment) Regulations, 2017:

QUOTE

"All coal/lignite based thermal generating units of 200 MW and above, Open Cycle Gas Turbine/Combined Cycle generating stations having gas turbines of more than 50 MW each and all hydro units of 25 MW and above ***operating at or up to 100% of their Maximum Continuous Rating (MCR) shall have the capability of (and shall not in any way be prevented from) instantaneously picking up to 105%, 105% and 110% of their MCR, respectively, when the frequency falls suddenly****. 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.*

For the purpose of ensuring primary response, RLDCs/SLDCs shall not schedule the generating stat ion or unit (s) thereof beyond ex-bus generation corresponding to 100% of the Installed capacity of the generating station or unit (s) thereof. The generating stat ion shall not resort to Valve Wide Open (VWO) operation of unit s whether running on full load or part load, and shall ensure that there is margin available for providing Governor act ion as primary response. ***In case of gas/liquid fuel based units, suitable adjustment in Installed Capacity should be made by RLDCs/SLDCs for scheduling in due consideration of prevailing ambient conditions of temperature and pressure vis-à-vis site ambient conditions on which installed capacity of the generating stat ion or unit (s) thereof have been specified:***

UNQUOTE

After detailed discussion at 139th OCC the following had been decided.

a. The Generator, while making day-ahead declaration of DC, shall intimate hourly projected ambient temperature of next day based on authentic forecasted data (IMD). In case of unavailability of the same, the IMD weather data of the closest weather station from the generator shall be considered.
b. RLDC, in line with clause 5.2(h) of IEGC would make suitable adjustment in installed capacity for scheduling purpose based on projected day-ahead temperature and characteristics curve of the Generator. The correction would be both on higher and lower side.
c. Accordingly, ex-bus generation corresponding to 100% of the computed Installed capacity of the Generator less aux consumption would be computed.
d. Scheduling limit of the Generator would be set accordingly.
e. The Generator would ensure instantaneously picking up to 105% of their computed Installed capacity when the frequency falls suddenly.
f. The process has been made effective provisionally from 21.12.2017

Proposed Methodology (145th. OCC dated 19.06.2018):

1. Day ahead forecasted temperature will be provided by the Gas based generating station by 0600 Hrs. RLDC shall incorporate this data while preparation of the Entitlement for the next day.
2. Revision of the temperature data will be allowed four times for a day.
3. Time for providing the projected temperature:
    a. 2300 Hrs – To be incorporated in schedule w.e.f 0000 Hrs
    b. 0500 Hrs - To be incorporated in schedule w.e.f 0600 Hrs
    c. 1100 Hrs - To be incorporated in schedule w.e.f 1200 Hrs
    d. 1700 Hrs - To be incorporated in schedule w.e.f 1800 Hrs
4. In case the temperature data is not provided during a time slot as mentioned above, day ahead data provided (Sl. No. 1)/ the data provided in the previous time slot will continue to be considered till next time slot.
5. It is desirable to provide the data from IMD. In case of other source, web-link of the source should be provided.

Annexure-D.17

Temperature based IC Adjustment for Gas based Generation:

As per Regulation 5.2 (h) of Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Fifth Amendment) Regulations, 2017:

QUOTE

"All coal/lignite based thermal generating units of 200 MW and above, Open Cycle Gas Turbine/Combined Cycle generating stations having gas turbines of more than 50 MW each and all hydro units of 25 MW and above ***operating at or up to 100% of their Maximum Continuous Rating (MCR) shall have the capability of (and shall not in any way be prevented from) instantaneously picking up to 105%, 105% and 110% of their MCR, respectively, when the frequency falls suddenly****. 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.*

For the purpose of ensuring primary response, RLDCs/SLDCs shall not schedule the generating stat ion or unit (s) thereof beyond ex-bus generation corresponding to 100% of the Installed capacity of the generating station or unit (s) thereof. The generating stat ion shall not resort to Valve Wide Open (VWO) operation of unit s whether running on full load or part load, and shall ensure that there is margin available for providing Governor act ion as primary response. ***In case of gas/liquid fuel based units, suitable adjustment in Installed Capacity should be made by RLDCs/SLDCs for scheduling in due consideration of prevailing ambient conditions of temperature and pressure vis-à-vis site ambient conditions on which installed capacity of the generating stat ion or unit (s) thereof have been specified:***

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4. In case the temperature data is not provided during a time slot as mentioned above, day ahead data provided (Sl. No. 1)/ the data provided in the previous time slot will continue to be considered till next time slot.
5. It is desirable to provide the data from IMD. In case of other source, web-link of the source should be provided.

FRAMEWORK FOR REGISTRATION OF GENERATING UNITS

1. Background

Section 74 of Electricity Act, 2003 & and Regulation 4 & 5 of CEA (Furnishing of statistics, returns and information) Regulations, 2007, even though mandates every licensee, generating company, or person(s) generating electricity for its or his own use to furnish the statistics, returns or other information relating to generation, transmission, distribution, trading to CEA, the complete data/information is not made available to CEA particularly from Captive Power Plants and RE Generators. Even in case of some conventional electricity generating units of IPP's, information is sometimes made available to CEA only at the time of commissioning of the electricity generating unit.

Hence, mandatory registration of all the electricity generating units, above a specified capacity, through a National Level Data Registry System, by assigning each of them a unique registration number, is the need of the hour so that generating capacity of all the electricity generating units in India is available with CEA and captured in CEA's data base.

2.0 Uniqueness of Registration Number

The registration number to be assigned by CEA shall be a unique for each generating unit in the country and the registration number once assigned to a generating unit would not be changed. The status of generating unit may change (planned/ under construction/ commissioned/retired etc.). Even if the generating unit retires, its registration number would not be assigned to any other generating unit.

3.0 Applicability

3.1 The following category of generating units are required to obtain the unique registration number:

i) All the conventional grid connected electricity generating units (whether in Central Sector, State Sector, Private Sector, IPP's, Joint Venture etc.) in the country whether coal based, gas based, liquid fuel based, Hydro Power based or nuclear, if the capacity of the electricity generating unit is 500 kW (0.5 MW) and above.

ii) All the electricity generating units of grid-connected captive power plants, if the capacity of the electricity generating unit is 500 kW (0.5 MW) and above.

iii) All the Grid - connected Renewable Energy (RE) generators, if the capacity of RE generating unit is 500 kW (0.5 MW) or above. This also includes grid-connected roof-top solar installations.

iv) All the stand alone (off-grid) generating units, if the capacity of generating unit is 500 kW (0.5 MW) or above.

v) All the generating units supplying power to neighbouring countries, irrespective of whether these generating units are connected to the Indian Electricity Grid or not.

3.2 For existing grid connected electricity generating units, including grid connected captive and RES generating units, the registration number would be required for injecting power in the grid.

3.3 For under construction electricity generating units and generating units in conceptualisation stage, which includes grid connected captive and RES generating units, the registration number would be required while applying for grid connectivity. However, if grid connectivity has already been obtained or applied by these generating units, the registration number would still be required for physical injection of power in the grid.

4.0 Procedure of Registration

4.1 The registration number would be generated online by the generating companies/project developers, after filling in certain details.

4.2 The Generating Companies would have to register themselves in e-Registration portal of CEA on CEA's website (www.cea.nic.in) after filling in necessary details viz. name of the generating company, sector etc. in a format designed for the purpose. They can choose any user id and password while registering their generating units. Alternatively, user ID may be the name of the Company.

4.3 Using the user id and password generated in step 4.2, generating companies can enter the details of their generating units one by one and generate unique registration number for each generating unit. The unique registration number shall be a 10 digit numeric identification number in the format XXXXXXXXXX. The first digit will indicate whether it is Generating Company, Transmission Company or Distribution Company (Generating Company -1; Transmission Company -2; Distribution Company -3). In case of Generating Company the second digit will indicate the type of generating unit (Hydro-1/Thermal-2/Nuclear-3/RES-4). Digits from 3-10 (8 digits) would be the unique registration number of the generating unit.

All the information associated with a generating unit will be linked with this unique registration number. All the associated information like location of the generating unit, fuel type, technology (sub critical, supercritical, ultra-supercritical, off-shore wind, on-shore wind, roof top solar, solar thermal, floating solar etc.), installed capacity, sector (central, state, private, JV), utility or captive, grid connected or off -grid etc. will be available in the database and will be visible to the authorised persons, once the registration number is entered.

4.4 The generating companies / project developers would submit the following data/information at the time of registering their generating units.

4.4.1 Existing Generating Units

4.4.1.1 Mandatory Information to be filled at the time of registration

- Name of the generating unit
- Capacity of the Generating unit in MW
- State, Location & Address (including District) of the Generating Unit.
- Latitude & Longitude of the Generating Unit.
- Name of Owner (s) along with contact details including telephone, mobile, e-mail and fax.

- Name and contact details of person, including telephone, mobile, e-mail and fax number, to be contacted for clarifications, if required.
- Sector, whether Central/State/Private/JV
- Whether the generating unit is grid connected or off-grid
- Fuel type of generating unit (Coal/lignite/gas/diesel/HFO/Other Liquid Fuel/nuclear/hydro/solar/wind/ biomass/Coal Reject /Wind-Solar Hybrid etc.).
- Type of technology viz. Sub-critical/super-critical technology/ultra-super-critical technology in case of coal based generating unit; OCGT, CCGT, Gas Engines etc. etc. in case of gas based generating unit.
- Type of hydro viz. ROR, Pondage, Storage, Pumped Storage.
- Date of commissioning of the generating unit
- Date of Commercial Operation (COD) of the generating unit
- Fuel linkage/ source of fuel, if applicable
- Name of the Industry/Installation, in case of Captive Generating units

4.4.1.2 Information to be furnished subsequently

- Implementing Agency
- BTG Supplier in case of thermal generating units
- E&M, HM equipment supplier in case of Hydro generating units
- Type of hydro turbine viz. Pelton, Francis, Kaplan, Bulb, any other
- Ramp Up/ Down rate of the generating unit
- Minimum technical loading of the generating unit
- Whether the generating unit is connected to ISTS or State Grid
- Voltage level at which generating unit is connected to the ISTS/State Grid

4.4.2 Generating units under construction

4.4.2.1 Mandatory Information to be filled at the time of registration

- Name of the generating unit
- Capacity of the Generating unit in MW
- State, Location & Address (including District) of the Generating Unit.
- Latitude & Longitude of the Generating Unit.
- Name of Owner (s) along with contact details including telephone, mobile, e-mail and fax.
- Name and contact details of person, including telephone, mobile, e-mail and fax number, to be contacted for clarifications, if required.
- Sector, whether Central/State/Private/JV
- Whether the generating unit is grid connected or off-grid
- Fuel type of generating unit (Coal/lignite/gas/diesel/nuclear/hydro/solar/ wind/biomass/Coal Reject /Wind-solar hybrid etc.).
- Type of technology viz. Sub-critical/super-critical technology/ultra-super-critical technology in case of coal based generating unit; OCGT, CCGT etc. in case of gas based generating unit.

4.4.3.2 Information to be furnished subsequently

- BTG Supplier in case of thermal generating units
- E&M, HM equipment supplier in case of Hydro generating units
- Type of hydro turbine viz. Pelton, Francis, Kaplan, Bulb, any other.
- Likely source of fuel, if applicable.
- Ramp Up/ Down rate of the generating unit
- Minimum technical loading of the generating unit
- Whether the generating unit is proposed to be connected to ISTS or State Grid
- Voltage level at which generating unit is proposed to be connected to the ISTS/State Grid

5.0 Role of different Divisions of CEA in registration process.

Information in respect of most of the generating units is already available in CEA in different Divisions based on the work being handled by them. For example, data of existing generating units is maintained by PDM Division, CEA; data of under construction hydro generating units is maintained by HPM Division, CEA; data of under construction thermal generating units is maintained by TPM Division, CEA etc. Through the registration process, a unique ID would be assigned to each generating unit. Registration of different class (existing, under construction, planned etc.) of generating units would be handled by different Divisions of CEA who are dealing with respective class (existing, under construction, planned etc.) of generating units and are having expertise in the respective field.

5.1 Existing generating units (utilities)

- ***Nodal Division for registration of Existing Generating Units (Utilities) - PDM Division, CEA.***

The data of existing generating units is being maintained by PDM Division, CEA. As data base of existing generating units is also being maintained by OPM Division, CEA, for monitoring electricity generation, PDM Division, CEA, may associate with OPM Division, CEA, in this regard so that the data base being maintained by both the Divisions is uniform. These Divisions may seek clarification from the project developers, if necessary. To make changes like uprating/deration/retirement, the project developer would have to follow the process being followed at present. For example, to retire a generating unit, the project developer should furnish approval letter from the Board of Directors of the Company along with relevant supporting documents, if any, to CEA. The generating unit would then be removed by CEA from its installed capacity database.

The prime responsibility of PDM/OPM Division (in regards to existing generating units):

- To check that the on-line data of existing generating units as submitted by Generating Companies/project developers matches with the data already available/ being maintained in CEA in terms of name, capacity, location, fuel type, developer, sector etc. of generating units.
- To see that data duplicity is not there.
- To see that all the existing generating units as per CEA database are registered. If not, communicate with the concerned persons.

- Type of hydro viz. ROR, Pondage, Storage, Pumped Storage
- Letter of Award (LoA) Date {(a) BTG package for thermal generating units; (b) Main Civil, E&M and HM packages in case of Hydro generating units}
- Expected commissioning date of the generating unit
- Expected Date of Commercial Operation (COD) of the generating unit
- Fuel linkage/ source of fuel, if applicable
- Type of technology viz. Sub-critical/super-critical technology/ultra-super-critical technology in case of coal based generating unit
- Name of the Industry/Installation, in case of Captive Generating units

4.4.2.2 Information to be furnished subsequently

- Implementing Agency
- BTG Supplier in case of thermal generating units
- E&M, HM equipment supplier in case of Hydro generating units
- Type of hydro turbine viz. Pelton, Francis, Kaplan, Bulb, any other.
- Ramp Up/ Down rate of the generating unit
- Minimum technical loading of the generating unit
- Whether the generating unit is connected to ISTS or State Grid
- Voltage level at which generating unit is connected to the ISTS/State Grid

4.4.3 Generating units in conceptualisation stage

4.4.3.1 Mandatory Information to be filled at the time of registration

- Name of the generating unit
- Capacity of the Generating unit in MW
- State, Location & Address (including District) of the Generating Unit.
- Latitude & Longitude of the Generating Unit.
- Name of Owner (s) along with contact details including telephone, mobile, e-mail and fax.
- Name and contact details of person, including telephone, mobile, e-mail and fax number, to be contacted for clarifications, if required.
- Sector, whether Central/State/Private/JV
- Fuel type of generating unit (Coal/lignite/gas/diesel/nuclear/hydro/solar/ wind/biomass/Coal reject/Wind-solar Hybrid etc.).
- Whether the generating unit is grid connected or off-grid.
- Type of technology viz. Sub-critical/super-critical technology/ultra-super-critical technology in case of coal based generating unit; OCGT, CCGT etc. in case of gas based generating unit.
- Type of hydro viz. ROR, Pondage, Storage, Pumped Storage.
- Likely Letter of Award (LoA) date.
- Expected commissioning date of the generating unit, if available.
- Name of the Industry/Installation, in case of Captive Generating units

Subsequently, when a generating unit is commissioned, details of generating unit would be passed on to PDM & OPM Divisions, CEA, for further necessary action.

5.4 Data of RE Generators

- ***Nodal Division for registration of RE based Generating Units (Utilities as well as Captive) - RES Development Division, CEA***

Data of RE Generators (utilities & captive), existing, under construction as well as planned, would be maintained by RES Development Division, CEA.

5.5 Captive Generating units

- ***Nodal Division for registration of Captive Generating Units (excluding RE based Captive Generating Units) - PS&LF Division, CEA***

Data of Captive Generating Units (excluding RE based Captive Generating Units), existing, under construction as well as planned, would be maintained by PS&LF Division, CEA.

5.6 Maintaining the e-registration portal and ensuring smooth operation of the same

- The e-registration portal would be designed and maintained by IT Division, CEA.

6.0 Operationalisation of the scheme-Action to be taken by CEA/CERC/SERCs /JERC's /Forum of Regulators (FOR)

6.1 E-Registration portal and the Format for registration would be required to be designed on CEA's website in such a way that all the information could be filled on-line by the Generating companies in the prescribed format which would automatically go to the concerned Divisions of CEA for information and for monitoring (e.g. in case of Thermal projects, the information would go to TPM/TPP&D, in case of Renewable projects, the information would go to RES Development Division etc.).

(Action: IT Division, CEA, in association with TPM I&II, HPM, TPP&D, HPPA, RES Development, OPM, PDM, PS&LF Divisions).

6.2 Maintenance of e-registration Portal for registration of electricity generating units under National Level Data Registry System. **(Action: IT Division, CEA)**

6.3 In order to make it mandatory for the electricity generating units to obtain the unique registration number from CEA, necessary regulatory provisions/modifications would need to be incorporated in the following:

a) General Grid connectivity conditions of CEA (Technical Standards for Connectivity of the Grid) Regulations, 2007 as amended & CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013.
(Action: GM Division, Legal Division, CEA).

b) Appropriate Regulations of CERC & SERCs by taking up the matter with Forum of Regulators.
(Action: Secretary, CEA in association with RA/Legal Division, CEA)

5.2 Generating units under construction (utilities)

- ***Nodal Division for registration of Under Construction Thermal & Nuclear Generating Units - TPM I & II Divisions, CEA***
- ***Nodal Division for registration of Under Construction Hydro Generating Units - HPM Division, CEA***

Data of under construction generating units is maintained by TPM/HPM Divisions. Data of under construction generating units along with critical milestones, as submitted on-line by the project developers at the time of registration, would be analysed and maintained by TPM/HPM Divisions of CEA.

The project developer/generating Company would update the progress of construction of his project on CEA's website from time to time. Once the generating units is commissioned, the project developer would update the status of generating unit from "under construction" to "Commissioned" and submit relevant documents (on-line) to CEA as a proof of having commissioned the generating unit. Similarly, once the generating unit achieves Commercial Operation, the project developer would update its status on CEA's website and submit relevant documents (on-line) to CEA.

Once the generating unit is commissioned, the data of generating unit would be passed on to PDM/OPM Division, CEA, for further necessary action.

The responsibility of TPM & HPM Division, CEA, would be:

- To check that the on-line data of under construction generating units as submitted by Generating Companies, matches with the data already available/being maintained in TPM/HPM Divisions in terms of name, capacity, location, progress of construction, fuel type etc. of generating units.
- To see that data duplicity is not there.
- To see that all the under construction generating units as per CEA database are registered. If not, communicate with the concerned persons after a pre-specified time.
- To examine/monitor the progress of under construction generating units based on the periodic updates submitted by the project developers.

5.3 Generating units in conceptualisation stage (utilities)

- ***Nodal Division for registration of Planned (in conceptualisation stage) Thermal & Nuclear Generating Units- TPP&D Division, CEA***
- ***Nodal Division for registration of Planned (in conceptualisation stage) Hydro Generating Units- HPPA Division, CEA***

Data of generating units in conceptualisation stage, including its different milestones, would be maintained by TPP&D/HPPA Divisions of CEA, as these Divisions are already maintaining data of such generating units and have the necessary expertise in this field.

Once the generating unit qualifies for under construction status, relevant details of the generating unit would be passed on to TPM/HPM Division, CEA, for further necessary action.

c) CEA (Furnishing of statistics, returns and information) Regulations, 2007.
(Action: Secretary, CEA in association with PDM/RA/Legal Division, CEA),

7.0 The scheme would be implemented from the date from which the necessary logistics/enabling-provisions for implementation of the scheme would be ready, which may take about 6 months. The date from which the scheme is to be implemented would be intimated to all the stakeholders in due course.

8.0 Registration of Transmission & Distribution System

The registration process is to be first started for generating units. The information to be collected and format of registration number for transmission/distribution system would be designed subsequently.

8.1 Transmission System

The registration of transmission system (existing, under construction and planned) and data submitted by developers of transmission system would be analysed and maintained by PSPM Division of CEA, who have expertise in this area. The data to be collected, relevant formats for data collection and the format of registration number shall be devised by PSPM Division separately as and when the registration process of Transmission system is conceptualised.

8.2 Distribution System

The registration of Distribution System (existing, under construction and planned) and data submitted by developers of Distribution System would be analysed and maintained by DP&D Division of CEA, who have expertise in this area. The data to be collected, relevant formats for data collection and the format of registration number shall be devised by DP&D Division separately as and when the registration process of Distribution System is conceptualised.

Blackout of 220 kV Misa(PG)

at 15:30 Hrs & 16:34 Hrs on

21.05.18

Summary

- **220 kV Misa (PG) blacked out at 15:30 Hrs on 21st May'18. Following elements tripped :**
  - 220 kV Misa-Kopili I, II & III
  - 220 kV Misa-Dimapur I & II
  - 220 kV Misa-Byrnihat(Killing) I & II
  - 220 kV Misa-Samaguri I & II
  - 220 kV Misa-Mariani (PG)
  - 132 kV Kopili-Khandong 1&II
  - 132 kV Khandong-Khliehriat-I
  - 220 kV Samaguri-Sarusajai-II
  - 315 MVA 400/220 kV ICT I & II at Misa
  - Kopili Units I, II, III & IV (Generation Loss: 184 MW)
  - Khandong Units 1 & II (Generation Loss: 38)
- **Category as per CEA standards: GI –I**

- **At first 220 kV Misa Bus A charged through ICT I at Misa at 16:08 Hrs and following lines connected to Bus A restored progressively.**
  a) 132 kV Khandong- Khliehriat I at 15:59 Hrs.
  b) 220 kV Misa- Kopili I at 16:12 Hrs.
  c) 220 kV Misa- Samaguri I at 16:16 Hrs.
  d) 220 kV Misa- Dimapur II at 16:21 Hrs.
  e) 220 kV Misa- Byrnihat II at 16:29 Hrs.
- **While charging the lines connected to Bus-B by shifting to Bus-A ; at 16:34 Hrs, the total restored lines got tripped once again resulting voltage failure of Bus.**

Major Lines/Unit Under Outage:

Sl. No	Elements under Outage	Reasons
1	400 kV BNC- Balipara IV	Under planned shutdown for mass jumper tightening at all Tension Towers locations
2	800 kV HVDC BNC-Agra Pole I	Under blocked condition as per NLDC instruction
3	220 kV Misa-Mariani (As)	Under planned shutdown for 220 KV BPI; pipe bus erection under NERSS IV construction project

Antecedent Conditions

S.No	Area / Region	Before	After
1	Frequency(HZ)	49.76	49.73
2	Regional Demand(MW)	1839	1810
3	**NR-NER Flow (MW)**	500 (Export)	500 (Export)
4	**NER-ER Flow (MW)**	664(Import)	844(Import)
5	**NET NER (MW)**	163(Import)	344(Import)

Event Details

Sl No	Element Details	Relay Indication		Outage Date & Time (as per SOE)	Remarks
		End A	End B		
1	220 kV Misa-Kopili I	Bus Bar Protection, Zone-B	-	05/21/2018 15:30:55s	Connected with Bus-A at Misa
2	315 MVA, 400/220 kV ICT I at Misa	Bus Bar Protection, Zone-B		Event not recorded	Connected with Bus-A at Misa
3	220 kV Misa-Samaguri I	Bus Bar Protection, Zone-B	DP, 45.7 Kms	05/21/2018 15:30:55s	Connected with Bus-A at Misa
4	220 kV Misa-Dimapur II	Bus Bar Protection, Zone-B	No Tripping	05/21/2018 15:30:55s	Connected with Bus-A at Misa
5	220 kV Misa-Byrnihat(Killing) II	Not Furnished	Not Furnished	05/21/2018 15:35:05s	Connected with Bus-A at Misa
6	220 kV Misa-Samaguri II	Bus Bar Protection, Zone-B	DP, 45.7 Kms	05/21/2018 15:30:55s	Connected with Bus-A at Misa
7	220 kV Misa-Kopili II	No Tripping	Distance Protection Operated	05/21/2018 15:31:03s	Connected with Bus-B at Misa
8	220 kV Misa-Kopili III	Bus Bar Protection, Zone-B*	Distance Protection Operated	05/21/2018 15:31:03s	Connected with Bus-B at Misa
9	315 MVA, 400/220 kV ICT II at Misa	Bus Bar Protection, Zone-B*		Event not recorded	Connected with Bus-B at Misa
10	220 kV Misa-Dimapur I	No Tripping	DP, Z-II, Y-E	Event not recorded	Connected with Bus-B at Misa
11	220 kV Misa-Byrnihat(Killing) I	Not Furnished*	Not Furnished	Event not recorded	Connected with Bus-B at Misa
12	220 kV Misa-Mariani (PG)	Bus Bar Protection, Zone-B*	DP, Z-II, Y-E, 186 Kms	05/21/2018 15:31:03s	Connected with Bus-B at Misa

Event Details

Sl No	Element Details	Relay Indication		Outage Date & Time(as per SOE)	Remarks
		End A	End B		
13	132 kV Kopili-Khandong I	Backup Over Current	No Tripping	Event not recorded	
14	132 kV Kopili-Khandong II	Backup Over Current	No Tripping	Event not recorded	
15	132 kV Khandong-Khliehriat I	No Tripping	Over Current	05/21/2018 15:31:26s	
16	Kopili Unit I	Over Speed		05/21/2018 15:31:43s	
17	Kopili Unit II	Generator Field Failure		05/21/2018 15:31:40s	
18	Kopili Unit III	Over Speed		05/21/2018 15:31:43s	
19	Kopili Unit IV	Over Speed		05/21/2018 15:31:03s	
20	Khandong Unit I	Over Frequency		05/21/2018 15:31:36s	
21	Khandong Unit II	Over Frequency		05/21/2018 15:31:36s	
22	220 kV Samaguri - Sarusajai II	No Tripping	DP, Z-II, R-B-E, 202.6 Kms#	Event not recorded	

- **Elements connected to Bus-A tripped in BB, Zone-B. This is to be investigated by POWERGRID**

 # Tripping of 220 kV Sarusajai - Samaguri 2 line in Z-II is to be investigated by AEGCL

Preliminary Event Analysis Based on PMU Data

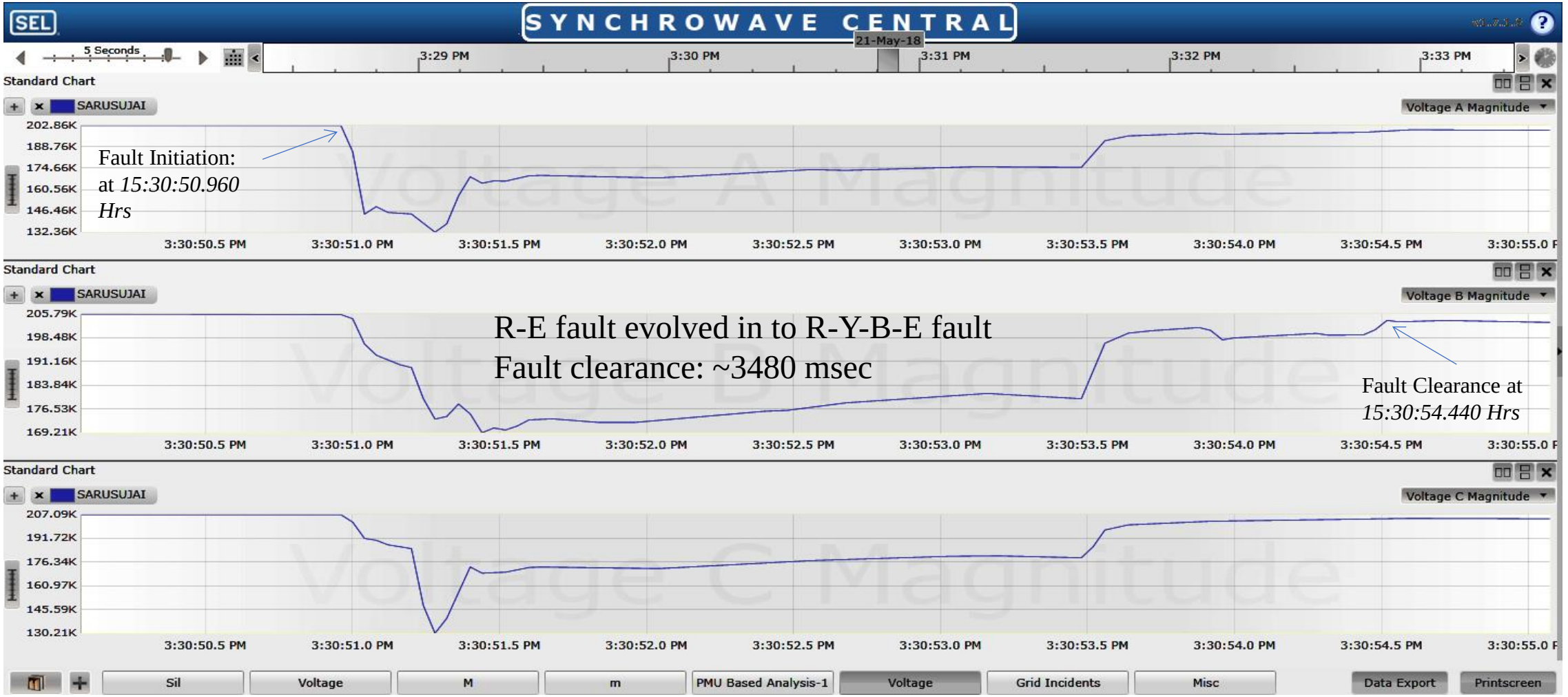
***Fault Initiation**: 15:30:50.960 Hrs*
***Fault Clearance Time**: 15:30:54.440 Hrs (3480 milliseconds)*

*As informed by POWERGRID, **Y-ph PT of Bus-B blasted** at Misa(PG).*

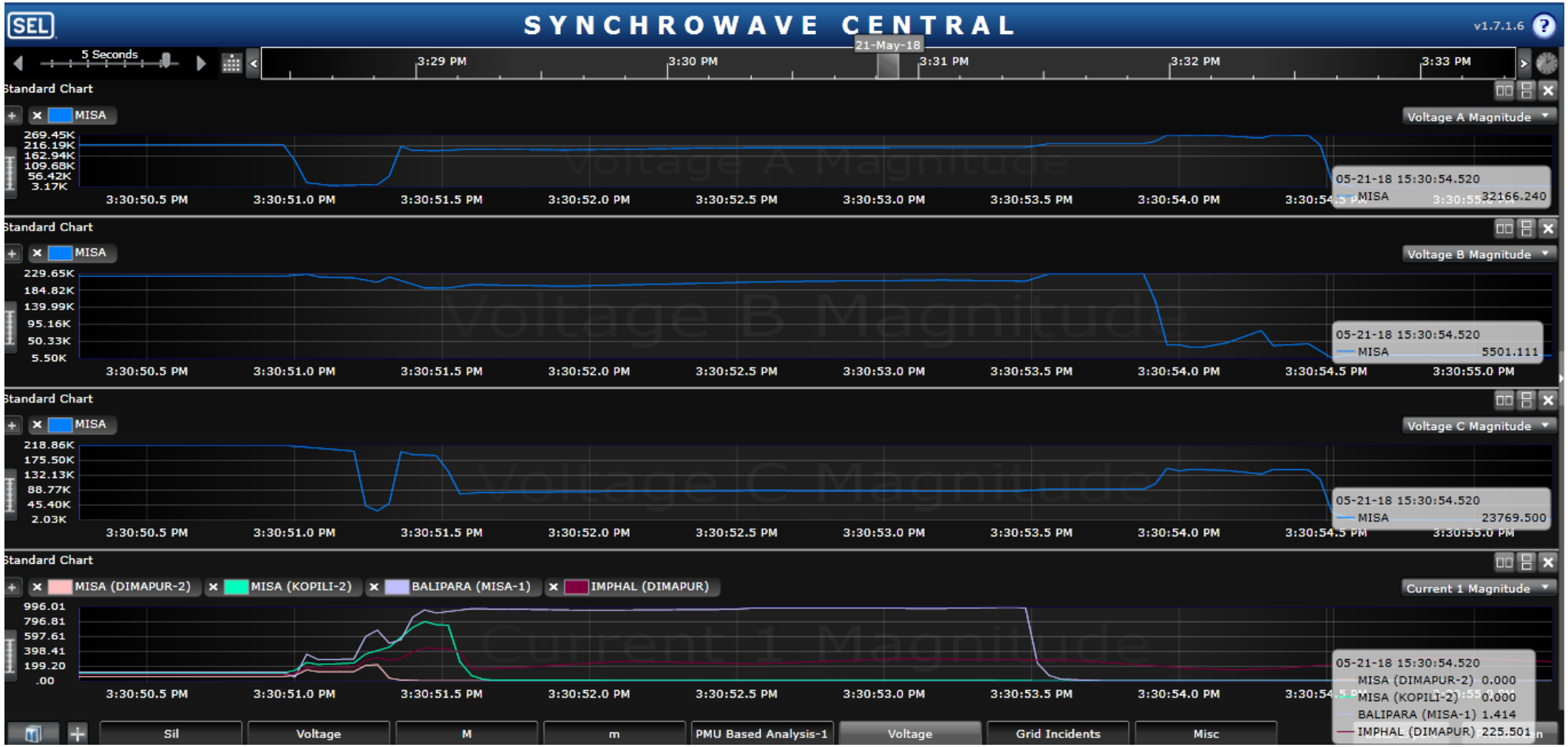
*As per PMU data (**Sarusajai PMU**);*
***At 15:30:50.960 Hrs**: **R-E** fault*
***At 15:30:51.200 Hrs**: Fault evolved in to **R-Y-B-E** fault*

*Fault in **R & B phases cleared at 15:30:53.480 Hrs.(2480 msec)***
*However, **Y-phase voltage recovered at 15:30:54.440 Hrs (3480 msec)***

Voltage Plot of 220 kV Sarusajai

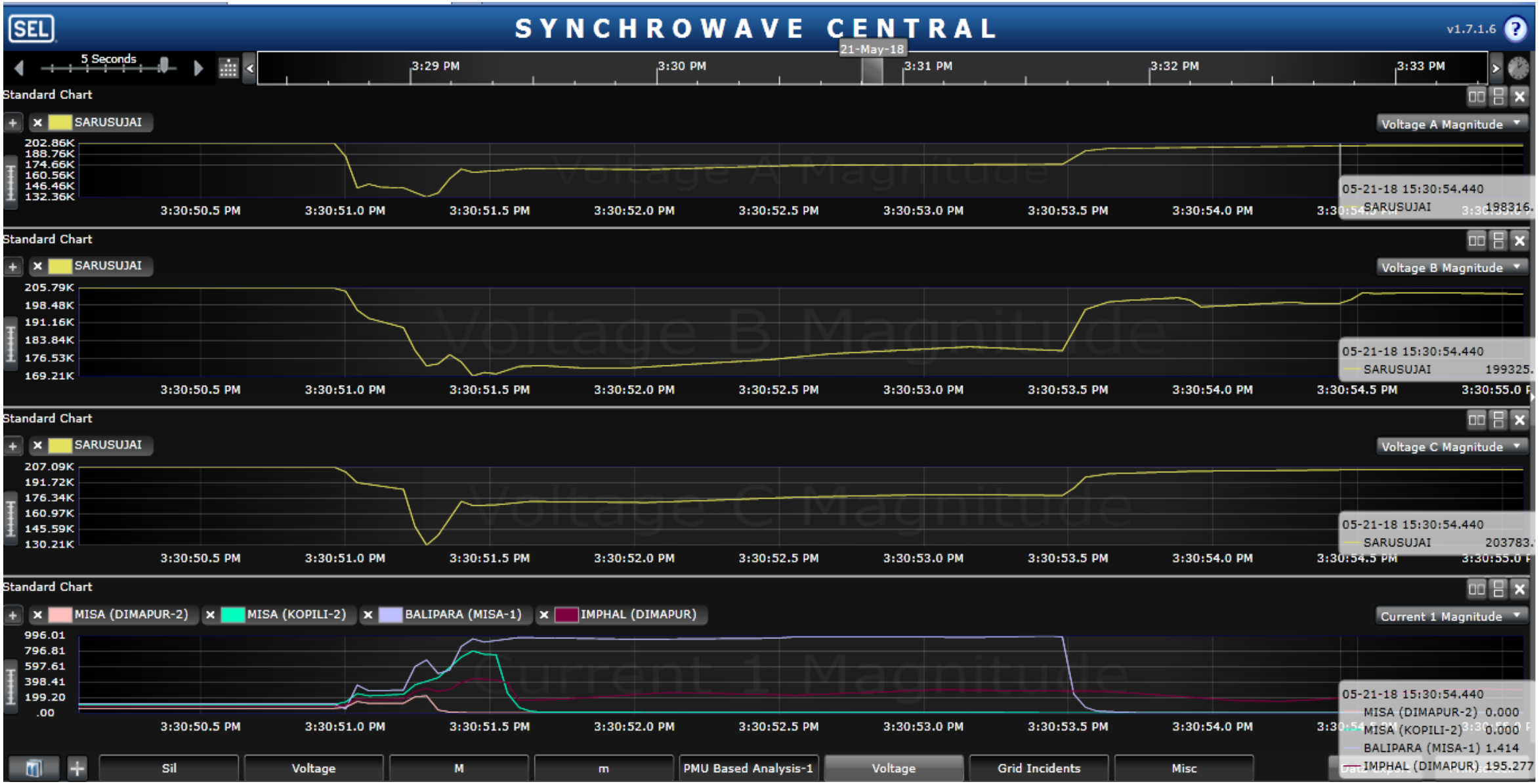


Voltage Plot of 220 kV Misa

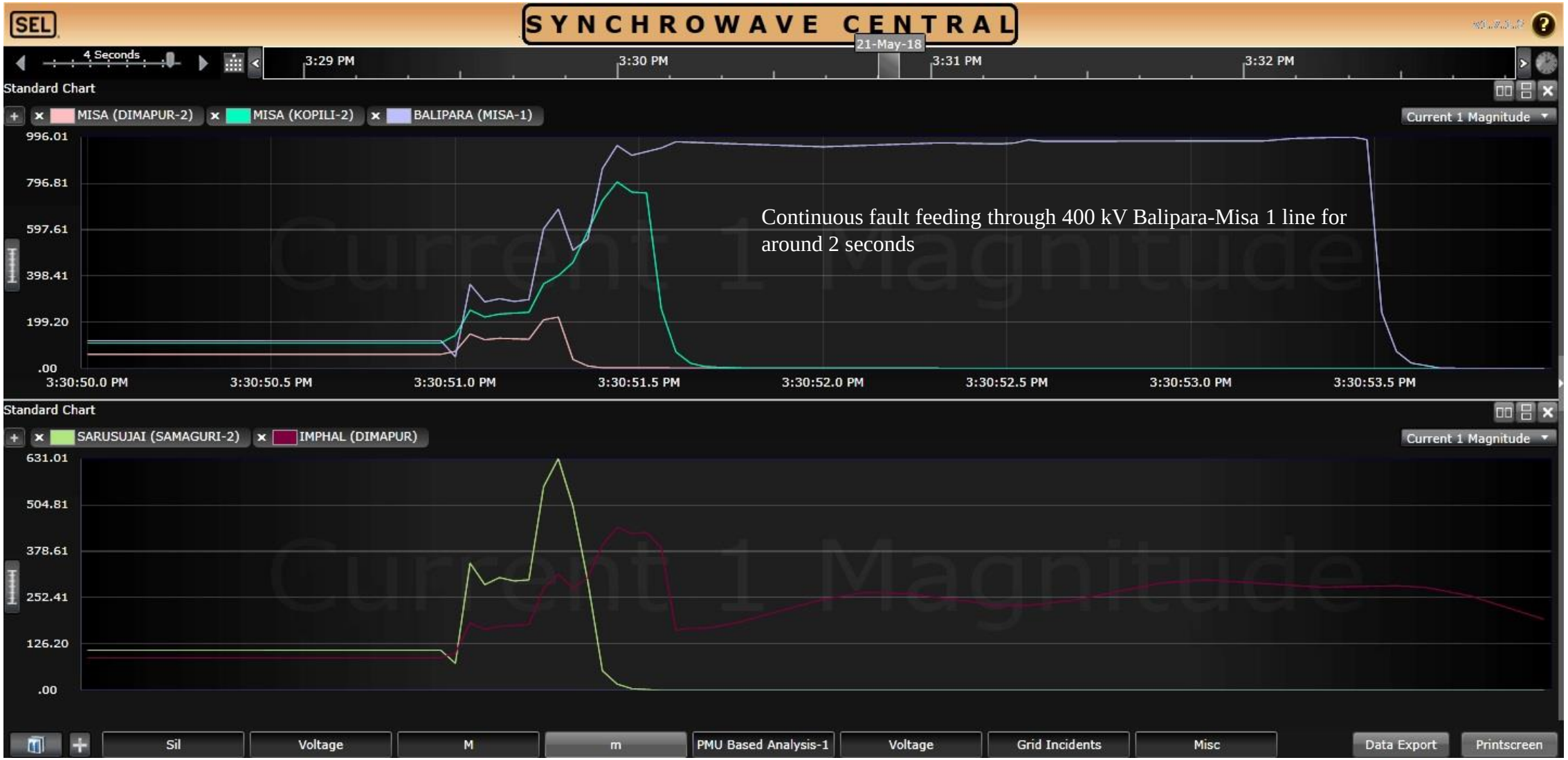


 # No much voltage dip initially in Y-ph. Different from Sarusajai / Balipara voltage plots.

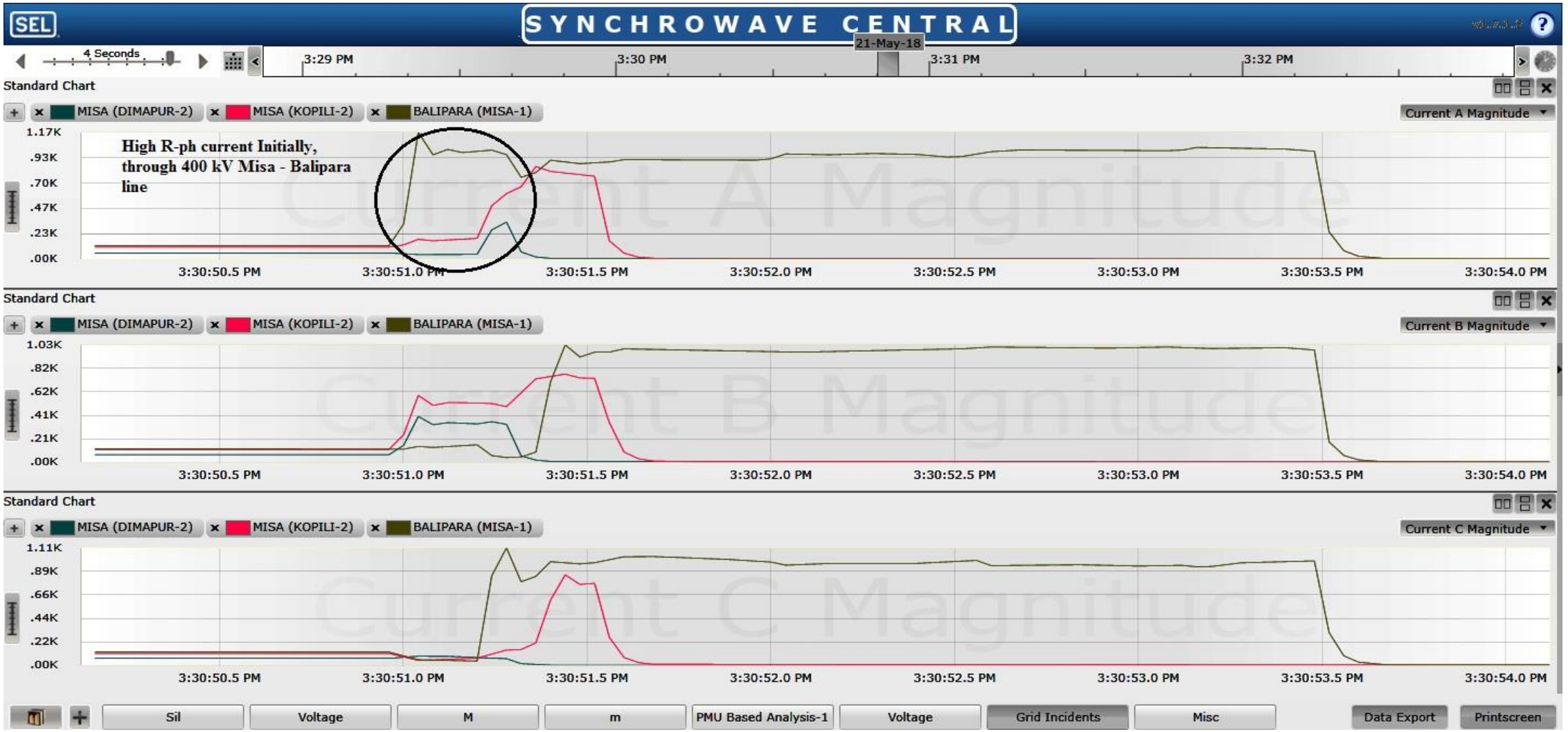
Voltage Plot of 220 kV Sarusajai Vs Fault Currents in different lines



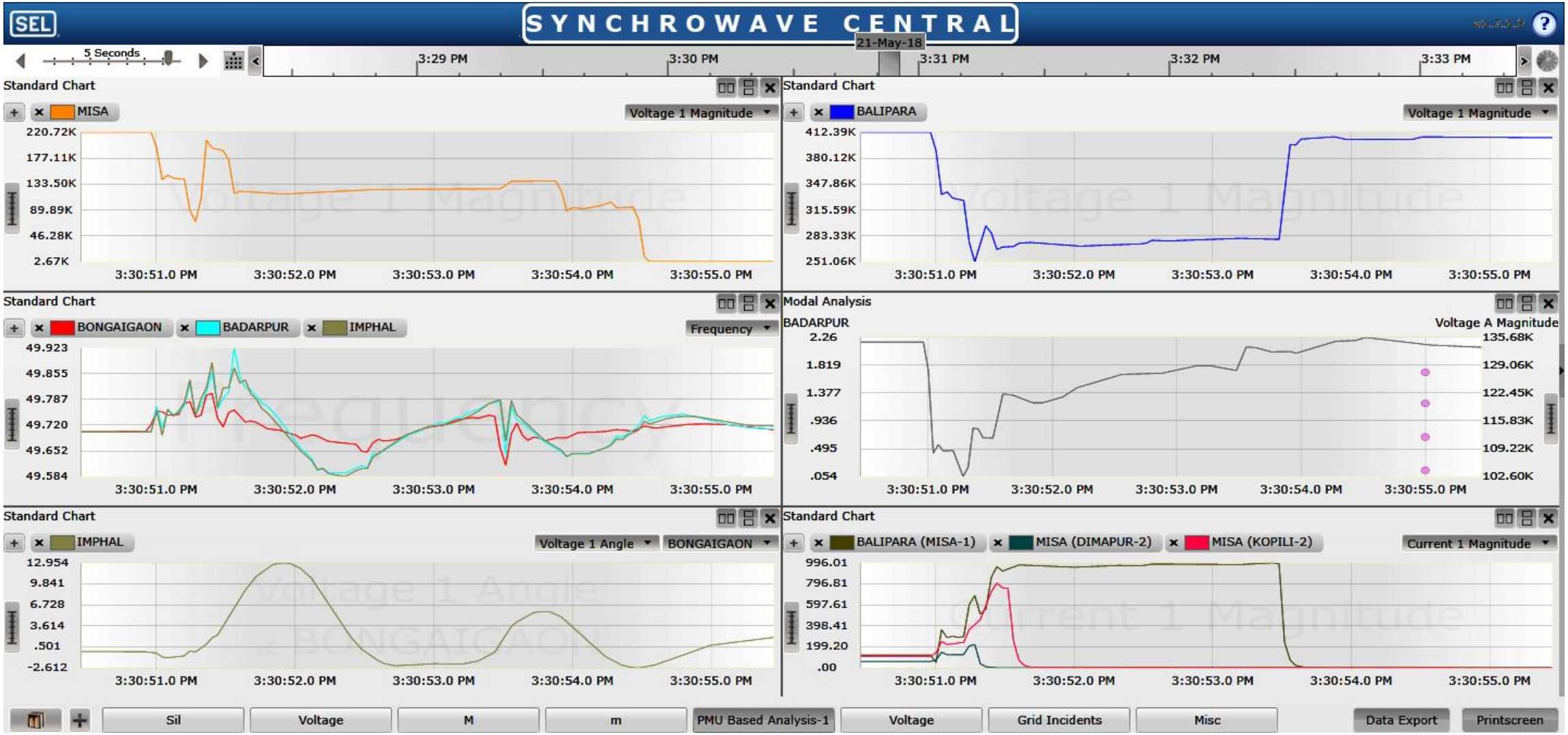
Current Plots



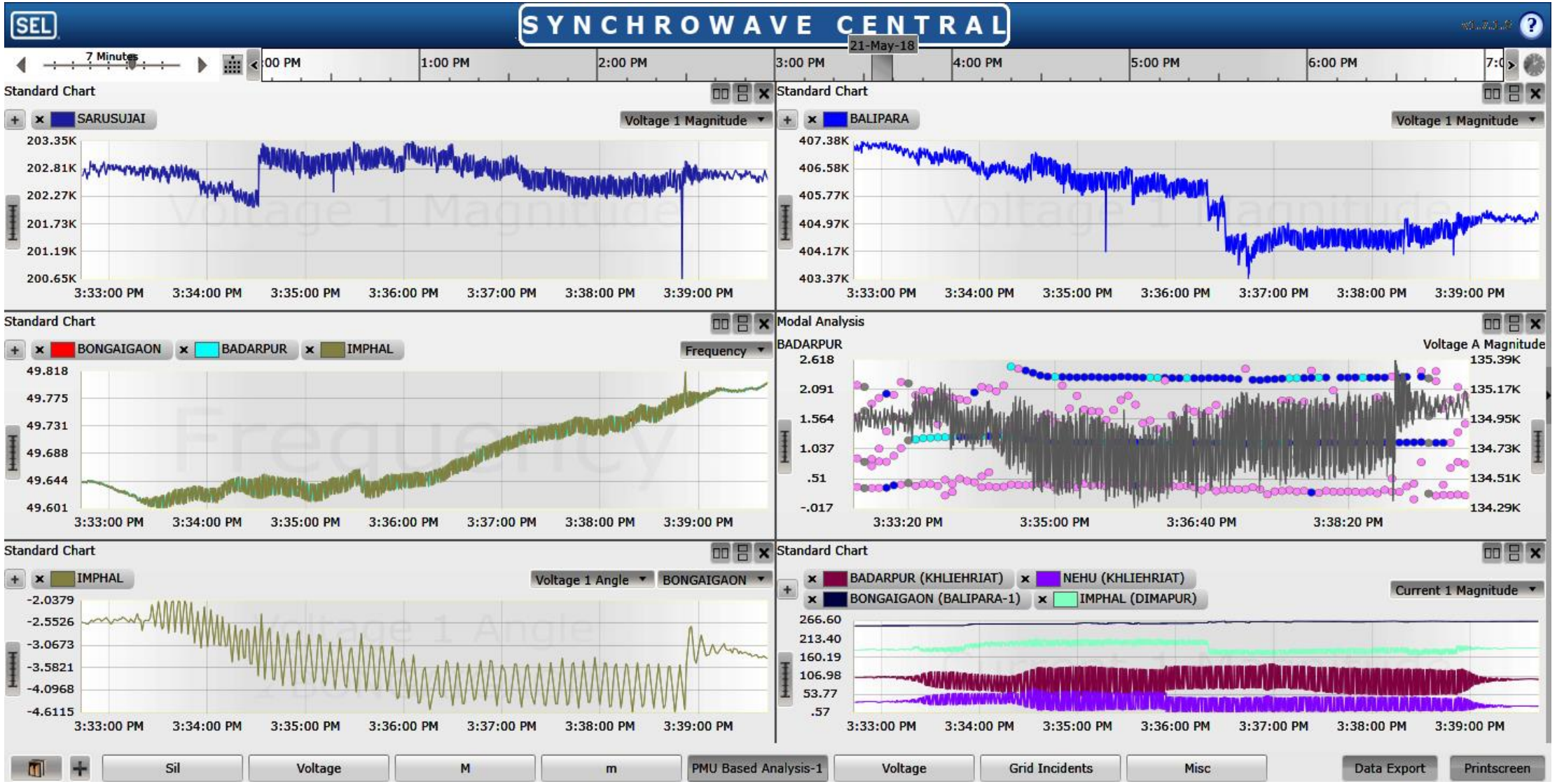
3-phase Current Plots



Entire Event ~15:30 Hrs



Oscillations Observed at 15:33:19.520 Hrs



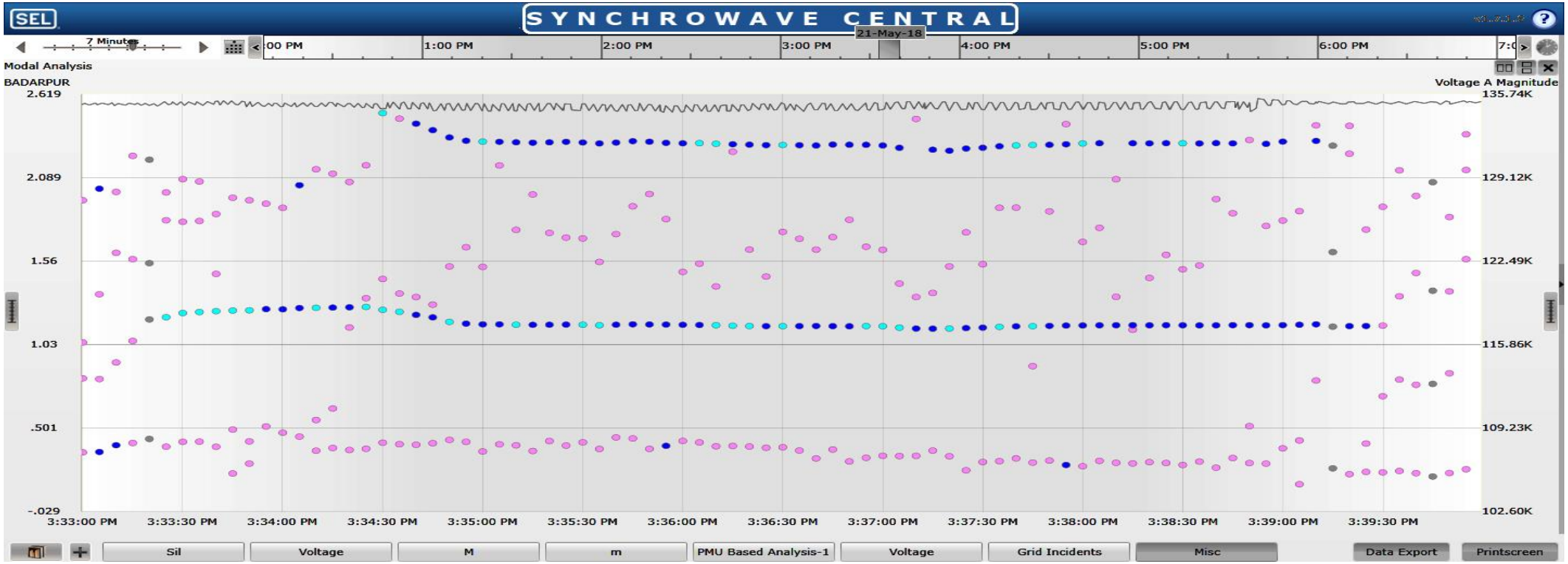
Oscillations…….

- 132 kV Khandong – Kopili D/C tripped at 15:31:31.360 Hrs
- Oscillation reported for Kopili stage-II unit

~ reduced damping

~evacuation through only one circuit (132 kV Khandong – Khilehriat -2 line)

Modes: ~**1.1 Hz & 2.2 Hz** (**Inter-Plant Mode**)



Restoration Details

At first 220 kV Misa Bus A charged through **ICT-I at Misa at 16:08 Hrs** and following lines connected to Bus A restored progressively.

- 132 kV Khandong- Khliehriat I at 15:59 Hrs.
- 220 kV Misa- Kopili I at 16:12 Hrs.
- 220 kV Misa- Samaguri I at 16:16 Hrs.
- 220 kV Misa- Dimapur II at 16:21 Hrs.
- 220 kV Misa- Byrnihat II at 16:29 Hrs.

While charging the lines connected to Bus-B by shifting to Bus-A ; at 16:34 Hrs, the total restored lines got tripped once again resulting voltage failure of Bus.

Restoration Details

After detailed inspection restoration of lines started **at 17:18 Hrs through 400/220 kV ICT I at Misa**.

The following lines are restored as follows:

- 220 kV Misa- Kopili III at 17:32 Hrs.
- 220 kV Misa- Dimapur II at 17:42 Hrs.
- 220 kV Misa- Byrnihat I at 17:55 Hrs.
- 220 kV Misa- Samaguri I at 18:01 Hrs
- 400/220 kV ICT II synchronized at 18:10 Hrs.
- 220 kV Misa- Mariani (PG) at 18:37 Hrs.
- 220 kV Misa- Samaguri II at 19:02 Hrs
- 220 kV Misa- Byrnihat II at 18:43 Hrs.
- 220 kV Misa- Dimapur I at 18:51 Hrs.
- 220 kV Misa- Dimapur II at 18:52 Hrs.
- 220 kV Misa- Kopili I at 18:48 Hrs.
- 220 kV Misa- Kopili II at 19:00 Hrs.

Issues to be Discussed:

- ***Reason of Fault ~ R-E fault evolved in to R-Y-B-E fault***

- ***Reason for delayed fault clearance (~3480 msec)***

- ***Reason for Tripping of all elements in both 220 kV Bus-A & Bus – B at Misa(PG)***
  - POWERGRID may intimate the details of elements connected to 220 kV Bus-A & 220 kV Bus-B prior to disturbance
  - POWERGRID may furnish DR & EL outputs of all elements connected to 220 kV Bus A & Bus-B
  - POWERGRID may furnish Station Event Logger Output of Misa(PG) w.e.f 13:15 Hrs to 19:00 Hrs

- ***Reason for tripping of 220 kV Samaguri – Sarusajai-2 line (AEGCL may investigate, Furnish DR & EL outputs)***

- ***Reason for tripping of 132 kV Khandong – Khiehriat -1 line (POWERGRID & NEEPCO may investigate, Furnish DR & EL outputs)***

- ***Reason for tripping of Khandong Machines (As informed by NEEPCO; due to tripping of bus coupler, machines tripped on Over Frequency, Furnish DR & EL outputs)***

- ***Reason for tripping of restored elements at 16:34 Hrs (POWERGRID may intimate)***

- ***LFO observed (Khandong, Kopili, Kopili stage-II, Loktak, Doyang may investigate)***

Thanks……

PRIMARY RESERVE MARGIN IN HYDRO

KEY POINTS

- This provision of keeping primary reserve margin is not applicable to units which have declared DC less than the 100% of IC (less AEC)

i.e. schedule of a unit which has declared DC corresponding to 90% of IC less AEC shall not be curtailed to 85% of IC for keeping primary reserve margin

- Schedule is to be restricted to 100% of IC less Auxiliary Energy Consumption only.

KEY POINTS

- For hydro stations, the restriction of schedule is applicable only for lean inflow period.

- the schedule is to be restricted to 100% of IC less AEC only during peaking hours and not for remaining period.

- Total Energy Declared will be scheduled within the day.

KEY POINTS

- DC declared by the generator is not to be reduced.
- Scheduling of hydro stations shall not be reduced during high inflow period in order to avoid spillage.
- The high inflow period shall be decided by respective RLDCs.

NER HYDRO PLANTS NORMATIVE SCHEDULE.

PLANT NAME	UNIT 1	UNIT 2	UNIT 3	UNIT4
KOPILI	49.5	99	148.5	198
KHANDONG	24.75	49.5		
KOPILI STG II	24.75			
DOYANG	24.75	49.5	74.25	
RANAGANADI	133.65	267.3	400.95	
PARE	54.45	108.9		
LOKTAK	34.65	69.3	103.95	

THANK YOU.

ANNEXURE-D.39				
Sl.No.	**RTU STATION**	**Analog Data**	**Digital data**	**Actual Status as per dtd 18.06.2018**
1	**BALIPARA**	400 kV Bongaigaon line 1 data is suspect. Data of 220 kV Balipara - Sonabil Line 1 and line 2 are wrong.	F_R3_R (BONGA_PG LINE 2 REACTOR), F_R4_R (BONGA_PG LINE 1 (BNC_PG LINE 1 REACTOR), E_05 CB data suspect.	1. There are no dedicated Circuit Breakers for Bong 1 & 2 LRs. 2. The CB status for BNC # 2 LR is reporting correctly upto RTAMC. Analog data: Locally check and found ok. RLDC end may discuss or a joint visit may be planned
2	**BONGAIGAON**	400/220 kV ICT data is WRONG, 80 MVAR Bus reactors suspect and 400 kV Bongaigoan-New Siliguri Line 1 data wrong.	ALL CBs OK.	Analog data: Locally checked at site and found ok. All CBs OK.
3	**DIMAPUR**	All data ok except Bus data of 220 kV and 132 kV Buses.	All data wrong.	Because of the fire incident, DPS/SPS cables were burnt down totally. Repairing is under process so tentative completion period will be 3months.
4	**IMPHAL**	All data suspect	All data suspect	ALL analog and CBs data ok.
5	**JIRIBAM**	All data ok except 132 kV Bus 1 Voltage wrong	All data ok.	Tipaimukh line data suspect(at remote end) but checked locally at site and found OK. All CBs OK.
6	**KOLASIB**	All data suspect.	All CB suspect.	RTU Not in POWERGRID Scope beyond 15yrs of life.. Communication link ok.
7	**MISA**	All data ok.	F_04 (400/220 kV ICT 1), B_03_R (Tertiary Reactor 3), E_L3 (Kopili-3), E_07 (220 kV B/C), F_01 (BALIPARA_PG Line 2), B_01_R (Tertiary Reactor 1), B_02_R (Tertiary Reactor 2), E_L1, E_L2, E_L3, E_L4, E_L5, E_L6, E_L7, E_L8, E_L9, E_06 data suspect.	All data ok. Digital data: B_51(33KV ICT BUS) data suspect. But checked locally and found ok.
8	**MARIANI**	All data ok except MVAR of all Lines		All analog data & CBs data Ok.

9	**BNC (HVDC)**	Firing Angle of pole 1 & 2, 400 kV Ranganadi-BNC Line I & II position swapped at BNC end, SUBAN_NH 3(BNC to SUBAN Line3) MW&MVAR Data Suspect, 132 kV Transfer Bus Data Suspect.	F_01(ICT-1), F_02(Tie between ICT-1 & ICT-2), F_03(ICT2), F_04(SUBAN-4), F_4R_R(SUBAN-4 Reactor), F_05 (Tie Between SUBAN-3 & SUBAN-4), F_06(SUBAN-3), F_R3_R(SUBAN-3 Reactor), F_R2_R(SUBAN-2 Reactor), F_R1_R(SUBAN-1 Reactor), F_08(Tie Between SUBAN-1 & SUBAN-2), F_09(SUBAN-1),F_13(Filter-3), F_14(Filter-3 main), F_23(pole-1), F_2W(Tie between bus-3 &4), F_1W(Tie between Bus-1 &2), F_25(Bus Between Bus Reactor-2 & Ranga-1), F_28(Pole-2 Bus-4) , F_29(Pole-2 Bus-2), F_31(Tie Between Ranga-2 & Balip-2), F_36(Tie Between Balip-1 & Balip-3), F_38(Filter-2), F_39(Tie Between Filter-2 F_40(Filter-1), F_42(Tie Between Balip-4 & Bus Reacxtor-1), F_43(Bus Reactor-1), D_01(ICT-1 132 KV side), D_02(ICT-2 132 KV Side), D_03(BNC-1), D_04(BNC-2)	Jointly Checked locally using Vinci Protocol Analyser test on 08.06.2018. All data OK except 1.Analog data: SUBAN-4LR MVAR(Line not charged), 132KV Transfer Bus Voltage & frequency. 2. Digital data: CB Status-F_4R_R(Suban-4 LR)-line not charged.
10	**ROING**	All data suspect.	All data suspect.	IP conflict at site(when . To be checked jointly with Alstom-NERLDC End and Alstom Site end.
11	**TEZU**	All data suspect.	All data suspect.	All Data OK/ Jointly checked with RLDC(except frequency & polarity)
12	**SILCHAR**	AZARA and Killing line reactors connection reversed.		1.AZARA and Killing line reactors connection reversed-**locally OK.** **2. Digital data: D_09 (PKBari Line 1) – Rectified.**
13	**AIZWAL**	All data ok except Bus 1 data		Locally checked and found OK.
14	**KOPILI**	Bus frequency and 220/132 kV 160MVA ICT 1 data is suspect	D_L4 (Khandong_NO Line 1), E_05 (220/132 kV 160 MVA ICT) data Suspect.	RTU Not in POWERGRID Scope beyond 15yrs of life.. Communication link ok.
15	**DOYANG**	All data suspect.	All CB suspect.	RTU Not in POWERGRID Scope beyond 15yrs of life.. Communication link ok.
16	**RANGANADI**	All data ok except Mvar Values of units	D_L6, D_L7, D_G1,D_06, D_08,F_L2,F_02 SUSPECT.	RTU Not in POWERGRID Scope beyond 15yrs of life.. Communication link ok.
17	**KOPILI EX NO**	33 KV bus voltage suspect, 132 kV Bus 2 Voltage suspect, 220 kV Bus 4 & 3 voltage data wrong, XFMR_S ED_T1 Data wrong.	D_06 (ICT-1).	RTU Not in POWERGRID Scope beyond 15yrs of life.. Communication link ok.
18	**RC NAGAR**	Bus 2 frequency suspect.		RTU Not in POWERGRID Scope

				beyond 15yrs of life.. Communication link ok.
19	**LOKTAK**	Bus 1 Frequency & Voltage, 132/33 kV ICT All Data Suspect	D_G3(Unit 3), D_G2(Unit 2), D_L3(132 kV Imphal Line), D_L1(132 kV Rengpa Line), D_06 (132/33 kV ICT)	RTU Not in POWERGRID Scope beyond 15yrs of life.. Communication link ok.
20	**ZIRO**	All data suspect.	All CB suspect.	PLCC link problem at Ranganadi Site and also POWERGRID Site representative could not go due to Landslide and road problem. However, GPRS modem will be installed at site in this week for alternative real time data transmission to NERLDC purpose.

Voice Communication:

The following ULDC phones are not working

1. Kohima (23640116)
2. Kathalguri (23640154)
3. Palatana (23640127)
4. Ranganadi (23640119)
5. Dimapur (23640142)- Another phone no. Working
6. NTPC, BgTPP.---Phone no. Working
7. 400kV Byrnihat/Killing

Expected date for installation of VOIP
(as per 141st OCCM).

1. Palatana, OTPC – by Nov'18
2. 400kV Silchar – by Nov'18
3. Ziro, Roing, Tezu and Pasighat - By Nov'18 (PG) & AP (under R&M)

Communication Links which are to be maintained by POWERGRID as per scope & norms are OK. All phones connecting to POWERGRID stations are working. IEAll Telephones are working. Further , for stations where phone is not working respective utility may confirm checking of the Link up to nearest wide band.

Grid Disturbance in Southern Part of NER Grid on 18.06.18 at 01:39 Hrs

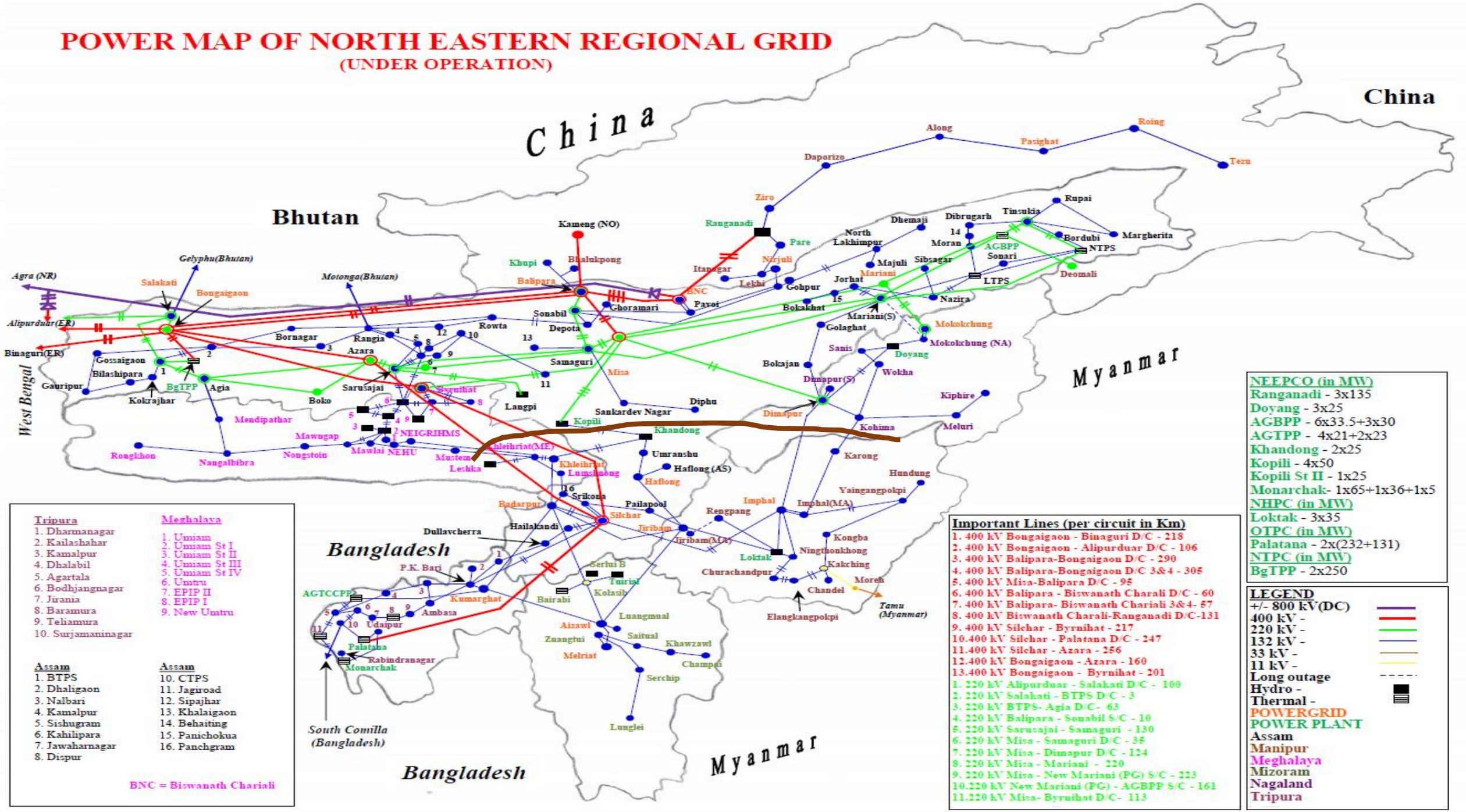
Summary

- Disturbance occurred in Southern Part of NER Grid on 18.06.18 at 01:39 Hrs comprising of the following Power Systems:
  - Tripura
  - South Assam
  - Manipur
  - Mizoram
  - Part of Meghalaya
  - Bangladesh (South Comilla)

- These Power Systems were connected with rest of NER Grid through the following links:

  - 400 kV Silchar - Azara line
  - 400 kV Silchar - Byrnihat line
  - 132 kV Khliehriat(ME) - Mustem line & 132 kV Khliehriat (ME) - NEIGRIHMS line
  - 220 kV Bus Coupler at Kopili (**Bus A**: 160 MVA ICT; **Bus B**: Misa 1, 2 & 3 lines, Unit 1,2,3 & 4) and
  - 132 kV Dimapur – Imphal line

POWER MAP OF NORTH EASTERN REGIONAL GRID
(UNDER OPERATION)



Tripura
1. Dharmanagar
2. Kailashahar
3. Kamalpur
4. Dhalabil
5. Agartala
6. Bodhjangnagar
7. Jirania
8. Baramura
9. Teliamura
10. Surjamaninagar

Meghalaya
1. Umiam
2. Umiam St I
3. Umiam St II
4. Umiam St III
5. Umiam St IV
6. Umtru
7. EPIP II
8. EPIP I
9. New Umtru

Assam
1. BTPS
2. Dhaligaon
3. Nalbari
4. Kamalpur
5. Sishugram
6. Kahilipara
7. Jawaharnagar
8. Dispur

Assam
10. CTPS
11. Jagiroad
12. Sipajhar
13. Khalaigaon
14. Behaiting
15. Panichokua
16. Panchgram

BNC = Biswanath Chariali

Important Lines (per circuit in Km)
1. 400 kV Bongaigaon - Binaguri D/C - 218
2. 400 kV Bongaigaon - Alipurduar D/C - 106
3. 400 kV Balipara-Bongaigaon D/C - 290
4. 400 kV Balipara-Bongaigaon D/C 3&4 - 305
5. 400 kV Misa-Balipara D/C - 95
6. 400 kV Balipara - Biswanath Charali D/C - 60
7. 400 kV Balipara- Biswanath Chariali 3&4- 57
8. 400 kV Biswanath Charali-Ranganadi D/C-131
9. 400 kV Silchar - Byrnihat - 217
10. 400 kV Silchar - Palatana D/C - 247
11. 400 kV Silchar - Azara - 256
12. 400 kV Bongaigaon - Azara - 160
13. 400 kV Bongaigaon - Byrnihat - 201
1. 220 kV Alipurduar - Salakati D/C - 100
2. 220 kV Salakati - BTPS D/C - 3
3. 220 kV BTPS- Agia D/C- 63
4. 220 kV Balipara - Sonabil S/C - 10
5. 220 kV Sarusajai - Samaguri - 130
6. 220 kV Misa - Samaguri D/C - 35
7. 220 kV Misa - Dimapur D/C - 124
8. 220 kV Misa - Mariani - 220
9. 220 kV Misa - New Mariani (PG) S/C - 223
10. 220 kV New Mariani (PG) - AGBPP S/C - 161
11. 220 kV Misa- Byrnihat D/C- 113

NEEPCO (in MW)
Ranganadi - 3x135
Doyang - 3x25
AGBPP - 6x33.5+3x30
AGTPP - 4x21+2x23
Khandong - 2x25
Kopili - 4x50
Kopili St II - 1x25
Monarchak- 1x65+1x36+1x5
NHPC (in MW)
Loktak - 3x35
OTPC (in MW)
Palatana - 2x(232+131)
NTPC (in MW)
BgTPP - 2x250

LEGEND
+/- 800 kV(DC)
400 kV -
220 kV -
132 kV -
33 kV -
11 kV -
Long outage
Hydro -
Thermal -
POWERGRID
POWER PLANT
Assam
Manipur
Meghalaya
Mizoram
Nagaland
Tripura

Major Lines/Unit Under Outage:

S.No	Name of line/Machine	Remarks
1	800 kV HVDC BNC-Agra Pole I	Out due to Tower Collapse since 02nd May 2018
2	400 kV BNC – Balipara III	Opened for voltage regulation since 16th June 2018
3	400kV Bongaigoan - Azara TL	Under Planned Shutdown since 10th June 2018

Antecedent Conditions

S.No	Area / Region	Before	After
1	Frequency(HZ)	49.93	49.93
2	Regional Demand(MW)	1413	1270
5	NET NER (MW)	960 (Export)	333(Import)

Sequence of Event

- At 01:39:43.925 Hrs, 400 kV Silchar – Byrnihat line tripped
- At 01:39:43.930 Hrs, 400 kV Silchar – Azara line tripped.
- Due to SPS-3 in off-condition, Palatana was not able to reduce generation to the desired level (240 MW).
- After tripping of 400 kV Silchar – Byrnihat & 400 kV Silchar – Azara lines, power flow (export from southern part of NER) was shifted to low capacity (132 kV lines) parallel corridor.
- 132 kV Khliehriat (ME) - NEIGRIHMS line tripped at 01:39:45.680 Hrs at NEIGHRIHMS end on Over-Current Protection.
- 132 kV Khliehriat (ME) - Mustem line tripped at 01:39:46.760 Hrs at both ends on Over-Current Protection.
- 132 kV Dimapur – Imphal line tripped at 01:39:46.480 Hrs at Dimapur end on Over-current.
- 220 kV Bus Coupler at Kopili (Bus A: 160 MVA ICT; Bus B: Misa 1, 2 & 3 lines, Units 1,2,3 & 4) tripped at 01:39:49 Hrs on over current.
- Due to tripping of these lines, Southern part of NER grid including South Comilla (Bangladesh load) was separated from rest of NER Grid and subsequently collapsed due to Load Generation Mismatch.

Sequence of Event …….

- At 01:44:16.415 Hrs, 400 kV Silchar – Palatana 2 line tripped (Silchar: Over Voltage, Palatana: DT received)
- At 01:44:16.437 Hrs, 400 kV Silchar – Palatana 1 line tripped (Silchar: Over Voltage, Palatana: DT received)
- At 01:44:16.494 Hrs, SPS-2 operated at Palatana.
- 400/132 kV 125 MVA ICT-1 at Palatana tripped at 01:44:16.501 Hrs and ICT-2 tripped at 01:44:16.529 Hrs.

Load Loss vs Generation Loss

- **Total Load Loss = 405 MW (including Bangladesh)**

  Tripura=87 MW, Manipur=65MW, Mizoram=26 MW, Meghalaya=13 MW

  South Assam = 110 MW, Bangladesh (South Comilla) =104 MW

- **Total Central Sector Generation Loss= 771MW**

  Palatana=481 MW, Loktak=105 MW, AGTCCPP=77 MW, Doyang=58 MW, Kopili STG II =25 MW

- **Total State Generation Loss: 99 MW**

  Monarchak = 78 MW, Rokhia = 21 MW

- **Total Generation Loss: 870 MW**
- **Antecedent Load: 1517 Antecedent Generation: 2373 MW**

- **Category of Grid Disturbance: GD-III**

Line Flow of Axis from SCADA

Line details	Line Loading at 01:38 Hrs (in MW)
400 kV Silchar – Byrnihat	228
400 kV Silchar – Azara	196
132 kV Badarpur - Khliehriat	-4
132/220 kV, 160 MVA ICT at Kopili	72
132 kV Imphal - Dimapur	25

Preliminary Event Analysis

- **At 01:39:43.916 Hrs, 400 kV Bongaigaon - Byrnihat tripped in Distance Protection (Silchar:** BNG: R-Y-B PH, Z-1, 190.3 KM; BYR: No Tripping)

  DR output from ***Bongaigaon(Main 1)*** *shows* ***R-Y-B-E fault in ZIII*** *with fault current, Ir=1.5 kA, Iy=1.3 kA, Ib=1.5 kA and In=0.2 KA. Fault was cleared in around* ***55 msec****. . The line tripped from Bongaigaon due to operation of Main 2 relay. The line did not trip from Byrnihat end as observed from Voltage waveform. Post fault , current of about 80 Amps is flowing which is the reactor current.(Current and Voltage waverform naming is interchanged in DR)*

  DR output from ***Bongaigaon(Main 2)*** *shows* ***R-Y-B-E fault in ZI (chances of over-reaching, needs to be reviewed by POWERGRID)****, carrier send with fault current, Ir=4.6 kA, Iy=4.3 kA, Ib=4.4 kA and In=0.2 KA. Fault was cleared in around 57 msec. The line did not trip from Byrnihat end as observed from Voltage waveform Pre fault current of around 0.8 kA in all the phases.* ***Post fault clearance 240 Amps is flowing in all the phases which needs to be investigated by POWERGRID****.* ***(DR is not time sycnrhonised)***

  DR was not triggered at Byrnihat

- **At 01:39:43.925 Hrs , 400 kV Silchar – Byrnihat line tripped in Distance Protection (Silchar**: DP, R-Y-B-E, Z-1, 63 KM; **Byrnihat**: DP, R-Y-B-E, Z-I, 127 km**)**

  DR output from Silchar shows ***R-Y-B-E fault in ZI*** *with fault current, Ir=2.1 kA, Iy=2.5 kA, Ib=1.7 kA and In=0.13. Fault voltage Vre=51 kV , Vye=38 kV and Vbe= 40 KA were observed. Fault was cleared in around 58 msec.*

- **At 01:39:43.930 Hrs, 400 kV Silchar – Azara line tripped in Distance Protection (Silchar**: R-Y-B-E, Z-1, 27 KM; **Azara**: R-Y-B-E, Z-2, 181.8 KM.**)**

  *DR output from **Silchar** shows **R-Y-B-E fault in ZI** with fault current, Ir=2.6 kA, Iy=2.3 kA, Ib=1.6 kA and In=0.24. Fault voltage Vre=55 kV , Vye=52 kV and Vbe= 53 KA were observed. Fault was cleared in around 60 msec.*

  *DR output from **Azara** shows **R-Y-B-E fault in ZI** with fault current upto Ir=1.8 kA, Iy=1.4 kA, Ib=1.9 kA and In=0.21. Fault voltage Vre=84 kV , Vye=75 kV and Vbe= 74 KA were observed. Fault was cleared in around 55 msec.*

- **At 01:39:39.362 Hrs(***Time sycnronisation to be checked***) , 132 kV Imphal - Dimapur line tripped in Distance Protection (Dimapur**: Directional O/C; **Imphal**: E/F.**)**

  *DR output from **Imphal** shows Operation of Distance Protection, In>1 trip with Ir=0.6 kA. Fault voltage Vre=76 kV. Fault clearing time could not be calculated as pre-fault period was not totally captured in DR. From PMU, it is observed that fault was cleared in around 2200 msec.*

  *DR output from **Dimapur** shows Operation of Back up O/C and E/F protection. Fault curren Ir=0.77 kA , Iy=0.79 kA and Ib= 0.73. R phase was opened after around 850 msec of opening of Y and B phase. Fault clearing time could not be calculated as pre-fault period was not totally captured in DR. From PMU, it is observed that fault was cleared in around 2200 msec.*

- **At 01:44:16:461 Hrs , 400 kV Silchar – Palatana I line tripped in Distance Protection (Silchar**: Over-voltage, Palatana: **)**

  *DR output from **Silchar** shows tripping of line due to **Over-Voltage Trip** . The voltages at the time of timing was Vre=257 kV, Vye=253 kV and Vbe=259kV.*
  DT Received at Palatana

- **At 01:44:16:461 Hrs , 400 kV Silchar – Palatana I line tripped in Distance Protection (Silchar**: Over-voltage, Palatana: **)**

  *DR output from **Silchar** shows tripping of line likely due to **Over-Voltage. However, Digital channel for Over- Voltage start was triggered but over voltage protection trip was not triggered.** The voltages at the time of timing was Vre=256 kV, Vye=254 kV and Vbe=260 kV.*
  DT Received at Palatana

- **At 01:44:58.590 Hrs, 132 kV Badarpur – Khleihriat line tripped in Distance Protection (Khliehriat**: B-E, Z-1, 8.62 KM; **Badarpur**: B-PH, Z-2, 66 KM**)**

  *DR output from Khliehriat shows **B-E fault in ZI, with fault current was around 2.2 kA, fault voltage, Vbe was around 21 kV** . Angle between Vb and Ib is around 38-55 degrees which indicates chances of vegetation infringement. Fault was cleared in around 55 msec.Three pole Auto-reclose was attempted after around 785 msec and was successful*

Restoration Details

- Restoration process was started by charging 400 kV kV Bongaigaon - Byrnihat Line at 01:51 Hrs.
- Power was extended to Khleihriat area through 132 kV Mustem – Khliehriat Line at 01:56 Hrs.
- Power was extended to Manipur Power System through 132 kV Imphal – Imphal I Line at 02:14 Hrs.
- Power was extended to Tripura Power System through 132 kV Silchar -P.K. Bari I Line at 02:14 Hrs.
- Power was extended to South Assam Power System through 132 kV Silchar - Srikona I Line at 02:16 hrs.
- Power was extended to Mizoram Power System through 132 kV Melriat - Zuangtui Line at 02:30 Hrs.
- Power was extended to Bangladesh (South Comilla) Power System through 132 kV SM Nagar - Comilla I Line at 03:10 Hrs.

Restoration Details

Sl no.	Name of line	Tripping time	Restoration time	Relay indication	Remarks
1	400 KV Bongaigaon-Byrnihat	01:39	01:51	BNG: R-Y-B PH, Z-1, 190.3 KM; BYR: N/A.	
2	400 KV Silchar-Byrnihat	01:39	02:04	SIL: R-Y-B-N, Z-1, 63 KM; BYR: R-Y-B-N.	
3	400 KV Silchar-Azara	01:39	04:46	SIL: R-Y-B-N, Z-1, 27 KM; AZARA: R-Y-B-N, Z-2, 181.8 KM.	
4	132 KV Dimapur-Imphal	01:39	02:44	DMP: DIRECTIONAL O/C; IMP: E/F.	
5	132 KV Dimapur-Doyang-I	01:39	02:47	DMP: 86Z	
6	132 KV Dimapur-Doyang-II	01:39	02:52	DMP: 86Z	
7	132 KV Dimapur-Bokajan	01:39	02:52	DMP: 86Z	
8	132 KV Dimapur-Dimapur-I	01:39	02:47	DMP: 86Z	
9	400 KV Silchar-Palatna-I	01:44	02:31	SIL: O/V.	SPS-2 operated at Palatana
10	400 KV Silchar-Palatna-II	01:44	03:26	SIL: O/V.	SPS-2 operated at Palatana
11	132 KV Badarpur-Khliehriat	01:44	02:20	KHLT: B-N, Z-1, 8.62 KM; BDP: B-PH, Z-2, 66 KM.	

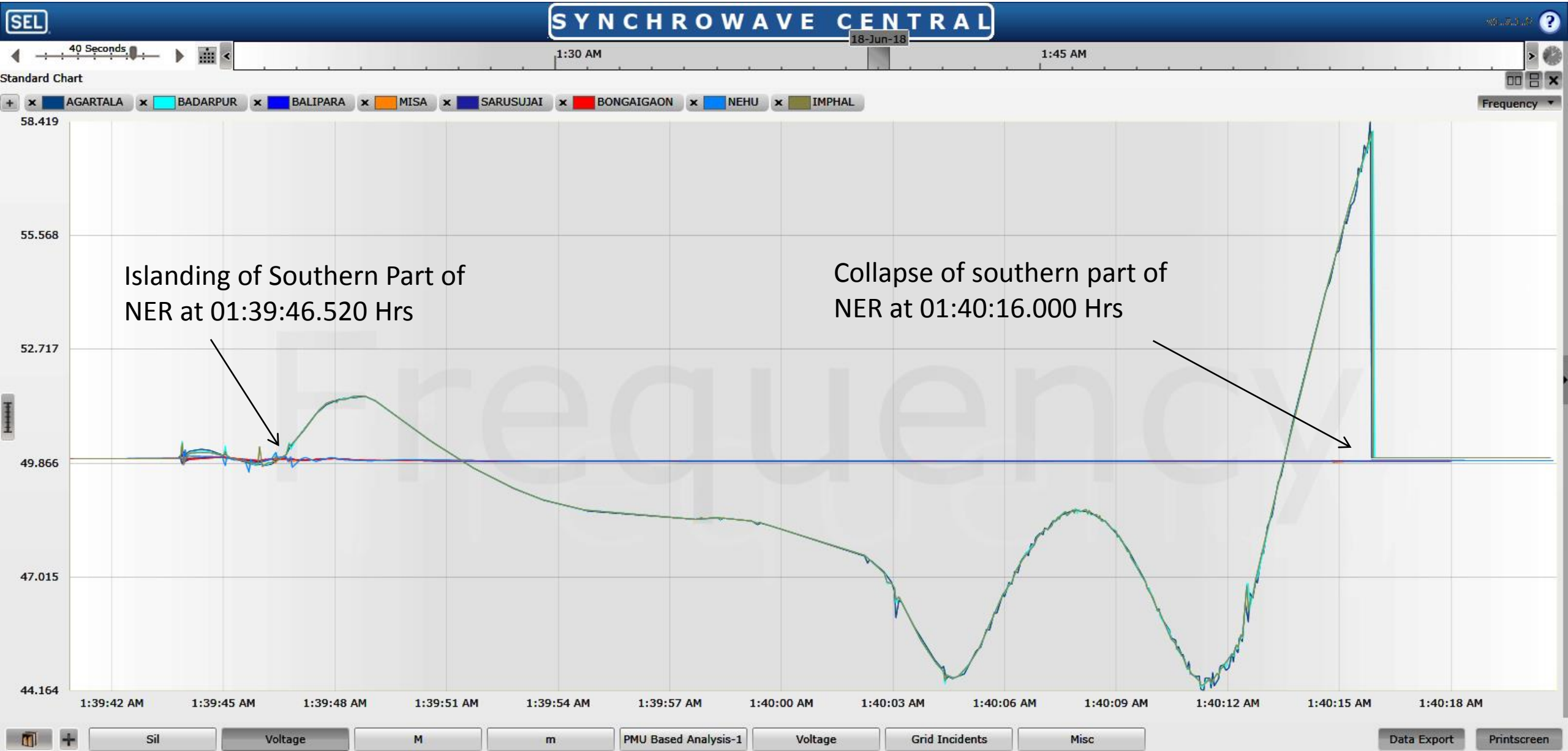
Restoration Details

Sl no	Name of the line/ICT	Restoration time
1	400/132 KV ICT-I at Silchar	02:08
2	132 KV Silchar-Imphal-I	02:09
3	132 KV Silchar-Imphal-II	02:11
4	132 KV Silchar-P.K.Bari-I	02:14
5	132 KV Silchar-Srikona-I	02:16
6	132 KV Silchar-Srikona-II	02:18
7	132 KV Badarpur-Jiribam	02:21
8	132 KV Jiribam-Aizawl	02:26
9	132 KV Silchar-Badarpur-I	02:34
10	132 KV Silchar-Badarpur-II	02:35

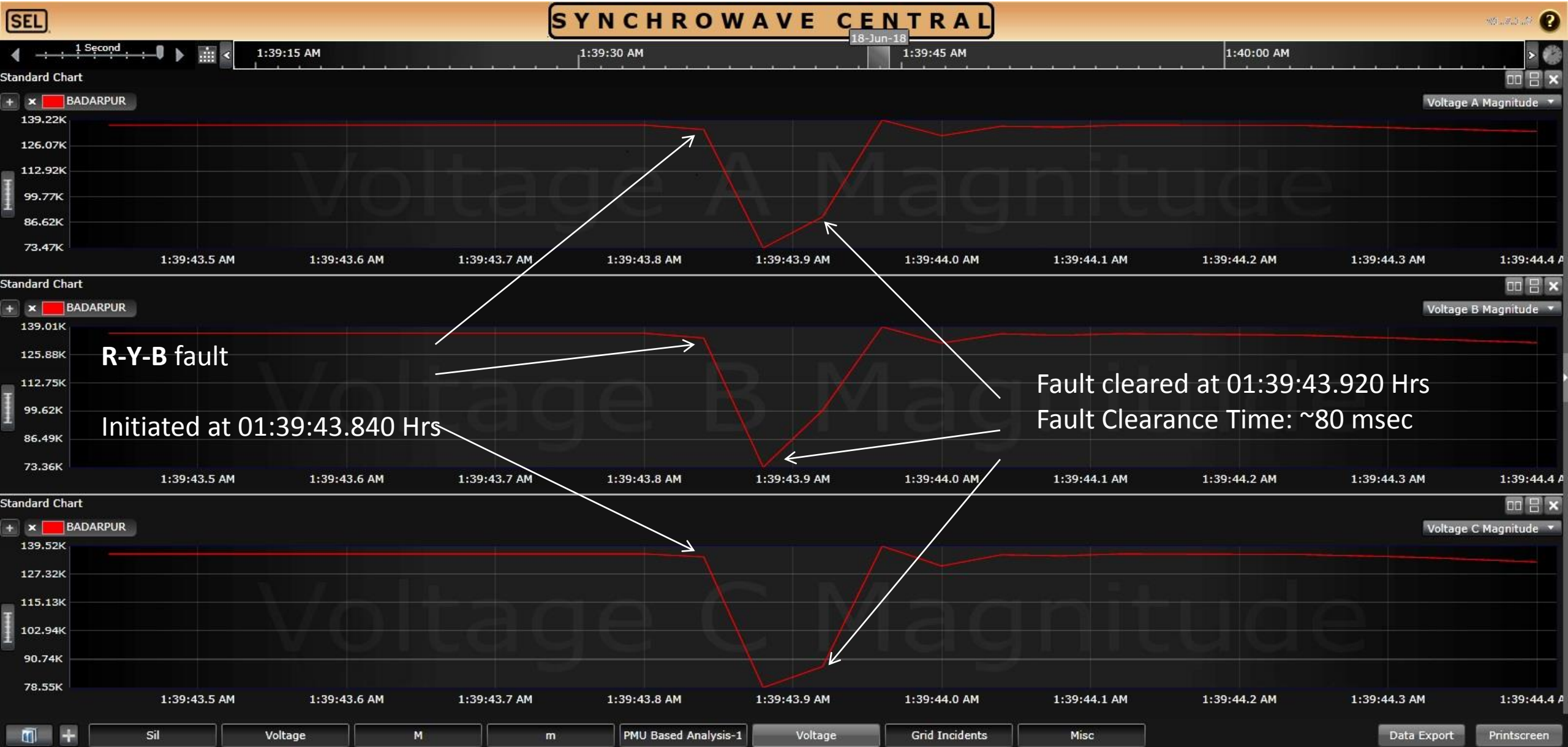
Sl no	Name of the line/ICT	Restoration time
11	132 KV Jiribam-Loktak-II	02:37
12	132 KV Jiribam-Haflong	02:37
13	400/132 KV ICT-II at Silchar	02:43
14	132 KV Imphal-Loktak-II	02:13
15	132/33 KV ICI-I & II at Imphal	02:13
16	132 KV Imphal-Imphal-I	02:14
17	132 KV Imphal-Imphal-II	02:16
18	132 KV Imphal-Ningthoukong	02:18
19	132 KV Silchar-Hailakandi-I & II	02:47
20	132 KV Dimapur-Doyang-I	02:47
21	132 KV Dimapur-Doyang-II	02:52
22	132 KV Aizawl-Melriat	02:30
23	132 KV Melriat-Zuangtui	02:30
24	132 KV Silchar-P.K.Bari-II	02:40

PMU Plots

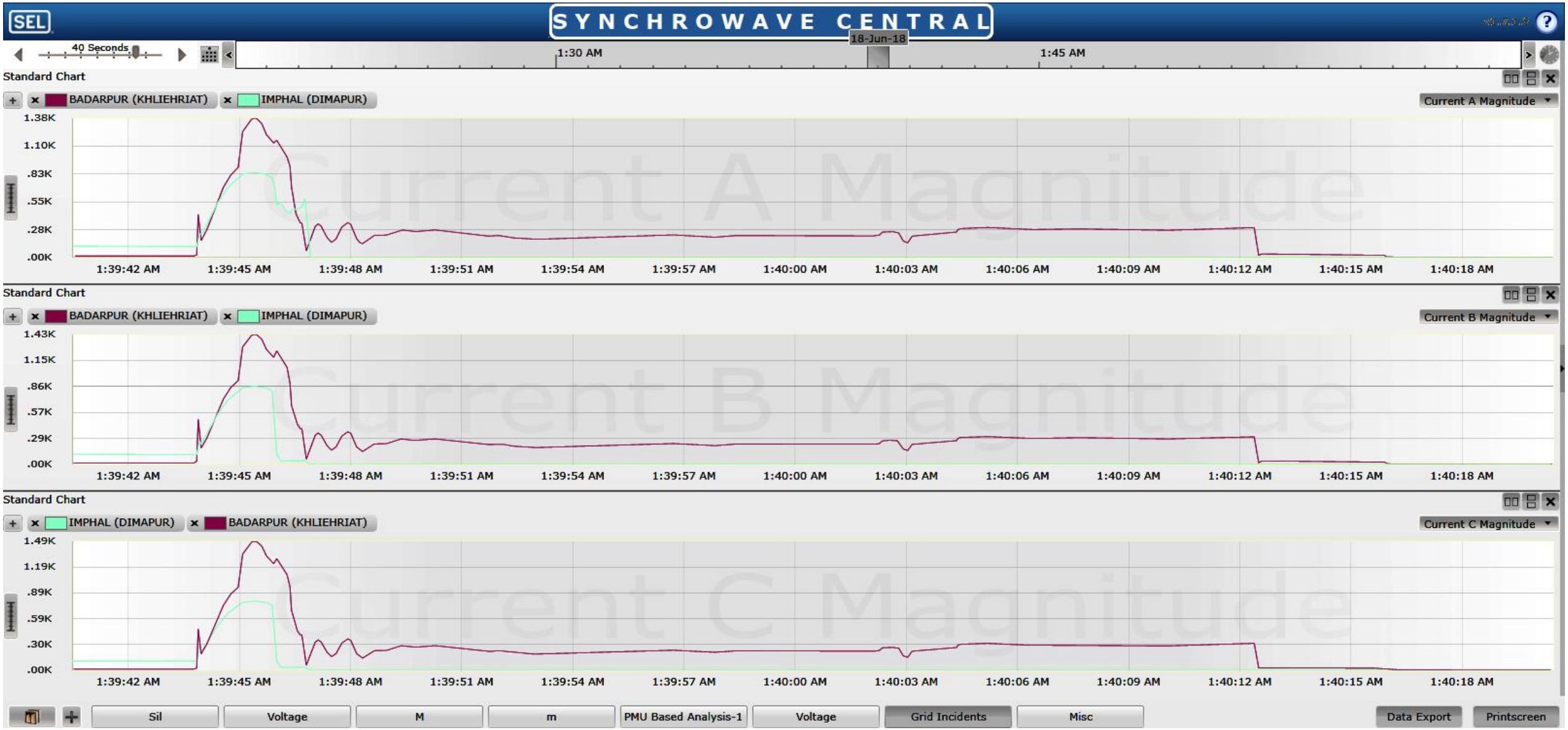
Islanding of Southern Part of NER Grid at 01:39:46.520 Hrs as observed in frequency plot of 132 kV Badarpur, Imphal and Agartala



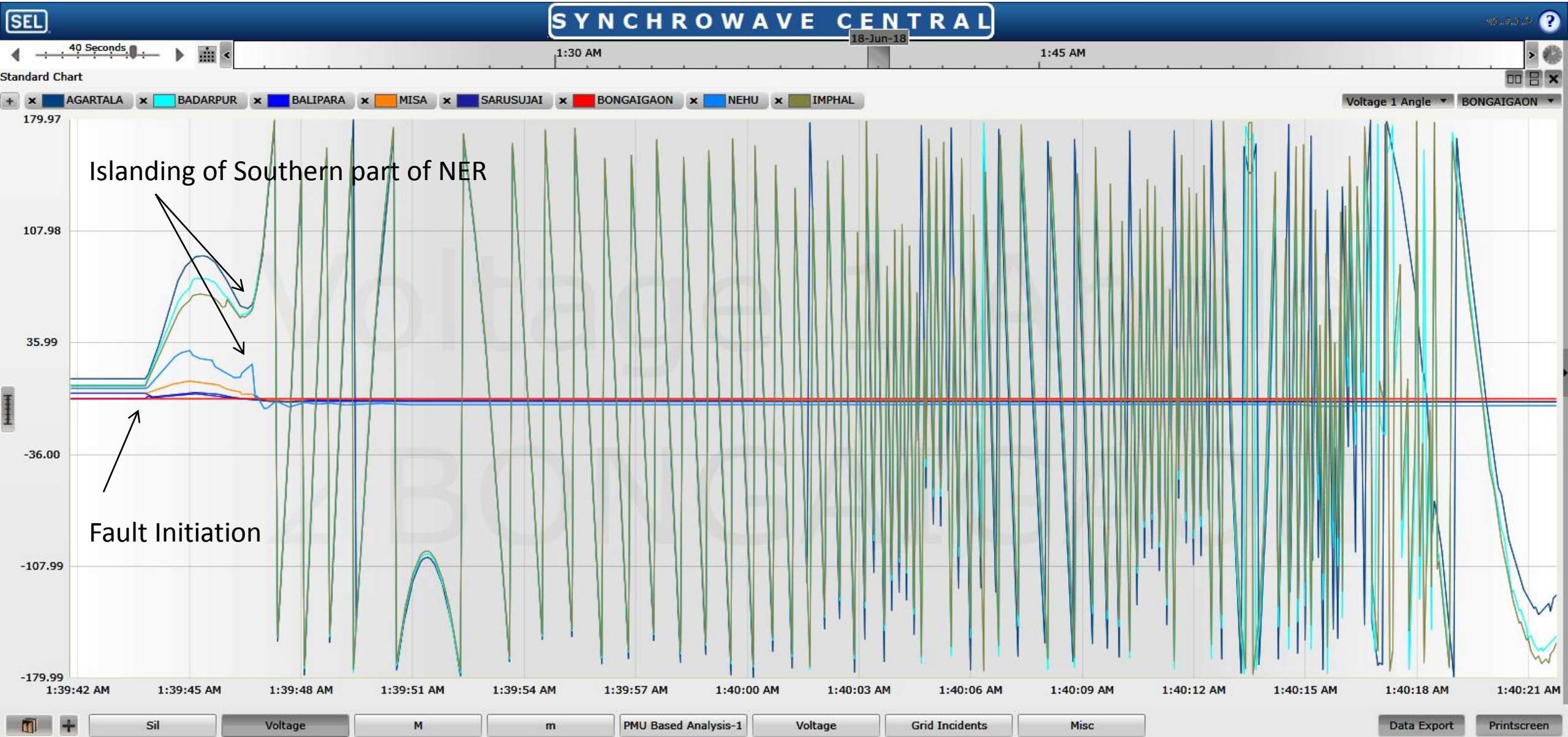
Tripping of 400 kV Silchar- Byrnihat & 400 kV Silchar – Azara at 01:39:43.920 Hrs on 18.06.18



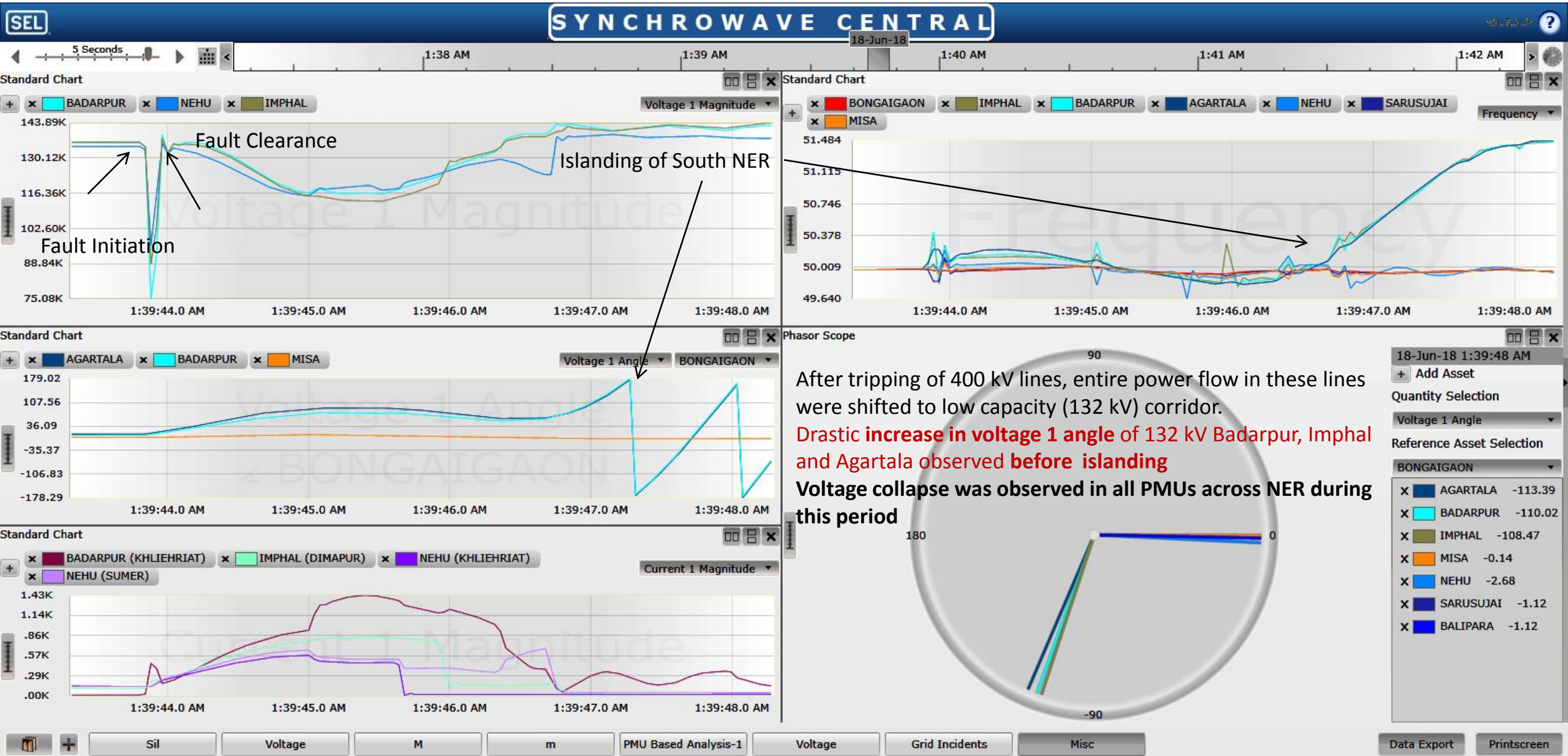
Loading of 132 kV lines ~ Current Magnitudes in all the 3-phases



Deviation in angle observed in 132 kV Badarpur, Imphal and Agartala PMU at the time of disturbance



Entire Event……..

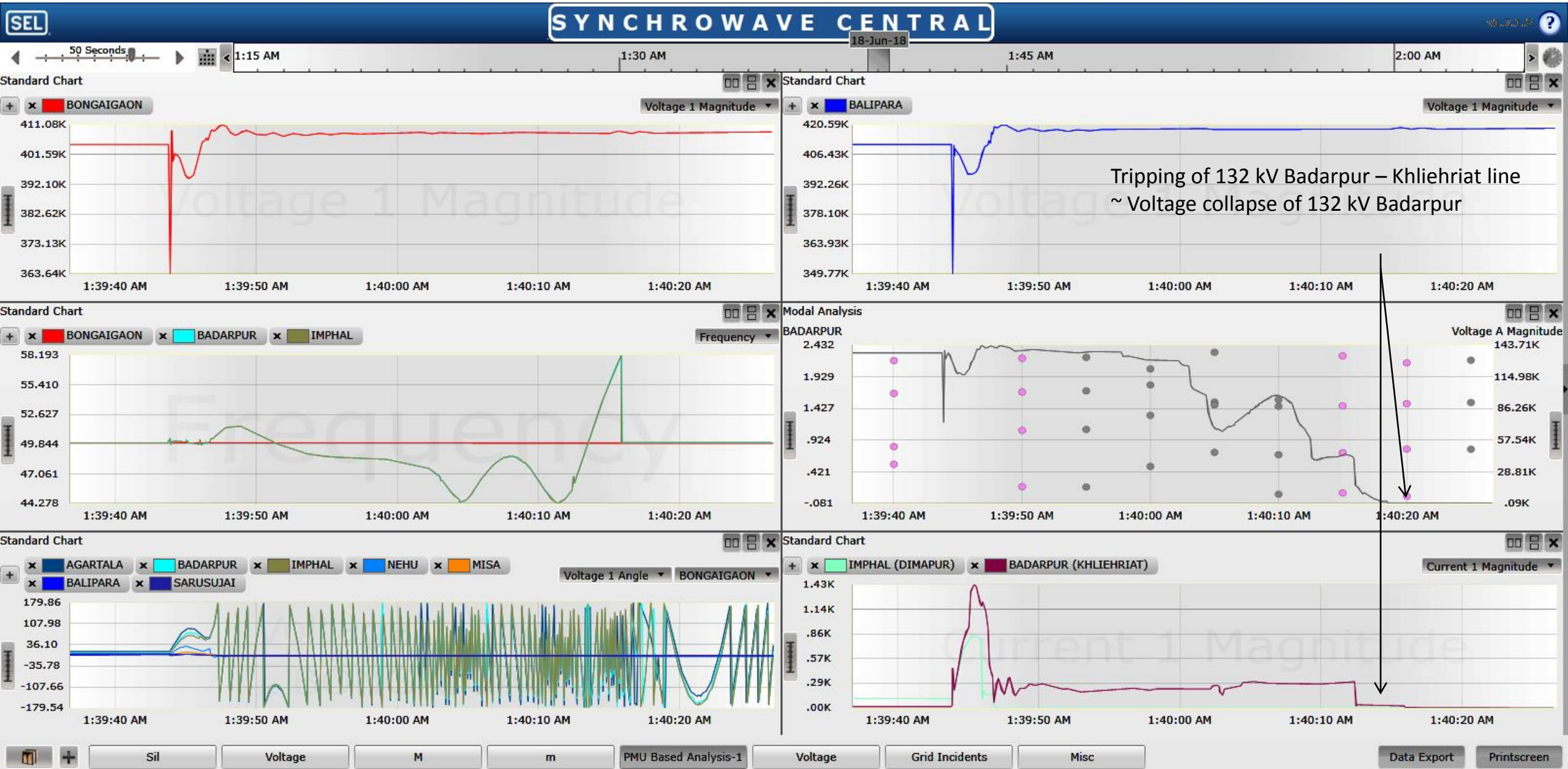


After tripping of 400 kV lines, entire power flow in these lines were shifted to low capacity (132 kV) corridor.

Drastic **increase in voltage 1 angle** of 132 kV Badarpur, Imphal and Agartala observed **before islanding**

Voltage collapse was observed in all PMUs across NER during this period

Entire Event …….



Items for discussion

- **Reason for Tripping of 400 kV Silchar – Azara & 400 kV Silchar – Byrnihat lines (Root Cause)**

  NETC/POWERGRID may please intimate

- **Reason for tripping of 400 kV Bongaigaon – Byrnihat line only at Bongaigaon (PG)**

  NETC/POWERGRID may please intimate.(Chances of Over-reaching of DPR at Bongaigaon)

- **Reason for tripping of 132 kV lines emanating from Dimapur (PG)**

  POWERGRID may please intimate

- **Non operation of Island no. 2 (Island Frequency: Min ~ 44.16 Hz & 58.41 Hz)**

  TSECL may please intimate the status of identification of 100 MW additional load relief (as per last system study meeting held on 10th May'18)

- **Status of SPS-3 at Palatana & Silchar**

  POWERGRID & OTPC may please intimate

- **Load relief from UFR based load shedding:**

  TSECL, MSPCL & P&ED Mizoram may please intimate

Thank You!!!

Annex

Flexibility in Generation and Scheduling of Thermal Power Stations to reduce emissions.

A. Background

The Government of India has given commitment that as part of Nationally Determined Contributions (NDC), India would have 40% of its installed capacity from non-fossil fuel sources by the year 2030.

In pursuance of this, as per provisions of Tariff Policy issued on 28th January, 2016, Ministry of Power has issued 'Long term growth trajectory of RPOs' for Non-solar as well as solar sources, uniformly for all States/UTs, initially for three years from 2016-17 to 2018-19.

Long Term trajectory	2016-17	2017-18	2018-19
Non-Solar	8.75%	9.5%	10.25%
Solar	2.75%	4.75%	6.75%
Total	11.5%	14.25%	17.00%

In the year 2016, Government has introduced the concept of flexible utilization of coal. Earlier, each power plant owned by a company had to sign Fuel Supply Agreements (FSA) for supply of coal from a specified coal mine. The policy for flexible utilization of coal allowed a company to use coal within its basket in the most optimal manner such that unnecessary coal transportation is avoided and lower costs of power generation could be passed on to the beneficiary states.

In a similar manner, there should be some flexibility provided in electricity Generation so that Discoms are able to meet their RPO without facing additional financial burden.

B. Need for allowing flexibility in Generation

Due to larger procurement of Renewables, the issues being faced by the stakeholders including Discoms which need to be addressed inter-alia are:

i) Need for balancing power: RE Generation sources have the benefits of cleaner energy sources but Solar and Wind energy is available only during some part of the day and is generally infirm in nature. This necessitates the user of RE energy

(mainly Discoms) to make arrangements for balancing power to meet the power requirement when RE energy will not be available. Thus, due to large scale integration of Grid connected renewable which inherently has huge variability of generation, there is a requirement of balancing power which matches with such variations so that the security and stability of Grid is maintained. Under present regulation, such balancing power is to be arranged by the Discoms.

ii) Additional financial burden to Discoms to meet RPO: Most of the states already have adequate PPA. In order to meet the RPO, Discoms will have to tie up additional RE power which will pose additional financial burden on them.

Thus, considering the impact of new environmental norms on thermal power generation capacity, energy storage capability of Hydro stations, infirm nature of RE Generation sources, balancing power requirements by Discoms and the benefit of Renewable Sources of energy in reducing environmental emissions, there is a need to provide flexibility to the Generating Stations to generate RE power and supply power under existing / future contractual agreements. Discoms will have flexibility to procure RE power within their existing PPA and meet their RPO.

C. Flexibility to Generating company

The generating company shall have the flexibility of using its Thermal power or renewable power to meet its scheduled generation from the specific thermal generating station. This flexibility will provide the Power Generators an opportunity to optimally utilize generation from RE sources and also help in reducing emissions. Beneficiaries of the Power will also get the firm power including Renewable power, which will help them to meet their RPO obligations and also the responsibility of arranging balancing power requirement will be shared by the Generators.

D. Proposed Mechanism for allowing Flexibility in Generation

i) Any generating company having coal/lignite/gas based thermal generating stations, may establish or procure renewable energy generating capacity anywhere in the country either at existing stations or at new locations.

ii) The generating companies would be allowed to utilize such renewable capacities for supplying power against existing commitments to supply the power from thermal station(s) anywhere in India.

iii) **Scheduling and commercial mechanism**

a. Declared Capacity (DC) shall be declared by the existing Thermal generating station as per the extent regulations. Once the schedule for the next day is received, the generating station shall have the flexibility of using its Thermal power or the generating company owned renewable power or procured RE Power to meet its generating station scheduled generation. Thus the RE power shall replace the Thermal power of any of the thermal generating station of the generating company, wherever found feasible by the generating company.

b. The sum total of all the power actually supplied from various generating sources shall be considered for DSM purposes.

c. The Declared Capacity of the Thermal Generating station shall be with respect to the terms of the PPA and the availability of primary fuel. The declared capacity of thermal generating station cannot be based on the availability of the additional RE power.

d. The changes in the regulation, if any, required for implementation of the above scheme shall be done by the appropriate Electricity Regulatory Commission.

e. The Power from RE stations would be supplied to the Beneficiaries at a Tariff which shall be equal to Energy Charge Rate (ECR) of the power station which was originally scheduled. This would include the balancing cost and the tariff risk to be taken by the Generator.

f. The net gain realized, if any, from supply of RE power in place of thermal power under existing PPA shall be passed on to the beneficiary appropriately considering balancing power support provided and the risk taken by the

generator. For this purpose, at the end of the year, truing-up can be done by the Appropriate Commission and the net gain , if any, earned by the Generator shall be shared with the beneficiary in the ratio of 50 (Beneficiary) : 50 (Generator).

g. This shall not be applicable to RE Projects for which PPAs have already been signed by the Generator and Beneficiaries.

h. The extra generation capacity available from existing thermal station(s) corresponding to the renewable generation capacity and up to the existing contracted capacity would make available additional power which at the time of need can be utilized by the beneficiaries.

iv) **RPO/ RGO** - Power which is generated from such renewable energy shall be eligible for any cross subsidies notified by the Government from time to time including waiver from ISTS transmission charges and losses as per notification from the Government. Such renewable energy procured by the beneficiaries shall qualify towards meeting their Renewable Purchase Obligations (RPO obligations). Further, such renewable power in capacity terms shall also qualify for Renewable Generation Obligations (RGO obligations) for the generators as envisaged in the Tariff Policy and as and when notified by Government of India.

v) **Deviation Settlement Mechanism (DSM)& Scheduling-**

For the purposes of flexible scheduling and operation of thermal stations, while giving the DC of the existing thermal station the generator shall not take into the account the forecast of generation from renewable component. Once the schedule for specific thermal generating station has been received, then depending upon the forecast available for RE energy, that Generating Station shall supply power either from existing thermal station or combination of thermal and RE power to meet its scheduled power as defined earlier in this scheme. Thus the deviation, if any, shall be made applicable to the scheduled generation from thermal station and sum total of actual generation from thermal/RE sources. No DSM shall be payable/receivable by the generating station if it is able to meet its scheduled generation by supplying thermal and RE power in any ratio.

vi) Procurement and supply of RE power by the Generator for supply under this scheme shall be allowed and necessary License required need to be fulfilled by the respective Generating Company.

vii) The proposed scheme shall be applicable only for the Thermal projects developed / being developed under Section 62 of the Electricity Act, i.e., "Regulated Tariff based Projects".

viii) Use of flexibility in generation as proposed in the scheme is optional and only if found feasible Generator can use power from RE sources to replace its existing thermal power to meet its schedule generation from thermal power station.

ix) Changes, if any, required in the Regulation for implementation of the above scheme shall be made by the appropriate Electricity Regulatory Commission.

x) Central Electricity Authority shall monitor the implementation and suggest changes, if required, in the scheme to the Central Government. In doing so, CEA may consult MNRE, POSOCO, CERC, Discoms and other stake holders.

xi) CEA shall also suggest a road map for implementation of the scheme at the Generating company level i.e a change from Station wise flexibility to company-wise flexibility