



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



No. NERPC/SE(P)/PCC/2026/1157-1198

Date: 13.07.2026

To

As per list attached

Sub: 90वीं संरक्षण समन्वय उप-समिति (पीसीसी) बैठक का कार्यवृत्त/ Minutes of 90th Protection Coordination Sub-Committee (PCC) Meeting

महोदय/महोदया,

कृपया 23 जून 2026 को NERPC कॉन्फ्रेंस हॉल, शिलांग में हुई 90वीं पीसीसी बैठक के कार्यवृत्त को अपनी जानकारी और आवश्यक कार्रवाई के लिए प्राप्त करें। कार्यवृत्त एनईआरपीसी की वेबसाइट www.nerpc.gov.in पर भी उपलब्ध है।

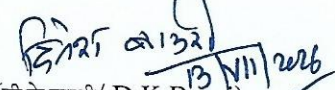
कृपया कोई भी टिप्पणी जल्द से जल्द NERPC सचिवालय को सूचित करें।

Sir/Madam,

Please find enclosed herewith the minutes of the 90th PCC Meeting held at NERPC Conference Hall, Shillong on 23rd June 2026 for your kind information and necessary action. The minutes is also available on the website of NERPC: www.nerpc.gov.in.

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

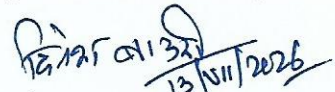
भवदीय / Yours faithfully,


(डी के बाउरी/ D K Bauri)
निदेशक / Director

Encl: As above

Distribution List:

1. Managing Director, AEGCL, Bijuli Bhawan, Guwahati – 781 001
2. Managing Director, APGCL, Bijuli Bhawan, Guwahati – 781 001
3. Managing Director, APDCL, Bijuli Bhawan, Guwahati – 781 001
4. Managing Director, MSPCL, Electricity Complex, Keishampat, Imphal – 795 001
5. Managing Director, MSPDCL, Secure Office Bldg. Complex, South Block, Imphal – 795 001
6. Director (Transmission), MePTCL, Lumjingshai, Short Round Road, Shillong – 793 001
7. Director (Generation), MePGCL, Lumjingshai, Short Round Road, Shillong – 793 001
8. Director (Distribution), MePDCL, Lumjingshai, Short Round Road, Shillong – 793 001
9. Director (Tech.), TSECL, Banamalipur, Agartala -799 001.
10. Director (Generation), TPGCL, Banamalipur, Agartala -799 001.
11. GM (Transmission), TPTL, Banamalipur, Agartala -799 001.
12. Chief Engineer (WE 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. Chief Engineer (Commercial) -cum- CEI, DoP, Govt. of Arunachal Pradesh, Itanagar- 791111
15. Engineer-in-Chief, P&E Department, Govt. of Mizoram, Aizawl – 796 001
16. Engineer-in-Chief, Department of Power, Govt. of Nagaland, Kohima – 797 001
17. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
18. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad, Haryana-121003
19. Group GM, NTPC, Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
20. Vice President (Plant), OTPC, Badarghat Complex, Agartala, Tripura - 799014
21. ED, PGCIL/NERTS, Dongtiah-Lower Nongrah, Lapalang, Shillong -793 006
22. AGM (BD), NVVN, Core 5, 3rd floor, Scope Complex, 7 Institutional Area, Lodhi Rd., N. Delhi-3
23. Vice President, PTCIL, 2nd Floor, NBCC Tower, 15, Bhikaji Cama Place, New Delhi – 110066
24. Dy. COO, CTUIL, “Saudamini”, 1st Floor, Plot No. 2, Sector-29, Gurugram, Haryana – 122001
25. Chief Engineer, GM Division, Central Electricity Authority, New Delhi – 110066
26. Chief Engineer, NPC Division, Central Electricity Authority, New Delhi – 110066
27. Head & VP, (R&C), ENICL, IndiGrid, Windsor Building, Kalina, Santacruz (East), Mumbai- 98
28. ED, NERLDC, Dongtiah, Lower Nongrah, Lapalang, Shillong -793 006
29. CGM, AEGCL, Bijuli Bhawan, Guwahati – 781001
30. CGM, APGCL, Bijuli Bhawan, Guwahati – 781001
31. CGM, DISCOM, Bijuli Bhawan, Guwahati – 781001
32. Head of SLDC, Dept. of Power, Govt. of Arunachal Pradesh, Itanagar – 791111
33. CGM, (LDC), SLDC Complex, AEGCL, Kahilipara, Guwahati-781 019
34. Head of SLDC, MSPCL, Imphal – 795001
35. Head of SLDC, MePTCL, Lumjingshai, Short Round Road, Shillong – 793 001
36. Head of SLDC, P&E Deptt. Govt. of Mizoram, Aizawl – 796 001
37. Head of SLDC, Dept. of Power, Govt. of Nagaland, Dimapur – 797103
38. Head of SLDC, TSECL, Agartala – 799001
39. Chief Engineer (Elect), Loktak HEP, Vidyut Vihar, Kom Keirap, Manipur- 795124
40. DGM (O&M), OTPC, Badarghat Complex, Agartala, Tripura – 799014
41. AGM Regulatory & Commercial, NER II TL, 10th Floor, Berger Tower, Noida sector 16B-201301
42. Director, NETC, 2C, 3rdFloor, D21Corporate Park, DMRC Building Sector 21, Dwarka, Delhi-77.


(डी के बाउरी/ D K Bauri)
निदेशक / Director



सत्यमेव जयते

Minutes of 90th PCCM

Govt. of India
Ministry of Power
North Eastern Regional Power Committee
Shillong

North Eastern Regional Power Committee

Minutes of

90th Protection Coordination Sub-Committee Meeting

Date: 23/06/2026 (Tuesday)

Time: 11:00 hrs.

Venue: NERPC Conference Hall, Shillong

The list of participants is attached as annexure I

Member Secretary NERPC welcomed all the participants in the meeting. He appreciated the NER utilities for improvement in submission of DR & EL over last two three years and urged them to timely submit the detailed reports on GDs and performance indices to NERPC and NERLDC. Further, he expressed concern over the repeated GDs occurring in Daporijo and Along areas of Arunachal Pradesh due to delays in replacement of CBs at Along substation and exhorted DoP, Ar. Pradesh to complete the replacement works at the earliest. Also, He apprised the forum that NERPC was organizing a 3 days classroom training program on Protection system from 30th June to 2nd July'26 at NERPC, Shillong. He added that it was a first of its kind program being organized by NERPC and requested the utilities to actively participate in it.

He, then requested Director (P), NERPC to take up the agenda items.

A. CONFIRMATION OF MINUTES

1. CONFIRMATION OF MINUTES OF THE 89th PROTECTION SUB-COMMITTEE MEETING OF NERPC.

Minutes of the 89th PCC Meeting held on 21st April, 2026 at NERPC Conference Hall, Shillong was circulated vide letter No.: NERPC/SE(P)/PCC/2026/413-454

Since, no comments were received from the constituents, the Sub-committee confirmed the minutes of the 89th PCCM.

B. ITEMS FOR DISCUSSION

B.1 Protection Audit of NER:

As per the protection code of IEGC 2023 following roles and responsibilities, related to the subject mentioned, of constituents have been defined–

Description		Constituent	Responsibility	Timeline
Audit	Internal Audit	All users (132kV and above)	Shall conduct internal audit of protection system	Annually
			Audit report to be shared with RPC	Within 30 days of Audit
			Action plan for rectification of deficiencies to be shared with RPC	Within 30 days of Audit
	Third party Audit	All users (132kV and above)	Shall conduct audit for each SS	Once in five years
			Shall conduct audit on advice of RPC	Within three months of advice of RPC
			Audit report to be submitted to RPC and NERLDC/SLDC	Within a month of submission of third-party audit report
			Action plan for rectification of deficiencies	Same as above
		RPC	Compliance to audit reports to be followed up regularly	Not specified
		RPC	After analysis of any event, shall identify substations where audit is required to be carried out	Conditional responsibility

	Annual audit plan	All users	Annual audit plan to be submitted to RPC by 31st October	Annual
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Status of Internal/External audit (89th PCCM)

Sr No	Utility/ Constituents	Internal Audit		External audit	
		Latest Status	report	Latest Status	report
1.	Ar. Pradesh	Audit of substations will be done September onwards. (Total Substation: 09)	Report for Daporijo, Khupi Lekhi and Tenga shared.	Planning and Tendering will be done for audit of all 9 SS. Proposal has been put up to the government for funding approval. (audit of 3 SS done by NERPC).	NA
2.	Assam	Done. (Total Substation: 82)	All the reports shared	The matter is being pursued with AERC for inclusion of the cost in the tariff. Meetings with AERC are underway. It is planned to conduct audit of 20 substations by next year.	
3.	Manipur	Planning being done for next FY (2026-27) (Total Substation: 17)		17 SS to be done, Schedule to be decided, subject to funding approval and law and Order situation. Audit of Yurembam ss, Ningthoukhong	NA

				SS and Imphal (PG) were done by NERPC in Aug'25	
4.	Meghalaya	Completed for FY 2025-26 (Total Substation: 22)	Reports of 6 SS submitted, rest to be sent shortly.	Audit of 19 substations done, 13 by CPRI and 6 by NERPC	Reports submitted
5.	Mizoram	Audit of 3 substations done. Rest of the audits will be taken up shortly. (Total Substation: 13)		During the 31 st NERPC meeting, Hon'ble Power Minister agreed for Sanctioning the budget for proposed audit. Subsequently, an offer has been solicited from M/s PRDC and the process for award of tender, to be done shortly. Audit of Kolasib, Aizawl, Melriat (PG), Zuangtui and Luangmual were done by NERPC in October'25.	
6.	Nagaland	9 out of 11 SS done. Audits of Zadima and Likhimro are in process.	Reports for 9S/s have been submitted.	Audit of six Substations has been done by NERPC in Jan'26. Zhadima done. For other substations, audit to be done by external agencies and the matter is under	

				discussion at higher levels. Audit firms are being finalized	
7.	Tripura	16 done, two substations, Manu and Amarpur have been recently commissioned under NERPSIP project and are yet to be handed over to the state. (Total Substation: 18)	Reports shared	M/s ERDA has emerged as the lowest (L1) bidder for undertaking the audit. In the first phase, a total of nine substations has been identified for the audit. The Letter of Award (LoA) has been issued, and the agency is expected to mobilize and commence activities, with their team scheduled to arrive within one week.	
8.	Powergrid (NERTS)	22 Substations done	Report for 16 S/s has been shared.	Budgetary offer will be taken after SAS upgradation 400kV substations. Audit of 9 substations have been done by NERPC so far. Balance order has been placed.	
9.	NTL	Audit of P K Bari and S M Nagar to be done in March'26. (Utility absent)		Feb, March'26. (Utility absent)	

10	KMTL	Done	submitted	Done by M/s ERDA	Report by May'26
12	NEEPCO (Total Substation: 10)	Completed.	Audit report of Khandong and Tuirial submitted. For rest, will be submitted shortly	External Audit completed for 3 stations such as AgGBPS in Jan'22, Kameng done by M/s PRDC in Dec'25. Tuirial done in Feb'26. Upcoming: Pare-June'26 PLHPS -June'26 AGTCCPP – done AGBPS – last week of April'26 Monarchak – Sep'26 Doyang- June'26 Order has been issued to M/s CPRI for the audit of AGBPS.	Report of Kameng will be submitted as soon as it is provided by M/s PRDC
16	APGCL	Will share the plan next week		Will share the plan next week	
17	TPGCL	TSCCL will write a letter to TPGCL on the matter			
18	MEPGCL	All done	All reports shared	Budgetary offer received from M/s CPRI, M/s CBIP and M/s PRDC. The audits will incur very high financial burden. It was requested to NERPC	

				to conduct the audit of the generating stations. NERPC opined that they may consider conducting the audit of some stations based on criticality.	
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Utilities that have complied with the regulation

1. MUML, NBTL
2. OTPC
3. NTPC
4. NHPC
5. Dikshi HEP

Deliberation

Status of Internal/External audit (90th PCCM)

Sr No	Utility/ Constituents	Internal Audit		External audit	
		Latest Status	report	Latest Status	report
1.	Ar. Pradesh	(Total Substation: 09) Internal audit of all S/S to be done for FY 26-27. Audits to start September onwards	FY 25-26: Report for Daporijo, Khupi and Tenga shared.	Planning and Tendering will be done for audit of all 9 SS. Proposal has been put up to the government for funding approval. (audit of 3 SS done by NERPC).	NA
2.	Assam	To be done for FY 2026-27. (Total Substation: 82)	All the reports shared for FY 25-26.	Tendering process underway, to be completed by next month.	

				It is planned to conduct audit of 20 substations by next year. Using own funds for the audit	
3.	Manipur	Planning being done for next FY (2026-27). Proposal has been put up to higher authorities (Total Substation: 17)		17 SS to be done, Schedule to be decided, subject to funding approval and law and Order situation. Audit of Yurembam ss, Ningthoukhong SS and Imphal (PG) were done by NERPC in Aug'25. Manipur facing fund issue for 3 rd party audit.	NA
4.	Meghalaya	For FY 2026-27, to be planned shortly. (Total Substation: 22)	for FY 25-26 Reports to be finalized this Friday, will submit by end of this month	Audit of 19 substations done, 13 by CPRI and 6 by NERPC.	Reports submitted
5.	Mizoram	Audit of 4 substations done for FY 26-27. Rest of the audits will be taken up shortly. (Total Substation: 13)	Report yet to be shared.	Techno-commercial offer received from PRDC, proposal has been put up to E-in-C. Audit of Kolasib, Aizawl, Melriat (PG), Zuangtui and Luangmual were done by NERPC in October'25.	

6.	Nagaland	10 out of 11 SS done for FY 2025-26, Likimro left. For FY 26-27, a plan has been prepared, audits will start within 2 months.	Reports for 9S/s have been submitted for FY 25-26.	Quotation has been received from 3 firms. One firm has been chosen for conducting the audits. Order will be issued shortly. Timeline will be provided shortly.	
7.	Tripura	For FY 25-26, 16 done, two substations, Manu and Amarpur have been recently commissioned under NERPSIP project and are yet to be handed over to the state. For FY 26-27, audit will be planned shortly. (Total Substation: 18)	Reports shared for FY 25-26	9 done by M/s ERDA.	Pre-liminary report shared, final will be shared shortly
8.	Powergrid (NERTS)	FY 2025-26 completed. For FY 2026-27, audit of 3 substations done.	Report for 16 S/s has been shared for FY 25-26.	Bid floated for audit of 13 substations. To complete the audits within one year. Total 9 SS done by NERPC.	

9.	NTL	Audit of P K Bari and S M Nagar to be done in March'26. (Utility absent)		Feb, March'26. (Utility absent)	
10	KMTL	Done	submitted	Done by M/s ERDA	Report submitted
12	NEEPCO (Total Substation: 10)	For FY 2026-27 Planning underway.	All reports submitted for FY 25-26	External Audit completed for 3 stations (AgBPS, Kameng and Turial) done. Upcoming: Pare-July'26 PLHPS -Sept'26 AGTCCPP – done AGBPS – done Monarchak – Sep'26 Doyang- Sept'26	Report of Kameng will be submitted as soon as it is provided by M/s PRDC. Other reports will be shared in due course
16	APGCL	Plan shared		Tendering going on for audit of 3 stations, Namrup, Lakwa and Karbi-Langpi	
17	TPGCL	TSECL will write a letter to TPGCL on the matter		Status will be intimated in next meeting	
18	MEPGCL	All done for FY 25-26. For FY 26-27, to be planned shortly.	All reports shared for FY 25-26	Budgetary offer received from M/s CPRI, M/s CBIP and M/s PRDC. The audits will incur very high financial burden. It	

				was requested to NERPC to conduct the audit of the generating stations. NERPC opined that they may consider conducting the audit of some stations based on criticality.	
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NERLDC requested all utilities to update the status of internal and 3rd party protection audit for the FY 2026-27 in the google spreadsheet.

<https://docs.google.com/spreadsheets/d/1MB51hUo60dzmOrK179gQE9qPVHjScYe6fikY3u0c47k/edit?gid=0#gid=0>

The Sub-committee noted as above

Action: PRDC and all power utilities

B.2 Ensuring active participations of NER states for ensuring effective utilization of the PDMS and PSCT software

Protection Database Management System (PDMS) and Protection Settings Calculation Tools (PSCT) have been in operation in NER since 2019 and the project has entered into 7th year AMC period from 19th May'26. These systems are critical for making a database of protection relay settings implemented in NER, which is a regulatory requirement and also for ensuring coordinated relay settings for NER grid. The project has been planned and implemented with the vision that the NER utilities would use it effectively to strengthen their protection systems and make NER grid resilient. Further, software licences were also provided by the OEM (M/s PRDC) for using the software.

In the last few years, the concern has risen that the NER power utilities are lacking interest in using these software(s) for relay settings updation and protection coordination studies for their respective networks. This has led to the problem of underutilisation of the system.

In this regard, it is requested to NER power utilities to realise the criticality of the software(s) and show keen interest in using them and strengthen their protection systems.

In 89th PCCM, MS NERPC emphasized the critical importance of PDMS and PSCT systems in strengthening of protection system network of NER grid and stressed that these tools should be widely utilised by the constituents to realize its intended benefits.

Subsequently a list of nodal officers was prepared to facilitate seamless coordination with the implementing agency and ensure effective utilisation of the PDMS system. The utilities provided the details of nodal officers as follow –

Utility	Name	Contact no.
AR. Pradesh		
AEGCL		
APGCL	P B Sarmah, DGM, HQ	9435358402
	J P Bailung, AGM, LTPS/LRPP	7002759516
	R D Barman, DGM, KLHEP	9401702372
	Rasewel Iercon, AGM, NRPP	9401659361
Manipur	Roshan Oinam, DGM	9863895218
	Anil Shairem, Sr. Manager	8798012496
Nagaland	Alex E Nguillie	8837080321
MepTCL	Kitbok Syrti, EE	8974595356
MePGCL		
Mizoram	C. Daniela, EE	9774692350
NERLDC	Utpal Das, DM	7005504075
NEEPCO	Bhaskar Majumdar, DGM	9436222650
Powergrid	M J Baishya, Ch. Manager	9435555740
NHPC	J Pani, Sr. Manager	8800021271
NTPC	G Sonowal, DGM	8269609797
OTPC	S Choudhary, Head Operation	8837008091

Further, the following specific matters to be discussed in the meeting –

1. M/s PRDC is requested to provide a gist of work done during the first month of the 7th year AMC of the system.
2. States may update on steps taken towards increasing adoption of the software for Protection studies
3. The PSCT license of many utilities have been lost or misplaced causing the non-utilisation of the software. Out of 31 originally distributed licenses only 10 have been recovered. In this regard it is proposed that M/s PRDC may arrange for 21 new licenses so that the utilities (without the licenses) may start using the software.

Deliberation

1. Regarding nodal officers list, Ar. Pradesh, AEGCL and MePGCL nominated Hibu Bama (EE), Abhishek Kalita (DM) and Alvin Shullai (AE) respectively.
2. PRDC submitted that during the first month of the 7th year AMC following updates in the PDMS system were done-
 - a. 3 numbers of new GSS added in existing database
 - b. a total of 28 new bays were created under 8 substations. Under these bays, 57 relay records were configured and updated in the MiP-PSCT and MiP PDMS database.
 - c. A total of 29 bay Modifications were carried out across 9 substations. Under these bays, 51 relay records were modified and updated in the MiP-PSCT and MiP PDMS database.
3. Regarding misplaced licenses, NERPC requested M/s PRDC to issue 21 new licenses to the utilities so that they may start utilizing the softwares. PRDC agreed to provide the same as it will not incur any additional cost. MS NERPC stated that the details of the persons to which the licenses will be issued, should be noted properly and put in record.
4. M/s PRDC added that online training programs for the utilities will be organized in near future, for which they will provide the schedule shortly.

The Sub-committee noted as above

Action: PRDC and all power utilities of NER

B.3 Draft Guidelines for Harmonic Measurements at Transmission Level

In the 17th meeting of NPC held on 27.02.2026 at Vizag, Andhra Pradesh, the issue of Uniform criteria on Harmonics measurement in the grid was discussed. Grid-India presented its draft report on the criteria. It was decided that Grid-India report to be examined by RPCs in coordination with RLDCs and other stakeholders.

The draft guidelines Harmonic Measurements at Transmission Level and the presentation given by NLDC are attached herewith (**annexure B.3.1 and B.3.2**).

NPC division CEA has requested RPCs to submit the comments and recommendations within one month for further deliberation in the NPC Protection Sub-Group, after which the guidelines shall be finalized and submitted to the upcoming NPC meeting for further deliberation and approval.

Deliberation

1. NERPC mentioned that the draft guidelines have been attached with agenda and requested the utilities to review the same and provide the comments within 10 days to NERPC
2. Director NERPC shared some observations of NERPC on the guidelines as follow:
 - i. Renewable energy sources purview should be enhanced to accommodate Green Hydrogen also.
 - ii. Definition of bulk consumer should be expanded to accommodate data centers and electrolyzers etc.
 - iii. As per these draft regulations minimum RE sources capacity to install PQ meter is 50MW. As per GNA and connectivity regulations, the minimum capacity either aggregated or individual capacity shall be 25 MW for NER States and Sikkim. Therefore, the proposed draft also should align with the GNA and connectivity regulations.
 - iv. When the THD limits cross 75% of allowable limits, Resonance study shall be carried out by Transmission license.
3. NERPC requested SLDCs and ISTS utilities to provide the list of substations (132kV and above) where the following elements are connected –
 - i. RE or Storage with capacity > 50 MW
 - ii. HVDC or FACTS devices
 - iii. Bulk consumers
 - iv. Traction loads

4. NERPC added that at the above substation, PQ meters have to be installed at highest voltage Bus by 31st March 2030 by the transmission licensee.

The Sub-committee noted as above

Action: all transmission utilities of NER

B.4 Analysis and Discussion on Grid Disturbances which occurred in NER grid in April and May'26 in compliance with IEGC 2023:

TABLE 8 : REPORT SUBMISSION TIMELINE

Sr. No.	Grid Event [^] (Classification)	Flash report submission deadline (users/ SLDC)	Disturbance record and station event log submission deadline (users/ SLDC)	Detailed report and data submission deadline (users/ SLDC)	Draft report submission deadline (RLDC/ NLDC)	Discussion in protection committee meeting and final report submission deadline (RPC)
1	GI-1/GI-2	8 hours	24 hours	+7 days	+7 days	+60 days
2	Near miss event	8 hours	24 hours	+7 days	+7 days	+60 days
3	GD-1	8 hours	24 hours	+7 days	+7 days	+60 days
4	GD-2/GD-3	8 hours	24 hours	+7 days	+21 days	+60 days
5	GD-4/GD-5	8 hours	24 hours	+7 days	+30 days	+60 days

[^]The classification of Grid Disturbance (GD)/Grid Incident (GI) shall be as per the CEA Grid Standards.

The forum may deliberate upon the GD/GI/near miss events that occurred in April and May 2026 based on the draft report prepared by NERLDC.

Deliberation

NERLDC informed that in April'26 a total of 47 GDs had occurred out of which 41 were radial. For the month of May'26, a total of 22 GDs occurred out of which 17 were radial. Further, it was informed that the GDs were discussed in details in the special meeting of NERPC held on 27th May'26 and 12th June'26. The findings and recommendations, as discussed in the meetings, have been attached at **Annexures**

B.4.1 and B.4.2.

The Sub-committee noted as above

B.5 Status of submission of FIR, DR & EL outputs for the Grid Events for the month of Apr'2026 & May'2026:

In line with regulation 12 (1) of CEA Grid Standards Regulations and IEGC-23 provision under clause 37.2 (c), FIR and DR & EL Outputs for each grid events are required to be submitted by concerned utilities to NERLDC for detailed investigation and analysis.

Status of uploading of FIR, DR & EL outputs of tripping of transmission elements in Tripping Monitoring Portal for events from 01-04-2026 to 31-05-2026 as on **15-06-2026** is given below:

Owner Name	Total No of FIR/ DR/EL to be submitted (SEND+REND)	FIR		DR		EL	
		Total Furnished in 24hrs %	Total furnished %	Total Furnished in 24hrs %	Total furnished %	Total Furnished in 24hrs %	Total furnished %
AEGCL	137	2.19%	61.31 %	5.84%	65.69%	9.49%	64.96%
APGCL	1	0.00%	100.00 %	0.00%	100.00%	0.00%	100.00 %
DoP, Ar. Pradesh	37	56.76%	78.38 %	59.46 %	89.19%	56.76%	81.08%
DoP, Nagaland	20	50.00%	100.00 %	10.00 %	90.00%	30.00%	90.00%
MePGCL GENERATION	5	100.00 %	100.00 %	40.00 %	100.00%	40.00%	100.00 %
MePGCL TRANSMISSION	23	8.70%	100.00 %	30.43 %	100.00%	21.74%	100.00 %
MePTCL	38	100.00 %	100.00 %	100.00 %	100.00%	71.05%	100.00 %

MSPCL	49	42.86%	97.96 %	28.57 %	63.27%	28.57%	59.18%
NBTL	3	33.33%	66.67 %	33.33 %	66.67%	33.33%	66.67%
NEEPCO GENERATION	30	53.33%	93.33 %	56.67 %	100.00%	56.67%	100.00 %
NEEPCO TRANSMISSIO N	54	74.07%	90.74 %	72.22 %	90.74%	51.85%	90.74%
NHPC	26	69.23%	96.15 %	46.15 %	96.15%	42.31%	92.31%
NHPC	19	15.79%	100.00 %	36.84 %	100.00%	31.58%	100.00 %
NTL	5	0.00%	100.00 %	0.00%	80.00%	0.00%	80.00%
OTPC	3	33.33%	100.00 %	33.33 %	100.00%	0.00%	66.67%
P&ED, Mizoram	24	45.83%	100.00 %	29.17 %	100.00%	33.33%	100.00 %
POWERGRID	78	56.41%	92.31 %	61.54 %	89.74%	58.97%	87.18%
TSECL	39	51.28%	100.00 %	53.85 %	94.87%	48.72%	94.87%

Concerned Utilities are requested to upload Disturbance Recorder (DR), Event Logger (EL) outputs for grid events along with a First Information Report (FIR) in Tripping Monitoring Portal (<https://tripping.nerldc.in/Default.aspx>) for analysis purpose. In light of the cybersecurity measures implemented by Grid India to safeguard sensitive information, NERLDC has created the email address nerldcso3@gmail.com. This new account has been specifically set up to facilitate the secure exchange of DR and EL files that have previously faced blockage when sent to nerldcprotection@grid-india.in.

Also, all utilities are requested to nominate a nodal officer responsible for the submission of FIR, DR & EL in Tripping Monitoring Portal (<https://tripping.nerldc.in/Default.aspx>)

Deliberation

Forum expressed dissatisfaction regarding less % submission of FIR, DR & EL by AEGCL. AEGCL informed the forum that due to higher number of tripping they could not submit the data on time, however MS, NERPC requested Assam to ensure submission of FIR, DR & EL within the stipulated time from next month onwards.

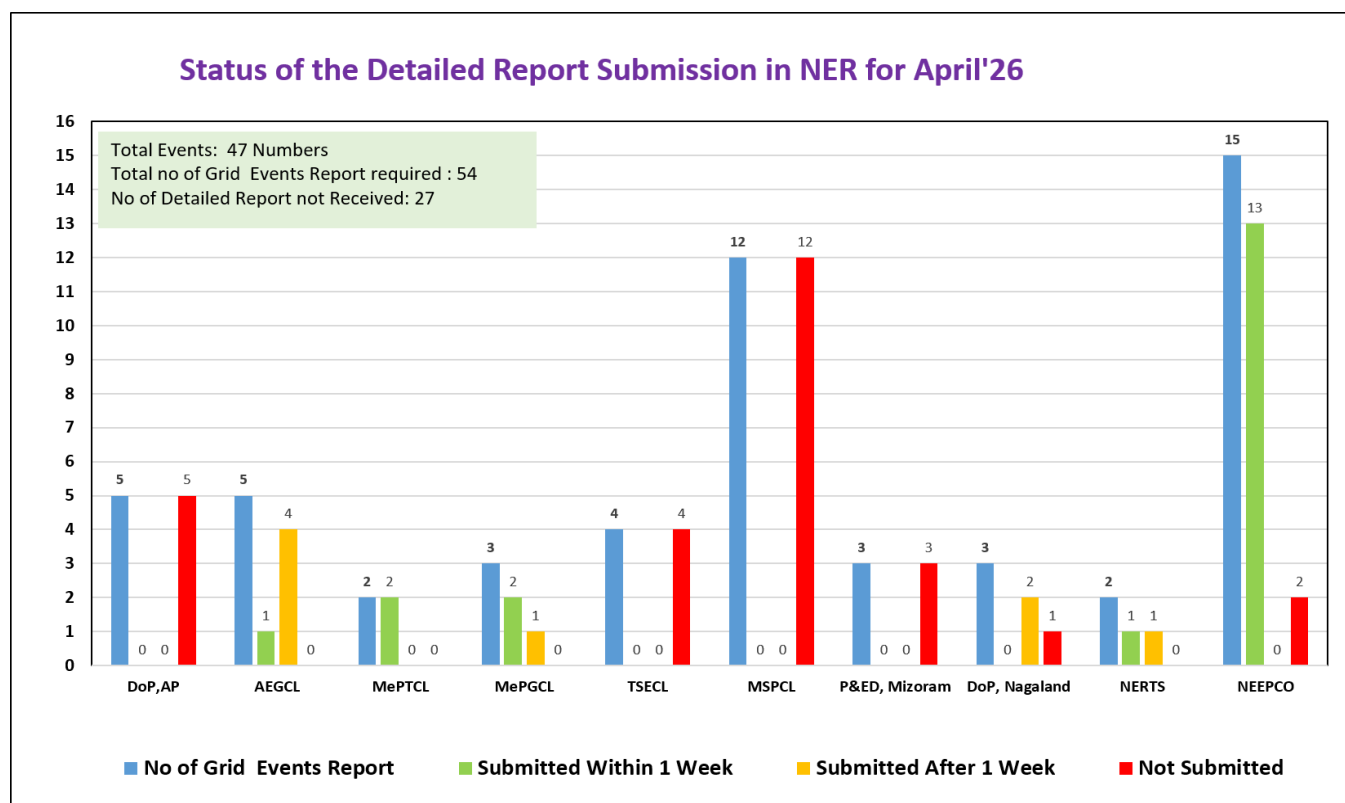
MSPCL informed that DR downloading facility laptops are available at site, however there is some issue in the cable due to which DR downloading is not possible at present. Designated officers have been appointed by MSPCL for looking into the matter. MSPCL also apprised that getting data from Gamphazol is difficult due to prevailing law & order situation.

The Sub-committee noted as above

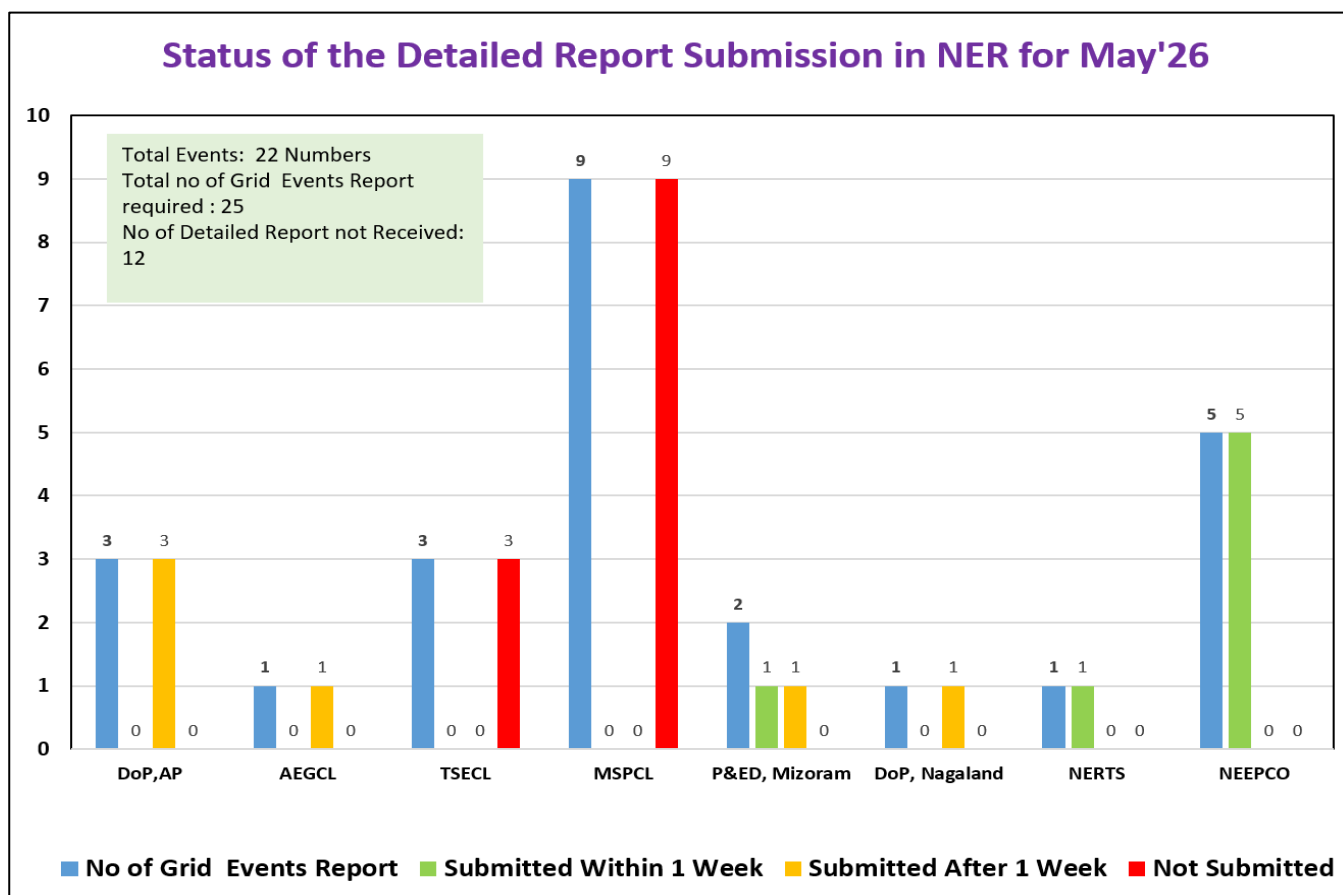
Action: all power utilities of NER

B.6 Submission of Detailed Report by User/SLDC as per IEGC-2023:

As per IEGC-2023, all User/SLDCs are requested to prepare and share **Flash Report** and **Detailed Report** with **NERLDC** and **NERPC** following any Grid Events as per the timeline mentioned in the cl 37.2(f). Status of submission of the Detailed Report for the month of **Apr'2026** & **May'2026** as on **15-06-2026** is shown below:



During Apr'26, detailed report of grid events not received from **DoP Arunachal Pradesh, TSECL, MSPCL & P&ED Mizoram.**



During May'26, detailed report of grid events not received from **TSECL & MSPCL.** All the utilities are requested to promptly share all the necessary information such as FIR, DR, EL and Reports (Flash Report & Detailed Report) as per the specified timeline mention in the Grid Code-2023.

Deliberation in the meeting

Forum urged all the utilities for timely submission of grid event report.

TPTL informed that report was shared with SLDC Tripura, however SLDC has not shared the same with NERLDC. TPTL requested NERLDC to share the list of grid disturbance occurred during a month in the "NER Protection Group".

The Sub-committee noted as above

Action: all power utilities of NER

B.7 Submission of Protection Performance Indices by Transmission Utilities for Apr'26 & May'26:

As per Regulation No. 15(6), Protection Code - Users shall submit the following protection performance indices of previous month to their respective RPC and RLDC on monthly basis for 220 kV and above (132 kV and above in NER) system by 12th of every month for previous month indices, which shall be reviewed by the RPC.

The submission status as on **15th June'2026** as tabulated below:

Sl. No.	Name of Transmission Licensee	D= (Nc/Nc+Nf)		S= (Nc/Nc+Nu)		R= (Nc/Nc+Ni)		Remarks
		Apr'26	May'26	Apr'26	May'26	Apr'26	May'26	
1	NETC	-	-	-	-	-	-	Submitted (No bay owned by NETC)
2	MUML	-	1	-	1	-	1	Submitted (No tripping during Apr'26)
3	NBTL	0.667	-	1	-	0.667	-	Failed AR operation at Bongaigaon & Nangalbibra end on 18th April & 20th April 2026. No tripping during May'26
4	NTL	Not submitted	1	Not submitted	1	Not submitted	1	
5	KMTL	-	1	-	1	-	1	Submitted (No tripping during Apr'26)
6	POWERGRID	1	1	1	1	1	1	
7	MePTCL	1	1	0.88	1	0.88	1	1.Unwanted tripping of 132 kV Khliehriat(ME)-

								Khliehriat(PG) II line from Khliehriat(ME) end 2.Unwanted tripping of 132 kV Ampati-Phulbari II line from Ampati end
8	TPTL	Not submitted		Not submitted		Not submitted		
9	DoP Nagaland	1	1	1	1	1	1	
10	DoP Arunachal Pradesh	Not submitted	0.923	Not submitted	1	Not submitted	0.923	
11	AEGCL	Not submitted	Not submitted	Not submitted	Not submitted	Not submitted	Not submitted	
12	Mizoram	0.98	1	1	1	0.98	1	Failed tripping of 132 kV Zuangtui - Serchhip line on 5 th April 26
13	MSPCL	Not Submitted						

Sl. No.	Name of Generating Company	D=		S=		R=		Remarks
		(Nc/Nc+Nf)		(Nc/Nc+Nu)		(Nc/Nc+Ni)		
		Apr'26	May'26	Apr'26	May'26	Apr'26	May'26	
1	NTPC(Bgtpp)	Not submitted	-	Not submitted	-	Not submitted	-	No tripping during May'26
2	OTPC(Palatan a)	1		1		1		

3	MePGCL	1	1	0.92 3	1	0.923	1	Unwanted Tripping of 132 kV Umtru - New Umtru Line on 21st and 29th April from New Umtru end
4	TPGCL	Not submi tted	Not sub mitt ed	Not sub mitt ed	Not subm itted	Not subm itted	Not sub mitt ed	
5	NHPC (Loktak)	1	1	1	1	1	1	
5	NHPC (Subansiri)	Not submitted						
6	Kameng	1	1	1	1	1	1	
7	Panyor	1	-	1	-	1	-	No tripping during May'26
8	Pare	1	1	1	1	1	1	
9	Kopili	1	1	0.5	0.167	0.5	0.16 7	Unwanted Tripping of 220 kV Kopili-Misa line 3 from Misa end due to DT received. Unwanted DT send from Kopili end due to faulty BCU. Similar event during 10 th , 11 th & 28 th May'26
10	Khandong	1	1	1	1	1	1	
11	Doyang	1	1	1	1	1	1	
12	AGBPP	1	1	1	0.8	1	0.8	
13	AGTCCPP	1	1	1	1	1	1	
14	Monarchak	1	1	1	1	1	1	
15	Tuirial	-	1	-	1	-	1	Submitted for April'26 (no tripping)

Therefore, all Users are requested to furnish and ensure performance indices (Dependability-D, Security-S, Reliability-R) with regards to the tripping of elements

to NERPC & NERLDC positively by **12th** of every month for previous month indices in compliance with IEGC.

Deliberation

NERLDC highlighted that in the month of April'26, protection performance indices not submitted by NTL, DoP Arunachal Pradesh, AEGCL & TPGCL and in the month of May'26, protection performance indices not submitted by AEGCL & TPGCL.

Forum requested all the utilities for timely submission of protection performance indices.

The Sub-committee noted as above

Action: all power utilities of NER

B.8 Maloperation of SPS related to outage/tripping of 220 kV Balipara-Sonabil D/C lines and GD in Sonabil and radially connected areas of Assam on 1st June'26:

Event 1: At 08:52 hrs of 01-06-2026, SPS Criteria-II related to outage/tripping of 220 kV Balipara - Sonabil D/C lines mal-operated during the planned shutdown of 220 kV Balipara - Sonabil I. Load loss of around 40-50 MW occurred in Assam power system.

Event 2: At 15:45 Hrs of 01-06-2026, SPS Criteria-1 operated due to high loading in 220 kV Balipara Sonabil II line (approximately 224 MW / 630 A) at Sonabil, resulting in the opening of 220 kV Sonabil –Samaguri D/C lines which was as per the SPS logic.

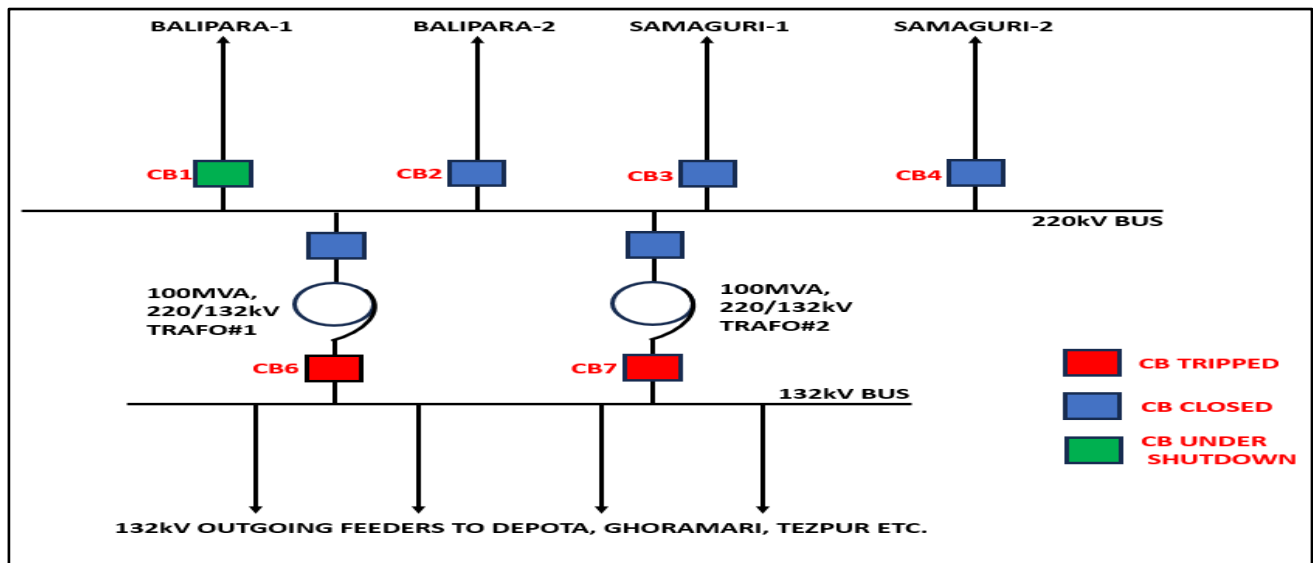
However, at the same time, 220 kV Balipara-Sonabil II line also tripped at Sonabil end, leading to a complete blackout of Sonabil and radially connected areas of Assam. Load loss of around 70 MW was observed. Prior to the event, 220 kV Balipara-Sonabil I line was under planned shutdown.

As per PMU data at NERLDC, no fault was observed in the system at 15:45 Hrs of 01-06 2026.

Therefore, tripping of 220 kV Balipara-Sonabil II line during SPS operation appears to be unwarranted.

AEGCL reported that at 08:52 Hrs, it was observed that the indications for **CB R-Phase Closed, CB Y-Phase Closed, and CB B-Phase Closed** changed to "OFF" at

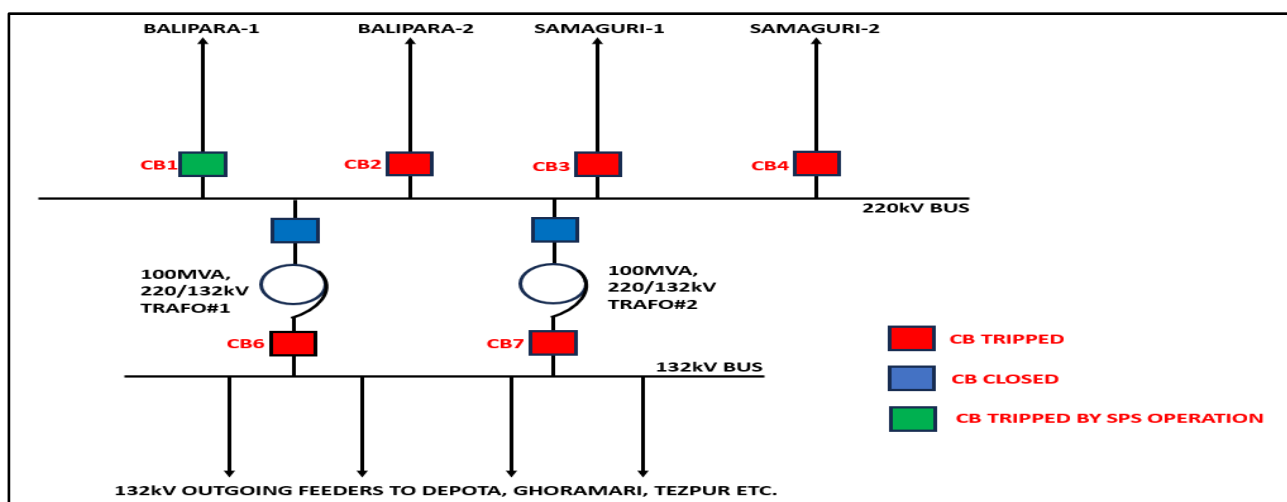
08:52:18.088 hrs. This indicates a loss of DC supply to the circuit breaker indication circuit, resulting in the disappearance of the closed status indications for 220 kV Balipara- Sonabil line-2 at Sonabil resulted into the SPS Criteria II operation.



Again at 15:45 Hrs, the 220kV Sonabil – Balipara Line 2 was overloaded (crossed 630A) and SPS Triggering Criteria-1 was operated thus tripping the 220kV Sonabil – Samaguri Line I & II (CB3 and CB4).

It was observed that after operation of SPS Triggering Criteria-1, the “**RELAY TRIP 3PH**” was found HIGH which initiated the tripping of Master Trip relay for Balipara Line-II. The relay overlapped the SPS with a protection function.

The tripping of 220kV Sonabil – Balipara Line II initiated the operation of SPS Triggering Criteria-II (Both circuits out of service) and hence, the LV CB's of the transformers were tripped (CB6 & CB7) hence, the LV CB's of the transformers were tripped (CB6 & CB7)



Remedial measures taken:

The SPS logic was upgraded, implemented and tested successfully on 9th and 10th of June, 2026 at 220kV Sonabil GSS. The above SPS operations took place during the event not due to issue with the SPS logic but due to other overlapping factors (missed DC supply, Overloading, transient overloading by traction which overlapped the SPS logic with protection function). Presently, the upgraded logic is immune to all the above factors.

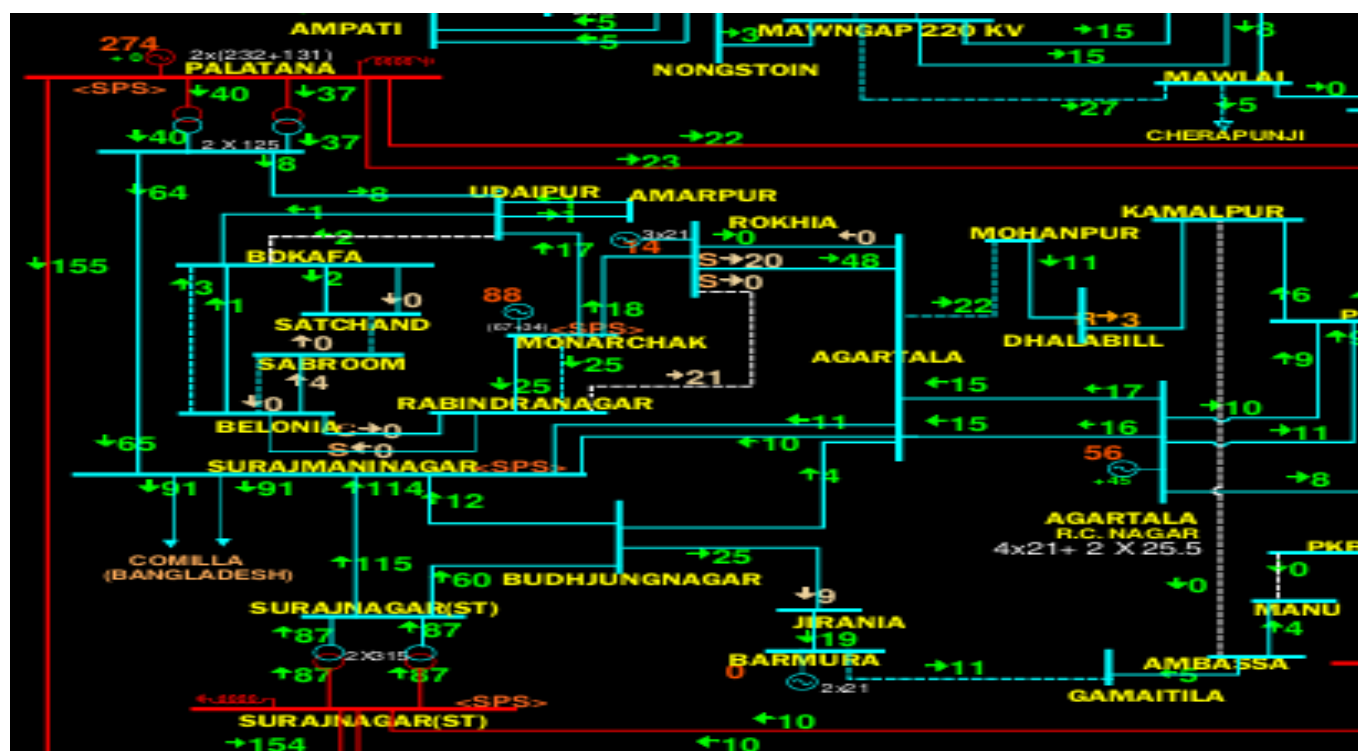
Deliberation

AEGCL informed that the SPS logic has been upgraded and implemented successfully.

The Sub-committee noted as above

B.9 Non-operation of SPS scheme related to tripping of 132 kV Palatana-Surajmaninagar Line on 28-04-2026:

At 09:28 Hrs of 28-04-2026, during tripping of 132 kV Palatana-Surajmaninagar Line, SPS related to tripping of 132 kV Palatana-Surajmaninagar Line failed to operate.



As per the details received from OTPC dated 29-04-2026, SPS operation was observed at OTPC during the tripping of the 132 kV Palatana-Surajmaninagar line,

and the same has been recorded in the relay DR and SCADA SOE. Further, an increase in PLCC counter readings was also recorded at Palatana.

In this regard, NERTS is requested to kindly share the findings of the testing carried out, particularly with respect to the non-tripping of the 132 kV Surajmaninagar–Comilla D/C lines despite SPS operation.

NERTS is also requested to confirm the present healthiness status of the associated communication channels of the SPS scheme.

Deliberation

NERTS informed that there was some issue with the PLCC link due to which SPS signal was not received, the issue has been resolved. He added that additional SPS logic has been implemented to safeguard the non-operation of SPS from PLCC failure. Additional SPS logic: If CB trips at SMnagar for 132 kV Palatana Line, Bangladesh load will be disconnected.

The Sub-committee noted as above

Action: NERTS, Powergrid

B.10 Proposal for SPS for the 220 kV BTPS–Agia D/C Corridor:

Due to delays in the commissioning of the upcoming 400 kV Sonapur and 400 kV Rangia substations in Assam, high loading is expected on the following transmission corridors:

- 400 kV Bongaigaon–Azara line
- 220 kV BTPS–Agia D/C
- 220 kV Balipara–Sonabil DC

System studies indicate that during periods of high demand in the North Eastern Region, particularly in the Assam power system, the combined loading of 400 kV Bongaigaon–Azara line and 220 kV BTPS–Agia DC may exceed 600 MW for longer duration.

Under such operating conditions, tripping of the 400 kV Bongaigaon–Azara line may result in critical loading of approximately 190 MW on each circuit of the 220 kV Agia–BTPS D/C line. Subsequent tripping of the 220 kV Agia–BTPS D/C line may lead to cascading outages in the Assam power system and may results into grid disturbances in both the Capital Region and the BTPS–Rangia area of the Assam power system.

To minimise the impact of the above contingency, a meeting was held on 29.05.2026 at the SLDC Assam office with officials from NERLDC, SLDC Assam, and AEGCL to deliberate on the implementation of a new System Protection Scheme (SPS) in the NER power system. The proposed SPS envisages automatic disconnection of approximately 45 MW of load at Agia and nearby substations whenever the loading on the 220 kV BTPS–Agia D/C line exceeds 500 A. This scheme is intended to prevent overloading of the corridor and avoid the possibility of cascading outages during contingency conditions. The minutes of the meeting are enclosed as **Annexure-B.10.**

However, considering the criticality of the issue elaborated above, the SPS should only be viewed as an interim mitigation measure. As a long-term solution to ensure reliable and secure operation of the Assam power system, Assam is requested to accord priority to the strengthening of the 220 kV Agia–BTPS D/C line and expedite its implementation.

Deliberation

Assam informed that the SPS will be implemented by mid-July'26.

The Sub-committee noted as above

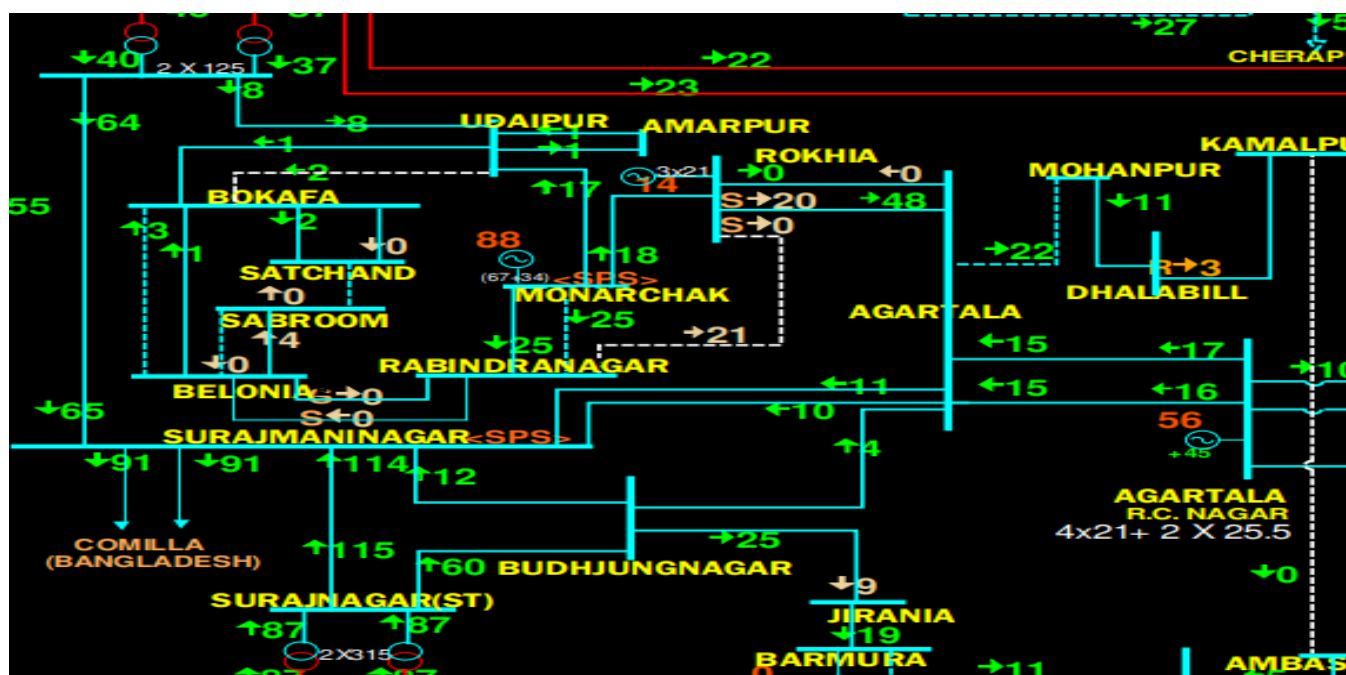
Action: AEGCL

B.11 Disabling of SPS related to "Secure evacuation of power from the Monarchak (NEEPCO) Power Plant":

Recently, several elements have been commissioned in the Tripura Power System under the NERPSIP scheme, as listed below:

- 132 kV Udaipur – Bagafa D/C
- 132 kV Bagafa – Belonia D/C
- 132 kV Belonia – Sabroom S/C
- 132 kV Bagafa – Satchand S/C
- 132 kV Rabindranagar – Belonia D/C
- 132 kV Rabindranagar – Rokhia D/C (one circuit is currently charged)
- 132 kV Udaipur – Amarpur D/C

The status of the above elements was confirmed by SLDC Tripura during the meeting held on 12th May 2026.



With the commissioning of these elements, power from the Monarchak (NEEPCO) Power Plant can now be evacuated safely. Accordingly, the SPS implemented for “Secure Evacuation of Power from Monarchak (NEEPCO) Power Plant” is no longer required.

In view of the above, NEEPCO is requested to permanently dismantle the SPS, in coordination with TPTL, at the earliest and confirm completion of the same.

Deliberation

NEEPCO informed that the SPS has been permanently dismantled.

The Sub-committee noted as above

B.12 Reporting of Operation & performance of SPS by the users and SLDCs as per IEGC:

As per Clause 16(3) of IEGC-23, the users and SLDCs shall report about the operation of SPS immediately and detailed report shall be submitted within three days of operation to the concerned RPC and RLDC in the format specified by the respective RPCs.

As per Clause 16(4) of IEGC-23, the performance of SPS shall be assessed as per the protection performance indices specified in these Regulations. In case, the SPS fails to operate, the concerned User shall take corrective actions and submit a detailed report on the corrective actions taken to the concerned RPC within a fortnight.

In view of the above, NERLDC has prepared a format for reporting of operation and performance of SPS attached as **Annexure B.12**.

Therefore, all the utilities are requested to submit report of operation of any SPS scheme within 3 days of operation and report on protection performance indices of SPS within a fortnight to RPC & RLDC in line with IEGC-23 in the attached format.

Deliberation

Forum requested all the utilities to submit reports on operation of SPS and performance of SPS to NERPC and NERLDC in the attached formats within the specified timelines.

The Sub-committee noted as above

Action: all power utilities of NER

B.13 Decommissioning of the SPS at SM Nagar (TPTL):

In 89th PCC meeting, it was discussed that the SPS scheme (No: SPS/TR/005) for overloading of the 132 kV Surajmaninagar (TPTL) – Surajmaninagar (NTL) line, needs to be decommissioned by TPTL as the objective of the SPS scheme has been fulfilled after successful implementation of CTR of 800:1 at the Surajmaninagar (TPTL) end.

Further to the above, TPTL has informed, through its email dated 15.06.2026, that the decommissioning work was completed on 12.06.2026. Accordingly, the SPS at SM Nagar (TPTL) stands successfully decommissioned.

Placed for information of the forum

Deliberation

TPTL informed that decommissioning works has been completed on 12th June 2026.

The Sub-committee noted as above

B.14 Grid Disturbances at Lower Subansiri HEP on 12th and 13th June 2026:

On 12th June 2026 and 13th June 2026 total black out occurred at Lower Subansiri HEP with tripping of all the running units and all the evacuating lines. The details of the above events are appended below.

Event -1 On 12th June 2026 at Lower Subansiri HEP:

At 18:59 hrs on 12th June 2026, Unit-3 tripped due to tripping of its Unit Auxiliary Transformer (UAT). Subsequently, at 19:45 hrs on 12th June 2026, Unit-1 and Unit-2, along with the associated evacuation lines, namely 400 kV Subansiri-Biswanath Chariali Ckt-3 and Ckt-4, tripped, resulting in Grid Disturbance and total black out at the Lower Subansiri HEP with generation loss of 694 MW. Prior to the above event Unit-4 at Lower Subansiri was under forced outage.

Sl No.	Element Name	Outage time	Revival Time	Reason	Remarks
1	Subansiri Lower HEP - UNIT 3	12-06-2026 18:59	-	Due to the tripping of UAT	Generation loss of 230 MW
2	400KV-BISWANATH CHARIALI-SUBANSIRI-3	12-06-2026 19:45	12-06-2026 20:55	Auxiliary supply failure at Subansiri &	Tripping of all the elements resulted into GD at Lower Subansiri with generation loss of 464 MW (Unit 1 & 2); Total loss of Generation: 694 MW
3	400KV-BISWANATH CHARIALI-SUBANSIRI-4	12-06-2026 19:45	12-06-2026 21:46	No tripping at Biswanath Chariali for Line-3 and DT received for line-4	
4	Subansiri Lower HEP - UNIT 1	12-06-2026 19:45	12-06-2026 21:32	Auxiliary supply failure at Subansiri	
5	Subansiri Lower HEP - UNIT 2	12-06-2026 19:45	12-06-2026 21:14		

Event -2 On 13th June 2026 at Lower Subansiri HEP:

Again, on 13th June 2026 at 11:41 hrs, Unit-1 and Unit-2, along with 400 kV Lower Subansiri-Biswanath Chariali Ckt-3 and Ckt-4, tripped, resulting Grid Disturbance

and total black out at the Lower Subansiri HEP with generation loss of 465 MW. Prior to the above event Unit-4 and Unit-3 at Lower Subansiri was under forced outage.

Sl No.	Element Name	Outage time	Revival Time	Reason	Remarks
1	400KV-BISWANATH CHARIALI-SUBANSIRI-3	13-06-2026 11:41	13-06-2026 12:35	GIS breakers tripped due to	Tripping of all the elements resulted into GD at Lower Subansiri with generation loss of 465 MW (Unit 1 & 2)
2	400KV-BISWANATH CHARIALI-SUBANSIRI-4	13-06-2026 11:41	13-06-2026 12:47	unhealthy GIS controller at Subansiri; No tripping at Biswanath Chariali for Line-3	
3	Subansiri Lower HEP - UNIT 1	13-06-2026 11:41	13-06-2026 12:46	GIS breakers tripped due to	
4	Subansiri Lower HEP - UNIT 2	13-06-2026 11:41	13-06-2026 12:43	unhealthy GIS controller at Subansiri	

Action Required from Lower Subansiri HEP (NHPC):

1. Identify the root cause and report implement remedial measures to prevent recurrence of similar total blackout incidents.
2. Submit a detailed report for the Grid Events.
3. Expedite restoration of Unit-4, which has been under forced outage since 12.05.2026.

4. Expedite restoration of 400 kV, 80 MVAR Bus Reactor-1, which has been under forced outage since 20.05.2026.

Deliberation

No representative of NHPC was present in the meeting.

NERPC informed that as per the mail received from NHPC on the matter, the following is to be noted –

Event – 1

On 12.06.2026 an electrical short circuit occurred in the MV-side external delta connection of the 2 MVA Dry Type (Vacuum Pressure Impregnation), Dyn11, 16/ $\sqrt{3}$ kV / 433/ $\sqrt{3}$ V Unit Auxiliary Transformer (UAT) of Unit #3 at the Subansiri Lower Hydroelectric Project.

2. As a result of the fault, Unit #3 tripped on Overcurrent Protection (Second Stage). The fault was severe enough to cause an internal flashover and explosion, which ruptured the UAT enclosure and damaged the tin-sheet partition separating the UAT from Station Service Board-2 (SSB-2).
3. Smoke, soot, and debris from the damaged UAT entered SSB-2, which was located in close proximity to the transformer. To prevent the possibility of an electrical flashover within SSB-2, the AC input supply to the board was isolated as a precautionary measure. However, this action also interrupted the power supply to the DC battery charger, resulting in the suspension of battery charging.
4. The existing DC battery bank, which was kept in store for approximately 15 years and has only been in service since 2023, has low backup capacity due to aging. Consequently, the DC bus voltage declined rapidly after the charger supply was lost. The reduction in DC voltage led to the loss of inverter output supplying AC power to the PLCs of various plant bays.
5. As the plant protection and control systems are designed with hardwired fail-safe logic, the affected controllers became unhealthy due to loss of power, resulting in the tripping of Units #1 and #2 as well as Transmission Lines #3 and #4.

Event -2

1. On 13.06.2026, Transmission Lines #3 and #4 tripped again due to improper PLC communication. Investigation revealed that the communication cards of the affected PLCs required manual resetting. After resetting the communication modules, normal communication was restored.

2. The tripping of Lines #3 and #4 resulted in the loss of evacuation path for generating Units #1 and #2. Consequently, both generating units experienced an over-frequency condition and tripped on over-frequency protection.

Corrective actions taken

1. Replacement of DC Battery Bank

- a. All materials required for the new DC battery bank have been received at site.
- b. Erection of the new battery rack is currently in progress.

2. Replacement of Plant Inverter System

- a. A purchase order has already been placed for a new inverter system.
- b. Drawings are under review for clearance for manufacturing
- c. The existing inverter will be replaced during the lean generation season or during a planned plant outage, whichever occurs earlier.

3. SCADA System Modernization

- a. A comprehensive modernization of the plant SCADA system is currently underway.
- b. Commissioning activities for Unit #5 under the new SCADA platform have already commenced.
- c. The SCADA systems for the remaining generating units and common plant systems will be upgraded sequentially.

4. Replacement of Unit Auxiliary Transformers

- a. PO for Five new Unit Auxiliary Transformers (UATs) have been already placed.
- b. In addition, two UATs refurbished by the OEM, M/s Crompton Greaves Limited, are expected to arrive at site shortly.

The Sub-committee noted as above

Action: NHPC

B.15 Frequent unwanted tripping of 400/132 kV Kameng ICT:

400/132 kV Kameng ICT tripped multiple times since Apr'2026 causing grid disturbance in Khupi & Seppa areas of Arunachal Pradesh which is a matter of serious concern.

The details of the events are shown below:

Event 1: At 15:38 Hrs of 22nd April'26

Sl. No.	Element Name	Tripping Time	Relay Indication A	Relay Indication B	Analysis based on FIR/DR/EL
1	132 kV Tenga-Khupi Line	22-04-2026 15:38	DP, ZII, Y-N	Distance protection optd	Y-N fault (Iy-1.3 kA, In-1.3 kA) in 132 kV Tenga-Khupi Line initiated at 15:28:46.495 Hrs and cleared within 432 msec
2	3X40 MVA, 400/132 kV ICT at Kameng	22-04-2026 15:38	E/F Stg-2 in HV side operated within 69 msec		from Tenga end on operation of DP, ZII. Distance protection operated at Khupi end. At 15:29:03.515 Hrs, Kameng ICT tripped on E/F Stg-II within 69 msec

Event 2: At 09:57 Hrs of 30th April'26

Sl. No.	Element Name	Tripping Time	Relay Indication A	Relay Indication B	Analysis based on FIR/DR/EL
1	132 kV Khupi-Seppa Line	30-04-2026 09:57	E/F	No tripping (radial)	As per information from DoP Arunachal Pradesh, 132 kV Khupi-Seppa line tripped on E/F from Khupi end. At 09:57 Hrs, Kameng ICT tripped on E/F Stg-I within 3.5 sec
2	3X40 MVA, 400/132 kV ICT at Kameng	30-04-2026 09:57	E/F Stg-1 in HV side operated		

Event 3: At 17:24 Hrs of 10th May'26

Sl. No.	Element Name	Tripping Time	Relay Indication A	Relay Indication B	Analysis based on FIR/DR/EL
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1	132 kV Tenga- Khupi Line	10-05- 2026 09:57	Auto Recloser successful from both ends	R-N fault (Ir-2.7 kA, In- 2.8 kA) initiated at 17:23:08.367 hrs which was cleared within 73 msec from Khupi end on operation of DP, ZI. Fault cleared within 142 msec from Tenga end on DP, ZI. AR operated successfully after 1.6 sec from both ends. At 17:23:04.470 Hrs, Kameng ICT tripped on E/F Stg-II within 76 msec.
2	3X40 MVA, 400/132 kV ICT at Kameng	10-05- 2026 09:57	E/F Stg-2 in HV side operated within 76 msec	

Event 4: At 13:38 Hrs of 21st May'26

Sl. No.	Element Name	Tripping Time	Relay Indication A	Relay Indication B	Analysis based on FIR/DR/EL
1	132 kV Tenga-Khupi Line	21-05-2026 13:38	DP, ZI, R-N, AR unsuccessful	DP, ZI, R-N, AR unsuccessful	R-N fault (Ir-1.5 kA, In-1.4 kA) initiated at 13:38:15.107 Hrs which was cleared within 81 msec from Tenga end on operation of DP, ZI. After around 1.5 sec, AR attempted however tripped on reclose. Fault cleared within 71 msec from Khupi
2	3X40 MVA, 400/132 kV ICT at Kameng	21-05-2026 13:38	E/F Stg-2 in HV side operated within 70 msec		

				end on operation of DP, ZI, AR attempted after 1 sec, however tripped during reclaim time. At 13:38:18.187 Hrs, Kameng ICT tripped on E/F Stg-II within 70 msec.
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It has been observed that HV side E/F operation of Kameng ICT seems to be correct as per the setting of $200 \times 8 = 1600$ A with time delay of 50 msec. However, high current value of around 2.5-2.9 kA observed in 400 kV Star connected end of Kameng ICT.

The event discussed during the GD discussion online meeting held on 12th June 2026 as follows: -

The 400/132 kV ICT is an autotransformer having common neutral for the 400 kV and 132 kV windings. During an earth fault in the 132 kV system, neutral current may return through the common neutral of the ICT. Accordingly, where the E/F protection derives current input from the neutral bushing CT (ratio: 200/1 A), the relay may record the neutral current corresponding to the 132 kV-side earth fault. Hence, the forum suggested NEEPCO to take the Backup OC & EF relay settings using the inputs from the Bay CT's at the HV side (CTR: 500/1) to avoid such unwanted EF Highset operation.

Hence, NEEPCO is requested to take necessary corrective measures on the above-mentioned issues to prevent further occurrences.

Deliberation

NEEPCO stated that the current for EF protection was taken from Neutral CT on the directions of the OEM. Forum suggested NEEPCO to take the Backup OC & EF relay settings using the inputs from the Bay CT's at the HV side (CTR: 500/1) to avoid such unwanted EF Highset operation. NEEPCO agreed to adhere to the changes and informed that it will be implemented within 20 days. Further he requested NERPC

and NERLDC to provide pick up current settings for EF highset at the earliest. NERLDC assured that the settings will be communicated shortly.

Also, NEEPCO informed that the vendor of the P633 relay has been demerged into 2 different companies i.e., Schneider & GE Vernova and getting OEM support has become difficult. Also, he informed that the suggestion will be implemented after carrying out Simulation studies in consultation with the OEM.

The Sub-committee noted as above

Action: NEEPCO

B.16 Frequent Grid disturbance in Karong & Gamphajol area of Manipur power system and CB issue at Karong & Gamphajol S/S:

Gamphajol & Karong areas of Manipur power is connected with rest of the grid through 132 kV Yurembam-Gamphajol line, 132 kV Gamphajol-Karong line & 132 kV Karong-Kohima line.

During Jan'26 to June'26 (till date), 8 no. of GD occurred in Gamphajol & Karong areas due to tripping of 132 kV Yurembam-Gamphajol line, 132 kV Gamphajol-Karong line & 132 kV Karong-Kohima line.

The details of tripping are tabulated below:

SL N o.	Element Name	Owner	Tripping Date & Time	Restoration Date & Time	Outage Duration	Relay_Se nd	Relay_Rend	GD affected areas	Loa d loss
1	132 kV Gamphajol -Karong Line	MSP CL	15-03-2026 20:52	16-03-2026 13:18	16:26:00	DP, ZI, B-N, 5.2 Km	No tripping, likely CB not open	Karong	3
2	132 kV Kohima-Karong Line	MSP CL & DoP Nagaland	15-03-2026 20:52	15-03-2026 22:05	01:13:00	DP, ZIII, B-N	No tripping		

SL N o.	Element Name	Owner	Tripping Date & Time	Restoration Date & Time	Outage Duration	Relay_Se nd	Relay_Rend	GD affected areas	Load loss
3	132 kV Imphal (MSPCL) - Gamphajol Line	MSP CL	17-03-2026 16:13	18-03-2026 14:09	21:56:00	DP, ZI, B-E,FD: 2.6 km,9.3kA (Jumper snapped)	DP, ZI (radial)	Karong, Gamphajol areas of Manipur & Kohima, Meluri, Zhadima, Chiephebozou areas of Nagaland	33
4	132 kV Gamphajol -Karong Line	MSP CL	22-03-2026 00:48	22-03-2026 15:56	15:08:00	EF	OC	Gamphajol	2
5	132 kV Imphal (MSPCL) - Gamphajol Line	MSP CL	22-03-2026 00:48	31-03-2026 19:01	9.18:13:00	OC (CB opening mechanism faulty)	EF		
6	132 kV Gamphajol -Karong Line	MSP CL	06-04-2026 11:02	06-04-2026 14:10	03:08:00	Overcurrent, 1 km	Overcurrent, 22.54 km	-	-

SL N o.	Element Name	Owner	Tripping Date & Time	Restoration Date & Time	Outage Duration	Relay_Se nd	Relay_Rend	GD affecte d areas	Loa d loss
7	132 kV Gamphajol -Karong Line	MSP CL	10-04-2026 08:22	10-04-2026 15:15	06:53:00	No tripping	DP, ZIII, 54.55 km	Gamphajol and Karong	5
8	132 kV Imphal (MSPCL) - Gamphajol Line	MSP CL	10-04-2026 08:22	10-04-2026 15:17	06:55:00	DP, ZI, B-N, 4.4 Km	DP, ZI, B-N, 7.2 Km, likely CB not open		
9	132 kV Kohima-Karong Line	MSP CL & DoP Nagaland	10-04-2026 08:22	10-04-2026 09:04	00:42:00	DP, ZIII	No tripping		
10	132 kV Imphal (MSPCL) - Gamphajol Line	MSP CL	01-05-2026 13:44	03-05-2026 14:50	2.01:06:00	DP, ZI, B-N, 6.5 Km	DP, ZI, 17.2 Km	Gamphajol	20
11	132 kV Gamphajol -Karong Line	MSP CL	01-05-2026 13:44	01-05-2026 15:00	01:16:00	No tripping	I>4 trip, R-N (DP, ZIII started)		
12	132 kV Gamphajol -Karong Line	MSP CL	11-05-2026 11:25	26-05-2026 17:39	15.25972222	awaited	Z1, E/F, O/C, 18.01km	-	-

SL N o.	Element Name	Owner	Tripping Date & Time	Restoration Date & Time	Outage Duration	Relay_Se nd	Relay_Rend	GD affecte d areas	Loa d loss
13	132 kV Kohima-Karong Line	MSP CL & DoP Nagaland	11-05-2026 16:55	11-05-2026 18:15	01:20:00	DP, ZI, R-Y-B	DP, ZI, 3.471 Km	Karong	13
14	132 kV Imphal (MSPCL) - Gamphajol Line	MSP CL	26-05-2026 17:41	28-05-2026 08:12	1.14:31:00	E/F, 17.2 km	Z-III, 35.7km, Iy=2.15 kA	-	-
15	132 kV Gamphajol -Karong Line	MSP CL	01-06-2026 21:22	02-06-2026 13:39	16:17:00	No Tripping	DP, ZIII, 40.73 Km	Gamphajol	9
16	132 kV Imphal (MSPCL) - Gamphajol Line	MSP CL	01-06-2026 21:22	02-06-2026 13:38	16:16:00	DP, ZI, B-N, 2.516 kA	No Tripping, Likely CB not open		
17	132 kV Imphal (MSPCL) - Gamphajol Line	MSP CL	10-06-2026 09:41	10-06-2026 11:34	01:53:00	Z-3, R-ph, 51.49 km	No tripping	Gamphajol	2
18	132 kV Gamphajol -Karong Line	MSP CL	10-06-2026 09:41	Not yet revived (as on 15.06.2026)	-	No tripping, likely CB not open	Z-1, 4.03 kms		

Observations:

- 132 kV Imphal-Gamphajol line tripped 7 number times & 132 kV Gamphajol-Karong tripped 8 number of times during Jan'26 to June'26.
- Due to the above tripping, a total of four (04) grid disturbance occurred in Karong area and six (06) grid disturbance occurred in Gamphajol area of Manipur power system.
- Protection system of Gamphajol fails to isolate the fault resulting in clearing of fault by tripping of healthy lines on ZIII from remote ends.
- Highset OC setting was found enabled at Karong end for 132 kV Gamphajol line which is likely causing early tripping of CB at Karong.

The issue of repeated grid disturbances at Gamphajol & Karong Substation likely due to CB issue at Gamphajol has been informed to MSPCL vide NERLDC letter dated 12-05-2026 attached as **Annexure B.16**. However, no corrective action has been implemented till date, resulting in repeated grid disturbances in the Gamphajol area of Manipur power system.

Action points for MSPCL:

- Share root cause of such repeated tripping.
- Check the circuit breaker and protection relays at Gamphajol for both 132 kV Yurembam-Gamphajol & 132 kV Gamphajol-Karong lines.
- Likely Relay coordination issue at Karong end of Gamphajol line which is causing early tripping from Karong end. I>4 setting with delay 50 msec needs to be reviewed.
- Submit DR/EL data at Gamphajol end.

Deliberation

MSPCL informed the forum that the root cause of the issue could not yet be identified, as the Disturbance Recorder (DR) and Event Logger (EL) data could not be retrieved. Also, proper inspection of the line cannot be conducted due to prevailing law and order situation in the area.

The forum advised MSPCL to carry out the necessary testing of the circuit breakers and protection relays at Gamphajol and Karong at the earliest.

Manipur further informed that the DR data is expected to be collected within the next 10–15 days, following which appropriate corrective actions will be taken in coordination with NERPSIP.

Manipur further informed that highset OC setting at Karong for 132 kV Gamphajol line has been disabled. Forum advised MSPCL to submit the relay setting file of Karong end.

The Sub-committee noted as above

Action: MSPCL

B.17 Frequent tripping of 132 kV Loktak-Rengpang line and grid disturbance in Rengpang area of Manipur:

Rengpang area of Manipur power system is connected to Loktak (NHPC) through 132 kV Loktak – Rengpang line due to the long outage of 132 kV Rengpang – Jiribam (MA) line.

During Jan'26 to June'26 (till 15-06-2026), 132 kV Loktak – Rengpang line tripped 27 number of times causing grid disturbance in Rengpang area of Manipur power system which is a matter of serious concern.

The details of tripping are listed below:

Sl. No.	Element Name	Owner	Tripping Date & Time	Relay_Loktak	Relay_Rengpang
1	132 kV Loktak - Rengpang Line	MSPCL	28-02-2026 11:16	DP, ZI, B-N, 2.5 kA, 14.34 Km, 81 msec	No tripping (radial)
2	132 kV Loktak - Rengpang Line	MSPCL	28-02-2026 12:11	DP, ZI, Y-N, 7.34 Km, 2.6 kA, 82 msec	No tripping (radial)
3	132 kV Loktak - Rengpang Line	MSPCL	13-03-2026 14:14	I>trip, Ir-467 A, Iy-453 A, Ib-433 A	No tripping (radial)
4	132 kV Loktak - Rengpang Line	MSPCL	15-03-2026 01:18	DP, ZI, R-Y, 22.87 Km, 3.6 kA, 92 msec	No tripping (radial)
5	132 kV Loktak - Rengpang Line	MSPCL	28-03-2026 11:19	DP, ZI, B-N, 14.1 Km	No tripping (radial)

6	132 kV Loktak - Rengpang Line	MSPCL	02-04-2026 03:05	I>1 trip, B-N	No tripping (radial)
7	132 kV Loktak - Rengpang Line	MSPCL	08-04-2026 01:04	I>1 trip, B-N	No tripping (radial)
8	132 kV Loktak - Rengpang Line	MSPCL	15-04-2026 00:34	DP, Z1, 14.18km, B-ph, 2.253kA	No tripping (radial)
9	132 kV Loktak - Rengpang Line	MSPCL	21-04-2026 00:02	DP, ZI, B-N, 14.39 Km, 82 msec, 2.5 kA	No tripping (radial)
10	132 kV Loktak - Rengpang Line	MSPCL	21-04-2026 21:58	DP, Z1, B-N, 14.35 km, 69 msec, 2.6 kA	No tripping (radial)
11	132 kV Loktak - Rengpang Line	MSPCL	22-04-2026 07:34	DP, ZI, B-N, 14.53 km, 68 msec	No tripping (radial)
12	132 kV Loktak - Rengpang Line	MSPCL	26-04-2026 04:58	DP, ZI, B-N, 14.23 km, 66 msec, 2.3 kA	No tripping (radial)
13	132 kV Loktak - Rengpang Line	MSPCL	26-04-2026 18:36	DP, ZI, B-N, 14.6 km, 72 msec, 2.6 kA	No tripping (radial)
14	132 kV Loktak - Rengpang Line	MSPCL	27-04-2026 06:02	DP, ZI, B-N, 13.84 km, 79 msec, 2.2 kA	No tripping (radial)
15	132 kV Loktak - Rengpang Line	MSPCL	22-05-2026 13:17	DP, Z1, R-Y, 23.85 km, 75 msec, 3.4 kA	No tripping (radial)
16	132 kV Loktak - Rengpang Line	MSPCL	25-05-2026 14:42	DP, ZI, R-Y, 23.71 Km, 70 msec, 3.5 kA	No tripping (radial)

17	132 kV Loktak - Rengpang Line	MSPCL	26-05-2026 07:43	DP, ZI, R-Y, 23.4 Km, 3.4 kA, 63 msec	No tripping (radial)
18	132 kV Loktak - Rengpang Line	MSPCL	29-05-2026 10:21	DP, ZI, B-N, 8.8 Km, 3.2 kA, 82 msec	No tripping (radial)
19	132 kV Loktak - Rengpang Line	MSPCL	31-05-2026 09:20	DP, ZI, B-N, 9.36 km	No tripping (radial)
20	132 kV Loktak - Rengpang Line	MSPCL	01-06-2026 09:47	DP, ZI, B-N, 9.4 km, 70 msec, 3.2 kA	No tripping (radial)
21	132 kV Loktak - Rengpang Line	MSPCL	03-06-2026 12:40	DP, ZI, B-N, 2.8 kA	No tripping (radial)
22	132 kV Loktak - Rengpang Line	MSPCL	05-06-2026 10:19:00	DP, ZI, B-N, 3.18 kA, 9.21 km	No tripping (radial)
23	132 kV Loktak - Rengpang Line	MSPCL	08-06-2026 10:31:00	DP, ZI, B-N	No tripping (radial)
24	132 kV Loktak - Rengpang Line	MSPCL	11-06-2026 09:39:00	DP, ZI, B-N, 9.11 km, 3.11 kA	No tripping (radial)
25	132 kV Loktak - Rengpang Line	MSPCL	11-06-2026 12:52:00	DP, ZI, B-N, 9.09 km	No tripping (radial)
26	132 kV Loktak - Rengpang Line	MSPCL	12-06-2026 09:49:00	DP, ZI, 9.2 km, 3.192 kA	No tripping (radial)
27	132 kV Loktak - Rengpang Line	MSPCL	13-06-2026 15:53:00	DP, ZI, B-N, 8.77 km, 3.2 kA	No tripping (radial)

MSPCL had availed a shutdown of the 132 kV Loktak–Rengpang line on 4th and 5th June 2026 for line inspection and jungle cutting activities. However, tripping of the line has continued to occur even after the completion of the maintenance work.

The issue of frequent tripping of the 132 kV Loktak–Rengpang line is being regularly discussed in the monthly PCC meetings. Despite repeated deliberations, the

underlying cause has not yet been identified and no effective corrective action appears to have been taken, resulting in continued disturbances on the line. Further, restoration of the 132 kV Jiribam (MA)–Rengpang line may be expedited to enhance system reliability and avoid grid disturbances in the Rengpang area of Manipur.

MSPCL is requested to provide an update on the reasons for the frequent tripping of the 132 kV Loktak–Rengpang line, along with the corrective measures being undertaken to resolve the issue.

Deliberation

Manipur informed that most of the trippings occurred due to vegetation fault. They added that the vegetation clearance has been done except for a stretch of 7 Km which lies in the sensitive zone, wherein only non-local people are allowed. Finally, Manipur submitted that complete vegetation clearance will be done as soon as the law and order situation improves in the state.

Forum raised serious reservation and raised the issue of long outage of 132 kV Jiribam(MA)-Rengpang line. Manipur informed that letter has been issued to NHIDCL regarding the matter and update will be shared by last week of June 2026.

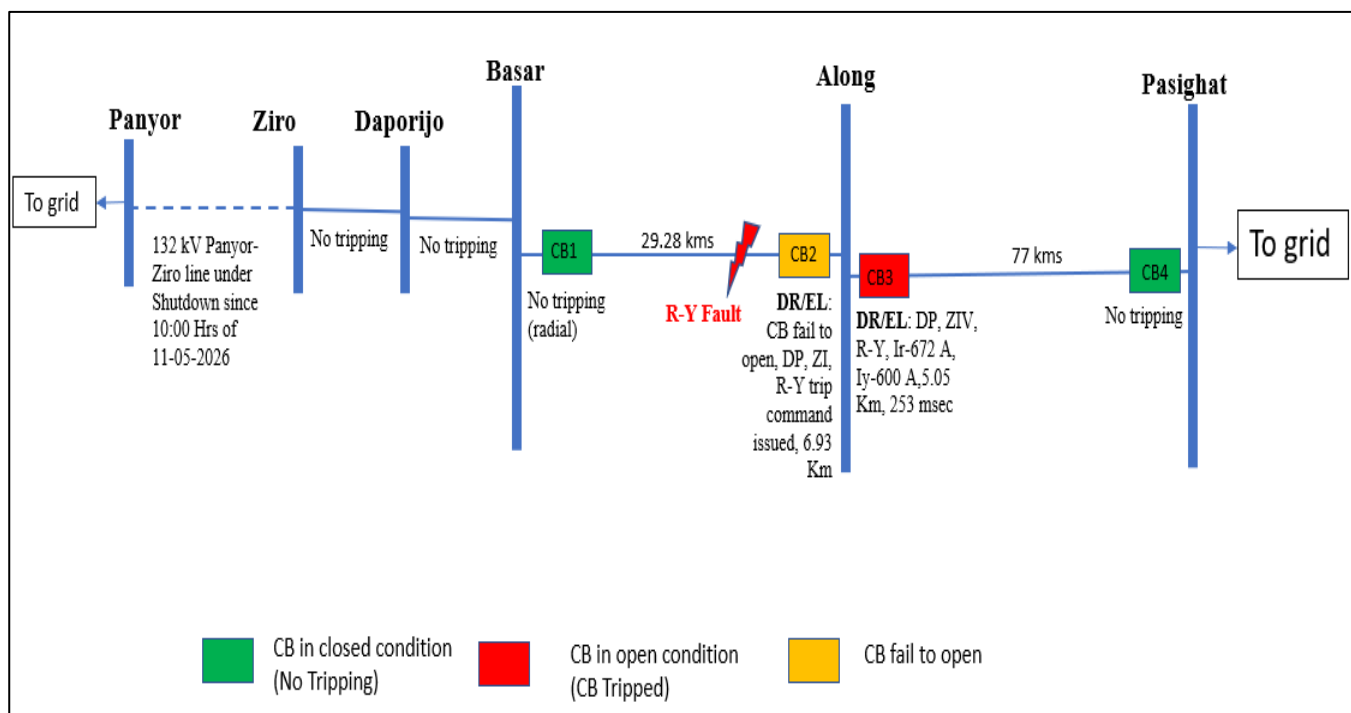
The Sub-committee noted as above

Action: MSPCL

B.18 Grid Disturbance in Along, Basar, Daporijo and Ziro area of Arunachal Pradesh Power System on 18-05-2026:

Ziro, Daporijo, Basar and Along areas of Arunachal Pradesh Power System were connected to the rest of the NER grid through 132kV Along-Pasighat line. 132 kV Panyor-Ziro line is under Planned shutdown since 10:00 Hrs of 11-05-2026 and above-mentioned areas are radially connected with 132 kV Ziro-Daporijo-Basar-Along-Pasighat link only.

At 04:02 Hrs of 18-05-2026, 132 kV Along-Pasighat line tripped which resulted in blackout of Ziro, Daporijo, Basar and Along areas of Arunachal Pradesh. Load loss of 11 MW occurred.



As per DR analysis, resistive R-Y fault (Ir-0.66 kA, Iy-0.60 kA) initiated at 04:05:51.590 hrs in 132 kV Basar-Along line. Fault detected in ZI from Along end and trip command was issued, however CB at Along failed to open. Consequently, fault was cleared by tripping of 132 kV Along-Pasighat line from Along end on operation of DP, ZIV within 253 msec.

Similar event occurred on 21-04-2026.

DoP Arunachal Pradesh to undertake necessary remedial measures to avoid recurrence of such events.

Deliberation

NERLDC informed that CBs at Along are malfunctioning and needs to be changed as discussed in the earlier PCC meetings.

DoP Ar. Pradesh informed that the TBC breaker has been replaced and main bay CB will tentatively be replaced by July'26.

MS NERPC insisted upon DoP Arunachal Pradesh to expedite the process and complete the replacement positively by July'26.

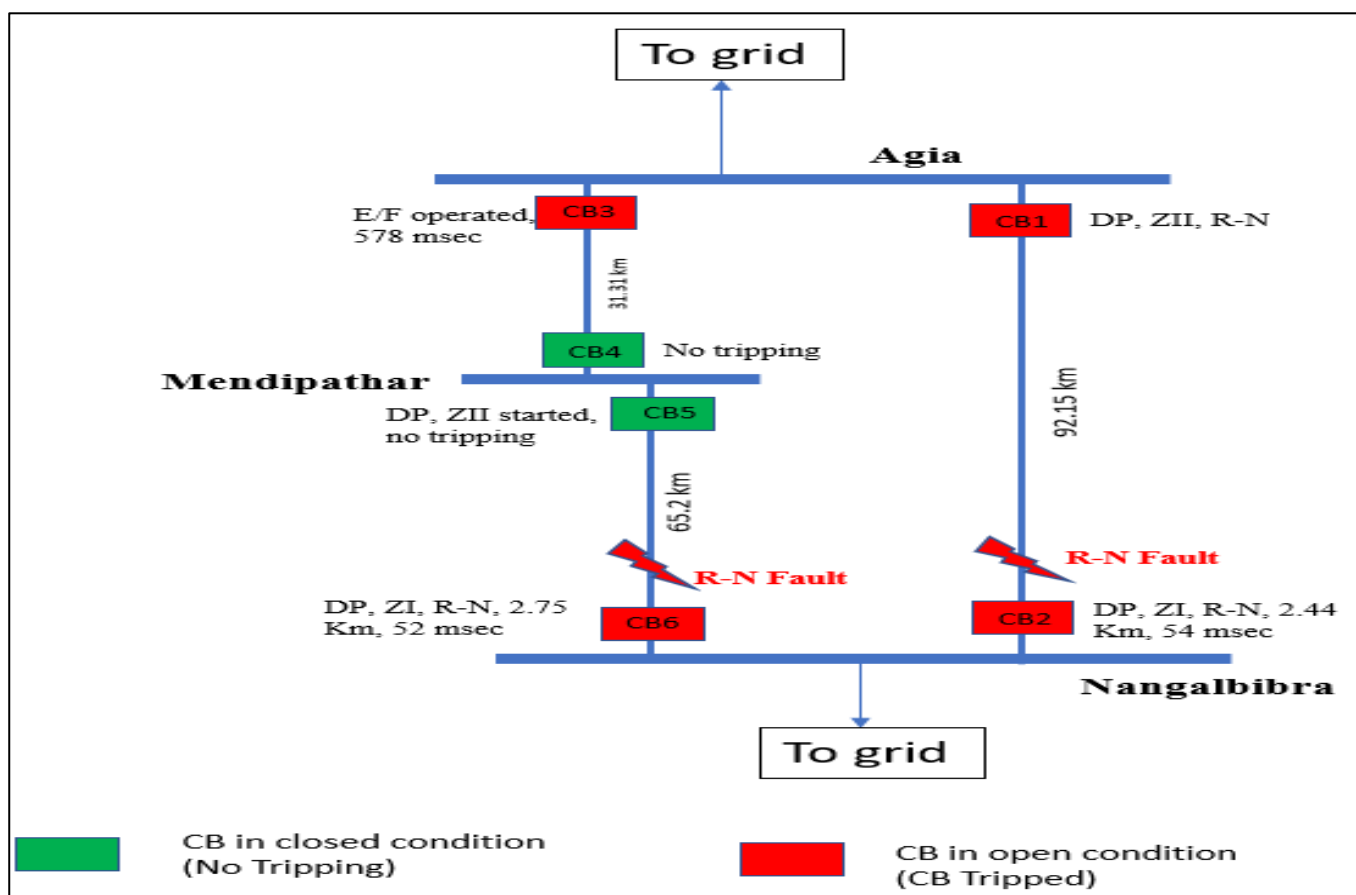
The Sub-committee noted as above

Action: DoP Ar. Pradesh

B.19 Grid Disturbance in Mendipathar area of Meghalaya Power System on 4th June'2026:

Mendipathar area of Meghalaya power system was connected with rest of the grid through 132 kV mendipathar-Nangalbibra & 132 kV Agia-Nangalbibra lines.

At 02:12 hrs of 04-06-2026, 132 kV 132 kV Agia-Mendipathar, 132 kV Mendipathar-Nangalbibra & 132 kV Agia-Nangalbibra Lines tripped leading to grid disturbance in Mendipathar area of Meghalaya power system. Load loss of 16 MW occurred.



As per DR analysis, Solid R-N fault (Ir-1.2 kA, In-1.4 kA) appears to be in 132 kV Agia Nangalbibra line at a distance of 2.44 Km from Nangalbibra which was cleared from Nangalbibra end (CB2) on ZI within 54 msec. ZII operated at Agia end (CB1). There was a subsequent fault in 132 kV Nangalbibra-Mendipathar line which tripped on ZI at Nangalbibra end (CB6) with a fault distance of 2.75 Km. ZII/ZIII started at Mendipathar end (CB5), however, prior to clearing of fault from Mendipathar end (CB5), 132 kV Agia-Mendipathar line tripped on operation of Earth fault from Agia end (CB3) within 578 msec.

Root cause: Tripping occurred due to multiple lightning faults near Nangalbibra.

Action points for MePTCL:

- Backup E/F setting at Agia for 132 kV Mendipathar line (CB3) needs to be reviewed and coordinated with ZIII time delay as per NERPC Protection philosophy.
- ZII time delay at Mendipathar (CB5) for 132 kV Nangalbibra line needs to be reviewed and set as per protection philosophy.

Deliberation

Forum directed MePTCL to undertake the following action points –

- Backup E/F setting at Agia for 132 kV Mendipathar line (CB3) to be reviewed and coordinated with ZIII time delay as per NERPC Protection philosophy.
- ZII time delay at Mendipathar (CB5) for 132 kV Nangalbibra line needs to be reviewed and set as per protection philosophy.
- Relay at Mendipathar for Nangalbibra line to be tested.
- MePTCL to provide the ZII settings and EF settings, as mentioned above, to NERPC and NERLDC at the earliest.

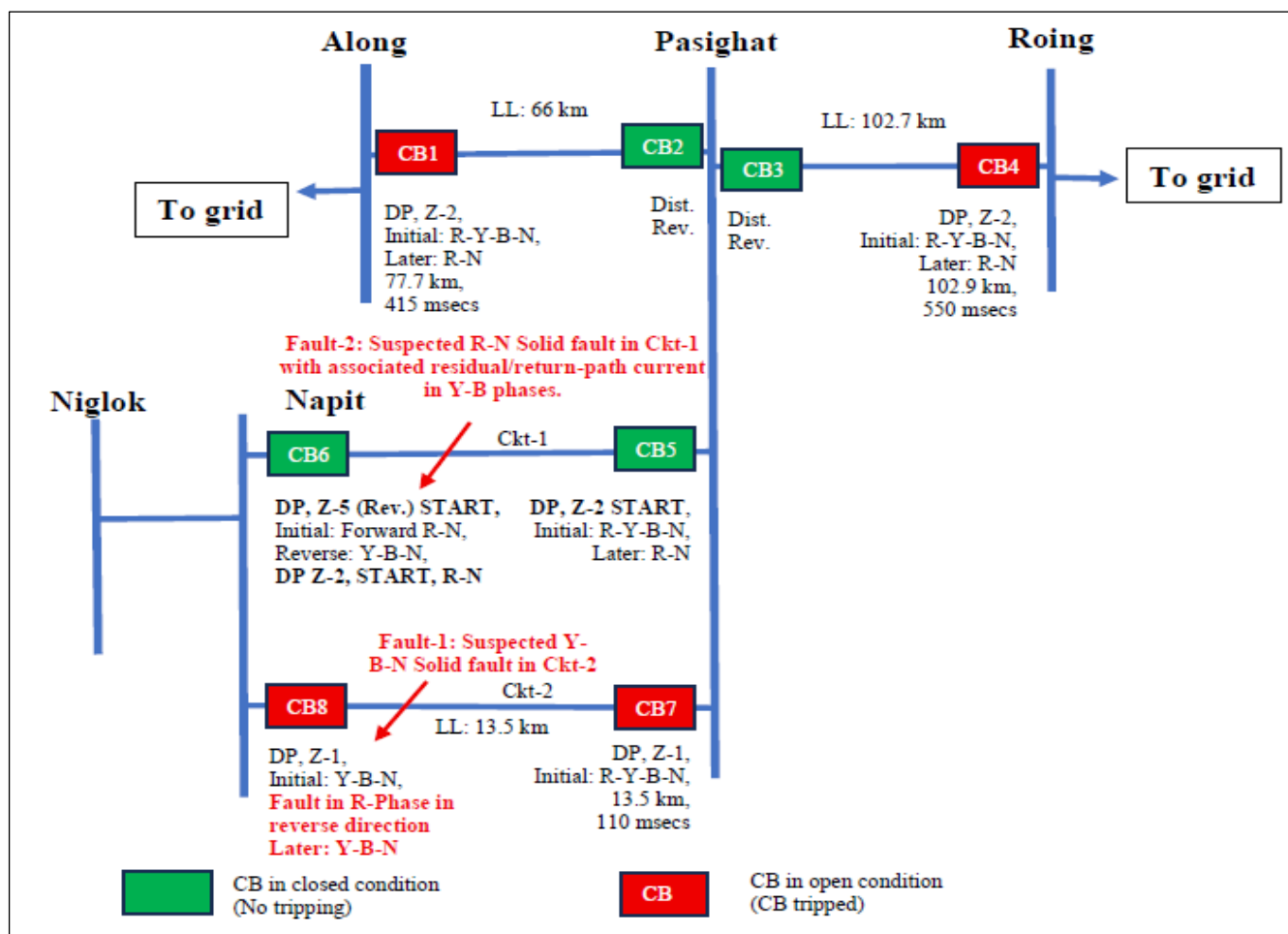
The Sub-committee noted as above

Action: MePTCL

B.20 Grid disturbance in Pasighat area of Arunachal Pradesh on 3rd June'2026:

Pasighat, Napit and Niglok areas of AP Power System were connected with rest of NER Grid through 132 kV Along-Pasighat and 132 kV Roing-Pasighat lines.

At 01:42 Hrs on 03-06-2026, 132 kV Along-Pasighat and 132 kV Roing-Pasighat lines tripped. Due to tripping of these elements, Pasighat, Napit and Niglok areas of AP Power System were isolated from NER Grid and collapsed due to no source available in this area. Load loss of 8 MW occurred.



A three-phase-to-ground fault (R-Y-B-N) appears to have occurred in the system connected at Pasighat. The fault initially persisted as a multi-phase fault for approximately 170 msec, after which it evolved into a predominantly R-phase-to-ground fault.

Fault was in 132 kV Pasighat-Napit lines which was cleared by Line-2 from both ends on Zone-1 operation. However, the fault was not cleared immediately from Pasighat end of line-1 due to which fault was feeding from 132 kV Along-Pasighat & 132 kV Roing-Pasighat lines. Consequently, 132 kV Along-Pasighat & 132 kV Roing-Pasighat lines tripped on ZII from Along & Roing end.

Action points for DoP Arunachal Pradesh:

- Delayed clearance of fault through 132 kV Pasighat-Napit Ckt-1 from Pasighat end was observed. Distance protection settings and scheme for 132 kV Pasighat-Napit I line needs to be reviewed.
- DR time drift needs to be rectified at Pasighat:

Time drift of **7 min** at Pasighat end of 132 kV Pasighat-Napit Ckt-1 line

Time drift of **9 min** at Pasighat end of 132 kV Pasighat-Napit Ckt-2 line

Deliberation

Forum directed DoP Ar. Pradesh to check the distance protection settings at Pasighat end for the Napit ckt 1 and rectify the issue in coordination with NERPC and NERLDC. Further DoP Ar. Pradesh was instructed to rectify the DR time drift issue at Pasighat at the earliest.

The Sub-committee noted as above

Action: DoP Ar. Pradesh

B.21 Nonoperation of Autorecloser in 400 kV NETC owned lines during May & June'26:

The list of the tripping events is tabulated below: -

Sl. No.	Name of Line Element	Tripping Date & Time	Revival Date & Time	Relay Indication		Remarks
				End A	End B	
1	400 kV Silchar-Palatana T/L (Ckt-II)	24-05-2026 04:32	24-05-2026 05:01	Silchar End: AFAS:M1: R-N, 60.762KM, 4.40KA, Zone-1 M2: R-N,60.979 KM, 4.35KA, Zone-1	Palatana End: DP, ZI, R-E, 180.2 KM, 1.436KA, 50 msecs	A/R Successful at Silchar end but AR not attempted at Palatana end.
2	400 kV Silchar-Palatana T/L (Ckt-II)	03-06-2026 05:06	03-06-2026 05:46	Silchar End: AFAS:M1: R-,40.99KM, 7.22KA, Zone-1	Palatana End: R-N, 205 KM, Zone-2, Carrier	A/R Successful at Silchar end but AR not attempted

				M2: R-N,41.463 KM,7.4 KA, Zone-1	aided Tripping, 84 msecs	at Palatana end.
3	400 kV Silchar- Byrnihat T/L (Ckt-II)	24-05- 2026 01:13	24-05- 2026 04:14	Silchar End: AFAS:M1: B-N,18.696KM, 8.64KA, Zone-1 M2: B-N,18.886 KM,8.52KA, Zone-1; DT Received	Byrnihat End: DP, ZII, B- E, FD: 249.9 KM,1.8 kA Carrier aided Tripping, 86 msecs; DT Send	A/R Successful at Silchar end but tripped on DT received but AR not attempted at Byrnihat end.

The nonoperation of Autorecloser in the above-mentioned lines are critical for the NER grid.

Hence, utilities are requested to take corrective action & as well ensure the healthiness of the at the lines.

Deliberation

1. For issue with the 400 kV Silchar-Palatana II line, OTPC stated that there is some issue with the PLCC link because of which AR was blocked. He requested Powergrid to visit Palatana and help resolve the issue. Forum urged Powergrid to extend necessary assistance in this regard.
2. For 400 kV Silchar-Byrnihat line, forum directed MePTCL to look into the issue and revert through mail.

The Sub-committee noted as above

Action: OTPC, MePTCL, Powergrid

B.22 Installation of SMS Alert System in the connecting substations of the 400 kV D/C Palatana-Bongaigaon Transmission System of NETC - NETC.

This has reference to the discussion of the 65th PCCM pertaining to the installation of SMS Alert System in the connecting substations of the 400 kV D/C Palatana-

Bongaigaon Transmission System of NETC for obtaining instant messages in the event of Auto-reclosure/ Tripping of the line elements. This installation of SMS Alert System was taken up to address the issue of delay in receiving the Auto-reclosure/ Tripping messages.

Subsequently, NETC has procured 05 nos. SMS Alert System to install in the connecting substations i.e. OTPC S/s (Palatana), Silchar S/s (PGCIL), Byrnihat S/s (MePTCL), Azara S/s (AEGCL) and Bongaigaon S/s (PGCIL).

Currently, installation of the SMS Alert System was successfully completed at POWERGRID S/s i.e. Silchar and Bongaigaon S/s. And for the other substations i.e. OTPC (Palatana), Byrnihat (MePTCL) and Azara (AEGCL), installation is pending. In this regard, we have already requested the concerned substations, however, the same is still pending.

In view of the above, NETC requested for kind intervention of the PCC forum so that the SMS Alert systems may be successfully installed in the pending substations and able us to receive instant messages in the event of Auto-reclosure/ Tripping of the line elements of the 400 kV D/C Palatana-Bongaigaon Transmission System of NETC which will help towards maintaining stable & reliable NER Grid.

Deliberation

Forum noted that the installation of the SMS alert system should be completed at the earliest. MS NERPC urged OTPC, AEGCL and MePTCL to install the system at their ends, for the Palatana-Bongaigaon transmission system of NETC, without any further delay.

The Sub-committee noted as above

Action: OTPC, AEGCL, MePTCL

B.23 Repeated tripping of Kathalguri-Tinsukia II line

NEEPCO apprised that the Kathalguri-Tinsukia II line has been repeatedly on DT sent from Tinsukia end for faults on other Tinsukia connected lines. The forum may take cognisance of the matter and direct AEGCL to take corrective measures in this regard at the earliest.

Deliberation

NEEPCO informed that DT was sent from Tinsukia end due to which tripping at AGBPP occurred. In 2 instances, Auxiliary at AGBPP tripped due to voltage jerk.

Forum asked AEGCL to check DC E/F at Tinsukia end along with necessary steps in consultation with AGBPP.

AEGCL assured to look into the issue at Tinsukia urgently.

The Sub-committee noted as above

Action: AEGCL

B.24 Status on operation of UFRs under AUFLS scheme during the recently occurred low-frequency scenario in the grid - NERLDC

As per discussion in 238th OCC meeting, NERLDC highlighted that at 14:09:53 hrs of 13-05-2026, frequency dropped down to 49.396 Hz due to generation loss of 8962 MW at Khavda Complex in Gujarat. As such UFR Stg-I operation was observed only in Assam and Meghalaya. Out of around 184 MW approved quantum for UFR Stg-I, load relief of only 55 MW was observed.

- Mizoram informed that UFR stg-I settings kept at 48.2 Hz.
- Tripura informed that few of the feeders were under shutdown during the event.

NERLDC highlighted the importance of ensuring healthiness of UFR as the grid is experiencing high demand and low frequency at any moment of time including peak and off-peak hours. All the utilities agreed on ensuring healthiness of UFR.

Mapping of UFR in SCADA for Arunachal Pradesh, Manipur, Mizoram & Tripura needs to be expedited by states in consultation with NERLDC SCADA team.

Deliberation

Forum informed that testing and inspection of the UFRs need to be conducted. Tripura informed that 33 kV feeders identified for UFR are presently in no-load condition and operation of UFR will have no effect. As such, proper review of UFR in NER needs to be conducted.

The Sub-committee noted as above

Action: all power utilities of NER

C. FOLLOW-UP AGENDA ITEMS

C.1 Mapping of SPS in the SCADA Display for real time monitoring of all SPS:(Ref: Agenda C.1 88th PCCM | 19th February 2026)

NLDC has submitted the Guidelines on “Interfacing Requirements” after stakeholder consultation for approval of the Commission as mentioned in the Regulation 7.4, read with Regulation 14.2 of the Communication System for inter-State transmission of electricity) Regulations, 2017. On dated 19-Jan-2024, CERC approved the guideline on “Interfacing Requirements” prepared by NLDC in consultation with the stakeholder. As per the Guideline, real time telemetered SPS Signal need to be monitored. The digital status shall be as per IEC standard. Digital Status for circuit breaker must be double point while isolator status can be either single point or double point as per end device. All users shall comply with interface requirements as specified and shall share interface details with respective Control Centre.

Sl. No.	Description	Analog Points	Digital Points	Protection Signal
1	SPS Signal		DIGITAL STATUS: Enable/Disable, Operated/No Operated (Condition/Logic Wise)	

Present Status of SPS mapping in SCADA Display

10-Apr-2026 17:54:24		SPS STATUS &		NER
STATION	SPS	SPS ON/OFF	SPS OPTD.	
BGTPP_NTPC	BGTPP U-3	☐ ON	☐ NRML	
PALATANA_OTPC	SPS-2 Bangladesh	☐ ON	☐ NRML	
	SPS-4 Bangladesh	☐ ON	☐ NRML	
	SPS -2 HSR	☐ OFF	☐ NRML	
	SPS -3 HSR	☐ OFF	☐ NRML	
ZIRO_PG	ZIRO SPS	☐ OFF	☐ NRML	
SARUSAJAI_AS	SARUSAJAI SPS	F ☐ OFF	F ☐ NRML	
IMPHAL_PG	IMPHAL SPS	☐ OFF	☐ NRML	
SM NAGAR (ST)	SM NAGAR B/R -1 SPS	☐ ON	☐ NRML	
SM NAGAR (ST)	SM NAGAR B/R -2 SPS	☐ ON	☐ NRML	
PK BARI (ST)	PK BARI B/R -1 SPS	☐ ON	☐ NRML	
PK BARI (ST)	PK BARI B/R -2 SPS	☐ ON	☐ NRML	
TINSUKIA (AS)	TINSUKIA SPS	☐ OFF	☐ NRML	
BONGA_AS	SPS Stage -1	☐ ON	☐ NRML	
	SPS Stage -2		☐ NRML	
MONARCHAK	MONARCHAK	☐ ON	☐ NRML	
KHLEIHRIAT	KHLEIHRIAT SPS	☐ ON	☐ NRML	
LESKA	LESKA SPS	☐ ON	☐ NRML	
SM NAGAR (TE)	SM NAGAR LOAD SPS	☐ ON	☐ NRML	

Sl. No.	SPS under operation	SPS mapping status in SCADA (YES/No)
1	SPS related to outage of 220 Misa-Samaguri D/C lines	NO Mapping will be done shortly by last Week of March 2026
2	Related to outage of any one circuit of 220 kV Balipara-Sonabil D/C lines	NO Mapping will be done shortly by last Week of March 2026
3	Outage of 220 kV BTPS (Salakati) – Rangia I & II Line	NO Mapped till SLDC. SLDC to coordinate with NERLDC
4	SPS at Azara for Preventing Overloading of 400/220 kV, 2×315 MVA ICTs at Azara	NO

5	SPS related to overloading of any one of the 400/132kV, 2x360 MVA ICTs at Panyor Lower Hydro Power Station	NO
6	Outage/tripping of any one circuit of 132 kV Dimapur(PG)-Dimapur(NA) D/C Line	NO
7	SPS related to generation evacuation from Loktak HEP	NO As per NHPC, SCADA system is not available at Loktak. Mapping of SPS at Loktak HEP will take time & it will be completed after renovation work at Loktak plant.

It is to be noted that the SPS logic at Sonabil has recently been updated by AEGCL during 9th & 10th June 2026. In view of the criticality of SPS operation and system security, it is essential that all SPS-related status and trigger signals are made available at SLDC and NERLDC for continuous real-time monitoring and situational awareness.

All the utilities are requested to update the status of Mapping of SPS in the SCADA Display.

Deliberation

Sl. No.	SPS under operation	SPS mapping status in SCADA as per 90 th PCC (YES/No)
1	SPS related to outage of 220 Misa-Samaguri D/C lines	NO RTU is very old; no assistance provided from OEM. AEGCL informed that 3rd party team will be involved for the same. By July'26.

2	Related to outage of any one circuit of 220 kV Balipara-Sonabil D/C lines	NO RTU is very old; no assistance provided from OEM. AEGCL informed that 3rd party team will be involved for the same. By July'26.
3	Outage of 220 kV BTPS (Salakati) – Rangia I & II Line	NO By July'26.
4	SPS at Azara for Preventing Overloading of 400/220 kV, 2×315 MVA ICTs at Azara	NO By July'26
5	SPS related to overloading of any one of the 400/132kV, 2x360 MVA ICTs at Panyor Lower Hydro Power Station	NO To be done shortly
6	Outage/tripping of any one circuit of 132 kV Dimapur(PG)-Dimapur(NA) D/C Line	NO NERLDC to recheck the mapping status
7	SPS related to generation evacuation from Loktak HEP	NO As per NHPC, SCADA system is not available at Loktak. Mapping of SPS at Loktak HEP will take time & it will be completed after renovation work at Loktak plant.

The Sub-committee noted as above

C.2 Spurious tripping of 132 kV Haflong (PG) - Haflong (AS) line on 16th Feb'2026:

[\(Ref: Agenda B.10 | 89th PCCM | 21st April 2026\)](#)

At 21:21 hrs of 16-02-2026, 132 kV Haflong (PG)-Haflong (AS) line tripped only from Haflong (AS) end due to intertrip command received in LDR relay. As per PMU signal,

there was no fault observed in the system. AEGCL to update the reason of receipt of intertrip command in LDR relay at Haflong (AS).

Deliberation in 89th PCC meeting:

NERLDC informed that there was no fault in the system. As per AEGCL, 132 kV Haflong (PG)-Haflong (AS) line tripped from Haflong (AS) end due to inter-trip received in LDR relay. However, PGCIL informed there was no inter trip signal transmission from PG end.

Requested AEGCL to check DC E/F at Haflong(AS) substation & share the event highlighting the inter trip signal received at Haflong. AEGCL assured to carry out the tests by the end of April'26.

Deliberation

Cable insulation resistance checking to be done by AEGCL. If the issue arises again, POWERGRID & AEGCL to jointly resolve the issue.

The Sub-committee noted as above

C.3 Grid Disturbance at Luangmual, Melriat and Lunglei areas of Mizoram on 20th Feb'2026:

[\(Ref: Agenda B.11 | 89th PCCM | 21st April 2026\)](#)

At 03:26 Hrs of 20-02-2026, 132 kV Aizawl - Luangmual line tripped resulting in grid disturbance in Luangmual, Melriat and Lunglei areas of Mizoram and load loss of 29 MW occurred.

As per the DR analysis, tripping occurred due to operation of Backup Earth Fault protection ($I_y = 0.4$ kA, $I_n = 0.3$ kA, $V_y = 70$ kV) with a tripping time of 1674 milliseconds from Aizawl end. No tripping was observed from Luangmual end.

Fault occurred due to burning of Y-Ph conductor on 33 kV side of the 132/33 kV, 12.5 MVA ICT at Luangmual. Fault should have been cleared primarily by the HV (132 kV) side protection of the transformer through operation of Backup Earth Fault protection, thereby avoiding unnecessary tripping at the upstream substation, i.e. Aizawl (PG). P&ED Mizoram to update the reason of non-operation of HV side protection of 132/33 kV ICT at Luangmual.

Deliberation in 89th PCC meeting:

Forum noted that HV side of ICT at Luagmual should have isolated the fault prior to the operation of the CB1 at Aizawl, indicating a case of relay mis-coordination. Forum instructed Mizoram to coordinate the relay settings between the ICT at Luangmual and Aizawl end for Luangmual line in coordination with NERPC and NERLDC at the earliest.

NERPC requested Mizoram to provide the settings of the ICT and Aizawl end for Luangmual feeder within one week in order to carry out the coordination study. NERTS: The TMS for EF settings for 132kV Luanagmual feeder at Aizwal SS has been changed from 0.165 to 0.4. on 20th April 2026.

Deliberation

NERPC requested Mizoram to provide the relay settings of the ICT and Aizawl line for Luangmual feeder.

The Sub-committee noted as above

Action: Mizoram

C.4 Grid Disturbance at Kohima & radially connected areas Pfutsero, Meluri, Zhadima, Chiephobozou areas & LHEP generating station of Nagaland:

[\(Ref: Agenda B.12 | 89th PCCM | 21st April 2026\)](#)

Deliberation in 89th PCC meeting:

Event 1:

NERLDC apprised that in the DR of Kohima end it has been observed that there was intermittent pickup of ZII at Kohima end for instances of 310 msecs & 150 msecs by the Main relay of 132 kV Dimapur – Kohima line resulted into failure of timely operation of ZII at the Kohima end and hence ZII operation at Karong.

Forum instructed DoP Nagaland to –

1. Test the Main relay at Kohima for the 132 kV Dimapur – Kohima line.
2. Transplay the DR output for the tripping in the main relay to check the performance.

Event 2:

DoP Nagaland informed that the reason for no operation of protection system at Kohima end is being looked into. NERLDC apprised that the ZIV initiation at Kohima for Karong bay raises concern that the actual fault location must be somewhere near the Kohima SS.

Forum instructed DoP Nagaland to –

1. Ensure timely submission of DR and EL so that thorough analysis of GDs may be done
2. Find out the location of fault and investigate into non-operation of protection system at Kohima and provide report to NERPC at the earliest.

Forum also instructed Manipur to look into the issue of operation of ZII in 73 msec, which is not in compliance with the standard time delay of 350-500 msec. Regarding the revival of 132kV Chiephobozou -Wokha line, DoP Nagaland updated that tower restoration works are under way and the line will tentatively be revived by end of April'26.

Deliberation

DoP Nagaland informed that relay testing at Kohima for 132 kV Dimapur line and trans playing of DR output could not be done due to lack of trained personnel and assistance from POWERGRID will be required. Forum requested POWERGRID to provide necessary assistance to DoP Nagaland for the same.

The Sub-committee noted as above

Action: DoP Nagaland

C.5 Repeated Grid Disturbance in Tipaimukh area of Manipur Power System:

[\(Ref: Agenda B.14 | 89th PCCM | 21st April 2026\)](#)

Deliberation in 89th PCC meeting:

NERLDC apprised that non-operation of protection system at Tipaimukh substation remains a long pending issue and causing frequent GD's at Tipaimukh.

Forum noted that MSPCL needs to ensure DR downloading facility at Tipaimukh & perform proper fault analysis. Additionally, MSPCL should perform the necessary testing of the CB at Tipaimukh at the earliest.

MSPCL informed that laptops have been procured and will be distributed to each substation shortly, after which, system for DR downloading and sharing will be put in place. Further he mentioned that accessing Tipaimukh substation is difficult to due to prevailing Law and Order situation in the state.

Deliberation

MSPCL informed that CB will be replaced at Tipaimukh, however, due to prevailing law and order situation in Tipaimukh area, engineers are not able to visit the site for carrying out necessary activities.

MS NERPC told the Manipur to take up the matter once situation is improved as no party is ready to visit the substation.

The Sub-committee noted as above

Action: MSPCL

C.6 Repeated tripping of 132 kV Doyang-Sanis Line during March'2026:

[\(Ref: Agenda B.15 | 89th PCCM | 21st April 2026\)](#)

Deliberation in 89th PCC meeting:

Powergrid informed that there might be issue with Analog signal inputs to the relay which should be tested thoroughly.

DoP Nagaland expressed its inability to carry out the relay test on its own and requested the forum for necessary assistance. MS NERPC requested Powergrid to extend necessary support to DoP Nagaland for the testing. Powergrid requested Nagaland to send a formal request to them in this regard.

Status of CVT installation to be updated by DoP Nagaland.

Deliberation

Officials of POWERGRID visited Sanis SS.

Following are the observations of 7SR1004 relay installed in 132 kV Sanis- Doyang Line at Sanis end.

1. The CT polarity of the relay was reversed.
2. In relay settings, only derived earth fault was enabled but the wiring was done for SEF.

All the discrepancies have been rectified and testing for O/C and E/F were carried out in presence of DOP Nagaland.

The Sub-committee noted as above

C.7 Repeated tripping of 220 kV Misa-Kopili 2 & 3 Lines:

[\(Ref: Agenda 2.2 | 238th OCCM | 15th May 2026\)](#)

Deliberation in 238th OCC:

NEEPCO apprised the forum that there may be issues related to the BCU associated with the Kopili–Misa-2 and Kopili–Misa-3 lines. NEEPCO informed that the matter has already been taken up with M/s GE Vernova and representatives from the OEM are expected to visit by the last week of the month for detailed examination of the issue. NEEPCO further informed that, based on the observations during the visit, the status and further course of action would be intimated to NERPC and NERLDC. MS, NERPC directed that the matter may also be deliberated in detail during the upcoming PCC meeting of NERPC for further review and necessary action.

Action: NEEPCO to coordinate with M/s GE Vernova for detailed examination of the BCU issues associated with Kopili–Misa-2 and Kopili–Misa-3 lines and update NERPC and NERLDC. The matter shall also be deliberated in the upcoming PCC meeting of NERPC.

Deliberation

NEEPCO informed that OEM will visit the site by July'26 end / Aug'26 first week.

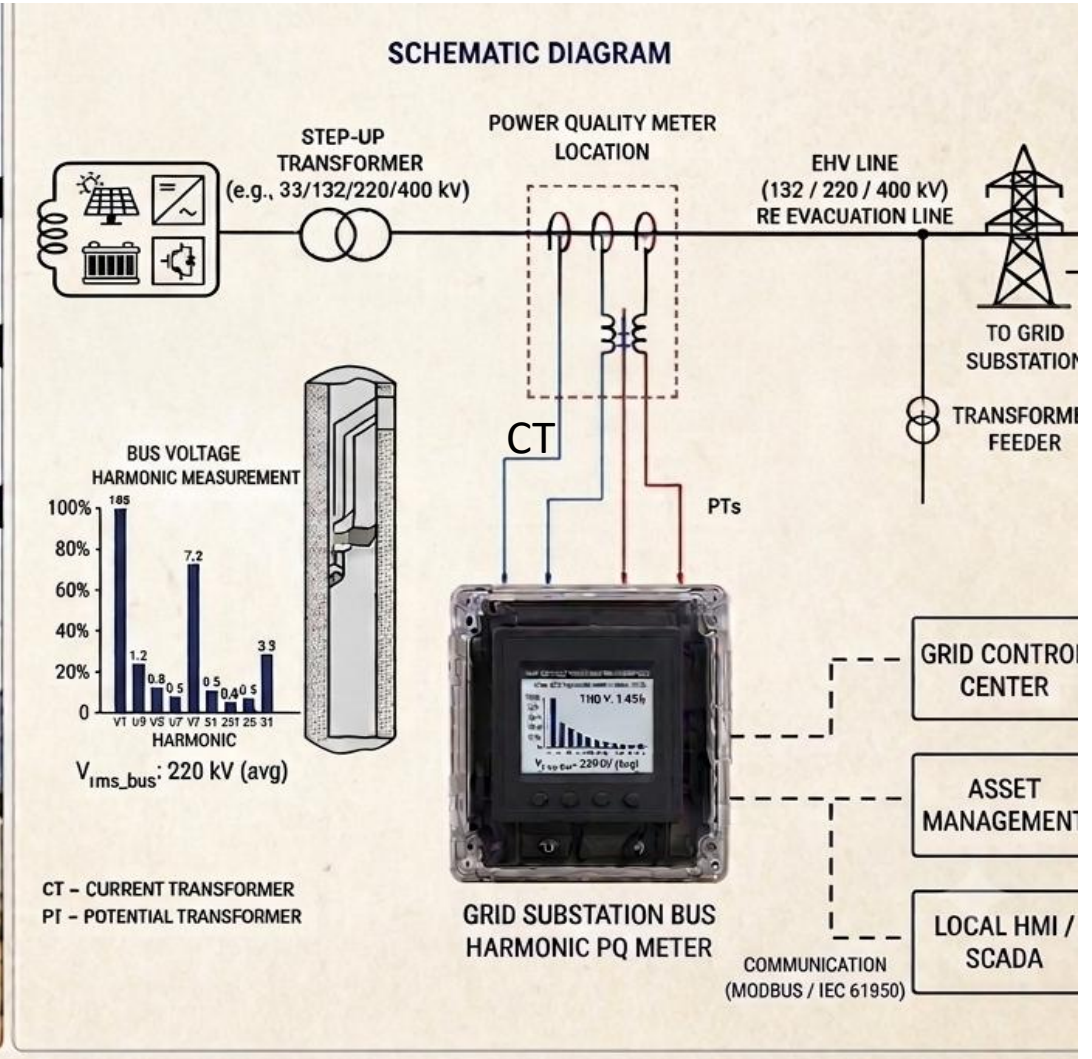
The Sub-committee noted as above

Action: NEEPCO

List of Participants in the 90th PCC Meeting held on 23.06.2026

SN	Name & Designation	Organization
1	Sh. M.Pertin, EE (E)	Ar. Pradesh
2	Sh. H.Habung, AE (E)	Ar. Pradesh
3	Sh. Himangshu Das, DGM, APGCL	Assam
4	Sh. K. Kalita, Dy.Mgr, AEGCL	Assam
5	Sh. Ridip Dutta, Dy.Mgr, AEGCL	Assam
6	Sh. K.H.Rolo, Mgr,MSPCL	Manipur
7	Sh. Kh.Chandrakumar Singh, JE, SLDC,MSPCL	Manipur
8	Sh. C.Chawngzikpuia, SDO	Mizoram
9	Sh. K.Kynjing, AEE, MePTCL	Meghalaya
10	Sh. Namheu Khate, EE (T)	Nagaland
11	Sh. S.I.Asangba Tikhir, EE, SLDC	Nagaland
12	Sh. Shuwatho Katiry, JE (E)	Nagaland
13	Sh. P.Tiakaba Yimchunger, JE, SLDC	Nagaland
14	Sh. Santanu Das, DGM, TPTL	Tripura
15	Sh. Somara Lakra, GM I/c	NERLDC
16	Ms. Subhra Ghosh, AM	NERLDC
17	Sh. Bastov Saikia, Engineer	NERLDC
18	Sh. Mintu Mandal, Ch.Mgr (SO-RT)	NERLDC
19	Sh. Manash Jyoti Baishya, Ch.Mgr	PGCIL
20	Sh. Ashim Kr.Sarmah, DGM (Tech.)	NEEPCO
21	Sh. Bhaskar Mazumder, DGM (T)	NEEPCO
22	Sh. Suresh Kammila, Shift-Incharge	OTPC
23	Sh. Niranjan Rabha, I/c-NETC, Guwahati	NETC
24	Sh. Ranjib Maity, Sr. Engineer	PRDC
25	Sh. Sudip Chanda, Engineer	PRDC
26	Sh. B.Lyngkhai, Member Secretary	NERPC
27	Sh. Veerandranath Muncha, Director	NERPC
28	Smti Kanchan Chauhan, Dy.Director	NERPC
29	Sh. Vikash Shankar, Asst. Director	NERPC

Guidelines for Harmonics Measurements at Transmission Level



Introduction & Regulatory Framework

Draft GUIDELINES FOR HARMONICS MEASUREMENTS AT TRANSMISSION LEVEL



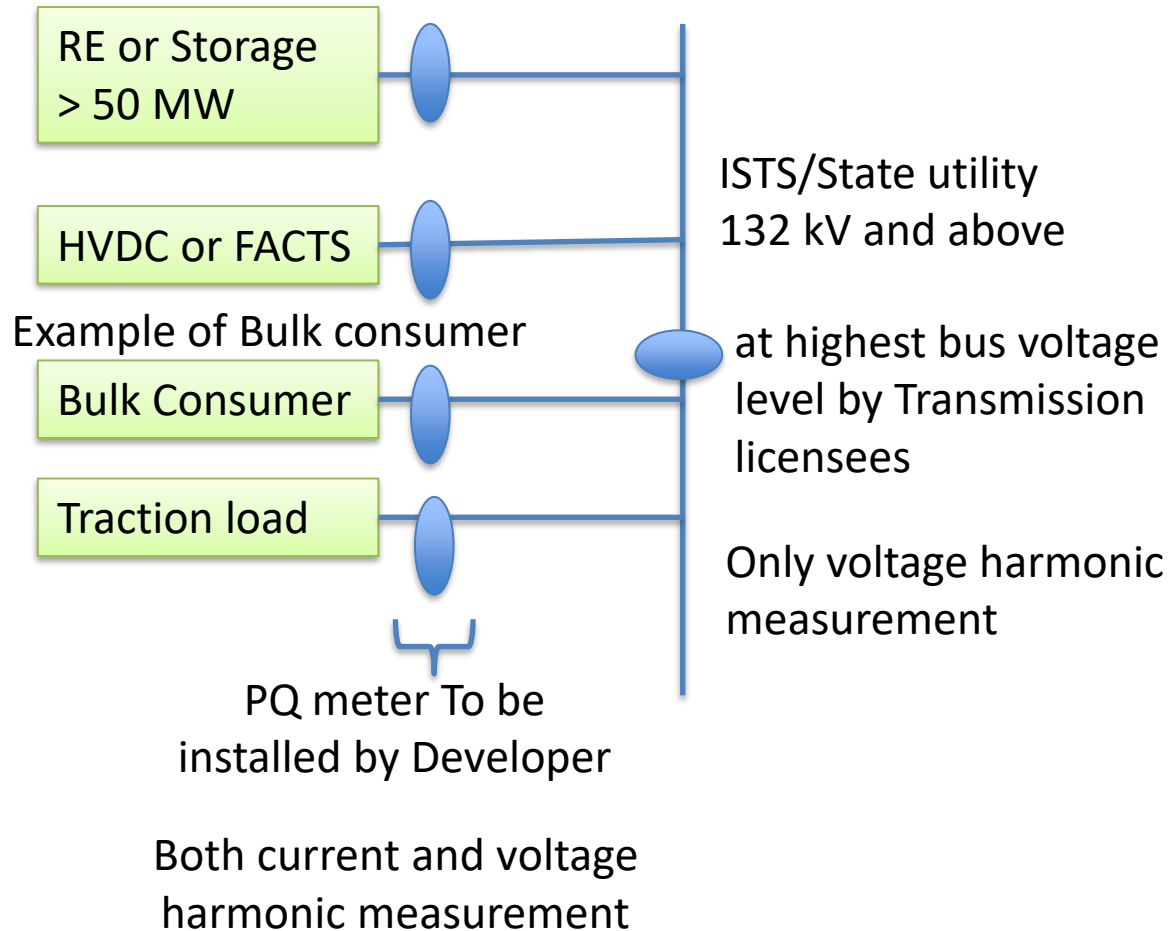
Draft is prepared in line with:

1. Based on CEA Grid Standards and Connectivity Regulations (2007 & amendments)
2. CEA (Grid Standards) Regulations, 2010
3. CEA (Technical Standards for Construction of Electrical Plants and Electric Lines), 2022 & amendments

Following principal of:

1. Harmonic limits as per IEEE 519 and IEC standards
2. IEEE-2800

Scope & Applicability



**CEA Meeting Direction
(01.07.2024):** Harmonics
measurement at ALL ISTS
substations; PQ meters to be
included in bidding documents
for upcoming ISTS substations;

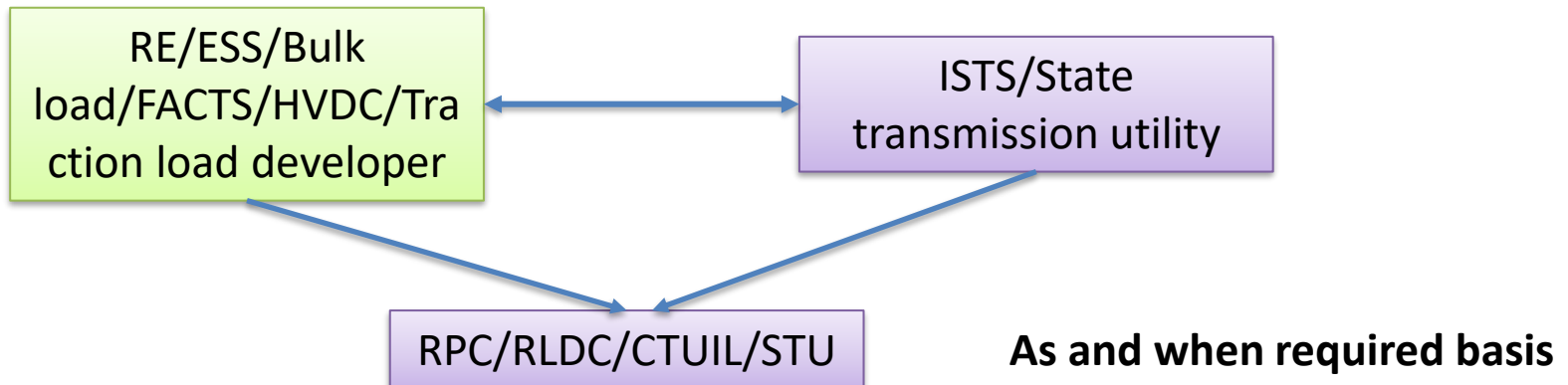
Timeline

- For new project
commissioned after 1st
April 2027 shall follow this
- Existing project shall
complete the installation
following above criteria by
31st Mar 2030

Key Features

It streamlines:

- Equipment accuracy classes
- Parameter to be measured.
- Time window of measurement
- Data retention and submission guideline
- Report formats
- Data sharing



Voltage Harmonic Limits (CEA Grid Standards)

CEA (Grid Standards) Regulations, 2010 - Voltage Waveform Quality Limits:

System Voltage (kV rms)	Total Harmonic Distortion (%)	Individual Harmonic (%)
765 kV	1.5%	1.0%
400 kV	2.0%	1.5%
220 kV	2.5%	2.0%
33 kV to 132 kV	5.0%	3.0%

VTHD Formula: $V_{THD} = \sqrt{\sum_{n=2}^{40} V_n^2 / V_1^2} \times 100\%$

Where: '1' = fundamental frequency (50 Hz), 'n' = harmonic of nth order (50 x n Hz)

IEEE 519 & Applicable Standards

IEEE 519-2022: Current Distortion Limits at PCC

- Applies to installations with harmonic-producing loads at PCC
- For inverter-based resources: IEEE Std 1547-2018 or IEEE Std 2800-2022 applies
- Inverter-based generation: Decision tree in IEEE 519-2022 Figure 1 determines applicability
- HVDC installations: Individual harmonic limits may be increased by multiplying factor when lower-order harmonics are reduced

Applicable Standards Reference:

- IEEE 519-2022: Harmonic Control in Electric Power Systems
- IEC 61000-4-7: Measurement techniques for harmonics & inter-harmonics (Class I)
- IEC 61000-4-30 Class A: Power quality measurement methods
- IEC 61000-3-7 (2008): Emission limits for fluctuating loads in medium/high voltage systems
- IEEE 1453-2022 & IEC 61000-4-15: Flicker measurement
- IEEE 2800-2022: Inverter-based resources interconnection

Measurement Locations

A. Transmission Substations (132 kV and above)

Install P-Q meter on highest voltage level bus where the following are directly connected:

- 50 MW or more (aggregated) Wind/Solar/Inverter-based/Hybrid/Energy Storage
- Any HVDC or FACTS device
- Bulk consumer
- Traction load

Measurement type: Continuous voltage harmonic measurement with respect to bus voltage

Responsibility- Transmission substation owner/ In case of multiple owners Transmission license with highest number of bay will install and maintain.

B. Inverter-Interfaced Load or Generation Stations

Developer (Wind/Solar PV/Hybrid/ESS/Bulk load) shall install PQ meter at their own substation on lines connecting plant to Point of Interconnection (POI)

Measurement type: Continuous measurement of both voltage and current harmonics

Responsibility- Developer of (Wind/Solar PV/Hybrid/ESS/Bulk load)

Parameters to be Measured (IEEE 519)

VOLTAGE Measurements:

- Total Harmonic Distortion (THD): Daily 99th percentile very short time (3 s) + Weekly 95th percentile short time (10 min)
- Individual Harmonic Distortion: Daily 99th percentile very short time (3 s) + Weekly 95th percentile short time (10 min)
- Flicker: Weekly Short-term Pst (10 min) 95th & 99th percentile + Weekly Long-term Plt (2-hour) 95th & 99th percentile

CURRENT Measurements:

- THD/TDD: Daily 99th percentile (3 s) + Weekly 99th percentile (10 min) + Weekly 95th percentile (10 min)
- Individual Harmonic Distortion: Daily 99th percentile (3 s) + Weekly 99th & 95th percentile (10 min)
- DC Component in Current at rated current

Base Current for TDD Calculation (IEEE 519):

- RE plants: Rated current (AC side, per IEEE 2800) | HVDC/FACTS: Rated current (IEEE 519) | Bulk load: Rated load current | Traction: Maximum demand current (last 1 year data)

Period & Duration of Measurement

Continuous Measurement (Primary Requirement):

- Measurement shall be carried out continuously once PQ meters are installed
- Any breakdown of measurement device to be reported in the annual report
- Aggregation: Very short time (3 s) values accumulated daily; short time (10 min) values accumulated weekly as per IEEE 519-2022

Interim Period (Until PQ Meters Installed):

- Annual measurement through accredited third-party agency (schedule to be finalized in RPC)
- Once during peak RE generation season; minimum duration: 7 days continuously
- If concerned parties desired to witness the measurement; additional measurement within 5 working days on written request
- RPC/RLDC/SLDC may advise additional measurement as and when required

Measurement Methodology

Testing Agency:

- Transmission substation owner shall engage a NABL/IEC accredited third-party testing agency

Measurement Standards:

- IEC 61000-4-7 Class I: Measurement techniques for harmonics & inter-harmonics
- IEC 61000-4-30 Class A: Power quality measurement methods
- Measurement window width and statistical methodology as per IEEE Std 519 (latest amendment), in line with CEA regulations

Data Aggregation:

- 'Flagging' concept per IEC 61000-4-30 (latest amendment)
- Harmonic values during voltage dips, swells, or interruptions shall be EXCLUDED from statistical analysis (95th/99th percentile calculations)
- Prevents fault events from skewing steady-state harmonic compliance results (per CIGRE TB 596)

Instrumentation Requirements

Accuracy Class Requirements:

- Instruments must comply with IEC 61000-4-7 and IEC 61000-4-30 Class A (latest amendment at time of installation)
- Class A instruments: Measurements required at minimum up to the 50th harmonic order

Functional Requirements:

- Auto report generation facility for daily and weekly reports of Harmonics/Flicker/DC currents as per IEEE 519/IEC 61000 (latest amendment)
- Reports must be quickly submittable to SLDC/RLDC/RPC/CTUIL/STU/RE developer
- Time synchronization via GPS with timestamp accuracy better than 1 ms
- GPS synchronization ensures correlation of events between different grid nodes

Data Formats:

- COMTRADE or PQDIF (Power Quality Data Interchange Format) for raw data storage
- Software details for viewing raw files shall be provided with every submission

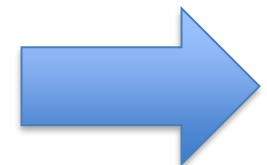
Data Retention & Report Submission

Data Retention Schedule (as per IEEE 2800):

- Very short-term harmonics (3 s intervals): Retain for 10 Days
- Short-term harmonics (10 min intervals): Retain for 90 Days
- Long-term harmonics (95th weekly percentile per IEEE 519): Retain for 1 Year
- All raw files in COMTRADE or PQDIF format

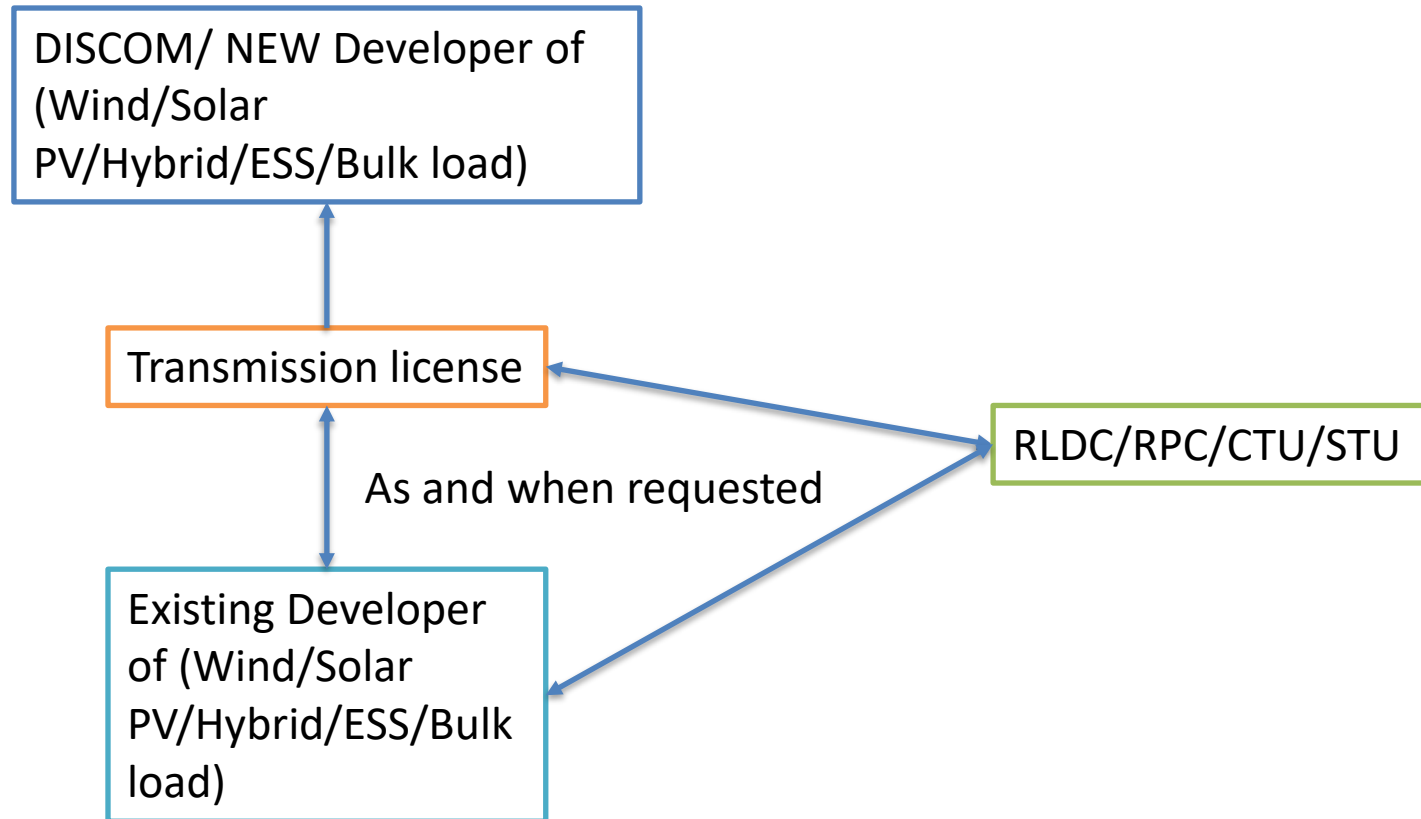
Report Contents (Mandatory):

- Trends: Voltage, Current, Power (HV side equivalent with PT/CT scaling)
- Voltage THD & individual harmonics (both 95th and 99th percentile) per IEEE 519
- TDD & individual current harmonics (95th and 99th percentile); DC injection trend; Flicker trend
- Individual harmonic power flow for violating harmonic orders (IEC 61000-4-7 latest)
- Raw CSV and raw meter files; CT details with photographs; sample calculations of 99th/95th percentile and TDD values
- Daily V/I/P/PF summary (min, max, avg) at measurement point; harmonic analysis by time of day



Data Sharing & Review

Data Sharing Obligations:



Document Review:

- This document (Revision R0) will be reviewed by NPC/CEA periodically and updated in light of new standards, technologies, or operational experience
- In case of any inconsistency, provisions of CEA Regulations shall prevail

Thank You

Annexure Power Quality Test Report Format

Power quality measurement report to be submitted in the following format.

Test Report Number:			
1.	Name and address of Transmission substation :		
2.	Reference: - Service request form number: Date of receipt of EUT:		
3.	Location of testing :		
4.	Testing Detail: - Date of issue: Date of testing:		
4.	Duration of testing:		
5.	Description of Measurement: - Measurement Point (PCC):		
6.	Environmental conditions of measurements: Temperature: Relative humidity:		
7.	Witnessed by :		
8.	Description of Power Quality Analyzer used for testing:		
	Power Quality Analyzer	Calibration valid up to	Calibration Details
	Power Quality & Energy Analyzer Make: XXXXX Model: XXXX Sr. No.: XXXXXX EI No.: - XXXX	DD-MM-YYYY	Voltage Harmonic, Current Harmonic, Flicker, DC Current Injection
9.	Measurement Procedure		

In addition to above, Measurement standard followed, measurement instrument connection details may also be included.

10. Electrical: Power Supplies & Stabilizers

10.1 Measurement

A. For Voltage Circuit PQ Parameter Measurement

1. Daily Total Harmonic Distortion in Voltage circuit (THD) for Very short

time (3second) values 99th percentile:

Day	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks
1					
2					
3					
4					
5					
6					
7					

2. Weekly Total Harmonic Distortion in Voltage circuit (THD) for short time (10minute) values 95th percentile:

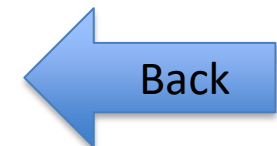
Recommended limit as per Standard IEEE 519-2022(%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks



3. Individual Voltage Harmonic distortion measurement for very short time (3second)
values 99th percentile

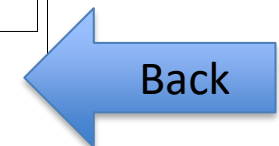
Day 1

3.Individual Voltage Harmonic distortion measurement for very short time (3second) values 99th										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Odd Harmonics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	R e m a r k
2					3					
4					5					
6					7					
8					9					
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40					41					
42					43					
44					45					
46					47					
48					49					
50										



4. Weekly Individual Voltage Harmonic distortion measurement for short time (10 Minutes) values 95th percentile

4.Individual Voltage Harmonic distortion measurement for short time (10 Minutes) values 95th										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
2					3					
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48					49					
50										



Flicker Measurement

1. 1. Weekly value of Short term Flicker (Pst) measurement values 95th percentile:

Recommended limit as per Standard IEEE 1453-2022 & IEC 61000-4-15 IEC 61000-3-7 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks

2. Long term Flicker (Plt) measurement values 95th percentile:

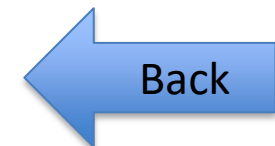
Recommended limit as per Standard IEEE 1453-2022 & IEC 61000-4-15 IEC 61000-3-7 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks

3. Short term Flicker (Pst) measurement values 99th percentile:

Recommended limit as per Standard IEEE 1453-2022 & IEC 61000-4-15 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks

4. Long term Flicker (Plt) measurement values 99th percentile:

Recommended limit as per Standard IEEE 1453-2022 & IEC 61000-4-15 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks



B. For Current Circuit PQ Parameter Measurement

1. Total Harmonic Distortion in Current circuit (THD)/ Total Demand Distortion in Current circuit (TDD) for Very short time (3second) values 99th percentile:

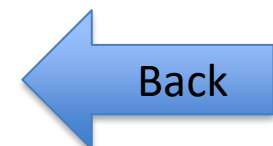
Day	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks
1					
2					
3					
4					
5					
6					
7					

2. Weekly Total Harmonic Distortion in Current circuit (THD)/ Total Demand Distortion in Current circuit (TDD) for short time (10Minute) values 99th percentile:

Recommended limit as per Standard IEEE 519-2022(%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks

3. Weekly Total Harmonic Distortion in Current circuit (THD)/ Total Demand Distortion in Current circuit (TDD) for short time (10Minute) values 95th percentile:

Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks



4. Individual Current Harmonic distortion measurement for very short time (3second)
values 99th percentile:

Day 1

4. Individual Current Harmonic distortion measurement for very short time (3second) values 99th percentile										
Even Harmonics	Recommended limit as per Standard IEEE 519-2022(%)	R Phase (%)	Y Phase (%)	B Phase (%)	Odd Harmonics	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remark
2					3					
4					5					
6					7					
8					9					
10					11					
12					13					
14					15					
16					17					
18					19					
20					21					
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48					49					
50										



5. Individual Current Harmonic distortion measurement for short time
(10minute) values 99th percentile:

5. Individual Current Harmonic distortion measurement for short time (10 minute) values 99th percentile										
Even Harmonics	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Odd Harmonics	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remark
2					3					
4					5					
6					7					
8					9					
10					11					
12					13					
14					15					
16					17					
18					19					
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36					37					
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40					41					
42					43					
44					45					
46					47					
48					49					
50										



6. Individual Current Harmonic distortion measurement for short time (10Minute) values
95th percentile:

6. Individual Current Harmonic distortion measurement for short time (10 minute) values 95th percentile										
Even Harmonics	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Odd Harmonics	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks
2					3					
4					5					
6					7					
8					9					
10					11					
12					13					
14					15					
16					17					
18					19					
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42					43					
44					45					
46					47					
48					49					
50										



7. DC Current Injection

Percentage of Full load rated current at POI	Recommended limit as per CEA 2013 standard and amendment	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks
Maximum/rated current					



**Grid Controller of India Ltd.
National Load Despatch Centre (NLDC)**



Draft
GUIDELINES FOR HARMONICS MEASUREMENTS
AT TRANSMISSION LEVEL



Revision-R0

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GUIDELINES FOR HARMONICS MEASUREMENTS

AT TRANSMISSION LEVEL

1. Introduction

A. Standards for power quality as stipulated in various CEA standards are quoted below:

1. For generating station:

Part II B. of Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2013 & 2019 mandates wind generating stations, generating stations using inverters, wind - solar photo voltaic hybrid systems and energy storage systems to restrict harmonic, direct current and flicker injection as per following clauses:

“B1. Requirements with respect to Harmonics, Direct Current (DC) Injection and Flicker

- 1) Harmonic current injections from a generating station shall not exceed the limits specified in Institute of Electrical and Electronics Engineers (IEEE) Standard 519*.
- 2) The Generating station shall not inject DC current greater than 0.5 % of the full rated output at the interconnection point.
- 3) The generating station shall not introduce flicker beyond the limits specified in IEC 61000*. Provided that the standards for flicker will come into effect from 1st April 2014.”

2. For Bulk load and Discom:

Part IV of Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2013 & 2019 mandates for Bulk consumer and distribution system:

“3) Voltage and Current Harmonics. - (i) The limits of voltage harmonics by the distribution licensee in its electricity system, the limits of injection of current harmonics by bulk consumers, point of harmonic measurement, i.e., point of common coupling, method of harmonic measurement and other related matters, shall be in accordance with the IEEE 519-2014 standards, as amended from time to time;”

3. For Transmission licensees:

3(2) of CEA (Grid Standards) Regulations, 2010 specified that:

“the transmission licensee shall ensure that the voltage wave-form quality is maintained at all points in the Grid by observing the limits given in Table below-

S.No.	System Voltage (kV rms)	Total Harmonic Distortion (%)	Individual Harmonic of any particular Frequency (%)
1	765	1.5	1.0
2	400	2.0	1.5
3	220	2.5	2.0
4	33 to 132	5.0	3.0

Provided that the standard on Harmonic Distortion shall come into force concurrently with clause 3 of Part IV of the Schedule to the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007.

Explanation: For the purpose of this regulation, Total Harmonic Distortion (VTHD) expressed as percentage, shall be calculated as under-

$$V_{THD} = \sqrt{\sum_{n=2}^{n=40} \frac{V_n^2}{V_1^2}} \times 100$$

‘1’ refers to fundamental frequency (50 Hz)

‘n’ refers to the harmonic of nth order (corresponding frequency is 50 x n Hz).”

4. IEEE 519 current harmonics limits:

Further, it is mentioned in IEEE-519-2022 (IEEE Standard for Harmonic Control in Electric Power Systems) standard that:

“The current distortion limits shall apply to a user’s PCC primarily with harmonic producing loads. For installations with primarily inverter-based resources, users are directed to other applicable standards such as IEEE Std 1547-2018 or IEEE Std 2800-2022. For installations where there is a mix of both loads and inverter based resources, the decision tree in Figure 1 shows when IEEE Std 519 limits shall apply at the installation PCC.”

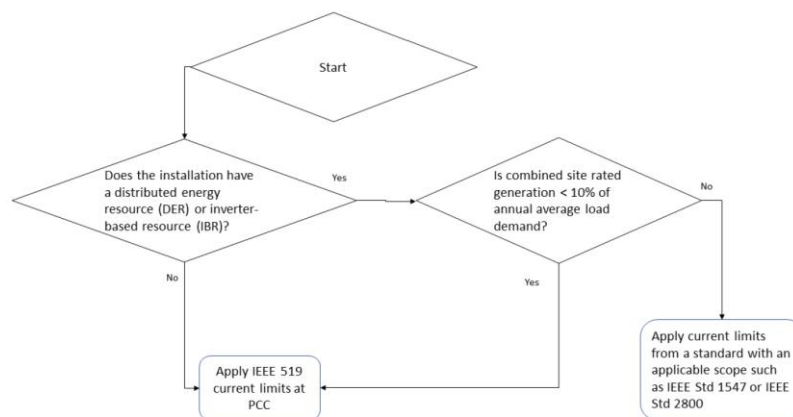


Figure 1 — Decision tree for applying current distortion limits at PCC

For HVDC installation the individual harmonic limits given in IEEE 519 may be increased by a multiplying factor when actions are taken by a user to reduce lower-order harmonics as per the multiplier mentioned in same standard.

B. Mandate for harmonics measurements as stipulated in various CEA standards are quoted below:

1. For generating stations

Part II B. of Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2013 & 2019 mandates wind generating stations, generating stations using inverters, wind - solar photo voltaic hybrid systems and energy storage systems to carry out measurement of Harmonics, Direct Current (DC) Injection and Flicker measurement as below:

“4) Measurement of harmonic content, DC injection and flicker shall be done at least once in a year in presence of the parties concerned and the indicative date for the same shall be mentioned in the connection agreement.

Provided that in addition to annual measurement, if distribution licensee or transmission licensee or the generating company, as the case may be, desires to measure harmonic content or DC-injection or flicker, it shall inform the other party in writing, and the measurement shall be carried out within 5 working days.”

2. For Bulk Load and DISCOM

Part IV of Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2013 & 2019 mandates for Bulk consumer and distribution system to measure harmonic as per following clauses:

“3 (ii) Measuring and metering of harmonics shall be a continuous process with meters complying with provisions of IEC 61000-4-30 Class A.

(iii) The data measured and metered as mentioned in sub-paragraph (ii) with regard to the harmonics, shall be available with distribution licensee and it shall also be shared with the consumer periodically.

(iv) The bulk consumer shall install power quality meter and share the recorded data thereof with the distribution licensee with such periodicity as may be specified by the appropriate Electricity Regulatory Commission: Provided that the existing bulk consumer shall comply with this provision within twelve months from the date of commencement of the Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2018.

(v) In addition to harmonics, periodic measurement of other power quality parameters such as voltage sag, swell, flicker, disruptions shall be done as per relevant International Electrotechnical Commission Standards by the distribution licensee and the reports thereof shall be shared with the consumer.

(vi) The distribution licensee shall install power quality meters in a phased manner within three years from the date of commencement of the Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2018 covering at least 33% of the 33 kV substations each year.”

3. For transmission licensees

Further as per the Minutes of the Meeting taken by the Chairperson, CEA on 01.07.2024, the following directions were issued regarding harmonic measurement and the installation of harmonic filters by Renewable Energy (RE)

generators:

“The measurement of harmonics shall be done at all ISTS substations, and the data may be shared with RE plants connected at these ISTS substations for better accuracy of simulation studies to assess the requirement of harmonic filters. CTUIL shall include the requirement for installation of PQ meters in the bidding documents for all upcoming ISTS substations. Further, for the existing ISTS substations, PQ meters shall be installed within a period of 6 to 8 months, and the ISTS substations currently under erection and commissioning shall also ensure installation of PQ meters at the time of commissioning.”

C. Mandate for mathematical modelling and studies for power quality

6(6) of Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 mentions that: “For inter-connection studies the requester shall make a request for connection in the planning stage to the Appropriate Transmission Utility. In case a requester is seeking inter-connection to a distribution system such a request will be made to the distribution licensee. The Appropriate Transmission Utility or distribution licensee shall carry out the inter connection study to determine the point of inter-connection, required inter-connection facilities and modifications required on the existing grids, if any, to accommodate the interconnection. The study may also address the transmission system capability, transient stability, voltage stability, losses, voltage regulation, harmonics, voltage flicker, electromagnetic transients, machine dynamics, ferro resonance, metering requirements, protective relaying, sub-station grounding and fault duties, as the case may be. Provided that in order to carry out the said study, the requester shall present the mathematical model of the equipment in accordance with the requirements as stipulated by the Appropriate Transmission Utility or distribution licensee, as the case may be”

With a view to ensuring uniform interpretation of the applicable national regulations and their alignment with relevant international standards, the following detailed guidelines have been prepared for reference. In the event of any inconsistency, the provisions of the CEA Regulations shall prevail.

2. Scope & Applicability

These guidelines apply to all Wind generating stations and generating stations using inverters, wind - solar photo voltaic hybrid systems and energy storage systems, transmission licensees i.e owner of ISTS/InSTS transmission substation (220 kV (132 kV for NER) and above) and Bulk consumer.

3. Guidelines:

3.1. Measurement Locations

A. Transmission substation

Owners of following transmission substations at 132 kV and above shall install P-Q meter on the highest voltage level bus of that substation where following are connected directly:

- 50 MW or more (aggregated capacity) Wind generating stations and generating stations using inverters, wind - solar photo voltaic hybrid systems and energy storage systems
- any HVDC or FACTS device
- Bulk consumer

- Traction load

At these transmission substations continuous measurement of voltage harmonic with respect to bus voltage to be done. with standard specification as mentioned in section 4 and measure voltage harmonics on continuous basis.

B. Inverter interfaced Load or generation stations

Developer of wind generating stations and generating stations using inverters, wind - solar photo voltaic hybrid systems and energy storage systems or bulk load shall install PQ meter with standard specification as mentioned in section 4 and measure both voltage and current harmonics on continuous basis. Owner of such asset shall install the P-Q meter at their own substation on the lines which are connecting the plant to the point of inter connection in the grid.

3.2 Timelines for installations of power quality meters

1. Wind generating stations, generating stations using inverters, wind - solar photo voltaic hybrid systems and energy storage systems to carry out measurement of Harmonics, Direct Current (DC) Injection and Flicker measurement on annual basis as mandated in the Central Electricity Authority (Technical Standards for Connectivity to the Grid).
2. Power quality meter shall be installed (before COD) for continuous monitoring of harmonics in new transmission/Inverter interfaced Load or generation stations commissioned post 01st April 2027.
3. For already commissioned transmission substations, a plan for phase-wise installation of power quality meters for continuous monitoring at selected transmission substations to be finalized in respective RPCs. Installation to be completed by 31st Mar 2030. In the interim period, a schedule for periodic measurement (through accredited agency) to be finalized in RPC.

3.3 Parameters to be measured

The following minimum parameters shall be measured and recorded as per IEEE 519 latest amendment:

Quantity	Total Harmonic Distortion	Individual Harmonic Distortion	Flickers
Voltage	1. Daily 99 th percentile very short time (3 s)	1. Daily 99 th percentile very short time (3 s)	1. Weekly Short-term Flicker (10 min) (Pst) 95 th & 99 th percentile.
	2. Weekly 95 th percentile short time (10 min)	2. Weekly 95 th percentile short time (10 min)	2. Weekly Long-term Flicker (2-hour) (Plt) 95 th and 99 th percentile
Current	1. Daily 99 th percentile very short time (3 s)	1. Daily 99 th percentile very short time (3 s)	1. Weekly Short-term Flicker (10 min) (Pst) 95 th and 99 th

			percentile.
	2. Weekly 99 th percentile short time (10 min)	2. Weekly 99 th percentile short time (10 min)	2. Weekly Long-term Flicker(2-hour) (Plt) 95 th and 99 th percentile
	3. Weekly 95 th percentile short time (10 min)	3. Weekly 95 th percentile short time (10 min)	

DC Component in Current at rated current

The format for submission of Power Quality Test Report is attached as Annexure. The recommended limits are as per relevant version of standards IEEE 519 -2022, IEC 61000-3-7: 2008-02, IEEE 1543-2022, IEEE 2800-2022, IEC 614000, CEA Technical standards and amendment thereof.

Base quantities for calculation of harmonic distortion will be determined as per IEEE 519 as amended from time to time. For clarity Base value of current of different feeders for calculation of distortion are listed below:

1. For feeders where RE plants are connected- Rated Current of Installed RE plants on the AC side as per installed capacity (as per IEEE 2800 and amendment thereof)-.
2. For HVDC/FACTS connected feeders- Rated Current of the HVDC/FACTS (as per IEEE 519 and amendment thereof)
3. Feeders where Bulk load are Connected-Rated load current of complete installed load (as per IEEE 519 and amendment thereof).
4. Feeders where Traction loads are connected- maximum demand load current under normal load operating conditions as per last one year data.

3.4 Period and Duration of Measurement

Measurement shall be carried out continuously. In case of breakdown of measurement device, the same shall be reported in annual report.

Till the time continuous measurement equipment are installed, Measurement shall be done once in every financial year. Once during peak RE generation season. Measurement shall be done at least for 7 days. Very short and short time harmonic values should be accumulated over periods of one day and one week respectively in line with IEEE Standard 519-2022 and amendment thereof. Other than this, RPC/RLDC/SLDC may advise for additional measurement as and when required.

3.5 Methodology

Transmission substation owner shall engage a third-party testing agency which NABL/IEC accredited and their report shall be submitted. The measurement methodology shall follow latest amendment of IEC 61000-4-7 Class I and IEC 61000-4-30 Class A and Measurement window width, the statistical methodology for measuring harmonic and inter harmonic values in this requirement shall follow latest amendment of IEEE Std 519 in line with CEA regulations. Data aggregation shall utilize the 'Flagging' concept as per latest amendment of IEC 61000-4-30. Harmonic values recorded during time intervals flagged for voltage dips, swells, or interruptions shall be excluded from the statistical analysis (95th/99th percentile calculations) to prevent fault events from skewing steady-state harmonic compliance results (CIGRE TB 596 Reference: Chapter 2, Section 2.2.1)

3.6 Notice & Necessary parties

Only During the interim period till meters are installed, measurement of harmonic content, DC injection and flicker shall be done at least once in a year in the presence of the parties concerned if desired by the parties.

- a) Measurement of harmonic content, DC injection and flicker shall be done at least once in a year in the presence of the parties concerned if desired by the parties.
- b) Provided that in addition to annual measurement, if distribution licensee or transmission licensee or the generating company, as the case may be, desires to measure harmonic content or DC-injection or flicker, it shall inform the other party in writing, and the measurement shall be carried out within 5 working days

3.7. Retention and Submission of Data & Submission of Reports

As per IEEE 2800 latest amendment:

Provision data type	Recording rate	Retention
Power quality—Very short-term harmonics (COMTRADE or PQDIF* format)	3 s	10 Days
Power quality—short-term harmonics (COMTRADE or PQDIF* format)	10 min	90 Days
Power quality—long-term harmonics (COMTRADE or PQDIF* format)	95 weekly percentile (per IEEE Std 519)	1 Year

*PQDIF-Power Quality Data Interchange Format.

Report Format:

- a) The following graphs to be included in the report:
 - Voltage trend (High voltage side equivalent value based on the point of measurement with appropriate scaling of PT ratio)
 - Current trend (High voltage side equivalent value based on the point of measurement with

appropriate scaling of CT ratio)

- Power trend (High voltage side equivalent value based on the point of measurement as above)
- Voltage THD and individual harmonic order (both 95th and 99th percentile) trend in line with IEEE 519 and amendment thereof
- TDD and individual harmonic order (both 95th and 99th percentile) trend in line with IEEE 519 and amendment thereof
- DC injection trend
- Flicker trend
- Individual harmonic power flow for violating harmonic orders as per 61000-4-7 latest edition.

b) Raw file .csv and raw meter file used for High voltage side measurements.

c) software details to view the raw file.

d) Sample calculation of 99th percentile value and 95th percentile value for voltage and current harmonics in excel.

e) Scale factor to scale the values to rated HV side voltage and current.

f) CT details along with photograph, used for testing

g) Sample calculation of TDD value (As per IEEE Std 519-2022 and amendment thereof).

h) Voltage, current, power (active and apparent) and power factor summary (min, max and avg) in day wise at point of measurement with base of respective HV side as the case may be, requested to use the scale factor value to convert the measured value to actual HV side equivalent value.

i) Analysis of Harmonics distortion during different part of the day, showing current trend and current THD trend

4. Instrumentation Requirements

Instruments used must comply with the specifications of IEC 61000-4-7 and IEC 61000-4-30 (as per latest amendment of these standards at the time of installation or periodic measurement), Class A. For Class A instruments, measurements are required to be made at least up to the 50th order. PQ meters should have auto report generation facility of daily and weekly reports of Harmonics/Flicker and DC currents as per IEEE519/IEC61000(latest amendment), so that it can be quickly submitted to SLDC/RLDC/RPC/CTUIL/STU/RE developer. All Power Quality monitoring devices must be time-synchronized via GPS to ensure a timestamp accuracy of better than 1 ms, enabling correlation of events between different nodes in the grid.

5. Data sharing

In addition to annual measurement, if distribution licensee or transmission licensee or the generating company or appropriate LDC or RPC, as the case may be, desires power quality report from the entities connected to its substation, the entity shall share the report.

Power quality report may be required by entities for filter design during connectivity stage. Transmission licensees of envisaged point of interconnection substations to share the power quality report on request. If RLDC/SLDC/RPC/CTUIL, desires power quality report from the transmission licensees, transmission licensees shall share the report.

6. Review/Update of this document

The above document would be reviewed by NPC/CEA periodically and update them in light of new standards/ technologies / on need basis/ based on experience.

Annexure Power Quality Test Report Format

Power quality measurement report to be submitted in the following format.

Test Report Number:			
1.	Name and address of Transmission substation :		
2.	Reference: - Service request form number: Date of receipt of EUT:		
3.	Location of testing :		
4.	Testing Detail: - Date of issue: Date of testing:		
4.	Duration of testing:		
5.	Description of Measurement: - Measurement Point (PCC):		
6.	Environmental conditions of measurements: Temperature: Relative humidity:		
7.	Witnessed by :		
8.	Description of Power Quality Analyzer used for testing:		
	Power Quality Analyzer	Calibration valid up to	Calibration Details
	Power Quality & Energy Analyzer Make: XXXXX Model: XXXX Sr. No.- XXXXXX EI No.: - XXXX	DD-MM-YYYY	Voltage Harmonic, Current Harmonic, Flicker, DC Current Injection
9.	Measurement Procedure		

In addition to above, Measurement standard followed, measurement instrument connection details may also be included.

10. Electrical: Power Supplies & Stabilizers

10.1 Measurement

A. For Voltage Circuit PQ Parameter Measurement

1. Daily Total Harmonic Distortion in Voltage circuit (THD) for Very short

time (3second) values 99th percentile:

Day	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks
1					
2					
3					
4					
5					
6					
7					

2. Weekly Total Harmonic Distortion in Voltage circuit (THD) for short time (10minute) values 95th percentile:

Recommended limit as per Standard IEEE 519-2022(%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks

**3. Individual Voltage Harmonic distortion measurement for very short time (3second)
values 99th percentile**

Day 1

3.Individual Voltage Harmonic distortion measurement for very short time (3second) values 99th										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
2					3					
4					5					
6					7					
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**3. Individual Voltage Harmonic distortion measurement for very short time (3second)
values 99th percentile**

Day 2

3.Individual Voltage Harmonic distortion measurement for very short time (3second) values 99th										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
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**3. Individual Voltage Harmonic distortion measurement for very short time (3second)
values 99th percentile**

Day 3

3.Individual Voltage Harmonic distortion measurement for very short time (3second) values 99th										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
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3. Individual Voltage Harmonic distortion measurement for very short time (3second)
values 99th percentile

Day 4

3.Individual Voltage Harmonic distortion measurement for very short time (3second) values 99th										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
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3. Individual Voltage Harmonic distortion measurement for very short time (3second)
values 99th percentile

Day 5

3.Individual Voltage Harmonic distortion measurement for very short time (3second) values 99th										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
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**3. Individual Voltage Harmonic distortion measurement for very short time (3second)
values 99th percentile**

Day 6

3.Individual Voltage Harmonic distortion measurement for very short time (3second) values 99th										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
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3. Individual Voltage Harmonic distortion measurement for very short time (3second)
values 99th percentile

Day 7

3.Individual Voltage Harmonic distortion measurement for very short time (3second) values 99th										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
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4. Weekly Individual Voltage Harmonic distortion measurement for short time (10 Minutes) values 95th percentile

4.Individual Voltage Harmonic distortion measurement for short time (10 Minutes) values 95th										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
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Flicker Measurement

1. 1. Weekly value of Short term Flicker (Pst) measurement values 95th percentile:

Recommended limit as per Standard IEEE 1453-2022 & IEC 61000-4-15 IEC 61000-3-7 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks

2. Long term Flicker (Plt) measurement values 95th percentile:

Recommended limit as per Standard IEEE 1453-2022 & IEC 61000-4-15 IEC 61000-3-7 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks

3. Short term Flicker (Pst) measurement values 99th percentile:

Recommended limit as per Standard IEEE 1453-2022 & IEC 61000-4-15 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks

4. Long term Flicker (Plt) measurement values 99th percentile:

Recommended limit as per Standard IEEE 1453-2022 & IEC 61000-4-15 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks

B. For Current Circuit PQ Parameter Measurement

1. Total Harmonic Distortion in Current circuit (THD)/ Total Demand Distortion in Current circuit (TDD) for Very short time (3second) values 99th percentile:

Day	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks
1					
2					
3					
4					
5					
6					
7					

2. Weekly Total Harmonic Distortion in Current circuit (THD)/ Total Demand Distortion in Current circuit (TDD) for short time (10Minute) values 99th percentile:

Recommended limit as per Standard IEEE 519-2022(%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks

3. Weekly Total Harmonic Distortion in Current circuit (THD)/ Total Demand Distortion in Current circuit (TDD) for short time (10Minute) values 95th percentile:

Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks

4. Individual Current Harmonic distortion measurement for very short time (3second) values 99th percentile:

Day 1

4. Individual Current Harmonic distortion measurement for very short time (3second) values 99th percentile										
Even Harmonics	Recommended limit as per Standard IEEE 519-2022(%)	R Phase (%)	Y Phase (%)	B Phase (%)	Odd Harmonics	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remark
2					3					
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**4. Individual Current Harmonic distortion measurement for very short time (3second)
values 99th percentile:**

Day 2

4. Individual Current Harmonic distortion measurement for very short time (3second) values 99th percentile										
Even Harmonics	Recommended limit as per Standard IEEE 519-2022(%)	R Phase (%)	Y Phase (%)	B Phase (%)	Odd Harmonics	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remark
2					3					
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4.Individual Current Harmonic distortion measurement for very short time (3second)
values 99th percentile:

Day 3

4. Individual Current Harmonic distortion measurement for very short time (3second) values 99th percentile										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
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4.Individual Current Harmonic distortion measurement for very short time (3second)
values 99th percentile:

Day 4

4. Individual Current Harmonic distortion measurement for very short time (3second) values 99th percentile										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
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4.Individual Current Harmonic distortion measurement for very short time (3second)
values 99th percentile:

Day 5

4. Individual Current Harmonic distortion measurement for very short time (3second) values 99th percentile										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
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4.Individual Current Harmonic distortion measurement for very short time (3second)
values 99th percentile:

Day 6

4. Individual Current Harmonic distortion measurement for very short time (3second) values 99th percentile										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022(%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmon ics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
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4. Individual Current Harmonic distortion measurement for very short time (3second) values 99th percentile:

Day 7

4. Individual Current Harmonic distortion measurement for very short time (3second) values 99th percentile										
Even Harmonics	Recommended limit as per Standard IEEE 519-2022(%)	R Phase (%)	Y Phase (%)	B Phase (%)	Odd Harmonics	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remark
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5. Individual Current Harmonic distortion measurement for short time (10minute) values 99th percentile:

5. Individual Current Harmonic distortion measurement for short time (10 minute) values 99th percentile										
Even Harmonics	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Odd Harmonics	Recommended limit as per Standard IEEE 519-2022 (%)	R Phase (%)	Y Phase (%)	B Phase (%)	Remark
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**6. Individual Current Harmonic distortion measurement for short time (10Minute) values
95th percentile:**

6. Individual Current Harmonic distortion measurement for short time (10 minute) values 95th percentile										
Even Harmonics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	Odd Harmonics	Recommend ed limit as per Standard IEEE 519-2022 (%)	R Pha se (%)	Y Pha se (%)	B Pha se (%)	R e m a r k
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7. DC Current Injection

Percentage of Full load rated current at POI	Recommended limit as per CEA 2013 standard and amendment	R Phase (%)	Y Phase (%)	B Phase (%)	Remarks
Maximum/rated current					

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Date: 27th May 2026; Time: 11 AM

The Director, NERPC welcomed all the participants to the monthly Grid Disturbance (GD) Discussion Meeting and requested NERLDC to take up the agenda items.

During April 2026, a total of 47 Grid Disturbance events were reported in the North Eastern Region. All the events were categorized as GD Category-I. Out of these, 41 disturbances were associated with radial networks. Among the radial network disturbances, Tuirial and Rengpang accounted for the highest number of incidents, with 13 and 12 occurrences, respectively.

Hence, the gist of the discussion is as follows:

-: Arunachal Pradesh power system: -

1. **GD at Khupi, Tenga & Dikshi areas of Arunachal on 22-04-2026:**

As per DR analysis, For the 132 kV Tenga–Khupi line fault, the Tenga end tripped on the operation of DP, Zone-II, Y-E, In: 1.3 kA protection with a fault clearance time of 430 msecs. At the Khupi end, circuit breaker opened due to Zone-I tripping in 70 msecs;

Simultaneously, the 400/132 kV ICT at Khupi tripped on the operation of Earth Fault Stage-II protection. The fault was detected by the P633 relay on the HV side of the ICT within 69 msecs.

Although the ICT tripping was correct as per the relay setting implemented. However, such high neutral current in the HV side need to be investigated.

The summary of the fault current in the ICT as tabulated below:

Current in Amps	HV (400 kV side)		LV (400 kV side)	
	Pre fault	Fault	Pre fault	Fault
R-Ph	18	192	55	56
Y-Ph	18	805	55	3095
B-Ph	17	162	53	152
Neutral	4	2857	-	-

Similar tripping also observed at **09:57 Hrs of 30-Apr-2026**.

Discussion: The concern official of DoP, Arunachal & NEEPCO was not present during the meeting. Hence, Director, NERPC decided to discuss the matter in the

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upcoming GD discussion meeting before the upcoming PCC meeting during June'26.

2. **GD at Along area of Arunachal on 21-04-2026:**

As per DR analysis, resistive R-Y fault (I_r -0.734 kA, I_y -0.707 kA) in 132 kV Basar-Along Line initiated at 16:46:56.240 hrs which was cleared within 421 msec from Basar end on operation of DP, ZII. From Along end, fault detected in ZI and trip command was issued, however CB failed to open at Along.

Consequently, fault was cleared by tripping of 132 kV Along-Pasighat line from Along end on operation of DP, ZIV within 259 msec resulted into the GD.

Action Point: DoP, Arunachal to complete the CB replacement work at Along substation at the earliest to avoid such events in future.

3. **GD at Daporijo & Basar areas of Arunachal on 22-04-2026:**

The GD occurred due to radial feeding of the Daporijo & Basar areas after the tripping of 132kV Basar-Along line at 09:23 Hrs of 22-04-2026.

At 09:28 Hrs & 17:17 Hrs of 22-04-2026, 132 kV Ziro-Daporijo line tripped resulted into the events.

Action Point: DoP, Arunachal to conduct line maintenance to avoid radial operation of the network.

4. **GD at Ziro areas of Arunachal on 25-04-2026:**

132 kV Panyor-Ziro line tripped at 09:19 hrs of 25-04-2026.

As per DR analysis of 132 kV Ziro-Daporijo Line, R-B-E fault (I_r -0.257 kA, I_b -0.35 kA, I_n -0.278 kA) initiated at 09:53:42.891 hrs which was cleared within 429 msec from Daporijo end on operation of DP, ZII.

Action Point: DoP, Arunachal to conduct line maintenance to avoid radial operation of the network.

-: Assam power system: -

1. **GD at Dhaligaon & radially fed areas of Assam on 09-04-2026:**

At 05:34 Hrs, 220/132 kV, ICT 1 at BTPS & 132 kV BTPS - Dhaligaon 1 Line tripped due to tree fallen over the line and snapped B- phase conductor.

While charging the Line-1 at 05:59 Hrs, ICT-2 also got tripped resulted into GD at Dhaligaon & radially fed areas.

As per AEGCL, due to absence of polarizing voltage, the DEF protection for the line issued a delayed tripping, but as EF protection for ICTs are not zero-sequence voltage polarized, the EF trip issued by ICT overlapped with the delayed tripping of the downstream line.

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Protection Issue:

Tripping of ICT's at LV side on EF stage (non-directional) seems unwanted during the line fault.

Action Taken by AEGCL:

51N protection (non-direction) at both sides of 220/132kV ICTs will be changed to Dir, E/F (67N) to prevent such overreaching in future.

Additionally, Director NERPC informed AEGCL to submit the DR &EL and Detailed report as per timeline mandated in the IEGC'23.

2. GD at Dispur area of Assam on 16-02-2026:

Dispur area of Assam power system connected to rest of NER grid through 132kV Kahilipara – Dispur Line and 132kV CTPS – Dispur line.

At 06:55 hrs of 27-04-2026, both lines got tripped resulting in grid disturbance due to the bus fault at 132 kV Single bus at Dispur.

Action Point for AEGCL: As the Bus arrangement is of single bus & devoid of Bus Bar protection at Dispur. Hence, it is recommended to modify Z IV time delay from 500 msec to 200 msec for faster fault clearance at Dispur bus in future.

-: Meghalaya power system: -

1. Umiam Stage IV of Meghalaya Power System on 21st and 29th April 2026:

For 21-April-2026:

As per system requirement, 132 kV Umtru – Sarusajai 1 & 2 line was radially connected from Umtru substation.

At 03:47 Hrs, LLLG fault of highly metallic nature likely caused due to lightning in 132 kV Umtru – Sarusajai I & 2 line. The fault cleared at Umtru end on Operation of ZI in 288 msec & 75 msec for line 1 & 2.

Multiple lines & Units tripped. However, no substation blackout was observed during the event.

For 29-April-2026:

At 04:19 Hrs, RBE fault of highly metallic nature likely caused due to lightning in 132 kV Umtru – Stage4 Line I & II line. The fault cleared from the end on Operation of ZI within 100 msec.

The unwanted tripping of 132kV Umtru – New Umtru line observed at New Umtru & Umtru end on operation of backup highest protection in 66 msec.

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Also, generating Unit tripped at Umiam Stage IV & New Umtru power station.

Protection/Operational issues observed:

The unwanted tripping of 132kV Umtru – New Umtru line & 132kV Umtru – EPIP II line observed at New Umtru & Umtru end on operation of backup highest protection in 66 msec & 100 msec. Also, generating Unit tripped at Umiam Stage IV & New Umtru power station.

Action taken by MePGCL:

As per Detailed report submitted, the overcurrent / earth fault ($I > 2$ and $I_N > 2$) settings of back up protection at New Umtru end for New Umtru- Umtru line have been disabled on 5th May 2026.

Also, the overcurrent / earth fault relay of Umtru-EPIP II (Line 1&2) will be replaced with a new numerical relay to determine the disturbance record.

Additionally action points for MePGCL:

Review the generator protection at Umtru & Umiam Stage IV units to avoid unit trippings during the line fault.

Avoid such Highset line tripping in future in the MePGCL own bays.

2. Phulbari area of Meghalaya on 29-04-2026:

Phulbari area of Meghalaya is connected with rest of the grid with 132 kV Ampati-Phulbari I & II lines.

At 05:11 Hrs of 29-04-2026, 132 kV Ampati-Phulbari I & II lines tripped resulting in grid disturbance in Phulbari area of Meghalaya power system.

Root Cause of the Incident shared by MePTCL:

At the time of the incident, the area was experiencing heavy rainfall and lightning activity. At 05:13 Hrs, both circuits of the 132 kV Ampati–Phulbari Line-I & II tripped, resulting in the outage of the 132 kV Phulbari Substation.

Analysis of the disturbance records (DRs) revealed that Line-I tripped on Zone-I protection at both ends, with the fault located approximately 15.39 km from Ampati end and 38.53 km from Phulbari end. However, examination of the DR of the 132 kV Ampati–Phulbari Line-II indicated that although the relay detected the fault and picked up in Zone-III, it dropped off immediately before the Zone-III time delay elapsed, without issuing any trip command to the circuit breaker (CB-3).

Further analysis of the backup O/C and E/F relay DR confirmed that none of the protection elements operated or issued a trip command to the associated circuit breaker (CB-3). In this regard, it is suspected that stray signals may have inadvertently caused the tripping operation.

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It is also noted that the Line-II circuit breaker at the Phulbari end (CB-4) did not trip and was opened manually. Through relay testing (DR Transplay), the cause of the fault and the abnormal relay behaviour was investigated on the relays of the 132 kV Ampati–Phulbari Line-I and Ampati end during the second week of May 2026. The initial cause of the disturbance is attributed to lightning in the vicinity of the transmission line.

Action Point:

MePTCL informed that a detailed investigation at Ampati Substation will be carried out during the first week of June 2026 to ascertain the cause of the incident and abnormal relay operation.

3. Leshka HEP area of Meghalaya on 20-04-2026:

Leshka HEP of the Meghalaya is radially connected to the rest of the NER Grid via the 132 kV Leshka - Mynkre D/C lines.

At 21:12 hrs of 20-04-2026, 132 kV Leshka - Mynkre D/C lines tripped resulted the GD at Leshka HEP.

Action Point for MePTCL: TLSA may be implemented to avoid such trippings caused due to lightning fault.

-: Mizoram power system: -

1. Tuirial area of Mizoram in April'26:

GD occurred 13 times at Tuirial power station due to the tripping of radially connected 132 kV Kolasib – Tuirial line.

Action points for Mizoram:

Ensure the vegetation clearance for the line.

2. Zuangtui & radially connected areas of Mizoram in April'26:

On 10th & 27th April'26, GD occurred in the radially fed Zuangtui areas due to line fault in 132 kV Melriat(PG) – Zuangtui line.

However, on 7th April'26, 132 kV Melriat(PG) – Zuangtui line tripped at Zuangtui end during fault beyond the line probably in the reverse direction. As per the DR of Zuangtui end (P127 relay), slowly growing fault current observed multiple times in R-phase to ground (likely vegetation). However, no tripping confirmed from the DR. Maximum current in each as Ir: 650A, Iy: 107A, Ib:140A, IO: 435A.

As per P&ED, Mizoram: The P127 relay was non directional during the event.

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Action Point for P&ED, Mizoram: Ensure directionality of the backup relay at Zuangtui & share the backup relay setting to NERPC for review.

Additionally, Mizoram to complete the pending work related to the AR operation at Zuangtui for 132 kV Melriat(PG) – Zunagtui line at the earliest.

-: Manipur power system: -

1. Rengpang area of Manipur during April 2026:

12 numbers of GD observed at the Rengpang areas due to the fault in the 132 kV Loktak – Rengpang line.

Action Point for MSPCL:

Ensure vegetation clearance of the 132 kV Loktak -Rengpang line.

Additionally, restore the 132 kV Jiribam – Rengpang line which is under long outage since 17th Nov'23 due to Tower shifting required due to NHIDCL work.

-: Manipur & Nagaland power system: -

2. Gamphajol & Karong area of Manipur area during April 2026:

On 10th April'26, GD observed at the & Gamphajol Karong area due to the non-operation or delayed opening CB at Gamphajol for 132 kV Yurembam -Gamphajol line resulted into the ZIII tripping at Karong end of 132 kV Gamphajol – Karong line. Tripping at Kohima on ZIII seems unwanted.

Fault cleared from Kohima end on ZIII.

NERLDC highlighted due to the no submission of all the DR &EL, proper post fault analysis hampered at our end.

Action Point for MSPCL:

This was long pending issue and frequently creating GD's at Karong. Hence, MSPCL to ensure DR downloading facility, ensure timely submission of the DR & perform proper fault analysis.

Perform the necessary testing of the CB at Gamphajol & Karong at the earliest.

Action Point for DoP, Nagaland:

Enquire the reason for ZIII tripping at Kohima end of 132 kV Karong – Kohima line. Also, share the DR /EL of Kohima end for the tripping on 10th April'26.

-: Nagaland power system: -

1. **(Follow-up) Sanis & Wokha area of Nagaland during February & March 2026:**

DoP, Nagaland informed the installation of line CVT for Doyang line will be completed by the first week of May'26.

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DoP informed the installation of CVT was completed at Sanis.

Also, PGCIL informed us that the expert team will be visiting the Sanis S/S in the first week of June'26.

Action Point for DoP, Nagaland:

DoP to check the analog inputs of V & I should extend properly from the CT secondary to the relay inputs. PGCIL will provide possible assistance for the same.

2. (Follow-up) Frequent tripping of 132 kV Dimapur – Kohima line of Nagaland during February, March and April 2026:

DoP informed the forum that preventive maintenance of the 132 kV Dimapur–Kohima line could not be undertaken during the previous months due to repeated radial feeding arrangements for Kohima. As multiple feeding points are now available at Kohima, the preventive maintenance of the line will be carried out on 9th–10th June 2026.

-: Doyang power station: -

1. Doyang & radially fed areas of Nagaland on 22th April-2026:

Doyang HEP, Sanis and Wokha areas of Nagaland power were connected to rest of NER grid through 132 kV Doyang - Mokokchung line.

132 kV Dimapur Doyang –I tripped at 17:15 Hrs of 22-04-2026 and 132 kV Dimapur Doyang –II was under planned shutdown at 09:48 Hrs of 22-04-2026. Also, 132 kV Wokha-Chiephebozou line under long outage due to tower collapse.

At 17:32 Hrs on 22-04-2026, the 132 kV Doyang–Mokokchung line tripped. As per the disturbance record (DR) analysis, a B-phase to Neutral (B-N) fault ($I_b = 0.8$ kA, $I_n = 1.3$ kA) was initiated at 17:32:28.917 Hrs. The fault was initially detected in Zone-II/Zone-III and was subsequently cleared from the Doyang end within 140 msecs on the operation of Distance Protection (DP), Zone-I. At the Mokokchung end, the fault was cleared within 91 msecs on the operation of DP, Zone-I. Auto-reclosure (AR) was successful from the Mokokchung end.

During the tripping, AR not operated at Doyang for LG fault resulted into the loss of Doyang machines as well GD at Nagaland.

Action Point:

NEEPCO was advised to explore the implementation of an Auto-Reclosure (AR) scheme for single line-to-ground (LG) faults on the 132 kV Doyang–Mokokchung line at the Doyang end to minimize the impact of transient faults and avoid similar outages in the future.

-: Tripura power system: -

1. Dharmanagar area of Tripura on 5th, 19th & 26th April-2026:

The GD caused due to the radially nature of the network caused during the event. The single line tripping also caused GD in the Dharmanagar area of Assam. No Protection system related issues observed, however, NERLDC enquire about the non-implementation of the AR feature in the DPR at Tripura end. However, TPTL informed us the reason is due to Old CB's present at P K Bari & Dharmanagar.

Action Points for TPTL:

Ensure the healthiness of the 132kV Dharmanagar – PK Bari line.

Action Points for AEGCL:

Share the DR & EL for the Assam end of 132kV Dharmanagar – Dullavcherra line & share the Root cause Analysis.

2. Additional Points related to Tripura system:

I. Implementation of Auto recloser for important lines:

Check the feasibility of the Implementation of Autoreclose for 132 kV Surajamaninagar(NTL) - Surajamaninagar(TPTL) line & 132 kV Surajamaninagar(NTL) – Budhjungnagar line at the earliest for better system reliability of the Surajmaninagar & Comilla system during high demand period.

Action Points for TPTL: Will check the feasibility of AR scheme for the above-mentioned lines.

II. Disablement of the SPS at Monarchak:

NERLDC vide email dated 20th May'26 requested for disabling the SPS at Monarchak as the tripping of STG during the tripping of 132 kV Rokhia – Monarchak line & 132 kV Udaipur – Monarchak line is not required due to the availability of the new link from Monarchak – Rabindra nagarBagafa-Belonia-Udaipur.

NERLDC will keep the agenda for Decommissioning in the upcoming PCC meeting.

III. Decommissioning of the SPS at SM Nagar (TPTL):

NERLDC enquire about the status of the SPS as the same is requested to TPTL to dismantled in the 89th PCC meeting, TPTL.

Action Points for TPTL: To be Decommissioned soon.

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List of Participants:

Organization	Employee Name & Designation
NERPC, CEA	Veerandranath Muncha, Director Vikash Shankar, AEE/AD-I
NERLDC, GRID-INDIA	Subash Kumar, Manager Utpal Das, Deputy Manager Subhra Ghosh, Assistant Manager
NERTS, PGCIL	Manash Jyoti Baishya, Chief Manager
AEGCL	Jyoti Ranjan Baruah, AGM
P&ED, Mizoram	C Chawngzikpuia, SDO, MRT
MePTCL	Marak, RE, Nangalbibra
DoP, Nagaland	1. Er. Namheu Khatte EE Transmission 2. Er. Shuwato JE
TPTL (Tripura)	1. Er. Santanu Das, DGM (EHV Testing Cell) 2. Er. Anabik Shome, SM (EHV Testing Cell)

MSPCL:

" VC on Pre PCC meeting "

27/05/2026

~~Internal Protection committee meeting~~

Sl. No	Name of the Employee	Designation	Division	Signature
1	Jayela Habirban	JE (electrical)	SLDC	Jayela Habirban
2	Ranjit Kulkarni	D.G.M (SLDG)	SLDC	Ranjit Kulkarni
3	Rohin Dinson	DGM, SSD-III	SSD-III	Rohin Dinson
4	Er. Tapankumar Shome	DGM/SSD-II	SSD-II	Er. Tapankumar Shome
5	Huidrom Rakesh Meitei	Sr. Manager (SSD-II)	SSD-II	Huidrom Rakesh Meitei
6	Ch. Kailash	Jr. Engg (JE)	TD-IV	Ch. Kailash
7	Sh. Anilkumar	Asst. Manager	SLDC	Sh. Anilkumar
8	Pamei Ganchui	Manager	TD-II	Pamei Ganchui
9	GONMEI DINDY	Sr. Manager	TD-2	Gonmei Dindya

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Date: 12th June 2026; Time: 11 AM

The Director, NERPC welcomed all the participants to the monthly Grid Disturbance (GD) Discussion Meeting and urged the utilities to take necessary corrective actions on the issues discussed in previous GD meetings.

He also informed the participants about the upcoming Protection Training Programme being organized by NERPC from 30 June to 02 July 2026 and requested all utilities to ensure active participation.

Thereafter, he requested NERLDC to take up the agenda items for discussion.

NERLDC:

During May 2026, a total of 22 Grid Disturbance events were reported in the North-Eastern Region. All the events were categorized as GD Category-I. Out of these; 17 disturbances were associated with radial networks. Among the radial network

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disturbances, Tuirial and Rengpang accounted for the highest number of incidents, with 4 and 5 occurrences, respectively.

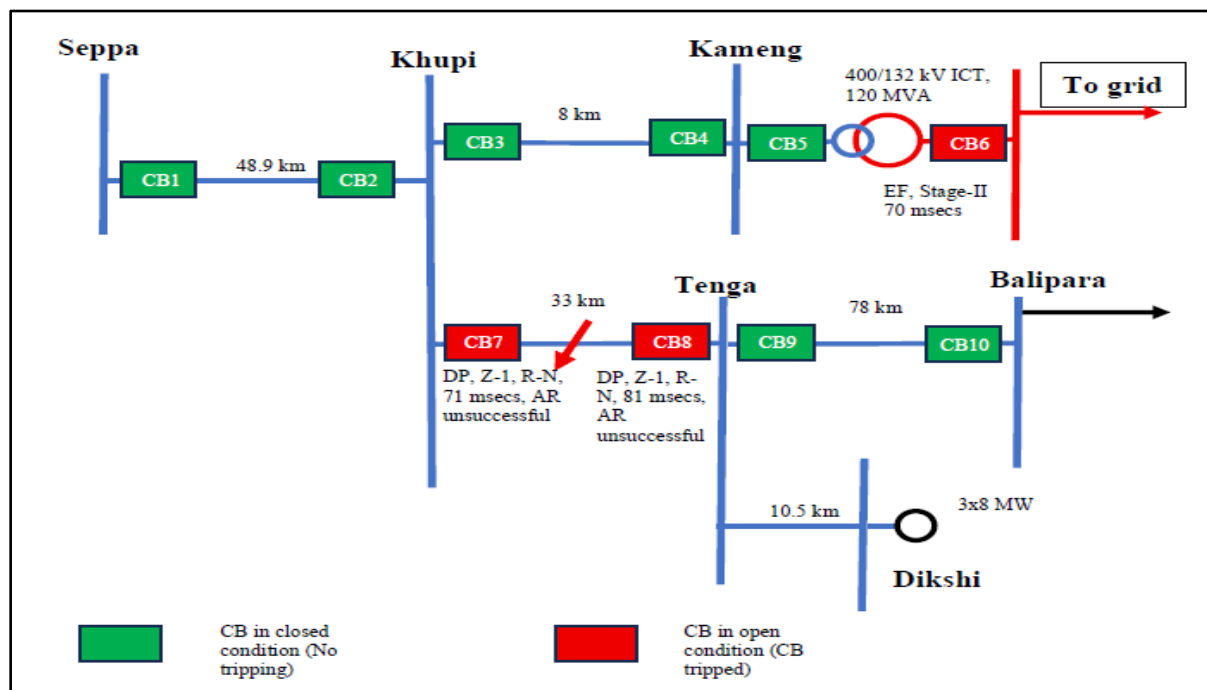
Hence, the gist of the discussion is as follows:

Arunachal Pradesh power system: -

1. GD at Khupi, Tenga & Dikshi areas of Arunachal on 21-05-2026:

As per DR analysis, R-N fault occurred in the Khuppi-Tenga line which was cleared from Tenga end in Zone-1 within 81 msecs and from Khuppi end in Zone-1 within 71 msecs. Auto-Reclose was attempted at both ends but failed to normalize the line as the fault persisted. Vegetation was found touching the R-phase conductor of the Tenga-Khuppi line near location 179.

400/132 kV ICT at Kameng tripped due to E/F within 70 msecs which is unwanted.



Similar tripping also observed at 22-Apr-2026, 30-Apr-2026 & 10-May-2026 as well.

Discussion:

It is understood that the 400/132 kV ICT is an autotransformer having common neutral for the 400 kV and 132 kV windings. During an earth fault in the 132 kV system, neutral current may return through the common neutral of the ICT. Accordingly, where the E/F protection derives current input from the neutral bushing CT (ratio: 200/1 A), the relay may record the neutral current corresponding to the 132 kV-side earth fault.

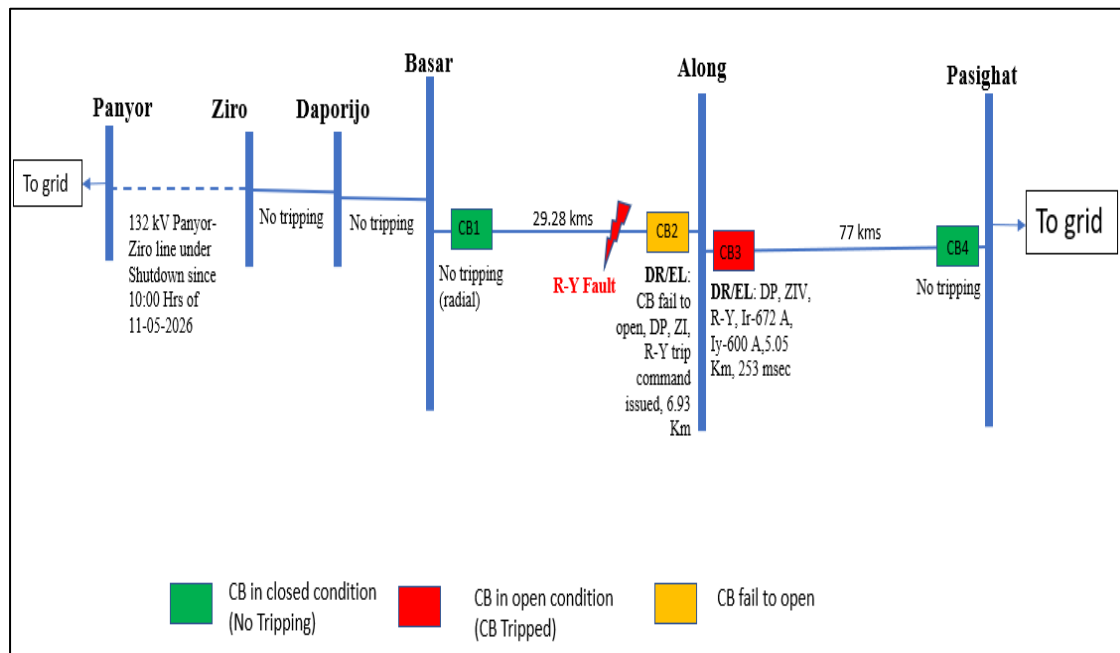
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Hence, the forum suggested NEEPCO to take the Backup OC & EF relay settings using the inputs from the Bay CT's at the HV side (CTR: 500/1) to avoid such unwanted EF Highset operation.

2. GD at Along, Basar, Daporijo and Ziro area of Arunachal Pradesh on 18-05-2026:

132 kV Panyor-Ziro is under Shutdown since 10:00 Hrs of 11-05-2026.

As per DR analysis, resistive R-Y fault (Ir-0.66 kA, Iy-0.60 kA) initiated at 04:05:51.590 hrs in 132 kV Basar-Along line. Fault detected in ZI from Along end and trip command was issued, however CB failed to open. Consequently, fault was cleared by tripping of 132 kV Along-Pasighat line from Along end on operation of DP, ZIV within 253 msec.



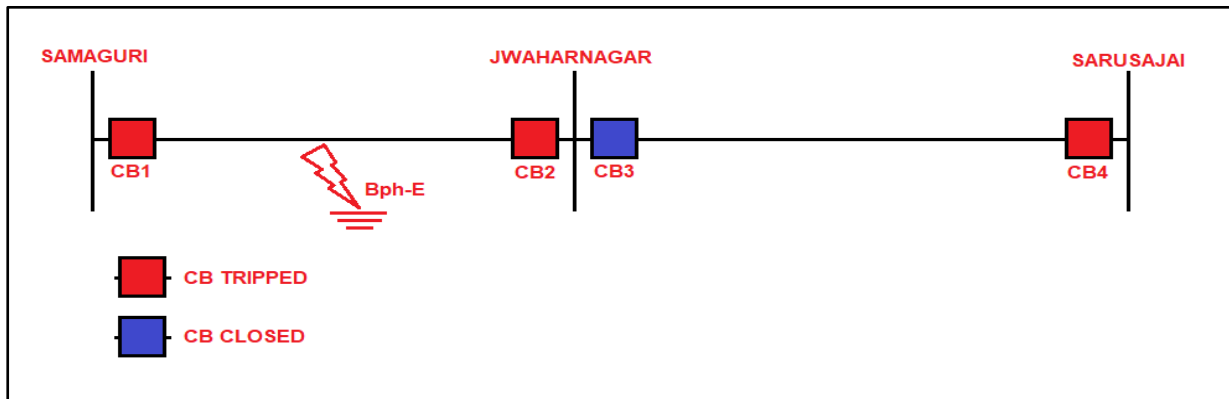
Protection issues observed: CB failed to open from Along end for 132 kV Basar line

Deliberation: Representative of DoP, AP informed the forum as the said CB replacement work is under progress. The replacement work of the CB will be completed by the end of June'2026.

Assam power system: -

1. GD at Jawaharnagar area of Assam on 14-05-2026: 220 kV Jawaharnagar- Samaguri line:

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As per DR analysis, high resistive R-N (Ir-1.6 kA, In-1.6 kA) fault in 220 kV Jawaharnagar-Samaguri line initiated at 12:09:44.836 hrs which was cleared within 854 msec from Samaguri end. Fault detected in ZI after 817 msec from initiation of fault at Samaguri end.

As per DR of Jawaharnagar end, fault present from the starting of the DR & 86 relay optd at 510 msec resulted into CB opening. However, no Main & backup protection function observed in the DR. As per FIR, tripped on EF operation at Jawaharnagar.

220 kV Jawaharnagar- Sarusajai line:

EF optd from Sarusajai end for 220 kV Jawaharnagar line in more than 1000 msec. Fault was present from the starting of the DR. The fault current gradually increased from 580 A to 1180 A in the neutral.

Protection issue: Backup relay coordination issue at Jawaharnagar.

Deliberation: AEGCL informed the forum that, the DEF TMS setting at Sarusajai end has been updated to 0.2 from 0.3 with respect to the fault current sensed during the fault.

Mizoram power system: -

1. **GD at Tuirial area of Mizoram in May'26:**

GD occurred 4 times at Tuirial power station due to the tripping of radially connected 132 kV Kolasib – Tuirial line.

In two instances i.e. on 15th & 24th May'26, operation of EF highest with 50-100 msec observed at Tuirial end.

Deliberation:

P&ED, Mizoram was requested to ensure regular vegetation clearance along the transmission line corridor to prevent line faults and outages.

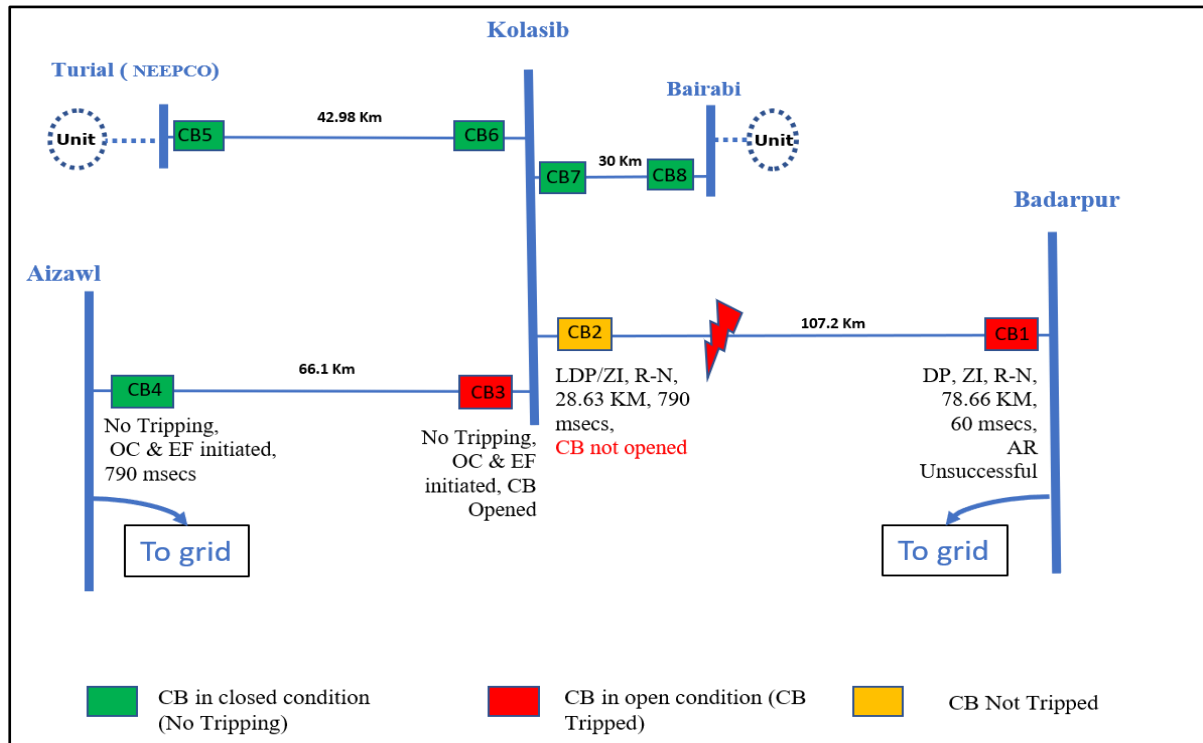
It was further noted that NEEPCO had been advised during the 85th PCCM held on 06 November 2025 to increase the high-set backup protection time delay at Tuirial to 200 msec. However, the recommendation has not yet been implemented.

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Accordingly, the forum reiterated its recommendation to increase the high-set backup time delay to 200 msecs, as faults beyond the 132 kV Kolasib–Tuorial line may otherwise result in unnecessary generation outages and adversely impact system reliability.

2. GD at Kolasib & radially fed areas of Mizoram in 10th-May'26:

Kolasib area is connected to the rest of the NER grid through 132kV Kolasib-Badarpur and 132kV Kolasib – Aizawl.



As per DR analysis of 132 kV Badarpur-Kolasib line, solid B-N fault (Ib-1.3 kA, In-1.1 kA) initiated at 05:39:06.672 hrs which cleared within 60 msecs from Badarpur end LDP protection. AR operated after 3 seconds & SOTF/TOR with the similar fault.

Also, the fault detected at 05:43:23.223 Hrs (4 min time drift) by the Main relay at Kolasib end in DP, ZI, R-E & issued the tripping command immediately, however the CB fails to open till 790 msecs from the Kolasib end.

As per DR analysis of 132 kV Aizawl-Kolasib line, ZIII & EF initiated at Aizawl end till 780-790 msecs. No tripping recorded at Aizawl end.

Also, at Kolasib end detected the reverse fault by P442 relay in OC & EF protection at 05:37 Hrs (2 min time drift) & CB opening observed in the DR of P543 relay at 05:34 Hrs (5 min time drift).

Tripping of CB-3 at Kolasib was not concluded. Also, the availability of the LBB relay yet to be confirmed.

Protection issues observed: Non-opening of the CB at Kolasib end of 132 kV Badarpur – Kolasib line.

Deliberation:

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The representative of NERTS informed the forum that during the fault on the 132 kV Kolasib–Badarpur line, a trip command was issued at the Kolasib end through the Line Differential Protection (LDP) scheme. However, due to a drop in operating pressure, the circuit breaker at Kolasib failed to operate, resulting in a breaker failure condition and initiation of the LBB protection.

It was observed that the LBB trip command was configured through the LDP relay, which led to a delayed operation of the LBB scheme. Subsequently, an EF protection operated after approximately 500–525 msecs, resulting in an overall fault clearing time of around 800 msecs.

NERTS further informed that a shutdown was availed on the following day, during which the LBB configuration at the LDP relay for the Kolasib end of the Badarpur line was corrected and successfully tested. The circuit breaker issue has been rectified temporarily and the breaker pressure is being closely monitored. A complete overhaul of the circuit breaker is planned within the next 2–3 months.

Forum also raised concerns regarding the non-availability of LBB protection for other State feeders at Kolasib. In response, the representative of P&ED informed the forum that the status of LBB protection will be updated soon.

3. GD at Zuangtui & radially connected areas of Mizoram in May'26:

On 27th May'26, GD occurred in the radially fed Zuangtui areas due to line fault in 132 kV Melriat(PG) – Zuangtui line.

As per DR analysis, due to high resistive fault in the R-E phase, backup EF initiated at 13:09:20.020 Hrs at Melriat(PG) end for 2276 msecs (Ir: 0.44 kA, In: 0.32 kA). No tripping observed. Likely fault beyond the line possibly in the downstream of Zuangtui SS.

The main relay Zuangtui end of 132 kV Melriat(PG) – Zuangtui line did not detect any fault in the forward direction. However, CB opening observed at 13:09:07.552 Hrs likely due to operation of Backup relay during reverse fault.

As per P&ED, Mizoram: The P127 relay was non directional during the event.

Deliberation:

P&ED, Mizoram informed the forum that relay coordination has been completed in coordination with Melriat (PG). It was further informed that the pending issue related to the non-operation of the auto-reclose scheme was resolved, and the necessary work was completed on 01 June 2026.

Additionally, P&ED, Mizoram was requested to share the updated relay settings with the forum by the end of the day.

Manipur power system: -

1. GD at Gamphajol area of Manipur area during May 2026:

On 1st May'26, GD observed at the Gamphajol area due to the non-operation or delayed opening CB at Gamphajol for 132 kV Yurembam -Gamphajol line resulted into the I>4 tripping at Karong end of 132 kV Gamphajol – Karong line.

Deliberation:

The forum advised MSPCL to carry out the necessary testing of the circuit breakers and protection relays at Gamphajol and Karong at the earliest.

MSPCL informed the forum that the root cause of the issue could not yet be identified, as the Disturbance Recorder (DR) and Event Logger (EL) data could not be retrieved. It was further informed that the DR data is expected to be collected within the next 10–15 days, following which appropriate corrective actions will be taken in coordination with NERPSIP.

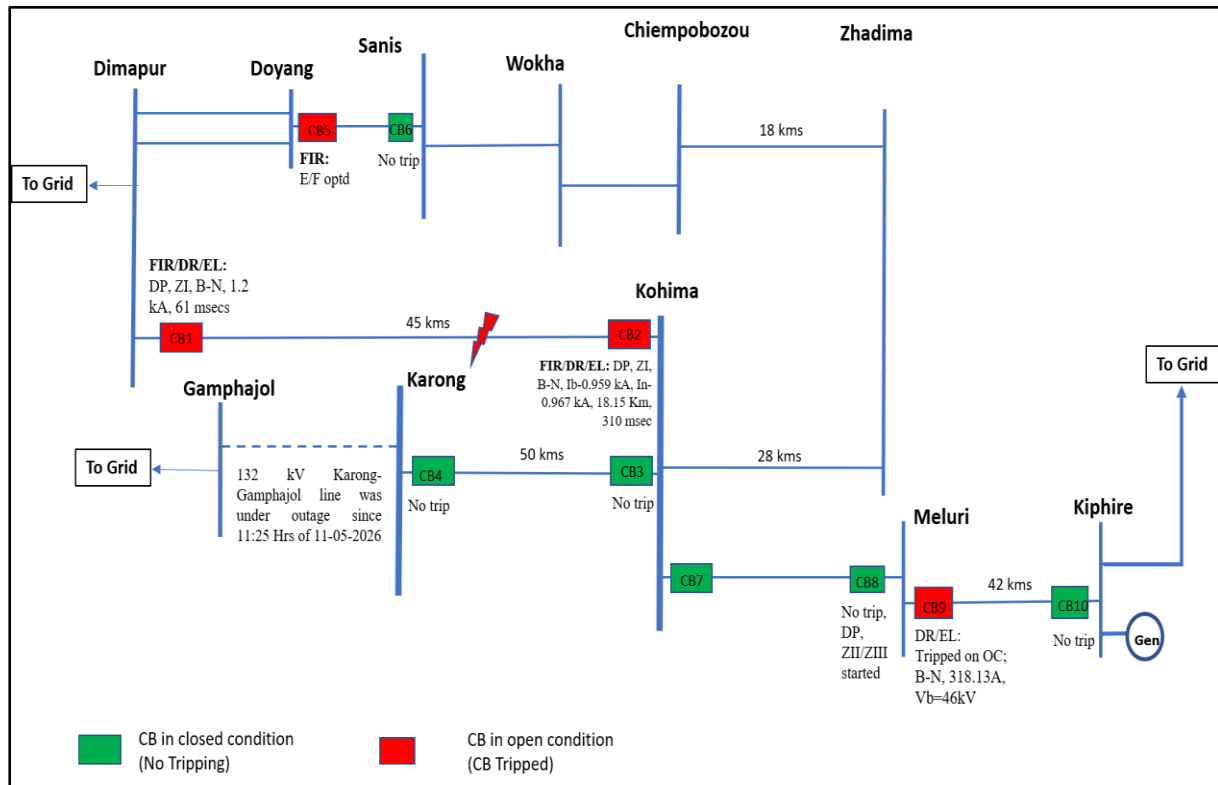
Nagaland power system: -

1. GD at Kohima, Sanis, Wokha, Chiephbozou, Zhadima and Meluri areas of Nagaland & Karong area of Manipur during May 2026:

Prior to the event, 132 kV Karong–Gamphajol line under outage since 11:25 Hrs of 11-05-2026.

At 16:30 Hrs of 14-05-2026, the 132 kV Dimapur (PG)–Kohima line, 132 kV Doyang–Sanis line, and 132 kV Meluri–Kiphire line tripped.

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As per DR analysis, high resistive B-N (Ib-0.959 kA, In-0.967 kA) initiated at 16:25:53.670 hrs in 132 kV Dimapur-Kohima line. Fault detected in ZI at Kohima end after 247 msec of inception of fault and cleared within 66 msec from Kohima end. ZI operated from Dimapur end.

As per FIR submitted by Doyang, E/F relay optd. and distance prot. relay optd. ESD was availed due to pole discrepancy (R-phase current is zero).

Protection/Operational issues observed:

Tripping of 132 kV Doyang-Sanis line from Doyang end for fault in 132 kV Dimapur-Kohima line is inferred unwanted. The same needs to be checked by NEEPCO.

Tripping of 132 kV Meluri - Kiphire line seems unwanted.

Deliberation:

NEEPCO informed the forum that the tripping at the Doyang end occurred due to the operation of the pole discrepancy protection. The issue was traced to a mechanical problem resulting in the plunger of the R-phase circuit breaker getting stuck. The defect was rectified on the following day.

DoP, Nagaland informed the forum that, based on the Disturbance Recorder (DR) analysis, the circuit breaker at Meluri tripped due to overloading, with power flow reaching 45–47 MW. It was further stated that such loading was experienced for the first time following the synchronization of the Kohima–Tuensang link on 30 April 2026.

However, NERPC sought clarification regarding the non-directional operation of the backup relay. In response, DoP, Nagaland informed the forum that a possible issue with the relay directionality is under investigation.

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Hence, NERPC suggested to share the relay settings of the Meluri end to NERPC at the earliest.

Closing of the meeting:

Director NERPC informed all the utilities to share the action taken report for the previous suggested measures before the upcoming PCC meeting.

Minutes of the GD Discussion meeting (Online) dated 12th June 2026

List of Participants:

Organization	Employee Name & Designation
NERPC, CEA	Veerandranath Muncha, Director Vikash Shankar, AEE/AD-I
NERLDC, GRID-INDIA	Subash Kumar, Manager Utpal Das, Deputy Manager Subhra Ghosh, Assistant Manager
NERTS, PGCIL	Manash Jyoti Baishya, Chief Manager
AEGCL	Bitupon Gogoi, DM, AEGCL
DoP, Arunachal Pradesh	Hibu Bama, EE Moli Kamki, EE Daggum Doje, AE
P&ED, Mizoram	C Chawngzikpuia, SDO, MRT
MePTCL	Marak, RE, Nangalbibra
DoP, Nagaland	1. Er. Namheu Khate EE Transmission 2. Er. Shuwato JE
TPTL (Tripura)	1. Er. Santanu Das, DGM (EHV Testing Cell) 2. Er. Anabik Shome, SM (EHV Testing Cell)
MSPCL:	

Minutes of Meeting on Introduction of SPS in the NER System

A meeting was held on 29.05.2026 at 12:00 hrs at the SLDC Assam office with officials from NERLDC, SLDC Assam, and AEGCL to discuss the introduction of a new Special Protection Scheme (SPS) in the North Eastern Region (NER) power system. The list of attendees is enclosed as *Annexure-A*.

1. Presentation by NERLDC

The NERLDC team highlighted that due to delays in the commissioning of the upcoming 400 kV Sonapur and 400 kV Rangia substations in Assam, high loading is expected on the following transmission corridors:

- 400 kV Bongaigaon–Azara line
- 220 kV BTPS–Agia D/C line

System studies indicate that during periods of high demand in the North Eastern Region, particularly in the Assam power system, the combined loading on the above corridors may exceed 600 MW.

Under such operating conditions, tripping of the 400 kV Bongaigaon–Azara line may result in critical loading of approximately 190 MW on each circuit of the 220 kV Agia–BTPS D/C line. Subsequent tripping of the 220 kV Agia–BTPS D/C line may lead to cascading outages in the Assam power system. Consequently, grid disturbances may occur in both the Capital Region and the BTPS–Rangia area of the Assam power system. In this regard, NERLDC highlighted that a grid disturbance involving a load loss of approximately 410 MW occurred in the BTPS–Rangia area of the Assam power system at 22:32 hrs on 14.06.2024 following the tripping of the 220 kV Agia–BTPS D/C line.

Following the outage of the 220 kV Agia–BTPS D/C line, the following transmission lines are likely to experience critical loading and may trip:

- 220 kV Balipara–Sonabil D/C
- 220 kV Misa–Samaguri D/C

In addition, critical loading may occur on the 220 kV Azara–Sarusajai D/C line, which could result in a low-voltage scenario in the Capital Region of the Assam power system.

Presentation attached in *Annexure-B*.

2. SPS Proposal

To mitigate the above contingency, NERLDC proposed implementation of an SPS involving automatic load disconnection at Agia and nearby substations whenever either of the following conditions is met:

- The combined loading on the 400 kV Bongaigaon–Azara line and the 220 kV BTPS–Agia D/C line exceeds 585 MW; or
- The loading on the 220 kV BTPS–Agia D/C line exceeds 500 A in each circuit.

NERLDC informed that designing an SPS based on combined flow-gate monitoring would require a robust communication infrastructure and may therefore take a longer time to implement. As an interim measure, an SPS based on local current measurements may be designed and implemented at an earlier stage.

3. Queries Raised by AEGCL and SLDC Assam

AEGCL raised the following points:

1. The quantum of load to be disconnected under the proposed SPS may be specified.
2. Since Agia Substation also supplies power to the Meghalaya power system, the possibility of load disconnection in the Meghalaya system may also be examined.

4. Clarifications by NERLDC

In response, NERLDC informed that:

- Load disconnection at Agia and Boko has a sensitivity of approximately 60–65%.
- Load disconnection at Azara has a sensitivity of around 50%.

Based on these sensitivities, approximately 45 MW of load shedding would be required to reduce the loading on the corridor from 190 MVA to 175 MVA.

Regarding load disconnection in the Meghalaya system, NERLDC stated that:

- Sensitivity at Meghalaya nodes is comparatively low.
- For an SPS based on local current measurements, local feeders would need to be disconnected.
- Isolation of the Meghalaya system from the Agia side could adversely affect system stability and may lead to grid disturbances under low-voltage conditions.

Further, it was observed that during periods when the 400 kV Bongaigaon–Azara line and the 220 kV BTPS–Agia D/C line experience high loading, the power flow on the 132 kV Agia–Mendipathar and 132 kV Agia–Nangalbibra lines remains comparatively low due to internal hydro generation in Meghalaya system. Therefore, isolating these lines would not achieve the intended objective of the SPS.

NERLDC emphasized that disconnection of Assam load fed from the Agia side would provide the desired relief on the 220 kV Agia–BTPS D/C line.

5. Decision of the Meeting

After detailed deliberations, it was noted that the primary objective of the SPS is to safeguard the Capital Region of the Assam power system by ensuring the availability of the 220 kV Agia–BTPS D/C link. The availability of this transmission corridor is not only critical for the Capital Region but is also essential for maintaining reliable voltage levels in the Rangia and BTPS areas of the Assam power system.

Accordingly, It was agreed that the SPS may be implemented through local load disconnection at Agia and Matia substations.

6. Protection Scheme Implementation

NERLDC enquired about the availability of overcurrent (O/C) settings in the Main-I and Main-II protection relays of the 220 kV BTPS–Agia D/C line.

AEGCL informed that, in the event that overcurrent functionality is not available in the existing Main-I and Main-II relays, a dedicated spare overcurrent relay will be arranged and utilized for SPS implementation.

7. Status of Upcoming Substations

AEGCL informed that:

- The 400 kV Rangia Substation is expected to be commissioned by April 2027.
- The 400 kV Sonapur Substation may face further delays due to Right of Way (RoW) issues.

8. Conclusion

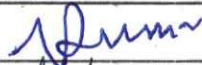
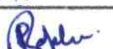
The meeting concluded with a vote of thanks proposed by CGM (SO), NERLDC.

Annexure-A

List of Attendees

Sl. No.	Name	Designation	Organisation
1	Neeraj Kumar	CGM(SO)	NERLDC
2	Asif Iqbal	DGM	AEGCL
3	Ashutosh Bhattacharyya	GM	AEGCL
4	Ashishek Kalita	DM	AEGCL
5	Pranab Saha	DGM	AEGCL
6	Priyabrata Deb	DM	AEGCL
7	Nilutpal Baruah	AGM	SLDC/ AEGCL
8	Subhra Ghosh	AM	NERLDC
9	Sachin K. Singh	Manager	NERLDC
10	Priyakshi Rajkhowa	DM	AEGCL
11	Sushmita Das	JM	SLDC/ AEGCL

ATTENDANCE SHEET FOR THE MEETING FOR DISCUSSION ON INTRODUCTION OF SPS IN NER SYSTEM

	DATE	29.05.2026	VENUE	SLDC CONFERENCE ROOM		
SL.NO	NAME	DESIGNATION	ORGANISATION	E-MAIL ID	PHONE NUMBER	SIGNATURE
1	Neeraj Kumar	CGM	Grid India	neeraj.kumar@grid-india.in	9910907949	
2	Asy Jopal	DM	AEGL	dgntic.mizra@aegl.co.in	9435733302	
3	Ashutosh Bhattacharya	GM	AEGL	ashu.oe@rediffmail.com	99541-06916	
4	Ashish K Kalita	DM	AEGL	ashishk.kalita@aegl.co.in	8486213068	
5	Pramab Saha	DCM	AEGL	pramab.saha@aegl.co.in	9435561717	
6	Priyabrata Deb	DM	AEGL	priyabrata.deb@aegl.co.in	9435401135	
7	Nitulpal Bormah	AGM, SLDC	AEGL	nitulpal.bormah@aegl.co.in	7002885719	
8	Subhra Ghosh	AM	GRID INDIA	subhra@grid-india.in	8415857079	
9	Sachin K Singh	Manager	"	sachinsingh@grid-india.in	882699194	
10	Priyankshi Rajkhowa	DM	AEGL	priyankshi.rajkhowa@aegl.co.in	9453093172	
11	Sushmita Das	JM	SLDC, ASSAM	sushmita.das@aegl.co.in	9864956879	
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Meeting Regarding Introduction of SPS in NER System

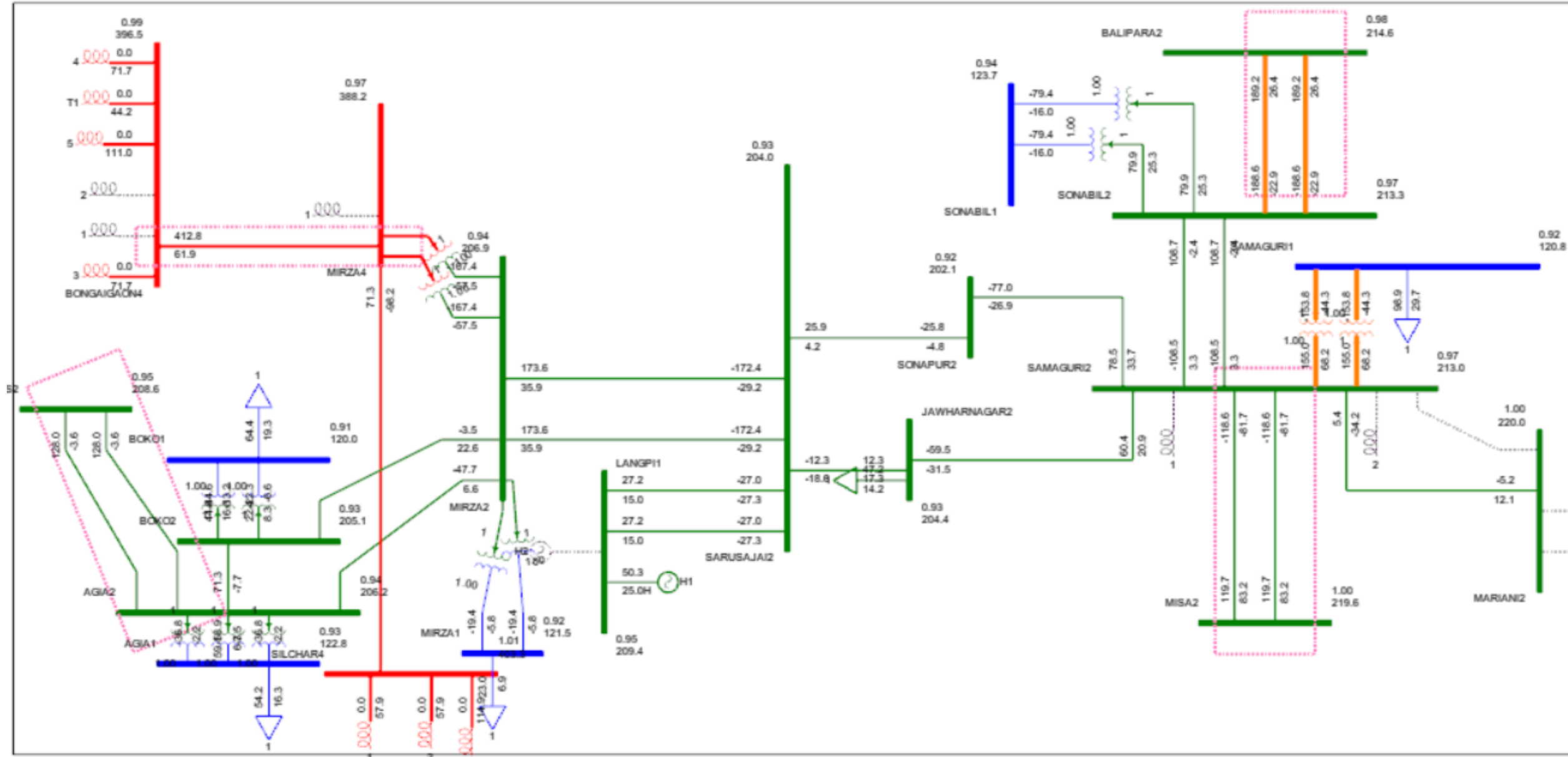
NERLDC Reliability

29-05-2026

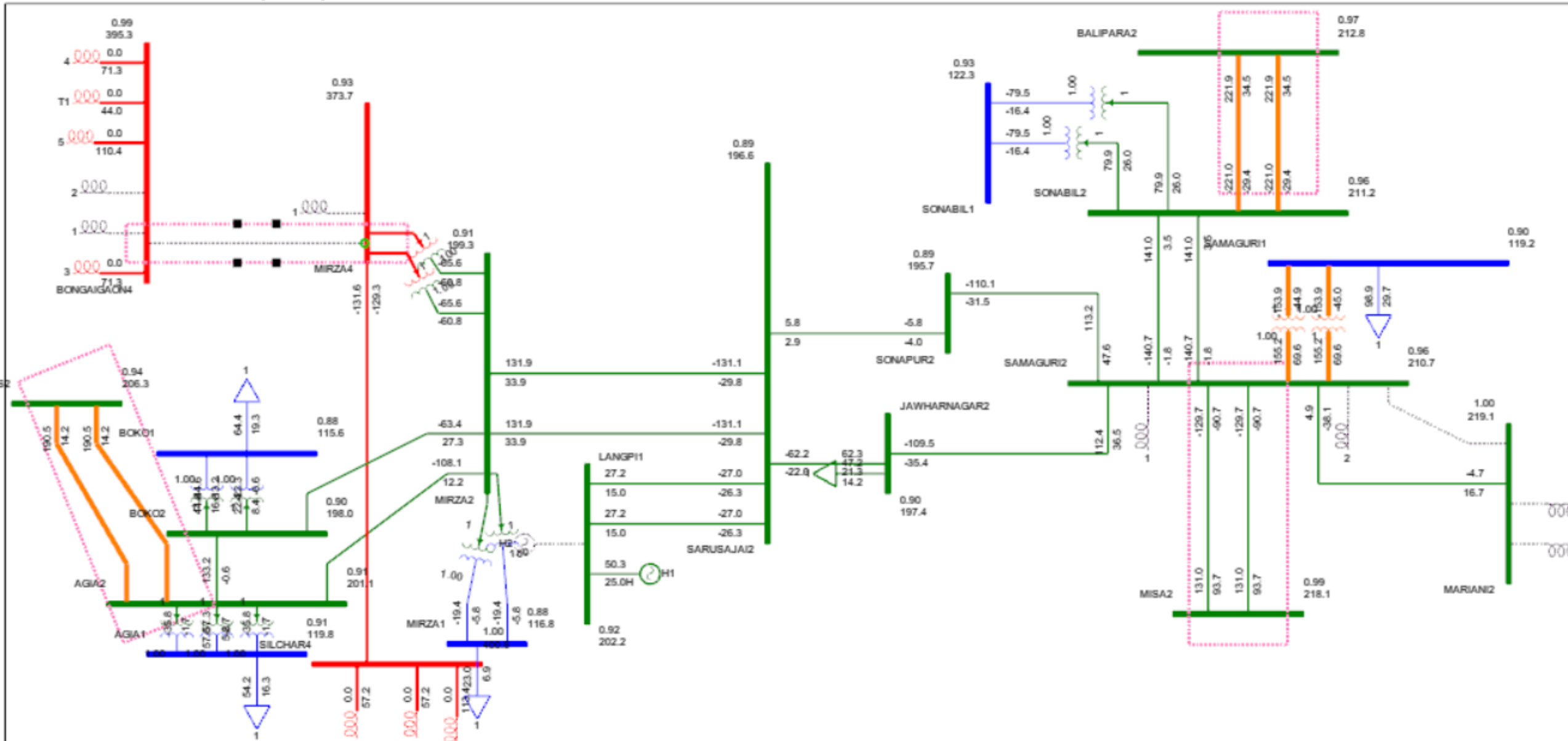
Issues

- High loading has been observed on the 400 kV Bongaigaon–Azara line and the 220 kV BTPS–Agia D/C line.
- Studies suggest that during periods of high demand in the North Eastern Region (NER), the combined loading on the 400 kV Bongaigaon–Azara line and the 220 kV BTPS–Agia D/C line may exceed 600 MW.
- Under such scenarios, tripping of the 400 kV Bongaigaon–Azara line may result in heavy loading of around 190 MVA on each circuit of the 220 kV Agia–BTPS D/C line. Subsequently, tripping of the 220 kV Agia–BTPS D/C line may lead to cascading tripping in the Assam power system.
- Following the tripping of the 220 kV Agia–BTPS D/C line, the following lines may also trip due to overloading:
 - 220 kV Balipara–Sonabil D/C \
 - 220 kV Misa–Samaguri D/C
- In addition, critical loading may occur on the 220 kV Azara–Sarusaajai D/C line.
- Therefore, it is proposed that an SPS may be introduced for load disconnection at Agia and nearby substations whenever the combined loading on the 400 kV Bongaigaon–Azara line and the 220 kV BTPS–Agia D/C line exceeds 600 MW.

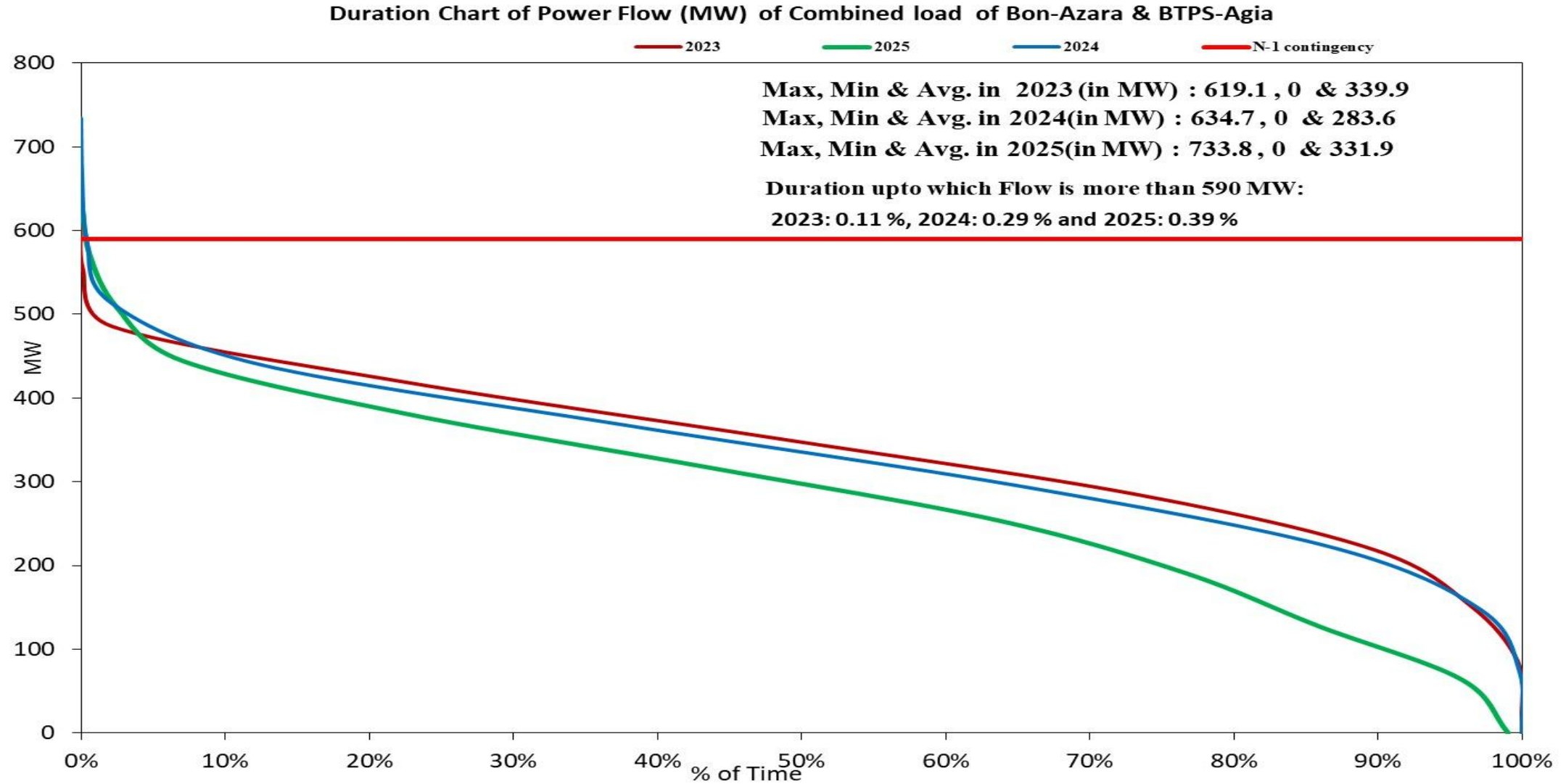
Base case –Assam load :2865 MW



Base case – Assam load : 2865 MW under N-1 contingency of 400 kV Bongaigaon-Azara line

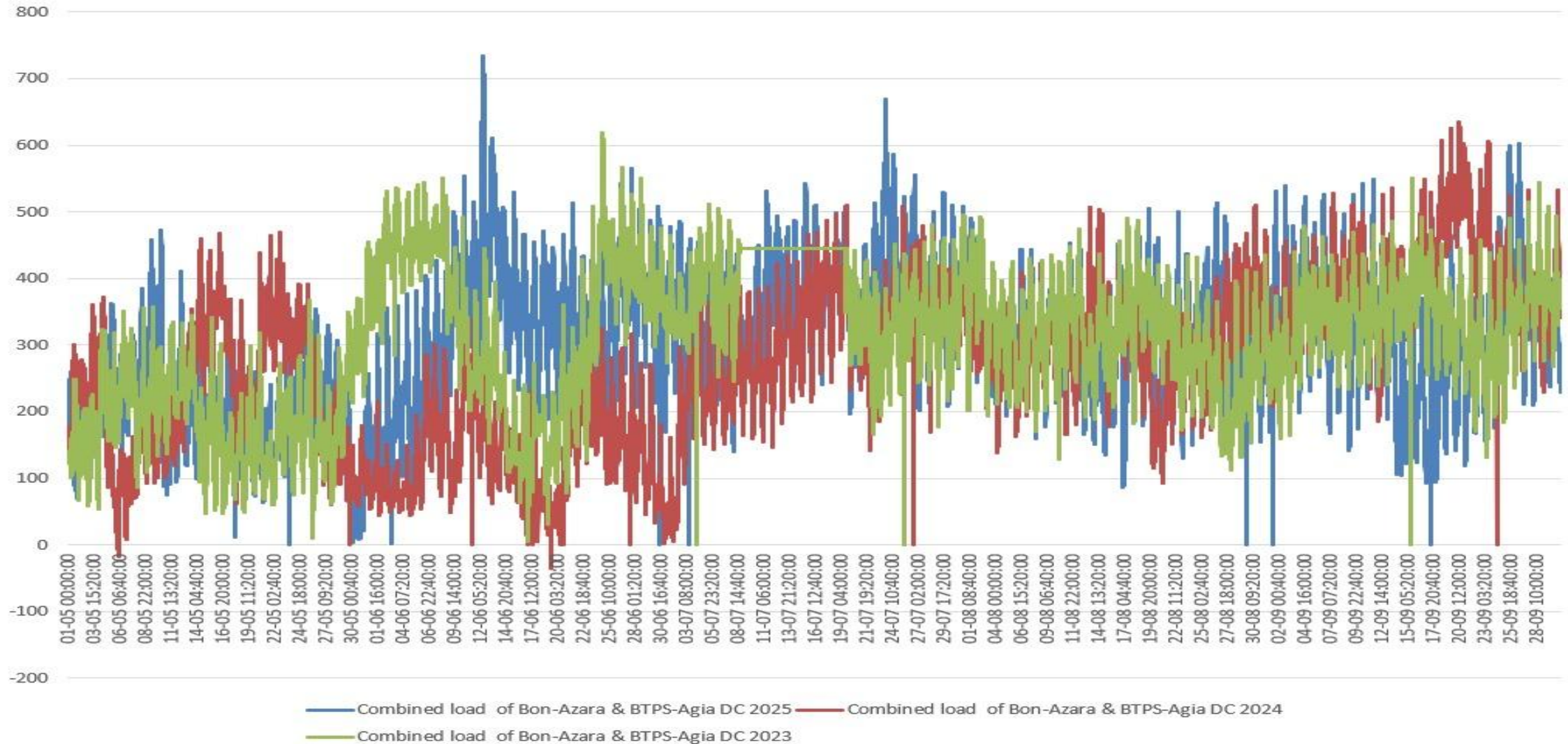


Duration curve of BTPS-Agia and Bongaigaon-Azara line

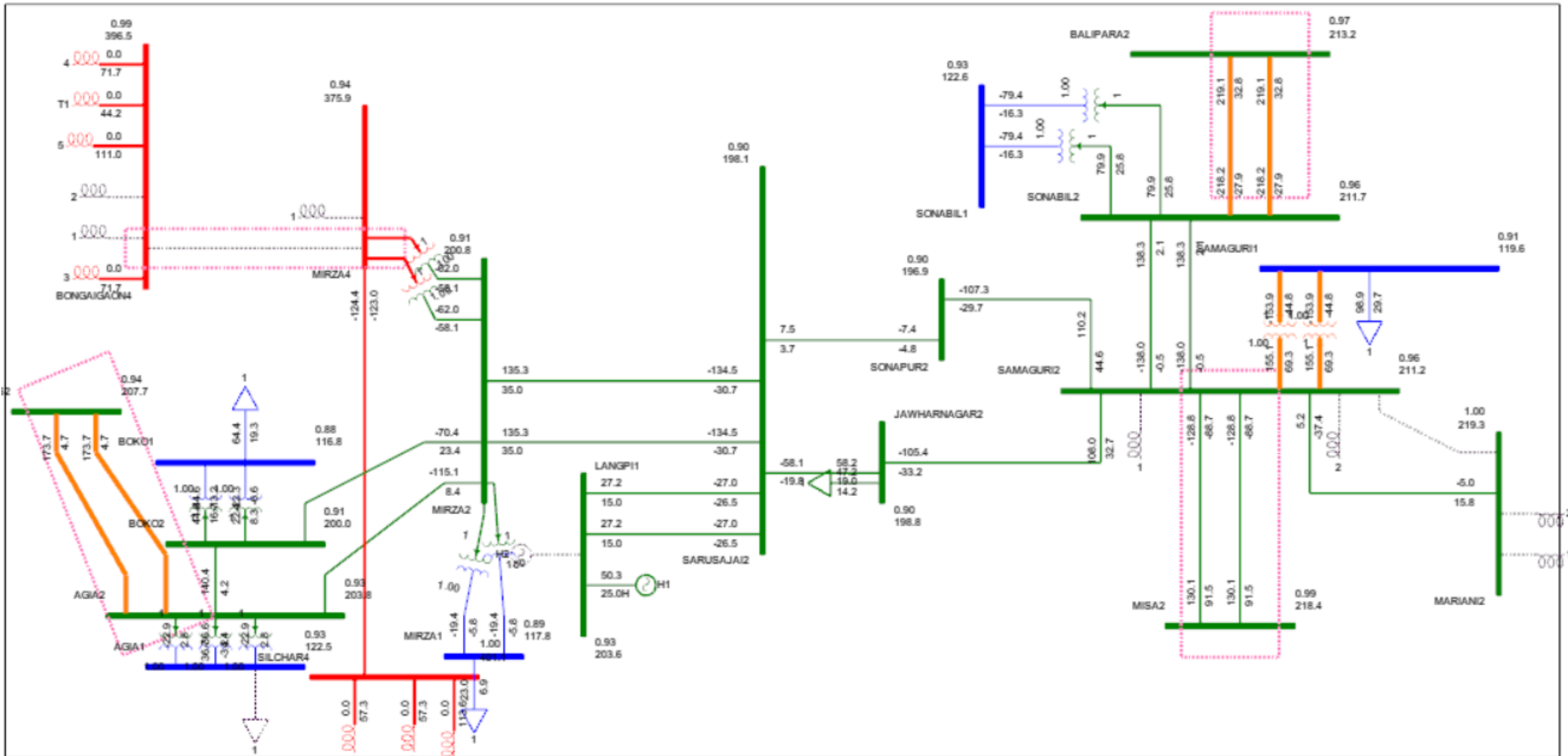


Load profile of BTPS-Agia and Bongaigaon-Azara line

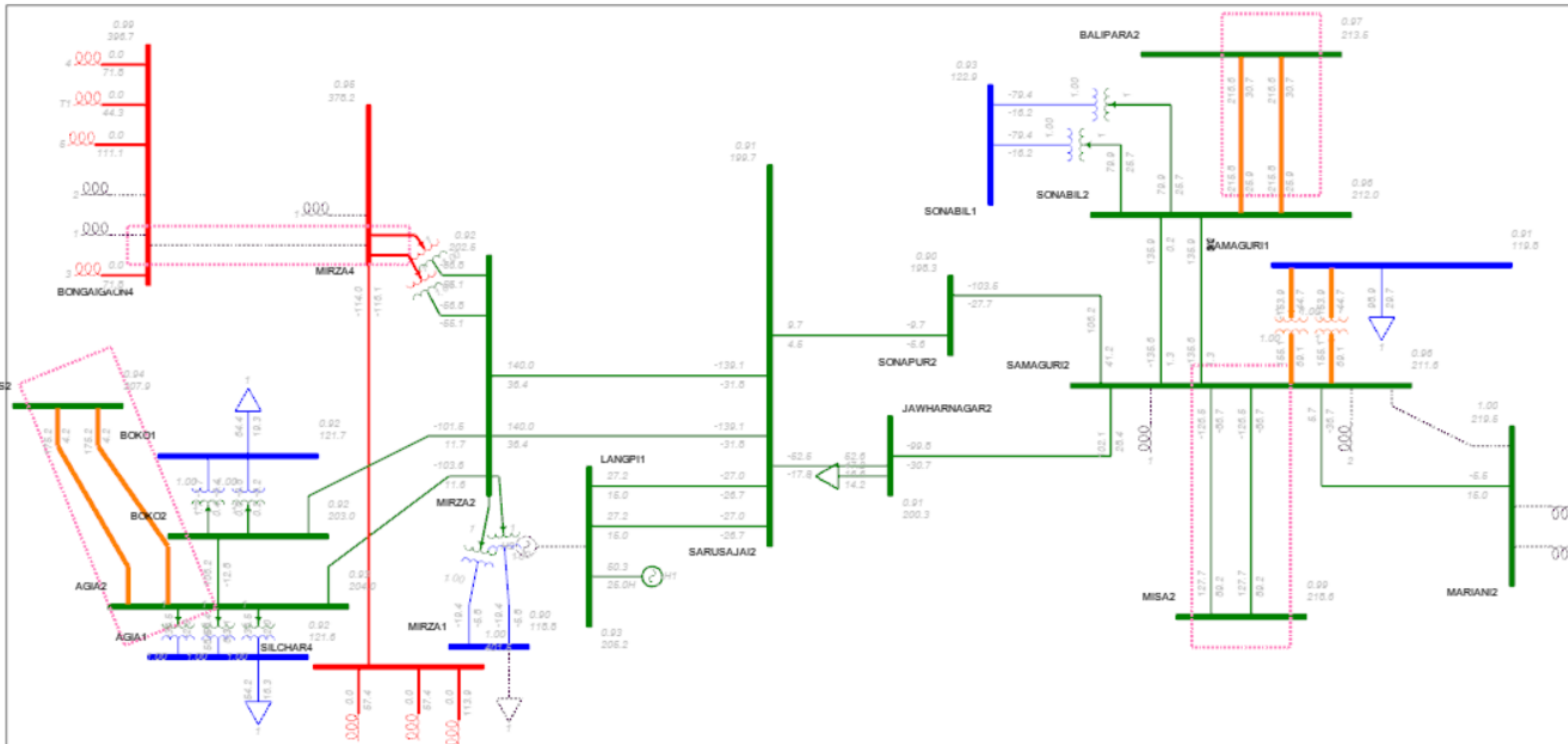
Combined load of Bon-Azara & BTPS-Agia



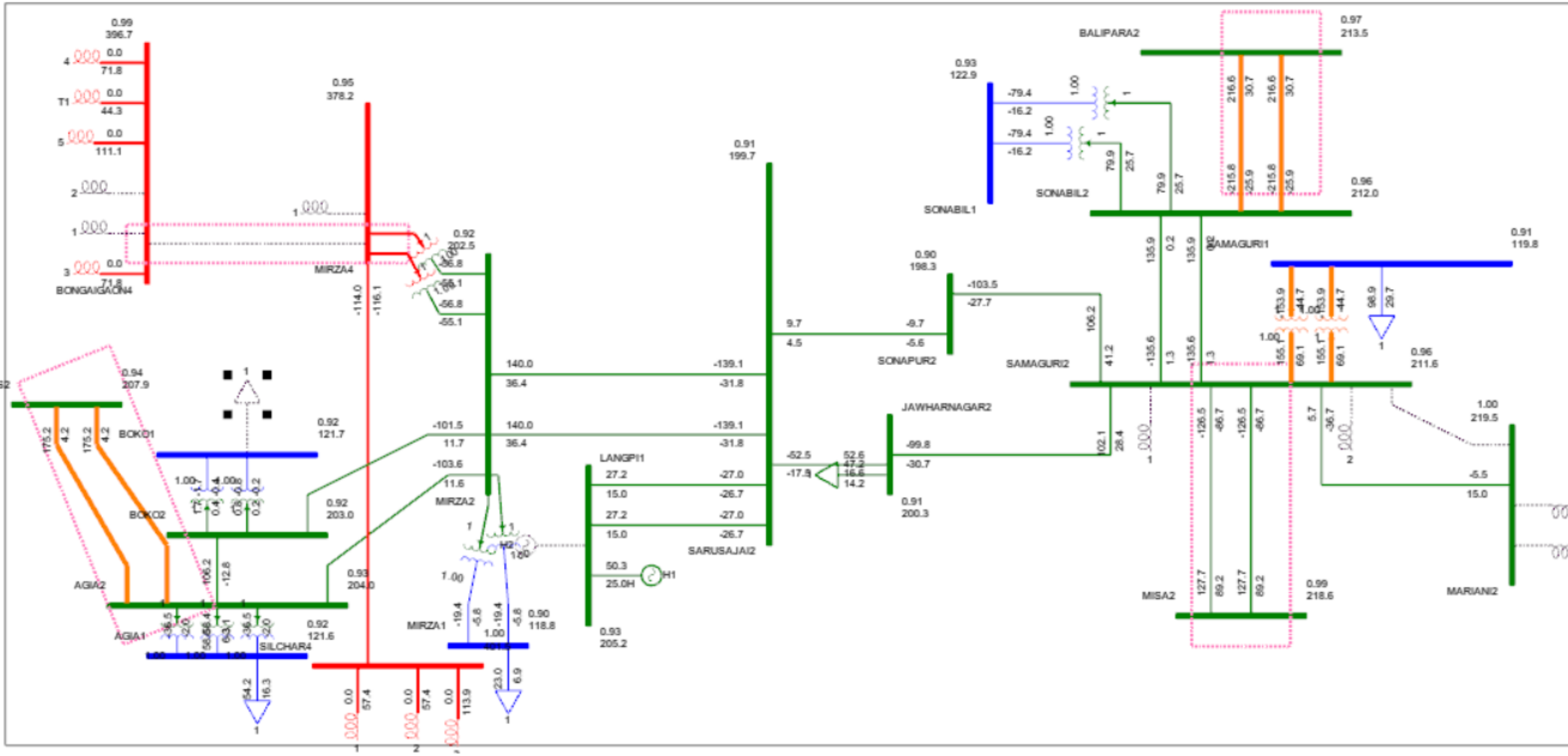
Agia load sensitivity-60%



Azara load sensitivity-37%



Boko load sensitivity-47%



Observations:

- The duration curve suggest that around 0.11%, 0.29 % and 0.39 % of time combined flow of 400 kV Bongaigaon-Azara and 220 kV BTPS-Agia DC line was above 590 MVA.
- First Langpi generation to be bring to reduce the combined loading of 400 kV Bongaigaon-Azara and 220 kV BTPS-Agia DC below 590 MVA. Generation sensitivity on the flow is 60 %
- Load disconnection at Agia and Boko has a sensitivity of approximately 62% and 47 % respectively.
- Load disconnection at Azara has a sensitivity of around 37%.
- Based on these sensitivities, approximately 50 MW of load shedding would be require at Agia and nearby station to reduce the loading on the corridor from 190 MVA to 175 MVA

**Detailed Report of SPS operation & Assessment of Protection performance indices of SPS in
<Substation/Area/State Name> of NER
(To be submitted by User/SLDC after SPS operation as per IEGC section 16.3 & 16.4)**

Date: dd-mm-yyyy

- 1. Name of the Scheme:**
- 2. Purpose of the Scheme:**
- 3. Time and Date of the Event:**
- 4. Event Category: Correct Operation/ Non operation/ Misoperation**
- 5. Location(Substation/Control Area):**
- 6. Event Description :**
Pre fault, during fault and Post fault
- 7. Load and Generation loss(in MW and MU) :**
- 8. Duration of interruption:**
- 9. Network across the affected area :**
- 10.Details of Non-operation/ Mis-operation (if any):**
- 11.Major Elements Tripped:**

Sl no	Name	Trip time (hh:mm:ss)	Restoration time (hh:mm:ss)	Relay End 1	Relay End 2	Element wise Load/Gen Loss in MW

- 12. Protection/Operational issues observed:**
- 13. Action Taken/Remedial Measures:**
- 14. Protection performance indices of SPS operation:**

Sl. No	Name of SPS	Nc	Nf	Nu	$Ni=Nf+Nu$	$D=\frac{Nc}{Nc+Nf}$	$S=\frac{Nc}{Nc+Nu}$	$R=\frac{Nc}{Nc+Ni}$

Abbreviations:

Nc :- Number of correct operations

Nf :- Number of failures to operate

Ni =(Nf+Nu):- Number of incorrect operation & sum of Nu+Nf

Nu :- Number of unwanted operation

D :- Dependability Index

S :- Security Index

R :- Reliability Index

15. Modification required in the present Logic (if any):

16. Key Lessons Learnt (if any):

Shift-In Charge,

User/SLDC

Copy to:

1. NERLDC
2. Affected utilities / user
3. MS, NERPC

Annexure:

(A Government of India Enterprise)

[Formerly Power System Operation Corporation Limited (POSOCO)]

उत्तर पूर्वी क्षेत्रीय भार प्रेषण केंद्र/ North Eastern Regional Load Despatch Centre

कार्यालय: पावर हाउस, काहिलिपारा, गुवाहाटी- 781019(असम)

Office: Power House, Kahilipara, Guwahati- 781019 (Assam)

CIN: U40105DL2009GOI188682, Website: www.nerldc.in, E-mail: nerldc@grid-india.in, Mob: 6901274070

Ref: NERLDC/SO/2026-27/14/9277

दिनांक/Date: 12.05.2026

सेवा में/To:

1. महाप्रबंधक (उपकेंद्र), एमएसपीसीएल, केशमपट, इम्फाल पश्चिम, मणिपुर – 795001 / GM (Sub-Station), MSPCL, Keishampat, Imphal West, Manipur – 795001
2. महाप्रबंधक (पारेषण), एमएसपीसीएल, केशमपट, इम्फाल पश्चिम, मणिपुर – 795001 / GM (Transmission), MSPCL, Keishampat, Imphal West, Manipur – 795001
3. महाप्रबंधक, राज्य भार प्रेषण केंद्र, एमएसपीसीएल, विद्युत परिसर, केइसुम्फट जंक्शन, इम्फाल, मणिपुर – 795001 / The General Manager, State Load Despatch Centre, Manipur State Power Company Ltd (MSPCL), Electricity Complex, Keisumphat Junction, Imphal, Manipur-795001

विषय/Sub: मणिपुर विद्युत प्रणाली के गामफाजोल एवं कारोन्ग क्षेत्रों में बार-बार होने वाले ग्रिड व्यवधान / Repeated Grid Disturbance in Gamphajol and Karong areas of Manipur Power System**महोदय/महोदया,**

जैसा कि आपको ज्ञात हैं, मणिपुर विद्युत प्रणाली के गामफाजोल एवं कारोन्ग क्षेत्र शेष उत्तर-पूर्वी ग्रिड से 132 केवी युरेम्बम-गामफाजोल लाइन तथा 132 केवी कारोन्ग-कोहिमा लाइनों के माध्यम से जुड़े हुए हैं।

पिछले महीनों में, मार्च 2026 से मई 2026 (दिनांक 12.05.2026 तक) के दौरान 132 केवी युरेम्बम-गामफाजोल, 132 केवी गामफाजोल-कारोन्ग तथा 132 केवी कारोन्ग-कोहिमा लाइनों के बार-बार ट्रिप होने की घटनाएं देखी गईं, जिसके परिणामस्वरूप मणिपुर विद्युत प्रणाली के गामफाजोल एवं कारोन्ग क्षेत्रों में ग्रिड व्यवधान उत्पन्न हुआ।

मणिपुर विद्युत प्रणाली के कारोन्ग क्षेत्र में कुल पाँच (05) ग्रिड व्यवधान तथा गामफाजोल क्षेत्र में भी कुल चार (04) ग्रिड व्यवधान उत्पन्न हुए, जो अत्यंत गंभीर चिंता का विषय है।

उपरोक्त सात (07) ग्रिड घटनाओं का विवरण परिशिष्ट-I में संलग्न है।

परिशिष्ट-I में उल्लिखित ट्रिपिंग के विवरण से निम्नलिखित प्रमुख अवलोकन निष्कर्षित किए जा सकते हैं:

1. 132 केवी गामफाजोल-युरेम्बम लाइन हेतु गामफाजोल में तथा 132 केवी गामफाजोल-कारोन्ग लाइन हेतु कारोन्ग में स्थापित सुरक्षा प्रणाली लाइन में उत्पन्न फॉल्ट को पृथक करने में विफल रही, जिसके परिणामस्वरूप दूरस्थ छोर से ज़ोन-III सुरक्षा के संचालन के कारण स्वस्थ लाइनों के ट्रिप होने द्वारा फॉल्ट का निवारण हुआ। इस संबंध में कारणों की जांच एमएसपीसीएल द्वारा किए जाने की आवश्यकता है। साथ ही, 132 केवी युरेम्बम-गामफाजोल लाइन के युरेम्बम छोर पर सर्किट ब्रेकर के ओपनिंग मैकेनिज्म में भी समस्या प्रतीत होती है, जिसकी जांच किया जाना आवश्यक है।
2. युरेम्बम, गामफाजोल एवं कारोन्ग उपकेंद्रों के डीआर/ईएल फाइलों का प्रस्तुत न किया जाना तथा विस्तृत प्रतिवेदन का जमा न किया जाना चिंता का विषय है, क्योंकि इससे घटनाओं का समुचित विश्लेषण प्रभावित होता है। कृपया ध्यान दें कि इन प्रतिवेदनों का समयबद्ध प्रस्तुतिकरण आईईजीसी-2023 के प्रावधानों के अनुसार अनिवार्य है।

गामफाजोल एवं कारोन्ग उपकेंद्रों में बार-बार होने वाली ग्रिड व्यवधान की समस्या पर मासिक पीसीसी बैठकों में भी नियमित रूप से चर्चा की गई है। तथापि, आज तक कोई सुधारात्मक कार्रवाई लागू नहीं की गई है, जिसके परिणामस्वरूप मणिपुर विद्युत प्रणाली के गामफाजोल एवं कारोन्ग क्षेत्रों में बार-बार ग्रिड व्यवधान उत्पन्न हो रहे हैं।

अतः, एमएसपीसीएल से पुनः अनुरोध किया जाता है कि गामफाजोल एवं कारोन्ग में स्थापित सर्किट ब्रेकरों तथा प्रोटेक्शन रिले की गहन जांच की जाए, ताकि मूल कारणों की पहचान कर उपयुक्त सुधारात्मक उपाय किए जा सकें एवं स्वस्थ फीडरों की अनावश्यक ट्रिपिंग तथा मणिपुर विद्युत प्रणाली के गामफाजोल एवं कारोन्ग क्षेत्रों में ब्लैकआउट की घटनाओं को रोका जा सके।

कृपया किए गए सुधारात्मक उपायों की एक प्रति यथाशीघ्र एनईआरपीसी एवं एनईआरएलडीसी के साथ साझा करने का कष्ट करें।

सुरक्षित एवं विश्वसनीय ग्रिड संचालन सुनिश्चित करने हेतु इस संबंध में आपका सहयोग अपेक्षित है।

As you are aware that, Gamphajol and Karong areas of Manipur power system are connected to the rest of the NER grid through 132 kV Yurembam-Gamphajol Line & 132 kV Karong-Kohima Lines.

In the previous months, between March 2026 to May 2026 (till 12.05.2026), frequent tripping of 132 kV Yurembam-Gamphajol, 132 kV Gamphajol-Karong & 132 kV Karong-Kohima lines were observed resulting in grid disturbance in Gamphajol and Karong areas of Manipur power system. A total of five (05) grid disturbance occurred in Karong area and four (04) grid disturbance occurred in Gamphajol area of Manipur power system which is a matter of serious concern.

The details of above seven (07) number of grid events are attached as **Annexure-I**.

Following are the key observations as can be inferred from the details of the tripping indicated in **Annexure-I**:

1. The protection system at Gamphajol for 132 kV Gamphajol-Yurembam line and at Karong for 132 kV Gamphajol-Karong line failed to isolate the fault in the line, leading to clearing of the fault by tripping of the healthy lines on operation of Zone-III protection from the remote end. The reason for the same needs to be investigated by MSPCL. Also, there appears to be an issue with CB opening mechanism at Yurembam end for 132 kV Yurembam-Gamphajol line which needs to be checked.
2. Non-submission of DR/EL files of Yurembam, Gamphajol and Karong Substations and Non-submission of detailed report is a matter of concern as it hampers proper event analysis. Please note that timely submission of these reports are mandated as per IEGC-2023.

The issue of repeated grid disturbances at Gamphajol and Karong Substation has been regularly discussed in the monthly PCC meetings also. However, no corrective action has been implemented till date, resulting in repeated grid disturbances in the Gamphajol and Karong area of Manipur power system.

Therefore, MSPCL is once again requested to carry out thorough checking of the circuit breakers and protection relays at Gamphajol and Karong to identify the root cause and take appropriate corrective measures so as to prevent unwanted tripping of healthy feeders as well as blackouts in the Gamphajol and Karong areas of the Manipur power system.

A copy of the remedial measures taken may please be shared with NERPC and NERLDC at the earliest.

Your cooperation in this regard is requested for safe and secure grid operation.

धन्यवाद एवं सादर सहित/

With thanks and regards,

भवदीय / Yours sincerely,

BISWAJIT
SAHU

Digitally signed by
BISWAJIT SAHU
Date: 2026.05.12
18:31:37 +05'30'

(विश्वजीत साहू / Biswajit Sahu)

मुख्य महाप्रबंधक (एस.ओ) /C.G.M. (S.O.)

उपक्षेभाप्रेके, गुवाहाटी / NERLDC, Guwahati

संलग्नक/Enclosures:

1. परिशिष्ट -I /Annexure-I: Detailed Event Analysis

प्रतिलिपि/Copy to:

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3. मुख्य महाप्रबंधक, प्रभारी, एनईआरएलडीसी, गुवाहाटी – 781019 / Chief General Manager, In-charge, NERLDC, Guwahati- 781019

Annexure-I:

The details of the grid disturbances are as follows:

Sl. No.	Transmission Element name	Relay Indication End A	Relay Indication End B	Analysis based on DR/EL	Discussion on PCC forum
Event 1: GD in Karong area at 20:52 Hrs of 15-03-2026. Load loss of 3 MW					
1	132 kV Gamphajol-Karong Line	DP, ZI, B-N, 5.2 Km (DR/EL not submitted)	No tripping (DR/EL not submitted)	Suspected B-N fault in 132 kV Gamphajol-Karong line cleared from Gamphajol end on ZI. Protection system at Karong end for 132 kV Gamphajol-Karong line failed to isolate the fault in the line resulting in clearing of fault by tripping of healthy 132 kV Karong-Kohima line on ZIII from remote end within 850 msec.	Discussed in 89 th PCCM on 21 st April 2026
2	132 kV Kohima-Karong Line	DP, ZIII, B-N	No tripping (DR/EL not submitted)		
Event 2: GD in Karong area at 01:01 Hrs of 16-03-2026. Load loss of 3 MW					
1	132 kV Kohima-Karong Line	I>4 trip, B-N (DP, ZII started)	No tripping (radial as 132 kV Gamphajol-Karong line under tripped condition since 20:52 hrs of 15-03-2026)	Metallic B-N fault (Ib-1.2 kA, In-1.1 kA) initiated at 01:00:46.198 hrs which was cleared within 131 msec from Kohima end likely on operation of B/U protection. As per EL, at 01:00:46.279 hrs, I>4 trip observed (DP, ZII also started in Main relay). No tripping from Karong end (radial)	Discussed in Pre-PCC online meeting on 16 th April 2026
Event 3: GD in Karong, Gamphajol areas of Manipur & Kohima, Meluri, Zhadima, Chiephebozou areas of Nagaland at 16:13 Hrs of 17-03-2026. Load loss of 33 MW					
1	132 kV Yurembam-Gamphajol Line	DP, ZI, B-N, 2.6 Km, 9.3 kA (DR/EL not submitted)	DP, ZI (DR/EL not submitted)	Fault in 132 kV Yurembam-Gamphajol Line. Proper analysis could not be done due to non-submission of DR/EL by MSPCL.	Discussed in Pre-PCC online meeting on 16 th April 2026

				Karong, Gamphajol areas of Manipur & Kohima, Meluri, Zhadima, Chiephebozou areas of Nagaland were radially connected to the grid through 132 kV Yurembam-Gamphajol Line as 132 kV Chiephobozou-Wokha line under shutdown since 13:26 Hrs of 30-09-2025 & 132kV Dimapur (PG)-Kohima line under ESD since 15:30 Hrs of 17 03-2026.	
Event 4: GD in Gamphajol area at 00:48 Hrs of 22-03-2026. Load loss of 2 MW					
1	132 kV Yurembam-Gamphajol Line	Not furnished (DR/EL not submitted)	As informed by MSPCL, CB opening mechanism was faulty at Yurembam for 132 kV Gamphajol Line. Proper analysis could not be done due to non-submission of DR/EL by MSPCL.		Discussed in Pre-PCC online meeting on 16 th April 2026
2	132 kV Gamphajol-Karong Line	Not furnished (DR/EL not submitted)			
Event 5: GD in Gamphajol and Karong areas at 08:22 Hrs of 10-04-2026. Load loss of 5 MW					
1	132 kV Yurembam-Gamphajol Line	DP, ZI, B-N, 4.4 Km (DR/EL not submitted)	DP, ZI, B-N, 7.2 Km (DR/EL not submitted)	Suspected that fault was in 132 kV Yurembam-Gamphajol Line as fault detected in ZI from both the ends (as per FIR). Fault was not cleared from Gamphajol end which led to tripping of healthy 132 kV Gamphajol-Karong & 132 kV Karong-Kohima lines from remote ends on operation of ZIII.	-
2	132 kV Gamphajol-Karong Line	No tripping (DR/EL not submitted)	DP, ZIII, 54.55 Km (DR/EL not submitted)		
3	132 kV Kohima-Karong Line	DP, ZIII (DR/EL not submitted)	No tripping (DR/EL not submitted)		
Event 6: GD in Gamphajol area at 13:44 Hrs of 01-05-2026. Load loss of 20 MW					

1	132 kV Yurembam- Gamphajol Line	DP, ZI, 6.5 Km (DR/EL not submitted)	DP, ZI, 17.2 Km (DR file not opening)	Suspected that R-N fault in 132 kV Yurembam-Gamphajol Line as fault detected in ZI from both the ends (as per FIR) Fault was not cleared which led to tripping from 132	-
2	132 kV Gamphajol- Karong Line	No tripping	I>4 trip, R- N (DP, ZIII started)	kV Gamphajol-Karong line from remote end. As per EL of Karong end for 132 kV Gamphajol line, DP, ZIII started & I>4 trip occurred within 126 msec.	

Event 7: GD in Karong area at 16:55 Hrs of 11-05-2026. Load loss of 13 MW

1	132 kV Kohima-Karong Line	DP, ZI, R-Y- B (DR/EL not submitted)	DP, ZI, 3.471 Km (DR/EL not submitted)	Prior to tripping of 132 kV Kohima-Karong line, 132 kV Gamphajol-Karong line tripped at 11:25 Hrs of 11-05-2026 due to which Karong area was radially connected through 132 kV Kohima-Karong line. Fault was in 132 Kohima-Karong line.	-
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