



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

SPEED POST/FAX

Ph : 0364-2534039

Fax: 0364-2534040

email: nerpc@ymail.com

website: www.nerpc.gov.in

No.: No. NERPC/SE (O)/PCC/2024/1647-1688

July 24, 2024

**To**

**As per list attached**

**Sub: Minutes of 69<sup>th</sup> Protection Coordination Sub-Committee (PCC) Meeting**

Sir/Madam,

Please find enclosed herewith the minutes of the 69<sup>th</sup> PCC Meeting held at NERPC Conference Hall, Shillong on 11<sup>th</sup> July 2024 for your kind information and necessary action. The minutes is also available on the website of NERPC: [www.nerpc.gov.in](http://www.nerpc.gov.in).

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

भवदीय / Yours faithfully,

(अनिल कवरानी/ Anil Kawrani)

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, Dongtieh-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, Dongtieh, 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, 10<sup>th</sup> Floor, Berger Tower, Noida sector 16B-201301
42. Director, NETC, 2C, 3rdFloor, D21Corporate Park, DMRC Building Sector 21, Dwarka, Delhi-77.

(अनिल कवरानी/ Anil Kawrani)

निदेशक / Director



सत्यमेव जयते

# Minutes of 69<sup>th</sup> PCCM



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

## North Eastern Regional Power Committee

### Minutes of

### 69<sup>th</sup> Protection Coordination Sub-Committee Meeting

**Date:** 11/07/2024 (Thursday)

**Time:** 11:00 hrs.

**Venue:** NERPC conference Hall, Shillong

The list of Participants is attached as **annexure I**

#### **A. C O N F I R M A T I O N   O F   M I N U T E S**

#### **1. CONFIRMATION OF MINUTES OF THE 68<sup>th</sup> PROTECTION SUB-COMMITTEE MEETING OF NERPC.**

Minutes of the 68<sup>th</sup> PCC Meeting held on 13<sup>th</sup> June, 2024 (Thursday) at NERPC Conference Hall, Shillong was circulated vide letter No.: NERPC/SE (O)/PCC/2024/1341-1382 dated 2<sup>nd</sup> July, 2024.

Following comments was received from NERTS.

Sl. No.	Agenda point	Original minutes	Comments
1	B.17, Grid Disturbance in Tipaimukh area of Manipur on 17-April-24	NERTS to increase the Zone II time delay to 150 msec for 132 kV Jiribam-Tipaimukh line considering Max fault clearance time of 132 kV level within 160 msec as per CEA	NERTS to increase the Zone II time delay to 125 msec. POWERGID has agreed to the same.

***The Sub-committee confirmed the minutes of 68<sup>th</sup> PCCM with the above modification.***

## 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
<b>Audit</b>	Internal Audit	All users (132kV and above)	Shall conduct internal audit of protection system
			Audit report to be shared with RPC
			Action plan for rectification of deficiencies to be shared with RPC
	Third party Audit	All users (132kV and above)	Shall conduct audit for each SS
			Shall conduct audit on advice of RPC
			Audit report* to be submitted to RPC and NERLDC/SLDC
			Action plan for rectification of deficiencies
		RPC	Compliance to audit reports to be followed up regularly
		RPC	After analysis of any event, shall identify substations where audit is required to be carried out
	Annual audit plan	All users	Annual audit plan to be submitted to RPC by <b>31<sup>st</sup> October</b>

Background: In 60<sup>th</sup> PCCM the following points were discussed–

Member Secretary NERPC informed that third party protection audit has to be generally conducted by the utilities on their own. However, the 3<sup>rd</sup> party audit will be carried out by team constituted by NERPC at selected substations based on the criticality, analysis and requirement. In this regard, NERPC has already circulated an audit calendar and audit formats for reference of the constituents.

The nodal officers of respective State/Power Utilities have to fill the audit formats and submit to the NERPC secretariat within 1 week.

The forum decided that compliance to audit reports will be followed up regularly in PCC meeting of NERPC.

Information regarding substations that have already been audited will be provided by States to NERPC & NERLDC.

Forum agreed that all users (132 kV and above) have to conduct Internal Audit annually and submit audit report to RPC with action plan for rectification of deficiencies within 30 days of Audit.

Regarding audit plan of utilities, the forum requested the utilities to furnish the list of substations and audit (internal as well as third party) schedule for FY 2024-25. NERLDC Stated that a google spreadsheet has been circulated to the constituents to provide the schedule of protection audit as well as date of last audit. The forum requested the constituents to update the spreadsheet.

In 68<sup>th</sup> PCCM, following points were discussed

1. Forum requested users to update the proposed date for Internal Audit & Third-party Audit in the spreadsheet shared by NERLDC as soon as possible.
2. AEGCL updated that the internal audit was underway and would be completed by June'24. He also updated that third party audit of most of the substations were carried out by NERPC in 2021 and in January'24 and May'24. For rest of the substations the audit to be planned soon.
3. Mizoram stated that reports of internal audit had been shared with NERPC and schedule for external audit had been updated in the google sheet.
4. TSECL updated that internal audit committee had been formed and the internal audit had been started. Forum requested TSECL to plan for third party audit also.
5. Manipur updated that internal audit report had been shared with NERPC. Forum requested to plan for the external audit at the earliest subject to Law and Order situation in the State.
6. DoP Arunachal Pradesh updated that internal audit of Chimpu SS was underway and audit of Lekhi would be done by this month. He also stated that the audit reports would be shared in due time to NERPC.
7. OTPC updated that internal audit of Palatana station had been started and 3<sup>rd</sup> Party audit had already been conducted in Nov'23.
8. NTPC informed that 3<sup>rd</sup> party audit would be conducted by CPRI by June 2024.

Regarding audit of substations of Nagaland and adjoining substations of NERTS, MS, NERPC stated that the audit would be conducted shortly.

***Deliberation of the sub-committee***

1. Forum requested users to update the proposed date for Internal Audit & Third-party Audit in the spreadsheet shared by NERLDC as soon as possible.
2. AEGCL updated that the internal audit has been completed and would share the report shortly. He also updated that third party audit of most of the substations were carried out by NERPC in 2021 and in January'24 and May'24. For rest of the substations, which is 132 kV Karim Ganj, the audit is to be planned soon.
3. Mizoram stated that reports of internal audit had been shared with NERPC and schedule for external audit had been updated in the google sheet.
4. TSECL updated that internal audit of 11 substations have been done and rest to be done next month. Forum requested TSECL to plan for third party audit also.
5. Manipur - absent.
6. DoP Arunachal Pradesh – absent.
7. OTPC updated that internal and external audit reports have been shared to NERPC.
8. NTPC informed that 3rd party audit has been awarded and will be done within 3 months. NTPC asked whether the protection audit includes the audit of generator protection or not. Forum stated that generator protection audit is also included in the audit.

Regarding audit of substations of Nagaland and adjoining substations of NERTS, Forum decided that the audit of 132 kV Dimapur (DoPN) SS, 132 kV Kohima SS, 132 kV Chiepouvozou SS, 132 kV Zhadima SS and 220 kV Dimapur (PGCIL) will be conducted in 1<sup>st</sup> week of August'24. Further audit of rest of the 132 kV substations of Nagaland will be conducted after end of Monsoon season.

**B.2 Urgent requirement of Third-Party Protection Audit of substations of MePTCL**

In 64<sup>th</sup> PCCM, MePTCL had informed that third party protection audit is urgently required at 21 substations (list provided).

In 67<sup>th</sup> PCCM, MePTCL informed that six substations, viz; Killing, Mawphlang, Mawlai, NEHU, Khliehriat and Lumshnong have been shortlisted for carrying out

urgent protection audit. NERPC informed that audit at these substations will be carried out shortly. Also, NERTS requested to carry out 3rd party protection audit at Khlieriat (PG) along with Khlieriat (Meghalaya) substation.

In 68<sup>th</sup> PCCM, MS, NERPC stated that audit would tentatively be conducted by end of July'24.

### **Deliberation of the sub-committee**

Forum decided that audit would tentatively be conducted on 22<sup>nd</sup> and 23<sup>rd</sup> August'24.

### **B.3 Detailed system study to review the protection settings of NER grid as per IEGC 2023**

As per regulation 14(1) of IEGC 2023, “RPCs shall undertake review of the protection settings, assess the requirement of revisions in protection settings and revise protection settings in consultation with the stakeholders of the respective region, from time to time and at least once in a year. The necessary studies in this regard shall be carried out by the respective RPCs. The data including base case (peak and off-peak cases) files for carrying out studies shall be provided by RLDC and CTU to the RPCs”

In this regard, each State has to carry out the detailed system of their grid, once a year, in order to holistically overview the protection settings in the State and present the study report to NERPC and NERLDC. States may use the PDMS and PSCT software platforms to carry out the studies.

In 66<sup>th</sup> PCCM, NERPC stated that the States may carry out the necessary studies by using the PSCT and PDMS software of M/s PRDC.

Assam stated that for training of the software is required to impart necessary skills to the personnel of the State.

PRDC representative assured that necessary training session will be conducted for all the States. He, further highlighted that before carrying out the studies Protection settings database of the software has to be updated.

MS, NERPC directed M/s PRDC to update the database in coordination with NERPC, NERLDC and concerned utilities.

NERLDC highlighted the need to update the database in PDMS software from time to time and also requested PRDC team to model the entire power system of NER in PSCT tool for setting calculation considering recent network changes.



States further requested that a user manual of the PSCT and PDMS software may be provided for easy reference during carrying out the studies. M/S PRDC assured to provide the same at the earliest.

In 67<sup>th</sup> PCCM, M/s PRDC intimated that the training has been scheduled on 20<sup>th</sup> and 21<sup>st</sup> June'24. Forum requested PRDC to take nominations from the States and to share the schedule to them and also take feedback from the trainees after the session.

PRDC agreed to Assam's request to carry out the case studies on some substations of AEGCL during the training. MS, NERPC asked M/s PRDC to update and verify the database in PDMS in coordination with NERLDC.

In 68<sup>th</sup> PCCM, M/s PRDC updated that the training (online) had been scheduled on 20<sup>th</sup> and 21<sup>st</sup> June'24. Forum requested the States to send the nominations for the training at the earliest.

#### **Deliberation of the sub-committee**

M/s PRDC updated that one training session on PSCT has been conducted on 20<sup>th</sup> June'24. Further he stated that next training session will be conducted on 18<sup>th</sup> and 19<sup>th</sup> July'24. The forum requested all the utilities to update the respective network database in the PDMS.

#### **B.4 Analysis and Discussion on Grid Disturbances which occurred in NER grid in June'24 in compliance with IEGC 2023:**

TABLE 8 : REPORT SUBMISSION TIMELINE

Sr. No.	Grid Event <sup>^</sup> (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

<sup>^</sup>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 June 2024 based on the draft report prepared by NERLDC (**annexure B.4**).

***Deliberation of the sub-committee***

NERLDC stated that 43 number of Grid Disturbances occurred in June'24, out of which 28 occurred due to radial nature of network and 15 due to protection issues. Forum noted that multiple disturbances have occurred in Thanlon, Kakching, CC'pur and adjoining areas of Manipur in last few months. NERLDC updated that as intimated by Manipur, many protections system related corrective actions had been taken by Manipur to address the issues (**annexure B.4.1**).

***Agenda from NERLDC***

**B.5 Status of submission of FIR, DR & EL outputs for the Grid Events for the month of May'2024**

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 in Tripping Monitoring Portal for events from 01-06-2024 to 30-06-2024 as on **04-07-2024** is given below:

Name of Utility	No of trippings	Total FIR, DR & EL to be submitted			Total FIR, DR & EL not submitted			% Submission of		
		FIR	DR	EL	FIR	DR	EL	FIR	DR	EL
DoP, Arunachal Pradesh	14	25	20	22	6	1	1	76	95	95
AEGCL	35	65	61	61	64	20	20	2	67	67
APGCL	0	0	0	0	0	0	0	No event		
MSPCL	37	55	51	52	14	9	9	75	82	83
MePTCL	36	56	55	55	8	13	13	86	76	76
MePGCL	4	18	14	13	17	5	11	6	64	15
P&ED, Mizoram	2	3	3	3	0	0	0	100	100	100
DoP, Nagaland	11	15	15	15	0	0	0	100	100	100
TSECL	22	43	41	41	40	5	5	7	88	88
TPGCL	3	3	2	2	3	2	2	0	0	0
POWERGRID	26	41	36	35	2	2	2	95	94	94
NEEPCO	46	57	44	43	12	5	5	79	89	88
NHPC	6	17	17	17	0	0	0	100	100	100
NTPC	1	1	1	1	1	1	1	0	0	0
OTPC	4	5	5	5	0	0	0	100	100	100
IndiGrid	7	10	10	10	2	1	1	80	90	90
MUML	1	1	1	1	0	0	0	100	100	100
KMTL	0	0	0	0	0	0	0	No event		

**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.nerlndc.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 [nerlndcso3@gmail.com](mailto:nerlndcso3@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 [nerlndcprotection@grid-india.in](mailto:nerlndcprotection@grid-india.in).

#### **Deliberation of the sub-committee**

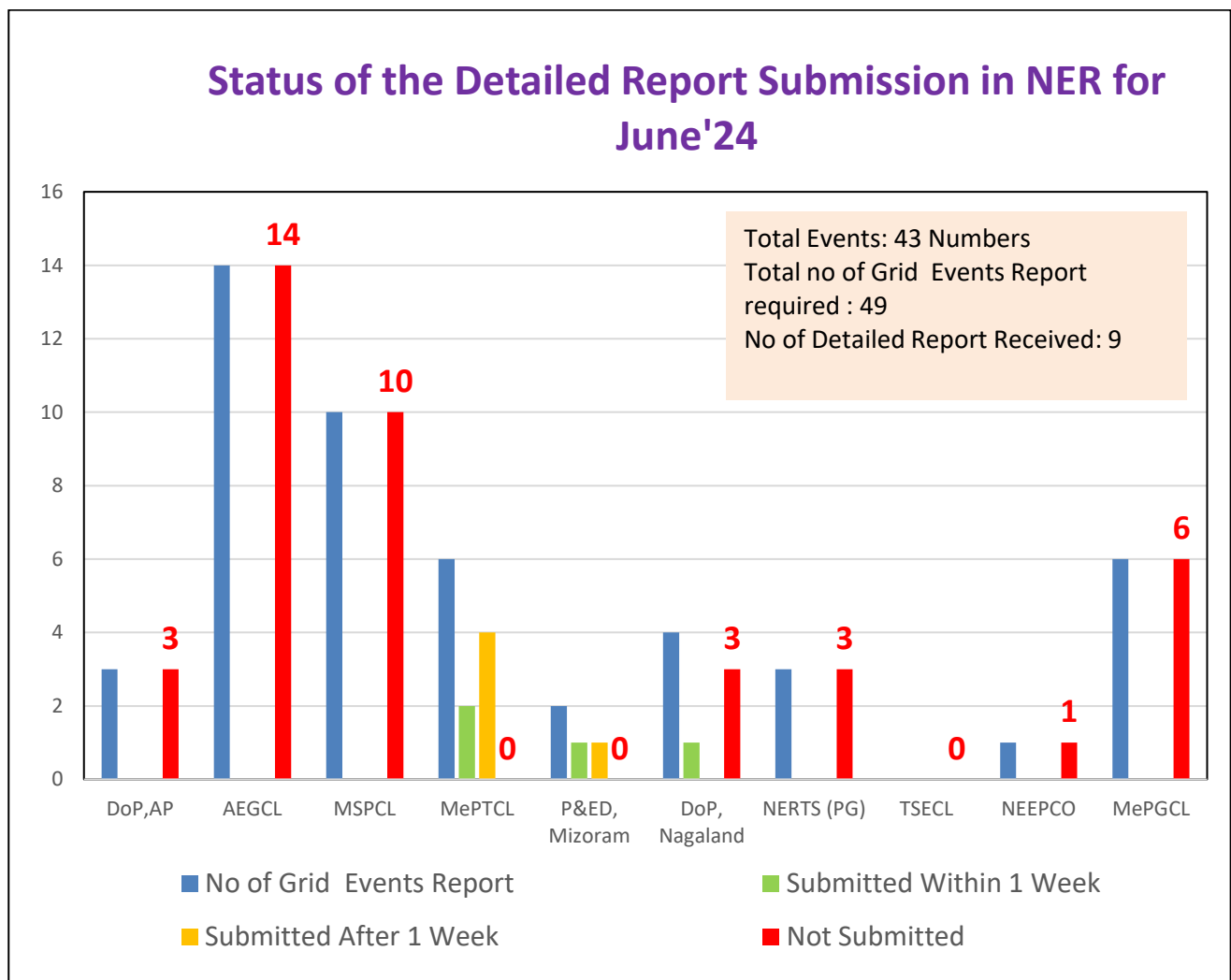
NERLDC highlighted less number of FIR submission for AEGCL (2%), MePTCL (6%) and TSECL (7%) which is the non-compliance of IEGC 2023. ED, NERLDC requested to submit the FIR of all event within timeline specified in IEGC.

After detailed deliberation, the forum requested all the utilities to submit the FIR, DR and EL timely in compliance with IEGC 2023.

### **B.6 Submission of Flash Report and 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 same for the month of **June, 2024 as on 03-07-2024** is shown below:



*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.*

### **Deliberation of the sub-committee**

NERLDC raised the concern of non-submission of Detailed report by the NER utilities. For the month of Jun'24, only 9 Detailed Report received from the Utilities as on 03-07-24.

Forum noted the instances of late submission or non-submission of the reports by the utilities. After detailed deliberation, the forum exhorted the utilities to submit the reports timely in compliance with the IEGC 2023.

**B.7 Non-operation of auto recloser in Important Grid Elements for transient faults in June 2024:**

S. No	Element Name	Tripping Date and Time	RELAY_A	RELAY_B	Auto-Recloser not Operated	Remarks from Utility
1	400 kV Imphal - Silchar 2 Line	03-06-2024 12:03	DP,ZI,R-E,FD: 125.8 km	DP,ZI,R-E,FD: 18.5 km	Both Ends	AR was in non-auto mode
2	132 kV Pare-North Lakhimpur 1 Line	13-06-2024 16:00	DP,ZI,R-E,FD: 7.46KM	DP,ZI,R-E,FD: 20km, 1.6kA	Pare HEP(NEEP CO) & North Lakhimpur	*Neepco - will check. MUML - absent
3	132 kV Badarpur - Karimganj Line	17-06-2024 08:01	DP,ZII,B-E, FD: 22.93Kms, Carrier aided Tripping ( <b>AR operated &amp; ToR</b> )	Z1, OC, 5.04Kma, 3 ph	Karimganj (AEGCL)	AR internally blocked. To be checked during next shut down
4	400 kV P K Bari - Silchar 1 Line	18-06-2024 12:21	DP,ZI,Y-E,FD:26.19KM	DP, ZI,B-E, FD:111.62 KM ( <b>AR Successful</b> )	P K Bari (INDIGRID)	AR not attempted due to carrier failed and some issues in the

S. No	Element Name	Tripping Date and Time	RELAY_A	RELAY_B	Auto-Recloser not Operated	Remarks from Utility
						PLCC. To be investigated
5	220 kV AGBPP - Mariani (AEGCL) Line	26-06-2024 09:15	DP, ZI, R-E, FD:46.47 km	DP, ZI, R-E, FD:11.27 km (AR Successful)	AGBPP(NE EPCO)	**Service engineer to visit shortly to investigate the matter

\*Forum requested to keep AR in Enable condition at Pare HEP for all lines.

\*\* NERLDC highlighted that at AGBPP, Main-1: Any Trip, Virtual output 7/13, dist sig send, AR close within 306 msec high recorded but CB not reclosed. DR needs standardization properly (Z-1 missed, CB status not reporting etc).

***Sub-committee noted as above***

**B.8 Submission of Protection Performance Indices by Transmission Utilities:**

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 10<sup>th</sup> of every month for previous month indices, which shall be reviewed by the RPC:

- The Dependability Index defined as  $D = N_c / (N_c + N_f)$
- The Security Index defined as  $S = N_c / (N_c + N_u)$
- The Reliability Index defined as  $R = N_c / (N_c + N_i)$

Where,

Nc: number of correct operations at internal power system faults

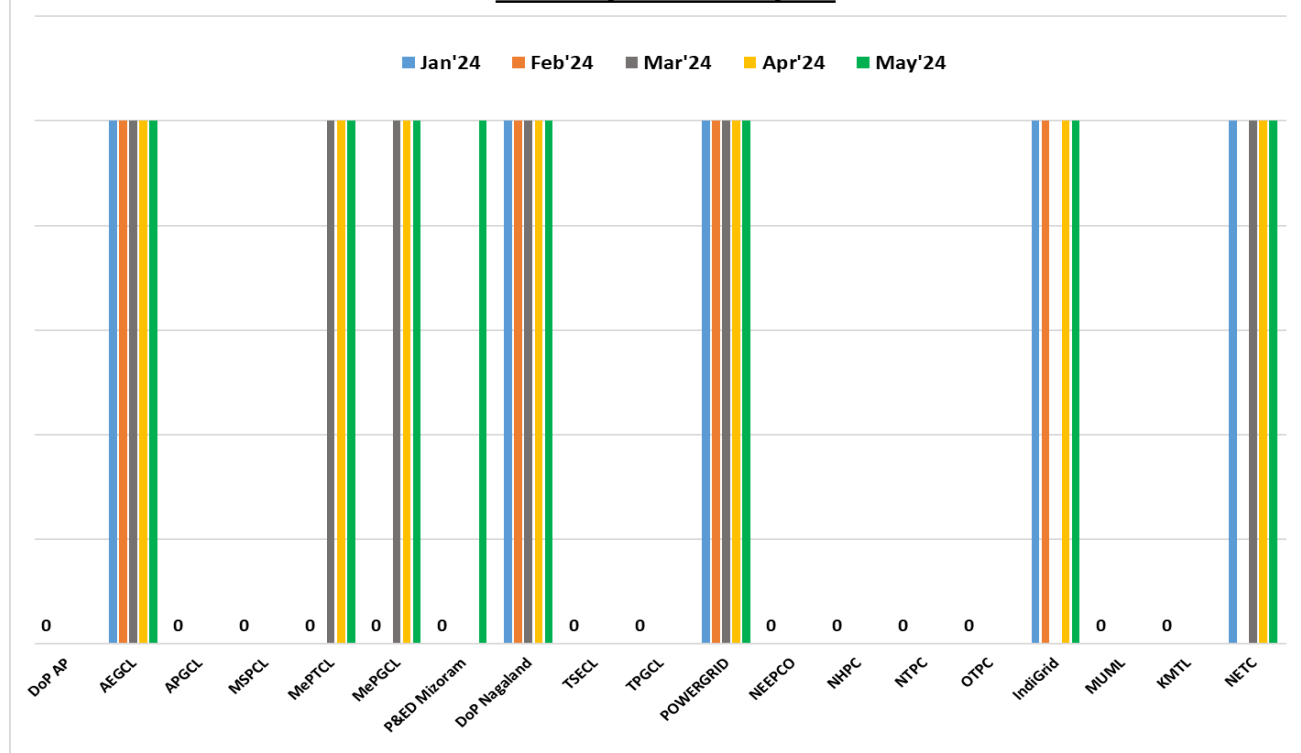
Nf: Number of failures to operate at internal power system faults.

Nu: Number of unwanted operations.

Ni: Number of incorrect operations and is the sum of Nf and Nu

It has been observed that Protection Performance Indices are not being submitted by all the users.

**Status of submission of Protection performance indices from  
January'24 to May'24**



It has been observed that **DoP AP, APGCL, MSPCL, TSECL, TPGCL, NEEPCO, NHPC, OTPC, MUML & KMTL** has not submitted the protection performance indices since Jan'24 which is a violation of **IEGC Clause 15.6**.

Therefore, all Users are requested to furnish performance indices (Dependability-D, Security-S, Reliability-R) with regards to the tripping of elements to NERPC & NERLDC positively **by 10th of every month for previous month indices**.

**Deliberation of the sub-committee**

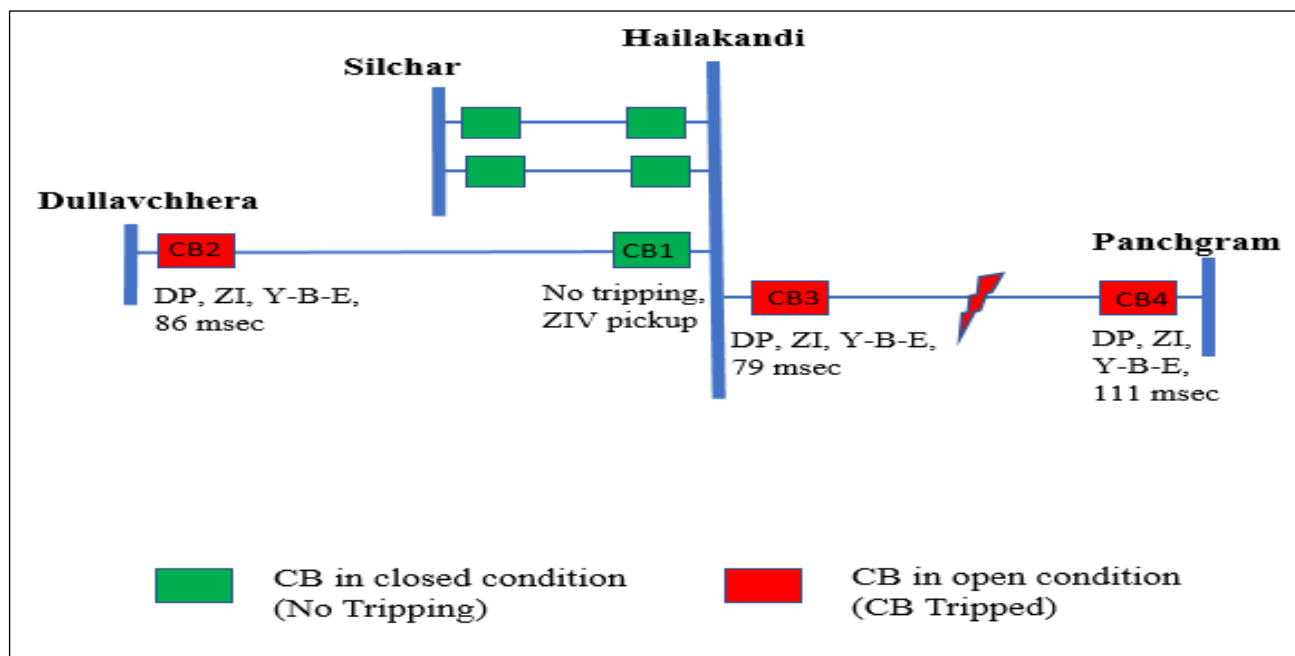
P&ED, Mizoram updated that they have submitted for last 5 months. Also, a few ISGS /STU raised that they are not aware to the requirement of the submission requirement.

NERLDC highlighted that few utilities are not submitting the report in the proper format & requested to share in proper format for fruitful analysis. Forum decided to attach a copy of the format in the MoM of the PCC Meeting. This will also be shared in the NER protection whatsapp Group.

MS, NERPC urged States to send the requisite information by July end and from next month onwards send regularly. It was decided that NERLDC will attach the format for seeking data from utilities /States as **Annexure B.8**.

### **B.9 Unwanted tripping of 132 kV Dullavchhera-Hailakandi line on 05.05.2024**

At 13:53 Hrs of 05.05.2024, 132 kV Dullavchhera-Hailakandi line & 132 kV Hailakandi-Panchgram line tripped.



As per DR analysis, Y-B-E fault (I<sub>y</sub>-8.3 kA, I<sub>b</sub>-7.3 kA, I<sub>n</sub>-2.6 kA) in 132 kV Hailakandi-Panchgram line cleared within 79 msec from Hailakandi end on DP, ZI & 111 msec from Panchgram end on DP, ZI.

At the same time, Dullavchhera end relay detected the fault in ZI and CB tripped within 86 msec, which is inferred to be unwanted. There was no tripping from Hailakandi end and ZIV pickup which clearly indicates that fault is beyond the line. AEGCL may update the following-

1. ZI overreaching issue at Dullavchhera end for 132 kV Dullavchhera-Hailakandi line.
2. The DR time drift Issue of **23 minute** at Dullavchhera end.

#### ***Sub-committee may deliberate***

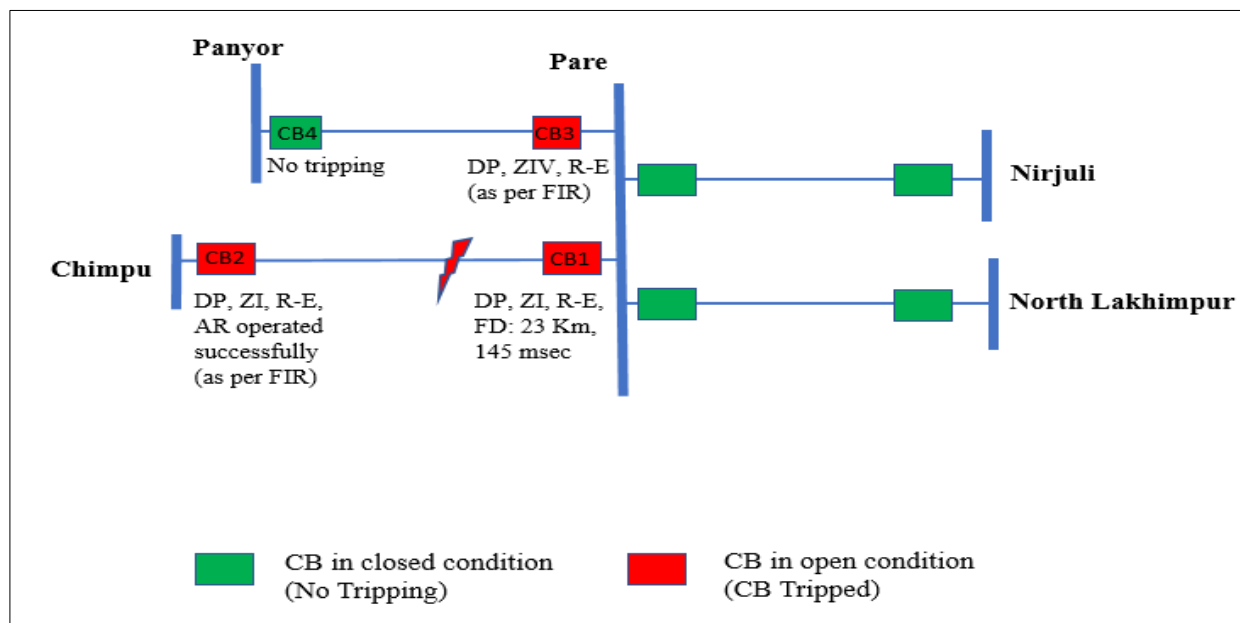
1. Regarding Z1 tripping at Dullavchhera, AEGCL stated that settings have been checked and found to be ok. AEGCL further stated that the rely will be recheck shortly.



- Regarding time drift, AEGCL stated that the same will be rectified, using GPS, shortly. (This is due to problem with GPS Connector, which is not readily available at local market. Connector will be procured within July24)

### **B.10 Multiple tripping of 132 kV Panyor-Pare line & 132 kV Pare-Itanagar line on 09.05.2024**

At 02:07 Hrs of 09.05.2024, 132 kV Pare-Itanagar & 132 kV Panyor-Pare lines tripped.



As per DR analysis of 132 kV Pare-Itanagar line, R-E fault initiated at 02:07:24.071 Hrs. After 74 msec, R-phase current increased to 2.9 kA. Fault cleared within 145 msec on operation of DP, ZI (initially ZII pickup) from Pare end.

For 132 kV Panyor-Pare line, there was no tripping from Panyor end. However, Pare CB tripped on DP, ZIV (as per FIR, no DR/EL submitted)

DoP AP & NEEPCO may update the following-

- Reason for tripping of 132 kV Panyor-Pare on Z4 and its corrections.
- Reason for Non operation of AR during Single phase fault at Pare end of 132 kV Pare-Itanagar line.

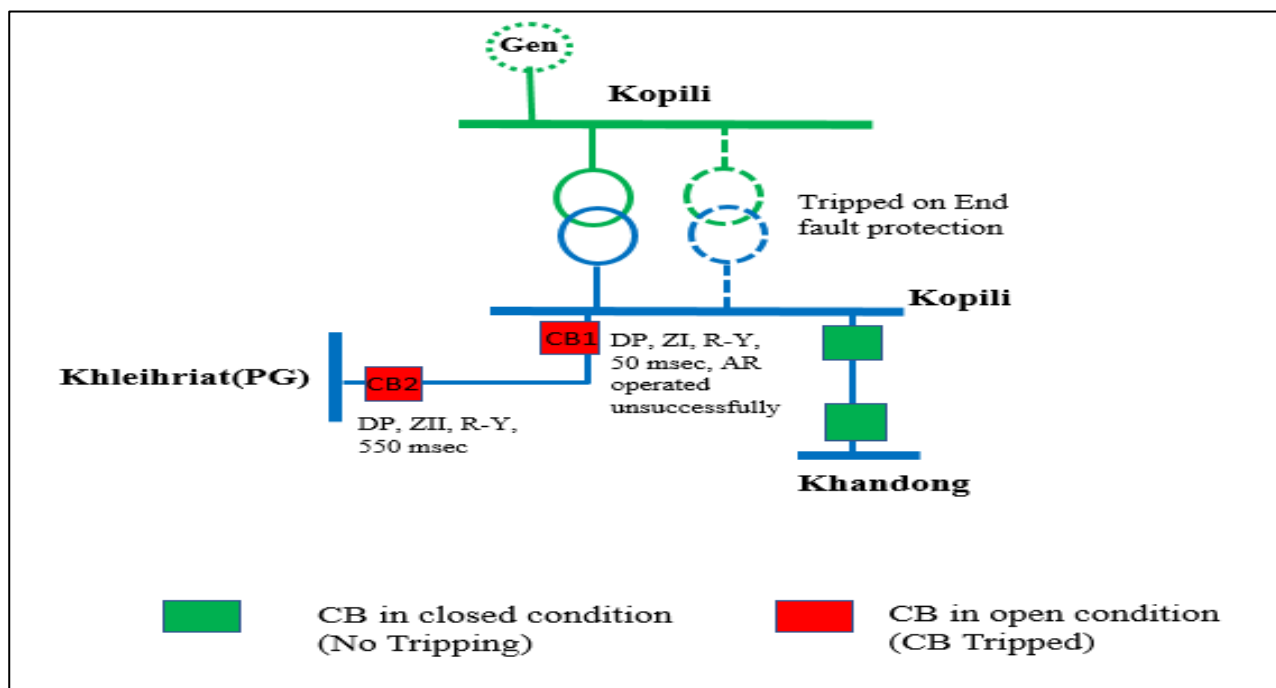
### **Deliberation of the sub-committee**

NEEPCO updated that ZIV settings at Pare end for Panyor line will be checked and will be revised soon. Forum requested to share the protection settings of 132 kV Paynor Line with NERLDC & NERPC.

No conclusive reason shared by NEEPCO for Non operation of AR during Single phase fault at Pare HEP. Forum requested NEEPCO to enable AR function in all lines connected to Pare HEP as it's the mandate of IEGC.

### **B.11 Tripping of 220/132 kV Kopili ICT-II on 28.05.2024**

At 01:43 Hrs of 28.05.2024, 132 kV Kopili-Khleihriat line & 220/132 kV Kopili ICT-II tripped.



As per DR analysis of 132 kV Kopili - Khleihriat line, R-Y fault (Ir-6.5 kA, Iy-6.5 kA) cleared within 50 msecs on operation of DP, ZI from Kopili end and within 550 msec from Khleihriat end on operation of DP, ZII (As reported by POWERGRID, the line tripped due to falling of tree on line at span no. 21 to 22).

At the same time, 220/132 kV ICT-II at Kopili tripped on operation of end fault protection (EFP) as per information received from NEEPCO.

NEEPCO may update the reason for operation of end fault protection of Kopili ICT-II for fault beyond line and its corrective measures.

### **Deliberation of the sub-committee**

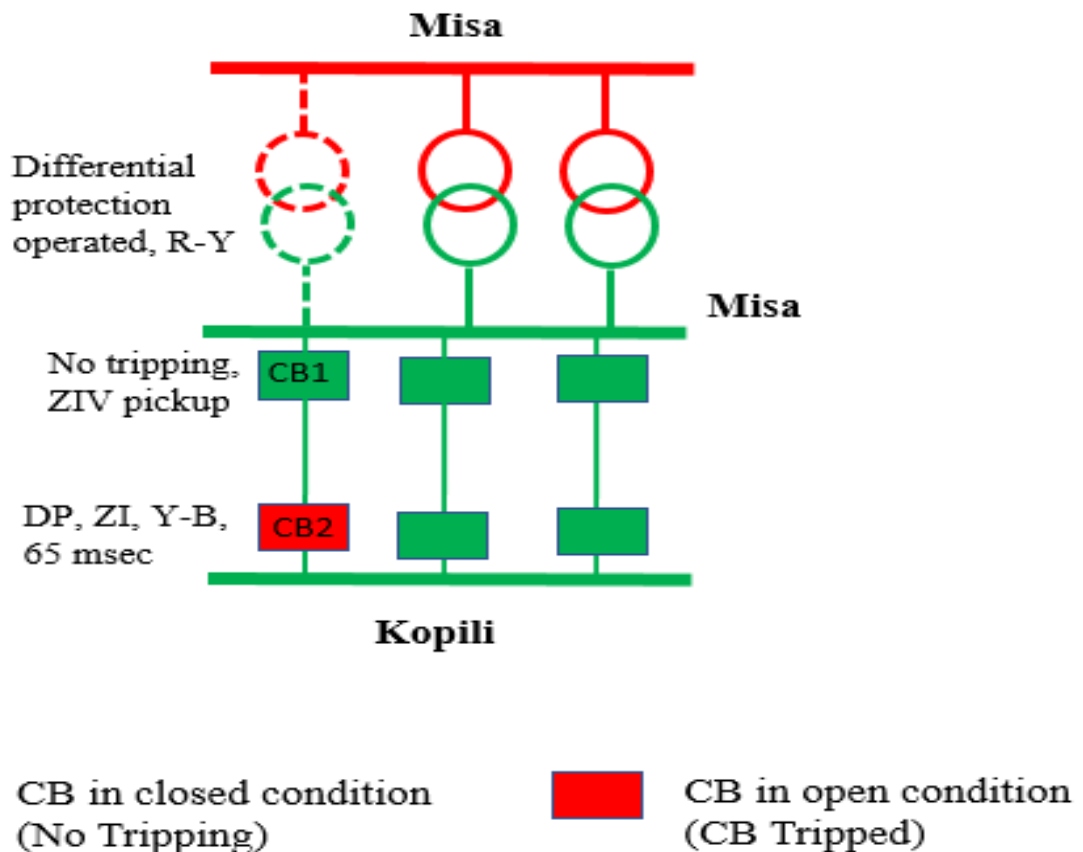
NEEPCO informed that 220 kV side bay of the ICT II tripped on EFP, which is embedded in the Bus Bar protection of the 220 kV bus. He further updated that DR

and EL of the tripping have been sent to the OEM for analysis and the report will be shared shortly to NERPC and NERLDC.

Forum requested NEEPCO to check the protection settings as well as configurations in the Bus Bar protection relay.

### **B.12 Unwanted tripping of 220 kV Misa-Kopili I line on 28.05.2024**

At 06:39 Hrs of 28.05.2024, 220 kV Misa-Kopili I line and 500 MVA, 400/220 kV ICT-I at Misa tripped.



400/220 kV ICT-I at Misa tripped on operation of differential protection.

**As report by POWERGRID, a long branch of tree had fallen over middle and bottom conductor and touched tower cross arm of 220 kV side dead-end tower due to heavy storm which caused immediate tripping of ICT-I at Misa on diff. protection.**

At the same time, 220 kV Misa-Kopili I line tripped from Kopili end on operation of DP, ZI (fault cleared within 65 msec). There was no tripping from Misa end.

ZIV was pickup from Misa end which clearly indicates that fault is in reverse direction.

**NEEPCO** is requested to update the reason of ZI tripping at Kopili end and its corrections for 220 kV Misa-Kopili I line to avoid any further reoccurrence.

### **Deliberation of the sub-committee**

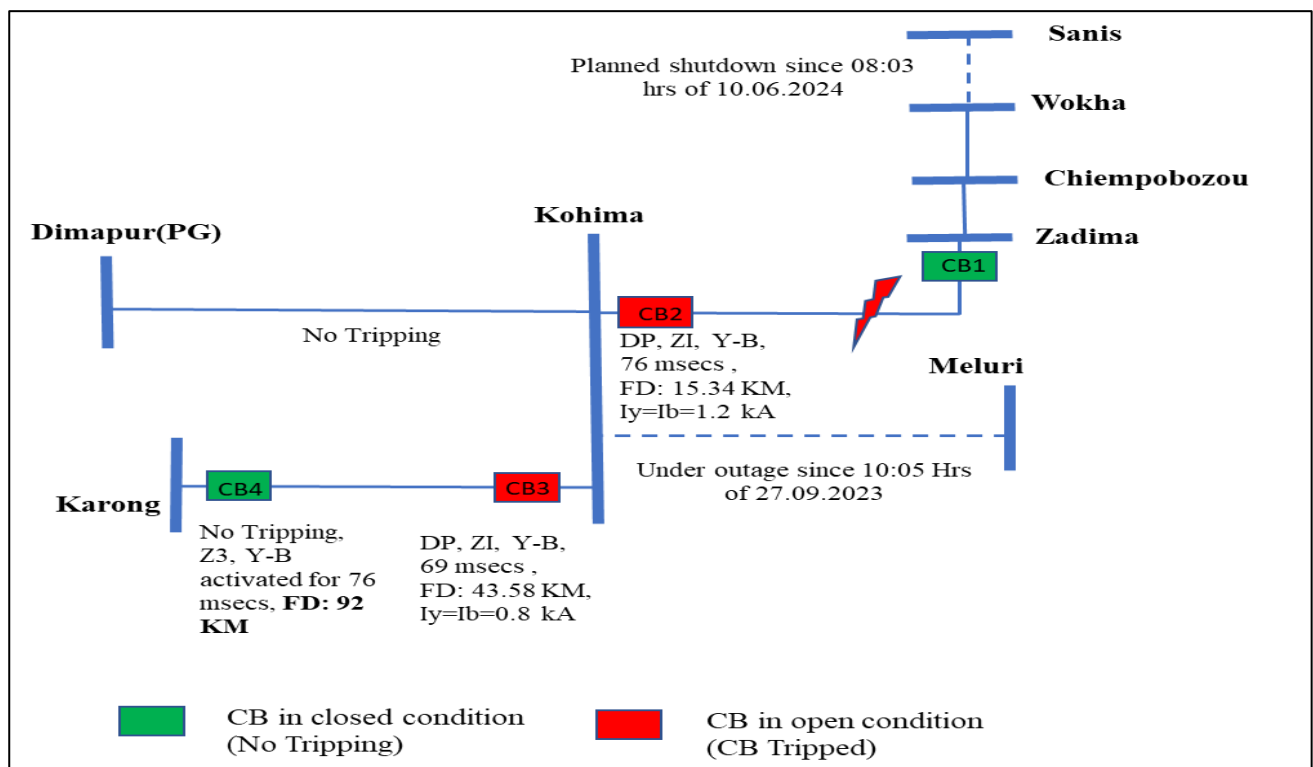
NEEPCO deliberated that the Main I relay Mal-operation of Misa-Kopili I at NEEPCO end.

NEEPCO stated that issue of ZI operation from Kopili end will be checked and resolved shortly.

Forum requested to compare the relay settings at Kopili end with other two circuit as they have not tripped. Also, requested to furnish Main-1 setting (.set) file of all 3 lines to NERLDC and NERPC.

### **B.13 Grid disturbance in Zhadima, Chiephbozou & Wokha areas of Nagaland on 10-June-24:**

Zhadima, Chiephbozou & Wokha areas of Nagaland Power System were connected with rest of NER Grid through 132 kV Sanis-Wokha and 132 kV Kohima-Zhadima lines. (132 kV Sanis-Wokha was under planned shutdown since 08:03 hrs of 10.06.2024)



At 22:30 Hrs, Y-B fault occurred in 132 kV Kohima- Zhadima line as confirmed from the DR of **CB2** showing ZI (tripping) & CB4 showing ZIII (no tripping).

However, tripping of 132 kV Karong –Kohima line at Kohima on Z-I i.e. CB3 was unwanted.

DoP, Nagaland is requested to update:

1. Reason for tripping at Kohima i.e. CB3 on ZI protection for Reverse fault.
2. Rectification of 2 min time lag in the DR of Kohima end for 132 kV Karong –Kohima.

Also, MSPCL is requested to highlight the action taken on 1 Hr time lead in the DR of Karong end for 132 kV Karong –Kohima.

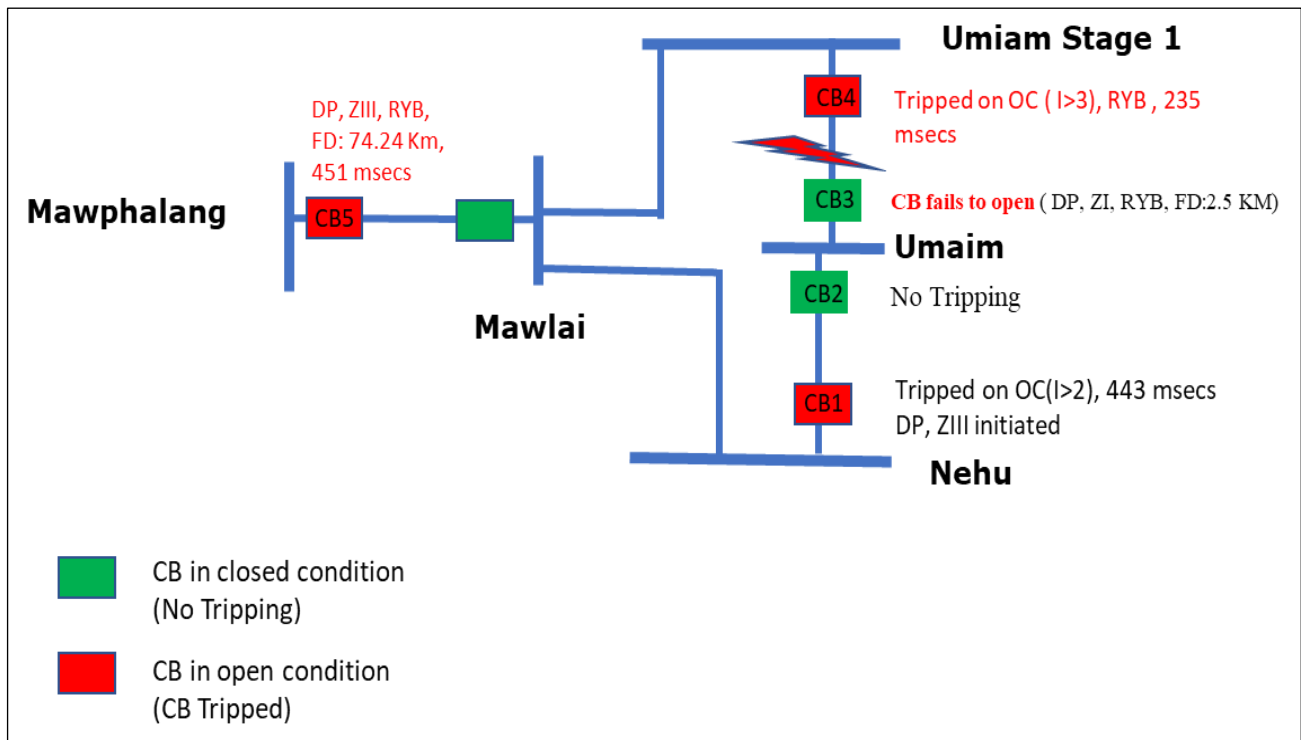
### **Deliberation of the sub-committee**

Regarding ZI operation at Kohima end for Karong line, Nagaland updated that CT polarity has been checked and found ok. The forum requested DoP Nagaland to check the healthiness of the main relay for the Karong line.

### **B.14 Grid disturbances in Umiam of Meghalaya Power System on 24-06-2024:**

Umiam S/S of Meghalaya Power System was connected with rest of NER Grid via 132kV Umiam Stage I - Umiam and 132 kV Nehu-Umiam lines.

At **13:38** Hrs of 24-06-2024, 132kV Umiam Stage I-Umiam and 132 kV Nehu-Umiam lines tripped. Due to tripping of these lines, Umiam S/S of Meghalaya Power System was isolated from NER Grid.



**As per DR analysis of Umiam end of 132 KV Umiam Stage 1- Umiam**, R-Y-B (Ir-Iy-Ib-2.5 kA) phase fault initiated at 13:35.32.800 Hrs. Distance Protection detected the fault in ZI and Trip command issued. However, CB fails to open at Umiam resulted in the opening of CB at Nehu for 132 KV NEHU – Umiam.

**As per DR analysis of Umiam I end of 132 KV Umiam Stage I- Umiam**, R-Y-B (Ir-5.4 kA Iy-7 kA & Ib-7 kA) phase fault initiated at 13:37.01.866 Hrs. However, tripping observed due to operation of Highset OC relay in 235 msecs.

Root Cause of the tripping of **132 KV Umiam Stage 1- Umiam**: snapping of conductor.

Following action taken by MePTCL (As per Detailed Report):

1. On inspection it was found that there was mechanical blockage in the tripping mechanism at Umiam (for Umiam Stage I) which halted the CB from opening. (The problem was then rectified).
2. The Zone III-time delay of 132kV Mawphalang- Mawlai feeder has been reset to 500 ms and also the high set, DEF of 132 kV NEHU-Umiam feeder changed to 400 ms.

MePTCL is requested to update:

1. Reason for non-operation of DP (Main Protection) at Umiam Stage I for 132 KV Umiam Stage 1- Umiam line.

2. The status of review of ZIII time delay (451 msec) setting and its coordination at Mawphlang as per NER protection philosophy.
3. Rectification of DR parameter standardization at Umiam, Umiam I & Mawphlang for proper analysis purpose as per Grid code.

### **Deliberation of the sub-committee**

MePTCL stated that the 132 kV Umiam stg I-Umiam line is a very short line and there is no differential Protection (due to non-availability of OPGW on the line) Distance protection on the line and only B/U protection is present on the line. Forum exhorted MePTCL to install OPGW on the line and commission Differential Protection on the line.

Regarding ZIII settings at Mawphlang end for Mawlai line, Forum requested MePTCL to revise the time delay to 750 msec.

MePGCL assures that rectification of DR parameter standardization at Umiam, Umiam I & Mawphlang will be done within July24.

Also, the forum requested MePTCL to revise the settings of B/U OC protection at Nehu end for Umiam line so the it is coordinated with ZIII protection.

### **B.15 Frequent Grid disturbances in Myntdu Leshka HEP of Meghalaya Power System:**

132 kV Myntdu Leshka - Khlieriat D/C lines play a crucial role in power evacuation from Leshka Generation. In the recent past, it has been observed that 132 kV Myntdu Leshka-Khleihriat 1 & 2 lines has tripped **four** times during May 2024.

Similar trippings are also observed in the month of June'24 where simultaneous tripping of both the created Five number of Grid Disturbance at Leshka power station.

The details of tripping in June'24 are as follows:

<b>Sl No</b>	<b>Event</b>	<b>GD/GI/ Near miss</b>	<b>Date &amp; Time</b>	<b>Root cause</b>	<b>Generation Loss in MW</b>
1	Leshka generating station	GD-I	<b>13-06-2024</b> 01:10	Lightning ,Y-E fault	123 MW
2		GD-I	<b>17-06-2024</b> 20:30	Lightning, R-Y-B-E fault	119 MW

3		GD-I	<b>17-06-2024</b> 23:37	Likely Lightning, R-B-E fault	42 MW
4		GD-I	<b>23-06-2024</b> 16:00	Vegetation	119 MW
5		GD-I	<b>26-06-2024</b> 12:01	Likely Lightning, R-B-E fault	84 MW

Following observations needs to be addressed which has already been intimated by NERLDC vide Letter No: NERLDC/SO-II/14/6366, dated 18/06/2024 and NERLDC/SO-II/14/6177.

1. There was no Auto reclose attempt observed. The auto-reclose (A/R) scheme should be inspected and activated to ensure the safe evacuation of Leshka generation by reclosing the line in case of single-phase fault.
2. ZII time delay need to be reviewed as per NERPC protection philosophy (less time delay observed during GD in May'24).
3. DR channels needs to be standardized both ends:
  - DR time duration appears to be insufficient at Leshka. It should be extended to 3 seconds, with a pre-fault time of 500 milliseconds and a post-fault time of 2.5 seconds.
  - DR time not synchronised, exhibiting time drift issue at Leshka & Khliehriat.
  - CB status is currently not allocated in the DR digital channel. It's essential for MePTCL and MePGCL to include CB ON/OFF status in DR channels at both ends for fruitful analysis of events.
4. MePGCL is requested to ensure that patrolling related activities are undertaken as per CEA (Grid Standard) Regulation, 2010 on regular basis and measures may be identified and implemented at the earliest so as minimize tripping of these lines.
5. Installation of TLSA may be expedite to prevent tripping on account of lightning.

MePGCL/MePTCL may update the corrective measures taken on the above observations which has already highlighted in the last 68<sup>th</sup> PCCM.

### **Deliberation of the sub-committee**



MePGCL stated that installation of TLSA on the line is critical for reducing the tripping on lightening faults and the matter was also discussed in 26<sup>th</sup> TCC/RPC meeting. Member Secretary, NERPC stated that in the 26<sup>th</sup> RPC meeting, a resolution has been adopted by the forum to request MoP to consider providing PSDF funding on urgent basis as a special dispensation to NER.

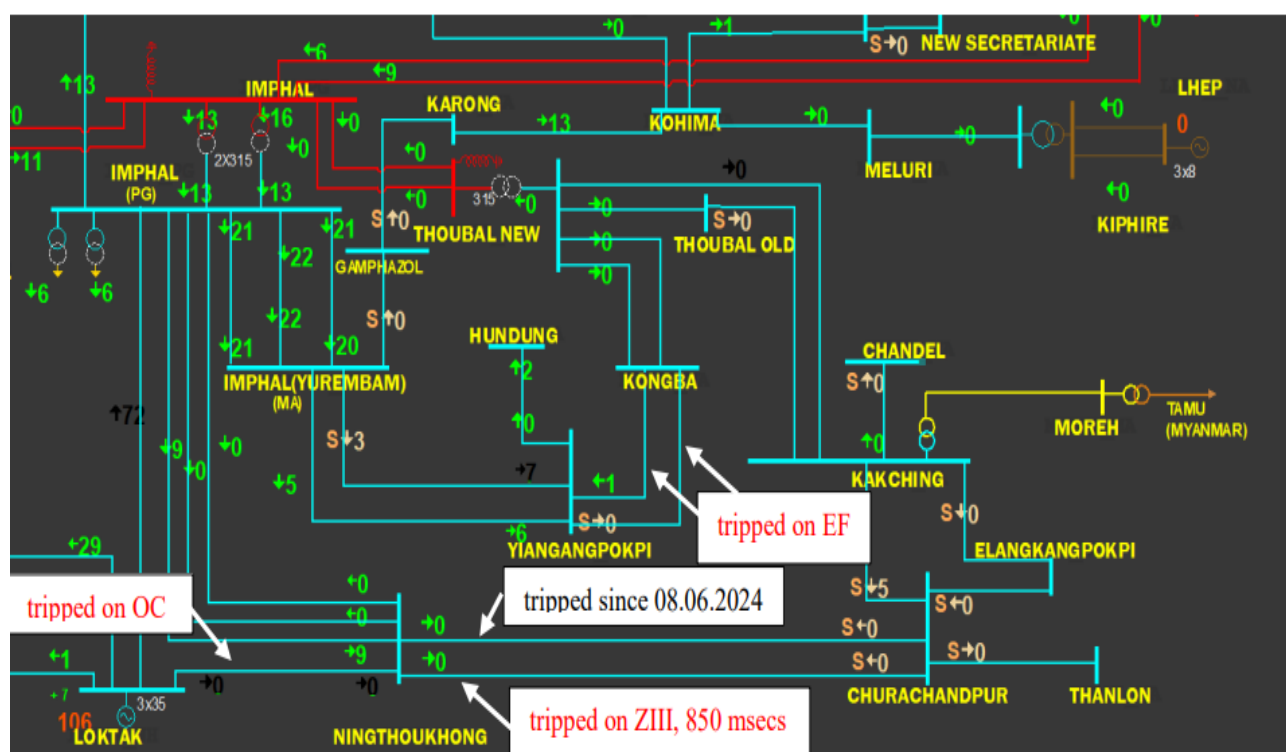
As per MePGCL, intentionally time delay of ZII was kept low at khleihriat to cover the fast operation during fault in the link feeder within Leska. MePGCL requested to keep it for the time being.

Forum requested MePTCL/MePGCL to resolved the DR parameter standardization issue within July'24.

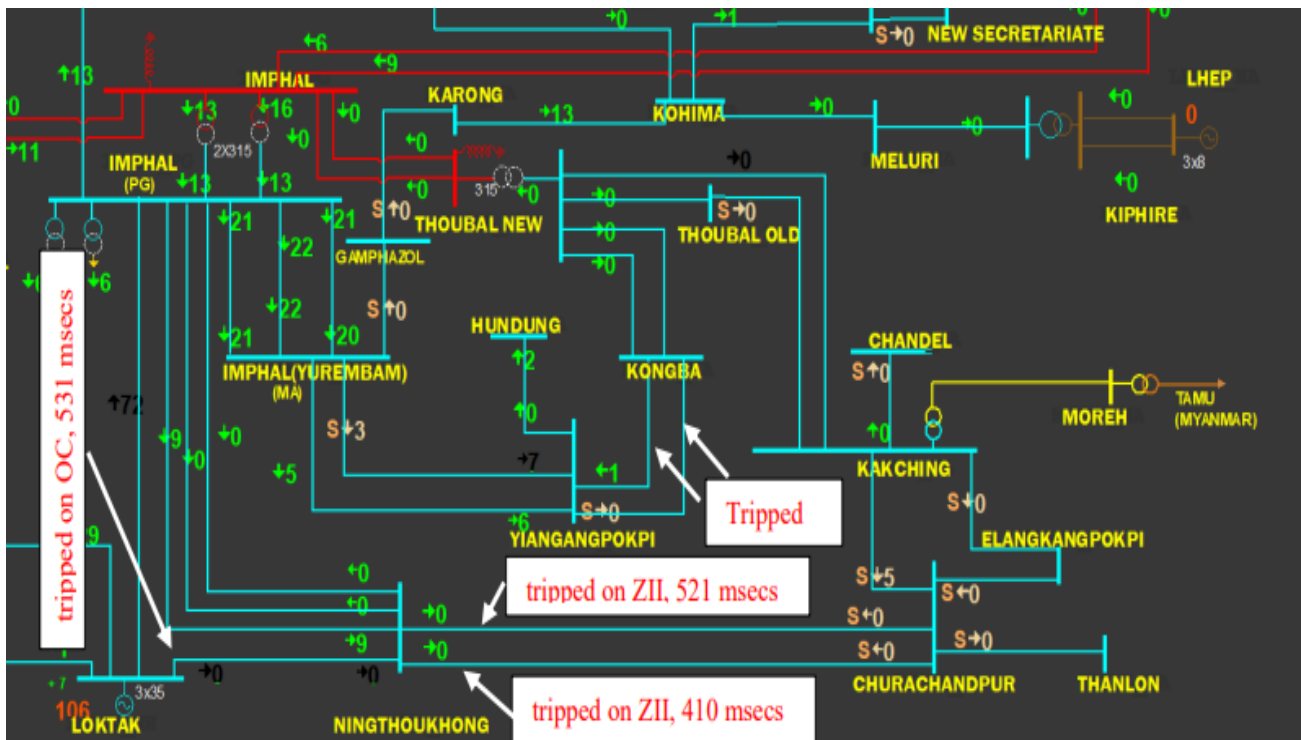
**B.16 Relay maloperation at Yiangangpokpi end of 132 kV Yiangangpokpi – Kongba 1&2 line of Manipur power system:**

Grid Disturbance occurred in the Manipur area during the month of June'24 due to the relay maloperation at Yiangangpokpi end.

Sl No	Event	GD/GI/ Near miss	Date & Time	Analysis
1	Churachandpur, Thanlon, Elangkangpokpi, Kakching, Chandel, Moreh, Thoubal old, Thoubal New and Kongba area of Manipur Power System and Tamu load of Myanmar	GD-I	12-06-2024 10:33	Fault in the downstream of Churachandpur cleared by simultaneous tripping at loktak in 840 msec by Backup OC & Ning at 860 msec by DP, ZIII.  At the same time, 132 kV Yiangangpokpi -Kongba 1 &2 line tripped on Relay maloperation at Yiangangpokpi.



Sl No	Event	GD/GI/ Near miss	Date & Time	Analysis
2	Churachandpur Thanlon, Elangkangpokpi, Kakching, Chandel, Thoubal Old, New Thoubal and Kongba area of Manipur	GD-I	15-06-2024 06:11	<p>Fault in the 132 kV Ningthoukhong - Churachandpur cleared by simultaneous tripping 132 kV Loktak- Ningthoukhong line at loktak in 531 msecs by Backup OC, Ningthoukhong ckt I at 521 msecs by DP,ZII &amp; Ningthoukhong ckt II at 420 msecs by DP,ZII</p> <p>At the same time, 132 kV Yiangangpokpi -Kongba 1 &amp;2 line tripped on Relay maloperation at Yianggangpokpi.</p>



MSPCL is requested to update the root cause and remedial measures on relay setting coordination of the above tripping events.

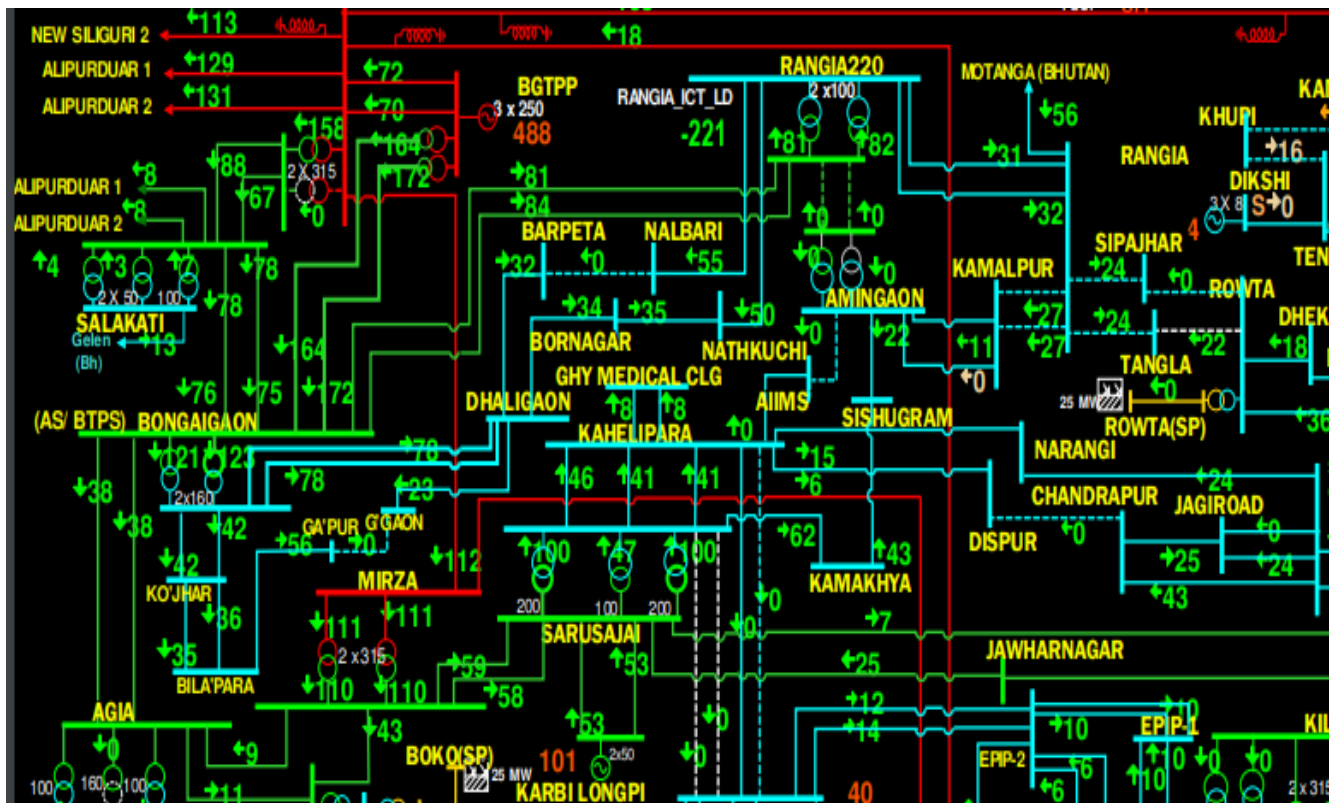
### **Deliberation of the sub-committee**

NERLDC updated that required relay coordination had been done by MSPCL.

### **B.17 Bus Bar relay maloperation at BTPS (AEGCL) substation of Assam on 14-June-24:**

At 22:32 Hrs of 14-06-2024, all feeders connected to Bus 1 and Bus 2 of 220 kV BTPS (AEGCL) tripped due to maloperation of LBB/BB relay. Due to tripping of these elements, BTPS, Kokrajhar, Bilasipara, Gauripur, Gossaingaon, Dhaligaon, APM, Barpeta, Nalbari, Barnagar, Nathkuchi, Kamalpur, Sipajhar, BGR, Railway TSS areas of Assam Power System was isolated from NER Grid and collapsed due to no source available in these areas.

Due to above, Grid disturbance of category GD-2 with Load loss of 410 MW and Gen loss of 0.79 MW (Hayen Hydel- IPP) observed in the Assam power system, which is the matter of serious concern from operational point of view.



As per the analysis, there was no fault on the system at the time of event. As such tripping of all elements on LBB protection inferred to be UNWANTED. AEGCL is requested to update the root cause of maloperation of LBB/Bus bar protection and its corrective actions taken to avoid repetition.

### **Deliberation of the sub-committee**

AEGCL stated that at 22:31 Hrs, OSR protection spuriously operated at 160MVA, 220/132kV ICT#2. After the loss of ICT#2, the 160MVA, ICT#1 was overloaded and tripped on Back up Overcurrent protection.

Further the elements connected to 220 kV Busbar I tripped on LBB protection (maloperation due to control cable wiring issue) during the tripping of ICT#2 on OSR and the elements connected to 220 kV Busbar II tripped on LBB protection during the tripping of ICT#1.

SPS operated correctly at Rangia due to tripping of 220 kV BTPS-Rangia DC line. NERLDC stated that 2 X 160 MVA, 220/132 kV ICT at BTPS (AS) is not N-1 complied. For ensuring reliable system operation at BTPS area of Assam Power system, SPS need to be explored as a short term measure till upgradation of ICT with higher capacity.

The forum stated that the occurrence of GD-2 of such magnitude due to spurious and maloperation of protection system is a serious concern for NER power system and strongly urged AEGCL to take necessary measures to address the issues.

**B.18 Grid Disturbance in Wokha area of Nagaland on 26-June-24:**

Wokha area of Nagaland Power System was connected with rest of NER Grid through 132 kV Sanis-Wokha line and 132 kV Wokha-Chiephebozou line.

At **09:31 Hrs of 26.06.2024**, 132 kV Sanis-Wokha line and 132 kV Wokha-Chiephebozou line tripped resulting in blackout of Wokha area of Nagaland.

As per DR&EL analysis, Y-B fault occurred in 132 kV Wokha-Chiephebozou line cleared on ZI from Chiempobozou and ZII from Wokha end. At the same time, 132 kV Wokha-Sanis line tripped from Wokha end only on operation of B/which is unwanted.

Observations:

- i) Tripping of 132 kV Wokha-Sanis line from Wokha end on operation of backup protection for fault in 132 kV Wokha - Chiephebozou line (reverse fault) is unwanted.
- ii) DR time at Wokha end for 132 kV Wokha-Chiephebozou line and 132 kV Wokha-Sanis line is different from the event time.

Similar type of event occurred 2 times in May'24.

***DoP Nagaland may update the root cause and remedial measures taken at Wokha for Sanis Line.***

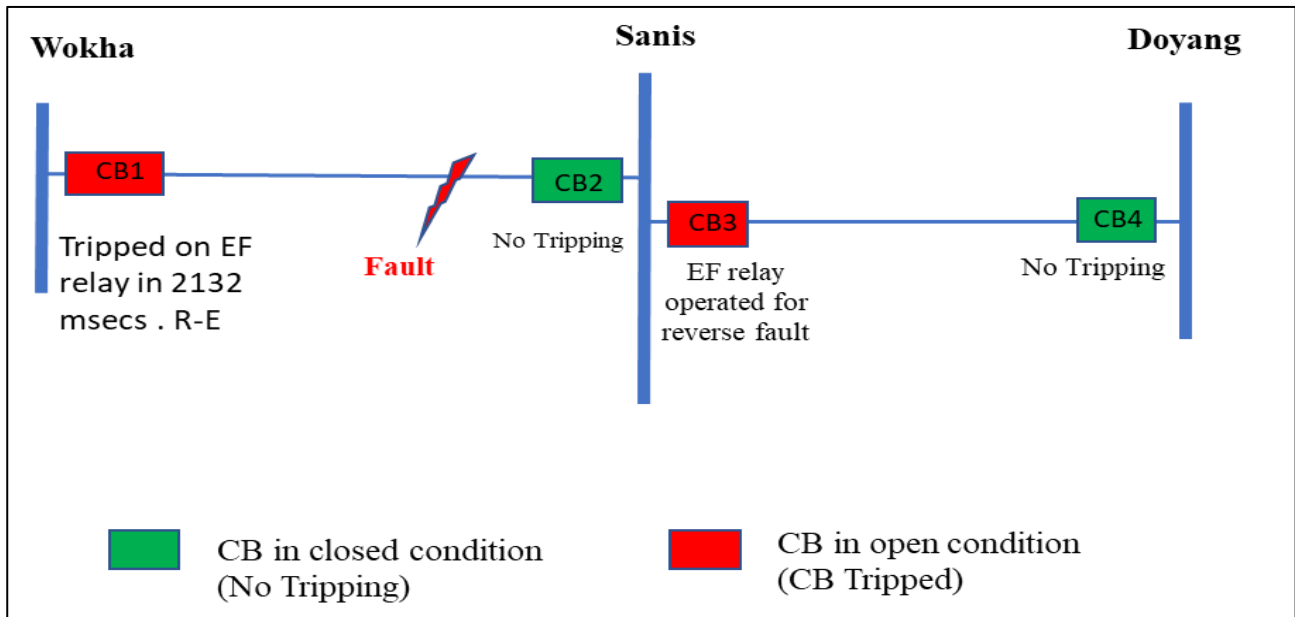
**Deliberation of the sub-committee**

DoP Nagaland updated that the B/U relay of Sanis line at Wokha end is faulty and disabled on 2<sup>nd</sup> July'24 and B/U protection is enabled in Main (primary) relay.

**B.19 Grid Disturbance in Sanis area of Nagaland on 27-June-24:**

Sanis area of Nagaland Power System was connected with rest of NER Grid through 132 kV Sanis-Wokha line and 132 kV Doyang-Sanis line.

At **03:54 Hrs of 27.06.2024**, 132 kV Sanis-Wokha line and 132 kV Doyang-Sanis line tripped resulting in blackout of Sanis area of Nagaland.



DR of Wokha end of 132kV Sanis-Wokha Line, R-E fault of High resistive nature initiated at 03:54:13.213 Hrs and cleared by Backup EF relay in 2132 msec at Wokha end. There was no tripping from Sanis end.

DR of Sanis end of 132kV Doyang-Sanis Line, Tripping observed on reverse fault. There was no tripping from Doyang end.

Observations:

1. Non operation of protection system at Sanis for 132 kV Wokha Line and
2. Mis-operation of B/U at Sanis for 132 kV Doyang Line.

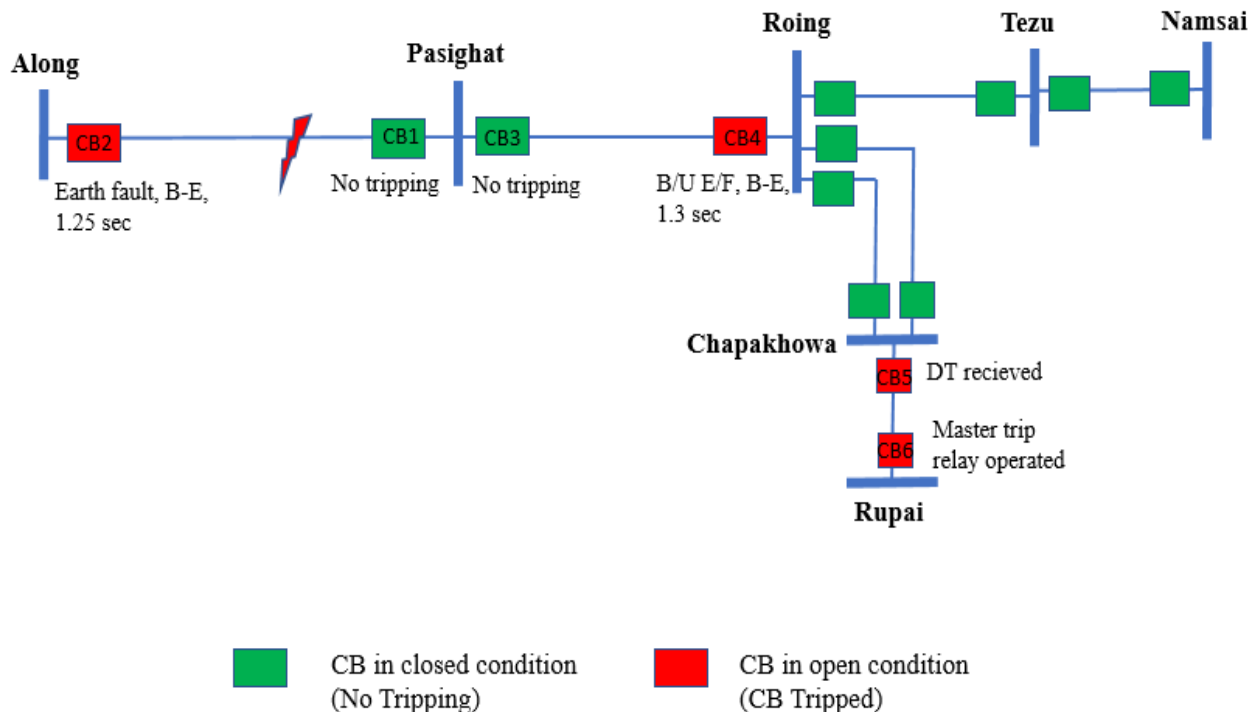
***DoP Nagaland may update the root cause of the above issues and remedial measures taken.***

#### **Deliberation of the sub-committee**

DoP Nagaland stated that the transmission wing will visit Sanis SS next week to look into the issues with protection system for Doyang line.

**B.20 Grid disturbance in Pasighat, Roing, Tezu, Namsai areas of Arunachal Pradesh and Chapakhowa area of Assam on 29.06.2024**

At 09:25 Hrs of 29.06.2024, 132 kV Along-Pasighat, 132 kV Roing-Pasighat & 132 kV Rupai-Chapakhowa lines tripped leading to blackout of Pasighat, Roing, Tezu, Namsai areas of Arunachal Pradesh and Chapakhowa area of Assam. Load loss of 14 MW occurred.



As per DR analysis, resistive B-E fault ( $I_b$ -0.32 kA,  $I_n$ -0.26 kA) in 132 kV Along-Pasighat line initiated at 09:24:32.912 Hrs and cleared within 1.25 sec from Along end on operation of directional earth fault. There was no tripping from Pasighat end due to which fault was feeding from Roing end which was finally cleared by tripping of healthy 132 kV Roing-Pasighat line from Roing end (within 1.3 sec) on operation of backup E/F.

At the same time, 132 kV Rupai-Chapakhowa line also tripped with B/U EF operated at Rupai and DT received at Chapakhowa which seems to be unwanted.

Observations:

1. Protection system at Pasighat failed to isolate the fault in 132 kV Along-Pasighat line which is a matter of concern.
2. Unwanted tripping of 132 kV Rupai-Chapakhowa line on B/U protection.
3. FIR/DR/EL of tripping of 132 kV Rupai-Chapakhowa line not submitted by AEGCL due to which proper analysis could not be done.

DoP Arunachal Pradesh/AEGCL is requested to update –

1. Root cause of non-isolation of fault by protection system at Pasighat for 132 kV Along Line and its remedial measures.
2. Reason of B/U operation at Rupai for 132 kV Chapakhowa Line and its setting coordination. .

Similar event occurred at 11:21 Hrs of 03<sup>rd</sup> July.

#### **Deliberation of the sub-committee**

1.Regarding non-operation of protection at Pashighat end for Along line, DoP Ar. Pradesh stated that earlier there was issue in CT neutral wiring in B/U protection, which was rectified. However, the problem has recurred, so DoP Arunachal Pradesh will check the EF relay comprehensively along with that at Along and Roing.

2.Regarding Tripping at Rupai for Chapakhowa line, AEGCL updated that the DT EF protection was kept on. AEGCL disabled the Backup high set setting at Rupai end after the event.

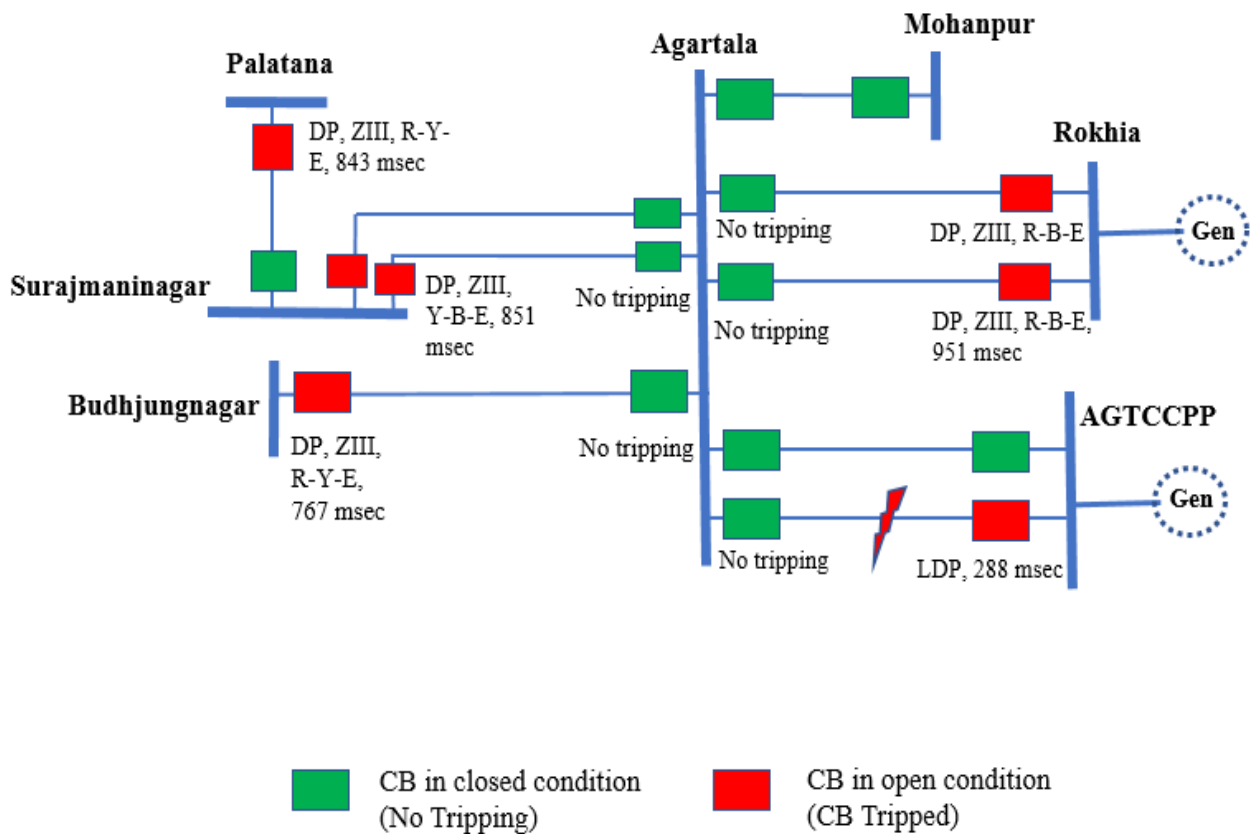
NERLDC highlighted that similar type of events occurred on 9th July'24, where fault in 132 kV Along-Basar line was not clear from Along & Pasighat and it is clear from Roing on Z-III protection.

Forum requested DoP AP, to conduct relay testing using the same fault current and submit a detailed report thereafter. Due to the frequent protection failures at Along and Pasighat, NERLDC emphasized the urgent need for inspections/protection audit at these two substations without delay.

#### **B.21 Multiple tripping in Agartala area of Tripura Power system on 18.06.2024**

At 12:38 Hrs of 18.06.2024, multiple elements tripped in Agartala area of Tripura power system which is a matter of serious concern as it reduces security and reliability of NER grid.





As per DR analysis, double phase to earth fault is in 132 kV AGTCCPP-Agartala II line occurred at 12:34:47.0013 Hrs with  $I_r=I_y=7$  kA,  $I_n=5$  kA, and  $V_{ae}=V_{be}=18$  kV, resulting in a Differential Trip. However, the **circuit breaker (CB) at Agartala did not open**, causing the fault to persist till 12:34:47.836 Hrs. Consequently, the fault was cleared from remote ends of other healthy lines emanating from Agartala on operation of ZIII from Rokhia, Agartala, Budhjungnagar and Palatana.

NERTS is requested to update the root cause/findings of the event and its corrective action taken.

OTPC may review the ZIII setting at Palatana for 132 kV Palatana-Surajmaninagar line.

### **Deliberation of the sub-committee**

1.Regarding tripping of AGTCCPP-Agartala line, NERTS informed that the Lockout relay picked up so tripping did not occur at Agartala end for the line. He further stated that lock out relay has been replaced.

2.Forum requested OTPC to check the reach of ZIII protection for Subramani Nagar line.

**B.22 Non-operation of SPS related to Bangladesh due to tripping of 132 kV Palatana-Surajmaninagar line**

At 12:38 Hrs of 18.06.2024, 132 kV Palatana-Surajmaninagar Line tripped with R-Y-E fault and cleared within 840 msec on DP, ZIII. Fault was beyond the line which seems to be inside Tripura System.

As per DR data, as soon as the line tripped, **Bangladesh SPS-2** operation signal was high. However, no DT signal was sent resulting in no SPS operation at Surajmaninagar.

**Similar event occurred at 14:20 Hrs of 18.05.2024** (Tripping of 132 kV Palatana-Surajmaninagar line due to maloperation of pole discrepancy relay)

**As per IEGC-23, Clause 16(4):** 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.

OTPC is requested to update the reason for non-transmission of DT signal and its corrective measures taken.

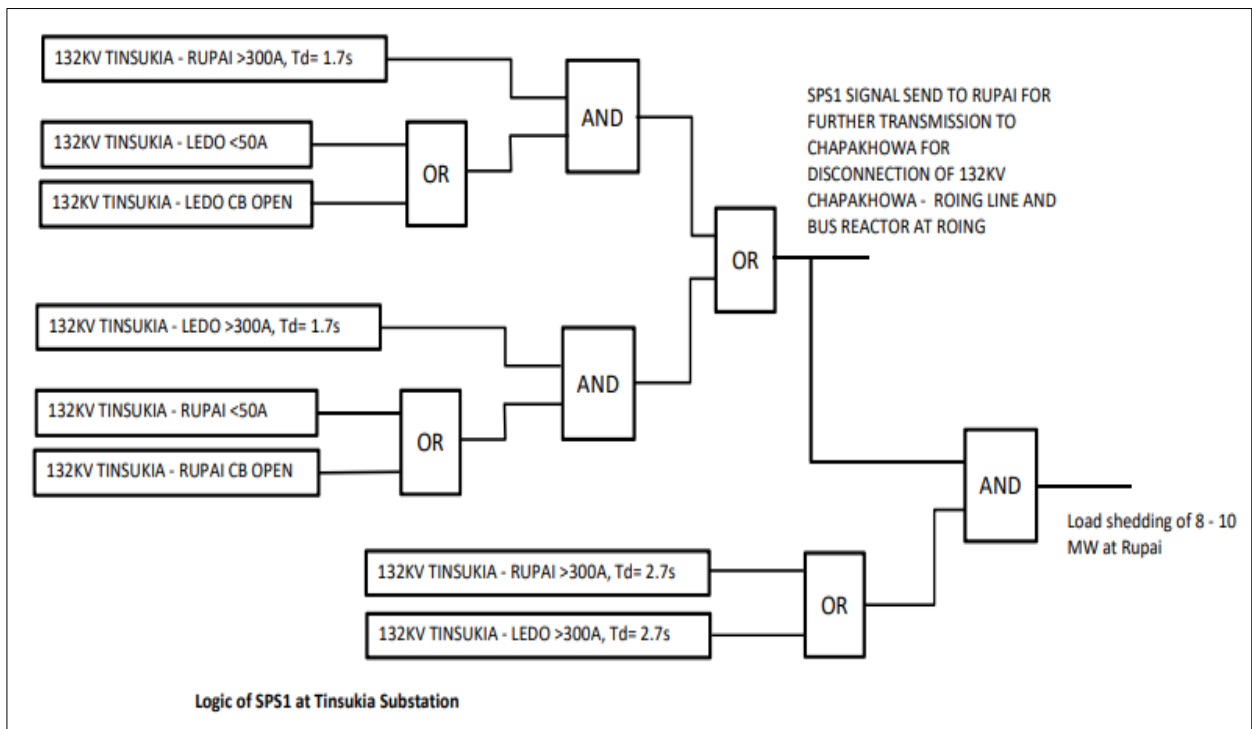
**Deliberation of the sub-committee**

OTPC informed that the SPS did not operate due to PLCC issue at Palatana end. NERTS updated that they will look into and the testing of the PLCC to be done shortly.

**B.23 Requirement of SPS related to reliable power supply to Arunachal Pradesh from Assam through 132 kV Roing-Chapakhowa D/C lines**

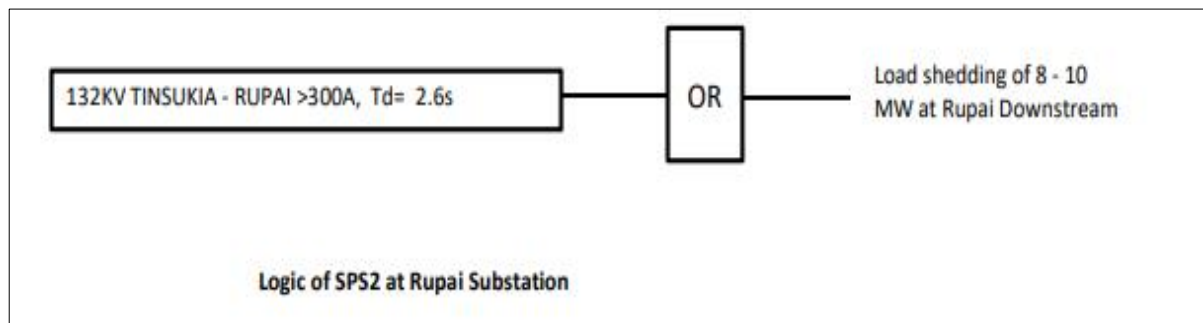
**Scenario I:**

On tripping of either 132 kV Tinsukia-Ledo line or 132 kV Tinsukia-Rupai line with current exceedingly more than 300 A in 132 kV Tinsukia-Ledo or 132 kV Tinsukia-Rupai line, 132 kV Roing-Chapakhowa D/C lines would open along with 20 MVAR bus reactors at the Roing substation. Also, 8-10 MW load will be disconnected from 132 kV Rupai or 132 kV Ledo substation.



### **Scenario II**

On tripping of 132 kV Panyor-Ziro line, to mitigate the overloading of 132 kV Tinsukia-Rupai line, 8-10 MW load at 132 kV Rupai S/S will be shed when current in 132 kV Tinsukia-Rupai line crosses 300 A.



AEGCL is requested to update the implementation status of SPS logics.

For implementation of SPS logic at Chapakhowa for disconnection of 132 kV Roing-Chapakhowa D/C lines and BR at Roing, POWERGRID requested (via email) AEGCL to install one Aux relay with minimum 4 NO contacts (not self-resetting type) at Chapakhowa end for smooth implementation of the scheme.

### **Deliberation of the sub-committee**

1. AEGCL informed that the SPS has been implemented and scheme checking will be done during next shutdown.
2. NERTS stated that they will install the auxiliary relay at Chapakhowa shortly.
3. Forum requested AEGCL, NERTS and NERLDC to check and ensure the thorough testing of the scheme.

#### **B.24 Frequent tripping of Monarchak Generation during June'24:**

On 16.06.2024 & 17.06.2024, Monarchak GT tripped on Rotor Earth Fault.

As per DR analysis, there were no fluctuations in voltage and current magnitudes during both tripping events. On 16<sup>th</sup> June'24, the recorded current and voltage at the time of the event were 2.3 kA ( $I_r=I_y=I_b$ ) and 6.5 kV ( $V_r=V_y=V_b$ ), respectively. Similarly, on 17<sup>th</sup> June'24, the recorded values were 3.2 kA ( $I_r=I_y=I_b$ ) and 6.5 kV ( $V_r=V_y=V_b$ ).

Therefore, tripping of Monarchak GT on operation of the Rotor E/F seems to be misoperation.

NEEPCO is requested to:

1. Update the root cause of such tripping and its remedial measures.
2. Review the Rotor E/F settings along with healthiness of Relay and check for any DC earth faults in the DC system.

#### **Deliberation of the sub-committee**

EF relay replaced with new one on 3rd June'24 as stated by NEEPCO.

Also, NEEPCO informed that BHEL engineer will visit next week to look into the issue with the excitation system.

#### **B.25 Mock testing of System Protection Scheme (SPS) related to tripping of Bus reactors at 400 kV P K Bari (ISTS) & 400 kV S M Nagar (ISTS):**

As per Clause 16.2 of IEGC 2023, mock testing of SPS for reviewing SPS parameters & functions should be conducted at least **once** in a year.

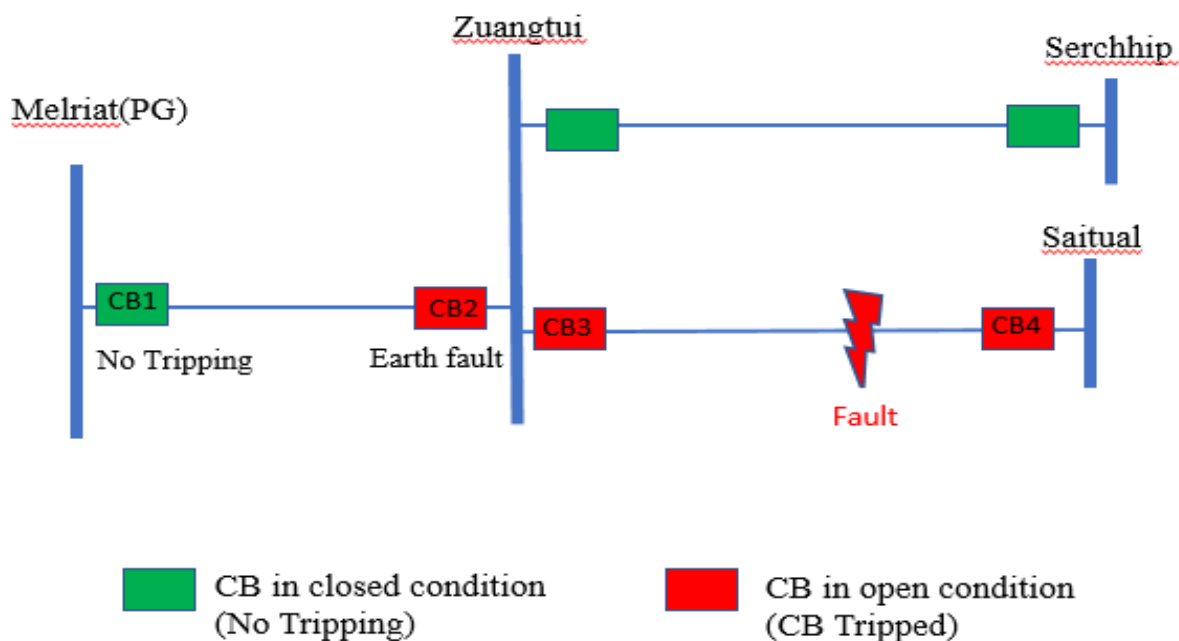
In order to compliance the above clause, IndiGrid is requested to provide the tentative dates for mock testing of SPS in July'24 related to tripping of Bus reactors at 400 kV P K Bari (ISTS) & 400 kV S M Nagar (ISTS).

#### **Deliberation of the sub-committee**

M/s Indigrid informed that the mock testing is likely to be done in last week of July'24.

### **B.26 Grid Disturbance in Zuangtui S/S and radially connected areas of Mizoram on 05-May-24:**

Zuangtui substation and radially connected Saitual, Vankal, Khawzawl and Serchhip substations are connected to the rest of the grid via 132 kV Melriat(PG)-Zuangtui line. 132 kV Serchhip-Lunglei line is kept open due to system requirement. At **04:13 Hrs of 05.05.2024**, 132 kV Melriat-Zuangtui line tripped which led to grid disturbance in Zuangtui S/S and radially connected areas of Mizoram.



As per FIR submitted by P&ED Mizoram, fault was in 132 kV Zuangtui-Saitual line. Tripping of 132 kV Melriat-Zuangtui line from Zuangtui end for reverse fault in 132 kV Zuangtui-Saitual line is unwanted resulting in blackout of Zuangtui and radially connected substations of Mizoram.

In 68<sup>th</sup> PCCM, Mizoram stated that fault in the Zuagntui-Saitual was due to stormy weather condition at the time. Further, he stated that the directionality and setting of backup relay at Zuangtui for 132 kV Melriat(PG)-Zuangtui Line would be checked shortly.

### **Deliberation of the sub-committee**

Mizoram representative stated that directionality and setting of backup relay at Zuangtui for 132 kV Melriat(PG)-Zuangtui Line has been checked and rectified.

<b>C. FOLLOW - UP AGENDA ITEMS</b>
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**C.1 Submission of monthly and quarterly progress report by respondents of NERLDC's Petition:**

As per the Direction of Hon'ble commission related to the Petition No 198/MP/2020, 259/MP/2020, 535/MP/2020, 539/MP/2020 and 540/MP/2020, respective respondents have to submit the **monthly/quarterly progress report** of the action plan prepared by the respective respondents in consultation with the Petitioner (i.e. NERLDC) to NERPC.

Order dated	Petition No	Respondent
08-Nov-2023	198/MP/2020	DoP, Arunachal Pradesh
	259/MP/2020	DoP, Nagaland
	539/MP/2020	MSPCL
27-Oct-2023	535/MP/2020	TPTL/TSECL
	540/MP/2020	P&ED, Mizoram

All the respondents are requested to share the monthly/Quarterly progress report for the month of Dec'23.

In 63<sup>rd</sup> PCCM, MS, NERPC stated that Hon'ble CERC (in above mentioned Petition) has directed the following:

NERPC shall monitor the work of the implementation of the Protection system by the Department of Power, Arunachal Pradesh; Department of Power, Nagaland, MSPCL, TPTL/TSECL, P&ED, Mizoram and shall submit a quarterly progress report to the Commission till the establishment of the Protection system at the substations identified by the NERLDC.

NERPC shall validate relay settings and conduct the Protection Audit of the associated transmission system at the substation and transmission lines, as and when required. Any issue faced during the implementation of Protection system or observed during the protection audit shall be discussed in the Protection Sub-Committee meeting at the RPC forum and sorted out. Concerned Power department /State shall identify one person from their top management as a nodal officer, who shall submit a monthly progress report on the implementation of the protection

system to the NERPC and NERLDC, till the establishment of the Protection system at the substations identified by the NERLDC.

In this regard, Member Secretary strongly urged the concerned States to appoint a nodal officer at SE and above level who shall submit a monthly progress report on the implementation of the protection system to NERPC and NERLDC. The monthly progress report will be monitored at PCC forum. He requested the States to send monthly progress report and action plan accordingly.

In 67<sup>th</sup> PCCM, AEGCL updated that Nodal officer for submission of work progress report has been nominated. Forum requested DoP Arunachal Pradesh to submit the nomination of Nodal officers to NERPC.

DoP Nagaland stated that work progress for the months of March'24 and April'24 have been submitted to NERPC.

NERPC stated that the quarterly work progress report has been prepared and will be sent to CERC shortly.

In 68<sup>th</sup> PCCM, MS, NERPC stated that the quarterly work progress report has already been sent to CERC.

DoP Ar. Pradesh updated that the nodal officer had been nominated and the details would be intimated to NERPC shortly.

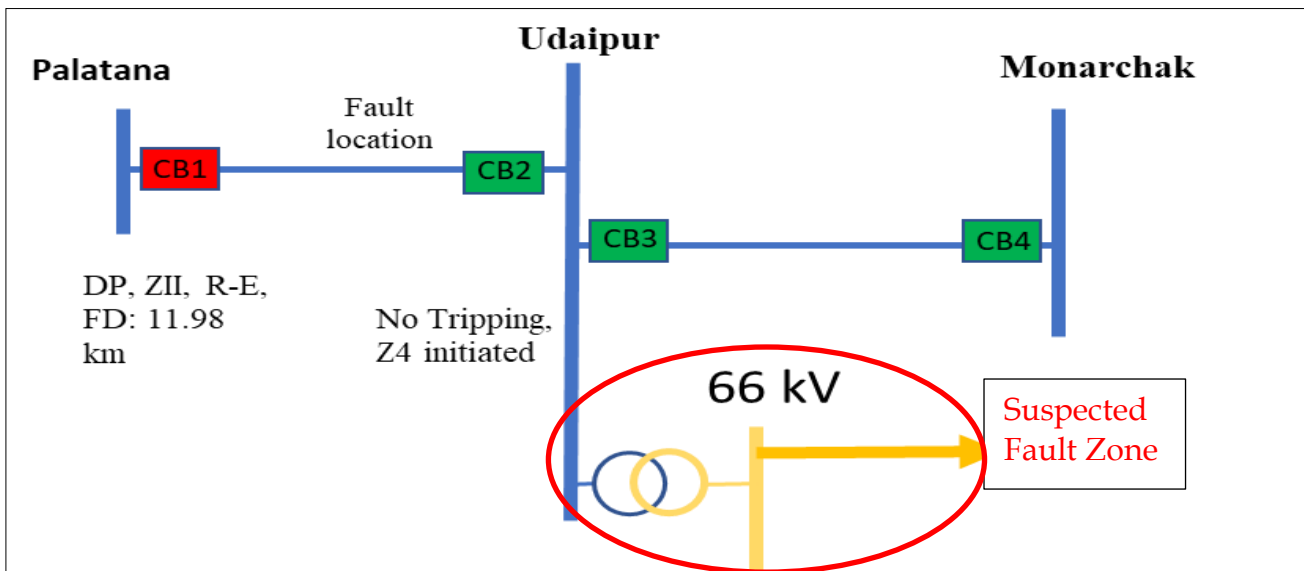
### **Deliberation of the sub-committee**

NERLDC highlighted the non-submission status of AP & Nagaland till date.

MS, NERPC stated that 2<sup>nd</sup> quarterly progress report (April-June'24) would be prepared shortly. He requested the concerned States and NERLDC to submit the monthly progress report, till June'24, to NERPC at the earliest.

### **C.2 Fault in downstream system of Udaipur area of Tripura power system on 31-Mar-2024:**

132 kV Udaipur SS is connected through 132 kV Palatana-Udaipur & 132 kV Monarchak- Udaipur Line.



At 07:37 Hrs on 31-03-2024, 132 kV Palatana – Udaipur line tripped at Palatana end on operation of DP, ZII, R-E, FD: 11.98 Km.

However, no tripping & DP, Z4 initiation (reverse fault) at the Udaipur end indicates the fault was in the downstream of the Udaipur SS.

Therefore, TPTL/TSECL is requested to inform the root cause and remedial measures that has been taken to prevent reoccurrence of the event.

In 66<sup>th</sup> and 67<sup>th</sup> PCCM, TSECL informed that fault occurred in downstream 66 kV lines due to heavy wind. Regarding protection system of 66 kV system and 132/66 kV transformer, the forum exhorted TSECL to provide the details of protection system to NERPC and NERLDC. TSECL assured to provide the same shortly.

Forum also noted that non-clearance or delayed clearance of downstream faults at Udaipur SS had caused unwanted tripping at Monarchhak and Palatana generator ends which have had detrimental effects on the generators. Forum strongly urged TSECL to take urgent actions to strengthen the downstream protection system.

In 68<sup>th</sup> PCCM, TSECL updated that the details of downstream protection system would be sent shortly to NERPC and NERLDC. The forum strongly urged TSECL to take urgent actions to strengthen downstream protection system.

### **Deliberation of the sub-committee**

TSECL updated that the protection settings of the downstream system will be sent shortly to NERPC and NERLDC.

### **C.3 Mapping of SPS in the SCADA Display for real time monitoring of all SPS:**



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 is 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)	

At present, there are 18 numbers of SPS under operation and 2 numbers of SPS under implementation as listed tabulated below

SPS mapping status as update by utilities in 69<sup>th</sup> PCCM

Sl. No.	SPS under operation	Long term measures	SPS mapping status in SCADA (YES/No)
1	<b><u>Tripping of 400kV Palatana-Silchar D/C-</u></b> when both modules of Palatana are in service causes tripping of HV side breaker of 2x125 MVA, 400/132 kV ICT at Palatana	After commissioning of 400 kV Palatana - Surajmaninagar line-1, there is no requirement of this SPS and hence, it is to be kept OFF. However, the SPS at Palatana is to be kept ON during shut down of 400	SCADA Mapping Completed. SPS in disabled condition after commissioning of 400 kV

		kV Palatana-Surajmaninagar (ISTS) line-1	Palatana-Surajmaninagar Line
2	Reverse power flow more than 60 MW from LV to HV side of 2 X 315 MVA, 400/220 kV Azara ICTs causes tripping of 400/220 kV, 2x315 MVA ICTs at Azara (AEGCL)	After upgradation of 220 kV BTPS-Salakati D/C lines. ( Need to disable after system study of the present condition)	-SCADA Mapping to be completed within 1 month. SPS operated during Renal cyclone.
3	Tripping of 132 kV Umiam Stg-I to Umiam Stg-III D/C lines causes instantaneous load shedding near Mawphlang area	After commissioning of 220 kV Killing-Mawngap D/C lines and re-conductoring of 132kV Lumshnong-Panchgram line, SPS is kept OFF	No DI points available. Additional cards required, will take around 3 months. SCADA Mapping to be completed by the end of month.
4	SPS related to overloading of 220kV BTPS- Salakati D/C- Tripping of 220kV Agia – Boko and 220kV Agia – Mirza	After upgradation of 220 kV BTPS-Salakati D/C lines, this SPS is kept OFF	-SCADA Mapping to be completed within 1 month . SPS in disabled condition after reconductoring

			of 220 kV BTPS Salakati DC
5	<b><u>Related to the safe evacuation of power from BgTPP(NTPC) generation</u></b> - BGTPP generation reduction to 600 MW	-	Done
6	<b><u>Related to Generation evacuation from Monarchak(NEEPCO) Power Plant</u></b> - Tripping of STG at Monarchak under outage of any one circuit of 132 kV Monarchak – Rokhia line & 132 kV Monarchak- Udaipur	Commissioning of 132 kV Monarchak-Surajmaninagar line	NEEPCO-configuration by BHEL to be done in July'24
7	Outage of 220 kV BTPS (Salakati) – Rangia I & II - load shedding	Commissioning of 400 kV Rangia SS and LILO of 400 kV Bongaigaon-Balipara 1 & 2 Line at Rangia.	SCADA Mapping To be completed within 1 month. Mock Testing : Not required as SPS operated (correctly) 3 times in the month of Jun'24.
8	<b><u>Related to the tripping of Bus Reactors at 400 kV S M Nagar (ISTS)</u></b> - Tripping of both circuits of 400 kV SM Nagar-PK Bari D/C will trip 2 x 125 MVAR Bus Reactors at SM Nagar (ISTS) to prevent under voltage situation	-	Hardware required for SCADA mapping. Will be done by 70 <sup>th</sup> PCCM . Mock testing by end of July'24.

9	<p><b><u>Related to the tripping of Bus Reactors at 400 kV P K Bari (ISTS)</u></b> -</p> <p>Tripping of both circuits of 400kV PK Bari (ISTS) – Silchar(PG) D/C will trip 2 x 125 MVAR Bus Reactors at P K Bari(ISTS) to prevent under voltage situation</p>	-	Hardware required for SCADA mapping. Will be done by 70 <sup>th</sup> PCCM . Mock testing by end of July'24.
10	<p><b><u>Related to the tripping of Bus Reactors at 400 kV Imphal (PG)</u></b> -</p> <p>Tripping of 400 kV New Kohima – Imphal D/C during outage of 400 kV Silchar – Imphal D/C will lead to the tripping of 125 MVAR and 80 MVAR Bus Reactor at Imphal(PG)</p>	-	SCADA Mapping done. Mock testing will be done by Aug'24
11	<p><b><u>Related to Outage of any one of the 400/132kV 2x360MVA ICTs at Panyor Lower Hydro Power Station</u></b> -</p> <p>Disconnection of One Unit of Panyor (135 MW) and One Unit of Pare (55 MW)</p>	After restoration of 132 kV Panyor -Itanagar & 132 kV Panyor -Pare line ( expected by 31st Mar'24)	Will be checked whether to disable or not. NEEPCO to implement mapping by next month
12	<p><b><u>SPS related to outage of 220 kV Azara-Sarusajai DC/220 kV Misa-Samaguri DC</u></b> -</p> <p><b>1) On tripping of 220 kV Azara-Sarusajai D/C:</b> 140-150 MW load disconnection is to be done at Sarusajai and Kahilipara areas</p> <p><b>2) On tripping of 220 kV Misa-Samaguri DC:</b> Load reduction of 50-60 MW at Samaguri area</p>	Commissioning of 400 kV Sonapur Substation. LILO of 400 kV Bongaigaon-Byrnihat Line at Sonapur.	Template prepared by the OEM. Mapping to be done at Sarusajai first, then to other substations. AEGCL informed that it

			will be done by July'24
13	<b><u>SPS related to the outage of 132 kV Panyor HEP-Ziro Line -</u></b> Tripping of 132 kV Panyor-Ziro will cause disconnection of 33kV Load at Ziro	Commissioning of 132 kV Khupi - Along Link/220 kV AGBPS-Namsai D/C	1 month
14	Related to outage of any one circuit of 132 kV Dimapur(PG)- Dimapur(NA) D/C	Reconductoring of 132 kV Dimapur(PG)- Dimapur(NA) D/C	Done
15	Related to outage of any one circuit of 220 kV Balipara-Sonabil D/C	Reconductoring of 220 kV Balipara-Sonabil D/C lines with higher ampacity and Utilisation of 2 X 160 MVA ICTs at Balipara	AEGCL to implement within 2 months, by Sept'24
16	<b><u>Related to Outage of 400 kV Palatana – Surajmani Nagar line (charged at 132 kV) -</u></b> Tripping of 400 kV SM Nagar – Comilla D/C (charged at 132 kV) during outage of 400 kV Palatana – SM Nagar (TSECL) line (charged at 132 kV)	Upgradation of 132 kV Surajmaninagar (TSECL) to 400 kV	SCADA Mapping done. Mock testing: Within September'24 ± month
17	<b><u>Related to Outage of both 400/132 kV, 2x125 MVA ICTs at Palatana -</u></b> Entire load disconnection of South Comilla by way of tripping of 132kV SM Nagar-South Comilla D/C	Upgradation of 132 kV Surajmaninagar (TSECL) to 400 kV	1 month
18	Related to the outage of any one circuit of the 132 KV Khliehriat (PG)- Khliehriat D/C line	Reconductoring of 132 KV Khliehriat (PG)- Khliehriat D/C line	No DI points available. Additional cards required,

			will take around 2 months
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Sl. No.	SPS under implementation	Long term measures
1	Related to outage of any one circuit of 132 kV Leshka – Khliehriat D/C	Reconductoring of 132 kV Khliehriat – Leshka D/C
2	Related to Outage of one circuit of 400 kV Surajmani Nagar (TSECL)- South Comilla line (Charged at 132 kV)	Upgradation of Comilla SS to 400 kV level

In 65<sup>th</sup> PCCM, NERLDC gave a ppt presentation on the guideline on interfacing requirement as approved by CERC. Forum noted the guidelines and requested the concerned stakeholders to take necessary measures to ensure mapping of SPS signals in SCADA for real time monitoring.

#### ***Deliberation of the sub-committee***

The forum opined that Mock testing of those SPS which have not operated in last 3 months may be planned by concerned utilities and NERLDC.

#### **C.4 Status on remedial measures actions on non-operation of auto recloser in Important Grid Elements for transient faults occurred in last few months:**

As updated in 69<sup>th</sup> PCCM

Sl No	Element Name	Time	Relay End1	Relay End2	A/R not Operated	Remarks from Utility (69 <sup>th</sup> PCCM)
1	132 kV Agartala - Surajmaninagar 2 Line	17-11-2023 15:10	DP,ZI,Y-B,FD:5.81 km, AR successful	DP,ZI,R-Y,FD:11.98 KM	Surajmani nagar	PLCC and funding issue. AR without carrier to be enabled within one month.

2	220 kV Mariani (AEGCL) - Samaguri Line	29-11- 2023 15:10	DP, ZI, B-E	DP, ZI, B- E, FD: 16 km	Samaguri	done
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SL No	Element Name	Tripping Date and Time	Relay Details_A	Relay Details_B	AR not Operated	Remarks from utility (69 <sup>th</sup> PCCM)
3	220 kV Byrnihat - Misa 2 Line	23-02- 2024 04:39	DP,ZI, Y-E, FD: 59.54 Km	DP,ZI, Y-E, FD: 81.019km (AR Successful)	Byrnihat	OEM arrived, work going on, to be completed by Jul end.

SL No	Element Name	Tripping Date and Time	Restoration Date and Time	Relay _A	Relay _B	Auto-Recloser not Operated	Remarks as per 69 <sup>th</sup> PCCM
4	132 kV Gohpur - North Lakhimpur 1	26-03- 2024 05:55	26-03-2024 06:12	DP, ZI, R-E, FD: 4.1km	DP, ZI, R-E	Both ends	done
5	132 kV Tenga - Khupi	26-03- 2024 07:35	26-03-2024 12:25	DP, ZI, R-B-E, FD: 30km	DP, ZI, R-B-E, FD:4.9 km	Khupi	B/U relay disabled, to be replaced this month
6	220 kV Mawngap - New Shillong 1	26-03- 2024 12:22	26-03-2024 19:31	DP, ZI, Y-E, FD: 27.82 Km	DP, ZI, Y-E	Mawngap	BB mal- operation issue. Coordination with NERPSIP underway.
7	132 kV Dimapur - Doyang 2	29-03- 2024 13:10	29-03-2024 13:31	DP, Z1, R-Y, FD: 72.6km	DP, Z1, R- Y	Doyang	CB procurement

underway. By  
March'25

S. No	Element Name	Tripping Date and Time	RELAY_A	RELAY_B	Auto-Recloser not Operated	Remarks from Utility
8	220 kV AGBPP - Mariani (PG) Line	01-05-2024 03:12	Z1, B-N, 24.97 Kms	DP, ZI, B-E, FD: 131.4 KM, Operated Successfully	AGBPP	Checking by OEM to be done. By July end
9	132 kV Jiribam - Loktak 2 Line	02-05-2024 03:39	DP, ZI, R-E, FD: 25.74 km	Earth fault, overcurrent, Z-1, 49.31 km (DR not opening)	Jiribam	Tripping in reclaim time
10	132 kV Badarpur - Karimganj Line	05-05-2024 13:48	DP, ZII, Y-E, FD:27.25 KM, Carrier Aided tripping & AR Operated Successfully	DP, ZI, Y-E, FD: 0.2km	Karimganj	Testing to be done. Shutdown required for checking AR block issue. Shutdown yet to be planned.
11	132 kV Aizawl - Tipaimukh Line	05-05-2024 21:54	DP,ZI,B-E,FD:72.7 3KM	Details awaited	Aizawl	AR was blocked due to multiple



S. No	Element Name	Tripping Date and Time	RELAY_A	RELAY_B	Auto-Recloser not Operated	Remarks from Utility
						carrier fail alarm, DC supply issue at Tipaimukh end. Manipur to check the DC supply. Area lying in buffer zone, difficult to reach due to Law and Order issue.
12	400 kV Azara - Bongaigaon Line	18-05-2024 06:49	DP, ZII, B-E, FD: 151.3km, Carrier Aided Tripping	BG, 9.9kA, 2.294, Z1	Not Operated at Azara (Spring not charged alarm high)	Relay working fine, will recheck in case of repeat event
13	132 kV AGTCCPP - PK Bari (Indigrid) 2 Line	19-05-2024 14:58	DP,ZII, Y-E, Carrier Aided Tripping	DP,ZI,Y-E	both ends	Indigrid checked, some settings were wrong, corrected, now checked and revised and found ok.

***Sub-committee noted as above.***

### **C.5 132 kV Kumarghat - P.K. Bari issue**

POWERGRID has commissioned Line Diff Relay for 132kV Kumarghat PK Bari feeder. During commissioning, following issues have been noted at PK Bari end: -

1. AR kept OFF at PK Bari end by Tripura, however, the same is in ON Position at Kumarghat end.
2. Due to previous experience of multiple tripping at Kumarghat because of fault in P.K. Bari-Dharmanagar feeder & non isolation of the fault by P.K. Bari end CB, previously it was decided that Zone Timer for 132kV Kumarghat-P.K. Bari feeder (at Kumarghat end) shall be kept as under: -
  - a. Z1 = 0 msec
  - b. Z2 = 200 msec
  - c. Z3 = 300 msec

Tripura may please confirm the healthiness of the CBs (PK Bari end CB for Kumarghat PK Bari & P.K. Bari end CB for P.K. Bari-Dharmanagar feeder) otherwise forum may allow continuing the above Time delay setting for respective Zones of Distance Protection in 132kV Kumarghat-P K Bari Line at Kumarghat end.

In 62<sup>nd</sup> PCCM, Forum approved above stated time delay setting till TSECL checks and confirms the healthiness of the CBs (PK Bari end CB for Kumarghat PK Bari & P.K. Bari end CB for P.K. Bari-Dharmanagar feeder).

TSECL assured the forum to check the healthiness at the earliest.

In 63<sup>rd</sup> PCCM, TSECL informed that there is some issue with CB at PK Bari for Dharmanagar. Testing equipment has been received and test will be done soon.

Forum requested TSECL to confirm CB healthiness status after testing within Feb24.

In 64<sup>th</sup> PCCM, TSECL stated that protection team will visit P K Bari substation in Feb'24 to inspect and rectify the issue.

In 65<sup>th</sup> PCCM, TSECL updated that shutdown of the PK Bari-Dharmanagar line is scheduled in March'24, required work will be carried out during the shutdown.

In 68<sup>th</sup> PCCM, TSECL updated that the shutdown of the PK Bari-Dharmanagar line was not planned yet. Work will be done in upcoming shutdown.

***TSECL may further update***

TSECL updated that testing was done at P K Bari SS on 10<sup>th</sup> July'24. Pneumatic breaker to be replaced with spring operated breaker.

### **C.6 PLCC issues follow up:**

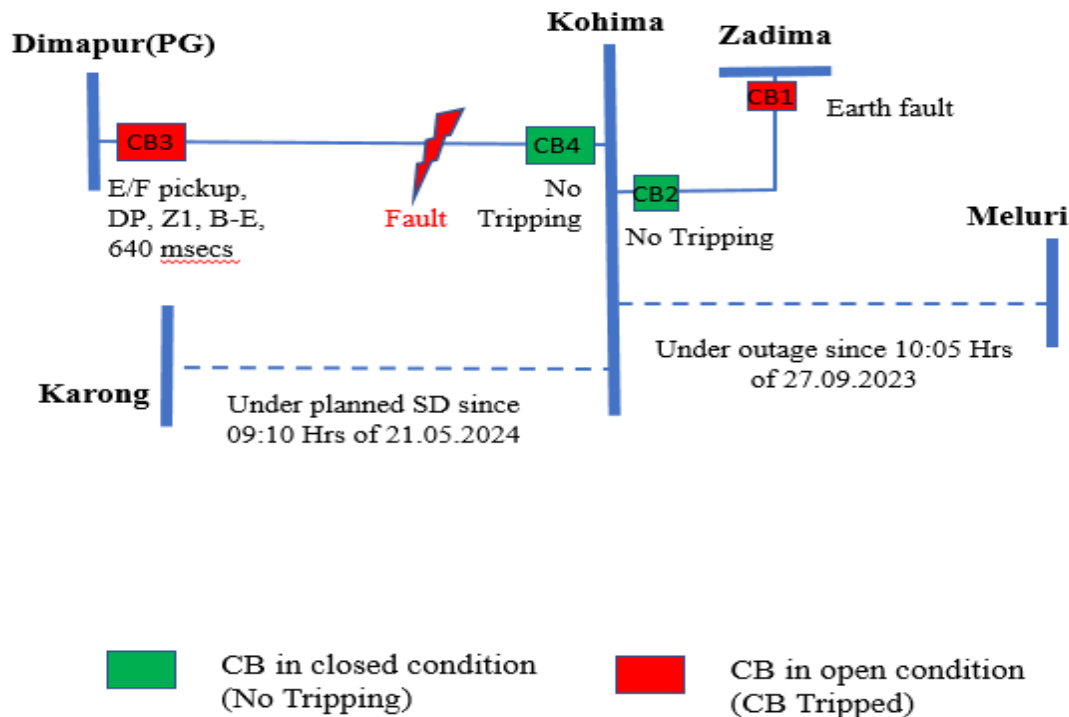
Update as provided by utilities in 69<sup>th</sup> PCCM

Sl. No	Line	Utility	Update
1	132 kV Dimapur-Kohima	DoP Nagaland	DPR is complete except for budgetary offer. Offer to be tentatively provided by July end.
2	132 kV Melriat-Zemabawk	Mizoram	NERTS updated that PLCC is available, Mizoram stated that CVT is available and WT has to be procured. Mizoram further updated that DTPC is being planned instead of PLCC. Forum suggested to ensure both PLCC and DTPC. POWERGRID shall install only the PLCC. CVT intalled & got approval for Wave Trap at Zemabwk end, Mizoram likely to buy in 2 months.
3	400 kV Mariani-Kohima ckt 2		resolved
4	132 kV Roing-Pashighat	DoP Ar. Pradesh	DoP Ar. Pradesh updated that there was issue with 48 V battery which would be replaced by July'24. (last status as DoP Ar.P – absent)

***Sub-committee noted as above.***

### **C.7 Grid disturbance in Kohima area of Nagaland on 21-May-24:**

At **16:42 Hrs of 21.05.2024**, 132 kV Dimapur(PG) - Kohima line and 132 kV Kohima-Zadima Line tripped resulting in blackout of Kohima S/S. Load loss of 15 MW occurred.



As per DR analysis of 132 kV Dimapur-Kohima line, high resistive B-E fault occurred at 16:42:46.534 Hrs and cleared within 640 msec from Dimapur end. E/F relay pickup at Dimapur end and after around 600 msec, distance protection detected the fault and ZI operated in 40 msec. There was no tripping from Kohima end.

CB at Zadima tripped on Earth fault.

In 68<sup>th</sup> PCCM, DoP Nagland updated that the fault occurred in 132 kV Dimapur-Kohima line due to vegetation issue. Also, Fourm requested DoP Nagland to review the Backup E/F setting at Zadima for 132 kV Kohima-Zadima line and coordinate with ZIII as per NERPC protection philosophy.

### **Deliberation of the sub-committee**

DoP Nagaland updated that 900 ms setting for Backup E/F setting at Zadima for 132 kV Kohima-Zadima will be done by next week.

### **C.8 Frequent Grid disturbances in Myndtu Leshka HEP of Meghalaya Power System:**

132 kV Myntdu Leshka - Khlieriat D/C lines play a crucial role in power evacuation from Leshka Generation. In the recent past, it has been observed that 132 kV Myntdu Leshka-Khleihriat 1 & 2 lines has tripped **four** times during May 2024.

The details of tripping are as follows:

Sl No.	Name of element	Date and Time of tripping	DR Analysis( End A)	DR Analysis(End B)
1	132 kV Myntdu Leshka - Khleihriat 1 Line	02-May-2024 00:45 Hrs	No tripping	Phase to E fault with Z-2, B-N, Ib: 2.3 kA, FD: 29.2 Kms and tripped within 209 msec.
	132 kV Myntdu Leshka - Khleihriat 2 Line			Phase to E fault with Z-2, B-N, Ib: 2.2 kA, FD: 36.2 Kms and tripped within 210 msec.
2	132 kV Myntdu Leshka - Khleihriat 1 Line	02-May-2024 04:10:00 Hrs	DP, ZI, R-N and tripped within 60 msec	Phase to E fault with Z-2, R-N, Ia: 2.3 kA, FD: 34.32 Kms and tripped within 198 msec.
	132 kV Myntdu Leshka - Khleihriat 2 Line	02-May-2024 04:11:00 Hrs	No tripping	Phase to E fault with Z-1, R-B-N, Ia: 2.2 kA, Ic: 2.5 kA, In: 1.6 kA, FD: 21.62 Kms and tripped within 65 msec.
3	132 kV Myntdu Leshka - Khleihriat 1 Line	05-May-2024 16:05:00 Hrs	DP, ZI, R-B-N and tripped within 56 msec	Phase to E fault with Z-1, R-B-N, Ia: 2.9 kA, Ic: 1.8 kA, In: 1.4 kA and tripped within 73 msec.
	132 kV Myntdu Leshka - Khleihriat 2 Line		DP, ZI, R-B-N and tripped within 56 msec	Phase to E fault with Z-1, R-B-N, Ia: 2.9 kA, Ic: 4.2 kA, In: 2.0 kA and tripped within 65 msec.
4	132 kV Myntdu Leshka - Khleihriat 1 Line	23-May-2024 14:05:00 Hrs	No tripping	Phase to E fault with Z-1, R-B-N, Ia: 2.8 kA, Ic: 2.4 kA, In: 1.8 kA and tripped within 66 msec.
	132 kV Myntdu Leshka - Khleihriat 2 Line			Phase to E fault with Z-1, R-B-N and tripped within 66 msec.

Following observations needs to be addressed:

1. There was no Auto reclose attempt observed. The auto-reclose (A/R) scheme should be inspected and activated to ensure the safe evacuation of Leshka generation by reclosing the line in case of single phase fault.
2. ZII time delay need to be reviewed as per NERPC protection philosophy.
3. DR channels needs to be standardized both ends:
  - DR time duration appears to be insufficient at Leshka. It should be extended to 3 seconds, with a pre-fault time of 500 milliseconds and a post-fault time of 2.5 seconds.
  - DR time not synchronised, exhibiting time drift issue at Leshka & Khleihriat.

- CB status is currently not allocated in the DR digital channel. It's essential for MePTCL and MePGCL to include CB ON/OFF status in DR channels at both ends for fruitful analysis of events.
4. MePGCL is requested to ensure that patrolling related activities are undertaken as per CEA (Grid Standard) Regulation, 2010 on regular basis and measures may be identified and implemented at the earliest so as minimize tripping of these lines.

MePGCL informed in 68<sup>th</sup> PCCM, that a meeting will be held with State protection Committee regarding implementation of Auto recloser in 132 kV Leshka-Khliehriat D/C lines.

#### **Deliberation of the sub-committee**

MePGCL informed that meeting of State protection Committee would be held before next PCCM.

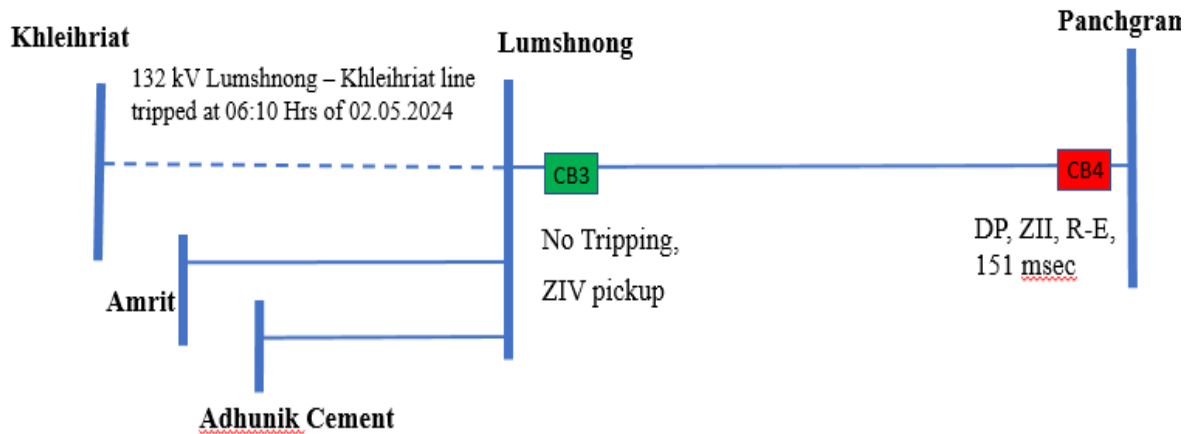
#### **C.9 Grid Disturbance in Lumshnong area of Meghalaya on 30-05-2024:**

Lumshnong area of Meghalaya Power System is connected to the rest of NER Grid through 132 kV Lumshnong-Panchgram and 132 kV Lumshnong-Khliehriat lines.

##### **Event 1:**

Prior to the event, 132 kV Lumshnong-Khliehriat line tripped at 06:10 Hrs of 02.05.2024.

At 07:01 Hrs of 02.05.2024, 132 kV Lumshnong-Panchgram line tripped resulting in blackout of Lumshnong area of Meghalaya.



**Suspected fault in 132 kV M/S Amrit or 132 kV M/S Adhunik Cement**

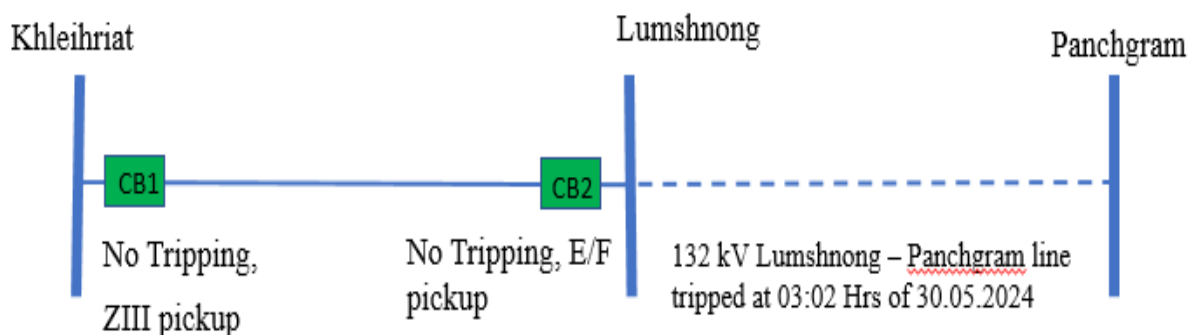
As per DR analysis, R-E fault (Ir-1.8 kA, In-1.4 kA) initiated at 07:00:11.821 Hrs in 132 kV Lumshnong-Panchgram line cleared within 151 msec on operation of DP, ZII from Panchgram end only. ZIV start at Lumshnong end which inferred that fault is in reverse direction.

Fault is suspected in 132 kV Amrit or 132 kV Adhunik Cement line.

### Event 2:

Prior to the event, 132 kV Lumshnong-Panchgram line tripped at 03:02 Hrs of 30.05.2024 from Panchgram end.

At 06:39 Hrs of 30.05.2024, 132 kV Lumshnong-Khliehriat line tripped resulting in blackout of Lumshnong area of Meghalaya.



As per DR analysis of Khliehriat end, solid R-Y-B fault (Ir-2.2 kA, Iy-2.4 kA, Ib-2.4 kA) initiated at 06:38:48.098 Hrs and fault current disappeared within 64 msec. Again, at 06:38:48.322 Hrs, Y-E fault (Iy-1.5 kA, In-1.3 kA) reappeared and fault current disappeared within 471 msec. **DP, ZIII** pickup at Khliehriat end. There was no tripping from Khliehriat end.

As per SOE, CB tripped at Lumshnong end. However, as per EL of Lumshnong end, **IN>1** started and **all pole dead ON** after 488 msec.

It is unclear as to which protection system operated and cleared the fault. MePTCL may update.

MePTCL is requested to –

- i) Share the root cause and remedial measures taken.
- ii) Protection setting coordination for 132 kV Amrit & 132 kV Adhunik Cement needs to be done by MePTCL.

#### Deliberation of the 68<sup>th</sup> PCCM

##### **Event 1**

1. MePTCL informed that fault was in 132 kV Amrit line.
2. Forum suggested AEGCL to increase ZII time delay at Panchgram to 250 msec for 132 kV Panchgram-Lumshnong line in coordination with PGCIL for 132 kV Badarpur-Panchgram Line.
3. Forum suggested MePTCL to enable High Set for B/U protection of 132 kV Amrit & 132 kV Adhunik Cement.

##### **Event 2**

1. MePTCL informed at 06:39 Hrs, R-Y-B in 132 kV Lumshnong-Panchgram line cleared from Lumshnong in ZI. Again, Y-E fault reappeared and LBB operated at Lumshnong. (fault cleared 471 msec)
2. MePTCL informed arching must have occurred in the Y-phase interrupter pole. CB Y-pole will be replaced shortly within June'24.
3. Forum asked MePTCL to keep LBB time delay setting to 200 msec as per NERPC protection philosophy.

#### **Deliberation of the sub-committee**

AEGCL updated that ZII time delay at Panchgram has been increased to 250 msec.

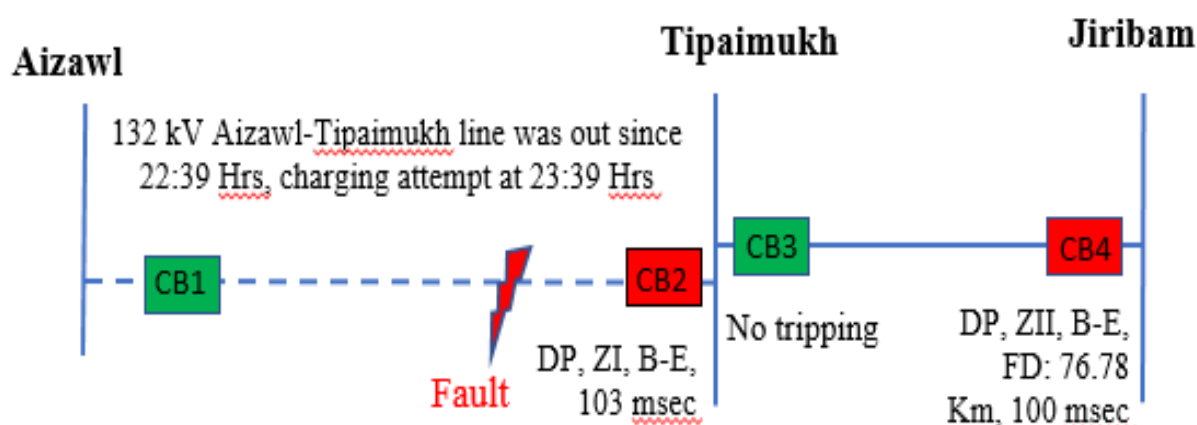


MePTCL updated –

- 1.High set for B/U protection for Amrit and Adhunik feeder will be enabled next week
- 2.that Y Pole CB at Lumshnong will be replaced shortly in the upcoming shutdown
- 3.LBB time delay will be modified shortly.

### C.10 Grid Disturbance in Tipaimukh area of Manipur on 17-April-24:

Tipaimukh area of Manipur power system is connected to the rest of the grid via 132 kV Jiribam(PG)-Tipaimukh and 132 kV Aizawl-Tipaimukh lines. Prior to the event, 132 kV Aizawl-Tipaimukh line tripped twice at 21:54 Hrs & 22:39 Hrs of 05.05.2024. At 23:39 Hrs of 05-05-2024, while taking charging attempt of 132 kV Aizawl-Tipaimukh line, 132 kV Jiribam(PG)-Tipaimukh line tripped resulting in blackout of Tipaimukh S/S of Manipur.



As per DR analysis of 132 kV Jiribam(PG)-Tipaimukh line, solid B-E fault initiated at 23:41:33.831 Hrs and cleared on operation of DP, ZII within 100 msec from Jiribam end.

As per DR analysis of 132 kV Aizawl-Tipaimukh line, B phase fault cleared within 103 msec on operation of DP, ZI from Tipaimukh end.

#### Following observations:

- i) Tripping of healthy 132 kV Jiribam(PG)-Tipaimukh line due to delayed fault clearing at Tipaimukh end (more than 100 msec) for 132 kV Aizawl-Tipaimukh line.

- ii) 132 kV Jiribam-Tipaimukh line tripped from Jiribam end in 100 msec on operation of DP, ZII. ZII time delay setting needs to be reviewed and set as per NER Protection philosophy.

MSPCL is requested to rectify the following issues-

- i) PLCC in 132 kV Jiribam(PG)-Tipaimukh line to be made healthy.
- ii) Delayed fault clearing time by CB (more than 100 msec) at Tipaimukh for Aizwal-Tipaimukh line.

In 68<sup>th</sup> PCCM, MSPCL updated, regarding PLCC in 132kV Jiribam- Tipaimukh line, that PLCC card replacement is to be done this month.

After detailed deliberation the forum requested –

1. MSPCL to test the distance relay and conduct timing test of CB at Tipaimukh end for Aizawl line and address the issue of delayed clearance on Z1.
2. NERTS to increase the Zone II time delay to 130 msec for 132 kV Jiribam-Tipaimukh line considering Max fault clearance time of 132 kV level within 160 msec as per CEA.

### ***MSPCL absent in the meeting***

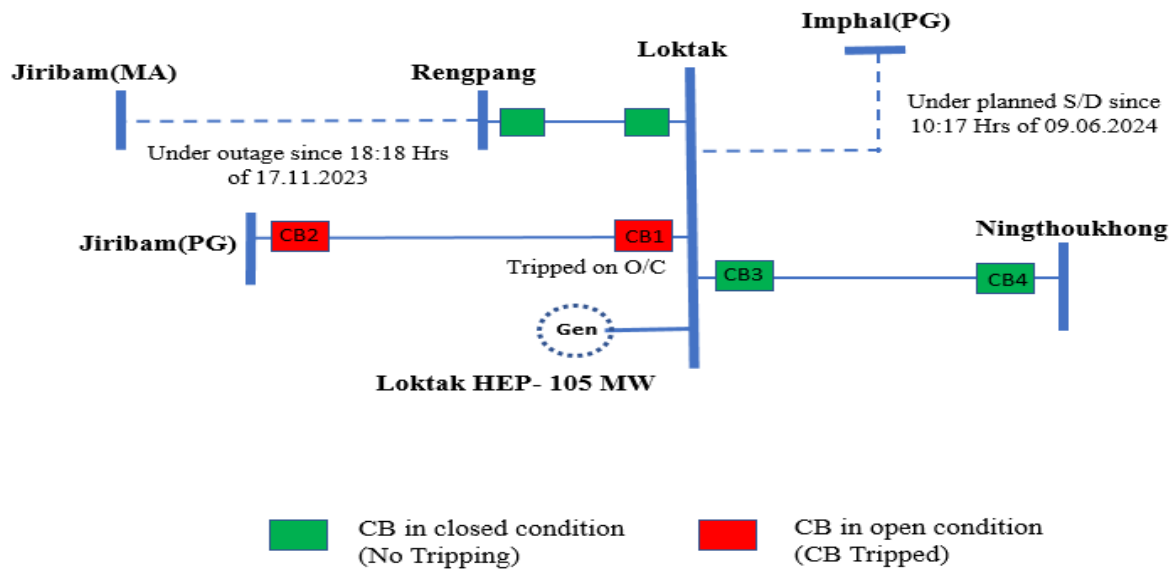
#### **C.11 Grid Disturbance in Loktak HEP on 09-06-2024:**

Loktak generating station of NHPC is connected with rest of NER Grid through 132 kV Loktak-Rengpang (radial), 132 kV Loktak-Imphal(PG), 132 kV Loktak-Jiribam(PG) & 132 kV Loktak-Ningthoukhong lines.

Pre-condition: To facilitate the planned shutdown of 132 kV Imphal (PG) bus, 132 kV Imphal(PG)-Ningthoukhong line went under planned shutdown at 10:17 Hrs & 132 kV Imphal(PG)-Loktak line went under planned shutdown at 10:31 Hrs of 09.06.2024.

#### **Event 1:**

Loktak HEP was generating 105 MW and power flow of 54 MW in 132 kV Loktak-Jiribam (PG) Line and remaining 70 MW in 132 kV Loktak-Ningthoukhong Line.

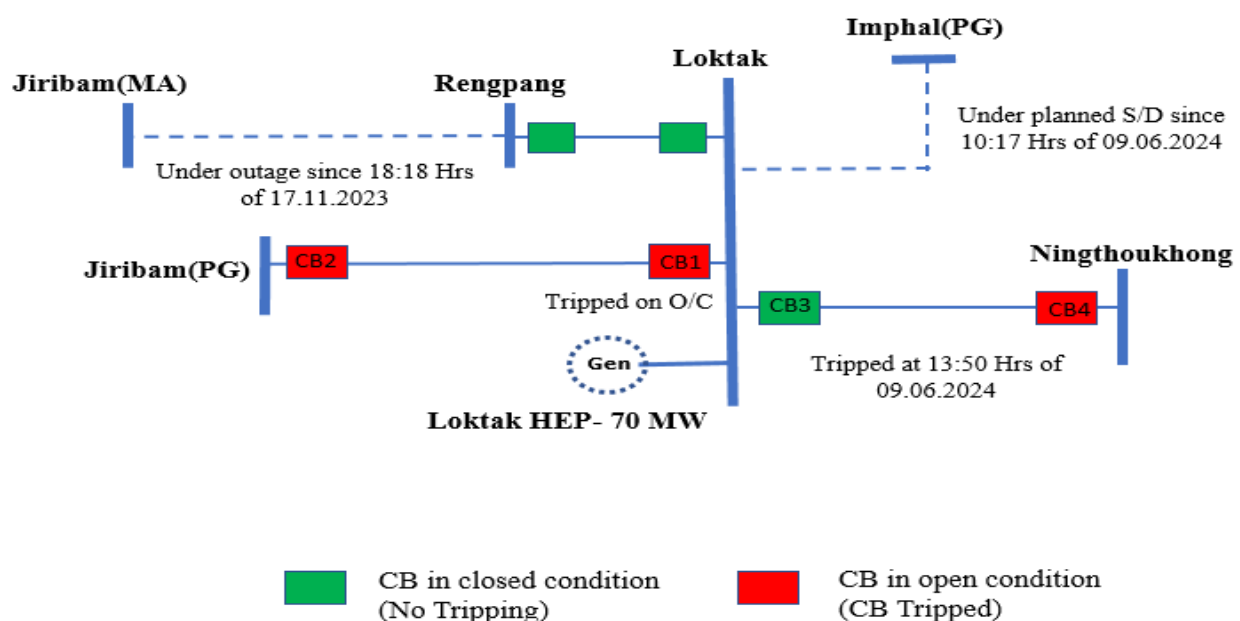


At 10:32 Hrs of 09-06-2024, 132 kV Loktak-Jiribam(PG) line tripped from Loktak end on Overcurrent due to which 132 kV Loktak-Ningthoukhong line got overloaded and subsequently all three units of Loktak tripped leading to generation loss of 105 MW.

### Event 2:

Loktak HEP was generating 70 MW and power flow of 12 MW in 132 kV Loktak-Jiribam(PG) Line and remaining 56 MW in 132 kV Loktak-Ningthoukhong Line.

Prior to the event, at 13:50 Hrs of 09-06-2024, 132 kV Loktak-Ningthoukhong line tripped. As per DR analysis, B-E fault started and cleared within 80 msec from Ningthoukhong end on operation of DP, ZI.



At 13:53 Hrs of 09-06-2024, 132 kV Loktak-Jiribam(PG) Line tripped from Loktak end on Overcurrent which led to tripping of all units of Loktak leading to generation loss of 70 MW.

Following Observations shared by NERLDC on 9th June24:

- Only 212 A current has been recorded at Loktak for 132 kV Loktak-Jiribam (PG) Line. Therefore, tripping of 132 kV Loktak-Jiribam(PG) line on Overcurrent is inferred to be NUISANCE TRIPPING.
- NHPC may check the setting and implement as per NER philosophy to prevent repetition. Flash Report & Detailed report of the events (as per IEGC) not submitted.
- DR/EL of 132 kV Loktak-Ningthoukhong line for Event 1 not submitted by MSPCL.

*Loktak may update the root cause and measures*

In 68th PCCM, NERLDC highlighted the Nuisance tripping of 132 kV Loktak-Jiribam Line from Loktak with current of 210-230 A, which led to GD at Loktak twice. Loktak informed that Overcurrent setting of 132 kV Loktak-Jiribam line will be checked and rectified shortly.

NHPC may update

**Deliberation of the sub-committee**

NHPC updated that the overcurrent setting has been increased in compliance with NERPC protection philosophy and the same will be sent shortly o NERPC.

<b>D. ITEMS FOR STATUS UPDATE</b>
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**D.1. Status of auto-reclosure on z-1 operation for important lines:**

In the discussions of the Sub-group on 12-04-2021 the following points were noted:

- a.** Auto-Reclosure is very much required for maintaining system stability, reliability and uninterrupted power supply.
- b.** Presently it will take some time for the state utilities to implement the PLCC and establish carrier communication between stations.
- c.** The operation of Auto-Reclosure on Z-I operation at the local end independent of carrier healthiness is required.

In the 57<sup>th</sup> and 56<sup>th</sup> PCC meeting the forum approved the implementation of Auto-Reclosure on Z-1 without carrier check for all lines except the lines with generating stations at both the ends and requested the utilities to implement the AR scheme at the earliest.

Status as updated in 69<sup>th</sup> PCCM

Sl no	State	Important Transmission lines where AR has to be enabled at the earliest	Status (68 <sup>th</sup> /67 <sup>th</sup> PCCM)	status as per 69 <sup>th</sup> PCCM
1.	Arunachal Pradesh	132kV Balipara-Tenga, 132kV Ziro-Daporijo-Along-Pashighat link	PLCC implementation under PSDF underway. SPAR have been enabled on the lines without PLCC 3-Ph AR will be enabled by March'24.	3 Ph AR enabled on the lines
2.	Assam	All 220kV and 132kV lines	For 220kV Some bays at Tinsukia, NTPS and Kathalguri remaining, to be done soon  For 132kV bays Testing and enabling of AR is being done	Process underway. To be completed by September'24. AEGCL requested NEEPCO to provide the PLCC wiring

			gradually, to be completed by June'24.	scheme at Kathalguri SS.
3.	Manipur	132kV Imphal-Ningthoungkong	DPR preparation underway, to be prepared by March'24	DPR under preparation. To be completed shortly.
4.	Meghalaya	<b>Annexure</b> (D.1)	August'24. Forum requested Meghalaya to provide monthly work progress report (around 25 number of 132kV line)	By August'24, will share the work progress report shortly
5.	Tripura	132kV Agartala-S M Nagar (TSECL), 132kV Agartal-Rokhia DC, 132kV, 132kV Agartala-Budhjungnagar	To be done during internal audit.	Aug'24

***Sub-committee noted as above***

## **D.2. Installation of line differential protection for short lines:**

As per sub-regulation 3 of Regulation 48 of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022-

"For short line (less than 10 km) or cable or combination of overhead line and cable, line differential protection shall be used with built-in backup distance protection."

As per discussion in 61<sup>st</sup> PCC meeting the status for different STUs/ISTS licensees are as follows:

Status as updated in 69<sup>th</sup> PCCM -

<b>Name of utility</b>	<b>Last updated status (68<sup>th</sup>/67<sup>th</sup> PCCM)</b>	<b>status as per 69<sup>th</sup> PCCM</b>
AEGCL	AEGCL updated that PSDF monitoring group has suspended funding for LDP for 1 year. AEGCL requested MS, NERPC to take up with	MS, NERPC stated that funding for the LDP considering the special case

	NPC, CEA to provide funding for the same considering the special case of NER	of NER will be taken up as resolution by RPC forum
MSPCL	DPR under preparation, to be submitted within one month.	DP under preparation, to be completed shortly
MePTCL	<p>LDP operation for 9 feeders.</p> <p>For Neighrims-NEHU line, waiting for dark fiber.</p> <p>For other lines, OPGW not available commissioned after OPGW link is established. <b>(Annexure D.2)</b></p> <p>7 Feeder operational for rest OPGW work is pending</p> <p>OPGW to be installed on 16 lines.</p> <p>LDP will be enabled after that.</p>	<p>Regarding OPGW installation, MePTCL updated that DPR is being prepared for inclusion in reliable communication scheme.</p> <p>For NEHU-NEighrims line, fiber has to be laid by PowerGrid NERPSIP.</p>
P&ED Mizoram	<p>Lines identified 132kV Khamzawl - Khawiva. DPR being revised.</p> <p>Mizoram requested for assistance in preparation of DPR. Forum requested Assam to provide assistance to Mizoram in this regard.</p>	Mizoram stated that DPR in final stage. Price offer ahs been received and the DPR will be prepared by end of July'24
DoP Nagaland	<p>LDP Doyang-Sanis line, LDR to be installed by NEEPCO.</p> <p>NEEPCO stated that LDR is available with NEEPCO, however, healthiness of the OPGW link on the line has to be checked first. Forum asked DoP Nagaland to coordinate with NEEPCO in this regard</p>	DoP Nagaland updated that FOTE is present. NEEPCO updated that GE engineers will visit on 15 <sup>th</sup> July.
TSECL	<p>132kV 79 Tilla-Budhjungnagar. DPR to be prepared. Cost estimate submitted to TIDC to arrange for ADB funding.</p> <p>TIDC approval is still awaited for fund.</p>	<p>Approved for ADB funding. E-tendering underway.</p> <p>Regarding Rokhia-N.Rokhia link, he updated that the breaker has been received.</p> <p>MS, NERPC suggested to apply under PSDF</p>

***Sub-committee noted as above*****D.3. Status against remedial actions for important grid events:**Status as updated in the 69<sup>th</sup> PCCM:

<b>Sl No</b>	<b>Details of the events(outage)</b>	<b>Remedial action suggested</b>	<b>Name of the utility &amp; previous update</b>	<b>status as per 6<sup>th</sup> PCCM</b>
1.	132 kV Balipara-Tenga line in May and June	Carrier aided inter-tripping to be implemented for 132kV Balipara-Tenga-Khupi at the earliest (PLCC has to be installed on the link. Under consideration of the higher authorities)	DoP, Arunachal Pradesh. PLCC panels received. For further work PSDF payment issue. Matter to be taken up with PSDF	DoP updated that PSDF funding will be short closed due to long pending payment issues and delays. He further stated that state is considering funding of the project through its own funding. PLCC work to be tentatively completed by end of this year.
2.	132 kV DoyangMokokchung line 132 kV Mokokchung - Mokokchung (DoP, Nagaland) D/C lines on 30th July	Carrier inter-trip for 132kV DHEP-Mokokchung to be implemented by DoP Nagaland (NO PLCC on the line. Matter under consideration of Higher authorities)	DoP Nagaland (DPR is under preparation for PLCC, by March'24	DPR is being prepared for DTPC link on the line. Offer by Hitachi by July end
3.	Leshka-Khleihriat DC multiple tripping in April to September	TLSA installation along the line to be done by MePTCL	MePTCL (DPR submitted, Approval pending.)	DPR returned by PSDF.
4.	132 kV Loktak-Jiribam line, 132 kV Loktak-Imphalline, 132 kV Loktak-Ningthoukhong line, 132 kV Loktak-Rengpang line & Loktak	> 5MVA TRAFO (Aux. Transformer) to be repaired ->5MVA Auxiliary TRAFO panel to be repaired by NHPC	NHPC Tender awarded, Order placed, manufacturing underway.	TX manufacturing underway. To be completed by Dec'24



	Units 1,2 and 3 on 3rd Aug			
5.	Grid Disturbance at Loktak HEP on 03rd Aug'22	NHPC-Loktak informed that LBB has been included under R&U scheme and the same shall be commissioned by Mar'23	NHPC (LBB to be commissioned under R&U project) Renovation would start in Nov.'24 and to be completed by Oct.'25. Forum stressed to take LBB on priority.	Same status, Forum requested to expedite it
6.	Outage of 220 KV Bus Bar Protection Scheme at 400/220/132 KV Killing SS	Bus-Bar protection of 220kV bus at Killing SS	MePTCL Order given to ABB. Visit of OEM next week. To be completed by April'24	BBR defective. Order placed in Oct'23, will arrive in around 7 months, i.e. by May or June'24
7.	Non-operation of AR for various lines at Byrnihaat end on 25 <sup>th</sup> and 26 <sup>th</sup> June'23	Rectification of PLCC issues by MePTCL Consultation with OEM underway for resolution	MePTCL Visit of OEM next week. To be completed by April'24	By May'24
8.	Tripping of 132kV Kahilipara- Sarusajai 1, 2 and 3 line, 132kV Kahilipara Main bus 1, 132kV Kahilipara transfer Bus 1 and 132kV Kahilipara-Kamalpur line on 2.08.2021	BB protection to be implemented at Kahilipara with procurement of 5 core CTs	AEGCL DPR is under preparation for PSDF. CT under procurement, to be completed by end of this year	By end of this year
9.	AR issue at Gohpur end for 132kV Nirjuli-Gohpur line	Panel replacement underway	AEGCL - By April'24	Panel commissioned in June 2024.
10.	Non-operation of AR at Doyang HEP	Pneumatic CBs to be replaced	NEEPCO- August 2024	March'25
11.	Generation evacuation issue at Leshka due to tripping of any line of 132kV Leshka-Khliehriat DC line	SPS to be implemented	MePGCL to implement the SPS by May'24	
12	Multiple trippings in the lines connected to Leshka station in	Differential protection on the link line to be implemented.	MePGCL	

	April'24 have been observed due to delayed clearance of faults in the link line (GT to Switchyard, 550 meters)	Also, AR on the link line to be implemented	To be discussed in internal OCC meeting first	
13	Multiple tripping of 132 kV Panchgram-Lumshnonong line in April'24 has been observed due to delayed clearance of downstream fault in Lumshnong	B/U protection settings coordination for the 132kV downstream industrial feeders has to be done	MePTCL To be done shortly	

***Sub-committee noted as above***

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**Annexure-I****List of Participants in the 69<sup>th</sup> PCC Meeting held on 11.07.2024**

SN	Name & Designation	Organization	Contact No.
1	Sh. Abhishek Kalita, Dy.Mgr, AEGCL	Assam	08486213068
2	Sh. Bibek Baruti, Dy.Mgr, AEGCL	Assam	07002238466
3	Sh. Lalawmpuia Chawngthu, AE	Mizoram	08730843706
4	Sh. Lalsangliana, JE	Mizoram	06009605796
5	Sh. A.Shullai, AEE, MePGCL	Meghalaya	07005379616
6	Sh. K.Kynjing, AEE, MePTCL	Meghalaya	-
7	Sh. Paul Warjri, JE, MePTCL	Meghalaya	08014773964
8	Sh. P.Tiakaba Yimchunger, JE, SLDC	Nagaland	08974020157
9	Sh.Sukanta Banik, Manager	Tripura	09862935742
10	Sh. Amaresh Mallick, ED	NERLDC	09436302720
11	Sh. Bimal Swargiary, DGM	NERLDC	09435499779
12	Sh.Utpal Das, AM	NERLDC	09435850016
13	Sh. Manash Jyoti Baishya, Ch.Manager	PGCIL	09435555740
14	Sh. M. Talukdar, DGM	NEEPCO	09435339690
15	Sh. Sohan De, Shift-in-Charge	OTPC	09556557658
16	Sh. B.Dhanasekhar, Dy.Mgr	NTPC	07002666581
17	Sh. C.L.Khayuingam, Sr.Mgr (E)	NHPC	07085916006
18	Sh. Niranjan Rabha, Dy.Mgr (Projects)	NETC	07002022736
19	Sh. Manvendra Singh Hada, Sr.Mgr	INDIGRID	09925033157
20	Sh. Samriddhi Gogoi, Sr.Associate	INDIGRID	09101330587
21	Sh. Rabi S.Choubey, Engg. (PSS)	PRDC	-
22	Sh. Basab Maity, Engg.(PSS)	PRDC	09732416233
23	Sh. K.B.Jagtap, Member Secretary	NERPC	-
24	Sh. Anil Kawrani, Director	NERPC	-
25	Sh. Abhijeet Agrawal, DD	NERPC	09871266951
26	Sh. Vikash Shankar, AD-I	NERPC	09455331756
27	Sh. Dinesh Kr.Singh, AD-I	NERPC	-

### REVIEW and RECTIFICATION of Protection issues in SS under SSD-III, MSPCL

#### 1. 132 kV NTK-CCPUR LINE 1 at NINGTHOUKHONG Sub-station:

*Date of review and rectification:* 04:05:2024

**FINDINGS:** C&R panel Termination Scheme and existing PSL of 21-DPR were not in accordance with each other. Relay output contact to Trip circuit for Z1 was wrongly assigned.

**REMEDIAL ACTION:** Existing PSL was modified in accordance with termination scheme and updated in the IED, then relay operation was tested and found correct. Settings for Back Up Relay-67/67N were also coordinated for OC with Z2 timing and EF with Z3 timings of DPR.

#### 2. 132 kV KAK-CCPUR LINE at KAKCHING Sub-station:

*Date of review and rectification:* 13:06:2024

**FINDINGS:** The incoming secondary terminals of CTs were grounded at the C&R panels' Relay Test Block (RTB), which have not been reverted to normal connections during earlier assignments. C&R panel Termination Scheme and existing PSL of 21-DPR are not in accordance with each other. Relay output contact to Trip circuit to CB for Z1 and for other zones to 86 were wrongly assigned.

**REMEDIAL ACTION:** The CTs secondary termination were reverted back to normal connection. Existing PSL was modified in accordance with termination scheme and updated in the IED, then relay operation was tested and found correct. Settings for Back Up Relay-67/67N were also coordinated for OC with Z2 timing and EF with Z3 timings of DPR.

#### 3. 132 kV KAK-THOUBAL LINE 1 and LNE 2 at KAKCHING Sub-station:

*Date of review and rectification:* 13:06:2024

**FINDINGS:** C&R panel Termination Scheme and existing PSL of 21-DPR were not in accordance with each other. Relay output contact to Trip circuit (86) to CB for Z2, Z3, Z4 and SOTF were wrongly assigned.

**REMEDIAL ACTION:** Existing PSL was modified in accordance with termination scheme and Updated in the IED, then relay operation was tested and found correct. Settings for Back Up Relay-67/67N were also coordinated for OC with Z2 timing and EF with Z3 timings of DPR.

#### 4. 132 kV CCPUR-NTK LINE 1 and LNE 2 at CHURACHANDPUR Sub-station:

*Date of review and rectification:* 18:06:2024

**FINDINGS:** C&R panel Termination Scheme and existing PSL of 21-DPR were not in accordance with each other. Logic for Zones protection were missing in LINE 2. Positive potential extension to Relay output contacts for LINE 1 to Trip circuit to CB for Z1, Z2, Z3, Z4 and SOTF were open circuited.

**REMEDIAL ACTION:** Trip circuits were checked and necessary potential was extended for LINE 1. Existing PSL was modified in accordance with termination scheme and updated in the IED,

then relay operation was tested and found correct. Settings for Back Up Relay-67/67N were also coordinated for OC with Z2 timing and EF with Z3 timings of DPR.

**5. 132 kV CCPUR-KAKCHING LINE and 132 kV CCPUR-ELANGKHANGPOKPI LINE at CHURACHANDPUR Sub-station:**

*Date of review and rectification:* 18:06:2024

**FINDINGS:** C&R panel Termination Scheme and existing PSL of 21-DPR were not in accordance with each other. Relay output contact to Trip circuit for all Zones were wrongly assigned.

**REMEDIAL ACTION:** Existing PSL was modified in accordance with termination scheme and updated in the IED, then relay operation was tested and found correct. Settings for Back Up Relay-67/67N were also coordinated for OC with Z2 timing and EF with Z3 timings of DPR.

6. PENDING WORKS: PROTECTION CIRCUIT REVIEW FOR ELANGKHANGPOKPI SU-STATION is pending.

**Annexure D.1**  
**Annexure C.1**

Name of the line	Status as updated in 56/57th PCC meeting	Latest Status
132 kV Agia - Mendipathar	PLCC works completed. AR operation configuration to commence from March'22. Latest Status to be intimated.	
132 kV EPIP II - Byrnihat D/C		
132 kV EPIP II - Umtru D/C		
132 kV Kahilipara - Umtru D/C		
132 kV Khliehriat – Mustem		
132 kV Mustem - NEHU line		
132 kV Khliehriat (MePTCL) - Khliehriat (PG) Ckt#II		
132 kV Khliehriat- NEIGRIHMS		
132 kV NEHU – Mawlai		
132 kV Mawlai - Umiam Stage I		
132 kV Mawphlang - Nongstoin		
132 kV Mawphlang - Umiam Stg I D/C		
132 kV Mawphlang- Mawlai		
132 kV Mendipathar – Nangalbibra		
132 kV Myntdu Leshka - Khliehriat D/C		
132 kV Nangalbibra – Nongstoin		
132 kV NEHU – NEIGRIHMS		
132 kV NEHU – Umiam		
132 kV Sarusajai - Umtru D/C		
132 kV Umiam - Umiam St I	By March'22	
132 kV Umiam St I - Umiam St II		
132 kV Umiam St I - Umiam St III D/C		
132 kV Umiam St III -Umiam St IV D/C		
132 kV Umiam St III - Umtru D/C		
132 kV Umtru - Umiam St IV D/C		

**MePTCL**

STATUS OF LINE DIFFERENTIAL PROTECTION PROJECT UNDER PSDF					
Sl. No	Feeder Name	Installation		Commissioning	Remarks
		End A	End B		
1	EPIP-I - EPIP II Line I	Completed	Completed	Completed	
2	EPIP-I - EPIP II Line II	Completed	Completed	Completed	
3	EPIP -I - Killing Line I	Completed	Completed	Completed	
4	EPIP -I - Killing Line II	Completed	Completed	Not Completed	Fiber Network Not Available
5	EPIP -I - M/S Maithan Alloy	Completed	Completed	Not Completed	
6	EPIP -I - Shyam Century	Completed	Completed	Not Completed	
7	EPIP-II - Umtru Line I	Completed	Completed	Not Completed	
8	EPIP-II - Umtru Line II	Completed	Completed	Completed	
9	EPIP II - New Umtru	Completed	Completed	Completed	
10	EPIP II - Killing Line I	Completed	Completed	Not Completed	Fiber Network Not Available
11	EPIP II - Killing Line II	Completed	Completed	Not Completed	
12	Umtru- New Umtru	Completed	Completed	Completed	
13	LUMSHNONG- M/S MCL	Completed	Completed	Not Completed	Fiber Network Not Available
14	LumSHNONG- M/S ACL	Completed	Completed	Not Completed	
15	Lumshnong - M/S MPL	Completed	Completed	Not Completed	
16	UMIAM - Stage I	Completed	Completed	Not Completed	
17	Umiam - NEHU	Completed	Completed	Completed	
18	UMIAM/STAGE-I - Umiam Stage II	Completed	Completed	Not Completed	Fiber Network Not Available
19	NEHU - NEIGHRIMS	Completed	Completed	Not Completed	Awaiting for Commissioning of fiber under NERFO
20	NEHU - MAWLAI	Completed	Completed	Completed	
21	KHLIEHRIAT (MePTCL)- KHLIEHRIAT(PG) line-II	Completed	Completed	Completed	
22	Stage-III - Stage IV Line I	Completed	Completed	Not Completed	Fiber Network Not Available
23	Stage-III - Stage IV Line II	Completed	Completed	Not Completed	

POWERGRID Lines																								
SL_NO	ELEMENT NAME	OWNER	TRIPPING DATE	TRIPPING TIME	SENDOWNER	RELAY INDICATION (S)	AR_A	RENDOWNER	RELAY INDICATION(R)	AR_B	End A (Mark '1' for relevant category and "0" for not applicable)				End B (Mark '1' for relevant category and "0" for not applicable)				Indices				Remarks	
											Nc	Nf	Nu	Ni	Nc	Nf	Nu	Ni	Nc	Nf	Nu	Ni		
1	132kV KUMARGHAT-KARIMGANI(ASSAM)	POWERGRID	03-03-2024	15:50	POWERGRID	Backup PRT OPTD,86A/B OPTD,>1 Trip,Z2/Z3 START,3.52KA,B-N	NA	NA	NA	NA	1	0	0	0	0	0	0	0	1	0	0	0	WHILE LIVE-LINE OPGW STRINGING WORK, THE DISMANTLED PILOT WIRE SLIPPED FROM THE PULLEY AT LOC. NO. 336 AND CAME WITHIN THE INDUCTION ZONE OF THE B-PHASE CONDUCTOR BELOW RESULTING IN FLASHOVER.	
2	132kV NIRJULI-LEKH(DOP-AP)	POWERGRID	06-03-2024	12:09	POWERGRID	NOT TRIPPED.	NA	NA	NA	NA	1	0	0	0	0	0	0	0	1	0	0	0	LEKHI: RYB-PH, Z1, 7.8KM. AT THE SAME TIME 132KV NIRJULI-PARE (STERLITE) FEEDER TRIPPED.	
3	132kV ROING-PASIGHAT(DOP-AP)	POWERGRID	07-03-2024	15:46	POWERGRID	DEF OPTD,B-N-279A	NA	POWERGRID	NA	NA	1	0	0	0	1	0	0	0	2	0	0	0	PASIGHAT (POWERGRID bay): NO TRIPPING comes under Z4. AT SAME TIME 132KV PASIGHAT -ALONG STATE LINE TRIPPED AT PASIGHAT END	
4	220kV MARIANI-MOKOKCHUNG-2	POWERGRID	11-03-2024	15:53	POWERGRID	M1: R-Y, Z1, 6.8KA, 5.3KM ; M2: R-Y, Z1, 7.46KA, 5.34 KM	NA	POWERGRID	M1: R-Y, Z2, 2.5KA, 45.37KM ; M2: R-Y, Z2, 2.46KA, 46.22 KM	NA	1	0	0	0	1	0	0	0	2	0	0	0	ON POST-FAULT PATROLLING, THE TALL BAMBOO BRANCH, LYING OUTSIDE THE LINE CORRIDOR IN THE UPHILL SIDE OF THE CONDUCTOR, WAS CUT BY SOME UNKNOWN MISCREANTS AND IT CAME IN PROXIMITY TO THE TOP AND MIDDLE PHASE CONDUCTOR WHICH RESULTED IN THE TRIPPING. FIR HAS BEEN LODGED FOR THE SAME.	
5	132kV DOYANG(NEEPCO)-DIMAPUR-1	POWERGRID	16-03-2024	13:38	NEEPCO	B-NH ,Z-2, 60.074 KM (CB TRIPPED)	Not Operated	POWERGRID	CB RE-CLOSED; B-N, Z1, Ib= 1.06KA, 68.49KM	A/R SUCCESS	0	0	0	0	1	0	0	0	1	0	0	0	A/R SUCCESS AT DIMAPUR END AND LINE WAS CHARGED FROM DIMAPUR END	
6	132kV BADARPUR-KHLEHRIAT-1	POWERGRID	17-03-2024	04:15	POWERGRID	Y-N, Z1, 23.71KM, 3.25KA	AR ATTEMPTED AND TRIPPED ON RECLAIM TIME	POWERGRID	Y-N, Z1, 52.0KM, 1.587KM	AR ATTEMPTED AND TRIPPED ON RECLAIM TIME	1	0	0	0	1	0	0	0	2	0	0	0	ON TOWER-TOP PATROLLING, FLASHOVER MARKS WERE OBSERVED IN THE ARCING HORN OF Y-PHASE CONDUCTOR AT TOWER LOC. NO. 80 (B+D). INCREMENTAL WEATHER CONDITIONS WERE PREVALENT IN THE AREA AT THE TIME OF TRIPPING. AS THE TRIPPING OCCURRED DUE TO LIGHTNING AND THUNDERSTORM.	
7	132kV BADARPUR-KHLEHRIAT-1	POWERGRID	20-03-2024	18:53	POWERGRID	R-N, Z1, 37.48KM, 2.39KA	Not Operated as the AR in Auto mode in process at Badarapur end after OPGW	POWERGRID	R-N, Z1, 38.77KM, 1.71KA	A/R SUCCESS	1	0	0	0	1	0	0	0	2	0	0	0	ON POST FAULT PATROLLING CARRIED OUT BY KHLEHRIAT TLM AFTER TRIPPING OF THE SAID TRANSMISSION LINE, A FLASHOVER SPOT WAS OBSERVED ON PORCELAIN DISC INSULATOR AND ARCING HORN OF R-PHASE CONDUCTOR AT TOWER LOC. NO. 118.	
8	132kV DOYANG(NEEPCO)-DIMAPUR-2	POWERGRID	22-03-2024	02:25	NEEPCO	R-G,CB TRIPPED	Not Operated	POWERGRID	R-G,Z1,4.47 KA,06.947 KM	A/R SUCCESS	0	0	0	0	1	0	0	0	1	0	0	0	A/R SUCCESS AT DIMAPUR END AND LINE WAS CHARGED FROM DIMAPUR END	
9	132kV AIZWAL-TIPAIMUKH(MANIPUR)	POWERGRID	23-03-2024	22:00	POWERGRID	Y-G, 242 AMP , DEF	NA	STATE	Y-G, 242 AMP	NA	1	0	0	0	1	0	0	0	1	0	0	0	DURING POST FAULT PATROLLING IT WAS FOUND THAT THE FEW PINE BRANCHES WERE FOUND IN THE LOC NO 306-307 AND WHICH ARE FALLEN DURING HEAVY WIND AND THANDER STORM FROM OUT SIDE CORRIDOR	
10	132kV GOHPUR(ASSAM)-NIRJULI	POWERGRID	25-03-2024	12:30	STATE	E/F	NA	POWERGRID	DIR O/C, R-Y PH, Ir=2.65KA, Iy= 2.43KA	NA	0	0	0	0	1	0	0	0	1	0	0	0	AS PER STATEMENT RECORDED FROM LOCAL VILLAGERS ONE POCKLAND/EXCAVATOR, WHILE CROSSING THE LINE BETWEEN SPAN 29 & 30, GOT NEAR THE INDUCTION ZONE OF THE CHARGED CONDUCTOR AND FLASHOVER OCCURRED. TO ASCERTAIN THE FACTS, THOROUGH PATROLLING WAS CARRIED AT LOC. NO. 29 AND 30 AND A FLASHOVER MARK WAS FOUND AT THE BOTTOM Y-PHASE CONDUCTOR. ACCORDINGLY, AN FIR HAD BEEN LODGED AT THE NEAREST POLICE STATION (GOHPUR PS).	
11	132kV DIMAPUR-KOHIMA(NAGALAND)	POWERGRID	25-03-2024	15:38	POWERGRID	B-N, 919 AMP ,42.73 KM	Not Operated as remote A/R is not successful	STATE	E/F	NA	1	0	0	0	0	0	0	0	1	0	0	0	TRIPPED BEYOND POWERGRID LINE JURISDICTION	
12	132kV JIRIBAM-HAFLONG	POWERGRID	26-03-2024	01:26	POWERGRID	R-N, Z1, 6.608KM, 3.81KA	AR ATTEMPTED AND TRIPPED ON RECLAIM TIME	POWERGRID	R-N, Z-1, 71.55KM, 0.68KA	AR ATTEMPTED AND TRIPPED ON RECLAIM TIME	1	0	0	0	1	0	0	0	2	0	0	0	DURING TOWER TOP PATROLLING AT FAULT TOWER LOCATION 226 (A+6), FLASH OVER MARK OBSERVED IN R PHASE AT CLR POLYMER INSULATOR AND ARCING HORN.HEAVY RAIN AND LIGHTNING PREVAILS IN AN AROUND THE AREA DURING TRIPPING OF THE LINE.	
13	132kV ROING-PASIGHAT(DOP-AP)	POWERGRID	26-03-2024	06:26	POWERGRID	R-BN–PH, Z2, 102.9KM, 0.88KA,	A/R not operated DUE TO THE PLCC OUT OF SERVICE AT PASIGHAT END DUE TO THE NON-AVAILABILITY OF	POWERGRID	R–BN–PH, Z1, 0.55KA,	A/R SUCCESS	1	0	0	0	1	0	0	0	2	0	0	0	ON POST-FAULT PATROLLING, EVIDENCE OF TRIPPING WAS FOUND AT LOC. NO. 22-23 WHERE JHUM FIRE WAS FOUND TO HAVE BEEN LIT BY LOCALITES. ALSO, FLASHOVER MARKS WERE SEEN IN INSULATOR AT LOC. NO. 10.	
14	132kV DOYANG(NEEPCO)-DIMAPUR-2	POWERGRID	29-03-2024	13:10	NEEPCO	Z-1, R-Y, Ir-2.0KA, Iy- 2.21KA	Not Operated	POWERGRID	R-Y-ph , Ir -1.48KA, Iy-1.3KA, 72.56 KM	A/R SUCCESS	0	0	0	0	1	0	0	0	1	0	0	0	A/R SUCCESS AT DIMAPUR END AND LINE WAS CHARGED FROM DIMAPUR END	
15	400kV SILCHAR-P K BARI(STERLITE)-1	POWERGRID	30-03-2024	17:07	POWERGRID	BN, Z2, 191.4KM, 1.46KA	NA	STERLITE	No Tripping	NA	0	0	1	0	0	0	0	0	0	0	0	1	0	LINE TRIPPED AT SILCHAR END ONLY SILCHAR: BN, Z2, 191.4KM, 1.46KA PK BARI: NOT TRIPPED. Total line length-137KM AT SAME TIME 400KV SM NAGAR - PK BARI -2 LINE AUTORECLOSE AT PK BARI END. THERE WAS PSL LOGIC ISSUE AND SAME WAS RECTIFIED AT SILCHAR END.
16	400kV PALATANA(OTPC)-SM.NAGAR(TSECL)-1	POWERGRID	31-03-2024	07:29	OTPC	Y-G, Z-1, 36.6KM, 3.95KA,AR BLOCKED	Not Operated	STERLITE	Y-G,Z-1, 14.66KM, 1.02KA	A/R ATTEMPTED AND TRIPPED ON RECLAIM TIME	1	0	0	0	1	0	0	0	0	0	0	0	HEAVY RAIN AND LIGHTNING PREVAILS IN AN AROUND THE AREA DURING TRIPPING OF THE LINE.	
17	132kV KUMARGHAT-AIZWAL	POWERGRID	31-03-2024	08:39	POWERGRID	R-PH, Z-1, 46.95KM, 1.56KA;	A/R ATTEMPTED AND TRIPPED ON RECLAIM TIME	POWERGRID	R-PH, Z-1, TOR, 59.37KM, 1.04KA	A/R ATTEMPTED AND TRIPPED ON RECLAIM TIME	1	0	0	0	1	0	0	0	2	0	0	0	DURING TOWER TOP PATRILLOING, IT WAS FOUND FLASH OVER MARK ON THE INSULATOR AT LOC.NO.05	
18	132kV AIZWAL-KOLASIB(MIZORAM)	POWERGRID	31-03-2024	09:08	POWERGRID	Y-PH, TOR, 3.79KM, 3.6KA	A/R ATTEMPTED AND TRIPPED ON RECLAIM TIME	POWERGRID	Diff Tip-Y phase,TOR,2.5KA	A/R ATTEMPTED AND TRIPPED ON RECLAIM TIME	1	0	0	0	1	0	0	0	2	0	0	0	PATROLLING HAS BEEN CARRIED OUT FROM LOC. NO. 231-249, ON PATROLLING ABOVE FAULT FOUND AT LOC. NO. 231 OF 132KV S/C KUMARGHAT-AIZAWL TL IN WHICH A FLASH MARK IS FOUND IN THE ARCING HORN.	
19	132kV AIZWAL-TIPAIMUKH(MANIPUR)	POWERGRID	31-03-2024	09:38	POWERGRID	Y-N, BACKUP E/F, Iy= 352.4AMP	NA	STATE	Y-PH, BACKUP ,E/F	NA	1	0	0	0	1	0	0	0	1	0	0	0	DUE TO HEAVY WIND AND RAIN ,BAMBOOS (NEWLY GROWN) WERE FOUND CLOSE (APPROX 2 MTR) TO THE CONDUCTOR OF Y PHASE. AT LOC NO 322-323	
20	132kV ROING-TEZU	POWERGRID	31-03-2024	23:59	POWERGRID	Diff Trip(Z1)_Y_0_N,1.16KA	A/R ATTEMPTED AND TRIPPED ON RECLAIM TIME	POWERGRID	Diff Trip,Y_0,N,1.02KA	A/R ATTEMPTED AND TRIPPED ON RECLAIM TIME	1	0	0	0	1	0	0	0	2	0	0	0	DURING POST FAULT PATROLLING IT WAS FOUND 01 NO. 132KV TOWER COLLAPSED , LOCATION NO- 72 AT 132KV ROING - TEZU TRANSMISSION LINE OF POWERGRID ON DATED- 31.03.2024 AT 23:59 HOURS. IT WAS DUE TO TURBULENT WEATHER, WITH HEAVY RAINS THAT AFFECTED THESE PARTS OF NER.	
21	15MVA,132/33kV ICT-1 AT ZIRO	POWERGRID	03-03-2024	11:46	POWERGRID	DIFF PROTECTION,Fault current : Ir (HV) : 465 A, Ir (LV) : 118 A due to R-ph 33KV cable puncture	NA	NA	NA	NA	1	0	0	0	0	0	0	0	1	0	0	0	TRIPPED DUE TO R-PH XLPE CABLE BRUST IN 33 KV SIDE	