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
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No.: No. NERPC/SE (O)/PCC/2024/ 2403-2444 October 1, 2024

To
As per list attached

Sub: Minutes of 71st Protection Coordination Sub-Committee (PCC) Meeting

Sir/Madam,

Please find enclosed herewith the minutes of the 71st PCC Meeting held at NERLDC Conference Hall, Guwahati on 11th September 2024 for your kind information and necessary action. The minutes is also available on the website of NERPC: www.nerpc.gov.in.

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

भवदीय / Yours faithfully,

(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, 10th 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

71st PCCM

Azadi Ka Amrit Mahotsav

Govt. of India

Ministry of Power

North Eastern Regional Power Committee

Shillong

North Eastern Regional Power Committee

Minutes of

71st Protection Coordination Sub-Committee Meeting

Date: 11/09/2024 (Wednesday)

Time: 11:00 hrs.

Venue: NERLDC conference Hall, Guwahati

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

A. CONFIRMATION OF MINUTES

1. CONFIRMATION OF MINUTES OF THE 70th PROTECTION SUB-COMMITTEE MEETING OF NERPC.

Minutes of the 70th PCC Meeting held on 8th August, 2024 (Thursday) at NERPC Conference Hall, Shillong was circulated vide letter No.: NERPC/SE (O)/PCC/2024/1928-1969 dated 20th August, 2024.

No comments were received from constituents

The Sub-committee confirmed the minutes of 70th PCCM.

B. ITEMS FOR DISCUSSION

B.1 Protection Audit of NER:

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

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

	Annual audit plan	All users	Annual audit plan to be submitted to RPC by ***31st October***	Annual

Background: In 60th 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 3rd 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.

<u>In 70th and 69th PCCM, following points were discussed</u>

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 of 61 substations has been completed and would share the report by this month.
3. TSECL absent

4. Manipur informed that Protection audit committee has been formed and the audit schedule, for external audit, will be decided shortly.
5. DoP Arunachal Pradesh updated that internal audit of Chimpu SS is done and report will be shared shortly to NERPC and NERLDC. He further informed that audit of Lekhi would be done by August'24. He also stated that the audit reports would be shared in due time to NERPC.
6. NTPC informed that 3rd party audit has been awarded and will be done in 3rd week of September.
7. NERTS updated that internal audit of its substations is being done in a phased manner and audit of 10 substations has been completed and reports shared with NERPC.
8. DoP Naglanad updated that internal audit of 4 substations has been completed and report shared with NERPC.
9. NEEPCO informed that internal audit of Pare and Kopili has been completed and audit of thermal substations will be done shortly.

Regarding audit of substations of Nagaland and adjoining substations of NERTS, it was decided to conduct the audit of 132 kV Dimapur (DoPN) SS, 132 kV Kohima SS, 132 kV Chiepouvozou SS132 kV Zhadima SS and 220 kV Dimapur (PGCIL) in August'24. DoP Nagaland stated that the audit schedule will be provided shortly. Further, it has been decided that audit of rest of the 132 kV substations of Nagaland will be conducted after end of Monsoon season.

The status of internal audit, external audit and report submissions have been summarized in the following table (as update in 71st PCCM) –

	Utility/Constituents	Internal Audit		External audit	
		status	**report**	**status**	**report**
1.	Ar. Pradesh	Chimpu – done. Rest to be done	Report of Chimpu to be submitted soon	Chimpu and Pashighat planned in February'25. Rest may be conducted in Novemeber'24.	NA

2.	Assam	Done for 61 SS	To be submitted by Aug end	NERPC conducted audit of 6 SS in Jan to June'24. Other SS done in 2021-22. Only Karimganj left.	submitted
3.	Manipur	Done for all SS	Submitted	Schedule to be decided shortly.	NA
4.	Meghalaya	No audit done yet in FY 2024-25	NA	Audit of 6 SS (Killing, EPIP I, EPIP II, NEHU, Mawlai an MAwphlang) conducted by NERPC on 26th and 27th August'24	Report to be shared by end of October'24
5.	Mizoram	Done for all SS	Report shared	Audit of Luangmual, Zuangtui and Kolasib planned in August'24. List of external agencies awaited	NA
6.	Nagaland	Done for four SS	Report shared	Audit of 5 ss to be done by NERPC in August. For rest, to be planned	Nov'24
7.	Tripura	11 done, rest by September	To be shared	To be planned After Durga Puja	NA
8.	Powergrid(NERTS)	Done for 10 SS. Others to be done in	shared		

		phased manner			
9.	NTL				
10	KMTL				
11	MUML	Planned in Dec'24 for N.Lakhimpur-Pare line bays and N.Lakhimpur-Nirjuli bays at Lakhimpur	To be shared		
12	NEEPCO	Pare, Ranganadi and Turial done. RC Nagar and Kathalguri to be planned	Shared for Pare and Turial	To be planned. Waiting for the list of agencies from NPC	
13.	OTPC	Done		Done	shared
14.	NTPC	Done	shared	September 3rd week	
15.	NHPC				
16.	APGCL				
17.	TPGCL				
18.	MEPGCL				

Deliberation of the sub-committee

Following points were discussed in the meeting

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. Forum requested users to update the next year Internal Audit & Third-party Audit plan and also requested to send the last 5-years Internal Audit & Third-party Audit list to NERPC and NERLDC as soon as possible.
3. AEGCL updated that the internal audit of 61 substations has been completed and report has been submitted. AEGCL also updated that for Third-party Audit of 132 kV Karimganj substation is yet to be done.
4. TSECL updated that the internal audit of 11 substations has been completed and rest will be completed by Sept.'24 and would share the report at earliest. He also informed the forum that Third-party Audit will be planned after Oct'24.
5. Manipur informed that Protection audit committee has been formed and the audit schedule, for external audit, will be decided shortly.
6. DoP Arunachal Pradesh updated that the external audit is planned to be conducted in Nov'24.
7. Mizoram informed the forum that they are planning Third-party Audit through recognized auditor and for the same they are waiting for the CEA recognized auditor list.
8. NTPC informed that 3rd party audit has been awarded and will be done in 3rd week of September.
9. DoP Naglanad informed the forum that due to landslide issue, external audit of 5 substations will not be possible now and requested that external audit of the same could be done tentatively in Nov'24.

ED, NERLDC informed the forum that in recent past multiple tripping/grid events at Kolasib SS of Mizoram has been reported. Therefore, he requested forum that Third-party Audit of the same need to be done at earliest. NERTS representative also requested the forum that to cover Aizwal and Melriat SS of NERTS with the Kolasib SS of Mizoram.

MS, NERPC stated that the audit of Kolasib(Mizoram), Aizwal (PG), Melriat (PG) and other nearby important substations would be conducted by Octoebr'24.

Also, the forum requested all the NER utilities that during the Third-party Audit MRT and communication team of the respective utility need to be present at the SS.

B.2 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 66th 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 69th PCCM, M/s PRDC updated that one training session on PSCT has been conducted on 20th June'24. Further he stated that next training session will be conducted on 18th and 19th July'24. The forum requested all the utilities to update the respective network database in the PDMS.

In 70th PCCM, the forum decided that a sub-group will be formed to undertake the necessary studies to review the protection setting as per IEGC. The sub-group will have members from NERPC, NERLDC, CTU, STU, SLDCs, Transmission licensees, NEEPCO and NTPC. The utilities will send nomination of members within a week to NERPC. NERPC will issue the order accordingly.

M/s PRDC highlighted that the utilities are not regularly updating the relay settings in DMNS portal of PDMS platform. The forum urged the utilities to actively use the DMNS portal and reap the benefits of it.

Deliberation of the sub-committee

Utilities provided the nominations for the sub-group as follow:

S.N.	Organization	Name (S/Shri/Ms/Smt)
	NERPC	Maya Kumari
		Vikash Shankar
	NERLDC	Subra Ghosh
		Utpal Das
	Powergrid	Manas Jyoti Baishya
		Deep Sarkar
	AEGCL	Abhishek Kalita
		Juganta Sonowal
	DoP Arunachal Pradesh	Moli Kamki
	MePTCL	K Sethi, EE, system protection
	MePGCL	W. Khyriem
	Manipur	L. Ritu
		S Romen
		S Sanajabo
	Mizoram	C Daniel
		Lalsabiama
	TSECL	Anabik Soon
	DoP Nagaland	Shuwatito Katiry
		Alex Nhullie
	NTPC	G Sonowal, Sr Manager
	NEEPCO	To provide soon

MS, NERPC stated that every month group will review the protection settings, assess the requirement of revisions in protection settings and revise protection settings of NER in consultation with the respective utilities. Forum also requested M/s PRDC to provide their support.

B.3 Analysis and Discussion on Grid Disturbances which occurred in NER grid in August'24 in compliance with IEGC 2023:

TABLE 8 : REPORT SUBMISSION TIMELINE

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

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

The forum may deliberate upon the GD/GI/Near miss events that occurred in August 2024 based on the draft report prepared by NERLDC (**annexure B.4**).

Deliberation of the sub-committee

The forum noted the GD events that occurred in Aug'24. NERLDC highlighted that 50 GD had occurred in NER in August'24, out of which 30 GDs occurred due to radial nature of the grid and 16 GDs occurred in Manipur alone. He further stated that those GDs involving protection issues had been put up for discussion in further agenda items.

B.4 B/U setting coordination of Arunachal grid

In 70th PCCM, DoP Ar Pradesh requested the forum to holistically review the B/U settings on 132 kV Rupai-Chapakhowa-Roing-Pasighat-Along-Basar-Daporizo-Zero-Paynor link.

Deliberation of the sub-committee

DoP Ar. Pradesh again requested the forum to holistically review the B/U settings on 132 kV Rupai-Chapakhowa-Roing-Pasighat-Along-Basar-Daporizo-Zero-Paynor link. In this regard forum formed a Sub-group consisting to NERPC, NERLDC, NERTS, Ar Pradesh and Assam and requested the sub-group to conduct an online meeting at the earliest to review B/U settings of the same.

Nominations for the sub-group are as follow-

1. NERPC: Vikash Shankar and Dinesh Kumar Singh
2. NERLDC: Bimal Swargiyari and Utpal Das
3. NERTS: Manash Jyoti Baishya
4. Arunachal Pradesh: Moli Kamki
5. Assam: Abhishek Kalita

Sub-committee noted as above

Agenda from OTPC

B.5 <u>Line opening issue in Palatana-Banduar line</u>

On 28.08.24 at 11:25 hrs. a call was received from SLDC for the emergency shut-down for 132 KV line-1 (Palatana- Banduar). After receiving clearance from SLDC at 11:31 hrs 132 KV line-1 breaker opened from Palatana end and after a while breaker opened from Banduar substation end. Even after opening of both end circuit-breakers line voltages were showing in all 3 phases at Palatana end.

This information was conveyed to SLDC and NERLDC control room. Instruction given to SLDC personals not to attempt for any tree trimming work, until proper de-energization of 132 KV Line-1.

Later at 11:58 hrs line voltage became zero after the rectification work from Banduar substation end. Later line isolation opened and earth-switch made on and clearance given for tree-trimming work.

As you are aware that same incident had happened earlier on 23.12.2023 & 01.04.2024 during 132 KV line-1 shutdown and the matter was discussed in 63rd & 66th Protection Committee Meeting but still no corrective action taken from SLDC Tripura end.

Hence Forum is requested to investigate total incident so that this type of event doesn't reoccur in future.

Deliberation of the sub-committee

OTPC -Palatana representative informed the forum that during the above incident even after opening of CBs at both ends, line voltages were showing in all 3 phases at Palatana end around 72kV. In this regard Tripura informed the forum that the CB at Udaipur end did not open properly and they would replace the CB (all poles) at Udaipur end during the shutdown on 14th & 15th Sept'24 so that this type of event doesn't re-occur in future.

Agenda from NERLDC

B.6 Status of submission of FIR, DR & EL outputs for the Grid Events for the month of August'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 01-08-2024 to 31-08-2024 as on **02-09-2024** is given below:

Name of Utility	No. of trippings	Total FIR, DR & EL submitted			Total FIR, DR & EL not submitted			% Submission of		
		FIR	DR	EL	FIR	DR	EL	FIR	DR	EL
DoP, Arunachal Pradesh	18	30	30	30	2	1	1	94	97	97
DEPL	0	0	0	0	0	0	0	No event		
AEGCL	42	89	59	59	0	0	0	100	100	100
APGCL	4	3	3	3	1	1	1	75	0	0
MSPCL	34	37	34	35	5	7	7	88	83	83
MePTCL	28	22	23	23	10	8	8	69	74	74
MePGCL	15	19	11	5	4	0	12	83	100	29
P&ED, Mizoram	6	5	5	5	1	1	1	83	83	83
DoP, Nagaland	24	29	25	25	0	3	3	100	89	89
TSECL	19	16	18	21	14	12	9	53	60	70
TPGCL	0	0	0	0	0	0	0	No event		
POWERGRID	57	81	65	68	8	10	11	91	87	86
NEEPCO	34	47	46	47	12	11	11	80	81	81
NHPC	15	15	15	15	0	0	0	100	100	100
NTPC	0	0	0	0	0	0	0	No event		
OTPC	5	6	5	6	0	0	0	100	100	100
NTL	10	14	13	13	0	0	0	100	100	100
MUML	0	0	0	0	0	0	0	No event		
KMTL	2	0	0	0	2	2	2	0	0	0

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

Deliberation of the sub-committee

1.Regarding low percentage of submission, APGCL stated that the concerned persons at Stations were not yet familiar with the procedure of downloading the DR etc. APGCL assured that the DR/FIR/EL would be submitted timely henceforth.

2. Regarding low percentage of submission, TSECL stated that due to communication issues because of flood they were not able to submit the DR/FIR/EL timely. TSECL assured that the DR/FIR/EL would be submitted timely henceforth.

3. Regarding non submission of DR/FIR/EL, KMTL assured that the these would be submitted timely in future.

After detailed deliberation the forum requested all the utilities to take urgent actions to ensure timely submission of the data in compliance with IEGC 2023.

B.7 Frequent tripping of 132 kV Loktak- Rengpang Line:

Due to frequent tripping of 132 kV Loktak - Rengpang line, Rengpang area of Manipur Power System was affected multiple times. Tripping details of the line from 01-June-24 to 30-Aug-2024 indicates that most of the tripping occurred due to line to ground (L-G) fault primarily because of the vegetation in the line.

The said line tripped **2 times**, **10 times** & **13 times** in the month of **June'24**, **July'24** & **Aug'24** respectively resulted in **25** number of Grid Disturbances (GD-I) in the Manipur power. Further, Loktak (NHPC) has also raised concern regarding frequent tripping of the above line (132 kV Loktak - Rengpang) which is causing voltage fluctuation at the generating Units and may reduce the life span of the circuit breakers due to frequent CB operation.

In order to prevent frequent tripping of the above line from vegetation, MSPCL is requested to take following corrective action immediately.

- **A.** Perform complete patrolling of the line & clear the vegetation infringement wherever required and also take all necessary measure to avoid frequent tripping of the said line.
- **B.** Restore the 132 kV Jiribam - Rengpang line which is under prolong outage so as to improve reliability of power supply to Rengpang area.

Deliberation of the sub-committee

Manipur representative informed the forum that patrolling of the 132kV Loktak-Rengpang line & vegetation infringement clearance has been done between 6th and 9th Sept'24 despite the challenges being posed by current Law and Order situation on site. NHPC informed that a tripping had occurred after the works as mentioned by Manipur. The forum requested Manipur to check for other issues in the line.

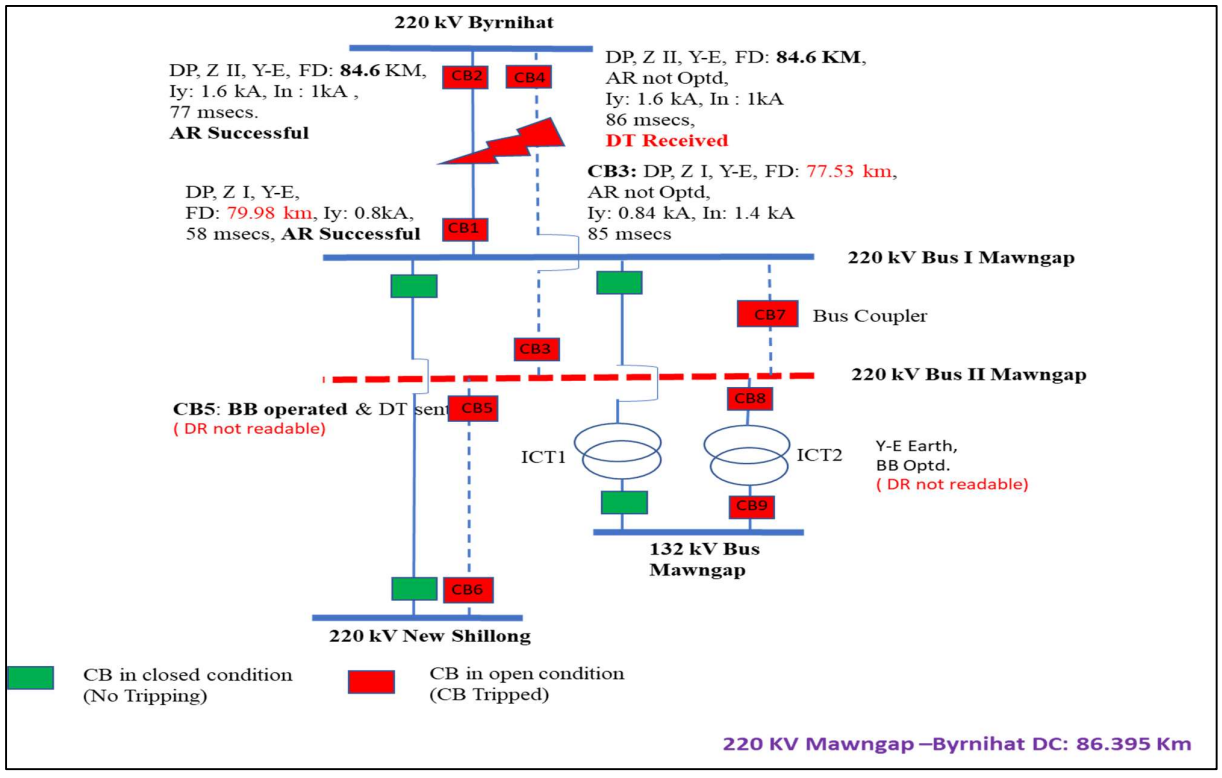
Regarding restoration of 132kV Jiribam-Rengpang line he informed the forum that a tower had collapsed due to road expansion work by NHIDCL and therefore tower shifting was required. He further stated that the line might be restored by October'24.

KMTL representative requested forum that they need support from Manipur for the patrolling and maintenance of 400kV D/c Imphal-N.Kohima line in light of present law-and-order situation.

After detailed deliberation forum stated that NERPC would send a letter to Manipur Govt. requesting support from MSPCL side to maintain the line. Forum also requested KMTL to send a letter to Manipur Govt. from their end also.

B.8 Maloperation of Bus Bar protection at 220 kV Mawngap Substation:

At 12:50 Hrs of **15-08-2024**, metallic fault observed in Y-E phase in the 220 kV Mawngap - Byrnihat I & II line. 220 kV Mawngap - Byrnihat I Line auto-reclosed successfully from the both end. However, Bus Bar protection operated in 220 kV Bus II which resulted into the tripping of 220 kV Mawngap - Byrnihat II Line, 220 kV Mawngap - New Shillong II Line, Bus Coupler and ICT-2 at Mawngap.



MePTCL is requested to update the following: -

1. Reason of unwanted operation Bus Bar protection, leading to the tripping of all the connected elements in 220 kV Bus II and its corrective measures taken to prevent re-occurrence.
2. Reason of misleading fault distance showing at Mawngap for 220 kV Killing I & II line.
3. Status of incorporation of Digital Channel of DR at Mawngap (Each phase CB status need to be added)

Similar event also occurred at 16:51 hrs. of 28-08-2024.

Deliberation of the sub-committee

MePTCL representative informed the forum that this mal-operation of Bus Bar issue had to be resolved by NERPSIP. He also informed the forum that on 28th Sept'24 representative from NERPSIP, ABB & Techno would visit the Mawngap SS and would attend the problem. Meanwhile forum suggested MePTCL to attend this problem with the help of NERTS before 28th Sept'24 once. Assam also highlighted the same issue at their substation and reported that mal-operation occured because of the logic issue.

During Third party protection audit on 27th Aug'24, it highlighted the following:

1. Regarding mal-operation of Bus Bar issue CT star point polarity for line and Bus bar need to be checked
2. Status of incorporation of Digital Channel of DR at Mawngap (Each phase CB status need to be added)

After detailed deliberation forum requested MePTCL to check the following with the help of Assam & NERTS:

1.Logic issue need to be checked

2.Stablity test need to be performed

3. CT star point polarity for line and Bus bar need to be checked

Sub-committee noted as above.

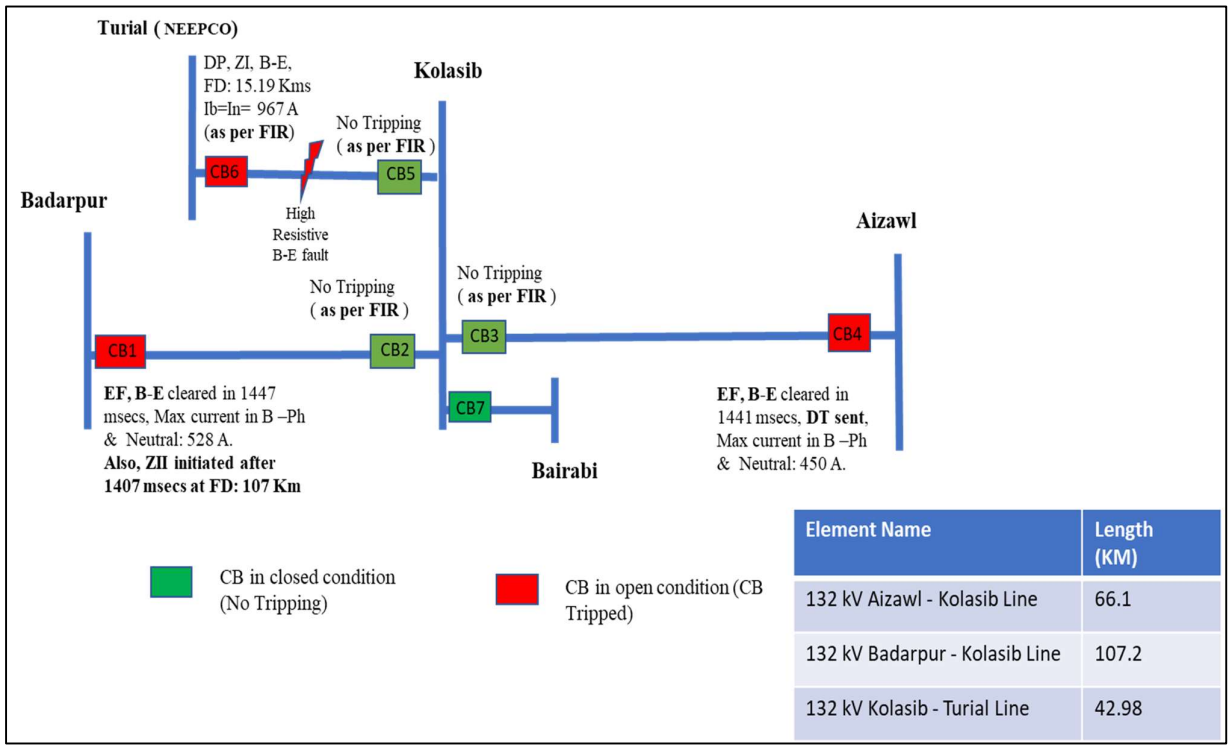
B.9 Grid disturbance in Turial & Kolasib on 13-08-2024:

High resistive B-E fault occurred in 132 kV Kolasib -Turial line and cleared from Turial on ZI operation. However, failed to clear by the protection system at Kolasib

end, resulting tripping of healthy ISTS lines from 132 kV Aizawl and Badarpur on B/U protection (1447 msec) which is the matter of serious issue.

Issues:

1. Non operation of distance protection for 132 kV Tuirial line.
2. Delayed backup protection operation at Kolasib for Tuirial line.



Element Name	Length (KM)
132 kV Aizawl - Kolasib Line	66.1
132 kV Badarpur - Kolasib Line	107.2
132 kV Kolasib - Turial Line	42.98

As per detailed report received from P&ED, Mizoram, Distance protection not operated due to faulty PT and CVT. Backup protection operated. PT has been fixed. CVT repair work to be done shortly.

P&ED, Mizoram is requested to complete the CVT repairing work for proper functioning of the protection system at Kolasib on urgent basis. Review and share the B/U setting immediately for coordination so that fault can be cleared from Kolasib itself.

In addition, Mizoram is requested to clear the vegetation infringement wherever required and also take all necessary measure to avoid frequent tripping of the said line, as it impacting the Turial generation of NEEPCO (Gen Loss: 54 MW).

Deliberation of the sub-committee

Mizoram representative informed the forum that distance protection did not operate at Kolasib end due to faulty PT and CVT. He also informed the forum that now they

were using the bus PT for the supply. Further he also assured the forum that by the end of Sept'24 all faulty phase CVT would be replaced.

NERPC highlighted that O/C protection should had operated at Kolasib for Turial line even if CVT and PT were faulty.

After detailed deliberation forum suggested the following:

1. Clear the vegetation infringement wherever required
2. B/U O/C setting at Kolasib end for Turial line needs to be sent to NERPC & NERLDC

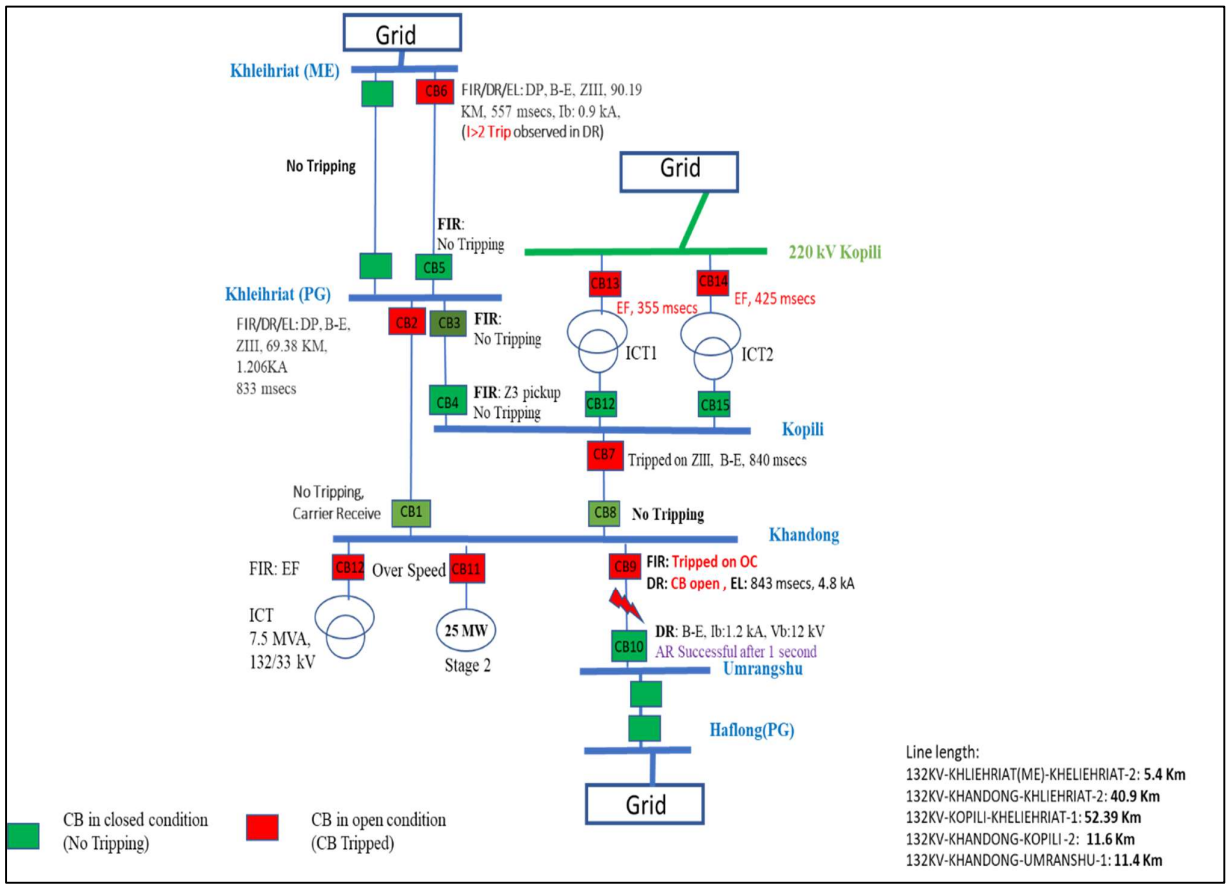
Sub-committee noted as above.

B.10 <u>Grid disturbance in Khandong on 13-08-2024:</u>

1X25 MW Khandong Stage-2 generation is evacuated through 3 lines viz 132 kV Khandong – Kopili 2 line & 132kV Khandong – Khliehriat 2 Line and 132kV Khandong – Umrangshu Line.

At 07:18 hrs. of 13-Aug-24,

- B-E fault of metallic nature occurred in 132 kV Khandong- Umrangshu line which was cleared at Umrangshu within 65 msecs on operation of DP in ZI and CB reclosed successfully after a dead time of 1 second. However, Main Protection (i.e. DPR) at Khandong not detected the fault (seems issue with directionality/CT star point/ setting of the DPR) and Backup protection cleared the fault in 843 msecs resulted into the tripping of 132 kV Khandong – Kopili 2 line & 132kV Khandong – Khliehriat 2 Line from the remote end on ZIII after 800 msecs, which led to blackout of 132 kV Khandong sub-station.
- At same time, 2X160 MVA, 220/132 kV ICT at Kopili HEP tripped on B/U protection in 355 msecs & 425 msecs, which inferred to be unwanted.
- Also, tripping of 132 kV Khliehriat (MePTCL)- Khliehriat (PG) 2 Line at MePTCL end on operation of B/U OC seems nuisance.



Due to the blackout, the generation loss of 25 MW observed in Khandong Stage -2.

The following action need to be taken by Khandong(NEEPCO), NERTS, MePTCL & AEGCL:

A. Non-Operation of Main Protection at Khandong: As per setting submitted by Khandong HEP, over current Pickup 408A, TMS: 0.25. As such B/U OC at Khandong (4.8 kA) for 132 kV Umrangshu line should have cleared the fault within 689 msec. If this had occurred, GD at Khandong could have been avoided.

Khandong (NEEPCO) is requested to update following recommendation by NERLDC vide mail dated 29th August'24-

- Revision of backup O/C setting as per NERPC protocol with OC pickup:450 A and TMS :0.18 to 0.20 considering Max fault current of 4.8 kA after due approval from NERPC

- Reason of non-detection of fault by distance relay by checking of setting/CT star point/directionality and by testing the relay with simulating same fault scenario to ensure healthiness of protection system.

B. Submission of Flash Report & Detailed Report: Khandong(NEEPCO) is requested to share the Flash Report (within 8 after the event as per IEGC-23) & Detailed report of the Blackout at Khandong (within 7 days after the event as per IEGC-23) as per IEGC mandate.

C. Tripping of ICT's: Tripping of ICT 1 &2 at Kopili in 355 msecs & 425 msecs is unwanted. As per report submitted by PGCIL, necessary backup settings revised by NERTS on 27th August'24.

D. Tripping at MePTCL end of 132 kV Khliehriat (MePTCL)- Khliehriat (PG) 2 Line: Overcurrent tripping at MePTCL end need to check and necessary TMS settings need to be revised by MePTCL.

E. DR standardization: Any start, any trip needs to be added in Digital Channel of Khandong end of Umranshu line. DR window need to increase to 3000 msecs. CB Open status need to be added at MePTCL end of 132 kV Khliehriat (MePTCL)- Khliehriat (PG) 2 Line.

F. Time Synch Issues: DR time synch error at Khandong (06:09 Hrs instaed of 07:18 Hrs) and Umrangshu (06:51 Hrs instead of 07:18 Hrs) in 132 kV Khandong-Umrangshu Line.

Deliberation of the sub-committee

A. NEEPCO representative informed the forum that due to the directionality issue distance protection at Khandong end (for Umrangshu line) had not detected the fault. He also informed the forum that issue had been rectified by NEEPCO by rectifying CT star point polarity.

B. NEEPCO representative assured the forum that Flash Report & Detailed report would be shared timely henceforth as per IEGC-2023 mandate.

C. NERTS updated the forum that the B/U settings of 220/132kV ICTs (HV side) at Kopili had been revised in coordination with NERPC and NERLDC.

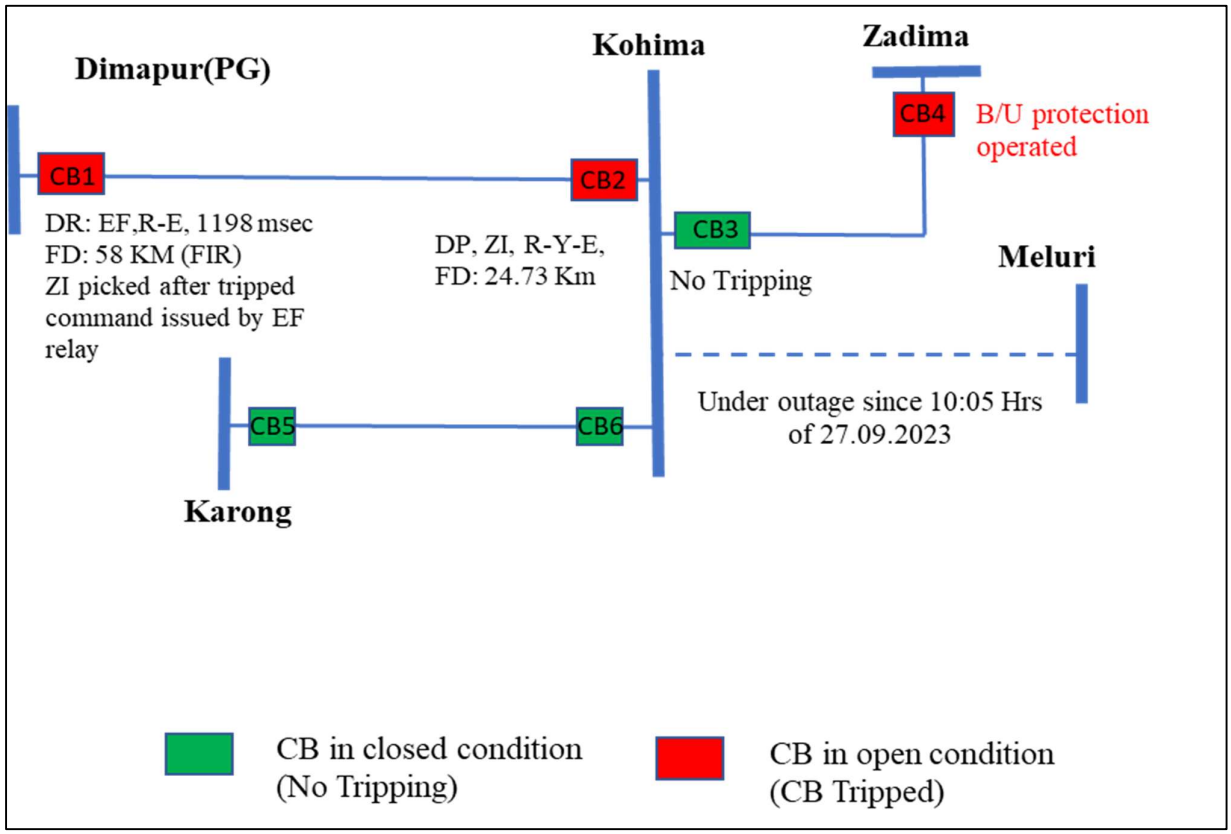
D. MePTCL is requested to review the B/U protection settings at Khliehriat end for Khliehriat line as per the NERPC protection protocol and disable the high set setting (I>2).

E. NEEPCO representative assured the forum that DR standardization would be done at earliest.

AEGCL also raised the concern of LBB Maloperation at Various NERPSIP commissioned SS at Assam viz, Tinsukia, Amingaon, Behaiting Kahilipara etc.

B.11 <u>Protection relay setting issues at Zadhima SS of Nagaland on 18-Aug-2024:</u>

Event I: At 13:21 Hrs of 18-08-2024, Phase to Earth fault occurred in 132 kV Dimapur – Kohima line cleared from both the end.



As per the DR of Dimapur end, High resistive fault in R-E fault (Ir=In=0.7 kA) initiated at 13:21:08.232 hrs which detected by Backup EF relay and trip command issued after 1162 msecs which tripped CB at Dimapur end. Also ZI (R-Y-E) initiated after 1198 msecs from the initiation of the fault (Ir=3.4 kA, Iy=3 kA, In=0.4 kA).

As per the DR of Kohima end, EF relay not detected the high resistive fault (Ir=In=0.4 kA) and DP initiated tripped command at 13:19:29.597 Hrs for R-Y-E fault (Ir=1.1 kA, Iy=0.9 kA, In=0.4 kA).

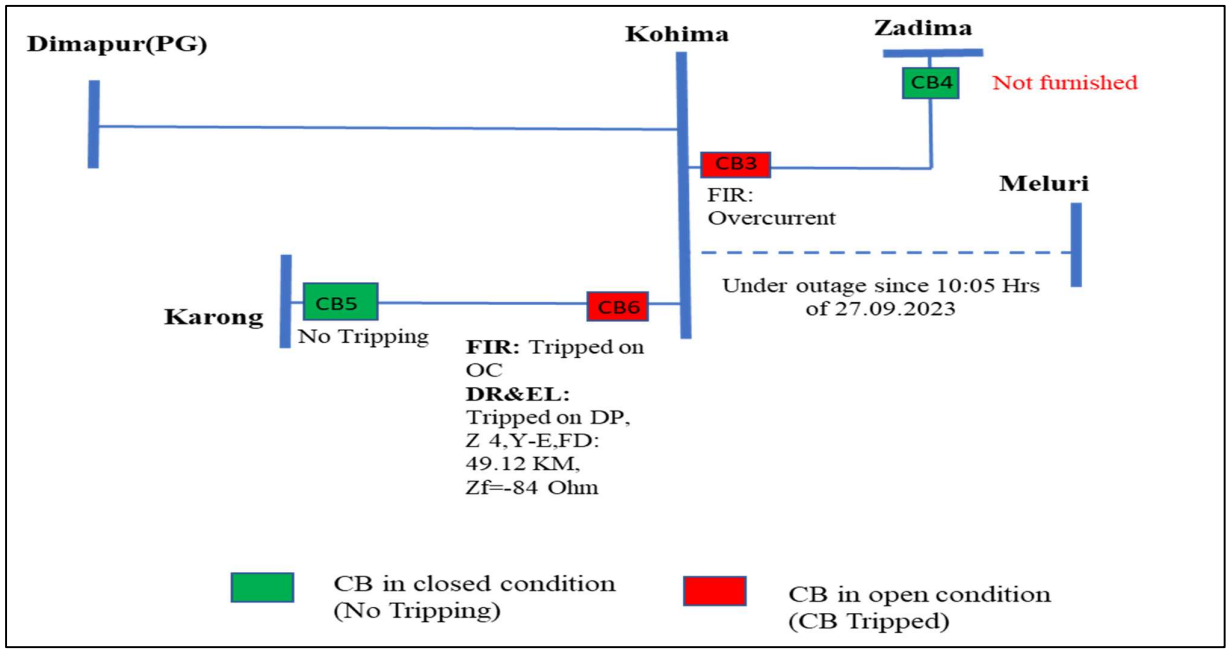
The proper analysis could not be performed due to non-submission of the DR&EL data of Zadhima end which is the violation of IEGC.

DoP, Nagaland is requested to update the following:

A. Reason for operation of Backup Protection Relay at Zadhima for Kohima feeder and Corrective action taken.

B. Request to submit the DR & EL Kohima & Zadhima SS.

Event II: At 12:01 Hrs of 29-08-2024, 132 kV Karong – Kohima & 132 kV Kohima-Zadhima line tripped simultaneously. Fault location could not be identified due to the non-submission of all necessary DR &EL data which is the great concern.



DoP, Nagaland is requested to update the following:

A. Root cause & actual fault location of the tripping on 19-08-2024.

B. Submit the DR & EL Kohima & Zadhima end of 132 kV Kohima- Zadhima line.

Deliberation of the sub-committee

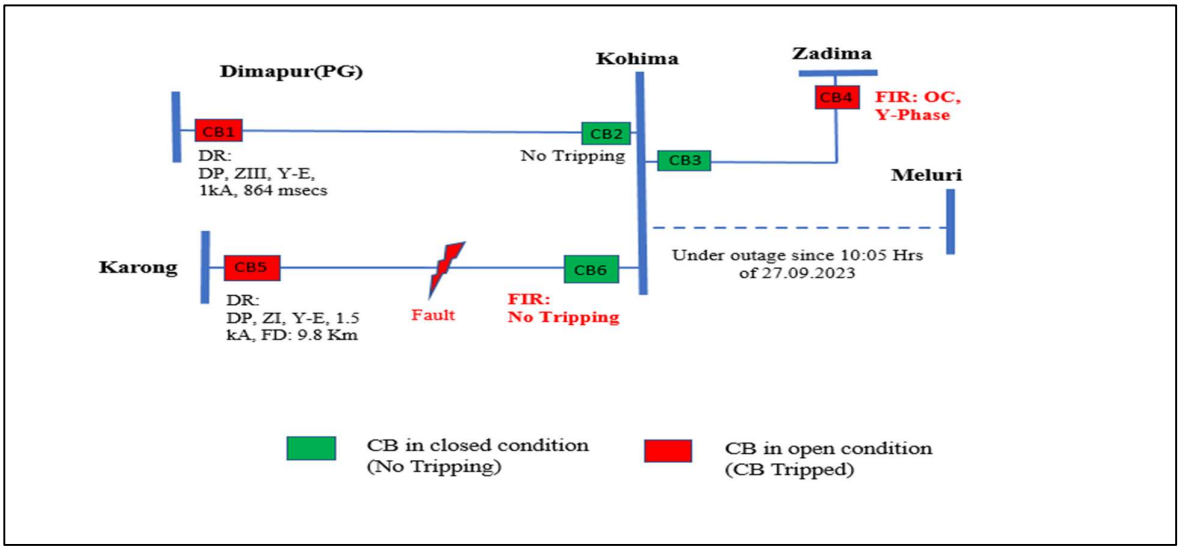
For event-I DoP Nagaland representative informed the forum that they were not able to download DR & EL of Kohima line at Zadhima SS in appropriate format. In this regard forum requested NERPSIP to provide support to Nagaland in downloading the DR & EL so that detailed analysis could be done by DoP Nagaland & NERLDC for any event.

For event-II DoP Nagaland representative updated the forum that as per their record CB3 had not tripped in O/C. Also Zone 4 settings for Zadima line at Kohima SS has been modified as per recommendations of NERLDC.

NERLDC informed the forum that due to non-submission of all necessary DR &EL data fault location could not be identified.

The forum requested DoP Nagaland to submit the DR/EL at the earliest so that complete analysis, including fault distance might be done timely.

B.12 Non operation of Distance Protection Relay at Kohima SS of Nagaland on 23-Aug-2024:



At 13:51 Hrs of 23-08-2024, Metallic fault (Iy=In=1.5 kA & Vy=12 kV) in 132 kV Karong-Kohima line cleared from Karong end on operation of distance protection in DP in 70 mescs (ZI, Y-E, FD: 9.8 kM).

But there is no tripping observed at Kohima end of Karong feeder. Hence, the fault cleared from Dimapur & Zhadima end resulted into the Grid Disturbance at Kohima, Zhadima, Chiephobozou, Wokha and New Secretariate areas of Nagaland Power System.

DoP, Nagaland is requested to update the following:

1. Reason for non-operation of Distance Protection Relay (DPR) at Kohima for Karong feeder and Corrective action taken.
2. Request to submit the DR & EL of Kohima & Zadhima SS and detailed report of the Grid Disturbance at Kohima.

Deliberation of the sub-committee

DoP Nagaland representative informed the forum that the distance protection at Kohima end for Karong line did not operate as fault current was observed in another phase due to some wiring issue.

Forum suggested the following:

1. Relay wiring from switchyard to relay at Kohima SS needs to be checked and rectified.
2. CT secondary loop resistance to be checked. Primary injection by CT analyser and checking of phase currents in the distance as well as B/U relay
3. Protection setting at Kohima end for Karong feeder need to be reviewed.

Forum requested all utilities that in case of replacement of CT, CVTs etc., connection checking had to be self-certified by the owner of SS before charging of the element.

B.13 Tripping of 400 kV Palatana-Silchar II line on 06-July-2024

At 12:03 Hrs of 06.07.2024, 400 kV Palatana-Silchar II line tripped.

As per DR/EL analysis, all pole dead at 11:58:47.309 Hrs and there was no voltage fluctuation (over voltage situation prior to opening of all CBs) at Palatana end. However, at 12:03:21.683 Hrs, DT was received at Silchar end.

Following observations:

1. It is unclear which protection system operated at Palatana end Palatana is requested to review the DT send logic and resolve the issue by checking of PLCC end to end.
2. Time drift of 5 min observed in DR of Palatana end for 400 kV Palatana-Silchar II Line which needs correction.

OTPC is requested to update the root cause of the tripping and remedial measures taken to prevent re-occurrence.

Deliberation of the sub-committee

OTPC Palatana representative informed that the breaker auxiliary switch of the line at Palatana malfunctioned, which tripped main and tie CB, which in-turn sent the DT signal to Silchar end.

On enquiring about how the tie CB operated, OTPC informed that on tripping of main CB, it tripped automatically. Forum noted that the scheme needed to be revised and some conditions, for tie CB to trip, had to be inserted in the scheme.

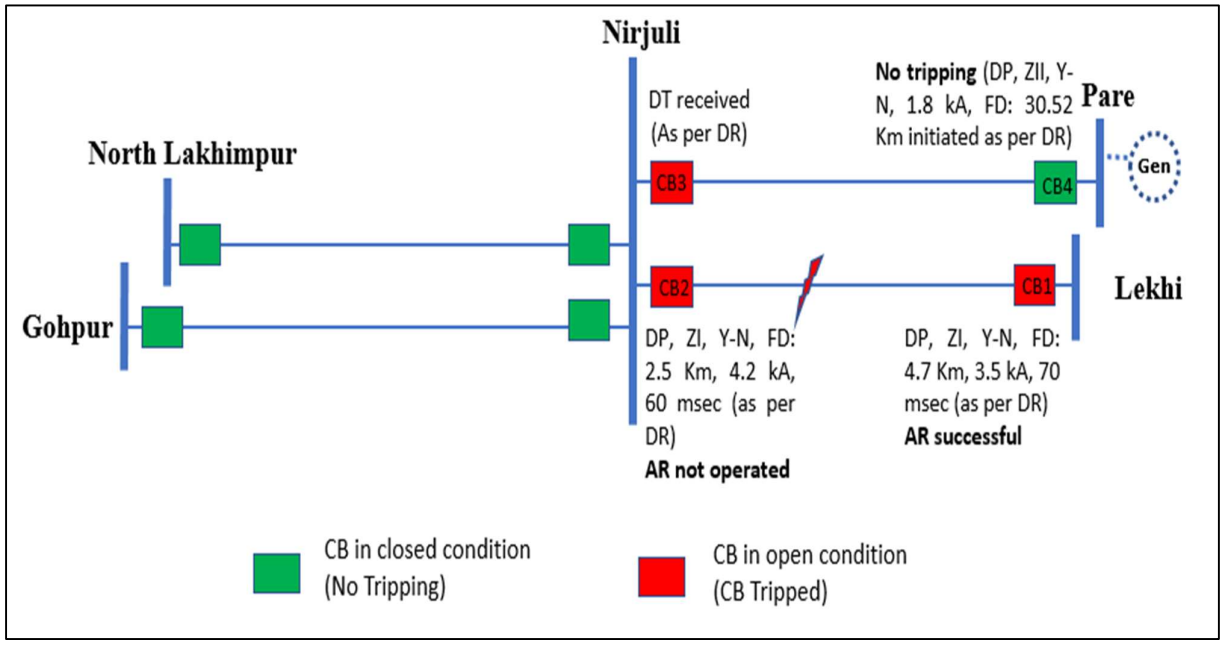
Also, the forum requested OTPC:

1. DT send logic scheme needs to be reviewed within one week.
2. Sequence of event report needs to be prepared within one week

OTPC Palatana representative also updated the forum that time drift issue had been resolved.

B.14 Tripping of 132 kV Nirjuli-Lekhi line and 132 kV Pare-Nirjuli line on 31-July-2024

At 11:20 Hrs of 31.07.2024, 132 kV Nirjuli-Lekhi and 132 kV Pare-Nirjuli lines tripped.



As per DR analysis, Y-N fault occurred in 132 kV Nirjuli-Lekhi line and fault cleared from Lekhi end within 70 msec and from Nirjuli end within 60 msec on operation of DP, ZI. Autorecloser operated successfully at Lekhi. However, Autorecloser not attempted at Nirjuli.

At the same time, 132 kV Nirjuli-Pare Line tripped on DT received at Nirjuli end. There was no tripping from Pare end. As per DR of Pare end, Y-N fault detected in Z-II (Iy:1.9 kA, Vye:38kV) for 65 msec and DIST Sig. Send ON recorded in the event.

Similar nature of unwanted DT transmission from Pare also observed in 6th & 26th Mar'24 highlighted in 66th PCC Meeting.

Following observations:

1. As per Pare end DR, on pick up of Z-II, distance signal send was recorded in the event. However, in DR data, no distance signal send was observed. The same needs to be configured in DR. The distance signal send channel on pickup of Z-II needs to be tested end to end by Pare in coordination with MUML, PGCIL.

2. 132 kV Pare-Nirjuli line tripped on DT received at Nirjuli end. PGCIL is requested to check DT and permissive carrier signal received channel in coordination with Pare HEP.
3. Time drift of 4 min observed at Lekhi end for 132 kV Nirjuli-Lekhi line.

NEEPCO/POWERGRID/DoP Arunachal Pradesh may update.

Deliberation of the sub-committee

NEEPCO representative informed the forum, regarding DT sent issue at Pare end, that they had tested the DT sending scheme but no problem had been identified by them.

NERTS suggested that DR trans play might be done to identify the problem. The forum suggested NEEPCO to take shutdown of the line on D-3/emergency basis and undertake further testing in coordination with NERTS and MUML.

NEEPCO informed to perform end to end relay testing by replaying the same fault on 15th Sept'24 in coordination with the NERTS and MUML.

B.15 Tripping of 132 kV Dimapur- Doyang DC lines on 28-08-2024:

At 13:33 Hrs, 132 kV Dimapur-Doyang DC tripped as shown below: -

	Relay end A	Relay end B
132kV Dimapur-Doyang ckt-1	No Tripping	B/U OC Ir:312 A, Iy:316A, Ib: 318 A
132kV Dimapur-Doyang ckt-2	Tripped on DP, ZII, R-E, Carrier Received & AR Successful	Tripped on DP, ZI, R-E, Carrier Sent. Ir=In= 1 kA

As per DR data 132 kV Dimapur -Doyang-1 line tripped from Doyang end only on B/U OC with Ir:312 A, Iy:316A, Ib: 318 A which inferred to be unwanted.

Therefore, it is requested to review the B/U OC setting on urgent basis in line with NERPC protocol and take necessary corrective action. Also, share the existing implemented B/U setting to this end for needful.

In addition to the above, healthiness of A/R function at Doyang HEP for both 132 kV Dimapur line need to be ensured to prevent loss of feeder in case of transient fault.

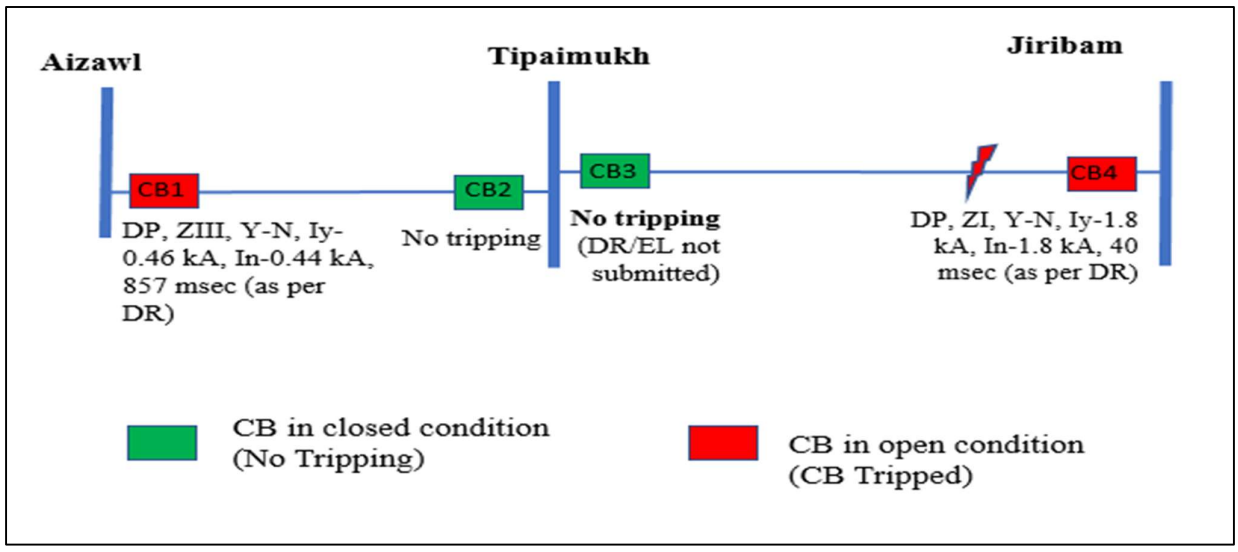
Deliberation of the sub-committee

Forum suggested following:

1. NEEPCO to review the B/U OC setting for Dimapur-Doyang line at Doyang end at earliest in line with NERPC protocol and take necessary corrective action.
2. NEEPCO to ensure healthiness of A/R function at Doyang HEP for both 132 kV Dimapur line to prevent loss of feeder in case of transient fault.

B.16 Tripping of 132 kV Aizawl-Tipaimukh line on 30th August, 2024

At 09:32 Hrs of 30.08.2024, 132 kV Aizawl-Tipaimukh and 132 kV Jiribam-Tipaimukh lines tripped.



As per DR analysis, Y-N fault in 132 kV Jiribam-Tipaimukh line cleared within 40 msec from Jiribam end on operation of DP, ZI. Carrier signal was sent to Tipaimukh end from Jiribam. However, CB at Tipaimukh end did not trip until 800 msec from inception of fault which led to clearing of fault by tripping of healthy 132 kV Aizawl-Tipaimukh line from Aizawl end on operation of DP, ZIII within 857 msec.

Similar incident occurred on 25.08.2024.

MSPCL is requested to furnish the reason for non-opening of CB at Tipaimukh end for 132 kV Jiribam-Tipaimukh line and remedial actions taken.

Deliberation of the sub-committee

Manipur representative informed that checking by local staffs was done recently but expert visit was required. He further informed the forum that due to landslide issue road was not approachable for them to send any skilled staff to Tipaimukh SS to download DR/EL for the event for further analysis and submission to NERLDC. He further stated that access to Tipaimukh was through Aizawl only. Therefore, Manipur requested the forum to provide support either from Mizoram or NERTS.

Forum requested Mizoram & NERTS to provide necessary support to Manipur at earliest.

NERTS will inform after check the feasibility to visit at Tipaimukh via Aizawl.

B.17 Third party protection Audit of substations of MePTCL

On 69th PCCM, forum decided to conduct third party protection audit of Killing, EPIP I, EPIP II, Mawphlang, Mawlai and NEHU substations of MePTCL during August, 24. As such, two teams were formed and audit of these substations were successfully conducted on 26th & 27th August, 2024.

The preliminary report of third-party protection audit conducted in Killing, EPIP I, EPIP II, Mawphlang, Mawlai and NEHU substations of MePTCL is attached in **Annexure B.17**.

Deliberation of the sub-committee

Preliminary reports of the audits were presented to the forum and major issues in the protection systems were noted. Further, the forum updated that detailed report of third-party protection audit of substations of MePTCL would be submitted by the end of Oct'24.

B.18 Mock testing of System Protection Scheme (SPS)

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, it has been planned to conduct mock testing of SPS:

i) Related to outage of any one circuit of 132 kV Dimapur(PG)- Dimapur(NA) D/C

ii) Related to the tripping of Bus Reactors at 400 kV Imphal (PG)

DoP Nagaland and POWERGRID is requested to provide the tentative dates for mock testing of SPS in the month of September'24.

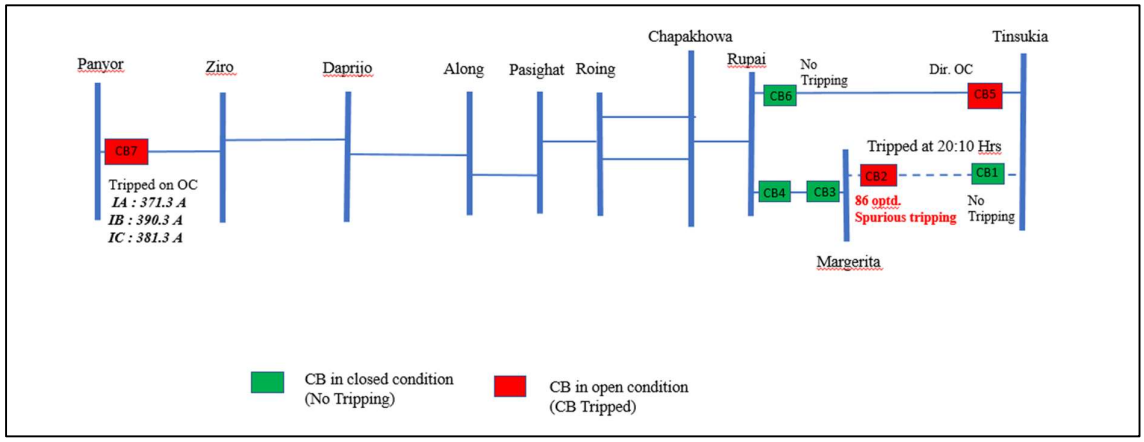
Deliberation of the sub-committee

DoP Nagaland informed that the SPS mock testing at Dimapur to be conducted by September'24.

Additional Agenda from NERLDC

B.19 Non operation of SPS during the tripping of 132 kV Panyor - Ziro line on 17-08-2024*:*

As per SPS implemented at Ziro, during the tripping of 132 kV Panyor-Ziro at Panyor end, DT should transmit from Panyor to Ziro.



Sl no	Name	Trip time (hh:mm)	Restoration time (hh:mm)	Relay End 1	Relay End 2
1	132 kV Tinsukia-Margherita Line	20:10	20:33	No Tripping	86A, B operated (Spurious Trip)
2	132 kV Ranganadi - Ziro Line	20:17	20:46	**Tripped on Over Current**	No Tripping

3	132 kV Rupai – Tinsukia Line	20:17	20:57	No Tripping	**Tripped on Over Current**

During the above event, DT signal not transmitted from Panyor end which is matter of concern. NEEPCO is requested to share the reason for the same.

Deliberation of the sub-committee

NEEPCO will check & intimate the DT transmission actually occurred or not. NERTS informed that DT signal not received from Panyor end for Ziro line on that day.

Forum requested to check the end-to-end testing of SPS in coordination with NERTS and DoP, Ar. Pradesh.

B.20 Blackout of 220 kV system at Byrnihat on 10-09-2024:

At 07:21 Hrs of 10-09-2024, the following element tripped: -

- Metallic fault in 220 kV Misa-Byrnihat DC cleared from Misa end in ZI for both the lines within 70 msecs. At Byrnihat, cleared from ZI for line I at Byrnihat end. However, CB at Byrnihat not tripped.
- 400 kV Bongaigaon – Byrnihat & 400 kV Silchar – Byrnihat tripped from Bongaigaon & Silchar end.
- 220 kV Byrnihat-Mawngap DC tripped at Mawngap on ZIII.
- Tripped of 160 MVA, 220/132 kV, ICT-2 on LV side on Operation of Earth Fault.

As per DR analysis:

Bongaigaon: R-E fault (Ir/In: 1.3/0.75 kA) initiated at 07:21:28.375 Hrs and converted to R-B-E (Ir/Ib/In: 1.3/1.6/0.5 kA) after 1.2 seconds. Fault cleared by DPR on operation of DP, ZIII, FD: 204 KM in 1.54 Seconds.

Silchar: Y-E fault (Iy/In:1/0.6 kA) initiated at 07:21:28.377 Hrs and converted to R-B-E (Ir/Iy/In: 1.2/1.1/0.4 kA) after 1.2 seconds. Fault cleared by DPR on operation of DP, ZIII, FD: 217.12 KM in 1.54 Seconds.

Misa:

220 kV Misa –Byrnihat I Line: Y-B-E fault (Iy/Ib/In:3.6/1.5/__ kA) initiated at 07:21:23.954 Hrs. Fault cleared by DPR on operation of DP, ZI, FD: FD: 43.39 KM in 70 Seconds. R, Y & B phase voltage dips to 82 kV, 68 kV & 82 kV respectively.

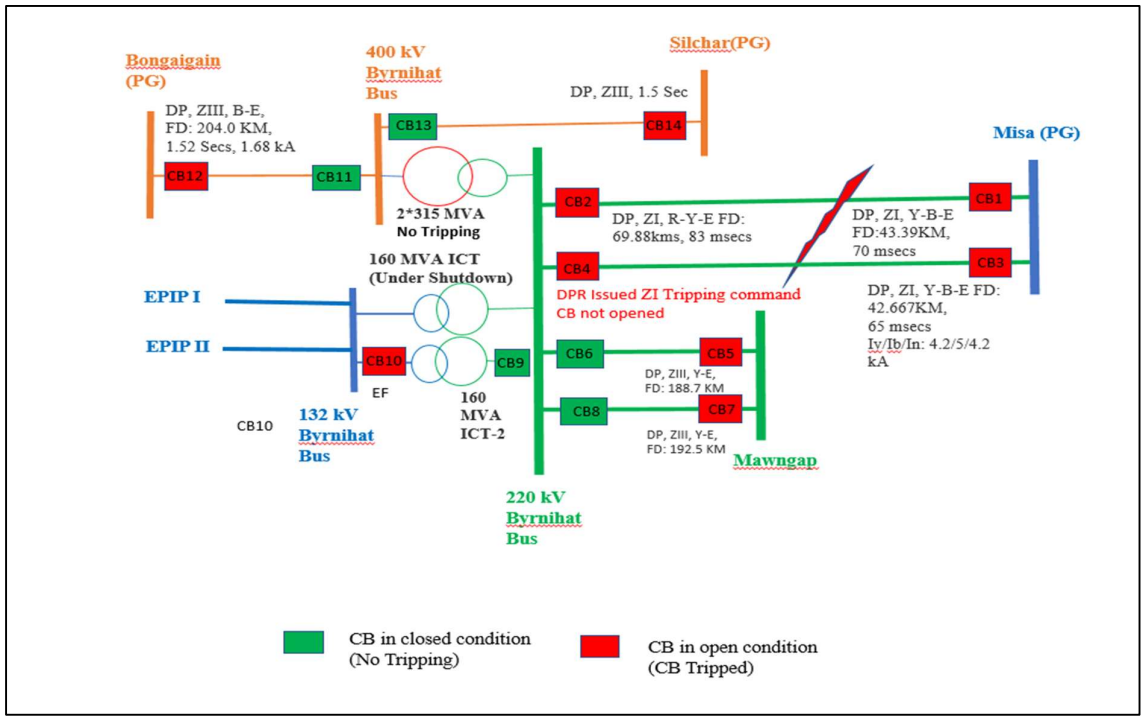
220 kV Misa –Byrnihat II Line: Y-B-E fault (Iy/Ib/In:3.6/1.5/__ kA) initiated at 07:21:24.099 Hrs. Fault cleared by DPR on operation of DP, ZI, FD: FD: 42.66 KM in 65 Seconds. R, Y & B phase voltage dips to 82 kV, 68 kV & 82 kV respectively.

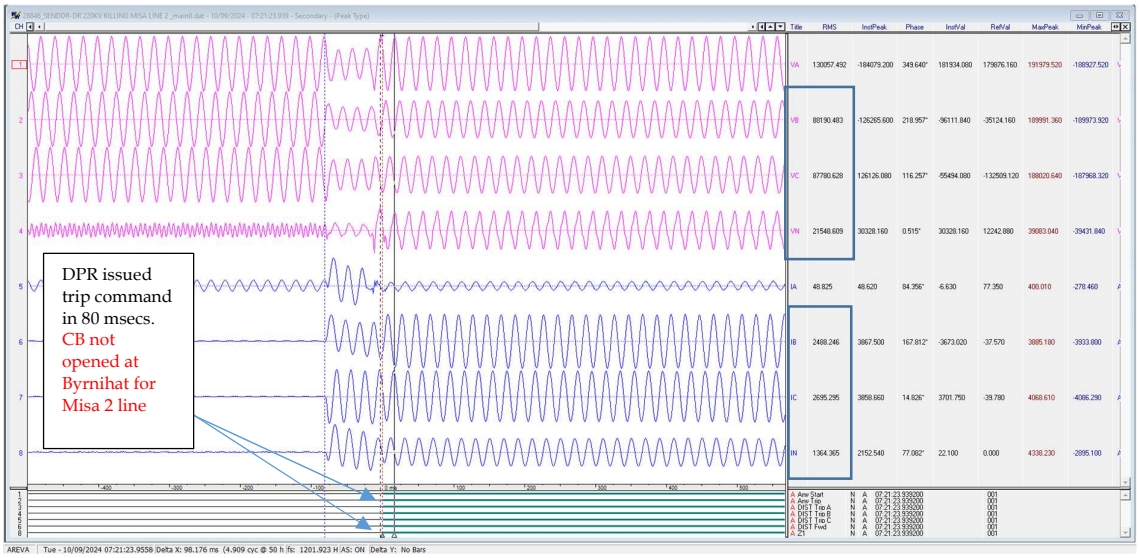
Byrnihat:

220 kV Misa –Byrnihat I Line: R-B-E fault (Ir/Ib/In:3.2/2/2.4 kA) initiated at 08:21:23.855 Hrs. Fault cleared by DPR on operation of DP, ZI, R-Y-E FD: 69.88kms, in 83 msecs. R, Y & B phase voltage dips to 76 kV, 61 kV & 76 kV respectively.

220 kV Misa –Byrnihat II Line: Y-B-E fault (Iy/Ib/In:2/2.8/2.6 kA) initiated at 07:21:23.860 Hrs. **DPR initiated tripping command on ZI however no CB opening observed at Byrnihat end**. R, Y & B phase voltage dips to 75 kV, 60 kV & 75 kV respectively.

Tripping of the above element resulted into the outage of 400 kV & 220 kV system at Byrnihat substation. However, 132 kV system survived at Byrnihat resulted into the continuous power supply and no load loss due to the event.





MePTCL is requested to share the reason for suspected non-operation of CB at Byrnihat for 220 kV Misa-Byrnihat 2 line.

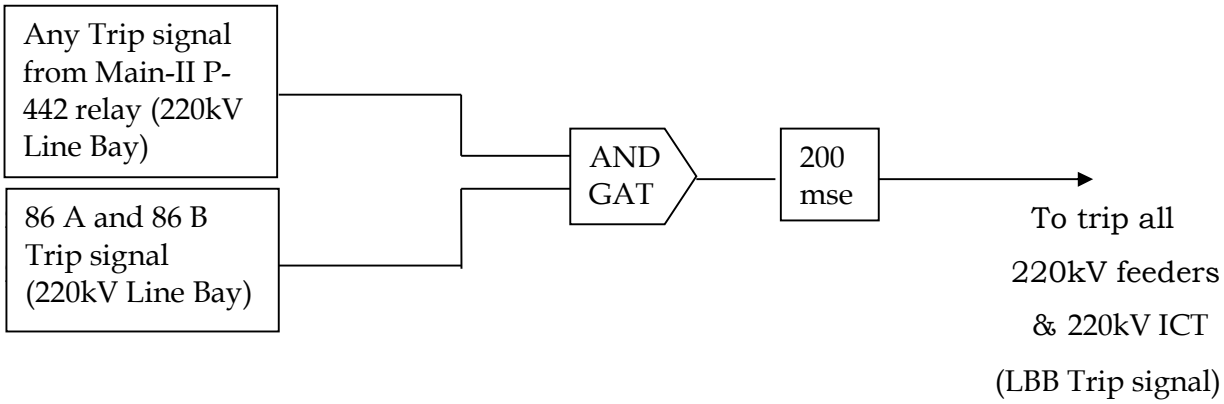
MePTCL should implement the Bus Bar scheme immediately in 220 kV & 400 kV system at Byrnihat.

Deliberation of the sub-committee

MePTCL representative informed the forum that due to failure of CB of 220kV Misa line-II feeder at 07:21hrs of 10.09.24 which has resulted in the cascading tripping of 400kV Killing- Bongaigoan and 400kV Killing- Silchar feeder, along with the tripping of 220/132kV,160MVA ICT-II. The cause of CB failure was due to the defective K10 gas density contactor causing the trip circuit TC1 and TC2 to became faulty.

He also informed the forum that the BB and LBB protection of 220kV level is out since 2023 due to defective BI/BO card of REB relay. The card is under procurement and has arrived in India from Switzerland but is yet to be received at site. After receiving of the card, another quotation has to be sought for installation part.

In view of the above, as the above BB protection will still delay from some more time, MePTCL representative requested the forum to allow modification in the LBB scheme of 220kV bus level as an immediate remedial measure as per the following scheme: -



Further he informed the forum that the above scheme will be done in hardwiring. If the above scheme is approved, kindly allow emergency shutdown of 220kV Misa line-I &II and Mawphlang feeder I & II for implementation of the above scheme.

After detailed deliberation forum approved the modification required in the LBB scheme of 220kV bus level as an immediate remedial measure as suggested by MePTCL.

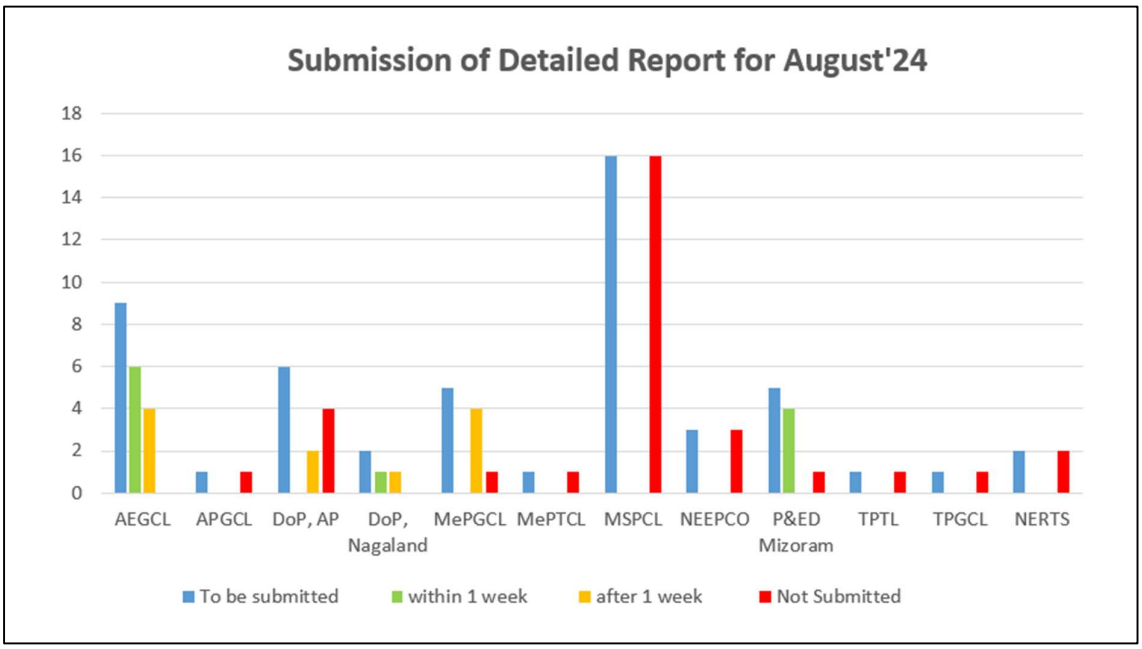
Forum requested to review the following:

1. 315 MVA ICT HV side Backup should act. Setting need to review
2. Bongaigaon & Silchar end for 400 kV Byrnihat , Z-III tripping seems fine. Z-3 reach to be cross checked by PGCIL
3. 160 MVA ICT-2 LV side Backup setting to be checked by MePTCL.
4. At 220 kV Mawngap end of Byrnihat, Z-III Reach to be cross check by MePTCL.

B.21 <u>Submission of Flash Report and Detailed Report by User/SLDC as per IEGC-2023</u>:

As per IEGC-2023, all User/SLDCs are requested to prepare and share **Flash Report** and **Detailed Report** with **NERLDC** and **NERPC** following any Grid Events as per the timeline mentioned in the cl 37.2(f).

Status of submission of the Detailed report for the month of **August, 2024 as on 10-09-2024** 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 shared the Status of submission of the Detailed report for the month of **August, 2024 as on 10-09-2024.**Detailed report received for 20-22 event only (out of 50 events). Forum noted the non-compliance of TPTL in the report submission.

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

B.22 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 10th of every month for previous month indices, which shall be reviewed by the RPC.

Summary for the month of July'24

Report submitted by ISTS Utility NERTS, NETC & NTL

SN	Name of Transmission Licencee	D= (Nc/Nc+Nf)	S= (Nc/Nc+Nu)	R= (Nc/Nc+Ni)	Remarks
1	NETC	-	-	-	No bays owned by NETC
2	NERTS	1	1	1	-
3	NTL	1	0.8	0.8	• Bus Reactor-01 tripped due to high oil temperature. • Bus reactor-02 could not be charged due to Y-phase differential protection operated
4	AEGCL	0.988	0.93	0.92	• Setting issue at Kokrajhar has been resolved. • Bus bar relay has been commissioned and new bus coupler isolators are being arranged. DC failure at Rangia end (resolved). • Tripped due to upstream fault. Error in REF settings at

					Mariani ICT1&2 (resolved). • Harmonic unblocked during charging and led to the tripping event at Mariani BR (resolved). • DEF settings updated at Rupai end.
5	MePTCL	0.95	0.88	0.84	• LBB operation at Nongstoin SS due less creepage distance between CT & CB (to be resolved) • ZI overreaching issue at Khleihriat for Neighrims feeder(resolved) . • Maloperation of OSR relay at Killing in 160 MVA ICT1 (to be resolved)
6	DoP Nagaland	1	1	1	-

7	OTPC	1	1	1	-
8	MePGCL	1	1	1	-

- **Report not submitted by ISTS Utility:** MUML & KMTL (No Tripping observed for July'24).
- **Report not submitted by State Trans. Utility:** TPTL, MSPCL, DoP, Arunachal, P&ED, Mizoram.
- **Report not submitted by ISGS Generator:** NHPC, NTPC & NEEPCO.
- **Report not submitted by State owned Generator:** APGCL & TPGCL.

Summary for the month of August'24

SN	Name of Transmission Licencee	D= (Nc/Nc+Nf)	S= (Nc/Nc+Nu)	R= (Nc/Nc+Ni)	Remarks
1	NETC	-	-	-	No bays owned by NETC
2	NERTS	1.000	1.000	1.000	-
3	DoP, AP	1	0.963	1.000	-
4	MSPCL	0.9	0.81	0.75	• Failure to operate at Tipaimukh for Jiribam line.
5	MePTCL	1	0.85	0.85	Maloperation of Bus Bar protection at Mawngap on 18th & 28th August'24(yet to be resolved)

6	MePGCL	1	1	1	-
7	DoP, Nagaland	0.941	0.842	0.941	DPR not operated at Kohima for Karong Feeder

Reports are yet to be received from **ISTS Utility** (NTL, MUML, KMTL), **State Trans. Utility** (TPTL, P&ED, Mizoram, AEGCL), ISGS Gen (NTPC, OTPC, NEEPCO & NHPC) and State-owned Generator (APGCL & TPGCL).

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

Forum noted the noncompliance from the utility.

C. FOLLOW–UP AGENDA ITEMS

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 63rd 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 67th 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 68th 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.

In 70th PCCM,_NERLDC informed that only Nagaland, Manipur and Mizoram are submitting the monthly progress report, while Arunachal Pradesh and Tripura have not yet shared any monthly report. The forum strongly urged Ar. Pradesh and Tripura to provide the reports within two working days.

MS NERPC stated that NERLDC will send quarterly report to NERPC and NERPC to prepare the quarterly progress report in this month and send to CERC accordingly.

Deliberation of the sub-committee

During the meeting, comments have been received from respective State utilities and same has been incorporated in the quarterly progress report for onward submission

to CERC by this month. MS, NERPC stated that the report would be sent to CERC shortly.

Also, the forum requested Tripura and DoP Arunachal Pradesh to submit the monthly progress reports to NERPC and NERLDC timely.

C.2 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 71st PCCM

Sl No	Element Name	Tripping date and time	Relay End1	Relay End2	A/R not Operated	Remarks from Utility (71st 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	Surajmaninagar	PLCC and funding issue. AR without carrier to be enabled shortly. The Relay Testing kit has been repaired but not receive yet. After receiving of the kit AR to be enabled within one week.
2	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	Byrnihat	OEM arrived; work done. Testing for line 1 has been

				Successful)		done and for line 2, testing to be done end of Sept'24
3	220 kV Mawngap - New Shillong 1	26-03-2024 12:22	DP, ZI, Y-E, FD: 27.82 Km	DP, ZI, Y-E	Mawngap	BB mal-operation issue. Coordination with NERPSIP. Visit of NERPSIP, ABB & Techno has been scheduled on 28th Sept'24
4	132 kV Dimapur - Doyang 2	29-03-2024 13:10	DP, Z1, R-Y, FD: 72.6km	DP, Z1, R-Y	Doyang	CB procurement underway. By March'25
5	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 Sucessfully	AGBPP	Offer has been received from OEM and order would be placed soon.
6	132 kV Badarpur - Karimganj Line	05-05-2024 13:48	DP, ZII, Y-E, FD:27.25KM, Carrier Aided tripping & AR	DP, ZI, Y-E, FD: 0.2km	Karimganj	Relay shifting, from Jorhat, to be done by end of this month.

			Operated Successfully			
7	132 kV Aizawl - Tipaimukh Line	05-05-2024 21:54	DP,ZI,B-E,FD:72.73KM	Details awaited	Aizawl	48 Volt DC battery has been replaced at Tipaimukh. Regarding PLCC, 4 cards has been procured but not been handed over yet.
8	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,1.6 kA	Pare HEP(NEEPCO) & North Lakhimpur	NEEPCO updated that the PLCC will be checked during end-to-end DT test as decided in **Agenda B.14**. Also, SPAR has been enabled on all line at Pare end.
9	132 kV AGTCCPP-Kumarghat Line	05-07-2024 12:45	DP, ZI, Y-B, 70.17	DP, ZI, Y-B, 30.92 Km **(AR successful)**	AGTCCPP	NEEPCO will check on 20th Sept'24.

10	132 kV BNC-Gohpur Line	09-07-2024 10:43	DP, ZI, R-E, 55.63 Km, **(AR operated and TOR)**	DP, ZI, R-E (DR not submitted)	Gohpur	Issue has been resolved. AR needs to be tested
11	220 kV Behiating-Tinsukia I Line	13-07-2024 15:10	DP (DR not submitted)	DP, ZI, 10.59 Km (DR not submitted)	Both ends	AEGCL informed that the bay is commissioned by NERPSIP, issue with the CB so no AR. Forum requested to resolve the issue in coordination with NERPSIP.

Sub-committee noted as above

C.3 PLCC issues follow up:

Update as provided by utilities in 71st PCCM

Sl. No	Line	Utility	Update
1	132 kV Dimapur-Kohima	DoP Nagaland	DPR (for DTPC) is completed except for budgetary offer. Offer has not been received from Hitachi yet.
2	132 kV Melriat-Zemabawk	Mizoram	For Wave Trap order has been placed with GE. Order will be received after 6 months as communicated by GE. As per 70th PCCM NERTS had updated that PLCC is available,

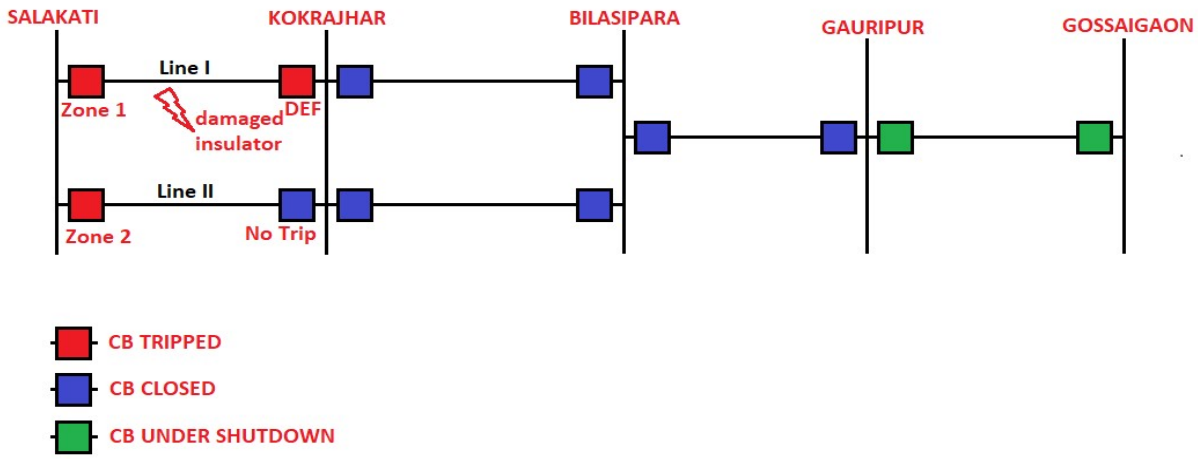
			Mizoram had stated that CVT is available and WT had to be procured. Mizoram had also updated that DTPC was being planned instead of PLCC. Forum had suggested that both PLCC and DTPC has to be enabled. POWERGRID shall install only the PLCC. CVT installed.
3	132 kV Roing-Pashighat	DoP Ar. Pradesh	DoP Ar. Pradesh updated that 48 V battery has been received but not commissioned yet. To be done by Oct'24

Sub-committee noted as above

C.4 Grid Disturbance in Kokrajhar, Bilasipara and Gauripur areas of Assam Power System on 11.07.2024:

Kokrajhar, Bilasipara and Gauripur areas of Assam Power System were connected to NER Power system via 132 kV BTPS – Kokrajhar D/C lines. 132 kV Gauripur – Gosaigaon line was kept opened for load segregation purpose.

At 03:55 Hrs. of 11-07-2024, 132 kV BTPS – Kokrajhar I & II lines tripped leading to blackout of Kokrajhar, Bilasipara and Gauripur areas of Assam. Load loss of 25 MW occurred.



Event Analysis: As per DR, solid B-E fault occurred in 132 kV BTPS-Kokrajhar I line at 03:55:38.044 Hrs and cleared within 60 msec on DP, ZI from BTPS end. DEF operated at Kokrajhar end (no DR submitted).

Same fault was also sense by DPR at BTPS for 132 kV Kokrajhar II line and cleared within 408 msec on DP, ZII. There was no tripping from Kokrajhar end as reverse fault.

As informed by AEGCL, fault was due to failure of polymer insulator disc at Loc.26 in 132 kV BTPS-Kokrajhar I line.

AEGCL is requested to update the reason for non-operation of distance protection at Kokrajhar for 132 kV BTPS-Kokrajhar I line and review status of DEF setting.

Similar type of GD event occurred at 12:22 hrs on 16-07-2024.

Deliberation of the 70th PCCM -

1.AEGCL informed that TMS of the EF relay is very low which caused early tripping on EF. The forum requested AEGCL to revise the TMS and modify the ROT in line with NERPC protection protocol.

2.The forum also urged AEGCL to ensure carrier aided tripping on the Salakati-Kokrajhar line.

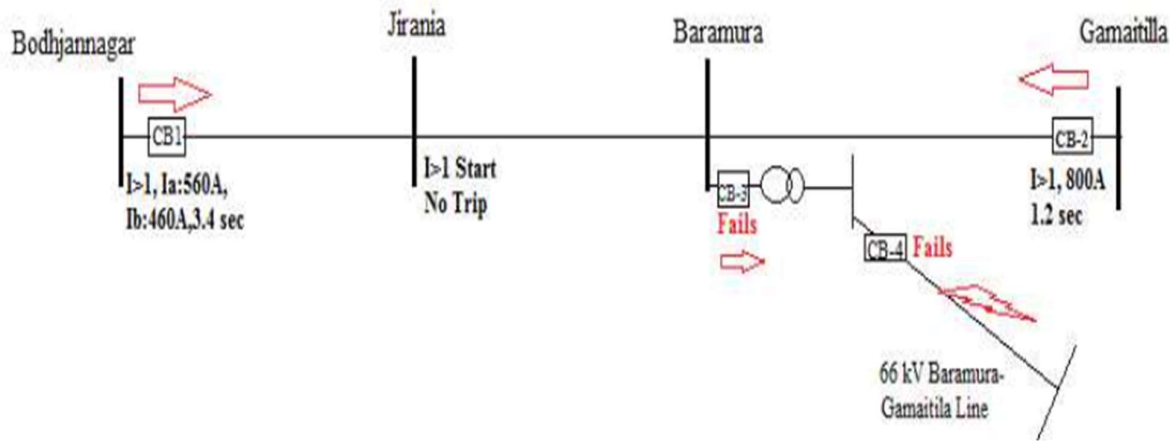
Deliberation of the sub-committee

1. AEGCL representative updated the forum that TMS and modification in the ROT in line with NERPC protection protocol has been revised in the last month.
2. AEGCL representative updated the forum that carrier aided tripping on the Salakati-Kokrajhar line had been ensured as per 70th PCCM.

C.5 Grid disturbance in Jirania area of Tripura on 07.07.2024:

Jirania area of Tripura Power System is connected with rest of NER Grid through 132 kV Budhjundnagar-Jirania & 132 kV Jirania-Baramura-Gamaitilla link.

At 16:51 Hrs of 07.07.2024, 132 kV Budhjungnagar-Jirania & 132 kV Baramura-Gamitilla lines tripped leading to blackout of Jirania area of Tripura power system. Load loss of MW occurred.



Event Analysis based on DR:

- 132 kV Budhjannagar - Jirania Line tripped from Budhjannagar on B/U OC within 3.4 sec with Ir: 560 A, Iy: 460A. There was no tripping at Jirania end.
- O/C pickup at Jirania end for 132 kV Baramura - Jirania Line. However, there was no tripping.
- 132 kV Baramura - Gamaitilla Line tripped from Gamaitilla on B/U O/C protection within 1.2 sec for fault beyond the line.

Observations:

- Fault is suspected in downstream of Baramura substation. Protection system at Baramura for downstream feeder and transformer HV side at Baramura did not operate, which resulted in delayed clearance of fault from Gamaitilla and Bodhjannagar ends.
- O/C protection at Jirania for 132 kV Jirania-Baramura line should have operated prior to Budhjungnagar end. B/U setting needs to be coordinated at Jirania for 132 kV Baramura - Jirania Line as per NER protection philosophy.
- DR time drift of 3 min at Budhjungnagar end for 132 kV Budhjungnagar-Jirania line and 10 min at Jirania for 132 kV Jirania-Baramura line recorded which needs immediate correction.

TSECL is requested to update following-

1. Root cause of tripping and remedial actions taken.
2. Reason of non-operation of protection system at Baramura for downstream feeder and transformer HV side.
3. Reason for non-tripping of Jirania CB for 132 kV Jirania-Baramura line.

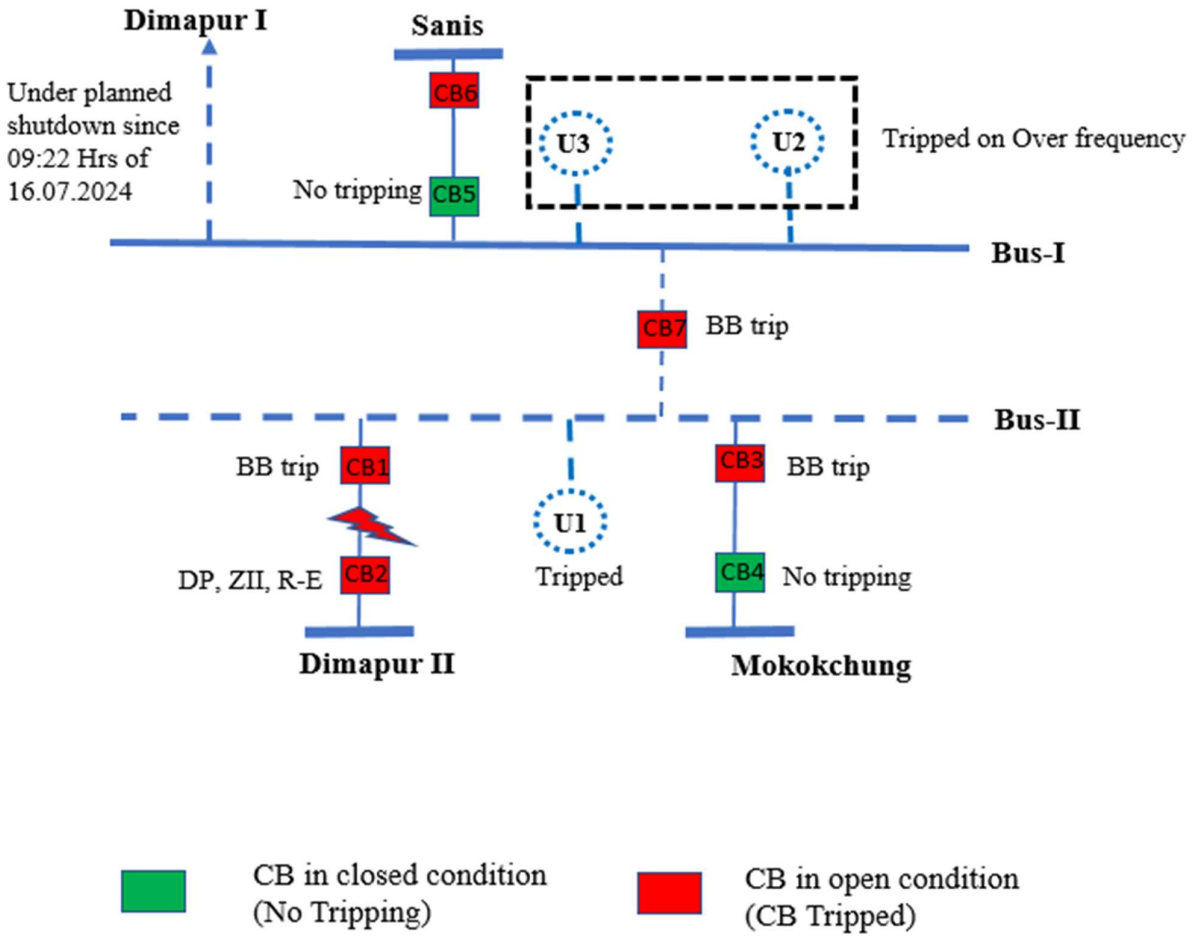
4. Reason for non-submission of detailed report in compliance with IEGC 2023.

Deliberation of the sub-committee

NERPC stated that TSECL has submitted the existing relay settings of the concerned lines and new settings would be shared to TSECL, for implementation, shortly.

C.6 Grid Disturbance in Doyang generating station of NEEPCO Power System on 16.07.2024:

At 10:08 Hrs of 16-07-2024, 132 kV Dimapur-Doyang II (132 kV Dimapur-Doyang I was under shutdown), 132 kV Doyang-Mokokchung and 132 kV Doyang-Sanis lines tripped. Subsequently, all three units of Doyang tripped leading to blackout in Doyang generating station of NEEPCO power system. Generation loss of 73 MW occurred.



Event Analysis: As per DR, R-E fault (Ir-1.1 kA, In-1 kA) occurred in 132 kV Dimapur-Doyang II line at 10:08:36.655 Hrs and cleared within 233 msec on operation of DP, ZII (Carrier aided trip) from Dimapur. At Doyang, R-E fault detected

and Bus bar trip signal issued instantly. Y & B-phase pole of CB tripped within 52 msec. However, fault current was persisting in R-phase pole and disappeared at 10:08:36.820 Hrs on operation of ZI.

Bus coupler and 132 kV Mokokchung line tripped at Doyang on Bus bar trip leading to blackout of 132 kV Doyang Bus-II.

At the same time, 132 kV Doyang-Sanis line also tripped. There was no tripping from Doyang end (ZIV pickup). Fault current disappears within 78 msec, which may be due to tripping from Sanis end (no DR submitted by DoP)

Doyang Unit-1 tripped at 10:08:36.744 Hrs and Unit-2 & 3 tripped on over frequency.

Observations:

1. Operation of Bus bar protection at Doyang for fault in 132 kV Dimapur-Doyang II line is unwanted. Bus bar relay configuration and wiring to be checked.
2. Non-opening of R-ph CB pole at Doyang for 132 kV Dimapur-Doyang II line after issuing of BB trip.
3. Delayed ZI start after 169 msec of fault initiation at Doyang end for 132 kV Dimapur-Doyang II Line. Distance protection setting needs to be reviewed.
4. Non-tripping of Doyang Unit-1 on BB trip needs to be checked by NEEPCO. From DR data, it is not clear which protection operated.
5. DR time duration is insufficient at Doyang for 132 kV Doyang-Sanis line. It has to be increased to 3 sec with pre fault of 500 msec and post fault of 2.5 sec.

NEEPCO is requested to update the root cause and remedial measures taken.

Deliberation of the 70th PCCM –

NEEPCO informed the fault was in the Bus. Hence operation of Bus Bar protection was correct.

NERLDC pointed that after the initiation of bus bar trip command, Y&B phase pole opened at Doyang for 132 kV Dimapur-Doyang II line. R-phase fault then sensed by the Main at Doyang in DP, ZI.

2.NERPC also highlighted that Doyang-Sanis should not have tripped from Sanis end and consequently Unit 2 and Unit 3 should not have tripped as evacuation path would have been available

3.DoP Nagaland stated that the Doyang-Sanis line had not tripped.

After due deliberation the forum decided to refer the matter to Protection system analysis Group (PSAG) constituted by NERPC vide order NERPC/SE/PCC/2023/3469-3512 dated 17.01.2024

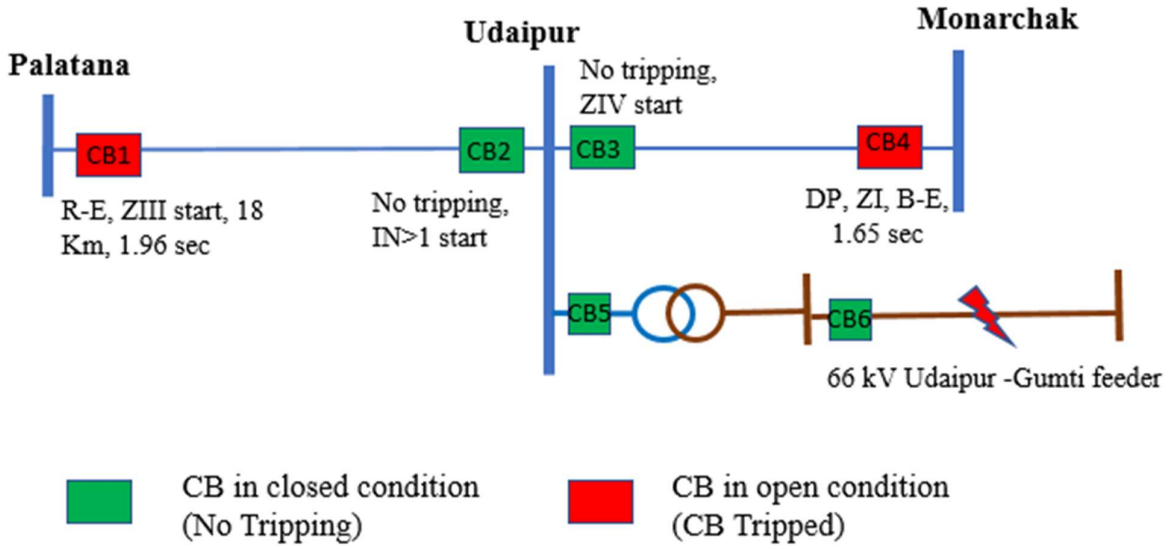
Deliberation of the sub-committee

Protection System Analysis Group (PSAG) constituted by NERPC as per revised nomination would review the issue shortly and update in the next PCCM.

C.7 Grid Disturbance in Udaipur area of Tripura power system on 26.07.2024:

Udaipur area of Tripura Power System is connected with rest of NER Grid through 132 kV Palatana-Udaipur & 132 kV Monarchak-Udaipur lines.

At 11:25 Hrs of 26.07.2024, 132 kV Palatana-Udaipur & 132 kV Monarchak-Udaipur lines tripped leading to blackout of Udaipur area of Tripura. Load loss of 25 MW occurred.



Event Analysis: As per DR of 132 kV Palatana-Udaipur line, high resistive R-E fault initiated at 11:12:59.566 Hrs with Ir: 145 A, In-99 A. After 1.897 sec, ZIII pickup and all poles dead within 63 msec. It is not clear which protection issued trip signal

at Palatana end. At Udaipur end, IN>1 started (Ib-298 A) and no tripping from Udaipur end.

As per DR of 132 kV Monarchak-Rokhia line, B-E fault initiated at 11:25:01.992 Hrs with Ib: 405 A, In: 318 A. After 1.59 sec, ZI started and tripped within 50 msec from Monarchak end. At Udaipur end, Z-II & ZIII pickup at 11:24:41.955 Hrs for 89 msec. Again at 11:24:42.142 Hrs, ZIV pickup at Udaipur end. However, there was no tripping from Udaipur end.

Suspected fault in downstream of Udaipur which was not cleared resulting in clearance of fault by tripping of healthy 132 kV Palatana-Udaipur & 132 kV Monarchak-Udaipur lines from remote ends.

TSECL/Palatana is requested to:

1. Update the feeder's name where fault occurred.
2. Furnish reason of non-operation of protection system at Udaipur for downstream feeder and transformer HV side, which led to isolation of fault from Palatana (ISGS) and Monarchak.
3. Update the Rectification status of DR time drift issue at Palatana (14 minutes time lag)

Similar downstream issue in Udaipur occurred on 31st March, 2024.

Deliberation of the 70th PCCM -

NERLDC informed that tripping at Palatana occurred on EF and B/U relay operation is not available in the received DR.

As per TSECL (email), Monarchak tripping in 1.65 sec in ZI and CB of 66 kV line & ICT tripping at Udaipur in mere 500 msecs.

Relay setting of downstream along with ICTs are already shared with NERLDC for further suggestion. However, it is to be noted that Gumti is a hydel plant might have fed the fault and resulting tripping of CB of 66 kV line & ICT tripping at Udaipur.

OTPC informed the tripping occurred on operation EF relay. Also, time drift issue resolved at their end.

The forum also decided that the delayed clearance of downstream fault at Udaipur will be taken up Tripura through a separate meeting.

Deliberation of the sub-committee

MS, NERPC directed the protection sub-group formed under agenda B.2 to review the settings and to suggest coordinated settings at the earliest.

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 need 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 synchronized, 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.

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

In 70th PCCM, MePGCL representative updated that the meeting of State protection Committee has been conducted and the report will be available by end of August'24.

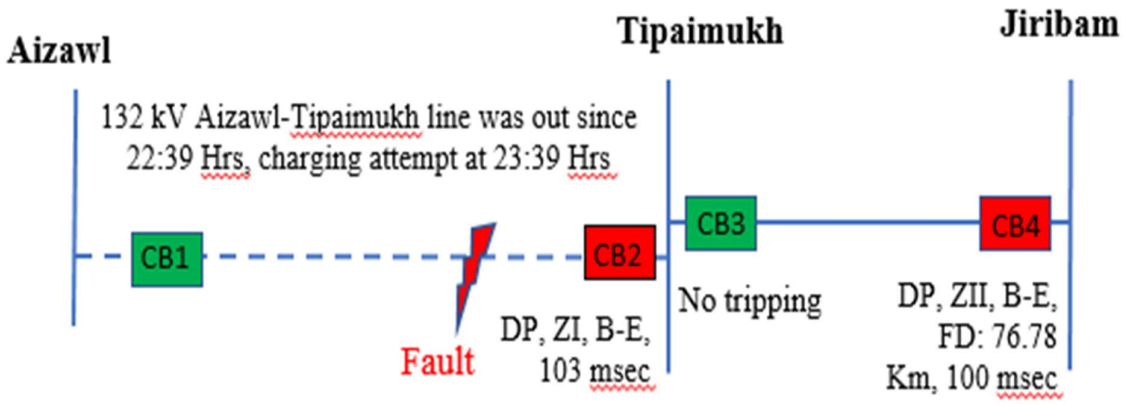
Deliberation of the sub-committee

MePGCL representative updated that the meeting of State Protection Committee has been conducted and the report has been shared with NERPC.

MS, NERPC stated that NERPC and NERLDC would analyze the report shortly.

C.9 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.



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

In 70th PCCM MSPCL updated as follow -

1.Regarding the PLCC on Jiribam-Tipaimukh line, the PLCC card has been procured at Tipaimukh SS and the PLCC will be commissioned by 15th September'25.

2.Regarding Z1 timing issue and time testing of CB at Tipaimukh SS for Aizawl line, MSPCL updated that they were not able to reach the Tipaimukh substation due to Law-and-Order situation in the State.

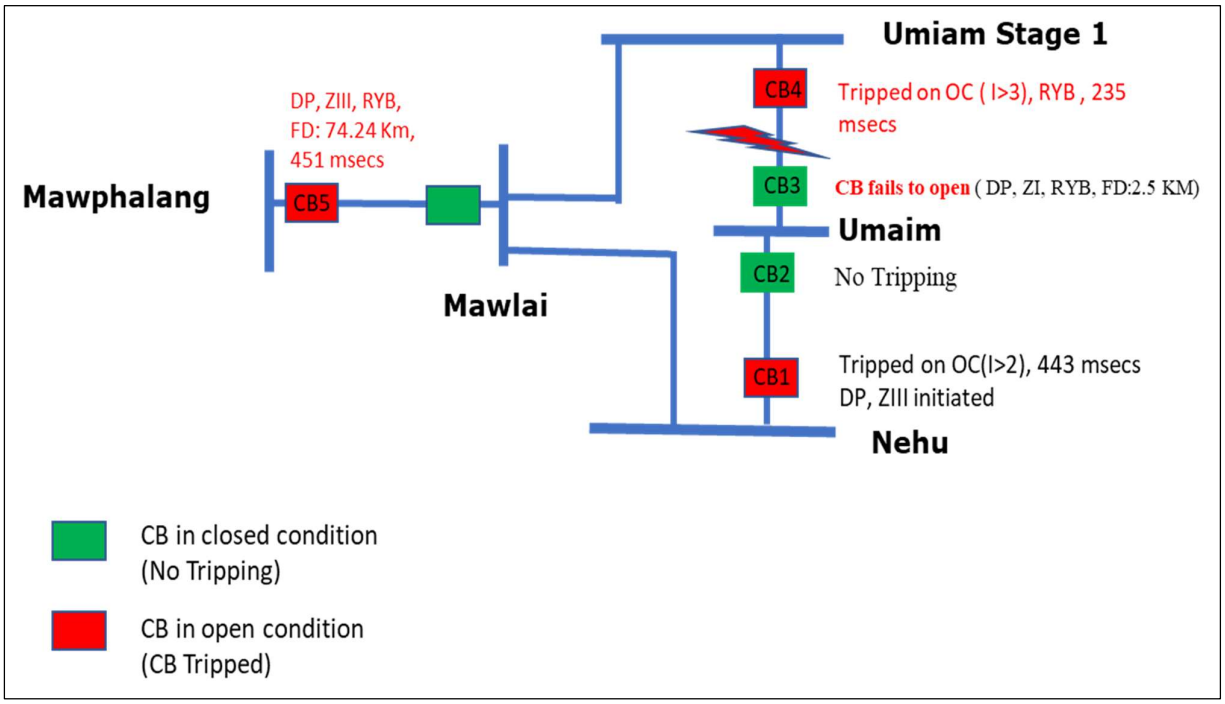
Deliberation of the sub-committee

1. Regarding the PLCC on Jiribam-Tipaimukh line, the PLCC card has been procured at Tipaimukh SS and the PLCC would be commissioned by 15th September'25.
2. Regarding Z1 timing issue and time testing of CB at Tipaimukh SS for Aizawl line, forum requested Mizoram and NERTS to assist Manipur to resolve the issue (agenda B.16).

C.10 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 Umaim 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 Mawphlang- 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 was 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.

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.

In 70th PCCM MePTCL updated that –

1.Zone III time delay at Mawphlang end for Mawlai line has been revised to 500msec

2.Time setting for high set Overcurrent protection at NEHU for Umiam line has bene revised to 700 msec.

NERPC stated that protection settings of Meghalaya grid are not in line with NER Protection protocol. After detailed deliberation the forum strongly urged MePTCL and MePGCL to revise the settings of Meghalya grid in compliance with the code.

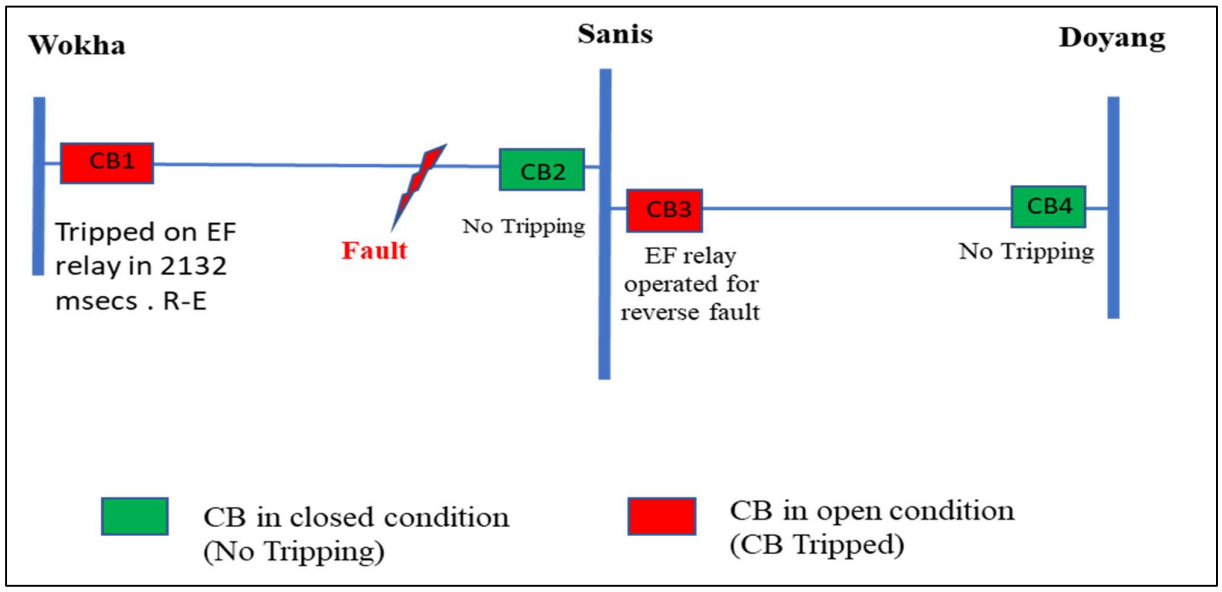
Deliberation of the sub-committee

MePTCL informed that Zone 3 timing at Mawphlang end for Mawlai line had been modified in accordance with the protocol and for other sub-stations, modification was underway. Forum again requested MePTCL and MePGCL to revise the settings of Meghalya grid in compliance with the code.

C.11 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 msecs 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.

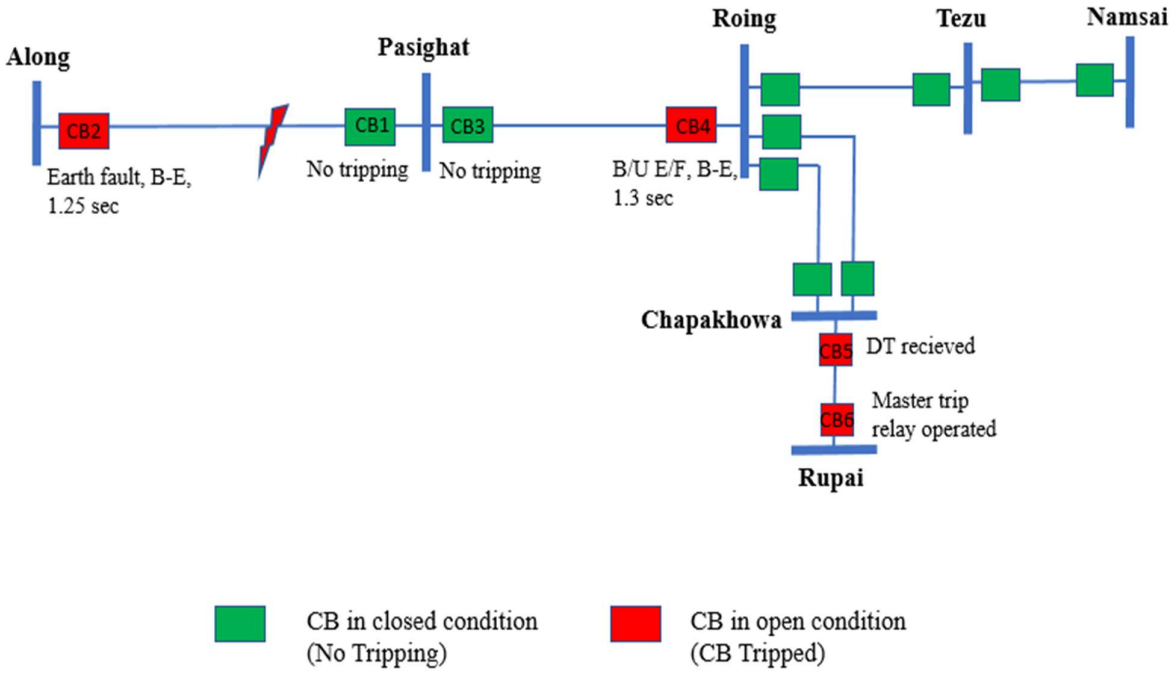
In 70th PCCM, DoP Nagaland stated that the transmission wing will visit Sanis SS next week to look into the issues with protection system for Doyang line.

Deliberation of the sub-committee

DoP Nagaland representative informed the forum that transmission wing had visited Sanis SS and some issue had been observed in the B-ph CT. He assured the forum that issue would be rectified by next week.

C.12 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 (Ib-0.32 kA, In-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 03rd July.

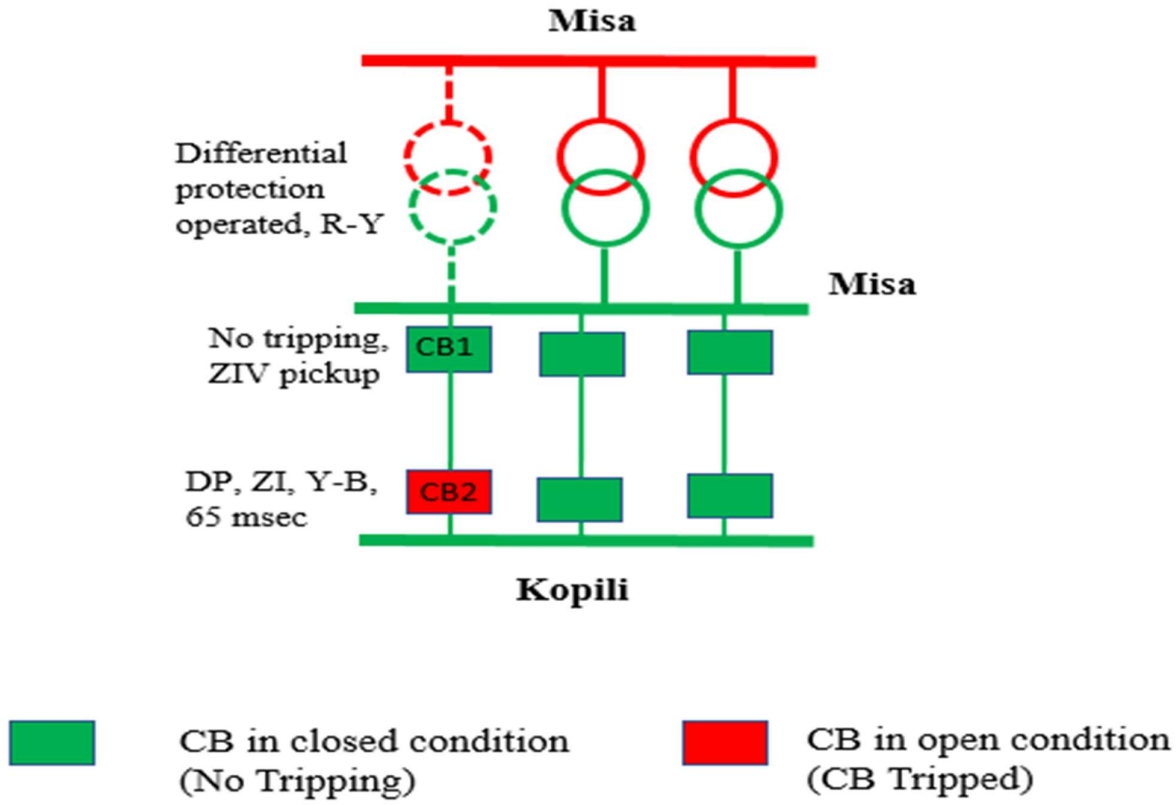
In 70th PCCM, AEGCL updated, regarding tripping at Rupai end, that the operating time issue of B/U protection has been rectified in June. However, NERPC highlighted that the same mal-operation has recurred on 3rd July'24 which has caused GD in Ar.Pradesh. AEGCL replied that the timing will be rechecked shortly and will reply accordingly to NERPC and NERLDC.

Deliberation of the sub-committee

AEGCL representative updated the forum that operating time issue of B/U protection at Rupai for Chapakhowa line had been rectified.

C.13 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.

In 69th PCCM, 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.

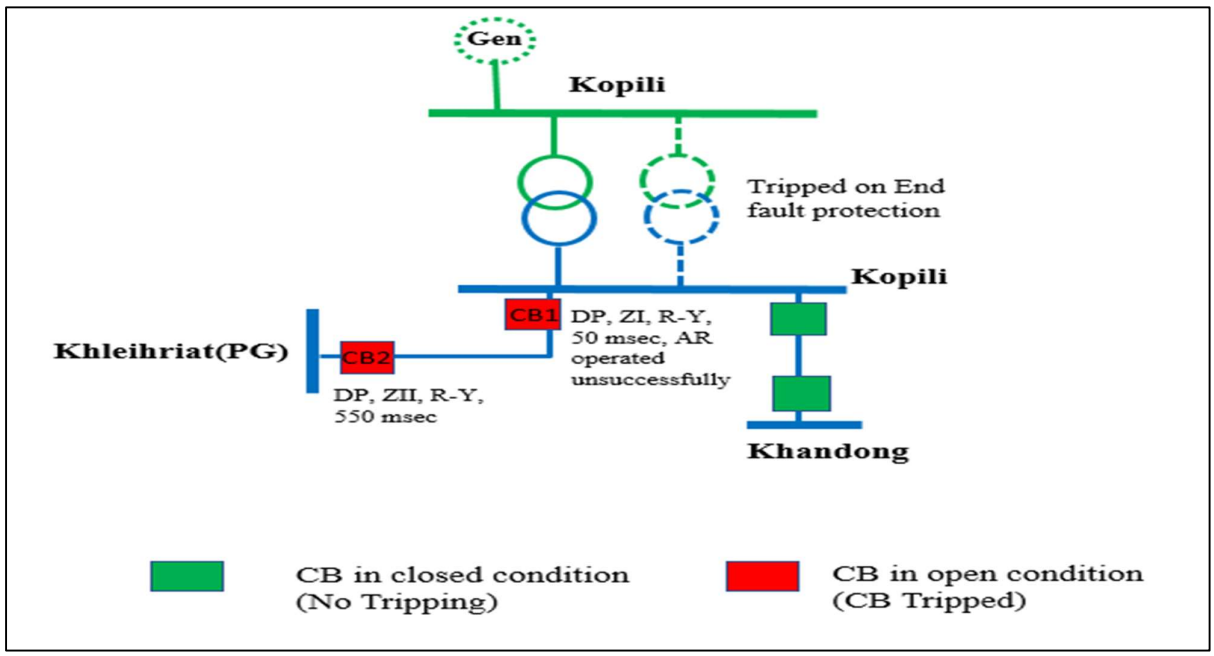
In 70th PCCM, NEEPCO updated that there is setting issue in the reach of Zone 1 at Kopili end for Misa line 1, the same will be revised and will be sent to NERPC for consent.

Deliberation of the sub-committee

NEEPCO representative updated the forum that revised setting had been sent to design team and would be implemented before next PCCM.

C.14 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.

In 69th PCCM, 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.

In 70th PCCM, NEEPCO informed that there is some issue with the Bus Bar relay, CB status was not coming in the relay. He further stated that the issue will be rectified shortly.

Deliberation of the sub-committee

NEEPCO representative informed the forum that CB status was not coming correctly to the relay so spurious tripping occurred and the issue had been resolved now. Also, no tripping had been observed since then. The forum decided to drop the agenda.

D. ITEMS FOR STATUS UPDATE

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 57th and 56th 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 71st PCCM

Sl no	State	Important Transmission lines where AR has to be enabled at the earliest	Status (69th/68th PCCM)	Status as per 71st 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 has been 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 gradually, to be completed by June'24.	Process underway. 220kV – Completed except for Kathalguri-tinsukia line which will be done within 2 months. Delay is due to the shutdown issue with Discoms. 132kV – completed except for Dhemaji and Majuli Substations, to be done by Oct'24.
3.	Manipur	132kV Imphal-Ningthounkong	DPR preparation underway, to be prepared by March'24	1. In 71st PCCM Manipur updated that 132kV Imphal-Ningthounkong line work has been completed & 4 additional line have been considered for AR implementation which work will be completed by end of Sept'24.

				DPR for PLCC under preparation. To be completed shortly.
4.	Meghalaya	**Annexure** (D.1)	August'24. Forum requested Meghalaya to provide monthly work progress report (around 25 number of 132kV line)	Matter was thoroughly discussed in State protection committee. Report of the meeting has been submitted to NERPC. It was further updated that AR on 132kV Lumshnong-khliehriat line and Lumshnong-Panchgram lines will be enabled by next week.
5.	Tripura	132kV Agartala-S M Nagar (TSECL), 132kV Agartal-Rokhia DC, 132kV, 132kV Agartala-Budhjungnagar	To be done during internal audit.	Relay testing kit has been repaired but not received yet. Target-Sept.'24

Deliberation of the sub-committee

PowerGrid requested all the States to enable the AR at the State end on the lines where PowerGrid had enabled it at its end.

Forum also agreed to the request of Powergrid.

Regarding the dead time, NERPC informed that the same may be increased to 2 to 3 msec based on the past experience regarding discharge of lightning strikes.

Sub-committee noted as above.

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

As per sub-regulation3 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 61st PCC meeting the status for different STUs/ISTS licensees are as follows:

Status as updated in 71st PCCM -

Name of utility	**Last updated status (70th /69th/68th PCCM)**	**Status as per 71st PCCM**
AEGCL	AEGCL updated that PSDF monitoring group has suspended funding for LDP for 1 year. AEGCL requested MS, NERPC to take up with NPC, CEA to provide funding for the same considering the special case of NER	MS, NERPC stated that funding for the LDP considering the special case of NER will be taken up as resolution by RPC forum
MSPCL	DPR under preparation, to be submitted within one month.	DPR has been approved & NIT to be floated
MePTCL	LDP operation for 9 feeders. For Neighrims-NEHU line, waiting for dark fiber. For other lines, OPGW not available commissioned after OPGW link is established. (**Annexure D.2**) 7 Feeder operational for rest OPGW work is pending OPGW to be installed on 16 lines. LDP will be enabled after that.	Regarding OPGW installation, MePTCL updated that DPR has been prepared and it would be submitted to PSDF committee for funding by next month for inclusion in reliable communication scheme. For NEHU-NEighrims line, NERPSIP informed the forum that fiber for this line is not under the scope

		of NERPSIP. Therefore, forum suggested MePTCL to cover this in any other scheme.
P&ED Mizoram	Lines identified 132kV Khamzawl - Khawiva. DPR being revised. Mizoram requested for assistance in preparation of DPR. Forum requested Assam to provide assistance to Mizoram in this regard.	Mizoram stated that DPR in final stage. Price offer has been received from one vendor and awaited form other vendors. The DPR would be prepared by end of Sept.'24.
DoP Nagaland	LDP Doyang-Sanis line, LDR to be installed by NEEPCO. NEEPCO stated that LDR is available with NEEPCO, however, healthiness of the OPGW link on the line has to be checked first. DoP Nagaland updated that FOTE is present. NEEPCO updated that GE engineers will visit on 15th July.	1. NEEPCO updated that GE engineers had visited the site and work had been completed. 2. Report has been submitted to NERPC. 3. Agenda may be dropped
TSECL	132kV 79 Tilla-Budhjungnagar. DPR to be prepared. Cost estimate submitted to TIDC to arrange for ADB funding. TIDC approval is still awaited for fund. Approved for ADB funding. E-tendering underway.	DPR has been sent to PSDF committee for funding.

	Regarding Rokhia-N.Rokhia link, he updated that the breaker has been received. MS, NERPC suggested to apply under PSDF	

Sub-committee noted as above

D.3. <u>Status against remedial actions for important grid events:</u>

Status as updated in the 71st PCCM:

Sl No	**Details of the events(outage)**	**Remedial action suggested**	**Name of the utility & previous update**	**Status as per 71st PCCM**
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.	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 July'24	Offer from Hitachi is still awaited.
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 Units 1,2 and 3 on 3rdAug	> 5MVA TRAFO (Aux. Transformer) to be repaired ->5MVA Auxiliary TRAFO panel to be repaired by NHPC	NHPC TX manufacturing underway. To be completed by Dec'24	Not received yet due to landslide issue.
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	R & M work to start in Nov'24

			Oct.'25. Forum stressed to take LBB on priority.	
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 BBR defective. Order placed in Oct'23, will arrive in around 7 months, i.e. by May or June'24	1.Card arrived in India, but not received yet. 2. Meanwhile Forum requested NERTS to provide card to MePTCL if available. NERTS assured the forum that they would check the availability of card and update
7.	Non-operation of AR for various lines at Byrnihaat end on 25th and 26th June'23	Rectification of PLCC issues by MePTCL Consultation with OEM underway for resolution	MePTCL Visit of OEM next week. To be completed by May'24	OEM visited, PLCC defective, will procure at earliest
8.	Tripping of 132kV Kahilipara- Sarusajai 1, 2 and 3 line, 132kV Kahilipara Main bus	BB protection to be implemented at Kahilipara with	AEGCL DPR is under preparation for PSDF.	New bays have to be integrated to ABB relay, so

	1, 132kV Kahilipara transfer Bus 1 and 132kV Kahilipara-Kamalpur line on 2.08.2021	procurement of 5 core CTs	CT under procurement, to be completed by end of this year	new cards have to be procured, commissioning may go beyond Dec'24
9.	AR issue at Gohpur end for 132kV Nirjuli-Gohpur line	Panel replacement underway	AEGCL - By April'24	Done, Agenda may be dropped
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	Done, Agenda may be dropped
12	Multiple trippings fn the lines connected to Leshka station in April'24 have been observed due to delayed clearance of faults in the link line (GT to Switchyard, 550 meters)	Differential protection on the link line to be implemented. Also, AR on the link line to be implemented	MePGCL To be discussed in internal OCC meeting first. DPR under preparation, to be prepared within one month	DPR has been prepared and submitted to higher authority
13	Multiple tripping of 132 kV Panchgram-Lumshnonong line in April'24 has been observed due to delayed clearance of	B/U protection settings coordination for the 132kV downstream industrial feeders has to be done	MePTCL To be done shortly	Done, Agenda may be dropped

	downstream fault in Lumshnong			
14	Issue with CB at P K Bari end for Dharmangar line (agenda item C.5 of 69th PCCM.) Powergrid has reduced timing of zone settings at Kumaraghat end for P K Bari line. The settings will be reverted as soon as the breaker issues is resolved by TSECL	Pneumatic CB at P K Bari end to be replaced with spring charging type CB	TSECL (Work in progress)	NERPSIP informed the forum that M/s Siemens was working and work would be completed within one month
15	At 12:38 Hrs of 09.07.2024, 132 kV Along - Pasighat Line, 132 kV Roing-Pasighat Line & 132 kV Along-Basar Line tripped leading to blackout of Along & Pasighat areas of Arunachal Pradesh	Pneumatic CBs at Along end for Basar line to replaced with Spring type by Oct'24. LBB relay to be rectified at Along SS	DoP Ar. Pradesh (replacement within 2 months)	Covered under PSDF scheme & parallelly exploring for State funding also
16.	At 14:56 Hrs of 17-07-2024, 132 kV NEHU-NEIGRIHMS line & 132 kV Khleihriat-NEIGRIHMS line tripped leading to	Neigrihms end for NEHU line Relay to be replaced shortly	MePTCL	

	blackout of NEIGRIHMS area.			

Sub-committee noted as above

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Annexure-I

List of Participants in the 71st PCC Meeting held on 11.09.2024

SN	Name & Designation	Organization	Contact No.
1	Sh. Hibu Bama, EE (E)	Ar. Pradesh	08119858317
2	Sh. Pranab J.Baishya, AGM, APGCL	Assam	09365673696
3	Sh. Abhishek Kalita, Dy.Mgr, AEGCL	Assam	08486213068
4	Sh. Ridip Dutta, AM, AEGCL	Assam	08876640042
5	Sh. Mikhail Puyam, Manager, MSPCL	Manipur	09077560957
6	Sh. Bhumeshwar Sharma, Manager, MSPCL	Manipur	08014819889
7	Sh. Lalawmpuia Chawngthu, AE	Mizoram	08730843706
8	Sh. Lalsangliana, JE	Mizoram	06009605796
9	Sh. Kitbok Syrti, EE (SP), MePTCL	Meghalaya	08974595356
10	Sh. A.Shullai, AEE (GSPSD), MePGCL	Meghalaya	07005379616
11	Sh. A.G.Tham, AEE (MRT), MePTCL	Meghalaya	09774664034
12	Sh. Rokobeito Iralu, S.D.O (Trans.)	Nagaland	09436832020
13	Sh. Namheu Khate, EE (Trans.)	Nagaland	09436000800
14	Sh. Krishnadhan Biswas, Sr.Mgr, TPTL	Tripura	09862478930
15	Sh. Amaresh Mallick, ED	NERLDC	09436302720
16	Sh. Biswajit Sahu, CGM	NERLDC	09425409539
17	Sh. Bimal Swargiary, DGM	NERLDC	09435499779
18	Sh. Manash Jyoti Baishya, Ch.Manager	PGCIL	09435555740
19	Sh. Abhilash AA, Asst Mgr, NERPSIP	PGCIL	09600160276
20	Sh. Pranjal Das, Asst. Mgr, NERPSIP	PGCIL	08473811643
21	Sh. Manas Pratim Sharma, Sr.Mgr	NEEPCO	08729901871
22	Sh. Mitangshu Saha, Lead-STG	OTPC	07085310211
23	Sh. Sajeev Mohandas, AGM-EMD	NTPC	09496006403
	-	NHPC	-
24	Sh. Niranjan Rabha, Dy.Mgr (Projects)	NETC	07002022736
25	Sh. Navin Kumar Poddar, In-Charge (O&M)	NETC	09555593044
26	Sh. Rabi S.Choubey, Engg. (PSS)	PRDC	-
27	Sh. Manoj Kr. Gupta, DGM (Trans.)	KMTL	09996789264
28	Sh. Mahesh Bhagat, AM (O&M)	STERLITE	09206682124
29	Sh. K.B.Jagtap, Member Secretary	NERPC	-
30	Sh. Anil Kawrani, Director	NERPC	-
31	Smti Maya Kumari, Dy.Director	NERPC	-
32	Sh. Vikash Shankar, AD-I	NERPC	09455331756
33	Sh. Dinesh Kr.Singh, AD-I	NERPC	-
34	Sh. J. D, Bhammar, AD-I	NERPC	08980757460

Preliminary Report

1. Name of the Sub-Station/Generating Station: Killing S/S
2. Voltage level: 400/220/132 kV
3. Owner: MePTCL
4. Date of Audit: 26.08.2024
5. Members of Auditing Team:

Sl.No.	Name	Designation	Organization	Signature
1.	Vikash Shankar	AD-I	NERPC	Vikash
2.	Vipul Anand	Asst. Manager	POWERGRID	vipul. A.
3.	Utpal Das	AM	NERLDC	उत्पल
4	Jugantа Sonowal	Deputy Manager	AEGCL	J Sonowal

6. Representatives of the Sub-station/Generating Station assisting the auditing team:

Sl.No.	Name	Designation	Contact details	Signature
1.	Shri. M. Mairon	E.E	8259904575	
2.	Shri. K. Mythong	A.EE	8794435131	K.Mythong

Observations/Recommendations:

1. Check list

Parameters	Yes/NO	Remarks
Whether redundant supply for station auxiliaries is available?	NO	- DG set NOT operational. - LT supply from State (SEB) - not available.
Whether SCADA system is present?	Yes	
Whether Governor/AVR and associated panels for each units in healthy condition?	N/A	
Whether two separate DC sources provided for Main I and Main II protection ?	Yes	
Whether protection relays for generating transformers/ICTs are operational?	Yes	
Whether protection relays for emanating lines are operational?	Yes	
Whether time synchronisation facility is available in the Sub-station?	Yes	
Whether existing RTUs are healthy and reporting?	N/A	BCU is available & working.
Whether existing communication via PLCC or OPGW? If PLCC then healthiness of PLCC panels	PLCC-OK.	
In case of OPGW connectivity to the station, whether end equipments are available and functional?	N/A	

Healthiness of Protection coupler/Coupling device?	OK.	
Tie-breaker healthiness	N/A	
Bus-coupler healthiness	Yes	
Whether sufficient lighting is available in the switchyard?	OK.	
Whether remote operation of MIV is possible?	N/A	
Whether online/offline diagnostic tools are available for monitoring generator healthiness?	N/A	
DC Supply- Whether two DC sources are available?	Yes	
Earthing System in the switchyard: Whether as per IS?	OK.	
List of diagnostic tools, testing equipments etc. and whether are present in sufficient quantity?	NO.	Not adequately present at S/S level. Present with MRT team.
Whether firefighting provision is available in the station?	Not operational.	Hydrant Fire fighting system -Not operational Fire extinguishers are available.

2. Review of existing settings at substation and recommendations- to be reviewed, analysis to be provided in the final report.

3. Recommendation of last protection checking and validation (status of work and pending issues if any)- previous audit done in 2016. Recomendations partially complied with. Other observations covered in present report.

4. Disturbance Recorder out available for last 6 tripping's (Y/N) and recommended action- Yes.

5. Chronic reason of tripping, if any- ICT-2, OSR abnormal tripping during monsoon season. suspected cable issue. Same needs to be addressed at the earliest.

6. Major non-conformity/deficiency observed - i) NO Bus Bar protection on 220kV & 400kV
ii) NO OPGW based tele-protection on 400kV lines.

7. Any other specific observations/recommendations: (Noted below)

i) Busbar & LBB Protection are not operational for 400kV and 220kV. To be implemented at the earliest.

ii) IEC 104 data communication to be made available for reporting real-time data to SLDC (OPGW based).

iii) ~~Provision~~ It has been observed that there is no provision for NIFPS & for ICTs (400/220kV), and also no provision available for Hydrant based or Hydrant based fire protection system fire protection for Switchyard.
— The same has to be urgently made available.

iv) It has been observed that for all 220kV bays, there is sufficient gap b/w CT and CB. Therefore, provision for end-fault protection needs to be provided on all 220kV feeders.

v) Fire detection Alarm System — not available in 400kV GIS Hall.

vi) Periodic Testing of Switchyard equipment — not being done.

vii) Wave Trap in EPIP-I (132kV) is available in only one phase, and is also in dilapidated condition. — W.T. has to be provided in two phases and needs to be replaced.

viii) Line Differential Protection Relay has been provided for EPIP-1 & 2 lines, however not functional due to unavailability of OPGW links. Same has to be ensured at the earliest.

ix) All the Teleprotection is provided only through PLCC only except for 220KV Mawplang line. Teleprotection through OPGW has to be provided at the earliest on all the lines. (Note: OPGW fiber is strung on the 400KV lines but not used as no terminal equipments present).

x) In MISA 220KV bays (204, 205), old existing BPL Make PLCC is in service. However, frequent Alarms due to Card failure has been observed. The same may be upgraded to latest versions.

xi) Auto-reclose function is not working in 220KV MISA-1&2 lines. Single phase A/R has to be implemented in 220KV MISA-1&2 lines and in all 132KV lines.

xii) Due to flooding, overgrowth of vegetation is observed in 132KV Switchyard & parts of 220KV Main Bus Section, 220KV Mawngap bays.
Also, the cable trench is filled with water in certain areas which has a potential hazard of Earth fault.
– cleaning and Re-gravelling may be taken up to combat the same

xiii) Vegetation infringement observed in the outgoing 132KV EPIP-1,2 feeders as viewed from S/Y.
– The same needs to regularly checked & maintained.

Preliminary Report

1. Name of the Sub-Station/Generating Station: EPIP- 1 Sub-Station
2. Voltage level: 132/33 kV
3. Owner: MePTCL
4. Date of Audit: 27th Aug 2024
5. Members of Auditing Team:

Sl.No.	Name	Designation	Organization	Signature
1.	Vikash Shankar	AD-I	NERPC	Vikash
2.	Utpal Das	AM	NERLDC	
3.	Vipul Anand	AM	POWERGRID	
4.	Jyanita Sonowal	DM	AEGCL	

6. Representatives of the Sub-station/Generating Station assisting the auditing team:

Sl.No.	Name	Designation	Contact details	Signature
1	A.C. Wahlong	RE, EPIP-I	9774670581	
2.	Dapura Sumer	J.E EPIP-I	8787857231	

Observations/Recommendations:

1. Check list

Parameters	Yes/NO	Remarks
Whether redundant supply for station auxiliaries is available?	Yes.	
Whether SCADA system is present?	No	
Whether Governor/AVR and associated panels for each units in healthy condition?	N/A	
Whether two separate DC sources provided for Main I and Main II protection ?	No	
Whether protection relays for generating transformers/ICTs are operational?	Yes.	REF is not present in both ICT-1,2 (20MVA).
Whether protection relays for emanating lines are operational?	Yes	
Whether time synchronisation facility is available in the Sub-station?	NO	
Whether existing RTUs are healthy and reporting?	~~NO~~ Yes	
Whether existing communication via PLCC or OPGW? If PLCC then healthiness of PLCC panels	- PLCC - Yes	
In case of OPGW connectivity to the station, whether end equipments are available and functional?	N/A	

Healthiness of Protection coupler/Coupling device?	No	
Tie-breaker healthiness	N/A	
Bus-coupler healthiness	N/A	
Whether sufficient lighting is available in the switchyard?	Yes	
Whether remote operation of MIV is possible?	N/A	
Whether online/offline diagnostic tools are available for monitoring generator healthiness?	N/A	
DC Supply- Whether two DC sources are available?	No	110V – 1 48V – 1
Earthing System in the switchyard: Whether as per IS?	Yes	
List of diagnostic tools, testing equipments etc. and whether are present in sufficient quantity?	list provided. NO	present with MRT only
Whether firefighting provision is available in the station?	NO	NIFPS → not operational. Hydrant based → Not available.

2. Review of existing settings at substation and recommendations- to be provided in the final report.

3. Recommendation of last protection checking and validation (status of work and pending issues if any)- N/A (No protection audit has been conducted previously)

4. Disturbance Recorder out available for last 6 tripping's (Y/N) and recommended action- Yes

5. Chronic reason of tripping, if any- ~~Yes~~.

NO

6. Major non-conformity/deficiency observed - i) NO differential relay on short
ii) 132 kV - Only single main

7. Any other specific observations/recommendations: — provided below.

i) Line Differential Relays (Siemens) make is available but, not working due to non availability of OPGW link on the feeders.

ii) REF Protn in ICTs not enabled due to non availability of NCT. Same has to be ensured at the earliest.

iii) For industrial feeders (radial), only BU protn (OC, EF) is operational, distance (21) Protn is not enabled for Shyam Century & Maithan.
— also, Time & pickup settings of O/C, EF has to be modified as per final report.

iv) 132kV Bus is Single Main type, Transfer Bus has to be provided.

v) There is no local SCADA and PC. Provisions for the same may be ensured.

vi) All CRP panels (except for PIONEER) are open, old and rusted, highly prone to rodent invasion.
These CRPs needs to be replaced.

vii) OPGW in Killing-1, 2 and EPIP2 lines 1 & 2 has to be commissioned. Further, communication via Digital PLCC and SDH has to be maintained properly.

viii) For 110V - 1 VRLA & 1 Lead Acid type bank is available, housed in the same room.
A separate A.C. chamber has to be provided for VRLA bank. Also, 110V lead acid has to be changed to VRLA.

ix) 48V VRLA Battery Bank, PLCC & Communication panel housed in the same room – A.C. to be provided for cooling.

x) 48V DCDB panel → Battery fuse fail Alarm to be attended at the earliest.

xi) Routine Testing of S/S equipment has to be ensured.

xii) No protection has been provided for the 33kV feeders at EPIP-1 end. Only LV side of ICT provides the protection. Dedicated protection for the line has to be provided urgently.

14A.PERIODICITY OF MAINTENANCE OF SUBSTATION EQUIPMENT / TRANSMISSION LINE COMPONENTS/ELEMENTS

Sl. No.	Equipment	Tests being conducted	Preiodicity of Tests being conducted (Put "Y" under appropriate column)				
			3 months	6 months	1 year	> 1 year	No test is being done
1	Transformer / Reactor	Winding resistance measurement		y			
		Voltage Ratio test for transformer		y			
		Magnetising current test		y			
		Magnetic balance test		y			
		Insulation Resistance (IR) Measurement		Y			
		Polarisation Index (PI)		Y			
		Capacitance & Tandelta Measurement for					
		(a) Winding		y			
		(b) Bushing		y			
		Break Down Voltage (BDV)Test for oil		y			
		Dissolved Gas Analysis(DGA)					y
		Sweep Frequency Response Analysis(SFRA)		y			
		Partial Discharge (PD) Measurement					y
		Degree of Polymerisation (DP) for cellulose insulation					y
		Furan Analysis					
		Vibration Measurement for reactors					
		Check of various earthing connections		y			
		Any other test (Please mention)					
2	Circuit Breaker (CB)	Static Contact Resistance Measurement					N y
		Dynamic Contact Resistance Measurement (DCRM)					N y
		Operating timing of CB (Opening Time, Closing time, CO)					N y
		Operating timing of Pre Insertion Resistor (Pre-insertion time)		NA			
		Capacitance & Tandelta measurement for Grading capacitors					y
		Healthiness of Trip Coil (TC) & Closing Coil (CC)		Y			
		Healthiness of Operating Mechanism		Y			
		Dew point measurement of SF6 gas					N y
		Check of various earthing connections		Y			
		Any other test (Please mention)					
3	Isolator / Disconnectors	Static Contact Resistance Measurement		N			y
		Healthiness of Operating Mechanism		Y			
		Checking of Interlocks with CB, Earthing switches etc.					N y
		Check of various earthing connections		Y			
		Any other test (Please mention)					
4	Current Transformer(CT)	Capacitance & Tandelta Measurement					
		Insulation Resistance (IR) Measurement		Y			N y
	Current Transformer(CT)	Measurement of secondary winding resistance		y			

27/08/24 (AEGCL)

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14A.PERIODICITY OF MAINTENANCE OF SUBSTATION EQUIPMENT / TRANSMISSION LINE COMPONENTS/ELEMENTS

		Partial Discharge (PD) measurement					N Y
		Check of various earthing connections		Y			
		Any other test (Please mention)					
							N Y
5	Potential	Capacitance & Tandelta Measurement					N Y
		Insulation Resistance (IR) Measurement					N Y
		Partial Discharge (PD) measurement					
		Check of various earthing connections		Y			
		Any other test (Please mention)					
							N Y
6	Capacitive Voltage Transformer (CVT)	Capacitance & Tandelta Measurement					N Y
		Insulation Resistance (IR) Measurement					N Y
		Secondary Voltage Measurement					N Y
		Partial Discharge (PD) measurement					
		Check of various earthing connections		Y			
		Any other test (Please mention)					
7	Surge Arrester (SA)	3rd Harmonic Leakage Current Measurement					N Y
							N Y
		Capacitance Measurement					
		Insulation Resistance (IR) Measurement		Y			
		Check of various earthing connections		Y			
		Any other test (Please mention)					
8	Relays	Functional tests of each Protection relay		Y			
		Operating timings		Y			
		Testing of DR/EL with TSE					
9	PLCC system	Checking of PLCC system		Y			
10	Battery	Measurement of specific gravity of electrolyte (for flooded battery)		Y			
		Topping of battery using Demineralized / Distilled water (for flooded battery)		Y			
		Open Circuit Voltage of Cells Tests				Y	
		Capacity test					Y
		Checking of earth fault due to leakage (for flooded battery)					
11	Earthing	Resistance of Earth mat		Y			
12	Hot Spot	Infrared scanning		Not available			N/A
		(a) Inside switch yard / substation (for clamps , connectors etc.)					Y
		(b) Transmission lines (Clamps, connectors, Jumpers etc.)					Y
13	Insulator	Punncture Insulator Detection					N Y
		Cleaning of Porcelain / Glass insulators					
		(a) Normal washing				Y	
		(b) Hotline washing					Y
14	Tower	Tower footing resistance measurement		Y			

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14B. AVAIALABILITY OF VARIOUS DIAGNOSTIC TOOLS

Sl. No.	DIAGNOSTIC TOOLS	Avail-ability	If Yes (i.e. if Available)	
		(Y/N)	Make	Model
1	Winding resistance meter	N		
2	Transformer Voltage Ratio test meter	N		
3	Insulation Resistance (IR) tester	Y		
	(a) 5 kV			
	(b) 10 kV		Megger	S1-1068
4	Capacitance & Tandelta Measurement Instrument	N		
	(a) Automatic			
	(b) Manual			
5	Break Down Voltage (BDV)Test kit for oil	N		
6	Dissolved Gas Analyser	N		
7	Sweep Frequency Response Analysis(SFRA) test	N		
8	Partial Discharge (PD) Measuring Instrument	y	Navitus Control & Equipment Pvt Ltd	PD13
9	CB operational Analyser	Y	SCOPE	3015.00AC.0869
10	DCRM test kit		SCOPE	(DCRM) Model
11	SF6 Gas leakage detector	N		
12	Dew point measuring instrument	N		
13	SF6 Gas Hanndling Plant (for Evacuation, filling, filtering of gas)	N		
14	Static Contact Resistance Measuring instrument	Y	SCOPE	CRM200B
15	Leakage Current Meter (LCM)	Y	SCOPE	SA 30i
16	Earth Tester	Y	MTD 20 Kwe	ME 9032 B
17	Automatic Realy test kit	N		
18	Thermovision camera for detection of hot spots	N		
19	Thermal Scanner (for Transformer / Reactor)	N		
20	Transmission line Response Analyser	N		
21	Punncture Insulator Detector (PID)	N		
22	On line Partial Discharge (PD) monitoring of GIS	N		
	If Yes			
	(a) Using Ultra High Frequency (UHF) technique			
	(b) Using Acoustic technique			
22	Any On line diagnostic tools	N		
	If Yes, List the instruments			
	(a)			
	(b)			

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14C. VARIOUS PROVISION IN SUBSTATION / SWITCHYARD

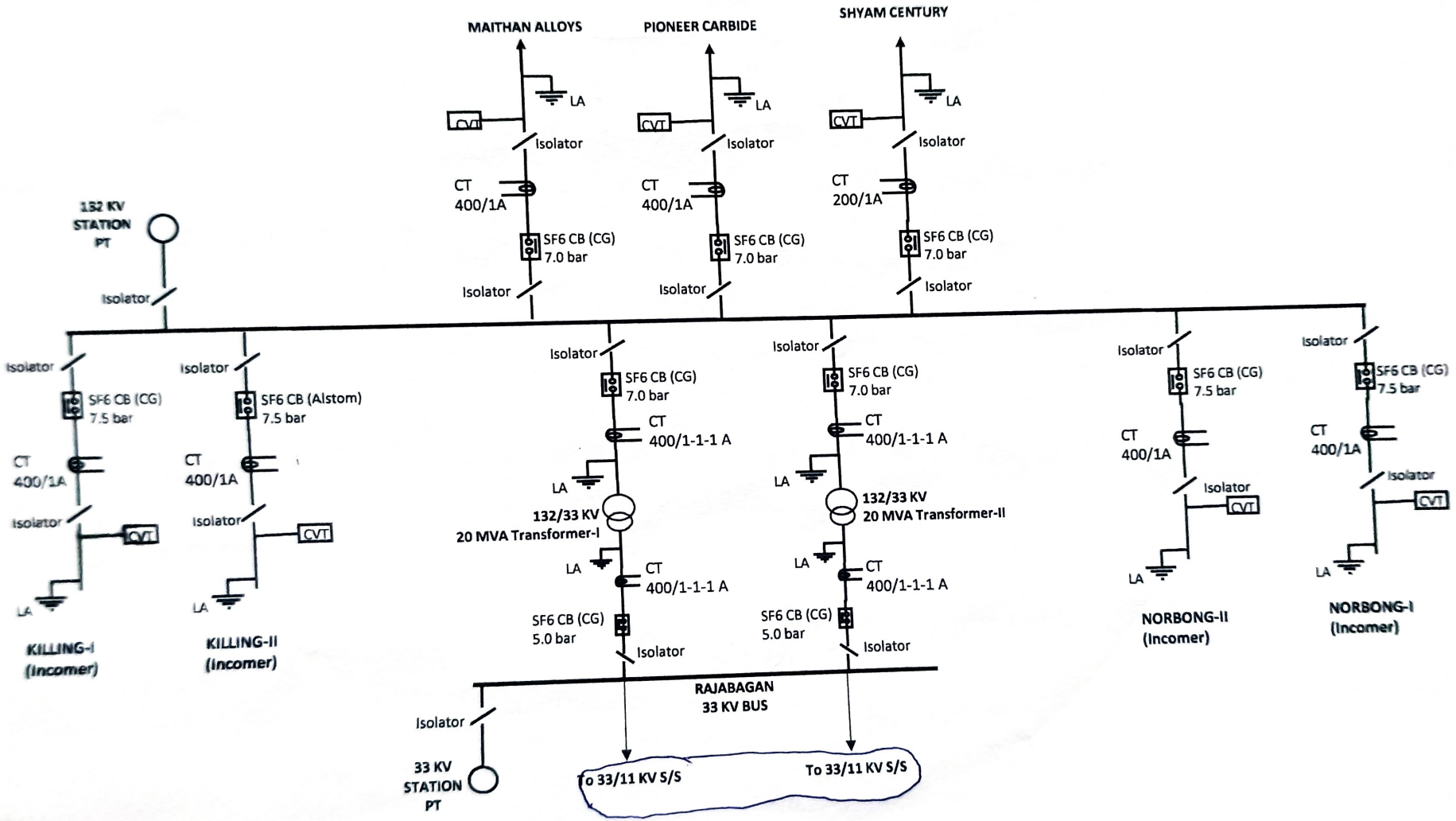
Sl. No.	VARIOUS PROVISION	Availability (Y/N)
1	Soak Pit for transformer / reactors of 10MVA and above rating or with oil capacity more than 2000ltrs	Yes
2	Oil Collecting pit for transformer / reactors	Yes
3	CO2 and sand buckets	Yes
4	Foam type fire extinguisher	Yes
5	Portable type fire extinguisher	Yes
6	Hydrant Type	No
7	High Velocity Water Spray (HVWS) System	No
8	Nitrogen Injection Based Fire Protection System (NIFPS)	Yes
9	Both HVWS system & NIFPS	No
10	Fire Fighting wall between Transformers (if distance between transformers < 15m)	Yes
11	Direct Lightning Protection	
	(a) Using Over Head Ground Wire(OHGW)	Yes
	(b) Using Spikes	No
	(c) Using Lightning Masts(LMs)	No
	(d) Combination of OHGW + LM	No
	(e)Combination of OHGW + Spikes	
12	Condition of Earthing System	
	(a) Gravels Spread ove Pre-Stressed Concrete (PCC)	No
	(b) Only Gravels	Yes
	(c) Gravels are visible	Yes
	(d) Gravels coverd with grass / soil	
13	Operation of On Load Tap Changer (OLTC)	No
	(a) As and when required	
	(b) Never operated	
14	Operation of Off Load Tap Changer	
	(a) As and when required	Yes
	(b) Never operated	
15	DG Set	Yes
	If Yes, Rating (Nos., Voltage level, KVA capacity)	250KVA

27/08/24

27/08/24

27/08/24

SINGLE LINE DIAGRAM OF 132/33KV EPIP-I S/S, MePTCL RAJABAGAN (2 X 20 MVA CAPACITY)



Preliminary Report

1. Name of the Sub-Station/Generating Station: EPIP - II
2. Voltage level: 132/33 kV
3. Owner: MePTCL
4. Date of Audit: 27.08.2024
5. Members of Auditing Team:

Sl.No.	Name	Designation	Organization	Signature
1	Vikash Shankar	AD-I	NERPC	
2.	Vipul Anand	AM	POWERGRID	
3.	Utpal Das	AM	NERLDC	
4.	Juganta Sonowal	DM	AEGCL	

6. Representatives of the Sub-station/Generating Station assisting the auditing team:

Sl.No.	Name	Designation	Contact details	Signature
1	Ibanthiraw Nongbri	AM	8794523468	
2	T. Muktsor	JM	9774838061	

Observations/Recommendations:

1. Check list

Parameters	Yes/NO	Remarks
Whether redundant supply for station auxiliaries is available?	Yes	
Whether SCADA system is present?	No	
Whether Governor/AVR and associated panels for each units in healthy condition?	N/A	
Whether two separate DC sources provided for Main I and Main II protection ?	NO	
Whether protection relays for generating transformers/ICTs are operational?	Yes	REF is not enabled.
Whether protection relays for emanating lines are operational?	Yes	
Whether time synchronisation facility is available in the Sub-station?	No	
Whether existing RTUs are healthy and reporting?	Yes	
Whether existing communication via PLCC or OPGW? If PLCC then healthiness of PLCC panels	- PLCC - Yes	
In case of OPGW connectivity to the station, whether end equipments are available and functional?	N/A	

Healthiness of Protection coupler/Coupling device?	Yes	
Tie-breaker healthiness	N/A	
Bus-coupler healthiness	N/A	
Whether sufficient lighting is available in the switchyard?	Yes	
Whether remote operation of MIV is possible?	N/A	
Whether online/offline diagnostic tools are available for monitoring generator healthiness?	No	MRT Team looking after the same.
DC Supply- Whether two DC sources are available?	No	
Earthing System in the switchyard: Whether as per IS?	Yes	
List of diagnostic tools, testing equipments etc. and whether are present in sufficient quantity?	No	Not even megger & basic tools are available at S/S.
Whether firefighting provision is available in the station?	No	only Fire extinguisher cylinders are available.

2.Review of existing settings at substation and recommendations-

To be provided in the final report.

3. Recommendation of last protection checking and validation (status of work and pending issues if any)- No protection Audit done earlier.

4. Disturbance Recorder out available for last 6 tripping's (Y/N) and recommended action-

5. Chronic reason of tripping, if any- i) Lightning (LNCC)
ii) vegetation

6. Major non-conformity/deficiency observed - ① Differential Protn not present on short lines.
② Dist. settings deviating from RPC protocols.

7. Any other specific observations/recommendations:

i) Line Differential Relay is provided in all feeders, but OPGW link is not available except New Unitara. Therefore, OPGW has to provided, and LDR to be made operational in all the feeders.

ii) Zone - Reach of Distance Protn of all the feeders have been found to be deviating from NERPC Protn protocol. The same needs to be reviewed and to be made in-compliance with the protocol.

iii) FOR NALARI feeder: No MAIN PROTN is provided, Numerical Differential & Distance Protection to be provided.

iv) FOR ICT, [50MVA] REF is not provided, the same has to be ensured.

v) CRP of the 50MVA ICT are old & partially functional.

vi) for 110V DC system:
1- VRLA
1- old lead Acid } Battery in service.

However, in VRLA Bank [(+ve) to Earth = (0V), (-ve) to Earth = (-121V)]

This is a major DCEF scenario. TO BE attended urgently.

viii) Both 110V Battery Banks to be replaced with new VRLA Banks.

ix) AC to be made operational/provided in the VRLA Battery room in a separate chamber.

x) 33 kV feeders have been provided with O/C, EF Protn, the settings of which needs to be co-ordinated with the B/U Protn of the ICT.

xi) 132 kV Bus is only single main Bus Scheme, Transfer Bus is to be provided.

xii) Commicatn has to be ensured via OPGW link. (with SLDC)

xiii) Hydrant based Fire protection has to be provideed in the switchyard.

xiv) Cover plates to be provided in CRP panel area with earth mat placed over it.

xv) Killing-1 P442 relay: Case unhealthy Alarm is persisting. The same may be attended shortly.

xvi) Auto-reclosure is not enabled on any 132 kV lines. Single-phase or 3-ϕ AR has to be enabled on all the 132 kV lines at the earliest.

14B. AVAIALABILITY OF VARIOUS DIAGNOSTIC TOOLS

Sl. No.	DIAGNOSTIC TOOLS	Avail-ability	If Yes (i.e. if Available)	
		(Y/N)	Make	Model
1	Winding resistance meter	N		
2	Transformer Voltage Ratio test meter	N		
3	Insulation Resistance (IR) tester	N		
	(a) 5 kV			
	(b) 10 kV			
4	Capacitance & Tandelta Measurement Instrument	N		
	(a) Automatic			
	(b) Manual			
5	Break Down Voltage (BDV)Test kit for oil	N		
6	Dissolved Gas Analyser	N		
7	Sweep Frequency Response Analysis(SFRA) test kit	N		
8	Partial Discharge (PD) Measuring Instrument	N		
9	CB operational Analyser	N		
10	DCRM test kit	N		
11	SF6 Gas leakage detector	N		
12	Dew point measuring instrument	N		
13	SF6 Gas Hanndling Plant (for Evacuation, filling, filtering of gas)	N		
14	Static Contact Resistance Measuring instrument	N		
15	Leakage Current Meter (LCM)	N		
16	Earth Tester	N		
17	Automatic Realy test kit	N		
18	Thermovision camera for detection of hot spots	N		
19	Thermal Scanner (for Transformer / Reactor)	N		
20	Transmission line Response Analyser	N		
21	Punncture Insulator Detector (PID)	N		
22	On line Partial Discharge (PD) monitoring of GIS	N		
	If Yes			
	(a) Using Ultra High Frequency (UHF) technique			
	(b) Using Acoustic technique			
22	Any On line diagnostic tools	N		
	If Yes, List the instruments			
	(a)			
	(b)			
	(c)			

14C. VARIOUS PROVISION IN SUBSTATION / SWITCHYARD

Sl. No.	VARIOUS PROVISION	Availability (Y/N)
1	Soak Pit for transformer / reactors of 10MVA and above rating or with oil capacity more than 2000ltrs	Y
2	Oil Collecting pit for transformer / reactors	N
3	CO2 and sand buckets	Y
4	Foam type fire extinguisher	Y
5	Portable type fire extinguisher	Y
6	Hydrant Type	N
7	High Velocity Water Spray (HVWS) System	N
8	Nitrogen Injection Based Fire Protection System (NIFPS)	Y
9	Both HVWS system & NIFPS	N
10	Fire Fighting wall between Transformers (if distance between transformers < 15m)	N
11	Direct Lightning Protection	
	(a) Using Over Head Ground Wire(OHGW)	Y
	(b) Using Spikes	N
	(c) Using Lightning Masts(LMs)	N
	(d) Combination of OHGW + LM	N
	(e)Combination of OHGW + Spikes	N
12	Condition of Earthing System	
	(a) Gravels Spread ove Pre-Stressed Concrete (PCC)	N
	(b) Only Gravels	Y
	(c) Gravels are visible	Y
	(d) Gravels coverd with grass / soil	N
13	Operation of On Load Tap Changer (OLTC)	
	(a) As and when required	
	(b) Never operated	Y
14	Operation of Off Load Tap Changer	
	(a) As and when required	Y
	(b) Never operated	
15	DG Set	Y
	If Yes, Rating (Nos., Voltage level, KVA capacity)	1*250KVA,415V

14A.PERIODICITY OF MAINTENANCE OF SUBSTATION EQUIPMENT / TRANSMISSION LINE COMPONENTS/ELEMENTS

Sl. No.	Equipment	Tests being conducted	Preiodicity of Tests being conducted (Put "Y" under appropriate column)				
			3 months	6 months	1 year	> 1 year	No test is being done
1	Transformer / Reactor	Winding resistance measurement			Y		
		Voltage Ratio test for transformer				Y	
		Magnetising current test				Y	
		Magnetic balance test				Y	
		Insulation Resistance (IR) Measurement			Y		
		Polarisation Index (PI)			Y		
		Capacitance & Tandelta Measurement for				Y	
		(a) Winding				Y	
		(b) Bushing				Y	
		Break Down Voltage (BDV)Test for oil				Y	
		Dissolved Gas Analysis(DGA)				Y	
		Sweep Frequency Response Analysis(SFRA)				Y	
		Partial Discharge (PD) Measurement					Y
		Degree of Polymerisation (DP) for cellulose insulation					Y
		Furan Analysis					Y
		Vibration Measurement for reactors					Y
		Check of various earthing connections			Y		
		Any other test (Please mention)					
2	Circuit Breaker (CB)	Static Contact Resistance Measurement				Y	
		Dynamic Contact Resistance Measurement (DCRM)					Y NOT DONE
		Operating timing of CB (Opening Time, Closing time, CO)					Y NOT DONE
		Operating timing of Pre Insertion Resistor (Pre-insertion time)					Y NOT DONE
		Capacitance & Tandelta measurement for Grading capacitors					Y NOT DONE
		Healthiness of Trip Coil (TC) & Closing Coil (CC)				Y	
		Healthiness of Operating Mechanism				Y	
		Dew point measurement of SF6 gas					NOT DONE
		Check of various earthing connections			Y		
		Any other test (Please mention)					

AEGCL

3rd NERLDC

ERIODICITY OF MAINTENANCE OF SUBSTATION EQUIPMENT / TRANSMISSION LINE COMPONENTS/ELEMENTS

3	Isolator / Disconnectors	Static Contact Resistance Measurement						NOT DONE
		Healthiness of Operating Mechanism			Y			
		Checking of Interlocks with CB, Earthing switches etc.			Y			
		Check of various earthing connections			Y			
		Any other test (Please mention)						
4	Current Transformer(CT)	Capacitance & Tandelta Measurement						Y
		Insulation Resistance (IR) Measurement						NOT DONE
	Current Transformer(CT)	Measurement of secondary winding resistance						Y
		Partial Discharge (PD) measurement						Y
		Check of various earthing connections			Y			
		Any other test (Please mention)						
5	Potential Transformer (PT)	Capacitance & Tandelta Measurement						Y
		Insulation Resistance (IR) Measurement						Y NOT DONE
		Partial Discharge (PD) measurement						Y
		Check of various earthing connections			Y			
		Any other test (Please mention)						
6	Capacitive Voltage Transformer (CVT)	Capacitance & Tandelta Measurement						Y
		Insulation Resistance (IR) Measurement						NOT DONE
		Secondary Voltage Measurement						Y
		Partial Discharge (PD) measurement						Y
		Check of various earthing connections			Y			
		Any other test (Please mention)						
7	Surge Arrester (SA)	3rd Harmonic Leakage Current Measurement						Y
		Capacitance Measurement						Y
		Insulation Resistance (IR) Measurement				Y		
		Check of various earthing connections			Y			
		Any other test (Please mention)						
8	Relays	Functional tests of each Protection relay						Y
		Operating timings						Y

3rd MTM NERLDC

...NOTY OF MAINTENANCE OF SUBSTATION EQUIPMENT / TRANSMISSION LINE COMPONENTS/ELEMENTS

		Testing of DR/EL with TSE						Y
	PLCC system	Checking of PLCC system						Y
10	Battery	Measurement of specific gravity of electrolyte (for flooded battery)						NOT DONE
		Topping of battery using Demineralized / Distilled water (for flooded battery)						NOT DONE
		Open Circuit Voltage of Cells Tests						NOT DONE
		Capacity test						NOT DONE
		Checking of earth fault due to leakage (for flooded battery)						NOT DONE
11	Earthing	Resistance of Earth mat					Y	
12	Hot Spot detection	Infrared scanning						NOT DONE
		(a) Inside switch yard / substation (for clamps , connectors etc.)						NOT DONE
		(b) Transmission lines (Clamps, connectors, Jumpers etc.)						NOT DONE
13	Insulator	Punncture Insulator Detection						NOT DONE
		Cleaning of Porcelain / Glass insulators				Y		
		(a) Normal washing				Y		
		(b) Hotline washing						
14	Tower	Tower footing resistance measurement					Y	

SMTM NERLDC

Preliminary Report

1. Name of the Sub-Station/Generating Station: Mawlai S/S
2. Voltage level: 132/33 KV
3. Owner: MePTCL
4. Date of Audit: 26/08/2024
5. Members of Auditing Team:

Sl.No.	Name	Designation	Organization	Signature
1.	Dinesh Kr. Singh	AD	NERPC	DSingh
2	PARESH B PATIL	Manager	PACIL	
3	ARINDAM PAUL	Asst. Manager	AEGCL	
4	SUBHRA GHOSH	Asst. Manager	NERLDC	

6. Representatives of the Sub-station/Generating Station assisting the auditing team:

Sl.No.	Name	Designation	Contact details	Signature
1	R. Khongmalai	RF	8014137284	
2	J. Tariang	RE	9863083260	26/8/24

Observations/Recommendations:

1. Check list

Parameters	Yes/NO	Remarks
Whether redundant supply for station auxiliaries is available?	YES	11KV Mawlai & station Transformer present 1 DG set - 250 KVA
Whether SCADA system is present?	NO	
Whether Governor/AVR and associated panels for each units in healthy condition?	NA	
Whether two separate DC sources provided for Main I and Main II protection ?	NA	
Whether protection relays for generating transformers/ICTs are operational?	YES	
Whether protection relays for emanating lines are operational?	YES	
Whether time synchronisation facility is available in the Sub-station?	NO	
Whether existing RTUs are healthy and reporting?	YES	
Whether existing communication via PLCC or OPGW? If PLCC then healthiness of PLCC panels	PLCC	
In case of OPGW connectivity to the station, whether end equipments are available and functional?	YES	132 KV Mawphlang - Mawlai line & 132KV NEHU - Mawlai line
Healthiness of Protection coupler/Coupling device?	NO	Single Bus scheme

Tie-breaker healthiness	NA	
Bus-coupler healthiness	NA	
Whether sufficient lighting is available in the switchyard?	YES	
Whether remote operation of MIV is possible?	NA	
Whether online/offline diagnostic tools are available for monitoring generator healthiness?	NA	
DC Supply- Whether two DC sources are available?	YES	2 DC sources 110 V each - But only 1 DC source is utilized 1 48 V DC source
Earthing System in the switchyard: Whether as per IS?	YES	
List of diagnostic tools, testing equipments etc. and whether are present in sufficient quantity?	NO	
Whether firefighting provision is available in the station?	NO	only NIFPS for Transformer

2.Review of existing settings at substation and recommendations-

3. Recommendation of last protection checking and validation (status of work and pending issues if any)-
On 14.04.2024, at 17:13 Hrs, LBB operated at Kawlai S/S. due to fault in 132KV Kaulai-Schra line. LBB time delay was set to 300 msec. It has now been ~~modified~~ changed to 200 msec as per NER protection philosophy.

4. Disturbance Recorder out available for last 6 tripping's (Y/N) and recommended action- Available.

5. Chronic reason of tripping, if any-

6. Major non-conformity/deficiency observed -

7.Any other specific observations/recommendations:

1. proper fire fighting provision needs to be available in switchyard and control room.

2. Spare cables in Battery room / control room / switchyard should be properly insulated.

3. Cable trenches ~~are~~ in switchyard are not covered properly.

4. All safety related provisions should be available in switchyard and control room.

5. One 48V DC-I Battery bank available. Two DC Battery bank needs to be available for redendancy.

6. Proper Diagnostic Tools and Testing equipments should be present for periodic Testing of equipment.

7. Automatic changeover of DG set needs to be implemented.

8. Auto recloser needs to be implemented in all 132KV lines as per NERPC protection philosophy.

9. Common Earth pit for all equipment. It is recommended to keep seperate earth pit for each substation equipment.

10. Rusting was observed in marshelling box. It should be painted to avoid rusting.

11. Proper marking of bay is not available.

12. Silica gel ~~was~~ may be replaced ~~wherever~~ wherever required.

13. The spare CVT primary side to be shorted.

14. Line differential protection is installed in 132KV NEHO - Kawlai line. However, it is not operational due to non-availability of OPGW.

15. proper cooling system should be provided in Battery Room and control room. (AC present but non-functional)

16. 132 KV Mawlai Bus is Single Bus scheme. It should be upgraded to Main and Transfer Bus scheme.

17. Scrap in switchyard needs to be properly disposed.

18. In 110 V DC-2 source, ~~Earth fault~~ (+)ve - (−)ve = 122 V

(+)ve - E = 95.5 V

(−)ve - E = −25.9 V

Preliminary Report

1. Name of the Sub-Station/Generating Station: 132/33 KV NEHU
2. Voltage level: 132/33 KV
3. Owner: MePTCL
4. Date of Audit: 26/08/2024
5. Members of Auditing Team:

Sl.No.	Name	Designation	Organization	Signature
1.	Dinesh Kr. Singh	AD	NERPC	DSingh
2.	PARESH B PATIL	MANAGER	PGCIL	
3.	ARINDAM PAUL	Asst. Manager	AEGCL	
4.	Subhra Ghosh	Asst. Manager	NERLDC	

6. Representatives of the Sub-station/Generating Station assisting the auditing team:

Sl.No.	Name	Designation	Contact details	Signature
1.	Mebam P. Tariang	A.E	9402502174	
2.	J. Tariang	AE	9863083260	26/8/24
3.	R. Khonjamai	AE	8014137268	

Observations/Recommendations:

1. Check list

Parameters	Yes/NO	Remarks
Whether redundant supply for station auxiliaries is available?	NO	1 station Transformer available 1 DG Set - 250 KVA (manual mode)
Whether SCADA system is present?	NO	
Whether Governor/AVR and associated panels for each units in healthy condition?	- NA -	
Whether two separate DC sources provided for Main I and Main II protection ?	YES	2 DC - 220V available But only one DC source is utilized and changeover from time to time manually.
Whether protection relays for generating transformers/ICTs are operational?	YES	
Whether protection relays for emanating lines are operational?	YES	
Whether time synchronisation facility is available in the Sub-station?	NO	
Whether existing RTUs are healthy and reporting?	YES	
Whether existing communication via PLCC or OPGW? If PLCC then healthiness of PLCC panels	YES	PLCC - ~~Mawdi, Austem and NEIGRIHMS lines~~ ~~OPGW - Mawlyndep line~~
In case of OPGW connectivity to the station, whether end equipments are available and functional?	YES	~~OPGW - Umaim line.~~ 132 KV NEHU-NEIGRIHMS & 132 KV NEHU - Mawlai
Healthiness of Protection coupler/Coupling device?	YES.	

Tie-breaker healthiness	-NA-	
Bus-coupler healthiness	-YES-	
Whether sufficient lighting is available in the switchyard?	YES	
Whether remote operation of MIV is possible?	-NA-	
Whether online/offline diagnostic tools are available for monitoring generator healthiness?	-NA-	
DC Supply- Whether two DC sources are available?	~~NO~~ YES	* But only one DC source is utilized, and is change-over from time to time. manually.
Earthing System in the switchyard: Whether as per IS?	YES	Earth pit to be neumbered properly previous measurement to be displayed.
List of diagnostic tools, testing equipments etc. and whether are present in sufficient quantity?	~~YES~~ NO	
Whether firefighting provision is available in the station?	NO	

2.Review of existing settings at substation and recommendations-

3. Recommendation of last protection checking and validation (status of work and pending issues if any)-

4. Disturbance Recorder out available for last 6 tripping's (Y/N) and recommended action- Available

5. Chronic reason of tripping, if any-

6. Major non-conformity/deficiency observed -

7.Any other specific observations/recommendations:

1. Proper fire fighting to be made available in switchyard and Control room.

2. Electromechanical relay of 132KV Bus Coupler to be replaced by numerical relay.

3. Currently, only one trip coil is being used. However, there is a provision for second trip. It is recommended to make both the trip coils in use for reliability.

4. Earth mat in Control room and Battery room to be provided. (Rubber insulated mat)

5. Spare cables in Control room / Battery room / switchyard should be properly insulated.

6. Safety kit, (All safety related provision) is not ~~availble~~ available in switchyard / control room. Proper safety kit should be present for ensuring safety.

7. ~~Emergency cont~~

7. one 48 V DC Battery bank needs to be checked.

8. proper diagnostic tools and testing equipments ~~to be~~ should be present.

9. Automatic changeover of DG set to be implemented.

10. proper shed for DG set to be made available.

11. AR needs to be implemented in all 132KV lines as per NERPC protection philosophy.

12. Earth pit should be numbered properly and previous measurement value to be displayed along with last date of measurement.

13. only one supply for station auxilliary available. It needs to be available as per regulation.

14. proper sealing of holes in ICT Marshelling box panel needs to be done.

15. Rusting was observed in Marshelling box. ~~and~~ Equipment should be properly painted to avoid rusting.

16. ~~Obs Tra~~ Calibration of WTI, OTI needs to be done.

17. Scraps in switchyard needs to be properly disposed.

18. 2 DC source available. However, only one DC source is utilized and changeover is done from time to time manually.

19. Line differential protection is installed in 132KV NEHU-Umiam line and 132 KV NEHU-NEIGRIHMS lines. However, it is not operational due to non-availability of fiber. LDP needs to be implemented in lines less than 10 Km as per NERPC protection philosophy.

20. proper cooling system should be available in battery room and control room. (AC present but non-functional)

~~21. over~~

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 - Khleihriat 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	Not Completed	Fiber Network Not Available
4	EPIP -I - Killing Line II	Completed	Completed	Not Completed	
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	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	