सत्यमेव जयते

Agenda

For

71st PCCM

Azadi Ka Amrit Mahotsav

Govt. of India

Ministry of Power

North Eastern Regional Power Committee

Shillong

North Eastern Regional Power Committee

Agenda for

71st Protection Coordination Sub-Committee Meeting

Date: 11/09/2024 (Wednesday)

Time: 11:00 hrs.

Venue: NERLDC conference Hall, Guwahati

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 may confirm 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 –

	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 not yet planned.	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 September'24
5.	Mizoram	Done for all SS	Report shared	Audit of Luangmual, Zuangtui and Kolasib planned in August'24	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	
7.	Tripura	11 done, rest by September	To be shared	To be planned	
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				

Sub-committee may deliberate

B.2 <u>Detailed system study to review the protection settings of NER grid as per IEGC 2023</u>

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.

Sub-committee may deliberate

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**).

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.

Sub-committee may deliberate

Agenda from OTPC

B.5 Line opening issue in Palatana-Banduar line

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.

Sub-committee may deliberate

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.

Sub-committee may deliberate

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.

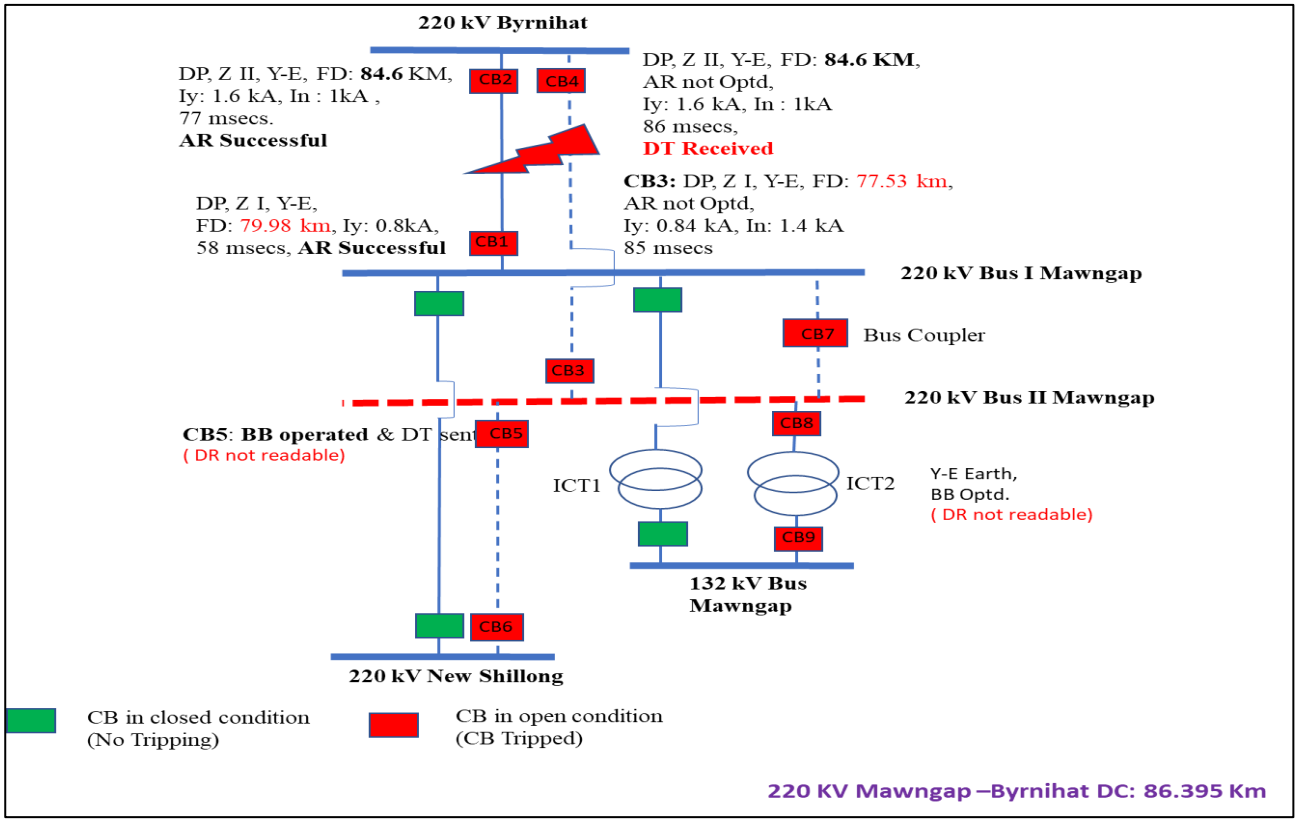
A. Perform complete patrolling of the line & clear the vegetation infringement wherever required and also take all necessary measure to avoid frequent tripping of the said line.

B. Restore the 132 kV Jiribam - Rengpang line which is under prolong outage so as to improve reliability of power supply to Rengpang area.

Sub-committee may deliberate

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.

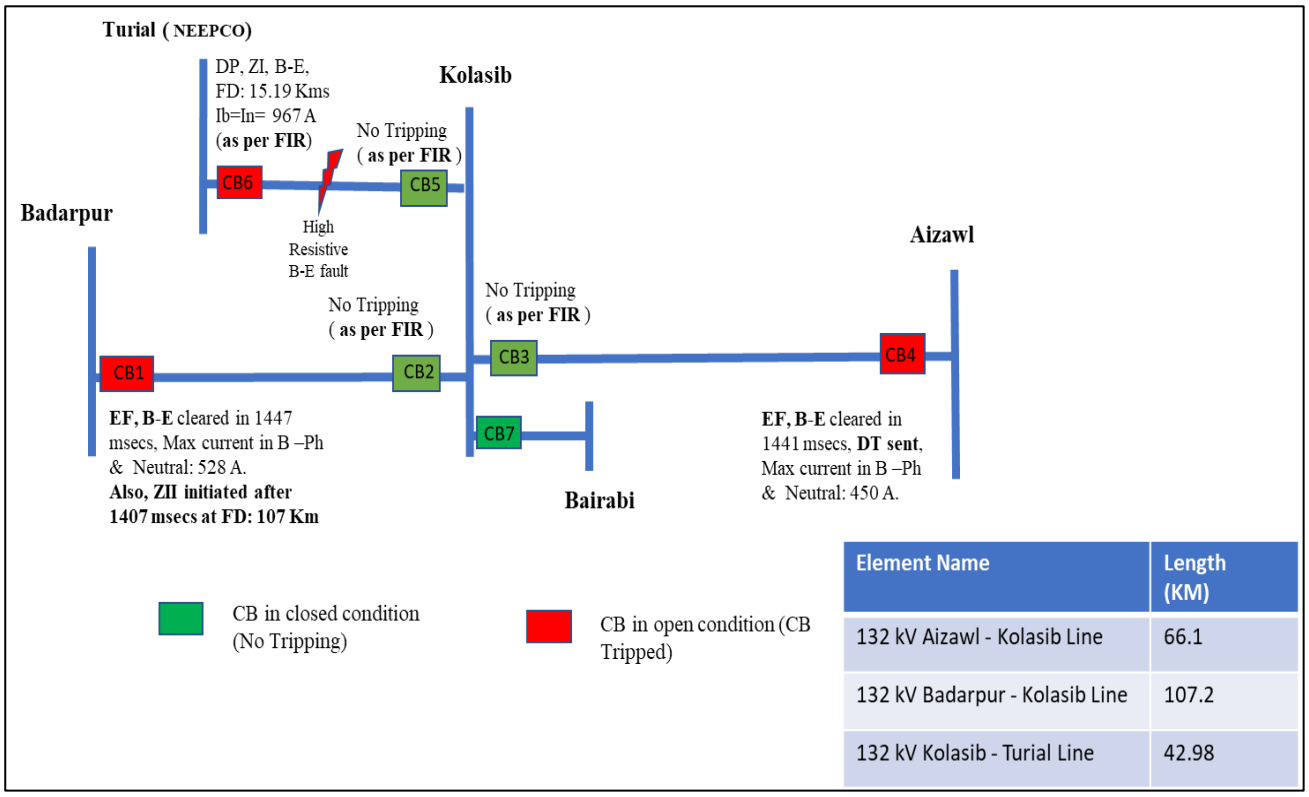
Sub-committee may deliberate

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).

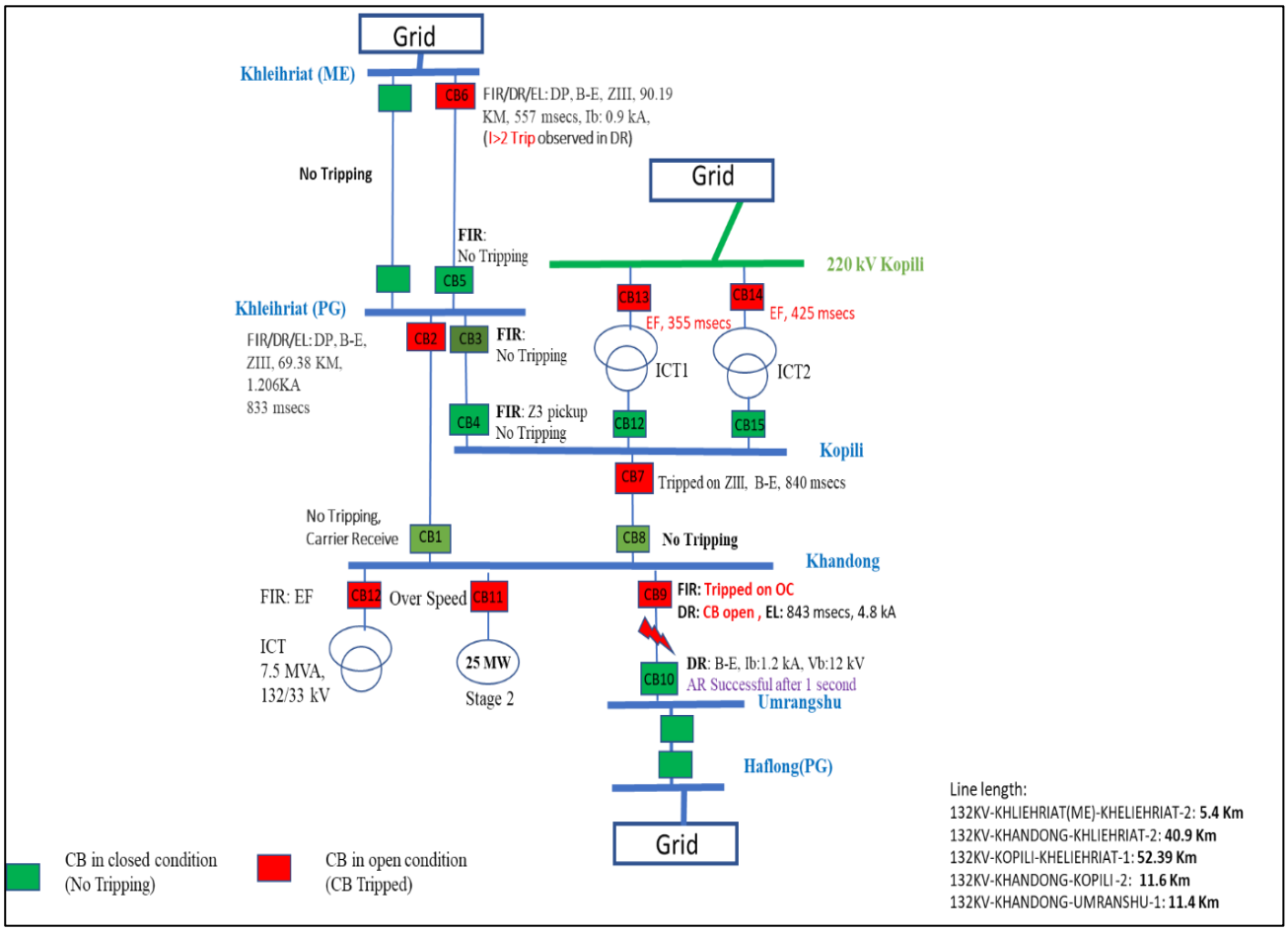
Sub-committee may deliberate

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.

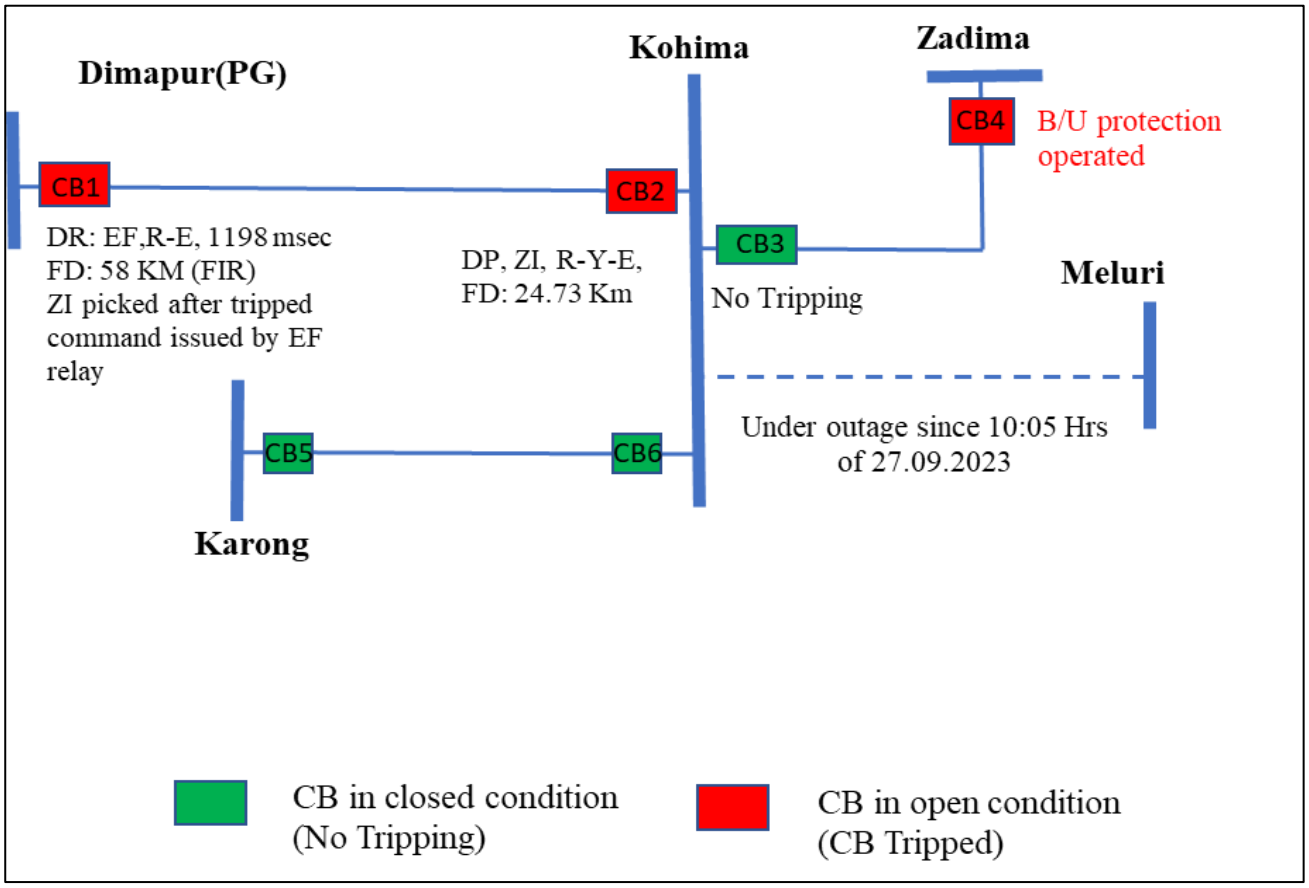
E. DR standardization: Any start, any trip needs to be added in Digital Channel of Khandong end of Umranshu line. DR window need to increase to 3000 msecs. CB Open status need to be added at MePTCL end of 132 kV Khliehriat (MePTCL)- Khliehriat (PG) 2 Line.

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.

Sub-committee may deliberate

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

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).

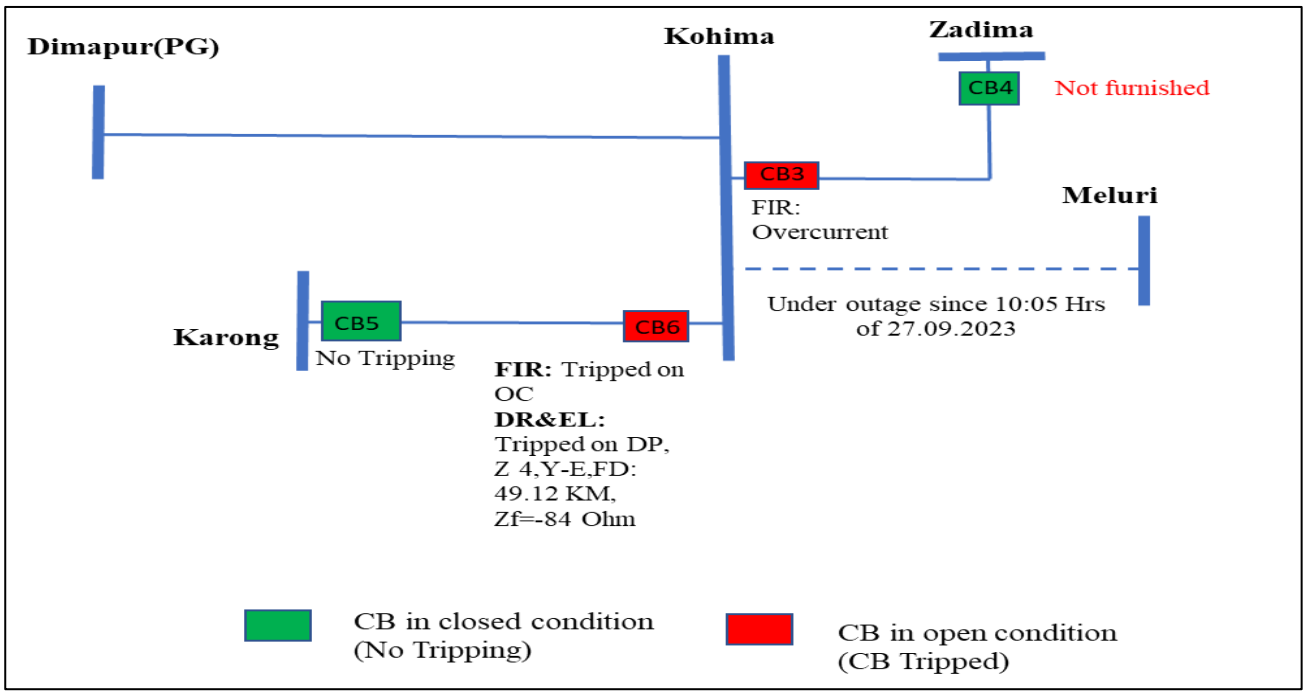
The proper analysis could not be performed due to non-submission of the DR&EL data of Zadhima end which is the violation of IEGC.

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.



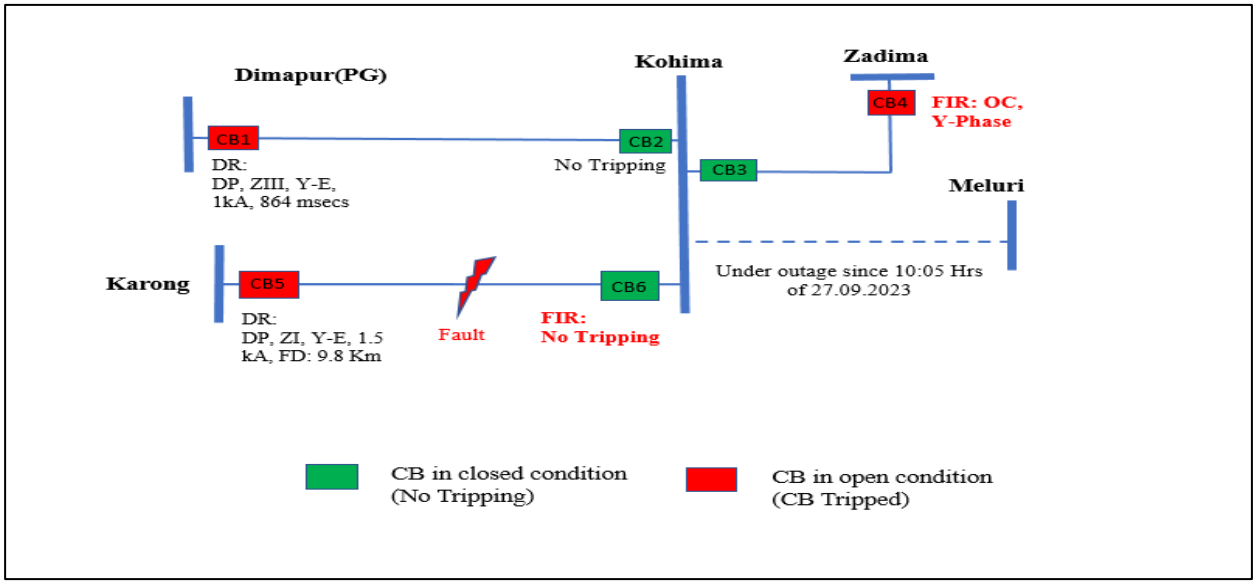
DoP, Nagaland is requested to update the following:

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.

Sub-committee may deliberate

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



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.

Sub-committee may deliberate

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

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.

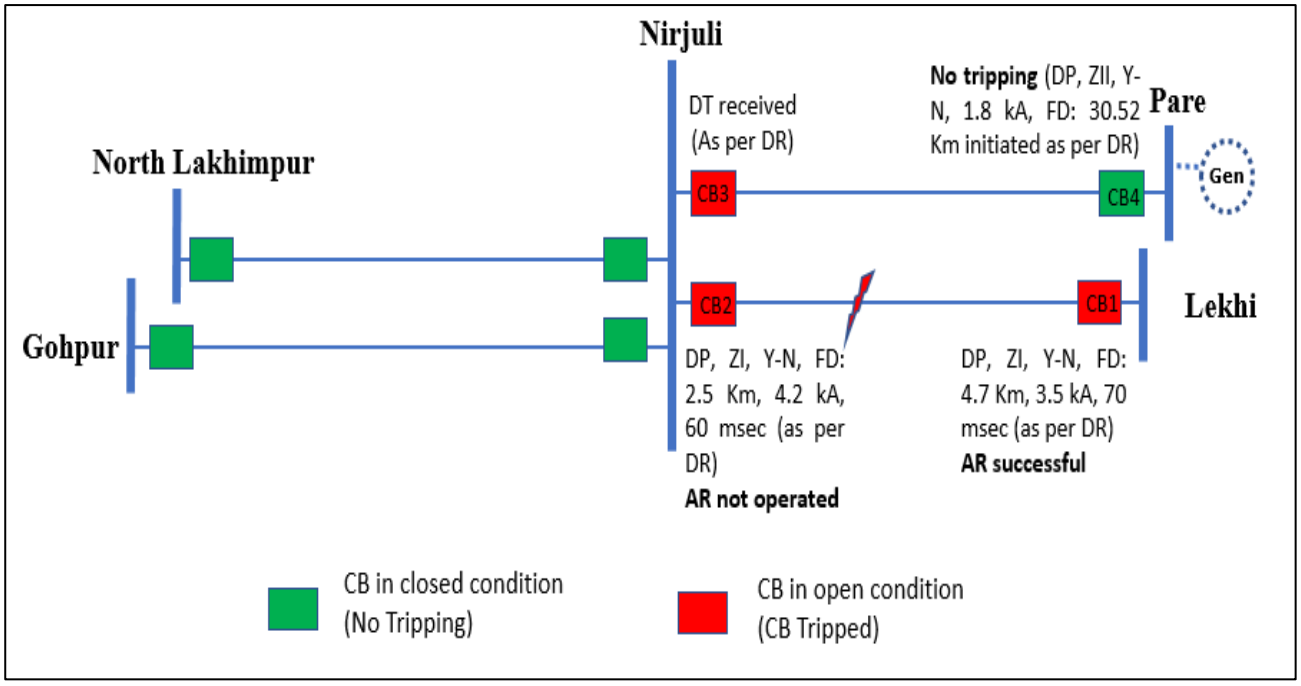
2. Time drift of 5 min observed in DR of Palatana end for 400 kV Palatana-Silchar II Line which needs correction.

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

Sub-committee may deliberate

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

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.

Sub-committee may deliberate

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

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.

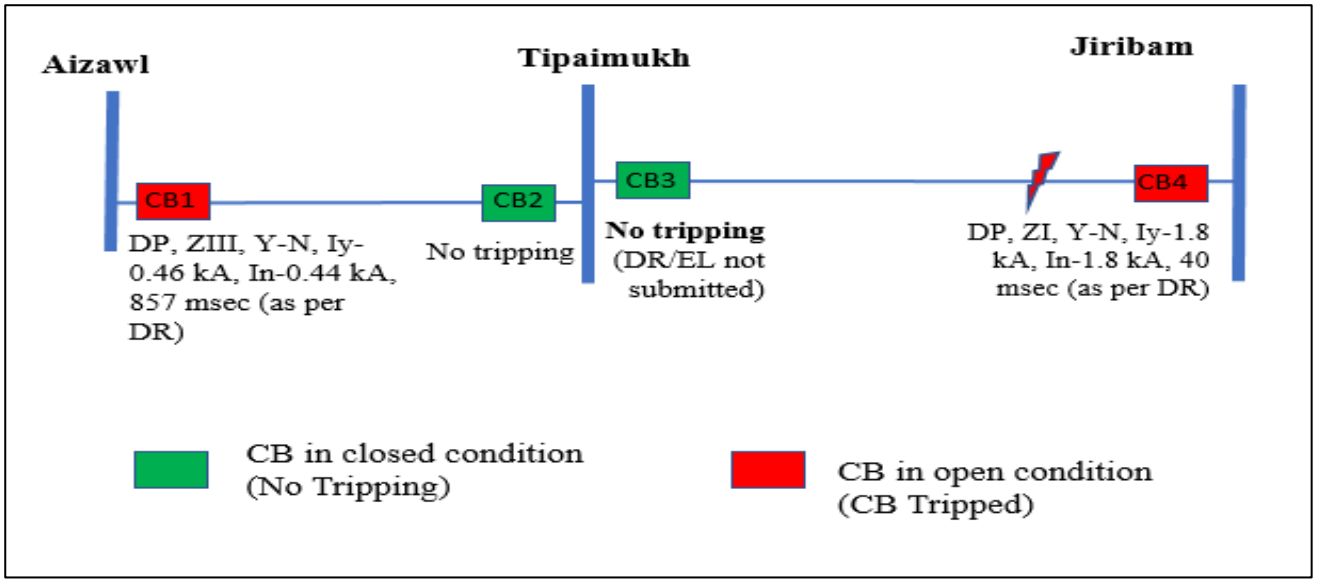
Therefore, it is requested to review the B/U OC setting on urgent basis in line with NERPC protocol and take necessary corrective action. Also, share the existing implemented B/U setting to this end for needful.

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.

Sub-committee may deliberate

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

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.

Sub-committee may deliberate

B.17 <u>Third party protection Audit of substations of MePTCL</u>

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**.

Sub-committee may deliberate

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.

Sub-committee may deliberate

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.

Sub-committee may deliberate

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 70th PCCM

Sl No	Element Name	Tripping date and time	Relay End1	Relay End2	A/R not Operated	Remarks from Utility (70th 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 is sent for repairing. After rectification of the kit AR without carrier to be enabled.
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 Successful)	Byrnihat	OEM arrived, work done. Testing for line 1 has been done and for line 2, testing to be done end of August'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 underway.

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	Checking by OEM to be done. Communication with the OEM underway, offer awaited, then order will be placed for service.
6	132 kV Badarpur - Karimganj Line	05-05-2024 13:48	DP, ZII, Y-E, FD:27.25KM, Carrier Aided tripping & AR Operated Successfully	DP, ZI, Y-E, FD: 0.2km	Karimganj	Relay to be replaced shortly.
7	132 kV Aizawl - Tipaimukh Line	05-05-2024 21:54	DP,ZI,B-E,FD:72.73KM	Details awaited	Aizawl	AR was blocked due to multiple carrier fail alarm, DC supply issue at Tipaimukh end. Manipur replaced the 48 Volt Dc battery at Tipaimukh.

						Regarding PLCC, 4 cards will be received by end of August'24
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,1.6kA	Pare HEP(NEEPCO) & North Lakhimpur	NEEPCO updated that the PLCC will be checked during upcoming shutdown next week. 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 to check during upcoming shutdown next week.
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	DR for the bay is yet to be integrate with the local SCADA system. Coordination with M/s NTL is required.

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

Utilities may further update

C.3 PLCC issues follow up:

Update as provided by utilities in 70th PCCM

Sl. No	Line	Utility	Update
1	132 kV Dimapur-Kohima	DoP Nagaland	DPR is complete except for budgetary offer. Offer to be tentatively provided by Aug end.
2	132 kV Melriat-Zemabawk	Mizoram	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 & got approval for Wave Trap at Zemabwk end, Mizoram likely to buy in 1 month.

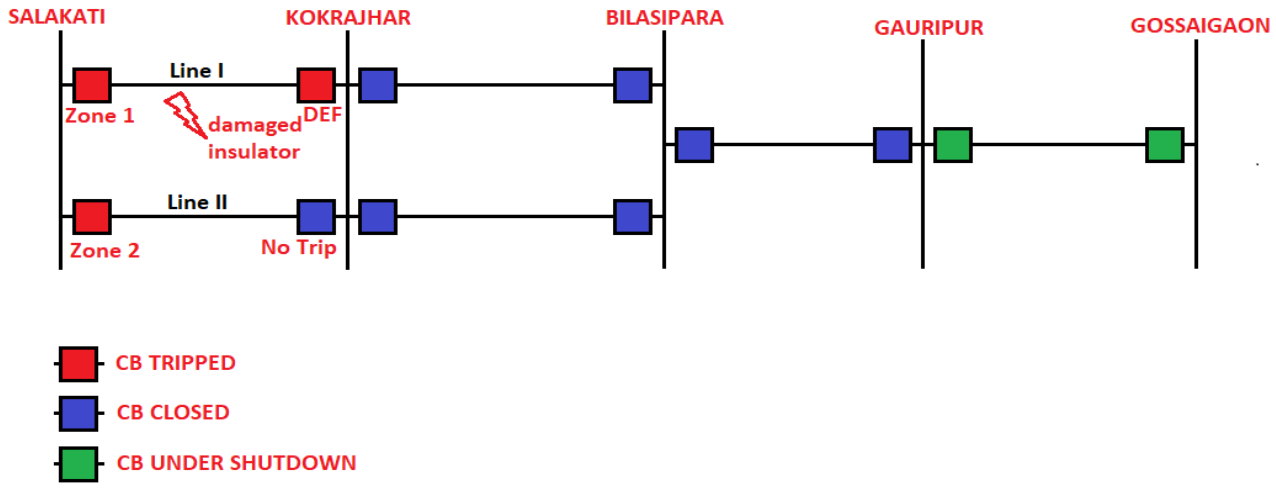
4	132 kV Roing-Pashighat	DoP Ar. Pradesh	DoP Ar. Pradesh updated that there was issue with 48 V battery which would be replaced by Oct'24.

Utilities may further update

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.

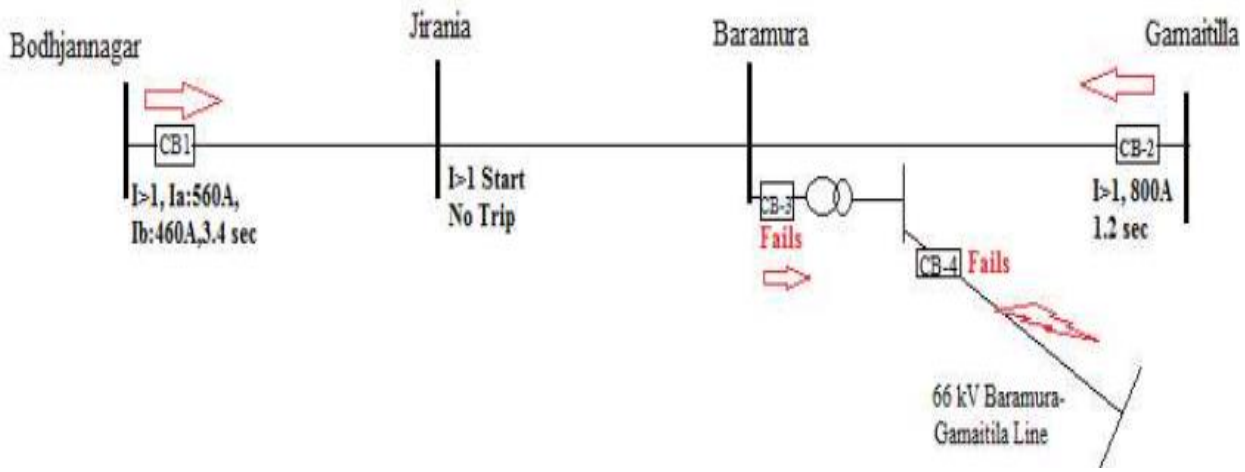
2.The forum also urged AEGCL to ensure carrier aided tripping on the Salakati-Kokrajhar line.

AEGCL may update

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.

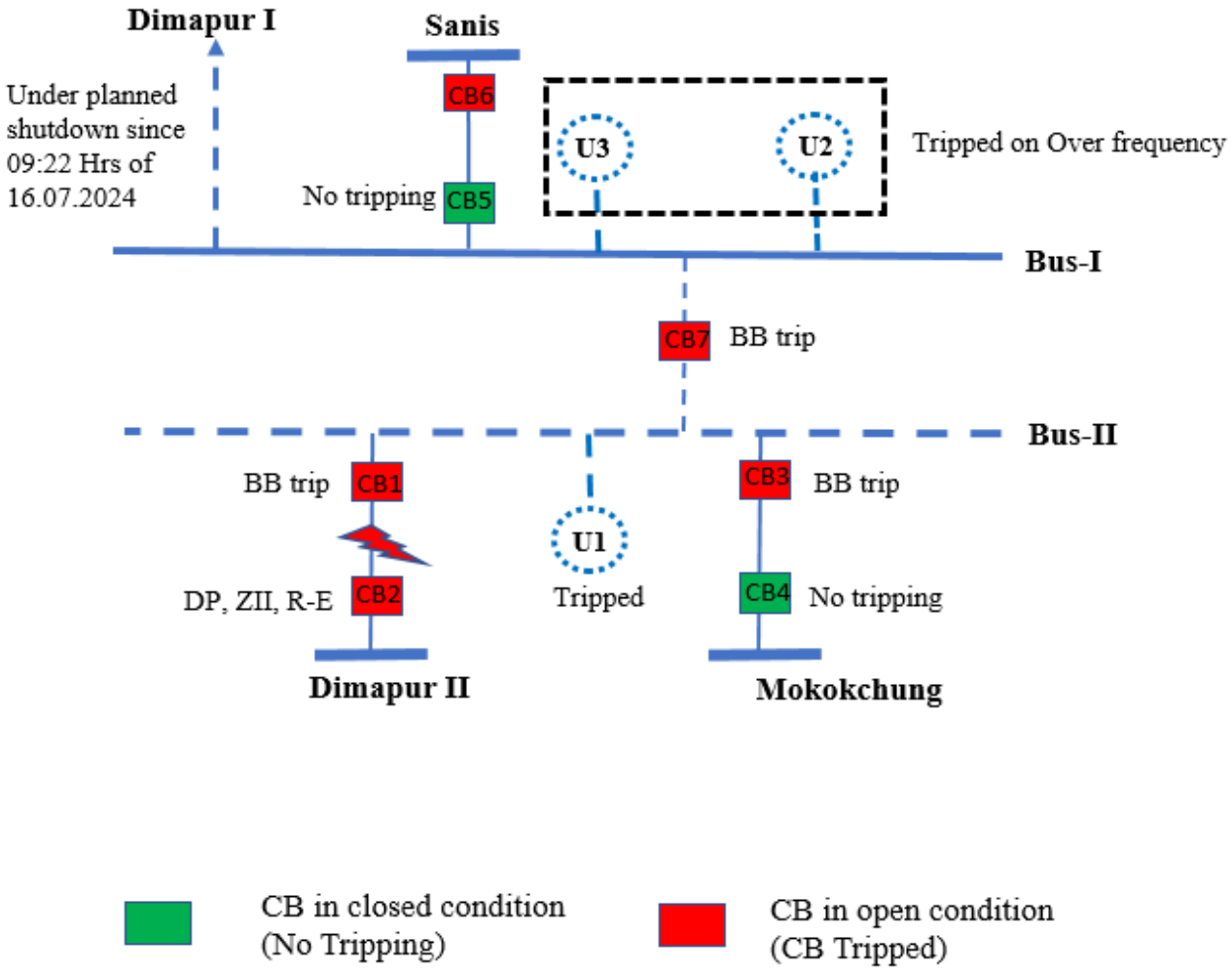
TSECL is requested to update following-

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.

TSECL may update

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.

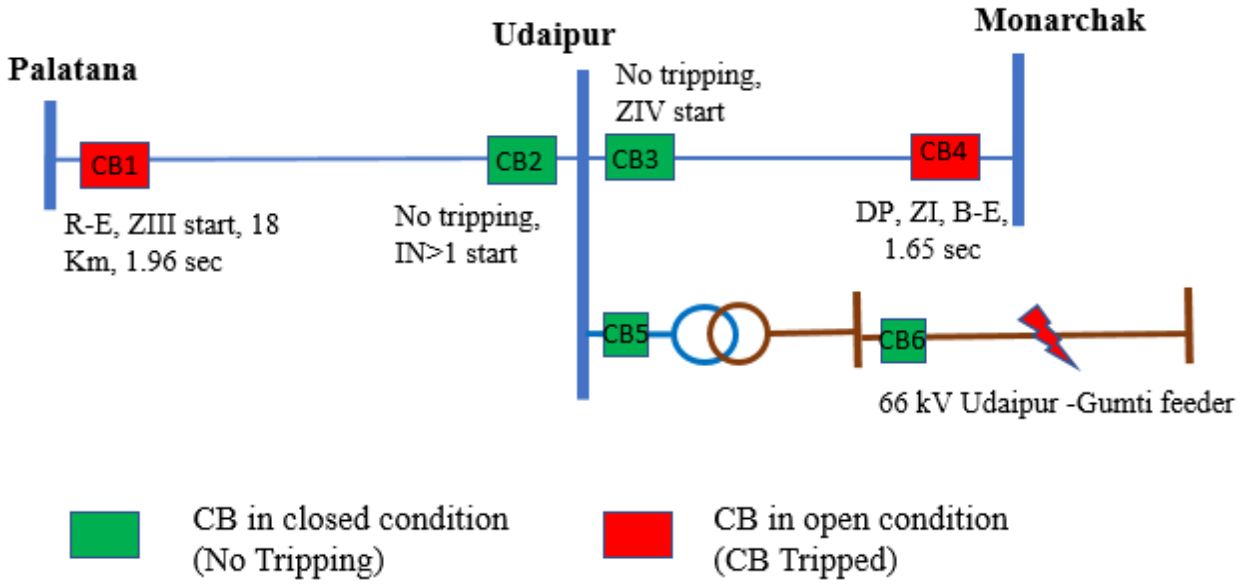
After due deliberation the forum decided to refer the matter to Protection system analysis Group (PSAG) constituted by NERPC vide order NERPC/SE/PCC/2023/3469-3512 dated 17.01.2024

Sub-committee may deliberate

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.

TSECL may update

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.

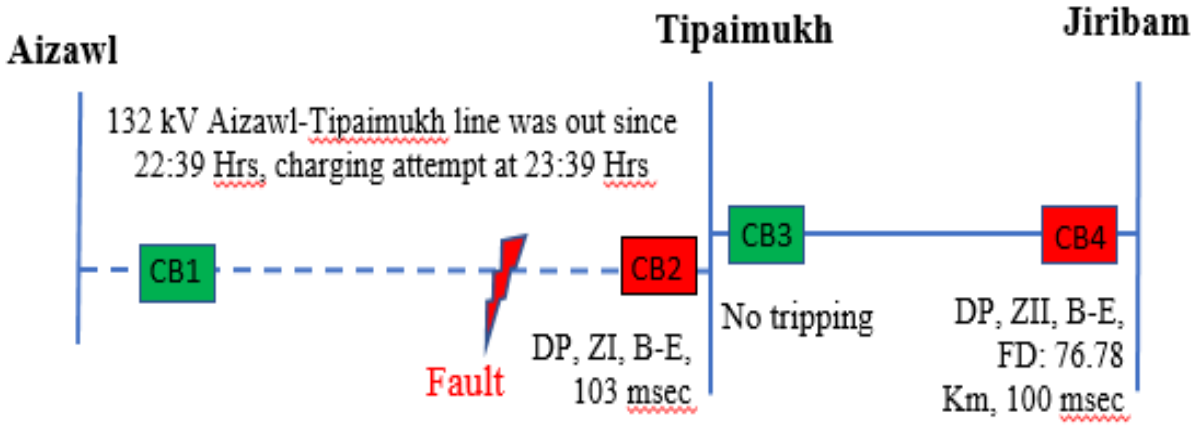
MePGCL informed in 68th PCCM, that a meeting will be held with State protection Committee regarding implementation of Auto recloser in 132 kV Leshka-Khliehriat D/C lines.

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.

MePGCL may further update

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.

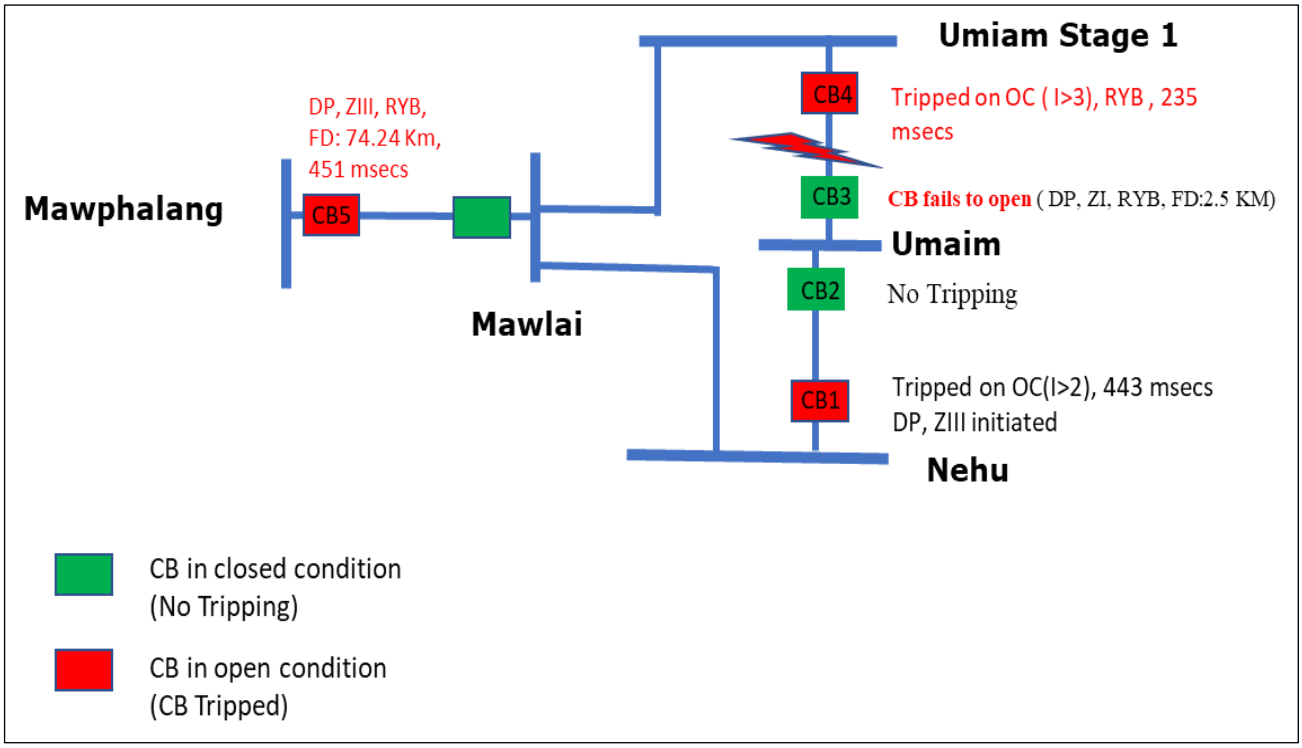
2.Regarding Z1 timing issue and time testing of CB at Tipaimukh SS for Aizawl line, MSPCL updated that they were not able to reach the Tipaimukh substation due to Law and Order situation in the State.

MSPCL may further update

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.

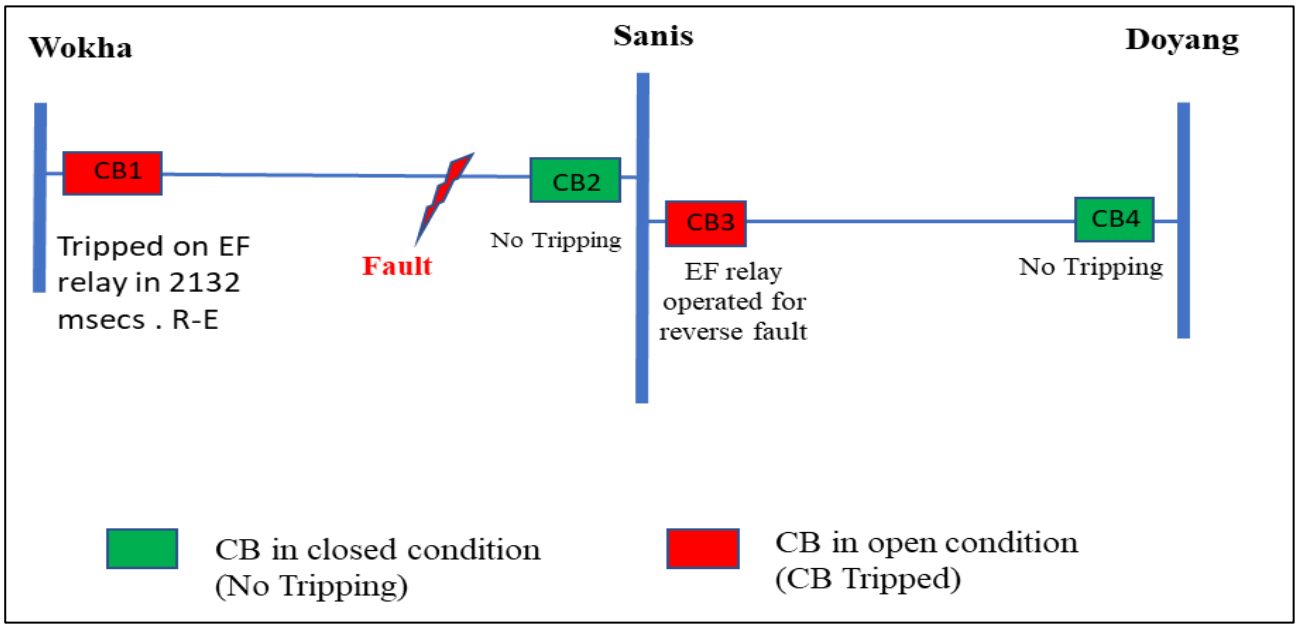
NERPC stated that protection settings of Meghalaya grid are not in line with NER Protection protocol. After detailed deliberation the forum strongly urged MePTCL and MePGCL to revise the settings of Meghalya grid in compliance with the code.

MePTCL may update on compliance with NERPC protection protocol.

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:

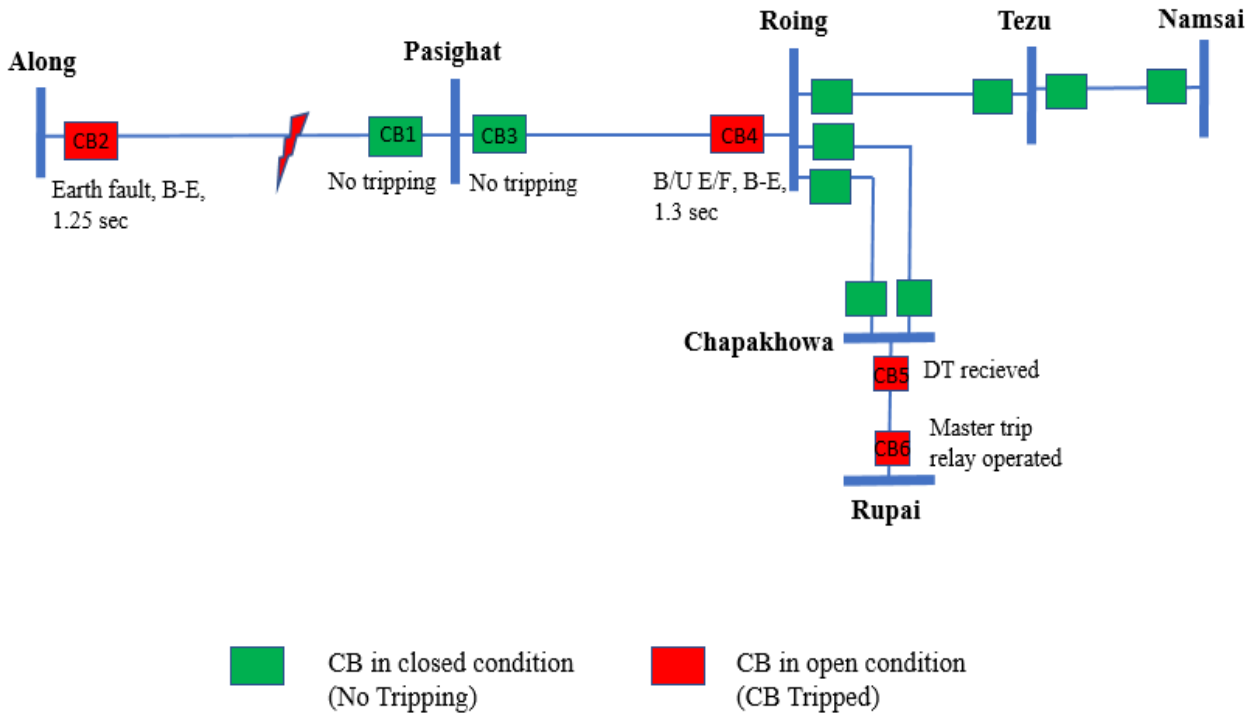
1. Non operation of protection system at Sanis for 132 kV Wokha Line and
2. Mis-operation of B/U at Sanis for 132 kV Doyang Line.

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.

DoP Nagaland may update

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.

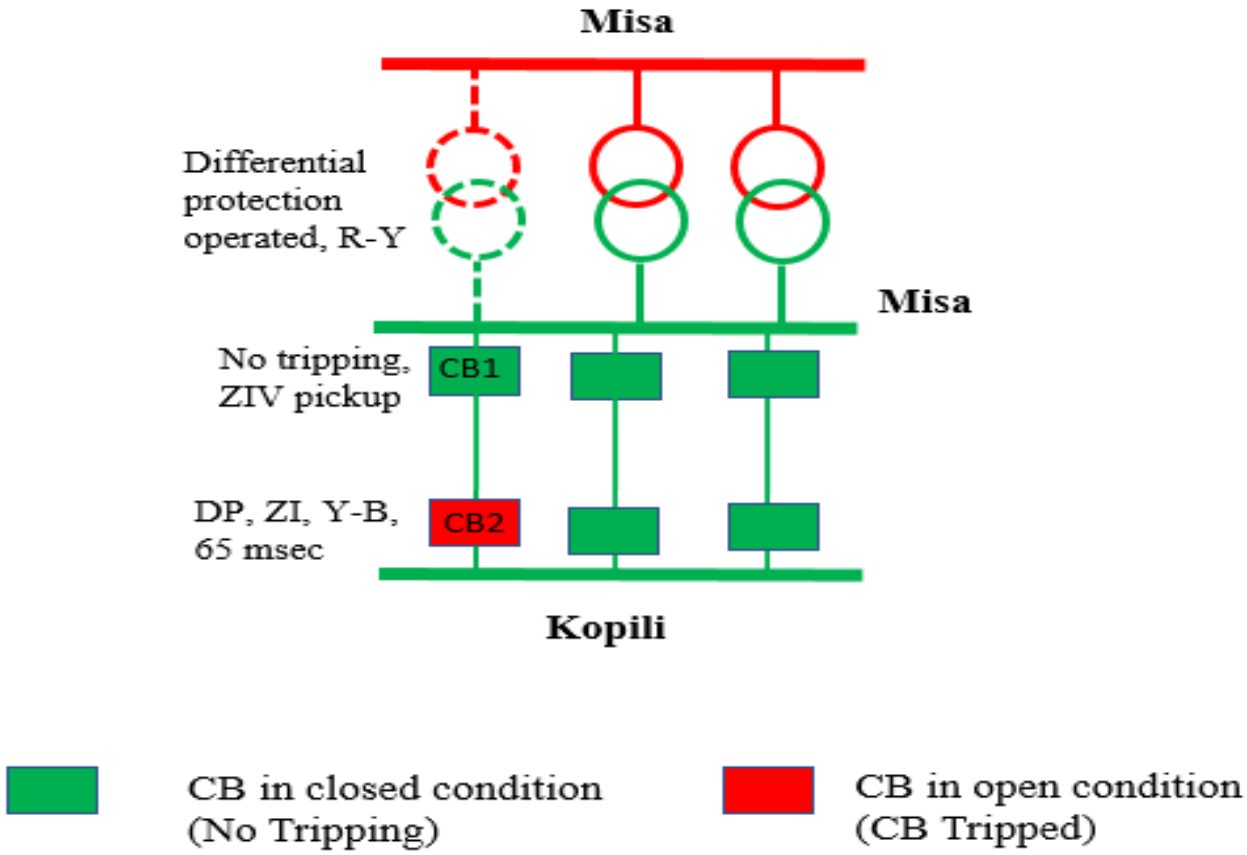
Similar event occurred at 11:21 Hrs. of 03rd July.

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.

AEGCL may update

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.

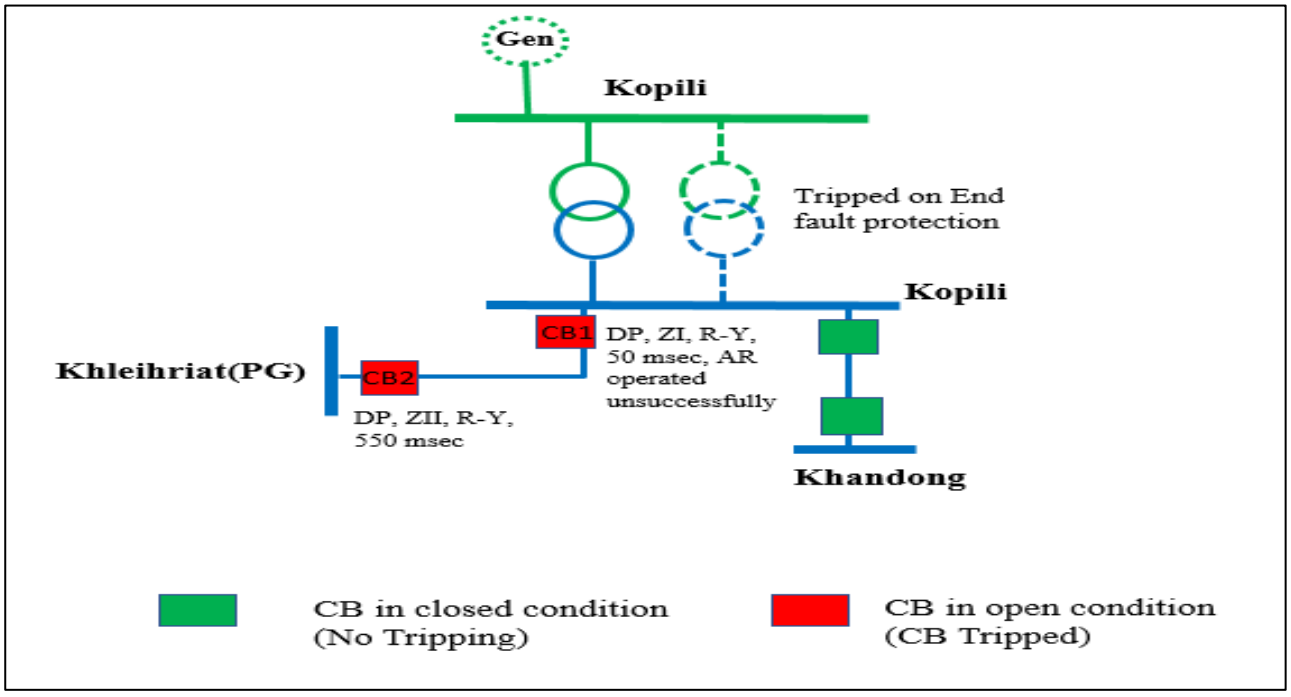
NEEPCO stated that issue of ZI operation from Kopili end will be checked and resolved shortly.

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.

NEEPCO may update

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.

NEEPCO may further update

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 70th PCCM

Sl no	**State**	**Important Transmission lines where AR has to be enabled at the earliest**	**Status (69th/68th PCCM)**	**status as per 70th PCCM**
1.	Arunachal Pradesh	132kV Balipara-Tenga, 132kV Ziro-Daporijo-Along-Pashighat link	PLCC implementation under PSDF underway. SPAR have been enabled on the lines without PLCC 3-Ph AR will be enabled by March'24.	3 Ph AR enabled on the lines
2.	Assam	All 220kV and 132kV lines	For 220kV	Process underway.

			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.	220kV – Completed except for Kathalguri-tinsukia line which will be done within 2 months. 132kV – completed except for Dhemaji and Majuli Substations, to be done within 2 months
3.	Manipur	132kV Imphal-Ningthounkong	DPR preparation underway, to be prepared by March'24	Manipur updated that the AR on the line has been implemented at Ningthounkong end, without carrier, on 4.08.2024. DPR for PLCC under preparation. To be completed shortly.
4.	Meghalaya	**Annexure** (D.1)	August'24. Forum requested Meghalaya	Matter was thoroughly

			to provide monthly work progress report (around 25 number of 132kV line)	discussed in State protection committee. Report of the meeting will be available by Aug'24 end. It was further updated that AR on 132kV Lumshnong-khliehriat line and Lumshnong-Panchgram line, lines have been reconductored recently, AR will be enabled by this month
5.	Tripura	132kV Agartala-S M Nagar (TSECL), 132kV Agartal-Rokhia DC, 132kV, 132kV Agartala-Budhjungnagar	To be done during internal audit.	Aug'24

Utilities may further update

D.2. <u>Installation of line differential protection for short lines:</u>

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 70th PCCM -

Name of utility	**Last updated status (69th/68th PCCM)**	**status as per 70th 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.	Received first installment in last week of July.
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 is being prepared for inclusion in reliable communication scheme. For NEHU-NEighrims line, fiber has to be laid by PowerGrid NERPSIP.
P&ED Mizoram	Lines identified 132kV Khamzawl - Khawiva. DPR being revised.	Mizoram stated that DPR in final stage. Price offer has been received from

	Mizoram requested for assistance in preparation of DPR. Forum requested Assam to provide assistance to Mizoram in this regard.	one vendor and awaited form other vendors. The DPR will be prepared by end of August'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.	NEEPCO updated that GE engineers are on site and work in underway, to be completed in few days.
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. Regarding Rokhia-N.Rokhia link, he updated that the breaker has been received. MS, NERPC suggested to apply under PSDF

Utilities may further update

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

Status as updated in the 70th PCCM:

Sl No	**Details of the events(outage)**	**Remedial action suggested**	**Name of the utility & previous update**	**status as per 70th PCCM**
1.	132 kV Balipara-Tenga line in May and June	Carrier aided inter-tripping to be implemented for	DoP, Arunachal Pradesh.	DoP updated that PSDF funding will be

		132kV Balipara-Tenga-Khupi at the earliest (PLCC has to be installed on the link. Under consideration of the higher authorities)	PLCC panels received.	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 by Hitachi by August end
3.	Leshka-Khleihriat DC multiple tripping in April to September	TLSA installation along the line to be done by MePTCL	MePTCL (DPR submitted, Approval pending.)	DPR returned by PSDF.

4.	132 kV Loktak-Jiribam line, 132 kV Loktak-Imphalline,132 kV Loktak-Ningthoukhong line, 132 kV Loktak-Rengpang line & Loktak 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	To arrive at site shortly, planned to be commissioned by Aug end
5.	Grid Disturbance at Loktak HEP on 03rd Aug'22	NHPC-Loktak informed that LBB has been included under R&U scheme and the same shall be commissioned by Mar'23	NHPC (LBB to be commissioned under R&U project) Renovation would start in Nov.'24 and to be completed by Oct.'25. Forum stressed to take LBB on priority.	R & M work to start in Nov'24
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	Card arrived in India, will reach at site shortly.
7.	Non-operation of AR for various lines at Byrnihaat end on 25th and 26th June'23	Rectification of PLCC issues by MePTCL	MePTCL Visit of OEM next week. To be	OEM visited, PLCC

		Consultation with OEM underway for resolution	completed by May'24	defective, will procure soon
8.	Tripping of 132kV Kahilipara- Sarusajai 1, 2 and 3 line, 132kV Kahilipara Main bus 1, 132kV Kahilipara transfer Bus 1 and 132kV Kahilipara-Kamalpur line on 2.08.2021	BB protection to be implemented at Kahilipara with procurement of 5 core CTs	AEGCL DPR is under preparation for PSDF. CT under procurement, to be completed by end of this year	New Byas have to be integrated to BB relay, so 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	Panel commissioned in June 2024.
10.	Non-operation of AR at Doyang HEP	Pneumatic CBs to be replaced	NEEPCO- August 2024	March'25
11.	Generation evacuation issue at Leshka due to tripping of any line of 132kV Leshka-Khliehriat DC line	SPS to be implemented	MePGCL to implement the SPS by May'24	Done
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

13	Multiple tripping of 132 kV Panchgram-Lumshnonong line in April'24 has been observed due to delayed clearance of downstream fault in Lumshnong	B/U protection settings coordination for the 132kV downstream industrial feeders has to be done	MePTCL To be done shortly	Refer to agenda item C.6
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)	
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)	

	At 14:56 Hrs of 17-07-2024, 132 kV NEHU-NEIGRIHMS line & 132 kV Khleihriat-NEIGRIHMS line tripped leading to blackout of NEIGRIHMS area.	Neigrihms end for NEHU line Relay to be replaced shortly	MePTCL	

Utilities may further update

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