सत्यमेव जयते

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/2023/ 3683-3724 February 7, 2024

To
As per list attached

Sub: Minutes of 63rd Protection Coordination Sub-Committee (PCC) Meeting

Sir/Madam,

Please find enclosed herewith the minutes of the 63rd PCC Meeting held at "Hotel Royale De'Casa", Guwahati on 18th January 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,

(एस. एम. आइमोल / S. M. Aimol)
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. Head, Transmission, KMTL, 7th Floor, Fulcrum, Sahar Road, Andheri (E), Mumbai-400099
42. Director, NETC, 2C, 3rdFloor, D21Corporate Park, DMRC Building Sector 21, Dwarka, Delhi-77.

(एस. एम. आइमोल / S. M. Aimol)
निदेशक / Director

Minutes of

63rd Protection Coordination Sub-Committee Meeting

Date: 18/01/2024 (Thursday)

Time: 11:30 hrs

Venue: Hotel Royale De'Casa, Guwahati

Member Secretary welcomed all the participants. He informed that as per tentative annual calendar of 3rd Party Protection audit for NER, the third-party protection audit of substations of Assam will be carried out by NERPC between 30th and 31st Januray'24 and similar audits for other states will be taken up after that. Further, he stated that NER protection protocol has been finalized by NERPC and the same has been circulated and uploaded on the website of NERPC. He requested all the constituents to take measures to comply with protocol. Finally, he exhorted the utilities to take necessary steps to minimize the tripping of their transmission and generation elements to ensure secure and reliable operation of the grid.

He then requested Director NERPC to take up the agenda items.

List of Participants is attached at **Annexure-I.**

A. CONFIRMATION OF MINUTES

1. CONFIRMATION OF MINUTES OF THE 62nd PROTECTION SUB-COMMITTEE MEETING OF NERPC.

Minutes of the 62nd PCC Meeting held on 20th December, 2023 (Wednesday) at NERPC conference hall, Shillong was circulated vide No.: NERPC/SE (O)/PCC/2023/ 3356-3397 dated 9th January, 2024.

No comment(s)/observation(s) were received from the constituents.

The Sub-committee confirmed the minutes of 62nd PCCM of NERPC

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

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. NERLDC to submit a list of all 132 kV and above substations of the States to 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.

AEGCL requested for a uniform guideline for maintenance of bay elements. Member Secretary requested POWERGRID to share their maintenance guideline with the states so that Assam and other utilities may adopt it after customizing to suit local requirement.

In 62nd PCCM following points were discussed -

1. Audit of substations of Assam (Sarusajai, Kahilpara, BTPS) will be carried out tentatively from 29th to 31st January 2024.
2. Three different groups each of four members will conduct the above audit. The members would be as follows:

Group Members: NERPC, NERLDC, PGCIL & Nagaland/MeECL.

Forum requested all above utilities to nominate suitable officers for the audit and mail to NERPC by 12th January'24.

Status of compliance of IEGC 2023 –

List of utilities that have submitted the audit plan for FY 2024-25 –

1. DoP Arunachal Pradesh
2. Indigrid
3. NEEPCO
4. Sterlite

NERLDC stated that a google sheet format for declaration of Internal/3rd party audit plan for FY24-25 has been prepared for submission of details of Audit plan. Forum requested NERLDC to circulate the format once again to all utilities. Forum

requested all remaining utilities to submit Audit plan for FY 2024-25 in the format as prepared by NERLDC.

Deliberation of the sub-committee

1. Audit of substations of Assam (Sarusajai, Kahilpara, BTPS) will be carried out from 29th to 31st January 2024.
2. Two different groups, each of four/five members will conduct the above audit. Group Members: NERPC, NERLDC, PGCIL & Nagaland/MeECL.
3. Boarding & Lodging arrangement at Bongaigaon and Guwahati would be provided by NTPC Limited and AEGCL respectively and local transport will be provided by Assam for both the teams.

Status of compliance of IEGC 2023 –

List of utilities that have submitted the audit plan for FY 2024-25

1. DoP Arunachal Pradesh
2. Indigrid
3. NEEPCO
4. Sterlite
5. Powergrid

MePTCL submitted a list of substations for third party protection audit. NERPC stated that protection audit at some substations of MePTCL may conducted by NERPC team.

NERLDC stated that a google spreadsheet format for declaration of Internal/3rd party audit plan for FY24-25 has been prepared for submission of details of Audit plan. Forum requested all remaining utilities to submit Audit plan for FY 2024-25 in the format as prepared by NERLDC.

B.2 Submission of Protection performance indices by utilities

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
	1.Dependibility index (D)	All users (132kV and above)	Shall submit the indices for previous month to RPC and RLDC	Monthly (by 10th of Next month)

Performance indices **	2.Security index (S) 3.Reliability index (R	All users	Shall submit he reason for indices less than unity (element wise) and action plan for corrective measures	Not specified
		RPC	Action plan to be regularly followed up in RPC	

**definition of indices

(a) The Dependability Index defined as $D = \frac{Nc}{Nc+Nf}$

where,

N_c is the number of correct operations at internal power system faults and

N_f is the number of failures to operate at internal power system faults.

(b) The Security Index defined as $S = \frac{Nc}{Nc+Nu}$

Where,

N_c is the number of correct operations at internal power system faults

N_u is the number of unwanted operations.

(c) The Reliability Index defined as $R = \frac{Nc}{Nc+Ni}$

Where,

N_c is the number of correct operations at internal power system faults

N_i is the number of incorrect operations and is the sum of N_f and N_u

In 60th PCCM it was decided that all users have to submit Performance indices (Dependability-D, Security-S, Reliability-R) to NERPC & NERLDC by 10th of every month for previous month indices. Users also have to submit reason for indices being less than unity and corrective action plan. Action plan will be regularly followed up in PCCM.

In 61st PCCM, regarding submission of the report on performance indices, ISTS, ISGS and state utilities assured that they will start sending the report December'23 onwards. Member secretary NERPC stated that if clarification is required on any index, utilities may communicate with NERLDC and NERPC

In 62nd PCCM, forum noted that POWERGRID, Assam & NETC have submitted the Performance Indices. Forum requested all other constituents to submit the indices on timely basis i.e. by 10th of every month.

Deliberation of the sub-committee

List of utilities that have submitted the indices for the previous month:

1. Nagaland
2. Powergrid
3. Assam
4. NETC
5. NTL
6. Meghalaya

Forum directed other utilities to provide the indices before 10th of every month for previous month grid element operation.

B.3 Analysis and Discussion on Grid Disturbances which occurred in NER grid in December'23 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 December 2023 based on the draft reports prepared by NERLDC

Deliberation of the sub-committee

The forum deliberated the GD/GI/Near miss events that occurred in December 2023 and proposed the recommended actions, which are provided below –

Sl. No	GD/GI/Near miss events	Elements tripped	Actions recommended in the meeting
1.	GD at Lakwa (06.12.2023)	All the lines connected with LTPS substation	1. As the useful life of the station is completed, APGCL may consider for R&M of the same. 2. As the installed capacity of LTPS (along with LRPP) is currently at 150 MW, it is advisable to consider upgrading the existing bus Main & Transfer scheme to a Double Main Cum Transfer scheme. This enhancement is essential for ensuring reliability and preventing generation outage in the event of a bus fault 3. 132 kV LTPS-Nazira II lines tripped within 120 msec on Z-II. Z-II times delay and zone reach setting needs to be checked by AEGCL.
2.	GD at Umiam stg II (09.12.2023)	132 kV Umiam Stage 1 – Umiam Stage 2 line	1. Directionality in EF protection for Umiam stg 2 line at Umiam stg 1 has to be ensured at the earliest 2. Non operation of distance protection at stg 3 for stg 4 line 2 has to be looked into. 3. Time settings for Z 3 at Umiam stg 1 for stg 3 line has to be changed to 800 msec. 4. Forum asked MePTCL to rectify relay coordination issue immediately as per NER protection

			philosophy and submit relay setting to NERPC and NERLDC along with detail report indication corrective action that has been undertaken.
3.	GD at Kohima (11.12.2023)	132 kV Dimapur (PG)-Kohima & 132 kV Kohima-Karong lines	1. Tripping of 132 kV Karong - Kohima line on Backup protection from Kohima end in 91 msec seems unwanted. DoP, Nagaland to ensure directionality of backup relay to avoid re occurrence. Forum asked DoP, Nagaland to share the findings of directionality issue of backup relay. 2. B/U O/C to be coordinated with ZII & E/F setting needs to be coordinated with ZIII time delay of distance protection (i.e. main protection) at Kohima end as per NERPC protection philosophy.
4.	Near Miss incident at Kopili (13.12.2023)	All the elements connected to Bus-II at Kopili	1. Issue with the software logic of LBB and Bus-Bar protection. NERLDC highlighted the long outage of bus bar protection at Kopili. NEEPCO asked to rectify the problem at the earliest. 2. NEEPCO informed that they have applied for shutdown of Kopili S/S on 20.01.2024 for checking and rectification of the same. Forum requested NEEPCO to submit the detail report indicating corrective

			action that has been taken after SD.
5.	GD at Kopili (14.12.2023)	All the elements connected to Bus-I and II at Kopili	1. Issue with the software logic of LBB and Bus-Bar protection. NERLDC highlighted the long outage of bus bar protection at Kopili and NEEPCO asked to rectify the problem at the earliest. 2. NEEPCO informed that they have applied for shutdown of Kopili S/S on 20.01.2024 for checking and rectification of the same. Forum requested NEEPCO to submit the detail report indicating corrective action that has been taken after SD

Member Secretary NERPC urged the concerned utilities to comply with the recommended actions at the earliest to avoid repetitive tripping's.

Agenda items from NERLDC

B.4 Status of submission of FIR and DR & EL outputs for the Grid Events for the month of December'2023

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 01-12-2023 to 31-12-2023 is given below:

Name of Utility	Total FIR/ DR/EL to be submitted	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	13	13	13	11	0	0	1	100	100	92
AEGCL	16	0	2	1	15	7	6	0	22	33
APGCL	2	0	0	0	2	2	2	0	0	0
MSPCL	1	1	1	1	0	0	0	100	100	100
MePTCL	1	0	1	1	1	0	0	0	100	100
MePGCL	12	2	6	5	10	0	2	17	100	71
P&ED, Mizoram	1	0	0	0	1	1	1	0	0	0
DoP, Nagaland	4	3	3	3	1	0	0	75	100	100
TSECL	4	2	4	4	2	0	0	50	100	100
POWERGRID	22	22	21	19	0	0	2	100	100	91
NEEPCO	12	9	9	8	3	2	3	75	82	73
NHPC	1	0	1	1	1	0	0	0	100	100
IndiGrid	1	1	1	1	0	0	0	100	100	100
KMTL	2	2	2	2	0	0	0	100	100	100

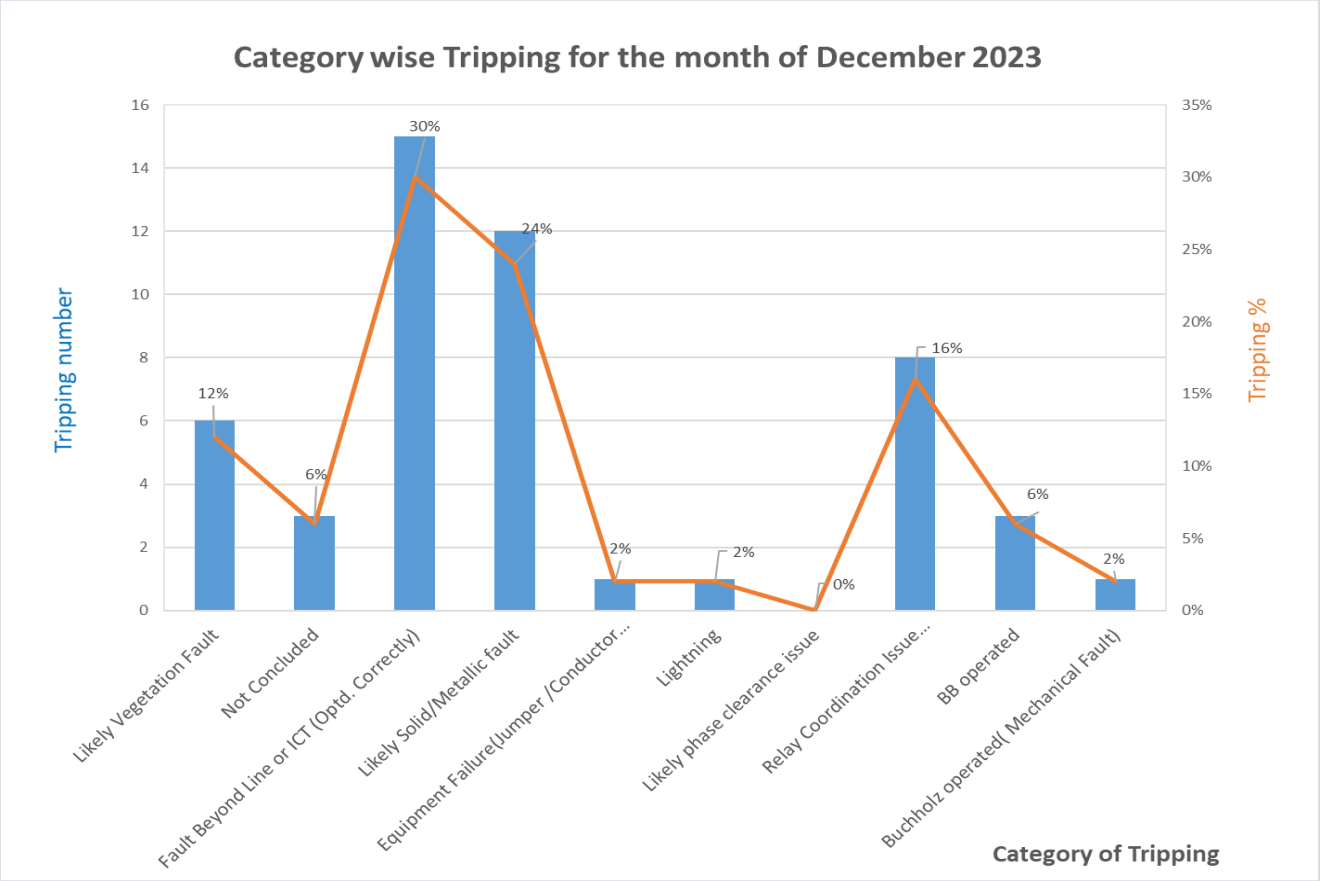
Concerned Utilities are requested to upload Disturbance Recorder (DR), Event Logger (EL) outputs for grid events along with a First Information Report (FIR) in Tripping Monitoring Portal (https://tripping.nerldc.in/Default.aspx) for analysis purpose. In light of the cybersecurity measures implemented 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

Member Secretary stated that each entity should send the DR, EL, FIR in standard format without any delay. Forum appreciated the utilities having 100 % DR and EL submission.

B.5 Category wise Tripping for the month of December 2023:

There were a total of 50 numbers of Line & ICT tripping during the month of December'23. A plot showing number of tripping and tripping percentage in each category such as Likely Vegetation, Solid/metallic fault and fault beyond the line etc. is shown below. It is observed that for around 6% of tripping, root cause could not be concluded due to non-submission or submission of improper DR/EL.



List of tripping due to Vegetation fault during December, 2023

Sl. No.	Element Name	Owner	Tripping Date & Time	Patrolling Report
1	400 kV Misa-Silchar I	NTL	06-12-2023 15:28	Not submitted
2	132 kV Along-Pasighat	DoP, Arunachal Pradesh	13-12-2023 22:29	Not submitted
3	400 kV New Kohima-New Mariani I	KMTL	18-12-2023 23:09	Not submitted
4	400 kV New Kohima-New Mariani I	KMTL	19-12-2023 11:56	Not submitted
5	132 kV Dharmanagar - P K Bari Line	TSECL	28-12-2023 03:46	Not submitted
6	132 kV Along-Pasighat	DoP, Arunachal Pradesh	31-12-2023 06:14	Not submitted

The patrolling report of POWERGRID for the month of November, 2023 is attached in **Annexure 1**.

Deliberation of the sub-committee

Forum suggested to the concern utilities for reduction in the tripping due to Solid/Metallic Fault by improving clearances and minimizing insulator creeping.

To reduce tripping due to relay coordination issue, forum requested all the utilities to update the relay settings in PDMS portal and also stated that any changes in relay setting will require prior approval of NERPC as mandated in IEGC 2023.

Forum requested DoP, Arunachal Pradesh to furnish the patrolling report regularly.

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

As per IEGC-2023, all User/SLDCs are requested to prepare and share **Flash Report** and **Detailed Report** with NERLDC and NERPC following any Grid Events.

Status of submission of the same for the month of December'23 is shown below:

Sl. No.	GD/GI/Near Miss	Affected Areas	Date & Time	Flash/Detailed report to be submitted by User/SLDC	Flash Report By User { IEGC section 37.2 (b)}	Detailed report by User within 7 Days { IEGC section 37.2 (e)}	Detailed Report submitted By NERLDC	Root Cause	Non Compliance observed
1	GD-I	Grid Disturbance at Lakwa	14:19 Hrs on 06-12-2023	Assam	Yes	No	29-12-2023	Bursting and catching of fire at compressor transformer of LTPS	**IEGC section 37.2 (e)- Detailed Report By User** **IEGC section 37.2 (c) & CEA grid Standard 15.3- DR/EL provided within 24 Hours?**
2	GD-I	Grid Disturbance at Umiam Stg-II	12:12 Hrs on 09-12-2023	Meghalaya	No	No (submitted on 28-12-2023)	29-12-2023	Suspected fault in the 132 kV Umiam 3-Umiam 4 Line-2. Multiple tripping occurred due to relay coordination issue	**IEGC section 37.2 (b)- Flash Report By User** **IEGC section 37.2 (e)- Detailed Report By User** **IEGC section 37.2 (c) and CEA grid Standard 15.3-DR/EL provided within 24 Hours?** **Umiam Stg-1, 3, 4- IEGC Section 17.3 - Time Synchronization issue**
3	GD-I	Grid Disturbance at Kohima	09:52 Hrs of 11-12-2023	Nagaland	Yes	Yes	26-12-2023	B-phase conductor of 132kV Dimapur (PG)-Kohima snapped at Lalmati area (Tower no. 88)	**MSPCL:** CEA grid Standard 15.3-DR/EL provided within 24 Hours?
4	NM	Near Miss at Kopili	16:58 Hrs of 13-12-2023	NEEPCO	No	No	29-12-2023	CB pole of Kopili Unit-III got stuck due to which bus bar protection got initiated leading to near miss incident at Kopili S/S	**IEGC section 37.2 (b)- Flash Report By User** **IEGC section 37.2 (e)- Detailed Report By User** **NEEPCO: IEGC section 37.2 (c) and CEA grid Standard 15.3-DR/EL provided within 24 Hours?**
5	GD-I	Grid Disturbance at Kopili	16:31 Hrs of 14-12-2023	NEEPCO	No	No (submited on 23-12-2023)	28-12-2023	CB pole of Kopili Unit-III got stuck due to which LBB got initiated leading to blackout of Kopili S/S	**IEGC section 37.2 (b)- Flash Report By User** **IEGC section 37.2 (e)- Detailed Report By User** **NEEPCO: IEGC section 37.2 (c) and CEA grid Standard 15.3-DR/EL provided within 24 Hours?**

Deliberation of the sub-committee

MS, NERPC directed all the utilities to avoid non-compliance of IEGC and send DR/EL reports on time for timely analysis of Grid events.

Sub-committee noted as above.

B.7 Non-operation of auto recloser in Important Grid Elements for transient faults in December 2023:

Sl No	Element Name	Time	Relay End1	Relay End2	A/R not Operated	Remarks from Utility
1	220 kV Dimapur(PG) -Misa-2 Line	12-12-2023 11:08	DP,ZI,B-E,FD:28.5 KM	DP,ZI,B-E,FD:83.40 KM	Both ends	
2	220 kV AGBPP-Mariani(PG) Line	12-12-2023 12:29	DP,ZI,B-E,FD: 44.9 Km, NO DR submitted	DP,ZI,B-E,FD: 110.9 KM, A/R successful	AGBPP	
3	400 kV Byrnihat-Silchar Line	13-12-2023 17:14	DP,ZI,Y-E,FD:36.4 KM, A/R Unsuccessful	DP,ZII,Y-E,FD:165 KM, Carrier aided	Silchar	
4	400 kV New Kohima - New Mariani 1 Line	18-12-2023 23:09	DP,ZI,B-E, FD: 1.18 KM, A/R successful	DP,ZII,B-E, FD: 86 kms, Carrier aided tripping	New Mariani	
5	132 kV Along-Pasighat Line	24-12-2023 03:07	DP, ZI, R-E	DP, ZI, R-E	Both ends	

6	132 kV Along-Pasighat Line	31-12-2023 06:14	DP,ZI,R-E,FD:48.01 KM	DP,ZI,R-E,FD:20.43 KM	Both ends	

Deliberation of the sub-committee

Sl No	Element Name	Time	Relay End1	Relay End2	A/R not Operated	Remarks from Utility
1	220 kV Dimapur(PG) -Misa-2 Line	12-12-2023 11:08	DP,ZI,B-E,FD:28.5 KM	DP,ZI,B-E,FD:83.40 KM	Both ends	OPGW work is going on so AR kept in non-auto mode
2	220 kV AGBPP-Mariani(PG) Line	12-12-2023 12:29	DP,ZI,B-E,FD: 44.9 Km, NO DR submitted	DP,ZI,B-E,FD: 110.9 KM, A/R successful	AGBPP	NEEPCO need to check the AR issue and submit DR/EL.
3	400 kV Byrnihat-Silchar Line	13-12-2023 17:14	DP, ZI, Y-E, FD:36.4 KM, A/R Unsuccessful	DP, ZII,Y-E,FD:165 KM, Carrier aided	Silchar	Breaker status issue in BCU. Now resolved
4	400 kV New Kohima - New Mariani 1 Line	18-12-2023 23:09	DP, ZI, B-E, FD: 1.18 KM, A/R successful	DP, ZII, B-E, FD: 86 kms, Carrier aided tripping	New Mariani	NERTS informed high resistive fault had occurred, Main-1 relay was pickup on Z-II at New Mariani and carrier

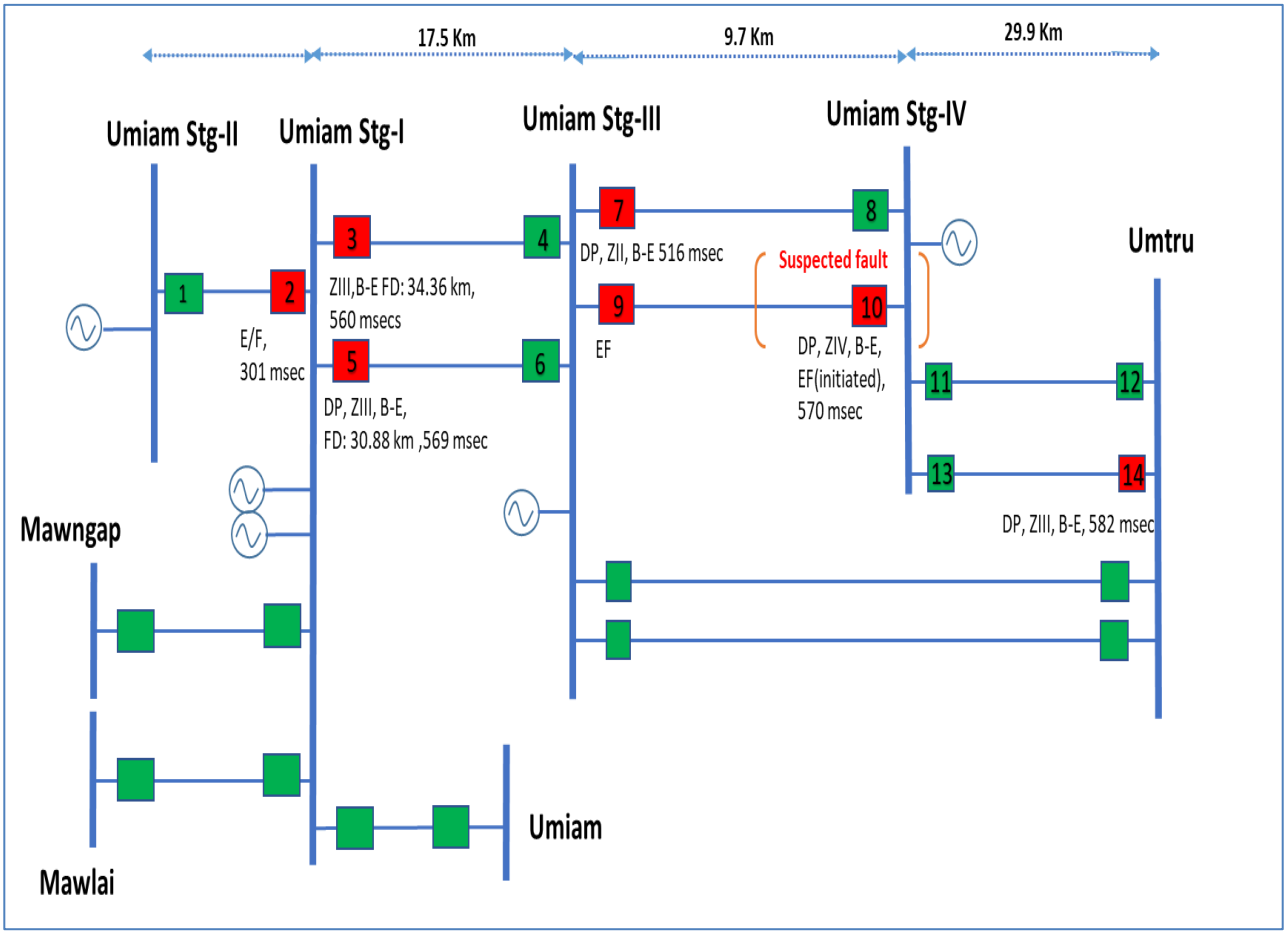
						received at New Mariani end in Main-II relay, however Main-II relay did not pick up, so carrier aided tripping did not occur. NERTS also opined that Carrier aided Directional EF should be enabled on important lines of NER (220kV and above) for fast clearance of high resistive earth faults, as fault level is generally low in NER. The forum agreed with the suggestion.
5	132 kV Along-Pasighat Line	24-12-2023 03:07	DP, ZI, R-E	DP, ZI, R-E	Both ends	Along AR not ready due to issue with CB spring

						charging motor. Pashighat - CB ready status not coming in CRP/BCU
6	132 kV Along-Pasighat Line	31-12-2023 06:14	DP,ZI,R-E,FD:48.01 KM	DP,ZI,R-E,FD:20.43 KM	Both ends	Same as point no. 5

Sub-committee noted as above

B.8 <u>Blackout of 132 kV Umiam Stg-II on 09th Dec 2023:</u>

At 12:12 Hrs of 09-Dec-2023, the following element tripped as shown below resulting in blackout of 132 kV Umiam Stg-II:-



As per DR analysis, 132 kV Umiam Stage 1- Umiam Stage 3 Line 1 & 2 tripped from Umiam Stage 1 end in 560 msecs & 570 msecs respectively on operation of DP, ZIII indicates that fault is beyond the line.

Tripping of 132 kV Umiam Stage 3- Umiam Stage 4 Line 1 on DP, ZII from Stage 3 end and no tripping from Stage 4 end indicates the fault is not in the line. Suspected fault in 132 kV Umiam Stage 3- Umiam Stage 4 Line 2 and tripping of multiple elements occurred due to relay coordination Issues.

Following protection issues were observed:

- Tripping on DP, ZIII in 560-580 msecs indicates less time delay setting incorporated at Umiam Stage 3.
- Tripping 132 kV Umiam Stage 1 – Umiam Stage 2 on Earth Fault from Stage 2 end indicates directionality issue in the backup relay.
- Tripping of Umiam I Unit-3 & 4 and Umtru Unit-1 seems unwanted.

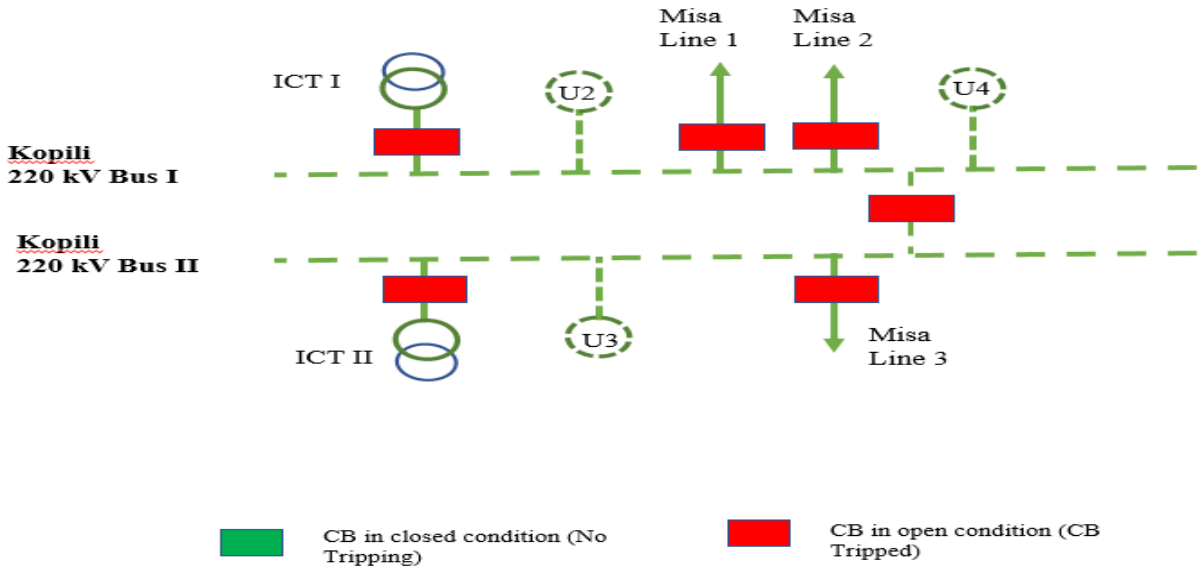
Meghalaya is requested to share the root cause of these tripping and remedial measures taken.

Deliberation of the sub-committee

After detail discussion, the following were recommended:

1. Directionality in EF protection for Umiam stg 2 line at Umiam stg 1 has to be ensured at the earliest. Highs set EF protection to be disabled.
2. Non operation of distance protection at stg 3 for stg 4-line 2 has to be looked into.
3. Time settings for Z 3 at Umiam stg 1 for stg 3 line has to be changed to 800 msec.

B.9 Frequent Operation of Bus Bar Protection at Kopili Hydro Power Station:



Several instances of Bus Bar protection operation at Kopili were observed during the period of December'23 to January'24.

Sl. No	Event Date & Time	Element Tripped	Gen Loss (MW)	Remarks
1	13-12-2023 16:58	220 kV Misa-Kopili 1 & 2, ICT-2, Unit-4 and Bus Coupler	50	Blackout of 220 kV Bus-2
2	14-12-2023 16:31	220 kV Misa-Kopili 1,2 & 3, ICT-1 & 2, Unit-2 and Bus Coupler	50	Blackout of 220 kV Bus-1 & 2
3	02-01-2024 16:59	220 kV Misa-Kopili 2, ICT-1, Unit-2,3,4 and Bus Coupler	115	Blackout of 220 kV Bus-1
4	02-01-2024 17:50	220 kV Misa-Kopili 2, ICT-1, Unit-2,3,4 and Bus Coupler	110	Blackout of 220 kV Bus-1
5	05-01-2024 17:05	220 kV Misa-Kopili 2, ICT-1, Unit-2,3 and Bus Coupler	95	Blackout of 220 kV Bus-1
6	08-01-2024 18:03	220 kV Misa-Kopili 2, ICT-1, Unit-2,3 and Bus Coupler	100	Blackout of 220 kV Bus-1

Operation of Bus Bar protection seems to be mal-operation as there is no fault in the system. NEEPCO informed that there was problem in Y-phase CB pole of Kopili Unit-3 which was replaced on 20.12.2023. However, similar event occurred repeatedly for four times between 02.01.2024 to 08.01.2024, indicating that the root cause behind the Bus Bar operation problem at Kopili Power Station remains unresolved.

NEEPCO is requested to share the root cause behind Bus Bar operation at Kopili and rectify the issue at the earliest, as long outage of B/B protection is not advisable, ensuring secured and integrated grid operation of the NER Grid.

Deliberation of the sub-committee

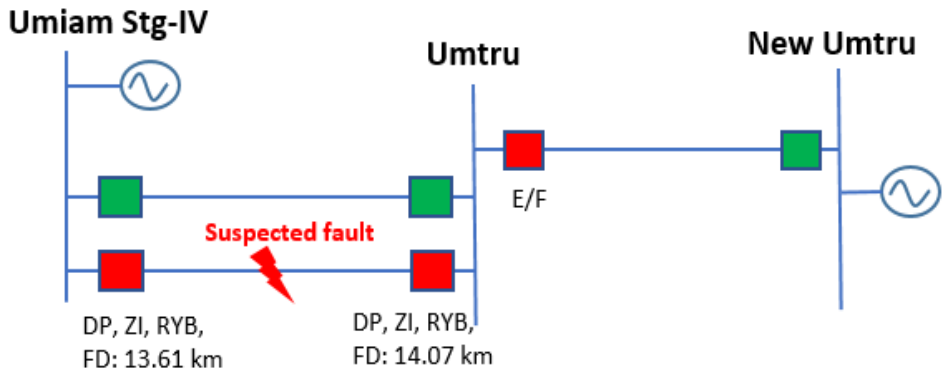
Forum noted that there is problem with the LBB and Bus-Bar protection. NERLDC highlighted the long outage of bus bar protection at Kopili and requested NEEPCO to rectify the problem at the earliest.

NEEPCO stated that some software issue was detected in the relay. The problem is being attended to and the same will be resolved soon. NEEPCO further informed that they have applied for shutdown of Kopili S/S on 20.01.2024 for checking and rectification of the same.

Forum requested NEEPCO to submit the detail report indicating corrective action that has been taken after SD.

B.10 Tripping of 132 kV Umtru-New Umtru & 132 kV Umtru-Umiam Stg-4 Line 2 on 10th Jan, 2024:

At 05:12 Hrs of 10-Jan-2024, the following element tripped as shown below:-



Suspected fault in 132 kV Umtru-Umiam Stg-IV Line-2 at a distance of 14 Km from Umtru end. Tripping of 132 kV Umtru-New Umtru line from Umtru end on Earth Fault seems unwanted and directionality of relay needs to be checked.

No DR & EL file received for the mentioned tripping which is violation of IEGC section 37.2 (c)

Meghalaya is requested to share the root cause of these tripping and remedial measures taken.

Deliberation of the sub-committee

Forum requested MePTCL/MePGCL to provide the root cause of fault in the Umtru-Umiam stg IV line.

Forum advised MePTCL/MePGCL to set directionality (forward directional) in the EF relay at Umtru for New Umtru feeder, and disable any High set EF and OC protection in line with NER protection philosophy.

B.11 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:

- The Dependability Index defined as $D = Nc/\ Nc+Nf$
- The Security Index defined as $S = Nc\ /Nc+Nu$
- The Reliability Index defined as $R = Nc\ Nc+Ni$

Where,

Nc: number of correct operations at internal power system faults

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

Nu: Number of unwanted operations.

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

NETC & NTL submitted the Protection Performance Indices for the month of December, 2023 as follows:

Sl. No.	Name of Transmission Licencee	D= (Nc/Nc+Nf)	S= (Nc/Nc+Nu)	R= (Nc/Nc+Ni)
1	NETC	1	1	1
2	NER-II Transmission Limited (NTL)	1	1	1

It has been observed that Protection Performance Indices are not being submitted by all the users. Therefore, all Users are requested to furnish performance indices (Dependability-D, Security-S, Reliability-R) with regards to the tripping of elements to NERPC & NERLDC positively by 10th of every month for previous month indices.

Deliberation of the sub-committee

Already discussed at item B.2

B.12 System Protection Scheme (SPS) Document of North Eastern Region:

A document on System Protection Schemes of North Eastern Region is prepared by NERLDC which comprises of details of all the SPS available in NER.

Regulatory Requirements

As per clause 29(14) under System Security of the IEGC-2023,

NLDC, RLDCs, SLDCs, CTU, STUs or users may identify the requirement of System Protection Schemes (SPS) (including inter-tripping and run-back) in the power system to operate the transmission system within operating limits and to protect against situations such as voltage collapse, cascade tripping and tripping of important corridors/flow-gates. Any such SPS at the intra-regional level shall be finalized by the concerned RPC.

SPS at the inter-regional and cross-border levels shall be finalized by the NLDC in coordination with the concerned RPCs. SPS shall be installed and commissioned by the concerned users. SPS shall always be kept in service. If any SPS at the intra-regional level is to be taken out of service, the permission of the concerned RLDC shall be required. If any SPS at the inter-regional and cross-border levels is to be taken out of service, permission of NLDC shall be required.

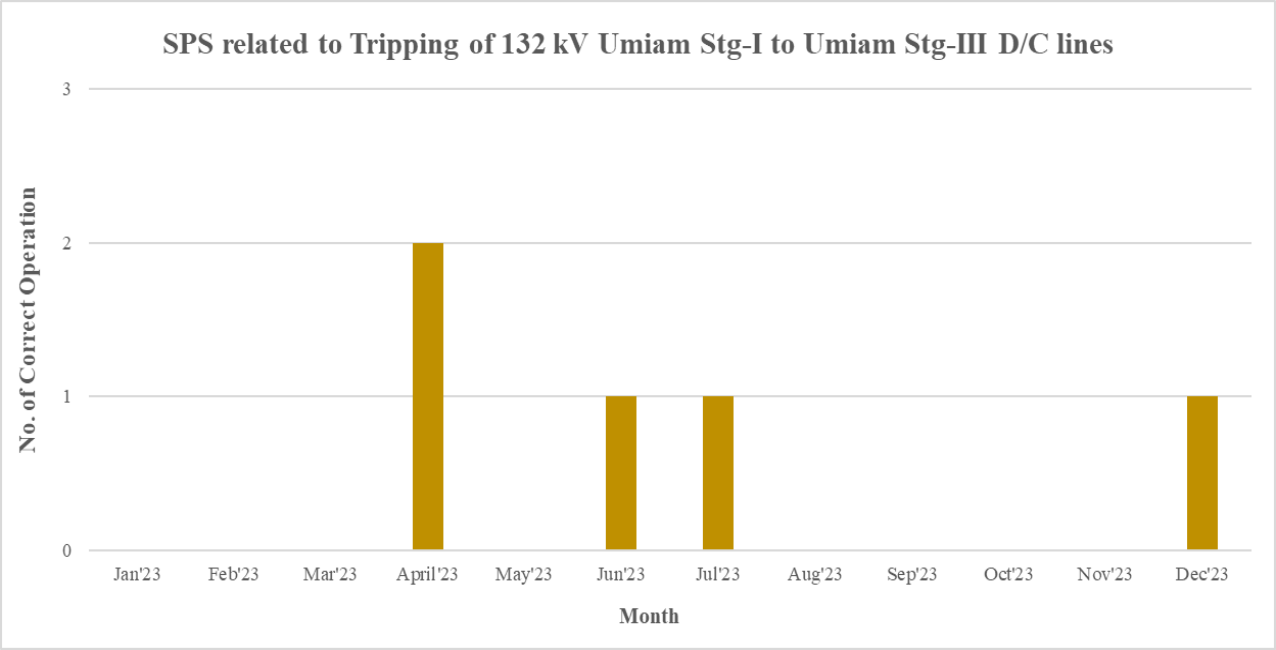
As per clause 16 (System Protection Scheme) of IEGC-2023,

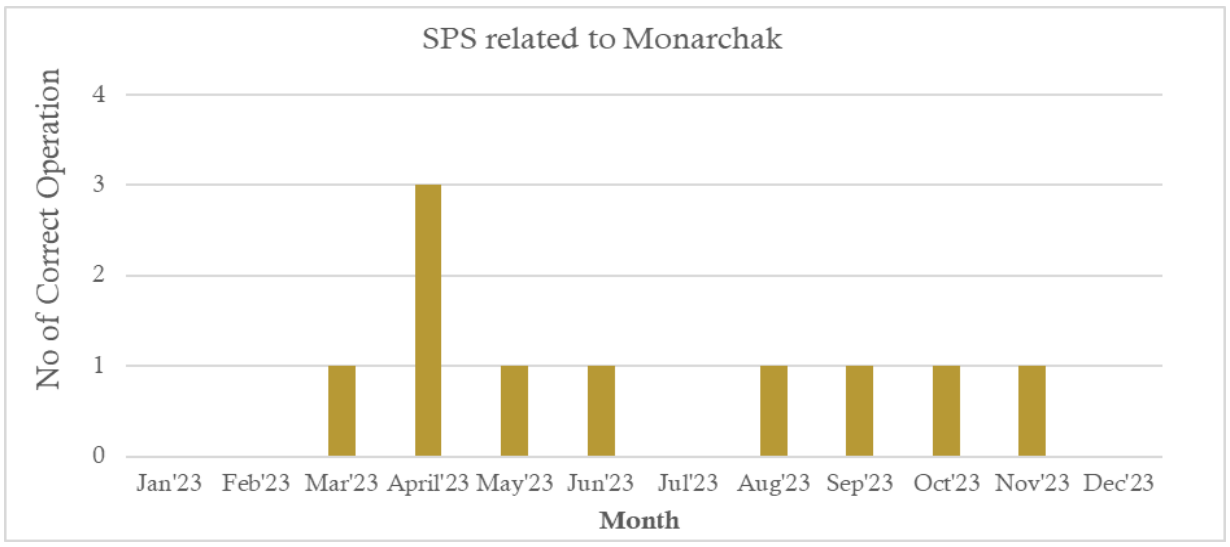
a. SPS for identified system shall have redundancies in measurement of input signals and communication paths involved up to the last mile to ensure security and dependability.
b. For the operational SPS, RLDC or NLDC, as the case may be, in consultation with the concerned RPC(s) shall perform regular load flow and dynamic studies and mock testing for reviewing SPS parameters & functions, at least once in a year. RLDC or NLDC shall share the report of such studies and mock testing including any short comings to respective RPC(s). The data for such studies shall be provided by CTU to the concerned RPC, RLDC and NLDC.
c. The users and SLDCs shall report about the operation of SPS immediately and detailed report shall be submitted within three days of operation to the concerned RPC and RLDC in the format specified by the respective RPCs.
d. The performance of SPS shall be assessed as per the protection performance indices specified in these Regulations. In case, the SPS fails to operate, the concerned User shall take corrective actions and submit a detailed report on the corrective actions taken to the concerned RPC within a fortnight.

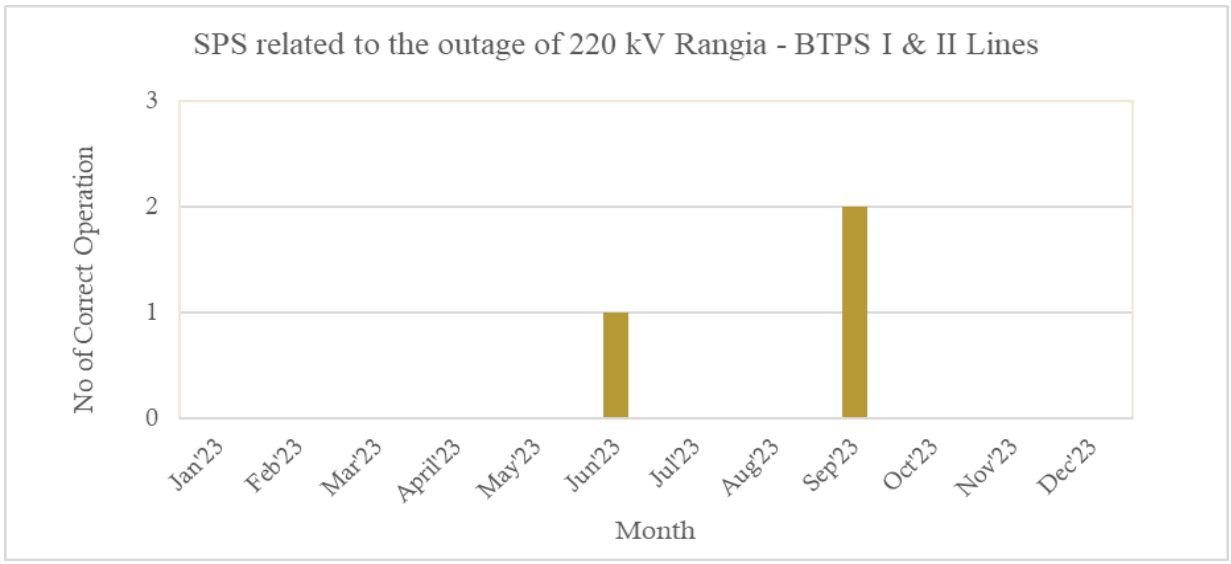
The Summary of System Protection Schemes (SPS) both inter/Intra regional including cross border SPS which are in service, and no of schemes Approved and no of schemes under discussion stage are detailed below: -

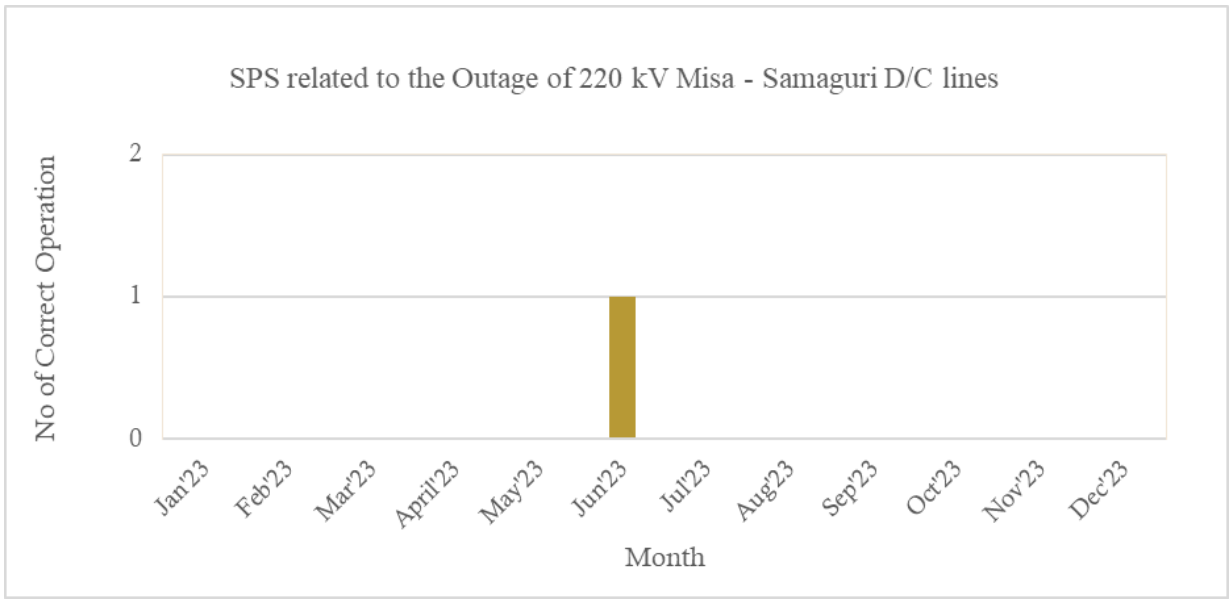
Sl. No	**Region**	**No. of Schemes in service**	**No. of Schemes approved (yet to be operationalized)**	**No of schemes under discussion**
1	SPS in NER under operation	13	4	0
2	SPS related to reliable power supply to Bangladesh	2	1	-
	TOTAL	15	5	0

Performance of the SPS Schemes during Jan'23 to Dec'23:









All the utilities are requested to review the document and furnish comments if any to NERLDC by ***25th of January, 2024***

Deliberation of the sub-committee

Forum suggested that NERLDC may intimate real time parameters related to an SPS to SLDC if condition for the operation of an SPS is met. The operation of SPS need to be reviewed on monthly basis.

All utilities are required to provide detailed report after every SPS operation within 3 days to RPC & RLDC in the format as will be specified by RPC. NERPC informed that format will be presented in the next PCC Meeting.

Member Secretary, NERPC requested all the stakeholders to comply with IEGC regulations related to SPS.

B.13 Disabling of existing SPS:

i. SPS related to tripping of 132 kV Umiam Stg-I to Umiam Stg-III D/C lines:

This SPS is related to tripping of 132 kV Umiam Stg-I to Umiam Stg-III D/C lines which causes 30 MW instantaneous load shedding near Mawphlang area.

After commissioning of 220 kV Killing-Mawngap D/C lines and re-conductoring of 132kV Lumshnong-Panchgram line, there is no need for this SPS to be in operation.

ii. SPS related to 220 kV BTPS-Salakati D/C lines:

After upgradation of 220 kV BTPS-Salakati D/C lines, the ampacity of HTLS Zebra is 1100 A and the adopted CT ratio is 1600/1.

Therefore, the existing SPS related to 220 kV BTPS-Salakati D/C lines is deemed unnecessary.

The respective utilities are requested to make necessary arrangement to disable the SPS.

Deliberation of the sub-committee

After detailed deliberation, the forum advised the respective utilities to disable the mentioned SPS until further discussion.

B.14 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 has 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**	**Respondant**
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.

Deliberation of the sub-committee

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.

Sub-committee noted as above.

Agenda from NERTS

B.15 Diversion of PLCC panels allotted for Salakati-Gelephu feeder to 220kV Salakati-BTPS-II feeder:

POWERGRID has procured PLCC panels to install in Salakati-Gelephu feeder at both ends. But, Bhutan Power Dept had cancelled the shutdown planned in Jan 2023 to install PLCC panels by POWERGRID as they are planning for DTPC installation at both ends. Further, even after reminders from POWERGRID & NLDC no action plan has been shared by Bhutan for DTPC installation till date. POWERGRID has planned to install the above allocated PLCC panels in 220kV Salakati-BTPS #II feeder. and there shall be no further plan to install PLCC panels in Salakati-Gelephu feeder by POWERGRID. This is for information and record.

Deliberation of the sub-committee

POWERGRID informed that they have planned to install the PLCC panels allocated for Salakati-Gelephu feeder in 220kV Salakati-BTPS #II feeder. NERLDC informed that NLDC has already sent a letter to NLDC Bhutan about the procurement status and installation cum commissioning plan of DTPC at both Salakati and Gelephu.

The forum noted as above and decided to review in PCC meeting.

B.16 Pending Line Diff Relay issues in 132kV feeder:

a. As discussed in 62nd PCCM, CT & PT wiring check is pending at Luangmual end for 132kV Aizwal - Luangmual feeder due to which Diff function cannot be activated at both ends.

b. For 132kV Haflong - Haflong feeder, at Haflong AEGCL end CT wiring needs to be checked & rectified as Diff function cannot be activated until the wiring mismatch is rectified.

Deliberation of the sub-committee

Mizoram will complete the CT/ PT wiring check in the next shutdown.

Assam will complete the pending task by Feb'24.

B.17 PLCC issues follow up:

a. PLCC/DTPC needs to be implemented in below stated lines –

1. 132kV Dimapur Kohima
2. 132kV Nirjuli Lekhi
3. 132kV Melriat - Zemabwk

b. 400kV Mariani Kohima Ckt #2 - For 400kV Mariani-Kohima Ckt-2, ABB make PLCC Model no-ETL41 is installed at both ends. PLCC panels at both ends are owned by KMTL. At Mariani end, for PLCC Ch#1, alarm is persisting in P4LA card. KMTL had previously deputed service engineer for rectification of the issue in Oct 2022.The issue was resolved in Oct 2022. However, the same issue had resurfaced again from 24th August 2023. Repeated communication has been sent to KMTL to resolve the issue. However, rectification action is still pending.

c. 132 kV Roing - Pasighat – PLCC panels for 132kV Roing -Pasighat feeder are installed at both ends. Panels are in healthy condition at both ends. However, due to non-availability of healthy 48V dc supply at Pasighat end, PLCC panels at Pasighat are in OFF state. DoP AP is requested to arrange healthy 48V dc supply at Pasighat end.

Deliberation of the sub-committee

a. 1. Dimapur-Kohima: DoP Nagaland informed that DPR for implementation of DTPC for tele-protection is under preparation.

a. 2. Nirjuli-Lekhi line: DoP Arunachal Pradesh stated that Wave trap and CVT will be provided by Ar. Pradesh and requested NERTS to provide any spare PLCC if available. Forum requested Ar. Pradesh to install DTPC if PLCC is not available. Ar. Pradesh will confirm in the next PCCM.

a. 3. Melriat – Zemabwk: Mizoram will provide WT, CVT at Zemabawk soon

b. 400kV Mariani Kohima Ckt #2: Issue could not be discussed as KMTL representative was not present.

c. Roing-Pashighat line: DoP Ar. Pradesh stated that there is no issue with the DC battery. It was decided that PGCIL will visit the substation and resolve the issue in coordination with DoP Ar.Pradesh.

Sub-committee noted as above

B.18 AR issues follow up:

a. Enabling of AR & Carrier Aided Trip at Gohpur end for 132kV Nirjuli-Gohpur feeder by AEGCL

b. 132kV Dimapur-Doyang 1&2 – At Doyang end, AR is not functional. NEEPCO may kindly look into it to enable it.

c. 132kV Dimapur-Bokajan - Auto reclose for this line is not functional at Bokajan end. AEGCL is requested to enable it at the earliest.

Deliberation of the sub-committee

a. AEGCL informed that panel replacement work is going on at Gohpur. It will be enabled in new panel, tentatively by Jan'24.

b. NEEPCO informed that AR will be functional at Doyang by end of Jan'24.

c. AEGCL informed that AR has not been installed at Bokajan but they will plan to install it soon.

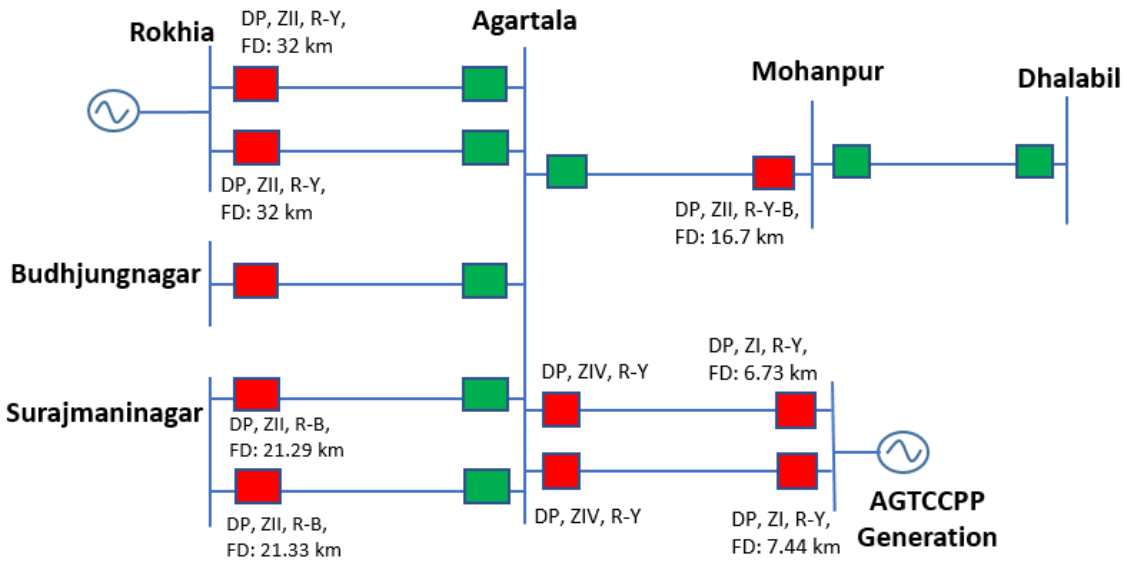
Forum requested all the states to send the list of lines, on which AR is working, not working, not available and also its commissioning dates to NERPC and NERLDC.

NERLDC was requested to prepare a list of lines in google spreadsheet so that utilities can update the same for smooth monitoring.

Additional Agenda from NERLDC

B.19 Blackout of 132 kV Agartala S/S on 15th Jan 2024:

At 16:26 Hrs of 15.01.2024, all the lines connected to 132 kV Agartala substation tripped which led to blackout at Agartala Substation of Tripura Power system which is the matter of serious concern.



As per preliminary analysis, R-Y fault detected in 132 kV AGTCCPP-Agartala D/C which was cleared on operation of Z-I from AGTCCPP end. As per information from POWERGRID, ZIV was initiated at Agartala end for both the lines which indicates that the fault is in reverse direction of Agartala.

All other elements connected to Agartala substation tripped from remote end on operation of ZII and no tripping was observed from Agartala end. Total fault clearance time as per PMU: 440 msec.

Prima facie it appears that-

1. Downstream fault is suspected at Agartala which was not cleared leading to tripping of all the elements connected to Agartala from remote end on backup protection.
2. Tripping of 132 kV Agartala-AGTCCPP D/C lines on DP, ZI (Z-1 overreach) from AGTCCPP end for fault beyond the line seems to be mis-operation. ZI reach setting needs to be reviewed by AGTCCPP to prevent re-occurrence. Line length may be confirmed by offline fault locator measurement.

Proper analysis of the event could not be done due to non-availability of FIR, DR & EL outputs by TSECL, AGTCCPP, PGCIL which violates the IEGC section 37.2 (c).

Therefore, it is requested to share the root cause of the event and remedial measures taken.

Deliberation of the sub-committee

NERLDC highlighted that double phase fault was within the switchyard of Agartala S/S as all the feeders from Agartala detected the fault in Z-IV, reverse side.

Forum requested TSECL to provide the root cause and submit the detailed report of the event as per grid code mandate.

C. FOLLOW–UP AGENDA ITEMS

C.1 Non-Operation of A/R at Doyang HEP for 132 kV Dimapur- Doyang 1&2 line:

Sl. No.	Element Name	Time	Relay End1	Relay End2	Remarks
1	132 kV Dimapur - Doyang 1	19-09-2023 14:53	DP, ZI, R-Y-E, FD: 86.192 Kms, AR Successful	DP, ZI, R-Y-E, AR Not Operated	Lightning
2	132 kV Dimapur - Doyang 2	07-08-2023 19:35	DP, ZI, B-E, FD:23.84 kms, AR Successful	DP, ZI, B-E, AR Not Operated	Lightning
3	132 kV Dimapur - Doyang 2	19-08-2023 02:19	DP, ZII, Y-E, FD: 91.14 Kms; carrier aided, AR Successful	DP, ZI, Y-E, AR Not Operated	Lightning

Numerous instances of tripping have been noted, primarily attributed to the transient nature of the fault. The Autorecloser at the Dimapur (PG) end has consistently performed successfully. Nevertheless, it is apparent that no Autorecloser operation was recorded in the submitted Disturbance Recorder (DR) from the Doyang end, indicating that there is need of checking of Autorecloser function at Doyang HEP.

In 60th PCCM NERLDC updated the forum that CBs at Doyang are spring closed and air operated (pneumatic type). As soon as breaker gets open, air pressure goes down below 15Kg/cm2 and the breakers goes to non-operative mode. After running the compressor when air pressure is achieved to 15Kg/cm2, that condition goes off, by that time AR time becomes over. They have called CGL, OEM of the breakers, to attend the problem. The OEM has assured that they will report within this month. In case, OEM is not able to resolve this matter, all the CBs of Doyang SY needs to be replaced (CBs were procured during commissioning of the Plant i.e., 2000).

In 61st PCCM NEEPCO intimated that the OEM will visit on 08th December, 2023 and suggest the resolution. If resolution not possible then NEEPCO will replace CB. The forum requested NEEPCO to resolve the issue at the earliest.

In 62nd PCCM, NEEPCO updated that the OEM visit could not take place so far due to some unavoidable reasons. Further NEEPCO informed that the visit is planned in Jan'24.

Deliberation of the sub-committee

NEEPCO informed that the OEM visit is planned in the coming week and the same is expected to be rectified by end of January 2024.

C.2 Requirement of SPS for 132 KV Khliehriat (PG)-Khliehriat D/C line

With expected availability of at least two machines of Kopili and one machine of Khandong during peak hours of the coming winter months of 2023-24 and considering the anticipated increase in demand, it is expected that total power flow along 132 KV Khliehriat (PG)-Khliehriat D/C line would be between 90-110 MW under different conditions. Load flow studies had been carried out by SLDC and shared with NERLDC. The matter had also been discussed with DGM, NERTS since 132 KV Khliehriat (PG)-Khliehriat line 1 is under POWERGRID. The scheme envisages shedding of 20-25 MW load at 132 KV Mustem substation in the event of tripping of any circuit of 132 KV Khliehriat (PG)-Khliehriat D/C line.

The above requirement was agreed in principle during the 205th OCC meeting and NERLDC and MePTCL were requested to develop the tripping logic and to present it in the next PCC meeting. The schematics of the SPS is attached for reference.

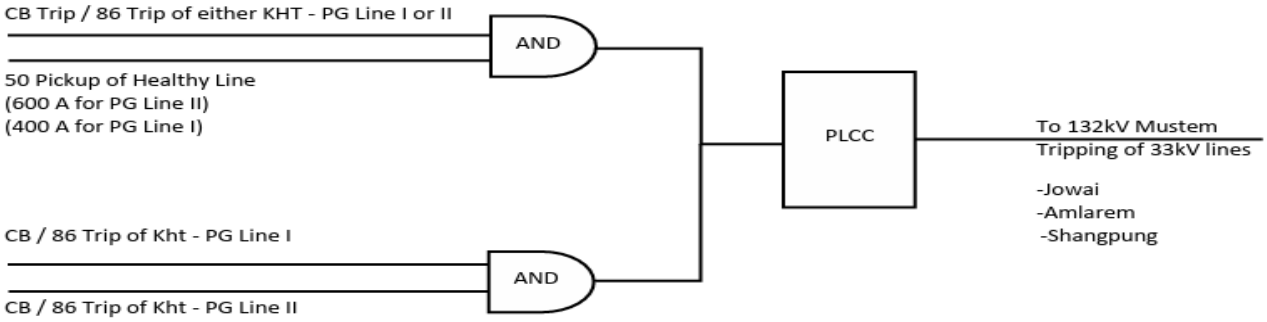
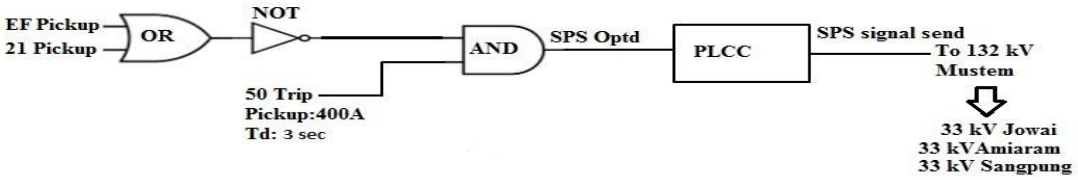


Fig: SPS Schematics at 132kV Khliehriat S/S for 132kV PG Line I & II

In 60th PCCM, NERLDC provided the modified logic (as below) and same need to be implemented by MePTCL. MePTCL agreed the same.

SPS Logic Diagram



In 61st PCCM SLDC, Meghalaya informed that the scheme has been put up for approval of higher authorities and the logic will tentatively be implemented by December'23 end.

In 62nd PCCM, MePTCL updated that the SPS is implemented at Mustem, while it will be implemented at Khliehriat S/S in Jan'24.

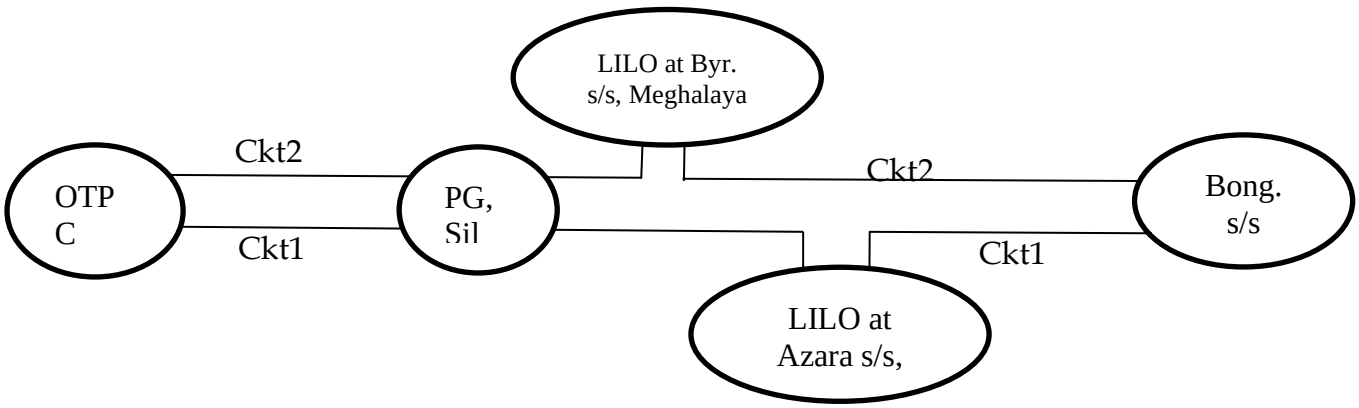
Deliberation of the sub-committee

Meghalaya informed that the SPS will be implementation by 6th Feb'24.

C.3 Correction of the settings of the relays associated with NETC transmission line elements and installation of TWFL in connected S/S.

North East Transmission Company Limited (NETC) is currently operating the 400 kV D/C Palatana-Silchar and Silchar-Bongaigaon T/L with connectivity through LILO line at Byrnihat (Meghalaya) and at Azara (Assam) for evacuation of power from OTPC power plant located at Palatana, Tripura to NER States.

A Single line diagram showing the connectivity of the 400 kV Palatana-Bongaigaon Transmission system is as follows:



During the last financial year (FY 2022-23), there were instances of tripping in the 400 kV D/C Palatana-Bongaigaon Transmission System. Due to inaccurate fault

calculations of the relays, difficulties were faced in detection of fault location. In normal scenarios, we expect to locate the faults within a range of +/- 5 km from the relay distance measurement. However, during post-fault patrolling, we discovered fault locations approximately 10-15 km away from the relay's calculated distance. The same issue persisted for the tripping instances during the current Financial Year (2023-24) as well. Here is a brief overview of such tripping instances:

SL. No.	**Name of line element**	**No. of tripping occurred during**		**Remarks**
		FY 2022-23.	**FY 2023-24 till Sept 2023**	
1	Palatana-Silchar line 1	12	2	During the all these tripping(s), the distance indications of the relay were wrong.
2	Palatana-Silchar line 2	4	4	
3	Silchar-Azara	7	2	
4	Silchar-Byrnihat	10	8	
5	Byrnihat-Bongaigaon	2	1	
6	Azara-Bongaigaon	0	0	

In view of above, we propose the following for detail deliberation by the forum:

i) A comprehensive review of the relay setting arrangements and implementation of the modified setting in conformity with the actual line parameters at all the connecting substations.

ii) Installation of the travelling Wave-Based Fault Locators (TWFL) at all the aforementioned connecting substations to ensure smooth and effective operation of the lines by precisely locating faults in cases of the line tripping.

In 60th PCCM, following decisions were taken

AEGCL representative stated that there is no issue with relay settings and line parameters. Further he stated that some error in fault distance is inevitable in case the fault involves the ground. He suggested to adopt some kind of methodology by which such error may be minimized.

Forum decided that RPC, NERLDC, NERTS, AEGCL and NETC will jointly discuss to address the issue as suggested by AEGCL. A comprehensive review of the line parameters and relays settings will also be undertaken jointly by NERPC, NERLDC NETC and concerned bay owners.

To research the fault location, DR data from Azara/Byrnihat needs to be reviewed by AEGCL/NERLDC during tripping of any one line of 400 kV Azara-Silchar and

Byrnihat-Silchar line as there is no mutual compensation wiring at LILO Azara & Byrnihat SS.

Regarding TWFL, the forum decided that proposal may be considered only after the measures, as suggested above are not fruitful.

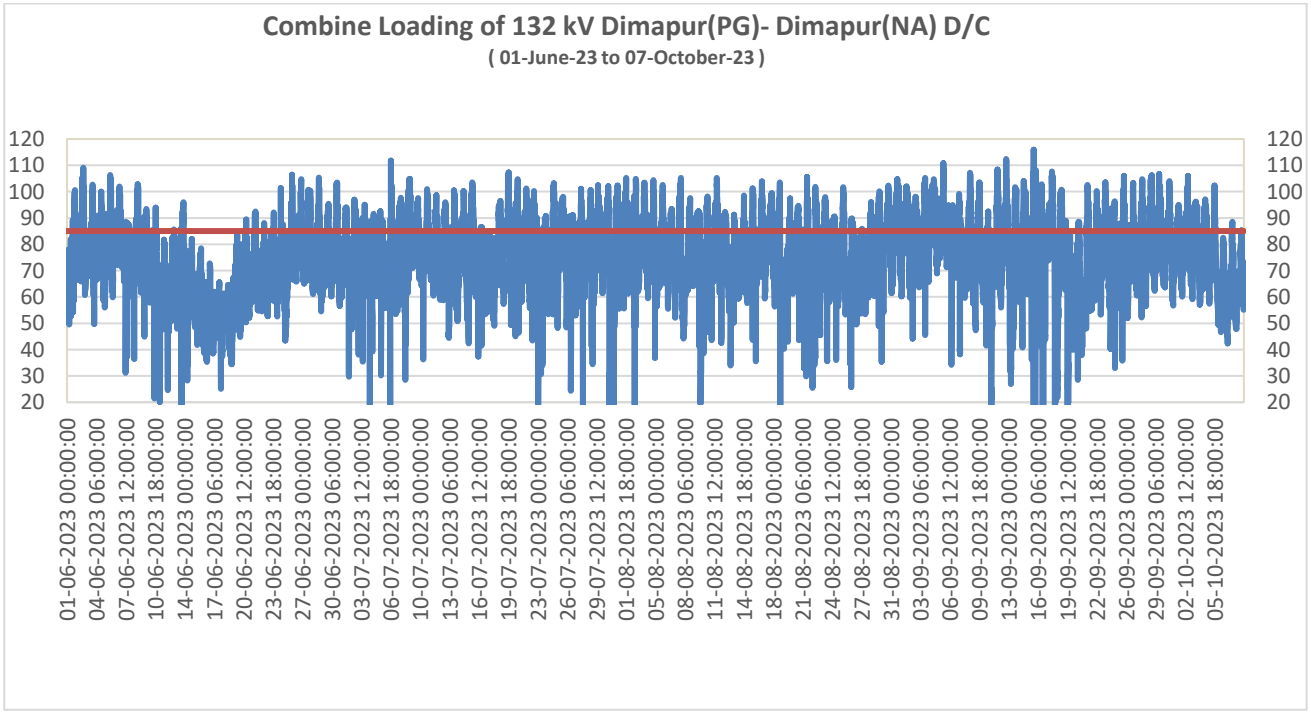
In 62nd PCCM, NERPC stated that a special meeting with NERTS, NERLDC, Assam and NETC will be organized shortly to discuss the issue.

Deliberation of the sub-committee

NERTS informed that Relay setting at Silchar & Byrnihat has been checked and found OK.

MS, NERPC stated that OTPC (Palatana), PGCIL(Bongaigoan), Assam (Azara) and Meghalaya (Byrnihaat) need to send relay setting data to RPC. After that, a special meeting with presence of concerned utilities will be arranged to discuss the issue.

C.4 Requirement of SPS implementation at Dimapur to for ensuring reliable power in Dimapur area of Nagaland:



Loading profile of Dimapur shows N-1 contingency of any one circuit not satisfied most of the time as the combine loading was above 85 MW for 22% of times and above 80 MW for 35% of times.

Hence, to satisfy the N-1 contingency at Dimapur (NL) and to avoid load loss in the Dimapur area, DoP, Nagaland is requested to implement suitable System Protection Scheme (SPS) with following criteria-

If the loading of any one circuit current exceeds more than 415A, the SPS will trigger and it will shed 25-30 MW load at Nagarjan area, which will increase the reliability of Nagarjan area of Nagaland system.

In 60th PCCM, DoP Nagaland updated that reconductoring of the line is under process, DPR is in final stage.

Regarding the SPS, forum requested DoP Nagaland to identify 25-30 MW load at Nagarjan area for the implementation of the SPS scheme at the earliest.

In 61st PCCM, Nagaland stated that feeders have been identified to cut around 40MW in 66kV Power House and 33kV Metha Further he stated that internal approval for the same has also been taken.

In 62nd PCCM, NERLDC informed that DoP Nagaland has identified the load and NERLDC has prepared the draft SPS. NERLDC further informed that the draft SPS has been sent to NERPC for review.

NERPC stated that the scheme will be reviewed shortly.

Deliberation of the sub-committee

DoP Nagaland stated that the SPS has been finalized and will be enabled shortly.

C.5 Providing PLCC in State owned lines /bays:

a. 132kV Dimapur Kohima line (Length – 58 km): DoP informed that currently PLCC ABB, ETL-41 is working at Kohima which supports Speech & data only. OPGW has already been laid. Nagaland will implement carrier scheme through DTPC (Digital tele-protection coupler).

b. 132 kV Melriat-Zemabawk line (Length – 10.12 km): Mizoram not present. However, the forum requested DoP Mizoram to arrange the 48V dc supply at Zemabawk to commission the PLCC link.

c. 132 kV Nirjuli-Lekhi line (Length – 11 km): Forum requested DoP Ar. Pradesh to implement the PLCC link on the said line and the option of PSDF funding under reliable communication may be explored. Ar. Pradesh informed that it will be installed in the next FY 2024-25.

In 61st and 62nd PCCM -

a. DoP Nagaland stated that DPR is being prepared for implementation of DTPC for tele-protection. Also, DoP Nagaland will explore the possibility of MPLS for carrier communication.
b. Mizoram stated that 48V DC supply is present at the substation. NERTS to commission the link soon. NERTS stated that WT, CVT not available at Zemabawk, same to be provided by Mizoram
c. DoP Ar. Pradesh stated that OPGW is available on the line. Forum requested DoP Ar. Pradesh to implement DTPC on the line

Deliberation of the sub-committee

Already discussed at item B.17

C.6 Non-operation of auto recloser in Important Grid Elements for transient faults in October and November 2023:

As updated in 62nd PCCM

Sl No	Element Name	Time	Relay End1	Relay End2	A/R not Operated	Remarks from Utility
1	220 kV NTPS - Tinsukia 1 Line	26-10-2023 16:37	DP,Z1,Earth fault,39km	B-Eph, Z-1, LA burst	No details provided	Configuration to be completed in next planned shutdown
2	220 kV Jawaharnagar - Samaguri Line	25-10-2023 11:11	DP, ZI, B-E, FD: 35.9 km	DP, ZI, R-E, FD: 71.8km, AR successful	Jawahar nagar	GIS work underway. AR will be implemented in next occ shutdown
3	132 kV Jiribam - Pailapool Line	30-10-2023 12:47	DP, ZI, R-Y, FD: 6.49 km, AR successful	DP, ZI, R-Y	Pailapool	Relay OEM has arrived, work underway, Will be completed by Dec'23

4	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	Will be implemented within 6 months,
5	220 kV Mariani (AEGCL) - Samaguri Line	29-11-2023 15:10	DP, ZI, B-E	DP, ZI, B-E, FD: 16 km	Samaguri	AR will be implemented by Jan'24 at Mariani (currently PSDF work is going on at Mariani so AR kept off at Samaguri)

Deliberation of the sub-committee

As updated in 63rd PCCM

Sl No	Element Name	Time	Relay End1	Relay End2	A/R not Operated	Remarks from Utility
1	220 kV NTPS - Tinsukia 1 Line	26-10-2023 16:37	DP,Z1,Earth fault,39km	B-Eph, Z-1, LA burst	No details provided	Planning completed will be implemented in Feb'24.
2	220 kV Jawaharnagar - Samaguri Line	25-10-2023 11:11	DP, ZI, B-E, FD: 35.9 km	DP, ZI, R-E, FD: 71.8km, AR successful	Jawaharnagar	Completed.
3	132 kV Jiribam - Pailapool Line	30-10-2023 12:47	DP, ZI, R-Y, FD: 6.49 km, AR successful	DP, ZI, R-Y	Pailapool	Will be completed by 7th Feb'24.
4	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	Will be implemented within 6 months, PowerGrid will help in implementation.

5	220 kV Mariani (AEGCL) - Samaguri Line	29-11-2023 15:10	DP, ZI, B-E	DP, ZI, B-E, FD: 16 km	Samaguri	AR will be implemented by Feb'24 at Mariani (currently PSDF work is going on at Mariani so AR kept off at Samaguri)

C.7 132kV Kumarghat P.K. Bari issue

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

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

a. Z1 = 0 msec
b. Z2 = 200 msec
c. Z3 = 300 msec

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

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

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

Deliberation of the sub-committee

TSECL informed that there is some issue with CB at PK Bari for Dharmanagar. Testing equipment has been received and test will be done soon.

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

C.8 132kV Aizwal – Luangmol Line Diff Relay Issue

POWERGRID has commissioned Line Diff Relay for 132kV Aizwal Luamgmol feeder. After commissioning, following observations have been noted: (Details enclosed)

1. Auto-reclosure feature of P543 Line Differential relay has been kept disabled at Luangmual end.
2. 132KV Aizawl-Luangmual Line was charged from Aizawl S/s and synchronized at Luangmual S/son 16:49 hrs of 15.12.23. However, the 132KV Aizawl-Luangmual tripped instantaneously on 3-phase Differential protection on charging of HV side of 132/33 KV ICT. Later, at 18:17 hrs, 132KVAizawl-Luangmual was charged with Current Differential Protection in disabled condition as per request of SLDC Mizoram.
3. Broken Conductor Alarm is recorded since charging of the line.
4. Following points maybe ensured at Luagmol end:
    a. CT and PT inputs to Relay to be provided in correct phase sequence after identification of actual R-phase and Y-phase secondary inputs from CT to P543 relay.
    b. CT ratio tapping and healthiness of CT Protection Core maybe ensured.
5. SLDC Mizoram may intimate POWERGRID when to put the Line Diff Protection in service.

In 62nd PCCM, Forum directed Mizoram to check phase sequence of the CT and PT inputs to the relay in coordination with PGCIL.

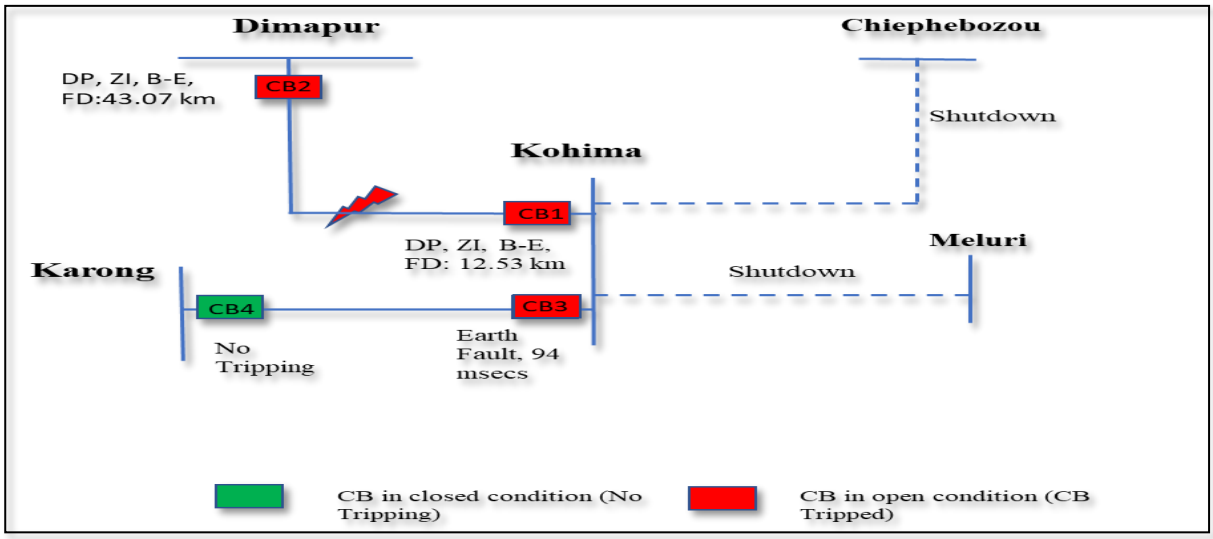
Deliberation of the sub-committee

Already discussed at B.16

C.9 Blackout of Kohima area of Nagaland on 11-Dec-2023

132 kV Kohima-Chiephobozou and 132 kV Kohima-Meluri line was under planned shutdown.

At 09:52 Hrs of 11-Dec-2023, 132 kV Dimapur (PG)-Kohima & 132 kV Kohima-Karong lines tripped. Due to tripping of these elements, 132 kV Kohima S/S of Nagaland Power system got separated from rest of the grid. Load loss of **20 MW** observed in the capital area of Nagaland.



As per DR analysis, Metallic fault in 132 kV Dimapur (PG) – Kohima line successfully cleared from the Kohima end in 77 msecs on operation of DP, ZI, B-E, FD: 12.53 km. Fault current of 940 A observed in neutral.

However, 132 kV Karong – Kohima line tripped at Kohima on operation of Direction Earth Fault (i.e. Backup Relay) in 91 msecs seems unwanted and leads to the grid disturbance at Kohima area.

DoP, Nagaland is requested to ensure the directionality of Backup relay at Kohima for 132 kV Karong feeder. Also, the tripping time of the earth fault relay need to be coordinated with the ZIII time of the Distance (i.e. Main protection) at Kohima end.

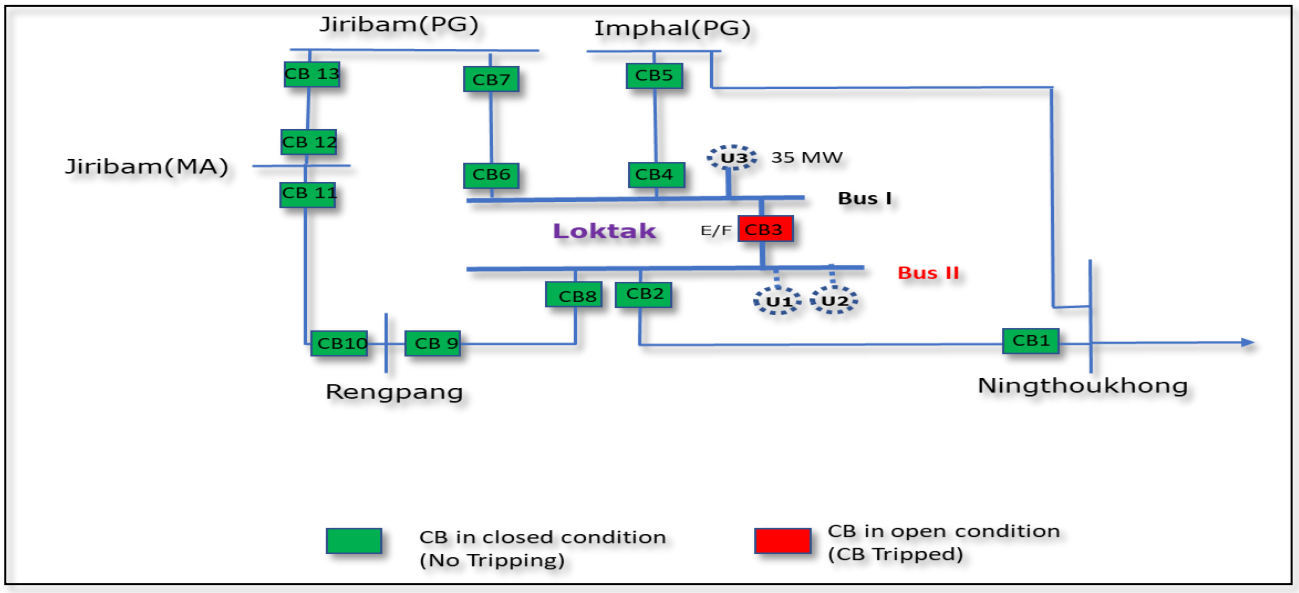
In 62nd PCCM, DoP Nagaland was requested to ensure directionality of backup relay at Kohima end, voltage inputs to the B/U relay and to coordinate the overall backup relay settings at Kohima.

Deliberation of the sub-committee

Already discussed in B.3

C.10 Tripping of 132 kV Bus Coupler Loktak on 10th,16th and 17th Nov'2023

As per regular practice, 132 kV Loktak – Jiriabm(PG) & 132 kV Loktak – Imphal(PG) are connected in **Bus I** and 132 kV Loktak – Rengpang & 132 kV Loktak – Ningthoukhong are connected in **Bus II**



The blackout of Bus II at Loktak observed in the 3 occasions due to the tripping of Bus Coupler at Loktak are listed below:

Sl No.	Element Name	Tripping Date and Time	Restoration Date and Time	RELAY_A	RELAY_B
Event I	132 kV Loktak - Ningthoukhong Line	10-11-2023 11:15	10-11-2023 12:02	**No tripping**, Only Earth fault initiated at Loktak	Earth Fault
	132 kV Loktak Bus Coupler	10-11-2023 11:15	10-11-2023 11:40	EF	-
Event II	132 kV Loktak - Ningthoukhong Line	16-11-2023 11:54	16-11-2023 12:53	**No Tripping**, Only Earth fault initiated at Loktak	Earth Fault
	132 kV Loktak Bus Coupler	16-11-2023 11:54	16-11-2023 12:16	EF	-
Event III	132 kV Loktak - Rengpang Line	17-11-2023 02:52	17-11-2023 03:41	Not Furnished	No Tripping
	132 kV Loktak Bus Coupler	17-11-2023 02:52	17-11-2023 03:42	Not Furnished	-

As per detailed report submitted for Event II:

B-E fault in 132 kV Loktak - Ningthoukhong feeder cleared by the Bus Coupler at Loktak before opening the line CB at Loktak. Remedial measures taken at Loktak by changing Bus Coupler EF relay setting to Pick up Current of 100A from 80A and TMS-0.25 (Unchanged).

Loktak HEP is requested to provide the root cause for the Event I & Event III at Loktak. Also, requested to upgrade the Bus Coupler relay from Electromechanical to Numerical for proper analysis of the Grid Events.

In 62nd PCCM, Forum requested NHPC and MSPCL to undertake relay coordination in coordination with NERPC and NERLDC at the earliest.

Forum requested Loktak to replace the Bus Coupler relay with Numerical type.

Deliberation of the sub-committee

It was informed that there was Relay setting coordination issue at Manipur end. Manipur need to check relay setting and take approval of NERPC for any correction.

NHPC updated that electromagnetic Bus-coupler relay will be replaced with Numerical relay by end of Jan'24.

NHPC further informed that relay coordination will be undertaken by Feb, 2024.

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 62nd PCCM

Sl no	**State**	**Important Transmission lines where AR has to be enabled at the earliest**	**Lates status**
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 soon.
2.	Assam	All 220kV and 132kV lines	For 220kV sub stations- At Sonapur, GIS work underway, support of OEM required At Kathalguri, procurement of relays underway At Jawaharnagar, WIP All works at three substations to be completed by DEC'23 For 132kV substations- 80% work completed, by Dec'23 90% to be completed

			Assam informed all work at three substations will be completed by Jan/Feb 2024.
3.	Manipur	132kV Imphal-Ningthounkong	-
4.	Meghalaya	**Annexure (D.1)**	AR put in place for 5 lines but approval of MERC is still awaited. MePTCL to do double jumpering and improve strength at critical locations to ensure integrity of the old lines
7.	Tripura	132kV Agartala-S M Nagar (TSECL), 132kV Agartal-Rokhia DC, 132kV, 132kV Agartala-Budhjungnagar	To be commissioned by Jan'24

Deliberation of the sub-committee

Utilities updated as follow-

Sl no	**State**	**Important Transmission lines where AR has to be enabled at the earliest**	**Lates status**
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 Feb'24.
2.	Assam	All 220kV and 132kV lines	For 220kV sub stations- At Sonapur, GIS work Completed. At Kathalguri, procurement of relays underway At Jawaharnagar, WIP All works at three substations to be completed by Feb'24 For 132kV substations- 80% work completed, by Dec'23 90% to be completed

			Assam informed all work at three substations will be completed by Jan/Feb 2024.
3.	Manipur	132kV Imphal-Ningthounkong	-
4.	Meghalaya	**Annexure (D.1)**	Financial Approval of BoD pending. Will take total six month to complete the task.
7.	Tripura	132kV Agartala-S M Nagar (TSECL), 132kV Agartal-Rokhia DC, 132kV, 132kV Agartala-Budhjungnagar	To be commissioned by Jan'24

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 62nd PCCM

Name of utility	**Last updated status (62nd PCCM)**	
AEGCL	DPR sent back by PSDF secretariat. Third party protection audit reports have to attached with the DPR. DPR being prepared as per new format and will be done by Jan'2024	
MSPCL	Revised DPR for 132kV Imphal-Imphal-III to be submitted. To be submitted soon	
MePTCL	Work completed Aug'21, but not commissioned yet. OPGW to be installed on some lines. LDP will be	

	commissioned after OPGW link is established.	
P&ED Mizoram	Lines identified viz. 132kV Aizawl - Luangmual and 132kV Khamzawl - Khawiva. DPR submitted. PSDF approval awaited. For Aizawl – Luangmual line Power grid will complete the task by Jan'23 and for other PSDF approval still awaited,	
DoP Nagaland	LDP on Dimapur-Dimpaur lines completed. Regarding Doyang-Sanis line, NEEPCO to install LDR at Sanis end. Regarding Doyang-Sanis line, NEEPCO to install LDR at Sanis end will be done by Jan'24.	
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.	

Deliberation of the sub-committee

Utilities updated as follow-

Name of utility	**Last updated status (62nd PCCM)**	**Latest status (63rd PCCM)**
AEGCL	DPR sent back by PSDF secretariat. Third party protection audit reports have to attached with the DPR. DPR being prepared as per new format and will be done by Jan'2024	Team is in Delhi to Discuss with PSDF secretariat.
MSPCL	Revised DPR for 132kV Imphal-Imphal-III to be submitted. To be submitted soon	Revised DPR submitted for PSDF.
MePTCL	Work completed Aug'21, but not commissioned yet. OPGW to be	

	installed on some lines. LDP will be commissioned after OPGW link is established.	7 Feeder operational for rest OPGW work is pending.
P&ED Mizoram	Lines identified viz. 132kV Aizawl - Luangmual and 132kV Khamzawl - Khawiva. DPR submitted. PSDF approval awaited. For Aizawl – Luangmual line Power grid will complete the task by Jan'23 and for other PSDF approval still awaited,	DPR revised and same will be submitted soon.
DoP Nagaland	LDP on Dimapur-Dimpaur lines completed. Regarding Doyang-Sanis line, NEEPCO to install LDR at Sanis end. Regarding Doyang-Sanis line, NEEPCO to install LDR at Sanis end will be done by Jan'24.	Relay Available installation will be completed by March'24.
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.	Approval still awaited.

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

Status as updated in the 63rd PCCM:

Sl No	**Details of the events(outage)**	**Remedial action suggested**	**Name of the utility & previous update**	**Latest status(63rd 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.	DoP, Arunachal Pradesh. As per previous updates, PLCC Work covered under PSDF. In progress	PLCC Work covered under PSDF. In progress

		Under consideration of the higher authorities)		
2.	132 kV DoyangMokokchung line 132 kV Mokokchung - Mokochung (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 (Work under progress. Will be completed soon.)	DPR is under preparation for PLCC.
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 submitted, Approval pending
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 (Order to be placed soon. Will take 6months after placing the order)	Order will be placed by 31st March.
5.	Grid disturbance of category GD-1 (Load loss: 13MW) occurred at Karong areas of Manipur Power System at 07:41 Hrs on 4th August'22	MSPCL to check the following1. Protection setting at Karong along with circuit wirings from DPR to CB mechanism 2. Z-III setting at Imphal and its healthiness of correct operation by relay testing.	MSPCL	
7.	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 and by the end of Jan'24)	Nov'24. RLDC directed NHPC to separate this job from R&M
10.	Review of SPS at Monarchak (item 2.22 of the sub-group held on4th May 23)	NERLDC requested NEEPCO and Tripura to implement the revised logic at Monarchak (as provided by NERLDC) and Udaipur Rokhia ends respectively	NEEPCO, TSECL (SLDC TSECL intimated that logic 1(to be configured at Udaipur and	Erection work completed need to commission.

			Rokhia to send DT to Monarchak) could not be implemented as there is no PLCC/OPGW connectivity in the LILO portion of Monarchak. NERLDC requested TSECL to explore installation of PLCC/FO for smooth functioning of SPS scheme for the reliability of Monarchak system)	
13.	132 kV Aizawl - Tipaimukh Line tripped at Aizawl end only on received of spurious DT signal on 16th and 26th Feb'23	rectification of PLCC issues at Tipaimukh end by MSPCL	MSPCL 48V DC battery issue. WIP	Will be completed soon.
14.	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 M/S ABB has given offer. Board's approval awaited. To be completed in 3-4 months	Order given to ABB.
15.	Retrip configuration in LBB scheme in AEGCL Hailakandi station:	In previous sub group meeting the forum opined that the retrip scheme in the LBB protection will increase reliability of the protection system and will help in preventing mal operations in connecting feeders.	AEGCL Logic finalized, need to be tested. Whole work may be completed within Nov23	To be completed by Jan'24

		AEGCL agreed to the suggestion and assured that the Retrip scheme, with time delay of 100msec will be configured in the LBB scheme in Silchar-Hailakandi Ckt 1 & 2 at Hailakandi end.		
16	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 Consultation with the OEM underway for resolution	Order given to ABB.
17	Non-operation of AR for various lines at Sonapur end in July and August	GIS related issues, coordination with OEM required	AEGCL GIS related issues, Coordination with OEM underway. WIP	
20	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 (will be done by April24)	DPR is under preparation for PSDF.

DATE AND VENUE OF NEXT PROTECTION SUB- COMMITTEE MEETING

The next Protection Sub-Committee meeting will be held in the month of February, 2024. The date and venue will be intimated separately.

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Annexure-I

List of Participants in the 63rd PCC Meeting held on 18.01.2024

SN	Name & Designation	Organization	Contact No.
1	Sh. Moli Kamki, AE (E), SLDC	Ar. Pradesh	09863703539
2	Sh. Arup Sarmah, AGM, AEGCL	Assam	09707854367
3	Sh. Jyoti Ranjan Baruah, AGM	Assam	07896732915
4	Sh. Sarungbam R. Singh, Mgr MSPCL	Manipur	08787640020
5	Sh. Lalrinawma, SDO (MRT)	Mizoram	09436791527
6	Sh. Lalsangliana, JE (MRT)	Mizoram	06009605796
7	Sh. A.Shullai, AEE (G&PSD), MePGCL	Meghalaya	09436334458
8	Sh. A.G.Tham, AEE, MePTCL	Meghalaya	09774664034
9	Sh. Rokobeito Iralu, S.D.O (Trans.)	Nagaland	09436832020
10	Sh. Namheu Khote, EE (F)	Nagaland	09436000800
11	Sh. Ratan Dhar, Mgr (E), TPTL	TPTL (Tripura)	09436582838
12	Sh. Amaresh Mallick, CGM	NERLDC	09436302720
13	Sh. Bimal Swargiary, CM	NERLDC	09435499779
14	Sh. Subhra Ghosh, Engineer	NERLDC	08415857079
15	Sh. Mabhusudan Dutt, Sr.GM	PGCIL	09445002038
16	Sh. Ankit Vaish, DGM	PGCIL	09409305725
17	Sh. M. Talukdar, DGM (E/M)	NEEPCO	09435339690
18	Sh. N.Ramesh K.Singh, AM	NETC	09101658046
19	Sh. Nitish Kumar, DGM (E)	NHPC	08811071107
20	Sh. Rakesh Kumar, AGM	NTPC	09131171001
21	Sh. Mitangshu Saha, Lead-STG	OTPC	07085310211
22	Sh. K.B.Jagtap, Member Secretary	NERPC	-
23	Sh. S.M.Aimol, Director	NERPC	08974002106
24	Sh. Shaishav Ranjan, Dy. Director	NERPC	08787892650
25	Sh. Vikash Shankar, AEE	NERPC	09455331756
26	Sh. Somraj, AEE	NERPC	-

Annexure 1: Patrolling Report of POWERGRID for the month of November, 2023

1.1. 400 kV Silchar-Imphal II Line: Tripped on 04.11.2023

CHECK LIST FOR POST FAULT PATROLLING OF POWERGRID TRANSMISSION LINE

Name of Transmission Line:	400KV Silchar-Imphal-II	Tripping date :	04.11.2023
Type of Tower: Single Circuit	(Suspension/Tension) Tension	Tripping Time :	16:19 hrs
Location Patrolled	415-425	Line restored (Date) :	04.11.2023
Date of Post Fault Patrolling:	05.11.2023	Line restored (Time) :	17:05 hrs
Actual Fault Location:	420-421	Off Line fault locator Distance :	~~Taken/No taken /NA~~
Actual Fault Distance:	20.69 KM from Imphal	Signature Analysis -	~~Taken/No taken /NA~~
Relay Distance –Main #1-	24.26 KM, R-Ph, Z-1 (Imphal end)	Weather report –	Sunny
Main#2	21.9 Km, R-Ph, Z-1 (Imphal end)	Conductor Config.(Ph.) =Top	Y Middle B Bottom R (D/C)
		OR =One side (Top___ Bottom___) other side __	(S/C)

Sl. No.	Particulars	CKT#1	CKT#2
1	Damaged/Missing Counter poise earthing (Yes/No)	N/A	N/A
2	Value of Tower Footing Impedance (Ohm)	N/A	N/A
3	Clearance between bottom conductor & vegetation in ROW (m)	N/A	9.4
4	Side clearance of conductors from nearby tall object (tree, small hill, building, etc)near to ROW (m)	N/A	N/A
5	Vertical clearance between conductors at maximum sag (m)	N/A	7.9
6	Clearance between earth wire/OPGW & top conductor (m)	N/A	10.8
7	Minimum clearance of jumper from tower body (m)	N/A	N/A
8	Maximum value of jumper drop (m)	N/A	N/A
9	Presence of pilot insulator & counter weight on jumpers (Yes/No)	N/A	N/A
10	Clearance of bottom conductor from power line crossing (under crossing) (m)	N/A	N/A
11	Clearance of top conductor from earth wire of power line crossing (overhead crossing) (m)	N/A	N/A
12	No. of broken/ damaged insulators in each string	N/A	N/A
13	Deposition of pollutant (dirt/bird excreta/ coastal, etc) on insulator (Yes/No)	N/A	N/A
14	Flash over marks on insulator (Yes/No)	No	No
15	Result of PID scanning (if transmission line is older than 10 years and has history of flashover/decapping)	N/A	N/A
16	No. of missing/ Tilted/ broken Corona/ grading ring	0	0
17	Presence of foreign material on tower near to conductor (cross arm, insulator, earth peak, etc)	N/A	N/A
18	Missing/ disconnected copper bond/ Aluminum bond	N/A	N/A
19	Loose/ hanging bird guards	N/A	N/A
20	Loose/ Missing/ Hanging tower members	N/A	N/A

*_ High Resolution close photographs of indicated parts are to be taken during patrolling.

Observation in Patrolling - During Post fault patrolling, It is observed that an unknown person/miscreants has burnt down dry vegetation in below the R-phase conductor within the span 420-421. This is the cause of tripping on 04.11.2023. FIR copy and Photograph of residuals of burning of dry vegetation is enclosed herewith.

Patrolled by: T. Basanta Singh

Signature:

Reviewed by: N.H.Laskar

Signature:

1.2. 132 kV Dimapur-Imphal Line: Tripped on 11.11.2023

पावरग्रिड
POWERGRID

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

No.NEDM/TL/GEN/32/ 75

Date:-13.11.2023

To
The Officer-in-charge
Zubza Police Station
Zubza,Kohima,Nagaland

Sub: Intimation of line tripping due to felling of Trees between Loc. 380-381 of 132 KV S/C Imphal-Dimapur Transmission Line.

Sir,

You are kindly aware that Power Grid Corporation of India Limited (A Govt. of India Enterprise and MAHARATNA) is engaged in effective transmission of Power in and across the regions in its Divisional office at Dimapur and is looking after the following Transmission lines beside a 220/132 kV Sub-station for supply of power to the state of Nagaland in particular and North eastern region in general .The Lines -i) 132 kV D/C Doyang-Dimapur Transmission line, ii) 132 kV S/C Imphal-Dimapur Transmission line ,iii) 220 kV Misa-Dimapur Transmission Line are traversing through the state of Nagaland.

That Sir, on 13.11.2023 , 12:33 HRS ,132 kV 132 KV S/C Imphal-Dimapur Transmission Line tripped showing following details as per Distance relay : R-Y phase fault at a distance of about 38.10 KM from Dimapur Substation end. Accordingly, Line maintenance team set out immediately on 11.06.2021 from Dimapur for patrolling of the line towards the affected section. The Patrolling team found many cut sections of big Himalu trees lying below and around adjacent areas of Location No. 380-381 of 132KV S/C Imphal-Dimapur Transmission line. There was also fresh flashover /contact spot of vegetation on the conductor. Local people also confirmed to have heard a loud crackling sound emanating from nearby the Location. The fault distance also coincides with the protective relay tripping distance.

The auto-reclose of the line caused disturbance in the Power system which further more may have caused tripping of the Line and interruption of bulk power supply to the constituents. Moreover, it may be mentioned that such type of felling of trees without proper safety measures near the live conductor and Tower location may invite various detrimental consequences as fatal incident to the person engaged in tree cutting and felling, damage/snapping of Line conductors, collapse of Line Towers.

In view of above and in the interest of uninterrupted Power supply and safeguard of precious Public property, it is our humble request to kindly look into the matter so as to prevent recurrence of such detrimental and hazardous activities.

A photograph showing the felled trees under and adjacent to the conductor of the affected location span is enclosed herewith.

Thanking you,

Yours Sincerely,

(M. Barman)
Deputy Manager, Dimapur S/S
Dimapur, Nagaland

Received 13/11/23
Officer-in-Charge
Zubza (Zubza) Police Station
Kohima : Nagaland

Copy to (i) GM , i/c. POWERGRID, Dimapur

एम. बर्मन/M. Barman
उप प्रबंधक/Dy. Manager
पावरग्रिड, दीमापुर/POWERGRID, Dimapur

220/132 के. वि. दीमापुर उपकेंद्र, फुल नागार्जन, दीमापुर (नागालैंड) - 797112, दूरभाष - 9435539231
220/132 kV Dimapur Substation, Full Nagarjan, Dimapur, (Nagaland) - 797112, Tele - 9435539231
केंद्रीय कार्यालय : "सौदामिनी", प्लाट न. 2, सेक्टर -29, गुरूग्राम - 122001 (हरियाना), दूरभाष : 0124 - 2571700 - 719
Corporate Office : "Suadamini", Plot No. - 2, Sector - 29, Gurugram - 122001 (Haryana), Tel : 0124 - 2571700 - 719
पंजीकृत कार्यालय दो - 9 कुतब इंस्टीटयूनल एरिया, कटवारिया सराय, नई दिल्ली - 0110016, दूरभाष : 011-26560112 / 26564812 , 26564892, सी आई एन L40101DL1989GO103812
Registered Office : B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi - 110016, Tel : 011-26560112 / 26564812 , 26564892, CIN :L40101DL1989GO103812
Website : www.powergridindia.com

1.3. 132 kV Loktak-Imphal Line: Tripped on 24.11.2023

CHECK LIST FOR POST FAULT PATROLLING OF POWERGRID TRANSMISSION LINE

Name of Transmission Line:	132KV Loktak-Imphal-II TL
Type of Tower: Single Circuit	(Suspension/Tension)
Location Patrolled	90 to 116
Date of Post Fault Patrolling:	24.11.2023 & 25.11.2023
Actual Fault Location:	111-112
Actual Fault Distance:	1.032KM from Imphal
Relay Distance –Main #1-	Imphal end :- R-Yph, Z-1, 1.15Km

Tripping date :	24.11.2023
Tripping Time :	16:55 Hrs
Line restored (Date) :	24.11.2023
Line restored (Time) :	20:30 hrs
Off Line fault locator Distance :	Taken/~~No taken /NA~~
Signature Analysis -	~~Taken~~/No taken /NA
Weather report –	Sunny

Conductor Config.(Ph.) =Top Middle Bottom (D/C)

OR =One side (Top_Y_ Bottom_R_) other side _B (S/C)

Sl. No.	Particulars	CKT#1	CKT#2
1	Damaged/Missing Counter poise earthing (Yes/No)	N/A	No
2	Value of Tower Footing Impedance (Ohm)	N/A	Not Measured
3	Clearance between bottom conductor & vegetation in ROW (m)	N/A	6.5
4	Side clearance of conductors from nearby tall object (tree, small hill, building, etc)near to ROW (m)	N/A	14
5	Vertical clearance between conductors at maximum sag (m)	N/A	3.8
6	Clearance between earth wire/OPGW & top conductor (m)	N/A	6
7	Minimum clearance of jumper from tower body (m)	N/A	NA
8	Maximum value of jumper drop (m)	N/A	NA
9	Presence of pilot insulator & counter weight on jumpers (Yes/No)	N/A	NO
10	Clearance of bottom conductor from power line crossing (under crossing) (m)	N/A	NA
11	Clearance of top conductor from earth wire of power line crossing (overhead crossing) (m)	N/A	NA
12	No. of broken/ damaged insulators in each string	N/A	0
13	Deposition of pollutant (dirt/bird excreta/ coastal, etc) on insulator (Yes/No)	N/A	NO
14	Flash over marks on insulator (Yes/No)	N/A	No
15	Result of PID scanning (if transmission line is older than 10 years and has history of flashover/decapping)	N/A	NA
16	No. of missing/ Tilted/ broken Corona/ grading ring	N/A	0
17	Presence of foreign material on tower near to conductor (cross arm, insulator, earth peak, etc)	N/A	No
18	Missing/ disconnected copper bond/ Aluminum bond	N/A	NO
19	Loose/ hanging bird guards	N/A	NO
20	Loose/ Missing/ Hanging tower members	N/A	NO

*_ High Resolution close photographs of indicated parts are to be taken during patrolling.

Observation in Patrolling: - During post fault patrolling on 24.11.2023 & 25.11.2023 it is found that an unknown person has fell a tree from outside line corridor at R-Y Phase side of conductor. This is the cause of tripping on 24.11.2023. FIR copy and photograph is enclosed herewith.

Patrolled by: ____________

Signature: ____________ T. [illegible] SINGH JE, Imphal TLM

Reviewed by: [illegible] Manager Engineer (O&M) Imphal.

Signature: ____________

1.4. 132 kV Loktak-Imphal Line: Tripped on 29.11.2023

CHECK LIST FOR POST FAULT PATROLLING OF POWERGRID TRANSMISSION LINE

Name of Transmission Line: 132KV Loktak-Imphal-II TL
Type of Tower: Single Circuit (Suspension/Tension)
Location Patrolled 56-67
Date of Post Fault Patrolling: 30.11.2023
Actual Fault Location: 62-63
Actual Fault Distance: 16.22 KM from Imphal
Relay Distance –Main #1- Imphal end :- R-Yph, Z-1, 16.19 Km

Tripping date : 29.11.2023
Tripping Time : 21:21 Hrs
Line restored (Date) : 30.11.2023
Line restored (Time) : 22:08 hrs
Off Line fault locator Distance : Taken/~~No taken /NA~~
Signature Analysis - ~~Taken~~/No taken /~~NA~~
Weather report – Cloudy
Conductor Config.(Ph.) =Top Middle Bottom (D/C)
OR =One side (Top_Y_ Bottom_R_) other side _B (S/C)

Sl. No.	Particulars	CKT#1	CKT#2
1	Damaged/Missing Counter poise earthing (Yes/No)	N/A	No
2	Value of Tower Footing Impedance (Ohm)	N/A	Not Measured
3	Clearance between bottom conductor & vegetation in ROW (m)	N/A	7.9
4	Side clearance of conductors from nearby tall object (tree, small hill, building, etc)near to ROW (m)	N/A	NA
5	Vertical clearance between conductors at maximum sag (m)	N/A	3.8
6	Clearance between earth wire/OPGW & top conductor (m)	N/A	6.5
7	Minimum clearance of jumper from tower body (m)	N/A	NA
8	Maximum value of jumper drop (m)	N/A	NA
9	Presence of pilot insulator & counter weight on jumpers (Yes/No)	N/A	NO
10	Clearance of bottom conductor from power line crossing (under crossing) (m)	N/A	NA
11	Clearance of top conductor from earth wire of power line crossing (overhead crossing) (m)	N/A	NA
12	No. of broken/ damaged insulators in each string	N/A	0
13	Deposition of pollutant (dirt/bird excreta/ coastal, etc) on insulator (Yes/No)	N/A	NO
14	Flash over marks on insulator (Yes/No)	N/A	No
15	Result of PID scanning (if transmission line is older than 10 years and has history of flashover/decapping)	N/A	NA
16	No. of missing/ Tilted/ broken Corona/ grading ring	N/A	0
17	Presence of foreign material on tower near to conductor (cross arm, insulator, earth peak, etc)	N/A	No
18	Missing/ disconnected copper bond/ Aluminum bond	N/A	NO
19	Loose/ hanging bird guards	N/A	NO
20	Loose/ Missing/ Hanging tower members	N/A	NO

*_ High Resolution close photographs of indicated parts are to be taken during patrolling.

Observation in Patrolling: - During post fault patrolling it was found that the Y-Phase (top) conductor has snapped in between the location span 62-63 which was sabotage by unknown miscreant This was the cause of breakdown on 29.11.223 at 21:21 hrs. FIR copy and photograph enclosed.

Patrolled by: सागर एस. हिंगुलकर / Sagar S. Hingulkar
Signature: अभियंता (टीएलएम) / Engineer (TLM)
पावर ग्रिड / POWERGRID
इम्फाल / IMPHAL

Reviewed by: N.H. Laskar
Signature: एन.एच. लस्कर / N.H. Laskar
प्रबंधक (टी एल)/ Manager (T/L)
पावरग्रिड / POWERGRID
इंफाल / Imphal Sub-station

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		