Agenda for

65th Protection Coordination Sub-Committee Meeting

Date: 14/03/2024 (Thursday)

Time: 11:30 hrs

Venue: Hotel royale De'casa, Beltola, Guwahati

A. CONFIRMATION OF MINUTES

1. CONFIRMATION OF MINUTES OF THE 64th PROTECTION SUB-COMMITTEE MEETING OF NERPC.

Minutes of the 64th PCC Meeting held on 15th February, 2024 (Thursday) at NERPC conference Hall, Shillong was circulated vide No.: NERPC/SE (O)/PCC/2023/3304-3345 dated 1st March, 2024.

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

The Sub-committee may confirm the minutes of 64th 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 64th PCCM,
NERPC informed that protection audit of Sarusajai, Kahilipara and BTPS substations of Assam (AEGCL) has been carried out on 31st January'24 by the NERPC audit team. Preliminary report has already been submitted and final report will be submitted within a month.

NERPC also stated that audit of substations of Nagaland (Dimapur, Kohima, Sanis, Wokha, Mokokchung) will be carried out shortly. NERTS requested the forum to carry out the audit at Dimapur (PG) and Mokokchung (PG) and nearby Substations. Forum agreed for the same.

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

Sub-committee may deliberate

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

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

AEGCL vide email dtd 4.03.2024 requested for urgent Planning of Protection Audit for the following AEGCL substations viz.

i) 220kV Jwaharnagar GIS
ii) 220kV KLHEP GSS
iii) 132kV Gauripur GSS
iv) 132kV Karimganj GSS

In 64th PCCM, in respect of MePTCL, Member Secretary NERPC opined that conducting audit by NEPRC at all of these substations may not be feasible and advised MePTCL to send list of priority Substations, out of which few Substations will be audited by NERPC team.

Sub-committee may deliberate

B.3 AMC of PDMS and PSCT

Comprehensive AMC for Protection Database Management System (PDMS) and Protection Setting Calculation Tool (PSCT), currently provided by M/s PRDC, is expiring in March 2025. The PDMS and PSCT system comprise complex set of software, hardware, servers, firewall etc. The AMC of the system is essential for smooth functioning and effective utilization of the system for improvement of protection system of NER region and thus ensuring secure and reliable operation of the grid. Therefore, it is critical that AMC of the system be renewed for next five years. The forum may deliberate upon renewal of the AMC.

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

TABLE 8 : REPORT SUBMISSION TIMELINE

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

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

The forum may deliberate upon the GD/GI/Near miss events that occurred in February 2024 based on the draft reports prepared by NERLDC. The list of events and draft report of NERLDC is attached as **Annexure B.3**

Sub-committee may deliberate upon the events

Agenda items from NERLDC

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

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

Status of uploading of FIR, DR & EL outputs in Tripping Monitoring Portal for events from 01-02-2024 to 29-02-2024 as on 06-03-2023 is given below:

Name of Utility	**Total FIR/ DR/EL to**	**Total FIR, DR & EL submitted**			**Total FIR, DR & EL not submitted**			**% Submission of**		
		FIR	**DR**	**EL**	**FIR**	**DR**	**EL**	**FIR**	**DR**	**EL**

	be submitted									
DoP, Arunachal Pradesh	3	3	3	3	0	0	0	100	100	100
AEGCL	9	9	7	5	0	1	0	100	86	100
MSPCL	23	19	8	5	2	5	10	90	74	44
MePTCL	7	6	5	5	1	1	1	86	83	83
DoP, Nagaland	2	2	1	1	0	0	0	100	100	100
TSECL	8	2	8	8	6	0	0	**25**	100	100
POWERGRID	27	27	25	25	0	0	0	100	100	100
NEEPCO	2	0	2	2	2	0	0	0	100	100
NHPC	4	1	1	1	3	3	3	**25**	**25**	**25**
OTPC	1	1	1	1	0	0	0	100	100	100
MUML	1	0	1	1	1	0	0	0	100	100
NTL	4	4	2	0	0	2	4	100	**50**	0

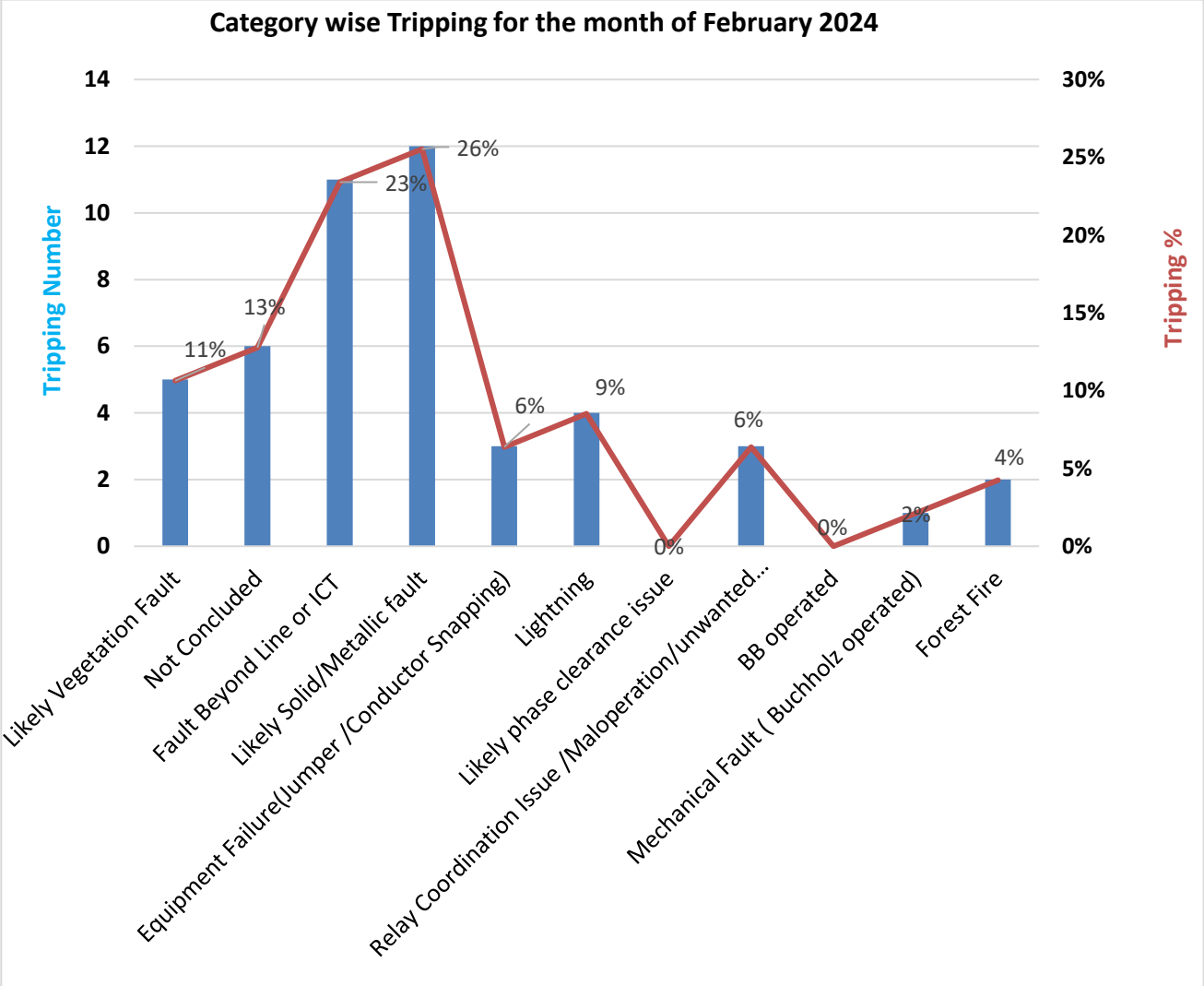
Concerned Utilities are requested to upload Disturbance Recorder (DR), Event Logger (EL) outputs for grid events along with a First Information Report (FIR) in Tripping Monitoring Portal (https://tripping.nerldc.in/Default.aspx) for analysis purpose. In light of the cybersecurity measures implemented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

Sub-committee may deliberate

B.6 Category wise Tripping for the month of February 2024:

There were a total of 47 numbers of Line & ICT tripping during the month of February'24. 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 23% of tripping were due to fault

beyond the line and 26% of tripping were due to solid fault. The trippings due to vegetation fault and solid fault are listed below:



List of tripping due to Vegetation fault during February, 2024

Sl. No.	Element Name	Owner	Tripping Date & Time
1	132 kV Nirjuli-North Lakhimpur 1 Line	MUML	12-02-2024 10:10
2	400 kV Palatana - Silchar 1 Line	NETC	16-02-2024 13:37
3	132 kV Roing - Pasighat Line	POWERGRID	21-02-2024 21:44
4	132 kV Jiribam - Pailapool Line	AEGCL	22-02-2024 01:14

5	132 kV Imphal (MSPCL) - Imphal (PG) 1	POWERGRID	27-02-2024 19:54

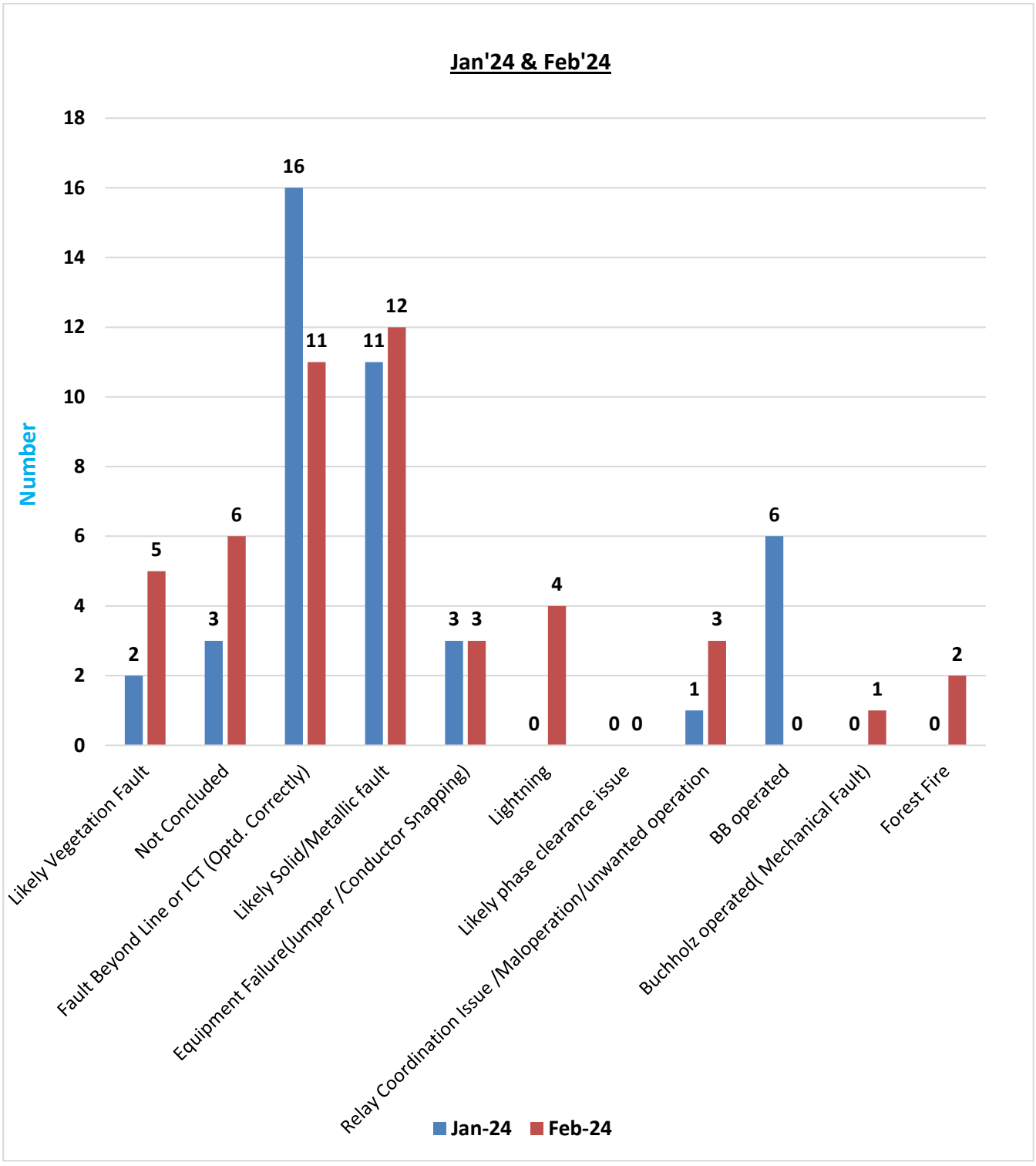
Patrolling Report of Assam is attached in the **Annexure B.6**

List of tripping due to Solid fault during February, 2024

Sl. No.	Element Name	Owner	Tripping Date & Time	End A	End B
1	132 kV Ningthoukhong - Churachandpur 2 Line	MSPCL	01-02-2024 22:47	DP, ZI, B-E	No tripping
2	132 kV Ningthoukhong - Churachandpur 2 Line	MSPCL	02-02-2024 01:37	DP, ZI, B-E	No tripping
3	220 kV Amguri - NTPS Line	AEGCL	02-02-2024 09:51	DP, ZI, B-E,FD: 81.89km	DP, ZI, B-E
4	400 kV Balipara - Bongaigaon 1 Line	POWERGRID	05-02-2024 10:42	DP, Z-I, B-E, FD:114.3 KM	DP, Z-I, B-E, FD:138.5KM
5	220 kV Samaguri - Sonabil 2 Line	AEGCL	08-02-2024 05:37	DP, ZI, Y-E, FD: 10.4 Kms	DP, ZI, Y-E, FD:45.8km
6	132 kV Bodhjannagar - Jirania Line	TSECL	08-02-2024 16:39	DP,ZII,B-E,FD: 17.56 km	DP,ZI,B-E,FD:0.5 KM
7	220 kV Mariani (AEGCL) - Samaguri Line	AEGCL	12-02-2024 13:52	DP,ZI,B-E,FD:27.8 Km	DP,ZI,B-E,FD:12.2 km
8	132 kV Basar-Daporijo Line	DoP, Arunachal Pradesh	13-02-2024 12:25	DP,ZI, B-E	DP,ZI, B-E, FD: 27.12 km

9	132 kV Dharmanagar - P K Bari Line	TSECL	21-02-2024 10:26	DP,ZI,B-E	DP,ZI,R-E,FD:22.49 km
10	132 kV Dhalabil - Kamalpur Line	TSECL	22-02-2024 12:10	DP,ZI,Y-E,FD:3 Kms	DP,ZI,Y-E,FD: 27.42 Kms
11	132 kV Agartala - Surajmaninagar 1 Line	TSECL	25-02-2024 05:04	DP,ZI, Y-B, FD: 5.8 Km	DP,ZI,R-Y, FD:11.82 Kms
12	220 kV Byrnihat - Misa 1 Line	MePTCL	26-02-2024 06:41	DP, ZI, R-E, FD: 55.27 Kms	DP,ZI, R-E, FD: 61.69 km

Monthly Comparison of category wise tripping for Jan'24 & Feb'24



Sub-committee may deliberate

B.7 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 February, 2024 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	Blackout of Churachandpur & Thanlon areas	22:47 Hrs on 01-02-2024	Manipur	**No**	**No**	Yes	Insulator damaged in multiple phases/locations in the 132 kV Ningthoukhong Churachandpur II.	**IEGC section 37.2(b) Flash report within 8 hrs 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? IEGC section 17.3 - DR time sync**
2	GD-I	Blackout of Churachandpur & Thanlon areas	01:37 Hrs on 02-02-2024	Manipur	**No**	**No**	Yes	Insulator damaged in multiple phases/locations in the 132 kV Ningthoukhong Churachandpur II.	**IEGC section 37.2(b) Flash report within 8 hrs 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? IEGC section 17.3 - DR time sync**
3	GD-I	Blackout of Ningthoukhong, Churachandpur & Thanlon areas	10:05 Hrs on 02-02-2024	Manipur	**No**	**No**	Yes	Insulator damaged in multiple phases/locations in the 132 kV Ningthoukhong Churachandpur II. (Tripping of Healthy line due to non-operation of the CB at Ningthoukhong end for 132 kV Ningthoukhong - Churachandpur II.)	**IEGC section 37.2(b) Flash report within 8 hrs 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? - POWERGRID**
4	GD-I	Blackout of Ningthoukhong, Churachandpur & Thanlon areas	18:44 Hrs on 02-02-2024	Manipur	**No**	**No**	Yes	Insulator damaged in multiple phases/locations in the 132 kV Ningthoukhong Churachandpur II. (Tripping of Healthy line due to non-operation of the CB at Ningthoukhong end for 132 kV Ningthoukhong - Churachandpur II.)	**IEGC section 37.2(b) Flash report within 8 hrs 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? - POWERGRID & NHPC**
5	GD-I	Blackout of Thoubal, and radially connected Kongba, Kakching, Chandel, Moreh, Elangkangpokpi areas of Manipur & international Tamu Load of Myanmar	08:32 Hrs on 03-02-2024	Manipur	**No**	**No**	Yes	Buchholz Relay operated for B-phase ICT at 400/132 kV 315 MVA ICT-1 at Thoubal	**IEGC section 37.2(b) Flash report within 8 hrs 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?**
6	GD-I	Blackout of Churachandpur & Thanlon areas	12:59 Hrs on 08-02-2024	Manipur	**No**	**No**	Yes	Y-E fault with fault current 1.2 kA. Suspected fault in 132 kV Churachandpur-Thanlon line which led to tripping of 132 kV Ningthoukhong-Churachandpur II line from Ningthoukhong end on DP, ZIII.	**IEGC section 37.2(b) Flash report within 8 hrs IEGC section 37.2 (e)- Detailed Report By User**
7	GD-I	Blackout of Churachandpur & Thanlon areas	06:57 Hrs on 21-02-2024	Manipur	**No**	**No**	Yes	Y-E fault with fault current 1.2 kA. Suspected fault in 132 kV Churachandpur-Thanlon line which led to tripping of 132 kV Ningthoukhong-Churachandpur II line from Ningthoukhong end on DP, ZIII.	**IEGC section 37.2 (b)- Flash Report By User IEGC section 37.2 (e)- Detailed Report By User**
8	GD-I	Blackout of Kolasib area	13:47 Hrs on 22-02-2024	Mizoram	**No**	**No**	Yes	Suspected fault in 132 kV Kolasib-Turial line which was not cleared from Kolasib end resulting in tripping of healthy 132 kV Aizawl-Kolasib and 132 kV Badarpur-Kolasib lines. (Y-B ph fault detected from Aizawl and Badarpur end DR)	**IEGC section 37.2 (b)- Flash Report By User IEGC section 37.2 (e)- Detailed Report By User**
9	GI-II	AGBPP	06:31 Hrs on 23-02-2024	NEEPCO	**No**	**No**	Yes	Loss of Power supply due to tripping of station transformer	**IEGC section 37.2(b) Flash report within 8 hrs 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?**
10	GD-I	Blackout of Karong area	20:34 Hrs on 28-02-2024	Manipur	No (Submitted on 04-03-24)	**No**	Yes	Y- phase CT blast at 132 kV Imphal (Yurembam) S/S	**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?**

The complied Event Report of February 2024 attached in **Annexure B.3**

Members may discuss

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

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

NTL, NETC & AEGCL submitted the Protection Performance Indices for the month of February, 2024 as follows:

SN	Name of Transmission Licencee	D= (Nc/Nc+Nf)	S= (Nc/Nc+Nu)	R= (Nc/Nc+Ni)	Remakrs
1	NETC	-	-	-	No bays owned by NETC
2	NTL	1	1	1	-
3	AEGCL	1	0.9	0.9	S & R Index below 1 due to the Pole Discrepancy Mal-operation at NTPS end for 220kV NTPS - Amguri line. The issue has been resolved.

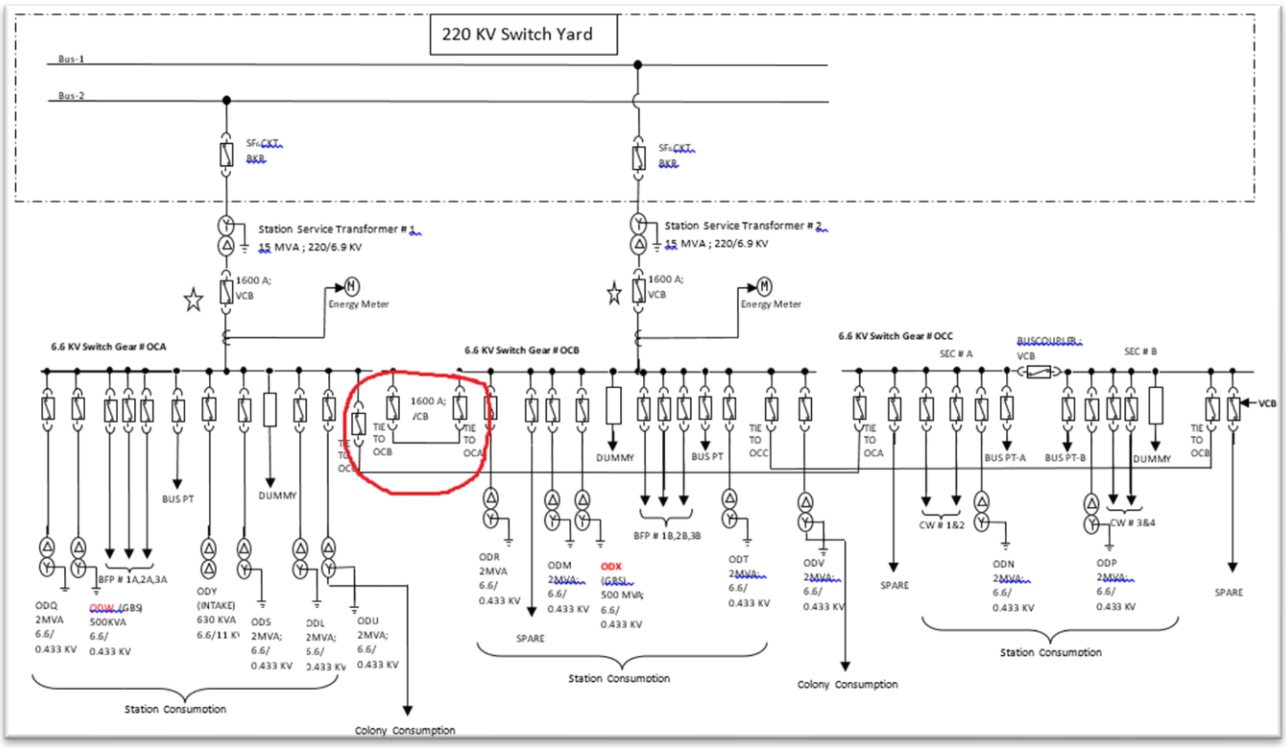
It has been observed that Protection Performance Indices are not being submitted by all the users. Therefore, all Users are requested to furnish performance indices

(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.

B.9 Tripping of AGBPP all units due to tripping of Station Transformer II on 23.02.2024:

On 23rd Feb,2024 at 06:15 Hrs, all available units of AGBPP(NEEPCO) tripped due to tripping of Station Transformer which give auxiliary supply to Gas Booster Station(GBS). GBS is the key element for running of GTGs.

It was informed by AGBPP that Station transformer tripped due to sudden pressure valve (30DQ) trip. And during restoration of power from Station Transformer I to GBS, running GBS tripped.



SLD of Station consumption of AGBPS

AGBPP(NEEPCO) may deliberate on this issue and make automatic switching arrangement between Station transformer I & II to avoid power interruption to GBS and unwanted tripping of units in future.

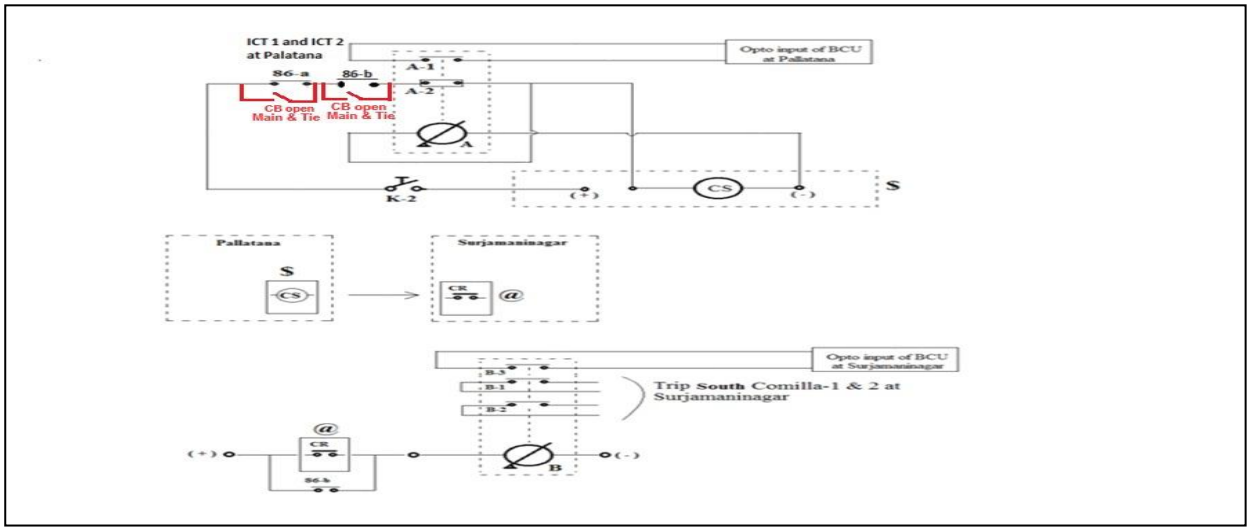
B.10 Modification of SPS at Palatana due to outage of both the ICT's:

SPS related to Reliable Power Supply to Bangladesh operates during the outage of both the ICT's at Palatana. On successful operation, entire load disconnection of South Comilla by way of tripping of 132kV SM Nagar-South Comilla D/C.

Present tripping logic included the operation of 86 relay status of both the ICT's.

However, the SPS will not work during the Shutdown (86 operate status-OFF) of any one ICT & tripping (86 Operate Status-ON) of other ICT.

Modification: Main CB & Tie CB status need to be included in the tripping logic for reliable SPS operation as highlighted in red colour below.



Members may discuss

B.11 <u>Modification required in the logic of the SPS Related to the tripping of Bus Reactors at 400 kV S M Nagar (ISTS) and 400 kV P K Bari (ISTS):</u>

SPS: Related to the tripping of Bus Reactors at 400 kV S M Nagar (ISTS)

Tripping of both circuits of 400 kV SM Nagar-PK Bari D/C will trip 2 x 125 MVAR Bus Reactors at SM Nagar (ISTS) to prevent under voltage situation at S M Nagar(ISTS) and nearby areas of Tripura Power system. Logic will also operate in case of the outage of any one circuit and tripping of the other circuit.

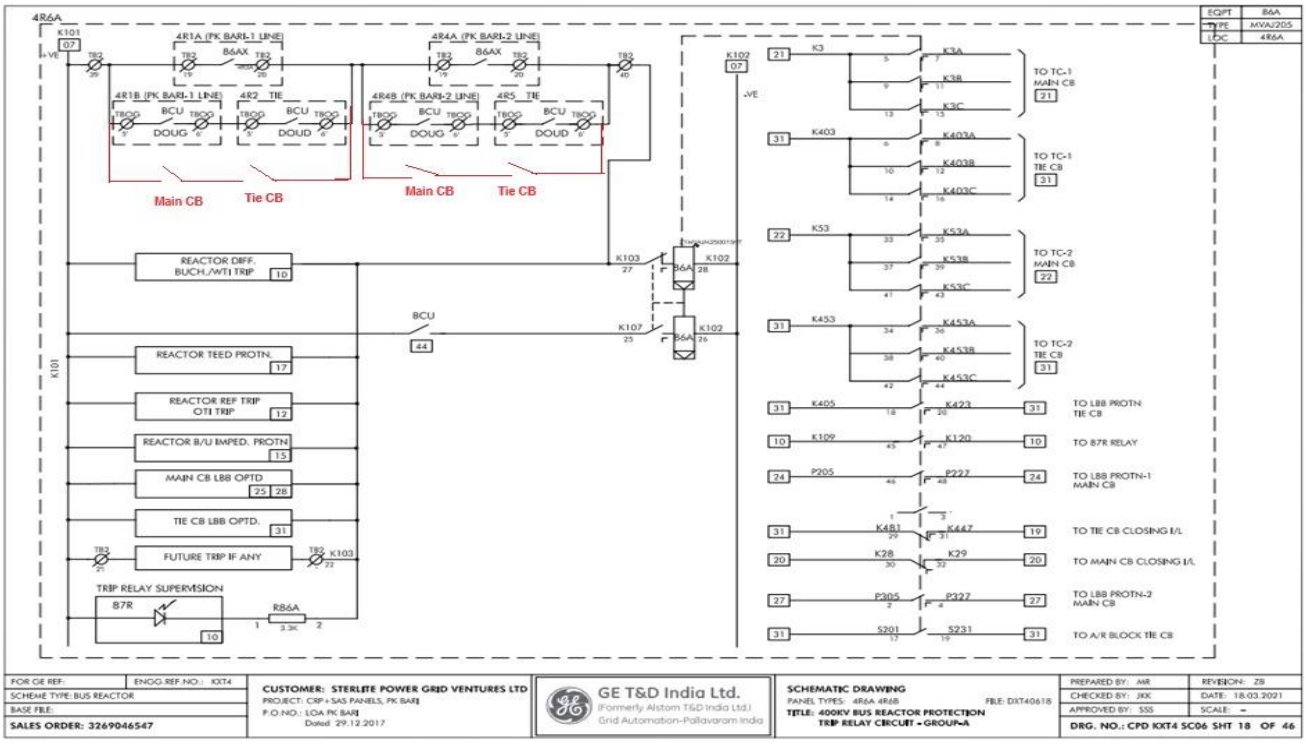
SPS: Related to the tripping of Bus Reactors at 400 kV P K Bari (ISTS)

Tripping of both circuits of 400kV PK Bari(ISTS) – Silchar(PG) D/C will trip 2 x 125 MVAR Bus Reactors at P K Bari(ISTS) to prevent under voltage situation at P K Bari(ISTS) and nearby areas of Tripura system. Logic will also operate in case of the outage of any one circuit and tripping of the other circuit.

Present tripping logic included the operation of 86/86 LO relay status of both the Lines.

However, the SPS will not work during the Shutdown (86 operate status-OFF) of any one line & tripping (86 operate Status-ON) of other line.

Modification Required: Main CB & Tie CB status need to be included in the tripping logic for reliable SPS operation.



B.12 Requirement of SPS for generation evacuation from Leshka HEP (MePGCL)

Reporting Party: MePGCL

Classification: SPS related to safe evacuation of Generation

Operation: Generation Rejection

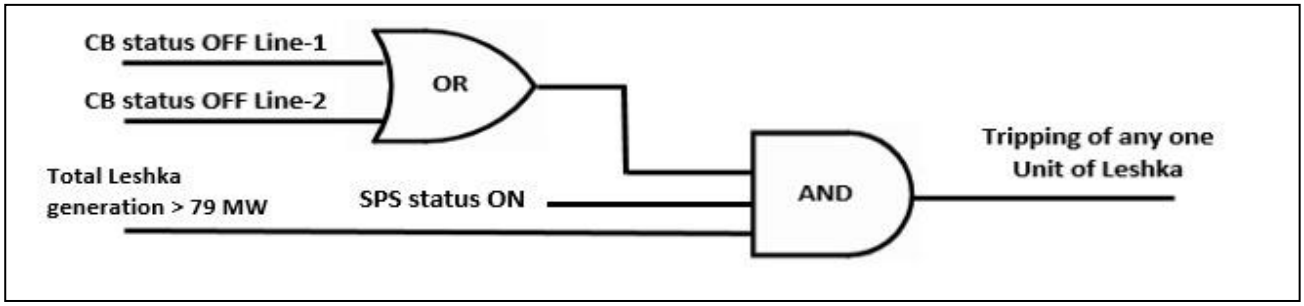
Scheme-

1. Right now Leshka with an installed capacity of 42 X 3=126 MW connected with rest of Grid via 132 kV Leshka-Khlieriat (MePTCL) D/C Line. If one circuit of 132 kV Leshka – Khliehriat (MePTCL) D/C trips/goes under outage, the full generation could not be evacuated via a single line of 132 kV Leshka – Khliehriat (MePTCL) line.

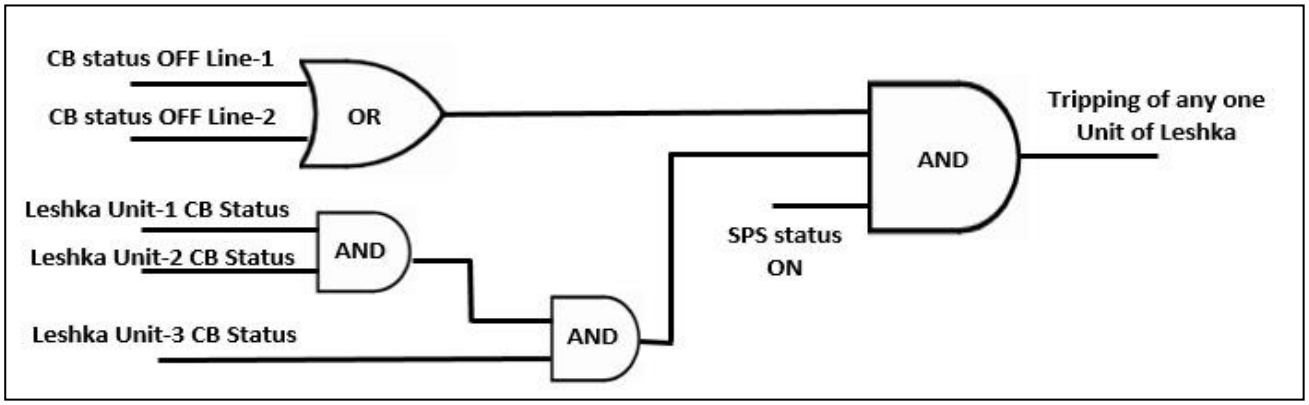
- As per the scheme logic, when sum of Leshka generation is more than 79 MW, outage of any one circuit of 132 kV Leshka-Khlieriat (MePTCL) line should result in tripping of any one unit of Leshka for safe evacuation of power from Leshka HEP. Hence, reliability of Leshka generation shall increase.
- OR
- When all the units running, outage of any one circuit of 132 kV Leshka-Khlieriat (MePTCL) line should result in tripping of any one unit of Leshka for safe

evacuation of power from Leshka HEP. Hence, reliability of Leshka generation shall increase.

The schematics of the SPS is attached for reference.



OR

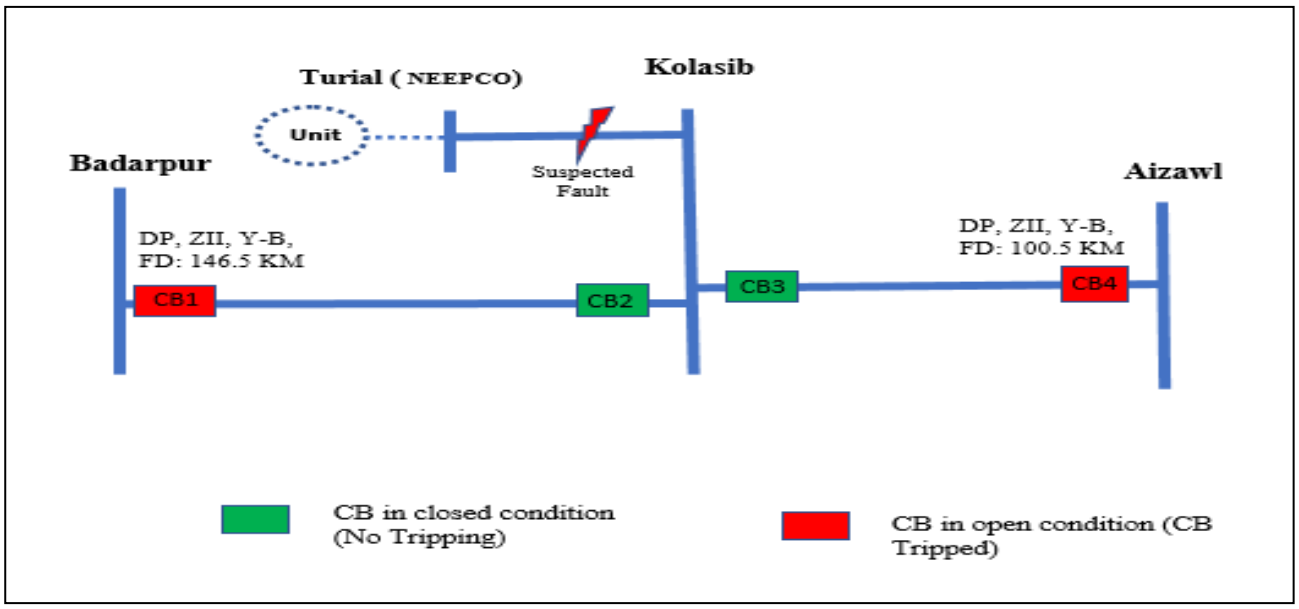


MePGCL is requested to implement any of the SPS logic at the earliest.

Forum may deliberate

B.13 <u>Grid Disturbance at Kolasib area of Mizoram power system on 22-02-2024:</u>

At 13:47 Hrs of 22.02.2024, 132 kV Aizawl-Kolasib and 132 kV Badarpur-Kolasib lines tripped, which led to blackout at Kolasib Substation of Mizoram Power system.

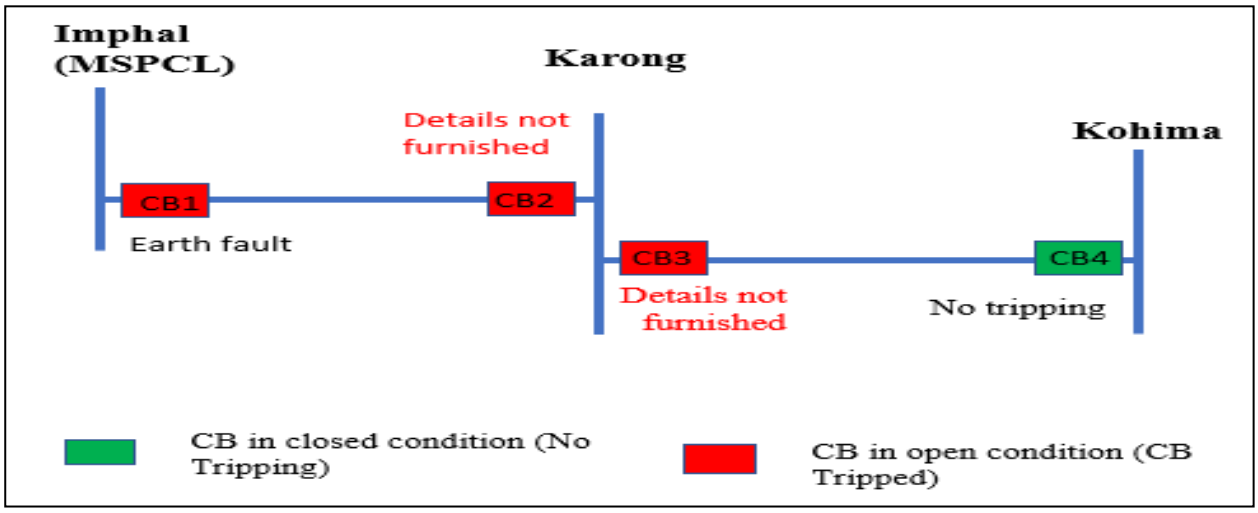


As per DR analysis, Y-B fault detected from Aizawl and Badarpur end which was cleared on operation of DP, ZIII within 850 msec. There was no tripping from Kolasib end for both the lines. Fault is suspected in 132 kV Kolasib-Tuirial line which was not cleared resulting in tripping of healthy 132 kV Aizawl-Kolasib and 132 kV Badarpur-Kolasib lines from remote end on operation of DP, ZIII which impacts the ISTS node

P&ED, Mizoram may share the root cause of the events and corrective action that has been taken to forum.

B.14 <u>Grid Disturbance at Karong area of Manipur power system on 28-02-2024:</u>

At 20:34 Hrs on 28-02-2024, 132 kV Imphal – Karong & 132 kV Karong – Kohima tripped resulting into the Grid Disturbance at the Karong area of Manipur power system.



As per the PMU snap of the Imphal SS, Y phase fault with Fault current of 414 A appears in the Y phase and cleared in 80 msec.

As per information from Manipur, Y- phase CT blast at 132 kV Imphal (Yurembam) S/S.

Tripping of 132 kV Karong- Kohima line from Karong end is unwanted resulting in blackout of Karong Substation which is the serious concern.

MSPCL may share the root cause of the event, reason of tripping of healthy 132 kV Kohima Line and remedial measures that has been taken to forum.

Sub-committee may deliberate

B.15 <u>Mapping of SPS in the SCADA Display for real time monitoring of all SPS:</u>

NLDC has submitted the Guidelines on "Interfacing Requirements" after stakeholder consultation for approval of the Commission as mentioned in the Regulation 7.4, read with Regulation 14.2 of the Communication System for inter-State transmission of electricity) Regulations,2017.

On dated 19-Jan-2024, CERC approved the guideline on "Interfacing Requirements" prepared by NLDC in consultation with the stakeholder.

As per the Guideline, real time telemetered is SPS Signal need to be monitored.

The digital status shall be as per IEC standard. Digital Status for circuit breaker must be double point while isolator status can be either single point or double point as per end device. All users shall comply with interface requirements as specified and shall share interface details with respective control centre.

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

<u>At present, there are 18 numbers of SPS under operation and 2 numbers of SPS under implementation as listed tabulated below:</u>

Sl. No.	SPS under operation	Long term measures	SPS mapping status in SCADA (YES/No)
1	**Tripping of 400kV Palatana-Silchar D/C-** when both modules of Palatana are in service causes tripping of HV side breaker of 2x125 MVA, 400/132 kV ICT at Palatana	After commissioning of 400 kV Palatana - Surajmaninagar line-1, there is no requirement of this SPS and hence, it is to be kept OFF. However, the SPS at Palatana is to be kept ON during shut down of 400 kV Palatana-Surajmaninagar(ISTS) line-1	
2	Reverse power flow more than 60 MW from LV to HV side of 2 X 315 MVA, 400/220 kV Azara ICTs causes tripping of 400/220 kV, 2x315 MVA ICTs at Azara (AEGCL)	After upgradation of 220 kV BTPS-Salakati D/C lines. (Need to disable after system study of the present condition)	
3	Tripping of 132 kV Umiam Stg-I to Umiam Stg-III D/C lines causes instantaneous load shedding near Mawphlang area	After commissioning of 220 kV Killing-Mawngap D/C lines and re-conductoring of 132kV Lumshnong-Panchgram line, SPS is kept OFF	
4	SPS related to overloading of 220kV BTPS- Salakati D/C- Tripping of 220kV Agia – Boko and 220kV Agia – Mirza	After upgradation of 220 kV BTPS-Salakati D/C lines, this SPS is kept OFF	
5	**Related to the safe evacuation of power from BgTPP(NTPC) generation -** BGTPP generation reduction to 600 MW	-	

6	**Related to Generation evacuation from Monarchak(NEEPCO) Power Plant -** Tripping of STG at Monarchak under outage of any one circuit of 132 kV Monarchak – Rokhia line & 132 kV Monarchak- Udaipur	Commissioning of 132 kV Monarchak-Surajmaninagar line	
7	Outage of 220 kV BTPS (Salakati) – Rangia I & II - load shedding	Commissioning of 400 kV Rangia SS and LILO of 400 kV Bongaigaon-Balipara 1 & 2 Line at Rangia.	
8	**Related to the tripping of Bus Reactors at 400 kV S M Nagar (ISTS)** - Tripping of both circuits of 400 kV SM Nagar-PK Bari D/C will trip 2 x 125 MVAR Bus Reactors at SM Nagar (ISTS) to prevent under voltage situation	-	
9	**Related to the tripping of Bus Reactors at 400 kV P K Bari (ISTS)** - Tripping of both circuits of 400kV PK Bari (ISTS) – Silchar(PG) D/C will trip 2 x 125 MVAR Bus Reactors at P K Bari(ISTS) to prevent under voltage situation	-	
10	**Related to the tripping of Bus Reactors at 400 kV Imphal (PG)** - Tripping of 400 kV New Kohima – Imphal D/C during outage of 400 kV Silchar – Imphal D/C will lead to the tripping of 125 MVAR and 80 MVAR Bus Reactor at Imphal(PG)	-	
11	**Related to Outage of any one of the 400/132kV 2x360MVA ICTs at Panyor Lower Hydro Power Station** - Disconnection of One Unit of Panyor	After restoration of 132 kV Panyor -Itanagar & 132 kV Panyor -Pare line (expected by 31st Mar'24)	

	(135 MW) and One Unit of Pare (55 MW)		
12	**SPS related to outage of 220 kV Azara-Sarusajai DC/220 kV Misa-Samaguri DC** - **1) On tripping of 220 kV Azara-Sarusajai D/C:** 140-150 MW load disconnection is to be done at Sarusajai and Kahilipara areas **2) On tripping of 220 kV Misa-Samaguri DC:** Load reduction of 50-60 MW at Samaguri area	Commissioning of 400 kV Sonapur Substation. LILO of 400 kV Bongaigaon-Byrnihat Line at Sonapur.	
13	**SPS related to the outage of 132 kV Panyor HEP-Ziro Line** - Tripping of 132 kV Panyor-Ziro will cause disconnection of 33kV Load at Ziro	Commissioning of 132 kV Khupi - Along Link/220 kV AGBPS-Namsai D/C	
14	Related to outage of any one circuit of 132 kV Dimapur(PG)- Dimapur(NA) D/C	Reconductoring of 132 kV Dimapur(PG)- Dimapur(NA) D/C	Yes
15	Related to outage of any one circuit of 220 kV Balipara-Sonabil D/C	Reconductoring of 220 kV Balipara-Sonabil D/C lines with higher ampacity and Utilisation of 2 X 160 MVA ICTs at Balipara	
16	**Related to Outage of 400 kV Palatana – Surajmani Nagar line (charged at 132 kV)** - Tripping of 400 kV SM Nagar – Comilla D/C (charged at 132 kV) during outage of 400 kV Palatana – SM Nagar(TSECL) line (charged at 132 kV)	Upgradation of 132 kV Surajmaninagar(TSECL) to 400 kV	

17	**Related to Outage of both 400/132 kV, 2x125 MVA ICTs at Palatana** - Entire load disconnection of South Comilla by way of tripping of 132kV SM Nagar-South Comilla D/C	Upgradation of 132 kV Surajmaninagar(TSECL) to 400 kV	
18	Related to the outage of any one circuit of the 132 KV Khliehriat (PG)-Khliehriat D/C line	Reconductoring of 132 KV Khliehriat (PG)-Khliehriat D/C line	

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

Sub-committee may deliberate

B.16 Non-operation of auto recloser in Important Grid Elements for transient faults in February 2024:

SL No	Element Name	Tripping Date and Time	Relay Details_A	Relay Details_B	AR not Operated	Remarks
1	220 kV Amguri - NTPS Line	02-02-2024 09:51	DP, ZI, B-E,FD: 81.89km	DP, ZI, B-E	Amguri & NTPS	
2	132 kV Dimapur - Imphal Line	06-02-2024 21:01	DP, ZI, Y-E, FD:17.02 km	DP, ZII, Y-E, FD: 149.5km (Carrier	Imphal	

			(AR Unsuccess s ful)	Aided tripping)		
3	220 kV Samaguri - Sonabil 2 Line	08-02-2024 05:37	DP, ZI, Y-E, FD: 10.4 Kms	DP, ZI, Y-E, FD:45.8km	Both ends	
4	132 kV Roing - Pasighat Line	21-02-2024 21:44	DP, ZI, Y-B, AR Sucessful	DP, ZII, Y-B,FD:95KM	Pasighat (out of service)	
5	220 kV Byrnihat - Misa 2 Line	23-02-2024 04:39	DP,ZI, Y-E, FD: 59.54 Km	DP,ZI, Y-E, FD: 81.019km (AR Successful)	Byrnihat	
6	220 kV Byrnihat - Misa 1 Line	26-02-2024 06:41	DP, ZI, R-E, FD: 55.27 Kms	DP,ZI, R-E, FD: 61.69 km	Both Ends	
7	220 kV Kopili - Misa 1 Line	27-02-2024 12:09	DP,ZI,B-E, AR not operated	DP,ZII,B-E,FD: 53.14KM (Carrier Aided Tripping), (AR Unsuccessful)	Kopili	

Utilities may update

Agenda from NERTS

B.17 Regarding Highset function for HV & LV O/C E/F for ICTs at Roing, Tezu & Namsai:

Due to frequent 33kV feeder faults in Roing, Tezu & Namsai, the ICTs in all the 3 stations are subjected to frequent fault currents. Further, there is also chance that in case the fault spills over to the connected 132kV system it will lead to blackout of Namsai & Tezu Ss which are the radially fed.

To isolate the faults in the 33kV system in the ICTs itself in worst case scenario, the HV & LV side O/C E/F settings have been revised and kept sensitive as :

Sl.No.	Protection for ICT	Settings	Trip time
1	HV OC Highset	70% of Max fault current	50 msec
2	HV EF Highset	80% of Max fault current	50 msec
3	LV OC Highset	50% of Max fault current	50 msec
4	LV EF Highset	50% of Max fault current	50 msec

The above settings revision is for intimation to forum & request to DoP AP to reduce the 33kV feeder faults.

B.18 Unwanted tripping of 132kV Badarpur – Kolsaib & 132kV Aizwal – Kolasib

on 22.02.24, it was observed that both 132kV Badarpur – Kolsaib & 132kV Aizwal – Kolasib feeder tripped on Z-3 fault at the same time. Upon investigation it was found that the fault was in 132kV Kolsaib-Turial feeder which was not cleared by Kolasib which led to tripping of the upstream feeders.

To prevent recurrence of above issue, Circuit Breaker as well relay operation (Distance Function) maybe checked at Kolasib end for Kolasib-Turial feeder. Forum may deliberate.

B.19 Regarding usage of dark fiber for Line Differential Function:

POWERGRID has successfully commissioned LDR for numerous 132kV lines in NER. For the following feeders, even though the LDR has been commissioned, due to non-availability of dedicated dark fibers Differential function has not been activated:

a. 132kV Kumarghat – PKBari – Fibre is owned by Tripura.

b. 132kV Kumarghat – Karimganj - ULDC owned 24 pair fibre is being installed & shall be commissioned by march 2024 upto LILO point. Beyond LILO point, fibre is owned by AEGCL.

Forum may approve usage of 01 pair of available fibre for Line Diff function of above feeders.

B.20 Issue of 48V PLCC supply at Pasighat for 132kV Roing-Pasighat feeder:

Due to unhealthy 48V dc supply at Pasighat Ss, carrier is permanently unhealthy for 132kV Roing-Pasighat feeder. Due to this, Auto Reclose & Carrier Aided Tripping (in case of Z-2 fault) at both ends is nonfunctional.

Remedial measures: To ensure successful AR & & Carrier Aided Tripping (in case of Z-2 fault) at both ends, the following changes shall be done until the 48V supply is restored at Pasighat end:

c. Carrier healthy shall be made permanently high at Pasighat end to prevent AR lockout in case of carrier unhealthy.

d. For both Roing & Pasighat end, Auto Reclose initiation shall be configured for Z-2 (without carrier) & trip extension to Master Trio relay (86) from Z-2 shall be removed. Alongwith it, trip time (T2) for Z2 fault shall be reduced to 100 msec.

C. FOLLOW–UP AGENDA ITEMS

C.1 Submission of monthly and Quarterly progress report by respondents of NERLDC's Petition:

As per the Direction of Hon'ble commission related to the Petition No 198/MP/2020, 259/MP/2020, 535/MP/2020, 539/MP/2020 and 540/MP/2020, respective respondents 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	Respondent
08-Nov-2023	198/MP/2020	DoP, Arunachal Pradesh
	259/MP/2020	DoP, Nagaland
	539/MP/2020	MSPCL
27-Oct-2023	535/MP/2020	TPTL/TSECL
	540/MP/2020	P&ED, Mizoram

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

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

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

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

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

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

All the respondents are requested to provide the progress report for Dec'23 and Jan'24.

In 64th PCCM, DoP Nagaland stated that the progress report for Jan'24 has been recently sent to NERPC and NERLDC.

Member Secretary, NERPC requested NELRDC and concerned states to provide following details and month wise report to NERPC so as quarterly report can be submitted to Commission –

State/Utility	Nomination of Nodal officers (at the level of SE & above)	Whether List of substations identified by NERLDC/State?	Whether Action plan with timeline for implementation submitted?	Monthly Work progress report submitted?
DoP Arunachal Pradesh	No	Yes	Yes	December 2023 1. DR/EL-100% 2. AR status-2024-25
DoP Nagaland	No	Yes	Not available	Not available
DoP Mizoram	No	Yes	Not available	Not available
TPTL/TSECL	No	Yes	Not available	Not available
MSPCL	No	Yes	Not available	Not available

Sub-committee may deliberate

C.2 Mock testing of the System Protection Scheme (SPS) of the NER:

New IEGC highlighted the need for mock testing of the SPS for reviewing SPS parameters & functions, at least once in a year under the regulation 16 (2) of IEGC 2023.

As per the discussion in the 63rd PCCM, NERLDC has prepared draft procedure for testing of SPS at Samaguri substation at Assam attached in **Annexure C.2**.

All the utilities are requested to share Suggestions/comments on the draft procedure.

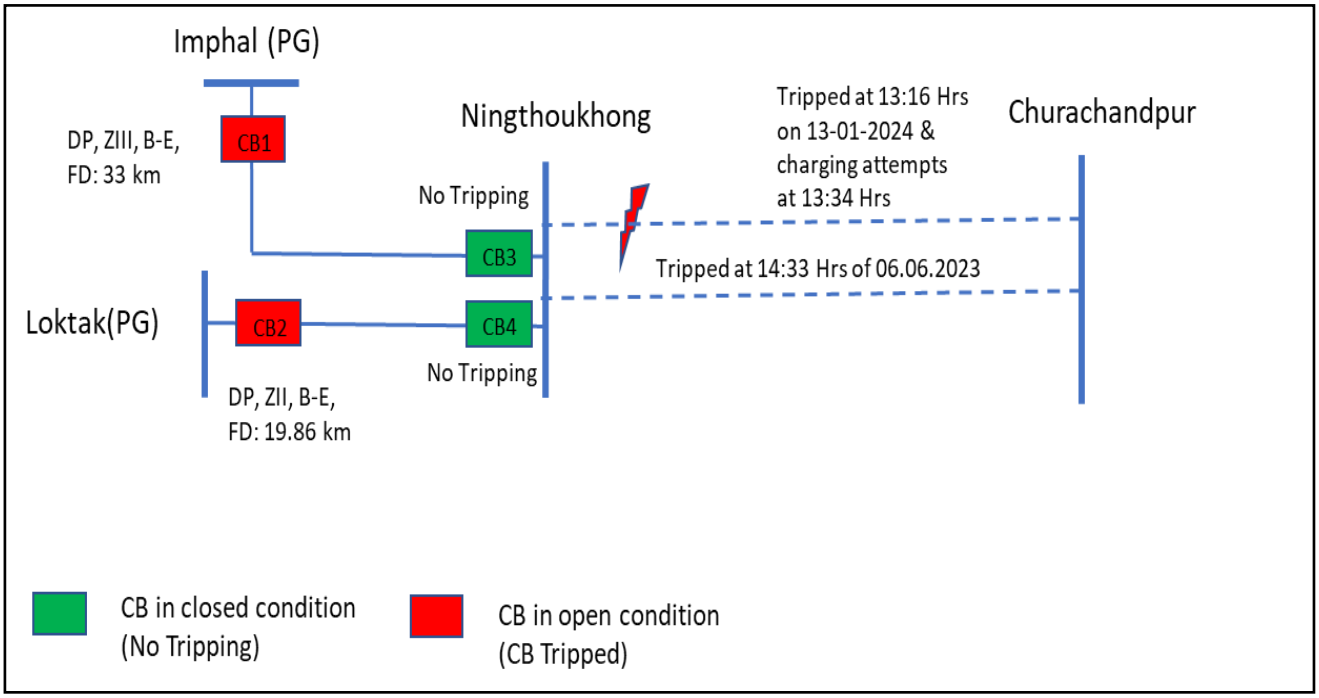
In 64th PCCM, NERLDC and AEGCL stated that mock SPS testing at Samaguri will be conducted on Sunday and shutdown of identified loads will be required for half an hour.

AEGCL may update

C.3 Repeated Grid Disturbance in Ningthoukhong and radially connected Churachandpur & Thanlon area of Manipur power system on January & February 2024:

Blackout of Ningthoukhong area**:**

At 13:34 Hrs of 13.01.2024, 132 kV Loktak – Ningthoukhong & 132 kV Imphal – Ningthoukhong lines tripped which led to blackout of Ningthoukhong area of Manipur power system.



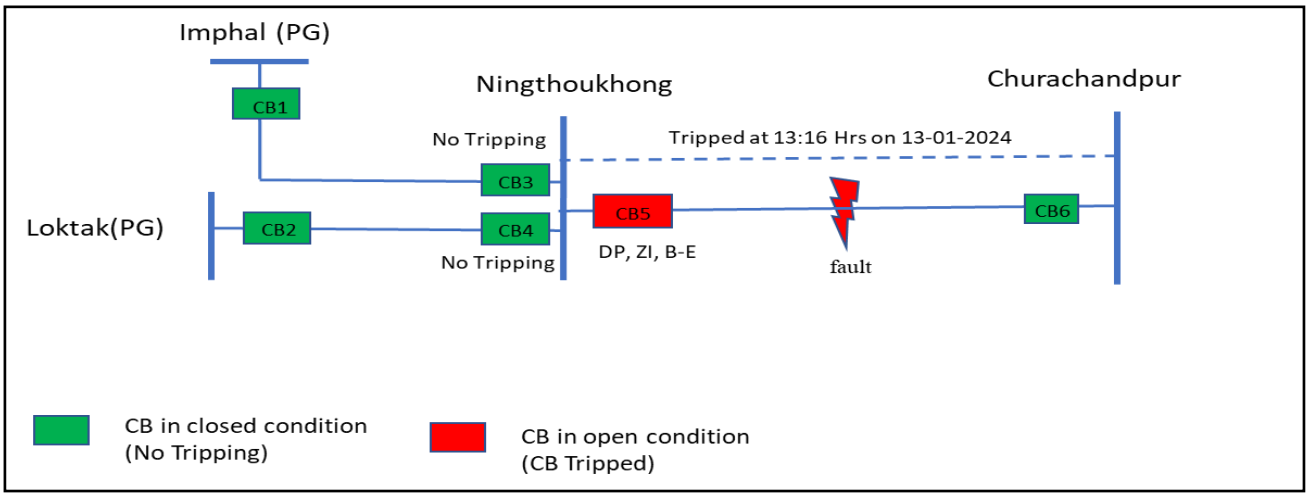
Remarks: Healthy lines tripped while taking charging attempts of the 132 kV Ningthukhong-Churachandpur 1 line at 13:34 Hrs.

Blackout of Churachandpur & Thanlon area:

Event 1: 01.02.2024, 22:47 Hrs: Load Loss: 8 MW

Event 2: 02.02.2024, 01:37 Hrs : Load Loss: 5 MW

132 kV Ningthoukhong-Churachandpur 2 line tripped which led to blackout of Churachandpur and Thanlon area of Manipur power system.



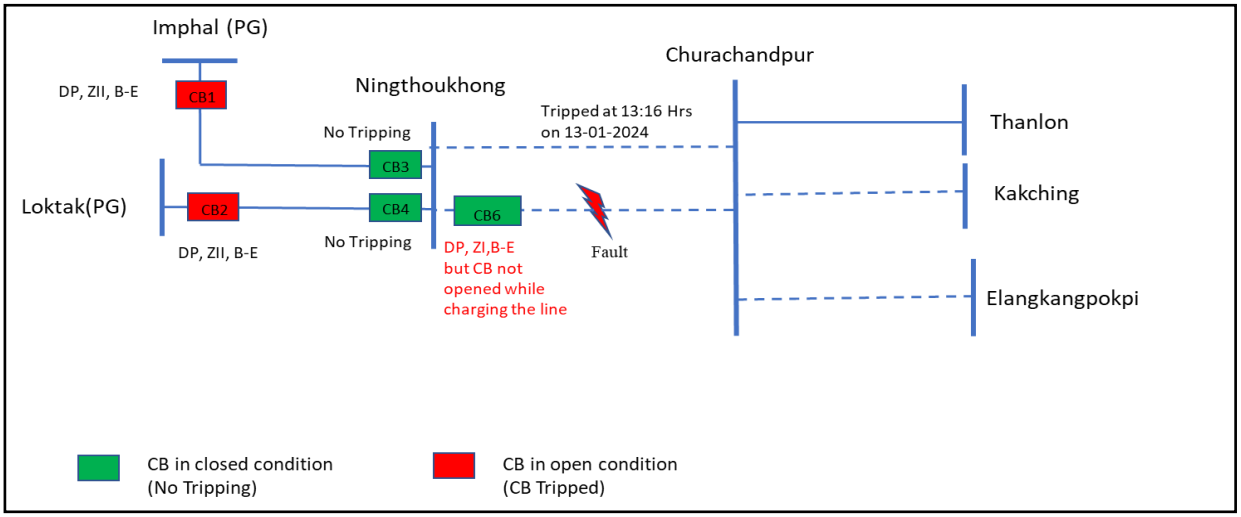
Remarks: Line tripped correctly due to Solid/metallic fault.

Blackout of Ningthoukhong and radially connected Churachandpur & Thanlon area:

Event 1: 02.02.2024,10:05 Hrs: Loss: 18 MW

Event 2: 02.02.2024,18:44 Hrs: Load Loss: 19 MW

132 kV Loktak – Ningthoukhong & 132 kV Imphal – Ningthoukhong lines tripped which led to blackout of Ningthoukhong area of Manipur power system.



Remarks: Healthy lines tripped while taking charging attempts of the 132 kV Ningthukhong-Churachandpur 2 line at 10:05 Hrs and 18:44 Hrs.

MSPCL is requested to share the root cause for repeated fault in the 132 kV Ningthoukhong-Churachandpur 2 line and remedial action taken to avoid such blackouts in the future.

In 64th PCCM, MSPCL stated that, regarding blackout on 13.01.2024, protection system at Ningthoukhong end for Churachandpur line 1 did not operate due to trip coil issue in the breaker which has now been resolved.

NERLDC stated that no flash report was received form MSPCL. MSPCL assured to look into the matter.

The forum requested Manipur to ensure simultaneous operation of both lines of Ningthoukhong-Churachandpur D/C line. Also, the forum urged Manipur to restore Elangkangpokpi- Churachandpur and Kakching-Churachandpur lines at the earliest for stable and reliable operation of the Manipur system.

Manipur representative stated that due to the law-and-order situation in the State, maintenance activities has been affected. He however assured that suggested actions will be taken at the earliest.

Sub-committee noted as above.

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

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.

In 64th PCCM, DoP Nagaland stated that the SPS will be implemented before the next PCC meeting.

DoP Nagaland may update

C.5 Status on remedial measures actions on Non-operation of auto recloser in Important Grid Elements for transient faults occurred in last few four months:

As updated in 64th 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, Implementation will take more time, w.r.t Feb'24
2	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 next week
3	132 kV Agartala -	17-11-2023 15:10	DP,ZI,Y-B,FD:5.81	DP,ZI,R-Y,FD:11.98 KM	Surajmani nagar	Will be implemented by May'24

	Surajmaninagar 2 Line		km, AR successful			
4	220 kV Mariani (AEGCL) - Samaguri Line	29-11-2023 15:10	DP, ZI, B-E	DP, ZI, B-E, FD: 16 km	Samaguri	Shifting work underway due to PSDF work. AR will be enabled within 3 months

Sl No	**Element Name**	**Time**	**Relay End1**	**Relay End2**	**A/R not Operated**	**Remarks from Utility**
6	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. To be done by March'24

Sl No	**Element Name**	**Time**	**Relay End1**	**Relay End2**	**A/R not Operated**	**Remarks from Utility**
1	132 kV Along-Pasighat Line	01-01-2024 04:48	DP, ZI, R-E, FD: 47.52 Km	DP, ZI, R-E, FD: 19.57 Km	Both ends	CB spring charging motor issue at Along SS, to be rectified by March'24
2	220 kV Karbi Langpi - Sarusajai 2 Line	01-01-2024 11:41	DP, ZI, B-E, FD: 36.33 Km, No DR submitted	DP, ZI, B-E, FD: 21.3 Km	Both ends	AR not configure at Karbi langpi. Will visit next month and configure the same.

3	132 kV Balipara - Tenga Line	04-01-2024 22:51	DP, ZI, R-Y, FD: 40.36 Km	DP, ZI, R-Y, FD: 37.30 Km	Both ends	Single phase AR enabled, but 3 phase fault occurred. Three phase AR to enabled by March'24
6	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	Insulator flashover. Burnt BPR was observed Will look into the issue of non-operation of AR
9	220 kV Mariani (AEGCL) - Samaguri Line	25-01-2024 13:11	DP, ZI, B-E, FD: 27.8 KM *(No DR submitted)*	DP, ZII, FD: 132 KM *(No DR submitted)*	Both ends	Panel replacement work underway

Utilities may update

C.6 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.

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

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

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

TSECL may update

C.7 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.

Status as per 64th PCCM -

Sl. No	feeder	Remedial measures	Last update	Latest update
1	132kV Aizwal - Luangmual	CT PT wiring need to be checked at Lunagmual end	Mizoram stated that CT PT wiring was checked but no problem was identified. He requested NERTS for assistance in next round of inspection	

2	132kV Haflong - Haflong feeder	CT wiring needs to be checked and modified	AEGCL stated that shutdown has been planned for next week for required checking and rectification work	

Utilities may further update

C.8 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.

<u>In 64th PCCM following points were discussed</u>

Utilities updated as follow-

Sl. No	Line	Utility	update
1	132kV Dimapur-Kohima	DoP Nagaland	DPR, for DTPC installation, to be prepared by March'24

2	132kV Nirhuli-Lekhi	DoP Ar. Pradesh	NERTS stated that one spare PLCC is available. Forum requested both utilities to implement the PLCC at the earliest
3	132kV Melriat-Zemabawk	Mizoram	NERTS updated that PLCC is available, Mizoram to check for spare WT and CVT
4	400kV Mariani-Kohima ckt 2		KMTL was not present for update
5	132kV roing-Pashighat	DoP Ar. Pradesh	48V DC at Pashighat is not working, proposal for new battery has been put up to higher authorities, to be procured by Dec'24.

Utilities may further update

D. ITEMS FOR STATUS UPDATE

D.1. Status of auto-reclosure on *z*-1 operation for important lines:

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

a. Auto-Reclosure is very much required for maintaining system stability, reliability and uninterrupted power supply.

b. Presently it will take some time for the state utilities to implement the PLCC and establish carrier communication between stations.

c. The operation of Auto-Reclosure on Z-I operation at the local end independent of carrier healthiness is required.

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

Status as updated in 64th PCCM

Sl no	State	Important Transmission lines where AR has to be enabled at the earliest	Status (64th PCCM)	Latest 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 March'24.	
2.	Assam	All 220kV and 132kV lines	Work completed at Sonapur. At Katalguri and Jawahanagar, work to be completed by April'24. At 132kV substations, works under progress.	

3.	Manipur	132kV Imphal-Ningthounkong	DPR preparation underway, to be prepared by March'24	
4.	Meghalaya	**Annexure (D.1)**	AR configuration to be done by August'24	
7.	Tripura	132kV Agartala-S M Nagar (TSECL), 132kV Agartal-Rokhia DC, 132kV, 132kV Agartala-Budhjungnagar	To be commissioned by March'24	

Utilities may update

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

As per sub-regulation3 of Regulation 48 of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022-

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

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

Status as updated in 64th PCCM

Name of utility	**Last updated status (64th PCCM)**	**Latest status**
AEGCL	Revised DPR prepared, Price quotation received. DPR to be sent shortly.	
MSPCL	Revised DPR for 132kV Imphal-Imphal-III to be submitted. Revised DPR submitted for PSDF. approval waited.	
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. (**annexure D.2**) 7 Feeder operational for rest OPGW work is pending	

	OPGW to be installed on 16 lines. LDP will be enabled after that.	
P&ED Mizoram	Lines identified 132kV Khamzawl - Khawiva. DPR being revised.	
DoP Nagaland	LDP Doyang-Sanis line, LDR to be installed by NEEPCO 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.	

Utilities may update

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

Status as updated in the 64th PCCM:

Sl No	Details of the events(outage)	Remedial action suggested	Name of the utility & previous update	Latest status
1.	132 kV Balipara-Tenga line in May and June	Carrier aided inter-tripping to be implemented for 132kV Balipara-Tenga-Khupi at the earliest (PLCC has to be installed on the link. Under consideration of the higher authorities)	DoP, Arunachal Pradesh. PLCC panels received. For further work PSDF payment issue. Matter to be taken up with PSDF	
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 (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.)	
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 Tender awarded, Order to be placed by March'24	
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) Forum requested NHPC to delink LBB from R& U scheme and implement the same at the earleist	
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 Rokhia to send DT to Monarchak) could not be implemented as there is no PLCC/OPGW connectivity in the LILO portion of Monarchak. Forum requested TSCEL to take up with PSDF under reliable	

			communication scheme.	
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 DC battery available. PLCC frequency issue. WIP	
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 Order given to ABB. To be completed by by April'24	
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 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.	AEGCL Logic finalized, need to be tested. CMR installation next month.	
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 Order given to ABB. Completion by April'24	
20	Tripping of 132kV Kahilipara- Sarusajai 1, 2 and 3 line, 132kV Kahilipara Main bus 1, 132kV Kahilipara transfer Bus 1 and 132kV Kahilipara-	BB protection to be implemented at Kahilipara with procurement of 5 core CTs	AEGCL DPR is under preparation for PSDF. CT under procurement as Reconductoring of	

	Kamalpur line on 2.08.2021		Kahilipara-Sarusajai underway	
21	GD at Agartala S/S (15.01.2024)	Bus Bar protection to be enabled at Agartala substation	TSECL	
22	AR issue at Gohpur end for 132kV Nirjuli-Gohpur line	Panel replacement underway	AEGCL - By Jan'24	
23	Non-operation of AR at Doyang HEP	Pneumatic CBs to be replaced	NEEPCO- August 2024	

DATE AND VENUE OF NEXT PROTECTION SUB- COMMITTEE MEETING

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

****

Annexure C.2

MOCK TEST PROCEDURE FOR SPS OPERATION SIMULATION FOR 220kV SAMAGURI – MISA CKT I & II

SPS LOGIC DEFINITION:

On event of loss of double circuits of 220kV Samaguri – Misa I & II, the power import to Samaguri will be shifted to substations in Guwahati Capital Area. To ensure stability of the network, the following elements are to be tripped at Samaguri substation:

i) 132kV Samaguri – SD Nagar Line I

ii) 132kV Samaguri – SD Nagar Line II

An average of 70MW load will be curtailed and stability of the grid will be ensured.

As per the SPS logic designed, the loss of the circuit will be recorded in the relay when all the three poles of the Circuit Breaker are found open. As such two cases are established for initiation of SPS:

CASE A: When both CBs are tripped at Samaguri end

CASE B: When both CBs are tripped at Misa end while AR is successful at Samaguri end

SPS SIMULATION:

a. A shutdown of 220kV Samaguri – Misa Line I & II and 132kV Samaguri – SD Nagar Line I & II will be availed by the respective utility in discussion with SLDC and NERLDC
b. The isolators of all the above four lines will be kept open at Samaguri, Misa and SD Nagar and thereafter, the CBs will be closed manually. The GPS time synch at the local SCADA and concerned IEDs are to be verified
c. CB of Samaguri – Misa I will be opened at Samaguri end. There will not be any SPS operation at this step (AND LOGIC verified)
d. Thereafter, CB of Samaguri – Misa II will be opened at Samaguri end. SPS would instantaneously operate and the CBs of Samaguri – SD Nagar Line I & II will be tripped at Samaguri end.
e. The event log/trip log created in the SAS and relays will be verified and instantaneous operation will be ensured.

f. Following the successful verification of 1st Case, the CBs of all the four concerned lines will be closed, with the isolators kept open at Samaguri end.

g. The healthiness of the PLCC Panel of Misa Line will be ensured. (The PLCC panel which is included in the SPS implementation)

h. The CB of Misa – Samaguri ckt I will be tripped at Misa end. No SPS operation will be ensured

i. Following this, the CB of Misa – Samaguri ckt II will be tripped at Misa. SPS would operate instantaneously and a "Direct Trip" command will be received at Samaguri. On receipt of the DT, the CBs of Samaguri – SD Nagar ckt I & II will be opened at Samaguri

j. The Sequence of events will be verified at Samaguri and Misa end (From SAS and relays)

k. On verification of the above two cases successfully, all the CBs of the lines at concerned substation will be opened and the shutdown will be returned.

l. Any discrepancy found during simulation of SPS will be recorded and rectification will be made during next scheduled shutdown.

Sl No.	**CHECKLIST**	**YES/NO**	**REMARKS**
1	Shutdown of Samaguri – Misa I at both ends		
2	Shutdown of Samaguri – Misa II at both ends		
3	Shutdown of Samaguri – SD Nagar I at both ends		
4	Shutdown of Samaguri – SD Nagar II at both ends		
5	Isolators of all concerned lines kept open at respective ends		
6	GPS Synch ensured at for all concerned substations at SAS and relays		
7	**SPS (CASE A) VERIFICATION START**		
7.1	CBs of all lines closed locally at all concerned substations		
7.2	CB of Samaguri – Misa I opened at Samaguri end and no SPS operation or spurious signals noticed		
7.3	CB of Samaguri – Misa II opened at Samaguri end and tripping of CBs of Samaguri – SD Nagar Line I & II observed at Samaguri end		
7.4	Verification of SOE/EL/Trip log/DR at Samaguri end		

7.5	Instantaneous operation hence verified successfully and no mal-operations observed		
8	**SPS (CASE B) VERIFICATION START**		
8.1	All CBs for the concerned lines are closed locally at the substations		
8.2	Healthiness of PLCC of Misa Line (including SPS DT logic) verified at Samaguri and Misa		
8.3	CB of Misa – Samaguri Line I opened at Misa end and no SPS operation observed		
8.4	CB of Misa – Samaguri Line II opened at Misa and instantaneous SPS operation observed		
8.5	CBs of Samaguri – SD Nagar Line I and II are tripped at Samaguri end as per SPS logic		
8.6	Verification of SOE/EL/Trip log/DR at Samaguri end		
8.7	Instantaneous operation observed and hence verified successfully and no mal-operations observed		
9	All the CBs are tripped manually after verification of the SPS scheme		
10	Shutdown of the concerned lines are returned successfully by the utility		
REMARKS (if any):			

Signatures of Members Present:

Annexure C.1

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

MePTCL

STATUS OF LINE DIFFERENTIAL PROTECTION PROJECT UNDER PSDF

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