भारत सरकार Government of India
विद्युत मंत्रालय Ministry of Power
उत्तर पूर्वी क्षेत्रीय विद्युत समिति
North Eastern Regional Power Committee
एन ई आर पी सी कॉम्प्लेक्स, डोंग पारमाओ, लापालाङ, शिल्लोंग-७९३००६, मेघालय
NERPC Complex, Dong Parmaw, Lapalang, Shillong - 793006, Meghalaya

SPEED POST/FAX
Ph : 0364-2534039
Fax: 0364-2534040
email: nerpc@ymail.com
website: www.nerpc.gov.in

No.: No. NERPC/SE (O)/OCC/2023/*331-370* April 10, 2023

To
As per list attached

Sub: Minutes of 58th Protection Coordination Sub-Committee (PCC) Meeting

Sir / Madam,

Please find enclosed herewith the minutes of the 58th PCC Meeting held at "NERPC Conference Hall", Lapalang, Shillong on 14th March, 2023 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.

Encl: As above

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

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. Chief Engineer (WE Zone), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
12. Chief Engineer (TP&MZ), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
13. Chief Engineer (Commercial) -cum- CEI, DoP, Govt. of Arunachal Pradesh, Itanagar- 791111
14. Engineer-in-Chief, P&E Department, Govt. of Mizoram, Aizawl – 796 001
15. Engineer-in-Chief, Department of Power, Govt. of Nagaland, Kohima – 797 001
16. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
17. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad, Haryana-121003
18. Group GM, NTPC, Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
19. Vice President (Plant), OTPC, Badarghat Complex, Agartala, Tripura - 799014
20. ED, PGCIL/NERTS, Dongtieh-Lower Nongrah, Lapalang, Shillong -793 006
21. AGM (BD), NVVN, Core 5, 3rd floor, Scope Complex, 7 Institutional Area, Lodhi Rd., N. Delhi-3
22. Vice President, PTCIL, 2nd Floor, NBCC Tower, 15, Bhikaji Cama Place, New Delhi – 110066
23. Dy. COO, CTUIL, “Saudamini”, 1st Floor, Plot No. 2, Sector-29, Gurugram, Haryana – 122001
24. Chief Engineer, GM Division, Central Electricity Authority, New Delhi – 110066
25. Chief Engineer, NPC Division, Central Electricity Authority, New Delhi – 110066
26. Head & VP, (R&C), ENICL, IndiGrid, Windsor Building, Kalina, Santacruz (East), Mumbai- 98
27. ED, NERLDC, Dongtieh, Lower Nongrah, Lapalang, Shillong -793 006
28. CGM, AEGCL, Bijuli Bhawan, Guwahati – 781001
29. CGM, APGCL, Bijuli Bhawan, Guwahati – 781001
30. CGM, DISCOM, Bijuli Bhawan, Guwahati – 781001
31. Head of SLDC, Dept. of Power, Govt. of Arunachal Pradesh, Itanagar – 791111
32. CGM, (LDC), SLDC Complex, AEGCL, Kahilipara, Guwahati-781 019
33. Head of SLDC, MSPCL, Imphal – 795001
34. Head of SLDC, MePTCL, Lumjingshai, Short Round Road, Shillong – 793 001
35. Head of SLDC, P&E Deptt. Govt. of Mizoram, Aizawl – 796 001
36. Head of SLDC, Dept. of Power, Govt. of Nagaland, Dimapur – 797103
37. Head of SLDC, TSECL, Agartala – 799001
38. Chief Engineer (Elect), Loktak HEP, Vidyut Vihar, Kom Keirap, Manipur- 795124
39. DGM (O&M), OTPC, Badarghat Complex, Agartala, Tripura – 799014
40. Director, NETC, 2C, 3rdFloor, D21Corporate Park, DMRC Building Sector 21, Dwarka, Delhi-77.

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

North Eastern Regional Power Committee

Minutes
of

58th Protection Sub-Committee Meeting

Date : 14/03/2023 (Tuesday)

Time : 10:30 hrs

Venue : NERPC Conference Hall, Shillong

List of participants is attached at **annexure-I**

Shri. K. B. Jagtap, Member Secretary, NERPC welcomed all the delegates and he stressed on the fact that the Protection Sub-Committee Meeting is of vital importance for safe, reliable and resilient operation of the grid. He also requested NER constituents to participate regularly and contribute maximum to make the NER region safe and strong. He mentioned that according to CEA recent guidelines, differential protection needs to be installed on Transmission lines of length less than 10Km and bus bar protection scheme has to be implemented for 220 KV and above substation. He also mentioned that the existing islanding schemes should be reviewed regularly and must check the healthiness status of islanding schemes.

Member Secretary, NERPC also observed that utilization of the PDMS portal by the constituents is very less, he requested all the members to get full utilization of the portal and regularly update it. He further stated that healthiness of DC battery at substation (used for CRPs) are to be certified periodically and third-party protection audit of Substation also need to be done regularly. All the concerned members are requested to check healthiness of batteries and send the report to RPC regularly.

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

A. CONFIRMATION OF MINUTES

A.1 CONFIRMATION OF MINUTES OF THE 57th PROTECTION SUB-COMMITTEE MEETING OF NERPC.

Minutes of the 57th PCC Meeting held on 15th February 2022 (Tuesday) at NERPC Conference Hall, Shillong was circulated vide no. No.: NERPC/SE (O)/PCC/2021/3288-3325 dated 25th March 2022.

Deliberation of the Sub-committee

Director, NERPC informed that no observations have been received from constituents. Therefore, the sub-committee confirmed the minutes of the 58th PCC.

B. ITEMS FOR DISCUSSION

B.1 Protection Audit of NER:

First phase of Third-Party protection Audit (2013-14) was completed in 2015 and in Second Stage of Protection Audit (2017-18) numerous stations were covered. However, few stations are yet to be audited. Status for second phase of Protection Audit:

Name of the state/utility	Name of the station(s)/Status (Yet to be audited)
Arunachal Pradesh	132/33kV Along, 132/33kV Pasighat, 220/132/33kV Deomali, 132/33kV Daporizo, 132/33kV Lekhi, 132/33kV Tippi, 132/33kV Chimpu, 132/33kV Khupi.
Assam	Completed in Nov'21.
Manipur	Yet to be intimated, i.r.o some Substations
Meghalaya	400/220/132kV Byrnihat,132kV Mawphlang, 132KV Mustem, 132kV Umiam
Mizoram	Yet to be intimated, i.r.o some Substations
Nagaland	132kV Wokha, 132kV Sanis,132kV Kiphire
Tripura	Yet to be intimated, i.r.o some Substations

Status of the Implementation of Third-Party Protection Audit recommendation in NER held in 2017-18:

Name of the Utility	No. of Stations covered	% of Recommendation completed as on 55th PCC meeting 11-11-2020	Current Status
Ar. Pradesh	3	0	
Assam	16	38	
Manipur	4	40	
Meghalaya	10	11	
Mizoram	3	8	
Nagaland	3	81	
Tripura	11	0	

Utilities are requested to update the current status of implementation of the Third-Party Protection Audit.

Deliberation of the Sub-committee

The sub-committee agreed to complete the audit of the remaining substations at the earliest. The sub-committee agreed that the audit of the substations could be done by the utility itself via any expert third party or by the third party as nominated by the sub-committee. If the audit had been done by the utility itself via any expert third party, then the report should be sent to NERPC and NERLDC. The forum agreed to maintain a yearly record of the substations that had been audited.

The following substations were selected to be audited at the earliest:

Manipur: Jiribam, Rengpang, Karong, New Thoubal, Churachandpur, Kakching and Tipaimukh.

Nagaland: Old Kohima substation.

The states are to update the current status on the percentage of recommendations completed as per the last audit held in 2017-18.

The Sub-committee noted as above.

B.2 Review of settings for Important elements:

a. All 132kV feeders of DHEP along with Mokokchung(NAG), Sanis and Wokha – DoP Nagaland to implement relay settings as discussed in the 57th PCC meeting and implementing Carrier inter trip on the lines.

b. Downstream co-ordination at 132kV Zuangtui(Zemabawk) completed. NERTS to revert to original zone timings at Melriat- Mizoram to submit relay settings for the lines and NERTS to revert back to original settings after verification of relay settings of Mizoram.

c. Co-ordination of Tipaimukh relay settings with Aizawl and Jiribam- suggested settings to be presented in the meeting

d. Review of Distance Protection settings at Ningthoukong for Churachandpur D/C - Implementation status of revised settings to be confirmed

e. Review of zone 3 setting for Imphal-Ningthounkong line at Imphal end and coordinating it with downstream lines.

Deliberation of the Sub-committee

a. Representative of Nagaland informed that the relay settings were implemented but were not communicated. Nagaland need to update the relay settings in the PDMS portal. Nagaland also informed that the carrier inter trip was not implemented as there was no PLCC in the above-mentioned lines and the same is being proposed under the PSDF. DGM, NERTS informed the forum that carrier inter-trip can be enabled through DTPC also, but OPGW is essential for the same.

Regarding status of OPGW, DoP Nagaland updated that OPGW is present on Doyang-Mokokchung line, Doyang-Sanis and Kohima-Wokha line, while OPGW on Wokha-Sanis link is absent. Further, it was updated that OPGW for existing lines are being proposed under PSDF and DPR has been sent to PSDF secretariat.

Member secretary, NERPC opined that representative of ULDC(PGCIL) should be available in the PCC meetings so that update on commissioning of OPGW and PLCC projects can be taken. Further the forum also opined that PSDF representative would be invited to attend the meeting whenever specific PSDF funding scheme is discussed.

Action: Nagaland

b. Mizoram updated that the downstream coordination is completed but revised relay settings is not yet communicated to NERPC. NERTS informed that they had kept the relay settings as: Zone 2 (200 ms instead of 350 ms) and Zone 3 (400ms instead of 800ms) to isolate the fault without affecting the upstream network elements. The forum decided that Mizoram SLDC to submit the revised relay settings to NERPC through PDMS portal for verification.

Action: Mizoram

c. The sub-committee asked MSPCL to submit the updated relay settings for co-ordination of Tipaimukh relay settings with Aizawl and Jiribam.

Action: Manipur

d. The sub-committee asked Manipur to update the Distance Protection settings at Ningthoukong for Churachandpur D/C in PDMS portal.

Action: Manipur

e. The sub-committee asked PGCIL to reverify the zone 3 setting for Imphal-Ningthoukong line at Imphal end, and to coordinate it with downstream lines. Relay setting for zone 3 suggested to be set at 800 ms from the existing 500 ms. Also, it was decided that Relay settings at Ningthoukong for Loktak-Ningthoukong line is to be verified by NERPC.

Action: PGCIL & Manipur.

The Sub-committee noted as above.

B.3 Implementation of Auto-Reclosure on Z-I operation:

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.

Deliberation of the sub committee

NERLDC representative informed that in the absence of PLCC, auto reclosure can be configured in the numerical relay so that its operation can be ensured independent of carrier healthiness. ALL the utilities were requested to implement the same on the lines where PLCC is absent so that AR on Z-I tripping can be ensured.

The forum enumerated the lines where AR is to be enabled at the earliest-

Nagaland : 132kV Dimapur-Kohima line (from Kohima end)

Mizoram : 132kV Turial-Kolasib line

Manipur : 132kV Imphal-Ningthoukong

Tripura : 132kV Agartala-S M Nagar (TSECL), 132kV Agartal-Rokhia DC, 132kV Agartal-R C Nagar DC, 132kV Agartala-Budhjungnagar

Arunachal Pradesh: 132kV Balipra-Tenga, 132kV Ziro-Daporijo-Along-Pashighat link

For Assam and Meghalaya- refer to item C.1

The Sub-committee noted as above.

B.4 Analysis and Discussion on Major Grid Disturbances which occurred in NER grid w.e.f September 2022 to February 2023:

Deliberation of the sub committee

Items related to Arunachal Pradesh

SL NO.	DESCRIPTION OF EVENT	DISCUSSION POINTS	DELIBERATION OF SUB COMMITTEE
SEPTEMBER-2022			
1	Tripping of 132 kV Balipara-Tenga line on 07/09/2022	No DR available	
2	Tripping of 132 kV Along-Pasighat line on 10/09/2022	As per DR analysis, suspected LG fault at phase C. Fault current=238A, angle=-15.54 degrees. Cleared in 630ms	
3	Tripping of 132 kV	No DR available	

	Along-Daporijo line on 21/09/2022		
4	Tripping of 132 kV Balipara-Tenga line on 22/09/2022	No DR available	
5	Tripping of 132 kV Along-Pasighat line on 24/09/2022	No DR available	
6	Tripping of 132 kV Balipara-Tenga line on 24/09/2022	No DR available	
OCTOBER-2022			
1	Tripping of 132 kV Balipara-Tenga line and Dikshi HEP unit 1 on 17/10/2022	No DR available	
2	Tripping of 132 kV Along-Pasighat line on 17/10/2022	As per DR analysis, suspected LG fault at phase C. Fault current=26.583A, angle=-12.795 degrees. Cleared in 50.8 ms. : Relay Indication from Along end:Main1- Earth Fault	
NOVEMBER-2022			
1	Tripping of 132 kV Ziro-Ranganadi line on 05/11/2022	As per DR analysis, suspected LL fault between phases B&C. Ib=2524A, Ic=2402A. : Relay Indication from Ranganadi end: Main1- DP,Z II,Y-B.	
DECEMBER-2022			
1	Tripping of 132 kV Balipara-Tenga line on 04/12/2022	As per DR analysis, suspected LG fault at phase B. Fault current=9668.46A, angle=-18.87 degrees. Cleared in 80 ms. Relay Indication from Balipara end:Main1- DP,ZI, Y-E, FD:0.33 km. Relay Indication from Tenga end:Main1- Undervoltage.	

2	Tripping of 132 kV Along-Pasighat line on 24/12/2022	No DR available	
FEBRUARY-2022			
1	Tripping of 132 kV Along-Daporijo line on 19/02/2023	No DR available	

Items related to Assam

SL NO.	DESCRIPTION OF EVENT	DISCUSSION POINTS	DELIBERATION OF SUB COMMITTEE
SEPTEMBER-2022			
1	Tripping of 132 kV Gohpur-BNC(Pavoi) D/C lines on 03/09/2022	As per DR analysis, suspected LLG fault at phase B &C. Ib=297A, Ic=213A,Vb=8 kV, Vc=5.089kV. Relay from gohpur end: Main1-overcurrent relay Relay from Pavoi end: Main1-DP, ZI, R-Y, FD: 30.7 Kms	Transient fault due to lightning.
2	Tripping of 132 kV LTPS-NTPS on 14/09/2022	No DR available	
3	Tripping of 132 kV LTPS-Sonari on 14/09/2022	No DR available	
4	Tripping of 132 kV LTPS-Moriani on 14/09/2022	No DR available	Flashover from isolator at LTPS end for 132 kV Mariani bay. As a result, 132 kV Line emanating from LTPS tripped at local & remote end.
5	Tripping of 132 kV	No DR available	

	LTPS-Nazira D/C on 14/09/2022		
6	Tripping of 132 kV Nazira-Teok on 14/09/2022	No DR available	
7	Tripping of 132 kV Sonabil-Depota on 22/09/2022	No DR available	
8	Tripping of 132 kV Sonabil-Ghoramari on 22/09/2022	No DR available	
9	Tripping of 132 kV Kahilipara-Sarusajai 2&4 on 23/09/2022	No DR available As per DR from Sarusujai, Z-2, RE fault.	Fault was due to bus fault at Kahilipara as per FIR. As Kahilipara SS has double main bus scheme, in the last 57th PCC meeting, forum recommended AeGCL to implement BB protection with procurement of 5 core CT for Bus coupler bay. The latest status and target may be intimated by AeGCL
10	Tripping of 132 kV Sonabil-Depota on 23/09/2022	No DR available	
11	Tripping of 132 kV Sonabil-Ghoramari on 23/09/2022	No DR available	

12	Tripping of 132 kV Narengi-Sonapur on 27/09/2022	No DR available	
13	Tripping of 132 kV Sarusajai-Kamakhya on 28/09/2022	No DR available	
14	Tripping of 132 kV Jiribam-Pailapool on 29/09/2022	As per DR analysis, suspected LG fault at phase B. Fault current=2233.754A, angle=-55.802 degrees. Cleared in 133ms. Relay Indication from Jiribam end: Main1- DP, ZII, Y-E, FD: 31.6km	Fault was in 132 kV Pailapool-Srikona Line. Zone 1 reach setting in Jiribam may be reviewed to prevent repetition by PGCIL.
15	Tripping of 132 kV Srikona-Pailapool on 29/09/2022	As per DR analysis, suspected LG fault at phase B. Fault current=1449A, angle=-166.468 degrees. Cleared in 352ms. Relay Indication from Pailapool end: Main1- Earth fault. Relay Indication from Srikona end: Main1- DP, ZII, Y-E, FD: 31.6km	Ph-E Fault was due to bursting of bus-coupler Y-Ph CT at Pailapool.
OCTOBER-2022			
1	Tripping of 220 kV Karbi Langpi-Sarusajai D/C line 1	As per DR analysis, suspected LG fault at phase Y. Fault current=1559.115A, angle=-56.820 degrees. Cleared in 50ms. Relay Indication from Sarusajai end: Main1- DP, ZI, Y-E	Transient fault due to lightning.
2	Tripping of 220 kV Karbi Langpi-Sarusajai D/C line 2	As per DR analysis, suspected LG fault at phase Y. Fault current=1358.527A, angle=-64.579 degrees. Cleared in 60ms. Relay Indication from Sarusajai end: Main1- DP, ZI, Y-	Transient fault due to lightning.

		E.	
3	Tripping of 132 kV Pailapool-Srikona on 10/10/2022	As per DR analysis, suspected LG fault at phase C. Fault current=5.771A, angle=-58.298 degrees. Cleared in 327ms. Relay Indication from Pailapool end: Main1- DP, ZI, B-E, FD:1.7km. Relay Indication from Srikona end: Main1- DP, ZII, B-E, FD:31km	
	Tripping of 132 kV Pailapool-Jiribam on 10/10/2022	As per DR analysis, suspected LG fault at phase C. Fault current=2117.424A, angle=-67.532 degrees. Cleared in 87ms. Relay Indication from Jiribam end: Main1- DP, ZI, B-E, FD:12.02 km Pailapool end- B-Ph to E fault. Z-4 pickup however no trip.	Ph to E fault was in 132 kV Pailapool-Srikona Line. 132 kV Pailapool line tripped from Jiribam on Z-1 which results blackout of Pailapool SS. Similar type of events occurred on 29/9/23. Zone 1 reach setting in Jiribam may be reviewed to prevent repetition by PGCIL.
NOVEMBER-2022			
1	Tripping of 220 kV BTPS-Rangia 1on 18/11/2022	As per DR analysis, suspected LG fault at phase R. Fault current=427.704A, angle=99.47degrees. Cleared in 550ms. Zone 4 picked up. : Relay Indication from Rangia end: Main1- DP,Z II, R-E. No tripping	Bus bar protection scheme at BTPS to be implemented by April'23.

		at BTPS end.	
2	Tripping of 220 kV BTPS-Rangia 2 on 18/11/2022	As per DR analysis, suspected LG fault at phase R. Fault current=438A, angle=75.84degrees. Cleared in 556ms. Zone 2 picked up. : Relay Indication from Rangia end:Main1- DP,Z II, B-E	Bus bar protection scheme at BTPS to be implemented by April'23.
3	Tripping of 220 kV BTPS-Agia 1 on 18/11/2022	As per DR analysis, suspected LG fault at phase R. Fault current=1553.107A, angle=-80.22degrees. Cleared in 565ms. Zone 4 picked up. Relay Indicationfrom Agia end: Main1- DP,Z II, RE. Relay Indication from BTPS end:Main1- DP,Z-IV, R-E,	Bus bar protection scheme at BTPS to be implemented by April'23.
4	Tripping of 220 kV BTPS-Agia 2 on 18/11/2022	As per DR analysis, suspected LG fault at phase C. Fault current=2007A, angle=-69.152degrees Cleared in 690ms. Zone 2&3 picked up. Relay Indication from Agia end: Main1- DP,Z II, BE.	Fault was due to bursting of B-Pole CB at BTPS. Bus bar protection scheme at BTPS to be implemented by April'23.
5	Tripping of 220 kV BTPS-Salakati 2 on 18/11/2022	As per DR analysis, suspected LG fault at phase C. Fault current=7793.342A, angle=160.75degrees. Cleared in 355ms. Relay Indication from BTPS end: Main1- DP, Z-IV, B-E. Relay Indication from Salakati end: Main1- DP,Z II, B-E, FD:3.75 km	Bus bar protection scheme at BTPS to be implemented by April'23.
6	Tripping of 315 MVA, 400/220/33 kV ICT 1 at BgTPP	No DR available	

7	Tripping of 315 MVA, 400/220/33 kV ICT 2 at BgTPP	No DR available	
8	Tripping of 220 kV BTPS Main Bus 1	No DR available	
9	Tripping of 220 kV BTPS Main Bus 2	No DR available	
FEBRUARY-2023			
1	Tripping of 132 KV Khandong-Khliehriatl on 08/02/2023	No DR available	Khandong-Umrangshu-Haflong radially connected. Fault was in Khandong-Umrangshu section. No CB at Khandong for both lines. Y Ph jumper open in-between loc 8 -9 of Khandong Umrangshu Line.
2	Tripping of 132 KV New Rangia-Rangia 1&2 on 09/02/2023	As per DR analysis, line collapse suspected. Loss of current in all phases. Voltage profile of all phases uniform and normal.	Maloperation of B/U protection relay. Corrective action taken.
3	Tripping of 132 KV Panchgram-Lumshong on 18/02/2023	As per DR analysis, suspected LG fault at phase A. Fault current=3.915KA, angle=-62.83 degrees. Cleared in 172 ms	M-2 auxiliary relay for extending the trip to bus coupler (in transfer mode) was not latched. Hence, LBB operated after 200ms results blackout. New M-2 Auxillary relay installed.

4	Tripping of 132 KV Panchgram-Hailakandi on 18/02/2023	No DR available	New relay installed
5	Tripping of 132 KV Panchgram-Badarpur on 18/02/2023	As per DR analysis, suspected LG fault at phase A. Fault current=1129.767A, angle=-60.913 degrees. Cleared in 178 ms	New relay installed

Items related to Meghalaya

SL NO.	DESCRIPTION OF EVENT	DISCUSSION POINTS	DELIBERATION OF SUB COMMITTEE
SEPTEMBER-2022			
1	Tripping of 132 kV Mynto Lekhsa-Khleirihrat D/C line on 04/09/2022	As per DR analysis, suspected LG fault at phase A. Fault current=474.6A, angle=34.632 degrees. Cleared in 79 ms. Relay Indication from Lehka end: Main1-DP, ZI, B-E, FD: 50.24 km Relay Indication Main1-DP, ZIII, B-E	Transient fault due to lightning.
2	Tripping of 132 kV Mynto Lekhsa-Khleirihrat D/C line on 09/09/2022	As per DR analysis, suspected LLG fault between phases A & C. Ia=1910A, Ic=2892.63A,In=1777.765A Cleared in 90 ms Relay Indication from Khleirihrat end: Main1: DP, ZI, R-B-E, FD: 18.24 km	TLSA required to be installed by MePTCL
3	Tripping of 132 kV Umiam stg 1-stg 3 line on 21/09/2022	As per DR analysis, suspected LLG fault between phases A & B. Ia=3534.201A, Ib=3652.30A,In=4457.209A Cleared in 120 ms	Corrective actions taken.

		Relay Indication from Umiam stg 1end: Main1-DP, ZI, R-Y-E, FD: 0.993 km Relay Indication from Umiam stg 3end: Main1-DP, ZI, R-Y-E	
4	Tripping of 132 kV Umiam stg 1-stg 2 line on 21/09/2022	No DR available	Corrective actions taken.
5	Tripping of 132 kV Umiam stg 1-Mawphlang D/C line on 21/09/2022	As per DR analysis, suspected LLLG fault Ia=332.562A, Ib=372.505A,Ic=349.667A . Low voltages in all phases.Cleared in 345 ms : Relay Indication from Mawphlang end: Main1-DP, ZII, R-Y-B, FD:49.36 km Relay Indication from Umium stg 1 end: Main1-DP, ZI, R-Y, FD:11.4 km	Corrective actions taken.
6	Tripping of 132 kV Umiam stg 1-Mawlai line on 21/09/2022	As per DR analysis, suspected LLLG fault Ia=729A, Ib=752.97A,Ic=767.895A . Low voltages in all phases.Cleared in 480.64 ms Relay Indication from Mawlai end: Main1-DP, ZI, R-Y, FD:11.4 km	Corrective actions taken.
7	Tripping of 132 kV Umiam stg 1-Umiam line on 21/09/2022	As per DR analysis, low voltages and low currents observed in all phases throughout.	Corrective actions taken.
8	Tripping of 132 kV Umiam -Nehu line on 21/09/2022	As per DR analysis, suspected LLLG fault Ia=1341.325A, Ib=1410.410A,Ic=1449.714A . Low voltages in all phases.Cleared in 496 ms Relay Indication from NEHU end: Main1-DP, ZIII, R-Y-B, FD: 15.57 km	Corrective actions taken.

9	Tripping of 132 kV Nehu-NEIGRIHMS line on 21/09/2022	As per DR analysis, suspected LLLG fault Ia=1291.148A, Ib=1398.172A,Ic=1424.71A . Low voltages in all phases.Cleared in 484 ms Relay Indication from NEHU end: Main1-Over Current	Corrective actions taken.
10	Tripping of 132 kV Nehu-Mawlai line on 21/09/2022	As per DR analysis, suspected LLLG fault Ia=668A, Ib=717.98A,Ic=714.531A . Low voltages in all phases.Cleared in 498 ms Relay Indication from NEHU end: Main1-DP, ZIII, R-Y-B, FD: 37.69 km	Corrective actions taken.
11	Tripping of 132 kV Khliehrat-Mustam line on 21/09/2022	As per DR analysis, suspected LLLG fault Ia=1084.21A, Ib=1127.654A,Ic=1138.556A. Low voltages in all phases.Cleared in 243 ms. Relay Indication from Khliehrat end: Main1-DP, ZII, R-Y-B, FD: 81.7 km	Corrective actions taken.
12	Tripping of 132 kV Khliehrat-NEIGRIHMS line on 21/09/2022	As per DR analysis, suspected LG fault at phase A. Fault current=8080.017A, angle=-37.40 degrees. Cleared in 161 ms. Relay Indication from Khliehrat end: Main1-DP, ZIII, R-Y-B, FD: 93.01 km	Corrective actions taken.
13	Tripping of 132 kV Lekhsa-Khleirihrat(ME) D/C line on 25/09/2022	No DR available	Transient fault due to lightning.
OCTOBER-2022			
1	Tripping of 132 kV Lekhsa-Khleirihrat	As per DR analysis, suspected LL fault between phases R&Y.	Transient fault due to lightning.

	line 1 on 11/10/2022.	Ir=4036.206A, Iy=4780.909A. : Relay Indication from Lekhsa end Main1-DP, ZI R-Y-E. Relay Indication from Khleirihrat end :Main1- DP, ZI R-Y-E, FD: 21.44 Kms.	

Items related to Nagaland

SL NO.	DESCRIPTION OF EVENT	DISCUSSION POINTS	DELIBERATION OF SUB COMMITTEE
SEPTEMBER-2022			
1	Tripping of 132 kV Dimapur PG-Dimapur(DoP) line 1 on 22/09/2022.	As per DR analysis, no voltage data obtained. Current profile seems uniform. SF6 zone trip signal of bus compartment has resulted in tripping From Dimapur (DoP, Nagaland): Overloading of line as circuit -2 is out due to bus bar problem at PG end	
2	Tripping of 132 kV Dimapur PG-Dimapur(DoP) line 1 on 22/09/2022.	As per DR analysis, line collapse suspected. Voltage lost in all phases and current lost in all phases.	Tripped on OC due to overload at Dimapur state end as Line-1 was not in service.
3	Tripping of 132 kV Kohima-Chiephobozou line on 28/09/2022.	No DR available	
4	Tripping of 132 kV Kohima-Meluri line on 28/09/2022.	As per DR analysis, suspected LG fault at phase C. Fault current=165.618A, angle=-53.964 degrees. Cleared in 544ms. Relay Indication from Kohima end: Main1-Earth Fault	Directionality issues. Nagaland to update the current status.
5	Tripping of 132 kV Karong-Kohima line on	As per DR analysis, suspected LG fault at phase C. Fault	At the same time, 132 kV Karong line

	28/09/2022.	current=200.671A, angle=110 degrees. Cleared in 2500ms. Relay Indication from Kohima end: Main1-Earth Fault	tripped at Kohima on B/U operation (Reverse fault) which seems to be UNWANTED. Directionality issues. Nagaland to update the current status.
OCTOBER-2022			
1	Tripping of 132 kV Dimapur PG-Dimapur line on 07/10/2022.	No DR available	17:18 & 17:41 Hrs. Tripped on OC at State end only
2	Tripping of 132 kV Sanis-Wokha line on 07/10/2022.	No DR available	
3	Tripping of 132 kV Kohima-Chiephobozou line on 07/10/2022.	As per DR analysis, suspected LG fault at phase B. Fault current=587.939A, angle=-61.862 degrees. Cleared in 253 ms. Relay Indication from Kohima end: Main1- DP, ZIII, B-E, FD: 36.24 km	BE Fault in Kohima-Chimp-Wokha line near Tseminyu Town (Bamboo came in contact). Tripping of Melurie and karong for Reverse fault unwanted. (Directionality issue)
4	Tripping of 132 kV Kohima-Meluri line on 07/10/2022.	No DR available	(Directionality issue). Distance directionality issue rectified 3/11/22
5	Tripping of 132 kV Karong-Kohima line on	As per DR analysis, suspected LG fault at phase C. Fault	(Directionality issue for B/U relay).

	07/10/2022.	current=952.594A, angle=-61.409 degrees. Cleared in 80 ms. Relay Indication from Kohima end: Main1- Earth Fault	Nagaland to update the current status.
6	Tripping of 132 kV Doyang-Mokokchung line on 14/10/2022.	As per DR analysis, suspected earth fault. Fault current in neutral=221.85A. Rise in fault current is not sharp. Cleared in 613 ms. : Relay Indication from Doyang end: Main1- Over Current. Relay Indication from Mokokchung end:Main1- Earth Faul	Corrective measures taken, patrolling of lines increased. Vegetation issues are resolved.
7	Tripping of 132 kV Karong-Kohima line on 24/10/2022.	As per DR analysis, suspected LG fault at phase A. Fault current=818A, angle=-61.863 degrees. Zone 1 picked up in 40.86ms. Relay Indication from Kohima end: Main1- DP, ZI, R-E	At 21:33 Hrs, Fault in Kohima-Chiephobozou and cleared within 120 msec. same time Karong line tripped from Kohima on B/U. Directionality issue
8	Tripping of 132 kV Sanis-Wokha line on 24/10/2022.	No DR available	Only Wokha end tripped on B/U. Directionality issue. Nagaland may update current status
9	Tripping of 132 kV Karong-Kohima line on 25/10/2022.	No DR available	
10	Tripping of 132 kV Kohima-Meluri line on 25/10/2022.	As per DR analysis, suspected LL fault between phases A&B. Ia=292A, Ib=243A. Zone 1 picked up. Cleared in 83.2 ms. Relay Indication from Kohima end:Main1- DP, ZI, R-Y,	

		FD:20.46 km	
11	Tripping of Likhimro Unit 1 &2 on 25/10/2022	No DR available	
12	Tripping of 132 kV Karong-Kohima line on 26/10/2022.	As per FIR, tripping due to broken jumper at loc 302 between Karong-Maram. No DR available.	
13	Tripping of 132 kV Kohima-Meluri line on 26/10/2022.	As per DR analysis, suspected LG fault at phase A. Fault current=755A, angle=115.918 degrees. Cleared in 292.3 ms. Relay Indication from Kohima end: Main1- Over Current.	
14	Tripping of 132 kV Karong-Kohima line on 26/10/2022.	As per DR analysis, suspected LG fault at phase A at Karong end. Fault current=731.3A, angle=-65 degrees. Cleared in 281.55 ms. Relay Indication from Kohima end:Main1- Backup Earth Fault. No tripping from Karong end.	
NOVEMBER-2022			
1	Tripping of 132 kV Dimapur-Kohima line on 02/11/2022.	No DR available	
2	Tripping of 132 kV Karong-Kohima line on 02/11/2022.	As per DR analysis, suspected LG fault at phase A. Fault current=241.2A, angle=160 degrees. Cleared in 578 ms. Relay Indication from Karong end:Main1- EF,R-E. Relay Indication from Kohima end:Main1- DP, ZI, R-E. As per DR, R-E Fault was in 132 kV Karong-Kohima Line at a distance 34.3 Kms from Kohima.DPR at Kohima detects fault in Z I, however	Action taken.

		CB fails to clear fault from the system. Due to non clearance of fault, fault was cleared from remote end i.e Dimapur on Z-III(800 msec) & Chimpubozou.	
3	Tripping of 132 kV Kohima-Chiephobozou line on 02/11/2022.	As per DR analysis, suspected LG fault at phase A. Fault current=678.37A, angle=-64.85 degrees. Cleared in 703 ms.	
4	Tripping of 132 kV Kohima-Meluri line on 26/10/2022.	As per DR analysis, suspected LG fault at phase A. Fault current=95A, angle=-74.37 degrees. Cleared in 340 ms. Relay Indication from Meluri end:Main1- Backup Earth Fault	

Items related to Manipur

SL NO.	DESCRIPTION OF EVENT	DISCUSSION POINTS	DELIBERATION OF SUB COMMITTEE
JANUARY-2023			
1	Tripping of 132 kV Loktak-Rengpa line on 20/01/2023.	As per DR analysis, suspected LG fault at phase C. Fault current=738A, Angle=-25.64 degrees. Cleared in 120 ms. Relay Indication from Loktak end: Main1- In>1 Trip. Relay Indication from Rengpa end: Main1- Any Start	
2	Tripping of 132 kV Imphal(PG)-Ningthoukhong line on 20/01/2023.	As per DR analysis, suspected LG fault at phase C. Fault current=1335.305A,	

		Angle=-45.762 degrees. Cleared in 463 ms. Zone 3 picked up. Relay Indication from Imphal end: Main1- DP, ZI, R-E, FD:19.27 km	
3	Tripping of 132 kV Loktak-Imphal(PG) line on 20/01/2023.	As per DR analysis, suspected LG fault at phase C. Fault current=2.278KA, Angle=-41.714 degrees. Cleared in 519.53 ms. Zone 3&2 picked up. Relay Indication from Imphal end:Main1- DP, ZII, B-E, FD:33.6 Kms	

Items related to Mizoram

SL NO.	DESCRIPTION OF EVENT	DISCUSSION POINTS	DELIBERATION OF SUB COMMITTEE
SEPTEMBER-2022			
1	Tripping of 132 kV Aizawl-Melriat line on 10/09/2022.	As per DR analysis, suspected LG fault at phase B. Fault current=2039.324A, Angle=-27.216 degrees. Cleared in 81 ms. Relay Indication from Mizoram end:Main1: DP, ZI, Y-E, FD: 1.4 kms Relay Indication from Melriat end:Main1: DP, ZI, Y-E, FD:4.23 kms	Action taken.

2	Tripping of 132 kV Zuangtui-Melriat line on 10/09/2022.	As per DR analysis, suspected LG fault at phase B. Fault current=1845.99A, Angle=-42.93 degrees. Cleared in 258ms. Relay Indication from Melriatend:Main1:Backup Earth Fault, Y-ph	
OCTOBER-2022			
1	Tripping of 132 kV Turial-Kolasib line on 03/10/2022.	No DR available	
2	Tripping of 132 kV Turial-Kolasib line on 17/10/2022.	No DR available	
DECEMBER-2022			
1	Tripping of 132 kV Turial-Kolasib line on 24/12/2022.	No DR available	
2	Tripping of 132 kV Aizawl-Lungmual line on 29/12/2022.	As per FIR, three phase to earth fault in 33 KV cable. Y phase of power transformer 2 punctured. No DR available.	
3	Tripping of 132 kV Aizawl-Lungmual line on 31/12/2022.	No DR available	

Items related to Tripura

SL NO.	DESCRIPTION OF EVENT	DISCUSSION POINTS	DELIBERATION OF SUB COMMITTEE
SEPTEMBER-2022			
1	Tripping of 132 kV Monarchak-Rokhia line on 05/09/2022	As per DR analysis, suspected LG fault at phase C. Fault current=1635.83A,	

		angle=-62.587 degrees. Cleared in 426 ms. Zone 2,3 picked up. Relay Indication from Monarchak end:Main1: DP, ZII, B-E, FD: 26.12 km	
2	Tripping of 132 kV Rokhia-Agartala D/C line on 05/09/2022	As per DR analysis, suspected LG fault at phase B. Fault current=2078.476A, angle=-76.5 degrees. Cleared in 520 ms. Zone 2,3 picked up. Relay Indication from Agartala end:Main1: DP, ZII, Y-E, FD: 37.18 Kms	
3	Tripping of 132 kV Monarchak-Rokhia line on 08/09/2022	As per DR analysis, suspected LG fault at phase C. Fault current=1091.476A, angle=-11.314degrees. Cleared in 460 ms. Zone 2,3 picked up. Relay Indication from Monarchak end:Main1: DP, ZII, B-E, FD:15.84 Kms	
4	Tripping of 132 kV PK Bari(ST)-Ambassa line on 15/09/2022	As per DR analysis, suspected LG fault at phase B. Fault current=1751.206A, angle=117.2degrees. Cleared in 530 ms. Relay Indication from PK Bari end:Main1-DP, ZIII, R-E, FD: 51.73 Km	
5	Tripping of 132 kV Ambassa-Kamalpur line on 15/09/2022	No DR available	

6	Tripping of 132 kV Ambassa-Gamaitilla line on 15/09/2022	No DR available	
7	Tripping of 132 kV Monarchak-Udaipur line on 27/09/2022	As per DR analysis, suspected LG fault at phase B. Fault current=1078.496A, angle=-40.33 degrees. Cleared in 105 ms. Relay Indication from Monarchak end:Main1-DP, ZI, Y-E	
8	Tripping of 132 kV Monarchak-Rokhia line on 27/09/2022	As per DR analysis, suspected LG fault at phase B. Fault current=1407A, angle=-39 degrees. Cleared in 78 ms. Relay Indication from Monarchak end:Main1-DP, ZI, Y-E, FD: 36 kms	

The sub-committee decided that all the constituents will send the DR/FR report in regular basis and implement the recommendation of DR analysis.

AGENDA ITEMS FROM NERLDC

B.5. Status of submission of FIR and DR & EL outputs for the Grid Events

In line with regulation 12 (1) of CEA Grid Standards Regulations and IEGC provision under clause 5.2 (r), 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 and EL outputs in Tripping Monitoring Portal for events in Dec'22- Feb'23 as on 05.03.23 is given below:

Name of Utility	Total FIR/ DR/EL	Total FIR, DR & EL submitted			Total FIR, DR & EL submitted as NA (Not Applicable)			Total FIR, DR & EL submitted as NU (Not Available)			Total FIR, DR & EL not submitted		
		FIR	DR	EL	FIR	DR	EL	FIR	DR	EL	FIR	DR	EL
DoP, Arunachal Pradesh	19	10	6	6	0	5	5	0	0	0	9	8	8
AEGCL	56	44	26	22	0	17	17	0	4	6	12	9	11
MSPCL	16	7	4	4	0	4	4	0	2	2	9	6	6
MePTCL	15	1	7	7	0	2	2	0	0	0	14	6	6
MePGCL	2	0	0	0	0	2	2	0	0	0	2	0	0
P&ED, Mizoram	3	2	1	0	0	0	0	0	1	2	1	1	1
DoP, Nagaland	16	13	6	6	0	2	2	0	2	2	3	6	6
TSECL	3	0	1	1	0	1	1	0	0	0	3	1	1
POWERGRID	68	54	49	36	0	14	15	0	2	0	14	3	17
NEEPCO	60	29	18	19	0	22	21	0	4	0	31	16	20
NHPC	7	0	1	0	0	2	1	0	0	0	7	4	6
NTPC	0	0	0	0	0	0	0	0	0	0	0	0	0
OTPC	18	18	17	0	0	0	0	0	1	0	0	0	18
NTL	8	8	4	4	0	4	4	0	0	0	0	0	0
KMTL	1	1	1	1	0	0	0	0	0	0	0	0	0
DEPL	1	0	0	0	0	1	1	0	0	0	1	0	0

Concerned Utilities are requested to upload Disturbance Recorder (DR), Event Logger (EL) outputs for grid events along with a First Information Report (FIR) in Tripping Monitoring Portal (https://103.7.131.234/Trippingnew/Account/Login.aspx) for analysis purpose.

Deliberation of sub-committee.

Representative of DoP, Nagaland informed that they could not submit the DR/EL/FIR data due to the accessibility and communication related issues of the substations and the incompetency of the personnel posted at those sub-stations to download and send the required data to SLDC/NERLDC.

Most of the utilities voiced the same concerns. Member Secretary asked the utilities to send the SOPs to all the sub-stations and educate site personnel the procedure to download the required DR and EL data from the relays and to send the same to SLDC/NERLDC/NERPC.

After detailed deliberation, the sub-committee decided that all the constituents to ensure timely submission of FIR, DR & EL data to enable proper tripping analysis to NERLDC and copy to NERPC.

The sub-committee noted as above.

B.6. Non-operation of auto recloser in Important Grid Elements for transient faults w.e.f. Dec 2022:

Sl. No	Name of the Line	A/R Not Operated	Date and Time
1	400 kV Misa - Silchar 1 Line	Misa, POWERGRID	01-12-2022 at 13:15 Hrs
2	132 kV AGTCCPP - Kumarghat Line	AGTCCPP, NEEPCO	27-12-2022 at 06:45 Hrs
3	132 kV Pailapool - Srikona Line	Both ends, AEGCL	02-01-2023 at 15:45 Hrs
4	220 kV Sarusajai- Sonapur Line	Both ends, AEGCL	15-01-2023 at 02:48 Hrs
5	132 kV Dimapur - Imphal Line	Dimapur, POWERGRID	16-01-2023 at 05:43 Hrs
6	220 kV Sarusajai- Sonapur Line	Both ends, AEGCL	22-01-2023 at 05:33 Hrs
7	400 kV Misa - New Mariani 1 Line	Both ends, POWERGRID	30-01-2023 at 14:33 Hrs
8	132 kV Hailakandi - Panchgram Line	AEGCL	03-02-2023 at 18:50 Hrs
9	132 Loktak – Imphal Line	Carrier issue, Loktak	11-02-2023 at 14:19 Hrs
10	220 kV Byrnihat - Misa 1 Line	Both ends, POWERGRID & MePTCL	12-02-2023 at 02:25 Hrs & 03:16 Hrs

Concerned Utilities are requested to intimate the reason for non-operation of AR & details of corrective actions implemented.

Deliberation of the sub-committee

Status as intimated & discussed in the 58th PCCM:

Sl. No	Name of the Line	A/R Not Operated	Date and Time	Deliberation of Sub committee
1	400 kV Misa - Silchar 1 Line	Misa, POWERGRID	01-12-2022 at 13:15 Hrs	Sufficient voltage was not available for phase selection. So auto reclosure operation was not successful. PGCIL has changed the reference voltage to 3V from 5V as corrective measure.
2	132 kV AGTCCPP - Kumarghat Line	AGTCCPP, NEEPCO	27-12-2022 at 06:45 Hrs	Inadvertently A/R switch was kept in non-auto mode by mistake earlier but presently put in Auto and functioning properly.
3	132 kV Pailapool - Srikona Line	Both ends, AEGCL	02-01-2023 at 15:45 Hrs	Auto reclosing attempted from Srikona end but unsuccessful due to persistent fault. Auto reclosing not attempted from Pailapool end. Assam to look into the matter.
4	220 kV Sarusajai-Sonapur Line	Both ends, AEGCL	15-01-2023 at 02:48 Hrs	AR keep disabled due to non-availability of spares of GIS Breaker.
5	132 kV Dimapur - Imphal Line	Dimapur, POWERGRID	16-01-2023 at 05:43 Hrs	No problem in Imphal end. There was loose PLCC connection at Dimapur end, Rectified
6	220 kV Sarusajai-Sonapur Line	Both ends, AEGCL	22-01-2023 at 05:33 Hrs	AR keep disabled due to non-availability of GIS spares.
7	400 kV Misa - New Mariani 1 Line	Both ends, POWERGRID	30-01-2023 at 14:33 Hrs	AR was kept in non-auto mode for OPGW works.
8	132 kV Hailakandi - Panchgram Line	AEGCL	03-02-2023 at 18:50 Hrs	Corrective measures taken.
9	132 Loktak – Imphal Line	Carrier issue, Loktak	11-02-2023 at 14:19 Hrs	No carrier signal sent from Loktak end. NHPC to look into the matter.
10	220 kV Byrnihat - Misa 1 Line	Both ends, POWERGRID & MePTCL	12-02-2023 at 02:25 Hrs & 03:16 Hrs	PLCC problem at Byrnihat end. Work in progress to rectify problem.

The sub-committee noted as above.

B.7 Tripping of 132 kV Along – Pasighat line and 132 kV Along – Daporizo line resulting in Grid Disturbance

132 kV Along – Pasighat line tripped on 24th Dec'22 and 132 kV Along – Daporizo line tripped on 19th Feb'23 & 05 March'23 resulting in Black out of Along, Pasighat, Roing, Tezu and Namsai area of Arunachal Pradesh Power System.

Name	GD on	Load Loss	Observation
132 kV Along – Pasighat	24th Dec'22	14 MW	No FIR, DR and EL Uploaded. Violation of clause 5.2r of IEGC-2010
132 kV Along – Daporizo	19th Feb'23	22 MW	DR standardization required (In Analog channel, DR window duration etc.)
	05 March'23	14 MW	As per FIR, Accidental trip while carrying out maintenance work.

DoP, AP is requested to intimate the root cause of tripping on 24th Dec'22 and 05 March'23. Also, intimate remedial measures that has been taken to prevent re-occurrence.

Deliberation of sub-committee

The sub committee noted that no DR and EL was submitted for the above events and advised Arunachal Pradesh to submit DR and EL in a timely manner. Arunachal Pradesh reported that the above incidents took place due to vegetation infringment. The forum advised DoP Arunachal Pradesh to ensure vegetation clearing and proper line patrolling and maintenance on regular basis as these are important transmission corridors.

The sub-committee noted as above.

B.8 Blackout of 220kV BTPS (AS) GSS:

Blackout of 220kV Salakati GSS on 18th of November, 2022. Complete blackout of the sub-station occurred due to insulation failure of the B-phase pole of 220KV CB (Make-Siemens) of 220KV Agia-II line. Although feeders were segregated in both the 220KV buses but due to non-availability of Bus-Bar protection, segregated tripping could not

be achieved. Non availability of bus bar protection is the noncompliance of Part-III, cl 1 CEA connectivity regulation 2007.

As such, AEGCL is requested to update the latest status of the commissioning of the Bus Bar protection at 220 kV BTPS(Assam) S/S at earliest to prevent complete outage of S/S in case of bus fault.

Deliberation of sub-committee

Representative of Assam State informed that order has been placed for Bus Bar protection relay panel and commissioning will be completed by April,2023.

The sub-committee noted as above.

B.9 Tripping of 400/132 kV ICT-1 at Kameng 13:13 Hrs :

At 13:13 Hrs of 28-11-2022, transient Ph to E fault occurred in 400 kV Balipara-Kameng-1 line and A/R operated successfully from both ends. At the same time, ICT-1 at Kameng HEP tripped on EF protection within 144 milliseconds.

As per DR analysis, prior to the fault Neutral current of 13.89A and unbalanced phase angle -19 degrees indicates there is some issue with the CT circuits to Protection relay. NERLDC vide mail dated 29-11-2022 had requested to take corrected action.

Kameng HEP requested to intimate the root cause and remedial measure that had been taken.

Deliberation of sub-committee

GM, NEEPCO stated that their site engineers could not find any problem in the CT circuit. However, CT polarities were not checked. He further stated that if the problem resurfaces then they would apply for shut down and look thoroughly into the matter.

The forum asked NEEPCO to examine the issue of unbalance current in the three phases and take corrective measures at the earliest.

The sub-committee noted as above.

Action: NEEPCO

B.10 Blackout at Lungmual and radially connected area of Melriat (MI) of Mizoram System:

Grid disturbance occurred on 29th Dec'22 at 15:46 Hrs due to tripping of 132 kV Aizawl line for the Reverse fault at LV side of 12.5 MVA Transformer (Y-ph LV side

cable punctured) which is the matter of serious concern. Since fault was in LV side of Transformer, Protection system of Transformer should act and clear the fault. NERLDC vide letter No NERLDC/SOII/14/4162 dated 02-01-2023 had requested to take following action-

- Non-operation of Transformer protection for LV side fault.
- Directionality of B/U protection of 132 kV Aizawl Line and its setting coordination with Transformer B/U Protection to prevent Unwanted tripping.

P&ED, Mizoram is requested to update the root cause and remedial measure that had been taken.

Deliberation of sub-committee

Mizoram informed that 132kV Aizawl line at Luangmual tripped on High set Back-up (B/U) protection, which is non-directional. Transformer B/U setting was high, setting is revised. The subcommittee asked Mizoram to submit the latest relay settings (Both main & B/U protection) of all the feeders connected to Luangmual S/S to NERPC and NERLDC.

The sub-committee noted as above.

Action: Mizoram

B.11 Frequent tripping of 132 kV Doyang-Sanis Line from Doyang end in the month of Jan'23 :

132 kV Doyang-Sanis Line repeatedly tripped three (3) times from Doyang end in the month of January 2023 on 16-01-2023 at 18:26 Hrs, 17-01-2023 at 17:37 Hrs and 21-01-2023 at 17:10 Hrs which is a cause of concern.

Proper analysis could not be done due to non-submission of the COMTRADE (.dat and .cfg) files for DR output and .evt files for EL output. Doyang HEP is requested to intimate the actual root cause and the remedial measures taken to this end.

Deliberation of sub-committee

Chief Manager, NERLDC informed the forum that no fault was observed in the PMU data and the tripping could not be analyzed due to non-submission of DR and EL files from Doyang end. GM, NEEPCO replied that possible reason for tripping was earth fault in the nearby jungle area and sparking was also observed by site people.

Regarding DR, he informed that it was inadvertently deleted by the site people. Forum advised NEEPCO to arrange training of the substation personnel on matter of importance of DR and it was also decided that RPC will check the relay settings for the line at Doyang end and try to gauge the possible reason of tripping.

The sub-committee noted as above.

Action: NEEPCO, NERPC

B.12 Repeated Tripping of 400 kV P K Bari - Silchar 1&2 Lines:

400 kV P K Bari - Silchar 1&2 Lines and 420 kV 125 MVAR Bus Reactor-1&2 at PK Bari (ISTS) Substation tripped two (2) times at 07:29 Hrs and 07:57 on 06-Feb-2023 on Backup impedance relay. 400 kV Silchar-1 & 2 feeder was in dia with 125 MVAR BR-1 & 2 @ PK Bari Station After isolation of 400 kV Bus-I(PSD) by opening of Main CB of Silchar-1 & 2 Lines, said lines were connected with Tie CB through 400 kV Bus-II.

As per DR analysis, at 07:57 Hrs, both the Bus Reactors tripped on Z-2 operation within a time delay of 500 msec. At the time of event, R & B phase voltage drops to 142 kV from 246 kV. No change in current magnitude was recorded which implies no fault in BRs.

NTL is requested to update the root cause and share remedial measures taken to prevent re-occurrence.

Deliberation of sub-committee

IndiGrid informed forum that voltage selection relay malfunctioned due to NO/NC contacts issue, resulting operation of backup impedance relay of 125 MVAR Bus Reactor-1 & 2. As corrective measures, Voltage selection relay has been replaced.

The sub-committee noted as above.

B.13 Non-Availability of Bus Bar Protection at 220 kV Mariani (Assam) Substation:

The bus scheme at 220 kV Mariani(Assam) substation is Main I & Main II cum Transfer scheme. On the day of Main I Bus S/D on 3rd February'23, it has come to the notice of NERLDC that Bus Bar Protection is not commissioned at Mariani Substation

(Non-availability of bus bar protection is the non-compliance of Part-III, cl 1 CEA connectivity regulation 2007).

As such, AEGCL is requested to implement the Bus bar protection at 220 kV Mariani (Assam) substation at earliest to prevent complete outage of S/S in cause of Bus Fault.

Deliberation of sub-committee

AEGCL informed that Bus Bar protection relay has been procured and it will be commissioned by June'23 subject to changing of bus switching scheme for Kathalguri line and Marini(PG) line to Double Main and Transfer by the PGCIL. DGM, PGCIL updated that PGCIL has already applied for the shutdown of Mariani bus to NERPC for completing the said work.

The sub-committee noted as above.

B.14 Frequent Tripping of 132 kV Aiwzawl- Tipaimukh on DT received at Aizawl end:

132 kV Aizawl -Tipaimukh Line tripped at Aizawl end only on received of spurious DT signal on 16th and 26th Feb'23 which is the matter of serious concern. As per PMU data, there was no fault on the system at the time of event. Presently, DT wiring at Aizawl has been removed by NERTS until the rectification of PLCC issues at Tipaimukh end by MSPCL. Therefore, MSPCL is requested to resolve the DT sent issue at Tipaimukh for 132 kV Aizawl Line at the earliest to prevent unwanted CB operation.

Deliberation of sub-committee

Matter could not be discussed as representatives of Manipur were not present in the meeting. Manipur to update on the issue.

The sub-committee noted as above.

B.15 Frequent Tripping of 132 kV Loktak – Rengpang line & Rengpang – Jiribam Line:

132 kV Loktak- Rengpang tripped 4(Four) times from November'22 and 132 kV Jiribam- Rengpang tripped 5(Five) times from November'22. As per DR Analysis, root cause for most of the trippings are of mainly vegetation nature. MSPCL is currently not submitting the DR /EL details of Main Protection Relay (DPR) for tripping at Rengpang SS.

MSPCL is requested to carry out the patrolling related activities as per Cl. No. 23(2) (3) & (4) of CEA (Grid Standard) Regulation, 2010 on a regular basis so that measures may be identified and implemented at earliest in order to enhance reliability & resiliency of the NER grid.

Also, requested to submit the DR& EL of the Main Protection relay of the Jiribam SS for any tripping occurred at Jiribam end.

List of Trippings are as follows-

SL No	Element Name	Owner	Outage Date	Outage Time	Revival Date	Revival Time	Reasons	Indication Details (End1)	Indication Details (End2)
1	132 kV Loktak - Rengpang	MSPCL	01/Nov/2022	11:43	01/Nov/2022	12:06	Likely Vegetation Fault	Distance Protection, Z-1, 15.7 km, 2.04 kA, B-ph	EF, Z-3, B-ph
2		MSPCL	26/Nov/2022	18:07	27/Nov/2022	12:50	Likely Solid Fault	No tripping	EF, Zone 1, distance - 8.5 km
3		MSPCL	04/Mar/2023	13:03	04/Mar/2023	13:29	Not Analysis done due non submission of DR & EL	No tripping	OC
4		MSPCL	11/Feb/2023	14:20	11/Feb/2023	15:00	Likely Vegetation Fault	No tripping	Earth Fault, Over-Current

SL No.	Element Name	Owner	Outage Date	Outage Time	Revival Date	Revival Time	Reasons	Indication Details (End1)	Indication Details (End2)
1	132 kV Jiribam - Rengpang	MSPCL	01/Nov/2022	12:12	01/Nov/2022	12:35	Vegetation fault	Earth Fault	Earth Fault, OC
2		MSPCL	10/Nov/2022	07:34	10/Nov/2022	09:41	Vegetation fault	O/C, Z-3, Y-ph, 49.15 km	E/F, O/C
3		MSPCL	12/Nov/2022	11:51	12/Nov/2022	12:20	Vegetation fault	Earth Fault	Earth Fault
4		MSPCL	11/Feb/2023	14:19	11/Feb/2023	14:50	Vegetation fault	No indication	Over-Current

5		MSPCL	16/Feb/2023	13:04	16/Feb/2023	13:33	Not Analysis done due non submission of DR & EL	E/F, O/C	E/F, O/C

Deliberation of sub-committee

Matter could not be discussed as Representatives of Manipur were not present in the meeting. The subcommittee urged Manipur to attend the meeting regularly and update on the issue to NERPC. The subcommittee further urged Manipur to appoint a nodal officer for addressing the above issue.

The sub-committee noted as above.

Action: MSPCL

B.16 Frequent Tripping of 132 kV Dimapur(PG)- Kohima line:

Sl. No.	Owner	Outage Date	Outage Time	Revival Date	Revival Time	Reasons	Indication Details (End1)	Indication Details (End2)
1	DoP, Nagaland	17/Dec/2022	01:31	17/Dec/2022	01:55	Earth fault	No tripping	Earth fault
2		26/Dec/2022	20:25	26/Dec/2022	20:51	Tripped on Distance Protection, Over Current	Z-1, B-ph, 16.22 kM, 2.829 kA	Over Current, B-ph, 44.2kM
3		07/Feb/2023	08:36	07/Feb/2023	14:39	Due to Distance protection	B-ph, Z-1, 35.19kM	B-ph, Z-1, 27.73 kM
4		23/Feb/2023	00:53	23/Feb/2023	01:27	Tripped on Distance protection	B-ph, Z-I, 35.06kM, 1.963kA	B-ph, Z-I, O/C
5		27/Feb/2023	12:54	27/Feb/2023	13:13	Tripped on Distance protection	B-ph, Z-1, 38.31 kM	OC, EF, B-ph, Z-1, 24.11 kM

132 kV Dimapur(PG) – Kohima tripped 5 (Five) times from 01-12-2022 to 05-03-2023. As per DR Analysis, root cause of all the tripping are of vegetation nature. This indicates that there is the requirement of proper maintenance of this transmission line by DoP Nagaland.

Frequent tripping of the above line impacts the ISTS network of Dimapur PG S/s. Hence, DoP Nagaland is requested to carry out the patrolling related activities as per Cl. No. 23(2) (3) & (4) of CEA (Grid Standard) Regulation, 2010 on a regular basis so that measures may be identified and implemented at earliest in order to enhance reliability & resiliency of NER grid.

Deliberation of sub-committee

Nagaland mentioned that the frequent trippings occurred only in phase B of the 132 kV Dimapur(PG) – Kohima line due to vegetation fault. The sub-committee advised Nagaland to ensure proper patrolling in the line and vegetation clearance as specified in various CEA/CERC regulations.

The forum also advised Nagaland to explore the option of using insulator sleeve in the affected phase.

The sub-committee noted as above.

Action: Nagaland

AGENDA ITEMS FROM MEGHALAYA

B.17 220 KV Bus Bar Protection Scheme being out of service.

At present the 220 KV Bus Bar Protection Scheme at 400/220/132 KV Killing SS is non-functional. The 220 KV bus with bus scheme 2MTB is consisting of 4 line bays, 4 transformer bays, 1 Transfer Bus Bay and the bu coupler bay.

Initially after commissioning of the 220/132 KV SS, the Bus Bar Protection Scheme (6 bays) was functioning as supported by relay test reports. With the extension of two additional transfer bays (LV side of 400/220/132 kV 315 MVA ICT's 3&4),the bus bar protection is out of service, looking from the condition at site the primary unit of these two bay has not been commissioned yet. The commissioning of Bus Bar Protection Scheme has not been taken up as view from HMI 500 software.

Recently, with the extension of two additional line bays Mawngap 1&2 it is learned that the I/O card of the REB 500 central unit is under faulty condition. Commissioning of the Bus Bar Protection Scheme for the two Mawngap 1&2 bays has been carried out successfully by disabling the defective I/O card of the central unit.

In the present scenario ot of the ten numbers of bay, the primary unit of two bays has not been commissioned and the I/O card of the central unit is defective. The Bus Bar Protection Scheme of the 220 kV bus at 400/220/132 kV Killing SS has been taken out of service.

Deliberation of sub-committee

MePTCL intimated that for integration of LV side bays of ICTs 3 and 4 to the BUS Bar protection panel, all the hardware is available but integration is still pending. He requested NERTS to ask M/s ABB (the contracting party) to do the necessary work.

DGM NERTS assured that he will check whether the said work is under the scope of contract agreement or not.

The sub-committee noted as above.

Action: Meghalaya, PGCIL.

B.18 Fault locator of Siemens relay 7SA52

It has been observed that in case of carrier aided trip by 21M relay 7SA52, the fault locator could not give the exact fault location. Instead, it gave the distance equivalent to 120% of line length. These relays are installed in 400 kV Silchar and 400kV Bongaigaon line.

Deliberation of sub-committee

The sub-committee noted that the problem arises as mutual inductance is not accurately accounted for in the relays. In this case the relay will sense the fault but the exact location can never be determined. As a relay can never detect the exact location of a fault even in healthy circumstances, so the forum advised Meghalaya to mitigate the problem keeping in mind the obvious error involved in the relay.

The sub-committee noted as above.

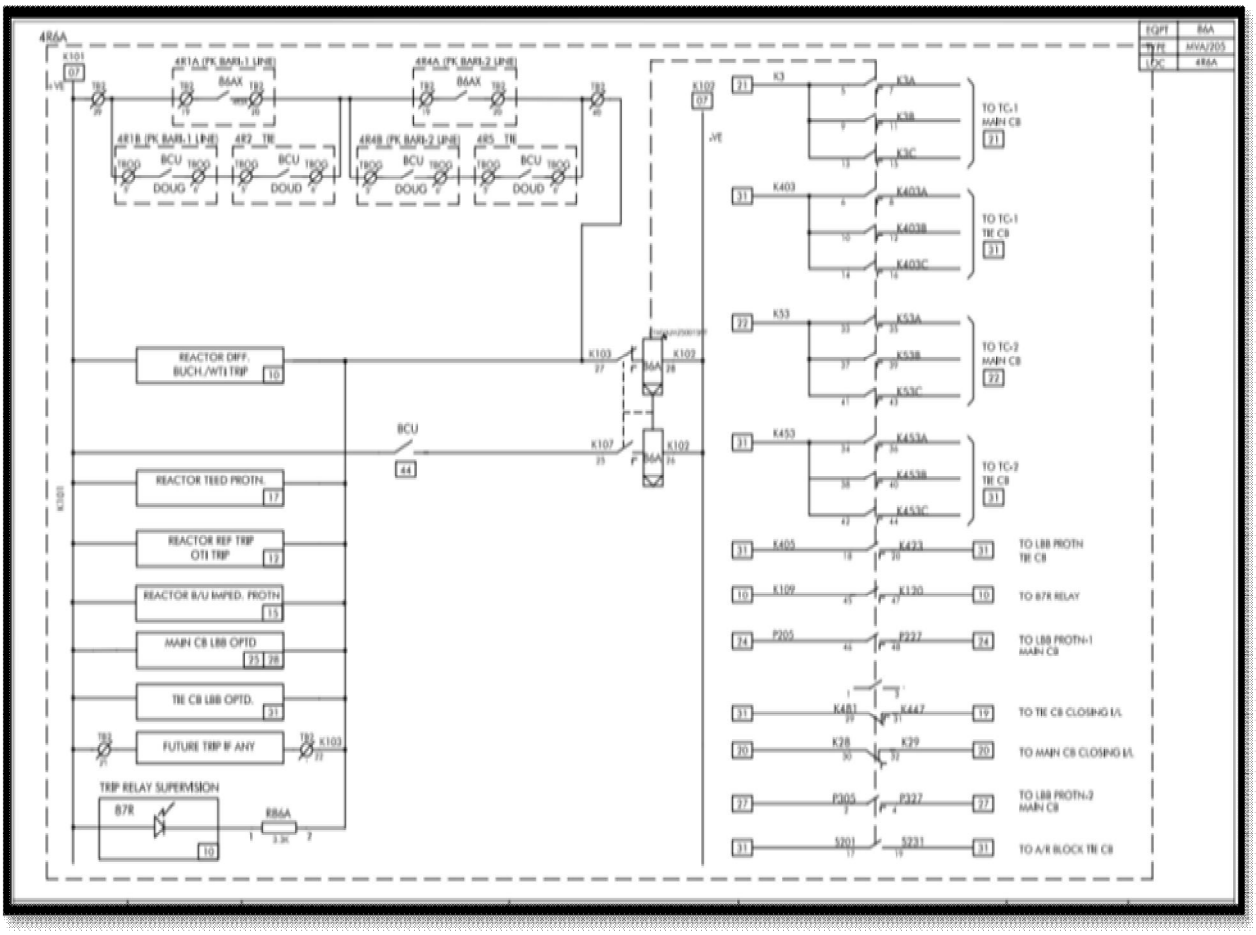
AGENDA ITEMS FROM INDI-GRID

B.19 NERSS SPS IMPLEMENTATION SCHEME:

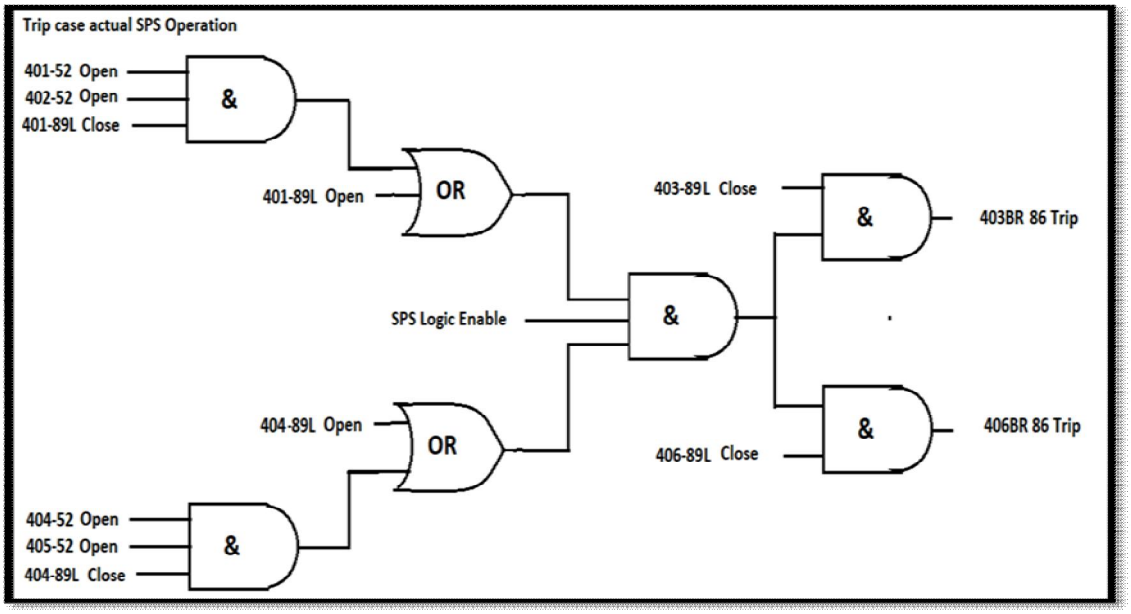
Classification: SPS related to under voltage condition

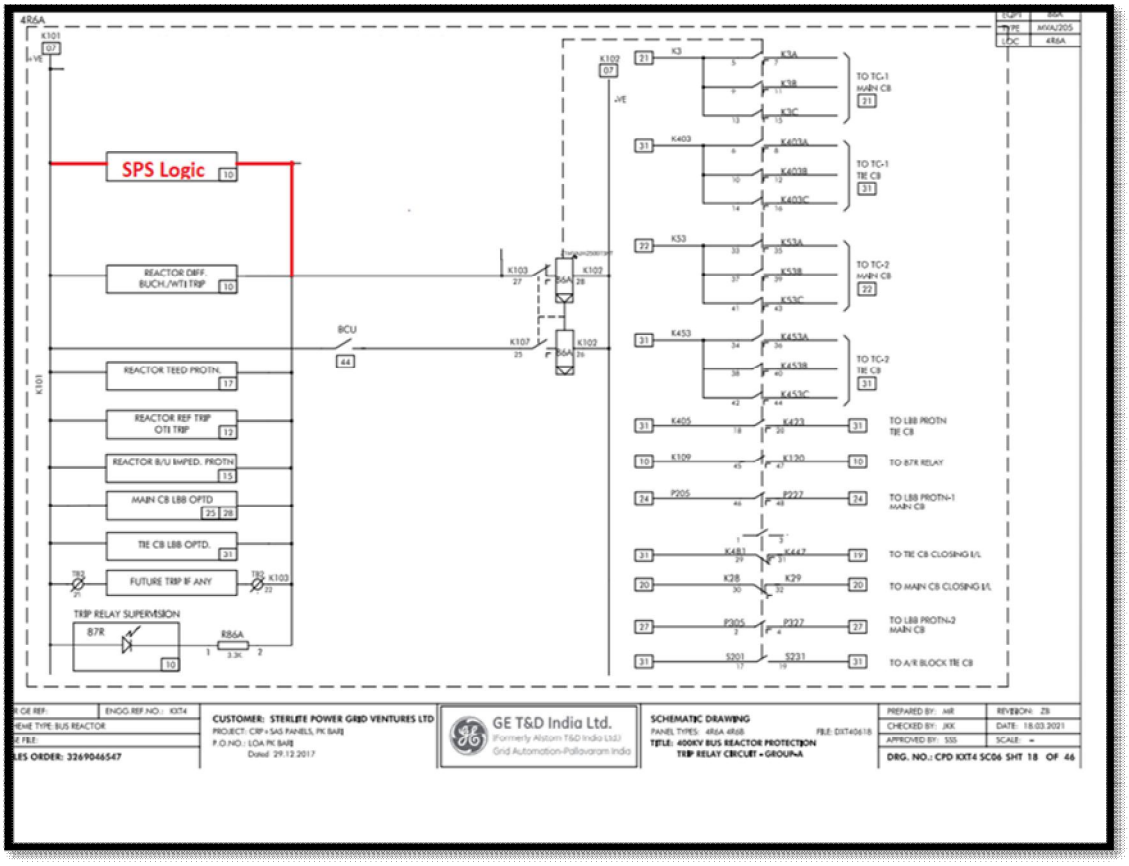
Operation: Disconnection of 2*125 MVAR Bus Reactor to prevent Under voltage situation at S M Nagar and nearby areas of Tripura power system.

As per the scheme,



NER-IITL Proposal - To avoid operation of bus reactor "Main CB", Isolator closing status needs to be provided in series with line either in outage or in trip condition. The same will need to be built in BCU soft logic which is proposed below.





Deliberation of sub-committee

The sub-committee advised Indi-Grid and NERLDC to discuss the proposed logic at length and bring up the best practice.

The sub-committee noted as above.

Action: IndiGrid & NERLDC

C. ITEMS FOR STATUS UPDATE

C.1 STATUS OF AUTO-RECLOSURE FOR IMPORTANT STATE GRID LINES:

Status of MePTCL lines

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		

Other utilities are requested to furnish the target date for Implementation of Auto Reclosure Scheme and furnish the details as decided

For 132kV Dimapur-Kohima decision as per previous meeting: 3-ph A/R is to be implemented for 132kV Dimapur-Kohima, with dead line charging at Kohima and check sync at Dimapur.

Updated list of auto recloser is attached as **Annexure-C.1.**

Deliberation of the sub-committee:

AEGCL updated that two 220KV substations (Jawaharnagar and Sonapur) and the 220 KV bay at Kathalguri has no auto reclosure but is expected to come up soon. Almost 60% of 132 KV substations has auto reclosure scheme and by June'23 the coverage will increase upto 90%.

Meghalaya stated that the petition to implement auto reclosure in all lines has been placed at MERC as the lines are very old and may snap on auto reclosing mechanism if persistent fault occurs. He stated that AR scheme has been put in place for 5 lines, but approval is required.

For other states, the forum enumerated the lines where AR is to be enabled at the earliest. The list is provided in item B.3.

The sub-committee noted as above.

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

As per discussion in 56th PCC meeting and subsequent OCC/Sub-group meetings the status for different STUs are as follows:

Name of utility	Last updated status	Latest status
AEGCL	Lines identified. Under Preparation stage.	DPR submitted to NERPC.
MSPCL	Revised DPR for 132kV Imphal-Imphal-III to be submitted.	
MePTCL	Work completed but not commissioned. By Aug'21.	
P&ED Mizoram	Lines identified viz. 132kV Aizawl - Luangmual and 132kV Khamzawl - Khawiva. DPR submitted. PSDF approval awaited.	DPR submitted. Relays are available but coordination required from NERTS regarding OPGW fibre.
DoP Nagaland	Lines identified under DPR preparation stage.	One line has been completed. For Doyang-Sanis line NEEPCO has procured the relays for both ends but Nagaland has to bear the cost of relay for one end to NEEPCO.
TSECL	132kV 79Tilla-Budhjungnagar. DPR to be prepared	Tripura was absent from the meeting and hence the matter could not be discussed.

Also, as per previous deliberation for the following important lines it was decided to implement LDP as early as possible:

Name of the line	Status of OPGW		Status of relay at both ends	
	Implementing utility	Latest status	Implementing utility	Latest status
132kV DHEP-Sanis	DoP Nagaland	NERTS to co-ordinate for fiber allocation	NEEPCO	LDP to be implemented. Relay under procurement

Deliberation of the sub-committee

Status as updated in 58th PCCM:

Name of utility	Last updated status	Latest status
AEGCL	Lines identified. Under Preparation stage.	DPR submitted to PSDF secretariat

MSPCL	Revised DPR for 132kV Imphal-Imphal-III to be submitted.	-
MePTCL	Workcompleted but not commissioned. Aug'21.	Meghalaya to provide line-wise status progress of LDP commissioning work to NERPC and NERLDC.
P&ED Mizoram	Lines identified viz. 132kV Aizawl - Luangmual and 132kV Khamzawl - Khawiva. DPR submitted. PSDF approval awaited.	Revised DPR for the two lines have already been submitted to NERPC
DoP Nagaland	Lines identified under DPR preparation stage.	Three lines were identified, viz; (i)132kV Dimapur-Dimapur-1 & 2 ((ii) 132kV Doyang-Sanis. Work is completed for the first two lines and regarding the Doyang-Sanis line status is provided below.
TSECL	132kV 79Tilla-Budhjungnagar. DPR to be prepared	-

Also, as per previous deliberation for the following important lines it was decided to implement LDP as early as possible:

Name of the line	Status of OPGW		Status of relay at both ends	
	Implementing utility	Latest status	Implementing utility	Latest status
132kV DHEP-Sanis	DoP Nagaland	NERTS to co-ordinate for fiber allocation	NEEPCO	LDP to be implemented. Relay under procurement

Regarding the 132kV Doyang-Sanis line, NEEPCO will procure and install the LDP relays and associated accessories at both the ends. DoP Nagaland will bear the cost corresponding to Sanis end.

OPGW stringing work, as decided in previous PCC meetings, is under the scope of NERTS. DGM NERTS stated that he will take up the matter with ULDC team and requested the forum to refer the matter to the next NeTEST meeting.

The sub-committee noted as above.

C.3 Implementation of carrier inter-trip for important grid lines

Decisions as per previous meeting(s):

- Carrier-intertrip to be immediately implemented for all Important grid elements in NER.
- Utilities are requested to update the Status

Deliberation of the sub-committee

DGM, NERTS informed the forum that wherever PLCC is not present, carrier inter-trip can be enabled through DTPC also, but OPGW is essential for the same. After detailed deliberation, the forum requested all the utilities to implement Carrier inter-trip at the earliest. List of Important Grid Elements in NER is attached as **Annexure-C.3**

The sub-committee noted as above.

C.4 Status for SPS:

The latest status for suggested modifications to be updated:

Sl No	SPS Details	Status as per 57th PCC meeting	Utility	Latest status/Discussion points
A. Existing				
1	SPS related to tripping of 400 kV Palatana-Silchar D/C when both modules of Palatana in service.		POWER GRID, OTPC	To be kept in service

2	SPS-5 (When reverse power flow greater than 60MW from LV to HV side of 400/132kV ICT at Azara, Trip both ICTs at Azara to prevent overloading of 220kV BTPS-Salakati D/C)	Similar scheme as before.	AEGCL	The forum agreed to disable the SPS-5 as it was redundant after the incoming of two 400KV transmission corridors.
3	SPS-6 (When 132kV Umiam Stg-I to Umiam Stg-III D/C line trips)	NERLDC informed that load shedding is required at Mawngap. MePTCL stated that 30MW load shedding at mawngap is possible, however s/d is required to implement the scheme. It was decided that works would be completed after return of Khandon s/d. MePTCL to submit the SPS scheme to NERLDC/NERPC. Carrier communication established for 132kV Mawngap-Umiam Stg-I. Remaining for 132kV Umiam-Umiam Stg-I. By Jun'21.	MePTCL	The forum advised to keep the SPS-6 associated with tripping of single ckt is to be kept on till Misa-Khandong-Kopili and Jiribam-Haflong linescome into service. However, SPS associated with tripping of both the circuit is required.
4	(When 220kV BTPS-Salakati D/C gets overloaded OR in case of outage of one circuit the other circuit gets overloaded (i.e loading greater than 600A) Signal to be sent from BTPS to Agia to trip 220kV Agia-Azara and 220kV Agia-Boko at Agia end.	In operation.	AEGCL	The forum advised to keep the SPS-7 on till the reconductoring works of 220 kV BTPS-Salakati D/C with HTLS conductors were completed.

5	SPS- 10 (Tripping of both 400kV BgTPP – Bongaigaon D/C lines) SPS Action: If generation greater than 600MW at that instant, then generation to be reduced to 600MW in order for power evacuation via 400/220kV 2x315MVA ICTs	In service w.e.f. 15.10.2020. Schematic submitted to NERPC/NERLDC	NTPC	
6	SPS- 11(Tripping of 132kV Monarchak-Udaipur OR 132kV Monarchak-Rokhia line) SPS Action: If before tripping of either of the lines CC generation greater than 65MW, then STG at Monarchak will be tripped.	In-service w.e.f. 19.01.2022	NEEPCO	
7	SPS related to Outage of 220 kV BTPS – Rangia I & II lines		AEGCL	To be kept in service
8	SPS related to the tripping of Bus Reactors at 400 kV S M Nagar (ISTS)		NTL	To be kept in service
9	SPS related to the tripping of Bus Reactors at 400 kV P K Bari (ISTS)		NTL	To be kept in service
10	SPS related to the tripping of Bus Reactors at 400 kV Imphal (PG)		POWERGRID	To be kept in service

11	SPS-12 (Outage of any one of the 400/132kV 2x360MVA ICTs at RHEP) SPS Action: Tripping of one unit of RHEP for ICT loading>130% for 2s, Tripping of one unit of RHEP+one unit of Pare HEP for ICT loading>145%	Under implementation. Overload relay to be procured. M/s GE yet to revert back.	NEEPCO	
SPS related to Bangladesh				
12	SPS-2(Outage of 400kV Palatana – SMNagar line charged at 132kV) SPS Action: Entire load disconnection of South Comilla by way of tripping of 132kV SMNagar-South Comilla D/C	In-service w.e.f. 08th Aug'2020. In-service w.e.f. 08th Aug'2020.Required till upgradation to HTLS of Tripura lines.	NERTS/ TSECL	To be kept in Service and reviewed after commissiong of: 1. Commissioning of Surajmaninagar – Monarchak 132kV D/c line. 2. Reconductoring of 132 kV-Surajmaninagar (ISTS)-Surajmaninagar(TSECL) with HTLS conductor 3. Reconductoring of 132 kV-Surajmaninagar (ISTS)-Budhjungnagar lines with HTLS conductor
13	SPS-3(Outage of one circuit of 400kV SMNagar-South Comilla D/C (charged at 132kV) SPS Action: 30MW load disconnection at South Comilla area of	As per decision of 171st OCCM implementation kept in abeyance. To be reviewed based on the present load growth in Bangladesh supply. To be reviewed in next Operational meeting with Bangladesh	Bangladesh	

	Bangladesh followed by shifting of the load to main grid of Bangladesh			
14	SPS-4(Outage of both 400/132kV 2x125MVA ICTs at Palatana) SPS Action: Entire load disconnection of South Comilla by way of tripping of 132kV SMNagar-South Comilla D/C	In-service w.e.f. 08th Aug'2020. After commissioning of 400kV PalatanaSMNagar some load at Bangladesh may be catered even after tripping of both ICTs. It was decided that NERLDC would determine the quantum of shedding required and thereafter the SPS would be suitably modified.	NERTS/ TSECL	To be kept in Service and reviewed after commissiong of: 1. Commissioning of Surajmaninagar – Monarchak 132kV D/c line. 2. Reconductoring of 132 kV-Surajmaninagar (ISTS)-Surajmaninagar (TSECL) with HTLS conductor 3. Reconductoring of 132 kV-Surajmaninagar (ISTS)-Budhjungnagar lines with HTLS conductor

New

	Name of SPS	SPS Trigger/Action	Utility	Status/Discussion points
15	SPS related to secure & reliable operation of Leshka HEP	Upon tripping of one circuit of 132kV Leshka-Khliehriat D/C, Leshka generation to be reduced	MePGCL	MePGCL to determine the logic based on line loading OR generation quantum and prepare the schematic at the earliest.
16.	SPS related to prevention of cascading tripping in Assam power system	Upon tripping f either 22kV DC Misa-Samaguri or 220kV Azara-Sarusaji DC	AEGCL	AEGCL to identify the 33kV Lines for load cutting, then cost estimated will be prepared and administrative approval will be taken

Concerned utilities may please update the status.

Deliberation of the sub-committee

NERLDC provided updates on selected SPS where some modification is required through a presentation attached as **Annexure C.4**.

Regarding New SPS, utilities updated as follow-

	Name of SPS	SPS Trigger/Action	Utility	Status/Discussion points
15	SPS related to secure &reliable operation of Leshka HEP	Upon tripping of one circuit of 132kV Leshka-Khliehriat D/C, Leshka generation to be reduced	MePGCL	Consultation with the Relay OEM M/s Hitachi is underway. The later will provide the cost estimates after receiving the details on configurations.
16	SPS related to prevention of cascading tripping in Assam power system	Upon tripping f either 22kV DC Misa-Samaguri or 220kV Azara-Sarusaji DC	AEGCL	In case of tripping of 220kV Azara-Sarusajai DC , AEGCL intimated that according to the plan, 132kV Sarusajsai-Kamakhya line will be tripped and load shedding at Kamalpur and Kahilipara wil be done. APDCL to identify the 33kV feeders at Kahilipara and Kamalpur which are to be tripped. In case of tripping of 220kV Misa-Samsaguri DC, 132kV Smagauri -Sanakardev Nagar will be tripped. AEGCL requested NERTS to send a DT signal from Misa end to Samaguri, in case AR is non-successful at Misa end, so that tripping decision can be taken on hard logic to minimize error. DGM NERTS suggested that zero power logic, with suitable threshold, may be configured in the BCU at Samsaguri end. He suggested that relying on signal from far end should be avoided to reduce the chances of Mal-operation or non-operation. AeGCL informed that they prefer hard wire-based logic but the same will be discussed with higher management.

C.5 Status against remedial actions for important grid events:

Deliberation of the sub-committee

Status as updated in the 58th PCCM:

Details of the events(outage)	Remedial action suggested	Name of the utility	Latest status
132 kV Balipara-Tenga line in May and JUne	Carrier aided inter-tripping to be implemented for 132kV Balipara-TengaKhupi at the earliest	DoP, Aruncahl Pradesh	
132 kV Kakching - Churachandpur, 132 kV Kakching - Elangkangpokpi, 400kV/132kV, 315MVA ICT New Thoubal and 132 kV New Thoubal - Kongba D/C lines on 05.03.2022	MSPCL to share B/U relay settings at New Thoubal SS to NERPC for better coordination of Kakching, Churachandpur, Ningthoukhong and Thoubal.	MSPCL	
132 kV Ningthoukhong-Churachandpur D/C and 132 kV New Thoubal - Kakching lines on 15.04.2022	DP settings to be reviewed for 132kV Kakching - Churachandpur	MSPCL	
132 kV Kohima Karong& 132 kV Imphal - Karong lines on 05.04.2022	TMS at Kohima for 132kV Karong to be set at 0.1	DoP Nagaland	Done
132 kV Imphal (MSPCL) - Karong& 132 kV Karong - Kohima lines on 06.05.2022 and 2nd july	> DP settings to be reviewed at Karong, Yurembam & Kohima	MSPCL, DoP NAGaland	
132 kV Haflong - Jiribam line on 15.04.2022	AEGCL stated that AR will be successfully implemented in Umransho by 15th Oct 2022	AEGCL	
132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) D/C lines on 15th , 19thjune 1st , 2ndjul	At present Bus Bar protection(at 132kV Nagrajan) has been disabled and shall be put into service after OEM visit.	DoP Nagaland	Work in progress. To be completed in 1-2 months.
132 kV Doyang Mokokchung line 132 kV Mokokchung - Mokochung (DoP, Nagaland) D/C lines on 30th July	> DP non-operation at Mokokchung(NAG) to be investigated by DoP Nagaland ->Carrier inter-trip for 132kV DHEP-Mokokchung to be implemented by DoP Nagaland	DoP Nagaland	
Leshka-Khleihriat DC	TLSA installation along the	MePTCL	DPR submitted

multi[le trippings in April to Septmeber	line to be done by MePTCL		
Loktak Unit-1, Loktak Unit-2, 132 kV Loktak Jiribam(PG) line, 132 kV Loktak-Ningthoukhong line and 132 kV Loktak-Imphal(PG) line on 30th March	CB overhauling to be done by NHPC	NHPC	
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	
132 kV Aizwal Lungmual line on 2, 14, 16, 17 and18 June	P&ED Mizoram to revise the 132/33kV ICT at Luangmual settings to Pickup at 200% with IDMT TMS such that time delay =50ms	P&ED Mizoram	P&ED Mizoram to update.
multiple tripping of 132kV Lekhi-Pare and 132kV Pare-RHEP-2 on 23rd Aug'22	DoP Arunachal Pradesh is requested to checked/reviewed the Z-1 reach setting of relay at Lekhi for Pare line urgently based on actual line impedance/line length and accordingly rectify	DoP Arunachal. Pradesh	
Blackout of Amguri Solar Station on 20th Sep'22	NERLDC requested AeGCL to check the Zone reach setting at NTPS for Amguri line immediately	AEGCL	High Set has been disabled, Zone setting revised. Relay settings to be sent to NERPC. AEGCL intimated about issue of low-infeed from the solar station. Protection philosophy for the inverter-based s/s to be finalized by NERPC.
Grid disturbance of category GD-1 (Load loss: 13MW) occurred at Karong areas of Manipur Power	MSPCL to check the following 1. Protection setting at Karong along with circuit wirings from DPR to CB mechanism 2.	MSPCL	

System at 07:41 Hrs on 4th August'22	Z-III setting at Imphal and its healthiness of correct operation by relay testing.		
PLCC & protection related issues at 132kV Tipaimukh S/S	MSPCL to ensure uninterrupted service of PLCC system at 132kV Tipaimukh S/S.	MSPCL	
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 by the end of March'23
Multiple tripping occurred at PK Bari-PK Bari and PK Bari-Kumarghat Line on 4th July 2022.	-> Healthiness of Carrier aided POTT scheme needs to be ensured by TSECL -> LDP needs to be implemented in 132 kV PK Bari-Kumarghat Transmission line. TSECL is requested to update the status of installation of LDP to this end -> Z-2 time delay of 132 kV PK bari(ISTS)-PK Bari line from PK Bari(ISTS) appears overlap with Z-2 time delay of short 132 kV PK Bari-Kumarghat Line at PK Bari. ->NTL is requested to check/review the Z-2 time setting at PK Bari(ISTS) and accordingly co-ordinate	TSECL, NTL	After installation of DTPC at PK Bari end and Kumaraghat end by PGCIL, Inter-trip will now be enabled between Kumaraghat and P K Bari after TSECL assists in connection of Relay to DTPC panel at P K Bari end.

Deliberation of the sub-committee

Subcommittee advised to all the concerned constituents to implement the remedial action for the important grid element for safe and reliable operation of NER grid.

DATE AND VENUE OF NEXT PROTECTION SUB- COMMITTEE MEETING

The next Protection Sub-Committee meeting will be held in the month of June 2023. The date and venue will be intimated separately.

****

Annexure-I

List of Participants in the 58th PCC Sub-Committee Meeting held on 14.03.2023

SN	Name & Designation	Organization	Contact No.
	NO REPRESENTATIVE	Ar. Pradesh	-
1.	Sh. Abhishek Kalita, DM, AEGCL	Assam	08486213068
	NO REPRESENTATIVE	Manipur	-
2.	Sh. A.G.Tham, AEE (MRT), MePTCL	Meghalaya	09774664034
3.	Sh. A.Shullai, AEE (GSPSD), MePGCL	Meghalaya	09436334458
4.	Sh. M.K.Myrthong, AEE, MePTCL	Meghalaya	08794435131
5.	Sh. R.Khongmalai, AE, MePTCL	Meghalaya	08014137268
6.	Sh. Lalrinawma, SDO, MRT	Mizoram	09436791567
7.	Sh. Lalremruata Sailo, JE (SLDC)	Mizoram	09612614372
8.	Sh. Hekaito Assumi, EE	Nagaland	09612859859
9.	Sh. Rokobeito Iralu, SDO	Nagaland	09436832020
10	Sh. Lengminlal Singson, SDO	Nagaland	09774652144
11.	Sh. A. Walling, JE	Nagaland	06009380715
	NO REPRESENTATIVE	Tripura	-
12.	Sh. Joypal Roy, GM (E/M)	NEEPCO	08837200069
13.	Sh. S.C.De, Sr.GM	NERLDC	09436339367
14.	Sh. Bimal Swargiary, CM	NERLDC	09435499779
15.	Sh. Sachin Singh, Dy.Mgr	NERLDC	-
16.	Sh. Chitra Bahadur Thapa, Manager	NERLDC	08135989964
17.	Sh. Utpal Das, AM	NERLDC	07005504075
18.	Smti. Isha Das, Engineer	NERLDC	09365332774
19.	Sh. Ankit Vaish, DGM	PGCIL	09409305725
20.	Sh. Deep Sarkar, Manager	PGCIL	09957665341
21.	Sh. Vivek Karthikeyan, Sr. Manager	INDIGRID	08966903034
22.	Sh. Prayas Gupta, AGM	INDIGRID	09099005516
23.	Sh. K.B.Jagtap, Member Secretary	NERPC	09436163419
24.	Sh. S. M. Aimol, Director	NERPC	08974002106
25.	Sh. Sadiq Imam, DD	NERPC	07004133772
26.	Sh. Shaishav Ranjan, DD	NERPC	08787892650
27.	Sh. Vikash Shankar, AD-I	NERPC	09455331756
28.	Sh. Dinesh Kr.Singh, AD-I	NERPC	07042118261
29.	Sh. Rajib Das, AD-I	NERPC	-
30.	Sh. Ashim Kr. Goswami, AD-II	NERPC	08638966481

Annexure C.1

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
1	132 kV	132 kV South Comilla (Bangladesh) - Surajmani Nagar	1	D/C	PGCB	POWERGRID	POWERGRID	Information not Available	Information not Available
2	132 kV	132 kV South Comilla (Bangladesh) - Surajmani Nagar	2	D/C	PGCB	POWERGRID	POWERGRID	Information not Available	Information not Available
1	132 kV	132 kV Gelyphu (Bhutan) - Salakati	1	S/C	BPCL	POWERGRID	POWERGRID	3-ph AR in service at Salakati	
2	132 kV	132 kV Motonga (Bhutan) - Rangia	1	S/C	BPCL	AEGCL	POWERGRID & BPC	3-ph AR in service at Rangia	
1	400 kV	400 kV Azara - Bongaigaon	1	D/C	AEGCL	POWERGRID	NETC(1.8%) &AEGCL (98.2%)	SPAR in service	
2	400 kV	400 kV Azara - Silchar	1	D/C	AEGCL	POWERGRID	NETC(37.5%) & AEGCL(62.5%)	SPAR in service	
3	400 kV	400 kV Balipara - Biswanath Chariali	1	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
4	400 kV	400 kV Balipara - Biswanath Chariali	2	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
5	400 kV	400 kV Balipara - Biswanath Chariali	3	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
6	400 kV	400 kV Balipara - Biswanath Chariali	4	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
7	400 kV	400 kV Balipara - Bongaigaon	1	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
8	400 kV	400 kV Balipara - Bongaigaon	2	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
9	400 kV	400 kV Balipara - Bongaigaon	3	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
10	400 kV	400 kV Balipara - Bongaigaon	4	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
11	400 kV	400 kV Balipara - Misa	1	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
12	400 kV	400 kV Balipara - Misa	2	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
13	400 kV	400 kV Biswanath Chariali - Ranganadi	1	D/C	POWERGRID	NEEPCO	POWERGRID	SPAR in service	
14	400 kV	400 kV Biswanath Chariali - Ranganadi	2	D/C	POWERGRID	NEEPCO	POWERGRID	SPAR in service	
15	400 kV	400 kV Bongaigaon - Byrnihat	1	D/C	POWERGRID	MePTCL	NETC(97.91 %) & MePTCL(2.09%)	SPAR in service	
16	400 kV	400 kV Binaguri - Bongaigaon	1	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
17	400 kV	400 kV Binaguri - Bongaigaon	2	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
18	400 kV	400 kV Alipurduar - Bongaigaon	1	D/C	POWERGRID	POWERGRID	ENICL	SPAR in service	
19	400 kV	400 kV Alipurduar - Bongaigaon	2	D/C	POWERGRID	POWERGRID	ENICL	SPAR in service	
20	400 kV	400 kV BgTPP - Bongaigaon	1	D/C	NTPC	POWERGRID	POWERGRID	SPAR Available	Due to LDP, SPAR is not attempting

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
21	400 kV	400 kV BgTPP - Bongaigaon	2	D/C	NTPC	POWERGRID	POWERGRID	SPAR Available	Due to LDP, SPAR is not attempting
22	400 kV	400 kV Byrnihat - Silchar	1	D/C	MePTCL	POWERGRID	NETC(98.06%)& MePTCL(1.94%)	SPAR in service	
23	400 kV	400 kV Pallatana - Silchar	1	D/C	OTPC	POWERGRID	NETC	SPAR in service	
24	400 kV	400 kV Pallatana - Silchar	2	D/C	OTPC	POWERGRID	NETC	SPAR in service	
1	220 kV	220 kV AGBPP - Mariani	1	S/C	NEEPCO	AEGCL	POWERGRID	Information not available	AGBPP-SPAR enabled, Mariani end-POWERGRID may intimate
2	220 kV	220 kV AGBPP - Mariani(PG)	1	S/C	NEEPCO	POWERGRID	POWERGRID	SPAR in service	
3	220 kV	220 kV Mariani - Misa	1	S/C	AEGCL	POWERGRID	POWERGRID	Information not available	POWERGRID may intimate the status
4	220 kV	220 kV Mariani (PG) - Misa	1	S/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
1	132 kV	132kV Imphal - Silchar	1	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
2	132 kV	132kV Imphal - Silchar	2	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
3	132 kV	132kV P K Bari - Silchar	1	D/C	TSECL	POWERGRID	POWERGRID	SPAR in service	LINE DISCONTINUED
4	132 kV	132kV P K Bari - Silchar	2	D/C	TSECL	POWERGRID	POWERGRID	SPAR in service	LINE DISCONTINUED
1	220 kV	220 kV AGBPP - Deomali	1	S/C	NEEPCO	DoP,Arunachal Pradesh	DoP, Arunachal Pradesh	Information not available	DoP AP may intimate the status
2	220 kV	220 kV AGBPP - Tinsukia	1	S/C	NEEPCO	AEGCL	AEGCL	SPAR not in service	SPAR available at both ends, but is not enabled at AGBPP as per Audit report
3	220 kV	220 kV AGBPP - Tinsukia	2	S/C	NEEPCO	AEGCL	AEGCL	SPAR not in service	SPAR available at both ends, but is not enabled at AGBPP as per Audit report
4	220 kV	220 kV Agia - Azara	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	SPAR available at Azara. At Agia by the end of January 2020.
5	220 kV	220 kV Agia - Boko	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	SPAR available at Azara. At Agia by the end of January 2020.
6	220 kV	220 kV Agia - BTPS	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	At BTPS SPAR completed. At Agia End testing of new panels are going on. Will be completed in two months time.
7	220 kV	220 kV Agia - BTPS	2	D/C	AEGCL	AEGCL	AEGCL	Not Available	At BTPS SPAR completed. At Agia End testing of new panels are going on. Will be completed in two months time.
8	220 kV	220 kV Azara - Boko	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	SPAR available at Azara. At Boko, the testing of the new panels are yet to be started. By March 2020.
9	220 kV	220 kV Azara - Sarusajai	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	SPAR available at Azara, other end will be done in R&M works

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
10	220 kV	220 kV Azara - Sarusajai	2	D/C	AEGCL	AEGCL	AEGCL	Not Available	SPAR available at Azara, other end will be done in R&M works
11	220 kV	220 kV Balipara - Sonabil	1	S/C	POWERGRID	AEGCL	AEGCL	SPAR in service	AEGCL & POWERGRID may confirm
12	220 kV	220 kV Alipurduar - Salakati	1	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
13	220 kV	220 kV Alipurduar - Salakati	2	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
14	220 kV	220 kV BTPS - Salakati	1	D/C	AEGCL	POWERGRID	POWERGRID	Not Available	SPAR available at BTPS end. Carrier communication link is yet to be established. In the AR logic, AR is blocked if comm. Link is absent.
15	220 kV	220 kV BTPS - Salakati	2	D/C	AEGCL	POWERGRID	POWERGRID	Not Available	SPAR available at BTPS end. Carrier communication link is yet to be established. In the AR logic, AR is blocked if comm. Link is absent.
16	220 kV	220 kV Dimapur - Misa	1	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
17	220 kV	220 kV Dimapur - Misa	2	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
18	220 kV	220 kV Jawaharnagar - Samaguri	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	SPAR available at JawaharNagar, other end will be done in R&M works
19	220 kV	220 kV Jawaharnagar - Sarusajai	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	SPAR available at JawaharNagar, other end will be done in R&M works
20	220 kV	220 kV Karbi Langpi - Sarusajai	1	S/C	APGCL	AEGCL	AEGCL	Not Available	SPAR will be done in R&M works
21	220 kV	220 kV Karbi Langpi - Sarusajai	2	S/C	APGCL	AEGCL	AEGCL	Not Available	SPAR will be done in R&M works
22	220 kV	220 kV Byrnihat - Misa	1	S/C	MePTCL	POWERGRID	MePTCL	SPAR in service	
23	220 kV	220 kV Byrnihat - Misa	2	S/C	MePTCL	POWERGRID	MePTCL	SPAR in service	
24	220 kV	220 kV Kopili - Misa	1	D/C	NEEPCO	POWERGRID	POWERGRID	SPAR in service	
25	220 kV	220 kV Kopili - Misa	2	D/C	NEEPCO	POWERGRID	POWERGRID	SPAR in service	
26	220 kV	220 kV Kopili - Misa	3	S/C	NEEPCO	POWERGRID	POWERGRID	SPAR in service	
27	220 kV	220 kV Mariani (AEGCL) - Samaguri	1	S/C	AEGCL	AEGCL	AEGCL	Not Available	will be done in PSDF scheme
28	220 kV	220 kV Mariani (PG) - Mokokchung (PG)	1	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
29	220 kV	220 kV Mariani (PG) - Mokokchung (PG)	2	D/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
30	220 kV	220 kV Misa - Samaguri	1	D/C	POWERGRID	AEGCL	POWERGRID	Information not available	POWERGRID may intimate the status
31	220 kV	220 kV Misa - Samaguri	2	D/C	POWERGRID	AEGCL	POWERGRID	Information not available	POWERGRID may intimate the status
32	220 kV	220 kV NTPS - Tinsukia	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	will be done in PSDF scheme

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
33	220 kV	220 kV NTPS - Tinsukia	2	D/C	AEGCL	AEGCL	AEGCL	Not Available	will be done in PSDF scheme
34	220 kV	220 kV Samaguri - Sarusajai	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
35	220 kV	220 kV Samaguri - Sarusajai	2	D/C	AEGCL	AEGCL	AEGCL	Not Available	will be done in PSDF scheme
35	220 kV	220 kV Samaguri - Sonabil	1	S/C	AEGCL	AEGCL	AEGCL	Not Available	Due to problem at Samaguri end. Implemeted in R&M scheme funded from PSDF
36	220 kV	220 kV Samaguri - Sonabil	2	S/C	AEGCL	AEGCL	AEGCL	Not Available	Due to problem at Samaguri end. Implemeted in R&M scheme funded from PSDF
1	132 kV	132 kV Agartala - AGTCCPP	1	D/C	TSECL	NEEPCO	POWERGRID	Not Available	SPAR available at AGTCCPP, PLCC is not in service
2	132 kV	132 kV Agartala - AGTCCPP	2	D/C	TSECL	NEEPCO	POWERGRID	Not Available	SPAR available at AGTCCPP, PLCC is not in service
3	132 kV	132 kV Agartala - Bodhjungnagar	1	S/C	TSECL	TSECL	TSECL	Not Available	132 KV breaker are 3-ph. gang operated.
4	132 kV	132 kV Agartala - Dhalabil	1	S/C	TSECL	TSECL	TSECL	Not Available	132 KV breaker are 3-ph. gang operated.
5	132 kV	132 kV Agartala - Rokhia	1	D/C	TSECL	TPGL	TSECL	Not Available	132 KV breaker are 3-ph. gang operated.
6	132 kV	132 kV Agartala - Rokhia	2	D/C	TSECL	TPGL	TSECL	Not Available	132 KV breaker are 3-ph. gang operated.
7	132 kV	132 kV Agia - Mendipathar	1	S/C	AEGCL	MePTCL	MePTCL	Not Available	Agia end: 3-ph AR will be implemented under R&M works, Mendipathar- MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by September 2019.
8	132 kV	132 kV AGTCCPP - Kumarghat	1	S/C	NEEPCO	POWERGRID	POWERGRID	SPAR/TPAR not in service	AGTCCPP: 1 AR facility available; Kumarghat: Gang Operated CBs
9	132 kV	132 kV Aizawl - Jiribam	1	S/C	POWERGRID	POWERGRID	POWERGRID	3-Ph AR in service	

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
10	132 kV	132 kV Aizawl - Kolasib	1	S/C	POWERGRID	P&ED, Mizoram	POWERGRID	3-Ph AR in service	POWERGRID may confirm
11	132 kV	132 kV Aizawl - Kumarghat	1	S/C	POWERGRID	POWERGRID	POWERGRID	3-Ph AR in service	
12	132 kV	132 kV Aizawl - Luangmual	1	S/C	POWERGRID	P&ED, P&ED, Mizoram	P&ED, Mizoram	Not Available	
13	132 kV	132 kV Aizawl - Melriat(PG)	1	S/C	POWERGRID	POWERGRID	POWERGRID	Not Available	
14	132 kV	132 kV Ambasa - Gamaitila	1	S/C	TSECL	TSECL	TSECL	Not Available	132 KV breaker are 3-ph. gang operated.
15	132 kV	132 kV Ambasa - Kamalpur	1	S/C	TSECL	TSECL	TSECL	Not Available	132 KV breaker are 3-ph. gang operated.
16	132 kV	132 kV Ambasa - P K Bari	1	S/C	TSECL	TSECL	TSECL	Not Available	Line terminated at P.K.Bari(Sterlite ISTS) & Line Differential In Service between 132KV P.K. Bari(ISTS) to P.K.Bari(TSECL)
17	132 kV	132 kV Badarpur - Jiribam	1	S/C	POWERGRID	POWERGRID	POWERGRID	Information not available	POWERGRID may intimate the status
18	132 kV	132 kV Badarpur - Kolasib	1	S/C	POWERGRID	P&ED, Mizoram	POWERGRID	Information not available	POWERGRID may intimate the status
19	132 kV	132 kV Badarpur - Kumarghat	1	S/C	POWERGRID	POWERGRID	POWERGRID	3-Ph AR in service	
20	132 kV	132 kV Badarpur - Panchgram	1	S/C	POWERGRID	AEGCL	POWERGRID	Information not available	**POWERGRID may intimate the status**, Panchgram end: 3 ph AR will be implemeted under R&M
21	132 kV	132 kV Badarpur - Silchar	1	D/C	POWERGRID	POWERGRID	POWERGRID	Information not available	Silchar end: AR in BCU available, **AEGCL may intimate the status**
22	132 kV	132 kV Badarpur - Silchar	2	D/C	POWERGRID	POWERGRID	POWERGRID	Information not available	Silchar end: 3-ph AR in BCU available, **AEGCL may intimate the status**
23	132 kV	132 kV Balipara - Bhalukpong	1	S/C	POWERGRID	DoP, Arunachal Pradesh	NEEPCO & DoP, Arunachal Pradesh	Not Available	
24	132 kV	132 kV Balipara - Depota	1	S/C	POWERGRID	AEGCL	AEGCL	Not Available	AEGCL&POWERGRID may intimate the plan of action

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
25	132 kV	132 kV Balipara - Sonabil	1	S/C	AEGCL	AEGCL	AEGCL	Information not available	Sonabil end: 3-ph AR available, **Balipara end: POWERGRID may intimate**
26	132 kV	132 kV Baramura - Gamaitilla	1	S/C	TPGL	TSECL	TSECL	Not Available	132 KV breaker are 3-ph. gang operated.
27	132 kV	132 kV Baramura - Jirania	1	S/C	TPGL	TSECL	TSECL	Not Available	132 KV breaker are 3-ph. gang operated.
28	132 kV	132 kV Bhalukpong - Khupi	1	S/C	DoP, Arunachal Pradesh	NEEPCO	NEEPCO & DoP, Arunachal Pradesh	Not Available	
29	132 kV	132 kV Biswanath Chariali - Pavoi	1	D/C	POWERGRID	AEGCL	POWERGRID	Not Available	Pavoid end- 3-ph AR will be implemented, BNC: POWERGRID may intimate the status
30	132 kV	132 kV Biswanath Chariali - Pavoi	2	D/C	POWERGRID	AEGCL	POWERGRID	Not Available	Pavoid end- 3-ph AR will be implemented, BNC: POWERGRID may intimate the status
31	132 kV	132 kV Pavoi - Sonabil	1	S/C	AEGCL	AEGCL	AEGCL	Not available	TPAR is available both at Pavoi and Sonabil. Carr. Comm. Is yet to be established.
32	132 kV	132 kV Bodhjannagar - Jirania	1	S/C	TSECL	TSECL	TSECL	Not Available	132 KV breaker are 3-ph. gang operated.
33	132 kV	132 kV Bokajan - Dimapur	1	S/C	AEGCL	POWERGRID	AEGCL	Not available	
34	132 kV	132 kV Bokajan - Golaghat	1	S/C	AEGCL	AEGCL	AEGCL	Not available	AEGCL may intimate the plan of action
35	132 kV	132 kV BTPS - Dhaligaon	1	D/C	AEGCL	AEGCL	AEGCL	Not available	3-ph AR under R&M
36	132 kV	132 kV BTPS - Dhaligaon	2	D/C	AEGCL	AEGCL	AEGCL	Not available	3-ph AR under R&M
37	132 kV	132 kV BTPS-Kokrajhar	1	S/C	AEGCL	AEGCL	AEGCL	Not available	AEGCL may intimate the plan of action
38	132 kV	132 kV Bilashipara-Kokrajhar	1	S/C	AEGCL	AEGCL	AEGCL	Not available	AEGCL may intimate the plan of action
39	132 kV	132 kV Bilashipara-Gauripur	1	S/C	AEGCL	AEGCL	AEGCL	Not available	AEGCL may intimate the plan of action

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
40	132 kV	132 kV Bornagar - Dhaligaon	1	S/C	AEGCL	AEGCL	AEGCL	Not available	AEGCL may intimate the plan of action
41	132 kV	132 kV Bornagar - Rangia	1	S/C	AEGCL	AEGCL	AEGCL	Not available	AEGCL may intimate the plan of action
42	132 kV	132 kV Budhjangnagar - Surjamaninagar	1	S/C	TSECL	TSECL	TSECL	Not available	132 KV breaker are 3-ph. gang operated.
43	132 kV	132 kV Budhjangnagar - Surjamaninagar	2	S/C	TSECL	TSECL	TSECL	Not available	Line terminated at S.M.Nagar(Sterlite ISTS) & Distance relay in Service between 132KV S.M.Nagar(Sterlite ISTS) to S.M.Nagar(TSECL)
44	132 kV	132 kV Dhalabil - Kamalpur	1	S/C	TSECL	TSECL	TSECL	Not available	132 KV breaker are 3-ph. gang operated.
45	132 kV	132 kV Dhaligaon-Gossaigaon	1	S/C	AEGCL	AEGCL	AEGCL	Not available	AEGCL may intimate the plan of action
46	132 kV	132 kV Dharmanagar - Dullavcherra	1	S/C	TSECL	AEGCL	AEGCL	Not available	AEGCL&TSECL may intimate the plan of action
47	132 kV	132 kV Dullavcherra - Hailakandi	1	S/C	AEGCL	AEGCL	AEGCL	Not available	AEGCL may intimate the plan of action
48	132 kV	132 kV Dharmanagar - P K Bari	1	S/C	TSECL	TSECL	TSECL	Not available	132 KV breaker are 3-ph. gang operated.
49	132 kV	132 kV Dimapur - Doyang	1	D/C	POWERGRID	NEEPCO	POWERGRID	SPAR in service	
50	132 kV	132 kV Dimapur - Doyang	2	D/C	POWERGRID	NEEPCO	POWERGRID	SPAR in service	
51	132 kV	132 kV Dimapur - Imphal	1	S/C	POWERGRID	POWERGRID	POWERGRID	SPAR in service	
52	132 kV	132 kV Dimapur (PG) - Dimapur (DoP, Nagaland)	1	S/C	POWERGRID	ED, DoP, Nagaland	DoP, Nagaland	Not Available	DoP Nagaland may please intimate the plan of action
53	132 kV	132 kV Dimapur (PG) - Dimapur (DoP, Nagaland)	2	S/C	POWERGRID	ED, DoP, Nagaland	DoP, Nagaland	Not Available	DoP Nagaland may please intimate the plan of action
54	132 kV	132 kV Dimapur (PG) - Kohima	1	S/C	POWERGRID	ED, DoP, Nagaland	DoP, Nagaland	Not Available	3-ph AR available at Dimapur(PG). DoP Nagaland may please intimate the plan of action
55	132 kV	132 kV Doyang - Mokokchung (DoP, Nagaland)	1	S/C	NEEPCO	ED, DoP, Nagaland	DoP, Nagaland	Not Available	
56	132 kV	132 kV Doyang - Sanis	1	S/C	NEEPCO	DoP, Nagaland	DoP, Nagaland	Not Available	

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
57	132 kV	132 kV EPIP II - Byrnihat	1	D/C	MePTCL	MePTCL	MePTCL	Not Available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by September 2019.
58	132 kV	132 kV EPIP II - Byrnihat	2	D/C	MePTCL	MePTCL	MePTCL	Not Available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by September 2019.
59	132 kV	132 kV EPIP II - Umtru	1	D/C	MePTCL	MePTCL	MePTCL	Not Available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by November 2019.
60	132 kV	132 kV EPIP II - Umtru	2	D/C	MePTCL	MePTCL	MePTCL	Not Available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by November 2019.
61	132 kV	132 kV Gauripur-Gossaigaon	1	S/C	AEGCL	AEGCL	AEGCL	Not available	AEGCL may intimate the plan of action
62	132 kV	132 kV Gohpur - Pavoi	1	S/C	AEGCL	AEGCL	AEGCL	Not available	AEGCL may intimate the plan of action
63	132 kV	132 kV Gohpur - Nirjuli	1	S/C	AEGCL	POWERGRID	POWERGRID	Not available	AEGCL may intimate the plan of action
64	132 kV	132 kV Golaghat - Mariani (AEGCL)	1	S/C	AEGCL	AEGCL	AEGCL	Not available	AEGCL may intimate the plan of action
65	132 kV	132 kV Haflong - Jiribam	1	S/C	POWERGRID	POWERGRID	POWERGRID	Not available	AEGCL may intimate the plan of action
66	132 kV	132 kV Haflong - Umranshu	1	S/C	AEGCL	POWERGRID	AEGCL	Not available	AEGCL may intimate the plan of action
67	132 kV	132 kV Imphal (MSPCL) - Imphal (PG)	1	S/C	MSPCL	POWERGRID	POWERGRID	Not available	AEGCL may intimate the plan of action
68	132 kV	132 kV Imphal (MSPCL) - Imphal (PG)	2	S/C	MSPCL	POWERGRID	POWERGRID & MSPCL	Not available	AEGCL may intimate the plan of action
69	132 kV	132 kV Imphal (MSPCL) - Karong	1	S/C	MSPCL	MSPCL	MSPCL	Not Available	AEGCL may intimate the plan of action
70	132 kV	132 kV Imphal (PG) - Ningthoukong	1	S/C	POWERGRID	MSPCL	MSPCL	Not Available	AEGCL may intimate the plan of action
71	132 kV	132 kV Imphal (PG) - Loktak	1	S/C	POWERGRID	NHPC	POWERGRID	SPAR in service	
72	132 kV	132 kV Jiribam - Loktak	2	S/C	POWERGRID	NHPC	POWERGRID	SPAR in service	
73	132 kV	132 kV Jiribam - Pailapool	1	S/C	POWERGRID	AEGCL	AEGCL/ MSPCL	Not Available	POWERGRID & AEGCL may intimate the plan of action

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
74	132 kV	132 kV Jiribam(PG) - Jiribam(MA)	1	S/C	POWERGRID	MSPCL	MSPCL	Not available	AEGCL may intimate the plan of action
75	132 kV	132 kV Jorhat - Mariani	1	S/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
76	132 kV	132 kV Jorhat - Mariani	2	S/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
77	132 kV	132 kV Jorhat - Nazira	1	S/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
78	132 kV	132 kV Kahilipara - Kamalpur	1	S/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
79	132 kV	132 kV Kamalpur - Rangia	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
80	132 kV	132 kV Kamalpur - Rangia	2	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
81	132 kV	132 kV Kahilipara - Sarusajai	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
82	132 kV	132 kV Kahilipara - Sarusajai	2	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
83	132 kV	132 kV Kahilipara - Sarusajai	3	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
84	132 kV	132 kV Sarusajai - Sishugram	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
85	132 kV	132 kV Kamalpur - Sishugram	1	S/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
86	132 kV	132 kV Kahilipara - Umtru	1	D/C	AEGCL	MePTCL	MePTCL	Not Available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by Deceber 2019
87	132 kV	132 kV Kahilipara - Umtru	2	D/C	AEGCL	MePTCL	MePTCL	Not Available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by Deceber 2019
88	132 kV	132 kV Kamalpur - P K Bari	1	S/C	TSECL	TSECL	TSECL	Not available	132 KV breaker are 3-ph. gang operated.
89	132 kV	132 kV Karong - Kohima	1	S/C	DoP, Nagaland	MSPCL	MSPCL(65.3%) / DoP, Nagaland(34.7%)	Not Available	
90	132 kV	132 kV Khandong - Khliehriat	1	S/C	NEEPCO	POWERGRID	POWERGRID	SPAR in service	
91	132 kV	132 kV Khandong - Khliehriat	2	S/C	NEEPCO	POWERGRID	POWERGRID	Information not available	POWERGRID may intimate the status

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
92	132 kV	132 kV Khandong - Kopili	1	S/C	NEEPCO	NEEPCO	POWERGRID	SPAR kept in non-auto mode	(SPAR facility available)
93	132 kV	132 kV Khandong - Kopili	2	S/C	NEEPCO	NEEPCO	POWERGRID	AR kept in non-auto mode	Gang operated CB at Kopili end (Owner:POWERGRID)
94	132 kV	132 kV Khandong - Umranshu	1	S/C	NEEPCO	AEGCL	POWERGRID & AEGCL	Not Available	Due to problem at Umrangshu end, Single pole CB, AR relay available at Khandong end
95	132 kV	132 kV Khliehriat - Badarpur	1	S/C	POWERGRID	POWERGRID	POWERGRID	3-Ph AR in service	
96	132 kV	132 kV Khliehriat - Mustem	1	S/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by January 2020.
97	132 kV	132 kV Mustem - NEHU line	1	S/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by January 2020.
98	132 kV	132 kV Khliehriat (MePTCL) - Khliehriat (PG)	1	S/C	MePTCL	POWERGRID	POWERGRID	Not available	
99	132 kV	132 kV Khliehriat (MePTCL) - Khliehriat (PG)	2	S/C	MePTCL	POWERGRID	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by January 2020.
100	132 kV	132 kV Khliehriat- NEIGRIHMS	1	S/C	MePTCL	POWERGRID	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by January 2020.
101	132 kV	132 kV Kumarghat - P K Bari	1	S/C	POWERGRID	TSECL	TSECL	Not Available	Scheme not available at PK Bari end; PLCC not available
102	132 kV	132 kV Lekhi - Nirjuli	1	S/C	DoP, Arunachal Pradesh	POWERGRID	DoP, Arunachal Pradesh & POWERGRID	Information not available	DoP, Arunachal Pradesh & POWERGRID may please intimate the status
103	132 kV	132 kV Pare - Ranganadi	1	S/C	DoP, Arunachal Pradesh	NEEPCO	DoP, Arunachal Pradesh & POWERGRID	AR kept in non-auto mode	
104	132 kV	132 kV Loktak - Ningthoukhong	1	S/C	NHPC	MSPCL	MSPCL	Not Available	
105	132 kV	132 kV Loktak - Rengpang	1	S/C	NHPC	MSPCL	MSPCL	Not Available	
106	132 kV	132 kV LTPS - Mariani	1	S/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
107	132 kV	132 kV LTPS - Moran	1	S/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
108	132 kV	132 kV LTPS - Nazira	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
109	132 kV	132 kV LTPS - Nazira	2	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
110	132 kV	132 kV LTPS - NTPS	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
111	132 kV	132 kV LTPS - Sonari	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
112	132 kV	132 kV Mariani (AEGCL) - Mokokchung (DoP, Nagaland)	1	S/C	AEGCL	ED, DoP, Nagaland	AEGCL(40%)/ DoP, Nagaland(60%)	Not Available	
113	132 kV	132 kV NEHU - Mawlai	1	S/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by January 2020.
114	132 kV	132 kV Mawlai - Umiam Stage I	2	S/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by January 2021.
115	132 kV	132 kV Mawphlang - Nongstoin	1	S/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by March 2020.
116	132 kV	132 kV Mawphlang - Umiam Stg I	1	D/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by March 2020.
117	132 kV	132 kV Mawphlang - Umiam Stg I	2	D/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by March 2020.
118	132 kV	132 kV Mawphlang- Mawlai	1	S/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by January 2021.
119	132 kV	132 kV Melriat(PG) - Zuangtui	1	S/C	POWERGRID	P&ED, Mizoram	POWERGRID	Not Available	POWERGRID may intimate the status
120	132 kV	132 kV Mendipathar - Nangalbibra	1	S/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by Septemeber 2019.

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
121	132 kV	132 kV Mokochung (PG) - Mokokchung (DoP, Nagaland)	1	D/C	POWERGRID	DoP,Nagaland	POWERGRID	Information not available	
122	132 kV	132 kV Mokochung (PG) - Mokokchung (DoP, Nagaland)	2	D/C	POWERGRID	DoP,Nagaland	POWERGRID	Information not available	
123	132 kV	132 kV Monarchak - Rokhia	1	S/C	NEEPCO	TPGL	TSECL	Not available	132 KV breaker are 3-ph. gang operated.
124	132 kV	132 kV Monarchak - Udaipur	1	S/C	NEEPCO	TSECL	TSECL	Not available	132 KV breaker are 3-ph. gang operated.
125	132 kV	132 kV Myntdu Leshka - Khleihriat	1	D/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by April 2020.
126	132 kV	132 kV Myntdu Leshka - Khleihriat	2	D/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by April 2020.
127	132 kV	132 kV Nangalbibra - Nongstoin	1	S/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by November 2019.
128	132 kV	132 kV NEHU - NEIGRIHMS	1	S/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by May 2020.
129	132 kV	132 kV NEHU - Umiam	1	D/C	MePTCL	MePTCL	MePTCL	Not available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by June 2020.
130	132 kV	132 kV NTPS - Tinsukia	1	S/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
131	132 kV	132 kV NTPS - Sonari	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
132	132 kV	132 kV Pailapool - Srikona	1	D/C	AEGCL	AEGCL	AEGCL	Not Available	AEGCL may intimate the plan of action
133	132 kV	132 kV Palatana - Surjamaninagar	1	D/C	OTPC	POWERGRID	POWERGRID	Not Available	Gang operated CB at Palatana end
134	132 kV	132 kV Palatana - Udaipur	1	S/C	OTPC	TSECL	TSECL	Not Available	132 KV breaker are 3-ph. gang operated.
135	132 kV	132 kV Hailakandi - Silchar	1	S/C	AEGCL	POWERGRID	POWERGRID	Information not available	Silchar end: AR in BCU available, AEGCL may intimate the status
136	132 kV	132 kV Panchgram - Srikona	1	S/C	AEGCL	AEGCL	AEGCL	Not Available	Will be implemented under R&M works funded from PSDF

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
137	132 kV	132 kV Ranganadi - Ziro	1	S/C	NEEPCO	POWERGRID	POWERGRID	SPAR in service	
138	132 kV	132 kV Roing - Pasighat	1	S/C	POWERGRID	POWERGRID	POWERGRID	Information not available	POWERGRID may intimate the status
139	132 kV	132 kV Roing - Tezu	1	S/C	POWERGRID	POWERGRID	POWERGRID	Information not available	POWERGRID may intimate the status
140	132 kV	132 kV Sarusajai - Umtru	1	D/C	AEGCL	MePTCL	MePTCL	Not Available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by May 2020.
141	132 kV	132 kV Sarusajai - Umtru	2	D/C	AEGCL	MePTCL	MePTCL	Not Available	MePTCL will implement the 3 Ph AR in paralell with ongoing R&M works of PLCC &DPC by May 2020.
142	132 kV	132 kV Silchar - Srikona	1	D/C	POWERGRID	AEGCL	POWERGRID	Information not available	Silchar end: AR in BCU available, AEGCL may intimate the status
143	132 kV	132 kV Silchar - Srikona	2	D/C	POWERGRID	AEGCL	POWERGRID	Information not available	Silchar end: AR in BCU available, AEGCL may intimate the status
144	132 kV	132 kV Umiam - Umiam St I	1	S/C	MePTCL	MePTCL	MePTCL	Not Available	MePGCL may intimate the plan of action
145	132 kV	132 kV Umiam St I - Umiam St II	1	S/C	MePTCL	MePTCL	MePTCL	Not Available	MePGCL may intimate the plan of action
146	132 kV	132 kV Umiam St I - Umiam St III	1	D/C	MePTCL	MePTCL	MePTCL	Not Available	MePGCL may intimate the plan of action
147	132 kV	132 kV Umiam St I - Umiam St III	2	D/C	MePTCL	MePTCL	MePTCL	Not Available	MePGCL may intimate the plan of action
148	132 kV	132 kV Umiam St III - Umiam St IV	1	D/C	MePTCL	MePTCL	MePTCL	Not Available	MePGCL may intimate the plan of action
149	132 kV	132 kV Umiam St III – Umiam St IV	2	D/C	MePTCL	MePTCL	MePTCL	Not Available	MePGCL may intimate the plan of action
150	132 kV	132 kV Umiam St III - Umtru	1	D/C	MePTCL	MePTCL	MePTCL	Not Available	MePGCL may intimate the plan of action
151	132 kV	132 kV Umiam St III - Umtru	2	D/C	MePTCL	MePTCL	MePTCL	Not Available	MePGCL may intimate the plan of action
152	132 kV	132 kV Umtru - Umiam St IV	1	D/C	MePTCL	MePTCL	MePTCL	Not Available	MePGCL may intimate the plan of action

Annexure-C.2

Details of Auto Recloser of Lines in North Eastern Regional Grid

Sl No	*Voltage Level*	*Name of Element (Emanating - Terminating)*	*Ckt ID*	Tower Configuration (S/C or D/C)	Agency at End 1	Agency at End 2	Owner	AR Details (SPAR/3-Ph AR/Not Available/Information not Available	Remarks
153	132 kV	132 kV Umtru - Umiam St IV	2	D/C	MePTCL	MePTCL	MePTCL	Not Available	MePGCL may intimate the plan of action
154	132 kV	132 kV Pare - Lekhi	1	S/C	NEEPCO	DoP, Arunachal Pradesh	NEEPCO, DoP, Arunachal Pradesh & POWERGRID	Not Available	
155	132 kV	132 kV Ranganadi - Itananar	1	S/C	NEEPCO	DoP, Arunachal Pradesh	NEEPCO & DoP, Arunachal Pradesh	Information not available	

List of Lines in North Eastern Regional Grid

Annexure C.3

Sl No	Name of Element (Emanating - Terminating)	Ckt ID	Agency at End 1	Agency at End 2	Name of Owners	TLSA	Megger /off line Fault locator	Controlled Switching Device (CSD)	Line Differential Protection Availability	OPGW Availability	PLCC Availabilty	Carrier Aided Protection Availability (Yes/No)
A. International Lines												
a. 400 kV Lines (Charged at 132 kV)												
1	South Comilla (Bangladesh) - Surajmani Nagar	1	PGCB	TSECL	POWERGRID & PGCB	NA				Available		
2	South Comilla (Bangladesh) - Surajmani Nagar	2	PGCB	TSECL	POWERGRID & PGCB	NA				NA		
b. 132 kV Line												
1	Gelyphu (Bhutan) - Salakati	1	BPCL	POWERGRID	POWERGRID				Not Available	Available		
2	Motonga (Bhutan) - Rangia	1	BPCL	AEGCL	POWERGRID							
c. 11 kV Line												
1	Moreh - Tamu (Myanmar)	1	MSPCL	ESE, Myanmar	MSPDCL & ESE, Myanmar							
B. +/- 800 kV HVDC Lines												
1	Agra - Biswanath Chariali	Pole 1	POWERGRID	POWERGRID	POWERGRID							
2	Agra - Biswanath Chariali	Pole 2	POWERGRID	POWERGRID	POWERGRID							
C. 400 kV Lines												
1	Azara - Bongaigaon	1	AEGCL	POWERGRID	NETC(1.8%) & AEGCL (98.2%)				No			
2	Azara - Silchar	1	AEGCL	POWERGRID	NETC(37.5%) & AEGCL(62.5%)				No			
3	Balipara - Biswanath Chariali	1	POWERGRID	POWERGRID	POWERGRID							
4	Balipara - Biswanath Chariali	2	POWERGRID	POWERGRID	POWERGRID							
5	Balipara - Biswanath Chariali	3	POWERGRID	POWERGRID	POWERGRID							
6	Balipara - Biswanath Chariali	4	POWERGRID	POWERGRID	POWERGRID							
7	Balipara - Bongaigaon	1	POWERGRID	POWERGRID	POWERGRID			Not Installed	Not Available			
8	Balipara - Bongaigaon	2	POWERGRID	POWERGRID	POWERGRID			Not Installed	Not Available			
9	Balipara - Bongaigaon	3	POWERGRID	POWERGRID	POWERGRID			Not Installed	Not Available			
10	Balipara - Bongaigaon	4	POWERGRID	POWERGRID	POWERGRID			Not Installed	Not Available			
C. 400 kV Lines												
11	Balipara - Misa	1	POWERGRID	POWERGRID	POWERGRID	NA		No	NA	YES		
12	Balipara - Misa	2	POWERGRID	POWERGRID	POWERGRID	NA		No	NA	YES		
13	Biswanath Chariali - Ranganadi	1	POWERGRID	NEEPCO	POWERGRID							
14	Biswanath Chariali - Ranganadi	2	POWERGRID	NEEPCO	POWERGRID							

List of Lines in North Eastern Regional Grid

Annexure-C.4

Sl No	Name of Element (Emanating - Terminating)	Ckt ID	Agency at End 1	Agency at End 2	Name of Owners	TLSA	Megger /off line Fault locator	Controlled Switching Device (CSD)	Line Differential Protection Availability	OPGW Availability	PLCC Availabilty	Carrier Aided Protection Availability (Yes/No)
15	Bongaigaon - Byrnihat	1	POWERGRID	MePTCL	NETC(97.91 %) & MePTCL(2.09%)							
16	New Siliguri - Bongaigaon	1	POWERGRID	POWERGRID	POWERGRID							
17	New Siliguri- Bongaigaon	2	POWERGRID	POWERGRID	POWERGRID							
18	Alipurduar - Bongaigaon	1	POWERGRID	POWERGRID	ENICL							
19	Alipurduar - Bongaigaon	2	POWERGRID	POWERGRID	ENICL							
20	BgTPP - Bongaigaon	1	NTPC	POWERGRID	POWERGRID			Not Installed	Available			
21	BgTPP - Bongaigaon	2	NTPC	POWERGRID	POWERGRID			Not Installed	Available			
22	Byrnihat - Silchar	1	MePTCL	POWERGRID	NETC(98.06%) & MePTCL(1.94%)							
23	Pallatana - Silchar	1	OTPC	POWERGRID	NETC							
24	Pallatana - Silchar	2	OTPC	POWERGRID	NETC							
25	Imphal - Silchar	1	POWERGRID	POWERGRID	POWERGRID	No		NA				
26	Imphal - Silchar	2	POWERGRID	POWERGRID	POWERGRID	No		NA				
27	Balipara - Kameng	1	POWERGRID	NEEPCO	POWERGRID							
28	Balipara - Kameng	2	POWERGRID	NEEPCO	POWERGRID							
D. 400 kV Lines (Charged at 220 kV)												
1	AGBPP - Mariani	1	POWERGRID	POWERGRID	POWERGRID	Nil	1 Off Line Fault Locator/2 Megger	No		Available		
2	AGBPP - Mariani(PG)	2	POWERGRID	POWERGRID	POWERGRID	Nil		No		Available		
3	Mariani - Misa	1	AEGCL	POWERGRID	POWERGRID	NA			NA			
4	Mariani (PG) - Misa	1	POWERGRID	POWERGRID	POWERGRID	NA			NA			
E. 400 kV Lines (Charged at 132 kV)												
1	Silchar-Melriat	1	POWERGRID	POWERGRID	POWERGRID	NA			NIL	YES		
2	Silchar-Melriat	2	POWERGRID	POWERGRID	POWERGRID	NA			NIL	NO		
3	P K Bari - Silchar	1	TSECL	POWERGRID	POWERGRID							
4	P K Bari - Silchar	2	TSECL	POWERGRID	POWERGRID							
5	Palatana - Surjamaninagar	1	OTPC	TSECL	POWERGRID	NA				NA		
F. 220 kV Lines												
1	AGBPP - Deomali	1	NEEPCO	DoP,Arunachal Pradesh	DoP, Arunachal Pradesh							
2	AGBPP - Tinsukia	1	NEEPCO	AEGCL	AEGCL							
3	AGBPP - Tinsukia	2	NEEPCO	AEGCL	AEGCL							
4	Agia - Azara	1	AEGCL	AEGCL	AEGCL							
5	Agia - Boko	1	AEGCL	AEGCL	AEGCL							
6	Agia - BTPS	1	AEGCL	AEGCL	AEGCL							
7	Agia - BTPS	2	AEGCL	AEGCL	AEGCL							
8	Azara - Boko	1	AEGCL	AEGCL	AEGCL							
9	Azara - Sarusajai	1	AEGCL	AEGCL	AEGCL							
10	Azara - Sarusajai	2	AEGCL	AEGCL	AEGCL							
F. 220 kV Lines												
11	Alipurduar - Salakati	1	POWERGRID	POWERGRID	POWERGRID							
12	Alipurduar - Salakati	2	POWERGRID	POWERGRID	POWERGRID							
13	Balipara - Sonabil	1	POWERGRID	AEGCL	AEGCL							

List of Lines in North Eastern Regional Grid

Annexure-C.4

Sl No	Name of Element (Emanating - Terminating)	Ckt ID	Agency at End 1	Agency at End 2	Name of Owners	TLSA	Megger /off line Fault locator	Controlled Switching Device (CSD)	Line Differential Protection Availability	OPGW Availability	PLCC Availabilty	Carrier Aided Protection Availability (Yes/No)
14	Bongaigaon-Salakati	1	POWERGRID	POWERGRID	POWERGRID			Not Installed	Available	Available		
15	Bongaigaon-Salakati	2	POWERGRID	POWERGRID	POWERGRID			Not Installed	Available	Available		
16	BTPS - Salakati	1	AEGCL	POWERGRID	POWERGRID			Not Installed	Not Available	Available		
17	BTPS - Salakati	2	AEGCL	POWERGRID	POWERGRID			Not Installed	Not Available	Available		
18	Dimapur - Misa	1	POWERGRID	POWERGRID	POWERGRID				NA			
19	Dimapur - Misa	2	POWERGRID	POWERGRID	POWERGRID				NA			
20	Jawaharnagar - Samaguri	1	AEGCL	AEGCL	AEGCL							
21	Jawaharnagar - Sarusajai	1	AEGCL	AEGCL	AEGCL							
22	Karbi Langpi - Sarusajai	1	APGCL	AEGCL	AEGCL							
23	Karbi Langpi - Sarusajai	2	APGCL	AEGCL	AEGCL							
24	Byrnihat - Misa	1	MePTCL	POWERGRID	MePTCL							
25	Byrnihat - Misa	2	MePTCL	POWERGRID	MePTCL							
26	Kopili - Misa	1	NEEPCO	POWERGRID	POWERGRID				NA			
27	Kopili - Misa	2	NEEPCO	POWERGRID	POWERGRID				NA			
28	Kopili - Misa	3	NEEPCO	POWERGRID	POWERGRID				NA			
29	Mariani (AEGCL) - Samaguri	1	AEGCL	AEGCL	AEGCL							
30	Mariani (PG) - Mokokchung (PG)	1	POWERGRID	POWERGRID	POWERGRID							
31	Mariani (PG) - Mokokchung (PG)	2	POWERGRID	POWERGRID	POWERGRID							
32	Misa - Samaguri	1	POWERGRID	AEGCL	POWERGRID				NA			
33	Misa - Samaguri	2	POWERGRID	AEGCL	POWERGRID				NA			
F. 220 kV Lines												
34	NTPS - Tinsukia	1	AEGCL	AEGCL	AEGCL							
35	NTPS - Tinsukia	2	AEGCL	AEGCL	AEGCL							
36	Samaguri - Sonapur	1	AEGCL	AEGCL	AEGCL							
37	Sarusajai-Sonapur	1	AEGCL	AEGCL	AEGCL							
38	Samaguri - Sonabil	1	AEGCL	AEGCL	AEGCL							
39	Samaguri - Sonabil	2	AEGCL	AEGCL	AEGCL							
G. 132 kV Lines												
1	Agartala - AGTCCPP	1	TSECL	NEEPCO	POWERGRID	NA						
2	Agartala - AGTCCPP	2	TSECL	NEEPCO	POWERGRID	NA						

List of Lines in North Eastern Regional Grid

Annexure-C.4

Sl No	Name of Element (Emanating - Terminating)	Ckt ID	Agency at End 1	Agency at End 2	Name of Owners	TLSA	Megger /off line Fault locator	Controlled Switching Device (CSD)	Line Differential Protection Availability	OPGW Availability	PLCC Availabilty	Carrier Aided Protection Availability (Yes/No)
3	Agartala - Bodhjungnagar	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	NA	NA	No
4	Agartala - Dhalabil	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	Available	NA	No
5	Agartala - Rokhia	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	NA	Available	No
6	Agartala - Rokhia		TSECL	TSECL	TSECL	NA	Megger available	NA	NA	NA	Available	No
7	Agia - Mendipathar	1	AEGCL	MePTCL	MePTCL							
8	AGTCCPP - Kumarghat	1	NEEPCO	POWERGRID	POWERGRID							
9	Aizawl - Tipaimukh	1	POWERGRID	MSPCL	POWERGRID	37 nos. of TLSA, Make-Oblum	1.0	-	NO	NO		
10	Aizawl - Kolasib	1	POWERGRID	P&ED, Mizoram	POWERGRID	09 nos. of TLSA, Make-Oblum		-	NO	Yes		
11	Aizawl - Kumarghat	1	POWERGRID	POWERGRID	POWERGRID	30 nos. of TLSA, Make-Oblum		-	NO	Yes		
12	Aizawl - Luangmual	1	POWERGRID	P&ED, Mizoram	P&ED, Mizoram	0.0		-	NO	NO		
13	Aizawl - Melriat(PG)	1	POWERGRID	POWERGRID	POWERGRID				NIL			
14	Ambasa - Gamaitila	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	NA	NA	No
15	Ambasa - Kamalpur	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	NA	NA	No
16	Ambasa - P K Bari	1	TSECL	TSECL	TSECL	NA	Megger available	NA	Line Differential Protection availble between P.K.Bari(Sterlite) to P.K.Bari(TSECL)	Available	NA	No
G. 132 kV Lines												
17	Badarpur - Jiribam	1	POWERGRID	POWERGRID	POWERGRID				NO			

List of Lines in North Eastern Regional Grid

Annexure-C.4

Sl No	Name of Element (Emanating - Terminating)	Ckt ID	Agency at End 1	Agency at End 2	Name of Owners	TLSA	Megger /off line Fault locator	Controlled Switching Device (CSD)	Line Differential Protection Availability	OPGW Availability	PLCC Availabilty	Carrier Aided Protection Availability (Yes/No)
18	Badarpur - Kolasib	1	POWERGRID	P&ED, Mizoram	POWERGRID							
19	Badarpur - Kumarghat	1	POWERGRID	POWERGRID	POWERGRID							
20	Badarpur - Panchgram	1	POWERGRID	AEGCL	POWERGRID							
21	Badarpur - Silchar	1	POWERGRID	POWERGRID	POWERGRID							
22	Badarpur - Silchar	2	POWERGRID	POWERGRID	POWERGRID							
23	Balipara - Bhalukpong	1	POWERGRID	DoP, Arunachal Pradesh	NEEPCO & DoP, Arunachal Pradesh							
24	Balipara - Ghoramari	1	POWERGRID	AEGCL	AEGCL							
25	Balipara - Sonabil	1	AEGCL	AEGCL	AEGCL							
26	Baramura - Gamaitilla	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	Available	NA	No
27	Baramura - Jirania	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	Available	NA	No
28	Bhalukpong - Khupi	1	DoP, Arunachal Pradesh	NEEPCO	NEEPCO & DoP, Arunachal Pradesh							
29	Biswanath Chariali - Pavoi	1	POWERGRID	AEGCL	POWERGRID							
30	Biswanath Chariali - Pavoi	2	POWERGRID	AEGCL	POWERGRID							
31	Pavoi - Sonabil	1	AEGCL	AEGCL	AEGCL							
32	Bodhjannagar - Jirania	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	Available	NA	No
33	Bokajan - Dimapur	1	AEGCL	POWERGRID	AEGCL							
34	Bokajan - Golaghat	1	AEGCL	AEGCL	AEGCL							
G. 132 kV Lines												
35	BTPS - Dhaligaon	1	AEGCL	AEGCL	AEGCL							
36	BTPS - Dhaligaon	2	AEGCL	AEGCL	AEGCL							
37	Budhjangnagar - Surjamaninagar	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	Available	NA	No

List of Lines in North Eastern Regional Grid

Annexure-C.4

Sl No	Name of Element (Emanating - Terminating)	Ckt ID	Agency at End 1	Agency at End 2	Name of Owners	TLSA	Megger /off line Fault locator	Controlled Switching Device (CSD)	Line Differential Protection Availability	OPGW Availability	PLCC Availabilty	Carrier Aided Protection Availability (Yes/No)
38	Budhjangnagar - Surjamaninagar	2	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	Available	Available (Between Bodhjungnagar to S.M.Nagar(Sterlite) and S.M.Nagar(Sterlite) to S.M.Nagar(TSECL)	No
39	Dhalabil - Kamalpur	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	Available	NA	No
40	Dharmanagar - Dullavcherra	1	TSECL	AEGCL	AEGCL	NA	Megger available	NA	NA	NA	NA	No
41	Dullavcherra - Hailakandi	1	AEGCL	AEGCL	AEGCL							
42	Dharmanagar - P K Bari	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	NA	NA	No
43	Dimapur - Doyang	1	POWERGRID	NEEPCO	POWERGRID				No	Yes		
44	Dimapur - Doyang	2	POWERGRID	NEEPCO	POWERGRID				No	Yes		
45	Dimapur - Imphal	1	POWERGRID	POWERGRID	POWERGRID				No	Yes		
46	Dimapur (PG) - Dimapur (DoP, Nagaland)	1	POWERGRID	DoP, Nagaland	DoP, Nagaland							
47	Dimapur (PG) - Dimapur (DoP, Nagaland)	2	POWERGRID	DoP, Nagaland	DoP, Nagaland							
48	Dimapur (PG) - Kohima	1	POWERGRID	DoP, Nagaland	DoP, Nagaland							
49	Doyang - Mokokchung (DoP, Nagaland)	1	NEEPCO	DoP, Nagaland	DoP, Nagaland							
50	Doyang-Sanis	1	NEEPCO	DoP, Nagaland	DoP, Nagaland							
G. 132 kV Lines												
51	Hailakandi - Silchar	1	AEGCL	POWERGRID	POWERGRID							
52	Hailakandi - Silchar	2	AEGCL	POWERGRID	POWERGRID							
53	EPIP II - Byrnihat	1	MePTCL	MePTCL	MePTCL							
54	EPIP II - Byrnihat	2	MePTCL	MePTCL	MePTCL							
55	EPIP II - Umtru	1	MePTCL	MePTCL	MePTCL							
56	EPIP II - Umtru	2	MePTCL	MePTCL	MePTCL							
57	Gohpur - Pavoi	1	AEGCL	AEGCL	AEGCL							
58	Gohpur - Nirjuli	1	AEGCL	POWERGRID	POWERGRID	Not Installed	YES	NA	Not Used	Available		
59	Golaghat - Mariani (AEGCL)	1	AEGCL	AEGCL	AEGCL							
60	Haflong - Jiribam	1	POWERGRID	POWERGRID	POWERGRID	No	Yes	NA	NO	YES(some part)		
61	Haflong - Umranshu	1	AEGCL	POWERGRID	AEGCL							
62	Imphal (MSPCL) - Imphal (PG)	1	MSPCL	POWERGRID	POWERGRID							
63	Imphal (MSPCL) - Imphal (PG)	2	MSPCL	POWERGRID	POWERGRID & MSPCL							
64	Imphal (MSPCL) - Karong	1	MSPCL	MSPCL	MSPCL							
65	Imphal (PG) - Ningthoukong	1	POWERGRID	MSPCL	MSPCL							

List of Lines in North Eastern Regional Grid

Annexure-C.4

Sl No	Name of Element (Emanating - Terminating)	Ckt ID	Agency at End 1	Agency at End 2	Name of Owners	TLSA	Megger /off line Fault locator	Controlled Switching Device (CSD)	Line Differential Protection Availability	OPGW Availability	PLCC Availabilty	Carrier Aided Protection Availability (Yes/No)
66	Imphal (PG) - Loktak	1	POWERGRID	NHPC	POWERGRID							
67	Jiribam - Loktak	2	POWERGRID	NHPC	POWERGRID	No	Yes	NA	NO	No		
68	Jiribam - Pailapool	1	POWERGRID	AEGCL	AEGCL/ MSPCL							
69	Jiribam(PG) - Jiribam(MA)	1	POWERGRID	MSPCL	MSPCL							
70	Jiribam-Tipaimukh	1	POWERGRID	MSPCL	POWERGRID	No	Yes	NA	NO	NO		
71	Jorhat - Mariani	1	AEGCL	AEGCL	AEGCL							
72	Jorhat - Mariani	2	AEGCL	AEGCL	AEGCL							
73	Jorhat - Nazira	1	AEGCL	AEGCL	AEGCL							
G. 132 kV Lines												
74	Kahilipara - Kamalpur	1	AEGCL	AEGCL	AEGCL							
75	Kahilipara - Sarusajai	1	AEGCL	AEGCL	AEGCL							
76	Kahilipara - Sarusajai	2	AEGCL	AEGCL	AEGCL							
77	Kahilipara - Sarusajai	3	AEGCL	AEGCL	AEGCL							
78	Kamakhya-Sarusajai	1	AEGCL	AEGCL	AEGCL							
79	Kamakhya-Sishugram	1	AEGCL	AEGCL	AEGCL							
80	Kahilipara - Umtru	1	AEGCL	MePTCL	MePTCL							
81	Kahilipara - Umtru	2	AEGCL	MePTCL	MePTCL							
82	Kamalpur - P K Bari	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	Available	NA	No
83	Karong - Kohima	1	DoP, Nagaland	MSPCL	MSPCL (65.3%) / DoP, Nagaland (34.7%)							
84	Khandong - Khliehriat	1	NEEPCO	POWERGRID	POWERGRID	in 16 towers				No		
85	Khandong - Khliehriat	2	NEEPCO	POWERGRID	POWERGRID	100% TOWERS (Make-Oblum & Raychem)				Yes		
86	Khandong - Kopili	1	NEEPCO	NEEPCO	POWERGRID	NIL				No		
87	Khandong - Kopili	2	NEEPCO	NEEPCO	POWERGRID	NIL				Yes		
88	Khandong - Umranshu	1	NEEPCO	AEGCL	POWERGRID & AEGCL							
89	Khliehriat - Badarpur	1	POWERGRID	POWERGRID	POWERGRID	in 12 towers				Yes		
90	Khliehriat - Mustem	1	MePTCL	MePTCL	MePTCL							
91	Mustem - NEHU line	1	MePTCL	MePTCL	MePTCL							
92	Khliehriat (MePTCL) - Khliehriat (PG)	1	MePTCL	POWERGRID	POWERGRID	NIL				Yes		
93	Khliehriat (MePTCL) - Khliehriat (PG)	2	MePTCL	POWERGRID	MePTCL							
94	Khliehriat- NEIGRIHMS	1	MePTCL	POWERGRID	MePTCL							
95	Kumarghat - P K Bari	1	POWERGRID	TSECL	TSECL	NA	Megger available	NA	NA	NA	NA	No

List of Lines in North Eastern Regional Grid

Annexure-C.4

Sl No	Name of Element (Emanating - Terminating)	Ckt ID	Agency at End 1	Agency at End 2	Name of Owners	TLSA	Megger /off line Fault locator	Controlled Switching Device (CSD)	Line Differential Protection Availability	OPGW Availability	PLCC Availabilty	Carrier Aided Protection Availability (Yes/No)
96	Lekhi - Nirjuli	1	DoP, Arunachal Pradesh	POWERGRID	DoP, Arunachal Pradesh & POWERGRID	Not Installed	Yes	NA	Not Available	Yes		
97	Lekhi - Pare	1	DoP, Arunachal Pradesh	NEEPCO	DoP, Arunachal Pradesh & POWERGRID	Not Installed	Yes	NA	Not Available	Yes		
G. 132 kV Lines												
98	Loktak - Ningthoukhong	1	NHPC	MSPCL	MSPCL							
99	Loktak - Rengpang	1	NHPC	MSPCL	MSPCL							
100	LTPS - Mariani	1	AEGCL	AEGCL	AEGCL							
101	LTPS - Moran	1	AEGCL	AEGCL	AEGCL							
102	LTPS - Nazira	1	AEGCL	AEGCL	AEGCL							
103	LTPS - Nazira	2	AEGCL	AEGCL	AEGCL							
104	LTPS - NTPS	1	AEGCL	AEGCL	AEGCL							
105	LTPS - Sonari	1	AEGCL	AEGCL	AEGCL							
106	Mariani (AEGCL) - Mokokchung (DoP, Nagaland)	1	AEGCL	ED, DoP, Nagaland	AEGCL(40%)/ DoP, Nagaland(60%)							
107	NEHU - Mawlai	1	MePTCL	MePTCL	MePTCL							
108	Mawlai - Umiam Stage I	2	MePTCL	MePTCL	MePTCL							
109	Mawphlang - Nongstoin	1	MePTCL	AEGCL	MePTCL							
110	Mawphlang - Umiam Stg I	1	MePTCL	MePTCL	MePTCL							
111	Mawphlang - Umiam Stg I	2	MePTCL	MePTCL	MePTCL							
112	Mawphlang- Mawlai	1	MePTCL	MePTCL	MePTCL							
113	Melriat(PG) - Zuangtui	1	POWERGRID	P&ED, Mizoram	POWERGRID				NIL			
114	Mendipathar - Nangalbibra	1	MePTCL	MePTCL	MePTCL							
115	Mokokchung (PG) - Mokokchung (DoP, Nagaland)	1	POWERGRID	DoP,Nagaland	POWERGRID	Nil	yes	No	Yes, Micom Schneider	Available		
116	Mokokchung (PG) - Mokokchung (DoP, Nagaland)	2	POWERGRID	DoP,Nagaland	POWERGRID	Nil	Yes	No	Yes, Micom Schneider	Available		
117	Monarchak - Rokhia	1	NEEPCO	TSECL	TSECL	NA	Megger available	No	NA	NA	NA	No
118	Monarchak - Udaipur	1	NEEPCO	TSECL	TSECL	NA	Megger available	No	NA	NA	NA	No
119	Myntdu Leshka - Khleihriat	1	MePTCL	MePTCL	MePTCL							
120	Myntdu Leshka - Khleihriat	2	MePTCL	MePTCL	MePTCL							
121	Namsai-Tezu	1	POWERGRID	POWERGRID	POWERGRID	NO	Megger available	NA	NO	NO		
122	Nangalbibra - Nongstoin	1	MePTCL	MePTCL	MePTCL							
123	NEHU - NEIGRIHMS	1	MePTCL	MePTCL	MePTCL							
124	NEHU - Umiam	1	MePTCL	MePTCL	MePTCL							
G. 132 kV Lines												

List of Lines in North Eastern Regional Grid

Annexure-C.4

Sl No	Name of Element (Emanating - Terminating)	Ckt ID	Agency at End 1	Agency at End 2	Name of Owners	TLSA	Megger /off line Fault locator	Controlled Switching Device (CSD)	Line Differential Protection Availability	OPGW Availability	PLCC Availabilty	Carrier Aided Protection Availability (Yes/No)
125	NTPS - Tinsukia	1	AEGCL	AEGCL	AEGCL							
126	NTPS - Sonari	1	AEGCL	AEGCL	AEGCL							
127	Pailapool - Srikona	1	AEGCL	AEGCL	AEGCL							
128	Palatana - Udaipur	1	TSECL	TSECL	TSECL	NA	Megger available	NA	NA	Available	NA	No
129	Panchgram - Srikona	1	AEGCL	AEGCL	AEGCL							
130	Pare- Itanagar	1	NEEPCO	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh & NEEPCO							
131	Ranganadi- Itanagar I	1	POWERGRID	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh							
132	Ranganadi - Pare	1	NEEPCO	NEEPCO	POWERGRID	Not Installed	Yes	NA				
133	Ranganadi - Pare	2	NEEPCO	NEEPCO	DoP, Arunachal Pradesh & NEEPCO							
134	Ranganadi - Ziro	1	NEEPCO	POWERGRID	POWERGRID	03 nos, make: OBLUM	1.0			Yes		
135	Roing - Pasighat	1	POWERGRID	POWERGRID	POWERGRID	NO	1.0		NO	NO		
136	Roing - Tezu	1	POWERGRID	POWERGRID	POWERGRID	NO	1.0		NO	NO		
137	Sarusajai - Umtru	1	AEGCL	MePTCL	MePTCL							
138	Sarusajai - Umtru	2	AEGCL	MePTCL	MePTCL							
139	Silchar - Srikona	1	POWERGRID	AEGCL	POWERGRID							
140	Silchar - Srikona	2	POWERGRID	AEGCL	POWERGRID							
141	Umiam - Umiam St I	1	MePTCL	MePTCL	MePTCL							
142	Umiam St I - Umiam St II	1	MePTCL	MePTCL	MePTCL							
143	Umiam St I - Umiam St III	1	MePTCL	MePTCL	MePTCL							
144	Umiam St I - Umiam St III	2	MePTCL	MePTCL	MePTCL							
145	Umiam St III - Umiam St IV	1	MePTCL	MePTCL	MePTCL							
146	Umiam St III – Umiam St IV	2	MePTCL	MePTCL	MePTCL							
147	Umiam St III - Umtru	1	MePTCL	MePTCL	MePTCL							
148	Umiam St III - Umtru	2	MePTCL	MePTCL	MePTCL							
149	Umtru - Umiam St IV	1	MePTCL	MePTCL	MePTCL							
150	Umtru - Umiam St IV	2	MePTCL	MePTCL	MePTCL							

Lines expected to be commissioned during 2019-20 (After commissioning of these elements, they will be considered as important elements of NER)

B. 220 kV Lines

1	BTPS - Rangia	1	AEGCL	AEGCL	AEGCL							
2	BTPS - Rangia	2	AEGCL	AEGCL	AEGCL							

C. 132 kV Lines

List of Lines in North Eastern Regional Grid

Annexure-C.4

Sl No	Name of Element (Emanating - Terminating)	Ckt ID	Agency at End 1	Agency at End 2	Name of Owners	TLSA	Megger /off line Fault locator	Controlled Switching Device (CSD)	Line Differential Protection Availability	OPGW Availability	PLCC Availabilty	Carrier Aided Protection Availability (Yes/No)
1	Palatana-Surajmaninagar	2	OTPC	TSECL	POWERGRID							
2	Monarchak - Surajmaninagar	1	NEEPCO	TSECL	TSECL							
3	Monarchak - Surajmaninagar	2	NEEPCO	TSECL	TSECL							

SPS REVIEW IN NE REGION

March 2023

SYSTEM PROTECTION SCHEMES (SPS) IN NER

Sl. No	SPS Name
1	SPS related to tripping of 400 kV Palatana-Silchar D/C when both modules of Palatana in service.
2	SPS related to reverse power flow more than 60 MW from LV to HV side of 400/220 kV Azara ICTs
3	SPS related to tripping of 132 kV Umiam Stg-I to Umiam St-III D/C lines
4	SPS: When 220kV BTPS Salakati D/C gets overloaded or in case of outage of one circuit the other circuit gets overloaded i.e loading greater than 600A)
5	SPS associated with generation evacuation from BgTPP.
6	SPS associated with generation evacuation from TGBPP, Monarchak
7	SPS related to Outage of 220 kV BTPS – Rangia I & II
8	SPS related to the tripping of Bus Reactors at 400 kV S M Nagar (ISTS)
9	SPS related to the tripping of Bus Reactors at 400 kV P K Bari (ISTS)
10	SPS related to the tripping of Bus Reactors at 400 kV Imphal (PG)

SPS RELATED TO REVERSE POWER FLOW MORE THAN 60 MW FROM LV TO HV SIDE OF 400/220 KV AZARA ICTS

SPS related to reverse power flow more than 60 MW from LV to HV side of 400/220 kV Azara ICTs was designed based on following criteria

1. Low generation in southern part of NER grid
2. High load in southern part of NER grid
3. Tripping of 400 kV Bongaigaon-Azara line

The SPS was meant to relieve the congestion in 220 kV Salakati-BTPS DC line by tripping 400/220 kV,2x315 MVA ICTs at Azara (AEGCL).

In the present scenario i.e. after commissioning of 400 kV Silchar-Misa DC and 400 kV Silchar-Imphal-New Kohima-Mariani-Misa link flow from LV to HV side of 400/220 kV Azara ICT is not observed.

SPS: TRIPPING OF 132 KV UMIAM STG-I TO UMIAM STG-III D/C LINES

Presently, SPS related to tripping of any one circuit of 132 kV Umiam Stg-I to Umiam Stg-III D/C has been implemented which will lead to 25 MW instantaneous load shedding near Mawphlang area . SPS related to tripping of both 132 kV Umiam StgI to Umiam Stg-III D/C is under implementation stage.

Reconducting work of 132 kV Umiam Stg-I to Umiam Stg-III D/C with HTLS conductor is in final stage and single circuit of 132 kV Umiam Stg-I to Umiam Stg-III D/C may carry up to 137 MVA (CT ratio 600/1 has been considered).

SPS: TRIPPING OF 132 KV UMIAM STG-I TO UMIAM STG-III D/C LINES

System Study result:

Case1: *With Misa-Kopili-Khandong link and 132 kV Haflong Jiribam line*
Meghalaya load: 430 MW and Meghalaya Generation: 100 MW

Observation: *On tripping of any one circuit of 132 kV Umiam Stg-I to Umiam Stg-III D/C, maximum* ***108 MW*** *load observed in other circuit of 132 kV Umiam Stg-I to Umiam Stg-III D/C*

Case2: *Without Misa-Kopili-Khandong link and 132 kV Haflong Jiribam line*
Meghalaya load: 430 MW and Meghalaya Generation: 100 MW

Observation: *On tripping of any one circuit of 132 kV Umiam Stg-I toUmiam Stg-III D/C, maximum* ***128 MW*** *load observed in other circuit of 132 kV Umiam Stg-I to Umiam Stg-III D/C*

SPS: TRIPPING OF 132 KV UMIAM STG-I TO UMIAM STG-III D/C LINES

Observations:

1. *The present SPS related to tripping of* ***any one circuit of 132 kV Umiam Stg-I to Umiam Stg-III D/C*** *may be kept in* **ON** *condition till* ***the restoration of Misa-Kopili-Khandong link and 132 kV Haflong Jiribam line.***

2. *The SPS related to tripping of 132 kV Umiam Stg-I to Umiam Stg-III D/C may be implemented at the earliest since tripping of both circuit may lead to cascading tripping in Meghalaya power system.*

SPS: WHEN 220KV BTPS SALAKATI D/C GETS OVERLOADED OR IN CASE OF OUTAGE OF ONE CIRCUIT THE OTHER CIRCUIT GETS OVERLOADED I.E LOADING GREATER THAN 600A)

Reconducting work of 220 kV BTPS-Salakati D/C with HTLS conductor is under implementation stage.

As per 2nd meeting of NERSCT the ampacity of single HTLS shall be 1596A,which is equivalent to Twin ACSR Moose conductor for 45ºC ambient and 85ºC maximum conductor temperature. Thus, the single circuit of 220 kV BTPS-Salakati D/C may carry up to 608 MVA.

The present SPS related to tripping of 220 kV Boko feeder and 220 kV Azara feeder at 220 kV Agia GSS when loading in any one circuit of 220 kV BTPS-Salakati D/C greater than 600A may not required after the completion of reconducting work of 220 kV BTPS-Salakati D/C with HTLS conductor.

CROSS-BORDER SPS IN NER

Sl. No	SPS Name
1	SPS related to Outage of 400 kV Palatana – Surajmani Nagar line (Charged at 132kV)
2	SPS related to Outage of both 400/132 kV, 2x125 MVA ICTs at Palatana

SPS RELATED TO OUTAGE OF BOTH 400/132 KV, 2X125 MVA ICTS AT PALATANA

Presently, SPS related to tripping of 132 kV Surajmani Nagar - South Comilla DC on outage of both 400/132 kV, 2x125 MVA ICTs at Palatana was meant to avert the cascading tripping thus saving the Tripura power system

Study suggest that

- ***On outage of both 400/132 kV, 2x125 MVA ICTs , 50 % load is being shifted to 132 kV Surajmani Nagar (ISTS)- Surajmani Nagar(Tsecl) line.***
- ***The loading of 132 kV Surajmani Nagar (ISTS)- Surajmani Nagar(Tsecl) line during summer season is more than 90MW during peak hours.***
- ***Outage of both 400/132 kV, 2x125 MVA ICTs at Palatana may lead to severe loading in 132 kV Surajmani Nagar (ISTS)- Surajmani Nagar(Tsecl), and tripping of the same may lead to cascading tripping in Tripura Power sytem.***
- ***The situation may become more severe on low internal generation in Tripura power system.***

SPS RELATED TO OUTAGE OF BOTH 400/132 KV, 2X125 MVA ICTS AT PALATANA

Observations:

The present SPS related to ***Outage of both 400/132 kV, 2x125 MVA ICTs at Palatana*** *and SPS related to* ***Outage of 400 kV Palatana – Surajmani Nagar line*** *(****Charged at 132kV****) may be kept in ON condition and reviewed after the following upgradation.*

1. *Commissioning of* ***Surajmaninagar – Monarchak 132kV D/C*** *line.*
2. ***reconductoring*** *of 132 kV-Surajmaninagar (ISTS)-Surajmaninagar(TSECL) with HTLS conductor*
3. ***reconductoring*** *of 132 kV-Surajmaninagar (ISTS)-Budhjungnagar lines with HTLS conductor*

THANK YOU

ग्रिड-इंडिया
GRID-INDIA