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)/PCC/2023/ **342-383** May 08, 2024

To
As per list attached

Sub: Minutes of 66th Protection Coordination Sub-Committee (PCC) Meeting

Sir/Madam,

Please find enclosed herewith the minutes of the 66th PCC Meeting held at NERPC Conference Hall, Shillong on 23rd April 2024 for your kind information and necessary action. The minutes is also available on the website of NERPC: www.nerpc.gov.in.

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

भवदीय / Yours faithfully,

(अनिल कवरानी/ Anil Kawrani)
निदेशक / Director

Encl: As above

Distribution List:

1. Managing Director, AEGCL, Bijuli Bhawan, Guwahati – 781 001
2. Managing Director, APGCL, Bijuli Bhawan, Guwahati – 781 001
3. Managing Director, APDCL, Bijuli Bhawan, Guwahati – 781 001
4. Managing Director, MSPCL, Electricity Complex, Keishampat, Imphal – 795 001
5. Managing Director, MSPDCL, Secure Office Bldg. Complex, South Block, Imphal – 795 001
6. Director (Transmission), MePTCL, Lumjingshai, Short Round Road, Shillong – 793 001
7. Director (Generation), MePGCL, Lumjingshai, Short Round Road, Shillong – 793 001
8. Director (Distribution), MePDCL, Lumjingshai, Short Round Road, Shillong – 793 001
9. Director (Tech.), TSECL, Banamalipur, Agartala -799 001.
10. Director (Generation), TPGCL, Banamalipur, Agartala -799 001.
11. GM (Transmission), TPTL, Banamalipur, Agartala -799 001.
12. Chief Engineer (WE Zone), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
13. Chief Engineer (TP&MZ), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
14. Chief Engineer (Commercial) -cum- CEI, DoP, Govt. of Arunachal Pradesh, Itanagar- 791111
15. Engineer-in-Chief, P&E Department, Govt. of Mizoram, Aizawl – 796 001
16. Engineer-in-Chief, Department of Power, Govt. of Nagaland, Kohima – 797 001
17. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
18. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad, Haryana-121003
19. Group GM, NTPC, Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
20. Vice President (Plant), OTPC, Badarghat Complex, Agartala, Tripura - 799014
21. ED, PGCIL/NERTS, Dongtieh-Lower Nongrah, Lapalang, Shillong -793 006
22. AGM (BD), NVVN, Core 5, 3rd floor, Scope Complex, 7 Institutional Area, Lodhi Rd., N. Delhi-3
23. Vice President, PTCIL, 2nd Floor, NBCC Tower, 15, Bhikaji Cama Place, New Delhi – 110066
24. Dy. COO, CTUIL, "Saudamini", 1st Floor, Plot No. 2, Sector-29, Gurugram, Haryana – 122001
25. Chief Engineer, GM Division, Central Electricity Authority, New Delhi – 110066
26. Chief Engineer, NPC Division, Central Electricity Authority, New Delhi – 110066
27. Head & VP, (R&C), ENICL, IndiGrid, Windsor Building, Kalina, Santacruz (East), Mumbai- 98
28. ED, NERLDC, Dongtieh, Lower Nongrah, Lapalang, Shillong -793 006
29. CGM, AEGCL, Bijuli Bhawan, Guwahati – 781001
30. CGM, APGCL, Bijuli Bhawan, Guwahati – 781001
31. CGM, DISCOM, Bijuli Bhawan, Guwahati – 781001
32. Head of SLDC, Dept. of Power, Govt. of Arunachal Pradesh, Itanagar – 791111
33. CGM, (LDC), SLDC Complex, AEGCL, Kahilipara, Guwahati-781 019
34. Head of SLDC, MSPCL, Imphal – 795001
35. Head of SLDC, MePTCL, Lumjingshai, Short Round Road, Shillong – 793 001
36. Head of SLDC, P&E Deptt. Govt. of Mizoram, Aizawl – 796 001
37. Head of SLDC, Dept. of Power, Govt. of Nagaland, Dimapur – 797103
38. Head of SLDC, TSECL, Agartala – 799001
39. Chief Engineer (Elect), Loktak HEP, Vidyut Vihar, Kom Keirap, Manipur- 795124
40. DGM (O&M), OTPC, Badarghat Complex, Agartala, Tripura – 799014
41. AGM Regulatory & Commercial, NER II TL, 10th Floor, Berger Tower, Noida sector 16B-201301
42. Director, NETC, 2C, 3rdFloor, D21Corporate Park, DMRC Building Sector 21, Dwarka, Delhi-77.

(अनिल कवरानी/ Anil Kawrani)
निदेशक / Director

सत्यमेव जयते

Minutes Of 66th PCCM

Govt. of India
Ministry of Power
North Eastern Regional Power Committee
Shillong

North Eastern Regional Power Committee

Minutes of

66thProtection Coordination Sub-Committee Meeting

Date:23/04/2024 (Tuesday)

Time: 11:00 hrs

Venue: NERPC conference Hall, Shillong

List of Participants is attached as **annexure I**

A. CONFIRMATION OF MINUTES

1. CONFIRMATION OF MINUTES OF THE 65th PROTECTION SUB-COMMITTEE MEETING OF NERPC.

Minutes of the 65thPCC Meeting held on 14th March, 2024(Thursday) at Hotel Royale De'casa, Beltola, Guwahati was circulated vide letter No.: NERPC/SE (O)/PCC/2023/3537-3578dated 26thMarch, 2024.

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

The Sub-committee confirmed the minutes of 65thPCCM of NERPC without any modifications

B. ITEMS FOR DISCUSSION

B.1 Protection Audit of NER:

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

Description		Constituent	Responsibility	Timeline
Audit	Internal Audit	All users (132kV and above)	Shall conduct internal audit of protection system	Annually
			Audit report to be shared with RPC	Within 30 days of Audit
			Action plan for rectification of deficiencies to be shared with RPC	Within 30 days of Audit
	Third party Audit	All users (132kV and above)	Shall conduct audit for each SS	Once in five years
			Shall conduct audit on advice of RPC	Within three months of advice of RPC
			Audit report* to be submitted to RPC and NERLDC/SLDC	Within a month of submission of third-party audit report
			Action plan for rectification of deficiencies	Same as above
		RPC	Compliance to audit reports to be followed up regularly	Not specified
		RPC	After analysis of any event, shall identify substations where audit is required to be carried out	Conditional responsibility
	Annual audit plan	All users	Annual audit plan to be submitted to RPC by ***31st October***	Annual

In 60th PCCM the following points were discussed-

Member Secretary NERPC informed that third party protection audit has to be generally conducted by the utilities on their own. However, the 3rd party audit will be carried out by team constituted by NERPC at selected substations based on the criticality,analysis and requirement.In this regard, NERPC has already circulated an audit calendar and audit formats for reference of the constituents.

The nodal officers of respective State/power utilities have to fill the audit formats and submit to the NERPC secretariat within 1 week.

The forum decided that compliance to audit reports will be followed up regularly in PCC meeting of NERPC.NERLDC to submit a list of all 132 kV and above substations of the States to NERPC.

Information regarding substations that have already been audited will be provided by States to NERPC & NERLDC.

Forum agreed that all users (132 kV and above) have to conduct Internal Audit annually and submit audit report to RPC with action plan for rectification of deficiencies within 30 days of Audit.

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

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

In 65th PCCM, the following was decided -

NERPC updated that final audit report of Sarusajai, Kahilipara and BTPS substations of Assam will be finalized within one week.

Regarding audit of substations of Nagaland (Dimapur, Kohima, Sanis, Wokha, Mokokchung), Member Secretary, NERPC Stated that the audit can be conducted between 25thto 29th April'24.

NERTS requested to the forum that whenever the audit team plans for audit of any station of any other utility, audit for the nearest station of NERTS may also be carried out. Forum agreed to the same.

Regarding schedules of internal and third-party protection audit –

1. AEGCL representative Stated that internal audit of all 132kV and above substations of Assam will be completed before 30th June'24 as per the direction of AERC. He further Stated that third party audit will be planned thereafter. The forum requested Assam to share internal audit report to NERPC and also plan third party audit as early as possible and update the google spreadsheet with schedules of internal as well as third party audit

2. Mizoram Stated that internal audit of all 132kV and above substations have been completed one week ago and third-party audit will be planned shortly. Member Secretary, NERPC requested Mizoram to share the internal audit reports to NERPC and NERLDC at the earliest.
3. TSECL assured that internal audit plan will be shared soon. Forum requested TSECL to plan for third party audit also.
4. Manipur updated that a protection audit committee has been formed recently and the audit will be scheduled shortly keeping in mind the prevailing Law and Order situation of the State

Deliberation of the sub-committee

Regarding audit of substations of Nagaland (Dimapur, Kohima, Sanis, Wokha, Mokokchung) and substations of NERTS in (Mokokchung, Dimapur and New Mariani), Member Secretary, NERPC stated that the audit can be conducted between 1st and 3rd May'24.

Regarding schedules of internal and third-party protection audit –

1. NERLDC informed that NEEPCO, Meghalaya and NERTS have provided the audit schedule for internal as well as external audit in the google spreadsheet
2. NTPC stated that external audit of BGTPP will be carried out in June'24.
3. AEGCL representative stated that third party audit will be planned after completion of internal audit in June'24. The forum requested Assam to share internal audit report to NERPC and also plan third party audit as early as possible and update the google spreadsheet with schedules of internal as well as third party audit
4. MS, NERPC strongly urged all other constituents to provide the schedules of internal and external protection audits at the earliest.

Sub-committee noted as above

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

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

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

i) 220kV Jawaharnagar GIS

ii) 220kV KLHEP GSS

iii) 132kV Gauripur GSS

iv) 132kV Karimganj GSS

In 65th PCCM,MePTCL updated that a revised list of prioritized substations which includes 18 substations has been submitted to NERPC. Member Secretary, NERPC Stated that conducting audit by NEPRC team at these 18 substations may not be feasible and advised MePTCL to send a list of 4-5 substations for which protection audit may be conducted by NERPC.

Also, in 65th PCCM, AEGCL requested NERPC to conduct audit at the substations as SCADA system and relay system are obsolete at the substations and PSDF funding is required for the renovation of the systems. NERLDC highlighted that the Karim Ganj GSS is less than 10 years old so it may not be eligible for PSDF funding.

After detailed deliberation, NERPC decided that protection audit of JawaharNagar, KLHEP and Gauripur substations of Assam will tentatively be carried out in 1st week of May'24

Deliberation of the sub-committee

Meghalaya

MePTCL updated that a list of 5 substations where third party protection audit has to be urgently carried out will be shared to NERPC within a week**.**

Assam

MS, NERPC stated that audit of Jawaharnagar GIS, KLHEP GSS and Gauripur GSS may be conducted by NERPC by end of May'24. NERTS added that audit of Misa SS may be clubbed with that of KLHEP and audit of Salakati SS may be clubbed with Gauripur SS due to physical proximity. The forum agreed for the same.

B.3 Detailed system study to review the protection settings of NER grid as per IEGC 2023

As per regulation 14(1) of IEGC 2023, "RPCs shall undertake review of the protection settings, assess the requirement of revisions in protection settings and revise protection settings in consultation with the stakeholders of the respective region, from time to time and at least once in a year. The necessary studies in this

regard shall be carried out by the respective RPCs. The data including base case (peak and off-peak cases) files for carrying out studies shall be provided by RLDC and CTU to the RPCs"

In this regard, each State has to carry out the detailed system of their grid, once a year, in order to holistically overview the protection settings in the State and present the study report to NERPC and NERLDC. States may use the PDMS and PSCT software platforms to carry out the studies.

Deliberation of the sub-committee

NERPC stated that the States may carry out the necessary studies by using the PSCT and PDMS software of M/s PRDC.

Assam stated that for training of the software is required to impart necessary skills to the personnel of the State.

PRDC representative assured that necessary training session will be conducted for all the States. He, further highlighted that before carrying out the studies Protection settings database of the software has to be updated.

MS, NERPC directed M/s PRDC to update the database in coordination with NERPC, NERLDC and concerned utilities.

NERLDC highlighted the need to update the database in PDMS software from time to time and also requested PRDC team to model the entire power system of NER in PSCT tool for setting calculation considering recent network changes.

States further requested that a user manual of the PSCT and PDMS software may be provided for easy reference during carrying out the studies. M/S PRDC assured to provide the same at the earliest.

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

TABLE 8 : REPORT SUBMISSION TIMELINE

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

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

The forum may deliberate upon the GD/GI/Near miss events that occurred in March 2024 based on the draft reports prepared by NERLDC. The list of events and draft report of NERLDC is attached as **Annexure B.4**

Deliberation of the sub-committee

NERPC stated that the Grid events have been discussed in a special meeting held on 18.04.2024. He further stated that root cause analysis and recommended actions are listed in **annexure B.4.1**. MS, NERPC requested the concerned utilities to complete the recommended actions at the earliest.

B.5 Agenda from OTPC

132 KV line 1 was in Shutdown from 10:32 hrs of 01.04.2024 as per OCC approved shutdown. After shutdown withdrawal of 132 KV line 1 and after getting clearance from NERLDC, during normalization it was observed that 132 KV Line 1 Voltage increased showing R-ph=70 KV, Y-ph =73.8, B-ph =16.4 KV in Breaker open condition at both Palatana and Banduar end at 16:40 Hrs.

Same was informed to SLDC Tripura control room and they confirmed to us that their side, breaker is still in open condition but we still observed uneven voltage at 132 KV Line-1. Same incident was conveyed to the NERLDC control room. After conversation with the SLDC engineer we requested to open the isolator from Banduar end. After opening the isolator from the Banduar end, immediately

voltage becomes 0 KV at 16:57 Hrs. It seems that somehow voltage was induced from the Banduar end.

We requested SLDC Agartala to take immediate measure regarding the same. As confirmed by SLDC they had done some maintenance work at Banduar substation and after rectification they had charged the isolator. At that time no voltage was showing at Palatana end. Consequently, after getting code from NERLDC 132 KV line 1 was normalized at both ends.

Voltage without closing of any breaker is a serious threat to both man & machineries. As you are aware that same incident had happened earlier on 23.12.2023 during 132 KV line-1 shutdown and the matter was discussed in 63rd Protection Committee Meeting. Hence Forum is requested to investigate total incident so that this type of event doesn't reoccur in future.

For necessary discussion in PCC meeting.

Deliberation of the sub-committee

The forum opined that the CB at Banduar end may be stuck and not opened completely. TSECL representative was not present in the meeting so update could not be taken. The forum strongly urged TSECL to look into the matter and take corrective measures so that the similar incidents are not repeated in future. Also, the forum requested TSECL to submit detailed report of the corrective measures taken.

Agenda items from NERLDC

B.6 Status of submission of FIR, DR & EL outputs for the Grid Events for the month of March'2024

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

Status of uploading of FIR, DR & EL outputs in Tripping Monitoring Portal for events from 01-03-2024 to 31-03-2024 as on 10-04-2024 is given below:

Name of Utility	Total FIR/ DR/EL to be submitted	Total FIR to be submitted			Total FIR, DR & EL submitted			Total FIR, DR & EL not submitted			% Submission of		
		FIR	DR	EL	FIR	DR	EL	FIR	DR	EL	FIR	DR	EL
DoP, Arunachal Pradesh	7	7	7	7	7	7	7	0	0	0	100	100	100
AEGCL	66	66	54	52	53	7	45	13	1	2	80	98	96
APGCL	13	13	9	9	0	0	0	13	9	9	**0**	**0**	**0**
MSPCL	16	16	10	10	16	4	5	0	2	2	100	80	80
MePTCL	27	27	25	26	20	20	20	7	4	5	74	84	81
MePGCL	10	10	10	10	9	8	6	1	1	3	90	90	70
P&ED, Mizoram	2	2	2	2	0	0	1	2	1	1	**0**	**50**	**50**
DoP, Nagaland	9	9	9	9	9	8	8	0	0	0	100	100	100
TSECL	20	20	20	20	17	14	18	3	2	2	85	90	90
TPGCL	3	3	3	3	0	0	0	3	3	3	**0**	**0**	**0**
POWERGRID	61	61	58	59	59	57	57	2	1	1	97	98	98
NEEPCO	38	38	29	34	35	24	28	3	3	5	92	90	85
NHPC	5	5	5	5	5	3	2	0	0	1	100	100	80
NTPC	1	1	1	1	0	0	0	1	1	1	**0**	**0**	**0**
ERTS	3	3	3	3	0	0	0	3	3	3	**0**	**0**	**0**
OTPC	4	4	4	4	4	4	4	0	0	0	100	100	100
MUML	3	3	3	3	1	1	1	2	2	2	**33**	**33**	**33**
IndiGrid	17	17	16	17	16	15	16	1	1	1	94	100	100

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

Deliberation of the sub-committee

NERLDC informed that AEGCL, TSECL, MePGCL, POWERGRID, MUML and NTPC have fully submitted the DR, EL and FIR data.

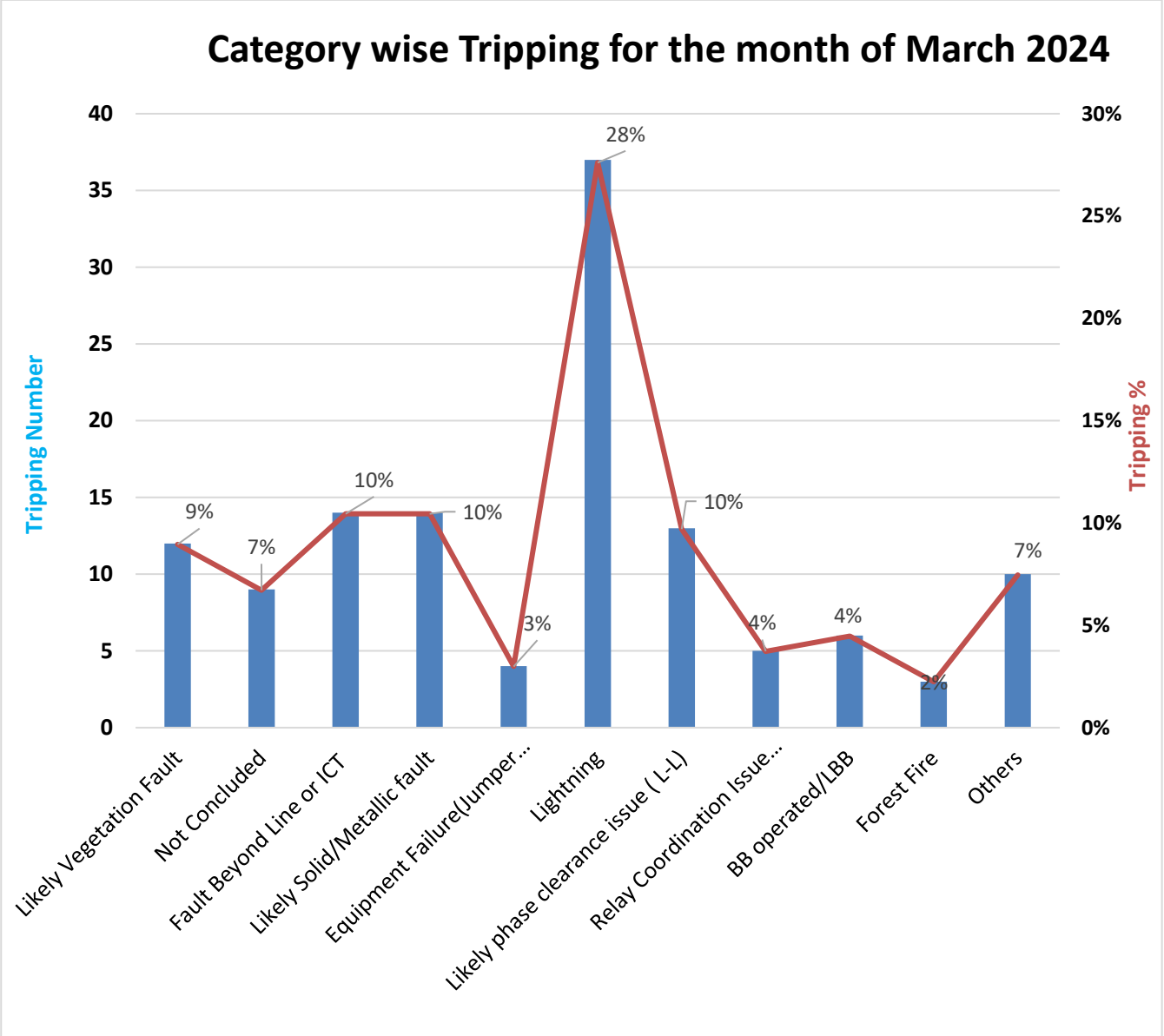
MS, NERPC stated that a letter will be written to NHPC, TPGCL and APGCL regarding attending the meeting, strengthening of their protection system and compliance of Protection code of IEGC 2023.

After detailed deliberation the forum urged all the utilities to ensure 100% submission of DR, EL and FIR data timely in compliance with IEGC 2023.

B.7 Category wise Tripping for the month of February 2024:

There were a total 7 numbers of Successful Auto reclosure operation (both ends) and 127 numbers of Line (including 1 number HVDC tripping) & ICT tripping during the month of March'24.

A plot showing number and percentage of tripping in each category such as Likely Vegetation, Lightning, Solid/metallic fault and fault beyond the line etc. is shown below. It is observed that for around 28% of tripping were due to lightning the line and 10% of tripping were due to solid fault and Likely phase clearance (L-L) faults.



The trippings due to Vegetation fault and solid/metallic fault and Lightning faults are listed below:

List of tripping due to Vegetation fault during March, 2024

Sl. No.	Element Name	Owner Name	Tripping Date and Time	Relay _A	Relay_B
1	132 kV Agia - Nangalbibra Line	MePTCL	03-03-2024 13:50	DP, ZI, R-N, FD: 26.13 Km	DP, ZI, B-N, FD: 50.35 Km
2	220 kV BALIPARA -	POWERGRID & AEGCL	04-03-2024 13:06	DP, ZII, B-E, FD: 10	DP, ZI, R-E, Carrier aid tripping (DEF

	SONABIL 2			Km, DT received	pick up)
3	132 kV Roing - Pasighat Line	POWERGRID	07-03-2024 15:46	DEF Operated	No Tripping (Earth fault pickup)
4	132 kV Imphal (MSPCL) - Karong Line	MSPCL	11-03-2024 11:26	DP, ZI, R-E, FD: 28.98 Km	No tripping, ZIV pick up, Y-E
5	220 kV Mariani (PG) - Mokokchung (PG) 2 Line	POWERGRID	11-03-2024 15:53	DP, ZI, R-Y, FD: 5.347 Km	DP, ZII, R-Y, FD: 45.37 Km, carrier aid trip
6	132 kV Chiephobozou-Wokha Line	DoP, Nagaland	12-03-2024 10:30	DP, ZII, Y-B, FD: 33.62 Km	DP, ZI, Y-B, FD: 3.4 Km
7	400 kV Azara - Silchar Line	NETC & AEGCL	16-03-2024 14:31	DP,ZI, R-B	DP,ZI,R-B,FD: 155.94 KM
8	220 kV BTPS - Rangia 1 Line	AEGCL	17-03-2024 12:08	DP,ZII,B-E	DP,ZI,B-E
9	132 kV Baramura - Jirania Line	TSECL	23-03-2024 20:30	Tripped on EF and DP,ZII,Y-E initiated	DP,ZII,Y-E
10	132 kV Aizawl - Tipaimukh Line	POWERGRID & MSPCL	23-03-2024 22:00	EF, Y-E	EF, Y-E
11	400 kV Palatana - Silchar 2 Line	NETC	25-03-2024 23:50	DP,ZII, B-E, FD: 299KM	Z-1, 3ph to ground, 35.6km, 5.12kAmp
12	132 kV Pailapool - Srikona Line	AEGCL	31-03-2024 07:44	No Tripping	DP Z II, R-E,FD: 30.3 km

List of tripping due to Solid fault during March, 2024

SL No	**Element Name**	**Owner Name**	**Tripping Date and Time**	**Relay_A**	**Relay_B**
1	132 kV Imphal (MSPCL) -	MSPCL	06-03-2024	DP, ZI, B-E, FD: 28.61 Km	No Tripping

	Yaingangpokpi 2 Line		17:54		
2	132 kV Lekhi - Ranganadi Line	DoP, Arunachal Pradesh & POWERGRID	07-03-2024 15:05	DP, ZI, R-E, FD: 1.4 Km	DP, ZII, R-E, FD: 22.23 Km
3	132 kV Dharmanagar - P K Bari Line	TSECL	10-03-2024 10:15	No Tripping	DP, ZII, B-E, FD: 36.58 Km
4	220 kV Azara - Sarusajai 2 Line	AEGCL	16-03-2024 05:58	DP,ZI,R-E,FD: 22.5 km	Z4 initiated
5	220 kV Sarusajai-Sonapur Line	AEGCL	16-03-2024 05:58	DP,ZII,Y-E,FD: 49.2 km	Z4 initiated
6	220 kV Jawaharnagar - Sarusajai Line	AEGCL	16-03-2024 05:58	DP,ZII,Y-E,FD: 12.2 km	Z4 initiated
7	132 kV Dharmanagar - P K Bari Line	TSECL	16-03-2024 15:54	No Tripping. Only DP,ZI,Y-E,FD: 17.59 km	DP, ZI, B-E,FD: 17.48 km.
8	132 kV Dimapur (PG) - Kohima Line	POWERGRID & DoP, Nagaland	25-03-2024 15:38	DP,ZI, B-E, FD: 42.73 Kms	DP,ZI, B-E
9	132 kV Panchgram - Lumshnong Line	AEGCL & MePTCL	25-03-2024 23:35	DP,ZI,B-E,FD:5.2kM	DP, ZII, B-E, FD: 44.83 Km
10	132 kV Agia - Nangalbibra Line	MePTCL	26-03-2024 01:57	Not Furnished	DP,ZI,B-E,FD: 9.41 KM
11	132 kV Nirjuli-North Lakhimpur 1 Line	MUML	26-03-2024 04:18	DP, ZI, B-E, FD: 8.67 KM	DP, ZI, B-E, FD: 45 KM
12	132 kV Nirjuli - Pare Line	MUML	26-03-2024	DP,ZI,B-E, FD:8.35KM,FC:	DP,ZI,B-E,FD:16.88

			04:18	2.0KA	KM
13	132 kV Agartala - Rokhia 1 Line	TSECL	31-03-2024 07:30	DP, ZI, Y-E ,FD: 7.2 km	DP, ZI, Y-E,FD: 3.2km
14	132 kV Aizawl - Kolasib Line	POWERGRID	31-03-2024 09:08	LDP,Y-E, FD:3.79KM	LDP Operated, Y-E

List of tripping due to L-L fault likely due to phase clearance Issue during March, 2024

SL No	**Element Name**	**Owner Name**	**Tripping Date and Time**	**Relay_A**	**Relay_B**
1	220 kV Karbi Langpi - Sarusajai 1 Line	AEGCL	15-03-2024 15:33	Not Furnished	DP, ZI, Y-B, FD: 31.5 Km
2	132 kV Depota - Ghoramari	AEGCL	22-03-2024 05:03	DP, ZI, Y-B, FD: 5.7 km	No tripping
3	132 kV Depota-Dhekiajuli	AEGCL	22-03-2024 05:03	DP, ZI, Y-B, FD: 2 km	No Tripping
4	132 kV Bodhjannagar - Jirania Line	TSECL	23-03-2024 22:25	DP, ZII, R-Y	No Tripping
5	132 kV Umiam St III - Umtru 1 Line	MePTCL	25-03-2024 09:38	DP,ZI,R-Y,FD: 12.73 KM	DP, ZI,R-Y
6	132 kV Jiribam - Pailapool Line	AEGCL	26-03-2024 01:29	R-Y-PH, Z-1, 8.84KM,Ir-2.729KA, Iy-2.747KA	DP, ZI, R-Y, FD: 4.2km
7	132 kV P K Bari (Sterlite Power) - P K Bari (TSECL) Line	TSECL	26-03-2024 03:08	LDP, R-B, FD: 8.646 Km	DP, ZIII, R-B, FD: 1.84 Km

8	132 kV Sarusajai - Umtru 1 Line	MePTCL	26-03-2024 03:39	Line kept ideally charged from Umtru	DP, ZI, Y-B
9	132 kV Sanis - Wokha Line	DoP, Nagaland	26-03-2024 07:42	DP, ZI, Y-B, FD: 21.35 Km	DP,ZI,Y-B
10	132 kV Dimapur - Doyang 2 Line	POWERGRID	29-03-2024 13:10	DP, Z1,R-Y,FD: 72.6km	DP,Z1, R-Y
11	132 kV Ambasa - P K Bari Line	TSECL	31-03-2024 08:22	DP,ZII,R-Y	Not Furnished
12	220 kV Agia - BTPS 2 Line	AEGCL	31-03-2024 20:19	DP,ZI,Y-B,FD: 40.2 km	DP,ZI,Y-B,FD: 24.5 km

List of tripping due to Lightning fault during March, 2024

SL No	**Element Name**	**Owner Name**	**Tripping Date and Time**	**Relay_A**	**Relay_B**
1	132 kV Dimapur - Doyang 1 Line	POWERGRID	16-03-2024 13:38	DP,ZI,B-E,FD:58.49 Kms	DP,ZII,R-E,FD:60.074 KM
2	132 kV Badarpur - Khliehriat Line	POWERGRID	17-03-2024 04:15	DP,ZI,Y-E,FD: 23.71KM	DP,ZI,Y-E,FD: 52.0KM
3	220 kV BTPS - Rangia 1 Line	AEGCL	20-03-2024 05:33	DP,ZI,R-Y-E,FD: 19km	DP,ZII,R-Y-E,FD: 19km (Carrier aided)
4	220 kV BTPS - Rangia 2 Line	AEGCL	20-03-2024 05:33	R-Yphase, Z-1,21.3km	DT received
5	132 kV Badarpur - Khliehriat Line	POWERGRID	20-03-2024 18:53	DP,ZI,R-E,FD: 37.48 KM	DP,ZI, B-E,FD: 38.77KM
6	132 kV Agia - Nangalbibra Line	MePTCL	22-03-2024 00:43	DP, ZI, R-E, 48.5 km	DP, ZI,R-E,FD:34.41kms

7	132 kV Dimapur - Doyang 2 Line	POWERGRID	22-03-2024 02:25	DP, ZI,B-E, FD: 6.945 KMS	DP, ZI,B-E
8	132 kV Dimapur - Doyang 1 Line	POWERGRID	22-03-2024 02:25	DP, ZI,B-E, FD: 6.945 Km	DP, ZI,B-E, FD:63.3km
9	400 kV Byrnihat - Silchar Line	NETC & MePTCL	23-03-2024 16:06	DP,ZI, Y-E,FD: 39 KM	DP,ZI,Y-E, FD:170 KM
10	132 kV Hailakandi - Silchar 2 Line	POWERGRID	23-03-2024 21:13	DP, ZI, Y-E,FD:8.3 KM	DP, ZI, Y-E,FD: 24.69 KM
11	132 kV AGTCCPP - PK Bari (TSECL) 1 Line	NTL	24-03-2024 06:19	DP, ZI, R-Y-B-E, FD: 5.4 km	DP, ZII, R-Y-B-E,FD: 77.3 km
12	132 kV AGTCCPP - PK Bari (TSECL) 2 Line	NTL	24-03-2024 06:19	DP, ZI, R-Y-B-E, FD: 5.4 km	DP, ZII, R-Y-B-E,FD: 79.3 km
13	220 kV Jawaharnagar - Samaguri Line	AEGCL	25-03-2024 10:30	B phase, Z1, 4.8 km	DP, ZII, R-E, FD: 107.2 km, Carrier aided tripping
14	132 kV Gohpur - Nirjuli Line	POWERGRID	25-03-2024 12:31	DP, ZI, R-Y	Directional O/C R-Y Phase, Ir=2.65 kA, Iy=2.43 kA
15	132 kV Haflong - Jiribam Line	POWERGRID	26-03-2024 01:26	DP, ZI, R-E, FD: 71.554KM	DP, ZI, R-E, FD: 5.95KM
16	132 kV Agia - Nangalbibra Line	MePTCL	26-03-2024 04:15	Not Furnished	DP,ZI,B-E,FD: 18.6 Km
17	132 kV Gohpur - North Lakhimpur 1 Line	AEGCL	26-03-2024 05:55	DP,ZI,R-E, FD: 4.1km	DP,ZI,R-E
18	132 kV Roing - Pasighat Line	POWERGRID	26-03-2024 06:26	DP, Z II,R-B,FD: 119.4KM	DP, Z II,R-B-E
19	132 kV Tenga - Khupi Line	DoP, Arunachal Pradesh	26-03-2024 07:35	DP,ZI, R-B-E, FD: 30km	DP,ZI, R-B-E,FD:4.9km
20	220 kV Agia -	AEGCL	26-03-2024	DP,ZI, Y-E,	DP,ZI, Y-E

	BTPS 1 Line		08:17	FD:17.2 Km	
21	220 kV Mawngap - New Shillong 1 Line	MePTCL	26-03-2024 12:22	DP,ZI, Y-E, FD: 27.82 Km	DP,ZI, Y-E
22	400 kV Surajmani Nagar (Sterlite Power) - P K Bari (Sterlite Power) 2 Line	NTL	30-03-2024 17:07	DP,ZI, Y-E,FD: 20.9 Kms	DP,ZI, Y-E,FD: 58.53 Kms
23	400 kV Palatana - Silchar 2 Line	NETC	30-03-2024 18:18	DP,ZI, Y-E,FD:65.67 km	DP,ZI, Y-E,FD:185.5 Km
24	220 kV Byrnihat - Misa 2 Line	MePTCL	31-03-2024 05:21	DP,ZI,R-E, FD: 50.38km	R-E , Z1. 2.445 KA, 68.508 KMS
25	132 kV Surajmani Nagar (TSECL) - Surajmani Nagar (Sterlite Power) Line	TSECL	31-03-2024 07:29	DP,Z-I, FD: 6.7 KM	DP, ZI, R-E
26	400 kV Surajmani Nagar (Sterlite Power) - Palatana 1 Line	POWERGRID	31-03-2024 07:30	LDP operated , FD:14 km	LDP Operated
27	132 kV AGTCCPP - PK Bari (TSECL) 1 Line	NTL	31-03-2024 08:15	DP, ZII, Y-E , FD: 97.4 KM	DP, ZI, Y-E
28	132 kV AGTCCPP - PK Bari (TSECL) 2 Line	NTL	31-03-2024 08:17	DP, ZII,Y-B,FD: 70.77KM	DP, ZI,Y-E,FD: 30 KM
29	132 kV Aizawl - Kumarghat Line	POWERGRID	31-03-2024 08:40	DP,ZI,R-E,FD: 59.37 KM	DP, ZI, R-E,FD: 46.95km
30	400 kV Alipurduar - Bongaigaon 2 Line	ENICL	31-03-2024 15:48	M1: RN, Z1, 12.38KA, 0.7KM M2: RN, Z1, 13.51KA,	DP,ZII, R-B-E,FD: 80.20KM , Carrier Aided tripping

				1.22KM	
31	132 kV Umtru - Umiam St IV 1 Line	MePTCL	31-03-2024 15:48	DP,ZII, R-Y,FD:26.6Kms	86A,86
32	220 kV Sarusajai-Sonapur Line	AEGCL	31-03-2024 16:25	DP,ZI,R-E, FD: 7.1km	DP,ZI,Y-E,FD: 32.4Kms
33	220KV-MAWNGAP-BYRNIHAT (KILLING)-1	MePTCL	31-03-2024 16:31	DP, ZII, Y-E, FD: 70.65Km(Carrier Aided Tripping)	DP, ZI, B-E, FD: 14.4 Km
34	132 kV Umiam St III - Umtru 1 Line	MePTCL	31-03-2024 16:42	ZII, FD: 36 KM	ZI, 6.9 KM
35	220 kV Agia - BTPS 1 Line	AEGCL	31-03-2024 16:51	Z1, Y-N, overcurrent, M1: 17.4 KM, M2: 15.2 KM	Z1, Y-N, 46.7 KM
36	220 kV Agia - BTPS 1 Line	AEGCL	31-03-2024 20:22	Z1,17.26km, Y phase	DP,ZI,Y-E,FD:44.5km
37	400 kV Byrnihat - Silchar Line	NETC & MePTCL	31-03-2024 20:51	DP,ZI, Y-E, FD: 68.7 km	DP,ZI, Y-E,FD: 175.11KM

Deliberation of the sub-committee

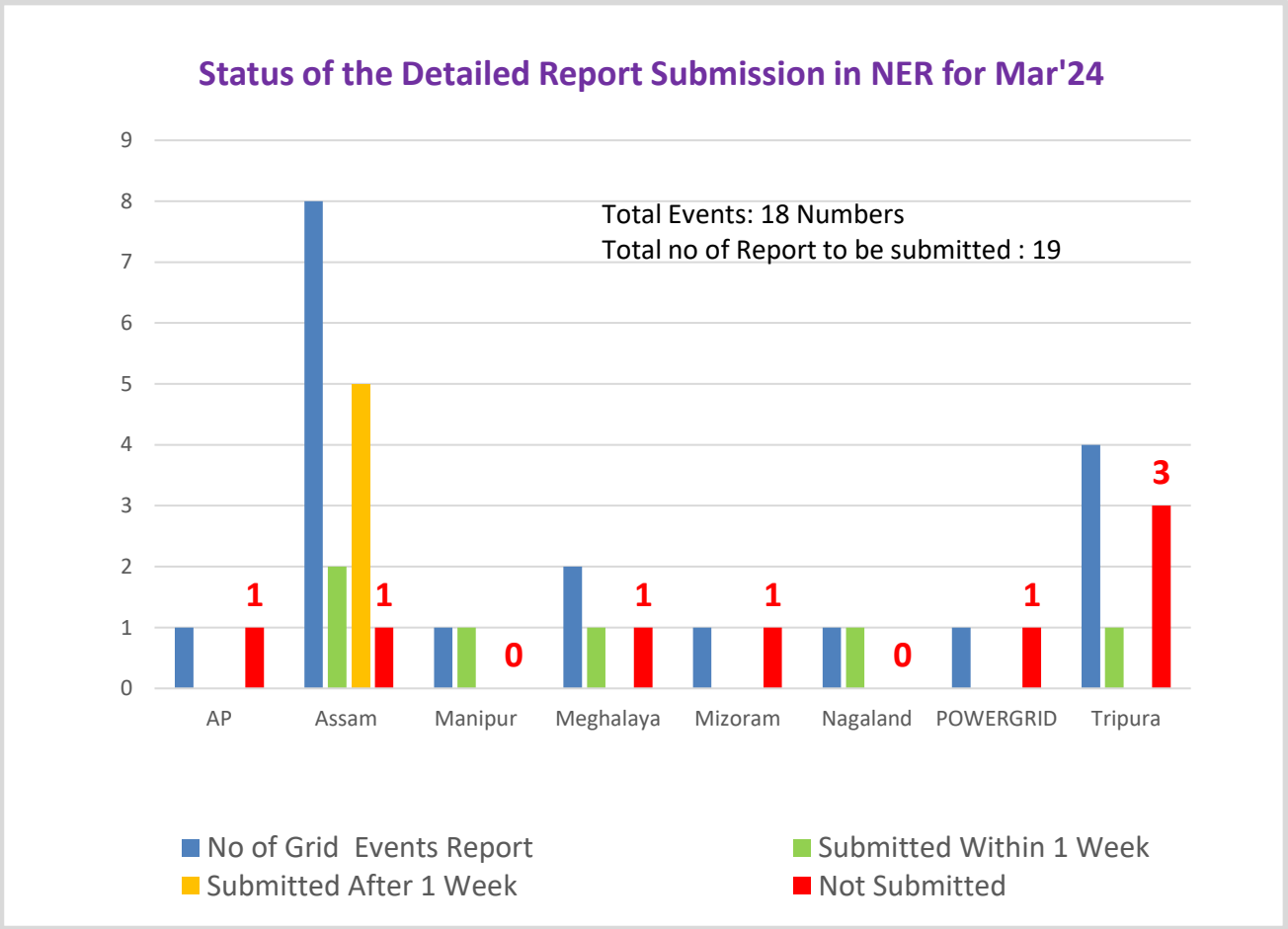
The forum expressed concern over significant increase in number of tripping due to lightening faults in March'24 which has been apparently caused due to inclement weather all over the region in the month.

MS, NERPC requested all the utilities to make provisions for TLSAs at identified vulnerable locations in lines, make the AR system robust and improve the Tower Footing Resistance to address the problem of tripping due to lightening. Also, MS, NERPC requested all utilities to conduct proper maintenance and patrolling of line for periodic clearance of vegetation. He emphasized on implementation of auto reclosure in all lines and checking of its healthiness to prevent tripping due to transient fault.

The forum requested the concerned utilities to provide Action Taken Report on all the 75 tripping mentioned above to NERPC and NERLDC.

B.8 Submission of Flash Report and Detailed Report by User/SLDC as per IEGC-2023:

As per IEGC-2023, all User/SLDCs are requested to prepare and share **Flash Report** and **Detailed Report** with **NERLDC** and **NERPC** following any Grid Events. Status of submission of the same for the month of March, 2024 is shown below:



All the utilities are requested to promptly share all the necessary information such as FIR, DR, EL and Reports (Flash Report & Detailed Report) as per the specified timeline mention in the Grid Code.

Also, the complied Monthly Event Report of March 2024 attached in **Annexure B.4** and Various Non-compliance of CEA Grid standard -2010 & Grid Code -2023 are listed in the **Annexure B.7.**

Deliberation of the sub-committee

The forum noted the instances of non-submission or untimely submission of Flash report and Detailed reports by the utilities.

After detailed deliberation the forum strongly urged all the utilities to ensure timely submission of required reports and compliance with the IEGC 2023.

B.9 <u>Submission of Protection Performance Indices by Transmission Utilities:</u>

As per Regulation No. 15(6), Protection Code - Users shall submit the following protection performance indices of previous month to their respective RPC and RLDC on monthly basis for 220 kV and above (132 kV and above in NER) system by 10th of every month for previous month indices, which shall be reviewed by the RPC:

- The Dependability Index defined as $D = Nc/\ Nc+N$f
- The Security Index defined as $S = Nc\ /Nc+N$u
- The Reliability Index defined as $R = NcNc+Ni$

Where,

Nc: number of correct operations at internal power system faults

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

Nu: Number of unwanted operations.

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

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

SN	Name of Transmission Licencee	D= (Nc/Nc+Nf)	S= (Nc/Nc+Nu)	R= (Nc/Nc+Ni)	Remakrs
1	NETC	-	-	-	No bays owned by NETC
2	DoP, Nagaland	1.00	0.89	0.89	132 kV Wokha-Sanis line tripped at Wokha end due to fault 132 kV Chiempobozou – Wokha seems unwanted.
3	MePGCL	1	0.91	0.91	High Set tripping observed at Stage 4

					end of 132 kV Umtru - Umiam Stage IV (Line 1)- Disabled after the tripping

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

Deliberation of the sub-committee

NERLDC updated that AEGCL, MePTCL and NERTS have also submitted the Protection Performance Indices.

After detailed deliberation Member Secretary, NERPC directed other utilities to provide the indices before 10th of every month for previous month grid element operation.

B.10 Non-operation of auto recloser in Important Grid Elements for transient faults in March 2024:

Utilities updated as follow -

SL No	Element Name	Tripping Date and Time	Restoration Date and Time	Relay_A	Relay_B	Auto-Recloser not Operated	Remarks
1	220 kV BALIPARA - SONABIL 2	POWERGRID & AEGCL	04-03-2024 13:06	04-03-2024 15:13	02:07:00	Sonabil	DT configuration is such that on 3 ph tripping DT is sent. Forum requested AEGCL to disable this

							DT logic in compliance with NER protection Philosophy.Further, AEGCL informed the forum that end to end testing with AR testing shall be carried out in next opportunity outage.
2	220 kV BTPS - Rangia 1	17-03-2024 12:08	17-03-2024 12:44	DP,ZII,B-E	DP,ZI, B-E	Rangia	Delayed Zone 1 detection and tripping due to week fault current. So no AR operated.
3	400 kV Byrnihat - Silchar	23-03-2024 16:06	23-03-2024 17:11	DP,ZI, Y-E,FD: 39 KM	DP,ZI, Y-E, FD:170 KM	Both ends	MePTCL updated that AR goes under lock out condition due to hydraulic pressure issue after every tripping, so DT is sent to other end. Forum requested MePTCL to

							resolve the matter at the earliest. POWERGRID mentioned that the DT receipt is causing unwanted 3 pole tripping of CB at Silchar end which is causing mechanical stress on CB. Further, NERLDC mentioned that as AR at Byrnihat end is not enabled, hence, till resolution of the same, DT send may be kept in service.
4	132 kV Hailakandi - Silchar 2	23-03-2024 21:13	23-03-2024 22:00	DP, ZI, Y-E,FD:8.3 KM	DP, ZI, Y-E,FD: 24.69 KM	Hailakandi	AR failed due to CB unhealthy issue. The same has been resolved
5	132 kV Dimapur (PG) -	25-03-2024 15:38	25-03-2024 17:02	DP,ZI, B-E, FD:	DP,ZI, B-E	Kohima	

	Kohima			42.73 Kms			
6	132 kV Haflong - Jiribam	26-03-2024 01:26	26-03-2024 01:51	DP, ZI, R-E, FD: 71.554KM	DP, ZI, R-E, FD: 5.95KM	Haflong	AR attempted but line tripped for fault in reclaim time which is as per standard logic.
7	132 kV Jiribam - Pailapool	26-03-2024 01:29	26-03-2024 01:55	DP,ZI, R-Y, FD:8.84 KM	DP, ZI, R-Y, FD: 4.2km	Both ends	
8	132 kV Nirjuli-North Lakhimpur 1	26-03-2024 04:18	26-03-2024 05:11	DP, ZI, B-E, FD: 18.67 KM	DP, ZI, B-E, FD: 45 KM	Both ends	AR failed due to Check Sync fail at Nirjuli. Initial voltage was beyond sync level.
9	132 kV Nirjuli - Pare	26-03-2024 04:18	26-03-2024 05:11	DP,ZI,B-E, FD:8.35 KM,FC: 2.0KA	DP,ZI, B-E,FD:16.88 KM	Both ends	DT received at Nirjuli. NEEPCO informed that the same shall be rectified during outage.
10	132 kV Gohpur - North Lakhimpur 1	26-03-2024 05:55	26-03-2024 06:12	DP,ZI,R-E, FD: 4.1km	DP,ZI, R-E	Both ends	
11	132 kV Tenga - Khupi	26-03-2024 07:35	26-03-2024 12:25	DP,ZI, R-B-E, FD: 30km	DP,ZI, R-B-E,FD:4.9km	Khupi	

12	220 kV Agia - BTPS 1	26-03-2024 08:17	26-03-2024 08:54	DP,ZI, Y-E, FD:17.2 Km	DP,ZI, Y-E	BTPS	
13	220 kV Mawngap - New Shillong 1	26-03-2024 12:22	26-03-2024 19:31	DP,ZI, Y-E, FD: 27.82 Km	DP,ZI, Y-E	Mawngap	
14	132 kV Gohpur - North Lakhimpur 2	28-03-2024 09:19		DP,ZI, B-E (B-ph LA Blast)	R-Y-B-ph, Z-2, 96.1 km	Both Ends	
15	132 kV Dimapur - Doyang 2	29-03-2024 13:10	29-03-2024 13:31	DP, Z1,R-Y,FD: 72.6km	DP,Z1, R-Y	Doyang	
16	220 kV Byrnihat - Misa 2	31-03-2024 05:21	31-03-2024 06:12	DP,ZI,R-E, FD: 50.38km	R-G , Z1. 2.445 KA, 68.508 KMS	Byrnihat	
17	220KV-MAWNGAP-BYRNIHAT (KILLING)-1	31-03-2024 16:31	31-03-2024 17:35	DP, ZII, Y-E, FD: 70.65Km(Carrier Aided Tripping)	DP, ZI, B-E, FD: 14.4 Km	Both Ends	
18	400 kV Byrnihat - Silchar	31-03-2024 20:51	31-03-2024 22:29	DP,ZI, Y-E, FD: 68.7 km	DP,ZI, Y-E,FD: 175.11 KM	Both Ends	AR failed due to DT receipt at Silchar end

Deliberation of the sub-committee

Utilities provided updates on some points in the above table. For rest of the trippings, MS, NERPC urged the utilities to send root cause and Action Taken Report to NERPC and NERLDC through email.

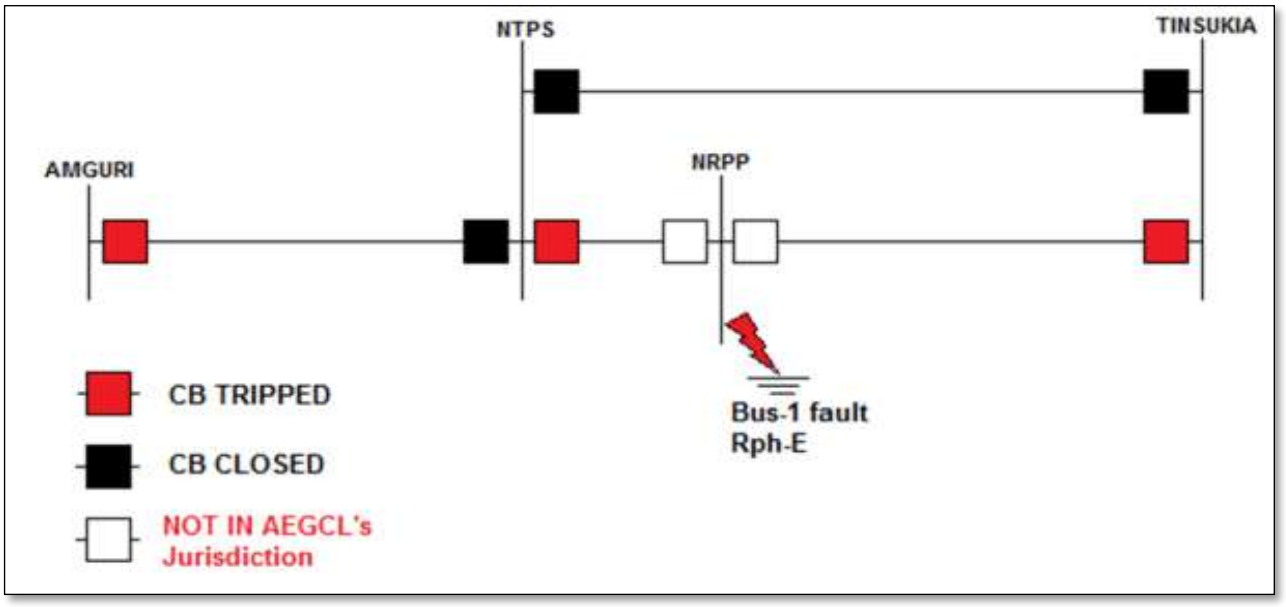
NERTS stated that in light of large number of unsuccessful auto reclosures in case of transient faults in 132kV lines 3 ph AR may be enabled for 132kV systems in a phase wise manner. He further stated that dead time for 3Ph AR may be increased to 2.5 to 3 sec to allow complete discharge of lightening flashovers.

After detailed deliberations the forum agreed that NERTS may enable 3Ph AR on 132kV line and increase the dead time to 2.5. to 3 sec on case to case and pilot basis after consultation with NERPC and NERLDC.

B.11 Grid disturbance in NRPP generating station of Assam power system on 08th March, 2024 due to non-operation of Bus Bar protection:

NRPP generating station of Assam Power system has installed capacity of 98 MW and the power gets evacuated through 220 kV NRPP-Tinsukia and 220 kV NRPP-NTPS lines.

On 08.03.2024, at 14:56 Hrs both 220kV Tinsukia-NRPP and 220 kV NTPS-NRPP lines tripped leading to blackout at NRPP generating station. Due to the above incident, running units of LRPP also tripped which resulted in total generation loss of 157 MW.



As per the detailed report received from AEGCL, R-phase conductor of 220 kV Bus-I at NRPP snapped. Also, Bus Bar protection at NRPP did not operate leading to tripping of all connected lines at NRPP generating station.

Non-operation of Bus Bar protection at NRPP is the serious concern from system stability point of view. *Same is highlighted to APGCL vide letter from NERLDC dated 04-April-2024. However, response is still awaited from the APGCL end.*

Therefore, APGCL is requested to ensure the following points:

1. Reason of non-operation of Bus Bar protection and take necessary corrective measures to avoid any unwarranted tripping in future.
2. As switching scheme of 220 kV NRPP bus is double main and transfer configuration, Uniform segregation of elements on different 220 kV buses need to be ensured to improve reliability and security of the grid.

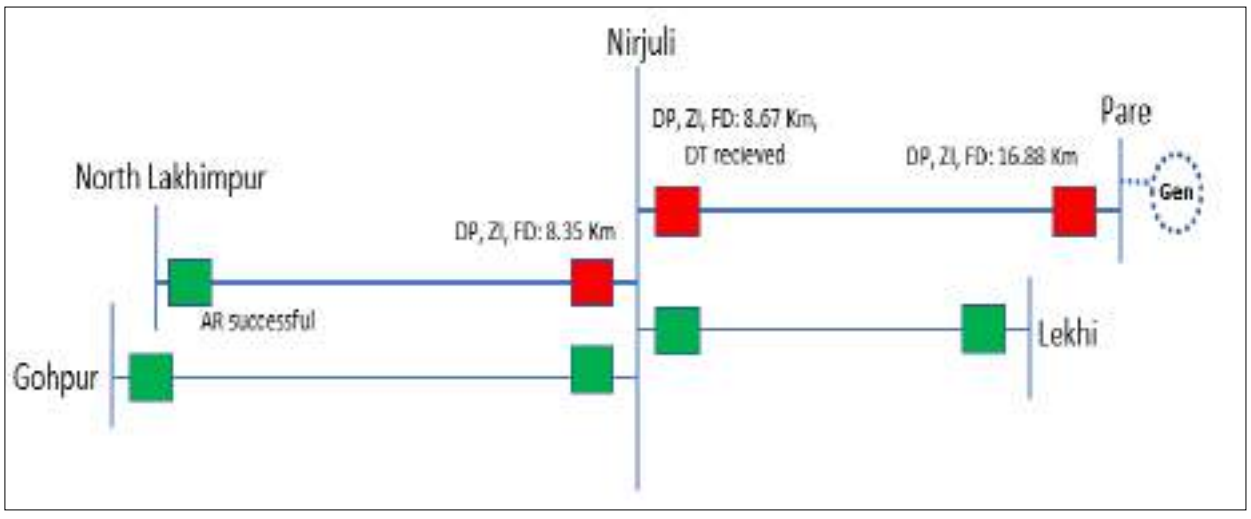
Deliberation of the sub-committee

Matter already discussed in agenda item B.4.

MS, NERPC stated that a letter will be written by NERPC secretariat to suitable authority of APGCL to look into the matter and strengthen the protection system.

B.12 Tripping of 132 kV Pare-Nirjuli and 132 kV Nirjuli-North Lakhimpur lines on 26th March, 2024

At 04:18 Hrs of 26.03.2024, 132 kV Pare-Nirjuli and 132 kV Nirjuli-North Lakhimpur Lines tripped.



The lines tripped due to ***solid fault which may be due to lightning.***

As per DR of Nirjuli end for 132 kV Pare-Nirjuli line, distance protection detected the fault in Z-1, B-E fault with a distance of 8.4 Kms from Nirjuli. A/R not operated due to DT received at Nirjuli from Pare end.

Similar type of DT signal received has been observed on 06.03.2024 at Nirjuli from 132 kV Pare end. This issue was communicated to NEEPCO vide email dated 11.03.2024 for resolving the issue. However, the issue is still persisting which is the matter of serious concern.

NEEPCO is requested to properly investigate the unwanted DT sent issue by thorough checking of PLCC end to end testing and protection scheme in coordination with PGCIL (Nirjuli) to avoid further unnecessary tripping of the line.

Deliberation of the sub-committee

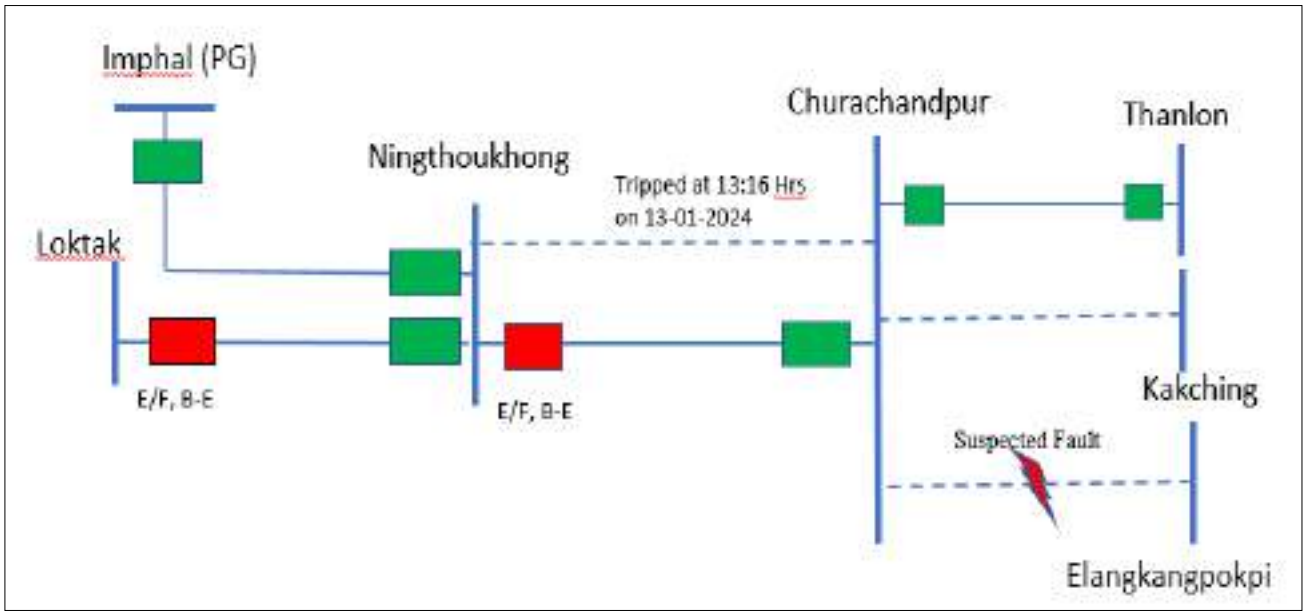
Regarding unwanted DT sent to Nirjuli from Pare end, NEEPCO stated that there is some issue with PLCC wiring and DT configuration. He further stated that a shutdown is being planned within 10 days to resolve the PLCC issue.

Forum requested NEEPCO to resolve the issue at the earliest.

Non-operation of AR at Nirjuli was due to sync. check threshold setting issue which has been resolved as informed by NERTS.

B.13 Blackout of Churachandpur and Thanlon areas of Manipur on 05-Mar-2024:

At 13:25 Hrs of 05.03.2024, 132 kV Ningthoukhong-Churachandpur II and 132 kV Loktak-Ningthoukhong lines tripped. Due to tripping of this element, Churachandpur and Thanlon areas of Manipur Power System were isolated from the grid. Load loss of 8 MW was observed.



As per DR analysis of Loktak end for 132 kV Loktak-Ningthoukhong line, B-E fault initiated at 13:25:34.259 Hrs and cleared within 1 sec on operation of backup Earth fault. Fault current of around 400 A appears in B phase.

As per information gathered from Manipur, B-phase fault was in 132 kV Churachandpur-Elangkankpokpi line which was not cleared leading to tripping of 132 kV Loktak-Ningthoukhong and 132 kV Ningthoukhong-Churachandpur II lines.

Following observations:

1. Non operation of protection system/clearing of fault from Churachandpur for 132 kV Elangkankpokpi line.
2. Non operation of Backup protection at Ningthoukong for 132 kV Churachandpur-II line which led to tripping of 132 kV Ningthoukhong Line from Loktak.

Therefore, MSPCL is requested to share the action taken at Ningthoukhong and Churachandpur to avoid such event in future.

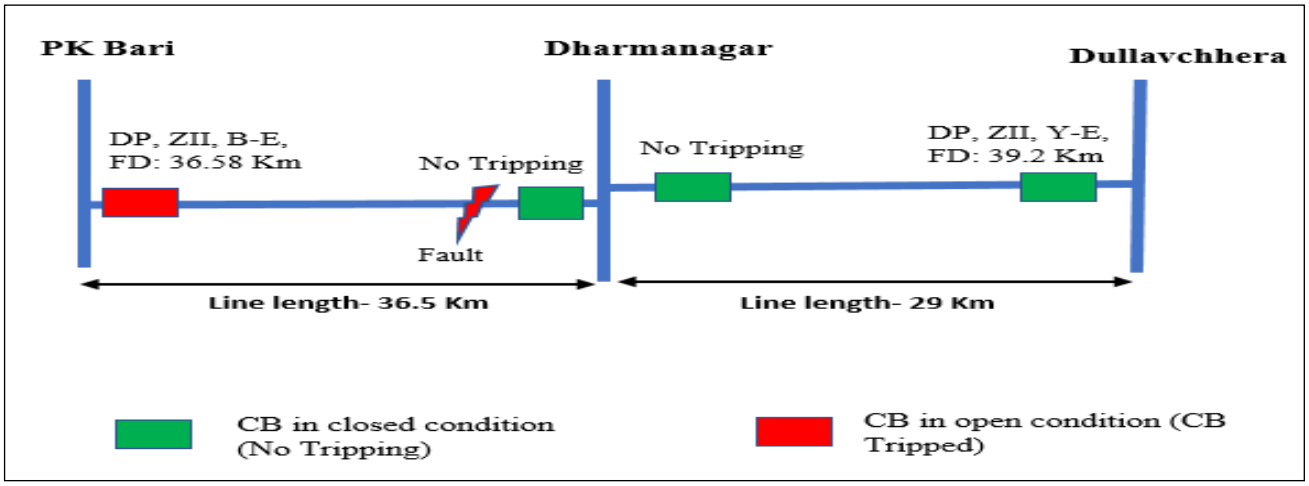
Deliberation of the sub-committee

Matter already discussed in agenda item B.4.

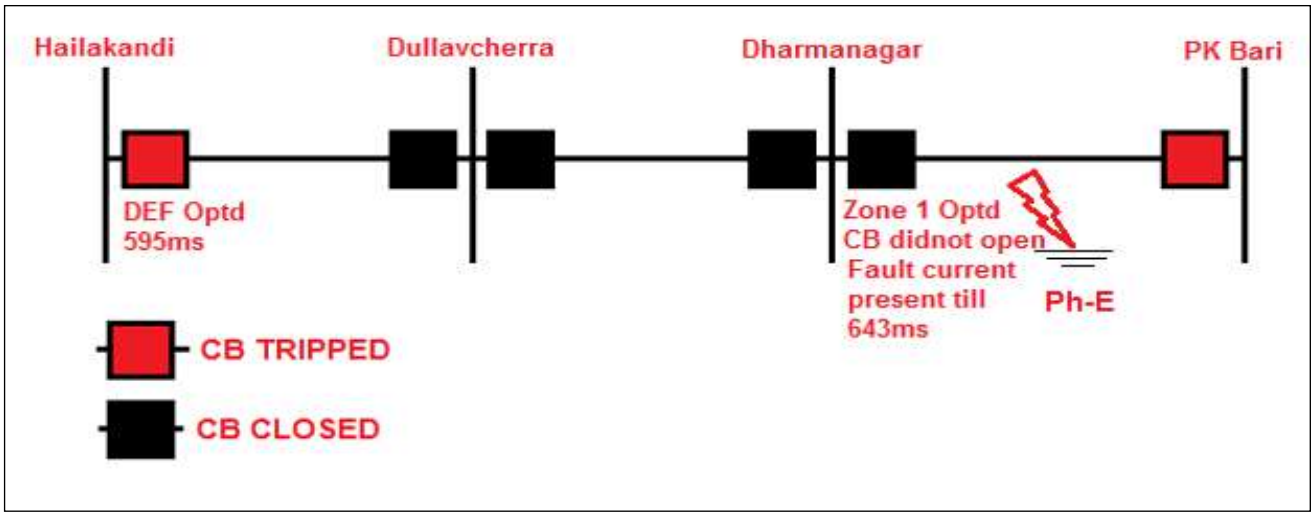
B.14 Repeated issue of the Circuit Breaker observed at Dharmanagar substation of Tripura power system on 10th and 16th March 2024:

Dharmanagar area of the Tripura power system connected with rest of the grid through 132 kV Dharmanagar - P K Bari Line & 132 kV Dharmanagar - Dullavcherra Line.

Event I on 10th Mar'24: B-E fault in 132 kV PK Bari-Dharmanagar line cleared from PK Bari end within 412 msec on operation of DP, ZII. The fault did not clear from the system due to non-opening of CB at Dharmanagar which led to clearing of fault by tripping of 132 kV Dharmnagar-Dullavcherra line from Dullavchhera end on operation of DP, ZII.



Event II on 16th Mar'24: B-phase fault in 132 kV PK Bari-Dharmanagar line and it was cleared from PK Bari end within 60 msec on operation of DP, ZI. The fault did not clear from system due to non-opening of CB at Dharmanagar (fault current persisting up to 643 msec as per DR data) even after issuance of Z-1 trip, which led to clearing of fault by tripping of 132 kV Hailakandi-Dullavcherra line from Hailakandi on DEF operation.



Repeated Issue of the non-opening of CB indicates the poor maintenance of the switchgear equipment and protection at the Dharmanagar SS of the Tripura power system.

TPTL/TSECL is requested to update the corrective action taken.

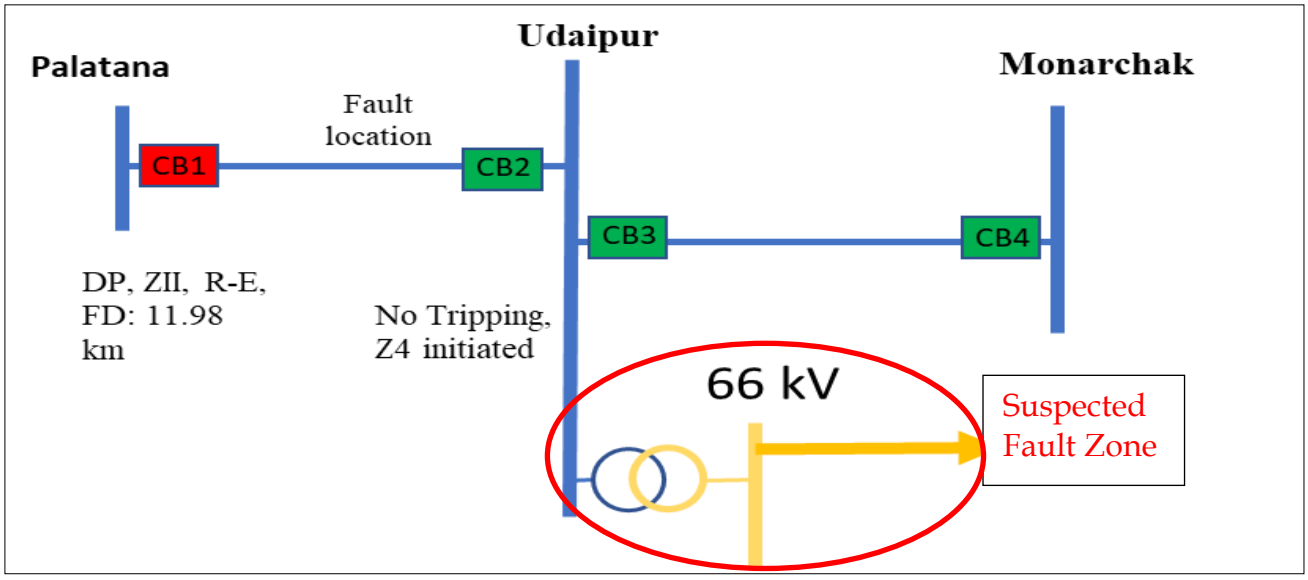
Deliberation of the sub-committee

Matter already discussed in agenda item B.4.

TSECL to replace the defective CB within one month.

B.15 Fault in downstream system of Udaipur area of Tripura power system on 31-Mar-2024:

132 kV Udaipur SS is connected through 132 kV Palatana-Udaipur & 132 kV Monarchak- Udaipur Line.



At 07:37 Hrs on 31-03-2024, 132 kV Palatana – Udaipur line tripped at Palatana end on operation of DP, ZII, R-E, FD: 11.98 Km.

However, no tripping & DP, Z4 initiation (reverse fault) at the Udaipur end indicates the fault was in the downstream of the Udaipur SS.

Therefore, TPTL/TSECL is requested to inform the root cause and remedial measures that has been taken to prevent reoccurrence of the event.

Deliberation of the sub-committee

NERPC highlighted that for downstream fault at Udaipur, CB3 should also show ZIV. Matter could not be further discussed as TSECL was not present in the meeting. MS, NERPC exhorted TSECL to provide detailed report and action taken report on the matter at the earliest to NERPC and NERLDC.

B.16 Multiple tripping at Loktak(NHPC) on 23-Mar-2024:

At 22:44 Hrs on 23-03-2024, 132 kV Loktak - Ningthoukhong Line and 132 kV Loktak - Rengpang Line.

Element Name	Relay End A	Relay End B	Analysis/Remakrs
132 kV Loktak - Ningthoukhong	Earth Fault, R-Y-B-ph	No Tripping	Tripped at Lokatk end on Backup Overcurrent (I>1 trip) after 364 msecs. Fault Current 1.3 kA & 1.2 kA observed in Y & B phases.
132 kV Loktak - Rengpang	Earth Fault	No Tripping	Loktak: As per FIR, Lline tripped due to operation of 67CX (Electromechanical Relay). Weather was windy & rainy.

Loktak & MSPCL is requested to share the root cause for the above trippings.

Deliberation of the sub-committee

Following issues were highlighted -

1. Regarding tripping of 132 kV Loktak – Ningthoukhong line, why distance protection did not pick up the fault as fault current was considerably high.
2. Regarding tripping of 132 kV Loktak –Rengpang line, why did earth fault pick up as fault was in back side and earth fault relay should be set in forward direction.

To the above issue, NHPC stated that it is not yet clear why distance protection did not operate. Also, he stated that for 132kV Loktak-Rengpang line, B/U Earth fault relay at Loktak is electromechanical type and there may be some issue with the relay.

NERLDC suggested NHPC to enable backup relay setting in main protection relay and requested to replace electromechanical relay with numerical one on priority basis.

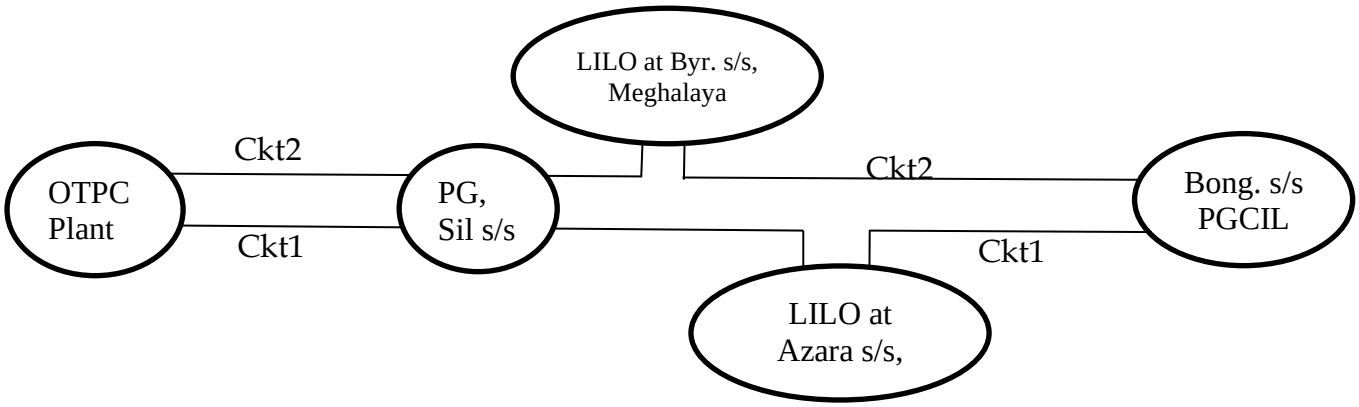
After detailed deliberations the forum strongly requested NHPC to provide the root cause analysis report to NERPC and NERLDC at the earliest.

Agenda from NETC

B.17 <u>Review of relay settings of the relays associated with NETC transmission line elements.</u>

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

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



During the last financial year (FY 2023-24), there were instances of tripping in the 400 kV D/C Palatana-Bongaigaon Transmission System due to transient faults like lightening. In some cases, the AR was successful in one end but unsuccessful in the other end. However, in some of the cases of transient fault due to lightning, AR didn't operate from both ends. List of such instances are tabulated below:

Sl. No.	**Name of line element**	**Date of event**	**Relay Details**	**Remarks**
1	400kV Palatan-Silchar line -1	26.05.2023	Silchar: M1: B-N, Z-1, 30.658 km, 6.634 kA; (M2) B-N, Z-1,28.28 km, 6.77 kA. Palatana: No indication.	AR successful at Silchar but unsuccessful at Palatana end.
2	400kV Silchar-Byrnihat	21.04.2023	Silchar: B-N, Z1,5.31 kms, 9.25 kA. Byrnihat: B-N,193.1 kms, 0.32	Tripped due to Lightening. AR didn't operate

			kA	from both ends.
3	400kV Silchar-Byrnihat	30.04.2023	Sil: M1: Z-1, Y-G, 137.9 km, 2.158 kA. M2: Z-1, Y-G,143.4 km, 2.27 kA. Brynihat End: M1: Z-1, Y-G, 75.6 km, 2.1 kA	Tripped due to Lightening. AR didn't operate from both ends.
4	400kV Silchar-Byrnihat	25.06.2023	Sil (AFAS): M1: YN, 117.91 KM, 3.03 KA, M2: Y-N, 129.51 KM, 3.00 kA Site: YN, Z-1, 118.3 KM, 2.12 kA, M2:YN, Z-1,132.9 km, 2.81 kA. DT Received. Byrnihat: YN, Z-1, 72.4 km, 2.9 kA.	Tripped due to Lightening. AR didn't operate from both ends.
5	400kV Bongaigaon-Byrnihat	02.09.2023	BNG: M1 B-N Z2 156.8 km BYR: Z1 R-N	AR successful at Byrnihat but unsuccessful at Bongaigaon.
6	400kV Silchar-Byrnihat	10.09.2023	Silchar: M1: Y-G ph., Z-1, 148.7 km M2: Y-G ph., Z-1, 152.23 km, 1.75 KA. Byr: M1: Y-G ph., Z-3, 260.1 km M2: Y-G ph., Z-1, 171.7 km, 1.358 KA.	Tripped due to Lightening. AR successful at Byrnihat but unsuccessful at Silchar
7	400kV Silchar-Palatana line - 2	25.03.2024	Silchar: M1: B-N, Z1, 35.269 km, 5.12 kA M2: B-N, Z1, 34.147 km, 4.87	AR successful at Silchar end but unsuccessful at Palatana end.

			kA Palatana: No indication	
8	400kV Silchar-Palatana line - 2	30.03.2024	Silchar: M1: Y-N, 167.19 km, 1.85 kA Palatana: Y-N, Z1, 65.67 km, 3.8 kA	AR successful at Silchar end but unsuccessful at Palatana end.

In view of the above, we propose a comprehensive review of the relay setting arrangements and implementation of the modified setting in conformity with the actual line parameters at all the connecting substations in order to arrest line tripping in transient fault and thereby improving system reliability.

Deliberation of the sub-committee

NETC informed that they are facing the issue large deviation in the fault calculated by relay and actual fault location.

AEGCL stated that this may be due to Mutual compensation effect.

The forum asked M/s PRDC to take line parameter details and suggest relay settings accordingly to the NETC

MS, NERPC further stated that in case of further tripping, NETC to coordinate with AEGCL for assistance in faut distance calculation.

B.18 Review to the process of obtaining the CONSENT from NETC for the first attempt for line charging in the event of tripping of NETC line elements.

As per the prevailing practice, in the event of tripping of NETC line elements, first charging attempt of the subject line is being taken without obtaining consent of NETC. If the subject line does not stand after the first charging attempt, then it shall be switch on to fault.

However, in the event of recent tripping of NETC line elements due to transient fault, first charging attempts are being taken only after obtaining consent through email from NETC. It may be noted that NETC does not own any bays or substations of the transmission line elements and thus, it does not own control rooms for operation of the 400 kV D/C Palatana-Bongaigaon Transmission System. Therefore, in case of tripping of the line elements in odd hours, it poses

difficulty to provide consent for the first charging attempt of the line. Eventually, in some cases, this is leading to maximum outage duration the subject line thereby affecting the Grid system.

In view of the above, NETC proposes to review the procedure being followed for availing the CONSENT from NETC for the first charging attempt in case of tripping and allow to attempt for first charging attempt by availing CONSENT from connected substation only, with information to NETC.

Deliberation of the sub-committee

After detailed deliberation the forum requested NETC to establish a control center for its assets in compliance with IEGC 2024

C. FOLLOW–UP AGENDA ITEMS

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

As per the Direction of Hon'ble commission related to the Petition No 198/MP/2020, 259/MP/2020, 535/MP/2020, 539/MP/2020 and 540/MP/2020, respective respondents has to submit the **monthly/quarterly progress report** of the action plan prepared by the respective respondents in consultation with the Petitioner (i.e. NERLDC) to NERPC.

Order dated	**Petition No**	**Respondent**
08-Nov-2023	198/MP/2020	DoP, Arunachal Pradesh
	259/MP/2020	DoP, Nagaland
	539/MP/2020	MSPCL
27-Oct-2023	535/MP/2020	TPTL/TSECL
	540/MP/2020	P&ED, Mizoram

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

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

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

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

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

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

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

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

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

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

In 65th PCCM, NERLDC updated as follow –

State/Utility	Nomination of Nodal officers (at the level of SE & above)	Whether List of substations identified by NERLDC/State?	Whether Action plan with timeline for implementation submitted?	Monthly Work progress report submitted?
DoP Arunachal Pradesh	No	Yes	Yes	Not submitted
DoP Nagaland	yes	Yes	Yes	Feb'24
DoP Mizoram	Yes (SE, MSLDC)	Yes	Yes	Not submitted
TPTL/TSECL	Yes (AGM, TPTL)	Yes	Yes	Not submitted

Forum noted above and directed the concerned State utilities to provide the nominations (if not provided) and monthly work progress report from December 2023 to February 2024 to NERPC within 15 days. The quarterly report will be submitted by NERPC to CERC as compliance to above petition. Forum also requested NERLDC to provide the Action plan report and monthly progress report (from December 2023 to February 2024 received from State) to NERPC.

Deliberation of the sub-committee

MS, NERPC exhorted DoP Arunachal Pradesh to nominate the nodal officer at the earliest. He further requested all the States to submit monthly work progress report till March'24 to NERPC and NERLDC within one week.

He further stated that NERPC will submit the quarterly work progress report to CERC very soon.

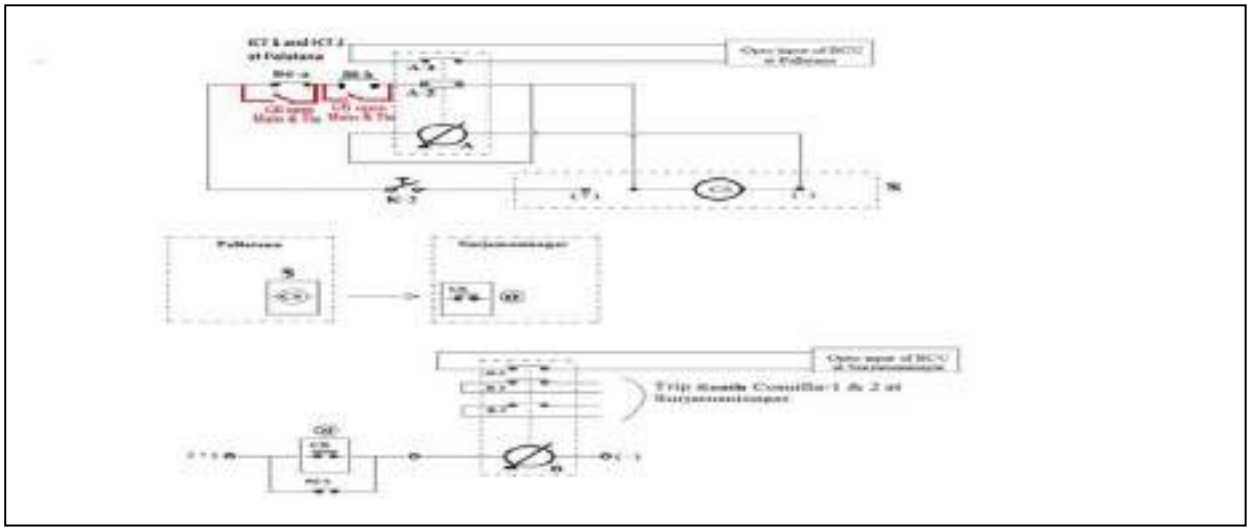
C.2 Modification of SPS at Palatana due to outage of both the ICT's:

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

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

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

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



In 65th PCCM, the forum noted the modification in SPS as suggested by NERLDC. NERTS stated that for CB status BCU output contacts may be used. OTPC stated that they will study the modifications as suggested by NERLDC and NERTS and will implement the same accordingly.

Deliberation of the sub-committee

OTPC stated that it is being considered internally to continue with the existing system wherein 86 relay status is bypassed manually before taking any ICT under shutdown.

NERLDC stated that with the scheme as proposed by them manual intervention will not be required and SPS failure due to manual error will be alleviated.

NERTS suggested that zero power flow signal may be configured in BCU which may be taken as input signal in the SPS.

After detailed deliberations the forum request OTPC to finalize a solution in coordination with NERLDC and NERTS.

C.3 Modification required in the logic of the SPS Related to the tripping of Bus Reactors at 400 kV S M Nagar (ISTS) and 400 kV P K Bari (ISTS):

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

Tripping of both circuits of 400 kV SM Nagar-PK Bari D/C will trip 2 x 125 MVAR Bus Reactors at SM Nagar (ISTS) to prevent under voltage situation at S M Nagar

(ISTS) and nearby areas of Tripura Power system. Logic will also operate in case of the outage of any one circuit and tripping of the other circuit.

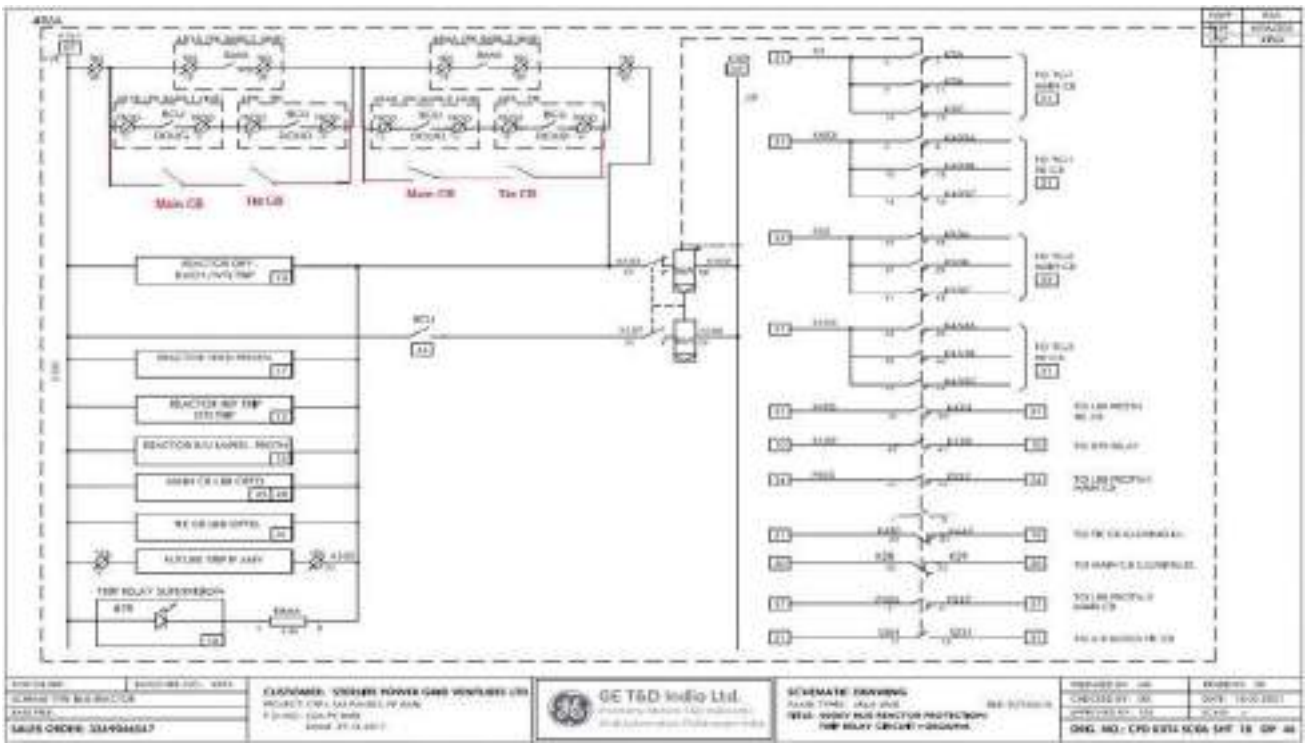
SPS: Related to the tripping of Bus Reactors at 400 kV P K Bari (ISTS)

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

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

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

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



In 65th PCCM, the forum noted the modification in SPS as suggested by NERLDC and requested NERLDC to coordinate with NTL and modify the SPS accordingly.

Deliberation of the sub-committee

NTL updated that the required modifications in the SPS has been completed.

Sub-committee noted as above.

C.4 Requirement of SPS for generation evacuation from Leshka HEP (MePGCL)

Reporting Party: MePGCL

Classification: SPS related to safe evacuation of Generation

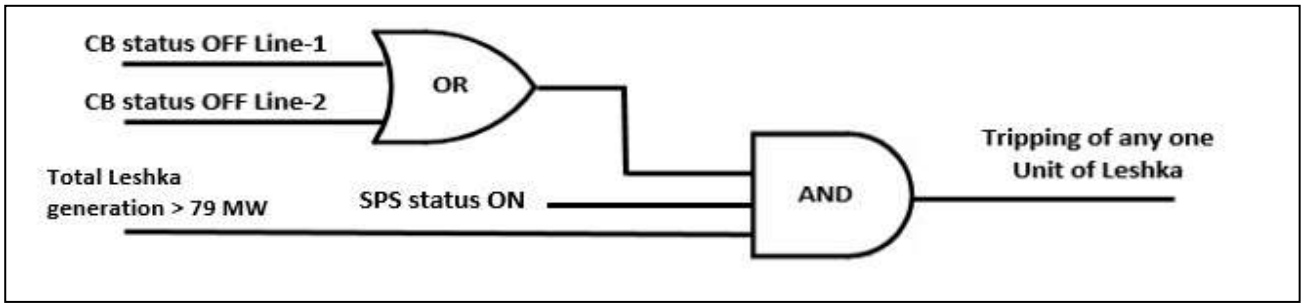
Operation: Generation Rejection

Scheme-

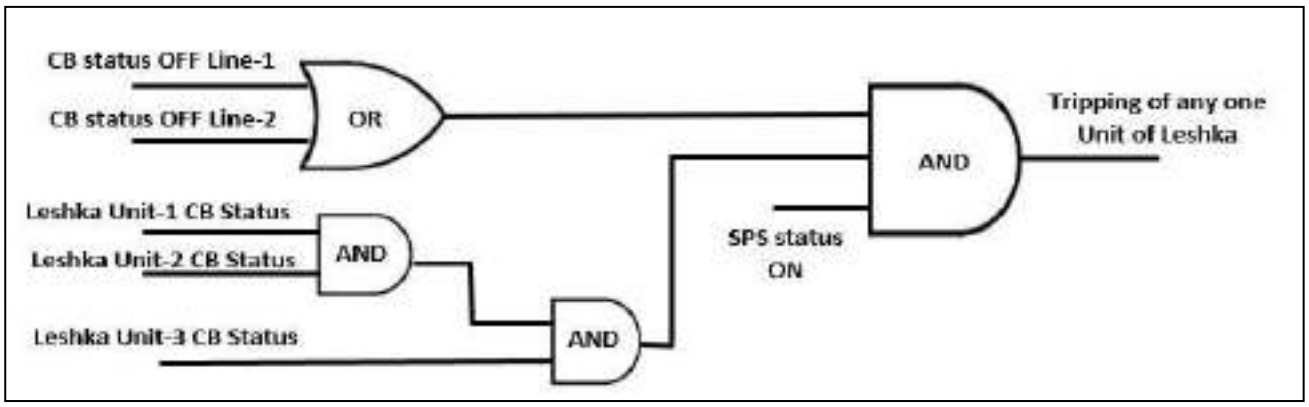
1. Right now Leshka with an installed capacity of 42 X 3=126 MW connected with rest of Grid via 132 kV Leshka-Khlieriat (MePTCL) D/C Line. If one circuit of 132 kV Leshka – Khliehriat (MePTCL) D/C trips/goes under outage, the full generation could not be evacuated via a single line of 132 kV Leshka –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

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

The schematics of the SPS is attached for reference.



OR



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

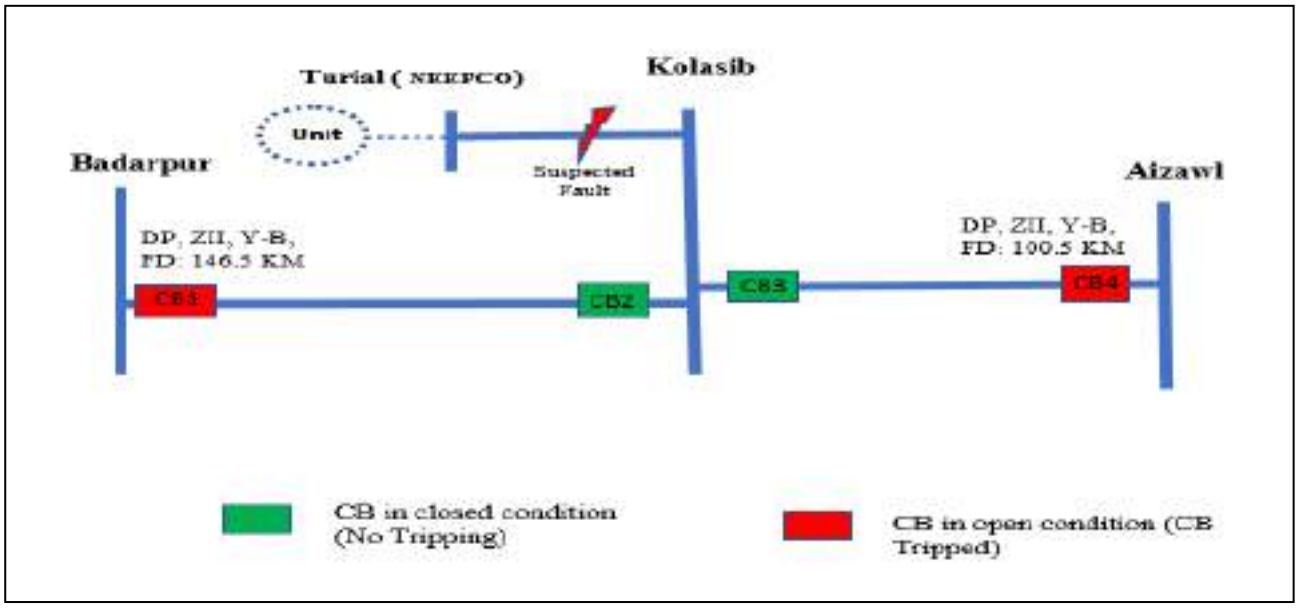
In 65th PCCM, MePGCL noted the SPS scheme as suggested by NERLDC and stated that the same will be put up for approval of higher authority.

Deliberation of the sub-committee

MePGCL updated that approval will be obtained by May'24.

C.5 Grid Disturbance at Kolasib area of Mizoram power system on 22-02-2024:

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



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

132 kV Badarpur-Kolasib lines from remote end on operation of DP, ZIII which impacts the ISTS node

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

In 65th PCCM, Mizoram stated that root cause of tripping has not been ascertained yet and assured that complete analysis of the event will be done soon. The forum strongly urged Mizoram to do necessary analysis and send the report to NERPC and NERLDC at the earliest.

Deliberation of the sub-committee

Mizoram updated that the detailed report has been submitted to NERLDC and trip coil issue at Kolasib has been resolved.

The forum also noted that 3rd Party protection audit may be conducted at Kolasib SS at the earliest.

C.6 Regarding usage of dark fiber for Line Differential Function:

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

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

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

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

In 65th PCCM,the forum agreed in-principle for provision of one pair of fiber for line differential protection. Further the forum requested NERTS and concerned States to work out the modalities and bring the same in next PCC meeting.

Deliberation of the sub-committee

Assam consented for providing 1 pair dark fiber in the LILO portion of 132kV Kumarghat-Karimganj line.

TSECL was not present in the meeting.

C.7 Mapping of SPS in the SCADA Display for real time monitoring of all SPS:

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

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

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

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

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

At present, there are 18 numbers of SPS under operation and 2 numbers of SPS under implementation as listed tabulated below

SPS mapping status as update by utilities in 66th PCCM

Sl. No.	SPS under operation	Long term measures	SPS mapping status in SCADA (YES/No)
1	**Tripping of 400kV Palatana-Silchar D/C-** when both modules of Palatana are in service causes tripping of HV side breaker of 2x125 MVA, 400/132 kV ICT at Palatana	After commissioning of 400 kV Palatana - Surajmaninagar line-1, there is no requirement of this SPS and hence, it is to be kept OFF. However, the SPS at Palatana is to be kept ON during shut down of 400 kV	OTPC to do shortly

		Palatana-Surajmaninagar(ISTS) line-1	
2	Reverse power flow more than 60 MW from LV to HV side of 2 X 315 MVA, 400/220 kV Azara ICTs causes tripping of 400/220 kV, 2x315 MVA ICTs at Azara (AEGCL)	After upgradation of 220 kV BTPS-Salakati D/C lines. (Need to disable after system study of the present condition)	AEGCL to do shortly
3	Tripping of 132 kV Umiam Stg-I to Umiam Stg-III D/C lines causes instantaneous load shedding near Mawphlang area	After commissioning of 220 kV Killing-Mawngap D/C lines and re-conductoring of 132kV Lumshnong-Panchgram line, SPS is kept OFF	
4	SPS related to overloading of 220kV BTPS- Salakati D/C- Tripping of 220kV Agia – Boko and 220kV Agia – Mirza	After upgradation of 220 kV BTPS-Salakati D/C lines, this SPS is kept OFF	
5	**Related to the safe evacuation of power from BgTPP(NTPC) generation -** BGTPP generation reduction to 600 MW	-	SPS is ON. NTPC assured to do mapping shortly.
6	**Related to Generation evacuation from Monarchak(NEEPCO) Power Plant -** Tripping of STG at Monarchak under outage of any one circuit of 132 kV Monarchak – Rokhia line & 132 kV Monarchak- Udaipur	Commissioning of 132 kV Monarchak-Surajmaninagar line	
7	Outage of 220 kV BTPS (Salakati) – Rangia I & II - load shedding	Commissioning of 400 kV Rangia SS and LILO of 400 kV Bongaigaon-Balipara 1 & 2 Line at Rangia.	

8	**Related to the tripping of Bus Reactors at 400 kV S M Nagar (ISTS)** - Tripping of both circuits of 400 kV SM Nagar-PK Bari D/C will trip 2 x 125 MVAR Bus Reactors at SM Nagar (ISTS) to prevent under voltage situation	-	NTL assured to do by 15th May'24.
9	**Related to the tripping of Bus Reactors at 400 kV P K Bari (ISTS)** - Tripping of both circuits of 400kV PK Bari (ISTS) – Silchar(PG) D/C will trip 2 x 125 MVAR Bus Reactors at P K Bari(ISTS) to prevent under voltage situation	-	NTL assured to do by 15th May'24.
10	**Related to the tripping of Bus Reactors at 400 kV Imphal (PG)** - Tripping of 400 kV New Kohima – Imphal D/C during outage of 400 kV Silchar – Imphal D/C will lead to the tripping of 125 MVAR and 80 MVAR Bus Reactor at Imphal(PG)	-	NERTS assured to do shortly.
11	**Related to Outage of any one of the 400/132kV 2x360MVA ICTs at Panyor Lower Hydro Power Station** - Disconnection of One Unit of Panyor (135 MW) and One Unit of Pare (55 MW)	After restoration of 132 kV Panyor -Itanagar & 132 kV Panyor -Pare line (expected by 31st Mar'24)	
12	**SPS related to outage of 220 kV Azara-Sarusajai DC/220 kV Misa-Samaguri DC** - **1) On tripping of 220 kV Azara-Sarusajai D/C:** 140-150 MW load disconnection is to be done at Sarusajai and Kahilipara areas **2) On tripping of 220 kV Misa-Samaguri DC:** Load reduction of 50-	Commissioning of 400 kV Sonapur Substation. LILO of 400 kV Bongaigaon-Byrnihat Line at Sonapur.	

	60 MW at Samaguri area		
13	**SPS related to the outage of 132 kV Panyor HEP-Ziro Line** - Tripping of 132 kV Panyor-Ziro will cause disconnection of 33kV Load at Ziro	Commissioning of 132 kV Khupi - Along Link/220 kV AGBPS-Namsai D/C	
14	Related to outage of any one circuit of 132 kV Dimapur(PG)- Dimapur(NA) D/C	Reconductoring of 132 kV Dimapur(PG)- Dimapur(NA) D/C	
15	Related to outage of any one circuit of 220 kV Balipara-Sonabil D/C	Reconductoring of 220 kV Balipara-Sonabil D/C lines with higher ampacity and Utilisation of 2 X 160 MVA ICTs at Balipara	
16	**Related to Outage of 400 kV Palatana – Surajmani Nagar line (charged at 132 kV)** - Tripping of 400 kV SM Nagar – Comilla D/C (charged at 132 kV) during outage of 400 kV Palatana – SM Nagar(TSECL) line (charged at 132 kV)	Upgradation of 132 kV Surajmaninagar(TSECL) to 400 kV	
17	**Related to Outage of both 400/132 kV, 2x125 MVA ICTs at Palatana** - Entire load disconnection of South Comilla by way of tripping of 132kV SM Nagar-South Comilla D/C	Upgradation of 132 kV Surajmaninagar(TSECL) to 400 kV	
18	Related to the outage of any one circuit of the 132 KV Khliehriat (PG)-Khliehriat D/C line	Reconductoring of 132 KV Khliehriat (PG)-Khliehriat D/C line	Meghalaya to do shortly

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

In 65th PCCM, NERLDC gave a ppt presentation on the guideline on interfacing requirement as approved by CERC. Forum noted the guidelines and requested the concerned stakeholders to take necessary measures to ensure mapping of SPS signals in SCADA for real time monitoring.

Utilities updated as above

C.8 Mock testing of the System Protection Scheme (SPS) of the NER:

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

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

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

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

In 65th PCCM, AEGCL updated that required shutdown has been planned on 7th April to carry out the SPS testing

Deliberation of the sub-committee

AEGCL stated that APDCL will give the consent for shutdown only after 7th May. The mock testing will be done accordingly.

C.9 Status on remedial measures actions on Non-operation of auto recloser in Important Grid Elements for transient faults occurred in last few four months:

As updated in 66th PCCM

Sl No	Element Name	Time	Relay End1	Relay End2	A/R not Operated	Remarks from Utility(66th PCCM)
1	220 kV NTPS - Tinsukia 1 Line	26-10-2023 16:37	DP,Z1,Earth fault,39km	B-Eph, Z-1, LA burst	No details provided	Planning completed, Implementation by May'24.
2	132 kV Agartala - Surajmaninagar 2 Line	17-11-2023 15:10	DP,ZI,Y-B,FD:5.81 km, AR successful	DP,ZI,R-Y,FD:11.98 KM	Surajmani nagar	Will be implemented by May'24.
3	220 kV Mariani (AEGCL) - Samaguri Line	29-11-2023 15:10	DP, ZI, B-E	DP, ZI, B-E, FD: 16 km	Samaguri	Panel retrofitting at Mariani under PSDF. AR will be enabled within 2 months, by June'24

Sl No	Element Name	Time	Relay End1	Relay End2	A/R not Operated	Remarks from Utility
4	132 kV Along-Pasighat Line	01-01-2024 04:48	DP, ZI, R-E, FD: 47.52 Km	DP, ZI, R-E, FD: 19.57 Km	Both ends	AS updated in 65th PCCM, CB spring charging motor issue at Along SS, to be rectified by March'24. DoP Ar. Padesh absent in 66th PCCM

5	220 kV Karbi Langpi - Sarusajai 2 Line	01-01-2024 11:41	DP, ZI, B-E, FD: 36.33 Km, No DR submitted	DP, ZI, B-E, FD: 21.3 Km	Both ends	AR not configured at Karbi Langpi. Will visit shortly and configure the same.
6	132 kV Balipara - Tenga Line	04-01-2024 22:51	DP, ZI, R-Y, FD: 40.36 Km	DP, ZI, R-Y, FD: 37.30 Km	Both ends	Single phase AR enabled, but 3 phasefaults occurred. Three phase AR to be enabled by March'24
7	220 kV AGBPP-Mariani(PG) Line	12-12-2023 12:29	DP,ZI,B-E,FD: 44.9 Km, *(No DR submitted)*	DP,ZI,B-E,FD: 110.9 KM, A/R successful	AGBPP	No DR available to analyze the fault, However AR is functional.

SL No	**Element Name**	**Tripping Date and Time**	**Relay Details_A**	**Relay Details_B**	**AR not Operated**	**Remarks from utility (66th PCCM)**
8	220 kV Amguri - NTPS Line	02-02-2024 09:51	DP, ZI, B-E,FD: 81.89km	DP, ZI, B-E	Amguri & NTPS	AR not configured at NTPS end, so kept off at Amguri end. To be configured within 2 months.
9	132 kV Dimapur - Imphal Line	06-02-2024 21:01	DP, ZI, Y-E, FD:17.02km (AR Unsuccess	DP, ZII, Y-E, FD: 149.5km (Carrier Aided	Imphal	Done

			ful)	tripping)		
10	220 kV Samaguri - Sonabil 2 Line	08-02-2024 05:37	DP, ZI, Y-E, FD: 10.4 Kms	DP, ZI, Y-E, FD:45.8km	Both ends	AR configuration not yet done. Shutdown required. To be done by next PCCM.
11	132 kV Roing - Pasighat Line	21-02-2024 21:44	DP, ZI, Y-B, AR Sucessful	DP, ZII, Y-B,FD:95KM	Pasighat (out of service)	Completed by NERTS
12	220 kV Byrnihat - Misa 2 Line	23-02-2024 04:39	DP,ZI, Y-E, FD: 59.54 Km	DP,ZI, Y-E, FD: 81.019km (AR Successful)	Byrnihat	OEM to arrive in 1st week of May to resolve the issue.
13	220 kV Byrnihat - Misa 1 Line	26-02-2024 06:41	DP, ZI, R-E, FD: 55.27 Kms	DP,ZI, R-E, FD: 61.69 km	Both Ends	Same as 12
14	220 kV Kopili - Misa 1 Line	27-02-2024 12:09	DP,ZI,B-E , AR not operated	DP,ZII,B-E,FD: 53.14KM (Carrier Aided Tripping), (AR Unsuccessful)	Kopili	Resolved

Sub-committee noted as above.

C.10 132 kV Kumarghat - P.K. Bari issue

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

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

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

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

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

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

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

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

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

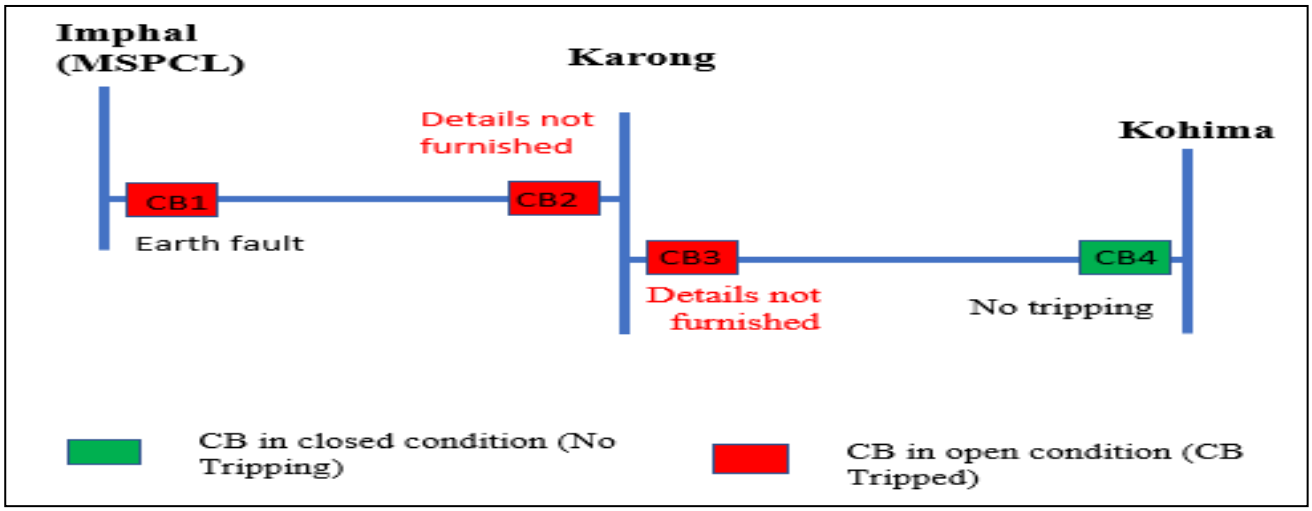
In 65th PCCM, TSECL updated that shutdown of the PK Bari-Dharmanagar line is scheduled in March'24, required work will be carried out during the shutdown.

Deliberation of the sub-committee

TSECL was absent in the meeting.

C.11 Grid Disturbance at Karong area of Manipur power system on 28-02-2024:

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



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

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

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

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

In 65th PCCM, MSPCL stated that root cause of the problem is blasting of CT at Imphal substation. Further he stated that maloperation of CB3 (as shown in the picture above) could not be analyzed as Karong substation lies in the buffer zone and reachability to the substation is severely hampered.

Forum noted the above points and urged MSPCL to undertake complete analysis at the earliest and share the report to NERPC/NERLDC.

Deliberation of the sub-committee

Manipur was absent in the meeting.

C.12 Pending Line Diff Relay issues in 132kV feeder:

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

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

Status as per 65th PCCM -

Sl. No	Feeder	Remedial measures	Last update (64th PCCM)	Latest update (65th PCCM)
1	132kV Aizwal – Luangmual	CT PT wiring need to be checked at Lunagmual end	Mizoram stated that CT PT wiring was checked but no problem was identified. He requested NERTS for assistance in next round of inspection	Shutdown is scheduled next Saturday to carry out the necessary work. Mizoram to coordinate with NERTS to carry out the work.
2	132 kV Haflong - Haflong feeder	CT wiring needs to be checked and modified	AEGCL stated that shutdown has been planned for next week for required checking and rectification work	Shutdown planned on 28th March'24

Deliberation of the sub-committee

Issues resolved.

C.13 PLCC issues follow up:

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

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

b. 400 kV Mariani Kohima Ckt #2 - For 400 kV Mariani-Kohima Ckt-2, ABB make PLCC Model no-ETL41 is installed at both ends. PLCC panels at both ends are

owned by KMTL. At Mariani end, for PLCC Ch#1, alarm is persisting in P4LA card. KMTL had previously deputed service engineer for rectification of the issue in Oct 2022.The issue was resolved in Oct 2022. However, the same issue had resurfaced again from 24th August 2023. Repeated communication has been sent to KMTL to resolve the issue. However, rectification action is still pending.

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

Update as provided by utilities in 66th PCCM

Sl. No	Line	Utility	Update
1	132 kV Dimapur-Kohima	DoP Nagaland	As per 65th PCCM DPR, for DTPC installation, to be prepared by March'24. DoP Nagaland was absent,so no further update.
2	132 kV Nirhuli-Lekhi	DoP Ar. Pradesh	NERTS stated that one spare PLCC is available. Availability of WT and CVT to be confirmed with DoP Arunachal Pradesh but DoP Arunachal Pradesh was absent.
3	132 kV Melriat-Zemabawk	Mizoram	NERTS updated that PLCC is available, Mizoram stated that order has been issued for WT and CVT.
4	400 kV Mariani-Kohima ckt 2		KMTL was not present for update.
5	132 kV Roing-Pashighat	DoP Ar. Pradesh	DoP Ar. Pradesh not present in the meeting.

MS, NERPC stated that a letter will be written to KMTL by NERPC secretariat regarding their regular absence in the PCC meetings.

Sub-committee noted as above.

D. ITEMS FOR STATUS UPDATE

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

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

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

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

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

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

Status as updated in 66th PCCM

Sl no	State	Important Transmission lines where AR has to be enabled at the earliest	Status (65th PCCM)	Latest status
1.	Arunachal Pradesh	132kV Balipara-Tenga, 132kV Ziro-Daporijo-Along-Pashighat link	PLCC implementation under PSDF underway. SPAR have been enabled on the lines without PLCC 3-Ph AR will be enabled by March'24.	Absent
2.	Assam	All 220kV and 132kV lines	220 kV bays Work to be completed except for some bays at Kathalguri 132 kV bays All work to be	For 220kV Some bays at Tinsukia, NTPS and Kathalguri remaining, to be done soon

			completed by June'24	For 132kV bays Testing and enabling of AR is being done gradually, to be completed by Jne'24
3.	Manipur	132kV Imphal-Ningthounkong	DPR preparation underway, to be prepared by March'24	Absent
4.	Meghalaya	Annexure (D.1)	August'24. Forum requested Meghalaya to provide monthly work progress report(around 25 number of 132kV line)	By August'24, will share the work progress report shortly
5.	Tripura	132kV Agartala-S M Nagar (TSECL), 132kV Agartal-Rokhia DC, 132kV, 132kV Agartala-Budhjungnagar	To be done during internal audit.	Absent

Sub-committee noted as above

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

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

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

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

Status as updated in 66th PCCM

Name of utility	**Last updated status (65th PCCM)**	**Latest status**
AEGCL	DPR sent.	AEGCL updated that PSDF

	AEGCL requested NEPRC to take up with MoP regarding expediting PSDF funding for LDP.	monoring group has suspended funding for LDP for 1 year. AEGCL requested MS, NERPC to take up with NPC, CEA to provide funding for the same considering the special case of NER
MSPCL	DPR under preparation, to be submitted within one month.	Absent
MePTCL	LDP operation for 9 feeders. For Neighrims-NEHU line, waiting for dark fiber. For other lines, OPGW not available commissioned after OPGW link is established. (**annexure D.2**) 7 Feeder operational for rest OPGW work is pending OPGW to be installed on 16 lines. LDP will be enabled after that.	Regarding OPGW installation, MePTCL updated that DPR is being prepared for inclusion in reliable communication scheme. For NEHU-NEighrims line, fiber has to be laid by PowerGrid NERPSIP.
P&ED Mizoram	Lines identified 132kV Khamzawl - Khawiva. DPR being revised. Mizoram requested for assistance in preparation of DPR. Forum requested Assam to provide assistance to Mizoram in this regard.	Mizoram stated that DPR is under preparation assistance of Assam is required. Assam stated that no communication form Mizoram yet. Forum asked Mizoram to coordinate with Assam
DoP Nagaland	LDP Doyang-Sanis line, LDR to be installed by NEEPCO. NEEPCO updated that LDR has been collected, commissioning target is April'24. However, testing has to be done to ensure healthiness of the line.	NEEPCO stated that LDR is available with NEEPCO, however, healthiness of the OPGW link on the line has to be checked first. Forum asked DoP Nagaland to coordinate with NEEPCO in

		this regard
TSECL	132kV 79 Tilla-Budhjungnagar. DPR to be prepared. Cost estimate submitted to TIDC to arrange for ADB funding. TIDC approval is still awaited for fund.	Absent

Utilities may update

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

Status as updated in the 66th PCCM:

Sl No	Details of the events(outage)	Remedial action suggested	Name of the utility & previous update	Latest status
1.	132 kV Balipara-Tenga line in May and June	Carrier aided inter-tripping to be implemented for 132kV Balipara-Tenga-Khupi at the earliest (PLCC has to be installed on the link. Under consideration of the higher authorities)	DoP, Arunachal Pradesh. PLCC panels received. For further work PSDF payment issue. Matter to be taken up with PSDF	Absent
2.	132 kV DoyangMokokchung line 132 kV Mokokchung - Mokochung (DoP, Nagaland) D/C lines on 30th July	Carrier inter-trip for 132kV DHEP-Mokokchung to be implemented by DoP Nagaland (NO PLCC on the line. Matter under consideration of Higher authorities)	DoP Nagaland (DPR is under preparation for PLCC, by March'24	Absent
3.	Leshka-Khleihriat DC multiple tripping in April to September	TLSA installation along the line to be done by MePTCL	MePTCL (DPR submitted, Approval pending.)	No communication yet form PSDF on the matter
4.	132 kV Loktak-Jiribam line, 132 kV Loktak-Imphalline,132 kV Loktak-Ningthoukhong line, 132 kV Loktak-Rengpang line &Loktak	> 5MVA TRAFO (Aux. Transformer) to be repaired ->5MVA Auxiliary TRAFO panel to be repaired by NHPC	NHPC Tender awarded, Order placed, manufacturing underway.	Same status

	Units 1,2 and 3 on 3rdAug			
5.	Grid Disturbance at Loktak HEP on 03rd Aug'22	NHPC-Loktak informed that LBB has been included under R&U scheme and the same shall be commissioned by Mar'23	NHPC (LBB to be commissioned under R&U project) Renovation would start in Nov.'24 and to be completed by Oct.'25. Forum stressed to take LBB on priority.	Same status, Forum requested to expedite it
8.	Outage of 220 KV Bus Bar Protection Scheme at 400/220/132 KV Killing SS	Bus-Bar protection of 220kV bus at Killing SS	MePTCL Order given to ABB. Visit of OEM next week. To be completed by April'24	BBR defective. Order placed in Oct'23, will arrive in around 7 months, i.e. by May or June'24
10.	Non-operation of AR for various lines at Byrnihaat end on 25th and 26th June'23	Rectification of PLCC issues by MePTCL Consultation with OEM underway for resolution	MePTCL Visit of OEM next week. To be completed by April'24	By May'24
11.	Tripping of 132kV Kahilipara- Sarusajai 1, 2 and 3 line, 132kV Kahilipara Main bus 1, 132kV Kahilipara transfer Bus 1 and 132kV Kahilipara-Kamalpur line on 2.08.2021	BB protection to be implemented at Kahilipara with procurement of 5 core CTs	AEGCL DPR is under preparation for PSDF. CT under procurement, to be completed by end of this year	Same status
13.	AR issue at Gohpur end for 132kV Nirjuli-Gohpur line	Panel replacement underway	AEGCL - By April'24	By May'24
14.	Non-operation of AR at Doyang HEP	Pneumatic CBs to be replaced	NEEPCO- August 2024	Auust'24

Sub-committee noted as above

DATE AND VENUE OF NEXT PROTECTION SUB- COMMITTEE MEETING

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

****

Annexure-I

List of Participants in the 66th PCC Meeting held on 23.04.2024

SN	Name & Designation	Organization	Contact No.
	-	Ar. Pradesh	-
1	Sh. Abhishek Kalita, Dy.Mgr, AEGCL	Assam	08486213068
2	Sh. Safir Ahmed, Dy.Mgr, AEGCL	Assam	09859472631
	-	Manipur	-
3	Sh. Lalremruata Sailo, JE	Mizoram	09612614372
4	Sh. Lalawmpuia Chawngthu, AE	Mizoram	08730843706
5	Sh. M.Mairom, EE	Meghalaya	08259904575
6	Sh. A.G.Tham, AEE, MePTCL	Meghalaya	09774664034
7	Sh. A.Shullai, AEE, MePGCL	Meghalaya	07005379616
8	Sh. K.Myrthong, AEE, MePTCL	Meghalaya	08794435131
	-	Nagaland	-
	-	Tripura	-
9	Sh. Amaresh Mallick, ED	NERLDC	09436302720
10	Sh. Biswajit Sahu, CGM	NERLDC	09425409539
11	Sh. Bimal Swargiary, Ch.Mgr	NERLDC	09435499779
12	Sh. Subhra Ghosh, AM	NERLDC	08415857079
13	Sh. Ankit Vaish, DGM (AM)	PGCIL	09409305725
14	Sh. Manas Pratim Sharma, Sr.Mgr	NEEPCO	08729901871
15	Sh. Suresh Kammila, Shift-Incharge	OTPC	08259943212
16	Sh. Bhupendra Kumar Sahu, SM (E)	NHPC	09990586661
17	Sh. Sanjeev Mohandas, AGM	NTPC	09496006403
18	Sh. Hrikhikesh Gohain, AM	NETC	07002517765
19	Sh. Niranjan Rabha, AM	NETC	07002022736
20	Sh. Vivek Karthikeyan, AGM	INDIGRID	08966903034
21	Sh. Mahesh Bhapat, AM	Sterlite Power	09206682124
22	Sh. A.Saha, AVP	SPTL	09051762110
23	Sh. Ravi Shanker Choubey, Engineer (PSS)	PRDC	07278680271
24	Sh. Soumya Sur, Team Lead (PSS)	PRDC	09007934696
25	Sh. K.B.Jagtap, Member Secretary	NERPC	-
26	Sh. Anil Kawrani, Director	NERPC	08799737377
27	Smti Maya Kumari, Dy.Director	NERPC	09024334279
28	Sh. Vikash Shankar, AD-I	NERPC	09455331756

Annexure B.4

ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड

GRID CONTROLLER OF INDIA LIMITED

Formerly Power System Operation Corporation Limited

North Eastern Regional Load Despatch Centre, Shillong

मार्च, 2024 माह के लिए ग्रिड घटना की विस्तृत विश्लेषण रिपोर्ट

Detailed Analysis Report of Grid Event for the month of March, 2024

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13	GD-I	Blackout of Lumshnong area of Meghalaya	00:32 Hrs on 26-03-2024	93-97
14	GD-I	Blackout of Nangalbibra, Rongkhon, Ampati and Phulbari areas of Meghalaya	01:56 Hrs on 26-03-2024	98-103
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ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Sonabil, Rowta, Depota, Ghoramari, Dhekiajuli, Tangla and Siphajhar S/S of Assam of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक**):19-03-2024**

1. **Event Summary (घटना का सारांश):**

   Sonabil, Rowta, Depota, Ghoramari, Dhekiajuli, Tangla and Sipajhar areas of Assam Power System were connected with rest of NER Grid through 220 kV Balipara-Sonabil II line. 220 kV Balipara-Sonabil I line, 132 kV Rangia- Tangla Line, 132 kV Rangia- Sipajhar Line was under outage.

   At 13:07 Hrs of 04.03.2024, 220 kV Balipara-Sonabil II line tripped and SPS at Sonabil operated successfully which caused tripping of 220/132 kV, 100 MVA ICT-I & II at Sonabil. Due to tripping of these elements, Sonabil, Rowta, Depota, Ghoramari, Dhekiajuli, Tangla and Sipajhar areas of Assam Power System were isolated from NER Grid and collapsed due to no source available in these areas.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 13:07 Hrs on 04-03-2024
3. **Event Category** (ग्रिड **घटना का प्रकार**)**:** GD-I
4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Sonabil, Rowta, Depota, Ghoramari, Dhekiajuli, Tangla and Sipajhar areas of Assam
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	50	1562	1904	238	1098
Post Event (घटना के बाद)	50	1566	1785	238	1060

Pre and post data of 1 minute before and after the even

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	220 kV Balipara-Sonabil I was under planned shutdown
Weather Condition (मौसम स्थिति)	Normal

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 38 MW. There was no generation loss.
7. **Duration of interruption (रुकावट की अवधि): 26 min**
8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा)**

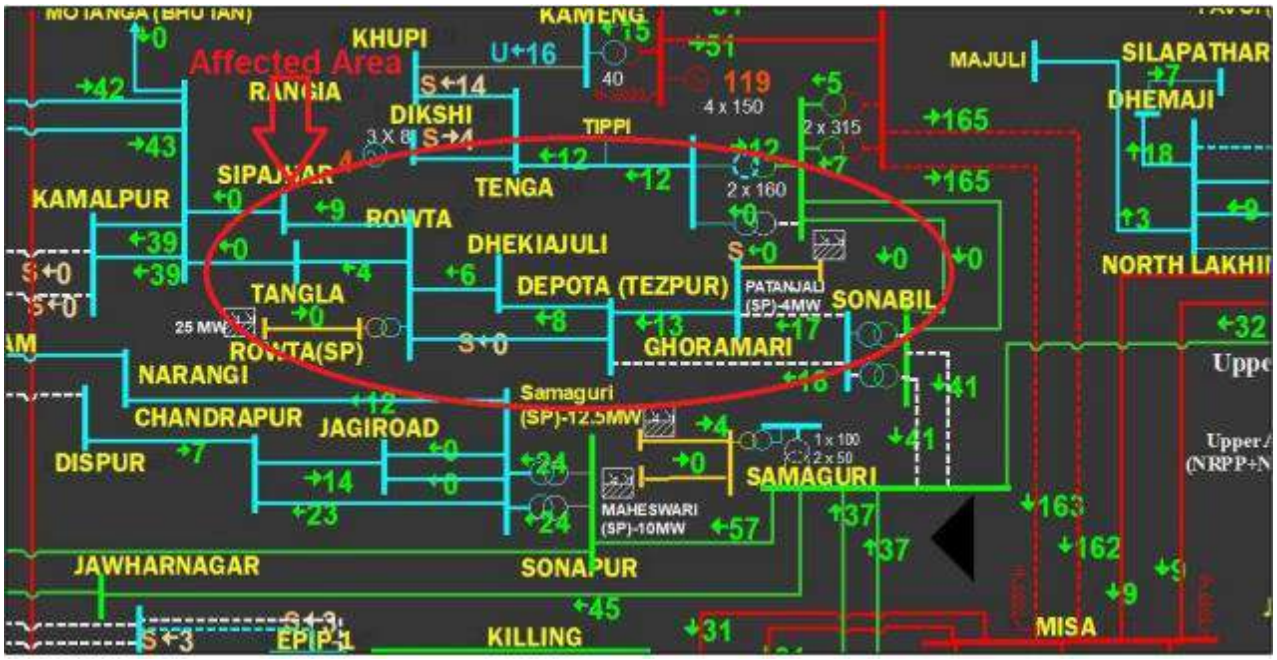


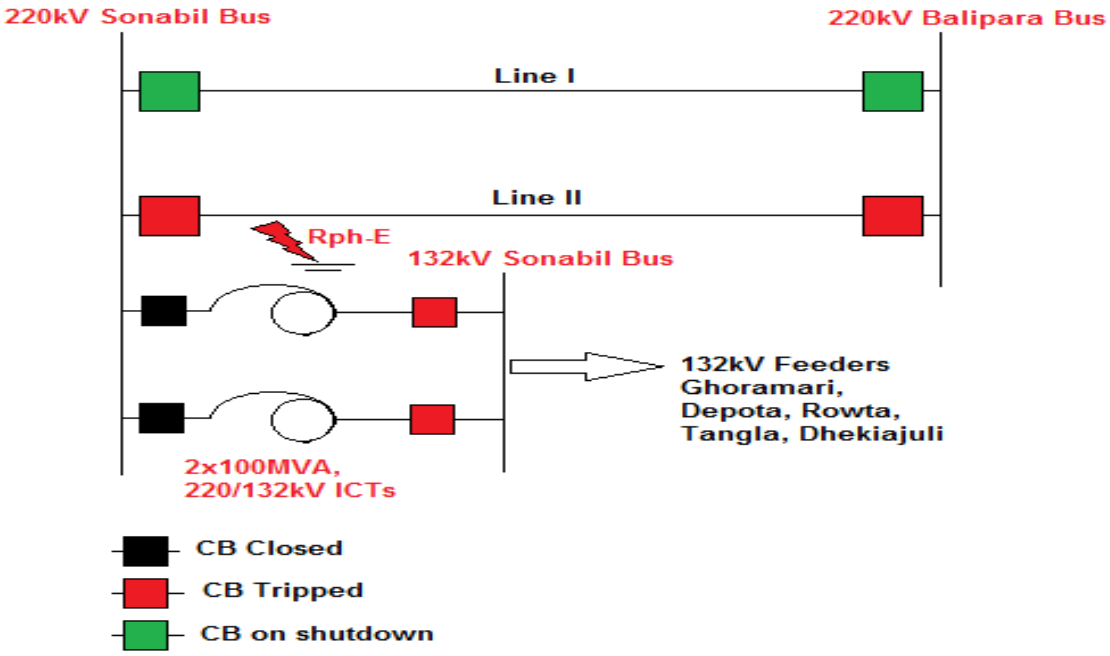
Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	220 kV Balipara-Sonabil II	13:07	15:13	DP, ZII, B-E, FD: 10 Km	R-E, DEF picked up/Trip
2	220/132kV, 100MVA ICT#1 at Sonabil	13:07	13:33	SPS Operated(Triggering criteria-2)	
3	220/132kV, 100MVA ICT#2 at Sonabil	13:07	13:34	SPS Operated(Triggering criteria-2)	

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):



As per DR analysis of Balipara end for 220 kV Balipara-Sonabil line, B-E fault initiated at 13:06:46.358 Hrs and cleared within 314 msec on operation of DP, ZII. Fault current of around 5.3 kA appears in B phase.

DR of Sonabil end shows R-E fault initiated at 13:06:46.368 Hrs and tripped within 189 msec.

As per information from Assam, 220 kV Balipara-Sonabil II line tripped due to contact with a bamboo tree.

12. **Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या): NIL**

13. **Action Taken/Remedial Measures (सुधारात्मक उपाय):**

- Power supply was extended to Sonabil, Rowta, Depota, Ghoramari, Dhekiajuli and Tangla areas of Assam Power System by charging 220/132kV 100MVA ICT-1 at Sonabil at 13:33 Hrs of 04.03.2024.
- Partial load shifting was done to Rangia side and both 220/132 kV, 100MVA ICT I & II at Sonabil were charged at 13:33 Hrs and 13:34 Hrs respectively.
- Planned shutdown of 220 kV Balipara-Sonabil I was returned and charged at 14:03 Hrs.
- Line maintenance works are carried out on routine basis.

14. **Non-compliance observed (विनियमन का गैर-अनुपालन):**

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	No violation
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**AEGCL**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**AEGCL**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	-
5.	**Any other non-compliance**		-

15. **Key Lessons Learnt (प्रमुख अधिगम बिंदु):**

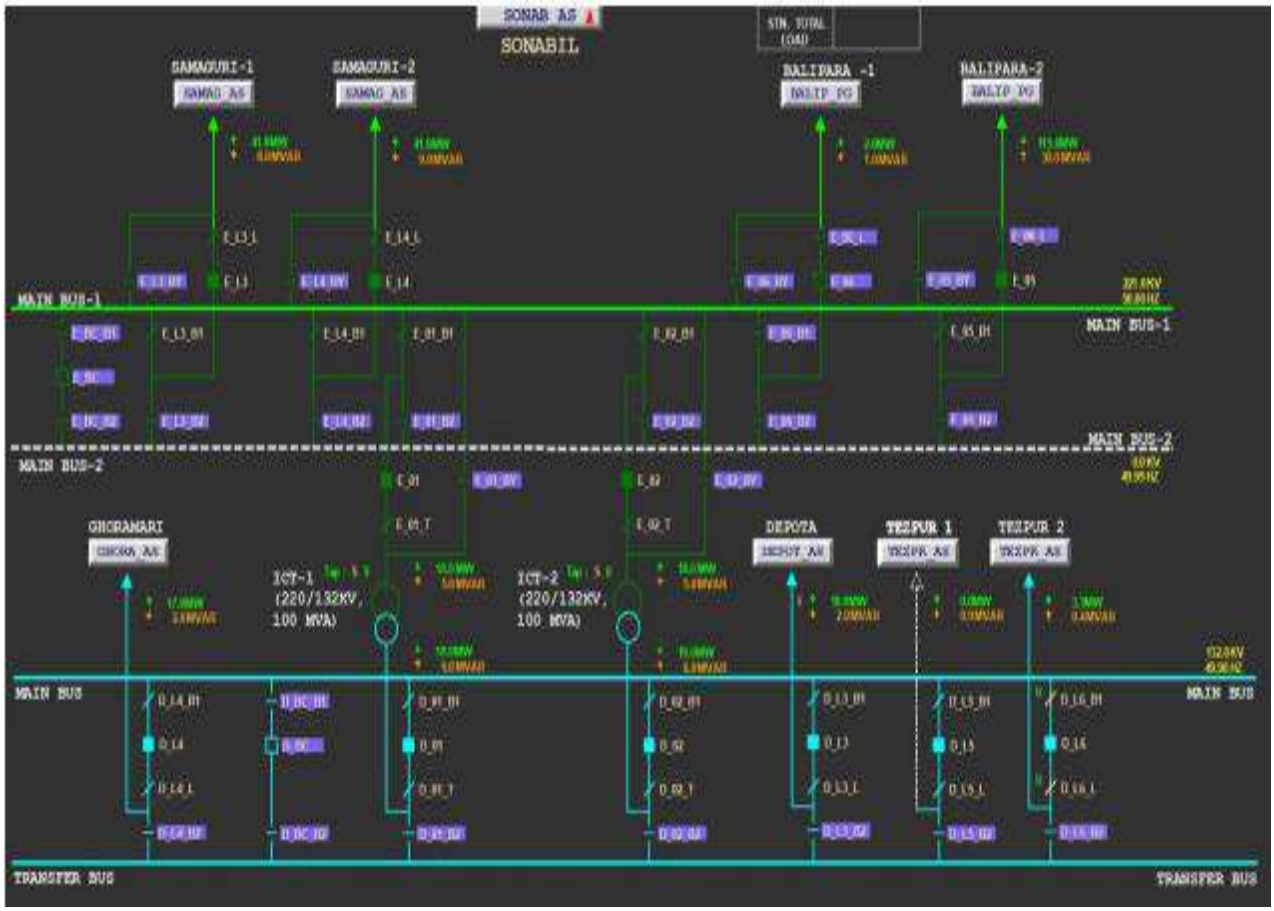
- Assam is requested to carry out patrolling and maintenance related activities as per various CEA/CERC regulations.

Annexure 1: Sequence of Events as per SCADA

AREA	CATEGORY	LOCATION	TEXT	SYSTEM_TIME	FIELD_TIME	MS
NAGALD	1C	MOKOK_NA	MOKOKCHUNG CB 66Kv LINE-1 TO TUENS CLOSE	04 Mar 2024 13:07:12:000	04 Mar 2024 13:02:59:000	9.65E+08
AEGCL	1C	SALAK_PG	SALAKATI CB 220/132 T1 (PRIM) CLOSED	04 Mar 2024 13:05:50:000	04 Mar 2024 13:05:45:000	8.02E+08
AEGCL	1C	BALIP_PG	BALIPARA CB 220Kv LINE-2 TO SONAB BETWEEN	04 Mar 2024 13:06:50:000	04 Mar 2024 13:06:46:000	6.6E+08
AEGCL	1C	BALIP_PG	BALIPARA CB 220Kv LINE-2 TO SONAB OPEN	04 Mar 2024 13:06:52:000	04 Mar 2024 13:06:46:000	6.67E+08
AEGCL	1C	SONAB_AS	SONABIL CB 220/132 T1 (SEC) OPEN	04 Mar 2024 14:01:04:000	04 Mar 2024 13:06:46:000	6.44E+08
AEGCL	1C	SONAB_AS	SONABIL CB 220/132 T2 (SEC) OPEN	04 Mar 2024 14:01:04:000	04 Mar 2024 13:06:46:000	6.43E+08
AEGCL	1C	ROWTA_AS	ROWTA CB 132Kv LINE TO DHEKI OPEN	04 Mar 2024 13:19:38:000	04 Mar 2024 13:19:16:000	5.85E+08
AEGCL	1C	ROWTA_AS	ROWTA CB 132Kv LINE TO TNGLA OPEN	04 Mar 2024 13:19:48:000	04 Mar 2024 13:19:27:000	9.95E+08
AEGCL	1C	ROWTA_AS	ROWTA CB 132Kv LINE TO DEPOT OPEN	04 Mar 2024 13:19:48:000	04 Mar 2024 13:19:36:000	1.15E+08
AEGCL	1C	SISHU_AS	SISHUGRAM CB 33 KV CP 1 1 CB CLOSED	04 Mar 2024 07:56:02:000	04 Mar 2024 13:20:26:000	9.68E+08
AEGCL	1C	ROWTA_AS	ROWTA CB 132Kv LINE TO SIPAJ BETWEEN	04 Mar 2024 13:21:56:000	04 Mar 2024 13:21:50:000	8.6E+08
AEGCL	1C	ROWTA_AS	ROWTA CB 132Kv LINE TO SIPAJ OPEN	04 Mar 2024 13:21:58:000	04 Mar 2024 13:21:52:000	9.26E+08
AEGCL	1C	ROWTA_AS	ROWTA CB 132Kv LINE TO SIPAJ BETWEEN	04 Mar 2024 13:22:00:000	04 Mar 2024 13:21:54:000	15000000
AEGCL	1C	SISHU_AS	SISHUGRAM CB 33 KV CP 2 1 CB CLOSED	04 Mar 2024 07:56:41:000	04 Mar 2024 13:22:33:000	2.06E+08

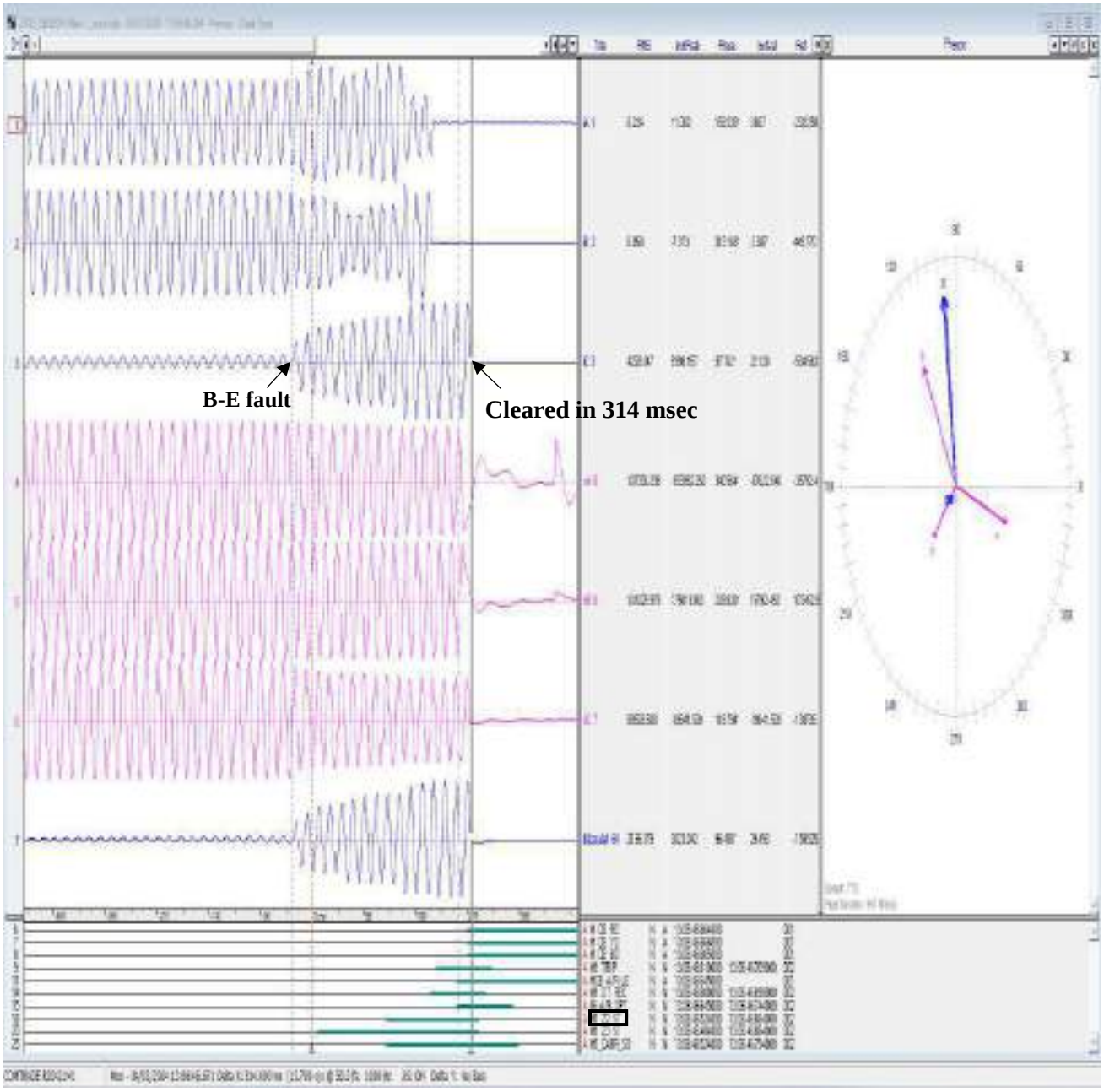
Annexure 2: PMU snapshot 400 kV Balipara-Misa I Line for Balipara end

Annexure 3: SLD of the effected SS

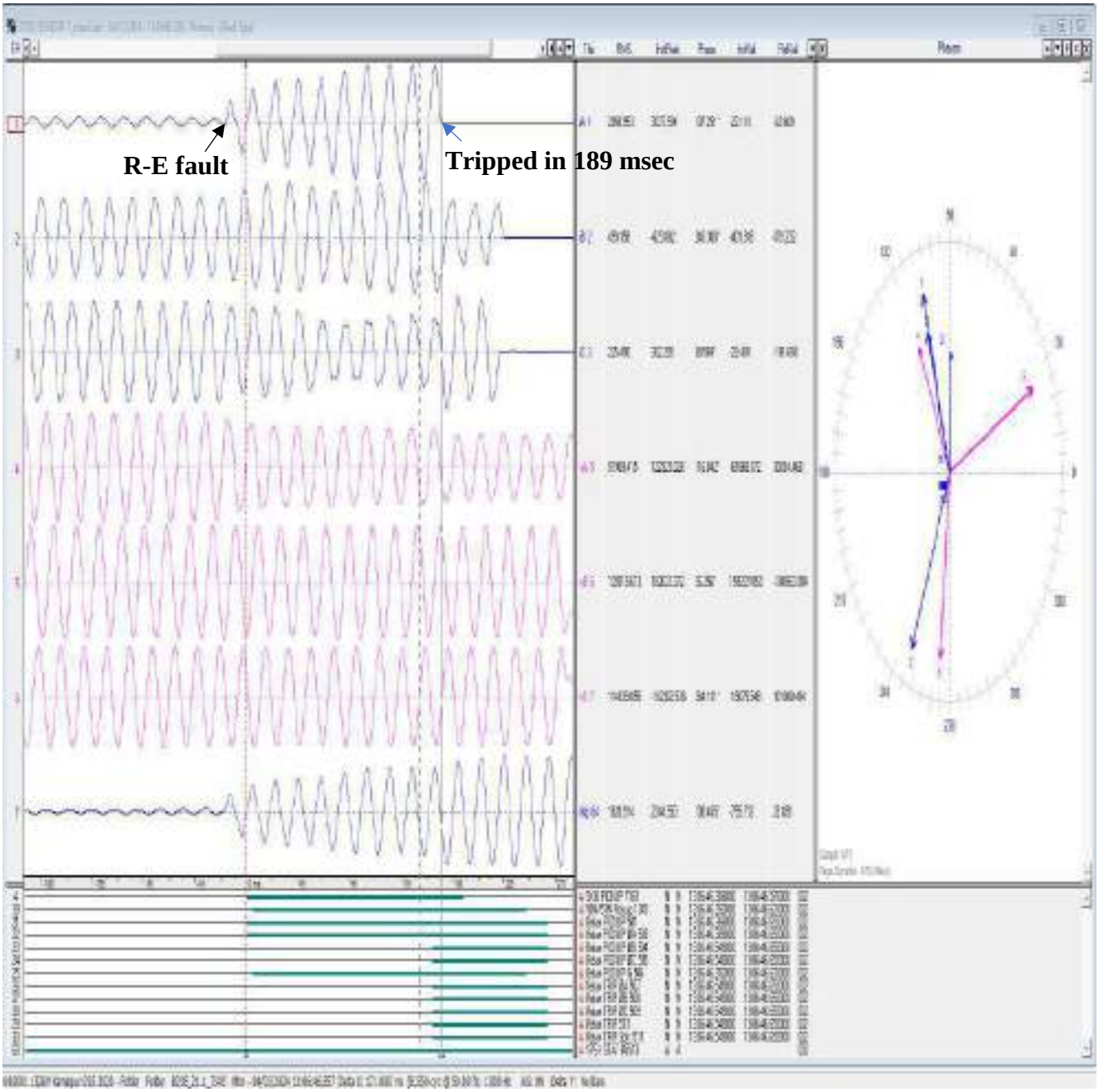


Annexure 4: Disturbance recorder snips showing faults and digital signals

4.1. DR Snapshot of Balipara for 220 kV Balipara-Sonabil II line



4.2. DR Snapshot of Sonabil for 220 kV Balipara-Sonabil II line



ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Churachandpur and Thanlon S/S of Manipur of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक**):01-04-2024**

1. **Event Summary (घटना का सारांश):**

Churachandpur and Thanlon areas of Manipur Power System were connected with rest of NER Grid through 132 kV Ningthoukhong-Churachandpur II line. 132 kV Ningthoukhong-Churachandpur I Line is under outage since 13.01.2024 and 132 kV Churachandpur-Elangkankpokpi line is under outage since 08.06.2023.

At 13:25 Hrs of 05.03.2024, 132 kV Ningthoukhong-Churachandpur II lines tripped. Due to tripping of these elements, Churachandpur and Thanlon areas of Manipur Power System were isolated from NER Grid and collapsed due to no source available in these areas.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 13:25 Hrs on 05-03-2024
3. **Event Category** (ग्रिड **घटना का प्रकार**)**:** GD-I
4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Churachandpur and Thanlon areas of Manipur
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	50.01	1810	1730	0	91
Post Event (घटना के बाद)	50.01	1823	1733	0	82

Pre and post data of 1 minute before and after the even

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	132 kV Ningthoukhong-Churachandpur I is under outage since 13.01.2024 & 132 kV Churachandpur-Elangkankpokpi line is under outage since 08.06.2023
Weather Condition (मौसम स्थिति)	Normal

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 8 MW. There was no generation loss.
7. **Duration of interruption (रुकावट की अवधि): 9 min**
8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

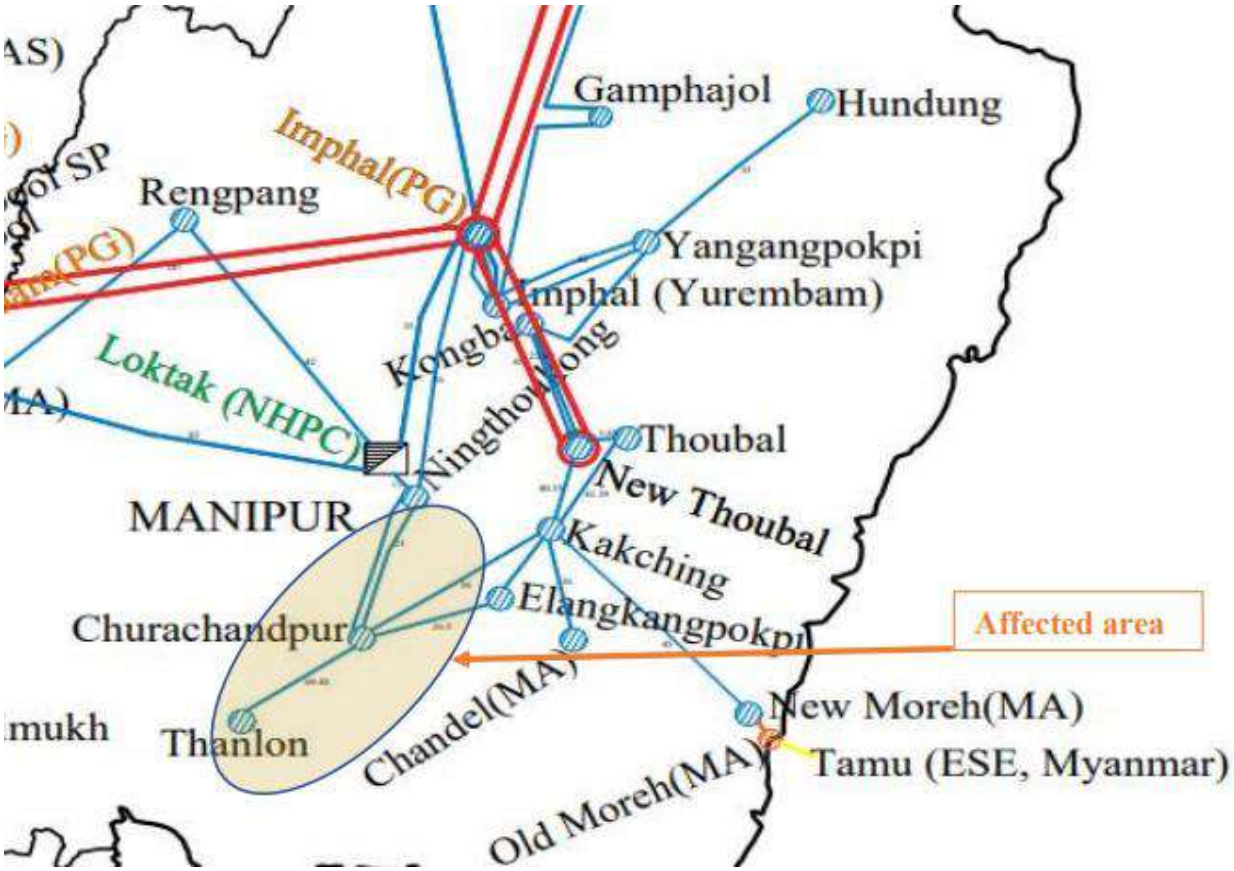


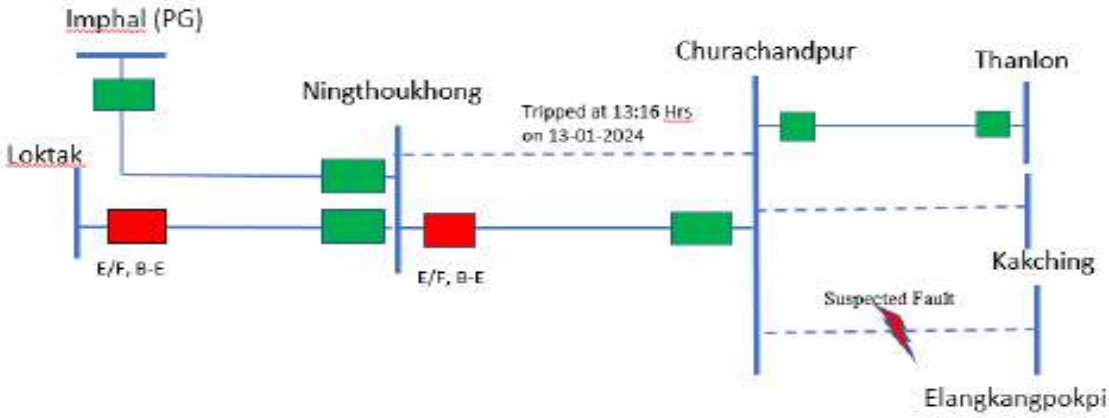
Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132 kV Churachandpur-Elangkankpokpi Line	13:25	16:02 Hrs of 06.03.2024	DP, B-E	Not applicable (open at Elangkankpokpi end)
2	132 kV Ningthoukhong-Churachandpur II Line	13:25	13:34	Earth fault, B-E	No Indiation, Line was charged radially.
3	132 kV Loktak-Ningthoukhong Line	13:25	13:49	Earth fault, B-E	No tripping

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):



As per DR analysis of Loktak end for 132 kV Loktak-Ningthukhong line, B-E fault initiated at 13:25:34.259 Hrs and cleared within 1 sec on operation of backup Earth fault. Fault current of around 400 A appears in B phase.

As per information gathered from Manipur, B-phase fault was in 132 kV Churachandpur-Elangkankpokpi line which was not cleared leading to tripping of 132 kV Loktak-Ningthoukhong and 132 kV Ningthoukhong-Churachandpur II lines.

12. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

- Non operation of protection system/clearing of fault from Churachandpur for 132 kV Elangkankpokpi line. MSPCL is requested to check the protection system and tripping circuits up to CB switchgear and resolve the issue.

- Non operation of B/U protection at Ningthoukong for 132 kV Churachandpur-II line which led to tripping of 132 kV Ningthoukhong Line from Loktak. B/U protection setting and characteristics needs to be checked promptly to take care in future and report to be submitted.

13. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power supply was extended to Churachandpur and Thanlon areas by charging 132 kV Ningthoukhong-Churachandpur II line at 13:34 Hrs of 05.03.2024.
- Non operation of protection at Ningthoukhong for 132 kV Churachandpur-II line is due to E/F relay characteristics issue. The earth fault setting of CHAR is modified as suggested by NERLDC team from extremely inverse and updated to IEC SI 3sec (Trip time for If = 1000A is 950 msec for Is=80 A, TMS= 0.35).
- The distance protection relay of Elangkankpokpi feeder at Churachandpur end indicated that the Back-Up Set was disabled. Thorough investigation could not be performed, for no indication of Zone and Fault Location and testing of the protection system for delay in clearing the fault.

14. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	No violation
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**MSPCL**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	No violation
4.	**DR Time Synchronization Issues**	IEGC section 17.3	-
5.	**Any other non-compliance**		-

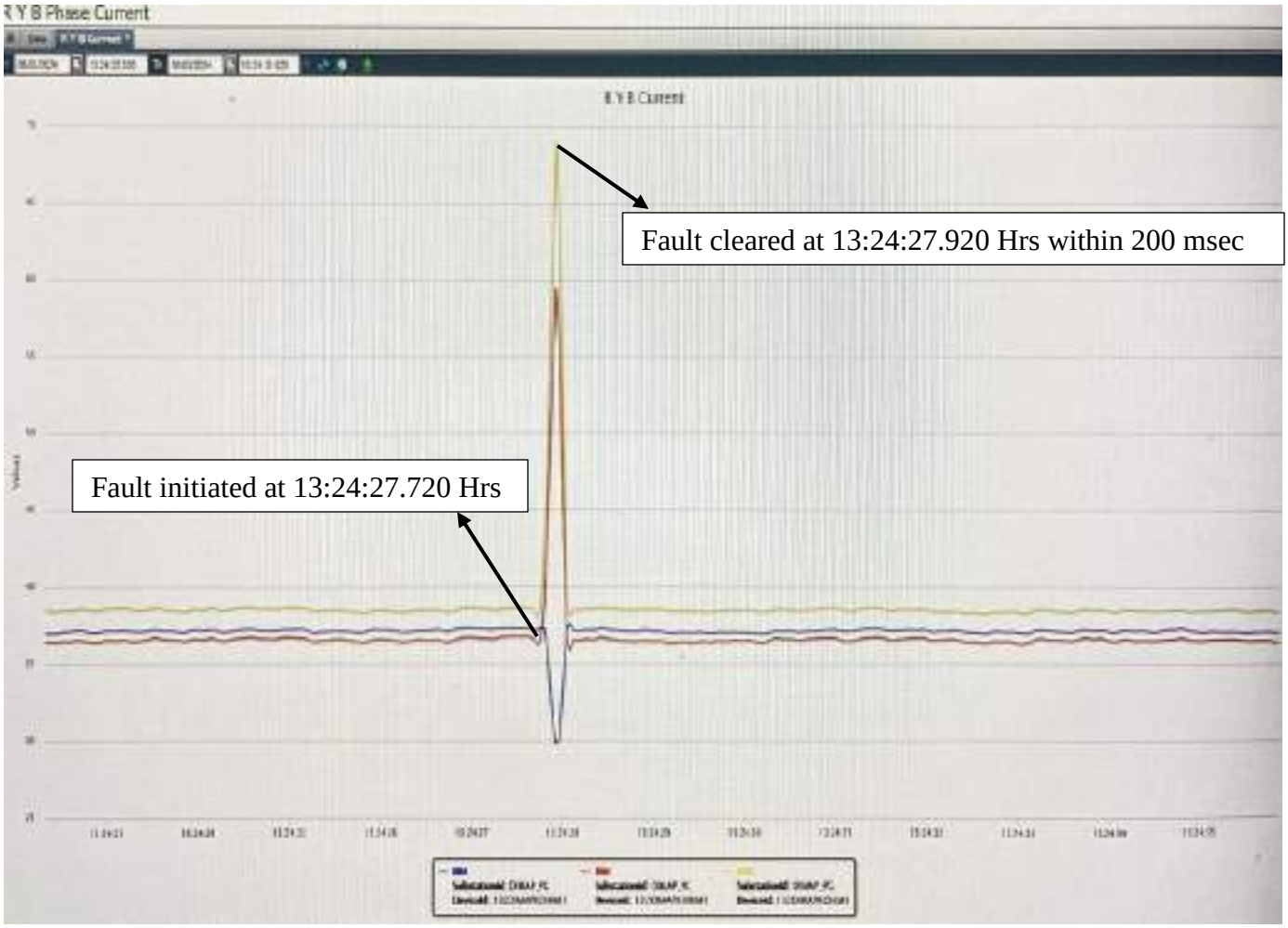
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

Healthiness of protection system needs to be checked regularly.

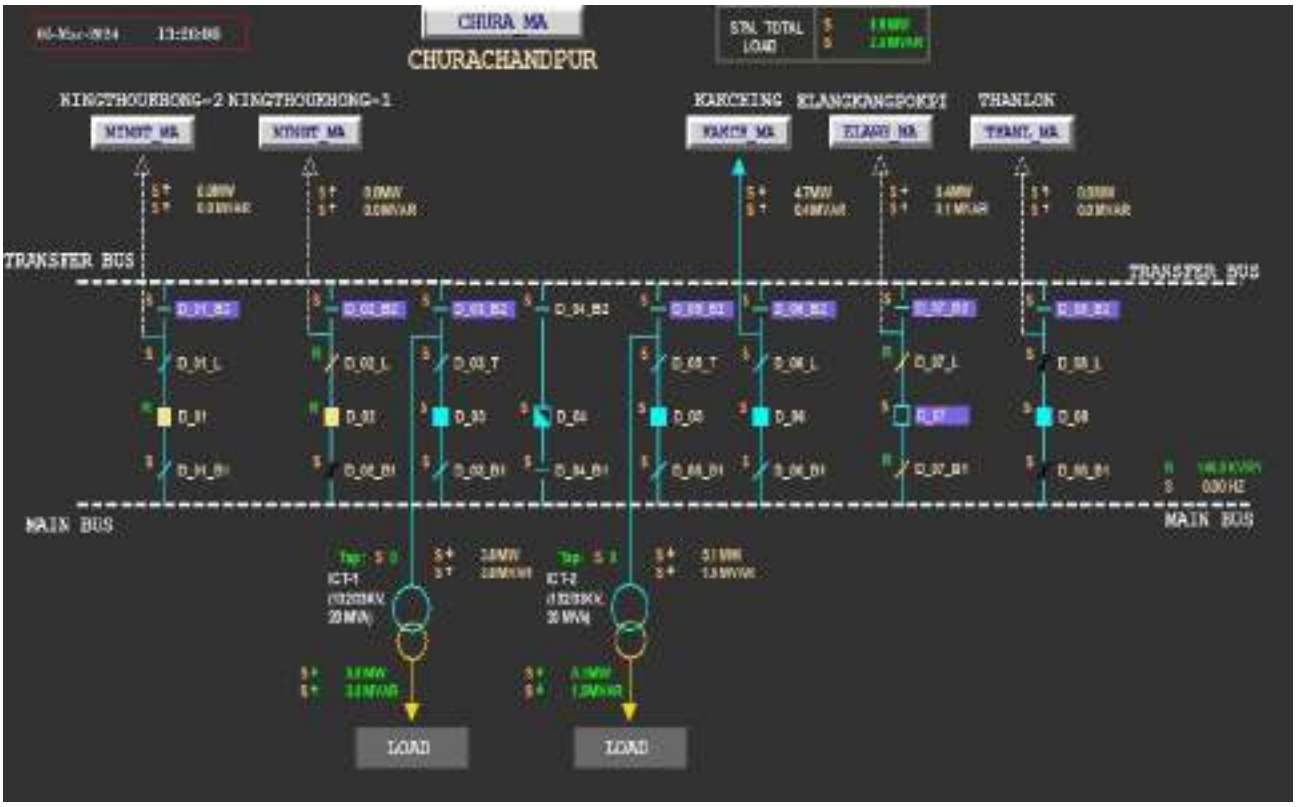
Annexure 1: Sequence of Events as per SCADA

AREA	CATEGORY	LOCATION	TEXT	SYSTEM_TIME	FIELD_TIME	MS
MEECL	1C	UMIA1_ME	UMIAM I CB 11 KV UNIT (H04) BETWEEN	05 Mar 2024 11:50:24:000	05 Mar 2024 11:50:17:000	4.72E+08
AEGCL	1C	MARIA_PG	MARIANI CB Tie CB Misa2-F_T1 CLOSED	05 Mar 2024 11:50:19:000	05 Mar 2024 11:50:18:000	3.3E+08
MEECL	1C	UMIA1_ME	UMIAM I CB 11 KV UNIT (H04) OPEN	05 Mar 2024 13:20:41:000	05 Mar 2024 13:20:33:000	73000000
MSPCL	1C	LOKTA_NH	LOKTAK CB 132Kv LINE TO NINGT OPEN	05 Mar 2024 13:25:37:000	05 Mar 2024 13:20:33:000	7.85E+08
MSPCL	1C	NINGT_MA	NINGTHOUKHONG CB 132Kv LINE-2 TO CHURA OPEN	05 Mar 2024 13:25:40:000	05 Mar 2024 13:25:35:000	47000000
ARUNCH	1C	RANGA_NO	PANYOR CB 11 KV UNIT (H03) CLOSED	05 Mar 2024 13:25:47:000	05 Mar 2024 13:25:46:000	9.91E+08
AEGCL	1C	TINSU_AS	TINSUKIA CB 220Kv LINE-1 TO BIHIA CLOSED	05 Mar 2024 13:27:13:000	05 Mar 2024 13:27:06:000	1.68E+08
AEGCL	1C	BONGA_AS	BONGAIGAON CB 220/132 T1 (PRIM) CLOSED	05 Mar 2024 13:27:19:000	05 Mar 2024 13:27:11:000	7.77E+08

Annexure 2: PMU snapshot of Dimapur end for 132 kV Dimapur-Kohima line

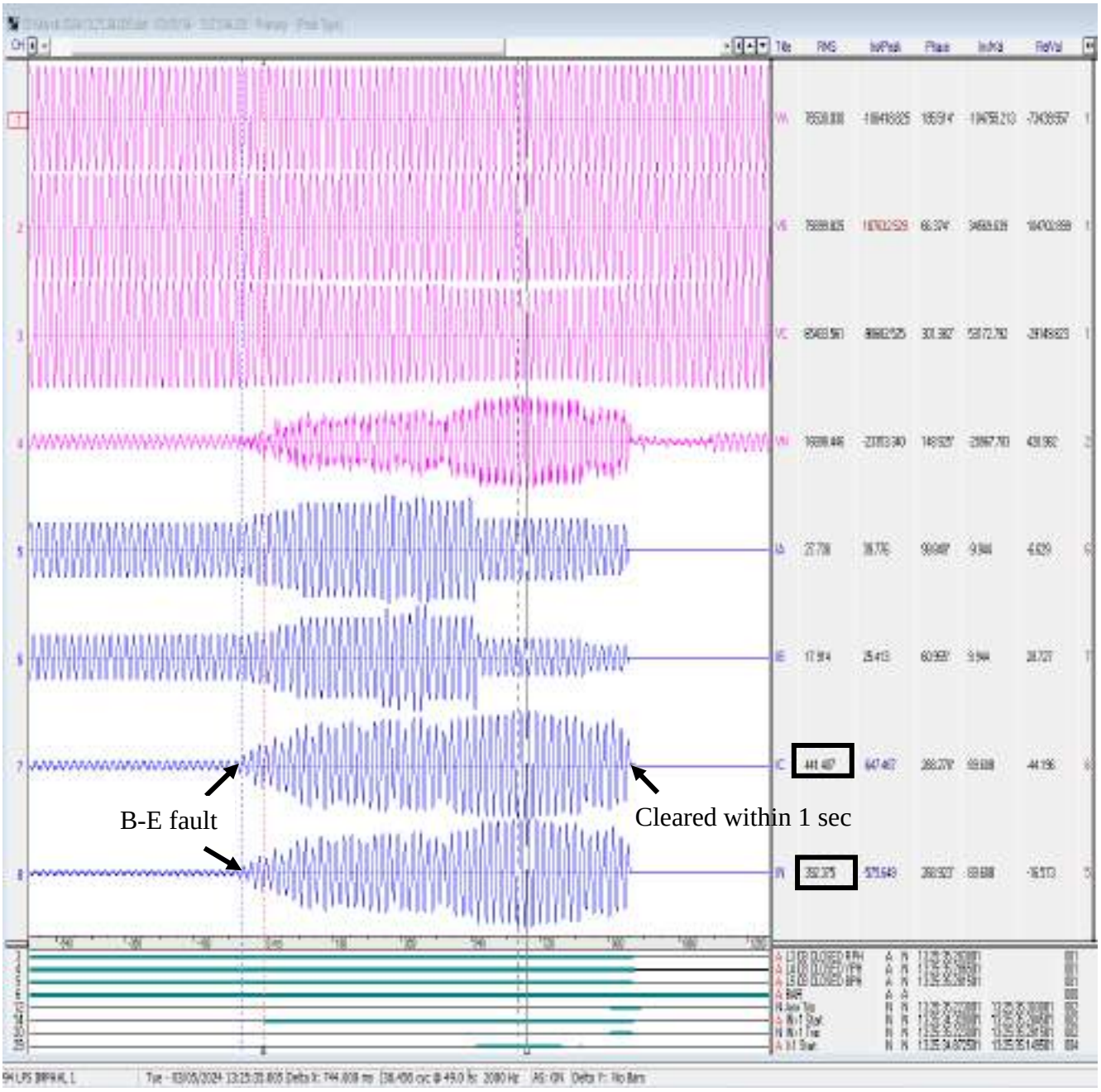


Annexure 3: SLD of the effected SS



Annexure 4: Disturbance recorder snips showing faults and digital signals

4.1. DR Snapshot of Loktak for 132 kV Loktak-Ningthoukhong line



ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Pasighat S/S of Arunachal Pradesh of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक**):08-04-2024**

1. **Event Summary (घटना का सारांश):**

Pasighat area of Arunachal Pradesh Power System is connected with the rest of the grid by 132 kV Along-Pasighat & 132 kV Roing-Pasighat lines.

At 15:46 Hrs of 07.03.2024, 132 kV Along-Pasighat and 132 kV Roing-Pasighat lines tripped. Due to tripping of these elements, Pasighat area of Arunachal Pradesh Power System was isolated from NER Grid and collapsed due to no source available in this area.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 15:46 Hrs on 07-03-2024
3. **Event Category** (ग्रिड **घटना का प्रकार):** GD-I
4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Pasighat area of Arunachal Pradesh
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	49.94	1796	1973	4	128
Post Event (घटना के बाद)	49.94	1802	1983	4	121

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	NIL
Weather Condition (मौसम स्थिति)	Clear sky

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 5 MW at Pasighat. There was no generation loss.
7. **Duration of interruption (रुकावट की अवधि): 1 Hour 40 min**
8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

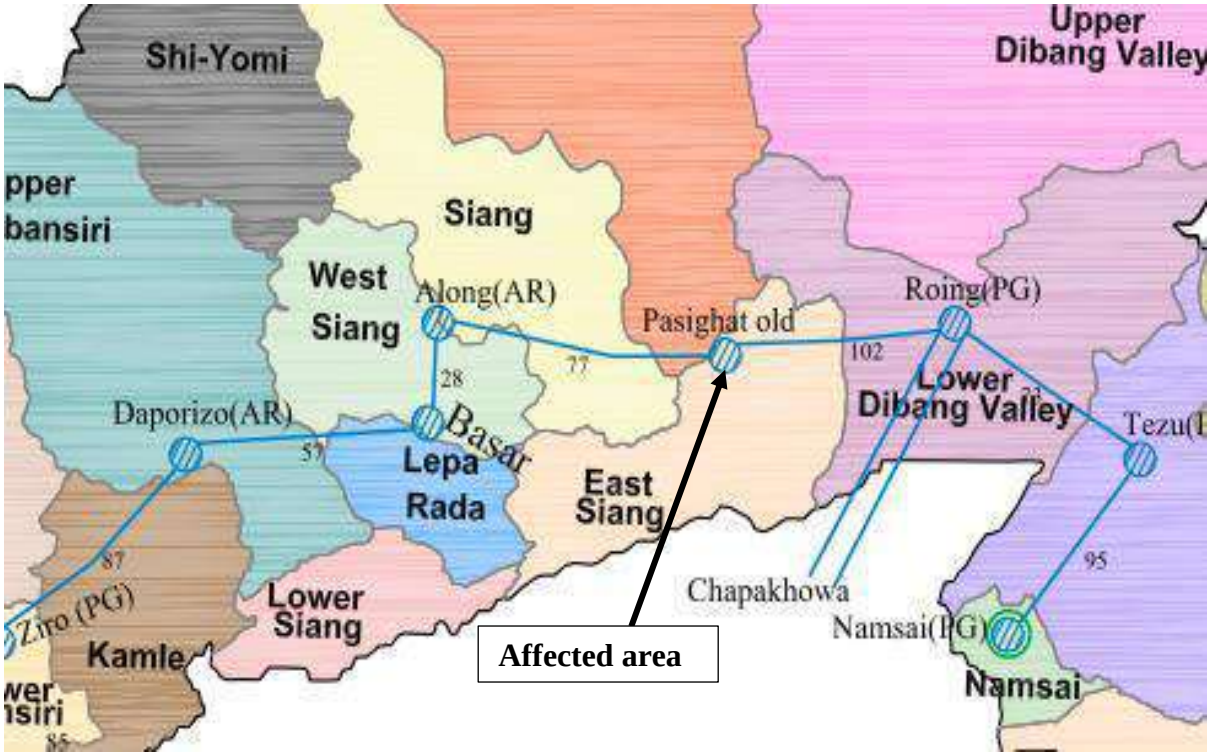


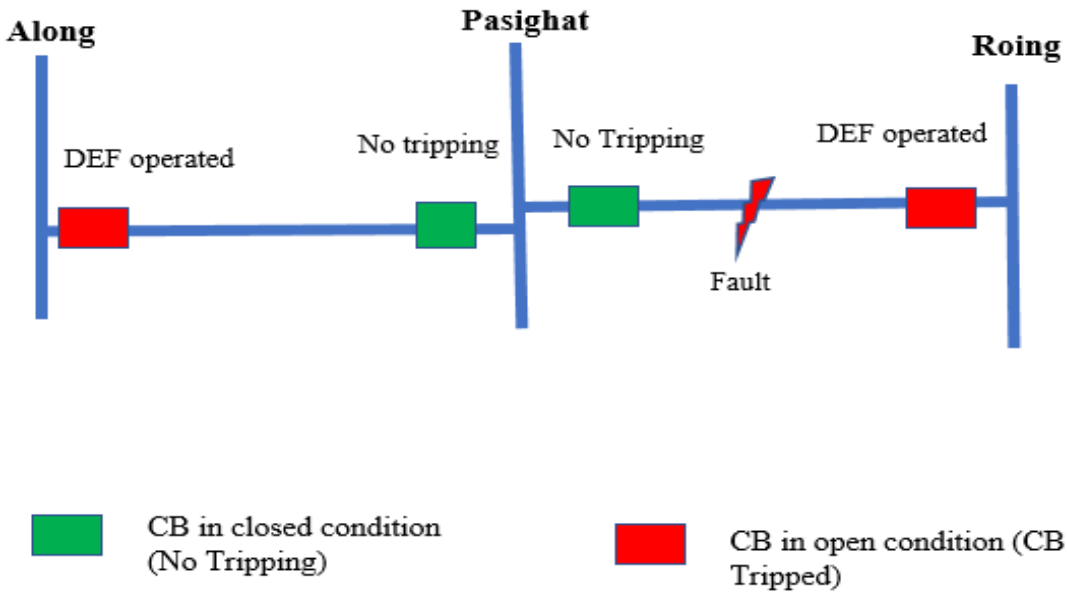
Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132 kV Along-Pasighat	15:46	21:35	DEF operated	No tripping
2	132 kV Roing-Pasighat	15:46	17:26	DEF operated	No tripping (Earth fault relay pickup)

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):



As per the PMU snap of the Ranganadi SS, B phase fault initiated at 15:46 Hrs and cleared within around 80 msec.

As per DR analysis of Along and Roing ends for 132 kV Along-Pasighat and 132 kV Roing-Pasighat lines, B-E fault initiated and cleared on operation of earth fault protection.

As per information from POWERGRID, high resistive B-E fault in 132 kV Roing-Pasighat line. Earth fault pickup at Pasighat end for 132 kV Roing-Pasighat line. However, the fault got cleared from Along end before Pasighat end breaker could trip.

12. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

- Tripping of 132 kV Along-Pasighat line from Along end seems unwanted and has occurred due to relay coordination issue. DoP, Arunachal Pradesh needs to ensure coordination of earth fault relay in coordination with PGCIL(Pasighat for Roing Line) at Along

13. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power supply was extended to Pasighat area of Arunachal Pradesh Power System by charging 132kV Pasighat - Roing at 17:26 Hrs of 07.03.2024

14. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	**DoP, Arunachal Pradesh**
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**DoP, Arunachal Pradesh**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**DoP, Arunachal Pradesh**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	-
5.	**Any other non-compliance**		-

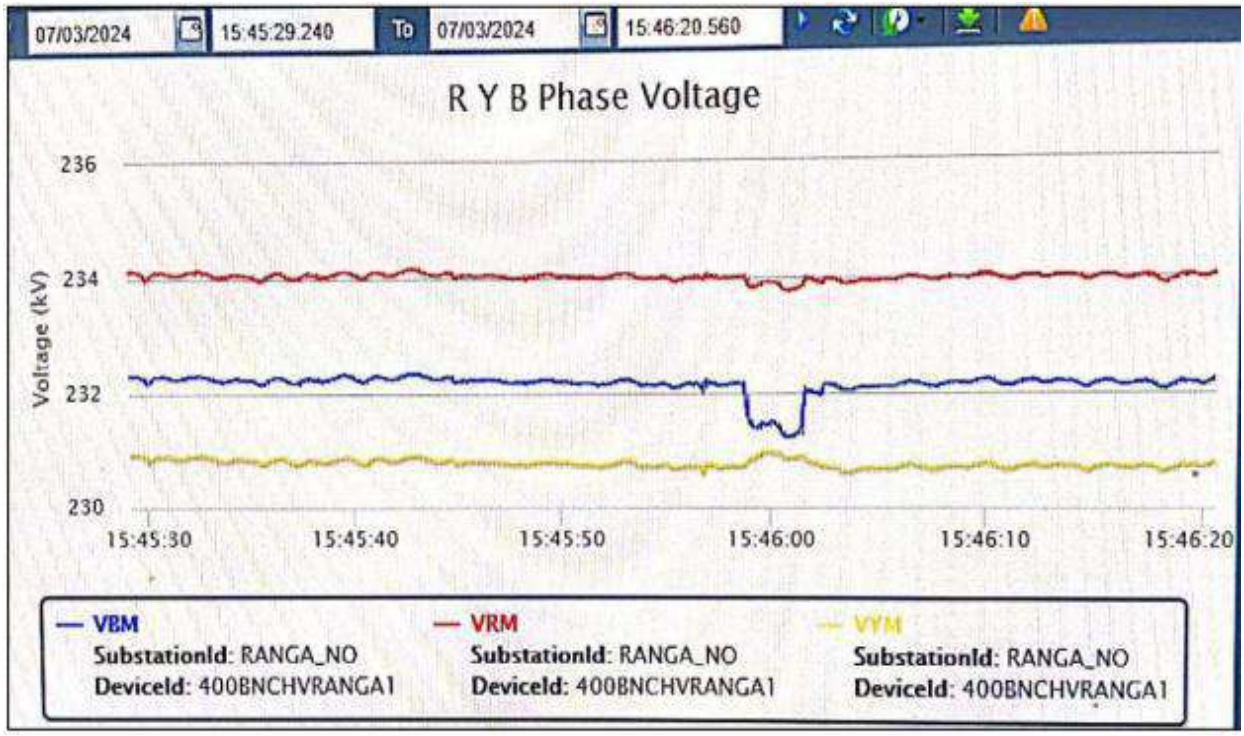
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- Regular patrolling and maintenance related activities needs to be carried out as per various CEA/CERC regulations
- B/U setting coordination to be reviewed time to time.

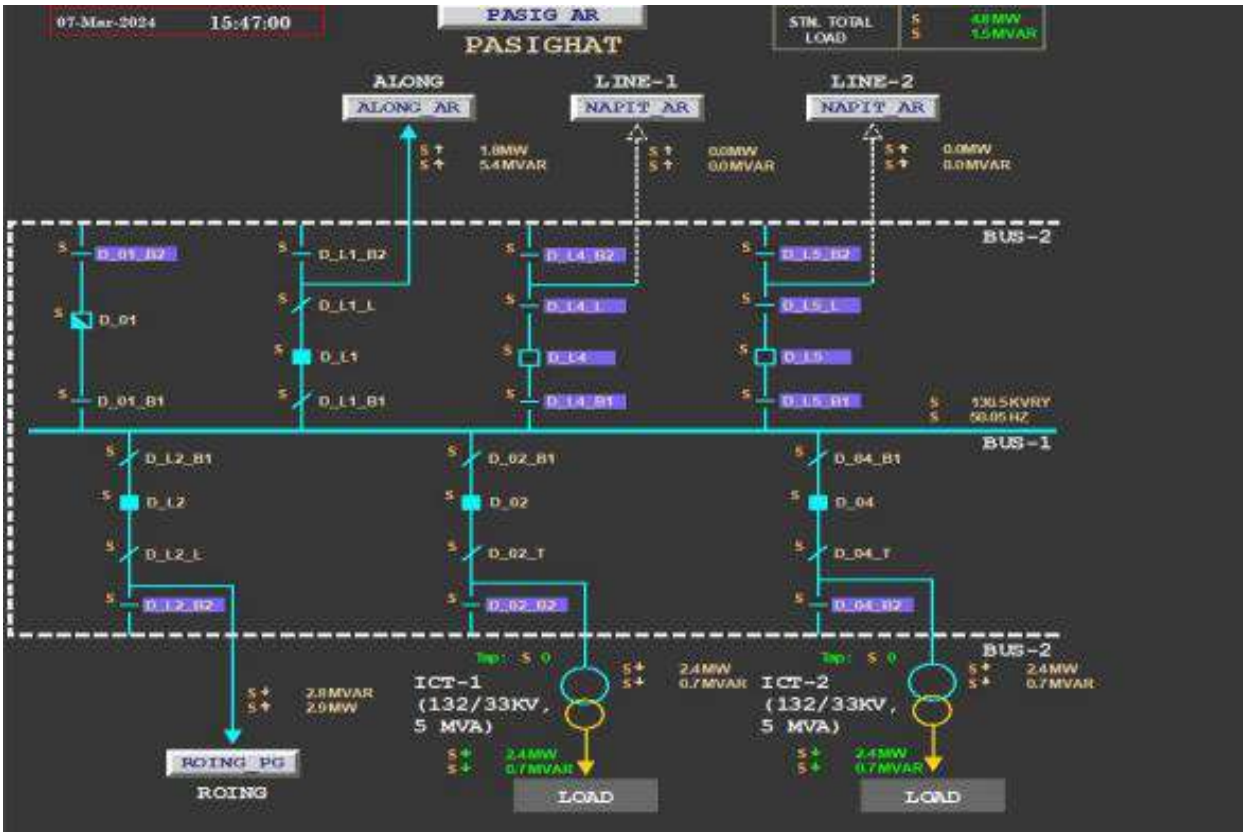
Annexure 1: Sequence of Events as per SCADA

AREA	CATEGORY	LOCATION	TEXT	SYSTEM_TIME	FIELD_TIME	MS
AEGCL	1C	NMRUP_AS	NTPS CB 220Kv LINE TO JAKSN OPEN	07 Mar 2024 08:41:51:000	18 Nov 2012 19:54:14:000	705000000
AEGCL	1C	NMRUP_AS	NTPS CB 220Kv LINE TO JAKSN CLOSED	07 Mar 2024 16:27:33:000	19 Nov 2012 03:40:07:000	92000000
ARUNCH	1C	ALONG_AR	ALONG CB 132Kv LINE TO PASIG OPEN	07 Mar 2024 15:46:05:000	09 Jan 2024 16:08:37:000	480000000
ARUNCH	1C	ALONG_AR	ALONG CB 132Kv LINE TO PASIG CLOSED	07 Mar 2024 21:35:54:000	09 Jan 2024 21:58:24:000	314000000
ARUNCH	1C	ITANA_AR	ITANAGAR CB 132 KV COUPLER (07) BETWEEN	07 Mar 2024 14:43:02:000	06 Mar 2024 10:54:47:000	802000000
AEGCL	1C	RNG22_AS	RANGIA220 CB 132Kv LINE TO NATHK CLOSED	07 Mar 2024 01:44:04:000	07 Mar 2024 01:43:58:000	791000000
ARUNCH	1C	ROING_PG	ROING CB 132Kv LINE-1 TO PASIG OPEN	07 Mar 2024 15:46:09:000	07 Mar 2024 02:16:02:000	469000000
ARUNCH	1C	ROING_PG	ROING CB 132Kv LINE-1 TO PASIG CLOSED	07 Mar 2024 17:26:29:000	07 Mar 2024 03:56:26:000	280000000
MEECL	1C	UMIA1_ME	UMIAM I CB 11 KV UNIT (H02) CLOSED	07 Mar 2024 04:12:06:000	07 Mar 2024 04:11:57:000	57000000

Annexure 2: PMU snapshot 400 kV BNC-PHEP I Line for Panyor end

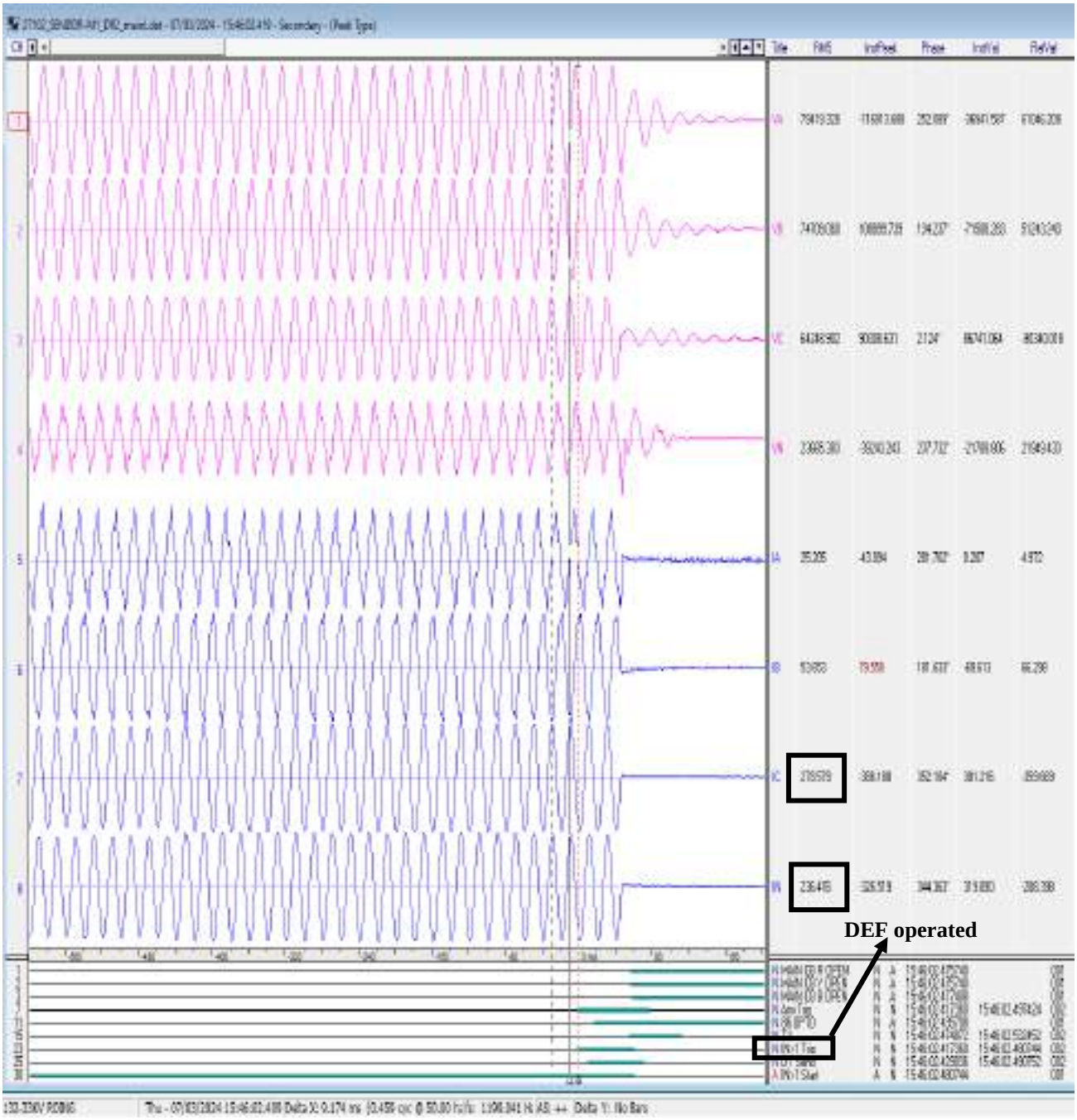


Annexure 3: SLD of the effected SS

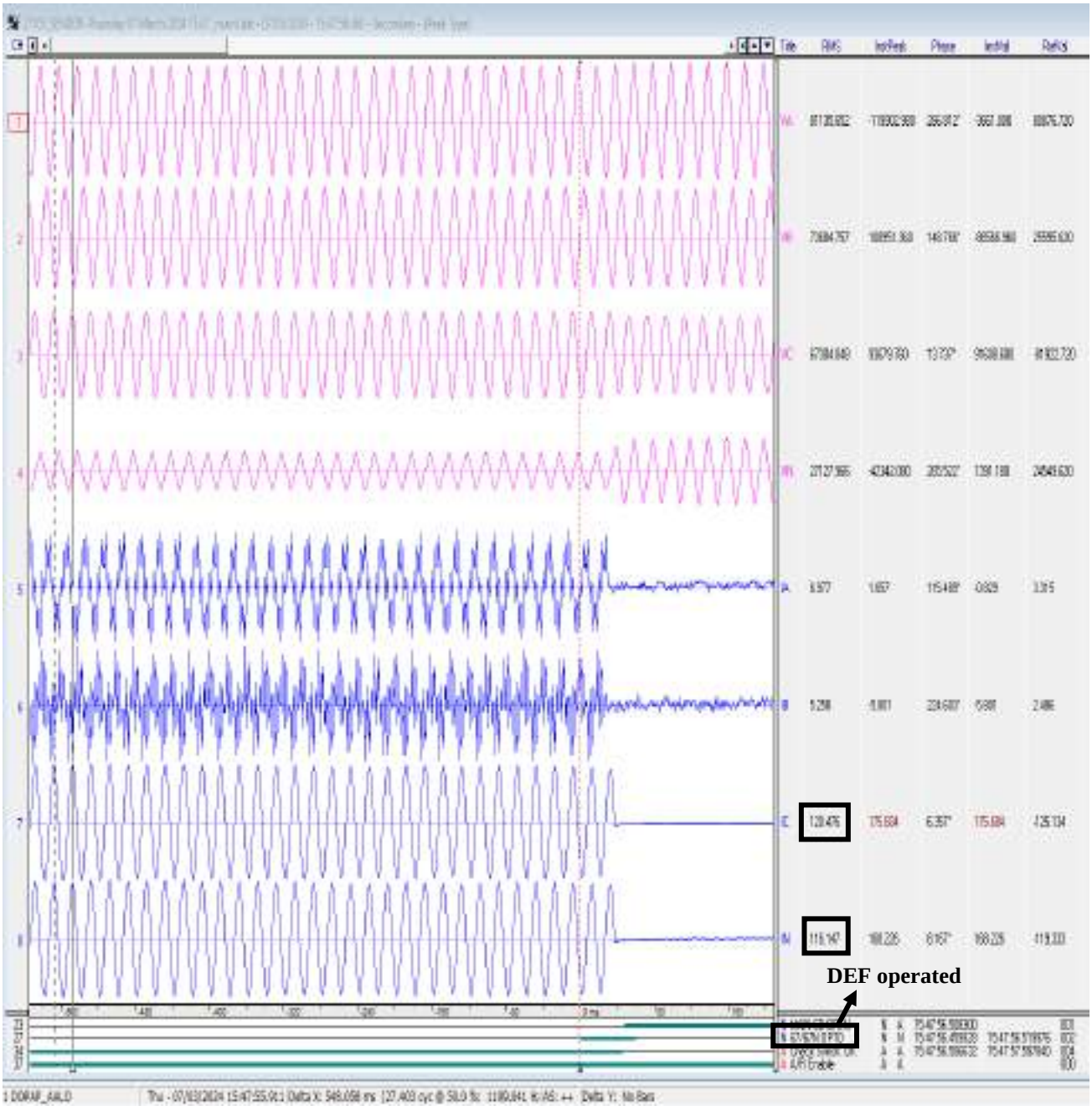


Annexure 4: Disturbance recorder snips showing faults and digital signals

4.1. DR Snapshot of Roing for 132 kV Roing-Pasighat Line



4.2. DR Snapshot of Along for 132 kV Along-Pasighat Line



ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in NRPP Generating station along with LRPP Generation of Assam of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक)**:02-04-2024**

1. **Event Summary (घटना का सारांश):**

NRPP Generating Station of Assam Power System was connected with rest of NER Grid through 220 kV Tinsukia-NRPP and 220 kV NTPS-NRPP lines.

At 14:56 Hrs of 08.03.2024, 220kV Tinsukia-NRPP, 220 kV NTPS-NRPP and 220 kV NTPS-Amguri lines tripped. Due to tripping of these lines, NRPP Generating Station was isolated from NER grid and collapsed due to load generation mismatch in this area. At the same time, LRPP generating units also tripped due to voltage jerk.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 14:56 Hrs on 08-03-2024
3. **Event Category** (ग्रिड **घटना का प्रकार**)**:** GD-I
4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): NRPP & LRPP generation of Assam
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	50.11	1705	1832	247.73	1087.8
Post Event (घटना के बाद)	50.11	1657	1899	90.5	1085

Pre and post data of 1 minute before and after the even

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	NIL
Weather Condition (मौसम स्थिति)	Clear sky

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Generation loss of 157 MW (NRPP & LRPP). There was no load loss.
7. **Duration of interruption (रुकावट की अवधि): 2 Hr 47 min**
8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा)**

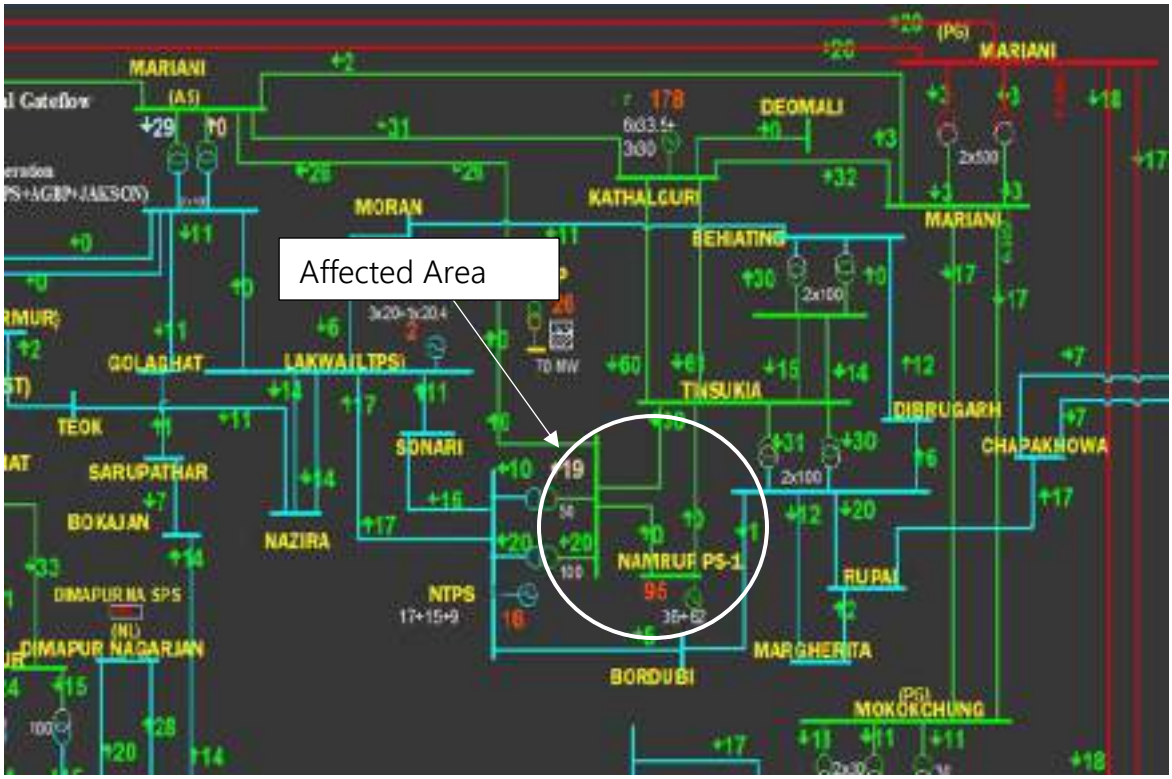


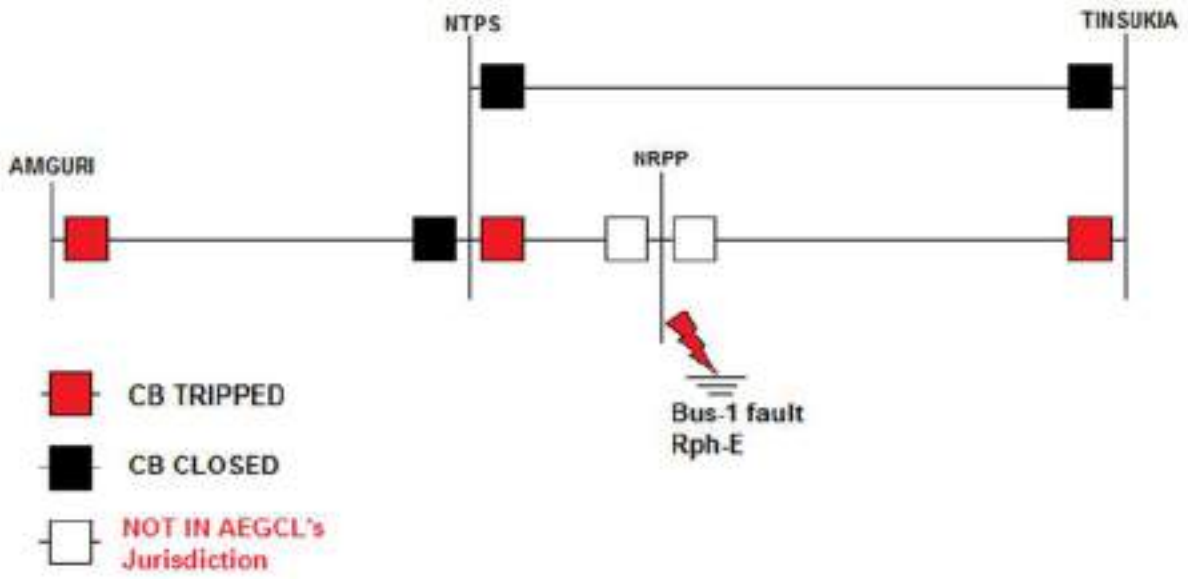
Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण):** R-phase bus conductor snapped in NRPP Bus-1.

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	220kV Tinsukia-NRPP	14:56	17:43	DP, ZI, R-E, FD: 27.5 Km	No tripping
2	220 kV NTPS-NRPP	14:56	18:25	DP, ZII, R-E	No tripping
3	220kV NTPS-Amguri	14:56	15:35	No tripping	DP, ZII
4	NRPP Unit -1	14:56	23:37 Hrs of 10.03.2024	R-phase bus conductor snapped in Bus-1	
5	NRPP Unit -2	14:56	-	R-phase bus conductor snapped in Bus-1	
6	LRPP Unit-1	14:56	15:16	Tripped due to voltage jerk	
7	LRPP Unit-2	14:56	15:54	Tripped due to voltage jerk	
8	LRPP Unit-3	14:56	15:45	Tripped due to voltage jerk	
9	LRPP Unit-4	14:56	15:23	Tripped due to voltage jerk	
10	LRPP Unit-5	14:56	15:28	Tripped due to voltage jerk	
11	LRPP Unit-6	14:56	15:05	Tripped due to voltage jerk	
12	LRPP Unit-7	14:56	15:44	Tripped due to voltage jerk	

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):



As per PMU, R-phase fault initiated at 14:56:10.720 Hrs and cleared at 14:56:11.200 Hrs. Fault clearance time: 480 msec.

As per information from APGCL, there was a snap in the R-phase bus conductor in NRPP Bus-1. As the fault was in the bus side of NRPP, all the lines connected to NRPP tripped from remote end. For 220 kV NTPS-NRPP line, Zone 2 picked up and tripped at NTPS end. For 220 kV Tinsukia-NRPP line, as the fault current was very low, initially earth fault picked up and tripped on ZI from Tinsukia end.

For 220kV Amguri – NTPS line, Zone 2 picked up and tripped at Amguri end. (220kV NTPS – NRPP line is very short line).

12. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

- The non-operation of BB protection at NRPP is the serious concern from system stability point of view. The cascaded tripping of NTPS – Amguri – Tinsukia may be resolved for a bus fault at NRPP switchyard, if healthiness of bus differential protection at NRPP is ensured.
- 220 kV Bus bar protection at NRPP needs to be bring in to service immediately by APGCL (as per CEA construction regulation-2022)

- SOE not recorded for tripping of 132 kV Tinsukia-NRPP line & 132 kV NTPS-Amguri line. The same needs attention by team AeGCL/SLDC Assam.

13. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power supply was extended to 220 kV NRPP Generating Station of Assam Power System by charging 220kV Tinsukia-NRPP line at **17:**43 Hrs of **08.03.2024.**
- All elements of NRPP were shifted to Bus-2 (GTG-1, STG-1, 220kV NTPS and 220kV Tinsukia) and all lines have been charged.
- All units of LRPP have been revived.

14. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	No violation
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**AEGCL**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	No violation
4.	**DR Time Synchronization Issues**	IEGC section 17.3	-
5.	**Any other non-compliance**		-

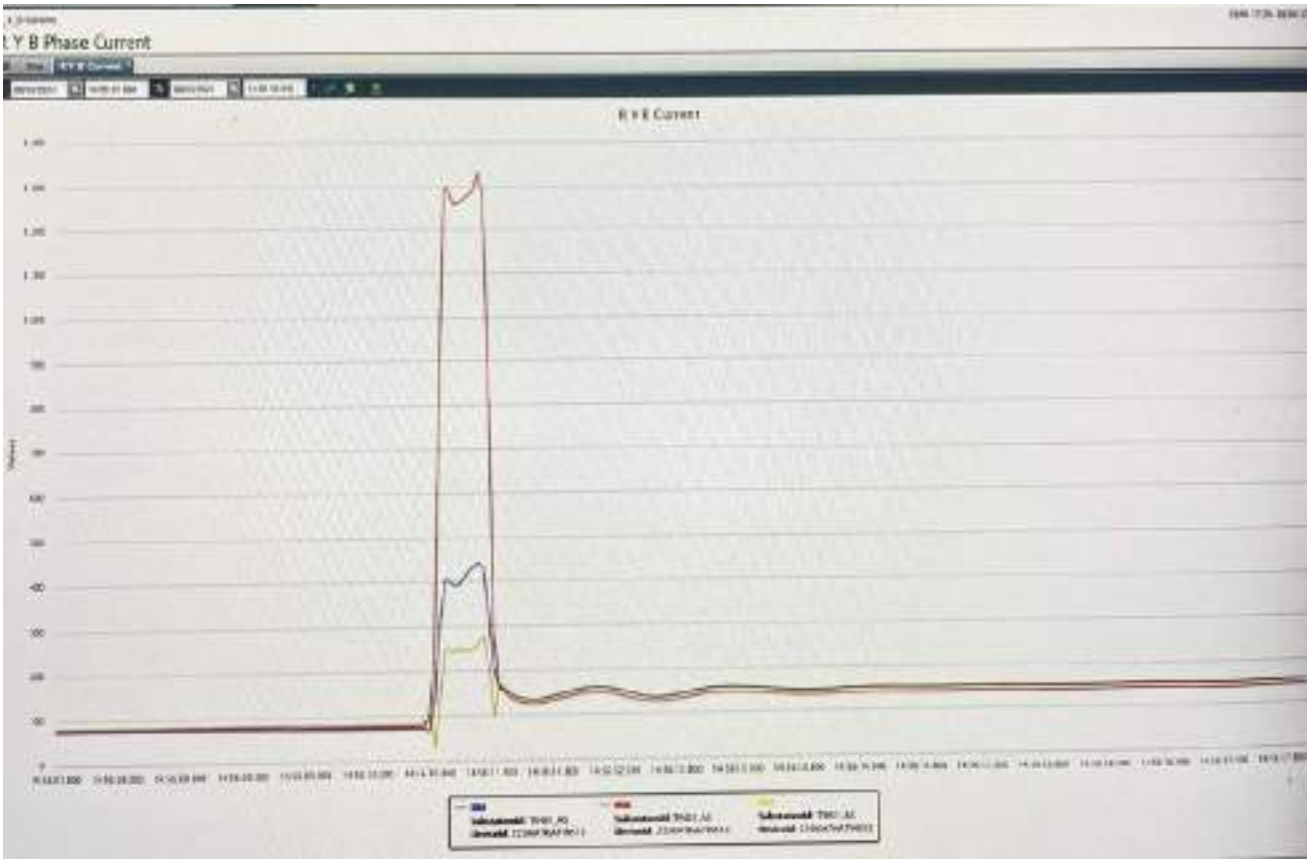
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- Periodic Thermo-vision scanning of bay equipment /terminal joints is utmost importance to detect hot spot/loose joints and further remedial measures to prevent such events.
- Periodic testing of all bay equipment is crucial to minimize the risk of equipment failures in critical substations.
- Monitoring of healthiness of protection system and ensuring its healthiness.

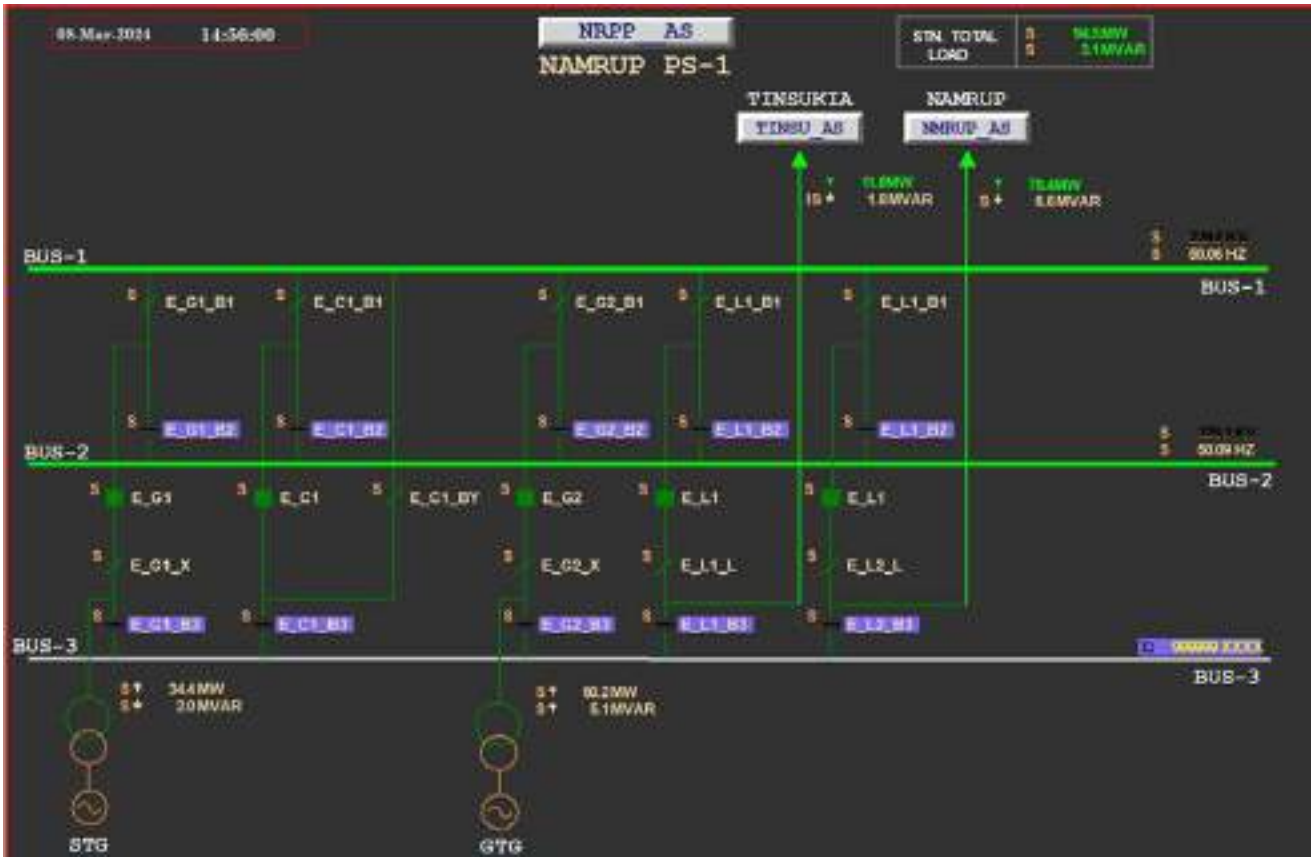
Annexure 1: Sequence of Events as per SCADA

AREA	CATEGORY	LOCATION	TEXT	SYSTEM_TIME	FIELD_TIME	MS
--------	----------	--------	----------	----------	----------	----------
NAGALD	1C	KOHIM_NA	KOHIMA CB 132 KV COUPLER (02) BETWEEN	08 Mar 2024 17:31:44:000	08 Mar 2008 17:31:37:000	2.27E+08
NAGALD	1C	KOHIM_NA	KOHIMA CB 132 KV COUPLER (02) CLOSED	08 Mar 2024 17:33:16:000	08 Mar 2008 17:33:10:000	7.85E+08
AEGCL	1C	NMRUP_AS	NTPS CB 220Kv LINE TO NRPP_OPEN	08 Mar 2024 14:56:19:000	17 Jan 2015 22:11:56:000	2.73E+08
AEGCL	1C	NMRUP_AS	NTPS CB 220Kv LINE TO NRPP_CLOSED	08 Mar 2024 18:24:52:000	18 Jan 2015 01:40:29:000	7.49E+08
TSECL	1C	ROKHI_TE	ROKHIA CB 11 KV UNIT G9 CLOSED	08 Mar 2024 04:54:28:000	17 May 2017 14:51:59:000	2.63E+08

Annexure 2: PMU snapshot of Tinsukia end for 22 kV AGBPP-Tinsukia II line

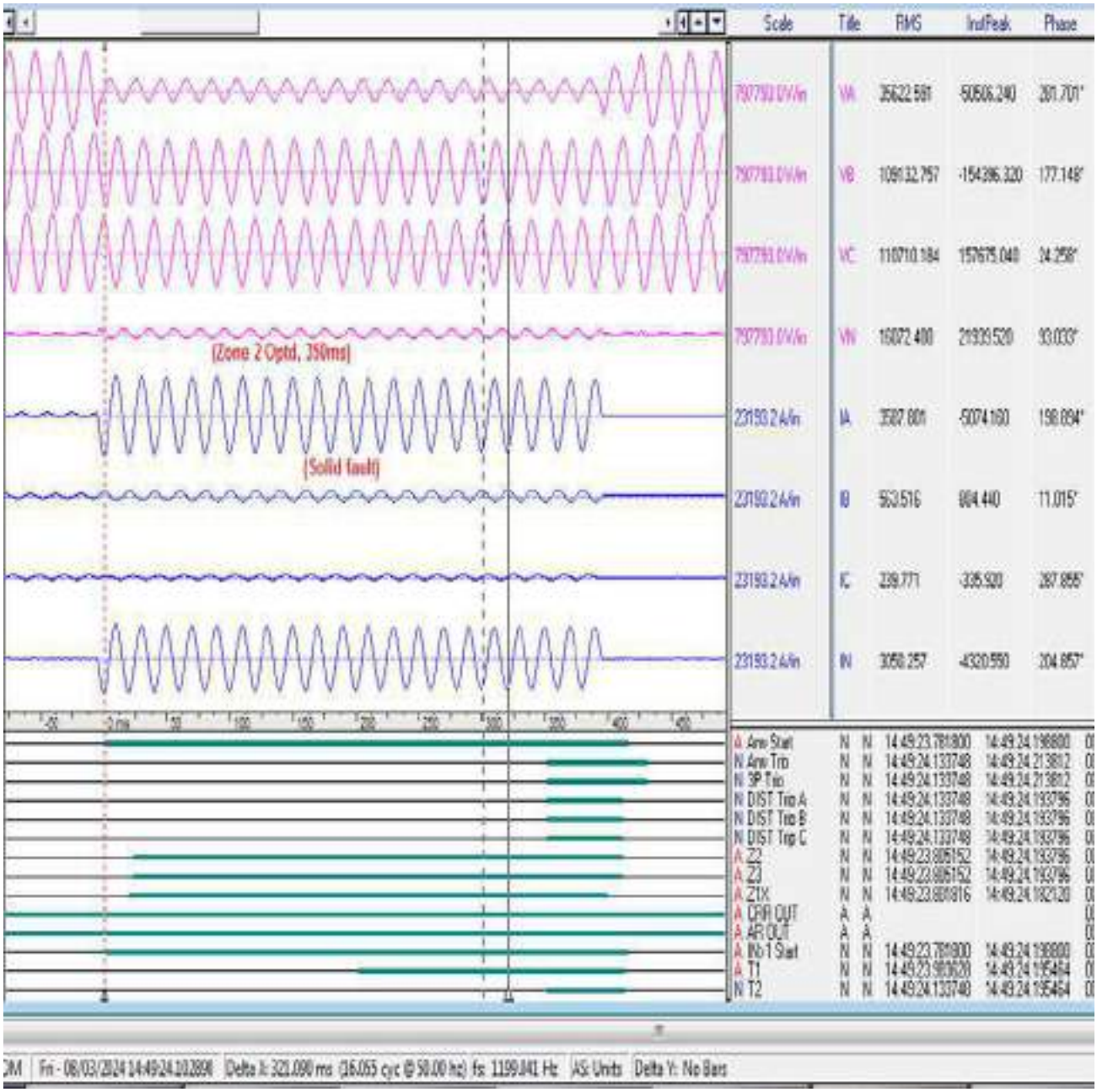


Annexure 3: SLD of the effected SS

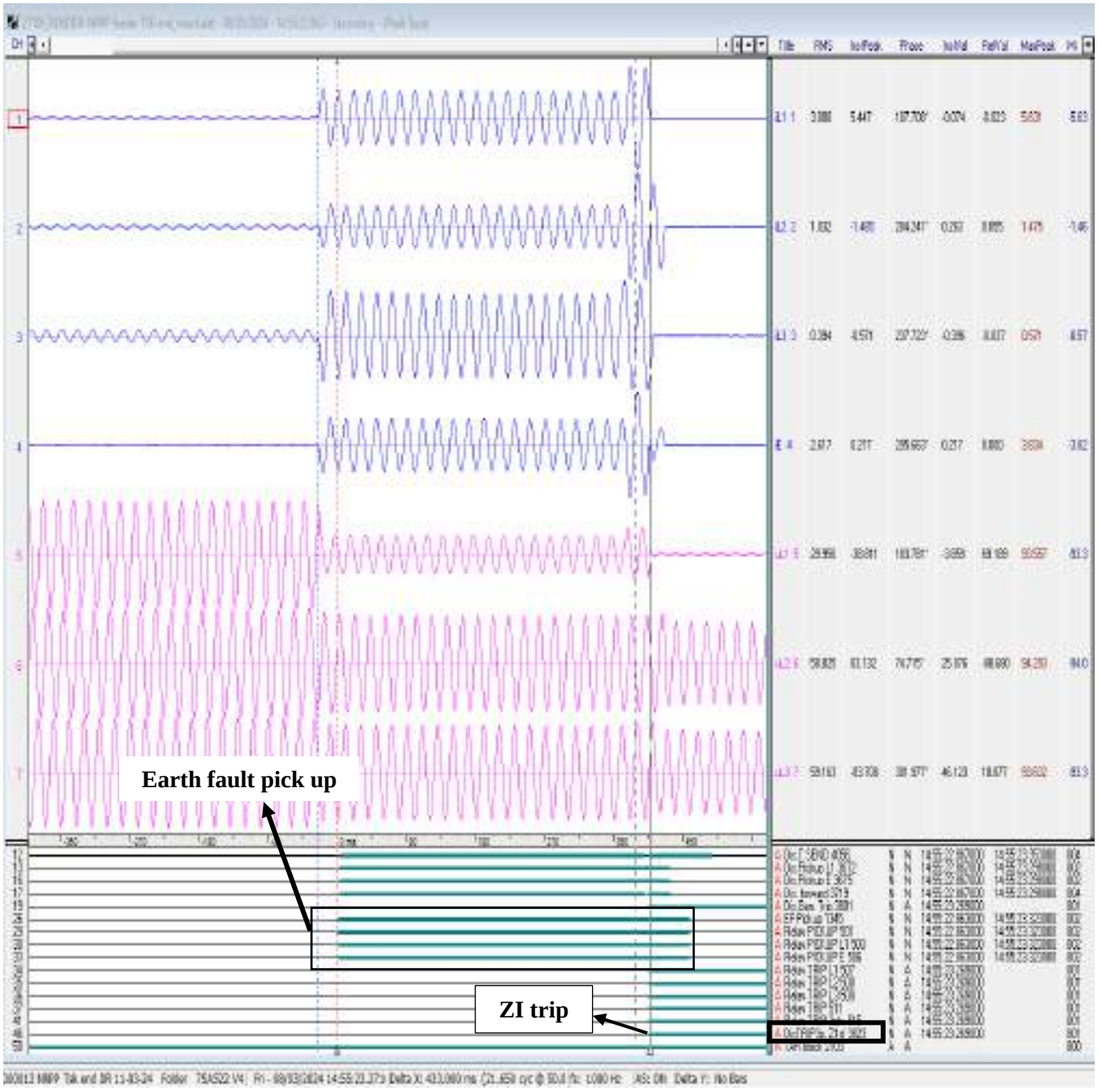


Annexure 4: Disturbance recorder snips showing faults and digital signals

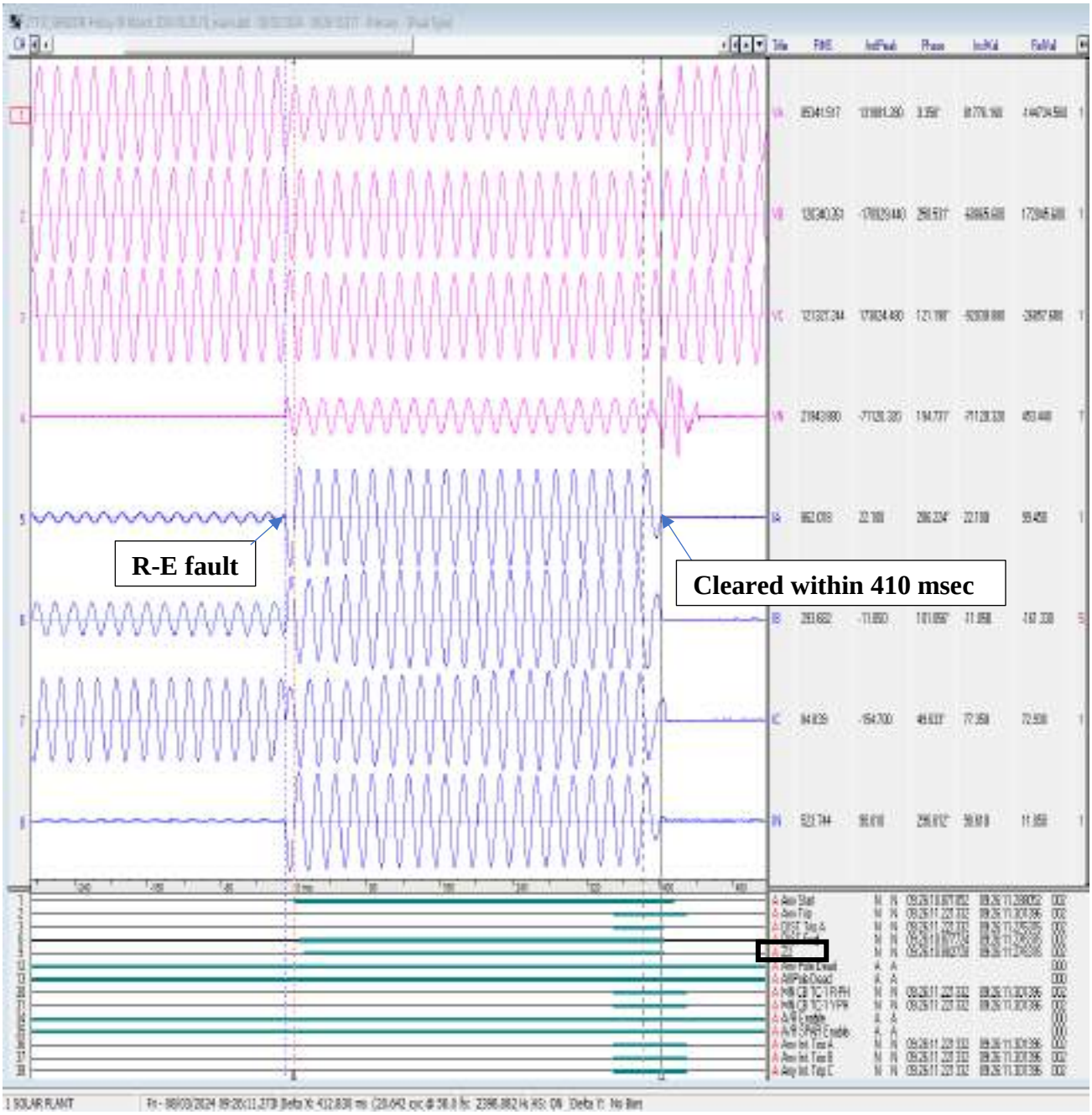
4.1. DR Snapshot of NTPS for 220 kV NTPS-NRPP line



4.2. DR Snapshot of Tinsukia for 220 kV NRPP-Tinsukia line



4.3. DR Snapshot of Amguri for 220 kV Amguri-NTPS line



ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Dharmanagar S/S of Tripura Power system of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक)**:08-04-2024**

1. Event Summary (घटना का सारांश):

Dharmanagar area of Tripura Power System is connected with the rest of NER Grid through 132 kV Dharmanagar- PK Bari and 132 kV Dharmanagar-Dullavcherra lines.

At 10:15 Hrs of 10.03.2024, 132 kV PK Bari-Dharmanagar and 132 kV Dharmanagar-Dullavchhera lines tripped. Due to tripping of these elements, Dharmanagar area of Tripura power system got isolated from NER grid and collapsed due to no source available in these areas.

2. Time and Date of the Event (घटना का स मय और दिनांक)**:** 1**0:15 Hrs on** 10-03-2024

3. Event Category (ग्रिड **घटना का प्रकार**)**:** GD-I

4. Location/Control Area (स्थान/नियंत्रण क्षेत्र): Dharmanagar of Tripura

5. Antecedent Conditions (पूर्ववर्ती स्थिति):

	Frequency in Hz	Regional Generation (MW)	Regional Demand (MW)	State Generation (MW)	State Demand (MW)
Pre-Event (घटना पूर्व)	50.03	1907	1895	124.6	142
Post Event (घटना के बाद)	50.03	1894	1876	124.3	125

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	NIL
Weather Condition (मौसम स्थिति)	Normal

2. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 13 MW in Dharmanagar
3. **Duration of interruption (रुकावट की अवधि): 1 Hour 36 min**
4. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

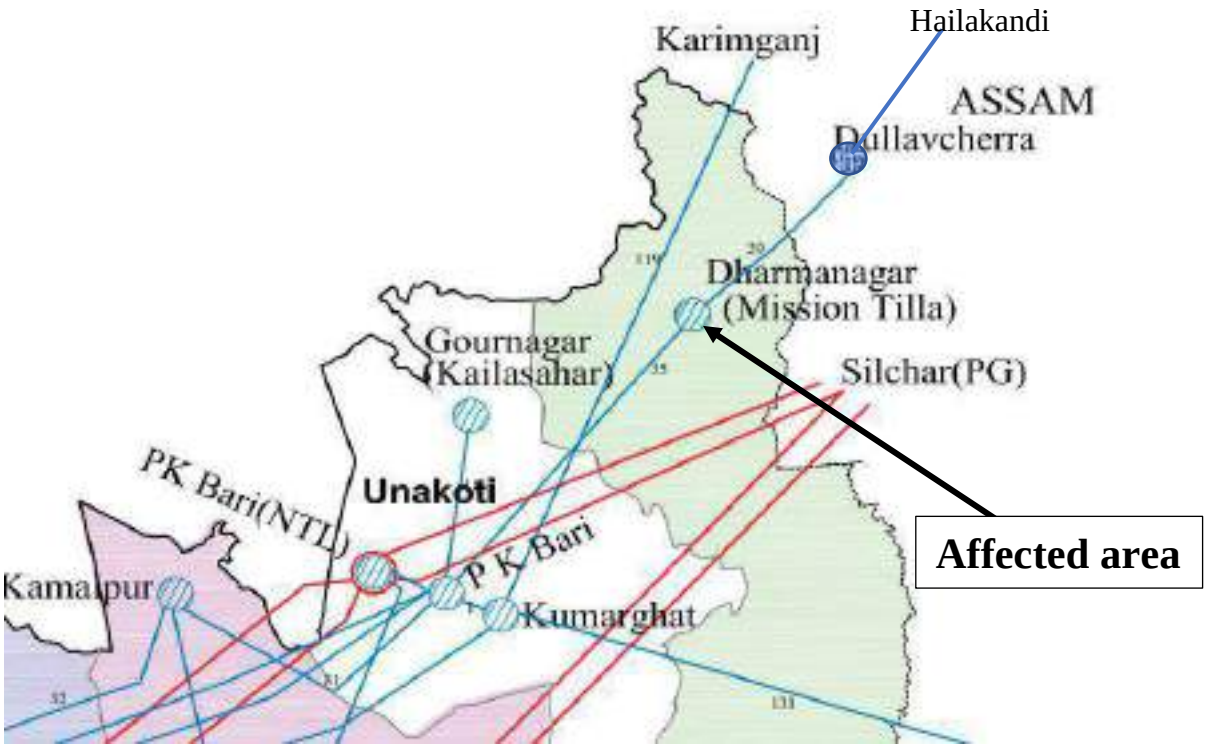


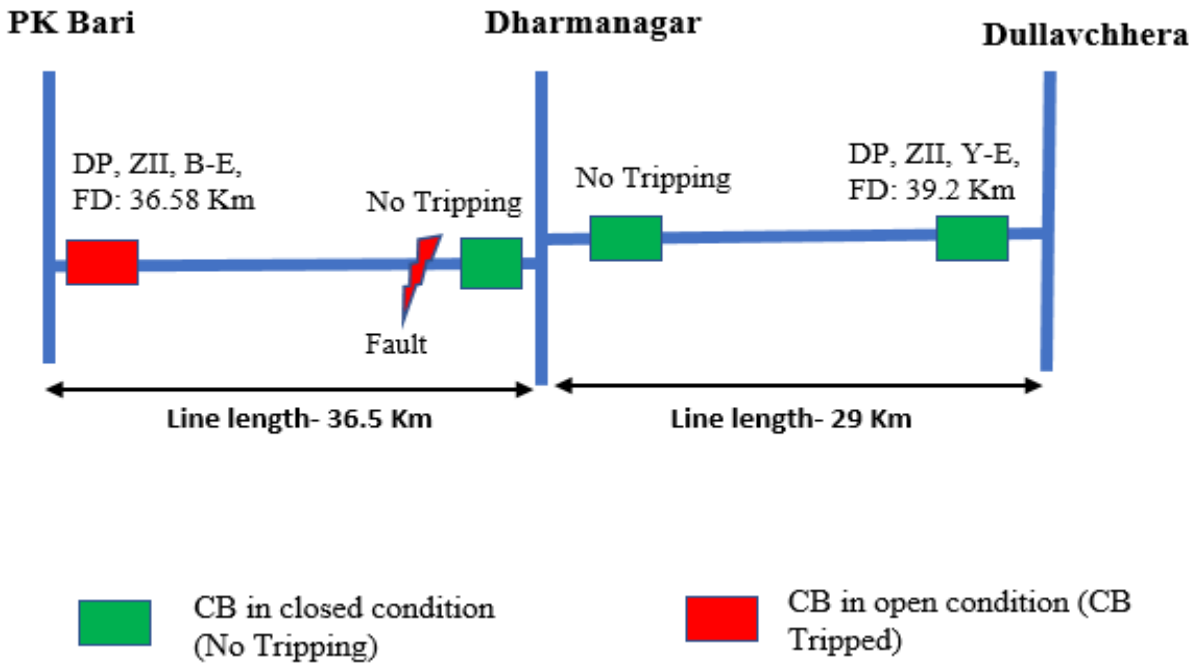
Figure 1: Network across the affected area

5. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

6. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132 kV PK Bari-Dharmanagar Line	10:15	11:54	DP, ZII, B-E, FD: 36.58 Km	No tripping
2	132 kV Dharmanagar-Dullavchhera Line	10:15	12:04	No tripping	DP, ZII, Y-E, FD: 39.2 Km

7. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):



As per DR analysis, B-phase fault in 132 kV PK Bari-Dharmanagar line which was cleared from PK Bari end within 412 msec on operation of DP, ZII. The fault did not clear from the system due to non-opening of CB at Dharmanagar which led to clearing of fault by tripping of 132 kV Dharmnagar-Dullavcherra line from Dullavchhera end on operation of DP, ZII.

8. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

- Non clearance of fault from Dharmanagar end needs to be checked by TSECL. The healthiness of tripping circuit from Distance relay to Trip relay to CB mechanism along with CB pole continuity during CB OPEN and CB CLOSE condition to be checked by TSECL and it is to be resolved on urgent basis to prevent repetition.
- SOE not recorded for tripping of 132 kV Dharmanagar-PK Bari and 132 kV Dharmanagar-Dullavchhera lines. The same needs attention by team TSECL and AEGCL.

9. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power supply was extended to Dharmanagar area of Tripura Power System by charging 132 kV PK Bari – Dharmanagar line at 11:54 Hrs of 10.03.2024.

- TSECL availed shutdown of 132 kV PK Bari-Dharmanagar line on 19.03.2024 to test the AREVA make SF6 Circuit Breaker at Dharmanagar end. The following tests were conducted:

  i) Continuity Test between Incoming to Outgoing side of all 3(three) phases in Breaker "ON" condition: Found OK

  ii) Continuity Test between Incoming to Outgoing side of all 3(three) phases in Breaker "OFF" condition: R-Ph: Malfunctioning, Y-Ph: Malfunctioning, B-Ph: OK.

  iii) The matter has been discussed by TSECL with Competent Authority. Overhauling of said Breaker will be done shortly.

10. Non-compliance observed (विनियमन का गैर-अनुपालन):

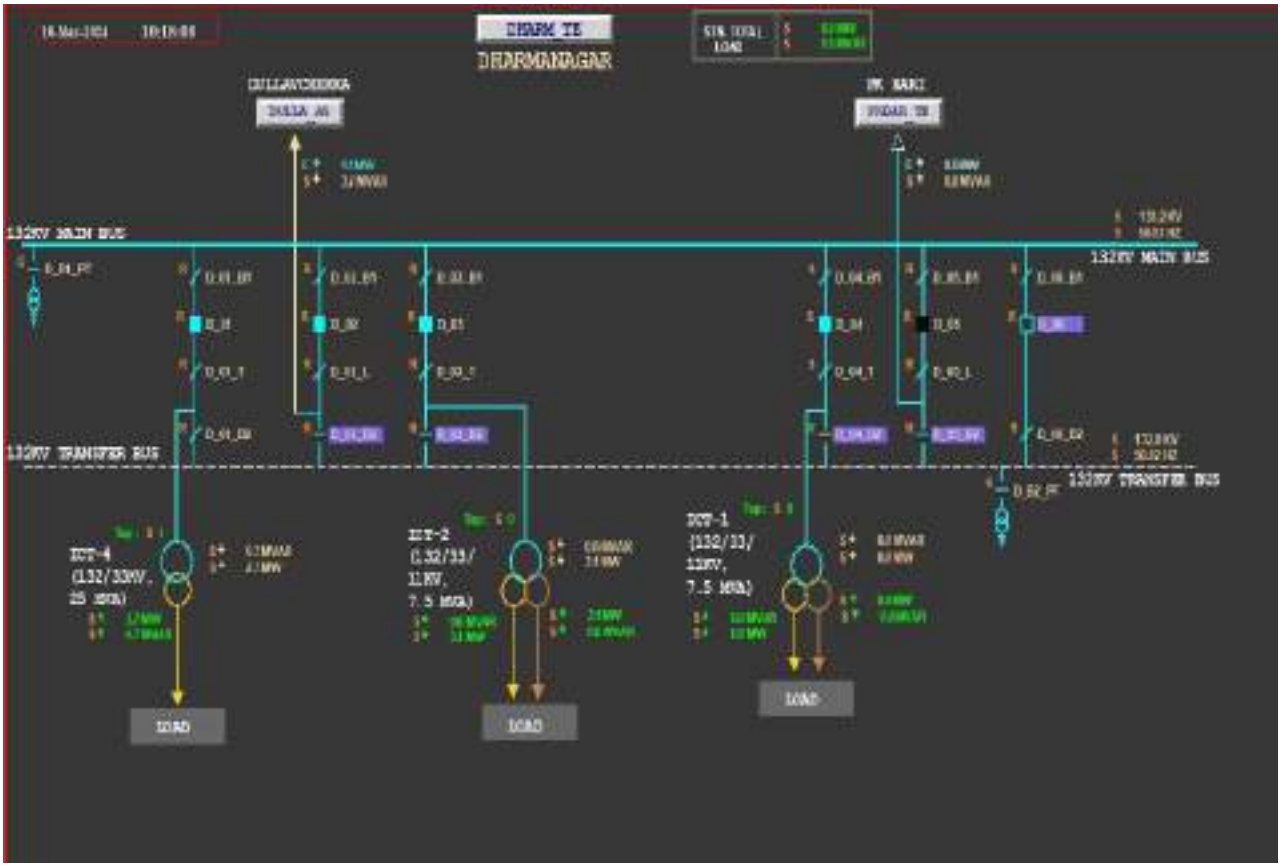
Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	**TSECL**
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**AEGCL**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**TSECL**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	-
5.	**Any other non-compliance**		-

11. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

Healthiness of protection system and CB switchgear like CB timing, DCRM, IR value needs to be checked regularly for ensuring healthiness.

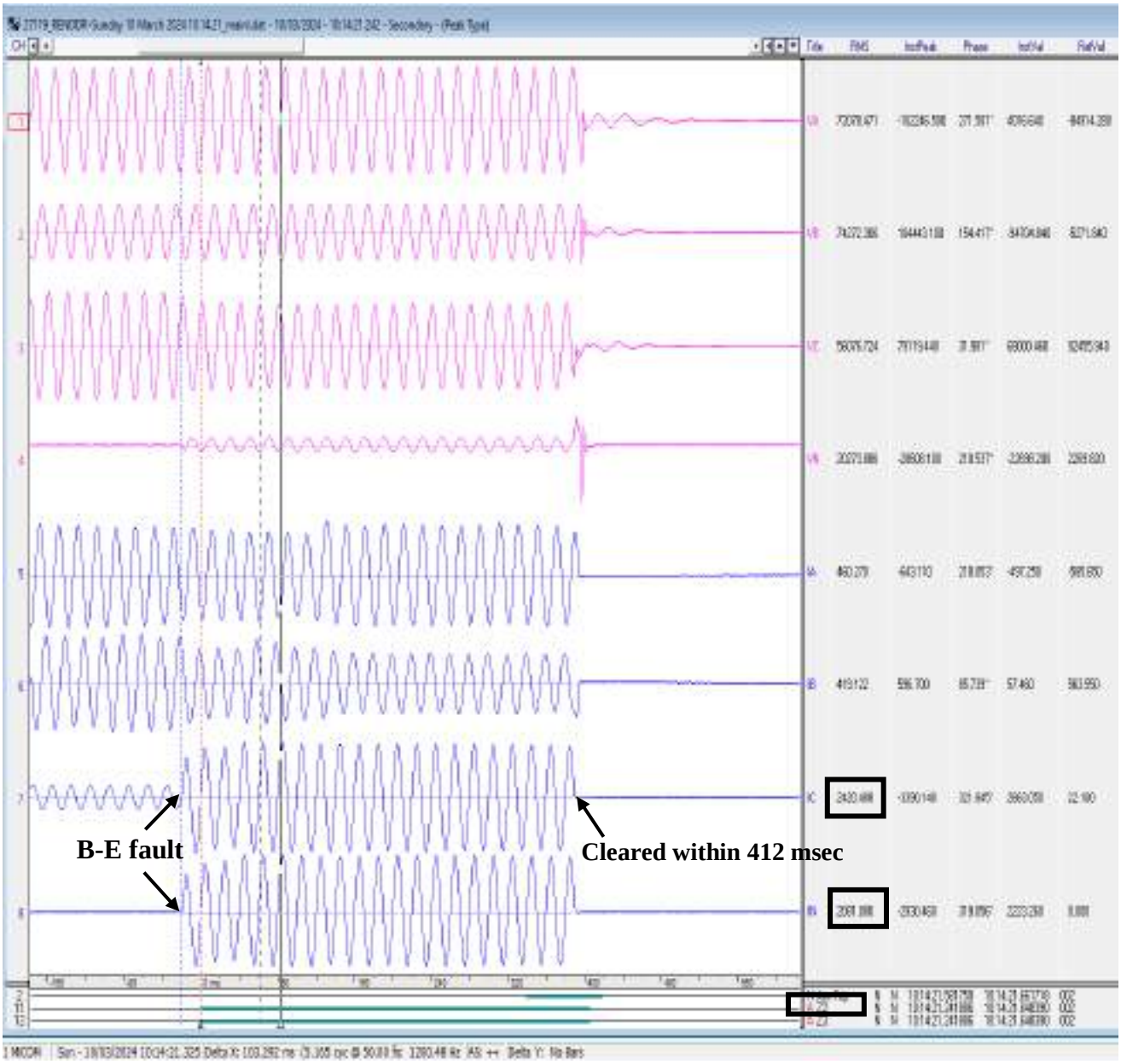
Annexure 1: Sequence of Events as per SCADA - SOE not recorded

Annexure 2: SLD of the effected SS

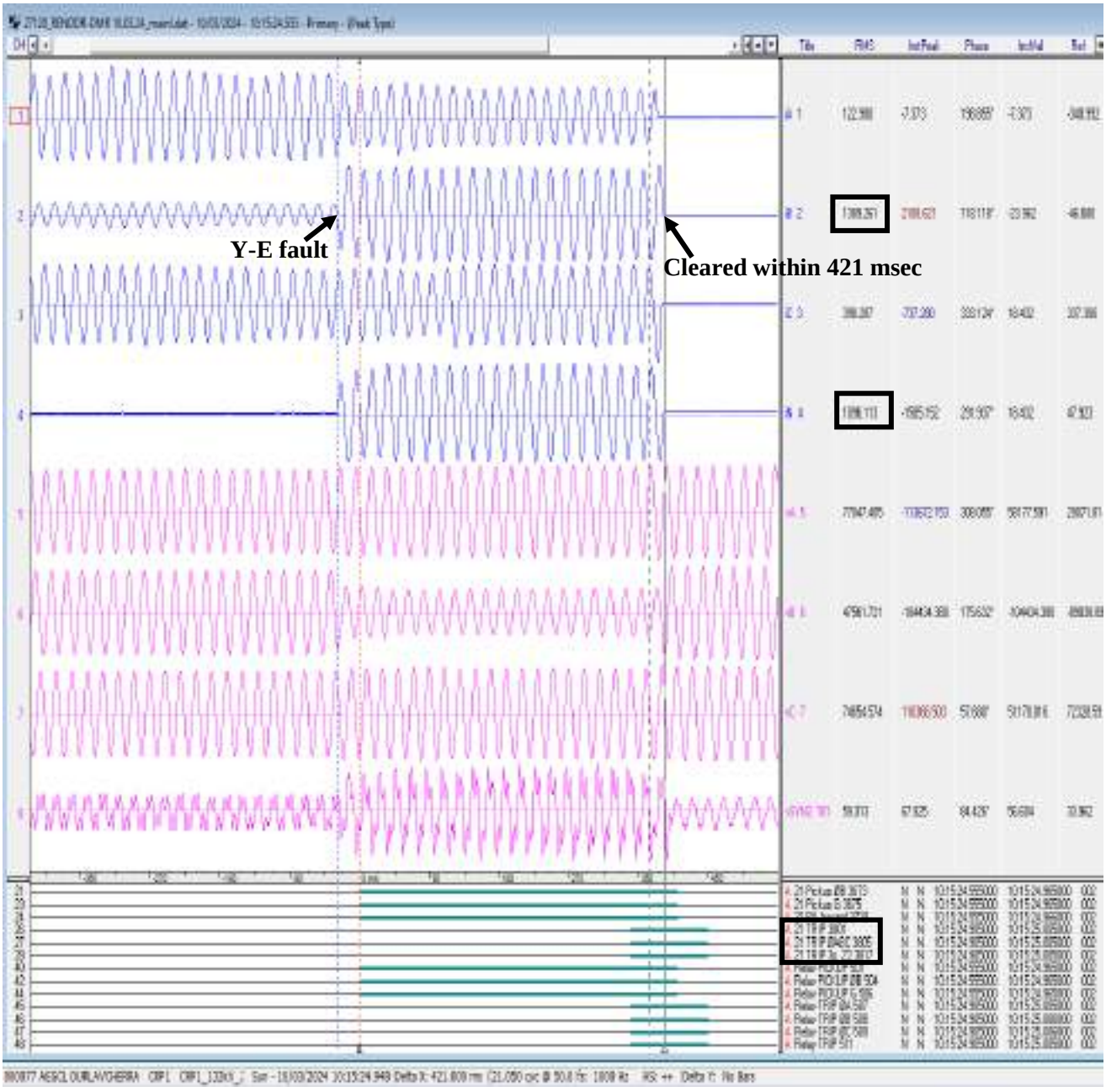


Annexure 3: Disturbance recorder snips showing faults and digital signals

3.1. DR Snapshot of PK Bari for 132 kV Dharmanagar-PK Bari line



3.2. DR Snapshot of Dullavchhera for 132 kV Dharmanagar-Dullavchhera line



ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Wokha S/S of Nagaland of North Eastern Region
(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक**):18-03-2024**

1. **Event Summary (घटना का सारांश):**

Wokha area of Nagaland Power System is connected with the rest of the grid by 132 kV Wokha-Sanis and 132 kV Wokha-Chiephebozou lines.

At 10:30 Hrs of 12.03.2024, 132 kV Wokha-Sanis and 132 kV Wokha-Chiephebozou lines tripped. Due to tripping of these elements, Wokha area of Nagaland Power System was isolated from NER Grid and collapsed due to no source available in this area.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 10:30 Hrs on 12-03-2024
3. **Event Category** (ग्रिड **घटना का प्रकार**)**:** GD-I
4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Wokha area of Nagaland
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	50.03	1758	2020	7	80.1
Post Event (घटना के बाद)	50.03	1755	2025	6	75.8

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	NIL
Weather Condition (मौसम स्थिति)	Normal

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 5 MW at Wokha. There was no generation loss.
7. **Duration of interruption (रुकावट की अवधि): 35 minutes**
8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

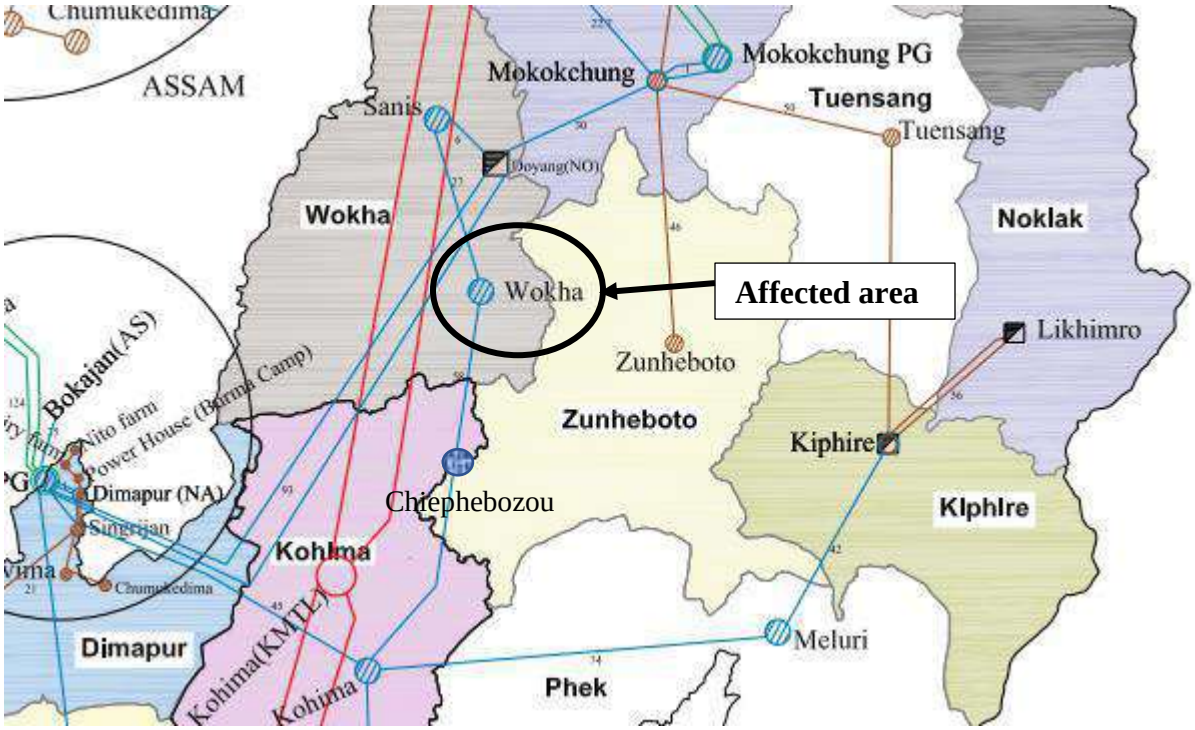


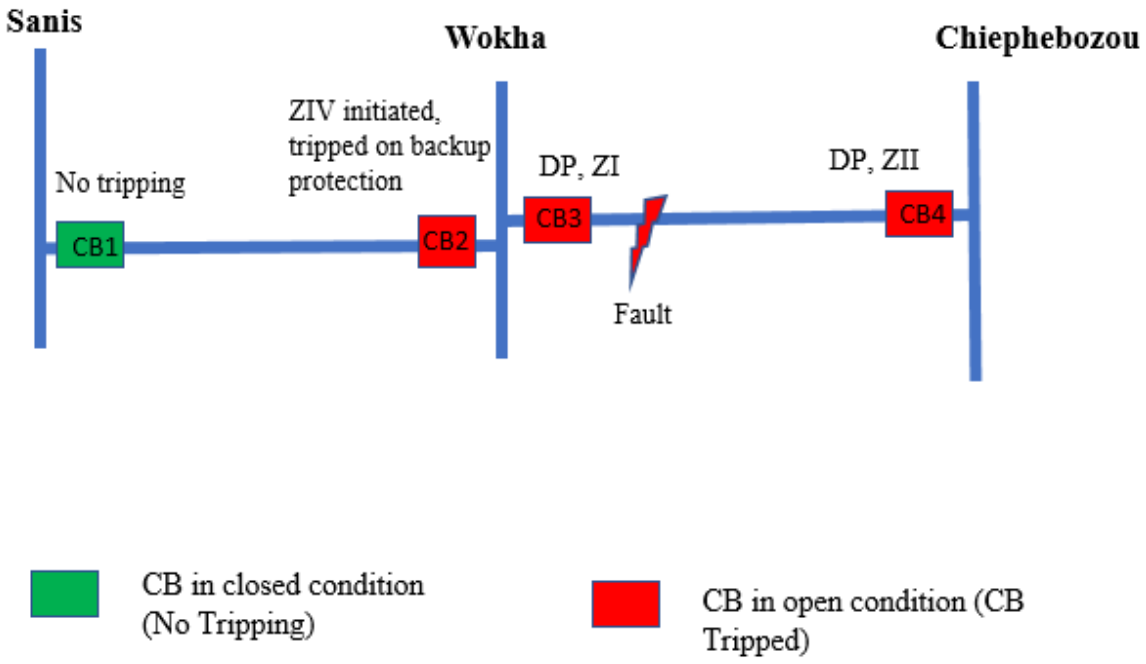
Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132 kV Wokha-Sanis Line	10:30	11:05	Backup protection operated	No tripping
2	132 kV Wokha-Chiephebozou Line	10:30	11:45	DP, ZI, YB	DP, ZII, YB

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):



As per the PMU snap of Dimapur SS, Y-B phase fault initiated at 10:30:50.36 Hrs and cleared at 10:30:50.76 Hrs. Fault clearance time is around 400 msec.

As per DR analysis, Y-B phase fault in 132 kV Wokha-Chiephebozou line and it was cleared from Wokha within 70 msec and Chiephebozou within 420 msec on operation of distance protection. ZIV was initiated at Wokha end for 132 kV Wokha-Sanis line which indicates fault is in reverse direction. Fault current disappears within 70 msec by operation of B/U protection leading to blackout of 132/33 kV Wokha SS.

The fault was due to a tree branch coming in contact with the 132 kV Wokha-Chiephebozou line at Longsa village.

12. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

- 132 kV Wokha-Chiephebozou line tripped within 420 msec on ZII. No carrier aided tripping was recorded after Z-II pick up. Same needs to be checked by DoP Nagaland and explore installation of PLCC/DTPC for carrier aided tripping scheme as per NERPC protection philosophy.
- Tripping of 132 kV Wokha-Sanis line inferred to be unwanted as DR of Wokha shows ZIV initiated (reverse fault).DoP Nagaland needs to check the directionality of backup relay for 132 kV Wokha-Sanis line at Wokha and ensure the forward direction of backup protection relay along with proper setting.
- Clearance issues (Y-B) needs to be checked and it is to be rectified to prevent further tripping due to such fault.

13. Action Taken/Remedial Measures (सुधारात्मक उपाय):

Power supply was extended to Wokha area of Nagaland Power System by charging 132 kV Wokha-Sanis line at 11:05 Hrs of 12.03.2024. 132kV Wokha-Cheiphebozou line was charged at 11:45 hrs of 12.03.2024.

14. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	No violation
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**DoP Nagaland**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	No violation
4.	**DR Time Synchronization Issues**	IEGC section 17.3	-
5.	**Any other non-compliance**		-

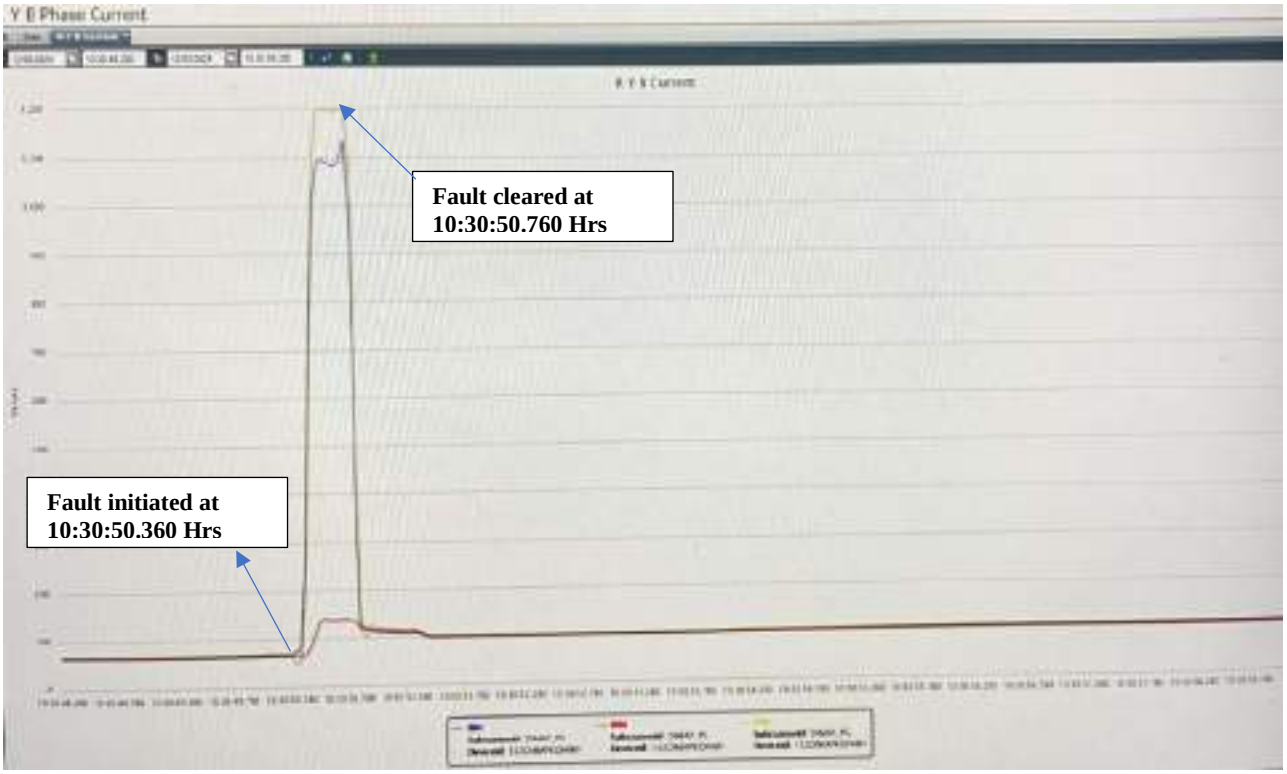
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- Importance of periodic review of the relay settings and maintenance of phase clearance to avoid tripping of important lines.
- Nagaland is requested to carry out patrolling and maintenance related activities as per various CEA/CERC regulations.

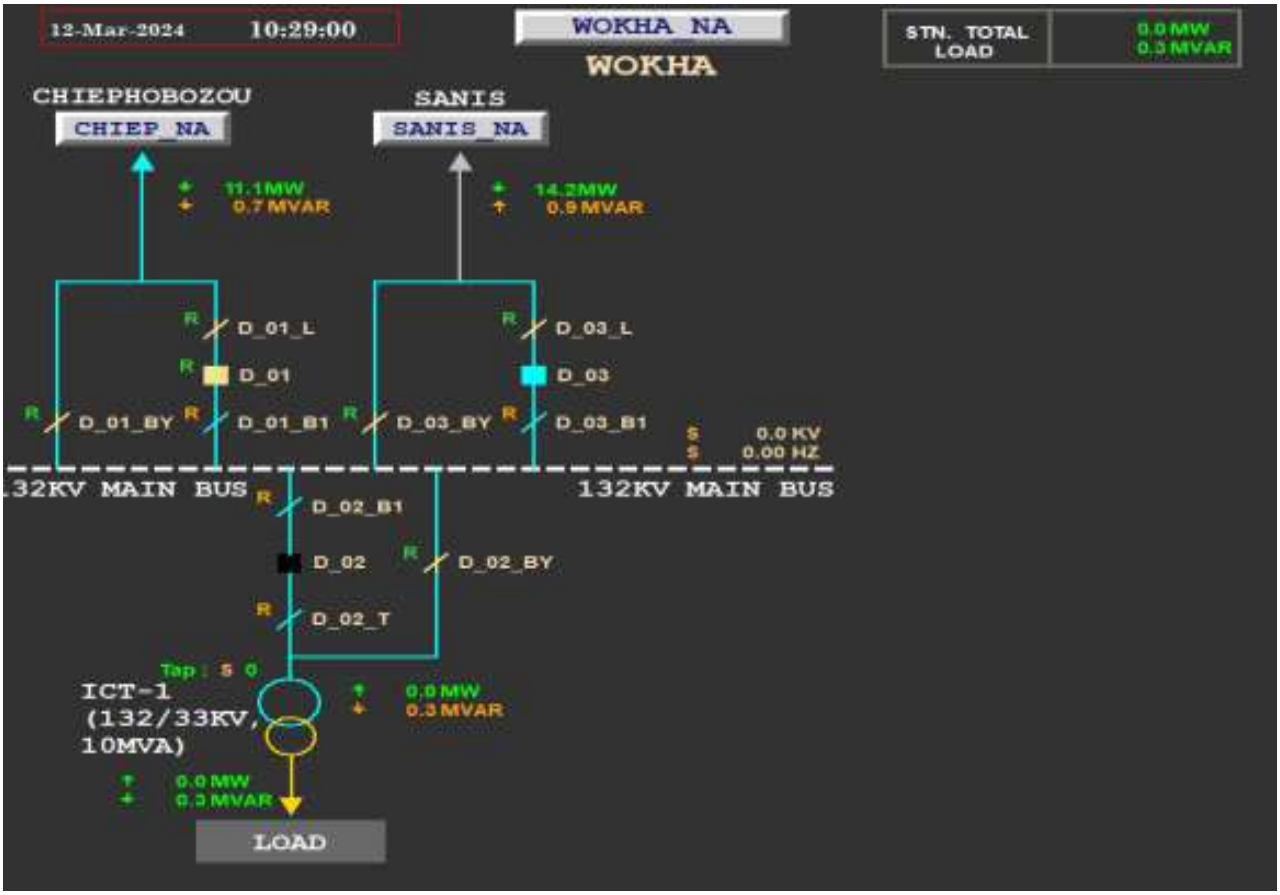
Annexure 1: Sequence of Events as per SCADA

AREA	CATEGORY	LOCATION	TEXT	SYSTEM_TIME	FIELD_TIME	MS
NAGALD	1C	DIMAP_NA	DIMAPUR NAGARJAN CB 33Kv LOAD-1 CLOSED	12 Mar 2024 10:28:14:000	12 Mar 2024 10:28:07:000	7.19E+08
AEGCL	1C	SISHU_AS	SISHUGRAM CB 33 KV CP 1 1 CB OPEN	12 Mar 2024 10:29:03:000	12 Mar 2024 10:28:57:000	6.95E+08
MEECL	1C	UMIA2_ME	UMIAM II CB 11 KV UNIT (H02) OPEN	12 Mar 2024 10:29:25:000	12 Mar 2024 10:29:18:000	4.23E+08
NAGALD	1C	WOKHA_NA	WOKHA CB 132Kv LINE TO CHIEP OPEN	12 Mar 2024 10:30:53:000	12 Mar 2024 10:30:50:000	7.77E+08
NAGALD	1C	WOKHA_NA	WOKHA CB 132Kv LINE TO SANIS OPEN	12 Mar 2024 10:30:53:000	12 Mar 2024 10:30:50:000	7.92E+08
AEGCL	1C	LAKHI_AS	NORTH LAKHIMPUR CB 132Kv LINE TO MAJUL CLOSE	12 Mar 2024 10:32:21:000	12 Mar 2024 10:32:16:000	5.5E+08
AEGCL	1C	MAJUL_AS	MAJULI CB 132/33 T1 (PRIM) CLOSED	12 Mar 2024 10:32:24:000	12 Mar 2024 10:32:20:000	6.8E+08
AEGCL	1C	MAJUL_AS	MAJULI CB 132/33 T2 (PRIM) CLOSED	12 Mar 2024 10:32:24:000	12 Mar 2024 10:32:20:000	6.8E+08
AEGCL	1C	MAJUL_AS	MAJULI CB 132/33 T2 (SEC) CLOSED	12 Mar 2024 10:32:24:000	12 Mar 2024 10:32:20:000	6.8E+08
MEECL	1C	NANGA_ME	NANGALBIBRA CB 33Kv LOAD BAGHM CLOSED	12 Mar 2024 10:57:30:000	12 Mar 2024 10:53:44:000	6.32E+08
MEECL	1C	NANGA_ME	NANGALBIBRA CB 33Kv LOAD BAGHM OPEN	12 Mar 2024 10:56:02:000	12 Mar 2024 10:55:58:000	6.03E+08
NAGALD	1C	WOKHA_NA	WOKHA CB 132Kv LINE TO SANIS CLOSED	12 Mar 2024 11:04:03:000	12 Mar 2024 11:04:00:000	4.57E+08
NAGALD	1C	DIMAP_NA	DIMAPUR NAGARJAN CB 66Kv LINE-1 TO SINJN OPE	12 Mar 2024 11:12:46:000	12 Mar 2024 11:12:36:000	7.55E+08
AEGCL	1C	JRTWT_AS	JORHAT (WEST) CB 132/33 T1 (PRIM) CLOSED	12 Mar 2024 12:06:31:000	12 Mar 2024 11:14:15:000	1.12E+08

Annexure 2: PMU snapshot 132 kV Dimapur-Kohima Line for Dimapur end

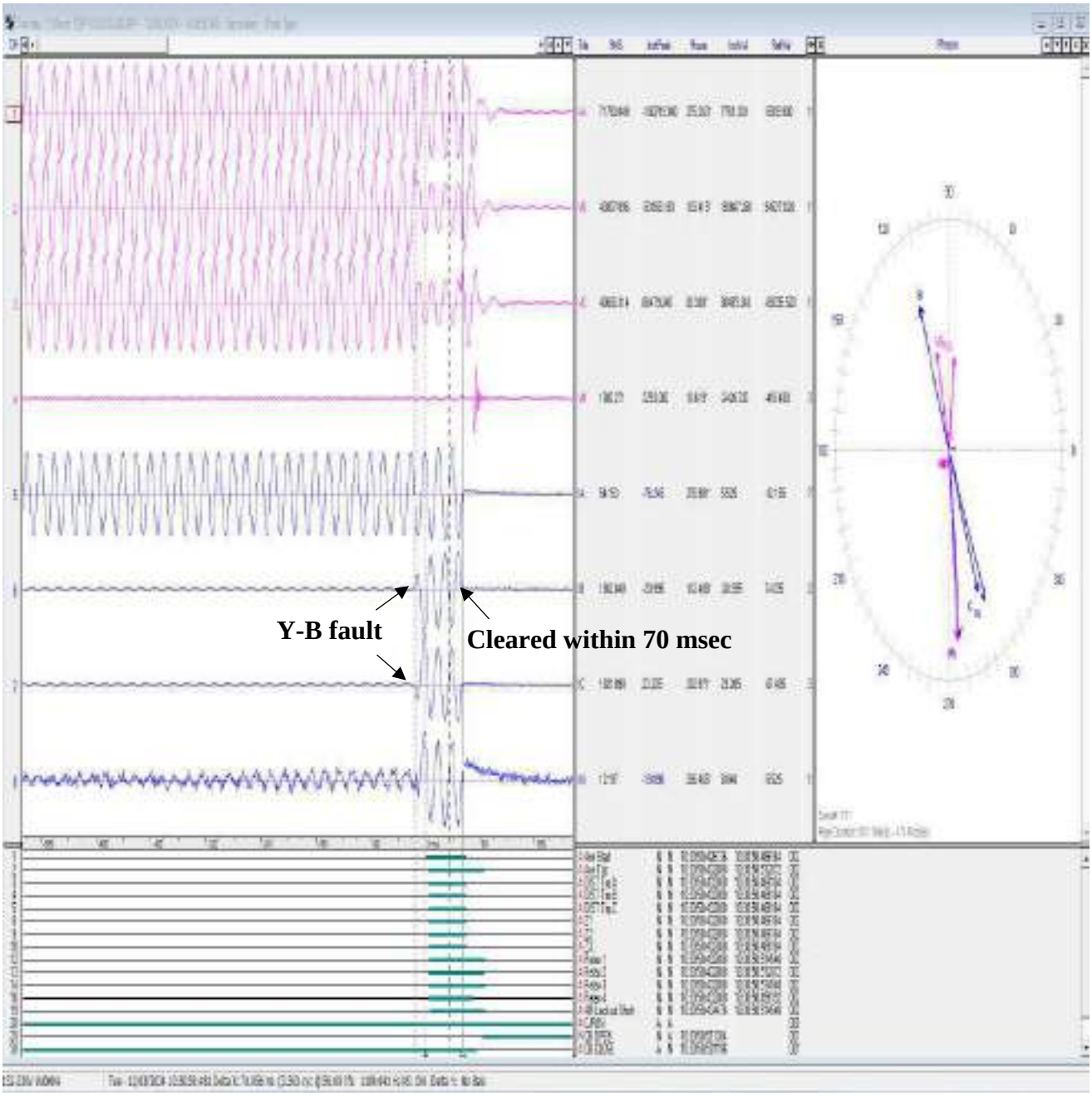


Annexure 3: SLD of the effected SS

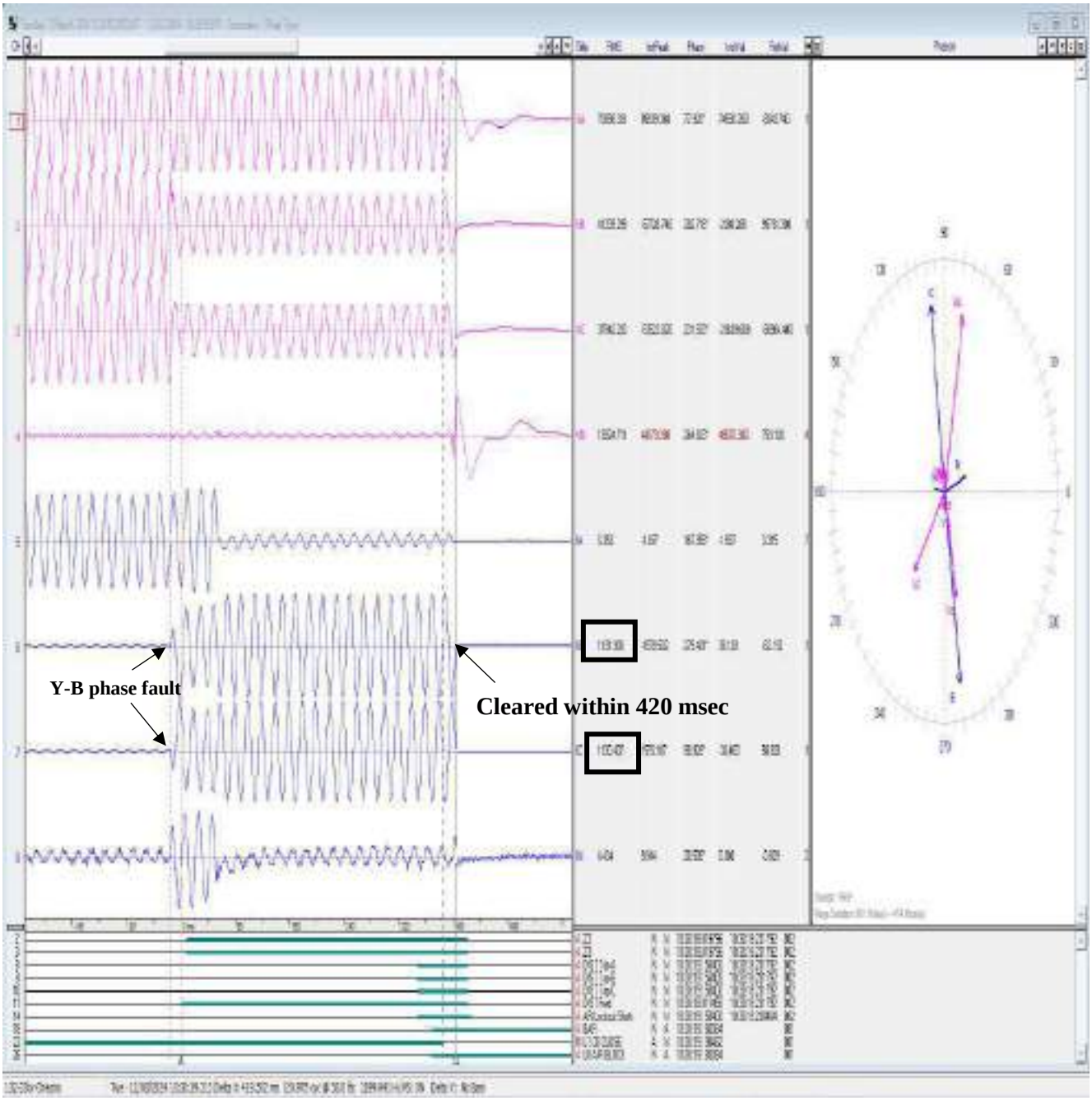


Annexure 4: Disturbance recorder snips showing faults and digital signals

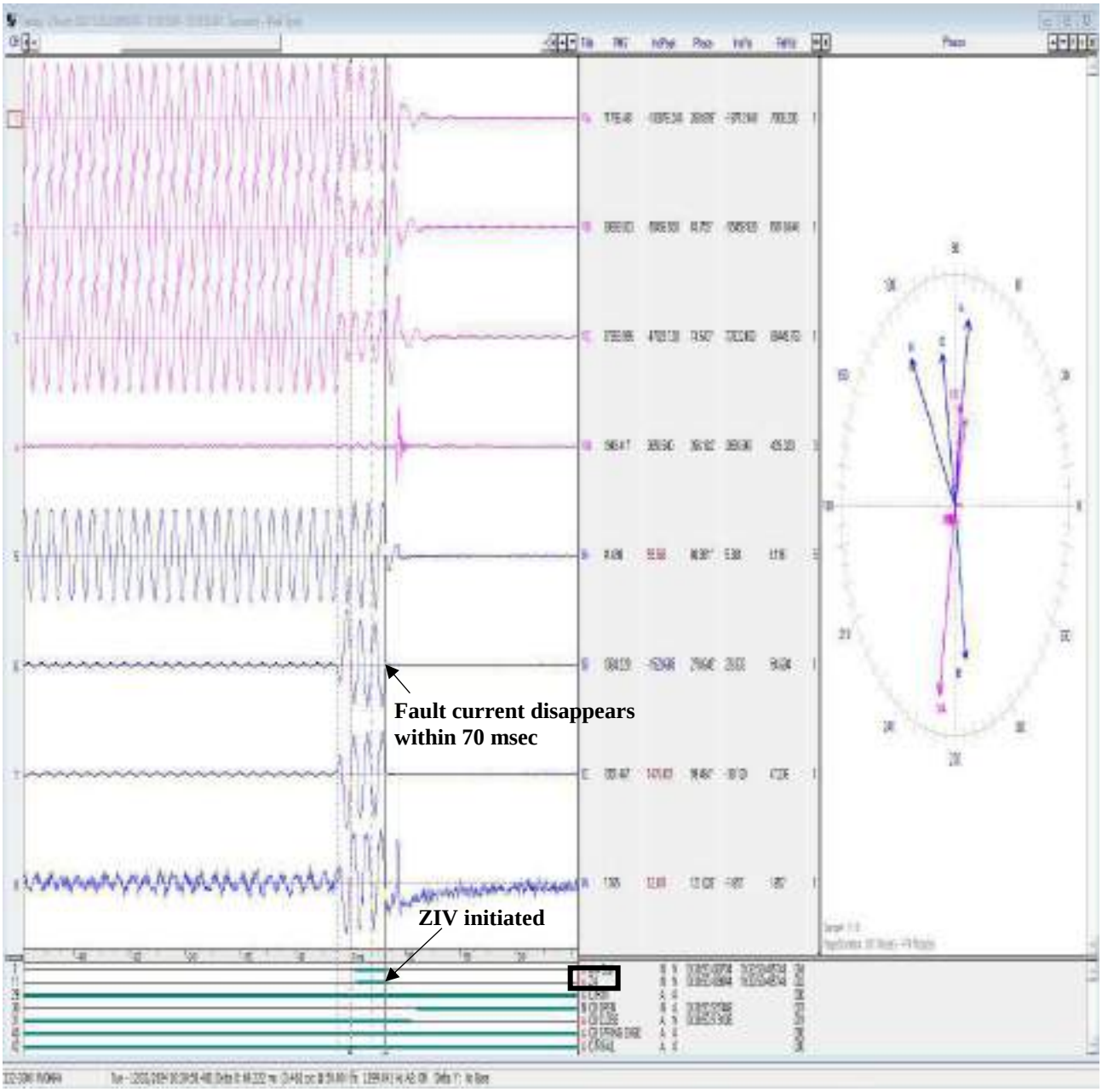
4.1. DR Snapshot of Wokha for 132 kV Wokha-Chiephebozou line



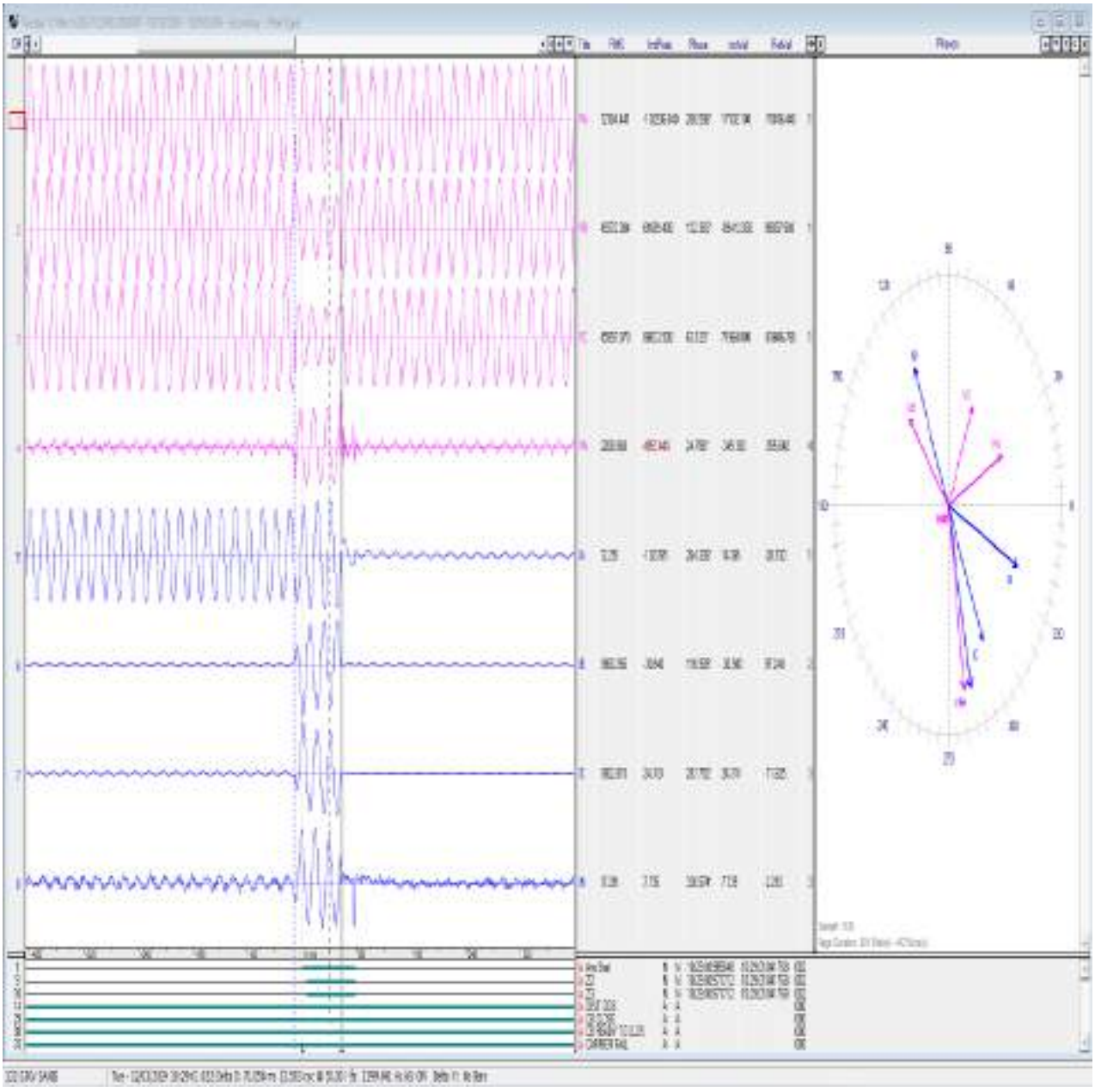
4.2. DR Snapshot of Chiephebozou for 132 kV Wokha-Chiephebozou line



4.3. DR Snapshot of Wokha for 132 kV Wokha-Sanis line



4.4. DR Snapshot of Sanis for 132 kV Wokha-Sanis line



ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Dharmanagar S/S of Tripura and Dullavchhera S/S of Assam of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक)**:01-04-2024**

1. **Event Summary (घटना का सारांश):**

Dharmanagar area of Tripura Power System and Dullavcherra area of Assam Power System were connected with rest of NER Grid through 132 kV Dharmanager- PK Bari line and 132 kV Dullavcherra-Hailakandi line.

At 15:53 Hrs of 16.03.2024, 132 kV PK Bari-Dharmanagar and 132 kV Hailakandi-Dullavchhera lines tripped. Due to tripping of these lines, Dharmanagar area of Tripura and Dullavchhera area of Assam power system got isolated from NER grid and collapsed due to no source available in these areas.

2. **Time and Date of the Event** (घटना का स मय और दिनांक)**:** 1**5:53 Hrs on** 16-03-2024

3. **Event Category** (ग्रिड **घटना का प्रकार**)**:** GD-I

4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Dharmanagar of Tripura and Dullavchhera of Assam

5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation (MW)	Regional Demand (MW)	Assam State Generation (MW)	Assam State Demand (MW)	Tripura State generation (MW)	Tripura State Demand (MW)
Pre-Event (घटना पूर्व)	49.94	2000	2326	200	1330	99	158
Post Event (घटना के बाद)	49.94	2047	2320	200	1317	100	140

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	NIL
Weather Condition (मौसम स्थिति)	Normal

2. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 18 MW in Dharmanagar and Load loss of 13 MW in Dullavchhera.
3. **Duration of interruption (रुकावट की अवधि): 20 min**
4. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

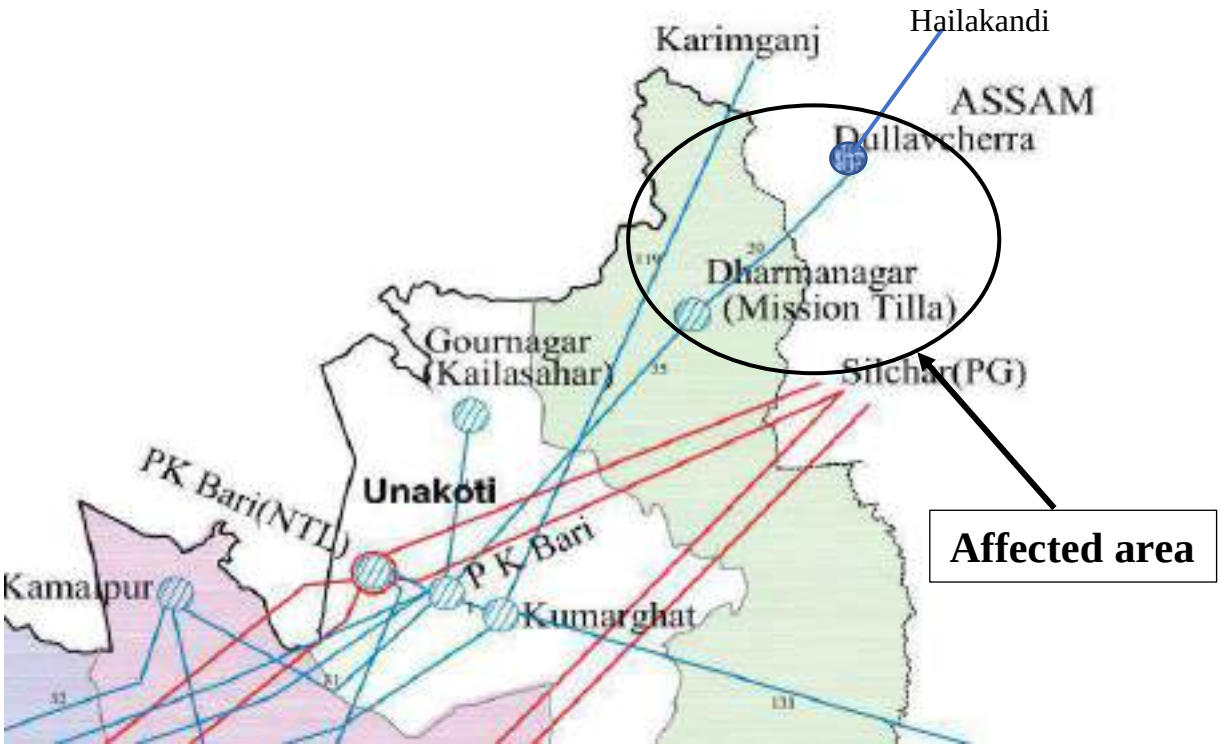


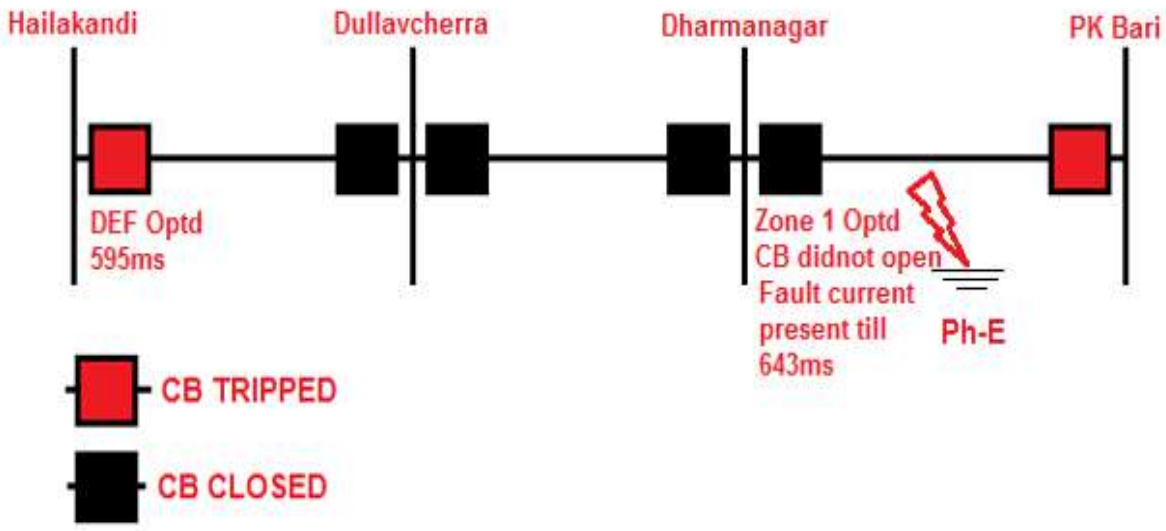
Figure 1: Network across the affected area

5. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

6. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132 kV PK Bari-Dharmanagar Line	15:53	16:14	DP, ZI, B-E, FD: 17.48 Km	No tripping(ZI trip issued but CB not opened)
2	132 kV Hailakandi-Dullavchhera Line	15:53	16:31	DEF operated	No tripping
3	132 kV Dharmanagar-Dullavchhera Line	15:53	16:43	No tripping	

7. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):



As per PMU, R-phase fault initiated at 15:54:06.120 Hrs and cleared at 15:54:06.240 Hrs. Fault clearance time: 120 msec.

As per DR analysis, B-phase fault in 132 kV PK Bari-Dharmanagar line and it was cleared from PK Bari end within 60 msec on operation of DP, ZI. The fault did not clear from system due to non-opening of CB at Dharmanagar (fault current persisting up to 643 msec as per DR data) even after issuance of Z-1 trip, which led to clearing of fault by tripping of 132 kV Hailakandi-Dullavcherra line from Hailakandi on DEF operation.

8. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

- Non clearance of fault from Dharmanagar end even after issuance of Z-1 Trip needs to be checked by TSECL. The healthiness of tripping circuit from Distance relay to Trip relay to CB mechanism along with CB pole continuity during CB OPEN and CB CLOSE condition to be checked by TSECL and it is to be resolved on urgent basis to prevent repetition.
- Tripping of 132 kV Hailakandi-Dullavchhera line would not have occurred if the fault got cleared from Dullavchhera end of 132 kV Dullavchhera-Dharmanagar line. AEGCL needs to review the setting at Dullavchhera end for 132 kV Dharmanagar and at Hailakandi end for 132 kV Dullavchhera line.
- DR of Dharmanagar recorded Y-E fault whereas DR of PK Bari recorded B-E fault for 132 kV PK Bari-Dharmanagar lines. The same needs to be corrected by TSECL for proper operation/maintenance point of view.
- SOE not recorded for tripping of 132 kV Hailakandi-Dullavchera line. The same needs attention by team AeGCL/SLDC Assam.

9. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power was extended to Dharmanagar area of Tripura Power System by charging 132 kV Dharmanager- P.K Bari line at 16:14 Hrs of 16.03.2024.
- Power was finally restored to Dullavcherra area of Assam Power System by charging 132 kV Dullavcherra-Hailakandi at 16:31 Hrs of 16.03.2024.
- As suggestion by NERLDC, the DEF settings at Hailakandi end were revised keeping in view the fault current feeding in Hailakandi – Dullavcherra – Dharmanagar link by team AeGCL.

  132 kV Dullavcherra – Dharmanagar Line: Dullavcherra End: Pickup: 80A, TMS **0.30**

  132 kV Hailakandi – Dullavcherra Line: Hailakandi End: Pickup: 80A, TMS: **0.39**
- TSECL availed shutdown of 132 kV PK Bari-Dharmanagar line on 19.03.2024 to test the AREVA make SF6 Circuit Breaker at Dharmanagar end. The following tests were conducted:

i) Continuity Test between Incoming to Outgoing side of all 3(three) phases in Breaker "ON" condition: Found OK

ii) Continuity Test between Incoming to Outgoing side of all 3(three) phases in Breaker "OFF" condition: R-Ph: Malfunctioning, Y-Ph: Malfunctioning, B-Ph: OK.

iii) The matter has been discussed by TSECL with Competent Authority. Overhauling of said Breaker will be done shortly.

10. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	No violation
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**AEGCL**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**AEGCL, TSECL**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	-
5.	**Any other non-compliance**		-

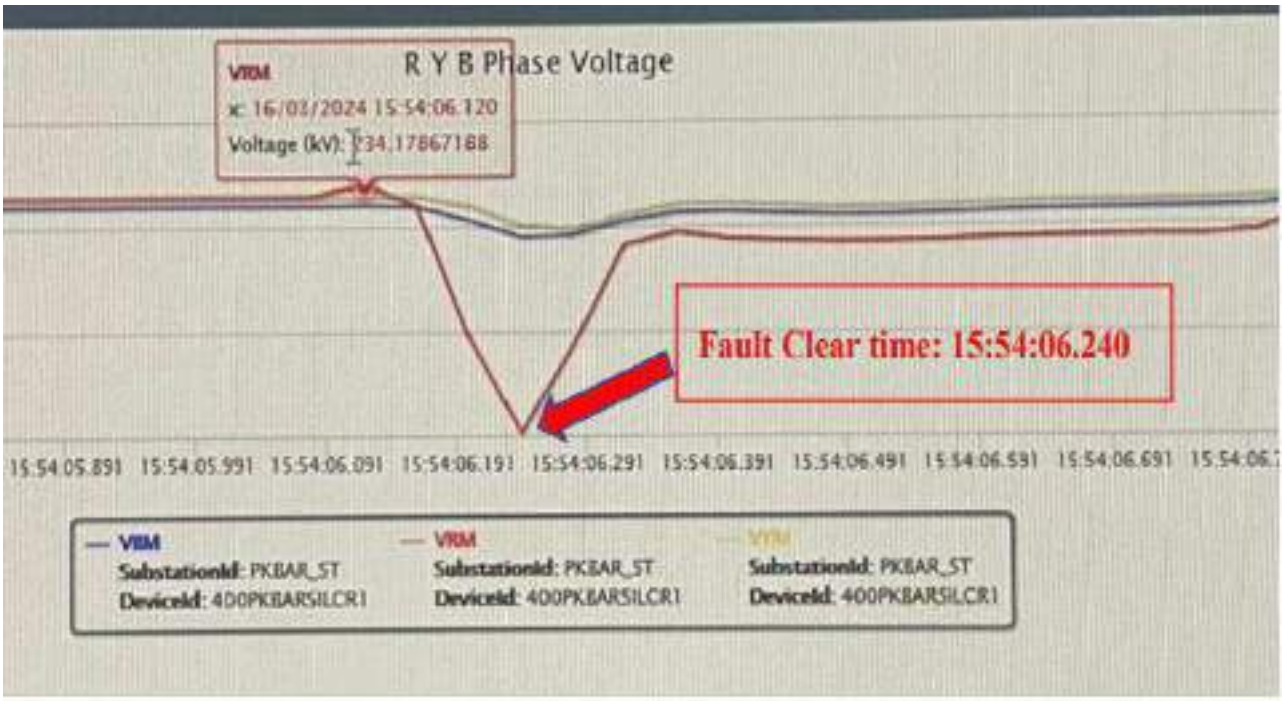
11. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

Healthiness of protection system and CB switchgear like CB timing, DCRM, IR value needs to be checked regularly for ensuring healthiness.

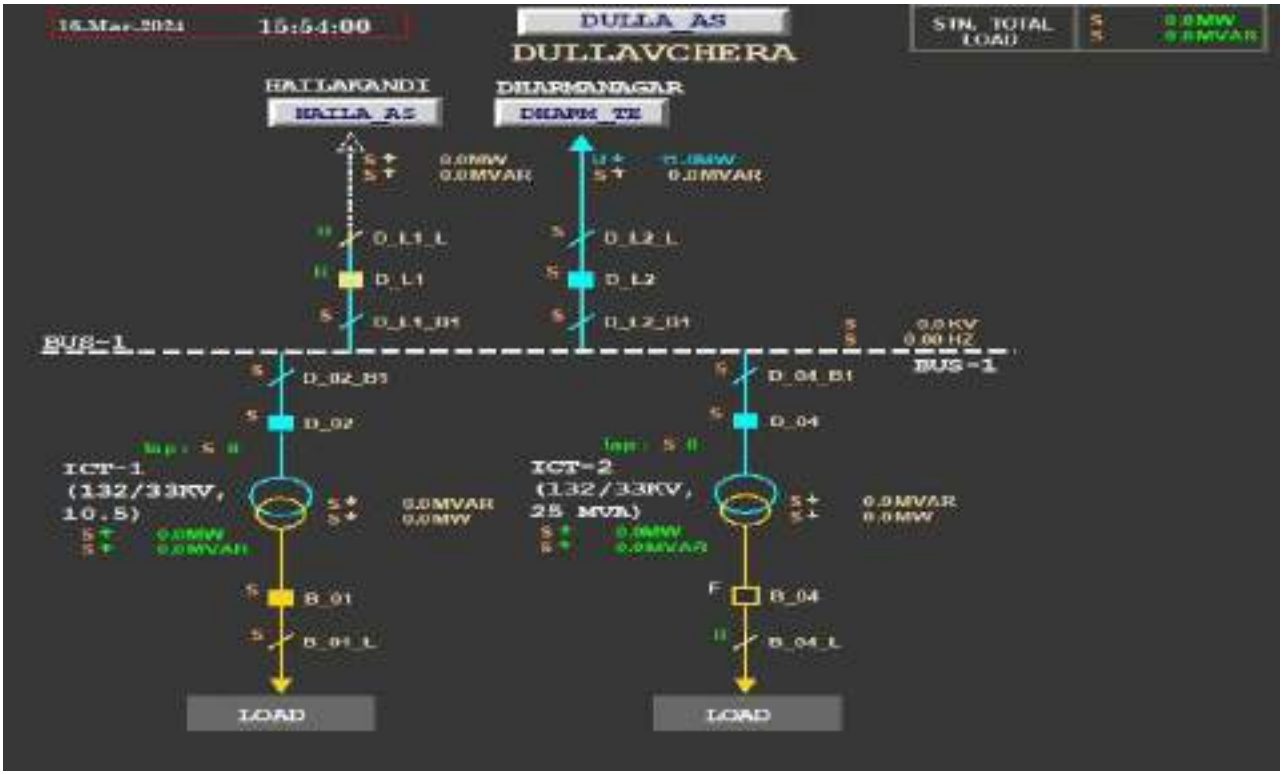
Annexure 1: Sequence of Events as per SCADA

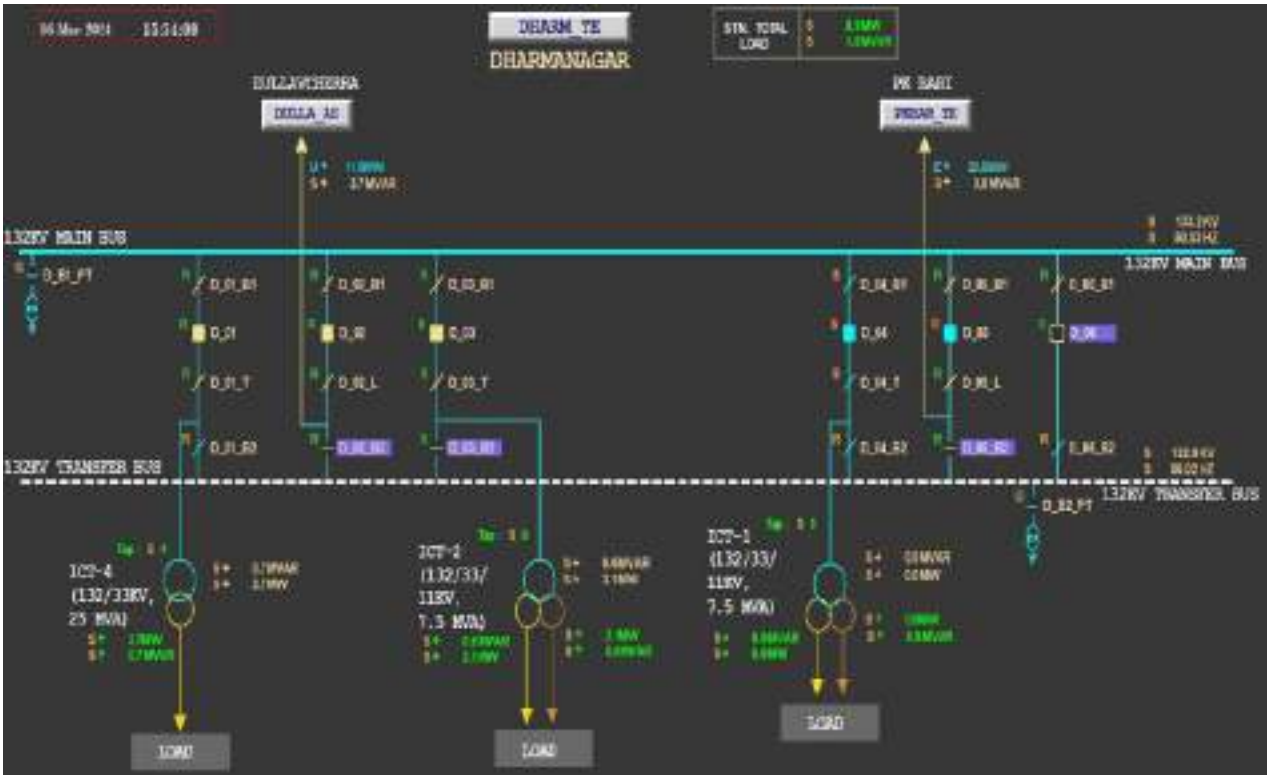
AREA	CATEGORY	LOCATION	TEXT	SYSTEM_TIME	FIELD_TIME	MS
MEECL	1C	NANGA_ME	NANGALBIBRA CB 33Kv LOAD BAGHM CLOSED	16 Mar 2024 15:52:03:000	16 Mar 2024 15:48:09:000	2.69E+08
ARUNCH	1C	KMENG_NO	KAMENG CB 11 KV UNIT (G01) CLOSED	16 Mar 2024 15:51:59:000	16 Mar 2024 15:51:42:000	7.45E+08
TSECL	1C	PKBAR_TE	PKBARI CB 132Kv LINE-1 TO DHARM OPEN	16 Mar 2024 15:54:14:000	16 Mar 2024 15:54:06:000	4.86E+08
TSECL	1C	BARMU_TE	BARMURA CB 66/11 T2 (PRIM) BETWEEN	16 Mar 2024 16:00:58:000	16 Mar 2024 16:00:22:000	9E+08
TSECL	1C	BARMU_TE	BARMURA CB 66 KV COUPLER (04) BETWEEN	16 Mar 2024 16:00:58:000	16 Mar 2024 16:00:22:000	8.98E+08
NAGALD	1C	DIMAP_NA	DIMAPUR NAGARJAN CB 33Kv LOAD-1 OPEN	16 Mar 2024 16:04:09:000	16 Mar 2024 16:03:51:000	5.76E+08

Annexure 2: PMU snapshot of PK Bari end for 400 kV PK Bari-Silchar I line



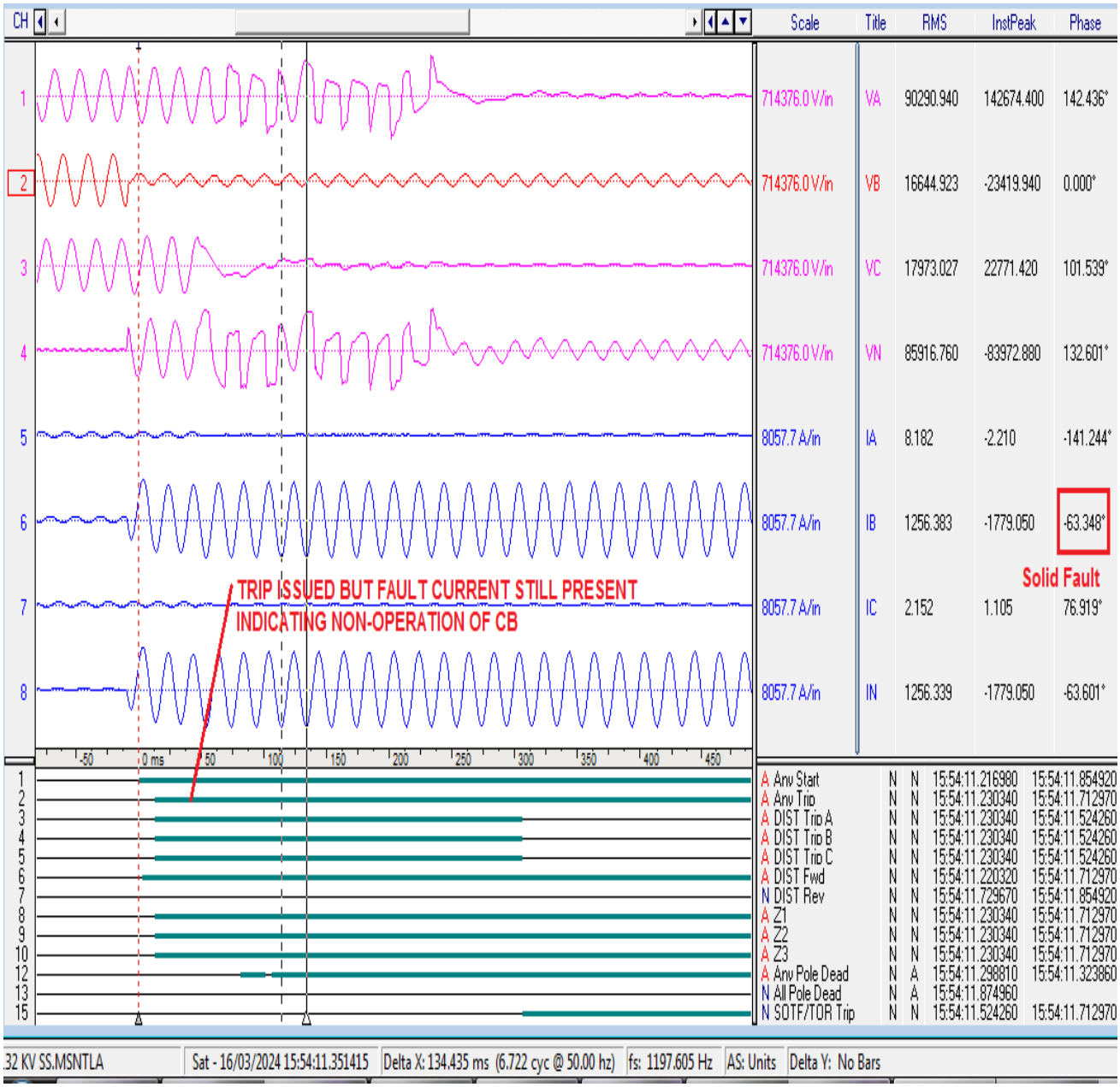
Annexure 3: SLD of the effected SS



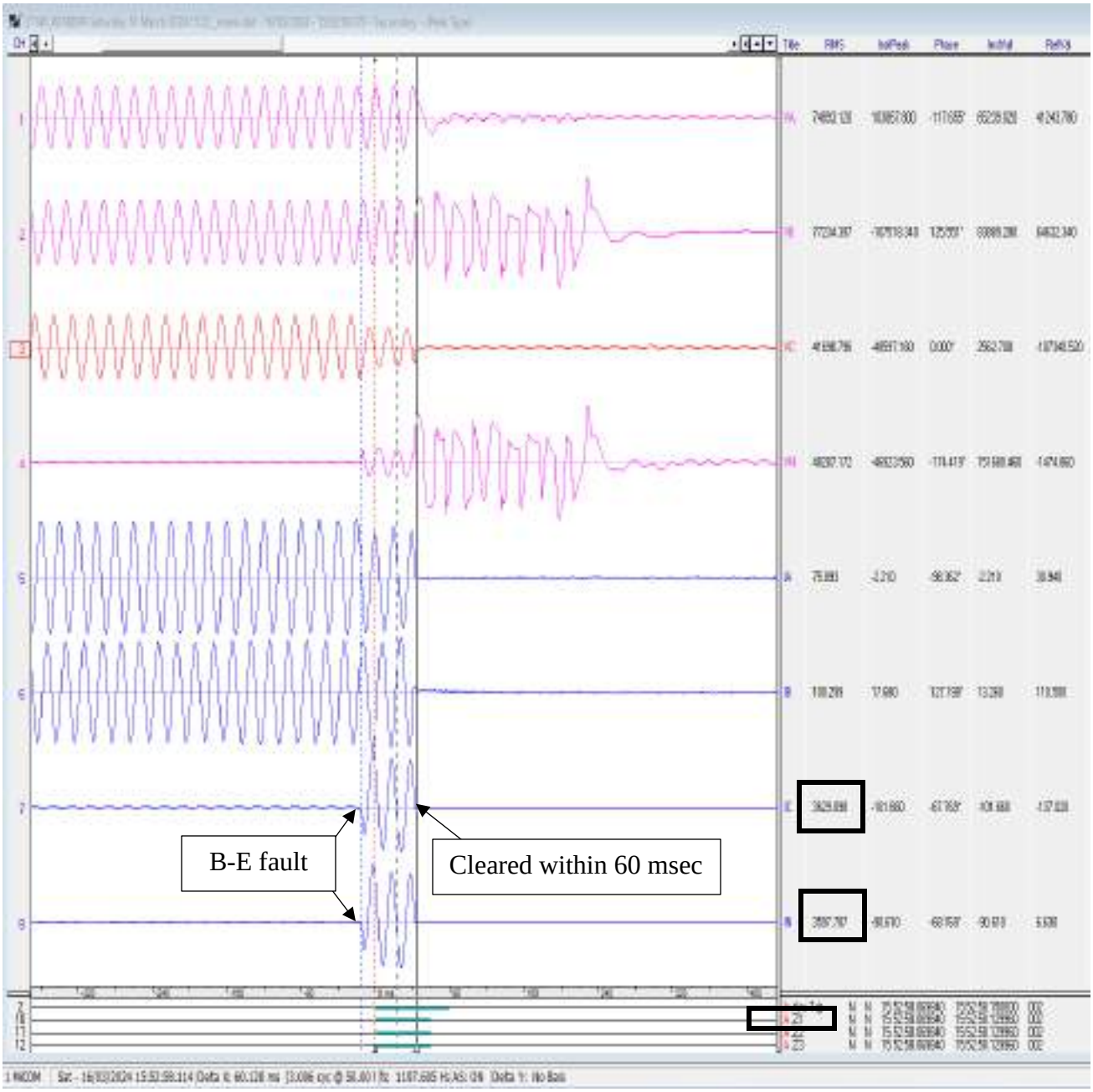

DHARM_TR
DHARMANAGAR
STN TOTAL LOAD
BULLAYSHERRA
DHARM_TR
PK BARI
132KV MAIN BUS
132KV TRANSFER BUS
ICT-4
(132/33KV, 25 MVA)
ICT-2
(132/33/ 11KV, 7.5 MVA)
ICT-1
(132/33/ 11KV, 7.5 MVA)
LOAD
LOAD
LOAD

Annexure 4: Disturbance recorder snips showing faults and digital signals

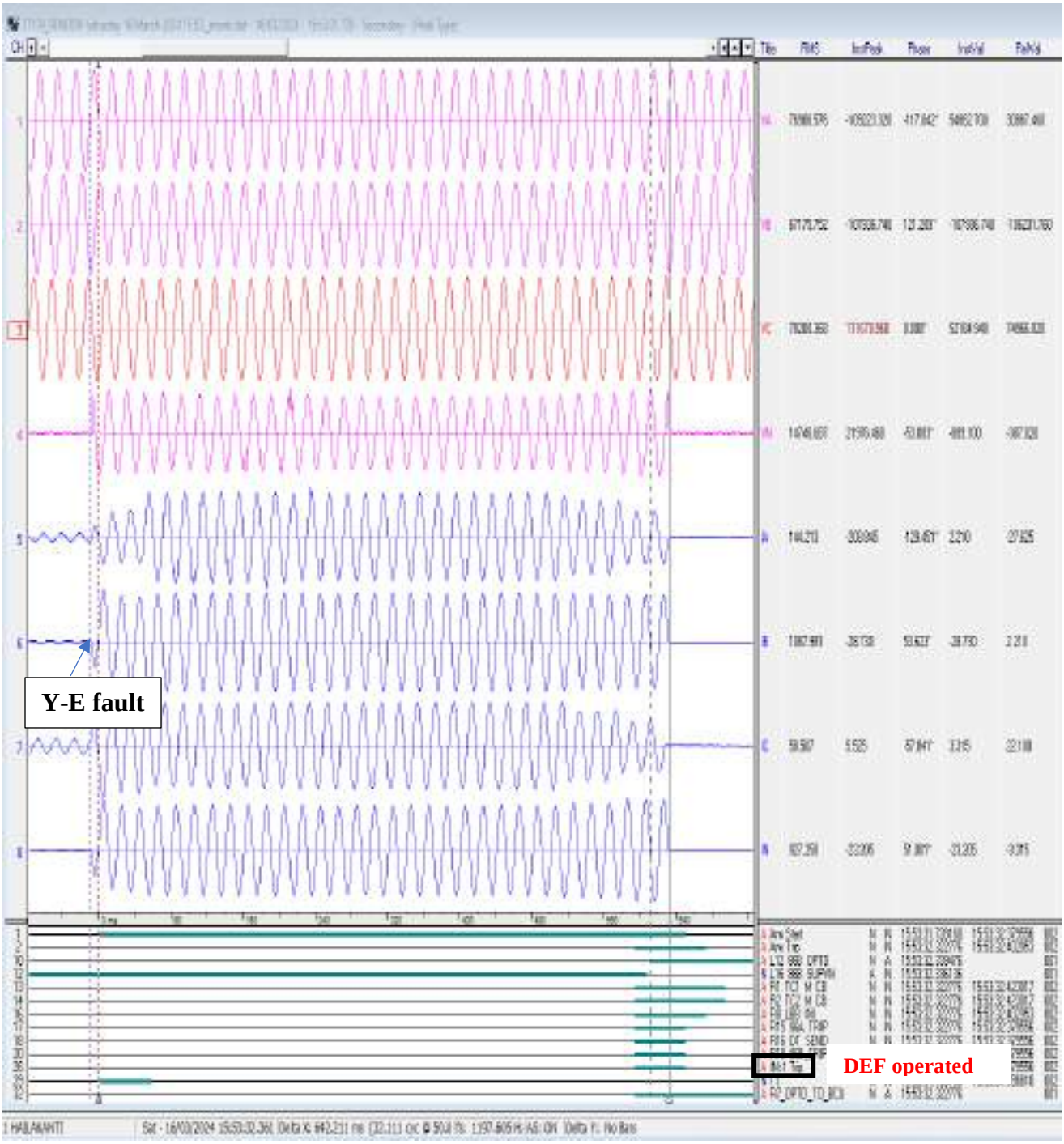
4.1. DR Snapshot of Dharmanagar for 132 kV Dharmanagar-PK Bari line



4.2. DR Snapshot of PK Bari for 132 kV Dharmanagar-PK Bari line



4.3. DR Snapshot of Hailakandi for 132 kV Hailakandi-Dullavchhera line



ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Sarusajai, Kahelipara, AIIMS, Kamakhya and Dispur areas of Assam of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))

(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक**):09-04-2024**

1. **Event Summary (घटना का सारांश):**

Sarusajai, Kahelipara, AIIMS, Kamakhya and Dispur areas of Assam Power System were connected with rest of the NER grid through 220kV Sarusajai – Mirza D/C, 220kV Sarusajai – Jawaharnagar, 220kV Sarusajai – Sonapur and 132kV Dispur – Chandrapur lines. Prior to the incident, 132kV Kamakhya – Sishugram and 132kV AIIMS-Amingaon lines were in open condition to avoid overloading of 220/132 kV Rangia ICTs.

At 05:57 Hrs of 16.03.2024, 220kV Sarusajai – Mirza II, 220kV Sarusajai-Jawaharnagar, 220kV Sarusajai-Sonapur and 132kV Dispur – Chandrapur lines tripped. Due to tripping of these lines, Sarusajai, Kahelipara, AIIMS, Kamakhya and Dispur areas of Assam were isolated from NER grid and collapsed due to no source available in these areas.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 05:57 Hrs on 16-03-2024
3. **Event Category** (ग्रिड **घटना का प्रकार):** GD-I
4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Sarusajai, Kahelipara, AIIMS, Kamakhya and Dispur of Assam
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	50.05	1680	1853	152.7	871
Post Event (घटना के बाद)	50.05	1681	1717	152.7	757

Pre and post data of 1 minute before and after the even

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	220kV Sarusajai Bus-1, 220kV Sarusajai – Mirza I was under PSD for Bay reconducting work from 05:55 Hrs of 16.03.2024. 132kV Kamakhya – Sishugram and 132kV AIIMS-Amingaon lines were in opened condition to avoid overloading of 220kV Rangia ICTs.
Weather Condition (मौसम स्थिति)	Normal

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 124 MW occurred.
7. **Duration of interruption (रुकावट की अवधि): 20 min**
8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

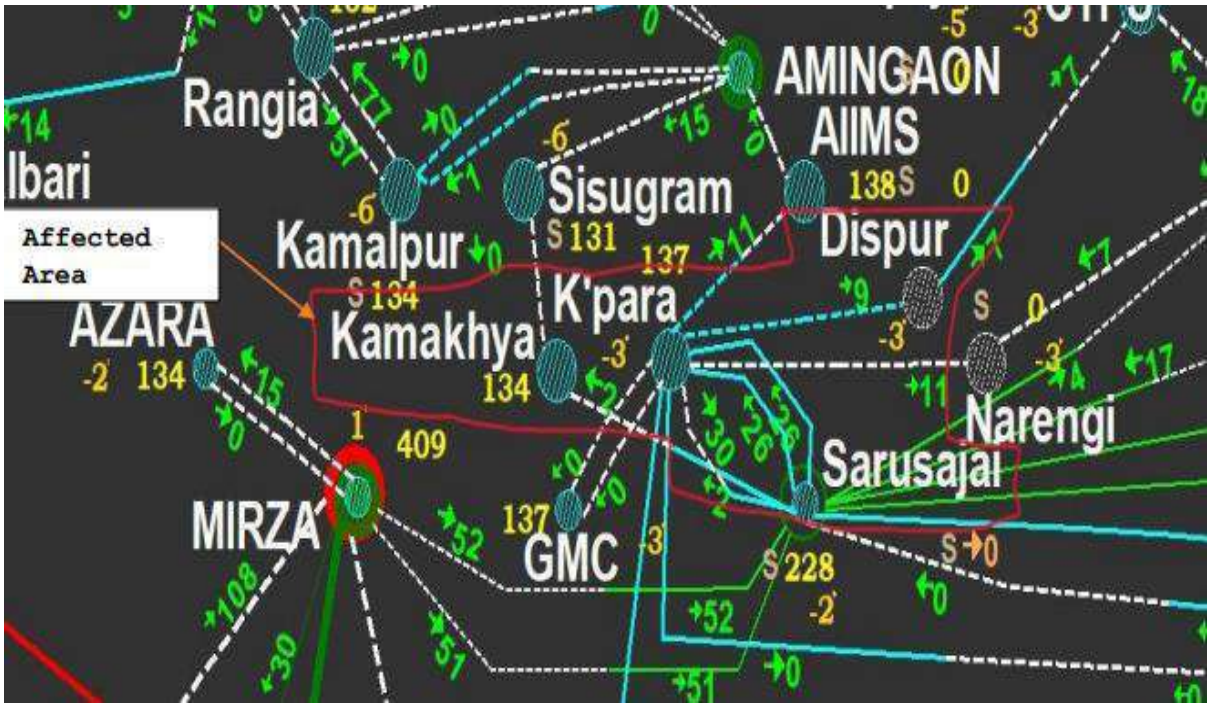


Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	220kV Sarusajai – Mirza II	05:57Hrs	06:12Hrs	Zone 4 pickup (No tripping)	DP, ZI, R-B, FD: 24 Km
2	220kV Sarusajai – Sonapur	05:57Hrs	06:26Hrs	Zone 4 Operated	DP, ZII
3	220kV Sarusajai - Jawaharnagar	05:57Hrs	06:27Hrs	Zone 4 Pickup (No tripping)	DP, ZII
4	220kV Bus Coupler	05:57Hrs	-	Earth fault operated	NA
5	132kV Kahilipara – Narengi	05:57Hrs	06:30 Hrs	No tripping	R-E, 86 A/B Relay operated
6	132kV Dispur – CTPS	05:57Hrs	06:30 Hrs	DT recieved	Overcurrent protection operated

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

PREFAULT CONDITION:

i) 220kV Bus-1 at Sarusajai was scheduled to be taken out of service from 06:00Hrs to 09:00Hrs for HTLS conductor works.

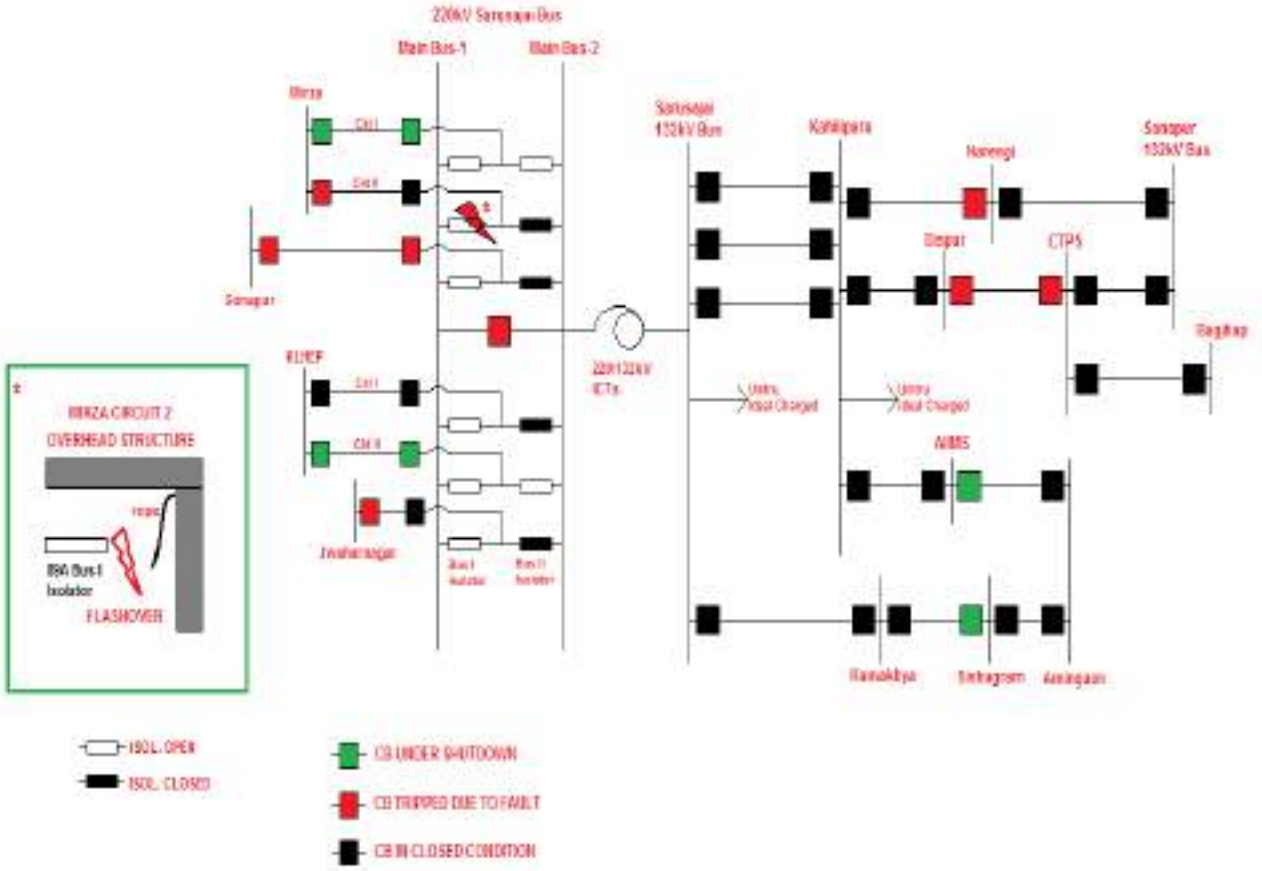
ii) All feeders (Line and Transformer) from 220kV Main Bus-1 were thereby shifted to 220 kV Main Bus-2 at Sarusajai.

iii) Shutdown of 220 kV Sarusajai – Mirza-I was availed and CBs were kept open. The 220 kV Sarusajai – KLHEP-II was already under shutdown.

iv) 132 kV Sishugram GSS which was initially drawing load from Sarusajai via Kamakhya was changed over to draw load from 220 kV Amingaon GSS on instruction from SLDC Assam (The Kamakhya Feeder CB was opened at Sishugram end)

v) 132 kV AIIMS GSS was drawing load from Sarusajai via Kahilipara. The CB of the 132 kV AIIMS – Amingaon line was kept open as per instruction from SLDC Assam.

vi) 132 kV Kahelipara-Umtru Lines I & II were ideally charged at Kahilipara GSS with CB's were kept opened at Meghalaya end.



As per DR analysis, R-B phase fault detected in 220 kV Mirza-Sarusajai II line which was cleared on operation of DP, ZI from Mirza end in 60 msec. ZIV was picked up at Sarusajai end. All other elements connected to Sarusajai substation tripped from remote end on operation of DP, ZII.

As per information gathered from AEGCL, while facilitating the pre-shutdown arrangement works of 220 kV Bus-1 at Sarusajai, a safety rope was tied on a structure pillar which was at a safe distance from the live part of the power conductors. Due to wind or slip of the knot, the safety rope was partly loosened from the structure pillar and one end of the rope fell off creating a flashover near the live part of the Bus-1 isolator of 220 kV Sarusajai – Mirza-II feeder. This led to tripping of elements connected to Sarusajai from remote ends. Also, 132 kV CTPS-Dispur line tripped on overcurrent protection resulting in blackout of Sarusajai, Kahelipara, AIIMS, Kamakhya and Dispur areas of Assam Power System.

All other feeders were manually tripped after the blackout.

12. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

- As per information from AEGCL, the busbar protection was kept out of service. As for a few 220kV Feeders, the isolators junction box mechanical NO/NC contacts for indicating the status of Isolators are old and worn out, keeping the busbar protection during changeover may cause false busbar differential operation during external faults if the Bus Isolator status are not automatically updated to the busbar relay. The busbar protection was planned to be brought into service once the correct status of bus isolators were verified at field end.
- Delayed fault clearing in 500 msec could be reduced to less than 100 msec had the busbar protection been active.

13. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- 220kV Bus II at Sarusajai was energized at 06:12 Hrs by charging 220 kV Sarusajai – Mirza-II line, then power was extended to Kahelipara S/S at 06:31 Hrs. Power was restored at Dispur S/S and Kamakhya S/S by charging 132kV Dispur – Chandrapur at 06:30 Hrs and 132 kV Sarusajai – Kamakhya line at 06:17 Hrs of 16.03.2024 respectively. Power was fully restored at Sarusajai Area at 06:33 Hrs of 16.03.2024. Power was extended to AIIMs at 06:53 Hrs of 16.03.2024.
- The old and worn out isolator mechanical NO/NC contact equipment would be replaced with new ones to facilitate isolator status to the Busbar differential relay.

14. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	**No violation**
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**AEGCL**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**AEGCL**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	-
5.	**Any other non-compliance**		-

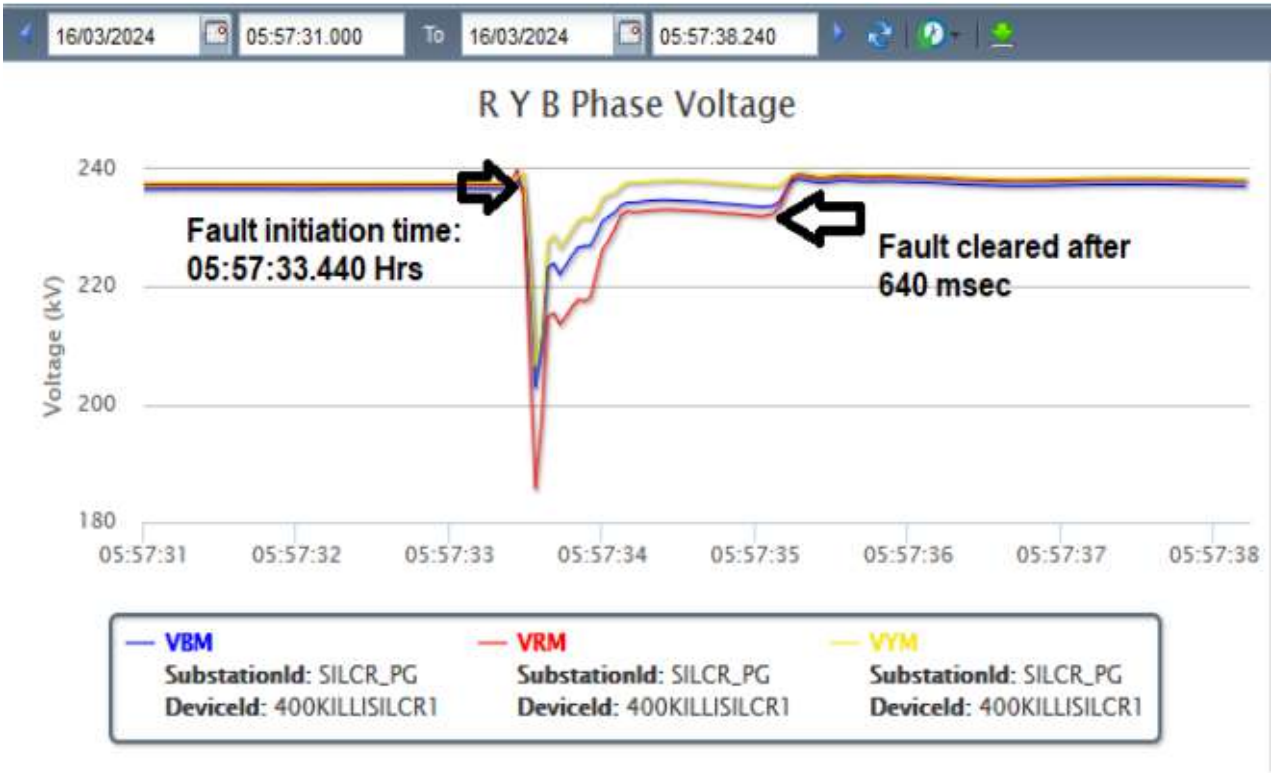
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- Tightness of safety ropes (if arranged) during shutdown is to be ensured to prevent such occurrence of flashovers in the future.

Annexure 1: Sequence of Events as per SCADA

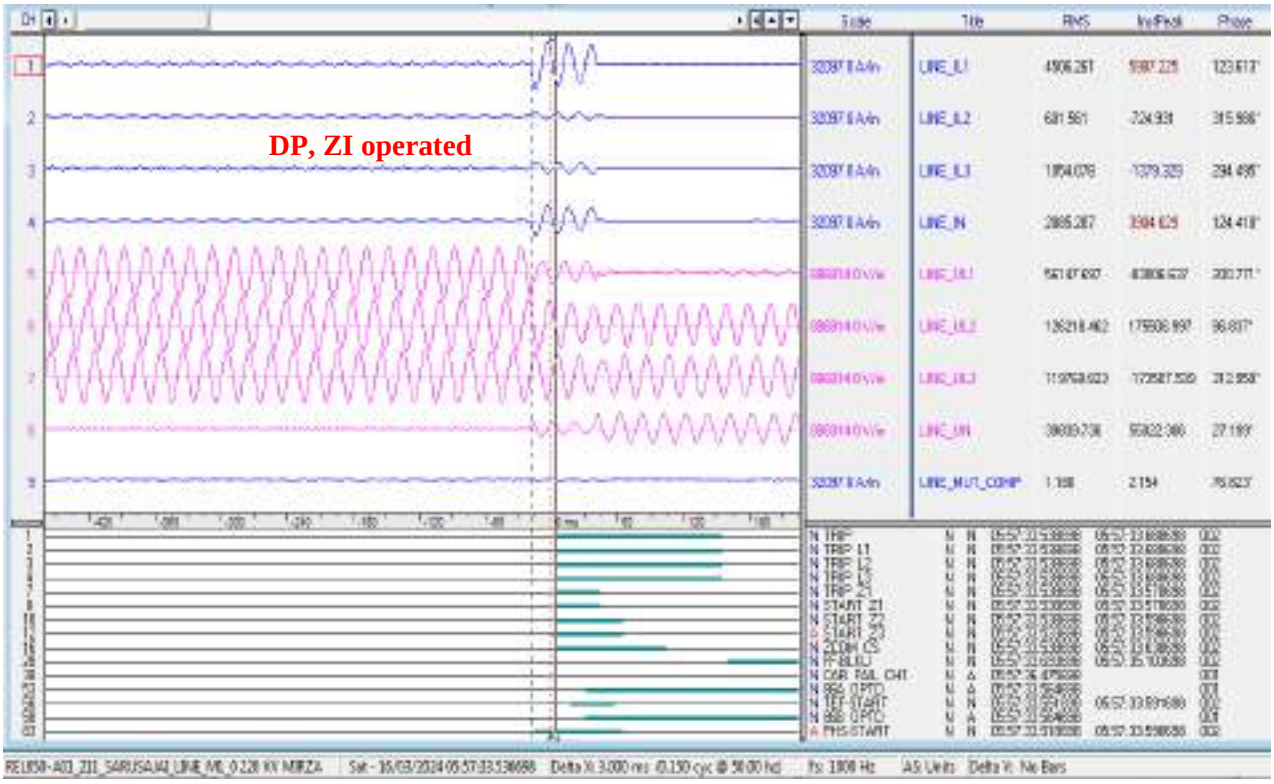
AREA	CATEGORY	LOCATION	TEXT	SYSTEM_TIME	FIELD_TIME	MS
AEGCL	1C	MIRZA_AS	MIRZA CB 220Kv LINE-1 TO SARUS OPEN	16 Mar 2024 05:56:25:000	16 Mar 2024 05:56:02:000	790000000
AEGCL	1C	MIRZA_AS	MIRZA CB 220Kv LINE-2 TO SARUS OPEN	16 Mar 2024 05:57:59:000	16 Mar 2024 05:57:33:000	589000000
AEGCL	1C	GMCH__AS	GHY MEDICAL CLG CB 132/33 T1 (PRIM) OPEN	16 Mar 2024 05:57:59:000	16 Mar 2024 05:57:34:000	761000000
AEGCL	1C	GMCH__AS	GHY MEDICAL CLG CB 132/33 T1 (SEC) OPEN	16 Mar 2024 05:57:59:000	16 Mar 2024 05:57:34:000	761000000
AEGCL	1C	CHAND_AS	CHANDRAPUR CB 132Kv LINE TO DISPU OPEN	16 Mar 2024 06:17:10:000	16 Mar 2024 05:57:35:000	190000000
AEGCL	1C	MIRZA_AS	MIRZA CB 220Kv LINE-2 TO SARUS CLOSED	16 Mar 2024 06:12:41:000	16 Mar 2024 06:12:07:000	265000000
MEECL	1C	GANOL_ME	GANOL SHEP CB 132 KV UNIT (H02) CLOSED	16 Mar 2024 06:12:41:000	16 Mar 2024 06:12:27:000	693000000
AEGCL	1C	KAHEL_AS	KAHELIPARA CB 132Kv LINE TO DISPU OPEN	16 Mar 2024 06:14:58:000	16 Mar 2024 06:14:36:000	122000000
AEGCL	1C	SONAP_AS	SONAPUR CB 220Kv LINE TO SARUS OPEN	16 Mar 2024 06:17:10:000	16 Mar 2024 06:16:52:000	144000000
AEGCL	1C	JAWHR_AS	JAWHARNAGAR CB 220/33 T1 (PRIM) OPEN	16 Mar 2024 06:17:10:000	16 Mar 2024 06:16:59:000	569000000
NAGALD	1C	MOKOK_NA	MOKOKCHUNG CB 66Kv LINE-1 TO ZUHEN OPEN	16 Mar 2024 06:20:12:000	16 Mar 2024 06:19:48:000	360000000
AEGCL	1C	CHAND_AS	CHANDRAPUR CB 132Kv LINE TO DISPU CLOSED	16 Mar 2024 06:21:09:000	16 Mar 2024 06:20:17:000	136000000
AEGCL	1C	KAHEL_AS	KAHELIPARA CB 132/33 T1 (PRIM) OPEN	16 Mar 2024 06:26:24:000	16 Mar 2024 06:26:14:000	24000000
AEGCL	1C	KAHEL_AS	KAHELIPARA CB 132/33 T2 (PRIM) OPEN	16 Mar 2024 06:26:58:000	16 Mar 2024 06:26:20:000	300000000
AEGCL	1C	SONAP_AS	SONAPUR CB 220Kv LINE TO SARUS CLOSED	16 Mar 2024 06:26:58:000	16 Mar 2024 06:26:29:000	809000000
AEGCL	1C	KAHEL_AS	KAHELIPARA CB 132/33 T3 (PRIM) OPEN	16 Mar 2024 06:26:58:000	16 Mar 2024 06:26:30:000	158000000

Annexure 2: PMU snapshot end

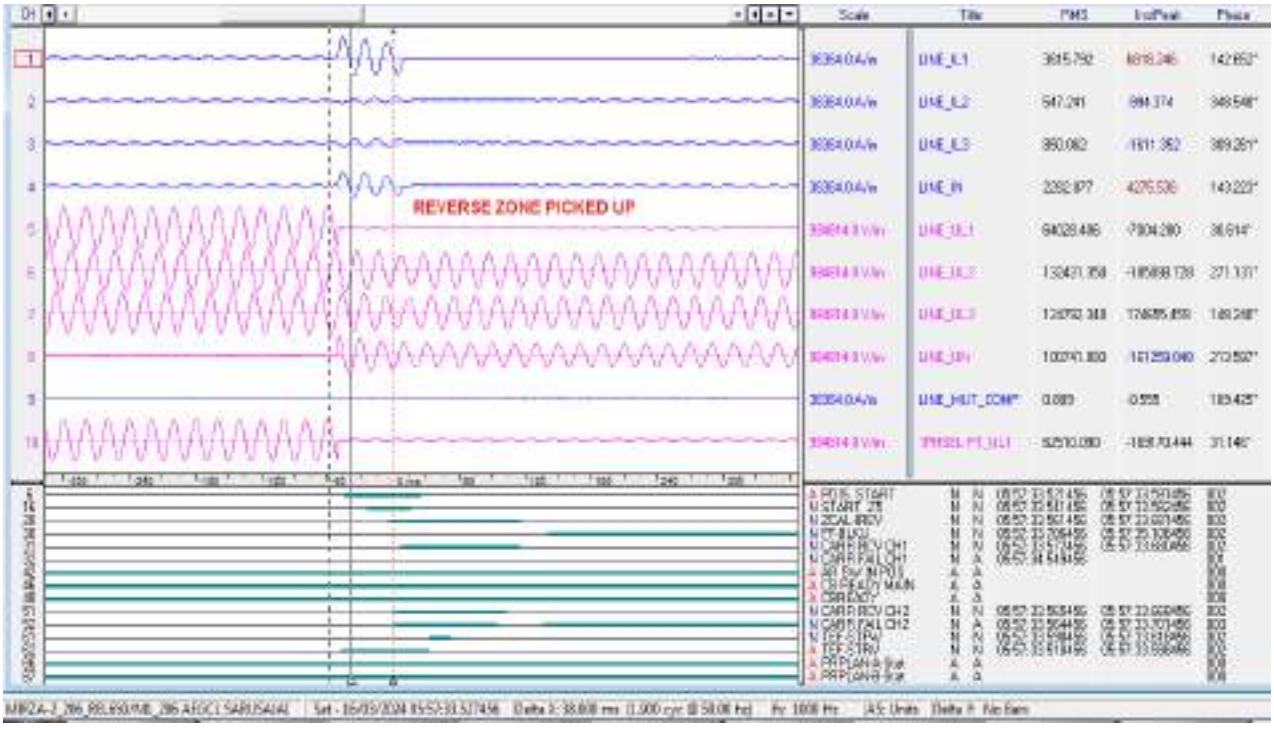


Annexure 3: Disturbance recorder snips showing faults and digital signals

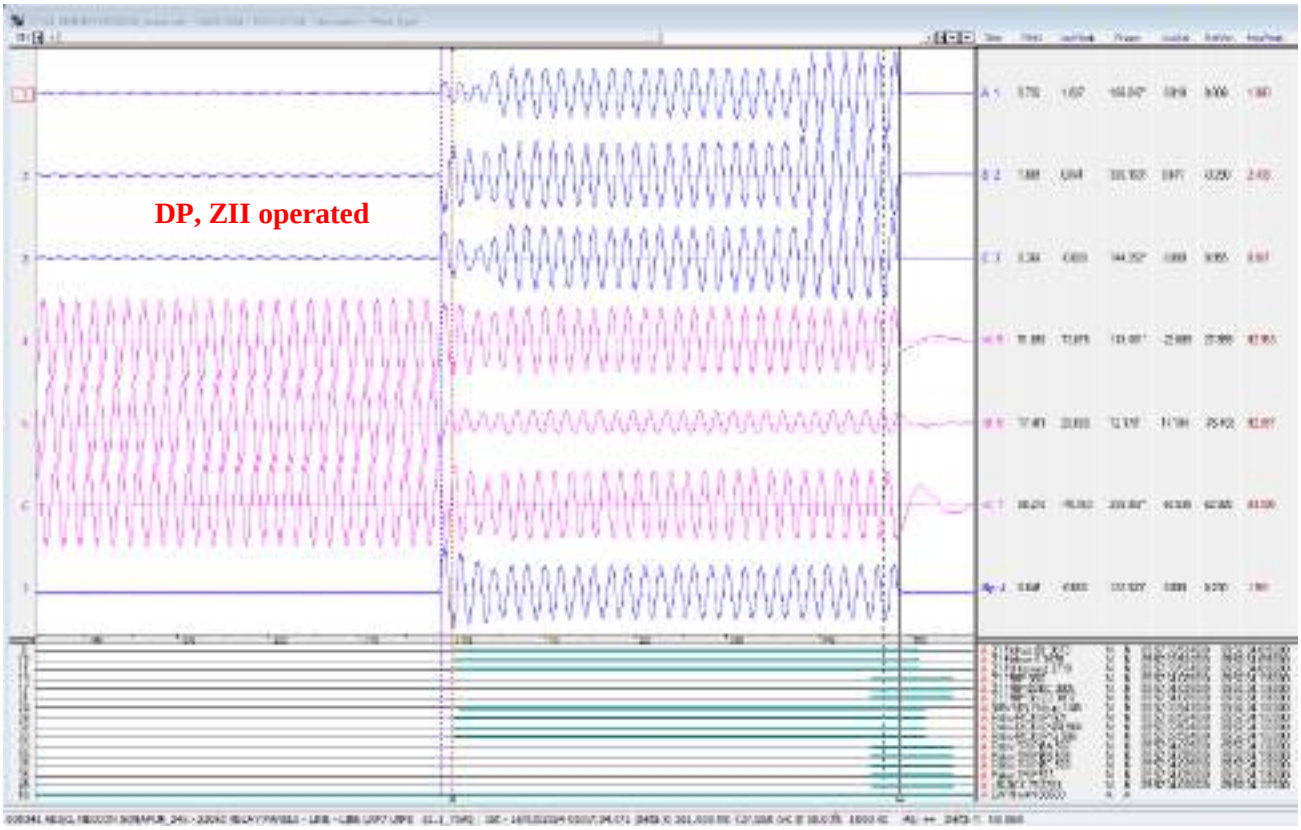
3.1. DR Snapshot of Mirza for 220 kV Mirza-Sarusajai II Line



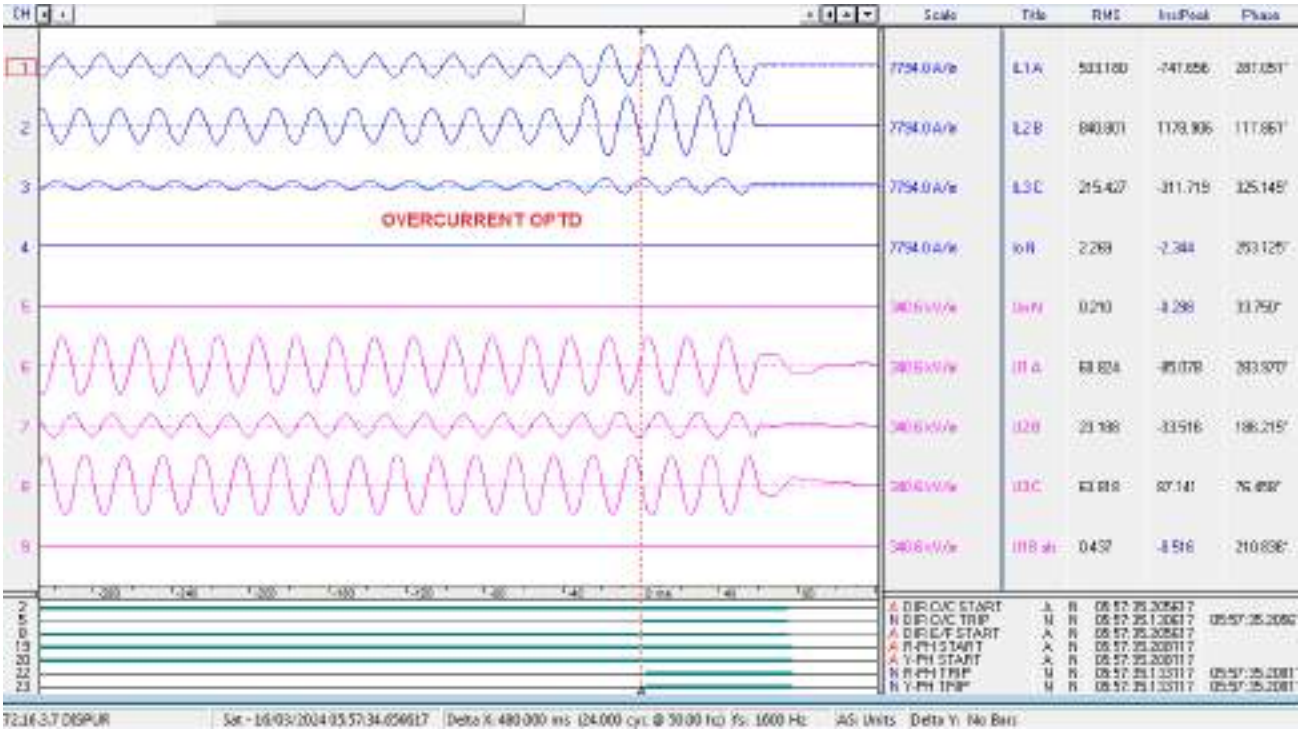
3.2. DR Snapshot of Sarusajai for 220 kV Mirza-Sarusajai II Line



3.3. DR Snapshot of Sonapur for 220 kV Sarusajai-Sonapur Line



3.4. DR Snapshot of CTPS for 132 kV CTPS-Dispur Line



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ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Rangia, Kamalpur, Amingaon, Sishugram, Nalbari, Kamakhya and Nathkuchi areas of Assam of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक)**:03-04-2024**

1. **Event Summary (घटना का सारांश):**

   Rangia, Kamalpur, Amingaon, Sishugram, Nalbari, Kamakhya and Natkuchi areas of Assam Power System were connected with rest of the NER grid through 220kV Rangia - BTPS D/C lines.

   At 05:33 Hrs of 20.03.2024, 220kV Rangia - BTPS D/C lines tripped leading to SPS operation which led to blackout of Rangia, Kamalpur, Amingaon, Sishugram, Nalbari, Kamakhya and Natkuchi areas of Assam Power System.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 05:33 Hrs on 20-03-2024

3. **Event Category** (ग्रिड **घटना का प्रकार**)**:** GD-I

4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Rangia, Kamalpur, Amingaon, Sishugram, Nalbari, Kamakhya and Natkuchi areas of Assam

5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	50	1700	1684	187	949
Post Event (घटना के बाद)	50	1698	1604	187	863

Pre and post data of 1 minute before and after the even

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	132 kV Sarusajai – Kamakhya for HTLS conductor works
Weather Condition (मौसम स्थिति)	Rainy and Windy

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of around 86 MW occurred.

7. **Duration of interruption (रुकावट की अवधि): 56 min**

8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा)**

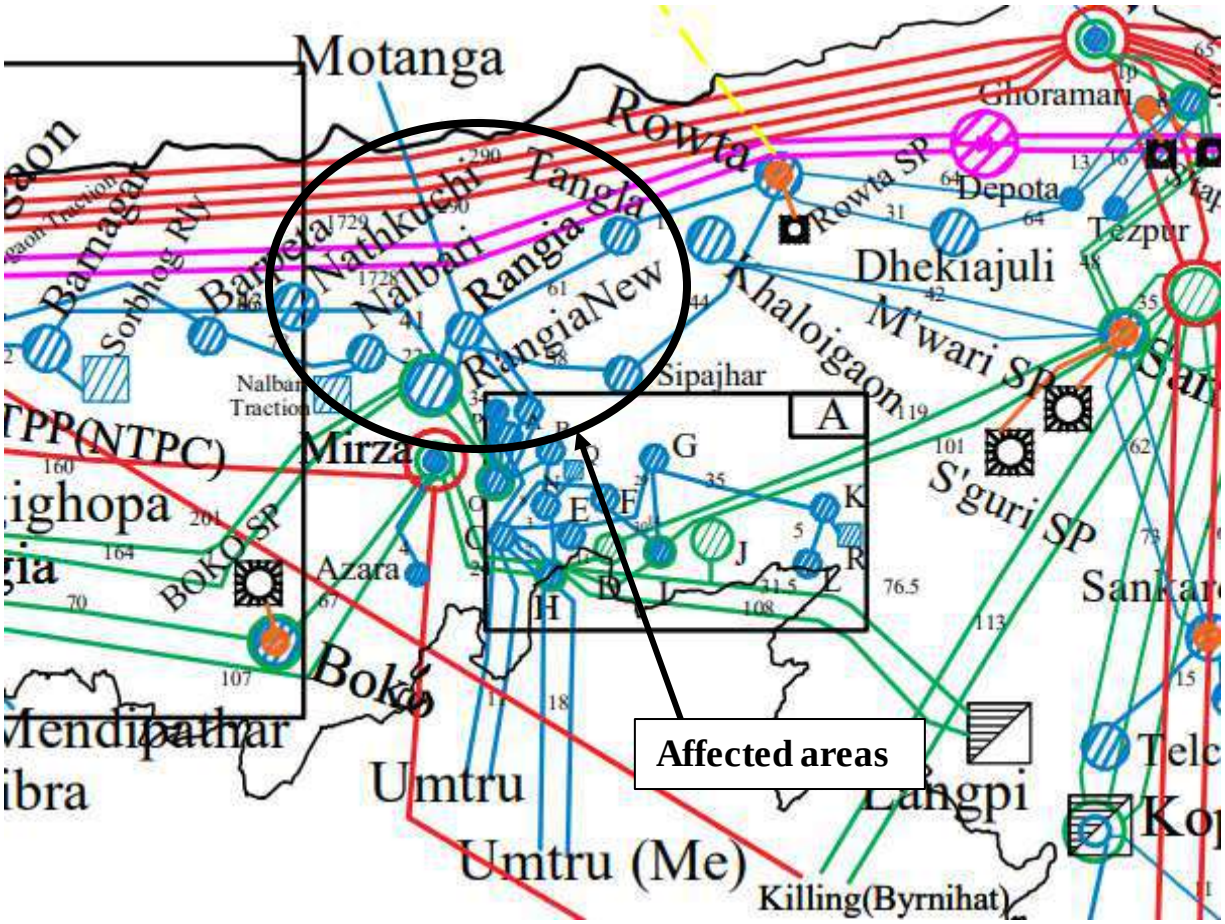


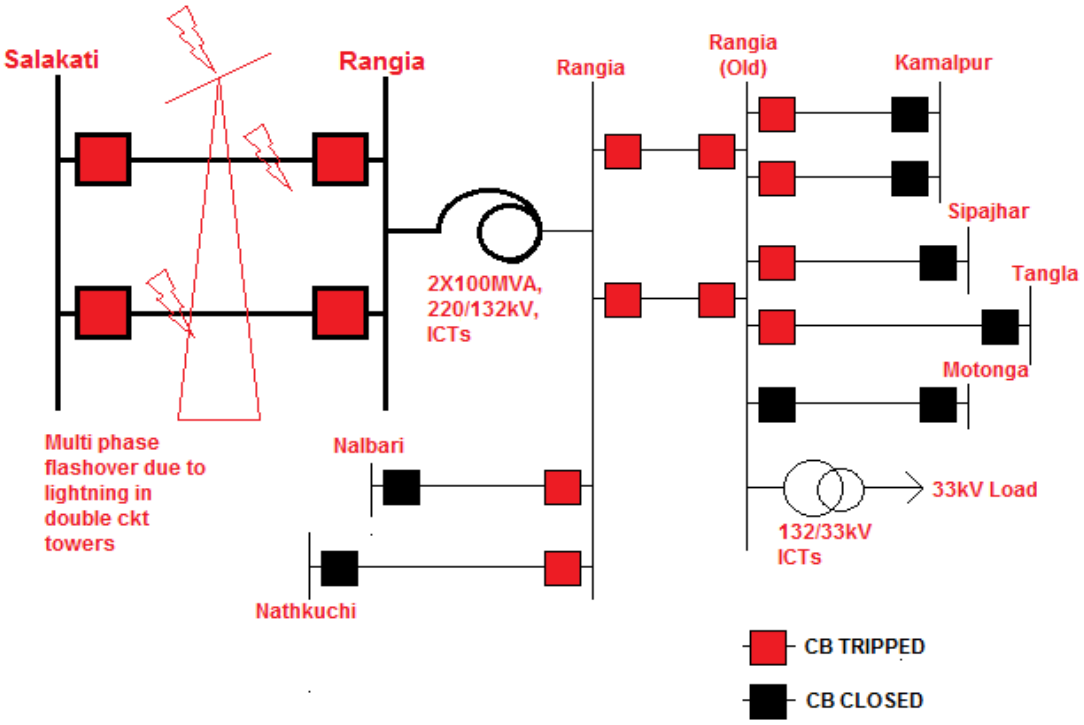
Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	220kV BTPS – Rangia I	05:33 Hrs	06:36 Hrs	DP, ZI, R-Y, FD: 19 Km	DT recieved
2	220kV BTPS – Rangia II	05:33 Hrs	06:29 Hrs	DP, ZI, R-Y, FD: 21.3 Km	DT recieved
3	132kV Rangia – Nalbari	05:33 Hrs	06:52 Hrs	SPS operated	
4	132kV Rangia – Nathkuchi	05:33 Hrs	06:53 Hrs	SPS operated	
5	132kV Rangia – Sipajhar	05:33 Hrs	07:17 Hrs	SPS operated	
6	132kV Rangia – Tangla	05:33 Hrs	07:19 Hrs	SPS operated	
7	132kV Rangia – Kamalpur I	05:33 Hrs	06:45 Hrs	SPS operated	
8	132kV Rangia – Kamalpur II	05:33 Hrs	06:46 Hrs	SPS operated	
9	132 kV Rangia-Rangia I	05:33 Hrs	06:41 Hrs	SPS operated	
10	132 kV Rangia-Rangia II	05:33 Hrs	06:37 Hrs	SPS operated	

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):



As per PMU, R-Y phase fault initiated at 05:33:27.800 Hrs and cleared at 05:33:27.920 Hrs. Fault clearance time: 120 msec.

As per DR analysis, lightning fault in 220 kV BTPS-Rangia D/C lines cleared within 54 msec on operation of DP, ZI. Due to inclement weather, tripping occurred due to lightning and back flashovers in multiple phases. Due to tripping of 220 kV BTPS-Rangia D/C lines, SPS operated successfully and 132 kV Rangia-Motonga (Bhutan) survived from being overloaded. The 33kV Rangia Bus and local load were fed by 132 kV Rangia-Motonga line.

12. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

- The protection system and SPS logic were successful in isolating the fault, saving the 33kV Rangia load and safeguarding Motonga from overloading.
- SOE not recorded for tripping of any element. The same needs attention by team AeGCL/SLDC SCADA team Assam.

13. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power supply was extended to 220 kV Rangia S/S and subsequently to Kamalpur, Amingaon, Sishugram, Nalbari, Kamakhya and Natkuchi areas of Assam Power System by charging 220kV Rangia – BTPS 2 line at 06:29 Hrs of 20.03.2024. 220kV Rangia – BTPS 1 line was charged at 06:36 Hrs.

- 220kV BTPS – Rangia D/C Line is being patrolled and maintained on regular basis.

14. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	No violation
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	No violation
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	No violation
4.	**DR Time Synchronization Issues**	IEGC section 17.3	No violation
5.	**Any other non-compliance**		-

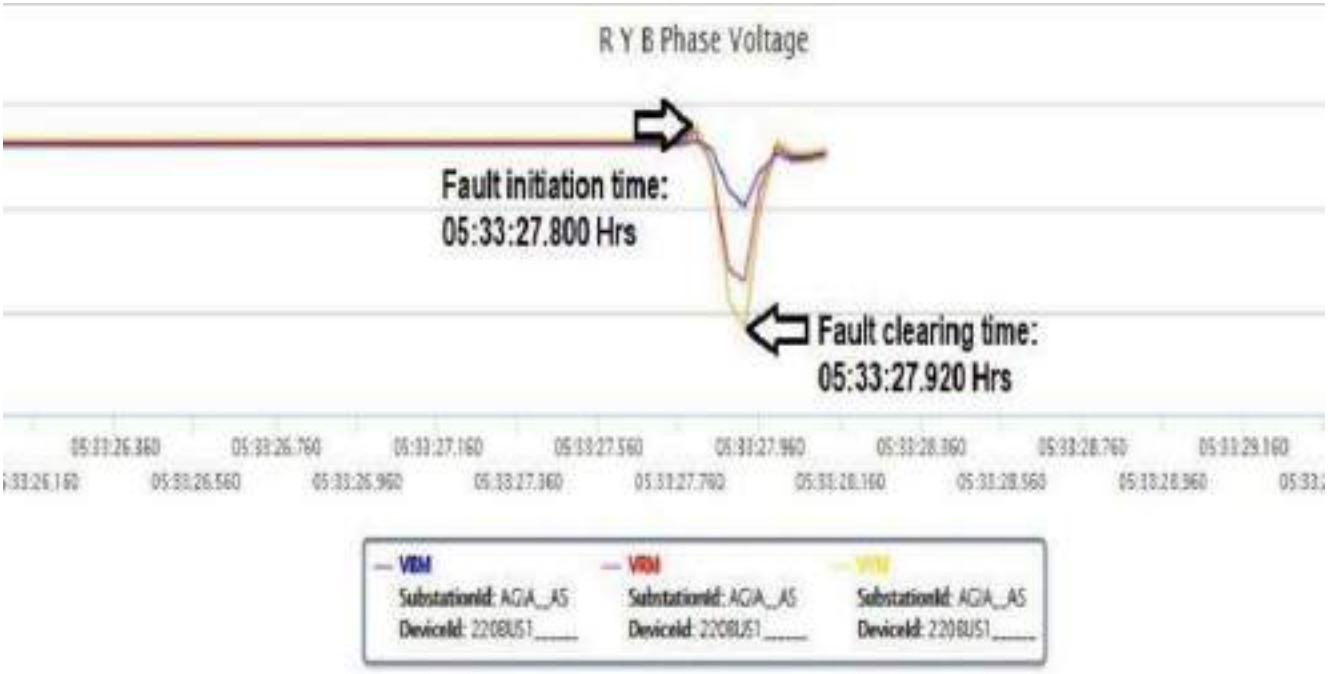
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

Tower footing resistance needs to be measured before onset of rainy season and if found greater than 10 Ohm, then necessary measures such as TLSA installation may be carried out.

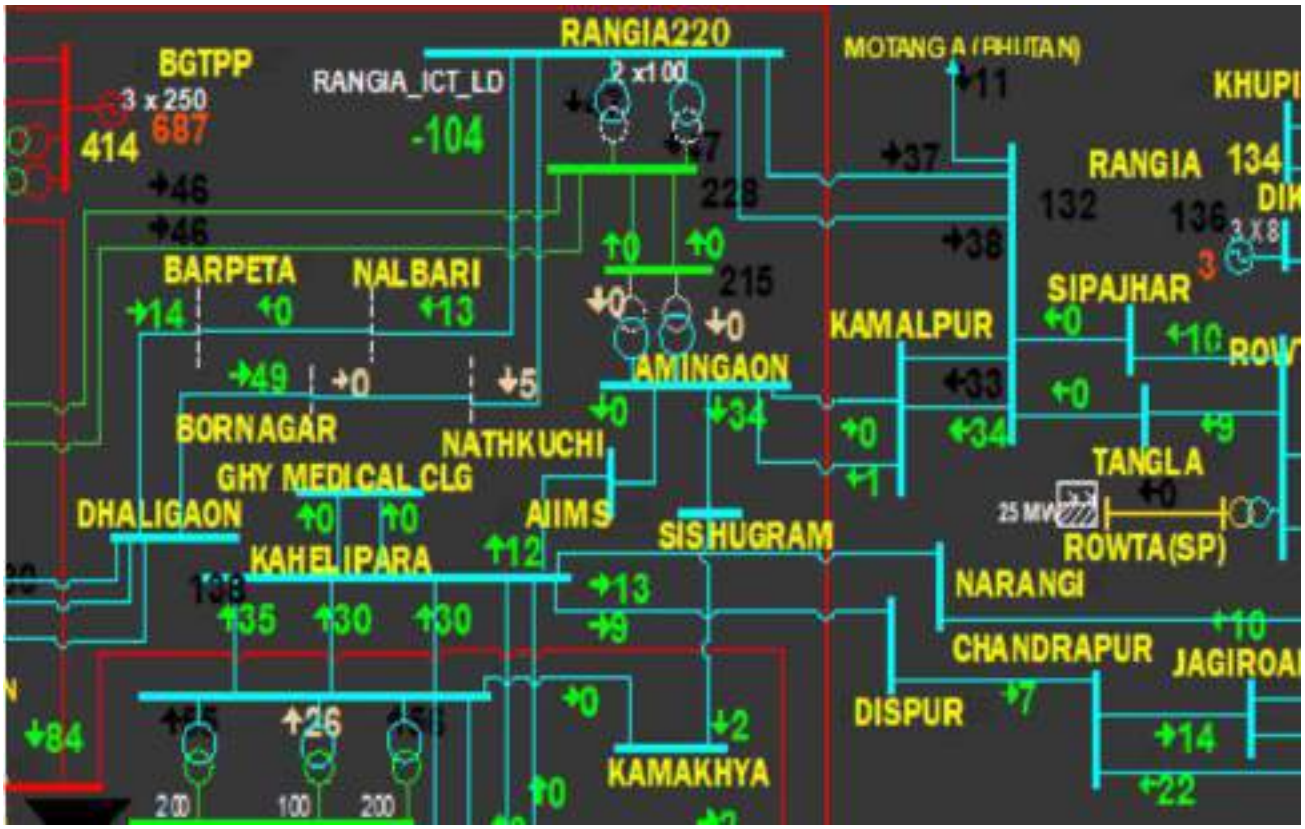
Annexure 1: Sequence of Events as per SCADA

SOE not recorded for the event

Annexure 2: PMU snapshot of 220 kV Agia Bus I

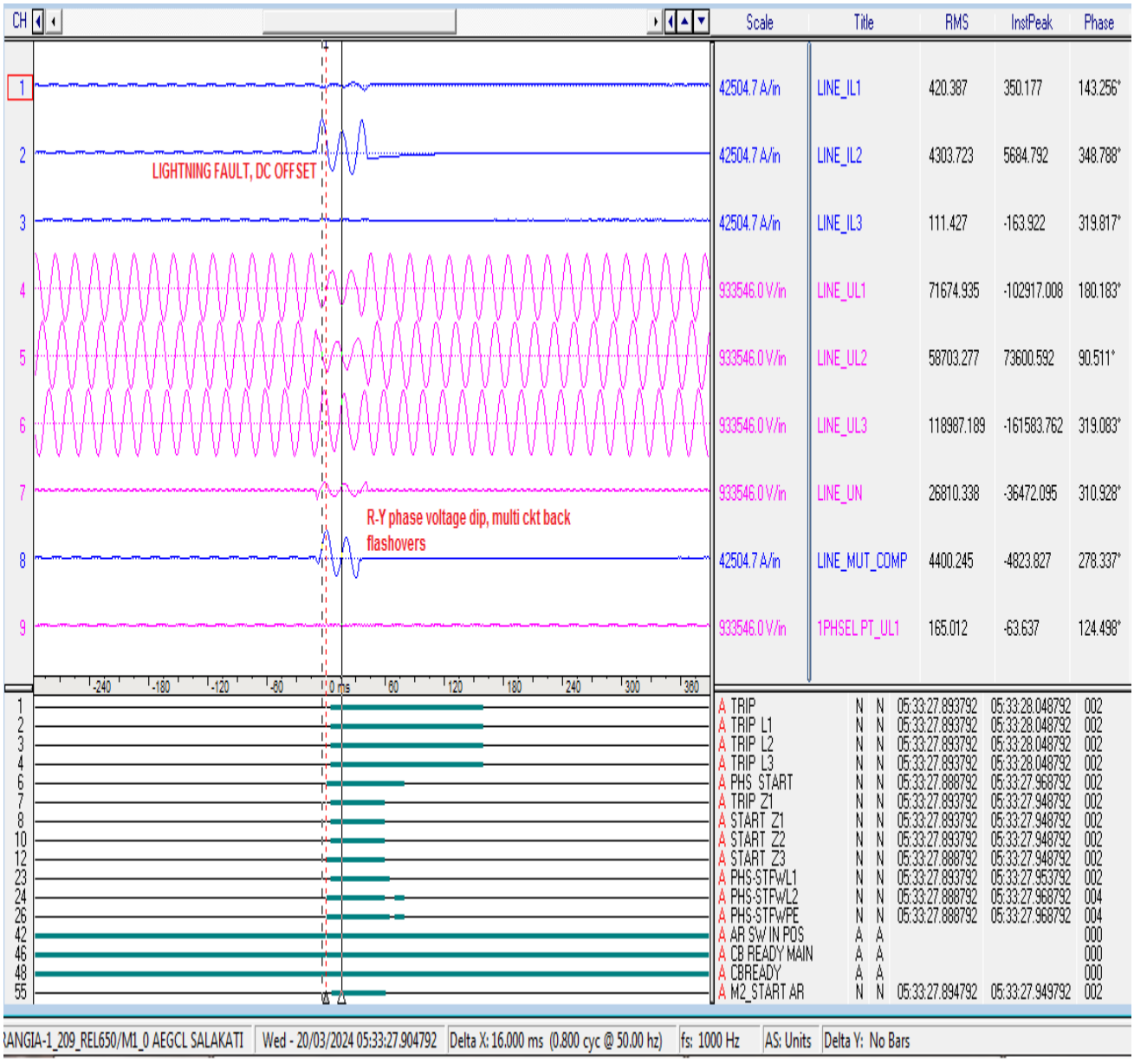


Annexure 3: SLD of the effected SS

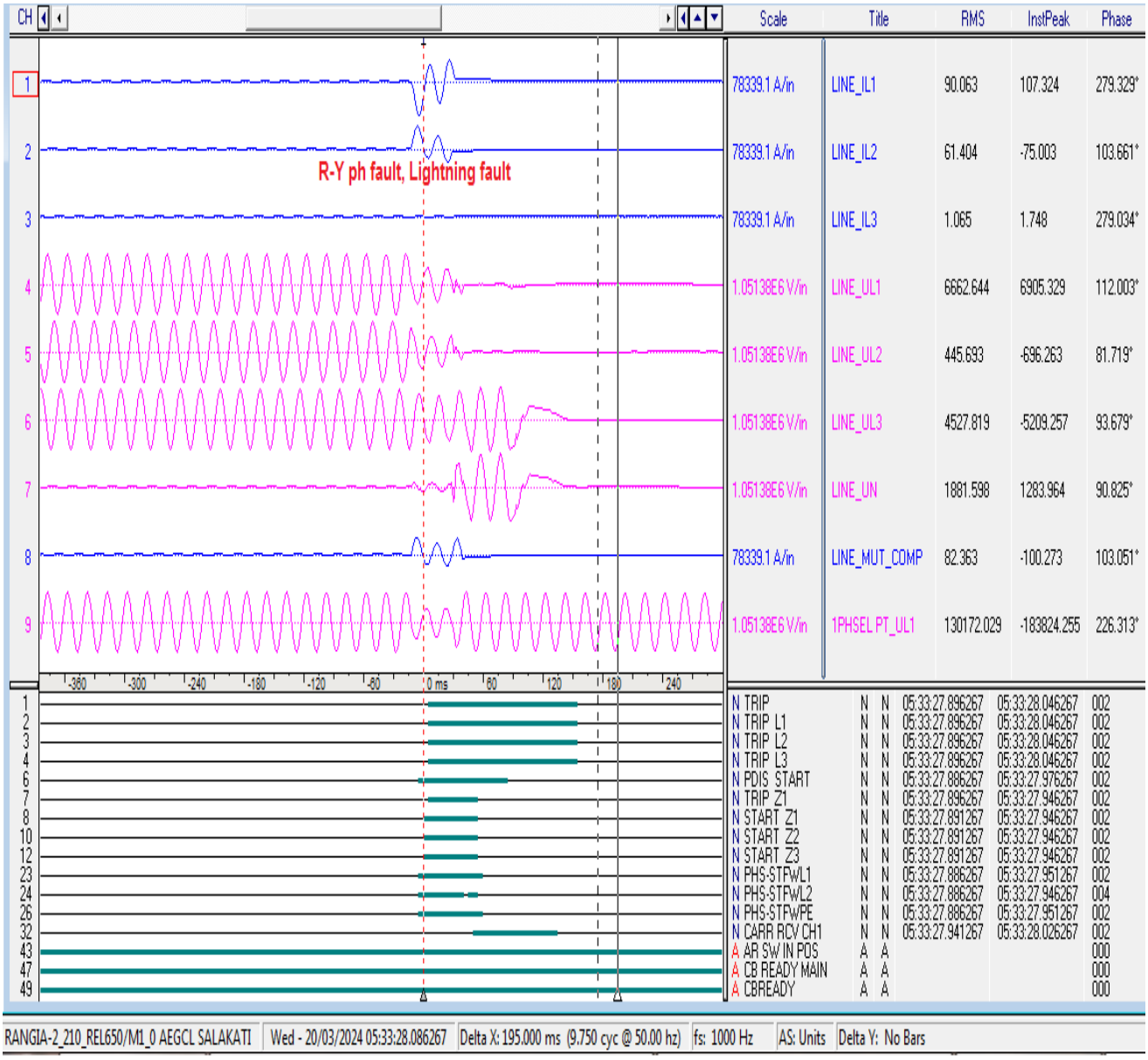


Annexure 4: Disturbance recorder snips showing faults and digital signals

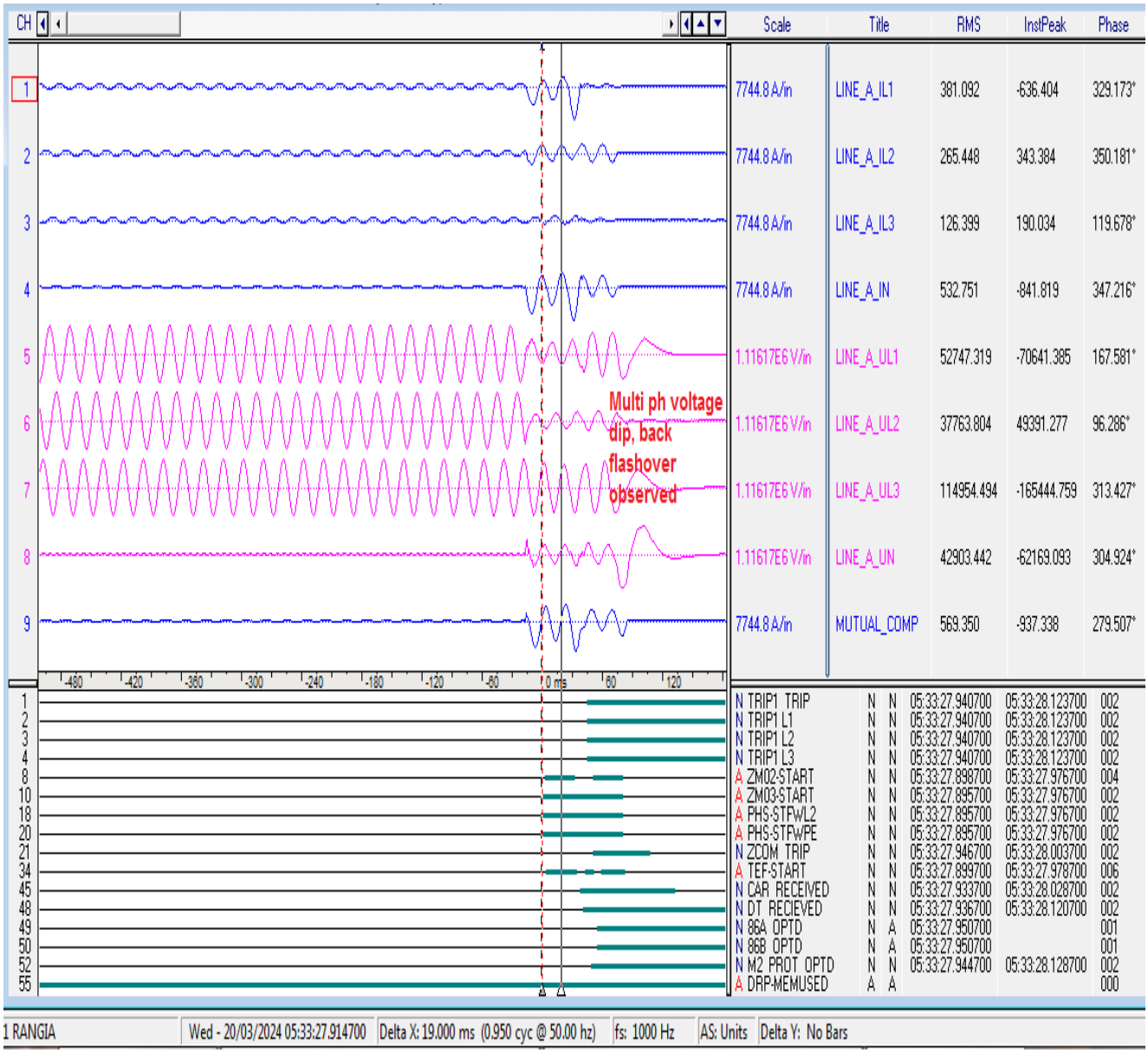
4.1. DR Snapshot of BTPS for 220 kV BTPS-Rangia I line



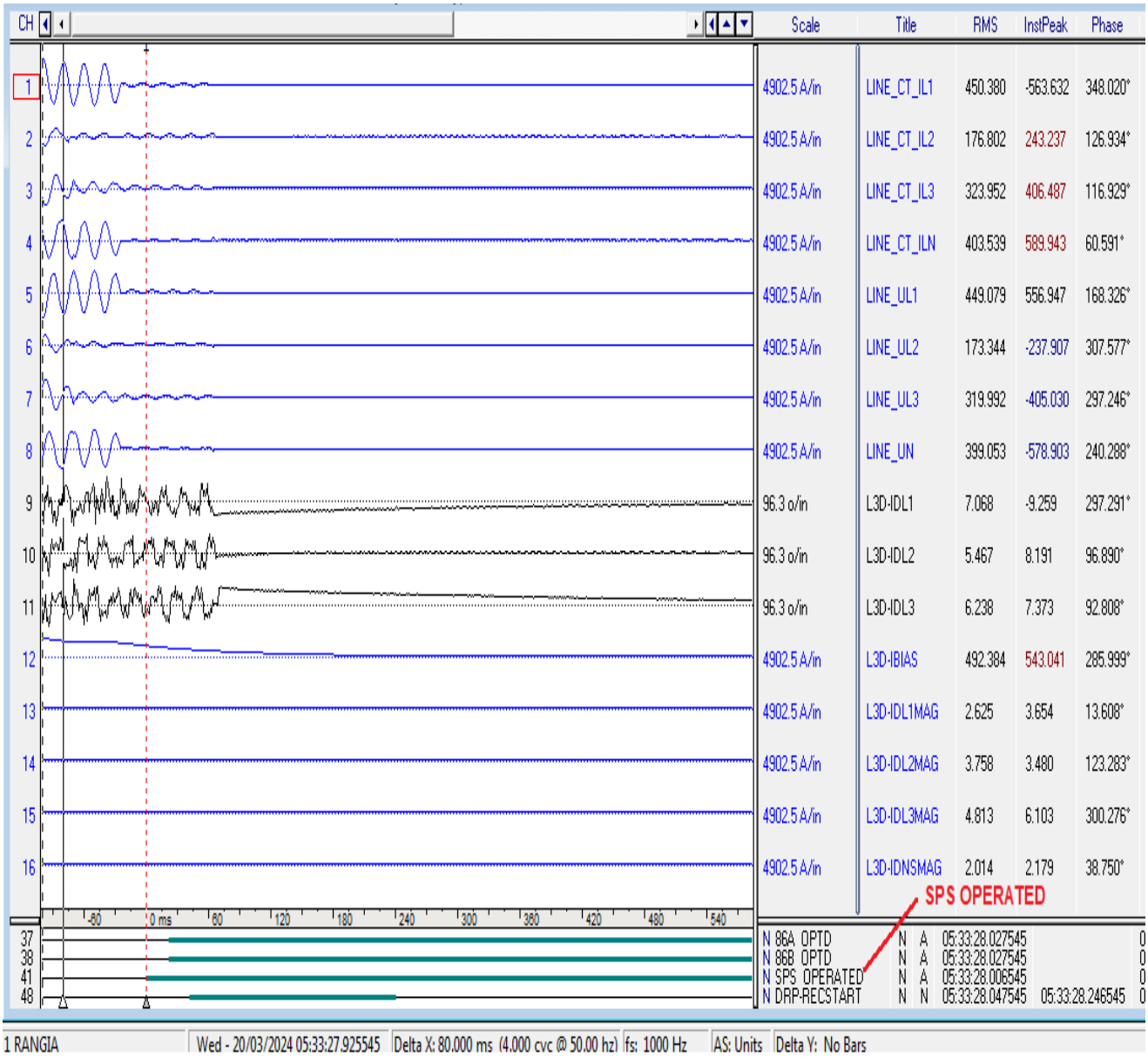
4.2. DR Snapshot of BTPS for 220 kV BTPS-Rangia II line



4.3. DR Snapshot of Rangia for 220 kV BTPS-Rangia I line



4.4. DR Snapshot of Rangia for 132 kV Rangia-Rangia I line



ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Depota, Rowta, Dhekiajuli, Sipajhar and Tangla areas of Assam of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक**):08-04-2024**

1. **Event Summary (घटना का सारांश):**

   Depota, Rowta, Dhekiajuli, Siphajhar and Tangla areas of Assam power system are connected to the rest of the grid through 132 kV Sonabil-Depota line & 132 kV Sonabil-Ghoramari-Depota link.

   At 05:03 Hrs of 22.03.2024, 132 kV Sonabil-Depota, 132 kV Depota-Ghoramari, 132 kV Depota-Rowta, 132 kV Depota-Dhekiajuli & 132 kV Rowta-Dhekiajuli lines tripped. Due to tripping of these elements, Depota, Rowta, Dhekiajuli, Siphajhar and Tangla areas of Assam power system were isolated from NER grid and collapsed due to no source available in these areas.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 05:03 Hrs on 22-03-2024
3. **Event Category** (ग्रिड **घटना का प्रकार**)**:** GD-I
4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Depota, Rowta, Dhekiajuli, Siphajhar and Tangla areas of Assam
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	49.96	2103	1302	191.5	521.1
Post Event (घटना के बाद)	49.96	2094	1293	191.5	502.3

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	132 kV Rangia-Tangla & 132 kV Rangia-Sipajhar lines kept open to control overloading of 220/132 kV ICTs at Rangia
Weather Condition (मौसम स्थिति)	Rainy and windy

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of around 19 MW occurred.

7. **Duration of interruption (रुकावट की अवधि): 22 min**

8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा)**

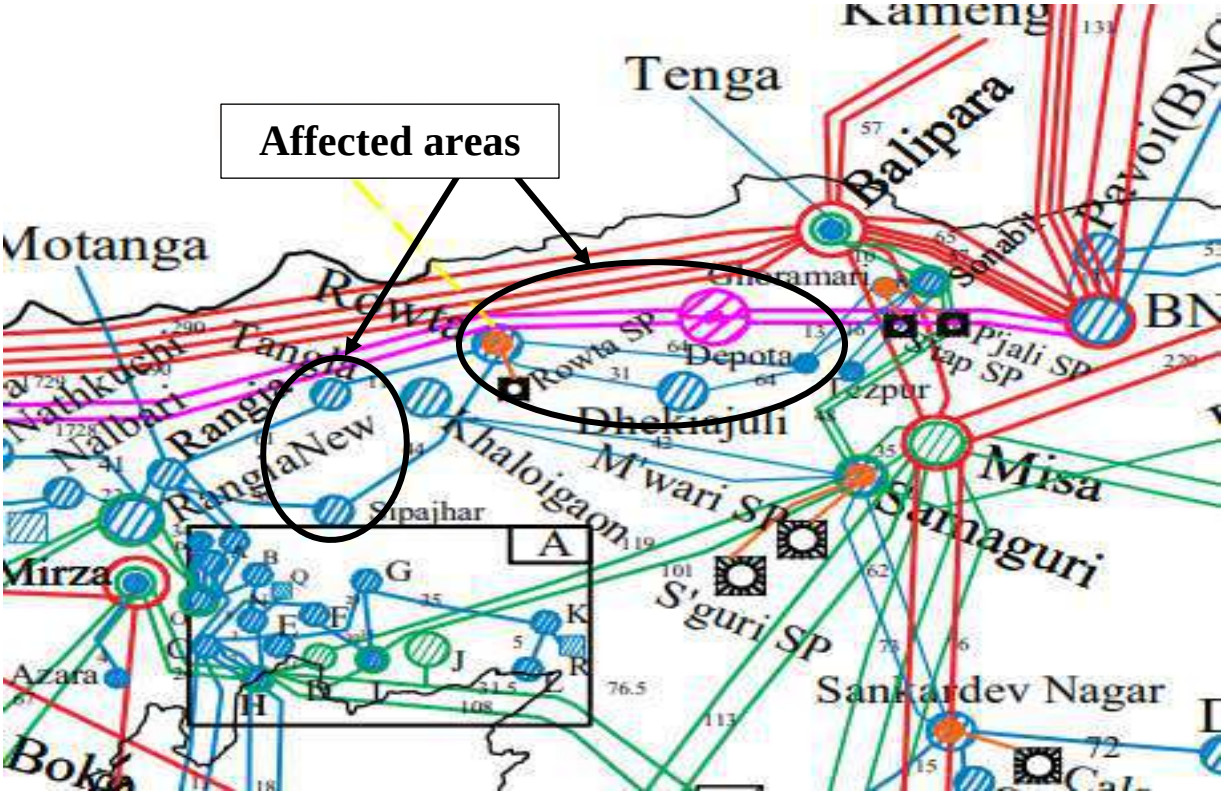


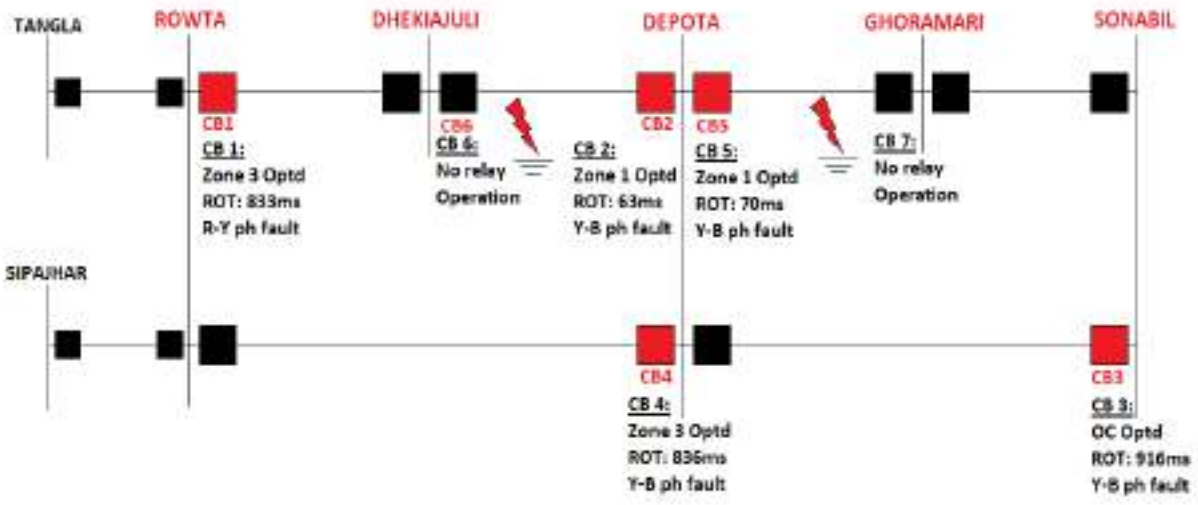
Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132kV Sonabil – Depota	05:03 Hrs	05:25 Hrs	Y-B phase fault, Dir. O/C Optd.	No Tripping
2	132kV Depota – Ghoramari	05:03 Hrs	05:24 Hrs	Y-B phase fault, Zone 1 Operated	No Tripping
3	132kV Depota – Dhekiajuli	05:03 Hrs	05:38 Hrs	Y-B phase fault, Zone 1 Operated	No Tripping
4	132kV Depota – Rowta	05:03 Hrs	05:30 Hrs	Y-B phase fault, Zone 3 Operated	No Tripping
5	132kV Rowta - Dhekiajuli	05:03 Hrs	05:42 Hrs	R-Y phase fault, Zone 3 Operated	No Tripping

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):



As per DR analysis, Y-B fault initiated at 05:03:24.277 Hrs in 132 kV Depota – Dhekiajuli Line which was cleared from Depota end within 68 msec on operation of DP, ZI. Simultaneous Y-B phase fault was observed in 132 kV Depota – Ghoramari line which was cleared from Depota end on DP, ZI within 70 msec. Due to fault in these lines, there was cascade tripping of 132 kV Sonabil – Depota, 132 kV Depota – Rowta and 132 kV Rowta – Dhekiajuli lines.

12. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

- SOE not recorded for tripping of 132 kV Sonabil-Depota, 132 kV Depota-Ghormari and 132 kV Depota-Rowta lines. The same needs attention by team AeGCL/SLDC SCADA team Assam.
- Non operation of protection system/clearing of fault from Dhekiajuli end for 132 kV Depota-Dhekiajuli lines. Fault was cleared by tripping of upstream elements.
- Directional overcurrent relay overreaching issue was observed at Sonabil end.
- Fault in 132kV Depota – Ghoramari line seems lightning fault. No tripping was observed at Ghoramari end. Non operation of protection system/clearing of fault from Ghoramari end for 132 kV Depota-Ghoramari lines needs to be checked by AEGCL.

13. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- 132 kV Sipajhar and Tangla GSS were shifted to 132 kV Rangia side to restore power at 05:11 hrs and 05:15 hrs respectively. Power was extended to Depota and connected substations by charging 132 kV Sonabil-Depota line at 05:25 Hrs of 22.03.2024.
- The Dir. O/C settings at Sonabil end for 132 kV Sonabil – Depota Line was reviewed and changed as per the fault current observed during the event. Present updated settings are:

  IDMT Normal Inverse, Direction: Forward

  Pickup: 400A and TMS: 0.20

- The shutdown of 132 kV Depota – Dhekiajuli line is planned on 7th of April, 2024 for testing the protection scheme at Dhekiajuli end.
- The shutdown of 132 kV Depota – Ghoramari line will be planned on 8th or 9th of April, for testing the protection scheme at both Depota and Ghoramari ends.

14. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	**AEGCL**
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**AEGCL**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**AEGCL**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	No violation
5.	**Any other non-compliance**		-

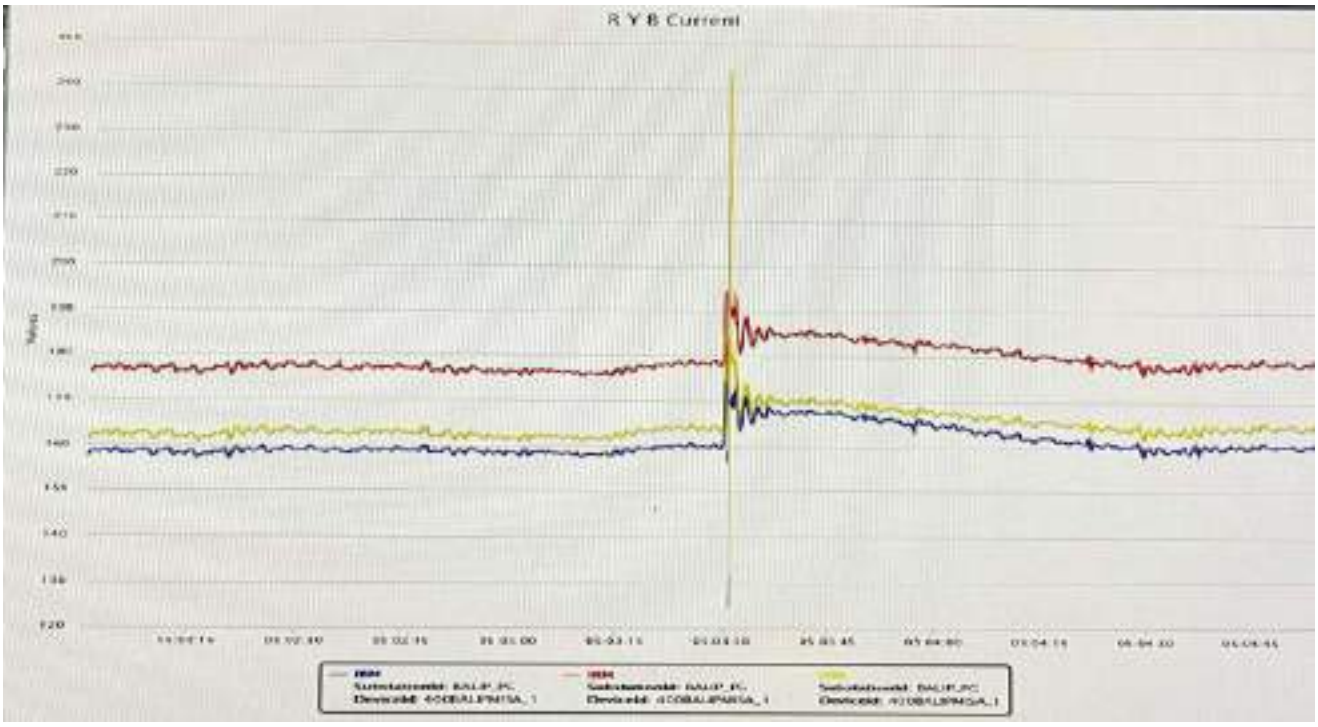
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- With the approaching windy monsoon season with high demand period, to reduce tripping of elements due to vegetation issues/ lightning etc, it is requested to ensure proper maintenance of the lines.
- Healthiness of protection system needs to be checked regularly.
- Tower footing resistance needs to be measured before onset of rainy season and if found greater than 10 Ohm, then necessary measures such as TLSA installation may be carried out.

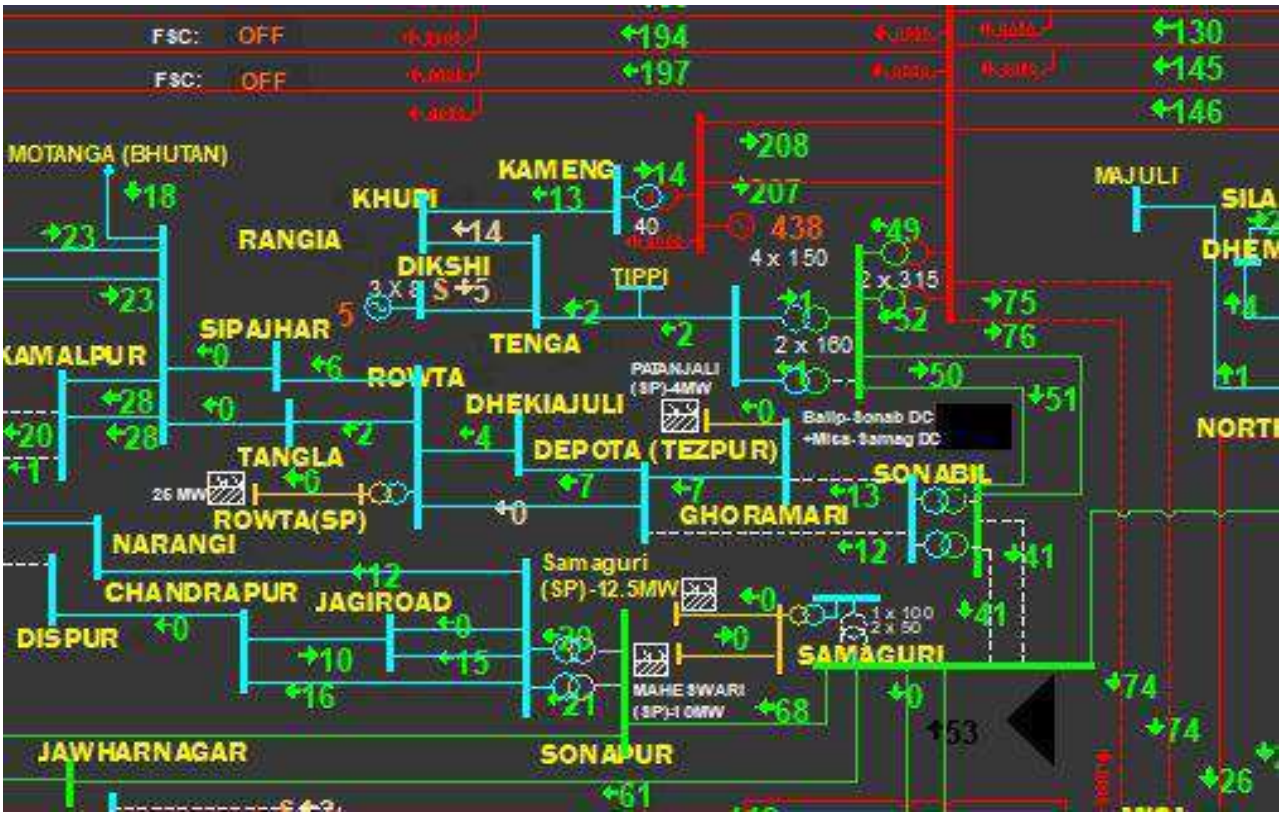
Annexure 1: Sequence of Events as per SCADA

AREA	CATEGORY	LOCATION	TEXT	SYSTEM_TIME	FIELD_TIME	MS
---	---	---	---	---	---	---
AEGCL	1C	DEPOT_AS	DEPOTA (TEZPUR) CB 132Kv LINE TO DHEKI OPEN	22 Mar 2024 05:35:53:000	22 Mar 2024 05:02:56:000	537000000
AEGCL	1C	DEPOT_AS	DEPOTA (TEZPUR) CB 132Kv LINE TO DHEKI BETWEEN	22 Mar 2024 05:05:58:000	22 Mar 2024 05:02:56:000	528000000
AEGCL	1C	ROWTA_AS	ROWTA CB 132Kv LINE TO DHEKI OPEN	22 Mar 2024 05:05:58:000	22 Mar 2024 05:03:31:000	607000000
AEGCL	1C	AZRRT_AS	ROWTA(SP) CB 11 KV UNIT (U2) OPEN	22 Mar 2024 05:06:31:000	22 Mar 2024 05:03:46:000	629000000
AEGCL	1C	AZRRT_AS	ROWTA(SP) CB 33Kv LINE TO ROWTA OPEN	22 Mar 2024 05:06:31:000	22 Mar 2024 05:03:46:000	628000000

Annexure 2: PMU snapshot of 400 kV Balipara-Misa I Line

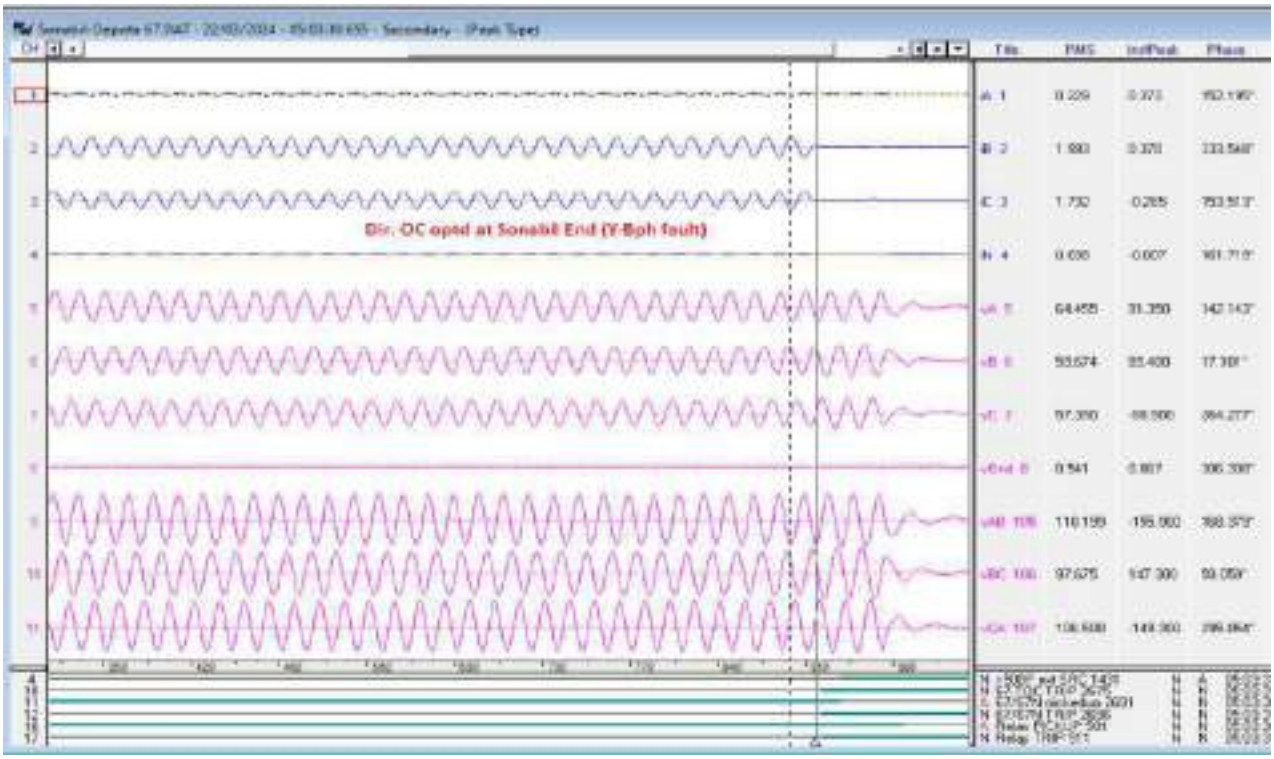


Annexure 3: SLD of the effected SS

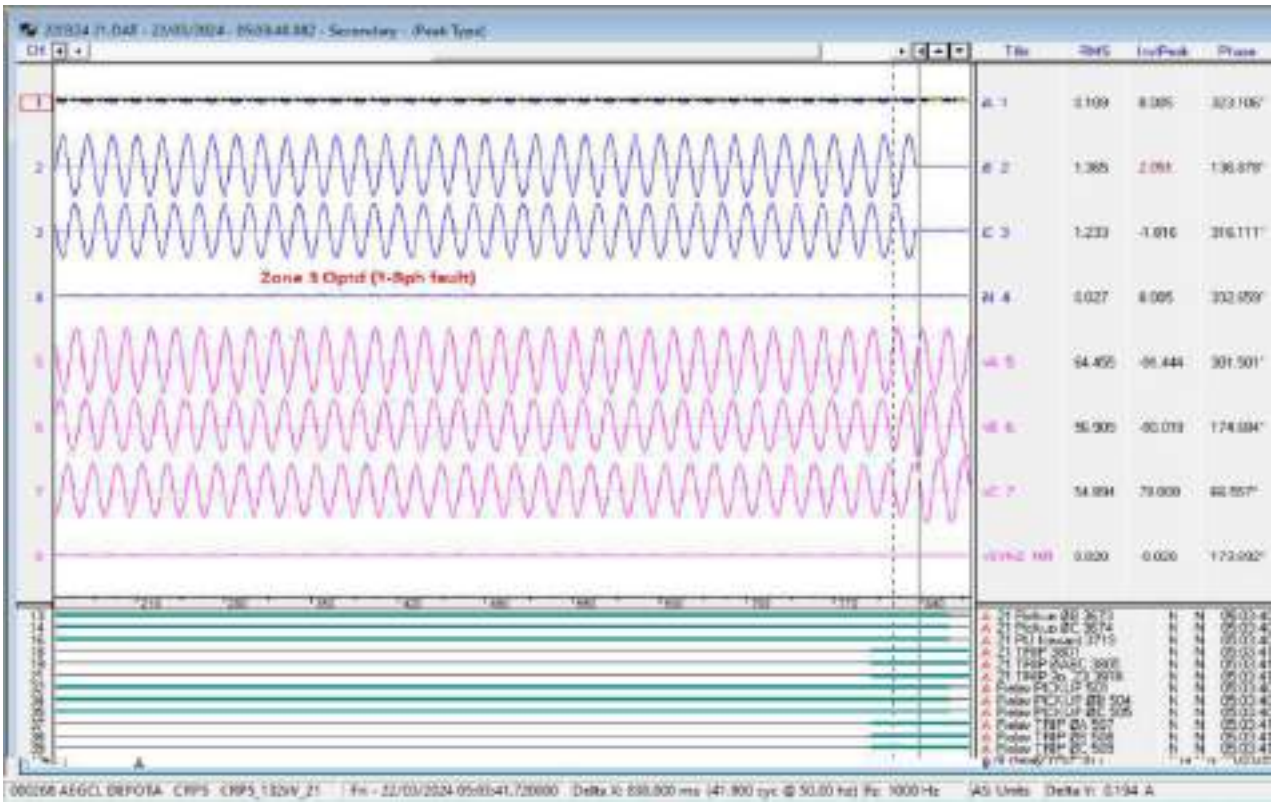


Annexure 4: Disturbance recorder snips showing faults and digital signals

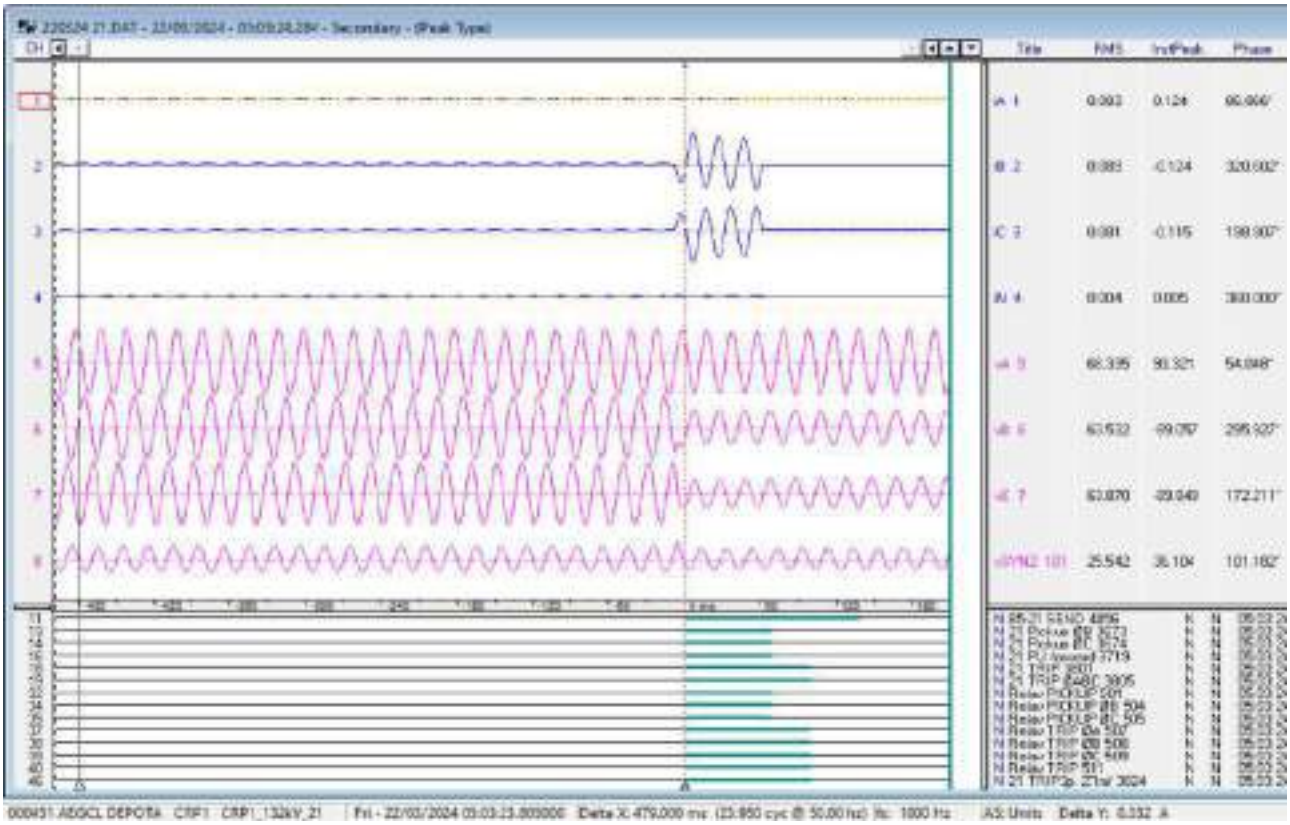
4.1. DR Snapshot of Sonabil for 132 kV Sonabil-Depota Line



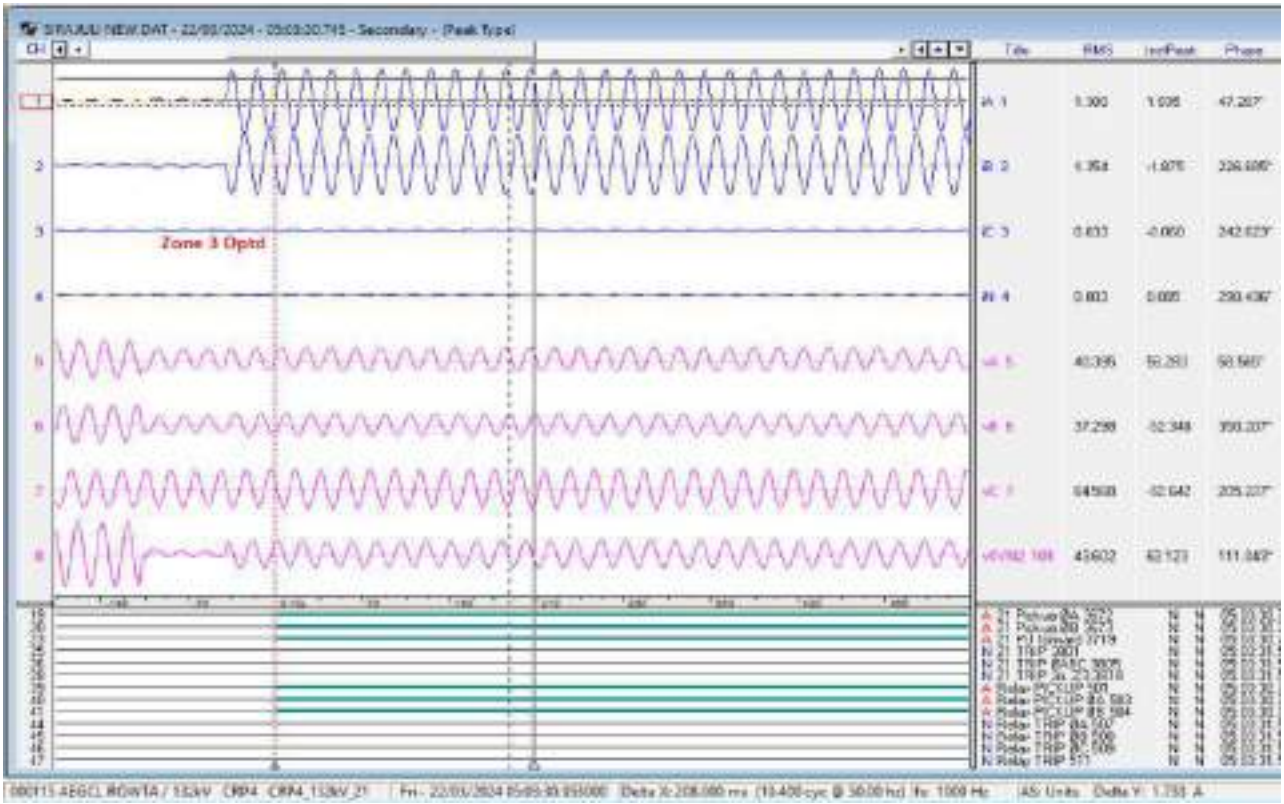
4.2. DR Snapshot of Rowta for 132 kV Depota-Rowta Line



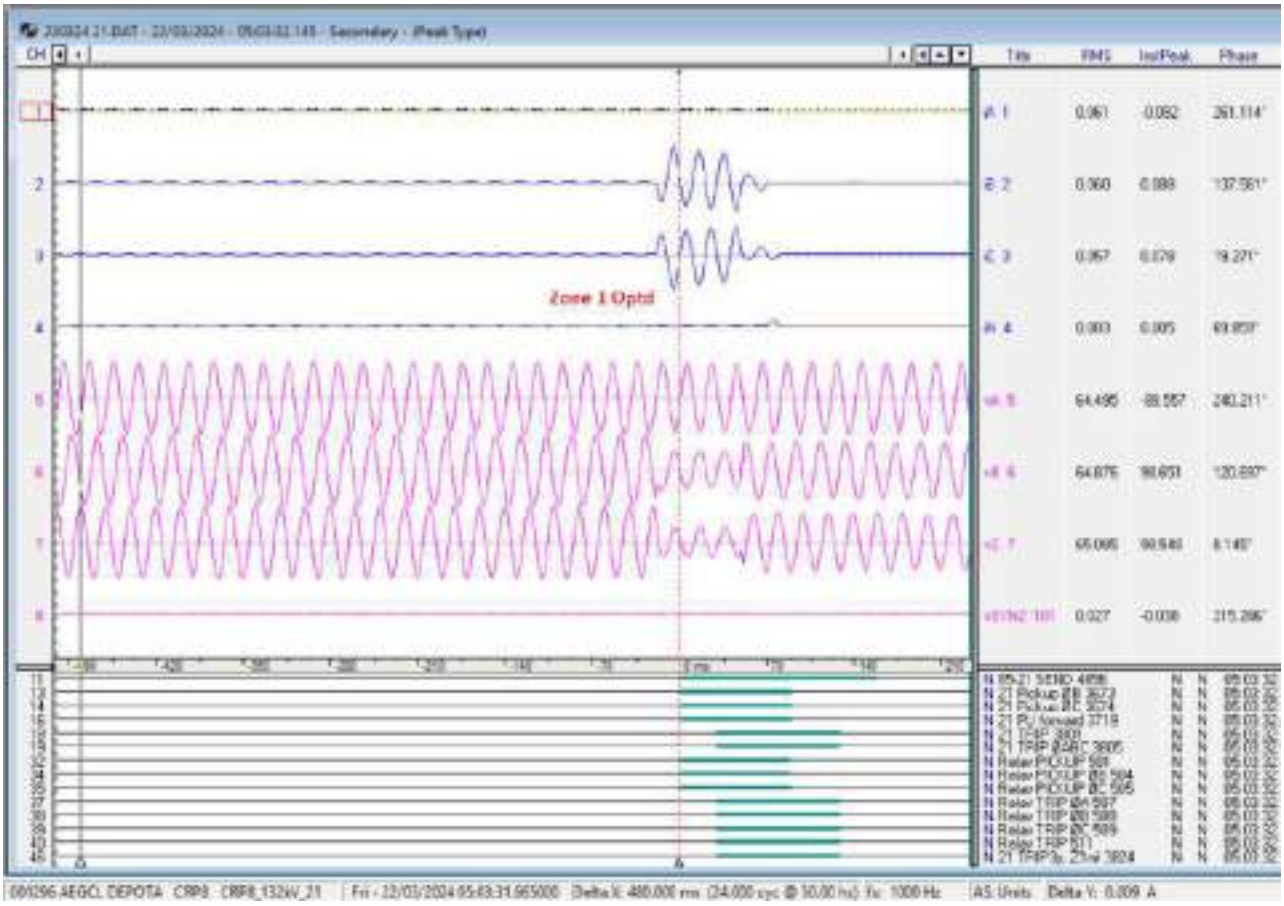
4.3. DR Snapshot of Depota for 132 kV Depota-Dhekiajuli Line



4.4. DR Snapshot of Rowta for 132 kV Rowta-Dhekiajuli Line



4.5. DR Snapshot of Depota for 132 kV Depota-Ghoramari Line



ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in North Lakhimpur, Dhemaji, Silapathar and Majuli areas of Assam of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक**):09-04-2024**

1. **Event Summary (घटना का सारांश):**

   North Lakhimpur, Dhemaji, Silpathar and Majuli areas of Assam Power System were connected with rest of NER Grid through 132 kV North Lakhimpur- Pare, 132 kV North Lakhimpur- Nirjuli and 132 kV North Lakhimpur- Gohpur D/C lines. Prior to the event, 132 kV Gohpur – North Lakhimpur II Line was under planned shutdown since 09:26 Hrs of 22.03.2024.

   At 12:31 Hrs of 22-03-2024, 132 kV North Lakhimpur- Pare line, 132 kV North Lakhimpur- Nirjuli line, and 132 kV North Lakhimpur- Gohpur I line tripped due to LBB operation at North Lakhimpur. Due to tripping of these elements, North Lakhimpur, Dhemaji, Silpathar and Majuli areas of Assam power system were isolated from NER grid and collapsed due to no source available in these areas.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 12:31 Hrs on 22-03-2024

3. **Event Category** (ग्रिड **घटना का प्रकार**)**:** GD-I

4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): North Lakhimpur, Dhemaji, Silpathar and Majuli areas of Assam

5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	50.05	2292	2049	213	1224
Post Event (घटना के बाद)	50.05	2271	2006	216	1195

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	132 kV Gohpur – North Lakhimpur II line was under PSD since 09:26 Hrs of 22.03.2024
Weather Condition (मौसम स्थिति)	Normal

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of around 44 MW occurred.

7. **Duration of interruption (रुकावट की अवधि): 1 Hour 19 min**

8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा)**

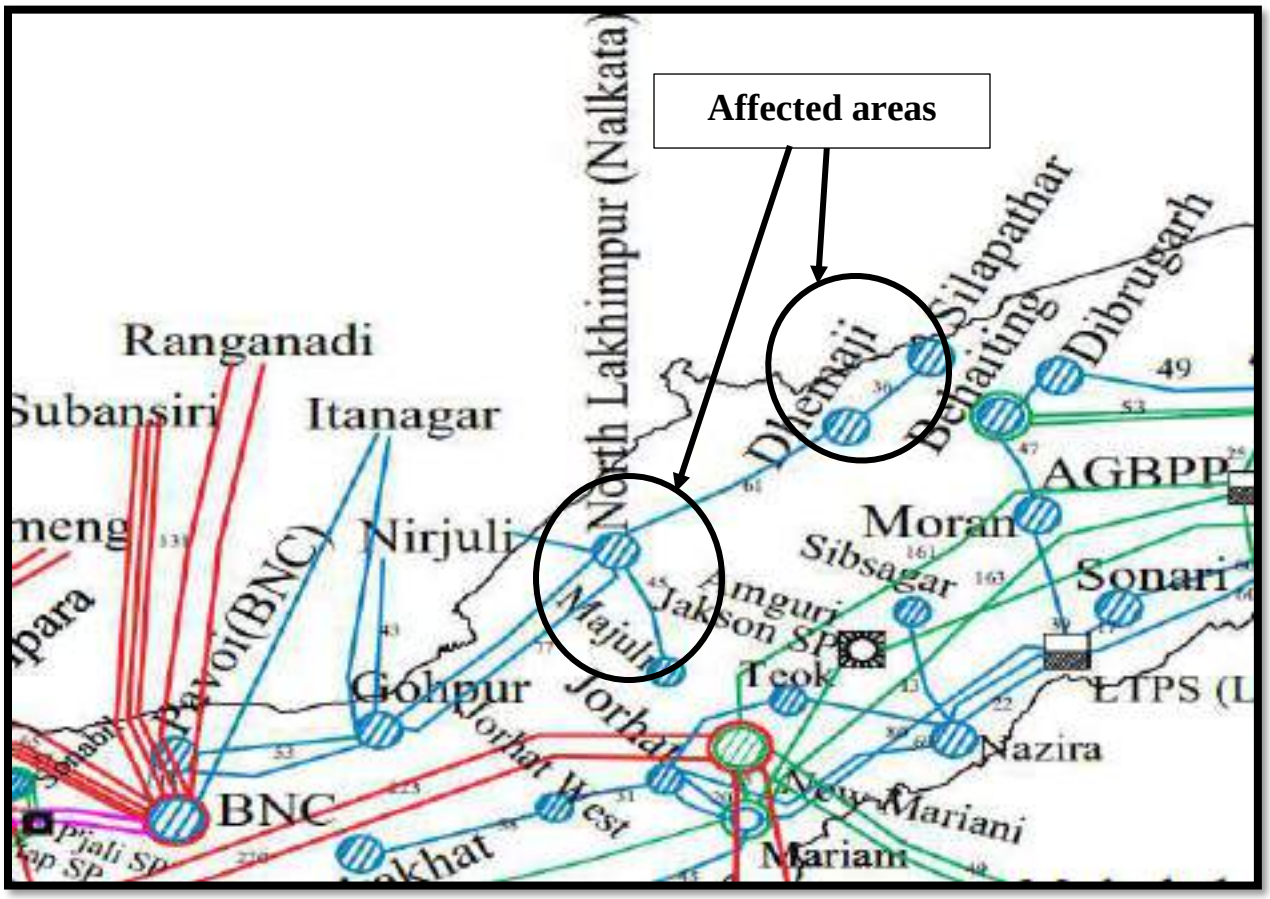


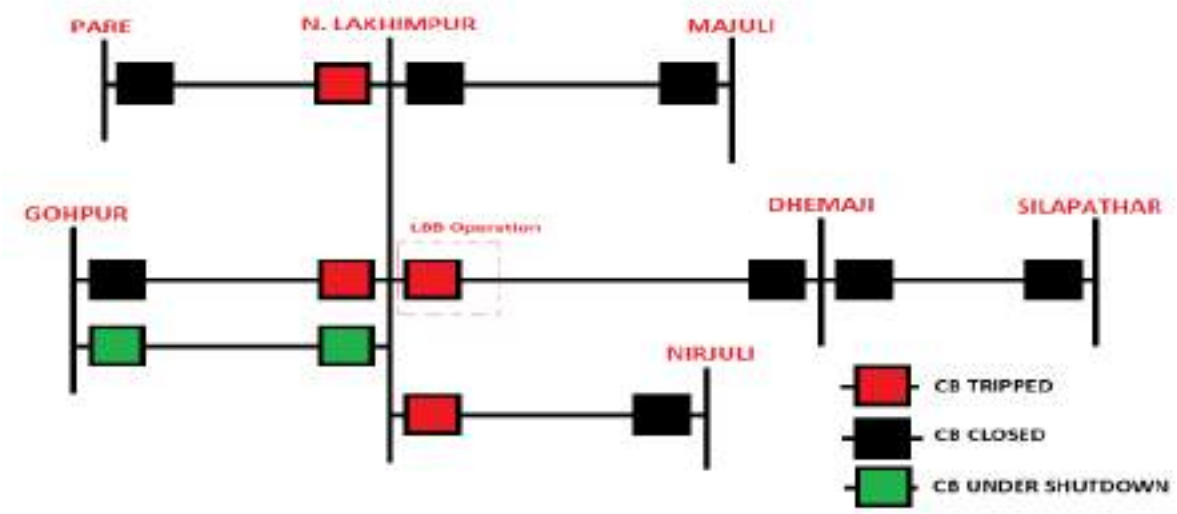
Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132kV North Lakhimpur – Pare	12:31 Hrs	13:38 Hrs	LBB operated	No Trip
2	132kV North Lakhimpur – Gohpur I	12:31 Hrs	14:59 Hrs	LBB operated	No Trip
3	132kV North Lakhimpur - Nirjuli	12:31 Hrs	13:19 Hrs	LBB operated	No Trip
4	132kV North Lakhimpur - Dhemaji	12:31 Hrs	13:48 Hrs	LBB operated	No Trip

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):



As per PMU, there was no fault in the system.

As per information gathered from AEGCL, due to mal-operation of LBB protection at North Lakhimpur, all the elements connected to North Lakhimpur tripped resulting in blackout of North Lakhimpur, Dhemaji, Silpathar and Majuli areas of Assam.

12. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

- Mal-operation of LBB protection needs to be checked by AEGCL.

13. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power was extended to North Lakhimpur by charging 132 kV North Lakhimpur- Nirjuli line at 13:19 Hrs of 22.03.2024 and subsequently to Dhemaji, Silapathar and Majuli Areas at 13:48 Hrs of 22.03.2024.
- The LBB circuit was verified during the period of outage. The DC earth faults, proper segregation of LBB inter-panel wires, tightness of connectors, wires in close vicinity to each other in LBB circuit were checked. The system was returned when the healthiness of LBB circuit was established.

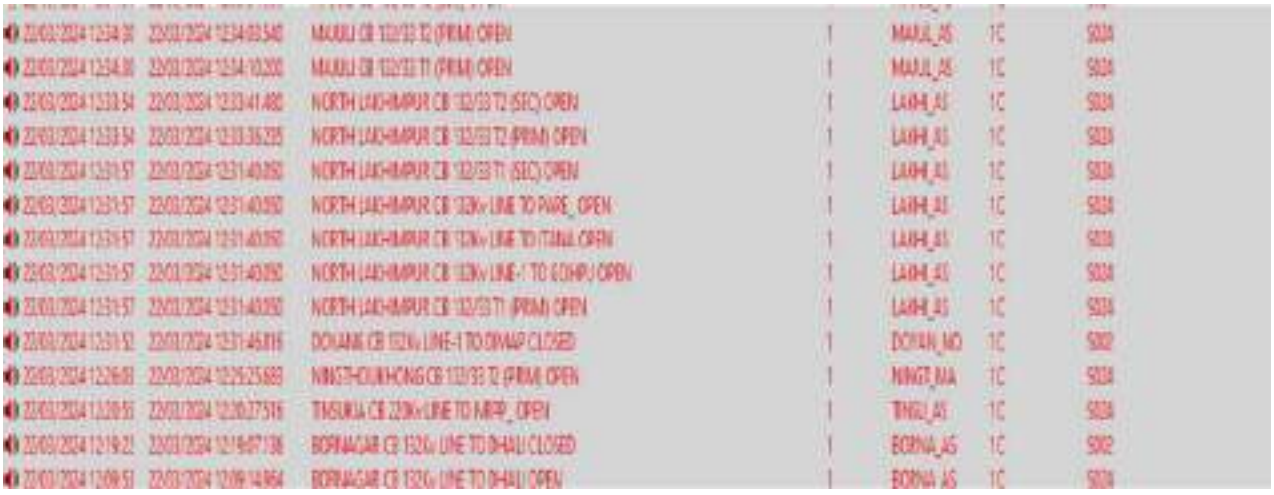
14. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	**AEGCL**
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**AEGCL**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**AEGCL**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	No violation
5.	**Any other non-compliance**		-

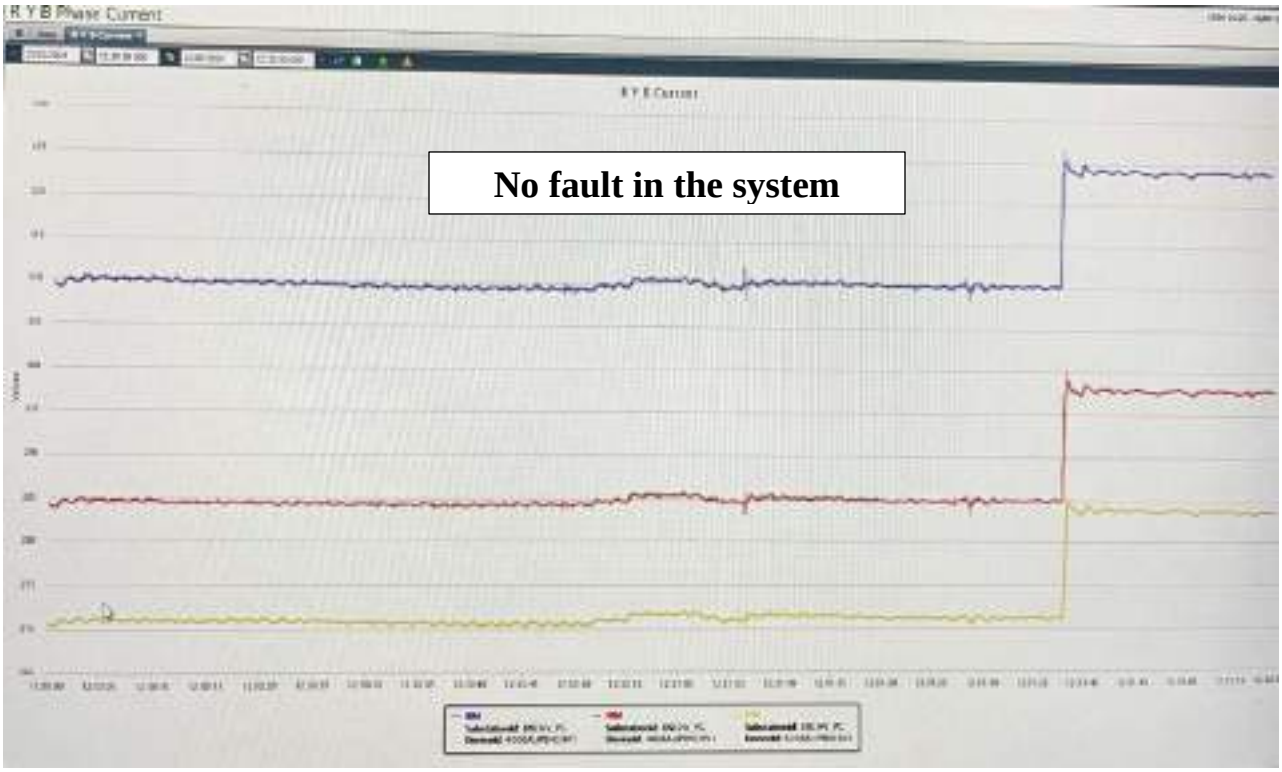
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- Healthiness of protection system needs to be checked regularly.

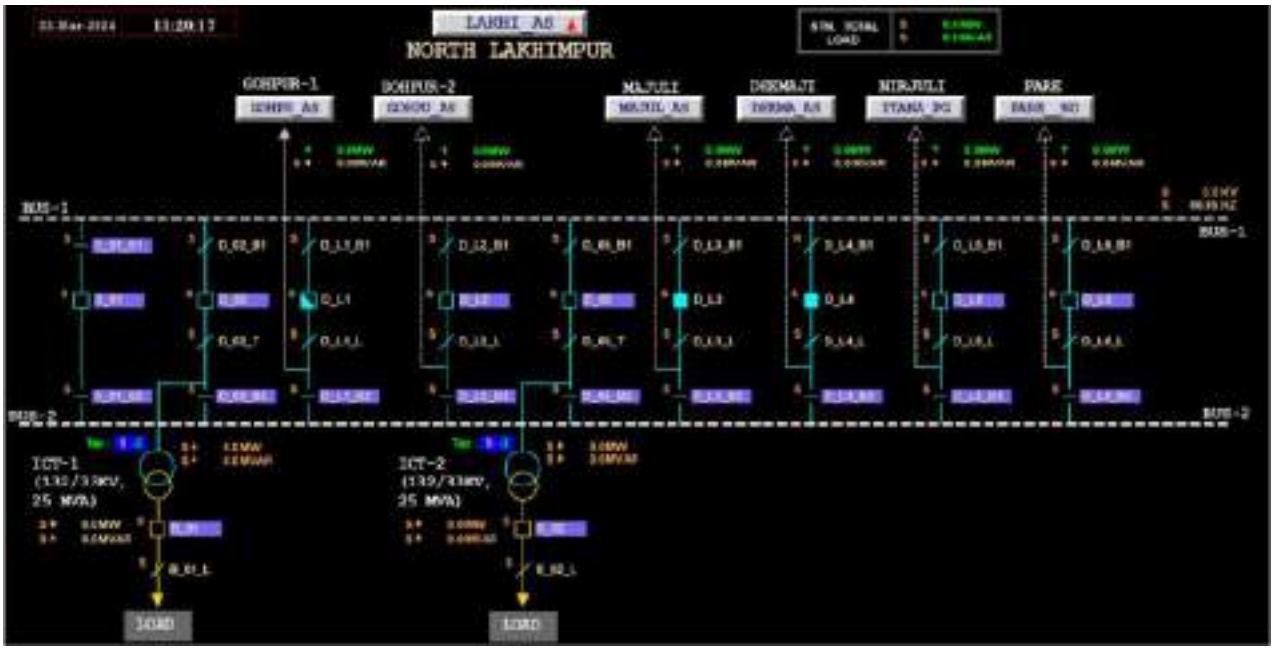
Annexure 1: Sequence of Events as per SCADA



Annexure 2: PMU snapshot of 400 kV Balipara-BNC I Line at BNC end



Annexure 3: SLD of the effected SS



Annexure 4: Disturbance recorder snips showing faults and digital signals

DR not submitted

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Jirania S/S of Tripura Power system of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक**):10-04-2024**

1. **Event Summary (घटना का सारांश):**

Jirania area of Tripura Power System is connected with the rest of NER Grid through 132 kV Budhjungnagar-Jirania and 132 kV Baramura-Jirania lines. Prior to the event, 132 kV Baramura-Jirania line tripped at 20:30 Hrs of 23.03.2024.

At 22:25 Hrs of 23.03.2024, 132 kV Budhjungnagar-Jirania line tripped. Due to tripping of this element, Jirania area of Tripura power system got isolated from NER grid and collapsed due to no source available in this area.

2. **Time and Date of the Event (**घटना का स मय और दिनांक**):** 22:25 Hrs on 23-03-2024

3. **Event Category (**ग्रिड **घटना का प्रकार):** GD-I

4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Jirania of Tripura

5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation (MW)	Regional Demand (MW)	State Generation (MW)	State Demand (MW)
Pre-Event (घटना पूर्व)	49.99	2020	1749	101	227
Post Event (घटना के बाद)	49.99	2014	1736	101	213

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	132 kV Jirania – Baramura tripped at 20:30 hrs of 23- 03-2024 and declared faulty.
Weather Condition (मौसम स्थिति)	Lightning and thundering

2. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 14 MW in Jirania

3. **Duration of interruption (रुकावट की अवधि): 22 min**

4. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

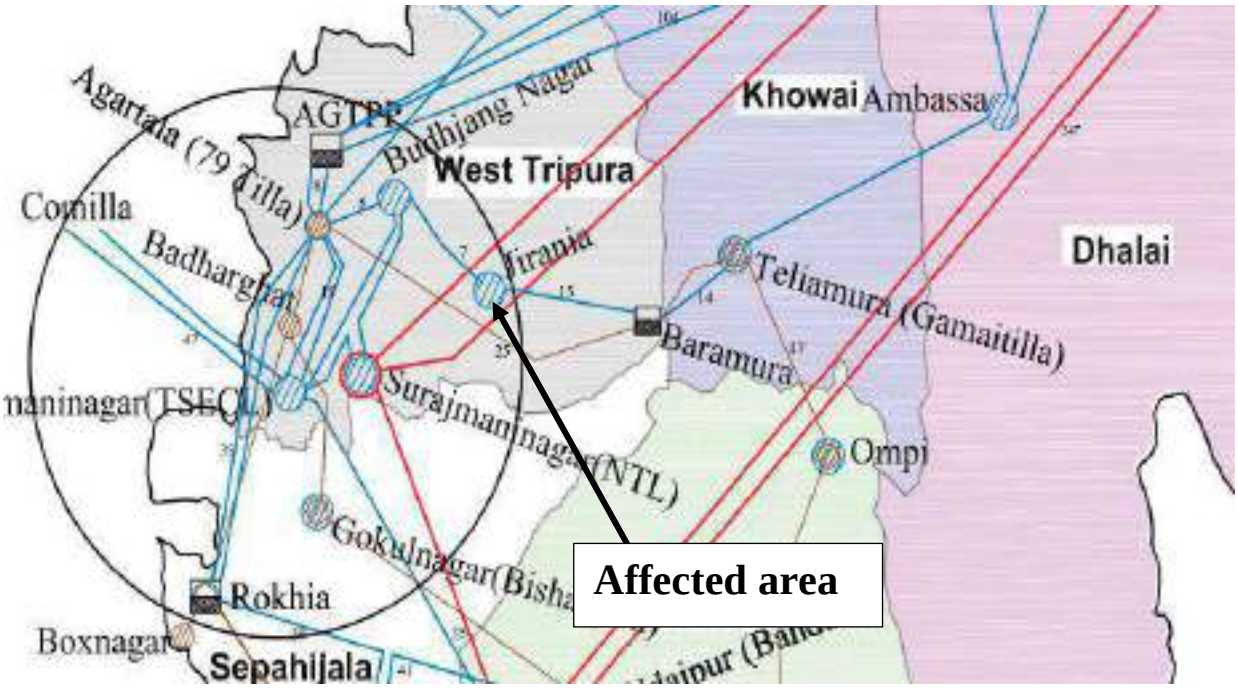


Figure 1: Network across the affected area

5. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

6. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132 kV Budhjungnagar-Jirania Line	22:25	22:47	DP, ZII, R-Y	No tripping

7. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

As per DR analysis, R-Y phase fault initiated at 22:20:58.126 Hrs which was cleared from Budhjungnagar end within 422 msec on operation of DP, ZII. Fault current of 5.2 kA appears in both R & Y phases.

8. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

9. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power supply was extended to Jirania area of Tripura Power System by charging 132 kV Budhjungnagar - Jirania at 22:47 Hrs of 23.03.2024.

10. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	**TSECL**
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**TSECL**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**TSECL**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	**Time drift of 5 min at Budhjungnagar**
5.	**Any other non-compliance**		**-**

11. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- Regular patrolling and proper maintenance activities needs to be carried out as per various CEA/CERC regulations to reduce tripping due to vegetation/lightning, etc.
- Periodic checking of clearances viz phase to phase, jumper clearance, E/W to phase conductor etc needs to be done to prevent such events.

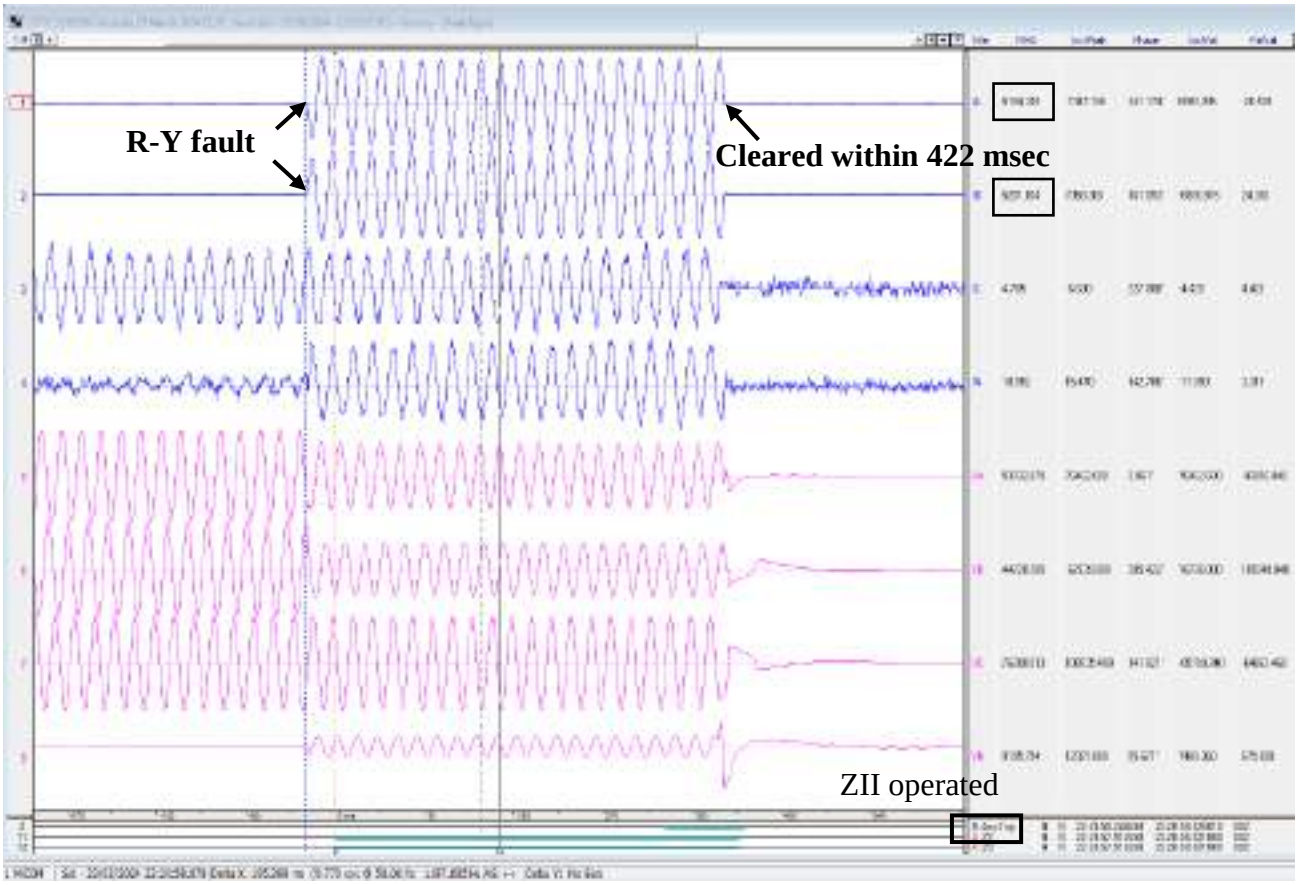
Annexure 1: Sequence of Events as per SCADA

AREA	CATEGORY	LOCATION	TEXT	SYSTEM_TIME	FIELD_TIME	MS
MIZORM	1C	KOLAS_MI	KOLASIB CB 132/33 T1 (PRIM) OPEN	23 Mar 2024 22:14:33:000	23 Mar 2024 22:14:25:000	32000000
TSECL	1C	BUDHJ_TE	BUDHJUNGNAGAR CB 132 KV COUPLER (02) BETWEE	23 Mar 2024 22:19:27:000	23 Mar 2024 22:19:13:000	539000000
MEECL	1C	RONGK_ME	RONGKHON CB 33Kv LOAD-2 TURA_ OPEN	23 Mar 2024 22:20:58:000	23 Mar 2024 22:20:51:000	169000000
TSECL	1C	BUDHJ_TE	BUDHJUNGNAGAR CB 132Kv LINE-1 TO JIRAN OPEN	23 Mar 2024 22:21:58:000	23 Mar 2024 22:21:53:000	823000000
MEECL	1C	RONGK_ME	RONGKHON CB 33Kv LOAD-2 TURA_ CLOSED	23 Mar 2024 22:22:56:000	23 Mar 2024 22:22:51:000	686000000
TSECL	1C	BARMU_TE	BARMURA CB 132/66 T1 (PRIM) INVALID	23 Mar 2024 22:46:18:000	23 Mar 2024 22:46:00:000	127000000
TSECL	1C	UDAIP_TE	UDAIPUR CB 66Kv LINE-1 TO GUMTI OPEN	23 Mar 2024 22:46:52:000	23 Mar 2024 22:46:36:000	105000000
TSECL	1C	BUDHJ_TE	BUDHJUNGNAGAR CB 132Kv LINE-1 TO JIRAN CLOSE	23 Mar 2024 22:47:40:000	23 Mar 2024 22:47:30:000	732000000
MIZORM	1C	AIZAW_PG	AIZAWL CB 132Kv LINE TO TIPAI CLOSED	23 Mar 2024 23:01:47:000	23 Mar 2024 23:01:45:000	394000000

Annexure 2: SLD of the effected SS

Annexure 3: Disturbance recorder snips showing faults and digital signals

3.1. DR Snapshot of Budhjungnagar for 132 kV Budhjungnagar-Jirania Line



ग्रिड-इंडिया GRID-INDIA
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Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Lumshnong S/S of Meghalaya of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक)**:10-04-2024**

1. **Event Summary (घटना का सारांश):**

Lumshnong area of Meghalaya Power System is connected to the rest of NER Grid through 132 kV Lumshnong-Panchgram and 132 kV Lumshnong-Khliehriat lines. Prior to the event, 132 kV Lumshnong-Panchgram line was out since 23:35 Hrs of 25.03.2024.

At 00:32 Hrs of 26.03.2024, 132 kV Lumshnong-Khliehriat line tripped. Due to tripping of this element, Lumshnong area of Meghalaya Power System got isolated from NER Grid and collapsed due to no source available in these areas.

2. Time and Date of the Event (घटना का स मय और दिनांक)**:** 00:32 **Hrs on** 26-03-2024

3. Event Category (ग्रिड **घटना का प्रकार**)**:** GD-I

4. Location/Control Area (स्थान/नियंत्रण क्षेत्र): Lumshnong area of Meghalaya

5. Antecedent Conditions (पूर्ववर्ती स्थिति):

	Frequency in Hz	Regional Generation (MW)	Regional Demand (MW)	State Generation (MW)	State Demand (MW)
Pre-Event (घटना पूर्व)	49.99	2049	1325	0	183
Post Event (घटना के बाद)	49.99	2050	1298	0	156

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	132 kV Lumshnong - Panchgram Line was under outage since 23:35 Hrs of 25.03.2024
Weather Condition (मौसम स्थिति)	Heavy rain and Frequent Lightning

2. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 27 MW in Lumshnong area. There was no generation loss.
3. **Duration of interruption (रुकावट की अवधि): 43 min**
4. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

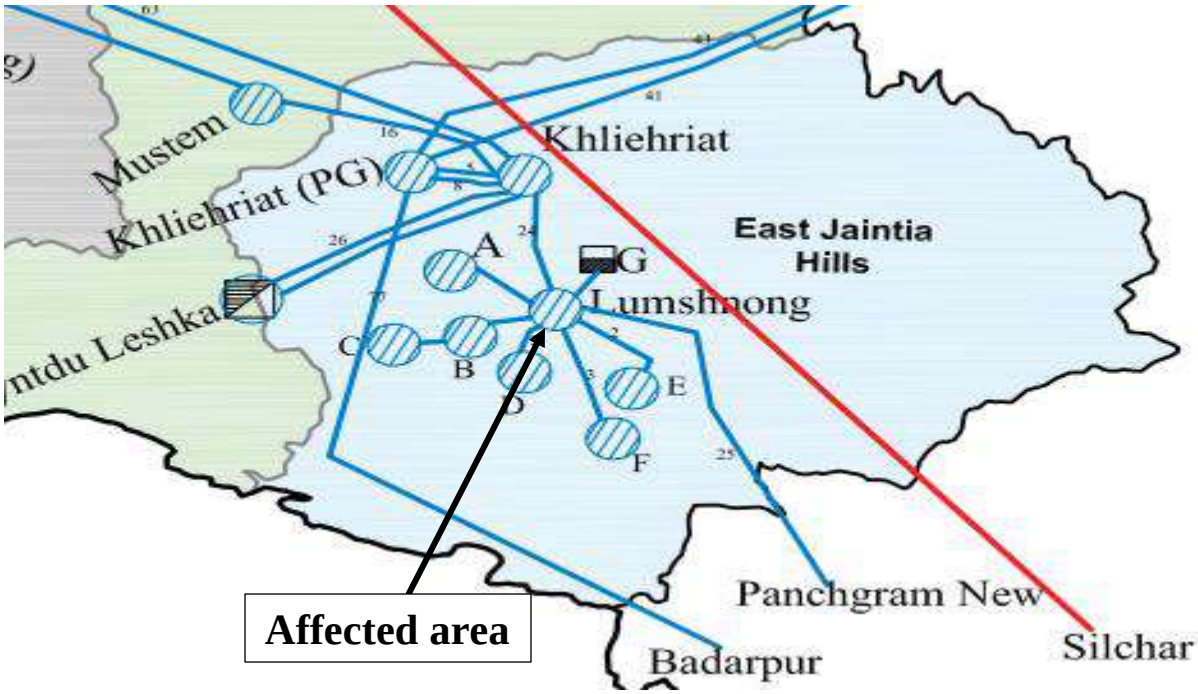


Figure 1: Network across the affected area

5. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

6. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132 kV Lumshnong-Khlieheriat	00:32	01:18	No tripping	DP, ZIII, Y-B, FD: 77.86 Km

7. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

As per DR analysis, Y-B phase fault initiated at 00:32:07.843 Hrs in 132 kV Lumshnong-Khleihriat Line which was cleared on operation of DP, ZIII within 566 msec from Khliehriat end.

Fault is suspected in the downstream of Lumshnong which was cleared from Khleihriat end on ZIII.

8. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

9. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power was extended to Lumshnong area of Meghalaya Power System by charging 132 kV Lumshnong – Khliehriat line at 01:18 Hrs of 26.03.2024.

10. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	**MePTCL**
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**No violation**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**MePTCL**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	**No violation**
5.	**Any other non-compliance**		**-**

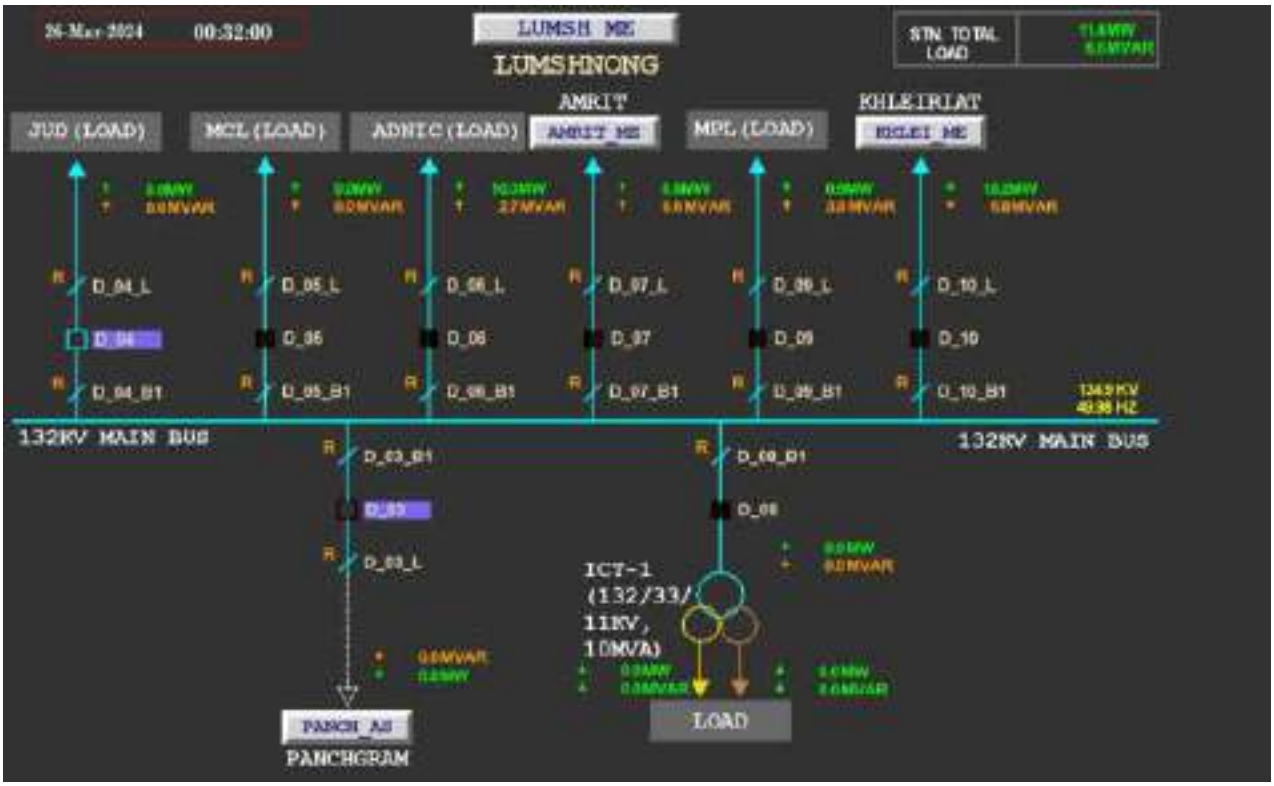
11. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- With the approaching windy monsoon season with high demand period, to reduce tripping of elements due to vegetation issues/ lightning etc, it is requested to ensure proper maintenance of the lines.

Annexure 1: Sequence of Events as per SCADA

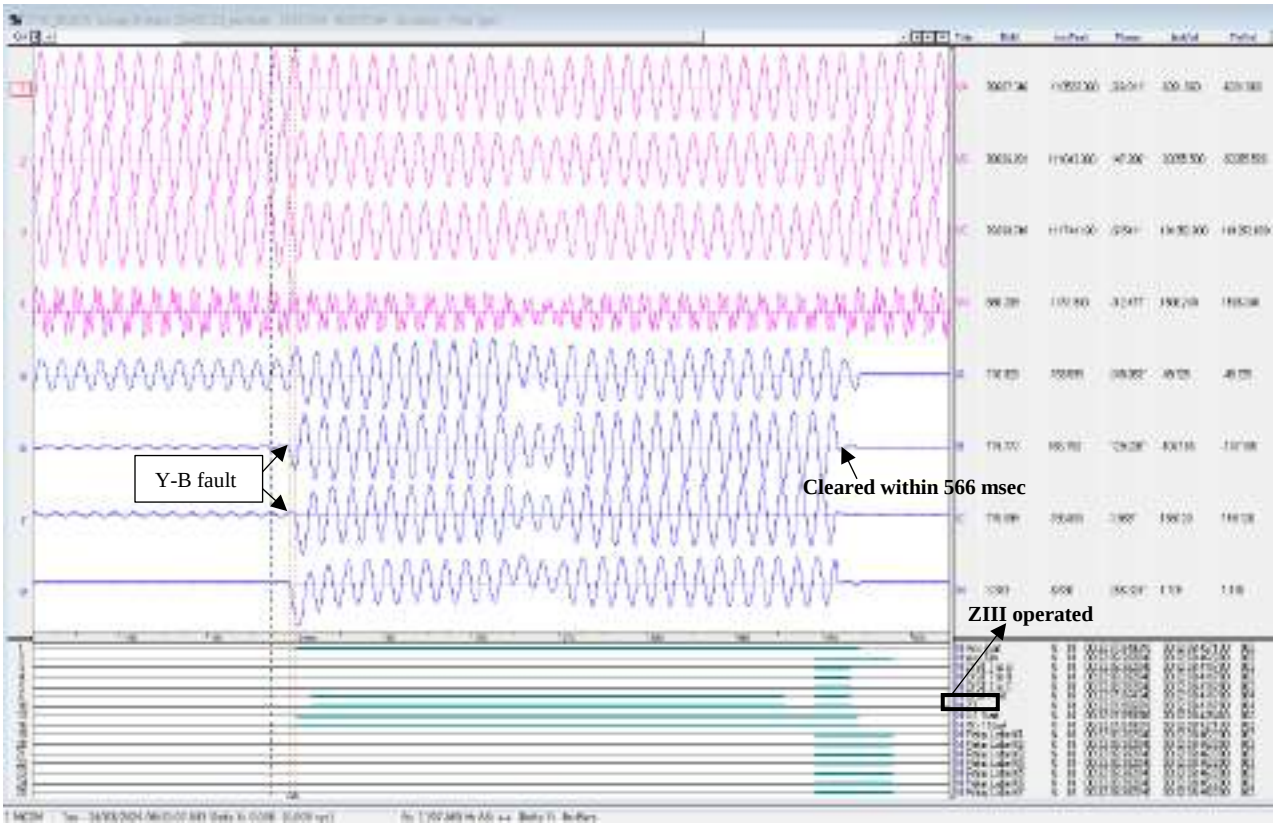
SOE not recorded

Annexure 2: SLD of the effected SS



Annexure 3: Disturbance recorder snips showing faults and digital signals

3.1. DR Snapshot of Khliehriat for 132 kV Khliehriat-Lumshnong Line



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CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Nangalbibra, Rongkhon, Ampati and Phulbari S/S of Meghalaya of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक)**:08-04-2024**

1. **Event Summary (घटना का सारांश):**

Nangalbibra, Rongkhon, Ampati and Phulbari areas of Meghalaya Power System are connected to the rest of NER Grid through 132 kV Agia- Nangalbibra, 132 kV Mendipathar –Nangalbibra and 132 kV Nangalbibra-Nongstoin lines. Prior to the event, 132 kV Nangalbibra-Nongstoin line tripped at 01:23 Hrs.

At 01:56 Hrs of 26.03.2024, 132 kV Agia- Nangalbibra and 132 kV Mendipathar -Nangalbibra lines tripped. Due to tripping of these lines, Nangalbibra, Rongkhon, Ampati and Phulbari areas of Meghalaya Power System were isolated from NER Grid and collapsed due to no source available in these areas.

2. Time and Date of the Event (घटना का स मय और दिनांक)**:** 01**:56 Hrs on** 26-03-2024

3. Event Category (ग्रिड **घटना का प्रकार**)**:** GD-I

4. Location/Control Area (स्थान/नियंत्रण क्षेत्र): Nangalbibra, Rongkhon, Ampati and Phulbari areas of Meghalaya

5. Antecedent Conditions (पूर्ववर्ती स्थिति):

	Frequency in Hz	Regional Generation (MW)	Regional Demand (MW)	State Generation (MW)	State Demand (MW)
Pre-Event (घटना पूर्व)	49.99	2010	1235	0	139
Post Event (घटना के बाद)	49.99	2003	1217	0	125

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	132 kV Nongstoin-Nangalbibra line tripped at 01:23 Hrs of 26.03.2024 & 132 kV Nangalbibra-Ronkhon line tripped at 01:44 Hrs of 26.03.2024
Weather Condition (मौसम स्थिति)	Rain and thunderstorm

2. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 14 MW in Nangalbibra, Rongkhon, Ampati and Phulbari areas. There was no generation loss.
3. **Duration of interruption (रुकावट की अवधि): 32 min**
4. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

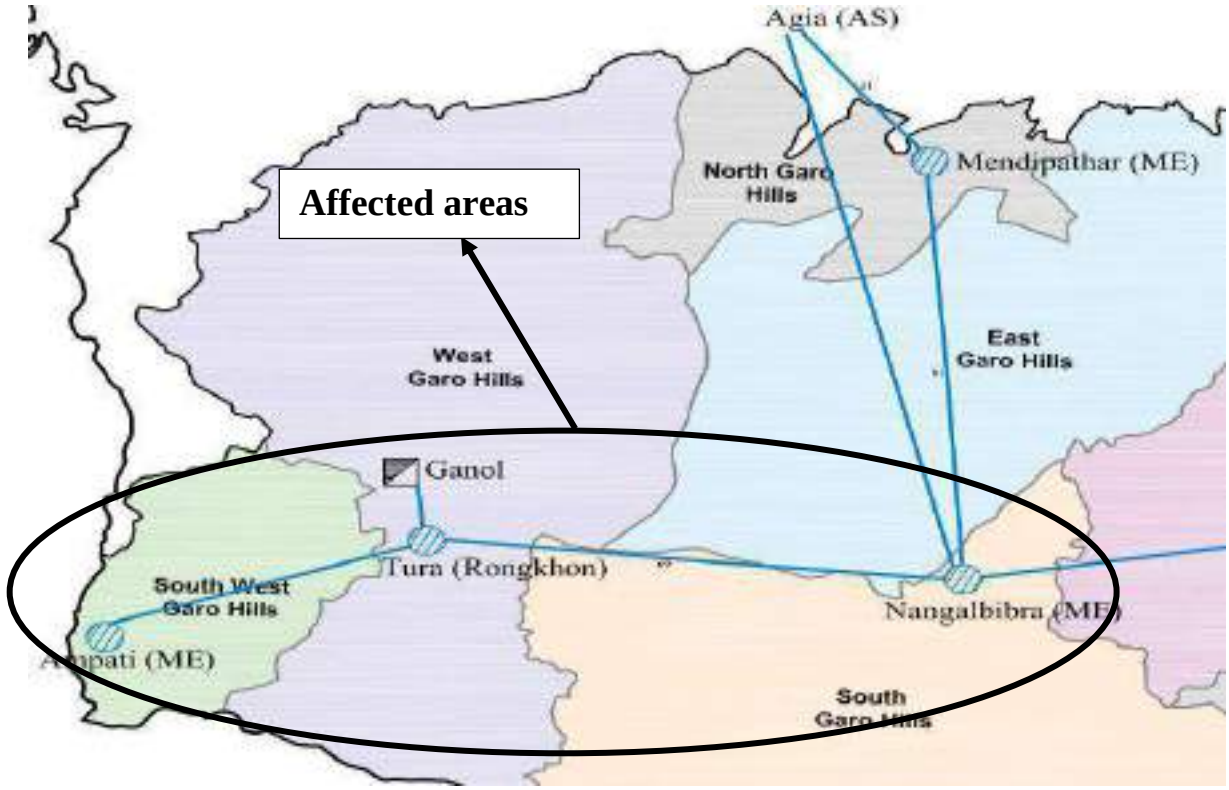


Figure 1: Network across the affected area

5. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

6. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132 kV Agia-Nangalbibra Line	01:56	02:28	DP, ZI, FD: 91.9 Km	DP, ZI, Y-E, FD: 9.41 Km
2	132 kV Nangalbibra-Mendipathar Line	01:56	02:12	Opened manually after tripping	DP, ZII, Y-E

7. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

As per DR analysis, Y-E fault in 132 kV Agia-Nangalbibra line cleared within 50 msec on operation of DP, ZI from Nangalbibra end.

As per information from Meghalaya, rain and thunderstorm was reported from various areas of Garo Hills during the morning hours of 26.03.2024. Due to this inclement weather condition, most of the Distribution Load was affected since most of the 33 kV feeders tripped.

The reason of the above tripping may be attributed to lightning as the faults were transient in nature.

8. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

- SOE not recorded for the tripping of 132 kV Agia-Nangalbibra and 132 kV Nangalbibra-Mendipathar lines. The same needs attention from MePTCL team/SLDC Meghalaya.

9. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power was extended to Nangalbibra, Rongkhon, Ampati and Phulbari areas of Meghalaya Power System by charging 132 kV Agia- Nangalbibra line at 02:28 Hrs.

10. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	**MePTCL**
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**AEGCL**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	No violation
4.	**DR Time Synchronization Issues**	IEGC section 17.3	**Time drift of 2 min in Nangalbibra end**
5.	**Any other non-compliance**		-

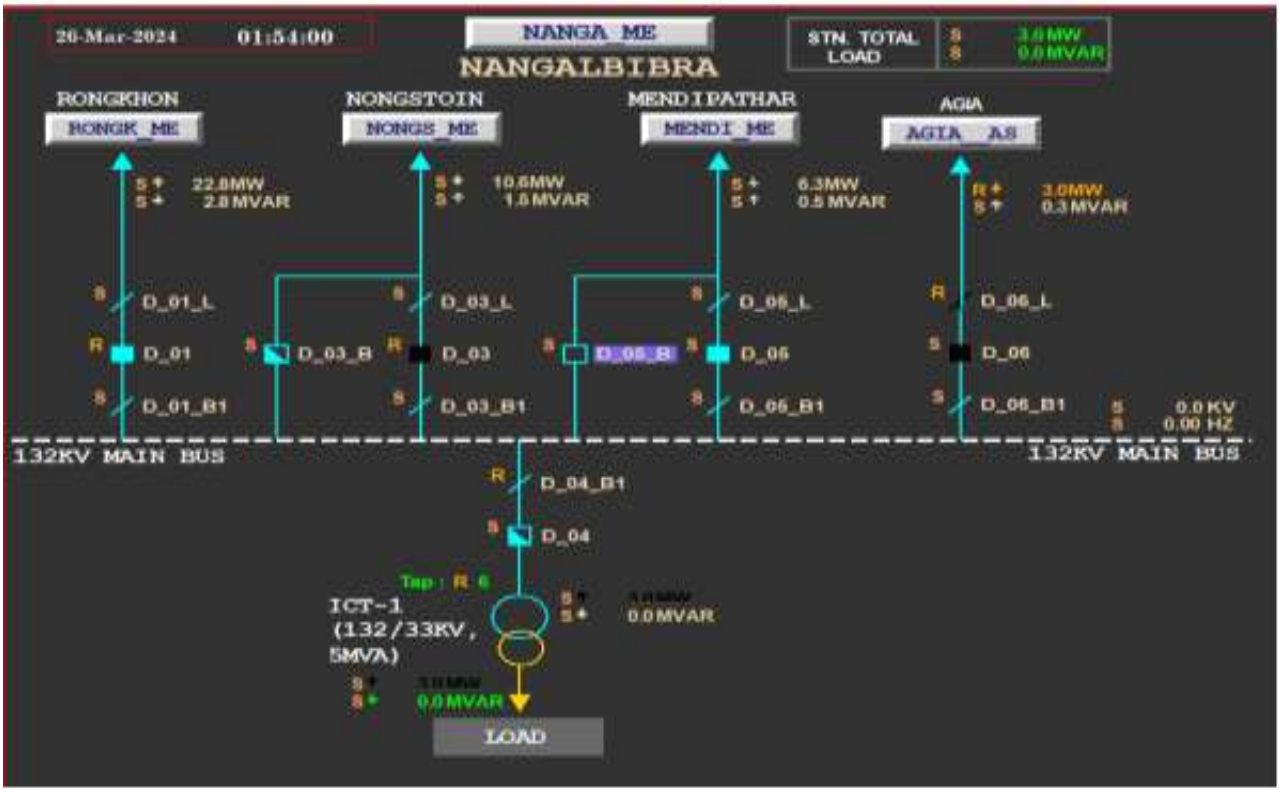
11. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- With the approaching windy monsoon season with high demand period, to reduce tripping of elements due to vegetation issues/ lightning etc, it is requested to ensure proper maintenance of the lines.
- Tower footing resistance needs to be measured before onset of rainy season and if found greater than 10 Ohm, then necessary measures such as TLSA installation may be carried out.

Annexure 1: Sequence of Events as per SCADA - SOE not recorded

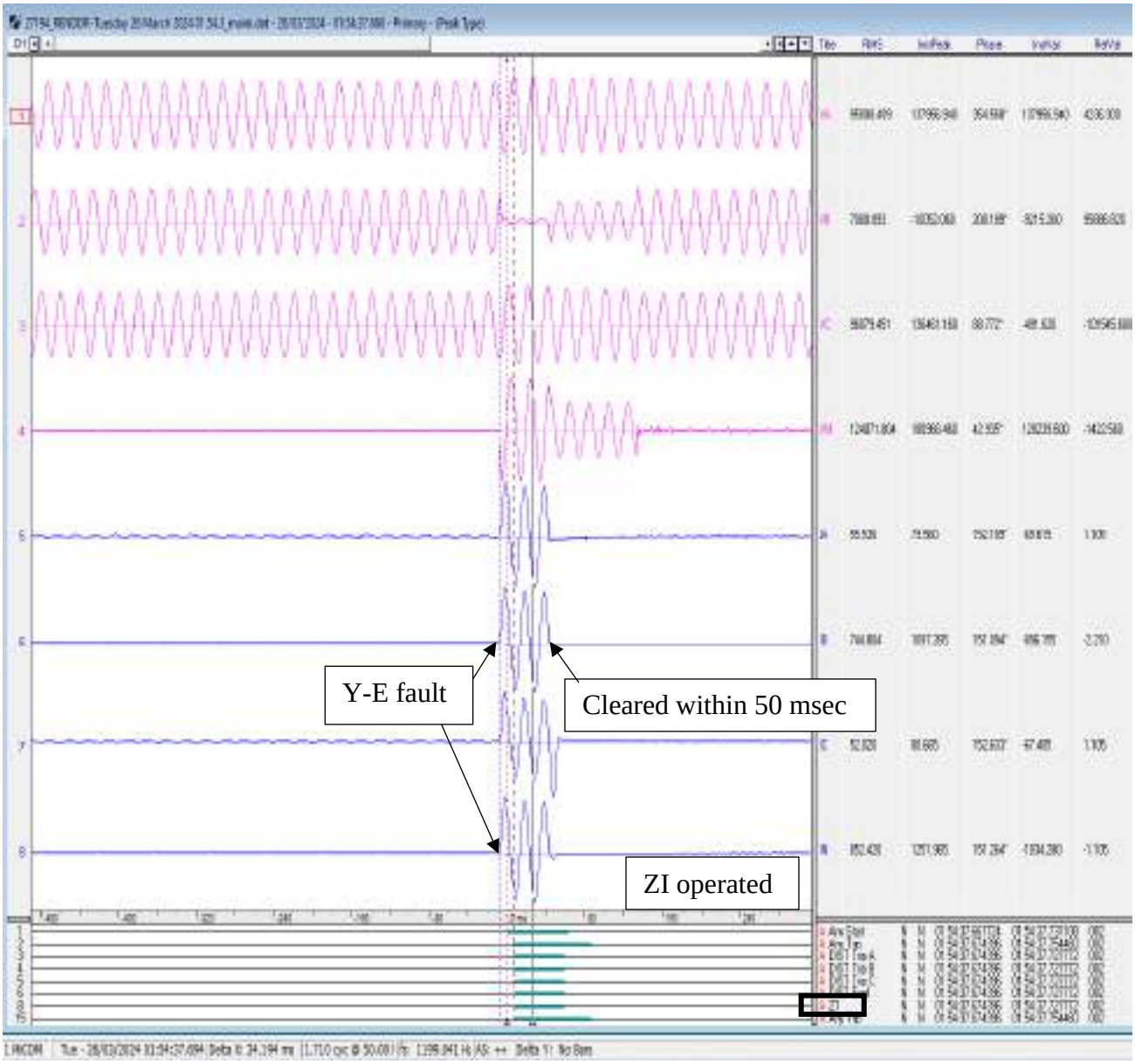
Annexure 2: PMU snapshot line

Annexure 3: SLD of the effected SS



Annexure 4: Disturbance recorder snips showing faults and digital signals

4.1. DR Snapshot of Nangalbibra for 132 kV Agia-Nangalbibra Line



4.2. DR Snapshot of Agia for 132 kV Agia-Nangalbibra Line

DR not submitted by AEGCL

4.3. DR Snapshot of Mendipathar for 132 kV Nangalbibra-Mendipathar Line

DR file not opening

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
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उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Monarchak, Udaipur and Rabindranagar S/S of Tripura of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक**):09-04-2024**

1. **Event Summary (घटना का सारांश):**

   Monarchak, Udaipur and Rabindranagar areas of Tripura Power System are connected with rest of NER Grid through 132 kV Monarchak-Udaipur and 132 kV Monarchak-Rokhia lines. Prior to the event, 132 kV Palatana-Udaipur line tripped at 07:32 Hrs of 31.03.2024.

   At 07:36 Hrs of 31.03.2024, 132 kV Monarchak-Rokhia line tripped. Due to tripping of this element, Monarchak, Udaipur and Rabindranagar areas of Tripura Power System were isolated from NER Grid and collapsed due to load generation mismatch in these areas.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 07:36 Hrs on 31-03-2024
3. **Event Category** (ग्रिड **घटना का प्रकार):** GD-I
4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Monarchak, Udaipur and Rabindranagar areas of Tripura
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	50.12	1950	1963	110	165
Post Event (घटना के बाद)	50.12	1890	1948	0	163

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	132 kV Palatana-Udaipur line tripped at 07:32 Hrs of 31.03.2024
Weather Condition (मौसम स्थिति)	Heavy Rainfall/Wind

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 2 MW. Generation loss of 74 MW in Monarchak and 36 MW in Rokhia.
7. **Duration of interruption (रुकावट की अवधि): 1 Hour 18 min**
8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

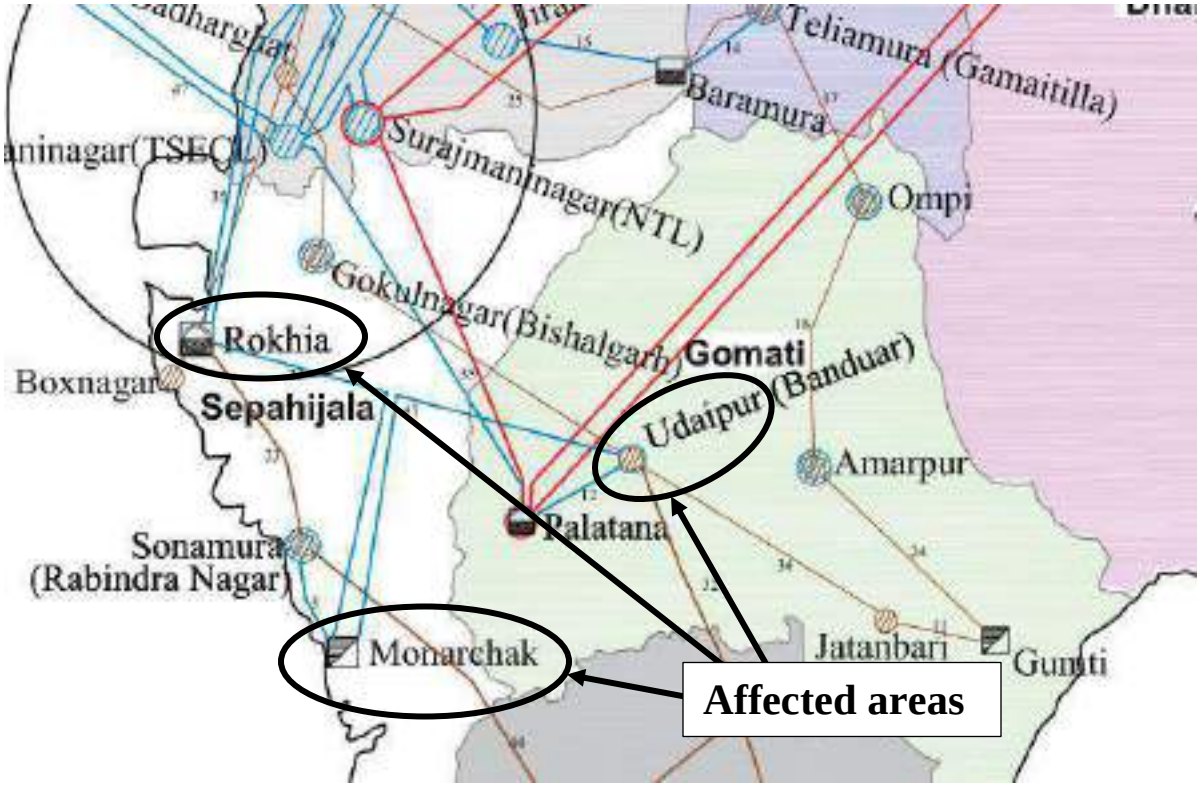


Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132 kV Monarchak-Rokhia	07:36	11:18	DP, ZII, Y-B, FD: 23.97 Km	DP, ZI, Y-B, FD:3.13 Km
2	Monarchak GTG	07:36	11:02	Tripped on Rotor earth fault	
3	Monarchak STG	07:36	12:47	Tripped on Rotor earth fault	
4	Rokhia Unit-7	07:36	12:01	Details awaited	
5	Rokhia Unit-8	07:36	12:30	Details awaited	

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

As per DR analysis, Y-B phase fault initiated at 07:23:00.896 Hrs in 132 kV Monarchak-Rokhia Line which was cleared from Rokhia end within 61 msec on operation of DP, ZI. Fault current of 4.8 kA appears in the Y & B phase. As per DR of Monarchak, Y-B phase fault detected and cleared on operation of DP, ZII within 400 msec.

As 132 kV Palatana-Udaipur line was already in tripped condition since 07:32 Hrs of 31.03.2024, tripping of 132 kV Monarchak-Rokhia line resulted in blackout of Monarchak generating station, Udaipur and Rabindranagar areas of Tripura. At the same time, Rokhia generation also tripped.

12. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

- SOE not recorded for any of the tripping. The same needs attention from TSECL/SLDC Tripura.

13. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power was extended to Monarchak Generating station, Rabindranagar, and Udaipur areas of Tripura Power System by charging 132 kV Palatana – Udaipur line at 08:54 Hrs of 31.03.2024

14. Non-compliance observed (विनियमन का गैर-अनुपालन):

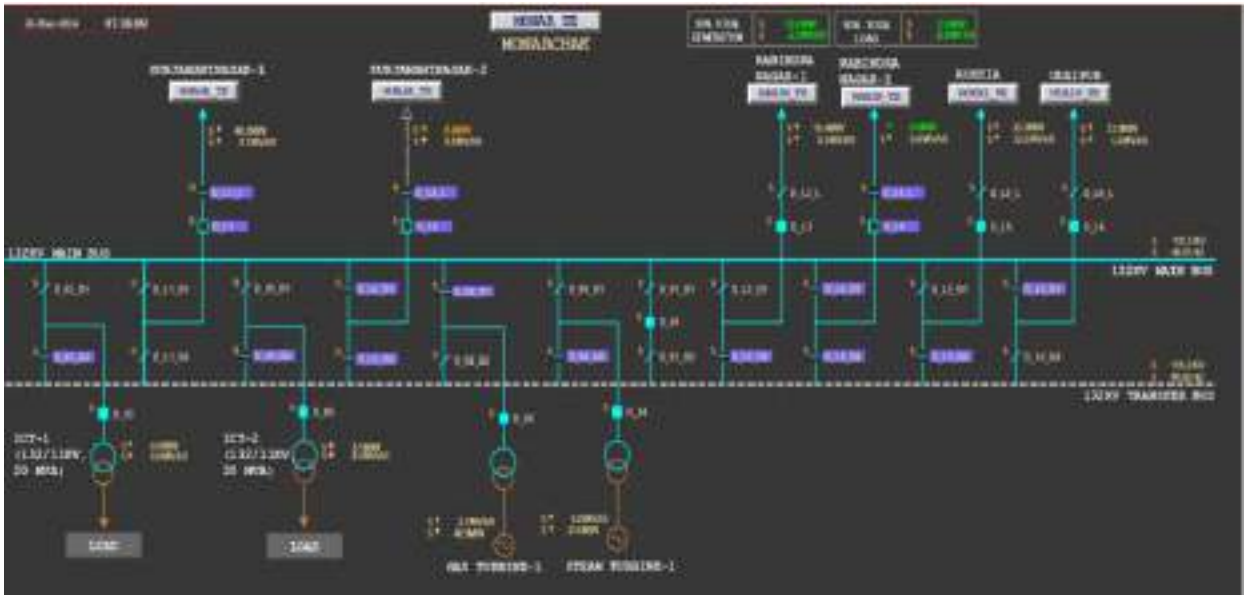
Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	**TSECL**
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**NEEPCO**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**TSECL**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	Monarchak- Time drift of **16 min**; Rokhia- Time drift of **13 min**
5.	**Any other non-compliance**		-

15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- Regular patrolling and proper maintenance activities needs to be carried out as per various CEA/CERC regulations to reduce tripping due to vegetation/lightning, etc.
- Periodic checking of clearances viz phase to phase, jumper clearance, E/W to phase conductor etc needs to be done to prevent such events.

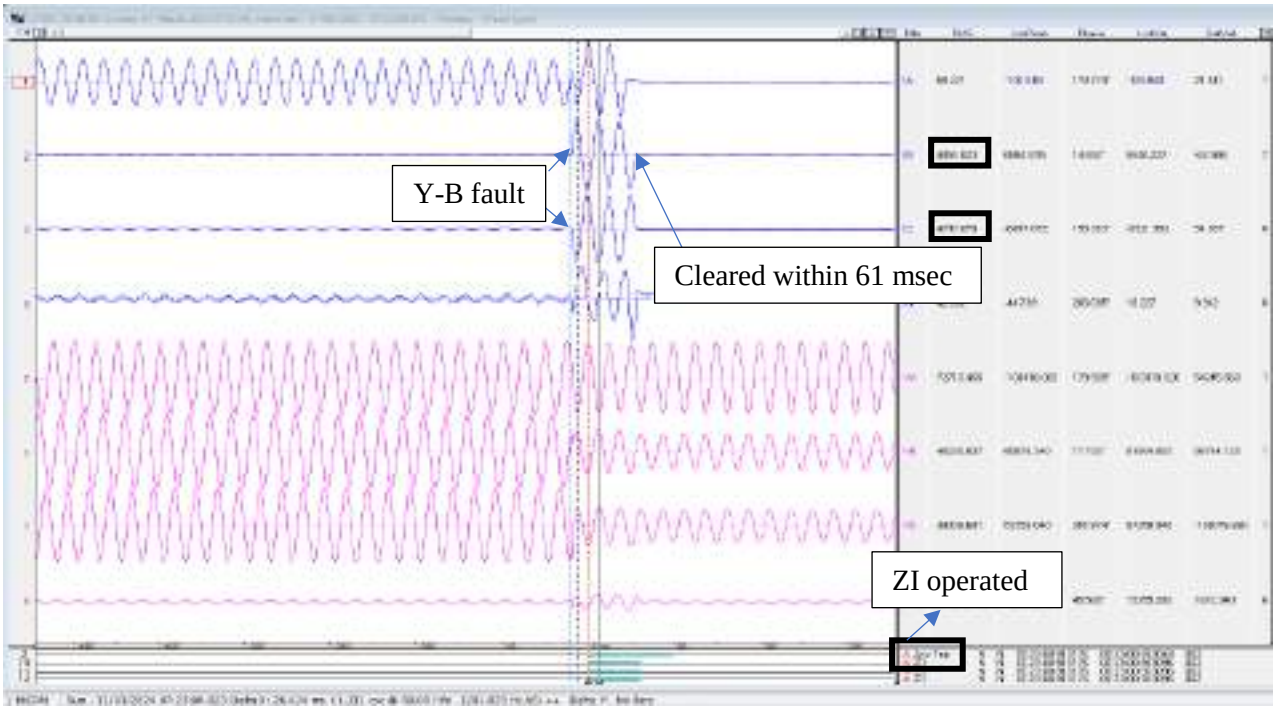
Annexure 1: Sequence of Events as per SCADA- SOE not recorded

Annexure 2: SLD of the effected SS

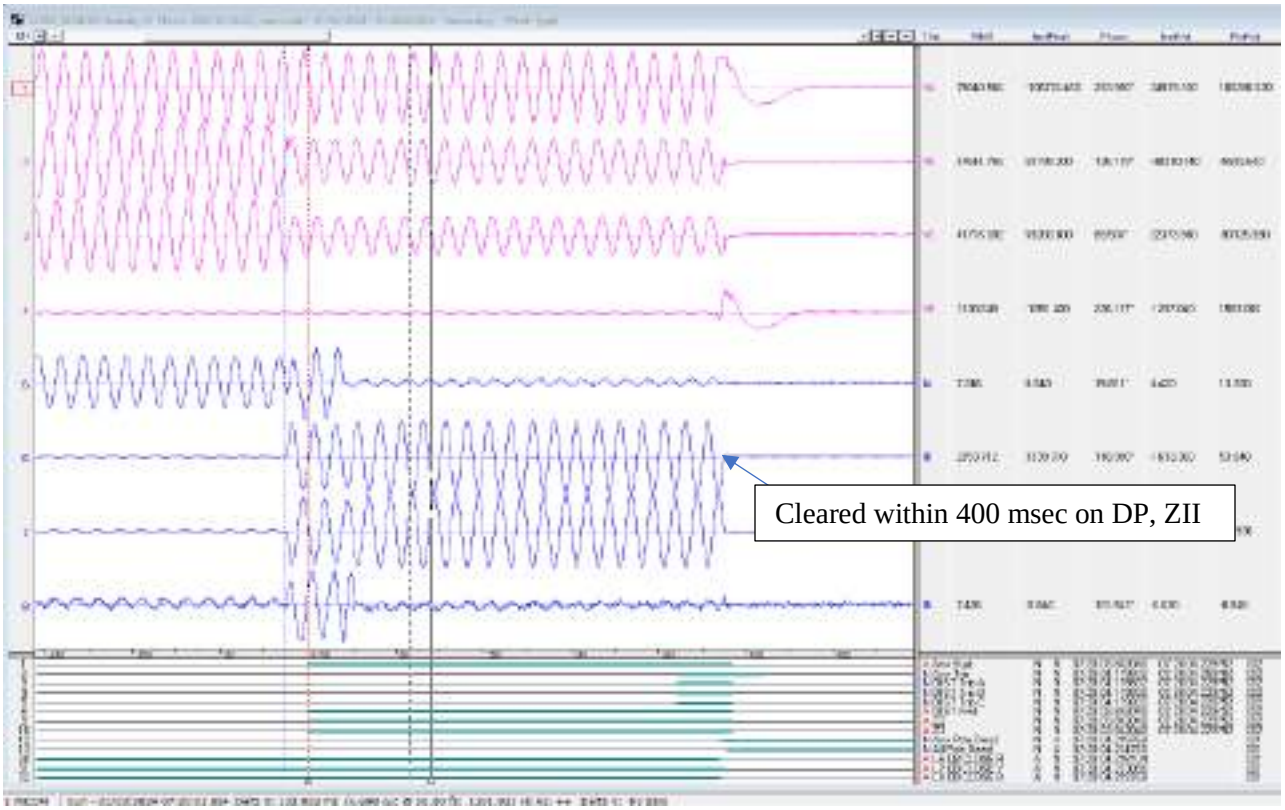


Annexure 3: Disturbance recorder snips showing faults and digital signals

3.1 DR snapshot of Rokhia for 132 kV Monarchak-Rokhia Line



3.2 DR snapshot of Monarchak for 132 kV Monarchak-Rokhia Line



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CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Serchhip S/S of Mizoram of North Eastern Region
(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक**):09-04-2024**

1. **Event Summary (घटना का सारांश):**

Serchhip area of Mizoram Power System is connected with the rest of the grid by 132 kV Zuangtui-Serchhip line. 132 kV Lunglie-Serchhip line is kept open due to system requirement.

At 09:18 Hrs of 31.03.2024, 132 kV Zuangtui-Serchhip line tripped. Due to tripping of this element, Serchhip area of Mizoram Power System was isolated from NER Grid and collapsed due to no source available in this area.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 09:18 Hrs on 31-03-2024
3. **Event Category** (ग्रिड **घटना का प्रकार**)**:** GD-I
4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Serchhip area of Mizoram
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	50.01	1917	1806	0	24
Post Event (घटना के बाद)	50.01	1917	1798	0	16

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	132 kV Lunglie-Serchhip line is kept open due to system requirement
Weather Condition (मौसम स्थिति)	Heavy Rainfall/Wind

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 8 MW at Serchhip. There was no generation loss.
7. **Duration of interruption (रुकावट की अवधि): 56 min**
8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NIL**

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132 kV Zuangtui-Serchhip	09:18	10:14	Earth fault	No tripping

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

Proper Event analysis could not be done due to non-submission of FIR & DR by P&ED, Mizoram.

12. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

13. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power was extended to Serchhip area of Mizoram Power System by charging 132 kV Zuangtui - Serchhip line at 10:14 Hrs.

14. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	**P&ED, Mizoram**
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**P&ED, Mizoram**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**P&ED, Mizoram**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	-
5.	**Any other non-compliance**		-

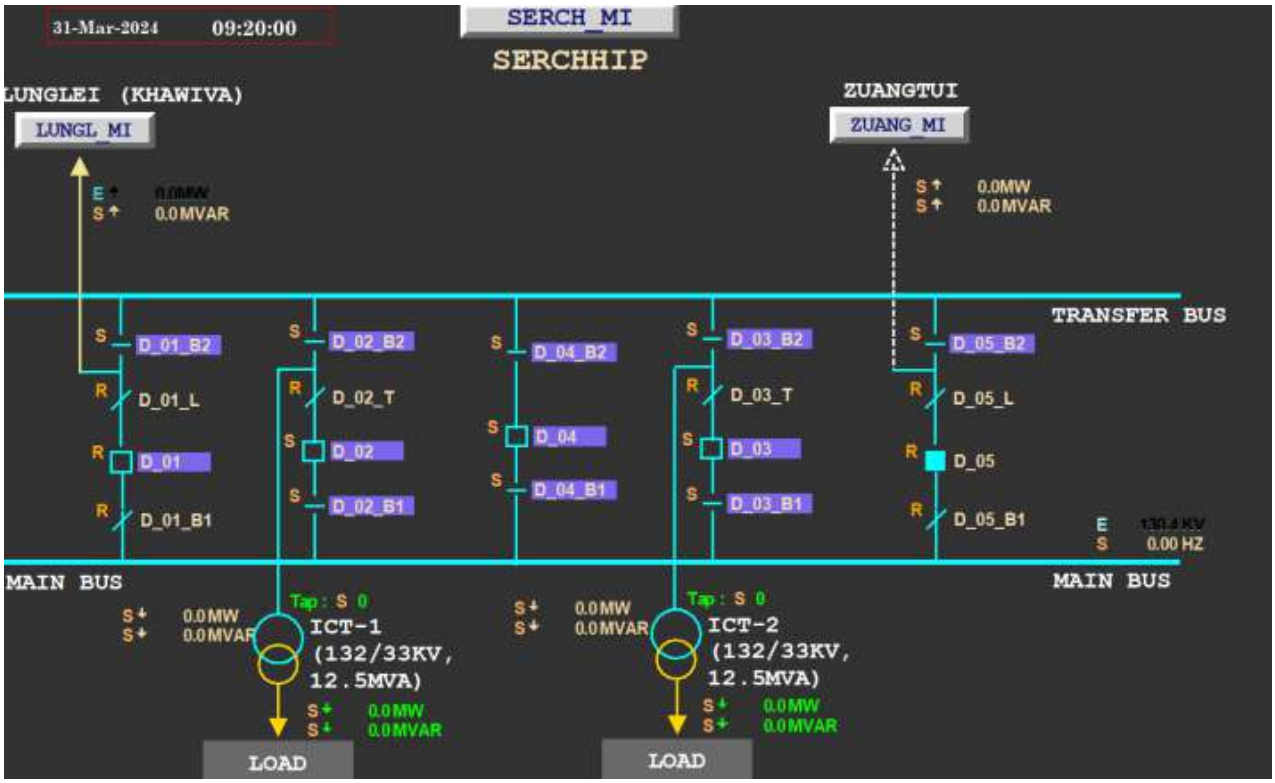
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- Regular patrolling and proper maintenance activities needs to be carried out as per various CEA/CERC regulations to reduce tripping due to vegetation/lighning, etc.

Annexure 1: Sequence of Events as per SCADA

AREA	CATEGORY	LOCATION	TEXT	SYSTEM_TIME	FIELD_TIME	MS
---	---	---	---	---	---	---
MIZORM	1C	KOLAS_MI	KOLASIB CB 132Kv LINE-1 TO AIZAW INVALID	31 Mar 2024 09:08:39:000	31 Mar 2024 09:08:05:000	827000000
MIZORM	1C	KOLAS_MI	KOLASIB CB 132/33 T1 (PRIM) OPEN	31 Mar 2024 09:09:32:000	31 Mar 2024 09:09:17:000	572000000
MIZORM	1C	ZUANG_MI	ZUANGTUI CB 132Kv LINE TO SERCH OPEN	31 Mar 2024 09:19:14:000	31 Mar 2024 09:19:01:000	997000000
TSECL	1C	UDAIP_TE	UDAIPUR CB 132Kv LINE-2 TO BOGAF CLOSED	31 Mar 2024 09:28:42:000	31 Mar 2024 09:28:32:000	267000000
TSECL	1C	UDAIP_TE	UDAIPUR CB 132Kv LINE-2 TO BOGAF OPEN	31 Mar 2024 09:29:16:000	31 Mar 2024 09:29:04:000	437000000

Annexure 2: SLD of the effected SS



Annexure 3: Disturbance recorder snips showing faults and digital signals

DR not submitted

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Detailed Report of Grid Disturbance in Tezu and Namsai S/S of POWERGRID of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक**):10-04-2024**

1. **Event Summary (घटना का सारांश):**

Tezu and Namsai S/S of POWERGRID is connected with the rest of the grid by 132 kV Roing – Tezu Line. Prior to the event, 132 kV Along-Pasighat line is under outage since 07:51 Hrs of 29.03.2024 for re-shifting of vulnerable tower.

At 23:59 Hrs of 31.03.2024, 132 kV Roing – Tezu Line tripped. Due to tripping of this element, Tezu and Namsai S/S of POWERGRID were isolated from NER Grid and collapsed due to no source available in this area.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 23:59 Hrs on 31-03-2024
3. **Event Category** (ग्रिड **घटना का प्रकार**)**:** GD-I
4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Tezu and Namsai areas of Arunachal Pradesh
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	50.05	2143	1236	5	100
Post Event (घटना के बाद)	49.98	2069	1233	5	98

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	132kV Along – Pasighat is under outage since 07:51 Hrs of 29-03-2024 for Reshifting of Vulnerable Tower
Weather Condition (मौसम स्थिति)	Heavy Rain

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of 2 MW at Tezu and Namsai areas. There was no generation loss.
7. **Duration of interruption (रुकावट की अवधि): 3 Days 13 Hour 49 min**
8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

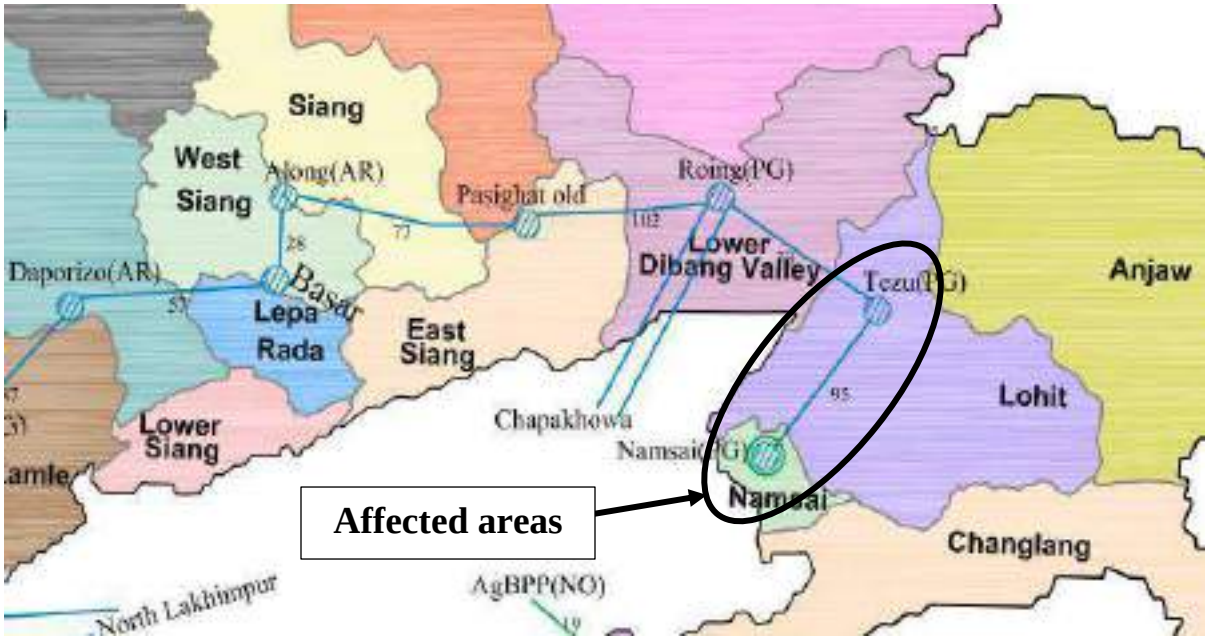


Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण):** Tower collapse at Loc. No. 72 in 132 kV Roing-Tezu line

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132 kV Roing-Tezu	23:59	13:49 Hrs of 04.04.2024	DP, ZII, Y-B ph, 72.9 Km (tower collapse at Loc. No. 72)	Loss of voltage

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

As per DR analysis, Y-B phase fault initiated at 23:59:27.763 Hrs (In>1 Start & I>1 start only). Autorecloser attempted after 1.5 seconds and tripped on Reclose (TOR) in DP, ZII, Y-B-E with current of Iy=1.1 kA, Ib=0.8 kA and In=1.2 kA.

As reported by POWERGRID, tower collapse occurred at location number. 72 of 132 kV Roing-Tezu line. Consequently, power supply is interrupted in Tezu and Namsai areas of Arunachal Pradesh.

12. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

13. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power supply was extended to Tezu and Namsai areas of Arunachal Pradesh Power System by charging 132 kV Roing-Tezu through ERS at 13:49 Hrs of 04.04.2024.

14. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	**POWERGRID**
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**POWERGRID**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**POWERGRID**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	-
5.	**Any other non-compliance**		-

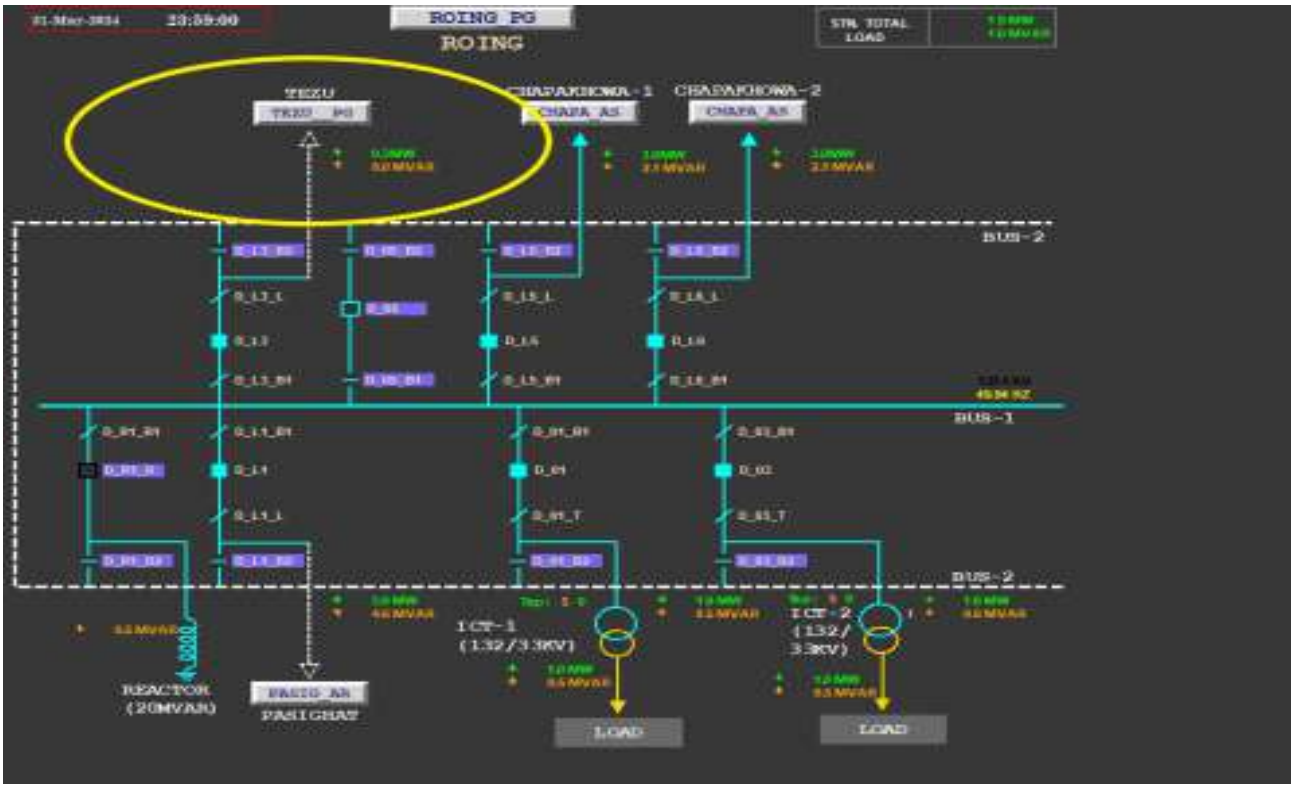
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- Regular maintenance of transmission lines, tower locations etc related activities needs to be carried out as per various CEA/CERC regulations.
- Availability of Emergency Restoration System has to be ensured at all times so that line can be restored immediately considering criticality of the line.

Annexure 1: Sequence of Events as per SCADA

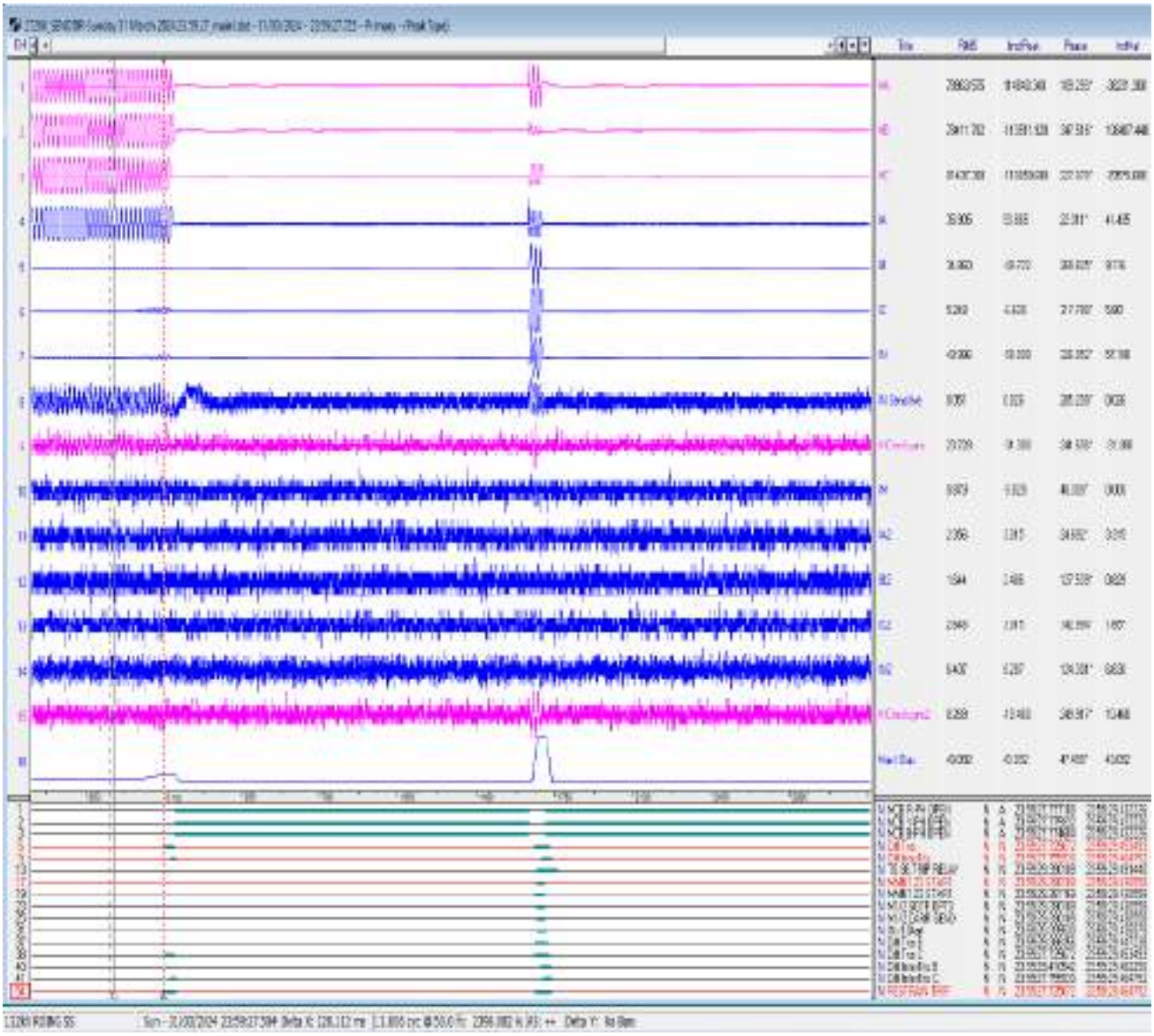
AREA	CATEGORY	LOCATION	TEXT	SYSTEM_TIME	FIELD_TIME	MS
---	---	---	---	---	---	---
MSPCL	1C	NINGT_MA	NINGTHOUKHONG CB 132Kv LINE TO IMPHA OPEN	31 Mar 2024 10:27:35:000	31 Mar 2024 10:26:59:000	6.84E+08
TSECL	1C	DHALA_TE	DHALABILL CB 132/33 T2 (PRIM) BETWEEN	31 Mar 2024 10:29:43:000	31 Mar 2024 10:28:54:000	1.45E+08
ARUNCH	1C	ROING_PG	ROING CB 132Kv LINE-1 TO TEZU_OPEN	31 Mar 2024 23:59:28:000	31 Mar 2024 10:29:27:000	7.65E+08
MSPCL	1C	KAKCH_MA	KAKCHING CB 132/33 T2 (PRIM) OPEN	31 Mar 2024 10:35:56:000	31 Mar 2024 10:35:42:000	6.76E+08

Annexure 2: SLD of the effected SS



Annexure 3: Disturbance recorder snips showing faults and digital signals

3.1. DR Snapshot of Roing for 132 kV Roing-Tezu Line



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(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / North Eastern Regional Load Despatch Centre
कार्यालय : लोवर, लापालांग, शिलांग -793006
Office : Lower Nongrah, Lapalang, Shillong- 793006
CIN : U40105DL2009GOI188682, Website : www.nerldc.in, E-mail : nerldc@grid-india.in, Tel.: 0364-2537470/427, Fax: 03642537486

Detailed Report of Grid Disturbance in Hatsingmari areas of Assam of North Eastern Region

(To be submitted by RLDC/NLDC during Grid Disturbances/Grid Incidents/Near Miss Event as per IEGC section 37.2 (f))
(आई ई जी सी 37.2 (एफ) के अनुपालन में)

Date (दिनांक)**:10-04-2024**

1. **Event Summary (घटना का सारांश):**

   Hatsingmari area of Assam Power System is connected with the rest of NER Grid through 132 kV Agia-Hatsingmari Line.

   At 19:31 Hrs of 31-03-2024, 132 kV Agia-Hatsingmari Line. Due to tripping of this element, Hatsingmari area of Assam power system got isolated from NER grid and collapsed due to no source available in this area.

2. **Time and Date of the Event (घटना का स मय और दिनांक):** 19:31 Hrs on 31-03-2024

3. **Event Category** (ग्रिड **घटना का प्रकार**)**:** GD-I

4. **Location/Control Area** (स्थान/नियंत्रण क्षेत्र): Hatsingmari areas of Assam

5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation(MW)	Regional Demand(MW)	State Generation(MW)	State Demand(MW)
Pre-Event (घटना पूर्व)	50.02	3034	1870	220	994
Post Event (घटना के बाद)	50.02	3050	1834	221	976

Pre and post data of 1 minute before and after the event

Important Transmission Line/Unit if under outage (before the even))महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है(	NIL
Weather Condition (मौसम स्थिति)	Heavy Rainfall/Wind

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Load loss of around 2 MW occurred.
7. **Duration of interruption (रुकावट की अवधि): 19 min**
8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा)**

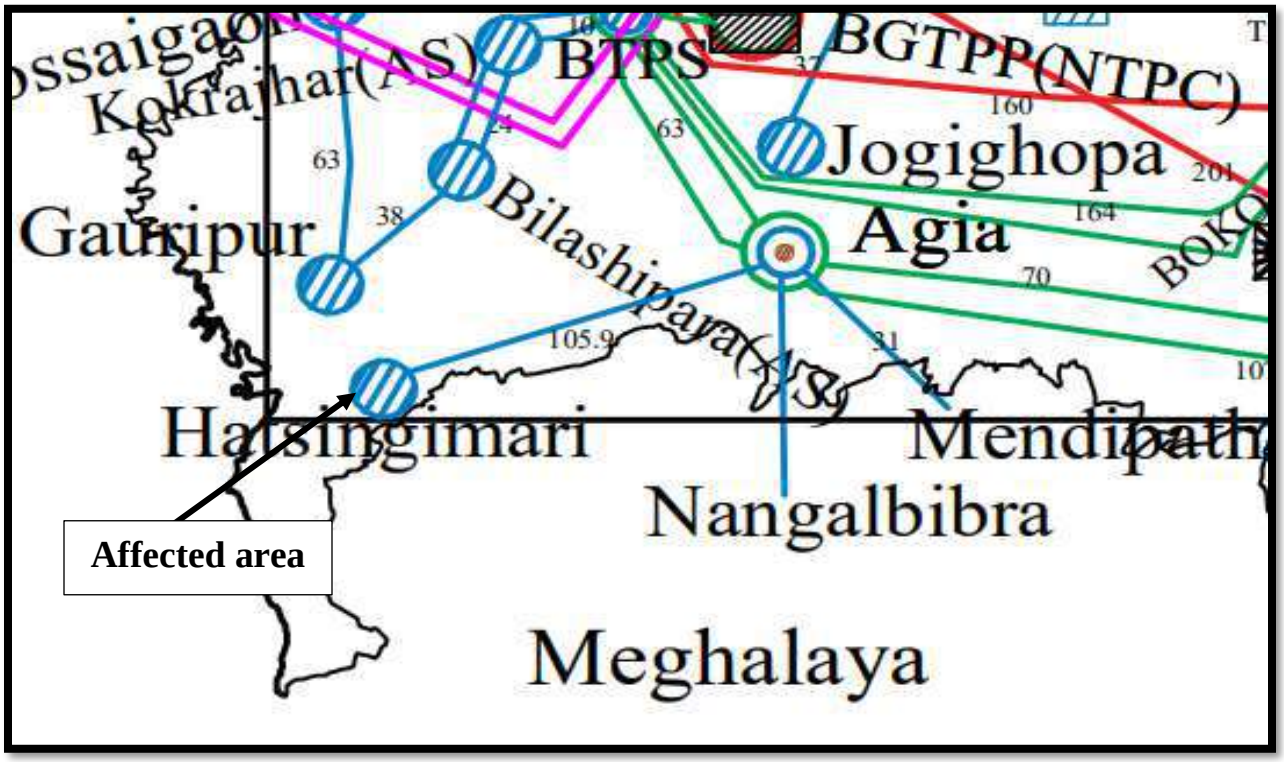

Figure 1: Network across the affected area

9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण):** Y-phase conductor snapped

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Sl. No.	नाम	Trip time (hh:mm:ss)	Restoration time	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत
1	132 kV Agia-Hatsingmari Line	19:31	21:55	DP, ZI, Y-E, FD: 5.5 Km	No tripping

11. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

As per PMU, R-Y phase fault initiated at 19:30:07.320 Hrs and cleared within 80 msec. Fault current of 736 A appears in R & Y phases.

As per information gathered from AEGCL, 132 kV Agia-Hatsingmari Line tripped due to Y-phase conductor snapping which led to blackout of Hatsingmari area of Assam.

12. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

13. Action Taken/Remedial Measures (सुधारात्मक उपाय):

- Power supply was extended to Hatsingmari area of Assam Power System by charging 132 kV Agia - Hatsingmari line at 21:55 Hrs of 31.03.2024.

14. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	**AEGCL**
2.	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	**AEGCL**
3.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**AEGCL**
4.	**DR Time Synchronization Issues**	IEGC section 17.3	
5.	**Any other non-compliance**		-

15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

- Thermo-vision scanning of line is utmost importance to detect hot spot/loose joints and further remedial measures to prevent such events.
- Team AEGCL is requested to carry out patrolling and maintenance related activities as per various CEA/CERC regulations.

Annexure 1: Sequence of Events as per SCADA

AREA	CATEGORY	LOCATION	TEXT	SYSTEM_TIME	FIELD_TIME	MS
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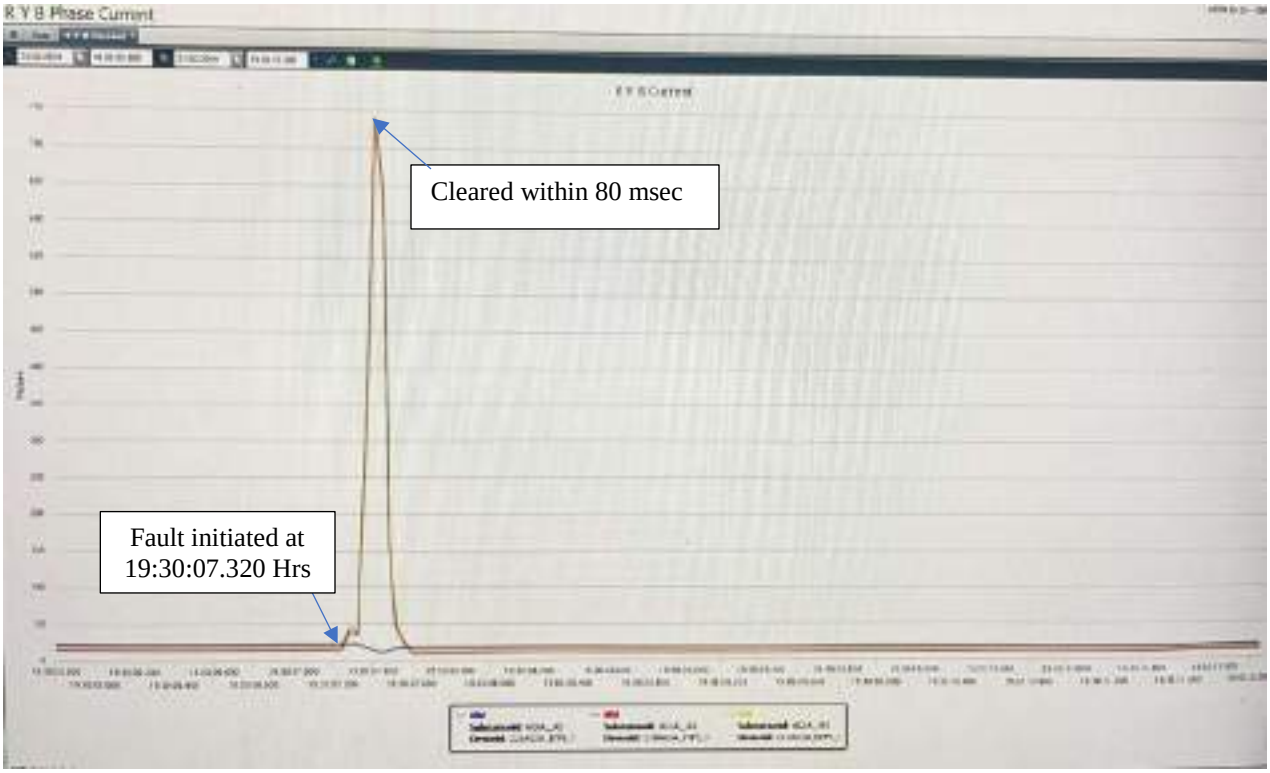
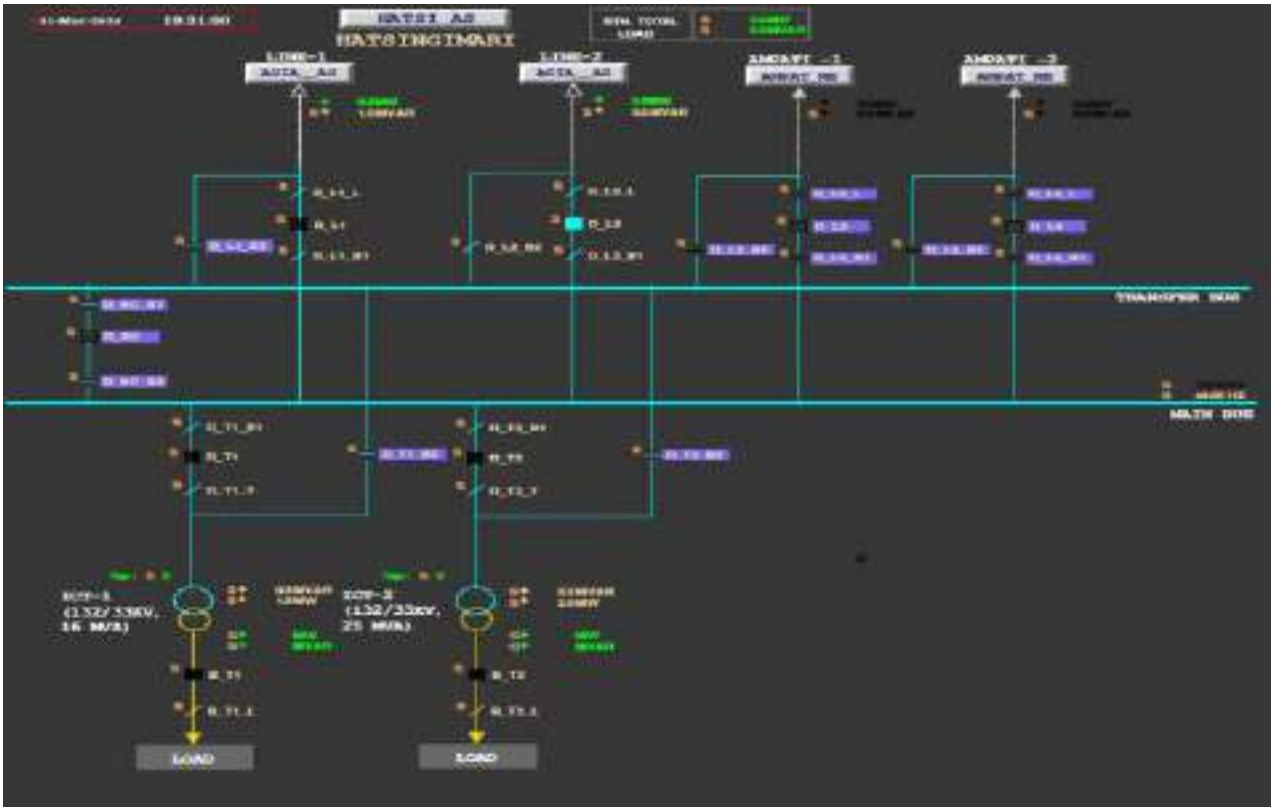
MEECL	1C	RONGK_ME	RONGKHON CB 33Kv LOAD DAKOP OPEN	31 Mar 2024 19:22:40:000	31 Mar 2024 19:22:03:000	2.76E+08
NAGALD	1C	DIMAP_NA	DIMAPUR NAGARJAN CB 33Kv LOAD-1 OPEN	31 Mar 2024 19:27:08:000	31 Mar 2024 19:26:06:000	4.68E+08
AEGCL	1C	AGIA__AS	AGIA CB 132Kv LINE-1 TO HATSI OPEN	31 Mar 2024 19:30:24:000	31 Mar 2024 19:30:34:000	87000000
MEECL	1C	RONGK_ME	RONGKHON CB 33Kv LOAD-1 TURA_CLOSED	31 Mar 2024 19:32:35:000	31 Mar 2024 19:32:20:000	3.48E+08
MEECL	1C	RONGK_ME	RONGKHON CB 33Kv LOAD-2 TURA_CLOSED	31 Mar 2024 19:32:35:000	31 Mar 2024 19:32:20:000	3.48E+08
MEECL	1C	RONGK_ME	RONGKHON CB 33Kv LOAD-1 TURA_OPEN	31 Mar 2024 19:37:08:000	31 Mar 2024 19:36:56:000	3.7E+08
NAGALD	1C	DIMAP_NA	DIMAPUR NAGARJAN CB 33Kv LOAD-1 CLOSED	31 Mar 2024 19:37:42:000	31 Mar 2024 19:37:17:000	4.59E+08

Annexure 2: PMU snapshot of 220 kV Agia-BTPS I Line at Agia end



Annexure 3: SLD of the effected SS



Annexure 4: Disturbance recorder snips showing faults and digital signals

DR not submitted

LIST OF GD/GI/NEAR MISS EVENTS AND CORRESPONDING RECOMMENDED ACTIONS AS DISCUSSED IN 66th PCCM

March'24

Sl. No	GD/GI/Near miss events	Elements tripped	Actions recommended in the meeting
1.	GD in Sonabil, Rowta, Depota, Ghoramari, Dekhiajuli, Tangla and Sipajhar SS of Assam (13:07 hrs on 04-03-2024)	220kV Balipara-Sonabil II line and SPS operation at Sonabil	1. NO protection system related issue observed 2. Assam to carry out line patrolling and Maintenance activities as per CEA/CERC regualtions
2.	Grid Disturbance in Churachandpur and Thanlon S/S of Manipur of North Eastern Region (13:25 hrs on 05-03-2024)	132 kV Ningthoukhong-Churachandpur line 2	1. Non operation of protection system/clearing of fault from Churachandpur for 132 kV Elangkankpokpi line. MSPCL is requested to check the protection system and tripping circuits up to CB switchgear and resolve the issue. 2. Manipur and NHPC to provide the relay settings for back up protection at Loktak for Ningthounkong line and at Ningthounkong for Churachandpur line respectively. Also, relay setting coordination has to be done by MSPCL in coordination with NERPC and NERLDC
3.	GD in Pashighat area of Arunachal Pradesh (15:46 hrs on 07-03-2024)	132 kV Along-Pasighat and 132 kV Roing-Pasighat lines	1. Tripping of 132 kV Along-Pasighat line from Along end seems unwanted and has occurred due to relay coordination issue. DoP, Arunachal Pradesh needs to

			ensure coordination of earth fault relay in coordination with PGCIL(Pasighat for Roing Line) at Along 2. NERTS updated that the EF pick up current has been set to 60Amps and issue has been resolved 3. Regular patrolling and maintenance related activities needs to be carried out as per various CEA/CERC regulations
4.	GD in NRPP and LRPP generating stations of Assam	220kV Tinsukia-NRPP, 220 kV NTPS-NRPP and 220 kV NTPS Amguri lines	1. The non-operation of BB protection at NRPP is the serious concern from system stability point of view. The cascaded tripping of NTPS – Amguri – Tinsukia may be resolved for a bus fault at NRPP switchyard, if healthiness of bus differential protection at NRPP is ensured. BB protection need to brought in service at the earliest 2. APGCL to ensure periodic Thermo-vision scanning of bay equipment/terminal joints and monitor the healthiness of bay equipment regularly in line with standard maintenance practices.
5.	GD in Dharmanagar area of Tripura power system (10:15 hrs on 10-03-2024)	132 kV PK Bari-Dharmanagar and 132 kV Dharmanagar Dullavchhera lines	1. Tripura to look into non-operation of CB at Dharmanagar end for P K Bari line. TSECL stated that CB pole will be replaced within one month
6.	GD in wokha SS of Nagaland (10:30 hrs on 12-03-2024)	132 kV Wokha-Sanis and 132 kV Wokha-	1. 32 kV Wokha-Chiephebozou line tripped within 420 msec on ZII. No carrier aided tripping was recorded after Z-II pick up.

		Chiephebozou lines	Same needs to be checked by DoP Nagaland and explore installation of PLCC/DTPC for carrier aided tripping scheme as per NERPC protection philosophy. 2. Tripping of 132 kV Wokha-Sanis line inferred to be unwanted as DR of Wokha shows ZIV initiated (reverse fault).DoP Nagaland needs to check the directionality of backup relay for 132 kV Wokha-Sanis line at Wokha and ensure the forward direction of backup protection relay along with proper setting 3. Clearance issues (Y-B) needs to be checked and it is to be rectified to prevent further tripping due to such fault.
7	GD in Dharmangar SS of Tripura and Dullavchhera SS of Assam (15:53 hrs on 16-03-2024)	132 kV PK Bari-Dharmanagar and 132 kV Hailakandi Dullavchhera lines	1. Non clearance of fault form DHarmanagar end due to non- operation of CB. TSEL to replece the CB at the earliest. (also refer to point no. 5) 2. Tripping of 132 kV Hailakandi-Dullavchhera line would not have occurred if the fault got cleared from Dullavchhera end of 132 kV Dullavchhera-Dharmanagar line. AEGCL needs to review the setting at Dullavchhera end for 132 kV Dharmanagar and at Hailakandi end for 132 kV Dullavchhera line

			3. DR of Dharmanagar recorded Y-E fault whereas DR of PK Bari recorded B-E fault for 132 kV PK Bari-Dharmanagar lines. The same needs to be corrected by TSECL for proper operation/maintenance point of view. 4. SOE not recorded for tripping of 132 kV Hailakandi-Dullavchera line. The same needs attention by team AeGCL/SLDC Assam
8	Grid Disturbance in Sarusajai, Kahelipara, AIIMS, Kamakhya and Dispur areas of Assam (5:57 hrs on 16.03.2024)	220kV Sarusajai – Mirza II, 220kV Sarusajai-Jawaharnagar, 220kV Sarusajai-Sonapur and 132kV Dispur – Chandrapur lines	1. AEGCL to strictly ensure safe and standard practices for switchyard related activities so that such incidents do not occur in future 2. AEGCL to ensure Bus Bar Protection at the earliest. The old and worn-out isolator mechanical NO/NC contact equipment would be replaced with new ones to facilitate isolator status to the Busbar differential relay 3. AEGCL to analyse the tripping of 132kV lines, viz; Narengi-Kahililpara and CTPS-Dispur line, provide a report to NERPC and look into relay coordination issue with HV side of ICTs at Sarusajai.
9.	Grid Disturbance in Rangia, Kamalpur, Amingaon, Sishugram,	220kV Rangia - BTPS D/C lines	1. Correct operation of SPS at Rangia Old SS 2. Regular maintenance of 220kV Rangai-BTPS line, TFR checking,

	Nalbari, Kamakhya and Nathkuchi areas of Assam (5:33 hrs of 20.03.2024)		patrolling etc. have to be ensured by AEGCL
10	Grid Disturbance in Depota, Rowta, Dhekiajuli, Sipajhar and Tangla areas of Assam (05:03 hrs of 22.03.2024)	132 kV Sonabil-Depota, 132 kV Depota-Ghoramari, 132 kV Depota-Rowta, 132 kV Depota-Dhekiajuli & 132 kV Rowta-Dhekiajuli lines	1. SOE not recorded for tripping of 132 kV Sonabil-Depota, 132 kV Depota-Ghormari and 132 kV Depota-Rowta lines. The same needs attention by team AeGCL/SLDC SCADA team Assam. 2. Non operation of protection system/clearing of fault from Dhekiajuli end for 132 kV Depota-Dhekiajuli lines. Fault was cleared by tripping of upstream elements. 3. Directional overcurrent relay overreaching issue was observed at Sonabil end. 4. Fault in 132kV Depota – Ghoramari line seems lightning fault. No tripping was observed at Ghoramari end. Non operation of protection system/clearing of fault from Ghoramari end for 132 kV Depota-Ghoramari lines needs to be checked by AEGCL. 5. The Dir. O/C settings at Sonabil end for 132 kV Sonabil – Depota Line was reviewed and changed as per the fault current observed during the event. Present updated settings are:

			IDMT Normal Inverse, Direction: Forward Pickup: 400A and TMS: 0.20
11	Grid Disturbance in North Lakhimpur, Dhemaji, Silapathar and Majuli areas of Assam (12:31 hrs of 22.03.2024)	132 kV North Lakhimpur- Pare line, 132 kV North Lakhimpur-Nirjuli line, and 132 kV North Lakhimpur-Gohpur I line	1. Mal-operation of LBB protection at N.Lakhimpur to be checked by AEGCL 2. AEGCL stated that necessary rectification has been done and LBB is healthy now
12	Grid Disturbance in Jirania S/S of Tripura Power system (22:25 hrs of 23.03.2024)	132 kV Budhjungnagar-Jirania line	1. Regular patrolling and proper maintenance activities needs to be carried out as per various CEA/CERC regulations to reduce tripping due to vegetation/lightning, etc. 2. Periodic checking of clearances viz phase to phase, jumper clearance, E/W to phase conductor etc needs to be done to prevent such events
13	Grid Disturbance in Lumshnong S/S of Meghalaya (00:32 hrs of 26.03.2024)	132 kV Lumshnong-Khliehriat line	1. With the approaching windy monsoon season with high demand period, to reduce tripping of elements due to vegetation issues/ lightning etc, it is requested to ensure proper maintenance of the lines.
14	Grid Disturbance in Nangalbibra, Rongkhon, Ampati	132 kV Agia-Nangalbibra and 132 kV	1. SOE not recorded for the tripping of 132 kV Agia-Nangalbibra and 132 kV Nangalbibra-Mendipathar lines.

	and Phulbari S/S of Meghalaya (1:56 hrs of 26.03.2024)	Mendipathar - Nangalbibra lines	The same needs attention from MePTCL team/SL 2. MePTCL to look into tripping of 132kV Nangalbibra-Mendipathar line on ZII when fault was cleared in the 132 kV Agia-Nangalbibra Line within 60msec. MePTCL to provide report to NERPC/NERLDC on the matter 3. with the approaching windy monsoon season with high demand period, to reduce tripping of elements due to vegetation issues/ lightning etc, it is requested to ensure proper maintenance of the lines. 4. Tower footing resistance needs to be measured before onset of rainy season and if found greater than 10 Ohm, then necessary measures such as TLSA installation may be carried out.
15	Grid Disturbance in Monarchak, Udaipur and Rabindranagar S/S of Tripura (7:36 hrs of 31.03.2024)	132 kV Monarchak-Rokhia line tripped	1. Regular patrolling and proper maintenance activities needs to be carried out as per various CEA/CERC regulations to reduce tripping due to vegetation/lightning, etc. 2. Periodic checking of clearances viz phase to phase, jumper clearance, E/W to phase conductor etc needs to be done to prevent such events.

16	Grid Disturbance in Serchhip S/S of Mizoram (9:18 hrs of 31.03.2024)	132 kV Zuangtui-Serchhip line	1. Regular patrolling and proper maintenance activities needs to be carried out as per various CEA/CERC regulations to reduce tripping due to vegetation/lighning, etc
17	Grid Disturbance in Tezu and Namsai S/S of POWERGRID (23:59 hrs of 31.03.2024)	132 kV Roing – Tezu Line	1. Tower collapse at loc.no. 72 in 132kV Roing-Tezu line. NERTS to restore the line at the earliest.

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Annexure B.7

Annexure II

Sl. No.	GD/GI/Near Miss	Affected Areas	Date & Time	Flash/Detailed report to be submitted by User/SLDC	Flash Report By User { IEGC section 37.2 (b)}	Detailed report by User within 7 Days { IEGC section 37.2 (e)}	Root Cause	Non Compliance observed
1	GD-I	Blackout of Sonabil, Rowta, Depota, Ghoramari, Dhekiajuli, Tangla and Sipajhar areas	13:07 Hrs on 04-03-2024	Assam	**Yes**	**No (submitted on 13.03.2024)**	R-phase fault in 220 kV Balipara-Sonabil II line. SPS triggering criteria II operated.	**Detailed Report submitted after 1 week.** **DR/EL received after 24 hrs.**
2	GD-I	Blackout of Churachandpur & Thanlon areas	13:25 Hrs on 05-03-2024	Manipur	**Yes**	**Yes**	B-phase fault was in 132 kV Churachandpur-Elangkankpokpi line which was not cleared leading to tripping of 132 kV Loktak -Ningthoukhong and 132 kV Ningthoukhong-Churachandpur II lines	**DR/EL received after 24 hrs.**
3	GD-I	Blackout of Pasighat areas	15:46 Hrs on 07-03-2024	Arunachal Pradesh	**No**	**No**	High resistive B-E fault in 132 kV Roing-Pasighat line. (Tripping of 132 kV Along-Pasighat line occurred due to relay coordination issue)	**No Flash & Detailed report submitted by DoP, Arunachal.** **DR/EL received after 24 hrs.**
4	GD-I	Blackout of NRPP and LRPP generation	14:56 Hrs on 08-03-2024	Assam	**Yes**	**Yes**	R-phase bus conductor snapped in NRPP Bus-1	**DR/EL submitted after 24 hrs.**
5	GD-I	Blackout of Dharmanagar area	10:15 Hrs on 10-03-2024	Tripura	**No**	**No**	B-phase fault in 132 kV PK Bari - Dhramanagar line which was not cleared from Dharmanagar end leading to tripping of 132 kV Dullavchhera-Dharmanagar line on DP, ZII	**No Flash Report & Detailed Report Submitted.** **DR/EL submitted after 24 hrs.**
6	GD-I	Blackout of Wokha area	10:30 Hrs on 12-03-2024	Nagaland	**Yes**	**Yes**	Fault was due to a tree branch coming in contact with the 132 kV Wokha-Chiephebozou line at Longsa village.	**DR/EL submitted after 24 hrs.**
7	GD-I	Blackout of Dharmanagar and Dullavchhera areas	15:53 Hrs on 16-03-2024	Tripura, Assam	**Yes**	**No(submitted by AEGCL on 24.03.2024 & by TSECL on 29.03.2024)**	B-phase fault in 132 kV PK Bari-Dharmanagar line. (The fault did not clear from system due to non-opening of CB at Dharmanagar even after issuance of Z-1 trip which led to clearing of fault by tripping of 132 kV Hailakandi-Dullavcherra line from Hailakandi on DEF operation)	**Detailed Report after 1 week.** **DR/EL submitted after 24 hrs (AEGCL, TSECL)**
8	GD-I	Blackout of Sarusajai, Kahelipara, AIIMS, Kamakhya and Dispur areas	05:57 Hrs on 16-03-2024	Assam	**Yes**	**No (Submitted on 24.03.2024)**	Due to wind or slip of the knot, the safety rope was partly loosened from the structure pillar and one end of the rope fell off creating a flashover near the live part of the Bus-1 isolator of 220 kV Sarusajai – Mirza-II feeder.	**Detailed Report submitted after 1 week.** **DR/EL submitted after 24 hrs.**
9	GD-I	Blackout of Rangia, Kamalpur, Amingaon, Sishugram, Nalbari, Kamakhya and Natkuchi areas	05:33 Hrs on 20-03-2024	Assam	**Yes**	**Yes**	Lightning fault in 220 kV BTPS-Rangia D/C lines cleared within 54 msec on operation of DP, ZI. SPS at Rangia operated successfully.	**No violation**

Sl. No.	GD/GI/Near Miss	Affected Areas	Date & Time	Flash/Detailed report to be submitted by User/SLDC	Flash Report By User { IEGC section 37.2 (b)}	Detailed report by User within 7 Days { IEGC section 37.2 (e)}	Root Cause	Non Compliance observed
10	GD-I	Blackout of Depota, Rowta, Dhekiajuli, Siphajhar and Tangla areas	05:03 Hrs on 22-03-2024	Assam	**No (Submitted on 28-03-2024)**	**No (Submitted on 06.04.2024)**	Y-B phase fault in 132 kV Depota – Dhekiajuli & 132 kV Depota – Ghoramari lines.	**Flash Report submitted after 8 Hrs and detailed report submitted after 1week.** **DR/EL submitted after 24 hrs.**
11	GD-I	Blackout of North Lakhimpur, Dhemaji, Silpathar and Majuli areas	12:29 Hrs on 22-03-2024	Assam	**No (Submitted on 08-04-2024)**	**No (Submitted on 08.04.2024)**	Maloperation of LBB protection at North Lakhimpur	**Flash Report submitted after 8 Hrs and detailed report submitted after 1week.** **DR/EL submitted after 24 hrs.**
12	GD-I	Blackout of Jirania area	22:25 Hrs on 23-03-2024	Tripura	**No**	**No**	R-Y phase solid fault in 132 kV Budhjungnagar-Jirania line	**No Flash & Detailed Report Submitted - MSPCL** **DR/EL submitted after 24 hrs.**
13	GD-I	Blackout of Lumshnong areas	00:32 Hrs on 26-03-2024	Meghalaya	**No**	**No**	Suspected downstream fault in Lumshnong which was cleared from Khleihriat end on DP, ZIII	**No Flash & Detailed Report Submitted - MePTCL**
14	GD-I	Blackout of Nangalbibra, Rongkhon, Ampati and Phulbari areas	01:56 Hrs on 26-03-2024	Meghalaya	**No**	**YES**	Lightning fault in 132 kV Agia-Nangalbibra line	**No Flash & Detailed Report Submitted - MePTCL & CEA grid Standard 15.3- DR/EL provided within 24 Hours?** **IEGC section 17.3 DR time sync issue - Time drift of 2 min in Nangalbibra end**
15	GD-I	Blackout of Monarchak, Udaipur and Rabindranagar areas	07:36 Hrs on 31-03-2024	Tripura	**No**	**No**	Y-B phase fault in 132 kV Monarchak-Rokhia line	**No Flash & Detailed Report Submitted - TPTL**
16	GD-I	Blackout of Serchhip area	09:18 Hrs on 31-03-2024	Mizoram	**No**	**No**	Not concluded due to non-submission of FIR, DR & EL	**No Flash & Detailed Report Submitted - P&ED,Mizoram & CEA grid Standard 15.3- DR/EL provided within 24 Hours?**
17	GD-I	Blackout of Tezu and Namsai area	23:59 Hrs on 31-03-2024	POWERGRID	**No**	**No**	Tower collapse occurred at location number. 72 of 132 kV Roing-Tezu line	**Detailed report not submitted -POWERGRID** **DR & EL submitted after 24 hrs - POWERGRID**
18	GD-I	Blackout of Hatsingimari area	23:59 Hrs on 31-03-2024	Assam	**No (submitted after 8 hours)**	**No**	Y-phase fault in 132 kV Agia-Hatsingimari line	**Flash Report Received after 8 hrs.** **Detailed report not submitted- Assam**

Annexure C.1

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

MePTCL

STATUS OF LINE DIFFERENTIAL PROTECTION PROJECT UNDER PSDF

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