Agenda
for
150th PCC Meeting

Date:19.08.2025
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

AGENDA FOR 150th PROTECTION COORDINATION SUB-COMMITTEE MEETING TO BE HELD ON 19TH AUG 2025 AT 10:30 HRS THROUGH MS TEAMS

PART – A

ITEM NO. A.1: Confirmation of Minutes of 149th Protection Coordination sub-Committee Meeting held on 15th July 2025 through MS Teams.

The minutes of 149th Protection Coordination sub-Committee meeting held on 15.07.2025 was circulated vide letter dated 5th Aug 2025.

Members may confirm the minutes of the Meeting.

PART – B

ITEM NO. B.1: Repeated Disturbance at 400 kV Dikchu HEP

A) Disturbance at 400 k V Dikchu HEP on 4th July 2025 at 13:02 Hrs

Prior to the disturbance Dikchu generation of around 105 MW was evacuating through 400kV Dikchu-Rangpo Line and 400kV Dikchu-Rangpo (Teesta-III Bypass) Line. At 13:02 Hrs, Y-B Phase fault occurred in 400kV Dikchu-Rangpo line and line got tripped from both end in Z-1 protection. Simultaneously 400/132kV ICT at Dikchu also tripped on LV side B/U over current protection. Due to complete loss of evacuation path, Dikchu unit 1 & 2 got tripped on over speed/ over frequency protection.

Gen. loss: 105 MW
Outage Duration: 00:25 Hrs

B) Disturbance at 400 kV Dikchu HEP on 23rd July 2025 at 13:45 Hrs

Prior to the disturbance Dikchu generation of around 106 MW was evacuating through 400kV Dikchu-Rangpo Line and 400kV Dikchu-Rangpo (Teesta-III Bypass) Line. At 13:45 Hrs Phase(B) to ground fault occurred in 400kV Dikchu-Rangpo line (Teesta-III Bypass) and line got tripped from Dikchu end in Z-1 protection. Simultaneously 132kV bus bar protection mal-operated, which led to tripping of 400/132kV ICT and GT-1 & 2 at Dikchu. Due to complete loss of evacuation path, Dikchu unit 1 & 2 got tripped on over speed/ over frequency protection.

Gen. loss: 106 MW
Outage Duration: 01:29 Hrs

C) Disturbance at 400 kV Dikchu HEP on 30th July 2025 at 13:26 Hrs

Prior to the disturbance Dikchu generation of around 106 MW was evacuating through 400kV Dikchu-Rangpo Line and 400kV Dikchu-Rangpo (Teesta-III Bypass) Line. At 13:26 Hrs, 132kV bus bar protection mal-operated during testing of bus-coupler relay, which led to tripping of 400/132kV ICT and GT-1 & 2 at Dikchu. Due to complete loss of evacuation path, Dikchu unit 1 & 2 got tripped on over speed/ over frequency protection.

Gen. loss: 106 MW
Outage Duration: 00:26 Hrs

Detailed report from ERLDC for these disturbances is attached at **Annexure B.1.**

Dikchu HEP may explain.

ITEM NO. B.2: Repeated Disturbance at 400/220 kV Indravati HEP (OHPC)

A) Disturbance at 400/220 k V Indravati HEP (OHPC) on 13th July 2025 at 23:30 Hrs

Prior to the disturbance, Indravati HEP generation of around 500 MW was evacuating through 220 kV Indravati-Jaypatna, 220 kV Therubali-Indravati-1,2 & 3 lines which were connected to 220kV main bus 1. At 23:30 Hrs on 13.07.2025, bus bar protection of 220 kV main bus-1 mal-operated and all element connected to main bus 1 got tripped subsequently 220kV Indravati bus became dead.

Gen. loss: 500 MW
Outage Duration: 04:28 Hrs

OHPC may explain.

B) Disturbance at 400/220 kV Indravati HEP (OHPC) on 14th July 2025 at 11:22 Hrs

Prior to the disturbance, Indravati HEP generation of around 150 MW was evacuating through 220 kV Indravati-Jaypatna, 220 kV Therubali-Indravati-1,2 & 3 which was connected to 220kV main bus 2. At 10:25 Hrs on 14.07.2025, bus bar protection of 220 kV main bus-2 mal-operated and Indravati unit 1, ICT 1 & 2 and 220 kV Indravati–Therubali Ckt-1 & 3 got tripped. Further at 11:22 Hrs again bus bar protection of main 2 mal-operated and remaining element also got tripped subsequently 220kV Indravati bus became dead.

Detailed report from ERLDC foe both events is attached at **Annexure B.2.**

Gen. loss: 150 MW
Outage Duration: 31:01 Hrs

OHPC may explain.

ITEM NO. B.3: Total Power Failure at 220 kV Tenughat (TVNL) S/s & 220 kV Govindpur (JUSNL) S/s on 17th July 2025 at 13:53 Hrs

Prior to the disturbance 220kV- Dumka – Govindpur D/C was kept open to control the loading of 220 kV Maithon-Dumka D/c and Tenughat unit 1 however unit 2 was Under Planned Maintenance. Therefore, generation was evacuating through 220 kV Tenughat–Biharsharif–1 and feeding load of Govindpur S/s. At 13:53 Hrs, 220kV Tenughat–Biharsharif–1 line got tripped on phase(R) to ground fault which led to island formation of Tenughat unit#1 with Govindpur load which didn't survive due to load generation mismatch. Subsequently Tenughat unit#1 got tripped on over speed/over frequency protection and as a result 220kV Tenughat and Govindpur S/s became dead.

Detailed report from ERLDC is attached at **Annexure B.3.**

Gen. Loss: 150 MW, Load loss: 70 MW
Outage Duration: 00:24 Hrs

JUSNL, TVNL & BSPTCL may explain.

ITEM NO. B.4: Total Power Failure at 220 k V Goraul (BSPTCL) S/s on 7th July 2025 at 14:31 Hrs

The 220kV Goraul S/S is connected to the grid through the 220kV-Goraul-Muzaffarpur (PG) D/C line. Prior to the disturbance, 220kV-Goraul-Muzaffarpur-2 line got tripped at 13:24 Hrs on phase to ground fault. Subsequently at 14:31 Hrs, 220kV-Goraul-Muzaffarpur (PG)-1 line also got tripped due to conductor snapping. Due to tripping of radial connected lines, 220kV Goraul S/S became dead.

Detailed report from ERLDC is attached at **Annexure B.4.**

Load loss: 180 MW
Outage Duration: 00:25 Hrs

BSPTCL may explain.

ITEM NO. B.5: Disturbance at 400 kV JSPL S/s on 21st July 2025 at 12:22 Hrs

Prior to the disturbance, 400 kV Meramundali-JSPL-2 was under planned shutdown for maintenance activity. JSPL was radially connected to 400 kV Meramundali S/S through JSPL-Meramundali circuit 1. 400kV MEERAMUNDALI-JSPL-1 got tripped at 12:22 Hrs on phase to ground fault. As a result, both Bus at 400 kV JSPL became dead. Captive power plant of JSPL has 6 units of 135 MW capacity each. Unit-1 with emergency load of 90 MW was separately connected with 220 kV Bus-1 and 220 kV bus-coupler was open. All other units were connected to 220 kV Bus-2 and As both evacuating lines tripped, the captive island didn't survive.

Detailed report from ERLDC is attached at **Annexure B.5.**

Gen. Loss: 540 MW, Load loss: 620 MW
Outage Duration: 00:52 Hrs

JSPL & OPTCL may explain.

ITEM NO. B.6: Disturbance at 400 kV PVUNL S/s on 28th July 2025 at 03:27 Hrs

PVUNL was drawing start up power radially from 400kV Tenughat S/s through 400kV Tenughat-PVUNL. On 28.07.2025, at 03:27 Hrs, 400KV Tenughat-PVUNL got tripped on over voltage from PVUNL and DT was sent to Tenughat end. Further, due to tripping of this line, 400 kV PVUNL S/s became dead.

Detailed report from ERLDC is attached at **Annexure B.6.**

Load loss: 4 MW
Outage Duration: 16:56 Hrs

PVUNL & TVNL may explain.

ITEM NO. B.7: Tripping of ICTs during the month of July 25

Sl. No	Name of the Element	Trip Date	Trip Time	Remarks	Utility
1	400KV/220KV 250 MVA ICT 2 AT TENUGHAT	28-07-2025	05:37	Over flux trip, transformer Differential 87 operated	Tenughat
2	400KV/220KV 315 MVA ICT 2 AT PATRATU	18-07-2025	18:02	Master trip relay operated.	JUSNL
3	400KV/220KV 500 MVA ICT 2 AT MERAMUNDALI B	18-07-2025	12:55	Master relay operated, SPR (Sudden Pressure Relay) operated.	OPTCL
4	400KV/220KV 315 MVA ICT 2 AT BOKARO-A TPS	13-07-2025	13:45	Tripped on Sensitive earth fault protection	DVC
5	400KV/220KV 315 MVA ICT 2 AT TSTPP	01-07-2025	13:01	Tripped on earth fault	NTPC Talcher

Concerned utilities may explain.

ITEM NO. B.8: Tripping of Buses during the month of July 25

Sl. No	Name of the Element	Trip Date	Trip Time	Remarks	Utility
1	400KV MAIN BUS - 1 AT NEW PPSP	01-07-2025	16:23	Tripped due to some technical issues while performing some modifications work at LCC panel	WBSEDCL

Concerned utilities may explain.

ITEM NO. B.9: Repeated tripping of transmission lines during the month of July 25

Sl. No.	Name of the Element	No. of times Tripped	Remarks	Utility
1	400KV-ALIPURDUAR (PG)-PUNASANGCHUN-2	5	Line tripped from Punasanchun end only in 4 instances and in Z-3 protection in one instance.	Bhutan/ PG ER-2

2	400KV-BINAGURI-MALBASE-1	5	Line tripped due to R phase fault, Y-B-Earth fault and DT received at Binaguri end in one instance.	Bhutan/ PG ER-2
3	400KV-KOLAGHAT-ARAMBAGH-1	3	Line tripped on DT received at Arambagh end in 2 instances and Y-Earth fault in one instance.	WBPDCL /WBSETCL
4	220KV-SAHARSA-BEGUSARAI-1	4	Tripped on B-Earth fault and fault distance was 14-15 kM from Saharsa end in 4 instances.	PG ER-1/ BSPTCL
5	220KV-DALTONGANJ-CHATRA-1	5	Spurious tripping at Chatra end.	JUSNL
6	220KV-JODA-RAMCHANDRAPUR-1	3	A/r successful from Joda end line tripped in Z-2 protection from Ramchandrapur end in 2 instances.	JUSNL

Concerned utilities may explain.

ITEM NO. B.10: On-load Operation of 400kV PVUNL-Tenughat

An online meeting was organized by ERLDC on 06.08.2025 to discuss regarding on-load operation of 400kV PVUNL-Tenughat circuit. Minutes of Meeting is attached in **Annexure B.10.1.**

Following action Points were agreed for improvement of system Reliability and equipment protection:

a) Tenughat ICT Protection:

Enabling backup overcurrent protection for the Tenughat ICT corresponding to 180 MW loading, with a 5-minute delay which would allow the operator sufficient time to rearrange loads and limit the Maithon–Dumka circuit loading thereby preventing tripping of ICT.

b) Operational SOP – Load Trend Monitoring:

Whenever loading of ICT exceeds 160 MW with a rising trend, Tenughat shall promptly inform SLDC Jharkhand to initiate load rearrangement and create a cushion on Maithon–Dumka loading. This is critical to ensure that, in case the Tenughat ICT trips, the Maithon–Dumka line loading remains within thermal limits and does not trigger SPS operation.

c) Protection Settings for 400 kV Patratu–Tenughat Line:

Enabling non-directional overcurrent protection at both ends of the line, with settings corresponding to 200 MW flow and Coordinating this protection with Zone-3 timing such that any flow exceeding 200 MW will result in tripping of line with a maximum delay of 800 milli seconds which will ensure system security under full generation from PUVNL and dual circuit outage of the 400 kV PUVNL–Patratu line.

Implemented setting at both ends is attached in **Annexure B.10.2.**

Members may discuss.

ITEM NO. B.11: Multiple tripping at 400kV Lapanga S/s

At 22:35 Hrs on 13/08/2025, switching off code of 400kV-Lapanga-Sterlite -1 was issued on request of SLDC Odisha to control the loading of 400kV OPGC-Lapanga D/C. During opening of line, B-phase of Tie CB at Lapanga got stuck which resulted in unbalanced flow and 400kV Lapanga-OPGC D/C and 400kV Lapanga-Sterlite 2 got tripped in Directional earth fault protection.

Detailed report is attached at **Annexure B.11.**

Members may discuss.

ITEM NO. B.12: Single Line Tripping Incidences in month of July 2025

Single line tripping incidents in the month of July 2025 which needs explanation from constituents of either end is attached at **Annexure B.12.**

Members may discuss.

PART- C: OTHER ITEMS

ITEM NO. C.1: Submission of protection performance indices on monthly basis by users to RPC and RLDC for 220 kV and above lines

As per IEGC 2023 Clause 15(6), 15(7) all users shall submit protection performance indices of previous month by 10th of every month to ERPC and ERLDC along with reasons for performance indices less than unity of individual element wise protection system to the respective RPC and action plan for corrective measures. For the month of July'25, detailed list is attached at **Annexure C.1.**

Following table shows the status of PP Indices received for last five months.

Sl.no	Utility Name	March 2025	April 2025	May 2025	June 2025	July 2025
1	PG-ER-1		Yes (23.02.2025)			
2	PG-ER-2	Yes (19.04.2025)	Yes		Yes (14.07.2025)	
3	PG-Odisha	Yes (21.4.2025)	Yes (12.05.2025)	Yes (16.06.2025)		
4	WBSETCL/ WBPDCL	Yes (08.04.2025)	Yes (07.05.2025)	Yes (09.06.2025)	Yes (07.07.2025)	Yes (05.08.2025)

5	BSPTCL/ BGCL	Yes (11.04.2025)	Yes (13.05.2025)	Yes (18.06.2025)	Yes (07.07.2025)	Yes (14.08.2025)
6	OPTCL/ OHPC	Yes (15.04.2025)	Yes (15.05.2025)	Yes (16.06.2025)	Yes (14.07.2025)	Yes (14.08.2025)
7	DVC		Yes (12.05.2025)			
8	JUSNL	Yes (23.04.2025)	Yes (21.05.2025)	Yes (22.06.2025)		
9	Sikkim					
10	OPGC					
11	PMTL					
12	NTPC-KHSTPP	Yes	Yes (23.05.25)	Yes (14.06.2025)	Yes (21.07.2025)	
13	NTPC-FSTPP					
14	NTPC-BARH	Yes (15.04.2025)	Yes (09.05.2025)	Yes (14.06.2025)		Yes (08.08.2025)
15	NTPC-TSTPP					
16	NTPC-KBUNL					
17	NPGC					
18	BRBCL					
19	NTPC-DARILAPLI	Yes (02.04.2025)	Yes (02.04.2025)	Yes (02.06.2025)	Yes (02.07.2025)	Yes (01.08.2025)
20	NTPC-NORTH KARNPUARA					
21	ATL					
22	APNRL				Yes (09.07.2025)	Yes (13.08.2025)
23	CBPTCL					
24	DMTCL	Yes (02/04/2025)	Yes (03.05.2025)	Yes (04/06/2025)	Yes (03.07.2025)	Yes (04.08.2025)
25	ENICL		Yes (13.05.2025)		Yes (07.07.2025)	Yes (11.08.2025)
26	Chuzachen HEP					

27	Jorethang HEP	Yes (02.04.2025)	Yes (02.05.2025)	Yes (01/06/2025)		Yes (01.08.2025)
28	Tashiding Hep	Yes (01.04.2025)	Yes (03.05.2025)	Yes (02/06/2025)	Yes (01.07.2025)	Yes (01.08.2025)
29	GMR					
30	IBEUL					
31	JITPL					
32	MPL					Yes (08.08.2025)
33	NKTL					
34	OGPTL		Yes (13.05.2025)		Yes (07.07.2025)	Yes (11.08.2025)
35	PMJTL					
36	Powerlink					
37	PKTCL		Yes (13.05.2025)		Yes (07.07.2025)	Yes (11.08.2025)
38	CESC	Yes (11.07.2025)	Yes (11.07.2025)	Yes (11.07.2025)	Yes (11.07.2025)	Yes (17.08.205)
39	Rongnichu HEP					
40	TVNL	Yes (01.04.2025)	Yes (03.05.2025)	Yes (04.06.2025)	Yes (01.07.2025)	Yes (04.08.2025)

Members may discuss.

ITEM NO. C.2: Internal Protection Audit Plan of Sub stations for the Year 2025-26

The Clause (5) of Regulation 15 of IEGC Regulations, 2023 envisages as below:

Quote
(1) *All users shall conduct internal audit of their protection systems annually, and any shortcomings identified shall be rectified and informed to their respective RPC. The audit report along with action plan for rectification of deficiencies detected, if any, shall be shared with respective RPC for users connected at 220 kV and above (132 kV and above in NER). .....*

(5) Annual audit plan for the next financial year shall be submitted by the users to their respective RPC by 31st October. The users shall adhere to the annual audit plan and report compliance of the same to their respective RPC."

Unquote

All utilities are requested to submit the annual audit plan for the substations 220kV and above voltage level for FY 2025-26 to ERPC by 31.10.2024. Annual audit plans for internal audit of their protection systems and third-party protection audit shall be furnished separately.

In 145th PCC Meeting, PCC advised all utilities to share internal protection audit plan for FY 2025-26 to ERPC at earliest.

Powergrid ER-II had submitted internal protection audit plan for FY 2025-26 to ERPC vide email dated 19 April 2025.

DMTCL had submitted internal protection audit plan for FY 2025-26 to ERPC vide email dated 5 April 2025.

In 149th PCC Meeting, PCC advised concerned utilities to share internal protection audit plan for FY 2025-26 to ERPC at earliest. It further said that final report of completed audits should also be shared with ERPC.

Concerned utilities may update.

ITEM NO. C.3: Third Party Protection audit of Sub stations for the Year 2025-26

As per IEGC 2023 Clause 15.2, "All users shall also conduct third party protection audit of each sub-station at 220 kV and above (132 kV and above in NER) once in five years or earlier as advised by the respective RPC."

and as per clause 15.5," Annual audit plan for the next financial year shall be submitted by the users to their respective RPC by 31st October. The users shall adhere to the annual audit plan and report compliance of the same to their respective RPC."

In 149th PCC Meeting, PCC advised all utilities to share third party protection audit plan for FY 2025-26 to ERPC at earliest.

Concerned utilities may update.

ITEM NO. C.4: Follow-up of Decisions of the Previous Protection Sub-Committee Meeting(s)

The decisions of previous PCC meetings are attached at **Annexure C.4.**

Members may update.

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)]
पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / Eastern Regional Load Despatch Centre
कार्यालय : 14, गोल्फ क्लब रोड, टालिगंज, कोलकाता - 700033
Office : 14, Golf Club Road, Tollygunge, Kolkata - 700033
CIN : U40105DL2009GOI188682, Website : www.erldc.in, E-mail : erldcinfo@grid-india.in, Tel.: 033 23890060/0061

पूर्वी क्षेत्र के 400 केवी दिक्चू में ग्रिड घटना पर विस्तृत रिपोर्ट / Detailed Report of grid event at 400 kV Dikchu S/s of 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): 24-07-2025

1. Event Summary (घटना का सारांश):

Prior to the disturbance Dikchu generation was around 105 MW evacuating through 400kV Dikchu-Rangpo Line and 400kV Dikchu-Rangpo (Teesta-III Bypass) Line. At 13:02 Hrs, Y-B Phase fault occurred in 400kV Dikchu-Rangpo line and line got tripped from both end in Z-1 protection. Simultaneously 400/132kV ICT at Dikchu also tripped on LV side B/U over current protection. Due to complete loss of evacuation path, Dikchu unit#1 & 2 tripped on over speed/ over frequency protection. This resulted in a total generation loss of 105 MW at Dikchu S/s.

2. Time and Date of the Event (घटना का समय और दिनांक): 13:02 hrs of 04.07.2025

3. Event Category (ग्रिड घटना का प्रकार): Grid Incident (GI)-2

4. Location/Control Area (स्थान/नियंत्रण क्षेत्र): Sikkim

5. Antecedent Conditions (पूर्ववर्ती स्थिति):

	Frequency in Hz	**Regional Generation in MW**	**Regional Demand in MW**
Pre-Event (घटना पूर्व)	50.260	25153	26255
Post Event (घटना के बाद)	50.260	25048	26255

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

Important Transmission Line/Unit if under outage	NA

(महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है)	
Weather Condition (मौसम स्थिति)	Inclement weather reported.

6. Load and Generation loss (लोड और जेनरेशन हानि): Generation loss of 105 MW at Dikchu HEP.

7. Duration of interruption (रुकावट की अवधि): 00:25 Hrs.

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

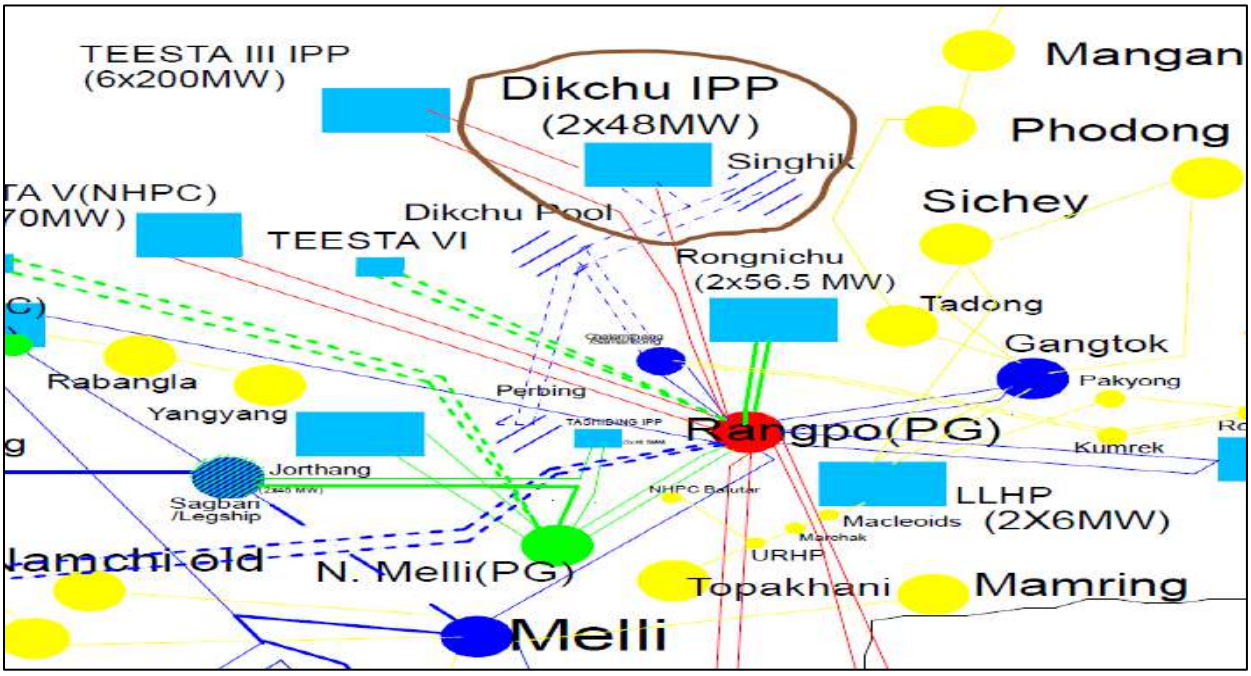


Figure 1: Network across the affected area

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

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

क्रoसo	नाम	Trip time (hh:mm:ss)	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत	Restoration time in Hrs
1	400 kV Rangpo-Dikchu Line	13:02:02:039	Rangpo: Y-B, FD: 11.4 km, Iy-4.5 kA, Ib-4.6 kA	Dikchu: Y-B, FD: 29.97 km, Iy-0.7 kA, Ib-0.6 kA	16:22

2	400/132kV ICT at Dikchu		LV side B/U over current protection operated	13:27
3	Dikchu Unit-1		Over frequency/Overspeed	14:11
4	Dikchu Unit-2		Over frequency/Overspeed	13:32

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

- Dikchu generation was evacuated through 400kV Rangpo-Dikchu S/c and 400kV Rangpo-Dikchu (Bypassing Teesta-III) Line.

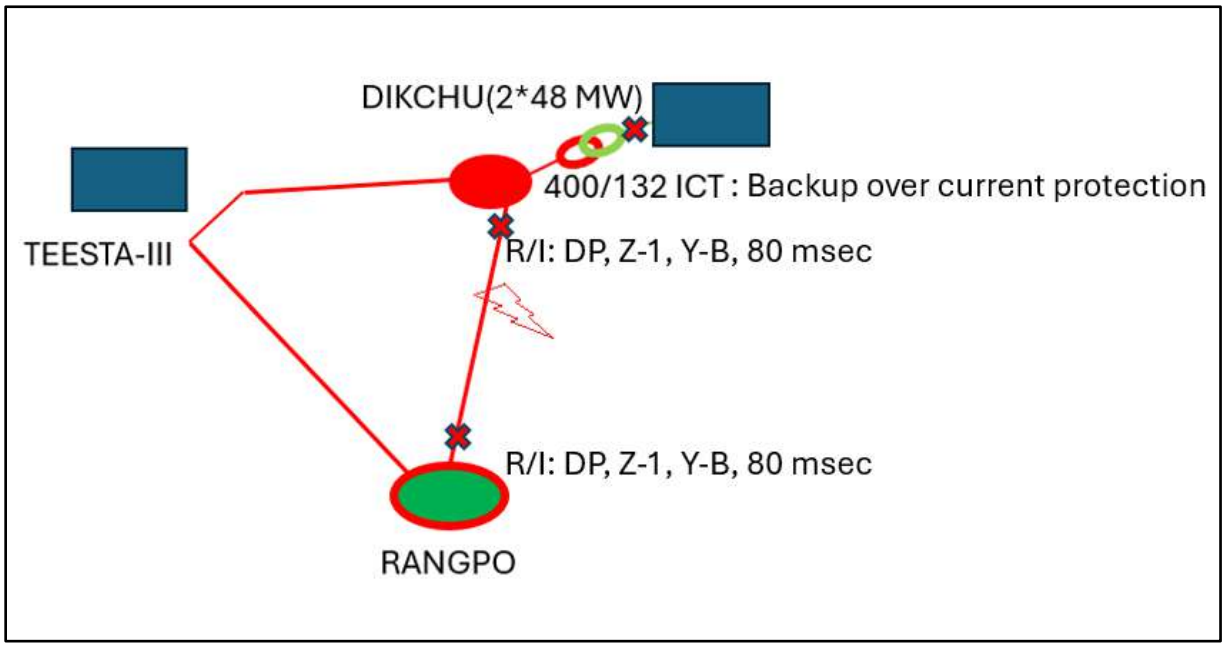


Figure 2: SLD of 400kV Dikchu S/s

- At 13:02:02 Hrs, Y-B fault occurred in 400kV Rangpo-Dikchu line and line got tripped from both end in Zone-1 protection within 100 msec.
- At the same time, 400/132kV ICT at Dikchu also got tripped on B/U over current protection in 132kV LV side and master trip command extended to HV side of ICT as per scheme.
- Due to tripping of 400/132kV ICT at Dikchu, Dikchu unit#1 & 2 got tripped on overspeed/ over frequency protection due to loss of evacuation path.
- Generation loss of 105 MW reported at Dikchu HEP.
- 400/132kV ICT at Dikchu charged at 13:27 Hrs and Dikchu unit #1 & 2 synchronised at 14:41 Hrs and 13: Hrs respectively.

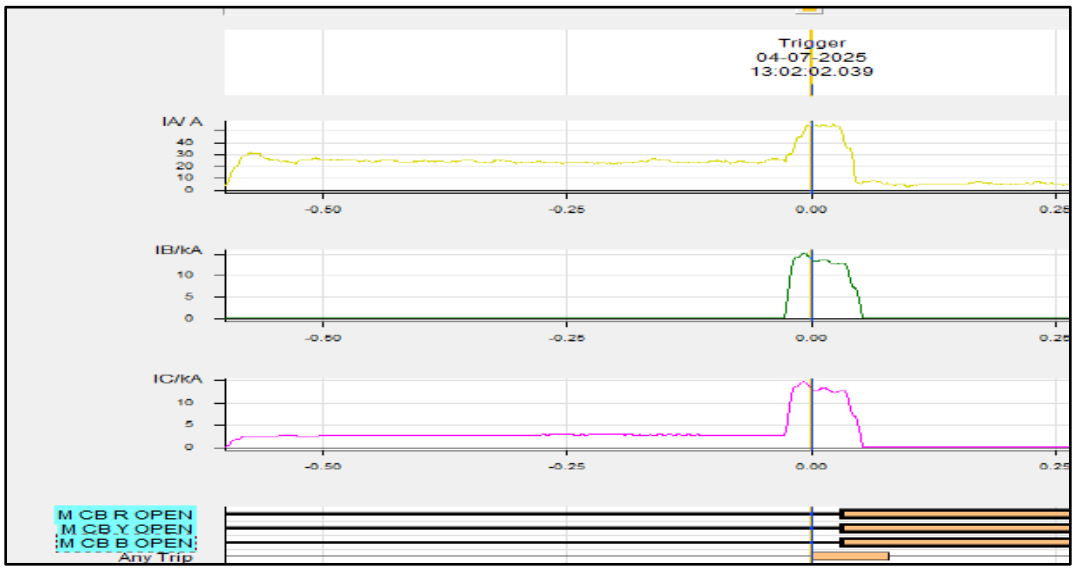


Figure 3: DR of 400kV Rangpo-Dikchu at Rangpo

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

- Line fault was cleared within 100 msec from both end and at the same time 400/132kV ICT tripped on LV side B/U over current protection which is unwanted. Backup over current setting of ICT at Dikchu may be reviewed.
- SOE not recorded for tripping of other elements like ICT, Line tripping and Unit tripping at Dikchu end. The same needs attention from Dikchu team.
- As discussed in 149th PCC meeting held on 15/07/2025, revised setting as per ERPC protection philosophy implemented by Dikchu as mentioned below:

1. **Phase Overcurrent 132kV Side of ICT**
   - CT Ratio: 2000/1A

   Stage:1
   - Type: IEC S Inverse
   - Direction: Forward Directional
   - Current Setting Stage-1 **Ip**: 1535.222 A **(Primary)**
   - TMS: 0.30

   Stage:2
   - Type: DT
   - Direction: Forward Directional
   - Current Setting Stage-2 **I>**: 10392.6 A **(Primary)**
   - Time Delay: 150ms

2. **EF Overcurrent 132kV Side of ICT**
   - NOT REQUIRED at 132KV LV Side

13. Action Taken/Remedial Measures (सुधारात्मक उपाय): Revised settings in accordance with ERPC protection philosophy were implemented on 04/07/2025.

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

S.No.	Issues	Regulation Non-Compliance	Remark
1	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	Not Submitted
2	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	Submitted
3	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	Not Submitted
4	**Protection system not operated correctly**	CEA Technical Standard for Construction of Electrical Plants and Electric Lines: 48 (1) a. CEA (Technical standards for connectivity to the Grid) Regulation, 2007: Schedule Part 1. (6.1, 6.2, 6.3)	400/132kV ICT tripped on backup over current due to incorrect relay setting which was not as per CEA and ERPC protection philosophy.

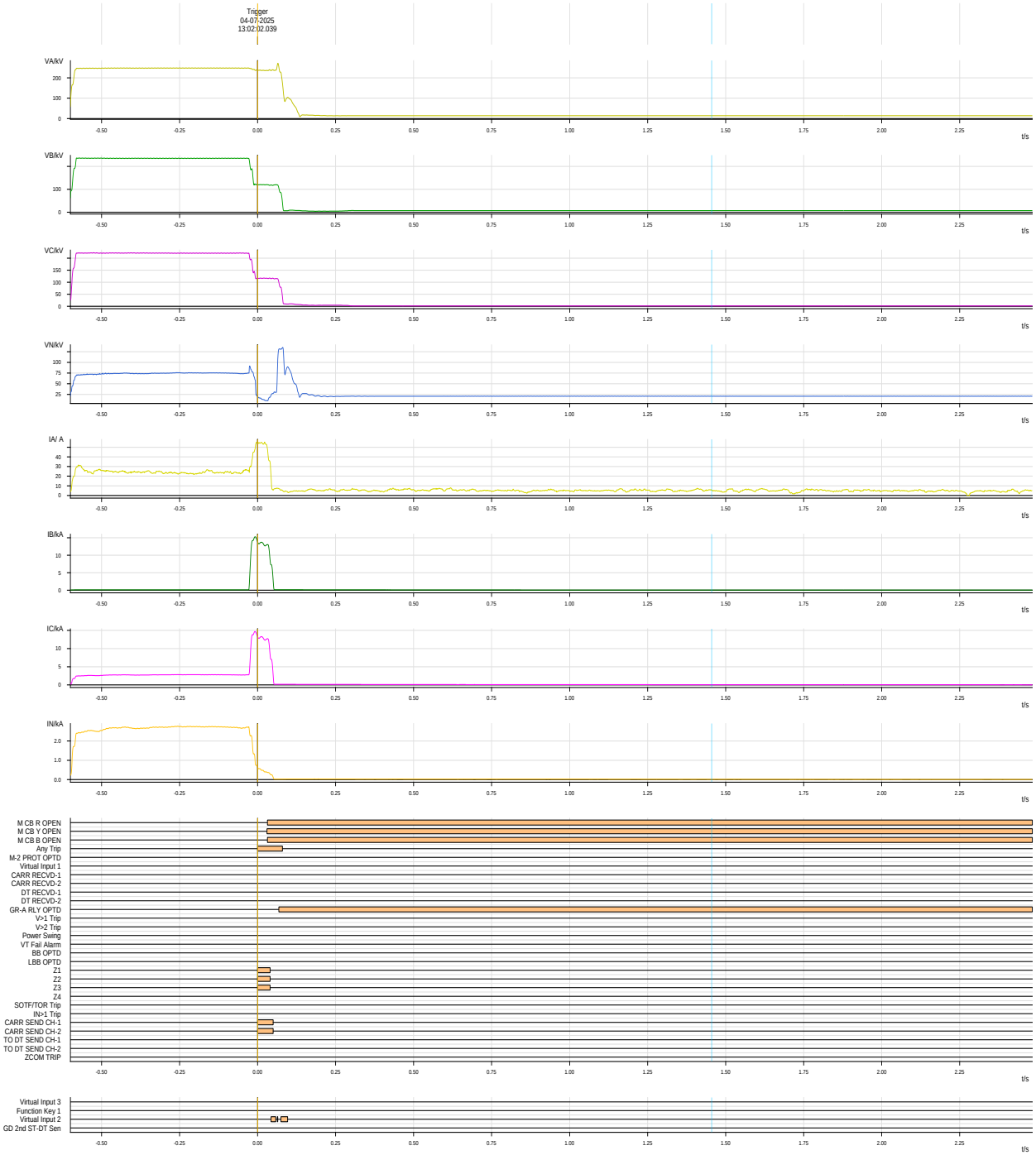
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु): Ensuring proper protection setting in line with ERPC protection Philosophy is essential to prevent UNWANTED tripping and system disturbance. As per Grid code, this should be verified by the user through an internal protection audit conducted annually.

Annexure 1: (Sequence of Events-As per ERLDC SCADA):

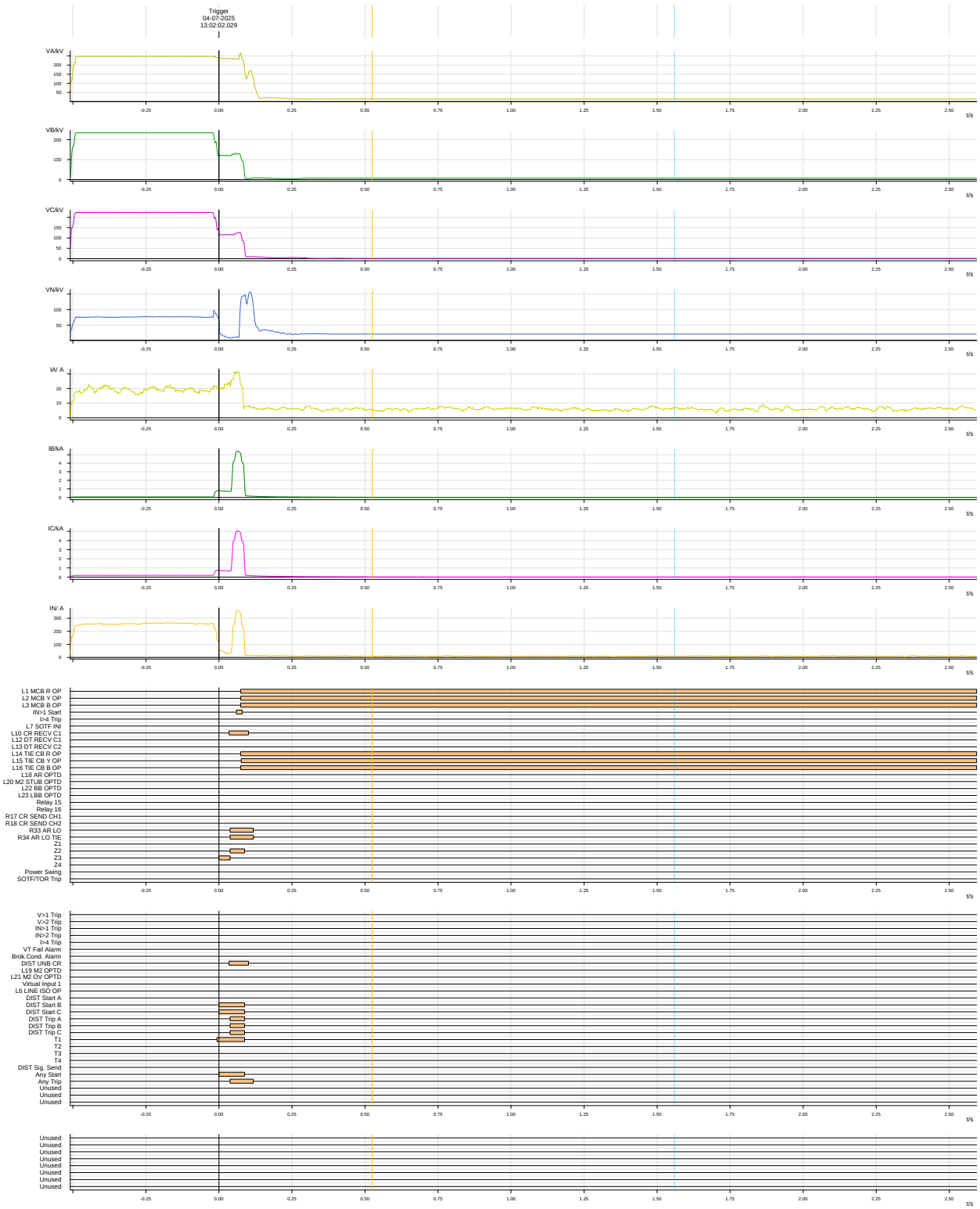
TIME	MILLI_SEC	STATION	DESCRIPTION	STATUS
04-07-2025 13:02	72	RANGP_PG	400_DIKCHU_PG_CB	Open
Rest SOE not available at ERLDC				

Annexure 2:

DR of 400kV Rangpo-Dikchu at Rangpo:



DR of 400kV Rangpo-Dikchu at Dikchu:



ग्रिड-इंडिया GRID-INDIA ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
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पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / Eastern Regional Load Despatch Centre
कार्यालय : 14, गोल्फ क्लब रोड, टालिगंज, कोलकाता - 700033
Office : 14, Golf Club Road, Tollygunge, Kolkata - 700033
CIN : U40105DL2009GOI188682, Website : www.erldc.in, E-mail : erldcinfo@grid-india.in, Tel.: 033 23890060/0061

पूर्वी क्षेत्र के 400 केवी दिक्चू में ग्रिड घटना पर विस्तृत रिपोर्ट / Detailed Report of grid event at 400 kV Dikchu S/s of 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): 05-08-2025

1. Event Summary (घटना का सारांश):

Event #1: At 13:45 Hrs on 23/07/2025

Prior to the disturbance Dikchu generation was around 106 MW evacuating through 400kV Dikchu-Rangpo Line and 400kV Dikchu-Rangpo (Teesta-III Bypass) Line. At 13:45 Hrs Phase(B) to ground fault occurred in 400kV Dikchu-Rangpo line (Teesta-III Bypass) and line got tripped from Dikchu end in Z-1 protection. Simultaneously 132kV bus bar protection mal-operated, which led to tripping of 400/132kV ICT and GT-1 & 2 at Dikchu. Due to complete loss of evacuation path, Dikchu unit#1 & 2 tripped on over speed/ over frequency protection. This resulted in a total generation loss of 106 MW at Dikchu S/s.

Event #2: At 13:26 Hrs on 30/07/2025

Prior to the disturbance Dikchu generation was around 106 MW evacuating through 400kV Dikchu-Rangpo Line and 400kV Dikchu-Rangpo (Teesta-III Bypass) Line. At 13:26 Hrs, 132kV bus bar protection mal-operated during testing of bus-coupler relay, which led to tripping of 400/132kV ICT and GT-1 & 2 at Dikchu. Due to complete loss of evacuation path, Dikchu unit#1 & 2 tripped on over speed/ over frequency protection. This resulted in a total generation loss of 106 MW at Dikchu S/s.

2. Time and Date of the Event (घटना का समय और दिनांक):

Event #1: At 13:45 Hrs on 23/07/2025
Event #2: At 13:26 Hrs on 30/07/2025

3. Event Category (ग्रिड घटना का प्रकार): Grid Incident (GI)-2

4. Location/Control Area (स्थान/नियंत्रण क्षेत्र): Sikkim

5. Antecedent Conditions (पूर्ववर्ती स्थिति):

Event #1: At 13:45 Hrs on 23/07/2025

	Frequency in Hz	Regional Generation in MW	Regional Demand in MW
Pre-Event (घटना पूर्व)	50.10	25212	30605
Post Event (घटना के बाद)	50.09	25106	30605

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

Important Transmission Line/Unit if under outage (महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है)	NA
Weather Condition (मौसम स्थिति)	Inclement weather reported.

Event #2: At 13:26 Hrs on 30/07/2025

	Frequency in Hz	Regional Generation in MW	Regional Demand in MW
Pre-Event (घटना पूर्व)	49.979	23316	25564
Post Event (घटना के बाद)	49.979	25210	25564

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

Important Transmission Line/Unit if under outage महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है	Nil
Weather Condition (मौसम स्थिति)	Inclement weather reported.

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Generation loss of 106 MW at Dikchu HEP during both disturbances.
7. **Duration of interruption (रुकावट की अवधि):** 01:29 Hrs(1 hours 29 minutes) and 00:26 Hrs(26 minutes) respectively.

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

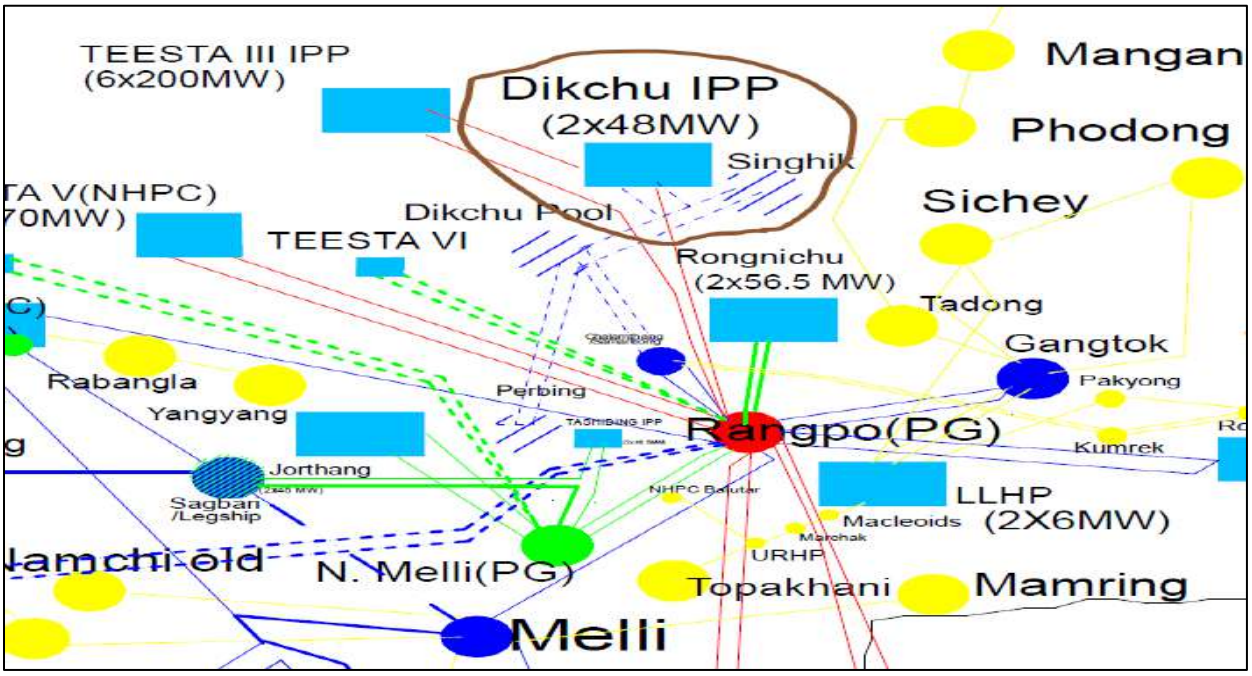


Figure 1: Network across the affected area

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

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

Event #1: At 13:45 Hrs on 23/07/2025

क्रoसo	नाम	Trip time (hh:mm:ss)	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत	Restoration time in Hrs
1	400 kV Rangpo-Dikchu Line (Teesta-III Bypass)	13:45:12	Rangpo: A/r successful from Rangpo end.	Dikchu: Z-1, B-N, FD: 13.72 Km, FC:2.142 kA	15:20
2	400/132kV ICT at Dikchu		132kV (LV) side bus bar protection operated		15:14
3	Dikchu Unit-1		Over frequency/Overspeed		15:20
4	Dikchu Unit-2		Over frequency/Overspeed		15:19

Event #2: At 13:26 Hrs on 30/07/2025

क्रoसo	नाम	Trip time (hh:mm:ss)	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत	Restoration time in Hrs
1	400/132kV ICT at Dikchu	13:25:51	LBB protection of 132kV Bus coupler bay mal-operated.		13:38
2	Dikchu Unit-1		Over frequency/Overspeed		14:01
3	Dikchu Unit-2		Over frequency/Overspeed		14:01

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

Event #1: At 13:45 Hrs on 23/07/2025

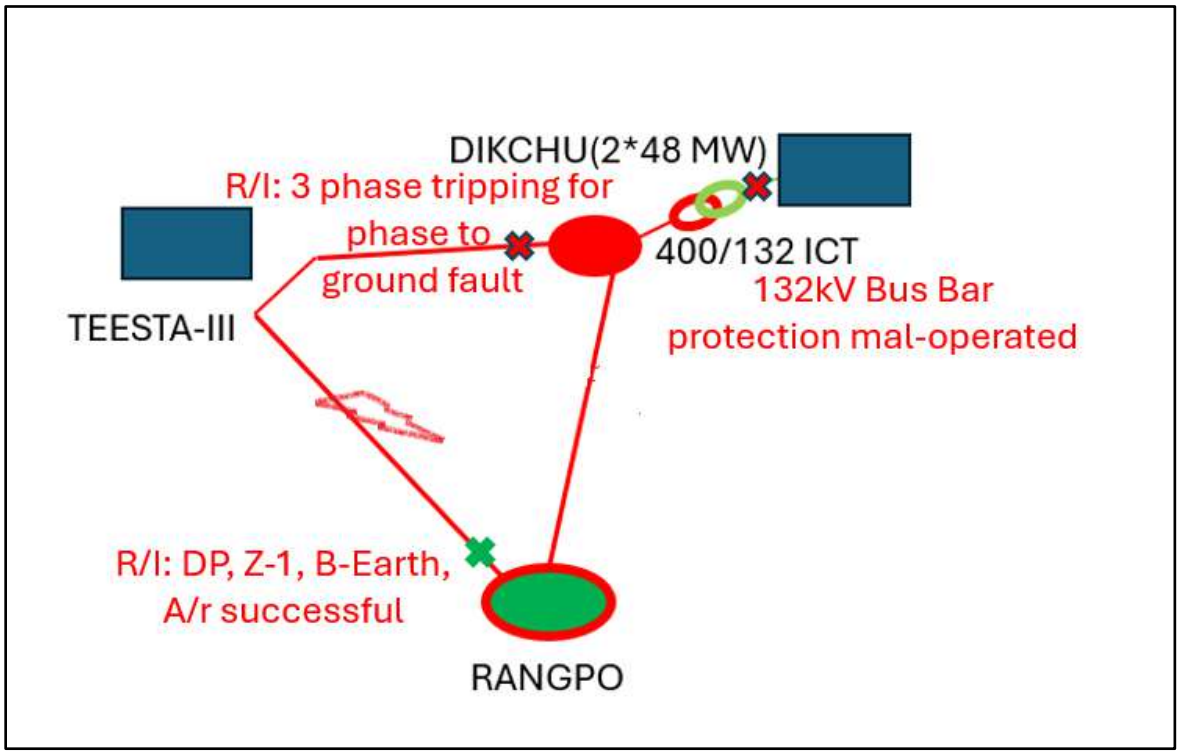


Figure 2: SLD of Dikchu HEP

- Dikchu generation was around 106 MW evacuated through 400kV Rangpo-Dikchu S/c and 400kV Rangpo-Dikchu (Bypassing Teesta-III) Line.
- At 13:45:11:860 Hrs, B phase high resistive fault occurred in 400kV Rangpo-Dikchu #2(Bypassing Teesta-III) line and fault was sensed in O/C earth fault from both end but after

850 msec line three phase tripping occurred from Dikchu end and A/r successful from Rangpo end.

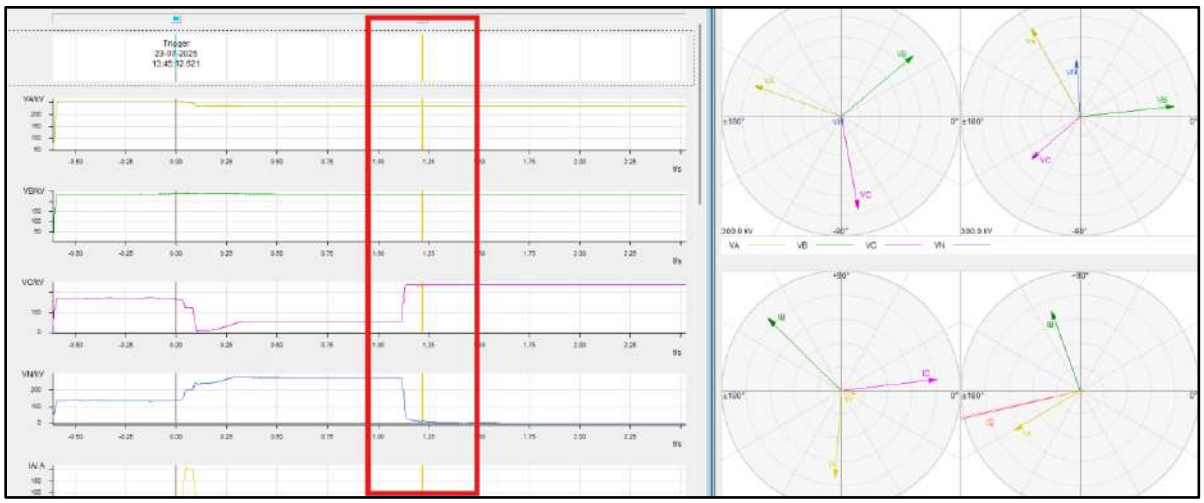


Figure 3: DR of 400kV Rangpo-Dikchu#2 at Rangpo

- At the same time, bus bar protection of 132kV main bus #1 mal-operated and all elements (GT#1 & 2 and 400/132kV ICT) connected to main bus #1 got tripped.
- Due to tripping of 132kV main bus #1, Dikchu unit#1 & 2 got tripped on overspeed/ over frequency protection due to loss of evacuation path.
- Generation loss of 106 MW reported at Dikchu HEP.
- 400/132kV ICT at Dikchu charged at 15:14 Hrs and Dikchu unit #1 & 2 synchronised at 15:20 Hrs and 15:19 Hrs respectively.

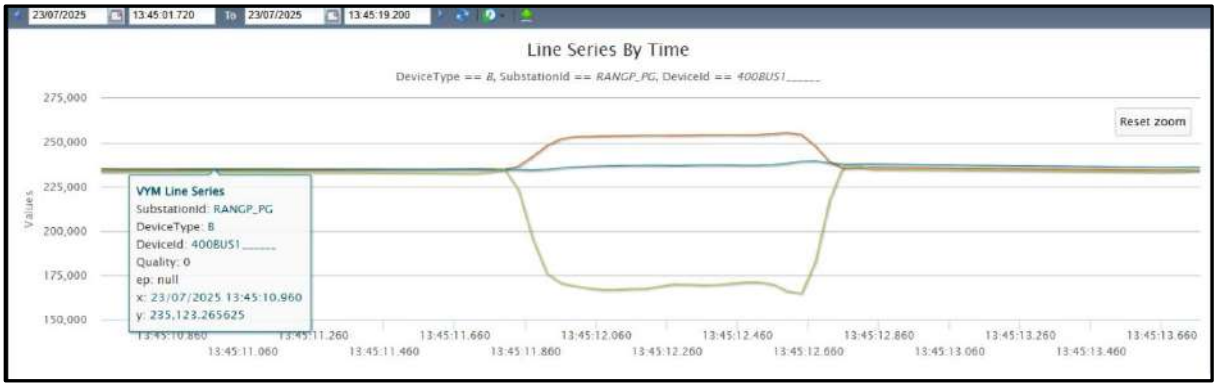


Figure 4: PMU of Rangpo

Event #2: At 13:26 Hrs on 30/07/2025

- Prior to the disturbance Dikchu generation was around 106 MW evacuated through 400kV Rangpo-Dikchu S/c and 400kV Rangpo-Dikchu (Bypassing Teesta-III) Line.
- After returning from S/D, Dikchu unit#2 synchronised on 132kV main bus #2 and unit#1 and 400/132kV ICT kept on 132kV main bus #1.
- After this configuration differential currents were observed in 132kV Busbar protection relay (132kV BB protection relay kept out due to ongoing rectification work).
- Further, it was found that polarity of Bus Coupler CT needs to be reversed to resolve the differential current issue in 132kV busbar relay. Hence, CT polarity of the same was reversed in BB relay CT configuration and tried to upload the same, resulted in Bus Coupler LBB protection mal-operation and tripping of 400/132kV ICT and GT#1 & 2.
- Dikchu unit#1 & 2 got tripped on overspeed/ over frequency protection due to loss of evacuation path.
- 400/132kV ICT at Dikchu charged at 13:38 Hrs and Dikchu unit #1 & 2 synchronised at 14:01 Hrs.

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

- During event #1, Auto-reclose (A/R) was not attempted for the phase-to-ground fault at the Dikchu end. The reason for this may be shared, and the healthiness of the A/R scheme should be ensured.

13. Action Taken/Remedial Measures (सुधारात्मक उपाय): Differential current issue in 132kV busbar relay was resolved. Now all the current measurements in 132kV BB relay are as per actual and healthy.

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

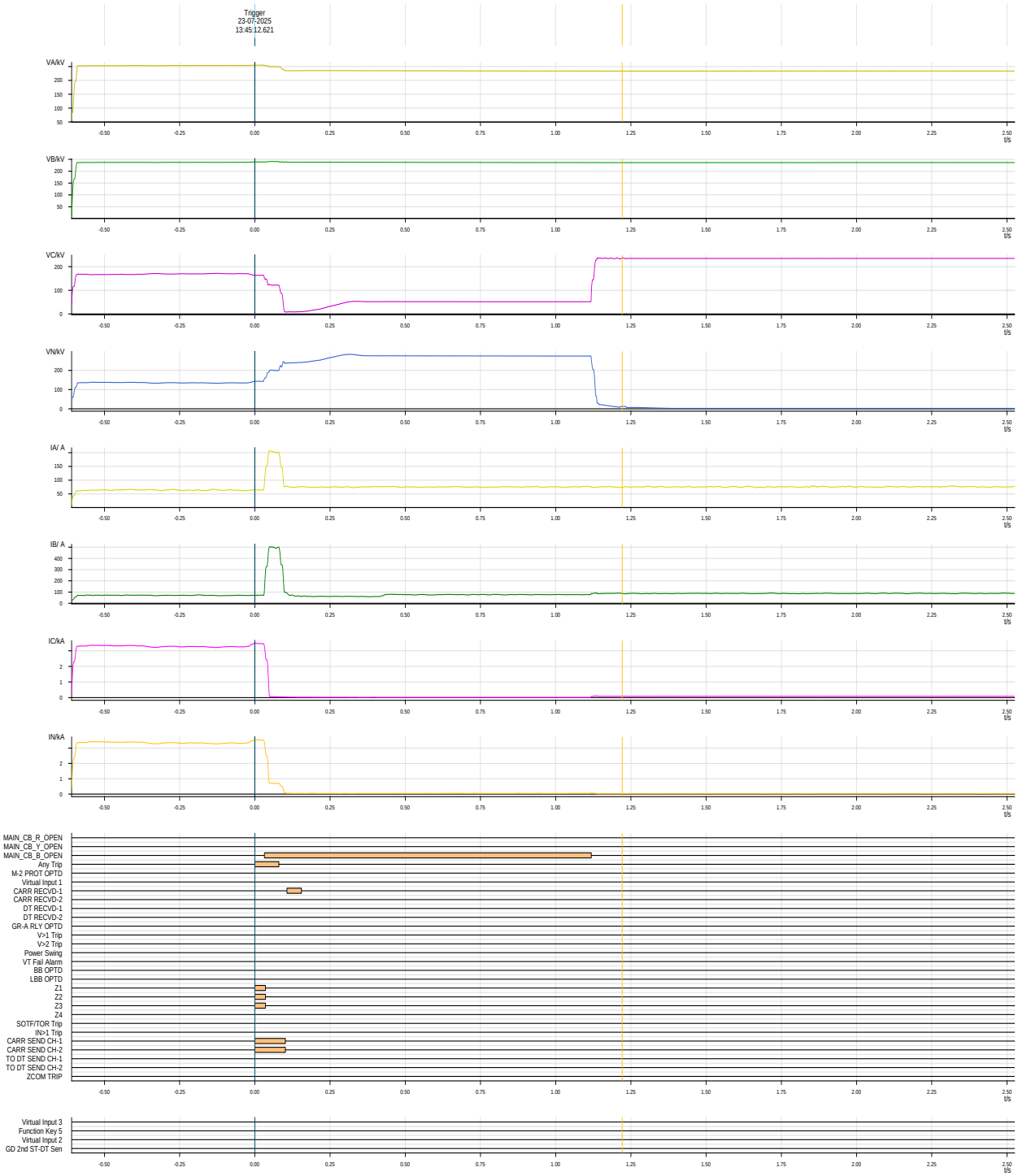
S.No.	Issues	Regulation Non-Compliance	Remark
1	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	Not Submitted
2	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	Submitted
3	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	Submitted

4	**Protection system not operated correctly**	CEA Technical Standard for Construction of Electrical Plants and Electric Lines: 48 (1) a. CEA (Technical standards for connectivity to the Grid) Regulation, 2007: Schedule Part 1. (6.1, 6.2, 6.3)	A/r not attempted at Dikchu HEP end which was not as per CEA and ERPC protection philosophy.

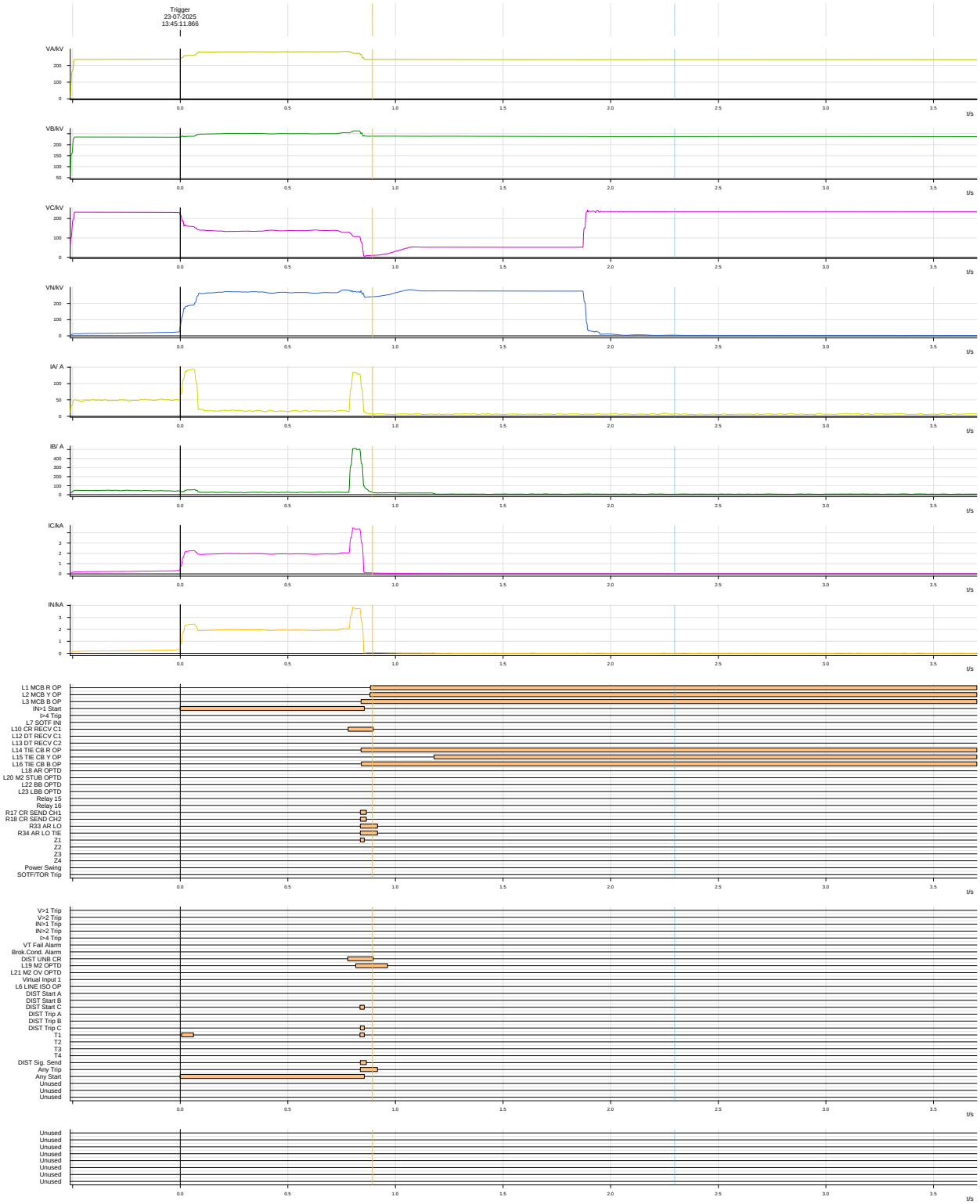
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु): NIL

Annexure 2:

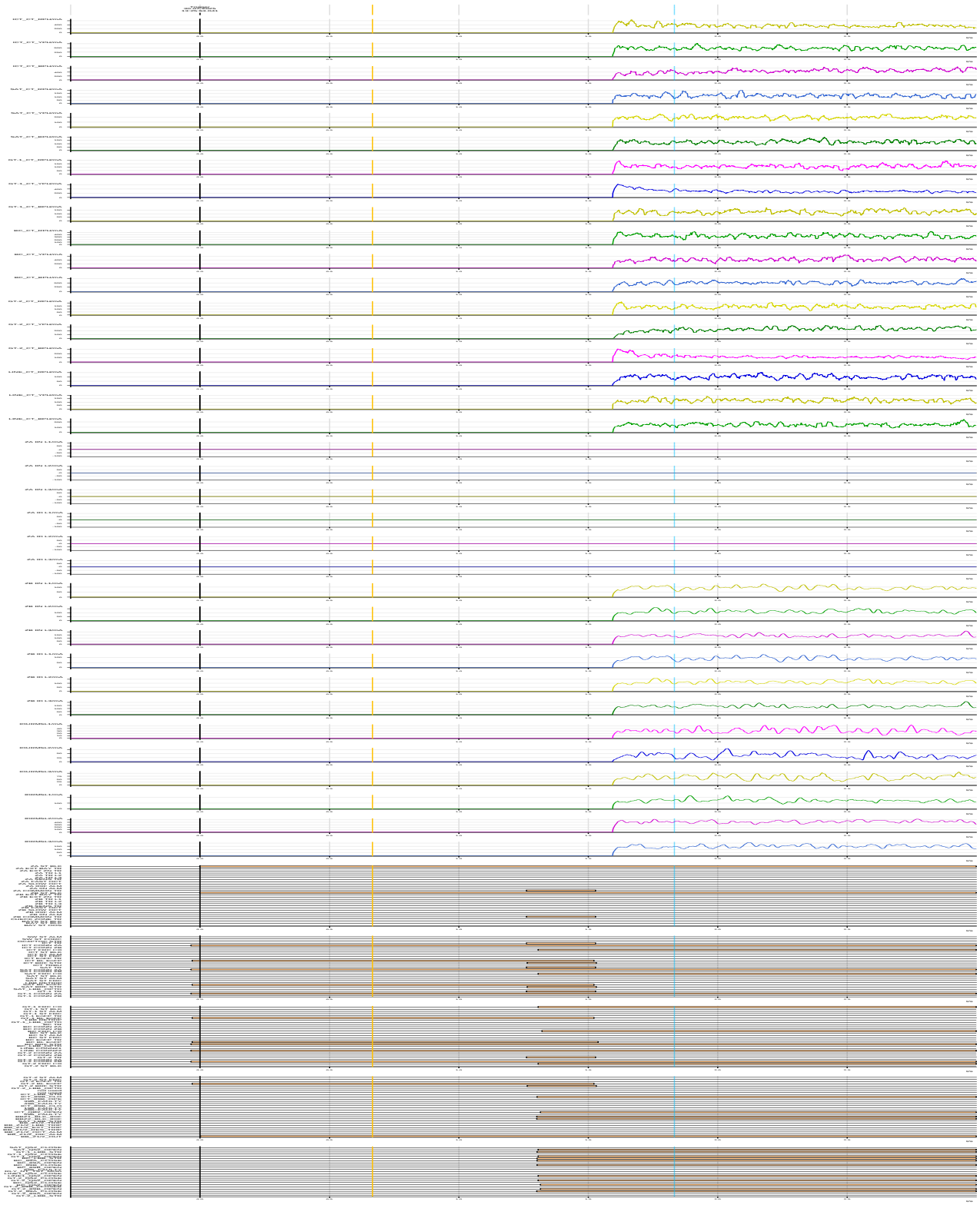
DR of 400kV Rangpo-Dikchu at Rangpo(Event#1):



DR of 400kV Rangpo-Dikchu at Dikchu:



DR of 132kV Bus bar:



ग्रिड-इंडिया GRID-INDIA ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
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CIN : U40105DL2009GOI188682, Website : www.erldc.in, E-mail : erldcinfo@grid-india.in, Tel.: 033 23890060/0061

पूर्वी क्षेत्र के 400/220kV केवी इंद्रावती उप-केन्द्र में ग्रिड घटना पर विस्तृत रिपोर्ट / Detailed Report of grid event at 400/220 kV Indravati HEP Sub-Station of 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):05-08-2025

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

Event at 23:30 Hrs on 13/07/2025:

Prior to the disturbance, Indravati HEP generation was around 500 MW evacuating through 220 kV Indravati-Jaypatna, 220 kV Therubali-Indravati-1,2 & 3 which was connected to 220kV main bus #1 at Indravati HEP. At 23:30 Hrs on 13.07.2025, bus bar protection of 220 kV main bus-1 at Indravati HEP mal-operated and all element connected to main bus #1 got tripped. 220kV Indravati bus became dead and generation loss of 500 MW occurred at Indravati HEP.

Event at 11:22 Hrs on 14/07/2025:

Prior to the disturbance, Indravati HEP generation was around 150 MW evacuating through 220 kV Indravati-Jaypatna, 220 kV Therubali-Indravati-1,2 & 3 which was connected to 220kV main bus #2 at Indravati HEP. At 10:25 Hrs on 14.07.2025, bus bar protection of 220 kV main bus-2 at Indravati HEP mal-operated and, Indravati unit#1, ICT 1 & 2 and 220 kV Indravati–Therubali Ckt-1 & 3 got tripped, further at 11:22 Hrs again bus bar protection of main #2 mal-operated and remaining element also got tripped. 220kV Indravati bus became dead and generation loss of 150 MW occurred at Indravati HEP.

2. **Time and Date of the Event (घटना का समय और दिनांक):**
   - Event at 23:30 Hrs on 13/07/2025
   - Event at 11:22 Hrs on 14/07/2025
3. **Event Category (ग्रिड घटना का प्रकार): Grid Incident (GI)-2**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** Odisha

5. Antecedent Conditions (पूर्ववर्ती स्थिति):

Event at 23:30 Hrs on 13/07/2025:

	Frequency	Regional Generation	Regional Demand	State Generation	State Demand
				Odisha	Odisha
Pre-Event (घटना पूर्व)	49.98 Hz	31898 MW	27404 MW	3786 MW	5567 MW
Post Event (घटना के बाद)	49.98 Hz	31398 MW	27404 MW	3286 MW	5567 MW

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

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

Event at 11:22 Hrs on 14/07/2025:

	Frequency	Regional Generation	Regional Demand	State Generation	State Demand
				Odisha	Odisha
Pre-Event (घटना पूर्व)	50.05 Hz	23212 MW	25412 MW	2840 MW	5487 MW
Post Event (घटना के बाद)	50.07 Hz	23062 MW	25412 MW	2690 MW	5487 MW

Important Transmission Line/Unit if under outage (महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है)	• Indravati – Unit#2 • Indravati – Unit#3 • Indravati – Unit#4
Weather Condition (मौसम स्थिति)	Normal.

6. Load and Generation loss (लोड और जेनरेशन हानि):

Event at 23:30 Hrs on 13/07/2025: 500 MW Generation loss.
Event at 11:22 Hrs on 14/07/2025: 150 MW Generation loss

Duration of interruption (रुकावट की अवधि):

Event at 23:30 Hrs on 13/07/2025:04:28 Hrs(4 hours, 28 minutes).
Event at 11:22 Hrs on 14/07/2025: 31:01 Hrs(31 hours, 01 minute).

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

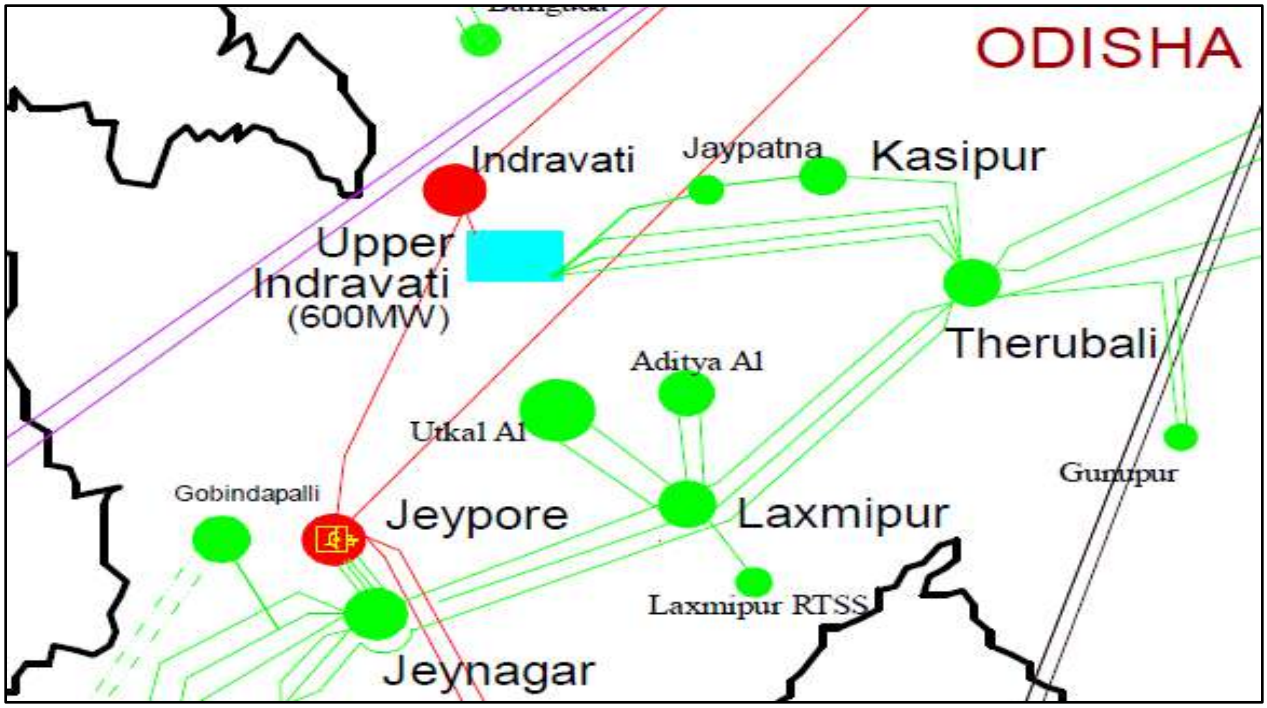

Figure 1: Network across the affected area

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

NIL

9. Major Elements Tripped (प्रमुख ट्रिपिंग):

Event at 23:30 Hrs on 13/07/2025:

क्रoसo	नाम	Trip time (hh:mm:ss)	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत	Restoration time

1	220 KV Main Bus - 1 At Indravati HEP	23:30: Hrs.	**B**us bar protection operated for bus#1.	-
2	Indravati - Unit 1			-
3	Indravati - Unit 2			-
4	Indravati - Unit 3			-
5	Indravati - Unit 4			-
6	400KV/220 KV 315 MVA ICT 1 at Indravati HEP			05:13
7	400KV/220 KV 315 MVA ICT 2 at Indravati HEP			06:15
8	220 KV Indravati-Therubali-1			03:58
9	220 KV Indravati-Therubali-2			04:00

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

Event at 23:30 Hrs on 13/07/2025:

- Prior to the disturbance, Indravati HEP generation was around 500 MW evacuating through 220 kV Indravati-Jaypatna, 220 kV Therubali-Indravati-1,2 & 3 which was connected to 220kV main bus #1 at Indravati HEP.
- At 23:30:12 Hrs on 13.07.2025, bus bar protection of 220 kV main bus-1 at Indravati HEP mal-operated and all element connected to main bus #1 got tripped.
- 220kV Bus at Indravati HEP became dead and 500 MW generation loss occurred at Indravati HEP.

Event at 11:22 Hrs on 14/07/2025:

- After disturbance on 13/07/2025, all elements at Indravati charged through 220kV main #2 and Indravati Unit#1 generating around 150 MW.

- Further, on 14.07.2025 at 10:25 Hrs, the following elements tripped due to the bus bar operation of 220 kV Bus-II:

1. 220 kV side CB of 400/220 kV, 315 MVA ICT-2
2. 400 kV side CB of 400/220 kV, 315 MVA ICT-1
3. 220 kV Indravati–Therubali Ckt-1
4. 220 kV Indravati–Therubali Ckt-3

Subsequently, at 11:22 Hrs on 14.07.2025, the following elements also tripped due to busbar-II protection operation and few elements hand tripped.

1. Indravati – Unit #1
2. Indravati – Unit #2 (in standstill condition) – hand tripped
3. 220 kV Indravati–Therubali Ckt-2 – hand tripped
4. 220 kV Indravati–Jaypatna – hand tripped

Which resulted in 220kV Indravati HEP became dead and 150 MW generation loss occurred at Indravati HEP.

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

- As discussed in 149th PCC meeting, It was also noted that the currently installed Bus Bar protection relay at the 220 kV Indravati HEP is of **static type**, lacking Disturbance Recorder (DR) and Event Logger (EL) facilities. As per CEA regulations, all protection relays shall be numerical type with communication protocols in accordance with IS-61850.
- Reason of spurious operation and root cause analysis of bus bar protection of main bus 1 & 2 may be shared, and status of bus bar protection may be shared.
- For double main & transfer bus scheme, it is recommended that feeder's arrangement should be equally distributed on both buses to avoid load and generation loss in case of any bus fault.
- Upgrade to a numerical type BB protection relay with DR/EL features and IS-61850 compliance.

12. Action Taken/Remedial Measures (सुधारात्मक उपाय): As discussed in 149th PCC meeting it was decided that mal operated bus bar protection for main bus 1 &2 was disabled and zone-4-time delay kept 250 msec for all connected feeders at Indravati HEP till the restoration of Bus Bar protection.

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

14. S.No.	Issues	Regulation Non-Compliance	Remark
1	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	Not Submitted
2	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	Submitted
3	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	Not Submitted
4	**Protection system not operated correctly**	CEA Technical Standard for Construction of Electrical Plants and Electric Lines: 48 (1) a. CEA (Technical standards for connectivity to the Grid) Regulation, 2007: Schedule Part 1. (6.1, 6.2, 6.3)	For 220kV level, Double bus scheme should be operationalise as per CEA standards.

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

ग्रिड-इंडिया GRID-INDIA ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
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(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / Eastern Regional Load Despatch Centre
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पूर्वी क्षेत्र के 220 केवी तेनुघाट, गोविन्दपुर में ग्रिड घटना पर विस्तृत रिपोर्ट / Detailed Report of grid event at 220 kV Tenughat TPS and 220kV Govindpur S/s of 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): 07-08-2025

1. Event Summary (घटना का सारांश):

Prior to the disturbance 220KV- Dumka – Govindpur D/C was kept open to control the loading of 220 kV Maithon-Dumka D/c and Tenughat unit#1(Unit#2 was Under Planned Maintenance) generation evacuating through 220 kV Tenughat–Biharsharif–1 and feeding load of Govindpur S/s. At 13:53 Hrs, 220kV Tenughat–Biharsharif–1 line tripped on phase(R) to ground fault. This led to island formation of Tenughat unit#1 with Govindpur load which didn't survive due to load generation mismatch and Tenughat unit#1 tripped on over speed/over frequency protection. 220kV Tenughat and Govindpur became dead. Generation loss of 150 MW at Tenughat and load loss of 70 MW at Govindpur was reported. Govindpur load was restored at 14:17 Hrs by charging 220KV- Dumka – Govindpur D/C line.

2. Time and Date of the Event (घटना का समय और दिनांक): 13:53 hrs of 17.07.202**5**

3. Event Category (ग्रिड घटना का प्रकार): Grid Disturbance (GD)-1

4. Location/Control Area (स्थान/नियंत्रण क्षेत्र): Jharkhand

5. Antecedent Conditions (पूर्ववर्ती स्थिति):

	Frequency (Hz)	Regional Generation (MW)	Regional Demand (MW)	State Generation	State Demand
				Jharkhand (MW)	Jharkhand (MW)
Pre-Event (घटना पूर्व)	49.73 Hz	25092 MW	26482 MW	190 MW	1453 MW
Post Event (घटना के बाद)	49.73 Hz	24942 MW	26412 MW	40 MW	1383 MW

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

Important Transmission Line/Unit if under outage (महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है)	220KV- Dumka – Govindpur D/C kept open from 07/07/2025 to control loading of 220 kV Maithon-Dumka D/c. Tenughat Unit #2 Under Planned Maintenance

Weather Condition (मौसम स्थिति)	Normal

6. **Load and Generation loss (लोड और जेनरेशन हानि): G**eneration loss of 150 MW at Tenughat TPS and Load loss of 70 MW at Govindpur.
7. **Duration of interruption (रुकावट की अवधि):** 00:24 Hrs (Govindpur Load was restored at 14:17 Hrs by charging 220KV- Dumka – Govindpur D/C)

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

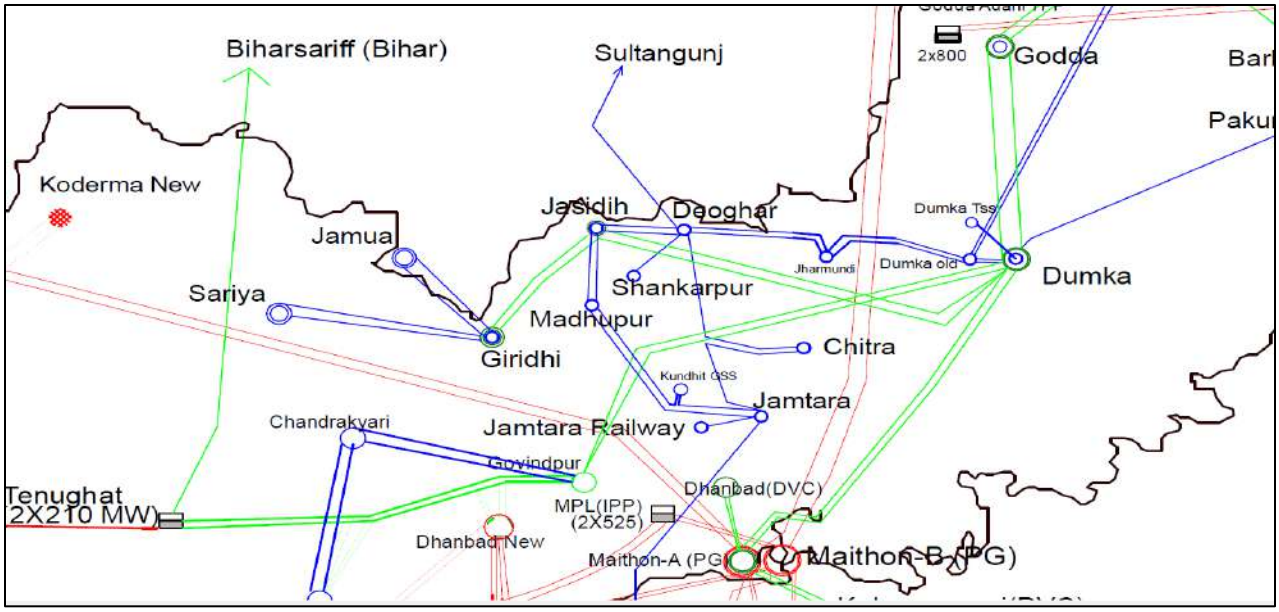


Figure 1: Network across the affected area

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

10.Major Elements Tripped (प्रमुख ट्रिपिंग):

क्र०स०	नाम	Trip time (hh:mm:ss)	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत	Restoration time
1	220 kV TTPS- Biharsharif Line	**13:53:23**	Tenughat: R-Earth, zone- 1, FD - 79.56km, FC- 1.083 kA	R-E, FC-1.49 kA, Z-1	14:38
2	210 MW Tenughat Unit 1		Over speed/over frequency protection		19:35

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

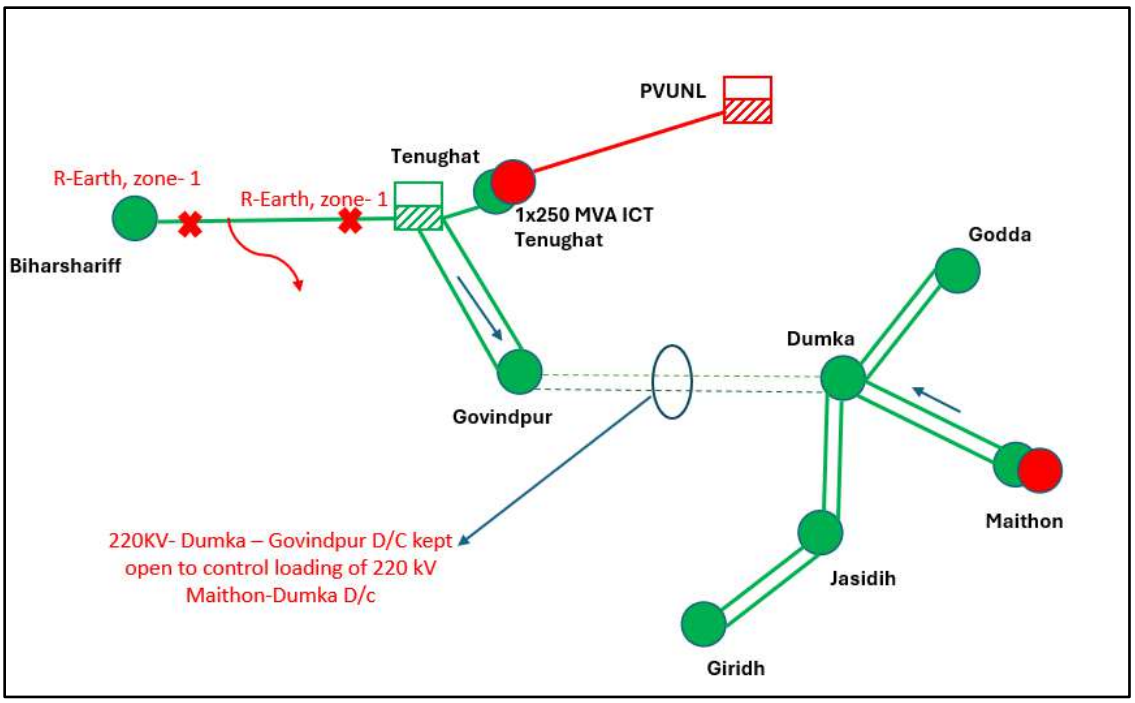


Figure 2: Network across the affected area

- Prior to the disturbance 220KV- Dumka – Govindpur D/C was kept open to control the loading of 220 kV Maithon-Dumka D/c and Tenughat unit#1(Unit#2 was Under Planned Maintenance) generation evacuating through 220 kV Tenughat–Biharsharif–1 and feeding load of Govindpur S/s.
- At 13:53:23 Hrs, R phase to ground fault occurred in 220kV Tenughat Biharsariff line and line got tripped from both ends.
- Due to tripping of this line, Tenughat unit#1 generation (Around 150 MW) island with Govindpur load(Around 70 MW).
- Due to load generation mismatch, Tenughat island didn't survive and Tenughat unit#1 got tripped on overspeed/over frequency protection.
- 220kV Tenughat & Govindpur became dead.
- 150 MW generation loss at Tenughat and 70 MW load loss at Govindpur occurred.

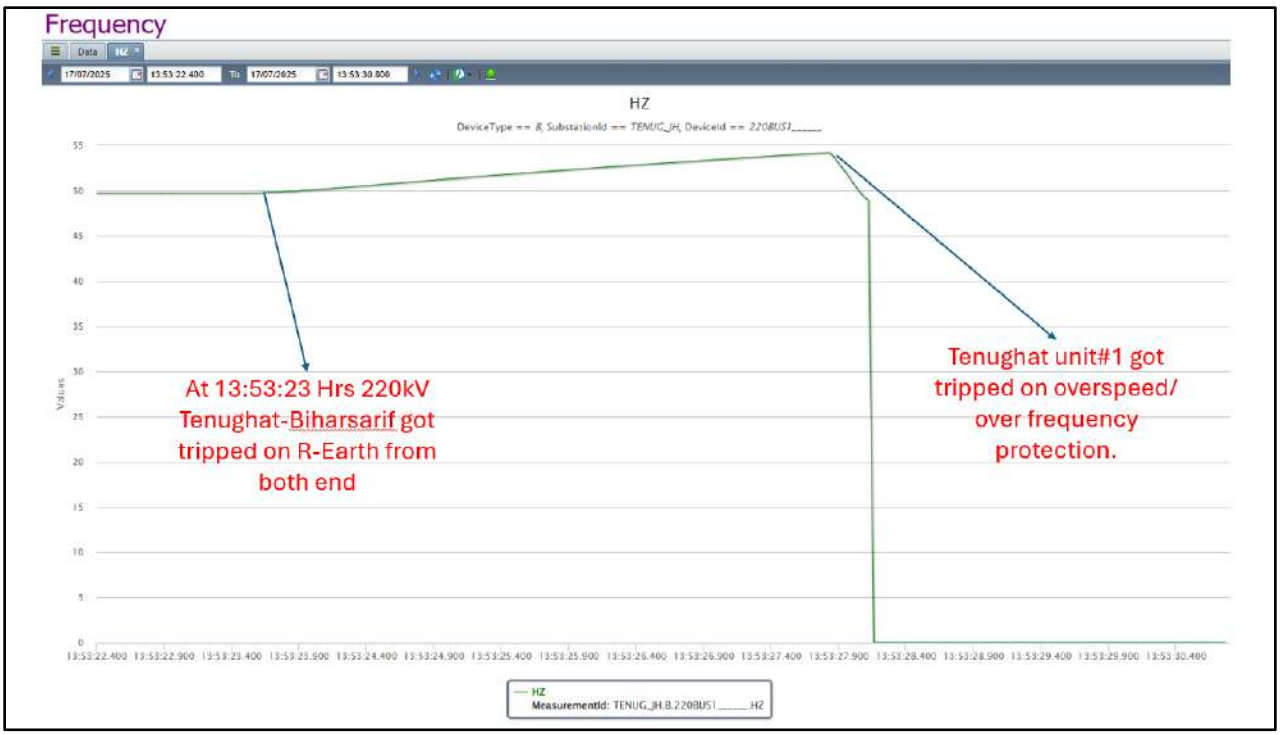


Figure 3: PMU of Frequency

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

- A/r scheme not implemented in 220kV Tenughat Biharsarif line. Kindly share the latest status of A/r scheme.

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

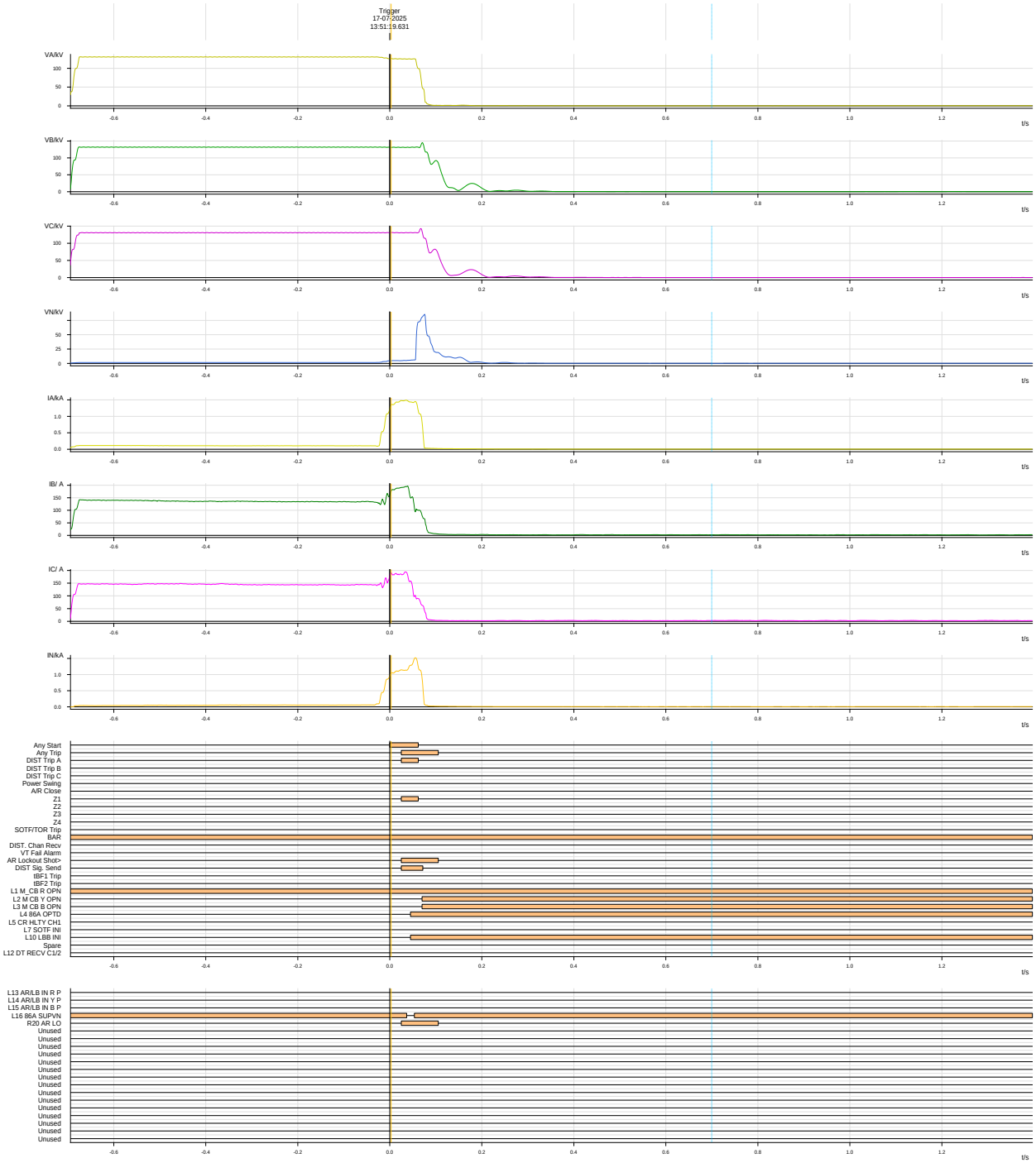
14.Non-compliance observed (विनियमन का गैर-अनुपालन):

S.No.	Issues	Regulation Non-Compliance	Remark
1	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	Not Submitted
2	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	Submitted
3	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	Not Submitted
4	**Protection system not operated correctly**	CEA Technical Standard for Construction of Electrical Plants and Electric Lines: 48 (1) a. CEA (Technical standards for connectivity to the Grid) Regulation, 2007: Schedule Part 1. (6.1, 6.2, 6.3)	A/r not implemented in 220kV Tenughat Biharsariff line which was not as per CEA standard.

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

Annexure 2:

DR of 220kV-Tenughat-Biharsariff ckt #1 at Biharsariff:



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)]
पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / Eastern Regional Load Despatch Centre
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पूर्वी क्षेत्र के 220/132 केवी गोरौल में ग्रिड घटना पर विस्तृत रिपोर्ट / Detailed Report of grid event at 220/132kV Goraul S/S of 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): 21-07-2025

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

The 220kV Goraul S/S is connected to the grid through the 220kV-Goraul-Muzaffarpur (PG) D/C line. Prior to the disturbance, 220kV-Goraul-Muzaffarpur #2 line tripped at 13:24 Hrs on phase to ground fault. Subsequently at 14:31 Hrs, 220kV-Goraul-Muzaffarpur (PG) #1 line also got tripped on ground-Phase-E fault due to conductor snaping. Due to tripping of radial connected line, 220kV Goraul S/S became dead.

Due to the above, total 180 MW load loss occurred at Goraul (Goraul (20 MW), Vaishali (42 MW), Sheetalpur (43 MW), Railway (15 MW), Jandaha (50 MW) and Mahnar (10 MW)). Power supply was subsequently restored via 132kV system through Hazipur, Jandaha and Manhar links. Further, 220kV Muzaffarpur (PG) -Goraul Ckt#2 line charged at 14:56 Hrs.

2. **Time and Date of the Event (घटना का समय और दिनांक):** At 14:31 Hrs on 07-07-2025
3. **Event Category (ग्रिड घटना का प्रकार): Grid Disturbance (GD)-1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** 220/132kV Goraul S/S
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency in Hz	Regional Generation in MW	Regional Demand in MW	State Generation in MW	State Demand in MW
				Bihar	Bihar
Pre-Event (घटना पूर्व)	49.99	460	6730	25829	26186
Post Event (घटना के बाद)	49.99	460	6550	25829	26006

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

Important Transmission Line/Unit if under outage (महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है)	• 220 kV Muzaffarpur (PG) - Goraul ckt #2 tripped since 13:24 hrs of 07.07.2025.
Weather Condition (मौसम स्थिति)	Normal

6. **Load and Generation loss (लोड और जेनरेशन हानि): Total load loss reported was approx. 180 MW** at Goraul (20 MW), Vaishali (42 MW), Sheetalpur (43 MW), Railway (15 MW), Jandaha (50 MW) and Mahnar (10 MW).

7. **Duration of interruption (रुकावट की अवधि):** 25 Minutes.

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

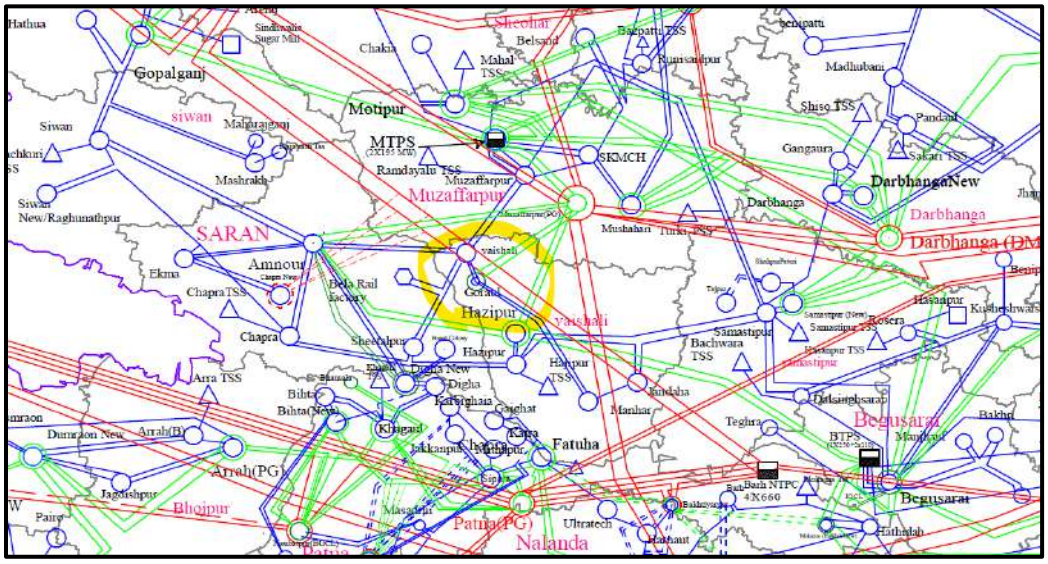


Figure 1: Network across the affected area

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

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

क्रoसo	नाम	Trip time (hh:mm:ss)	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत	Restoration time (Hrs)
1	220 kV Muzaffarpur (PG)-Goraul ckt 1	14:31:51	DT received at Muzaffarpur end.	Directional earth fault operated at Goraul end	23:18
2	220 kV Muzaffarpur (PG)-Goraul ckt 2	13:24:13	Zone -1 B-Phase fault	Goraul: Zone -1 B-Phase fault with fault current -2.41 KA Fault Distance: 15.5 Km, Line tripped on Pole Discrepancy Relay operation.	14:56

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

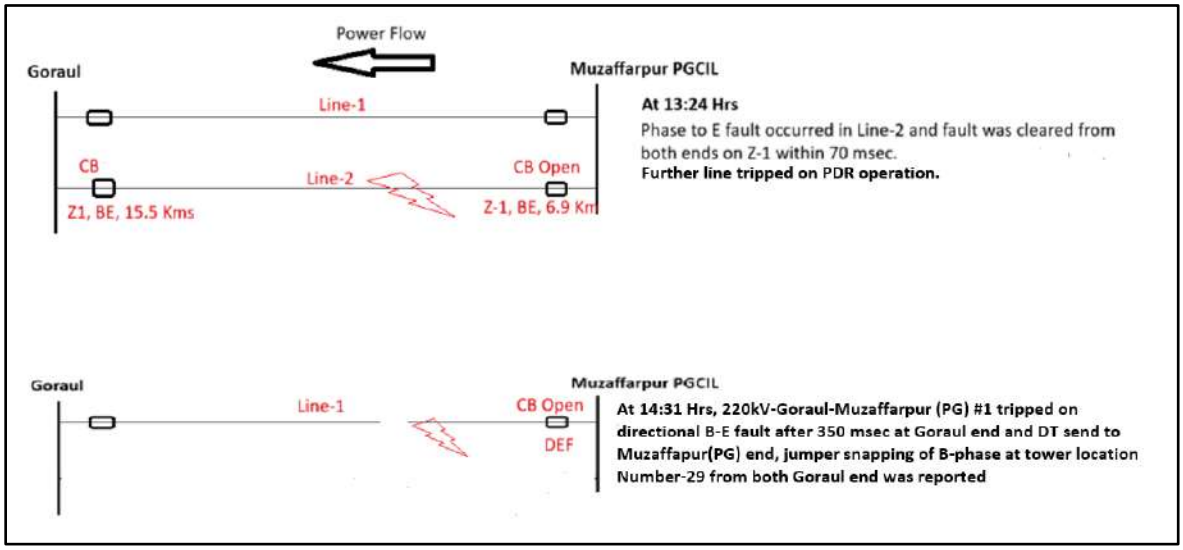


Fig 2: SLD of 220 kV Goraul S/S

- 220kV Goraul S/S is connected to Muzaffarpur (PG) S/s through 220kV-Goraul-Muzaffarpur (PG) D/C Line.
- Prior to the disturbance, 220kV-Goraul-Muzaffarpur (PG) #2 line tripped at 13:24:13 Hrs on B-E fault and A/r attempt was initiated after 1 sec at Goraul end. However, B-phase CB failed to reclose, leading to a pole discrepancy and A/r not attempted from Muzaffarpur end. Consequently, the line tripped on PDR operation after 2.5 sec from both ends.

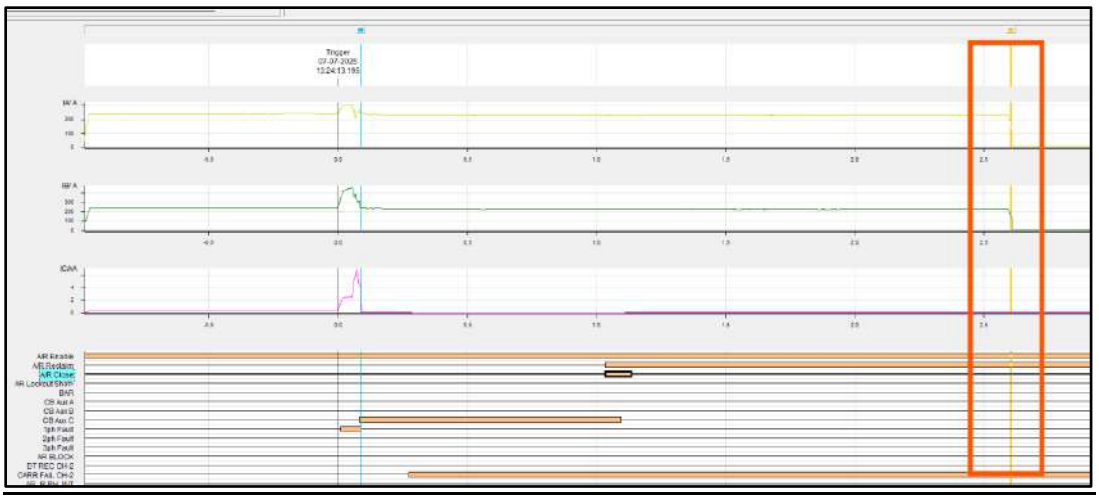


Figure 3: DR of 220kV Goraul-Muzaffarpur (PG) #1 at Goraul end

- After tripping of 220kV-Muzaffarpur (PG)-Goraul #1 line, Goraul was radially feeding from Muzaffarpur.
- At 14:31:51 Hrs, 220kV-Goraul-Muzaffarpur (PG) #1 line tripped on directional B-E fault after 350 msec at Goraul end and DT send to Muzaffapur(PG) end, jumper snapping of B-phase at tower location Number 29 from both Goraul end was reported.
- As Goraul was radially feeding from Muzaffarpur end, due to tripping of said circuit, 220kV Goraul S/s became dead.

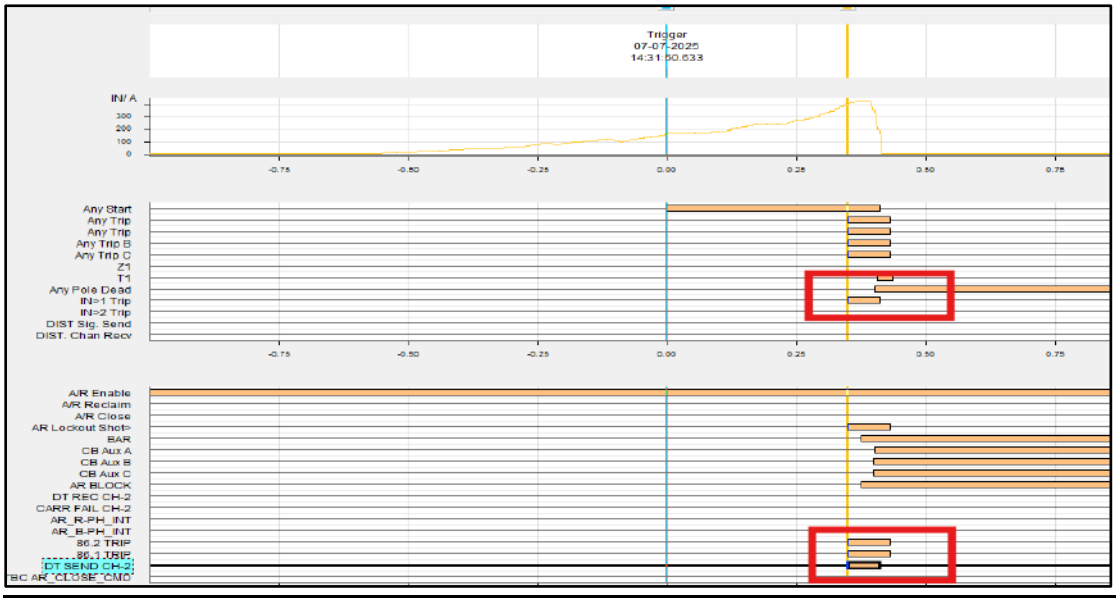


Figure 4: DR of 200kV Muzaffarpur (PG)-Goraul #1 at Goraul end

- Total load loss of 180 MW occurred at Goraul (20 MW), Vaishali (42 MW), Sheetalpur(43 MW), Railway (15 MW), Jandaha(50 MW) and Mahnar(10 MW)).

- Power supply was extended through 132kV system via Hazipur, Jandaha and Manhar link. Further, 220kV Muzaffarpur-Goraul Ckt#2 line charged at 14:56 Hrs.

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

- Non reclosing of CB at Goraul for Line-2 even after reclosing command from the protection relay. The same may be updated.
- A/r not attempted at Muzaffarpur end for phase to ground fault in 220kV Muzaffarpur (PG)-Goraul #2. A/r scheme may be reviewed.
- 220kV Muzaffarpur Goraul #1 line tripped on B/U earth fault within 350 msec from Goraul end. B/U earth fault setting may be reviewed.
- Time duration of DR at Muzaffarpur (PG) end needs to be increased as per standard (Minimum 3 seconds total duration (500 msec pre-fault, 2500 msec post-fault).

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

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

S.No.	Issues	Regulation Non-Compliance	Remark
1	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	Not Submitted
2	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	Submitted
3	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	Submitted
4	**Protection system not operated correctly**	CEA Technical Standard for Construction of Electrical Plants and Electric Lines: 48 (1) a. CEA (Technical standards for connectivity to the Grid) Regulation, 2007: Schedule Part 1. (6.1, 6.2, 6.3)	A/r not operated properly which was not as per CEA and ERPC protection philosophy.

15. Key Lessons Learnt (प्रमुख अधिगम बिंदु):

Periodic verification of the Auto Reclose (AR) circuit should be carried out to ensure its proper functionality and healthiness. Additionally, thermos-vision scanning of the transmission line should be conducted in line with CEA standards to detect potential issues such as loose or overheated joints.

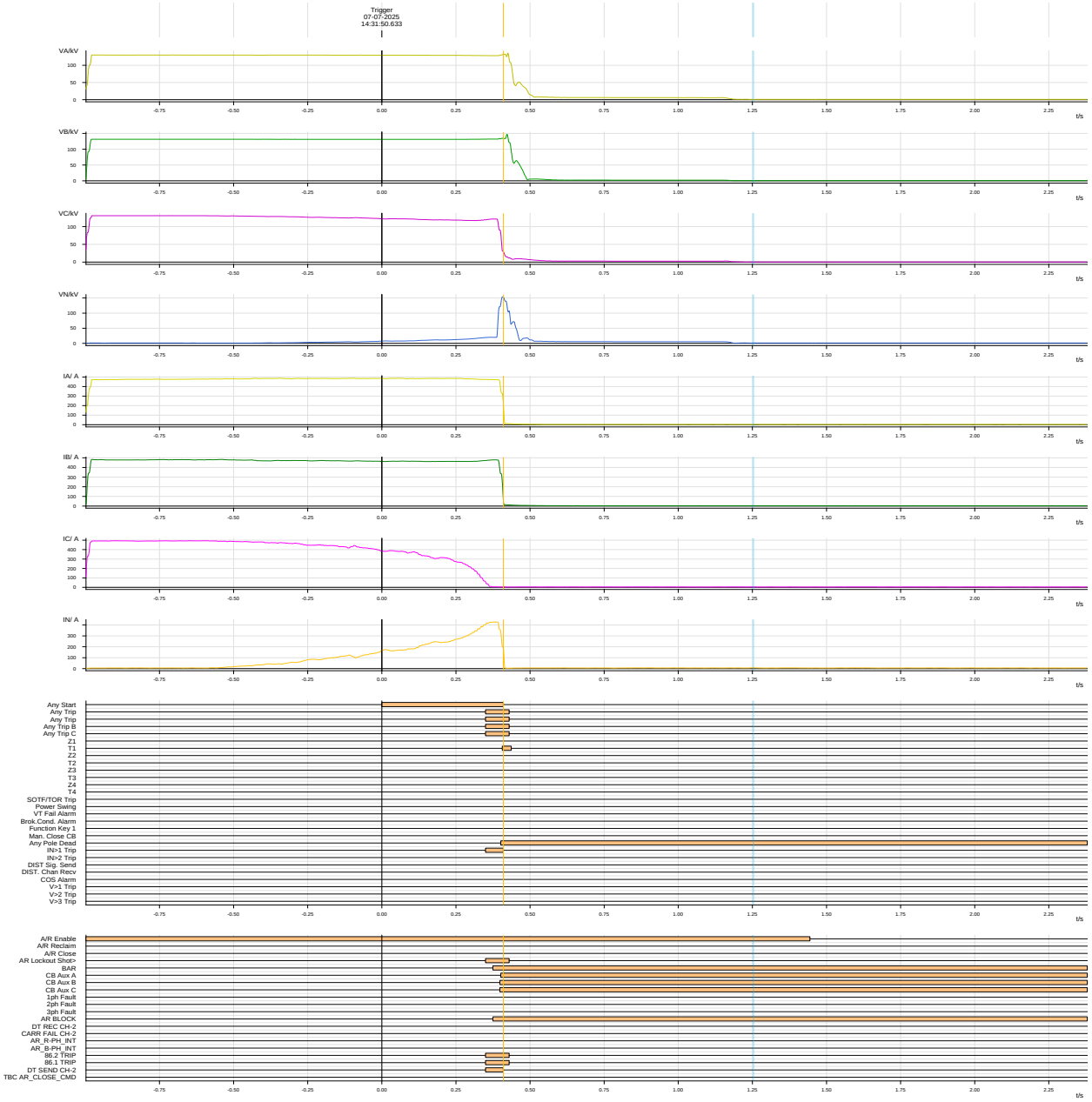
Annexure 1: (Sequence of Events-As per ERLDC SCADA):

TIME	MILLI_SEC	STATION	DESCRIPTION	STATUS
07-07-2025 13:24	222	MUZAF_PG	220_GARAU_BH_2_CB	Open
07-07-2025 14:32	499	MUZAF_PG	220_GARAU_BH_1_CB	Open

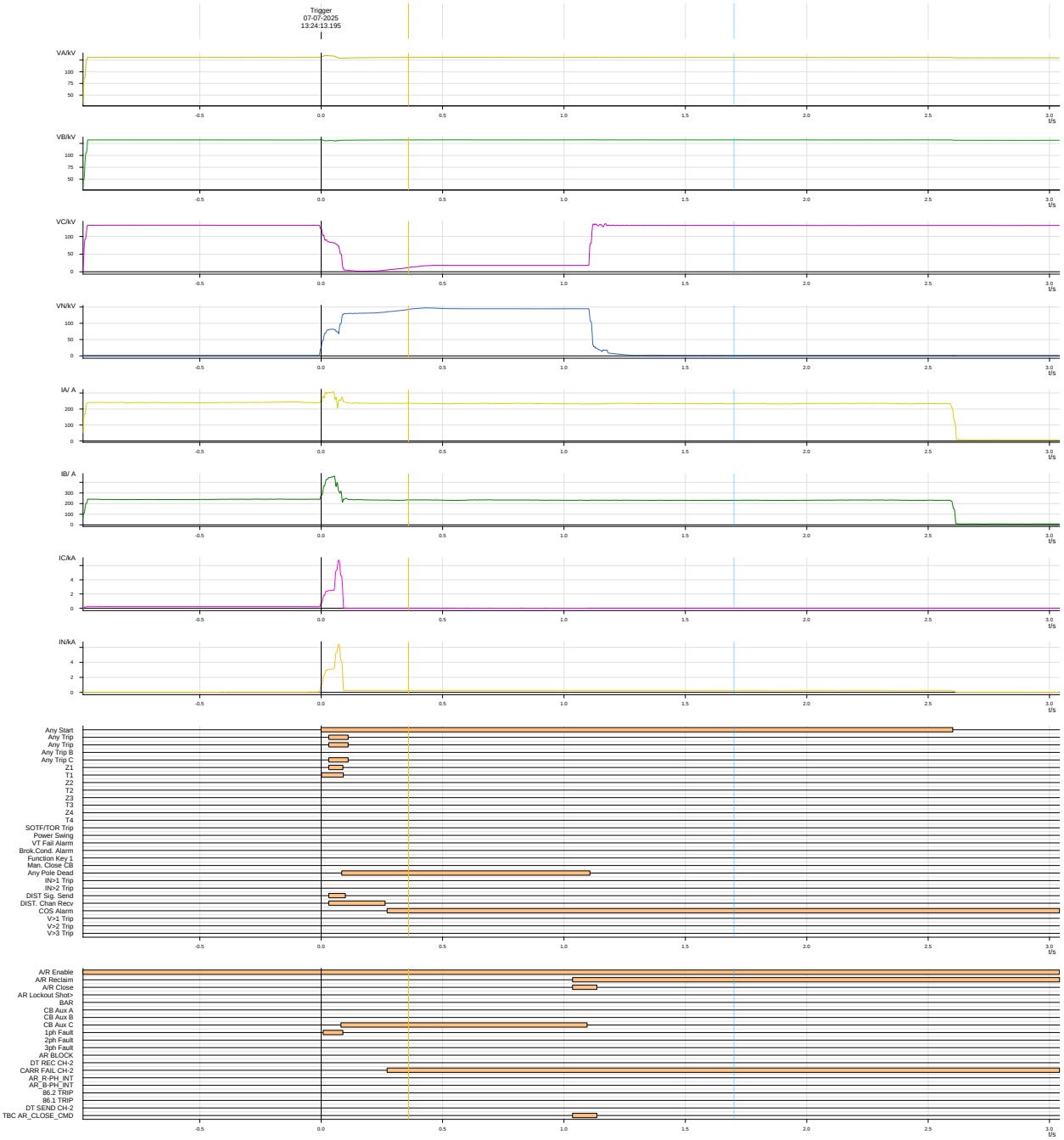
SOE status from Goraul Substation not reported during event. The same need to be check and telemetered as per Communication System for inter-State transmission of electricity Regulations-2017.

Annexure 2:

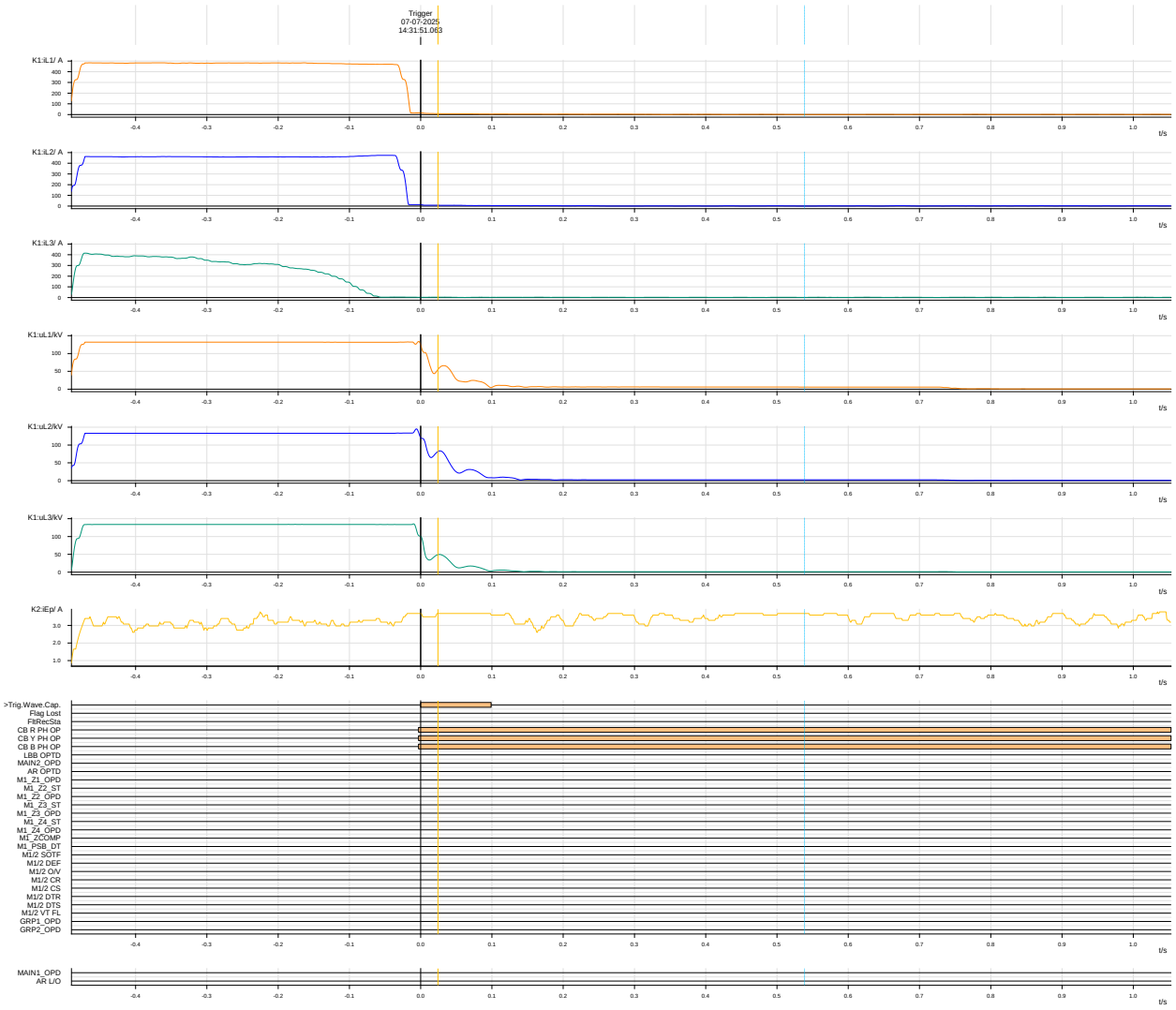
<u>DR of 220 Goraul-Muzaffarpur # 1 at Goraul:</u>



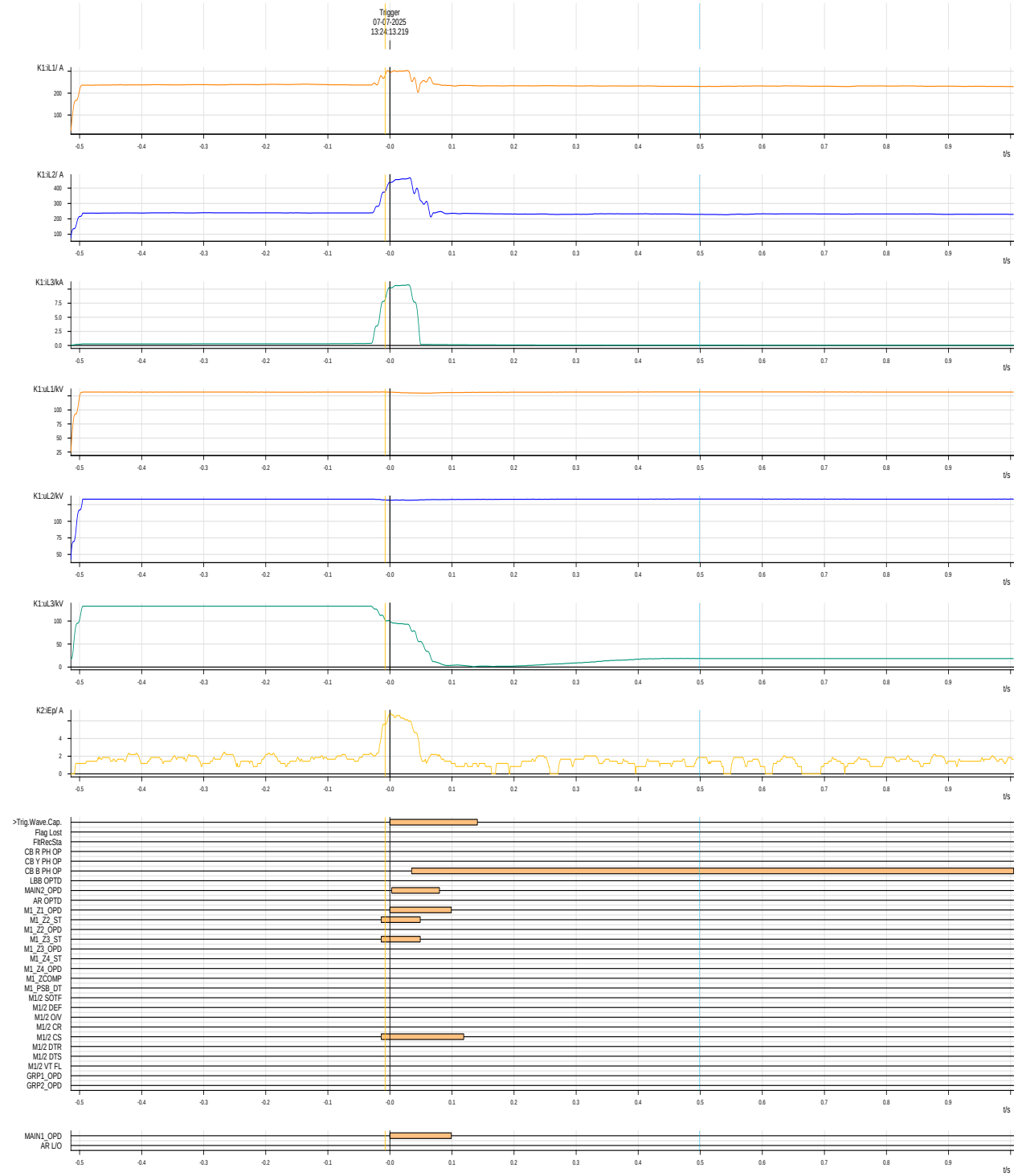
DR of 220 Goraul-Muzaffarpur # 2 at Goraul:

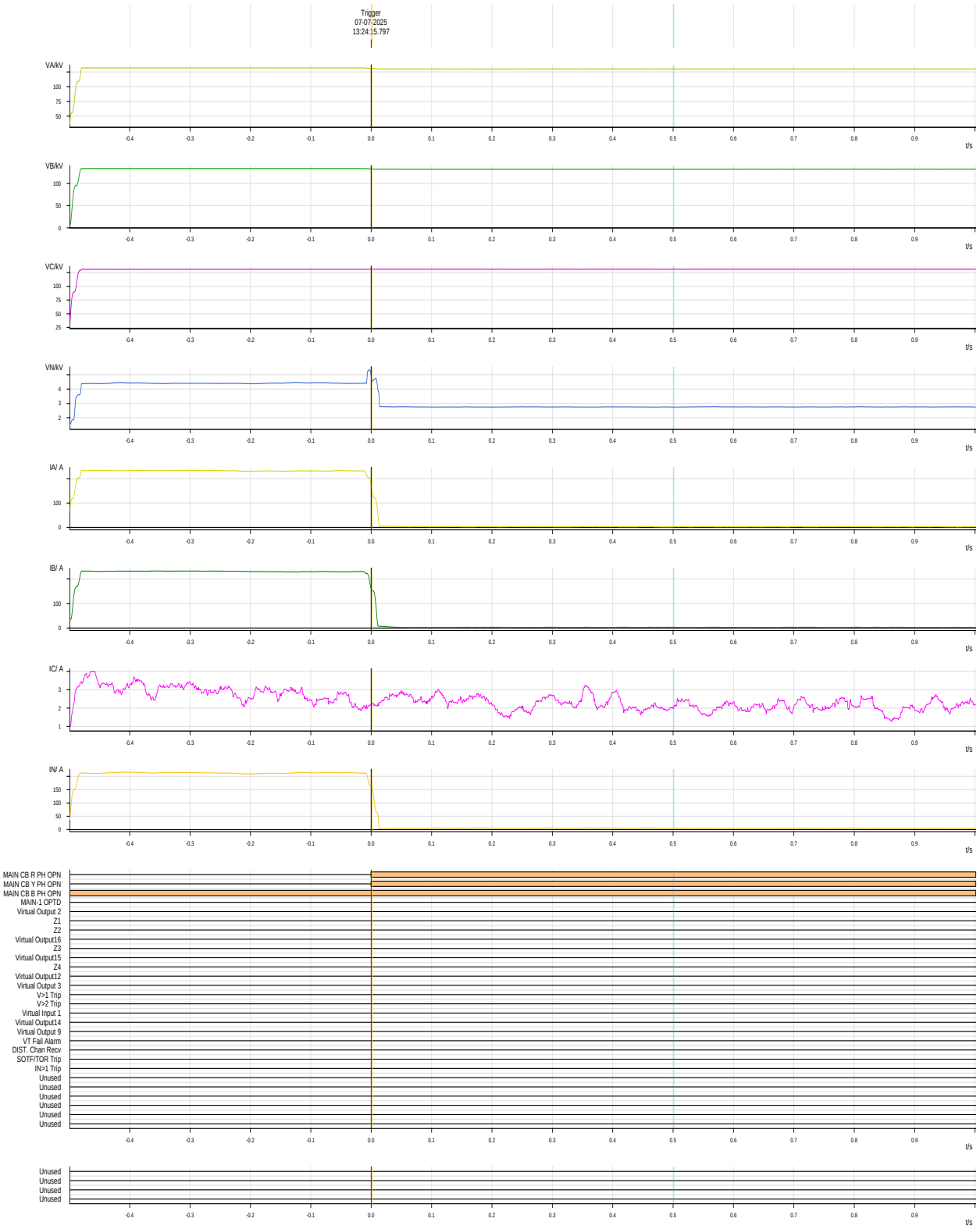


DR of 220 Goraul-Muzaffarpur # 1 at Muzaffarpur(PG):



DR of 220 Goraul-Muzaffarpur # 2 at Muzaffarpur(PG):




Trigger
07-07-2025
13:24:15.797
VA/kV
VB/kV
VC/kV
VN/kV
IA/ A
IB/ A
IC/ A
IN/ A
t/s
MAIN CB R PH OPN
MAIN CB Y PH OPN
MAIN CB B PH OPN
MAIN-1 OPTD
Virtual Output 2
Z1
Z2
Virtual Output16
Z3
Virtual Output15
Z4
Virtual Output12
Virtual Output 3
V>1 Trip
V>2 Trip
Virtual Input 1
Virtual Output14
Virtual Output 9
VT Fail Alarm
DIST. Chan Recv
SOTF/TOR Trip
IN>1 Trip
Unused
Unused
Unused
Unused
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Report regarding outage of power of 220/132/33 kV GSS Goraul at 14:31 Hrs on dated-07.07.2025 due to outage of 220 KV Muzaffarpur (PG)- Goraul T/L

List of Lines & tripping details during

Following transmission line are connected to 220 kV 220/132/33 KV GSS, Goraul:-

(a) 220 KV Muzaffarpur (PG) -Goraul Ckt-01 & Ckt-02

(b) 220 KV Goraul- Tajpur Ckt-01 & ckt-02

Line tripped during the event: -

S.N.	Name of T/L	Tripping time	Reason/Relay	Restoration time
1	220 KV Muzaffarpur (PG) - Goraul Ckt no.-02	13:24 Hrs	Zone-1, B-Pghase fault at a distance of 14.85 km having fault current-2.37 KA	**14:56 hrs**
2	220 KV Muzaffarpur (PG) to Goraul Ckt no.-01	14:31 Hrs	Due to jumper snapping of "B" phase at Tower no.-29 of 220 KV Muzaffarpur (PG) - Goraul Ckt no.-01 T/L causing total power failure as 220 KV Muzaffarpur(PG) - Goraul Ckt no.-02 was also under tripped condition.	**23:18 hrs**

Antecedent condition prior to event

220 KV Muzaffarpur (PG) - Goraul Ckt no.-02 was under tripped condition and total power was flowing through 220 KV Muzaffarpur (PG) - Goraul Ckt no.-01 T/L.

List of Elements Under Outage Prior to the Event:

- 220 kV Muzaffarpur (PG) – Goraul Circuit No. 02

Load Loss:

- Approximate quantum of load loss: 180 MW

Duration of the Event:

- Approximately 1 hour

Load Management:

- All downlinking GSSs, namely **Vaishali, Sheetalpur, Mahnar, Jandaha, and RWP Bela**, were shifted to alternate sources to maintain supply.

Root Cause of Line Tripping:

- Jumper snapped at Tower No. 29 of the 220 kV Muzaffarpur (PG) – Goraul Circuit No. 01 transmission line**.**

Remedial Action Taken:

- The 220 kV Muzaffarpur (PG) – Goraul Circuit No. 01 was charged after carrying out jumpering at Location No. 29 of the transmission line.

Restoration Time: The 220 KV Muzaffarpur (PG) - Goraul Ckt no.-01 was successfully restored at 23:18 hrs.

Weather Conditions During the Event: Normal

Report regarding outage of power of 220/132/33 KV GSS, Goraul at 14:31 Hrs on dated-07.07.2025 due to outage of 220 KV Muzaffarpur(POWERGRID) to Goraul Transmission Line

- List of Lines & tripped during the event

220/132/33 KV GSS, Goraul having following connected 220 KV lines:-
(a) 220 KV Muzaffarpur (PG) to Goraul Ckt-01 & Ckt-02
(b) 220 KV Goraul to Tajpur Ckt-01 & ckt-02
(c) 132KV Goraul- Mahanar Ckt-01 & Ckt- 02
(d) 132KV Goraul- Vaishali Ckt-01 & Ckt-02
Line tripped during the event:-
1. 220 KV Muzaffarpur(PG) to Goraul Ckt no.-02 tripped at 13:24 Hrs with Zone-1, B-Phase fault at a distance of 14.85 km from Gss Goraul end having fault current-2.37 KA and restored at 14:56 Hrs.
2. 220 KV Muzaffarpur(PG) to Goraul Ckt no.-01 was tripped at 14:31 Hrs due to snapping of "B" phase jumper at Tower no.-29 causing total power failure as 220 KV Muzaffarpur(PG) to Goraul Ckt no.-02 was also under tripped condition from Muzzafarpur(PG) end.

- Antecedent condition prior to event

220 KV Muzaffarpur(PG) to Goraul Ckt no.-02 was under tripped condition and total power was flowing through 220 KV Muzaffarpur(PG) to Goraul Ckt no.-01

- List of element which was under outage prior to the event

220 KV Muzaffarpur(PG) to Goraul Ckt no.-02

- Amount of load loss in MW-180 MW
- Duration of the event- Approx 1 Hr
- Catering load from alternate souce-All the downlinking GSS ie. Vaishali, Sheetalpur, Mahnar, Jandaha & RWP Bela were shifted on alternate source
- Root cause of tripping of Line-Jumper snapped at Tower no.-29
- Remedial action taken- restoration of snapped B-ph jumpher completed and line became successfully charged.
- Restoration of element-220 KV Muzaffarpur(PG) to Goraul Ckt no.-01 was restored at 23:18 hrs
- Weather condition during event-Normal

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)]
पूर्वी क्षेत्रीय भार प्रेषण केन्द्र / Eastern Regional Load Despatch Centre
कार्यालय : 14, गोल्फ क्लब रोड, टालिगंज, कोलकाता - 700033
Office : 14, Golf Club Road, Tollygunge, Kolkata - 700033
CIN : U40105DL2009GOI188682, Website : www.erldc.in, E-mail : erldcinfo@grid-india.in, Tel.: 033 23890060/0061

पूर्वी क्षेत्र के 400 केवी जेएसपीएल में ग्रिड घटना पर विस्तृत रिपोर्ट / Detailed Report of grid event at 400 kV JSPL (CPP) S/s of 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):06-07-2025

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

400KV-MEERAMUNDALI-JSPL-1 tripped at 12:22 Hrs on phase to ground fault (Ckt-2 was under planned shutdown for maintenance job of bay & line equipment's at JSPL end). Both Bus at 400 kV JSPL became dead as it was radially connected to 400 kV Meramundali S/S. Captive power plant JSPL has 6 units of 135 MW capacity each. Unit-1 with emergency load of 90 MW was separately connected with 220 kV Bus-1 (220 kV bus-coupler remaining open). All other units connected to 220 kV Bus-2 were generating around 510 MW and were taking 110 MW from grid. As both evacuating lines tripped, 400kV JSPL became dead. 510 MW generation loss and 620 MW load loss occurred at JSPL.

2. **Time and Date of the Event (घटना का समय और दिनांक):** 12:22 Hrs of 21.07.2025
3. **Event Category (ग्रिड घटना का प्रकार): Grid Disturbance (GD)-1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** Odisha
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency	Regional Generation	Regional Demand	State Generation	State Demand
				Odisha	Odisha
Pre-Event (घटना पूर्व)	49.958 Hz	27264 MW	27383 MW	2535 MW	5895 MW
Post Event (घटना के बाद)	49.982 Hz	27264 MW	27273 MW	2535 MW	5785 MW

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

Important Transmission Line/Unit if under outage (महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है)	400 kV JSPL-Meeramundali-2 was under planned shutdown for maintenance job of bay & line equipment's at JSPL end
Weather Condition (मौसम स्थिति)	Normal.

6. **Load and Generation loss (**लोड और जेनरेशन हानि**):** Net load loss of 110 MW at JSPL (CPP).
7. **Duration of interruption (**रुकावट की अवधि**): 00:52 Hrs (52 minutes)**

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

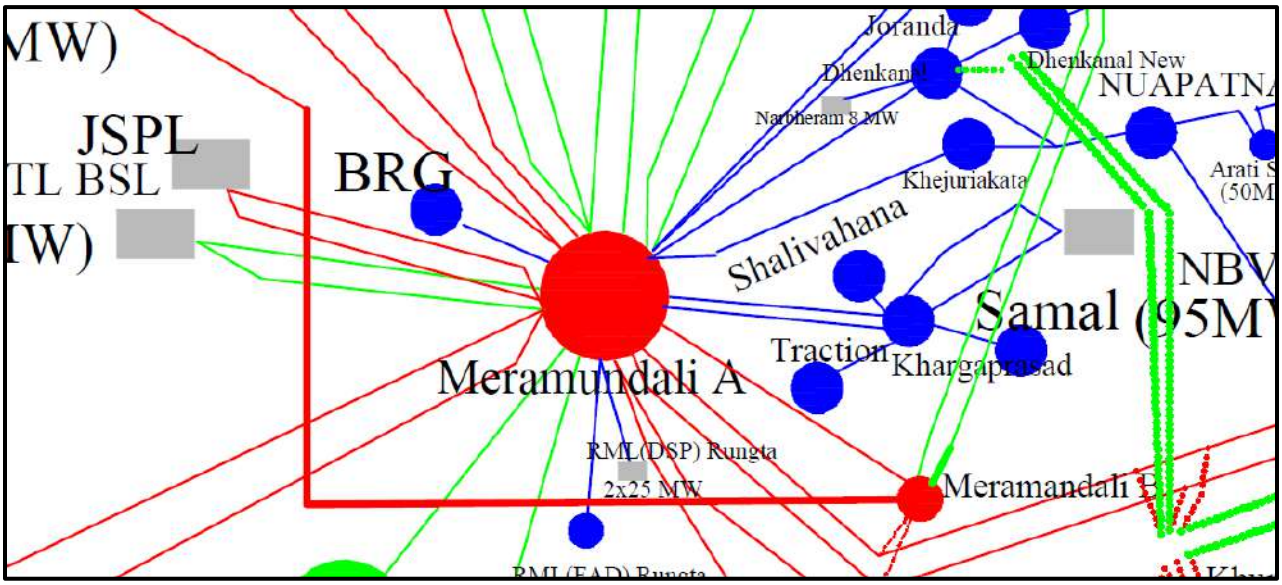


Figure 1: Network across the affected area

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

10. **Major Elements Tripped (प्रमुख ट्रिपिंग):**

क्रoसo	नाम	Trip time (hh:mm:ss)	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत	Restoration time (Hrs)
1	400 kV Meramundali-JSPL-1	12:21:51	Meeramundali End: B_N, Ib=11.65 KA, Z1, 13.5KM.	JSPL End: carrier added trip, FD-31.0KM, Ib=3.14 Ka	16:54

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

- Prior to the disturbance JSPL(CPP) drawing 110 MW radially through 400kV-Meeramundali-JSPL #1(400kV-Meeramundali-JSPL #2 was under planned shutdown for maintenance job of bay & line equipment's at JSPL end).
- Captive power plant JSPL has 6 units of 135 MW capacity each. Unit-1 with emergency load of 90 MW was separately connected with 220 kV Bus-1 (220 kV bus-coupler remaining open). All other units connected to 220 kV Bus-2 were generating around 510 MW and were taking 110 MW from grid.
- At 12:22:51 Hrs B phase to earth fault occurred in 400kV-Meeramundali-JSPL #1 and A/r failed after 1 sec from both ends.
- As JSPL radially connected through this line, due to tripping of this line 400kV JSPL became dead.
- Generation loss of 510 MW and load loss of 620 MW (Net 110 MW) reported at JSPL(CPP).

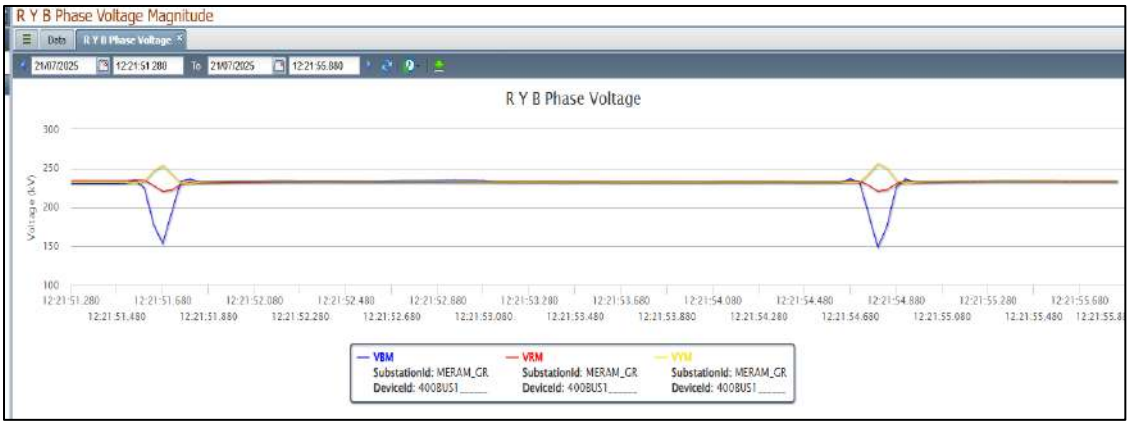


Figure 2: PMU of 400 kV Meramundali-JSPL-1 at Meramundali

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

- NIL

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

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

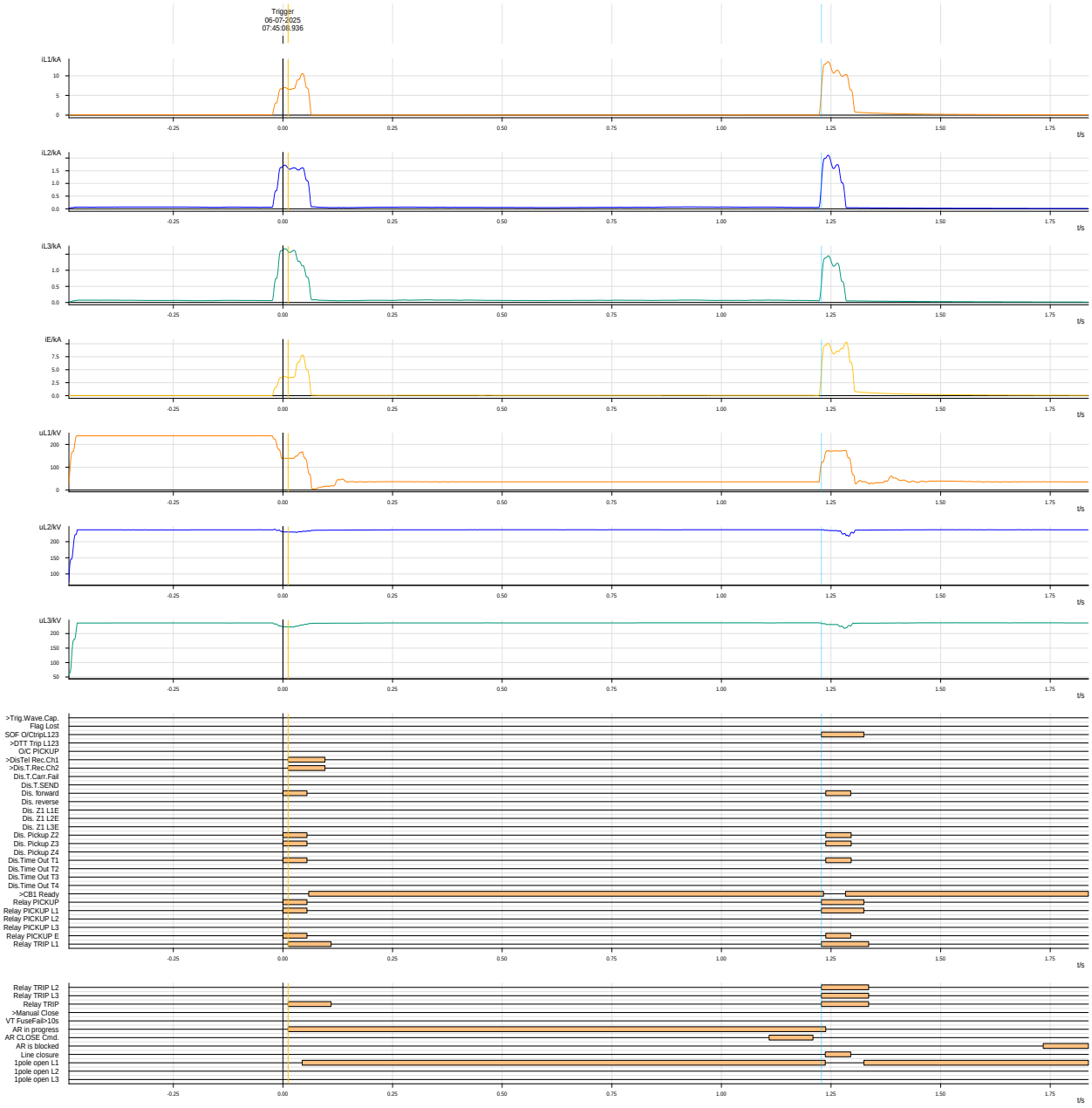
S.No.	Issues	Regulation Non-Compliance	Remark
1	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	Not Submitted

2	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	Submitted
3	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	Not Submitted
4	**Protection system not operated correctly**	CEA Technical Standard for Construction of Electrical Plants and Electric Lines: 48 (1) a. CEA (Technical standards for connectivity to the Grid) Regulation, 2007: Schedule Part 1. (6.1, 6.2, 6.3)	**Protection operated as per scheme.**

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

Annexure 2:

DR of 400 kV Meramundali-JSPL-1 (Meramundali):



ग्रिड-इंडिया GRID-INDIA ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
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CIN : U40105DL2009GOI188682, Website : www.erldc.in, E-mail : erldcinfo@grid-india.in, Tel.: 033 23890060/0061

पूर्वी क्षेत्र के 400 केवी पी.वी.यू.एन.एल. उप-केन्द्र में ग्रिड घटना पर विस्तृत रिपोर्ट / Detailed Report of grid event at 400 kV-PVUNL Station of 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):12-08-2025

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

Prior to the disturbance PVUNL was drawing start up power radially through 400kV Tenughat S/s through 400kV Tenughat-PVUNL line. At 03:27 Hrs on 28.07.2025, 400KV Tenughat-PVUNL line tripped on over voltage from PVUNL and DT send to Tenughat end. Due to tripping of this line, 400 kV PVUNL S/s became dead. Around 4 MW load loss (start-up power) occurred at PVUNL S/s.

2. **Time and Date of the Event (घटना का समय और दिनांक):** At 03:27 Hrs on 28/07/2025
3. **Event Category (ग्रिड घटना का प्रकार): Grid Disturbance (GD)-1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** Jharkhand / 400kV-PVUNL
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency	Regional Generation	Regional Demand	State Generation	State Demand
				Jharkhand	Jharkhand
Pre-Event (घटना पूर्व)	50.01	28830	26167	208	1410
Post Event (घटना के बाद)	50.01	28830	26163	208	1406

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

Important Transmission Line/Unit if under outage (महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है)	400/220 kV 250 MVA Tenughat ICT#1 under long outage condition.
Weather Condition (मौसम स्थिति)	Normal.

6. **Load and Generation loss (लोड और जेनरेशन हानि):**

- Generation loss: Nil; Load loss: 4 MW.

7. Duration of interruption (रुकावट की अवधि): 16:56 Hrs

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

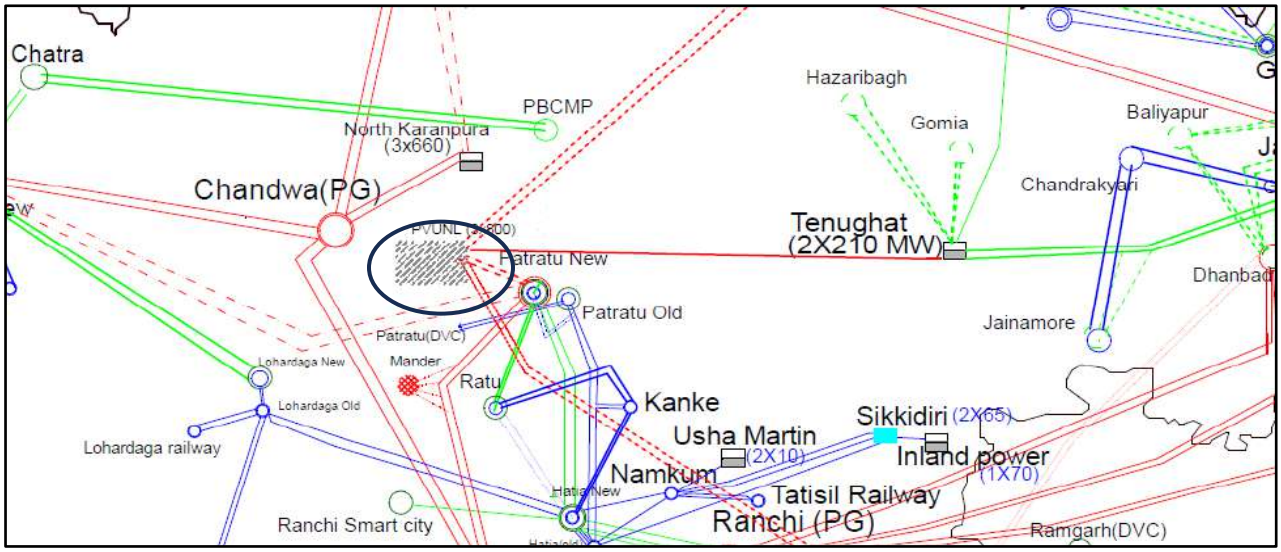


Figure 1: Network across the affected area

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

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

क्र०स०	नाम	Trip time (hh:mm: ss)	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत	Restoration time(Hrs)
1	400KV-TENUGHAT-PVUNL-1	03:27:35	DT received at Tenughat	Over Voltage Stg#1 operated.	20:23

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

- Prior to the disturbance PVUNL was drawing start up power radially through 400kV Tenughat S/s through 400kV Tenughat-PVUNL line
- At 03:27:35 Hrs 400kV Tenughat-PVUNL line tripped on over voltage protection from PVUNL end and DT send to Tenughat end.

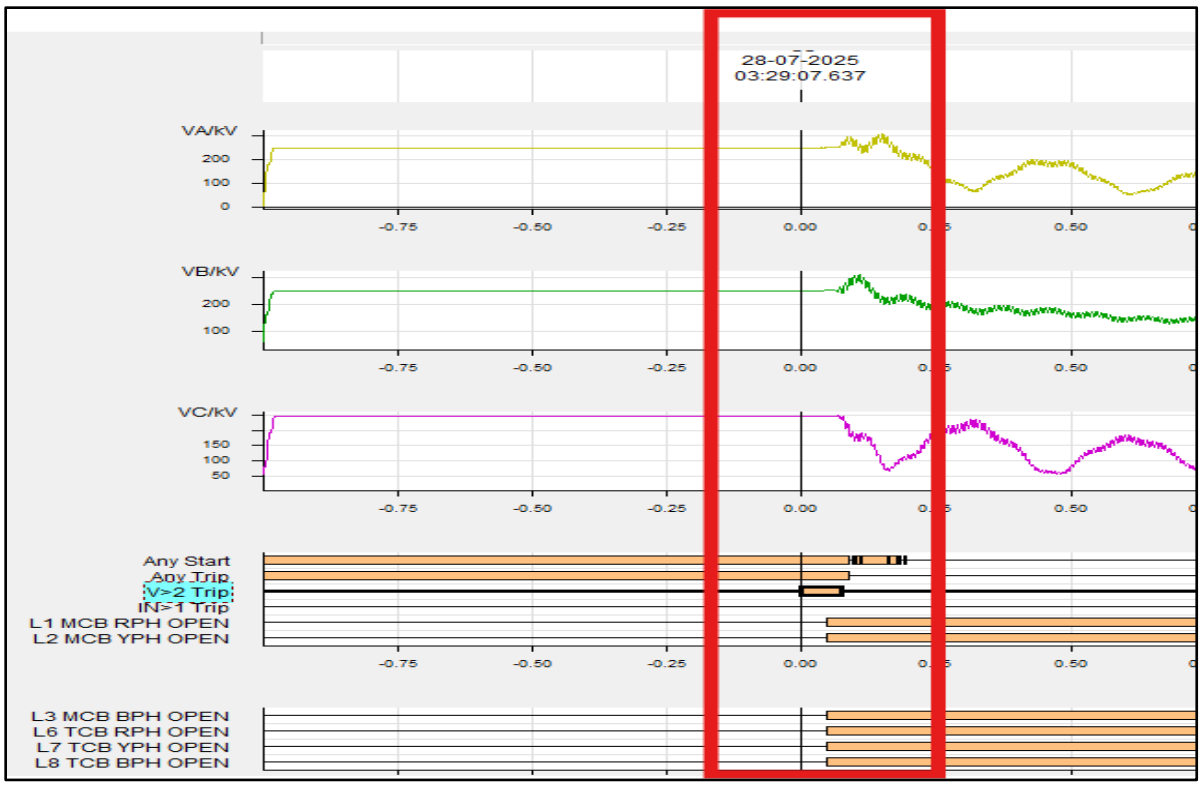


Figure 2: DR at PVUNL

- Due to tripping of radial connected line from PVUNl, PVUNL became dead and load loss of 4 MW(Start-up) reported at PVUNL.

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

- As per DR of Tenughat end, during over voltage operation, Vae = 249 kV, Vbe = 251 kV, Vce = 247 kV. Line voltage reached ~435 kV, which appears **unwanted for O/V operation**.
- Test the Overvoltage (O/V) function in both relays using a relay test kit to check for any faults and take corrective action immediately.
- Till the issue is resolved, it is suggested to temporarily revise the **V>2(Over voltage stage-1) setting to 111%** from **110%** with a **5-second delay** in both relays to avoid spurious tripping.
- For easier fault analysis of relay operation in future, it is suggested to clearly label the O/V stages in the DR digital channels—Stage-1 as V>1 and Stage-2 as V>2.

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

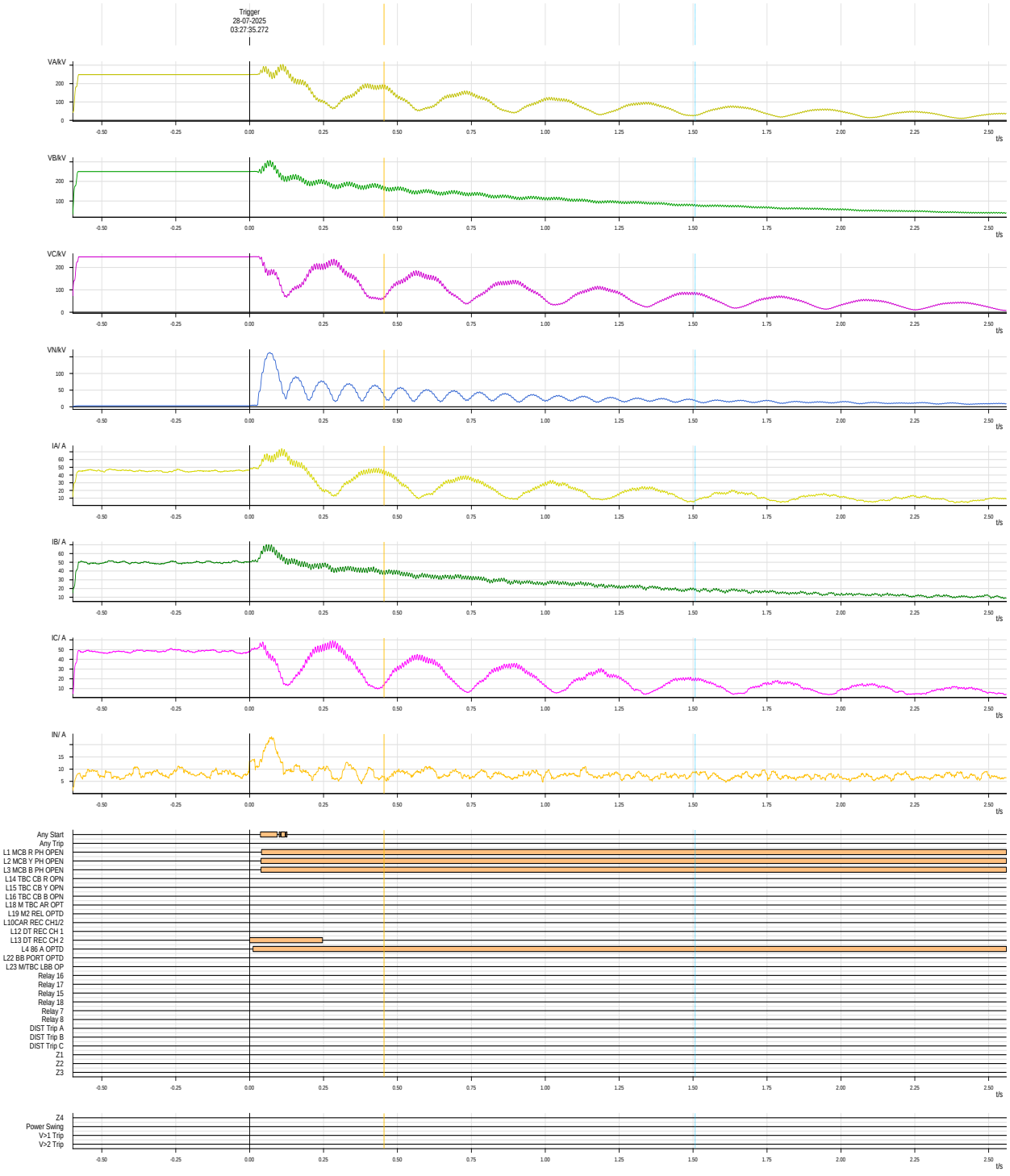
14. Non-compliance observed (विनियमन का गैर-अनुपालन):

S.No.	Issues	Regulation Non-Compliance	Remark
1	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	Not Submitted
2	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	Submitted
3	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	Not Submitted
4	**Protection system not operated correctly**	CEA Technical Standard for Construction of Electrical Plants and Electric Lines: 48 (1) a. CEA (Technical standards for connectivity to the Grid) Regulation, 2007: Schedule Part 1. (6.1, 6.2, 6.3)	Protection operated as per scheme.

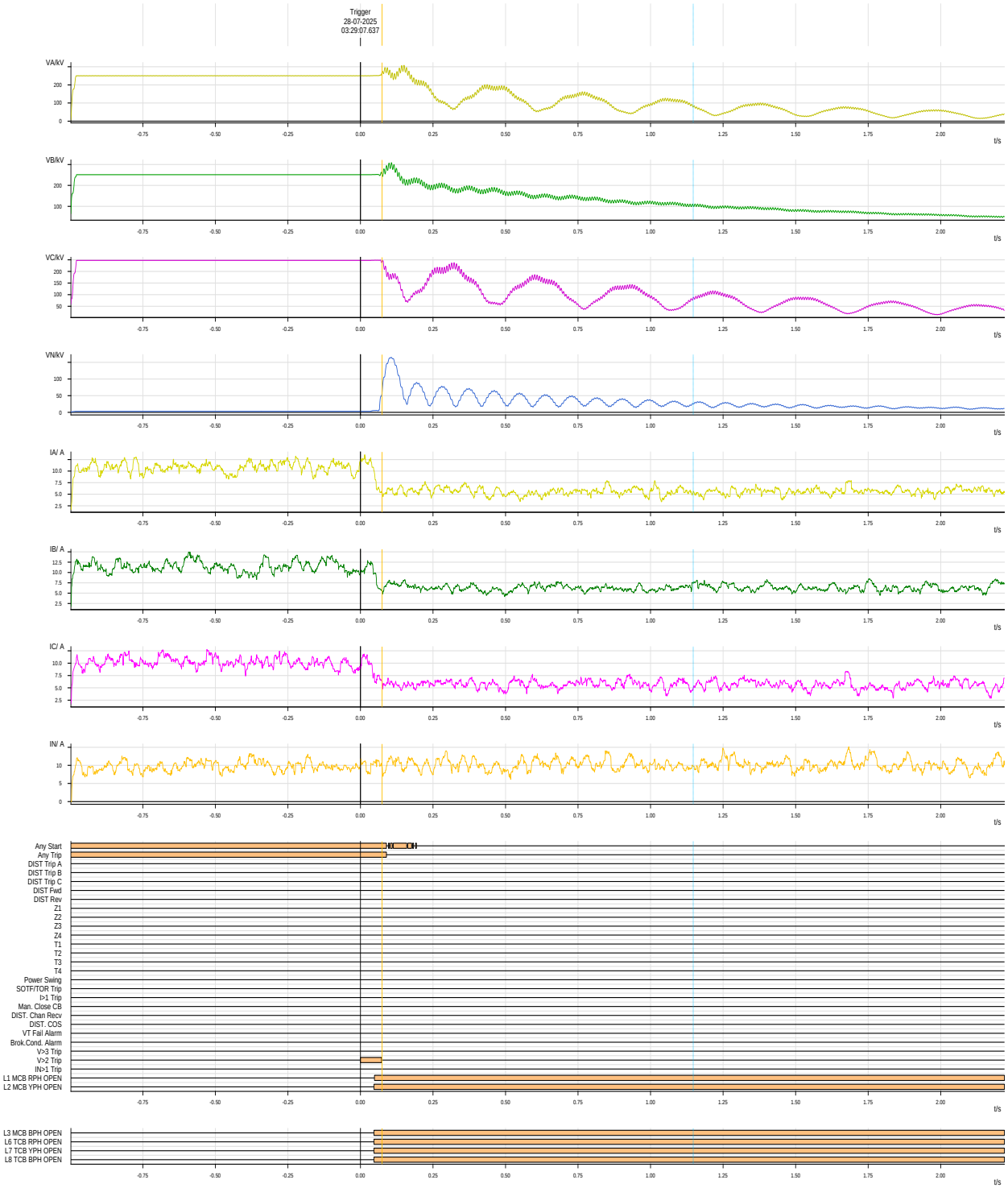
- **Key Lessons Learnt (प्रमुख अधिगम बिंदु)**: NIL

Annexure 2:

DR of 400kV PVINL-Tenughat at Tenughat:



DR of 400kV PVINL-Tenughat at PVUNL:



Minutes of Meeting Regarding On-load Operation of 400kV PVUNL-Tenughat

One online meeting was organized by ERLDC on 06.08.2025 to discuss regarding on-load operation of this 400kV PVUNL-Tenughat circuit. Executives from SLDC Jharkhand, JUSNL, TUVNL, PVUNL and ERLDC were present at this meeting. A schematic diagram of the whole system under discussion is shown in ***(Annexure-1).***

The details of the discussions are deliberated in the points below:

1. ERLDC presented a comparative analysis of power flow conditions under the peak demand scenario of Jharkhand. It was highlighted that the connection of the 400 kV Patratu–Tenughat link is significantly helping the Jharkhand system by relieving network constraints on the 220 kV Maithon–Dumka D/C. This link facilitates integrated system operation by allowing the Dumka–Govindpur D/C loop to be kept in service under various conditions of Tenughat unit availability, including scenarios of one unit outage or both units out. **(Study results attached in Annexure-3)**
2. Additionally, the link ensures reliable evacuation of power from the Tenughat plant and prevents the islanding of Govindpur load under situations where the Dumka–Govindpur loop is opened to manage loading on the Maithon–Dumka circuit.
3. A real-time case from 05.08.2025 was also presented, validating the study results. During that instance, both Tenughat units were out, and the 400 kV Patratu–Tenughat line provided 150 MW support to Tenughat through the 250 MVA ICT, effectively relieving loading on the Maithon–Dumka line. (***Annexure -2)***
4. It was observed that the 400 kV Patratu–Tenughat link helps to keep circuit loading within System Protection Scheme (SPS) thresholds, reducing the risk of overloading on the Maithon–Dumka double circuit line.
5. Jharkhand SLDC and JUSNL also acknowledged the importance of maintaining this link and emphasized its critical role in ensuring the reliability of the Jharkhand power system.
6. ERLDC further highlighted that under extreme operating scenarios—such as peak Jharkhand demand, full injection from PUVNL, and both Tenughat units being out—the loading on the 400/220 kV (250 MVA) ICT at Tenughat as well as the 400 kV Tenughat–Patratu line may exceed 200 MW. ***(Refer to study results in Annexure-3.)***

Tenughat -TVUNL raised concerns about the existing old ICT, submitted that the associated CT is over 40 years old which will be loaded up to 210 MW during certain operating conditions. Considering potential operational stress, Tenughat suggested adopting a temporary safe operating limit of 180 MW for the ICT. This threshold may be reviewed and revised in the future based on further operational experience.

Tenughat also submitted that 400 kV Patratu–Tenughat line, which, although constructed with twin HTLS conductor, has end terminations with single moose conductor, effectively limiting its secure transfer capability to 200 MW.

PUVNL also pointed out that, in the event of an outage of the 400 kV Patratu–PUVNL D/C under full injection, the entire output of one generating unit would be forced through the ICTs. This could potentially damage critical equipment and jeopardize the stability of the 220 kV Jharkhand system.

Minutes of Meeting Regarding On-load Operation of 400kV PVUNL-Tenughat

Action Points Agreed for System Reliability and Equipment Protection:

A. Tenughat ICT Protection:

- Enable backup overcurrent protection for the Tenughat ICT corresponding to 180 MW loading, with a 5-minute delay. This would allow the operator sufficient time to rearrange loads and limit the Maithon–Dumka circuit loading, thereby preventing an ICT trip.

B. Operational SOP – Load Trend Monitoring:

- Whenever ICT loading exceeds 160 MW with a rising trend, Tenughat shall promptly inform SLDC Jharkhand to initiate load rearrangement and create a cushion on Maithon–Dumka loading.
- This is critical to ensure that, in case the Tenughat ICT trips, the Maithon–Dumka line loading remains within thermal limits and does not trigger SPS operation.

C. Protection Settings for 400 kV Patratu–Tenughat Line:

- Enable non-directional overcurrent protection at both ends of the line, with settings corresponding to 200 MW flow.
- Coordinate this protection with Zone-3 timing such that any flow exceeding 200 MW will result in tripping the line with a maximum delay of 800 milliseconds.
- This ensures system security under full generation from PUVNL and dual circuit outage of the 400 kV PUVNL–Patratu line.

It was decided by JUSNL and SLDC Jharkhand that the 400 kV Patratu–Tenughat link shall be kept in continuous service to enhance the reliability of the Jharkhand power system. All necessary protection and operational settings, as proposed to facilitate the secure operation of this link, will be implemented and formally confirmed through written communication.

Furthermore, JUSNL and Tenughat assured that, to further strengthen system reliability, efforts will be expedited to commission an additional 250 MVA ICT at Tenughat.

PUVNL also committed for implementing the agreed protection settings by the end of same day 06-08-2025.

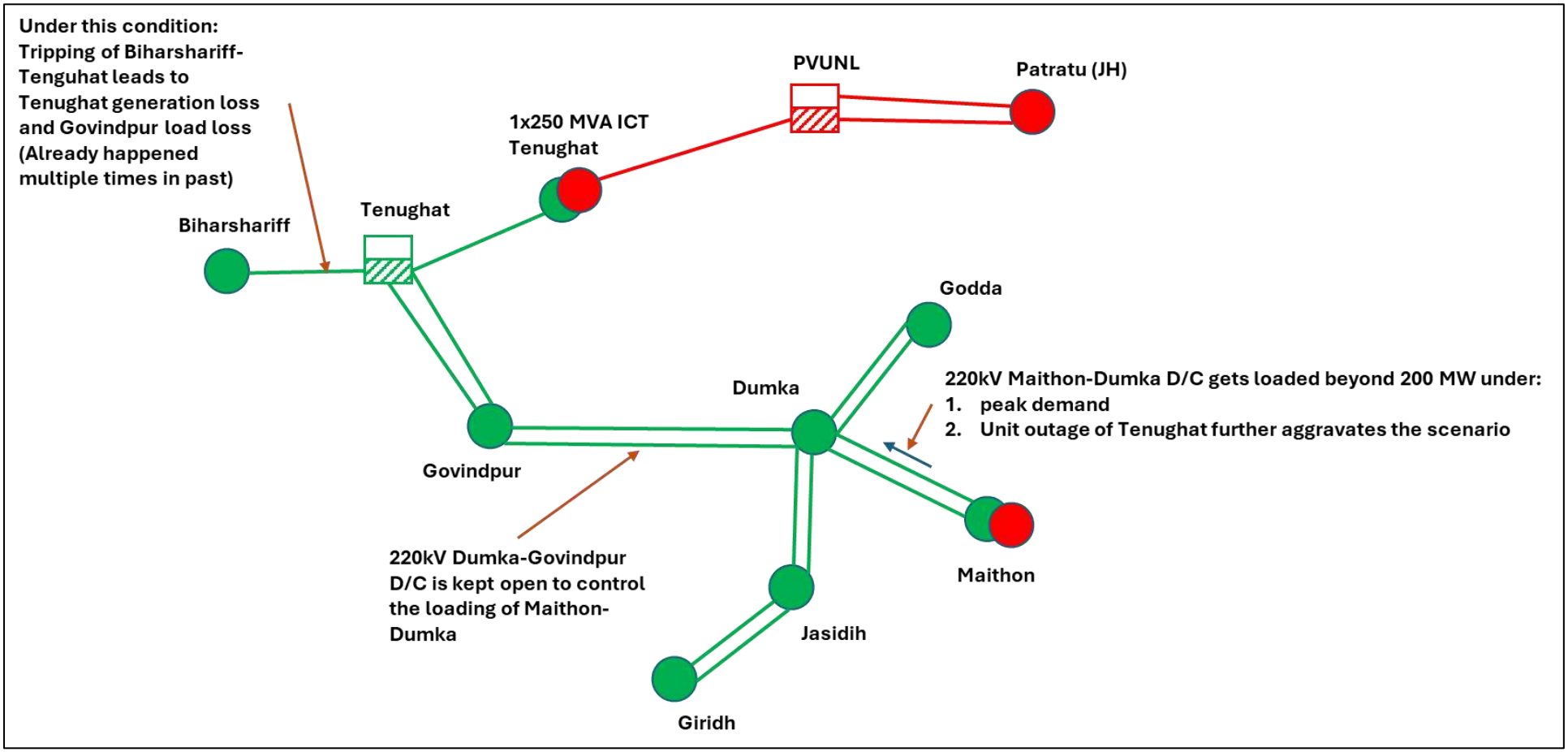
The meeting concluded with a vote of thanks to all participants.

Minutes of Meeting Regarding On-load Operation of 400kV PVUNL-Tenughat

List of Participants

1. Shri M.K.Karmali , ED -Operations -JUSNL
2. Shri Shailesh Kumar, ED- SLDC Jharkhand
3. Shri Shailesh Chowdhary, DGM-SLDC Jharkhand
4. Shri Praveen Ram, DGM -JUSNL
5. Shri Ashish Kumar Sharma ESE – TVUNL
6. Shri Suresh Kumar-AGM Maintenance- PUVNL
7. Shri Rohit – Sr Manager EEMG-PUVNL
8. Shri Niladri Biswas – DGM Operations -PUVNL
9. Shri D. Biswas – GM SO-ERLDC
10. Shri Manas Das – DGM SO-ERLDC
11. Shri Bilash Achari -DGM SO-ERLDC
12. Shri Alok Pratap Singh-CM SO -ERLDC
13. Shri Laldhari -Manager SO-ERLDC
14. Shri Srimalya Ghosal Asst Manager SO- ERLDC

Annexure-1


Under this condition:
Tripping of Biharshariff-Tenguhat leads to Tenughat generation loss and Govindpur load loss (Already happened multiple times in past)
PVUNL
Patratu (JH)
1x250 MVA ICT Tenughat
Tenughat
Biharshariff
Godda
Dumka
220kV Maithon-Dumka D/C gets loaded beyond 200 MW under:
1. peak demand
2. Unit outage of Tenughat further aggravates the scenario
Govindpur
220kV Dumka-Govindpur D/C is kept open to control the loading of Maithon-Dumka
Maithon
Jasidih
Giridh

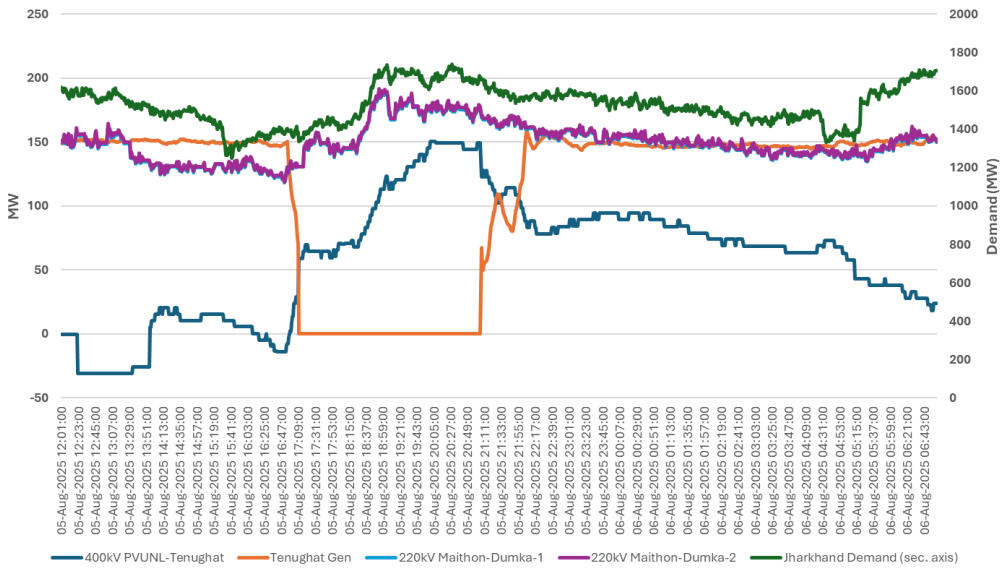
Annexure-2

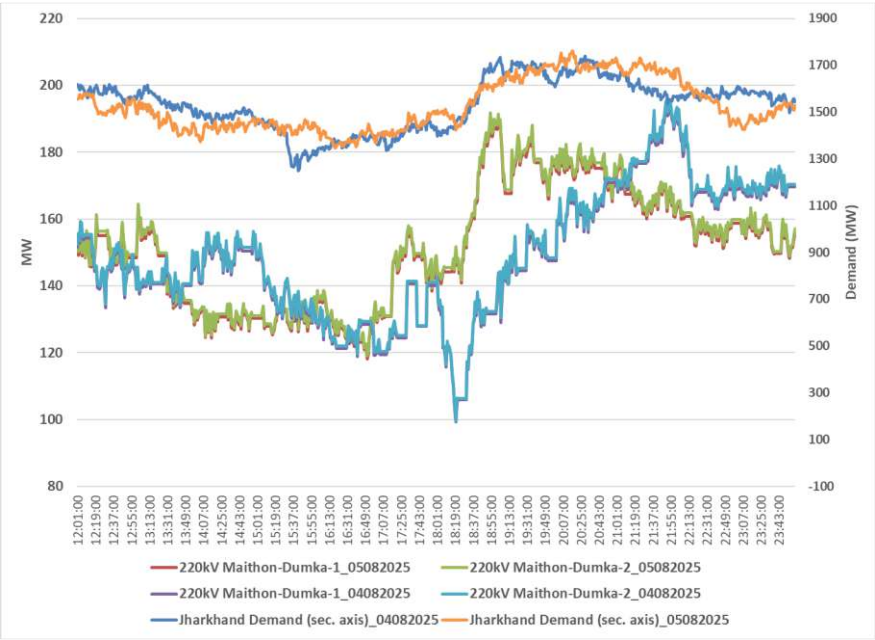
Relief in 220kV Maithon-Dumka Loading

Sensitivity of Tenughat generation on 220kV Maithon -Dumka each CKT:

39% without 400kV PVUNL -Tenughat link.

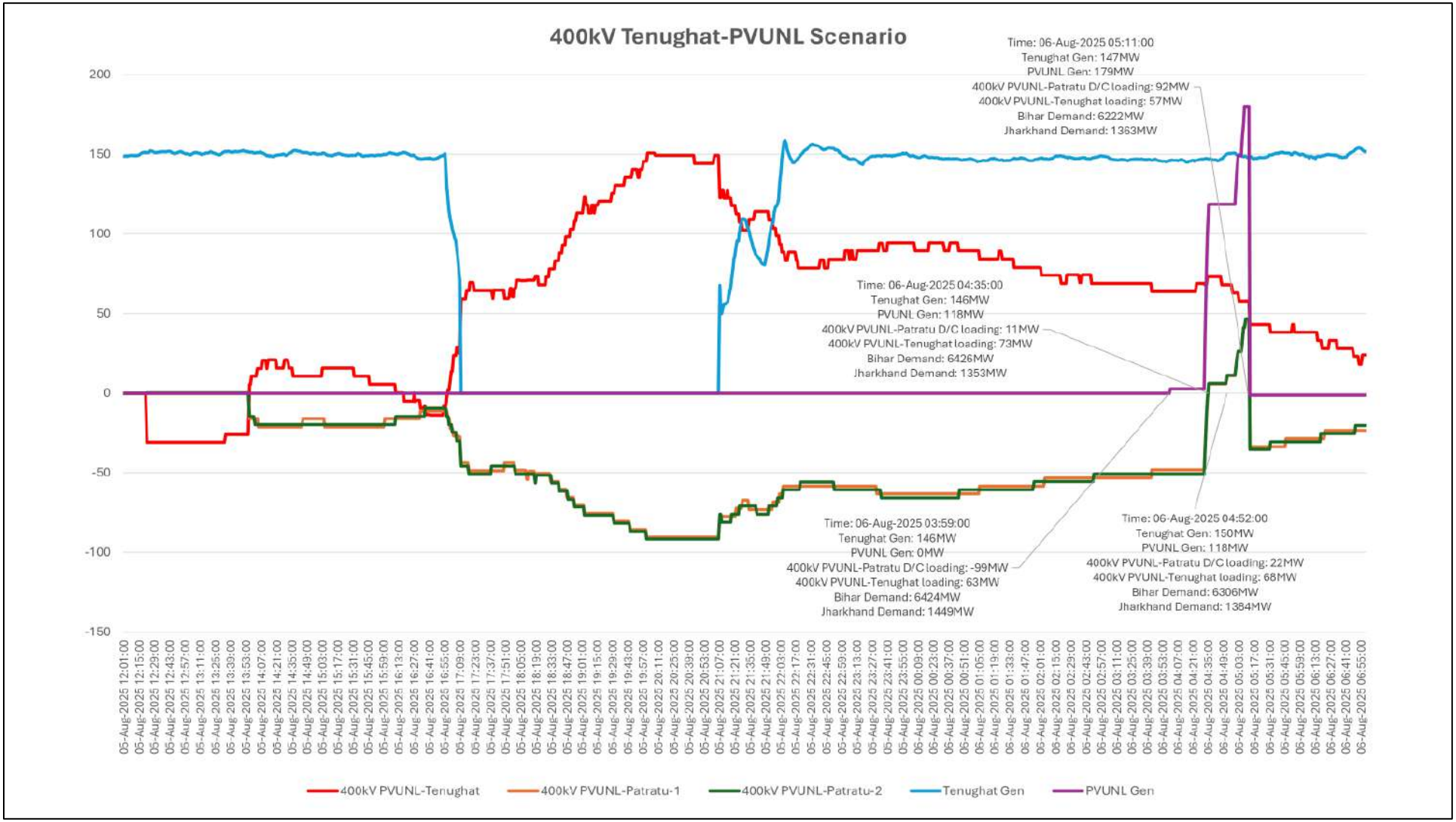
11.8% with 400kV PVUNL -Tenughat link.





On 05-08-2025, between 17:00 to 21:00 Hrs, one Tenughat unit was under outage.

Annexure-2

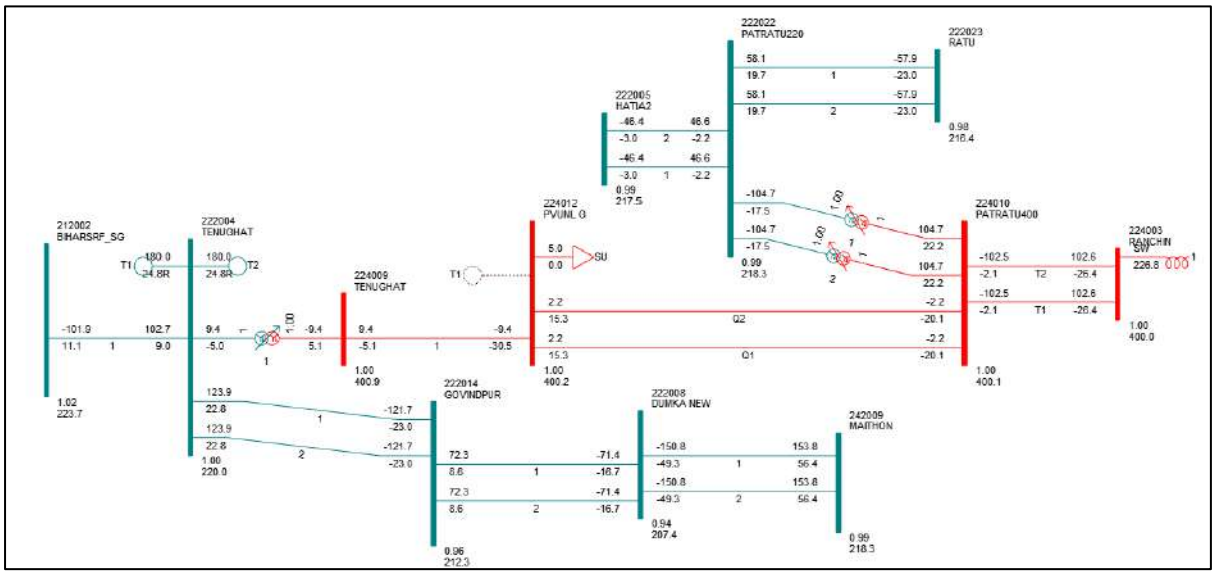

400kV Tenughat-PVUNL Scenario
Time: 06-Aug-2025 05:11:00
Tenughat Gen: 147MW
PVUNL Gen: 179MW
400kV PVUNL-Patratu D/C loading: 92MW
400kV PVUNL-Tenughat loading: 57MW
Bihar Demand: 6222MW
Jharkhand Demand: 1363MW
Time: 06-Aug-2025 04:35:00
Tenughat Gen: 146MW
PVUNL Gen: 118MW
400kV PVUNL-Patratu D/C loading: 11MW
400kV PVUNL-Tenughat loading: 73MW
Bihar Demand: 6426MW
Jharkhand Demand: 1353MW
Time: 06-Aug-2025 03:59:00
Tenughat Gen: 146MW
PVUNL Gen: 0MW
400kV PVUNL-Patratu D/C loading: -99MW
400kV PVUNL-Tenughat loading: 63MW
Bihar Demand: 6424MW
Jharkhand Demand: 1449MW
Time: 06-Aug-2025 04:52:00
Tenughat Gen: 150MW
PVUNL Gen: 118MW
400kV PVUNL-Patratu D/C loading: 22MW
400kV PVUNL-Tenughat loading: 68MW
Bihar Demand: 6306MW
Jharkhand Demand: 1384MW
200
150
100
50
0
-50
-100
-150
400kV PVUNL-Tenughat
400kV PVUNL-Patratu-1
400kV PVUNL-Patratu-2
Tenughat Gen
PVUNL Gen

Annexure-3

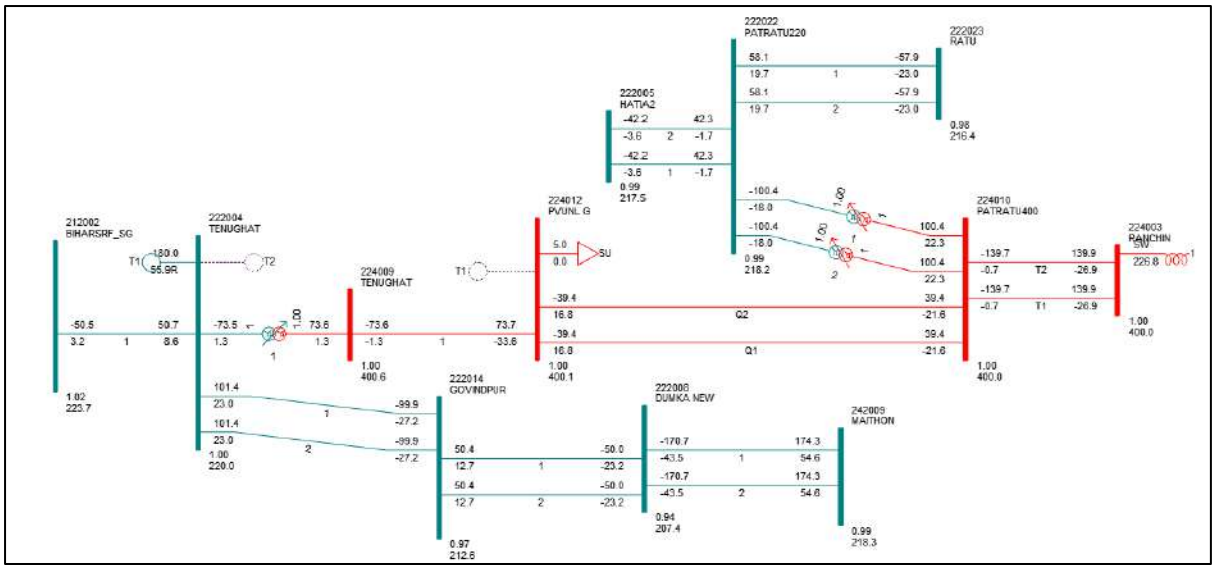
Interconnection Study of PVUNL

Before commissioning of PVUNL unit

A start-up drawl of 5 MW was considered at PVUNL.



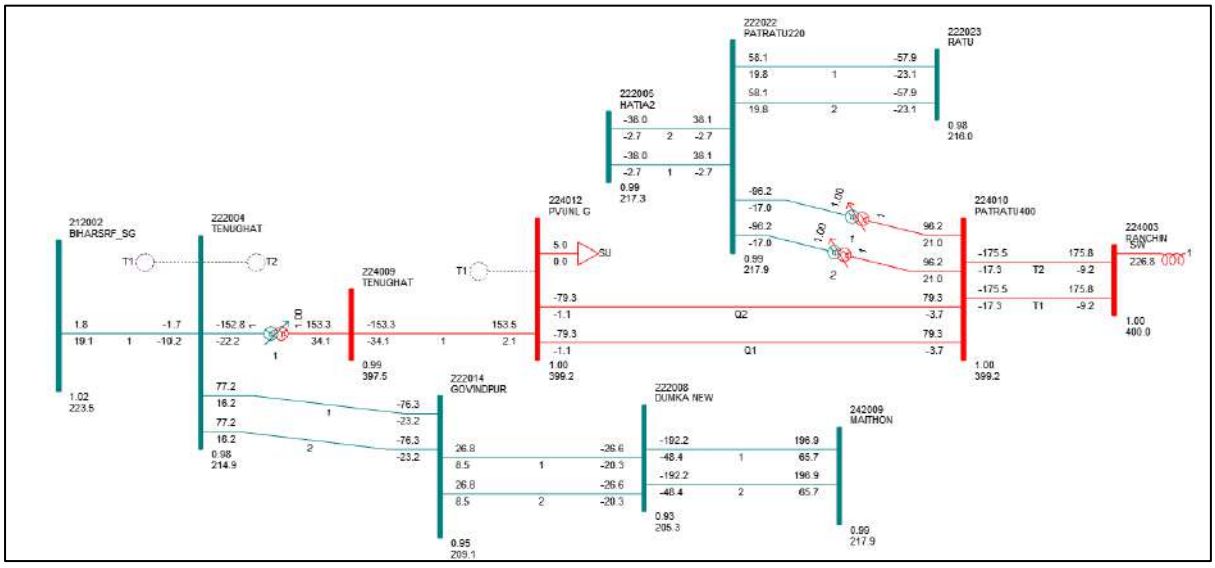
With both units of Tenughat in service, 9 MW is going from Tenughat to PVUNL via 250 MVA ICT at Tenguhat.



With one unit of Tenughat in service, 74 MW is coming from PVUNL to Tenughat via 250 MVA ICT at Tenguhat.

Annexure-3

Interconnection Study of PVUNL



With no units of Tenughat in service, 154 MW is coming from PVUNL to Tenughat via 250 MVA ICT at Tenguhat.

Post commissioning of PVUNL unit

PVUNL 400kV S/S consists of three 400kV transmission lines for evacuation of power of 800 MW unit. This report comprises of the effect of commissioning of the generator on the Grid.

Basecase conditions

Sl. No.	Name	Value
1	Jharkhand Demand	2054 MW
2	ER Demand	26124 MW
3	WR to ER injection	4427 MW
4	PVUNL Generation	750 MW
5	Tenughat Generation	2x180 MW

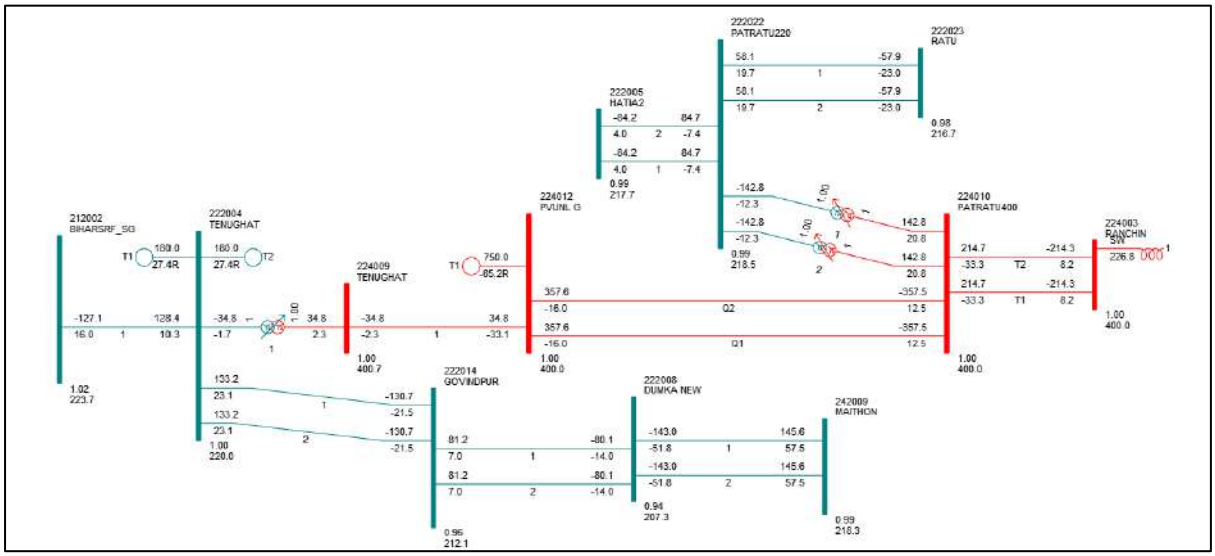
Under above conditions the distribution of PVUNL Generation is as follows:

Direction	Fraction of Generation
Towards 400kV Patratu (JH) S/S	0.9536
Towards 400kV Tenughat S/S	0.0464

With full generation of PVUNL and both units of Tenughat in service, 35 MW is coming from PVUNL to Tenughat via 250 MVA ICT at Tenguhat.

Annexure-3

Interconnection Study of PVUNL

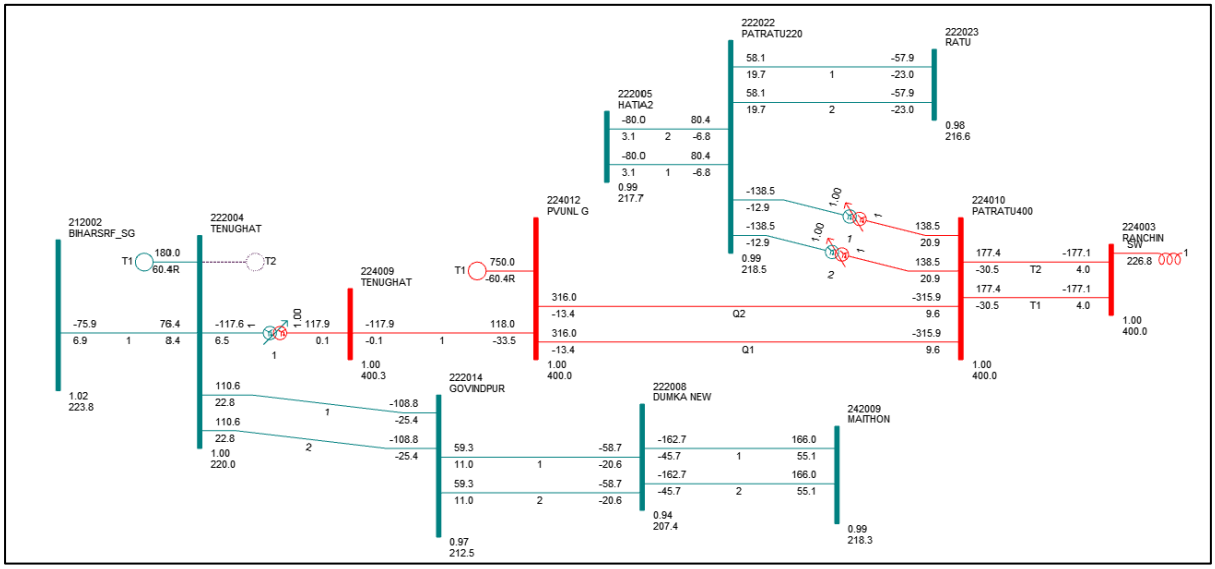


Sensitivities under these conditions:

The sensitivities on 400/220kV Tenughat single ICT are as follows –

Sl. No.	Name	Sensitivity
1	Jharkhand Demand	4%
2	WR to ER injection	1.2%
3	PVUNL Generation	5.8%
4	Tenughat Generation	- 46.2%

One Tenughat unit under outage



With full generation of PVUNL and only one unit of Tenughat in service, 118 MW is coming from PVUNL to Tenughat via 250 MVA ICT at Tenguhat.

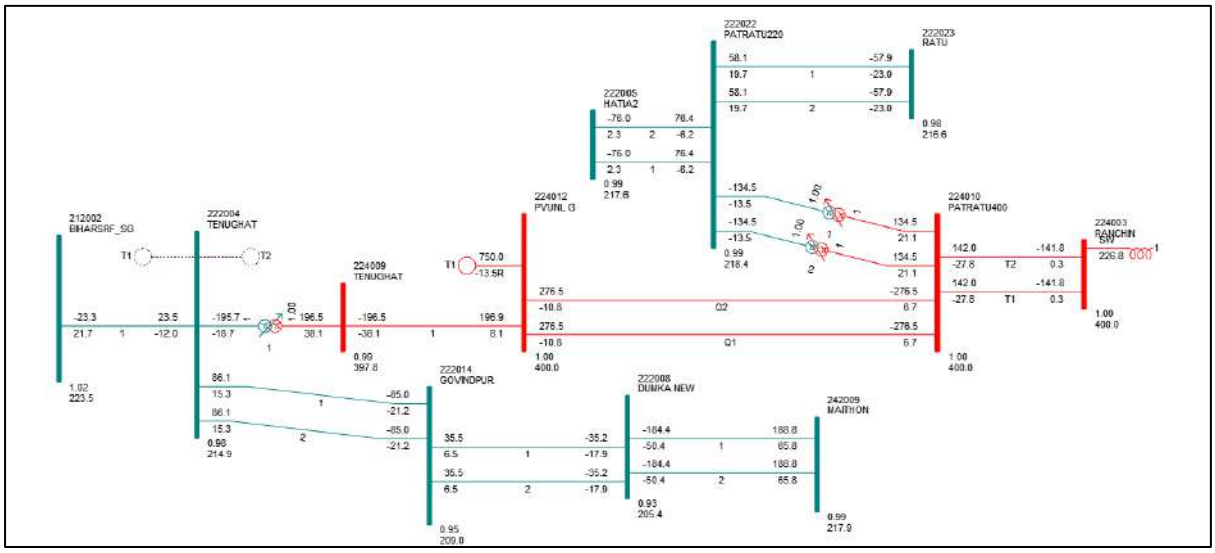
Annexure-3

Interconnection Study of PVUNL

The sensitivity on 400/220kV Tenughat single ICT are as follows –

Sl. No.	Name	Sensitivity
1	Jharkhand Demand	4%
2	WR to ER injection	1.2%
3	PVUNL Generation	5.8%
4	Tenughat Generation	- 46.2%

Both Tenughat units under outage



With high demand of Jharkhand and high injection from WR towards ER, single 400/220kV ICT at Tenughat may get loaded beyond 200 MW.

The sensitivities on 400/220kV Tenughat single ICT are as follows –

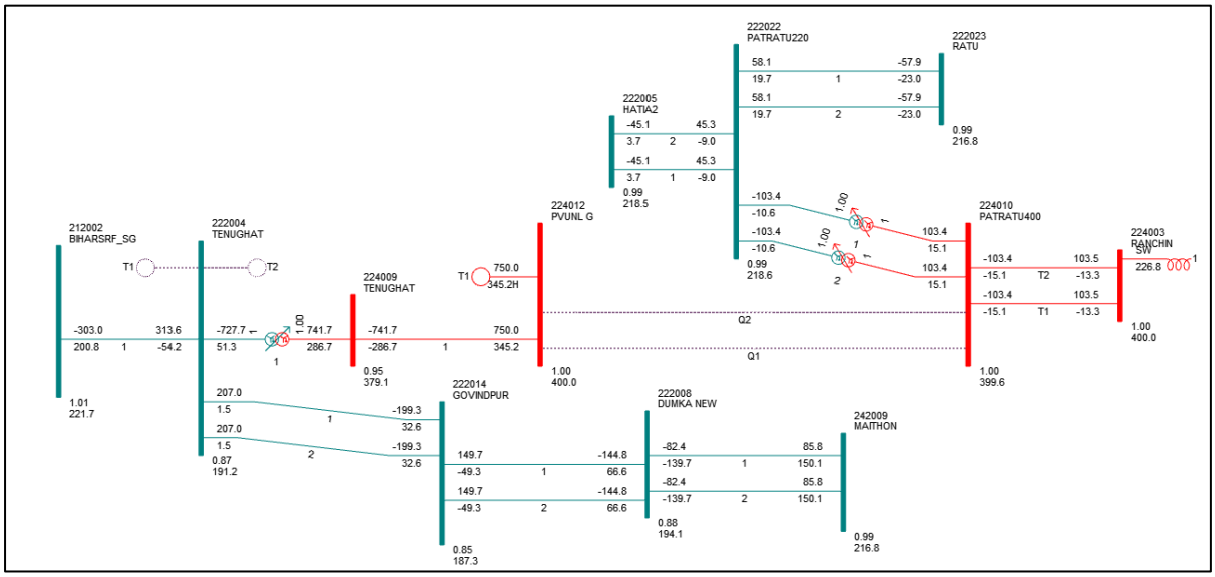
Sl. No.	Name	Sensitivity
1	Jharkhand Demand	4%
2	WR to ER injection	1.2%
3	PVUNL Generation	5.8%
4	N-1 of 220kV Maithon-Dumka	17.1%
5	N-1 of 400kV PVUNL-Patratu	0.8%

400kV PVUNL-Patratu D/C under outage

In case of fault in one 400kV PVUNL-Patratu CKT and simultaneous fault in the parallel CKT with first CKT under tripped conditions, the full power of PVUNL shall be avacuated through single 400kV PVUNL-Tenughat CKT and eventually overload the single 400/220kV Tenughat ICT.

Annexure-3

Interconnection Study of PVUNL



Hence, a SPS may be thought of to safeguard the network elements in such scenario.

Reply all | Delete Junk | •••

Fw: Interconnection of Katia-PVUNL-Tenughat, Adoption of 3phase Over current settings in Patratu-Tenughat line to avoid overstressing of ICT of Tenughat-reg

S MD RASOOL <SMDRASOOL@NTPC.CO.IN>

Reply all |

Thu 8/7/2025 4:03 PM

To: erpcprotection@gmail.com; Gitesh Patel (गितेश पटेल); P P JENA <erpc-protection@gov.in>

Cc: Kothamasu <SURESHKUMARK@NTPC.CO.IN>

Inbox

You forwarded this message on 8/7/2025 4:36 PM

Sir
The setting implemented at patratu end for Tenughat line to avoid overstressing of ICT at Tenughat side.

May find details in trailing mail.

Sent from Outlook for Android

From: Kothamasu <SURESHKUMARK@NTPC.CO.IN>
Sent: Wednesday, August 6, 2025 8:21:56 pm
To: SLDC,JSEB Ranchi <sldcranchi@gmail.com>; JUSNLPATRATU GSS <srmgr400kvpatratu@gmail.com>; Transmission Circle <esetcirclehzb@gmail.com>; General Manager, TZ-V, HZB <gmtzone5hzb@gmail.com>; critljusnl@gmail.com <critljusnl@gmail.com>; SCE PATRATU <sce_patratu@ntpc.co.in>; CHANDAN KUMAR <CHANDANKUMAR02@NTPC.CO.IN>; GRID ROOM <gcrttps@gmail.com>; RAKESH <RAKESHKUMAR07@NTPC.CO.IN>; YUGANDHAR BABU SAHUKARU <SYUGANDHARBABU@NTPC.CO.IN>; SCE PATRATU <sce_patratu@ntpc.co.in>; NILADRI BISWAS <NILADRIBISWAS@NTPC.CO.IN>
Cc: Prasenjit Halder <HALDERPRASENJIT@NTPC.CO.IN>; Ranjan Kumar <RANJANKUMAR07@NTPC.CO.IN>; OMPRAKASH SOLANKI <OPSOLANKI@NTPC.CO.IN>; S MD RASOOL <SMDRASOOL@NTPC.CO.IN>; Manish Khetrapal <MANISHKHETRAPAL@NTPC.CO.IN>; SANGITA DASH <SDASH@NTPC.CO.IN>; Prashant Pandurang <PRASHANTPATIL@NTPC.CO.IN>; JAYA PRAKASH AMBALLA <AJAYAPRAKASH@NTPC.CO.IN>; Cos Electrical <coselectrical@ntpc.co.in>
Subject: Interconnection of Katia-PVUNL-Tenughat, Adoption of 3phase Over current settings in Patratu-Tenughat line to avoid overstressing of ICT of Tenughat-reg

Dear Sir/Madam,

This has reference to tele conference held on 06.08.2025 regarding Settings to be adopted on Tenughat-Patratu line for faciliating powerflow without overstressing of 250MW ICT of Tenughat. In this connection as suggested following settings are made in main-1 & 2 relays of "patratu-tenughat" line at PVUNL end.

1. 3Phase Non directional Over current setting: 300A.
2. Time delay: 800 m sec, Definate Time.
3. DT sent to other end during this protection operation.

This is for your information. RLDC/SLDC may please ensure same settins may be adopted at Tenughat end.
These contingent settings may be reviewed after real time loadflow observations of PVUNL Unit#1 on full load.

Suresh Kumar K
AGM (EMD)
PVUNL


MOM for 400KV Relay Setting Revision at T.T.P.S., Lalpania

Relay Setting done at T.T.P.S. Lalpania on Dated 07.08.2025 as per guidelines issued by ERPC as discussed in Meeting held on 06.08.2025 and telephonic discusion.

1

ELEMENT	400KV TTPS-PVUNL T/L
RELAY NAME	MAIN 1 DISTANCE PROTECTION
RELAY MAKE	MICOM P444

PARAMETERS

GROUP 1 BACK UP I>

I>Function	DT
I>Directional	Non Diectional
I>1 Current Set	150.0 mA
I>1 Time Delay	800.0 ms
I>1 tReset	0 s
I>2 Function	Disabled
I>3 Function	Disabled
I>4 Function	Disabled

2

ELEMENT	400KV TTPS-PVUNL T/L
RELAY NAME	MAIN 2 DISTANCE PROTECTION
RELAY MAKE	ABB REL 670

PARAMETERS

GROUP 1 BACK UP I>

DirMode1	Non Diectional
Char1	IEC Def. Time
I1>	15% IB
t1	800.0 ms
t1Min	0 s
I1Mult	1

3

ELEMENT	400KV ICT-2
RELAY NAME	TRAFO DIFF. PROTN 87T
RELAY MAKE	MICOM P643

PARAMETERS

GROUP 1 OVERCURRENT

I>1 Status	Enabled
I>1 Char	IEC S Inverse
I>1 Direction	Directional FWD
I>1 Current Set	130.0 mA
I>1 TMS	1.2
I>1 tReset	500.0 ms
I>2 Status	Disabled
I>3 Status	Enabled
I>3 Direction	Non-Directional
I>3 Current Set	3.180 A
I>3 Time Delay	50.00 ms
I>4 Status	Disabled
I> Char Angle	60.00 deg

Representatives Present During Relay Setting

7/8/25
Chandra Shekhar Kumar
Senior Manager
J.U.S.N.L.

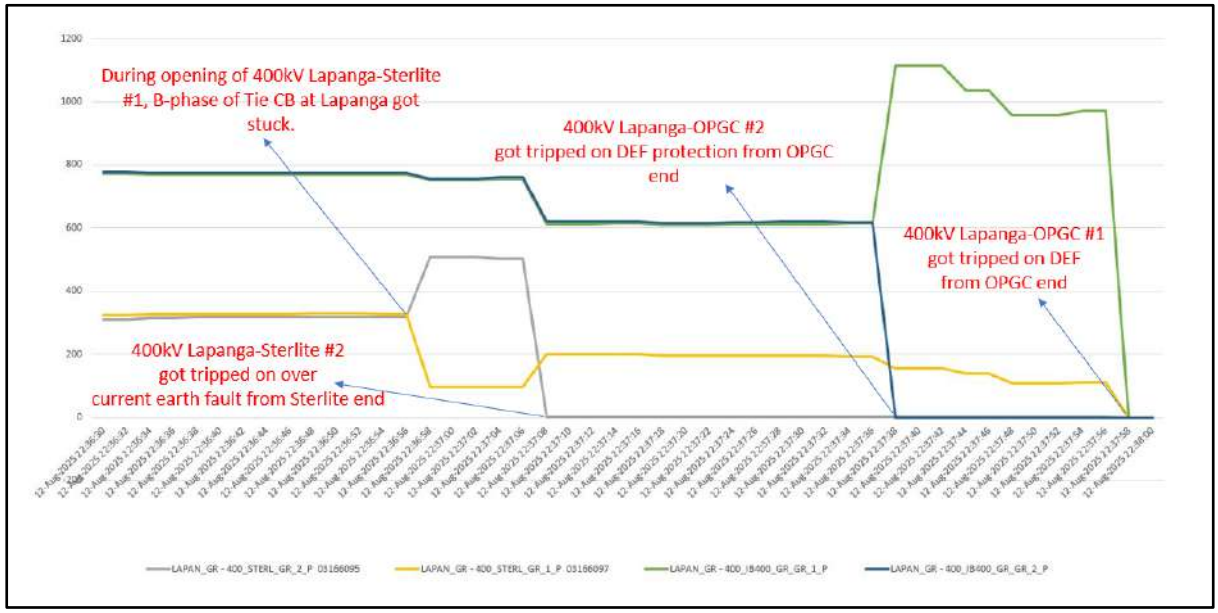
Samish 7/8/2025
Samish Srivastava
A.Ex.E.
T.T.P.S. Lalpania

B Kumar 07/08/2025
Birendra Kumar
E.Ex.E.
T.T.P.S. Lalpania

Multiple tripping on 13/08/2025 at Lapanga S/s

At 22:35 Hrs on 13/08/2025, switching off code of 400kV-Lapanga-Sterlite #1 issued on request of SLDC Odisha to control the loading of 400kV OPGC-Lapanga D/C. During opening of line, B-phase of Tie CB at Lapanga got stuck which resulted in unbalanced flow and 400kV Lapanga-OPGC D/C and 400kV Lapanga-Sterlite #2 got tripped in Directional earth fault protection.

Tripping sequence and power flow graph attached:



Sr. No.	Time_ 12/08/2025	Event Summary
1	**22:36:52 Hrs**	During opening of 400kV Lapanga-Sterlite #1 B phase of Tie CB got stuck.
2	**22:37:00 Hrs**	400kV Lapanga-Sterlite #2 got tripped from Sterlite end on O/C earth fault.
3	**22:37:31 Hrs**	400kV Lapanga-OPGC #2 got tripped on DEF at OPGC end and DT send to Lapanga end.
4	**22:37:48 Hrs**	Due to tripping of 400kV Lapanga-OPGC #2, SPS operated at OPGC and both unit of JSWEUL got tripped. 400kV Lapanga-OPGC #1 got tripped on DEF at OPGC end and DT send to Lapanga end.

Protection Observation during this event:

At Lapanga end:

- During opening of 400kV Lapanga-Sterlite #1, B-phase Tie CB got stuck at Lapanga end. LBB of Tie CB not operated. Reason of non-operation of LBB protection may be shared.

- Thereafter, around 670 A current was flowing through stuck B_ph as line was charged from Sterlite. DEF neither picked up nor operated neither at Lapanga nor at Sterlite end. Reason may be shared.
- If either LBB or DEF would have operated at Lapanga or Sterlite end, rest of the tripping wouldn't have occurred.
- After non-opening of B-ph pole of Tie Bay at Lapanga, PD operated after 2.5 msec. Digital channel of the same may be configured in DR.

At Sterlite end:

- 400kV Lapanga Sterlite #2 got tripped in over current earth fault from Sterlite end which had residual current of 290 Amps.
- Around 670 A current was flowing in stuck B-ph of 400 kV Lapanga-Sterlite-1 which will be reflected as residual current, however this line tripped after 50 seconds at last after tripping of OPGC-Lapanga D/C tripping. If this line would have tripped first, then rest of the tripping could have been avoided.
- **I pickup** of earth fault protection **set as 200 A**, which may be reviewed.

At OPGC end:

- 400kV Lapanga OPGC D/C tripped on DEF protection from OPGC end. I pickup of earth fault protection **set as 200 A**, which may be reviewed.
- During charging of 400kV Lapanga-OPGC D/C, line could not be synchronized at OPGC end due to conservative angular separation setting in auto synchro-check relay which was 10 degree. Angular separation setting in auto synchro-check relay may be checked at OPGC end and kept in the range of 20 degree.

You are requested to take necessary action to avoid unwanted tripping.

List of important transmission lines in ER which tripped in July-2025

Sl. No.	LINE NAME	TRIP DATE	TRIP TIME	RESTORATION DATE	RESTORATION TIME	Relay Indication LOCAL END	Relay Indication REMOTE END	Reason	Fault Clearance time in msec	Remarks	DR Configuration Discrepancy(Local End)	DR Configuration Discrepancy(Remote End)	DR/EL RECEIVED FROM LOCAL END	DR/EL RECEIVED FROM REMOTE END	LOCAL END UTILITY	REMOTE END UTILITY
1	220KV-BUDHIPADAR-KORBA-3	31-07-2025	18:20	#########	03:36	Not tripped	Tripped from Korba end.	No Fault	NA	No fault observed in PMU. Line tripped from Korba end only.			NO	NO	OPTCL	WRLDC
2	400KV-ALIPURDUAR (PG)-PUNASANGCHUN-2	30-07-2025	17:41	30-07-2025	19:32	Alipurduar : Not tripped	PUNASANGCHUN: No relay indication	No Fault	NA	As per PMU no fault was observed. Line tripped on Bhutan end on DTT trip.			NA	YES	PG ER-II	BHUTAN
3	400KV-MALDA(PG)-NEW PURNEA-2	28-07-2025	15:53	29-07-2025	00:18	Line tripped from Malda	NA	No Fault	NA	Line tripped from Malda end due to WTI of its non-switchable line reactor operated at Mlada.			NO	YES	PG ER-II	PG ER-I

4	400KV-GORAKHPUR-MOTIHARI-2	28-07-2025	14:18	28-07-2025	18:57	Gorakhapur: B-N Fault, F.D.-15.594kM, Ib-12.62kA	Motihari: B-Ph, 3.11kA, 160.4km,	B-Earth	00 mse	A/r failed after 1 sec			YES	NO	NRLDC	DMTCL
5	400KV-TENUGHAT-PATRATU-1	28-07-2025	03:29	28-07-2025	20:23	DT Received at Tenughat	Tripped on Overvoltage, Overvoltage start > 1, VAN-260.4 KV, VBN-293.9 KV, VCN-140.7 KV	B-Earth	NA	Over voltage protection operated at PVUNL end			YES	YES	JUSNL	NTPC
6	400KV-ALIPURDUAR (PG)-PUNASANGCHUN-2	25-07-2025	11:03	29-07-2025	23:52	Alipurduar: Not tripped	PUNASANGCHUN: Tripped on BU over current	No Fault	NA	Line tripped from Bhutan end only on BU over current protection.			NA	YES	PG ER-II	BHUTAN
7	400KV-ALIPURDUAR (PG)-BINAGURI-4	25-07-2025	02:26	25-07-2025	04:22	Alipurduar end: B-N fault, FC-9.74 kA, FD- 12 km	Binaguri: B-N fault, FD-82.5 km, FC-5 kA	B-Earth	00 mse	Line tripped in reclaim time			YES	YES	PG ER-II	PG ER-II

8	220KV-PATNA-SIPARA-3	24-07-2025	16:20	24-07-2025	19:47	R/I at Patna : Y-N, F Current 16 kA;	-	Y-Earth	00 mse	Line diffrential protection operated.			YES	NO	PG ER-I	OPTCL
9	400KV-BINAGURI-MALBASE-1	24-07-2025	13:31	24-07-2025	14:23	D/T received at Binaguri end from remote end	Not tripped	No Fault	NA	DT received at Binaguri end. No fault observed in PMU.			YES	YES	PG ER-II	BHUTAN
10	400KV-GAYA-KODERMA-1	24-07-2025	11:44	24-07-2025	20:37	DT recieved from Koderma end	Not tripped	No Fault	NA	Line tripped from Gaya end due to DT received from remote end. DVC may explain.			YES	NA	PG ER-I	DVC
11	400KV-RENGALI-INDRAVATI-1	23-07-2025	19:31	23-07-2025	23:20	Indravati : Y_N, F Dist: 303 km, FC: 1.157 kA.	Rengali: Y_N, FC: 19.7 kA, FD: 0.048 km	Y-Earth	00 mse	A/R operated unsuccessfully			NO	NO	OPTCL	G ODISHA

12	220KV-BUDHIPADAR-KORBA-2	23-07-2025	15:43	23-07-2025	18:37	Budhipadar: R_N, F Distance-53.27km, Zone-1 Ir-2.859kA	R/I at Korba: R_N,Z-1, F Distance -104 km, Ir-1.7kA	Y-Earth	00 mse	R Phase to ground fault occurred in line and R pole CB got opened and after 400 msec remaining pole got tripped . OPTCL may explain.			YES	NO	OPTCL	WRLDC
13	400KV-TSTPP-ROURKELA-1	23-07-2025	15:23	23-07-2025	20:43	Talcher end: Y _N, Zone-1, F Distance 93 km, fault current: 3.86 kA	R/I at Rourkela : Y_N, F Dist 69.65 km, F Current 4.84 kA,	Y-Earth	00 mse	Line tripped in reclaim time			YES	NO	NTPC	G ODISHA
14	400KV-DIKCHU-RANGPO-2	23-07-2025	13:45	23-07-2025	15:20	Dikchu : Zone-1 B_N, F Distance-13.72 kms Fault Curreent, Ib: 2.142 kA	A/R successful at Rangpo end	B-Earth	50 mse	B phase high resistive fault occurred and fault was sensed in O/C earth fault, further after 800 msec line B phase got tripped in Z-1 from both end. A/r successful from Rangpo end. A/r not attempted			YES	YES	GREENKO	PG ER-II
15	220KV-CHANDIL-STPS(WBPDCL)-1	23-07-2025	12:05	23-07-2025	12:52	STPS: R-N, Z-2, 92.7km, 0.319kA	Chandil: R-N, Z-1, 31.4km, 2.94kA	R-Earth	50 mse	Line tripped in Z-1 protection from Chandil end and in Z-2 protection from WBPDCL end. JUSNL may explain.	DR length need to increase to 3 sec.		YES	NO	JUSNL	WBPDCL

16	400KV-BINAGURI-ALIPURDUAR (PG)-1	23-07-2025	10:15	23-07-2025	13:23	Binaguri: R-Y, IR-4.5KA,IY-5.2KA,FD-95.55KM	Alipurduar: R-Y, 33.2 Km, IR-7.9kA, IY-10.04kA	R-Y-Earth	00 mse	Line tripped on phase to phase fault.			YES	YES	PG ER-II	PG ER-II
17	220KV-JODA-RAMCHANDRAPUR-1	22-07-2025	14:44	22-07-2025	15:43	RAMCHANDRAPUR: B-N, FC:2.38kA, Zone 01, Distance 32.7k	JODA: B-N, FC=1.241KA, Dist=32.7KM, Zone- 1	B-Earth	00 mse	Line tripped in reclaim time from Joda end and three phase tripping from Ramchandrapur end. JUSNL may explain.	DR is not time synchronised.	DR is not time synchronised and DR length need to increase to 3 sec.	YES	YES	OPTCL	JUSNL
18	400KV-KOLAGHAT-ARAMBAGH-1	22-07-2025	14:04	22-07-2025	14:29	Arambagh : M1: Y-N fault, ZONE 1, 37.44KM, FC- 6.389 KA	Kolaghat :- Y Ph, Z 1, 31.5 KM, 5.27 KA.	Y-Earth	00 mse	A/r failed after 1 sec.		DR is not time synchronised.	YES	YES	WBPDCL	WBSETCL
19	400KV-GMR-ANGUL-2	22-07-2025	12:10	23-07-2025	15:41	Angul : B–N, 22.77km, 11.69kA	GMR: Z-1, B-N, 14.73km, 8kA	B-Earth	00 mse	A/r failed after 1 sec.			NO	YES	GMR	G ODISHA

20	400KV-MEERAMUNDALI-JSPL-1	21-07-2025	12:22	21-07-2025	16:54	At MRDL end::B_N, Ib=11.65KA,Z1,13.5 KM.	-	B-Earth	00 mse	Line tripped in reclaim time			YES	NO	OPTCL	JSPL
21	220KV-JAMSHEDPUR-JINDAL-1	21-07-2025	11:29	21-07-2025	12:19	Jamshedpur end: B-N fault, fc-86A, Zone-2 , FL: 131.6 km	-	B-Earth	00 mse	As per PMU Three phase tripping for phase to ground fault. DVC and OPTCL may explain.			NO	NO	DVC	OPTCL
22	220KV-ROURKELA-TARKERA-1	21-07-2025	09:37	21-07-2025	11:37	Tarkera: Y-Earth, fault, FC-0.24 kA	onal earth fault o	Y-Earth	60 mse	A/r failed after 1 sec from Rourkela end and DEF operated from Tarkera end.	DR is not time synchronised.		YES	YES	G ODISH	OPTCL
23	400KV-TSTPP-ROURKELA-1	20-07-2025	16:39	21-07-2025	17:40	Talcher: Z-I,Y-Ph, 80.8km	Rourkela: Y-N fault, 4.96 kA, 69.9 km.	Y-Earth	00 mse	A/r failed after 1 sec.			YES	YES	NTPC	G ODISHA

24	220KV-DARBHANGA(DMTCL)-LAUKAHI-2	20-07-2025	00:34	20-07-2025	01:25	Not tripped	Laukhi end: Z-4,R-ph, FC:1.457 kA, FD:16.8 Km	R-Earth	00 mse	Line tripped in Z-4 protection within 100 msec at Laukhi end. BSPTCL may explain.			NO	YES	DMTCL	BSPTCL
25	220KV-TENUGHAT-BIHARSARIFF-1	19-07-2025	13:36	19-07-2025	14:00	_N, 45.76 k	rif: B_N, 126 km	B-Earth	00 mse	Three phase tripping for phase to ground fault. JUSNL and BSPTCL may explain.			NO	YES	JUSNL	BSPTCL
26	220KV-TTPS-TSTPP-1	19-07-2025	13:25	22-07-2025	13:45	, RN fault,	RN fault, 17.22	R-Earth	00 mse	As per PMU three phase tripping for phase to ground fault. NTPC and OPTCL may explain.			NO	NO	OPTCL	NTPC
27	220KV-DARBHANGA (DMTCL)-MOTIPUR-2	19-07-2025	10:58	19-07-2025	15:11	Darbhanga : Y_B, Iy=Ib=3.2 kA, 63 km	Y-B, Z-1	Y-B	00 mse	Line tripped on phase to phase fault.			NO	YES	DMTCL	NRLDC

28	400KV-NEW JEERAT-SUBHASGRAM(PG)-1	19-07-2025	10:35	19-07-2025	18:10	New Jeerat: Y_N, 36 km, 6.782 kA	Subhashgram: Y_N, 61.8 km, 3.9 kA	Y-Earth	00 mse	A/r failed after 1 sec.			YES	YES	PMJTL	PG ER-II
29	400KV-MALDA(PG)-NEW PURNEA-2	18-07-2025	14:07	18-07-2025	20:13	Y_N, F Dist 33.236 km, F Current 7.695 kA	A/R successful at New Purnea	Y-Earth	00 mse	A/r successful from N Purnea end and three phase tripping from Malda end during A/r attempt at Purnea end. PG ER-II may explain.			NO	YES	PG ER-II	PG ER-I
30	220KV-DARBHANGA (DMTCL)-MOTIPUR-1	18-07-2025	13:37	18-07-2025	15:16	Darbhanga : B_N, 97.35 km,	Motipur: B_N, 37.76km, 2.425 kA,	B-Earth	00 mse	A/r failed after 1 sec from Motipur end and three phase tripping for phase to ground fault at DMTCL end. DMTCL may explain.					DMTCL	BSPTCL
31	400KV-DURGAPUR-KAHALGAON-2	18-07-2025	10:58	18-07-2025	19:05	Durgapur end: R_N, F Dist 161km, 1.92 kA	R/I at Khstpp end: Z-1, R_N, 4.36 kA, 73.34 km, A/R unsucessful;	R-Earth	00 mse	A/r failed after 1 sec.			YES	NO	PG ER-II	NTPC

32	220KV-SAHARSA-BEGUSARAI-2	18-07-2025	09:16	20-07-2025	19:30	Current 6.3	; Begusarai end: Zone1, F Distance 42.6km, Ib= 2.63kA	B-Earth	00 mse	A/r failed after 1 sec.		DR length need to increase to 3 sec.	NO	YES	PG ER-I	BSPTCL
33	220KV-BUDHIPADAR-KORBA-2	17-07-2025	17:55	17-07-2025	19:17	R_N, 142 k	a: R_N, 9 km, 9.	R-Earth	00 mse	Line tripped on phase to ground fault in Z-1 protection and after 250 msec three phase tripping occurred. OPTCL may explain.			YES	NO	OPTCL	WRLDC
34	220KV-PATNA-FATUHA-1	17-07-2025	16:59	17-07-2025	18:14	_N, 17.6 km	-	B-Earth	50 mse	Line tripped in Z-2 protection from Patna end. BSPTCL may explain.			YES	NO	PG ER-I	BSPTCL
35	400KV-MUZAFFARPUR(PG)-DHALKEBAR-1	17-07-2025	16:21	17-07-2025	18:49	DT receipt at Muzaffarpur end	-	No Fault	NA	DT received at Muzaffarpur end.			YES	NO	PG ER-I	NEPAL

36	400KV-BARH-BAKHTIYARPUR (BH)-2	16-07-2025	16:57	16-07-2025	17:27	R/I at Barh : R_N, F Current 8.4 kA, F Dist 30.46 km	A/R successful, Bakhtiyarpur: R_N, zone -1 dist 12.32km, Ir-8.593kA	R-Earth	00 mse	As per PMU R phase tripped in Z-1 protection and after 2.5 sec line tripped in PD operation from Barh end. NTPC Barh may explain.	.DAT file not available on PDMS		YES	NO	NTPC	BSPTCL
37	400KV-ALIPURDUAR (PG)-PUNASANGCHUN-2	16-07-2025	15:26			Not tripped	ly from Phunatsa	No Fault	NA	Line tripped from Bhutan end, No event recorded at APD end.			YES	NO	PG ER-II	BHUTAN
38	220KV-JODA-RAMCHANDRAPUR-1	16-07-2025	14:01	16-07-2025	17:06	At JODA end:DP Relay Tripped DP Main –I: Start ph –BN Trip ph –B Zone-01 Fault Distance:	At Ramchandrapur end: DP relay: Zone- 2 Trip ph-BG Dist=122.9KM Fault current: Ia-0.65KA,Ib-1.78KA,Ic-0.27KA	B-Earth	50 mse	A/r successful from Joda end and later tripped in reclaim time, and for ramchandrapur end three phase tripped occurred in Z-2 protection due to carrier issue at Ramchandrapur end. JUSNL may			YES	YES	OPTCL	JUSNL
39	220KV-NEW PURNEA-MADHEPURA-1	16-07-2025	13:15	16-07-2025	15:30	Not tripped	Madhepura: DT Recieved.	No Fault	NA	Line tripped from Madhepur end on master trip. BSPTCL may explain.			NA	YES	PG ER-I	BSPTCL

40	765KV-JHARSUGUDA-RAIPUR PS (DURG)-1	15-07-2025	21:38	#########	00:43	Jharsuguda: Z2, RN fault, 2.388 kA, 300.1 km	R-B-Earth	350 ms	Line tripped in Z-2 protection from Jharsuguda end and A/r failed after 1 sec from remote end. PG Odisha may explain.			YES	NO	G ODISH	WRLDC
41	400KV-BIHARSARIFF(PG)-BALIA-2	15-07-2025	15:31	15-07-2025	20:08	Biharsariff: Y-N (LINE TRIPPED IN RECLAIM TIME), Fault Dist-25.339km, Fault Current-	-	Y-Earth 00 mse	Line tripped in reclaim time.			YES	NO	PG ER-I	NRLDC
42	400KV-KOLAGHAT-ARAMBAGH-1	15-07-2025	15:20	15-07-2025	15:46	Tripped at Arambagh end only,Relay at Arambagh end 86G1,86G2,85L/O	Not tripped.	No Fault NA	Due to DT Received at Arambag end line got tripped from Arambagh end only. WB may explain.			NO	YES	WBPDCL	WBSETCL
43	400KV-KOLAGHAT-ARAMBAGH-1	15-07-2025	05:42	15-07-2025	05:49	Tripped from Arambag only on DT receipt	Not tripped.	No Fault NA	Due to DT Received at Arambag end line got tripped from Arambagh end only. WB may explain.			NO	YES	WBPDCL	WBSETCL

44	400KV-BARH-PATNA-4	15-07-2025	04:39	15-07-2025	14:42	Barh:R_N, 30.33 km, 18.08 kA	Patna: R_N, 8.916 kA,47.72 km	R-Earth	00 mse	A/r failed after 1 sec from Patna end and from Barh end Tie A/r attempted after failed A/r attempt of Main #1. NTPC Barh may explain.			YES	YES	NTPC	PG ER-I
45	220KV-SAHARSA-BEGUSARAI-1	14-07-2025	20:58	15-07-2025	15:30	Saharsa: B_N, 15.189 km, 7.22 kA	Behusarai - Zone 2, B_N 82.4km, FC=1.82KA	B-Earth	00 mse	A/r failed after 1 sec from Saharsa end and three phase tripping for phase to ground fault occurred at Begusarai end. BSPTCL may explain.			YES	YES	PG ER-I	BSPTCL
46	400KV-BINAGURI-MALBASE-1	14-07-2025	19:06	14-07-2025	20:58	Binaguri : r-y-b, fd-126.2 km, fc-1.350 ka	-	R-Y-B	50 mse	As per PMU three phase fault occurred.	Wrong DR uploaded.		YES	NO	PG ER-II	BHUTAN
47	220KV-BIRPARA-MALBASE-1	14-07-2025	19:00	14-07-2025	20:39	Birpara: Z-3, b-n, fc-1.97 kA, fd-93.6 km	-	B-Earth	80 mse	A high resistive fault in B phase occurred and DEF pickup started and after 900 msec same fault was sensed in Z-3 protection and line got tripped in Z-3 protection after 800 msec from			YES	NO	PG ER-II	BHUTAN

48	400KV-ALIPURDUAR (PG)-PUNASANGCHUN-2	14-07-2025	17:01	14-07-2025	18:19	Alipurduar : Z3 Protection operated	Not tripped	B-Earth	00 mse	Instantaneous tripping occurred in Z-3 protection from Alipurduar end. PG ER-II may explain.			YES	NO	PG ER-II	BHUTAN
49	220KV-SAHARSA-BEGUSARAI-1	13-07-2025	20:35	14-07-2025	15:25	Saharsa: B_N, 14.6 km, 7.43 kA	Begusarai: Z-1, F.c-1.94 kA, F.D-82 km	B-Earth	00 mse	A/r failed after 1 sec from Saharsa end and three phase tripping for phase to ground fault occurred at Begusarai end. BSPTCL may explain.			YES	YES	PG ER-I	BSPTCL
50	220KV-KHAGARIA-NEW PURNEA-2	13-07-2025	19:24	13-07-2025	20:29	New Purnea: Y-B, 15.5km, 3.96kA	Khagaria: R, Y ph , FD-88.58 KM, Ir-2.47 KA, Iy-2.029 KA	Y-B-Earth	20 mse	Initially B-Earth fault occurred and B phase tripped in Z-1 protection from Khagaria end, further same fault converted into phase to phase fault and three phase tripping occurred after 350			YES	YES	BSPTCL	PG ER-I
51	400KV-KHSTPP-BARH-2	13-07-2025	15:48	13-07-2025	16:31	Barh: A/R successful, Z1, Y-N, 11.36kA, 40.5km	KHSTPP:- Y-N, Z1 , 186.2 KM , 2.74 KA	Y-Earth	00 mse	A/r successful from Barh end and three phase tripping for phase to ground fault at Kahalgaon end. NTPC Kahalgaon may explain.			YES	NO	NTPC	NTPC

52	220KV-KHAGARIA-NEW PURNEA-2	13-07-2025	13:20	13-07-2025	13:55	Khagaria end:Y ph B ph, Zone -1, Distance - 84.32km, Iy-1.804kA, Ib-1.807kA	Purnea end: Z1 Y-B FC-Iy-8.89 kA Ib-8.55 kA FD-14.3km	Y-B	00 mse	Line tripped on phase to phase fault.		DR is not time synchro nised and DR length need to increase to 3 sec.			BSPTCL	PG ER-I
53	400KV-MUZAFFARPUR(PG)-GORAKHPUR-1	13-07-2025	12:37	13-07-2025	17:14	MUZFAARPUR:-FD-158KM FC-2.509KA	GORAKHPUR: R- B ph trip, FC -4.66kA, FD-88.3km	B-Earth	00 mse	A/r failed after 1 sec.			YES	NO	PG ER-I	NRLDC
54	220KV-BIRPARA-MALBASE-1	13-07-2025	11:09	13-07-2025	14:50	M1 Zone 3 B-N fault, fault distance at 100%	Malbase: Tripped on Overvoltage.	B-Earth	00 mse	Main-2 operated. As per PMU line may be tripped on Z-3 protection from Birpara end. PG may explain.			YES	YES	PG ER-II	BHUTAN
55	400KV-BINAGURI-MALBASE-1	13-07-2025	11:09	13-07-2025	13:01	Tripped from Binaguri end M1 Zone 2, B-N fault	-	B-Earth	00 mse	A high resistive fault in B phase occurred and DEF pickup at Binaguri end and after 500 msec, Z-1 protection operated at Binaguri and after 1 sec A/r failed.			YES	YES	PG ER-II	BHUTAN

56	220KV-CHANDIL-STPS(WBPDCL)-1	13-07-2025	11:05	#########	13:36	STPS: B-Ph, Z-2, O/C	Chandil: B ph Fault, Ic -2.45 kA , Distance - 16 km, Zone -1	B-Earth	50 mse	Line tripped in Z-1 protection from Chandil end and in Z-2 protection from WBPDCL end. JUSNL may explain.					JUSNL	WBODCL
57	400KV-ARAMBAGH-BAKRESWAR-1	13-07-2025	10:30	13-07-2025	10:41	Bakaresh war: Y-N fault , Z-1 , 38.7 km, 5.11 kA	Y-N fault, Z-1, 30.31 km, 2.61 kA,	Y-Earth	00 mse	Phase to ground fault occurred in line, and line tripped in Z-1 protection from both, after 1 sec, A/r attempted from Arambagh end but CB didn't close, further after 2 sec, PD may be		DR length need to increase to 3 sec.	YES	YES	WBSETCL	WBPDCL
58	220KV-JODA-RAMCHANDRAPUR-1	13-07-2025	09:58	13-07-2025	10:44	Joda: auto recloser successful	Ramchandrapur : Ia -0.51kA Ib -1.5kA, Ic -0.3 kA , Distance - 129 .9 km, Zone -2	B-Earth	50 mse	A/r successful from Joda end and line tripped in Z-2 protection from Ramchandrapur end. JUSNL may explain.			YES	YES	OPTCL	JUSNL
59	400KV-NEW CHANDITALA-SATGACHIA-1	12-07-2025	14:10	12-07-2025	14:45	TRIPPED from Satgachia end only - zone -1 B_N , FD - 54. 6 km	ul from New Cha	B-Earth	00 mse	Three phase tripped from Satgachia end for phase to ground fault and A/r successful from N Chanditala end. WB may explain.			YES	YES	WBSETCL	WBSETCL

60	400KV-NEW DUBURI-PANDIABILI-1	10-07-2025	05:21	11-07-2025	16:01	NEW DUB	: Z1,6.42KA Y-N	Y-Earth	00 mse	A/r failed after 1 sec.			NO	NO	OPTCL	G ODISHA
61	400KV-BINAGURI-MALBASE-1	10-07-2025	11:09	10-07-2025	11:56	R/I at Binaguri : Y-B, Z-2, F Dist-118.72 km, F Current - Iy 4.4 kA, Ib 4.35kA	Malbase : Y and B operated, Zone 1, Fault distance 12.83km, Ir=22.06A, Iy=1.02kA ,Ib=879.1A	Y-B-Earth	00 mse	fault in B phase occurred and DEF pickup at Binaguri end and after 500 msec, same fault was converted into Y-B-Earth fault and Z-1 protection operated at Malbase end and			YES	YES	PG ER-II	BHUTAN
62	400KV-NEW DUBURI-PANDIABILI-1	10-07-2025	05:21	11-07-2025	16:01	NEW DUBRI: Y-N , Z1, 3.74 KA, 88.94 KM	Pandiabili: Z1,6.42KA Y-N 42.8 km	Y-Earth	00 mse	A/r failed after 1 sec.			NO	YES	OPTCL	G ODISHA
63	220KV-SAHARSA(PMTL)-BEGUSARAI-1	09-07-2025	21:45	10-07-2025	18:38	Begusarai: Zone 1, Dist: 77.39km, FC=1.96KA,	Saharsa B-N, 3.7 kA, 14.6 kM	B-Earth	00 mse	A/r failed after 1 sec.			NO	YES	PMTL	BSPTCL

64	220KV-DALTONGUNJ-GARWAH (NEW)-2	09-07-2025	00:05	09-07-2025	20:01	Daltonganj: 3.47km,3.27kA,Y-Ph,Z-I	Garwah: 1.973kA, 65.08km, R-Ph	&Y-Earth	00 mse	A/r failed after 1 sec from Garwah end and A/r successful from Daltonganj end.		DR is not time synchronised.	YES	YES	PG ER-I	JUSNL
65	220KV-KATAPALLI-BOLANGIR(PG)-1	08-07-2025	23:39	09-07-2025	00:22	Katapalli end: R-Ph, Auto recloser successful	Bolangir end: R-N fault, 113.37 km, 1.764 kA.	R-Earth	50 mse	As per PMU delayed tripping(Z-2 operated) reported from Bolangir end. PG ODISHA may explain.			YES	NO	OPTCL	G ODISHA
66	400KV-LAPANGA-STERLITE-1	08-07-2025	03:45	08-07-2025	15:44	Lapanga end: Z-2,16.12KM, B_N, Ib:12.43 kA	Starlite end: Main 1: Z-1,Ib=25.96kA,13.98KM	B-Earth	50 mse	As per PMU delayed tripping(Z-2 operated) reported from Lapanga end. OPTCL may explain.			YES	NO	OPTCL	OPTCL
67	400KV-ALIPURDUAR (PG)-PUNASANGCHUN-2	07-07-2025	15:04	07-07-2025	19:04	-	Bus bar protection operated at PUNASANGCHUN	No Fault	00 mse	Bus bar protection operated at PUNASANGCHUN			YES	NO	PG ER-II	BHUTAN

68	400KV-LAPANGA-STERLITE-1	07-07-2025	04:38	07-07-2025	08:55	Sterlite: B_N, 3.15 km, 36.45 kA; Lapanga: B_N, 13.8 km, 20.32 kA; A/r failed after 1 second from both	Lapanga: B_N, 13.8 km, 20.32 kA; A/r failed after 1 second from both ends	B-Earth	00 mse	A/r failed after 1 sec.			YES	NO	OPTCL	OPTCL
69	220KV-DALTONGANJ-CHATRA-1	07-07-2025	03:12	07-07-2025	22:50	Daltonganj : Not tripped	Chatra : DT Recieved:	No Fault	NA	As per PMU no fault was observed. Line tripped from Chatra end only due to DT received. JUSNL may explain.			YES	NO	PG ER-I	JUSNL
70	220KV-DALTONGANJ-CHATRA-1	07-07-2025	00:13	07-07-2025	02:07	Daltonganj : Not tripped	Chatra : DT Recieved:	No Fault	NA	As per PMU no fault was observed. Line tripped from Chatra end only due to DT received. JUSNL may explain.			YES	NO	PG ER-I	JUSNL
71	400KV-MAITHON-GAYA-2	06-07-2025	12:31	06-07-2025	14:50	Gaya R-Y-E fault, Ir 2.5 kA, Iy 2.3 kA, Distt 269.5 km.	Maithon: R-Y-E fault, Distt 1.8km, Ir 18.95 kA, Iy 18.66 kA	R-Y-Earth	00 mse	Line tripped on phase to phase fault.			YES	YES	PG ER-II	PG ER-I

72	400KV-MEERAMUNDALI-JSPL-2	06-07-2025	07:45	06-07-2025	17:35	Meramundali: R_N, 37.4 km, 6.56 kA;	JSPL: R_N, 4.56 km, 12.14 kA	R-Earth	00 mse	A/r failed after 1 sec.			YES	NO	OPTCL	JSPC
73	400KV-MEDINIPUR-NEW CHANDITALA-1	05-07-2025	17:33	06-07-2025	12:46	Medinipur : Y-Ph, Z-I, 10.6km,9.20kA	New Chaditala: Y-Ph,Z-I,2.481kA	Y-Earth	00 mse	A/r failed after 1 sec.			YES	YES	WBSETCL	WBSETCL
74	220KV-DALTONGANJ-CHATRA-1	04-07-2025	18:24	04-07-2025	19:54	Chatra : DT Recieved:	Daltonganj : Not tripped	No Fault	NA	As per PMU no fault was observed. Line tripped from Chatra end only due to DT received. JUSNL may explain.			YES	NO	PG ER-I	JUSNL
75	400KV-ARAMBAGH-PPSP-1	04-07-2025	13:08	04-07-2025	14:46	Y_N, 128.6	Y_N, 25.06 km, 8	Y-Earth	00 mse	Three phase tripping for phase to ground fault. A/r kept OFF at both end.			YES	NO	WBSETCL	WBPDCL

76	400KV-RANGPO-DIKCHU-1	04-07-2025	13:02	04-07-2025	16:22	.97 km, Iy-0	, 11.4 km, Iy-4.5	Y-B	00 mse	Line tripped on phase to phase fault.			YES	YES	PG ER-II	GREENKC
77	220KV-DALTONGANJ-CHATRA-1	03-07-2025	07:23	03-07-2025	08:39	Daltonganj : Not tripped	Chatra : DT Recieved:	No Fault	NA	As per PMU no fault was observed. Line tripped from Chatra end only due to DT received. JUSNL may explain.			YES	NO	PG ER-I	JUSNL
78	220KV-DALTONGANJ-CHATRA-1	03-07-2025	01:10	03-07-2025	01:40	Chatra : DT Recieved:	Daltonganj : Not tripped	No Fault	NA	As per PMU no fault was observed. Line tripped from Chatra end only due to DT received. JUSNL may explain.			YES	NO	PG ER-I	JUSNL
79	220KV-SAHARSA-BEGUSARAI-1	02-07-2025	18:17	03-07-2025	18:30	B_N, 75.3 k	a: B_N, 14.7 km,	B-Earth	00 mse	A/r failed after 1 sec.			YES	YES	PG ER-I	BSPTCL

80	400KV-BIHARSARIFF(PG)-SAHUPURI(CHANDAULI)-1	02-07-2025	08:03	02-07-2025	10:42	d from Biha	roblem in Sahup	No Fault	NA	Line tripped from Sahupuri end with any line fault.			YES	NO	PG ER-I	NRLDC
81	400KV-JAMSHEDPUR-ADHUNIK-2	01-07-2025	22:02	02-07-2025	21:39	-N Fault , 2	-	Y-Earth	00 mse	Line diffrential protection operated.			YES	NO	PG ER-I	ADHUNIK
82	400KV-NEW PPSP-NEW RANCHI-2	01-07-2025	16:23	01-07-2025	17:54	ng of 400 k	ceived at New R	No Fault	NA	Line tripped due to Bus tripping at New PPSP.			NO	YES	WBSEDC	PG ER-I
83	400KV-NEW PPSP-NEW RANCHI-1	01-07-2025	16:23	01-07-2025	17:55	ng of 400 k	ceived at New R	No Fault	NA				NO	YES	WBSEDC	PG ER-I

84	400KV-BIHARSARIFF(PG)-SAHUPURI(CHANDAULI)-1	01-07-2025	13:44	01-07-2025	16:15	d from Biha	roblem in Sahup	No Fault	NA	Line tripped from Sahupuri end with any line fault.			YES	NO	PG ER-I	NRLDC

Annexure C.1

NTPC Barh

Month	July						
Date	Line tripping	Cause of Tripping	Tripping Analysis	Correct Operations at NTPC Barh (Nc)	Failed operations at NTPC Barh(Nf)	Number of Unwanted Operation (Nu)	Number of incorrect operations (Ni= Nf+Nu)
13.07.2025	Barh-Kahalgaon-2	Y-N fault	Fault in zone-1 (Y-N fault). Successful auto-reclosure took plae at Barh end for both mian and tie breaker. Line remained idle charged from Barh end.	1	0	0	0
15.07.2025	Barh-Patna -4	R-N fault, developed into R-Y fault	Fault initially in zone 1, R-N (Fault current: 17 kA). A/R attempt took place. Fault developed into R-Y fault (phase to phase fault) resulting in three phase tripping. Charging attempt was further taken from Patna end which resulted in tripping on SOTF.	1	0	0	0
16.07.2025	Barh-Bakhtiyarpur-2	R-N fault	Fault in zone-1 (R-N fault). Inclement weather conditions prevailing at Barh end. Auto-reclosure attempt did not take place and both breakers tripped on Pole discrepancy. As analysed later on, 'CB not ready' status was coming in AR relay which is a pre-requisite for AR operation. Breakers in BKP-2 are hydraulically operated, and 1/3 pole tripping results in sudden dip in oil pressure which resulted in 'CB not ready' status.	0	1	0	1

Performance Indices of Darlipali STPP for July'25

Index. No.	Number of correct operations at internal power system faults(Nc)	Number of failures to operate at internal power system faults(Nf)	The Dependability Index(D=Nc/(Nc+Nf)
1	1	0	1

Index. No.	Number of correct operations at internal power system faults(Nc)	Number of unwanted operations (Nu)	The Security Index(S=Nc/(Nc+Nu)
2	1	0	1

Index. No.	Number of correct operations at internal power system faults(Nc)	Number of incorrect operations (Ni=Nf+Nu)	The Reliability Index (R=Nc/(Nc+Ni)
3	1	0	1

NOTE for reference of deciding parameters:

1) Nc = The number of correct operation of switchyard breakers (220kV and above) on protection to be counted i.e if the breaker has operated correctly on internal protection operation

2) Nf = The number of failure of switchyard breaker (220kV and above) to operate on its protection to be counted i.e if the breaker has not operated on internal protection operation (includes LBB operation etc)

3) Nu = The number of unwanted operation of switchyard breaker (220kV and above) without its own protection operation to be counted i.e if the breaker has opened without operation of its protection leading to tripping of other breaker or grid connected equipments

BSPTCL

Protection Performance Indices for the month of July'25

S. No.	Name of the element	Tripping Date	Tripping time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))	Remarks (Reason for performance indices less than 1)
						End A	End B	End A	End B	End A	End B	End A	End B				
1	220KV-PATNA-SIPARA-3	24-07-2025	16:20	24-07-2025	19:47	R/I at Patna : Y-N, F Current 16 kA;	-		1		0		0	1	1	1	Line diffrential protection operated.
2	220KV-DARBHANGA(DMTCL)-LAUKAHI-2	20-07-2025	00:34	20-07-2025	01:25	Not tripped	Laukhi end: Z-4,R-ph, FC:1.457 kA, FD:16.8 Km		0		1		0	0	0	0	220 kv DMTCL(Darbhanga)-Laukahi(BSPTCL) ckt-2 tripped on Zone-4. As per DR, Line tripped within 50 ms. Time Delay for Zone-4 has been verified in the relay and found to be 500 ms. (Relay Make- Micom P442). It seems that Relay has malfunctioned/ became defective.Request for arrangement of Shutdown in said ckt-2 has already been placed for the testing/ replacement of this Relay.
3	220KV-TENUGHAT-BIHARSARIFF-1	19-07-2025	13:36	19-07-2025	14:00	Tenughat: B_N, 45.76 km, 2.228 Ka	Biharsharif: B_N, 126 km, 1.7 kA;		0		0		1	0	0	0	PLCC issue persisting since long . As stated ealier ,ERPC intervention required ,as it involves Inter state Transmission line.
4	220KV-DARBHANGA (DMTCL)-MOTIPUR-2	19-07-2025	10:58	19-07-2025	15:11	Darbhanga: Y_B, Iy=Ib=3.2 kA, 63 km	Y-B, Z-1		1		0		0	1	1	1	Line tripped on phase to phase fault.
5	220KV-DARBHANGA (DMTCL)-MOTIPUR-1	18-07-2025	13:37	18-07-2025	15:16	Darbhanga: B_N, 97.35 km,	Motipur: B_N, 37.76km, 2.425 kA,		1		0		0	1	1	1	A/r and carrier send success from Motipur end and three phase tripping at DMTCL end.
6	220KV-SAHARSA-BEGUSARAI-2	18-07-2025	09:16	20-07-2025	19:30	R/I at Saharsha: B_N, F Current 6.31 kA, F Distance 19 km	; Begusarai end: Zone1, F Distance 42.6km, Ib= 2.63kA		1		0		0	1	1	1	A/r failed after 1 sec.
7	220KV-PATNA-FATUHA-1	17-07-2025	16:59	17-07-2025	18:14	Patna: B_N, 17.6 km, 2.74 kA	-		0		1		0	0	0	0	There was some issue in tripping circuit of 220KV Biharshariff ckt at GSS Fatuha end, which was later rectified.
8	220KV-NEW PURNEA-MADHEPURA-1	16-07-2025	13:15	16-07-2025	15:30	Not tripped	Madhepura: DT Recieved.		0		1		0	0	0	0	Line tripped at Madhepura end due to DT received and no other relay picked at that time. As per DR, no any fault was present in the line. It seems that PLCC communication has falsely triggered DT signal due to which Relay tripped on DT received. After that no any tripping of such type has been observed till date.Communication wing has been requested for thorough checking of PLCC system
9	220KV-SAHARSA-BEGUSARAI-1	14-07-2025	20:58	15-07-2025	15:30	Saharsa: B_N, 15.189 km, 7.22 kA	Behusarai - Zone 2, B_N 82.4km, FC=1.82KA		0		0		1	0	0	0	For no load charging(fault finding) of transmission line, all forward zones were set to time setting of Zero ms. While restoration, Zone 2 time was wrongly left to Zero ms. This mistake was later modified on dt-16/07/25
10	220KV-SAHARSA-BEGUSARAI-1	13-07-2025	20:35	14-07-2025	15:25	Saharsa: B_N, 14.6 km, 7.43 kA	Begusarai: Z-1, F.c-1.94 kA, F.D-82 km		0		0		1	0	0	0	
11	220KV-KHAGARIA-NEW PURNEA-2	13-07-2025	19:24	13-07-2025	20:29	New Purnea: Y-B, 15.5km, 3.96kA	Khagaria: R, Y ph , FD-88.58 KM, Ir-2.47 KA, Iy-2.029 KA	1	1	0	0	0	0	1	1	1	Initially B-Earth fault occurred and B phase tripped in Z-1 protection from Khagaria end, further same fault converted into phase to phase fault and three phase tripping occurred after 350 msec from both end.
12	220KV-KHAGARIA-NEW PURNEA-2	13-07-2025	13:20	13-07-2025	13:55	Khagaria end: Y ph B ph, Zone - 1, Distance - 84.32km, Iy- 1.804kA, Ib-	Purnea end: Z1 Y-B FC-Iy-8.89 kA Ib-8.55 kA FD-14.3km	1	1	0	0	0	0	1	1	1	Line tripped on phase to phase fault.
13	220KV-SAHARSA(PMTL)-BEGUSARAI-1	09-07-2025	21:45	10-07-2025	18:38	Begusarai: Zone 1, Dist: 77.39km, FC=1.96KA,	Saharsa B-N, 3.7 kA, 14.6 kM		1		0		0	1	1	1	A/r failed after 1 sec.

14	220KV-SAHARSA-BEGUSARAI-1	02-07-2025	18:17	03-07-2025	18:30	Begusarai: B_N, 75.3 km, 1.96 kA	Saharsa: B_N, 14.7 km, 7.2 kA		1		0		0	1	1	1	A/r failed after 1 sec.

OPTCL

PROTECTION PERFORMANCE INDICES AS PER TRIPPING LIST OF 150TH PCC MEETING AGENDA FOR THE MONTH OF JULY 2025 FOR OPTCL ,SLDC,ODISHA																
SL.NO	NAME OF THE ELEMENT	TRIPPING DATE	TRIPPING TIME	RESTORATION DATE	RESTORATION TIME	REASON(RELAX INDICATION)		NC		NU		NF		DEPENDABILITY INDEX (NC/NC+NF)	SECURITY INDEX (NC/NC+NU)	RELIABILITY INDEX(NC/NC+NU+NF)	REMARKS
						END-A	END-B	END-A	END-B	END-A	END-B	END-A	END-B				
1	220 KV BUDHIPADAR-KORBA-III	31/07/25	18:20	08-01-2025	03:36	NO TRIP	TRIPPED	0	1	0	1	0	1	END A=0 ,END B=1/2	END A=0 ,END B=1/2	END A=0 ,END B=1/3	NO FAULT OBSERVED IN PMU
2	400KV RENGALI PG-INDRAVATI-I	23/07/25	19:31	23/07/25	23:20	Z-1/Y-N/19.7 KA/0.048 KM	Z-1/Y-N/1.157 KA/303 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	A/R UNSUCCESSFUL AT BOTH END
3	220 KV BUDHIPADAR-KORBA-II	23/07/25	15:43	23/07/25	18:37	Z-1/R-N/2.859 KA/53.27 KM	Z-1/R-N/1.7 KA/104 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	R-PHASE TO GROUND FAULT OCCURRED IN LINE BUT AFTER 400ms REMAINING POLE GOT TRIPPED
4	220 KV JODA-RAMACHANDRAPUR-1	22/07/25	14:44	22/07/25	15:43	Z-1/B-N/1.24 KA/32.7 KM	Z-1/B-N/2.38 KA/32.7 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	LINE TRIPPED IN RECLAIM TIME FROM JODA END AND 3-PHASE TRIPPED FROM RAMCHANDRAPUR END
5	400KV MRDL-JSPL-I	21/07/25	12:22	21/07/25	16:54	Z-1/B-N/11.65 KA/13.5 KM	NO TRIP	1	0	1	0	1	0	END A=1/2,END B=0	END A=1/2,END B=0	END A=1/3,END B=0	LINE TRIPPED IN RECLAIM TIME MRDL END
6	220KV JAMSHEDPUR-JINDAL-I	21/07/25	11:29	21/07/25	12:19	Z-2/B-N/0.086 KA/131.6 KM	-	1	0	1	0	1	0	END A=1/2,END B=0	END A=1/2,END B=0	END A=1/3,END B=0	3-PHASE TRIPPING FOR SINGLE PHASE TO GROUND FAULT
7	220 KV TTPS-TSTPP-1	19/07/25	13:25	22/07/25	13:45	Z-1/R-N/2.718 KA/	Z-1/R-N/2.57 KA/17.22 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	3-PHASE TRIPPING FOR SINGLE PHASE TO GROUND FAULT
8	220 KV BUDHIPADAR-KORBA-II	17/07/25	17:55	17/07/25	19:17	Z-1/R-N/1.185 KA/142 KM	Z-1/R-N/9.3 KA/9 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	LINE TRIPPED IN PHASE TO GROUND FAULT AFTER 250ms 3-PHASE TRIPPED OCCURRED
9	220 KV JODA-RAMACHANDRAPUR-1	16/07/25	14:01	16/07/25	17:06	Z-1/B-N/6.343 KA/1.411 KM	Z-2/B-N/1.78 KA/122.9 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	A/R SUCCESSFUL AT JODA END THEN TRIPPED IN RECLAIM TIME .AT RAMCHANDRAPUR END 3-PHASE TRIPPED OCCURED DUE TO CARRIER ISSUE AT RAMCHANDRAPUR END
10	220 KV JODA-RAMACHANDRAPUR-1	13/07/25	09:58	13/07/25	10:44	A/R SUCCESSFUL	Z-2/1.5 KA/129.9 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	A/R SUCCESSFUL AT JODA END THEN TRIPPED IN RECLAIM TIME .AT RAMCHANDRAPUR END 3-PHASE TRIPPED OCCURED DUE TO CARRIER ISSUE AT RAMCHANDRAPUR END
11	400KV NEW DUBURI-PANDIAVIL-I	10-7-25	05:21	07-11-2025	16:21	Z-1/Y-N/3.74 KA/88.94 KM	Z-1/Y-N/6.42 KA/42.8 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	A/R FAILED AFTER 1SEC
12	400KV NEW DUBURI-PANDIAVIL-I	10-7-25	05:21	07-11-2025	16:21	Z-1/Y-N/3.74 KA/88.94 KM	Z-1/Y-N/6.42 KA/42.8 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	A/R FAILED AFTER 1SEC
13	KATAPALI-BOLANGIR_PG-I	8-7-25	23:39	07-09-2025	00:22	A/R SUCCESSFUL/R-N	Z-2/R-N/1.764 KA/113.31 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	Z-2 RELAY TRIPPING FROM BOLANGIR PG END
14	400KV LAPANGA-STERLITE-I	8-7-25	03:45	07-08-2025	15:44	Z-2/B-N/12.43 KA/16.12 KM	Z-1/B-N/25.96 KA/13.98 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	Z-2 RELAY TRIPPING FROM LAPANGA END
15	400KV LAPANGA-STERLITE-I	7-7-25	04:38	07-07-2025	08:55	Z-1/B-N/20.32 KA/13.8 KM	Z-1/B-N/36.45 KA/3.15 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	A/R FAILED AFTER 1SEC FROM BOTH END

WBSETCL

Protection Performance Indices for the month of JUNE'25 (In compliance of Clause 15(6) of IEGC 2023)																		
Sl. No.	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))	Remarks (Reason for performance indices less than 1)	Analysis of the event
						End A	End B	End A	End B	End A	End B	End A	End B					
1	Manikchak-Malda PG # 2	01.07.25	18:40:00	01.07.25	18:57:00	Zone-1,R-phase, CS ,CR ,3-phase Trip		1		0		0		1	1	1		
2	Arambag-PPSP #1	04.07.25	13:08:00	04.07.25	14:46:00	Zone-1,Y-phase, CS ,CR ,3-phase Trip		1		0		0		1	1	1		
3	NCT-Midnapore PG #1	05.07.25	17:33:00	06.07.25	12:46:00	Zone-2, Y Phase, A/R Close, A/R L/O		1		0		0		1	1	1		
4	NCT-Satgachia # 1	12.07.25	14:10:00	12.07.25	14:45:00	Zone-1, B- Phase ,A/R Close	Zone-1, B- Phase A/R L/O	1	0	0	1	0	0	#	#	#		
5	Arambag-BKTPP # 1	13.07.25	10:30:00	13.07.25	10:41:00	Zone-1, Y Phase, A/R Close, A/R L/O		1		0		0		1	1	1		
6	Arambag-KTPP # 1	15.07.25	05:42:00	15.07.25	05:49:00	DT Receive		1		0		0		1	1	1		
7	Arambag-KTPP # 1	15.07.25	15:20:00	15.07.25	15:46:00	DT Receive		1		0		0		1	1	1		
8	MANIKCHAK-MALDA PG # 2	16.07.25	22:26:00	16.07.25	23:07:00	Zone-1,R-phase, CS ,CR ,3-phase Trip		1		0		0		1	1	1		
9	MANIKCHAK-MALDA PG # 2	20.07.25	18:29:00	20.07.25	18:54:00	Zone-1,R-phase, CS ,CR ,3-phase Trip		1		0		0		1	1	1		
10	MANIKCHAK-MALDA PG #1	20.07.25	20:10:00	20.07.25	20:37:00	Zone-1,Y-phase, CS ,CR ,3-phase Trip		1		0		0		1	1	1		
11	MANIKCHAK-MALDA PG #2	21.07.25	19:37:00	21.07.25	20:17:00	Zone-1,R-phase, CS ,CR ,3-phase Trip		1		0		0		1	1	1		
12	Arambag-KTPP # 1	22.07.25	14:14:00	22.07.25	14:29:00	Zone-1, Y Phase, A/R Close, A/R L/O		1		0		0		1	1	1		
13	MANIKCHAK-MALDA PG #2	23.07.25	00:37:00	23.07.25	00:54:00	Zone-1,R-phase, CS ,CR ,3-phase Trip		1		0		0		1	1	1		
14	MANIKCHAK-MALDA PG #1	29.07.25	12:38:00	29.07.25	13:.06:00	Zone-1,R-phase, CS ,CR ,3-phase Trip		1		0		0		1	1	1		

CESC

		CESC 220kV Network Protection Performance Indices for the month of July'2025																
Station Name	**Feeder Name**	**Tripping Date/Time**	**Restoration/ Re-commission Date**	**Restoration/Re-commission Time**	**Reason (Relay indication)**		**Nc**		**Nu**		**Nf**		**Dependability index (Nc/(Nc+N f))**	**Security Index (Nc/(Nc+Nu))**	**Reliability Index (Nc/(Nc+ Nu+Nf))**	**Remarks (Reason for performan ce indices less than 1)**	**Analysis of the event**
					End A(EMSS)	End B(Princep St SS)	End A(EMSS)	End B(Princep St SS)	End A(EMSS)	End B(Princep St SS)	End A(EMSS)	End B(Princep St SS)					
Remarks : No tripping occurred in CESC 220kV network in the month of July'25																	

DMTCL

Protection Performance Indices for the month of July'2025																		
Sr.No.	Name of the Element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc	Nc	Nu	Nu	Nf	Nf	Dependability index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))	Remarks (Reason for performance indices less than 1)	Analysis of the event
						End A	End B	End A	End B	End A	End B	End A	End B					
	No-Tripping in July'2025 Month																	

APNRL

	ADHUNIK POWER AND NATURAL RESOURCES LIMITED 2 X 270 MW																	
	Protection Performance Indices for the JULY' 2025 (In compliance of Clause 15(6) of IEGC 2023)																	
Sl.No	**Name of the element**	**Tripping Date**	**Tripping Time**	**Restoration Date**	**Restoration on Time**	**Reason (Relay indication)**		**Nc**		**Nu**		**Nf**		**Dependability (Nc/(Nc+Nf)**	**Security Index (Nc/Nc+Nu)**	**Reliability Index (Nc/Nc+Nu+Nf)**	**Remarks (Reason for performance indices less then 1**	**Analysis of the Event**
						End A	**End B**	**End A**	**End B**	**End A**	**End B**	**End A**	**End B**					
1	ADHUNIK LINE-2 (406) & LINE TIE (405) Trip on Line Differential Protection	01.07.2025	22.02.04 Hrs	02.07.2025	21.30 Hrs	'Y' Phase Line Differential Protection Operated	DT Received	1	1	0	0	0	0	1	1	1	1	Y' phase LA failure at End -B side, which leads to line differential operated.
Nc - is the number of correct operations at internal power system faults																		
Nf - is the number of failures to operate at internal power system faults.																		
Nu- is the number of unwanted operations.																		

MPL

Maithon Power Plant 2X525MW																	
Protection Performance Indices for the month of July-25 (In compliance of Clause 15(6) of IEGC 2023)																	
S. No.	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))	Remarks (Reason for performance indices less than 1)
						End A	End B	End A	End B	End A	End B	End A	End B				
1	No Tripping																

Jorethang

Jorethang Loop Hydro Electric Project 2 X 28 MW

Protection Performance Indices for the JUNE-2025 (In compliance of Clause 15(6) of IEGC 2023)

Sl. No.	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+N f))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+ Nu+Nf))	Remarks (Reason for performance indices less than 1)	Analysis of the event
						End A	End B	End A	End B	End A	End B	End A	End B					
1	220KV Jorethang- New Melli Line-1																	NO Tripping
2	220KV Jorethang- New Melli Line-2																	No Tripping
	Nc - is the number of correct operations at internal power system faults.																	
	Nf - is the number of failures to operate at internal power system faults.																	
	Nu - is the number of unwanted operations.																	

Tashiding

Tashiding Hydro Electric Project 2 X 48.5 MW

Protection Performance Indices for the JULY -2025 (In compliance of Clause 15(6) of IEGC 2023)

Sl. No.	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+N f))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+ Nu+Nf))	Remarks (Reason for performance indices less than 1)	Analysis of the event
						End A	End B	End A	End B	End A	End B	End A	End B					
1	220KV Tashiding- New Melli Line-2	22-06-2025	23:03:56	05-07-2025	11:49	B,C Phase Z1 ,fault location 1.920km Fault Current IB 4.066kA,IC-4.021kA	B,C Phase Z2 fault location 18.65km Fault Current IB- 4.354kA,IC - 4.397kA	--	--	--	--	--	--	--	--	--	Tashiding-New Melli Ckt-2 tripped due to punctured Insulators on Tower No 5 & 6 by new piece work has been completed.	For replacing of punctured Insulators on Tower No 5 & 6.

Nc - is the number of correct operations at internal power system faults.
Nf - is the number of failures to operate at internal power system faults.
Nu - is the number of unwanted operations.

ENICL, OGPTL, PKTCL

Protection Performance Indices for the month of July-25 (In compliance of Clause 15(6) of IEGC 2023)

S. No.	Name of Utility	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))	Remarks (Reason for performance indices less than 1)
							End A	End B	End A	End B	End A	End B	End A	End B				
1	EAST NORTH INTERCONNECTION LIMITED	400 kv JQuad) D/C Bongaigaon - Alipurduaar line CKT- 1(BNG- ALIP # 1)							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
		400 kv JQuad) D/C Bongaigaon - Alipurduaar line CKT- 2(BNG- ALIP # 2)							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
		400 kv JQuad) D/C Purnia-Biharshrif Line CKT-1 (NPRN-BSF# 1)							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
		400 kv JQuad) D/C Purnia-Biharshrif Line CKT-2(NPRN- BSF# 2)							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
		400 kv JQuad) D/C Alipurduaar - Siliguri line CKT- 1(ALIP- SLG # 1)	23-07-2025	10:15	23-07-2025	13:22	FD-33.2 KM, F.C-7.9,10.4 KA	FD-97.55 KM, F.C-4.5, 5.2 KA	1.00	1.00	-	-	-	-	-NA-	1	1	Line Trimmed due to R-eh to Y-Ph fault.
		400 kv JQuad) D/C Alipurduaar - Siliguri line CKT- 2(ALIP- SLG # 2)	19-07-2025	16:22	19-07-2025	16:22:00	39.5km 5.812KA	69.82 5.56KA	1.00	1.00	-	-	-	-	-NA-	1	1	AR Success
2	ODISHA GENRATION PHASE - II LIMITED	765kV D/C Jharsuguda(Sundargarh)-Raipur pool CKT-2							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
		400kV D/C IB-OPGC-Jharsuguda(Sundargarh) Ckt-1							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
		400kV D/C IB-OPGC-Jharsuguda(Sundargarh) Ckt-1							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
		765kV D/C Jharsuguda(Sundargarh)-Raipur pool CKT-1							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
		400kV D/C LILO POINT (T. No. - 130) - Sundargarh							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
		400kV D/C OPGC-LILO POINT (T. No. - 130)							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
3	PURULIA KHARAGPUR TRANSMISSION COMPANY LIMITED	400 kV Chaibasa-Kharagpur D/C line CKT- 1							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
		400 kV Chaibasa-Kharagpur D/C line CKT- 2							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
		400 KV D/C New Ranchi-New Purulia Line: CKT-1							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25
		400 KV D/C New Ranchi-New Purulia Line: CKT-2							-	-	-	-	-	-	-NA-	-NA-	-NA-	No events in the month of July'25

TVNL

Protection Performance Indices for the month of JULY 2025(In compliance of Clause 15(6) of IEGC 2023)

Sl. No.	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))	Remarks (Reason for performance indices less than 1)
						End A	End B	End A	End B	End A	End B	End A	End B				
1	220KV TTPS-Bihar Shariff T/L	17.07.2025	13:54 HRS	17.07.2025	00:47 HRS	EARTH FAULT Z1 79.56 Km		1		1		0		1.0000	0.5000	0.5000	L-G FAULT
2	220KV TTPS-Bihar Shariff T/L	19.07.2025	13:36 HRS	19.07.2025	14:01 HRS	EARTH FAULT Z1 45.76 Km		1		1		0		1.0000	0.5000	0.5000	L-G FAULT
3	400KV TTPS-PVUNL T/L	28.07.2025	03:27 HRS	28.07.2025	20:23 HRS	DT REC		1		0		0		1.0000	1.0000	1.0000	
4	400 KV ICT-2	28.07.2025	05:37 HRS	28.07.2025	09:32 HRS	OVERFLUX TRIP OPTD		1		0		0		1.0000	1.0000	1.0000	

NOTE:
Nc is the number of correct operations at internal power system faults
Nf is the number of failures to operate at internal power system faults.
Nu is the number of unwanted operations.
Ni is the number of incorrect operations and is the sum of Nf and Nu

ANNEXURE C.4

Sl No.	Name of the incidence	PCC Recommendation	Latest status
149th PCC Meeting			
1.	Total Power failure at 220 k V Jorethang HEP on 3rd June 2025 at 14:49 Hrs	PCC advised to configure bus bar protection in DR and check whether DT signal was sent from Jorethang end during operation of bus bar protection and submit compliance to ERPC/ERLDC.	
2.	Total Power Failure 220 k V Chatra (JUSNL) S/s on 8th June 2025 at 10:48 Hrs	PCC once again advised JUSNL to check phase to phase clearance issues for the line.	
3.	Total Power Failure 220 kV Kishangunj (BSPTCL) S/s on 12th June 2025 at 18:24 Hrs	PCC advised BSPTCL to time synchronize bus bar relay with GPS at earliest.	
4.	Tripping of 400KV/220KV 315 MVA ICT 2 AT PATRATU on 19th June 2025 and 20th June 2025	PCC advised JUSNL representative to test for DC leakage in the substation and healthiness of cable.	
5.	Repeated tripping of 220kV-DALTONGANJ-CHATRA-1 in June 2025	JUSNL representative said that testing of carrier will be done on 19th July 2025.	
6.	Repeated tripping of 132kV-BARIPADA(PG)-BHOGARAI-1 and 132kV-BARIPADA(PG)-JALESWAR-1 in June 2025	PCC advised OPTCL representative to share relay settings at their end to ERPC/ERLDC along with issues being faced due to PG end settings. It further opined that auto-recloser can be enabled at PG end to avoid tripping of lines in transient faults.	
148th PCC Meeting			

2.	Disturbance at 220 k V Garhwa (JUSNL) S/s on 4th May 2025 at 15:36 Hrs	PCC advised JUSNL for thorough testing of healthiness of lines, jumpers etc. and ensure proper maintenance of lines including tightening of jumpers, tightening of nut bolts etc.	JUSNL representative informed that maintenace work of line is in progress.
3.	Disturbance at 220 k V Joda (OPTCL) S/s on 31st May 2025 at 12:07 Hrs	PCC suggested that GPS based time synchronization shall be installed in the substation.	OPTCL representative informed that requisition for GPS clock is already placed and it will be implemented at earliest.
5.	Tripping of 400KV/220KV 315 MVA ICT 3 AT JAMSHEDPUR on 1st May 2025 at 16:08 Hrs	PCC advised PG representative to share DR for the event to ERPC/ERLDC.	PG representative was not present in the meeting.
147th PCC Meeting			
7.	Repeated disturbance at 400 kV PVUNL S/s	PVUNL representative replied that update regarding implementation of week infeed protection will be shared to ERPC/ERLDC after consultation with protection team. ERLDC representative said that in case of disturbance held on 5th April 2025, after auto-recloser attempt at Tenughat side, line must have tripped in SOTF at Tenughat end instead of pickup in zone 2 protection. PCC advised TVNL representative to review protection settings at their end for 400KV Tenughat-PVUNL line in consultation with CRITL, JUSNL.	In 149th PCC,PVUNL representative was not present in the meeting.
9.	Repeated tripping of 220kV-PATNA-KHAGAUL-1,	PCC advised BSPTCL representative to take appropriate action for rectifying clearance issue caused due to dumping. It further advised BSPTCL representative to test auto-recloser of 220kV-PATNA-KHAGAUL-1 at their end and share observation report to ERPC/ERLDC. PCC advised	In 148th PCC Meeting, BSPTCL representative informed rectification work for clerance issue is in progress. In 149th PCC Meeting, BSPTCL representative said that estimate for commissioning of tower is already proposed from site.

		BGCL to test auto-recloser of 220kV-PATNA-KHAGAUL-3 at their end and share observation report to ERPC/ERLDC.	Further necessary actions of rectifying clerance issue due to dumping is already done for temporary basis.
136th PCC Meeting			
10.	Disturbance at 220 kV Tenughat (TVNL) S/s on 29.05.2024 at 12:57 Hrs	PCC advised JUSNL representative to rectify auto-reclose issue at Govindpur end by next week and intimate to ERPC/ERLDC. TVNL representative informed that settings at their end had been implemented by CRITL, JUSNL team and he further assured that O/C E/F settings will be revised at the earliest after consultation with CRITL, JUSNL team. PCC advised CRITL, JUSNL team to test auto-reclose and carrier at both Govindpur as well as Tenughat end.	In 147th PCC, TVNL representative informed that engineer from SLDC has visited the site for installation of battery bank however JUSNL, CRITL team had not visited till date. In 149th PCC, TVNL representative informed that no update is received from JUSNL. PCC advised TVNL representative to coordinate with JUSNL site and CRITL JUSNL in order to rectify this issue at earliest.