सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
पूर्वी क्षेत्रीय विद्युत समिति
Eastern Regional Power Committee
14, गोल्फ क्लब रोड, टालीगंज, कोलकाता-700033
14 Golf Club Road, Tollygunj, Kolkata-700033

स./NO. पू.क्षे.वि.स./PROTECTION/2026/ 393 **दिनांक /DATE: 20 /05/2026**

सेवा में / To,

संलग्न सूची के अनुसार / As per list enclosed.

विषय : दिनांक – 12.05.2026 को आयोजित 158 वीं पीसीसी बैठक का कार्यवृत्त ।

Sub: Minutes of the 158th PCC meeting held on 12.05.2026

महोदय/ Sir,

Please find enclosed the **Minutes of the 158th PCC** Meeting of ERPC held on **12.05.2026 at ERPC Conference Hall** for your kind information & necessary action. The MoM is also available in ERPC website (www.erpc.gov.in).

Observations, if any, may please be forwarded to this office at the earliest.

भवदीय / Yours faithfully,

20/5/2026

अधीक्षण अभियंता(पी.एस)
Superintending Engineer (PS)

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Plant Head, Maithon Power Limited, Maithon Office, MA 5 Gogna, Dist. Dhanbad, Jhankand State, PIN-828207	Plant Head, JIPL, Angul, Odisha
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Head(Asset Management), Indigrid Ltd.	

GOVERNMENT OF INDIA

MINISTRY OF POWER

Eastern Regional Power Committee

MINUTES

OF

158th PCC MEETING

Date: 12/05/2026

Venue: ERPC Conference Hall

Contents

Eastern Regional Power Committee, Kolkata

Minutes of 158th PCC MEETING
Date: 12th May, 2026(Tuesday) at 11:00 Hrs

Member Secretary, ERPC chaired the meeting. He welcomed all the participants to 158th PCC Meeting. The list of participants is enclosed at ***Annexure-A.***

The presentation on protection performance of ER for the month of April-26 shared by ERLDC is attached at ***Annexure-B.***

1. PART-A

1.1. Confirmation of Minutes of 157th PCC Meeting held on 16th April 2026.

The minutes of 157th PCC meeting held on 16.04.2026 through virtual mode was circulated vide letter no. ERPC/ Protection/2026/209 dated 28/04/2026.

Members may confirm the minutes of 157th PCC Meeting.

Deliberation in the meeting

Members confirmed the minutes of 157th PCC Meeting.

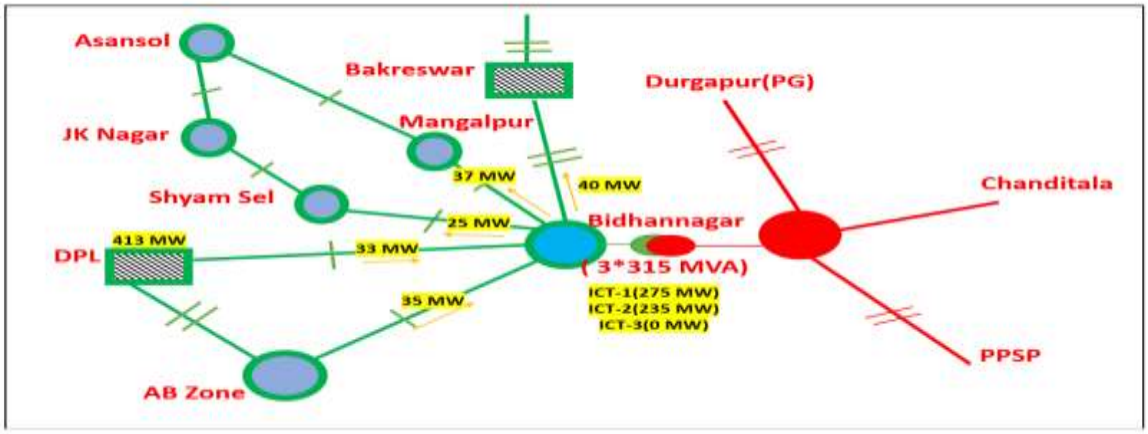
2. PART-B: ITEMS FOR DISCUSSION

2.1 Grid disturbance at 220 kV Bidhannagar, 220kV DPL, 220kV AB Zone S/s on 2nd April 2026 at 14:28 Hrs

Prior to the disturbance, 315 MVA ICT-3 at Bidhannagar S/s was under planned shutdown. On 2nd April 2026 at 14:20 Hrs, 315 MVA ICT-1 tripped due to PRD operation, which led to over loading of 315 MVA ICT-2 to 336 MW. To reduce the loading on ICT-2, 220kV Mangalpur and Shyam SEL feeder were manually tripped at 14:24 Hrs. Consequently, the loading on ICT-2 reduced to a safe limit of around 275 MW.

Subsequently, at 14:28 Hrs, 315 MVA ICT-2 was inadvertently hand tripped by site personal, which led to isolation of 220kV from 400kV system Simultaneously, 220kV Bidhannagar-Bakreswar D/C loading increased up to its thermal rating consequently both lines got tripped on O/C protection.

As a result, 220/132kV Bidhannagar islanded with AB Zone and DPL generation and got collapsed due to load generation unbalance.



Detailed report from ERLDC is attached at **Annexure 2.1.**

Load Loss: 782 MW, Gen. Loss: 413 MW
Outage Duration: 01:00 Hrs

Deliberation in the meeting

WBSETCL explained the event through a presentation. The presentation is enclosed at ***Annexure 2.1.1.***

Tripping of 400/220 kV ICT

- *315 MVA 400/220/33 KV ICT 3 was under planned shutdown before the disturbance. At 14:20 hrs, 315 MVA 400/220 KV ICT 1 tripped on PRD operation. This led to increase in loading of 315 MVA 400/220 KV ICT 2 to 336 MW.*
- *To control loading of 315 MVA 400/220/33 KV ICT 2, Mangalpur & Shyam SEL feeder were hand tripped as per instruction of SLDC. Consequently 315 MVA 400/220/33 KV ICT 2 loading came down to 275 MW.*
- *At 14:28 hrs, LV side of 315 MVA 400/220/33 KV ICT 2 was hand tripped by operating personnel inadvertently. This causes loading (Approx 600A per ckt) of BKTPP #1 & 2 goes beyond thermal limit, causing tripping of both feeder on Overcurrent protection.*
- *This in turn caused load generation imbalance to islanded DPL generator and the DPL units tripped subsequently.*

Reason for tripping of ICT-1: WBSETCL informed that there was no internal fault in the transformer and the PRD operated spuriously. Further checking will be done by availing shutdown of the ICT.

Busbar Operation for 220 kV Bus-B

- *At 14:29 hrs, LV side of 315 MVA 400/220/33 KV ICT 2 was closed by the operator at 220 kV Bidhannagar S/s seeing no power on 220 KV bus without isolating rest bays.*
- *This causes loading (Approx 1520A as per DR) of 315 MVA 400/220/33 KV ICT 2 goes nearly 1520A as 3 nos 200 MVA 220/132/33 KV ICT charged on no load along with DPL AB zone load & load connected to DPL feeder. As per the existing busbar logic, the current of the particular bay is included in busbar protection only when the breaker is closed. However, on that day the CB close command was not received in busbar relay. As per the busbar logic, current fed by 315 MVA 400/220/33 KV ICT 2 bay during charging (1.5 KA) could not be counted to BUS B. This resulted in differential current and operation of BB relay for Bus B.*

They submitted that they would check the CB close command issue by availing ICT shutdown.

- *ERLDC suggested that an SPS may be planned by incorporating overcurrent operation with AND logic with tripping status of either circuit of the 220 kV BKTPP–Bidhanagar line and the output may be extended to trip 220 kV Mangalpur and Shyam SEL feeders with directional(power flow from Bidhan nagarto Mangalpur/Shyam SEL). This arrangement will control overloading conditions effectively without tripping the 220 kV BKTPP–Bidhanagar D/C line, thereby ensuring safe and reliable system operation.*
- *WBSETCL submitted that SPS requirement and its logic may be decided in consultation with SLDC WB.*

2.2 Grid disturbance at 400/220kV TTPS(TVNL) S/s on 19th April 2026 at 23:13 Hrs

On 19/04/2026 at 23:13 Hrs, B-phase CT of bus coupler bay at Tenughat got burst which created bus fault at 220kV Tenughat S/s. Due to non-operation of bus bar protection at Tenughat S/s, all 220 kV emanating lines at Tenughat i.e., 220 kV Tenughat-Govindpur D/c and 220 kV Tenughat-Biharsharif got tripped from remote ends in zone 2 protection. Subsequently 400/220kV Tenughat S/s became dead which led to overloading of 220 kV Maithon-Dumka D/c and SPS operated at Dumka S/s.

Detailed report from ERLDC is attached at **Annexure 2.2.**

Load Loss: 120 MW, Gen. Loss: 317 MW
Outage Duration: 00:42 Hrs

TVNL &JUSNL may explain.

Deliberation in the meeting

ERLDC representative explained the disturbance as follows:

- *At 23:13 Hrs on 19/04/2026, B-phase CT of bus coupler bay at Tenughat got burst which created bus fault at 220kV Tenughat S/s. Subsequently, all lines connected to 220 kV Tenughat sub-station tripped on Z-3 protection from remote end (Bus bar protection not operated at Tenughat) and 400/220kV ICTs tripped on E/F protection, resulting complete power supply failure of Tenughat substation.*

- *Due to the above incident, 220 kV Maithon-Dumka D/c loading increased up to its thermal rating, leading to SPS operation at Dumka, which resulted in load loss of 120 MW at Godda and Pukur areas of Jharkhand Power System*

TVNL updated that purchase order for replacement of the electromechanical busbar relay with numerical relay has been issued and the replacement work will be completed in August-26.

On failure of CT, he informed that after the disturbance, oil sample was tested and discrepancy was found in BDV value. Further abnormal values were observed for tan delta test. The CT was replaced with new CT. It was observed by PCC that annual maintenance & testing was not carried out for the CTs at TVNL station.

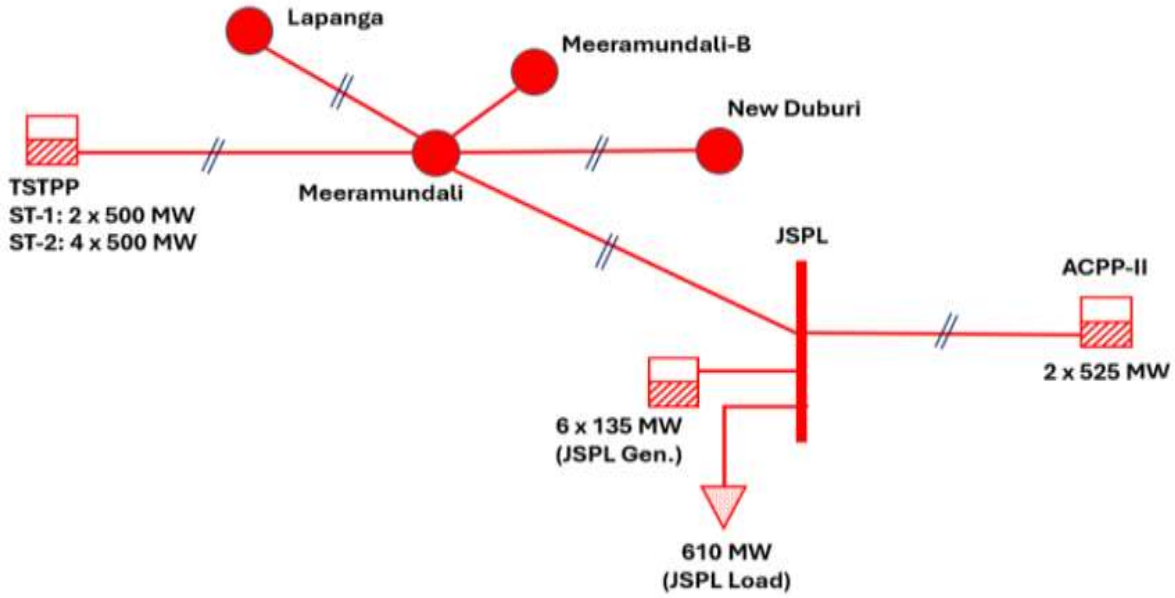
PCC advised TVNL to carry out periodic testing of the substation equipment to avoid equipment failure. PCC opined that TVNL shall adopt a maintenance procedure/practice for their substation equipment. They may consult Powergrid in this regard.

2.3 Grid disturbance at 400kV JSPL, ACPP-II S/s on 6th April 2026 at 16:03 Hrs

On 06/04/2026 at 16:03 Hrs, 400 kV Meramundali-JSPL-1 line got tripped from JSPL end due to B-phase CT blast at JSPL end. At the same time 400 kV Meramundali-JSPL-2 line got tripped on Zone 4 protection from JSPL end, which led to island formation of JSPL unit-1 with emergency load and another island formation with remaining JSPL units and load with ACPP-II. Island was not survived due to load generation mismatch.

Detailed report from ERLDC is attached at **Annexure 2.3.**

Load Loss: 670 MW, Gen. Loss: 810 MW
Outage Duration: 00:06 Hrs



Deliberation in the meeting

JSPL representative informed that the fault was due to CT blast in 400 kV JSPL-Meramundali-1 line at JSPL end. The line tripped in zone-1 protection. AT the same time, 400 kV JSPL-Meramundali-2 also tripped in zone-4 protection. Further the busbar was also picked up during this incident.

He informed that detailed checking/relay circuit testing could not be done due to unavailability of line shutdown. For the time being, they have made zone-4 "OFF" in the relay for both the circuits.

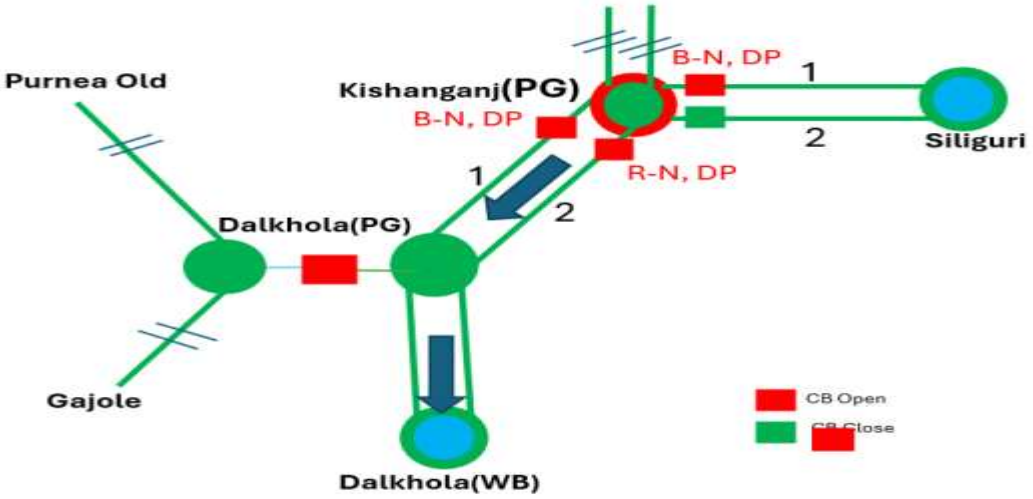
PCC observed that tripping of the JSPL-Meramundali-2 in zone-4 was not in order and advised JSPL to carry out relay testing at the earliest.

2.4 Grid disturbance at 220kV Dalkhola (WBSETCL) S/s on 26th April 2026 at 00:09 Hrs

Prior to the disturbance 220kV bus coupler at Dalkhola S/s (PG) was in off condition due to system requirement and Dalkhola S/s (WB) was radially connected through 220kV Kishanganj-Dalkhola (PG)-Dalkhola(WB) D/C line. On 26th April 2026 at 00:09 Hrs, 220kV Kishanganj-Siliguri-1 and 220 kV Kishanganj- Dalkhola (PG) D/C got tripped due to inclement weather on B phase fault consequently 220 kV bus become dead at Dalkhola (WB) S/s.

Detailed report from ERLDC is attached at **Annexure 2.4.**

Load Loss: 80 MW
Outage Duration: 00:23 Hrs



Deliberation in the meeting

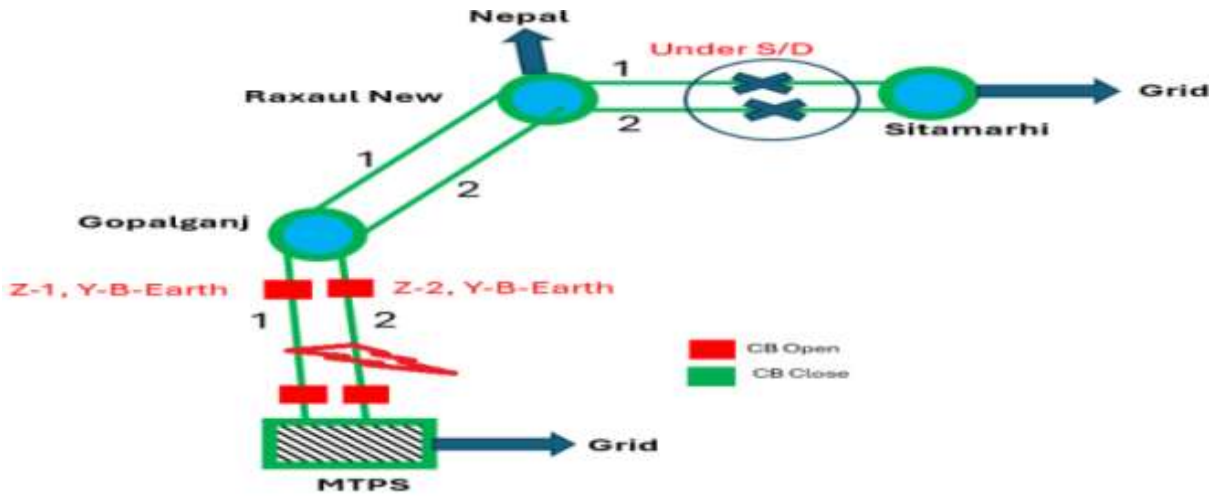
Powergrid informed the tripping had occurred due to Nor'westers on that day. At 00:11:04 Hrs 220kV Kishanganj Dalkhola (PG) line-1 tripped on B-Earth fault in reclaim time. At 00:11:29 Hrs 220kV Kishanganj Dalkhola (PG) line-2 tripped on R-Earth fault in reclaim time. At 00:11:34 Hrs 220kV Kishangan-Siliguri line -1 tripped on B-Earth fault in reclaim time.

Powergrid representative could not furnish the details of fault location and observations of line patrolling. Powergrid was advised to share a report on this disturbance to ERPC.

2.5 Grid disturbance at 220kV Raxaul & 220kV Gopalganj S/s on 20th April 2026 at 12:05 Hrs

Prior to the disturbance 220 kV Raxaul–Sitamarhi Circuit 1 & 2 were under planned shutdown from 11:30 Hrs on 20/04/2026 and Raxaul and Parwanipur areas of Bihar and the Nepal power system were connected to rest of the Eastern Region grid through the 220 kV Raxaul–Gopalganj–MTPS double circuit lines. On 20th April 2026 at 12:05 Hrs, 220 kV Gopalganj–MTPS line 1 & 2 got tripped due to Y-B phase fault, leading to a power failure at Raxaul and Gopalganj S/s.

Detailed report from ERLDC is attached at **Annexure 2.5.**



Load Loss: 152 MW
Outage Duration: 01:44 Hrs

BSPTCL may explain.

Deliberation in the meeting

BSPTCL representative informed that there was a fault in 220 kV Gopalganj-MTPS circuit-II. The breaker at Goalganj end tripped on zone-2 protection. At the same time the Gopalganj-MTPS circuit-I also tripped leading to total power failure at 220 Gopalganj as well as 220 kV Raxaul S/s.

On tripping of circuit-I, he explained that during SAS implementation work the busbar logic was wrongly configured in the relay. Due to incorrect logic, the busbar relay operated during the tripping of circuit-II and led to tripping of all other feeders. The logic was reviewed and rectified on 25.04.2026.

Regarding carrier-aided scheme for 220 kV Gopalganj-MTPS line, he informed that at present carrier is out of service for this line due to very old PLCC panel and further updated that the DTPC based carrier communication will be implemented within August-26.

PCC noted.

2.6 Grid disturbance at Goraul (BSPTCL) S/s on 29th April 2026 at 19:05 Hrs

Prior to the disturbance 220kV Muzaffarpur-Goraul-1 line got tripped at 18:57 Hrs on 29/04/2026. Further, 220kV Goraul S/s is radially connected to 220kV Muzaffarpur S/s through 220kV Muzaffarpur-Goraul-2 line. On 30/04/2026 at 19:06 Hrs, 220kV Muzaffarpur-Goraul-2 line tripped on B phase fault consequently 220kV Goraul S/s became dead.

Detailed report from ERLDC is attached at **Annexure 2.6.**

Load Loss: 113 MW
Outage Duration: 00:25 Hrs

BSPTCL may explain.

Deliberation in the meeting

BSPTCL informed that the weather was stormy during the disturbance. At 18:57 hrs, 220 kV Muzaffarpur-Goraul-I tripped on reclaim time. At 19:06 hrs, 220 kV Muzaffarpur-Goraul-II tripped on zone-2 protection from Goraul end. He further informed that the carrier communication is in failed condition for circuit-2 and the same would be rectified within two weeks' time.

PCC noted.

2.7 Grid disturbance at 220kV Chatra S/s on 24th April 2026 at 18:58 Hrs

Prior to the disturbance 220kV Daltonganj-Latehar line was kept opened on system requirement. On 24/04/2026 at 18:58 Hrs, Y phase fault occurred in 220kV Chatra-Latehar line and at the same time 220 kV Daltonganj-Chatra line got tripped from Chatra end only, resulting in total power failure at Chatra S/s.

Detailed report from ERLDC is attached at **Annexure 2.7.**

Load Loss: 40 MW
Outage Duration: 00:56 Hrs

JUSNL may explain.

Deliberation in the meeting

JUSNL representative informed that there was a fault in 220 kV Latehar-Chatra line. The relay at both end sensed the fault in zone-1 protection and issued trip command. At the same time, the breaker at Chatra end of 220 kV Chatra-Daltonganj line tripped. This led to total power failure at 220 kV Chatra S/s.
He further informed that the tripping could not be analysed as site personnel failed to extract the DR file from the relay. He updated that CRITL team would visit the substation in this week and thereafter they would submit the detailed report.

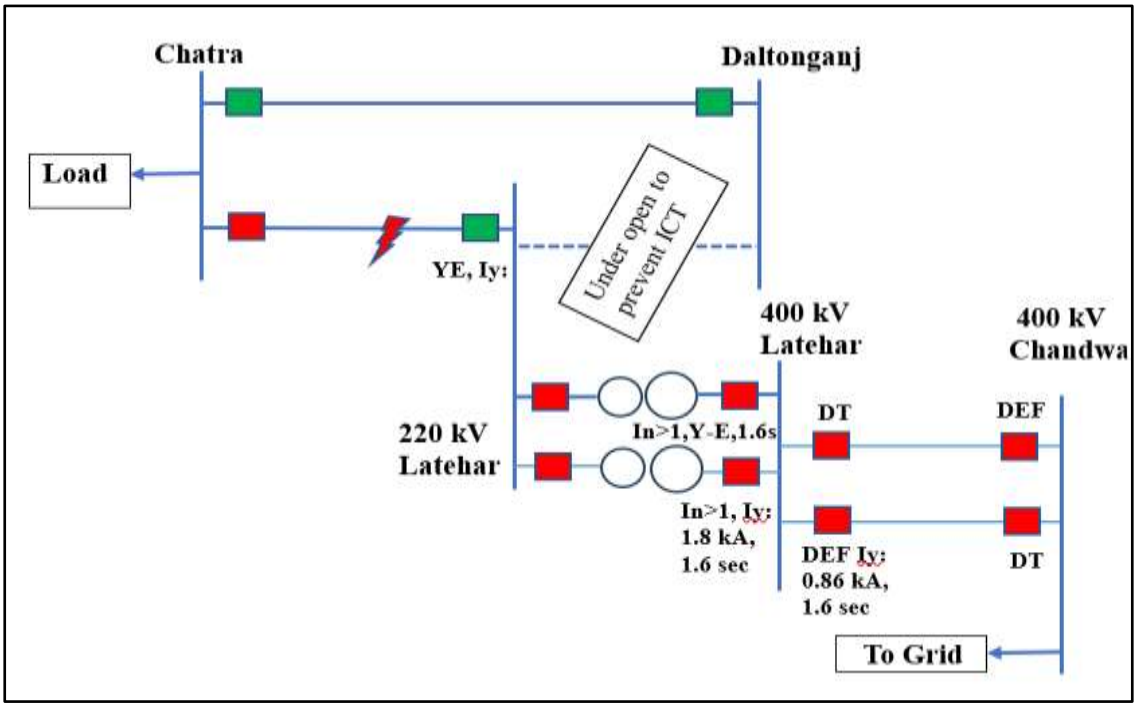
He intimated that similar type of tripping awas observed at Chhatra end on 30.04.2026.

PCC advised JUSNL to submit the detailed report on the above disturbance within a week.

2.8 Multiple elements tripping at Latehar Substation on 24-04-2026 at 20:11 Hrs

Multiple elements tripping occurred on 24.04.2026 at 20:11 Hrs at Latehar substation. The sequence of events is as follows:

- 220 kV Latehar-Chatra line got tripped at 18:58 Hrs on 24-04-2026 due to snapping of Y- Ph jumper at Loc No 264 from Chatra end.
- At 20:11 Hrs , during the charging attempt of the above line from Latehar end , the TBC CB failed to open which resulted in tripping of both 400/220 kV ICTs and 400 kV Latehar-Chandwa D/C.



This incident highlights serious concern regarding the performance and coordination of the protection system, as it had the potential to escalate into a major disturbance at Latehar area of ER power system.

Protection Issues observed:

1. Non opening of 220 kV Bus Coupler CB at Latehar- Detail checks may be carried out for CB operational timing, static and dynamic contact resistance, contact travel characteristics, as well as the complete trip circuitry from Protection relay up to CB trip coils.
2. The reason for the non-operation of the LBB protection may be investigated in detail and suitable corrective measures may be taken accordingly.
3. Tripping of 400/220 kV ICTs and 400 kV Latehar–Chandwa D/C within 1.55 seconds indicates protection coordination issues. Nnecessary protection setting coordination of the backup earth fault (B/U EF) protection of ICTs may be carried out in line with the ERPC protection philosophy.

ERLDC had sought details regarding root cause and remedial measures through emails dated 03.05.2026 for which copies of e-mails attached as Annexure. Response from JUSNL is still awaited.

JUSNL may update.

Deliberation in the meeting

ERLDC informed that during restoration of 220 kV Latehar-Chatra line on 24.04.2026 from Latehar end, the TBC CB failed to open resulting in tripping of both 400/220 kV ICTs and 400 kV Latehar-Chandwa D/C on DEF protection. The following protection issues were observed by PCC:

- *The reason for non-operation of LBB protection during CB failure of TBC bay.*

- *Reason for tripping of 400 kV Chandwa- Latehar Line. There seems protection coordination issue of Directional Earth Fault relay of ICTs & 400 kV Line at Latehar end.*

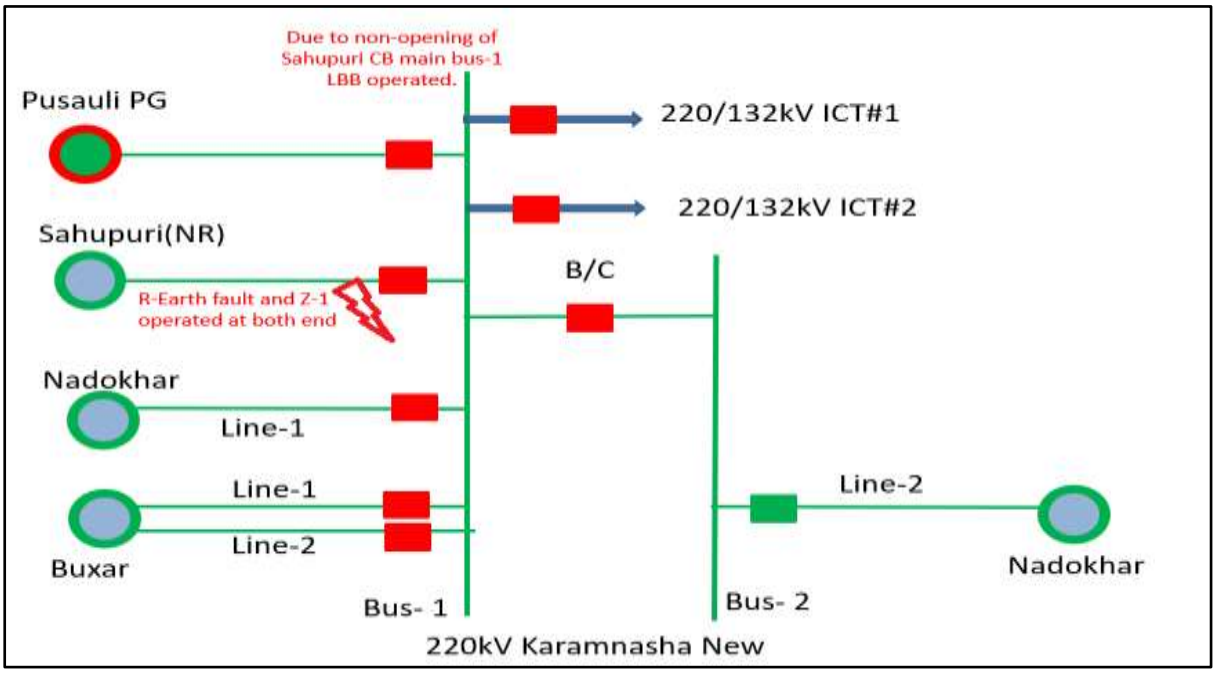
PCC advised JUSNL to complete the site visit within a week and submit the detailed analysis of the disturbance to ERPC within a week.

2.9 LBB Operation at 220 kV Karamnasha Substation at 13:02 Hrs on 15-04-2026

On 15.04.2026 at 13:02 Hrs, R phase fault occurred in 220kV Karamnasha New- Sahupuri Line with Ir:10.07 kA at a distance of 4.9 Kms from Karmnasa end. The Distance relay operated, however, CB at Karmnasa end failed to open, which led to operation of LBB protection subsequently tripping of 220 kV Bus-1 as intimated. As a result, the following elements connected to 220 kV Bus-1 were tripped:

1. 220 kV Pusauli PG
2. 220 kV Nadokhar-1
3. 220 kV Buxar 1 and 2 and both 200 MVA ICT

During event, only 220 kV Nadhokar -2 line connected to 220 kV bus-2 remained in service.



The incident is a matter of serious concern, as it had the potential to escalate into a major grid disturbance in the Eastern Region power system.

Protection & Operational issues:

1. The Reason for non-opening of CB at Karmnasa for 220 k Sahupuri Line may be investigated and appropriate remedial measures may be taken immediately. Preventive maintenance of Circuit breaker should be ensured, including Operational timing test, CRM, DCRM with travel, protection trip circuit from Relay to CB coils in line with CEA Grid Standard Regulation-2010
2. Proper distribution of feeders across both buses may be ensured to enhance system reliability and avoid concentration of critical elements on a single bus.

ERLDC had sought details regarding above points thought emails dated 20.04.2026 for which mail copy attached**.** Response from BSPTCL is still awaited.

BSPTCL may update.

Deliberation in the meeting

BSPTCL representative informed that there was a R phase to ground fault in 220 kV Karmanasha-Sahupuri line and the relay sensed the fault in zone-1 protection. However, due to delayed tripping of circuit breaker, LBB operated and led to tripping of 220 kV Bus-I at Karmanasa S/s.

He informed that the feeder segregation was not uniform due to some technical constraints in site. However, they have now uniformly segregated the feeders among the 220kV Bus after the disturbance.

On delayed opening of breaker, he informed that CRM, DCRM & other tests will be carried out for the breaker by availing shutdown of the line in this week.

2.10 Tripping of ICTs during the month of April'26

Sl. No	Name of the Element	Trip Date/Time	Reason of tripping	Utility
1	400KV/220KV 250 MVA ICT 2 AT TENUGHAT	2026-04-30 02:57	Over flux protection operated	TVNL
2	400KV/220KV 315 MVA ICT 1 AT BOKARO-A TPS	2026-04-29 15:23	Tripped on differential protection	DVC
3	400KV/220KV 250 MVA ICT 1 AT TENUGHAT	2026-04-30 02:57	Over flux Protection operated	TVUNL
4	400KV/220KV 500 MVA ICT 1 AT BAKHTIYARPUR(BH)	2026-04-26 20:39	Tripped due to high oil temperature.	BSPTCL
5	400KV/220KV 500 MVA ICT 1 AT BAKHTIYARPUR(BH)	2026-04-24 16:48	Due to a punctured control cable of the ICT, Main PRD-1, Buchholz, PRV-1, and OTI relays operated	BSPTCL
6	400KV/132KV 200 MVA ICT 4 AT KAHALGAON	2026-04-25 11:57	86B Lockout relay malfunctioned	NTPC Kahalgaon
7	400KV/220KV 315 MVA ICT 2 AT LATEHAR(JUSNL)	2026-04-24 20:11	E/f, Y-N, IY-1.812 kA	JUSNL

8	400KV/220KV 315 MVA ICT 1 AT LATEHAR(JUSNL)	2026-04-24 20:11	E/f, Y-N, IY-1. 763 kA	JUSNL
9	400KV/132KV 200 MVA ICT 2 AT KAHALGAON	2026-04-13 16:19	Spurious bus bar protection operated during maintenance work on 132kV Sabour line.	NTPC Kahalgaon
10	400KV/220KV 250 MVA ICT 1 AT TENUGHAT	2026-04-02 17:43	Tripped on REF Protection	TVNL
11	400KV/220KV 315 MVA ICT 3 AT JEERAT	2026-04-05 07:45	Due to foreign material, 220 kV Bus-1 at Jeerat tripped, along with ICT-3.	WBSETCL
12	400KV/220KV 250 MVA ICT 1 AT TENUGHAT	2026-03-30 15:01	REF Protection operated	TVNL
13	400KV/220KV 315 MVA ICT 2 AT LAPANGA	2026-04-14 06:50	Tripped on Differential Protection	OPTCL

Concerned utilities may explain.

Deliberation in the meeting

- *On tripping of ICT at Tenughat, ERLDC informed that the overvoltage issue observed as the GT tap position is being kept 1 at Tenughat. The issue will be discussed in the forthcoming OCC Meeting.*
- *For ICT-1 at Bokaro, DVC intimated that there was no internal fault in the ICT. On investigation, it was found that IR value of B-phase LA was not in order. The LA was replaced subsequently.*
- *Regarding ICT at Bakhtiyarpur, BSPTCL informed that the tripping was due to faulty control cable and the cable has now been replaced.*
- *Triping of ICT at Kahalgaon could not be discussed as NTPC Kahalgaon was not present in the Meeting.*
- *On tripping of ICT at Tenughat on REF protection, TVNL representative informed that due to circuitary issue the ICT tripped. The same has been rectified.*
- *Regarding tripping of ICT-3 at Jeerat, WBSETCL informed that the weather was stormy during the disturbance. Due to touching of foreign material (GI wire), Y- phase IV side CT bursted and B-phase CT was damaged. Subsequently the busbar protection operated. The CTs were replaced subsequently.*
- *On tripping of ICT at Lapanga, OPTCL representative informed that the ICT failed due to failure of B-phase bushing.*

2.11 Tripping of Bus during the month of April'26

Sl. No	Name of the Element	Trip Date	Trip Time	Reason of tripping	Utility

1	132KV MAIN BUS - 2 AT KHSTPP	2026-04-13	16:19	Spurious bus bar protection operated during maintenance work on 132kV Sabour line.	NTPC Kahalgaon
2	400KV MAIN BUS - 1 AT NEW DUBURI	2026-04-13	13:06	LBB operated during CT testing of 400kV New Duburi-TSL ckt-1	OPTCL

Deliberation in the meeting

- *OPTCL representative informed that during testing of CT circuitry of Tata Steel feeder, the LBB protection operated and led to tripping of 400 kV main bus-1 at Duburi. The detailed analysis report submitted by OPTCL is enclosed at Annexure. He informed that during CT Primary Injection, both Zone-1 & Zone-2 In/OUT switches in new Centralised Duplicate Bus Bar Panels (Siemens -7SS85) were kept in OUT position. However, the Bay was not made out of service. During current injection to CT, the LBB operated. On investigation with Siemens relay engineer, it was found that LBB tripping is independent of Zone In/Out selector switch and the bay needs to be made out in the busbar panel before carrying out any testing.*
- *He added that they have now adopted a SOP for carrying out testing/commissioning of SIPROTEC Centralized busbar relay to avoid similar incidents in future. The SOP is enclosed at* ***Annexure 2.11.***

2.12 Repeated tripping of transmission lines during the month of April'26

Sl. No.	Name of the Element	No. of times Tripped	Reason of tripping	Utility
1	220KV-JODA-RAMCHANDRAPUR-1	4	Tripped on R-Earth, Y-Earth, B-Earth, and Y-B fault.	OPTCL/JUSNL
2	220KV-TENUGHAT-BIHARSARIFF-1	3	Tripped on Y-B, R-Earth, B-Earth fault.	BSPTCL/JUSNL
3	220KV-TTPS-TSTPP-1	3	Line tripped in Z-3 protection in all instances on R-Y-B, R-Earth and B-Earth fault.	NTPC Talcher/OPTCL

Concerned utilities may explain.

Deliberation in the meeting

Regarding 220 kV Joda-Ramchandrapur Line, JUSNL informed that the faults are transient in nature and as PLCC was not healthy, the lines tripped in all instances. The PLCC issue at Ramchandrapur end has been rectified and pending for testing.

For 220 kV Tenughat-Biharsharif line, BSPTCL informed that vegetation issues were reported in some sections and the same has been cleared. MS, ERPC advised both BSPTCL & JUSNL to carry out regular patrolling and clear the vegetation related issues before onset of monsoon.

2.13 Single Line Tripping Incidences in month of April-2026

Single line tripping incidents in the month of April-2026 which needs explanation from constituents of either end is attached.

Members may discuss.

Deliberation in the meeting

Explanation from constituents of either end for single line tripping incidences in month of April 26 is attached at ***Annexure 2.13.***

3. PART-C: FOLLOW UP ITEMS

3.1. Over-voltage setting of 400kV & above transmission lines in Eastern Region

In 152nd PCC Meeting, it was decided that ERLDC will circulate list of 400 kV & above level lines in the ER to all the concerned utilities. Concerned Utilities will verify the details & submit the existing overvoltage settings of the lines.

In 155th PCC Meeting, ERLDC shared the draft settings and intimated that the settings have been suggested by incorporating grading in terms of voltage pick up & time delay of the overvoltage protection.

PCC advised concerned utilities to go through the proposed settings and share their observations, if any to ERPC/ERLDC.

In 156th PCC Meeting, Member Secretary ERPC advised that the observations of WBSETCL may be separately discussed with to clarify their queries.

Subsequently an online meeting was convened by ERLDC with WBSETCL to discuss and finalize the overvoltage settings of WBSETCL substations. Powergrid vide mail dated 13.04.2026 shared their observations on the proposed settings.

In 157th PCC Meeting, ERLDC representative informed that separate meeting was held with WBSETCL to finalise overvoltage settings for their lines.

PG ER-II representative informed that they are having few observations associated with the proposed settings which they have shared to ERPC/ERLDC vide email dated 13th April 2026.

PCC advised concerned utilities to go through the proposed overvoltage settings and submit their observations by end of April 2026.

It was decided that after receiving observation from concerned utilities, a special meeting may be convened to finalize the settings.

No further comment was received from utilities.

Members may update.

Deliberation in the meeting

It was informed in the meeting that Powergrid ER-II has submitted their observation. MS ERPC advised convening a special meeting with Powergrid and finalize the settings.

3.2. 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 April '26, protection performance indices have been received from NTPC Barh, Tashiding HEP, Jorethang HEP, TVNL and DMTCL. Indices details is attached at **Annexure 3.2.**

Utilities are requested to submit the details every month for necessary grid code compliance

Concerned utilities may update.

Deliberation in the meeting

It was informed that CESC, APNRL, OPTCL, WBSETCL & Powergrid ER_I have submitted the index for April-26. PCC advised utilities to share protection performance indices data of particular month by 10th day of subsequent month to ERPC/ERLDC.

3.3. Follow-up of Decisions of the Previous Protection Sub-Committee Meeting(s)

The latest status updated in 158th PCC Meeting is given below:

Sl No.	Name of the Incidence	PCC Recommendation	Latest status
157th PCC Meeting dated 16.04.2026			
1.	Repeated Grid disturbance at 220 kV TTPS (OPTCL) S/s	PCC advised OHPC to share the revised settings to ERPC for record. PCC further advised OHPC to investigate the reason for tripping of 220kV Rengali PH-Nalco & 220 kV Rengali-TSTPP line during the above disturbance.	*Rengali HEP representative informed that the settings file would be shared shortly.*
2.	Strengthening of Protection System for 132 kV Feeders Connected with Bandel TPS: Agenda by WBPDCL	2. PCC agreed to it and advised WBSETCL to reduce the zone-4-time settings to 250 msec for the feeders connected to 132 kV Chanditala & 132 kV Bighati S/s. 3. PCC advised WBSETCL & WBPDCL to share the DR /EL of the said event to ERPC/ERLDC for analysis. Further WBPDCL was advised to share the relay settings file for 132 kV feeders to ERPC/ERLDC.	*WBSETCL confirmed that the zone-4 settings have been revised to 250 msec at 132 kV Chanditala & 132 kV Bighati S/s.*

3.	Tripping of 220 kV Ramchandrapur Bus-1 due to LBB Operation	PCC advised JUSNL & OPTCL to carry out testing of carrier scheme for 220 kV Joda-Ramchandrapur line and resolve the carrier fail issue at the earliest.	*JUSNL informed that SDH amplifier at Joda end was found faulty and the same has been replaced. The PLCC would be brought into operation after testing.*
4.	Tripping of 220 kV Bus-II at 220/132/33 kV Amnour Substation	BGCL/BSPTCL may update the timeline for restoration of Bus-II at Amnour S/s.	*BSPTCL informed that the restoration work would take another 15-20 days.*
156th PCC Meeting dated 13.03.2026			
5.	Tripping of 400 kV Bus-II at Sagardighi Substation and 400 kV Sagardighi–Jeerat-1 Line	Regarding sending of DT trip signal to Jeerat end for Jeerat-1 line, WBPDCL was advised to check reason behind transmission of DT trip signal.	In 157th PCC Meeting, WBDPCL representative informed that as per existing scheme, DT is sent in 4 cases i.e LBB operation, bus differential protection operation, overvoltage protection operation and manually hand tripping. PCC observed that for one and half breaker bus arrangement, the existing DT send scheme will lead to tripping of healthy feeders from remote end though the feeder is charged though tie bay from source end. PCC advised WBPDCL to review the DT send logic in case of LBB operation. *In 158th PCC, WBPDCL informed that the DT sent logic as mentioned above was applicable when one and half breaker scheme is not in operation. He informed that the DT was sent during manual tripping of line.*
155th PCC Meeting dated 19.02.2026			
6.	Disturbance at 220 kV Bolangir New (OPTCL) S/s on 13.01.2026 at 12:38 Hrs	On enquiry from PCC forum, regarding status of Main bus 2, OPTCL representative replied that Main bus 2 and bus bar protection will be in service within one week.	*In 158th PCC Meeting, SLDC Odisha informed that they would facilitate the line shutdown for restoration of Busbar protection at New Bolangir S/s.*

Annexure A

List of Participants (joined physically):

ERPC:

1. K B Jagtap, Member Secretary
2. I K Mehra, SE(Protection)
3. R K Meena, SE(Operation)
4. P P Jena, EE(Protection)

ERLDC:

1. D Biswas, GM, SO
2. Manas Das, DGM
3. Bimal Swargiary, DGM
4. Gitesh Patel, Deputy Manager

WBSETCL:

1. Nirmal Mondal, Addl CE
2. Sanjib Kumar Das, DE

BSPTCL:

1. D K Jha, Executive Engineer
2. 2. Chandan Kumar, EE

DVC:

1. Swarup Kumar Pal, Sr DE

JUSNL:

1. Chandra Sekhar, Sr Manager
2. S Kumar
3. D D Murmu, Jr Manager

TVNL:

1. Rajendra Prasad, AEE

Powergrid:

1. Arik Sen, Manager

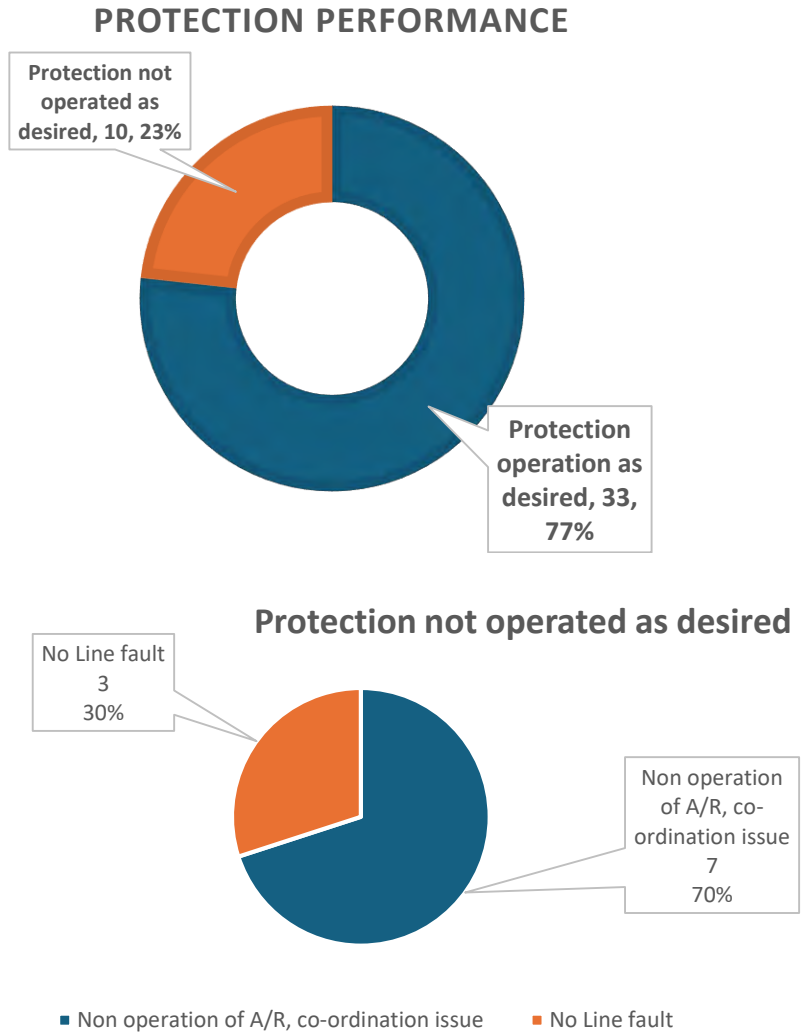
Name	First Join	Email			
ERPC Kolkata	5/12/26, 10:49:25 AM	ERPC@KolkataMST.onmicrosoft.com			
PRABHAT KUMAR (Unverified)	5/12/26, 10:49:33 AM				
UPENDRA KUMAR PATEL (External)	5/12/26, 10:51:44 AM	UKPATEL@NTPC.CO.IN			
Sanjai Kumar Singh {संजय कुमार सिंह} (External)	5/12/26, 10:51:48 AM	sanjai.singh@powergrid.in			
WBPDCL (Unverified)	5/12/26, 10:54:26 AM				
Somnath Chatterjee (External)	5/12/26, 10:54:27 AM	schatterjee@tatapower.com			
SLDC ODISHA (Unverified)	5/12/26, 10:55:08 AM				
Gitesh (Unverified)	5/12/26, 10:55:40 AM				
Dillip Kumar Sahoo,AGM(EL), E&MR S/D, New Duburi, OPTCL (Unverified)	5/12/26, 10:57:58 AM				
AMRENDRA (Unverified)	5/12/26, 10:59:37 AM				
Rahul Srivastava (External)	5/12/26, 11:00:13 AM	rahul.sr@greenkogroup.com			
CGM O&M, OPTCL (Unverified)	5/12/26, 11:00:46 AM				
OPTCL MRDL (Unverified)	5/12/26, 11:00:50 AM				
Surya Pratap rath, AGM OPTCL (Unverified)	5/12/26, 11:01:40 AM				
Deepak Optcl (Unverified)	5/12/26, 11:02:49 AM				
Rajiv Kumar Singh CESC (Unverified)	5/12/26, 11:06:31 AM				
Nishant Kumar Shankwar	5/12/26, 11:09:25 AM	Nishant.Kumar@energy-sel.com			
TASHIDING HEP (Unverified)	5/12/26, 11:09:57 AM				
Amresh Prusti (External)	5/12/26, 11:10:00 AM	amresh.prusti@opgc.co.in			
Ranjan Kumar Biswal {रंजन कुमार बिस्वाल} (External)	5/12/26, 11:11:18 AM	ranjankumar@powergrid.in			
MOGILI BHARGAVA KRISHNA (Unverified)	5/12/26, 11:13:24 AM				
Santosha kumar sahoo RHEP (Unverified)	5/12/26, 11:18:55 AM				
Dr.Prateek Sharma {प्रतीक शर्मा} (External)	5/12/26, 11:20:05 AM	prateeksharma@powergrid.in			
DGM,E&MR DIVISION, BURLA (Unverified)	5/12/26, 11:20:06 AM				
PARAG CHATTERJEE (External)	5/12/26, 11:29:00 AM	PARAGCHATTERJEE@NTPC.CO.IN			
OPTCL Balangir (Unverified)	5/12/26, 11:44:33 AM				
dgm emr balangir (Unverified)	5/12/26, 11:49:02 AM				
Jalaj Kumar Singh	5/12/26, 12:31:48 PM	jalaj.singh@jindalsteel.in			
SSARKAR (Unverified)	5/12/26, 12:40:10 PM				
S MD RASOOL (External)	5/12/26, 12:41:26 PM	SMDRASOOL@NTPC.CO.IN			

158th PCC Meeting
(12-05-2026)

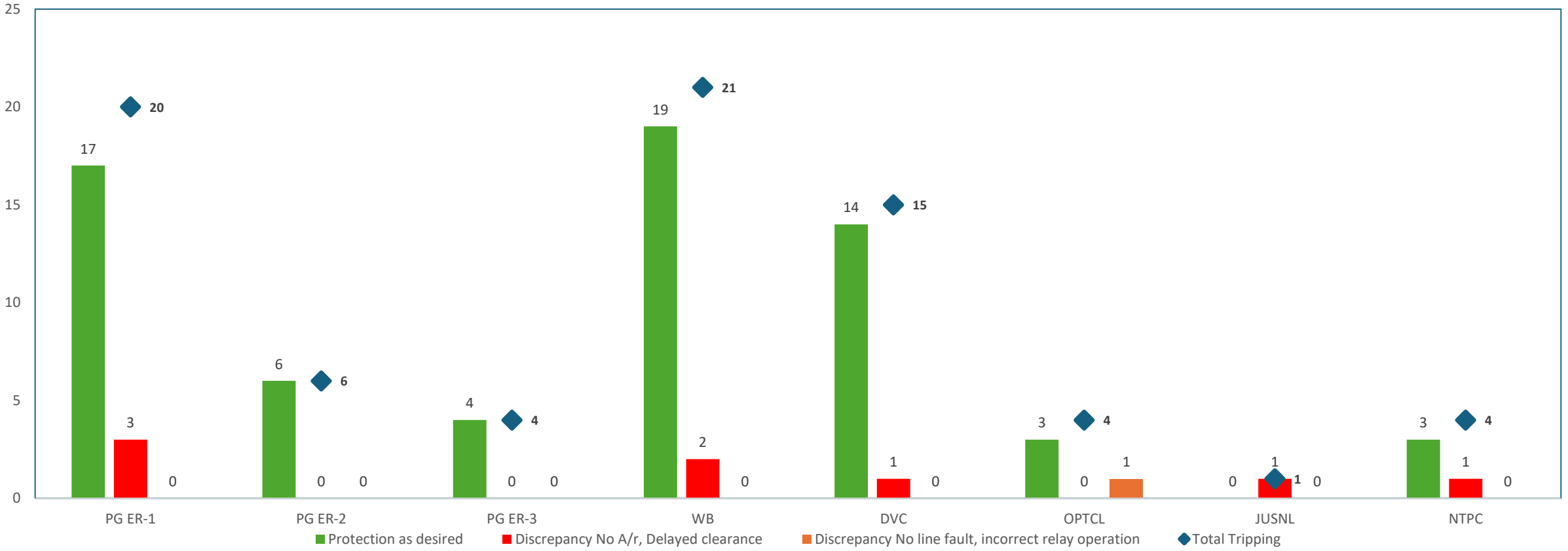
Protection Performance For The Month Of April 2026

- Total **43**-line tripping(400kV and above line):
  - Protection operation as per scheme: **33(77%)**
  - Protection operation not as desired: **10 (23%)**
- Number of Grid Event: GD-1 (**7**)

  - GD-1 reported at 220kV Bidhannagar, DPL and AB Zone on 02/04/2026 due to **unintended switching operation of Bidhannagar ICT-2.** Generation loss of **413 MW at DPL** and **load loss of 782 MW** reported
  - GD-1 reported at JSPL and ACPP-II on 06/04/2026 due to unwanted line tripping in Z-4 protection. Total generation loss of **400 MW at ACPP-II and 390 MW at JSPL (Net load loss of 650 MW).**



Utility wise performance for the month of April 2026



LBB operation during 2025-2026:

Sr. No.	Elements Name	Remarks	Date
1	400KV MAIN BUS - 2 AT SAGARDIGHI	LBB operated(Due to CB stuck)	24-02-2026
2	400KV-PVUNL-PATRATU-1, 400KV TIE BAY OF (LATEHAR-1 AND ICT 2) AT PATRATU and 400KV-NEW RANCHI-PATRATU-2	LBB operated at Patratu S/s.(Malfunction)	21/02/2026
3	220KV-BOLANGIR(PG)-BOLANGIR(GRIDCO)-2 and 220KV-BOLANGIR(PG)-BOLANGIR(GRIDCO)-1	LBB operated at Bolangir(OPTCL) S/s. (Due to CB stuck)	13/01/2026
4	220KV-KHAGARIA-NEW PURNEA-2, 220KV-NEW PURNEA-PURNEA-1, 400KV/220KV 500 MVA ICT 2 AT NEW PURNEA and 220KV MAIN BUS - 2 AT NEW PURNEA	LBB Operated at New Purnea S/s. (Due to CB stuck)	01/01/2026
5	220KV-JODA-RAMCHANDRAPUR-1, 220KV-RAMCHANDRAPUR-JAMSHEDPUR-1	LBB Operated at Ramchandrapur S/s. (Due to CB stuck)	13/09/2025
6	400KV MAIN BUS - 3 AT KHSTPP	LBB operated at Kahalgaon(Malfunction)	07/09/2025
7	400KV MAIN BUS - 1 AT KHSTPP	LBB operated at Kahalgaon(Malfunction)	17/08/2025
8	220KV-DARBHANGA (DMTCL)-MOTIPUR-2	LBB operated at Motipur. (Malfunction)	10/06/2025, 25/06/2025
9	400KV-FSTPP-KHSTPP-1	Malfunction of Tie Breaker LBB relay. (Malfunction)	23/05/2025
10	400KV/132KV 270 MVA ICT 1 AT DIKCHU HEP(Generation loss of 100 MW)	LBB operated at Dikchu. (Malfunction)	22/05/2025

Thank You

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

Detailed Report of grid event at 220kV Bidhannagar, DPL and AB Zone 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): 20-04-2026

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

Prior to the disturbance, 315 MVA ICT-3 at Bidhannagar S/s was under planned shutdown. At 14:20 Hrs of 02/04/2026, 315 MVA ICT-1 tripped due to PRD operation, which led to over loading of 315 MVA ICT-2(*Loading increased up to 336 MW*). To reduce the loading on ICT-2, 220kV Mangalpur and Shyam SEL feeder were manually tripped at 14:24 Hrs. Consequently, the loading on ICT-2 reduced to a safe limit of around 275 MW.
Subsequently, at 14:28 Hrs, 315 MVA ICT-2 was inadvertently hand tripped by site personal, which led to isolation of 220kV from 400kV system Simultaneously, 220kV Bidhannagar-Bakreswar D/C loading increased up to its thermal rating, causing both lines tripped on O/C protection.
As a result, 220/132kV Bidhannagar islanded with AB Zone and DPL generation and got collapsed due to load generation unbalance. 220kV Bidhananagr, Ab Zone, and DPL became dead and generation loss of **413 MW** at DPL and load loss of **782 MW** reported at Bidhannagar, AB Zone.

2. **Time and Date of the Event (घटना का समय और दिनांक):** 14:28 hrs of 02/04/2026
3. **Event Category (ग्रिड घटना का प्रकार): Grid Disturbance (GD)-1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** West Bengal
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency (Hz)	Regional Generation (MW)	Regional Demand (MW)	State Generation	State Demand
				Bihar (MW)	Bihar (MW)
Pre-Event (घटना पूर्व)	50.022 Hz	23357 MW	26100 MW	5094 MW	11080 MW
Post Event (घटना के बाद)	50.05 Hz	22944 MW	25318 MW	4681 MW	10298 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)	400/220KV ICT-3 at Bidhannagar is under planned shutdown
Weather Condition (मौसम स्थिति)	Normal

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Generation loss- 413 MW, Load loss-782 MW
7. **Duration of interruption (रुकावट की अवधि): 60 Mins**
8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

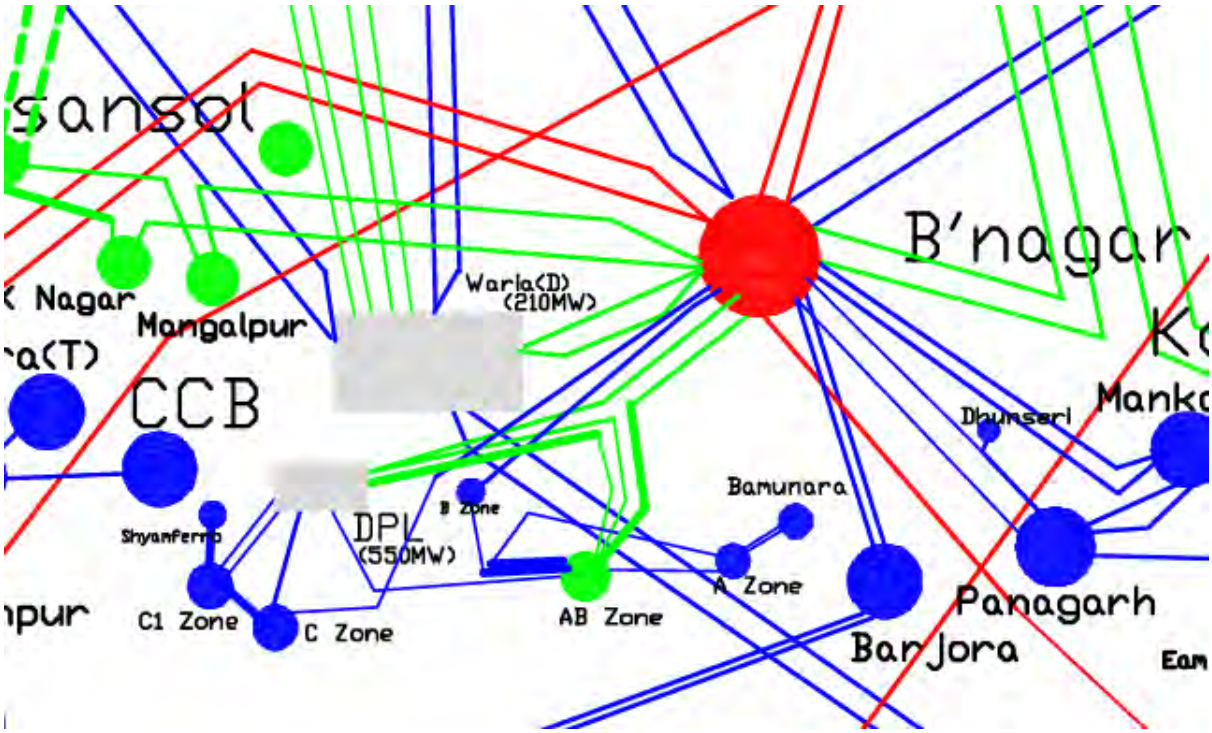


Figure 1: Network across the affected area

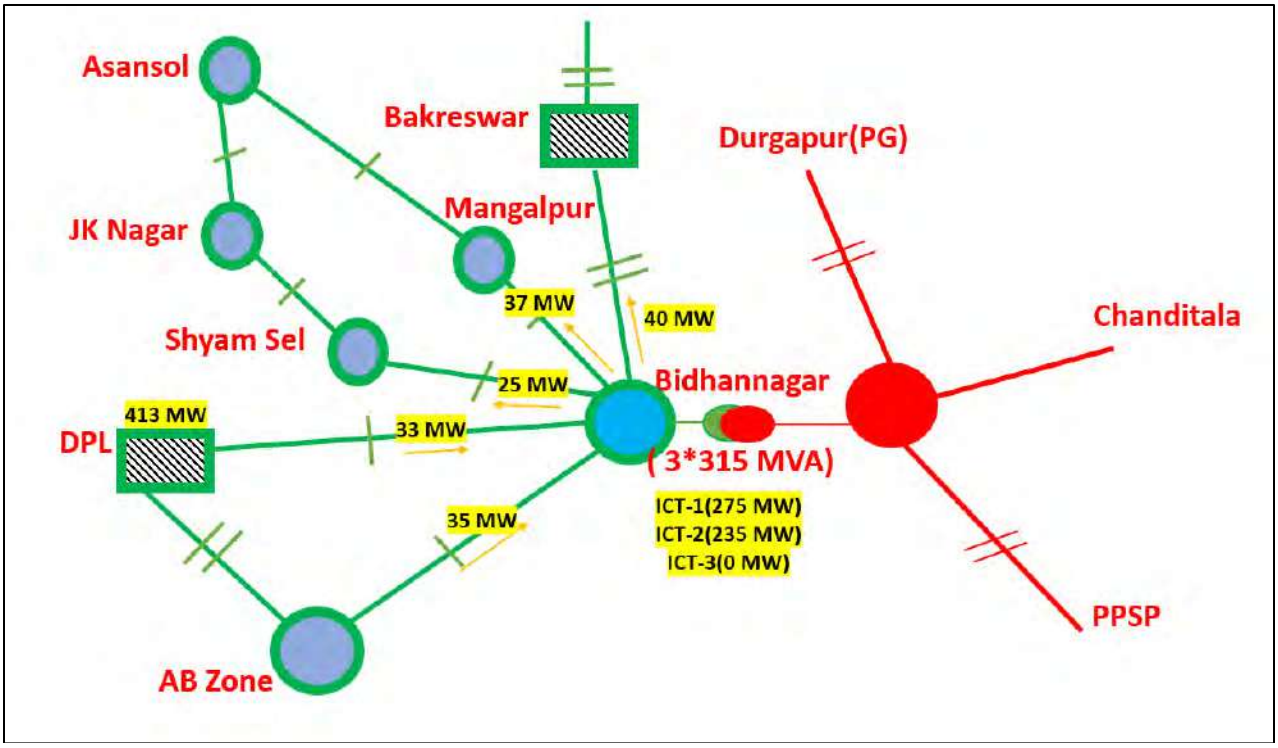
9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण):** NIL

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

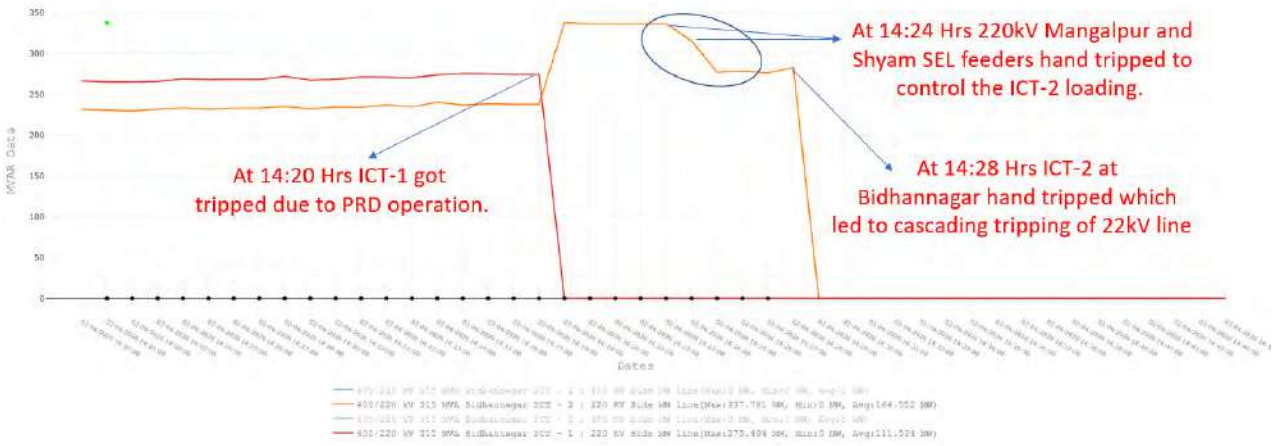
क्रoसo	नाम	Trip time (hh:mm:ss)	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत	Restoration time
1.	**400/220KV ICT-1 at Bidhannagar**	14:20	PRD operated.		17:25
2.	**400/220KV ICT-2 at Bidhannagar**	14:28	Hand tripped by site personal.		15:20
3	**DPL Unit-7**	14:28	Loss of evacuation.		-
4	**DPL Unit-8**	14:28	Loss of evacuation.		-

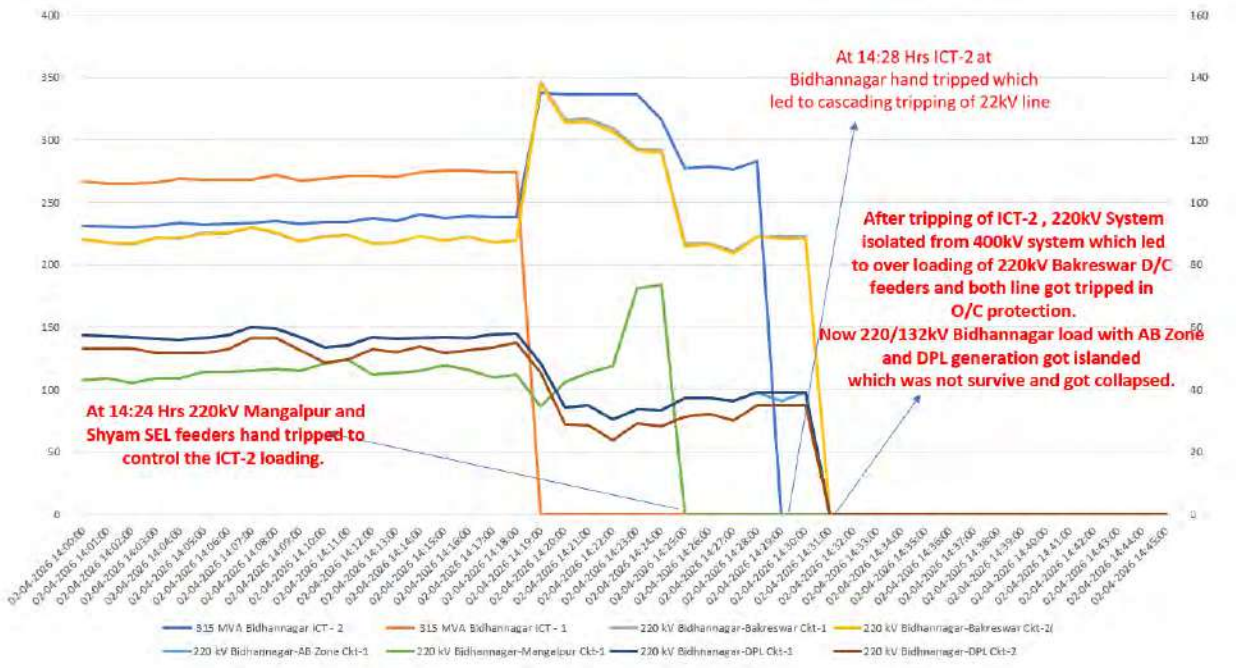
11. **Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):**

Pre-Disturbance condition



- At 14:20 Hrs on 02.04.2026, 315 MVA ICT-1 at Bidhannagar S/s tripped due to PRD operation.
- At that time, ICT-3 was under shutdown and only 315 MVA ICT-2 was in service (Loading was a round 336 MW).
- To control the loading of ICT-2, 220kV Mangalpur and Shyam SEL feeders were hand tripped.
- After tripping of both feeders ICT-2 loading was in safe side (Around 275 MW).
- Due to unintended switching operation by site person, ICT-2 was hand tripped. This led to cascading tripping in 220kV network by tripping of 220kV Bidhananar-Bakreswar D/C in O/C protection.
- 220/132kV Bidhannagar islanded with AB Zone and DPL generation.
- Due to load generation unbalance island got collapsed.
- 220kV Bidhananagr, Ab Zone, and DPL became dead and generation loss of about 413 MW at DPL and load loss of about 782 MW reported.





SCADA flow of lines and ICTs at Bidhanagar S/s

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

- Protection operation as per protection scheme.

Operational Observations-

- Switching operation of ICT-2 at Bidhannagar S/s may be explain as initiating factor for system collapse.
- During planned S/D of ICT-3, remaining ICT loading was not N-1 compliance. Real time monitoring and restriction of remaining ICTs loading in safe side were not adequately ensured.

One Special meeting was held on 10/04/2026 and during the meeting, the following points were suggested for further examination and implementation:

1. It was proposed to review the existing non-directional overcurrent setting of the 220 kV BKTPP–Bidhanagar D/C line (pickup: 584 A, time delay: 2.5 s at Durgapur end). It was suggested to incorporate OC with AND logic with tripping status of either circuit of the 220 kV BKTPP–Bidhanagar line and extend the output to downstream feeders to control overloading conditions of 220 kV BKTPP–Bidhanagar D/C line. This will prevent tripping of critical 220 kV BKTPP–Bidhanagar D/C line, thereby ensuring safe and reliable system operation.

OR

2. It was proposed to review the existing non-directional overcurrent setting of the 220 kV BKTPP–Bidhanagar D/C line (pickup: 584 A, time delay: 2.5 s at Durgapur end). It was suggested to incorporate OC with AND logic with tripping status of either circuit of the 220 kV BKTPP–Bidhanagar line and the output be extended to 220 kV Mangalpur and Shyam SEL feeders directional(power flow from Bidhan nagarto Mangalpur/ Shyam SEL). This arrangement will control overloading conditions effectively without tripping the 220 kV BKTPP–Bidhanagar D/C line, thereby ensuring safe and reliable system operation.

3. It was further requested to submit a list of 220 kV feeders in the West Bengal power system, where similar overcurrent settings are implemented for the information and awareness of real-time grid operators.

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

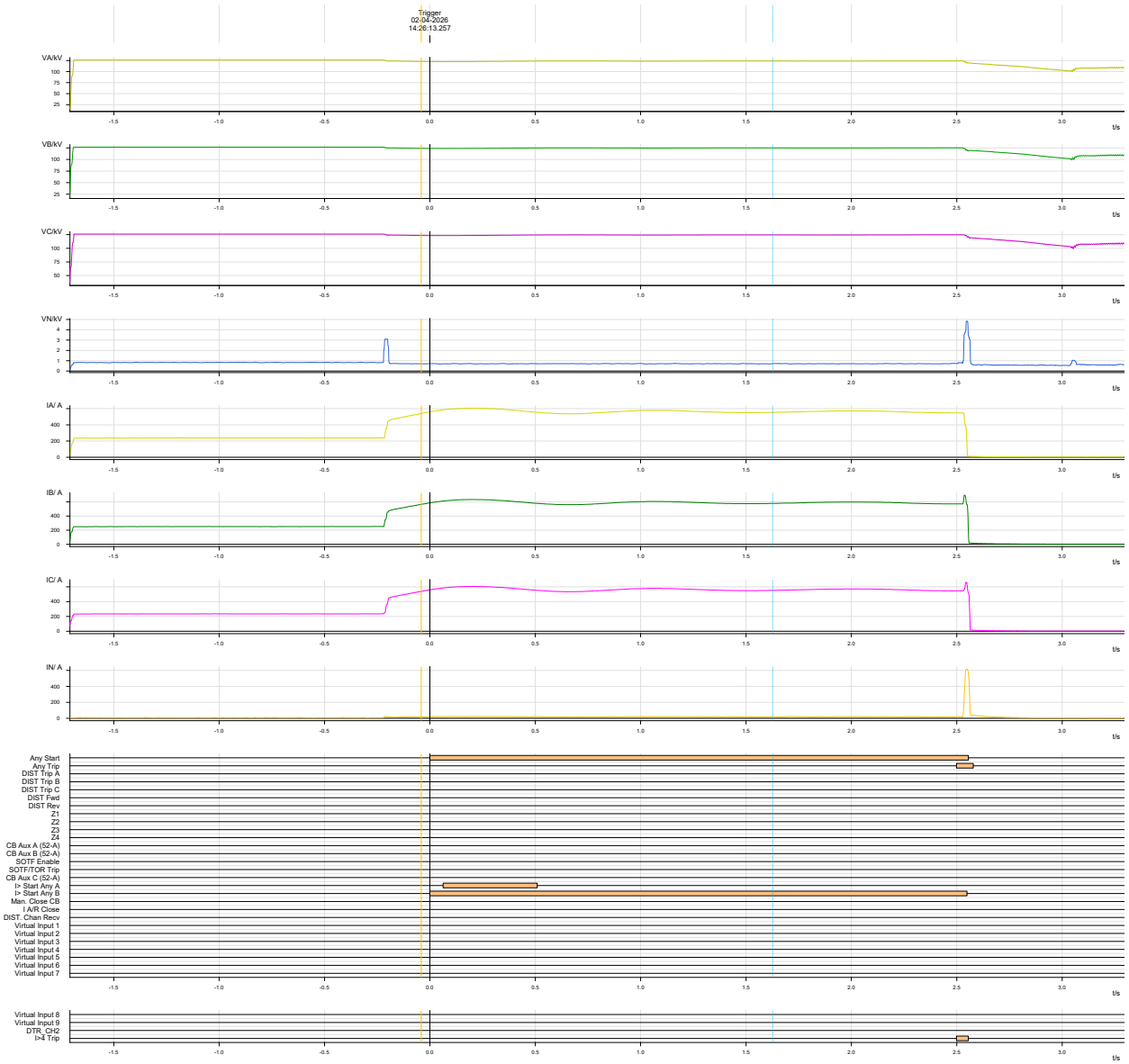
14. Non-compliance observed (विनियमन का गैर-अनुपालन):

S.No.	Issues	Regulation Non-Compliance	Remark
1	**Flash Report received within 8hrs?**	IEGC section 37.2 (b)	Submitted
2	**Whether DR/EL provided within 24 Hours?**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	Submitted (After 24 Hrs)
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)	Protection operated as per protection scheme.

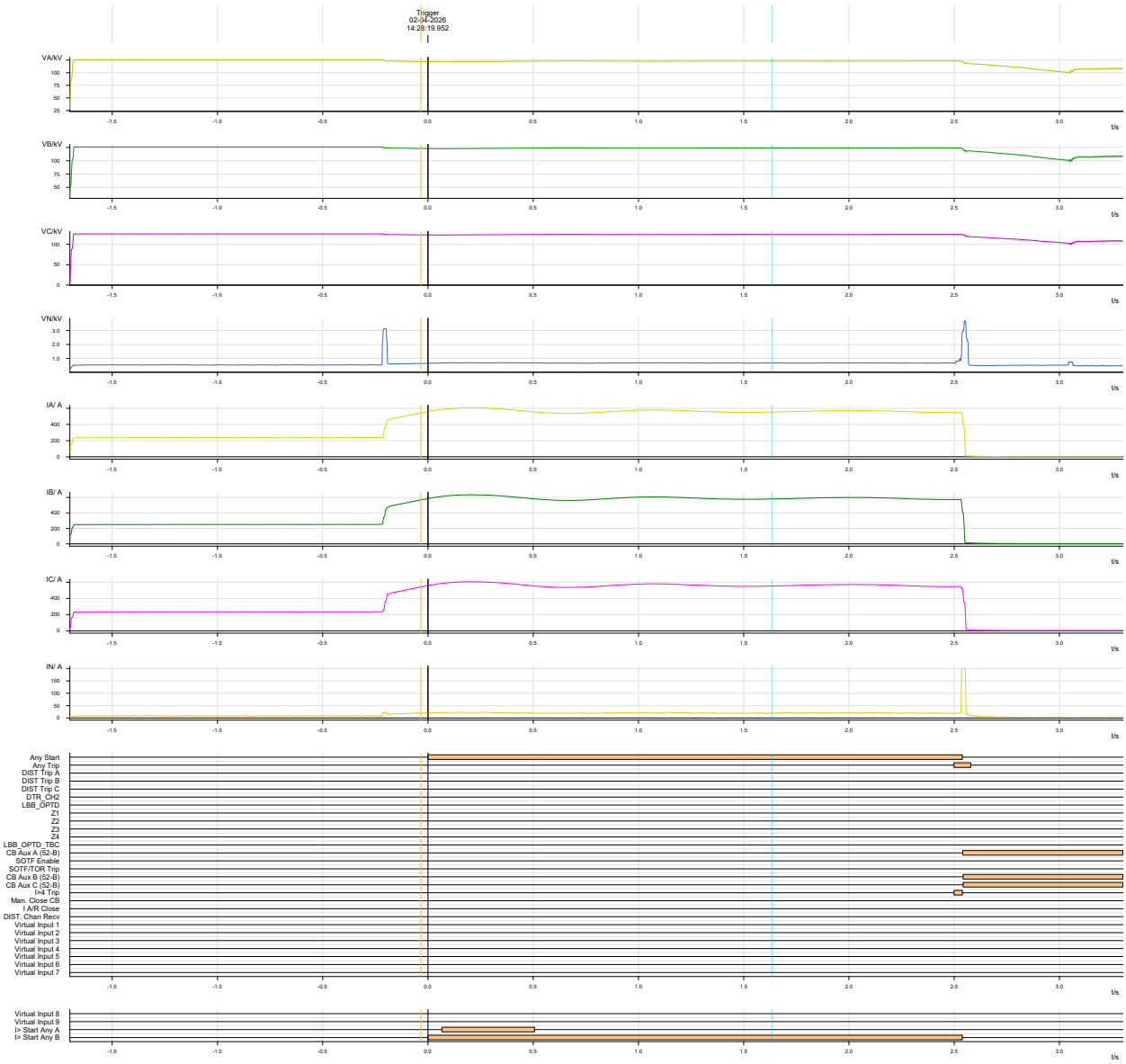
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु): Nil

Annexure 1:

DR of 220kV Bidhannagar-Bakreswar-1:



DR of 220kV Bidhannagar-Bakreswar-2:


Trigger
02-04-2026
14:28:19.952
VA/kV
VB/kV
VC/kV
VN/kV
IA/ A
IB/ A
IC/ A
IN/ A
t/s
Any Start
Any Trip
DIST Trip A
DIST Trip B
DIST Trip C
DTR_CH2
LBB_OPTD
Z1
Z2
Z3
Z4
LBB_OPTD_TBC
CB Aux A (52-B)
SOTF Enable
SOTF/TOR Trip
CB Aux B (52-B)
CB Aux C (52-B)
I>4 Trip
Man. Close CB
I A/R Close
DIST. Chan Recv
Virtual Input 1
Virtual Input 2
Virtual Input 3
Virtual Input 4
Virtual Input 5
Virtual Input 6
Virtual Input 7
Virtual Input 8
Virtual Input 9
I> Start Any A
I> Start Any B

INCIDENT REPORT:

Prior to incident :
Maintenance work of 400KV Main Bus 2 along with 315MVA, 400/220/33KV ICT-3 was already going on as per OCC approval .

315MVA, 400/220/33KV ICT-1 tripped at 14.18hrs on 02-04-2026 due to actuation of PRD (Main Tank R-Ph).

It may be noted that, on 13-03-2026, huge oil leakage was observed from PRD and was Manually switched OFF at 18:25 Hours and switched ON at 19:26 Hours. The PRD was replaced on 18-03-2026.

Before occurrence of incident 220 KV System Bus Configuration was

Bus A-

1.200 MVA 220/132/33 KV ICT 1
2.315 MVA 400/220/33 KV ICT 1
3.BKTPP 1
4.DPL AB Zone(DPL 1)
5.Mangalpur (Asansol)

Bus B-
1.200 MVA 220/132/33 KV ICT 2,
2.200 MVA 220/132/33 KV ICT 3,
3.315 MVA 400/220/33 KV ICT 2,
4.315 MVA 400/220/33 KV ICT 3 (in shutdown Condition),
5. BKTPP 2,
6. Shyamsel(JK Nagar),
7. DPL 2.

Chronology Of Occurrence

1.HV SIDE OF 315 MVA TR-1 Tripped at 14:18 Hours
2. 220 KV DGP-SHYAM SEL switched OFF at 14:23 Hours as per SLDC Instruction
3. 220 KV DGP-MANGALPUR switched OFF from Mangalpur end at 14:24 Hours as per SLDC Instruction. DT was received at that time.
4.315 MVA TR-2 Switched OFF at 14:26 Hrs. from 220 KV SIDE only (manual operation).
5. BKTPP -1, 2 Tripped in LRS (I>4, 584A, Non-Directional, Time delay-2.5 secs) at 14:27 Hours.
6. DPL AB Zone (DPL 1) & DPL 2 was NO power condition due to outage of DPL generation at DPL end at 14:27Hrs.
7. BUSBAR Zone B OPERATED AT 14:27:32 Hours at the time of closing of 220 KV side of 315 MVA 400/220/33 KV ICT 2.

OBSERVATION

315 MVA ICT#3 was in schedule shutdown along condition with 400 KV Main Bus B. At 14:18 hrs 315 MVA ICT#1 tripped with PRV with huge oil surge .As per instruction of SLDC on 14:23 hrs 220 KV Shyamsel and Mangalpur ckt was switched off to manage loading. At that time all the load was catered by 315 MVA ICT#2 . At that time at around

14:26 hrs operation personnel of 220 KV control room by **mistakenly switched off** IV CB of 315 MVA ICT#2 causing Durgapur 400 KV system isolated from Durgapur 220 KV. Around 14:27 hrs BKTPP #1 & 2 tripped with over current from Durgapur 220 KV end and at the same time DPL generation was isolated from DPL end .An special setting for preventing conductor /jumper snapping of Zebra conductor was adopted in consultation with SLDC in BKTPP circuit (Setting-584A,DT,Non-Directional,2.5 Sec) at Durgapur end. Due to mal operation of operating personnel, Durgapur 220 KV bus was in no power condition causing load loss in the following substations

1.Durgapur A Zone
2. Durgapur B Zone
3. Durgapur C Zone
4.Durgapur C1 Zone
5. Durgapur AB Zone
6.Bamunara
7.Ukhra
8.Panagarh
9.Mankar
10.Mahachanda

Operation personnel then closed 315 MVA ICT#2 IV side CB without switching off other 220 KV CB causing huge current to flow in ICT#2.Due to absence of CB closing command in ABB make REB 670 Busbar differential relay,Bus B operated in Busbar differential protection(315 MVA ICT#2 was in Bus B). During that time **busbar relay ignored current of ICT#2 bay as CB close status was not high at the time of pre arcing.**

Restoration

1. 220 KV BKTPP-1 switch ON at 14: 45 Hrs
2. 220 KV B/C ON at 14:50 hours
3. 220 KV BKTPP-2 ON AT 14:55 Hrs
4. 220 KV AB ZONE ON 15:00 HRS.
5. 220 KV MANGALPUR AT 15:15 HRS
6. 200 MVA TR-1 &3 AT 15:10 HOURS.
7. 315 MVA TR-2 AT 15:15 HOURS
8. 315 MVA TR-3 AT 15: 20 HRS
9. 200 MVA TR-22 ON AT 15:16 HOURS
10. 315 MVA TR-1 17: 25 HRS

Presentation regarding GD event at DURGAPUR 220/132 kV substation on 02/04/2026

1

INCIDENT

- Place-DURGAPUR 220/132 KV Substation.
- Date – 02/04/2026
- Time – 14:20 hrs to 14:29 hrs
- Incident- No power at 220 kV Bus & delay in restoration due to consequent busbar operation.

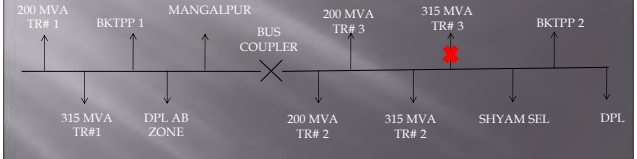
2

INCIDENT @14:20 hrs

- 315 MVA 400/220/33 KV ICT 3 was availing OCC shutdown.
- 315 MVA 400/220/33 KV ICT 1 tripped on PRD operation at 14:20 hrs.
- Loading of 315 MVA 400/220/33 KV ICT 2 shoot upto 336 MW.

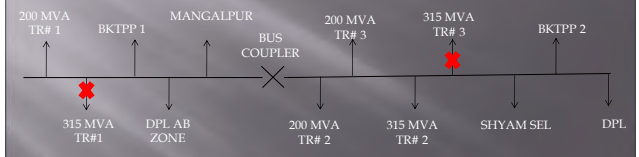
3

BUSCONFIGURATION PRIOR TO 14:20 hrs



4

BUSCONFIGURATION @14:20 HRS



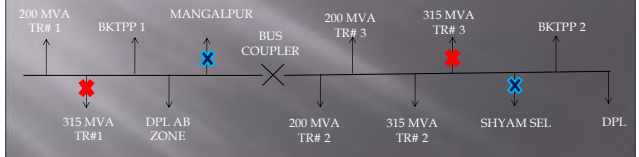
5

INCIDENT @ 14:24 hrs

- To control loading of 315 MVA 400/220/33 KV ICT 2,Mangalpur & Shyam SEL feeder were hand tripped as per instruction of SLDC.
- Consequently 315 MVA 400/220/33 KV ICT 2 loading came down to 275 MW.

6

BUSCONFIGURATION @14:24 HRS

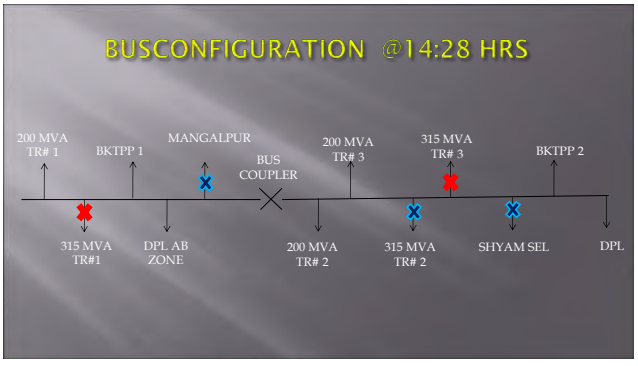


7

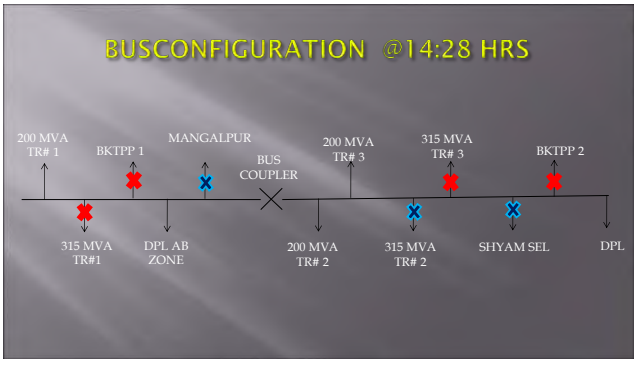
INCIDENT @ 14:28 hrs

- LV side of 315 MVA 400/220/33 KV ICT 2 was hand tripped by operating personnel inadvertently.
- This causes loading (Approx 600A per ckt) of BKTPP #1 & 2 goes beyond thermal limit , causing both feeder operation on OC.
- Which in turn causing Overload to DPL generator to trip from DPL end.

8



9



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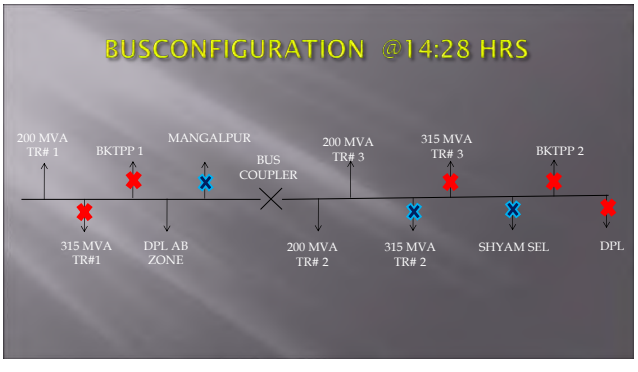
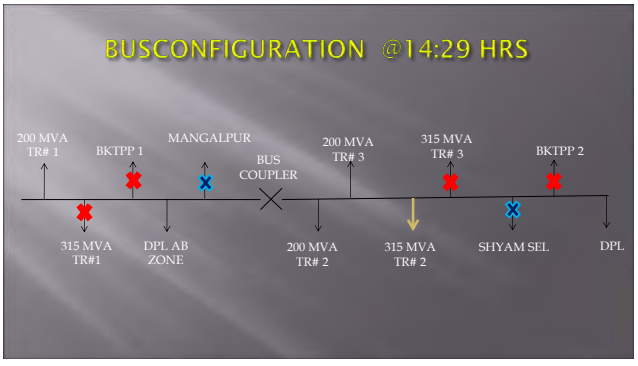


11

INCIDENT @ 14:29 hrs

- LV side of 315 MVA 400/220/33 KV ICT 2 was closed by operator seeing no power on 220 KV bus without isolating rest bays.
- This causes loading (Approx 1520A as per DR) of 315 MVA 400/220/33 KV ICT 2 goes nearly 1520A as 3 nos 200 MVA 220/132/33 KV ICT charged on no load along with DPL AB zone load & load connected to DPL feeder.
- 220 KV Busbar differential protection relay operated on Bus B.

12



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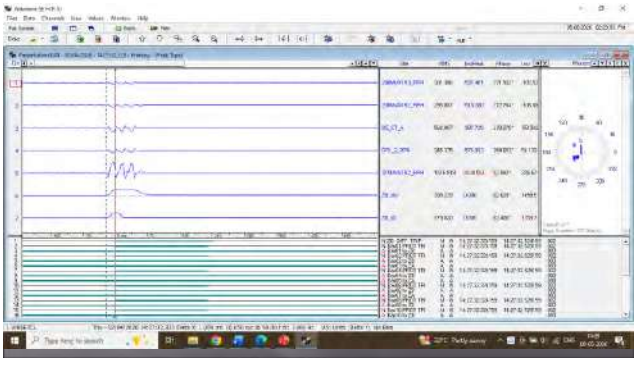
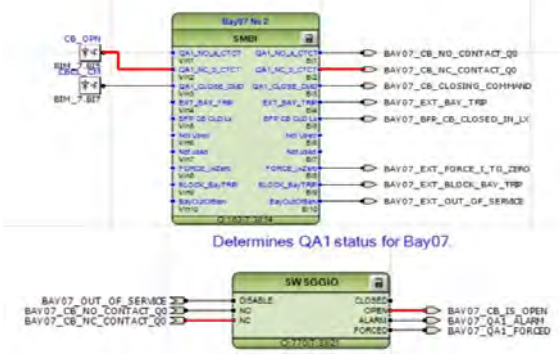


14

Reason for Busbar tripping

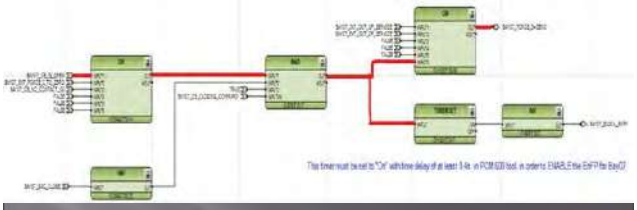
- CB open status stays during charging of 315 MVA 400/220/33 KV ICT 2 LV bay.
- CB close command did not come.
- As per relay(ABB REB670) configuration , current fed by 315 MVA 400/220/33 KV ICT 2 bay during charging (1.5 KA) could not be counted to BUS B. This causes to produce differential current and operation of BB relay.

15



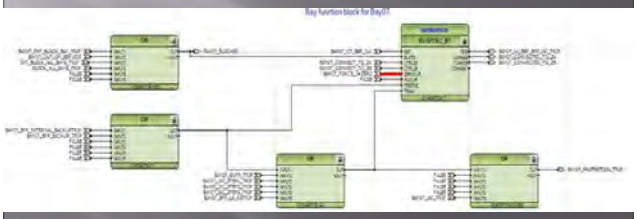
16

Busbar Configuaration



17

Busbar Configuaration



18

End

- Questions??

19

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 400/220 केवी तेनुघाट में ग्रिड घटना पर विस्तृत रिपोर्ट / Detailed Report of grid event at 400/220 kV Tenughat TPS 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): 06-05-2025

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

At 23:13 Hrs on 19/04/2026, B-phase CT in the bus coupler bay at Tenughat substation got burst, which created bus fault at 220kV Tenughat S/s. Due to non-operation of bus bar protection at Tenughat S/s, all 220 kV emanating lines at Tenughat i.e., 220 kV Tenughat-Govindpur D/c and 220 kV Tenughat-Biharsharif got tripped from remote ends in Z-2 protection.
Consequently, the 400/220kV Tenughat S/s became dead, resulting in a generation loss of **317 MW**.
This event further caused overloading of 220 kV Maithon-Dumka D/c, leading to operation of SPS at Dumka S/s. Load loss of around **120 MW** occurred at Godda and Pakur due to SPS operation.

2. **Time and Date of the Event (घटना का समय और दिनांक):** 23:13 Hrs on 19/04/2026
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)	50.02 Hz	32995 MW	30910 MW	317 MW	2111 MW
Post Event (घटना के बाद)	50.01 Hz	32678 MW	30790 MW	0 MW	1991 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

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Generation loss: 317 MW, load loss: 120 MW at Godda and Pakhur area of Jharkhand Power System
7. **Duration of interruption (रुकावट की अवधि):** 00:42 Hrs

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

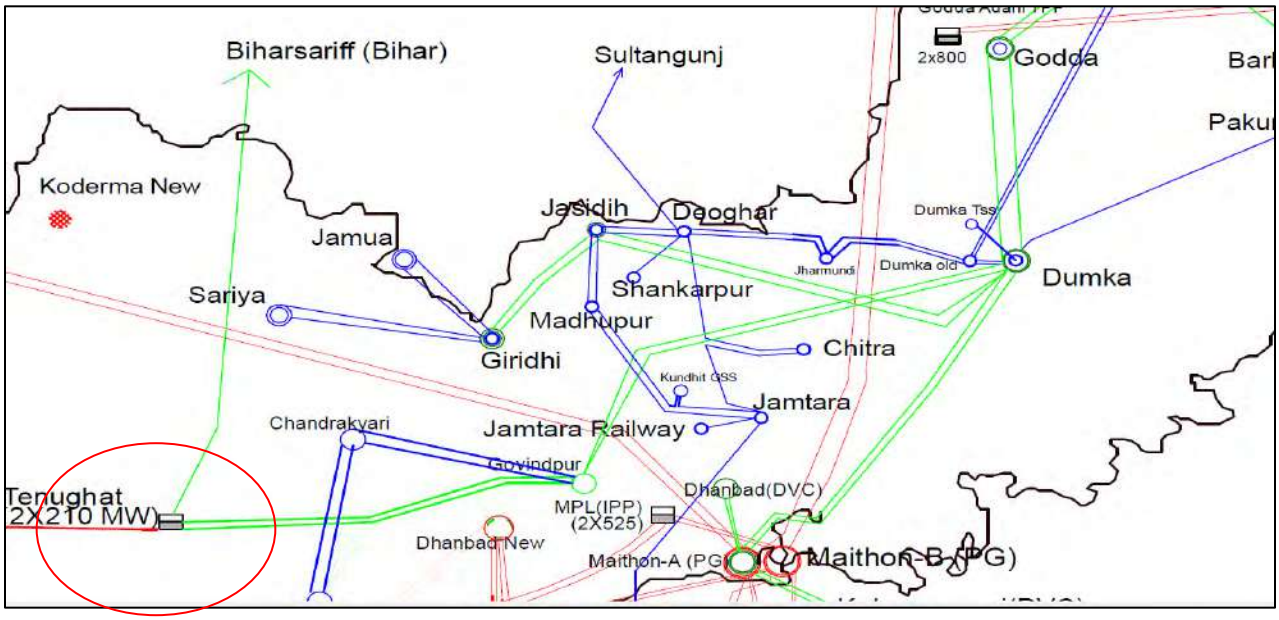


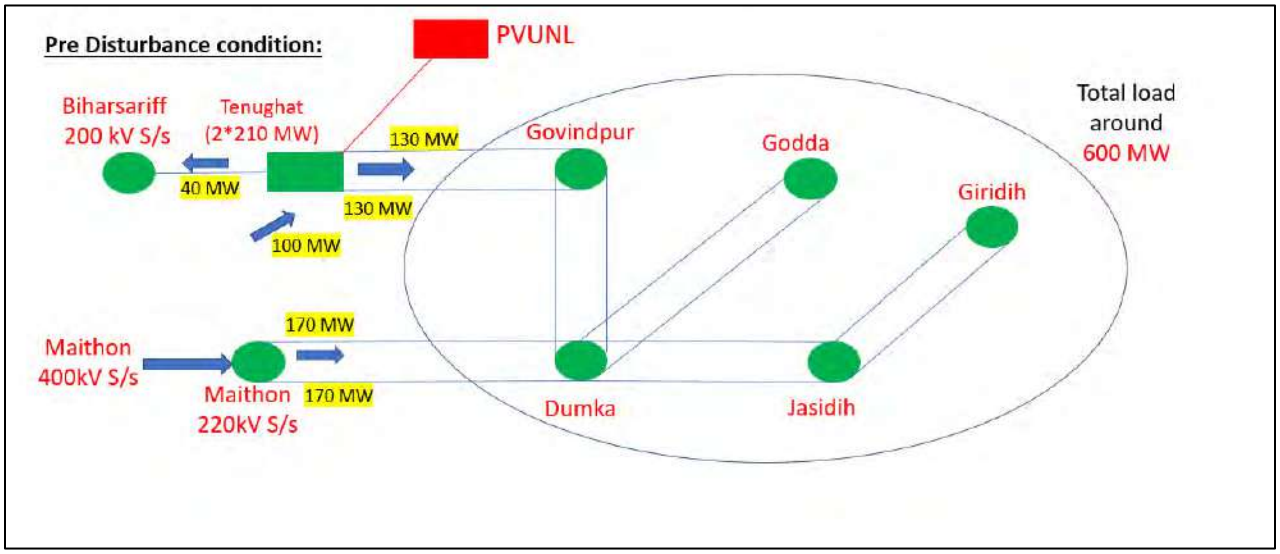
Figure 1: Network across the affected area

9. Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): B-phase CT of 220 kV bus coupler bay at Tenughat S/s.

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	220KV-TENUGHAT-BIHARSHARIF		Tripped from remote end in Z-3 protection		23:55 Hrs
2	220KV-TENUGHAT-GOVINDPUR-1				01:51 Hrs
3	220KV-TENUGHAT-GOVINDPUR-2				01:52 Hrs
4	210 MWU#1 at Tenughat	**23:13:17**	Loss of evacuation path		07:59 Hrs
5	210 MWU#2 at Tenughat		Loss of evacuation path		-
6	400/220 kV ICT-1 at Tenughat		Back Up O/c E/f operated		00:38 Hrs
7	400/220 kV ICT-2 at Tenughat		Back Up O/c E/f operated		00:47 Hrs

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

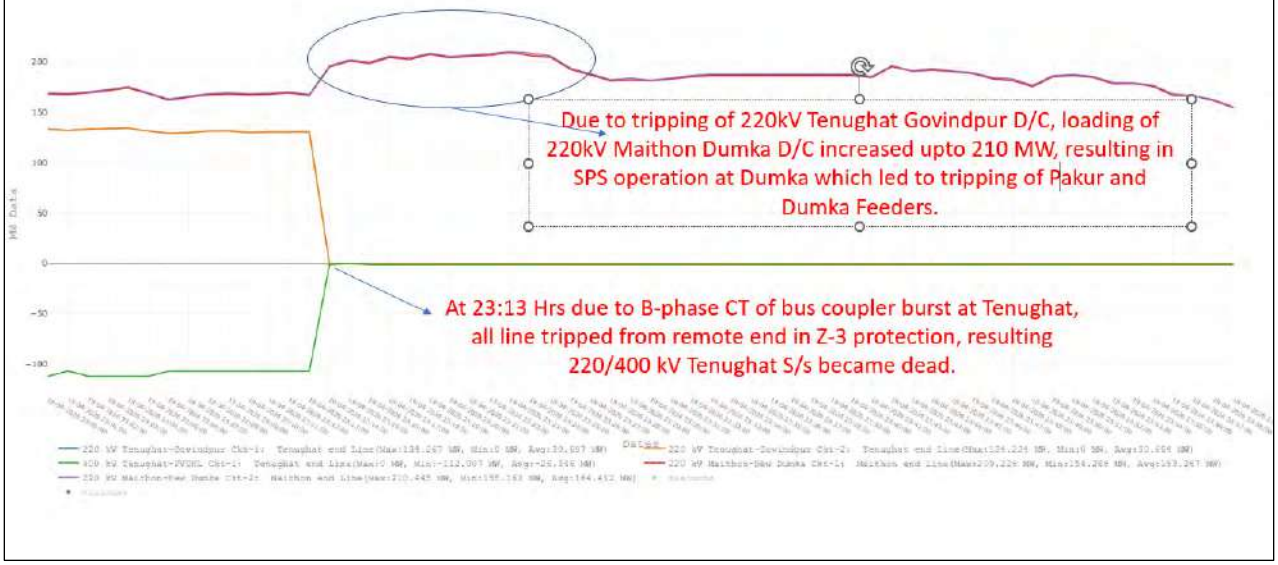


- At 23:13 Hrs on 19/04/2026, B-phase CT of bus coupler bay at Tenughat got burst which created bus fault at 220kV Tenughat S/s.
- Subsequently, all lines connected to 220 kV Tenughat sub-station tripped on Z-3 protection from remote end (Bus bar protection not operated at Tenughat) and

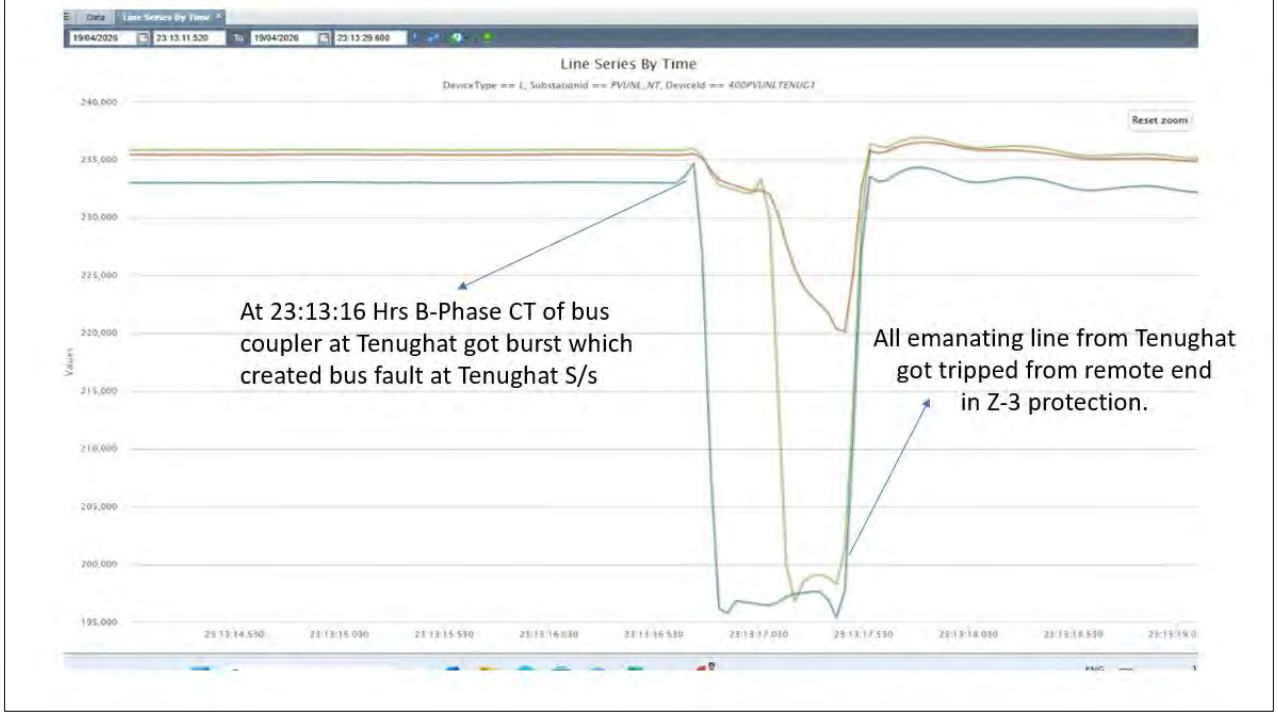
400/220kV both ICT tripped on E/F protection, resulting complete power supply failure of Tenughat sub station and a generation loss of about 317 MW reported.

- Further, due to the above incident, 220 kV Maithon-Dumka D/c loading increased up to its thermal rating, leading to SPS operation at Dumka, which resulted in load loss of 120 MW at Godda and Pukur areas of Jharkhand Power System.

Sequence of Event:



PMU Signature



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

- Identify the root cause of **B-Ph CT** bursting and share latest **test results** of CT carried out during preventive maintenance.
- Examine the reason of **non-isolation of fault** despite the availability of BB protection at Tenughat and take necessary remedial measures at earliest.
- Submit an action plan for revival of Bus coupler bay so that both bus can be charged with uniform feeder segregation to enhance system reliability
- Provide an update on replacement of E/M BB relay with Numerical Relays in compliance with CEA regulation and expedite the process.
- Ensure preventive maintenance of S/s equipment's is done in accordance with CEA Grid standard Regulation 2010.
- Clarify the reason for non-uniform distribution of feeders between both buses (All line feeders and GTs in 220 kV Bus-II).
- Possibility of fully utilization of both ICTs at Tenughat up to its rated MVA.
- Report received from Tenughat is attached in Annexure.

An online meeting was held on 21/04/2026 with participation from TVUNL, SLDC Jharkhand, CRITL Jharkhand Team, ERLDC and ERPC to discuss the Grid event (GD-1) at Tenughat S/s on 19/04/2026 which led to 317 MW generation loss at Tenughat and 120 MW load loss at Godda and Pakur due to SPS operation at Dumka S/s.

Deliberation of the discussion are as follows:

ERPC expressed concern over the criticality of generation loss at Tenughat and load loss due to SPS operation, which is a matter of serious concern for meeting Jharkhand demand.

ERLDC explained the sequence of event and highlighted protection and operational observation during the event. Reason of disturbance was bursting of B-phase CT of bus coupler bay and non-operation of bus bar protection which is electromechanical type relay.

TVUNL explained that during the fault, actual fault current contribution through the bus coupler was not measured correctly due to CT failure. The differential relay did not receive the true summation of currents, as a result, the operating current may not have exceeded the set threshold, causing non-operation of busbar protection.

TVUNL confirmed that burst CT will be replaced within one week and electromechanical bus bar relay will be replaced within 3 to 4 months.

ERLDC mentioned that during the event both units and feeders were kept on 220kV main bus #2. TVUNL confirmed that due to hotspot in main bus-1 side isolator of main bay GT-2, unit-2 and Govindpur line -2 shifted to main bus-2.

ERLDC suggested that after restoration of bus coupler, both 220kV bus taken into service with parallel segregation of elements for reliable operation at Tenughat S/s.

Points suggested by the forum are as follows:

Forum suggested that after revival of bus coupler bay high set O/C earth fault may be enabled in bus coupler to avoid total black out of Tenughat in case of non-operation of bur bar protection during bus fault at Tenughat S/s.

Forum suggested to explore the possibility of utilization of both ICTs up to its rated MVA capacity by reconductoring and upgradation of 220kV Tenughat substation for reliable operation during low Tenughat generation/ outage of Tenughat units.

Forum suggested to maintenance and testing of substation equipment on periodic basis to avoid equipment failure.

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

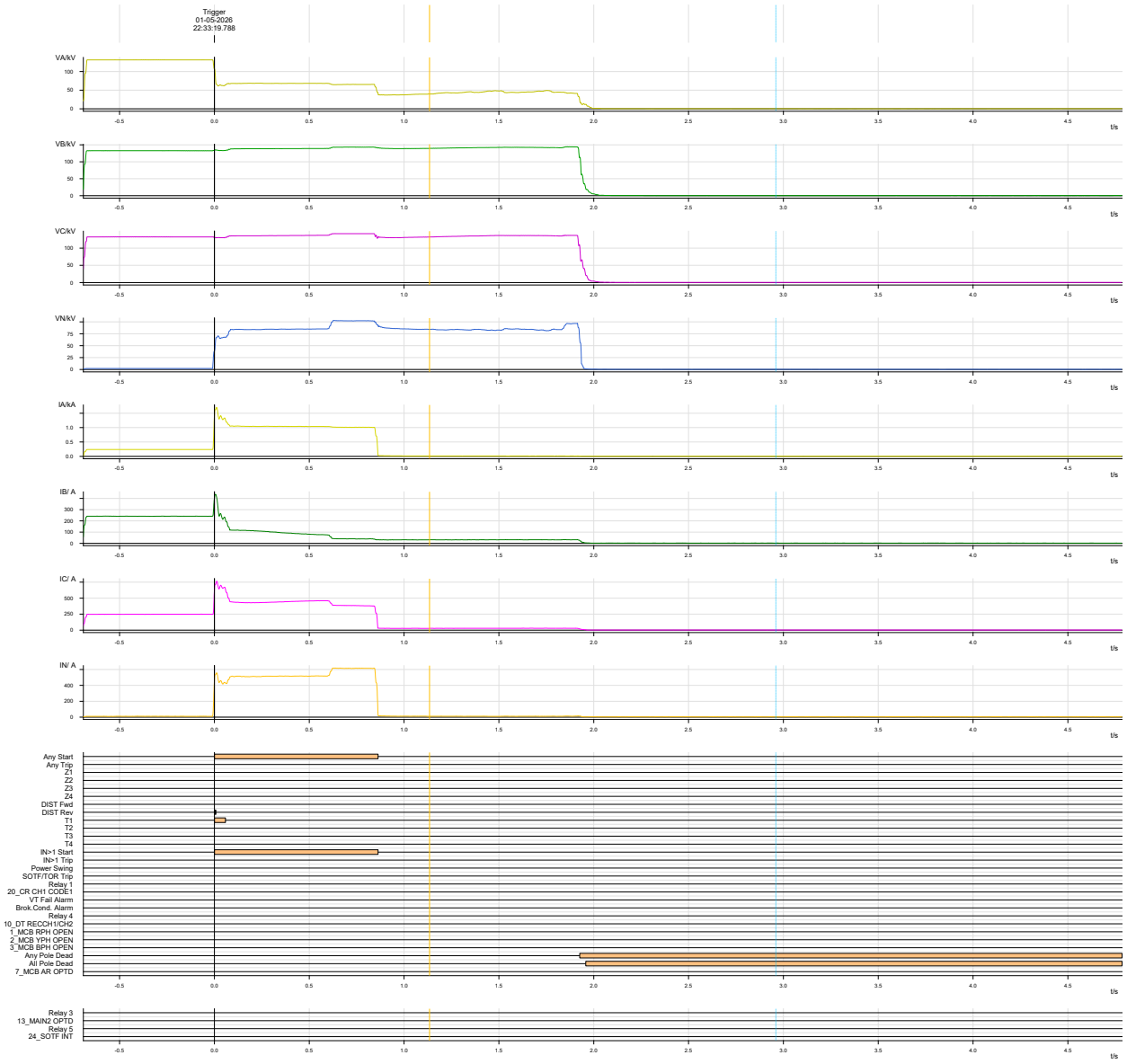
14.Non-compliance observed (विनियमन का गैर-अनुपालन):

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)	Bus bar protection not operated at Tenughat S/s.

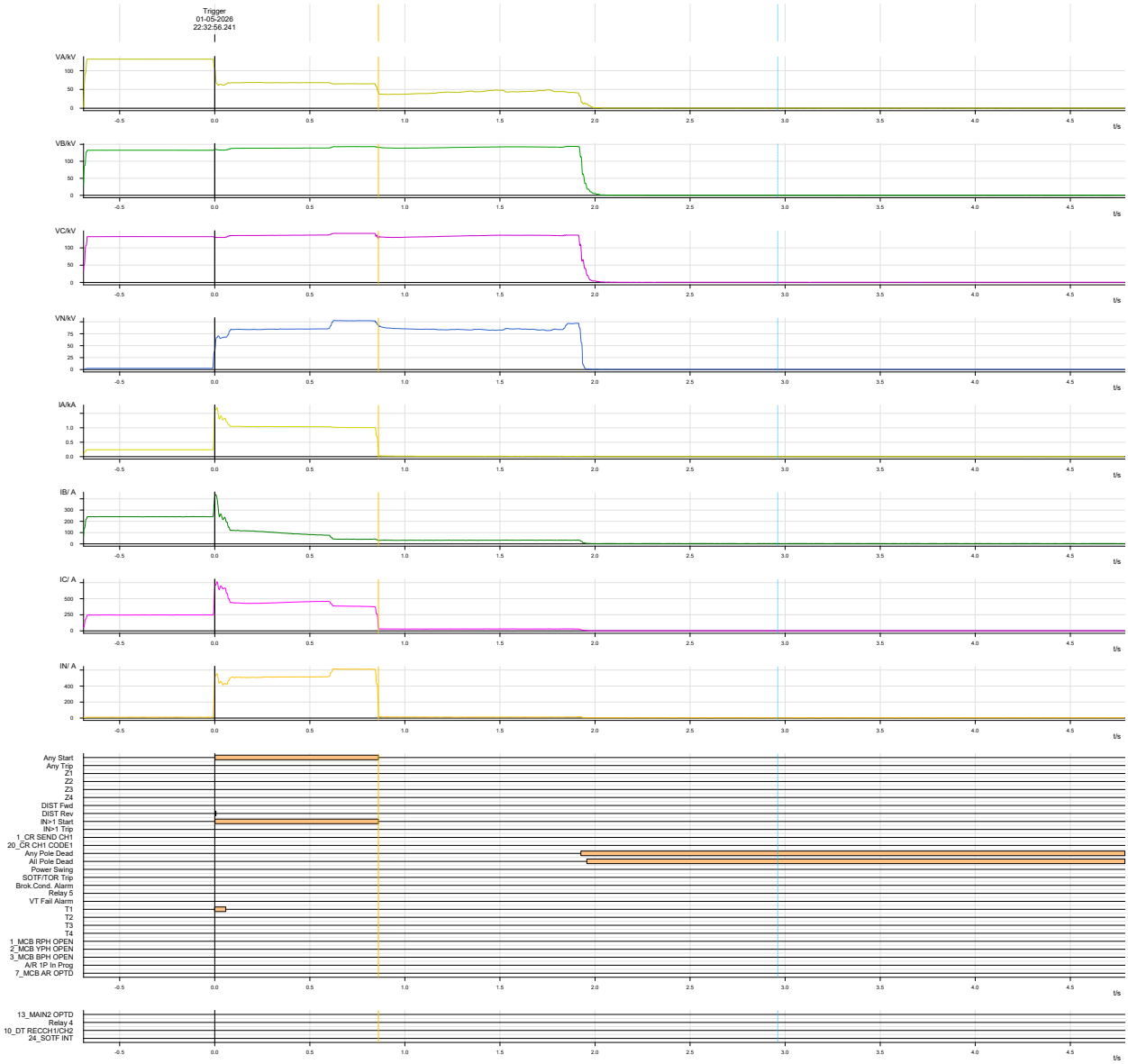
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु): Nil

Annexure 2:

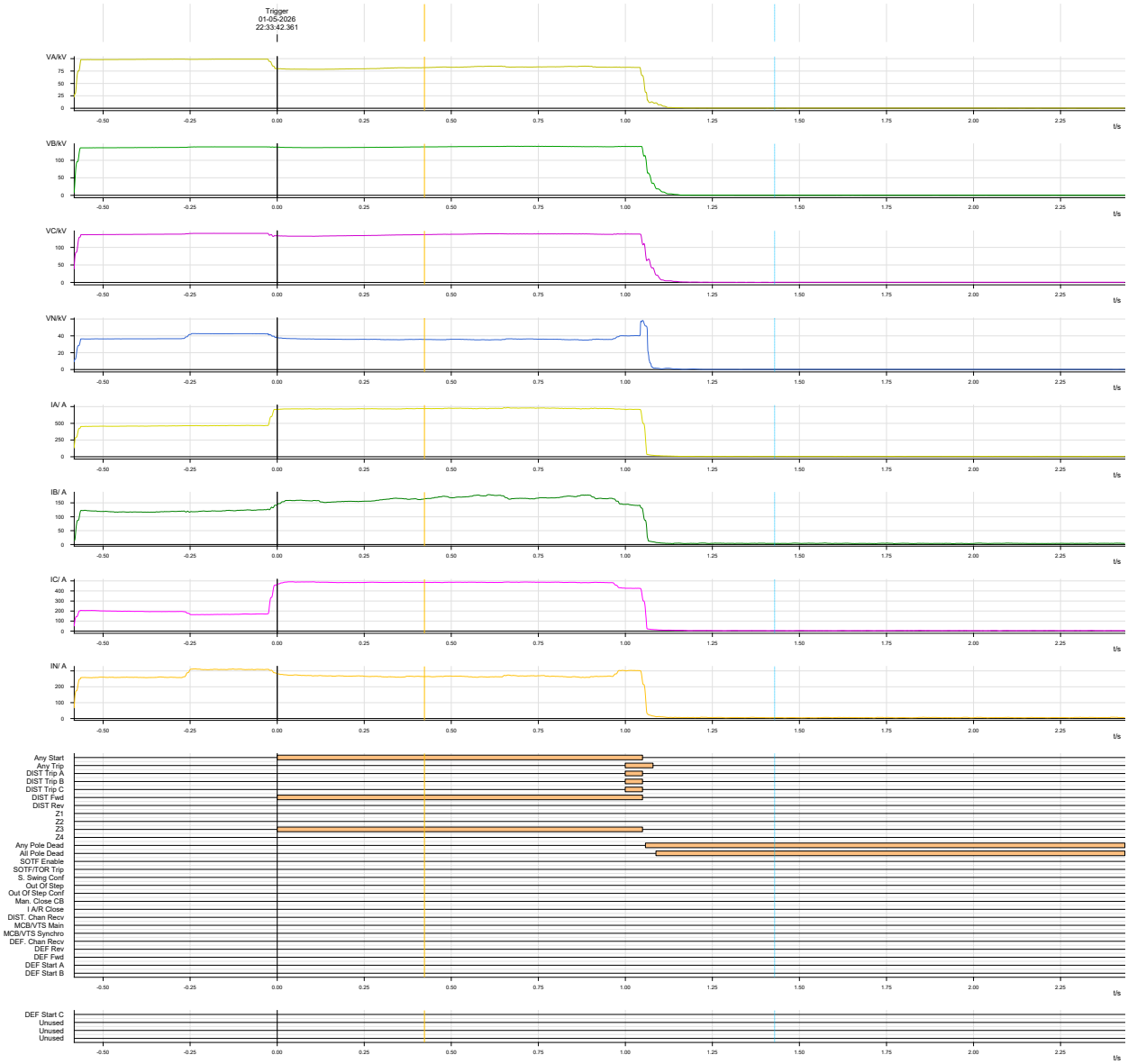
DR of ICT-1 at Tenughat



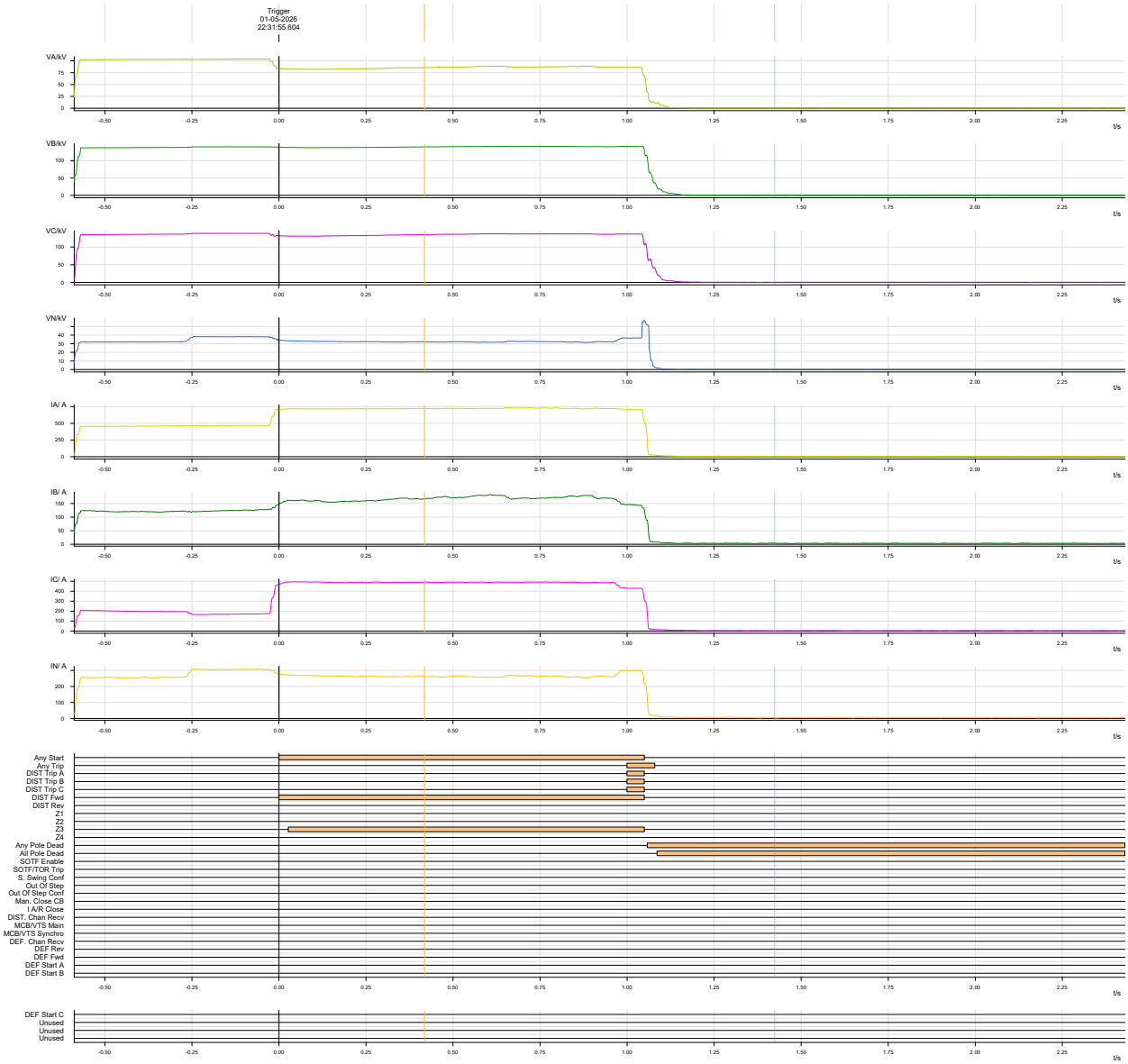
DR of ICT-2 at Tenughat



DR of Tenughat-Govindpur line 1 at Govindpur end:



DR of Tenughat-Govindpur line 2 at Govindpur end:



GRID DISTURBANCE AT TTPS Lalpania end at 23:13 Hrs on Dated: 19.04.2026

Event Detail : Bay No. 8 Bus-Coupler Bay CT of B-phase at 220KV TTPS Lalpania Switchyard exploded at 23:13 hrs on 19.04.2026.

Pre-Event Condition

BUS	BAY NO	BAY NAME	AMP	MW	OIL PR.	SF6 PR.
BUS-2	4	GOV-1	325A	130 MW(EXP)		7.1
BUS-2	5	GOV-2	328A	132 MW(EXP)		7.9
BUS-2	8	Bus Coupler	155A		325	7.0
BUS-2	14	Bihar Sharif	332A	134 MW(EXP)	328	7.4
BUS-1	17	IBT-1		52 MW(IMP)	330	7.6
BUS-2	18	GT-1	419A	147 MW	330	7.0
BUS-2	19	IBT-2		53 MW(IMP)	328	7.0
BUS-2	20	GT-2	480A	170 MW	325	7.2

Fig.1 may please be referred for Main Bus-1 & Main Bus-2 Loading before the occurrence, with 155A current flowing through Bus-Coupler.

Fig.1

Bus-Coupler Test & Thermography Details (attached in mail)

1.) Thermography Measured on 17.04.2026

CT Connector						Bus-1 Iso			Bus-2 Iso			Bus2 EMVT Connector			Bus2 EMVT Isolator		
R		Y		B		R	Y	B	R	Y	B	R	Y	B	R	Y	B
P1	P2	P1	P2	P1	P2	R	Y	B	R	Y	B	R	Y	B	R	Y	B
42	44	44	49	43	40	49	42	42	43	44	43	40	41	40	43	41	43

*Reports mailed to TTPS tech team on 17.04.2026

Tripping Analysis

The upper section of the CT, connected with the Moose conductor, broke during the explosion. The Moose conductor remained attached to the detached upper section, which subsequently fell to the ground, resulting in a Bus-1 earth fault.

Feeder	Tripping Time	Tripping End
Bihar Sharif	23:13:05	Remote
Govindpur-1	23:13:16	Remote
Govindpur-2	23:13:16	Remote
ICT-1	23:13:16	TTPS
ICT-2	23:13:16	TTPS
Unit 1 Tripped	23:13:36	TTPS
Unit 2 Tripped	23:13:43	TTPS

Operation of Bus-Bar Protection

Suspected Operation of Bus Bar Protection may as below:

NOTE:

- Existing 220KV Bus Bar is of Electromechanical Type.
- New 220KV NUMERICAL Bus Bar Protection is expected to be commissioned in 3 to 4 months.
- CT control cables melted in explosion fire of Bus Coupler Bay.

Case 1:

When the CT in the bus coupler explodes, the secondary current from that bay becomes zero or highly distorted which creates a current imbalance in the differential protection scheme. The protection system interprets incorrect current values, leading to Failure to detect internal faults (loss of sensitivity), or Unwanted restraint / spill current miscalculation.

Case 2:

During the fault, actual fault current contribution through the bus coupler was not measured correctly due to CT failure. The differential relay did not receive the true summation of currents. As a result, the operating current may not have exceeded the set threshold, causing non-operation or delayed operation of busbar protection.

ग्रिड-इंडिया GRID-INDIA ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
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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):06-05-2026

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

Prior to the event around 600 MW generation of JSPL and 400 MW generation of ACPP-II with 140 MW export to grid through JSPL-Meramundali D/C line. At 16:03 Hrs on 06/04/2026, 400 kV Meramundali-JSPL-1 line tripped from JSPL end due B-phase CT blast at JSPL end. At the same time 400 kV Meramundali-JSPL-2 line tripped on Z-4 protection from JSPL end only, which led to island formation of JSPL unit-1 with emergency load and remaining JSPL units and load with ACPP-II form another island which was not survive due to load generation mismatch. 400kV JSPL and ACPP-II became dead and generation loss of 410 MW and 400 MW reported at JSPL and ACPP-II respectively. Total net load loss at JSPL was 670 MW.

2. **Time and Date of the Event (घटना का समय और दिनांक):** 16:03 Hrs of 06.04.2026
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)	50.09 Hz	25631 MW	26214 MW	3334 MW	5636 MW
Post Event (घटना के बाद)	50.09 Hz	25631 MW	26076 MW	3334 MW	5498 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.

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Generation loss of 810 MW at JSPL and ACPP-II (Net load loss of 670 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):**

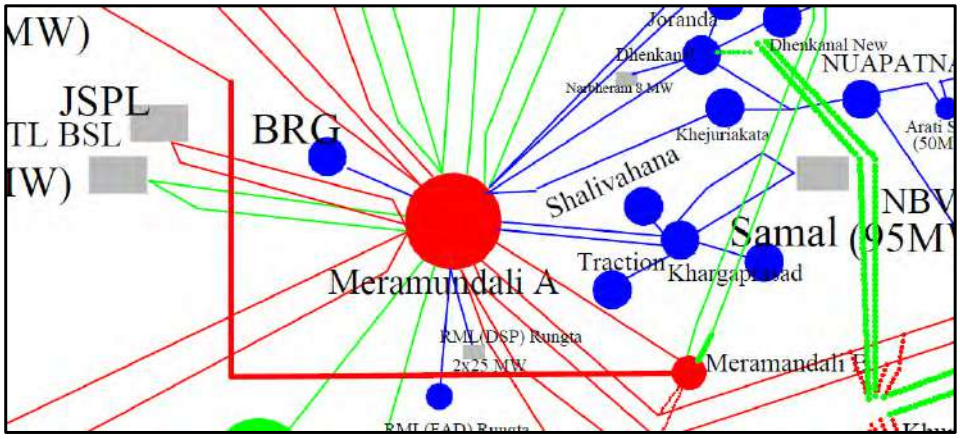


Figure 1: Network across the affected area

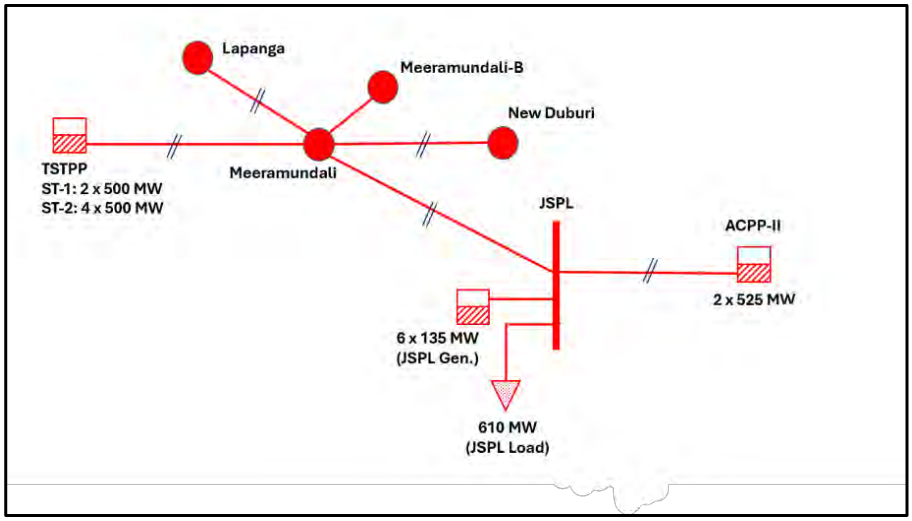
9. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण):** NA

10. Major Elements Tripped (प्रमुख ट्रिपिंग):

क्र०स०	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	**16:03:35**	A/R Successful at Meeramundali end, R/I at Meeramandali : B_N, Fault Current Ib - 7.4 kA, Z1, Fault distance 39 km.	CT blasted in B-Ph at JSPL end. B-Earth, Z-1	04:21 Hrs 07/04/2026
2	400 kV Meramundali-JSPL-2		Not tripped	Line tripped from JSPL end in Z-4 Operated.	16:09

Commented [BN1]: Restoration time may be mentioned for both lines

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



- Prior to the disturbance, 600 MW generation of JSPL and 400 MW generation of ACPP-II with 140 MW export to Grid through 400kV-Meeramundali-JSPL D/C.

- At 16:03:35 Hrs, B-phase CT of 400kV Meeramundali-JSPL line-1 blast at JSPL end and line got tripped from JSPL end only (A/r successful from Meeramundali end).
- At the same time 400kV JSPL Meeramundali-2 got tripped in Z-4 protection from JSPL end.
- After tripping of both 400kV JSPL Meeramundali D/C line, JSPL unit-1 islanded with emergency load of JSPL and remaining units of JSPL and ACPP-II form another island which got collapse due to load generation unbalance.
- 400kV JSPL and ACPP-II became dead.
- Generation loss of 810 MW at JSPl and ACPP-II (load loss of 670 MW at JSPL (CPP).

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

- **Un-intended operation of Zone-4** (Z-4) distance protection instantly. Review status of Z-4 settings of 400 kV Meeramundali-JSPL Line-2 for both **Main-1** and **Main-2** relays may be explained.
- **Explain whether Zone-4 tripping** command was issued by both Main-1 and Main-2 relays.
- Ensure that necessary preventive maintenance of switchyard equipment is carried out as per CEA Grid Standard regulation 2010.

JSPL may deliberate.

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

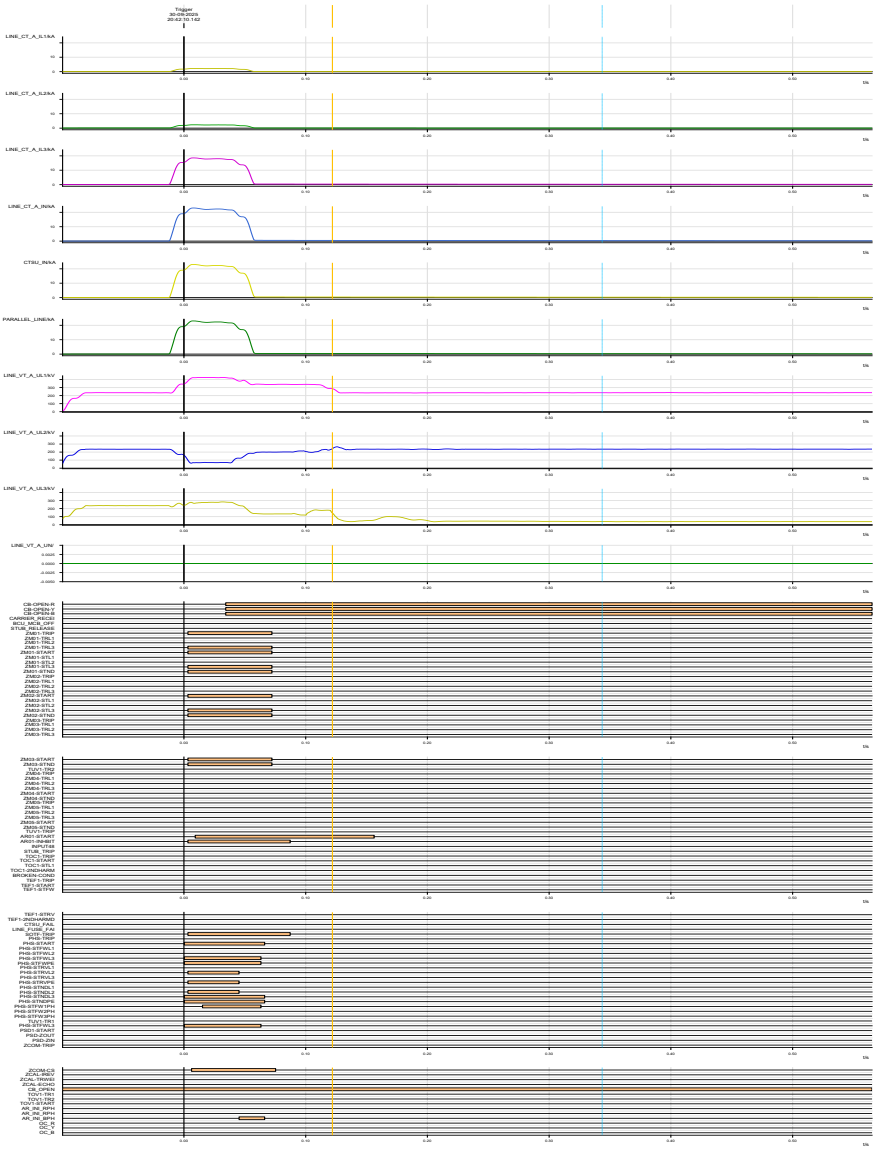
14. Non-compliance observed (विनियमन का गैर-अनुपालन):

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

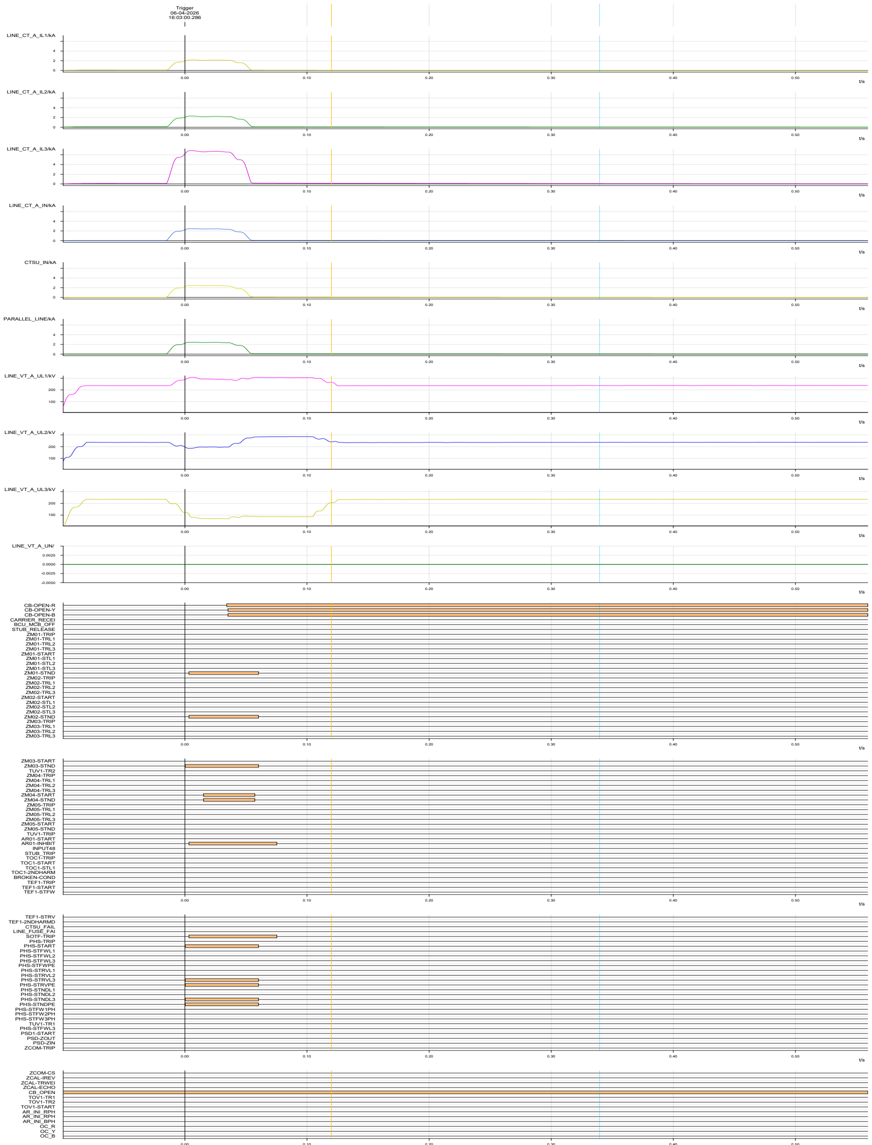
4	**Protection system not operated correctly**	CEA Technical Standard for Construction of Electrical Plants and Electric Lines: 48 (1) a. CEA (Technical standards for connectivity to the Grid) Regulation, 2007: Schedule Part 1. (6.1, 6.2, 6.3)	**Un-intended operation of Zone-4 for line-2 which was not as per protection scheme.**

Annexure 2:

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



DR of 400 kV Meramundali-JSPL-2 (JSPL):


Trigger
06-04-2026
16:03:00.286
LINE_CT_A_IL1/kA
LINE_CT_A_IL2/kA
LINE_CT_A_IL3/kA
LINE_CT_A_IN/kA
CTSU_IN/kA
PARALLEL_LINE/kA
LINE_VT_A_UL1/kV
LINE_VT_A_UL2/kV
LINE_VT_A_UL3/kV
LINE_VT_A_UN/
0.00
0.10
0.20
0.30
0.40
0.50
S%

ग्रिड-इंडिया GRID-INDIA ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
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Detailed Report of grid event at 220kV Dalkhola(WB) 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): 06-05-2026

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

Prior to the disturbance, 220kV bus coupler at Dalkhola (PG) was in off condition due to system requirement and Dalkhola(WB) was connected through 220kV Kishanganj-Dalkhola (PG)-Dalkhola (WB) D/C line.
At 00:09 Hrs on 26/04/2026, 220kV Kishanganj-Siliguri-1 and 220 kV Kishanganj- Dalkhola (PG) D/C tripped due to B-Earth fault. This resulted in 220 kV bus dead at Dalkhola (WB). Total load loss of 80 MW reported at Dalkhola(WB).

2. **Time and Date of the Event (घटना का समय और दिनांक):** 00:11 Hrs of 26/04/2026
3. **Event Category (ग्रिड घटना का प्रकार): Grid Disturbance (GD)-1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** West Bengal
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency (Hz)	Regional Generation (MW)	Regional Demand (MW)	State Generation WB (MW)	State Demand WB (MW)
Pre-Event (घटना पूर्व)	49.97 HZ	35069 MW	32034 MW	7173 MW	12183 MW
Post Event (घटना के बाद)	49.97 Hz	35069 MW	31954 MW	7173 MW	12103 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)	220 kV Bus coupler at Dalkhola (PG) was in off condition due to system requirement. Bus arrangement at Dalkhola (PG) was as follows: Bus 1: 220 kV Purnea D/C and 220 Gazole D/C Bus 2: 220 kV Kishanganj D/C and 220 kV Dalkhola (WB) D/C
Weather Condition (मौसम स्थिति)	Heavy storm reported.

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Generation loss- 0 MW, Load loss-80 MW
7. **Duration of interruption (रुकावट की अवधि): 23 Mins**
8. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

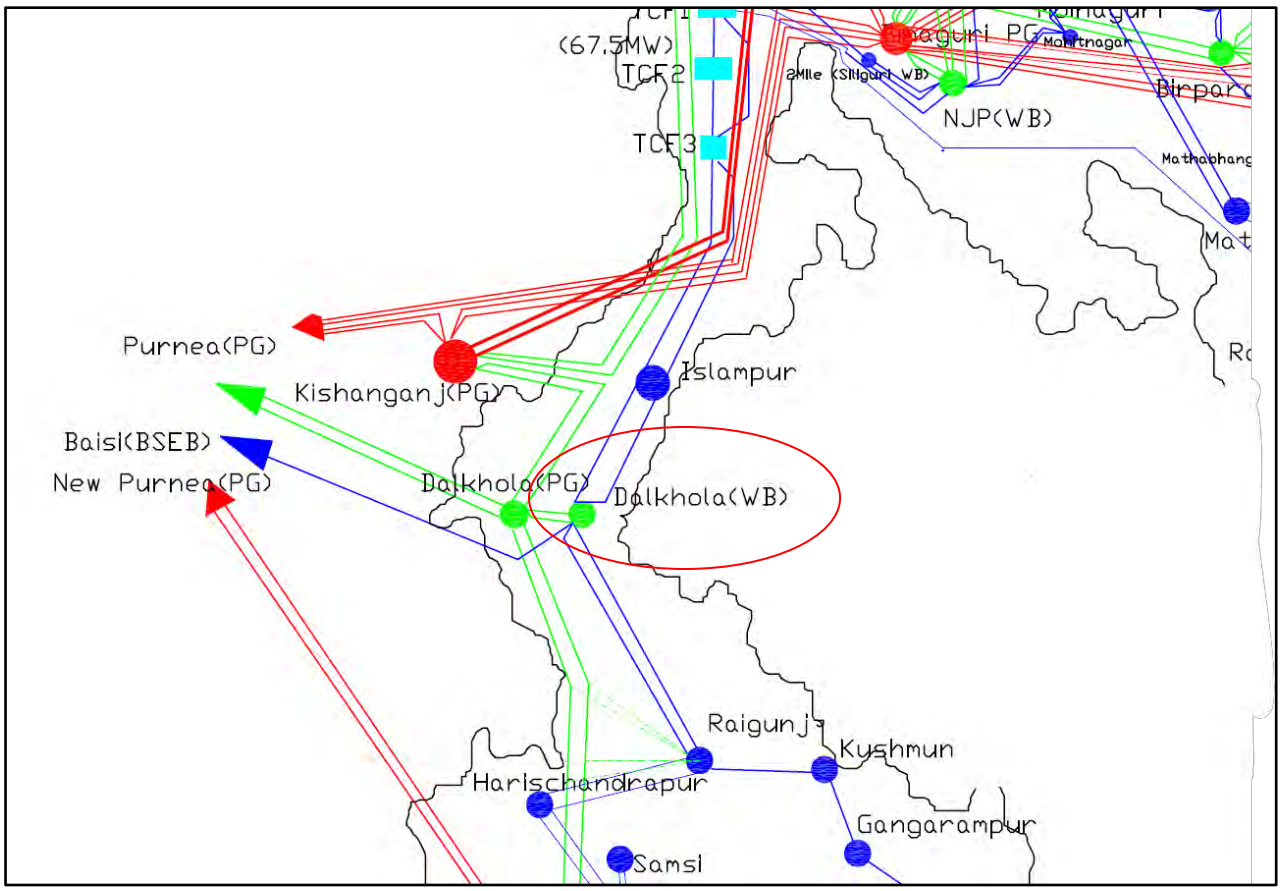


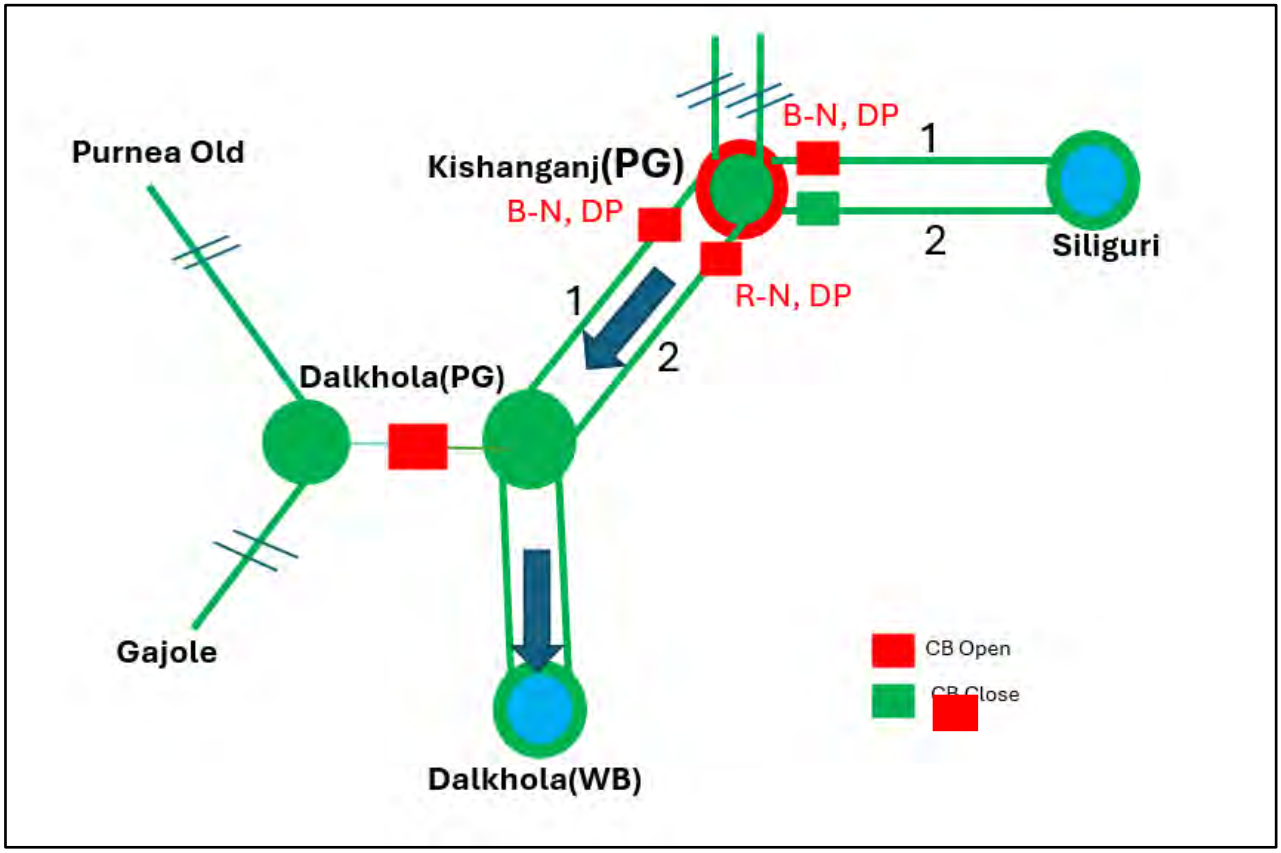
Figure 1: Network across the affected area

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

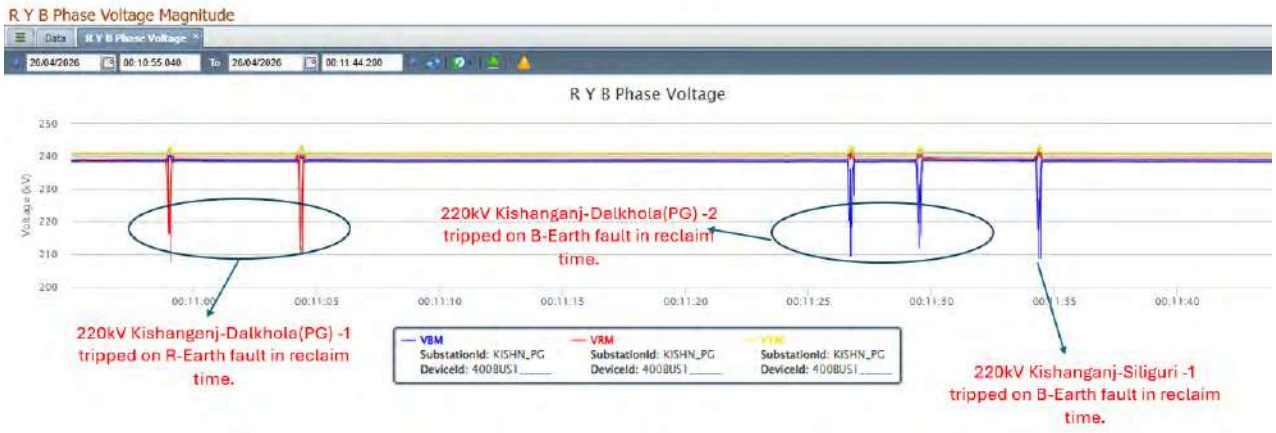
10. Major Elements Tripped (प्रमुख ट्रिपिंग):

क्रoसo	नाम	Trip time (hh:mm:ss)	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत	Restoration time
1.	220KV-KISHANGANJ(PG)-DALKHOLA (PG)-1	00:11:04	Tripped only from Kishanganj end: B-N, 4.7 km, Ib 14.1 kA,		03:11
2.	220KV-KISHANGANJ(PG)-DALKHOLA (PG)-2	00:11:29	Tripped only from Kishanganj end: 4.4 km, R-N.		03:13
3	220KV-SILIGURI-KISHANGANJ(PG)-1	00:11:35	Siliguri: B-N, 102 km, IB 2.2 kA. Kishanganj: B-N, IB 13.7 kA, 1.8 km,		03:05

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



- Prior to the disturbance, 220 kV bus coupler at Dalkhola(PG) was in OFF condition due to system requirement and Dalkhola (WB) connected through 220kV Kishanganj-Dalkhola(PG)-Dalkhola(WB) D/C line.
- On 26/04/2026 due to inclement weather multiple phases to ground transient fault occurred in 220kV Kishanganj-Dalkhola D/C and 220kV Kishanganj-Siliguri line.
- At 00:11:04 Hrs 220kV Kishanganj Dalkhola (PG) line-1 tripped on B-Earth fault in reclaim time.
- At 00:11:29 Hrs 220kV Kishanganj Dalkhola (PG) line-2 tripped on R-Earth fault in reclaim time.
- At 00:11:34 Hrs 220kV Kishangan-Siliguri line -1 tripped on B-Earth fault in reclaim time.
- Due to tripping of 220kV Kishanganj-Dalkhola (PG) D/C line, 220kV Dalkhola (WB) became dead.
- Total load loss of 80 MW reported at Dalkhola (WB) S/s of West Bengal Power System.



PMU of Kishanganj Voltage

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

- Protection operated as per protection scheme.

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

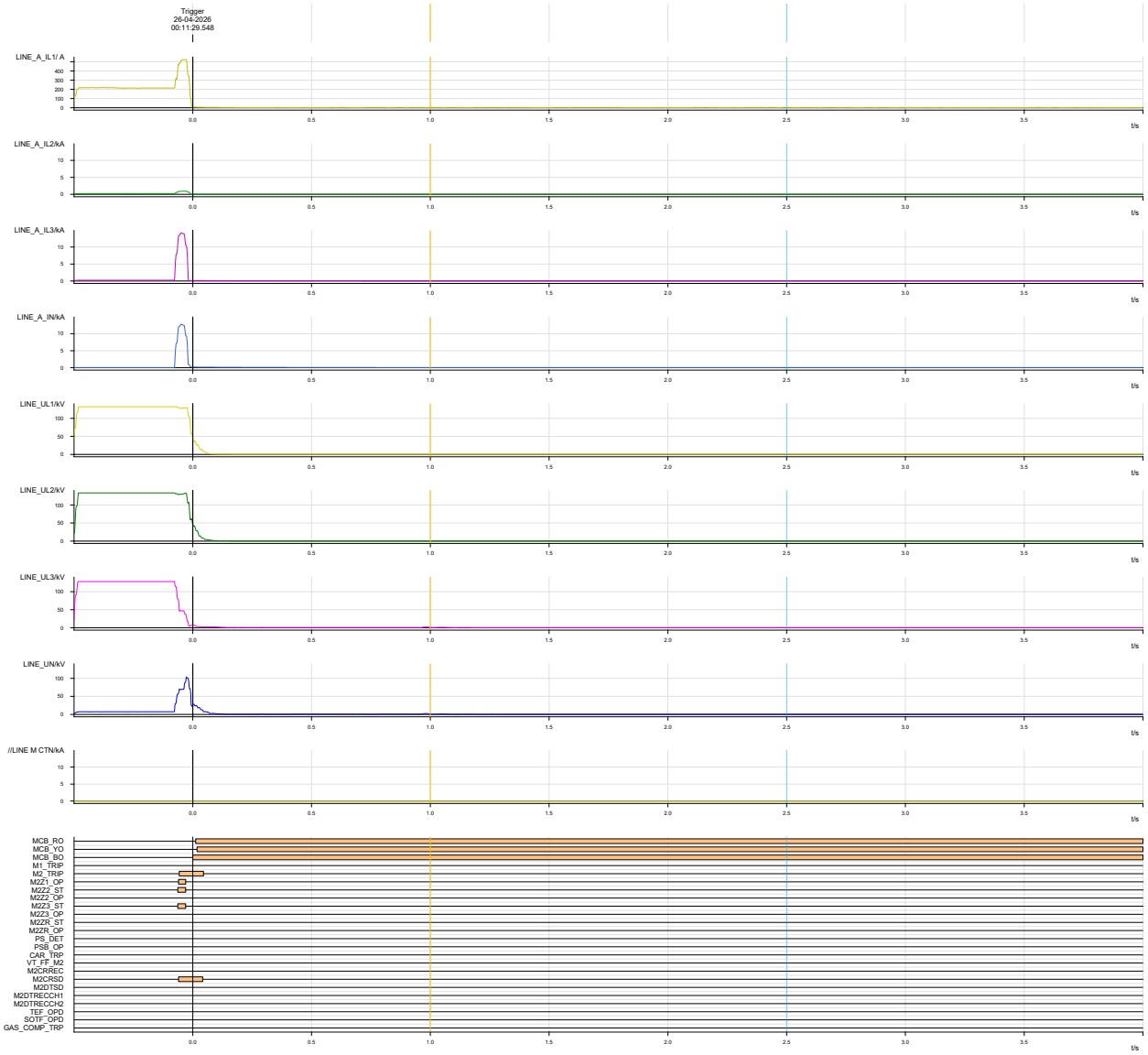
14. Non-compliance observed (विनियमन का गैर-अनुपालन):

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 (After 24 Hrs)
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 protection scheme.

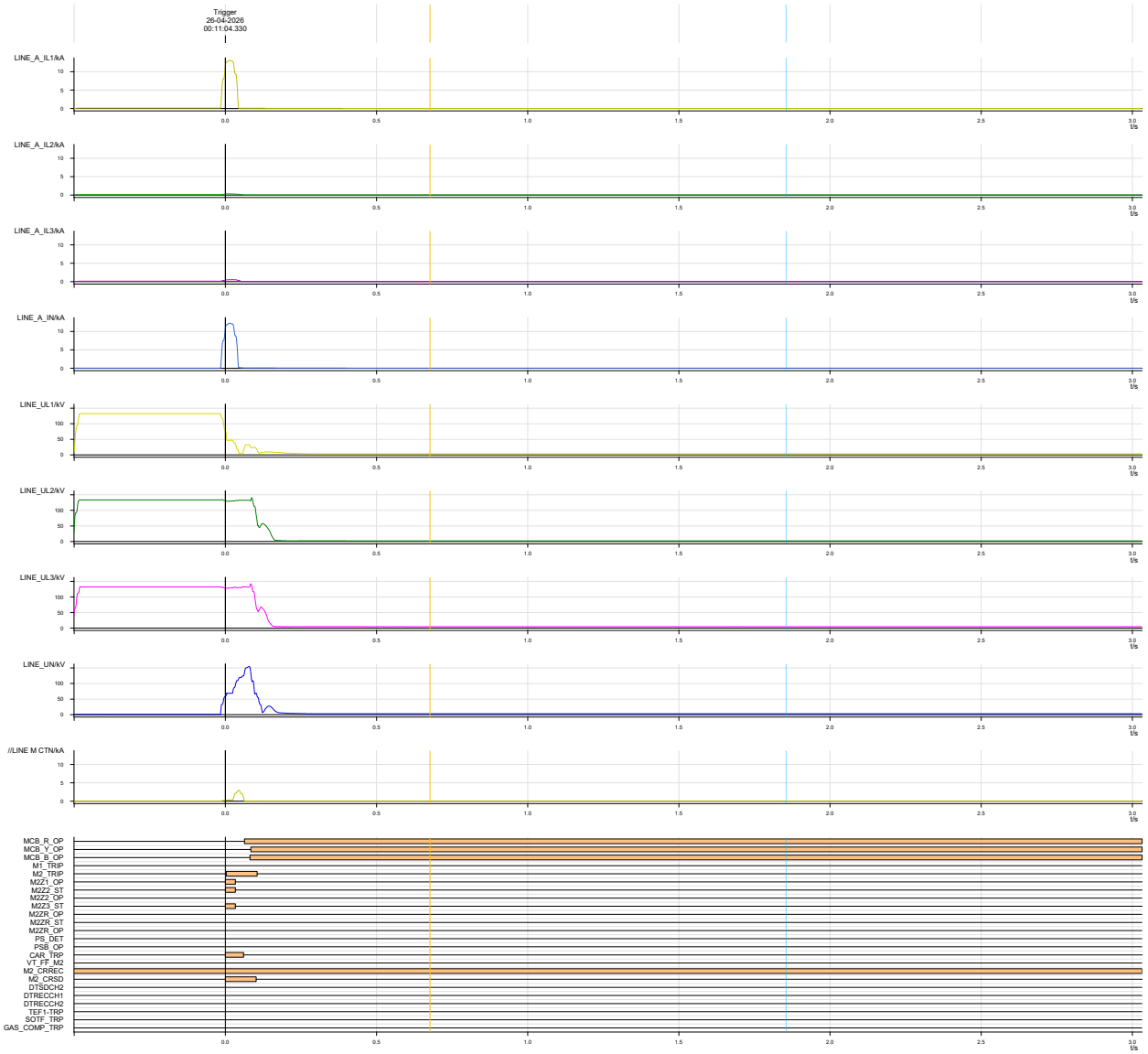
15. Key Lessons Learnt (प्रमुख अधिगम बिंदु): Nil

Annexure 1:

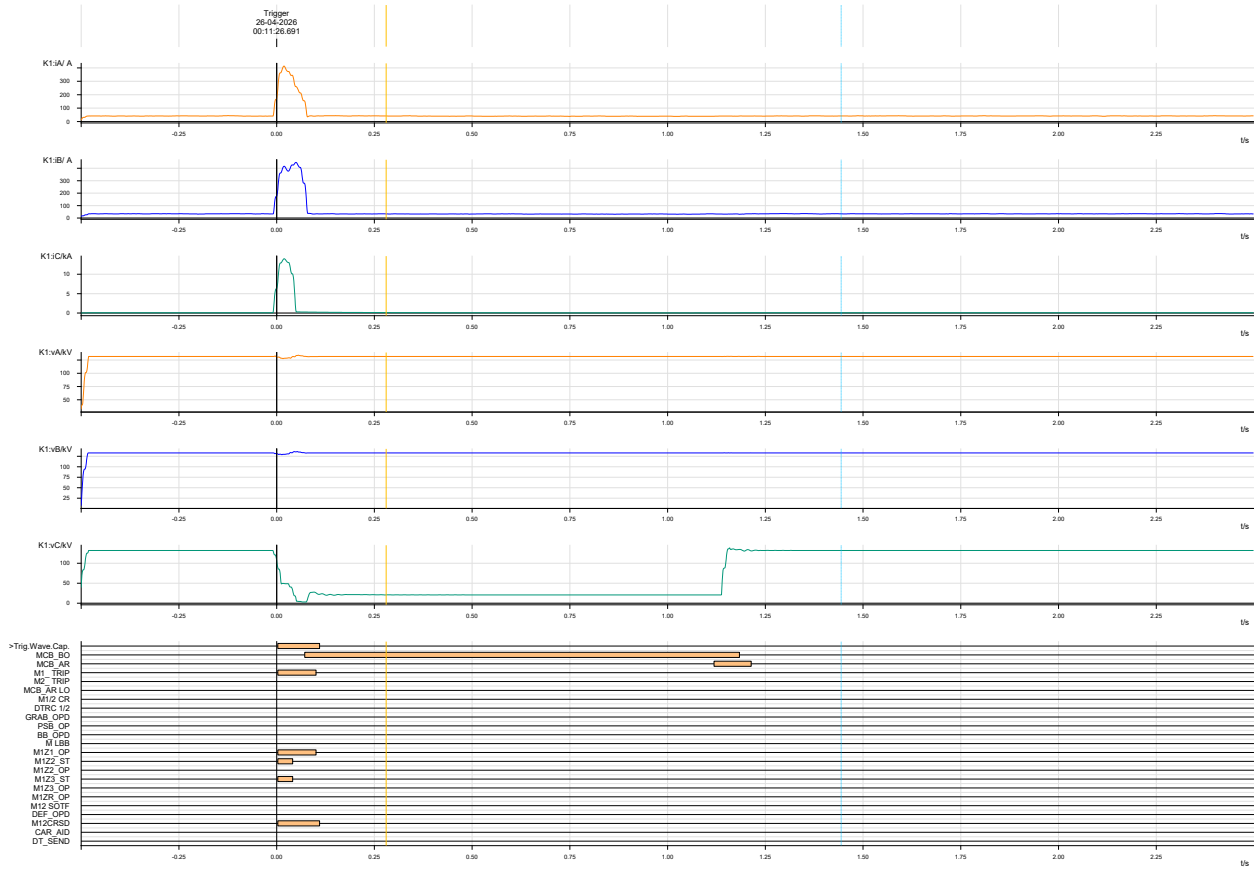
DR of 220kV Kishanganj-Dalkhola(PG)-1 at Kishanganj end



DR of 220kV Kishanganj-Dalkhola(PG)-2 at Kishanganj end



DR of 220kV Kishanganj-Siliguri-1 at Kishanganj end



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Detailed Report of grid event at 220kV Raxaul and Gopalganj 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): 06-05-2025

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

Prior to the disturbance, 220 kV Raxaul–Sitamarhi Ckt 1 & 2 were under planned shutdown from 11:30 Hrs on 20/04/2026. During this period, Raxaul and Parwanipur areas of Bihar and the Nepal power system were connected to rest of the Eastern Region grid through the 220 kV Raxaul–Gopalganj–MTPS double circuit lines.
At 12:05 Hrs, 220 kV Gopalganj–MTPS line 1 & 2 tripped due to Y-B phase fault, leading to a power failure at Raxaul and Gopalganj S/s. Total load loss of **152 MW** (130 MW at Nepal area) and 22 MW load loss reported at Raxaul and Gopalganj S/s.

2. **Time and Date of the Event (घटना का समय और दिनांक):** 11:30 Hrs on 20/04/2026
3. **Event Category (ग्रिड घटना का प्रकार): Grid Disturbance (GD)-1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** Bihar
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency (Hz)	Regional Generation (MW)	Regional Demand (MW)	State Generation	State Demand
				Bihar (MW)	Bihar (MW)
Pre-Event (घटना पूर्व)	50.01 Hz	23893 MW	29300 MW	227 MW	6308 MW
Post Event (घटना के बाद)	50.02 Hz	23893 MW	29278 MW	227 MW	6286 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)	220 kV New Raxaul- Sitamarhi D/C was under planned shutdown.
Weather Condition (मौसम स्थिति)	Normal

1. **Load and Generation loss (**लोड और जेनरेशन हानि**): L**oad loss: 152 MW (Nepal load: 130 Mw and Local load: 22 MW)

6. **Duration of interruption (रुकावट की अवधि):** 01:44 Hrs

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

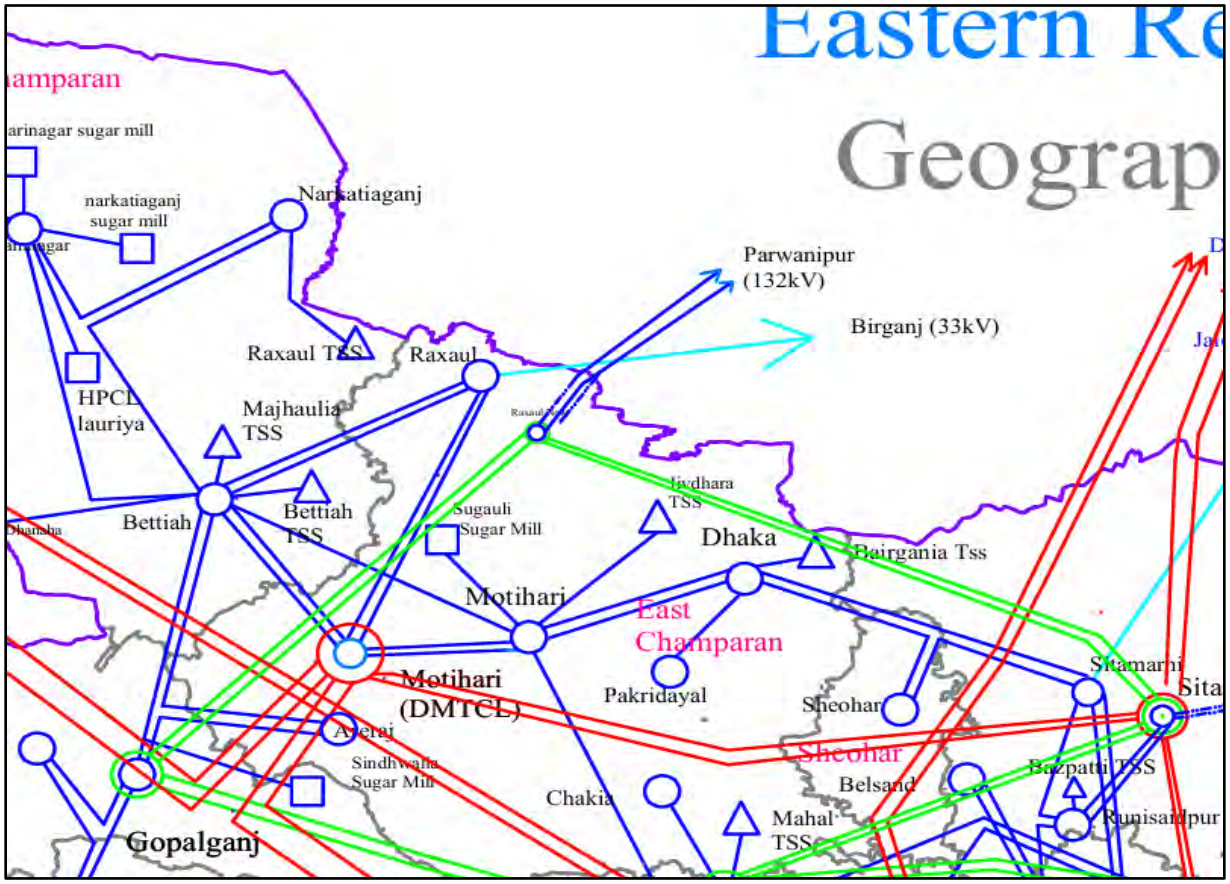


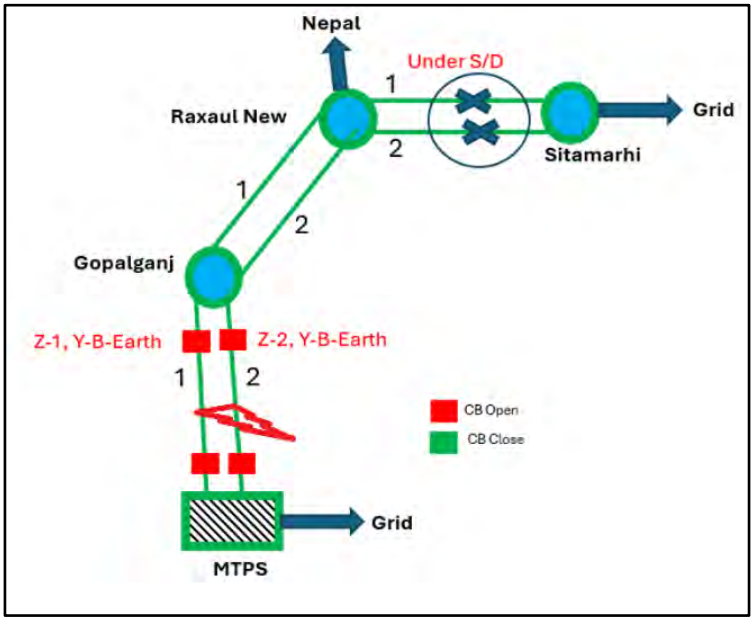
Figure 1: Network across the affected area

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

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

क्रoसo	नाम	Trip time (hh:mm:ss)	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत	Restoration time
1	220 KV-MTPS- Gopalganj-1	12:04:04	Y-B-Earth, Z-1 at Gopalganj end		-
2	220 KV-MTPS- Gopalganj-2		Y-B-Earth, Z-2 at Gopalganj end		-

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



- Prior to the disturbance 220kV Sitamarhi-Raxaul New D/C line was under planned shutdown and Raxaul New connected through 220kV Raxaul New-Gopalganj-MTPS D/C link.
- At 12:04:04 Hrs on 20/04/2026, Y-B-Earth fault occurred in 220kV MTPS-Raxaul New D/C line and line-1 and line-2 got tripped from both end in Z-1 and Z-2 protection respectively from Gopalganj end.
- Due to tripping of both lines, 220kV Gopalganj and Raxaul New S/s became dead.
- Total 150 MW load loss reported at Bihar and Nepal area.

PMU of Sitamarhi Voltage

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

- The tripping of 220 kV Gopalganj–MTPS-1 at MTPS end was due to operation of the 96-relay inferred to be unintended. The logic of the LBB scheme in the centralized busbar protection unit needs to be thoroughly examined and rectified on an URGENT BASIS.
- No carrier-aided tripping was observed at Gopalganj during Zone-2 operation, resulting in delayed fault clearance. This is not in compliance with the CEA Grid Standards Regulations-2010. The reason for the absence of carrier tripping needs to be investigated. The distance protection scheme, along with PLCC/DTPC communication channels, may be checked end-to-end for proper operation, including carrier healthiness and signal transmission.

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

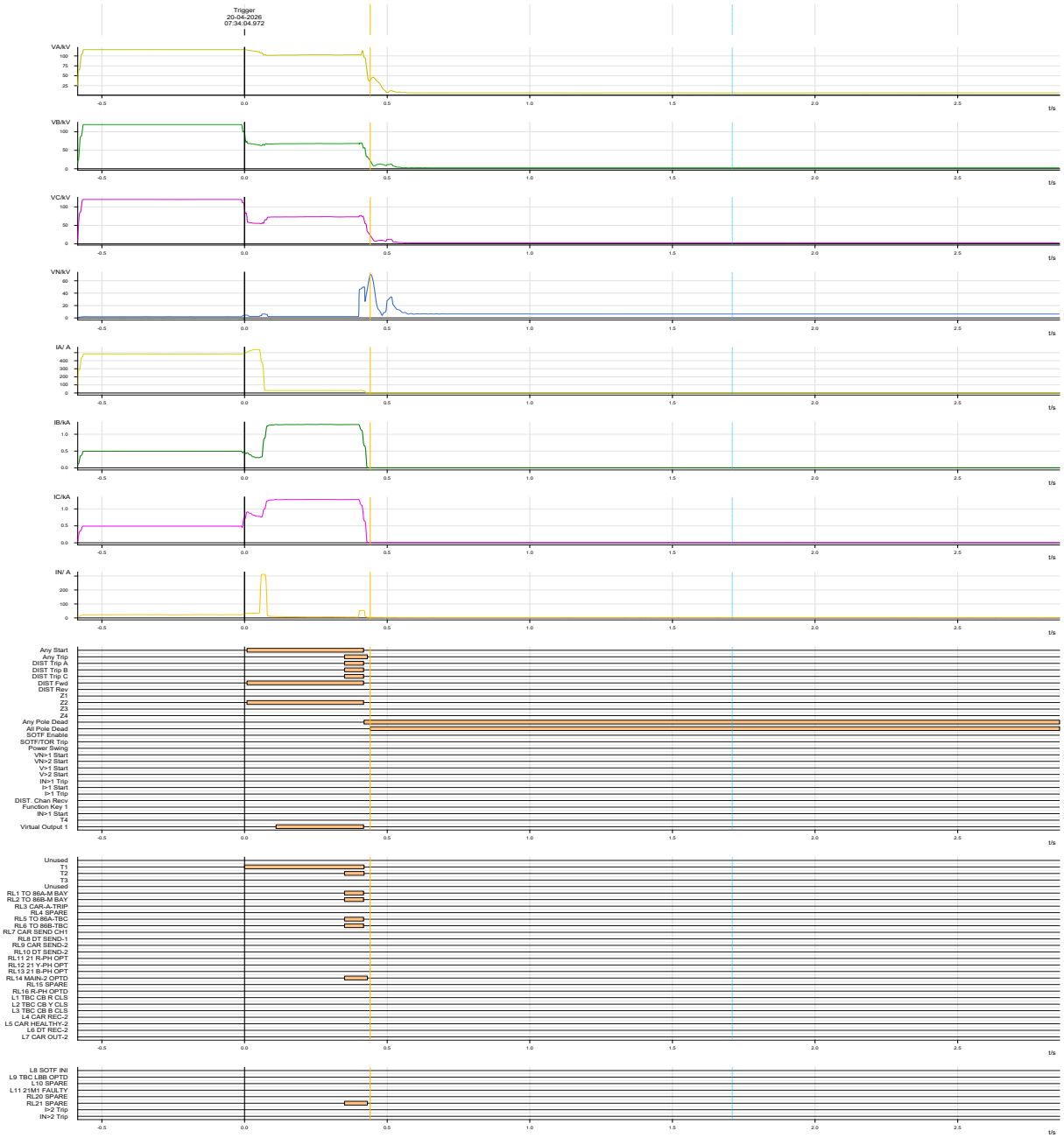
13.Non-compliance observed (विनियमन का गैर-अनुपालन):

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)	220kV Gopalganj-MTPS Line-2 tripped in Z-2 protection which was not as per scheme.

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

Annexure 2:

DR of 220kV Gopalganj-MTPS-2 at Gopalganj end:



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

Detailed Report of grid event at 220kV Raxaul and Gopalganj 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): 06-05-2025

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

Prior to the disturbance, 220kV Muzaffarpur-Goraul-1 line tripped at 18:57 Hrs on 30/04/2026 and 220kV Goraul S/s radially connected to 220kV Muzaffarpur S/s through 220kV Muzaffarpur-Goraul-2 line.
At 19:06 Hrs on 30/04/2026, 220kV Muzaffarpur-Goraul-2 line tripped on B-Earth fault, resulted in 220kV Goraul S/s became dead. Total load loss of **113 MW** reported at Goraul S/s.

2. **Time and Date of the Event (घटना का समय और दिनांक):** 19:06 Hrs on 29/04/2026
3. **Event Category (ग्रिड घटना का प्रकार): Grid Disturbance (GD)-1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** Bihar
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

	Frequency (Hz)	Regional Generation (MW)	Regional Demand (MW)	State Generation	State Demand
				Bihar (MW)	Bihar (MW)
Pre-Event (घटना पूर्व)	50.10 Hz	671 MW	2485 MW	32226 MW	19569 MW
Post Event (घटना के बाद)	50.10 Hz	671 MW	2372 MW	32226 MW	19456 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)	220 kV Muzaffarpur PG- Goraul ckt 1 tripped since 18:57 Hrs of 29-04-2026.
Weather Condition (मौसम स्थिति)	Inclement Weather.

1. **Load and Generation loss (**लोड और जेनरेशन हानि**):** Total load loss reported was approx. 113 MW.
6. **Duration of interruption (**रुकावट की अवधि**):** 00:25 Hrs
7. **Network across the affected area (प्रभावित क्षेत्र का नक्शा):**

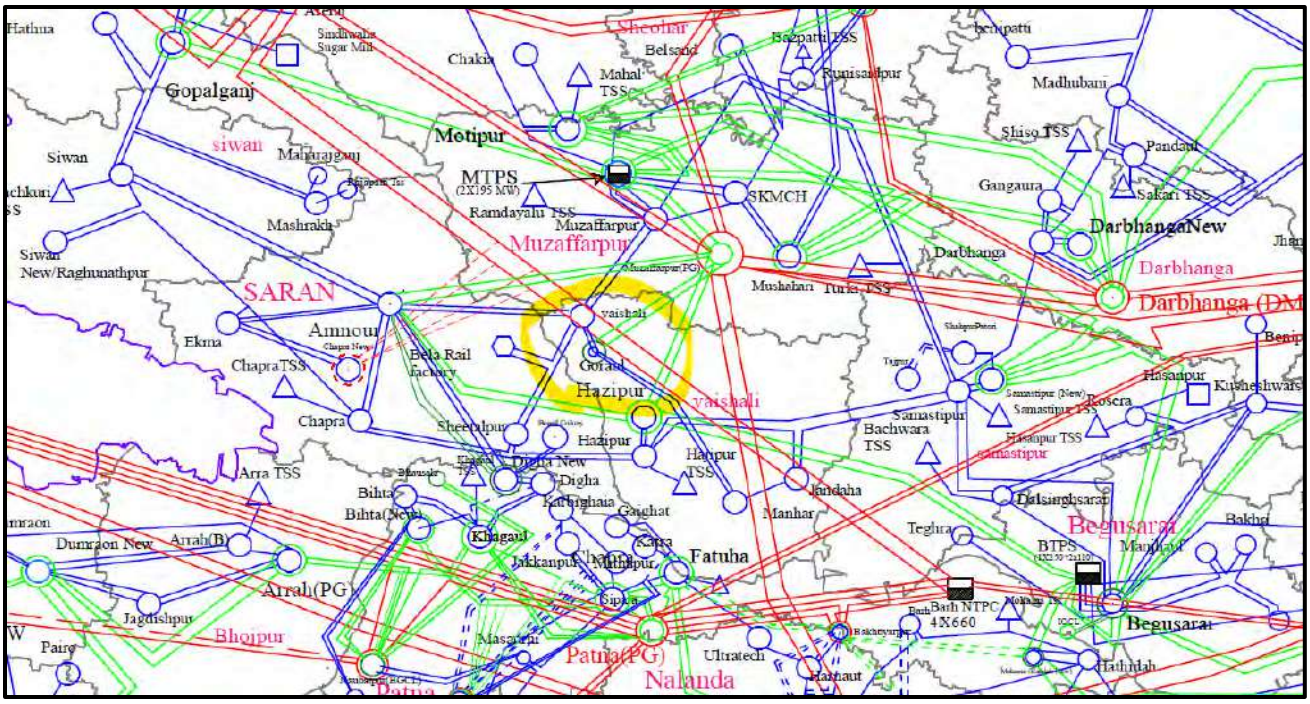


Figure 1: Network across the affected area

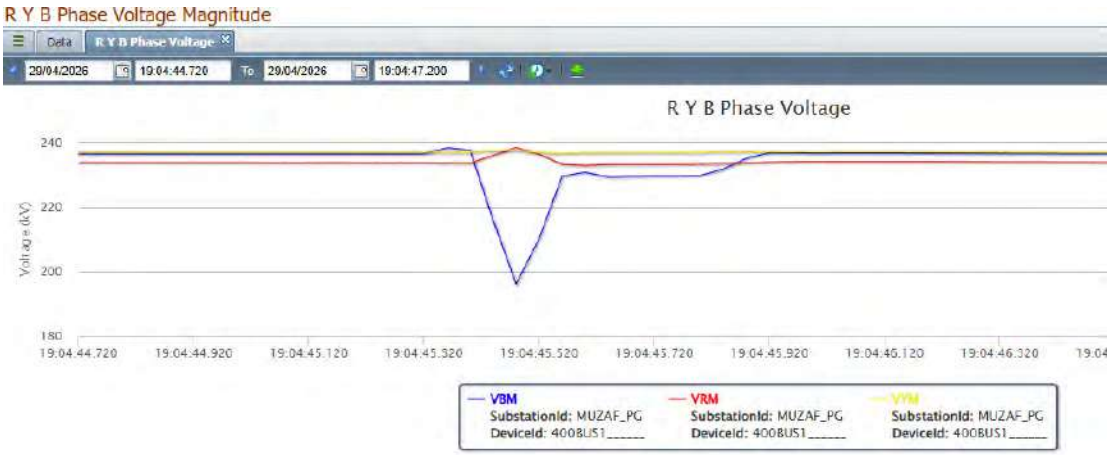
8. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण):** NIL

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

क्र०स०	नाम	Trip time (hh:mm:ss)	उप केंद्र 1 रिले संकेत	उप केंद्र 2 रिले संकेत	Restoration time
1	220 kV Muzaffarpur PG-Goraul ckt 1	18:57 hrs	Goraul end relay: B-N fault, 6.2 kA, 5.5 km		21:05 hrs
2	220 kV Muzaffarpur PG-Goraul ckt 2	19:05 hrs	Goraul end relay: B-N fault, 2.81 kA, 5.6 km		21:18 hrs

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

- Prior to the disturbance, 220kV Muzaffarpur-Goraul-1 line tripped at 18:57 Hrs on 30/04/2026.
- At 19:06 Hrs on 30/04/2026, 220kV Muzaffarpur-Goraul-2 line tripped on B-Earth fault, resulting in total power failure at Goraul S/s.
- 220kV Goraul S/s became dead.
- Total load loss of 113 MW reported at Goraul S/s.



PMU of Muzaffarpur Voltage

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

- Protection operated as per protection scheme.

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

13.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 at per protection scheme.

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

ग्रिड-इंडिया GRID-INDIA ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
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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 220/132 केवी चतरा में ग्रिड घटना पर विस्तृत रिपोर्ट / Detailed Report of grid event at 220/132 kV Chatra 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): 07-05-2025

1. Event Summary (घटना का सारांश):

Prior to the disturbance 220kV Daltonganj-Latehar line kept opened on system requirement. At 18:58 Hrs on 24/04/2026, Y-Earth fault occurred in 220kV Chatra-Latehar line and at the same time 220 kV Daltonganj-Chatra line tripped from Chatra end only, resulting in total power failure at Chatra S/s. Total load loss of around 40 MW reported at Chatra S/s.

2. Time and Date of the Event (घटना का समय और दिनांक): 18:58 hrs of 24.04.2026**.**

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 in Hz	Regional Generation in MW	Regional Demand in MW	State Generation (MW)	State Demand (MW)
				Jharkhand	Jharkhand
Pre-Event (घटना पूर्व)	49.79 Hz	32411 MW	30942 MW	218 MW	2227 MW
Post Event (घटना के बाद)	49.79 Hz	32411 MW	30902 MW	178 MW	2185 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)	220 kV Daltonganj-Latehar was under out to prevent overloading of line.

Weather Condition (मौसम स्थिति)	Normal.

6. **Load and Generation loss (लोड और जेनरेशन हानि):** Approximate load loss of **40 MW** at Chatra S/s.
7. **Duration of interruption (रुकावट की अवधि):** 00:56 Hrs (56 minutes).

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

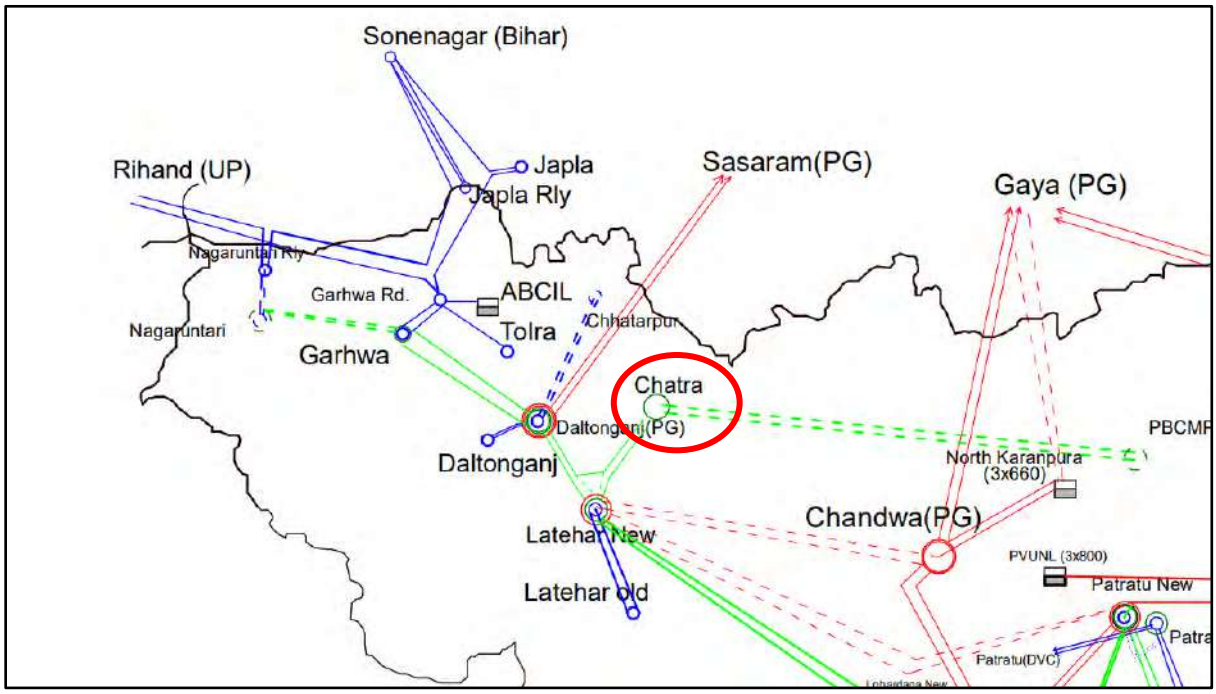
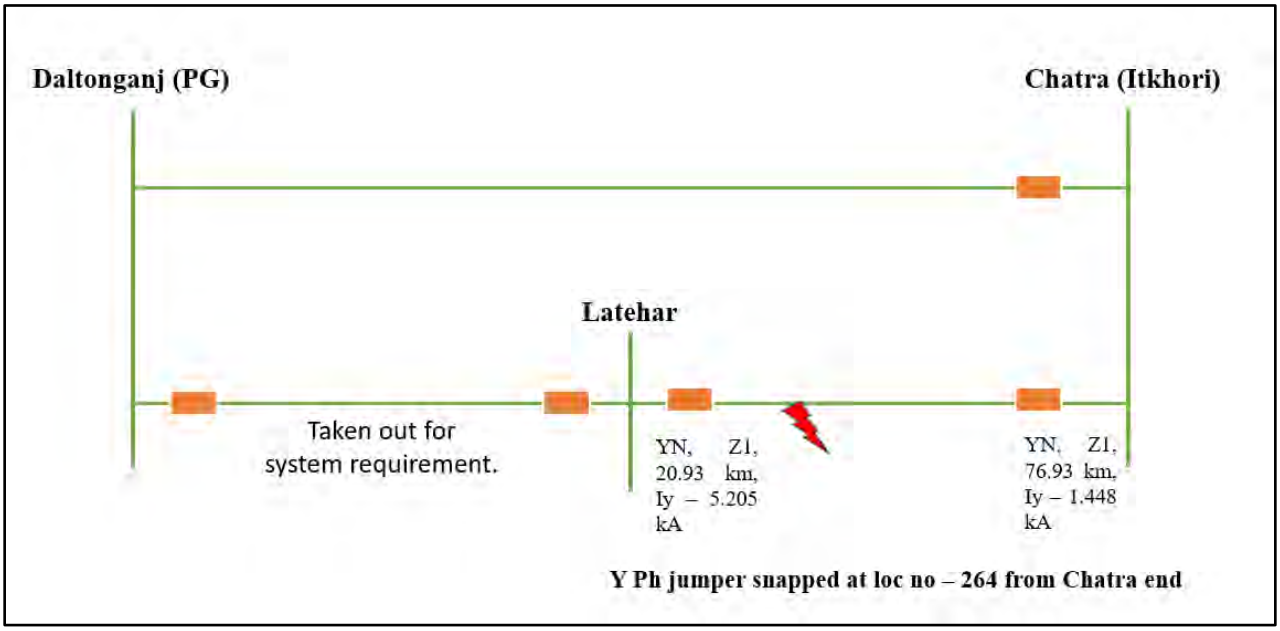


Figure 1: Network across the affected area

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 Daltonganj- Chatra	18:58	Tripped from Chatra only. -		19:54
2	220 kV Latehar- Chatra		YN, Z1-, 20.93 km, Iy – 5.205 kA	YN, Z-1, 76.93 km, Iy – 1.448 kA	-

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



- Prior to the disturbance 220 kV Chatra S/s was connected through 220kV Chatra-Daltongunj line and 220kV Chatra-Latehar line (220kV Latehar-Daltonganj line was under outage condition on system requirement).
- At 18:58 Hrs on 24/04/2026, Y-Earth fault occurred in 220 kV Chatra – Latehar line due to Y-phase Jumper snapped at Location 264 from Chatra end and line got tripped on Z-1 protection from both end within 100 msec.
- Simultaneously, 220 kV Chatra – Daltonganj line also tripped from Chatra end, resulting in total power failure at Chatra S/s.
- 220kV Chatra S/s became dead.
- Total load loss of 40 MW reported at Chatra S/s.

Figure 2: PMU of voltage at 220 kV Daltongaunj

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

- Reason of tripping of 220kV Chatra-Daltonganj line from Chatra end may be explain.

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

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

S.No.	Issues	Regulation Non-Compliance	Utilities
1.	**Detailed Report received within 7 days?**	IEGC section 37.2 (e)	**YES**

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

Annexure: 1

04/27/2026

13:25:08.487	13:25:08.933	13:25:09.001
Pickup	Trip	End

Fault type CG Trip type 3 Poles

Units

Pickup	Trip
Zone 1 Phase Units Pick Up	Zone 1 Trip
Zone 1 Ground Units Pick Up	
Zone 2 Phase Units Pick Up	Zone 2 Trip
Zone 2 Ground Units Pick Up	
Zone 3 Phase Units Pick Up	Zone 3 Trip
Zone 3 Ground Units Pick Up	
Zone 4 Phase Units Pick Up	Zone 4 Trip
Zone 4 Ground Units Pick Up	
Zone 5 Phase Units Pick Up	Zone 5 Trip
Zone 5 Ground Units Pick Up	
Zone 6 Phase Units Pick Up	Zone 6 Trip
Zone 6 Ground Units Pick Up	
Phase A Instantaneous Unit 1 Pick Up	Phase A Instantaneous Unit 1 Trip
Phase B Instantaneous Unit 1 Pick Up	Phase B Instantaneous Unit 1 Trip

Magnitudes

	Pre-Fault		Fault	
IA	0.044	A	0.042	A
ANG IA	96.4	°	91.4	°
IB	0.051	A	0.048	A
ANG IB	329.2	°	316.6	°
IC	0.105	A	0.744	A
ANG IC	138.1	°	53.1	°
IN	0.096	A	0.773	A
ANG IN	114.0	°	51.5	°
IPOL	0.002	A	0.001	A
ANG IPOL	95.6	°	127.1	°
PSC	0.048	A	0.221	A
NSC	0.035	A	0.262	A
ZSC	0.028	A	0.255	A
VA	66.832	V	64.691	V
ANG VA	0.0	°	358.0	°
VB	68.656	V	66.100	V
ANG VB	239.1	°	230.3	°
VC	66.283	V	52.293	V
ANG VC	117.6	°	111.3	°
VN	0.746	V	21.104	V
ANG VN	99.7	°	67.7	°
VSYNC	0.015	V	4.410	V
ANG VSYNC	218.4	°	173.2	°
VAB	109.520	V	87.240	V
VBC	110.258	V	82.746	V
VCA	109.352	V	109.043	V
PSV	63.326	V	53.213	V
NSV	0.324	V	9.827	V
ZSV	0.246	V	7.031	V
IGPAR	0.000	A	0.000	A
ANG IGPAR	182.9	°	21.3	°

General

FAULTTIME	42b40000	*
FREQ	50.270	Hz
DISTk	76.932	Km

Grid Disturbance at 220/132/33 kV Chatra (Itkhori) S/s and 400/220 kV Latehar S/s on 24/04/2026 at 18:58 Hrs and 20:11 Hrs

Event Description :-

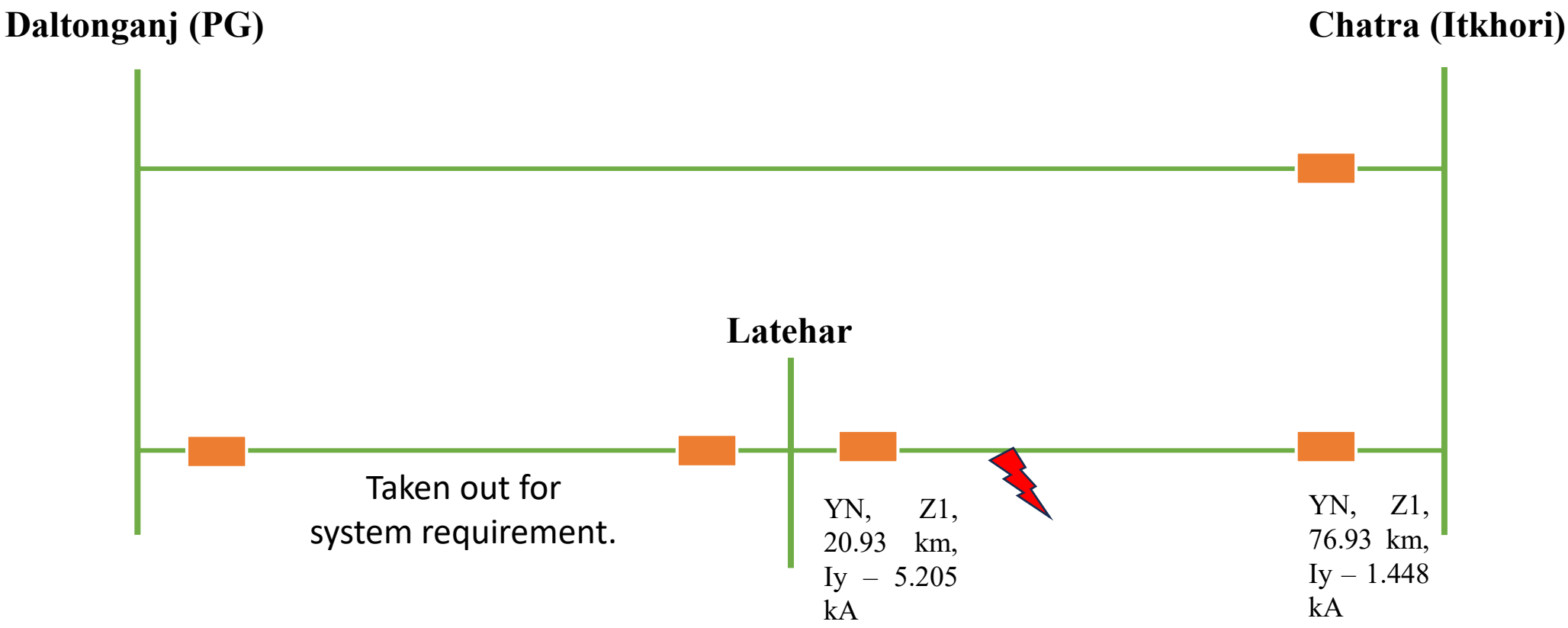
Event Analysis-1(18:58 Hrs) :-

A **Y-N fault** occurred on 220 kV Chatra - Latehar line at 18:58 Hrs due to Y-Ph Jumper snapped at Location No 264 from Chatra end and tripped on Z1 from both end within 100 ms. At the same time, 220 kV Chatra - Daltonganj line tripped from **Chatra end**. This results in complete power supply failure at Chatra area of Jharkhand and Load Loss of 40 MW occurred.

Event Analysis-2 (20:11 Hrs) :-

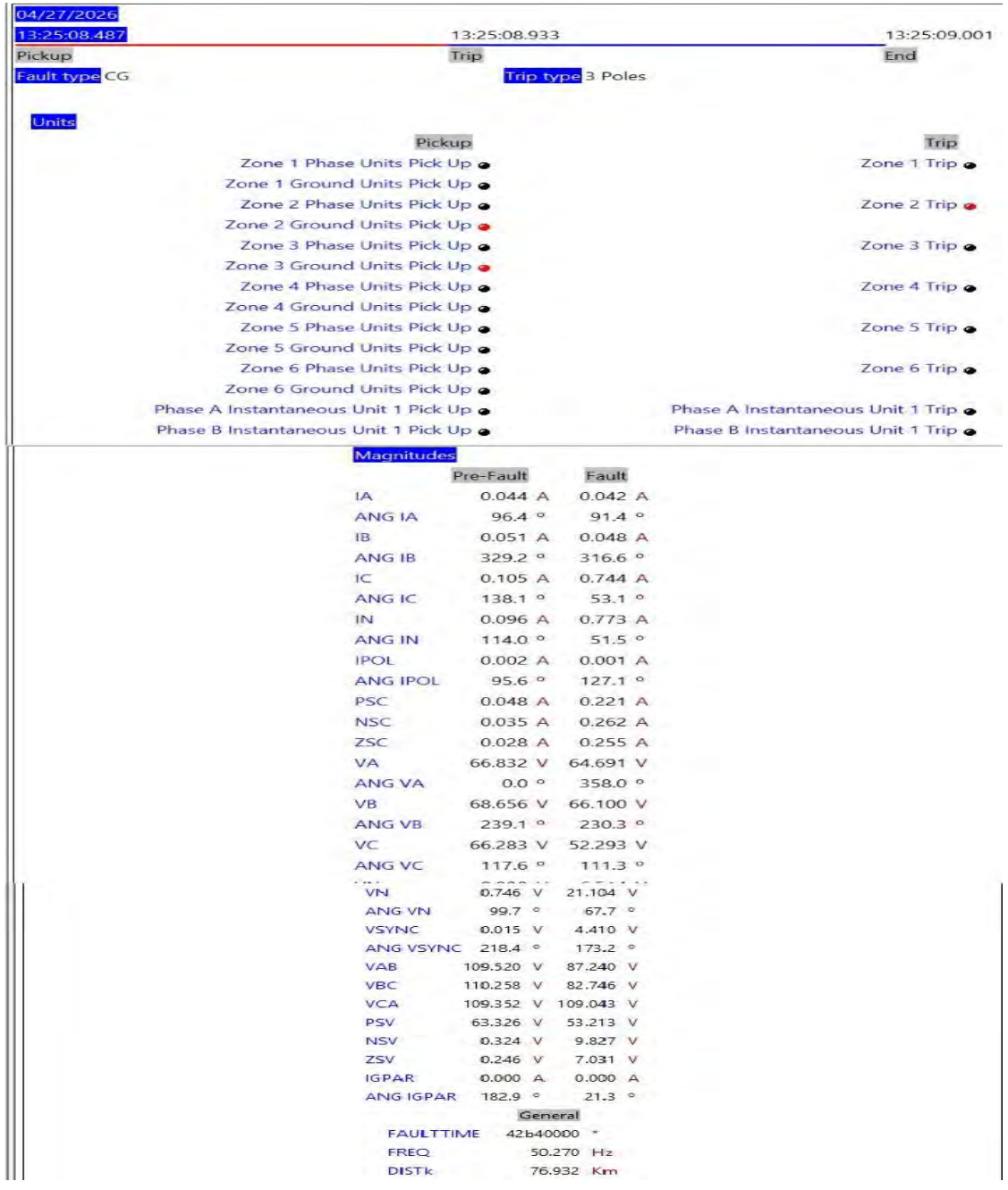
During the charging attempt of 220 kV Latehar - Chatra line through TBC from Latehar at 20:11 Hrs due to non – operation of TBC breaker, both 400/220 kV ICTs and 400 kV Latehar - Chandwa D/C tripped at Latehar.

Event Analysis-1 (18:58 Hrs)



Y Ph jumper snapped at loc no – 264 from Chatra end

220 kV Chatra end Relay Indication



04/27/2026
13:25:08.487 13:25:08.933 13:25:09.001
Pickup Trip End
Fault type CG Trip type 3 Poles

Units

Pickup		Trip	
Zone 1 Phase Units Pick Up	●	Zone 1 Trip	●
Zone 1 Ground Units Pick Up	●		
Zone 2 Phase Units Pick Up	●	Zone 2 Trip	●
Zone 2 Ground Units Pick Up	●		
Zone 3 Phase Units Pick Up	●	Zone 3 Trip	●
Zone 3 Ground Units Pick Up	●		
Zone 4 Phase Units Pick Up	●	Zone 4 Trip	●
Zone 4 Ground Units Pick Up	●		
Zone 5 Phase Units Pick Up	●	Zone 5 Trip	●
Zone 5 Ground Units Pick Up	●		
Zone 6 Phase Units Pick Up	●	Zone 6 Trip	●
Zone 6 Ground Units Pick Up	●		
Phase A Instantaneous Unit 1 Pick Up	●	Phase A Instantaneous Unit 1 Trip	●
Phase B Instantaneous Unit 1 Pick Up	●	Phase B Instantaneous Unit 1 Trip	●

Magnitudes

	Pre-Fault		Fault	
IA	0.044	A	0.042	A
ANG IA	96.4	°	91.4	°
IB	0.051	A	0.048	A
ANG IB	329.2	°	316.6	°
IC	0.105	A	0.744	A
ANG IC	138.1	°	53.1	°
IN	0.096	A	0.773	A
ANG IN	114.0	°	51.5	°
IPOL	0.002	A	0.001	A
ANG IPOL	95.6	°	127.1	°
PSC	0.048	A	0.221	A
NSC	0.035	A	0.262	A
ZSC	0.028	A	0.255	A
VA	66.832	V	64.691	V
ANG VA	0.0	°	358.0	°
VB	68.656	V	66.100	V
ANG VB	239.1	°	230.3	°
VC	66.283	V	52.293	V
ANG VC	117.6	°	111.3	°
VN	0.746	V	21.104	V
ANG VN	99.7	°	67.7	°
VSYNC	0.015	V	4.410	V
ANG VSYNC	218.4	°	173.2	°
VAB	109.520	V	87.240	V
VBC	110.258	V	82.746	V
VCA	109.352	V	109.043	V
PSV	63.326	V	53.213	V
NSV	0.324	V	9.827	V
ZSV	0.246	V	7.031	V
IGPAR	0.000	A	0.000	A
ANG IGPAR	182.9	°	21.3	°

General

FAULTTIME	42b40000	*
FREQ	50.270	Hz
DISTk	76.932	Km

220 kV Latehar end Relay Indication

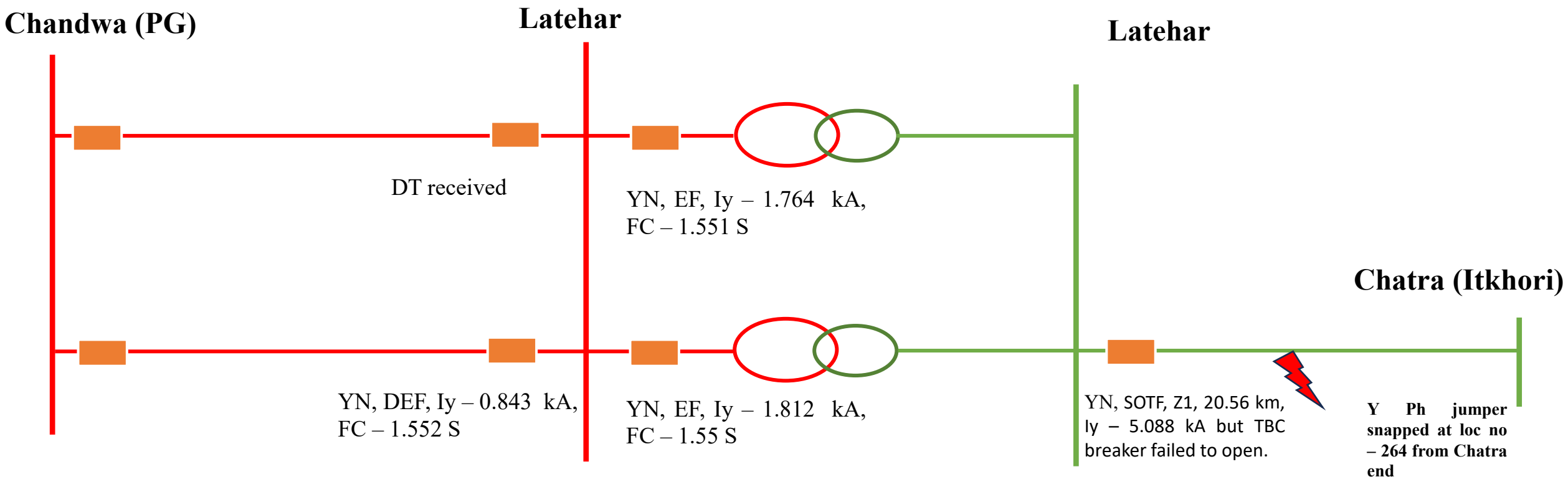
Parameter	Value
Friday 24 April 2026 19:00:16.413	TOR Enable OFF
Friday 24 April 2026 19:00:16.413	SOTF Enable ON
Friday 24 April 2026 18:58:27.101	Fault Recorded
Description	DIST PROTN M1
Plant reference	21M1
Model number	P444916J6M0720M
Address	001 Column: 01 Row: 00
Event type	Fault Record
Category	0
Event Value	0
Active Group	1
Faulted Phase	00101010
Start Elements	00000000000000001000000000
Tripped Elts	00000000000000001000000000
Time Stamp	Friday 24 April 2026 18:
Fault Alarms	0000000100000000
System Frequency	49.79 Hz
Fault Duration	66.95ms
Relay Trip Time	80.34ms
Fault Location	20.93km
IA	385.2 A
IB	5.205kA
IC	124.0 A
VAN	128.2kV
VBN	78.00kV
VCN	128.1kV
Fault Resistance	1.475 Ohm
Fault in Zone	Zone 1
Tripped Elts 2	00000000000000000000000000
Start Elements 2	0000000000000000
Evt Unique Id	108696
Friday 24 April 2026 18:58:26.582	TOR Enable ON
Friday 24 April 2026 18:58:26.494	MAIN2_TRIP OFF
Friday 24 April 2026 18:58:26.487	Logic Inputs 1
Friday 24 April 2026 18:58:26.484	Output Contacts2
Friday 24 April 2026 18:58:26.484	Output Contacts1
Friday 24 April 2026 18:58:26.418	All Pole Dead ON
Friday 24 April 2026 18:58:26.412	Output Contacts2
Friday 24 April 2026 18:58:26.412	Output Contacts1
Friday 24 April 2026 18:58:26.412	1P Trip OFF
Friday 24 April 2026 18:58:26.412	Any Trip B OFF
Friday 24 April 2026 18:58:26.412	Any Int. Trip B OFF
Friday 24 April 2026 18:58:26.412	MAIN1_TRIP OFF
Friday 24 April 2026 18:58:26.412	Any Trip OFF
Friday 24 April 2026 18:58:26.412	Any Int. Trip OFF

Chtatra end Event file : 220 kV Chatra – Daltongaj T/L

#	04/23/2026 13:45:08.527	OFF Open Phase Detector Pick Up	0.098	0.075	0.071	0.005	0.076	0.014	0.000	64.047	63.203	65.012	64.064	0.078
#	04/24/2026 19:18:07.381	ON Open Phase Detector Pick Up	0.074	0.369	0.104	0.195	0.159	0.138	0.062	61.988	49.491	63.648	58.289	3.923
#	04/24/2026 19:18:07.381	ON Oscillography Triggered	0.074	0.369	0.104	0.195	0.159	0.138	0.062	61.988	49.491	63.648	58.289	3.923
#	04/24/2026 19:18:07.441	ON Digital Input 6	0.225	0.176	0.165	0.135	0.173	0.048	0.041	62.213	68.695	53.363	61.008	9.465
#	04/24/2026 19:18:09.608	ON Digital Input 7	0.150	0.001	0.099	0.193	0.076	0.021	0.062	64.355	69.271	58.984	63.908	7.147
#	04/24/2026 19:18:09.614	OFF Open Phase Detector Pick Up	0.150	0.001	0.099	0.193	0.076	0.021	0.062	64.355	69.271	58.984	63.908	7.147
#	04/24/2026 19:18:09.614	ON Digital Input 5	0.087	0.000	0.050	0.071	0.041	0.021	0.021	66.445	67.918	61.137	65.021	5.036
#	04/24/2026 20:10:36.281	OFF Digital Input 12	0.000	0.000	0.000	0.001	0.000	0.000	0.000	65.453	65.996	65.566	65.656	0.142
#	04/24/2026 20:10:36.281	OFF Digital Input 20	0.000	0.000	0.000	0.001	0.000	0.000	0.000	65.453	65.996	65.566	65.656	0.142
#	04/24/2026 20:10:36.281	OFF Digital Input 5	0.000	0.000	0.000	0.001	0.000	0.000	0.000	65.453	65.996	65.566	65.656	0.142
#	04/24/2026 20:10:36.281	OFF Digital Input 6	0.000	0.000	0.000	0.001	0.000	0.000	0.000	65.453	65.996	65.566	65.656	0.142
#	04/24/2026 20:10:36.281	OFF Digital Input 7	0.000	0.000	0.000	0.001	0.000	0.000	0.000	65.453	65.996	65.566	65.656	0.142

Note : No relay indication and also DR & EL not captured at Chtatra end for 220 kV Chatra – Daltongaj T/L

Event Analysis - 2 (20:11 Hrs)



Fault Analysis (Event -2, 20:11 Hrs) :-

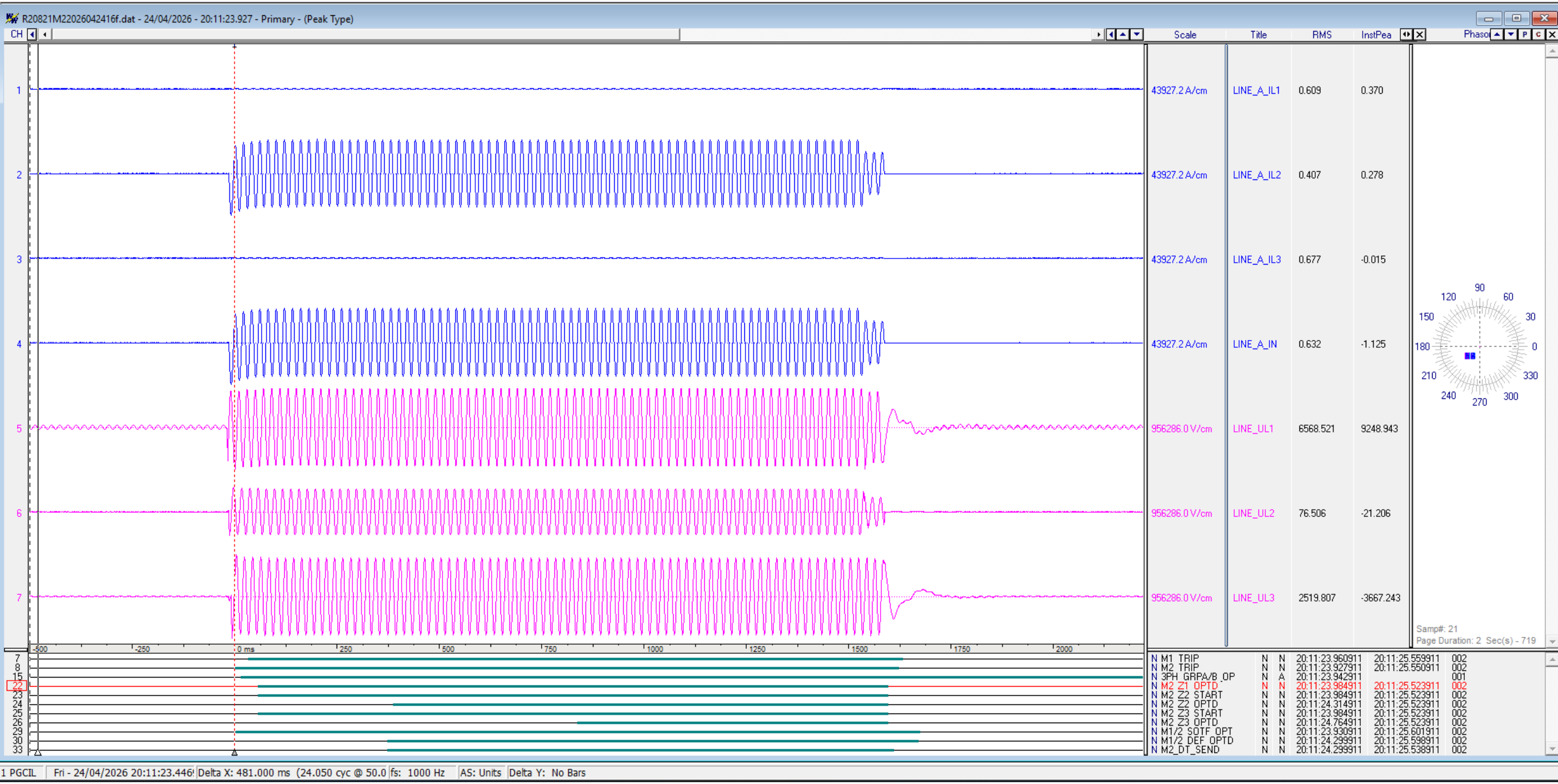
- After Tripping of 220 kV Latehar – Chatra T/L at 18:58 hrs, the charging attempt of 220 kV Latehar – Chatra T/L was made from Latehar end through TBC at 20:11 Hrs, distance relay sense the fault in SOTF (Z1, 20.56 km, Iy – 5.088 kA) due to persisting fault (**Y Ph jumper snapped at loc no – 264 from Chatra end)** but TBC breaker failed to open.
- Due to non-clearance of the line fault, both 400/220 kV ICTs tripped on Earth fault in 1.55 S.
- During the incident both the 400 kV Latehar – Chandwa T/L also tripped from both end. 400 kV Chandwa – 1 tripped on DT received and 400 kV Chandwa – 2 tripped on DEF in 1.55 S due to Y ph VT fuse fail in Main – 1 distance relay.

GROUP 1 EARTH FAULT O/C		
IN>1 Function	IEC S Inverse	38.01
IN>1 Directional	Directional FWD	38.02
IN>1 VTS Block	Non Directional	38.03
IN>1 Current Set	100.0 mA	38.04
IN>1 Time delay	0 s	38.05
IN>1 Time VTS	1.500 s	38.06
IN>1 TMS	305.0e-3	38.07
IN>1 Time Dial	7.000	38.08
IN>1 Reset Char	DT	38.09
IN>1 tReset	100.0 ms	38.0A
IN>2 Function	Disabled	38.0B

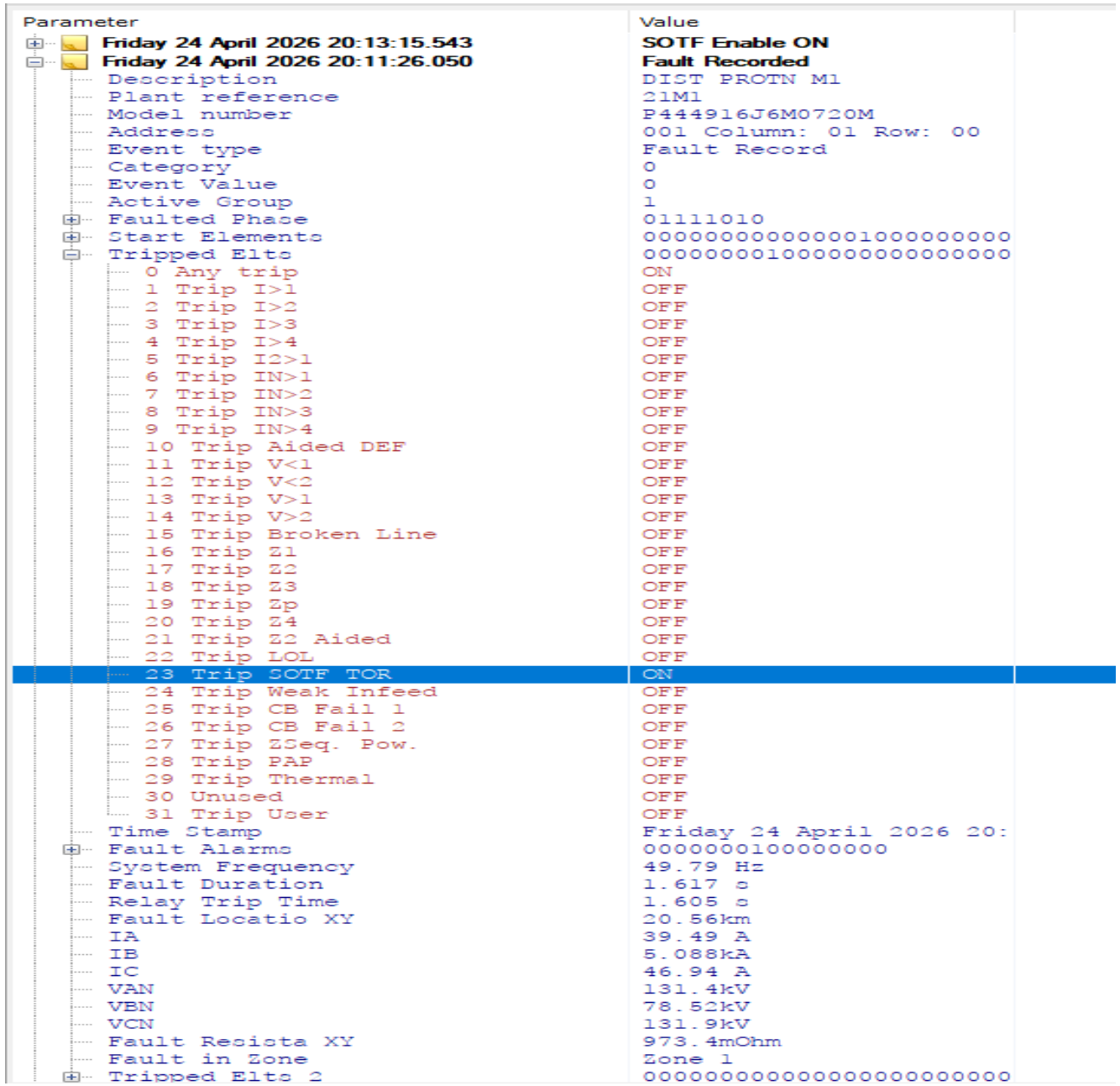
Relay Indication :-

Name of the Element	Relay Indication End 1	Relay Indication End 2	Remarks
220 kV Latehar - Chatra	SOTF, Z1, 20.56 km, Iy – 5.088 kA but TBC breaker failed to open.		Charging attempt was made from Latehar end through TBC
400/220 kV ICT – 1	EF, Iy – 1.764 kA, FC – 1.551 S		
400/220 kV ICT – 2	EF, Iy – 1.764 kA, FC – 1.551 S		
400 kV Latehar – Chandwa – 1	DT received		
400 kV Latehar – Chandwa – 2	DEF, Iy – 843.4 A, FC – 1.552 S		Due to Y phase VT fuse fail.

DR Latehar end of 220 kV Latehar - Chatra T/L

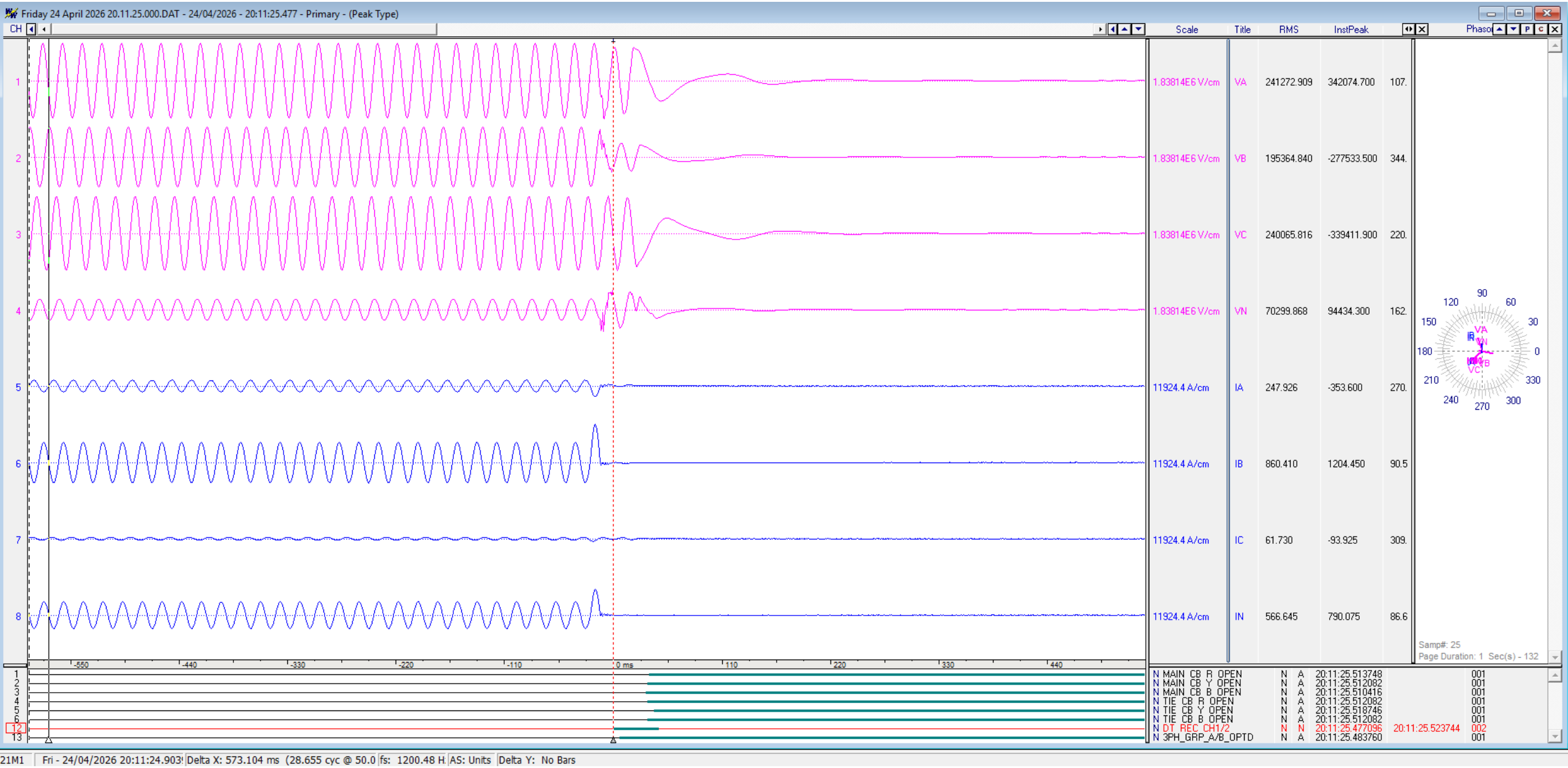


Event of Latehar end of 220 kV Latehar - Chatra T/L

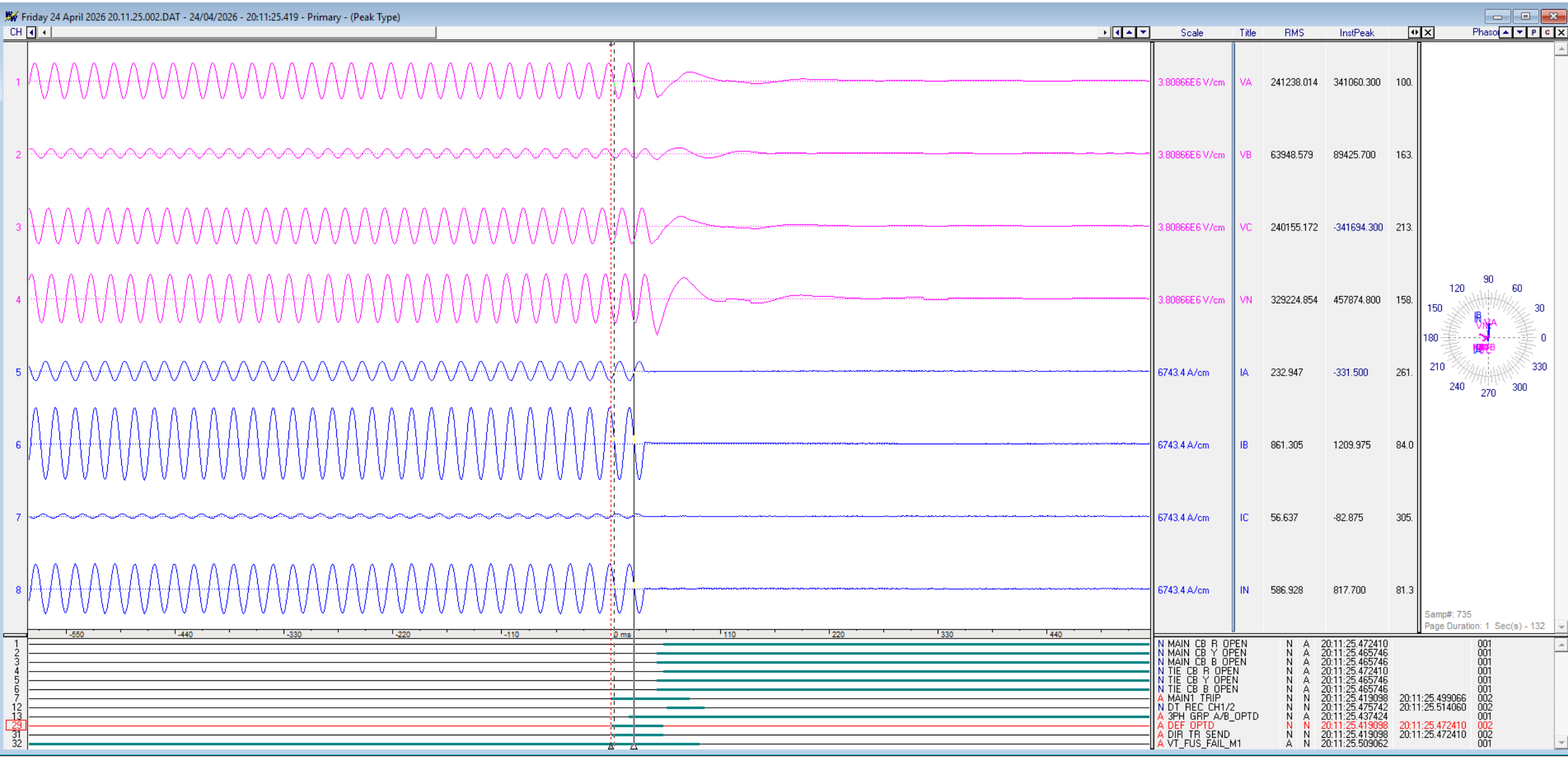


Parameter	Value
Friday 24 April 2026 20:13:15.543	**SOTF Enable ON**
Friday 24 April 2026 20:11:26.050	**Fault Recorded**
Description	DIST PROTN M1
Plant reference	21M1
Model number	P444916J6M0720M
Address	001 Column: 01 Row: 00
Event type	Fault Record
Category	0
Event Value	0
Active Group	1
Faulted Phase	01111010
Start Elements	00000000000001000000000
Tripped Elts	00000000100000000000000
0 Any trip	ON
1 Trip I>1	OFF
2 Trip I>2	OFF
3 Trip I>3	OFF
4 Trip I>4	OFF
5 Trip I2>1	OFF
6 Trip IN>1	OFF
7 Trip IN>2	OFF
8 Trip IN>3	OFF
9 Trip IN>4	OFF
10 Trip Aided DEF	OFF
11 Trip V<1	OFF
12 Trip V<2	OFF
13 Trip V>1	OFF
14 Trip V>2	OFF
15 Trip Broken Line	OFF
16 Trip Z1	OFF
17 Trip Z2	OFF
18 Trip Z3	OFF
19 Trip Zp	OFF
20 Trip Z4	OFF
21 Trip Z2 Aided	OFF
22 Trip LOL	OFF
23 Trip SOTF TOR	ON
24 Trip Weak Infeed	OFF
25 Trip CB Fail 1	OFF
26 Trip CB Fail 2	OFF
27 Trip ZSeq. Pow.	OFF
28 Trip PAP	OFF
29 Trip Thermal	OFF
30 Unused	OFF
31 Trip User	OFF
Time Stamp	Friday 24 April 2026 20:
Fault Alarms	00000001000000000
System Frequency	49.79 Hz
Fault Duration	1.617 s
Relay Trip Time	1.605 s
Fault Locatio XY	20.56km
IA	39.49 A
IB	5.088kA
IC	46.94 A
VAN	131.4kV
VBN	78.52kV
VCN	131.9kV
Fault Resista XY	973.4mOhm
Fault in Zone	Zone 1
Tripped Elts 2	00000000000000000000000

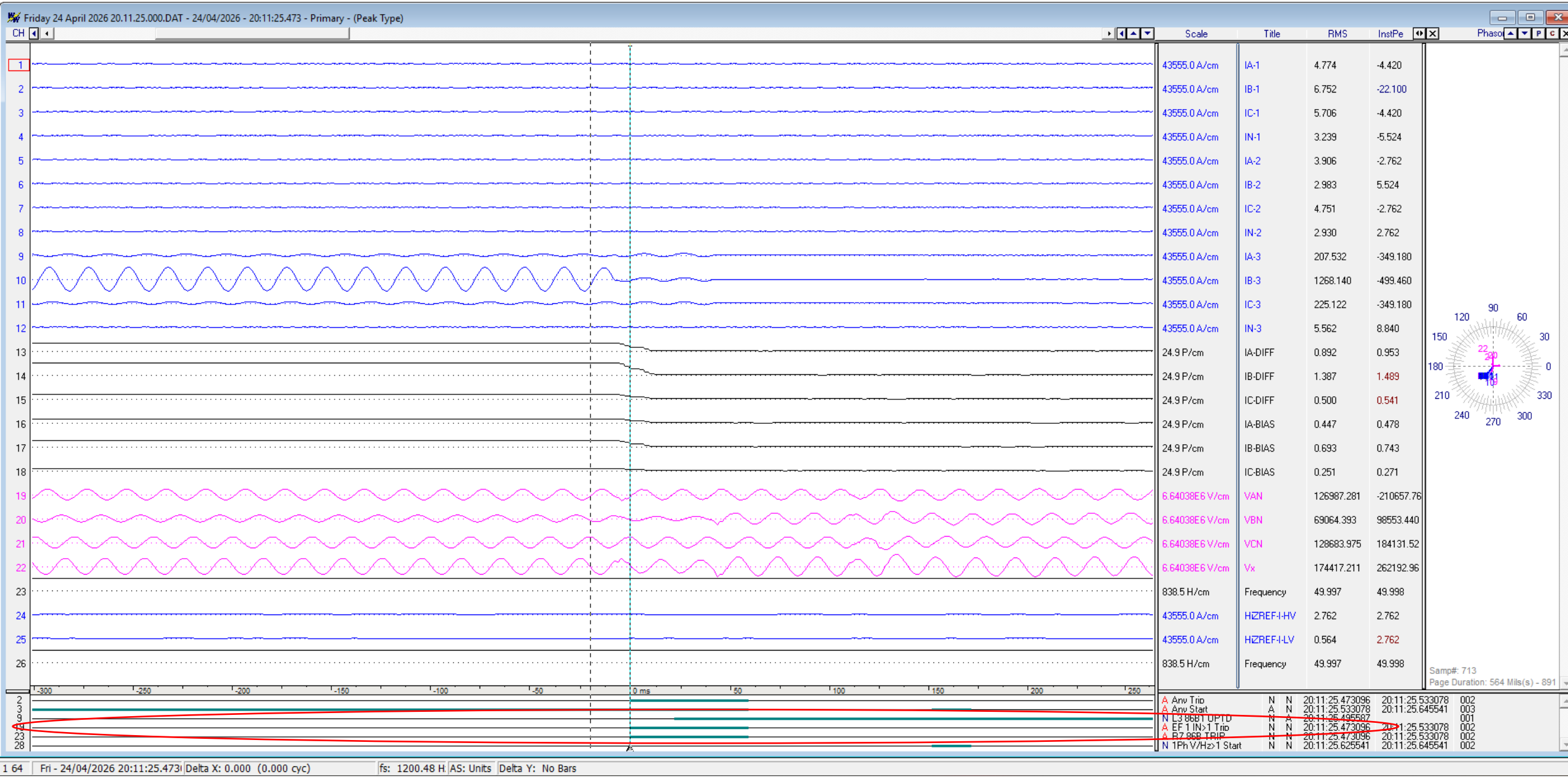
DR Latehar end of 400 kV Latehar - Chandwa - 01 T/L



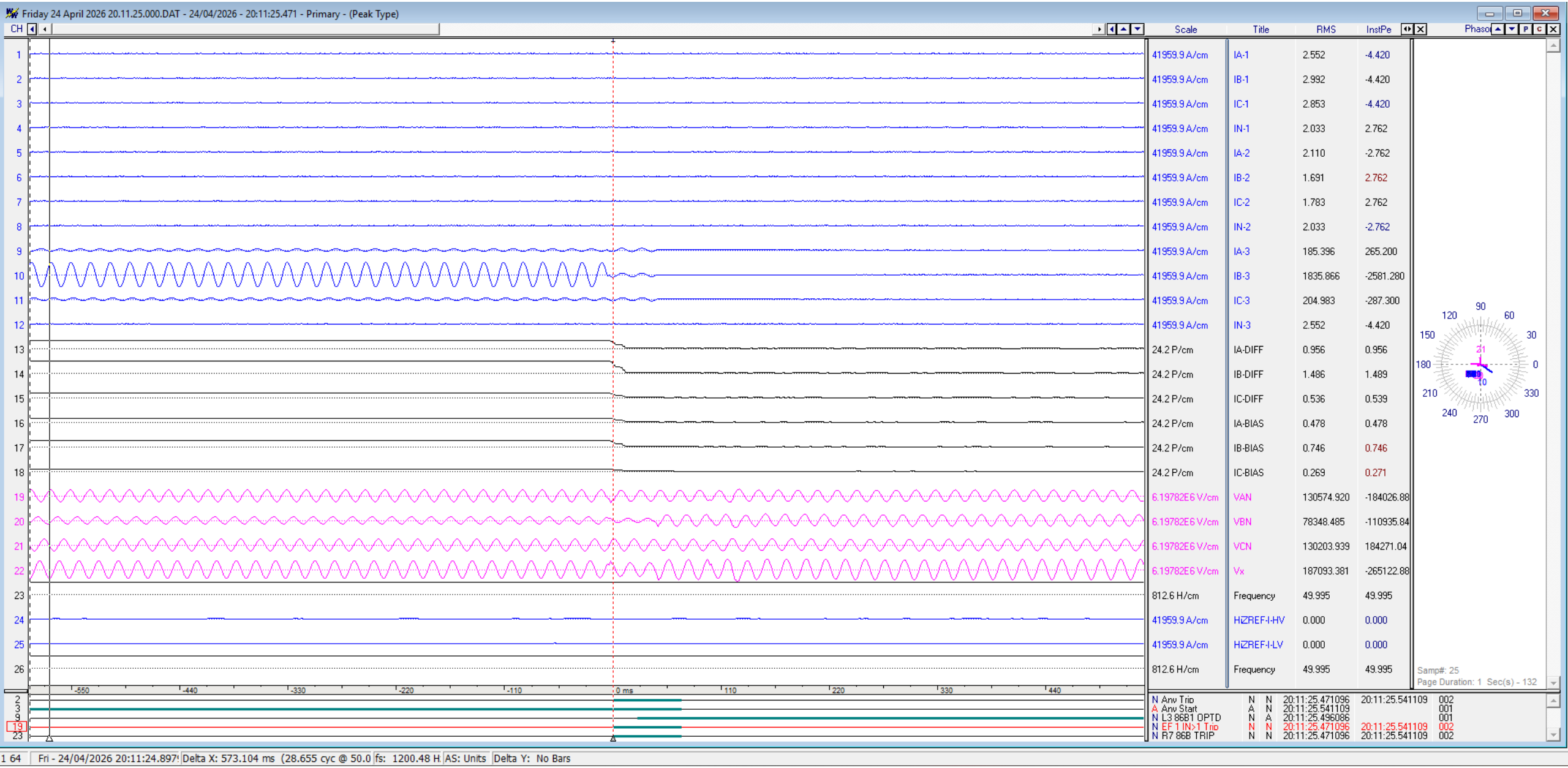
DR Latehar end of 400 kV Latehar - Chandwa - 02 T/L



DR of ICT – 1 (HV)


Friday 24 April 2026 20.11.25.000.DAT - 24/04/2026 - 20:11:25.473 - Primary - (Peak Type)
CH
Scale
Title
RMS
InstPe
Phaso
1 43555.0 A/cm IA-1 4.774 -4.420
2 43555.0 A/cm IB-1 6.752 -22.100
3 43555.0 A/cm IC-1 5.706 -4.420
4 43555.0 A/cm IN-1 3.239 -5.524
5 43555.0 A/cm IA-2 3.906 -2.762
6 43555.0 A/cm IB-2 2.983 5.524
7 43555.0 A/cm IC-2 4.751 -2.762
8 43555.0 A/cm IN-2 2.930 2.762
9 43555.0 A/cm IA-3 207.532 -349.180
10 43555.0 A/cm IB-3 1268.140 -499.460
11 43555.0 A/cm IC-3 225.122 -349.180
12 43555.0 A/cm IN-3 5.562 8.840
13 24.9 P/cm IA-DIFF 0.892 0.953
14 24.9 P/cm IB-DIFF 1.387 1.489
15 24.9 P/cm IC-DIFF 0.500 0.541
16 24.9 P/cm IA-BIAS 0.447 0.478
17 24.9 P/cm IB-BIAS 0.693 0.743
18 24.9 P/cm IC-BIAS 0.251 0.271
19 6.64038E6 V/cm VAN 126987.281 -210657.76
20 6.64038E6 V/cm VBN 69064.393 98553.440
21 6.64038E6 V/cm VCN 128683.975 184131.52
22 6.64038E6 V/cm Vx 174417.211 262192.96
23 838.5 H/cm Frequency 49.997 49.998
24 43555.0 A/cm HIZREF-I-HV 2.762 2.762
25 43555.0 A/cm HIZREF-I-LV 0.564 2.762
26 838.5 H/cm Frequency 49.997 49.998
90 120 60 150 30 180 0 210 330 240 270 300
Samp#: 713
Page Duration: 564 Mils(s) - 891
-300 -250 -200 -150 -100 -50 0 ms 50 100 150 200 250
A Any Trip N N 20:11:25.473096 20:11:25.533078 002
A Any Start A N 20:11:25.533078 20:11:25.645541 003
N L3 86BT OPTD N A 20:11:25.495587 001
A EF 1 IN>1 Trip N N 20:11:25.473096 20:11:25.533078 002
A BZ 86B TRIP N N 20:11:25.473096 20:11:25.533078 002
N 1Ph V/Hz>1 Start N N 20:11:25.625541 20:11:25.645541 002
1 64
Fri - 24/04/2026 20:11:25.473
Delta X: 0.000 (0.000 cyc)
fs: 1200.48 H
AS: Units
Delta Y: No Bars

DR of ICT – 1 (HV)


Friday 24 April 2026 20.11.25.000.DAT - 24/04/2026 - 20:11:25.471 - Primary - (Peak Type)
CH
Scale
Title
RMS
InstPe
Phasor
1 41959.9 A/cm IA-1 2.552 -4.420
2 41959.9 A/cm IB-1 2.992 -4.420
3 41959.9 A/cm IC-1 2.853 -4.420
4 41959.9 A/cm IN-1 2.033 2.762
5 41959.9 A/cm IA-2 2.110 -2.762
6 41959.9 A/cm IB-2 1.691 2.762
7 41959.9 A/cm IC-2 1.783 2.762
8 41959.9 A/cm IN-2 2.033 -2.762
9 41959.9 A/cm IA-3 185.396 265.200
10 41959.9 A/cm IB-3 1835.866 -2581.280
11 41959.9 A/cm IC-3 204.983 -287.300
12 41959.9 A/cm IN-3 2.552 -4.420
13 24.2 P/cm IA-DIFF 0.956 0.956
14 24.2 P/cm IB-DIFF 1.486 1.489
15 24.2 P/cm IC-DIFF 0.536 0.539
16 24.2 P/cm IA-BIAS 0.478 0.478
17 24.2 P/cm IB-BIAS 0.746 0.746
18 24.2 P/cm IC-BIAS 0.269 0.271
19 6.19782E6 V/cm VAN 130574.920 -184026.88
20 6.19782E6 V/cm VBN 78348.485 -110935.84
21 6.19782E6 V/cm VCN 130203.939 184271.04
22 6.19782E6 V/cm Vx 187093.381 -265122.88
23 812.6 H/cm Frequency 49.995 49.995
24 41959.9 A/cm HIZREF-I-HV 0.000 0.000
25 41959.9 A/cm HIZREF-I-LV 0.000 0.000
26 812.6 H/cm Frequency 49.995 49.995
90 120 60 150 30 180 0 210 330 240 270 300
Samp#: 25
Page Duration: 1 Sec(s) - 132
-550 -440 -330 -220 -110 0 ms 110 220 330 440
N Any Trip N N 20:11:25.471096 20:11:25.541109 002
A Any Start A N 20:11:25.541109 001
N L3 86B1 OPTD N A 20:11:25.496086 001
N EF 1 IN>1 Trip N N 20:11:25.471096 20:11:25.541109 002
N R7 86B TRIP N N 20:11:25.471096 20:11:25.541109 002
1 64
Fri - 24/04/2026 20:11:24.897
Delta X: 573.104 ms (28.655 cyc @ 50.0
fs: 1200.48 H
AS: Units
Delta Y: No Bars

Protection Isuue Observation:

Event 1:-

- 220 kV Chatra – Daltonganj tripped from Chatra end. No DR & EL captured, only CB open status found.

Event 2:-

- TBC breaker failed to open despite of generation of trip signal from both distance Main – 1 & 2 relay.
- 220 kV LBB Protection didn't operated.
- 400 kV Chandwa – 02 tripped on DEF at Latehar due to Y ph VT fuse fail in main – 1 distance relay.

Operational issue Observation:

- Non-uniform distribution of 220 kV feeders between both buses were observed at Latehar. 220 kV Feeders position during the event as follows –

  Main 1 Bus : ICT – I & II, TBC
  Main 2 Bus : Chatra, Daltonganj (PG), Lohardaga – 1& 2

Thank You

SOP FOR 400KV BUS BAR PROTECTION PANEL

The following SOP has been adopted for commissioning of 400kV New Bus Bar Protection (Siemens-Centralized Duplicate) at GSS New Duburi.

1. Binary Inputs such as Single Phase LBB initiation & 3-Ph LBB initiation has been extended from respective 400kV Panels of ICT/Reactor/Feeders only to BB-1 panel.
   Then the same BI are being looped to BB-2 panel due to unavailability of spare contacts.
2. DC Supply has been extended from DCDB-1 & DCDB-2 only to BB-1 Panel. In order to avoid mixing of both the Sources through Binary Inputs, DC Source-1 has been extended from FS-1 & FS-2 fuses of BB-1 to FS-1 & FS-2 fuses of BB-2 Panel.
3. Similarly, DC Source-2 has been extended from FS-5 & FS-6 fuses of BB-1 to FS-3 & FS-4 fuses of BB-2 Panel for annunciation purpose.
4. Internal wire for DC supply at **TB no X:DC1-1 & 2 and X:DC2-1 & 2 has been disconnected and both DC MCB-3 & 4 in BB-2 panel has been kept off.** Also, termination of DC cable layed from DCDB-1 & 2 to BB-2 panel has not been done at DCDB end.
5. **In case of failure of either of the DC supply to BB-1, the other DC supply will take care of both the Bus Bar protection & Annunciation through DC change over relay of BB-1 panel.**
6. **In case of failure of both the DC supply due to cable fault, care must be taken for extension of both the DC supply to either BB-1 or BB-2 panel in order to avoid mixing of both the sources.**
7. **Potential free BO 10.5 is used for 96 Trip purpose in ICT-3 in order to avoid mixing of DC sources.**

ATTENTION!!!!!

LBB & END FAULT PROTECTION ARE INDEPENDENT OF BUS BAR IN/OUT SELECTION SWITCH.

SO, BAY OUT OF SERVICE MUST BE CARRIED OUT IN BOTH BB1 & BB2 PANEL DURING ANY RELAY OR CT TESTING OF ANY BAY DURING SHUT DOWN.

SOP FOR 400KV BUS BAR PROTECTION PANEL

The **following SOP must be adopted** in New Bus Bar Protection (Siemens-Centralized Duplicate) at GSS New Duburi **during Relay or CT testing** in any Bay during shutdown of any 400kV Bay.

1. LBB and End fault protection are independent of Bus Bar In/Out selection switch.

2. So, Bay out of Service must be carried out in both BB1 & BB2 panel during CT / Relay testing in any 400kV bay during shut down.

Procedure to make Bay out of Service :

Go to Menu -> Click down arrow->Settings -> Go to the concerned Bay by clicking down arrow -> Click right arrow -> General -> Click right arrow -> Click on **"Change"** -> Press **'2'** Six times -> Change the mode 'off' from **'On'** -> Press Ok -> Click back arrow till "Select" is reached -> Press ok **"Twice"** to confirm.

After making Bay out of Service, again reconfirm regarding the same.

Similar procedure to be followed before charging of the said bay to make it **"In Service"**.

SOP FOR 220KV BUS BAR PROTECTION PANEL

The **following SOP must be adopted** in 220kV Bus Bar Protection (Siemens-De-Centralized) at GSS New Duburi **during Relay or CT testing** in any Bay during shutdown of any 220kV Bay.

1. LBB and End fault protection are independent of Bus Bar In/Out selection switch.

2. So, Bay out of Service must be carried out in MCU during CT / Relay testing in any 220kV bay during shut down.

Procedure to make Bay out of Service :

Go to Menu -> Click down arrow-> Settings ->Click right arrow-> Click down arrow till 'BU' is reached -> Click right arrow-> Go to the concerned Bay by clicking down arrow -> Click right arrow -> Enter Six times '0" -> Make "Out of Service" -> Enter -> Click back arrow.

After making Bay out of Service, again reconfirm regarding the same.

Similar procedure to be followed before charging of the said bay to make it **"In Service"**.

DETAIL INCIDENT REPORT REGARDING 400KV BUS-I LBB TRIPPING OCCUREED ON DT-13.04.2026 AT 400/220/33kV GSS NEW DUBURI:

Situation:

(i)400kV TATA-1 feeder bay was under shut down from Dt-11.04.2026 to 13.04.2026 for Annual maintenance purpose. During this period, CT JB, Cable from CT secondary to JB & CT JB to CRP and 400kV Bus Bar Panel were replaced at Grid end.

(ii)After completion of wiring, during CT Primary Injection, both Zone-1 & Zone-2 In/OUT switches in new Centralised Duplicate Bus Bar Panels (Siemens -7SS85) were kept in **OUT** position to avoid any short of tripping.

(iii)At 13:07 Hrs, during Current injection in R-Ph Bus-1 side CT in order to confirm the CT circuit of 400kV TATA-1 bay, Main CB of all the bays i.e. Meramundali-1 & 2, Pandiabili & 80MVAR Reactor connected with BUS-1 tripped on LBB.

Observation & Analysis:

(i)In the fault record in 400kV Bus Bar relay, it was observed that LBB initiation has been received from TATA-1 Bay. During the current injection in R-Ph upto 218A, all the main CB connected with 400kV Bus-1 got tripped on LBB with 96 relay operated with a time delay of 214ms. **Relay setting adopted for LBB Tripping in 400kV Bus Bar relay is 200A with a time delay of 200ms.**

NB:- No power interruption occurred at GSS New Duburi as all the Bays are in charged condition through Tie CB.

(ii)In consultation with Siemens Relay Engineer, it is learnt that LBB tripping is independent of Zone In/Out selector switch.

(iii) Subsequently, all the Main CBs connected with Main Bus-1 were charged at 14:13Hrs after receiving code from ERLDC, Kolkata.

Action:

(i)The above learning shall be incorporated in the standard operating procedure during shut down of any bay to avoid such type of unwanted tripping.

(ii)Bay out of service of the concerned bay shall be done in both Centralised Duplicate Bus Bar relays (Siemens-7SS85) to prevent any sort of unwanted tripping.

List of important transmission lines in ER which tripped in April-2026

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	UTILITY RESPONSE
1	400KV-FSTPP-BAHARAMPUR-2	01-04-2026	14:03	01-04-2026	17:38	FSTPP: R_N, 69.23 km, 4.5 kA	Z-1, R-Earth, PDR operated after 2.5 sec.	R-Earth	100 msec	A/r successful from PG end and A/r not attempted from Farakka end, further after 2.5 sec, PDR operated at Farakka end, NTPC Farakka may explain.			NO	YES	NTPC	PG ER-II	A/R operated at Berhampore SS. Protection operated properly at PG ER-II end.
2	400KV-MEDINIPUR-KHARAGPUR-2	05-04-2026	09:10	05-04-2026	16:16	Khargpur: Z1, Y-N, 115km, 4.5kA;	Medinipur: Y-N, 4.9km, 15.5kA	Y-Earth	100 msec	A/r failed after 1 sec.			YES	YES	PG ER-II	WBS ETCL	A/R attempted but tripped due to persisting fault in line. Protection operated properly at PG ER-II end.
3	400KV-MEDINIPUR-NEW CHANDITALA-1	08-04-2026	21:40	08-04-2026	23:16	Mednipur end : BN fault, FD-49.8KM, FC-5.196KA and	New Chandiatala: B-N, Z1, 7.69 kA, FD- 33.70 kM.	B-Earth	100 msec	Three phase tripping for phase to ground fault. WBSETCL and PMJTL may explain.			NO	YES	PMJTL	WBS ETCL	Fault was single phase type. However, DT received from WBSETCL end after 50ms during dead time. Hence, 3phase trip happened. Protection operated properly at PG ER-II end.

4	400KV-ALIPURDUAR (PG)-BINAGURI-3	21-04-2026	17:37	21-04-2026	20:06	A/R successful at Alipurduar end, Tripped at Binaguri end,	R/I at Binaguri B_N, Z2, F Dist >100%, F Current 3.7kA Alp B_N, Z-1, F Dist 19.34 km, F Current 4.85 kA	B-Earth	350 msec	A/r successful from Alipurduar end and as per PMU Z-2 tripping was observed at Binaguri end. PG ER-II may explain.			NO	NO	PG ER-II	PG ER-II	Very high resistive fault occurred in line. Initially, fault was detected by Alipurduar end. DEF started and fault gradually enchroached in Z1. Single phase trip happened at Alipurduar end. After fault clearing at Alipurduar end, current contribution increased from Binaguri end. Binaguri end detected the fault in Z2. However, there was no overlap between carrier signal & Z2 start at Binaguri end. Due to very high resistive fault & away from Binaguri SS, Binaguri detected Z2 in late & carrier receive signal got reset by that time. Hence, 3 phase trip happened at Binaguri end.
5	765KV-MEDINIPUR-NEW JEERAT-1	24-04-2026	04:09	24-04-2026	18:59	R/I at (Medinipur): Y-N,Z1,24.4KM, FC-7.369kA,	R/I at (New Jeerat): Y-N,116.2 KM, FC-2.138kA;	Y-Earth	100 msec	A/r failed after 1sec.			NO	NO	PMJTL	PMJTL	A/R attempted but tripped due to persisting fault in line. Protection operated properly at PG ER-II end.
6	765KV-NEW RANCHI-MEDINIPUR-2	26-04-2026	13:56	26-04-2026	15:13	Mednipur: R-Y, FD- 204km, Ir-2.91 kA, Iy-3.438 kA;	New Ranchi: R_Y, 70.28 km, Ir-9.396 kA, Iy-8.484 kA	R-Y-Earth	100 msec	Line tripped on phase to phase to earth fault.			YES	YES	PG ER-I	PMJTL	Phase to phase fault occurred in line & 3 phase trip happened. Protection operated properly at PG ER-II end.
7	400KV-MAITHON-GAYA-1	29-04-2026	15:25	29-04-2026	16:44	Gaya End : FD: 37.7 Km, FC: Rph-12.75 kA, Bph-13.61 kA	-	R-B	100 msec	As per PMU Line tripped on phase to phase fault			NO	NO	PG ER-II	PG ER-I	Phase to phase fault occurred in line & 3 phase trip happened. Protection operated properly at PG ER-II end.
8	400KV-MAITHON-GAYA-2	29-04-2026	15:26	29-04-2026	16:32	Gaya End: FD: 38.3 Km,FC: Rph:12.42 kA, Bph:13.24 kA	-	R-B	100 msec	As per PMU Line tripped on phase to phase fault			NO	NO	PG ER-II	PG ER-I	Phase to phase fault occurred in line & 3 phase trip happened. Protection operated properly at PG ER-II end.

Annexure 3.3

NTPC Barh

Month	April

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)
No Line Tripping				NA	NA	NA	NA

Dependability Index D = Nc/(Nc+Nf)	NA
Security Index S = Nc /(Nc+Nu)	NA
Reliability Index R= Nc/(Nc+Ni)	NA

1/5/26.

Signature of Area Engineer

पराग चटर्जी/Parag Chatterjee
वरिष्ठ प्रबंधक (प्र॰ एवं अनु॰/वि॰अनु॰ विभाग)
Sr. Manager (O&M/EMD)
एनटीपीसी लि॰, बाढ़/NTPC Ltd., Barh

01/05/2026

Signature of Area In-charge

कनिष्क रंजन / KANISHKA RANJAN
उप महाप्रबंधक (प्र॰ एवं अनु॰/विद्युत अनुरक्षण विभाग)
Dy. General Manager (O&M/EMD)
एनटीपीसी लि॰ बाढ़ / NTPC Ltd., Barh

Tashiding HEP

Tashiding Hydro Electric Project 2 X 48.5 MW

Protection Performance Indices for the APRIL -2026 (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- Legship Line-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NO TRIPPING	--
2	220KV Tashiding- 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.

Jorethang HEP

Jorethang Loop Hydro Electric Project 2 X 28 MW

Protection Performance Indices for the April-2026 (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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	220KV Jorethang- New Melli Line-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

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.

TVNL

Protection Performance Indices for the month of APRIL 2026(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	06-04-2026	02:25	06-04-2026	03:55	STARTED PH AN,DIST.Z1 49.26km		1		1		0		1.0000	0.5000	0.5000	
2	220KV TTPS-GOVINDPUR CKT 1 T/L	07-04-2026	12:25	07-04-2026	18:01	STARTED PH BC,FAULT Z1 39.34km		1		1		0		1.0000	0.5000	0.5000	
3	400KV TTPS-PVUNL T/L	07-04-2026	14:22	07-04-2026	18:08	A/R OPERATED,CARR,DT REC,DIST-58KM,Z1		1		1		0		1.0000	0.5000	0.5000	
4	220KV TTPS-GOVINDPUR CKT 2 T/L	14-04-2026	16:40	14-04-2026	20:50	Tripped from Remote End on Circuitary Fault		1		1		0		1.0000	0.5000	0.5000	
5	220KV TTPS-Bihar Shariff T/L	17-04-2026	13:14	17-04-2026	13:48	STARTED PH CN E/F DIST-Z1 72.54km		1		1		0		1.0000	0.5000	0.5000	
6	220KV TTPS-Bihar Shariff T/L	19-04-2026	23:13	19-04-2026	23:55									0.0000	0.0000	0.0000	Electromechanical Bus Bar Protection - To be replaced in 2-3 months
7	220KV TTPS-GOVINDPUR CKT 1 T/L	19-04-2026	23:13	20-04-2026	01:51	Bus Coupler CT at TTPS Exploded resulting in Bus Earth		0		1		1		0.0000	0.0000	0.0000	
8	220KV TTPS-GOVINDPUR CKT 2 T/L	19-04-2026	23:13	20-04-2026	01:55									0.0000	0.0000	0.0000	
9	400KV TTPS-PVUNL T/L	20-04-2026	01:50	20-04-2026	03:20	Overcurrent I>1		1		1		0		1.0000	0.5000	0.5000	
10	400KV TTPS-PVUNL T/L	20-04-2026	03:29	20-04-2026	10:32	Overcurrent I>1		1		1		0		1.0000	0.5000	0.5000	
11	220KV TTPS-Bihar Shariff T/L	22-04-2026	12:34	22-04-2026	13:34	STARTED PH BC,DIST-Z1 142.8km		1		1		0		1.0000	0.5000	0.5000	
12	400KV TTPS-PVUNL T/L	23-04-2026	07:45	23-04-2026	09:22	Overcurrent I>1		1		1		0		1.0000	0.5000	0.5000	
13	400KV TTPS-PVUNL T/L	24-04-2026	04:22	24-04-2026	07:33	Overcurrent I>1		1		1		0		1.0000	0.5000	0.5000	
14	400KV TTPS-PVUNL T/L	29-04-2026	15:16	02-05-2026	17:13	OverVoltaget V>1		1		1		0		1.0000	0.5000	0.5000	

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

DMTCL

Protection Performance Indices for the month of April'2026																		
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 April'2026 Month																	