Agenda
for
146th PCC Meeting

Date:23.04.2025
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

AGENDA FOR 146TH PROTECTION COORDINATION SUB-COMMITTEE MEETING TO BE HELD ON 23RD APRIL 2025 AT 10:30 HRS THROUGH MS TEAMS

PART – A

ITEM NO. A.1: Confirmation of Minutes of 145th Protection Coordination sub-Committee Meeting held on 27th March 2025 through MS Teams.

The minutes of 144th Protection Coordination sub-Committee meeting held on 27.03.2025 was circulated vide letter dated 16.04.2025.

Members may confirm the minutes of the Meeting.

PART – B

ITEM NO. B.1: Regarding Grid disturbance at 765kV New Ranchi S/s on 21/03/2025 at 09:35 Hrs

On 21/03/2025 at 09:35 hrs, due to the failure of four (4) CTs at New Ranchi S/s caused by lightning, the bus bar protection of main bus #1 and #2 operated, resulting in the total power failure at 765kV New Ranchi S/s.
Multiple CT failures during lightning induced overvoltage is the suspected cause for the disturbance.

In 145th PCC Meeting, Powergrid representative explained the event with help of presentation which is attached at **Annexure B.1.1.**

He informed that prior to incident on 21st March 2025, all elements at 765 k V New Ranchi S/s were in service. Strong wind, severe thunderstorm and heavy rainfall were observed at time of incident. At 09:34: 04 Hrs, 711 R phase CT got failed which lead to bus bar protection operation for 765 k V bus 2 and all feeders connected with bus 2 got tripped. After 44 seconds from event 1, 706 Y phase CT got failed subsequently bus bar protection for 765 k V bus 2 operated and further ICT 2 got tripped from hv and lv sides on LBB operation for 706 bay. After around 100 milliseconds from event 2, 765 k V New Ranchi- Dharamjaigarh- 2 line got tripped from New Ranchi end due to DT receipt. On analysis it was found that at Dharamjaigarh end, LA got failed so non switchable LA reactor got tripped in REF protection and DT was sent to New Ranchi end. He informed that after 4 seconds from event 3, 702 R phase CT got failed which lead to operation of differential protection of ICT 1 ultimately leading to tripping of ICT 1. Further after 25 seconds from event 4, 710 Y phase CT got failed which lead to operation of bus bar differential protection for 765 k V bus 1 and all elements connected to bus 1 got tripped.

Thus 765 k V Bus 1 and Bus 2 became dead after this disturbance.

On enquiry from PCC regarding remedial actions taken after disturbance, PG representative replied that physical inspection of switchyard was carried out in bus, gantry and connected

equipment however no abnormalities and flashover marks were noticed except 710 Y phase CT which was found punctured from insulator and gas got released from punctured insulator.
Further, SF6 gas was found contaminated for 3 nos of CTs which might be due to internal flashover however no flashover marks were found and rupture disk was also in good condition for CTs. He also said that quality test of all CTs (SO2 and dew point) also gave satisfactory results. Earthing risers of failed CTs, CT earthing were also checked in sample basis and found in order except connection of CT base to structure which is not done.

PG representative further said that OEM, M/s Siemens engineer had visited site after disturbance and suggested detailed quality testing for all connected SF6 CTs at S/s. Further 2 failed CTs will be sent to OEM factory for study.

On enquiry from MPL representative regarding whether secondary damage has resulting in failure of these CTs, PG representative replied that no secondary damage had found and there is chances that failure of these CTs had occurred due to heavy lightening.
MPL representative suggested PG representative to carry out lightening adequacy audit for better analysis behind failure of these CTs.

PCC advised PG representative to carry out lightening adequacy audit along with detailed earthing audit at New Ranchi S/s and submit observations to ERPC/ERLDC. It further advised PG representative to take suitable measures for discharging through earthing in case of heavy lightening.

PCC also advised PG representative to carry out earthing audit at other 765 k V S/s also so that similar type of incidents will not occur in future.

On enquiry from MS, ERPC regarding spare CTs at New Ranchi S/s, PG representative informed that earlier 4 number of CTs were present at S/s which had been used for replacement of failed CTs. Further, they are planning to take CTs from Gaya S/s and procurement also.

Detailed report from ERLDC is attached at **Annexure B.1.2.**

Members may discuss.

ITEM NO. B.2: Tripping of ICTs during the month of March 25

Sl. No	Name of the Element	Trip Date	Trip Time	Remarks	Utility
1	400KV/220KV 315 MVA ICT 1 AT LATEHAR(JUSNL)	30/03/2025	03:17	REF protection operated	JUSNL
2	400KV/220KV 315 MVA ICT 1 AT BAKRESWAR	28/03/2025	12:57	R-phase differential operated	WBPDCL/WBSETCL
3	400KV/220KV 315 MVA ICT 1 AT LATEHAR(JUSNL)	07/03/2025	11:40	REF protection operated	JUSNL
4	400KV/220KV 250 MVA ICT 2 AT TENUGHAT	13/03/2025	07:12	Differential protection operated	TVNL/JUSNL

Concerned utilities may explain.

ITEM NO. B.3: Tripping of Bus during the month of March 25

Sl. No	Name of the Element	Trip Date	Trip Time	Remarks	Utility
1	400KV MAIN BUS - 1 AT FSTPP	21/03/2025	04:50	Bus bar protection operated due to failure in PIR chamber of R ph CB of 400kV Kahalgaon 1 (400kV Bay 22).	NTPC
2	400KV MAIN BUS - 1 AT MEERAMUNDALI	10/03/2025	17:17	LBB operated during protection testing of 125 MVAR bus reactor at Meeramundali.	OPTCL
3	400KV MAIN BUS - 2 AT JAKKANPUR(BH)	06/03/2025	11:49	Mal-operation reported.	BSPTCL

Concerned utilities may explain.

ITEM NO. B.4: Submission of protection performance indices on a 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 March 2025, detailed list attached as **Annexure B.4.**

Sl.no	Utility Name	November 2024	December 2024	January 2025	February 2025	March 2025
1	PG-ER-1	Yes (13.02.2025)	Yes (13.02.2025)	Yes (13.02.2025)		
2	PG-ER-2	Yes (24.12.2024)	Yes (16.01.2025)	Yes	Yes	Yes (19.04.2025)
3	PG-Odisha	Yes (03.12.2024)	Yes (02.01.2025)	Yes (07.02.2025)	Yes (06.03.2025)	Yes (21.4.2025)
4	WBSETCL/ WBPDCL	YES (09.12.2024)	Yes (07.01.2025)	Yes (11/02/2025)	Yes (06.03.2025)	Yes (08.04.2025)
5	BSPTCL/ BGCL	Yes	Yes (13.01.2025)	Yes (10.02.2025)	Yes (10.03.2025)	Yes (11.04.2025)

6	OPTCL/ OHPC	YES	Yes (15.01.2025)	Yes (10.02.2025)	Yes (17.03.2025)	
7	DVC	YES (21.12.2024)	Yes			
8	JUSNL	Yes (07.01.2025)	Yes (07.01.2025)	Yes (13.02.2025)	Yes (05/03/2025)	
9	Sikkim					
10	OPGC					
11	PMTL					
12	NTPC-KHSTPP	Yes (13.12.20224)				
13	NTPC-FSTPP	YES (04.12.2024)				
14	NTPC-BARH	Yes (15.12.2024)	Yes (10.01.2025)		Yes (07.03.2025)	Yes (15.04.2025)
15	NTPC-TSTPP	YES (14.12.2024)				
16	NTPC-KBUNL					
17	NPGC					
18	BRBCL					
19	NTPC-DARILAPLI	Yes (02.12.2024)	Yes (04.01.2025)	Yes (12/02/2025)	Yes (01/03/2025)	Yes (02.04.2025)
20	NTPC-NORTH KARNPUARA	Yes (10.12.2024)	Yes (01/03/2025)	Yes (01/03/2025)	Yes (01/03/2025)	
21	ATL					
22	APNRL					
23	CBPTCL					
24	DMTCL	Yes (03.12.2024)	Yes (02.01.2025)	Yes (03/02/2025)	Yes (03/04/2025)	Yes (02/04/2025)
25	ENICL	YES (09.12.2024)	Yes (03.01.2025)	Yes (12.02.2025)	Yes	
26	Chuzachen HEP					
27	Jorethang HEP	Yes	YES	Yes	Yes (01/03/2025)	

			(02.01.2024)	(01/02/2025)		Yes (02.04.2025)
28	Tashiding Hep	YES (09.12.2024)	YES (02.01.2024)	Yes (01/02/2025	Yes (02/03/2025)	Yes (01.04.2025)
29	GMR					
30	IBEUL					
31	JITPL					
32	MPL					
33	NKTL					
34	OGPTL	YES (09.12.2024)	Yes (03.01.2025)	Yes (12.02.2025)	Yes	
35	PMJTL					
36	Powerlink					
37	PKTCL	YES (09.12.2024)	Yes (03.01.2025)	Yes (12.02.2025)	Yes	
38	CESC	Yes (25.12.2024)	Yes (17.02.2025)	Yes (17.02.2025)		
39	Rongnichu HEP					
40	SPTL					
41	TVNL	Yes (06.12.2024)	Yes (08.01.2025)	Yes (04.02.2025)	Yes (05.03.2025)	Yes (01.042025)

Members may discuss.

ITEM NO. B.5: Protection System Analysis Group of Eastern Region

A Uniform Protection protocol has been developed by NPC in line with IEGC 2023. The protocol envisages formation of a Protection System Analysis Group (PSAG) loads in each region with members from RPC, NLDC, RLDC, PGCIL, a Protection Expert from the region along with the entity under whose jurisdiction GD/GI occurred to analyze the GD/GI for analysis of Grid Disturbances/incidents at major/critical S/s and at substations that affected critical/essential/strategic in detail by visiting the respective substation/substations physically and conducting the meetings. The progress of implementation of the PSAG shall be followed up in the monthly PCC Meeting.

In 143rd PCC Meeting, PCC advised concerned utilities to provide nominations of nodal officer to ERPC by one week for forming Protection system analysis group of eastern region.

In 144th PCC Meeting, ERPC representative informed that nomination had been received from BSPTCL.

PCC advised concerned utilities to provide nominations of nodal officer to ERPC by Feb 25 for forming Protection system analysis group of eastern region.

ERPC representative informed that nomination had been received from BSPTCL and Powergrid ER-II.

PCC advised concerned utilities to provide nominations of nodal officer to ERPC by first week of April 25 for forming Protection system analysis group of eastern region.

Members may update.

ITEM NO. B.6: Single Line Tripping Incidences in month of March 2025

Single line tripping incidents in the month of March 2025 which needs explanation from constituents of either end is attached at **Annexure B.6.**

Members may discuss.

PART- C: OTHER ITEMS

ITEM NO. C.1: Internal Protection Audit Plan of Sub stations for the Year 2024-25

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

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

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

Unquote

All utilities are requested to submit the annual audit plan for the substations 220kV and above voltage level for FY 2024-25 to ERPC by 31.10.2023. Annual audit plans for internal audit of their protection systems and third-party protection audit shall be furnished separately.

The utility wise status is given below:

Sl.no	Utility Name	Status
1	PG-ER-1 & PMTL	Received
2	PG-ER-2	Received
3	PG-Odisha	Received
4	WBSETCL	Received
5	BSPTCL	Received
6	OPTCL	Received
7	DVC	Received
8	JUSNL	Received
9	OPGC	Not Received
10	CESC	Received
11	NTPC	Not Received
12	NHPC	Received
13	DMTCL	Received
14	IPP	Not Received

In 140th PCC Meeting, on enquiry from PCC, OPTCL representative informed that internal protection audit plan will be shared to ERPC/ERLDC by 2-3 days.

PCC advised NTPC & IPPs to share internal protection audit plan at earliest to ERPC/ERLDC.

PCC advised concerned utilities to submit internal protection audit report for S/s where audit had been completed to ERPC/ERLDC.

OPTCL vide email dated 22nd Nov 2024 had submitted internal protection audit plan.

In 144th PCC Meeting, PCC advised concerned utilities to submit internal protection audit report for S/s where audit had been completed to ERPC/ERLDC.

NTPC North Karanpura, NTPC Darlipalli and NTPC Talcher and DMTCL had submitted internal protection audit report.

Concerned utilities may update.

ITEM NO. C.2: Third Party Protection audit of Sub stations for the Year 2024-25

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

Further IEGC 2023 Clause 15.3 states that "After analysis of any event, each RPC shall identify a list of substations / and generating stations where third-party protection audit is required to be carried out and accordingly advise the respective users to complete third party audit within three months."

Accordingly, a list of S/s has been identified where third-party protection audit needs to be carried out:

NTPC Kahalgaon	Tenughat	Budhipadar	Darbhanga (BH)
NTPC Farakka	Chatra	Lapanga	Biharsharif (BH)
NTPC Barh	Hatia	Rengali (OPTCL)	Purnea Old (PG)
Jorethang	Garhwa	Rengali (PH)	Kishanganj (PG)
Tashiding	Chandil	Therubali	Meramundali
Ramchandrapur	Bantala (KLC)	Balimela	

As per SOP for Third Party Protection Audit prepared by NPC, Third Party Protection Audit shall be carried out by the third party designated agencies in line with the IEGC Regulations 2023 or by the audit teams constituted by RPCs with the members from other states (at least two) who opt for the RPC coordinated third party protection audit.

In 140th PCC Meeting, ERPC representative informed that third party protection audit plan has been received from OPTCL and Powergrid ER-1. He further added that after receiving audit plan from all utilities, ERPC will communicate to concerned utilities regarding substations for which protection audit can be done through audit team of ERPC. He further told that it is planned to carry out protection audit for critical substations by last week of November 2024.

NTPC representative informed that they are planning to carry out third party protection audit by CPRI in Dec 2024 /Jan 2025 for which audit plan will be shared to ERPC/ERLDC.

PCC advised all utilities to submit third party protection audit plan by 7 days to ERPC along with their choice to carry out protection audit either through ERPC coordinated third party protection audit or by third party designated agencies.

In 141st PCC Meeting, PCC advised all utilities to submit third party protection audit plan by 7 days to ERPC along with their choice to carry out protection audit either through ERPC coordinated third party protection audit or by third party designated agencies.

In 142nd PCC Meeting, ERPC representative informed that as per communications received from Jorethang HEP and Tashiding HEP, they are planning to conduct third party protection audit for concerned S/s by Reliserve solution before 31st March 2025. He further informed that as per communication received from NTPC Barh, they are planning to carry out third party protection audit by CPRI in Jan 2025.

PCC advised concerned utilities to submit third party protection audit plan by 31st Dec 2024 to ERPC along with their choice to carry out protection audit either through ERPC coordinated third party protection audit or by third party designated agencies.

In 143rd PCC Meeting, ERPC representative informed that it is planned to carry out protection audit for few critical substations by last week of Feb 2025.

PCC advised concerned utilities to submit third party protection audit plan by one week to ERPC along with their choice to carry out protection audit either through ERPC coordinated third party protection audit or by third party designated agencies.

In 145th PCC Meeting, ERPC representative informed that it is planned to carry out protection audit for few critical substations by last week of April 2025 (2025-26).

Members may update.

ITEM NO. C.3: Internal Protection Audit Plan of Sub stations for the Year 2025-26

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

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

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

Unquote

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

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

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

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

Concerned utilities may update.

ITEM NO. C.4: Third Party Protection audit of Sub stations for the Year 2025-26

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

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

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

Concerned utilities may update.

ITEM NO. C.5: Follow-up of Decisions of the Previous Protection Sub-Committee Meeting(s)

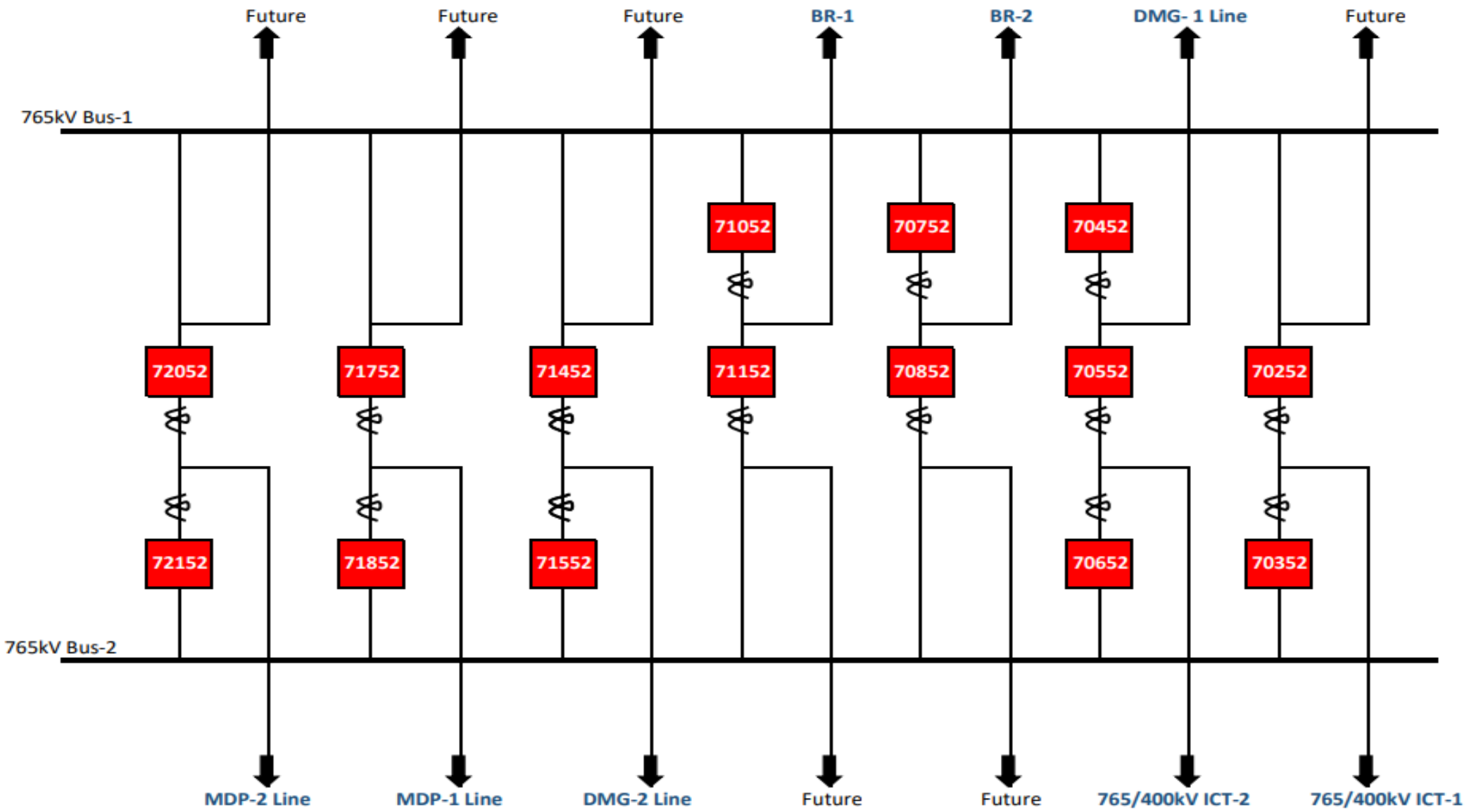
The decisions of previous PCC meetings are attached at **Annexure C.5.**

Members may update.

Annexure B.1.1

Report on Tripping of 765kV Bus-1 & 2 at New Ranchi SS on 21.03.2025, 09:34:04 Hrs

Single Line Diagram of 765 kV New Ranchi SS



- **Pre-Event & Climate Condition**:

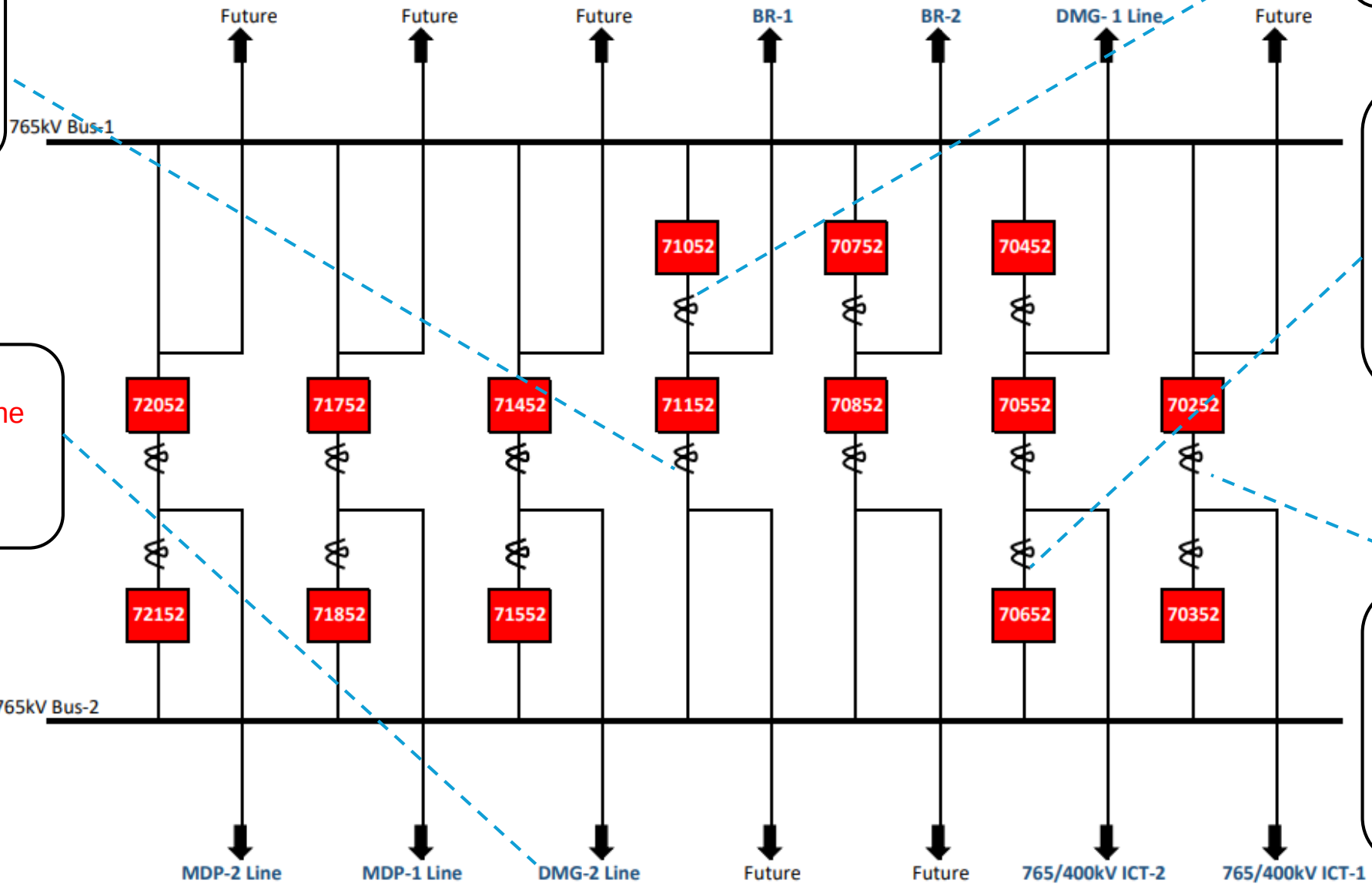
  - **All Lines and Equipments of 765kV New Ranchi SS were in service.**

  - **Strong winds, severe thunderstorm and heavy rainfall with hailstorm.**

Sequence of Events

Event 1: 711 R Ph CT Failed & Bus-2 Diff Optd
09:34:04:152

Event 5: 710 Y Ph CT Failed & Bus-1 Diff Optd
09:35:17:709



Event 2: 706 Y Ph CT Failed & Bus-2 Diff Optd
09:34:48:273.
ICT-2 tripped from HV & IV sides on 706 bay LBB Opn

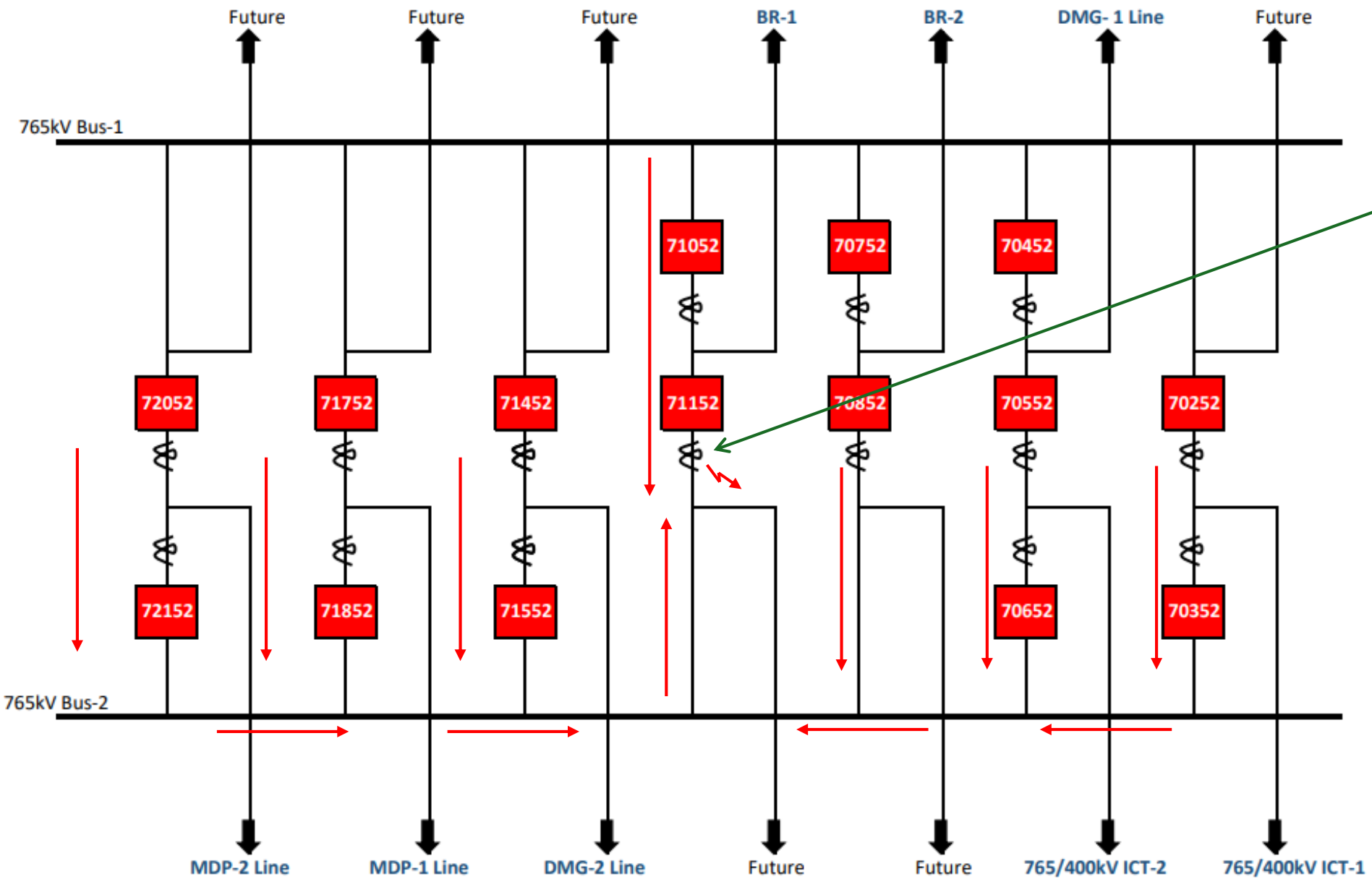
Event 3:
Dharamjaygarh-2 line Tripped due to DT receipt
09:34:48:370

Event 4: 702 R Ph CT Failed.
ICT-1 Diff Optd.
ICT-1 Tripped from both sides.
09:34:52:840

Sequence of Events:

Events	Time	Failure	Remarks
Event-1	09:34:04:152	711 R Phase CT	765kV Bus-2 Differential Protection- R Ph operated and so all Main bays connected to 765kV Main Bus-2 tripped (711 R-ph CT Fail)
Event-2	09:34:48:273	706 Y Phase CT	765kV Bus-2 Differential Protection- Y Ph was operated. ICT-2 Tripped due to 706 Bay LBB Back trip operated. (706 Y-ph CT Fail)
Event-3	09:34:48:370	-	765kV New Ranchi- Dharamjaygarh-2 Line tripped due to DT receipt
Event-4	09:34:52:840	702 R Phase CT	ICT-1 Differential Protection- R Ph operated and 765/400kV ICT-1 got tripped (702 R-ph CT Fail)
Event-5	09:35:17:709	710 Y Phase CT	765kV Bus-1 Differential Protection- Y Ph operated and Main bays connected to 765kV Main Bus-1 got tripped (710 Y-ph CT Fail)

EVENT - 1



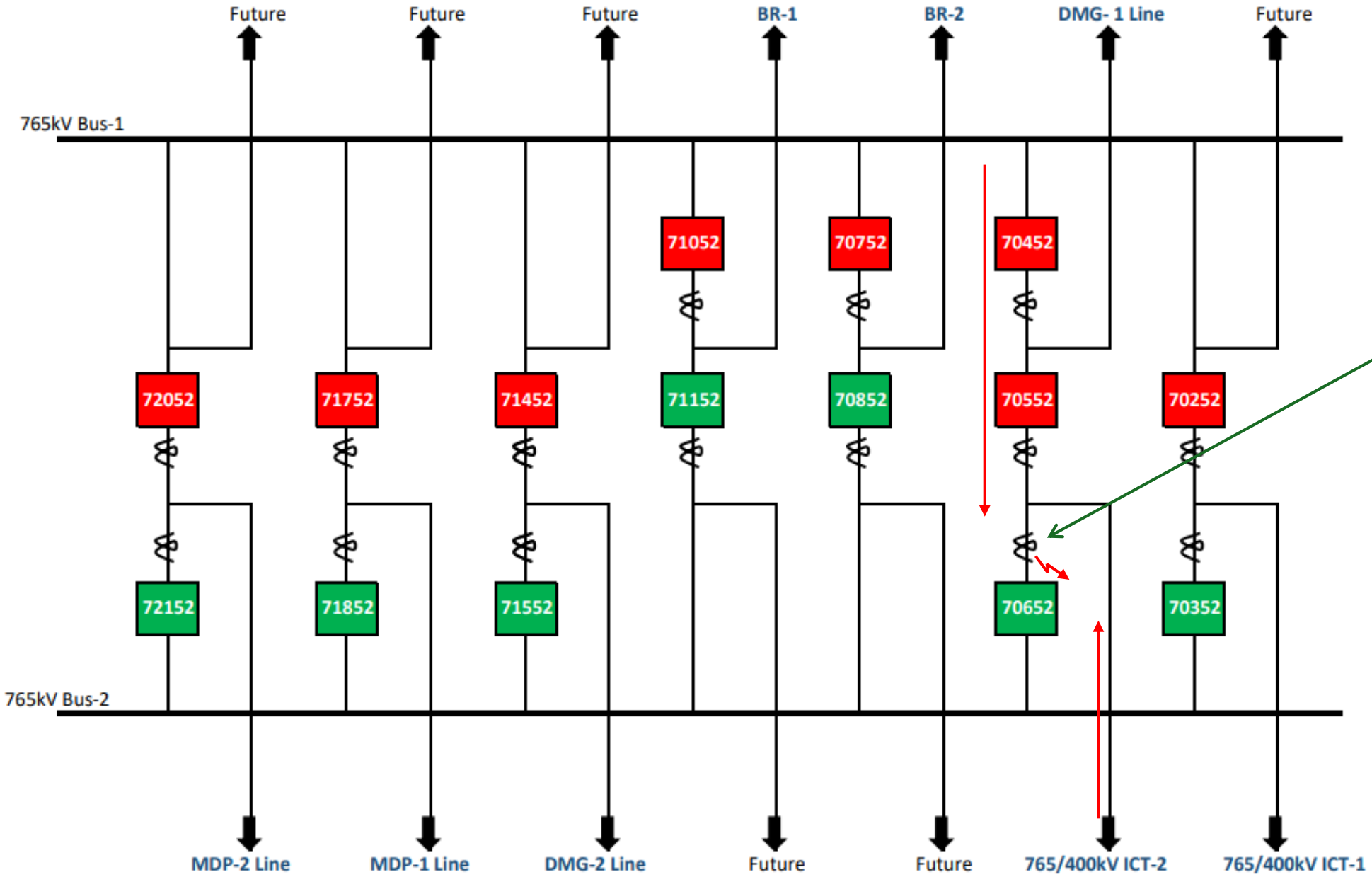
Event 1: 711 R Ph CT Failed & Bus-2 Diff Optd (Fault Current 23 kA)
09:34:04:152

Bay	Fault Current
703 ICT-1 Main	2.03kA
706 ICT-2 Main	2.8kA
708 BR-2 Tie	0.12kA
711 BR-1 Tie	**8.4kA**
715 DMG-2 Main	1.1kA
718 MDP-1 Main	7.4kA
721 MDP-2 Main	0.8kA

CB OPEN

CB CLOSE

EVENT - 2



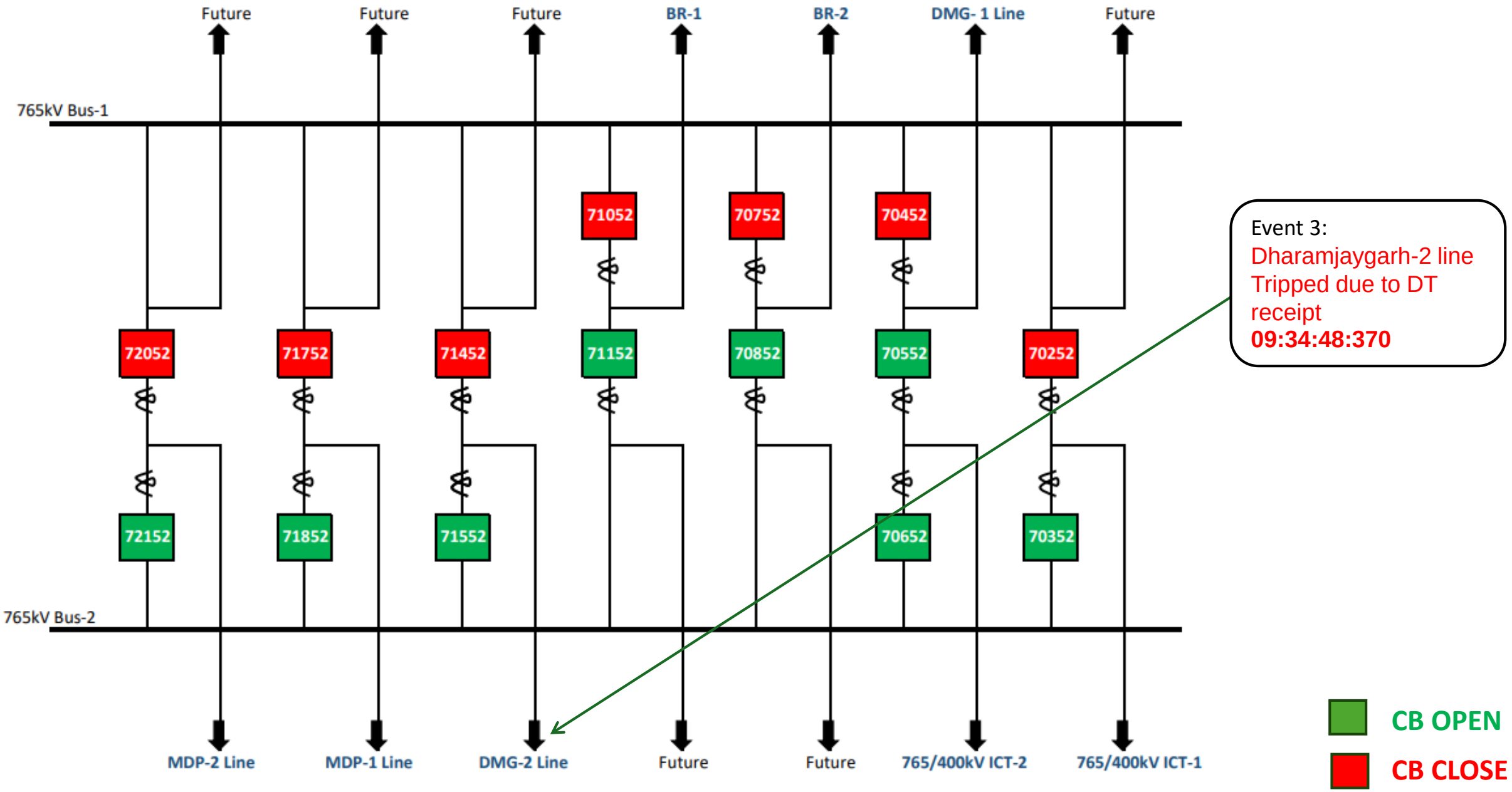
Event 2: 706 Y Ph CT Failed & Bus-2 Diff Optd (FC-16.6 kA) **09:34:48:273.** ICT-2 tripped from HV & IV sides on 706 bay LBB Opn

Bay	FC
706 ICT-2 Main	16.6 kA
705 ICT-2 Tie	12.30 kA
400kV IV Side	6.83 kA

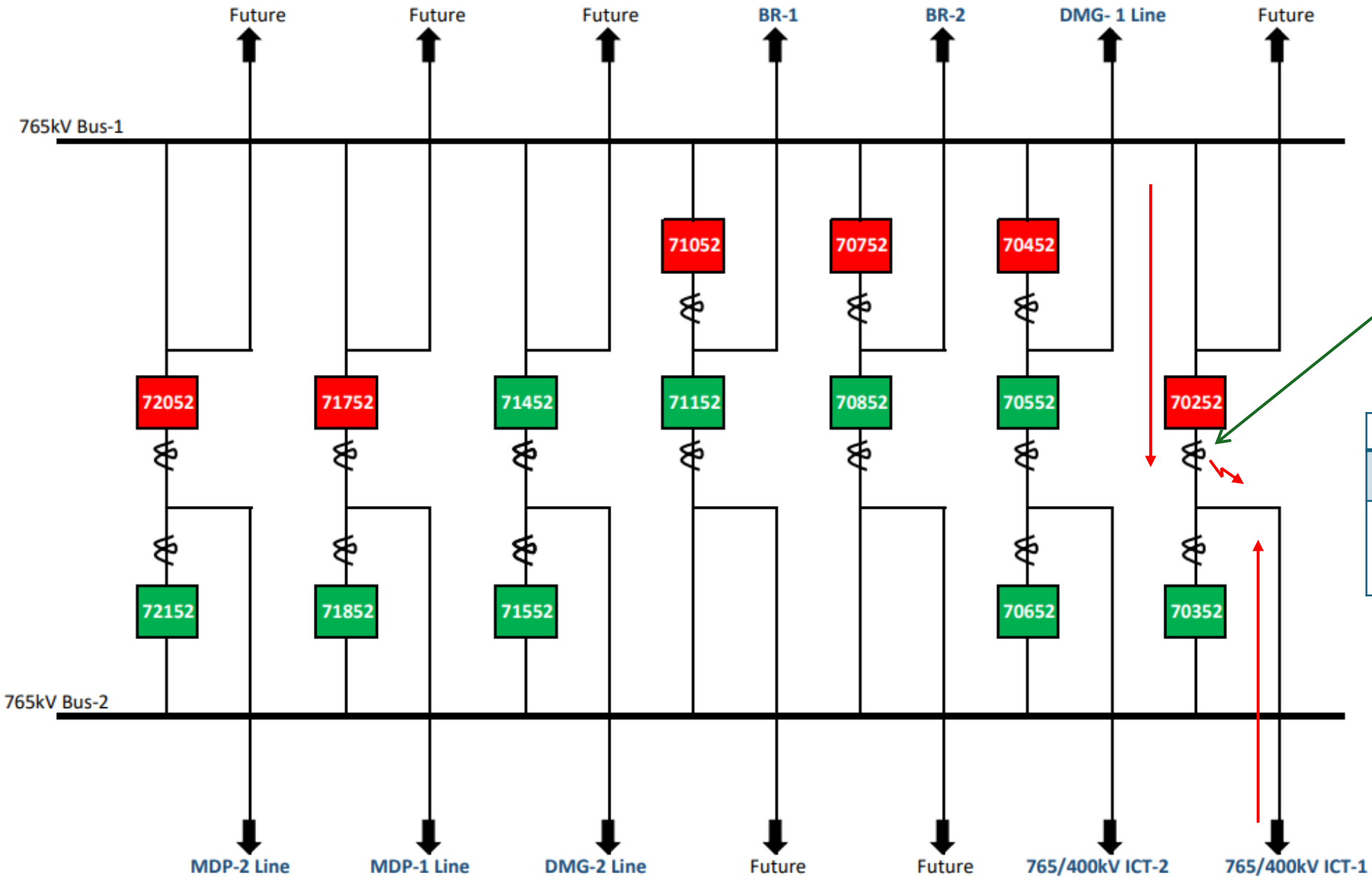
CB OPEN

CB CLOSE

EVENT - 3


Future
Future
Future
BR-1
BR-2
DMG- 1 Line
Future
765kV Bus-1
71052
70752
70452
72052
71752
71452
71152
70852
70552
70252
72152
71852
71552
70652
70352
765kV Bus-2
MDP-2 Line
MDP-1 Line
DMG-2 Line
Future
Future
765/400kV ICT-2
765/400kV ICT-1
Event 3:
Dharamjaygarh-2 line Tripped due to DT receipt
09:34:48:370
CB OPEN
CB CLOSE

EVENT - 4



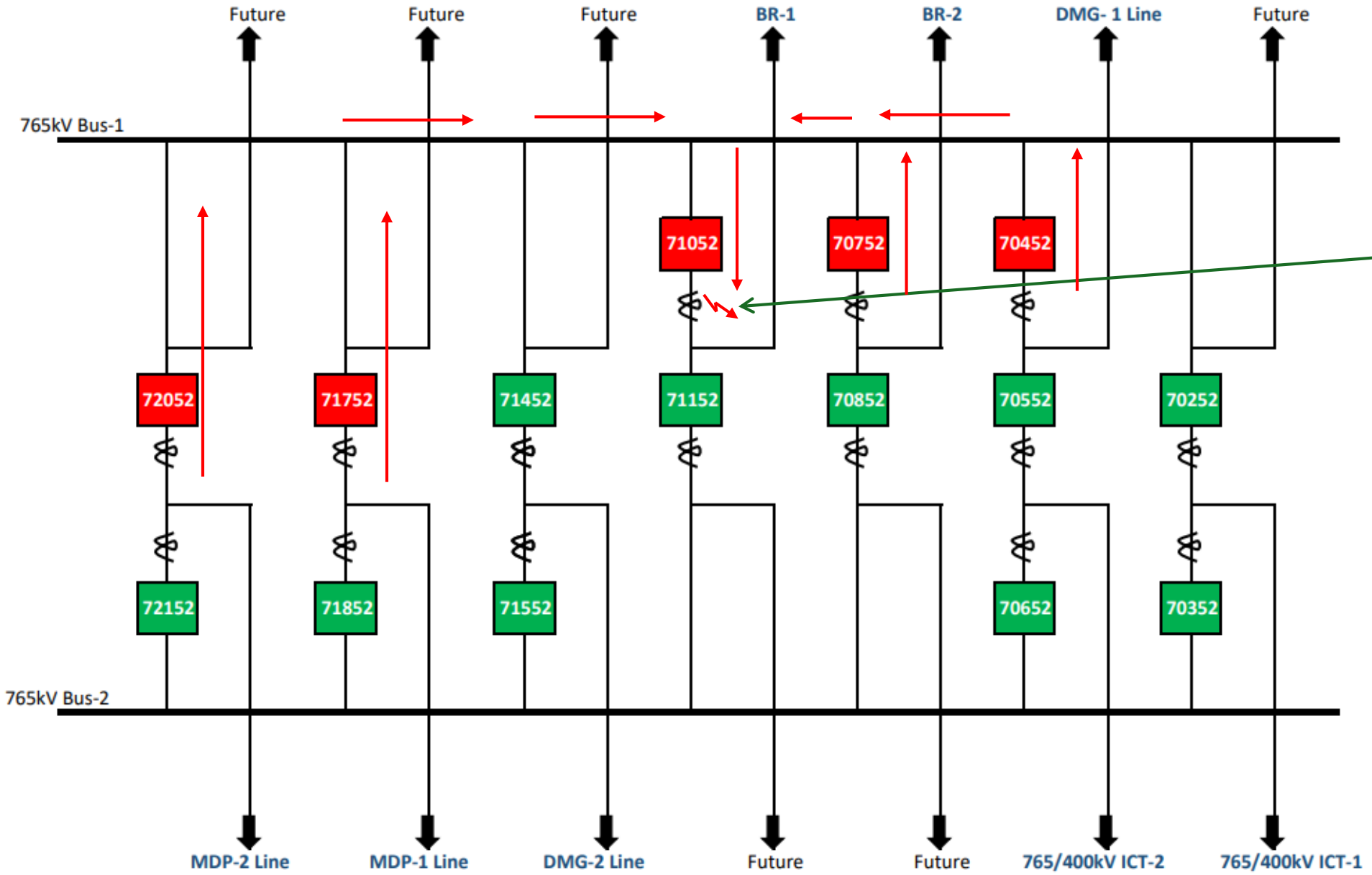
Event 4: 702 R Ph CT Failed.
ICT-1 Diff Optd.
ICT-1 Tripped from both sides.
09:34:52:840

Bay	FC
702 ICT-1 Tie	**7.3kA**
ICT-I IV side (Main + Tie)	11.0KA

CB OPEN

CB CLOSE

EVENT - 5



Event 5: 710 Y Ph CT Failed & Bus-1 Diff Optd (FC- 6.2 kA) **09:35:17:709**

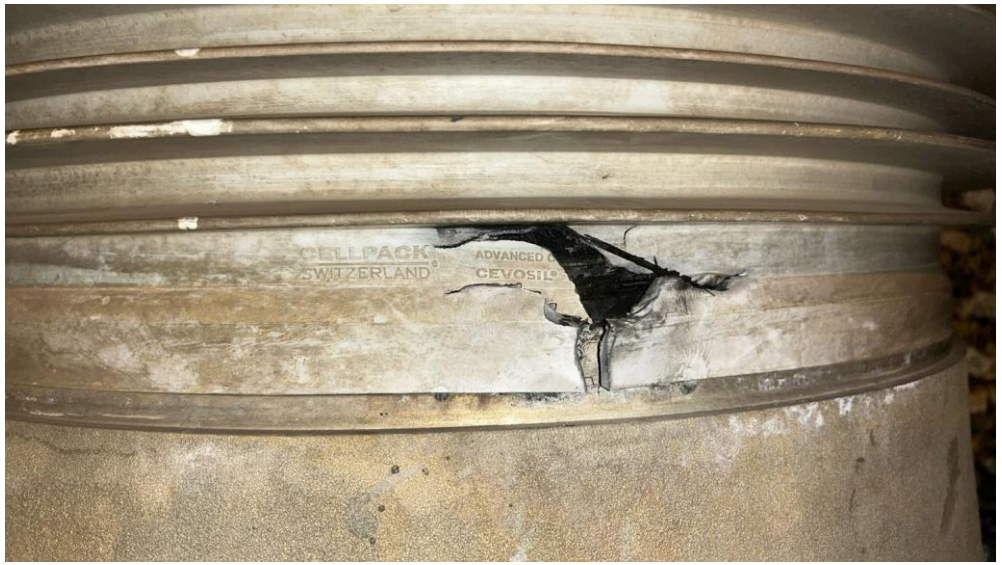
Bay	FC
704 DMG-1 Main	2.82 kA
707 BR-2 Main	0.17 kA
710 BR-1 Main	0.17 kA
717 MDP-1 Tie	1.5 kA
720 MDP-2 Tie	1.55 kA

CB OPEN

CB CLOSE

Inspection and Testing

- The physical inspection of switchyard was carried out in Bus, Gantry and connected equipment.
- No flashover marks & abnormalities were found in Bus and Gantry.
- 710 Y-Ph CT found punctured from insulator (bottom side) and SF6 gas released from punctured insulator. No other visible burning marks found on said CT. Rupture disc also found OK.

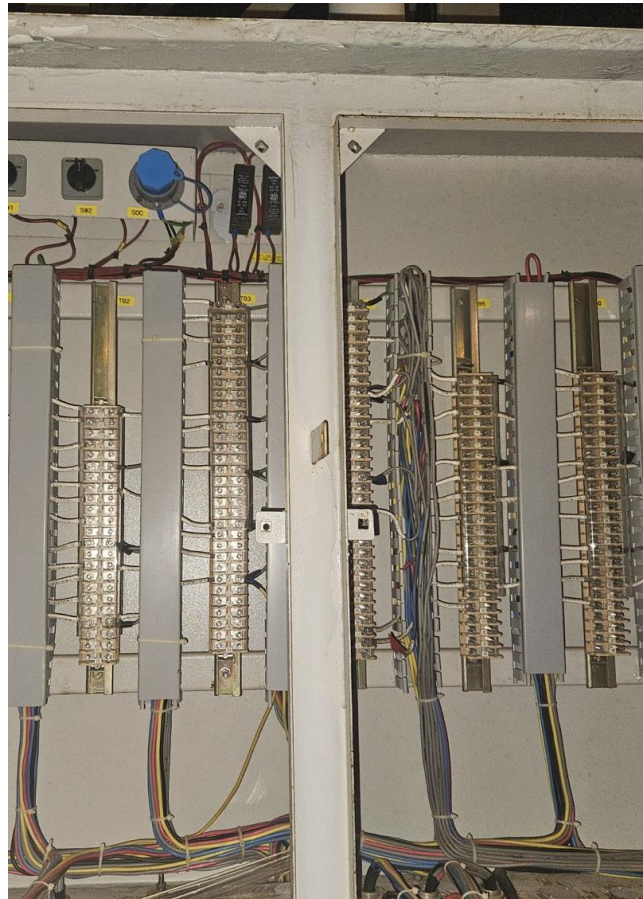


- SF6 gas found to be heavily contaminated as per test results of 03 nos CTs. It may be due to internal flashover. No other visible burning marks found on CTs, Rupture disc also found OK.

- **Damage CT Details**

CT	SO2 (ppmv)	CT Detail
711 RPh CT	> 99.99	Make- **TRENCH,** GERMANY YOM-2010 YOC- 2014 Last dew Point measurement in 2022, Results were OK.
706 YPh CT	> 99.99	
702 RPh CT	> 99.99	
710 Y-Ph CT	Punctured	

Terminal Connector, CT JB and Rupture Disc of all 04 failed CTs are in order.



Connectivity of Earthing Risers of failed CTs has been checked on sample basis and found in order.

- Shield wires in Switchyard are available as per DSLP layout.

- LA counter reading for all LA in 765 kV Switchyard has been checked. No increment in R & Y Phase counter has been observed.

  Increment in following LA has been observed:-

Bay	Phase	Increment
718 L (MDP-1 Line)	B	1
718R (MDP-1 LR)	B	1
DMG-1 LR NGR		8
MDP-1 LR NGR		1
MDP-2 LR NGR		1

- Earthing measurement of gantry pit has been carried out on sample basis for 04 nos pits. Results were found in the range 0.8 to 0.9 Ohm.

Restoration

765kV Bus-1	21.03.2025, 12:53 Hrs
765kV New Ranchi- Medinipur-1	
765KV Bus Reactor-2	21.03.2025, 12:53 Hrs
765KV New Ranchi- Dharamjaygarh-1	21.03.2025, 14:49 Hrs
765/400KV 1500MVA ICT-2	21.03.2025, 20:27 Hrs
765kV Bus-2	21.03.2025, 22:23 Hrs
765/400KV 1500MVA ICT-1	
765kV New Ranchi- Medinipur-2	21.03.2025, 23:43 Hrs
765KV New Ranchi- Dharamjaygarh-2 (after clearance from remote end)	22.03.2025, 00:59 Hrs
765KV Bus Reactor-1 **(after replacing 711 R-Ph CT)**	22.03.2025, 23:09 Hrs
702 Tie Bay of ICT-1 **(after replacing 702 R-Ph CT)**	23.03.2025, 14:27 Hrs
706 Main Bay of ICT-2 **(after replacing 706 Y-Ph CT)**	24.03.2025, 09:28 Hrs
710 Main Bay of Bus Reactor-1 **(after replacing 710 Y-Ph CT)**	24.03.2025, 09:33 Hrs

Restoration of elements was delayed due to intermittent rainfall and bad weather conditions at site.

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

पूर्वी क्षेत्र के 765/400 केवी न्यू राँची में ग्रिड घटना पर विस्तृत रिपोर्ट / Detailed Report of grid event at 765/400 kV New Ranchi 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):09-04-2025

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

At 09:34 Hrs on 21/03/2025 multiple CT failed at 765kV New Ranchi S/s. Bus Bar protection operated for 765kV Main bus 1 &2. All element connected through Main Bus 1 & 2 got tripped. 765kV Bus became dead. 765kV Main bus #1 charged at 12:53 Hrs.

2. **Time and Date of the Event (घटना का समय और दिनांक):** 09:34 Hrs on 21/03/2025.
3. **Event Category (ग्रिड घटना का प्रकार): Grid Event (Event not under GD/GI)**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** Jharkhand

Important Transmission Line/Unit if under outage (महत्वपूर्ण संचरण लाइने/ विधुत उत्पादन इकाइयां जो बंद है)	NIL
Weather Condition (मौसम स्थिति)	Severe thunderstorm with hailstorm, heavy rainfall, and strong winds.

5. **Load and Generation loss (**लोड और जेनरेशन हानि**):** NIL
6. **Duration of interruption (**रुकावट की अवधि**): 09:34 Hrs to 12:53 Hrs.**

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

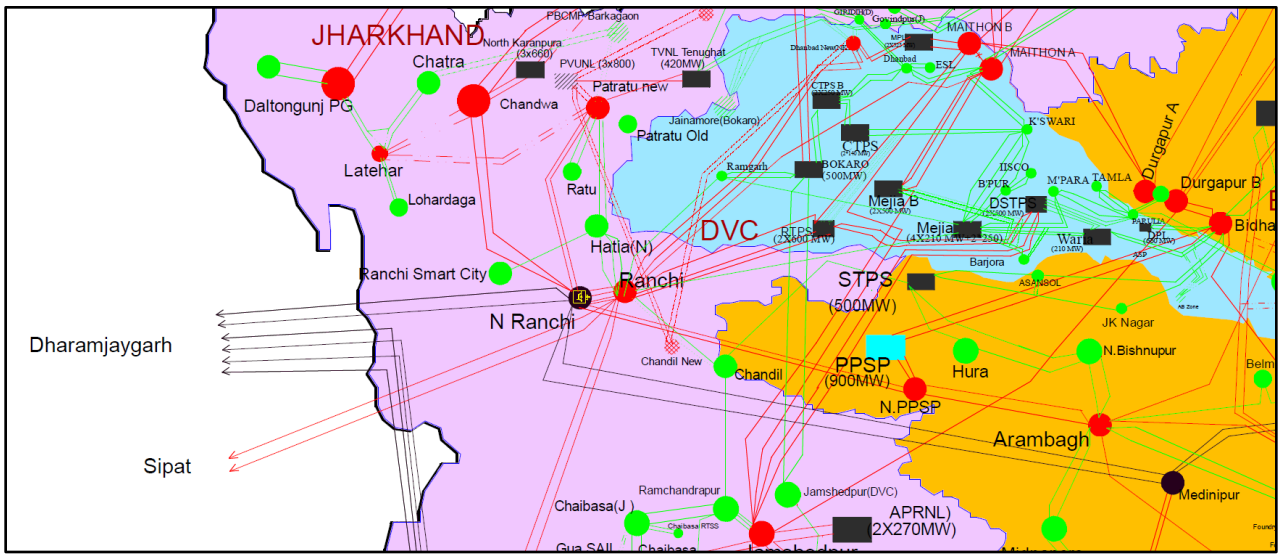


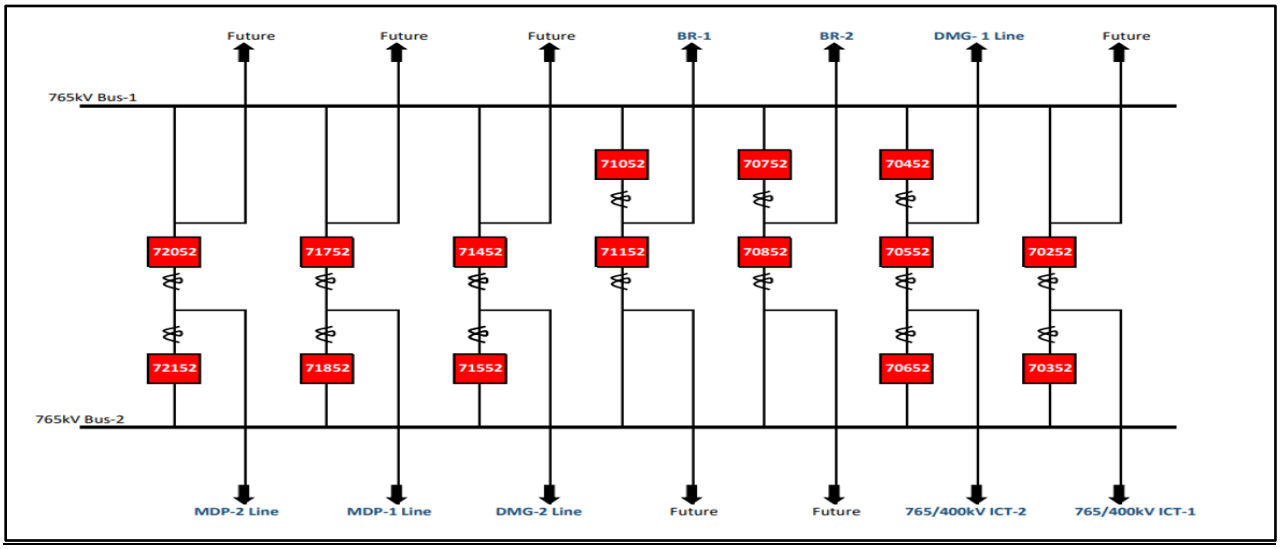
Figure 1: Network across the affected area

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

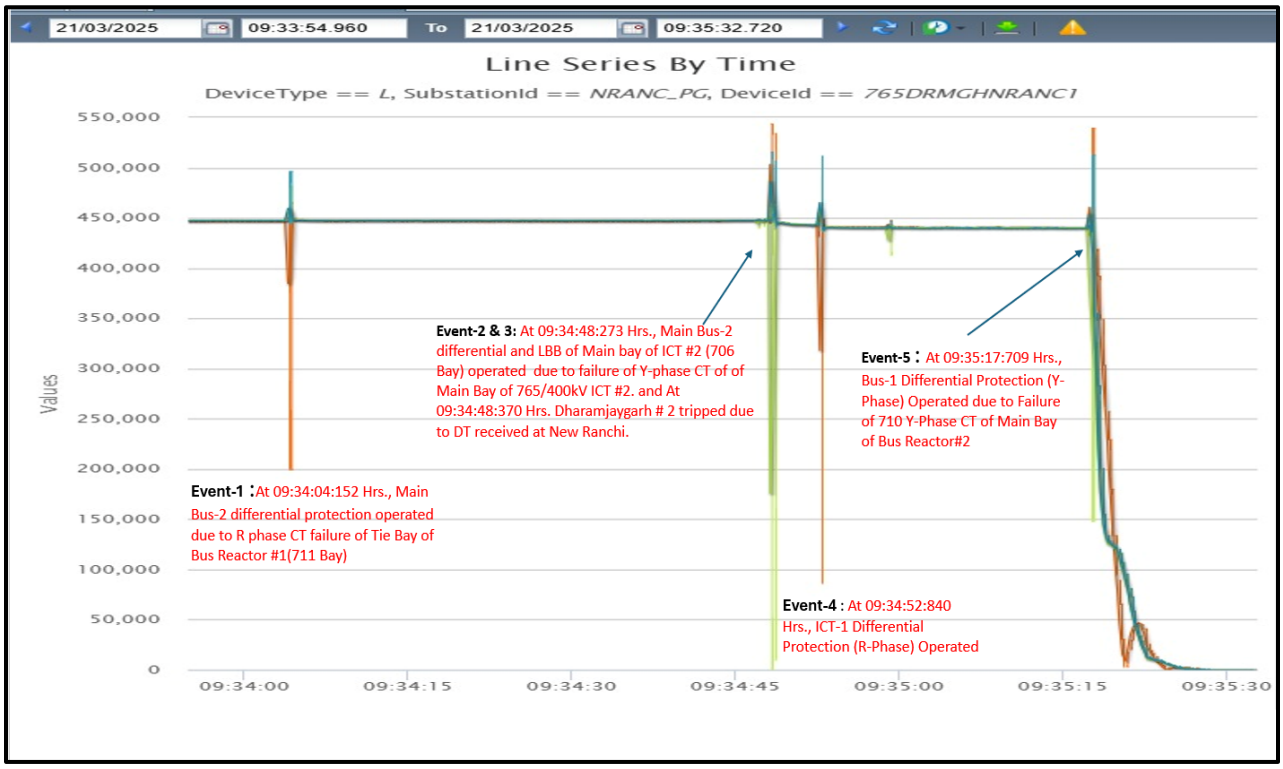
- **711 R-Phase CT** of Tie Bay of Bus Reactor #1
- **706 Y-Phase CT** of Main Bay of 765/400kV ICT #2
- **702 R-Phase CT** of Tie Bay of 765/400kV ICT #1
- **710 Y-Phase CT** of Main Bay of Bus Reactor#2

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

Pre-Fault Condition:



- All elements at 765kV New Ranchi S/S were in service.
- Strong winds, severe thunderstorm, and heavy rainfall with hailstorm.



Time Stamp	Element	Status	Event
21-03-25 09:34:04:379	765_ICT1_Main_CB	Open	Event-1 BUS-2 Tripping
21-03-25 09:34:04:227	765_SPARE_3_Main_Bus_R1_Tie	Open	
21-03-25 09:34:04:225	765_SPARE_3_Main_Bus_R1_Tie	Travel	
21-03-25 09:34:04:207	765_MEDNI_PG_1_Main_CB	Open	
21-03-25 09:34:04:203	765_MEDNI_PG_2_Main_CB	Open	
21-03-25 09:34:04:197	765_MEDNI_PG_2_Main_CB	Closed	
21-03-25 09:34:04:197	765_Main_Bus_R2_SPARE_2_Tie	Open	
21-03-25 09:34:04:195	765_DHRAM_WR_2_Main_CB	Open	
21-03-25 09:34:04:194	765_MEDNI_PG_2_Main_CB	Travel	
21-03-25 09:34:04:194	765_ICT2_Main_CB	Open	
21-03-25 09:34:04:193	765_MEDNI_PG_1_Main_CB	Travel	
21-03-25 09:34:04:178	765_Main_Bus_R2_SPARE_2_Tie	Travel	

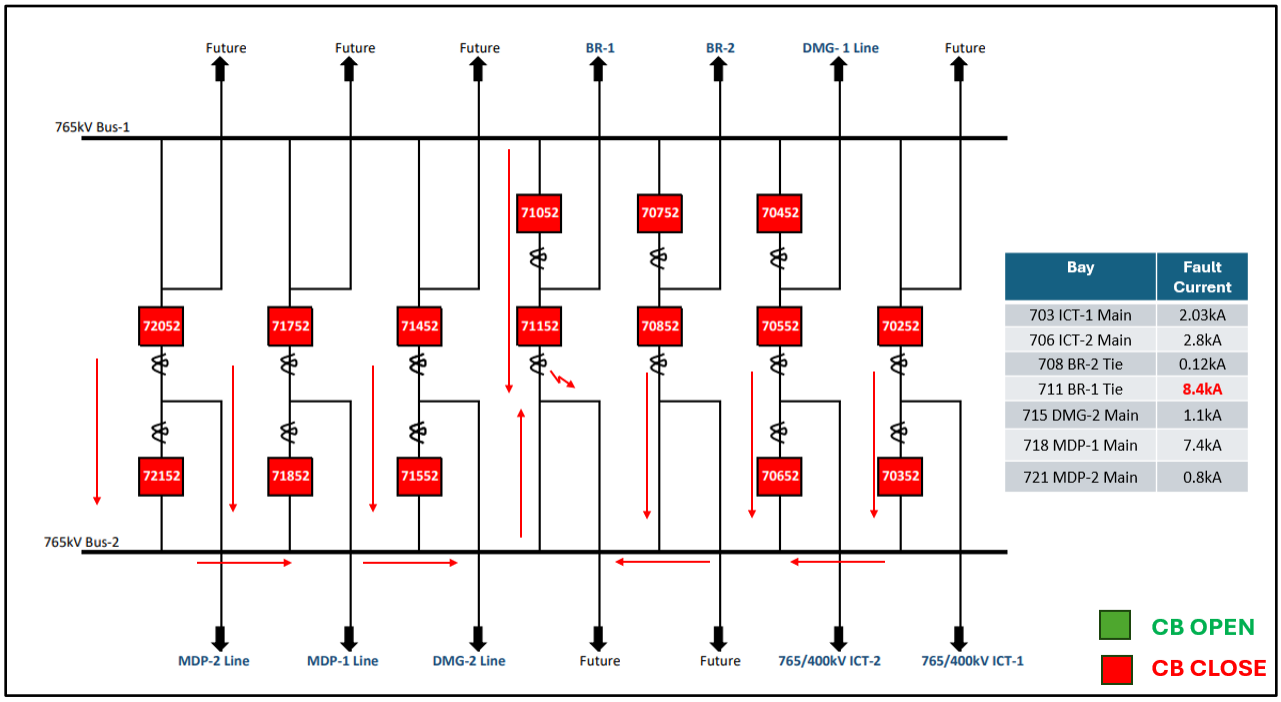
Time Stamp	Element	Status	Event
21-03-25 09:34:50:533	765_ICT2_DHRAM_WR_1_Tie	Open	Event 2&3 ICT-2 tripping via LBB &Dharmjaygarh-2
21-03-25 09:34:50:432	765_SPARE_4_DHRAM_WR_2_Tie	Open	
21-03-25 09:34:48:660	400_ICT2_RANCH_PG_2_Tie	Open	
21-03-25 09:34:48:533	400_ICT2_Main_CB	Open	
21-03-25 09:34:48:517	400_ICT2_Main_CB	Travel	

Time Stamp	Element	Status	Event
21-03-25 09:34:53:156	400_ICT1_RANCH_PG_4_Tie	Open	Event-4 ICT-1 Tripping
21-03-25 09:34:52:898	400_ICT1_Main_CB	Open	
21-03-25 09:34:52:896	765_SPARE_1_ICT1_Tie	Open	
21-03-25 09:34:52:883	400_ICT1_Main_CB	Travel	
21-03-25 09:34:52:882	765_SPARE_1_ICT1_Tie	Travel	

Time Stamp	Element	Status	Event
21-03-25 09:35:19:771	765_DHRAM_WR_1_Main_CB	Open	Event-5 BUS-1 Tripping
21-03-25 09:35:17:984	765_Main_Bus_R2_Main_CB	Open	
21-03-25 09:35:17:781	765_NRANC_PG_2_Main_CB	Open	
21-03-25 09:35:17:780	765_NRANC_PG_1_Main_CB	Open	
21-03-25 09:35:17:778	765_Main_Bus_R_1_NRANC_PG_	Open	
21-03-25 09:35:17:759	765_MEDNI_PG_1_FUTURE_2_Tie	Open	
21-03-25 09:35:17:759	765_MEDNI_PG_2_FUTURE_1_Tie	Open	
21-03-25 09:35:17:751	765_Main_Bus_R1_Main_CB	Open	
21-03-25 09:35:17:745	765_MEDNI_PG_1_FUTURE_2_Tie	Travel	
21-03-25 09:35:17:744	765_MEDNI_PG_2_FUTURE_1_Tie	Travel	

Event 1: Bus-2 Differential Protection (R-Phase) Operated

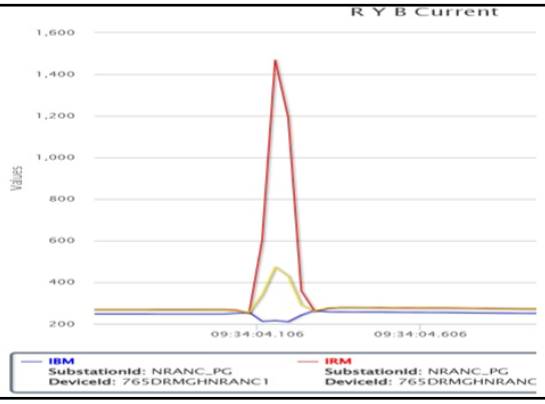
- **Time**: 09:34:04:152 Hrs.
- **Fault Detail**: Failure of **711 R-Phase CT** of Tie Bay of Bus Reactor #1



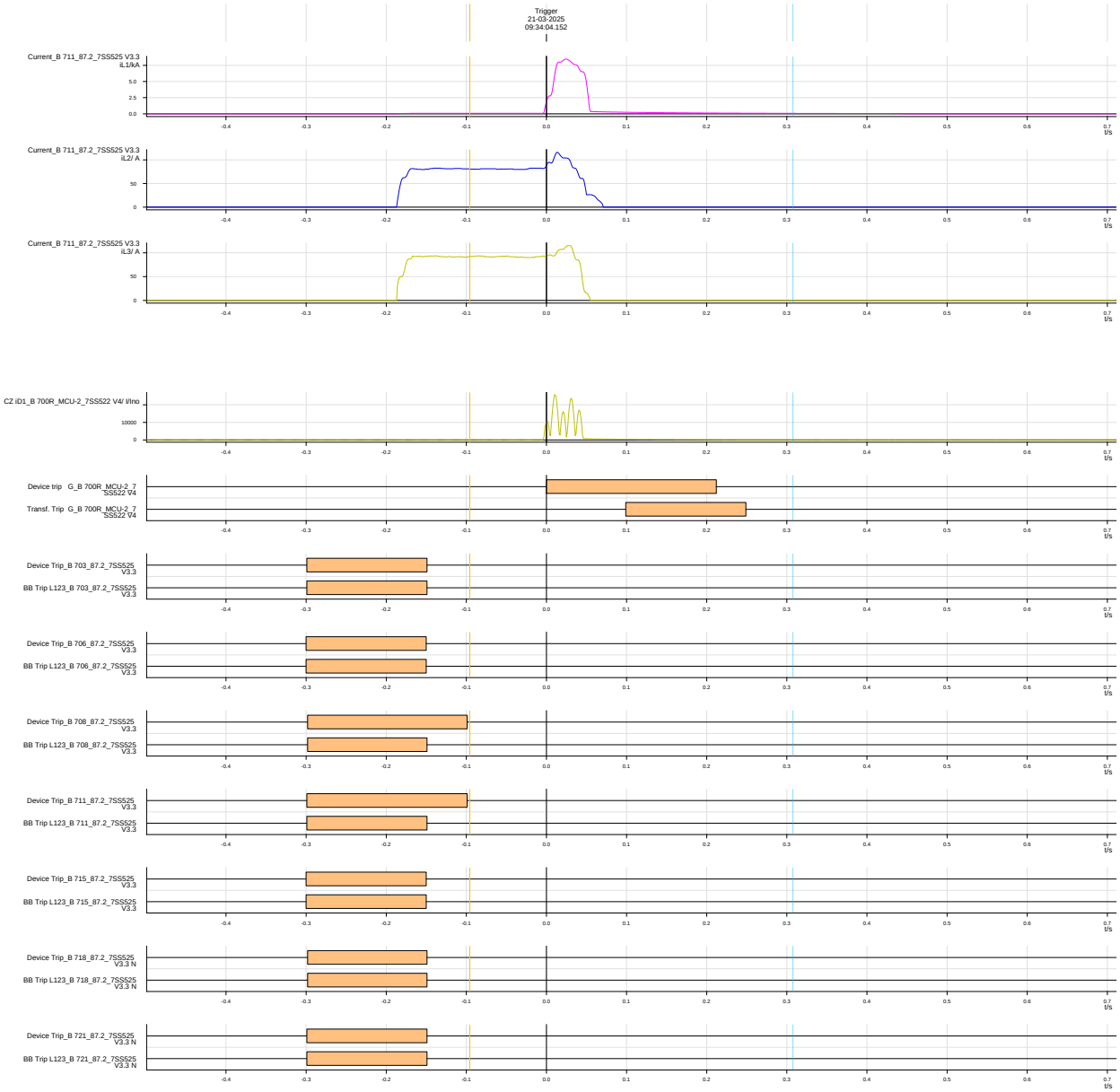
Bay	Fault Current
703 ICT-1 Main	2.03kA
706 ICT-2 Main	2.8kA
708 BR-2 Tie	0.12kA
711 BR-1 Tie	8.4kA
715 DMG-2 Main	1.1kA
718 MDP-1 Main	7.4kA
721 MDP-2 Main	0.8kA

- **Tripping**:
  - Main Bus-2 differential protection operated due to R phase CT failure of Tie Bay of Bus Reactor #1(711 Bay)

Time Stamp	Element	Status	Event
21-03-25 09:34:04:379	765_ICT1_Main_CB	Open	Event-1 BUS-2 Tripping
21-03-25 09:34:04:227	765_SPARE_3_Main_Bus_R1_Tie	Open	
21-03-25 09:34:04:225	765_SPARE_3_Main_Bus_R1_Tie	Travel	
21-03-25 09:34:04:207	765_MEDNI_PG_1_Main_CB	Open	
21-03-25 09:34:04:203	765_MEDNI_PG_2_Main_CB	Open	
21-03-25 09:34:04:197	765_MEDNI_PG_2_Main_CB	Closed	
21-03-25 09:34:04:197	765_Main_Bus_R2_SPARE_2_Tie	Open	
21-03-25 09:34:04:195	765_DHRAM_WR_2_Main_CB	Open	
21-03-25 09:34:04:194	765_MEDNI_PG_2_Main_CB	Travel	
21-03-25 09:34:04:194	765_ICT2_Main_CB	Open	
21-03-25 09:34:04:193	765_MEDNI_PG_1_Main_CB	Travel	
21-03-25 09:34:04:178	765_Main_Bus_R2_SPARE_2_Tie	Travel	

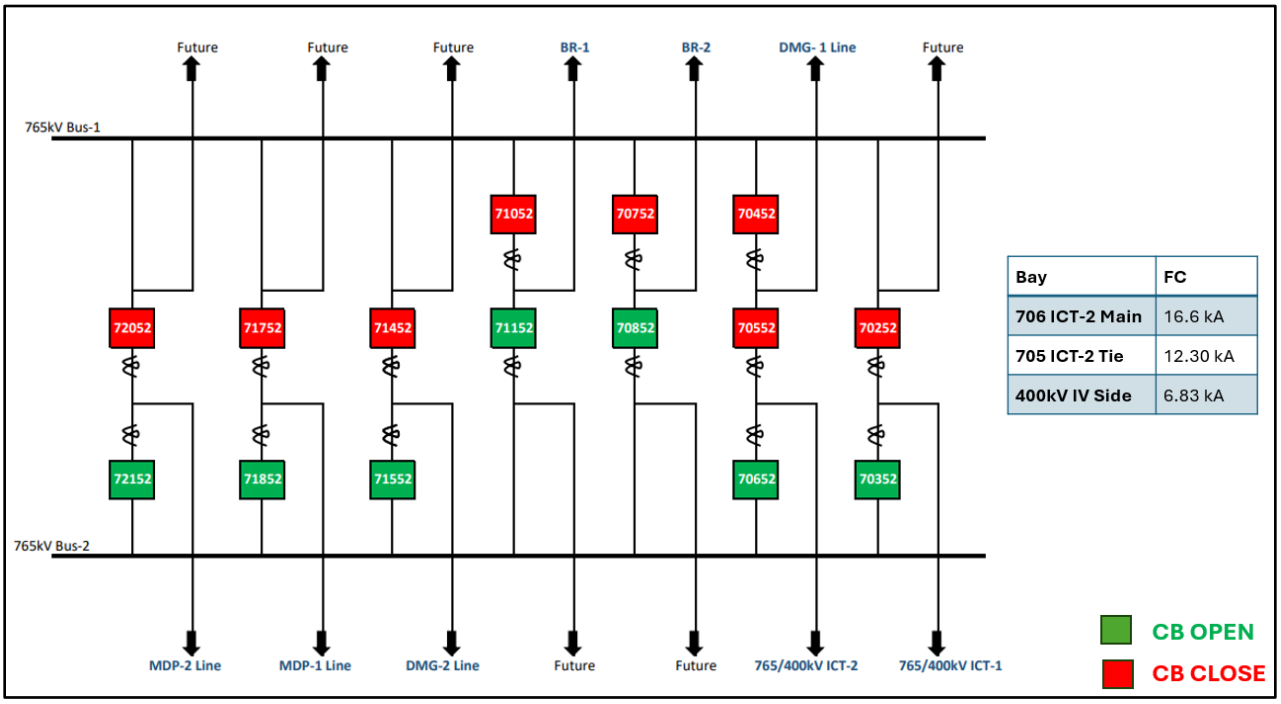


- Tripped bays: All main bay connected to Main bus #2 got tripped (ICT-1 Main (703), ICT-2 Main (706), BR-2 Tie (708), DMG-2 Main (715), BR-1 Tie (711), Medinipur#1 & 2(718 & 721).



Event 2: Bus-2 Differential Protection and 706 LBB operation.

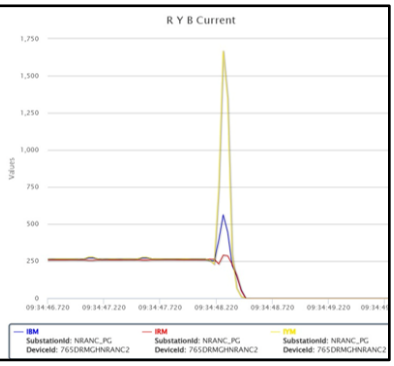
- **Time**: 09:34:48:273 Hrs.
- **Fault Detail**: Failure of **706 Y-Phase CT** of Main Bay of 765/400kV ICT #2



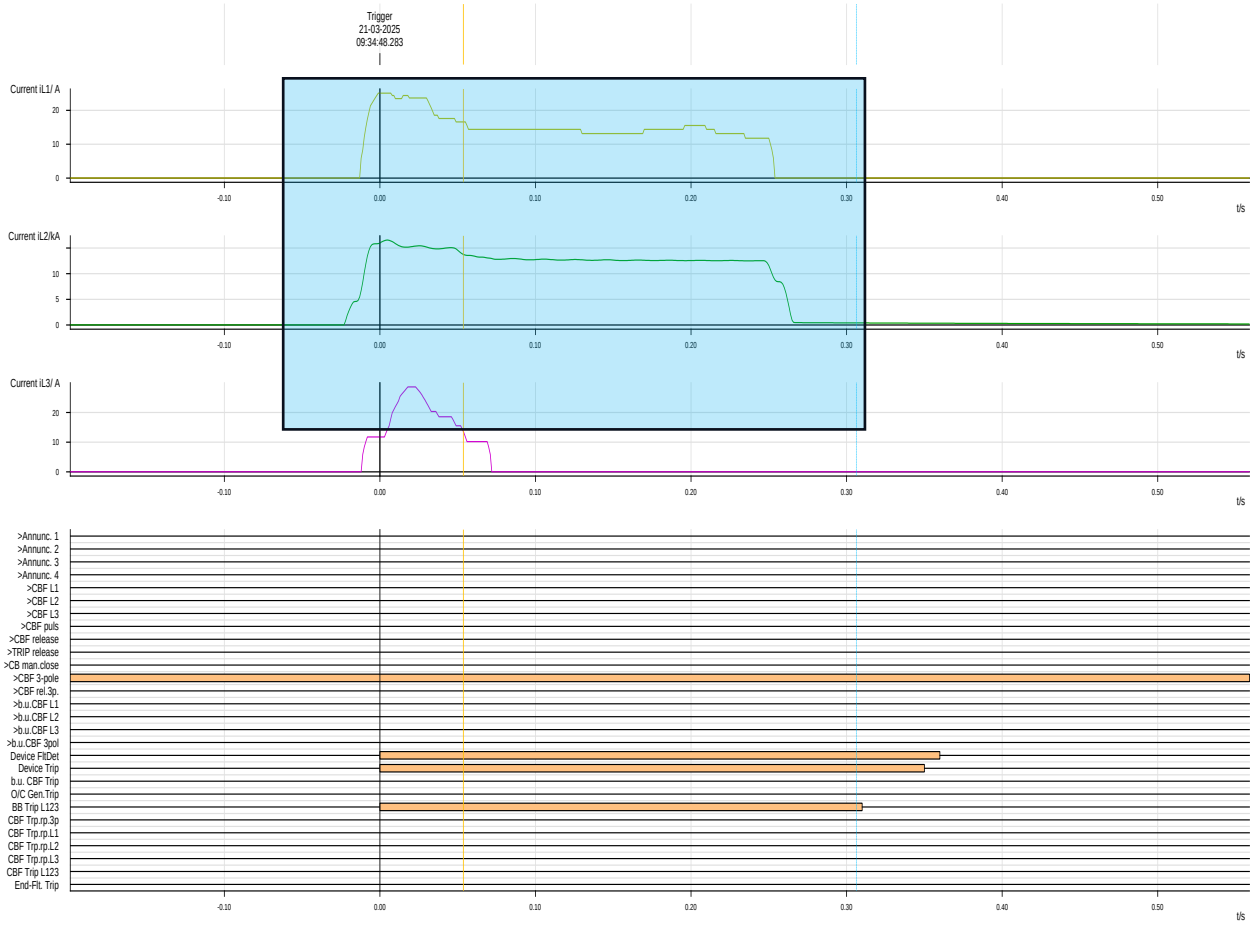
Bay	FC
706 ICT-2 Main	16.6 kA
705 ICT-2 Tie	12.30 kA
400kV IV Side	6.83 kA

- **Tripping**:
  - Bus-2 differential re-operated (Y-phase).
  - Main bay of ICT#2 already in tripped condition during event #1but fault current feed through ICT#2 and Tie Bay, to isolate faulty CT, LBB protection of Main Bay of 765/400kV ICT #2 (706 Bay) operated and ICT-2 Tie Bay (705) and LV-side bays (407, 408) got tripped after total 300 msec.

Time Stamp	Element	Status	Event
21-03-25 09:34:50:533	765_ICT2_DHRAM_WR_1_Tie	Open	Event 2&3 ICT-2 tripping via LBB &Dharmjaygarh-2
21-03-25 09:34:50:432	765_SPARE_4_DHRAM_WR_2_Tie	Open	
21-03-25 09:34:48:660	400_ICT2_RANCH_PG_2_Tie	Open	
21-03-25 09:34:48:533	400_ICT2_Main_CB	Open	
21-03-25 09:34:48:517	400_ICT2_Main_CB	Travel	

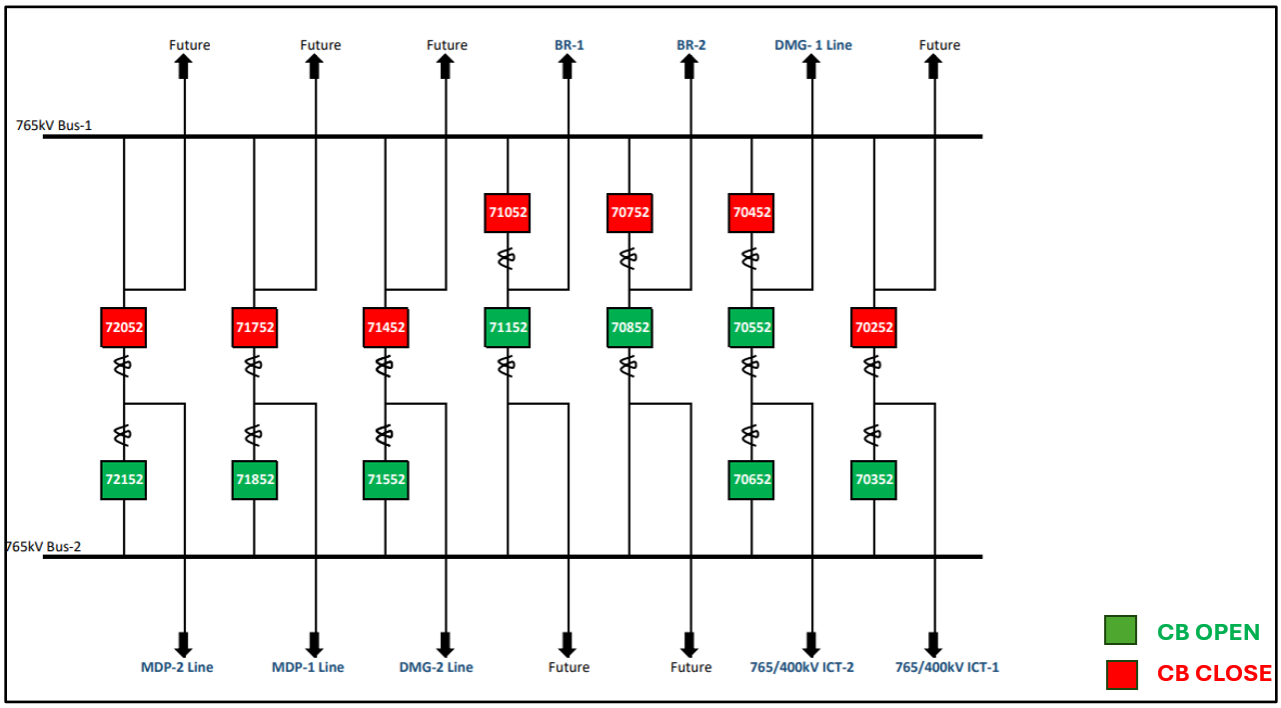


- As observed from below DR total fault clearance time was approx 300 msec due to LBB operation as Bus -2 was already out hence to isolate the fault LBB operation resulted into tripping of of ICT-2 Tie Bay.

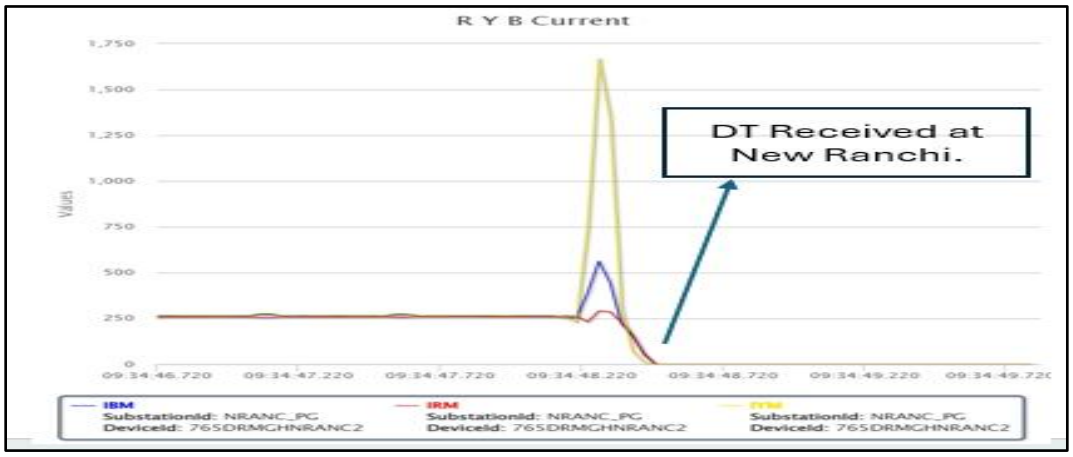


Event 3: Tripping of Dharamjaygarh #2

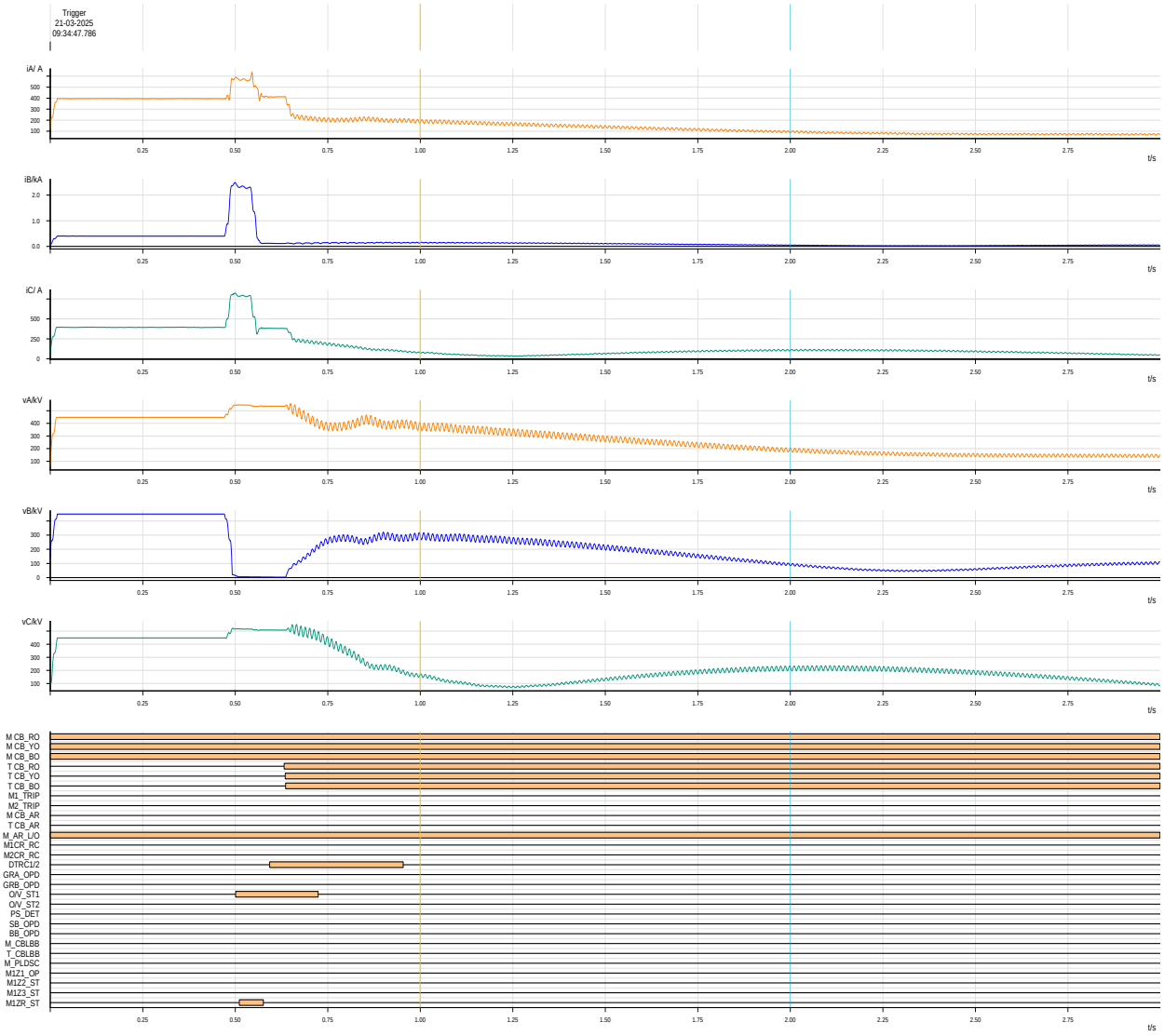
- **Time**: 09:34:48:370 Hrs.
- **Fault Detail**: Due to fault in NGR of Line reactor of New Ranchi #2 at Dharamjaygarh end.
- **Tripping**: Differential of Line reactor operated at Dharamjaygarh end due to NGR failure at Dharamjaygarh end and line tripped from Dharmjaygarh end immediately and DT was sent to New Ranchi end and line tripped.



Line current PMU plot of New Ranchi – Dhramjaygarh-2 at New Ranchi end

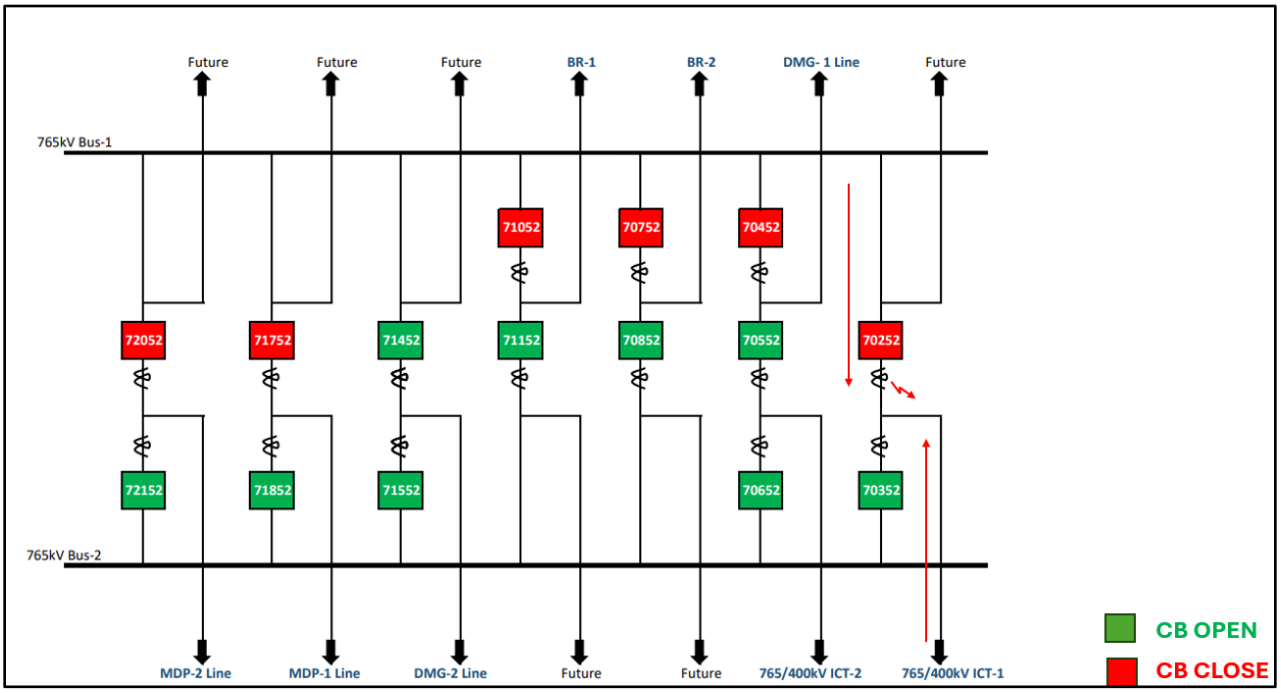


DR of New Ranchi-Dharamjaygarh #2 at New Ranchi:



Event 4: ICT-1 Differential Protection (R-Phase) Operated.

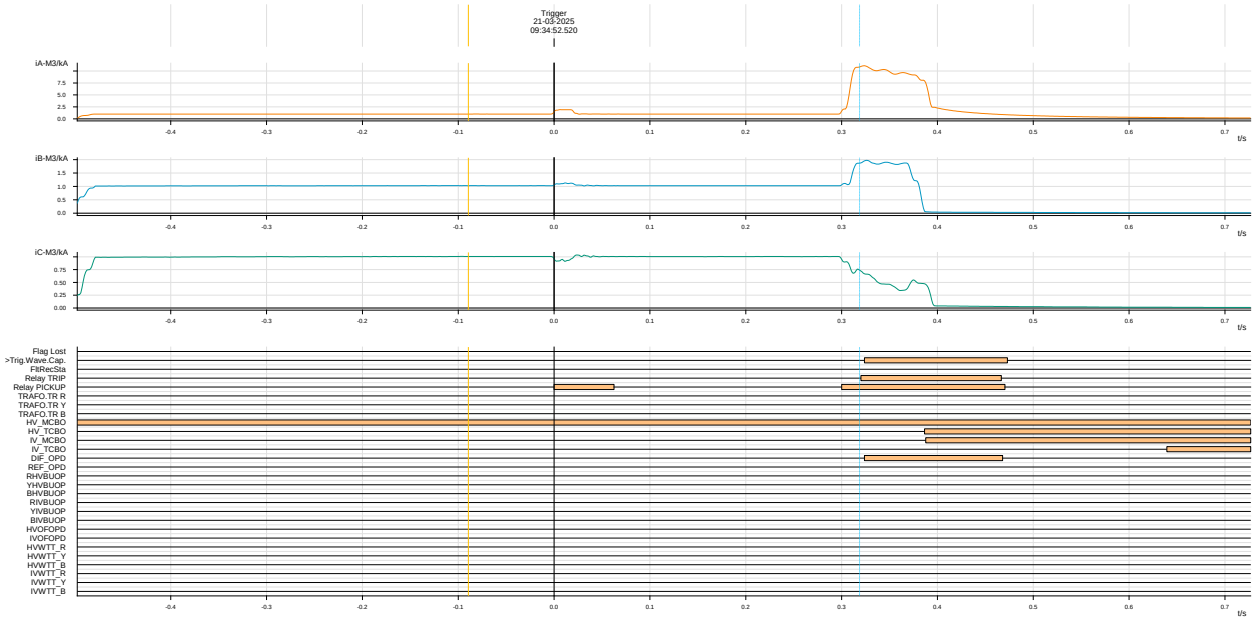
- **Time**: 09:34:52:840 Hrs.
- **Fault Detail**: Failure of **702 R-Phase CT** of Tie Bay of 765/400kV ICT #1



- **Tripping**: ICT-1 tripped from both HV and IV sides on differential protection.

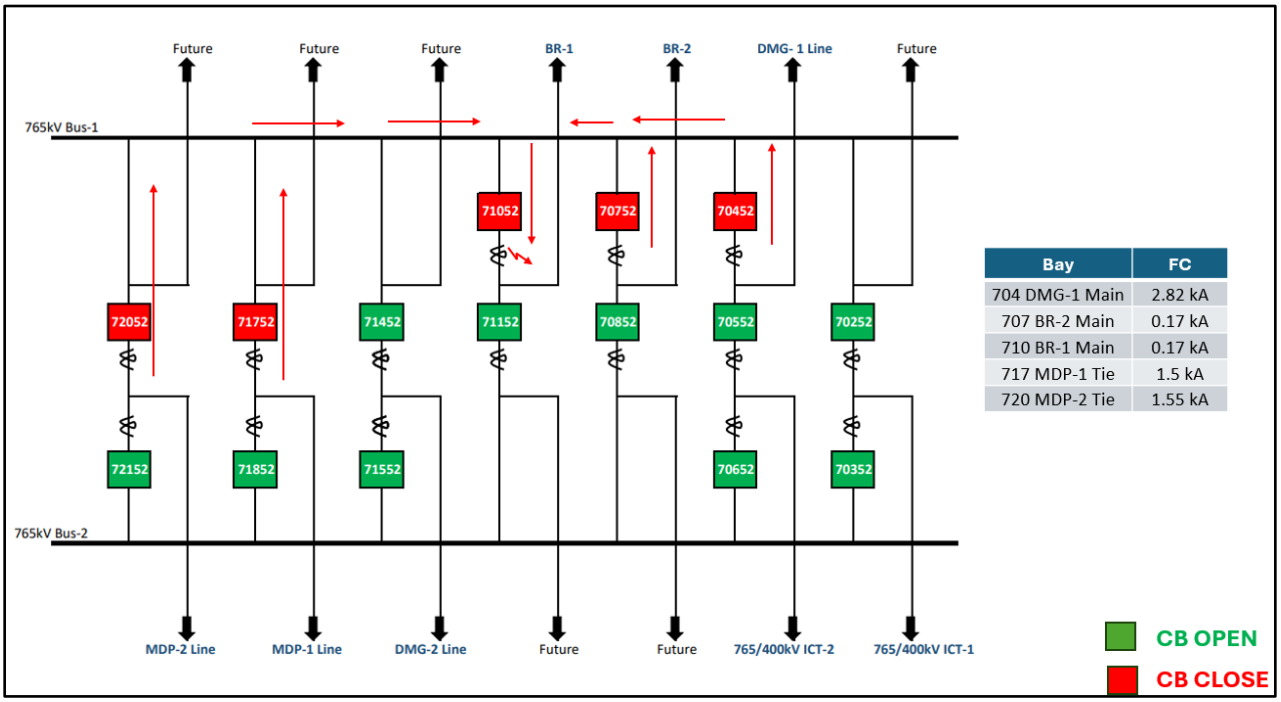
Time Stamp	Element	Status	Event
21-03-25 09:34:53:156	400_ICT1_RANCH_PG_4_Tie	Open	Event-4 ICT-1 Tripping
21-03-25 09:34:52:898	400_ICT1_Main_CB	Open	
21-03-25 09:34:52:896	765_SPARE_1_ICT1_Tie	Open	
21-03-25 09:34:52:883	400_ICT1_Main_CB	Travel	
21-03-25 09:34:52:882	765_SPARE_1_ICT1_Tie	Travel	

DR of ICT #1 at New Ranchi:



Event 5: Bus-1 Differential Protection (Y-Phase) Operated

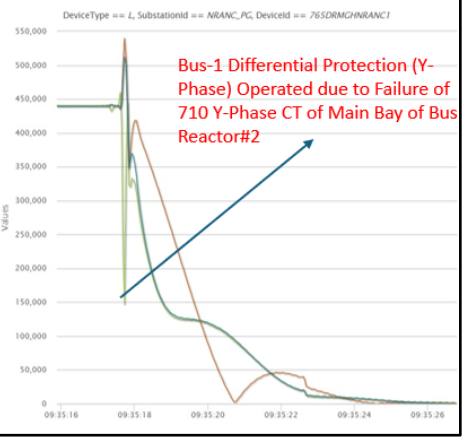
- **Time**: 09:35:17:709 Hrs.
- **Fault Detail**: Failure of **710 Y-Phase CT** of Main Bay of Bus Reactor#2



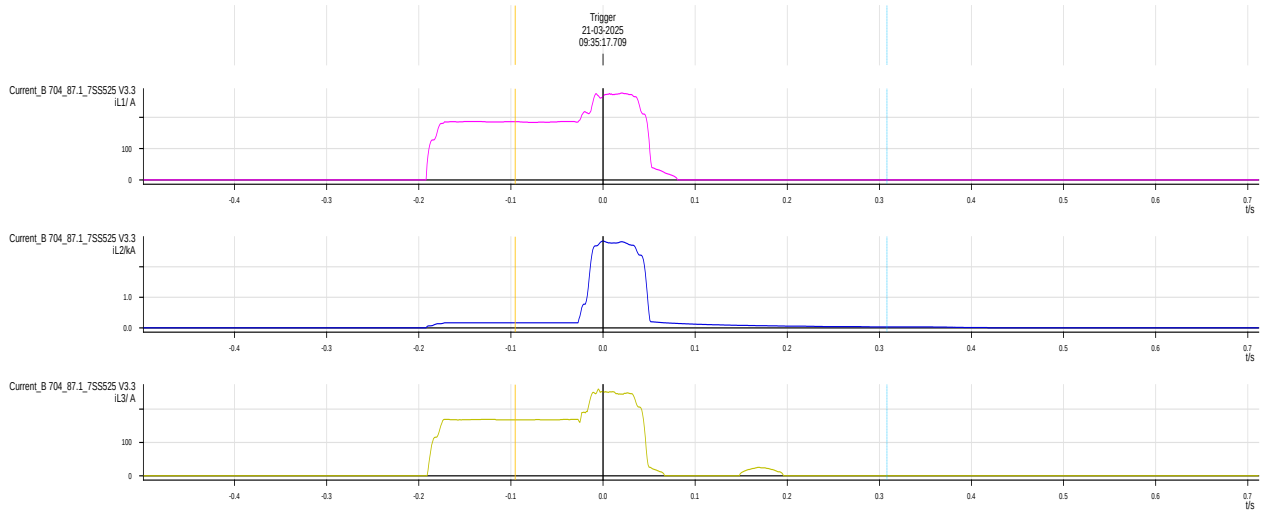
Bay	FC
704 DMG-1 Main	2.82 kA
707 BR-2 Main	0.17 kA
710 BR-1 Main	0.17 kA
717 MDP-1 Tie	1.5 kA
720 MDP-2 Tie	1.55 kA

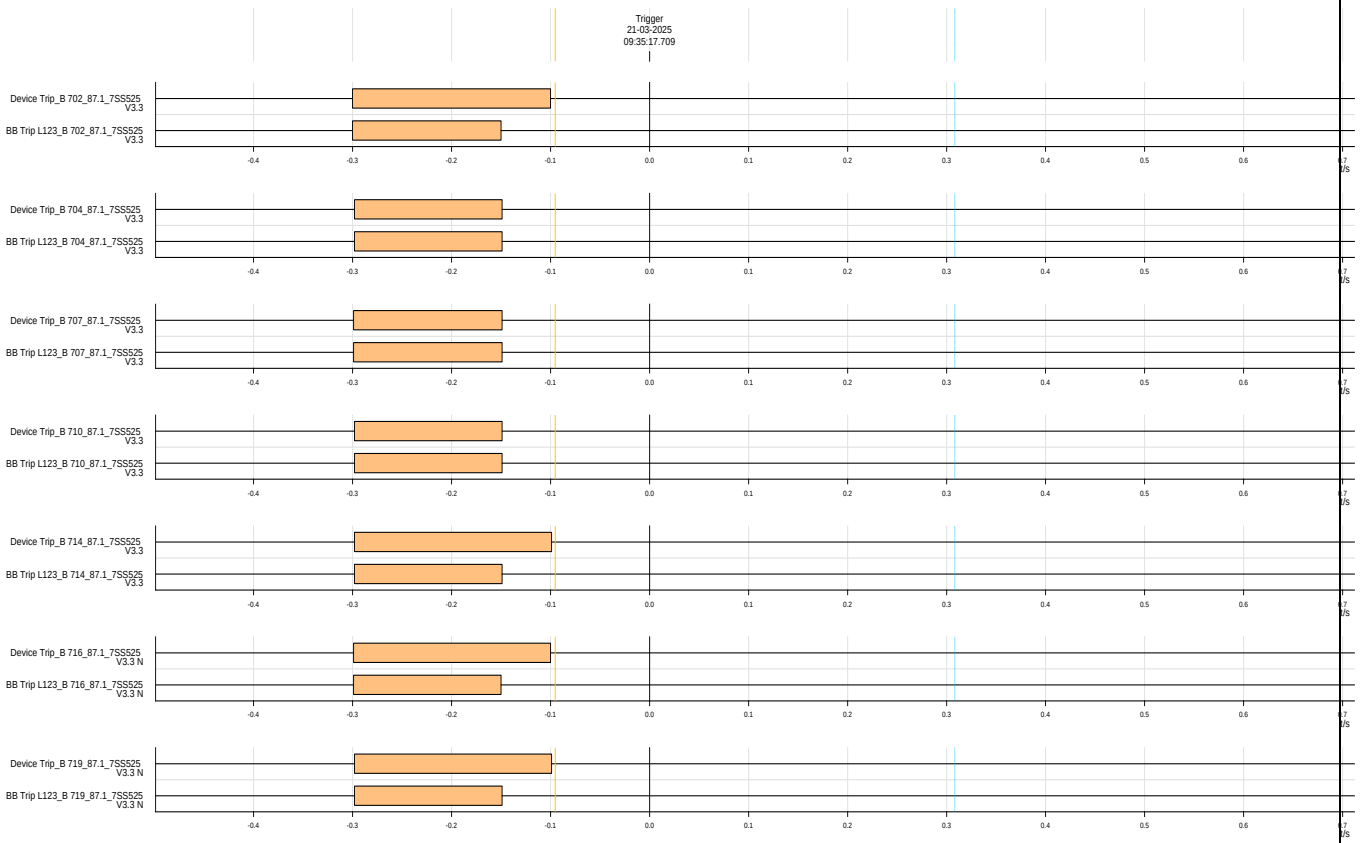
- **Tripping:** Due to Y-phase CT failure, Main Bus#1 Differential protection operated, and all main bay connected to Main bus #1 got tripped (Main Bay (704) DMG#1, Main Bay of B/R #1 & 2 (710 & 707), and main bay 720 & 717.

Time Stamp	Element	Status	Event
21-03-25 09:35:19:771	765_DHRAM_WR_1_Main_CB	Open	Event-5 BUS-1 Tripping
21-03-25 09:35:17:984	765_Main_Bus_R2_Main_CB	Open	
21-03-25 09:35:17:781	765_NRANC_PG_2_Main_CB	Open	
21-03-25 09:35:17:780	765_NRANC_PG_1_Main_CB	Open	
21-03-25 09:35:17:778	765_Main_Bus_R_1_NRANC_PG_1_Tie	Open	
21-03-25 09:35:17:759	765_MEDNI_PG_1_FUTURE_2_Tie	Open	
21-03-25 09:35:17:759	765_MEDNI_PG_2_FUTURE_1_Tie	Open	
21-03-25 09:35:17:751	765_Main_Bus_R1_Main_CB	Open	
21-03-25 09:35:17:745	765_MEDNI_PG_1_FUTURE_2_Tie	Travel	
21-03-25 09:35:17:744	765_MEDNI_PG_2_FUTURE_1_Tie	Travel	



- 765kV Main Bus# 1 & 2 became dead.





3. Restoration Timeline

765kV Bus-1 765kV New Ranchi- Medinipur-1	21.03.2025, 12:53 Hrs
765KV Bus Reactor-2	21.03.2025, 12:53 Hrs
765KV New Ranchi- Dharamjaygarh-1	21.03.2025, 14:49 Hrs
765/400KV 1500MVA ICT-2	21.03.2025, 20:27 Hrs
765kV Bus-2 765/400KV 1500MVA ICT-1	21.03.2025, 22:23 Hrs
765kV New Ranchi- Medinipur-2	21.03.2025, 23:43 Hrs
765KV New Ranchi- Dharamjaygarh-2 (after clearance from remote end)	22.03.2025, 00:59 Hrs
765KV Bus Reactor-1 **(after replacing 711 R-Ph CT)**	22.03.2025, 23:09 Hrs
702 Tie Bay of ICT-1 **(after replacing 702 R-Ph CT)**	23.03.2025, 14:27 Hrs
706 Main Bay of ICT-2 **(after replacing 706 Y-Ph CT)**	24.03.2025, 09:28 Hrs
710 Main Bay of Bus Reactor-1 **(after replacing 710 Y-Ph CT)**	24.03.2025, 09:33 Hrs

4. Root Cause Analysis: PGCIL ER-1 Monitored lightning arrestor counters (increments observed in MDP-1 and NGRs), It is suspected that Lightning-induced overvoltage's exacerbated CT failures (Similar to 2022 Angul incident).

Post event PowerGrid did preliminary investigation of 4 number of CTs which failed and found following observations pertaining to CTs,

CT Failure	Phase	Observation
711 R-Ph	R	SO2 >100 ppmv (insulation breakdown).
706 Y-Ph	Y	SO2 >100 ppmv, internal flashover.
702 R-Ph	R	SO2 >100 ppmv, degraded insulation.
710 Y-Ph	Y	Physical puncture due to lightning surge.

5. Recommendations

1. **Root cause analysis**: Root cause analysis to be done by OEM for all failed CTs , and finding out the manufacturing defects such as whether there were any problem in lot of CTs installed or other things were responsible for CT failure need to be investigated in detail.
2. **Earthing /DLSP Audit**: Similar incident was observed at Angul S/s where six number of CTs failed and it was recommended to do third party audit and review of DLSP and earthing system to find any abnormality which is leading the direct Lightning induced overvoltage's to reach till the terminal of CTs leading to failure in similar way it is suggested to do the thorough audit of DLSP s and earthing system for New Ranchi also.
3. **SF6 Preventive Maintenance:** After the Angul incident PowerGrid-ER-3 stated that till the RCA analysis is completed and exact root cause is known, OEM has recommended to increase the frequency of CT maintenance and monitoring to observe any parameter violations such as SO2 and other gas increase which will reduce the risk of CT failures.

BSPTCL

Annexure B.4

Protection Performance Indices for the month of March'25

S. No.	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))	Remarks (Reason for performance indices less than 1)
						End A	End B	End A	End B	End A	End B	End A	End B				
1	220KV-SAHARSA-BEGUSARAI-1	03-03-2025	13:45:00	03-03-2025	14:39:00		Begusarai End: Main 1 :Zone-1, R phase fault,Distance - 55KM,FC - 3.27KA		1		0		0	1	1	1	
2	220KV-SAHARSA-BEGUSARAI-1	05-03-2025	11:25:00	05-03-2025	16:53:00		Begusarai : Zone-1, R_N, Fault Distance - 55kM, Ir - 3.27KA		1		0		0	1	1	1	
3	220KV-SAHARSA(PMTL)-BEGUSARAI-2	08-03-2025	18:57:00	08-03-2025	19:46:00		Auto recloser is successfully operated at Begusarai end and relay details: Zone I, Dist 19.1Km, IC=4.83KA		1		0		0	1	1	1	
4	220KV-MUZAFFARPUR-HAJIPUR-1	17-03-2025	11:09:00	17-03-2025	13:13:00	Muzaffarpur: B-N, 20kA, 1.18km;	Hajpur: B-N, 0.8kA (A/R successful)	0	1	0	0	1	0	Muzaffarpur-0 Hajipur-1	Muzaffarpur-0 Hajipur-1	Muzaffarpur-0 Hajipur-1	PLCC issue
5	400KV-BARH-BAKHTIYARPUR(BH)-2	18-03-2025	13:11:00	18-03-2025	18:19:00		Bakhtiyarpur: Y-N, 5.5km, 6.53kA, Z-1		1		0		0	1	1	1	
6	220KV-TENUGHAT-BIHARSARIFF-1	27-03-2025	13:56:00	27-03-2025	14:38:00		Biharsharif end: B_N, Zone-1, FC: 1.01 kA, FD: 127.9 km		0		0		1	0	0	0	PLCC not functioning as stated earlier

WBSETCL

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

Sl. No.	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))	Remarks (Reason for performance indices less than 1)	Analysis of the event
						End A	End B	End A	End B	End A	End B	End A	End B					
1	Kharagpur-Chaibasa #1	01.03.2025	17:34:00	01.03.2025	19:28:00	Zone-2,B-Phase,A/R Close, A/R L/O		1		0		0		1	1	1		
2	Kharagpur-KTPP #1	16.03.2025	19:39:00	16.03.2025	20:19:00	Zone-1,R-Phase,A/R Close, A/R L/O		1		0		0		1	1	1		
3	Kharagpur-Midnapore PG #1	17.03.2025	19:22:00	17.03.2025	22:34:00	Zone-1,R-Y-Phase, A/R L/O		1		0		0		1	1	1		
4	Kharagpur-Midnapore PG #1	17.03.2025	19:28:00	18.03.2025	00:14:00	Zone-1,Y-Phase,A/R Close, A/R L/O		1		0		0		1	1	1		
5	Kharagpur-KTPP #1	17.03.2025	19:30:00			Zone-1,R-Phase,A/R Close, A/R L/O		1		0		0		1	1	1		Line break-down due to Tower collapse. Circuit normalised on 04/04/25 at 14:48 h
6	Kharagpur-Chaibasa #1	20.03.2025	18:16:00	20.03.2025	19:31:00	Zone-1,Y-Phase, A/R close ,A/R L/O		1		0		0		1	1	1		

7	Jeerat-Rajarhat #1	21.03.2025	14:34:00	21.03.2025	17:41:00	Zone-1,Y-B-Phase, A/R L/O 3-phase trip.		1		0		0		1	1	1		
8	Dalkhola WB-Dalkhola PG #1	27.03.2025	09:39:00	27.03.2025		NO TRIPPING		0		0		0		0	0	0		
9	Dalkhola WB-Dalkhola PG #2	27.03.2025	09:39:00	27.03.2025	16:09:00	Line Differential Trip.		1		0		0		1	1	1		Due to un-available of remote end current. Normalise after attend by PG Engg. at Dalkhola End

Powergrid ER-II

List of important transmission lines in ER which tripped in March-2025										END-A						END-B					
Sl. No.	LINE NAME	TRIP DATE	TRIP TIME	Relay Indication LOCAL END	Relay Indication REMOTE END	Remarks	LOCAL END UTILITY	REMOTE END UTILITY	UTILITY RESPONSE	Nc	Nu	Nf	Dependability Index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf)	Nc	Nu	Nf	Dependability Index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf)
1	400KV-MAITHON-DURGAPUR-2	01-03-2025	14:02:00	B-N Fault, FC-5.52kA	Durgapur:-B-N Fault, FD-17.5kM, FC-2.92kA	A/r failed after 1 second	PG ER-1I	PG ER-1I	A/R attempted on persisting fault & SOTF operated. Protection operated properly at both ends.	1			1	1	1	1			1	1	1
2	400KV-MEDINIPUR-KHARAGPUR-2	17-03-2025	19:28:00	Kharagpur: Z-1, Y ph, 11.5 km, 9.9 kA	Z-1, Y ph, FC-4.14 Ka	A/r successful from both ends. Tripped again within reclaim time.	PMJTL	WBSETCL	A/R attempted on persisting fault & SOTF operated. Protection operated properly at Medinipur end.	1			1	1	1	NA					
3	400KV-MEDINIPUR-KHARAGPUR-1	17-03-2025	19:22:00	Medinipur: R-Y ph, 117.8 km, Ir-3.46 kA, Iy-3.47 kA	Kharagpur: Z-1, R-Y ph, 4.67 km, Ir-17.6 kA, Iy-17.5 kA	Line tripped from Kharagpur end in Z-1 phase to phase fault and from Medinipur end carrier didn't received and line tripped in Z-2 protection. PG(ER-II) may explain.	PMJTL	WBSETCL	Carrier was not received from remote end. As information received, tower collapsed. Protection operated properly at Medinipur end.	1			1	1	1	NA					
4	400KV-BINAGURI-RANGPO-2	18-03-2025	10:37:00	Binaguri: R-B, IR-8.5kA, 33.26km;	Rangpo: R-B, IR-3.02kA, IB-30.03kA, 75.15km	Line tripped on phase to phase fault.	PG ER-1I	PG ER-1I	Phase to phase fault occurred in line & 3 phase trip happened. Protection operated properly at both ends.	1			1	1	1	1			1	1	1
5	400KV-RAJARHAT-JEERAT-1	21-03-2025	14:34:00	Rajarhat: Y-B-Ph, Iy:6.12kA, Ib: 6.28kA, 14.4km, Z-I	Jeerat: Y-B Ph, 21.83km, Z-I, Iy:9.25kA, Ib:8.96kA	Line tripped on phase to phase fault.	PG ER-II	WBSETCL	Phase to phase fault occurred in line & 3 phase trip happened. Protection operated properly at both ends.	1			1	1	1	NA					
6	220KV-CHUKHA-BIRPARA-2	22-03-2025	18:09:00	Chukha : Zone-1,Ir=721.53A, Iy=1965.45A, Ib=2895.37A ,In=2297.17A	Birpara: Y-BPh, Iy:3.55kA, Ib:3.56kA, 43.58km	Line tripped on phase to phase fault.	BHUTAN	PG ER-II	Phase to phase fault occurred in line & 3 phase trip happened. Protection operated properly at both ends.	NA						1			1	1	1
7	220KV-CHUKHA-BIRPARA-1	22-03-2025	18:09:00	Chukha: A/R successful from Bhutan Side	Birpara: Y-B Ph,Iy:3.083kA, Ib:3.198kA, 40.4km	Line tripped on phase to phase fault from Birpara end and A/r successful from Chukka end.	BHUTAN	PG ER-II	Fault started in Y phase first but it was evolved in B phase also with a fault current of 1.2kA. Hence, relay issued 3 phase trip command. Protection operated properly at PG ER2 end.	NA						1			1	1	1
8	220KV-DALKHOLA (WB)-DALKHOLA (PG)-2	27-03-2025	09:39:00	R ph line differential relay operated at both ends.		As per information received from WB, signal was missing. No line fault observed from PMU. WB may explain.	WBSETCL	PG ER-II	The line was under S/D for restoration of interim arrangement of lines for bus isolator replacement at Dalkhola SS. During charging of the line, differential protection operated. As observed, local end current was not reflected in relay measurements. Hence, differential protection operated. Necessay checking was done but no such abnormality was observed. However, tightness has been done in relay cards & CT circuits. Further, line was charged successfully.		1		#DIV/0!	0	0	NA					

Powergrid Odisha

Protection Performance Indices for the month of March'25 (In compliance of Clause 15(6) of IEGC 2023)																	
S. No.	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))	Remarks (Reason for performance indices less than 1)
						End A	End B	End A	End B	End A	End B	End A	End B				
1	**400kV ANGUL-BOLANGIR**	01-03-2025	13:36:00	01-03-2025	15:55:00	Line got tripped due to persistent fault M1: Z1, BN fault, 67.5 km, 5kA M2: Z1, BN fault, 66.3 km, 5.07kA	Line got tripped due to persistent fault M1: Z1, BN fault, 133.1 km, 1.36kA M2: Z1, BN fault, 125.5 km, 1.68kA	1	1	0	0	0	0	1	1	1	
2	**765KV ANGUL-JHARSUGURA-1**	05-03-2025	18:04:00	05-03-2025	18:47:00	Line got tripped due to persistent fault M1:Z1B; BN Fault; 264.2 km; 3.39 kA M1:Z1B; BN Fault; 271.9 km; 1.127 kA	Line got tripped due to persistent fault M1:Z1; BN Fault; 7.4 km; 16.33 kA M2;Z1; BN Fault; km; 0 kA	1	1	0	0	0	0	1	1	1	
3	**400kV ROURKELA-JHARSUGUDA-3**	06-03-2025	15:14:00	06-03-2025	18:32:00	Line got tripped due to persistent fault M1:Z1; YN Fault; 84.82 km; 2.872 kA M1:Z1; YN Fault; 84.2 km; 2.9 kA	Line got tripped due to persistent fault M1; Z1; YN Fault; 40.03 km; 5.65 kA M2;Z1; YN Fault; 42.2 km; 6.1 kA	1	1	0	0	0	0	1	1	1	
4	**400kV ROURKELA-JHARSUGUDA-4**	15-03-2025	12:37:00	15-03-2025	13:16:00	Line got tripped due to persistent fault M1:Z1; RN Fault; 84.1 km; 2.348 kA M1:Z1; RN Fault; 88.41 km; 2.36 kA	Line got tripped due to persistent fault M1; Z1; RN Fault; 30.65 km; 7.737 kA M2;Z1; RN Fault; 31 km; 7.88 kA	1	1	0	0	0	0	1	1	1	

NTPC Barh

Month	**March**						
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)**
18.03.2025	**Barh-Bakhtiyarpur-2**	**Y-N fault**	**Fault sensed in Zone 2 of Barh-Bakhtiyarpur-2 from Barh end. Carrier received at Barh end. Single phase auto-reclosure attempted for main and tie breaker. However, both breakers tripped on pole discrepancy. As per DR, it is seen that right after successful A/R attmept in both breakers; R,B pole opened on CB discrepancy. PD timer for main and tie CB has been increased for better coordination between A/R and PD timing.**	0	1	0	1
Dependability Index D = Nc/(Nc+Nf)				0			
Security Index S = Nc /(Nc+Nu)				#DIV/0!			
Reliability Index R= Nc/(Nc+Ni)				0			

NTPC Darlipalli

Performance Indices of Darlipali STPP for Mar'25

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

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

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

NOTE for reference of deciding parameters:

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

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

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

Jorethang HEP

Jorethang Loop Hydro Electric Project 2 X 28 MW

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

Sl. No.	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+N f))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+ Nu+Nf))	Remarks (Reason for performance indices less than 1)	Analysis of the event
						End A	End B	End A	End B	End A	End B	End A	End B					
1	220KV Jorethang- New Melli Line-1																NO TRIPING	
2	220KV Jorethang- New Melli Line-2																NO TRIPING	

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

Tashiding HEP

Tashiding Hydro Electric Project 2 X 48.5 MW

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

Sl. No.	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+N f))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+ Nu+Nf))	Remarks (Reason for performance indices less than 1)	Analysis of the event
						End A	End B	End A	End B	End A	End B	End A	End B					
1	220KV Tashiding- 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.

DMTCL

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

TVNL

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

Sl. No.	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))	Remarks (Reason for performance indices less than 1)
						End A	End B	End A	End B	End A	End B	End A	End B				
1	**400KV TTPS-PVUNL T/L**	**15.03.2025**	**13:00**	**15.03.2025**	**19:22**	**Earth Fault/ 20.84km**		1		0		0		1.0000	1.0000	1.0000	
2	**220KV TTPS-Govindpur-1 T/L**	**20.03.2025**	**06:04**	**20.03.2025**	**06:47**	**Earth Fault/ 3.54km**		1		0		0		1.0000	1.0000	1.0000	
3	**400KV TTPS-PVUNL T/L**	**27.03.2025**	**12:11**	**27.03.2025**	**13:05**	**Earth Fault/ 24.01km**		1		0		0		1.0000	1.0000	1.0000	
4	**400KV TTPS-Bihar Shariff T/L**	**27.03.2025**	**13:56**	**27.03.2025**	**14:39**	**Earth Fault/ 40.37km**		1		0		0		1.0000	1.0000	1.0000	

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

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

Sl. No.	LINE NAME	TRIP DATE	TRIP TIME	RESTORATION DATE	RESTORATION TIME	Relay Indication LOCAL END	Relay Indication REMOTE END	Reason	Fault Clearance time in msec	Remarks	DR Configuration Discrepancy(Local End)	DR Configuration Discrepancy(Remote End)	DR/EL RECEIVED FROM LOCAL END	DR/EL RECEIVED FROM REMOTE END	LOCAL END UTILITY	REMOTE END UTILITY
1	400KV-KHARAGPUR-CHAIBASA-1	01-03-2025	17:34:00	01-03-2025	19:28:00	Kharagpur End: B-ph, Z-1, FD:144.7 Km, FC: 2.21 kA,	Chaibasa End: B-ph, Z-1, FD: 36.4 Km, FC: 6.1 kA	B-Earth	100 msec	A/r failed after 1 second			YES	YES	WBSETCL	PGER-1
2	400KV-MAITHON-DURGAPUR-2	01-03-2025	14:02:00	01-03-2025	16:22:00	B-N Fault, FC-5.52kA	Durgapur:-B-N Fault, FD-17.5kM, FC-2.92kA	B-Earth	100 msec	A/r failed after 1 second			YES	YES	PGER-1I	PGER-1I

3	400KV-BOLANGIR (PG)-ANGUL-1	01-03-2025	13:36:00	01-03-2025	15:55:00	Angul:-M1-FC-5.01kA,FD-67.5kM. M2-FC-5.07kA,FD-66.3kM.	Bolangir:-FC-1.36 kA,FD-133.1kM. B-G fault.	B-Earth	100 msec	DR not submitted. Three phase tripping for phase to ground fault. PG Odisha may explain.			NO	NO	PG ODISHA	PG ODISHA
4	220KV-SAHARSA-BEGUSARAI-1	03-03-2025	13:45:00	03-03-2025	14:39:00	Saharsa: R-N, Z-1, 25.1 km, IR=5.02 kA,	Begusarai End: Main 1 :Zone-1, R phase fault,Distance - 55KM,FC - 3.27KA	R-Earth	100 msec	A/r failed after 1 second			YES	YES	PMTL	BSPTCL
5	765KV-ANGUL-JHARSUGUDA-1	05-03-2025	18:04:00	05-03-2025	18:47:00	Angul end: M1, B-G, IF: 3.39kA, 264.2KM	Jharsugda end: M1,B-G ,Z#1, IF: 16.33kA, 7.4KM	B-Earth	100 msec	A/r failed after 1 second			YES	YES	PG ODISHA	PG ODISHA
6	220KV-SAHARSA-BEGUSARAI-1	05-03-2025	11:25:00	05-03-2025	16:53:00	R/I at Saharsa: R_N, Fault Dist. 24.9 kM, Ir- 5.4 kA;	Begusarai : Zone-1, R_N, Fault Distance - 55kM, Ir - 3.27KA	R-Earth	100 msec	A/r failed after 1 second			YES	YES	PMTL	BSPTCL

7	400KV-JHARSUGUDA-ROURKELA-3	06-03-2025	15:14:00	06-03-2025	18:32:00	Jharsuguda: Y-Ph, 40.03km, 5.65kA, Z-I	Rourkella: Y-Ph, 80.82km, 2.872kA, Z-I	Y-Earth	100 msec	A/r failed after 1 second			YES	YES	PG ODISHA	PG ODISHA
8	220KV-SAHARSA(PMTL)-BEGUSARAI-2	08-03-2025	18:57:00	08-03-2025	19:46:00	Saharsa end Relay details: BN fault, fault current - 2.456 kA, fault distance - 64 km.	Auto recloser is successfully operated at Begusarai end and relay details: Zone I, Dist 19.1Km, IC=4.83KA	B-Earth	100 msec	DR not submitted. Three phase tripping for phase to ground fault from Saharsa end. PG ER-1 may explain.			NO	NO	PMTL	BSPTCL
9	220KV-CHANDIL-STPS(WBPDCL)-1	09-03-2025	12:08:00	09-03-2025	12:52:00	Chandil: E/F & O/C operated FC: 1.2KA, FD:16 KM	STPS: Z-2, R-Ph, FC: 281 A, FD:92 KM	R-Earth	100 msec	Line tripped on phase to ground fault from both end.			YES	NO	JUSNL	WBPDCL
10	400KV-JAMSHEDPUR-CHAIBASA(PG)-1	12-03-2025	12:28:00	12-03-2025	14:07:00	Jamshedpur: R ph , 7.5 km, 14.13 kA	Chaibasa: R ph , 3.3 km, 7.02 kA	R-Earth	350 msec	A/r failed after 1 second from Jamshedpur end and three phase tripping occurred from Chaibasa end after Z-2 time delay.			YES	YES	PG ER-1	PG ER-1

11	220KV-JODA-RAMCHANDRAPUR-1	13-03-2025	11:49:00	13-03-2025	13:02:00	Joda end: B-E, Zone -1, 22.65 km, A/R successful from Joda end, F/C 1.98 kA	Ramchandrapur end: Zone 1, 139.2 km,	B-Earth	100 msec	A/r successful from Joda end,			YES	YES	OPTCL	JUSNL
12	400KV-TENUGHAT-PVUNL-1	15-03-2025	13:00:00	15-03-2025	19:22:00	Tenughat: Z-I, 17.76km, 1.659kA	-	Y-Earth	100 msec	A/r failed after 1 second			NO	NO	TVNL	PVUNL
13	400KV-JAMSHEDPUR-ANDAL-2	15-03-2025	17:40:00	15-03-2025	20:36:00	Jmashedpur: Y-N, 31.1km, 6.1kA	Y-N, FC-3.04 Ka, Z-1	Y-Earth	100 msec	A/r successful from both ends. Tripped again within reclaim time.			YES	YES	PGER-1	DVC
14	400KV-ROURKELA-JHARSUGUDA-4	15-03-2025	12:37:00	15-03-2025	13:16:00	Rourkela end: M1,R-G, F/L: 94.702KM, 3.923KA	Jharsuguda end: M1, ZONE -1, R-G, F/C 7.3kA, F/L 30 km	R-Earth	100 msec	A/r failed after 1 second			YES	YES	PGODISHA	PGODISHA

15	400KV-NEW RANCHI-PATRATU-1	15-03-2025	10:31:00	15-03-2025	13:16:00	New Ranchi: B-N Ph, 12.65kA, 15.9km	Patratu: Ia 0.21kA, Ib 0.41kA, Ic 1.10kA. Distance 49.9km	B-Earth	100 msec	A/r failed after 1 second			YES	YES	PGER-1	JUSNL
16	400KV-KHARAGPUR-KOLAGHAT-1	16-03-2025	19:39:00	16-03-2025	20:19:00	KHARAGPUR END : R-ph, Z1, 60.9 KM, Ir- 4.088 KA	KTPP END : R-ph, Z1, 15.52 KM, Ir- 10.68 KA	R-Earth	100 msec	A/r successful from both ends. Tripped again within reclaim time.			YES	NO	WBSETCL	WBPDCL
17	400KV-KOLAGHAT-KHARAGPUR-2	17-03-2025	19:30:00	00-01-1900	00:00:00	Kolaghat: Z-1, R ph, 4.18 kA	Kharagpur: Z-1, R ph, 10.7 km, 10.24 kA	R-Earth	100 msec	A/r failed after 1 second			NO	YES	WBPDCL	WBSETCL
18	400KV-MEDINIPUR-KHARAGPUR-2	17-03-2025	19:28:00	00-01-1900	00:00:00	Kharagpur: Z-1, Y ph, 11.5 km, 9.9 kA	Z-1, Y ph, FC-4.14 Ka	Y-Earth	100 msec	A/r successful from both ends. Tripped again within reclaim time.		DR is not Time Synchronized	YES	YES	PMJTL	WBSETCL

19	400KV-MEDINIPUR-KHARAGPUR-1	17-03-2025	19:22:00	00-01-1900	00:00:00	Medinipur: R-Y ph, 117.8 km, Ir-3.46 kA, Iy-3.47 kA	Kharagpur: Z-1, R-Y ph, 4.67 km, Ir-17.6 kA, Iy-17.5 kA	R-Y	350 msec	Line tripped from Kharagpur end in Z-1 phase to phase fault and from Medinipur end carrier didn't received and line tripped in Z-2 protection. PG(ER-II) may explain.			YES	YES	PMJTL	WBSETCL
20	220KV-MUZAFFARPUR-HAJIPUR-1	17-03-2025	11:09:00	17-03-2025	13:13:00	Muzaffarpur: B-N, 20kA, 1.18km;	Hajpur: B-N, 0.8kA (A/R successful)	B-Earth	100 msec	A/r successful from Hajipur end. Line tripped from Muzaffarpur end. PG(ER-I) may explain			NO	YES	PGER-1	BSPTCL
21	400KV-BINAGURI-RANGPO-2	18-03-2025	10:37:00	18-03-2025	17:07:00	Binaguri: R-B, IR-8.5kA, 33.26km;	Rangpo: R-B, IR-3.02kA, IB-30.03kA, 75.15km	R-B	100 msec	Line tripped on phase to phase fault.			YES	YES	PGER-1I	PGER-1I
22	400KV-BARH-BAKHTIYARPUR(BH)-2	18-03-2025	13:11:00	18-03-2025	18:19:00	Barh: Y-N, 5.4kA, Z-2, 52.3km	Bakhtiyarpur: Y-N, 5.5km, 6.53kA, Z-1	Y-Earth	100 msec	A/r failed after 1 second			NO	YES	NTPC	BSPTCL

23	220KV-PANDIABILI-SAMANGARA-1	20-03-2025	12:29:00	21-03-2025	15:06:00	Tripped at only Pandiabili end, B_N, F Current Ib- 8.37 kA, F Dist 31.2 km	Didn't tripped, Line hand tripped	B-Earth	100 msec	A/r failed after 1 second from Pandiabili end, later line hand tripped from Samangara end. OPTCL may explain.			YES	NO	PG ODISHA	OPTCL
24	220KV-JAMSHEDPUR-JINDAL-1	20-03-2025	18:34:00	20-03-2025	19:43:00	Jamshedpur: R & Y ph, Zone 1, 42.20 km	R_Y, FC- 1.97 kA, 2.07 kA, Z-1	R-Y	100 msec	Line tripped on phase to phase fault.			YES	YES	DVC	OPTCL
25	400KV-KHARAGPUR-CHAIBASA-2	20-03-2025	18:16:00	20-03-2025	19:31:00	Kharagpur: Y-ph, 121 km, 2.71 kA	Chaibasha end- Y-N FC-14.397kA FD-3.913KM;	Y-Earth	100 msec	A/r successful from both ends. Tripped again within reclaim time.			YES	YES	WBSETCL	PG ER-1
26	765KV-NEW RANCHI-DHARAMJAIGARH-2	20-03-2025	16:09:00	20-03-2025	16:58:00	New Ranchi - B_N , FD-27.766KM, FC-8.489KA	-	B-Earth	100 msec	A/r failed after 1 second			YES	NO	PG ER-1	PG ODISHA

27	220KV-DALTONGANJ-CHATRA-1	21-03-2025	21:27:00	21-03-2025	22:55:00	A/R Succesfull	Chatra end: Zone 1 trip, Ia-2.668 kA, Ib-431 A, Ic-408A, Dist-2.75 km	R-Earth	100 msec	A/r successful from Daltonganj end, Line tripped from Chatra end. JUSNL may explain.			NO	NO	PG ER-1	JUSNL
28	400KV-RANCHI-SIPAT-1	21-03-2025	16:07:00	21-03-2025	21:01:00	A/R Succesfull at Ranchi end: B-N, FC-1.3 kA, FD-260 KM	Tripped From Sipat end.	B-Earth	100 msec	A/r successful from Ranchi end, line tripped from Sipat end only.			YES	NO	PG ER-1	WRLDC
29	400KV-RAJARHAT-JEERAT-1	21-03-2025	14:34:00	21-03-2025	17:42:00	Rajarhat: Y-B-Ph, Iy:6.12kA, Ib: 6.28kA, 14.4km, Z-I	Jeerat: Y-B Ph, 21.83km, Z-I, Iy:9.25kA, Ib:8.96kA	Y-B	100 msec	Line tripped on phase to phase fault.			YES	NO	PG ER-II	WBSETCL
30	220KV-CHANDIL-RANCHI-1	21-03-2025	10:22:00	21-03-2025	11:45:00	chandil end Zone 1 operated ,Dist-67.3km FC -2.12ka	Ranchi end - Y-N FD - 23.9 km , FC - 6.03 KA	Y-Earth	100 msec	A/r failed after 1 second			YES	YES	JUSNL	PG ER-1

31	220KV-CHUKHA-BIRPARA-2	22-03-2025	18:09:00	23-03-2025	16:55:00	Chukha : Zone-1,Ir=721.53A, Iy=1965.45A, Ib=2895.37A ,In=2297.17A	Birpara: Y-BPh, Iy:3.55kA, Ib:3.56kA, 43.58km	Y-B	100 msec	Line tripped on phase to phase fault.			YES	YES	BHUTAN	PG ER-II
32	400KV-MEERAMUNDALI-JSPL-2	22-03-2025	20:13:00	22-03-2025	20:57:00	DT received at Meeramundali end	Didn't tripped.	No Fault	-	Line tripped from Meramundali end due to DT received. JSPL may explain.			YES	NA	OPT CL	JSPL
33	400KV-MEERAMUNDALI-JSPL-2	22-03-2025	18:53:00	22-03-2025	19:28:00	DT received at Meeramundali end	Didn't tripped.	No Fault	-	Line tripped from Meramundali end due to DT received. JSPL may explain.			YES	NA	OPT CL	JSPL
34	220KV-CHUKHA-BIRPARA-1	22-03-2025	18:09:00	22-03-2025	19:07:00	Chukha: A/R successful from Bhutan Side	Birpara: Y-B Ph,Iy:3.083kA, Ib:3.198kA, 40.4km	Y-B	100 msec	Line tripped on phase to phase fault from Birpara end and A/r successful from Chukka end.			NO	NO	BHUTAN	PG ER-II

35	765KV-DHARAMJAIGARH-JHARSUGUDA-1	22-03-2025	08:42:00	22-03-2025	10:39:00	Dharamjaigarh : Y_N,F Current Iy: 9.345 kA, F Dist - 75.984km ;	Z1, Y_N, F Current: 9.95kA, F Dist: 58.7km	Y-Earth	100 msec	A/r failed after 1 second			NO	NO	PG ODISHA	PG ODISHA
36	220KV-DALTONGANJ-CHATRA-1	23-03-2025	09:47:00	23-03-2025	16:25:00	Daltongunj: FD-59km, 3.01kA, Y-B-Ph	Chatra :Z-1, Y_B, 63.3 km, IY 2.66 KA, Ib 2.68 KA	Y-B	100 msec	Line tripped on phase to phase fault.			NO	NO	PG ER-1	JUSNL
37	220KV-DALKHOLA (WB)-DALKHOLA (PG)-2	27-03-2025	09:39:00	27-03-2025	16:09:00	R ph line differential relay operated at both ends.		No Fault	-	As per information received from WB, signal was missing. No line fault observed from PMU. WB may explain.			NO	NO	WBSETCL	PG ER-II
38	220KV-TENUGHAT-BIHARSARIFF-1	27-03-2025	13:56:00	27-03-2025	14:38:00	Tenughat end: B_N, Zone-1, FC:1.27kA, FD: 40.37 km	Biharsharif end: B_N, Zone-1, FC: 1.01 kA, FD: 127.9 km	B-Earth	100 msec	As per PMU three phase tripping for phase to ground fault. JUSNL & BSPTCL may explain.			YES	NO	JUSNL	BSPTCL

39	400KV-MERAMUNDALI-LAPANGA-2	30-03-2025	14:23:00	30-03-2025	15:05:00	Meramundali end: R_N, Ir=1.72kA, F Dist=147.7 km	Lapanga end:R_N, Zone-1, Ir=6.899kA, F Dist= 42.73 km;	R-Earth	100 msec	A/r failed after 1 second			YES	YES	OPTCL	OPTCL
40	400KV-DSTPS(ANDAL)-RAGHUNATHPUR-2	29-03-2025	12:01:00	29-03-2025	17:33:00	DSTPS(ANDAL): F Dist - 52.18 KM, Z-1, Y_B, Iy- 5.34 kA, Ib- 5.33 kA;	Raghunathpur end: Y_B, F Dist 30.10 km,	Y-B	100 msec	A/r failed after 1 second			NO	NO	DVC	DVC
41	220KV-ATRI-PANDIABILI-2	28-03-2025	12:44:00	28-03-2025	13:04:00	Master tripped relay operated it Atri end.	-	B-Earth	100 msec	As per PMU B phase to ground fault observed, line tripped from Atri end. OPTCL & PG Odisha may explain.			NO	NO	OPTCL	PG ODISHA

ANNEXURE C.5

Sl No.	Name of the incidence	PCC Recommendation	Latest status
145th PCC Meeting			
1.	Disturbance at 400 k V GMR S/s on 4th Feb 2025 at 16:49 Hrs	Member Secretary, ERPC advised GMR representative to test whether both lines are capable of bearing load flow of 655 MW (generation power of 2 units at GMR) individually while other line is under shutdown for period of at least 48 hrs by first week of April 2025 and submit observation to ERPC/ERLDC. PCC agreed with proposal of Member Secretary, ERPC and advised GMR to do test as proposed by MS, ERPC as earliest as possible and submit observation to ERPC/ERLDC. Member Secretary, ERPC advised GMR representative to share details of preventive maintenance carried out by GMR during 2024-25 to ERPC/ERLDC.	
2.	Disturbance at 220 k V Indrawati S/s on 15th Feb 2025 at 16:49 Hrs	PCC suggested OHPC to rectify bus bar issue at earliest. It further advised OHPC representative to share present status of rectification work to ERPC/ERLDC. PCC advised OHPC representative to share present status of rectification of DR to ERPC/ERLDC. PCC advised OHPC representative to share detailed report to ERPC/ERLDC.	

		PCC advised OPTCL representative to share details of fault finding and reason of delayed fault clearance to ERPC/ERLDC at earliest.	
3.	Disturbance at 400 k V PVUNL S/s on 20th Feb 2025 at 02:33 Hrs	PCC advised JUSNL representative to share photographs of site during disturbance along with detailed report to ERPC/ERLDC.	
4.	Disturbance at 765/400 k V Angul S/s on 20th Feb 2025 at 16:20 Hrs	PCC advised PG representative to share updates of remedial actions to ERPC/ERLDC on weekly basis.	
5.	Repeated tripping of 220KV-BIRPARA-MALBASE-1 and 400KV-MALBASE-BINAGURI-1	PCC advised PG representative to do review protection settings at their end as per changes in Bhutan network as explained by ERLDC representative.	
6.	Review of protection setting and protection audit as per IEGC, 2023	PCC advised all utilities following – • Utilities are requested to ensure Zone protection setting as per ERPC protection philosophy where only Zone 1 ,2 ,3 & 4 should be enabled and	

		additional zone protection setting should be disabled. • Utilities are requested to disable backup overcurrent protection for 220 k V and above lines. However, if utilities want to keep backup overcurrent protection due to some constraint, then it should be with AND logic of VT fuse failure and overcurrent pickup setting should be more than (1.2 times) the thermal rating of line. PCC advised concerned utilities to take suitable actions for complying with ERPC protection philosophy. PCC advised Odisha to explore possibility for implementing UVLS scheme in their system for safeguarding the system during cascading of critical lines. PCC advised all utilities to share compliance of internal protection audit for FY 2024-2025 along with internal protection audit plan for 2025-26 to ERPC/ERLDC.	
144th PCC Meeting			
7.	Repeated Disturbance at 400 k V JSPL S/s	JSPL representative informed that shutdown of line is planned for next month in order to replace other damaged insulators as per PID test report of insulators. PCC advised JSPL representative that matter related to excess dust	JSPL representative informed that remaining insulators will be replaced by 15th May 2025. He further added that they are also in communication with

		production from industries should be communicated to CPCB	CPCB regarding excess dust production from industries.
8.	Tripping of 400KV/220KV 315 MVA ICT 2 AT MEJIA-B	PCC advised DVC representative to share detailed report after carrying out investigation. Further, it advised DVC representative to share DR of event to ERPC/ERLDC.	PCC advised DVC representative to share detailed report after carrying out investigation. Further, it advised DVC representative to share DR of event to ERPC/ERLDC.
9.	Uniform Protection Protocol prepared by NPC	PCC agreed with proposal made by ERLDC accordingly it advised concerned utilities to share nomination to form this committee.	PCC advised concerned utilities to share nominations to form this committee.
10.	Mock testing of SPS	PCC advised SLDCs to share mock testing details for intra state SPS to ERPC/ERLDC.	PCC advised SLDCs to share mock testing details for intra state SPS to ERPC/ERLDC.
143rd PCC Meeting			
11.	Disturbance at 400 k V JSPL S/s on 19th Dec 2024 at 13:27 Hrs	JSPL representative informed that communication is already being made with consultant in order to do system study and it is expected that around 4-5 months will be required for complete study. PCC advised JSPL representative to share islanding scheme details to ERPC/ERLDC. It further advised to share sequence of events, voltage and current data for furnace, motor load etc, drawl by furnace load and auxiliary load in minimum resolution as possible. PCC advised JSPL representative to do system study of JSPL as earliest as possible and submit final report to ERPC/ERLDC.	In 145th PCC Meeting, PCC advised JSPL representative to share islanding scheme details to ERPC/ERLDC.

12.	Tripping of 400KV/220KV 315 MVA ICT 2 AT NEW DUBURI on 21st Dec 2024 at 03:49 Hrs	PCC advised OPTCL representative to share report to ERPC/ERLDC. PCC advised utilities to share practice that are followed by them in case of keeping single or 2 nos of auxiliary relay TTX -2 to ERPC/ERLDC.	In 145th PCC, PCC advised OPTCL representative to share report to ERPC/ERLDC.
141st PCC Meeting			
13..	Repeated disturbance at 220 kV Balimela (OPTCL) S/s and 220 kV Balimela(PH)(OHPC) S/s	PCC advised OHPC representative to test backup impedance protection and share report to ERPC/ERLDC. It also advised OHPC representative to share unit-wise MW, MVAr, voltage and speed data with 1 minimum 1 second resolution to ERPC/ERLDC for further study. PCC further advised OHPC representative to coordinate with OEM for analysing reason behind failure of governor during the event and share observation to ERPC/ERLDC. PCC opined that as PLCC is already available for 2 feeders, so A/r scheme can be implemented by OHPC at earliest after finalising scheme. PCC advised OHPC representative to expedite work for	In 144th PCC Meeting, OHPC representative informed that DR length of Balimela PH had been increased as per ERPC DR standardization guideline. Regarding BCU, he informed that it had been received at site and under implementation stage for which OEM is helping from remote through online mode. Further they are planning to issue work order for deputation of engineer for this purpose if required. He further said that after implementing it, double bus bar scheme will be implemented at Balimela HEP. Bus bar relay had been already procured. It is expected that BCU will be implemented by 3 days if issue is resolved through OEM by online mode only however it will take around one month to

		operating Balimela PH with both bus 1 and bus 2. PCC advised OHPC representative to rectify issue of time synchronisation of DR for identified feeders at Balimela PH at earliest. PCC advised OHPC representative to prepare SOP. Regardingg present status of BCU and bus bar protection, OHPC representative replied that work order had been placed for both procurement of relay and repair of old relays. It is expected that issue will be resolved by 6 weeks. As per observation received from ERLDC, PCC advised OHPC representative to increase DR length of Balimela PH need as per ERPC DR standardization guideline. PCC advised OHPC representative to share timeline for all suggestive actions to ERPC/ERLDC.	resolve issue in case there is need to hire engineer. In 145th PCC Meeting, OHPC representative informed that goose settings for BCU was received online however it had not rectified issue. Therefore, it is planned to depute engineer at site in order to resolve the issue. He further added that further updates will be shared to ERPC, ERLDC and SLDC.
14.	Repeated tripping of 220KV-KHAGARIA-NEW PURNEA-1&2	PCC advised BSPTCL representative to resolve all issues associated with tripping of line along with root cause analysis of	In 145th PCC Meeting, BSPTCL representative informed that report will be

		repeated tripping of line after flood ends and share analysis report to ERPC/ERLDC	shared by 15th May 2025 to ERPC/ERLDC.
139th PCC Meeting			
15.	Total Power failure at 220/132 kV Katapalli (OPTCL) S/s on 29.08.2024 at 06:52 Hrs	OPTCL representative informed that it is planned to test relays by availing shutdown of lines as earliest as possible however at present they are facing difficulty in getting shutdown of lines due to evacuation path issue for heavy generation of Burla PH. PCC advised OPTCL to investigate about reason behind non-operation of protection on 29th Aug 2024 and submit observation to ERPC/ERLDC. PCC advised SLDC Odisha, OPTCL to communicate with Hindalco to explore possibility of setting delay time of 100-150 ms in islanding scheme of Hindalco to avoid islanding in transient faults and submit summary of discussion and decision taken to ERPC/ERLDC. PCC advised SLDC Odisha, OPTCL, OHPC representative to review o/c e/f settings at Lapanga, Burla, Chiplima, Katapalli, Sambalpur for all feeders and submit revised settings to ERPC/ERLDC Subsequently a meeting will be conducted among ERPC, ERLDC, OPTCL, OHPC, SLDC Odisha representative to finalize the settings. PCC advised OPTCL representative to share status of remedial measures taken for protection/ operation issues to ERPC/ERLDC on periodic basis.	In 145th PCC Meeting, SLDC representative informed that meeting had been done subsequently OPTCL and OHPC are advised to share settings to SLDC which is expected to be received by 1st week of April 2025. Further, ERPC and ERLDC can convey meeting after 10th April 2025.

136th PCC Meeting			
16.	Disturbance at 220 kV Tenughat (TVNL) S/s on 29.05.2024 at 12:57 Hrs	PCC advised JUSNL representative to rectify auto-reclose issue at Govindpur end by next week and intimate to ERPC/ERLDC. TVNL representative informed that settings at their end had been implemented by CRITL, JUSNL team and he further assured that O/C E/F settings will be revised at the earliest after consultation with CRITL, JUSNL team. PCC advised CRITL, JUSNL team to test auto-reclose and carrier at both Govindpur as well as Tenughat end.	In 145th PCC Meeting, JUSNL, SLDC Jharkhand and TVNL representatives to coordinate and resolve auto-relcoser issue at Tenughat end and share report to ERPC/ERLDC. It further advised JUSNL representative to share contact details of concerned person(Hazaribagh division) to ERPC so that communication can be shared from ERPC side.
133rd PCC Meeting			
17.	Review of SPS at Sterlite (Vedanta)	SLDC Odisha representative informed that the meeting to discuss the modalities of implementation of proposed SPS scheme will be convened within a week.	In 145th PCC Meeting, Vedanta representative informed that as per communication received from ABB, commissioning work of SPS will be started by second week of May 2025.