



सत्यमेव जयते



भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
पूर्वी क्षेत्रीय विद्युत समिति

Eastern Regional Power Committee

14, गोल्फ क्लब रोड, टॉलीगंज, कोलकाता-700033
14 Golf Club Road, Tollygunj, Kolkata-700033

स./NO. पू.क्षे.वि.स./PROTECTION/2025/273

दिनांक /DATE: 08/05/2025

सेवा में / To,

संलग्न सूची के अनुसार / As per list enclosed.

विषय : दिनांक – 23.04.2025 को आयोजित 146 वीं पीसीसी बैठक का कार्यवृत्त ।

Sub: Minutes of the 146th PCC meeting held on 23.04.2025

महोदय/ Sir,

23.04.2025 को आयोजित 146वीं पीसीसी बैठक का कार्यवृत्त पू.क्षे.वि.स. की वेबसाइट (<http://www.erpc.gov.in/>) पर उपलब्ध है। कृपया देखें।

Please find the minutes of the 146th PCC meeting of ERPC held on 23.04.2025 available at ERPC website (<http://www.erpc.gov.in/>).

यदि कोई अवलोकन हो, तो कृपया इस कार्यालय को यथाशीघ्र भेजा जाए।

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

यह सदस्य सचिव, पू. क्षे. वि. स. के अनुमोदन से जारी किया जाता है।

This issues with approval of Member Secretary, ERPC.

भवदीय / Yours faithfully,

(आई.के.मेहरा / I.K.Mehra)

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

14 गोल्फ क्लब रोड, टॉलीगंज, कोलकाता - 700 033 | 14 Golf Club Road, Tollygunge, Kolkata - 700 033.

Tele: 24239657, 24239651, 24239650. Fax: 24239652, 24239653. www.erpc.gov.in, Email: mserpc-power@nic.in

LIST OF ADDRESSES:

Chief Engineer, Trans (O&M) Bihar State Power Transmission Limited, Vidyut Bhawan, Bailey Road, Patna-800021	Chief Engineer (CRITL) Bihar State Power Transmission Limited, Vidyut Bhawan, Bailey, Road, Patna-800021
Chief Engineer(System Operation), SLDC , BSPTCL, Patna-800021	
Chief Engineer (SLDC) Damodar Valley Corporation, GOMD-I Premises, P.O.- DaneshSeikh Lane, Howrah- 711109	Chief Engineer (CTC) Damodar Valley Corporation, P.O. Maithon Dam, Dist. Dhanbad,Jharkhand-828207
Chief Engineer, (CRITL) Jharkhand Urja Sancharan Nigam Limited Kusai Colony, Doranda, Ranchi-834002	Chief Engineer (CLD) Jharkhand UrjaSancharan Nigam Limited, Kusai Colony,Doranda, Ranchi-834002
Chief General Manager (O&M), OPTCL, Janpath, Bhubaneswar, Odisha – 751 022. FAX: 0674-2542932 cgm.onm@optcl.co.in	Sr. General Manager (PPA), Technical Wing, OHPCL, Orissa State Police Housing & Welfare Corpn. Bldg. VaniviharChowk, Janpath, Bhubaneswar-752022
Chief Load Dispatcher, SLDC OPTCL, P.O. Mancheswar Rly. Colony Bhubaneswar-751017	Chief Engineer (Testing), WBSETCL Central Testing Laboratory, Abhikshan, Salt Lake, Kolkata-700091 (Fax no. 2367-3578/1235)
Chief Engineer (CLD) WBSETCL, P.O.Danesh Sheikh Lane, AndulRoad, Howrah-711109	Addl. Chief Engineer (ALDC) West Bengal Electricity Distribution Company Ltd VidyutBhavan, 7 th Floor, Bidhannagar, Sector-I Salt Lake City, Kolkata-700091(Fax-033-2334-5862)
Dy. Chief Engineer (Testing)/ Sr. Manager (Testing) CESC Ltd.,4, SasiSekhar Bose Road, Kolkata-700025	General Manager (O&M) KhSTPS, NTPC Ltd., P.O. Deepti Nagar, Dist. Bhagalpur, Bihar-813203
General Manager(O&M) FSTPS, NTPC Ltd., P.O. Nabarun, Dist. Murshidabad, West Bengal-742236	Dy. General Manager (Engineering), WBPDC, OS Dept. Corporate Office, 3/C, L.A Block, Salt Lake-III, Kolkata-700098 (Fax-033-23350516)
General Manager (O&M) Barh STPS, NTPC Ltd., P.O. NTPC Barh, Dist. Patna, Bihar-803213	General Manager (OS), ERHQ-II, NTPC Ltd., 3 rd flr. OLIC Building, Plot no. N 17/2, Nayapalli, Unit-8 Bhubaneswar- 751012 (Fax No. 0674-2540919)
General Manager(O&M), TSTPS, NTPC Ltd., P.O.Kaniha, Dist. Angul, Orissa-759117	General Manager (AM), POWERGRID, Odisha Projects, Sahid Nagar, Bhubaneswar – 751 007
General Manager (OS), ERHQ-I, NTPC Ltd., LoknayakJaiprakashBhawan, (2 nd Floor), DakBunglowChawk, Patna-800001	Manager (Electrical), Adhunik Power & Natural Resources Ltd. “Lansdowne Towers, Kolkata-700020 (Fax No. 033-2289 0285)
Executive Director (O&M) NHPC Ltd., NHPC Office Complex, Sector-33, Faridabad, Haryana-121003 (Fax-01292272413)	Electrical Superintending Engineer, TTPS, TenughatVidyut Nigam Ltd.,Lalpania, Dist. Bokaro, Jharkhand-829149
Dy. General Manager (Electrical) IB Thermal Power Station, OPGCL Banhapalli, Dist. Jharsuguda-768234, Orissa	General Manager (AM), ER-I Power Grid Corporation of India Ltd., Alankar Place, Boring Road, Patna-800001
Chief Engineer (Trans.) Power Deptt., Govt. of Sikkim, Gangtok-731010	Sr. Manager (CTMC) Durgapur Projects Limited,Durgapur-713201
Executive Director, ERLDC, POSOCO, Tollygunge, Kolkata-700033	Head –Regulatory and contracts, IndiGrid Limited , 247 Embassy, Office No 107, ‘B’ Wing, Hindustan Co. Bus Stop, Gandhi Nagar, L.B.S. Road, Vikhroli West, Mumbai – 400 079. Ph : +91 845509 96408
General Manager (AM), ER-II Power Grid Corporation of India Ltd., J-I-15, Block-EP, Sector-V,Salt Lake,Kolkata-91	The Plant Head, Maithon Power Limited, Maithon Office, MA 5 Gogna, Dist. Dhanbad, Jhankand State, PIN-828207
General Manager (P&O), PTC Ltd., Kanchanjunga Bldg.,18, Barakhamba Road,	

New Delhi-110001	
Managing Director, Bhutan Power Corporation Post Box no. 580, Thimpu, Bhutan.	Managing Director, Druk Green Power Corprn. P.O. Box-1351, Thimpu, Bhutan.
Associate Director (Commercial and Regulatory) Darbhanga-Motihari Transmission Company Limited (DMTCL),503,Windsor, Off CST Road, Kalina, Santacruz(E), Mumbai-400098	The Plant Head, JITPL. (FAX:011-26139256-65)
General Manager, Sikkim Urja Limited, New Delhi (FAX:011-46529744)	President , TPTEL, Bhikaji Cama Place, New Delhi , 110066
Director (NPC), CEA, NRPC Building, KatwariaSarai, New Delhi- 110016	President, Dans Energy Pvt. Ltd, 5th Floor, DLF Building No. 8, Tower-C, Gurgaon - 722002
Director, Shiga Energy Pw. Ltd., 5th Floor, DLF Building No. 8, Tower-C, Gurgaon - 722002	DGM (E&I), HALDIA ENERGY LIMITED, BARIK BHAWAN, KOKATA-700072, FAX: 033-22360955
The Plant Head, Dikchu HEP, Sikkim	

मुख्य अभियंता, ट्रांस (ओ एंड एम), बिहार स्टेट पावर ट्रांसमिशन लिमिटेड, विद्युत भवन, बेली रोड, पटना-800021	मुख्य अभियंता (सीआरआईटीएल), बिहार स्टेट पावर ट्रांसमिशन लिमिटेड, विद्युत भवन, बेली, रोड, पटना-800021
मुख्य अभियंता (सिस्टम ऑपरेशन), एसएलडीसी, बीएसपीटीसीएल, पटना-800021	
मुख्य अभियंता (एसएलडीसी), दामोदर वैली कॉर्पोरेशन, जीओएमडी-1 परिसर, पी.ओ.- दानेशशेख लेन, हावड़ा- 711109	मुख्य अभियंता (सीटीसी), दामोदर घाटी निगम, पी.ओ. मैथन बांध, जिला। धनबाद, झारखण्ड-828207
मुख्य अभियंता (सीआरआईटीएल), झारखण्ड ऊर्जा संचरण निगम लिमिटेड कुसाई कॉलोनी, डोरंडा, रांची-834002	मुख्य अभियंता (सीएलडी), झारखंड ऊर्जा संचरण निगम लिमिटेड, कुसाई कॉलोनी, डोरंडा, रांची-834002
मुख्य महाप्रबंधक (ओ एंड एम), ओपीटीसीएल, जनपथ, भुवनेश्वर, ओडिशा – 751 022. फैक्स: 0674-2542932 cgm.onm@optcl.co.in	वरिष्ठ महाप्रबंधक (पीपीए), तकनीकी विंग, ओएचपीसीएल, उड़ीसा राज्य पुलिस आवास एवं कल्याण निगम बिल्डिंग वाणीविहार चौक, जनपथ, भुवनेश्वर-752022
मुख्य लोड डिस्पैचर, एसएलडीसी ओपीटीसीएल, पी.ओ. मंचेश्वर रेलवे कॉलोनी भुवनेश्वर-751017	मुख्य अभियंता (परीक्षण), डब्ल्यूबीएसईटीसीएल केंद्रीय परीक्षण प्रयोगशाला, अभिक्षण, साल्ट लेक, कोलकाता-700091 (फैक्स नंबर 2367-3578/1235)
मुख्य अभियंता (सीएलडी), डब्ल्यूबीएसईटीसीएल, पी.ओ. दानेश शेख लेन, अंदुलरोड, हावड़ा-711109	अतिरिक्त मुख्य अभियंता (एएलडीसी), पश्चिम बंगाल विद्युत वितरण कंपनी लिमिटेड विद्युत भवन, 7वीं मंजिल, बिधाननगर, सेक्टर-1 साल्ट लेक सिटी, कोलकाता-700091 (फैक्स-033-2334-5862)
उप मुख्य अभियंता (परीक्षण)/वरिष्ठ प्रबंधक (परीक्षण) सीईएससी लिमिटेड, 4, शशि शेखर बोस रोड, कोलकाता-700025	महाप्रबंधक (ओ एंड एम), खएसटीपीएस, एनटीपीसी लिमिटेड, पी.ओ. दीप्ति नगर, जिला भागलपुर, बिहार-813203
महाप्रबंधक (ओ एंड एम) एफएसटीपीएस, एनटीपीसी लिमिटेड, पी.ओ. नबारून, जिला- मुर्शिदाबाद, पश्चिम बंगाल-742236	उप. महाप्रबंधक (इंजीनियरिंग), डब्ल्यूबीपीडीसीएल, ओएस विभाग कॉर्पोरेट कार्यालय, 3/सी, एलए ब्लॉक, साल्ट लेक-III, कोलकाता-700098 (फैक्स-033-23350516)
महाप्रबंधक (ओ एंड एम), बाढ़ एसटीपीएस, एनटीपीसी लिमिटेड, पी.ओ. एनटीपीसी बाढ़, जिला- पटना, बिहार-803213	महाप्रबंधक (ओएस), ईआरएचक्यू-II, एनटीपीसी लिमिटेड, 3 rd Floor, ओएलआईसी बिल्डिंग, प्लॉट नं. एन 17/2, नयापल्ली, यूनिट-8 भुवनेश्वर- 751012 (फैक्स नंबर 0674-2540919)
महाप्रबंधक (ओ एंड एम), टीएसटीपीएस, एनटीपीसी लिमिटेड, पी.ओ.कनिहा, जिला- अंगुल, उड़ीसा- 759117	महाप्रबंधक (एएम), पावरग्रिड, ओडिशा प्रोजेक्ट्स, साहिद नगर, भुवनेश्वर - 751 007
महाप्रबंधक (ओएस), ईआरएचक्यू-I, एनटीपीसी लिमिटेड, लोकनायक जयप्रकाश भवन, (दूसरी मंजिल), डाकबंगलाचौक, पटना-800001	प्रबंधक (इलेक्ट्रिकल), आधुनिक पावर एंड नेचुरल रिसोर्सेज लिमिटेड, लैंसडाउन टावर्स, कोलकाता-700020 (फैक्स नंबर 033-2289 0285)

कार्यकारी निदेशक (ओ एंड एम), एनएचपीसी लिमिटेड, एनएचपीसी कार्यालय परिसर, सेक्टर-33, फरीदाबाद, हरियाणा-121003 (फैक्स- 01292272413)	विद्युत अधीक्षण अभियंता, टीटीपीएस, तेनुघाट विद्युत निगम लिमिटेड, ललपनिया, जिला। बोकारो, झारखण्ड-829149
उप महाप्रबंधक (विद्युत), आईबी थर्मल पावर स्टेशन, ओपीजीसीएल बनहापल्ली, जिला। झारसुगुड़ा-768234, उड़ीसा	महाप्रबंधक (एएम), ईआर-I पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड, अलंकार प्लेस, बोरिंग रोड, पटना- 800001
मुख्य अभियंता (ट्रांस.), विद्युत विभाग, सरकार। सिक्किम, गंगटोक-731010	वरिष्ठ प्रबंधक (सीटीएमसी), दुर्गापुर प्रोजेक्ट्स लिमिटेड, दुर्गापुर-713201
कार्यकारी निदेशक, ईआरएलडीसी, पोसोको, टॉलीगंज, कोलकाता-700033	प्रमुख-नियामक और अनुबंध, इंडीग्रिड लिमिटेड, 247 दूतावास, कार्यालय संख्या 107, 'बी' विंग, हिंदुस्तान कंपनी बस स्टॉप, गांधी नगर, एल.बी.एस. रोड, विक्रोली, पश्चिम, मुंबई - 400 079 फोन: +91 845509 96408
महाप्रबंधक (एएम), ईआर-II इंडिया लिमिटेड का पावर ग्रिड कॉर्पोरेशन।, जे-आई-15, ब्लॉक-ईपी, सेक्टर-वी, साल्ट लेक, कोलकाता- 91	प्लांट हेड, मैथन पावर लिमिटेड, मैथन कार्यालय, एमए 5 गोगना, जिला। धनबाद, झारखंड राज्य, पिन-828207
महाप्रबंधक (पी एंड ओ), पीटीसी लिमिटेड, कंचनजंगा बिल्डिंग, 18, बाराखंभा रोड, नई दिल्ली-110001	
प्रबंध निदेशक, भूटान पावर कॉर्पोरेशन पोस्ट बॉक्स नं. 580, थिम्पू, भूटान।	प्रबंध निदेशक, ड्रक ग्रीन पावर कॉर्पोरेशन। पी.ओ. बॉक्स-1351, थिम्पू, भूटान।
सह निदेशक (वाणिज्यिक एवं नियामक), दरभंगा- मोतिहारी ट्रांसमिशन कंपनी लिमिटेड (डीएमटीसीएल), 503, विंडसर, ऑफ सीएसटी रोड, कलिना, सांताक्रूज़ (पूर्व), मुंबई- 400098	प्लांट हेड, जेआईटीपीएल। (फैक्स:011-26139256-65)
महाप्रबंधक, सिक्किम ऊर्जा लिमिटेड, नई दिल्ली (फैक्स:011-46529744)	अध्यक्ष, टीपीटीएल, भीकाजी कामा प्लेस, नई दिल्ली- 110066
निदेशक (एनपीसी), सीईए, एनआरपीसी बिल्डिंग, कटवारियासराय, नई दिल्ली- 110016	अध्यक्ष, डान्स एनर्जी प्रा. लिमिटेड, 5वीं मंजिल, डीएलएफ बिल्डिंग नंबर 8, टावर-सी, गुडगांव - 722002
निदेशक, शिगा एनर्जी पी.डब्ल्यू. लिमिटेड, 5वीं मंजिल, डीएलएफ बिल्डिंग नंबर 8, टावर-सी, गुडगांव - 722002	डीजीएम (ई एंड आई), हल्दिया एनर्जी लिमिटेड, बारीक भवन, कोकाता-700072, फैक्स: 033-22360955
प्लांट हेड, डिक्चु एचईपी, सिक्किम ।	



Minutes
of
146th PCC Meeting

Date:08.05.2025
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

MINUTES OF 146TH PROTECTION COORDINATION SUB-COMMITTEE MEETING HELD ON 23RD APRIL 2025 AT 10:30 HRS THROUGH MS TEAMS

*Member Secretary, ERPC chaired the meeting. List of participants is attached at **Annexure A.1**. ERLDC representative explained important grid disturbances occurred in April 2025 with help of presentation which is attached at **Annexure A.2**.*

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.

Deliberation in the meeting

In line with observations received from ERLDC some alterations are hereby incorporated in the Minutes of 145th PCC Meeting as detailed hereunder:

Item No. B.2 - Disturbance at 220 k V Indrawati S/s on 15th Feb 2025 at 16:49 Hrs,

Earlier – “OHPC representative replied that as per instruction received from ERLDC in 2007, operating single bus was suggested for reliability therefore single bus scheme was kept since 2007.”

Revised - “OHPC representative replied that as per instruction received from ERLDC in 2007, operating single bus was suggested for reliability therefore single bus scheme was kept since 2007 for which ERLDC representative replied that such instruction was not issued from ERLDC”.

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.

Deliberation in the meeting

PG representative was not present in the meeting.

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	WBPDC/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.

Deliberation in the meeting

- **Tripping of 400KV/220KV 315 MVA ICT 1 AT LATEHAR(JUSNL) on 7th March 2025 at 11:40 Hrs and on 30th March 2025 at 03:17 Hrs**

JUSNL representative informed that ICT had tripped on REF protection for the event on 7th March 2025 and 30th March 2025 for which detailed testing of ICT was done including stability testing however no abnormalities was found.

PG representative said that official from PG New Ranchi S/s had visited site for testing for ICT however no report had been received till date. He further added that as informed by concerned official, no abnormalities were observed during the testing.

PCC advised JUSNL representative to share detailed report of the event to ERPC/ERLDC.

- **Tripping of 400KV/220KV 315 MVA ICT 1 AT BAKRESWAR on 28th March 2025 at 12:57 Hrs**

WBPDC representative informed that on 28th March 2025 at 12:57 Hrs, 400 k V Bakreshwar – Jeerat line got tripped due to single phase to ground fault during which auto-recloser had also operated. Meanwhile 400kV/220kV 315 MVA ICT 1 also got tripped in R phase differential protection for this external fault. He further said that R phase CT had already crossed useful life of 15 years therefore in order to test healthiness of CT, current injection kit had been taken from another site and communication is already

given to WB SLDC for allowing shutdown in order to carry out detailed testing of CT for identifying reason behind operation of ICT differential protection for external fault. PCC advised WBPDC representative to share report to ERPC/ERLDC after conducting testing of CT.

- **Tripping of 400KV/220KV 250 MVA ICT 2 AT TENUGHAT on 13th March 2025 at 07:12 Hrs**

TVNL representative informed that 400kv/220kv 250 MVA ICT 2 at Tenughat had tripped on 13th March 2025 at 07:12 Hrs in differential protection. He further said that relevant testing (Megger test etc) was done after the disturbance however no issues was found. Further ICT was charged on the same day. PCC advised TVNL representative to share report to ERPC/ERLDC.

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.

Deliberation in the meeting

- **Tripping of 400 k V Main Bus 1 at FSTPP on 21st March 2025 at 04:50 Hrs**

NTPC representative informed that on 21st March 2025, during initiation of R phase breaker opening command for 400kV Farakka - Kahalgaon 1 while taking its shutdown, PIR chamber of R phase CB got failed resulting in flashover. Since it is under bus bar protection zone therefore bus bar protection operated for 400 k V Main Bus.

PCC advised NTPC representative to share report of event to ERPC/ERLDC.

Member Secretary, ERPC opined that as FSTPP is quite old substation therefore all old parts must be replaced at earliest. On enquiry about status of replacing old equipment, NTPC representative replied that contract for replacing breaker had been already awarded. Further, material had been received already at site so replacement work will be completed at earliest.

- **Tripping of 400 k V Main Bus 1 at Meeramundali on 10th March 2025 at 17:17 Hrs**

OPTCL representative informed that on 10th March 2025, there was no tripping related to any of 400 k V feeders at Meeramundali S/s however main breaker at Meeramundali was in off condition status. Since one and half bus scheme is present at Meeramundali S/s therefore LBB protection got initiated resulting in operation of bus bar protection.

PCC advised OPTCL representative to share report of event to ERPC/ERLDC.

- **Tripping of 400 k V Main Bus 2 at Jakkanpur on 6th March 2025 at 11:49 Hrs**

BGCL representative was not present in the meeting.

PCC advised ERPC representative to share communication to BGCL in order to get detailed report for tripping of 400 k V Main Bus 2 at Jakkanpur on 6th March 2025 at 11:49 Hrs.

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.

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/ WBPDC	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	Yes			

		(21.12.2024)				
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 (13.12.2024)				
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 (02.01.2024)	Yes (01/02/2025)	Yes (01/03/2025)	Yes (02.04.2025)
28	Tashiding Hep	YES	YES (02.01.2024)	Yes (01/02/2025)	Yes (02/03/2025)	Yes (01.04.2025)

		(09.12.2024)	4)			
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 (01.04.2025)

Members may discuss.

Deliberation in the meeting

ERPC representative informed that protection performance indices for March 2025 has been received from PG ER-II, PG Odisha, WBSETCL, BSPTCL, NTPC Barh, NTPC Darlipalli, DMTCL, Jorethang HEP, Tashiding HEP and TVNL.

OPTCL representative submitted that protection performance indices were sent to ERPC/ERLDC on 15th April 2025.

On enquiry from PCC, DVC representative submitted that details will be shared by 1-2 day.

On enquiry from PCC, JUSNL representative submitted that protection performance indices were shared to ERPC/ERLDC on 23rd April 2025.

*Protection performance indices for March 2025 received from utilities is attached at **Annexure B.4**.*

PCC advised NTPC Barh representative to communicate to concerned NTPC plants from where indices are not being shared to ERPC/ERLDC to share protection performance indices from next month.

PCC advised CESC, DVC and concerned IPPs representatives to share PP indices to ERPC/ERLDC. It further advised all utilities to share indices data of particular month by 10th day of subsequent month to ERPC/ERLDC.

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.

Deliberation in the meeting

ERPC representative informed that nomination had been received from BSPTCL, Powergrid ER-II and ERLDC. It advised concerned utilities to provide nominations of nodal officer to ERPC by one week for forming Protection system analysis group of eastern region.

OPTCL representative said that communication is already forwarded to management and details will be communication to ERPC after nomination is received from management.

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.

Members may discuss.

Deliberation in the meeting

*Explanation from constituents of either end for single line tripping incidences in month of March 2025 is attached at **Annexure B.6**.*

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.

Deliberation in the meeting

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

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.

Deliberation in the meeting

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

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.

Deliberation in the meeting

PCC advised concerned utilities to share internal protection audit plan for FY 2025-26 to ERPC at earliest.

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.

Deliberation in the meeting

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

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

The decisions of previous PCC meetings are attached.

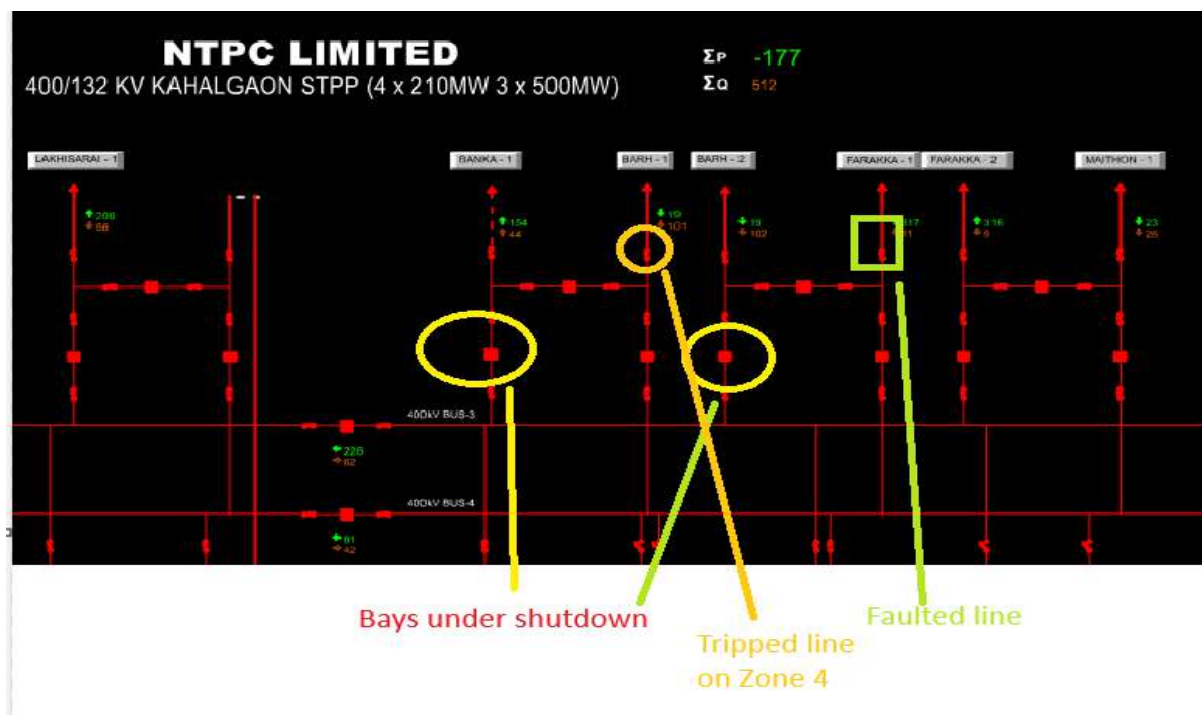
Members may update.

Deliberation in the meeting

*Updated status of decisions of previous PCC meetings is attached at **Annexure C.5.***

Additional Agenda Items

Agenda 1: Tripping of multiple lines at 400 KV kahalgaon s/w due to wrong settings on 18/04/2025



- Prior to event 400 KV main bay of Barh-2 and Banka-1 were under outage.
- At 11:13 hrs of 18/04/2025, 400 KV Farakka Kahalgaon ckt 1 tripped due to jumper snapping at Kahalgaon switchyard due to which 400 KV Barh-2 also tripped as it was charged through TBC of Farakka line.
- Same fault was sensed by 400 KV Kahalgaon- Barh 1 in reverse zone(Z-4) and tripped within 100 msec and Banka-1 also tripped as it was charged via Tie bay of Barh-1.

Discrepancy: Zone 4 delay should be 500 msec as per ERPC protection philosophy. However it was kept instantaneous. If the delay was kept 500 msec, both Barh 1 and Banka 1 wouldn't have tripped.

During past many events it has been observed that many unwanted protection operations are resulting to large /severe events, hence to avoid such instances All generating stations, Transmission licensees are requested to go through a comprehensive protection setting review /Audit.

To achieve the same, like Overcurrent exercise, all utilities are requested to share their Distance protection settings in google sheet and also share the PDF extracted from Relay for further review by ERLDC/ERPC.

Deliberation in the meeting

ERLDC representative explained that on 18th April 2025, 400 kV main bay of Barh-2 and Banka-1 were under outage prior to the event. At 11:13 Hrs, 400 kV Farakka - Kahalgaon 1 tripped due to jumper snapping at Kahalgaon switchyard. Since 400 kV Kahalgaon- Barh-2 was charged through tie bay of 400 k V Farakka – Kahalgaon- 1hence this line also got tripped. Further relay at Kahalgaon end for 400 kV Kahalgaon- Barh-1sensed the fault in zone 4 however it got tripped

within 100 millisecond and 400 kV Kahalgaon-Banka -1 also got tripped as it was charged through tie bay of 400 kV Kahalgaon-Banka -1.

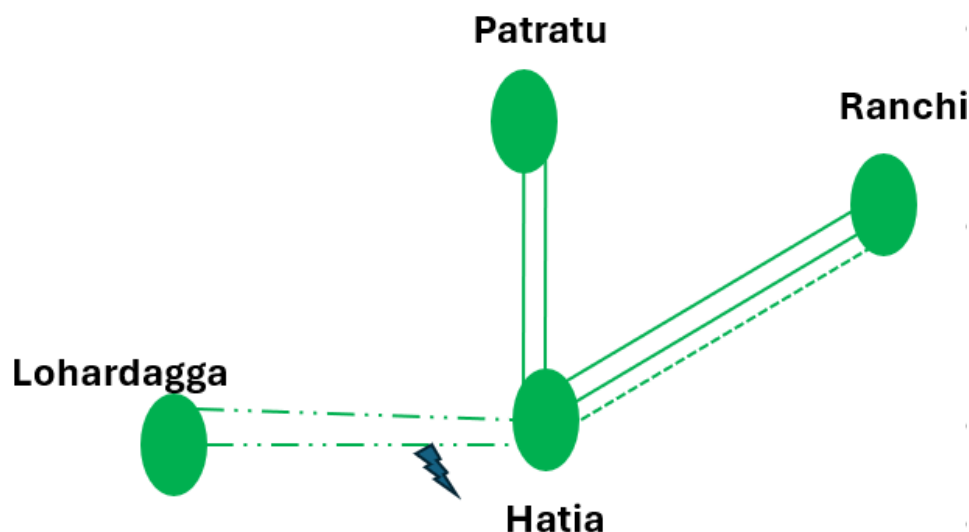
He further said that zone 4 delay should be kept as 500 msecond as per ERPC Protection philosophy due to which tripping of Barh – 1 and Banka -1 could be avoided.

Member Secretary, ERPC enquired that if distance protection settings are already available in PDMS then ERLDC must have conveyed NTPC earlier to revise the settings as per ERPC Protection Philosophy for which ERLDC representative submitted that correct zone 4 setting is being shown at PDMS however at site different settings had implemented therefore it is requested to important generators to share pdf file of settings extracted from relay itself to ERPC/ERLDC for further review.

Member Secretary, ERPC advised ERPC representative to send communication to higher authority of NTPC highlighting tripping incident at NTPC Kahalgaon due to improper relay settings.

Agenda 2: Disturbance at Capital City of Ranchi on 15th April 2025

Prior to incident, 220 kV Ranchi-Hatia-1 was under planned SD. At 18:36 Hrs due to Fault in 220 KV Hatia-Lohardagga line 2 (which was idle charge from Hatia end, including ckt 1), **220 kV Ranchi-Hatia 2 &3** and **220 kV Hatia- Patratu New D/C** also tripped. As a result, total power failure was observed at 220 kV Hatia.



Issues:

- Fault in Zone-1 of idle charged Lohardagga line but as CT polarity was reverse it sensed the forward fault of line in Zone -4.
- As Zone-4 time is 500 mses so fault persisted till 500 msec and all lines from remote end also tripped in Zone-2 time resulting to Load loss.
- **How CT Polarity reversal was not checked/ missed.**
- **Busbar protection is also unhealthy at Hatia.**

Members may discuss /JUSNL may Update

Deliberation in the meeting

ERLDC representative informed that on 15th April 2025, 220 kV Ranchi-Hatia-1 was under planned shutdown. Further, 220 kV Hatia-Lohardagga line 1 and 2 were idle charged from Hatia

end. At 18:36 Hrs, fault was developed in 220 kV Hatia-Lohardaga line 2 subsequently 220 kV Hatia-Lohardaga 1 and 2, 220 kV Ranchi-Hatia 2 & 3 and 220 kV Hatia- Patratu New D/C tripped which led to total power failure at Hatia S/s.

He further added that fault was in zone 1 of idle charged Lohardagga line but as CT polarity was reversed it sensed the forward fault of line in Zone -4. Since Zone-4 time is 500 mses so fault persisted till 500 msec and all lines from remote end tripped in Zone-2 time resulting to Load loss.

Further, Busbar protection is also unhealthy at Hatia end else only one bus had tripped and remaining feeders can be saved from tripping.

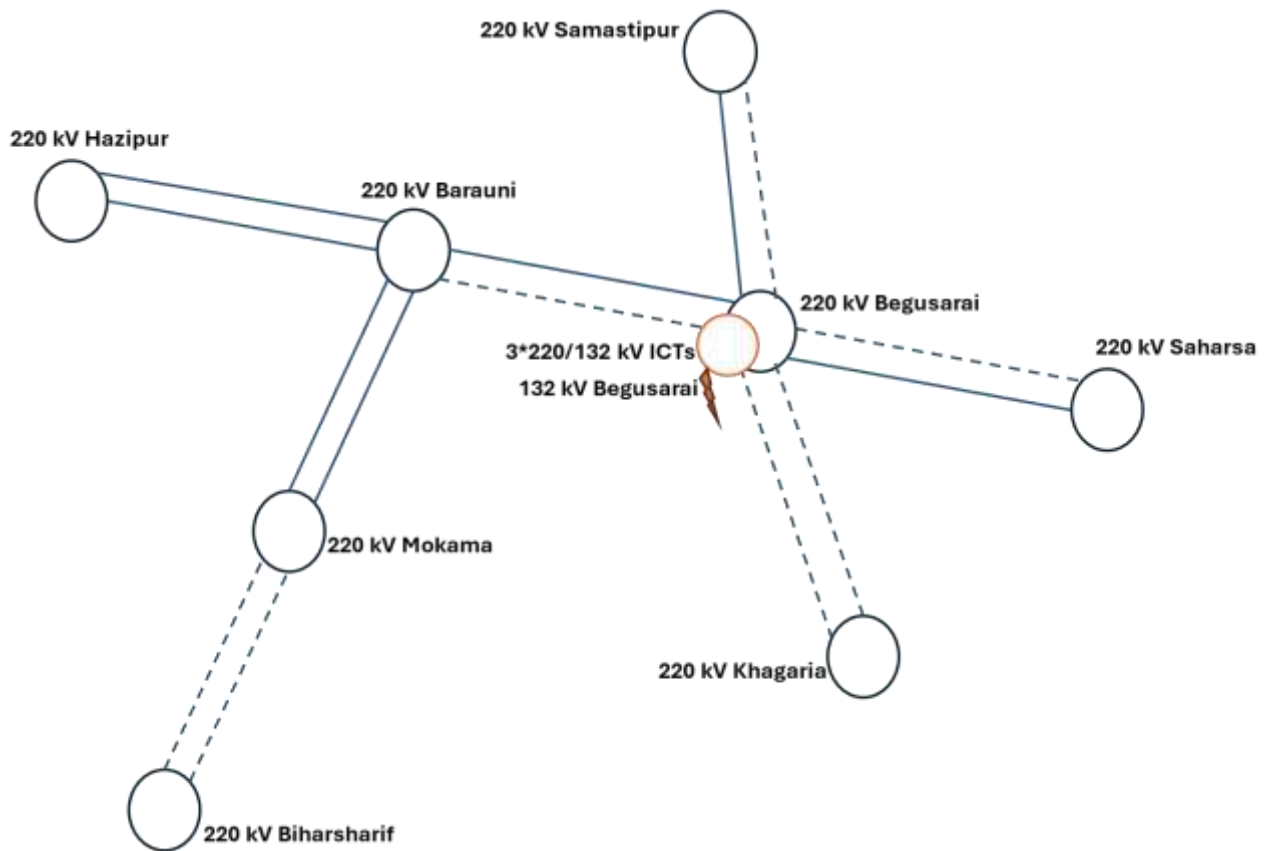
JUSNL representative informed that bus bar protection is available however due to non-availability of isolator status in particular bay it got blocked during the incident. On investigation issues was found with auxiliary contacts of isolator.

Member Secretary, ERPC advised JUSNL representative to monitor healthiness of protection equipment on periodic basis at all concerned substations so that such type of incidents can be avoided.

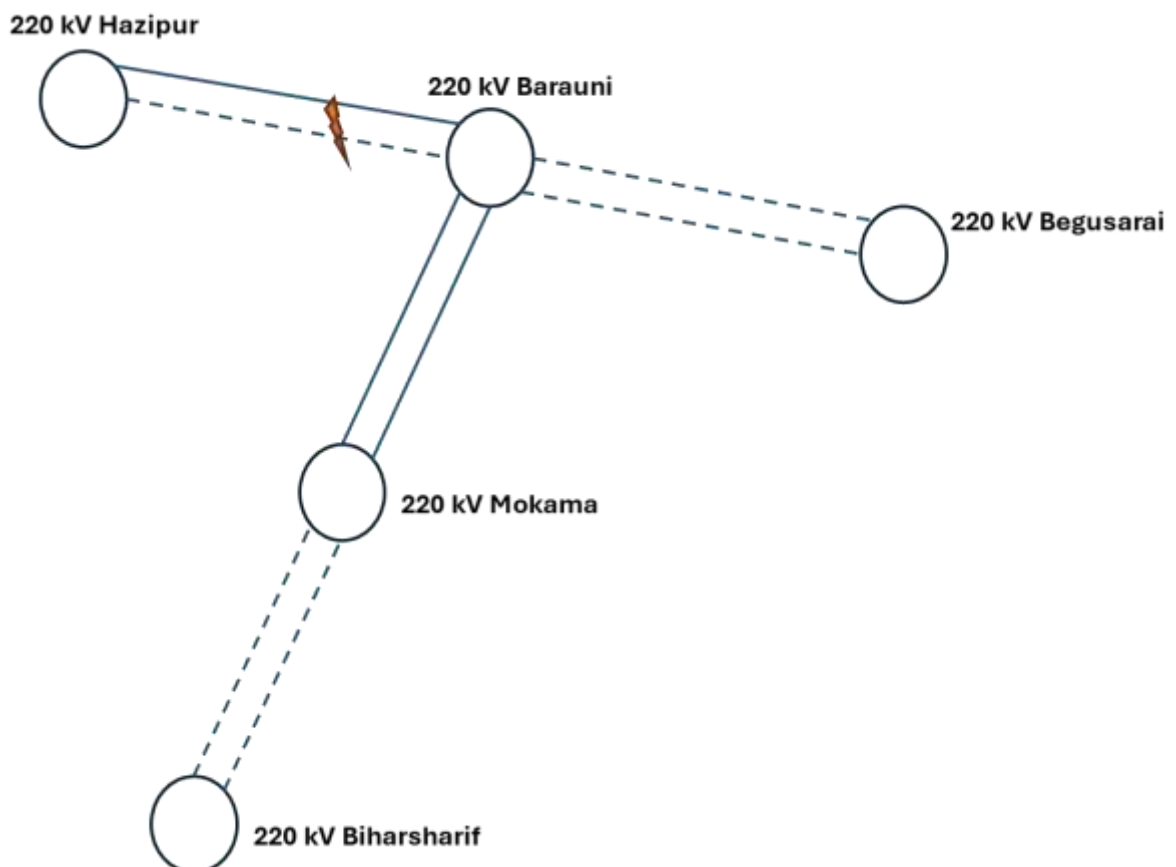
He further advised ERPC representative to share communication to concerned official of JUSNL regarding periodic monitoring of healthiness of protection equipment.

Agenda 3: Disturbance at Begusarai at 10:00 Hrs and at Barauni at 12:43 Hrs on 20.04.2025

At 10:00 Hrs, Y_ph Bus PT of 132 kV Bus at Begusarai burst, 2*220/132 kV ICTs at Begusarai tripped immediately, however Y_ph pole of another remaining 220/132 kV ICT remained stuck. Due to non-availability of bus bar protection at Begusarai S/s (both 220 and 132 kV), bus bar protection and LBB didn't operate. Fault was ultimately cleared in Zone-3 from remote ends. Prior to the disturbance, 220 kV Begusarai-Barauni-2 was under shutdown. This line has CT on the line side, when PT burst, 220 kV Barauni-Begusarai-1 was feeding around 3 kA. Induced current of around 400 A was observed in Ckt-2 which was under shutdown and its distance protection operated (Zone-1). As breaker was already open, LBB operated and 220 KV Bus-1 at Barauni tripped. One unit at Barauni and 220 kV Barauni-Hazipur-2 and 220 kV Barauni-Mokma-2 tripped.



At 12:43 Hrs, 220 kV Barauni-Hazipur-1 tripped due to phase-to-phase fault leading to island formation with one unit of Barauni and radial load of Mokama, which didn't survive.



Protection issues:

- Bus bar protection is not available at Begusarai. Both disturbances could have been avoided if bus bar protection was available.

- At Barauni, CT is on the line side. For such scheme, local CT earthing should be done, which was discussed in 104th PCC meeting.

Operational issues:

- 220 kV Biharsharif-Mokama D/c is kept open to control loading of 220 kV Barauni-Begusarai D/c which is already reconducted with HTLS.
- First event occurred at 10:00 Hrs but lines from Barauni were not charged for more than two and half hours. At 12:43 Hrs, another disturbance occurred.
- 2nd event could have been avoided if:
 - 220 kV Biharsharif-Mokama D/c was not closed.
 - 220 kV Barauni-Begusarai-1 or 220 kV Barauni-Hazipur-2 was charged in time.

Closing of 220 kV Biharsharif-Mokama D/c was already discussed in 115th PCC Meeting.

Deliberation in the meeting

*ERLDC representative informed that on 20th April 2025 at 10:00 Hrs, Y phase Bus PT of 132 kV Bus at Begusarai got burst which further evolved to 3 phase fault. Further, 2*220/132 kV ICTs at Begusarai got tripped immediately, however Y phase pole of another remaining 220/132 kV ICT got remained stuck. Due to non-availability of 220 and 132 kV bus bar protection at Begusarai S/s bus bar protection and LBB didn't operate and fault was ultimately cleared in Zone-3 from remote ends.*

He informed that, 220 kV Begusarai-Barauni-2 was under shutdown prior to the disturbance. During the disturbance 220 kV Barauni-Begusarai-1 was feeding around 3 kA therefore Induced current of around 400 A was observed in 220 kV Begusarai-Barauni-2 as it has CT on the line side subsequently distance protection operated in zone 1 for this line. Since breaker was already open, LBB got operated and 220 kV Bus-1 at Barauni got tripped which led to tripping of One unit at Barauni, 220 kV Barauni-Hazipur-2 and 220 kV Barauni-Mokma-2.

He further said that at 12:43 Hr on the same day, 220 kV Barauni-Hazipur-1 had tripped due to phase-to-phase fault leading to island formation with one unit of Barauni and radial load of Mokama, which didn't survive.

Following operational issues are observed related to this disturbance –

- 220 kV Biharsharif-Mokama D/c was kept open to control loading of 220 kV Barauni-Begusarai D/c which is already reconducted with HTLS (as deliberated in 115th PCC Meeting)
- First event occurred at 10:00 Hrs however lines from Barauni were not charged for more than two and half hours.

Therefore event at 12:43 Hrs could have been avoided if 220 kV Biharsharif-Mokama D/c was kept closed and 220 kV Barauni-Begusarai-1 or 220 kV Barauni-Hazipur-2 was charged in time.

MS, ERPC opined that event had occurred very recently so he advised ERLDC representative to place this agenda in next meeting along with detailed report received from concerned utility for fruitful discussion.

He further advised ERPC/ERLDC representative to share communication to BSPTCL for following operational practices as per deliberations in earlier PCC/OCC meetings.

List of participants in 146th PCC Meeting held on 23rd April 2025

Annexure A.1

Name	First Join	Email				
ERPC Kolkata	4/23/25, 10:13:28 AM	ERPC@KolkataMST.onmicrosoft.com				
SAMISH TTPS (Unverified)	4/23/25, 10:16:03 AM					
PARAG CHATTERJEE (External)	4/23/25, 10:17:36 AM	PARAGCHATTERJEE@NTPC.CO.IN				
WBPDC (Unverified)	4/23/25, 10:17:57 AM					
NIRMAL MONDAL, WBSETCL (Unverified)	4/23/25, 10:18:27 AM					
Gitesh (Unverified)	4/23/25, 10:19:15 AM					
MERAMUNDALI OPTCL (Unverified)	4/23/25, 10:19:43 AM					
Kumar Satyam, AEE, ERPC (Unverified)	4/23/25, 10:20:03 AM					
Gitesh Patel (External)	4/23/25, 10:20:24 AM	giteshpatel@erldc.onmicrosoft.com				
SMS Sahoo, DGM(Elect), OPTCL (Unverified)	4/23/25, 10:22:41 AM					
Pandi Krishnan N {पाण्डी कृष्णन एन.} (External)	4/23/25, 10:23:33 AM	pandikrishnan.n@powergrid.in				
M MISHRA NHPC (Unverified)	4/23/25, 10:25:27 AM					
AKHAND (Unverified)	4/23/25, 10:27:48 AM					
SLDC,ODISHA (Unverified)	4/23/25, 10:28:46 AM					
Pritam Mukherjee (External)	4/23/25, 10:29:50 AM	pritam@erldc.onmicrosoft.com				
Manas Das (External)	4/23/25, 10:29:57 AM	manasdas@erldc.onmicrosoft.com				
Laldhari Kumar (External)	4/23/25, 10:30:02 AM	laldhari@erldc.onmicrosoft.com				
Arindam Bsptcl (Unverified)	4/23/25, 10:30:36 AM					
Pranav Rathore (External)	4/23/25, 10:31:06 AM	pranav.rathore@indigrid.com				
Nishant Kumar Shankwar	4/23/25, 10:31:08 AM	Nishant.Kumar@energy-sel.com				
Shiv Shambhu kr Suman (External)	4/23/25, 10:31:31 AM	sskumar@erldc.onmicrosoft.com				
Rahul Anand (External)	4/23/25, 10:31:31 AM	RAHULANAND@NTPC.CO.IN				
Akash Kumar Modi (External)	4/23/25, 10:31:42 AM	akmodi@erldc.onmicrosoft.com				
Alok Pratap Singh (External)	4/23/25, 10:31:42 AM	apsingh@erldc.onmicrosoft.com				
Eee CRITL (Unverified)	4/23/25, 10:31:53 AM					
KIRAN SAI (External)	4/23/25, 10:33:10 AM	KIRANSAIMS@NTPC.CO.IN				
Dharm Das Murmu (Unverified)	4/23/25, 10:33:48 AM					
TVNL (Unverified)	4/23/25, 10:33:53 AM					
Premkant Kumar Singh (External)	4/23/25, 10:34:02 AM	premkant@erldc.onmicrosoft.com				
Rajiv Singh (External)	4/23/25, 10:34:31 AM	rajiv.singh1@rpsg.in				
Bilash Achari (External)	4/23/25, 10:35:27 AM	bilash.achari@erldc.onmicrosoft.com				
DGM E&MR MM OPTCL (Unverified)	4/23/25, 10:36:29 AM					
CRITL BSPTCL (Unverified)	4/23/25, 10:38:14 AM					
Jawed Anwar	4/23/25, 10:39:20 AM					
Chilakalapalli Mohana Rao {सी एच मोहन राव} (External)	4/23/25, 10:39:33 AM	mohan.rao@powergrid.in				

MS ERPC (Unverified)	4/23/25, 10:39:44 AM					
Ved Prakash (External)	4/23/25, 10:40:12 AM	VEDPRAKASH01@NTPC.CO.IN				
rupa kumari ,Transmission division hzb (Unverified)	4/23/25, 10:40:21 AM					
critl bsptcl (Unverified)	4/23/25, 10:40:43 AM					
Eee Td Begusarai (Unverified)	4/23/25, 10:41:00 AM					
Lily Choudhury (External)	4/23/25, 10:41:30 AM	LILYCHOWDHURY@NTPC.CO.IN				
pavan kumar (Unverified)	4/23/25, 10:41:49 AM					
Saurabh Vijay Agarwal (External)	4/23/25, 10:43:57 AM	saurabhvagarwal@erldc.onmicrosoft.com				
ESE BSPTCL (Unverified)	4/23/25, 10:44:07 AM					
Pinki Debnath (External)	4/23/25, 10:45:53 AM	pinkidebnath@erldc.onmicrosoft.com				
Amresh Prusti (External)	4/23/25, 10:46:50 AM	amresh.prusti@opgc.co.in				
Ratnakar Padhy (External)	4/23/25, 10:47:53 AM	p_ratnakar@erldc.onmicrosoft.com				
Rajib Sutradhar (External)	4/23/25, 10:48:29 AM	rajibsutradhar@erldc.onmicrosoft.com				
CRITL (Unverified)	4/23/25, 10:49:30 AM					
AEE TSD PURNEA (Unverified)	4/23/25, 10:51:27 AM					
Rahul Srivastava	4/23/25, 10:53:11 AM	rlsa@sikkimurjalimited.in				
RD Tirkey (Unverified)	4/23/25, 10:53:41 AM					
DGM E&MR MM OPTCL (Unverified)	4/23/25, 10:57:24 AM					
E&MR Div BBSR (Unverified)	4/23/25, 10:57:39 AM					
BSPTCL (Unverified)	4/23/25, 10:58:22 AM					
K SATYAM AEE ERPC (Unverified)	4/23/25, 11:01:15 AM					
PRASANTA kumar PRUSTY	4/23/25, 11:02:28 AM					
dgm,emr,burla (Unverified)	4/23/25, 11:04:11 AM					
MOHAN KUMAR (External)	4/23/25, 11:05:35 AM	MKPATEL@NTPC.CO.IN				
Sayan Sarkar (Unverified)	4/23/25, 11:06:03 AM					
sibesh kumar	4/23/25, 11:06:32 AM					
Somnath Chatterjee (External)	4/23/25, 11:10:17 AM	schatterjee@tatapower.com				
Prabhat Kumar	4/23/25, 11:11:22 AM	pk@sikkimurjalimited.in				
jitesh kumar (Unverified)	4/23/25, 11:13:27 AM					
Shabari Pramanick (External)	4/23/25, 11:13:30 AM	shabari.pramanick@erldc.onmicrosoft.com				
Atanu Mandal (External)	4/23/25, 11:15:14 AM	atanumandal@erldc.onmicrosoft.com				
chandan parida (Unverified)	4/23/25, 11:29:27 AM					
Jayathran P S (External)	4/23/25, 11:30:42 AM	JAYATHRANPS@NTPC.CO.IN				
TCSD TNG (Unverified)	4/23/25, 11:43:16 AM					
Arindam PRDC (Unverified)	4/23/25, 11:52:46 AM					
J. K . singh (Unverified)	4/23/25, 12:02:49 PM					

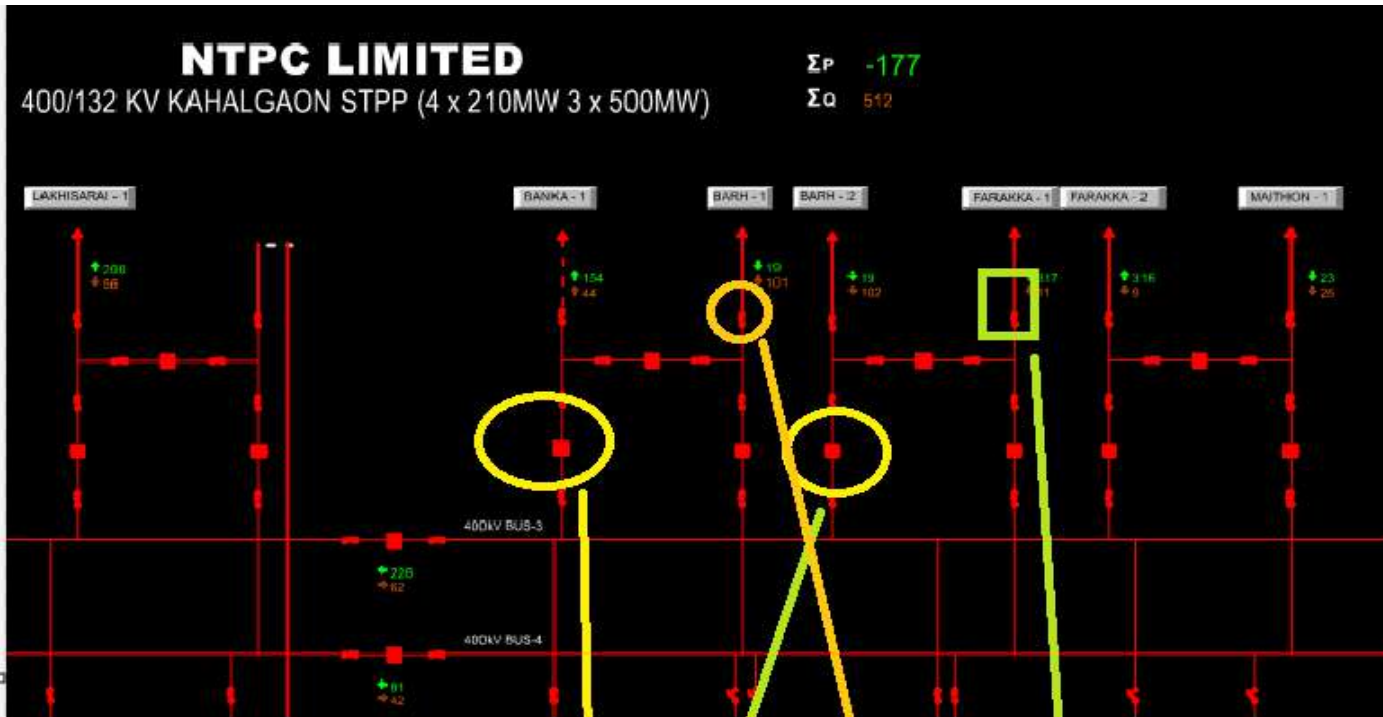
Critl (Unverified)	4/23/25, 12:07:19 PM						
Mithun Gayen {मिथुन गायेन} (External)	4/23/25, 12:19:41 PM	mithun.gayen@powergrid.in					
Suryakanta Pradhan (Unverified)	4/23/25, 12:26:54 PM						

Annexure A.2

Additional agenda for 146th PCC

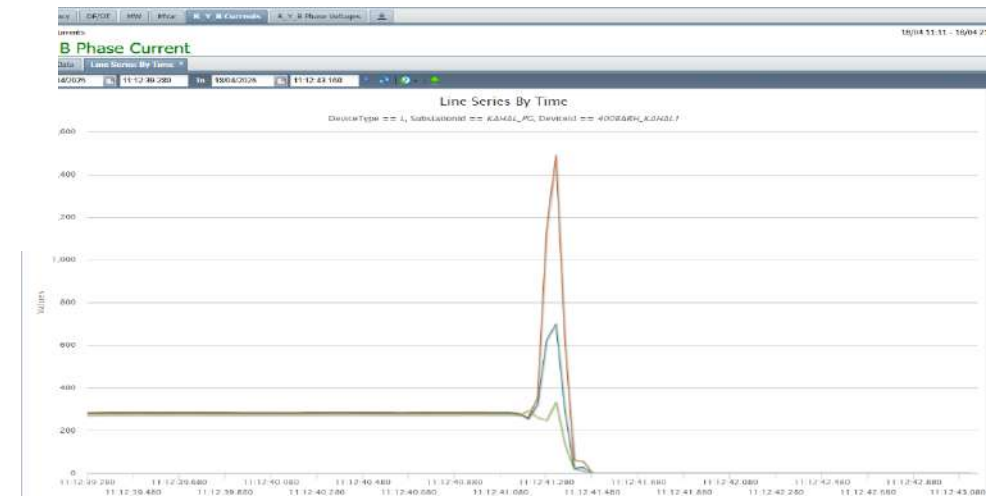
ERLDC

Tripping of multiple lines at 400 KV kahalgaon s/w due to incorrect settings on 18/04/2025



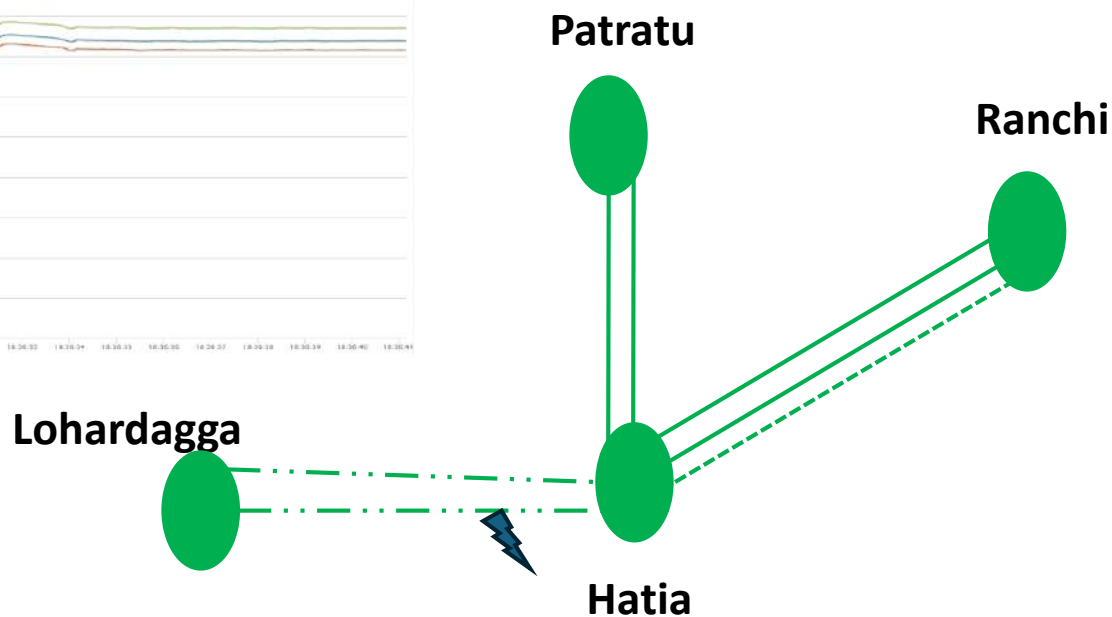
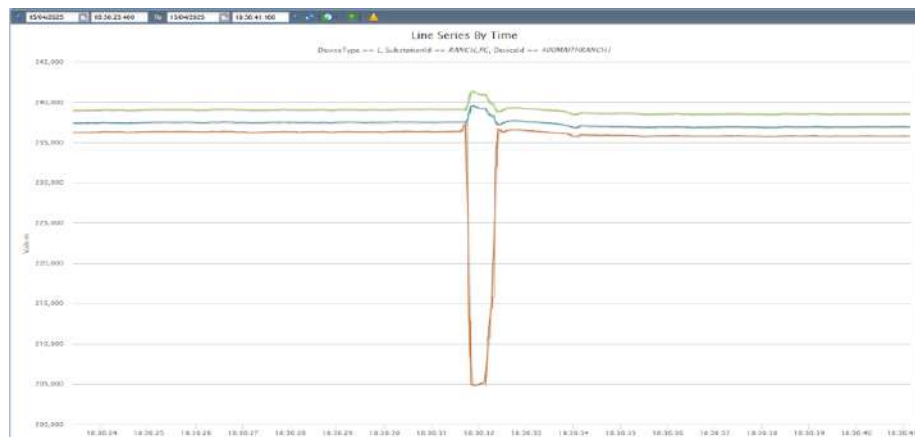
- Prior to event 400 KV main bay of Barh-2 and Banka-1 were under outage.
- At 11:13 hrs of 18/04/2025, 400 KV Farakka Kahalgaon ckt 1 tripped due to jumper snapping at Kahalgaon switchyard
- 400 KV Barh-2 also tripped being charged via Tie bay of Farakka-1.
- Same fault was sensed by 400 KV Kahalgaon- Barh 1 in reverse zone(Z-4) and tripped within 100 msec
- Banka-1 also tripped being charged via Tie bay of Barh-1.

- Zone 4 delay time kept instantaneous.
- If delay wad 500 msec, both Barh 1 and Banka 1 have remained
- Distance protection settings in google sheet , PDF extracted from Relay for further review by ERLDC/ERPC



Disturbance in Capital City of Ranchi on 15th April 2025

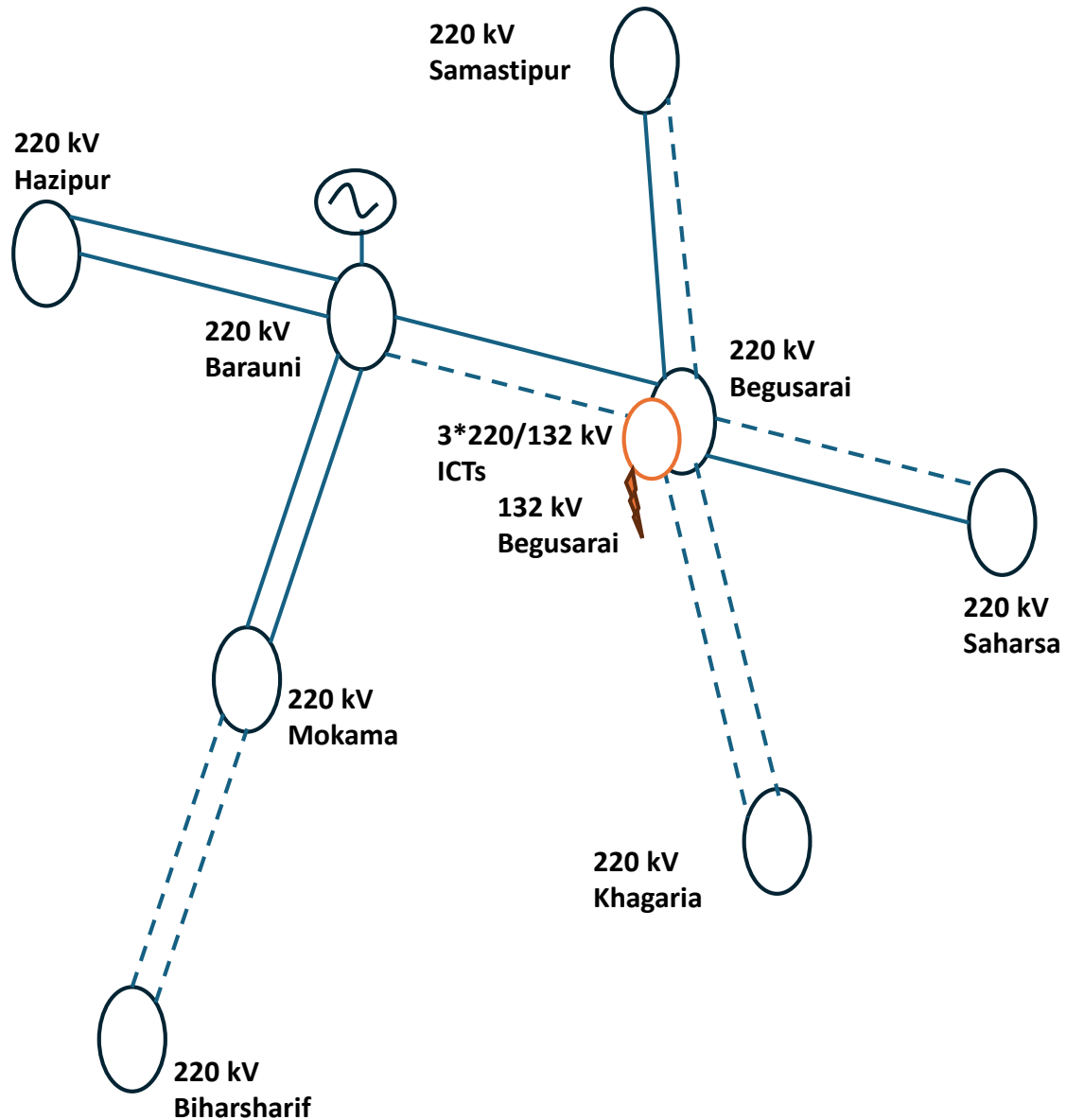
Prior to incident, 220 kV Ranchi-Hatia-1 was under planned SD. At 18:36 Hrs due to Fault in 220 KV Hatia Lohardagga line (which was idle charge from Hatia end), **220 kV Ranchi-Hatia 2 &3** and **220 kV Hatia- Patratu New D/C** tripped. As a result, total power failure was observed at 220 kV Hatia with 150 MW loss



Issues:

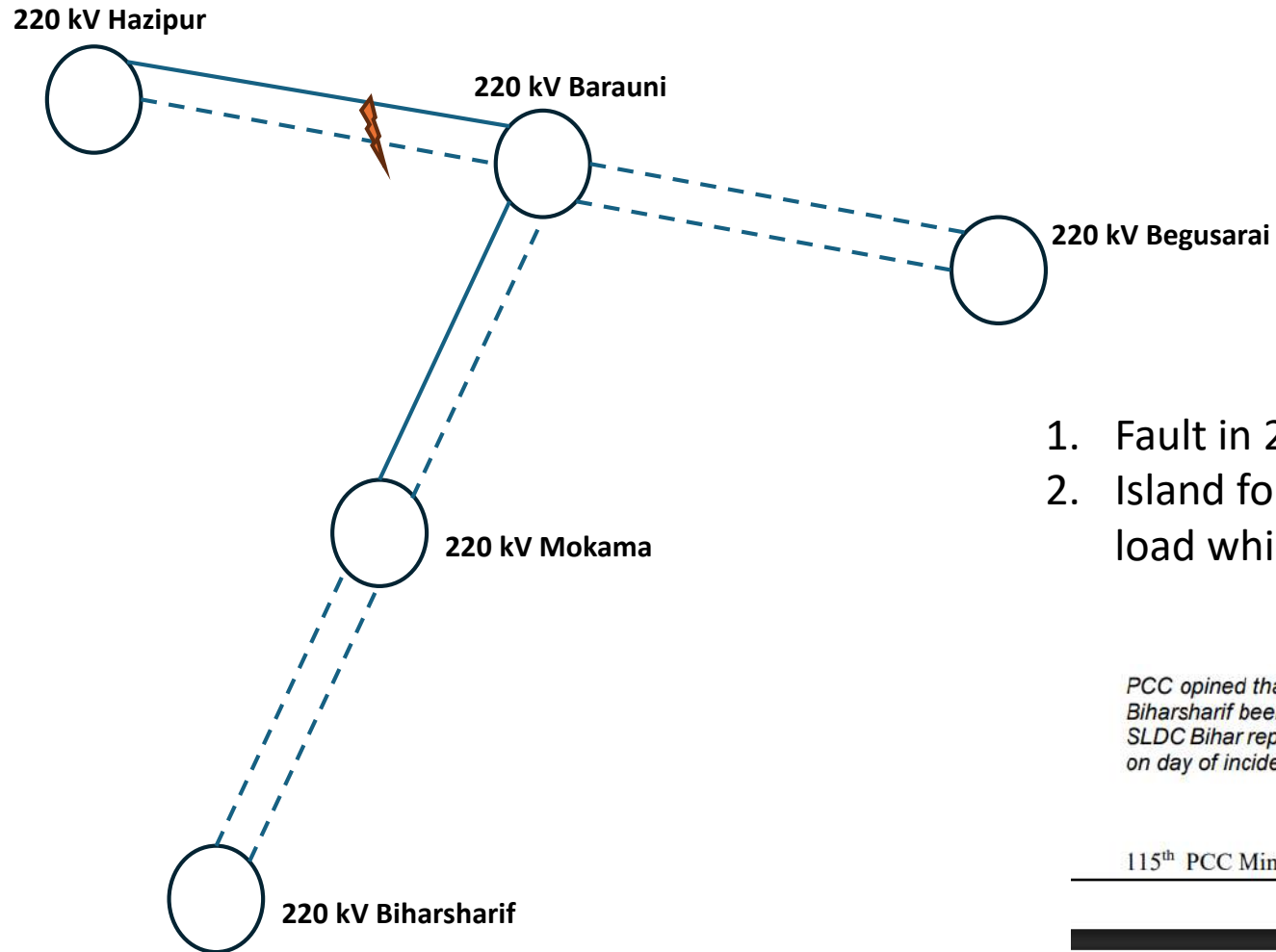
- Fault in Zone-1 of idel charged Lohardagga line but as CT polarity was reverse it sensed the forward fault of line in Zone -4.
- As Zone-4 time is 500 Ms so fault persisted till 500 Ms and all lines from remote end also tripped in Zone-2 time resulting to Load loss.
- **How CT Polarity reversal was not checked/ missed .**
- **Busbar protection is also unhealthy at Hatia.**

Disturbance at Begusarai (At 10:00 Hrs on 20.04.2025)



Begusarai -> Total load loss 170 MW.
Total Generation loss of 228 MW at Barauni.

1. 132 kV Y_ph bus PT burst at Begusarai which evolved to a 3-ph fault
2. 2*220/132 kV ICTs tripped immediately. R_ph pole of another ICT remained stuck
3. Fault was ultimately cleared by remote lines in Zone-3.
4. However, at Barauni, 220 kV ckt at Begusarai 1 feeding fault ->induced voltage in ckt 2 (already under shutdown)->LBB led to Bus-1 trip at the 220 kV Barauni
5. One unit at Barauni and 220 kV Barauni-Hazipur-2
220 kV Barauni-Mokama-2 tripped.



1. Fault in 220 kV Barauni-Hazipur-1
2. Island formed with one unit of Barauni and Mokama load which didn't survive

*PCC opined that the total power failure at BTPS could have been avoided had 220 kV Mokama-Biharsharif been in service.
 SLDC Bihar representative replied that reason for shutdown of 220 kV Mokama to Biharsharif D/C on day of incident will be shared to ERPC/ERLDC.*

Disturbance at Barauni (At 12:43 Hrs on 20.04.2025)

PCC advised SLDC Bihar to keep 220 kV Mokama-Biharsharif D/C in closed condition whenever both the circuits of 220 kV BTPS-Hazipur is under shutdown or out of service.

Operational Issues

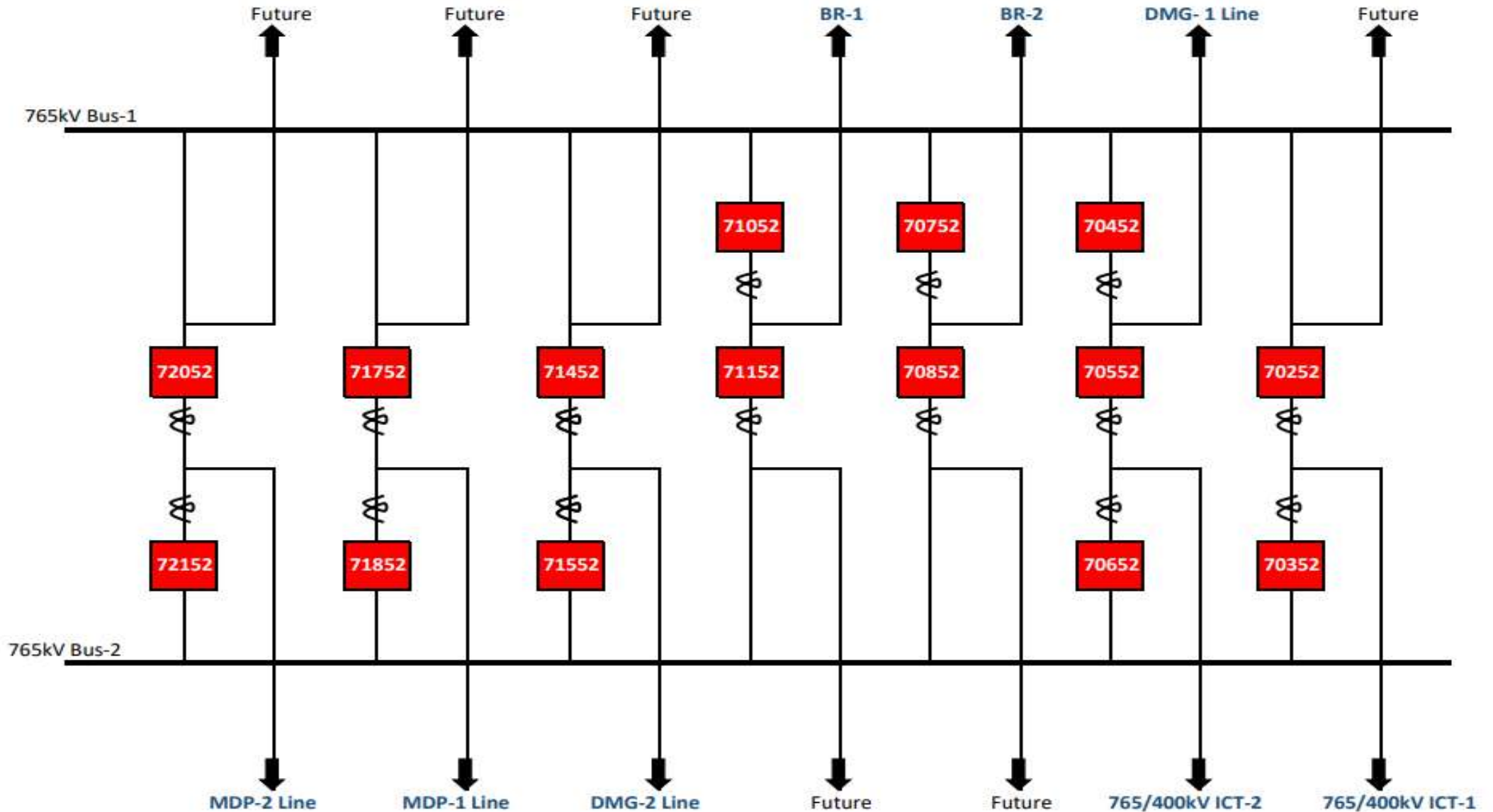
- 220 kV Biharsharif-Mokama D/c is kept open to control loading of 220 kV Barauni-Begusarai D/c which is already reconducted with HTLS.
- First event occurred at 10:00 Hrs but lines from Barauni were not charged for more than two and half hours. At 12:43 Hrs, another event occurred.
- 2nd event could have been avoided if:
 - 220 kV Biharsharif-Mokama D/c was not closed.
 - 220 kV Barauni-Begusarai-1 or 220 kV Barauni-Hazipur-2 was charged in time.

Protection Issues

- Bus bar protection is not available at Begusarai. Both disturbances could have been avoided if bus bar protection was available.
- At Barauni, CT is on the line side. For such scheme, local CT earthing should be done, which was discussed in 104th PCC meeting.

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

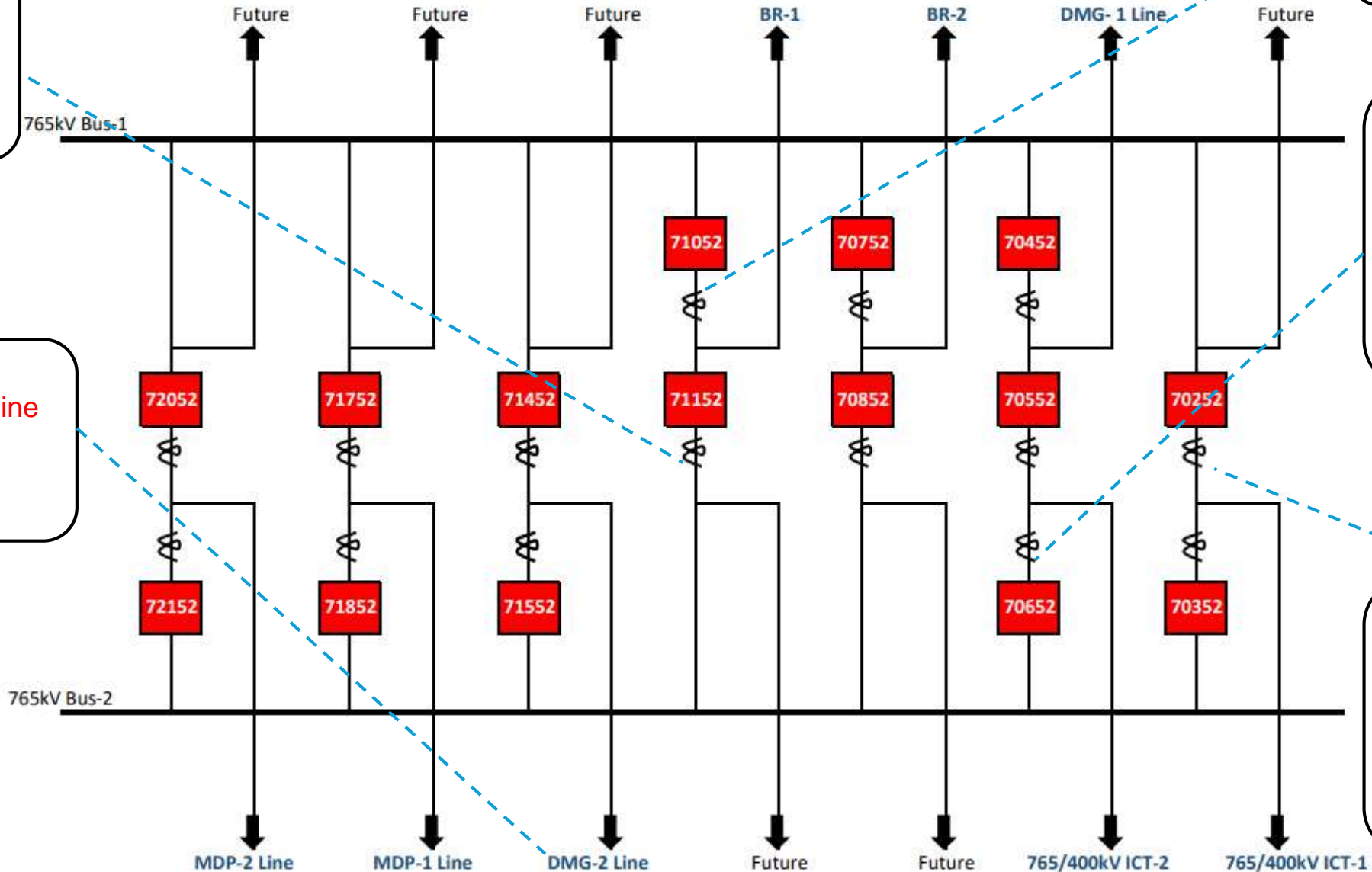
Event 1: 711 R Ph CT Failed & Bus-2 Diff Optd
09:34:04:152

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

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

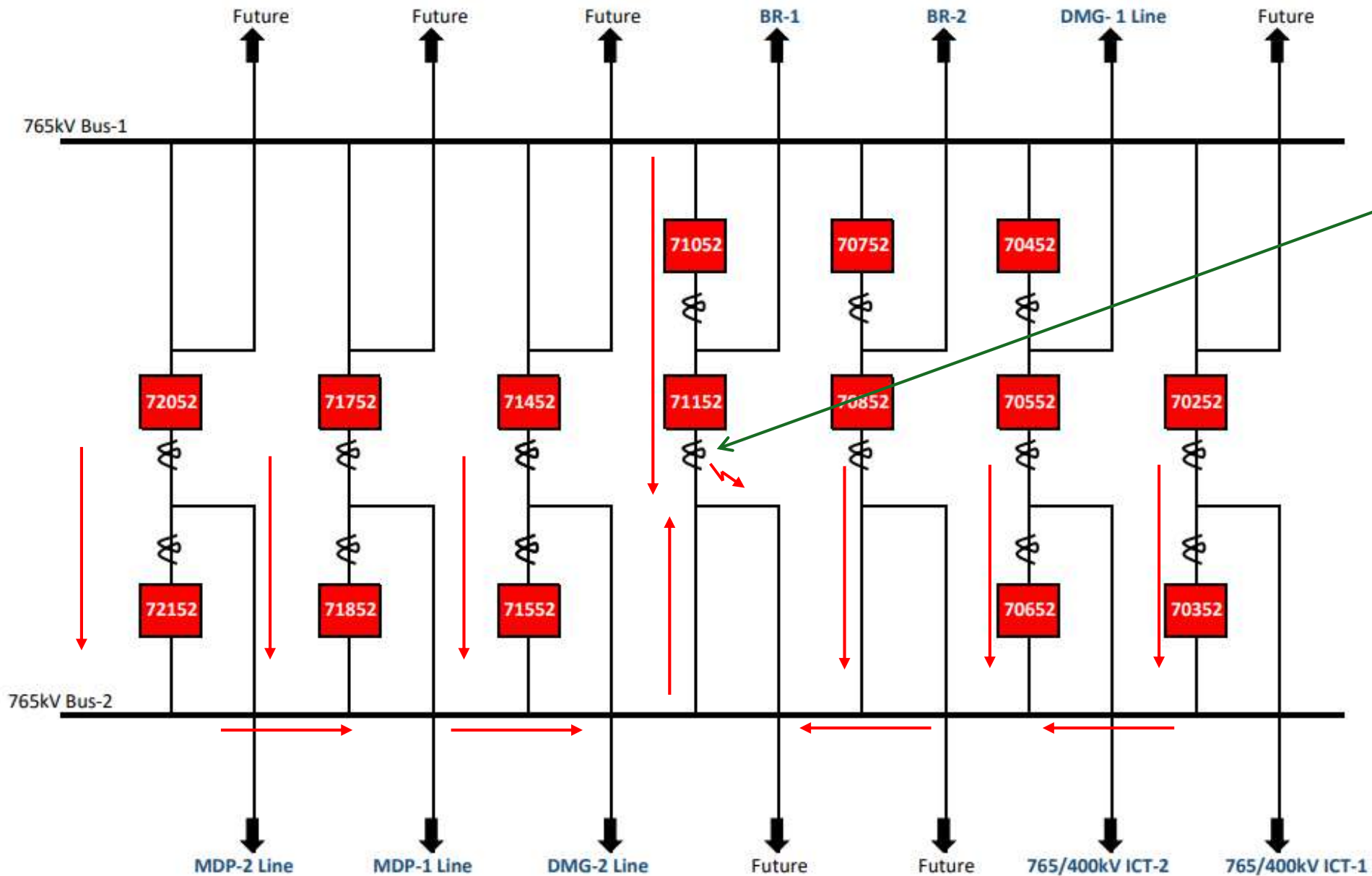
Event 4: 702 R Ph CT Failed.
ICT-1 Diff Optd.
ICT-1 Tripped from both sides.
09:34:52:840



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

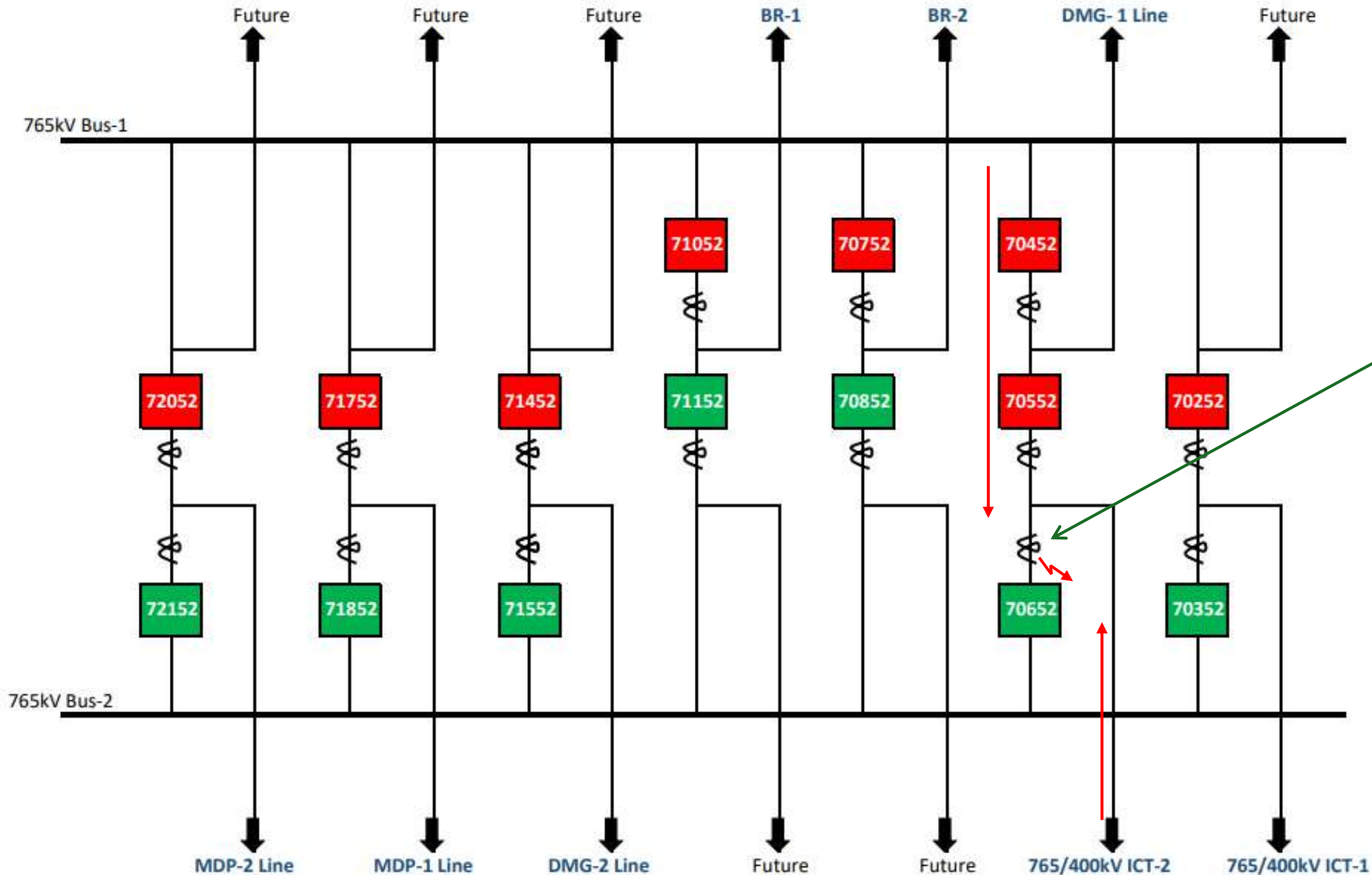


Event 1: 711 R Ph CT Failed & Bus-2 Diff Optd (Fault Current 23 kA)
09:34:04:152

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

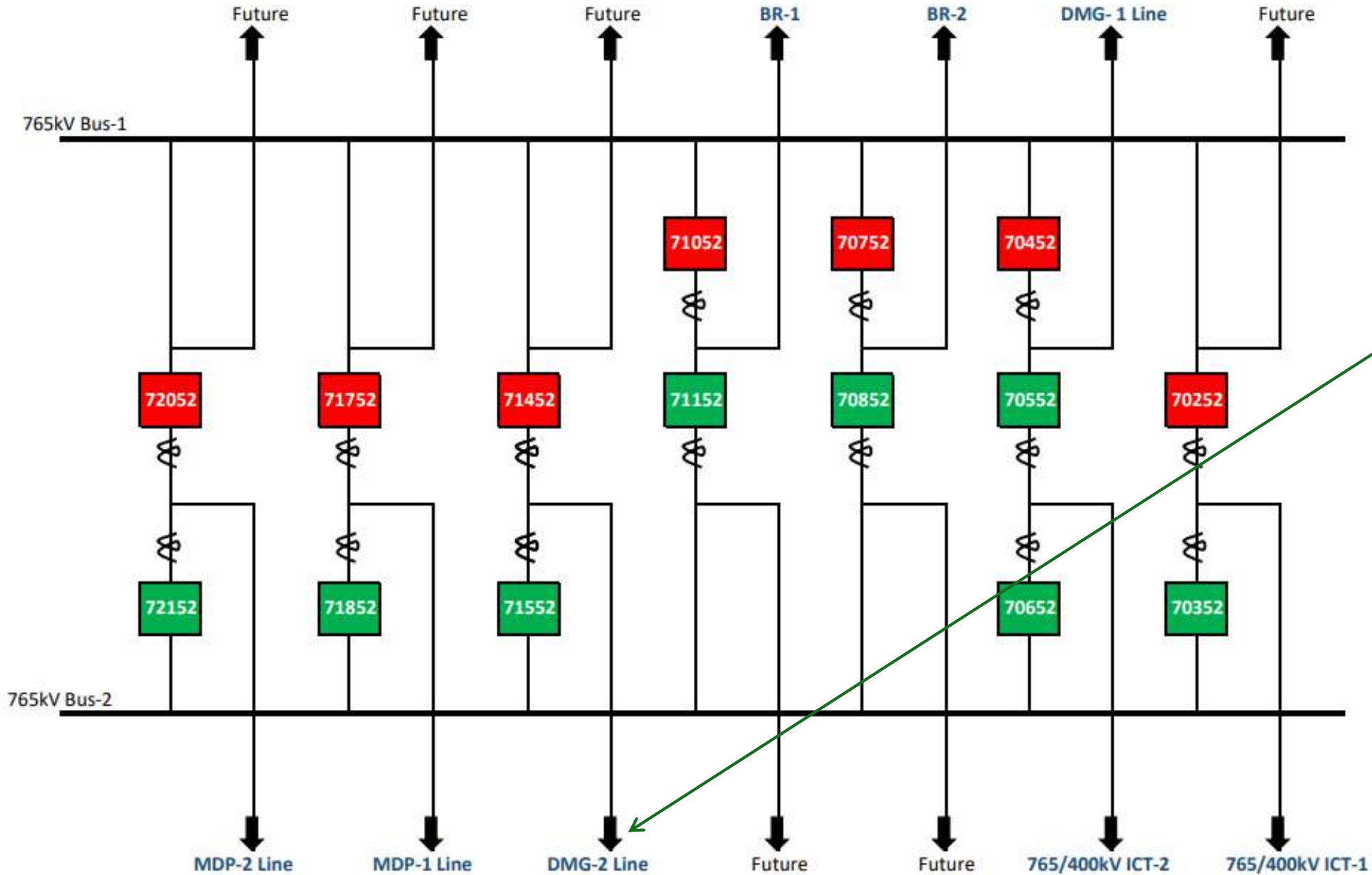


Event 2: 706 Y Ph
 CT Failed &
 Bus-2 Diff Optd (FC-
 16.6 kA)
09:34:48:273.
 ICT-2 tripped from
 HV & IV sides on
 706 bay LBB Opn

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

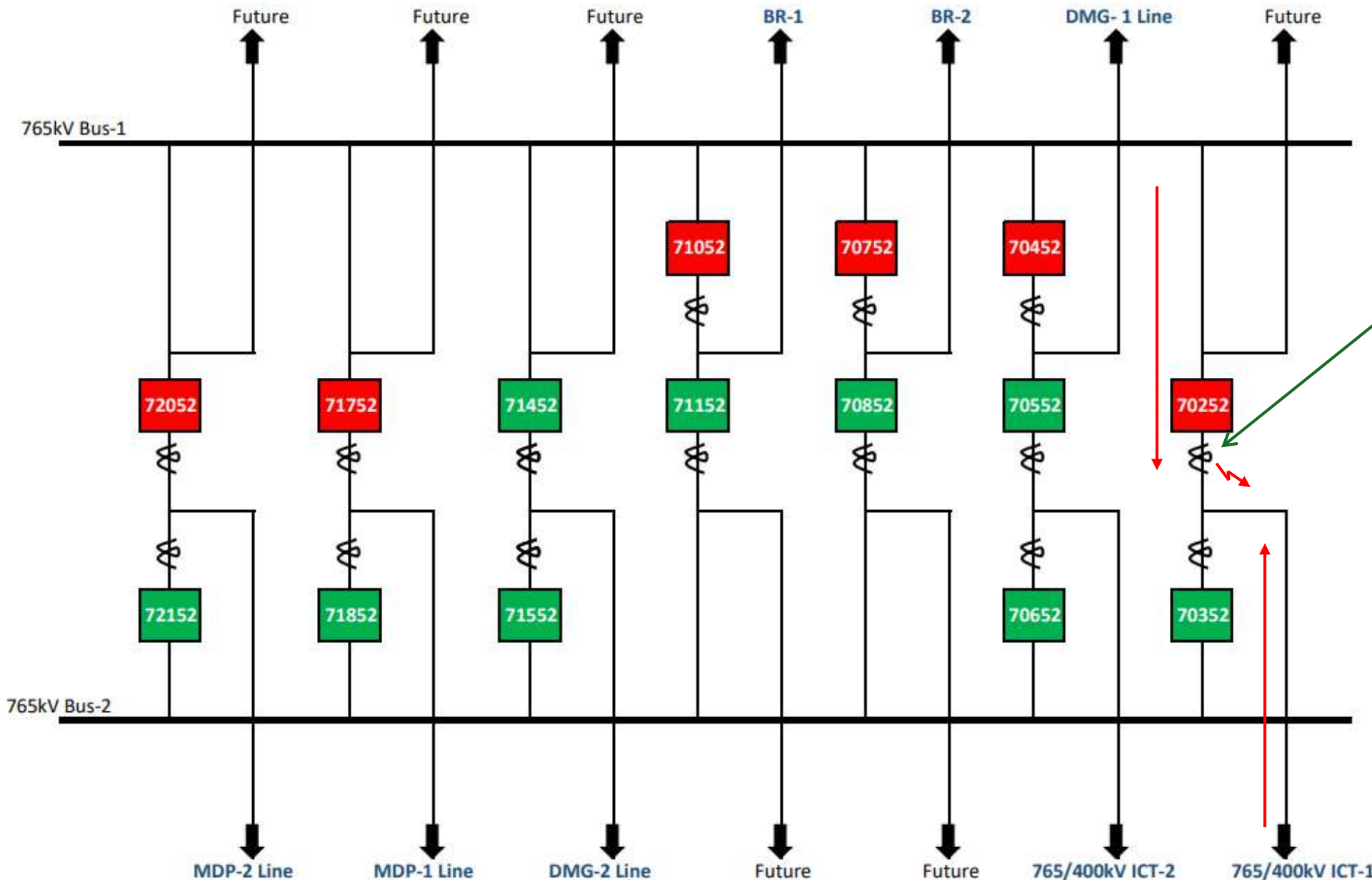
EVENT - 3



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

 CB OPEN
 CB CLOSE

EVENT - 4

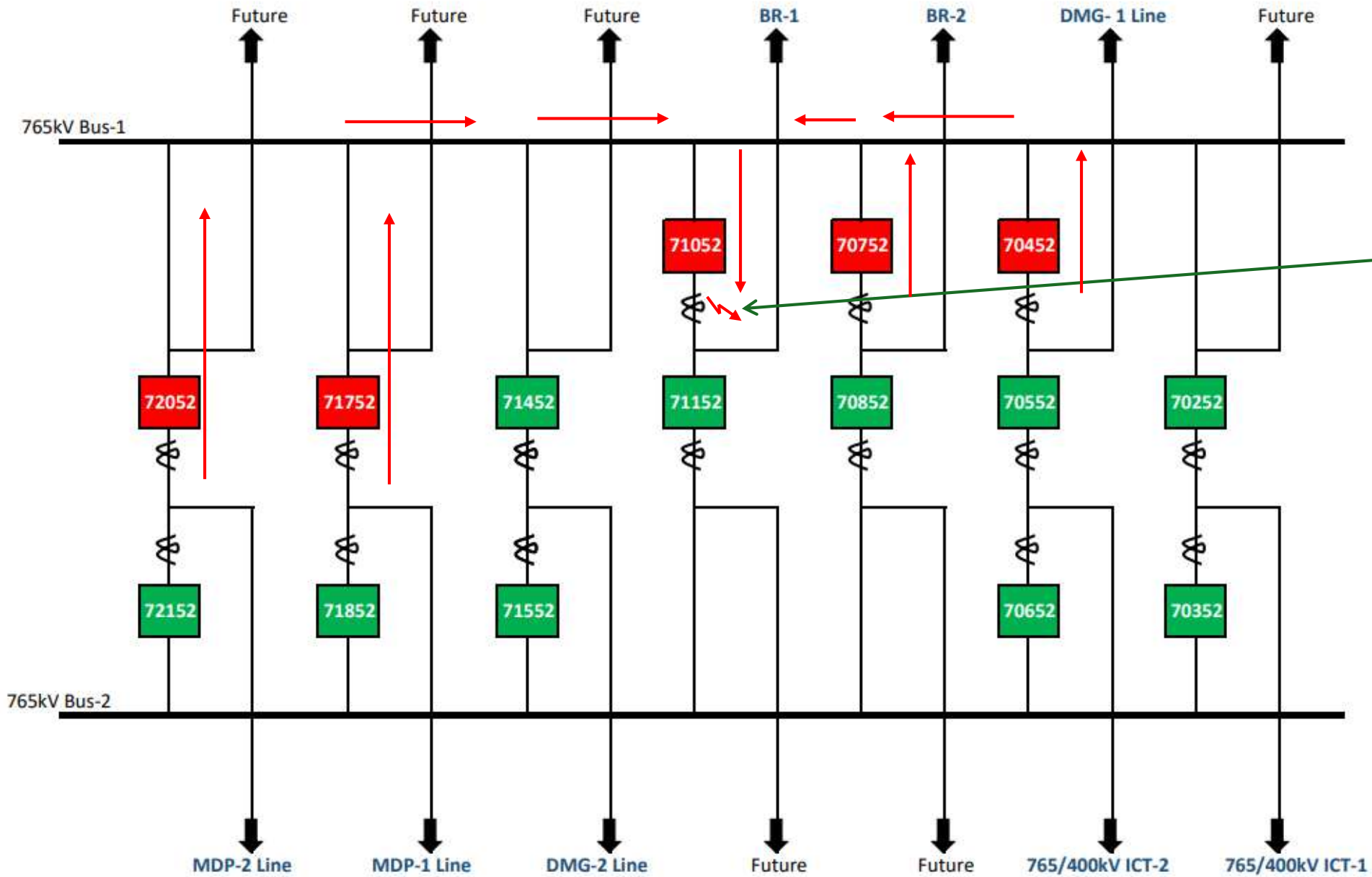


Event 4: 702 R Ph CT Failed.
ICT-1 Diff Optd.
ICT-1 Tripped from both sides.
09:34:52:840

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.



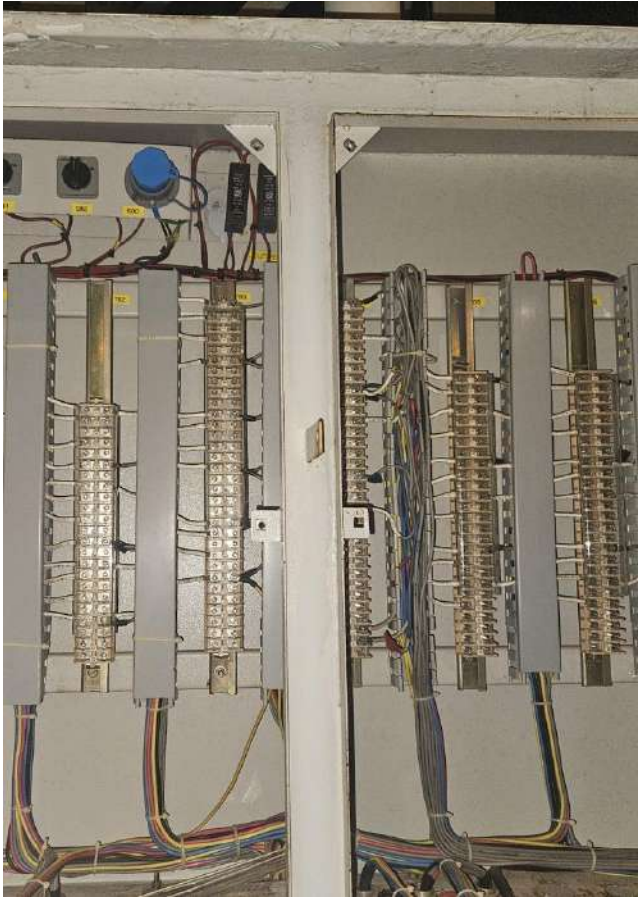
- SF6 gas found to be heavily contaminated as per test results of 03 nos CTs. It may be due to internal flashover. No other visible burning marks found on CTs, Rupture disc also found OK.

- **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.

The image features a white background with four decorative geometric shapes in the corners. The top-left and bottom-right corners contain overlapping squares in shades of blue and grey. The top-right and bottom-left corners contain overlapping triangles in shades of blue and grey. The text "THANK YOU" is centered in the middle of the page.

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, टॉलिंगंज, 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/ विद्युत उत्पादन इकाइयां जो बंद हैं)	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):

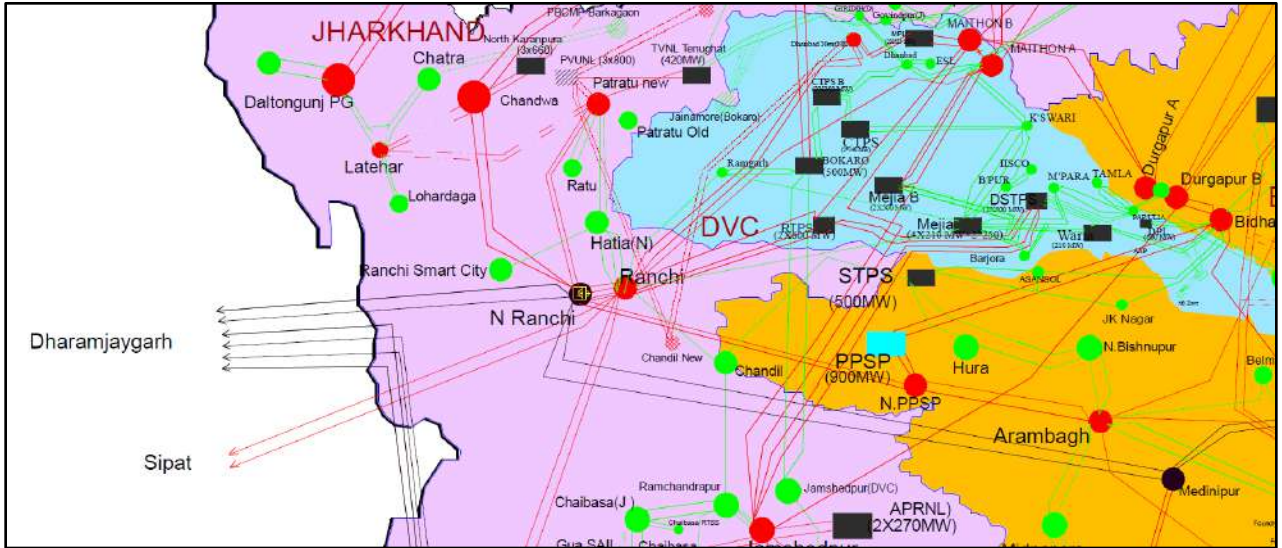


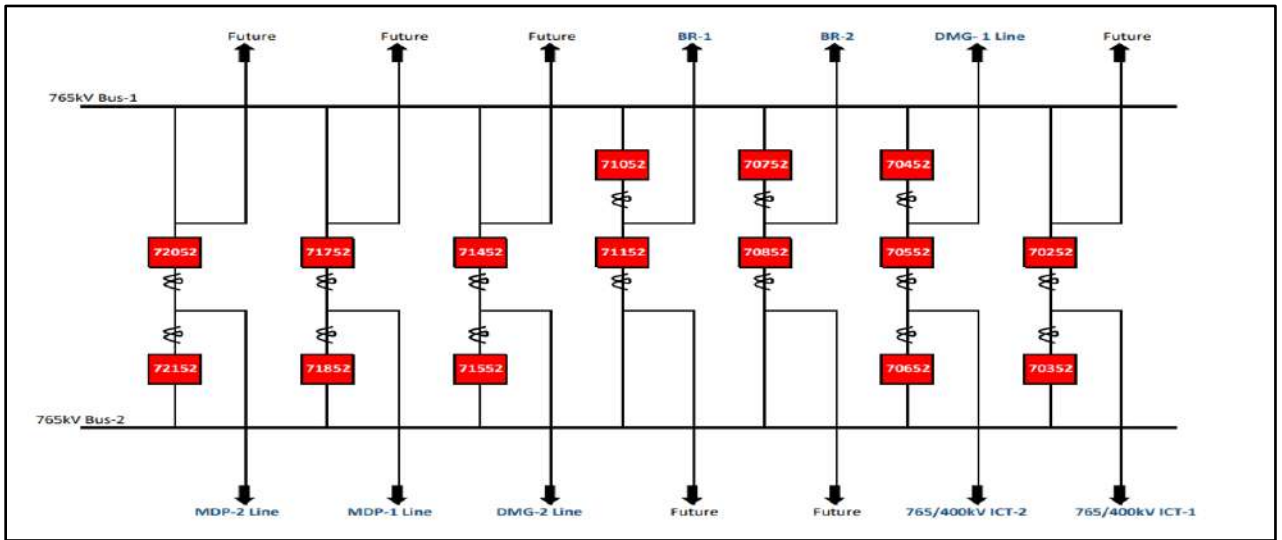
Figure 1: Network across the affected area

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	

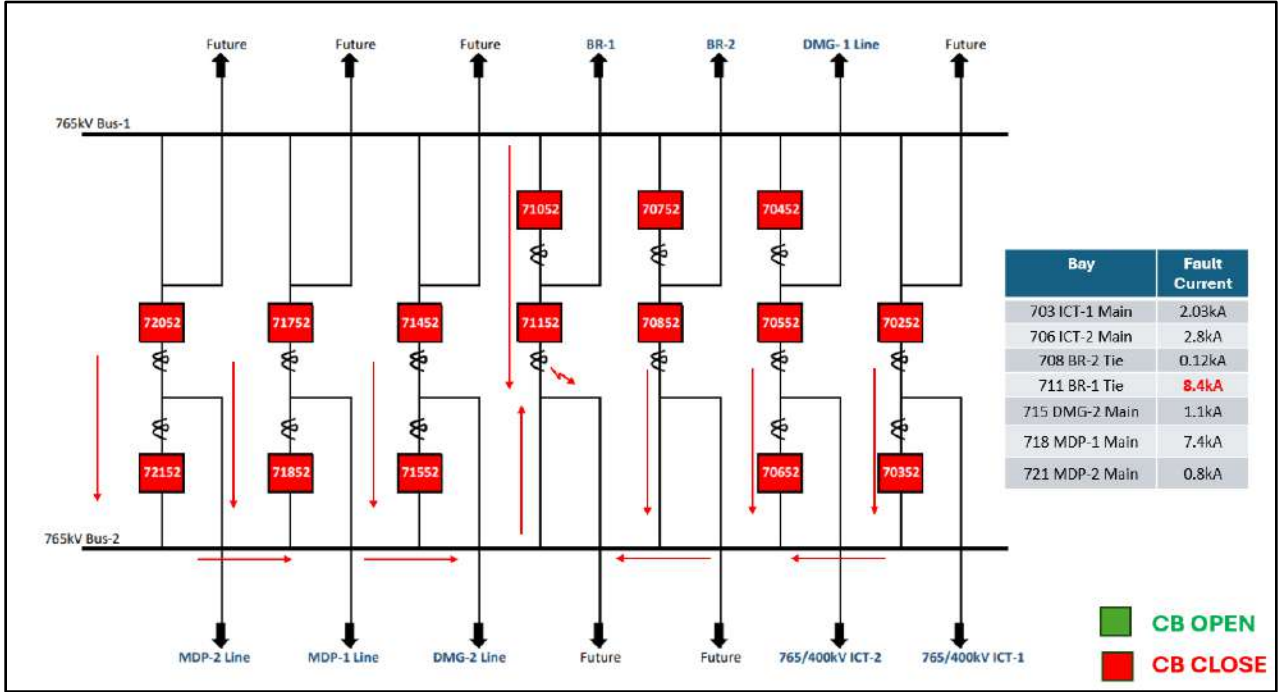
Time Stamp	Element	Status	Event
21-03-25 09:34:50:533	765 ICT2_DHRAM_WR_1_Tie	Open	Event 2&3 ICT-2 tripping via LBB & Dharmjaygarh-2
21-03-25 09:34:50:432	765_SPARE_4_DHRAM_WR_2_Tie	Open	
21-03-25 09:34:48:660	400 ICT2_RANCH_PG_2_Tie	Open	
21-03-25 09:34:48:533	400 ICT2_Main_CB	Open	
21-03-25 09:34:48:517	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	

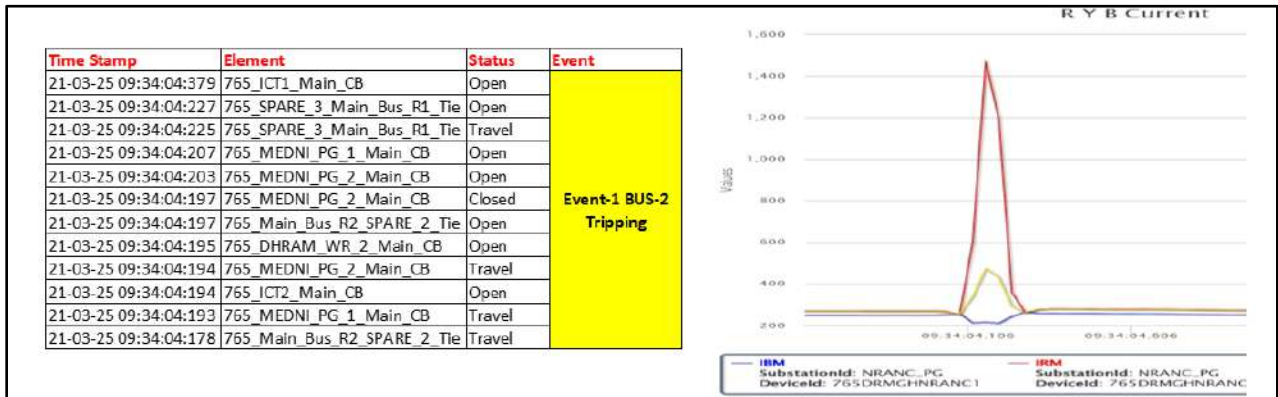
Time Stamp	Element	Status	Event
21-03-25 09:35:19:771	765_DHRAM_WR_1_Main_CB	Open	Event-5 BUS-1 Tripping
21-03-25 09:35:17:984	765_Main_Bus_R2_Main_CB	Open	
21-03-25 09:35:17:781	765_NRANC_PG_2_Main_CB	Open	
21-03-25 09:35:17:780	765_NRANC_PG_1_Main_CB	Open	
21-03-25 09:35:17:778	765_Main_Bus_R_1_NRANC_PG	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

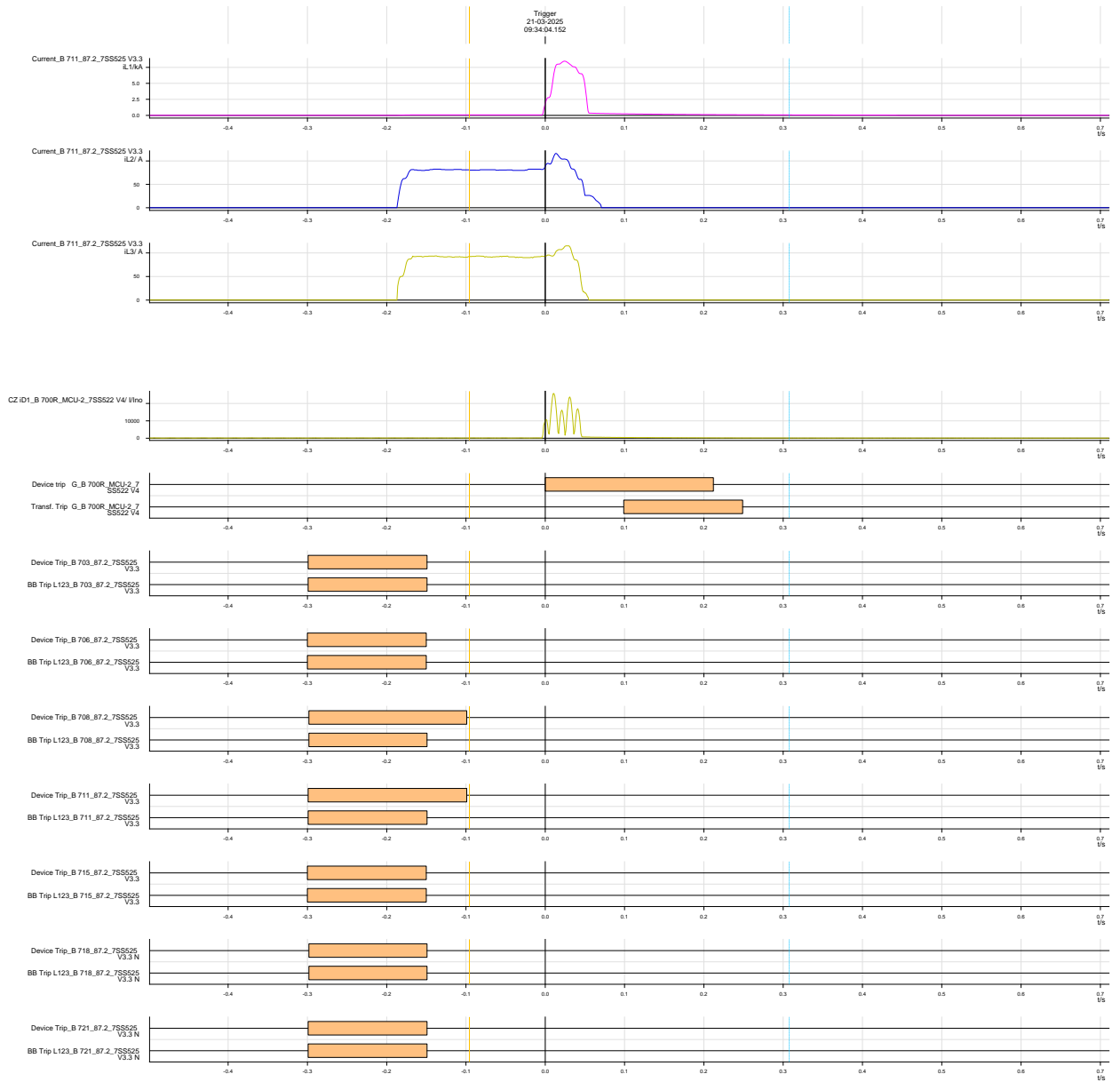
- **Time:** 09:34:04:152 Hrs.
- **Fault Detail:** Failure of 711 R-Phase CT of Tie Bay of Bus Reactor #1



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

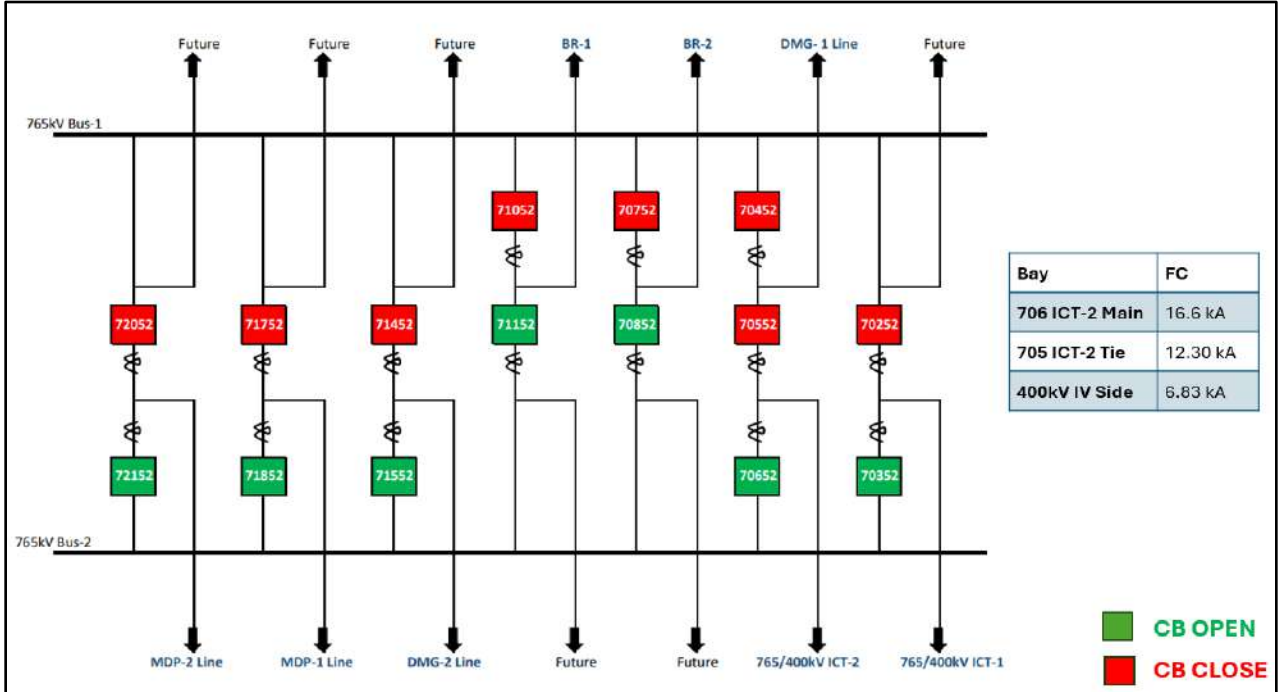


- Tripped bays: All main bay connected to Main bus #2 got tripped (ICT-1 Main (703), ICT-2 Main (706), BR-2 Tie (708), DMG-2 Main (715), BR-1 Tie (711), Medinipur#1 & 2(718 & 721)).



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

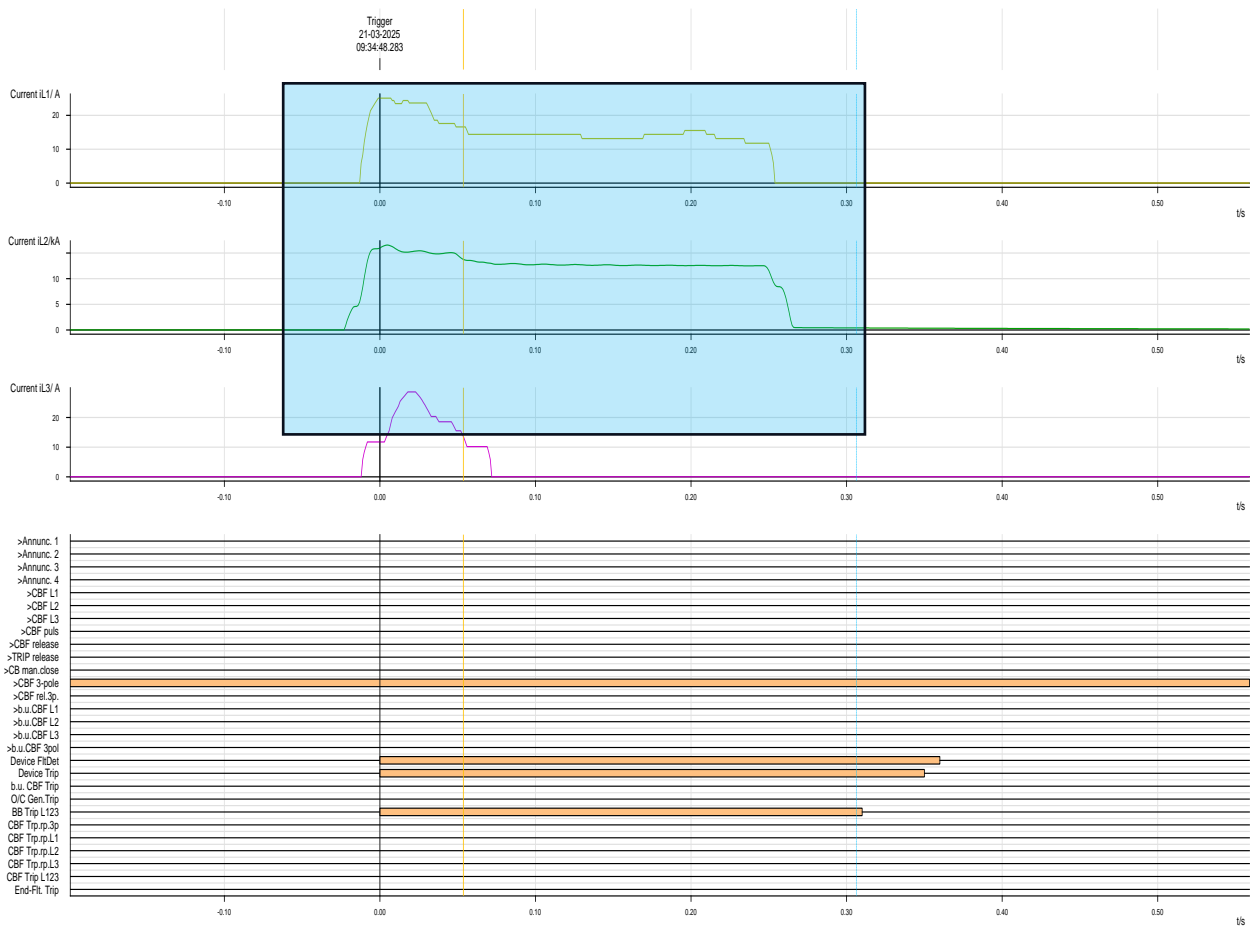


• Tripping:

- Bus-2 differential re-operated (Y-phase).
- Main bay of ICT#2 already in tripped condition during event #1 but 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.

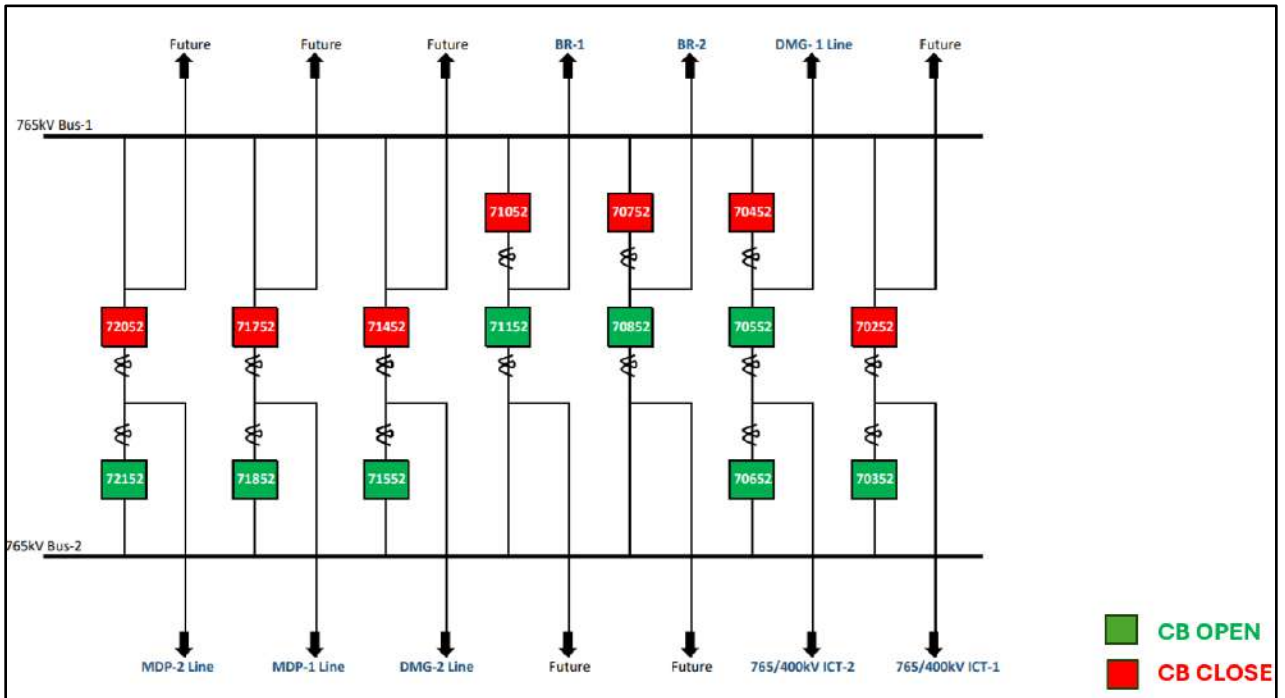


- As observed from below DR total fault clearance time was approx 300 msec due to LBB operation as Bus -2 was already out hence to isolate the fault LBB operation resulted into tripping of of ICT-2 Tie Bay.

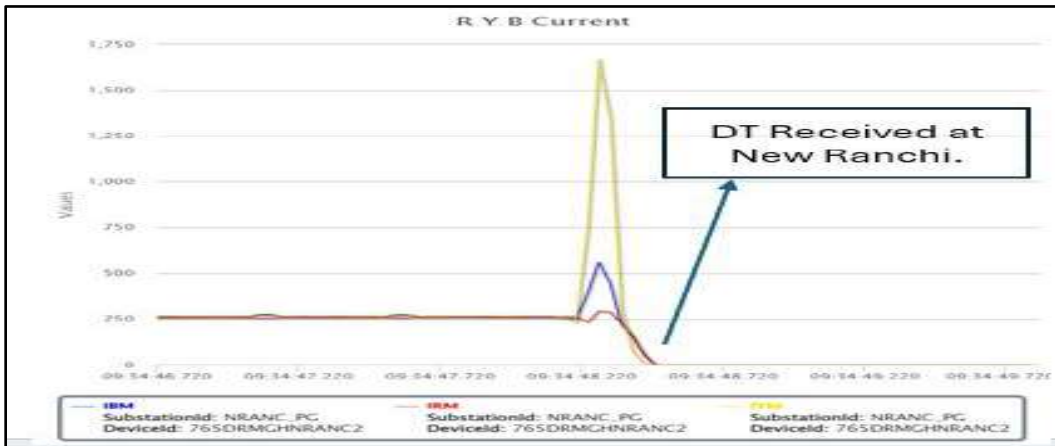


Event 3: Tripping of Dharamjaygarh #2

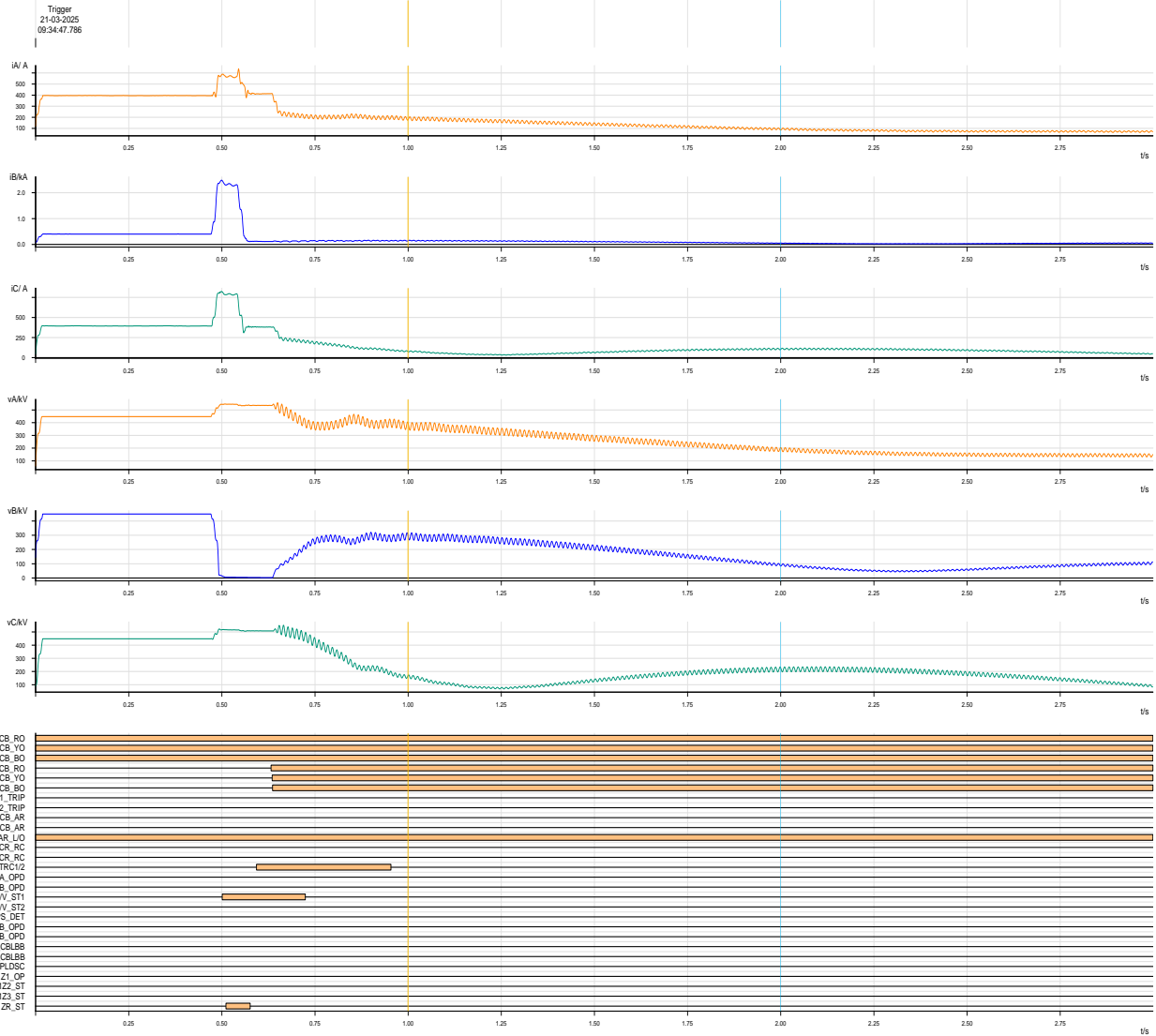
- **Time:** 09:34:48:370 Hrs.
- **Fault Detail:** Due to fault in NGR of Line reactor of New Ranchi #2 at Dharamjaygarh end.
- **Tripping:** Differential of Line reactor operated at Dharamjaygarh end due to NGR failure at Dharamjaygarh end and line tripped from Dharmjaygarh end immediately and DT was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



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

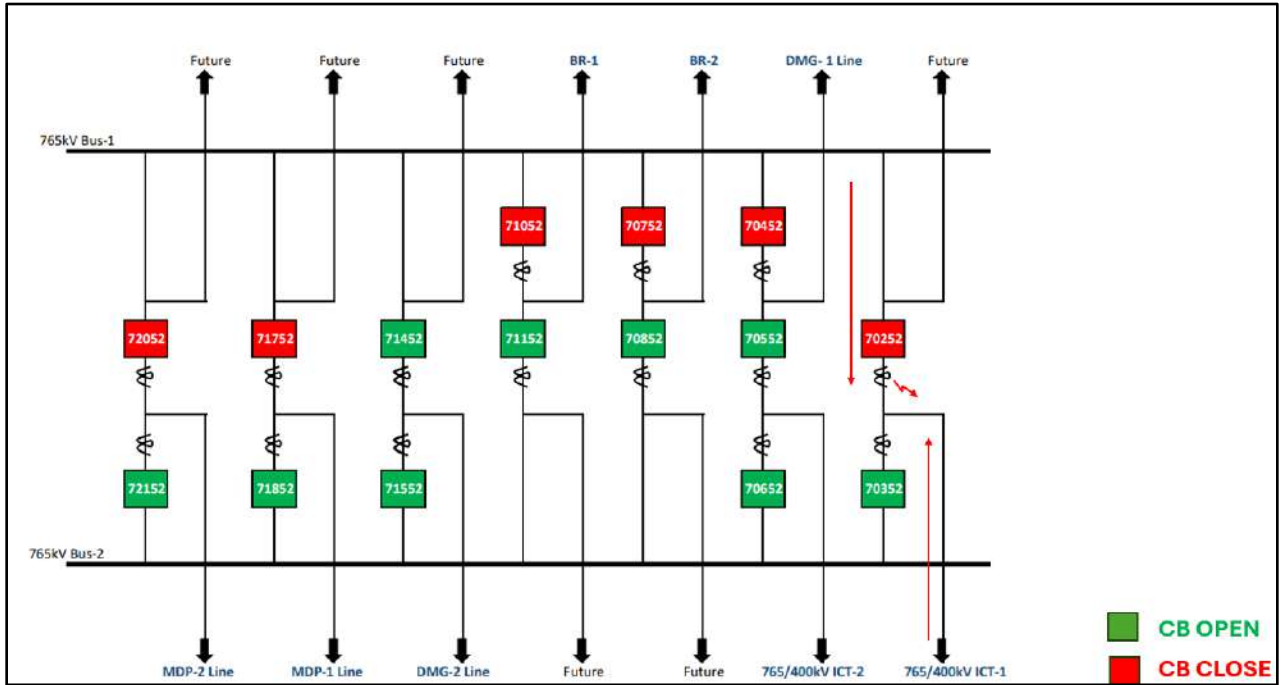


DR of New Ranchi-Dharamjaygarh #2 at New Ranchi:



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

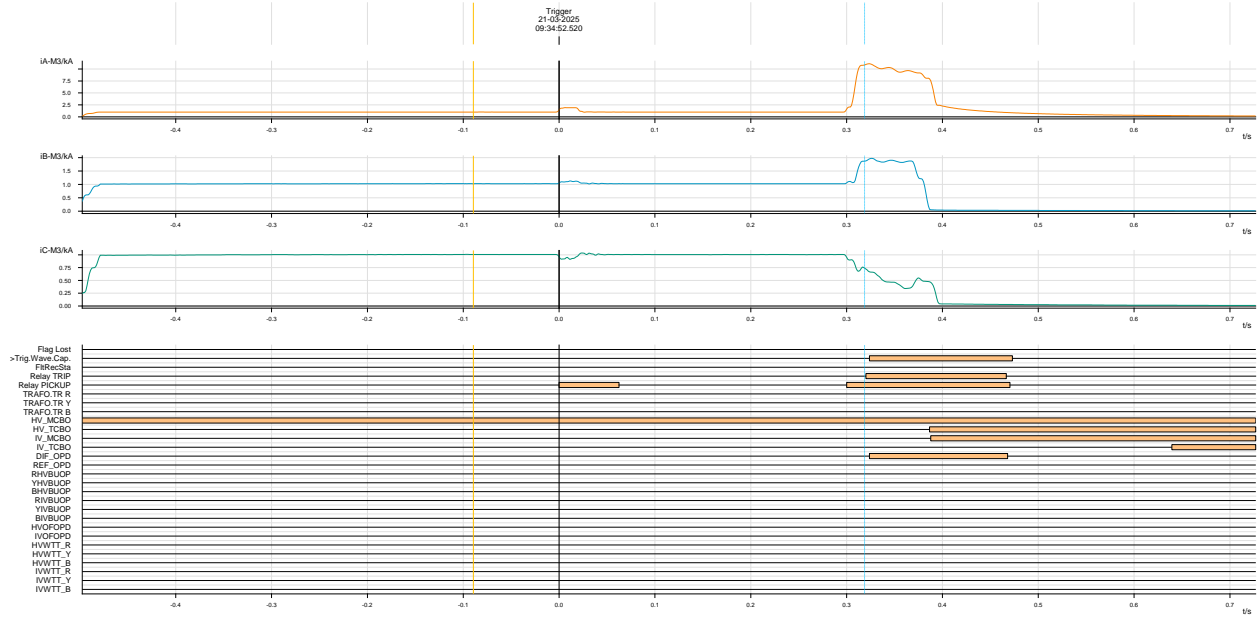


- **Tripping:** ICT-1 tripped from both HV and IV sides on differential protection.



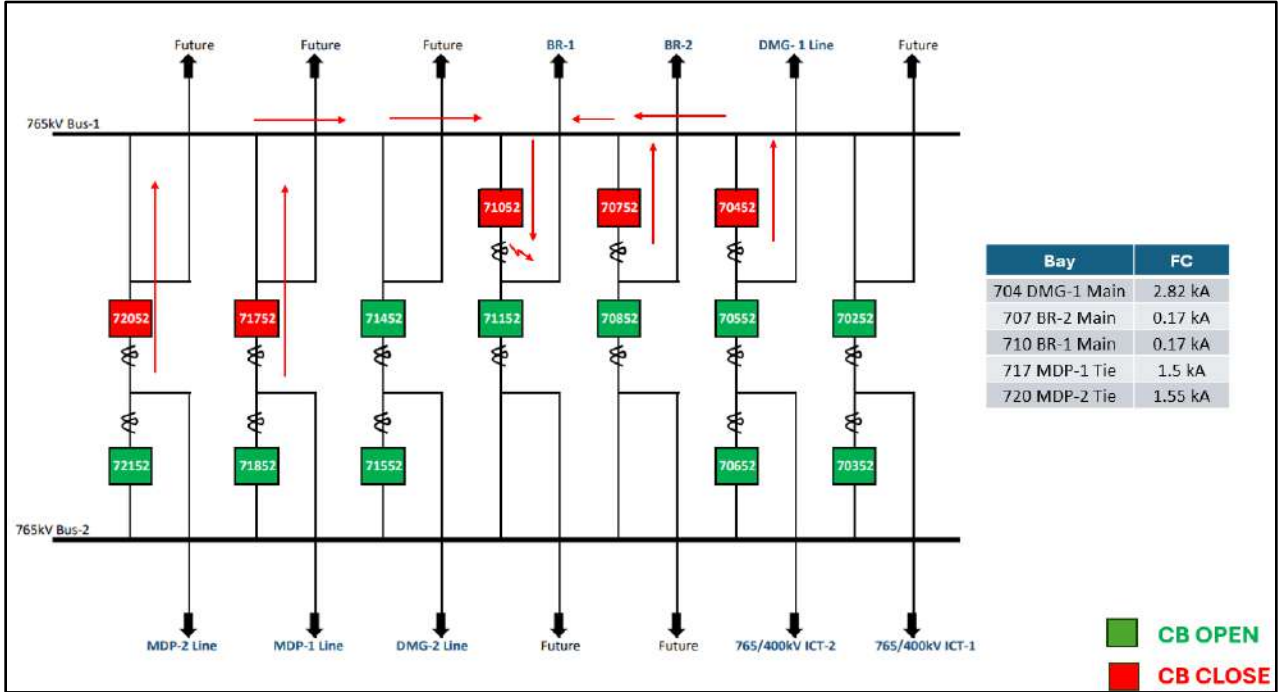
Time Stamp	Element	Status	Event
21-03-25 09:34:53:156	400 ICT1_RANCH_PG_4_Tie	Open	Event-4 ICT-1 Tripping
21-03-25 09:34:52:898	400 ICT1_Main_CB	Open	
21-03-25 09:34:52:896	765_SPARE_1 ICT1_Tie	Open	
21-03-25 09:34:52:883	400 ICT1_Main_CB	Travel	
21-03-25 09:34:52:882	765_SPARE_1 ICT1_Tie	Travel	

DR of ICT #1 at New Ranchi:

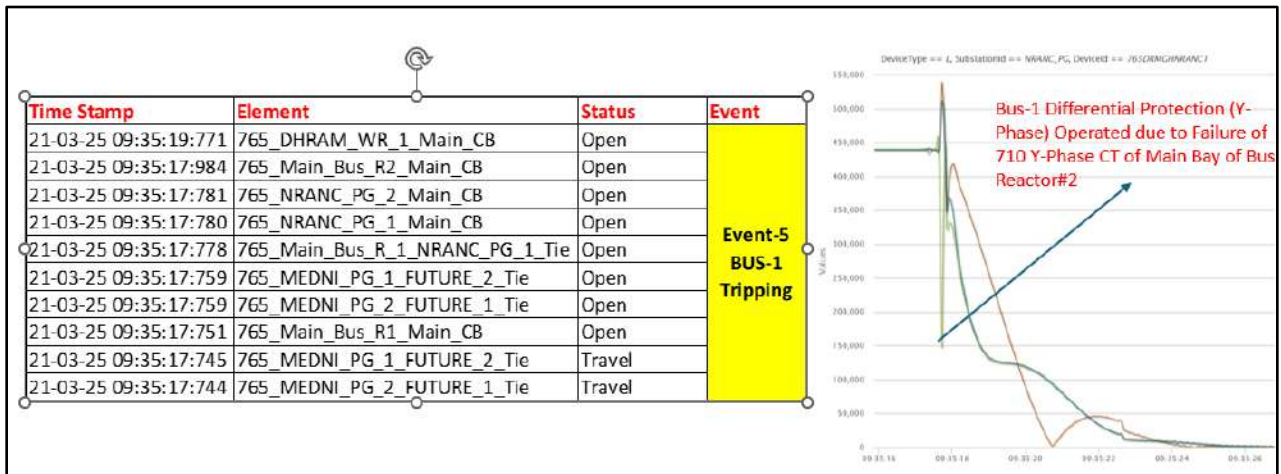


Event 5: Bus-1 Differential Protection (Y-Phase) Operated

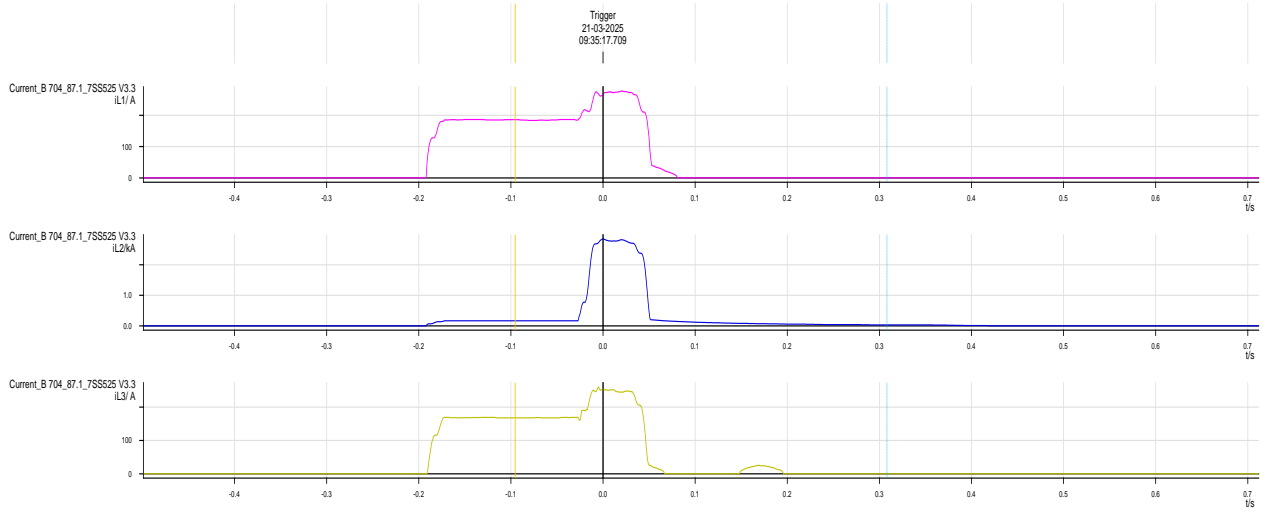
- **Time:** 09:35:17:709 Hrs.
- **Fault Detail:** Failure of 710 Y-Phase CT of Main Bay of Bus Reactor#2



- **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.



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



3. Restoration Timeline

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

4. Root Cause Analysis: PGCIL ER-1 Monitored lightning arrester 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.

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;	Hajipur: 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-BIHARSARIF-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	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 (No/(Nc+Nf))	Security Index (No/(Nc+Nu))	Reliability Index (No/(Nc+Nu+Nf))	Nc	Nu	Nf	Dependability Index (No/(Nc+Nf))	Security Index (No/(Nc+Nu))	Reliability Index (No/(Nc+Nu+Nf))
1	400KV-MATHON-DURGAPUR-2	01-03-2025	14:02:00	B-N Fault, FC-5.52kA	Durgapur:-B-N Fault, FD-17.5M, FC-2.62kA	Air failed after 1 second	PG ER-II	PG ER-II	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, I-3.46 kA, Iy-3.47 kA	Kharagpur: Z-1, R-Y ph, 4.67 km, I-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-8.9kA, 33.26km;	Rangpo: R-B, IR-3.02kA, IB-30.03kA, 75.19km	Line tripped on phase to phase fault.	PG ER-II	PG ER-II	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-1	Jeerat: Y-B Ph, 21.83km, Z-1, Iy:9.25kA, Ib:9.98kA	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, I=721.53A, Iy=1965.45A, Ib=2895.37A, Ij=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.							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 Chukha 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.							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 PMJ. WB may explain.	WBSETCL	PG ER-II	The line was under SD 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. Necessary 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			IDV/01	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; 7.86 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 attempt 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			

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+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	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+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	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.

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

OPTCL

PROTECTION PERFORMANCE INDICES AS PER TRIPPING LIST OF PCC MEETING AGENDA FOR THE MONTH OF MARCH 2025 FOR OPTCL ,SLDC,ODISHA																	
SL.NO	NAME OF THE ELEMENT	TRIPPING DATE	TRIPPING TIME	RESTORATION DATE	RESTORATION TIME	REASON(RELAX INDICATION)		NC		NU		NF		DEPENDABILITY INDEX (NC/NC+NF)	SECURITY INDEX (NC/NC+NU)	RELIABILITY INDEX(NC/NC+NU+NF)	REMARKS
						END-A	END-B	END-A	END-B	END-A	END-B	END-A	END-B				
1	220KV JODA-RAMCHANDRAPUR-1	13/03/25	11:49	13/03/25	13:02	Z-1/B-E/1.98 KA /22.65KM /A/R SUCCESS	Z-1/139.2KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	A/R SUCCESSFUL FROM JODA END ONLY.
2	220KV PANDIABIL-SAMANGARA-1	20/03/25	12:29	21/03/25	15:06	Z-1/B-N/8.37 KA	DIDN'T TRIP	1	0	0	0	0	1	END A=1 ,END B=0.5	END A=1 ,END B=1	END A=1 ,END B=0.5	A/R FAILED AFTER 1 SEC FROM PANDIABIL. LINE HAND TRIPED FROM SAMANGERA END.
3	220KV JAMSEDPUR-HINDAL-1	20/03/25	18:34	20/03/25	19:43	Z-1/R-Y/42.2KM	Z-1/R-Y/1.97KA,2.07KA	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	LINE TRIPED ON PHASE TO PHASE FAULT
4	400 KV MRDL-ISPL-2	22/03/25	20:13	22/03/25	20:57	DT RECEIVED AT MRDL END	DIDN'T TRIP	1	0	1	0	1	0	END A=0.5 ,END B=0	END A=0.5 ,END B=0	END A=0.5 ,END B=0	LINE TRIPED AT MERAMANDALI END DUE TO DT RECEIVED FROM JSPL END.
5	400 KV MRDL-ISPL-2	22/03/25	18:53	22/03/25	19:28	DT RECEIVED AT MRDL END	DIDN'T TRIP	1	0	1	0	1	0	END A=0.5 ,END B=0	END A=0.5 ,END B=0	END A=0.5 ,END B=0	LINE TRIPED AT MERAMANDALI END DUE TO DT RECEIVED FROM JSPL END.
6	400 KV MRDL-LAPANGA-2	30/03/25	14:23	30/03/25	15:05	Z-1/R-N/1.72KA/147.7 KM	Z-1/R-N/6.899KA/42.73 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	A/R FAILED AFTER 1 SEC
7	220KV ATRI-PANDIABIL-2	28/03/25	12:44	28/03/25	13:04	MASTER TRIP OPERATED		1	0	0	0	0	1	END A=1 ,END B=0.5	END A=1 ,END B=1	END A=1 ,END B=0.5	GROUND FAULT OBSERVED. LINE TRIPED FROM ATRI END ONLY.

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	220KV-CHANDIL-STPS(WBPDC)-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	1		0		0		1	1	1	
2	220KV RAMCHANDRAPUR - Joda	13-03-2025	11:49:00	13-03-2025	13:02:00	Ramchandrapur end: Zone 1, 139.2 km,	Joda end: B-E, Zone - 1, 22.65 km, A/R successful from Joda end, F/C 1.98 kA	1		0		1		0.5	1	0.5	
3	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		1		0		0	1	1	1	
4	220 KV Govindpur - TVNL - 01	20-03-2025	06:05:00	20-03-2025	06:43:00	RN, Z2, 83.86 km, Ir- 1.36 kA	RN, Z1, 3.54 km, Ir- 2.12 kA	1		0		1		0.5	1	0.5	
5	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		1		0		1	0.5	1	0.5	
6	220KV CHANDIL - Ramchandrapur	21-03-2025	10:22:00	21-03-2025	11:40:00									#DIV/0!	#DIV/0!	#DIV/0!	
7	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	1		0		0		1	1	1	
8	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		1		0		1	0.5	1	0.5	
9	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		1		0		0	1	1	1	
10	220 KV Jasidih - Giridih - 01	28-03-2025	11:44	28-03-2025	12:08			1	1	0	0	1	1	0.5	1	0.5	PLCC is unhealthy
11	220 KV Jasidih - Giridih - 02	28-03-2025	11:44	28-03-2025	12:07			1	1	0	0	1	1	0.5	1	0.5	

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	PMU Location	DR Configuration Discrepancy(Local End)	DR Configuration Discrepancy(Remote End)	D/REL RECEIVED FROM LOCAL	D/REL RECEIVED FROM REMOTE	LOCAL END UTILITY	REMOTE END UTILITY	UTILITY RESPONSE
1	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	MAITHON			YES	YES	PG ER-11	PG ER-11	A/R attempted on persisting fault & SOTF operated. Protection operated properly at both ends.
2	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.	MEDINIPUR		DR is not Time Synchronized	YES	YES	PMJTL	WBSETCL	A/R attempted on persisting fault & SOTF operated. Protection operated properly at Medinipur end.
3	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-11) may explain.	MEDINIPUR			YES	YES	PMJTL	WBSETCL	Carrier was not received from remote end. As information received, tower collapsed. Protection operated properly at Medinipur end.
4	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.	RANGPO			YES	YES	PG ER-11	PG ER-11	Phase to phase fault occurred in line & 3 phase trip happened. Protection operated properly at both ends.
5	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-1	Jeerat: Y-B Ph, 21.83km, Z-1, Iy:9.25kA, Ib:8.96kA	Y-B	100 msec	Line tripped on phase to phase fault.	JEERAT			YES	NO	PG ER-II	WBSETCL	Phase to phase fault occurred in line & 3 phase trip happened. Protection operated properly at both ends.
6	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.	BINAGURI			YES	YES	BHUTAN	PG ER-II	Phase to phase fault occurred in line & 3 phase trip happened. Protection operated properly at both ends.
7	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.	BINAGURI			NO	NO	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.
8	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.	NEW PURNEA			NO	NO	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. Necessary checking was done but no such abnormality was observed. However, lightness has been done in relay cards & CT circuits. Further, line was charged successfully.

SI No.	Name of the incidence	PCC Recommendation	Latest status
145th PCC Meeting			
1.	Disturbance at 400 k V GMR S/s on 4 th Feb 2025 at 16:49 Hrs	<p>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.</p> <p>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.</p> <p>Member Secretary, ERPC advised GMR representative to share details of preventive maintenance carried out by GMR during 2024-25 to ERPC/ERLDC.</p>	<p><i>In 146th PCC Meeting, GMR representative was not present in the meeting.</i></p> <p><i>ERLDC representative informed that no update had been received from GMR.</i></p>
2.	Disturbance at 220 k V Indrawati S/s on 15 th Feb 2025 at 16:49 Hrs	<p>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.</p> <p>PCC advised OHPC representative to share present status of rectification of DR to ERPC/ERLDC.</p> <p>PCC advised OHPC representative to share detailed report to ERPC/ERLDC.</p>	<p><i>In 146th PCC Meeting, OHPC representative was not present in the meeting.</i></p> <p><i>SLDC Odisha representative said that update will be shared to ERPC/ERLDC after communication with OHPC.</i></p>

		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 20 th Feb 2025 at 02:33 Hrs	PCC advised JUSNL representative to share photographs of site during disturbance along with detailed report to ERPC/ERLDC.	<i>In 146th PCC Meeting, JUSNL representative informed that report had been prepared and will be shared to ERPC/ERLDC at earliest.</i>
4.	Disturbance at 765/400 k V Angul S/s on 20 th Feb 2025 at 16:20 Hrs	PCC advised PG representative to share updates of remedial actions to ERPC/ERLDC on weekly basis.	<i>In 146th PCC Meeting, PG representative replied that report of audit will be shared to CPRI as deliberated in 226th OCC Meeting. Root cause analysis report for failure of CTs will be prepared by OEM by 27th April 2025 subsequently it will be shared to ERPC/ERLDC</i>
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.	<i>In 146th PCC Meeting, PG representative was not present in the meeting. ERLDC representative informed that requisite information for changes in Bhutan Network (Commissioning of new 400/ 220 k V ICT at Malabase and LiLo of 220 k V Malbase-</i>

			<i>Chukha) had been shared to Powergrid.</i>
6.	Review of protection setting and protection audit as per IEGC, 2023	<p>PCC advised all utilities following –</p> <ul style="list-style-type: none"> • 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. <p>PCC advised concerned utilities to take suitable actions for complying with ERPC protection philosophy.</p> <p>PCC advised Odisha to explore possibility for implementing UVLS scheme in their system for safeguarding the system during cascading of critical lines.</p> <p>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.</p>	<i>In 146th PCC Meeting, ERLDC representative said that communication regarding review of backup overcurrent protection had been shared to all generating and transmission utility and it had been reviewed at most of generating stations as per ERPC Protection Philosophy however it is pending for few transmission utilities.</i>

144th PCC Meeting			
7.	Repeated Disturbance at 400 k V JSPL S/s	<p>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.</p> <p>PCC advised JSPL representative that matter related to excess dust production from industries should be communicated to CPCB</p>	<p>JSPL representative informed that remaining insulators will be replaced by 15th May 2025.</p> <p>He further added that they are also in communication with CPCB regarding excess dust production from industries.</p> <p><i>In 146th PCC Meeting, JSPL representative was not present in the meeting.</i></p>
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.	<p>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.</p> <p><i>In 146th PCC Meeting, DVC representative said that report will be shared to ERPC/ERLDC at earliest.</i></p>
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.	<i>In 146th PCC Meeting, PCC advised concerned utilities to share nominations to form this committee.</i>
10.	Mock testing of SPS	PCC advised SLDCs to share mock testing details for intra state SPS to ERPC/ERLDC.	<p><i>In 146th PCC Meeting, PCC advised SLDCs to share mock testing details for intra state SPS to ERPC/ERLDC.</i></p> <p><i>PCC advised ERPC representative to share communication to SLDCs for getting mock testing details for intra state SPS.</i></p>

143rd PCC Meeting			
11.	Disturbance at 400 k V JSPL S/s on 19 th Dec 2024 at 13:27 Hrs	<p>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.</p> <p>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.</p> <p>PCC advised JSPL representative to do system study of JSPL as earliest as possible and submit final report to ERPC/ERLDC.</p>	<i>In 146th PCC Meeting, PCC advised JSPL representative to share islanding scheme details to ERPC/ERLDC.</i>
12.	Tripping of 400KV/220KV 315 MVA ICT 2 AT NEW DUBURI on 21 st Dec 2024 at 03:49 Hrs	<p>PCC advised OPTCL representative to share report to ERPC/ERLDC.</p> <p>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.</p>	<i>In 146th PCC Meeting, OPTCL representative informed that report had been shared to ERPC/ERLDC on 29th March 2025.</i>
141st PCC Meeting			

<p>13..</p>	<p>Repeated disturbance at 220 kV Balimela (OPTCL) S/s and 220 kV Balimela(PH)(OHPC) S/s</p>	<p>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, MVA, voltage and speed data with 1 minimum 1 second resolution to ERPC/ERLDC for further study.</p> <p>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.</p> <p>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.</p> <p>PCC advised OHPC representative to expedite work for operating Balimela PH with both bus 1 and bus 2.</p> <p>PCC advised OHPC representative to rectify issue of time synchronisation of DR for identified feeders at Balimela PH at earliest.</p> <p>PCC advised OHPC representative to prepare SOP.</p> <p>Regarding 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.</p> <p>As per observation received from ERLDC, PCC advised OHPC representative to increase DR length of Balimela PH need as per</p>	<p>In 144th PCC Meeting, OHPC representative informed that DR length of Balimela PH had been increased as per ERPC DR standardization guideline.</p> <p>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.</p> <p>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 resolve issue in case there is need to hire engineer.</p> <p>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.</p> <p><i>In 146th PCC Meeting, OHPC representative was not present in the meeting.</i></p>
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14.	Repeated tripping of 220KV-KHAGARIA-NEW PURNEA-1&2	<p>PCC advised BSPTCL representative to resolve all issues associated with tripping of line along with root cause analysis of repeated tripping of line after flood ends and share analysis report to ERPC/ERLDC</p>	<p><i>In 146th PCC Meeting, BSPTCL representative informed that report will be shared by 15th May 2025 to ERPC/ERLDC.</i></p>
139th PCC Meeting			
15.	Total Power failure at 220/132 kV Katapalli (OPTCL) S/s on 29.08.2024 at 06:52 Hrs	<p>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.</p> <p>PCC advised OPTCL to investigate about reason behind non-operation of protection on 29th Aug 2024 and submit observation to ERPC/ERLDC.</p> <p>PCC advised SLDC Odisha, OPTCL to communicate with Hindalco to explore possibility of</p>	<p>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.</p> <p><i>In 146th PCC Meeting, SLDC Odisha representative said that settings had been shared to ERLDC.</i></p>

		<p>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.</p> <p>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.</p> <p>PCC advised OPTCL representative to share status of remedial measures taken for protection/ operation issues to ERPC/ERLDC on periodic basis.</p>	<p><i>ERLDC representative informed that settings are being reviewed.</i></p>
136th PCC Meeting			
16.	Disturbance at 220 kV Tenughat (TVNL) S/s on 29.05.2024 at 12:57 Hrs	<p>PCC advised JUSNL representative to rectify auto-reclose issue at Govindpur end by next week and intimate to ERPC/ERLDC.</p> <p>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.</p> <p>PCC advised CRITL, JUSNL team to test auto-reclose and carrier at</p>	<p>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.</p> <p>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.</p> <p><i>In 146th PCC Meeting, TVNL representative informed that</i></p>

		both Govindpur as well as Tenughat end.	<p>as per communication received from Govindpur end JUSNL, CRITL team will visit Tenughat S/s soon for detailed checking of auto-recloser.</p> <p>PCC advised TVNL representative to share observation report to ERPC/ERLDC after detailed checking of auto-recloser by CRITL team.</p>
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.	<p>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.</p> <p><i>In 146th PCC Meeting, SLDC Odisha representative informed that commissioning work of SPS will be started by second week of May 2025.</i></p>