



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/2024/ 1289

दिनांक /DATE: 30/10/2024

सेवा में / To,

संलग्न सूची के अनुसार / As per list enclosed.

विषय : दिनांक – 24.10.2024 को आयोजित 140 वीं पीसीसी बैठक का कार्यवृत्त ।

Sub: Minutes of the 140th PCC meeting held on 24.10.2024

महोदय/ Sir,

24.10.2024 को आयोजित 140वीं 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 140th PCC meeting of ERPC held on 24.10.2024 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,

*for Kumar Satyam
30/10/2024*

(आई.के.मेहरा / I.K.Mehra)

अधीक्षण अभियंता(पी.एस)

Superintending Engineer (PS)

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 Corp. 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, डुक 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
140th PCC Meeting

Date:30.10.2024
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

MINUTES OF 140th PROTECTION COORDINATION SUB-COMMITTEE MEETING TO BE HELD ON 24.10.2024 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 protection performance of eastern region for Sep 24 with help of presentation which is attached at **Annexure A.2**.

PART – A

ITEM NO. A.1: Confirmation of Minutes of 139th Protection Coordination sub-Committee Meeting held on 26th Sep 2024 through MS Teams.

The minutes of 139th Protection Coordination sub-Committee meeting held on 26.09.2024 was circulated vide letter dated 30.09.2024.

Members may confirm the minutes of the Meeting.

Deliberation in the meeting

Members confirmed the minutes of 139th PCC Meeting.

PART – B

ITEM NO. B.1: Major grid events other than GD/GI

1.1 Bus tripping occurred in Eastern Region during September'24

Element Name	Tripping Date	Reason	Utility
400 kV Bus-2 at Rourkela	05/09/2024	Faulty TNC switch of isolator extending DC	PG (Odisha)
220 kV Bus-1 at Naubatpur	17/09/2024	LBB operation	BGCL

Report for tripping of 400 kV Bus-2 at Rourkela on 5th Sep 2024 is attached.

Concerned Utilities may explain.

Deliberation in the meeting

- **Tripping of 400 kV Bus-2 at Rourkela on 05/09/2024**

Powergrid representative explained the incident with help of report which is attached at **Annexure B.1.1**.

He informed that 400kV Talcher-2 main bay is under Shutdown for Breaker Drive Overhauling work and Modification of Mechanical gang to Electrical gang operation of 40789A isolator since 31.08.24. On 5th Sep 2024, after completion of DCRM and timing test of breaker, cables were about

to be opened however meanwhile, Isolator DC supply fuse in control panel at C/R was connected to check the DC supply up to isolator MOM box by engaged team consequently 40789A isolator got automatically closed leading to bus fault at 400 k V Bus 2 through testing kit which resulted in operation of bus bar protection. Subsequently all elements connected to 400 k V Bus 2 got tripped at Rourkela S/s.

He further added that reason behind extension of DC signal was checked after tripping and it was found that faulty TNC switch of respective isolator in control panel was extending the DC to close circuit afterwards same was replaced.

He also informed that as preventive measures, DC & AC supply in Isolator MOM boxes should be kept off till all works on CB are completed and T&P are removed. Further, DC supply from Control panel to 40789A Isolator should not be extended till all works on CB are completed.

PCC advised Powergrid to provide trainings to site officials on periodic basis and advise them to follow SOPs strictly in order to avoid such disturbances in future.

ERLDC representative informed that at time of disturbance, 220 k V Rourkela circuit -1 and 2 had also tripped from Tarkera end for which report is attached at **Annexure B.1.2**. He informed that as per report, both the relays of Rorkela-1 and Rourkela-2 were checked by OPTCL and observed that no DR was generated in both the relays of circuit 1 & circuit 2.

Upon checking the events it was found that siemens 7SA52 relay doesn't have any tripping events for three pole tripping. However, in events of Micom relay P444 it was found that three pole tripping output contact closed for 10 ms and power swing was detected however there was no tripping in Zone 1, Zone 2, Zone 3, Zone 4 as power swing blocked in all zones of both relays therefore both circuit 1 & circuit 2 had tripped on out of step as per the OUT OF STEP node directly configured with Three pole trip contact at Tarkera configuration.

He further informed that after mutual discussion, OPTCL was advised to allow power swing trip in zone -1 and block power swing in Zone-2,3& 4 with unblocking time 2 sec as per protection philosophy of eastern region. Further, OUT OF STEP setting was advised to be disabled and removed from PSL logic. Suggestions has been updated to the Main-1 & 2 relays of 220kV Rourkela-1 & 2 at 220/132 kV Tarkera GSS as informed by OPTCL.

PCC advised OPTCL representative and other utilities too to update protection settings as per Protection philosophy of ERPC.

- **Tripping of 220 kV Bus-1 at Naubatpur on 17/09/2024**

BGCL representative was not available in the meeting. On enquiry from ERPC representative, ERLDC representative informed that no report / communication was received from BGCL in this regard however as per their record most probably no fault was present during the disturbance.

PCC advised ERPC representative to share communication to BGCL in order to obtain report of the bus tripping along with remedial actions take.

1.2 Repeated tripping of transmission lines during the month of September'24

SI.No.	Name of the Element	No. of times Tripped	Remarks	Utility
1	765KV-JHARSUGUDA-RAIPUR PS (DURG)-1	3	Tripped due to persistent fault in 2 instances.	PG (Odisha Projects)

2	220KV-RANCHI-MTPS(DVC)-1	5	Fault around 170 km from Ranchi in 4 instances. A/r successful from Ranchi in three instances	DVC
3	220KV-KHAGARIA-NEW PURNEA-1	4	Tripped on phase-to-phase fault in 3 instances.	BSPTCL/PG(ER-I)
4	220KV-PATNA-KHAGAU-1	3	Fault in B_ph in all 3 instances with distance of around 16 km from Khagaul.	BSPTCL
5	132KV-NAGARUNTARI-NABINAGAR-1	7	Tripped on Phase to ground fault in each instance.	BSPTCL/JUSNL
6	132KV-MAITHON-JAMTARA-1	5	Tripped on Phase to ground fault in all instances with fault distance at around 2-3 Km from Maithon in each case.	DVC/JUSNL

Concerned utilities may explain.

Deliberation in the meeting

- ***Repeated tripping of 765KV-JHARSUGUDA-RAIPUR PS (DURG)-1***

Powergrid representative informed that lines belong to Indigrd however as per their information, lines had tripped two times (on 16th Sep 2024 and 26th Sep 2024) due to persistence fault caused by insulator flashover and in one incidence, LA had failed at Raipur PS (Durg) S/s end (on 19th Sep 2024) leading to tripping of line.

Indigrd representative confirmed the remarks made by Powergrid. He further added that patrolling of line was done by team after the disturbance and emergency shutdown of line was taken during which 2 damaged polymer insulators were replaced and at present there is no issue associated with line therefore no tripping had occurred after this. ERLDC representative confirmed that no tripping had occurred in Oct 2024.

Member Secretary, ERPC advised Indigrd to share root cause analysis report for damaged insulator to ERPC/ERLDC/Powergrid Odisha. PCC advised same to Indigrd.

PCC opined that since line is of 765 k V voltage level so its healthiness is critical for grid hence it advised Indigrd to take precautionary measures for line in order to avoid repeated tripping.

On enquiry from PCC regarding reason behind LA failure at Raipur PS (Durg) S/s, Powergrid (Odisha) representative informed that as per communication made with Powergrid representative of WR, LA is of CG make which had failed at Durg S/s however during testing of LA before monsoon, during monsoon and after monsoon and measure of insulation resistance during AMP, results were satisfactory therefore communication had been forwarded to OEM along with report. He further informed that LA failure had occurred earlier at 400 k V Jharsuguda S/s also. He informed that after receiving observation from OEM, it will be shared to ERPC/ERLDC.

- **Repeated tripping of 220KV-RANCHI-MTPS(DVC)-1**

DVC representative informed that line had tripped repeatedly in month of Sep 2024 due to vegetation issues in which most of part had been cleared and further vegetation will be removed at earliest.

Member Secretary, ERPC advised ERPC representative to send communication to higher authority of DVC highlighting this issue so that it can be resolved at earliest.

- **Repeated tripping of 220KV-KHAGARIA-NEW PURNEA-1**

BSPTCL representative informed that after repeated tripping of line (on 12/09/2024, 15/09/2024, 28/09/2024, 30/09/2024), patrolling was done consequently some clearance issues was observed around 100 km from Khagaria end due to flood.

ERLDC representative opined that since tripping had occurred due to phase to phase fault so it can not be due to flood, there might be certain other clearance issues like vegetation. PCC agreed with same however BSPTCL representative said that even after doing thorough patrolling of line, vegetation issues were not found anywhere and there is water logging issue in concerned region so there might be chances that issue had not been identified correctly.

PCC advised ERLDC representative to do analysis of tripping of 220KV-KHAGARIA-NEW PURNEA-1 & 2 for last one year and share to ERPC/BSPTCL. It further advised BSPTCL representative to resolve all clearance issues along with root cause analysis of repeated tripping of line after flood ends and share analysis report to ERPC/ERLDC.

- **Repeated tripping of 220KV-PATNA-KHAGAUL-1**

BSPTCL representative informed that at particular location in line, clearance with ground had decreased due to increase in ground level caused by dumping yard subsequently line had tripped due to B phase fault for 3 times in month of Sep 2024. He further added that by raising tower height, issue had been resolved.

MS, ERPC advised BSPTCL representative to share photographs of site to ERPC/ERLDC. Since tower height cannot be raised every time due to technical limitation, PCC advised ERPC representative to highlight issue of dumping yard to higher authority as it should not be present below line because it will result in repeated tripping, conductor damage etc.

- **Repeated tripping of 132KV-NAGARUNTARI-NABINAGAR-1**

BSPTCL representative informed that out of 7 nos of tripping occurred in month of Sep 2024, tripping of line had occurred around 2 -3 times from their end subsequently patrolling of line (12 km under BSPTCL jurisdiction) was done in which around 10 nos of polymer insulators were found damaged which had been replaced.

JUSNL representative informed that after repeated tripping of lines (4 times in Sep 2024 from their end) patrolling was done in which few vegetation issues and damaged insulators were found at certain locations. He further informed that damaged insulators were replaced and vegetation issues had been cleared subsequently no tripping had occurred recently.

ERLDC representative informed that line had also tripped 3 times in month of Oct 2024 with latest tripping on 14th Oct 2024.

PCC advised BSPTCL & JUSNL representative to carry out third party inspection in concerned jurisdiction and share report to ERPC/ERLDC.

- **Repeated tripping of 132KV-MAITHON-JAMTARA-1**

DVC representative informed that after repeated tripping of line, patrolling was done in concerned region in which it was found that dumping of dust by industry of Impex ferro tech ltd had observed around 2-4 km (Tower location 7 & 8) from Maithon end which had resulted in reducing B phase clearance of line with ground resulting in repeated tripping of line due to B phase fault however issue had been rectified and no tripping of line had occurred further.

On enquiry from Member Secretary, ERPC, DVC representative informed that line belongs to JUSNL so maintenance and RoW issues are taken by JUSNL however power to industry is provided by DVC by separate feeder of 33 k V.

JUSNL representative was not available in the meeting.

PCC advised ERPC to share communication to JUSNL to share report mentioning actions taken for removing dumping done by industry along with photographs of site and further measures. It further advised DVC to share report prepared by them to ERPC/ERLDC and send letter to JUSNL asking for actions taken so far for removing dumping done by industry.

1.3 Tripping of ICTs during the month of September'24

Sl. No	Name of the Element	Trip Date	Trip Time	Remarks	Utility
1	400KV/220KV 315 MVA ICT 1 AT NEW CHANDITALA	26-09-2024	01:40	PRD Operated	WB
2	400KV/220KV 315 MVA ICT 1 AT PATRATU	25-09-2024	12:50	Tripped from 220 kV side only.	JUSNL
3	400KV/220KV 500 MVA ICT 1 AT MERAMUNDALI B	21-09-2024	17:58	PRD trip	OPTCL
4	400KV/220KV 315 MVA ICT 1 AT NORTH KARANPURA	12-09-2024	12:53	Tripped on Differential protection	NTPC
5	400KV/220KV 315 MVA ICT 2 AT LATEHAR(JUSNL)	04-09-2024	13:55	PRV operated.	JUSNL
6	400KV/220KV 315 MVA ICT 3 AT ROURKELA	04-09-2024	16:23	LV over flux protection, trip command was issued by relay due to ferro resonance in R phase CVT and there was no genuine fault.	PG (Odisha Project)

7	400KV/220KV 315 MVA ICT 1 AT ROURKELA	04-09-2024	16:23	LV over flux protection, trip command was issued by relay due to ferro resonance in R phase CVT and there was no genuine fault.	PG (Odisha Project)
8	400KV/220KV 315 MVA ICT 2 AT BIHARSARIFF	04-09-2024	12:31	Inter trip operated	PG(ER-I)

Members may discuss.

Deliberation in the meeting

- **Tripping of 400KV/220KV 315 MVA ICT 1 AT NEW CHANDITALA on 26th Sep 2024 at 01:40 Hrs**

WBSETCL representative informed that microswitch of PRD relay had sorted due to Sulphur accumulation resulting in maloperation of PRD relay. He further added that microswitch was replaced after the incident subsequently ICT was charged.

- **Tripping of 400KV/220KV 315 MVA ICT 1 AT PATRATU on 25th Sep 2024 at 12:50 Hrs**

JUSNL representative informed that on day of incident, 220 kV Patratu- Hatia-1 was under shutdown and commissioning work for PLCC of Hatia circuit was in progress during which LBB protection had operated resulting in tripping of Burmu -1 and 2 lines as well ICT 1 at Patratu. He further added that DR was not recorded during the disturbance as there was no fault.

- **Tripping of 400KV/220KV 500 MVA ICT 1 AT MERAMUNDALI B on 21st Sep 2024 at 17:58 Hrs**

OPTCL representative informed that due to moisture ingress caused by heavy rain and wind on 21st Sep 2024, PRD trip had operated resulting in tripping of ICT. PCC advised OPTCL representative to do preventive maintenance activities on regular basis like proper sealing of relay in order to avoid such tripping in future.

- **Tripping of 400KV/220KV 315 MVA ICT 1 AT NORTH KARANPURA on 12th Sep 2024 at 12:53 Hrs**

NTPC North Karanpura representative was not available in the meeting.

- **Tripping of 400KV/220KV 315 MVA ICT 2 AT LATEHAR(JUSNL) on 4th Sep 2024 at 13:55 Hrs**

JUSNL representative informed that on doing investigation, after tripping of ICT, NO contacts of PRD switch were found sorted which had resulted in maloperation of PRD relay leading to tripping of ICT subsequently contacts had been replaced. He further added that it seems that this was manufacturing defect as per communication made with OEM.

- **Tripping of 400KV/220KV 315 MVA ICT 3 & ICT 1 AT ROURKELA on 4th Sep 2024 at 16:23 Hrs**

Powergrid Odisha representative informed that at Rourkela S/s, 400k V /220 k V ICTs are connected in parallel operation and over flux protection is also enabled for both ICTs on hv as well as lv side. He further added that 220 k V bus CVTs are being utilized to provide power to lv

side of overflux protection and 220 k V bus has DMT scheme with lv incomer of ICT 1 and ICT 3 connected to Bus -1.

On 4th Sep 2024, ICT 1 and ICT 3 had tripped due to operation of lv over flux protection as per thermal settings. He informed that after tripping, thorough investigation was done in which following observations were recorded –

- It was found that as per DR, R phase bus CVT voltage was oscillating having harmonics other than fundamental frequency similar to oscillations during ferro resonance in lines.
- B phase CVT fuse in relay panel was blown out during the event.
- Trip command was continuously extended even after tripping.
- R phase secondary voltage was also found to be higher than Y and B phase to neutral voltage
- Voltage limiting Device was found damaged (damping device was sorted) similar to incident happened in month of July 2024

On enquiry from PCC regarding remedial measures taken, PG Odisha representative informed that VLD was replaced already in month of July 2024 however tripping had occurred again hence CVT had been replaced.

- **Tripping of 400KV/220KV 315 MVA ICT 2 AT BIHARSARIFF on 4th Sep 2024 at 12:31 Hrs**

BSPTCL representative informed that on 4th Sep 2024, inter trip command was issued from their side resulting in tripping of ICT at Biharsharif. He further added that there are two contacts of backup relay for ICT in which one of contact is given for intertrip command to Fathua and other is given for intertrip command to Biharsharif. On request of Powergrid representative, these contacts had been interchanged and Megger test was also done which give satisfactorily results subsequently no further tripping had been observed.

ITEM NO. B.2: Implementation of A/r in 220 kV Ranchi-Mejia (MTPS)-1

220 kV Ranchi-Mejia (MTPS)-1 has tripped 21 times since January'24. Out of 21 instances, A/r has been successful from Ranchi in 17 instances. This is indicative of transient nature of faults. A/r has been kept disabled at Mejia end citing potential damage to old running units. One alternative was suggested in 139th PCC to enable A/r with voltage check in which A/r attempt will be taken by Mejia only when A/r is successful at remote end. This was ruled out by DVC as line CVT is present in only one phase at Mejia end.

ERLDC has suggested another alternative to increase A/r dead time at Mejia and take A/r attempt only after it is successful at Ranchi. In case of A/r failure at Ranchi, a DT signal will be sent, and all three phases will trip at Mejia. A letter in this regard has been sent by ERLDC on 16.10.2024, ref. ERLDC/SO/2024-25/745 which is attached at **Annexure B.2**.

According to CEA (Technical standard for construction of electric plants and electric lines) Regulations, 2022 -Clause 48.3 (Schedule-V), transmission line of 220 kV and above should have single-phase auto-reclosing facility.

DVC may update. Members may note.

Deliberation in the meeting

DVC representative informed that scheme suggested by ERLDC regarding increasing A/r dead time at Mejia end is under discussion for which a meeting is scheduled in one week so that logic of A/r will be finalized along with communication scheme at their end and further it will be implemented in coordination with Powergrid by Oct 2024.

He informed that 2 free codes are available at Mejia end in which one code will be utilized for DT signal and other code will be utilized for auto-recloser.

PCC informed that according to CEA (Technical standard for construction of electric plants and electric lines) Regulations, 2022 -Clause 48.3 (Schedule-V), transmission line of 220 kV and above should have single-phase auto-reclosing facility therefore it advised all utilities that in case of keeping single phase auto-recloser scheme to be disabled for any line of 220 kV and above due to any reason should be intimated to ERPC/ERLDC so that it can be placed in PCC Meeting in order to find solution for keeping single phase auto-recloser scheme enabled by using any alternative arrangement /scheme as required.

ITEM NO. B.3: Submission of protection performance indices on monthly basis by users to RPC and RLDC for 220 kV and above lines

As per IEGC 2023 Clause 15(6), 15(7) all users shall submit protection performance indices of previous month by 10th of every month to ERPC and ERLDC along with reasons for performance indices less than unity of individual element wise protection system to the respective RPC and action plan for corrective measures. For the month of September'24, JUSNL, WBSETCL, BSPTCL, OPTCL, DMTCL, NTPC Barh, PG Odisha, Jorethang HEP, Tashiding HEP have submitted the same, which is attached.

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

Sl.no	Utility Name	June	July	August	September
1	PG-ER-1				
2	PG-ER-2				
3	PG-Odisha	YES			Yes (21.10.2024)
4	WBSETCL/WBPDCL	YES	YES	YES (20.09.24)	Yes (08.10.2024)/-
5	BSPTCL/ BGCL	YES		YES (19.09.24)	Yes (15.10.2024)/-
6	OPTCL/ OHPC				Yes (22.10.2024)
7	DVC	YES	YES	YES (24.09.24)	
8	JUSNL	YES		Yes (14.09.24)	Yes (08.10.2024)
9	Sikkim				
10	OPGC				
11	PMTL				
12	NTPC- KHSTPP	YES			
13	NTPC- FSTPP	YES	YES	YES (18.09.24)	
14	NTPC-BARH	YES			Yes (16.10.2024)
15	NTPC- TSTPP				
16	NTPC- KBUNL	YES	YES		
17	NPGC	YES			
18	BRBCL	YES			

19	NTPC- DARILAPLI				
20	NTPC- NORTH KARNPUARA	YES			
21	ATL				
22	APNRL				
23	CBPTCL				
24	DMTCL			YES (13.09.24)	Yes (05.10.2024)
25	ENICL				
26	Chuzachen HEP				
27	Jorethang HEP	YES	YES	YES (01.09.24)	Yes (01.10.2024)
28	Tashiding Hep				Yes (03.10.2024)
29	GMR				
30	IBEUL				
31	JITPL				
32	MPL				
33	NKTL				
34	OGPTL				
35	PMJTL				
36	Powerlink				
37	PKTCL				
38	NHPC Rangit				
39	Rongnichu HEP				
40	SPTL				

In 139th PCC Meeting, ERPC representative informed that for the month of Aug '24, Powergrid ER-1, Powergrid ER-2, BSPTCL, JUSNL, DVC, OPTCL, WBSETCL, DMTCL, NTPC Farkka, NTPC Barh & Jorethang HEP had submitted the protection performance indices.

On enquiry from ERPC representative regarding non submission of PP indices, Powergrid Odisha representative submitted that since no tripping had occurred in month of Aug 2024 therefore indices was not submitted.

SE, ERPC replied Powergrid Odisha representative that even in case of no tripping of lines, PP indices can be submitted mentioning nil tripping.

ERPC representative informed DVC representative that indices submitted by DVC is not in desired format and indices needs to be given for all elements individually for which DVC representative requested ERPC representative to share format of PP indices. As per the request, ERPC representative had shared format which is attached.

PCC advised all utilities to submit Protection Performance Indices of every month before 10th day of next month so that it can be analyzed jointly by ERPC & ERLDC. It further requested all utilities to provide nodal officer details also so that it will be easier for ERPC to coordinate for getting these details. It also requested all SLDC representative to coordinate with their concerned utilities for getting these data.

Members may discuss.

Deliberation in the meeting

ERPC representative informed that for month of Sep 2024, protection performance indices had been received from JUSNL, WBSETCL, BSPTCL, OPTCL, DMTCL, NTPC Barh, PG Odisha, PG ER-II, Jorethang HEP, Tashiding HEP attached at **Annexure B.3**.

PG ER-1 representative informed that PP indices for month of Sep 2024 will be shared by 24th Oct 2024.

ERLDC representative informed that analysis of protection performance indices for month of Sep 2024 was done by them subsequently they found that calculation of PP indices was right for all utilities except having few observations with respect to PG Odisha, NTPC Barh and JUSNL.

In case of PG Odisha, ERLDC representative informed that for tripping of 765 k V Jharsuguda-Raipur on 19th Sep 2024, carrier was received at time of auto-recloser failed attempt instead of occurrence of first fault (i. e. delayed receipt of carrier) hence indices had to be corrected for that.

In case of NTPC Barh, ERLDC representative informed that for tripping of 400 k V Barh – Patna - 1 on 6th Sep 2024, since auto-recloser had not operated during the tripping incident therefore Nf will be 1 however Nu will be 0 since there is no unwanted operation occurred in the incident. Further, column of Ni is not required to be mentioned in report.

In case of JUSNL, ERLDC representative informed that for few tripping, it is observed that both Nc and Nf is said to be 1 which is not possible (i. e. both failed and correct operation can not occur for same tripping incident). Since JUSNL representative was not available in the meeting, PCC advised ERLDC representative to discuss this issue bilaterally with JUSNL representative.

ERLDC representative informed that for tripping of 220 k V Tashiding -New Meli -1 on 18th Sep 2024 it is observed that DT signal had been sent to New Meli end from Tashiding end for single phase fault which is incorrect. Further similar scheme is observed for any single-phase fault occurred in lines from Tashiding end. Tashiding HEP representative confirmed the same.

PCC advised Tashiding HEP representative to enable A/r scheme in single phase fault so that for any single phase fault, first of all A/r attempt will be done from Tashiding end and in case of failure of auto-recloser attempt, DT signal will be sent to remote end.

ERLDC representative informed that they have received PP indices from DVC however they had shared indices cumulatively for all tripping instead of indices values for individual tripping. PCC advised DVC representative to provide PP indices for all tripping individually.

NHPC representative informed that lines up to 132 k V voltage level are present under Rangit hence PP indices is not submitted by them.

ERPC representative informed that since there are no lines of 220 k V and above so submission of PP indices is not mandatory for Rangit NHPC.

CESC representative enquired that whether Protection Performance Indices are required to be submitted by them since their name is not included in list for which ERPC representative replied that as per IEGC 2023 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 220 k V and above system and it will be included in list.

Powergrid ER-I, Powergrid ER-II and OPTCL representative informed that PP indices had been submitted for month of Aug 2024 however it had not updated in list for which PCC advised ERLDC and ERPC to update list.

SE, ERPC representative advised all utilities to provide PP indices of particular month before 10th day of next month from Nov 2024 else issue will be communication to concerned higher authorities of utilities.

PCC advised all utilities to submit Protection Performance Indices of every month before 10th day of next month so that it can be analyzed jointly by ERPC & ERLDC. It further requested all utilities to provide nodal officer details also so that it will be easier for ERPC to coordinate for getting these details. It also requested all SLDC representative to coordinate with their concerned utilities for getting these data.

ITEM NO. B.4: 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.

Members may discuss.

Deliberation in the meeting

ERPC representative informed that as per protection protocol developed by NPC in line with IEGC 2023, Protection System Analysis Group (PSAG) needs to be formed in eastern region with members from ERPC, NLDC, ERLDC, 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.

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

ITEM NO. B.5: Single Line Tripping Incidences in month of Sep 2024

Single line tripping incidents in the month of Sep 2024 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 Sep 2024 is attached at **Annexure B.5**.*

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	Not Received
7	DVC	Received
8	JUSNL	Received
9	OPGC	Not Received
10	CESC	Received
11	NTPC	Not Received
20	NHPC	Received
21	IPP	Not Received

In 139th PCC Meeting, on enquiry from ERPC representative regarding internal audit plan, OPTCL representative submitted that internal protection audit plan upto March 2025 had been received and it will be submitted to ERPC/ERLDC by 7 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.

DMTCL vide email dated 1st Oct 2024 had submitted internal protection audit plan.

Concerned utilities may update.

Deliberation in the 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.

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 139th PCC, ERPC representative informed that third party protection audit plan has been received from OPTCL. 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.

OPTCL representative requested ERPC representative to intimate list of substations for which protection audit can be done through audit team of ERPC so that date can be finalized for carrying out audit for which ERPC representative replied that after discussing with ERLDC, list for substations for which audit will be done through them will be shared. He also informed that third party agency will be hired for carrying out audit.

SE, ERPC informed that ERPC Secretariat would identify critical substations in consultation with ERLDC for which the protection audit will be carried out by ERPC along with the members from ERLDC & other utilities with help of third party agencies (to be hired by ERPC).

PCC advised all utilities to submit third party protection audit plan by 15 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.

Members may update.

Deliberation in the 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.

ITEM NO. C.3: 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.3**.

ITEM NO. C.4: Revision in protection settings of 400 kV Dikchu Teesta 3 line (Agenda by Dikchu HEP)

After the flooding of the Dikchu HEP Plant in Oct 2023, the plant was under restoration and is presently undergoing re-commissioning activities targeting the end of Oct 2024 to commission the first unit. The transmission system of the Dikchu plant is through a single-line LILLO arrangement of the 400 kV Teesta- Rango D/c lines.

As the Teesta -3 HEP plant is under shut down and is not likely to be re-commissioned in the near future, the Transmission lines of Teesta 3 plant i.e. 400 kV Teesta 3 -Rangpo & 400 kV Teesta 3- Dikchu, have been interconnected near Teesta 3 Pothead yard, bypassing the GIS. Hence Dikchu-Teesta-3 line (15 kms) shall be effectively extended directly to Rangpo, (Dikchu-Teesta3-Rangpoo) and the total length of the line shall be around 71 Kms. In view of this, the distance relay settings at Dikchu end needs to be changed. Further, settings will be changed back once Teesta 3 Plant is operational.

The other line from Dikchu to Rangpoo (32 km) shall not require any change in trip settings.

The details of the relays installed are given in following table and proposed settings are attached at **Annexure C.4**.

Distance Protection of Dikchu Teesta 3 line	Relay 1	Relay 2
Relay	Alstom P444	ABB REL670
PTR	400kV/110V	400kV/110V

CTR	3000/1A	3000/1A
Line Length presently considered	15.10 KM	
Line Impedance presently considered	3.825 Ohm	
Line Angle	86.6 Degree	

Dikchu HEP may explain. Members may discuss.

Deliberation in the meeting

PCC advised ERPC & ERLDC representative to coordinate with Dikchu HEP representative for finalizing proposed settings at Dikchu HEP end.

List of participants in 140th PCC Meeting held on 24th Oct 2024 at 10:30 AM

Annexure A.1

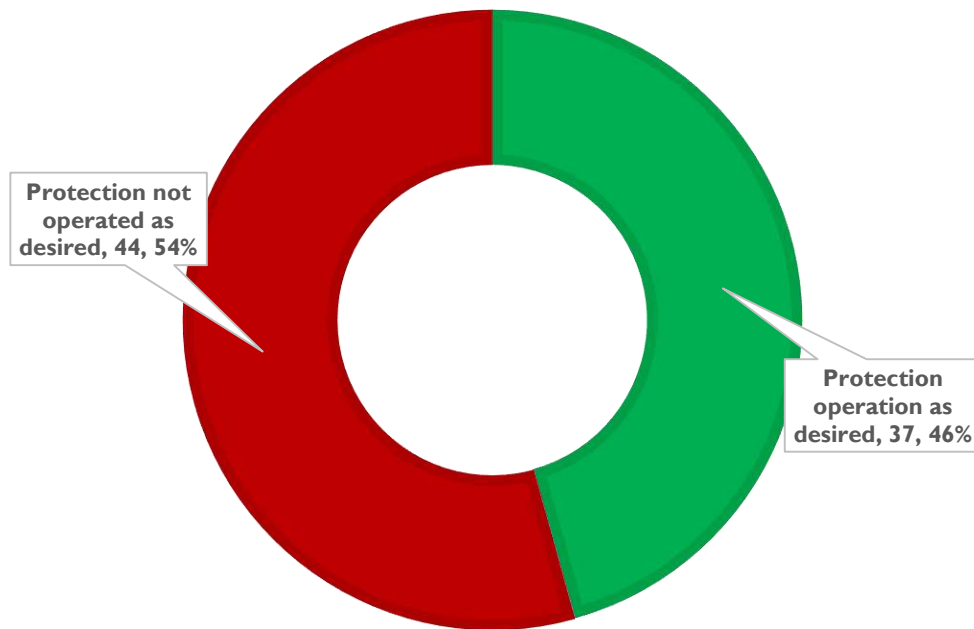
Name	First Join	Email				
ERPC Kolkata	10/24/24, 9:50:43 AM	ERPC@KolkataMST.onmicrosoft.com				
Samish (External)	10/24/24, 10:06:35 AM	samish@tvnl.in				
Nisar Husain	10/24/24, 10:08:47 AM					
THEP (Unverified)	10/24/24, 10:09:57 AM					
RAHUL RAJ (Unverified)	10/24/24, 10:09:58 AM					
NIRMAL MONDAL , ADDL. CE , WBSETCL (Unverified)	10/24/24, 10:14:39 AM					
WBPDC (Unverified)	10/24/24, 10:17:36 AM					
Kumar Satyam, AEE, ERPC (Unverified)	10/24/24, 10:19:13 AM					
akhand (Unverified)	10/24/24, 10:19:26 AM					
b parida (Unverified)	10/24/24, 10:20:00 AM					
V Anil Krishna (Unverified)	10/24/24, 10:21:40 AM					
MERAMUNDALI OPTCL (Unverified)	10/24/24, 10:22:01 AM					
MD Aarif (External)	10/24/24, 10:24:28 AM	arif.md@greenkoenergyprojects.com				
SLDC ODISHA (Unverified)	10/24/24, 10:24:48 AM					
JAGANATH PANI NHPC (Unverified)	10/24/24, 10:25:47 AM					
SMS SAHOO, DGM(ELECT), OPTCL, BHUBANESWAR (Unverified)	10/24/24, 10:25:55 AM					
PARAG CHATTERJEE (External)	10/24/24, 10:27:42 AM	PARAGCHATTERJEE@NTPC.CO.IN				
Somnath Chatterjee (External)	10/24/24, 10:28:04 AM	schatterjee@tatapower.com				
Rakesh Kr Pradhan (External)	10/24/24, 10:28:22 AM	rkpradhan@erldc.onmicrosoft.com				
Akash Kumar Modi (External)	10/24/24, 10:29:40 AM	akmodi@erldc.onmicrosoft.com				
arindam bsptcl (Unverified)	10/24/24, 10:29:46 AM					
Chilakalapalli Mohana Rao {सी एच मोहन राव} (External)	10/24/24, 10:29:57 AM	mohan.rao@powergrid.in				
Gitesh (Unverified)	10/24/24, 10:30:19 AM					
Himanshu Kumar Anshu {हिमांशु कुमार अंशु} (External)	10/24/24, 10:30:32 AM	himanshukumar@powergrid.in				
THEO (Unverified)	10/24/24, 10:31:27 AM					
Shyamal Konar (External)	10/24/24, 10:31:29 AM	konar_s@erldc.onmicrosoft.com				
Manas Mandal (External)	10/24/24, 10:32:05 AM	manas.mandal@dansenergy1.onmicrosoft.com				
Manas Das	10/24/24, 10:32:11 AM					
EEE CRITL (Unverified)	10/24/24, 10:32:41 AM					
CRITL BSPTCL (Unverified)	10/24/24, 10:33:50 AM					
Nishant Kumar Shankwar (External)	10/24/24, 10:34:03 AM	Nishant.Kumar@energy-sel.com				
Mithun Gayen {मिथुन गायेन} (External)	10/24/24, 10:34:19 AM	mithun.gayen@powergrid.in				
Bilash Achari (External)	10/24/24, 10:35:30 AM	bilash.achari@erldc.onmicrosoft.com				
Rajiv Singh (Unverified)	10/24/24, 10:35:44 AM					
ssarkar (Unverified)	10/24/24, 10:38:17 AM					
Amresh Prusti (External)	10/24/24, 10:38:25 AM	amresh.prusti@opgc.co.in				

shadab (Unverified)	10/24/24, 10:38:48 AM					
ESE BSPTCL (Unverified)	10/24/24, 10:40:00 AM					
DGM,EMR,BURLA,OPTCL (Unverified)	10/24/24, 10:41:29 AM					
critl bsptcl (Unverified)	10/24/24, 10:43:07 AM					
SLDC RANCHI	10/24/24, 10:43:19 AM					
Avinash Kumar	10/24/24, 10:43:44 AM					
Amol Mengar	10/24/24, 10:45:12 AM					
Sr. Manager, TD, Daltonganj (Unverified)	10/24/24, 10:45:33 AM					
CRITL (Unverified)	10/24/24, 10:46:07 AM					
GSS JAMTARA (M/JMT) (Unverified)	10/24/24, 10:47:13 AM					
emr s/d ksng (Unverified)	10/24/24, 10:47:49 AM					
DGM,E&MR,Burla (Unverified)	10/24/24, 10:47:57 AM					
WBPDC (Unverified)	10/24/24, 10:56:36 AM					
CTD (Unverified)	10/24/24, 11:00:26 AM					
SANTOSH KUMAR (Unverified)	10/24/24, 11:04:07 AM					
Manager Latehar (Unverified)	10/24/24, 11:05:31 AM					
Sanatan Sarvesh, DD, RIO(E) (Unverified)	10/24/24, 11:06:04 AM					
Eee CRITL (Unverified)	10/24/24, 11:07:27 AM					
Gautam Ranjan (External)	10/24/24, 11:08:14 AM	GAUTAMRANJAN@NTPC.CO.IN				
manoj kumar (Unverified)	10/24/24, 11:10:33 AM					
RAHUL RAJ	10/24/24, 11:15:11 AM					
shadab (Unverified)	10/24/24, 11:15:21 AM					
Bablu Kumar Singh (External)	10/24/24, 11:19:40 AM	bablu.singh@opgc.co.in				
AMOL MENGAR- DANS ENERGY (Unverified)	10/24/24, 11:29:45 AM					
Vivek Karthikeyan (External)	10/24/24, 11:29:59 AM	vivek.karthikeyan1@indigrid.com				
Alok Pratap Singh (External)	10/24/24, 11:33:32 AM	apsingh@erldc.onmicrosoft.com				
BIJOY MUKHERJEE (External)	10/24/24, 11:47:02 AM	bijoy.mukherjee@dvc.gov.in				
A Basu (Unverified)	10/24/24, 11:49:15 AM					
Pranav Rathore (External)	10/24/24, 11:49:30 AM	pranav.rathore@indigrid.com				
Premkant Kumar Singh (External)	10/24/24, 12:33:40 PM	premkant@erldc.onmicrosoft.com				
SUNIL KUMAR (Unverified)	10/24/24, 12:43:46 PM					
Akhand (Unverified)	10/24/24, 1:03:59 PM					
Boni Dhananjay (Unverified)	10/24/24, 1:31:52 PM					

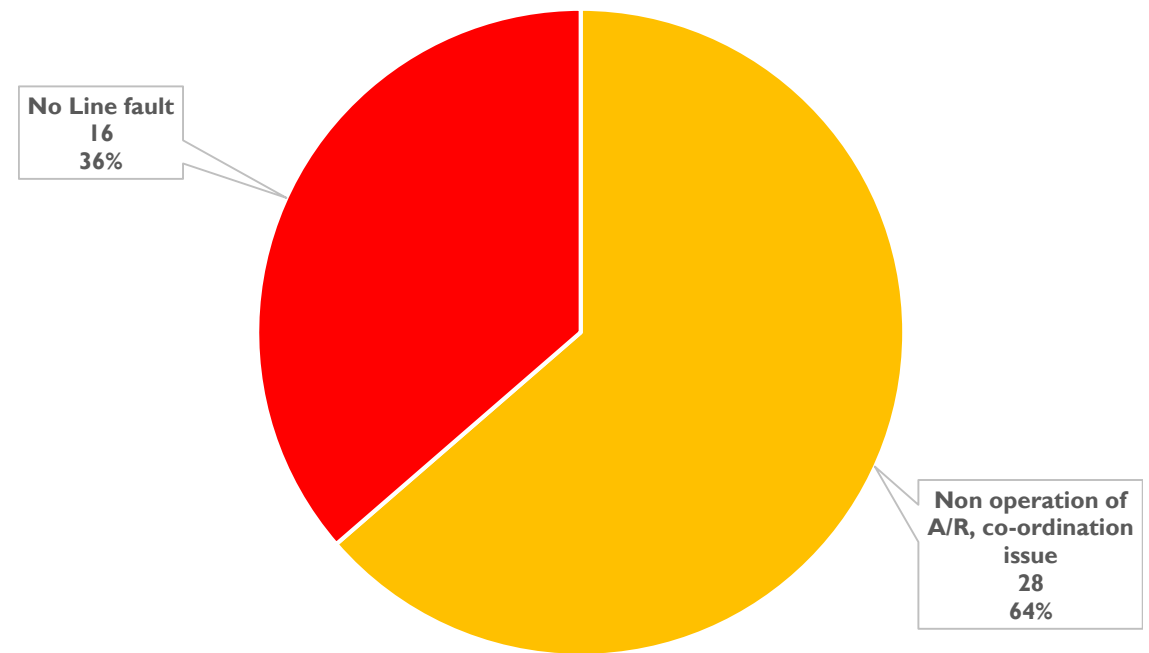
140TH PCC (EASTERN REGION)

PROTECTION PERFORMANCE FOR THE MONTH SEPTEMBER 2024:

PROTECTION PERFORMANCE



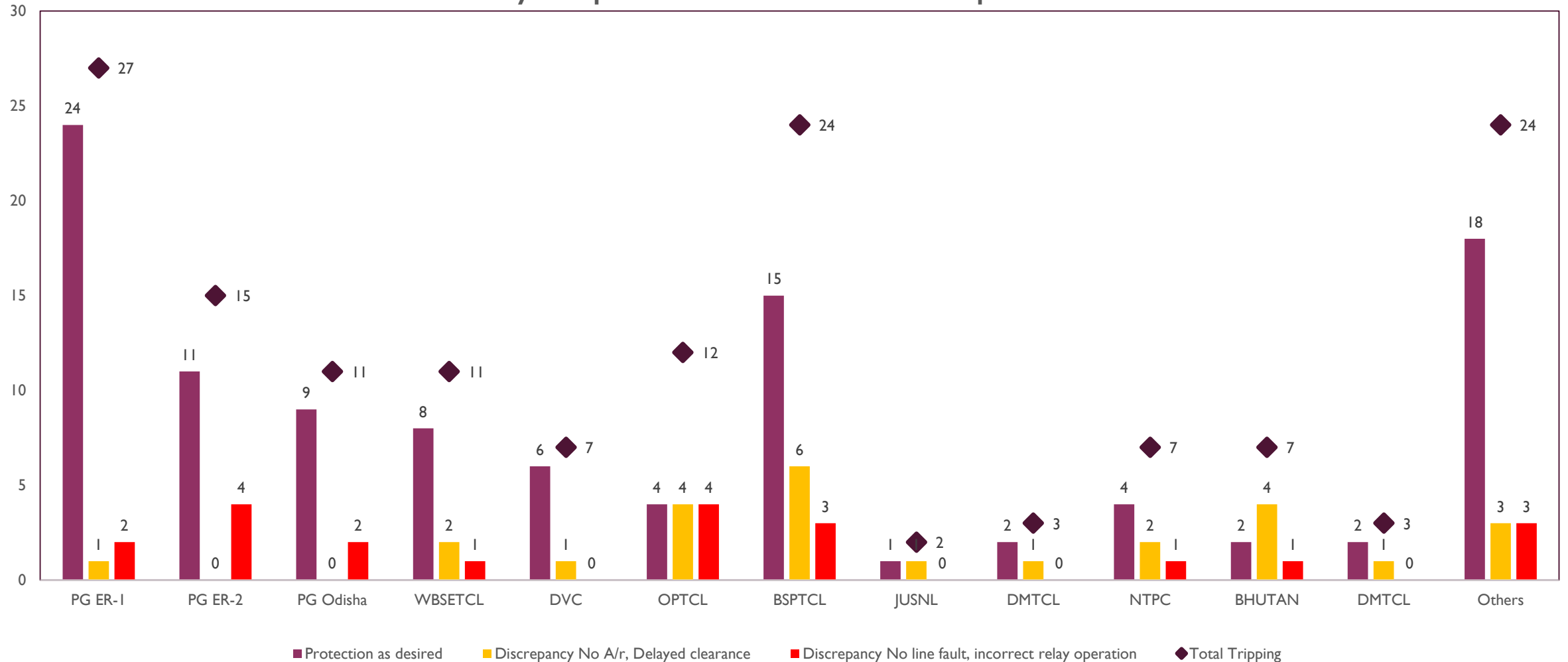
Protection not operated as desired



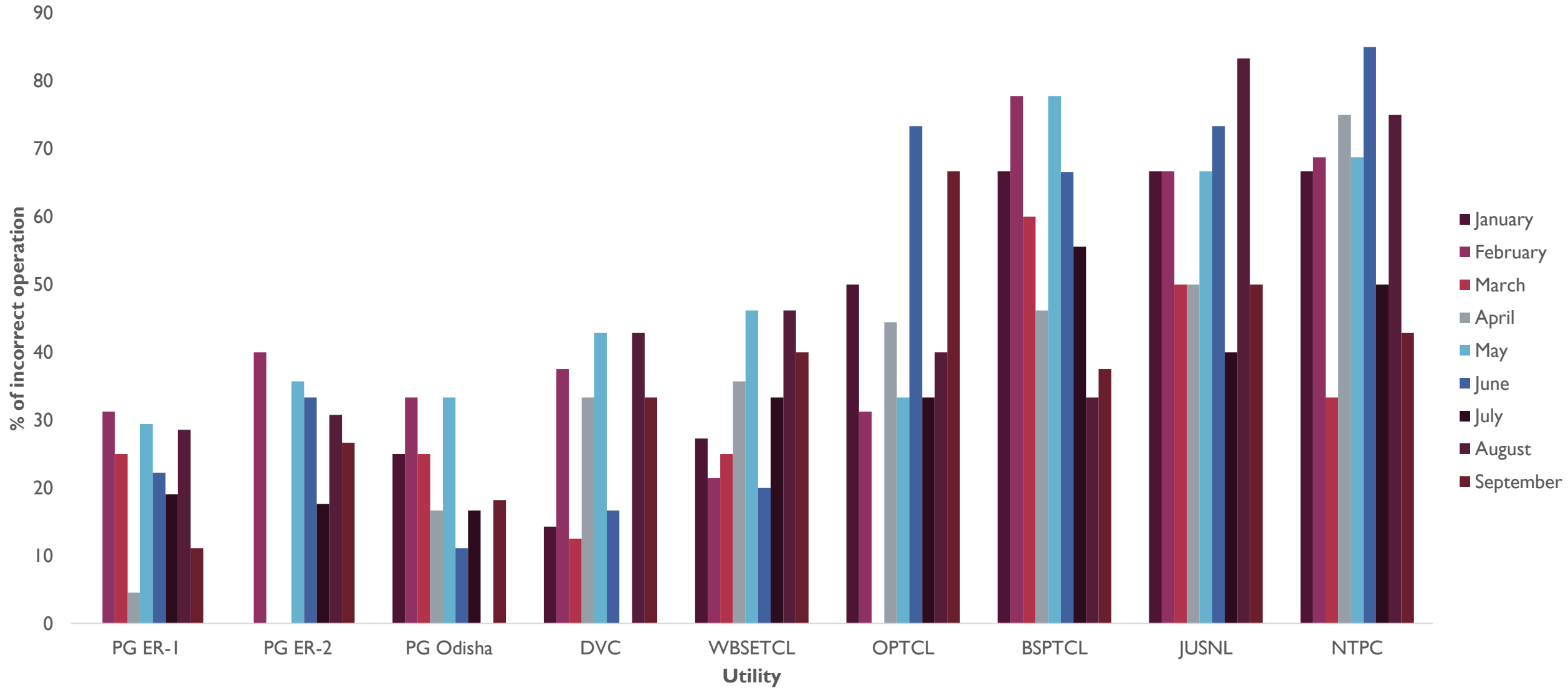
■ Non operation of A/R, co-ordination issue ■ No Line fault

UTILITY WISE PERFORMANCE FOR THE MONTH OF SEPTEMBER'24

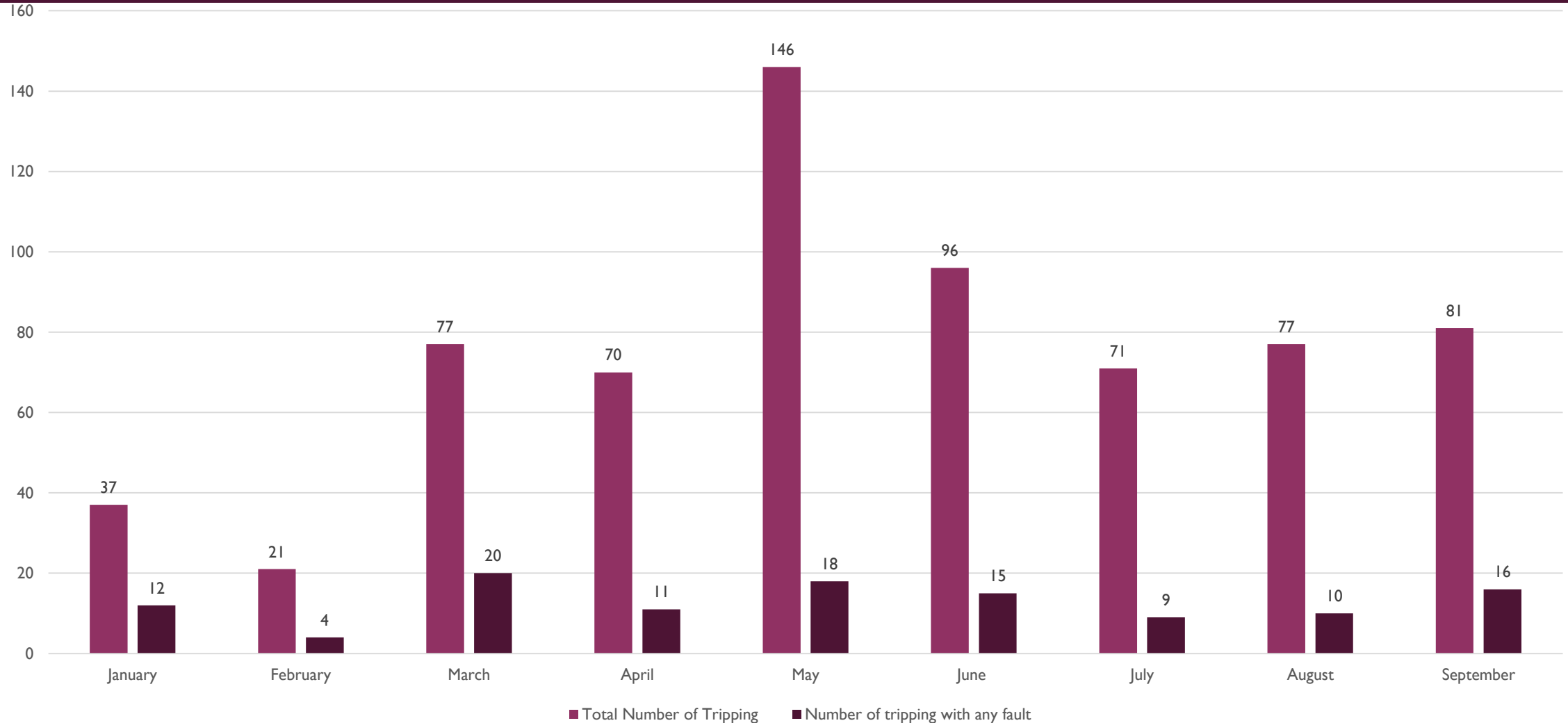
Utility wise performance for the month of September'24



% of Undesired Protection Operation (Utility Wise) from January to September '24 :



LINE TRIPPING **WITHOUT ANY LINE FAULT** FOR FROM JANUARY TO SEPTEMBER 2024:



Repeated Tripping of Line **without any fault** from for year'24:

Sl. No.	Line	Number of Tripping	Tripping History			
1	400KV-KHSTPP-BARH-1	8	04-03-2024	09-03-2024	11-05-2024	14-05-2024
			27-06-2024	27-06-2024	28-06-2024	28-06-2024
2	400KV-JEERAT-SAGARDIGHI-1	5	14-07-2024	15-07-2024	07-08-2024	
			09-08-2024	01-09-2024		
3	400KV-MEERAMUNDA LI-NEW DUBURI-2	5	13-03-2024	13-03-2024	28-06-2024	
			29-06-2024	29-06-2024		

Reason: Line tripped from Barh end only due to DT received in all instances.
Present Status: Line hasn't tripped since June. **Action taken by NTPC Kahalgaon may be shared.**

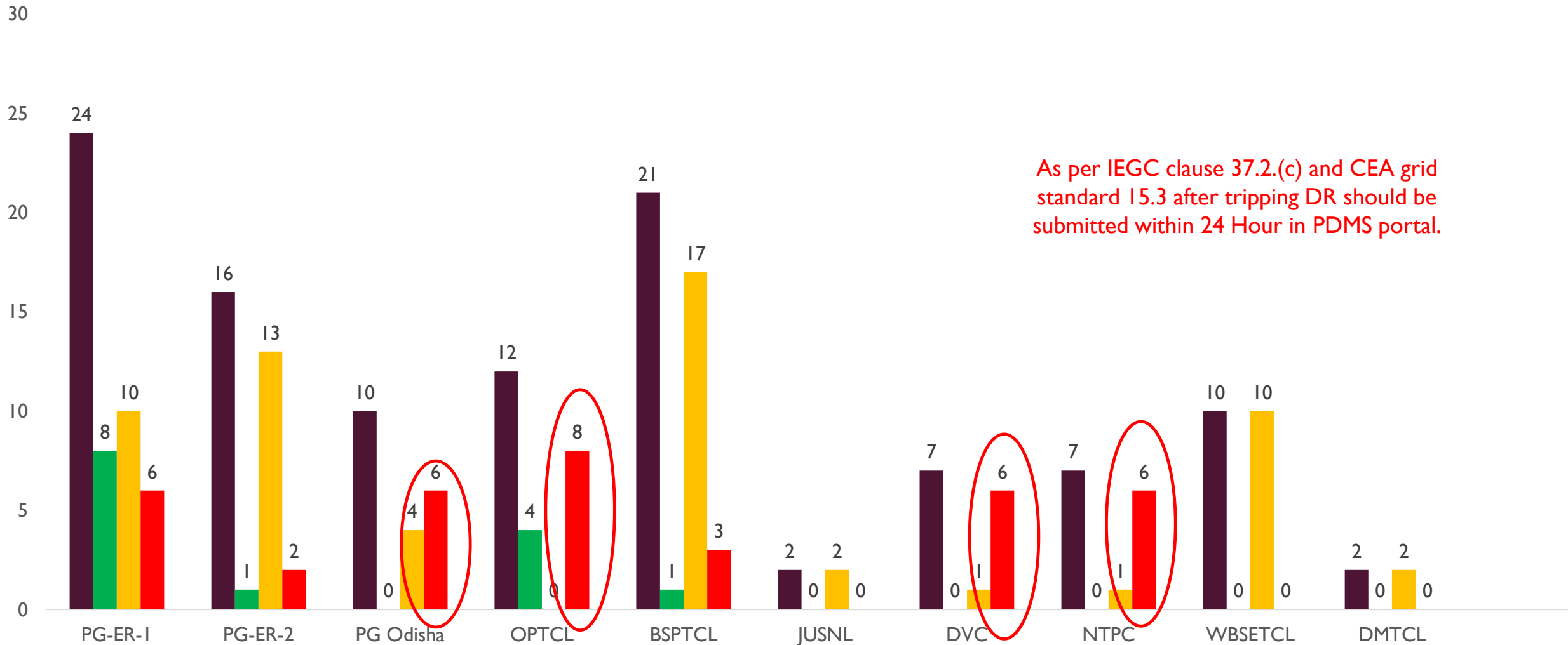
Reason: Tripped from Sagardighi end only due to DT received in all instances.
Present Status: **DT link is isolated**

Reason: DT received at either end in all instances. Relay mal-operation reported.
Present Status: Line hasn't tripped since June. **Action taken by OPTCL may be shared.**

September 24 DR Submission Status (As on 04.10.24):

'September 24 DR Submission Status (As on 04.10.24)

■ Total Tripping ■ Submitted within 24 Hrs ■ Submitted after 24 Hrs ■ DR Not Submitted



As per IEGC clause 37.2.(c) and CEA grid standard 15.3 after tripping DR should be submitted within 24 Hour in PDMS portal.

Frequent tripping of 220 kV Ranchi-Mejia (MTPS):

- ❑ From January'24 to September' 24, 220kV Ranchi Mejia ckt tripped 21 times.
- ❑ Out of 21 instances, in 17 tripping instances single phase to ground fault with Successful A/r operation from Ranchi end.
- ❑ A/r kept disabled from Mejia end.
- ❑ As per CEA(Technical standard for construction of electrical plants and electric lines) regulation 2022-clause 48.3(Schedule-V), transmission line of 220kV and above should have single-phase auto-reclosing facility.
- ❑ Scope of taking A/r in service by increasing dead time at mejia end and A/r will be attempted only when A/r is successful from Ranchi end. DVC may explain.

THANK YOU



Report on 400KV Bus-2 tripping at Rourkela on 05.09.24

STATION: 400/220kV Rourkela

Date of Occurrence: 05.09.24

Time of Occurrence: 15:45:40hrs

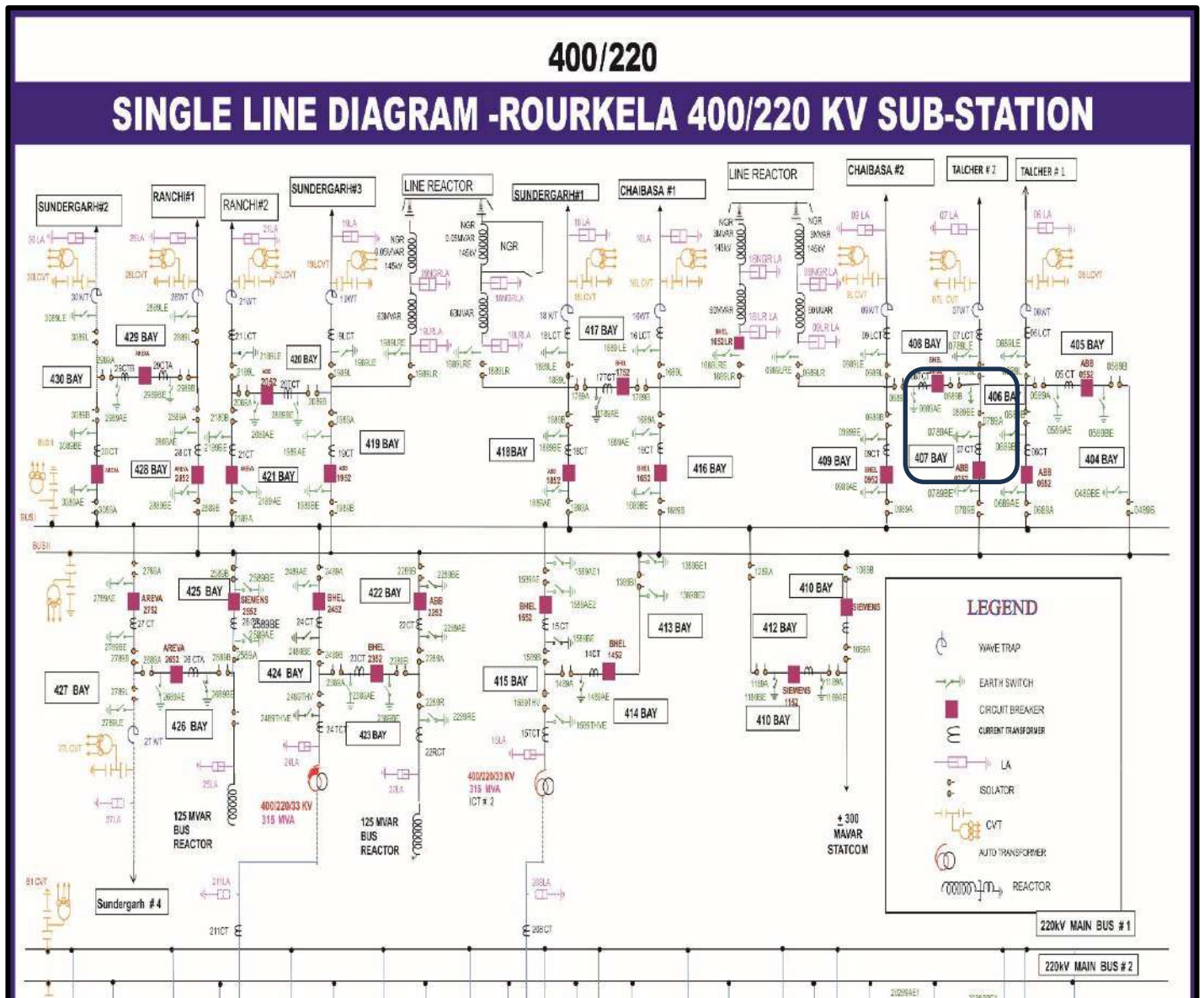
Event: 400kV Bus-2 tripped on Bus bar Protection & 400KV Talcher-2 during mal-operation of 40789A.

Works going on:

1. 407CB (Main CB of Tacher-2) Drive over-hauling works.
2. 40789A Isolator (Talcher-2 main Bay)- Modification of Mechanical gang to Electrical gang operation

Status of the elements just before tripping:

400KV Bus-2: 405,407(under S/D),410 (STATCOM) 414,416,419,422,425,428

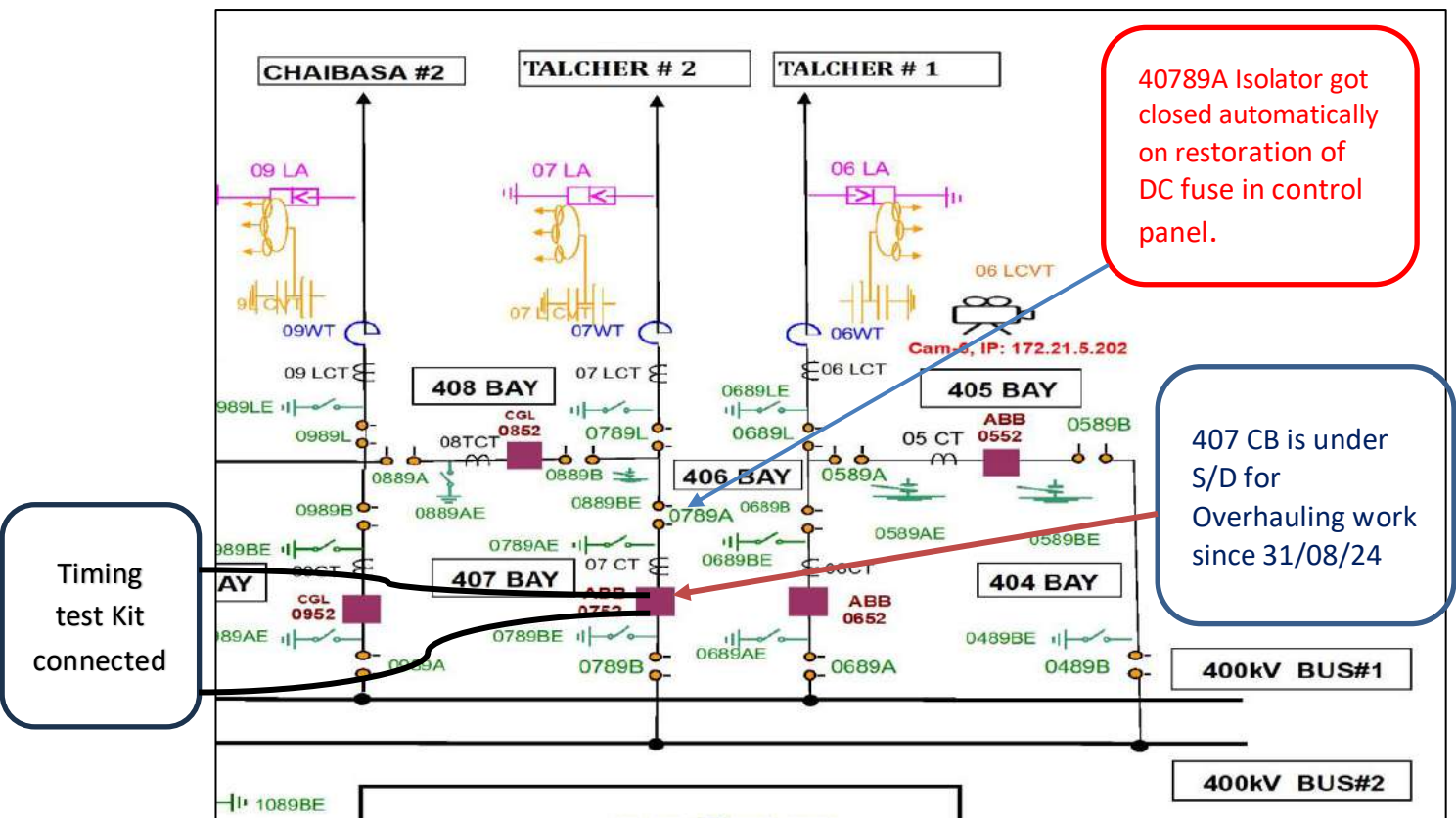


Sequence of Events:

1. **15:45:37:620** Talcher-2 main bay isolator (40789A) closed
2. **15:45:40:817** M1 BB Relay of 400KV Bus-2 operated.
3. **15:45:40:819** M2 BB Relay of 400KV Bus-2 operated.
4. **15:45:40:864** All feeders connected to Bus-2 got tripped
5. **15:45:41:135** Talcher-2 (407 bay) LBB operated & tripped respective Tie CB (408 CB) and sent DT to other end.

Observations:

1. 400KV Talcher-2 main bay (407) is under S/D for CB Drive Overhauling work and Modification of Mechanical gang to Electrical gang operation of 40789A isolator since 31.08.24.



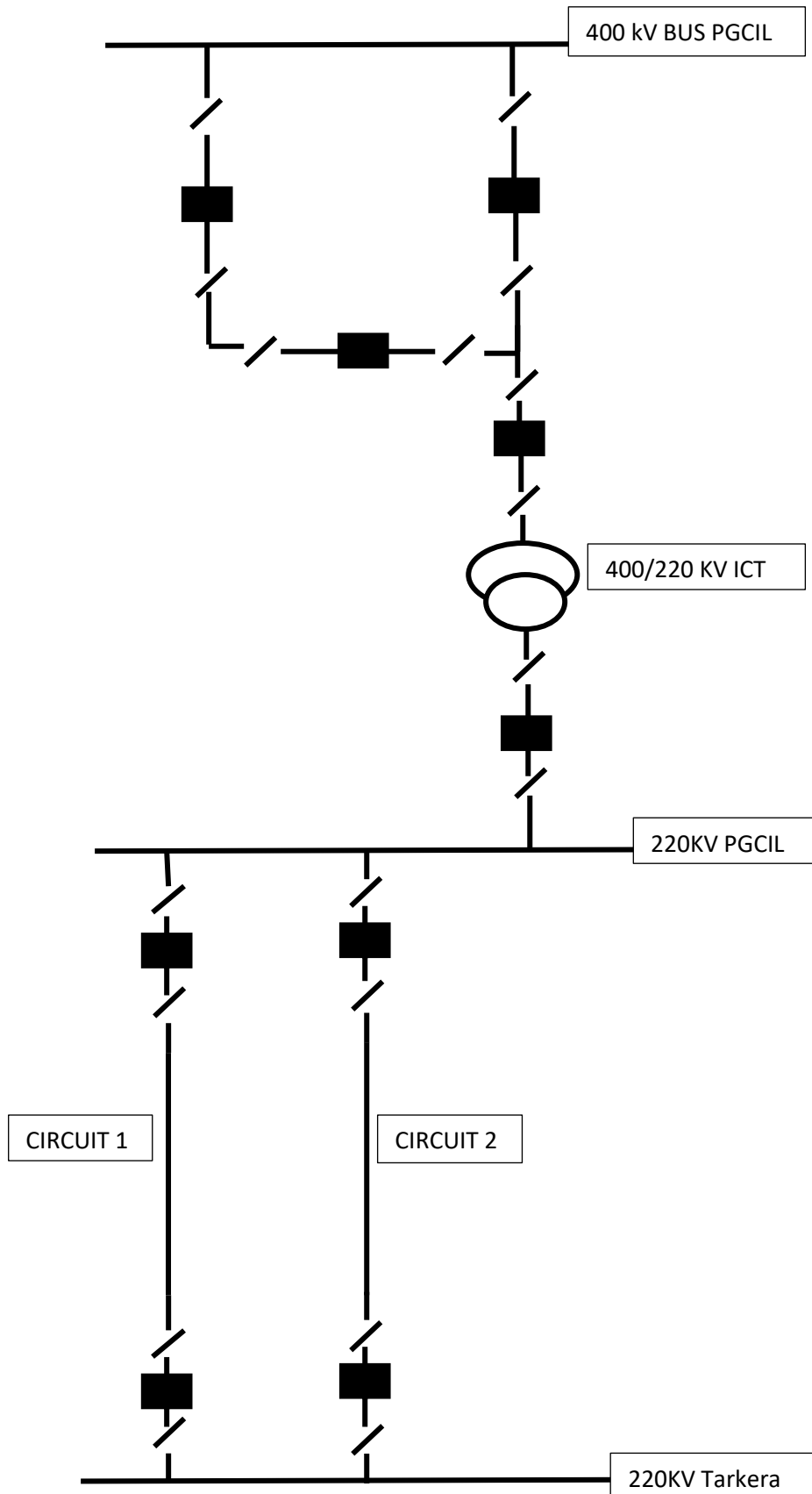
2. On 05.09.24, DCRM & Timing testing of CB are completed, and cables were about to be opened.
3. Meanwhile, Isolator DC supply fuse in control panel at C/R was connected to check the DC supply up to isolator MOM box. Immediately 40789A isolator automatically closed.
4. This resulted in 400KV Bus-2 fault through test kits and resulted in BB protection operation and tripping of all CBs connected to Bus-2.
5. After tripping, the cause of extension of DC for close operation is checked and found that TNC switch of respective isolator in control panel is extending the DC to close circuit. The same was replaced.

Remedial Measures:

1. DC & AC supply in Isolator MOM boxes should be kept off till all works on CB are completed and T&P are removed.

2. DC supply from Control panel to 40789A Isolator should not be extended till all works on CB are completed.

Analysis of Fault occurred on 05.09.2024 at 15:43 Hrs



FAULT:- 220 kV PGCIL Circuit 1 & Circuit 2 tripped on **05.09.2024 at 15:43 hrs** with no relay indication due to some disturbances in the 400 kV system.

Relay in PGCIL circuit 1

Main 1- Siemens 7SA52, Main2- Micom P444

Relay in PGCIL circuit 2

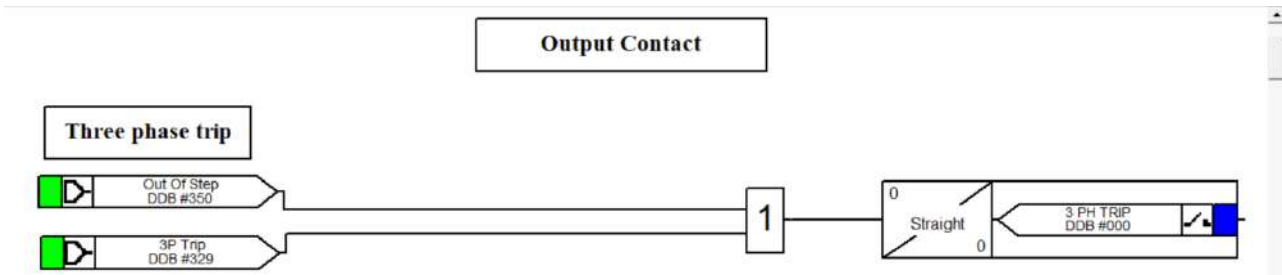
Main 2- Siemens 7SA52, Main 2- Micom P444

OBSERVATION :- Both the relays of PGCIL1 and PGCIL 2 checked and observed that no DR was generated in both the relays of circuit 1 & circuit 2. Upon checking the events it was found that siemens 7SA52 relay doesn't have any tripping events for three pole tripping. However in events of Micom relay P444 it was found that three pole tripping output contact closed for 10 ms and power swing was detected. There was no tripping in Zone 1, Zone 2, Zone 3, Zone 4 as power swing blocked in all zones of both relays.

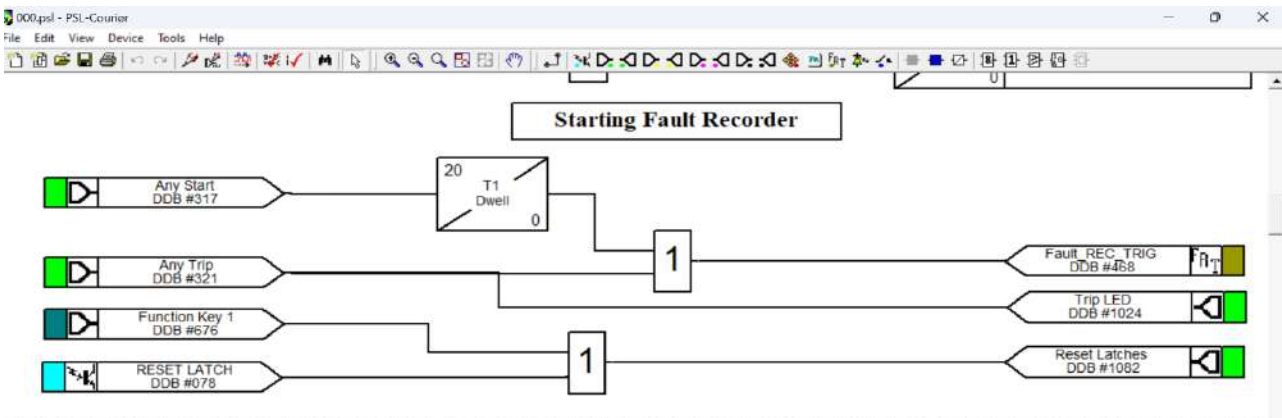
Thursday 05 September 2024 15:43:43.626		Output Contacts1
Description		PGCIL 1
Plant reference		TARKERA GSS
Model number		P44491NB7M0720M
Address		001 Column: 00 Row: 21
Event type		Relay Output Changed Sta
Category		0
Event	Value	
0	3 PH TRIP	ON
1	R-PH TC1 TRIP	OFF
2	Y-PH TC1 TRIP	OFF
3	B-PH TC1 TRIP	OFF
4	R-PH TC2 TRIP	OFF
5	Y-PH TC2 TRIP	OFF
6	B-PH TC2 TRIP	OFF
7	A/R CLOSE	OFF
8	CARRIER SEND	OFF
9	DT SEND	OFF
10	ANY TRIP	OFF
11	SOTF/TOR TRIP	OFF
12	BROKEN CONDUCTOR	OFF
13	VT FUSE FAIL	OFF
14	POWER SWING	ON
15	A/R FAIL	OFF
16	CARRIER FAIL	OFF
17	CARRIER RECIEVE	OFF
18	TC1/2 UNHEALTHY	ON
19	O/C E/F OPTD	OFF
20	86 UNHEALTHY	ON
21	A/R STATUS	OFF
22	Relay Label 23	OFF
23	Relay Label 24	OFF
24	R INIT TO M2	OFF
25	Y INIT TO M2	OFF
26	B INIT TO M2	OFF
27	TEST	OFF
28	Relay Label 29	OFF
29	Relay Label 30	OFF
30	Relay Label 31	OFF
31	Relay Label 32	OFF
Evt Unique Id		12939
Thursday 05 September 2024 15:43:43.456		Z3 ON
Thursday 05 September 2024 15:43:43.456		Dist Start NON

Thursday 05 September 2024 15:43:43.636		Output Contacts1
Description		POCIL 1
Plant reference		TARNERA GCS
Model number		P44491NB7M0720M
Address		001 Column: 00 Row: 21
Event type		Relay Output Changed Sta
Category		0
Event Value	000000000001010000000000	
0 3 PH TRIP		OFF
1 R-PH TCI TRIP		OFF
2 Y-PH TCI TRIP		OFF
3 B-PH TCI TRIP		OFF
4 R-PH TCC TRIP		OFF
5 Y-PH TCC TRIP		OFF
6 B-PH TCC TRIP		OFF
7 A/R CLOCE		OFF
8 CARRIER SEND		OFF
9 DT SEND		OFF
10 ANY TRIP		OFF
11 SOTF/TOR TRIP		OFF
12 BROKEN CONDUCTOR		OFF
13 VT FUSE FAIL		OFF
14 POWER GWING		OFF
15 A/R FAIL		OFF
16 CARRIER FAIL		OFF
17 CARRIER RECIEVE		OFF
18 TCI/C UNHEALTHY		ON
19 O/C E/F OPTD		OFF
20 86 UNHEALTHY		ON
21 A/R STATUS		OFF
22 Relay Label 23		OFF
23 Relay Label 24		OFF
24 R INIT TO MC		OFF
25 Y INIT TO MC		OFF
26 B INIT TO MC		OFF
27 TEST		OFF
28 Relay Label 29		OFF
29 Relay Label 30		OFF
30 Relay Label 31		OFF
31 Relay Label 32		OFF
Evt Unique Id	12947	
Thursday 05 September 2024 15:43:43.636		Power Swing OFF
Thursday 05 September 2024 15:43:43.636		Dial Start N OFF
Thursday 05 September 2024 15:43:43.636		Z3 OFF

Both circuit 1 & circuit 2 tripped on out of step as per the OUT OF STEP node directly configured with **Three pole trip** contact in our configuration.



In Micom P444 relay we have configured Fault Record Triggering by Any Trip Node. As there is no internal logic of OUT OF STEP function configured with any trip function. So no DR triggered in Micom relays of both the circuit.



Remarks:-

The above issue was discussed with the representative of ERLDC and they suggested to allow power swing trip in zone -1 and block power swing in Zone-2,3& 4 with unblocking time 2sec. Also OUT OF STEP setting is disabled and removed from PSL logic. The same configuration has been updated to the Main-1 & 2 relays of 220kV PGCIL-1 & 2 at 220/132 kV Tarkera GSS, OPTCL.

ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)



ग्रिड-इंडिया
GRID-INDIA

[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, Tel.: 033 23890060/0061

ERLDC / SO / 2024-25/745

Date/दिनांक: 16.10.2024

To
Chief Engineer,
SLDC DVC,
DVC Towers, VIP Road Kolkata-700054

Subject: Frequent tripping of 220 kV Ranchi-Mejia (MTPS) and enabling A/r at Mejia end

Sir

This is to draw your kind attention towards repeated tripping of 220 kV Ranchi-Mejia. This line has tripped 21 times since January'24. The details of each tripping along with relay indications are attached at Annexure-1 for your reference.

Out of 21 instances, in 17 instances A/r was successful from Ranchi end, indicating fault being transient in nature. In many instances, fault distance is between 165-175 km from Ranchi. Further, Auto-reclose feature has been kept disabled at Mejia end citing potential damage to generating unit of Mejia. This has been discussed in several Eastern Region PCC meetings also. Thereafter in 139th PCC meeting, one alternative was suggested by ERLDC to enable A/r with voltage check in which A/r attempt will be taken at Mejia only when A/r is successful at remote end. This was ruled out by DVC as line CVT is present in only one phase at Mejia end.

ERLDC has suggested another alternative to increase A/r dead time at Mejia and take A/r attempt only after it is successful at Ranchi. In case of A/r failure at Ranchi, a DT signal will be sent, and all three phases will trip at Mejia.

Therefore, it is requested to find the root cause of frequent tripping of the line and remedial measures may be taken accordingly. According to CEA (Technical standard for construction of electric plants and electric lines) Regulations, 2022 -Clause 48.3 (Schedule-V), transmission line of 220 KV and above should have single-phase auto-reclosing facility. Therefore, possibilities of keeping A/r enabled at Mejia end may be explored to avoid outage of the line in case of transient faults in compliance with CEA Regulations.

Your co-operation is highly solicited.

Thanking you.

Yours sincerely,

S. Konar
16/10/24

S. Konar

Sr. GM (System Operation)

Copy to:

1. Member Secretary, ERPC

पंजीकृत कार्यालय : बी-9, प्रथम तल, कुतुब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली - 110016

Registered Office : B-9, 1st Floor, Qutab Institutional Area, Katwaria Sarai, New Delhi - 110016

Website : www.grid-india.in

Annexure-1

Sl. No	Element Name	Tripping Date	Tripping Time	Reason	Revival Date	Revival Time	Remarks
1	220KV-RANCHI-MTPS(DVC)-1	08-10-2024	16:16	Ranchi End:R-ph, FC:0.963 kA, FD:177.943 Km, A/R successful from Ranchi end Mejia End:R-Ph, FC:10.6 kA, FD:12.24 Km, Z-1	08-10-2024	17:10	A/R successful from Ranchi end
2	220KV-RANCHI-MTPS(DVC)-1	04-10-2024	21:33	Ranchi: R ph, 167.7 km, 1 kA, A/R successful	04-10-2024	22:48	A/R successful from Ranchi end
3	220KV-RANCHI-MTPS(DVC)-1	23-09-2024	22:03	Auto recloser successfule at ranchi end: RN fault distt 177 KM, fault current 1.016 KA Line tripped at Mejia end: RH fault, F/D=23.1 KM,F/C=5.81 KA	23-09-2024	22:45	A/R successful from Ranchi end
4	220KV-RANCHI-MTPS(DVC)-1	20-09-2024	12:44	MTPS:Z-1,IY-12.56KA, IB-12.40KA, DIST-12.5 KM. Ranchi: YB fault, dist 211.3 KM, ly1.25 lb1.19 KA	20-09-2024	18:03	Y_B Fault
5	220KV-RANCHI-MTPS(DVC)-1	14-09-2024	04:39	Tripped at Mejia end only, R/I at Mejia end :R_N,ZONE-1, FD-68.79KM,Ir-2.47 kA; A/r successful at Ranchi end: R_N, FD-170.135 KM, FC-1.08kA	14-09-2024	05:51	A/R successful from Ranchi end
6	220KV-RANCHI-MTPS(DVC)-1	07-09-2024	15:47	MTPS: R-Ph, Z-1,1.09 kA, 168.36 km Ranchi: R ph, 3.99 kA, 38 km	07-09-2024	16:35	A/R successful from Ranchi end
7	220KV-RANCHI-MTPS(DVC)-1	05-09-2024	16:32	Tripped at MTPs end only, relay details:- M1: R-Ph ,Zone-1, F/C=1.936kA, F/D=87.04 KM. M2:	05-09-2024	17:14	A/R successful from Ranchi end

				Zone-1, F/C=0.89 KA F/D=86.1 KM Ranchi end: Auto reclose took place and the line remains charged from Ranchi end.			
8	220KV-RANCHI-MTPS(DVC)-1	13-08-2024	21:44	Ranchi end: A/R Successful, Y-Ph, 80.52km,1.88kA Mejia: Y Ph,Zone-One, Fault dist- 221.38 KM,Fault current=835.22 Amp	13-08-2024	22:40	A/R successful from Ranchi end
9	220KV-RANCHI-MTPS(DVC)-1	31-07-2024	13:07	Mejia: R-ph, Z-1, 1.25 kA, 135.3 km;	31-07-2024	13:54	A/R successful from Ranchi end
10	220KV-RANCHI-MTPS(DVC)-1	12-07-2024	21:54	MTPS: Y Ph-Trip,Zone-1 trip,Trip- Zcom, Fault Dist=203.6 Km Fault Current=138.97/914.02/26.68 A Ranchi: Y-Ph, 20.4km, 5.71kA,Z-I. A/R Successful	12-07-2024	22:32	A/R successful from Ranchi end
11	220KV-RANCHI-MTPS(DVC)-1	10-07-2024	12:22	Ranchi: A/R Successful, B-Ph, 20.229km, 6.8kA, Z-I MTPS: B-ph, 191.30km,0.943kA	10-07-2024	12:50	A/R successful from Ranchi end
12	220KV-RANCHI-MTPS(DVC)-1	18-06-2024	22:57	Ranchi: R-Ph, 169.3km,1.05kA,Z-I, A/R successful Mejia: R PH TRIP/ZONE1,Fault distance :70.81Km,F/C:2412.11A	18-06-2024	23:36	A/R successful from Ranchi end
13	220KV-RANCHI-MTPS(DVC)-1	12-06-2024	19:44	MTPS:R-N,Z1,7.93km,1.05kA; Ranchi: R-N, Z-3,335.8KM,F/C, 0.45KA	12-06-2024	22:42	Three Phase tripping for single phase fault
14	220KV-RANCHI-MTPS(DVC)-1	06-05-2024	19:44	Ranchi: B/N ,116km,1.6kA Mejia:-B Ph, Zone-1 Trip, ,Fault current(IL3)= 1775.4A	08-05-2024	17:49	A/r Failed

15	220KV-RANCHI-MTPS(DVC)-1	06-05-2024	15:42	MTPS: Trip-R Ph, Zone-1 Trip ,Fault current(IL1)= 1.332KA. Ranchi: 97 km,1.9kA,R-Ph, A/R successful	06-05-2024	16:26	A/R successful from Ranchi end
16	220KV-RANCHI-MTPS(DVC)-1	20-04-2024	16:15	Bus-4 PT Blast.	20-04-2024	18:56	-
17	220KV-RANCHI-MTPS(DVC)-1	20-03-2024	18:55	MTPS:-R-ph Trip,Zone-1 trip,Fault dist=177.91 KM,Fault Current=1045.88 Amp.Line has Auto reclosed at Ranchi end.	20-03-2024	20:02	A/R successful from Ranchi end
18	220KV-RANCHI-MTPS(DVC)-1	18-03-2024	16:24	line tripped from Mejia end only :-- R_N , FD - 210.92 KM, FC - 914.03A Ranchi - R_N , FD - 15.12 KM , FC - 9.05 KA (A/R successful)	18-03-2024	17:38	A/R successful from Ranchi end
19	220KV-RANCHI-MTPS(DVC)-1	16-03-2024	15:43	Tripped from Mejia end on R_N fault, FC-0.89 Ka, A/R successful from Ranchi end, R-Ph-N Fault, Fault Current 10.257 kA, Fault Distance 110.79Km from Ranchi	16-03-2024	16:26	A/R successful from Ranchi end
20	220KV-RANCHI-MTPS(DVC)-1	03-01-2024	20:25	MTPS: R Ph,Zone-1 Trip ,Fault Dist=157 KM,Fault current= 1111.33A RANCHI:R-ph, 51.7km,3.44kA,Z-I, A/R successful	03-01-2024	21:48	A/R successful from Ranchi end
21	220KV-RANCHI-MTPS(DVC)-1	03-01-2024	04:00	MTPS: R Ph,Zone-1 Trip ,Fault Dist=131.8 KM,Fault current=1.31943 KA Ranchi: 1.910 kA,95.938 km,R-Ph, Z-I,A/R Successful	03-01-2024	05:14	A/R successful from Ranchi end

Annexure B.3

Protection Performance Indices for the month of September'24 (In compliance of Clause 15(6) of IEGC 2023) JUSNL																	
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	220 kV Chandil - RCP	05.09.2024	20:57			BN, Z-1, 20.3 km, IB-3.54 kA		1		1		0		1	0.50	0.50	3 Ph tripping for single phase fault.
2	220 kV Hatia II - Patratu - 02	13.09.2024	21:31			BN, Z-1, 26.6 km, IB-4.32 kA		1		1		0		1	0.50	0.50	3 Ph tripping for single phase fault. DTPC is not installed .
3	220 kV Dumka II (Madanpur) - Jasidih	15.09.2024	15:51			BC, Z2, 44.3 KM, IY - 1.84 kA , IB - 1.44 kA			1		0		0	1	1	1	
4	220 kV Joda - RCP	17.09.2024	21:37			BN, Z1, 10.2 km, Ib - 9.66 kA			1		1		0	1	0.5	0.5	3 Ph tripping for single phase fault. DTPC is not installed .
5	220 kV Dumka II (Madanpur) - Govindpur - 01	18.09.2024	18:35			BN, Z-1, 31.88 km, IB-3.02 kA			1		0		1	0.5	1	0.50	3 Ph tripping for single phase fault. DTPC is not installed .
6	220 kV Ranchi (PG) - Hatia II- 02	24.09.2024	17:51			R_N, Z1, 4.26 kA, 22.7 km. A/R Successful.			1		0		0	1	1	1	
7	220 kV Dumka II (Madanpur) - Godda - 1	25.09.2024	20:16														
8	220 kV TVNL - Govindpur - 02	29.09.2024	11:13			YBN, Z2, 87.25 km, IY-1.59 kA, IB - 1.51 kA			1		0		0	1	1	1	

Protection Performance Indices for the month of SEP'24 (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	Jeerat-Sagardighi #1	01.09.24	22:44:00	01.09.24	23:14:00	No Tripping at Jeerat End	DT Receive	0		1		0		0	#	#	At Jeerat , BPL make PLCC are present against Jeerat-Sagardighi #1 which is maintained by WBPDC and Powergrid. Fourious DT signal send from Jeerat End. Informed the same to Powergrid for rectification.	
2	Jeerat-Sagardighi #2	08.09.24	11:18:00	08.09.24	16:24:00	R-Y-phase, Zone-1, 3-phase Trip		1		0		0		1	1	1		
3	Jeerat-New-Chanditala	09.09.24	10:08:00	09.09.24	10:22:00	R-phase, Zone-1, A/R close, A/R L/O	R-phase, Zone-1, A/R close, A/R L/O	1	1	0	0	0	0	1	1	1		0
4	Arambag-New-Chaditala #1	13.09.24	14:46:00	13.09.24	15:17:00	R-phase, Zone-1, A/R SW OFF, A/R L/O	R-phase, Zone-1, A/R SW OFF, A/R L/O	1	1	0	0	0	0	1	1	1		
5	New-Chanditala-Midnapore PG #1	13.09.24	14:53:00	13.09.24	21:00:00	B-phase, Zone-1, A/R close, A/R L/O		1		0		0		1	1	1		
6	Kharagpur-Midnapore PG #2	13.09.24	22:15:00	15.09.24	01:26:00	Y-phase, Zone-1, A/R close, A/R L/O		1		0		0		1	1	1		Disc Failure , Replaced by PG
7	Arambag-New-Chaditala #1	14.09.24	08:55:00	14.09.24	09:25:00	R-phase, Zone-1, A/R SW OFF, A/R L/O		1		0		0		1	1	1		
8	New-Chanditala-KTPP #1	14.09.24	08:58:00	14.09.24	09:27:00	Y-phase, Zone-1, A/R close, A/R L/O		1		0		0		1	1	1		
9	Arambag-New-Chaditala #1	14.09.24	09:35:00	14.09.24	14:17:00	R-phase, Zone-1, A/R SW OFF, A/R L/O	R-phase, Zone-1, A/R SW OFF, A/R L/O	1	1	0		0		1	1	1		
10	New-Chanditala-KTPP #1	14.09.24	10:23:00	14.09.24	16:09:00	Y-phase, Zone-1, A/R close, A/R L/O		1		0		0		1	1	1		
11	220KV NJP-Binaguri #2	17.09.24	16:00:00	17.09.24	NIL	No Tripping at NJP End		0		0		0		0	0	0		
12	132 KV NJP-132 KV Siliguri PG	17.09.24	16:00:00	17.09.24	NIL	No Tripping at NJP End		0		0		0		0	0	0		
13	132 Kv Kurseong-Rangit #1	24.09.24	19:35:00	24.09.24	20:08:00	R-phase, Zone-1, 3-phase trip		1		0		0		1	1	1		
14	133 Kv Kurseong-Siliguri PG #1	24.09.24	19:35:00	24.09.24	19:58:00	R-phase, Zone-1, A/R in progress, L/O		1		0		0		1	1	1		During the Tripping of Kurseong- Siliguri PG line at 19:35 Hrs, Auto reclose started as observed in DR and event. But due to simultaneous tripping of Kurseong- Rangit line, bus voltage at Kurseong end became zero which did not fulfill the condition of Auto reclose i.r.o. Kurseong – Siliguri PG line as the AR is allowed only in Live Bus Live Line condition
15	Kharagpur-Midnapore PG #2	25.09.24	17:24:00	26.09.24	10:29:00	Y-phase, Zone-2, A/R close, A/R L/O		1		0		0		1	1	1		Disc Failure , Replaced by PG

Protection Performance Indices for the month of Sept'24 (BSPTCL)

S. No.	Name of the element	Tripping Date	Tripping Time	Restoration Date	Restoration Time	Reason (Relay indication)		Nc		Nu		Nf		Dependability index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))	Remarks (Reason for performance indices less than 1)
						End A	End B	End A	End B	End A	End B	End A	End B				
1	220KV-PATNA-KHAGAUL-1	03-09-2024	00:37	03-09-2024	01:08		Khagaul: B-N, 5 kA, 16 km	0	0	0	0	1	0	0	0	0	Problem of A/r rectified. A/r successful on dt-21/09/24 and 22/09/24.
2	220KV-DARBHANGA(DMTCL)-LAUKAHI-2	03-09-2024	09:57	03-09-2024	18:00		Laukahi: Y_B, Iy=Ib=2.1 kA	1	0	0	0	0	1	1	1	1	
3	220KV-CHANDAUTI (PMTL)-SONENAGAR-2	03-09-2024	12:57	03-09-2024	14:17		Sonenagar-B_N, 47.45 Km, 1.54 kA	1	0	0	0	0	1	1	1	1	
4	220KV-PUSAULI-NADHOKAR-2	05-09-2024	18:40	05-09-2024	19:34	Pusauly: tripped	Nadokahar-no tripping										Distance Protection relay of 220 kV Nadokhar, Dabri

Nadokhar :-No tripping

								Laukahi -NO tripping								Laukahi -Dist		
5	220KV-PUSAULI-NADHOKAR-1	05-09-2024	18:40	05-09-2024	19:17	Pusauli: tripped	Nadokahar-no tripping											transmission line will be tested shortly
6	220KV-NEW PURNEA-MADHEPURA-2	06-09-2024	16:17	06-09-2024	20:19	New Purnea: Z1,	Madhepura:-No tripping	0		1		0		0		0		Distance Protection relay at Purnea PG end proposed to be tested on dt-23/10/24
7	220KV-NEW PURNEA-MADHEPURA-1	06-09-2024	16:17	09-09-2024	18:15	New Purnea: Y-B fault, Z-2, 77 km, 3.03 kA (1.5 sec before tripping A/R successful	Madhepura-Z1	0	1	0	0	1	0	New Purnea-0 Madhepura-1	New Purnea-0 Madhepura-1	New Purnea-0 Madhepura-1		Dead time at both Purnea PG and Madhepura end to be matched.
8	220KV-DARBHANGA(DMTC L)-LAUKAHI-1	08-09-2024	02:51	08-09-2024	19:01		Laukahi : Y-B, Iy-2.031 KA, Ib-2.195 KA, 62.86 Km		1		0		0	1		1		
9	220KV-KHAGARIA-NEW PURNEA-1	12-09-2024	07:38	12-09-2024	08:19	Khagaria-Z1	New Purnea:Z1, Y-B, Iy-5.37 kA, Ib-5.31 kA, 35.4 km	1	1	0	0	0	0	1		1		
10	220KV-Sitamarhi PG-Motipur Ckt-2	12-09-2024	09:59	12-09-2024	12:09		Motipur end-Dist Protection relay optd, Z-1, Fault distance 28km, Ic-3.629kA		1		0		0	1		1		

11	220KV-NEW PURNEA-MADHEPURA-2	13-09-2024	11:42	13-09-2024	12:40	New Purnea-B_N, 2.16 KA, 65.1 km	Madhepura-B_N, 1.3 KA, 46 Km	1	1	0	0	0	0	1	1	1	
12	220KV-NEW PURNEA-MADHEPURA-1	13-09-2024	12:40	13-09-2024	13:22	-	Tripped from Madhepura end only			0	1	0	0	0	0	0	Tripping of Auxilliary relay
13	220KV-KHAGARIA-NEW PURNEA-1	15-09-2024	12:28	15-09-2024	13:35	Khagaria: Z1,Y_B, Ib-5.1 kA, 12.35 km	New Purnea:Z2, Y-B, Iy-3.3 kA, IB-3.3 kA,84 km	1	0	0	0	0	1	Khagaria-1 New Purnea-0	Khagaria-1 New Purnea-0	Khagaria-1 New Purnea-0	PLCC testing scheduled to be tested on dt-22/10/24
14	220KV-PUSAULI-NADHOKAR-2	17-09-2024	11:10	28-09-2024	19:55	-	Nadokhar: R_Y_B, Ir: 2.5 kA, Iy: 15.9 kA, Ib: 8.82 kA		1		0	0	1	1	1		
15	220KV-RAXAUL New-SITAMARHI PG-Ckt2	18-09-2024	12:56	18-09-2024	18:53		Raxaul end - Dist Protection relay optd, Z-1, Fault distance 41.88km, Ib-2.764kA, Ic-2.88kA		1		0	0	1	1	1		
16	220KV-PATNA-KHAGAUL-1	21-09-2024	04:16	21-09-2024	05:27		Khagaul: B_N,7.93 kA, 16.84 Km, Tripped in reclaim time		1		0	0	1	1	1		

17	220KV-PATNA-KHAGAU-1	22-09-2024	12:34	27-09-2024	17:33		Khagaul: B_N, 16 Km, Tripped in reclaim time		1		0		0		1		1		1	
18	220KV-KHAGARIA-NEW PURNEA-2	24-09-2024	01:48	24-09-2024	02:58	Khagaria : Z1, Y_B, Iy- 2.827 kA, Ib- 2.735 kA, 58.67 km	New Purnea: Z1, Y_B, Iy: 4.9 KA, Ib: 4.6 KA, 39.9 km		1	1	0	0	0	0	1		1		1	
19	220KV-GAYA(PG)-BODHGAYA-3	25-09-2024	00:02	25-09-2024	18:38	Tripped from Gaya PG	Not Applicable for Bodhgaya end.											Line is idle charged from Gaya.		
20	220KV-SAHARSA-BEGUSARAI-2	25-09-2024	12:15	28-09-2024	17:33		Begusarai- Z1, RN, Tripped in reclaim time		1		0		0		1		1		1	
21	220KV-PATNA-FATUHA-1	26-09-2024	06:56	26-09-2024	14:40	Patna: Line didn't trip	Line tripped from Fatuha end only.		0		1		0		0		0		0	There was issue in control cable of indication ckt causing grounding in DC and finally tripping occur. Issue has ben rectified and ckt charged.
22	220KV-KHAGARIA-NEW PURNEA-1	28-09-2024	13:28	28-09-2024	14:26	Khagaraia: Z1, Y-B, 55.68 km, Iy - 2.810 kA, Ib- 2.852 KA,	New Purnea: Z1, Y-B, Iy: 4.7 kA, Ib: 4.6 kA, 41.1 km		1	1	0	0	0	0	1		1		1	

23	220KV-DMTCL-Motipur Ckt-1	29-09-2024	09:18	29-09-2024	10:28		Motipur end-Dist Protection relay optd, Z-1, Fault distance 40.06km, Ic-2.603kA,A/R Successful at Motipur end and carrier received at DMTCL end		1		0		0		1		1		1	.
24	220KV-KHAGARIA-NEW PURNEA-1	30-09-2024	16:05	30-09-2024	18:12	Khagaria:Z1,B-N, 2.732 kA, 59.8 km	New Purnea: Z1,B-N, 51.8 Km, 3.6 kA	1	1	0	0	0	0		1		1		1	

PROTECTION PERFORMANCE INDICES AS PER 140TH PCC MEETING AGENDA FOR THE MONTH OF SEPT-2024 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						
1	400KV MRDL LAPANGA-2	04-09-2024	14:02	04-09-2024	17:04	Y-N/ 5.6 KA /41KM/ZONE-1/AR-US	R-Y/IR=1.3KA,IY=3.1KA/130KM	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 attempted but failed due to persistent fault
2	220KV ROURKELA PG-TARKERA-2	05-09-2024	15:45	05-09-2024	19:34	DID NOT TRIP	R-Y-B/27.2KM B-PHASE OUT OF STEP PROT. OPTD	0	0	0	1	0	0	END A=0 ,END B=0	END A=0 ,END B=0	END A=0 ,END B=0	NO FAULT IN THE LINE ,LINE TRIPPED DUE TO OUT OF STEP PROT IN 400KV BUS AT RKL PG
3	220KV ROURKELA PG-TARKERA-1	05-09-2024	11:45	05-09-2024	17:17	DID NOT TRIP	R-Y-B/IR=3.43KA,IY=3.6KA,IB=3.53KA,OUT OF STEP PROT. OPTD	0	0	0	1	0	0	END A=0 ,END B=0	END A=0 ,END B=0	END A=0 ,END B=0	NO FAULT IN THE LINE ,LINE TRIPPED DUE TO OUT OF STEP PROT IN 400KV BUS AT RKL PG
4	220KV BUDHIPADAR RAIGARH-1	07-09-2024	18:10	07-09-2024	19:20	R-N/3.228KA 54.95KM	.....	1	0	0	0	0	1	END A=1 ,END B=0	END A=1 ,END B=0	END A=1 ,END B=0	LBB NOT OPTD AT BUDHIPADAR END. SAS WORK IS IN PROGRESS.
5	220KV JODARAMCHANDRAPUR-1	17-09-2024	21:37	17-09-2024	22:06	B-N/1.35KA/117.1KM	B-N/9.66 KA/10.2KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	NO A/R AT RAMCHANDRAPUR END
6	220KV TTPS-TSTPP-1	20-09-2024	11:54	20-09-2024	12:24	.....	R-N/4.8KA /29.2KM/ZONE-2	0	0	0	1	0	0	END A=0 ,END B=0	END A=0 ,END B=0	END A=0 ,END B=0	NO FAULT IN THE LINE
7	220KV BOLANGIR(PG)-KESINGA	21-09-2024	23:49	22-09-2024	01:01	Y-B/IY=1.05KA,IB=0.82KA/293.6KM/ZONE-3	DID NOT TRIP	1	0	0	0	0	1	END A=1 ,END B=0	END A=1 ,END B=0	END A=1 ,END B=0	NO FAULT IN THE LINE
8	220KV BUDHIPADAR KORBA-2	22-09-2024	10:19	22-09-2024	12:32	B-N/202KA/52.8KM/A/R FAIL	.....	1	0	0	0	0	1	END A=1 ,END B=0	END A=1 ,END B=0	END A=1 ,END B=0	3-PHASE A/R SUCCESSFUL AT BUDHIPADAR END
9	220KV BUDHIPADAR KORBA-1	26-09-2024	16:04	26-09-2024	17:48	Y-N/1.4KA/125 KM/ZONE-2	.....	1	0	0	0	0	1	END A=1 ,END B=0	END A=1 ,END B=0	END A=1 ,END B=0	TRIPPED IN ZONE-2 AT BUDHIPADAR END
10	220KV TTPS-TSTPP-1	30-09-2024	09:28	30-09-2024	18:27	R-N/4.971KA/23.71 KM	R-N/19 KA/0.8 KM	1	1	0	0	0	0	END A=1 ,END B=1	END A=1 ,END B=1	END A=1 ,END B=1	NO A/R FROM BOTH SIDES

Month	September	NTPC Barh
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<u>Date</u>	<u>Line tripping</u>	<u>Cause of Tripping</u>	<u>Tripping Analysis</u>	<u>Correct Operations at NTPC Barh (Nc)</u>	<u>Failed operations at NTPC Barh(Nf)</u>	<u>Number of Unwanted Operation (Nu)</u>	<u>Number of incorrect operations (Ni= Nf+Nu)</u>
06.09.2024	400 kV Barh-Patna 1	Zone-1, Y phase transient fault	Zone-1, Y phase transient fault detected. Main and tie CB Y pole opened but A/R initiation did not take place leading to CB tripping on pole discrepancy after 2-3 secs (approximately). On analysis it was found that particular contacts of the single phase self reset trip relay (MVAJ101JA1000A) which initiates A/R operation was faulty and contact changeover did not occur during the transient fault. Corrective Action: Spare contacts have been assigned for A/R initiation (Y-phase: Main & Tie CB).	0	1	1	1
				0	1	1	1

Dependability Index $D = Nc / (Nc + Nf)$	0
Security Index $S = Nc / (Nc + Nu)$	0
Reliability Index $R = Nc / (Nc + Ni)$	0

Protection Performance Indices for the month of September'24 (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	765KV-ANGUL-JHARSUGUDA-2	05-09-2024	12:04	05-09-2024	13:14	Angul : B_N, 6.197 kA, 65.024 Km	Jharsuguda: B_N, 4.278 kA, 222 Km	1	1	0	0	0	0	1	1	1	
2	400KV-ANGUL-JITPL-1	05-09-2024	13:00	05-09-2024	13:55	Angul: B-N, 11.22 kA, 17km	JITPL: B-N, 3.1KA, 57 km	1	1	0	0	0	0	1	1	1	
3	400KV-TSTPP-ROURKELA-2	05-09-2024	15:45	05-09-2024	18:14	Roukella: Busbar operated		1	0	0	1	0	0	1	0.5	0.5	Busbar-2 tripped due to inadvertent closure of Tie Side Isolator on DC supply ON for Isolator circuit during Main Bay CB testing (test Kit and lead wiring is connected). Upon closing of Isolator, flashover happened and Busbar operated but fault was not cleared as it is in blind zone and subsequently Man Bay LBB operated, and Tie CB tripped and DT sent to remote end.
4	400KV-JHARSUGUDA-RAIGARH-1	14-09-2024	17:29	15-09-2024	03:08	Jharsuguda: R-N, Ir- 3.44 kA, 100.3 Km	Raigarh: R_N, 1.8 kA, 31.488 km	1	1	0	0	0	0	1	1	1	
5	765KV-JHARSUGUDA-RAIPUR PS (DURG)-1	16-09-2024	17:31	18-09-2024	23:44	Jharsuguda: R_N, 8.73 kA, 78.58 Km.	Raipur: R_N, 207.19 km, 3,849 kA	1	1	0	0	0	0	1	1	1	
6	765KV-JHARSUGUDA-RAIPUR PS (DURG)-1	19-09-2024	00:29	19-09-2024	23:30	Jharsuguda: R_N, 3,978 kA, 251.415 km	-	1	1	0	0	0	0	1	1	1	
7	765KV-JHARSUGUDA-RAIPUR PS (DURG)-1	26-09-2024	06:54	26-09-2024	15:25	Jharsudha :R-N, 8.52 KA, 77.009 km	-	1	1	0	0	0	0	1	1	1	

List of important transmission lines in ER which tripped in September-2024 for PG ER-II					END-A						END-B					
Sl. No.	LINE NAME	TRIP DATE	Relay Indication LOCAL END	Relay Indication REMOTE END	Nc	Nu	Nf	Dependability Index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))	Nc	Nu	Nf	Dependability Index (Nc/(Nc+Nf))	Security Index (Nc/(Nc+Nu))	Reliability Index (Nc/(Nc+Nu+Nf))
1	400KV-BINAGURI-TALA-4	02-09-2024	Binaguri: B_N, 2.7 kA	Tala: B_N, 2.28 kA, 69.8 Km	1	0	0	1	1	1	NA					
2	400KV-NEW JEERAT-SUBHASGRAM(PG)-2	02-09-2024	New Jeeart: B_N, 3.92 kA	Subhasgram: B-N, 19.32 KA, 1.3 Km	1	0	0	1	1	1	1	0	0	1	1	1
3	220KV-MAITHON-DHANBAD-1	05-09-2024	Maithon:B-N, 4.3 kA, 39.1 3 km	Dhanbad: B-N, 9.17 kA, 4.7 km	0	0	1	0	#DIV/0!	0	NA					
4	400KV-BINAGURI-TALA-4	06-09-2024	Binaguri: Y-B, Iy-3.106 kA, IB-2.89 kA, 132.9 km (Carrier not received).	-	1	0	0	1	1	1	NA					
5	400KV-ALIPURDUAR (PG)-PUNASANGCHUN-2	11-09-2024	Alipurdaur: R_N, 4.73 KA, 76.2 km	-	1	0	0	1	1	1	NA					
6	400KV-ALIPURDUAR (PG)-BINAGURI-4	13-09-2024	Alipurdaur: B_N, 1.43 KA, 45 Km	Binaguri: B_N, 110.2 Km, 5.7 KA	1	0	0	1	1	1	1	0	0	1	1	1
7	400KV-ALIPURDUAR (PG)-PUNASANGCHUN-2	13-09-2024	ALipurdaur end: DT received	Punasangchun: B_N, 0.76kA, 153 km.	1	0	0	1	1	1	NA					

8	400KV-MEDINIPUR-NEW CHANDITALA-1	13-09-2024	Medinipur-B-N, 2.66 kA, 82 km	New Chanditala: B_N, 12.3 kA	1	0	0	1	1	1	NA					
9	400KV-MEDINIPUR-KHARAGPUR-2	13-09-2024	Medinipur: Y_N, 38.4 Km, 6.626 kA	Kharagpur :Y_N, 74.12 Km, 4.118 KA	1	0	0	1	1	1	NA					
10	220KV-BIRPARA-MALBASE-1	16-09-2024	Birpadar: Didn't trip	Malbase: O/c protection operated	1	0	0	1	1	1	NA					
11	220KV-BINAGURI-NJP-2	17-09-2024	Binaguri: Intertrip signal received.	NJP: Didn't trip	1	0	0	1	1	1	NA					
12	220KV-NEW MELLI-TASHIDING-1	18-09-2024	New Melli -R_N , 24.94 KM ,6.3 kA	-	1	0	0	1	1	1	NA					
13	400KV-ALIPURDUAR (PG)-JIGMELLING-2	18-09-2024	Alipurduar: Didn't trip		1	0	0	1	1	1	NA					
14	400KV-ALIPURDUAR (PG)-JIGMELLING-2	19-09-2024	Alipurduar: Didn't trip	-	1	0	0	1	1	1	NA					
15	400KV-ALIPURDUAR (PG)-BINAGURI-3	23-09-2024	Alipurduar:B-N, 4.6 KA, 47 km	Binaguri: B-N, 4.37 KA, 79.16 km	1	0	0	1	1	1	1	0	0	1	1	1
16	400KV-MEDINIPUR-KHARAGPUR-2	25-09-2024	Medinipur: Y_N, 1.16 kA, 10.06 Km	Kharagpur : Y_N, 4.53 kA, 106.3 Km	1	0	0	1	1	1	NA					

17	220KV-MAITHON-DHANBAD-1	27-09-2024	Maithon : R_N, 4.13 kA, 136 km	-	0	0	1	0	#DIV/0!	0	NA
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Jorethang Loop Hydro Electric Project 2 X 28 MW

Protection Performance Indices for the SEPTEMBER-2024 (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 TRIPPING	
2	220KV Jorethang-New Melli Line-2	21-09-2024	19:46	22-09-2024	17:46	Line-2 P442 Relay record: Started phase ABN Tripped Phase -B E.F start IN1 over current I>1 Distance trip Z2 19:46:42 fault duration-411.4 ms Relay trip time-79.95 ms fault location x7-11.57 KM system frequency-50.03 Fault record: IA-639.8A,VAN-65.2 KV IB-725.6A,VBN-60.4. KV IC-113.7A,VCN-127.5 KV Zone-02												Due to Earth fault in line-2 simultaneously both runing Unit triped

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.

List of important transmission lines in ER which tripped in September-2024

Sl. No.	LINE NAME	TRIP DATE	TRIP TIME	RESTORATION DATE	RESTORATION TIME	Relay Indication LOCAL END	Relay Indication REMOTE END	Reason Earth	Fault Clearance time in msec	Remarks	DR Configuration Discrepancy END-1	DR Configuration Discrepancy END-2	DR/EL RECEIVED FROM LOCAL END	DR/EL RECEIVED FROM REMOTE END	LOCAL END UTILITY	REMOTE END UTILITY	UTILITY RESPONSE
1	400KV-JEERAT-SAGARDIGHI-1	01-09-2024	22:44	01-09-2024	23:35	Jeerat : Didn't trip	Sagardighi: DT received	No fault	NA	DT received at Sagardighi. No fault observed from PMU.			NO	NO	WBSETCL	WBPDCCL	WB: No tripping at Jeerat End. As per instruction of Power Grid, DT link is isolated and trying to find out the fault as the fault is not in permanent nature. Shutdown will be taken after Durgapuja for find the fault.
2	400KV-BINAGURI-TALA-4	02-09-2024	11:07	02-09-2024	12:01	Binaguri: B_N, 2.7 kA	Tala: B_N, 2.28 kA, 69.8 Km	B-Earth	100	Three phase tripping in single phase B_N fault due to DT received at Binaguri.			YES	NO	ER-II	BHUTAN	DT received from Bhutan end. Protection perated at Binaguri end properly.
3	400KV-NEW JEERAT-SUBHASGRAM(PG)-2	02-09-2024	16:02	03-09-2024	10:53	New Jeerat: B_N, 3.92 kA	Subhasgram: B-N, 19.32 kA, 1.3 Km	B-Earth	100	A/r failed from both end after 1 second due to persistent fault.			YES	YES	PMJTL	ER-II	Protection operated properly.
4	220KV-MAITHON-DHANBAD-1	05-09-2024	11:09	07-09-2024	18:21	Maithon: B-N, 4.3 kA, 39.13 km	Dhanbad: B-N, 9.17 kA, 4.7 km	B-Earth	100	Three phase tripping from Maithon. A/r failed from Dhanbad due to persistent fault.		DR not time synchronized.	YES	YES	ER-II	DVC	PG: Line was kept in TBC due to CB replacement work in main bay. TBC has static type AR relay which failed to reclose. Failed component has been replaced & AR function has been tested successfully.

5	220KV-ROURKELA-TARKERA-2	05-09-2024	15:45	05-09-2024	19:34	Rourkela: Did not trip	Tarkera:R_Y_B, 27.2km, B-Ph, Out of step protection operated	Eartho fault	NA	No fault in line. Line tripped on Out of Step protection during fault in 400 kV Rourkela Bus			NA	NO	PG ODISHA	OPTCL	PG: Line not tripped from Rourkela end
6	220KV-ROURKELA-TARKERA-1	05-09-2024	15:45	05-09-2024	17:17	Rourkela: Did not trip	Tarkera:R-Y-B, Ir-3.43 kA, Iy- 3.6 kA, Ib-3.53 kA, Out of step protection operated	Eartho fault	NA	No fault in line. Line tripped on Out of Step protection during fault in 400 kV Rourkela Bus			NA	NO	PG ODISHA	OPTCL	PG: Line not tripped from Rourkela end
7	400KV-TSTPP-ROURKELA-2	05-09-2024	15:45	05-09-2024	18:14	Roukella: Busbar operated	TSTPP: DT Received, DP Operated	R-Y-B	350	At Rourkela, bus bar protection operated while isolator of main bay of TSTPP-2 got closed during some testing, later LBB also operated as fault was being fed from remote end and through ie bay. DT received at TSTPP.			No	Yes	NTPC	PG ODISHA	PG:Busbar-2 tripped due to inadvertent closure of Tie Side Isolator on DC supply ON for Isolator circuit during Main Bay CB testing (test Kit and lead wiring is connected). Upon closing of Isolator, flashover happened and Busbar operated but fault was not cleared as it is in blind zone and subsequently Man Bay LBB operated, and Tie CB tripped and DT sent to remote end.
8	400KV-BINAGURITALA-4	06-09-2024	10:39	07-09-2024	17:11	Binaguri: Y-B, Iy-3.106 kA, IB-2.89 kA, 132.9 km (Carrier not received).	-	Y_B	500	Tripped in phase to phase fault with Z-2 time delay of 500 msec from Binaguri end as carrier not received from Tala.			YES	NO	ER-II	BHUTAN	Carrier not received from Bhutan end. Protection operated at Binaguri end properly.
9	220KV-BUDHIPADAR-RAIGARH-1	07-09-2024	18:10	07-09-2024	19:20	Budhipadar : R_N, 3.228 kA, 54.95 Km	-	R-Earth	500	Distance protection operated at Budhipadar, however R_ph didn't open. Later SOTF operated after 500 msec. Why LBB didn't operate. OPTCL may explain.			YES	NO	OPTCL	WESTERN REGION	OPTCL: Presently the said line feeder is in TBC due to breakdown of breaker. May be some circuit wiring issue. It is to checked after commissioning of new breaker.
10	400KV-JEERAT-SAGARDIGHI-2	08-09-2024	11:18	08-09-2024	16:24	Jeerat: R-Y, IR - 29.9 kA, IY=21.4 kA, 1.9 Km	Sagardighi : R-Y, IR - 2.86 kA, IY- 1.43 kA, 201.4 Km	R_Y	500	Tripped in Zone-2 from Sagardighi. WBPDC/WBSETCL may explain.	DR channels not configured properly at Sagardighi		YES	YES	WBSETCL	WBPDC	WB: Jeerat End tripped with Zone-1 , R-Y phase fault and CB opened with in 45 ms. Carrier send from Jeerat End.

11	400KV-ALIPURDUAR (PG)-BINAGURI-4	13-09-2024	10:50	13-09-2024	15:13	Alipurdaur: B_N, 1.43 KA, 45 Km	Binaguri: B_N, 110.2 Km, 5.7 KA	B_Earth	320	Evolving resistive fault. A/R unsuccessful from both ends. Only faulty phase tripped during failed A/r attempt at Alipurdaur. Other two phase tripped later on PD. At Binaguri, R_ph tie CB digital status is showing as closed. Same may be checked. PG ER-2 may explain.			YES	YES	ER-II	POWERGRID	At Alipurdaur end, relay issued the trip command properly during AR attempt on persisting fault. However, other two phases did not open as AR LO was not executed by BCU. It may be noted that BCU executed the AR LO trip on a similar type of fault on 23.10.2024. OEM support is sought for resolving this issue. At Binaguri end, Tie CB R phase status did not report to M2 relay due to aux contact issue. However, same reported in M1 relay. Issue has been rectified.
12	400KV-ALIPURDUAR (PG)-PUNASANGCHUN-2	13-09-2024	12:30	13-09-2024	13:03	Alipurdaur end: DT received	Punasangchun: B_N, 0.76kA, 153 km.	B_Earth	1200	Resistive fault. DEF picked at Alipurdaur. After 1.2 seconds DT received from Bhutan and line tripped.			YES	NO	ER-II	BHUTAN	DT received from Bhutan end. Protection perated at Alipurdaur end properly.
13	400KV-MEDINIPUR-NEW CHANDITALA-1	13-09-2024	14:53	13-09-2024	21:00	Medinipur-B-N, 2.66 kA, 82 km	New Chanditala: B_N, 12.3 kA	B-Earth	100	A/R attempted from both end, but failed due to persistent fault.			YES	YES	PMJTL	WBSETCL	Protection operated properly.
14	400KV-MEDINIPUR-KHARAGPUR-2	13-09-2024	22:15	15-09-2024	01:26	Medinipur: Y_N, 38.4 Km, 6.626 kA	Kharagpur :Y_N, 74.12 Km, 4.118 KA	Y_Earth	100	A/R attempted from both end, but failed due to persistent fault.		DR not time synchronized.	YES	YES	PMJTL	WBSETCL	Protection operated properly.
15	220KV-BIRPARA-MALBASE-1	16-09-2024	09:14	16-09-2024	09:59	Birpadar: Didn't trip	Malbase: O/c protection operated	No Fault	NA	No fault in line. As reported, line tripped from Malbase on O/c.			NO	NO	ER-II	BHUTAN	No fault in line & no trip observed at Birpara end. Protection operated properly at Birpara end.

16	220KV-BINAGURI-NJP-2	17-09-2024	15:59	17-09-2024	16:36	Binaguri: Intertrip signal received.	NJP: Didn't trip	No Fault	NA	Line tripped from Binaguri only. At the same time, LA of 132/33 ICT-3 kV failed at NJP. PG ER-2/WBSETCL may explain.			NO	NO	ER-II	WBSETCL	PG: Tripping command received from remote end. No issue at PG end. WB: No inter trip had been send from NJP End. Inter trip will be send only when LBB operate due to failure of CB in NJP-Binaguri 220 KV feeder # 1 & 2 Otherwise only NJP end CB will trip for Bus- fault at NJP Sub-Station. Actual fault was 132 KV B-phase LA of 31.5 MVA TR#3 was burst-out and transformer tripped with Differential Protection and fault cleared with in 80 ms.
17	220KV-JODA-RAMCHANDRAPUR-1	17-09-2024	21:37	17-09-2024	22:06	Joda:B-N, 1.35 KA, 117.1 km	Ramchandrapur:-B-N, Ib=9.66 KA, 10.2 Km	B_Earth	400	Tripped in Zone-2 time from Joda. No A/r attempt at Ramchandrapur.	DR is not Time Synchronized & DR length needs to be increased	DR not time synchroniz ed.	YES	YES	OPTCL	JUSNL	3 Ph tripping for single phase fault. DTPC is not installed .
18	220KV-NEW MELLI-TASHIDING-1	18-09-2024	11:21	18-09-2024	15:36	New Melli-R_N , 24.94 KM ,6.3 kA	-	R_Earth	100	DT received at New Melli and all three phase tripped.			YES	NO	ER-II	DANS POWER	DT received from remote end. Protection operated properly at New Melli end.
19	400KV-ALIPURDUAR (PG)-JIGMELLING-2	18-09-2024	15:08	18-09-2024	16:16	Alipurduar: Didn't trip		No Fault	NA	No fault observed from PMU. Line tripped from Jigmelling end only.			NA	NO	ER-II	BHUTAN	No fault in line & no trip observed at Birpara end. Protection operated properly at Alipurduar end.
20	765KV-JHARSUGUDA-RAIPUR PS (DURG)-1	19-09-2024	00:29	19-09-2024	23:30	Jharsuguda: R_N, 3.978 kA, 251.415 km	-	R_Earth	500	Tripped in Zone-2 from Jharsuguda. Carrier not received. A/r attempt failed from Raipur and during this time carrier received. PG Odisha may explain.			YES	NA	PG ODISHA	WESTERN REGION	PG: During first fault Carrier not received, but PLCC was in healthy condition. During AR attempt carrier received.
21	400KV-ALIPURDUAR (PG)-JIGMELLING-2	19-09-2024	11:23	19-09-2024	13:12	Alipurduar: Didn't trip	-	No Fault	NA	No fault observed from PMU. As reported, line tripped from Jigmelling end due to DC failure.			NA	NO	ER-II	BHUTAN	No fault in line & no trip observed at Birpara end. Protection operated properly at Alipurduar end.

22	220KV-BOLANGIR (PG)-KESINGA-1	21-09-2024	23:49	22-09-2024	01:01	Bolangir - Y-B , Zone-3, 293.6 KM , FC -1Y- 1.05 KA , IB - 0.82 KA	Did not trip from Kesinga end.	No fault	NA	No fault in line. Line tripped in Zone-3 from Bolangir. There was a fault in downstream of Kesinga which was not cleared. Total fault duration was 2.8 seconds.			YES	NO	PG ODISHA	OPTCL	OPTCL: As per settings , Line tripped after 800msec of Zone-3 start.
23	220KV-BUDHIPADAR-KORBA-2	22-09-2024	10:19	22-09-2024	12:32	A/r successful from Budhipadar end : B-N, 2.2kA, 52.8 km	-	B_Earth	400	Three phase A/r successful from Budipadar end. Tripped in Zone-2 from Korba.			YES	NO	OPTCL	WESTERN REGION	OPTCL: 3 Phase A/R initiation for single phase fault to be checked.
24	220KV-KATAPALLI-BOLANGIR(PG)-1	24-09-2024	11:48	24-09-2024	18:57	Katapali: Y_N, 29.03 Km, 4.05 KA	Bolangir: Y-N,1.7 kA, 82.9 Km	Y_Earth	100	A/r successful from Katapali end, A/r not attempted from Bolangir end.	DR not time synchronized.	DR length needs to be increased	YES	YES	OPTCL	PG ODISHA	OPTCL: PLCC Not available for this line. Line belongs to OPTCL.
25	400KV-MEDINIPUR-KHARAGPUR-2	25-09-2024	17:24	26-09-2024	10:29	Medinipur: Y_N, 1.16 kA, 10.06 Km	Kharagpur : Y_N, 4.53 kA, 106.3 Km	Y_Earth	100	A/r failed from both end after 1 second due to persistent fault.		DR not time synchronized.	NO	YES	PMJTL	WBSETCL	Protection operated properly.
26	220KV-PATNA-FATUHA-1	26-09-2024	06:56	26-09-2024	14:40	Patna: Line didn't trip	Line tripped from Fatuha end only.	No fault	NA	No fault observed from PMU. As reported, due to some auxiliary failure at Fatuah end, line tripped.			NO	NO	ER-I	BSPTCL	BSPTCL: Due to grounding of indication cable, fuse wire of indication circuit blown causing tripping of circuit breaker without relay. After isolating indication circuit ,breaker closed.
27	220KV-BUDHIPADAR-KORBA-1	26-09-2024	16:04	26-09-2024	17:48	Budhipadar: Y_N, 1.4 KA, 125 Km	-	Y_Earth	500	Tripped in Zone-2 from Budhipadar.			YES	NO	OPTCL	WESTERN REGION	OPTCL: Tripped in Z-2

28	220KV-MAITHON-DHANBAD-1	27-09-2024	17:57	27-09-2024	18:29	Maithon : R_N, 4.13 kA, 136 km	-	R_Earth	100	A/r successful at Dhanbad. Tree phase tripping for single phase fault at Maithon. PG ER-2 may explain.			YES	NO	ER-II	DVC	Line was kept in TBC due to CB replacement work in main bay. TBC has static type AR relay which failed to reclose. Failed component has been replaced & AR function has been tested successfully.
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SI No.	Name of the incidence	PCC Recommendation	Latest status
139th PCC Meeting			
1.	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 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>SLDC Odisha representative informed that protection settings had been collected from OHPC and shared to OPTCL for study. He further informed that at present, team is engaged in planning and restoration work for cyclone therefore meeting is scheduled in next week among concerned utilities to revise settings.</i></p> <p><i>On enquiry from ERPC representative regarding setting delay time of 100-150 ms in islanding scheme of Hindalco, SLDC Odisha representative replied that communication had been sent to Hindalco. Representative from Hindalco will be present in scheduled meeting where it will be discussed.</i></p> <p><i>PCC advised SLDC Odisha to share deliberation of scheduled meeting to ERPC/ERLDC.</i></p> <p><i>PCC advised ERPC to convey meeting among ERPC, ERLDC, OPTCL, OHPC, SLDC Odisha representative to finalize the settings after receiving revised settings from OPTCL, OHPC and SLDC Odisha.</i></p>

2.	<p>Total Power failure at 220/132 kV Purnea (PG) S/s on 01.08.2024 at 15:50 Hrs</p>	<p>PCC advised PG representative to test differential protection for 132 kV Purnea-Purnea-1 along with rectification. It further advised BSPTCL representative to test OPGW and differential protection for 132 kV Purnea-Purnea-1 along with rectification at their end.</p> <p>PCC advised PG representative to identify reason behind difference in fault currents in each circuit of 132 k V Purnea-Purnea T/c.</p> <p>PCC advised PG ER-II representative to review zone 3 protection settings at Dalkhola end for 220 kV Dalkhola-Purnea in coordination with 220/132 kV ICTs at Purnea & 220 kV Gazole-Dalkhola and coordinate with WBSETCL for same.</p>	<p><i>BSPTCL representative informed that OPGW had been restored for 132 kV Purnea-Purnea-1 in coordination with PG.</i></p> <p><i>Powergrid representative informed that differential protection is healthy for 132 kV Purnea-Purnea-1.</i></p> <p><i>On enquiry from ERPC representative regarding reason behind difference in fault currents observed in different lines for 132 k V Purnea-Purnea T/c, Powergrid representative informed that during the time of disturbance, additional faults had occurred in downstream feeders of BSPTCL (Tower collapse in Trivanigani).</i></p> <p><i>Regarding revision of zone 3 settings at Dalkhola end, Powergrid representative informed that at present zone 3 settings is kept 0.8 second for 220 kV Dalkhola-Purnea and it is observed that it is getting encroached by settings of ICTs at Purnea so settings will be revised.</i></p> <p><i>ERLDC representative informed that since zone 3 setting is kept at 1.2 second at Gazole end so Powergrid can keep settings to be less than 1.1 second at Dalkhola end.</i></p> <p><i>PCC advised PG ER-II representative to review zone 3 protection settings at Dalkhola end for 220 kV</i></p>

			<p><i>Dalkhola-Purnea in coordination with 220/132 kV ICTs at Purnea & 220 kV Gazole-Dalkhola and share revised settings to ERPC/ERLDC.</i></p>
3.	<p>Total Power failure at 220 kV Darbhanga (BSPTCL) S/s on 01.08.2024 at 17:59 Hrs</p>	<p>MS, ERPC advised BSPTCL representative to carry out third party inspection at Darbhanga S/s in coordination with DMTCL and submit observations to ERPC/ERLDC. PCC advised same to BSPTCL & DMTCL representative.</p> <p>PCC opined that zone 4 pickup at BSPTCL end in 220 kV Darbhanga (DMTCL)-Darbhanga 2 should not have dropped in 50 ms so it advised BSPTCL representative to check the issue and submit observation to ERPC/ERLDC.</p> <p>PCC advised BSPTCL representative to resolve issue of DR channel configuration and time synchronization at BSPTCL end at earliest and share confirmation to ERPC/ERLDC after its rectification.</p>	<p><i>DMTCL representative informed that shutdown date is not provided by BSPTCL for third party inspection at Darbhanga S/s hence inspection had not been done till date.</i></p> <p><i>BSPTCL representative informed that DCRM test for circuit breaker had been performed and results were satisfactory.</i></p> <p><i>PCC advised BSPTCL representative to share report to ERPC, ERLDC & DMTCL.</i></p> <p><i>PCC advised BSPTCL representative to resolve issue of DR channel configuration and time synchronization at BSPTCL end at earliest and share confirmation to ERPC/ERLDC.</i></p> <p><i>Regarding drop of zone 4 pickup at BSPTCL end within 50 ms, BSPTCL representative informed that since line is very short therefore zone 4 distance protection might had dropped in 50 ms however relay will be tested again and result will be shared to ERPC/ERLDC.</i></p>

4.	Repeated tripping of 132kV-RIHAND-GARWAH-1	PCC advised JUSNL to identify fault location and jurisdiction and share details to ERPC/ERLDC so that issue can be further coordinated with Uttar Pradesh & Bihar in order to resolve issue of repeated tripping of line.	<i>JUSNL representative was not available in the meeting.</i>
5.	Repeated tripping of 220kV-DARBHANGA (DMTCL)-MOTIPUR-1	PCC advised BSPTCL representative to check healthiness of carrier at their end for Motipur-1 and rectify at earliest and share update to ERPC/ERLDC. It further advised DMTCL to check details of tripping held on 30 th Aug 2024 and share with BSPTCL along with ERPC/ERLDC.	<i>DMTCL representative informed that carrier issue had been resolved in last week (around 17th Oct 2024) and it is healthy at present.</i> <i>On enquiry from ERPC representative, ERLDC representative informed that no tripping had occurred for this line since 29th Sep 2024.</i>
6.	Tripping of 400KV/220KV 315 MVA ICT 2 AT NEW DUBURI	OPTCL representative informed that NIT switch will be checked by availing shutdown of ICT in Oct 2024 and observations will be shared to ERPC/ERLDC.	<i>OPTCL representative informed that NIT switch had maloperated during the disturbance subsequently contacts were replaced.</i>
138th PCC Meeting			
7.	Disturbance at 220 kV Bokaro (DVC) S/s on 20.07.2024 at 19:38 Hrs	DVC representative replied that old MOCB breaker is present at BTPS B which failed to open during the disturbance therefore it is planned to replace all old MOCB breaker by Sep 2024. DVC representative informed that at present there is no independent set of batteries however during renovation work at CTPS & BTPS-B, two independent set of batteries will be installed. PCC opined that for DR recording, there should be independent supply system so that in case of	Regarding old MOCB breaker, DVC representative replied that procurement process had been started and it will be implemented by Dec 2024. Regarding two set of batteries, DVC representative informed that two DC sources are kept at S/s however DCCB is fed from only one source at present. He further added that complete switchyard at Bokaro S/s will be renovated by one and half year during which numerical relay, two independent

		<p>total power failure at substation DR should be captured for which DVC was advised to comply same.</p> <p>PCC advised all utilities to submit their observation regarding DR retrieving feature for relays of different make being used by them in case of DC supply failure to ERPC/ERLDC.</p> <p>PCC advised DVC representative to replace the Old High Impedance Bus bar scheme with low impedance Bus Bar Scheme for enhancing the stability of the protection as per IEGC guideline.</p> <p>PCC advised DVC representative to share status of renovation/upgradation work to ERPC/ERLDC on periodic basis.</p> <p>DVC representative replied that DC system will be rectified along with enabling of bus bar protection by 10th Sep 2024.</p>	<p>sources etc issue will be resolved.</p> <p>On enquiry from ERLDC, DVC representative submitted that since additional independent source is available so in case of failure of connected DC source , it can be replaced manually by additional source hence similar issue of DC power failure will not be observed.</p> <p>PCC advised all utilities to submit their observation regarding DR retrieving feature for relays of different make being used by them in case of DC supply failure to ERPC/ERLDC.</p> <p>PCC advised DVC representative to replace the Old High Impedance Bus bar scheme with low impedance Bus Bar Scheme for enhancing the stability of the protection as per IEGC guideline.</p> <p>PCC advised DVC representative to share status of renovation/upgradation work to ERPC/ERLDC on periodic basis.</p> <p><i>In 140th PCC Meeting, PCC advised DVC representative to share status of renovation/upgradation work to ERPC/ERLDC.</i></p>
8.	Repeated tripping of 400KV LAPANGA-STERLITE-2	On enquiry from PCC regarding reason behind non operation of auto-recloser, Sterlite	Sterlite representative informed that shutdown of line is planned as weather

		representative submitted that issue will be checked and report for A/r will be shared to ERPC/ERLDC along with insulator replacement report by 2 days.	condition improves in order to test A/r however no tripping had been observed recently. <i>No representative was present from Sterlite.</i>
137th PCC Meeting			
9.	Disturbance at 220 kV Budhipadar(OPTCL) S/s and 220 kV Ib-TPS (OPGC) S/s on 05.06.2024 at 04:11 Hrs	<p>PCC advised SLDC Odisha to coordinate with CPPs and share islanding scheme details to ERPC/ERLDC.</p> <p>OPTCL representative replied that due to non availability of shutdown & testing kit, testing of auto-recloser was not done however it is expected to be completed within 10 days and report will be shared to ERPC/ERLDC.</p> <p>PCC advised OPTCL to test relays at earliest and submit observation to ERPC/ERLDC.</p> <p>PCC advised OPTCL to conduct testing of breaker also and submit observation to ERPC/ERLDC.</p> <p>PCC advised OPTCL representative to review zone 3 time & reach settings of relay at Budhipadar end for 132 k V Budhipadar- Lapanga.</p> <p>PCC advised OPTCL representative to increase in DR length to 3 seconds.</p> <p>It further advised OPTCL representative to prepare annual maintenance plan and outage plan of each S/s and share to ERPC/ERLDC.</p>	<p>OPTCL representative informed that testing of relay of Korba- 1 is done and testing of relay of raigarh will be done by Sep 2024.</p> <p>Regarding DR length, OPTCL representative replied that it had been increased to 3 seconds for ALSTOM make relays however for Siemens relays they are facing difficulty.</p> <p>PCC advised OPTCL representative to share further plan of testing with ERPC/ERLDC.</p> <p><i>In 140th PCC Meeting, OPTCL representative informed that breaker at Raigarh had been installed.</i></p> <p><i>He further informed that relay will be tested by next week.</i></p> <p><i>PCC advised SLDC Odisha to coordinate with CPPs and share islanding scheme details to ERPC/ERLDC. It further advised ERPC and ERLDC to send separate communications to competent authority of SLDCs regarding furnishing islanding scheme details.</i></p>

10.	Disturbance at 400 kV Meeramundali B (OPTCL) S/ s and 400 kV GMR S/s on 20.06.2024 at 19:18 Hrs	PCC advised OPTCL & GMR to carry out testing of the carrier communication jointly and submit observation to ERPC/ERLDC.	<i>OPTCL representative informed that testing of carrier will be done before 7th Nov 2024 and testing report will be shared to ERPC/ERLDC.</i>
11.	Repeated tripping of 400kV-KHSTPP-BARH-1	<p>She further informed that shutdown of bus 2 is also planned on 31st July 2024 to revive tie bay for Banka -1 as Barh and Banka are in same tie subsequently no issue will occur further.</p> <p>ERLDC representative further enquired that auto-reclose is not getting successful from their end for barh circuit -2 for which she replied that issue will be checked in planned shutdown of line.</p> <p>NTPC representative replied that they are planning to replace faulty relays by Oct 2024 subsequently these issues will be resolved.</p> <p>PCC advised NTPC representative to resolve auto-recloser & DR issue at earliest</p>	<p><i>NTPC Barh representative informed that as per communication made with NTPC Kahalgaon there was issue with TNC switch of tie bay for Banka which had been replaced hence no further spurious DT command is being sent from KhSTPP end subsequently no tripping of line had occurred since Aug 2024.</i></p> <p><i>NTPC KhSTPP representative informed that contact of TNC switch were shorted which had resulted in spurious DT command and issue had been resolved after replacement of TNC switch.</i></p>
12.	SPS Scheme for 220 k V Maithon Dumka D/C	PCC advised JUSNL representative to share details of feeder identified for providing load relief of 160 MW to ERPC/ERLDC within a week.	<i>ERLDC representative informed that as per communication received from JUSNL, SPS had been implemented on 23th Oct 2024 at 16:09 Hrs.</i>
136th PCC Meeting			
13.	Disturbance at 765/400 kV Jharsuguda (Powergrid) S/s and tripping of units at Darlipalli STPP (NTPC)	NTPC representative replied that already team is deployed for reviewing settings and OEM support is also required for review of these settings for which communication is already made	<i>NTPC Darlipalli representative informed that OEM support is required for review of settings since settings is preset for which communication is already made with OEM and</i>

	and OPGC on 21.05.2024 at 17:02 Hrs	<p>with OEM and updates will be shared with ERPC/ERLDC.</p> <p>PCC advised OPGC representative to coordinate with OEM (M/s BHEL and M/s Siemens) to review LSR settings (slope, time delay etc) and update status to ERPC/ERLDC.</p> <p>PCC further advised to share slope of LSR ramp settings and protection scheme to ERPC/ERLDC.</p>	<p><i>OEM had informed that tuning will be required between no load and full load therefore it will be done during overhauling period.</i></p> <p><i>No representative was present from OPGC.</i></p>
14.	Disturbance at 400 kV Haldia (HEL) S/s on 29.05.2024 at 12:38 Hrs	<p>PCC advised Powergrid representative to coordinate with OEM in order to find root cause behind tripping of zone 2 fault in zone 1 and share the analysis received from OEM to ERPC/ERLDC. PCC further advised PG representative to share DR of the event to ERPC/ERLDC.</p> <p>PCC advised HEL representative to coordinate with OEM in order to find reason behind operation of DEF protection.</p>	<p>HEL representative informed that protection settings, DR, EL etc had been shared to OEM and report will be submitted to ERPC/ERLDC after receiving from OEM.</p> <p><i>In 140th PCC Meeting, HEL representative was not available in the meeting.</i></p>
15.	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>JUSNL representative informed that work order for auto-reclose will be issued by 10th Oct 2024 for Govindpur end and will be done for Tenughat end and Dumka end soon.</p> <p><i>In 140th PCC Meeting, JUSNL representative was not available in the meeting.</i></p> <p><i>TVNL representative informed that as per update received from JUSNL, auto-recloser had not been rectified at Govindpur end. He further</i></p>

		both Govindpur as well as Tenughat end.	<i>informed that implementation work of two new feeders (Gomia and Hazaribagh) at their end will be started by JUSNL (by Nov 2024 tentatively) during which auto-recloser will be tested.</i>
135th PCC Meeting			
16.	Total Power Failure at 220 kV Pratapsasan (OPTCL)S/s on 23.04.2024 at 14:22 Hrs	PCC opined that blocking of isolator and CB status should not cause busbar relay operation and suggested that this event of mal-operation of busbar relay shall be consulted with relay OEM and logic of busbar relay may be reviewed. PCC advised the issue may be resolved within a month.	<i>OPTCL representative informed that communication had been already made with OEM regarding testing of bus bar relay and issue with bus bar logic however no response had been received from OEM therefore testing will be done by OPTCL during annual maintenace for which target date will be shared to ERPC/ERLDC.</i>
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.	<i>SLDC Odisha representative informed that as per communication made with Vedanta , agency is prepared for implementing SPS however they require discussion with ERLDC before implemeting SPS for which ERLDC representative agreed.</i> <i>PCC advised ERPC, ERLDC, SLDC Odisha and Vedanata to have discussion by 8th Nov 2024 for implementing SPS at earliest.</i>

400kV RELAY SETTING CALCULATIONS.									
Note: Edit only Blue Fonted Cells									
Line details: DIKCHU – Teesta-3 400 KV									
PROTECTED LINE PARAMETERS					Conductor Used		DC QUAD MOOSE		
LENGTH OF THE LINE IN KMS					71	Earlier value of 15.1 kM has been changed to 71 kM			
					R	X	Z		
POSITIVE SEQ. IMP PER KM PER PHASE IN Ohms					0.014683	0.253120			
ZERO SEQ. IMP PER KM PER PHASE IN Ohms					0.249120	0.999360			
MUTUAL ZERO SEQ. IMP PER KM PER Ph IN Ohms					0	0	0.528		
POSITIVE SEQ. IMP PER KM PER PHASE IN Ohms					0.253545509				
Zero SEQ. IMP PER KM PER PHASE IN Ohms					1.029942321				
Positive SEQ. Resistance Of PL IN Ohms					1.042493				
Positive SEQ. Reactance Of PL IN Ohms					17.97152				
POSITIVE SEQ. IMP Of PL IN Ohms					18.0017311				
POSITIVE SEQ. IMP Angle					86.68				
Zero SEQ. Resistance Of PL IN Ohms					17.68752				
Zero SEQ. Reactance Of PL IN Ohms					70.95456				
Zero SEQ. IMP Of PL IN Ohms					73.12590477				
Zero SEQ. IMP Angle					76.00				
Adjacent Shortest LINE PARAMETERS(Rampo-Teesta-V)					Conductor Used		DC QUAD MOOSE		
LENGTH OF THE LINE IN KMS					56.14				
					R	X			
POSITIVE SEQ. IMP PER KM PER PHASE IN Ohms					0.01468	0.25312			
ZERO SEQ. IMP PER KM PER PHASE IN Ohms					0.2491	0.9993			
MUTUAL ZERO SEQ. IMP PER KM PER Ph IN Ohms					0	0			
Positive SEQ. IMP PER KM PER PHASE IN Ohms					0.253545335				
Zero SEQ. IMP PER KM PER PHASE IN Ohms					1.029879265				
Positive SEQ. Resistance Of SL IN Ohms					0.8241352				
Positive SEQ. Reactance Of SL IN Ohms					14.2101568				
Positive SEQ. IMP Of SL IN Ohms					14.2340351				
POSITIVE SEQ. IMP Angle					86.68				
Zero SEQ. Resistance Of SL IN Ohms					13.984474				
Zero SEQ. Reactance Of SL IN Ohms					56.100702				
Zero SEQ. IMP Of SL IN Ohms					57.81742192				
Zero SEQ. IMP Angle					76.00				
Adjacent Longest LINE PARAMETERS					DC QUAD MOOSE		Conductor Used		Twin HTLS
LENGTH OF THE LINE IN KMS					45.34			10.8	
					R	X	R	X	
POSITIVE SEQ. IMP PER KM PER PHASE IN Ohms					0.014683	0.253120	0.034705	0.307680	
ZERO SEQ. IMP PER KM PER PHASE IN Ohms					0.249120	0.999360			
MUTUAL ZERO SEQ. IMP PER KM PER Ph IN Ohms					0	0	0	0	
Positive SEQ. IMP PER KM PER PHASE IN Ohms					0.253545509		0.309631102		
Zero SEQ. IMP PER KM PER PHASE IN Ohms					1.029942321			T	

Positive SEQ. Resistance Of LL IN Ohms				0.66572722			0.374814		
Positive SEQ. Reactance Of LL IN Ohms				11.4764608			3.322944		
Positive SEQ. IMP Of LL IN Ohms				11.49575336			3.344015903		
POSITIVE SEQ. IMP Angle				86.68			83.56		
Zero SEQ. Resistance Of LL IN Ohms				11.2951008					
Zero SEQ. Reactance Of LL IN Ohms				45.3109824					
Zero SEQ. IMP Of LL IN Ohms				46.69758482					
Zero SEQ. IMP Angle				76.00					
Reverse Shortest LINE PARAMETERS					Conductor Used				
LENGTH OF THE LINE IN KMS									
				R			X		
POSITIVE SEQ. IMP PER KM PER PHASE IN Ohms				0			0		
ZERO SEQ. IMP PER KM PER PHASE IN Ohms				0			0		
MUTUAL ZERO SEQ. IMP PER KM PER Ph IN Ohms				0			0		
Positive SEQ. IMP PER KM PER PHASE IN Ohms				0					
Zero SEQ. IMP PER KM PER PHASE IN Ohms				0					
Positive SEQ. Resistance Of SL IN Ohms				0					
Positive SEQ. Reactance Of SL IN Ohms				0					
Positive SEQ. IMP Of SL IN Ohms				0					
POSITIVE SEQ. IMP Angle				#DIV/0!					
Zero SEQ. Resistance Of SL IN Ohms				0					
Zero SEQ. Reactance Of SL IN Ohms				0					
Zero SEQ. IMP Of SL IN Ohms				0					
Zero SEQ. IMP Angle				#DIV/0!					
				Pri			Sec		
	CT RATIO IN A			3000			1		Amps
	PT RATIO IN V			400000			110		Volts
PRIMARY TO SEC RATIO(CTR/PTR)				0.825					
% ZONE Settings:									
ZONE - I = % OF PROTECTED LINE(Enter Protected Line%)							80	%	
ZONE - II = % OF PL							150	%	
ZONE - III = 120% OF PL +120% OF ADJACENT LL(Enter Longest line %)							120	%	
Zone-IV =20% of Reverse shortest Line(Enter % of Reverse SL)							20	%	
Relay settings									
1)GROUND Factor									
Magnitude,KZ1,KZ2,KZ3....PS1 =			1.021						
Angle KG =			-14.121	deg					
Protected Line Impedence Value=			14.851	Ω					
2)Zone Settings									
Z1=			11.881	Ω					
Z2=			22.277	Ω					
Z3=			32.513	Ω					
Z4=			2.970	Ω					
3)Resistive Reach settings:									

RELAY REL670 ABB

System Parameters			
Voltage level	400	kV	
Type of configuration	Double circuit		
Base current	3000	Amps	
Max load in forward	2078	MVA	
Max load in reverse	2078	MVA	
Min line Voltage	380	kV	
Power factor at max line loading	0.9		
Over load margin	110	%	
Multi.factor for inner resistive boundary forward	0.6		
Multi.factor for inner resistive boundary Reverse	0.6		
CT Details			
CT Primary	3000	Amps	
CT Secondary	1	Amps	
CT ratio	3000		
PT Details			
PT Primary	400000	Volts	
PT Secondary	110	Volts	
PT ratio	3636.363636		
CTR/PTR	0.825		
Length of the protected line	71	KM	Earlier value of 15.1 KM has been changed to 71 KM
Positive Sequence Resistance per KM	0.014693	Ohms	
Positive Sequence Reactance per KM	0.253120	Ohms	
Zero Sequence Resistance per KM	0.249120	Ohms	
Zero Sequence Reactance per KM	0.999360	Ohms	
Mutual Sequence Resistance per KM	0.0000	Ohms	
Mutual Sequence Reactance per KM	0.0000	Ohms	
Positive Sequence Resistance for prot. Line (R1)	1.042493	Ohm	
Positive Sequence Reactance for prot. Line (X1)	17.97152	Ohm	
Positive Sequence Impedance for prot. Line (Z1)	18.0017311	Ohm	
Positive Sequence Impedance Angle	86.68010343	Degree	
Zero Sequence Resistance for prot. Line(R0)	17.68752	Ohm	
Zero Sequence Reactance for prot. Line(X0)	70.95456	Ohm	
Zero Sequence Impedance for prot. line (Z0)	73.12590477	Ohm	
Zero Sequence Impedance Angle	76.00261429	Degree	
Zero Sequence Compensation Resistance for prot. Line(Rn)	5.548342333	(R0-R1)/3	
Zero Sequence Compensation Reactance for prot. Line(Xn)	17.66101333	(X0-X1)/3	
Zero Sequence Compensation Factor (Kn)	1.028347572		
Zero Sequence Compensation Angle (l)	-14.12061335		
Mutual Zero Sequence Compensation Factor (Km)			
Mutual Zero Sequence Compensation Angle (l)			
Arc resistance			
Tower foot resistance			
Phase to earth fault resistance(RFPE)	Arc+ Tower foot resistances		
Phase to Phase fault resistance (RPP)	Arc resistance		
Task force recommendation (CEA)			
Distance Zone settings			
Zone1:			
Line under reaching zone	80% of protected line		
Positive sequence impedance reach Z1=(R1+X1)	0.8339944	j	14.377216
Zero sequence impedance reach Z0=(R0+X0)	14.150016	j	56.763648
Fault resistance reach in Phase-Phase loop RPPP	30.79		as per vendor document
Fault resistance reach in Phase-Earth loop RFPE	41.06		
Positive sequence impedance reach Z1=|Z1| θ ₁	14.40138488		86.68010343
Earth return factor Kn	1.028347572		-14.12061335
Operation Direction	Forward		
Phase-Phase operating Time	0		
Phase-Earth operating time	0		
Zone2:			
Line under reaching zone	150% of protected line		
Positive sequence impedance reach Z1=(R1+X1)	1.5637395	j	26.95728
Zero sequence impedance reach Z0=(R0+X0)	26.53128	j	106.43184
Fault resistance reach in Phase-Phase loop RPPP	30.79		as per vendor document
Fault resistance reach in Phase-Earth loop RFPE	41.06		
Positive sequence impedance reach Z1=|Z1| θ ₁	27.00259666		86.68010343
Earth return factor Kn	1.028347572		-14.12061335
Operation Direction	Forward		
Phase-Phase operating Time	0.35 Sec		
Phase-Earth operating time	0.35 Sec		
Remarks:			
The Proposed Z2 (150% protected) impedance is well below the combined impedance 100% line+100% of Transformer impedance. Thereby zone2 not encroaching in to LV side transformer.			
Zone3:			

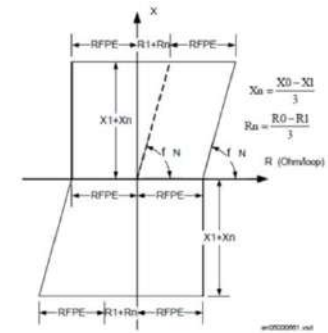


Figure 33: Characteristic for the phase-to-earth measuring loops, ohm/loop domain.

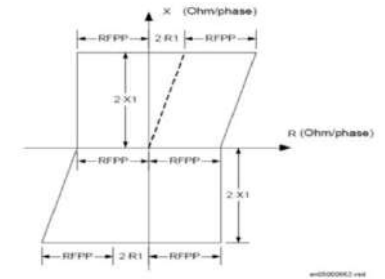


Figure 34: Characteristic for the phase-to-phase measuring loops

Line under reaching zone	120%(100% protected line +100% of adjacent longest line)			Twin HTLS		
Adjacent longest line	45.34	km		10.8	km	
Positive sequence impedance reach $Z1=(R1+X1)$	2.499641064		39.3251098	R	X	
Zero sequence impedance reach $Z0=(R0+X0)$	38.00774016		152.470356	0.034705	0.307680	
Fault resistance reach in Phase-Phase loop RFPP	30.79			0.249120	0.999360	
Fault resistance reach in Phase-Earth loop RFPE	41.06	as per vendor document		0	0	
Positive sequence impedance reach $Z1=|Z1| \theta_L$	39.40447263	86.3629735				
Earth return factor Kn	1.028347572	-14.12061335				
Operation Direction	Forward					
Phase-Phase operating Time	1 Sec					
Phase-Earth operating time	1 Sec					
Remarks:						
The Proposed Z3 120%(100% protected line+100% of adjacent longest line) is well below the combined impedance 100% line+100% of Transformer impedance.						
Thereby zone3 not encroaching in to LV side transformer.						
Zone4:	OFF					
Zone5:						
Line under reaching zone	20% of protected line					
Positive sequence impedance reach $Z1=(R1+X1)$	0.2084986		3.594304			
Zero sequence impedance reach $Z0=(R0+X0)$	3.537504		14.190912			
Fault resistance reach in Phase-Phase loop RFPP	30.79					
Fault resistance reach in Phase-Earth loop RFPE	41.06	as per vendor document				
Positive sequence impedance reach $Z1=|Z1| \theta_L$	3.600346221	86.68010343				
Earth return factor Kn	1.028347572	-14.12061335				
Operation Direction	Reverse					
Phase-Phase operating Time	0.5 Sec					
Phase-Earth operating time	0.5 Sec					
Phase selection with Load En						