



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

Tel. No.: 033-24239651, 24239659 FAX No.: 033-24239652, 24239653 Web: www.erpc.gov.in

सं./NO. पू.क्षे.वि.स./PROTECTION/2022/ 624

दिनांक /DATE: 08.08.2022

सेवा में / To,

संलग्न सूची के अनुसार / As per list enclosed.

विषय : पू.क्षे.वि.स. की 117 वीं संरक्षण समन्वय उप-समिति (पीसीसी) की बैठक हेतु सूचना।

Sub: Notice for 117th Protection Coordination sub-Committee (PCC) meeting of ERPC.

Sir/Madam,

यह सूचित किया जाता है कि पू.क्षे.वि.स की 117वीं पीसीसी बैठक 22 अगस्त 2022 (सोमवार) को 10:30 बजे से ऑनलाइन माइक्रोसॉफ्ट टीमस मीटिंग प्लेटफॉर्म के माध्यम से आयोजित की जाएगी। मीटिंग लिंक ई-मेल या संदेश के माध्यम से अग्रेषित किया जाएगा।

Notice is hereby given that **117th PCC meeting** of ERPC will be held on **22nd August, 2022 (Monday)** from 10:30 hrs through **online Microsoft Teams meeting platform**. The meeting link will be forwarded through e-mail or message.

The tentative agenda items for discussion will be as follows:

- 1) Confirmation of the minutes of 116th Protection sub-Committee Meeting of ERPC
- 2) Analysis of following grid disturbances of July 2022:
 - Total Power failure at 220 kV Chatra(JUSNL) S/s on 01.07.2022 at 13:50 Hrs and on 14.07.2022 at 16:17 Hrs
 - Disturbance at 220 kV IB TPS(OPGC) S/S on 03.07.2022 at 01:39 Hrs
 - Disturbance at 220kV BTPS (NTPC) on 06.07.2022 at 15:34 Hrs and on 11.07.2022 at 21:04 Hrs
 - Total Power failure at 220 kV Ramchandrapur(JUSNL) S/s on 09.07.2022 at 14:27 Hrs
 - Disturbance at 400/220 kV Keonjhor(OPTCL) S/S on 12.07.2022 at 09:27 Hrs
 - Total Power failure at 220 kV Alipurduar(WBSETCL) S/s on 14.07.2022 at 17:43 Hrs
 - Total Power failure at 220/132 kV Bantala S/s on 23.07.2022 at 08:46 Hrs
 - Total Power failure at 220 kV Joda(OPTCL) S/s on 27.07.2022 at 11:30 Hrs
 - Disturbance at 220kV Hajipur (BSPTCL) S/s on 31.07.2022 at 00:28 Hrs
- 3) Follow up of decision of previous Protection Coordination sub-Committee Meetings.
- 4) Single line tripping incidences of transmission elements for July 2022 as enclosed at **Annexure-1**.

You are requested to kindly furnish the detail report along with all records (SLD, SOE, DR, Relay and schematic diagram of auxiliary supply, wherever applicable) related to above tripping well in advance for meaningful analysis. You are also requested to upload the details in on-line tripping incident reporting system implemented in Protection Database Management System(www.erpc-protectiondb.in.)

Your participation in the meeting is highly solicited.

भवदीय / Yours faithfully,

Dum
08.08.22

(पी.पी.जेना / P.P.Jena)

Executive Engineer (PS)

कार्यपालक अभियंता(पी.एस)

LIST OF ADDRESSES:

Chief Engineer, Trans (O&M) Bihar State Power Transmission Limited, VidyutBhawan, Bailey Road, Patna-800021	Electrical Supeerintending Engineer (CRITL) Bihar State Power Transmission Limited, VidyutBhawan, 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 UrjaSancharan Nigam Limited Kusai Colony, Doranda, Ranchi-834002	Electrical Superintending Engineer (CLD) Jharkhand UrjaSancharan Nigam Limited, Kusai Colony, Doranda, Ranchi-834002
Chief General Manager (O&M), OPTCL, Janpath, Bhubaneswar, Odisha – 751 022. FAX: 0674-2542932 cgm.onm@optcl.co.in	Sr. General Manager (PPA), Technical Wing, OHPCL, Orissa State Police Housing & Welfare Corpn. Bldg. Vanivihar Chowk, 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, Andul Road, Howrah-711109	Addl. Chief Engineer (ALDC) West Bengal Electricity Distribution Company Ltd Vidyut Bhavan, 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, Sasi Sekhar 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, LA 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., Loknaya Jaiprakash Bhawan, (2 nd Floor), Dak Bunglow Chawk, 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, Tenughat Vidyut 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	The Head Maithon Power Limited, Maithon Office, MA 5 Gogna, Dist. Dhanbad, Jharkhand State, PIN-828207
General Manager (AM), ER-II Power Grid Corporation of India Ltd., J-I-15, Block-EP, Sector-V, Salt Lake, Kolkata-91	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 (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 Corpn. 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, Angul, Odisha (FAX:011- 26139256-65)
Shri D. P. Bhagava, Chief Consultant (O&M), TeestaUrja Limited, New Delhi (FAX:011- 46529744)	Director (GM Division), Central Electricity Authority Sewa Bhawan, R. K. Puram, New Delhi-110066
Director (NPC), CEA, NRPC Building, Katwaria Sarai, 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
President , TPTL, Bhikaji Cama Place, New Delhi , 110066	

List of important transmission lines in ER which tripped in July-2022

Sl. No.	LINE NAME	TRIP DATE	TRIP TIME	RESTORATION DATE	RESTORATION TIME	Relay Indication LOCAL END	Relay Indication REMOTE END	Reason	Fault Clearance time in msec	Remarks	DR Configuration Discrepancy	DR/RECEIVED FROM LOCAL END	DR/RECEIVED FROM REMOTE END	UTILITY RESPONSE
1	400 KV JHARSUGUDA- RAIGARH-3	01-07-2022	01:42	01-07-2022	02:29	Jharsuguda: Y_N, 90.57 km, 4.225 kA	Raigarh: Y_N, 49.05 km, 5.91 kA, A/r successful	Y- Earth	100	Three phase tripping for single phase fault at Jharsuguda. A/r successful from Raigarh		Yes	NA	

2	400 KV PATNA-NAUBATPUR-1	01-07-2022	03:54	01-07-2022	04:36	Patna: R_N, 11.16 km, 17.8 kA	Naubatpur: R_N, 9.8 km, 7.76 kA	R-Earth	100	Three phase tripping for single phase fault		Yes	No
3	400 KV BINAGURI-MALBASE-1	01-07-2022	07:14	01-07-2022	07:36	Binaguri: R_N		R-Earth	100	A/r successful from Binaguri only		Yes	NA
4	220 KV RANCHI-MEJIA (MTPS)-1	01-07-2022	12:07	01-07-2022	13:50	Ranchi: R_B, 20 km, Ir: 4.38 kA, Ib: 8.34 kA	Mejia: R_B, 223.68 km, Ir: 1.03 kA, ib: 1.26 kA	R-B-Earth	100	Phase-to-phase fault		Yes	No
5	400 KV JEERAT-BAKRESWAR-1	01-07-2022	16:24	01-07-2022	17:34	Jeerat: Y_N, 117.3 km, 3.549 kA	Bakreswar: A/r successful	Y-Earth	100	A.r successful from Bakreswar end only. Other two phase tripped at Jeerat after 1.5 second. A/r command triggerred but A/r didn't occur		Yes	No
6	400 KV JAKKANPUR-PATNA-1	02-07-2022	16:24	02-07-2022	19:55	Patna: R_Y, 4.6 km, Ir=Iy=21.26 kA	Jakkanpur: Y_N, 14.4 km	Y-Earth	100	Intially fault in R_ph. Another fault struck Y_ph within 100 msec		No	Yes
7	400 KV ALIPURDUAR-JIGMELLING-2	03-07-2022	12:55	03-07-2022	15:23	Alipurduar: R_Y_B, 18.73 km, Ir: 12.26 kA, Iy: 3.85 kA, Ib: 4.03 kA	Jigmelling: Didn't trip	R-Y-B-Earth	100	Three phase A/r successful from Jigmelling		Yes	NA
8	765 KV JHARSUGUDA-RAIPUR-2	04-07-2022	03:33	04-07-2022	07:29	Jharsuguda: B_N, Zone-1, 159.2 km, 4.96 kA	Raipur: B_N, 132 km, 5.49 kA	B-Earth	100	A/r failed after 1 sec		No	NA

9	400 KV JHARSUGUDA- ROURKELA-1	04-07-2022	22:14	05-07-2022	03:07	Jharsuguda: Y_N, 114.7 km, 3.742 kA	Rourkela: Y_N, 27.7 km, 10.337 kA	Y- Earth	100	DT received at Jharsuguda after 200 msec and all three phase tripped	Yes	No
10	400 KV RANCHI- SIPAT-1	06-07-2022	02:38	06-07-2022	16:58	Ranchi: R_N, 402.33 km, 1.069 kA	Sipat: R_N, 49.12 km, 6.182 kA	R- Earth	100	A/r failed after 1 sec	Yes	NA
11	400 KV RANCHI- RAGHUNATHPUR-2	06-07-2022	13:05	06-07-2022	13:59	Ranchi: B_N, 130.07 km, 2.85 kA	Raghunathpur: B_N, Zone-1, 1.69 kA	B- Earth	100	A/r successful. Tripped again within reclaim time	Yes	Yes
12	400 KV JEERAT- NEW JEERAT-1	07-07-2022	07:32	07-07-2022	15:52	Jeerat: B_N, Zone- 1, 16.8 km	New Jeerat: B_N, 6.4 km, 9.17 kA	B- Earth	100	A/r failed after 1 sec	Yes	No
13	220 KV CHUKHA- BIRPARA-1	07-07-2022	21:04	07-07-2022	21:38	Tripped from Chukha only	Birpara: Didn't trip	No fault	NA	Tripped from Chukha only.	NA	NA
14	220 KV CHUKHA- BIRPARA-2	07-07-2022	21:04	07-07-2022	22:22	Tripped from Chukha only	Birpara: Didn't trip	No fault	NA	Tripped from Chukha only.	NA	NA
15	220 KV TSTPP- MERAMUNDALI-2	08-07-2022	00:01	08-07-2022	13:27	TSTPP: Y_N, 8.5 km, 11.2 kA	Meramundali: Y_N, Zone-1, 31.55 km, 4.5 kA. A/r successful	Y- Earth	100	A/r successful at Meramundali. Other two phase at TSTPP tripped after 2.1 second	Yes	Yes

16	220 KV RENGALI (PH)- TSTPP-1	08-07-2022	00:40	09-07-2022	16:33	Rengali (PH): Y_N, 45.44 km	TSTPP: Y_N, 9.2 km, 8.6 kA	R-Y-Earth	350	Tripped in Zone-2 time from Rengali (PH)	DR channels not configured at TSTPP end	No	Yes	
17	220 KV BUDHIPADAR-RAIGARH-1	08-07-2022	17:57	09-07-2022	02:17	Budhipadar: Y_B, 30.4 km, Iy: 8.17 kA, Ib: 5.35 kA	Raigarh: Y_B, 53.44 km	Y_B-Earth	100	Phase to phase fault		Yes	NA	
18	220 KV BUDHIPADAR-KORBA-2	08-07-2022	17:57	08-07-2022	20:10	Budhipadar: B_N, 48.8 km, 4.45 kA; A/r successful	Korba: B_N, 1.193 kA	B-Earth	100	A/r successful from Budhipadar. Three phase A/r scheme is in service.		Yes	NA	
19	400 KV ALIPURDUAR-BINAGURI-2	09-07-2022	11:52	10-07-2022	08:57	Alipurduar: R_Y, Zone-2, 109.1 km, Ir: 1.94kA, Iy: 2.18 kA	Binaguri: R_Y, Zone-1, 4.5 km, Ir: 23.41 kA, Iy: 23.47 kA	R-Y	100	Phase to phase fault		Yes	Yes	
20	220 KV KHAGARIA-NEW PURNEA-1	09-07-2022	12:59	09-07-2022	15:00	Khagaria: Didn't trip	Tripped during testing of DC voltage for investigation of DC Earth problem at New Purnea	No fault	NA	Tripped during DC Earth fault testing. BSPTCL/PG ER-1 may explain		No	No	

21	220 KV KATAPALLI-BOLANGIR-1	12-07-2022	22:55	13-07-2022	00:03	Katapalli: R_N, Zone-1, 77.87 km, 1.758 kA, A/r successful	Bolangir: R_N, Zone-1, 41.2 km, 1.68 kA	R-Earth	100	A/r successful from Katapalli only. Three phase A/r in service. PLCC channel not healthy	Yes	No	
22	220 KV KATAPALLI-BOLANGIR-1	13-07-2022	21:44	13-07-2022	22:13	Katapalli: R_N, Zone-1, 65.8 km, 2.73 kA, A/r successful	Bolangir: R_N, 40.5 km, 2.59 kA	R-Earth	100	A/r successful from Katapalli only. Three phase A/r in service. PLCC channel not healthy	Yes	No	
23	220 KV MAITHON-KALYANESHWARI-2	14-07-2022	21:38	14-07-2022	23:07	Maithon: Didn't trip	Kalyaneshwari: Master trip	Broken Conductor	NA	Broken conductor appeared. DVC may explain the logic implemented. Current unbalance observed.	No	Yes	
24	400 KV NEW PURNEA-MUZAFFARPUR-2	16-07-2022	09:17	16-07-2022	12:26	New Purnea: R_B, 213 km, Ir=Ib=2.6 kA	Muzaffarpur: R_B, 20.3 km, Ir=Ib=16.8 kA	R-B	100	Phase-to-phase fault	Yes	Yes	
25	220 KV JINDAL-JAMSHEDPUR-1	17-07-2022	13:32	17-07-2022	14:27		Jamshedpur: Y_N, 0.884 kA	Y-Earth	500	Tripped in Zone-2 from Jamshedpur. PLCC scheme not available	No	Yes	
26	220 KV SAHARSA-KHAGARIA-1	18-07-2022	19:29	19-07-2022	14:44	Sparking observed in line isolator at Saharsa end		No fault	NA	DT sent to Khagaria. Line was handtripped from Saharsa	Yes	No	

27	765 KV MEDINIPUR-NEW JEERAT-1	18-07-2022	23:43	19-07-2022	00:33	Medinipur: B_N, 42.5 km, 5.6 kA	New Jeerat: B_N, 118.5 km, 2.66 kA	B-Earth	100	A/r operated successfully but line tripped again within reclaim time		No	No	
28	400 KV BARH-PATNA-1	19-07-2022	07:10	19-07-2022	08:18	DC failure in DCDB at Barh	Patna: DT received	No fault	NA	Tripped due to DC failure. NTPC Barh may explain		Yes	Yes	
29	400 KV BARH-KAHALGAON-2	19-07-2022	07:10	19-07-2022	07:54	DC failure in DCDB at Barh		No fault	NA	Tripped due to DC failure. NTPC Barh may explain		Yes	No	
30	220 KV ALIPURDUAR-BIRPARA-1	20-07-2022	00:13	20-07-2022	00:53	Alipurduar: R_B, Ir: 9.9 kA, Ib: 5.76 kA	Birpara: R_B, Ir: 49.98 km, Ir: 2.8 kA, Ib: 2.4 kA	R-B-Earth	100	Phase-to-phase fault		Yes	Yes	
31	220 KV ALIPURDUAR-BIRPARA-2	20-07-2022	00:13	20-07-2022	00:36	Alipurduar: B_N, Ib: 7.36 kA, Ir: 1.31 kA	Birpara: R_B, Ir: 1.31 kA, Ib: 3.13 kA	R-B-Earth	100	Phase-to-phase fault seen from Birpara. However, only B_ph tripped at Alipurduar, although R_ph voltage and current suggest fault was in both R_ph and B_ph. Zone settings at Alipurduar may be checked.		Yes	Yes	

32	200 KV GAYA-DEHRI-1	20-07-2022	00:34	20-07-2022	19:14	Gaya: R_N, 51 km, 2.92 kA	Dehri: R_N, 34.77 km, 2.482 kA	R-Earth	100	Another fault struck Y_ph after 800 msec	Yes	Yes	
33	400 KV TALA-BINAGURI-4	20-07-2022	07:51	20-07-2022	10:15		Binaguri: Y_B, 105.468 km, 4.681 kA	Y-B_Earth	100	Phase to phase fault	NA	Yes	
34	400 KV BINAGURI-MALBASE-1	20-07-2022	07:51	20-07-2022	08:38	Binaguri: Y_B, 114.239 km, 5.208 kA		Y-B-Earth	100	Phase to phase fault	Yes	NA	
35	220 KV JEYPORE-JAYANAGAR-2	20-07-2022	20:18	20-07-2022	20:58	Jeypore: R_N, 0.73 km, 12.544 kA, A/r successful	Jayanagar: R_N, 11 kA	R-Earth	100	A/r successful from Jeypore only	No	No	
36	400 KV MEDINIPUR-NEW CHANDITALA-1	21-07-2022	13:04	21-07-2022	18:47	Medinipur: R_Y, 76.21 km, Ir:5.872 kA, Iy: 5.011 kA	New Chanditala: R_Y, 27 km, Ir: 11.1 kA, Iy: 10.3 kA	R-Y-Earth	100	Phase to phase fault	No	Yes	
37	400 KV BIHARSHARIF-KODERMA-1	21-07-2022	15:21	21-07-2022	17:52	Biharsharif: R_B, 36.6 km, Ir=Ib=9.3 kA	Koderma: R_B, 74.2 km, Ir: 6.36 kA, Ib: 6.52 kA	R-B-Earth	100	Phase to phase fault	Yes	Yes	
38	400 KV BARH-PATNA-2	22-07-2022	15:40	22-07-2022	16:12	Barh: R_N, 55.4 km, 6.1 kA	Patna: R_N, 37.38 km, 9 kA, A/r successful	R-Earth	100	A/r successful at Patna. Other two phase at Barh tripped after 2.5 seconds	Yes	Yes	
39	400 KV NEW PPSP-NEW RANCHI-1	22-07-2022	17:02	22-07-2022	17:45		New Ranchi: DT received	No fault	NA	DT received at new Ranchi	Yes	Yes	

40	400 KV JAMSHEDPUR- MAITHON-1	22-07-2022	19:41	23-07-2022	13:15	Jamshedpur: Y_N, 95.6 km, 3.9 kA	Maithon: Y_N, 46.2 km, 5.9 kA	Y- Earth	100	A/r failed after 1 sec		Yes	No	
41	220 KV RANCHI- MEJIA (MTPS)-1	23-07-2022	12:52	23-07-2022	18:25	Ranchi: R_B, 77.4 km, Ir: 2.84 kA, Ib: 2.78 kA	Mejia: R_B, 163.16 km, Ir:1.48 kA, Ib: 1.56 kA	R-B- Earth	100	Phase to phase fault		Yes	Yes	
42	400 KV TALA- BINAGURI-2	23-07-2022	16:11	26-07-2022	20:35	Tala: B_N, 31 km	Binaguri: B_N, 122 km, 1.12 kA	B- Earth	100	A/r successful. Line tripped again within reclaim time		NA	No	
43	220 KV BEGUSARAI SAHARSA-2	24-07-2022	12:14	24-07-2022	13:00	Main-1 relay maloperated at Begusarai		No fault	NA	Main-1 relay maloperated at Begusarai		No	No	
44	400 KV TALA- BINAGURI-1	24-07-2022	22:15	24-07-2022	22:59		Binaguri: R_N, 119 km, 4.7 kA	R- Earth	100	Three phase tripping for single phase fault.		NA	Yes	
45	400 KV TALA- BINAGURI-1	25-07-2022	01:36	28-07-2022	20:57	Tala: R_N, 10 km, 8.1 kA	Binaguri: R_N, 121 km, 3.66 kA	R- Earth	100	A/r failed after 1 sec		NA	Yes	

46	400 KV ARAMBAGH-NEW PPSP-2	25-07-2022	14:17	25-07-2022	14:46	Arambag: B_N, 161.2 km, 2.283 kA	New PPSP: B_N, 24.6 km, 4.95 kA	B- Earth	100	A/r failed after 1 sec		Ye s	Yes	
47	400 KV KODERMA- BOKARO-1	27-07-2022	01:21	08-04-2022	21:52	Koderma: B_N, 78.4 km, 4.2 kA		B- Earth	100	Another fault appeared in R_ph after 800 msec		Ye s	No	
48	400 KV KODERMA- BOKARO-2	27-07-2022	01:21	08-04-2022	22:18	Koderma: R_N, 87.4 km, 4.45 kA	Bokaro: R_N, 31.65 km, 2.99 kA	R- Earth	100	Another fault appeared in B_ph after 800 msec		Ye s	No	
49	765 KV JHARSUGUDA- RAIPUR-1	26-07-2022	20:36	27-07-2022	10:35	Jharsuguda: Y_B_N, 7.5 km, Iy: 33 kA, Ib: 29 kA	Raipur: Y_B_N, 304 km, Iy: 4.5 kA, Ib: 4.5 kA	Y-B- Earth	100	Phase to phase fault		No	NA	
50	220 KV JODA- RAMCHANDRAPU R-1	26-07-2022	16:27	27-07-2022	12:49	Joda: B_N, Zone-2, 126 km, 1.326 kA	Ramchandrapur: B_N, 11.8 km, 7.75 kA	B- Earth	400	Tripped in Zone-2 time from Joda. Carrier protection not healthy		No	No	
51	400 KV BIHARSHARIF- KODERMA-1	28-07-2022	16:18	28-07-2022	17:10	Biharsharif: Didn't trip	Koderma: DT received	No fault	NA	Details maybe shared by PG ER-1/ DVC. No fault observed from PMU data		N A	No	

52	400 KV RANCHI-RAGHUNATHPUR-3	28-07-2022	17:26	28-07-2022	18:40	Ranchi: Didn't trip	Raghunathpur: DT received	No fault	NA	LBB of main bus-1 at Ranchi operated. PG ER-1 may explain	Yes	Yes
53	400 KV RANCHI-NEW RANCHI-1	28-07-2022	17:26	28-07-2022	19:10	Ranchi: R_N, 53.18 km, 5.89 kA	New Ranchi: R_N, 49.26 km, 6.4 kA	R-Earth	180	DT received at New Ranchi after 180 msec. PG ER-1 may explain.	Yes	Yes
54	400 KV NABINAGAR (NPGC)-JAKKANPUR-2	28-07-2022	17:56	28-07-2022	19:56	NPGC: B_N, 93.3 km, 3.16 kA	Jakkanpur: B_N, 18.6 km, 10.5 kA	B-Earth	100	Three phase tripping at NPGC end. A/r successful from Jakkanpur	Yes	No
55	400 KV BARH-MOTIHARI-2	28-07-2022	19:41	28-07-2022	20:32	Barh: B_N, 98.37 km, 4.2 kA	Motihari: B_N, 113 km, 0.43 kA	B-Earth	100	A/r successful from both sides. However, after 3 seconds DT received at Motihari and line tripped from Motihari only	Yes	Yes
56	400 KV BIHARSHARIF-VARANASI-1	28-07-2022	16:13	29-07-2022	13:30	Biharsharif: R_N, 53.18 km, 5.89 kA	Varanasi: R_N, 275.8 km, 1.6 kA	R-Earth	100	A/r failed after 1 sec	Yes	NA

57	400 KV TALA-BINAGURI-1	28-07-2022	23:09	08-04-2022	16:06		Binaguri: R_Y, 120.8 km, Ir: 3.553 kA, iy: 3.854 kA	R-Earth	100	Initially fault in R_ph. A/r successful. After 200 msec phase to phase fault appeared		NA	No
58	400 KV TSTPP-MERAMUNDALI-2	29-07-2022	10:44	29-07-2022	11:29	TSTPP: DT received	Meramundali: O/V St-2 in B_ph	No fault	NA	Problem with B_ph CVT at Meramundali. System voltage was within limits.		Yes	Yes
59	400 KV TSTPP-MERAMUNDALI-2	29-07-2022	11:33			TSTPP: DT received	Meramundali: O/V St-2 in B_ph	No fault	NA	Problem with B_ph CVT at Meramundali. System voltage was within limits.		Yes	Yes
60	220 KV MAITHON-DUMKA-1	29-07-2022	11:38	29-07-2022	12:15		Maithon: B_N, 2.57 kA	B-Earth	250	Resistive fault, evolved gradually. Distance protection operated at Maithon. A/r failed after 1 sec		Yes	No
61	400 KV FSTPP-BAHARAMPUR-1	29-07-2022	14:34	29-07-2022	21:47		Farakka: R_N, 68.45 km, 6.3 kA	R-Earth	100	A/r failed after 1 sec		No	Yes

62	400 KV JEERAT-SAGARDIGHI-1	29-07-2022	14:38		15:25	Jeerat: R_N, 14.25 km, 13.68 kA	Sagardighi: R_N, 173 km, 2.48 kA	R-Earth	100	A/r failed after 1 sec		Yes	Yes	
63	220 KV BEGUSARAI SAHARSA-2	29-07-2022	16:29		17:35	Begusarai: Clock synchronization error	Saharsa: Didn't trip	No fault	NA	Main-1 relay maloperated at Begusarai		No	NA	
64	220 KV SILIGURI-KISHANGANJ-1	29-07-2022	18:16	29-07-2022	19:24	Siliguri: R_Y, 11.29 km, Ir: 11.58 kA, Iy: 6.0 kA	Kishanganj: R_Y, 96.17 km, Ir=Iy=2.94 kA	R-Y-Earth	100	Phase to phase fault		Yes	Yes	
65	220 KV SILIGURI-KISHANGANJ-2	29-07-2022	18:16	29-07-2022	19:06	Siliguri: Y_N, Zone-1, 11.81 km, 5.25 kA, A/r successful	Kishanganj:R_Y_N, 99.01 km, 2.22 kA	R-Y-Earth	100	Phase to phase fault. Kishanganj end saw phase-to-phase fault		No	Yes	
66	400 KV PATNA-NAUBATPUR-1	29-07-2022	19:38	29-07-2022	21:04	Patna: Didn't trip	Naubatpur: LBB of tie bay of Patna-1 and main bay of Patna-2 operated	No fault	NA	No fault observed in PMU. LBB maloperated at Naubatpur. BGCL may explain.		NA	No	
67	400 KV PATNA-NAUBATPUR-2	29-07-2022	19:38	29-07-2022	21:04			No fault	NA			NA	No	

68	400 KV BARH-MOTIHARI-2	29-07-2022	19:41	29-07-2022	21:08	Barh: R_B, 9.5 km, Ir: 19.7 kA, Ib: 22.62 kA	Motihari: R_B, 262 km, Ir: 1.99 kA, Ib: 1.94 kA	R_B_N	100	Phase-to-phase fault		Yes	Yes	
69	220 KV NEW PURNEA-MADHEPURA-1	30-07-2022	11:53	30-07-2022	13:04	New Purnea: Y_B, 44.1 km, Iy: 4.65 kA, Ib: 4.55 kA	Madhepura: Y_B, 50.3 km	Y-B	100	Phase-to-phase fault	DR of another instance uploaded from Madhepura	Yes	No	
70	220 KV JODA-RAMCHANDRAPUR R-1	31-07-2022	14:47	31-07-2022	15:32	Joda: Didn't trip	Ramchandrapur: R_N, 112.1 km	R-Earth	100	Three phase tripping for single phase fault		No	No	
71	220 KV DALTONGANJ-CHATRA-2	31-07-2022	18:10	31-07-2022	19:11	Daltonganj: B_N, 107.2 km, 1.13 kA	Chatra: B_N, 54.61 km, 1.065 kA	B-Earth	100	Three phase tripping for single phase fault.	DR channels not configured at Chatra	No	No	
72	400 KV MAITHON-MEJIA-1	31-07-2022	22:31	31-07-2022	23:49	Maithon: Master trip relay	Mejia: Didn't trip	No fault	NA	Distance protection operated at Maithon. No fault observed. PG ER-2 may explain.		Yes	NA	