Details of Grid Events during the Month of January 2022 in Northern Region

Sl No.	Category of Grid Event	Affected Area	Time and Date of occurrence of Grid Event	Time and Date of Restoration	Duration (HH:MM)	Loss of generation / loss of load during the Grid Event		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Event		Antecedent Generation/Load in the Regional Grid*		Brief details of the event (pre fault and post fault system conditions)	Elements Tripped
	(GI 1or 2/ GD-1 to GD-5)					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
1	GI-2	RAJASTHAN	03-Jan-2022 08:23	05-Jan-2022 18:20	9:57	0	0	0.000	0.000	41440	50614	At 08:23 Hrs, 400/220 kV 315 MVA ICT 1 tripped on Y-ph over current and Bucholz protection operation. At the same time, 400/220 kV 315 MVA ICT 2 also tripped on Y-ph over current protection operation. As per PMU, no fault is observed. As per DR received, over current was observed in Y-ph of ICT-1. In antecedent condition, 400/220 kV 315 MVA ICT 1 & ICT 2 were carrying 257MW & 261MW respectively.	1) 400/220 kV 315 MVA ICT 2 at Bikaner(RS) 2) 400/220 kV 315 MVA ICT 1 at Bikaner(RS)
2	GI-2	UTTAR PRADESH	05-Jan-2022 02:58	05-Jan-2022 04:40	1:42	0	0	0.000	0.000	25861	31121	At 02:58 Hrs, during charging of 400 KV Lucknow-Sultanpur ckt from Sultanpur end, line tripped on SOTF protection operated at Sultanpur end. At the same time, 400 KV Obra_B-Sultanpur (UP) Ckt-1 tripped from Obra end only in Z-3, 400kV Sultanpur-Tanda ckt tripped on over voltage protection operation at Tanda end and DT received at Sultanpur end and all three 400/220kV (315MVA ICT-1,3 & 240MVA ICT-2) ICTs tripped on earth fault protection operation. As per PMU, Y-N phase to earth fault with delayed clearance of 1200ms is observed. In antecedent condition, 400kV Sultanpur-Tanda ckt, 400 KV Obra_B-Sultanpur (UP) Ckt-1, 400/220kV 315MVA ICT-1, ICT-3 and 400/220kV 240MVA ICT-2 were carrying 48MW, 275MW, 84MW, 83MW & 60MW respectively.	1) 400KV Bus 1 at Sultanpur(UP) 2) 400KV Bus 3 at Sultanpur(UP) 3) 400KV Bus 2 at Sultanpur(UP) 4) 400 KV Obra_B-Sultanpur (UP) Ckt-1 5) 400 KV Tanda(NT)-Sultanpur(UP) (UP) Ckt-1 6) 400/220 KV 315 MVA ICT 3 at Sultanpur(UP) 7) 400/220 kV 240 MVA ICT 2 at Sultanpur(UP) 8) 400/220 kV 315 MVA ICT 1 at Sultanpur(UP)
3	GI-2	UTTAR PRADESH	06-Jan-2022 00:53	06-Jan-2022 04:04	3:11	0	0	0.000	0.000	23802	27511	At 00:53Hrs, DT received at Rosa end of 400 KV Badaune(UP)-Rosa(UPC) (OCBTL) Ckt-1 (connected to 400kV Bus-1) and LBB operated. With the operation of LBB of 400 KV Badaune(UP)-Rosa(UPC) (OCBTL) Ckt-1, 400/220 kV 200 MVA ICT 1 at Rosa(UPC) and bus coupler tripped. As per PMU, no fault is observed. In antecedent condition, 400 KV Badaune(UP)-Rosa(UPC) (OCBTL) Ckt-1 & 400/220 kV 200 MVA ICT 1 at Rosa(UPC) were carrying 19MW each.	1) 400 KV Badaune(UP)-Rosa(UPC) (OCBTL) Ckt-1 2) 400/220 kV 200 MVA ICT 1 at Rosa(UPC)
4	GI-2	RAJASTHAN	06-Jan-2022 01:35	06-Jan-2022 03:01	1:26	0	0	0.000	0.000	23660	26608	At 01:35 Hrs, 400 KV Kota(PG)-Merta(RS) (PG) Ckt-1 tripped on B-N phase to earth fault. At the same time, 400 KV RAPS_D(NP)-Kota(PG) (PG) Ckt-1 also tripped in Z-3 from Kota(PG) end. As per PMU, B-N fault with delayed clearance of 1480mS is observed. In antecedent condition, 400 KV Kota(PG)-Merta(RS) (PG) Ckt-1 and 400 KV RAPS_D(NP)-Kota(PG) (PG) Ckt-1 were carrying 60MW & 68MW respectively.	1) 400 KV Kota(PG)-Merta(RS) (PG) Ckt-1 2) 400 KV RAPS_D(NP)-Kota(PG) (PG) Ckt-1
5	GI-2	J & K	08-Jan-2022 04:23	08-Jan-2022 05:59	1:36	0	0	0.000	0.000	21410	23717	At 04:23 Hrs, 400/220 kV 315 MVA ICT 1, ICT 2 & ICT 3 at Samba(PG) all tripped on Over flux protection operation. As per PMU, no fault is observed. In antecedent condition, Bus voltage at 400kV & 220kV side was 434kV & 243kV respectively and 400/220 kV 315 MVA ICT 1, ICT 2 & ICT 3 at Samba(PG) were carrying approx. 24MW each.	1) 400/220 kV 315 MVA ICT 1 at Samba(PG) 2) 400/220 kV 315 MVA ICT 2 at Samba(PG) 3) 400/220 kV 315 MVA ICT 3 at Samba(PG)
6	GD-1	UTTRAKHAND	10-Jan-2022 18:38	10-Jan-2022 20:05	1:27	275	70	0.674	0.136	40797	51296	At 18:38 Hrs, 220 KV Dhauliganga(NH)-Bareilly(UP) (PG) Ckt-1 tripped on B-N phase to earth fault, fault occurred due to sparking in B-phase line isolator at Bareilly(UP). At the same time, 220 KV Pithoragarh(PG)-Bareilly(UP) (PG) Ckt-1, 220kV Bareilly- Dohna(UP) ckt-1&2 and 220 Bareilly-Shahjhanpur(UP) ckt tripped on Z-4 distance protection operation. With the tripping of these lines 220 KV Dhauliganga(NH)-Pithoragarh(PG) (PG) Ckt-1 and all four units at Dhauliganga HEP tripped. As per PMU, B-N phase to earth fault with delayed clearance of 240ms is observed. As per SCADA, load loss of approx. 70MW is observed in Uttarakhand control area and generation loss of approx. 275MW of Dhauliganga HEP. In antecedent condition, 220 KV Dhauliganga(NH)-Bareilly(UP) (PG) Ckt-1, 220 KV Pithoragarh(PG)-Bareilly(UP) (PG) Ckt-1 and 220 KV Dhauliganga(NH)-Pithoragarh(PG) (PG) Ckt-1 were carrying 93MW, 60MW & 180MW respectively.	1) 220 KV Dhauliganga(NH)-Pithoragarh(PG) (PG) Ckt-1 2) 132 KV Pithoragarh(PG)-Almora(PTCUL) (PTCUL) Ckt-1 3) 220 KV Dhauliganga(NH)-Bareilly(UP) (PG) Ckt-1 4) 220 KV Pithoragarh(PG)-Bareilly(UP) (PG) Ckt-1
7	GI-2	UTTAR PRADESH	11-Jan-2022 02:20	11-Jan-2022 03:24	1:04	0	0	0.000	0.000	23346	29476	At 02:20 Hrs, 400 KV Muradnagar_2-Mathura (UP) Ckt-1 tripped on R-N phase to earth fault, fault was in Zone-1, distance 105.3km and fault current was 2.763kA from Mathura(UP). At the same time, 400 KV Dadri(NT)-Muradnagar_2(UP) (PG) Ckt-1 also tripped on over voltage protection operated at Muradnagar_2 end and DT received at Dadri end. With the tripping of 400 KV Dadri(NT)-Muradnagar_2(UP) (PG) Ckt-1 which was the only source to 400kV Bus-1 & Bus 2 of 400/220kV Dadri(NT)(Bus sectioniser was in open condition at 400kV Dadri), 400kV Dadri(NT)-panipat ckt-1 tripped on over voltage. As other lines at 400kV Bus-1& Bus-2 were already in out condition, both bus1&2 became dead. As per PMU, B-N phase to earth fault is observed. In antecedent condition, 400 KV Mathura-Muradnagar_2(UP) Ckt-1 and 400 KV Muradnagar_2(UP)-Dadri(NT) (PG) Ckt-1 were carrying 193MW & 207MW respectively.	1) 400 KV Dadri(NT)-Muradnagar_2(UP) (PG) Ckt-1 2) 400 KV Muradnagar_2-Mathura (UP) Ckt-1
8	GI-2	UTTAR PRADESH	16-Jan-2022 05:04	16-Jan-2022 07:43	2:39	0	0	0.000	0.000	24828	32993	At 05:04 Hrs, 400 KV Unnao-Panki (UP) Ckt-1 tripped on B-N phase to earth fault. At the same time, 400/220 kV 315 MVA ICT 2 at Unnao(UP), 220kV Unnao-Kanpur Road ckt and 220kV Unnao-BTHOR ckt tripped on bus bar protection operation of 220kV Bus-1 at 400/220kV Unnao(UP). As per PMU, B-N phase to earth fault is observed. In antecedent condition, 400 KV Unnao-Panki (UP) Ckt-1 and 400/220 kV 315 MVA ICT 2 at Unnao(UP) were carrying 15MW & 65MW respectively.	1) 400 KV Unnao-Panki (UP) Ckt-1 2) 400/220 kV 315 MVA ICT 2 at Unnao(UP)
9	GI-2	RAJASTHAN	16-Jan-2022 23:19	17-Jan-2022 05:11	5:52	0	0	0.000	0.000	26490	34674	At 23:19 Hrs, 400 KV Bassi(PG)-Heerapura(RS) (PG) Ckt-2 tripped on DT received from Bassi end. At the same time, 400/220 kV 250 MVA ICT 2 at Heerapura(RS) also tripped on Bus bar protection of 400kV bus-1 at Heerapura(RS). As per PMU, Y-N phase to earth fault is observed. In antecedent condition, 400/220 kV 250 MVA ICT 2 at Heerapura(RS) was carrying 63MW.	1) 400 KV Bassi(PG)-Heerapura(RS) (PG) Ckt-2 2) 400/220 kV 250 MVA ICT 2 at Heerapura(RS) 3) 400KV Bus 1 at Heerapura(RS)
10	GI-2	UTTAR PRADESH	17-Jan-2022 17:51	17-Jan-2022 20:09	2:18	0	0	0.000	0.000	40582	51484	At 17:51 Hrs, 400 KV Tanda(NT)-Basti(UP) (UP) Ckt-1 tripped on Y-N phase to earth fault with fault distance 52.07km & fault current 3.6kA from Basti(UP) end and 400 KV Tanda(NT)-Basti(UP) (UP) Ckt-2 tripped on R-N phase to earth fault with fault distance 43.8km & fault current 3.44kA from Basti(UP) end. At the same time, 125MVAR Bus reactor-1 at Tanda(NT) and 400/11kV ST-4 at Tanda(NT) also tripped. As per PMU, Y-N phase to earth fault is observed. In antecedent condition, 400 KV Tanda(NT)-Basti(UP) (UP) Ckt-1 & Ckt-2 were carrying 32MW & 27MW respectively.	1) 400 KV Tanda(NT)-Basti(UP) (UP) Ckt-1 2) 400 KV Tanda(NT)-Basti(UP) (UP) Ckt-2
11	GI-2	UTTAR PRADESH	22-Jan-2022 20:32	22-Jan-2022 23:16	2:44	0	0	0.000	0.000	35061	46031	At 20:32 Hrs, 765 KV Anpara_C(LAN)-Unnao(UP) (UP) Ckt-1 tripped on R-B-N phase to phase fault, fault distance was approx. 410km from Unnao end. At the same time, 765 KV Anpara_C(LAN)-Anpara_D(UP) (UP) Ckt-1 tripped from Anapra_D end only. As per PMU, R-B phase to phase fault is observed. In antecedent condiion, 765 KV Anpara_C(LAN)-Unnao(UP) (UP) Ckt-1 and 765 KV Anpara_C(LAN)-Anpara_D(UP) (UP) Ckt-1 were carrying 872MA & 118MW respectively.	1) 765 KV Anpara_C(LAN)-Anpara_D(UP) (UP) Ckt-1 2) 765 KV Anpara_C(LAN)-Unnao(UP) (UP) Ckt-1

Details of Grid Events during the Month of January 2022 in Northern Region

Sl No.	Category of Grid Event	Affected Area	Time and Date of occurrence of Grid Event	Time and Date of Restoration	Duration (HH:MM)	Loss of generation / loss of load during the Grid Event		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Event		Antecedent Generation/Load in the Regional Grid*		Brief details of the event (pre fault and post fault system conditions)	Elements Tripped
	(GI 1or 2/ GD-1 to GD-5)					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
12	GI-2	HIMACHAL PRADESH	23-Jan-2022 04:58	23-Jan-2022 06:35	1:37	0	0	0.000	0.000	24115	29247	At 04:58 Hrs, 400 KV Kala Amb(PKTL)-Wangto_GIS(HP) (HPPTCL) Ckt-1 tripped on R-N phase to earth fault. Fault distance and fault current were 3.8kA and 67.69km from Wangtoo(HP) end. At the same time, 400 KV Nathpa Jhakri(SJ)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1 and 400 KV Baspa(JP)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1 both tripped on Over voltage protection operation at Karcham Wangtoo(JSW) end and DT received at remote ends. As per PMU, R_N phase to earth fault is observed. In antecedent condition, bus voltage at Karcham Wangtoo(JSW) was 436kV and 400 KV Karcham Wangtoo(JSW)-Nathpa Jhakri(SJ) (HBPCL) Ckt-1 & 400 KV Karcham Wangtoo(JSW)-Baspa(JP) (HBPCL) Ckt-1 were carrying 83MW & 1MW respectively.	1) 400 KV Nathpa Jhakri(SJ)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1 2) 400 KV Baspa(JP)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1 3) 400 KV Kala Amb(PKTL)-Wangto_GIS(HP) (HPPTCL) Ckt-1
13	GD-1	RAJASTHAN	23-Jan-2022 12:40	23-Jan-2022 15:48	3:08	210	0	0.510	0.000	41216	48063	At 12:40 Hrs, 400 KV Bikaner(PG)-AYANA1 SL_BKN_PG (ARP1PL) (ARP1PL) Ckt-1 tripped on Y-phase overcurrent from PGCIL end. At the same time, 400/33 kV 330 MVA ICT 1 at AYANA1 SL_BKN_PG (ARP1PL) also tripped. As per PMU, no fault is observed. As per SCADA, solar generation loss of approx. 210MW at AYANA Solar is observed.	1) 400/33 kV 330 MVA ICT 1 at AYANA1 SL_BKN_PG (ARP1PL) 2) 400 KV Bikaner(PG)-AYANA1 SL_BKN_PG (ARP1PL) (ARP1PL) Ckt-1
14	GD-1	RAJASTHAN	23-Jan-2022 14:16	23-Jan-2022 14:36	0:20	1400	0	3.839	0.000	36468	42495	At 14:16 Hrs, 400 KV Jaipur South-Bassi (PG) Ckt-2 tripped on R-Y fault, fault current and fault distance was 32.525kA & 1.559km and 12.097kA & 35.54km from Bassi and Jaipur South end respectively. a kite thread was found between tower location no. 103-104 during the patrolling and same was removed. At the same time, 400 KV Jaipur South-Bassi (PG) Ckt-1 tripped on R-Y-B fault (fault distance & fault current was 0.8km and 32kA from Bassi end) and 400 KV Bassi(PG)-Heerapura(RS) (PG) Ckt-2 tripped on DT received at Bassi end. Solar generation loss of approx. 1400MW was also observed during the same time. At the same time, 765 KV Bikaner(PG)-Khetri (PKTSL) (BKTL) Ckt-1 & Ckt-2 tripped on Over voltage protection operation at Bikaner end and 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1 tripped on Over voltage protection operation at Bhadla2 end. As per PMU, R-Y-B three phase fault followed by rise in voltage is observed. As per SCADA, dip in solar generation of approx. 1400MW is observed (approx. 1150MW connected at Fatehgarh2(PG) and 250MW connected at Bhadla(PG)). As per PMU MW plot, delayed LVRT operation was observed in some of solar plants.	1) 765 KV Bikaner(PG)-Khetri (PKTSL) (BKTL) Ckt-1 2) 400 KV Jaipur South-Bassi (PG) Ckt-1 3) 400 KV Bassi(PG)-Heerapura(RS) (PG) Ckt-2 4) 765 KV Bikaner(PG)-Khetri (PKTSL) (BKTL) Ckt-2 5) 400 KV Jaipur South-Bassi (PG) Ckt-2 6) 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1
15	GD-1	RAJASTHAN	25-Jan-2022 11:45	25-Jan-2022 14:33	2:48	180	0	0.401	0.000	44904	52683	At 11:45 Hrs, 400 KV Bikaner(PG)-AYANA1 SL_BKN_PG (ARP1PL) (ARP1PL) Ckt-1 tripped on R&B phase overcurrent from ARP1PL end. As per PMU, no fault is observed. As per SCADA, solar generation loss of approx. 180MW is observed. In antecedent condition, 400 KV Bikaner(PG)-AYANA1 SL_BKN_PG (ARP1PL) (ARP1PL) Ckt-1 was carrying 216MW.	1) 400 KV Bikaner(PG)-AYANA1 SL_BKN_PG (ARP1PL) (ARP1PL) Ckt-1
16	GD-1	RAJASTHAN	26-Jan-2022 12:05	26-Jan-2022 15:38	3:33	210	0	0.492	0.000	42705	48950	At 12:05 Hrs, 400 KV Bikaner(PG)-AYANA1 SL_BKN_PG (ARP1PL) (ARP1PL) Ckt-1 tripped on R & Y phase overcurrent, Iy=12.5kA, Ir=0.35kA. Fault was at LV side of 400/33kV AYANA(ARP1PL) sub-station. As per PMU, Y-N phase to earth fault is observed. As per SCADA, solar generation loss of approx. 210MW is observed. In antecedent condition, 400 KV Bikaner(PG) AYANA1 SL_BKN_PG (ARP1PL) (ARP1PL) Ckt-1 was carrying 216MW.	1) 400 KV Bikaner(PG)-AYANA1 SL_BKN_PG (ARP1PL) (ARP1PL) Ckt-1
17	GI-2	UTTAR PRADESH	27-Jan-2022 17:42	27-Jan-2022 20:46	3:04	0	0	0.000	0.000	41846	48478	At 17:42 Hrs, 400/220 kV 315 MVA ICT 2 at Mathura(UP) tripped on PRV protection operation due to DC earth fault in Emulsifier system. At the same time, 400/220 kV 500 MVA ICT 3 at Mathura(UP) also tripped on WTI protection operation. Again at 22:29 Hrs, 400/220 kV 315 MVA ICT 2 & 400/220 kV 500 MVA ICT 3 at Mathura(UP) tripped on PRV protection & WTI protection respectively. As per PMU, no fault is observed.	1) 400/220 kV 315 MVA ICT 2 at Mathura(UP) 2) 400/220 kV 500 MVA ICT 3 at Mathura(UP)
18	GD-1	UTTAR PRADESH	27-Jan-2022 18:13	27-Jan-2022 18:28	0:15	0	350	0.000	0.662	43197	52906	At 18:13 Hrs, 400/220 kV 315 MVA ICT 2 at Obra_B(UP) & 400/220 kV 240 MVA ICT 3 at Obra_B(UP) both tripped on over current protection operation. As per PMU, no fault is observed. As per SCADA, load loss of approx. 350MW is observed. 400/220 kV 315 MVA ICT 1 at Obra_B(UP) is under shutdown since 7th August 2021. In antecedent condition, 400/220 kV 315 MVA ICT 2 at Obra_B(UP) was carrying 305MW.	1) 400/220 kV 315 MVA ICT 2 at Obra_B(UP) 2) 400/220 kV 240 MVA ICT 3 at Obra_B(UP)
19	GD-1	RAJASTHAN	29-Jan-2022 11:36	29-Jan-2022 15:16	3:40	208	0	0.459	0.000	45304	53006	400 KV Bikaner(PG)-AYANA1 SL_BKN_PG (ARP1PL) (ARP1PL) Ckt-1 tripped on Y phase overcurrent from ARP1PL end. As per PMU, no fault is observed. As per SCADA, solar generation loss of approx. 208MW is observed. In antecedent condition, 400 KV Bikaner(PG)-AYANA1 SL_BKN_PG (ARP1PL) (ARP1PL) Ckt-1 was carrying 216MW.	1) 400 KV Bikaner(PG)-AYANA1 SL_BKN_PG (ARP1PL) (ARP1PL) Ckt-1
20	GD-1	RAJASTHAN	30-Jan-2022 11:27	30-Jan-2022 12:01	0:34	2038	0	3.923	0.000	51950	51950	At 11:27:43:400 Hrs, 240MVAR Bus reactor-2 was opened. With the opening of bus reactor, transient voltage shoot up is observed at Fatehgarh2(PG). As per PMU at Fatehgarh2(PG), phase voltage of 400kV Fatehagrh2-Fatehgarh ckt-2 shoot up from 226kV to 259kV and came back to 239kV within 520ms. Further within 500ms, solar generation loss at Renew Sunwave and EDEN solar is observed. Further after 3sec, 220/33kV transformers at Renew Solar Urja tripped. Further within 3-4 sec Renew Sunbright and some inverters of AHEJ2L, AHEJ3L, Renew jharkhand3 and RE generation at ADANI pooling substation tripped. Total solar generation loss of around 2038MW is observed. Tripping of 765kV Fatehgarh2-Bhadla2 ckt-1 and 400kV Fatehgarh2-Fatehgarh ckt-1 also observed on over voltage protection operation at Fatehgarh2 end. In antecedent condition, as per SCADA, bus voltages at Fatehgarh2 were 816kV, 428kV & 235kV at 765kV, 400kV & 220kV bus respectively.	1) 220 KV Adani RenewPark_SL_FGARH_FBTL (AREPRL)-AHEJ4L PSS 3 HB_FGRAH_FBTL (AHEJ4L) (AREPRL) Ckt-1 2) 400 KV Fatehgarh_II(PG)-Fatehgarh Pooling(FBTL) (FBTL) Ckt-1 3) 220 KV Renew SunBright SL_FGARH_PG (RSBPL)-Fatehgarh_II(PG) (RENEW SUN BRIGHT (RSBPL)) Ckt-1 4) 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1 5) 220 KV Fatehgarh_II(PG)-EDEN SL_FGRAH_PG (ERCPL) (EDEN (ERCPL)) Ckt-1

Details of Grid Events during the Month of January 2022 in Western Region

Sl No.	Category of Grid Event	Affected Area	Time and Date of occurrence of Grid Event	Time and Date of Restoration	Duration (HH:MM)	Loss of generation / loss of load during the Grid Event		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Event		Antecedent Generation/Load in the Regional Grid*		Brief details of the event (pre fault and post fault system conditions)	Elements Tripped
	(GI 1or 2/ GD-1 to GD-5)					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
1	GI-1	WR	09-Jan-22 01:17	09-Jan-22 03:01	1:44	47	-	0.001	-	44459	41088	At 01:17 Hrs/09-01-2022, 50 MW SSP Unit 5 tripped on Reverse power protection operation, but the CB did not open and resulted in LBB protection operation. This caused tripping of 220 kV SSP CHPH Bus 2 and all the connected elements. There was a generation loss of 47 MW due to the event.	Tripping of 1.220 kV SSP CHPH Bus 2 2.220 kV SSP CHPH- RBPH 2 3.50 MW SSP CHPH Unit 5
2	GI-1	WR	10-Jan-22 05:57	10-Jan-22 08:04	2:07	-	-	-	-	49567	42637	At 05:57 Hrs/10-01-2022, Due to failure of Y phase CT of 220KV Pandurna- Betul (PGCIL) Feeder, bus bar Protection operated at 220KV S/S Pandurna and all the elements connected to 220 kV Main bus tripped. No load loss was reported by MP SLDC as load was met through 132 kV level at Pandurna.	Tripping of 1.220 kV Pandurna- Betul 2.220 kV Pandurna- Kalmeshwar 3.220 kV Pandurna- Chhindwara 4.220/132 kV Pandurna ICTs 1&2
3	GI-1	WR	12-Jan-22 10:15	12-Jan-22 11:21	1:06	-	-	-	-	63422	57853	At 10:15 Hrs/12-01-2022, 220 kV Morena Bus 2 and all the connected elements tripped on bus bar protection operation due to R phase fault in 220 kV Mehgaon line bay. As intimated by CWRTL (ADANI), the climate was foggy during the tripping and there was no physical flashover marks found during inspection.	Tripping of 1.220 kV Morena Bus 2 2.220 kV Morena- Mehalgaon 3.220 kV Morena- malanpur 4.400/220 kV Morena ICT 2
4	GD-1	WR	20-Jan-22 05:39	20-Jan-22 07:00	1:21	-	179	-	0.004	54880	46379	At 05:39 Hrs/20-01-2022, 220 Morbi- Lalpar line tripped only from Morbi end on Directional Earth fault protection operation due to flashover of 66 kV side post insulators at Lalpar substation. As reported by GETCO, flashover occurred in 4 No.s of post Insulators (02 No.s of 66KV Bus-1 PT Isolator PI R & Y-Ph and 02 No.s of 66KV Bus-1 PT Support PI R & Y-Ph) in 66 kV side. At 05:43 Hrs, 220 kV Lalpar Bus 1 tripped on bus bar protection operation due to R-phase fault. Due to these tripping, 220 kV Lalpar station became dead.	Tripping of 1.220 kV Lalpar- Morbi 2.220 kV Lalpar- Bhachau 3.220/66 kV Lalpar ICTs 1&2 4.220/132 kV Lalpar ICT
5	GD-1	WR	20-Jan-22 23:37	21-Jan-22 10:30	10:53	-	180	-	0.004	51717	44550	At 23:37 Hrs/20-01-2022, 220 kV Dahej Bus 1 and all the connected elements tripped on B-E fault on bus bar protection operation. At 23:58 Hrs, 220 kV Dahej Bus 2 and all the connected elements tripped on B-E fault on bus bar protection operation. With these trippings, 220 kV Dahej became dead. As reported by GETCO, the climate was foggy at the time of tripping. After yard inspection, at 00:30 Hrs/21-01-2022, 220 kV Dahej Bus 1 was charged through 220 kV Haldarwa line. At 00:40 Hrs, 220 kV Dahej Bus 1 tripped again on B-E fault. During yard inspection, 220KV PLNG bay Bus 1 Isolator B Phase post insulators (PIs) were found flashed. After carrying out yard inspection and removing kite threads, 220kV Dahej Bus 2 was charged (through 220KV Haldarwa – Dahej line) at 03:27 Hrs/21-01-2022. 220 kV Dahej Bus 2 tripped again at 03:51 Hrs/21-01-2022 on Y-E fault. During yard inspection, 220KV PLNG bay Bus B isolator Y Phase dropper PIs found flashed. After replacement of flashed Insulators and carrying out cloth cleaning of bus insulators, 220kV Dahej Bus 1&2 charged at 10:30 Hrs & 16:30 Hrs/21-01-2022 respectively.	Tripping of 1.220 kV Dahej- Wagra 2.220 kV Dahej- Haldarwa 3.220 kV Dahej- DGEN 4.220 kV Dahej- Suva 5.220 kV Dahej- GACL 1&2 6.220 kV Dahej- Indo Gulf 1&2 7.220 kV Dahej- PLNG 8.220 kV Dahej- ONGC 9.220/66 kV Dahej ICTs 1,2&3
6	GI-1	WR	22-Jan-22 13:04	22-Jan-22 13:30	0:26	176	-	0.003	-	60068	52957	At 13:04 Hrs/22-01-2022, 400kV SSP-Rajgarh 2 tripped on B-E fault. At the same time, SSP CHPH Units 1, 2, 3 & 4 also tripped on directional over current & E/F protection operation. Generation loss of 176 MW was reported by NCA.	Tripping of 1.400 kV SSP- Rajgarh 2 2.50 MW SSP CHPH Units 1,2,3&4
7	GD-1	WR	28-Jan-22 17:25	28-Jan-22 18:53	1:28	-	-	-	-	56237	56230	At 17:25 Hrs/28-01-2022, 220 kV Bhuj- Dayapar 2 and all the elements connected to 220 kV Dayapar Bus 1 tripped on LBB protection operation of 220 kV Bhuj 2. There was no wind generation at 220 kV Dayapar(INOX) power plant during the tripping.	Tripping of 1.220 kV Bhuj- Dayapar 2 2.220/33 kV Dayapar ICTs 1,2&3
8	GD-1	WR	30-Jan-22 14:23	30-Jan-22 15:11	0:48	346	68.4	0.006	0.001	56691	58502	At 14:23 Hrs/30-01-2022, 220kV Hinganghat – TSS Ckt-1 tripped on Y-E fault at 220kV Hinganghat S/s. Due to the delayed clearance of fault at Hinganghat end, 220 kV Hinganghat- Warora & 220 kV Hinganghat- Bhugaon tripped on Zone 2 distance protection operation from respective remote ends. At the same time, 220kV Warora-SWPCL (Sai Wardha Power) 1&2 tripped on Zone 2 distance protection operation from SWPCL end. With these tripping, 220 kV Hinganghat & 220 kV SWPCL stations became dead. There was a generation loss of 346 MW at SWPCL and load loss of 68.4 MW due to the event.	Tripping of 1.220 kV Hinganghat- Railway TSS 1&2 2.220 kV Hinganghat- Warora 3.220 kV Hinganghat- Bhugaon 4.220 kV Warora- SWPCL 1&2 5.135 MW SWPCL Units 2,3&4

Details of Grid Events during the Month of January 2022 in Southern Region

Sl No.	Category of Grid Event	Affected Area	Time and Date of occurrence of Grid Event	Time and Date of Restoration	Duration	Loss of generation / loss of load during the Grid Event		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Event		Antecedent Generation/Load in the Regional Grid		Brief details of the event (pre fault and post fault system conditions)	Name of Elements (Tripped/Manually opened)
	(GI 1or 2/ GD-1 to GD-5)					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
1	GD-1	Andhra Pradesh	08-Jan-22 19:46	08-Jan-22 22:15	2 hrs 29 mins	0	0	0.00%	0.00%	33009	39957	Complete Outage of 220kV Gooty _SWS of APTRANSCO: As per the report submitted, Y-phase insulator string of 220kV Gooty_SWS Bus 1 failed and fell on 220kV Boyareddipalli line R-phase Jumper at 220kV Gooty_SWS end. Immediately, BBP of 220kV Bus 1 & 2 operated and all the elements connected to the buses got tripped. This resulted in complete outage of 220kV Gooty_SWS.	1. 220kV Gooty SWS Dhoni-1 & 2 2. 220kV Gooty SWS Gooty RS 3. 220kV Gooty SWS Anathapur 4. 220kV Gooty SWS BR Palli 5. 400kV/220kV Gooty ICT-1,2&3 6. 220kV Gooty SWS Gooty RTSS 7. 220kV Gooty SWS Shapuram 8. 220kV Gooty SWS Ultratech
2	GD-1	Andhra Pradesh	12-Jan-22 22:51	13-Jan-22 10:10	11 hrs 19 mins	0	0	0.00%	0.00%	31692	35677	Complete Outage of 400kV RYTPP Generating Station of APGENCO: During antecedent conditions, 400kV Kalikiri RYTPP Line -2 was under outage. Triggering incident was tripping of 400kV Kalikiri RYTPP Line -1 on over voltage stage-1 protection at RYTPP end and DT was received at Kalikiri end. Since both the lines connected to RYTPP got tripped, this resulted in complete outage of 400kV RYTPP generating station. There was no generation in RYTPP during this event.	1.400kV Kalikiri RYTPP-1
3	GD-1	Andhra Pradesh	20-Jan-22 20:12	20-Jan-22 21:26	1 hrs 14 mins	0	0	0.00%	0.00%	35779	40020	Complete Outage of 220kV Gooty_SWS and Multiple Trippings in 220kV/132kV Gooty_RS of APTRANSCO: As per the report submitted, triggering incident was failure of B-ph CT of 220kV Gooty_SWS Gooty_RS line at 220kV Gooty_RS end. At 200kV/132kV Gooty_RS, 220kV side BBP operated and all the connected elements got tripped. 132kV Gooty_RS was intact during this event. At 220kV Gooty_SWS, Gooty_RS feeder was not tripped and all the connected source feeders got tripped at remote ends including 400kV/220kV Gooty_PG ICT#1,2, and 3. This resulted in complete outage of 220kV Gooty_SWS.	1. 400/220 kV ICT-1,2 &3 at Gooty 2. 220kV Gooty-Ultratech 3. 220kV Gooty-Doni-1&2 4. 220kV Gooty-Ananthpur 5. 220kV Gooty- Boyareddypalli 6. 220kV Gooty-Shapuram 7. 220kV Gooty SWS- Gooty Railways 8. 220kv Gooty SWS-Gooty RS 9. 220kv Gooty RS-Gooty Railways 10. 220kv Gooty RS-Regulapadu
4	GD-1	Tamil Nadu	25-Jan-22 17:14	25-Jan-22 17:52	38mins	0	134	0.00%	0.30%	38394	44393	Complete Outage of 230kV/110kV Taramani SS of TANTRANSCO: As per the report submitted, trigering incident was operation of 230kV Bus- A and Bus-B BBP while charging 230kV Bus-B at 230kV/110kV Taramani SS . All the feeders connected to 230kV bus bars got tripped and this resulted in complete outage of 230kV/110kV Taramani SS.	1. 230kV Taramani KITS park 2. 230kV Taramani Kalibindapattu
5	GD-1	Andhra Pradesh	28-Jan-22 06:49	28-Jan-22 11:30	4hrs 41mins	0	122	0.00%	0.29%	35990	41548	Complete Outage of 220kV/132kV Paravada SS of APTRANSCO: During antecedent conditions, 220kV/132kV Paravada SS was radially fed from 220kV VSS due to outage of 220kV Parawada Anrak line. As per the report submitted, triggering incident was R-phase jumper failure in 220kV Paravada VSS line and the line got tripped at both the ends on operation of Earth Fault protection. Due to tripping of only connected line, there was complete loss of supply at 220kV/132kV Paravada SS.	1. 220kV Paravada VSS line
6	GI-1	Kerala	20-Jan-22 11:40	20-Jan-22 12:34	54mins	0	216	0.00%	0.44%	48313	48861	Tripping of 110kV Bus-1 at 220kV/110kV Madakathara SS of KSEB: As per the report submitted, all the elements were connected to 110kV Bus-1 at 220kV/110kV Madakathara SS since 110kV Bus-2 was under planned outage. Triggering incident R phase fault in 110kV Bus-1. Due to non-operation of 110kV Bus-1 BBP, fault was cleared by tripping of transfomers and feeders at remote ends. This r esulted in 110kV side bus de-energisation of 220kV/110kV Madakathara SS.	1. 220kV/110kV Madakatara ICT-1,2&3 2. 110kV Madakatara connected feeders

Details of Grid Events during the Month of January 2022 in Eastern Region

Sl No.	Category of Grid Event	Affected Area	Time and Date of occurrence of Grid Event	Time and Date of Restoration	Duration (HH:MM)	Loss of generation / loss of load during the Grid Event		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Event		Antecedent Generation/Load in the Regional Grid		Brief details of the event (pre fault and post fault system conditions)	Elements Tripped
	(GI 1 or 2/ GD-1 to GD-5)					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
1	GD-1	Tenughat	01-Jan-22 05:58	01-Jan-22 07:11	01:13	320	0	1.31%	0.00%	24481	15756	At 05:58 hrs, all emanating lines from 220 kV Tenughat (TVNL) tripped. Two running units at Tenughat also tripped. Both 220 kV Buses at Tenughat tripped which resulted in 320 MW generation loss at Tenughat power plant.	220 kV Tenughat-Patratu 220 kV Tenughat-Biharsharif 220 kV Tenughat-Govindpur-1
2	GD-1	Garhwa	02-Jan-22 04:29	02-Jan-22 05:51	01:22	0	51	0.00%	0.35%	18323	14370	At 04:29 Hrs, 220 kV Daltonganj-Garhwa(New)-1 tripped on Y-phase to earth fault. At the same time, 220 kV Daltonganj-Garhwa(New)-2 tripped on R-phase to earth fault, leading to total power failure at 220/132 kV Garhwa(New) S/s. There was total load loss of 51 MW during the event.	220 kV Daltonganj-Garwah D/c
3	GD-1	Dikchu	04-Jan-22 13:14	04-Jan-22 16:03	02:49	0	0	0.00%	0.00%	23018	16584	At 13:01 Hrs, 400 kV Teesta 3-Dikchu tripped on O/V at Dikchu and DT sent to Teesta-3. 400 kV Dikchu S/s became dead as 400 kV Rangpo-Dikchu was out of service due to shutdown of both 400 kV buses at Rangpo.	400 kV Teesta 3-Dikchu
4	GD-1	Dikchu	05-Jan-22 12:58	05-Jan-22 16:41	03:43	0	0	0.00%	0.00%	22681	16595	At 13:01 Hrs, 400 kV Teesta 3-Dikchu tripped on O/V at Dikchu and DT sent to Teesta-3. 400 kV Dikchu S/s became dead as 400 kV Rangpo-Dikchu was out of service due to shutdown of both 400 kV buses at Rangpo.	400 kV Teesta 3-Dikchu
5	GD-1	Dikchu	14-Jan-22 13:01	14-Jan-22 14:51	01:50	0	0	0.00%	0.00%	22556	17218	At 13:01 Hrs, 400 kV Teesta 3-Dikchu tripped on O/V at Dikchu and DT sent to Teesta-3. 400 kV Dikchu S/s became dead as 400 kV Rangpo-Dikchu was under planned shutdown.	400 kV Teesta 3-Dikchu
6	GD-1	Teesta 3, Dikchu	16-Jan-22 14:01	16-Jan-22 17:49	03:48	0	0	0.00%	0.00%	20208	14474	At 14:01 Hrs, 400 kV Teesta 3-Dikchu tripped at Dikchu on O/V at DT sent to Teesta 3. At the same time, 400 kV Teesta 3-Kishanganj also tripped at Teesta 3 on O/V and DT sent to Kishanganj. 400 kV Teesta-3 & 400 kV Dikchu S/s became dead. 400 kV Rangpo-Dikchu was under planned shutdown. No generation or load loss occurred.	400 kV Teesta 3-Dikchu 400 kV Teesta 3-Kishanganj
7	GD-1	Biharsharif	17-Jan-22 13:13	17-Jan-22 13:32	00:19	0	147	0.00%	0.93%	23526	15884	At 13:13 hrs, all lines emanating from 220/132 kV Biharsharif S/s tripped. Total power failure occurred at Biharsharif and supply to Ekangarsarai, Rajgir, Baripahari, Hatidah, Harnaut, Barh, Nalanda interrupted. Total 147 MW load loss occurred.	220 kV Biharsharif-Tenughat 220 kV Biharsharif-Mokama D/c 220 kV Biharsharif-Fatuah D/c 220 kV Biharsharif-Khizarsarai-2 4*315 MVA 400/220 kV ICT at Biharsharif
8	GI-1	Tenughat	25-Jan-22 10:24	25-Jan-22 13:48	03:24	320	0	1.15%	0.00%	27805	17931	At 10:24 Hrs, both running units at Tenughat (TVNL) tripped due to loss of auxilliary supply (Station transformer tripped due to flash over in 6.6 kV side bus).	2*210 MW (U#1 & U#2) at Tenughat (TVNL)

Details of Grid Events during the Month of January 2022 in North Eastern Region

Sl No.	Category of Grid Event (GI 1or 2/ GD-1 to GD-5)	Affected Area	Time and Date of occurrence of Grid Event	Time and Date of Restoration	Duration (HH:MM:SS)	Loss of generation / loss of load during the Grid Event		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the		Antecedent Generation/Load in the Regional Grid		Brief details of the event (pre fault and post fault system conditions)	Elements Tripped
						Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
1	GD-I	Lumshnong area of Meghalaya Power System	07-Jan-22 07:39	07-Jan-22 08:08	0:29:00	0	56	0.00%	2.50%	1940	2238	Lumshnong area of Meghalaya Power System is connected with rest of NER grid through 132 kV Khleihriat-Lumshnong Line. 132 kV Panchgram -Lumshnong Line was under outage since 07:18 hrs on 07.01.22. At 07:39 hrs on 07.01.22, 132 kV Khleihriat-Lumshnong Line tripped. Due to tripping of this element, Lumshnong area of Meghalaya Power System was separated from rest of NER Grid and subsequently collapsed due to no source available in the area. Power supply was extended to Lumshnong area of Meghalaya Power System by charging 132 kV Khleihriat-Lumshnong Line at 08:08 hrs on 07.01.22.	132 kV Khleihriat-Lumshnong Line
2	GD-I	Lumshnong area of Meghalaya Power System	18-Jan-22 07:09	18-Jan-22 07:24	0:15:00	0	41	0.00%	1.94%	1941	2113	Lumshnong area of Meghalaya Power System was connected with rest of NER grid through 132 kV Panchgram -Lumshnong Line & 132 kV Khleihriat-Lumshnong Line At 07:09 hrs on 18.01.22, 132 kV Panchgram -Lumshnong Line and 132 kV Khleihriat-Lumshnong Line tripped. Due to tripping of these elements, Lumshnong area of Meghalaya Power System got separated from rest of NER Grid and subsequently collapsed due to no source in the area. Power supply was extended to Lumshnong area of Meghalaya Power System by charging 132 kV Khleihriat-Lumshnong Line at 07:24 hrs. on 18.01.22.	132 kV Panchgram -Lumshnong Line & 132 kV Khleihriat-Lumshnong Line
3	GD-I	Lumshnong area of Meghalaya Power System	20-Jan-22 16:30	20-Jan-22 16:38	0:08:00	0	35	0.00%	1.59%	2289	2202	Lumshnong area of Meghalaya Power System was connected with rest of NER grid through 132 kV Khleihriat-Lumshnong Line. 132 kV Panchgram -Lumshnong Line was under outage since 16:07 hrs on 20.01.2022 At 16:30 hrs on 20.01.22, 132 kV Khleihriat-Lumshnong Line tripped. Due to tripping of this element, Lumshnong area of Meghalaya Power System got separated from rest of NER Grid and subsequently collapsed due to no source in the area. Power was extended to Lumshnong area of Meghalaya Power System by charging 132 kV Khleihriat-Lumshnong Line at 16:38 hrs on 20.01.2022	132 kV Khleihriat-Lumshnong Line
4	GD-I	Pasighat, Roing, Tezu and Namsai areas of Arunachal Pradesh Power System	25-Jan-22 18:20	25-Jan-22 19:48	1:28:00	0	15	0.00%	0.54%	2330	2799	Pasighat, Roing, Tezu and Namsai areas of Arunachal Pradesh Power System were connected with the rest of NER Grid through 132 kV Along - Pasighat Line. At 18:20 hrs on 25.01.2022,132 kV Along - Pasighat Line tripped. Due to tripping of this element, Pasighat, Roing, Tezu and Namsai areas of Arunachal Pradesh Power System were separated from the rest of NER Grid and subsequently collapsed due to no source available in these areas. Power was extended to Pasighat, Roing, Tezu and Namsai areas of Arunachal Pradesh Power System by charging 132 kV Along - Pasighat Line at 19:48 hrs on 25.01.2022.	132 kV Along - Pasighat Line
5	GD-I	Zuangtui, Serchhip and Saitual areas of Mizoram Power System	31-Jan-22 07:32	31-Jan-22 13:47	6:15:00	0	52	0.00%	2.25%	2778	2315	Zuangtui, Serchhip and Saitual areas of Mizoram Power System were connected with the rest of NER Grid through 132 kV Melriat(PG) - Zuangtui Line. 132 kV Serchip - Lunglei (Khawiva) Line was in opened condition since 15:30 hrs on 29.09.2021 to avoid overloading of 132 kV Aizawl - Luangmual Line and 132kV Melriat(PG) -Zuangtui Line At 07:32 hrs on 31.01.2022, 132 kV Melriat - Zuangtui Line tripped. Due to tripping of this element, Zuangtui, Serchhip and Saitual areas of Mizoram Power System were separated from the rest of NER Grid and subsequently collapsed due to no source available in these areas. Power was extended to Zuangtui, Serchhip and Saitual areas of Mizoram Power System by charging 132 kV Melriat(PG) - Zuangtui Line at 13:47 hrs on 31.01.2022	132kV Melriat(PG) -Zuangtui Line
6	GI-I	Tripura	03-Jan-22 06:17	03-Jan-22 08:00	1:43	30	0	2%	0%	1402	1801	AGTCCPP Unit-3 tripped at 06:17 hours on 03-01-22 due to inlet air differential pressure high . Revision done from Block No. 33 on 03-01-22.	AGTCCPP Unit-3
7	GI-I	Tripura	10-Jan-22 05:15	10-Jan-22 07:00	1:45	130	0	9%	0%	1447	1575	AGTCCPP Unit 1, 2, 3, 4, 5 & 6 tripped at 05:15 hours on 10-01-22 due to sudden low gas pressure alarm. Revision done from Block No. 29 on 10-01-22.	AGTCCPP Unit 1, 2, 3, 4, 5 & 6
8	GI-II	Assam	26-Jan-22 14:49	26-Jan-22 16:30	1:41	60	0	4%	0%	1658	1903	AGBPP Unit 2 tripped at 14:49 hours on 26-01-22 due to tripping of Gas Compressor 1. Revision done from Block No. 67 on 26-01-22.	AGBPP Unit 2