



Details of Grid Events during the Month of December 2021 in Northern 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 (H: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
						Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
1	GD-1	HARYANA	02-Dec-2021 03:32	02-Dec-2021 05:52	2:20	0	80	0.000	0.259	23912	30878	Blue Phase CT of 220 KV Palli - Samaypur Ckt - 2 blasted and caught fire which led to bus bar protection operation of 220KV Bus-2 at Palli. Due to bus bar protection operation, 220 KV Samaypur(BB)-Pallii(HV) (HVPNL) Ckt-1 & Ckt-2, 220KV Palli- Sector 56 Gurgaon ckt-1 & Ckt-2 and 220/66KV Transformer-1 at Palli all tripped as all were connected to 220KV Bus-2. At the same time, 220 KV Faridabad(NT)-Palla(HV) (PG) Ckt-1 & 220 KV Faridabad Sec-58 (HV)-Faridabad(NT) (HVPNL) Ckt-1 also tripped. As per PMU, B-N phase to earth fault with delayed clearance in 400ms is observed. As per SCADA, load loss of approx. 80MW is observed in Haryana control area. In antecedent condition, 220 KV Samaypur(BB)-Pallii(HV) (HVPNL) Ckt-1&2 carrying 40MW each.	1) 220 KV Samaypur(BB)-Pallii(HV) (HVPNL) Ckt-2 2) 220 KV Samaypur(BB)-Pallii(HV) (HVPNL) Ckt-1 3) 220 KV Faridabad(NT) - Bus 1 4) 220 KV Faridabad(NT)-Palla(HV) (PG) Ckt-1 5) 220 KV Faridabad Sec-58 (HV)-Faridabad(NT) (HVPNL) Ckt-1&2
2	GI-2	RAJASTHAN	02-Dec-2021 14:17	02-Dec-2021 16:02	1:45	0	0	0.000	0.000	32622	42215	400 KV Avaada Pooling SL_BKN_PG (AEPL)-Bikaner(PG) (AEPL) Ckt-1 along with 400/33 kv 150 MVA ICT 5, ICT 6 & ICT 7 at Avaada Pooling SL_BKN_PG (AEPL) tripped on three phase to earth fault at 33kv side of 400/33 kv 150 MVA ICT 6 at Avaada Pooling. As per PMU, R-Y-B three phase fault is observed.	1) 400 KV Avaada Pooling SL_BKN_PG (AEPL)-Bikaner(PG) (AEPL) Ckt-1 2) 400/33 kv 150 MVA ICT 7 at Avaada Pooling SL_BKN_PG (AEPL) 3) 400/33 kv 150 MVA ICT 5 at Avaada Pooling SL_BKN_PG (AEPL) 4) 400/33 kv 150 MVA ICT 6 at Avaada Pooling SL_BKN_PG (AEPL)
3	GD-1	UTTAR PRADESH	02-Dec-2021 14:42	02-Dec-2021 17:00	2:18	105	0	0.322	0.000	32626	42260	400KV Bus 1 at Vishnuprayag(IP), 400 KV Alaknanda GVK(UPC)-Vishnuprayag(IP) (UP) Ckt-1 and 400 KV Muzaffarnagar(UP)-Vishnuprayag(IP) (UP) Ckt-1 all tripped on bus bar protection operation of 400KV bus-1 at Vishnuprayag end. Bus bar protection operated due to fault in B-ph CB of Unit-2 at Vishnuprayag(IP). As per PMU, B-N phase to earth fault is observed. As per SCADA, generation loss of approx. 105MW is observed at Vishnuprayag(IP). In antecedent condition, 400 KV Alaknanda GVK(UPC)-Vishnuprayag(IP) (UP) Ckt-1 and 400 KV Muzaffarnagar(UP)-Vishnuprayag(IP) (UP) Ckt-1 were carrying 18MW & 82MW respectively.	1) 400KV Bus 1 at Vishnuprayag(IP) 2) 400 KV Alaknanda GVK(UPC)-Vishnuprayag(IP) (UP) Ckt-1 3) 400 KV Muzaffarnagar(UP)-Vishnuprayag(IP) (UP) Ckt-1
4	GD-1	UTTAR PRADESH	03-Dec-2021 22:17	03-Dec-2021 23:19	1:02	0	110	0.000	0.304	26747	36222	R-ph bushing of 50MVAR bus reactor at 400 KV S/S Moradabad got burst which was charged through transfer bus. As fault was outside the range of differential protection of bus reactor and bus bar protection also not operated, fault cleared with the tripping of 400 KV Hapur(UP)-Moradabad(UP) (PG) Ckt-1, 400 KV Moradabad(UP)-Kashipur(UK) (UK) Ckt-1, 400 KV Bareilly(PG)-Moradabad(UP) (PG) Ckt-1 & Ckt-2 from the remote end. 220KV feeders to Almora and Sambhal also tripped from remote end only. 400/220 kv 500 MVA ICT 1, ICT 2 & 240MVA ICT 3 at Moradabad(UP) were hand tripped from LV side. As per PMU, R-N phase to earth fault followed by Y-N & B-N fault with delayed clearance in 440ms is observed. As per SCADA, load loss of approx. 110MW is observed in UP control area. In antecedent condition, 400 KV Hapur(UP)-Moradabad(UP) (PG) Ckt-1, 400 KV Moradabad(UP)-Kashipur(UK) (UK) Ckt-1, 400 KV Bareilly(PG)-Moradabad(UP) (PG) Ckt-1 & Ckt-2 were carrying 120MW, 58MW, 200MW & 200MW respectively.	1) 400 KV Hapur(UP)-Moradabad(UP) (PG) Ckt-1 2) 400 KV Moradabad(UP)-Kashipur(UK) (UK) Ckt-1 3) 400 KV Bareilly(PG)-Moradabad(UP) (PG) Ckt-2 4) 400 KV Bareilly(PG)-Moradabad(UP) (PG) Ckt-1
5	GI-2	HIMACHAL PRADESH	05-Dec-2021 14:12	05-Dec-2021 15:32	1:20	0	0	0.000	0.000	32843	42307	400 KV Chamera_2(NH)-Chamera_1(NH) (PG) Ckt-1 and 400 KV Chamera_2(NH)-Kishenpur(PG) (PG) Ckt-1 both tripped on R-B phase to phase fault at distance approx. 20km from Chamera II end during inclement weather condition. Length of 400 KV Chamera_2(NH)-Chamera_1(NH) (PG) Ckt-1 & 400 KV Chamera_2(NH)-Kishenpur(PG) (PG) Ckt-1 is 36km & 135km respectively and both lines are on same tower upto 36km from Chamera II end. As per PMU, R-B phase to phase fault is observed. In antecedent condition, 400 KV Chamera_2(NH)-Chamera_1(NH) (PG) Ckt-1 and 400 KV Chamera_2(NH)-Kishenpur(PG) (PG) Ckt-1 were carrying 71MW & 160MW respectively.	1) 400 KV Chamera_2(NH)-Chamera_1(NH) (PG) Ckt-1 2) 400 KV Chamera_2(NH)-Kishenpur(PG) (PG) Ckt-1
6	GD-1	RAJASTHAN	06-Dec-2021 18:27	08-Dec-2021 20:08	1:41	500	0	1.307	0.000	38253	49429	While synchronizing the 200MW Unit-13 at Obra_B TPS, B-ph circuit breaker of Unit-13 got blast which was connected to Bus-1. On this fault, bus bar of Bus-1 operated and due to delay in opening of bus coupler, bus bar protection of bus-2 also operated resulted into tripping of all connected transmission lines, ICTs and generating units. As per PMU, B-N phase to earth fault is observed. As per SCADA, generation loss of approx. 500MW is observed at Obra_B TPS due to tripping of 200MW Unit-10,11&12. In antecedent condition, 400 KV Anpara-Obra_B (UP) Ckt-1, 400 KV Obra_B-Sultanpur (UP) Ckt-1, 400 KV Obra_B-Rewa Road (UP) Ckt-1 and 400/220 kv 240 MVA ICT 3 at Obra_B(UP) were carrying 310MW, 208MW, 229MW & 210MW respectively.	1) 400 KV Obra_C_TPS-Obra_B (UP) Ckt-1 2) 400 KV Anpara-Obra_B (UP) Ckt-1 3) 400 KV Obra_B-Sultanpur (UP) Ckt-1 4) 400 KV Obra_B-Rewa Road (UP) Ckt-1 5) 200 MW Obra TPS - UNIT 10 6) 200 MW Obra TPS - UNIT 11 7) 200 MW Obra TPS - UNIT 12 8) 400KV Bus 2 at Obra_B(UP) 9) 400KV Bus 1 at Obra_B(UP) 10) 400/220 kv 240 MVA ICT 3 at Obra_B(UP) 11) 400/220 kv 315 MVA ICT 2 at Obra_B(UP)
7	GD-1	NEW DELHI	10-Dec-2021 17:38	10-Dec-2021 21:08	3:30	0	110	0.000	0.235	35574	46736	At 17:38 Hrs on 10.12.2021, current leakage occurred at secondary CT of 220/66KV Transformer-1 at 220/66KV Narela(DV) (connected at 220KV Bus-2) due to insulation failure. It came under the zone of bus bar 2-2 protection and bus bar protection of Bus-2 operated. On operation of Bus bar protection, 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 & Ckt-2, 220/66KV 100MVA Transformer -1,2 & 3 at Narela(DV) all tripped. As per PMU, no fault is observed. As per SCADA, load loss of approx. 110MW is observed in Delhi control area. In antecedent condition, 220KV Panipat-Narela ckt-1,2&3 were off and 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 & Ckt-2 were carrying 90MW each.	1) 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 2) 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2
8	GD-1	HIMACHAL PRADESH	11-Dec-2021 12:00	11-Dec-2021 21:42	9:42	80	0	0.211	0.000	37947	48192	As reported on 11.12.2021, multiple tripping of 400/220 kv 315 MVA ICT 1 & ICT 2 at Gumma (HP) is observed at 12:00Hrs to 15:06Hrs and 19:10Hrs. SFG gas density monitor of R-phase and B-phase of Tie CB(02 Bay) compartment have been found faulty, which was initiating LBB tripping command. As 400/220 kv 315 MVA ICT 1 & ICT 2 at Gumma (HP) were connected same dia through Main CB, multiple tripping of both ICTs were observed. As per PMU, no fault is observed. As per SCADA, generation loss of approx. 80MW is observed at Sawra kuddu HEP. In antecedent condition, 400/220 kv 315 MVA ICT 1 & ICT 2 at Gumma (HP) were carrying 40MW each at 19:08 Hrs.	1) 400/220 kv 315 MVA ICT 1 at Gumma (HP) 2) 400/220 kv 315 MVA ICT 2 at Gumma (HP) 3) 400/220 kv 315 MVA ICT 1 at Gumma (HP) 4) 400/220 kv 315 MVA ICT 2 at Gumma (HP) 5) 400/220 kv 315 MVA ICT 1 at Gumma (HP) 6) 400/220 kv 315 MVA ICT 2 at Gumma (HP)
9	GD-1	UTTAR PRADESH	19-Dec-2021 17:39	19-Dec-2021 18:22	0:43	0	160	0.000	0.332	38447	48210	400/220 kv 315 MVA ICT 2 & 400/220 kv 240 MVA ICT 3 at Obra_B(UP) tripped on over current protection operation. As per PMU, no fault is observed. As per SCADA, load loss of approx. 160MW is observed. 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)

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						Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
10	GI-2	HIMACHAL PRADESH	21-Dec-2021 12:28	21-Dec-2021 14:22	1:54	0	0	0.000	0.000	42445	53726	400/220 kv 315 MVA ICT 1 & ICT 2 at Gumma (HP) tripped on LBB operation of Tie CB (402 Bay) on SF6 gas low stage-2 flag. Earlier on 11.12.2021 also, multiple tripping of both ICTs was observed. During investigation SF6 gas density monitor of R-phase and B-phase of Tie CB(402 Bay) compartment was found faulty and same was replaced and kept under observation. After two days observation when Tie CB was charged, again 402 Bay Tie CB LBB operated on SF6 gas low stage-2 flag and both ICTs tripped. There was no generation at Sawrakuddu during the tripping of ICTs. As per PMU, no fault is observed.	1) 400/220 kv 315 MVA ICT 1 at Gumma (HP) 2) 400/220 kv 315 MVA ICT 2 at Gumma (HP)
11	GI-2	RAJASTHAN	22-Dec-2021 00:44	22-Dec-2021 04:12	3:28	0	0	0.000	0.000	26962	34791	Due to fire in Y-ph CT at 220kV side (203 Bay) of 400/220 kv 315 MVA ICT 2 at Kota(PG) which was connected to Bus-1, bus bar protection of 220kV Bus-1 operated. Due to bus bar protection of bus 1 operation, elements connected to 220kV Bus-1 i.e. 220 kv Kota(PG)-KTPS(RVUNJ) (RS) Ckt-2, 220 kv Dhuni(RS)-Kota(PG) (RS) Ckt-1 and 400/220 kv 315 MVA ICT 2 at Kota(PG) all tripped. As per PMU, Y-N phase to earth fault is observed. In antecedent condition, 220 kv KTPS(RVUNJ)-Kota(PG)(RS) Ckt-2, 220 kv Kota(PG)-Dhuni(RS)(RS) Ckt-1 and 400/220 kv 315 MVA ICT 2 at Kota(PG) were carrying 100MW, 66MW and 13MMW (towards 400kv side).	1) 400/220 kv 315 MVA ICT 2 at Kota(PG) 2) 220KV Bus 1 at Kota(PG) 3) 220 kv Kota(PG)-KTPS(RVUNJ) (RS) Ckt-2 4) 220 kv Dhuni(RS)-Kota(PG) (RS) Ckt-1
12	GD-1	RAJASTHAN	22-Dec-2021 07:27	22-Dec-2021 12:34	5:07	0	600	0.000	1.147	42934	52300	400/220 kv 315 MVA ICT 1 & ICT 2 at Hindaun(RS) tripped on over load. At the same time, 400 kv Alwar(ATIL)-Hindaun(RS) (ATIL) Ckt-1 and 400 kv Heerapura-Hindaun (RS) Ckt-1 tripped on DC supply failure at Hindaun. With the tripping of 400 kv Alwar(ATIL)-Hindaun(RS) (ATIL) Ckt-1, both 400/220kv ICT and 220kv feeders at Alwar also tripped. SCADA data of antecedent condition also not available with SDC-Rajasthan due to DC supply failure during the tripping event. As per PMU no fault observed. As per SCADA, load loss of approx. 600MW is observed in Rajasthan control area. In antecedent condition, 400 kv Alwar(ATIL)-Hindaun(RS) (ATIL) Ckt-1 was carrying 101MW and SCADA data at 400/220kv Hindaun(RS) was suspected.	1) 400/220 kv 315 MVA ICT 1 at Alwar(ATIL) 2) 400 kv Alwar(ATIL)-Hindaun(RS) (ATIL) Ckt-1 3) 400/220 kv 315 MVA ICT 1 at Hindaun(RS) 4) 400 kv Heerapura-Hindaun (RS) Ckt-1 5) 400/220 kv 315 MVA ICT 2 at Alwar(ATIL) 6) 400/220 kv 315 MVA ICT 2 at Hindaun(RS)
13	GD-1	J & K	23-Dec-2021 15:29	23-Dec-2021 16:11	0:42	30	0	0.080	0.000	37682	46505	Bus Bar protection of 220KV Bus 2 at Sala(NH) operated during Dismantling of old MOM and installation of new MOM and annual maintenance of Isolator work on 220 kv Kishenpur(PG)-Sala(NH) (PG) Ckt-1. As per PMU, Y-B fault is observed in the system. In antecedent conditions, Unit#3 at Sala(NH) generating 30MW. 220 kv Sala(NH)-Jammu(PDD) (PG) Ckt-1 & 2 carrying 96MW & 85MW respectively.	1) 220 kv Kishenpur(PG)-Sala(NH) (PG) Ckt-2 2) 220 kv Kishenpur(PG)-Sala(NH) (PG) Ckt-3 3) 220 kv Sala(NH)-Jammu(PDD) (PG) Ckt-1 4) 220KV Bus 2 at Sala(NH) 5) 220 kv Sala(NH)-Jammu(PDD) (PG) Ckt-2
14	GD-1	RAJASTHAN	24-Dec-2021 17:50	24-Dec-2021 18:58	1:08	0	250	0.000	0.477	44836	52395	400/220 kv 315 MVA ICT 1 & 315 MVA ICT 2 at Bikaner(RS) tripped due to O/C trip. As per PMU, No fault is observed in the system. In antecedent conditions, 400/220 kv 315 MVA ICT 1 & 315 MVA ICT 2 at Bikaner(RS) carrying 253MW & 257MW respectively.	1) 400/220 kv 315 MVA ICT 1 at Bikaner(RS) 2) 400/220 kv 315 MVA ICT 2 at Bikaner(RS)
15	GI-2	HARYANA	25-Dec-2021 23:47	26-Dec-2021 01:06	1:19	0	0	0.000	0.000	27943	36146	Bus Bar protection at 400/220kv Ballabgarh(PG) operated due to R-ph CB of Mainpur-1 main CB blasted at 23:47 hrs while opening of line on voltage regulation. As per PMU, R-N fault is observed in the system. In antecedent conditions, 400/220 kv 500 MVA ICT 4 at Ballabgarh(PG) carrying 138MW.	1) 80 MVAR Bus Reactor No 1 at 400kv Ballabgarh(PG) 2) 400/220 kv 500 MVA ICT 4 at Ballabgarh(PG) 3) 400KV Bus 3 at Ballabgarh(PG) 4) 400KV Bus 1 at Ballabgarh(PG)
16	GD-1	NEW DELHI	26-Dec-2021 20:42	26-Dec-2021 23:41	2:59	0	600	0.000	1.427	31744	42034	Y-ph Circuit Breaker of 220 kv Manoldā Gopalpur Ckt-2 blasted at Mandola End. This resulted in 220 kv Bus Bar Operation leading to tripping of all 4 ICTs at Mandola & all 220 kv circuits emanating from Mandola Station. Approx. 600 MW Load Loss was observed at 220 kv Narela, 220 kv South Wazirabad, 220 kv Gopalpur in Delhi. As per PMU, three phase fault is observed in the system. In antecedent conditions, 400/220 kv 500 MVA ICT 1, ICT 2, ICT 3 & ICT 4 at Mandola(PG) carrying 178MW, 178MW, 178MW & 177MW respectively.	1) 220KV Bus 1 at Mandola(PG) 2) 220KV Bus 2 at Mandola(PG) 3) 220KV Bus 4 at Mandola(PG) 4) 220 kv Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-1 5) 220 kv Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-2 6) 220 kv Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-4 7) 220 kv Mandola(PG)-Narela(DV) (DTL) Ckt-1 8) 220 kv Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-3 9) 220 kv Mandola(PG)-Narela(DV) (DTL) Ckt-2 10) 220 kv Mandola(PG)-Gopalpur(DTL) (DTL) Ckt-2 11) 400/220 kv 500 MVA ICT 1 at Mandola(PG) 12) 400/220 kv 500 MVA ICT 4 at Mandola(PG) 13) 220KV Bus 3 at Mandola(PG) 14) 400/220 kv 500 MVA ICT 3 at Mandola(PG) 15) 400/220 kv 500 MVA ICT 2 at Mandola(PG)
17	GI-2	PUNJAB	27-Dec-2021 06:54	27-Dec-2021 07:35	0:41	0	0	0.000	0.000	36158	44862	B-phase CT of 404 bay (Chamba-1 main bay at Jalandhar) got blast. This fault led to bus bar protection operation of 400kv Bus-1 at Jalandhar(PG). All main CBs connected to 400kv Bus-1 opened. With the opening of Main CBs, 400/220 kv 315 MVA ICT 1 at Jalandhar(PG), 400 kv Jalandhar(PG)-Nakodar(PG) (PG) Ckt-1, 400 kv Chamba-Jalandhar (PG) Ckt-1 and 400 kv Moga-Jalandhar (PG) Ckt-2 all tripped as their Tie CBs were not charged during the event. As informed by CPCC-2, the lines which tripped were opened in night hours on voltage regulation and restored in morning. During the event time, charging of Tie CB of these lines were due. As per PMU, B-N phase to earth fault is observed.	1) 400KV Bus 1 at Jalandhar(PG) 2) 400/220 kv 315 MVA ICT 1 at Jalandhar(PG) 3) 400 kv Jalandhar(PG)-Nakodar(PG) (PG) Ckt-1 4) 400 kv Chamba-Jalandhar (PG) Ckt-1 5) 400 kv Moga-Jalandhar (PG) Ckt-2

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						Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
18	GI-2	UTTAR PRADESH	29-Dec-2021 01:00	29-Dec-2021 05:07	4:07	0	0	0.000	0.000	29704	38204	DT signal received at 400kV Rosa & Badaun end. Due to this line tripped at 400kV Badaun end but at 400kV Rosa end only B phase opened, other phase pole did not open.This initiated LBB protection due to which 200MVA ICT- 1 also tripped. As per PMU, No fault is observed in the system.	1) 400/220 kv 200 MVA ICT 1 at Rosa(UPC) 2) 400 KV Badaun(U)-Rosa(UPC) (OCBTL) Ckt-1
19	GI-2	HARYANA	29-Dec-2021 18:24	29-Dec-2021 21:45	3:21	0	0	0.000	0.000	42755	53255	800 KV HVDC Kurukshetra(PG) Pole-1 blocked on HVHS reclose protection at Champa end and 800 KV HVDC Kurukshetra(PG) Pole-03 blocked on CAT B protection at Champa end. As per PMU, R-B fault is observed in the system.	1) 800 KV HVDC Kurukshetra(PG) Pole-1 2) 800 KV HVDC Kurukshetra(PG) Pole-03
20	GI-2	UTTAR PRADESH	29-Dec-2021 19:05	29-Dec-2021 19:38	0:33	0	0	0.000	0.000	40100	50200	400kV Bus Bar 2 at Unnao tripped due to LBB operation on 400kV Unnao Bareilly-2 line as 400kV Unnao-Bareilly-2 line CB failed to clear R phase fault. As per PMU, R-N fault with delayed clearance of 160ms is observed in the system.	1) 400/220 kv 315 MVA ICT 3 at Unnao(UP) 2) 400/220 kv 315 MVA ICT 2 at Unnao(UP) 3) 400 KV Unnao(UP)-Jehiz, Haridol Road (UP) (PG) Ckt-1 4) 400 KV Bareilly-Unnao (UP) Ckt-2 5) 765/400 kv 1000 MVA ICT 2 at Unnao(UP)

Details of Grid Events during the Month of December 2021 in Western Region



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						Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
1	GI-1	WR	05-Dec-21 03:54	05-Dec-21 06:03	2:09	-	-	-	-	47394	41561	At 03:54 Hrs/05-12-2021, 220kV Bus -2 at Haldarwa substation tripped on Bus bar protection due to R phase fly over pilot insulator flashover in Wagara line bay. 220kV Jhanor- Haldarwa -3 which was connected to Bus-1 tripped on SOTF from Jhanor end at the same time. There was no load loss due to the event.	Tripping of 1. 220kV Haldarwa - Wagara - 1 2. 220kV Jhanor - Haldarwa 3 3. 220kV Jhanor - Haldarwa 2 4. 220kV Haldarwa - Kawas - 2 5. 220kV Haldarwa - Kakrapar - 2
2	GI-1	WR	06-Dec-21 13:18	06-Dec-21 20:35	7:17	-	-	-	-	56858	52977	At 13:18 Hrs/06-12-2021, 220kV Bus -2 at Kolhapur(MH) substation tripped on Bus Bar protection due to R ph Insulator String failure of 220kV Side of 501MVA 400/220kV ICT 3. There was no load loss due to the event.	Tripping of 1. 400/220kV Kolhapur(MH) 500MVA ICT-3 2. 220kV Kolhapur - IchaKararji 2 3. 220kV Kolhapur(MH)- Hamidwada 4. 220kV Kolhapur(MH)- MIDC 2 5. 220kV Kolhapur(MH) - Mudshingi 2
3	GD-1	WR	07-Dec-21 16:25	07-Dec-21 16:45	0:20	-	48	-	0.09%	58738	54579	At 16:26 Hrs/07-12-2021, 220kV Bus-2 at Sagapara substation in Gujarat tripped on Bus Bar protection. As 220kV Bus-1 was already under planned shutdown, while returning the shutdown the Bus-1 side isolator of 100MVA ICT-1 got operated from the isolator mechanism box. Supply to the station was interrupted and load loss of 48 MW occurred due to the event.	Tripping of 1. 220kV Sagapara - BECL 1 2. 220kV Sagapara - BECL 2 3. 220kV Sagapara - Otha 1 4. 220kV Sagapara - Savarkundla 5. 220kV Sagapara - Vartej line 6. 220/66kV 100 MVA ICT-1 7. 220/66kV 100 MVA ICT-3
4	GD-1	WR	14-Dec-21 18:25	14-Dec-21 18:37	0:12	-	420	-	0.76%	60830	55555	At 18:25 Hrs/14-12-2021, all 220kV feeders and ICTs at Raigarh(CG) substation tripped due to failure of B-ph fuse in 220kV Main Bus-1 PT protection ckt. There was a load loss of 420 MW due to the event as reported by SLDC Chhattisgarh.	1. 220kV Raigarh - Raigarh PG - 1 2. 220kV Raigarh - Raigarh PG - 2 3. 220kV Raigarh- Raigarh PG- 3 4. 220kV Raigarh-Saraipali-1 5. 220kV Raigarh-Saraipali-2 6. 220kV Korba(E) - Raigarh- 1 7. 220/132kV 160 MVA Raigarh ICT 1 8. 220/132kV 160 MVA Raigarh ICT 2 9. 220/132kV 160 MVA Raigarh ICT 3
5	GI-2	WR	21-Dec-21 07:29	21-Dec-21 09:15	1:46	-	-	-	-	61423	55981	At 07:29 Hrs/21-12-2021, 400kV Bus -1 at Bableshtar substation tripped on Bus Bar protection due to failure of B-ph bus side CB pole of 400kV Reactor-1 bay immediately after handtripping. There was no load loss during the event.	Tripping of 1. 400kV Bableshtar - Dhule - I 2. 400kV Bableshtar - Ektuni(Aurangabad-III) - I 3. 400kV Bableshtar - PADGHE - I 4. 400kV Aurangabad - Bableshtar - I 5. 400/220kV Bableshtar ICT-2 6. 400/220kV Bableshtar ICT-3
6	GD-1	WR	21-Dec-21 06:47	21-Dec-21 07:32	0:45	9	-	0.0002	-	58918	52655	At 06:47 Hrs/21-12-2021, 220kV Bhuj- Nanavalka (Alfancar) line tripped on Y-E fault. This resulted in generation loss of 9 MW at Nanavalka (Alfancar) wind generation plant due to loss of evacuation path.	Tripping of 1. 220kV Bhuj- Nanavalka (Alfancar)
7	GI-2	WR	24-Dec-21 03:20	24-Dec-21 05:32	2:12	-	-	-	-	48144	44581	At 03:20 Hrs / 24-12-2021, 400 kV Bus-1 at Parli substation tripped on LBB protection of 400kV Parli-Solapur line bay due to failure of R&Y phase CB poles. There was no load loss due to the event.	Tripping of 1. 400kV Nanded - Parli - 1 2. 400kV Lonikhand - Parli - 1 3. 400kV Parli - Solapur - 1 4. 400kV Parli - Parli(PG) - 2 5. 400kV Chandrapur - Parli - 3 6. 400/220kV Parli ICT-1 7. 400/220kV Parli ICT-2
8	GI-2	WR	26-Dec-21 03:53	26-Dec-21 18:42	14:49	-	-	-	-	47263	44557	At 03:53 Hrs/26-12-2021, 400 kV Wardha Bus 1 tripped on Bus bar protection due to failure of Bus insulator string of Y-phase at gantry tower. At the same time, 400kV Wardha- Akola -2 line also tripped from Wardha end only as its tie bay was open due to planned outage of 400 kV Bus Reactor-1. There was no load loss due to the event.	Tripping of 1. 400kV Akola - Wardha - 2
9	GI-2	WR	26-Dec-21 22:04	26-Dec-21 23:45	1:41	-	-	-	-	49240	44979	At 22:04 Hrs/26-12-2021, 400 kV Dehgam Bus 1 tripped along with 400/220kV 500 MVA ICT-3 due to failure of B-ph CT of 400kV main bay of ICT-3. There was no load loss due to the event.	Tripping of 1. 400/220kV Dehgam ICT -3 2. 400kV Dehgam - Wanakbori - 1

Details of Grid Events during the Month of December 2021 in Western 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)	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
						Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
10	GI-2	WR	29-Dec-21 18:23	29-Dec-21 21:18	2:55	-	-	-	-	60818	53389	At 18:23 Hrs/29-12-2021, 765kV Raigarh PS (Kotra) Bus-1 section-1 tripped along with 765/400kV ICT-4 on Bus bar protection due to flashover on Y phase CT of ICT-4 main bay. At the same time, HVDC Raigarh - Pugalur Pole-1 & Pole-4 tripped on DC Bus Differential Protection operation. At 18:24 hrs, HVDC Champa-Kurukshetra Pole-1 & 3 tripped on HVHS Reclose Protection operation & CATB protection respectively. At 18:52 hrs during inspection , spark tracing was observed on Y ph CT of 714 bay (tie bay) & hence emergency handtripping was done of 765kV Raigarh PS (Kotra)- Champa line-1 from Kotra end.	Tripping of 1. 765 kV Champa - Kotra - 1 2.765/400kV Kotra ICT-4 3. 800kV HVDC Champa - Kurukshetra Pole- 1 4. 800kV HVDC Champa - Kurukshetra Pole- 3 5.800kV HVDC Raigarh-Pugalur Pole-1 6. 800kV HVDC Raigarh-Pugalur Pole-4
11	GD-1	WR	30-Dec-21 07:26	30-Dec-21 08:36	1:10	149	-	0.25%	-	60784	51746	At 07:26 Hrs/30-12-2021, 220kV Bhuj- Gadhsisa (Renew Power) line tripped on Y-E fault. This resulted in generation loss of 149 MW at Gadhsisa (Renew Power) wind generation plant due to loss of evacuation path.	Tripping of 1. 220kV Bhuj- Gadhsisa

Details of Grid Events during the Month of December 2021 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	Sonenagar	15-Dec-21 15:28	15-Dec-21 15:58	00:30	0	101	0.00%	0.73%	22212	13803	At 15:28 Hrs, 220 kV Chandauti-Sonenagar-1 tripped from both end on R_Y fault. At the same time, 220 kV Chandauti-Sonenagar-2 also tripped on R_Y fault from Chandauti end only. This led to total power failure at 220/132 kV Sonenagar S/s. Power supply to Aurangabad, Sonenagar, Rafiganj and Jajpla interrupted. Total 101 MW load loss occurred.	220 kV Chandauti-Sonenagar D/c
2	GD-1	Tarkera	21-Dec-21 19:38	21-Dec-21 20:40	01:02	0	450	0.00%	2.42%	26870	18593	At 19:38 Hrs, both 220 kV Bus at Tarkera became dead resulting in total power failure at Rourkela RSP (Rourkela Steel Plant), Rajgangpur. Total 450 MW load loss occurred.	220 kV Bus-1 & Bus-2 at Tarkera 220 kV Rourkela-Tarkera D/c 220 kV Budhipadar-Tarkera D/c 220 kV RSP-Tarkera Q/c 220 kV Barkot-Tarkera 220 kV Chandiposh-Tarkera 4*100 MVA 220/132 kV ATR at Tarkera

Details of Grid Events during the Month of December 2021 in Southern Region



Sl No.	Category of Grid Event (GI for 2/ GD-1 to GD-5)	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)
						Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
1	GD-1	Karnataka	03-Dec-21 19:16	03-Dec-21 21:12	1 hrs 56 mins	4	0	0.01%	0.00%	30741	38092	Complete Outage of 220kV/33kV Ostro Kannada Wind Plant : As per the report submitted, triggering incident was tripping of a 33kV feeder at Ostro end due to 3-phase fault. At the same time, 220kV Hiriyur Ostro Kannada line and 220kV/33kV 160MVA Transformer tripped on suspected maloperation of Over current relay at Ostro kannada end. 220kV Hiriyur Ostro Kannada line was holding at Hiriyur end. Due to tripping of the only connected line, there was complete outage of 220kV/33kV Ostro Kannada Wind Plant.	1. 220kV Hiriyur Ostro Kannada 2. 220kV/33kV 160MVA Transformer
2	GD-1	Andhra Pradesh	09-Dec-21 23:25	13-Dec-21 08:24	80hrs 59mins	0	0	0.00%	0.00%	29298	32203	Complete Outage of 400kV RYTPP Generating Station of APGENCO: During antecedent conditions, 400kV Kalikiri RYTPP Line -1 was under outage. Triggering incident was hand tripping of 400kV Kalikiri RYTPP Line -2 to contain over voltage at RYTPP 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-2
3	GD-1	Karnataka	12-Dec-21 14:52	12-Dec-21 15:21	29mins	0	260	0.00%	0.75%	36202	34846	Complete Outage of 220kV/66kV Kolar_KA SS and 220kV/66kV Chintamani SS of KPTCL: 220kV/66kV Kolar_KA SS and 220kV/66kV Chintamani SS are radially fed from 400kV/220kV Kolar_PG. During antecedent conditions, all poles of Pugalur HVDC were under shutdown. Triggering incident was maloperation of Pugalur HVDC SPS, while doing a software update in Pugalur HVDC PCS. Immediately, backup protection initiated and SPS operated tripping 220kV Kolar_PG Kolar_KA Line-1&2 and 220kV kolar_PG Chintamani Line-1&2. This resulted in complete outage of 220kV/66kV Kolar_KA SS and 220kV/66kV Chintamani SS of KPTCL.	1. 220kV Kolar_PG Kolar_KA Line-1&2 2. 220kV kolar_PG Chintamani Line-1&2
4	GD-1	Karnataka	26-Dec-21 08:56	26-Dec-21 09:40	44mins	40	40	0.10%	0.09%	40157	42446	Complete Outage of 220kV Kadra PH, 220kV Kodalalli PH of KPCL and 220kV/110kV Karwar SS of KPTCL: During antecedent conditions, 220 kV Kaiga-Kadra and 220 kV Kaiga-Kodalalli were in idle charged condition. As per the report submitted, Y-phase pole discrepancy relay operated while de synchronising unit-2 at Kodalalli. At the same time, Unit-1 LBB operated and all the elements connected to 220kV Bus got tripped. This resulted in complete outage of 220kV Kadra PH, 220kV Kodalalli PH of KPCL. This also resulted in complete outage of 220kV/110kV Karwar SS due to incoming supply failure from 220kV kodalalli PH.	1. 220kV Kadra Kodalalli 2. 220kV Kodalalli Nagheri 1&2
5	GI-1	Tamil Nadu	06-Dec-21 21:41	08-Dec-21 11:58	38hrs 17mins	0	0	0.00%	0.00%	29212	34825	Tripping of 230kV Bus-1&2 of 400kV/230kV Kudankulam Nuclear GS of NPCIL: As per the report submitted, triggering incident tripping of all the elements connected to 230kV Bus-1 and 2 of 400kV/230kV Kudankulam Nuclear Generating Station due to operation of 230kV Bus-1 and Bus-2 BBP.	1. 400/220 KV ICT -1&2 at Kudankulam 2. 230kV Kudankulam SR Pudur 3. 230kV Kudankulam TTPS

Details of Grid Events during the Month of December 2021 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-4	Karong area of Manipur Power System	02-Dec-21 09:38	02-Dec-21 10:10	0:32:00	0	13	0.00%	0.85%	1617	1530	Karong area of Manipur Power System is connected with rest of NER grid through 132 kv Yurembam-Karong and 132 kv Kohima-Karong lines. At 09:38 Hrs on 02.12.21, 132 kv Yurembam-Karong and 132 kv Kohima-Karong lines tripped. Due to tripping of these elements Karong area of Manipur Power System was separated from rest of NER Grid and subsequently collapsed due to no source in this area. Power supply was extended to Karong area of Manipur Power System by charging 132 kv Yurembam-Karong at 10:10 Hrs. on 02.12.21	132 kv Yurembam-Karong line 132 kv Kohima-Karong line
2	GI-II	Assam	07-Dec-21 20:11	07-Dec-21 21:30	1:19:00	146	0	5.39%	0.00%	2708	2438	BGTTP Unit 3 tripped at 20:11 hours on 07.12.21 due to Class-A protection operation. Revision done from Block No. 87 on 07.12.21.	BGTTP Unit 3
3	GI-II	Assam	30-Dec-21 10:33	30-Dec-21 12:00	1:27:00	191	3	10.25%	0.15%	1864	1985	AGBPP GTG 1, 2, 3, 5 & 6 tripped at 10:33 hours on 30.12.21 due to Tripping of GBC, AGBPP STG 1 & 3 tripped at 10:35 hours on 30.12.21 due to Non-availability of GTG 1 & 3. Revision done from Block No. 49 on 30.12.21.	AGBPP GTG 1, 2, 3, 5 & 6 AGBPP STG 1 & 3