Details of Grid Events during the Month of June 2021 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	UTTAR PRADESH	01-Jun-2021 01:33	01-Jun-2021 03:32	1:59	0	0	0.000	0.000	31753	36236	400 KV Ataur-Muradnagar_1 (UP) Ckt-1 tripped on Y-N phase to earth fault. Fault was in Z-1 from both end, distance was 17.29km & fault current was 7.43kA from Muradnagar_1(UP) end. Line successfully autoreclosed and later tripped in reclaim time. At the same time, 400 KV Hapur(UP)-Muradnagar_1(UP) (PG) Ckt-1 tripped on R-N phase to earth fault. Fault distance was 6.6km and fault current was 18.18kA from Hapur end. As per PMU, R-N phase to earth fault followed by Y-N phase to earth fault is observed.	1) 400 KV Ataur-Muradnagar_1 (UP) Ckt-1 2) 400 KV Hapur(UP)-Muradnagar_1(UP) (PG) Ckt-1
2	GI-2	UTTAR PRADESH	01-Jun-2021 03:54	01-Jun-2021 05:54	2:00	0	0	0.000	0.000	38133	41880	400/220 kV 315 MVA ICT 1 & ICT 2 at Mathura(UP) and 400/220 kV 500 MVA ICT 3 at Mathura(UP) all tripped on over flux. As per PMU, R-Y-B three phase fault is observed.	1) 400/220 kV 315 MVA ICT 1 at Mathura(UP) 2) 400/220 kV 315 MVA ICT 2 at Mathura(UP) 3) 400/220 kV 500 MVA ICT 3 at Mathura(UP)
3	GI-2	UTTAR PRADESH	01-Jun-2021 03:59	01-Jun-2021 07:05	3:06	0	0	0.000	0.000	28143	31714	400KV Bus 1 at Muradnagar_1(UP), 400 KV Aligarh-Muradnagar_1 (UP) Ckt-1 & 400/220 kV 315 MVA ICT 3 at Muradnagar_1(UP) all tripped on LBB operation of 400kV Aligarh-Muradnagar_1 Ckt-1 which was connected to Bus-1. At 02:26Hrs, 400kV Aligarh-Muradnagar_1 Ckt-1 tripped from Muradnagar end only due to Over voltage. Bus bar relay of 400kV Aligarh-Muradnagar_1 Ckt-1 at Muradnagar_1(UP) was reading 245A for more than 200ms (current setting is I>200A with delay of 200ms). Hence LBB of 400kV Aligarh-Muradnagar_1 Ckt-1 operated and elements connected to Bus 1 tripped. As per PMU, R-Y-B three phase to earth fault is observed with delayed clearance in 1000ms observed.	1) 400KV Bus 1 at Muradnagar_1(UP) 2) 400/220 kV 315 MVA ICT 3 at Muradnagar_1(UP) 3) 400 KV Aligarh-Muradnagar_1 (UP) Ckt-1
4	GD-1	HARYANA	03-Jun-2021 11:02	03-Jun-2021 12:50	1:48	0	55	0.000	0.116	37803	47264	220 KV Hissar(PG)-Hissar IA(HV) (PG) Ckt-1 & Ckt-2, 220kV Hissar IA- Hissar BBMB ckt 1 & Ckt-2, 220kV Hissar IA-Masudpur ckt 1 & Ckt-2 and 220kV Hissar IA- Narwana ckt all tripped on bus bar protection operation due to flashover in Bus-2 isolator of 220kV Hissr IA-Hissar (BB) ckt-2 during transfer of lines from Bus-1 to Bus-2 for taking shutdown of Bus-1 at Hissar IA(HV) As per PMU, B-N phase to earth fault is observed. As per SCADA, load loss of approx. 55MW is observed.	1) 220 KV Hissar(PG)-Hissar IA(HV) (PG) Ckt-1 2) 220 KV Hissar(PG)-Hissar IA(HV) (PG) Ckt-2
5	GD-1	NEW DELHI	04-Jun-2021 17:37	05-Jun-2021 07:18	13:41	0	194	0.000	0.444	33599	43721	220 KV Mandola(PG)-Gopalpur(DTL) (DTL) Ckt-1 tripped on B-N phase to earth fault. Fault was in Z-2 (24.72km) and fault current was 8.107kA. At the same time, 220 KV Mandola(PG)-Gopalpur(DTL) (DTL) Ckt-2 tripped on R-N phase to earth fault. Fault was in Z-2(23.35km) and fault current was 8.44kA. Lines tripped on differential protection operation. As per PMU, R-N & B-N phase to earth fault with delayed clearance in 400ms is observed. As per SCADA, load loss of approx. 194MW is observed.	1) 220 KV Mandola(PG)-Gopalpur(DTL) (DTL) Ckt-1 2) 220 KV Mandola(PG)-Gopalpur(DTL) (DTL) Ckt-2
6	GI-2	HIMACHAL PRADESH	08-Jun-2021 11:36	08-Jun-2021 14:32	2:56	0	0	0.000	0.000	44808	56888	400 KV Gumma (HP) - Bus 2, 400 KV Gumma (HP)-Panchkula(PG) (PG) Ckt-2, 400 KV Nathpa Jhakri(SJ)-Gumma (HP) (PG) Ckt-2 & 400/220 kV 315 MVA ICT 1 at Gumma (HP) all tripped on Bus Bar protection of Bus 2 at 400kV Gumma. Due to low SF6 gas pressure in BB-2 VT compartment, SF6 gar pressure low level-2 initiated bus bar operation. As per PMU, no fault is observed. As 400kV Bus-1 at Gumma(HP) was already in shutdown so bus bar operation of Bus 2 lead to tripping of both line.	1) 400/220 kV 315 MVA ICT 1 at Gumma (HP) 2) 400 KV Gumma (HP)-Panchkula(PG) (PG) Ckt-2 3) 400 KV Gumma (HP) - Bus 2 4) 400 KV Nathpa Jhakri(SJ)-Gumma (HP) (PG) Ckt-2
7	GD-1	J & K	08-Jun-2021 13:15	08-Jun-2021 14:09	0:54	0	550	0.000	0.989	45563	55615	220 KV Amargarh(NRSS XXIX)-Ziankote(JK) (PDD JK) Ckt-1 tripped on Y-B phase to phase fault. Fault distance was 32.84km and fault current was Iy 2.39kA & Ib 2.79kA from Amargarh end. At the same time, 220 KV Wagoora(PG)-Ziankote(JK) (PDD JK) Ckt-1 & Ckt-2 and 220 KV Amargarh(NRSS XXIX)-Ziankote(JK) (PDD JK) Ckt-2 tripped along with 220 KV Amargarh(NRSS XXIX)-Ziankote(JK) (PDD JK) Ckt-1. As per PMU, Y-B phase to phase fault with delayed clearance in 800ms is observed. As per SCADA, load loss of approx. 550MW is observed. As per PMU & SOE, it is observed that, 220 KV Amargarh(NRSS XXIX)-Ziankote(JK) (PDD JK) Ckt-2 tripped from Amargarh end only and after 700ms other lines also got tripped.	1) 220 KV Wagoora(PG)-Ziankote(JK) (PDD JK) Ckt-1 2) 220 KV Wagoora(PG)-Ziankote(JK) (PDD JK) Ckt-2 3) 220 KV Amargarh(NRSS XXIX)-Ziankote(JK) (PDD JK) Ckt-1 4) 220 KV Amargarh(NRSS XXIX)-Ziankote(JK) (PDD JK) Ckt-2
8	GD-1	UTTAR PRADESH	09-Jun-2021 05:38	09-Jun-2021 06:50	1:12	0	200	0.000	0.373	40749	53599	disc insulator string of R phase of Main Bus-2 got damaged and fell on run through of 500MVA ICT-I & 220kV Gorakhpur ckt-2, which led to the operation of 220kV Bus Bar Prorection. Due to 220kV Bus Bar Protection operation 400/220 kV 500 MVA ICT 1, 315MVA ICT 2 & 240MVA ICT 3 at Gorakhpur(UP) and all the 220kV lines emanating from 400kV Gorakhpur S/S were tripped. As per PMU, R-N phase to earth fault is observed. As per SCADA, load loss of approx. 200MW is observed.	1) 400/220 kV 315 MVA ICT 2 at Gorakhpur(UP) 2) 400/220 kV 240 MVA ICT 3 at Gorakhpur(UP) 3) 400/220 kV 500 MVA ICT 1 at Gorakhpur(UP)
9	GD-1	HIMACHAL PRADESH	10-Jun-2021 17:35	10-Jun-2021 18:11	0:36	200	0	0.461	0.000	43347	55630	220 KV AD hydro(AD)-Nallagarh(PG) (ADHPL) Ckt-1 & 220 KV Phozal(HP)-Nallagarh(PG) (ADHPL) Ckt-1 tripped on Y-B-N double phase to ground fault during inclement weather condition. Fault distance was 112.9km from AD Hydro end and fault current was Iy=0.89kA & Ib=1.4kA from Phozal end. At the same time, 220 KV AD hydro(AD)-Phozal(HP) (ADHPL) Ckt-1 tripped on under voltage and 96 MW AD hydro - UNIT 1 & UNIT 2 also tripped. As per PMU, Y-B phase to phase fault is observed. As per SCADA, generation loss of 200MW is observed at AD Hydro HEP.	1) 220 KV AD hydro(AD)-Nallagarh(PG) (ADHPL) Ckt-1 2) 220 KV AD hydro(AD)-Phozal(HP) (ADHPL) Ckt-1 3) 220 KV Phozal(HP)-Nallagarh(PG) (ADHPL) Ckt-1 4) 96 MW AD hydro - UNIT 1, 96 MW AD hydro - UNIT 2
10	GD-1	HIMACHAL PRADESH	10-Jun-2021 17:54	10-Jun-2021 19:42	1:48	560	0	1.319	0.000	42450	54980	400 KV Nathpa Jhakri(SJ)-Rampur HEP(SJ) (PG) Ckt-2 tripped on Y-N phase to earth fault. Fault distance was 8.8km and fault current was 5.315kA from Rampur end. Due to tripping of 400kV Nathpa Jhakri-Rampur ckt-2, SPS case-1 operated due to overloading of 400kV Nathpa Jhakri-Rampur ckt-1 and as per SPS case-1 action, 250 MW Nathpa-Jhakri HPS - UNIT 3, 68.67 MW Rampur HEP - UNIT 5 & 250MW Karcham Unit-2 tripped. As per PMU, Y-N phase to earth fault with delayed clearance in 480ms is observed. As per SCADA, generation loss of approx. MW is observed due to SPS operation in Nathpa Jhakri complex. As per the 1 sec SCADA data at NRLDC, it is observed that after tripping of 400kV Nathpa Jhakri-Rampur ckt-2 MW loading of 400kV Nathpa Jhakri-Rampur ckt-1 rose to 745MW (<850MW). Hence, SPS shouldn't have operated.	1) 68.67 MW Rampur HEP - UNIT 5 2) 400 KV Nathpa Jhakri(SJ)-Rampur HEP(SJ) (PG) Ckt-2 3) 250 MW Nathpa-Jhakri HPS - UNIT 3
11	GD-1	RAJASTHAN	11-Jun-2021 16:02	11-Jun-2021 18:19	2:17	1500	0	3.259	0.000	46026	57868	220kV Akal-Bhu ckt-1 & Ckt-2 both tripped due to snapping of B-ph jumper. 400MW wind generation loss occurred due to tripping of Akal-Bhu D/C and 800MW wind generation loss occur due to may be non compliance of LVRT. At the same time, 400kV Barmer-Jaisalmer-2 Ckt-1 & Ckt-2 tripped on overvoltage may be due to loss of wind generation. 300MW solar generation also tripped connected at 400/220kV Jaisalmer-2 during the voltage dip. As per PMU, R-Y-B three phase fault is observed with delayed clearance in 320ms. As per SCADA, solar & wing generation loss of 300MW & 1200MW respectively is observed.	1) 400 KV Jaisalmer-Barmer (RS) Ckt-1 2) 400 KV Jaisalmer-Barmer (RS) Ckt-2
12	GD-1	HIMACHAL PRADESH	12-Jun-2021 03:02	12-Jun-2021 17:03	14:01	270	0	0.692	0.000	39035	46326	400 KV Kala Amb(PKTL)-Wangto_GIS(HP) (HPPTCL) Ckt-1 tripped during bad weather condition. At 03:12 Hrs, 400 KV Wangto_GIS(HP)-Sorang(Greenko) (Greenko) Ckt-1 & 400 KV Kala Amb(PKTL)-Sorang(Greenko) (Greenko) Ckt-1 both tripped on R-N phase to earth fault. Again charging attempt was taken at 03:35 Hrs but 400 KV Karcham Wangtoo(JSW)-Wangto_GIS(HP) (HPPTCL) Ckt-2 & 400/220 kV 315 MVA ICT 1 at Wangto_GIS(HP) tripped on Bus bar differential of Bus 1 operated at Wangtoo_GIS(HP). Again at 05:25 Hrs, during charging of 315MVA ICT 1 again fault occurred which led to tripping of 400 KV Karcham Wangtoo(JSW)-Wangto_GIS(HP) (HPPTCL) Ckt-1, 400/220 kV 315 MVA ICT 2 at Wangto_GIS(HP) & 250MW Unit at Karcham Wangtoo(JSW). Later it was found that persistent fault was due SO2 impurity in Y-ph breaker compartment of Wangtoo-Kala Amb ckt at Wangtoo GIS. As per PMU, B-N fault followed by R-N fault at 03:12 Hrs and later Y-N fault at 03:35Hrs are observed. As per SCADA, generation loss of approx. 270MW is observed at Karcham Wangtoo(JSW)	1) 400 KV Kala Amb(PKTL)-Wangto_GIS(HP) (HPPTCL) Ckt-1 2) 400/220 kV 315 MVA ICT 1 at Wangto_GIS(HP) 3) 400 KV Karcham Wangtoo(JSW)-Wangto_GIS(HP) (HPPTCL) Ckt-2 4) 400 KV Karcham Wangtoo(JSW)-Wangto_GIS(HP) (HPPTCL) Ckt-1 5) 400/220 kV 315 MVA ICT 2 at Wangto_GIS(HP) 6) 400 KV Wangto_GIS(HP)-Sorang(Greenko) (Greenko) Ckt-1 7) 400 KV Kala Amb(PKTL)-Sorang(Greenko) (Greenko) Ckt-1

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	(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)		
13	GD-1	UTTRAKHAND	12-Jun-2021 04:36	12-Jun-2021 07:09	2:33	560	0	1.409	0.000	39731	51358	terminal connector of B-Phase of 765kV Koteshwar-Meerut-1 had broken led to the fault in system. Due to high resistive fault, Line tripped on directional backup earth fault protection however 765/400kV, 800MVA ICT-1,2,3 & 4 at Koteshwar end tripped on back up earth fault approx. 140ms before Meerut Ckt-1. Due to tripping of aforementioned lines and ICTs, two units of Koteshwar-TH & Tehri HEP each tripped. As per PMU, R-B phase to phase fault is observed with delayed clearance in 480ms. As per SCADA, generation loss of approx. 380MW at Tehri HEP & 180MW at Koteshwar HEP.	1) 400 KV Tehri(THDC)-Koteshwar(PG) (PG) Ckt-2 2) 400 KV Tehri(THDC)-Koteshwar(PG) (PG) Ckt-1 3) 765/400 kV 800 MVA ICT 4 at Koteshwar(PG) 4) 765/400 kV 800 MVA ICT 3 at Koteshwar(PG) 5) 765/400 kV 800 MVA ICT 1 at Koteshwar(PG) 6) 765 KV Koteshwar-Meerut (PG) Ckt-1 7) 765 KV Koteshwar(PG) - Bus 1
14	GD-1	J & K	16-Jun-2021 09:51	16-Jun-2021 10:46	0:55	0	360	0.000	0.685	40902	52575	During opening of 220kV Amargar-Ziankote Ckt-2 at 09:51 Hrs for approved planned shurdown, other three lines 220kV Amargar-Ziankote Ckt-1, 220kV Wagoora-Ziankote Ckt-1 & Ckt-2 all tripped on R-N phase to earth fault. Fault distance was 28.6km & fault current was 2.56kA from Wagoora(PG) end. As per PMU, R-N phase to earth fault with delayed clearance in 760ms is observed. As per SCADA, load loss of approx. 360MW is observed.	1) 220 KV Amargarh(NRSS XXIX)-Ziankote(JK) (PDD JK) Ckt-1 2) 220 KV Wagoora(PG)-Ziankote(JK) (PDD JK) Ckt-2 3) 220 KV Wagoora(PG)-Ziankote(JK) (PDD JK) Ckt-1
15	GI-2	RAJASTHAN	17-Jun-2021 01:25	17-Jun-2021 05:10	3:45	0	0	0.000	0.000	40685	56585	Y-N phase to earth fault occurred on 400kV Akal-Ramgarh CKt-1 & Ckt-2. 400kV Akal-Ramgarh ckt-1 tripped from both end but Ckt-2 didn't trip due to problem in DC supply to relay coil. As fault persisted, 400/220kV 315MVA ICT-1 & ICT-3 and 400/220kV 315MVA ICT-2 & ICT-4 tripped on back up earth fault protection operation. As per PMU, Y-N phase to earth fault with delayed clearance in 3880ms is observed. As per SOE, delayed tripping was observed at 400kV Ramgarh S/s too.	1) 400/220 kV 315 MVA ICT 2 at Akal(RS) 2) 400 KV Akal-Ramgarh (RS) Ckt-1 3) 400 KV Akal-Ramgarh (RS) Ckt-2 4) 400/220 kV 315 MVA ICT 3 at Akal(RS) 5) 400/220 kV 500 MVA ICT 4 at Akal(RS) 6) 400/220 kV 315 MVA ICT 1 at Akal(RS)
16	GI-2	RAJASTHAN	18-Jun-2021 17:05	18-Jun-2021 18:53	1:48	0	0	0.000	0.000	38693	51900	765 KV Bikaner(PG)-Ajmer(PG) (UNDEF) Ckt-1 & 765 KV Bhadla-Bikaner (PG) Ckt-1 both tripped on over voltage protection operation at 765kV Bikaner(PG) end and DT received at remote ends. As per PMU, no fault is observed and line to line voltage of 765kV Bikaner-Ajmer Ckt-1 is observed approx. 830-831kV for more than 5sec. Stage-1 over voltage setting of both the lines are 1.08pu (826kV with delay os 5sec)	1) 765 KV Bikaner(PG)-Ajmer(PG) (UNDEF) Ckt-1 2) 765 KV Bhadla-Bikaner (PG) Ckt-1
17	GD-1	RAJASTHAN	20-Jun-2021 18:26	20-Jun-2021 21:09	2:43	150	0	0.425	0.000	35324	45474	400 kV Chhabra(RVUN)-Kawai SCTPS(APR) (RS) Ckt-1 tripped due to 401 Tie Bay R phase CT blasted at Chhabra and 250 MW Chhabra TPS - UNIT 2 tripped on overall differential protection and GT overcurrent earth fault protection operation. At the same time, 400 kV Hindaun(RS)-Chhabra(RVUN) (RS) Ckt-1 also tripped. As per PMU, R-N phase to earth fault is observed. As per SCADA, generation loss of approx. 150MW is observed at Chhabra TPS.	1) 400 KV Chhabra(RVUN)-Kawai SCTPS(APR) (RS) Ckt-1 2) 400 KV Hindaun(RS)-Chhabra(RVUN) (RS) Ckt-1 3) 250 MW Chhabra TPS - UNIT 2
18	GD-1	UTTRAKHAND	21-Jun-2021 14:02	21-Jun-2021 14:54	0:52	95	0	0.218	0.000	43543	56973	220 KV Tanakpur(NH)-Sitarganj(PG) (PG) Ckt-1 tripped on B-N phase to earth fault, fault disance was 39.78km & fault current was 1.141kA from Sitarganj end & 3.194kA from Tankapur end. At the same time, 220 KV Tanakpur(NH)-CBGanj(UP) (PG) Ckt-1 also tripped on same fault from CB Ganj end only in Z-2 (105km) from CB Ganj end. Due to tripping of both lines, 31.42 MW Tanakpur HPS - UNIT 1 UNIT 2 & UNIT 3 all tripped on over frequency protection operation. As per PMU, B-N phase to earth fault with delayed clearance in 400ms is observed. As per SCADA, generation loss of approx. 95MW is observed at Tanakpur-NH. As per DR of Tanakpur end, it is observed that relay sensed fault in Z-1 even then CB openend in Z-2 time delay of around 350ms. 400kV Tankapur-CBGanj might have tripped from CB ganj end due to delayed clearance of fault from Tanakpur end.	1) 220 KV Tanakpur(NH)-Sitarganj(PG) (PG) Ckt-1 2) 31.4 MW Tanakpur HPS - UNIT 3 3) 220 KV Tanakpur(NH)-CBGanj(UP) (PG) Ckt-1 4) 31.42 MW Tanakpur HPS - UNIT 1 5) 31.4 MW Tanakpur HPS - UNIT 2
19	GD-1	PUNJAB	23-Jun-2021 21:21	23-Jun-2021 22:54	1:33	460	380	0.945	0.585	48691	65010	220 KV Kishenpur(PG)-Sarna(PS) (PG) Ckt-1 & Ckt-2, 220 KV Sarna(PS)-Dasuya(PS) (PG) Ckt-1 & Ckt-2, 220 KV RSD(PS)-Jessore(HP) (HPSEB) Ckt-1, 66MW Unit 1 & Unit 4 at Pong HEP, 150MW Unit 2, Unit 3 & Unit 4 at RSDPH all tripped on Y-N phase to earth fault. Fault was in 132kV network of Punjab. Fault distance was 103.6km from Kishenpur end. As per PMU, Y-N phase to earth fault. As per SCADA, load loss of approx. 380MW & generation loss of approx. 460MW at RSDPH & Pong HEP. In antecedent condition, 220 KV Kishenpur(PG)-Sarna(PS) (PG) Ckt-1 & Ckt-2, 220 KV Sarna(PS)-Dasuya(PS) (PG) Ckt-1 & Ckt-2, 220 KV RSD(PS)-Jessore(HP) (HPSEB) Ckt-1, 66MW Unit 1 & Unit 4 at Pong HEP, 150MW Unit 2, Unit 3 & Unit 4 at RSDPH carrying 78MW, 78MW, 35MW, 35MW, 5MW, 49MW, 49MW, 120MW, 122MW & 131MW respectively.	1) 220 KV RSD(PS)-Jessore(HP) (HPSEB) Ckt-1 2) 220 KV Sarna(PS)-Dasuya(PS) (PG) Ckt-2 3) 220 KV Kishenpur(PG)-Sarna(PS) (PG) Ckt-2 4) 220 KV Kishenpur(PG)-Sarna(PS) (PG) Ckt-1 5) 220 KV Sarna(PS)-Dasuya(PS) (PG) Ckt-1
20	GI-2	HARYANA	24-Jun-2021 12:36	24-Jun-2021 13:14	0:38	0	0	0.000	0.000	46844	58979	800 KV HVDC Kurukshetra(PG) Pole-1 & Pole-2 both tripped due to tripping of AC filter during taking in other filters. Bipole-1 tripped as minimum filter requirement didn't satisfied after tripping of filters. As per PMU, no fault is observed. In antecedent condition, 800 KV HVDC Kurukshetra(PG) Bipole 1 carrying 750MW.	1) 800 KV HVDC Kurukshetra(PG) Pole-2 2) 800 KV HVDC Kurukshetra(PG) Pole-1
21	GI-2	HARYANA	25-Jun-2021 14:21	25-Jun-2021 16:36	2:15	0	0	0.000	0.000	48517	61588	800 KV HVDC Kurukshetra(PG) Bipole-2 (Pole-3 & Pole-4) tripped on operation of VBE major fault in Pole-4 and DC differential fault protection operation in Pole-3. Fault occurred due to striking of lightening at Bipole 2 at Champa end. At the same time, 800 KV HVDC Kurukshetra(PG) Bipole-1 (Pole-1 & Pole-2) tripped on Category B protection operation during tripping of Pole-3 Pole-4. As per PMU, no fault is observed. In antecedent condition, 800 KV HVDC Kurukshetra(PG) Bipole 1 Bipole 2 carrying 750MW each.	1) 800 KV HVDC Kurukshetra(PG) Pole-1 2) 800 KV HVDC Kurukshetra(PG) Pole-2 3) 800 KV HVDC Kurukshetra(PG) Pole-4 4) 800 KV HVDC Kurukshetra(PG) Pole-3
22	GI-2	UTTAR PRADESH	29-Jun-2021 19:31	29-Jun-2021 21:19	1:48	0	0	0.000	0.000	49579	65414	400/220 kV 315 MVA ICT 2 at Obra_B(UP) tripped on differential protection operation of phase R-Y-B. Simultaneously, 400/220 kV 315 MVA ICT 2 & 400/220 kV 240 MVA ICT 3 at Obra_B(UP)both tripped on directional over current relay operation. After patrolling it was found that one conductor & insulator of B phase was damaged at Tower no. 2 just outside the 220kV side switch yard. As per PMU, B-N phase to earth fault is observed. In antecedent condition, 400/220 kV 315 MVA ICT 1 & ICT 2 at Obra_B(UP) carrying 187MW & 182MW respectively.	1) 400/220 kV 315 MVA ICT 2 at Obra_B(UP) 2) 400/220 kV 240 MVA ICT 3 at Obra_B(UP) 3) 400/220 kV 315 MVA ICT 1 at Obra_B(UP)
23	GD-1	PUNJAB	30-Jun-2021 06:00	30-Jun-2021 07:58	1:58	0	750	0.000	1.202	48480	62380	220 KV Amritsar(PG)-Khasa(PS) (PSTCL) Ckt-1 & Ckt-2, 220 KV Amritsar(PG)-Verpal(PS) (PSTCL) Ckt-1 & Ckt-2 and 400/220 kV 315 MVA ICT 2 at Amritsar(PG) all tripped during CT blast at Verpal(PSTCL). 400/220 kV 315 MVA ICT 2 at Amritsar(PG) tripped on backup Impedance protection operation, 220 KV Amritsar(PG)-Khasa(PS) (PSTCL) Ckt-1 tripped on directional earth fault protection operation. As per PMU, B-N phase to earth fault with delayed clearance in 720ms followed by Y-N phase to earth fault is observed. As per SCADA, load loss of approx. 750MW is observed in Punjab control area. In antecedent condition, 220 KV Amritsar(PG)-Khasa(PS) (PSTCL) Ckt-1 & Ckt-2, 220 KV Amritsar(PG)-Verpal(PS) (PSTCL) Ckt-1 & Ckt-2 and 400/220 kV 315 MVA ICT 2 at Amritsar(PG) carrying 131MW, 132MW, 121MW, 113MW & 130MW respectively.	1) 220 KV Amritsar(PG)-Verpal(PS) (PSTCL) Ckt-1 2) 400/220 kV 315 MVA ICT 2 at Amritsar(PG) 3) 220 KV Amritsar(PG)-Khasa(PS) (PSTCL) Ckt-1 4) 220 KV Amritsar(PG)-Khasa(PS) (PSTCL) Ckt-2 5)220 KV Amritsar(PG)-Verpal(PS) (PSTCL) Ckt-2
24	GI-2	RAJASTHAN	30-Jun-2021 16:42	30-Jun-2021 19:10	2:28	0	0	0.000	0.000	51192	64779	400 KV Bhilwara-Chittorgarh (RS) Ckt-1 & Ckt-2, 400 KV Bhilwara(RS)-Chhabra(RVUN) (RS) Ckt-1 tripped in Zone-2 from Chittorgarh and Chhabra end respectively. At the same time, 400 KV Chittorgarh(RS)-Chittorgarh(PG) (PG) Ckt-1 also tripped in Z-3 from Chittorgarh(PG) end only. As per PMU, Y-N phase to earth fault followed by B-N phase to earth fault with delayed clearance in 640ms is observed. In antecedent condition, 400 KV Bhilwara-Chittorgarh (RS) Ckt-1 & Ckt-2, 400 KV Bhilwara(RS)-Chhabra(RVUN) (RS) Ckt-1 carrying 72MW , 72MW, 214MW & 93MW respectively.	1) 400 KV Chittorgarh(RS)-Chittorgarh(PG) (PG) Ckt-1 2) 400 KV Bhilwara(RS)-Chhabra(RVUN) (RS) Ckt-1 3) 400 KV Bhilwara-Chittorgarh (RS) Ckt-1 4) 400 KV Bhilwara-Chittorgarh (RS) Ckt-2

Details of Grid Events during the Month of June 2021 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	GD-1	WR	01-Jun-21 20:15	01-Jun-21 21:07	0:52	-	131	-	0.29%	56443	44447	At 20:15 Hrs/01-06-21, All 220 kV lines connected to Osmanabad substation tripped on Busbar protection operation. 220 kV Barshi, 220kV Paranda, 132 kV Kallamb, 132 kV Bhoom, 132 kV Kharda affected due to the event.	Tripping of 1.220 kV Osmanabad- Parli(PG) 2.220 kV Osmanabad- Solapur2 3.220 kV Osmanabad- Barshi 4.220 kV Osmanabad- Paranda
2	GI-2	WR	04-Jun-21 23:16	05-Jun-21 02:31	3:15	-	-	-	-	57409	46400	At 23:16 Hrs/04-06-21, all the 400 kV elements connected to 400 kV Buses 1&2 at Asoj substation tripped on Bus bar protection operation due to Y-B fault in 400 kV Bus coupler bay. As reported by GETCO, on switchyard inspection, crow nest was found in Bus 2 B phase CVT gantry which is adjacent to B phase CT (Bus 2 side) of Bus coupler and aluminum conductor pieces were found nearer to 400 kV Bus coupler bay. As seen from the Bus bar DR attached in annexure, fault current in Y& B phase was 36.9 kA and the fault was cleared in 50 ms. All the lines expect 400 kV Vadodara 2 tripped at remote end on DT receipt. There was no load loss due to the event.	Tripping of 1.400 kV Asoj- Chorania 1&2 2.400 kV Asoj- Indore 1&2 3.400 kV Asoj- Wanakbori 4.400 kV Asoj- SSP 5.400 kV Asoj- Vadodara 2 6.400/220 kV Asoj ICTs 1,3&4
3	GD-1	WR	05-Jun-21 05:08	05-Jun-21 05:36	0:28	-	400	-	0.93%	54331	43018	At 05:08 Hrs, 220 kV Amarkantak-Siddhi tripped on Y-B fault. After this tripping 220 kV Birsinghpur-Rewa tripped on overcurrent protection operation. 220 kV Satna-Kotar was out of service due to tower collapse at locations 67-69 from 01-06-21. There was no generation at TONS due to Canal work. With these tripping, load connected to Rewa,Siddhi, Mauganj, Katra, Sagra, Rampur Niken, Mangawan, Deosar, Beohari affected.	Tripping of 1.220 kV Amarkantak-Siddhi 2.220 kV Birsinghpur- Rewa
4	GI-1	WR	06-Jun-21 01:41	06-Jun-21 03:18	1:37	256	-	0.46%	-	55242	44941	At 01:41 Hrs/06-06-21, 220 kV Bus 2 at OSP tripped on LBB protection operation of 220 kV Chhegaon.	Tripping of 1.220 kV OSP- Barwaha 2.220 kV OSP- Chhegaon 3.220 kV OSP- Khandwa 4.65 MW OSP Units 2,4,6&8
5	GD-1	WR	11-Jun-21 16:06	11-Jun-21 17:22	1:16	-	-	-	-	55690	46978	At 16:06 Hrs/11-06-21, all elements connected at 400kV Navsari Bus 1&2 tripped on bus bar protection operation. Tripping was due to operation of SF6 gas trip logic of 400 kV Kakrapar(3&4) 1 bay at Navsari. 220kV side of Navsari S/S remained intact. 400 kV DGEN became dead due to tripping of 400kV Navsari-DGEN D/C. There was no generation at DGEN at the time of tripping. As intimated by PGCIL, faulty contacts in the density monitor of bus side common compartment (G9) of 400 kV Kakrapar(3&4) 1 bay replaced.	Tripping of 1.400 kV Navsari- Magarwada 1&2 2.400 kV Navsari- Kakrapar(3&4) 1&2 3.400 kV Navsari- Gandhar 4.400 kV Navsari-Vav 5.400 kV Navsari-DGEN 1&2 6.400/220 kV Navsari ICTs 1,2&3
6	GI-2	WR	12-Jun-21 01:30	12-Jun-21 02:15	0:45	410	-	0.77%	-	52946	43936	At 01:30 Hrs/12-06-21, 400 kV ISP Bus 1 and all the connected elements tripped on LBB operation of ISP Unit 4. There was a generation loss of 410 MW due to the event.	Tripping of 1.400 kV Indirasagar- Nagda 1 2.400 kV Indirasagar- Indore 1 3.125 MW ISP Units 1,2,3&4
7	GD-1	WR	15-Jun-21 18:22	15-Jun-21 21:30	3:08	600	-	1.15%	-	52079	45215	At 18:22 Hrs/15-06-21, Y phase CVT jumper of 400 kV Warora-Chandrapur ckt 2 opened at 400 kV warora(MH) and created R-Y phase fault. As informed by MSETCL, Distance protection was blocked due to the non-availability of Y phase voltage, as CVT jumper got broken. Other than 400 kV Warora(MH)-IEPL, All the lines connected to Warora(MH) tripped on Zone 2 Distance protection operation from remote end. 400 kV IEPL-Warora(MH) did not trip from IEPL end as there was no fault infeed from IEPL end. 400 kV Warora(MH) Buses 1&2 and 400/220 kV Warora(MH) ICTs 1&2 (normally ICTs remain idle charged from 400 kV side) de-energized after tripping of all other elements. As per PMU, fault persisted for around 560 msec. 300 MW Dhariwal Units 1&2 tripped on Voltage controlled Over Current protection. 400 kV Warora(MH) and 400 IEPL substations went dark after these trippings. There was a generation loss of around 600 MW due to the event.	Tripping of 1.400 kV Warora(MH)- Chandrapur 1&2 2.400 kV Warora(MH)- Tirora 1&2 3.400 kV Warora(MH)- IEPL 4.400 kV Warora(MH)- Wardha 5.300 MW Dhariwal STU Unit 1 6.300 MW Dhariwal CTU Unit 2
8	GI-1	WR	16-Jun-21 09:31	16-Jun-21 09:35	0:04	-	150	-	0.31%	56640	47694	At 09:31 Hrs/16-06-21, 220 kV Amona – Ponda line 1 tripped on R-Y-B three phase fault from both ends and 220 kV Mapusa – Ponda line tripped on R-E fault from Ponda end only. During the tripping bus coupler connecting 220 kV Ponda Bus 1&2 was in open condition and Bus 1 was supplied through 220 kV Mapusa – Ponda line, therefore 220kV Bus-I at Ponda S/S became dead.	Tripping of 1.220 kV Amona-Ponda 1 2.220 kV Mapusa-Ponda

Details of Grid Events during the Month of June 2021 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)		
9	GD-1	WR	17-Jun-21 15:25	17-Jun-21 15:55	0:30	-	150	-	0.32%	52966	46417	At 15:25 Hrs/17-06-2021, 220KV Bhachau- Lalpar and 220KV Bhachau- Morbi lines tripped on B-E fault. Along with these, 220KV Morbi lalpar line also tripped (No indication). This led to total blackout at 220 kV Lalpar s/s. As intimated by GETCO, 220kV Bhachau - Lalpar & 220kV Bhachau - Morbi tower collapsed at Loc No. 30 to33.	Tripping of 1.220 kV Bhachau-Lalpar 2.220 kV Bhachau- Morbi 3.220 kV Morbi- Lalpar
10	GD-1	WR	19-Jun-21 17:06	19-Jun-21 17:36	0:30	72	-	0.15%	-	48558	41394	At 17:06 Hrs/19-06-2021, 220KV Bhuj-Dayapar 2 tripped on LBB protection operation during "Breaker mechanism and Relay Testing work" of 220/33kV Dayapar ICT-2. There was a generation loss of 72 MW due to loss of evacuation path.	Tripping of 1.220 kV Bhuj-Dayapar 2
11	GI-1	WR	23-Jun-21 22:30	24-Jun-21 01:24	2:54	-	-	-	-	58046	45465	At 22:30 Hrs/23-06-21, 220 kV Khandwa Bus 2 and all the connected elements tripped on Bus bar protection operation due to failure of supporting insulator of Bus 2 side B phase isolator.	Tripping of 1.220 kV Khandwa- Chhegaon 2 2.220 kV Khandwa- Chhanera 2 3.220 kV Khandwa- Neepnagar 1 4.400/220 kV Khandwa ICTs 1&2
12	GI-1	WR	24-Jun-21 05:17	24-Jun-21 13:46	8:29	-	-	-	-	53721	42378	At 05:17 Hrs/24-06-21, 220 kV Dehgam Bus 1 and all connected elements tripped on Busbar protection operation due to problem in Busbar relay. There was no load loss due to the event.	Tripping of 1.220 kV Dehgam- Ranasan 1 2.220 kV Dehgam- Khanpur 1 3.400/220 kV Dehgam ICTs 1&2
13	GI-2	WR	25-Jun-21 14:21	25-Jun-21 16:35	2:14	-	-	-	-	55305	46456	At 14:21 Hrs/25-06-21,800 kV Champa-Kurukshetra Poles 3&4 blocked due to Poles 3&4 HVDC control system lanes becoming unavailable. As reported by PGCIL, heavy lightning strike occured at champa end during this event. Pole 1&2 blocked on CAT B protection operation due to isolation failure of Poles 3&4. Prior to the event, the total power flow in all poles was 1500 MW.	Tripping of 1.800 kV Champa-Kurukshetra Poles 1,2,3&4

Details of Grid Events during the Month of June 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	01-06-2021 11:56	01-06-2021 12:37	00:41	0	80	0.00%	0.44%	21591	18116	220 kV Chandauti-Sonenagar D/C tripped at 11:56 hrs on 01 - 06 - 2021 leading to total power failure at 220/132 kV Sonenagar (BSPTCL) and radially connected 132 kV substations.	220 kV Chandauti-Sonenagar D/C
2	GD-1	Barauni	01-06-2021 17:03	01-06-2021 17:55	00:52	133	133	0.56%	0.88%	23630	15199	On 01-06-2021 at 17:12 hrs 220 kV Hazipur – BTPS ckt- 1, 220 kV Mokama – BTPS 2, 220 kV BTPS-Begusarai D/C, 220 kV Begusarai – Purnea(PG) ckt -I, 220 kV Begusarai Khagaria ckt -2, 220 kV Begusarai- New Samastipur (Ujiyarpur) D/C and 220 kV Mokama(BGCL)-Biharshariff D/C tripped resulting in total power failure at BTPS.	220 kV Hazipur – BTPS ckt- 1 220 kV Mokama – BTPS 2 220 kV BTPS-Begusarai D/C 220 kV Begusarai – Purnea(PG) ckt -I 220 kV Begusarai Khagaria ckt -2 220 kV Begusarai- New Samastipur (Ujiyarpur) D/C 220 kV Mokama(BGCL)-Biharshariff D/C
3	GD-1	Bihar sharif	01-06-2021 17:10	01-06-2021 18:20	01:10	0	180	0.00%	1.20%	13464	14962	At 17:10 hrs, all 220 kV lines, emanating from 220 kV Biharshariff (Bihar) tripped. It was reported that R phase CT at LV side of 400/220 kV ICT- 2 busted out resulting to tripping of all emanating lines. Total load loss was around 180 MW at Ekangasarai / Rajgir / Baripahari / Hatida / Harnaut / Barh / Nalanda in Bihar system. Entire load restored by 18:20 hrs.	400KV/220kV 315 MVA ICT 1 at Biharshariff 400KV/220kV 315 MVA ICT 2 at Biharshariff 400KV/220kV 315 MVA ICT 3 at Biharshariff 400KV/220kV 500 MVA ICT 4 at Biharshariff 220 kV Biharshariff-Fatwa D/C 220 kV Biharshariff-Khizisarai D/C 220kV-Tenughat- Biharshariff -1 220 kV Bus-1 & 2 at Biharshariff (BSPTCL)
4	GD-1	Sonenagar	07-06-2021 13:15	07-06-2021 13:52	00:37	0	120	0.00%	0.58%	24260	20767	220KV Chandauti –Sonenagar (BSEB) D/C tripped on Y-B fault at 13:15 hrs leading to total power failure at 220/132/33 kV Sonenagar in BSPTL system. Power was extended to Sonenagar through 220 kV Chandauti ckt1 at 13:52 hrs. All loads restored progressively by 14:57hrs.	220 kV Chandauti-Sonenagar D/C
5	GD-1	Hazipur	09-06-2021 20:46	09-06-2021 21:40	00:54	0	300	0.00%	1.38%	28461	21791	At 20:46 hrs blast occurred in Y-phase bus coupler CT at 220kV Hazipur S/S leading to operation of bus-bar protection and both bus becoming dead along with tripping of all outgoing lines emanating from S/S. Total load loss reported was 300 MW at Hazipur and nearby areas. Buses were charged via 220 kV Hazipur-BTPS-2 and 220kV Hazipur-Muzaffarpur -1 at 21:40 and 21:59 hrs respectively. By 22:40 hrs all loads was restored.	220 kV Hazipur-Muzaffarpur D/C 220 kV Hazipur-BTPS-2 220 kV Hazipur-Amnour D/C 132 kV Hazipur- Hazipur D/C
6	GD-1	Sonenagar	21-06-2021 11:15	21-06-2021 11:40	00:25	0	104	0.00%	0.60%	23611	17385	220KV Chandauti –Sonenagar (BSEB) D/C tripped on Y phase to earth fault at 11:15 hrs leading to total power failure at 220/132/33 kV Sonenagar in BSPTL system. 220 kV Bus # 2 at Sonenagar was energized at 11:31 hrs through 220 kV Chandauti - 1 feeder. All loads restored by 11:40 hrs.	220 kV Chandauti-Sonenagar D/C
7	GD-1	Sonenagar	24-06-2021 13:42	24-06-2021 14:02	00:20	0	80	0.00%	0.42%	23640	19175	220 kV Chandauti - Sonenagar - 1 was under shutdown. At 13:42 hrs, 220 kV Chandauti - Sonenagar - 2 tripped from Chanduati (PMTL) end resulting in total power failure at 220/132 KV G.S.S Sonenagar (new) end leading to load loss of 80 MW at S'Nagar & Aurangabad at Bihar system. Power supply to Japla was also interrupted as it was being fed from SoneNagar 132 kV side. 220 kV Chandauti - Sonenagar 2 was restored at 14:02 hrs. Japla power also restored at 14:54 hrs from Sonenagar.	220 kV Chandauti - Sonenagar - 2 132kV-Sonenagar-Japla-1
8	GD-1	Tashiding	25-06-2021 04:54	26-06-2021 17:49	36:55	90	0	0.35%	0.00%	25558	20110	220 kV Tashiding – Rangpo S/C and 220KV Tashiding-New Melli S/C tripped at 04:54 hrs on Y-B fault resulting in tripping of Tashiding unit # 1 and unit # 2 due to loss of evacuation path.	220 kV Tashiding – Rangpo S/C 220KV Tashiding-New Melli S/C
9	GD-1	Sonenagar	25-06-2021 16:04	25-06-2021 17:41	01:37	0	94	0.00%	0.51%	23353	18397	On 25-06-2021, 220 kV Chandauti – Sonenagar – 1 was under shutdown for maintenance since 10:07 hrs. 220 kV Chandauti – Sonenagar – 2 tripped at 16:04 hrs from Chandauti end only due to R phase to earth fault at 43 km from Chandauti. Due to obstruction in operation of main breaker at Chandauti end, LBB operated for Chandauti 220 kV bus 2. As a result, 220 kV main bus 2 at Chandauti along with elements connected to 220 kV bus 2 at Chandauti i.e. 400/220 kV 500 MVA ICT 3 at Chandauti and 220/132 kV 200 MVA ICT 1 & 2 at Chandauti also got tripped. 220 kV bus 2 at Chandauti was restored at 17:16 hrs.	220 kV Chandauti-Sonenagar-2 220 kV bus 2 at Chandauti 220/132 kV 200 MVA ICT 1 & 2 at Chandauti 400/220 kV 500 MVA ICT 3 at Chandauti
10	GD-1	Sonenagar	30-06-2021 19:13	30-06-2021 19:30	00:17	0	203	0.00%	0.94%	28208	21547	220 kV Chandauti - Sonenagar - 2 was under shutdown. At 19:13 hrs, 220 kV Chandauti - Sonenagar - 1 tripped from Sonenagar end only due to back up protection operation. As a result total power failure occurred at Sonenagar, Aurangabad, Japla, Kudra and nearby area.	220 kV Chandauti - Sonenagar - 1

Details of Grid Events during the Month of June 2021 in Southern 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	Loss of generation / loss of load during the Grid Event		% Loss of generation / loss of load w.r.t Antecedent		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	04-Jun-21 17:56	04-Jun-21 19:02	1hr 6mins	0	340	0.00	0.01	28465	34613	Multiple Tripping in 400kV/220kV Hoody SS and Complete Outage of 220kV/66kV EDC SS and 220kV/66kV HAL SS of KPTCL: As per the report submitted, triggering incident was tripping of 400/220kV Hoody ICT-2 due to maloperation of Y-phase OSR relay during heavy rain. At the same time, 400/220kV ICT-3 tripped due to temporary DC ground fault due to heavy rain. During this incident, 220kV Hoody HAL lines 1 & 2 were hand tripped which led to complete outage of 220kV/66kV HAL SS. Since 220/66kV EDC SS was radially fed from 220/66kV HAL SS, this further resulted in complete outage of 220kV/66kV EDC SS.	i.400/220kV Hoody ICT-2 ii.400/220kV Hoody ICT-3 iii. 220kV Hoody HSR iv. 220kV Hoody HAL LIne1 & 2 v. 220kV Hoody EPIP
2	GD-1	Telangana	08-Jun-21 15:45	08-Jun-21 16:27	42mins	0	0	0.00	0.00	38996	39631	Complete Outage of 220kV Pulichinthala Generating station of TSGENCO: During antecedent conditions, there was no generation at Pulichinthala. As per the report submitted, triggering incident was breaker failure at Unit-3. Immediately, LBB operated and all the elements connected to 220kV bus got tripped. since all the elements were connected to single bus during antecedent conditions, this resulted in complete outage of 220kV Pulichinthala generating station.	i. 220kV Seethapuram Pulichinthala ii. 220kV Chillakallu Pulichinthala
3	GD-1	Andhra pradesh	13-Jun-21 03:31	19-Jun-21 13:19	6 days 9hrs 48min	0	0	0.00	0.00	29367	31282	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.	i.400kV Kalikiri RYTPP Line -1
4	GD-1	Tamil Nadu	13-Jun-21 21:13	14-Jun-21 10:24	13hrs 11mins	188	0	0.01	0.00	33565	34084	Complete Outage of 220/33kV Betam Wind Energy : As per the report submitted, triggering incident was Y-N fault in 230kV TTGS Betam line. At TTGs end, carrier aided zone-2 protection operated, A/r operated and line got tripped due to persistent fault. At Betam end, line tripped on operation of Zone-1 distance protection. This resulted in complete outage of 230kV Betam Wind Energy due to tripping of only connected line.	i. 230kV TTGS Betam line
5	GD-1	Karnataka	18-Jun-21 10:50	18-Jun-21 11:44	54mins	496	100	0.01	0.00	42947	41476	Complete Outage of 220kV Lingapur Switching Station of KPTCL,220kV/110kV/33kV Kustagi, 220kV/110kV BMM, 220kV/110kV Halavarthy and 220kV/110kV Sindhanur.: During antecedent conditions, all elements were connected to 220kV Main bus and bus coupler was in open condition. It was intended to shift JVSL line 2 (Jindal) to reserve bus 1 since isolator flash over was noticed at Lingapur end. During that time, bus bar protection (BBP) of Main bus operated and all connected elements at 220kV Lingapur Switching Station got tripped resulting in the loss of wind evacuation at 220kV/110kV/33kV Kustagi, 220kV/110kV BMM, 220kV/110kV Halavarthy and 220kV/110kV Sindhanur.	i.220kV BTPS Lingapur ii.220kV Kushtagi Lingapur iii.220kV Sindhanur Lingapur iv. 220kV Guddadahalli Lingapur-1 v. 220kV Guddadahalli Lingapur-2 vi. 220kV BMM Lingapur vii. 220kV Halvarthy Lingapur Line-1 viii. 220kV JVSL Lingapur Line-1 and 2
6	GD-1	Andhra pradesh	20-Jun-21 03:00	22-Jun-21 21:32	2 days 18hrs 32mins	0	0	0.00	0.00	32388	35051	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.	i. 400kV Kalikiri RYTPP Line -1
7	GD-1	Telangana	24-Jun-21 19:25	25-Jun-21 00:10	4hrs 45min	0	0	0.00	0.00	36238	41435	Complete outage of 400kV/220kV Mamidipally SS of TSTRANSCO: AS per the report submitted, triggering incident was fire in B-Phase HV side LA stack of 400/220kV ICT-1. Because of this, all the ICTs aling with 400kV, 220kV feeders were handtripped as per the SLDC instructions. This resulted in complete outage of 400/220kV Mamidipally SS.	i. 400kV Mamidipally Khammam-1 ii. 400kV Mamidipally Khammam-2 iii. 400kV Mamidipally Maheswaram-1 iv. 400kV Mamidipally Maheswaram-2 v. 400kV Mamidipally Hyderabad vi. 400/220kV ICT-1, 2,3 and 4
8	GD-1	Kerala	26-Jun-21 02:44	26-Jun-21 03:04	20mins	0	270	0.00	0.01	36117	38863	Complete outage of 220kV/110kV Pothencode SS of KSEB: As per the report submitted, triggering incident was suspected to be insulator flashover at 220/110kV Transformer-3. Immediately, BBP operated and all the 220kV feeders and 220/110kV ICTs got tripped resulting in the complete outage of 220/110kV Pothencode SS.	i. 220kV Pothencode Trivandrum-1, 2, 3 and 4 ii. 220kV Pothencode Edamon-1 and 2 iii. 220kV Pothencode New Kattakada-1 and 2 iv. 220/110kV Transformer-1 and 2
9	GD-1	Telangana	28-Jun-21 12:57	28-Jun-21 13:44	47mins	0	12	0.00	0.00	36117	44079	Complete outage of 220kV/33kV Nagaram, 220/kV/11kV Shalivagu, 220/11kV pulakurthy, 220kV/11kV Gangaram SS, and 220kV/11kV Bheemganpur SS of TSTRANSCO: As per the report submitted, triggering incident was Y-phase CT blast in 220kV Nagaram Pulakurthy Line-2 at 220/33kV Nagaram SS. Immediately BBP operated and all the elements connected to 220kV Ngaram SS got tripped. 220kV/11kV Gangaram and 220kV/11kV Shalivagu are radially connected to 220kV/11kV BheemghanpurS/S which is further radially connected 220kV/11kV Pulakurthy SS. Since 220kV/11kV Pulakurthy SS is radially connected to 220kV/33kV Nagaram SS, tripping of 220kV Nagarm-Pulakurthy lines resulted in complete outage of 220kV/11kV Shalivagu, 220/11kV pulakurthy, 220kV/11kV Gangaram SS, 220kV/11kV Bheemganpur SS of TSTRANSCO.	i. 220kV Nagaram Pulakurthy 1 and 2 ii. 220kV Nagaram Warangal 1 and 2 iii. 220kV Nagaram Oglapur(PGCIL) 1 and 2 iv. 220kV Nagaram Manthani v. 220kV Nagaram RFCL

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						Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
1	GD-I	Khupi area of Arunachal Pradesh Power System	03-Jun-21 13:08	03-Jun-21 13:23	0:15:00	4.3	21	0.0	0.0	1942	2122	Khupi area of Arunachal Pradesh Power System was connected with the rest of NER Grid through 132 kV Balipara - Tenga line. At 13:08 Hrs on 03.06.2021, 132 kV Balipara - Tenga Line, 132 kV Tenga- Khupi Line and Unit 1 of Dikshi HEP tripped. Due to tripping of these elements, Khupi area of Arunachal Pradesh Power System were separated from the rest of NER Grid and subsequently collapsed due to load generation mismatch in this area.	132 kV Balipara - Tenga line, 132 kV Tenga-Khupi T/L & Dikshi HEP Unit 1
2	GD-I	Karong area of Manipur Power System	08-Jun-21 11:51	08-Jun-21 11:56	0:05:00	0	9	0.0	0.0	2168	1982	Karong area of Manipur Power System was connected with the rest of NER Grid through 132 kV Imphal (MSPCL) - Karong Line and 132 kV Karong - Kohima Line . At 11:51 Hrs on 08.06.2021, 132 kV Imphal (MSPCL) - Karong Line and 132 kV Karong - Kohima Line tripped. Due to tripping of these elements, Karong area of Manipur Power System was separated from the rest of NER Grid and subsequently collapsed due to no source in this area.	132 kV Imphal (MSPCL) - Karong Line 132 kV Karong - Kohima Line
3	GD-I	Daporijo area of Arunachal Pradesh Power System	09-Jun-21 10:56	09-Jun-21 11:28	0:32:00	0	21	0.0	0.0	1673	1723	Daporijo Area of Arunachal Pradesh Power system were connected with the rest of NER Grid through 132 kV Ziro- Daporijo Line. At 10:56 Hrs on 09.06.2021, 132 kV Ziro- Daporijo Line tripped. Due to tripping of this element, Daporijo area of Arunachal Pradesh were separated from the rest of NER Grid and subsequently collapsed due to no source in this area.	132 kV Ziro- Daporijo Line.
4	GD-I	Leshka Generating Station of Meghalaya Power System	09-Jun-21 15:50	09-Jun-21 15:59	0:09:00	124	0	0.1	0.0	1932	1550	Leshka Generating Station of Meghalaya Power System was connected with the rest of NER Grid through 132 kV Leshka-Khliehriat(MePTCL) D/C lines. At 15:50 Hrs OF 09.06.2021, Myndtu Leshka - Unit 2 & 3 and 132 kV Leshka-Khliehriat(MePTCL) D/C lines tripped. Due to tripping of these elements, Leshka Generating Station of Meghalaya Power System was separated from the rest of NER Grid and subsequently collapsed due to load generatiom mismatch in this area.	Myndtu Leshka - UNIT 2 & 3 and 132 kV Leshka-Khliehriat(MePTCL) D/C lines
5	GD-I	Pasighat,Roing, Tezu & Namsai Areas of Arunachal Power System	13-Jun-21 13:11	13-Jun-21 14:23	1:12:00	0	23	0.0	0.0	2046	2055	Pasighat,Roing,Tezu & Namsai Areas of Arunachal Power System was connected with the rest of NER Grid through 132 kV Along-Pasighat line. At 13:11 Hrs, 132 kV Along-Pasighat line tripped. Due to tripping of this element, Pasighat and radially connnected Roing, Tezu & Namsai area of Arunachal Power System was separated from the rest of NER Grid and subsequently collapsed due to no source available in these areas.	132 kV Along-Pasighat line
6	GD-I	Khupi area of Arunachal Pradesh Power System & Dikshi HEP	16-Jun-21 04:38	16-Jun-21 05:08	0:30:00	8	20	0.0	0.0	1733	2042	Khupi area of Arunachal Pradesh Power System & Dikshi HEP of Arunachal Pradesh Power System were connected with the rest of NER Grid through 132 kV Balipara - Tenga line. At 04:38 Hrs on 16.06.2021, 132 kV Balipara - Tenga line tripped. Due to tripping of this element, Khupi area of Arunachal Pradesh Power System & Dikshi HEP of Arunachal Pradesh Power System were separated from the rest of NER Grid and subsequently collapsed due to load generation mismatch in this area.	132 kV Balipara - Tenga line, 132 kV Tenga-Khupi Line & Dikshi HEP Unit 2
7	GD-I	Khupi area of Arunachal Pradesh Power System & Dikshi HEP	21-Jun-21 09:52	21-Jun-21 10:05	0:13:00	10	20	0.0	0.0	1672	2235	Khupi area of Arunachal Pradesh Power System & Dikshi HEP of Arunachal Pradesh Power System were connected with the rest of NER Grid through 132 kV Balipara - Tenga line. At 09:52 Hrs on 21.06.2021, 132 kV Balipara - Tenga line tripped. Due to tripping of this element, Khupi area of Arunachal Pradesh Power System & Dikshi HEP of Arunachal Pradesh Power System were separated from the rest of NER Grid and subsequently collapsed due to load generation mismatch in this area.	132 kV Balipara - Tenga line, 132 kV Tenga-Khupi Line & Dikshi HEP Unit 1 & 2
8	GD-I	Bokajan Area of Assam Power System	23-Jun-21 23:40	23-Jun-21 23:55	0:15:00	0	17	0.0	0.0	2641	2883	Bokajan area of Assam Power System was connected with the rest of NER Grid through 132 kV Bokajan - Dimapur(PG) & 132 kV Bokajan - Golaghat lines. At 23:40 Hrs on 23.06.2021, 132 kV Bokajan - Dimapur(PG) line & 132 kV Bokajan - Golaghat line tripped. Due to tripping of this element, Bokajan area of Assam Power System was separated from the rest of NER Grid and subsequently collapsed due to no source in this area.	132 kV Bokajan - Dimapur(PG) line & 132 kV Bokajan - Golaghat line

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						Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
9	GD-I	Rangia, Nalbari, Sipajhar, Kamalpur, Sishugram and part of the load of Bornagar Areas of Assam Power System	25-Jun-21 19:37	25-Jun-21 19:55	0:18:00	0	220	0.0	0.1	2950	3130	System were connected with the rest of NER Grid through 220 kV BTPS - Rangia 1 Line, 220 kV BTPS - Rangia 2 Line and 132 kV Motonga (Bhutan) - Rangia Line. 132 kV Nalbari- Dhaligaon line was kept under shutdown due to low loading capacity of 132 kV Nalbari- Dhaligaon line, 132 kV Rowta- Rangia Line and 132 kV Sipajhar-Rowta Line were kept under shutdown to avoid overloading of 132 kV Sonabil-Depota Line. At 19:37 Hrs on 25.06.2021, 100 MVA, 220/132 kV ICT 1 at Rangia, 100 MVA, 220/132 kV ICT 2 at Rangia & 132 kV Motonga (Bhutan) - Rangia Line tripped. Due to tripping of these elements, Rangia, Nalbari, Sipajhar, Kamalpur, Sishugram and part of the load of Bornagar Areas of Assam Power System were separated from the rest of NER Grid and subsequently collapsed due to no source in these areas.	100 MVA, 220/132 kV ICT 1 at Rangia, 100 MVA, 220/132 kV ICT 2 at Rangia & 132 kV Motonga (Bhutan) - Rangia Line.
10	GD-I	Ziro, Daporijo, Along, Pasighat, Roing, Tezu and Namsai areas of Arunachal Pradesh Power System	26-Jun-21 23:03	27-Jun-21 00:36	1:33:00	0	28	0.0	0.0	2341	2104	Ziro, Daporijo, Along, Pasighat, Roing, Tezu and Namsai areas of Arunachal Pradesh Power System are connected with rest of NER Grid through 132 kV Ranganadi - Ziro line. At 23:03 Hrs on 26.06.2021, 132 kV Ranganadi - Ziro line tripped. Due to tripping of this element, Ziro, Daporijo, Along, Pasighat, Roing, Tezu and Namsai areas of Arunachal Pradesh Power System were separated from rest of NER Grid and subsequently collapsed due to no source in these areas.	132 kV Ranganadi - Ziro Line
11	GD-I	Dhaligaon, Gossaigaon, Barnagar, BRPL and Jogighopa areas of Assam Power System	26-Jun-21 13:22	26-Jun-21 13:42	0:20:00	0	88	0.0	0.0	2493	2338	Dhaligaon, Gossaigaon, Barnagar, BRPL and Jogighopa areas of Assam Power System were connected to the rest of NER Grid through 132 kV BTPS - Dhaligaon D/C. 132 kV Gossaigaon - Gouripur line was kept opened to control overloading of 132 kV BTPS - Kokrajhar line. 132 kV Dhaligaon - Nalbari line was kept opened by Assam SLDC due to low loading capability of the line. 132 kV Barnagar Bus was segregated and loads fed radially via 132 kV Dhaligaon - Barnagar line and 132 kV Rangia - Barnagar line. At 13:22 Hrs on 26.06.2021, 132 kV BTPS - Dhaligaon D/C tripped. Due to tripping of these elements, Dhaligaon, Gossaigaon, Barnagar, BRPL and Jogighopa areas of Assam Power System were separated from the rest of NER Grid and subsequently collapsed due to no source in these areas.	132 kV BTPS Dhaligaon D/C
12	GD-I	Myndtu Leshka Area of Meghalaya Power System	26-Jun-21 17:42	26-Jun-21 17:52	0:10:00	124	0	0.0	0.0	2544	2311	Myndtu Leshka Area of Meghalaya Power System was connected to the rest of NER Grid through 132 kV Leshka - Khliehriat D/C. At 17:42 Hrs on 26.06.2021,132 kV Leshka - Khliehriat D/C tripped. Due to tripping of these elements, Myndtu Leshka Area of Meghalaya Power System consisting of 3 units of Leshka Generation were separated from the rest of NER Grid and subsequently collapsed due to loss of evacuation path.	132 kV Leshka - Khliehriat D/C
13	GD-I	Bokajan Area of Assam Power System	28-Jun-21 13:12	28-Jun-21 13:19	0:07:00	0	13	0.0	0.0	1767	1967	Bokajan area of Assam Power System was connected with the rest of NER Grid through 132 kV Bokajan - Dimapur(PG) line and 132 kV Bokajan - Golaghat line. At 13:12 Hrs on 28.06.2021, 132 kV Bokajan - Dimapur(PG) line and 132 kV Bokajan - Golaghat line tripped. Due to tripping of these elements, Bokajan Area of Assam Power System were separated from the rest of NER Grid and subsequently collapsed due to no source in this area.	132 kV Bokajan - Dimapur(PG) line and 132 kV Bokajan - Golaghat line
14	GD-I	Dhaligaon, Gossaigaon and part load of Bornagar areas of Assam Power System	29-Jun-21 04:20	29-Jun-21 05:07	0:47:00	0	40	0.0	0.0	1786	2120	Dhaligaon, Gossaigaon and part load of Bornagar areas of Assam Power System were connected with the rest of NER Grid through 132 kV BTPS-Dhaligaon 1 line and 132 kV BTPS-Dhaligaon 2 line. 132 kV Gossaigaon-Gauripur line was ideally charged from Gauripur end to avoid O/L of 132 kV BTPS-Kokrajhar and 132 kV Dhaligaon-Nalbari line was kept open by Assam SLDC due to low loading capability of the line At 04:20 Hrs on 29.06.2021, 132 kV BTPS-Dhaligaon 1 line & 132 kV BTPS-Dhaligaon 1 line tripped. Due to tripping of these elements, Dhaligaon, Gossaigaon and part load of Bornagar areas of Assam Power System were separated from the rest of NER Grid and subsequently collapsed due to no source in these areas.	132 kV BTPS-Dhaligaon 1 line and 132 kV BTPS-Dhaligaon 2 line
15	GI-II	Assam	13-Jun-21 14:06	13-Jun-21 15:16	1:10:00	131	0	0.1	0.0	2168	2127	AGBPP 2, 3, 4 & 8 tripped due to tripping of gas compressor-2 at 14:06 Hours on 13-06-21 . Revision done from Block No. 65 on 13-06-21.	AGBPP 2, 3, 4 & 8
16	GI-II	Assam	13-Jun-21 18:17	13-Jun-21 20:27	2:10:00	97	0	0.0	0.0	2593	2272	AGBPP 2, 4 & 8 tripped due to tripping of gas compressor-4 at 18:17 Hours on 13-06-21 . Revision done from Block No. 83 on 13-06-21.	AGBPP 2, 4 & 8
17	GI-I	Tripura	15-Jun-21 08:30	15-Jun-21 10:00	1:30:00	20	0	0.0	0.0	1871	2258	AGTCCPP Unit 5 tripped due to high exhaust steam pressure at 08:30 Hours on 15-06-21 . Revision done from Block No. 41 on 15-06-21.	AGTCCPP Unit 5

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						Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
18	GI-II	Assam	22-Jun-21 01:42	22-Jun-21 03:45	2:03:00	42	0	0.0	0.0	2310	1815	AGBPP Unit 4 tripped due to high exciter vibration at 01:42 Hours on 22-06-21 . Revision done from Block No. 16 on 22-06-21.	AGBPP Unit 4
19	GI-I	Tripura	22-Jun-21 12:13	22-Jun-21 14:00	1:47:00	27	0	0.0	0.0	2572	2411	AGTCCPP Unit 4 tripped due to problem in thermocouple at 12:13 Hours on 22-06-21 . Revision done from Block No. 57 on 22-06-21.	AGTCCPP Unit 4
20	GI-II	Arunachal Pradesh	28-Jun-21 19:58	28-Jun-21 21:30	1:32:00	133	0	0.1	0.0	2487	2982	Kameng Unit 2 tripped due to high LGB pad temperature at 19:58 Hours on 28-06-21 . Revision done from Block No. 87 on 28-06-21.	Kameng Unit 2
21	GI-I	Tripura	30-Jun-21 12:30	30-Jun-21 14:00	1:30:00	43	0	0.0	0.0	2572	2411	AGTCCPP Unit 1&2 tripped due to Main Steam Pressure Lowat 12:30 Hours on 30-06-21 . Revision done from Block No. 57 on 30-06-21.	AGTCCPP Unit 1 & 2