

## Details of Grid Events during the Month of May 2024 in Northern Region



Sl No.	Category of Grid Event (GI for GI-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 as % of 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	Rajasthan	01-05-2024 09:31	01-05-2024 12:11	02:40	244	0	0.439	0.000	55573	57450	<p>i) Generation of 220kV SBEP station evacuates through 220 KV Bhadla(PG) ESUCRL SL_BHD_PG (ESUCRL) (ESUCRL) Ckt. During antecedent condition, SBEP station was generating approx. 344MW (as per PMU).</p> <p>ii) As reported at 09:30hrs, 220 KV Bhadla(PG) ESUCRL SL_BHD_PG (ESUCRL) (ESUCRL) Ckt tripped from Bhadla(PG) end only on B-N phase to earth fault (fault sensed in zone-1 at Bhadla(PG) end) with fault current of 7.8kA and fault distance of 9.8km from Bhadla(PG) end.</p> <p>iii) As per SCADA, Y-N phase to earth fault is observed with delayed fault clearing time of 360ms (Phase sequence issue is observed at Bhadla(PG) end).</p>	<p>1) 220 KV Bhadla(PG) ESUCRL SL_BHD_PG (ESUCRL) (ESUCRL) Ckt</p>
2	GD-1	Punjab	04-05-2024 07:10	04-05-2024 09:20	02:10	0	90	0.000	0.158	47911	57078	<p>i) As reported at 07:10 hrs, 220kV side R-N CT of 220/132kV Auto T/F-1 at SamalPS tripped which created bus fault at both the 220kV buses at SamalPS.</p> <p>ii) Bus-bar protection is not available at SamalPS. Hence, all the 220kV lines connected to SamalPS tripped on zone-4 protection operation at SamalPS end and lines tripped from remote ends on zone-2 protection operation. From DR at SamalPS, it was observed that zone-4 operated after a delay of ~500ms.</p> <p>iii) Due to tripping of all the 220kV lines connected to SamalPS, complete blackout occurred at</p> <p>iv) As per PMU at Kishenpur(PG), R-N phase to earth fault with fault clearing time of 120ms followed by R-B phase to phase fault converted to R-Y phase to phase fault with delayed fault clearing time of 560ms is observed.</p> <p>v) As per SCADA, no change in demand is observed in Punjab control area. But as reported by SLDC Punjab, load loss of approx. 90MW occurred in Punjab Control Area.</p> <p>vi) As per SCADA, change in demand of approx. 40MW is observed in J&amp;K control area. But as reported by SLDC J&amp;K, no load loss occurred in J&amp;K Control Area.</p>	<p>1) 220 KV Samal(PS)-Dasuya(PS) (PG) Ckt-1</p> <p>2) 220 KV Samal(PS)-Dasuya(PS) (PG) Ckt-2</p> <p>3) 220 KV Samal(PS)-Udhampur(PD) (PD) Ckt</p> <p>4) 220 KV Samal(PS)-Hiranagar(PD) (PG) Ckt</p> <p>5) 220 KV Kishenpur(PG)-Samal(PS) (PG) Ckt-1</p> <p>6) 220 KV Kishenpur(PG)-Samal(PS) (PG) Ckt-2</p> <p>7) 220 KV Samal(PS)-Wadiala(PS) Ckt-1</p> <p>8) 220 KV Samal(PS)-Wadiala(PS) Ckt-2</p> <p>9) 220 KV Samal(PS)-Wadiala(PS) Ckt-3</p> <p>10) 220 KV Samal(PS)-Wadiala(PS) Ckt-4</p> <p>11) 220 KV Samal(PS)-RSDP(PS) Ckt-1</p> <p>12) 220 KV Samal(PS)-RSDP(PS) Ckt-2</p> <p>13) 220 KV Samal(PS)-RSDP(PS) Ckt-3</p> <p>14) 220 KV Samal(PS)-RSDP(PS) Ckt-4</p> <p>15) 220 KV Samal(PS)-Kullay Ckt</p>
3	GI-1	Punjab	05-05-2024 08:11	05-05-2024 09:30	01:19	615	0	1.220	0.000	50430	58722	<p>i) 220/132kV Rogar GGS(PS) has main and transfer bus scheme at 220kV level.</p> <p>ii) As per SCADA, during antecedent condition, 210 MW Guru Gobind Singh TPS (Rogar) - UNIT 3, 4 &amp; 6 were carrying approx. 186MW, 148MW &amp; 198 MW respectively. Unit-3, Unit-6, 220kV feeders to Kharar, Mohali, Bassi Pathana &amp; Gobindgarh ckt-2 &amp; 3 were connected to 220kV main bus section-III. Rest of the elements were connected to main bus section-I &amp; II.</p> <p>iii) As reported at 08:11 hrs, during the boiling up (due to boiler tube leakage) of Unit-4, blue phase pole lagged in opening of GT breaker which led to LBB operation. Due to LBB operation, all 220kV feeders (Gobindgarh ckt-2 &amp; 3, Bassi Pathana ckt, Kharar ckt, Mohali ckt) and Unit-6 tripped as Unit-4 was running on the same section (Section III).</p> <p>iv) Further, as reported, during the same time, due to tripping of 5-13 (exact reason yet to be shared) all allied auxiliaries of Unit-3 tripped causing tripping of Unit-3.</p> <p>v) As per PMU at Jalandhar(PG), no fault is observed in the system.</p> <p>vi) As per SCADA, generation loss of approx. 615MW occurred at Rogar GGS(PS).</p> <p>vii) As per SCADA, no load loss observed in Punjab control area.</p> <p>viii) As reported, corrective action has been taken and both the trip coils of blue phase of GT breaker of Unit-4 were replaced.</p>	<p>1) 220 MW Guru Gobind Singh TPS (Rogar) - UNIT 3</p> <p>2) 220 MW Guru Gobind Singh TPS (Rogar) - UNIT 4</p> <p>3) 220 MW Guru Gobind Singh TPS (Rogar) - UNIT 6</p> <p>4) 220kV GGS(PS) - Mohali(PS) ckt</p> <p>5) 220kV GGS(PS) - Kharar(PS) ckt</p> <p>6) 220kV GGS(PS) - Bassi Pathana(PS) ckt</p> <p>7) 220kV GGS(PS) - Gobindgarh(PS) ckt-2</p> <p>8) 220kV GGS(PS) - Gobindgarh(PS) ckt-3</p>
4	GD-1	Uttarakhand	06-05-2024 16:47	06-05-2024 17:30	00:43	0	13	0.000	0.021	55223	63163	<p>i) As reported, at 16:47 Hrs, 220 KV Pithoragarh-Jauljivi(PG) ckt-1 tripped during bad weather condition on R-N phase to earth fault with fault distance of ~17km from Pithoragarh end. A/N is kept off in the line as there is cable in some part of the line.</p> <p>ii) At the same time, 220kV Pithoragarh-Jauljivi ckt-2 also tripped from Jauljivi end only on maloperation of DDO relay. However, R-phase pole of ckt-2 Jauljivi end got stuck and didn't open. Due to unavailability of one phase, there was unbalance in system and 220/132kV ICT-1&amp;2 at Pithoragarh(PG) tripped on DEF protection.</p> <p>iii) With the tripping of 220/132kV ICT-1&amp;2, 132kV Pithoragarh(PG) Pithoragarh(PS) ckt and 132kV Pithoragarh(PG) Almora(PS) ckt became dead due to loss of supply.</p> <p>iv) 132kV Pithoragarh(PS) was radially connected to Pithoragarh(PG) hence, load of Pithoragarh(PS) affected which restored at 17:45hrs on revival of 220/132kV ICTs at Pithoragarh(PG).</p> <p>v) 220kV Almora have further connectivity from 132kV Bhowal (connected to 220/132kV Haldwani) and 132kV Rankilhet and Bageshwar (having small hydro at 132kV level). Hence, supply to 132kV Almora didn't affect during the event.</p> <p>vi) As per PMU, R-N phase to earth fault with fault clearing time of 80ms is observed.</p> <p>vii) As per SCADA, no load loss observed in Uttarakhand control area. However, 13MW load loss at Pithoragarh(PS) is reported by Uttarakhand SLDC.</p>	<p>1) 220 KV Pithoragarh-Jauljivi(PG) Ckt-1</p> <p>2) 220 KV Pithoragarh-Jauljivi(PG) Ckt-2</p> <p>3) 220/132 KV 100 MVA ICT-1 at Pithoragarh(PG)</p> <p>4) 220/132 KV 100 MVA ICT-2 at Pithoragarh(PG)</p>
5	GI-1	Himachal Pradesh	06-05-2024 06:18	06-05-2024 08:49	02:31	124	0	0.260	0.000	47693	60730	<p>i) During antecedent condition, 66MW Unit-1, 2 &amp; 3 at Pong HEP were running and generating approx. 59MW, 65MW and 65MW respectively (as per SCADA). 66MW Unit-4, 5 &amp; 6 at Pong HEP were not in service. Unit-1 &amp; 3, 220/66kV 40MVA Transformer and 220kV feeders to Barailal, Jalandhar ckt-1 and Dasuya ckt-1 were connected at 220kV Bus-1 and Unit-2 &amp; 220kV feeders to Jansar, Jalandhar ckt-2 and Dasuya ckt-2 were connected at 220kV Bus-2.</p> <p>ii) As reported, during the stopping process of 66MW Unit-1 (as per schedule change at Pong(BB)), blue phase pole of Unit-1 CB lagged in opening and couldn't open properly which caused failure in CB.</p> <p>iii) During the same time, LBB operated which led to tripping of all 220kV feeders (Barailal ckt, Jalandhar ckt-1 and Dasuya ckt-1), 66MW Unit-3 &amp; 220kV 40MVA ICT connected to Bus-1 and Bus-1 became dead.</p> <p>iv) As per PMU at Jalandhar(PG), no fault is observed in the system.</p> <p>v) As per SCADA, generation loss of approx. 124MW occurred at Pong(BB) HEP and no load loss is observed in HP control area.</p>	<p>1) 66 MW Pong HPS - UNIT 1</p> <p>2) 66 MW Pong HPS - UNIT 3</p> <p>3) 220 KV Barailal(H)-Pong(BB) (PG) Ckt</p> <p>4) 220 KV Pong(BB)-Dasuya(PS) (BB) Ckt-1</p> <p>5) 220 KV Jalandhar-Pong (BB) Ckt-1</p> <p>6) 220KV Bus 1 at Pong(BB)</p> <p>7) 220/66kV 40MVA ICT-1 at Pong(BB)</p>
6	GD-1	Uttarakhand	06-05-2024 16:59	06-05-2024 18:09	01:10	0	0	0.000	0.000	54673	62854	<p>i) 220kV Tehri(THDC) has double main bus scheme.</p> <p>ii) During antecedent condition, 250 MW TEHRI HPS - UNIT- 1, 2, 3 &amp; 4 were not in service. So, total generation at TEHRI HPS was 0 MW. Power flow from 400 KV Tehri(THDC)-Koteswar(PG) (PG) Ckt-1 &amp; Ckt-2 was also 0 MW.</p> <p>iii) As reported, at 16:59 hrs, Y-B phase to phase fault is observed at a distance of 3.7km from Tehri(THDC) end on 400kV Tehri(THDC)-Koteswar(PG)(PG) ckt-1. From Tehri(THDC) end, only 400kV Tehri(THDC)-Koteswar(PG)(PG) ckt-1 tripped however both ckt-1 &amp; 2 tripped from the Koteswar(PG) end.</p> <p>iv) As per DR of 400kV Tehri(THDC)-Koteswar(PG)(PG) ckt-1, directional E/F pick up is observed during Y-N phase to earth fault, however zone-1 operated at both ends after conversion of fault into Y-B phase to phase fault with fault current of I<sub>y</sub>=5.7kA, I<sub>b</sub>=5.11kA (from Tehri end) and I<sub>y</sub>=6.0kA, I<sub>b</sub>=5.11kA (from Koteswar end). Delayed fault clearing time of 880ms is observed.</p> <p>v) As per DR of 400kV Tehri(THDC)-Koteswar(PG)(PG) ckt-2, directional E/F pick up is observed during Y-N phase to earth fault, however zone-1 operated at Koteswar end after conversion of fault into Y-B phase to phase fault with fault current of I<sub>y</sub>=4.5kA and I<sub>b</sub>=3.8kA from Koteswar end. Delayed fault clearing time of 880ms is observed.</p> <p>vi) As per PMU at Koteswar(PG), Y-N phase to earth fault converted into Y-B phase to phase fault is observed with delayed fault clearing time of 880ms is observed.</p> <p>vii) As per SCADA, no load loss/generation loss is observed during the tripping event (there was no generation at Tehri HEP during the event).</p>	<p>1) 400 KV Tehri(THDC)-Koteswar(PG) (PG) Ckt-1</p> <p>2) 400 KV Tehri(THDC)-Koteswar(PG) (PG) Ckt-2</p>
7	GI-1	Punjab	07-05-2024 14:30	07-05-2024 19:10	04:40	500	100	0.830	0.150	60250	66629	<p>i) During antecedent condition, 220 KV Sultampur(PG)-Chahla Sahib(PS) Ckt, 220 KV Sultampur(PG)-Pantli(PS) Ckt and 220 KV Chahla Sahib(PS)-Pantli(PS) Ckt were not in service.</p> <p>ii) As reported, at 14:30 hrs, a piece of stray flexible conductor came within induction zone of 220 KV Sultampur(PS)-Goidwal TFS(PS) Ckt-2 as it fell on tower location no. 16 which led to tripping of this circuit with fault distance of 5km from Goidwal TFS end.</p> <p>iii) Distance Protection Relay (DPR) at Goidwal TFS end sensed the fault in zone-1 and line tripped immediately from Goidwal TFS end. But Distance Protection Relay at Sultampur end detected power swing scenario and due to PSD block of DPR for 2 seconds (de-blocking time) at Sultampur end, fault continued to feed through 220 KV Sultampur(PS)-Badshahpur(PS) Ckt, 220 KV Sultampur(PS)-Jamshar(PS) Ckt and 220 KV Sultampur(PS)-Goidwal TFS(PS) Ckt-1.</p> <p>iv) Badshahpur end DPR issued trip command in zone-3 after 800ms and fault feeding stopped from these ends. But fault feeding continued through 220 KV Sultampur(PS)-Goidwal TFS(PS) Ckt-1 as Goidwal TFS end DPR did not pick up the fault in zone-3.</p> <p>v) This led to tripping of 270 MW Goidwal(OVK) - UNIT 1 &amp; 2 on earth fault protection operation (S1 NIGT) after 1 sec.</p> <p>vi) As per PMU at Jamshar(PS), R-N phase to earth fault converted to 3-phase fault with delayed fault clearing time of 2120ms is observed.</p> <p>vii) As per SCADA, change in demand of approx. 100MW is observed in Punjab control area.</p> <p>viii) As reported by SLDC Punjab, generation loss of approx. 500MW occurred at Goidwal TFS(PS).</p>	<p>1) 220 KV Sultampur(PS)-Goidwal TFS(PS) Ckt-2</p> <p>2) 220 KV Sultampur(PS)-Badshahpur(PS) Ckt</p> <p>3) 220 KV Sultampur(PS)-Jamshar(PS) Ckt</p> <p>4) 270 MW Goidwal(OVK) - UNIT 1</p> <p>5) 270 MW Goidwal(OVK) - UNIT 2</p>
8	GD-1	Haryana	07-05-2024 11:16	07-05-2024 12:24	01:08	0	270	0.000	0.421	61025	64157	<p>i) 220/132/66kV Hissar(BB) S's has double main bus scheme at 220kV level.</p> <p>ii) During antecedent condition, all the 220kV feeders (Chirawa ckt, Jindal Steel ckt, Sangrur ckt-1 &amp; 2, Bhiwani ckt-1 &amp; 2, Hissar (A ckt-1 &amp; 2) and 220/132kV 100MVA ICT-1, 2 &amp; 3 were connected to 220kV Bus-1. 220kV Bus-2 was not in service.</p> <p>iii) As reported, at 11:16 hrs R-ph jumper of 220 KV Hissar-Sangrur (BB) Ckt-1 snapped from common point of 220kV bus isolator no. 223 &amp; 224 at Hissar(BB) S's which caused R-N phase to earth fault.</p> <p>iv) As reported, on this fault, Bus bar relay at 220kV Hissar(BB) didn't operate. 220 KV Hissar (BB) Hissar (AHV) (HV) Ckt-1 &amp; 2 tripped on Zone-4 from Hissar(BB) end and later all 220kV feeders (Chirawa ckt, Jindal Steel ckt, Sangrur ckt-1 &amp; 2, Bhiwani ckt-1 &amp; 2) tripped from the remote ends in Zone-2 protection operation.</p> <p>v) During the same time 220 KV Barnala-Sangrur(BB) Ckt also tripped (exact reason of tripping need to be shared).</p> <p>vi) As per DR of 220 KV Hissar(BB)-Hissar (AHV)(end) (BB) Ckt-1, R-N phase to earth fault (fault current I<sub>r</sub>=7.4kA) is observed in zone-4 with fault clearing time of 360ms.</p> <p>vii) As per DR of 220 KV Hissar-Sangrur(end) (BB) Ckt-1, R-N phase to earth fault converted into R-Y phase to phase fault (fault current I<sub>r</sub>=1.3kA, I<sub>b</sub>=1.3kA) is observed in zone-2 with fault clearing time of 560ms.</p> <p>viii) As reported, status of 220 KV Hissar-Sangrur (BB) Ckt-2 provided in the Bus bar relay settings were incorrect (status of isolator no. 227 &amp; 228 were incorrect). Due to this, false differential current generated in Bus Bar 2-2 caused current feature of relay picked up which led to blocking of Bus bar relay.</p> <p>ix) Due to tripping of all the elements connected to 220kV Bus-1 (220kV Bus-2 was not in service) at Hissar(BB), the complete 220/132/66kV Hissar(BB) S's became dead.</p> <p>x) As per PMU at Hissar(PG), R-N phase to earth fault with fault clearing time of 360ms (delayed) is observed.</p> <p>xi) As per SCADA, change in demand of approx. 150MW is observed in Haryana control area. But as reported by BBMB, load loss of 207MW occurred in Haryana control area.</p>	<p>1) 220 KV Hissar(BB)-Hissar (AHV) (HV) Ckt-1</p> <p>2) 220 KV Hissar(BB)-Hissar (AHV) (HV) Ckt-2</p> <p>3) 220 KV Bhiwani-Hissar (BB) Ckt-1</p> <p>4) 220 KV Bhiwani-Hissar (BB) Ckt-2</p> <p>5) 220 KV Hissar-Sangrur (BB) Ckt-1</p> <p>6) 220 KV Hissar-Sangrur (BB) Ckt-2</p> <p>7) 220 KV Hissar(BB)-Jindal Steel(HV) (HV) Ckt</p> <p>8) 220 KV Hissar(BB)-Chirawa(PS) (BB) Ckt</p> <p>9) 220 KV Barnala-Sangrur(BB) Ckt</p> <p>10) 220KV Bus 1 at Hissar(BB)</p>

### Details of Grid Events during the Month of May 2024 in Northern Region



Sl No.	Category of Grid Event (GI for GI-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 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)		
9	GI-2	Uttar Pradesh	07-05-2024 16:18	07-05-2024 16:45	00:27	0	185	0.000	0.281	56440	65748	<p>i)B2U/220/132kV Muzaffarnagar(UF) has double main and transfer bus scheme at 220kV level.</p> <p>ii)During antecedent condition, 400/220 KV 315 MVA ICT-3 &amp; 500 MVA ICT-4 at Muzaffarnagar(UF), 220/132kV 160MVA ICT-4 at Muzaffarnagar(UF), 220 KV Muzaffarnagar(UF)-Badhni Katan Ckt, 220 KV Muzaffarnagar(UF)-Jansath Ckt and 220 KV Muzaffarnagar(UF)-Khatauli Ckt were connected to 220kV Bus-1 at Muzaffarnagar(UF) and rest of the elements were connected to 220kV Bus-2 at Muzaffarnagar(UF).</p> <p>iii)As reported, at 16:18hrs, Y-ph of 220 KV Muzaffarnagar(UF) end of 220 KV Muzaffarnagar(UF)-Badhni Katan Ckt blasted which led to bus-bar protection operation at 220kV Bus-1 at Muzaffarnagar(UF).</p> <p>iv)Due to bus bar protection operation, all the elements connected to 220kV Bus-1 at Muzaffarnagar(UF) tripped and Bus-1 became dead.</p> <p>v)As per PMU at Muzaffarnagar(UF), Y-N phase to earth fault with fault clearing time of 130ms is observed.</p> <p>vi)As per SCADA, change in demand of approx. 185 MW is observed in UP control area.</p>	<p>1)220/220 KV 315 MVA ICT-3 at Muzaffarnagar(UF)</p> <p>2)220/220 KV 500 MVA ICT-4 at Muzaffarnagar(UF)</p> <p>3)220/132kV 160MVA ICT-4 at Muzaffarnagar(UF)</p> <p>4)220 KV Muzaffarnagar(UF)-Badhni Katan Ckt</p> <p>5)220 KV Muzaffarnagar(UF)-Jansath Ckt</p> <p>6)220 KV Muzaffarnagar(UF)-Khatauli Ckt</p>
10	GD-1	Himachal Pradesh	07-05-2024 16:17	07-05-2024 23:29	07:12	30	0	0.054	0.000	55751	65721	<p>i)Total generated power of Saini(HEP(H)), Parbat_2(NH) and parbat_3(NH) evacuates through 400 KV Parbat_2(NH)-Banala(PG) (PKTCL) Ckt and 400 KV Parbat_3(NH)-Banala(PG) (PKTCL) Ckt via 400 KV Parbat_2(NH)-Saini(PG) (PKTCL) Ckt and 400 KV Parbat_3(NH)-Saini(PG) (PKTCL) Ckt.</p> <p>ii)During antecedent condition, only 50MW Unit-1 at Saini(HEP(H)) was running (generating approx. ~30MW) and 50MW Unit-2 at Saini(HEP(H)), all four units (~4250MW) at Parbat_2(NH) and all four units (~4250MW) at Parbat_3(NH) were not in service.</p> <p>iii)As reported, at 16:17hrs, 400 KV Parbat_3(NH)-Saini(PG) (PKTCL) Ckt tripped on B-N phase to earth fault with fault distance of 1.808km from Saini end. From initial patrolling it was observed that a Fire Tree abutting approx. 30m fell from an uphill position outside the transmission line corridor. The tree weight resulted in simultaneous falling of cross arm of Tower Location No. 7 of 400 KV Parbat_3(NH)-Saini(PG) (PKTCL) Ckt as well as snapping of conductor leading to tripping of line.</p> <p>iv)As per DR of 400 KV Parbat_3(NH) (end)-Saini(PG) (PKTCL) Ckt, B-N phase to earth fault is observed with delayed fault clearance time of 400ms and fault current of 7.105KA from Parbat_3(NH) end. Fault was sensed in zone-2 from Parbat_3(NH). Due to non-receipt of carrier signal from remote end, three phase trip command issued after 22 time delay.</p> <p>v)As further reported, 400 KV Parbat_2(NH)-Saini(PG) (PKTCL) Ckt also tripped at the same time (exact reason of the same yet to be shared). As per DR (time sync issue observed), B-N phase to earth fault with fault current of 2.122KA from Parbat_2(NH) end is observed.</p> <p>vi)During the same time, 400 KV Parbat_2(NH)-Banala(PG) (PKTCL) Ckt also tripped from Parbat_2(NH) end only on B-N phase to earth fault with fault distance of 22.5km and fault current of 1.304KA from Banala(PG) end. As per DR, fault was sensed in zone-1 at Banala(PG) end and carrier sent to Parbat_2(NH) end and line successfully auto-reclosed from Banala(PG). But as reported by NTPC, fault was sensed in zone-2 at Parbat_2(NH) end and upon receipt of carrier signal from Banala(PG) B-phase CB opened. But reclosing command was not extended to B-phase CB after dead time, hence, line tripped from Parbat_2(NH) on operation of Pole discrepancy relay.</p> <p>vii)As per PMU at Banala(PG), B-N phase to earth fault is observed with delayed fault clearing time of 400ms.</p> <p>viii)As per SCADA, generation loss of approx. 30 MW at Saini(HEP(H)) is observed.</p>	<p>1)400 KV Parbat_2(NH)-Saini(PG) (PKTCL) Ckt</p> <p>2)400 KV Parbat_3(NH)-Saini(PG) (PKTCL) Ckt</p> <p>3)400 KV Parbat_2(NH)-Banala(PG) (PKTCL) Ckt</p> <p>4)500 MW Unit-1 at Saini(HEP(H))</p>
11	GD-1	Rajasthan	08-05-2024 12:18	08-05-2024 17:19	05:01	138	0	0.237	0.000	58188	63043	<p>i)Generation of 220kV ASER2PH(Phalodi) station evacuates through 220 KV Bhadra(PG)-ASER2PH(Phalodi) Ckt. During antecedent condition, ASER2PH(Phalodi) station was generating approx. 180MW (as per SCADA).</p> <p>ii)As reported, at 12:18hrs, 220 KV Bhadra(PG)-ASER2PH(Phalodi) Ckt tripped due to snapping of conductor at distance of 8.8km from Bhadra(PG) end (exact nature of protection operated yet to be shared).</p> <p>iii)As per PMU at Bhadra(PG), B-N phase to earth fault is observed with fault clearing time of 80ms.</p> <p>iv)As per SCADA, generation loss of approx. 138 MW is observed at ASER2PH(Phalodi).</p>	<p>1)220 KV Bhadra(PG)-ASER2PH(Phalodi) Ckt</p>
12	GI-2	Uttar Pradesh	09-05-2024 13:40	09-05-2024 21:49	08:09	860	0	1.424	0.000	60409	64571	<p>i)During antecedent condition, 500 MW Rihand STPS - UNIT 1 &amp; 2 were generating approx. 414MW &amp; 443 MW respectively.</p> <p>ii)As reported at 13:40 hrs, four running circulating water pumps pertaining to 500 MW Rihand STPS - UNIT 1 &amp; 2 tripped on Band screen (filter) high DP protection- 800 mmwc which led to tripping of 500 MW Rihand STPS - UNIT 1 &amp; 2.</p> <p>iii)Vegetation debris in cooling water intake channel was causing choking of Band screen(filter) of CW pumps. According to Protection philosophy implemented for auxiliary equipments at Rihand(NTPC), CW pump will trip on Band screen high DP protection-800 mmwc to save CW pumps.</p> <p>iv)As per PMU at Rihand(NTPC), no fault is observed in the system.</p> <p>v)As per SCADA, generation loss of approx. 860MW occurred at Rihand (NTPC).</p> <p>vi)As per SCADA, no load loss is observed in UP control area.</p> <p>vii)As further reported, an electrical action taken, multi-layer screen/ net was installed to prevent vegetation debris.</p>	<p>1)500 MW Rihand-1 STPS - UNIT 1</p> <p>2)500 MW Rihand-1 STPS - UNIT 2</p>
13	GI-2	Uttar Pradesh	09-05-2024 17:06	09-05-2024 19:49	02:43	585	0	1.085	0.000	53903	63512	<p>i)During antecedent condition, 200 MW Singrauli STPS - UNIT 1, 3 &amp; 5, 400 KV Singrauli(NT) Lucknow(PG) (PG) Ckt and 400 KV Singrauli(NT) Allahabad(PG) (PG) Ckt were connected to 400KV Bus 2 at Singrauli(NT). As per SCADA, 200 MW Singrauli STPS - UNIT 1, 3 &amp; 5 were generating approx. 187MW, 191MW &amp; 183 MW respectively.</p> <p>ii)As reported at 17:06 hrs, busbar protection operated at 400KV Bus-2 at Singrauli(NT) as due to bad weather condition wave trap fallen over current transformer which in turn created bus fault. Due to busbar protection operation, all the elements connected to Bus-2 tripped and Bus-2 became dead.</p> <p>iii)As per DR of 400 KV Singrauli(NT) Lucknow(PG) (PG) Ckt, Y-B phase to phase fault is observed with fault current of Iy=952A and Ib=1405A from Lucknow(PG) end; fault sensed in zone-2 at Lucknow(PG) end. However, line tripped on DT received at Lucknow(PG) end.</p> <p>iv)As per PMU at Singrauli(NT), Y-B phase to phase fault with fault clearing time of 80 ms is observed.</p> <p>v)As per SCADA, generation loss of approx. 585MW occurred at Singrauli (NTPC).</p> <p>vi)As per SCADA, no load loss is observed in UP control area.</p>	<p>1)200 MW Singrauli STPS - UNIT 1</p> <p>2)400 MW Singrauli STPS - UNIT 3</p> <p>3)200 MW Singrauli STPS - UNIT 5</p> <p>4)400 KV Singrauli(NT) Lucknow(PG) (PG) Ckt</p> <p>5)400 KV Singrauli(NT) Allahabad(PG) (PG) Ckt</p>
14	GI-2	Haryana	10-05-2024 19:35	10-05-2024 21:18	01:43	1072	0	2.109	0.000	50841	63360	<p>i)Generation of 600MW Unit-1 &amp; 2 at Khedar TPS (total ~1072MW) was evacuating through 400KV Khedar(HR)-Fatehabad(PG) ckt (carrying ~858MW), 400KV Khedar-Nuhiyawali(HR) ckt (carrying ~174MW) only.</p> <p>ii)At 19:35:24.255 hrs, B-N phase to earth fault occurred on 400KV Khedar-Nuhiyawali (HR) ckt. As per DR of 400KV Khedar-Nuhiyawali (HR) ckt, distance protection relay at both end sensed B-N fault in 2-1(Khedar end: I=1.15KA, 75ms), R-ph AR started from both ends.</p> <p>iii)At 19:35:24.291 hrs, as per DR of 400KV Khedar(HR)-Fatehabad(PG) ckt, distance protection relay at Khedar end sensed B-N fault in 2-1(Khedar end: Ib=1.1KA, 8.5km) and initiated A/R in B-ph at Khedar end. Fatehabad(PG) end distance protection relay didn't sense this B-N fault and no operation occurred at Fatehabad end.</p> <p>iv)At 19:35:24.758 hrs, as per DR of 400KV Khedar(HR)-Fatehabad(PG) ckt, distance protection relay at Khedar end initiated 3-ph tripping command and B &amp; Y ph pole also opened.</p> <p>v)As R-ph autoreclosing was also going on in 400KV Khedar-Nuhiyawali (HR) ckt at this time and all 3-ph pole of 400KV Khedar(HR)-Fatehabad(PG) ckt opened, all the power now started evacuating through B phase of 400KV Khedar-Nuhiyawali (HR) ckt. Current in Y &amp; B phase started increasing, it increased to ~2850A by 19:35:25.153 hrs.</p> <p>vi)At 19:35:25.376 hrs, R-ph pole of 400KV Khedar-Nuhiyawali (HR) ckt closed from both ends and line successfully autoreclosed.</p> <p>vii)At 19:35:25.421 hrs, all 3-ph pole at Khedar end of 400KV Khedar(HR)-Fatehabad(PG) ckt closed and line successfully autoreclosed.</p> <p>viii)At the same time, power swing also observed in DR of Units 1&amp;2 and evacuating lines.</p> <p>ix)At 19:35:25.944hrs, 600MW Unit-1 tripped on pole slip protection operation.</p> <p>x)At 19:35:25.974hrs, 600MW Unit-2 tripped on pole slip protection operation.</p> <p>xi)At 19:35:30.309 hrs and 19:35:30.350 hrs, over frequency protection also operated of Unit-1 &amp; 2 respectively.</p> <p>xii)600MW Unit-1 at Khedar TPS revived at 04:28hrs on 11th May 2024 and Unit-2 have been kept out for inspection purpose.</p>	<p>1)400KV Fatehabad(PG)-Nuhiyawali(HR) ckt</p> <p>2)400KV Khedar-Kirori (HR) ckt</p> <p>3)400KV Khedar-Kirori (HR) ckt</p> <p>4)400KV Khedar(HR)-Fatehabad(PG) ckt</p> <p>5)400KV Khedar-Nuhiyawali ckt</p> <p>6)600MW Unit-1 at Khedar (RSTP)</p> <p>7)600MW Unit-2 at Khedar (RSTP)</p>
15	GI-2	Haryana	10-05-2024 19:41	11-05-2024 02:24	06:43	0	0	0.000	0.000	50214	63513	<p>i)During antecedent condition, 800KV HVDC Champa-Kurukshetra was carrying total 3000MW power from Champa to Kurukshetra (Pole-1 to 1500MW, Pole-2 &amp; Pole-4: 750MW each). The weather condition at the time of incident was very severe accompanying thunderstorms &amp; very heavy lightning along with wind was prevailing at Champa.</p> <p>ii)As reported, the sequence of event is as follows:</p> <p>a. At 19:41:46.169 hrs, 800 KV HVDC Kurukshetra (PG) Pole-02 blocked from Champa end on activation of SSAD instability detection &amp; DC Undercurrent Protection. There was SSAD instability detected in Pole-2 Lane-1 which was the Active Lane. Then Lane Changeover from Lane-1 to Lane-2 as per Control Philosophy was facilitated by Pole-2 Control System. Again, DC Undercurrent Minor Fall alarm latched in Pole-2 &amp; eventually Pole-2 blocked on latching of DC Undercurrent Protection at Champa.</p> <p>b. At 19:41:50.576 hrs, 800 KV HVDC Kurukshetra (PG) Pole-04 also blocked due to on latching of T-Zone Protection. As heavy flashover was detected at the instance of tripping of Pole-2 &amp; Pole-4, there was noticeable increase in IdI (up to 3KA) in Pole-2 which was also seen by Pole-4 IdI &amp; IdI which generated T-Zone Protection operation in Pole-4 along with generation of CAT B alarm due to which Pole-4 got blocked.</p> <p>iii)As further reported, from logs it was observed that optical communication between Bipole 1 &amp; Bipole 2 got unhealthy. Due to unhealthy optical communication, abnormal values of Pole IdI current resulted in latching of T-zone protection. After re-inserting optical fibres in Bipole 1 lane 1 CIB-A optical communication got healthy.</p> <p>iv)As per SCADA, due to tripping of two poles (Pole-02 and Pole-04), power order reduced from 2900MW to 1980MW. But, as reported by POWERGRID, Pole Power was compensated in only one pole in service and power order reduced from 3000MW to 1500MW.</p> <p>v)As per PMU, fluctuation in voltage was observed.</p> <p>vi)As per SCADA, no change in demand is observed in Haryana control area.</p>	<p>1)800 KV HVDC Kurukshetra(PG) Pole-02</p> <p>2)800 KV HVDC Kurukshetra(PG) Pole-04</p>
16	GI-1	Jammu and Kashmir	10-05-2024 13:06	10-05-2024 18:10	05:04	0	130	0.000	0.196	62886	66490	<p>i)220/132kV Zankote S/1 have two buses at 220kV side i.e., main bus &amp; reserve bus.</p> <p>ii)During antecedent condition, 220kV Amargah(INDGRID)-Zankote(K) D/C (carrying 70MW each) was feeding Zankote load.</p> <p>iii)As reported, at 13:06 hrs, 220 KV Amargah(INDGRID)-Zankote(K) (PDD K) Ckt-1 tripped on R-Y phase to phase fault with fault current of I=r=2.11kA and I=y=2.36kA and fault distance of 1.745km from Zankote(K) end; fault sensed in zone-1 at Zankote(K) end. (Exact reason yet to be shared)</p> <p>iv)As further reported, at the same time, 220 KV Amargah(INDGRID)-Zankote(K) (PDD K) Ckt-2 also tripped on over-voltage protection operation.</p> <p>v)As per PMU at Amargah(INDGRID), R-Y phase to phase fault with fault clearing time of 120ms is observed.</p> <p>vi)As per SCADA, change in demand of approx. 130MW is observed in JK control area.</p>	<p>1)220 KV Amargah (INDGRID)-Zankote(K) (PDD K) Ckt-1</p> <p>2)220 KV Amargah (INDGRID)-Zankote(K) (PDD K) Ckt-2</p>

### Details of Grid Events during the Month of May 2024 in Northern Region



Sl No.	Category of Grid Event (GI for GI-2 to GI-5) 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 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)		
17	GI-2	Jammu and Kashmir	12-05-2024 07:26	12-05-2024 08:12	00:46	390	0	0.787	0.000	49537	55574	<p>During antecedent condition, 130MW Unit-1 &amp; 3 at Dulhasti HEP were running (generating approx. ~122MW ~131MW &amp; ~129MW respectively) and total generated power was evacuating through 400 kV Dulhasti(NH)-Kishanpur(PG) (PG) Ckt-1 only. 400 kV Dulhasti(NH)-Kishanpur(PG) (PG) Ckt-2 was not in service (planned shutdown since Jan, 2024).</p> <p>It/Rs reported, at 07:26hrs, 400 kV Dulhasti(NH)-Kishanpur(PG) (PG) Ckt-1 successfully auto-reclosed from both the ends and on transient R-N phase to earth fault. Fault was located in zone-1 and fault current was I<sub>r</sub>=1.82kA at Dulhasti(NH) end.</p> <p>Due to the opening of R phase pole of Ckt-1 the three phase currents of all the three running units got unbalanced that lead to flow of unbalanced current in the GT neutral. It/Rs further reported, all the three units got tripped on operation of three phase current monitoring protection.</p> <p>It/Rs per DR, 74CT (alarm relay) and 50/52N (non-directional earth fault relay) operated. 74CT operated after 1200ms which coincides with A/R dead time (as also confirmed from PMU).</p> <p>It/Rs per PMU at Kishanpur (PG), R-N phase to earth fault is observed with delayed fault clearing time of 120ms.</p> <p>Generation loss of approx. 375 MW at Dulhasti HEP (NH/PG) (as per SCADA). However, NH/PG reported generation loss of 300 MW at Dulhasti HEP (NH/PG).</p>	<p>130MW Unit-1 at Dulhasti HEP</p> <p>129MW Unit-2 at Dulhasti HEP</p> <p>131MW Unit-3 at Dulhasti HEP</p>
18	GI-1	Rajasthan	12-05-2024 12:44	12-05-2024 15:10	02:26	156	0	0.250	0.000	62430	61010	<p>Generation of 220kV Mahoba Solar(Adani) station reverts through 220 kV Bhabad(PG)-Mahoba Solar(Adani) Ckt which is connected to 220/230 kV 150 MVA Ckt 1 &amp; 2 at Mahoba Solar(Adani) carrying approx. 155MW and 152MW respectively. During antecedent condition, Mahoba Solar(Adani) station was generating approx. 307MW (as per SCADA).</p> <p>It/Rs reported, at 12:44hrs, 220/230 kV 150 MVA Ckt 1 at Mahoba Solar (Adani) tripped due to Y phase cable end ckt failure (exact nature of protection operated to be shared). On inspection it was found that fire caught in Y phase cable.</p> <p>It/Rs per PMU at Bhabad(PG), Y-N phase to earth fault is observed with fault clearing time of 120ms.</p> <p>It/Rs per SCADA, total generation loss of approx. 156 MW is observed at Mahoba Solar(Adani).</p>	<p>220/230 kV 150 MVA Ckt 1 at Mahoba Solar(Adani)</p>
19	GI-1	Himachal Pradesh	12-05-2024 03:40	12-05-2024 05:55	02:15	64	0	0.143	0.000	44636	56495	<p>During antecedent condition, 66MW Unit-1, 2 &amp; 3 at Pong HEP were running and generating approx. 58MW, 62MW and 64MW respectively (as per SCADA). 66MW Unit-4, 5 &amp; 6 at Pong HEP were not in service. Unit-1, 2 &amp; 3, 220/66kV 66MVA Transformer and 220kV feeders to Barsail, Jalandhar ckt-1 and Dasuya ckt-1 were connected at 220kV Bus-1 and Unit-2 &amp; 220kV feeders to Jessore, Jalandhar ckt-2 and Dasuya ckt-2 were connected at 220kV Bus-2.</p> <p>It/Rs reported, at 03:40 hrs, heavy sparking was observed on Y phase PT of 220kV Bus-2 at Pong(BB). Due to this sparking cables in trench caught fire.</p> <p>During the same time, bus bar protection operated which led to tripping of 220 kV feeders (Jessore ckt, Dasuya ckt-1, Jalandhar ckt-2), 66MW Unit-2 and Bus coupler between 220kV Bus-1 &amp; Bus-2 connected to Bus-2 and Bus-2 became dead.</p> <p>During the same time, 220/66kV 66MVA Transformer (connected to Bus-1) also tripped due to over current protection operation (exact reason yet to be shared).</p> <p>It/Rs per PMU at Jalandhar(PG), Y-N phase to earth fault is observed with fault clearing time of 120ms.</p> <p>It/Rs per SCADA, generation loss of approx. 62 MW at Pong HEP (BB) and no load loss is observed in HP control area. However, BMBB reported 64MW generation loss at Pong HEP.</p>	<p>1320 kV Jessore(PH/Pong(BB)) (PG) Ckt-2</p> <p>220/230 kV Pong(BB)-Dasuya(PG) (BB) Ckt-2</p> <p>1320kV Jalandhar-Pong (BB) Ckt-2</p> <p>4120kV Bus-2 at Pong(BB)</p> <p>586 MW Pong HEP - UNIT 2</p> <p>66/220/66kV 66MVA Ckt 1 at Pong(BB)</p>
20	GD-1	Uttar Pradesh	13-05-2024 17:27	13-05-2024 20:11	02:44	0	5	0.000	0.008	50404	62451	<p>During antecedent condition, load at 400kV Agra South(LUP) was approx. 100MW (was evacuating through 132kV feeders). Power incoming at Agra South(LUP) S/w was through 400 kV Agra Fatehabad-Agra South (LUP) Ckt (approx. 76MW) and 400 kV Agra South(LUP)-Firozabad(PFTL) (LUP) Ckt (approx. 24MW).</p> <p>It/Rs reported, at 17:27 hrs, during inclement weather condition, B-N phase phase to earth fault occurred. (Exact location of fault yet to be received).</p> <p>It/Rs to B-N phase to earth fault, both the lines 400kV Agra South-Agra Fatehabad (LUP) &amp; 400kV Agra South -Firozabad (LUP) tripped.</p> <p>It/Rs per DR of Firozabad end of 400 kV Agra South(LUP)-Firozabad(PFTL) (LUP) Ckt, B-N phase to earth fault is observed (I<sub>r</sub>=945A). Line tripped on zone-1 distance protection operation.</p> <p>It/Rs per DR of both ends of 400 kV Agra Fatehabad-Agra South (LUP) Ckt, B-N phase to earth fault is observed (I<sub>r</sub>=796A, I<sub>b</sub>=6.2kA from Agra South &amp; Agra Fatehabad end respectively). No A/R operation is observed from Agra Fatehabad end.</p> <p>It/Rs to tripping of both 400kV feeders connected to 400kV Agra South(LUP), Agra South(LUP) S/w lost its connectivity from grid and the complete 400/132kV Agra South(LUP) S/w became dead.</p> <p>It/Rs per PMU at Agra(PG), multiple B-N phase to earth faults are observed with fault clearing time of 80ms.</p> <p>It/Rs per SCADA, no load loss is observed in LUP control area. However, SDC-UP reported 5MW load loss at 132kV Kheragah S/w in LUP control area.</p>	<p>1300 kV Agra Fatehabad-Agra South (LUP) Ckt</p> <p>1300 kV Agra South(LUP)-Firozabad(PFTL) (LUP) Ckt</p>
21	GI-2	Rajasthan	13-05-2024 07:11	13-05-2024 08:46	01:35	0	136	0.000	0.218	53784	62451	<p>It/Rs reported, at 07:11hrs, B-N phase to earth fault occurred (exact location of fault yet to be received).</p> <p>It/Rs per DR of Bhabad(PG) end, 220 kV Bhabad(PG)-Bhabad(PG) (PG) Ckt-1 &amp; ckt-2 were carrying approx. 200 MW each.</p> <p>It/Rs per DR of Bhabad(PG) end, 220 kV Bhabad(PG)-Bhabad(PG) (PG) Ckt-1 &amp; 220 kV Bhabad(PG)-Kushkhera(RS) (RS) Ckt tripped from Bhabad(PG) end only on back up E/F protection operation. Line ender's trip from Bhabad end.</p> <p>It/Rs the same time, 400 kV Kheri (PKT(S)) Bhabad(PG) (PBT(S)) D/C, 400kV Bhabad-Neemrana (PG) Ckt-1, 400 kV Busi-Bhabad (PG) Ckt, 500 kV HVDC Bala-Bhabad (PG) D/C, 220 kV Neemrana(PG)-Neemrana(RS) (RS) Ckt-1 &amp; 220kV lines from Bhabad(PG) to Rewari(HV) (HV) D/C, HSIDC, Bawal(HV), Maulvi(HV) also tripped (exact reason for multiple elements tripping yet to be received).</p> <p>It/Rs per PMU at Bhabad(PG), at 07:11 hrs, B-N phase to earth fault with no A/R operation is observed with delayed fault clearing time of 1480ms.</p> <p>It/Rs per SCADA, change in demand of approx. 136MW in Rajasthan control area is observed.</p>	<p>1300 kV Kheri (PKT(S)) Bhabad(PG) (PBT(S)) Ckt-2</p> <p>1300 kV Kheri (PKT(S)) Bhabad(PG) (PBT(S)) Ckt-1</p> <p>400 kV Busi-Bhabad (PG) Ckt</p> <p>500 kV HVDC Bala-Bhabad (PG) Ckt-1</p> <p>6900 kV HVDC Bala-Bhabad (PG) Ckt-1</p> <p>1320 kV Bhabad(PG)-Bhabad(PG) (PG) Ckt-1</p> <p>1320 kV Bhabad(PG)-Rewari(HV) (HV) Ckt-1</p> <p>1320 kV Bhabad(PG)-Rewari(HV) (HV) Ckt-2</p> <p>1320 kV Bhabad(PG)-HSIDC Bawal(HV) (HV) D/C</p> <p>11200 kV Bhabad(PG)-Maulvi(HV) (HV) Ckt</p> <p>11200 kV Bhabad(PG)-Kushkhera(RS) (RS) Ckt</p> <p>1320 kV Neemrana(PG)-Neemrana(RS) (RS) Ckt-1</p>
22	GD-1	Uttarakhand	15-05-2024 11:29	15-05-2024 14:52	03:23	0	200	0.000	0.285	65685	70164	<p>It/Rs reported, at 11:29hrs, 220kV Rishikesh-IP Harrawala ckt tripped on B-N phase to earth fault. At lower location no. 115, 111kV line came in contact with the line due to loss of insulator. 220kV Rishikesh-IP Harrawala ckt was carrying 200MW so clearance issue due to loss is also suspected.</p> <p>It/Rs per PMU at Roorkee(PG), B-N phase to earth fault cleared within 120ms is observed.</p> <p>It/Rs to tripping of 220kV Rishikesh-IP Harrawala ckt, supply to 220/132kV Jhakra lost and S/w became dead.</p> <p>It/Rs per SCADA, change in demand of approx. 200MW is observed in Uttarakhand control area.</p> <p>It/Rs reported, PTEUL has communicated respective DISCOM to make the 11kV line underground.</p>	<p>1) 220kV Rishikesh-IP Harrawala ckt</p>
23	GI-1	Haryana	17-05-2024 16:21	17-05-2024 17:15	00:54	Data not available due to SCADA issue						<p>During antecedent condition, 500 kV HVDC Mundra-Mahinderghar(APL) bipole was carrying total ~1500MW.</p> <p>It/Rs reported, at 16:21 hrs, 500 kV HVDC Mundra-Mahinderghar(APL) bipole blocked due to RFC No AC Filter alarm raised at Mohinderghar end. After thorough investigation, it was observed that RCI changerover has been initiated from RCI 2 to RCI 1 ACTIVE and after the "RFS SET RANGE EXCEEDED" event triggered followed by RFC NO AC FILTER, which caused blocking of both the Poles.</p> <p>It/Rs per PMU at Mahinderghar(PG), no fault in system is observed, fluctuation voltage is observed.</p> <p>Due to blocking of both the poles of 500 kV HVDC Mundra-Mahinderghar(APL), there was power order reduction of ~1500MW. As per HVDC Mundra-Mahinderghar SPS, SPS case-3 would have operated and as per action in this case, load relief in UP, Haryana, Punjab, Rajasthan &amp; Delhi and generation relief at Mundra Stage-III is desired.</p> <p>Details of load relief not received from SDCs. Communication has been sent to all the SDCs to share the quantum of load generation referred in their respective control area due to SPS operation. SCADA data at NREC was not healthy during the event time.</p> <p>As per detail RCU log of Mahinderghar end, DTFC fail alarm is recorded except Dhanonda. Any communication related issue need to be rectified at the earliest to ensure proper SPS operation.</p> <p>Both RCI system was restarted and the system was normalized.</p>	<p>1300 kV HVDC Mahinderghar(APL) Pole-1</p> <p>1300 kV HVDC Mahinderghar(APL) Pole-1</p>
24	GD-1	Haryana	15-05-2024 23:12	16-05-2024 00:55	01:43	0	870	0.000	1.259	55540	69099	<p>It/Rs reported, at 23:12 hrs, 220 kV Mohana(HV)-Sonapat(PG) (HV/NPL) D/C, 220kV Mohana-Samalkha (HV) D/C and 220kV Mohana-Sampla (HV) D/C, Samalkha and Sampla are load center. Power source is through 220kV Sonapat only. Samalkha(HV) S/w had connectivity from grid through 220kV Mohana-Samalkha (HV) D/C only and 220kV Sampla is connected with 220kV Mohana and 400/220kV Kabulpur also.</p> <p>During antecedent condition, 220 kV Mohana(HV)-Sonapat(PG) (HV/NPL) D/C was carrying total ~300MW. Loading at 400/220 kV 315 MVA Ckt 1 &amp; 2 at Kabulpur(HV) was 282 MW &amp; 279 MW respectively.</p> <p>It/Rs reported, at 23:12 hrs, 220 kV Mohana(HV)-Sonapat(PG) (HV/NPL) D/C tripped. (Exact reason of tripping yet to be received).</p> <p>It/Rs per PMU at Samalkha(PG), no fault is observed.</p> <p>It/Rs the same time, 400/220 kV 315 MVA Ckt 1 &amp; 2 at Kabulpur(HV) also tripped.</p> <p>It/Rs is suspected that, after tripping of 220 kV Mohana(HV)-Sonapat(PG) (HV/NPL) D/C, loading of 220kV Sampla (HV) would have shifted to 400/220kV Kabulpur Ckts and 400/220 kV 315 MVA Ckt 1 &amp; 2 at Kabulpur(HV) tripped on overcurrent protection operation.</p> <p>It/Rs due to tripping of 220 kV Mohana(HV)-Sonapat(PG) (HV/NPL) D/C, 220/132kV Mohana(HV) S/w lost its connectivity from grid and the complete 220/132kV Mohana(HV) S/w became dead.</p> <p>It/Rs per SCADA, 870 MW load loss is observed in Haryana control area.</p>	<p>1320 kV Mohana(HV)-Sonapat(PG) (HV/NPL) Ckt-1</p> <p>1320 kV Mohana(HV)-Sonapat(PG) (HV/NPL) Ckt-2</p> <p>1300/220 kV 315 MVA Ckt 1 at Kabulpur(HV)</p> <p>400/220 kV 315 MVA Ckt 2 at Kabulpur(HV)</p>
25	GD-1	Uttarakhand	17-05-2024 17:21	17-05-2024 18:09	00:48	0	0	0.000	0.000	56219	67302	<p>It/Rs reported, at 17:21 hrs, 400kV Tehri(THDC)-Koteswar(PG) (PG) ckt-1 tripped on Y-B phase to phase fault. Fault distance was ~2.8km from Tehri(THDC) end. At the same time, 400kV Tehri(THDC)-Koteswar(PG) (PG) ckt-2 tripped from Koteswar(PG) end only.</p> <p>It/Rs per DR of Tehri end of 400kV Tehri(THDC)-Koteswar(PG) (PG) ckt-1, directional earth fault started followed by sensing Y-B fault in 2-1. Fault current was I<sub>r</sub>=1.9kA, I<sub>b</sub>=7.4kA. Total fault clearance time was ~760ms.</p> <p>It/Rs per DR of Tehri end of 400kV Tehri(THDC)-Koteswar(PG) (PG) ckt-2, distance protection sensed Y-B fault in 2-4, no tripping was initiated. Fault current was I<sub>r</sub>=4.8kA, I<sub>b</sub>=4.0kA.</p> <p>It/Rs per PMU at Koteswar(PG), Y-N phase to earth fault converted into Y-B phase to phase fault is observed with delayed fault clearance time of 760ms is observed.</p> <p>It/Rs per SCADA, no load loss/generation loss is observed during the tripping event (there was no generation at Tehri HEP during the event).</p>	<p>1300 kV Tehri(THDC)-Koteswar(PG) (PG) Ckt-1</p> <p>1300 kV Tehri(THDC)-Koteswar(PG) (PG) Ckt-2</p>



## Details of Grid Events during the Month of May 2024 in Northern Region



Sl No.	Category of Grid Event (GI for GI-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 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)		
34	GD-1	Uttar Pradesh	23-05-2024 03:28	23-05-2024 04:49	01:21	0	245	0.000	0.341	53019	71891	<p>↳Buring antecedent condition, 220KV/132/33KV Kanpur Naubasta(UP) has single main and transfer bus scheme at both 220KV and 132KV level.</p> <p>↳Buring antecedent condition, MW power flows of 220/132KV 100MVA ICT-1 &amp; 2 at Kanpur Naubasta(UP) were approx. 83MW and 83MW respectively as per SCADA.</p> <p>↳Buring reported, at 03:28hrs, B-N phase to earth fault occurred on 220 KV Kanpur(UP) Kanpur Naubasta(UP) (PG) Ckt-1 (exact location of fault yet to be shared). Line auto-reclosed successfully from Kanpur(UP) end. As per DR at Kanpur Naubasta(UP) end, fault was sensed in zone-4 and fault current was approx. 8.64kA. Fault clearing time was approx. 55ms.</p> <p>↳Buring the same time, bus bar protection operated at 220KV bus of Kanpur Naubasta(UP) which led to tripping of all the elements connected to 220KV bus and complete blackout occurred at 220/132/33KV Kanpur Naubasta(UP) (exact reason of bus bar protection operation yet to be shared).</p> <p>↳Buring per PMU at Kanpur(UP), B-N phase to earth fault with fault clearing time of 120ms is observed.</p> <p>↳Buring per SCADA, change in demand of approx. 245MW is observed in Uttar Pradesh control area.</p>	<p>1) 220 KV Kanpur(UP)-Kanpur Naubasta(UP) (PG) Ckt-1</p> <p>2) 220 KV Fatehpur(PG)- Kanpur Naubasta(UP) (PG) Ckt-1</p> <p>3) 220/132KV 100MVA ICT-1 at Kanpur Naubasta(UP)</p> <p>4) 220/132KV 100MVA ICT-2 at Kanpur Naubasta(UP)</p>
35	GD-1	Jammu and Kashmir	23-05-2024 14:49	23-05-2024 16:13	01:24	0	235	0.000	0.289	69934	81359	<p>↳Buring antecedent condition, power flow from Wagpora(PG) S/s to Pampore(PDO) S/s was approx. 200 MW through 220 KV Wagpora(PG) Pampore(PDO) (PG) D/C. 220KV Pampore-Mirbazar(PDO) D/C was not in service.</p> <p>↳Buring reported, at 14:49 hrs, 220 KV Wagpora(PG) Pampore(PDO) (PG) D/C tripped from Wagpora(PG) end on R-N phase to earth fault on 220 KV Wagpora(PG)-Pampore(PDO) (PG) Ckt-2 with fault distance of 2.8km from Wagpora(PG) end. From Pampore(PDO) (PG) end, only 220 KV Wagpora(PG) Pampore(PDO) (PG) Ckt-2 tripped.</p> <p>↳Buring per DR of Wagpora(PG) end of 220 KV Wagpora(PG) (PG) Ckt-1 &amp; Ckt-2, R-N phase to earth fault is observed in zone-2 and zone-1 for 220 KV Wagpora(PG)-Pampore(PDO) (PG) Ckt-1 &amp; Ckt-2 respectively. Fault current observed is in 7.8kA &amp; 11.2kA for 220 KV Wagpora(PG)-Pampore(PDO) (PG) Ckt-1 &amp; Ckt-2 respectively. From Hissar, it is suspected that fault was on 220 KV Wagpora(PG) Pampore(PDO) (PG) Ckt-2 and Ckt-1 tripped from Wagpora(PG) end due to delayed clearance from Pampore end. Details of Pampore end yet to be received.</p> <p>↳Buring per PMU at Wagpora(PG), R-N phase to earth fault is observed with delayed fault clearing time of 520ms.</p> <p>↳Buring per SCADA, change in demand of approx. 235MW is observed in J&amp;K control area.</p>	<p>1) 220 KV Wagpora(PG)-Pampore(PDO) (PG) Ckt-1</p> <p>2) 220 KV Wagpora(PG)-Pampore(PDO) (PG) Ckt-2</p>
36	GD-1	Punjab	24-05-2024 10:08	24-05-2024 10:27	00:19	0	460	0.000	0.577	69088	79682	<p>↳Buring antecedent condition, 220KV Bus-1 at Lalotkalan(PS) was under shutdown for maintenance. All the 220KV lines and 220/66KV ICTs were connected to Bus-2.</p> <p>↳Buring reported, at 10:08hrs, Y-phase CT of 220/66KV 100MVA ICT-4 at Lalotkalan(PS) blasted which created bus fault at 220KV Bus-2 at Lalotkalan(PS).</p> <p>↳Buring to this, bus bar protection operated at 220KV Bus-2 of Lalotkalan(PS). Hence, all the 220KV circuits connected to Lalotkalan(PS) along with three 220/66KV ICTs tripped and complete blackout occurred at Lalotkalan(PS) S/s.</p> <p>↳Buring per PMU at Jalandhar(PG), Y-N phase to earth fault with fault clearance time of respectively 80ms is observed.</p> <p>↳Buring per SCADA, change in demand of approx. 460MW is observed in Punjab control area.</p>	<p>1) 220KV Lalotkalan(PS)-Hambran(PS) Ckt</p> <p>2) 220KV Lalotkalan(PS)-Dandhar(PS) Ckt</p> <p>3) 220KV Lalotkalan(PS)-Jagroan(PS) Ckt</p> <p>4) 220KV Lalotkalan(PS)-Ferozpur Road(LHPS) Ckt</p> <p>5) 220 KV Ludhiana(PS)-Lalotkalan(PS) (PSTCL) Ckt-1</p> <p>6) 220/66KV 100MVA ICT-1 at Lalotkalan(PS)</p> <p>7) 220/66KV 100MVA ICT-4 at Lalotkalan(PS)</p> <p>8) 220/66KV 100MVA ICT-5 at Lalotkalan(PS)</p> <p>9) 220/132KV 200MVA ICT-2 at Lalotkalan(PS)</p> <p>10) 220/132KV 200MVA ICT-3 at Lalotkalan(PS)</p> <p>11) 220/132KV 200MVA ICT-4 at Lalotkalan(PS)</p>
37	GI-2	Haryana, Punjab, UP, Delhi & Rajasthan	25-05-2024 12:46	25-05-2024 14:16	01:30	1100	2200	1.556	2.737	70679	80392	<p>↳Buring antecedent condition, 800KV HVDC Champa-Kurukshetra Bipole-1&amp;2 was running on its full capacity (carrying approx. 6000MW).</p> <p>↳Buring reported, at 12:46:14.00hrs, Y-B fault converted into R-Y fault after ~220ms occurred on 220 KV Hissar(BBMB)-Hissar (AHV) (HVPL) Ckt-1. Line CB at Hissar(BBMB) end opened instantaneously on Y-B fault in 2.1. However, CB at Hissar (AHV) end opened with delay of ~400ms in 2.2. At the same time, line CB at Hissar(BBMB) end of 220 KV Hissar(BBMB)-Hissar (AHV) (HVPL) Ckt-2 also opened. Fault current was in the range of ~25kA. Snapshot of DR of 220 KV Hissar(BBMB)-Hissar (AHV) (HVPL) D/C attached in Annexure.</p> <p>↳Buring reported, fault occurred due to vegetation fire incident in line corridor at distance ~3km from Hissar (AHV) end. Initially Y-B fault occurred and after ~220ms R-ph jumper at Hissar (AHV) end of 220 KV Hissar(BBMB)-Hissar (AHV) (HVPL) Ckt-1 snapped led to R-Y fault.</p> <p>↳Buring per PMU plot of phase voltages, Y-B fault converted into R-Y fault with delayed clearance in ~480ms is observed.</p> <p>↳Buring to this, generation reduction at some of the RE stations observed. As per SCADA, reduction of ~1000MW RE generation at Rajasthan occurred, out of which ~700MW recovered within 2.5minutes. As per PMU phase voltage at POI end of 220KV line of RE stations, voltage was above 0.9pu during the fault.</p> <p>↳Buring per SCADA, HVDC Champa-Kurukshetra pole-1 blocked on DC overcurrent protection operation at Kurukshetra end. DC overcurrent protection operated due to multiple communication failure in pole-1.</p> <p>↳Buring there was variation in frequency during the incident. From 12:46:15.800hrs, frequency started ramping down from 49.50Hz and reached 49.374Hz at 12:46:16:20hrs. During this frequency reduction, multiple feeders in distribution tripped on/off (ROCOF) stage 1 (0.2Hz/sec) operation. List of feeders tripped on df/dt operation in UP, Punjab, Delhi and Rajasthan is attached in Annexure. DR file of df/dt relay of Lodhi Road S/s (Delhi control area) is also attached in Annexure.</p> <p>↳Buring per SCADA, change in Northern Region demand of approx. 2200MW (Punjab:1140MW; Rajasthan:180MW; Haryana:520MW; Delhi:60MW) observed. As reported by SDCs, load loss of ~172MW in UP, ~82MW in Delhi, ~1375MW in Punjab and ~440MW in Rajasthan occurred due to df/dt operation.</p>	<p>1) 220 KV Hissar(BBMB)-Hissar (AHV) (HVPL) Ckt-1</p> <p>2) 220 KV Hissar(BBMB)-Hissar (AHV) (HVPL) Ckt-2</p> <p>3) 800 KV HVDC Kurukshetra(PG) Pole-1</p>
38	GI-1	Delhi	25-05-2024 16:10	25-05-2024 17:20	01:10	195	211	0.295	0.267	66081	79118	<p>↳Buring antecedent condition, power generation of 104.6MW UNIT-1, 2 and 121.2MW UNIT-3 was 85MW, 80MW &amp; 107MW respectively at 220/66V Pragati(DV).</p> <p>↳Buring reported, at 16:10 hrs, UNIT-1, 2 &amp; 3 tripped on internal fault of UNITS (exact reason of tripping yet to be received).</p> <p>↳Buring per PMU at Mahanagar(PS), Y-B phase to phase fault is observed with delayed fault clearing time of 400ms.</p> <p>↳Buring per SCADA, change in demand of approx. 211MW is observed in Delhi control area. Generation loss of approx. 195MW is observed at 220/66V Pragati(DV) (as per SCADA).</p>	<p>1) 104.6 MW Pragati Gas Turbines - UNIT 1</p> <p>2) 121.2 MW Pragati Gas Turbines - UNIT 3</p>
39	GD-1	Himachal Pradesh	26-05-2024 13:30	26-05-2024 14:12	00:42	185	0	0.271	0.000	68338	77854	<p>↳Buring antecedent condition (before event at @13:30hrs), 96 MW Unit-1 &amp; 2 at ADHPL(UP) were generating approx. 93MW and 92MW respectively as per SCADA.</p> <p>↳Buring reported, at 13:31 hrs, 220 KV Phozal(HV) Nallagar(HV) (ADHPL) Ckt tripped on B-N phase to earth fault with fault distance of 121km from Nallagar(HV) end and 37.8km from Phozal(HV) end (as per DR). As per DR, fault sensed in zone-1 at Nallagar(HV) end and zone-2 at Phozal(HV) end and fault current was ~1.164kA from Nallagar(HV). DT received at Phozal(HV) end.</p> <p>↳Buring per PMU at Nallagar(HV), B-N phase to earth fault with fault clearing time of 240ms is observed.</p> <p>↳Buring per SCADA, generation loss of approx. 400MW observed at ADHPL(UP).</p> <p>↳Buring further at 13:30hrs, R-N phase to earth fault occurred on 220 KV AD hydro(AD)-Nallagar(HV) (ADHPL) Ckt with fault current of ~6.07kA from Nallagar(HV) end and ~1.164kA from AD hydro end (as per DR). As reported, there was forest fire near 400/220KV Nallagar(HV) S/s.</p> <p>↳Buring per DR at Nallagar(HV) end, fault was sensed in zone-1 at Nallagar(HV) end and successfully auto-reclosed from Nallagar(HV) end.</p> <p>↳Buring per DR at AD hydro end, fault was sensed in zone-2 and carrier received at AD hydro, bus zone-2 got reset. Y and B ph current increased upto ~1.53kA and ~1.47kA and A/R locked operated and line tripped from AD hydro end.</p> <p>↳Buring per PMU at Phozal(HV), B-N phase to earth fault occurred on 220 KV AD hydro(AD)-Nallagar(HV) (ADHPL) Ckt within the reclaim time with fault current of ~1.07kA from Nallagar(HV) end (as per DR); fault was sensed in zone-1 and tripped from Nallagar(HV) end.</p> <p>↳Buring to this, tripping of 220 KV Phozal(HV)-Nallagar(HV) (ADHPL) Ckt and 220 KV AD hydro(AD)-Nallagar(HV) (ADHPL) Ckt, island formed with 96MW Unit-1 &amp; 2 at AD hydro(AD) and 220 KV AD hydro(AD)-Phozal(HV) (ADHPL) Ckt and generation load imbalance occurred. After this, 96MW Unit-1 &amp; 2 at AD hydro(AD) tripped due to over-speeding.</p> <p>↳Buring after tripping of 96MW Unit-1 &amp; 2 at AD hydro(AD), 220 KV AD hydro(AD)-Phozal(HV) (ADHPL) Ckt got de-energized and complete blackout occurred at 220V ADHPL(UP).</p> <p>↳Buring reported, line CB at AD hydro end of 220 KV AD hydro(AD)-Phozal(HV) (ADHPL) Ckt was opened manually at 13:48 hrs.</p> <p>↳Buring per PMU at Nallagar(HV), R-N followed by B-N phase to earth fault ~8 fault with fault clearing time of 120ms and 120ms is observed.</p> <p>↳Buring per SCADA, no change in demand is observed in Himachal Pradesh control area. Generation loss of approx. 185MW occurred at ADHPL(UP).</p>	<p>1) 220 KV Phozal(HV)-Nallagar(HV) (ADHPL) Ckt</p> <p>2) 220 KV AD hydro(AD)-Nallagar(HV) (ADHPL) Ckt</p> <p>3) 220 KV Heerapura(PS)-Vikar(PS) Ckt</p> <p>4) 96MW Unit-1 at AD hydro(AD)</p> <p>5) 96MW Unit-2 at AD hydro(AD)</p>
40	GD-1	Rajasthan	26-05-2024 10:45	26-05-2024 11:45	01:00	85	260	0.134	0.339	63418	76627	<p>↳Buring antecedent condition, MW power flows of 220 KV Bassi(PG)-Bagnu(PS) (PG) Ckt and 220 KV Phulara(PS)-Bagnu(PS) Ckt were approx. 288MW and 217MW respectively as per SCADA.</p> <p>↳Buring reported, at 10:45hrs, 220 KV Bassi(PG)-Bagnu(PS) (PG) Ckt and 220 KV Phulara(PS)-Bagnu(PS) Ckt tripped due to over-loading (exact reason, nature and location of fault yet to be shared).</p> <p>↳Buring to this, tripping, complete blackout occurred at 220/132KV Bagnu(PS) S/s.</p> <p>↳Buring during the same time, 90MW Anta Solar plant also tripped (exact reason of tripping yet to be shared).</p> <p>↳Buring per PMU at Bagnu(PS), R-N phase to earth fault with fault clearing time of 80ms is observed.</p> <p>↳Buring per SCADA, change in demand of approx. 260MW is observed in Rajasthan control area.</p> <p>↳Buring per SCADA, change in NR solar generation of approx. 85MW is observed.</p>	<p>1) 220 KV Bassi(PG)-Bagnu(PS) (PG) Ckt</p> <p>2) 220 KV Phulara(PS)-Bagnu(PS) Ckt</p>
41	GI-1	Rajasthan	27-05-2024 16:40	27-05-2024 16:51	00:11	0	165	0.000	0.209	62324	78769	<p>↳Buring antecedent condition, 220/132KV 100MVA ICT-1 at Heerapura(PS) was not in service.</p> <p>↳Buring reported, at 16:40hrs, during the charging of 132 KV Heerapura(PS)-Chambal(PS) Ckt, line CB pole at Heerapura(PS) end burst.</p> <p>↳Buring the same time, B-C-G bus coupler (Bus B end and coupled by B-C-G bus coupler), 220 KV Heerapura(PS)-Mansarovar(PS) Ckt, 220 KV Heerapura(PS)-Vikar(PS) Ckt, 220/132KV 100MVA ICT-1, 2, 3 &amp; 4 and 3 Heerapura(PS) (VIA) also tripped (exact reason of tripping operation yet to be shared).</p> <p>↳Buring per PMU at Bassi(PG), 3-phase to earth fault (delayed fault clearance in B-ph) is observed with delayed fault clearing time of 720ms.</p> <p>↳Buring per SCADA, change in demand of approx. 165MW in Rajasthan control area is observed.</p>	<p>1) 132 KV Heerapura(PS)-Chambal(PS) Ckt</p> <p>2) 220 KV Heerapura(PS)-Mansarovar(PS) Ckt</p> <p>3) 220 KV Heerapura(PS)-Vikar(PS) Ckt</p> <p>4) 220/132KV 100MVA ICT-1 at Heerapura(PS)</p> <p>5) 220/132KV 100MVA ICT-2 at Heerapura(PS)</p> <p>6) 220/132KV 100MVA ICT-4 at Heerapura(PS)</p>
42	GI-2	Haryana	27-05-2024 14:36	27-05-2024 15:53	01:17	665	1060	0.959	1.249	69347	84892	<p>↳Buring antecedent condition, 500MW Unit-1, 2 &amp; 3 at Jhajjar(ARCL) were generating approx. 380MW each.</p> <p>↳Buring antecedent condition, 500MW Unit-1, 2 &amp; 3 at Jhajjar(ARCL) were generating approx. 380MW each.</p> <p>↳Buring reported, at 14:36hrs, 400 KV Jhajjar(ARCL)-Mundka(DV) (ARCL) Ckt-2 tripped on R-Y-N double phase to earth fault with fault distance of 55.3km from Mundka(DV) end. As per DR, fault current was in 26.2kA and ~18.25kA from Mundka(DV) end.</p> <p>↳Buring during the same time, 400 KV Jhajjar(ARCL)-Dauharabadi(HV) (HV) Ckt-2 also tripped (exact reason and nature of protection operated yet to be shared).</p> <p>↳Buring per PMU at Gurgaon(PG), R-Y-N double phase to earth fault is observed with fault clearing time of 80ms.</p> <p>↳Buring per SCADA, change in demand of approx. 540MW in Haryana, 280MW in UP and 140MW in Uttarakhand control area are observed (details from states regarding any frequency related protection (df/dt) operation yet to be received).</p> <p>↳Buring per SCADA, change in demand of approx. 665MW among which almost 495MW revised within 3 minutes.</p>	<p>1) 400 KV Jhajjar(ARCL)-Mundka(DV) (ARCL) Ckt-2</p> <p>2) 400 KV Jhajjar(ARCL)-Dauharabadi(HV) (HV) Ckt-2</p>

## Details of Grid Events during the Month of May 2024 in Northern Region



Sl No.	Category of Grid Event (GI for GI-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)		
43	GI-2	Rajasthan	28-05-2024 05:37	28-05-2024 06:38	01:01	0	620	0.000	0.845	51468	73388	<p>During antecedent condition, 400/220 KV 315 MVA ICT 1 and 500 MVA ICT 2 at Bikaner(RS) was carrying approx. 294MVA and 296MVA respectively. 220KV Bikaner-Dungargarh (RS) line was in open condition from Bikaner end.</p> <p>VIJRs reported, at 05:37 hrs, 400/220 KV 315 MVA ICT 2 at Bikaner(RS) tripped on WTI (Winding Temperature Indicator) protection operation.</p> <p>VIJRs per PMU at Bhabha(PG), no fault in system is observed.</p> <p>VIJRs to tripping of ICT-2, SPS implemented at Bikaner(RS) S/S related to overloading of remaining ICTs after tripping of any ICT operated. As per SPS scheme, 220KV Bikaner-Nokha (RS) line and 220KV Bikaner-Dungargarh (RS) line has to open. 220KV Bikaner-Nokha (RS) line (carrying ~140MW) opened on SPS operation.</p> <p>VIJRs with the tripping of 400/220KV ICT-2, load shifted on 400/220KV ICT-1 and as 220KV Bikaner-Dungargarh (RS) line was already in open condition, after SPS operation sufficient load relief was not achieved. Thus, loading of ICT-1 remained in the range of ~400MVA.</p> <p>VIJRs further, 400/220 KV 315 MVA ICT 1 at Bikaner(RS) also tripped on overcurrent protection operation.</p> <p>VIJRs per SCADA, change in demand of approx. 620MW is observed in Rajasthan control area.</p> <p>VIJRs reported, setting of WTI in ICT-2 has been revised from 85-90°C to 95-100°C.</p>	<p>1) 400/220 KV 315 MVA ICT 1 at Bikaner(RS)</p> <p>2) 400/220 KV 315 MVA ICT 2 at Bikaner(RS)</p>
44	GI-2	Rajasthan	28-05-2024 10:43	28-05-2024 11:31	00:48	0	495	0.000	0.607	65751	81584	<p>During antecedent condition, 400/220 KV 315 MVA ICT 1 and 500 MVA ICT 2 at Bikaner(RS) were carrying approx. 300MVA. 220KV Bikaner-Dungargarh (RS) line was in open condition from Bikaner end.</p> <p>VIJRs reported, at 10:43 hrs, 400/220 KV 315 MVA ICT 2 at Bikaner(RS) tripped on overcurrent protection operation.</p> <p>VIJRs from DR of 400/220 KV 315 MVA ICT 2 at Bikaner(RS) of HV side, it is observed that phase current were started increasing from 430A and reached 41~590A due to sudden increase in loading of 220KV Bikaner-Nokha (RS) line. Reason of sudden increase in loading of line is not identified yet.</p> <p>VIJRs per PMU at Bhabha(PG), no fault in system is observed.</p> <p>VIJRs to tripping of ICT-2, SPS implemented at Bikaner(RS) S/S related to overloading of remaining ICTs after tripping of any ICT operated. As per SPS scheme, 220KV Bikaner-Nokha (RS) line and 220KV Bikaner-Dungargarh (RS) line has to open. 220KV Bikaner-Nokha (RS) line opened on SPS operation. As per DR of 220KV Bikaner-Nokha (RS) line, phase current of line before tripping was in the range of ~480A.</p> <p>VIJRs with the tripping of 400/220KV ICT-2, load shifted on 400/220KV ICT-1 and as 220KV Bikaner-Dungargarh (RS) line was already in open condition, after SPS operation sufficient load relief was not achieved. Thus, loading of ICT-1 remained high (phase current increased from ~590A to ~770A after tripping of ICTV-2).</p> <p>VIJRs further, 400/220 KV 315 MVA ICT 1 at Bikaner(RS) also tripped on overcurrent protection operation.</p> <p>VIJRs per SCADA, change in demand of approx. 495MW is observed in Rajasthan control area.</p>	<p>1) 400/220 KV 315 MVA ICT 1 at Bikaner(RS)</p> <p>2) 400/220 KV 315 MVA ICT 2 at Bikaner(RS)</p>
45	GD-1	Haryana	28-05-2024 18:27	28-05-2024 19:50	01:23	0	222	0.000	0.314	53002	70596	<p>1220/120KV Mohana S/S has six (06) 220KV lines i.e., 220 KV Mohana(HV) Sonapat(PG) (HV/NL) D/C, 220KV Mohana-Samalkha (HV) D/C and 220KV Mohana-Sampla (HV) D/C. Samalkha and Sampla are load centre. Power source is through 220KV Sonapat only. Samalkha(HV) S/S is having connectivity from grid through 220KV Mohana-Samalkha (HV) D/C only and 220KV Sampla has connectivity with 220KV Mohana and 400/220KV Kabulpur also.</p> <p>During antecedent condition, 220 KV Mohana(HV) Sonapat(PG) (HV/NL) D/C was carrying total ~288MW. Approx. 116MW was evacuating through 220KV Mohana-Samalkha (HV) D/C and remaining power was evacuating through 132KV load feeders from Mohana(HV) S/S. 220KV Mohana-Sampla (HV) D/C was not in service during the event (opened from Sampla end).</p> <p>VIJRs reported, at 18:27 hrs, B phase CT of 220 KV Mohana(HV) Sonapat(PG) (HV/NL) Ckt-1 blasted at Mohana(HV) end which resulted in tripping of 220 KV Mohana(HV) Sonapat(PG) (HV/NL) D/C from Sonapat(PG) end and only 220 KV Mohana(HV) Sonapat(PG) (HV/NL) Ckt-1 tripped from Mohana(HV) end. (exact location of fault during 2nd instant yet to be received).</p> <p>VIJRs per DR at Sonapat(PG) end of 220 KV Mohana(HV) Sonapat(PG) (HV/NL) Ckt-1, N-N phase to earth fault with fault current of I<sub>r</sub>=14.3kA is observed. Line tripped instantaneously on distance protection operation in zone-1. As per relay flag at Mohana(HV) Sonapat(PG) (HV/NL) Ckt-1, line tripped instantaneously on distance protection operation in zone-1.</p> <p>VIJRs per DR at Sonapat(PG) end of 220 KV Mohana(HV) Sonapat(PG) (HV/NL) Ckt-2, R-N phase to earth fault with fault current of I<sub>r</sub>=13.4kA is observed. Line tripped on distance protection operation in zone-2 with fault clearing time of 400msec.</p> <p>VIJRs to tripping of 220 KV Mohana(HV) Sonapat(PG) (HV/NL) D/C, 220KV Mohana-Samalkha (HV) D/C and 220KV Mohana-Sampla (HV) D/C became dead and 220/132KV Mohana(HV) S/S also lost its connectivity from grid and the complete 220/132KV Mohana(HV) S/S became dead.</p> <p>VIJRs per PMU at Sonapat(PG), multiple R-N phase to earth fault is observed with fault clearing time of 160msec &amp; 400msec.</p> <p>VIJRs per SCADA, approx. 222 MW load loss is observed in Haryana control area.</p>	<p>1) 220 KV Mohana(HV) Sonapat(PG) (HV/NL) Ckt-1</p> <p>2) 220 KV Mohana(HV) Sonapat(PG) (HV/NL) Ckt-2</p>
46	GI-2	Uttar Pradesh	29-05-2024 15:57	29-05-2024 17:11	01:14	0	100	0.000	0.121	66380	82732	<p>1220/120KV Masoli(UF) S/S has one load feeder bus scheme at 80KV voltage level.</p> <p>During antecedent condition, loading of 400/132 KV 200 MVA ICT 1,2&amp;3 at 400/132KV Masoli(UF) was approx. 162MW (approx. 54MW for each ICT) (As per SCADA).</p> <p>VIJRs reported, at 15:57 hrs, during inclement weather condition, towers of 132KV feeders to Naini and Karachana from Masoli(UF) damaged which created B-N phase to earth fault on 123KV Masoli-Naini (UF) d/c followed by Y-N phase to earth fault on 123KV Masoli-Karchhana (UF) d/c.</p> <p>VIJRs per PMU at earth fault on 123KV Masoli-Naini (UF) d/c cleared instantaneously (within 120msec as per PMU). CB of 123KV Masoli-Karchhana (UF) ckt could not open from Masoli(UF) end on Y-N phase to earth fault.</p> <p>VIJRs CB of 123KV Masoli-Karchhana (UF) ckt failed to open, fault cleared with the tripping of 400/132 KV 200 MVA ICT 1,2&amp;3 and 125 MVAR Bus Reactor at Masoli(UF) tripped on D/C UF protection operation.</p> <p>VIJRs per PMU at Allahabad(PG), B-N followed by Y-N phase to earth fault is observed with fault clearing time of 120msec and 840msec respectively.</p> <p>VIJRs per SCADA, change in demand of approx. 94MW is observed in UP control area. However, 100MW load loss is reported by S/DC-UF in UP control area.</p>	<p>1) 400/132 KV 200 MVA ICT 1 at Masoli(UF)</p> <p>2) 400/132 KV 200 MVA ICT 2 at Masoli(UF)</p> <p>3) 400/132 KV 200 MVA ICT 3 at Masoli(UF)</p> <p>4) 125 MVAR Bus Reactor No 1 at 400 KV Masoli(UF)</p> <p>5) 123KV Masoli-Karchhana (UF) ckt</p> <p>6) 123KV Masoli-Naini (UF) ckt</p>
47	GI-2	Haryana	30-05-2024 09:07	30-05-2024 09:53	00:46	0	0	0.000	0.000	66977	77406	<p>During antecedent condition, 800KV HVDC Champa Kurukshetra was carrying total 6000MW power from Kurukshetra to Champa (carrying ~1500MW each).</p> <p>VIJRs reported, Ripole-2 (Pole-3&amp;4) at 800KV HVDC Champa Kurukshetra blocked due to non-availability of minimum AC filter. Further, as per detail received sequence of event are as follows:</p> <ul style="list-style-type: none"> <li>a. At 08:09:02(542hrs), B type filter (HACQ-52) of Ripole-2 tripped on capacitor unbalance stage-1 protection.</li> <li>b. Now, Ripole-2 was running with 3A (HACQ-41, HACQ-51, HACQ-51) +1C-4E type filter at 3000MW without satisfying minimum filter requirement.</li> <li>c. B type filter (HACQ-42) was available for energization but was not taken in service by Reactive Power Controller (RPC) as E-type filters were connected for Voltage Regulation which had resulted in generation of alarm "Phr Cnt incorrect Element Energized". (As per M/A GE, RPC philosophy, when D/E type filters are connected, then RPC will not follow the filter table and RPC shall not allow for energization of B type filter).</li> <li>d. For satisfying the harmonic performance of HVDC system, one B type filter was additionally supposed to be in service which could also satisfy the minimum filter requirement.</li> <li>e. At 09:08:18(2hrs), the operator tried to take B type filter (HACQ-42) in manual mode. As soon as HACQ42 was taken in manual mode, Pole-3 &amp; Pole-4 both got blocked on controlled blocking due to non-availability of minimum B type filter.</li> </ul> <p>VIJRs per SCADA, due to outage of two poles (Pole-03 and Pole-04), power order reduced from 6000MW to 3000MW.</p> <p>VIJRs per PMU, fluctuation in voltage was observed.</p> <p>VIJRs per SCADA, no change in demand is observed in Haryana control area.</p>	<p>1) 800 KV HVDC kurukshetra(PG) Pole-03</p> <p>2) 800 KV HVDC kurukshetra(PG) Pole-04</p>
48	GI-2	Rajasthan	30-05-2024 10:16	31-05-2024 10:33	00:17	1435	0	2.014	0.000	71257	81922	<p>During antecedent condition, 400 KV Sikar(PG) Ratangarh(RS) (PG) Ckt-1, 400 KV Sikar(PG) Bikaner(RS) (PG) Ckt-1 &amp; 2 and 400 KV Ratangarh(RS) Merta(RS) (RS) Ckt were not in service. Active power flow of 400 KV Sikar(PG) Ratangarh(RS) (PG) Ckt-1 was approx. 470MW from Ratangarh(RS) to Sikar(PG).</p> <p>VIJRs reported, at 10:16 hrs, 400 KV Sikar(PG) Ratangarh(RS) (PG) Ckt-1 tripped on R-Y-N double phase to earth fault with fault distance of 26.592km from Sikar(PG) end. Y-Ph conductor snapped between Ratangarh-88-84.</p> <p>VIJRs per DR, zone-1 distance protection operated at Sikar(PG) end. Fault current was I<sub>r</sub>=11.986kA and I<sub>y</sub>=12.735kA from Sikar(PG).</p> <p>VIJRs per SCADA SOE, 220KV Ratangarh(RS) khetri(RS) Ckt-2 tripped during the same time (exact reason yet to be shared).</p> <p>VIJRs per PMU at Sikar(PG), R-Y-N double phase to earth fault with fault clearing time of 20ms is observed. Voltage dipped upto 0.746 p.u. at Sikar(PG).</p> <p>VIJRs per SCADA, change in NR solar generation of approx. 1200MW is observed (which reversed within 1.5 minutes) change in Rajasthan solar generation of approx. 66MW is observed which revived within 2 minutes).</p> <p>VIJRs per SCADA, change in Rajasthan wind generation of approx. 145MW is observed.</p>	<p>1) 400 KV Sikar(PG) Ratangarh(RS) (PG) Ckt-1</p>
49	GD-1	Haryana and Himachal Pradesh	31-05-2024 11:25	31-05-2024 14:54	03:29	0	160	0.000	0.194	72346	82633	<p>0220KV Pinjore(HR) S/S has double main bus arrangement at 220KV side.</p> <p>During antecedent condition, incoming power at Pinjore(HR) S/S was approx. 230 MW through 220 KV Panchkula(PG) Pinjore (HR) (HV/NL) D/C out of which approx. 188 MW was evacuating through 220 KV Baddi(HR) Pinjore (HR) (HPPTCL) D/C and approx. 42MW was evacuating through 66KV feeders at Pinjore(HR) S/S. 220 KV Baddi(HR) Pinjore (HR) (HPPTCL) D/C and some 66KV feeders connected to 220KV Bus-2 at Baddi(HR) and no other 200KV line connected at the same Bus. (As per SCADA).</p> <p>VIJRs reported, at 11:25 hrs, due to forest fire, B-N phase to earth occurred on 220 KV Panchkula(PG) Pinjore (HR) (HV/NL) Ckt-2 which led to tripping of 220 KV Panchkula(PG) Pinjore (HR) (HV/NL) D/C from Panchkula(PG) end and only 220 KV Panchkula(PG) Pinjore (HR) (HV/NL) Ckt-2 tripped from Pinjore(HR) end.</p> <p>VIJRs the same time, Bus coupler of 220KV Bus-1 &amp; Bus-2 at Baddi(HR) S/S opened due to which 220KV Bus-2 &amp; 220 KV Baddi(HR) Pinjore (HR) (HPPTCL) D/C became dead. Detail of protection operation on which bus coupler opened is yet to be received from HP.</p> <p>VIJRs per DR at Panchkula(PG) end of 220 KV Panchkula(PG) Pinjore (HR) (HV/NL) Ckt-1, B-N phase to earth fault is observed in Zone-2 and line tripped from Panchkula end with the delay of ~200msec.</p> <p>VIJRs per DR at Panchkula(PG) end of 220 KV Panchkula(PG) Pinjore (HR) (HV/NL) Ckt-2, initially B-N phase to earth fault in zone-1 with fault current of 1.3kA is observed. On this fault A/R operation started but before A/R redosing Y-N phase to earth fault occurred which led to 3 phase tripping of the line.</p> <p>VIJRs 220 KV Baddi(HR) Pinjore (HR) (HPPTCL) D/C became dead and due to tripping of 220 KV Panchkula(PG) Pinjore (HR) (HV/NL) D/C, 220 Pinjore(HR) loss its connectivity from Grid and complete Pinjore(HR) S/S became dead.</p> <p>VIJRs per PMU at Baddi(HR) (PG), B-N phase to earth fault followed by Y-N fault is observed with delayed fault clearing time of 1240msec &amp; 80msec respectively.</p> <p>VIJRs per SCADA, change in demand of approx. 33MW &amp; 88MW is observed in Haryana &amp; HP control area respectively. However, approx. 60MW &amp; 100MW load loss is reported by S/DC-Haryana &amp; S/DC-HP in Haryana &amp; HP control area respectively.</p>	<p>1) 220 KV Panchkula(PG) Pinjore (HR) (HV/NL) Ckt-1</p> <p>2) 220 KV Panchkula(PG) Pinjore (HR) (HV/NL) Ckt-2</p>



### Details of Grid Events during the Month of May 2024 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
						Generation Loss(MW)	Load Loss (MW)	% Generation Loss (MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
						( GI for GI2/ GD-1 to GD-5)							
1	GD-1	WR	23:21 / 01-05-2024	00:04 / 02-05-2024	00:43	167	-	0.20%	-	84099	66152	At 23:21 Hrs / 01-05-2024, 220 kV Bhuj-Baranda-1 tripped on 3 phase to ground fault due to falling of spare conductor of 220 kV Bhuj-Dayapar-D/C on 220 kV Bhuj-Baranda-1 near Bhuj gantry. At the same time 220 kV Bhuj-Gadhisa-1 tripped at Gadhisa end only. Generation loss of 132 MW and 35 MW occurred at Gadhisa (Renew Power) and Baranda (Avikiran) respectively due to loss of evacuation path.	Tripping of following Elements: 1. 220 kV Bhuj-Baranda-1 2. 220 kV Bhuj-Gadhisa-1
2	GI-2	WR	10:46 / 03-05-2024	14:15 / 03-05-2024	03:29	250	-	0.31%	-	81200	68933	At 10:46 Hrs / 03-05-2024, busbar protection operation in 400 kV Satpura-Bus-1 (Double main and transfer bus scheme) resulted in tripping of all elements connected to 400 kV Satpura-Bus-1 (400 kV Satpura-Koradi-1, 400 kV Satpura-Indirasagar-1, 400 kV Satpura-Itarsi-1, 400 kV Satpura-Astha-1 and Satpura Unit-11 (250 MW)). Busbar protection maloperated as there was no fault signature present in nearby PMUs. Detailed investigation of relay maloperation is being done by MPPCL. Generation loss of 250 MW occurred due to the tripping of Satpura Unit-11 during the event.	Tripping of following Elements: 1. 400 kV Satpura-Bus-1 2. 400 kV Satpura-Koradi-1 3. 400 kV Satpura-Indirasagar-1 4. 400 kV Satpura-Itarsi-1 5. 400 kV Satpura-Astha-1 6. Satpura Unit-11 (250 MW)
3	GD-1	WR	10:49 / 10-05-2024	13:34 / 10-05-2024	02:45	248	-	0.31%	-	80062	69092	At 10:49 Hrs / 10-05-2024, 220 kV Bhavsingpura-Khandwa tripped from Khandwa end only due to relay maloperation. Generation loss of 248 MW occurred at Bhavsingpura and Kanani (Masaya Solar) Solar power plants respectively, due to the loss of evacuation path.	Tripping of following Elements: 1. 220 kV Bhavsingpura-Khandwa 2. 220 kV Bhavsingpura-Kanani
4	GI-2	WR	15:47 / 13-05-2024	16:26 / 13-05-2024	00:39	-	348	-	0.51%	80866	68076	At 15:47 Hrs / 13-05-2024, 220 kV Kalwa-Bus-2 and all connected elements tripped due to LBB operation of 220 kV Kalwa-DCH due to non-quenching of arc of Circuit Breaker. At the same time, 220 kV Kharghar-Khandeshwar tripped on differential protection operation on R-B phase to phase to earth fault. At 15:53 Hrs / 13-05-2024, 400/220 kV Kharghar ICT-2 tripped on the operation of the Oil Surge Relay, resulting in LTS operation in 400/220 kV Kharghar ICT-1. At the time of tripping heavy winds and rains were reported and many elements at Kalwa and Kharghar region tripped on transient faults. +/- 500 kV HVDC Chandrapur-Padghe-1&2 tripped at 16:07 and 16:10 hrs / 13-05-2024 respectively due to voltage dip on transient faults. Load loss of 348 MW occurred at Mumbai and MMR (Mumbai Metropolitan Region) due to LTS operation.	Tripping of following Elements: 1. 220 kV Kalwa-DCH 2. 220kV Kalwa-Bus-2 3. 220 kV Kalwa-Salsette-3 4. 220 kV Kalwa-Mulund-1&2 5. 220 kV Kalwa-Borivali 6. 220kV Kalwa-THL 7. 400/220 kV Kalwa-ICT-1&2 (500 MVA) 8. 400/220 kV Kharghar-ICT-2 (315 MVA) 9. +/- 500 kV HVDC Chandrapur-Padghe-1&2 10. 220 kV Kharghar-Khandeshwar-2 11. 220kV Kharghar-Borivali-2
5	GI-2	WR	19:33 / 13-05-2024	22:13 / 13-05-2024	02:40	-	-	-	-	78514	58752	At 19:33 Hrs / 13-05-2024, 400 kV Charanka-Vasana-1 tripped on Y-E fault from Charanka end only and auto recloser was successful at Vasana end. At the same time, 400 kV Veloda-Charanka-1 tripped on R-E fault. 400 kV Veloda-Charanka-2 tripped from Veloda end on R-E fault and the Circuit Breaker at Charanka end didn't open due to problem in breaker. Due to this, 400 kV Charanka-Kansari-1&2 tripped on 2-3 operation from Kansari end. 400/220 kV Charanka-ICT-1&2 tripped due to Backup earth fault protection operation. With these tripping, 400 kV Charanka became dead and 220 kV Charanka was intact. At the time of tripping heavy wind and thunderstorms were reported. No generation or load loss occurred due to the event.	Tripping of following Elements: 1. 400 kV Charanka-Vasana-1 2. 400 kV Veloda-Charanka-1&2 3. 400 kV Charanka-Kansari-1&2 4. 400/220 kV Charanka-ICT-1&2
6	GI-1	WR	19:52 / 13-05-2024	21:58 / 13-05-2024	02:06	72	-	0.09%	-	78168	58222	At 19:52 Hrs / 13-05-2024, 220 kV CHPH-RBPH-1&2 tripped due to a lightning strike on the ATR gantry at SSP. At the same time, 400/220 kV SSP-ICT-1 tripped on differential protection operation due to the grounding of the lightning strike. 400/220 kV SSP-ICT-2 tripped on neutral over current protection operation. Generation loss of 72 MW occurred due to tripping of SSP-CHPH-Unit-1&2 (50 MW) due to loss of evacuation path.	Tripping of following Elements: 1. 220 kV CHPH-RBPH-1&2 2. 400/220 kV SSP-ICT-1&2 3. SSP-CHPH-Unit-1&2 (50 MW)
7	GD-1	WR	16:26 / 15-05-2024	04:58 / 16-05-2024	12:32	68	-	0.08%	-	83355	67892	At 16:26 Hrs / 15-05-2024, 220 kV Bhuj-II-Nakharana tripped on Y-E fault due to insulator degrading at Tower location 37. Generation loss of 68 MW occurred at Nakharana and Dedhaya Wind Power Plant. Isolated due to the loss of evacuation path.	Tripping of following Elements: 1. 220 kV Bhuj-II-Nakharana 2. 220 kV Bhuj-II-Nakharana-Dedhaya
8	GD-1	WR	22:12 / 15-05-2024	01:51 / 16-05-2024	03:39	85	-	0.10%	-	84685	65854	At 22:13 Hrs / 15-05-2024, 220 kV Bhuj-Baranda tripped on R-E fault and at same time 220 kV Bhuj-Gadhisa tripped from Gadhisa end only on R-E fault due to falling of earth wire of 220 kV Bhuj-Dayapar at 220 kV Bhuj. Generation loss of 85 MW (71 MW at Gadhisa (Renew Power) and 14 MW at Baranda (Avikiran) occurred at Gadhisa and Baranda Wind Power Plant respectively due to loss of evacuation path.	Tripping of following Elements: 1. 220 kV Bhuj-Baranda 2. 220 kV Bhuj-Gadhisa
9	GD-1	WR	16:54 / 16-05-2024	20:03 / 16-05-2024	03:09	75	-	0.09%	-	83142	65635	At 16:54 Hrs / 16-05-2024, 220 kV Bhuj-Kotda Math tripped due to B-E fault. During patrolling no abnormality was found. Generation loss of 75 MW occurred at Kotda Math (Alfara) due to loss of evacuation path.	Tripping of following Elements: 1. 220 kV Bhuj-Kotda Math
10	GI-1	WR	23:34 / 20-05-2024	02:26 / 21-05-2024	02:52	-	140	-	0.20%	86685	68796	At 23:34 Hrs / 20-05-2024, Y phase suspension string of flyover span of line side CT of 220 kV Kondhwa-Jejuri flashed over at Jejuri end, the fault was not cleared in zone-1 protection and was being fed from all lines and ICTs connected at 220 kV Jejuri substation. Due to this bus coupler tripped on backup to busbar protection operation after 200 msec (definite time delay) isolating 220 kV Jejuri-Bus-1&2. Y phase of 220 kV Lonand-Jejuri-1 tripped on Z-1 distance relay operation at Jejuri end although the fault was in reverse direction and later R phase tripped after 500 msec. This tripping was undesirable and the relay maloperated. After the isolation of 220 kV Jejuri buses 220 kV Kondhwa-Jejuri was connected through 220 kV Jejuri Bus-1, but all the lines connected to 220 kV Jejuri Bus-2 (220 kV Jejuri-Barmati, 220 kV Jejuri-Phursang-2, 220 kV Jejuri-Phursang-1) tripped on Z-1 distance protection operation (the relays over reached) and auto recloser cycle was initiated. Further tripping of 220 kV Jejuri-Phursang-2 initiated LBB protection and after 200 msec all elements connected to 220 kV Jejuri Bus-2 tripped. The operation of LBB was undesirable. Remote ends of the lines 220 kV Jejuri-Phursang-1 and 220 kV Lonand-Jejuri-1 tripped on Z-2 distance protection. After 550 msec of the first fault appearance, a fault occurred in the R phase of 220 kV Kondhwa-Jejuri resulting in Z-1 R-Y phase-phase fault operation. With the tripping of 220 kV Kondhwa-Jejuri, 220 kV Parvati-Phursang tripped on overcurrent protection operation due to overloading and LTS stage-1 operation. Only 220 kV Jejuri-Phursang-1 and 400/220 kV Jejuri-ICT-1 were in service Load loss of 140 MW occurred at Kothrud, NCL, and Kondhwa region due to LTS operation. Also, the correct auto-closing of the 220 kV Lonikhand-Lonikhand(II) interconnector saved the LTS operation in 400/220 kV Lonikhand(II) ICTs which were overloaded due to these trippings.	Tripping of following Elements: 1. 220 kV Jejuri Bus 2 2. 220 kV Jejuri-Barmati 3. 220 kV Jejuri-Phursang-1 4. 220 kV Jejuri-Phursang-2 5. 220 kV Kondhwa-Jejuri 6. 220 kV Jejuri-Phursang-1&2 7. 220 kV Kondhwa-Jejuri 8. 220 kV Lonand-Jejuri-1 9. 400/220 kV Jejuri-ICT-2&3
11	GI-1	WR	02:02 / 22-05-2024	03:40 / 22-05-2024	01:38	-	-	-	-	85177	66501	At 02:02 Hrs / 22-05-2024, Bus protection mal-operated in 220 kV Chhhegaon-Bus-1 due to fault in 220 kV Chhegaon-Saktapur circuit resulting in tripping of all connected elements. On investigation it was found that the polarity of connection use for Bus bar protection from 220 kV Chhegaon-Saktapur was reversed, resulting in bus bar protection operation. No load loss occurred, as all other elements were in service through 220 kV Chhhegaon-Bus-2.	Tripping of following Elements: 1. 220 kV Chhhegaon-Bus 1 2. 220 kV Chhegaon-Saktapur 3. 220 kV Chhegaon-Singaji-1 4. 220 kV Chhegaon-Nirman-1 5. 220 kV Chhegaon-Khandeshwar-1
12	GD-1	WR	17:59 / 28-05-2024	20:18 / 28-05-2024	02:19	-	1045	-	1.58%	83170	66310	At 17:59 Hrs / 28-05-2024, failure of R phase Bus-1 side isolator chamber at 220 kV Gora GIS led to bus bar protection operation in 220 kV Gora-Bus-1&2 and tripping of all connected elements. Load loss of 99 MW was reported by SDC Maharashtra in the Gora area due to the event. However, from the demand curves of Maharashtra and Mumbai from SCADA, the instantaneous load loss of around 2000 MW and 1000 MW was observed in the Maharashtra and Mumbai control area, out of which around 500 MW recovered within 5 minutes of the tripping. The same was evident from the PMU plots, wherein frequency rose to 0.15 Hz during the above incident and the Phase voltage of Kalwa dipped from 230 kV to 110 kV. It is suspected that induction machines during severe voltage dip might have stalled resulting in demand reduction and after fault clearance might have started automatically (demand started increasing in a few seconds itself after fault clearance). Also, some machines might have stopped and had to be started manually as restoration took longer than normal. SDC Maharashtra has reported load drop of 3045 MW in the Mumbai Control area. The load loss calculated using ICTs loading at the Maharashtra control area was 1587 MW.	Tripping of following Elements: 1. 220 kV Gora-Versova 2. 220 kV Gora-Ghodbunder 3. 220 kV Gora-Borivali-1&2 4. 220 kV Gora-Bus-1&2 5. 220/93 kV Gora-ICT-1&2 (125 MVA)
13	GI-2	WR	00:21 / 29-05-2024	03:22 / 29-05-2024	03:01	-	-	-	-	89119	68822	At 00:21 Hrs / 29-05-2024, Failure of Bus bar CVT at 400 kV Raigarh- led to tripping of 400 kV Raigarh-Bus-2 on Busbar protection operation. During the Busbar operation, R phase pole of 400 kV Raigarh-Ishraguda-3 stuck and didn't open and fumes from failed CVT led to tripping of 400 kV Raigarh-Ishraguda-3 on Local Breaker Backup (LBB) protection operation. At same time, fumes from CVT created flashover on line side of 400 kV Raigarh-Ishraguda-1 resulting in its tripping. No generation / load loss occurred due to the event	Tripping of following Elements: 1. 400 kV Raigarh-Bus-2 2. 400 kV Raigarh-Ishraguda-1&3
14	GI-2	WR	12:02 / 29-05-2024	12:33 / 29-05-2024	00:31	408	-	0.48%	-	85160	67605	At 12:02 Hrs / 29-05-2024, 400 kV Chorania-Asaj-2 tripped due to wavetrap jumper broken at Chorania end. At the same time 400 kV Chorania-Amrelli-1 and 400 kV Chorania-Hadala-1 tripped from remote ends only due to overreaching of relays. During investigation of the relays at Amrelli and Hadala by Gujarat the compensation factor was found to be higher same has been changed and under investigation. Wind generation loss of around 408 MW occurred in Chorania area due to the event.	Tripping of following Elements: 1. 400 kV Chorania-Amrelli-1 2. 400 kV Chorania-Hadala-1 3. 400 kV Chorania-Asaj-2
15	GI-1	WR	22:48 / 29-05-2024	23:16 / 29-05-2024	00:28	-	35	-	0.05%	91950	69195	At 22:48 Hrs / 29-05-2024, R phase CT burst of 220/132 kV Chhattarpur-ICT-1 resulted in busbar protection operation in 220 kV Chhattarpur-Main Bus and tripping of all connected elements. Load loss of around 35 MW occurred at Chhattarpur area due to the event.	Tripping of following Elements: 1. 220 kV Chhattarpur-Main Bus 2. 220 kV Chhattarpur-Satna(MP) 3. 220 kV Chhattarpur-Satna(SG) 4. 220 kV Chhattarpur-Tikamgarh 5. 220/132 kV Chhattarpur-ICT-1&2 (160 MVA)
16	GD-1	WR	18:20 / 30-05-2024	18:48 / 30-05-2024	00:28	420	-	0.50%	-	84168	66176	At 18:20 Hrs / 30-05-2024, R phase CT of 220 kV Birsingpur-Ishabpur-2 at Birsingpur burst resulting in multiple trippings at 220 kV Birsingpur. Busbar protection module was out of service since 17-11-2021, which was not initiated to WRLDC. 220 kV Birsingpur-Jabalpur-1 tripped from Birsingpur on Z-1 operation which is maloperation and tripped on Z-2 operation from remote end. 220 kV Birsingpur-Sanjay Gandhi TPS(C)2,3&4 tripped correctly on Z-4 operation and tripped on Z-1 operation from remote end. 220 kV Birsingpur-Sanjay Gandhi TPS(C)1 hand tripped at Birsingpur end and tripped on Z-1 operation from remote end. 220 kV Birsingpur-Nowroobad Traction-1&2 and 220 kV Birsingpur-Hydel Feeder hand tripped at Birsingpur end and were holding from remote end. Generation loss of 420 MW occurred due to tripping of Sanjay Gandhi-Unit-1&2 (210 MW) on heavy voltage dip.	Tripping of following Elements: 1. 220 kV Birsingpur-Jabalpur-1&2 2. 220 kV Birsingpur-Nowroobad Traction-1&2 3. 220 kV Birsingpur-Hydel Feeder 4. 220 kV Birsingpur-Sanjay Gandhi TPS(C)1,2,3&4 5. 220/132 kV Birsingpur-ICT-1 (160 MVA) 6. Sanjay Gandhi-Unit-1&2 (210 MW)

**Details of Grid Events during the Month of May 2024 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
	( G1 for G1-2/ GD-1 to GD-5)					Generation Loss(MW)	Load Loss (MW)	% Generation Loss (MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
17	GD-1	WR	22:25 / 31-05-2024	22:57 / 31-05-2024	00:32	-	700	-	1.02%	93111	68738	At 22:25 hrs / 31-05-2024, Flashover of Y phase CT of Tie bus resulted in tripping of all connected lines on 2-2 from remote ends only. 220/132 kV Suhela-ICT-1 tripped on earth fault protection operation. Non operation of Busbar protection is under investigation by CSPCL. Load loss of 700 MW occurred at 220 kV Suhela, 220 kV Parawani, 220 kV Bemetara and other down stream network.	Tripping of following Elements: 1. 220 kV Suhela-Parawani-1&2 2. 220 kV Suhela-Bemetara-1&2 3. 220 kV Suhela-Bhatapara(CG) 4. 220 kV Suhela-Bhatapara(PG)-1,2&3 5. 220 kV Suhela-DSPM 6. 220 kV Suhela-Banari 7. 220/132 kV Suhela-ICT-1



### Details of Grid Events during the Month of May 2024 in Southern Region



Sl No.	Category of Grid Event (GI 1or GI 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	Andhra Pradesh	02-05-2024 23:22	03-05-2024 00:00	0:38	0	270	0.00%	0.46%	47410	58405	Complete Outage of 220kV/132kV AP Carbides SS of APTRANSCO: 220kV/132kV AP Carbides SS is being radially fed from 400kV/220kV Naroor SS. As per the reports submitted, the triggering incident was 1-phase CT failure in 220kV/132kV AP carbides. The fault was cleared by remote lines (220kV Naroor Ap Carbide Line-1&2) on zone-2. Tripping of both lines resulted in complete outage of 220kV/132kV AP Carbides station.	1. 220kV Naroor AP Carbide Line-1&2
2	GD-1	Andhra Pradesh	02-05-2024 14:25	02-05-2024 15:02	0:37	0	160	0.00%	0.24%	53399	65330	Complete Outage of 220kV/132kV Nandyal SS of APTRANSCO: 220kV/132kV Nandyal is being radially fed from 220kV Somayajalappally Pooling station. As per the reports submitted, the triggering incident was R-N fault in 220kV Somayajalappally Nandyal Line-2 and the line tripped. Subsequently, 220kV Somayajalappally Nandyal Line-1 also tripped on R-N fault at 14:10hrs. Tripping of both lines resulted in complete outage of 220kV/132kV Nandyal SS.	1. 220kV Somayajalappally Nandyal Line-1&2
3	GD-1	Kerala	03-05-2024 17:19	03-05-2024 18:12	0:53	0	0	0.00%	0.00%	47418	55902	Complete Outage of 220kV Kaniyampeta of KSEB: 220kV Kaniyampeta is connected with two 220kV feeders (220kV Kadakola-Kaniyampeta and 220kV Kaniyampeta-Kunnamangalam). In the antecedent condition 220kV Kadakola-Kaniyampeta was idle charged from Kaniyampeta end. The triggering incident is the R-N fault in the line Kaniyampeta Kadakola line and the line tripped. While charging the line at 17:55hrs, R-N fault due to the insulator discharging was again observed. R-N fault during the charging persisted without the operation of SOTF at Kaniyampeta end and after around 1sec 220kV Kaniyampeta-Kunnamangalam tripped at Kunnamangalam end on N-1. Tripping of the only connected line led to the Complete Outage of 220kV Kaniyampeta of KSEB.	1. 220kV Kadakola-Kaniyampeta 2. 220kV Kaniyampeta-Kunnamangalam
4	GD-1	Andhra Pradesh	07-05-2024 19:29	07-05-2024 22:06	2:37	0	0	0.00%	0.00%	41357	47368	Complete Outage of 220kV Tallapally Switching Station of APTRANSCO: As per the reports submitted the triggering incident was R phase LA flashover in 220kV Tallapally Nagarjuna Sagar Line-1 at Tallapally end. At the same time, IBB of 220kV Tallapally ICT-1(connected to Bus-2) & ICT-2(connected to Bus-1) and all the elements connected to 220kV Bus-1 and Bus-2 tripped. Tripping of both buses led to complete outage of 220kV Tallapally Switching Station.	1. 220kV Tallapally NagarjunaSagar-1,2&3 2. 220kV Tallapally Srisalim-1&2 3. 220kV Tallapally Rentschirhala 4. 220kV Tallapally Inuparagalli-1&2 5. 220kV Tallapally Chalkurthy 6. 220kV Tallapally ICT-1,2&3
5	GD-1	Tamil Nadu	08-05-2024 11:14	08-05-2024 11:40	0:26	0	183	0.00%	0.34%	49396	53621	Complete Outage of 230kV/110kV Gummidipoondi SS of TANTANSCO: 230kV Cauvery SS, 230kV Kamachi SS, 230kV Thevul Kandigal SS, and 230kV Myhalin SS: 230kV Cauvery SS, 230kV Kamachi SS, 230kV Thevul Kandigal SS, and 230kV Mychalin SS are being radially connected to 230kV/110kV Gummidipoondi SS. During antecedent condition, 230kV Gummidipoondi NCTPS line was idle charged from Gummidipoondi end and 230kV Gummidipoondi Suryadev line was under outage. 230kV Gummidipoondi Sullurpet is the only source to 230kV/110kV Gummidipoondi SS. As per the reports submitted the triggering incident was B-phase jumper failure in 230kV Gummidipoondi Sullurpet line at Gummidipoondi station causing a bus fault on 230kV Bus-1. At Gummidipoondi station, BBP of Bus-1 operated and all the elements connected to bus tripped. Tripping of the only source led to complete outage of 230kV/110kV Gummidipoondi SS.	1. 230kV Gummidipoondi Sullurpet line
6	GD-1	Tamil Nadu	10-05-2024 15:12	10-05-2024 19:07	3:55	0	0	0.00%	0.00%	47159	59083	Complete Outage of 230kV Ettayapuram Solar Plant: 230kV Ettayapuram Solar Plant is being radially connected through 230kV TTGS Ettayapuram line. The triggering incident was R-N fault in 230kV TTGS Ettayapuram line. Tripping of only connected line led to complete outage of 230kV Ettayapuram Solar Plant.	1. 230kV TTGS Ettayapuram line.
7	GD-1	Karnataka	10-05-2024 23:32	11-05-2024 01:03	1:31	0	92	0.00%	0.18%	40566	50922	Complete Outage of 220kV/110kV NRS SS of KPTCL: 220kV/110kV NRS SS is operating with single bus at 220kV Level. As per the reports submitted, the triggering incident was 220kV BBP maloperation at NRS and all the elements connected to the bus tripped. This led to complete outage of 220kV/110kV NRS SS.	1. 220kV Peenya NRS 2. 220kV Vrushabhavati NRS 3. 220kV AR circle NRS line, 4. 100 MVA NRS Transformer-1&2
8	GD-1	Karnataka	11-05-2024 16:39	11-05-2024 20:18	3:39	32	226	0.07%	0.43%	43037	52329	Complete Outage of 220kV/110kV Ambewadi SS of KPTCL: 220kV/110kV Ambewadi SS is operating with single bus at 220kV level. As per the reports submitted, the triggering incident was B-phase jumper failure in 220kV Ambewadi Ponda line at Ambewadi SS causing a bus fault. Immediately, BBP operated and all the lines connected to the bus tripped. This led to complete outage of 220kV/110kV Ambewadi SS.	1. 210kV Ambewadi Ponda
9	GD-1	Karnataka	11-05-2024 15:13	11-05-2024 16:36	1:23	30	250	0.06%	0.45%	52329	55675	Complete Outage of 400kV/220kV Koppal SS of WKTCL, 400kV Kudgi Generating station of NTPC_Kudgi, 220kV Nadhihal Pooling Station, 220kV GM Navar SS, 220kV/110kV Bijapur SS, 220kV/110kV Indi SS, and 220kV/110kV Aheri-220kV RSDPL, 220kV RSRPL, 220kV Ayana: As per the reports submitted, the triggering incident was B-N fault in 400kV Koppal Kudgi_PG Line-1&2 due to lightning near Kudgi_PG station and both lines tripped. Tripping of both lines led to complete outage of 400kV/220kV Koppal, 220kV RSDPL, 220kV RSRPL, 220kV Ayana. At the same time under frequency relay envisaged for Bangalore Islanding scheme operated tripping 400kV Kudgi_NTPC Kudgi_PG Line-1,2,3&4. This led to formation of island with 400kV Kudgi_NTPC, 220kV Nadhihal Pooling Station, 220kV GM Navar SS, 220kV/110kV Bijapur SS, 220kV/110kV Indi SS, and 220kV/110kV Aheri which later collapsed due to load generation imbalance.	1. 400kV Koppal Kudgi_PG Line-1&2 2. 400kV Kudgi_NTPC Kudgi_PG Line-1,2,3&4 3. 220kV Vajramathi Kudgi Line-1&2
10	GD-1	Tamil Nadu	13-05-2024 12:40	13-05-2024 16:53	4:13	77	0	0.17%	0.00%	46324	49425	Complete Outage of 230kV JSW_Vlathikulam_Wind: 230kV JSW_Vlathikulam_Wind is radially connected through 230kV TTGS JSW_Vlathikulam_Wind line. As per the reports submitted, the triggering incident was B-N fault in the line and the line tripped. Tripping of the only connected line resulted in complete outage of 230kV JSW_Vlathikulam_Wind.	1. 230kV TTGS JSW_Vlathikulam_Wind line
11	GD-1	Tamil Nadu	17-05-2024 09:01	17-05-2024 09:59	0:58	0	147	0.00%	0.31%	41052	46801	Complete Outage of 230kV Tondarpet SS, 230kV Basin Bridge SS, 400kV/230kV Pulyanthope SS, 230kV Korattur SS, 230kV CMRL SS, Vysaripadi SS and 230kV TNEB HQ of TANTANSCO and 230kV NCTPS Generating station of TANGEDCO: 230kV Tondarpet SS, 230kV Basin Bridge SS, 400kV/230kV Pulyanthope SS, 230kV Korattur SS, 230kV CMRL SS, Vysaripadi SS and 230kV TNEB HQ are being radially connected through 230kV NCTPS Tondarpet Line-1&2. 230kV Manali Korattur, 400kV Manali Almathy Line. These source feeders tripped on different faults from 09:02hrs leading to complete outage of 230kV Tondarpet SS, 230kV Basin Bridge SS, 400kV/230kV Pulyanthope SS, 230kV Korattur SS, 230kV CMRL SS, Vysaripadi SS and 230kV TNEB HQ and 230kV NCTPS Generating station.	1. 230kV NCTPS Tondarpet Line-1&2 2. 230kV Manali Korattur 3. 400kV Manali Almathy Line
12	GD-1	Karnataka	18-05-2024 20:10	18-05-2024 22:03	1:53	40	0	0.09%	0.00%	43115	45951	Complete outage of 220kV Ostro Kannada: 220kV Ostro Kannada is being radially connected through 220kV Hiriyur Ostro kannada line. As per the reports submitted, the triggering incident was R-N fault in the line and the line tripped. Tripping of the only connected line resulted in complete outage of 220kV Ostro Kannada.	1. 220kV Hiriyur Ostro kannada line
13	GD-1	Karnataka	20-05-2024 03:45	20-05-2024 06:04	2:19	32	0	0.10%	0.00%	33607	36045	Complete outage of 220kV Ostro Kannada: 220kV Ostro Kannada is being radially connected through 220kV Hiriyur Ostro kannada line. As per the reports submitted, the triggering incident was operation of over voltage stage-1 protection at Ostro Kannada end and DT was sent to Hiriyur end in the line and the line tripped. Tripping of the only connected line resulted in complete outage of 220kV Ostro Kannada.	1. 220kV Hiriyur Ostro kannada line
14	GD-1	Karnataka	20-05-2024 23:45	21-05-2024 05:09	5:24	30	0	0.07%	0.00%	45869	50758	Complete outage of 220kV Ostro Kannada: 220kV Ostro Kannada is being radially connected through 220kV Hiriyur Ostro kannada line. As per the reports submitted, the triggering incident was R-N fault in the line and the line tripped. Tripping of the only connected line resulted in complete outage of 220kV Ostro Kannada.	1. 220kV Hiriyur Ostro kannada line
15	GD-1	Karnataka	22-05-2024 05:47	22-05-2024 06:43	0:56	100	450	0.25%	1.12%	40671	40060	Complete Outage of 220kV/110kV Shimoga SS, 220kV/110kV Heggurje SS, 220kV/110kV Puttur SS, 220kV Bus-2 of 220kV/110kV Kemar SS of KPTCL and 220kV Varahi PH of KPTCL: 220kV/110kV Heggurje SS, 220kV/110kV Puttur SS, 220kV Bus-2 of 220kV/110kV Kemar SS, of KPTCL and 220kV Varahi PH of KPTCL are being radially connected to 220kV/110kV Shimoga SS. 220kV/110kV Shimoga SS was operating with single bus operation at 220kV level. As per the reports submitted, the triggering incident was failure of R-phase CVT of bus coupler through which 220kV Shimoga Arasikere line was charged. Immediately, BBP operated and all elements connected to the bus tripped resulting in complete outage of 220kV/110kV Shimoga SS leading to outage of the radial connected stations.	1. 220kV Shimoga Arasikere Line 2. 220kV Shimoga Varahi Line-1,2&3 3. 220kV Shimoga Chiknangalore 4. 220kV Shimoga Shantapura 5. 220kV Shimoga Bettedawereker 6. 220kV Shimoga Honnali Line

### Details of Grid Events during the Month of May 2024 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 (HHEMM)	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 for GI 2/ GD-1 to GD-5)					Generation Loss(MW)	Load Loss (MW)	% Generation Loss (MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
16	GD-1	Karnataka	24-05-2024 16:50	24-05-2024 17:20	0:30	0	259	0.00%	0.56%	46560	48363	Complete Outage of 220kV/66kV Manyata SS, 220kV/66kV HBR Layout SS 220kV Bus-1 of 220kV Yelahanka SS and 220kV Bus-1 of 220kV/66kV Shakarnagar SS of KPCL 220kV/66kV Manyata SS, 220kV/66kV HBR Layout SS are radially connected to 220kV Bus-1 of 220kV/66kV Shakarnagar SS which was being radially fed from 220kV Bus-1 of 220kV Yelahanka SS. As per the reports submitted, the triggering incident was LBB operation in 220kV Yelahanka Sahakarnagar Line-1. Immediately all lines connected to 220kV Yelahanka Bus-1 tripped. This led to complete outage of all radial connected stations.	1. 220kV Yelahanka_PG Yelahanka Line-1 2. 220kV/66kV Yelahanka Transformer-1 3. 220kV Yelahanka Shakarnagar Line-1 4. 220kV Yelahanka YCCP Line-1
17	GD-1	Telangana	26-05-2024 14:48	26-05-2024 19:16	4:28	0	0	0.00%	0.00%	42970	47960	Complete Outage of 765kV/400kV Warangal (New) SS of WKTL: As per the reports submitted, the triggering incident was B-N fault in 765kV Maheshwaram Warangal (New) Line-1 and 400kV Warangal Warangal (New) Line-2 and the lines tripped. At the same time, 765kV/400kV Warangal (New) ICT-1&2 tripped on earth fault stage-2 protection and 400kV Warangal Warangal (New) Line-1 tripped due to spurious DT receipt at Warangal_PG end. Tripping of all these lines led to complete outage of 765kV/400kV Warangal (New) SS.	1. 765kV Maheshwaram Warangal(New) Line-1 2. 400kV Warangal Warangal(New) Line-1&2 3. 765kV/400kV Warangal(New) ICT-1&2
18	GD-1	Tamil Nadu	30-05-2024 16:44	30-05-2024 17:45	1:01	0	0	0.00%	0.00%	52677	56542	Complete Outage of 230kV/110kV Cheekanurani SS of TANTRANSOCO: As per the reports submitted, the triggering incident was R-phase CT failure in 230kV Cheekanurani Renganathapuram line at Cheekanurani end causing a Bus fault in 230kV Bus-1. Immediately, Bus-1 BBP operated and all lines connected to the bus tripped. Subsequently, Bus-2 BBP operated as other CTs connected to 230kV Bus-2 were damaged due to R-phase CT failure in 230kV Cheekanurani Renganathapuram line. All elements connected to 230kV Bus-1 tripped. This resulted in complete outage of 230kV/110kV Cheekanurani SS.	1. 230kV Cheekanurani Amuthapuram 2. 230kV Cheekanurani Sempatty 3. 230kV Cheekanurani Theni 4. 230kV Cheekanurani Pasumalai 5. 230kV Cheekanurani Kinnimangalam 6. 230kV Cheekanurani Sivapuram 7. 230kV Cheekanurani Nallamanakayappatty 8. 230kV Cheekanurani Renganathapuram 9. 400kV/230kV Madhurai ICT-1,2&3

### Details of Grid Events during the Month of May 2024 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 for GI 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	Garaul	09.05.2024 08:02	09.05.2024 11:02	03:00	0	15	0.00%	0.07%	24825	20809	At 08:02 hrs on 09.05.2024, 220kV Muzaffarpur-Garaul-2 tripped due to R-N Fault which led to total power failure at Garaul as 220kV Muzaffarpur-Garaul CH#1 was under breakdown. Total load loss of around 15 MW at Garaul was reported. Power was extended through 132kV system via Hazipur, Jandaha and Manhar link.	220 kV Muzaffarpur-Garaul-2
2	GI-2	Jharsuguda, Darlipalli, OPGC	21.05.2024 17:02	21.05.2024 18:50	01:48	1900 (750+575+575)	0	6.25%	0.00%	30391	25500	At 17:02 Hrs on 21.05.2024, 765 kV Bus Reactor-1 & 1500 MVA 765/400 kV ICT-1 at Jharsuguda tripped due to failure of tie bay CT at Jharsuguda. At the same time, 800 MW UR1 Darlipalli tripped due to tripping of VFDs used for pulverisers which led to loss of fuel. Subsequently, UR3 and UR4 at OPGC also tripped one by one on low forward power. Total generation loss of around 1900 MW occurred within a span of 3 minutes.	240 MVA Bus Reactor-1 at Jharsuguda 1500 MVA 765/400 kV ICT-1 at Jharsuguda 765 kV Jharsuguda-Darlipalli-2 800 MW UR2 at Darlipalli 660 MW UR3 at OPGC 660 MW UR4 at OPGC
3	GD-1	Barkot, Chandiposh	21.05.2024 18:09	21.05.2024 18:25	00:16	0	40	0.00%	0.16%	28931	24949	At 18:09 Hrs on 21.05.2024, Y_ph BPI of 220 kV Rengali-Rengali (PH)-1 punctured at Rengali end. At the same time, 220 kV Rengali-Rengali (PG) D/c, 220 kV Rengali-Chandiposh and 220 kV Rengali-Barkot also tripped. This led to total power failure at Chandiposh and Barkot. Load loss of around 40 MW occurred.	220 kV Rengali- Chandiposh 220 kV Rengali- Rengali(PG)-1 220 kV Rengali- Rengali(PG)-1 220 kV Rengali- Barkot 220 kV Rengali- Rengali(PH)-1
4	GD-1	Haldia	29.05.2024 12:38	29.05.2024 12:57	00:19	566	0	2.19%	0.00%	25886	28256	At 12:34 hrs on 29.05.2024, R_ph bushing of GT-1 at Haldia caught fire which led to tripping of Unit-1, due to operation of GT-1 Transformer Differential protection. At the same time, 400 kV Haldia-Subhashgram-2 tripped due to fault in R phase LA & 400 kV Haldia-Subhashgram-3 tripped due to E/F. Consequently, UR2 also tripped due to loss of evacuation path. Total generation loss of around 566 MW occurred.	400 kV Haldia-Subhashgram D/c 2*300 MW Units at Haldia
5	GD-1	Tenughat	29.05.2024 12:57	29.05.2024 13:14	00:17	333	0	1.30%	0.00%	25657	28796	At 12:57 hrs on 29.05.2024, 220 kV Tenughat-Govindpur-1 tripped due to Y-B Fault. 220 kV Tenughat Govindpur-2 also tripped at the same time from Tenughat only. 220 kV Tenughat-Biharsharif was already under breakdown. Consequently, both units of Tenughat tripped due to loss of evacuation path and around 333 MW generation loss occurred.	220 kV Tenughat-Govindpur-1 220 MW UR1 at Tenughat 220 kV Tenughat-Govindpur-2 220 MW UR2 at Tenughat
6	GD-1	Dalkhola	31.05.2024 02:42	31.05.2024 04:32	00:10	0	4	0.00%	0.02%	28426	22896	At 02:42 Hrs on 31.05.2024, 132 kV Bus PT burst at Dalkhola(WB) and 132 kV Bus became dead. 220 kV Dalkhola(PG)-Kishanganj D/c also tripped from Kishanganj in Zone-3. Consequently, 220 kV Dalkhola (WB) S/S became dead. Load loss of 4 MW occurred at Dalkhola as other areas remained on alternate sources. All load was restored within 30 minutes.	220 kV Kishanganj-Dalkhola (PG)-D/c 132 kV Bansi-Dalkhola(WB)-1

### Details of Grid Events during the Month of May 2024 in North Eastern Region



Sl No.	Category of Grid Event ( GI for GI 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)		
1	GD I	Rhongkhon Area of Meghalaya	02-05-2024 01:12	02-05-2024 01:58	00:46:00	0	40	0.00%	1.67%	2291	2390	Rongkhon, Ampati, Phulbari and Ganol areas of Meghalaya Power System are connected to the rest of NER Grid through 132 kV Nangalibra-Rongkhon line. At 01:12 Hrs of 02.05.2024, 132 kV Nangalibra-Rongkhon line tripped. Due to tripping of this line, Rongkhon, Ampati, Phulbari and Ganol areas of Meghalaya Power System were isolated from NER Grid and collapsed due to no source available in these areas. Power supply was extended to Rongkhon area of Meghalaya Power System by charging 132kV Nangalibra –Rongkhon at 01:58 hrs of 02-05-2024.	132kV Nangalibra –Rongkhon
2	GD I	Lumshnong S/S of Meghalaya	02-05-2024 07:01	02-05-2024 07:26	00:25:00	0	14	0.00%	0.62%	2234	2241	Lumshnong area of Meghalaya Power System is connected to the rest of NER Grid through 132 kV Lumshnong-Panchgram and 132 kV Lumshnong-Khliehriat lines. Prior to the event, 132 kV Lumshnong-Khliehriat line tripped at 06:10 Hrs of 02.05.2024. At 07:01 Hrs of 02.05.2024, 132 kV Lumshnong-Panchgram line tripped. Due to tripping of this element, Lumshnong area of Meghalaya Power System got isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to Lumshnong S/S of Meghalaya Power System by charging 132 kV Khliehriat – Lumshnong line at 07:26 hrs of 02-05-2024.	132kV Lumshnong - Panchgram
3	GD I	Monarchak Generating station (NEEPCO) and Rabindranagar of Tripura Power	02-05-2024 18:48	02-05-2024 21:09	02:21:00	69	5	2.38%	0.18%	2904	2844	Monarchak Generating station of NEEPCO and Rabindranagar area of Tripura Power System is connected to the rest of NER Grid through 132 kV Monarchak-Rokhia line and 132 kV Monarchak-Udaipur line. Prior to the event, 132 kV Monarchak-Rokhia line tripped at 18:42 Hrs of 02.05.2024. At 18:48 Hrs of 02.05.2024, 132 kV Monarchak-Udaipur line tripped. Due to tripping of this element, Monarchak generation and Rabindranagar area of Tripura power system got isolated from NER Grid and collapsed due to load generation mismatch in this area. Power supply was extended to Rabindranagar S/S of Tripura Power System by charging 132 kV Monarchak-Udaipur line at 21:09 Hrs of 02-05-2024. Monarchak Generation was synchronised at 00:01 Hrs of 03-05-2024.	132 kV Monarchak-Udaipur line, Monarchak GT & ST
4	GD I	Leshka HEP of Meghalaya Power System	02-05-2024 00:45	02-05-2024 00:56	00:11:00	42	0	1.92%	0.00%	2189	2209	Leshka HEP of Meghalaya Power System were connected with rest of NER Grid through 132 kV Leshka-Khliehriat D/C lines. At 00:45 Hrs of 02-05-2024, 132 kV Leshka-Khliehriat D/C lines tripped. Due to tripping of these elements, Leshka HEP of Meghalaya power system got isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to Leshka HEP of Meghalaya Power System by charging 132 kV Leshka - Khliehriat 1 line at 00:56 hrs of 02-05-2024. Subsequently, 132 kV Leshka - khliehriat 2 line was charged at 01:08 hrs of 02-05-2024.	132 kV Leshka-Khliehriat D/C
5	GD I	Leshka HEP of Meghalaya Power System	02-05-2024 04:11	02-05-2024 04:51	00:40:00	42	0	1.96%	0.00%	2142	1921	Leshka HEP of Meghalaya Power System were connected with rest of NER Grid through 132 kV Leshka-Khliehriat D/C lines. Prior to the event, 132 kV Leshka-Khliehriat I Line tripped at 04:10 Hrs of 02.05.2024. At 04:11 Hrs of 02-05-2024, 132 kV Leshka-Khliehriat II lines tripped. Due to tripping of these elements, Leshka HEP of Meghalaya power system got isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to Leshka HEP of Meghalaya Power System by charging 132 kV Leshka - Khliehriat 1 line at 04:51 hrs of 02-05-2024. Subsequently, 132 kV Leshka - khliehriat 2 line was charged at 04:53 hrs of 02-05-2024.	132 kV Leshka-Khliehriat D/C
6	GD I	Cherapunji Area of Meghalaya Power System	02-05-2024 02:51	02-05-2024 04:11	01:20:00	0	2	0.00%	0.09%	2260	2290	Cherapunji area of Meghalaya Power System is connected to the rest of NER Grid through 132 kV Mawlai-Cherapunji line. At 02:51 Hrs of 02.05.2024, 132 kV Mawlai-Cherapunji line tripped. Due to tripping of this element, Cherapunji area of Meghalaya Power System got isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to Cherapunji S/S of Meghalaya Power System by charging 132 kV Mawlai-Cherapunji line at 04:11 hrs of 02-05-2024.	132kV Mawlai-Cherapunji line
7	GD I	Pasighat Area of Arunachal Pradesh	02-05-2024 19:26	02-05-2024 19:56	00:30:00	0	5	0.00%	0.19%	2867	2702	Pasighat Area of Arunachal Pradesh Power System were connected with rest of NER Grid through 132 kV Roing - Pasighat Line. 132kV Along - Pasighat tripped at 18:36 hrs of 02.05.2024 At 15:46 Hrs of 02.05.2024, 132kV Along - Pasighat and 132kV Pasighat - Roing lines tripped. Due to tripping of these lines, Pasighat area of Arunachal Pradesh Power System was isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to Pasighat area of Arunachal Pradesh Power System by charging 132kV Pasighat - Roing at 19:56 Hrs of 02.05.2024.	132 kV Roing - Pasighat Line
8	GD I	Ampati and Pulbari substation of Meghalaya	05-05-2024 12:27	05-05-2024 12:46	00:19:00	0	14	0.00%	0.78%	1619	1794	Ampati and Pulbari substation of Meghalaya is connected to NER Power system via 132kV Rongkhong - Ampati line At 12:27 Hrs of 05-05-2024, 132kV Rongkhong - Ampati line tripped. Due to tripping of this line, Ampati and Pulbari areas of Meghalaya Power System was isolated from NER Grid and collapsed due to no source available in this area. Line was charged at 12:46 and the power was restored.	132kV Rongkhong - Ampati line
9	GD I	Zuangtui, saitual, Vankal and Khawzal area of Mizoram	05-05-2024 04:13	05-05-2024 04:44	00:31:00	0	15	0.00%	0.93%	1939	1614	Zuangtui substation and radially connected Saitual, Vankal, Khawzal and Serchhip substations are connected to the rest of the grid via 132 kV Mekriat(PG)-Zuangtui line. 132 kV Serchhip-Lunglet line is kept open due to system requirement. At 04:13 Hrs of 05-05-2024, 132 kV Mekriat- Zuangtui line tripped. Due to tripping of this element, Zuangtui and radially connected substations of Mizoram power system got separated from rest of the grid due to no source available in these areas. Power was extended to Zuangtui and radially connected substations by charging 132 kV Mekriat-Zuangtui Line at 04:44 Hrs of 05-05-2024.	132 kV Mekriat- Zuangtui Line
10	GD I	Tipaimukh area of Manipur	05-05-2024 23:39	06-05-2024 00:19	00:40:00	0	0	0.00%	0.00%	2291	1600	Tipaimukh area of Manipur Power System was connected with rest of NER Grid through 132 kV Jiribam - Tipaimukh line & 132 kV Aizawl-Tipaimukh. At 21:54 Hrs of 05-05-2024, 132 kV Aizawl-Tipaimukh tripped. At 23:39 Hrs of 05-05-2024, during the charging attempt of 132 kV Aizawl-Tipaimukh line, 132 kV Jiribam- Tipaimukh line also tripped and Tipaimukh area was isolated from NER Grid and collapsed due to no source available in this area. Power was extended to Tipaimukh area of Manipur Power System, by charging 132 kV Jiribam- Tipaimukh line at 00:19 Hrs.	132 kV Jiribam- Tipaimukh line

### Details of Grid Events during the Month of May 2024 in North Eastern Region



Sl No.	Category of Grid Event  (GI for GI 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)		
11	GD I	Leshka HEP of Meghalaya Power System	05-05-2024 16:06	05-05-2024 16:29	00:23:00	42	0	2.42%	0.00%	1735	1658	Leshka HEP of Meghalaya Power System was connected with rest of NER Grid via 132 kV Myntdu Leshka - Khleihriat D/C lines. At 16:06 Hrs of 05-05-2024, 132 kV Myntdu Leshka - Khleihriat D/C lines tripped. Due to tripping of these lines, Leshka HEP of Meghalaya Power System was isolated from NER Grid and collapsed due to loss of evacuation path. Power supply was extended to Leshka HEP of Meghalaya Power System by charging 132 kV Myntdu Leshka - Khleihriat D/C at 16:29 hrs of 05.05.2024	132 kV Leshka-Khleihriat D/C
12	GD I	Nangalbibra, Ronkhon and Ampati areas of Meghalaya Power System	06-05-2024 05:21	06-05-2024 05:56	00:35:00	0	14	0.00%	1.19%	1996	1173	Nangalbibra substation of Meghalaya is connected to NER Power system via 132kV Agia- Nangalbibra line, 132kV Nangalbibra- Mendipathar line and 132kV Nangalbibra - Nongstoin line. Prior to the event, 132kV Nangalbibra - Nongstoin line tripped at 05:18hrs; 132kV Agia- Nangalbibra line tripped at 05:20 hrs. At 05:21 hrs of 05-05-2024, 132 kV Nangalbibra- Mendipathar line tripped. Due to tripping of this line, Nangalbibra, Ronkhon and Ampati areas of Meghalaya Power System was isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to Nangalbibra, Ronkhon and Ampati areas of Meghalaya Power System by charging 132 kV Nangalbibra- Nongstoin line at 05:56 hrs of 06.05.2024.	132 kV Nangalbibra- Mendipathar line
13	GD I	Kongba, Thoubal New, Thoubal old areas of Manipur Power System	12-05-2024 12:32	12-05-2024 15:46	03:14:00	0	15	0.00%	0.62%	2164	2420	Kongba, Thoubal New, Thoubal old areas of Manipur Power were connected with rest of NER Grid through 132 kV Vyanggokpi-Kongba D/C line, 132 kV Thoubal New-Kachching and 132 kV Thoubal old-Kachching line. 400 kV- Imphal(PG)-Thoubal-1 line was under outage since 13:32 Hrs of 18.10.2021, 400 kV-Imphal(PG)-Thoubal-2 line was under outage since 15:05 Hrs of 24.04.2024. At 12:32 Hrs of 12-05-2024, 132 kV Vyanggokpi-Kongba D/C line, 132 kV Thoubal New-Kachching and 132 kV Thoubal old-Kachching lines tripped. Due to tripping of these elements, Kongba, Thoubal New, Thoubal old areas of Manipur Power System were isolated from NER Grid and collapsed due to no source available in these areas.	132kV Vyanggokpi-Kongba D/C line, 132 kV Thoubal New-Kachching and 132 kV Thoubal old-Kachching lines
14	GD I	Dhemaji and Silapathar areas of Assam Power System	14-05-2024 13:36	14-05-2024 13:57	00:21:00	0	16	0.00%	0.59%	1734	2696	Dhemaji and Silapathar areas of Assam power system were connected with rest of NER Grid through 132kV North Lakhimpur - Dhemaji line. At 13:36 Hrs of 14-05-2024, 132 kV North Lakhimpur - Dhemaji line tripped. Due to tripping of this line, Dhemaji and Silapathar areas of Assam Power System were isolated from NER Grid and collapsed due to no source available in these areas. Power was extended to Dhemaji and Silapathar by charging 132 kV North Lakhimpur - Dhemaji line at 13:57 Hrs of 14-05-2024.	132 kV North Lakhimpur - Dhemaji line
15	GD I	NEIGRIHMS area of Meghalaya Power system	16-05-2024 15:37	16-05-2024 15:45	00:08:00	0	2	0.00%	0.07%	2087	2991	NEIGRIHMS area of Meghalaya Power System is connected to the rest of NER Grid through 132 kV NEIGRIHMS-NEHU line and 132 kV NEIGRIHMS-Khleihriat line. Prior to the event, 132 kV NEIGRIHMS-Khleihriat line tripped at 14:45 Hrs of 16.05.2024. At 15:37 Hrs of 16.05.2024, 132 kV NEIGRIHMS-NEHU line tripped. Due to tripping of this element, NEIGRIHMS area of Meghalaya Power System get isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to NEIGRIHMS S/S of Meghalaya Power System by charging 132 kV NEIGRIHMS-NEHU line at 15:45 Hrs of 16-05-2024.	132 kV NEIGRIHMS-NEHU line
16	GD I	Nathkuchi area of Assam Power System	17-05-2024 23:34	18-05-2024 00:13	00:39:00	0	4	0.00%	0.16%	2385	2525	Nathkuchi area of Assam Power System is connected to NER Power system via 132 kV Bornagar-Nathkuchi line. 132 kV Rangla - Nathkuchi line was under outage since 22:54 Hrs of 17.05.2024. At 23:34 Hrs of 17-05-2024, 132 kV Bornagar-Nathkuchi line tripped. Due to tripping of this line, Nathkuchi area of Assam Power System was isolated from NER Grid and collapsed due to no source available in this area. Power was extended to Nathkuchi area by charging 132 kV Bornagar-Nathkuchi line at 13:57 Hrs of 14-05-2024.	132 kV Bornagar-Nathkuchi line
17	GD I	Barpeta area of Assam Power System	17-05-2024 23:44	17-05-2024 23:58	00:14:00	0	14	0.00%	0.56%	2402	2485	Barpeta area of Assam Power System is connected to NER Power system via 132 kV Dhalgaon - Barpeta line, 132 kV Nalbari - Barpeta line was kept open for Load segregation. At 23:44 Hrs of 17-05-2024, 132 kV Dhalgaon - Barpeta line tripped. Due to tripping of this line, Barpeta area of Assam Power System was isolated from NER Grid and collapsed due to no source available in this area. Power was extended to Barpeta area by shifting Barpeta load to Nalbari side at 23:58 Hrs of 17-05-2024.	132 kV Dhalgaon - Barpeta line
18	GD I	Gossaigaon area of Assam Power System	18-05-2024 01:17	18-05-2024 01:39	00:22:00	0	0	0.00%	0.00%	2105	2235	Gossaigaon area of Assam Power System is connected to NER Power system via 132 kV Dhalgaon - Gossaigaon line. 132 kV Gossaigaon-Gauripur line was kept open on system requirement. At 01:17 Hrs of 18-05-2024, 132 kV Dhalgaon - Gossaigaon line tripped. Due to tripping of this line, Gossaigaon area of Assam Power System was isolated from NER Grid and collapsed due to no source available in this area. Power was extended to Gossaigaon area by charging 132 kV Gossaigaon-Gauripur line at 01:39 Hrs of 18-05-2024.	132 kV Dhalgaon - Gossaigaon line
19	GD I	New Shillong area of Meghalaya Power System	21-05-2024 12:52	21-05-2024 14:11	01:19:00	0	1	0.00%	0.04%	2070	2783	New Shillong area of Meghalaya Power System is connected to NER Power system via 220kV Mawngap-New Shillong D/C lines. At 12:52 hrs of 21-05-2024, 220kV Mawngap-New Shillong D/C tripped. Due to tripping of this line, New Shillong area of Meghalaya Power System was isolated from NER Grid and collapsed due to no source available in this area. Power was restored to New Shillong area by charging 220kV Mawngap-New Shillong 1 at 14:11 hrs of 21-05-2024.	220kV Mawngap-New Shillong D/C lines
20	GD I	Serchhip area of Mizoram Power System	21-05-2024 16:06	21-05-2024 17:02	00:56:00	0	7	0.00%	0.25%	2126	2854	Serchhip substation of Mizoram power system are connected to the rest of the grid via 132 kV Zuangtui-Serchhip and 132 kV Serchhip-Lunglei lines. 132 kV Serchhip-Lunglei line is kept open due to system requirement. At 16:06 Hrs of 21-05-2024, 132 kV Zuangtui-Serchhip line tripped. Due to tripping of this element, Serchhip area of Mizoram power system get separated from rest of the grid due to no source available in this area. Power supply was extended to Serchhip area by charging 132 kV Zuangtui-Serchhip Line at 17:02 Hrs of 21-05-2024.	132 kV Zuangtui-Serchhip line

### Details of Grid Events during the Month of May 2024 in North Eastern Region



Sl No.	Category of Grid Event ( GI For GI 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)		
21	GD I	Kohima area of Nagaland Power System	21-05-2024 16:42	21-05-2024 17:15	00:33:00	0	15	0.00%	0.53%	2165	2826	Kohima area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur-Kohima line, 132 kV Karong-Kohima line, 132 kV Kohima-Zadima line and 132 kV Kohima-Meluri line. Prior to the event, 132 kV Karong-Kohima line and 132 kV Kohima-Meluri line was under outage. At 16:42 Hrs of 21.05.2024, 132 kV Dimapur(PG) - Kohima and 132 kV Kohima-Zadima Lines tripped. Due to tripping of these lines, Kohima area of Nagaland Power System got isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to Kohima area of Nagaland Power System by charging 132 kV Kohima-Zadima Line at 17:15 Hrs of 21.05.2024.	132 kV Dimapur(PG) - Kohima and 132 kV Kohima-Zadima Lines
22	GD I	Rengpang area of Manipur Power System	21-05-2024 20:22	21-05-2024 20:54	00:32:00	0	3	0.00%	0.09%	3133	3346	Rengpang area of Manipur power system is connected to the rest of the grid via 132 kV Loktak-Rengpang line and 132 kV Jiribam-Rengpang line. 132 kV Jiribam-Rengpang line is under outage since 18:18 Hrs of 17.11.2023. At 20:22 Hrs of 21-05-2024, 132 kV Loktak-Rengpang line tripped. Due to tripping of this element, Rengpang area of Manipur power system got separated from rest of the grid due to no source available in this area. Power was extended to Rengpang area of Manipur power system by charging 132 kV Loktak-Rengpang Line at 20:54 Hrs of 21-05-2024.	132 kV Loktak-Rengpang line
23	GD I	Leshka HEP of Meghalaya Power System	23-05-2024 14:05	23-05-2024 15:01	00:56:00	0	0	0.00%	0.00%	1840	2877	Leshka HEP of Meghalaya Power System was connected with rest of NER Grid via 132 kV Myntdu Leshka - Khleihriat D/C lines. At 14:05 Hrs of 23-05-2024, 132 kV Myntdu Leshka - Khleihriat D/C lines tripped. Due to tripping of these lines, Leshka HEP of Meghalaya Power System was isolated from NER Grid and collapsed due to loss of evacuation path. Power supply was extended to Leshka HEP of Meghalaya Power System by charging 132 kV Myntdu Leshka - Khleihriat 1 line at 15:01 Hrs of 23.05.2024. Subsequently, 132 kV Myntdu Leshka - Khleihriat 2 line was charged at 15:03 Hrs of 23.05.2024.	132 kV Myntdu Leshka - Khleihriat D/C lines
24	GD I	MUSTEM area of Meghalaya Power System	23-05-2024 14:47	23-05-2024 15:00	00:13:00	0	0	0.00%	0.00%	1989	2960	MUSTEM area of Meghalaya Power System was connected with rest of NER Grid via 132 kV Mawlyndep - Mustem line. 132 kV Khleihriat - Mustem line was under outage since 14:37 Hrs on 23.05.2024. At 14:47 Hrs of 23-05-2024, 132 kV Mawlyndep - Mustem line tripped. Due to tripping of these lines, MUSTEM area of Meghalaya Power System was isolated from NER Grid and collapsed due to load generation mismatch in this area. Power supply was extended to MUSTEM area of Meghalaya Power System by charging 132 kV Khleihriat - Mustem line at 15:00 Hrs of 23.05.2024.	132 kV Mawlyndep - Mustem line
25	GD I	Kongba, Thoubal New, Thoubal old, Chandel, Kakching, Elangkangpokpi, Thanlon, Churachandpur and Moreh areas of Manipur Power System and Tamu load of Myanmar power system	24-05-2024 14:44	24-05-2024 14:48	00:04:00	0	33	0.00%	1.11%	2288	2975	Kongba, Thoubal New, Thoubal old, Chandel, Kakching, Elangkangpokpi, Thanlon, Churachandpur and Moreh areas of Manipur power system were connected with rest of NER Grid through 132kV Yangangpokpi - Kongba 2 line, 132kV Yangangpokpi - Kongba 1 line was under outage since 20:37 Hrs of 16-05-2024 due to hotspot observed at Yangangpokpi end for this line. 132kV Ningthoukhong Churachandpur 1 line was under outage since 21:14 Hrs of 29-04-2024 and 132kV Ningthoukhong Churachandpur 2 line was under ESD since 13:10 Hrs of 24.05.24 for insulator Replacement of Ningthoukhong Churachandpur 1 line. At 14:44 Hrs of 24-05-2024, 132kV Yangangpokpi - Kongba 2 line tripped. Due to tripping of this element, Kongba, Thoubal New, Thoubal old, Chandel, Kakching, Elangkangpokpi, Thanlon, Churachandpur and Moreh areas of Manipur Power System and Tamu load of Myanmar power system were isolated from NER Grid and collapsed due to no source available in these areas. Power was extended to Kongba, Thoubal New, Thoubal old, Chandel, Kakching, Elangkangpokpi, Thanlon, Churachandpur and Moreh areas of Manipur Power System and Tamu load of Myanmar power system by charging 132kV Yangangpokpi-Kongba 2 line at 14:48 hrs.	132kV Yangangpokpi - Kongba 2 line
26	GD I	Rengpang area of Manipur Power System	24-05-2024 16:23	24-05-2024 20:59	04:36:00	0	1	0.00%	0.03%	2258	2986	Rengpang area of Manipur power system is connected to the rest of the grid via 132 kV Loktak-Rengpang line and 132 kV Jiribam-Rengpang line. 132 kV Jiribam-Rengpang line is under outage since 18:18 Hrs of 17.11.2023. At 16:23 Hrs of 24-05-2024, 132 kV Loktak-Rengpang line tripped. Due to tripping of this element, Rengpang area of Manipur power system got separated from rest of the grid due to no source available in this area. Power was extended to Rengpang area of Manipur power system by charging 132 kV Loktak-Rengpang Line at 20:59 Hrs of 24-05-2024.	132kV Loktak-Rengpang line
27	GD I	Wokha area of Nagaland Power System	24-05-2024 14:54	24-05-2024 16:17	01:23:00	0	1	0.00%	0.03%	2258	2986	Wokha area of Nagaland Power System was connected with rest of NER Grid through 132kV Sanis-Wokha and 132kV Wokha-Chiephebozou lines. At 14:54 Hrs of 24-05-2024, 132kV Sanis-Wokha and 132kV Wokha-Chiephebozou lines tripped. Due to tripping of these elements, Wokha area of Nagaland Power System was isolated from NER Grid and collapsed due to no source available in this area. Power was extended to Wokha by charging 132kV Sanis-Wokha at 16:17 hrs of 24.05.2024.	132kV Sanis-Wokha and 132kV Wokha-Chiephebozou lines
28	GD I	Serchhip area of Mizoram Power System	26-05-2024 09:34	-	-	0	2	0.00%	0.08%	2705	2638	Serchhip area of Mizoram Power System was connected with rest of NER Grid through 132 kV Zungtui - Serchhip line. 132 kV Serchhip - Lunglei kept open for Load segregation purpose. At 22:45 Hrs of 26-05-2024, 132 kV Zungtui - Serchhip line tripped. Due to tripping of this element, Serchhip area of Mizoram Power System was isolated from NER Grid and collapsed due to no source available in this area.	132 kV Zungtui - Serchhip line
29	GD I	Daporijo, Basar & Along areas of Arunachal Pradesh Power System	24-05-2024 09:53	24-05-2024 11:18	01:25:00	0	5	0.00%	0.22%	1784	2272	Daporijo, Basar & Along areas of Arunachal Pradesh Power System were connected with rest of NER Grid through 132 kV Ziro-Daporijo line. 132 kV Along-Paighat was under tripped condition since 21-05-2024. At 09:53 Hrs of 24-05-2024, 132 kV Ziro-Daporijo line tripped. Due to tripping of this element, Daporijo, Basar & Along areas of Arunachal Pradesh Power System were isolated from NER Grid and collapsed due to no source available in this area. Power was extended to Daporijo by charging 132 kV Ziro-Daporijo at 11:18 hrs of 24.05.2024.	132 kV Ziro-Daporijo line
30	GD I	Wokha area of Nagaland Power System	26-05-2024 20:26	26-05-2024 21:19	00:53:00	0	5	0.00%	0.15%	2811	3233	Wokha area of Nagaland Power System was connected with rest of NER Grid through 132 kV Sanis-Wokha line and 132 kV Wokha-Chiephebozou lines. At 20:26 Hrs of 26-05-2024, 132 kV Sanis-Wokha and 132 kV Wokha-Chiephebozou lines tripped. Due to tripping of these elements, Wokha area of Nagaland Power System was isolated from NER Grid and collapsed due to no source available in this area. Power was extended to Wokha by charging 132 kV Wokha-Sanis at 21:19 hrs of 26.05.2024.	132 kV Sanis-Wokha and 132 kV Wokha-Chiephebozou lines
31	GD I	Serchhip area of Mizoram Power System	26-05-2024 22:45	-	-	0	2	0.00%	0.08%	2705	2638	Serchhip area of Mizoram Power System was connected with rest of NER Grid through 132 kV Zungtui - Serchhip line. 132 kV Serchhip - Lunglei kept open for Load segregation purpose. At 22:45 Hrs of 26-05-2024, 132 kV Zungtui - Serchhip line tripped. Due to tripping of this element, Serchhip area of Mizoram Power System was isolated from NER Grid and collapsed due to no source available in this area.	132 kV Zungtui - Serchhip line
32	GD I	Bornagar area of Assam Power System	27-05-2024 01:04	27-05-2024 01:19	00:15:00	0	11	0.00%	0.53%	2007	2084	Bornagar area of Assam Power System is connected with rest of NER Grid via 132 kV Dhalgaon-Bornagar and 132 kV Bornagar-Nathkuchi Lines. Due to bus split at Bornagar, part load of Bornagar is fed from Dhalgaon end and part load is fed from Nathkuchi end. At 01:04 Hrs of 27-05-2024, 132 kV Dhalgaon-Bornagar line tripped. Due to tripping of this element, part load of Bornagar area of Assam Power System got isolated from NER Grid. Part load of Bornagar area of Assam Power System was restored by charging 132 kV Dhalgaon-Bornagar line at 01:19 Hrs of 27.05.2024.	132 kV Dhalgaon-Bornagar Line
33	GD I	Karong area of Manipur Power system	28-05-2024 08:44	28-05-2024 15:04	06:20:00	0	13	0.00%	1.87%	1917	694	Karong area of Manipur Power System is connected with rest of NER Grid through 132 kV Imphal (MSPL)-Karong and 132 kV Karong-Kohima lines. At 08:44 Hrs of 28.05.2024, 132 kV Imphal (MSPL)-Karong and 132 kV Karong-Kohima Lines tripped. Due to tripping of these lines, Karong area of Manipur Power System got isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to Karong area of Manipur Power System by charging 132 kV Imphal(MSPL)-Karong Line at 15:04 Hrs of 28.05.2024.	132 kV Imphal (MSPL)-Karong and 132 kV Karong-Kohima Lines

### Details of Grid Events during the Month of May 2024 in North Eastern Region



Sl No.	Category of Grid Event  ( GI for GI 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)		
34	Near Miss	Sarusajai, Kahelipara, Dispur, Narengi, Chandrapur, Jagiroad, Sonapur and Jawaharnagar areas of Assam Power System	28-05-2024 02:50	-	-	0	0	0.00%	0.00%	2522	854	<p>The following tripping occurred before near miss event:</p> <ul style="list-style-type: none"> <li>• 220kV Samaguri – Sonapur tripped at 02:45 Hrs of 28.05.2024 and declared faulty</li> <li>• 220/132kV ICT-3 at Sarusajai kept as Spare transformer by SLDC Assam</li> <li>• 220/132kV 100MVA ICT-2 at Sarusajai handtripped at 02:10 Hrs due to overvoltage</li> <li>• 220kV Mirza – Sarusajai I &amp; II tripped at 02:27 Hrs and 02:50 Hrs respectively</li> <li>• Karbi-Langpi generation was out as per water availability and low demand</li> </ul> <p>Sarusajai, Kahelipara, Dispur, Narengi, Chandrapur, Jagiroad, Sonapur and Jawaharnagar of Assam Power System were connected with rest of the NER grid through 220kV Sarusajai – Mirza I &amp; II, 220kV Samaguri – Jawaharnagar and 220kV Samaguri – Sonapur. Due to inclement weather in the prevailing cyclonic situation (Cyclone “Remal”), multiple lines at downstream 33kV feeders tripped. Along with that the connecting lines mainly 220kV Samaguri – Sonapur line tripped at 03:45 Hrs, then 220kV Mirza-Sarusajai I &amp; II tripped at 02:27 Hrs and 02:50 Hrs respectively. Power to above areas were supplying through 220kV Samaguri-Jawaharnagar line only. Tripping of 220kV Samaguri – Jawaharnagar might have led to complete blackout of above-mentioned areas of Assam Power System with load loss of 16 MW (as per SCADA). As reported via mail by SLDC Assam, load crash of 1483.05 MW observed in entire Assam. Restoration: Karbi-Langpi generation Unit-2 was black started and synced at Sarusajai at 12:37 Hrs, there was some reduction in voltage</p>	220kV Samaguri-Sonapur, 220/132kV 100 MVA ICT-2 at Sarusajai, 220kV Mirza – Sarusajai I & II, 132kV Sarusajai – Kahelipara I, II & III, 132 kV Sarusajai-Kamakhyia
35	GD I	Gauripur area of Assam Power system	29-05-2024 02:49	29-05-2024 04:07	01:18:00	0	15	0.00%	1.05%	2583	1425	<p>Gauripur area of Assam Power System is connected with rest of NER Grid via 132 kV Bilaspada-Gauripur and 132 kV Gossaigaon-Gauripur lines. 132 kV Gossaigaon-Gauripur line is kept open to control overloading of 132 kV Kokrajhar-Bilaspada D/C lines. At 02:49 Hrs of 29-05-2024, 132 kV Bilaspada-Gauripur line tripped. Due to tripping of this element, Gauripur area of Assam Power System was isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to Gauripur area of Assam Power System by charging 132 kV Bilaspada-Gauripur line at 04:07 Hrs of 29.05.2024.</p>	132 kV Bilaspada-Gauripur Line
36	GD I	Kokrajhar area of Assam Power System	29-05-2024 03:18	29-05-2024 03:44	00:26:00	0	10	0.00%	0.72%	2262	1390	<p>Kokrajhar area of Assam Power System is connected with rest of NER Grid via 132 kV BTPS-Kokrajhar D/C lines. Prior to the event, 132 kV Bilaspada-Kokrajhar D/C lines and 132 kV BTPS-Kokrajhar I line was under outage since 03:04 Hrs and 03:11 Hrs of 29.05.2024 respectively. At 03:18 Hrs of 29-05-2024, 132 kV BTPS-Kokrajhar II line tripped. Due to tripping of this element, Kokrajhar area of Assam Power System was isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to Kokrajhar area of Assam Power System by charging 132 kV BTPS-Kokrajhar I line at 03:44 Hrs of 29.05.2024.</p>	132 kV BTPS-Kokrajhar II Line
37	GD I	New Shillong and Mawngap areas of Meghalaya Power System	29-05-2024 15:17	29-05-2024 17:29	02:12:00	0	0.1	0.00%	0.00%	3211	2002	<p>New Shillong and Mawngap areas of Meghalaya Power System are connected with the rest of NER grid via 220kV Mawngap-Killing D/C lines and 220/132 kV ICT-1 &amp; II at Mawngap. At 15:17 Hrs of 29-05-2024, 220 kV Mawngap – Killing D/C, 220 kV Mawngap – New Shillong D/C &amp; 220/132 kV ICT-1 &amp; 2 at Mawngap tripped. Due to tripping of these elements, New Shillong and Mawngap areas of Meghalaya Power System were isolated from NER Grid and collapsed due to no source available in these areas. Power supply was extended to 220 kV Mawngap S/S by charging 220 kV Mawngap – Killing I line at 17:19 Hrs of 29.05.2024 and to New Shillong by charging 220 kV Mawngap-New Shillong D/C lines at 17:29 Hrs of 29.05.2024.</p>	220 kV Mawngap-Killing D/C Line, 220 kV Mawngap-New Shillong D/C Line, 220/132 kV ICT-1 & II at Mawngap
38	GD I	Lumshnong area of Meghalaya Power system	30-05-2024 06:39	30-05-2024 06:52	00:13:00	0	2	0.00%	0.12%	2809	1732	<p>Lumshnong area of Meghalaya Power System is connected to the rest of NER Grid through 132 kV Lumshnong-Panchgram and 132 kV Lumshnong-Khliehriat lines. Prior to the event, 132 kV Lumshnong-Panchgram line tripped at 03:02 Hrs of 30.05.2024. At 06:39 Hrs of 30.05.2024, 132 kV Lumshnong-Khliehriat line tripped. Due to tripping of this element, Lumshnong area of Meghalaya Power System got isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to Lumshnong S/S of Meghalaya Power System by charging 132 kV Khliehriat – Lumshnong line at 06:52 Hrs of 30-05-2024.</p>	132 kV Lumshnong-Khliehriat Line
39	GD I	Phulbari area of Meghalaya Power System	31-05-2024 13:44	31-05-2024 14:10	00:26:00	0	1	0.00%	0.04%	2819	2224	<p>Phulbari area of Meghalaya Power System are connected to the rest of NER Grid through 132 kV Ampati-Phulbari line. At 13:44 Hrs of 31-05-2024, 132 kV Ampati-Phulbari line tripped. Due to tripping of this line, Phulbari area of Meghalaya Power System was isolated from NER Grid and collapsed due to no source available in this area. Power supply was extended to Phulbari area by charging 132 kV Ampati-Phulbari line at 14:10 Hrs of 31-05-2024</p>	132 kV Ampati-Phulbari Line