# Details of Grid Events during the Month of November 2023 in Northern 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 (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 | GI-2 | Rajasthan | 03-Nov-2023 09:16 | 03-Nov-2023 09:59 | 00:43 | 0 | 335 | 0.000 | 0.623 | 46716 | 53744 | i) During antecedent condition, 220kV Hindaun220-Sikrai(Dausa)(Raj) ckt was not in service and MVA loading of 400/220 kV 315 MVA ICT-1 & 2 at Hindaun(Raj) was 269 and 259 MVA respectively.<br>ii) As reported, at 09:16 hrs, 400/220kV 315MVA ICT-1 & 2 both tripped due to overloading.<br>iii) As per DR, current in three phases in LV side of 400/220 kV 315 MVA ICT -1 at Hindaun(Raj) are I_R=~936A, I_Y=~966A and I_B=~938A.<br>iv) As per PMU at Bassi(PG), no fault is observed in the system.<br>v) As per SCADA, load loss of approx. 335MW is observed in Rajasthan control area. | 1) 400/220 kV 315 MVA ICT -1 at Hindaun(Raj)<br>2) 400/220 kV 315 MVA ICT -2 at Hindaun(Raj) |
| 2 | GI-2 | Uttar Pradesh | 04-Nov-2023 04:03 | 04-Nov-2023 05:48 | 01:45 | 455 | 0 | 1.492 | 0.000 | 30487 | 39273 | i) During antecedent condition, interconnectors were in opened condition. 490MW Unit-5 was not running and 490MW Unit-6 was generating approx. 455MW. HVDC Rihand-Dadri Bipole was carrying total ~600MW.<br>ii) As reported, at 04:03:05:240 hrs, B-N phase to earth fault occurred on 400kV Dadri-Mandola ckt-1. Fault distance was approx. 100meter from Dadri TPS end. This fault was sensed by both the ends in Z-1. After ~160msec (08 cycles) of fault, B-ph pole of CB at both then ends opened and A/R started. Further after ~1sec (dead time), line successfully autoreclosed due to transient nature of fault. Delayed tripping initiation in Z-1 was due to Z-1 time delay setting which was kept as 100msec instead of instantaneous. As informed by NTPC Dadri, Z-1 time delay has been set as 0 sec (instantaneous).<br>iii) As per PMU & DR of 400kV Dadri-Mandola ckt-1, B-N phase to earth fault with successful A/R operation is observed. Steady state fault current was approx. 35kA, during transient fault current magnitude was ~52kA.<br>iv) On this fault, commutation failure at HVDC Rihand-Dadri occurred and power order dropped to zero (0).<br>v) Distance protection relay at Harshvihar end of 400kV Dadri-Harshvihar ckt-2 sensed the fault on 400kV Dadri-Mandola ckt in Z-1 and successful autoreclosed from Harshvihar end. Dadri end relay sensed fault in Z-4 as fault was in reverse direction however as informed by Dadri, instant three phase tripping occurred on DT received from Harshvihar end. Reason of DT received at Dadri end is yet to be identified.<br>vi) During fault time, over voltage of the magnitude of approx. 723kV in 400kV Dadri-Mandola ckt-2 and Dadri end and approx. 560kV in 400kV Bus-2 at Dadri TPS is observed (as per PMU at Dadri TPS). Over voltage sustained for approx. 100msec. On this over voltage, 400kV Dadri-Mandola ckt-2 tripped on over voltage stage-2 protection operation at Dadri end.<br>vii) At the same time, all three filter banks connected at Dadri HVDC tripped on over voltage protection operation. As reported by POWERGRID, over voltage protection of filter banks is 489.89kV with 20msec pickup time delay. Due to tripping of filter banks, HVDC Rihand-Dadri Bipole got blocked.<br>viii) From DR & PMU voltage plots, over voltage didn't occur in other 400kV elements at Dadri TPS. On overvoltage in Mandola ckt-2, Dadri TPS informed that neutral of CVT at Main 1 relay found opened at Dadri end which led to rise in voltage at secondary side. Reason of over voltage in 400kV Bus and Dadri HVDC bus is yet to be identified. | 1) 400 KV Dadri(NT)-Mandola(PG) (PG) Ckt-1<br>2) 400 KV Dadri(NT)-Mandola(PG) (PG) Ckt-2<br>3) 400 KV Dadri(NT)-Loni Harsh Vihar(DV) (NT) Ckt-2<br>4) 490 MW Dadri-II TPS - UNIT 2<br>5) 500 kV HVDC Rihand-Dadri (PG) Ckt-1<br>6) 500 kV HVDC Rihand-Dadri (PG) Ckt-2 |
| 3 | GI-1 | Himachal Pradesh | 10-Nov-2023 13:54 | 10-Nov-2023 14:30 | 00:36 | 0 | 90 | 0.000 | 0.181 | 45307 | 49690 | i) During antecedent condition, 400/220kV 315MVA ICT at Dehar(BB) was carrying 90MW among which 220kV Dehar(BB)-Kangoo(HP) (HPPTCL) Ckt was carrying 48MW and 220/132kV 40MVA ICT-1 & 2 were carrying 22MW and 20MW respectively and the total of 42MW was evacuating through 132 KV Dehar(BB)-Kangoo(HP) (HPPTCL) Ckt.<br>ii) As reported, at 13:54 hrs, 220kV Dehar(BB)-Kangoo(HP) (HPPTCL) Ckt tripped on R-N phase to earth fault (Exact reason and location of fault yet to be shared).<br>iii) During the same time, 132 KV Dehar(BB)-Kangoo(HP) (HPPTCL) Ckt also tripped due to over-current (as reported by SLDC-HP).<br>iv) As per PMU at Panchkula(PG), R-N phase to earth fault is observed with fault clearing time of 80ms.<br>v) As per SCADA, change in demand of approx. 100MW is observed in HP control area.<br>vi) As reported by SLDC-HP, load loss of approx. 90MW is observed in HP control area. | 1) 220 KV Dehar(BB)-Kangoo(HP) (HPPTCL) Ckt<br>2) 132 KV Dehar(BB)-Kangoo(HP) (HPPTCL) Ckt |
| 4 | GI-2 | Himachal Pradesh | 16-Nov-2023 02:01 | 16-Nov-2023 08:14 | 06:13 | 0 | 0 | 0.000 | 0.000 | 27333 | 33193 | i) 400/220kV Gumma(HP) has one and half breaker scheme at 400kV level.<br>ii) As reported, at 02:01hrs, bus bar protection operated at both 400kV Bus 1 & 2 at Gumma(HP) due to malfunction of relay P746 (Y-phase relay of Bus-1). Due to this, both the 400kV buses at Gumma(HP) became dead and 400/220 kV 315 MVA ICT 1 & 2 at Gumma (HP) also tripped.<br>iii) Though the main CBs at Gumma(HP) of 400kV Gumma(HP)-Nathpa Jhakri Ckt- 1& 2 and 400kV Gumma(HP)-Panchkula(PG) Ckt-1 & 2 tripped due to bus bar protection operation, but tie CBs of the said four circuits remained closed.<br>iv) As per PMU at Panchkula(PG), no fault is observed in the system.<br>v) As per SCADA, no change in demand in observed in HP control area. | 1) 400 KV Gumma (HP) - Bus 1<br>2) 400 KV Gumma (HP) - Bus 2<br>3) 400/220 kV 315 MVA ICT 1 at Gumma (HP)<br>4) 400/220 kV 315 MVA ICT 2 at Gumma (HP) |
| 5 | GI-2 | Rajasthan | 17-Nov-2023 20:36 | 17-Nov-2023 23:11 | 02:35 | 0 | 80 | 0.000 | 0.179 | 34411 | 44672 | i) 400kV Suratgarh(RS) has one and half breaker bus scheme. 400kV Suratgarh SCTPS-Suratgarh ckt-1&2 acts as interconnector between Suratgarh SCTPS and Suratgarh S/s, having line CBs only. Unit-3, 4, 5 & 6 are connected at 400kV Suratgarh(RS) and Unit-7 & 8 of SCTPS are further connected via two interconnectors.<br>ii) During antecedent condition, Unit-3, 4, 5 & 6 were already boxed up and Unit- 7 & 8 of SCTPS were running at 488MW and 247MW load respectively. Power imported by SCTPS to Suratgarh(RS) via interconnectors were 245MW and 241MW respectively. 400 KV Suratgarh(RVUN)-Bikaner(RS) (RS) Ckt and 400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-1 were carrying approx. 113MW and 144MW respectively. 400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-2 was already tripped manually at 19:42 hrs.<br>iii) As reported, at 20:36hrs, 400 KV Suratgarh(RVUN)-Bikaner(RS) (RS) Ckt tripped on B-N phase to earth fault with fault distance of 28km from Suratgarh(RS) end. As per DR at Suratgarh(RS) end, B-N phase to earth fault occurred and zone-1 distance protection operated with fault current of ~9.05kA from Suratgarh(RS) end and fault clearing time of ~68ms (DR time sync issue observed at Suratgarh(RS) end). As per DR at Bikaner(RS) end, R-N phase to earth fault occurred and zone-1 distance protection operated with fault current of ~3.69kA from Bikaner(RS) end and fault clearing time of ~48ms (Phase sequence issue observed at Suratgarh(RS) and Bikaner(RS) end).<br>iv) During the same time, over-current protection of B-phase operated at 400kV Suratgarh SCTPS-Suratgarh ckt-1&2 (as reported).<br>v) 400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-1 tripped at the same time due to over-voltage stage-1 protection operation. As per DR at Suratgarh(RS) end, phase voltages of R, Y and B phase were respectively 236.44kV, 244.81kV and 254.83kV depicting B-phase voltage= ~110.34% (DR time sync issue observed at Suratgarh(RS) end).<br>vi) As per PMU at Bikaner765(PG), Y-N phase to earth fault with fault clearing time of 80ms is observed.<br>vii) As per SCADA, change in demand of approx. 80MW is observed Rajasthan control area. No change in generation is observed at Suratgarh(RS). | 1) 400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-1<br>2) 400 KV Suratgarh SCTPS(RVUN)-Suratgarh(RS) (RS) Ckt-1<br>3) 400 KV Suratgarh SCTPS(RVUN)-Suratgarh(RS) (RS) Ckt-2<br>4) 400 KV Suratgarh(RVUN)-Bikaner(RS) (RS) Ckt |
| 6 | GI-1 | Punjab | 30-Nov-2023 06:51 | 30-Nov-2023 08:14 | 01:23 | 463 | 60 | 1.331 | 0.140 | 34790 | 43000 | i) 220/132kV Ropar GGSTP(PS) has main and transfer bus scheme at 220kV level.<br>ii) During antecedent condition, 210 MW Guru Gobind Singh TPS (Ropar) - UNIT 4 (carrying ~164MW), UNIT 5 (carrying ~148MW) & UNIT 6 (carrying ~151MW) and 220kV feeders to Kharar, Mohali & Gobindgarh-2 were connected to 220kV main Bus section-III. Rest of the elements were connected to main Bus section-I & II.<br>iii) As reported, at 06:51 hrs, 220kV GGSTP-Kharar Ckt tripped on R-N phase to earth fault (zone-1 distance protection operated) with fault current of 4.071kA and fault distance of 33.91km from GGSTP end. Fault occurred due to heavy lightening.<br>iv) On this fault, all other elements connected to 220kV main Bus section-III tripped. (Exact reason yet to be shared)<br>v) As reported by GGSTP Ropar, 220kV GGSTP-Bassi Pathana Ckt (connected to 220kV main Bus section-I) and 220kV GGSTP-Gobindgarh Ckt-1 (connected to 220kV main Bus section –II) also tripped during the same time. (Exact reason yet to be shared)<br>vi) As per SCADA SOE, 66kV Morinda-Kharar(PS) ckt also tripped at the same time. (Exact reason yet to be shared)<br>vii) As per PMU at Jalandhar(PG), R-N phase to earth fault is observed with delayed fault clearance time of 440ms.<br>viii) As per SCADA, generation loss of approx. 463MW occurred at Ropar GGSTP.<br>ix) As per SCADA load loss of approx. 60MW is observed in Punjab control area. | 1) 210 MW Guru Gobind Singh TPS (Ropar) - UNIT 4<br>2) 210 MW Guru Gobind Singh TPS (Ropar) - UNIT 5<br>3) 210 MW Guru Gobind Singh TPS (Ropar) - UNIT 6<br>4) 220kV GGSTP-Kharar Ckt<br>5) 220kV GGSTP-Mohali Ckt<br>6) 220kV GGSTP-Bassi Pathana Ckt<br>7) 220kV GGSTP-Gobindgarh Ckt-1<br>8) 220kV GGSTP-Gobindgarh Ckt-2 |
| 7 | GD-1 | Uttarakhand | 30-Nov-2023 17:31 | 30-Nov-2023 19:17 | 01:46 | 500 | 0 | 1.371 | 0.000 | 36478 | 47744 | i) 400kV Tehri(THDC) has double main bus scheme.<br>ii) During antecedent condition, 250 MW TEHRI HPS - UNIT 2 was running at approx. 250MW and 250 MW TEHRI HPS - UNIT 3 was synchronized to grid at 17:24 hrs and was increasing the total generation upto approx. 500MW.<br>iii) As reported, at 17:31 hrs, 400 KV Tehri(THDC)-Koteshwar(PG) (PG) Ckt-1 tripped from both the ends and 400 KV Tehri(THDC)-Koteshwar(PG) (PG) Ckt-2 tripped from Tehri end only on line bus duct differential protection operation.<br>iv) On tripping of both 400 KV Tehri(THDC)-Koteshwar(PG) (PG) Ckt-1 & 2, 250 MW TEHRI HPS - UNIT 1, 2 & 3 also tripped due to loss of evacuation path.<br>v) 400 KV Tehri(THDC)-Koteshwar(PG) (PG) Ckt-2, was synchronized at 18:01hrs. Subsequently, 250 MW TEHRI HPS - UNIT 1, 2 & 3 were also synchronized to the grid and load was gradually increased.<br>vi) At 18:15 hrs, 400 KV Tehri(THDC)-Koteshwar(PG) (PG) Ckt-2 tripped again from Tehri end on line bus duct differential protection operation. On this, 250 MW TEHRI HPS - UNIT 1, 2 & 3 also again tripped due to loss of evacuation path.<br>vii) As reported by Tehri-HEP, on analysis it was found that the differential current is being measured as CT of line bus duct differential relay was erroneously shorted instead of CT of bus bar protection relay due to mismatch of drawing and actual field connections during Main-II Bus bar protection related works at Tehri HEP. However, the issue is addressed and resolved.<br>viii) As per PMU at Koteshwar(PG), Y-B phase to phase fault is observed with fault clearance time of 80ms at 17:31 hrs and no fault is observed in the system at 18:15 hrs.<br>ix) As per SCADA, generation loss at Tehri HEP of approx. 500MW and 205MW are observed at 17:31hrs and 18:15hrs respectively. | 1) 400 KV Tehri(THDC)-Koteshwar(PG) (PG) Ckt-1<br>2) 400 KV Tehri(THDC)-Koteshwar(PG) (PG) Ckt-2<br>3) 250 MW TEHRI HPS - UNIT 1<br>4) 250 MW TEHRI HPS - UNIT 2<br>5) 250 MW TEHRI HPS - UNIT 3 |

## Details of Grid Events during the Month of November 2023 in Western Region

| Sl No. | Category of Grid Event | Affected Area | Time and Date of occurrence of Grid Event | Time and Date of Restoration | Duration (HH:MM) | Loss of generation / loss of load during the Grid Event | | % Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Event | | Antecedent Generation/Load in the Regional Grid* | | Brief details of the event ( pre fault and post fault system conditions) | Elements Tripped |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ( GI 1or 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 | WR | 03-Nov-23 17:52 | 03-Nov-23 18:14 | 00:22 | - | 200 | - | 0.30% | 72953 | 66421 | At 17:52 hrs/03-11-2023, B phase lightening arrestor of 220 kV Kawas-Ichhapore-1 at Ichhapore station failed and resulted Bus Bar protection operation and 220 kV Ichhapore-Bus-1&2 and all connected elements tripped. Load loss of 200 MW occurred at Ichhapore due to the event. | Tripping of follwing elements-<br>1. 220 kV Ichhapore-Bus-1&2<br>2. 220 kV Kawas-Ichhapore-1&2<br>3. 220 kV Sachin-Ichchhapore-1<br>4. 220 kV RIL-Ichchhapore-1&2<br>5. 220/66 kV Ichhapore-ICT-1,2,3&4 |
| 2 | GI-1 | WR | 11-Nov-23 06:54 | 11-Nov-23 12:00 | 05:06 | 152 | - | 0.23% | - | 67080 | 60700 | At 06:54 Hrs/11-11-2023, 220 kV Bus coupler of Dedhiya substation of Nakhatrana Wind PSS tripped on overcurrent protection resulting in tripping of 220 kV Dedhiya Bus-2 and 220/33 kV Dedhiya-ICT-1&2 (connected to Bus-2) became dead.220/33 kV Dedhiya-ICT-1&2 were hand tripped at 08:24 hrs to prevent high inrush current during charging of bus coupler.Generation loss of 152 MW occurred at Dedhiya Wind power plant due to the event. | Tripping of follwing elements-<br>1. 220 kV Dedhiya-Bus coupler<br>2. 220/33 kV Dedhiya-ICT-1&2<br>3. 220 kV Dedhiya Bus-2 |
| 3 | GD-1 | WR | 07-Nov-23 23:12 | 08-Nov-23 00:38 | 01:26 | 19.13 | - | 0.03% | - | 67521 | 61977 | At 23:12 Hrs/07-11-2023, 220 kV Indore-Pritamnagar tripped on R-E fault at Pritamnagar end only and auto recloser successfull at Indore end, Pritamnagar Wind Power Plant became dead. Generation loss of 19.13 MW occurred Pritamnagar Wind Power Plant due to loss of evacuation path. | Tripping of follwing elements-<br>1. 220 kV Indore-Pritamnagar-1<br>2. 220/33 kV Pritamnagar-ICT-1,2&3<br>3. 220 kV Pritamnagar-Bus-1&2 |
| 4 | GD-1 | WR | 13-Nov-23 11:11 | 13-Nov-23 12:18 | 01:07 | - | 167 | - | 0.28% | 57136 | 58781 | At 11.10 Hrs /13.11.2023, opening of 400 kV Jetpur-Bus Coupler Bay-B phase Bus-2 side Dropper Jumper from Fly-Over Bus resulted in tripping of 400kV Jetpur Bus-1 and all connected elements on Bus Bar protection operation. 400/220 kV Jetpur ICT-2 tripped on over current protection operation and 400 kV TPCL Mundra-Jetpur-2 tripped on overvoltage stage-1&2 operation.<br>400 kV Jetpur-Amreli-2 and 400/220 kV Jetpur ICT-3 (500 MVA) were under outage due to high voltage. Load loss of 167 MW occurred due to SPS operation on overloading of 400/220 kV Jetpur ICT-2. | Tripping of follwing elements-<br>1. 400 kV TPCL Mundra-Jetpur-1&2<br>2. 400 kV Jetpur-Amreli-1<br>3. 400/220 kV Jetpur ICT-1,2 (315 MVA)<br>4. 400kV Jetpur Bus-1<br>5. 400/220 kV Jetpur ICT-4 (500 MVA) |
| 5 | GI-2 | WR | 14-Nov-23 05:00 | 14-Nov-23 09:45 | 04:45 | - | - | - | - | 53156 | 48265 | At 05:00 Hrs /14-11-2023, fault in R-phase Disconnector swith (DS1) of 400 kV Vav-Kosamba resulted in tripping of 400 kV Vav Bus- 1 and all the connected elements on Bus bar protection operation. 400 kV Vav-Kosamba was under outage due to high voltage but its Disconnector swith (DS1) was closed.<br>400 kV Ukai-Vav connected to 400 kV Vav Bus- 2 also tripped during the event on Zone-4 protection operarion and Carrier recieved. No load loss occurred due to the event. | Tripping of follwing elements-<br>1. 400/220 kV Vav ICT-3 (500 MVA)<br>2. 400 kV Vav Bus Reactor<br>3. 400 kV Vav Bus Coupler<br>4. 400 kV Ukai- Vav (Connected to 400 kV Vav Bus- 2)<br>5. 400 kV Vav-Kosamba-1 |
| 6 | GD-1 | WR | 25-Nov-23 18:20 | 25-Nov-23 19:37 | 01:17 | 35 | - | 0.05% | - | 70810 | 65221 | At 18:20 Hrs/25-11-2023, 220kV Kotda Madh-Bhuj-1 tripped on B-E fault from Kotda Madh end and Auto Recloser successfully operated at Bhuj end. Kotda madh end AR blocked due to unhealthy PLCC. Generation loss of 40 MW reported at Kotda Madh wind power plant due to loss of evacuation path. | Tripping of follwing elements-<br>1. 220 kV Bhuj-Kotda Madh-1 |
| 7 | GD-1 | WR | 27-Nov-23 02:20 | 27-Nov-23 18:52 | 16:32 | 115 | - | 0.24% | - | 48200 | 42027 | At 02:20 Hrs / 27-11-2023, 220 kV Indore(PG)-Pritamnagar-1 tripped on Y-E fault due to Y phase jumper open at fault location. Generation loss of 115 MW occurred at Pritamnagar (AWEMP1PL) wind power plant due to loss of evacuation path. | Tripping of follwing elements-<br>1. 220 kV Indore(PG)-Pritamnagar-1 |
| 8 | GD-1 | WR | 27-Nov-23 13:55 | 27-Nov-23 16:03 | 02:08 | 17 | - | 0.03% | - | 61545 | 52483 | At 13:55 Hrs / 27-11-2023, 220 kV Bhuj-Kotda Madh-1 tripped due to false DT signal received from Bhuj end. Generation loss of 17 MW occurred at Kotda Madh (Alfanar) wind power plant due to loss of evacuation path. | Tripping of follwing elements-<br>1. 220 kV Bhuj-Kotda Madh-1 |
| 9 | GI-1 | WR | 28-Nov-23 16:27 | 28-Nov-23 18:15 | 01:48 | 135 | - | 0.002 | - | 63658 | 53346 | At 16:27 Hrs / 29-11-2023, 220 kV Bhuj-Nanavalka-1 auto reclosed successfully at both end on B-E fault. At same time 220/33 kV Nanavalka-ICT-1&2 tripped on Over Current Earth Fault protection operation. No fault found during inspection. Generation loss of 135 MW occurred at Nanavalka (Alfanar) wind power plant due to the event. | Tripping of follwing elements-<br>1. 220/33 kV Nanavalka-ICT-1&2 |
| 10 | GD-1 | WR | 29-Nov-23 16:06 | 29-Nov-23 18:09 | 02:03 | - | 487 | - | 0.009 | 62831 | 52678 | At 16:04 Hrs / 29-11-2023, R phase CT of Bus coupler burst at 220 kV Kharadpada, 220 kV Kharadpada-New Kharadpada-1&2 tripped on Over Current Earth Fault, 200 kV Vapi-Bhilosa-1 and 220 kV Vapi-Kharadpada-1 tripped from Vapi end only on zone-2 R-E fault. Due to these trippings powerflow to 220 kV Kharadpada-Bus-1&2 became zero (Bus became Dead). Load loss of 487 MW occurred at Kharadpada and Bhilosa due to the event. | Tripping of follwing elements-<br>1. 220 kV Kharadpada-New Kharadpada-1&2<br>2. 200 kV Vapi-Bhilosa-1<br>3. 220 kV Vapi-Kharadpada-1 |

# Details of Grid Events during the Month of November 2023 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 (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-1 | Tamil Nadu | 03-Nov-23 03:19 | 03-Nov-23 07:12 | 3hrs 53mins | 0 | 200 | 0.00% | 0.57% | 30368 | 34874 | Complete Outage of 230kV/110kV Koyambedu SS, 230kV Guindy SS, 230kV/33kV Mambalam SS and 230kV/33kV RA Puram SS of TANTRANSCO: During antecedent conditions, were being radially fed from 230kV/110kV Koyambedu SS. As per the reports submittedm the triggering incident was B-N fault in 230kV Koyambedu Guindy line.Koyambedu end failed to clear the fault and the fault was cleared but remote ends of other connected lines in zone-3. This resulted in complete outage of 230kV/110kV Koyambedu SS, 230kV Guindy SS, 230kV/33kV Mambalam SS and 230kV/33kV RA Puram SS | 1. 230kV Koyambedu Guindy<br>2. 230kV Koyambedu Alamathy<br>3. 230kV Koyambedu Sriperumbudur<br>4. 230kV Koyambedu Ambathur<br>5. 230kV Koyambedu Thiruverkadu |
| 2 | GD-1 | Kerala | 08-Nov-23 13:35 | 08-Nov-23 14:12 | 37mins | 25 | 420 | 0.06% | 0.91% | 43336 | 45916 | Complete Outage of 220kV/110kV/11kV Mylatty SS, 220kV/110kV Ambalathara SS, 220kV/110kV/11kV Kanhirode SS, 220kV/110kV/33kV Taliparamba SS and 220kV/110kV Talassery SS of KSEB: As per the reports submitted, 220kV Orkattery Areakode was under outage. The triggering incident was fault in 220kV Areakode Kanhirode Line-1 and the line tripped . Since 220kV/110kV/11kV Mylatty SS, 220kV/110kV Ambalathara SS, 220kV/110kV/11kV Kanhirode SS, 220kV/110kV/33kV Taliparamba SS and 220kV/110kV Talassery SS are radially connected through 220kV Areakode Kanhirode Line-1, tripping of the 220kV Line resulted in complete outage of the stations. | 1. 220kV Areakode Kanhirode Line-1 |
| 3 | GD-1 | Karnataka | 08-Nov-23 22:14 | 09-Nov-23 01:20 | 3hrs 06mins | 1089 | 260 | 3.15% | 0.65% | 34624 | 40171 | Complete Outage of 400kV/220kV UPCL, 220kV MSEZ SS, 220kV Kavoor and Tripping of 220kV Bus-1 of 220kV Kemar SS: During antecedent conditions, 220kV Kemar SS was operating with a bus split condition with 220kV Puttur, 220kV Varahi, and 220kV Heggunje on 220kV Bus-2 and 220kV UPCL, 220kV MSEZ and 220kV Kavoor on 220kV Bus-1. 400kV UPCL was generating approximately 1000MW. The triggering incident was a B-n fault on 400kV UPCL Hebbenahalli Line-1&2 during heavy rain. The fault was sensed in zone-2 at both ends and the lines tripped with a delay of approximately 400ms. Immediately, UPCL Unit-2 tripped on SPS operation. Tripping of both these lines resulted in an unstable island with 400kV/220kV UPCL, 220kV MSEZ SS, 220kV Kavoor SS, 220kV Kemar Bus-1 where UPCL Unit-1 generation was more than load. Immediately, under frequency protection operated and UPCL Unit-1 tripped. This resulted in a complete outage of 400kV/220kV UPCL, 220kV MSEZ SS, 220kV Kavoor, and 220kV Kemar Bus-1. | 1. 400kV UPCL Hebbenahalli Line-1&2 |
| 4 | GD-1 | Tamil Nadu | 11-Nov-23 03:21 | 11-Nov-23 04:05 | 44mins | 100 | 0 | 0.33% | 0.00% | 30478 | 34994 | Complete Outage of 230kV JSW_Vilathikulam_Wind Station: As per the reports submitted, the triggering incident was Y-N fault in 230kV TTGS JSW_Vilathikulam_Wind line and the line tripped. Tripping of the only connected line resulted in complete outage of 230kV JSW_Vilathikulam_Wind Station. | 230kV TTGS JSW_Vilathikulam_Wind |
| 5 | GD-1 | Andhra Pradesh | 13-Nov-23 07:59 | 13-Nov-23 10:26 | 2hr 27mins | 0 | 0 | 0.00% | 0.00% | 34550 | 39401 | Complete Outage of 220kV Tallapally SWS of APTRANSCO: As per the reports submitted, the triggering incident is the R-phase CVT failure for 220kV Tallapally-Srisailam RB-2 at Tallapally end. Since VT fuse fail was observed before the eventual failure of the CVT in the line, the zone protection was blocked in the line. The fault in R-phase was observed to have a fault current of 32kA and developed into a RY-N fault after around 250ms. Since the zone protection was blocked in the line of 220kV Tallapally-Srisailam RB-2, the lines tripped at remote end on Z2 or in Z4 at Tallapally end.The 400/220kV N'Sagar ICTs were feeding the fault while sensing Z2 (Back up impedance) and have sensed after around 600ms, the ICTs tripped on Z2. With the tripping of all the elements connected to 220kV Tallapalli SS led to complete outage of the station | 1. 220kV Tallapally Nsagar-1,2&3<br>2. 220kV Tallapally Srisailam-1&2<br>3. 220kV Talappally Rentachintala<br>4. 220kV Talappally Piduguralla-1&2<br>5. 220kV Talappally VTPS<br>6. 400kV/220kV Nsagar ICT-1,2&3 |
| 6 | GD-1 | Karnataka | 20-Nov-23 10:19 | 20-Nov-23 11:05 | 46mins | 14 | 363 | 0.03% | 0.70% | 50677 | 51988 | Tripping of 220kV Bus-1 of 400kV/220kV Guttur SS, 220kV<br>Bus-2 of 220kV/66kV Honnali SS and complete outage of 220kV/110kV Ranebenur SS,<br>220kV/66kV Davanagere SS, 220kV/66kV Hosadurga SS, 220kV/66kV Benkikere SS &<br>220kV/66kV Guttur SAS SS of KPTCL:During antecedent conditions, 220kV Guttur Haveri Line-2 was under outage. 220kV Bus-2 of 220kV/66kV Honnali SS, 220kV/110kV Ranebenur SS, 220kV/66kV Davanagere SS, 220kV/66kV Hosadurga SS, 220kV/66kV Bemkikere SS, and 220kV/66kV Guttur SAS SS were being radially fed through 220kV Bus-1 of 400kV/220kV Guttur SS. As per the reports submitted, triggering incident was an R-phase jumper failure in 220kV Guttur Ranebennur Line bay causing an RY fault in 220kV Bus-1 of 400kV/220kV Guttur SS. Immediately BBP operated and all the elements connected to the bus tripped including LV side of 400kV/220kV Guttur ICT-1. This resulted in in a complete outage of these stations and 220kV Bus-2 of 220kV/66kV Honnali SS. | 1. 400/220 kV ICT-1 AT GUTTUR |
| 7 | GD-1 | Tamil Nadu | 22-Nov-23 18:22 | 23-Nov-23 20:17 | 1hr 55mins | 0 | 0 | 0.00% | 0.00% | 39153 | 47552 | Complete Outage of 230kV SPRNG_Pugalur: As per the reports submitted, the triggering incident was R-N fault in 230kV Pugalur Sprng_Pugalur line and the line tripped. Tripping of the only connected line resulted in complete outage of 230kV SPRNG_Pugalur. | 1. 230kV Pugalur Sprng_Pugalur line |
| 8 | GD-1 | Andhra Pradesh | 22-Nov-23 00:39 | 24-Nov-23 09:39 | 9hrs | 0 | 0 | 0.00% | 0.00% | 32560 | 32548 | Complete outage of 400kV RYTPP Generating station of APGENCO: As per the reports submitted, the triggering incident was Over voltage at RYTPP end. Immediately Over voltage protection of 400kV RYTPP Kalikiri Line-2&2 operated at RYTPP end and DT was sent to Kalikiri. Tripping of both lines resulted in complete outagae of 400kV RYTPP Generating station . | 1. 400kV RYTPP Kalikir Line-1&2 |
| 9 | GD-1 | Karnataka | 24-Nov-23 08:05 | 24-Nov-23 09:17 | 1hr 12 mins | 0 | 159 | 0.00% | 0.38% | 41846 | 41991 | Complete Outage of 220kV/66kV Ancheplaya SS, 220kV/66kV Magadi SS and 220kV/66kV Naga Mangala SS of KPTCL: As per the reports submitted, the triggering incident was tripping of 400/220kV Nelamangala 500MVA ICT 2 on operation of WTI. Immediately, SPS operated tripping the 220kV Nelamangala-Anchepalya and 220kV Nelamangala-Magadi lines. Tripping of these lines resulted in a complete outage of 220kV/66kV Ancheplaya SS, 220kV/66kV Magadi SS and 220kV/66kV Naga Mangala SS. At the same time, 400kV Nelamangala-Hassan line, whose main breaker was under outage and was charged through Tie of 400kV/220kV Nelamangala ICT-2, also tripped along with the ICT-2 | 1.400kV Nelamangala-Hassan 2. 220kV Nelamangala - Magadi 3. 220kV Nelamangala - Anchepalya 4.220kV Anchepalya – Nagamangala 1&2 5.400/220kV Nelamangala 500MVA ICT 2 |
| 10 | GD-1 | Karnataka | 29-Nov-23 12:15 | 29-Nov-23 12:25 | 10mins | 50 | 270 | 0.12% | 0.63% | 40890 | 42824 | Complete Outage of 220kV/66kV Begur SS, 220kV/66kV TK Halli SS,, 220kV/66kV Chamrajnagar SS, 220kV/66kV Madhuvanahalli SS and 220kV/66kV Hebbani SS and 220kV Bus-2 of 220kV/66kV Vajamangala SS of KPTCL: During antecedent conditions, 220kV TK Halli Kankapura line was under outage. As per the reports submitted, the triggering incident was Y-phase jumper failure in 220kV Mysore Kadakola line.At the same time, 220kV Kadakola Adakanahally Line-1&2 tripped on DEF protection at Kadakola end. Subsequently, Vajamangala bus coupler tripped on over current protection. This resulted in complete outage of 220kV/66kV Begur SS, 220kV/66kV TK Halli SS, 220kV/66kV Chamrajnagar SS, 220kV/66kV Madhuvanahalli SS and 220kV/66kV Hebbani SS and 220kV Bus-2 of 220kV/66kV Vajamangala SS. | 1. 220kV Kadakola Adakanahally Line-1&2<br>2. 220kV Kadakola Mysore line |
| 11 | GI-1 | Kerala | 07-Nov-23 13:02 | 07-Nov-23 14:33 | 1hr 31mins | 0 | 0 | 0.00% | 0.00% | 42815 | 47556 | Tripping of 220kV/110kV Pothencode SS of KSEB: As per the reports submitted, the triggering incident was tension insulator failure in 220kV Bus-1 causing an R-N fault in the bus. Immediately BBP operated and all the elements connected to the bus tripped. | 1. 220kV Edamon Pothencode Line-1<br>2. 220kV Pothencode Kattakada Line-1<br>3. 220kV Pothencode Trivandrum Line-1<br>4. 220kV/110kV Pothencode Transformer Line-1&3 |
| 12 | GI-2 | Tamil Nadu | 12-Nov-23 02:23 | 12-Nov-23 08:19 | 5hr 56mins | 267 | 0 | 0.95% | 0.00% | 28206 | 33659 | Tripping of 400kV Bus-1 of 400kV NTECL Vallur Generating station: As per the reports submitted, while withdrawing NTECL Vallur Unit-2, LBB operated and all the elements connected to the 400kV NTECL Bus-1 tripped. | 1. 400kV Vallur Kalivendapattu Line-1<br>2. 400kV Vallur Alamathi Line-1<br>3. 400kV Vallur NCTPS line-1<br>4. 400kV Vallur Unit-3 |

## Details of Grid Events during the Month of November 2023 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 1or 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) | | |
| | NIL | | | | | | | | | | | | |

## Details of Grid Events during the Month of November 2023 in North 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 1or 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-I | Tinsukia & Margherita area of Assam Power system | 07-Nov-23 12:48 | 07-Nov-23 13:38 | 00:50 | 98 | 53 | 4.29% | 2.78% | 2287 | 1905 | Tinsukia along with Margherita areas of Assam Power System were connected with the rest of the grid by 220 kV Kathalguri-Tinsukia 2 line, 220 kV NTPS-Tinsukia line, 220 kV NRPP-Tinsukia line, 132 kV Dibrugarh-Tinsukia line, 132 kV Bordubi-Tinsukia line, 132 kV Rupai-Tinsukia line & 132 kV Rupai-Margherita lines. 220 kV Kathalguri-Tinsukia 1 line was under planned shutdown prior to the event.<br><br>At 12:48 Hrs of 07-11-2023, 220 kV Kathalguri-Tinsukia 2 line, 220 kV NTPS-Tinsukia line, 220 kV NRPP-Tinsukia line, 132 kV Dibrugarh-Tinsukia line, 132 kV Bordubi-Tinsukia line, 132 kV Rupai-Tinsukia line & 132 kV Rupai-Margherita lines tripped. Due to tripping of this elements, Tinsukia along with Margherita area of Assam Power System got separated from rest of NER grid and collapsed due to no source available in these areas.<br><br>Power was extended to Tinsukia and Margherita areas of Assam Power system by charging 220 kV Tinsukia-NTPS line & 132 kV Rupai-Margherita line at 13:38 Hrs and 14:02 Hrs of 07-11-2023 respectively. | 220 kV Kathalguri-Tinsukia 2 line, 220 kV NTPS-Tinsukia line, 220 kV NRPP-Tinsukia line, 132 kV Dibrugarh-Tinsukia line, 132 kV Bordubi-Tinsukia line, 132 kV Rupai-Tinsukia line & 132 kV Rupai-Margherita lines |
| 2 | GD-I | Rokhia area of Tripura Power system | 17-Nov-23 14:12 | 17-Nov-23 15:41 | 01:29 | 20 | 6 | 1.18% | 0.37% | 1698 | 1642 | Rokhia area of Tripura Power System were connected with the rest of the grid by 132 kV Rokhia-Agartala I & II lines and 132 kV Rokhia-Monarchak lines.<br>At 14:12 Hrs of 17-11-2023, 132 kV Rokhia-Agartala D/C & 132 kV Rokhia-Monarchak lines tripped. Due to tripping of this elements, Rokhia area of Tripura Power System got separated from rest of NER grid and collapsed due to load-generation mismatch in this area.<br><br>Power was extended to Rokhia area of Tripura Power system by charging 132 kV Rokhia-Agartala I line at 15:41 Hrs of 17-11-2023. | 132 kV Agartala-Rokhia I & II and 132 kV Rokhia-Monarchak |
| 3 | GD-I | Kohima area of Nagaland Power System | 25-Nov-23 11:51 | 25-Nov-23 12:21 | 00:30 | 17 | 0 | 0.92% | 0.00% | 1853 | 1874 | Kohima area of Tripura Power System were connected with the rest of the grid by 132 kV Dimapur- Kohima, 132 kV Karong- Kohima and 132 kV Chiempobozou- Kohima lines.<br>At 11:51 Hrs of 25-11-2023, 132 kV Dimapur- Kohima, 132 kV Karong- Kohima and 132 kV Chiempobozou- Kohima lines.tripped. Due to tripping of this elements,Kohima area of Nagaland Power System got separated from rest of NER grid and collapsed due to load-generation mismatch in this area.<br><br>Power was extended to Rokhia area of Tripura Power system by charging 132 kV Karong- Kohima line at 12:21 Hrs of 25-11-2023. | 132 kV Dimapur- Kohima, 132 kV Karong- Kohima and 132 kV Chiempobozou-Kohima lines. |