Ministry Of Energy and Natural Resource

Office Of The Bhutan Power System Operator

Thimphu: Bhutan

Transmission System Performance Report

Third Quarterly Report 2022

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1. Introduction

The electricity transmission network in Bhutan is solely owned by Bhutan Power Corporation limited (BPC) and electricity generation is solely owned by Druk Green Power Corporation Limited (DGPC). The Office of the Bhutan Power System Operator (BPSO) under Ministry of Energy and Natural Resources is responsible for safe, secure and efficient operation of Bhutan transmission network and generation.

This quarterly report is prepared in compliance to the Grid Code Regulation (GCR) 2008, clause 6.14.1, and "System Operator has to submit a quarterly report covering the performance of the Transmission System to all Licensees, Authority and Ministry". This transmission performance report contains summary of growth of peak demand, performance of generating stations (power and energy generation), energy availability and requirement for the country, export and import of electricity to/ from India, frequency profile of selected substation and voltage profile of few important substations.

All the index and other calculations in this report have been executed based on the data received from substations and generating plants.

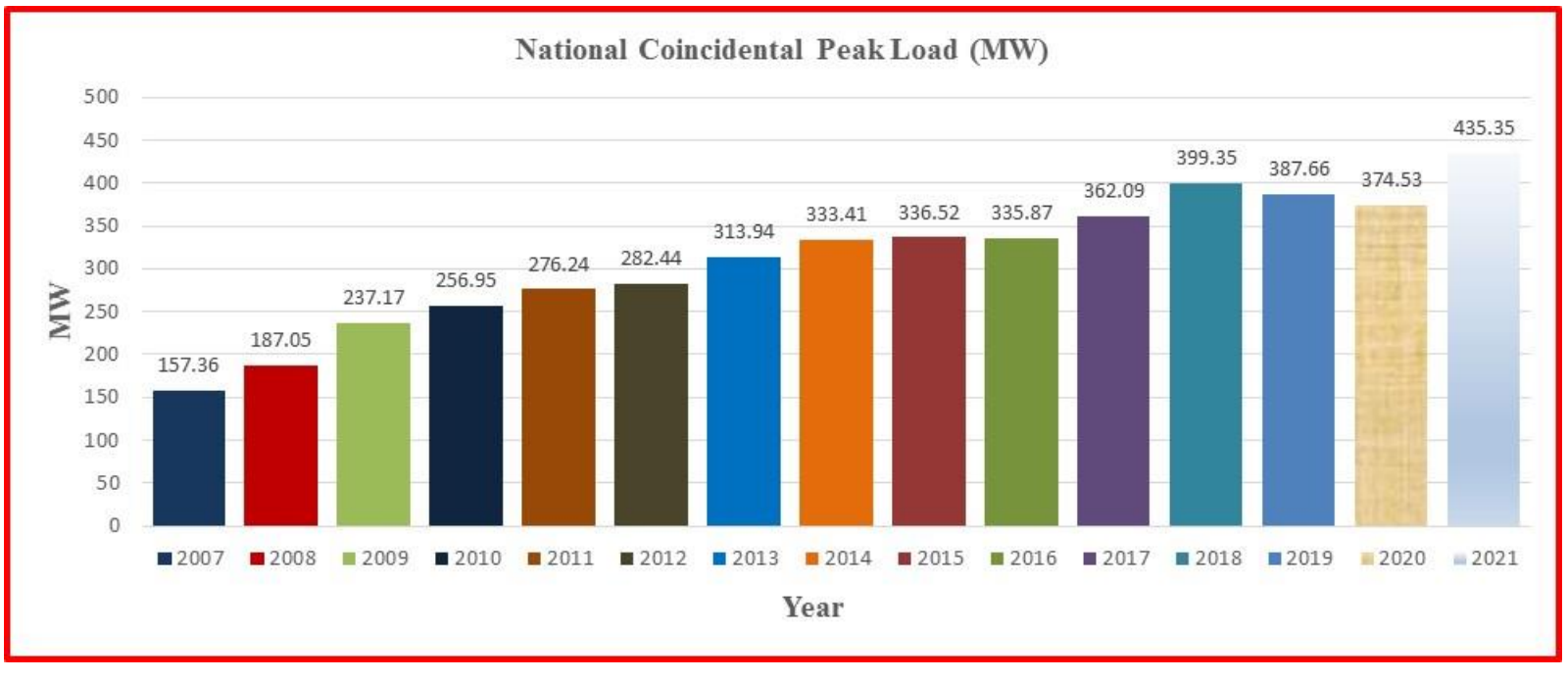
2. National Peak Demand

The national peak demand till now is recorded at **435.35MW** which was occurred on December 26, 2021 at 18:00 hours. This is calculated by summation of Feeder Loading at Plants minus Export.

Table 2.1. The National Peak Demand since 2007

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Peak Load (MW)	157.36	187.05	237.17	256.95	276.24	282.44	313.94	333.41	336.52	335.87	362.09	399.35	387.66	374.53	435.35
% Growth over previous Year	-	18.87	26.79	8.34	7.51	2.24	11.15	6.20	0.93	-0.19	7.81	10.29	-2.93	-3.39	16.24

Graph 2.1. The growth in National Peak Demand since 2007



2.1. Power (MW) consumed by country

Following methods are used to calculate peak demand for the Eastern Grid, Western Grid and National demand.

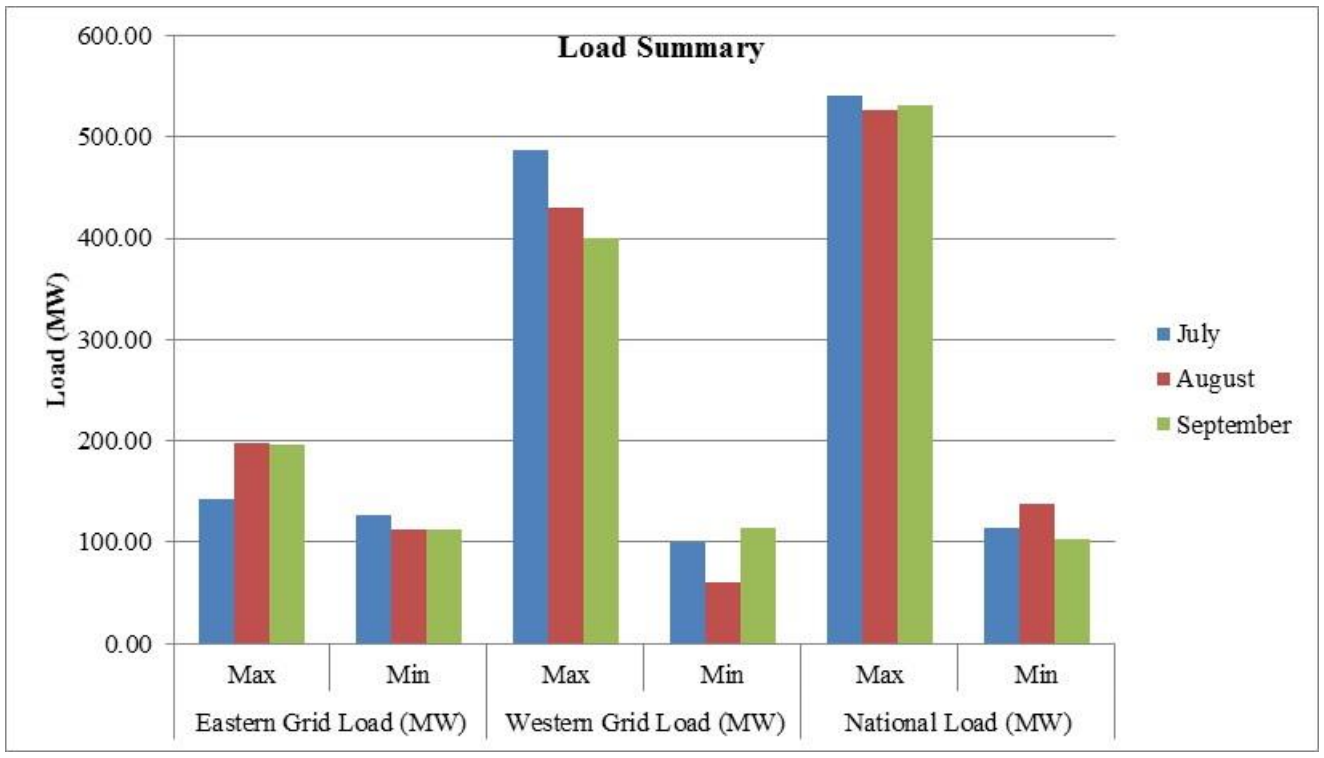
1. **National Demand** = (Sum of all total generation)-(Sum of all Export or Import)
2. **National Demand** = (Sum of all feeders loading at hydropower station) – (Sum of all Export/Import)
3. **National Demand** = (Sum of all substation loading)

For this report, the National Demand was calculated using method-1

Table 2.1.2. Domestic demand for Eastern Grid, Western Grid and National using method- 1

Grid	Eastern Grid Load (MW)		Western Grid Load (MW)		National Load (MW)	
Month	Max	Min	Max	Min	Max	Min
July	143.03	126.00	487.45	99.30	540.67	114.15
August	198.09	112.00	430.26	60.24	527.18	138.29
September	196.43	112.90	400.75	113.86	530.45	102.27

Graph 2.1.2. Domestic demand for Eastern Grid, Western Grid and National using method- 1



The national load pattern for the month of July to September, 2022 calculated using method-1 is attached as **Annexure-II**

3. Energy Availability and Requirement for the country

3.1. Energy (MU) consumed by Country

The total energy consumed within Bhutan is computed from the total energy DGPC had sold to BPC including the royalty energy.

Table 3.1.1. Total Energy (MU) consumed

Month	Total Ex-bus (MU)	Total Export/Import (MU)	Total energy sold to BPC (MU)
July	1466.27185885	1165.18020988	302.86886546
August	1687.51443064	1368.19948924	321.19551127
September	1647.27563936	1332.65091566	316.52998178

Graph 3.1.1. Total Energy (MU) consumed

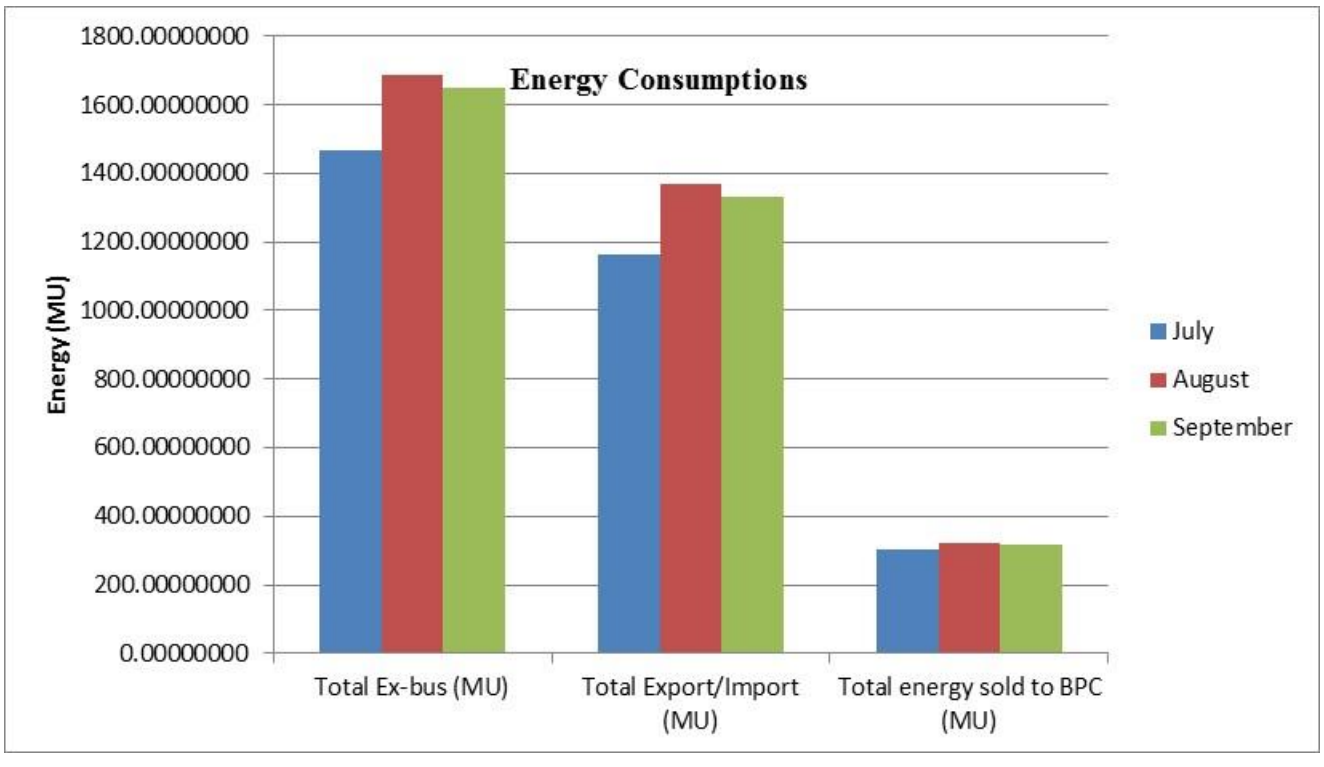
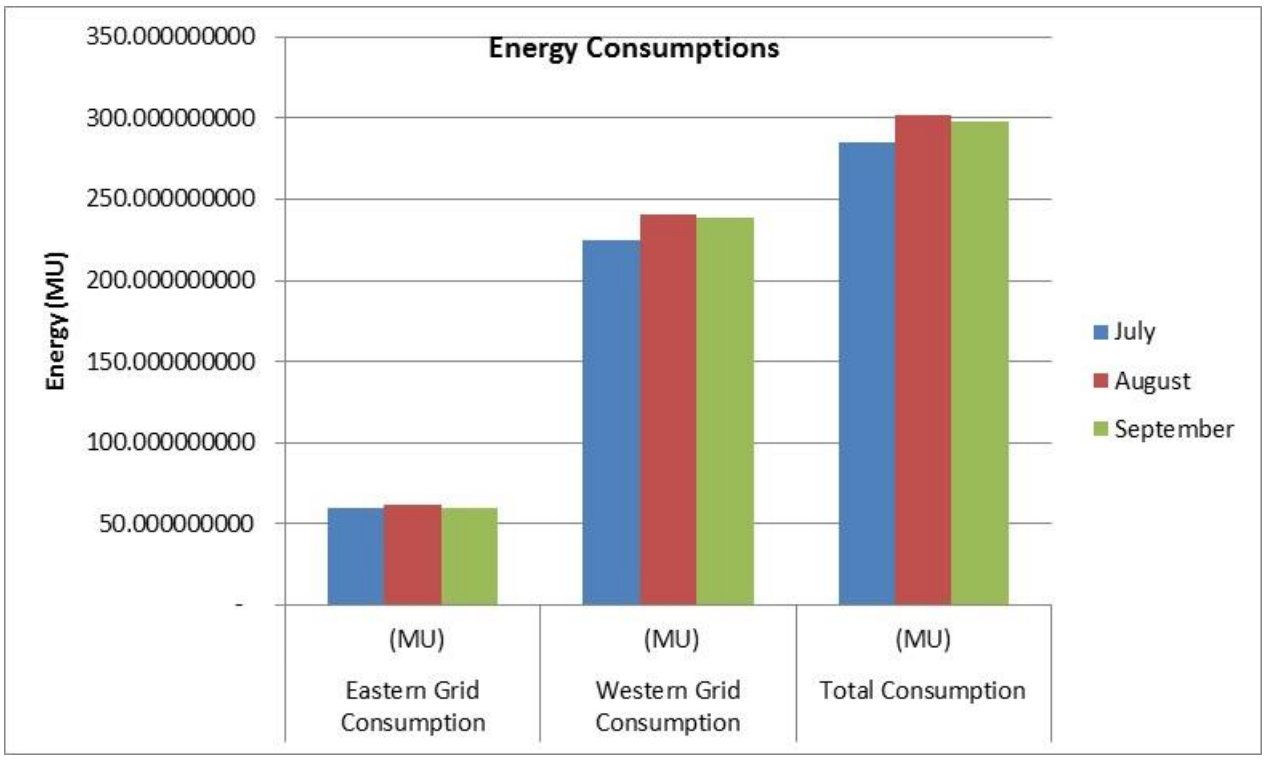


Table 3.1.2. Energy (MU) consumed

Grid	Eastern Grid Consumption	Western Grid Consumption	Total Consumption
Month	(MU)	(MU)	(MU)
July	59.728885600	224.844968	284.5738535
August	61.584417200	240.532610	302.1170268
September	60.13601145	238.081376	298.2173871

Graph 3.1.2. Energy (MU) consumed



4. Performance of generating plants

4.1. Power and Energy Generation

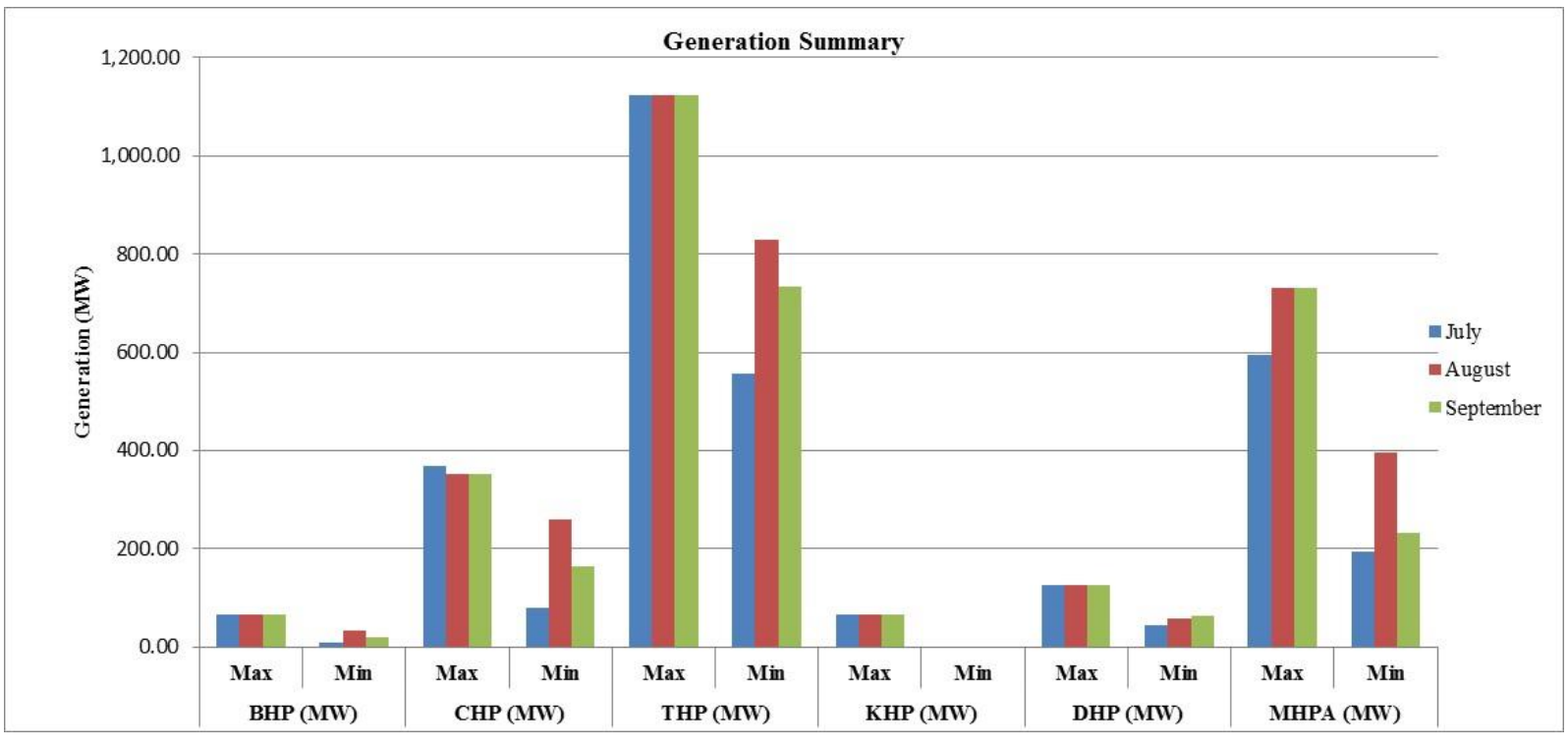
The maximum total generation for the third quarter of year 2022 was 2,465.02 MW in month of September and minimum generation was 884.67 MW in the July month.

Table: 4.1.1 Summary of maximum and minimum generation by various hydropower plant

Generation By	BHP (MW)		CHP (MW)		THP (MW)		KHP (MW)		DHP (MW)		MHPA (MW)		TOTAL (MW)	
Month	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
July	66.40	10.70	369.99	79.47	1,122.00	557.00	66.00	0.00	127.03	44.31	594.19	193.19	2,345.61	884.67
August	66.58	33.54	353.00	259.79	1,122.00	830.00	66.00	0.00	127.07	57.38	729.82	395.37	2,464.47	1,576.08
September	66.39	21.10	353.39	165.59	1,122.00	734.00	66.00	0.00	127.32	63.37	729.92	232.07	2,465.02	1,216.13

Source: Hydropower Plants (DGPC)

Graph: 4.1.1 Summary of maximum and minimum generation by various hydropower plant



Daily maximum, minimum and average generation by each generating plant for the month of July to September, 2022 is attached as **Annexure-I.**

4.2.Plant Capacity Factor

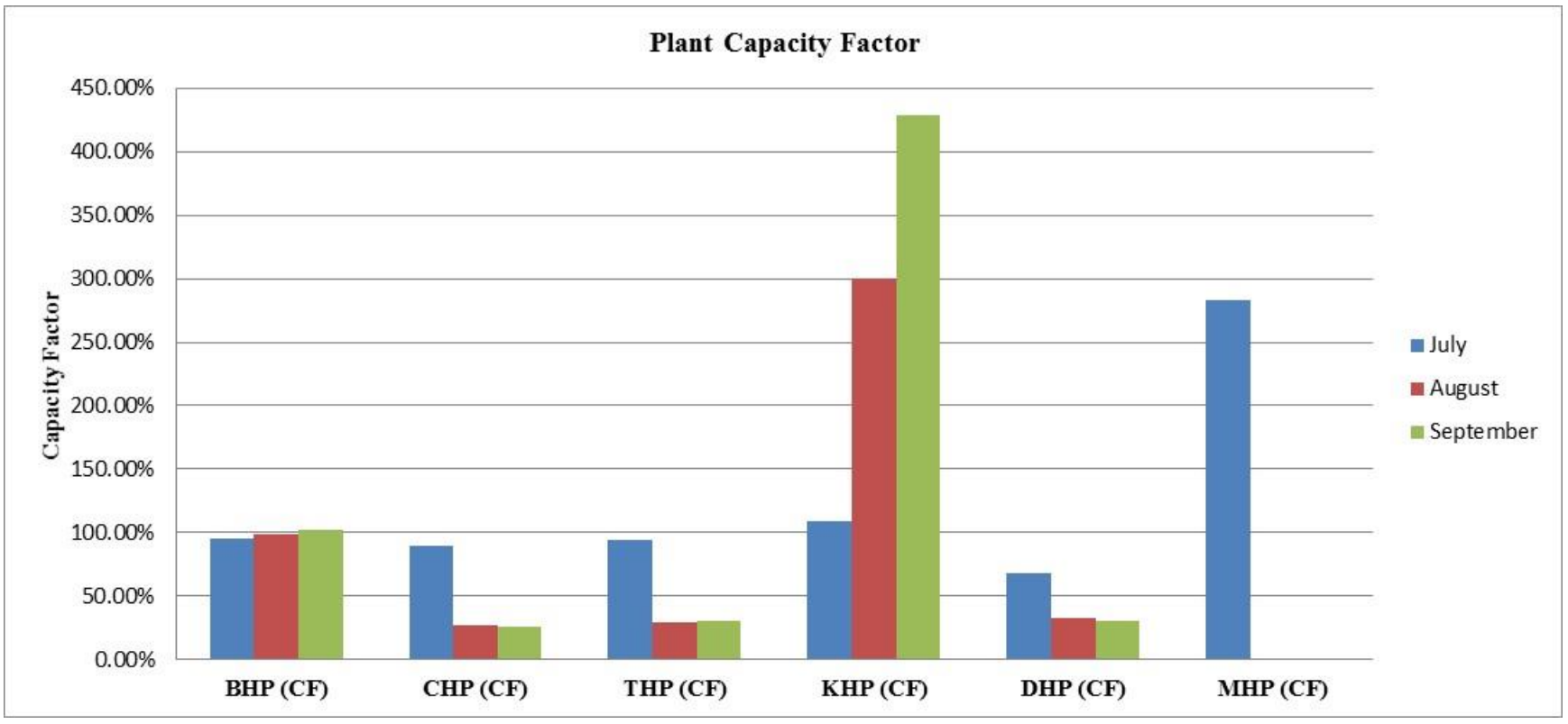
The capacity factor of each generating plant was calculated as below:

$$Capacity\ factor = \frac{Total\ energy\ plant\ has\ produce\ over\ a\ period}{Total\ energy\ plant\ would\ produce\ when\ operated\ at\ full\ capacity}$$

Table 4.2.1: Total generation and capacity factor of various hydropower plants

Month	BHP (MU)	BHP (CF)	CHP (MU)	CHP (CF)	THP (MU)	THP (CF)	KHP (MU)	KHP (CF)	DHP (MU)	DHP (CF)	MHP (MU)	MHP (CF)
July	43.83676	95.13%	217.85103	90.05%	692.638545	94.31%	47.016469	108.83%	62.04	68.39%	1,466.27	282.85%
August	47.02880	98.77%	68.64779	27.46%	220.88800	29.11%	134.037818	300.26%	30.752396	32.80%	0	0.00%
September	46.97590	101.94%	63.49768	26.25%	225.46300	30.70%	185.114909	428.51%	27.62	30.45%	0.00	0.00%
Source: TD, BPC												

Graph 4.2.1: Capacity factor of various hydropower plants



5. Export and Import of Electricity

Maximum export for the third quarter of year 2022 was 1,280.73 MW in the month of August to Binaguri substation in India. The minimum export recorded was 2 MW to Salakoti & Rangia substation in India during the month of July.

Table 5.1. Export of electricity to India

Export To	Binaguri (MW)		Birpara (MW)		Salakoti and Rangia (MW)	
Month	Max	Min	Max	Min	Max	Min
July	1,209.00	571.03	232.88	51.30	77.24	2.00
August	1,280.73	727.27	260.74	52.32	77.91	13.79
September	1,136.36	559.00	281.22	4.30	95.51	0.50

Graph 5.1. Export of electricity to India

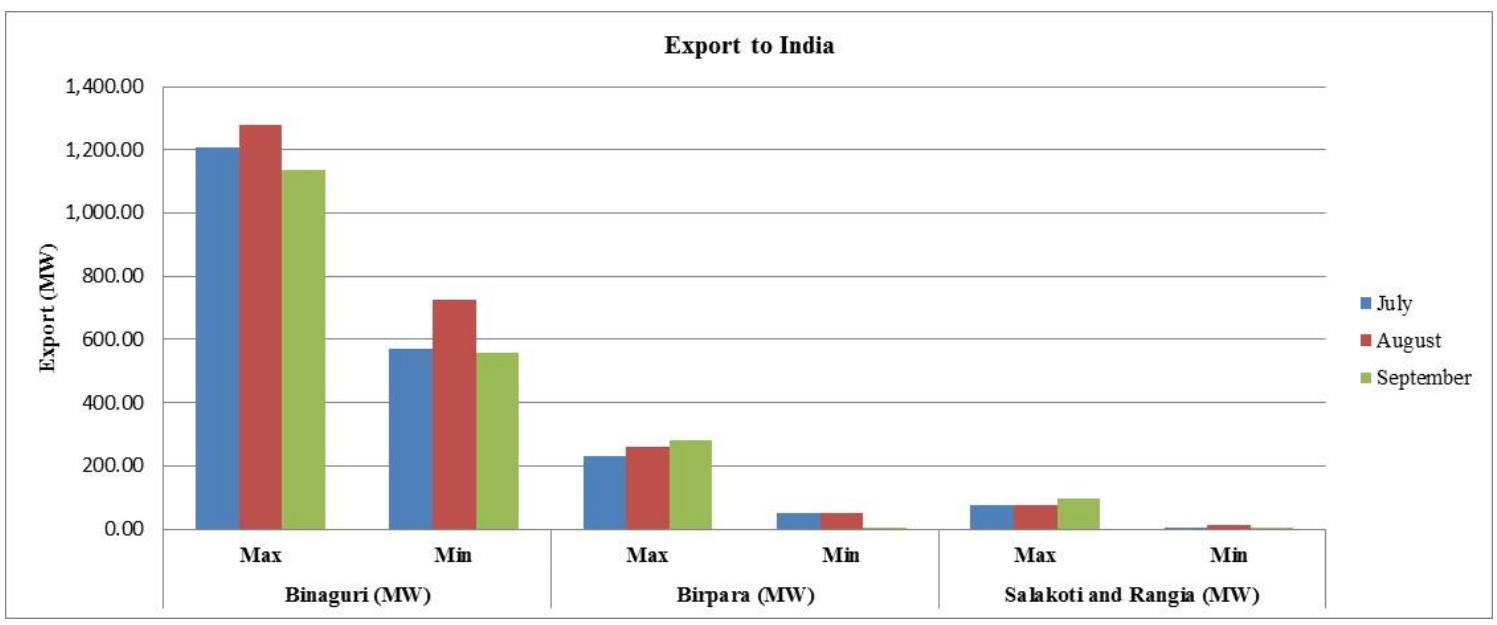
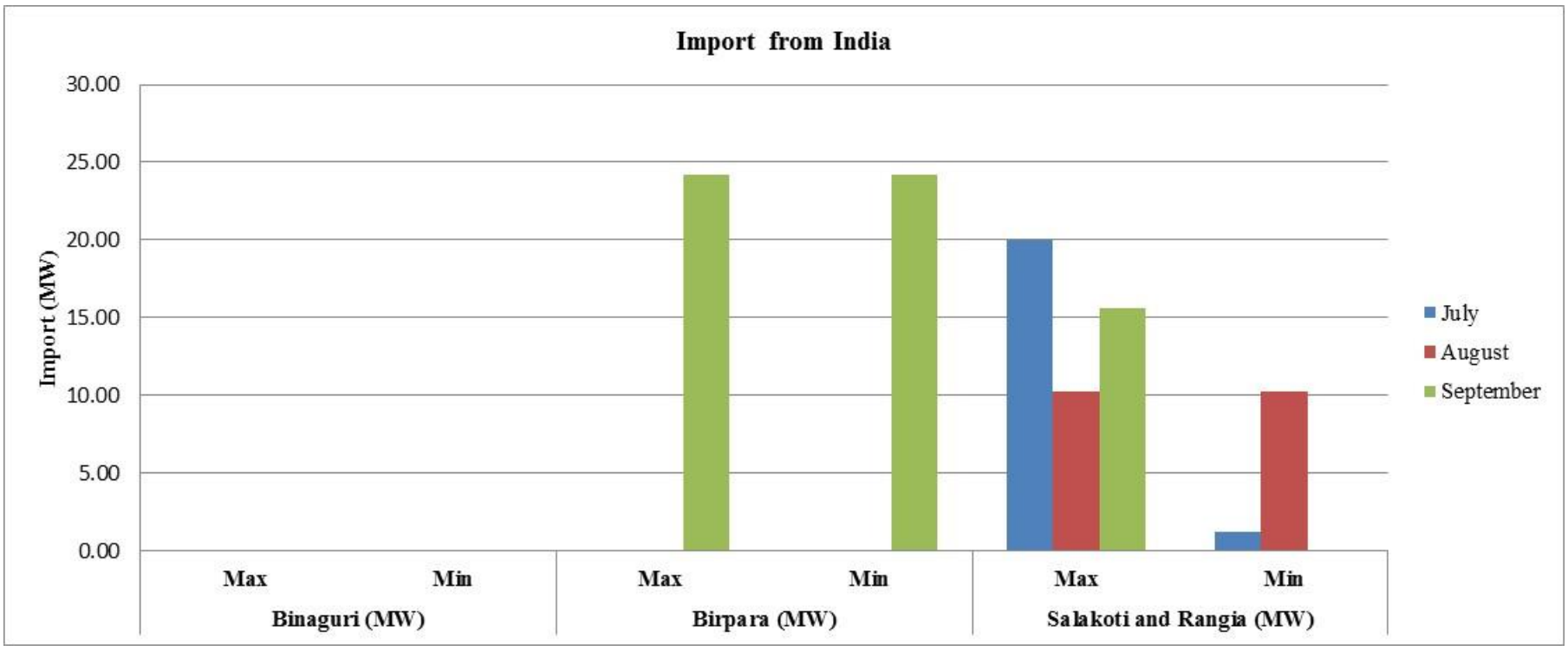


Table 5.2. Import of electricity from India.

Import From	Binaguri (MW)		Birpara (MW)		Salakoti and Rangia (MW)	
Month	Max	Min	Max	Min	Max	Min
July	0.00	0.00	0.00	0.00	20.02	1.29
August	0.00	0.00	0.00	0.00	10.24	10.24
September	0.00	0.00	24.16	24.16	15.60	0.06

Graph 5.3. Import of electricity to India



6. Frequency profile

The nominal allowed frequency range shall be 50Hz ± 1% in Bhutan. The system is normally managed such that frequency is maintained within operational limit of 49.5 Hz to 50.5 Hz. However, frequency may move outside these limit under faulty condition.

As per the Grid Code 2008, clause 6.4.1 the frequency is classified into three different bands as follows:

a. Normal state
   The transmission System frequency is within the limit of 49.5Hz to 50.5Hz.
b. Alert state
   The Transmission System frequency is beyond the normal operating limit but within 49.0Hz to 50.0Hz.
c. Emergency state
   There is generation deficiency and frequency is below 49.0Hz.

The frequency at 220kV Bus at 220/66/11kV Semtokha substation in the western grid and 132kV Bus at 60MW Kurichhu Hydropower Plant in the eastern grid is considered.

6.1.Frequency for the month of July, 2022

Table 6.1.1. Bus Frequency profile of Semtokha Substation

Sl. No.	Operating State	Frequency
1	Normal State	100.00%
2	Alert State	0.00%
3	Emergency State	0.00%
4	Blackout/Other	0.00%

Graph 6.1.1. Bus Frequency of Semtokha Substation

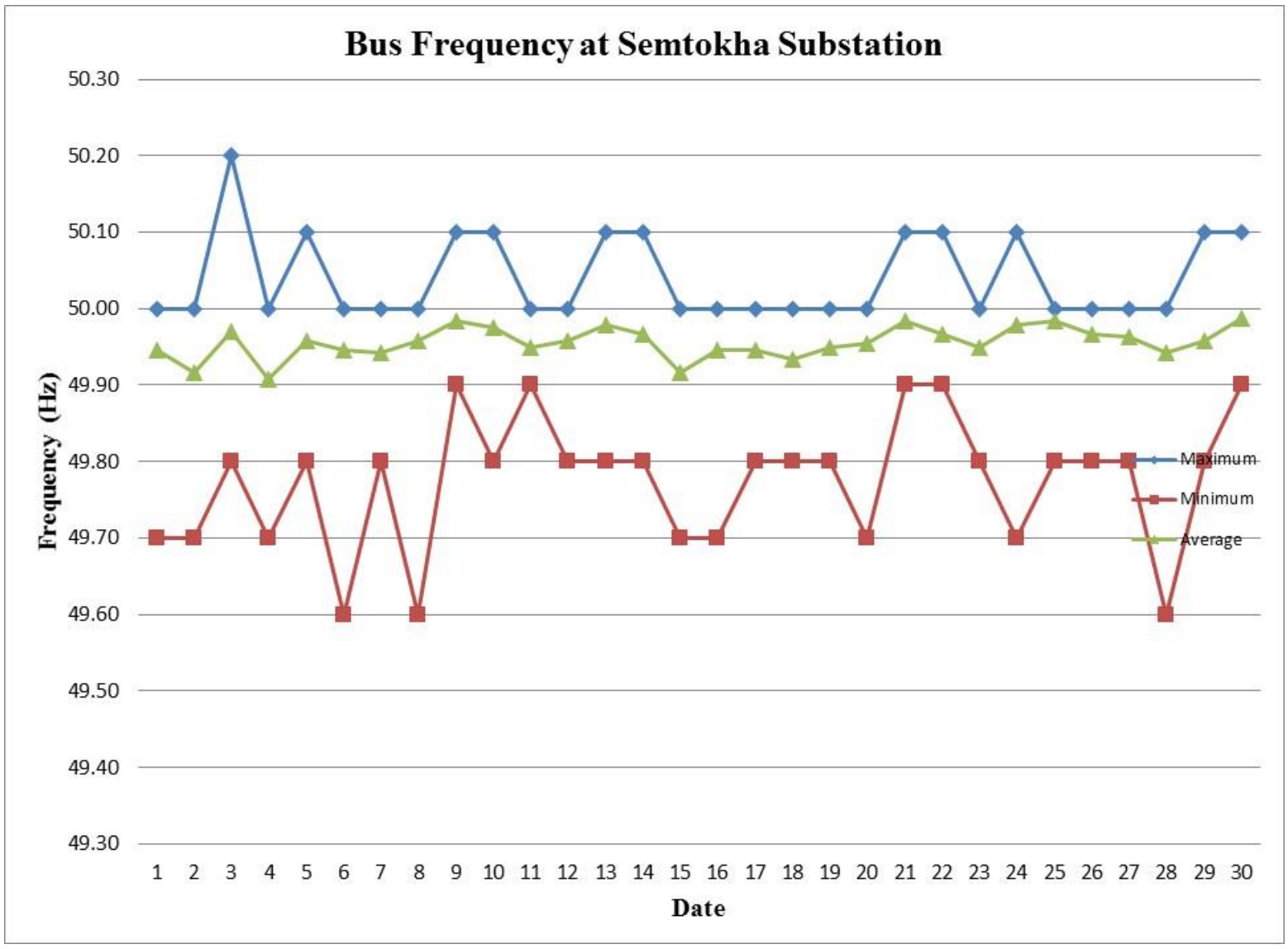
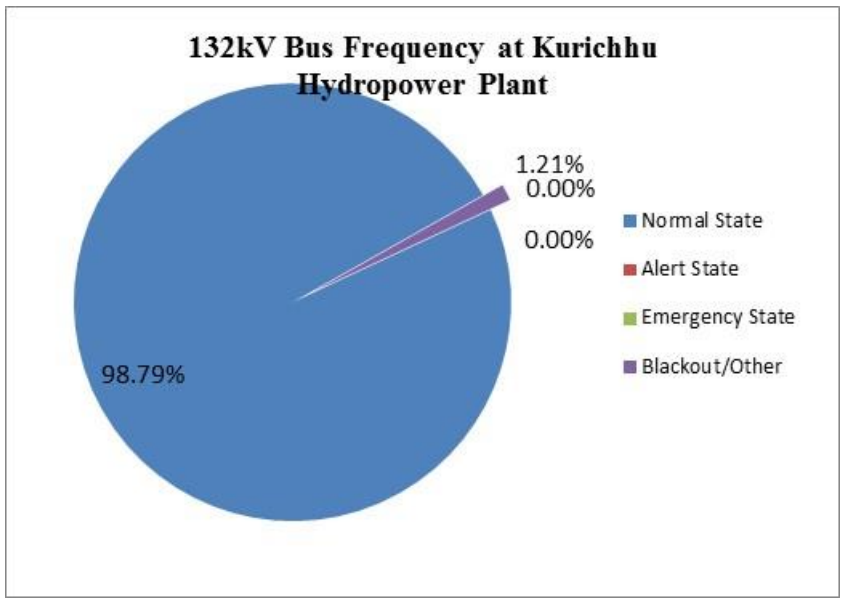


Table 6.1.2. Bus frequency of Kurichhu Hydro Power Plant

Sl. No.	Operating State	Frequency
1	Normal State	98.79%
2	Alert State	0.00%
3	Emergency State	0.00%
4	Blackout/Other	1.21%

Graph 6.1.2. Bus frequency of Kurichhu Hydro Power Plant



In the month of July, 2022, the Western grid has maintained the frequency within the normal operating limit of 100% and Eastern grid has maintained the normal operating limit of 98.79% and deviated 1.21% to blackout/others.

6.2.Frequency for the month of August, 2022

Table 6.2.1. Bus frequency of Semtokha Substation

Sl. No.	Operating State	Frequency
1	Normal State	99.87%
2	Alert State	0.13%
3	Emergency State	0.00%
4	Blackout/Other	0.00%

Graph 6.2.1. Bus frequency of Semtokha Substation

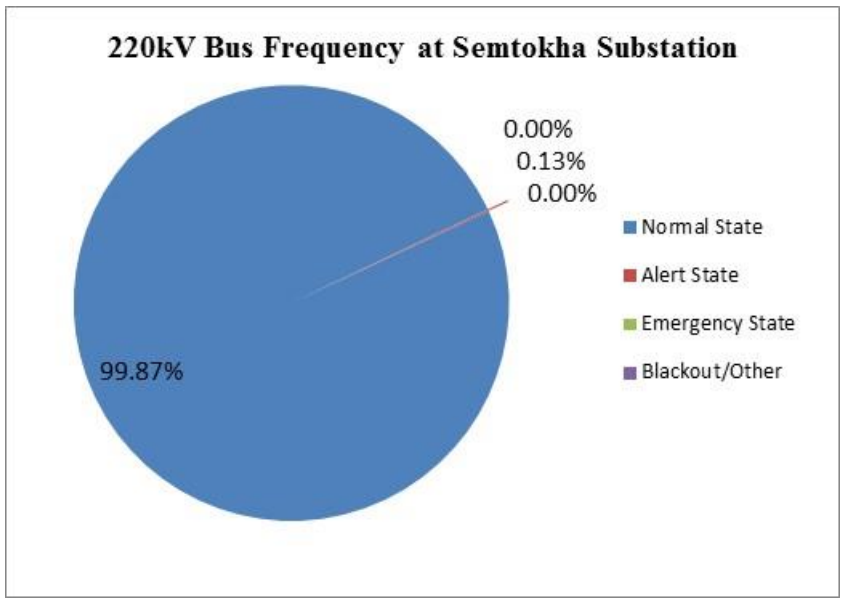
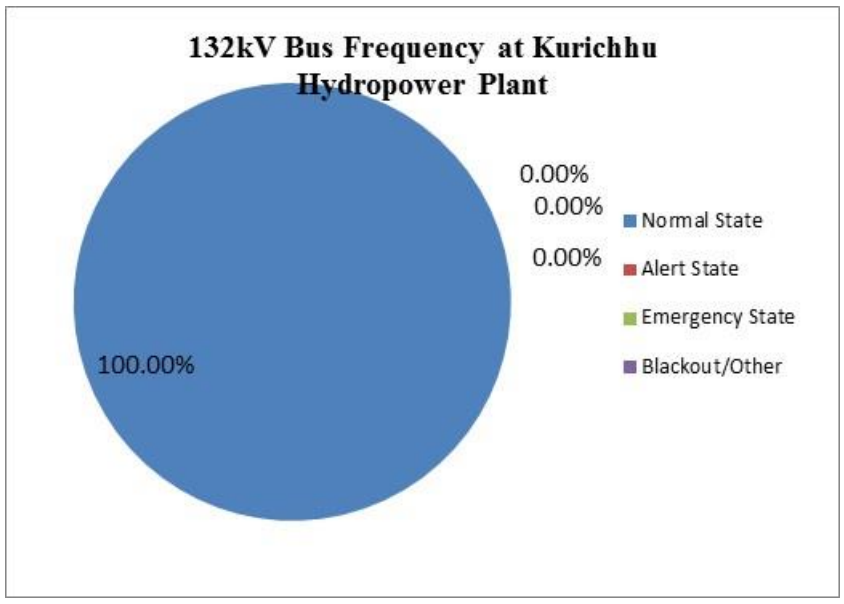


Table 6.2.2. Bus frequency of Kurichhu Hydro Power Plant

Sl. No.	Operating State	Frequency
1	Normal State	100.00%
2	Alert State	0.00%
3	Emergency State	0.00%
4	Blackout/Other	0.00%

Graph 6.2.2. Bus frequency of Kurichhu Hydro Power Plant



In the month of August, 2022, the western grid frequency was maintained at normal operating range of 99.87% and deviated 0.13%to Alert state whereas Eastern grid was maintained at maintained at normal operating range of 100%

6.3.Frequency for the month of September, 2022

Table 6.3.1. Bus frequency of Semtokha Substation

Sl. No.	Operating State	Frequency
1	Normal State	96.51%
2	Alert State	0.00%
3	Emergency State	0.00%
4	Blackout/Other	3.49%

Graph 6.3.1. Bus frequency of Semtokha Substation

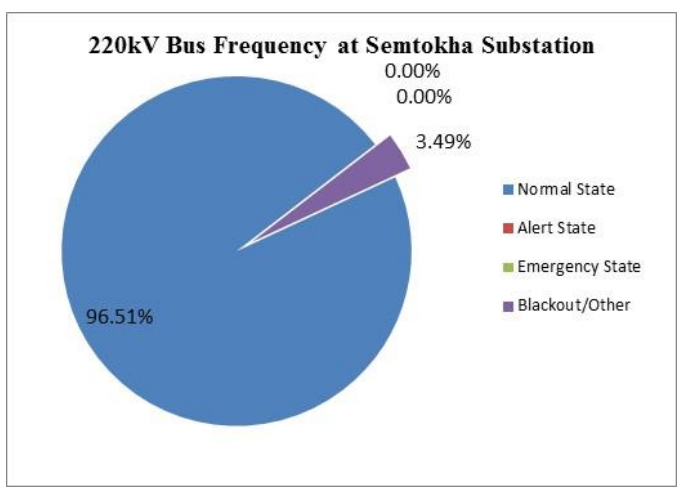
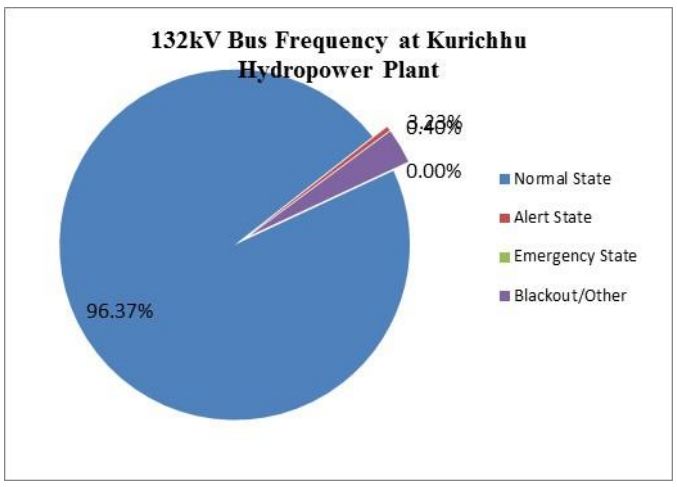


Table 6.3.2. Bus frequency of Kurichhu Hydro Power Plant

Sl. No.	Operating State	Frequency
1	Normal State	96.37%
2	Alert State	0.40%
3	Emergency State	0.00%
4	Blackout/Other	3.23%

Graph 6.3.2. Bus frequency of Kurichhu Hydro Power Plant



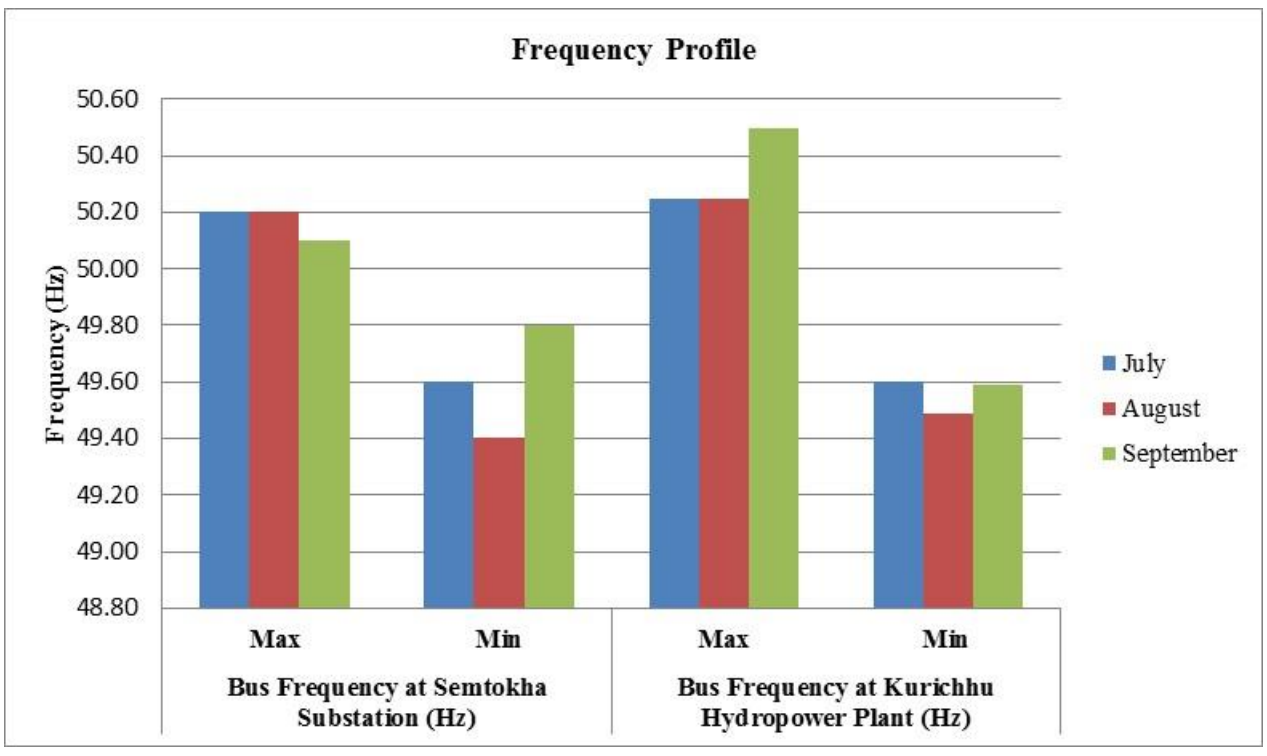
In the month of September, 2022, western gird frequency had maintained at 96.51% within the normal operating range and deviated 3.49% to blackout/other state. The eastern also maintain within normal operating range of 96.37 %, deviated 0.40% to alert state and 3.23 % to blackout/other state.

6.4.Frequency Summary for the month of July to September 2022

Table 6.4.1. Frequency summary for the month of July to September, 2022.

Substation/Plant	Bus Frequency at Semtokha Substation (Hz)		Bus Frequency at Kurichhu Hydropower Plant (Hz)	
Month	Max	Min	Max	Min
July	50.20	49.60	50.25	49.60
August	50.20	49.40	50.25	49.49
September	50.10	49.80	50.50	49.59

Graph 6.4.1. Frequency summary for the month of July to September, 2022



Daily maximum, minimum and average Frequency of Malbase substation in western grid and Kurichhu Hydro Power Plant in eastern grid for the month of July to September, 2022 is attached as **Annexure-III**

7. Voltage Profile of selected substation

As per the Grid Code 2008, clause 6.4.1 the voltage at all connection point is classified into three different bands as follows:

1. *Normal State*
   The voltage at all connection points are within the limits of 0.95 times and 1.05 times of the normal values

2. *Alert State*
   The voltage at all connection points are outside the normal limit but within the limits of 0.9 times and 1.1 times of the nominal values.

3. *Emergency State*

Transmission system voltages are outside the limit of 0.9 times and 1.1 times of nominal values.

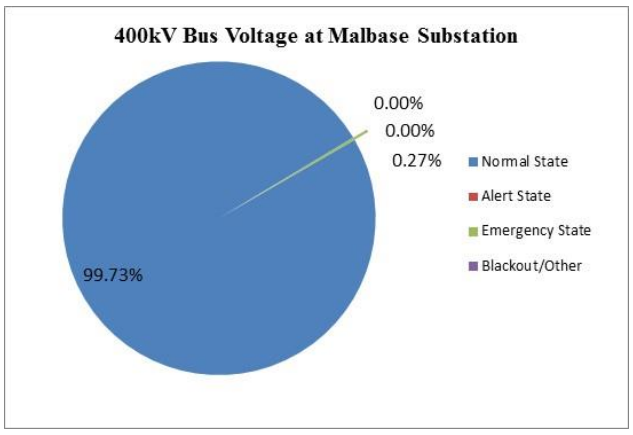
Due to the location of 400/22/66/11kV Malbase substation in western grid and 132/33/11kV Nangkhor substation in the eastern grid, the voltage profile of these substations are considered.

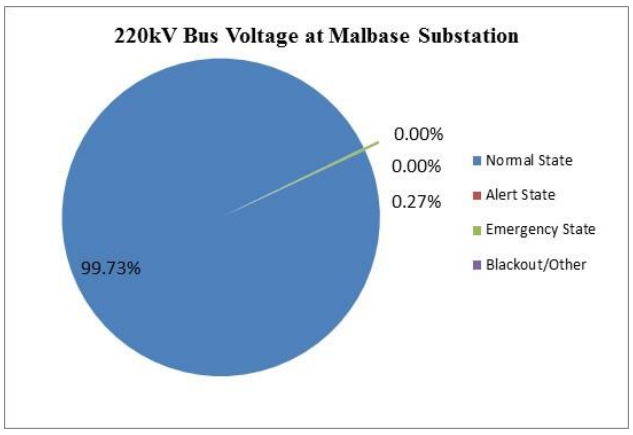
7.1.Voltage profile for the July, 2022

Table 7.1.1. Voltage Profile for 400/220/66kV Malbase Substation

Sl. No.	Operating State	400kV Bus Voltage	220kV Bus Voltage	66kV Bus Voltage
1	Normal State	99.73%	99.73%	99.87%
2	Alert State	0.00%	0.00%	0.00%
3	Emergency State	0.27%	0.27%	0.13%
4	Blackout/Other	0.00%	0.00%	0.00%

Graph 7.1.1. Voltage Profile for 400/220/66kV Malbase Substation





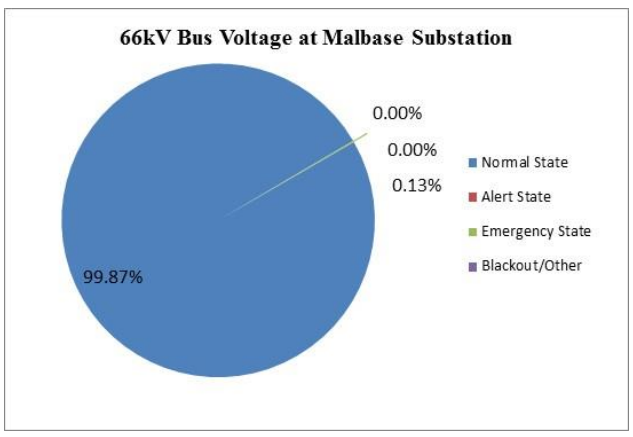
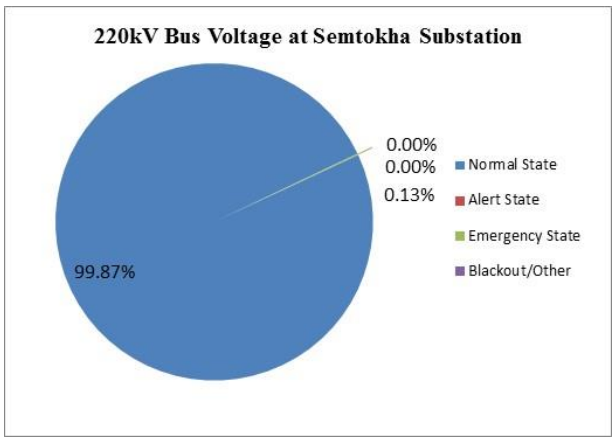


Table 7.1.2. Voltage Profile of 220/66/11kV Semtokha Substation

Sl. No.	Operating State	220kV Bus Voltage	66kV Bus Voltage
1	Normal State	99.87%	100.00%
2	Alert State	0.00%	0.00%
3	Emergency State	0.13%	0.00%
4	Blackout/Other	0.00%	0.00%

Graph 7.1.2. Voltage Profile of 220/66/11kV Semtokha Substation



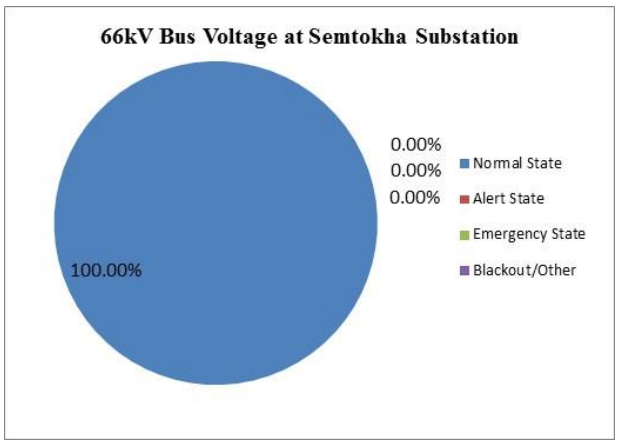
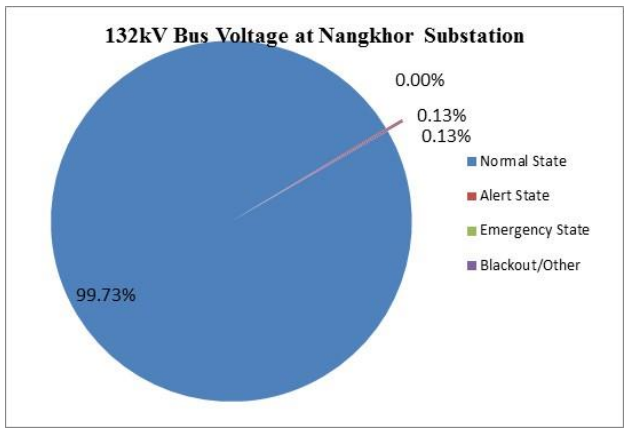


Table 7.1.3. Voltage Profile of 132/33/11kV Nangkhor Substation

Sl. No.	Operating State	132kV Bus Voltage
1	Normal State	99.73%
2	Alert State	0.13%
3	Emergency State	0.00%
4	Blackout/Other	0.13%

Graph 7.1.3. Voltage Profile of 132/33/11kV Nangkhor Substation

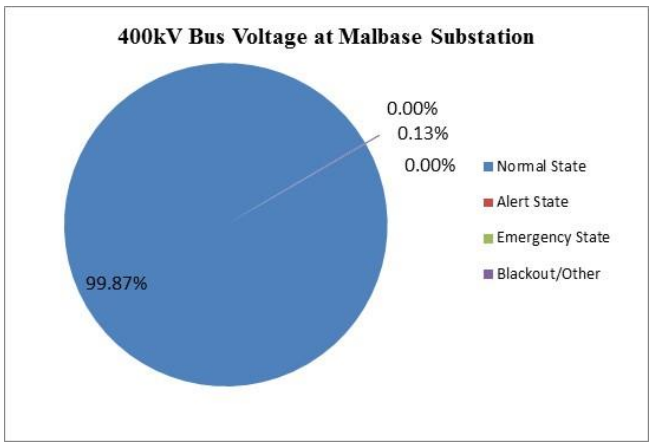


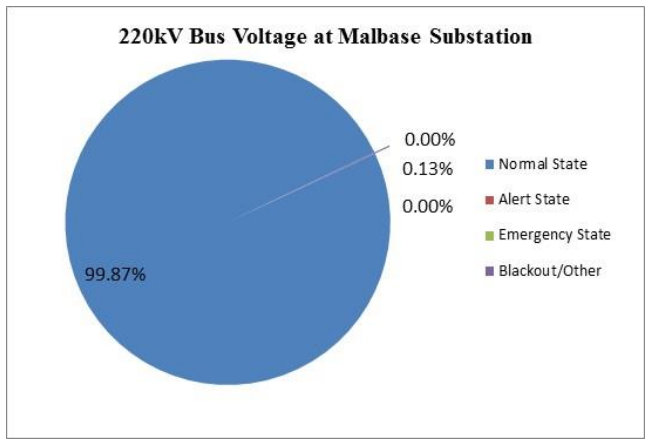
7.2.Voltage Profile for month of August, 2022

Table 7.2.1. Voltage Profile for 400/220/66kV Malbase Substation

Sl. No.	Operating State	400kV Bus Voltage	220kV Bus Voltage	66kV Bus Voltage
1	Normal State	99.87%	99.87%	97.04%
2	Alert State	0.00%	0.00%	2.69%
3	Emergency State	0.00%	0.00%	0.13%
4	Blackout/Other	0.13%	0.13%	0.13%

Graph 7.2.1. Voltage Profile for 400/220/66kV Malbase Substation





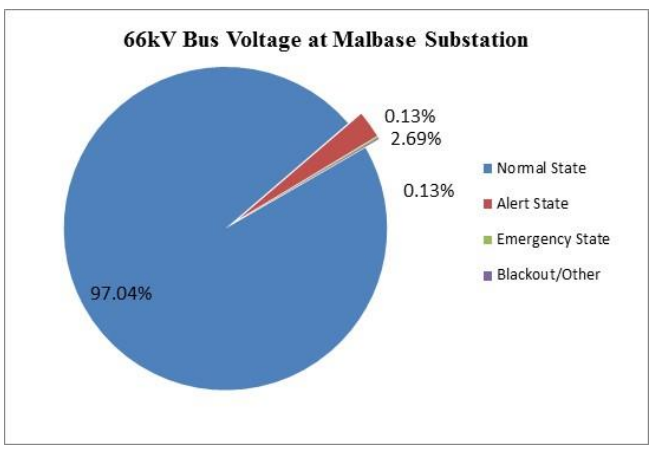
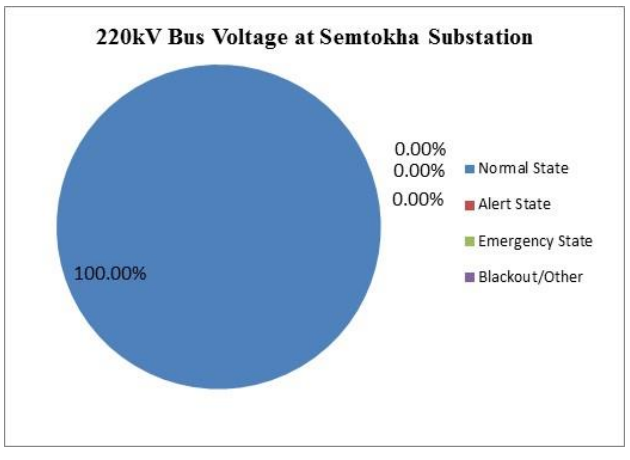


Table 7.2.2. Voltage Profile of 220/66/11kV Semtokha Substation

Sl. No.	Operating State	220kV Bus Voltage	66kV Bus Voltage
1	Normal State	100.00%	100.00%
2	Alert State	0.00%	0.00%
3	Emergency State	0.00%	0.00%
4	Blackout/Other	0.00%	0.00%

Graph 7.2.2. Voltage Profile of 220/66/11kV Semtokha Substation



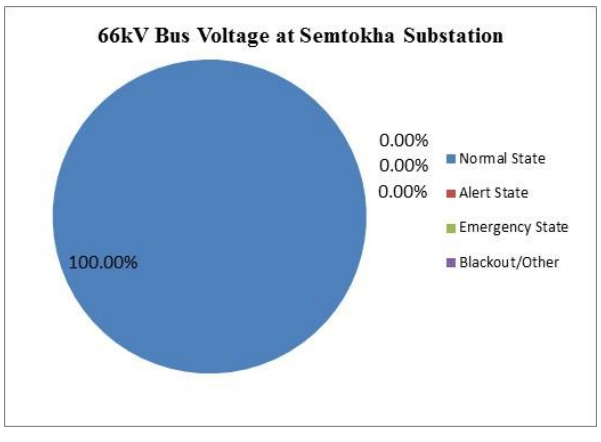
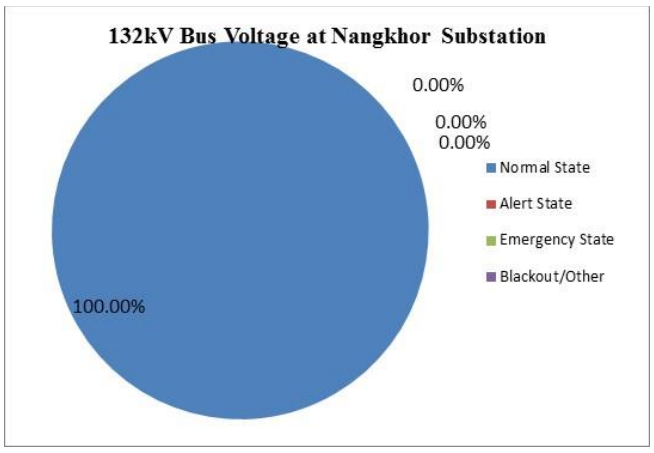


Table 7.2.3. Voltage Profile of 132/33/11kV Nangkhor Substation

Sl. No.	Operating State	132kV Bus Voltage
1	Normal State	100.00%
2	Alert State	0.00%
3	Emergency State	0.00%
4	Blackout/Other	0.00%

Graph 7.2.3. Voltage Profile of 132/33/11kV Nangkhor Substation

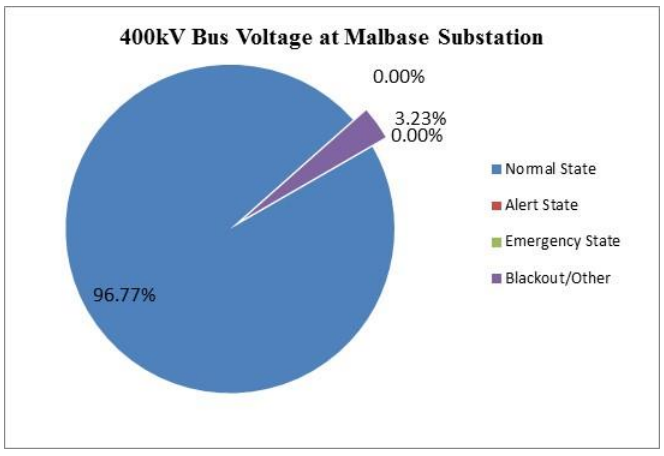


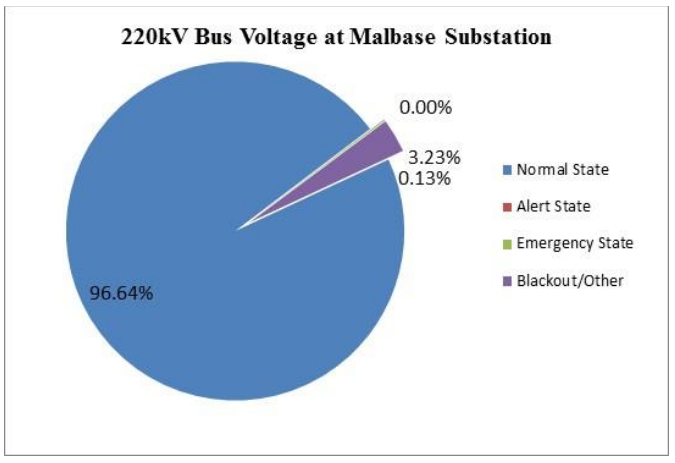
7.3.Voltage Profile for the month of September, 2022

Table 7.3.1. Voltage Profile for 400/220/66kV Malbase Substation

Sl. No.	Operating State	400kV Bus Voltage	220kV Bus Voltage	66kV Bus Voltage
1	Normal State	96.77%	96.64%	95.97%
2	Alert State	0.00%	0.00%	0.40%
3	Emergency State	0.00%	0.13%	0.00%
4	Blackout/Other	3.23%	3.23%	3.63%

Graph 7.3.1. Voltage Profile for 400/220/66kV Malbase Substation





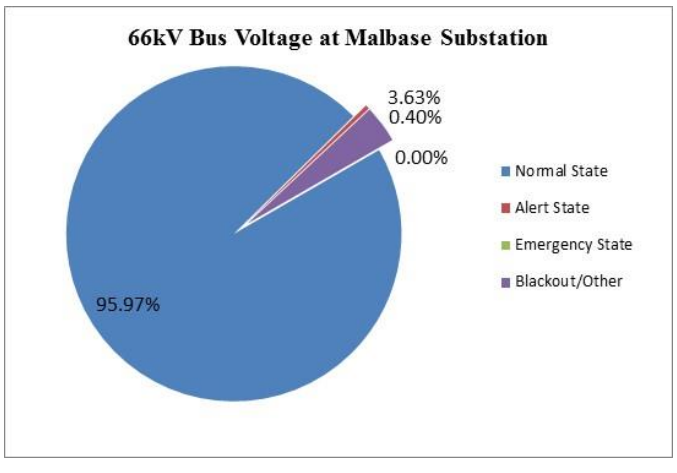
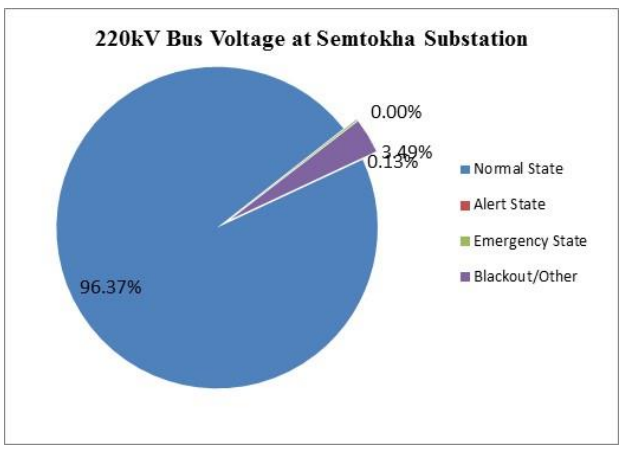


Table 7.3.2. Voltage Profile of 220/66/11kV Semtokha Substation

Sl. No.	Operating State	220kV Bus Voltage	66kV Bus Voltage
1	Normal State	96.37%	96.51%
2	Alert State	0.00%	0.00%
3	Emergency State	0.13%	0.00%
4	Blackout/Other	3.49%	3.49%

Graph 7.3.2. Voltage Profile of 220/66/11kV Semtokha Substation



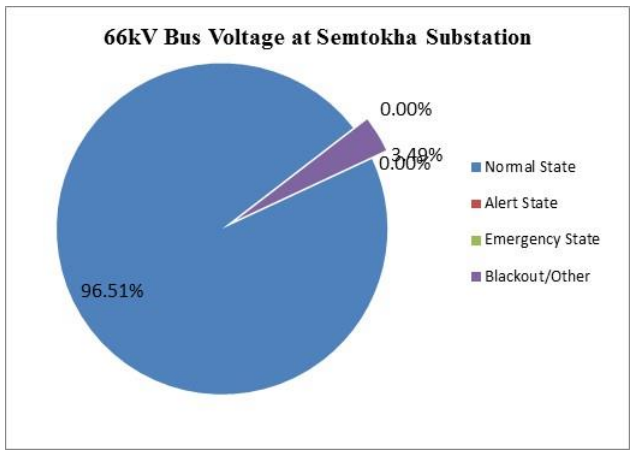
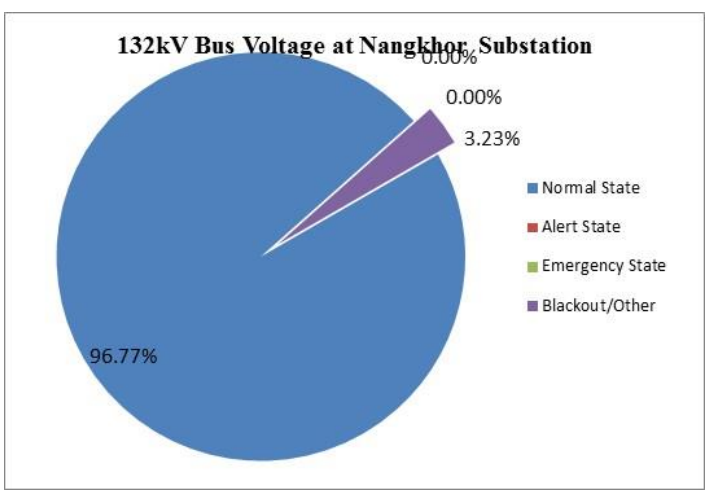


Table 7.3.3. Voltage Profile of 132/33/11kV Nangkhor Substation

Sl. No.	Operating State	132kV Bus Voltage
1	Normal State	96.77%
2	Alert State	0.00%
3	Emergency State	0.00%
4	Blackout/Other	3.23%

Graph 7.3.3. Voltage Profile of 132/33/11kV Nangkhor Substation

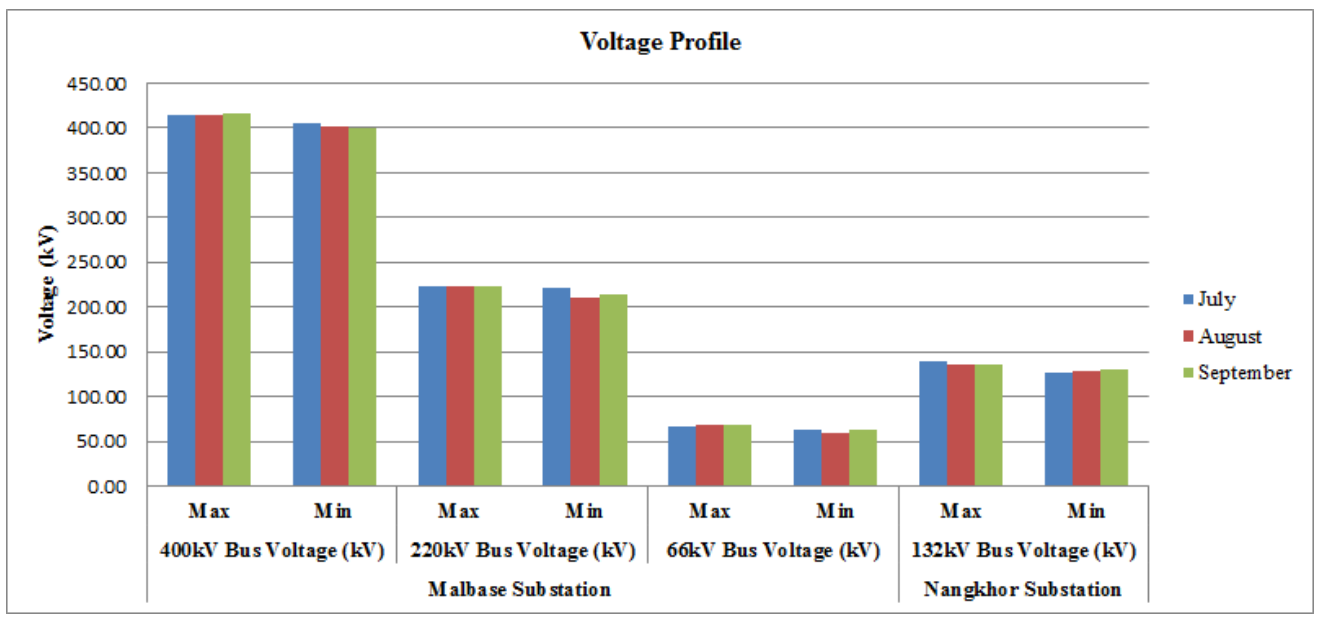


7.4.Voltage Summary for the Month of July to September, 2022

Table 7.4.1. Voltage Summary for the month of July to September, 2022

Substation	Malbase Substation						Nangkhor Substation	
Voltage Level	400kV Bus Voltage (kV)		220kV Bus Voltage (kV)		66kV Bus Voltage (kV)		132kV Bus Voltage (kV)	
Month	Max	Min	Max	Min	Max	Min	Max	Min
July	414.00	405.00	224.00	221.00	66.35	63.10	139.87	126.34
August	414.50	402.00	222.50	209.50	68.00	60.01	136.31	129.04
September	415.50	399.00	223.00	214.50	68.00	62.00	136.10	129.45

Graph 7.4.1. Voltage Summary for the month of July to September, 2022



Daily maximum, minimum and average bus voltage of Malbase substation in western grid and Nangkhor substation in eastern grid for the month of July to September, 2022 is attached as **Annexure-IV**

8. Major Outages of Feeders and Equipment

The transmission lines and equipment which were shut down for annual maintenance and hand/force trip are not considered in the report.

8.1.Major Outages in Eastern Grid

It had been observed that there was multiple major tripping occurred during the third quarter of the year compare to the previous quarter. Generally, all the tripping occurred are of transient in nature but the maximum restoration time 38hr.

The feeders and equipment outages for the Eastern grid is attached as **Annexure-V**.

8.2.Major Outages in Western Grid

It had been observed that there was major tripping occurred during the third quarter year as compared to the previous quarter the restoration time was ranging from 2hrs-1847hrs.

The detail tripping report of any element is compiled and circulated to relevant stakeholder every month.

The feeders and equipment outages for the Western grid is attached as **Annexure-VI.**

9. Annexures

Annexure-I

Table: Generation of July, 2022

Jul-22	BHP (MW)			CHP (MW)			THP (MW)			KHP (MW)			DHP (MW)			MHP (MW)		
Date	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava
1	66.33	63.72	66.12	369.32	277.26	351.03	1,122.00	1,122.00	1,122.00	0.00	0.00	0.00	126.83	95.37	104.11	593.64	591.70	592.83
2	66.34	66.08	66.20	369.56	275.58	352.38	1,122.00	1,122.00	1,122.00	65.77	64.90	65.31	126.89	95.39	110.76	594.19	592.01	593.21
3	66.24	65.97	66.09	369.97	366.82	368.16	1,122.00	935.00	1,114.21	66.00	64.59	65.33	105.31	45.00	86.29	594.06	193.19	568.54
4	0.00	65.73	66.05	369.99	367.63	368.52	1,122.00	871.00	1,001.33	66.00	66.00	66.00	97.46	62.12	81.18	593.67	394.26	580.42
5	0.00	62.10	64.52	369.40	367.05	368.26	1,021.00	777.00	887.92	66.00	66.00	66.00	74.37	66.37	70.71	593.59	591.95	593.04
6	0.00	22.05	58.83	369.07	366.70	368.26	1,078.00	699.00	867.83	66.00	66.00	66.00	67.31	62.29	64.92	593.59	538.15	578.57
7	63.35	58.20	60.87	369.26	79.47	352.51	867.00	557.00	783.63	66.00	66.00	66.00	62.33	57.46	60.36	573.08	479.48	521.21
8	60.48	40.52	57.96	277.29	272.65	275.42	747.00	557.00	707.00	66.00	65.71	65.92	63.64	56.86	58.44	540.75	358.22	504.46
9	66.11	56.12	61.80	274.55	272.84	273.87	837.00	717.00	752.13	66.00	66.00	66.00	126.41	58.41	84.76	578.26	395.50	517.33
10	57.08	51.25	55.06	274.65	272.71	273.88	817.00	617.00	722.67	66.00	66.00	66.00	64.35	55.40	59.55	538.40	460.68	497.25
11	55.84	10.70	49.75	277.00	273.82	275.00	790.00	670.00	730.00	66.00	66.00	66.00	56.46	53.37	54.83	569.55	470.83	521.93
12	54.50	49.71	50.80	276.72	275.56	276.23	824.00	630.00	721.21	66.00	66.00	66.00	53.93	51.39	52.37	585.00	479.36	526.85
13	49.69	48.05	49.13	276.98	274.87	276.04	1,122.00	690.00	890.08	66.00	66.00	66.00	52.46	48.94	51.32	566.06	500.53	535.02
14	48.15	44.26	47.05	276.82	274.69	276.15	1,122.00	774.00	1,016.54	66.00	66.00	66.00	50.52	48.00	49.50	592.90	429.05	569.19
15	48.69	45.10	46.17	276.79	275.01	276.13	921.00	607.00	829.21	66.00	65.69	65.95	59.94	46.99	50.74	593.08	465.49	521.90
16	44.94	44.20	44.59	277.22	275.32	276.39	764.00	607.00	712.88	66.00	65.34	65.70	45.77	44.32	45.28	479.92	420.70	461.43
17	44.55	43.10	43.65	277.41	275.24	276.05	1,071.00	674.00	789.13	65.91	64.99	65.42	45.77	44.32	45.28	479.91	435.43	463.55
18	46.59	43.37	44.45	276.67	275.62	276.19	940.00	680.00	747.92	66.00	33.00	62.86	45.59	44.31	45.07	473.53	419.33	443.96
19	62.06	19.71	49.93	277.11	275.52	276.22	750.00	680.00	710.00	66.00	66.00	66.00	63.23	47.01	54.87	591.99	420.93	542.59
20	66.09	45.87	56.92	277.03	274.87	276.06	1,061.00	710.00	840.79	66.00	65.61	65.95	123.30	55.98	80.97	593.89	509.47	553.59
21	66.35	66.07	66.17	277.04	274.78	276.16	1,122.00	851.00	1,002.92	65.14	47.71	63.93	126.94	88.35	113.64	593.89	591.39	592.67
22	66.30	65.71	66.17	276.74	272.85	276.00	1,122.00	1,122.00	1,122.00	65.12	31.46	62.38	126.98	107.06	122.22	593.62	591.74	593.01
23	66.33	66.08	66.22	277.19	275.42	276.03	1,122.00	935.00	1,084.29	65.04	59.45	61.83	127.03	124.40	126.56	593.65	592.53	593.27
24	66.29	66.07	66.20	277.22	274.94	275.93	1,122.00	561.00	1,075.25	66.00	29.81	59.26	124.40	66.44	101.25	593.61	592.84	593.33
25	66.26	66.05	66.17	277.00	274.66	275.95	1,122.00	935.00	1,083.04	65.83	65.03	65.40	123.35	86.57	99.88	593.68	387.51	567.37
26	66.33	66.11	66.21	276.79	274.96	276.22	1,122.00	1,122.00	1,122.00	65.50	63.41	64.40	126.95	118.33	125.40	593.13	392.10	571.52
27	66.33	24.79	63.21	276.79	275.51	276.05	1,122.00	1,122.00	1,122.00	66.00	32.00	54.02	126.95	118.33	125.40	593.62	591.09	592.53
28	66.40	66.22	66.31	277.07	273.82	276.03	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	126.90	110.28	121.40	594.01	341.68	310.19
29	66.35	66.17	66.26	276.44	274.94	275.88	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	121.40	104.38	114.26	594.16	591.49	593.16
30	66.30	66.14	66.21	276.85	274.96	276.04	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	126.89	108.30	119.79	594.12	591.69	593.54
31	66.34	66.03	66.24	277.06	184.25	272.26	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	126.95	115.38	122.98	593.73	575.48	592.44
Max	66.40			369.99			1,122.00			66.00			127.03			594.19		
Min		10.70			79.47			557.00			0.00			44.31			193.19	
Source: THP, CHP, BHP, KHP,MHP (DGPC)																		

Graph: Generation for the month July, 2022

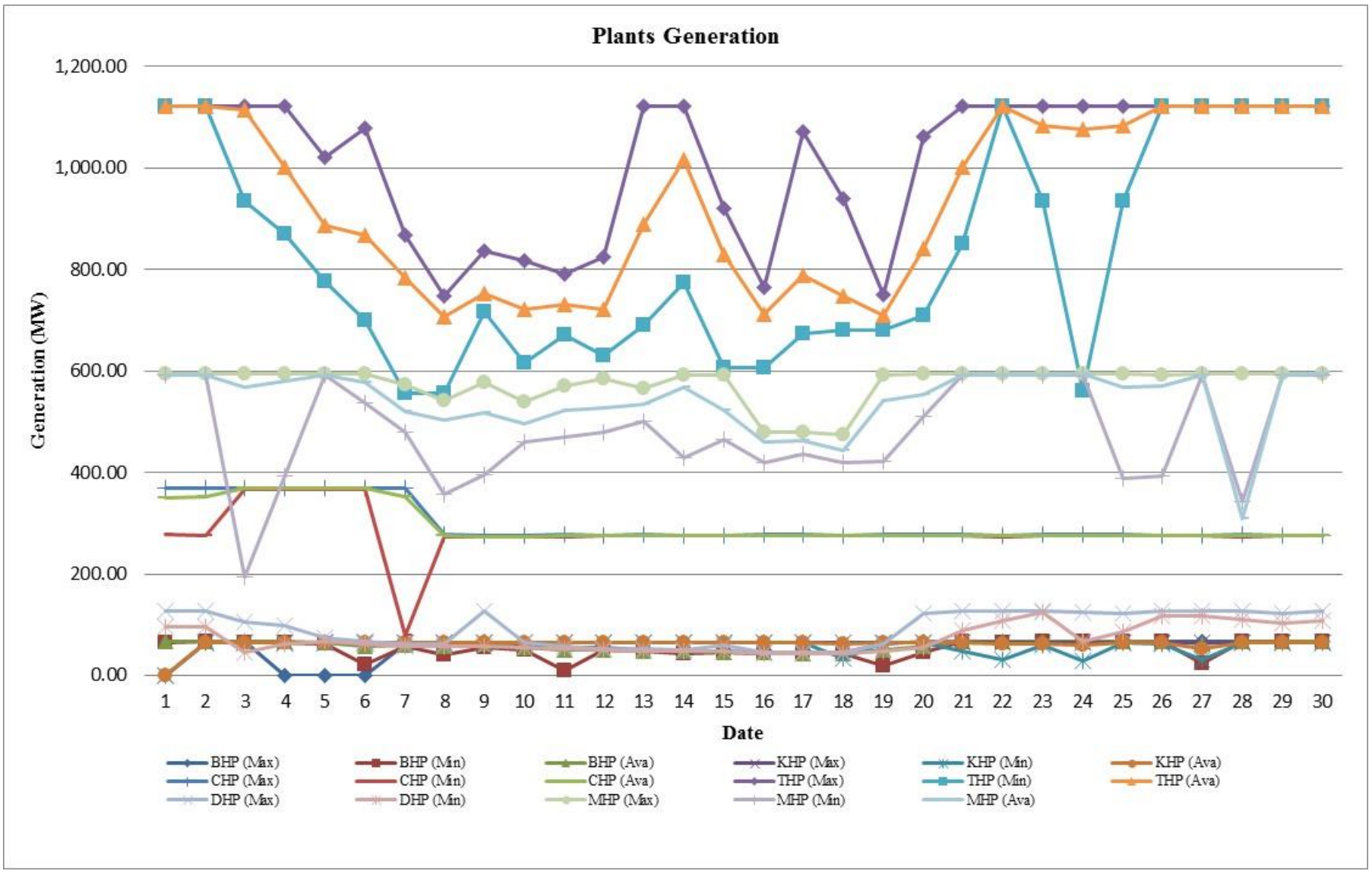


Table: Generation for the month of August, 2022

Aug-22	BHP (MW)			CHP (MW)			THP (MW)			KHP (MW)			DHP (MW)			MHP (MW)		
Date	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava
1	66.35	66.18	66.28	276.73	274.73	276.11	1,122.00	1,122.00	1,122.00	0.00	0.00	0.00	126.98	126.62	126.86	593.81	395.37	573.70
2	66.38	66.16	66.28	276.76	275.14	276.03	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	126.95	126.64	126.82	593.88	592.89	593.50
3	66.38	66.15	66.29	276.85	274.89	276.16	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	126.98	126.76	126.86	593.79	592.12	593.45
4	0.00	66.21	66.28	276.75	275.64	276.38	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	127.07	110.80	123.63	593.90	593.38	593.58
5	0.00	66.18	66.25	277.09	275.09	276.31	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	126.95	106.46	113.28	638.83	592.15	599.72
6	0.00	66.13	66.27	276.98	275.62	276.20	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	126.98	80.60	121.13	729.82	638.39	706.26
7	66.58	66.24	66.42	276.98	275.81	276.24	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	127.03	113.46	122.81	729.72	561.21	721.00
8	66.29	66.10	66.19	276.62	274.67	276.06	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	113.46	97.42	107.23	729.07	726.71	728.08
9	66.29	66.07	66.17	276.89	275.58	276.24	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	110.49	97.41	102.44	729.04	728.37	728.75
10	66.31	66.06	66.17	276.99	275.86	276.41	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	98.44	89.33	93.93	728.98	727.26	728.69
11	66.21	66.03	66.10	276.87	275.91	276.34	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	95.39	86.38	91.18	729.02	661.36	721.04
12	66.43	66.10	66.32	276.80	275.76	276.41	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	87.40	80.90	84.27	661.56	605.27	633.13
13	66.24	66.01	66.10	277.13	275.53	276.32	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	87.46	78.37	80.72	726.80	575.01	613.28
14	66.18	66.00	66.08	277.13	275.55	276.28	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	127.03	87.41	116.81	729.55	721.28	727.68
15	66.27	45.82	65.24	309.45	275.71	282.15	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	126.84	94.38	110.53	728.75	727.45	728.17
16	66.19	66.00	66.08	335.41	309.38	324.48	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	118.48	87.41	96.69	729.82	625.66	689.27
17	66.25	33.54	55.66	344.07	331.55	340.85	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	90.52	80.36	84.63	644.42	556.14	591.75
18	66.14	33.82	50.99	343.89	342.14	342.78	1,122.00	958.00	1,075.38	66.00	66.00	66.00	80.39	75.30	77.87	709.22	550.99	570.07
19	65.36	64.38	64.81	349.08	342.40	347.10	1,122.00	958.00	1,105.67	66.00	66.00	66.00	87.41	63.50	76.15	729.28	530.92	653.70
20	64.42	57.94	62.81	348.88	275.75	332.67	1,122.00	978.00	1,073.25	66.00	66.00	66.00	86.36	71.81	76.35	729.36	676.31	714.60
21	62.39	60.23	60.84	348.93	347.40	348.15	1,122.00	961.00	1,008.75	66.00	66.00	66.00	76.39	68.38	71.83	728.33	591.25	663.81
22	61.61	56.52	60.04	352.20	347.44	349.10	1,122.00	998.00	1,097.25	66.00	66.00	66.00	82.70	68.69	73.12	729.22	645.69	715.48
23	61.13	58.93	59.60	352.59	350.67	351.62	1,122.00	948.00	1,046.54	66.00	66.00	66.00	106.40	67.39	76.19	728.96	621.39	707.42
24	58.77	40.82	57.09	352.39	350.95	351.68	1,105.00	948.00	1,039.29	66.00	66.00	66.00	96.41	68.35	76.49	621.53	576.13	590.00
25	57.73	54.85	55.75	352.35	348.52	351.70	948.00	884.00	917.96	66.00	65.82	65.99	71.38	63.34	66.45	630.43	541.22	581.31
26	57.25	54.41	55.53	352.27	351.45	351.92	994.00	830.00	909.33	66.00	65.76	65.94	67.35	62.29	64.08	630.52	516.16	564.18
27	66.07	51.15	54.68	352.68	351.37	351.83	870.00	830.00	845.00	66.00	33.00	61.81	63.38	57.38	61.10	625.13	529.88	553.33
28	66.25	65.48	66.07	353.00	348.99	352.01	1,122.00	830.00	1,065.04	66.00	65.71	65.99	126.90	61.45	87.99	729.09	628.90	704.37
29	66.29	66.01	66.14	352.88	351.37	351.85	1,122.00	1,122.00	1,122.00	66.00	65.74	65.96	127.05	80.37	95.29	729.04	725.98	727.99
30	66.20	64.88	65.91	352.46	349.13	351.66	1,122.00	1,122.00	1,122.00	65.91	65.60	65.78	104.51	63.14	83.57	728.92	726.95	728.14
31	66.17	64.79	65.58	352.47	259.79	310.04	1,122.00	1,122.00	1,122.00	65.57	65.02	65.36	126.93	78.42	91.91	728.90	727.45	728.40
Max	**66.58**			**353.00**			**1,122.00**			**66.00**			**127.07**			**729.82**		
Min		**33.54**			**259.79**			**830.00**			**0.00**			**57.38**			**395.37**	
Source: THP, CHP, BHP, KHP,MHP (DGPC)																		

Graph: Generation for the month of August, 2022

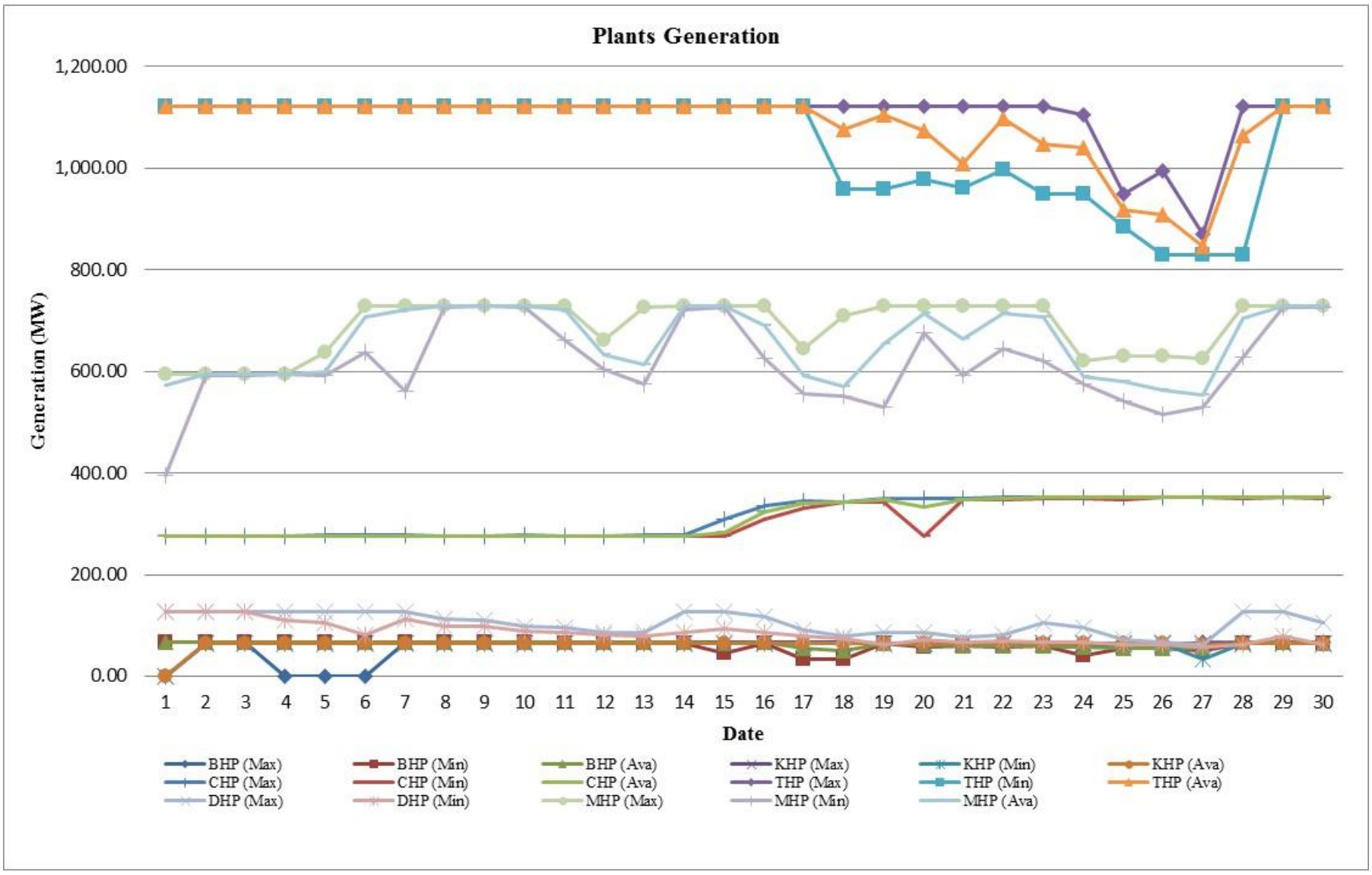


Table: Generation for the month of September, 2022

Sep-22	BHP (MW)			CHP (MW)			THP (MW)			KHP (MW)			DHP (MW)			MHP (MW)		
Date	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava
1	21.24	21.10	21.16	352.46	259.18	325.36	1,122.00	1,122.00	1,122.00	16.50	0.00	15.12	101.51	78.91	86.53	729.05	726.82	727.88
2	66.17	65.99	66.10	352.29	259.43	323.44	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	101.51	78.91	86.53	729.07	726.67	728.33
3	66.28	66.02	66.12	352.58	351.71	352.08	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	106.41	79.44	96.15	729.26	727.56	728.66
4	0.00	65.94	66.05	352.35	351.80	351.98	1,122.00	1,122.00	1,122.00	66.00	65.82	65.98	101.42	79.28	88.43	729.23	728.10	728.90
5	0.00	64.21	65.28	352.62	351.77	352.12	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	85.39	74.36	78.75	729.55	725.61	727.87
6	0.00	66.05	66.13	353.27	351.67	352.18	1,122.00	961.00	1,005.54	66.00	65.82	65.98	126.86	74.39	98.19	729.11	725.65	728.21
7	66.23	66.03	66.12	352.49	351.11	352.03	1,122.00	1,122.00	1,122.00	66.00	65.53	65.86	95.46	75.38	83.61	728.67	628.36	724.23
8	66.28	66.01	66.13	352.36	351.53	352.03	1,122.00	1,122.00	1,122.00	65.81	63.13	64.48	127.01	74.86	86.22	729.17	728.06	728.56
9	66.39	64.87	66.17	352.50	351.22	351.99	1,122.00	1,122.00	1,122.00	64.27	30.81	60.63	127.32	126.74	126.87	729.25	726.63	728.45
10	66.26	66.06	66.16	352.61	351.21	351.85	1,122.00	1,122.00	1,122.00	66.00	33.00	62.35	127.02	100.57	118.90	729.92	727.28	728.83
11	66.39	66.05	66.19	352.61	351.39	352.12	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	108.46	94.98	100.54	729.55	727.94	728.90
12	66.27	65.99	66.16	352.52	350.67	352.04	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	96.47	87.12	90.23	729.81	727.16	728.97
13	66.22	66.03	66.11	352.45	350.62	351.81	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	121.27	85.36	95.46	729.71	726.63	728.68
14	66.20	65.90	66.09	352.49	350.53	351.83	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	118.47	92.36	100.70	729.53	726.89	728.43
15	66.18	65.95	66.06	352.61	350.84	351.91	1,122.00	1,122.00	1,122.00	66.00	30.00	57.44	109.50	88.33	96.88	729.24	728.30	728.74
16	66.16	65.98	66.06	352.44	351.11	351.79	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	127.01	90.42	100.25	729.05	728.37	728.65
17	66.26	54.37	65.53	352.53	273.56	348.41	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	127.02	85.45	111.70	729.31	728.15	728.77
18	66.23	45.84	65.29	352.51	351.20	351.93	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	100.49	81.48	89.49	729.00	631.32	704.23
19	66.27	66.10	66.17	352.58	351.60	352.08	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	92.40	78.85	81.93	631.55	586.47	612.42
20	66.17	65.93	66.09	352.22	351.29	351.93	1,122.00	1,122.00	1,122.00	66.00	66.00	66.00	84.40	75.08	78.98	586.55	541.08	558.14
21	66.06	65.14	65.57	352.81	350.26	352.14	1,122.00	935.00	1,067.46	66.00	66.00	66.00	79.38	73.01	75.36	570.25	496.22	530.94
22	66.28	24.53	64.00	353.30	165.59	324.54	1,122.00	771.00	973.33	66.00	66.00	66.00	80.87	73.98	77.00	695.90	358.29	558.95
23	66.22	65.05	65.66	353.09	351.14	352.29	1,122.00	928.00	1,029.83	66.00	66.00	66.00	98.43	74.64	86.62	676.20	436.32	625.85
24	65.54	64.49	65.04	352.90	351.20	352.09	1,122.00	968.00	1,096.33	66.00	66.00	66.00	114.38	63.37	94.36	729.48	232.07	505.56
25	66.19	64.35	65.36	352.56	351.59	352.14	1,122.00	908.00	1,041.79	66.00	66.00	66.00	94.39	80.34	84.93	727.95	530.32	715.27
26	66.25	64.34	65.52	352.89	351.47	352.20	1,078.00	988.00	1,016.75	66.00	66.00	66.00	80.35	73.34	77.31	727.14	616.61	651.79
27	66.19	64.23	65.37	352.71	261.38	345.14	1,105.00	938.00	1,033.33	66.00	49.50	65.31	74.86	70.86	72.84	726.57	555.97	618.64
28	66.12	63.16	64.71	352.53	323.43	350.69	938.00	734.00	919.75	66.00	66.00	66.00	71.33	68.30	69.90	600.41	566.17	581.52
29	66.19	64.33	65.31	353.02	331.78	351.27	908.00	854.00	887.75	66.00	66.00	66.00	96.49	63.40	76.22	728.26	556.24	638.33
30	65.53	59.86	62.80	353.39	351.50	352.19	854.00	790.00	805.54	66.00	49.50	65.31	70.55	66.33	67.89	580.52	540.40	557.11
31	63.78	58.93	60.65	0.00	No Generati	Error	820.00	820.00	820.00	0.00	No Generati	Error	89.03	89.03	89.03	0.00	No Generation	Error
Max	**66.39**			**353.39**			**1,122.00**			**66.00**			**127.32**			**729.92**		
Min		**21.10**			**165.59**			**734.00**			**0.00**			**63.37**			**232.07**	
Source: THP, CHP, BHP, KHP,MHP (DGPC)																		

Graph: Generation for the month of September, 2022

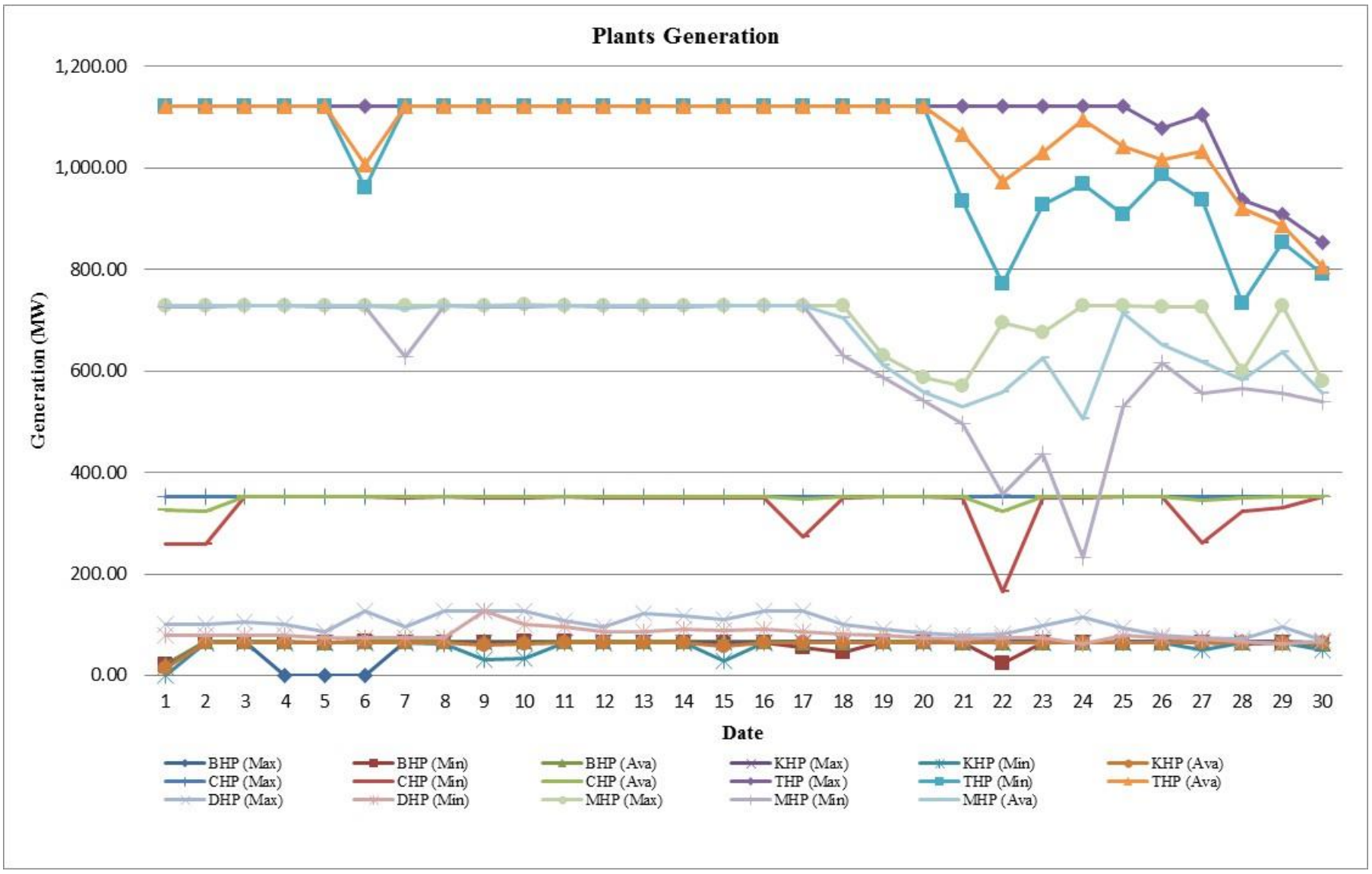


Table: National demand for July, 2022

Jul-22	Max	Min	Ava
0:00	503.95	140.28	319.37
1:00	446.84	127.90	311.02
2:00	447.61	143.74	307.12
3:00	480.90	169.46	327.89
4:00	439.26	169.23	313.08
5:00	447.58	185.74	336.40
6:00	474.43	199.90	368.67
7:00	510.34	211.01	389.22
8:00	540.67	218.82	381.79
9:00	536.16	114.15	373.17
10:00	532.18	160.49	365.54
11:00	517.90	220.66	367.17
12:00	483.64	242.61	372.29
13:00	479.54	246.46	353.12
14:00	490.60	159.46	345.17
15:00	462.87	162.55	338.45
16:00	477.06	158.15	353.68
17:00	502.37	174.69	368.08
18:00	499.42	173.29	380.47
19:00	519.85	169.29	392.14
20:00	529.99	138.54	389.31
21:00	507.27	123.07	376.58
22:00	518.04	157.12	343.66
23:00	503.47	146.00	328.86
	540.67		
		114.15	

Graph: National Demand for July, 2021 **Annexure-II**

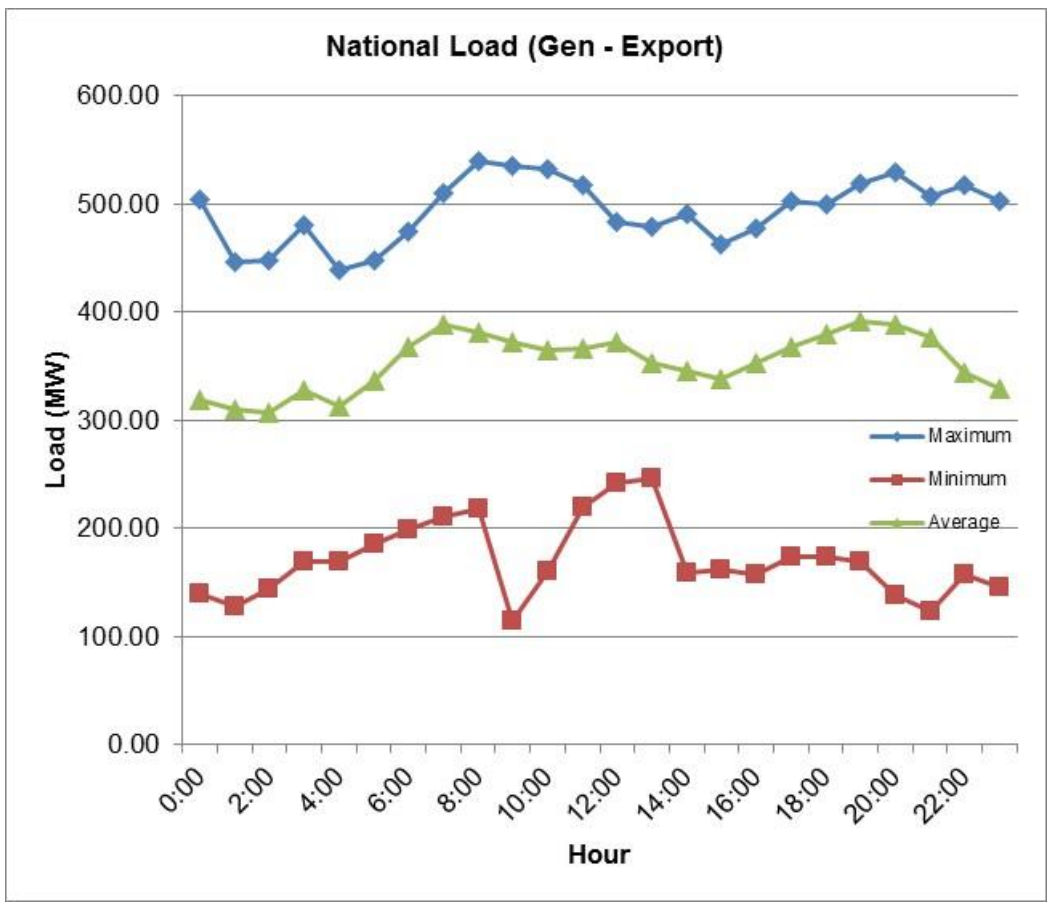


Table: National Demand for August, 2022

Aug-22	Max	Min	Ava
0:00	503.57	279.43	392.16
1:00	466.40	256.11	388.51
2:00	501.55	138.29	381.48
3:00	500.49	269.10	389.96
4:00	433.90	273.91	386.85
5:00	437.96	224.61	387.44
6:00	461.42	313.43	417.62
7:00	485.66	345.36	441.02
8:00	474.33	342.46	426.55
9:00	490.41	336.28	429.08
10:00	467.82	152.08	415.66
11:00	468.04	226.36	417.91
12:00	482.51	230.31	413.43
13:00	456.99	254.76	415.96
14:00	495.80	249.62	408.14
15:00	452.70	283.77	405.96
16:00	462.41	281.94	401.88
17:00	464.29	285.62	403.97
18:00	498.11	309.35	428.43
19:00	527.18	340.93	460.61
20:00	521.26	368.90	463.12
21:00	489.76	338.75	439.40
22:00	474.56	318.77	417.32
23:00	455.99	286.47	399.24
	527.18		
		138.29	

Graph: National Demand for August, 2022

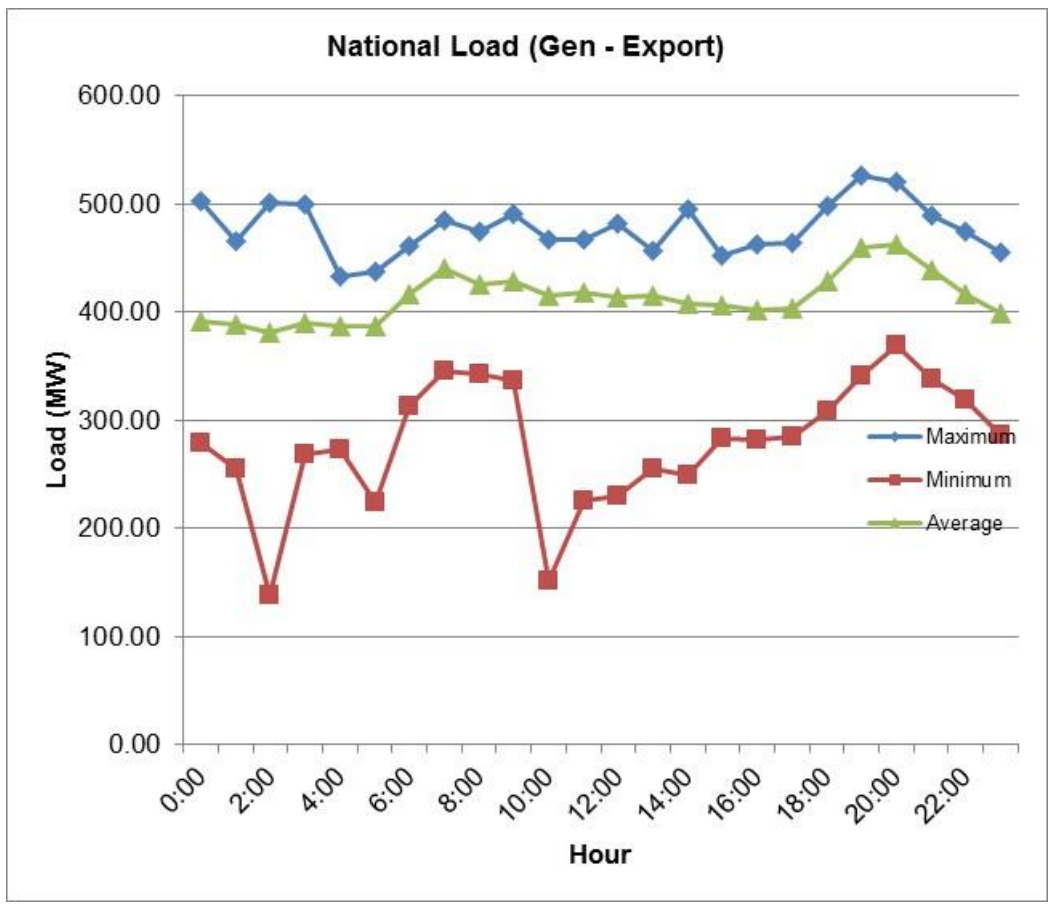
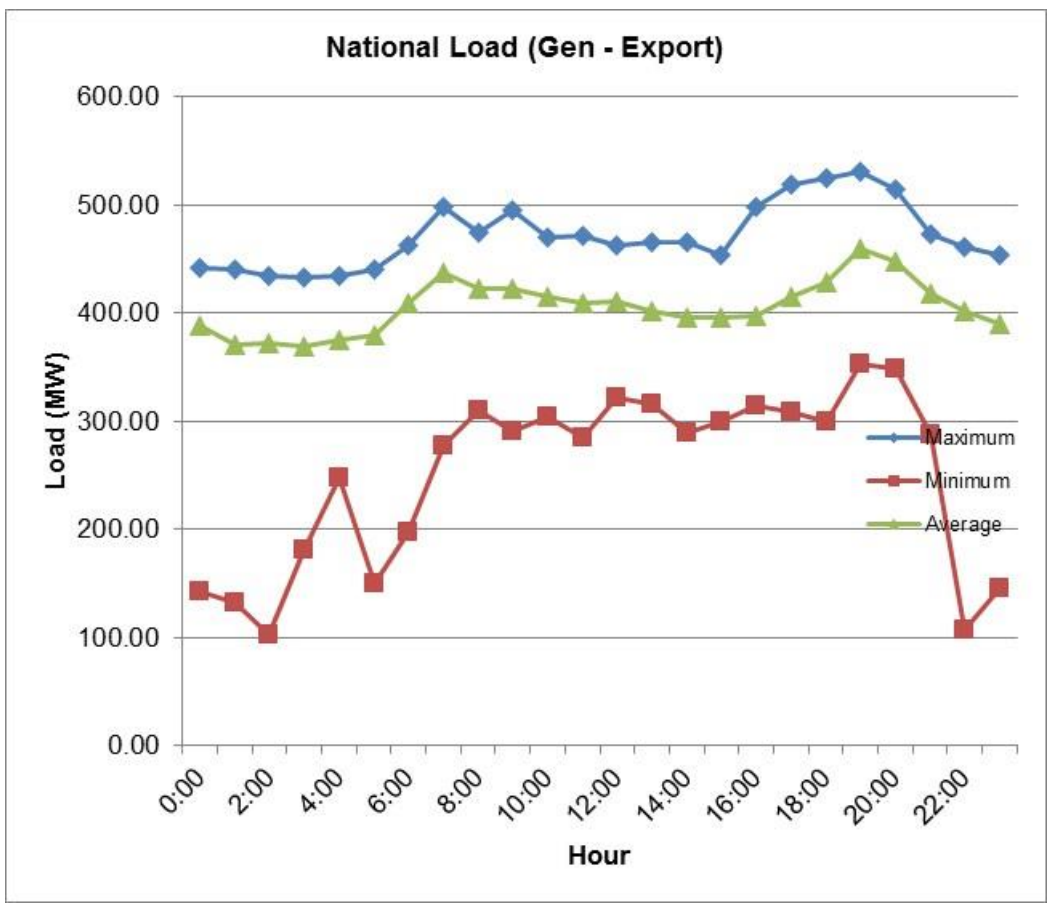


Table: National Demand for September, 2022

Sep-22	Max	Min	Ava
0:00	442.41	142.30	388.69
1:00	441.11	132.15	370.59
2:00	434.44	102.27	371.84
3:00	433.11	181.40	369.33
4:00	434.56	248.17	376.22
5:00	440.04	150.40	380.01
6:00	462.90	197.33	409.10
7:00	498.32	277.54	438.39
8:00	474.02	310.33	423.20
9:00	495.38	290.65	422.79
10:00	470.99	304.65	415.50
11:00	471.77	284.91	410.21
12:00	462.91	322.87	411.04
13:00	466.36	316.18	401.62
14:00	466.06	289.16	396.31
15:00	454.37	299.55	396.72
16:00	498.30	314.96	398.16
17:00	519.22	309.51	415.07
18:00	525.39	300.49	428.69
19:00	530.45	353.81	460.48
20:00	514.96	348.60	448.61
21:00	473.99	287.97	418.56
22:00	461.76	107.09	402.53
23:00	453.39	146.49	390.91
	530.45		
		102.27	

Graph: National Demand for September, 2022



Annexure-III

Table: Daily maximum, minimum and average frequency for the month of July, 2022

Jun-22	Bus Frequency at Semtokha Substation			Bus Frequency at Kurichhu Hydropower Plant		
Date	Max	Min	Ava	Max	Min	Ava
1	50.00	49.70	49.95	50.14	49.81	50.01
2	50.00	49.70	49.92	50.15	49.79	49.97
3	50.20	49.80	49.97	50.15	49.84	50.02
4	50.00	49.70	49.91	50.08	49.74	49.96
5	50.10	49.80	49.96	50.10	49.87	49.99
6	50.00	49.60	49.95	50.06	49.77	50.00
7	50.00	49.80	49.94	50.13	49.79	50.00
8	50.00	49.60	49.96	50.13	49.84	50.01
9	50.10	49.90	49.98	50.12	49.93	50.02
10	50.10	49.80	49.98	50.11	49.76	50.01
11	50.00	49.90	49.95	50.15	49.76	50.00
12	50.00	49.80	49.96	50.10	49.90	50.01
13	50.10	49.80	49.98	50.14	49.88	50.02
14	50.10	49.80	49.97	50.10	49.84	50.01
15	50.00	49.70	49.92	50.25	49.70	49.98
16	50.00	49.70	49.95	50.08	49.81	50.01
17	50.00	49.80	49.95	50.12	49.87	50.02
18	50.00	49.80	49.93	50.05	49.60	49.95
19	50.00	49.80	49.95	50.13	49.79	50.00
20	50.00	49.70	49.95	50.15	49.74	50.01
21	50.10	49.90	49.98	50.08	49.90	50.02
22	50.10	49.90	49.97	50.13	49.94	50.02
23	50.00	49.80	49.95	50.09	49.87	50.02
24	50.10	49.70	49.98	50.09	49.79	50.01
25	50.00	49.80	49.98	50.10	49.92	50.04
26	50.00	49.80	49.97	50.06	49.84	50.00
27	50.00	49.80	49.96	50.08	49.83	50.00
28	50.00	49.60	49.94	50.08	49.69	50.00
29	50.10	49.80	49.96	50.12	49.85	50.00
30	50.10	49.90	49.99	50.12	49.94	50.04
31	50.00	49.90	49.98	50.17	49.97	50.04
Max	**50.20**			**50.25**		
Min		**49.60**			**49.60**	
Source: TD (BPC), KHP (DGPC)						

Graph: Daily maximum, minimum and average frequency for the month of July, 2022

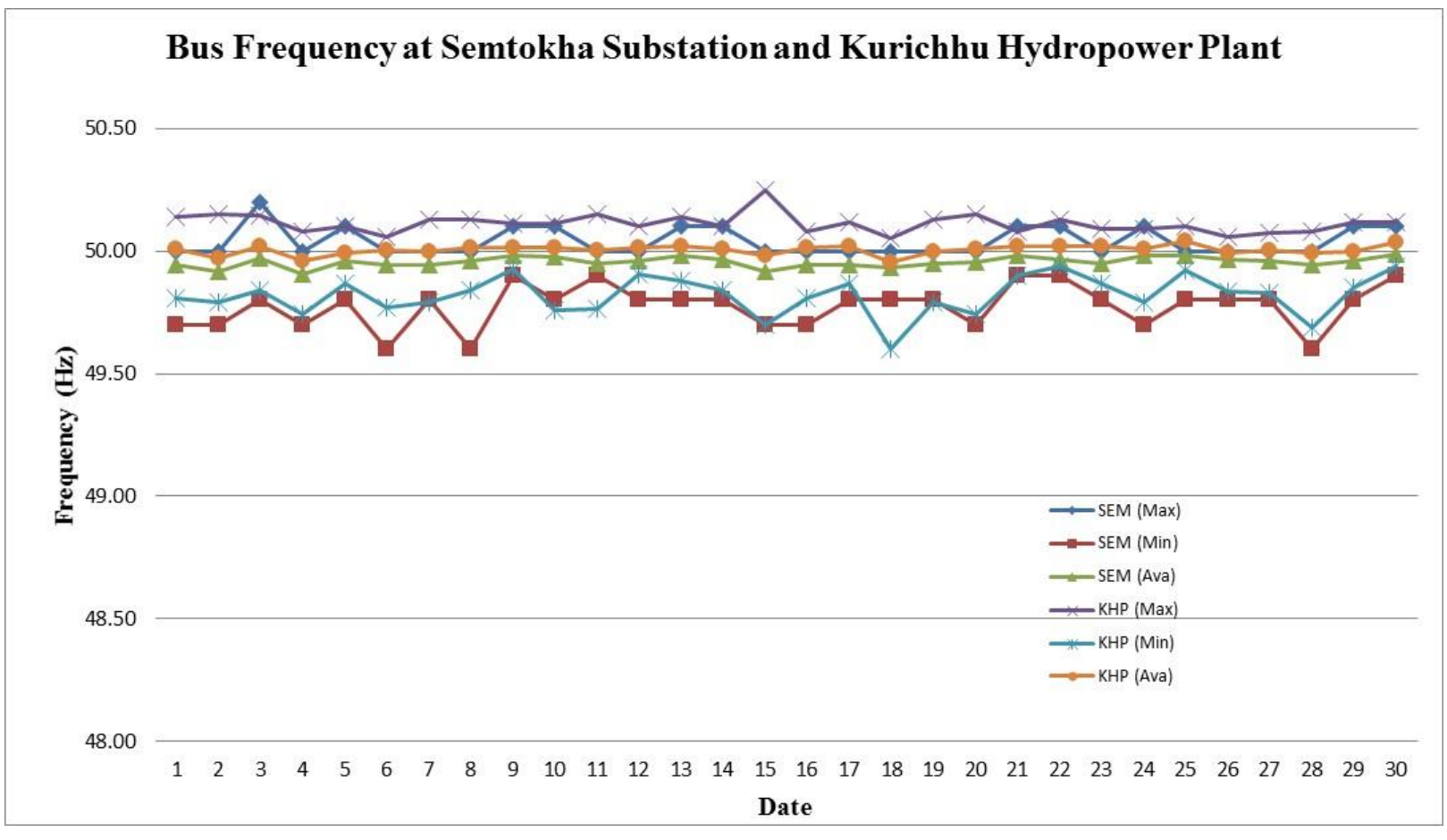


Table: Daily maximum, minimum and average frequency for the month of August, 2022

Aug-22	Bus Frequency at Semtokha Substation			Bus Frequency at Kurichhu Hydropower Plant		
Date	Max	Min	Ava	Max	Min	Ava
1	50.00	49.80	49.95	50.08	49.88	50.02
2	50.00	49.80	49.96	50.07	49.73	50.00
3	50.00	49.60	49.92	50.07	49.60	49.97
4	50.00	49.80	49.94	50.10	49.80	49.99
5	50.00	49.80	49.97	50.08	49.96	50.02
6	50.00	49.80	49.95	50.08	49.76	49.99
7	50.00	49.90	49.97	50.21	49.91	50.02
8	50.00	49.70	49.95	50.12	49.76	50.01
9	50.00	49.70	49.95	50.11	49.86	50.01
10	50.00	49.80	49.95	50.23	49.87	50.01
11	50.00	49.70	49.95	50.19	49.83	50.03
12	50.00	49.80	49.93	50.07	49.80	49.99
13	50.00	49.80	49.93	50.05	49.85	49.98
14	50.00	49.80	49.96	50.08	49.73	50.00
15	50.20	49.80	49.97	50.25	49.81	50.03
16	50.00	49.40	49.92	50.09	49.67	50.01
17	50.00	49.80	49.94	50.05	49.86	49.99
18	50.00	49.60	49.94	50.08	49.59	50.00
19	50.00	49.90	49.97	50.19	49.96	50.04
20	50.00	49.90	49.97	50.07	49.89	50.01
21	50.00	49.70	49.95	50.14	49.80	50.01
22	50.00	49.90	49.97	50.10	49.90	50.02
23	50.00	49.80	49.95	50.08	49.90	50.02
24	50.00	49.70	49.92	50.14	49.81	49.99
25	50.00	49.60	49.94	50.09	49.59	49.98
26	50.00	49.60	49.91	50.08	49.74	49.97
27	50.00	49.80	49.91	50.12	49.86	49.98
28	50.00	49.80	49.95	50.12	49.90	49.99
29	50.00	49.70	49.92	50.03	49.82	49.95
30	50.00	49.80	49.93	50.09	49.81	49.99
31	50.00	49.80	49.93	50.09	49.81	50.00
Max	**50.20**			**50.25**		
Min		**49.40**			**49.59**	
Source: TD (BPC), KHP (DGPC)						

Graph: Daily maximum, minimum and average frequency for the month of August, 2021

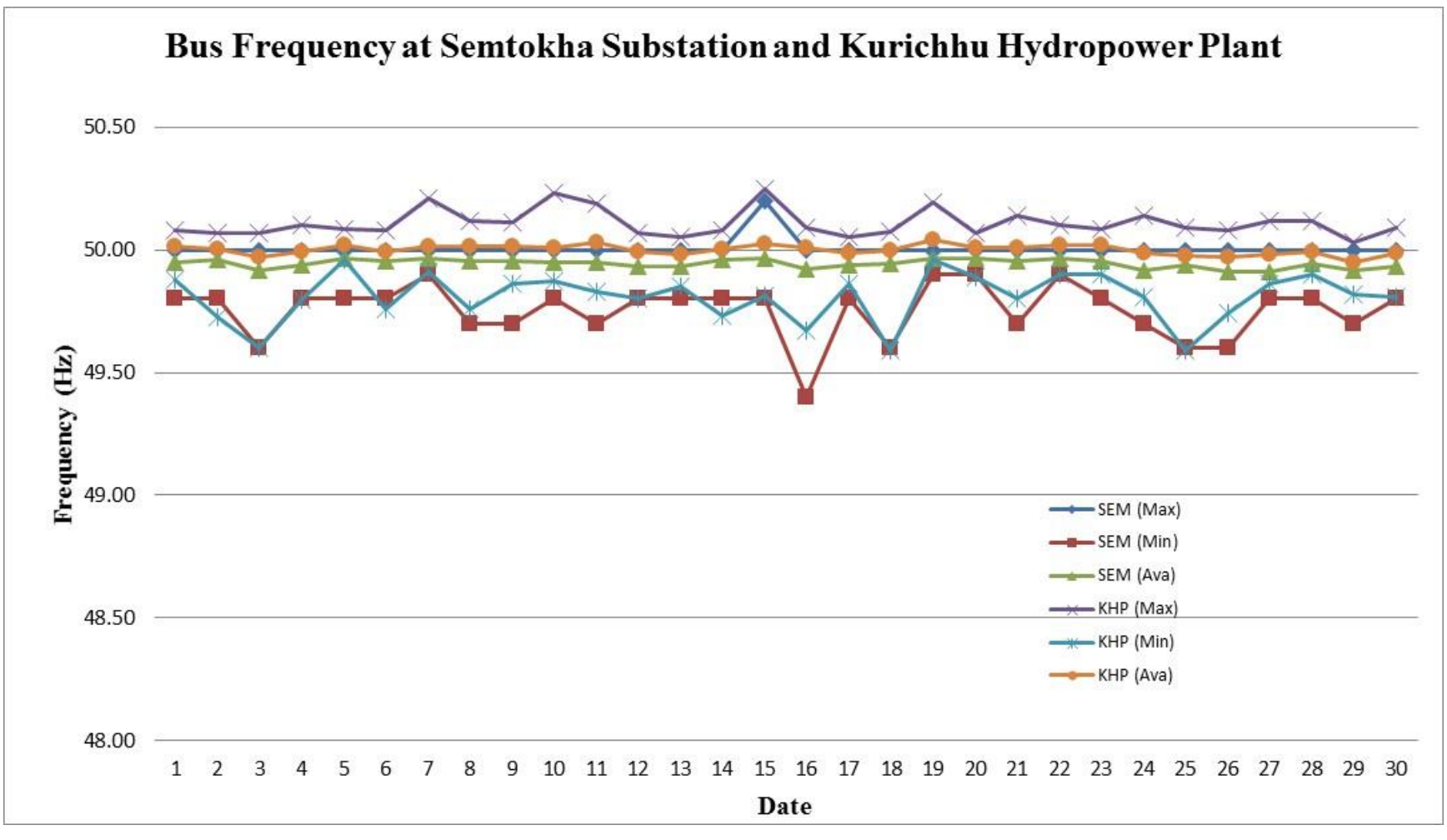
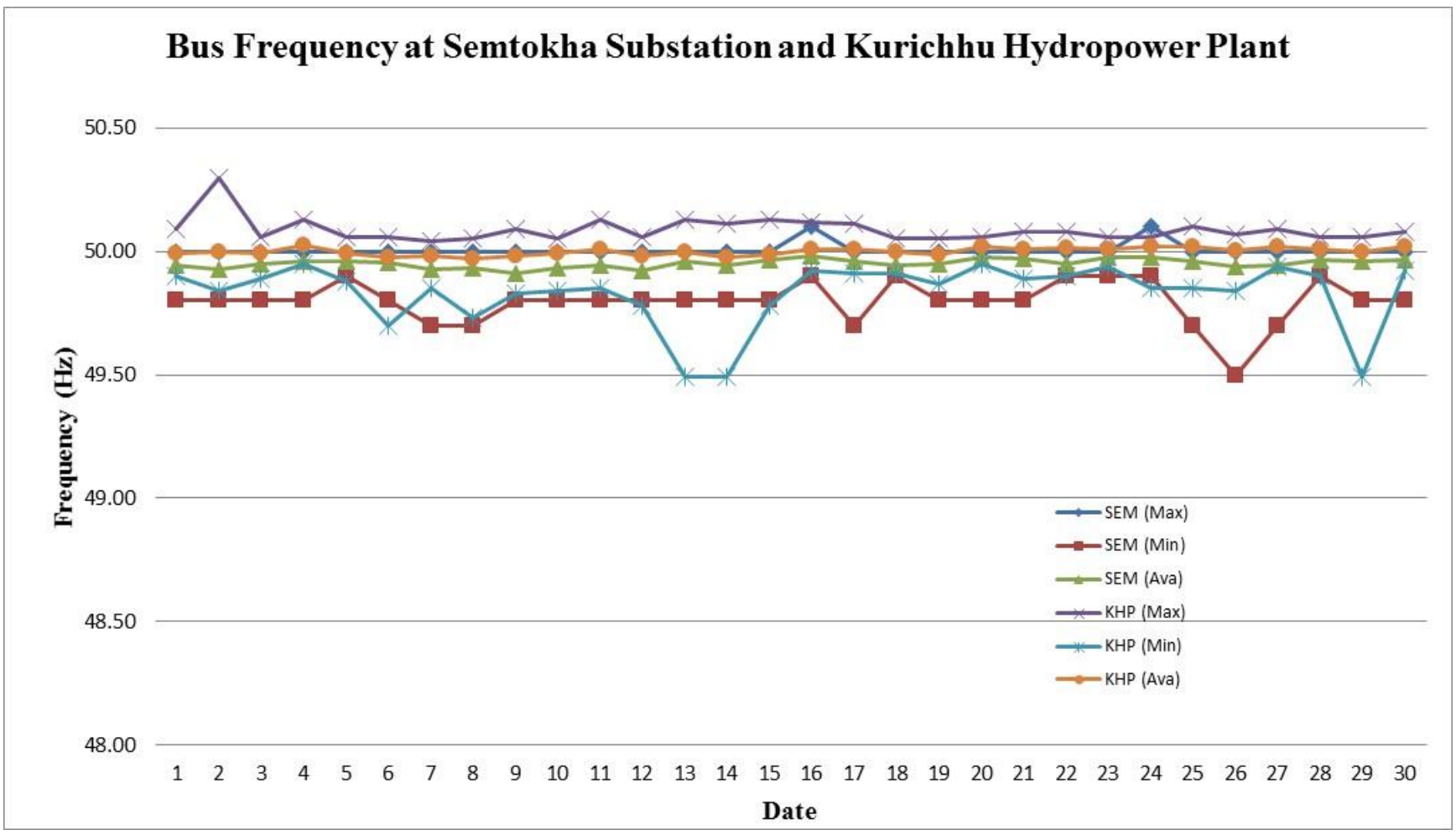


Table: Daily maximum, minimum and average frequency for the month of September, 2022

Sep-22	Bus Frequency at Semtokha Substation			Bus Frequency at Kurichhu Hydropower Plant		
Date	Max	Min	Ava	Max	Min	Ava
1	50.00	49.80	49.94	50.09	49.90	50.00
2	50.00	49.80	49.93	50.30	49.84	50.00
3	50.00	49.80	49.95	50.06	49.89	49.99
4	50.00	49.80	49.96	50.13	49.95	50.02
5	50.00	49.90	49.96	50.06	49.88	49.99
6	50.00	49.80	49.95	50.06	49.70	49.97
7	50.00	49.70	49.93	50.04	49.85	49.98
8	50.00	49.70	49.93	50.05	49.73	49.97
9	50.00	49.80	49.91	50.09	49.83	49.98
10	50.00	49.80	49.93	50.05	49.84	49.99
11	50.00	49.80	49.94	50.13	49.85	50.01
12	50.00	49.80	49.92	50.06	49.78	49.98
13	50.00	49.80	49.96	50.13	49.49	50.00
14	50.00	49.80	49.95	50.11	49.49	49.98
15	50.00	49.80	49.97	50.13	49.78	49.99
16	50.10	49.90	49.98	50.12	49.92	50.01
17	50.00	49.70	49.96	50.11	49.91	50.01
18	50.00	49.90	49.94	50.05	49.91	50.00
19	50.00	49.80	49.95	50.05	49.87	49.99
20	50.00	49.80	49.98	50.06	49.95	50.02
21	50.00	49.80	49.97	50.08	49.89	50.01
22	50.00	49.90	49.95	50.08	49.90	50.01
23	50.00	49.90	49.97	50.06	49.94	50.01
24	50.10	49.90	49.98	50.06	49.85	50.02
25	50.00	49.70	49.96	50.10	49.85	50.02
26	50.00	49.50	49.94	50.07	49.84	50.00
27	50.00	49.70	49.95	50.09	49.94	50.02
28	50.00	49.90	49.97	50.06	49.90	50.01
29	50.00	49.80	49.96	50.06	49.49	50.00
30	50.00	49.80	49.97	50.08	49.92	50.02
31	0.00	Error	Error	0.00	Error	Error
Max	**50.10**			**50.30**		
Min		**49.50**			**49.49**	
Source: TD (BPC), KHP (DGPC)						

Graph: Daily maximum, minimum and average frequency for the month of September 2022



Annexure-IV

Table: Daily maximum, minimum and average Voltage for the month of July, 2022

Jul-22	Malbase Substation									Nangkhor Substation		
	400kV Bus Voltage (kV)			220kV Bus Voltage (kV)			66kV Bus Voltage (kV)			132kV Bus Voltage (kV)		
Date	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava
1	412.50	402.00	404.06	218.00	214.00	216.00	66.00	64.00	64.96	134.23	130.29	132.64
2	406.00	401.50	404.17	219.00	213.00	215.77	66.00	64.00	65.03	134.65	130.70	132.83
3	406.00	401.00	404.35	217.50	213.50	216.04	65.90	64.00	64.84	135.28	130.50	132.91
4	406.00	402.50	404.33	218.00	121.00	211.91	65.50	64.00	64.92	134.44	131.23	132.65
5	405.50	403.50	404.63	217.00	213.50	215.31	65.25	64.00	64.69	135.48	130.08	132.99
6	407.50	402.50	404.52	218.00	212.00	215.38	65.10	63.10	64.60	134.20	131.32	132.85
7	408.50	402.50	405.50	218.50	212.50	215.81	65.20	63.68	64.55	134.44	131.12	132.82
8	406.50	404.50	405.65	217.50	213.00	215.42	65.00	64.00	64.65	134.44	131.74	133.08
9	409.00	404.50	406.81	219.50	213.00	215.85	66.00	64.00	64.70	135.69	132.57	134.33
10	410.50	406.00	408.79	218.50	214.00	216.73	66.00	64.00	65.15	136.31	131.57	134.38
11	410.00	407.00	408.46	219.00	215.50	217.23	66.00	64.00	65.36	135.90	130.29	132.99
12	411.50	405.00	407.77	219.00	213.50	216.35	66.00	63.65	64.78	135.69	129.66	132.88
13	407.00	405.00	406.56	219.00	213.50	216.92	66.00	63.65	64.95	134.21	130.29	132.63
14	411.00	406.00	407.65	219.00	214.00	216.90	66.00	64.50	65.01	134.03	131.12	132.42
15	411.00	405.00	407.78	220.00	217.00	218.21	66.00	65.00	65.48	135.48	130.02	132.34
16	411.00	405.00	408.50	220.00	216.50	218.49	65.25	64.00	64.95	134.86	130.29	132.20
17	414.00	405.00	394.46	223.00	218.00	219.00	65.23	65.00	65.04	135.27	130.08	132.73
18	413.00	405.00	408.79	222.50	216.00	218.63	65.23	64.00	64.74	134.03	130.70	132.45
19	410.50	406.00	407.10	220.50	216.50	218.08	65.45	64.75	64.99	135.69	130.49	132.42
20	409.00	402.00	406.60	220.50	217.00	218.56	66.00	64.00	65.12	134.65	130.29	132.77
21	409.50	404.00	407.33	220.50	217.00	218.88	66.35	64.50	65.56	136.31	130.49	132.82
22	407.50	404.00	405.88	219.50	216.00	217.73	66.00	64.00	65.07	134.65	130.08	132.22
23	411.00	403.00	405.67	219.00	216.00	217.60	66.00	64.00	65.09	134.23	130.50	132.22
24	408.50	402.50	405.25	218.50	215.00	216.77	65.00	64.00	64.63	135.28	129.25	132.64
25	410.00	404.50	405.98	219.33	122.00	213.51	66.00	64.55	65.01	135.90	131.32	133.35
26	408.00	405.00	405.96	222.00	216.00	219.23	66.00	64.00	64.96	139.87	129.87	133.31
27	413.50	406.00	410.39	222.50	218.50	220.94	66.00	65.00	65.24	134.10	126.34	131.76
28	413.00	405.00	408.54	224.00	216.00	219.69	66.00	64.00	65.29	135.48	129.90	132.96
29	408.50	405.50	406.94	219.50	216.00	218.15	66.00	64.00	64.94	138.39	131.12	132.85
30	408.00	405.50	406.96	220.00	217.00	218.27	65.00	64.88	64.99	135.07	131.12	133.32
31	410.00	406.00	407.67	220.75	217.00	219.30	65.87	64.50	65.10	135.69	131.53	133.13
Max	414.00			224.00			66.35			139.87		
Min		401.00			121.00			63.10			126.34	
Source: TD, BPC												

Graph: Daily maximum, minimum and average Voltage for the month of July, 2022

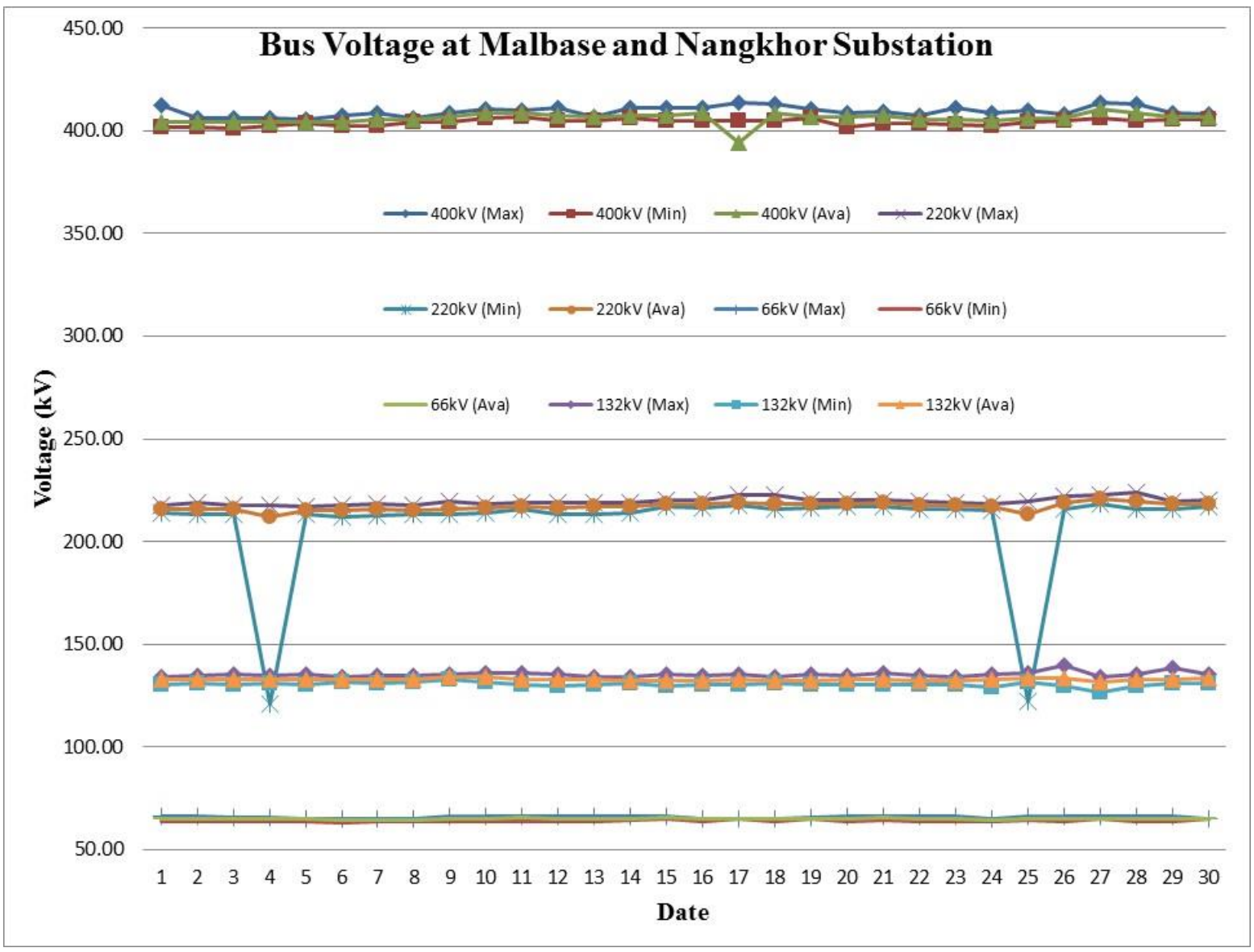


Table: Daily maximum, minimum and average Voltage for the month of August, 2022

Aug-22	Malbase Substation									Nangkhor Substation		
	400kV Bus Voltage (kV)			220kV Bus Voltage (kV)			66kV Bus Voltage (kV)			132kV Bus Voltage (kV)		
Date	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava
1	409.50	405.50	407.56	221.00	213.00	218.42	66.00	64.00	64.95	134.23	130.89	132.58
2	408.50	404.00	406.71	219.50	215.00	217.98	65.50	64.00	64.74	134.86	130.08	132.50
3	410.00	404.00	406.73	219.50	215.50	217.67	65.00	64.00	64.67	135.28	129.04	132.24
4	410.50	404.50	407.02	220.50	214.50	217.52	65.75	63.00	64.31	135.07	131.32	132.62
5	408.50	404.50	406.83	218.50	215.00	216.98	65.13	64.00	64.48	134.44	130.08	132.30
6	410.00	404.50	407.40	219.50	215.50	217.25	65.00	63.00	64.32	135.48	130.98	132.76
7	410.00	404.50	407.45	219.00	215.00	217.21	65.00	64.00	64.57	133.89	129.10	132.68
8	409.50	406.00	407.77	219.00	216.00	217.60	65.28	64.00	64.77	135.07	130.56	132.82
9	410.50	405.50	408.13	220.50	215.50	217.65	66.01	64.25	65.04	133.82	131.16	132.61
10	412.00	405.50	408.85	219.00	216.00	217.75	65.00	64.00	64.56	134.86	129.66	132.88
11	413.00	404.00	408.50	219.50	213.50	217.25	66.00	63.00	64.53	135.69	131.12	133.06
12	413.00	405.00	407.67	218.50	216.00	217.15	65.30	63.89	64.66	135.27	131.53	132.96
13	409.00	406.00	407.79	219.00	216.50	217.46	65.00	64.15	64.79	134.65	131.45	132.73
14	412.00	407.00	409.88	220.50	217.00	218.81	65.45	64.00	64.96	133.82	131.42	132.91
15	410.50	404.00	407.90	221.00	216.00	218.54	66.00	64.00	65.13	134.03	130.80	132.89
16	408.50	403.50	405.81	219.50	215.50	217.44	66.00	64.00	64.93	134.44	129.66	132.35
17	406.50	403.00	404.54	219.00	215.00	216.79	65.30	64.00	64.59	134.86	130.08	132.49
18	408.00	404.00	405.81	219.50	214.50	217.17	66.00	62.70	64.51	134.44	130.29	132.35
19	407.50	404.50	405.89	216.00	209.50	214.67	64.00	60.01	62.81	134.65	130.80	132.25
20	409.00	403.00	406.25	217.50	213.50	215.71	63.45	62.00	62.93	134.65	130.70	132.90
21	409.00	404.00	406.63	222.50	215.00	217.63	68.00	62.70	64.15	136.31	130.45	133.60
22	406.50	402.50	405.31	220.00	216.50	217.58	65.00	64.00	64.34	135.07	130.19	132.52
23	407.50	402.00	405.31	218.50	216.00	217.65	65.00	63.00	64.04	135.90	130.70	132.87
24	409.00	404.50	406.60	219.50	215.50	218.05	65.00	63.00	64.11	133.82	130.49	132.36
25	408.00	405.00	406.24	218.00	214.00	215.90	64.45	61.00	62.94	135.48	131.32	133.19
26	409.80	405.00	406.87	218.00	215.00	216.53	65.00	62.65	63.75	133.00	130.49	131.92
27	410.00	407.00	408.63	219.50	215.50	217.52	65.25	63.00	64.42	134.80	129.10	132.24
28	414.50	404.50	410.17	221.50	215.00	218.25	65.85	65.00	63.43	135.07	130.70	133.27
29	407.50	405.00	405.77	218.00	214.00	216.33	65.00	63.00	63.97	135.48	130.25	132.99
30	408.50	403.50	405.48	219.00	215.00	217.23	65.00	62.60	64.38	134.44	130.08	133.00
31	406.00	403.50	404.98	218.50	215.50	217.19	65.50	63.50	64.55	135.27	132.16	133.17
Max	414.50			222.50			68.00			136.31		
Min		402.00			209.50			60.01			129.04	
Source: TD, BPC												

Graph: Daily maximum, minimum and average Voltage for the month of August, 2022

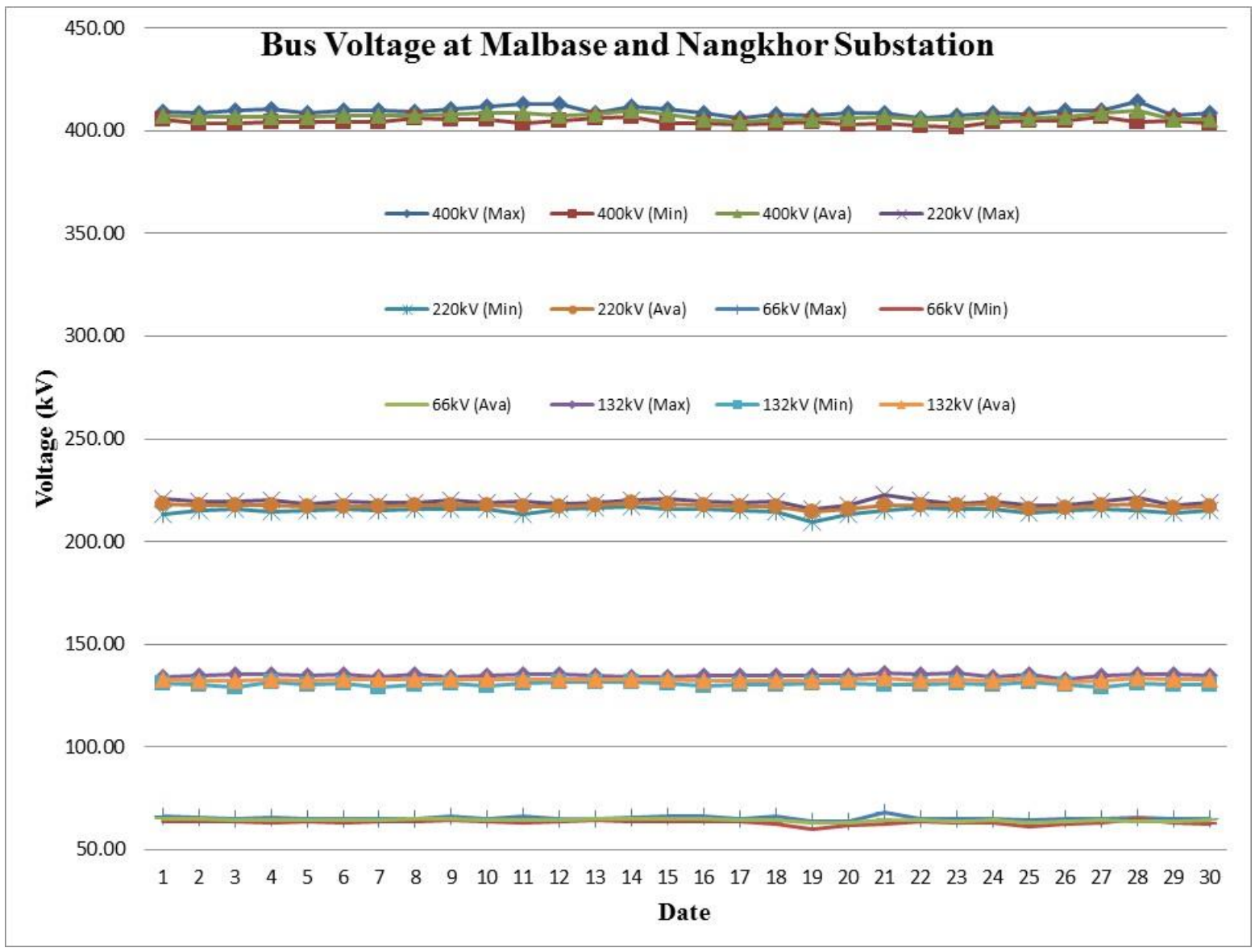
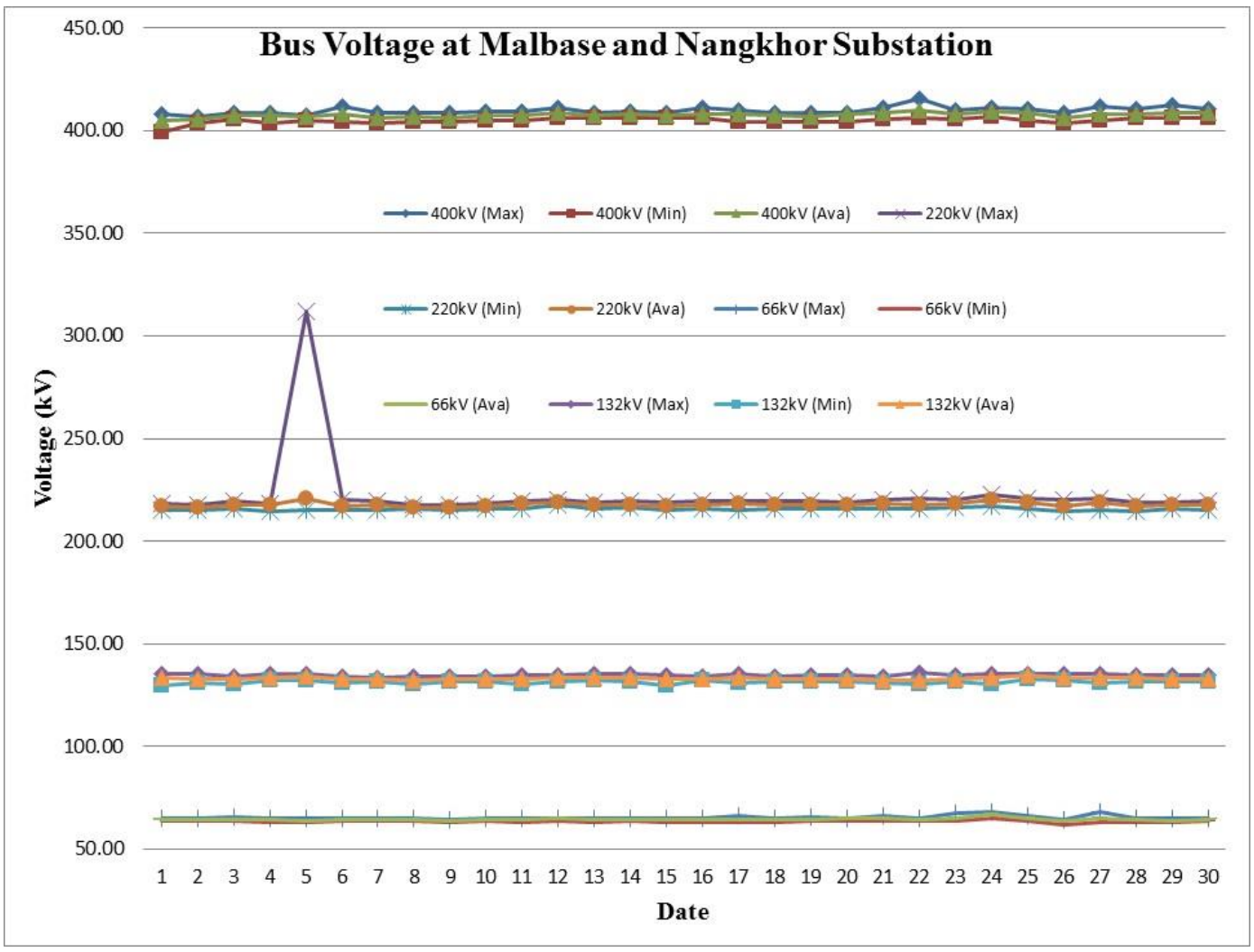


Table: Daily maximum, minimum and average Voltage for the month of September, 2022

Sep-22	Malbase Substation									Nangkhor Substation		
	400kV Bus Voltage (kV)			220kV Bus Voltage (kV)			66kV Bus Voltage (kV)			132kV Bus Voltage (kV)		
Date	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava	Max	Min	Ava
1	408.00	399.00	405.13	218.50	215.00	217.15	65.00	64.00	64.53	135.69	129.45	133.41
2	407.00	404.00	405.54	218.00	215.00	216.69	65.00	63.50	64.20	135.07	131.10	132.99
3	408.50	405.50	407.56	219.50	215.50	217.77	65.85	63.50	64.65	134.03	130.08	132.88
4	409.00	403.50	407.17	218.50	214.50	217.39	65.25	63.00	64.31	135.28	132.00	133.58
5	407.50	405.00	406.98	312.00	215.00	220.69	65.00	63.00	63.95	135.48	132.16	133.89
6	412.00	404.50	408.13	220.00	215.00	217.33	65.00	63.65	64.12	133.82	131.12	132.63
7	408.50	404.00	406.29	219.50	215.00	217.52	65.00	64.00	64.55	133.61	131.32	132.60
8	408.50	404.50	406.67	217.50	215.50	216.52	65.00	63.75	64.34	134.03	130.10	132.28
9	408.50	404.50	406.17	218.00	215.00	216.29	64.65	63.00	63.96	133.82	131.50	132.58
10	409.50	405.00	407.25	218.50	215.50	217.38	65.00	63.45	64.47	134.03	131.50	132.79
11	409.50	405.00	407.75	219.50	216.00	218.02	65.05	63.00	64.40	134.44	130.40	132.89
12	411.00	406.50	408.90	220.00	217.50	218.69	65.15	64.00	64.79	134.65	131.75	133.20
13	409.00	406.00	407.60	219.00	216.00	217.59	65.00	63.00	64.14	135.10	132.37	133.47
14	409.50	406.00	408.04	219.50	216.50	217.55	65.00	63.90	64.35	135.07	131.79	133.53
15	409.00	406.50	407.69	219.00	215.00	217.38	65.00	63.00	64.36	134.86	129.45	132.55
16	411.00	406.00	408.33	219.50	216.00	217.81	65.00	63.00	64.53	134.23	132.50	133.17
17	410.00	404.50	407.96	219.50	215.00	218.19	66.00	63.00	64.43	135.69	131.10	133.47
18	409.00	404.50	407.23	219.50	215.50	217.79	65.00	63.00	64.21	134.24	131.30	132.87
19	408.50	404.50	406.82	219.50	216.00	217.73	65.35	64.00	64.55	134.86	131.53	133.18
20	409.00	404.50	407.83	219.00	215.50	217.67	65.00	64.00	64.77	134.52	131.32	132.82
21	411.50	405.50	408.52	220.00	215.50	218.04	66.00	64.00	64.74	134.00	131.12	132.49
22	415.50	406.00	409.88	221.00	216.00	217.79	65.00	64.00	64.51	136.10	130.29	132.49
23	410.00	405.50	407.88	220.00	216.50	218.17	67.60	64.00	65.31	134.86	131.30	132.88
24	411.00	407.00	409.19	223.00	217.00	220.31	68.00	65.25	67.01	135.48	130.49	133.64
25	410.50	405.00	408.88	221.00	215.50	218.85	66.00	64.00	65.08	135.69	132.70	134.47
26	408.50	403.50	406.50	220.50	214.50	217.19	64.69	62.00	63.66	135.69	132.16	133.55
27	412.00	405.00	408.19	221.00	215.00	218.69	68.00	63.00	64.79	135.48	131.12	133.55
28	410.50	406.00	408.21	219.00	214.50	217.38	65.00	63.00	64.30	134.56	131.80	133.28
29	412.50	406.00	408.67	219.00	216.00	217.60	65.00	62.90	64.04	134.65	131.89	133.13
30	410.50	406.00	408.46	219.50	215.00	217.67	65.00	63.50	64.10	134.86	131.60	132.99
31	0.00	Error	Error	0.00	Error	Error	0.00	Error	Error	0.00	Error	Error
Max	**415.50**			**312.00**			**68.00**			**136.10**		
Min		**399.00**			**214.50**			**62.00**			**129.45**	
Source: TD, BPC												

Graph: Daily maximum, minimum and average Voltage for the month of September, 2022



Annexure-V

Eastern Grid Outages
July Month 2022

MONTHLY OUTAGE REPORT FOR THE MONTH OF MAY,2022 UNDER SMD DEOTHANG, TD, BPC.

Division:	SMD-DEOTHANG
Substation:	132/33/11kV Kilikhar Substation
Month:	Jul-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)			
132kV Feeders															
1	Kurichu Incomer	132KV	Tripped	07-03-22	16:13 hrs	07-03-22	16:18 hrs		5	4.536	NA	NA	Grid Failed	Tripped	Grid Failed from Tingtibi
2	Kurichu Incomer	132kV	Tripped	08-07-22	22:55 hrs	08-07-22	23:14 hrs		19	55.368	NA	NA	Grid Failed	Tripped	Grid failed from both the end(Rangia and Salakati)

Division:	SMD-DEOTHANG
Substation:	132/33/11kV Kanglung Substation
Month:	Jul-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)			
	132kV														
1	Corlung to Kanglung	132	Tripping	03.07.2022	15:33	03.07.2022	15:35	0	2	18.828	distance protection opt/tripping relay opt			NA	test charged the feeder, so the feeder withstand.
2	phutshothang to Kanglung	132	Tripping	03.07.2022	15:33	03.07.2022	16:54	1	21	-21.348	GR-A/B Trip relay optd.			NA	test charged the feeder at 16:29 hrs with charging code 1650(BPSO) but couldnot withstand the feeder showing same fault.
3	Corlung to Kanglung	132	Tripping	05.07.2022	0:42	05.07.2022	0:52	0	10	-21.996	distance protection opt/tripping relay opt	IA 585.7A, IB 541.4A, IC 98.64A.	Earth fault	NA	test charged, thus it withstand
4	phutshothang to Kanglung	132	Tripping	05.07.2022	0:42	05.07.2022	1:24	0	42	20.772	GR-A/B Trip relay optd.			NA	Test charged after getting information from BPSO, thus withstand.
5	Corlung to Kanglung	132	Grid Fail	08.07.2022	22:52	08.07.2022	23:25	0	53	51.048	distance protection opt/tripping relay opt	NA		NA	Grid Fail
6	Corlung to Kanglung	132	hand tripped	20.07.2022	14:24	20.07.2022	15:01	0	37	-20.124	NA	NA[hand tripped]	33 side transfer bus isolator disk punctured and conductor snaped	NA	Due to disk punctured and conductor snaped in 33 kv side Bus, isolators caught fire and as emergency incomer had to be trip

Division:	SMD-DEOTHANG
Substation:	132/33/11kV Nangkor Substation
Month:	Jul-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)			
132kV Feeders															
1	Nangkor-Deothang Line	132kV	Tripping	02-07-22	16:22 hrs	02-07-22	20:34 hrs	4	12	54.5	MiCOMP14DB	***Directional -O/C & E/F Relay*** : Start Ø BN,Trip Ø N. O/C start I>1, E/F1 start IN1>12, trip IN1>2.VAB=85.86kV, VBC=86.72kV,VCA=128kV,VAN=70.0kV,VBN=24.31kV,VCN=74.65kV,IA=226.8A,IB=1.32kA,IC=237.7A, INDerived=1.260kA, IN measured=1.261kA & tripping relay 86 operated at our end.	Insulator punctured at Deothang Substation end	-	Charged after informing BPSO, Thimphu.
2	Main Grid	132kV	Tripping	03-07-22	16:13 hrs	03-07-22	16:18 hrs	0	5	-	-	-	Transient fault	-	Supply failed from Tintibi & Deothang SS
3	Nangkor-Nganglam	132kV	Tripping	03-07-22	16:13 hrs	03-07-22	16:21 hrs	0	8	-4.1	MiCOMP14DB & Distance relay	***Directional -O/C & E/F Relay*** : Start Ø ABC. O/C start I>1.VAB=33.07kV, VBC=33.84kV,VCA=47.27kV,VAN=27.54kV,VBN=10.15kV,VCN=26.97V,IA=982.7A,IB=1.866kA,IC=1.570kA, INDerived=576.3A, IN measured=578.3A & tripping relay 86 operated at our end. ***Distance Relay:*** Start Ø ABCN, Trip Ø ABC. Start element distance, AR lockout shot>, fault duration: 73.17ms, relay trip time: 79.82ms, Fault location: 9.815KM towards Nganglam. IA=1.936kA, IB=2.079kA, IC=1.857kA, VAN=8.087kV, VBN=8.124kV,VCN=10.03kV, Fault resistance=136.1mΩ & fault at Zone-1	Tripped on fault	-	Tripped at the instant of Grid failure. Charged after receiving instruction from BPSO, Thimphu
4	132/33kV, 5MVA Trf-I	132kV	Tripping	05-07-22	00:09 hrs	05-07-22	00:13 hrs	0	4	0.231	Non directional IDMT relay optd	O/C relay-50A & trip relay 86 operated	Tripped on feeder fault	-	Tripped due to fault on 33kV Namng feeder
5	132/33kV, 5MVA Trf-II	132kV	Tripping	05-07-22	00:09 hrs	05-07-22	00:13 hrs	0	4	0.153	Non directional IDMT relay optd	O/C relay-50A & trip relay 86 operated	Tripped on feeder fault	-	Tripped due to fault on 33kV Namng feeder
7	132/33kV, 5MVA Trf-I	132kV	Tripping	08-07-22	05:41 hrs	08-07-22	05:45 hrs	0	4	0.621	Non directional IDMT relay optd	O/C relay-50A & trip relay 86 operated	Tripped on feeder fault	-	Tripped due to fault on 33kV Namng feeder
8	132/33kV, 5MVA Trf-II	132kV	Tripping	08-07-22	05:41 hrs	08-07-22	05:46 hrs	0	5	0.405	Non directional IDMT relay optd	O/C relay-50A, 50C & trip relay 86 operated	Tripped on feeder fault	-	Tripped due to fault on 33kV Namng feeder
9	132/33kV, 5MVA Trf-I	132kV	Tripping	08-07-22	05:55 hrs	08-07-22	05:57 hrs	0	2	0.621	Non directional IDMT relay optd	O/C relay-50A, 50C & trip relay 86 operated	Tripped on feeder fault	-	Tripped while test charging 33kV Namng feeder
10	132/33kV, 5MVA Trf-II	132kV	Tripping	08-07-22	05:55 hrs	08-07-22	05:58 hrs	0	3	0.405	Non directional IDMT relay optd	O/C relay-50A, 50C & trip relay 86 operated	Tripped on feeder fault	-	Tripped while test charging 33kV Namng feeder
11	132/33kV, 5MVA Trf-I	132kV	Tripping	08-07-22	15:14 hrs	08-07-22	15:18 hrs	0	4	0.522	Non directional IDMT relay optd	O/C relay-50A, 50C & trip relay 86 operated	Tripped on feeder fault	-	Tripped while closing LBS for 33kV Namng feeder from Khoeri site
12	132/33kV, 5MVA Trf-II	132kV	Tripping	08-07-22	15:14 hrs	08-07-22	15:18 hrs	0	4	0.351	Non directional IDMT relay optd	O/C relay-50A, 50C & trip relay 86 operated	Tripped on feeder fault	-	Tripped while closing LBS for 33kV Namng feeder from Khoeri site
13	Nangkor-Deothang Line	132kV	Tripping	08-07-22	17:29 hrs	08-07-22	17:32 hrs	0	3	42.8	Distance Relay	***Distance Relay:*** Start Ø ACN, Trip Ø ABC. Start element distance, Distance trip Z1,AR lockout shot>, fault duration: 58.29ms, relay trip time: 79.95ms, Fault location: 18.35KM towards Deothang IA=1.426kA, IB=184.0A, IC=1.689kA, VAN=26.15kV, VBN=60.19kV,VCN=25.8kV, Fault resistance=359.3mΩ & tripping relay 86 operated.	Transient fault	-	Informed to BPSO & charged as per their instruction.
14	Nangkor-Deothang Line	132kV	Tripping	08-07-22	17:47 hrs	08-07-22	17:50 hrs	0	3	42.8	Distance Relay	***Distance Relay:*** Trip Ø ABC. BRC start, BRC trip, AR lockout shot>, fault duration: 69.94ms, relay trip time: 79.93ms, IA=193.2A, IB=191.3A, IC=149.3A, VAN=78.96kV, VBN=76.15kV,VCN=77.21kV & tripping relay 86 operated.	Transient fault	-	Informed to BPSO & charged as per their instruction.
15	Nangkor-Deothang Line	132kV	Tripping	08-07-22	17:56 hrs	08-07-22	21:59 hrs	4	3	42.8	-	Tripping relay 86 operated	Tripped while closing CB from Deothang SS end	-	Informed to BPSO & as instructed kept CB in open position and at the same informed to TMD, Nangkor as there was repeated tripping of the said feeder. Charged as per the instruction from BPSO, Thimphu at 21:59 hrs.
16	Kurichu-Nangkor Line	132kV	Tripping	08-07-22	17:56 hrs	08-07-22	18:11 hrs	0	15	-41.25	Distance Relay	***Distance Relay:*** Trip Ø ABC. BRC start, BRC trip, AR lockout shot>, fault duration: 63.1ms, relay trip time: 79.97ms, IA=176.8A, IB=169.3A, IC=64.42A, VAN=77.51kV, VBN=76.25kV,VCN=78.35kV & tripping relay 86 operated.	Tripped while closing CB from Deothang SS end	-	Informed BPSO & as instructed closed the CB from our end.
17	Kurichu-Nangkor	132kV	Tripping	08-07-22	22:55 hrs	08-07-22	23:08 hrs	0	13	-9.9	Distance Relay	***Distance Relay:*** Trip Ø ABC. BRC start, BRC trip, AR lockout shot>, fault duration: 49.9ms, relay trip time: 79.91ms, IA=191.1A, IB=184.6A, IC=41.52A, VAN=76.98kV, VBN=74.35kV,VCN=77.87kV & tripping relay 86 operated.	Tripped at the instant of Grid failure	-	Informed BPSO & as instructed closed the CB from our end.
18	Main Grid	132kV	Tripping	08-07-22	22:55 hrs	08-07-22	23:01 hrs	0	6	-	-	-	Transient fault	-	Grid failed form Rangia SS & Salakati Grid received at 23:01 hrs.
19	Nangkor-Deothang Line	132kV	Tripping	08-07-22	22:55 hrs	08-07-22	23:11 hrs	0	16	0.07	Distance Relay	***Distance Relay:*** Trip Ø ABC. BRC start, BRC trip, AR lockout shot>, fault duration: 63.26ms, relay trip time: 79.91ms, IA=175.4A, IB=171.6A, IC=12.39A, VAN=78.60kV, VBN=74.02V,VCN=76.58kV & tripping relay 86 operated.	Tripped at the instant of Grid failure	-	Informed BPSO & as instructed closed the CB from our end.
20	Nangkor-Nganglam	132kV	Tripping	09-07-22	06:55 hrs	09-07-22	09:44 hrs	2	49	14.58	-	-	Transient fault/ CB tripped without any relay indication/CB problem	-	Informed to BPSO & test charged done at 07:09 hrs and 07:17 hrs, but CB didn't stand. Checked the CB & charged after checking & tightening the trip circuit.
21	Nangkor-Nganglam	132kV	Tripping	11-07-22	08:10 hrs	11-07-22	08:15 hrs	0	5	-0.18	-	-	Transient fault	-	CB operated without any relay indication. Informe dto BPSO & closed the CB
21	Nangkor-Nganglam	132kV	Tripping	11-07-22	10:49 hrs	11-07-22	10:50 hrs	0	9	-4.86	-	-	Transient fault	-	CB operated without any relay indication. Informed to BPSO & closed the CB
22	Nangkor-Nganglam	132kV	Tripping	11-07-22	12:04 hrs	12-07-22	13:07 hrs	25	3	-5.58	-	-	Transient fault	-	CB operated without any relay indication. Informed to BPSO & due to repeated tripping feeder taken under shutdwon for CB rectification work.CB closed after informing to BPSO.
23	132/33kV, 5MVA Trf-I	132kV	Tripping	14-07-22	15:28 hrs	14-07-22	15:29 hrs	0	1	0.6	Non directional IDMT relay optd	O/C/-50A & tripping relay 86 operated	Tripped on feeder fault	-	Tripped due to fault on 33kV Namng feeder
24	132/33kV, 5MVA Trf-II	132kV	Tripping	14-07-22	15:28 hrs	14-07-22	15:30 hrs	0	2	0.35	Non directional IDMT relay optd	O/C/-50A & tripping relay 86 operated	Tripped on feeder fault	-	Tripped due to fault on 33kV Namng feeder
25	132/33kV, 5MVA Trf-I	132kV	Tripping	14-07-22	16:04 hrs	14-07-22	16:05 hrs	0	1	0.501	Non directional IDMT relay optd	O/C/-50A & tripping relay 86 operated	Tripped on feeder fault	-	Tripped while test charging 33kV Tsebar feeder
26	132/33kV, 5MVA Trf-II	132kV	Tripping	14-07-22	16:04 hrs	14-07-22	16:05 hrs	0	1	0.312	Non directional IDMT relay optd	O/C/-50A & tripping relay 86 operated	Tripped on feeder fault	-	Tripped while test charging 33kV Tsebar feeder
27	Nangkor-Nganglam	132kV	Tripping	20-07-22	21:26 hrs	20-07-22	21:31 hrs	0	5	-16.7	-	-	Transient fault	-	Tripped without any relay indication. Informed to BPSO & closed the CB

Division:	SMD-DEOTHANG
Substation:	132/33/11kV Deothang Substation
Month:	Jul-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)			
3	Deothang- Nangkor line	132kV	Tripping	02.07.2022	16:23	02.07.2022	20:37	4	14	-54.468	Nil	NA	Tripped due to Disc punctured on Y phase of 5mvA Tr.II main bus side	NA	Charged after the repaccement of disc insulator with the closing code 1638 from BPSO given by Jangchuck Seldon.
4	Deothang- Motanga line	132kV	Tripping	02.07.2022	16:23	02.07.2022	20:51	4	27	52.524	Nil	NA	Tripped due to Disc punctured on R phase of 5mvA Tr.II main bus side		Charged after the repaccement of disc insulator with the closing code 1637 from BPSO given by Jangchuck Seldon.
7	Deothang-Nangkor line	132kV	Tripping	03.07.2023	16:14	03.07.2023	16:19	0	5	-62.208	Over current	IA = 1.079A, IB = 1.155A Ic =1.092A IN =39.73A	Transcent fault	NA	Tripped at Deothang end only . No supply interruption as the supply avail from Motanga substation
12	Deothang-Nangkor line	132kV	Shutdown	05.07.2022	9:15	05.07.2022	11:30	2	10	-43.776	NA	Nil	NA	Emengency shutdown	Shutdown as per opening code 0836 by BPSO Pema Lhamo saying Hot spot on line isolater R phase.Charge as per the closing code 1663 by BPSO karma.
16	5 MVA Transformer II	132/33kV	Tripping	07.07.2022	4:09	07.07.2022	4:15	0	6	0.582	Only 86 operated	Nill	Due to bangtar fdr transformer got tripped		Test charge done and found normal.
23	Deothang-Nangkor line	132kV	Tripping	08.07.2022	17:28	08.07.2022	17:34	0	6	-42.768	O/C	Fault Z1 tripped, fault location-13.85km.IA-1.357kA,IB-182.9A,IC-1.482kA, Drectional relay fault value:IA-1.361kA,IB-183.8A,IC-1.437kA.	Unknown	NA	Test charge done and found normal.
24	Deothang-Motanga line	132kV	Tripping	08.07.2022	17:28	08.07.2022	17:32	0	4	42.26	NA	Nil	NA	NA	At our end breaker is normal and supply resumed from montonga end
25	Deothang-Nangkor line	132kV	Tripping	08.07.2022	17:46	08.07.2022	21:53	4	7	-42.768	O/C	Distance relay fault value: IA-191.8A,IB-192.9A,IC-12.49A.Test charged value:IA-180.8A,IB-181.5A,IC-12.57A	Unknown	NA	Test charge done 17:52 but couldn't stand.As information given by BPSO, lightning and thundering at Nangkor side.
26	Deothang-Nangkor line	132kV	Tripped	08.07.2022	22:58	08.07.2022	23:15	0	17	-42.768	Distance relay	under voltage	under voltage		Test charge done 23:15hrs with the closing code 1690 given by the BPSO Karma choden and line stand.
27	Deothang-Motanga line	132kV	Hand trip	08.07.2022	22:32	08.07.2022	22:40	0	8	-0.9	Nil	Nil			Breaker hand trip as to charge from Motanga substation due to unbalance in voltage, Opening code from BPSO 0846 by Phub Zam.Closing code 1695 by BPSO Karma Choden and line stand
71	Nangkor-Deothang line	132kV	Tripping	23.07.2022	23:43	23.07.2022	23:48	0	5	-46.692	Distance relay	IA-1.288kA, IB-191A, IC-1.305kA	Transcent fault	NA	Line charged as per informed by the BPSO and line hold.
86	Transformer I (5MVA)	132kV	Tripped	30.07.2022	15:10	30.07.2022	15:16	0	6	0.3	NA	relay 86 operated	due to bangtar feeder	NA	Tripped by Bangtar fdr,
87	Transformer II (5MVA)	132kV	Tripped	30.07.2022	15:10	30.07.2022	15:17	0	7	0.3	NA	relay 86 operated	due to bangtar feeder	NA	Tripped by Bangtar fdr,

Division:	SMD-DEOTHANG
Substation:	132/33/11kV Nganglam Substation
Month:	Jul-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)			
132kV															
1	Nganglam-Tintibi feeder	132kV	Tripping	03.07.2022	16:13	03.07.2022	16:18	0	5	-14.71	Micom relayP442	IA- 952.2A IB- 982.8A IC- 953.9A VAN- 11.19kV VBN- 1.30kV VCN- 12.51kV Fault location 51.818km Relay Trip Time 0.00ms Fault resistance -66.95hms Trip Phase ABCN Zone 3	Earth Fault	CB operated both end from Tingtibi ss & Nangkor ss. No CB operated at our end only Micom relay operated.	Supply restored from Tingtibi end.
2	Nganglam-Tintibi feeder	132kV	Tripping	06.07.2022	7:50	06.07.2022	7:57	0	7	-0.4	Micom relayP443	Line tripped on Earth fault	Earth Fault		
3	Nganglam-Tintibi feeder	132kV	Tripping	08.07.2022	22::35	08.07.2022	23:00	0	25	-2.71	Micom relayP443	IA- 1.029kA IB- 0.000A IC-1.007kA VAN-12.39kV VBN- 1.06kV VCN- 11.28kV Fault location38.77km Relay Trip Time66.59ms Fault resistance -3/81.5 mili hms Trip Phase ABC Zone 1	Earth Fault	CB operated both end from Tingtibi ss & Nangkor ss. No CB operated at our end only Micom relay operated.	Supply restored from Tingtibi end.
4	5MVA Transformer-1 HV &LV	132kV	Tripping	08.07.2022	22:15	08.07.2022	22:26	0	11	0.886	O/C & E/F Micom relay	Tripped on Fault	Earth Fault		Supply restored from trs 11
7	3MVA Tranformer	132kV	Tripping	18.07.2022	7:38	18.07.2022	12:04	4	25		Micom O/C & E/F	Tripped on O/C and observed low SF6 and Normalized after refilling the Gas	Overcurrent		
8	5MVA Transformer	132kV	Tripping	18.07.2022	8:58	18.07.2022	9:01	0	3	0.75	Micom O/C & E/F	Tripped on O/C due to 33kV Dechenling feeder	Overcurrent		
10	5MVA Transformer	132kV	Tripping	24.07.2022	0:54	24.07.2022	0:55	0	1	0.425	O/C & E/F Micom relay	Tripped on Overcurrent while Test charging 33kV Dechenling feeder	Overcurrent		
11	Nganglam-Tintibi feeder	132kV	Tripping	24.07.2022	2:10	24.07.2022	2:22	0	12	-20.56	Micom relayP442	Tripped on Overcurrent. Fault details; IA- 57.22A IB- 1.065kA IC- 1.151kA IN- 4.374A VAN- 112.0kV VBN- 38.92kV VCN- 106.4kV A/R lock out Zone2 Fault duration 399.9ms Relay Trip time 79.98ms Fault Location 85.13km Fault resistance -399.7micro sec. Trip phase ABC	Overcurrent		
12	5MVA Transformer-I LV side	132kV	Tripping	25.07.2022	20:05	25.07.2022	20:10	0	5	1.21	O/C & E/F Micom relay	Feeder tripped on earth fault. 86opreted. 51N operated	Earth Fault		
13	5MVA Transformer	132kV	Tripping	27.07.2022	11:15	27.07.2022	11:17	0	2	0.78	O/C & E/F Micom relay	Tripped Transformer(LV side) on O/C & E/F by 33kV Dechenling feeder fault .	Overcurrent/Earth Fault		
14	5MVA Transformer	132kV	Tripping	31.07.2022	3:20	31.07.2022	3:21	0	1	0.493	O/C & E/F Micom relay	Tripped on Overcurrent due to 33kV Dechenling feeder fault	Overcurrent		

Division:	SMD-DEOTHANG
Substation:	132/33kV Motanga Substation
Month:	Jul-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)			
1	Rangia Feeder	132kV	Tripping	02-07-22	16:22 hrs	02-07-22	16:58hrs	0	36	46.52	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 46.5A, IL2= 657.3A, IL3= 213.9A, Frequency= 49.96Hz & tripping relay 86 & B operated at our end.	Tripped by transient fault.	-	Informed to BPSO and charged via code: 1636(BPSO), 68(NLDC, India), 3953(NERLDC).
2	Deothang Feeder	132kV	Tripping	02-07-22	16:22 hrs	02-07-22	20:22hrs	4	0	-53.42	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 144.6A, IL2= 1593.6A, IL3= 392.4A, Frequency= 49.97Hz & tripping relay 86 & B operated at our end.	Tripped by transient fault.	-	Rangia & Deothang feeder tripped on same time but Deothang fdr kept on hold as per BPSO, Rangia charged. Disc insulator punctured at deothang end as per BPSO. Feeder was charged after replacement of disc insulator.
3	Phuntshothang feeder	132kV	Tripping	03-07-22	15:35 hrs	03-07-22	21:43 hrs	0	8	-18.22	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 614.4A, IL2= 89.7A, IL3= 595.2A, Frequency= 50.12Hz & tripping relay 86 & B operated at our end.	Tripped by transient fault.	-	charged the feeder by verbal instruction from BPSO.
4	Phuntshothang feeder	132kV	Tripping	05-07-22	00:44 hrs	05-07-22	00:50 hrs	0	6	-19.99	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 900.3A, IL2= 981A, IL3= 52.8A, Frequency= 49.93Hz & tripping relay 86 & B operated at our end.	Tripped by transient fault.	-	charged the feeder by verbal instruction from BPSO.
5	Deothang Feeder	132kV	Tripping	05-07-22	00:44 hrs	05-07-22	01:22 hrs	0	38	-51.56	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 690.6A, IL2= 699.5A, IL3= 249A, Frequency= 49.91Hz & tripping relay 86 & B operated at our end.	-	-	Charged the feeder by verbal instruction from BPSO.
6	Rangia Feeder	132kV	Tripping	07-07-22	09:23 hrs	07-07-22	09:47 hrs	0	24	28.11	Distance protection, REL650	***O/C & E/F Relay operated:*** Tripped on E/F & O/C : IL1= 159.97A, IL2= 634.39A, IL3= 131.50A, Frequency= 50.09Hz & tripping relay 86 & B operated at our end.	Transient fault	-	charging code: BPSO(1673, NLDC, INDIA, 310 and NERLDC, INDIA(4080.
7	Deothang Feeder	132kV	Tripping	08-07-22	17:29 hrs	08-07-22	17:31 hrs	0	2	-42.16	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 1408.6A, IL2= 243A, IL3= 1564.3A, Frequency= 49.93Hz & tripping relay 86 & B operated at our end.	Tripped by transient fault.	-	charged the feeder by verbal instruction from BPSO.
8	Rangia Feeder	132kV	Tripping	08-07-22	17:29 hrs	08-07-22	17:46 hrs	0	17	32.19	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 633.3A, IL2= 154.5A, IL3= 696A, Frequency= 49.92Hz & tripping relay 86 & B operated at our end.	Transient fault	-	charging code: BPSO(1682, NLDC, INDIA, 425 and NERLDC, INDIA(4121).
9	Deothang Feeder	132kV	Tripping	08-07-22	22:00 hrs	08-07-22	22:47 hrs	0	47	0.83	DEFLPDEF1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 1219A, IL2= 223.2A, IL3= 1.2A, Frequency= 50.03Hz & tripping relay 86 & B operated at our end.	Transient fault	-	At 22:34hrs test charge was done at our end but CB did not hold & got tripped on same fault. Yard inspection carried out for any abnormalities. Informed BPSO and charged feeder with code: 1694.
10	Deothang Feeder	132kV	Tripping	09-07-22	01:13 hrs	10-07-22	15:17 hrs	38	4	-7.47	DEFLPDEF1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 245A, IL2= 247.2A, IL3= 1.2A, Frequency= 50.01Hz, Fuse Fail/BRC shown at REL650 distance protection relay, & tripping relay 86 & B operated at our end.	Feeder tripped on permanent fault	-	Feeder was tripped and there was low voltage shown on B-phase. Fuse fail/broken conductor indicated by REL650 Relay. Informed BPSO & TMD team, Deothang. Line patrolling carried out by TMD team and found that B-Phase jumper was out at location no. DM 23/1. Replaced jumper and charged the feeder on next day upon coordination with BPSO.
11	15MVA Transformer	132/33kV	Tripping	12-07-22	00:35 hrs	12-07-22	00:39 hrs	0	4	3.01	Distance protection, REL650	tripping relay 86A and B and SEF operated.		-	charged the transformer by verbal instruction from BPSO.
12	15MVA Transformer	132/33kV	Tripping	18-07-22	04:17 hrs	18-07-22	04:39 hrs	0	22	1.02	protecton Relay 86 A&B operated.	tripped on O/C & E/F, 50/51 trip.	Transient fault	-	coordinated with BPSO and charged.
13	Rangia Feeder	132kV	shutdown	19-07-22	11:29 hrs	19-07-22	13:56 hrs	2	27	4.96	-	-	-	For RoW clearing works.	Shutdown taken by Rangia end for RoW clearing works.
14	15MVA Transformer	132/33kV	Tripping	19-07-22	14:11 hrs	19-07-22	14:16 hrs	0	5	1.54	protecton Relay 86 A&B operated.	tripped on O/C & E/F, 50/51 trip, SEF protection trip.	Transient fault	-	charged the feeder by verbal instruction from BPSO.
15	15MVA Transformer	132/33kV	Tripping	21-07-22	05:57 hrs	21-07-22	06:03 hrs	0	6	0.16	Directional E/F Relay, DEFLPDEF1, & 86 A&B operated.	tripped on O/C & E/F, 50/51 trip, SEF protection trip.	Transient fault	-	-
16	Deothang Feeder	132kV	Tripping	23-07-22	23:44 hrs	23-07-22	23:52 hrs	0	8	-45.43	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 1968A, IL2= 256.2A, IL3= 1824.6A, Frequency= 49.86Hz, tripping relay 86A&B operated at our end.	Transient fault	-	Charged as per the instruction from BPSO.
17	Rangia Feeder	132kV	Tripping	23-07-22	23:44 hrs	24-07-22	00:33 hrs	0	49	37.3	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 1646.4, IL2= 297.6A, IL3= 1549.2A, Frequency= 49.88Hz, tripping relay 86A&B operated at our end.	Transient fault	-	charging code: BPSO(1795, NLDC, INDIA, 1259 and NERLDC, INDIA(4662).
18	Rangia Feeder	132kV	shutdown	26-07-22	09:25 hrs	26-07-22	13:29 hrs	0	49	37.3	-	-	-	For RoW clearing works by TMD, P/thang.	Shutdown taken by TMD, P/thang for RoW clearing works.

Division:	SMD-DEOTHANG
Substation:	132/33kV Corlung Substation
Month:	Jul-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)			
3	Grid fail	132 kV	Grid fail	08-07-22	22:55 hrs	08-07-22	23:25 hrs	0	30		Nil	Nil	Grid fail		33 kV Incomer was tripped on under voltage due to 132 kV grid fail.

Division:	SMD-DEOTHANG
Substation:	132/33kV Phuntshothang Substation
Month:	Jul-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)			
50	132/33kV Transformer-I(10MVA)	132kV	Transient fault	09-07-22	17:11	09-07-22	17:14		3	0.00	86A and 86B	(PHHPTOC1)Fault Value L1: 7.65A, L2: 185.25A,L3: 179.7A, LN: 0	vercurrent and earth fa	Unknown	Charged
9	132kV Kanglung Line	132kV	Transient fault	05-07-22	0:44	05-07-22	1:06		22	20.64	Zone-1 OPTD, R-PH and B-PH TRIP, OV/UV TRIP, 86A and 86B	Fault Value L1: 1698.01A, L2: 1742.19A,L3: 108.38A, LN: 1072.21A	Zone-1 OPTD, R-PH and B-PH TRIP, OV/UV TRIP	Unknown	Grid Fail at 0:44,at 0:44 breaker got open and after receving information from BPSO, line charged at 1:06.
15	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	06-07-22	17:59	06-07-22	18:00		1	0.32	86A and 86B	(DPHLPDOC1) Fault value; L1: 181.8A, L2: 88.65A, L3: 93A,Ln: 0A.	Overcurrent	Unknown	Charged
19	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	06-07-22	18:57	06-07-22	18:59		2	0.32	86A and 86B	(DPHLPDOC1) Fault value; L1: 180.45A, L2: 87.45A, L3: 93A,Ln: 0A.	Overcurrent	Unknown	Charged
25	132/33kV Transformer-II (10MVA)	132kV	Transient fault	07-07-22	16:11	07-07-22	16:14		3	0.26	86A and 86B	(DPHLPDOC1) Fault value; L1: 144.6A, L2: 1.8A, L3: 146.25A,Ln: 0A.	vercurrent and earth fa	Unknown	Charged
33	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	06-07-22	22:36	06-07-22	22:38		2	0.37	86A and 86B	(DPHLPDOC1) Fault value; L1: 123.75A, L2: 81.3A, L3: 76.95A,Ln: 0A.	Overcurrent	Unknown	Charged
39	132kV Motanga Line	132kV	Transient fault	08-07-22	23:15	08-07-22	23:33		18	47.13	OV/UV TRIP, 86A and 86B	Fault Value L1: 0.12A, L2: 0.16A,L3: 0.05A, LN: 0.32A	OV/UV TRIP	Unknown	Grid Fail at 23:00,at 23:15 breaker got open,While charging from Motanga end. Line Normalize at 23:31 from kanghang and after receving information from BPSO, Motanga line charged at 23:33.
40	132/33kV Transformer-I(10MVA)	132kV	Transient fault	08-07-22	23:38	08-07-22	23:40		2	0.31	86A and 86B	(DPHLPDOC1)Fault Value L1: 73.05A, L2: 72.6A,L3: 1.35A, LN: 0	vercurrent and earth fa	Unknown	Charged
50	132/33kV Transformer-I(10MVA)	132kV	Transient fault	09-07-22	17:11	09-07-22	17:14		3	0.00	86A and 86B	(PHHPTOC1)Fault Value L1: 7.65A, L2: 185.25A,L3: 179.7A, LN: 0	vercurrent and earth fa	Unknown	Charged
56	132/33kV Transformer-II (10MVA)	132kV	Transient fault	10-07-22	9:12	10-07-22	9:14		2	0.52	86A and 86B	(DPHLPDOC1) Fault value; L1: 82.65A, L2: 72.75A, L3: 40.35 A,Ln: 0A.	Earth fault	Unknown	Charged
59	132/33kV Transformer-I(10MVA)	132kV	Transient fault	10-07-22	9:18	10-07-22	9:20		2	0.32	86A and 86B	(DPHLPDOC1)Fault Value L1: 155.25A, L2: 2.25A,L3: 157.35A, LN: 0	vercurrent and earth fa	Unknown	Charged
67	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	10-07-22	19:57	10-07-22	19:59		2	0.80	86A and 86B	(DPHLPDOC1) Fault value; L1: 59.55A, L2: 52.95A, L3: 19.2A,Ln: 0A.	vercurrent and earth fa	Unknown	Charged
75	132/33kV Transformer-II (10MVA)	132kV	Transient fault	12-07-22	12:44	12-07-22	12:46		2	0.58	86A and 86B	Did not reflect on REF615 relay	Earth fault	Unknown	Charged
78	132/33kV Transformer-II (10MVA)	132kV	Transient fault	12-07-22	16:36	12-07-22	16:38		2	0.52	86A and 86B	(DPHLPDOC1) Fault value; L1: 114.75A, L2: 3.6A, L3: 117.45A,Ln: 0A.	ver current and Earth fa	Unknown	Charged
84	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	14-07-22	19:16	14-07-22	19:19		3	0.80	86A and 86B	(DPHLPDOC1) Fault value; L1: 51.45A, L2: 97.65A, L3: 62.85A,Ln: 0A.	Earth fault	Unknown	Charged
87	132/33kV Transformer-II (10MVA)	132kV	Transient fault	14-07-22	21:11	14-07-22	21:13		2	0.83	86A and 86B	(DPHLPDOC1) Fault value; L1: 51.45A, L2: 97.65A, L3: 62.85A,Ln: 0A.	Over Current	Unknown	Charged
90	132/33kV Transformer-II (10MVA)	132kV	Transient fault	15-07-22	5:04	15-07-22	5:07		3	0.58	86A and 86B	(DPHLPDOC1) Fault value; L1: 184.95A, L2: 181.2A, L3: 3.9A,Ln: 0A.	ver current and Earth fa	Unknown	Charged
99	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	15-07-22	16:23	15-07-22	16:26		3	0.63	86A and 86B	Fault Value did not reflect on Relay (REF615)	Earth fault	Unknown	Charged
103	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	15-07-22	17:18	15-07-22	17:21		3	0.67	86A and 86B	Fault Value did not reflect on Relay (REF615)	Earth fault	Unknown	Charged
106	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	16-07-22	5:58	16-07-22	6:00		2	0.65	86A and 86B	(DPHLPTOC1) Fault value; L1: 50.25A,L2: 115.5A,L3: 106.95A,Ln: 0A.	Earth fault	Unknown	Charged
109	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	16-07-22	7:34	16-07-22	7:38		4	0.91	86A and 86B	Not reflected on REF615	Earth fault	Unknown	Charged
112	132/33kV Transformer-I(10MVA)	132kV	Transient fault	16-07-22	12:07	16-07-22	12:10		3	0.34	86A and 86B	(DPHLPDOC1)Fault Value L1: 18A, L2: 96.75A,L3: 95.4A, LN: 0	vercurrent and earth fa	Unknown	Charged
116	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	17-07-22	5:38	17-07-22	5:44		6	0.63	86A and 86B	(DPHLPTOC1) Fault value; L1: 112.95,L2: 115.8A,L3: 62.7A,Ln: 0A.	Earth fault	Unknown	Charged
121	132/33kV Transformer-II (10MVA)	132kV	Transient fault	17-07-22	10:57	17-07-22	10:59		2	0.61	86A and 86B	(DPHLPDOC1) Fault value; L1: 3.6A, L2: 107.85A, L3: 104.4A,Ln: 0A.	ver current and Earth fa	Unknown	Charged
125	132/33kV Transformer-II (10MVA)	132kV	Transient fault	17-07-22	12:20	17-07-22	12:23		3	0.10	86A and 86B	(DPHLPDOC1) Fault value; L1: 167.85A, L2: 163.65A, L3: 0.525A,Ln: 0A.	ver current and Earth fa	Unknown	Charged
128	132/33kV Transformer-II (10MVA)	132kV	Transient fault	17-07-22	14:31	17-07-22	14:33		2	0.57	86A and 86B	(DPHLPDOC1) Fault value; L1: 3.45A, L2: 84.45A, L3: 81.6A,Ln: 0A.	ver current and Earth fa	Unknown	Charged
135	132/33kV Transformer-II (10MVA)	132kV	Transient fault	18-07-22	9:18	18-07-22	9:21		3	0.57	86A and 86B	Fault value not detected or reflect on REF615	Earth fault	Unknown	Charged
139	132/33kV Transformer-II (10MVA)	132kV	Transient fault	18-07-22	15:20	18-07-22	15:22		2	0.60	86A and 86B	(DPHLPDOC1) Fault value; L1: 159.15A, L2: 155.4A, L3: 4.35A,Ln: 0A.	arth fault and Overcurre	Unknown	Charged
142	132/33kV Transformer-II (10MVA)	132kV	Transient fault	19-07-22	10:49	19-07-22	10:51		2	0.53	86A and 86B	(DPHLPDOC1) Fault value; L1: 46.35A, L2: 62.4A, L3: 28.95A,Ln: 0A.	Earth fault	Unknown	Charged
145	132/33kV Transformer-II (10MVA)	132kV	Transient fault	19-07-22	14:53	19-07-22	14:56		3	0.50	86A and 86B	(DPHLPDOC1) Fault value; L1: 89.1A,L2: 42A,L3: 42A,Ln: 0A.	Earth fault	Unknown	Charged
148	132/33kV Transformer-II (10MVA)	132kV	Transient fault	19-07-22	18:21	19-07-22	18:22		1	0.67	86B	(DPHLPDOC1) Fault value; L1: 43.35A,L2: 101.1A,L3: 95.1A,Ln: 0A.	Earth fault	Unknown	Charged
152	132/33kV Transformer-II (10MVA)	132kV	Transient fault	20-07-22	9:22	20-07-22	9:26		4	0.58	86A And 86B	(DPHLPDOC1) Fault value; L1: 115.5A,L2: 111.9A,L3: 37.5A,Ln: 0A.	arth fault and Overcurre	Unknown	Charged
148	132/33kV Transformer-II (10MVA)	132kV	Transient fault	20-07-22	14:22	20-07-22	14:24		2	0.52	86A and 86B	(DPHLPDOC1) Fault value; L1: 105A,L2: 135.3A,L3: 69.6A,Ln: 0A.	Over current	Unknown	Charged
151	132/33kV Transformer-II (10MVA)	132kV	Transient fault	20-07-22	14:36	20-07-22	14:38		2	0.52	86A and 86B	Fault value not detected or reflect on REF615	Earth fault	Unknown	Charged
155	132/33kV Transformer-II (10MVA)	132kV	Transient fault	20-07-22	17:04	20-07-22	17:06		2	0.61	86A and 86B	Fault value not detected or reflect on REF615	Earth fault	Unknown	Charged
159	132/33kV Transformer-II (10MVA)	132kV	Transient fault	21-07-22	10:11	21-07-22	10:14		3	0.54	86A and 86B	(DPHLPDOC1) Fault value; L1: 59.4A,L2: 58.95A,L3: 61.35A,Ln: 0A.	Over current	Unknown	Charged
166	132/33kV Transformer-II (10MVA)	132kV	Transient fault	22-07-22	1:16	22-07-22	1:18		2	0.51	86A and 86B	(DPHLPDOC1) Fault value; L1: 3.3A,L2: 55.8A,L3: 52.65A,Ln: 0A.	Over current	Unknown	Charged
177	132/33kV Transformer-II (10MVA)	132kV	Transient fault	23-07-22	14:23	23-07-22	14:25		2	0.56	86A and 86B	(DPHLPDOC1) Fault value; L1: 96.9A,L2: 78.45A,L3: 46.95A,Ln: 0A.	Earth fault	Unknown	Charged
180	132/33kV Transformer-II (10MVA)	132kV	Transient fault	23-07-22	21:41	23-07-22	21:42		1	0.74	86A and 86B	Fault Value did not reflect on Relay (REF615)	Earth fault	Unknown	Charged
183	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	23-07-22	23:30	23-07-22	23:33		3	0.58	86A and 86B	(DPHLPDOC1) Fault value; L1: 91.05A,L2: 138A,L3: 73.35A,Ln: 0A.	Earth fault	Unknown	Charged
188	132/33kV Transformer-I(10MVA)	132kV	Transient fault	25-07-22	9:59	25-07-22	10:01		2	0.27	86A and 86B	(DPHLPOC1)Fault Value L1: 1A, L2: 37.6A,L3: 37.2A, LN: 0	Overcurrent	Unknown	Charged
192	132/33kV Transformer-II (10MVA)	132kV	Transient fault	25-07-22	15:29	25-07-22	15:03		1	0.59	86A and 86B	Fault Value did not reflect on Relay (REF615)	Earth fault	Unknown	Charged
196	132/33kV Transformer-II (10MVA)	132kV	Transient fault	25-07-22	16:55	25-07-22	17:00		5	0.10	86A and 86B	Fault Value did not reflect on Relay (REF615)	Earth fault	Unknown	Charged
200	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	25-07-22	23:29	25-07-22	23:31		2	0.54	86A and 86B	Not reflected on REF615	Earth fault	Unknown	Charged.
205	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	27-07-22	2:29	27-07-22	2:33		4	0.43	86A and 86B	(DPHLPDOC1)Fault Value L1: 296.25A, L2: 135.75A,L3: 160.65A, LN: 0	Over current	Unknown	Charged.
209	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	27-07-22	7:55	27-07-22	8:00		5	0.10	86A and 86B	(DPHLPDOC1)Fault Value L1: 5.25A, L2: 120.45A,L3: 116.4A, LN: 0	ver current and Earth fa	Unknown	Charged.
215	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	27-07-22	18:04	27-07-22	18:09		5	0.55	86A and 86B	(DPHLPDOC1)Fault Value L1: 127.95A, L2: 3.3A,L3: 130.95A, LN: 0	Over current	Unknown	Charged.
225	132/33kV Transformer-II (10MVA)	132kV	Transient fault	29-07-22	3:54	29-07-22	3:56		2	0.51	86A and 86B	Fault Value did not reflect on Relay (REF615)	Earth fault	Unknown	Charged
230	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	29-07-22	14:53	29-07-22	14:58		5	0.58	86A and 86B	Not reflected on REF615	Earth fault	Unknown	Charged.
230	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	29-07-22	19:25	29-07-22	19:27		2	1.00	86A and 86B	Not reflected on REF615	Earth fault	Unknown	Charged.
236	132/33kV Transformer-I(10MVA)	132kV	Transient fault	31-07-22	9:29	31-07-22	9:30		1	0.32	86A and 86B	(DPHLPOC1)Fault Value L1: 1.65A, L2: 168A,L3: 166.5A, LN: 0	Overcurrent	Unknown	Charged

1. 400/220/132/33kV Jigmeling Substation

Sl. No.	Date of Tripping	Time of Outages/ Time of Tripping	Date of Normalization	Time of Fault was Cleared	Duration of Outages (Hrs)	MW before Outage (MW)	Name of feeder	Name of the Substation/lines Affected by the Fault	Reasons of Fault	Relay Operations	Fault Location(KM)	Type of outages	Remarks
i) 132kV Above													
1	29.07.2022	5:48 hrs	29.07.2022	6:19 hrs	0	-4.05	400/220 kV ICT	Jigmeling Substation		67/67NLV			
2	03.07.2022	15:40 hrs	03.07.2022	16:20 hrs	0	-39.250	220kV ICT-1	Jigmeling Substation		Main 1&2 86.1&2 trip and RYBph trip	Main 1 Fault current Ic = 2.94KA at distance 10.8km. Main 2 Fault distance 10.48km.		
3	07.07.2022	06:17 hrs	07.07.2022	06:23 hrs	0	35.180	220kV Dagapela Feeder	Dagapela Substation	Earth fault(YBph to Ground)	Main 1 &2 (YBph Trip and Z1 trip, Zone1 trip,	Main 1 &2 Fault Current Ia =.10 kA,Ib=7.45kA, Ic=7.35kA, Fault distance 7.2km.		
4	08.07.2022	19:48 hrs	08.07.2022	19:59 hrs	0	-15.780	220kV Tsirang Feeder	Jigmeling Substation	Earth fault(L1L2- Ground)	Main 1 &2 (L1L2-G Trip), Zone1 trip,	Main 1 &2 Current Ia =3.71kA, Ib=0.14kA, Ic=3.97kA, Fault distance (21.1)7.8km.		
5	08.07.2022	19:50 hrs	08.07.2022	20:00 hrs	0	32.470	220kV Dagapela Feeder	Dagapela Substation	Earth fault(L1L3- Ground)	Main 1 &2 (L1L3-G Trip),Zone1 trip,	Main 1 &2 Current Ia =3.80 kA, Ib=0.11kA, Ic=3.7kA, Fault distance 5.8km(21.1)& 3.79(21.2)		
6	09.07.2022	02:18 hrs	09.07.2022	02:33 hrs	0	48.160	220kV Tsirang Feeder	Jigmeling Substation	Earth fault(B phase to Ground)	Main 1 (R,Y & B phase trip, Zone1 trip Main 2 (R,Y & B phase trip , Zone1 trip	Main 1 Fault distance 17.6km Main 2 Fault distance 17.56km		
7	09.07.2022	02:20 hrs	09.07.2022	02:34 hrs	0		220kV Dagapela Feeder	Dagapela Substation	Earth fault(Y phase to Ground)	Main 1 (R & Y phase trip , Zone1 trip Main 2 (R & Y phase trip , Zone1 trip	Main 1 Fault distance 10.9km Main 2 Fault distance 14.65km		
8	09.07.2022	19:54 hrs	09.07.2022	20:02 hrs	0	61.490	220kV Tsirang Feeder	Jigmeling Substation	R,Bphase to ground loop	R,B phase (Z1 trip, Ia-3.03kA,Ib-0.17kA,Ic-1.66kA,50N/51N trip,) main 1&2 trip.	Fault Dist-11.1km		
9	20.07.2022	19:54 hrs	20.07.2022	20:05 hrs	0	44.570	220kV Dagapela Feeder	Dagapela Substation	R,B phase to ground loop	R,B phase trip(Z1 trip,Ia-3.47kA,Ib-0.23kA, Ic-8.51kA,50N/51Ntrip,) main 1 and 2 86.1 &2 trip.	Fault Dist-9.4KM		
10	21.07.2022	19:17hrs	21.07.2022	20:27hrs	1		220kV Bus Coupler	Jigmeling Substation	Over Current	50 trip			
11	22.07.2022	19:08hrs	22.07.2022	19:23hrs			220kV Bus Coupler	Jigmeling Substation	Over Current	50 trip			
12	03.07.2022	14:05 hrs	03.07.2022	14:12 hrs	0	45.06	132kV Tingtibi feeder	Tingtibi Substation	RYB phase trip.	Main 1&2 86.1&2 trip, RYB phase trip,Z1 trip,	fault Current Ia=3.74kA, Ib=3.95kA,Ic=3.81 kA, Distance=30.8km	Transient	
13	03.07.2022	15:40 hrs	03.07.2022	16:20	0	39.49	132kV ICT-1	Jigmeling Substation		Main 1&2 86.1&2 trip and RYBph trip		Transient	
14	08.07.2022	20:28 hrs	08.07.2022	20:36 hrs	0	35.17	132kV Tingtibi feeder	Tingtibi Substation	Earth fault (L2L3-G)	Main 1 optd, L2L3-G Trip, Zone1 trip,	Main 1 Current Ia =0.17kA, Ib=2.05kA, Ic=2.18kA, Fault distance 8.00km(21.1)	Transient	
15	08.07.2022	20:30 hrs	08.07.2022	20:35 hrs	0	20.94	132kV Gelephu feeder	Gelephu Substation	Earth fault (L2L3-G)	Main 1&2 optd, L2L3-Gound Trip, Zone1 trip,	Fault distant (21.1)7.50km.	Transient	
16	24.07.2022	16:09hrs	24.07.2022	16:20hrs	0	31.66	132kV Tingtibi feeder	132kV Tingtibi feeder	Earth fault (L1L2-G)	Main 1&2 optd, L1L2-Gound Trip, Zone1 optd,	Fault distant 5.00km.	Transient	
17	24.07.2022	16:11hrs	24.07.2022	16:37hrs	0	19.95	132kV Gelephu feeder	Gelephu Substation	Earth fault (L1L2L3)	Main 1&2 optd, L1 L2L3 Trip, Zone1 optd,	Fault distant 6.4km.	Transient	

2. 220/66/33kV Dhajay Substation													
i) 66kV and above													
1	08.07.2022	19:48hrs	08.07.2022	19:58hrs	0	20.82	Tsirang-Jigmeling	Dhajay Subsation	Main I- Ia=1.86kA, Ib=0.01kA, Ic=1.87kA with distance 30.3kM. Main 2- Ia=1745.84A, Ib=103.89A, Ic=1873.28A with distance 30.38KM.	Distance relay Main 1&2(21.1& 21.2)	Line segment	Tripped	Feeder restored after BPSO instructions.
2	09.07.2022	2:18:05hrs	09.07.2022	2:32:30hrs	0	20.82	Tsirang-Jigmeling	Dhajay Subsation	Main I- Ia=2.01kA, Ib=1.25kA, Ic=2.09kA with distance 31kM. Main 2- Ia=2043.55A, Ib=1029.94A, Ic=2093.24A with distance 17KM.	Distance relay Main 1&2(21.1& 21.2)	Line segment	Tripped	Feeder restored after BPSO instructions.
3	20.07.2022	19:52hrs	20.07.2022	20:00hrs	0	61.58	Tsirang-Jigmeling	Dhajay Subsation	Main I- Ia=2.24kA, Ib=0.01kA, Ic=0.01kA with distance 47.21kM. Main 2- Ia=2051.34A, Ib=177.28, Ic=1681.48A, In=1663.12A with distance 31KM.	Distance relay Main 1&2(21.1& 21.2)	Line segment	Tripped	Feeder restored after BPSO instructions.
3. 132/66/33/11kV Gelephu Substation													
i) 66kV and above													
1	08.07.2022	20.29hrs	08.07.2022	21.39hrs	1	24	132kv Sal-Ge	Gelephu ss	heavy lightening	o/c on ABC - phase IA=160.5A,IB=1 .595KA,IC=1.44 8KA		Temporary .	Charging Code; NLDC BTN=1689, NLDC IND=430 & NERLDC=4125. At the same time 132kv Gel-Jig line also tripped from Jigmeling end.weather was heavy raining,thunder & lightning
2	24.07.2022	16.09hrs	24.07.2022	16.55hrs		15	132kv Sal-Ge	Gelephu ss	heavy lightening	o/c on ABC - phase IA=1.618KA,IB =1.700KA,IC=1. 741KA		Temporary.	Charging Code; NLDC BTN=1808, NLDC IND=1275 & NERLDC=4681. At the same time 132kv Gel-Jig line also tripped from Jigmeling end & charged back at 16.38hrs
3	24.07.2022	17.12hrs	24.07.2022	19.26hrs	2	12	132kv Gel-Jel	Non	Isolator clamp burnt	shut down taken by	Gelephu ss	Temporary.	Due to burnt (spark) on R phase line isolator Opening code:NLDC BTN=0892 & Closing code:NLDC BTN=1810.Salakati was normal so the customer were not affected during that emergency shutdow.
4	24.07.2022	19.40hrs	24.07.2022	20.50hrs	1	12	132kv Gel-Jel	Non	Isolator clamp burnt	shut down taken by	Gelephu ss	Temporary.	Due to burnt (spark) on Y phase line isolator Opening code:NLDC BTN=0894 & Closing code:NLDC BTN=1815.customer was not affected as salakati was there.

4. 132/33kV Tintibi Substation

i) 66kV & Above

1	03.07.2022	14:04	03.07.2022	14:13	0	-44.57	Tingtibi-Jigme	ingtibi-Jigm	Tempoary Fault	Distance Relay:Start Phase:ABCN,Trip Phase:ABC,Fault zone-1 trip,Fault location:18.84kM.	18.84kM	Tempoary	
2	03.07.2022	16:13	03.07.2022	16:18	0	14.98	Tingtibi-nangl	ingtibi-nan	Tempoary Fault	Distance Relay:Start Phase:ABCN,Trip Phase:ABC,Fault zone-1 trip,Fault location:55.81kM.	55.18kM	Tempoary	
3	06.07.2022	7:50	06.07.2022	8:03	0	2.38	Tingtibi-nangl	ingtibi-nan	Tempoary Fault	Distance Relay:Start Phase:ABCN,Trip Phase:ABC,Fault zone-1 trip,Fault location:35.91kM.	35.91kM	Tempoary	
4	08.07.2022	20:28	08.07.2022	20:28	0	-23.54	Tingtibi-Jigme	ingtibi-Jigm	Tempoary Fault	Distance Relay:Start Phase:BCN,Trip Phase:ABC,Fault zone-1 trip,Fault location:22.88kM.	22.88kM	Tempoary	
5	08.07.2022	22:16	08.07.2022	22:26	0	22.26	Tingtibi-nangl	ingtibi-nan	Tempoary Fault	Distance Relay:Start Phase:ABCN,Trip Phase:ABC,Fault zone-1 trip,Fault location:32.17kM.	32.17kM	Tempoary	
6	08.07.2022	22:34	08.07.2022	22:43	0	15:54	Tingtibi-nangl	ingtibi-nan	Tempoary Fault	Distance Relay:Start Phase:BN,Trip Phase:ABC,Fault zone-1 trip,Fault location:30.29kM.	30.29kM	Tempoary	
7	08.07.2022	22:47	08.07.2022	22:59	0	14.54	Tingtibi-nangl	ingtibi-nan	Tempoary Fault	Distance Relay:Start Phase:ABN,Trip Phase:ABC,Fault zone-1 trip,Fault location:53.47kM.	53.47kM	Tempoary	
8	08.07.2022	15:15	08.07.2022	15:31	0	32.44	Tingtibi-Jigme	ingtibi-Jigm	Tempoary Fault	Distance Relay:Start Phase:BCN,Trip Phase:ABC,Fault zone-1 trip,Fault location:17.34kM.	17.34kM	Tempoary	
9	08.07.2022	15:32	08.07.2022	16:21	0	-32.2	Tingtibi-Jigme	ingtibi-Jigm	Tempoary Fault	Distance Relay:Start Phase:BCN,Trip Phase:ABC,Fault zone-1 trip,Fault location:17.70kM.	17.70kM	Tempoary	
10	24.07.2022	2:10	24.07.2022	2:20	0	19.66	Tingtibi-nangl	ingtibi-nan	Tempoary Fault	Distance Relay:Start Phase:ABN,Trip Phase:ABC,Fault zone-1 trip,Fault location:19.08kM.	19.08kM	Tempoary	
11	24.07.2022	14:36	24.07.2022	14:47	0	13.61	Tingtibi-nangl	ingtibi-nan	Tempoary Fault	Distance Relay:Start Phase:AN,Trip Phase:ABC,Fault zone-1 trip,Fault location:XY 19.76kM.	19.76kM	Tempoary	
12	24.07.2022	16:09	24.07.2022	16:19	0	30.01	Tingtibi-Jigme	ingtibi-Jigm	Tempoary Fault	Distance Relay:Start Phase:ABCN,Trip Phase:ABC,Fault zone-1 trip,Fault location:24.49kM.	24.49kM	Tempoary	

5. 132/33kV Yurmoo Substation

i) 66kV & Above

1	08.07.2022	10:49	08.07.2022	10:56	0	-28.8	132kV Tingtibi I/C	Yurmoo Ss	Broken conductor optd	86 relay	Nill	Tencent Fault	
2	09.07.2022	12:23	09.07.2022	12:26	0	-28.6	132kV Tingtibi I/C	Yurmoo Ss	Broken conductor optd	86 relay	Nill	Tencent Fault	
3	18.07.2022	12:09	18.07.2022	12:11	0	-33.7	132kV Tingtibi I/C	Yurmoo Ss	Broken conductor optd	86 relay	Nill	Tencent Fault	
4	19.07.2022	19:55	19.07.2022	19:57	0	-33.8	132kV Tingtibi I/C	Yurmoo Ss	Broken conductor optd	86 relay	Nill	Tencent Fault	
5	23.07.2022	23:44	23.07.2022	23:54	0	-31.1	132kV Tingtibi I/C	Yurmoo Ss	Broken conductor optd	86 relay	Nill	Tencent Fault	sumed after intimation w
6	24.07.2022	2:10	24.07.2022	2:17	0	-30.5	132kV Tingtibi I/C	Yurmoo Ss	Broken conductor optd	86relay	Nill	Tencent Fault	
7	25.07.2022	10:05	25.07.2022	10:10	0	-32	132kV Tingtibi I/C	Yurmoo Ss	Broken conductor optd	86relay	Nill	Tencent Fault	

6. 220/33kV Dagapela Substation

i) 66kV & Above

1	07.07.2022	06:15hrs	7.07.2022	06:25hrs	0	-34.99	220kV Jimeling	Dagapela Substation	Earth fault	Master trip relay optd.	zone 1 at the distance of 7.2 km(Y&B phase)	Grid fail	Tripped from Jigmeling end due to o/c
2	8.07.2022	17:48hrs	8.07.2022	20:02hrs	2	-32.13	220kV Jimeling	Dagapela Substation	L1 L3 phase to ground(Earth fault)	Master trip relay optd.		Grid fail	Tripped from Jigmeling end due to o/c
3	9.07.2022	02:22hrs	9.07.2022	02:34hrs	0	-34.43	220kV Jimeling	Dagapela Substation	R&Y phase	Master trip relay optd.	zone	Grid fail	Tripped from Jigmeling end due to o/c
4	20.07.2022	19:53hrs	20.07.2022	20:04hrs	0	-43.84	220kV Jimeling	Dagapela Substation	R&B to ground	Master trip relay optd.	distance at 9.4km	Grid fail	Tripped from Jigmeling end due to o/c

Month of August 2021

Division:	SMD-DEOTHANG
Substation:	132/33/11kV Kanglung Substation
Month:	Aug-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault (if tripped)	Reason for Shutdown (if shutdown)	Weather Condition during the Outage	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protection Relay Optd (name of relay)	Fault Details (As recorded by relay)				
	132kV															
2	Kanglung- Phuntsothang	132	tripping	03.08.2022	20:40	03.08.2022	20:50	0	10	19.152	NA	NA	dist relay optd		Clear	Grid fail
3	Kanglung- Phuntsothang	132	tripped	21.08.2022	17:18	21.08.2022	17:24	0	6	18.864	Distance relay Optd		Due to lightening		Rainy	Line charge after 6 minutes as per the instruction from BPSO without closing code.

Division:	SMD-DEOTHANG
Substation:	132/33/11kV Nangkor Substation
Month:	Aug-22

BPC/SMD/132kV-NSS/2022/03/081 Date: 01.09.2022

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Weather Condition during the Outage	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)				
132kV Feeders																
1	132/33kV, 5MVA Trf-I	132kV	Tripping	08-08-22	10:10 hrs	08-08-22	10:12 hrs	0	2	0.396	Non directional IDMT relay optd	O/C relay-50C & trip relay 86 operated	Tripped on feeder fault	-	Clear	Tripped due to fault on 33kV Tsebar feeder
2	132/33kV, 5MVA Trf-II	132kV	Tripping	08-08-22	10:10 hrs	08-08-22	10:13 hrs	0	3	0.216	Non directional IDMT relay optd	O/C relay-50C & trip relay 86 operated	Tripped on feeder fault	-	Clear	Tripped due to fault on 33kV Tsebar feeder
3	132/33kV, 5MVA Trf-I	132kV	Tripping	11-08-22	18:45 hrs	11-08-22	18:50 hrs	0	5	0.627	Non directional IDMT relay optd	O/C relay-50C & trip relay 86 operated	Tripped on feeder fault	-	Clear	Tripped at the instant of charging 33kV Wamrong feeder
4	132/33kV, 5MVA Trf-II	132kV	Tripping	11-08-22	18:45 hrs	11-08-22	18:51 hrs	0	6	0.42	Non directional IDMT relay optd	O/C relay-50C & trip relay 86 operated	Tripped on feeder fault	-	Clear	Tripped at the instant of charging 33kV Wamrong feeder
7	Nangkor-Nganglam Line	132kV	Tripping	31-08-22	03:38 hrs	31-08-22	03:41 hrs	0	3	-8.35	-	No relay operated	-	-	Heavy rainfall	Informed to BPSO & closed the CB
8	Nangkor-Nganglam Line	132kV	Tripping	31-08-22	03:57 hrs	31-08-22	05:47 hrs	1	50	-8.35	-	No relay operated	-	-	Heavy rainfall	Informed to BPSO & closed the CB
9	Nangkor-Nganglam Line	132kV	Tripping	31-08-22	05:56 hrs	31-08-22	08:37 hrs	2	41	-8.35	-	No relay operated	-	-	Heavy rainfall	Informed to BPSO. Due to heavy rainfall,going to Yard was held , checked the circuit inside relay pannel and found ok & closed the CB.
10	Nangkor-Nganglam Line	132kV	Tripping	31-08-22	09:41 hrs	31-08-22	15:03 hrs	5	22	9.57	-	No relay operated	-	Due to heavy rainfall, the water have dripped into CB mechanism box & its wiring TB.	Heavy Rainfall	Informed to BPSO that CB rectification work will carry out after rainfall subsides & CB kept in open position.

Division:	SMD-DEOTHANG
Substation:	132/33/11kV Deothang Substation
Month:	Aug-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Weather Condition during the Outage	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)				
9	Transformer I & II (5MVA)	132kV	Tripping	06.08.2022	13:54	06.08.2022	13:58	0	4		NA	Nil	NA	Tripped by Bangtar and Gomdar line	Thunder and raining	Test charged done and found normal
31	5MVA Transformer I	132kV	Tripping	13.08.2022	6:03	13.08.2022	6:08	0	5	0.942	Neutral Displacement relay at 33kV bus transfer	Nil	Melt of arching Horn in Earthing Transformer at R-Phase	NA	clear	Test charge done found normal
32	5MVA Transformer II	132kV	Tripping	13.08.2022	6:03	13.08.2022	6:08	0	5	0.921	Neutral Displacement relay at 33kV bus transfer	Nil	Melt of arching Horn in Earthing Transformer at R-Phase	NA	clear	Test charge done found normal
57	5MVA Tr.I	132kV	Tripping	21.08.2022	19:11	21.08.2022	19:20	0	9	1.344	NA	Nil	Due to Bangtar line, since tripped coil got jamed, freder was not able to tripped.	NA	clear	Tripped due to bangtar fdr;Test charge done found normal
58	5MVA Tr.II	132kV	Tripping	21.08.2022	19:11	21.08.2022	19:20	0	9	1.308	NA	Nil	Due to Bangtar line, since tripped coil got jamed, freder was not able to tripped.	NA	clear	Tripped due to bangtar fdr;Test charge done found normal
66	Nangkor- Deothang I/C	132kV	Shutdown	25.08.2022	8:20	25.08.2022	16:55	8	35	-46.152	NA	Nil	NA	For ROW cutting from location from NI245 to 53	Clear	Shutdown takes as per 31A/BPC/BPSO/PSOD/VOL-1/2022/202 and opening code 0978 from Tshering Chodem,BPSO,Thimphu. Charged after workpermit returned with closing code 191given by MRS Krishna from BPSO found normal.

Division:	SMD-DEOTHANG
Substation:	132/33/11kV Nganglam Substation
Month:	Aug-22

SL.No	Substation Name (Select from list)	Feeder Name (Select from list)	Outage Reason (Select from list)	Fault Location (Select from list)	Tripping Date & Time (dd/mm/yyyy hh:mm:ss)	Normalization Date & Time (dd/mm/yyyy hh:mm:ss)	Customers affected (Yes/No)?	Remarks	Outage Duration(hh:mm:ss)	Outage in Minuts(ri)	No. of Customers Interrupted (Ni)
02	Nganglam	132kV Nganglam-DCCL Factory	Fault	Transmission Line	01-08-2022 05:11:00	01-08-2022 05:14:00	Yes	Tripped on Overcurrent & Earth Fault (50A & 50C)	00:03:00		1
03	Nganglam	132kV Nganglam-DCCL Factory	Fault	Transmission Line	01-08-2022 07:14:00	01-08-2022 07:26:00	Yes	Tripped on Overcurrent & Earth Fault (50A & 50C)	00:12:00		130
09	Nganglam	132kV Nganglam-Tintibi	Fault	Transmission Line	03-08-2022 10:44:00	03-08-2022 10:53:00	No	Tripped on Earth Fault. Fault details; IA= 447.5A IB= 7.227A IC= 6.750A IN= 437.4A VAN= 111.8kV VBN= 131.5kV VCN= 125.2kV	00:09:00		0
14	Nganglam	132kV Nganglam-Tintibi	Fault	Transmission Line	06-08-2022 12:10:00	06-08-2022 12:22:00	No	Tripped on over current.Realy opted 86.Fault Zone=1 Fault Duration=76.74ms.Relay tripped time=80.08ms.Fault loc=15:23km.IA=1.579KA.IB=1.607KA.IC=137.7A.VAN=137.7A.VBN=9.001KV.VCN=83.07KV.Fault Resistance=160.5ms	00:12:00		0
15	Nganglam	132/33kV, 5MVA Transformer-1	Fault	Substation	06-08-2022 12:10:00	06-08-2022 12:14:00	Yes	Tripped due to 132 kV Nganglam-Tingtibi	00:04:00		3244
29	Nganglam	132/33kV, 5MVA Transformer-1	Fault	Distribution Line	14-08-2022 14:24:00	14-08-2022 14:27:00	Yes	Tripped on Overcurrent	00:03:00		3244
30	Nganglam	132/33kV, 5MVA Transformer-1	Fault	Substation	14-08-2022 14:27:00	14-08-2022 14:30:00	Yes	Tripped on overcurrent due to 33kV Druk GYP feeder.(Feeder CB not Operated)	00:03:00		3244
36	Nganglam	132/33kV, 5MVA Transformer-1	Fault	Substation	15-08-2022 15:16:00	15-08-2022 15:18:00	Yes	5MVA trs (LV) side triped due to 33kV DGCL fdr on E/F	00:02:00		3244
37	Nganglam	132/33kV, 5MVA Transformer-1	Fault	Distribution Line	18-08-2022 06:45:00	18-08-2022 06:47:00	Yes	5MVA trs-1 (HV & LV)triped due to 33kV Decheling feeder	00:02:00		1458
42	Nganglam	132/33kV, 5MVA Transformer-1	Fault	Distribution Line	20-08-2022 07:18:00	20-08-2022 07:22:00	Yes	Tripped on Overcurrent due to 33kV Panbang feeder fault while extending supply frpm Thinlegang LBS.	00:04:00		339
51	Nganglam	132/33kV, 5MVA Transformer-1	Fault	Distribution Line	23-08-2022 11:41:00	23-08-2022 11:52:00	Yes	Tripped due to 33kV Dechenling Feeder Fault	00:11:00		3244
52	Nganglam	132/33kV, 5MVA Transformer-1	Fault	Distribution Line	23-08-2022 22:12:00	23-08-2022 22:13:00	Yes	Tripped on Overcurrent. The 5MVA Tr-I is kept in Idle Charged and 3MVA Transformer is put inservice	00:01:00		3244
53	Nganglam	132/33kV, 3MVA Transformer-2	Shutdown	Distribution Line	23-08-2022 18:25:00	23-08-2022 18:26:00	No	5MVA Transformer was put in Parallel with 3MVA transformer after the installation of 2Nos. of CB Interrupter at 5MVA Tr-I LV side and 3MVA Transformer was kept in Idle charged	00:01:00		0
67	Nganglam	132kV Nganglam-Nangkhor	Shutdown	Transmission Line	31-08-2022 04:02:00	31-08-2022 05:50:00	No	CB could not Closed at Nangkhor end after tripping, BPSO instructed us to Open CB at our end and Closed first at Nangkhor end.	01:48:00		0
68	Nganglam	132kV Nganglam-Nangkhor	Shutdown	Transmission Line	31-08-2022 13:30:00	31-08-2022 15:03:00	No	To do CB maintance at Nangkhor S/S.	01:33:00		0

Division:	SMD-DEOTHANG
Substation:	132/33kV Motanga Substation
Month:	Aug-22

03/BPC/SMD/MSS/2022/272 Date: 01.08.2022

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Weather Condition	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)				
132kV Feeders																
1	15MVA Transformer	132kV	Tripping	02-08-22	20:38 hrs	02-08-22	20:42 hrs	0	5	0.22	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 506.92A, IL2= 242.57A, IL3= 268.13A, Frequency= 49.98Hz & tripping relay 86 & B operated at our end.	Tripped by transient fault	-	sunny	Grid failed. Deothang, Rangia and P/Thang fdr tripped at the same time.
2	Deothang Feeder	132kV	Tripping	03-08-22	20:40 hrs	03-08-22	20:43hrs	0	3	-55.1	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 678A, IL2= 308.4A, IL3= 285.6A, Frequency= 49.96Hz & tripping relay 86 & B operated at our end.	Tripped by transient fault	-	Rainy	charged in coordination with BPSO.
3	Phuntshothang feeder	132kV	Tripping	03-08-22	20:40 hrs	03-08-22	20:54hrs	0	14	-17.51	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 736.8A, IL2= 78.6A, IL3= 25.8A, Frequency= 50.10Hz & tripping relay 86 & B operated at our end.	Tripped by transient fault	-	Heavy Rainfall	coordinated with BPSO about the charging sequence of feeders. Charged as per their instruction.
4	Rangia Feeder	132kV	Tripping	03-08-22	20:40 hrs	03-08-22	21:32hrs	0	52	46.35	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 427.2A, IL2= 172.5A, IL3= 99.6A, Frequency= 49.98Hz & tripping relay 86 & B operated at our end.	Tripped by transient fault	-	Heavy Rainfall	charging code: BPSO(1879, NLDC, INDIA, 167 and NERLDC, INDIA(5041.
5	15MVA Transformer	132/33kV	Tripping	06-08-22	09:39 hrs	06-08-22	09:50 hrs	0	11	0.31	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C, Frequency= 49.90Hz & tripping relay 86A operated at our end.	Tripped by transient fault	-	Rainfall	Charged by verbal instruction from BPSO.
6	15MVA Transformer	132/33kV	Tripping	12-08-22	12:44 hrs	12-08-22	12:50 hrs	0	6	0.17	Distance protection, REL650	***O/C & E/F Relay operated:*** Tripped on E/F & O/C : IL1= 351A, IL2= 0.60A, IL3= 0.60A, Frequency= 50.10Hz & tripping relay 86 & B operated at our end.	Transient fault	-	sunny	-
7	Phuntshothang feeder	132kV	shutdown	13-08-22	09:05 hrs	13-08-22	17:11 hrs	8	0	-16.52	-	-	-	for clearing right of way of line	sunny	shutdown taken by TLMSD, Phuntshothang.
8	15MVA Transformer	132/33kV	Tripping	18-08-22	20:23 hrs	18-08-22	20:32 hrs	0	10	1.97	Distance protection, REL650	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 16.8A, IL2= 331.8A, IL3= 316.8A, Frequency= 49.93Hz & tripping relay 86 & B operated at our end.	Transient fault	-	cloudy	-
9	Phuntshothang feeder	132kV	Tripping	21-08-22	17:18 hrs	21-08-22	17:21 hrs	0	3	-17.64	DEFLPDEF1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C, Frequency= 50.03Hz & tripping relay 86 & B operated at our end.	Transient fault	-	rainfall	At 17:18hrs 132kV Deothang and Phuntshothang feeder tripped at the same time due to o/c and e/f. charged both of them in coordinating with BPSO.
10	Deothang Feeder	132kV	Tripping	21-08-22	17:18 hrs	21-08-22	17:27 hrs	0	9	-46.14	DEFLPDEF1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C, Frequency= 50.01Hz, tripping relay 86 & B operated at our end.	Transient fault	-	Rainfall	Charging code: 161.
11	15MVA Transformer	132/33kV	Tripping	23-08-22	11:34 hrs	23-08-22	11:37 hrs	0	3	0.2	Distance protection, REL650	tripping relay 86A and B and SEF operated.	-	-	rainy	charged the transformer by verbal instruction from BPSO.
12	15MVA Transformer	132/33kV	Tripping	23-08-22	17:09 hrs	23-08-22	17:28 hrs	0	19	0.21	Distance protection, REL650	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 3.42A, IL2= 4.2A, IL3= 64.48A, Frequency= 49.90Hz & tripping relay 86 & B operated at our end.	Transient fault	-	clear	coordinated with BPSO and charged.
13	15MVA Transformer	132/33kV	Tripping	26-08-22	16:20 hrs	26-08-22	16:23 hrs	0	3	0.38	Distance protection, REL650	tripping relay 86A /B and SEF operated.	Transient fault	-	clear	coordinated with BPSO and charged.
14	15MVA Transformer	132/33kV	Tripping	31-08-22	11:38 hrs	31-08-22	11:42 hrs	0	4	0.29	Distance protection, REL650	tripped on O/C & E/F, 50/51 trip, SEF protection trip.	Transient fault	-	rainy	coordinated with BPSO and charged.
15	15MVA Transformer	132/33kV	Tripping	31-08-22	14:39 hrs	31-08-22	14:43 hrs	0	4	0.03	Distance protection, REL650	tripped on O/C & E/F, 50/51 trip, SEF protection trip.	-	-	Sunny	-

Division:	SMD-DEOTHANG
Substation:	132/33kV Phuntshothang Substation
Month:	Aug-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Weather Condition	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protection Relay Optd	Fault Details (As recorded by relay)				
1	Kanghung (1K7LA)	132kV	Shutdown	01-08-22	7:38	02-08-22	12:37	28	59	15.93	Nil	Nil	Nil	Due to flood near the KP tower No#95A &95B at Bangparong	Rainy	Emergency Shutdown taken by Mr.Dangkar Choeling SDM due to flood near the KP tower No#95A &95B at Bangparong with vide switch OFF code#0922 issued by MISS.Karma Dema (BPSO).Line charge and coordination to Kanghung end and BPSO with vide switch ON code# 1868 issued by MR. Binda Rai.
2	132/33kV Transformer-II (10MVA)	132kV	Transient fault	01-08-22	11:43	01-08-22	11:44		1	0.41	86A and 86B	Fault Value did not reflect on Relay (REF615)	Over current	Nil	Rainy	Charged
3	Incomer II (H12)	33kV	Transient fault	01-08-22	11:43	01-08-22	11:45		2	0.41	50N and 86OPTD	(EFHPTOC1) Fault value; L1: 13.6A,L2: 217.6A,L3: 10.2A,Ln: 212.4A.	Earth fault	Nil	Rainy	Incomer charged
4	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	01-08-22	12:02	01-08-22	12:06		1	0.38	86A and 86B	Fault Value did not reflect on Relay (REF615)	Over current	Nil	Rainy	Charged
11	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	01-08-22	19:15	01-08-22	19:25		10	0.52	86A and 86B	(DPHLPDOC1) Fault value; L1: 148.35A,L2: 145.35A,L3: 3.15A,Ln: 0A	ver current and Earth fa	Nil	Clear	Charged
15	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	01-08-22	22:50	01-08-22	22:54		4	0.43	86A and 86B	(DPHLPDOC1) Fault value; L1: 38.7A,L2: 88.2A,L3: 91.2A,Ln: 0A.	Earth fault	Nil	Clear	Charged
31	132kV Kanghung Line	132kV	Transient fault	03-08-22	20:39	03-08-22	20:50		11	18.87	Zone-1 OPTD, R-PH TRIP, OV/UV TRIP, 86A and 86B	Fault Value L1: 1417.99A, L2: 161.73A,L3: 9.76A, LN: 1285.51A	Unknown	Nil	Thunderstorm	Grid Fail at 20:39,at 20:39 breaker got open and after receving information from BPSO, line charged at 20:50
32	132kV Motanga Line	132kV	Transient fault	03-08-22	20:39	03-08-22	20:54		15	17.35	OV/UV TRIP, 86A and 86B	Fault Value L1: 1417.43A, L2: 156.18A,L3: 8.25A, LN: 1285.34A	Unknown	Nil	Thunderstorm	Grid Fail at 20:39,at 20:39 breaker got open and after receving information from BPSO, line charged at 20:54
38	132/33kV Transformer-I(10MVA)	132kV	Transient fault	05-08-22	21:36	05-08-22	21:40		4	0.36	86A and 86B	(DPHLPDOC1) Fault value; L1: 327.45A,L2: 160.05A,L3: 167.55A,Ln: 0A.Test charged fault value;L1: 360.3A,L2: 172.5A,L3: 188.7A,Ln: 0A	Over Current	Nil	Cloudy	Charged
41	132/33kV Transformer-II (10MVA)	132kV	Transient fault	06-08-22	6:44	06-08-22	6:46		2	1.02	86A and 86B	(DPHLPDOC1) Fault value; L1: 118.8A,L2: 113.7A,L3: 5.85A,Ln: 0A.	ver current and Earth fa	Nil	Clear	Charged
45	132/33kV Transformer-II (10MVA)	132kV	Transient fault	06-08-22	8:35	06-08-22	8:38		3	0.59	86A and 86B	Fault value not reflect.	Earth fault	Nil	Sunny	Charged
55	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	06-08-22	22:40	06-08-22	22:41		1	0.65	86A and 86B	(DPHLPDOC1) Fault value; L1: 87.15A,L2:63A,L3: 44.85A,Ln: 0ATest charged fault value;L1: 28.65A,L2: 58.65A,L3: 71.7A,Ln: 0A	Earth fault	Nil	rainy	Charged
61	132/33kV Transformer-II (10MVA)	132kV	Transient fault	07-08-22	17:47	07-08-22	17:51		4	0.61	86A and 86B	Fault value not reflect.	Earth fault	Nil	cloudy	Charged
67	132/33kV Transformer-I(10MVA)	132kV	Transient fault	08-08-22	1:36	08-08-22	1:38		2	0.28	86A and 86B	(DPHLPDOC1) Fault value; L1: 326.7A,L2: 311.7A,L3: 334.65A,Ln: 0A.	Over Current	Nil	Thunderstorm	Charged
78	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	09-08-22	20:30	09-08-22	20:32		2	0.15	86A and 86B	(DPHLPDOC1) Fault value; L1: 2.7A,L2: 104.25A,L3:102A,Ln: 0	Earth fault	Nil	Clear	Charged
81	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	10-08-22	5:16	10-08-22	5:17		1	0.30	86A and 86B	(DPHLPDOC1) Fault value; L1: 5.7A,L2: 120.3A,L3: 117A,Ln: 0	arth fault and Over curre	Nil	cloudy	Charged
99	132/33kV Transformer-II (10MVA)	132kV	Transient fault	12-08-22	16:31	12-08-22	16:33		2	0.55	86A and 86B	(DPHLPDOC1) Fault value; L1: 106.2A,L2: 49.8A,L3: 57A,Ln: 0	Earth fault	Nil	cloudy	Charged
105	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	13-08-22	20:00	13-08-22	20:02		2	0.02	86A and 86B	(DPHLPDOC1) Fault value; L1: 5.4A,L2: 164.85A,L3: 160.2A,Ln: 0	Over current	Nil	Cloudy	Charged
109	132/33kV Transformer-II (10MVA)	132kV	Transient fault	14-08-22	1:46	14-08-22	1:47		1	0.5	86A and 86B	Fault Value did not reflect on Relay (REF615)	Over current	Nil	Windy	Charged
114	132/33kV Transformer-I(10MVA)	132kV	Trip on Fault	14-08-22	16:14	14-08-22	16:19		5	0.36	86A and 86B	(DPHLPDOC1) Fault value; L1: 315.75A,L2: 156.15A,L3: 159.6A,Ln: 0	Over current	Nil	Sunny	Charged
118	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	14-08-22	21:47	14-08-22	21:49		2	0.88	86A and 86B	(DPHLPDOC1) Fault value; L1: 4.05A,L2: 165.45A,L3: 161.85A,Ln: 0	Over current	Nil	Clear	Charged
135	132/33kV Transformer-II (10MVA)	132kV	Trip on Fault	16-08-22	4:34	16-08-22	4:36		2	0.47	86A and 86B	(DPHLPDOC1) Fault value; L1: 3.15A,L2: 110.4A,L3: 107.4A,Ln: 0	Over current	Nil	Clear	Charged
138	132/33kV Transformer-II (10MVA)	132kV	Transient fault	16-08-22	5:38	16-08-22	5:39		1	0.54	86A and 86B	Fault Value did not reflect on Relay (REF615)	Over current	Nil	cloudy	Charged
151	132/33kV Transformer-II (10MVA)	132kV	Transient fault	17-08-22	11:12	17-08-22	11:14		2	0.57	86A and 86B	Fault Value did not reflect on Relay (REF615)	Over current	Nil	Cloudy	Charged
189	Kanghung (1K7LA)	132kV	Transient fault	21-08-22	17:18	21-08-22	17:30		12	18.71	Zone-1 OPTD, R-PH TRIP, OV/UV TRIP, 86A and 86B	Fault Value L1: 1280.88A, L2: 179.21A,L3: 30.36A, LN: 1092.63A	unknown	Nil	Cloudy	Grid Fail at 17:18 and breaker got open at both end.Kanghung line charged at 17:30, after receving information from BPSO.
190	Motanga (1K3LA)	132kV	Transient fault	21-08-22	17:18	21-08-22	17:24		6	17.72	E/F ,OV/UV TRIP, 86A and 86B	Fault Value L1:1281.57 A, L2: 173.37A,L3: 32.18A, LN:1093.54 A	unknown	Nil	Cloudy	Grid Fail at 17:18 and breaker got open at both end. Line charged at 17:24 , after receving information from BPSO.
194	132/33kV Transformer-II (10MVA)	132kV	Transient fault	22-08-22	8:58	22-08-22	9:00		2	0.25	86A and 86B	(DPHLPDOC1) Fault value; L1: 148.35A,L2: 1.95A,L3: 149.85A,Ln: 0A	Over current	Nil	Cloudy	Charged
200	132/33kV Transformer-I(10MVA)	132kV	Transient fault	22-08-22	15:16	22-08-22	15:19		3	0.79	86A and 86B	(DPHLPDOC1) Fault value; L1: 64.95A,L2: 68.85A,L3: 114.45A,Ln: 0A	Earth fault	Nil	Cloudy	Charged
215	132/33kV Transformer-I(10MVA)	132kV	Transient fault	23-08-22	11:29	23-08-22	11:32		3	0.39	86A and 86B	(DPHLPDOC1) Fault value; L1: 4.35A,L2: 103.05A,L3: 98.85A,Ln: 0A.	Over Current	Nil	rainy	Charged
220	132/33kV Transformer-I(10MVA)	132kV	Transient fault	23-08-22	15:48	23-08-22	15:51		3	0.65	86A and 86B	Did not reflect on REF615 relay	Earth fault	Nil	Sunny	Charged
222	132/33kV Transformer-I(10MVA)	132kV	Transient fault	23-08-22	17:31	23-08-22	17:33		2	0.69	86A and 86B	(DPHLPDOC1) Fault value; L1: 70.5A, L2: 141A, L3: 94.5A, Ln: 211.4A	Over Current	Nil	Sunny	Charged
226	132/33kV Transformer-I(10MVA)	132kV	Transient fault	23-08-22	23:59	24-08-22	0:02		3	0.61	86A and 86B	(DPHLPDOC1) Fault value; L1: 3.45A,L2: 103.8A,L3: 100.35A,Ln: 0A	Over current	Nil	Windy	Charged

1. 400/220/132/33kV Jigmeling Substation

Sl. No.	Date of Tripping	Time of Outages/ Time of Tripping	Date of Normalization	Time of Fault was Cleared	Duration of Outages (Hrs)	MW before Outage (MW)	Name of feeder	Name of the Substation/lines Affected by the Fault	Reasons of Fault	Relay Operations	Fault Location(KM)	Type of outages	Remarks
a) 132kV Above													
1	09.08.2022	08:30 hrs			0	0	400kV MHPA - Jigmeling Line-4	Jigmeling and Alipurduar	Phase to Ground fault	Main 1: Fault Loop RYph to Ground, Z1 optd, Main 2: Fault Loop RYph to Ground and Z1 optd,	Main 1: Fault current: I1 = 7.37kA,I2=7.30KA,I3=0.07 ,Fault dist; 40.7km. Main 2: Fault current: I1 = 7.39kA, I2 = 7.30kA, I3 = 0.06kA, Fault distance: 40.8km		**Line close-trip and kept shutdown**
2	11.08.2022	01:59 hrs			258.16		400kV Interim Circuit 2	Alipurduar	Phase to Ground fault	Main 1: RYBph pick up, Ground pick up, Fault loop L3-E Main 2: RYBph pick up, Ground pick up, Fault loop L3-E	Main 1: Fault current: I1 = 0.33kA, I2=0.23kA,I3=1.72 ,Fault dist; 102.2km Main 2: Fault current: I I1 = 0.33kA, I2=0.23kA,I3=1.72 ,Fault dist; 102.0km.		**Line inter changed to Interim circuit 1**
3	13.08.2022	18:17 hrs	13.08.2022	18:26 hrs	0	307.74	400kV Alipur Direct line 1	Alipurduar	L1,L2,L3 loop,	DTT tripped .RYB phase pick up, CB operated.	IL1,IL2,IL3=0.18kA		
4	15.08.2022	11:03 hrs				391.96	400kV Alipur Direct line 1	Alipurduar		RYB phase pick up, CB operated.	DTT tripped .L1,L2,L3 loop, IL1,IL2,IL3=0.18kA		**Line could not stand and switch over to Line 2**
5	16.08.2022	04:24 hrs	16.08.2022	04:43 hrs	0	265.49	400kV Interim Circuit 1	Alipurduar	Yph - Ground	tripped on L2, both main 1 main 2 operated.			
6	24.08.2022	13:11hrs	24.08.2022	16:33hrs	3	-13.09	400kV MHPA - Jigmeling Line-4	Jigmeling ss	CVT fuse failed				**Charged**
1	14.08.2022	13:02hrs	14.08.2022	13:13hrs	0	52.91	Tintibi Feeder	Jigmeling substation	Phase to ground fault	main 1 optd R,Y &B pick up	main 1 (faukt current Ia= 3.30ka , Ib=.71ka, Ic = 1.81ka at distance 5.3km	transist fault	
2	14.08.2022	13:03hrs	14.08.2022	13:16hrs	0	29.36	Gelephu Feeder	Jigmeling substation	Phase to ground fault	main 1 and 2 optd R,Y &B pick up	main 1 (faukt current Ia= 1.43ka , Ib=.4.49ka, Ic = 1.88ka at distance 5.8km	transist fault	
3	14.08.2022	13:02hrs	14.08.2022	13:10hrs	0		Bus Coupler	Jigmeling substation	Over Current	50Trip		transist fault	
4	15.08.2022	11:07 hrs	15.08.2022	11:25 hrs	0		Bus Coupler	Jigmeling substation	Over Current	50Trip			
5	16.08.2022	04:26 hrs	16.08.2022	04:52 hrs	0		Bus Coupler	Jigmeling substation	Over Current	50Trip			

3. 132/66/33/11kV Gelephu Substation

i) 66kV and above

1	08.08.2022	11.14hrs	08.08.2022	20.36hrs	9	6.8	132kV Sal-Gel	Non	Shutdown taken by Salakati substation	shutdown	Salakati substaion		For bus bar & LBB testing of 132kv LV side of ICT#3 under NERSS-XI at Salakatii ss & Opening code:NLDC BTN=0934,NLDC IND=395, NERLDC=5204 Closing code: NLDC BTN=1893 NLDC IND=424 NERLDC=5526
2	14.08.2022	13.01hrs	14.08.2022	13.44hrs		23.2	132kV Gel-Sal	Gelephu ss	Raining	o/c on ABC - phase IA=1.581KA,IB =1.737KA,IC=1.692KA			Charging Code; NLDC BTN=110, NLDC IND=729 & NERLDC=5470. At the same time 132kv Gel-Jig line also got tripped from Jigmeling end.(heavy raining,thunder & lightning)
42	31.08.2022	15.59hrs	31.08.2022	16.04hrs		0.563	11KV ADP	11KV ADP	line fault	O/C on Rphs IA=70.98 IB=31.98 IC=32.76 INM=43.09 IND=43.09	Forest check post		Dis puncture at Hindu mandir

4. 132/33kV Tintibi Substation

i) 66kV & Above

1	06.08.2022	12:12hrs	06.08.2022	12:24hrs	0	14.54	kV Tingtibi-Nanglam	2kV Tingtibi-Nanglam F	Tempoary Fault	Distance Relay:Start Phase:ABN,Trip Phase:ABC,Fault zone-1 trip,Fault location:40.49kM	40.49kM	Tempoary	
2	14.08.2022	13:02	14.08.2022	13:13hrs	0	-52.56	kV Tingtibi-Jigmeling	2kV Tingtibi-Jigmeling F	Tempoary Fault	Distance Relay:Start Phase:ABCN,Trip Phase:ABC,Fault zone-1 trip,Fault location:31.33kM	31.33kM	Tempoary	

5. 132/33kV Yurmoo Substation

i) 66kV & Above

1	06.08.2022	12:11hrs	06.08.2022	12:25hrs	0	-32	132kV Tingtibi I/C	Yurmoo Ss	Voltage Drop	86 relay optd	Yurmoo Ss		
2	14.08.2022	15:31hrs	14.08.2022	15:38hrs	0		132kV Tingtibi I/C	Yurmoo Ss	Tripped on OC Y& B Phase	86 relay optd	Yurmoo Ss		sumed after intimation w

Month of September 2022

Division:	SMD-DEOTHANG
Substation:	132/33/11kV Kanglung Substation
Month:	Sep-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault (if tripped)	Reason for Shutdown (if shutdown)	Weather Condition during the Outage	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protection Relay Optd (name of relay)	Fault Details (As recorded by relay)				
132kV																
1	Corlung	132	Tripped	08.09.2022	15:56	08.09.2022	18:10	2	14	-19.332		Distance Relay Operated Started phase = A, N, IA = 907.9A, IB4 = 80.1A, IC = 106.4A, IN = A, Fault Location = 1.334Km. Fault in = Zone 1.	R phase Disc insulator punctured and Snapped on R phase CT terminal and main bus	NA	Cloudy	Supply tripped on Distance relay operated and R phase disc insulator punctured and snapped on R phase CT terminal and main bus. So kept under tripped position and done the re- stringing work. Charging Code from BPSO : 257 (Miss. Karma Yangdon)
2	Phuntshothang	132	Tripped	08.09.2022	15:56	08.09.2022	18:10	2	14	18.288		G/R - A/B Trip relay operated	R phase Disc insulator punctured and Snapped on R phase CT terminal and main bus	NA	Cloudy	Supply tripped on Distance relay operated and R phase disc insulator punctured and snapped on R phase CT terminal and main bus. So kept under tripped position and done the re- stringing work. Charging Code from BPSO : 258 (Miss. Karma Yangdon)

Division:	SMD-DEOTHANG
Substation:	132/33/11kV Nangkor Substation
Month:	Sep-22

BPC/SMD/132kV NSS/2022/03/081 Date: 01.09.2022

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Weather Condition during the Outage	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)				
132kV Feeders																
1	Nangkor-Deothang Line	132kV	Tripping	04-09-22	03:45 hrs	04-09-22	03:59 hrs	0	14	42.8	MiCOMP40 Agile	Distance Relay Relay: Trip Ø ABC,start Ø ABCN. Start element-Distance, TOC start, distance trip-Z1, fault duration-60.09ms,Fault location=9.737KM. IA=1.612kA, IB=1.687kA, IC=1.608kA, VAN=7.243kV, VBN=7.228kV, VCN=7.926kV,fault resistance=433.1mΩ & trip relay 86 operated.	Tripped on fault	-	Heavy rainfall with thunder & lightning	Informed to BPSO & charged the feeder
2	Nangkor-Deothang Line	132kV	Tripping	04-09-22	05:41 hrs	04-09-22	05:45 hrs	0	4	44.6	MiCOMP40 Agile	Distance Relay Relay: Trip Ø B,start Ø BN. Start element-Distance, TOC start, distance trip-Z1, fault duration-69.93ms,Fault location=20.88KM. IA=72.69A, IB=1.717kA, IC=206.7A, VAN=70.92kV, VBN=33.36kV, VCN=66.23kV,fault resistance=1.414Ω.	Tripped on fault	-	Heavy rainfall with thunder & lightning	Informed to BPSO & charged the feeder
3	Nangkor-Deothang Line	132kV	Tripping	04-09-22	05:51 hrs	04-09-22	10:17 hrs	4	26	44.6	MiCOMP40 Agile	Distance Relay Relay: Trip Ø B,start Ø BN. Start element-Distance, TOC start, distance trip-Z1, fault duration-69.93ms,Fault location=19.82KM. IA=3.878A, IB=1.978kA, IC=5.064A, VAN=70.74kV, VBN=34.1kV, VCN=67.37kV,fault resistance=1.356Ω.	Tripped on fault	-	Heavy Rainfall	Informed to BPSO & as instructed test charged at 05:56 hrs & 06:50 hrs but couldn't stand showing same fault.
4	Nangkor-Deothang Line	132kV	Tripping	04-09-22	23:55 hrs	05-09-22	15:08 hrs	15	13	48.0	MiCOMP40 Agile	Distance Relay Relay: Trip Ø B,start Ø BN. Start element-Distance, TOC start, distance trip-Z1, fault duration-59.95ms, relay trip time- 79.93ms,Fault location=20.88KM. IA=124.7A, IB=1.763kA, IC=250.5A, VAN=70.67kV, VBN=33.84kV, VCN=66.95kV,fault resistance=3.107Ω.	Tripped on fault	-	Heavy Rainfall	Informed to BPSO & as instructed test charged at 23:59 hrs & 00:21hrs of 05/09/2022 but couldn't stand showing same fault.
5	132/33kV,5MVA-I	132kV	Tripping	08-09-22	11:22 hrs	08-09-22	11:24 hrs	0	2	0.54	-	Tripping relay 86 operated	Tripped on feeder fault	-	Cloudy	Tripped at the instant of 33kV Yurung feeder tripping
6	132/33kV,5MVA-II	132kV	Tripping	08-09-22	11:22 hrs	08-09-22	11:25 hrs	0	3	0.36	Non directional PROTN Relay operated	O/C relay-50A & trip relay 86 operated	Tripped on feeder fault	-	Cloudy	Tripped at the instant of 33kV Yurung feeder tripping
7	132/33kV,5MVA-I	132kV	Tripping	08-09-22	12:52 hrs	08-09-22	12:55 hrs	0	3	0.45	Non directional PROTN Relay operated	O/C relay-50A & trip relay 86 operated	Tripped on feeder fault	-	Cloudy	Tripped at the instant of 33kV Yurung feeder tripping
8	132/33kV,5MVA-II	132kV	Tripping	08-09-22	12:52 hrs	08-09-22	12:56 hrs	0	4	0.27	Non directional PROTN Relay operated	O/C relay-50A & trip relay 86 operated	Tripped on feeder fault	-	Cloudy	Tripped at the instant of 33kV Yurung feeder tripping
9	Nangkor-Deothang Line	132kV	Tripping	22-09-22	04:20 hrs	22-09-22	08:59 hrs	4	39	46.4	MiCOMP40 Agile	Trip Ø B,start Ø BN. Start element-Distance, TOC start, distance trip-Z1, fault duration-75.00ms, relay trip time- 80.0ms,Fault location=20.8KM towards Deothang. IA=14.2A, IB=1.779kA, IC=241.5A, VAN=69.6kV, VBN=33.32kV, VCN=65.9kV,fault resistance=3.1141Ω.	Tripped on fault	-	Rainfall	Informed to BPSO & test charged at 04:24 hrs & 07:09 hrs, but couldn't stand.
10	Nangkor-Deothang Line	132kV	Tripping	23-09-22	07:08 hrs	23-09-22	07:38 hrs	0	10	33.9	MiCOMP40 Agile	Trip Ø ABC,start Ø BN. Start element-Distance, TOC start, distance trip-Z2,AR lock out shot>, fault duration-396.6ms, relay trip time- 79.99ms,Fault location=23.12KM towards Deothang. IA=10.24A, IB=1.184kA, IC=254.1A, VAN=67.83kV, VBN=25.96kV, VCN=64.81kV,fault resistance=4.001Ω. Fault zone-2	Tripped on fault	-	Rainfall	Informed to BPSO & charged the feeder.

Division:	SMD-DEOTHANG
Substation:	132/33/11kV Nganglam Substation
Month:	Sep-22

SL.No	Substation Name (Select from list)	Feeder Name (Select from list)	Outage Reason (Select from list)	Fault Location (Select from list)	Tripping Date & Time (dd/mm/yyyy hh:mm:ss)	Normalization Date & Time (dd/mm/yyyy hh:mm:ss)	Customers affected (Yes/No)?	Remarks	Outage Duration(hh:mm:ss)	Outage in Minuts(ri)	No. of Customers Interrupted (Ni)
3	Nganglam	132/33kV, 3MVA Transformer-2	Fault	Transmission Line	02-09-22 18:01	02-09-22 18:05	No	Trippped due to 33kv Panabng feeder	0:04:00	4	0
14	Nganglam	132kV Nganglam-Tintibi	Fault	Transmission Line	08-09-22 11:29	08-09-22 11:42	No	feeder tripped due to earth fault. 86 relay operated,IA=472.7A,IB =57.17A,IC=74.40A,I N=630.1A,VAN=109. 6kv VBN=77.98kv VCN=125.2kv	0:13:00	13	0
15	Nganglam	132kV Nganglam-Tintibi	Fault	Transmission Line	08-09-22 12:03	08-09-22 12:09	No	Fdr Tripped due to Earth fault. 86 relay operated,IA=382.7A,IB =55.87A,IC=66.53A,I N=638.7A.	0:06:00	6	0
52	Nganglam	132kV Nganglam-Tintibi	Fault	Transmission Line	23-09-22 5:18	23-09-22 5:23	No	Tripped on Overcurrent. Fault details; IA-1.435KA IB- 1.360KA IC- 1.352KA IN-253.5A Fault duration 73.31ms Relay Trip Time 79.98ms Fault Location 4.689km Fault resistance 513.6ms A/R Lookout	0:05:00	5	0
53	Nganglam	132kV Nganglam-Tintibi	Fault	Transmission Line	23-09-22 5:30	23-09-22 12:48	No	Tripped on Overcurrent. Fault detacs; IA-1.352KA IB- 1.279KA IC-1.203KA IN-118.9A Fault duration 73.28ms Relay Trip Time 79.94ms Fault Location 4.913km Fault Resistance 643.8ms	7:18:00	438	0
55	Nganglam	132kV Nganglam-DCCL Factory	Fault	Transmission Line	23-09-22 5:47	23-09-22 5:53	Yes	Over Current	0:06:00	6	1
63	Nganglam	132kV Nganglam-Tintibi	Fault	Transmission Line	25-09-22 2:38	25-09-22 2:49	No	Earth Fault	0:11:00	11	0

Division:	SMD-DEOTHANG
Substation:	132/33kV Motanga Substation
Month:	Sep-22

03/BPC/SMD/MSS/2022/272 Date: 01.08.2022

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Weather Condition during the Outage	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)				
132kV Feeders																
1	15MVA Transformer	132/33kV	Tripping	01-09-22	15:27 hrs	01-09-22	15:32 hrs	0	5	0.37	RET650, transformer differential relay	Tripped on E/F & O/C : IL1= 5.25A, IL2= 6.86A, IL3= 174.36A, Frequency= 49.98Hz & tripping relay 86A & SEF operated at our end.	-	-	sunny	Transformer was tripped while charging of 33kV S/jonkhar feeder. Charged after receiving verbal instruction from BPSO.
2	15MVA Transformer	132/33kV	Tripping	01-09-22	16:53 hrs	01-09-22	15:58 hrs	0	5	0.25	RET650, transformer differential relay	Tripped on E/F & O/C : IL1= 4.44A, IL2= 6.17A, IL3= 180.16A, Frequency= 49.98Hz & tripping relay 86A & SEF operated at our end.	-	-	sunny	33kV S/jonkhar feeder was test charged, and the transformer was tripped while test charging the feeder.
3	15MVA Transformer	132/33kV	Tripping	02-09-22	16:46 hrs	02-09-22	16:50 hrs	0	5	0.31	DEFLPDEF1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 0.012xIn, IL2= 0.014xIn, IL3= 0.463xIn, Frequency= 50.11Hz & tripping relay 86A & SEF operated at our end.	-	-	sunny	tripped while charging 33kV S/jonkhar feeder.
4	15MVA Transformer	132/33kV	Tripping	04-09-22	23:50 hrs	04-09-22	23:54 hrs	0	4	1.04	RET650, transformer differential relay	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 171.04A, IL2= 17.17A, IL3= 18.23A, Frequency= 50.10Hz & tripping relay 86 operated.	Tripped by transient fault	-	Heavy Rainfall	charged verbally by the instruction of BPSO.
5	Deothang Feeder	132kV	Tripping	04-09-22	00:18 hrs	04-09-22	00:24 hrs	0	6	-43.21	DPHLPDOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 3.837xIn, IL2= 3.738xIn, IL3= 3.553xIn, Frequency= 50.11Hz & tripping relay 86A operated at our end.	Tripped by transient fault	-	Rainfall	Charged by verbal instruction from BPSO.
6	15MVA Transformer	132/33kV	Tripping	06-09-22	9:30 hrs	06-09-22	9:33 hrs	0	3	1.25	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 0.575xIn, IL2= 0.949xIn, IL3= 0.469xIn, Frequency= 50.10Hz & tripping relay 86A operated at our end.	Transient fault	-	sunny	charged after obtaining verbal clearance from BPSO.
7	15MVA Transformer	132/33kV	Tripping	09-09-22	7:32 hrs	09-09-22	7:35 hrs	0	3	2.94		Fault values not recorded by the relay. Frequency= 50.10Hz & tripping relay 86A & SEF operated at our end.	-	-	sunny	-
8	15MVA Transformer	132/33kV	Tripping	10-09-22	14:11 hrs	10-09-22	14:11 hrs	0	3	1.43	EFHPTOC1, REF615	***Directional -O/C & E/F Relay:*** Tripped on E/F & O/C : IL1= 0.487xIn, IL2= 0.472xIn, IL3= 0.019xIn, Frequency= 50.12Hz & tripping relay 86A operated at our end.	Transient fault	-	cloudy	-
9	15MVA Transformer	132/33kV	Tripping	16-09-22	15:52 hrs	16-09-22	16:11 hrs	0	19	1.34		Fault values not recorded by the relay. Frequency= 50.11Hz & tripping relay 86A & SEF operated at our end.	Transient fault	-	rainfall	-
10	15MVA Transformer	132/33kV	Tripping	22-09-22	19:36 hrs	22-09-22	19:39 hrs	0	3	0.34		Fault values not recorded by the relay. Frequency= 50.11Hz & master tripping relay 86A operated.	Transient fault	-	sunny	charged after obtaining verbal clearance from BPSO.
11	15MVA Transformer	132/33kV	Tripping	29-09-22	04:16 hrs	29-09-22	04:19 hrs	0	3	0.14		Fault values not recorded by the relay. Frequency= 50.12Hz & master tripping relay 86A operated.	-	-	sunny	charged after obtaining verbal clearance from BPSO.

Division:	SMD-DEOTHANG
Substation:	132/33kV Corlung Substation
Month:	Sep-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Weather Condition during the Outage	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protecton Relay Optd	Fault Details (As recorded by relay)				
6	132 kV Kanglung Feeder	132 kV	Tripping	08-09-22	15:55 hrs	08-09-22	18:08 hrs	2	13	19.720	Distance Relay (P442) and Back up Relay (P14D)	**Distance Relay (P442)** operated on Zone 1 trip, Recorded fault values : Started phase-ABCN, Tripped phase-A, Started elements Distance,Over voltage start V>1, Distance Trip Z 1, V<1 Alarm, System Frequency 49.89, fault duration-3.341 ms, relay trip time-80.18 ms, fault location-16.15 km, IA-905A, IB-81.11A, IC-107.5A, VAN-12.45 kV, VBN-78.93kV, VCN-75.54 kV. Fault Resistance 3.227 Ohm, Fault in Zone-Zone 1 **Backup Relay (P14D)** : Started phase-AN, OC strated I>I< 1, EF 1 start IN1>> 1, System Frequency 49.90 Hz, IA-918.5A, IB-79.89A, IC-110.1 A, VAB-83.79 KV, VBC-132.5 KV,VCA-84.09 KV, IN-877.7 A, IN Derived-877.2A, VAN-12.26kV, VBN-78.82 kV, VCN-75.43kV, VN-67.24 kV.	Disc insulator puncture at Kanglung Substation		Cloudy	At 15.55 hrs Kanglung Feeder was trip and informed to BPSO .As per information from BPSO disc insulator was punctured at Kanglung Substation. Line was charged at 18:08 hrs after rectrifying the fault at Kanglung Substation.

Division:	SMD-DEOTHANG
Substation:	132/33kV Phuntshothang Substation
Month:	Sep-22

Sl. No.	Name of Feeder	Voltage Level	Type of Outage (Shutdown/Tripping)	Shutdown/Tripping Time		Normalization Time		Duration of Outage		MW before Outage (MW)	Tripping Details		Type/Cause of Fault	Reason for Shutdown	Weather Condition during the Outage	Remarks
				Date	Time	Date	Time	(Hrs)	(Min)		Protection Relay Optd	Fault Details (As recorded by relay)				
27	Kanglung (1K7LA)	132kV	Trip on Fault	08-09-22	15:55	08-09-22	18:09	2	14	18.19	Zone-2 OPTD, R-PH TRIP, OV/UV TRIP, 86A and 86B	Fault value,IL1: 889.23A,IL2:240.81A,IL3: 69.5A,IL0: 590.99A.	Over current	Nill	Cloudy	At 15:55 breaker got open and after clearing the fault at Kanglung Substation. Line charged at 18:09 codination with Kanglung end after reciving closing code#258 issued by MISS Karma Yangdzn(BPSO).

1. 400/220/132/33kV Jigmeling Substation

Sl. No.	Date of Tripping	Time of Outages/ Time of Tripping	Date of Normalization	Time of Fault was Cleared	Duration of Outages (Hrs)	MW before Outage (MW)	Name of feeder	Name of the Substation/lines Affected by the Fault	Reasons of Fault	Relay Operations	Fault Location(KM)	Type of outages	Remarks
i) 132kV Above													
1	09.09.2022	09:44 hrs	09.09.2022	10:28 hrs	0	178.76	400kV Interim Circuit-1	Alipurduar	DTT	RYB phase pickup	Fault current: I1 = 0.26kA, I2 = 0.3kA, I3 = 0.26kA		
2	22.09.2022	05:54 hrs	22.09.2022	10:02 hrs	4	-315.6	400kV Mhpa line 5	Alipurduar	Over voltage	Over voltage			
3	22.09.2022	04:45 hrs	2.09.2022	06:33 hrs	1	307.74	400kV Alipur Direct line-2	Alipurduar	RY pickup	RY pickup, Ground pickup, Z2 optd	Main 1 Fault current; I1=2.43kA, I2=1.38kA, I3=3.0kA, Fault Dist = -56.5km Main 2 Fault current; I1=2.38kA, I2=2.97kA, I3=1.330kA, Fault Dist = -56.4km		
4	22.09.2022	05:54 hrs	22.09.2022	07:51 hrs	1	391.96	400kV Alipur Direct line-1	Alipurduar	Over voltage	Over voltage			
5	4.09.2022	02:47hrs	24.09.2022	04:41hrs	1	-292.33	400kV Mhpa line 1	Alipurduar	Over voltage	Over voltage	Over voltage, RYB tripped, zone 1 optd,		
6	24.09.2022	02:47hrs	24.09.2022	04:25hrs	1	-4.01	500MVA ICT		Over voltage	Over voltage	RYB phase tripped		
7	24.09.2022	03:10hrs	24.09.2022	04:27hrs	1	-292.33	400kV MHPA line 3	Alipurduar	Over voltage	Over voltage	RYB phase tripped, zone 1 opted.		
8	24.09.2022	03:10hrs	24.09.2022	03:25hrs	0	214.41	400kV Alipur Direct line-1	Alipurduar	Over voltage	Over voltage	RYB phase tripped on Over voltage		
9	24.09.2022	03:10hrs	24.09.2022	05:05hrs	1	213.3	400kV Alipur Direct line-2	Alipurduar	Over voltage	Over voltage	RYB phase tripped on over voltage		
10	22.09.2022	05:54 hrs	22.09.2022	06:04 hrs	0	-20.480	80MVA ICT -2	Jigmeling SS	LV SEF trip	Relay General Trip, LV SEF trip			
11	2.09.2022	05:54 hrs	22.09.2022	07:05 hrs	1	-20.110	80MVA ICT - 1	Jigmeling SS	LV SEF trip	Relay General Trip, LV SEF trip			
12	08.09.2022	18:38hrs	08.09.2022	18:48hrs	0	62.1	132kV Tintibi Feeder	Tintibi	Earth fault	Rand Y ph trip, Rph to ground fault	41.5km	transient	
13	2.09.2022	04:56 hrs	2.09.2022	05:08 hrs	0	61.69	132kV Tintibi Feeder	Tintibi	R,Y,B phase loop	Main 1 (R,Y & B phase trip , Z1/ZB trip, zone 1 trip	Main 1 Fault current; Ia=3.95kA, Ib=3.72kA, Ic=0.03kA Fault Dist = 24.1km		
14	22.09.2022	05:20 hrs	22.09.2022	05:29 hrs	0	61.69	132kV Tintibi Feeder	Tintibi	R,Y,B phase loop	Main 1 (R,Y & B phase trip , Z1/ZB trip, zone 1 trip	Main 1 Fault current; Ia=3.5kA, Ib=3.69kA, Ic=3.61kA Fault Dist = 31.9km		
15	22.09.2022	06:01 hrs	22.09.2022	11:48 hrs	5	19.86	132kV Tintibi Feeder	Tintibi	R,Y,B phase loop	Main 1 (R,Y & B phase trip , Z1/ZB trip, zone 1 trip	Main 1 Fault current; Ia=1.22kA, Ib=0.19kA, Ic=1.361kA Fault Dist = 25.3km		Line charged from Tintibi end, due to voltage issue CB at Jigmeling end kept opened as per BPSO instruction and line was taken shutdown by TMD
16	24.09.2022	02:47hrs	24.09.2022	03:29hrs	0	24.6	132kV Tintibi Feeder	Tintibi	Due to over voltage	Main 1 &2 picked up, RYBphase tripped on over voltage			

2. 220/66/33kV Dhajay Substation													
i) 66kV and above													
1	12.09.2022	19:19hrs	12.09.2022	19:33hrs	0		220kV Bus Coupler	Dhajay Substation		50/51N Relay	Substation	Tripped	Feeder restored after O&M head ,ESD Tsirang confirmed line clerance.
2	24.09.2022	3:10hrs	24.09.2022	3:21hrs	0	19.72	Tsirang-Jigmeling Feeder	Dhajay Substation	over current	Distance relay main-2(21.2)-Ia=634.03A, Ib=653.65A, Ic=729.24A, In=41.91A	Substation	Tripped	Feeder restored after O&M head ,ESD Tsirang confirmed line clerance.
3. 132/66/33/11kV Gelephu Substation													
i) 66kV and above													
1	07.09.2022	09:30hrs	09.09.2022	16:45hrs	31	18	Gelephu-Jigmeling.	Non	shutdown taken by SMG,Jigmeling	Non	Gelephu Substation	Temporary	Shutdown taken to shift the Jigmeling Panel towards Salakati Panel (Rearrangement of Panels due to Substation upgradation works)
2	24.09.2022	03:09hrs	24.09.2022	03:35hrs		16	phu-Salakati & Jigm	Gelephu & Jigmeling.	Grid fail	86 relay operated.	Salakati line	Temporary	Supply extended from Jigmeling at 03.22hrs
4. 132/33kV Tintibi Substation													
i) 66kV & Above													
1	08.09.2022	11:29hrs	08.09.2022	11:45hrs	0	12.43	kV Tingtibi-nanglam	32kV Tingtibi-nanglam F	Tempoary Fault	Distance Relay:Start Phase:ABC,Trip Phase:ABC,Fault zone-1 trip,Fault location:XY 21.16 kM.	21.16kM	Tempoary	
2	08.09.2022	12:04hrs	08.09.2022	12:12hrs	0	11.74	kV Tingtibi-nanglam	32kV Tingtibi-nanglam F	Tempoary Fault	Distance Relay:Start Phase:AN,Trip Phase:ABC,Fault zone-1 trip,Fault location:XY 18.78 kM.	XY 18.79	Tempoary	
3	22.09.2022	04:56hrs	22.09.2022	05:08hrs	0	-59.76	kV Tingtibi-Jigmeling	32kV Tingtibi-Jigmeling F	Tempoary Fault	Distance Relay:Start Phase:ABN,Trip Phase:ABC,Fault zone-1 trip,Fault location:20.22kM .	20.22	Tempoary	
4	22.09.2022	05:20hrs	22.09.2022	05:29hrs	0	-59.76	kV Tingtibi-Jigmeling	32kV Tingtibi-Jigmeling F	Tempoary Fault	Distance Relay:Start Phase:ABC,Trip Phase:ABC,Fault zone-1 trip,Fault location:17.64kM .	17.64	Tempoary	
5	22.09.2022	06:01hrs	22.09.2022	06:37hrs	0	-19.58	kV Tingtibi-Jigmeling	32kV Tingtibi-Jigmeling F	Tempoary Fault	Distance Relay:Start Phase:ACN,Trip Phase:ABC,Fault zone-1 trip,Fault location:17.64kM	17.64	Tempoary	
6	23.09.2022	03:48hrs	23.09.2022	03:53hrs	0	27.8	kV Tingtibi-nanglam	32kV Tingtibi-nanglam F	Tempoary Fault	Distance Relay:Start Phase:BN,Trip Phase:ABC,Fault zone-1 trip,Fault location:35.22 kM.	35.22	Tempoary	
7	23.09.2022	05:18hrs	23.09.2022	05:22hrs	0	33.41	kV Tingtibi-nanglam	32kV Tingtibi-nanglam F	Tempoary Fault	Distance Relay:Start Phase:ABC,Trip Phase:ABC,Fault zone-1 trip,Fault location:41.29kM	41.29	Tempoary	
8	23.09.2022	05:30hrs	23.09.2022	12:49hrs	7	33.41	kV Tingtibi-nanglam	32kV Tingtibi-nanglam F	Tempoary Fault	Distance Relay:Start Phase:ABCN,Trip Phase:ABC,Fault zone-1 trip,Fault location:37.48kM	37.48	Tempoary	
9	25.09.2022	02:38hrs	25.09.2022	02:50hrs	0	20.52	kV Tingtibi-nanglam	32kV Tingtibi-nanglam F	Tempoary Fault	Distance Relay:Start Phase:AN,Trip Phase:ABC,Fault zone-1 trip,Fault location:34.01kM	34.01	Tempoary	
10	28.09.2022	22:38hrs	28.09.2022	22:44hrs	0	43.27	kV Tingtibi-nanglam	32kV Tingtibi-nanglam F	Tempoary Fault	Distance Relay:Start Phase:AN,Trip Phase:ABC,Fault zone-1 trip,Fault location:30.10kM	30.1	Tempoary	
5. 132/33kV Yurmoo Substation													
i) 66kV & Above													
1	08.09.2022	18:40hrs	08.09.2022	18:47hrs	0	-32.9	132kV Tingtibi I/C	Yurmoo Ss	O/C Y&B	86 relay optd	Yurmoo Ss		
2	17.09.2022	02:33hrs	17.09.2022	02:40hrs	0	-35.9	132kV Tingtibi I/C	Yurmoo Ss	Undervoltage	86 relay optd	Yurmoo Ss		Charged as per the BP
3	21.09.2022	09:31hrs	21.09.2022	09:36hrs	0	-30.3	40MVA Trf-1	Yurmoo Ss	NCT wiring	86 relay optd	Yurmoo Ss		Charged as per the BP
4	22.09.2022	06:02hrs	22.09.2022	06:07hrs	0	-37.5	132kV Tingtibi I/C	Yurmoo Ss	Undervoltage	86 relay optd	Yurmoo Ss		Charged as per the BP
5	23.09.2022	04:46hrs	23.09.2022	05:00hrs	0	-37.5	40MVA Trf-1	Yurmoo Ss	NCT wiring	86 relay optd	Yurmoo Ss		Charged as per the BP
6	23.09.2022	04:47hrs	24.09.2022	04:49hrs	0	-36.5	132kV MHPA Line 2	Yurmoo Ss	Grid fail	Nill	MHPA		On dated:- 24.09.2022
6. 220/33kV Dagapela Substation													
i) 66kV & Above													
1	13.09.2022	15:05hrs	13.09.2022	15:12hrs	0	26.28	Transformer II	Dagapela SS	Heavy rainfall	Master trip relay A & B	DagapelaSS Switchyard		Transformer II restored

Annexure-VI

Western grid Outages

July 2021

Sl No.	Date of Tripping	Time of outages	Date of Normalization	Time of fault was cleared	Duration of Outages (Hrs)	MW before outage (MW)	Feeder Name	Name of the Substation/lines affected by the fault	Reasons of fault	Relay operations	Exact location of fault [Line segment/ Substation]	Type of outages	Remarks
66kV & Above													
(A) 400/220/66/11 kV Malbase Substation													
1	01.07.22	7:46	01.07.22	8:06	0	551.27	400kV Malbase- Siliguri fdr.	Malbase Ss	O/C & E/F	Main I trip, Main II CAR-RCV, 2M3 trip, fuse fail	193km		IL1=1672A<303.7deg,IL2=748.2A<255.3deg,IL3=718.4A<133.1deg,IL4=1599 A<278.9deg
2	03.07.22	17:20	03.07.22	17:27	0	151.9	200kV Malbase - Chukha feeder	Malbase Ss	O/C & E/F	Zone 1 trip, AR lock out shut	Zone 1= 8.001km		IA=3.679kA, I2=3.967kA, I3=3.732kA
##	18.07.22	3:06	18.07.22	4:35	1	5.6	200kV Malbase - Samtse feeder	Dhamdum Ss	O/C on B phase	86 optd			IL1=75.95A<220.7deg,IL2=116.5A<235.2deg,IL3=2538A<41.95deg.IL4=2347 A<41.59deg.
##	20.07.22	8:20	20.07.22	9:09	0	226	400kV Malbase- Siliguri fdr.	Malbase Ss & Siliguri Ss	O/C on Y & B phase	Zone 1 trip	38.55km		IL1=750A, I2= 3939A, I3=3623A
##	23.07.22	17:11	23.07.22	17:23	0		66kV Bus Coupler	Malbase Ss	O/C				R=13737.24A, Y=11481.82A, B=14715.29A
##	23.07.22	17:11	23.07.22	17:25	0	22	66kV Pasakha feeder I	Malbase Ss	O/C				R=129.11A<-103.18deg, Y=1796.66A<139.38deg, B=1230.16A<17.55A
##	23.07.22	17:11	23.07.22	18:24	1	0	66kV pling feeder	Malbase Ss	O/C				R=11.26kA, Y=11.72kA, B=1.32kA
##	28.07.22	11:38	28.07.22	13:55	2	20	66kV Pasakha feeder I	Malbase Ss		IEF 50N_trip, 86 optd, general trip			IL1=210.56A<-82.05deg, IL2=925.15A<19.83deg, IL3=279.19A<90.05deg, IL4=976.52A<-156.85 deg
##	28.07.22	11:38	28.07.22	23:47	12	21	66kV Pasakha feeder II	Malbase Ss		51 Trip, 86 optd, General trip			IL1=0.19A< 0.05deg, IL2=656.02A<-156.39deg, IL3=662.70A<23.20deg, IL4=0.19A< 0.9 deg
##	28.07.22	11:38	28.07.22	23:47	12	23	66kV Pasakha feeder IV	Malbase Ss		IEF 50N_trip, 86 optd, general trip			IL1=809.15< 14.74deg, IL2=1657.84A<17.40deg, IL3=208.51A<53.29deg, IL4=809.15A< 14.74 deg
##	28.07.22	11:38	28.07.22	23:47	12		66kV Bus Coupler	Malbase Ss		IEF 50N_trip, 86 optd, general trip, IEF_50_trip			IL1=648.57A<-115.40deg,IL2=12463.04A< -131.23deg,IL3=236.83A<98.24deg,IL4=12947.29A< -131.26deg
##	28.07.22	11:38					66kV pling feeder	Malbase Ss	O/C	Trip phase N, Earth Fault 1, Trip IN1>3			IL1= 8.397A, IL2= 9.697kA, IL3= 3.560kA, IL4= 9.690kA, The feeder still under breakdown due to 400kV Tala feeder I conductor got snapped and touched on transmission line of said feeder.
(B)220/66/11 kV Singhigoan Substation													
1	17.07.22	3:32	17.07.22	3:45	0	0.897	220kV Singhi-Samtse Feeder	Singyegoan ss					couldnt download fault due to Digsi software communication problem.
##	28.07.22	23:39	28.07.22	23:44	0	4	66kV B/Concast feeder	Singyegoan ss					IL1=113.84kA, IL2= 58.93kA, IL3= 95.53kA
(B)66/33/11 kV Phuntsholing Substation													
1	03.07.2022	17:19	03.07.2022	17:26	0	-3.70	66kV Chukha-Pling feeder	66kV Chukha-Pling fdr		DSTN OPTD, 186&86	Tripped at both end		At 17:19hrs 66kV Chukha-Pling feeder got tripped from both end. At 17:26hrs normalised the above feeder after getting clearance from BPSO with charging code 1652.
##	12.07.2022	6:30	12.07.2022	6:34	0	1.15	10MVA Voltamps TRF (66/33kV)	10MVA Voltamps TRF (66/33kV)	Tripped		Substation		10 MVA Transformer and 33kV Incomer II got tripped due to fault on 33kV fdr IV,Serina Bosokha.
##	14.07.2022	17:09	14.07.2022	17:24	0	-3.27	66kV Chukha-Pling feeder and 66kV Pling-Gomtu feeder	Black out at Pling ss	Tripped at their end	Nill	Tripped at their end		66kV Chukha-Pling and 66kV Pling-Gomtu feeder got tripped at their end, no breaker operation at our end. At 17:24hrs normalised 66kV Chukha-Pling feeder from Chukha and at 17:27hrs normalised 66kV Gomtu feeder from Gomtu end.
##	15.07.2022	15:42	15.07.2022	15:44	0	1.93	10MVA Voltamps TRF (66/33kV)	10MVA Voltamps TRF (66/33kV)	Tripped	Nill	Substation		10 MVA Transformer and 33kV Incomer II got tripped due to fault on 33kV fdr IV,Serina Bosokha.
(D) 66/33/11 kV Gedu Substation													
1	03.07.2022	17:20	03.07.2022	17:28	0	1.72	66kV Gedu- Chukha	Blackout	Bad weather		Line segment		66kV supply failed from CHP. At 17:27hrs 66kV supply charged from Phuentsholing Substation.
	06.07.2022	9:02	06.07.2022	9:45	0	1.33	66/11kV 5MVA Tr.- I	Nil	Tighten transformer NCT		Substation		Work permit no 78 issued to Substation Head for NCT tightening work.
2	16.07.2022	18:58	16.07.2022	19:10	0	1.69	66kV Gedu- Chukha	Blackout			Line segment		66kV supply failed from CHP. At 19:10hrs 66kV supply restored from Chukcha.
3	31.07.2022	9:12	31.07.2022	9:27	0	1.5	66kV Gedu-Phuntsholing	Nil	Emergency shutdown at Phuntsholing end		Line segment		Emergency shutdown taken at Phuntsholing substation to rectify the hissing sound from line isolator.
(E) 66/33/11 kV Gomtu Substation													
1	11.07.2022	17:30	12.07.2022	10:50	17	0.01	66/33kV 5 MVA Transformer	Nil	over current	O/C with IDMT highset 50y and trip relay 86	Gomtu ss	Fault	Punctured bus insulator
2	14.07.2022	17:09	14.07.2022	17:29	0	-4.824	66kV Dhamdhum feeder	Gomtu Substation	Transient fault	Distance Relay Operated	Line segment	Transient fault	Charged the feeder as per the instruction given by BPSO
2	14.07.2022	17:09	14.07.2022	17:27	0	2.66	66kV Phuentsholing feeder	Gomtu Substation	Earth fault	IDMT EF operated	Line segment	Transient fault	Charged the feeder as per the instruction given by BPSO
3	16.07.2022	19:01	16.07.2022	19:11	0	-5.362	66kV Dhamdhum feeder	Gomtu Substation	Tripped from Dhamdhum end	Nil	Line segment	Transient fault	Tripped from Dhamdhum end and supply resumed at 19:11hrs
3	16.07.2022	19:01	16.07.2022	19:14	0	3.61	66kV Phuentsholing feeder	Phuentsholing substation	Earth fault	E/F 57NX	Line segment	Transient fault	Tripped on earthfault and charged the line as requested by BPSO and charge withstand
4	19.07.2022	09:15	19.07.2022	10:35	1	2.82	66kV Phuentsholing feeder	Nil	Spark on R phase CB terminal	Nil	Gomtu substation	Emmergency Shutdown	Availed emergency shutdown by SubStation Head against Work Permit No. 074, opening code 6868 and closing code 1751 from BPSO.
4	28.07.2022	18:56	28.07.2022	18:56	0	-7.634	66kV Dhamdhum feeder	Nil	B-Phase fault	Distance Relay Operated & A/R Operated, General trip,Zone One, trip, Z-Com trip & B-Phase fault	Line segment	Transient fault	Auto recloser operated and charged from Dhamdhum end at 19:09hrs of date 28.07.2022 against closing code 1854 from BPSO
(F) 220/66/33 kV Dhamdum Substation													
1	14.7.2022	17:10	14.7.2022	17:29	0	5.09	66kv Gomtu fdr	Gomtu	Heavy thundering,lightning,windy and raining at Gomtu area.	General trip,Zone 2 trip, Y phase fauly, vt fuse fail.	Heavy thundering,lightning,windy and raining at Gomtu area.	line fault	Feeder test after stopping the weather at gomtu area and consult with BOSO for test charging.
2	28.07.2022	18:56	28.07.2022	19:09	0	7.41	66kv Gomtu fdr	Gomtu	thundering,lightning,windy and raining at Samtse	General trip,Zone 1 trip, Y phase fauly	NA	line fault	REF670:General trip Zone 1,0/C on YØ Abs Dist: 2.39 Re I Dist: 15.92% Fault loop - L2N # Charged the feeder based upon the charging Code:1854, BPSO T/phu, moreover after normalization of rain fall
Sl. No.	**Date of Tripping**	**Time of outages**	**Date of Normalization**	**Time of fault was cleared**	**Duration of Outages (Hrs)**	**MW before outage (MW)**	**Feeder Name**	**Name of the Substation/lines affacted by the fault**	**Reasons of fault**	**Relay operations**	**Exact location of fault [Line segment/ Substation]**	**Type of outages**	**Remarks**
	(A) 66kV Chumdu switching station												
1	01.07.2022	1838hrs	01.07.2022	1843hrs		(-) 11.1MW	66kV Chukha Feeder	Paro substation	E/fault	Due to E/F IA 151.4A IB 681.6A IC 157.5A	66kV Transmission Line	Trip	
2						7.62MW	66kV Pangbasa Feeder	Pangbasa Substation	Transient fault	3Ph and General trip	66kV Transmission Line	Trip	
3				1925hrs		(-) 1.94MW	66kV Jemina Feeder	Paro and Pangbasa	Transient fault	3Ph and General trip	66kV Transmission Line	Trip	Kept feeder open as per BPSO.
4	26.07.2022	1058hrs	26.07.2022	1551hrs	4hrs	(-)2.1MW	66kV Jemina Feeder	Fed from 66kV Chukha Feeder	S/down	CB open, Line&Bus isolator open, E/switch closed	Jemina substation	S/down	S/down bu CNPD for checking the operation of Linne abd Bus isolators electrically as SCADA installation is in process at Jemina.
	(B) 66/33kV Watsa Substation												
1	07-01-22	189:38hrs	07-01-22	18:43hrs		.620MW	66KV IC	Fdr. I and II	66KV IC tripped at chukha end	66KV IC tripped at chukha end	66KV IC tripped at chukha end	Tripped	WTI tripped and reset the temperature to 75 with consultation with Mtc. Head SMD, and the line charged.
	(C) 66/33kV Olakha Substation												
1	21-07-22	17:15	21-07-22	17:35	0	6.19	66/33kV 20MVA, Transformer I	Only 66/33kV 20MVA, Transformer I was effected	Over current and earth fault	Earth Fault Over Current Operated	Line Segment	Taken Shut down	The 66kV Olakha-Changidaphu was taken shut down by Manager Chundu Gyentshen of TMD, with work permit no 2507 and also with the shutdown approval from BPSO Thimphu for removal of flag pole installed at the line near Dago Ex lympo area with breaker opening code 0820. The line was charged after completion of the work with closing code 1617 at 17:38hrs and stood normal
	(D) 66/33/11kV Lobeysa Substation												
	66kV LSA - Gewathang feeder												
1	07.07.2022	06:15hrs	07.07.2022	06:20hrs	0	-20.620	66kV LSA - Gewathang feeder	66/33/11kV Lobeysa substation		NA			66kV LSA - Gewathang feeder tripped at 06:15hrs and supply resumed at 06:20hrs and at the time of tripping No breaker or relay operated at Lobeysa end.
2	08.07.2022	19:49hrs	08.07.2022	19:50hrs	0	-17.970	66kV LSA - Gewathang feeder	66/33/11kV Lobeysa substation		NA			66kV LSA - Gewathang feeder tripped at 19:49hrs informed to BPSO and line charged at 19:50hrs from Gewathang ss and line extended to Dochula at 19:53hrs.
3	09.07.2022	02:18hrs	09.07.2022	02:18hrs	0	-18.720	66kV LSA - Gewathang feeder	66/33/11kV Lobeysa substation		Dist.relay operated(Zone 3 optd)			66kV LSA - Gewathang feeder tripped at 02:18hrs informed to BPSO and line charged at 02:19hrs from Gewathang ss and line extended to Dochula at 02:33hrs.
4	09.07.2022	12:23hrs	09.07.2022	12:24hrs	0	-20.240	66kV LSA - Gewathang feeder	66/33/11kV Lobeysa substation		Dist.relay operated(Zone 3 optd)			66kV LSA - Gewathang feeder tripped at 12:23hrs informed to BPSO and line charged at 12:24hrs from Gewathang ss and line extended to Dochula at 12:30hrs.
5	20.07.2022	19:53hrs	20.07.2022	19:56hrs	0	-23.050	66kV LSA - Gewathang feeder	66/33/11kV Lobeysa substation		Dist.relay operated(Trip B &C ,Zone 3 optd, IA-119.8A,IB-815.3,IC-686.1A)			66kV LSA - Gewathang feeder tripped at 19:53hrs informed to BPSO and line charged at 19:56hrs from Gewathang ss and line extended to Dochula at 20:01hrs.
	66kV LSA - Dochula feeder												
1	07.07.2022	06:15hrs	07.07.2022	06:20hrs	0	15.470	66kV LSA - Dochula feeder			NA			66kV LSA - Dochula feeder tripped at 06:15hrs and supply resumed at 06:20hrs and at the time of tripping No breaker or relay operated at Lobeysa end.
2	08.07.2022	19:49hrs	08.07.2022	19:53hrs	0	15.840	66kV LSA - Dochula feeder			NA			66kV LSA - Dochula feeder tripped at 19:49hrs informed to BPSO and line charged at 19:50hrs from Gewathang ss and line extended to Dochula at 19:53hrs.
3	09.07.2022	02:18hrs	09.07.2022	02:18hrs	0	16.120	66kV LSA - Dochula feeder			NA			66kV LSA -Dochula feeder tripped at 02:18hrs informed to BPSO and line charged at 02:19hrs from Gewathang ss and line extended to Dochula at 02:33hrs.
4	09.07.2022	12:23hrs	09.07.2022	12:24hrs	0	-20.240	66kV LSA - Dochula feeder			NA			66kV LSA - Dochula feeder tripped at 12:23hrs informed to BPSO and line charged at 12:24hrs from Gewathang ss and line extended to Dochula at 12:30hrs.
5	20.07.2022	00:42hrs	20.07.2022	00:51hrs	0	14.850	66kV LSA - Dochula feeder			Dist Trip B & Dist Trip C,Zone 3 optd			Supply was resumed from Gewathang ss at 00:47hrs .66kV LSA - Dochula feeder tripped at 00:42hrs informed to BPSO and line extended at 00:51hrs
6	20.07.2022	12:42hrs	20.07.2022	12:51hrs	0	14.850	66kV LSA - Dochula feeder			Dist Trip B & Dist Trip C,Zone 3 optd			Supply was resumed from Gewathang ss at 00:47hrs .66kV LSA - Dochula feeder tripped at 00:42hrs informed to BPSO and line extended at 00:51hrs
7	21.07.2022	17:16hrs	21.07.2022	17:20hrs	0	17.200	66kV LSA - Dochula feeder			Dist Trip B & Dist Trip C,Zone 3 optd			66kV LSA - Dochula feeder tripped at 17:16hrs informed to BPSOand supply was extended from Gewathang at 17:17hrs and line extended at 17:20hrs towards Dchula.

	(F) 66/33/11kV Jemina Substation												
66 kV side Tripping													
1	01.07.2022	18:39	01.07.2022	18:45	0	-3.870	66 kV Changedaphu	Black out	Earth fault	Non direcctional E/F operated	Line Segment	Transient	
2	01.07.2022	18:39	01.07.2022	19:26	0	1.950	66 kV Chumdo	Black out	Earth fault	Non direcctional E/F operated	Line Segment	Transient	Wheather lightninig at Chumdo end as per the BPSO personnel.
	(G) 66/33/11kV Dechencholing substation												
1	01.07.2022	18:20Hrs	01.07.2022	18:37hrs	0	-21.48	66KV IC	All whole ss	Supply failed from source				
2	20.07.2022	00:42Hrs	20.07.2022	00:48hrs	0	-21.29	65KV IC	All whole ss	Supply failed from source				
	(H) 66/11kV Haa Substation												
1	01-07-22	18:36	01-07-22	18:48	0	-1.68	All	unknown	O/C	pangbesa	Tripped from Pangbesa end		
2	14-07-22	0:44	14-07-22	0:59	0	-0.66	All	unknown	O/C	pangbesa	Tripped from Pangbesa end		
3	14-07-22	3:57	14-07-22	4:23	0	-0.56	All	unknown	O/C	pangbesa	Tripped from Pangbesa end		
4	15-07-22	1:57	15-07-22	3:10	1hr	-0.63	All	unknown	O/C	pangbesa	Tripped from Pangbesa end		
5	18-07-22	3:55	18-07-22	4:12	0	-0.51	All	unknown	O/C	pangbesa	Tripped from Pangbesa end		
	(I) 220kV Substation Semtokha												
1	01-07-22	18:21hrs	01-07-22	18:26hrs			66/33kV 20MVA-1 transformer	Semtokha Substation	REF Trip	REF Trip,	Transient fault	Trasient	
2	01-07-22	18:21hrs	01-07-22	18:37hrs		21.81	66kv Semtokha- Dechencholoing Line	Dechencholing and Damji Substation	Distance protection Optd., Zone 1, Trip B	Distance protection Optd., Zone 1, Trip B	Transient fault	Trasient	
3	07-07-22	06:15hrs	07-07-22	06:21hrs		49.05	66kv Semtokha-Dochula Line	Dochula s/s	Directional earth fault protection operated	OC/EF Optd, IN<<2 trip	Transient fault		
4	07-07-22	06:15hrs	07-07-22	06:21hrs		49.05	66kv Semtokha- Dechencholoing Line	Dechencholing and Damji Substation	Broken Conductor	Distance protection Optd., BRC Trip	Transient fault		
5	08-07-22	19:49hrs	08-07-22	19:52hrs		45.95	66kv Semtokha-Dochula Line	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I>2 Trip	Transient fault		
6	09-07-22	02:19hrs	09-07-22	02:26hrs		47.18	66kv Semtokha-Dochula Line	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I>2 Trip	Transient fault		
7	09-07-22	12:23hrs	09-07-22	12:25hrs		45.81	66kv Semtokha-Dochula Line	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I>2 Trip	Transient fault		
8	20-07-22	00:44hrs	20-07-22	00:50hrs			66kv Semtokha-Dochula Line	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I>2 Trip , fault Current Ia=225.9A, Ib=5.745kA, Ic=5.574kA, In=17.49	Transient fault		
9	20-07-22	00:44hrs	20-07-22	00:55hrs			66kv Semtokha- Dechencholoing Line	Dechencholing and Damji Substation	Broken Conductor	Tripped on Broken Conductor, Fault Current I=131.3A, Ib=69.83A, Ic=84.01A			
10	20-07-22	19:53hrs	20-07-22	19:58hrs			66kv Semtokha-Dochula Line	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I>2 Trip , fault Current Ia=6.926A, Ib=5.734kA, Ic=5.544kA, In=0.00	Transient fault		
11	21-07-22	17:16hrs	21-07-22	17:31hrs			66kv Semtokha-Dochula Line	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I>2 Trip , fault Current Ia=151.7A, Ib=5.761kA, Ic=5.683kA, In=0.00	Transient fault		

)66/33/11kV Pangbesa substation													
1	01.07.2022	18:36Hrs	01.07.2022	18:48Hrs	0		Haa Line	Haa	Shutdown	Tripped on E/F & O/C	Pan-Haa	Transient	Replacement of HT Fuse
2	14..07.2022	00:44Hrs	14..07.2022	1:00Hrs	0	0.7	Haa Line	Haa	Tripping	Dir.O/C	Pan-Haa	Transient	Cloudy
3	14..07.2022	3:58Hrs	14..07.2022	4:13Hrs	0	0.7	Haa Line	Haa	Tripping	Dir.O/C	Pan-Haa	Transient	Cloudy
4	14..07.2022	4:16Hrs	14..07.2022	4:22Hrs	0		Haa Line	Haa	Tripping	Dir.O/C	Pan-Haa	Transient	Cloudy
5	15..07.2022	1:56Hrs	15..07.2022	2:10Hrs	0		Haa Line	Haa	Tripping	Dir.O/C	Pan-Haa	Transient	Cloudy,Charged did not again
6	15..07.2022	2:10Hrs	15..07.2022	2:17Hrs	0		Haa Line	Haa	Tripping	Dir.O/C	Pan-Haa	Transient	Cloudy,Charged again,did not stand
7	15..07.2022	2:19Hrs	15..07.2022	2:39Hrs	0		Haa Line	Haa	Tripping	Dir.O/C	Pan-Haa	Transient	Cloudy,Charged again,did not stand
8	15..07.2022	2:39Hrs	15..07.2022	2:49Hrs	0		Haa Line	Haa	Tripping	Dir.O/C	Pan-Haa	Transient	Cloudy,Charged again,did not stand
9	15..07.2022	2:56Hrs	15..07.2022	3:08Hrs	0		Haa Line	Haa	Tripping	Dir.O/C	Pan-Haa	Transient	Cloudy,Charged Fault from Haa 11kV fdr.
10	18..07.2022	3:58Hrs	18..07.2022	4:07Hrs	0		Haa Line	Haa	Tripping	Dir.O/C	Pan-Haa	Transient	Cloudy
	(L) 66/33kV Damji Substation												
1	01.07.2022	1821 hrs	01.07.2022	1851 hrs	0	-4	66 kV Incoming Line	Whole Substation	Trip	NA			Transmission Line tripped from Semtokha Substation (B Phase Tripped)
2	07.07.2022	0615 hrs	07.07.2022	0621 hrs	0	-4.13	66 kV Incoming Line	Whole Substation	Trip	NA			Transmission Line tripped from Semtokha Substation
3	08.07.2022	1113 hrs	08.07.2022	1114 hrs	0	-4.02	66 kV Incoming Line	Whole Substation	Trip	NA			Transmission Line tripped from Dechencholing Substation due to installation of starter
4	20.07.2022	0044 hrs	20.07.2022	0048 hrs	0	-4.05	66 kV Incoming Line	Whole Substation	Trip	NA			Transmission Line tripped from Semtokha Substation
	(M) 66/11kV Dochula Substation												
1	07-07-22	6:15	07-07-22	6:23		-31.83	66kV Semtokha	Semtokha - Dochula	Transit fault	under voltage and 86 relay	Semtokha	Temporary	DHI
2	07-07-22	6:15	07-07-22	6:27		-30.24	66kV lobeysa	Lobeysa - Dochula	Transit fault	under voltage and 86 relay	Lobeysa	Temporary	DHI
3	09-07-22	19:48	09-07-22	19:57		-31.16	66kV Semtokha	Semtokha - Dochula	Transit fault	under voltage and 86 relay	Semtokha	Temporary	DHI
4	09-07-22	19:48	09-07-22	20:00		-29.55	66kV Lobeysa	Lobeysa - Dochula	Transit fault	under voltage and 86 relay	Lobeysa	Temporary	DHI
5	09-07-22	2:20	09-07-22	2:35		-31.92	66kV Semtokha	Semtokha - Dochula	Transit fault	under voltage and 86 relay	Semtokha	Temporary	DHI
6	09-07-22	2:20	09-07-22	2:47		-30.34	66kV lobeysa	Lobeysa - Dochula	Transit fault	under voltage and 86 relay	Lobeysa	Temporary	DHI
7	09-07-22	12.23	09-07-22	12.27		-31.88	66kV Semtokha	Semtokha - Dochula	Transit fault	under voltage and 86 relay	Semtokha	Temporary	DHI
8	09-07-22	12.23	09-07-22	12.35		-30.17	66kV lobeysa	Lobeysa - Dochula	Transit fault	under voltage and 86 relay	Lobeysa	Temporary	DHI
9	20-07-22	0.43	20-07-22	0.53		-29.67	66kV lobeysa	Lobeysa - Dochula	Transit fault	under voltage and 86 relay	Lobeysa	Temporary	DHI
10	20-07-22	0.43	20-07-22	0.55		-31.42	66kV Semtokha	Semtokha - Dochula	Transit fault	under voltage and 86 relay	Semtokha	Temporary	DHI
11	20-07-22	19:53	20-07-22	20:06		-29.96	66kV lobeysa	Lobeysa - Dochula	Transit fault	under voltage and 86 relay	Lobeysa	Temporary	DHI
12	20-07-22	19:53	20-07-22	19:59		-31.61	66kV Semtokha	Semtokha - Dochula	Transit fault	under voltage and 86 relay	Semtokha	Temporary	DHI
13	21-07-22	17:16	21-07-22	17:22		-30.28	66kV lobeysa	Lobeysa - Dochula	Transit fault	under voltage and 86 relay	Lobeysa	Temporary	DHI
14	21-07-22	17:16	21-07-22	17:32		-31.84	66kV Semtokha	Semtokha - Dochula	Transit fault	under voltage and 86 relay	Semtokha	Temporary	DHI

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Sl No.	Date of Tripping	Time of outages	Date of Normalization	Time of fault was cleared	Duration of Outages (Hrs)	MW before outage (MW)	Feeder Name	Name of the Substation/lines affected by the fault	Reasons of fault	Relay operations	Exact location of fault [Line segment/ Substation]	Type of outages	Remarks
66kV & Above													
(A) 400/220/66/11 kV Malbase Substation													
1	01.08.2022	19:07	01.08.2022	21:05	1	139	200MVA ICT	Malbase Ss	PRD OPTD	PRD Y- Phase, 86 OPTD			IL1=276.3A,IL2=259.4A,IL3=231.3
2	08.08.2022	7:23	08.08.2022	7:29	0	25	66kV Pasakha I	Malbase Ss	O/C on R-phase	86 OPTD, General trip IEF-50N trip	line		IL1=1825.53A<-13.31, I2=219.37A<-130.54, I3=505.41A<151.16, IL4=1176.84a<164.80
3	08.08.2022	7:23	08.08.2022	7:30	0	26	66kV Pasakha II	Malbase Ss	O/C on Y-phase	86 OPTD, General trip IEF-50N trip	line		IL1=.20A<132.92, I2=742.124<-55.73, I3=228.20A<-106.15
4	08.08.2022	7:23	08.08.2022	7:30	0	5.6	66kV Pasakha IV	Malbase Ss	O/C on R-phase	86 OPTD, General trip IEF-50N trip	line		IL1=2315.03A<-50.57, I2=292.37A<-98.58,IL3=180.51A<38.88
5	18.08.2022	14:57	18.08.2022	15:17	0	22	50/63 MVA Transformer I	Malbase Ss		86 OPTD,LBB-Trip,general Trip			IL1=110.88A<114.2 IL2=75.28A<174.65,IL3=313.80A<-52.28
6	18.08.2022	14:57	18.08.2022	1:12	10	23	50/63 MVA Transformer III	Malbase Ss		OLTC BUCH Trip,DIFF Trip,86 OPTD			IL1=140.56A,119.04,IL2=104.47A,166.39,IL3=189.88<120.21
7	18.08.2022	14:57	26.08.2022	16:59	194	59.2	220kV Malbase- Birpara fdr	Malbase Ss& Birpara SS		Zone 1 trip, AR OPTD	1.533KM		IL1=7.602KA, I2= 919.3A, I3=571.2A
8	18.08.2022	14:57	26.08.2022	17:12	194	70	220kv Malbase- Singhigoen fdr	Malbase Ss& Birpara SS		Dis Pickup I3 ON, Loop L3-Ef	.7Km		IL1=.00kA,IL2=0.01KA,IL3=7.76KA
9	18.08.2022	14:57	18.08.2022	15:17	0	22	66kV LV 606	Malbase Ss		51N START	S/S		R=171.26A<97.6, Y=182A<-130, B=310A<119, N=408.93A<127.99
10	19.08.2022	6:35	19.08.2022	6:50	0	64	200MVA ICT	Malbase Ss	Temporary fault	86 OPTD	S/S		IL1=.131A,IL2=.004A,IL3=.095A
11	19.08.2022	6:35	19.08.2022	7:51	1	11	220kVMalbase-Samtse fdr	Malbase Ss-Samtse	Temporary fault	87 OPTD	line		IL1=58.774A<69.27,IL2=36.41A<254.4,IL3=59.17A<187.2,IL4=50.52A<167.3
12	19.08.2022	6:35	19.08.2022	10:26	3	-79	220kVMalbase-Chukha fdr	Malbase Ss- ChukhaS/S	Strart R-phase,	87 OPTD	line		IL1=764.2A<249.9,IL2=223.4A<57.86<57.86,IL3=568A<38.75IL4=50.52A<330.3
13	19.08.2022	6:35	19.08.2022	7:59	1	44	50/63 MVA Transformer I	Malbase Ss		86 OPTD,BBP OPTD	S/S		IL1=.01A<249.9,IL2=.06A<-91.03,IL3=.03A<-140.11,IL4=.00A<-173.34
14	19.08.2022	6:35	19.08.2022	7:32	0	42	66kV Pasakha feeder I	Malbase Ss	O/C, E/F	IOC 50 Trip,IEF50N Trip,General Trip,86 OPTD	line		IL1=54.74A<-48.83,IL2=316.74A<-120.62,IL3=5859.39A<74.71,IN=5157.57A<-166.02
15	19.08.2022	6:35	19.08.2022	6:45	0			Malbase Ss	O/C, E/F	IEF 50N_trip, 86 optd, general trip, IEF_50_trip			IL1=6420.49A<54.29,IL2=639.18A<128.62,IL3=6485.32A<109.52,IN=7519.76A<113.68
16	20.08.2022	1:45	20.08.2022	5:03	3	18.4	220kVMalbase-Samtse fdr	Malbase Ss-Samtse	E/F	M1 Trip, R phase Trip,Zone 1 Trip, B/U Trip	30.3 KM		IL1=184.6A,IL2=3503A,IL3=102.2A,IN=3286A
17	21.08.2022	5:32	21.08.2022	5:42	0	17	220kVMalbase-Samtse fdr	Malbase Ss-Samtse	O/C on R phase and Y -phase	M1 Trip, Zone 1 Trip,			IL1=6883A,IL2=6477A,IL=131.4A,IN=5197A
18	21.08.2022	5:32	21.08.2022	5:40	0	66	200MVA ICT	Malbase Ss	Temporary fault	87 OPTD			IL1=199.3A<38.98,IL2=185.6A<-84.24,IL3=158.1A<-155.3
19	21.08.2022	11:09				41	50/63 MVA Transformer I	Malbase Ss	LBB & PRD oparated did not charged, keped under shutdown	LBB Trip, 86POTD	S/S		LI1=289.54A<-2.17,LI2=280.11A<24.48,IL3=314.28A<110.06
20	21.08.2022	11:09	21.08.2022	14:17	3		66kV Bus Coupler	Malbase Ss	O/C on R,Y& B Phase	51 Trip, 86OPTD	S/S		IL1=1762.53A,IL2=1743.75A<-119.75,IL3=1772.81<120.53,IL4=1753A<90.38
21	21.08.2022	11:09	21.08.2022	14:19	3	50	66kV pasakha IV	Malbase Ss	O/C	51 Trip, 86OPTD	line		IL1=786.4A,IL2=789.53A<-120.42,IL3=790.83A<120.11
22	21.08.2022	11:09	21.08.2022	14:18	3	44	66kV pasakha II	Malbase Ss	O/C	51 Trip, 86OPTD	line		IL1=.22A<.00,IL2=577.20A<75.72,IL3=602.78A<-102.18
23	21.08.2022	18:10	21.08.2022	18:16	0	24	200MVA ICT	Malbase Ss	Temporary fault	86 OPTD	c		IL1=.073A<192.4,IL2=.047A<72.17,IL3=.357A<-134.3
24	21.08.2022	11:29	21.08.2022	15:21	3	-12.65	66kV malbase- Phuntsholing	Malbase Ss-Phuntsholing S/S	O/C	O/C Trip I>1,E/f 1	line		IA=530.4A,IB=505A,IC=503.2A,IN=4467A
25	21.08.2022	18:10	21.08.2022	18:32	0	-31	220kVMalbase-Chukha fdr	Malbase Ss- ChukhaS/S	Temporary fault	86 optd>	line		IL1=80.05A<145.1,IL2=65.89A<21.98,IL3=67.44A<276,IL4=5887A<70.5
26	21.08.2022	18:10	21.08.2022	18:30	0	15	66kV Pasakha IV	Malbase Ss	O/C	IEF-50N-ON-trip,General trip,86trip	line		IL1=2345.55A<32.88deg,IL2=372.63A<73.8deg,IL3=233.33A<1.47deg
27	21.08.2022	18:10	21.08.2022	18:19	0	23	50/63 MVA Transformer III	Malbase Ss	Temporary fault	BBP optd,Differential opted.	S/S		IL1=26A<11.32deg,IL2=218.14A<120deg,IL3=203.78A<118.97deg
28	21.08.2022	18:10	21.08.2022	18:33	0	13	220kVMalbase-Samtse fdr	Malbase Ss-Samtse	Temporary fault	B/B Trip	line		IL1=52.76A<71.65deg,IL2=32.99A<262.8deg,IL3=44.16A<139.2degIL4=51.50A<114.8deg
29	23.08.2022	14:32	23.08.2022	14:35	0	31	50/63 MVA Transformer III	Malbase Ss	Temporary fault	86 optd,Differential opted.	S/S		IL1=183.68A<6.41deg,IL2=72.46A<20.01deg,IL3=102.60A<81.95degIL4=282.29A<20.16deg
30	23.08.2022	14:32	23.08.2022	14:47	0	3	220kVMalbase-Samtse fdr	Malbase Ss-Samtse	O/C on y phase and with E/F	Main-1protection trip<O/C relay trip<Loop-L2-N	line		IL1=92.18A<350.7deg,IL2=3733A<160.8deg,IL3=33.3A<14.36degIL4=3603A<161.5deg
31	23.08.2022	14:48	23.08.2022	16:18	1	3	220kVMalbase-Samtse fdr	Malbase Ss-Samtse	O/C on Y & B phase and with E/F	General trip<Main-1 trip	line		IL1=56.29A<323.8deg,IL2=4350A<171.9deg,IL3=4075A<34.8degIL4=3153A<102.6deg
32	26.08.2022	18:35	26.08.2022	18:47	0	33	50/63 MVA Transformer III	Malbase Ss	Temporary fault	86OPTD, 027 Trip, Diff Trip,	S/S		IL1=40.63A<59.53 deg, IL2=364.11A<-52.67 deg, IL3=279.86A<-170.42 deg IL4= 300.45A<-96.03 deg
33	26.08.2022	18:35	27.08.2022	14:47	20	26.08	220kV Malbase- Birpara fdr	Malbase Ss& Birpara SS	Birpara line LA got punctured.	Phase ABC, Distance zone 1 tripped, AR Lockout , Fault location= 589.3m.	line		IA= 772.5A, IB= 639.9A, IC= 7.441kA
34					0								
35					0								
(B)220/66/11 kV Singhigoan Substation													
1	17.07.22	3:32	17.07.22	3:45	0	0.897	220kV Singhi-Samtse Feeder	Singyegoan ss					couldnt download fault due to Digsi software communication problem.
2	18.07.22	12:00	18.07.22	13:56	1	0.02	11kV Feeder 1	Singyegoan ss					IL1= 9.05kA, IL2= 7.87kA IL3= 1.73kA
3	18.07.22	17:50	18.07.22	20:35	2	3226	11kV feeder 8	Singyegoan ss					IL1= 8.03kA, IL2= 7.95kA IL3= 0.05kA
4	19.07.22	10:40	19.07.22	10:42	0	0.13	11kV Feeder 1	Singyegoan ss		Transit Fault			IL1= .01kA, IL2= 0.01kA, IL3= 0.19kA
5	23.07.22	16:59	23.07.22	17:31	0	0.122	11kV Feeder 1	Singyegoan ss					IL1= 1.08kA, IL2= 0.01kA, IL3= 1.16kA
6	24.07.22	9:09	24.07.22	9:10	0	0.057	11kV feeder I	Singyegoan ss	o/c & E/F,IEF Trip, General trip				IL1=0.29kA, IL2= 0.01kA, Il3= 0.01kA
7	26.07.22	20:50	26.07.22	21:13	0	0.953	11kV feeder II	Singyegoan ss		Tripped on O/C Y&B Phase			IL1= 0.07kA, IL2= 3.54kA, IL3= 3.11kA
8	28.07.22	23:39	28.07.22	23:44	0	4	66kV B/Concast feeder	Singyegoan ss					IL1=113.84kA, IL2= 58.93kA, IL3= 95.53kA

(B)66/33/11 kV Phuntsholing Substation													
1	13.08.2022	18:36	13.08.2022	18:40	0	-4.77	66kV Chukha-Pling feeder	Black out at Pling ss			Tripped at chukha end		At 18:36hrs 66kV Chukha-Pling feeder got tripped from chukha end and 66kV Pling-Gomtu feeder got tripped at our end causing black out at Pling. At 18:40hrs normalised the 66kV Chukha-Pling from Chukha end and at 18:45hrs normalised 66kV Pling-Gomtu feeder after getting clearance from BPSO.
2	13.08.2022	18:36	13.08.2022	18:45	0	-1.04	66kV Pling-Gomtu fdr	Black out at Pling ss	Overcurrent	Ia- 995.7A, Ib-1.036kA,Ic-51.71A,VAB-4.560kV,VBC-54.00kV,VCA-57.51kV, INM-11.72A IND-12.38A	Tripped at our end		
3	14.08.2022		14.08.2022	14:24		Idle charge	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr					At 18:24hrs charged 66kV Pling-Malbase feeder which was under idle charge condition with closing code 111 from BPSO. At 18:59hrs opened CB of above fdr with opening code 0943 from BPSO and said feeder kept under idle charged conidition.
4	14.08.2022	14:26	14.08.2022	18:56	4	-1.57	66kV Pling-Gomtu fdr	66kV Pling-Gomtu fdr	Shutdown	Nill	Line		At 14:26hrs 66kV Pling-Gomtu feeder taken shut down by TMD,Pling against work permit no 004 with opening code 0941 from BPSO for RoW clearing between location PP# 2 to PP# 3. At 18:56hrs normalized with closing code 114 from BPSO.
5	18.08.2022	15:25	18.08.2022	15:32	0	-2.97	66kV Chukha-Pling feeder	Black out at Pling ss	Tripped at their end	Nill	Tripped at their end		Tripped at Chukha end.
6	18.08.2022	15:25	18.08.2022	15:45	0	-3.15	66kV Pling-Gomtu fdr	Black out at Pling ss	Earthfault	In>>, Ia- 54.61A, Ib-1.026kA,Ic-1.052kA,VAB-48.21kV,VBC-9.162kV,VCA-44.53kV, INM-638.4A IND-638.1A, Van-31.37kV, Vbn-17.13kV, Vcn--13.69kV	Substation		Tripped at our end. At 15:45hrs test charged after getting clearance from BPSO and stood normal.
7	18.08.2022		18.08.2022	15:28		Idle charge	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr					At 15:28hrs charged 66kV Pling-Malbase feeder which was under idle charge condition with closing code 134 from BPSO, since 66kV Chukha-Pling supply fail from Chukha end and 66kV Pling-Gomtu tripped at our end. At 15:57hrs opened CB of above fdr with opening code 0954 from BPSO and said feeder kept under idle charged conidition.
8	19.08.2022		19.08.2022	9:34		Idle charge	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr					At 09:34hrs as per instruction from BPSO charged 66kV Pling-Malbase feeder which was under idle charge condition with closing code 134 from BPSO due to voltage fluctuation. On dated 21.08.2022 at 11:39hrs opened CB of 66kV Pling-Malbase feeder with opening code 0961 from BPSO and feeder kept under idle charged condition.
9	21.08.2022	11:09	21.08.2022	11:29	0	-8.87	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder		DSTN OPTD, 186&86			Test charged as per instruction from BPSO with charging code 156 but didn't withstand. Informed to BPSO. At 11:29hrs test charged with same charging code as per instruction from BPSO and stood normal.
10	21.08.2022	11:09	21.08.2022	11:16	0	-8.97	66kV Pling-Gomtu fdr	66kV Pling-Gomtu fdr		operated only 186 & 86			At 11:16hrs test charged as per instruction from BPSO with charging code 157 and stood normal.
11	21.08.2022		21.08.2022	15:24		Idle charge	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr					At 15:24hrs as per instruction from BPSO charged 66kV Pling-Malbase feeder which was under idle charge condition with closing code 160 from BPSO. At 17:13hrs opened CB of 66kV Pling-Malbase feeder with opening code 0962 as per instruction from BPSO and feeder was put back to idle charged condition.
12	25.08.2022		25.08.2022	16:05		Idle charge	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr					At 16:05hrs as per instruction from BPSO charged 66kV Pling-Malbase feeder which was under idle charge condition with closing code 190 from BPSO. At 16:111hrs opened CB of 66kV Pling-Malbase feeder with opening code 09684 as per instruction from BPSO and feeder was put back to idle charged condition. The operation was carried out to build up the voltage.
13	26.08.2022		26.08.2022	9:51		Idle charge	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr					At 09:51 66 kV Pling -Malbase feeder charged from our end with charging code 196 from BPSO due to high rise in winding temperature of 50/63MVA transformwer II & III at Malbase end. At 17:31hrs opened CB of 66kV Pling-Malbase feeder with opening code 0986 from BPSO and said feeder was put back to idle charged condition.
(D) 66/33/11 kV Gedu Substation													
1	13.08.2022	18:35	13.08.2022	18:40	0	1.3	66kV Gedu-Chukha Feeder.	Black out	Tripped from Chukha end.		Line segment		66kV supply restored from Chukha end.
2	18.08.2022	15:26	18.08.2022	15:32	0	1.53	66kV Gedu-Chukha Feeder.	Black out	Tripped from Chukha end.		Line segment		66kV supply restored from Chukha end.
(E) 66/33/11 kV Gomtu Substation													
1	13.08.2022	18:35	13.08.2022	18:44	0	-9.279	66kV Dhamdum feeder	Whole Gomtu	Grid failed	Nil	Chukha		tripped from Dhamdhum end
2	13.08.2022	18:35	13.08.2022	18:45	0	0.96	66kV Gomtu-Phuntsholing	Whole Gomtu	Grid failed	Nil	Chukha		Tripped from pling end
##	18.08.2022	15:25	18.08.2022	15:37	0	-7.784	66kV Dhamdhum Line	Gomtu	Tripped	General tripped.	Gomtu SS	Tripped	Supply charged as per the BPSO Instruction.
(F) 220/66/33 kV Dhamdum Substation													
1	18.08.2022	14:56	24.08.2022	18:02	3	-3.16	Singeygoan	Dhamdum	heavy rain with wind	REL 670 trip	NA		Line tripped due to E/F on BØ faulty, Zone: 1(General trip) 400KV conductor snap and fall on 220KV line. So Fdr. Kept under shut down.
2	23.08.2022	14:33	23.08.2022	14:47	0	-13.12	220kV Malbase feeder	Dhamdum	heavy rain with wind	REL 670 trip	NA		Feeder tripped due to, Zone 1(General trip)R,Y,B Fault and VT fuse fail but only Breaker trip from Malbase end
3	23.08.2022	14:48	23.08.2022	16:18	1	-13.12	220kV Malbase feeder	Dhamdum	heavy rain with wind	REL 670 trip	NA		Feeder tripped from Malabase end.Relay indicated; Zone: 1(General trip),R,Y,B Fault and VT fuse fail only
4	24.08.2022	15:15	25.08.2022	13:34	22	6.74	50/63mva Transformer II	Dhamdum	sunny	shut down	NA		50/63MVA transformer II taken emergency shut down due to abnormal sound produced from the Circuit breaker RØ against work permit No:1598. BPSO shutdown code no. 0965
5	13.08.2022	18:35	13.08.2022	18:44	0	9.24	Gomtu	_	Transient fault	REC670	NA	-	Tripped on O/C.Fault current value 1) L1 : 2.250A 2) L2: 2.424A 3) L3: 2.318A 4) I0: 0.001A
6	18.08.2022	15:43	18.08.2022	15:53	0	8.2	Gomtu	_	Transient fault	REC670	NA	-	Tripped on O/C.Fault current value(Y & BØ) 1) L1 = 0.294A 2) L2 =1.998A 3) L3 = 1.965A 4) I0: 0.001A
7	23.08.2022	14:02	23.08.2022	14:05	0	9.2	66kV Gomtu feeder	_	Transient fault	REL 670 General trip,Zone2 trip,Bphase fault.	NA	-	Fault current value(BØ) I1= Fault mag.=162.22A, Fault angle=14.75deg. I2= Fault mag= 42.19A,Fault angle=145.01deg, I3=1882.45A,Fault angle= 43.65deg.
8	23.08.2023	14:02	23.08.2023	14:12	0	0	66kV Bus coupler	_	Transient fault	no relay operation	NA	-	Trip same time with Gomtu feeder.
	(B) 66/33kV Watsa Substation												
1	08-01-22	9:46hrs	08-01-22	10:06hrs		5.630MW	66/33KV, 8MVA transformer	Fdr. I and II	WTI tripped	WTI tripped	8MVA WTI tripped	Tripped	
2	08-02-22	7:19hrs	08-02-22	7:50hrs		5.900MW	66/33KV, 8MVA transformer	Fdr. I and II	WTI tripped	WTI tripped	8MVA WTI tripped	Tripped	
3	08-02-22	10:49hrs	08-02-22	11:15hrs		5.555MW	66/33KV, 8MVA transformer	Fdr. I and II	WTI tripped	WTI tripped	8MVA WTI tripped	Tripped	
4	08-03-22	13:04hrs	08-03-22	13:22hrs		5.304MW	66/33KV, 8MVA transformer	Fdr. I and II	WTI tripped	WTI tripped	8MVA WTI tripped	Tripped	
5	08-03-22	19:40hrs	08-03-22	19:52hrs		5.810MW	66/33KV, 8MVA transformer	Fdr. I and II	WTI tripped	WTI tripped	8MVA WTI tripped	Tripped	
6	08-05-22	8:19hrs	08-05-22	8:40hrs		5.380MW	66/33KV, 8MVA transformer	Fdr. I and II	WTI tripped	WTI tripped	8MVA WTI tripped	Tripped	
7	08-05-22	9:39hrs	08-05-22	10:02hrs		5.280MW	66/33KV, 8MVA transformer	Fdr. I and II	WTI tripped	WTI tripped	8MVA WTI tripped	Tripped	
8	08-05-22	10:56hrs	08-05-22	11:22hrs		5.280MW	66/33KV, 8MVA transformer	Fdr. I and II	WTI tripped	WTI tripped	8MVA WTI tripped	Tripped	
9	13/8/2022	17:50hrs	13/8/2022	17:56hrs		.450MW	66KV SF6 breaker	Fdr. I and II	Earth fault on Y phase	Earth fault on Y phase	Fdr. II Chapcha	Tripped	Tree fallen on line
10	26/8/2022	8:45hrs	26/8/2022	8:50hrs		.850MW	66KV SF6 breaker	Fdr. I and II	Earth Fault	EF relay operated	Fdr. I Chazhi	Tripped	Tree fallen on 33KV line as per ESD betikha. Line charged after opening faulty section as per ESD betikha.
11	28/8/2022	00:20hrs	28/8/2022	00:30hrs		.245MW	66KV SF6 breaker	Fdr. I and II	OC and EF on ABC phase	OC and EF on ABC phase	Fdr. II Chapcha	Tripped	Test charged at 00:21hrs but line could not hold and breaker charged after opening isolator of fdr. II chapcha
	(C) 66/33kV Olakha Substation												
1	03-08-22	2:33	03-08-22	2:42	0	2.86	66/33kV 20MVA, Transformer I	All the 33kV was effected as the 20MVA Transformer I & II was tripped	Over current and earth fault	Earth Fault Over Current Operated	Distribution line	Transient fault	Reset the relays and test charged the feeders and stood normal.
2	03-08-22	2:33	03-08-22	2:42	0	2.86	66/33kV 20MVA, Transformer II	All the 33kV was effected as the 20MVA Transformer I & II was tripped	Over current and earth fault	Earth Fault Over Current Operated	Distribution line	Transient fault	Reset the relays and test charged the feeders and stood normal.
3	04-08-22	5:04	04-08-22	5:25	0	3.15	66/33kV 20MVA, Transformer I	All the 33kV was effected as the 20MVA Transformer I & II was tripped	Over current and earth fault	Earth Fault Over Current Operated	Distribution line	Transient fault	Reset the relays and test charged the feeders and stood normal.
4	04-08-22	5:04	04-08-22	5:25	0	3.13	66/33kV 20MVA, Transformer II	All the 33kV was effected as the 20MVA Transformer I & II was tripped	Over current and earth fault	Earth Fault Over Current Operated	Distribution line	Transient fault	Reset the relays and test charged the feeders and stood normal.
	(G) 66/33/11kV Dechencholing substation												
1	23.08.2022	08:46Hrs	23.08.2022	09:56Hrs	0	4.213	66KV Damji line	only Damji line	Tripped on Distance relay.	Dist relay; IA-44.02A. IB-1.55KA. & IC 1.515KA, Fault resistance -2.049Ω	Fault loaction: 29.23KM ;Zone-1	Tripped	charged the fdr as per the BPSO charging code No.163 and hold the fdr normally.
	(H) 66/11kV Haa Substation												
1	21.08.2022	15:35	21.08.2022	15:46	0	-0.91	66kV incomer	All	unknown	O/C	Pangbesa	The supply was normalised after resetting the relay.	
2	26.08.2022	6:06	26.08.2022	6:22	0	-0.81	66kV incomer	All	unknown	O/C & E/F	Pangbesa	The supply was normalised after resetting the relay.	

	(I) 220kV Substation Semtokha												
1	01-08-22	16:21hrs	01-08-22	16:23hrs		46.46	66kv Semtokha-Dochula Line	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I>2 Trip.IA=240.3A,IB=5.768kA, IC=5.605kA&IN=17.39A		Trasient	
2	04-08-22	05:05hrs	04-08-22	05:10:00hrs		46.46	66kv Semtokha-Dochula Line	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I>2 Trip.IA=211.7A,IB=5.740kA, IC=5.614kA&IN=16.88A		Trasient	
3	16-08-22	07:31hrs	16-08-22	07:34hrs		46.63	66kv Semtokha-Dochula Line	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I>2 Trip.IA=275A.7A,IB=5.712k A,IC=5.522kA&IN=17.99A		Trasient	
4	21-08-25	05:32hrs	21-08-22	05:47hrs		47.31	66kv Semtokha-Dochula Line	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I>2 Trip.IA=303.5A.7A,IB=5.68k A,IC=5.45kA&IN=17.11A		Trasient	
5	26-08-22	18:34hrs	21-08-22	18:46hrs		45.25	66kv Semtokha-Dochula Line	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I>2 Trip. O/C.IA=263.2A,IB=5.799kA, IC=5.605kA.		Trasient	
	(K) 66/33kV Changidaphu Substation												
1	26-08-22	18:34hrs	26-08-22	18:50hrs		-5.05	66kV Cangidaphu-Olakha Line	66kV Cangidaphu-Olakha Line		Distance Protectoin, Zone 2 Yph Trip, R=120.162, Y=566.002, B=625.669		Trasient	
	(L) 66/33kV Damji Substation												
1	23.08.2022	0844 hrs	23.08.2022	0858 hrs	0	-3.83	66 kV Incoming Line	Whole Substation	Trip	NA			Transmission Line tripped from Dechencholing Substation
	(M) 66/11kV Dochula Substation												
1	01-08-22	16:21	01-08-22	16:25		-32.06	66kV Semtokha	Semtokha - Dochula	Transit fault	under voltage and 86 relay	Semtokha	Temporary	1
2	01-08-22	17:21	01-08-22	16:31		-30.45	66kV Lobeysa	Lobeysa - Dochula	Transit fault	under voltage and 86 relay	Lobeysa	Temporary	1
3	04-08-22	5:05	04-08-22	5:15		-31.76	66kV Semtokha	Semtokha - Dochula	Transit fault	Under voltage and 86 relay	Semtokha	Temporary	1
4	04-08-22	5:05	04-08-22	5:18		-30.24	66kV Lobeysa	Lobeysa - Dochula	Transit fault	Under voltage and 86 relay	Lobeysa	Temporary	1
5	16-08-22	7.31	16-08.22	7.35		-32.04	66kV Semtokha	Semtokha - Dochula	Transit fault	Under voltage and 86 relay	Semtokha	Temporary	1
6	16-08-22	7.31	16-08-22	7.37		-30.45	66kV Lobeysa	Lobeysa - Dochula	Transit fault	Under voltage and 86 relay	Lobeysa	Temporary	1
7	21-08-22	5:32	21-08-22	5:49		-32.89	66kV Semtokha	Semtokha - Dochula	Transit fault	Under voltage and 86 relay	Semtokha	Temporary	1
8	21-08-22	5:32	21-08-22	5:52		-30.29	66kV Lobeysa	Lobeysa - Dochula	Transit fault	Under voltage and 86 relay	Lobeysa	Temporary	1
9	26-08-22	18:34	26-08-22	18:48		-29.64	66kV Semtokha	Semtokha - Dochula	Transit fault	Under voltage and 86 relay	Semtokha	Temporary	1
10	26-08-22	18:34	26-08-22	18:42		-27.98	66kV Lobeysa	Lobeysa - Dochula	Transit fault	Under voltage and 86 relay	Lobeysa	Temporary	1

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Sl No.	Date of Tripping	Time of outages	Date of Normalization	Time of fault was cleared	Duration of Outages (Hrs)	MW before outage (MW)	Feeder Name	Name of the Substation/lines affected by the fault	Reasons of fault	Relay operations	Exact location of fault [Line segment/ Substation]	Type of outages	Remarks
66kV & Above													
(A) 400/220/66/11 kV Malbase Substation													
1	06-09-2022	0:08	06-09-2022	0:12	0	33	50 MVA transformer III	Malbase Substation	Tripping	86optd, Diff Harm Blk			IL1= 85.52<167.70deg , IL2= 152.33A<64.93deg,IL3= 317.11A,-61.26deg,IL4= 178.63,-41.14deg. Transformer charged with charging code 252/BPSO
2	06-09-2022	0:08	06-09-2022	0:22	0	-134	220kV Chukha feeder III	Malbase Substation	Tripping	MiCOM Relay, START BN, Tripped Phase,ABC,Start Element Distance, Distance trip Zone ,AR lockout shot ,system frequency 49.93, fault duration:53.41ms, Relay time :81.78ms,	11.42 km		IA= 488.8A ,IB=5.40kA,IC=267.1A, Charged with Code 251/BPSO .
3	07-09-2022	15:51	07-09-2022	15:59	0	-	66kV Bus Coupler	Malbase Substation	Tripping	86 optd ,IEF_50N Trip,IOC_50-TRIP,GENERAL TRIP			IL1=11.2928A/-59.91deg,IL2=125.07A/-61.57deg,IL3=13239.57A/82.06deg, IL4= 9495.09A/20.76deg
4	07-09-2022	15:51	07-09-2022	15:59	0	17	66kV Pasakha fdr no I	Malbase Substation	Tripping	86 optd ,IEF_50N Trip,IOC_50-TRIP,GENERAL TRIP			IL1=1101.08A/107.54deg,IL2=65.25A/-61.16deg, IL3=1079.85A/-93.43deg, IL4= 373.73A/13.4deg
5	15-09-2022	22:41	15-09-2022	22:46	0	10	220kV Malbase-Samtse	Malbase Substation	Tripping	M1 trip,Zone1 trip	10.3km		I1=24.26A<232.2, I2:56.69A<238.3, I3:2208A<39.58, I4:2134A<38.78
6	15-09-2022	22:38	15-09-2022	22:44	0		220kV bus coupler	Malbase Substation	Tripping	86OPTD,			
7	15-09-2022	22:41	15-09-2022	22:48	0	34	50 MVA transformer III	Malbase Substation	Tripping	OLTC trip,Diff Restrain,Diff Trip,Diff.WARM,Diff WAVM Trip			IL1=91.66A<27.36,IL2=151.47A<-120.59,IL3=65.52A<-126.91,IL4=227.62<-98.85
8	16-09-2022	23:28	16-09-2022	23:47	0	-119	220kV Chukha feeder III	Malbase Substation	Tripping	86 optd, Zone 1 Tripped			IA =463.3A,IB =419.9A,IC=4.718kA
9	16-09-2022	23:28	16-09-2022	23:49	0	27	50 MVA transformer III	Malbase Substation	Tripping	DIFF. TRIP,27 TRIP,86 Optd			IL1 =91.99 A< -41.12 DEG,,IL2 =151.66 A< 112.19 DEG,IL3=63.07A <-119.95DEG,IL4=56.3A<-94.36DEG
10	16-09-2022	10:28	16-09-2022	10:31	0		50 MVA transformer III	Malbase Substation	Tripping	EXT. TRIP, 86 OPTD.			IL1 = 106.82 A, IL2= 423.8 A. IL3= 284.97A,IL4= 217.19A
11	16-09-2022	19:34	16-09-2022	19:50	0	10.4	220kV Malbase-Samtse	Malbase Substation	Tripping	B/U Trip			LI=3031A,<270.4,L2=100.8A<182.3,l3=2961A<51.30,L4=1909A<337.9
12	16-09-2022	19:34	16-09-2022	19:39	0	26	50 MVA transformer III	Malbase Substation	Tripping	EXT TRIP, BUCH Trip			I1+13.15A<-.47,I2=111.5A<-132.39 I3=67.55A<144.37
13	16-09-2022	22:28	16-09-2022	22:31	0	28	50 MVA transformer III	Malbase Substation	Tripping	EXT. TRIP, 86 OPTD. OLTC, BUCH trip			IL1 = 106.82 A, IL2= 423.8 A. IL3= 284.97A,IL4= 217.19A
14	20-09-2022	8:31	20-09-2022	8:34	0	0	220 kV Bus coupler	Malbase Substation	Tripping	86 optd.			No data displayed
15	22-09-2022	2:55	22-09-2022	3:00	0	115	220kV Chukha feeder III	Malbase Substation	Tripping	O/C,Zone 1 trip , R,Y,B phase Trip, fault location :9.157Km,	fault location 9.157Km,Fd=80.02ms		Il1=10.94A,IL2=7.15KA,IL3=6.471KA
16	22-09-2022	2:55	22-09-2022	3:01	0	28	50 MVA transformer III	Malbase Substation	Tripping	Diff trip, 86 optd			IL1=153.55A<-19.74,IL2=96.02A<-34.56,IL3=76.86A,<-41.48,IL4=322.34A,<-29.22
17	22-09-2022	2:55	22-09-2022	3:00	0	-	220kV bus coupler	Malbase Substation	Tripping	CBFP			IA=11.6A,IB=6846A, IC=5810A,IE=5393AE/F IDMT IE=5393A.
18	22-09-2022	3:04	22-09-2022	3:06	0	-	220kV bus coupler	Malbase Substation	Tripping	CBFP			-
19	22-09-2022	3:04	22-09-2022	3:08	0	28	50 MVA transformer III	Malbase Substation	Tripping	DIFF. TRIP,86 Optd			IL1=404.32A<95.28deg,IL2=176.33A,<-30.73deg,IL3=142.81A<-134.32deg,IL4=210.83A<86.04deg
20	22-09-2022	3:04	22-09-2022	4:04	1	-111	220kV Chukha feeder III	Malbase Substation	Tripping	Zone 1 trip,86 optd	Zone 1 trip, fault location =11.59Km,		IA=10.56A,IB=7.023kA,IC=5.829kA
21	22-09-2022	4:04	22-09-2022	4:12	0	-115	220kV Malbase-Samtse	Malbase Substation	Tripping	M1--trip,zone1 trip,	Fault loop=L1-L2,distance 6.2kM		M1--trip,zone1 trip,Fault loop=L1-L2, distance 6.2kM,IL1=4972A>284.6deg,IL2=6654A>164.7deg,IL3=4900A>38.75deg,IL4=994.7A>165.7deg
22	22-09-2022	4:04	22-09-2022	4:11	0	66	400/220kV, 200MVA ICT	Malbase Substation	Tripping	Buchhozl=trip			IL1=177.4A>40.06deg,IL2=181.4A>164.9deg,IL3=159.1A>66.65deg.
23	23-09-2022	1:57	23-09-2022	2:07	0	19	66kV Pasakha fdr no II	Malbase Substation	Tripping	67_Trip, 86 OPTD, General Trip, 67N_Trip			IL1= 0.63A>15.65deg, IL2= 166.43A>-14.28deg,IL3= 165.86A>162.62deg, IL4=0.52A>15.65deg
24	23-09-2022	1:57	23-09-2022	2:06	0	19	66kV Pasakha fdr no IV	Malbase Substation	Tripping	67N Trip, General Trip			IL1= 519.61A>-96.07deg,IL2= 666.2A>-124.6deg. Il3=2509.85A>81.22deg, Il4=519.61A>-96.07deg
25	23-09-2022	1:57	23-09-2022	2:05	0	-	66kV Bus Coupler	Malbase Substation	Tripping	General Trip, 67 Trip, 67_ST2L3			IL1=919.04A>80.79deg, IL2=487.09A>125.7deg, Il3=4758.81A>66.65deg,Il4=5948.01A>72.8deg
26	23-09-2022	17:27	23-09-2022	17:35	0	73	400/220kV, 200MVA ICT	Malbase Substation	Tripping				
27	23-09-2022	17:27	23-09-2022	17:37	0	-	220 kV Bus coupler	Malbase Substation	Tripping				
28	23-09-2022	17:27	23-09-2022	17:45	0	27	50 MVA transformer II	Malbase Substation	Tripping				Il1=711.85A-2.71deg,Il2=734.69A -124.06deg,Il3=704.74A .97deg
29	23-09-2022	17:27	24-09-2022	17:46	24	19	66kV Pasakha fdr no II	Malbase Substation	Tripping				"IL1=0.29A/-1.11deg,IL2=806.11 A/18.89deg,IL3=829.52 A/-162.02deg. Test charge done at 18:25hrs. date 23/09/2022 but could not hold and kept on open condition. Taken shutdown for OPG wire resting by TMD/pling (work permit number 288) on 24/09/2022 at 8:45 hours and Test charged at 24/09/2022 @13:39 but could not hold.. Test charge done @ 14:45 hold in Idle charge with no load given"
30	23-09-2022	17:27	24-09-2022	17:46	24	20	66kV Pasakha fdr no IV	Malbase Substation	Tripping				"IL1=814.97A/149.39deg,IL2=573.27A /-156.57deg ,IL3=2202.32A/87.25deg. Test charge done at 18:25hrs @ 23/09/2022. but could not hold and kept on open condition.Taken shutdown for OPG wire resting by TMD/pling (work permit number 288) on 24/09/2022 at 8:45 hour and test charged at 24/09/2022 @13:40 but could not hold - Test charged hold @14:45 on 24/09/2022 in Idle Charge condition"
31	23-09-2022	17:27	24-09-2022	17:46	24	19	66kV Pasakha fdr no I	Malbase Substation	hand tripped				"Handtripped during charging of 220/66kV 50 MVA Transformer 2, test charged at 20:48 on 23/09/2022 but could not hold in ring system with 66kV bhutan Concast.Taken shutdown for OPG wire resting by TMD/pling (work permit number 288)on 24/09/2022 at 8:45 hour and test charged & hold at 24/09/2022 13:39 dated 24/09/2022 but hand tripped at 14:00 hrs dated 24/09/2022 due to mising Y phase current and is currently being attended by TMD pling (Work Permit Number 290 Issued to TMD p/ling) at 15:35 hrs. and at 17:30 hrs Work permit no 290 was returned by TMD PLING and all 66kV out going feeder Charged at 17:45 hrs."
32	23-09-2022	17:27	24-09-2022	18:23	24	-7.2	66kV Phuntsholing fdr.	Malbase Substation	Tripping	N1-trip,86opted			IL1=1.233kil2=197.5k,il3=1.222klN=2..031k.Kept in oped condition.
33	23-09-2022	20:48	23-09-2022	20:53	0	-	220 kV Bus coupler	Malbase Substation	Tripping	86 optd.	line		No data displayed
34	23-09-2022	20:48	23-09-2022	20:55	0	59	400/220kV, 200MVA ICT	Malbase Substation	Tripping	86 optd.	line		IL1=0.058A/35.35DEG,IL2=0.160A/28.57DEG,IL3=0.005A/173.4DEG.tripped due to test charge of 66kv feeder Tripped while doing test charge on 66kV Pasakha I and 66kV bhutan Concast fdr..
35	23-09-2022	20:48	23-09-2022	20:58	0	0.42	50 MVA transformer II	Malbase Substation	Tripping	86 optd.	line		IA=0.06A, IB=0.03A, IC=0.02A(no load 66KV feeders out Tripped while doing test charge on 66kV Pasakha I and 66kV bhutan Concast fdr.)
36	23-09-2022	21:42	23-09-2022	22:38	0	88	220kV Birpara feeder	Malbase Substation	Tripping	O/C on R&B phase,general trip,zone 3 trip.	fault location Distance=55.54KM.		IA=2.157kA, IB=170.6A, IC=2.650kA
38	28-09-2022	18:40	28-09-2022	18:44	0	-108	220kV Chukha feeder III	Malbase Ss	Tripping		line		General Trip, Zone-1 Trip, Fault loop=L3-N, Dist.= 9.00 Km. Trip value Il1=378.8A/200.1deg, Il2=132.9A/71.22deg, IL3=5504A/44.84deg, IL4=5284A/47.38deg
39	28-09-2022	18:40	28-09-2022	18:45	0	25	50MVA Transformer III	Malbase Ss	Tripping				027 TRIP, DIFF TRIP, Tripped value IL1=76.52A/-61.44deg, IL2=139.94A/-119.29deg,IL3=86.52A/-123.68deg, IL4=273.19A/-107.0deg
40	30-09-2022	12:32	30-09-2022	12:39	0	-117.44	220kV Malbase-Chhukha	Malbase Ss	Tripping				tripped (BB protection)
41	30-09-2022	12:32	30-09-2022	12:37	0	70	400/220kV, 200MVA ICT	Malbase Ss	Tripping				tripped (BB protection)
42	30-09-2022	12:32	30-09-2022	12:41	0	14.56	220kV Malbase-Samtse	Malbase Ss	Tripping				tripped (BB protection)
43	30-09-2022	12:32	30-09-2022	13:26	0	30.08	220kV Malbase-Bripara.	Malbase Ss	Tripping				tripped (BB protection)
44	30-09-2022	12:32	30-09-2022	12:38	0		220 kV Bus coupler	Malbase Ss	Tripping				
45	30-09-2022	13:05	30-09-2022	13:12	0	36	400/220kV, 200MVA ICT	Malbase Ss	Tripping				tripped (BB protection)
46	30-09-2022	13:05	30-09-2022	13:17	0		220 kV Bus coupler	Malbase Ss	Tripping				tripped (BB protection)
47	30-09-2022	13:05	30-09-2022	13:18	0	-75.84	220kV Malbase-Chhukha	Malbase Ss	Tripping				BB trip,I1=91.72A<204deg,I2=113A<79.85deg,I3=101.32A,312.1deg,I4=6.067A<353.4deg.
48	30-09-2022	13:05	30-09-2022	13:22	0	9.9	220kV Malbase-Samtse	Malbase Ss	Tripping				BB trip,I1=27.72A<28.63def,I2=28.26A<296.4deg,I3=28.82A,144.5deg,I4=82A<52deg.

(B)220/66/11 kV Singhigoan Substation													
##	07.09.2022	15:51	7.9.22	15:54	0	32	66kV Bhutan Concast fdr.	Singhigaon Ss	O/C	Directionl Time O/C trip,IE>>DIRECTIONAL TRIP,GENERAL TRIP, 86 OPTD.	line		IL1=1.14kA,IL2=0.26kA,IL3=0.34kA
##	07.09.2022	15:51	7.9.22	15:54	0	-	66kV Bus I	Singhigaon Ss	-	86 optd., IEp trip	-		-
##	16.9.22	19:34	16.9.22	20:58	1	3	220kVSinghgoen- Samtse	Singhigaon Ss	tripped	zone 1 trip fault loop l3-N 14.6Km	line		Il1=41.31A<194.2,IL2=45.02A<248.1,IL3=1358A<40.85,IL4=1284A<40.84
##	16.9.22	22:28	16.9.22	22:36	0	0.1	220kVSinghgoen- Samtse	Singhigaon Ss	tripped	General Trip, Zone 1 Trip, F/L=I1-N, Distance=33Km	line		I1=2891A<283.6deg,I2=86.15A<96.50deg,I3=88.81A<11.7deg,I4=2714A,283.6deg,
##	17.9.22	22:16	17.9.22	22:17	0	0.067	11kV feeder no I	Singhigaon Ss	O/C	General trip,Time O/C trip, IP trip	line		IL1=1.38KA, IL2=1.45KA, IL3=1.39KA
##	18.9.22	16:46	18.9.22	16:48	0	0.06	11kV feeder no I	Singhigaon Ss	O/C	General trip, O/C trip, IEp trip	line		IL1=1.08kA IL2=0.01kA IL3=0.01kA
##	18.9.22	21:01	19.9.22	10:10	13	0.361	11KV Feeder III	Singhigaon Ss	O/C	IEp,time over current trip	line		Fault Current IL1=0.02KA IL2=0.02KA IL3=0.39KA
##	20.9.22	14:53	20.9.22	17:29	2	1.25	11KV Feeder III	Singhigaon Ss	O/C	IEp,time over current trip	line		IL1=0.02kA, Il2=0.02kA, IL3=0.39kA
##	21.9.22	2:04	21.9.22	11:52	9	0.458	11KV Feeder III	Singhigaon Ss	O/C	General trip, O/C trip, IEp trip	line		IL1=0.01kA, Il2=0.01kA, IL3=0.39kA
##	21.9.22	11:45	21.9.22	16:51	#NUM!	0.58	11KV Feeder III	Singhigaon Ss	O/C	General trip, O/C trip, IEp trip	line		IL1=0.06kA.IL2=0.07kA,IL3=0.44kA.
##	22.9.22	0:56	22.9.22	13:46	12	0.643	11KV Feeder III	Singhigaon Ss	O/C	General trip ,O/C trip,IEP trip,			IL1=0.05kA,IL2=0.05kA.IL3=0.43kA
##	22.9.22	4:04	22.9.22	4:32	0	2.09	220kVSinghgoen- Samtse	Singhigaon Ss	tripped	-	line		IL1=525.1A<159.3deg,IL2=2342A<277.5deg,IL3=2308<46.32deg,IL4=1475A<341.7deg.
##	23.9.22	1:57	23.9.22	2:06	0	27.5	66kV Bhutan Concast fdr.	Singhigaon Ss	tripped	directional time OC trip, IE>>Directional trip, I>> Directional Trip,General trip.	line		IL1=0.46kA, IL2=1.11kA, IL3=5.62kA
##	23.9.22	17:27	24.9.22	13:47	20	26	66kV Bhutan Concast fdr.	Singhigaon Ss	tripped	Diff.time O/C trip.IE>>diff-trip,I>>diff. trip.	line		I1=4.35kA,I2=0.08kAIi3=6.30kA test charge at 20:49 hrs.but could not hold and kept on open condition.
##	25.9.22	10:03	25.9.22	10:21	0	0.779	11KV Feeder II	Singhigaon Ss	O/C	General trip, Time O/C trip, Iep>> trip	line		IL1=0.05kA,IL2=0.04kA.IL3=1.54kA
(B)66/33/11 kV Phuntsholing Substation													
1	07.09.2022	18:23	07.09.2022	18:28	0	-3.45	66kV Chukha-Pling feeder	Black out at Pling ss			Tripped at chukha end		At 18:36hrs 66kV Chukha-Pling feeder got tripped from chukha end and 66kV Pling-Gomtu feeder got tripped at Gomtu end (i.e 66kV Dhamdhum-Gomtu feeder got tripped at Gomtu end) causing black out at Pling. At 18:29hrs normalised the 66kV Chukha-Pling from Chukha end and at 18:32hrs normalised 66kV Dhamdhum-Gomtu feeder from Gotmu feeder.
2	07.09.2022	18:23	07.09.2022	18:32	0	-2.07	66kV Pling-Gomtu fdr	Black out at Pling ss			66kV Dhamdum-Gomtu fdr tripped from Dhamdhum Ss		
3	11.09.2022	20:35	11.09.2022	20:43	0	-3.09	66kV Chukha-Pling feeder	Black out at Pling ss			Tripped at chukha end		At 20:35hrs 66kV Chukha-Pling feeder got tripped from chukha end and 66kV Pling-Gomtu feeder got tripped at Gomtu end (i.e 66kV Dhamdhum-Gonmtu feeder got tripped at Gomtu end) causing black out at Pling. At 20:43hrs normalised the 66kV Chukha-Pling from Chukha end and at 20:42hrs normalised 66kV Dhamdhum-Gomtu feeder from Gotmu feeder.
4	11.09.2022	20:35	11.09.2022	20:42	0	-3.05	66kV Pling-Gomtu fdr	Black out at Pling ss			66kV Dhamdum-Gomtu fdr tripped from Dhamdhum Ss		
5			11.09.2022	20:38	20	Idle charge	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr					At 20:38hrs charged 66kV Pling-Malbase feeder which was under idle charge condition with closing code 271 from BPSO. At 20:45hrs opened CB of above fdr with opening code 1015 from BPSO and said feeder kept under idle charged conidition after nomalising 66kV Chukha and Gomtu feeder.
##	15.09.2022	22:15	15.09.2022	22:22	0	-3.67	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at both end	DSTN OPTD, 186&85	Tripped at both end	Tripped on fault	The cause of tripping was due to transient fault. At 22:22hrs normalised with charging code 287 from BPSO.
##	15.09.2022	22:38	15.09.2022	23:07	0	-1.58	66kV Pling-Gomtu fdr	Black out at Pling ss	Tripped at both end	DSTN OPTD, 186&86	Tripped at both end	Tripped on fault	Tripped at both end. At 23:07hrs test charged after getting clearance from BPSO and stood normal.
##	15.09.2022	22:38	15.09.2022	22:46	0	-3.67	66kV Chukha-Pling feeder	Black out at Pling ss	Tripped at chukha end		Tripped at chukha end		At 22:38hrs 66kV Chukha-Pling feeder got tripped from chukha end and 66kV Pling-Gomtu feeder got tripped at both end causing black out at Pling. At 22:46hrs normalised 66kV Chukha-Pling fdr from Chukha end with charging code 290
##	16.09.2022	19:33	16.09.2022	19:41	0	-1.89	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at chukha end		Tripped at chukha end		At 19:33hrs 66kV Chukha-Pling feeder got tripped from chukha end causing black out at Pling. At 19:41hrs normalised 66kV Chukha-Pling fdr from Chukha end.
##	16.09.2022	19:33	16.09.2022	20:02	0	-4.70	66kV Pling-Gomtu fdr	66kV Pling-Gomtu fdr	Tripped at their end		66kV Dhamdum-Gomtu fdr tripped from Dhamdhum Ss		At 19:33hrs 66kV Pling-Gomtu feeder got tripped at Gomtu end (i.e. 66kV Dhamdhum-Gomtu fdr tripped at Dhamdhum end) causing black out at Pling. At 20:02hrs normalised 66kV Pling-Gomtu fdr from Dhamdhum end.
##	16.09.2022	23:28	17.09.2022	0:50	1	-4.06	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at chukha end		Tripped at chukha end		At 23:28hrs 66kV Chukha-Pling fdr tripped from chukha end (Pling black out) and as per instruction from BPSO opened CB for said fdr at 23:50hrs at our end. At 00:50hrs charged from our end as per instruction from BPSO with charging code 296 and stood normal.
##	16.09.2022	23:28	17.09.2022	11:04	10	-0.15	66kV Pling-Gomtu fdr	66kV Pling-Gomtu fdr	Tripped at their end		66kV Dhamdum-Gomtu fdr tripped from Dhamdhum Ss		At 23:28hrs 66kV Pling-Gomtu feeder got tripped at Gomtu end (i.e. 66kV Dhamdhum-Gomtu fdr tripped at Dhamdhum end) causing black out at Pling. At 23:37hrs test charged from Gomtu end but got tripped at our end operating distance relay. As per instruction from BPSO test charged from our end but again got tripped acutating same relay. On dated 17.09.2022 at 11:04hrs as per instruction from BPSO againt closing code 300 66kV Pling-Gomtu fdr charged and stood normal.
##			16.09.2022	23:53		Idle charge	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr					At 23:53hrs as per instruction from BPSO charged 66kV Pling-Malbase feeder which was under idle charged condition, since 66kV Chukha-Pling fdr and 66kV Pling-Gomtu fdr couldn't stand while test charging. On dated 17.09.2022 at 11:06hrs opened CB of 66kV Pling-Malbase feeder with opening code 1019 as per instruction from BPSO and feeder was put back to idle charged condition.
##	20.09.2022	8:31	20.09.2022	8:37	0	-3.02	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at chukha end		Tripped at chukha end		At 08:31hrs 66kV Chukha-Pling fdr tripped from chukha end (Pling black out) and at 08:37hrs normalised the supply from Chukha end with charging code 316.
##	20.09.2022	8:31	20.09.2022	8:41	0	-2.11	66kV Pling-Gomtu fdr	66kV Pling-Gomtu fdr	Tripped at our end	DSTN OPTD, 186&86	Tripped at our end		At 08:31hrs 66kV Pling-Gomtu feeder got tripped at our end causing black out at Pling. At 08:41hrs as per instruction from BPSO charged Pling-Gomtu fdr againt closing code 318.
##	22.09.2022	2:49	22.09.2022	3:15	0	-4.86	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at our end	DSTN OPTD, 186&86	Tripped at our end	Tripped on fault	At 03:15hrs test charged the feeder as per instruction from BPSO and stood normal.
##	22.09.2022	3:53	22.09.2022	9:53	6	-4.86	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at both end	DSTN OPTD, 186&86	Tripped at both end	Tripped on fault	66kV Pling-Chukha fdr tripped at both end. Relay OPTD Dist OPTD. As per instruction from BPSO test charged at 05:05hrs but tripped on same fault and said feeder kept under shutdown (grid fail). At 09:53hrs as per instruction from BPSO normalised the 66kV Pling-Chukha fdr.
##			22.09.2022	4:15			66kV Pling-Malbase fdr	66kV Pling-Malbase fdr					At 04:15hrs as per instruction from BPSO charged 66kV Pling-Malbase feeder which was under idle charged condition.
##	20.09.2022	12:31	20.09.2022	12:34	0	-2.23	66kV Pling-Gomtu fdr	66kV Pling-Gomtu fdr	Tripped at our end	DSTN OPTD, 186&86	Tripped at our end		The cause of tripping was due to transient fault. (Pling black out)
##	23.09.2022	1:57	23.09.2022	2:07	0	-3.01	66kV Pling-Gomtu fdr	66kV Pling-Gomtu fdr	Tripped at our end	DSTN OPTD, 186&86	Tripped at our end		The cause of tripping was due to transient fault. (Pling black out)
##	23.09.2022	1:57	23.09.2022	2:10	0	-7.43	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at chukha end		Tripped at chukha end		The cause of tripping was due to transient fault. (Pling black out)
##	23.09.2022	1:57	23.09.2022	2:04	0	6.12	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr	Tripped at Malbase end		Tripped at Malbase end		The cause of tripping was due to transient fault. (Pling black out)
##	23.09.2022	17:27	23.09.2022	17:35	0	-7.36	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at chukha end		Tripped at chukha end		The cause of tripping was due to transient fault. (Pling black out)
##	23.09.2022	17:27	23.09.2022			7.20	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr	Tripped at Malbase end		Tripped at Malbase end		The cause of tripping was due to transient fault. (Pling black out). As per instruction of BPSO 66kV Pling-Malbase feeder kept open at our end with opening code 033.
##	23.09.2022	17:27	23.09.2022	17:43	0	-3.94	66kV Pling-Gomtu fdr	66kV Pling-Gomtu fdr	Tripped at our end	DSTN OPTD, 186&86	Tripped at our end		The cause of tripping was due to transient fault. (Pling black out).At 17:37hrs test charged as per instruction from BPSO but couldn't withstand. At 17:43hrs again test charged as per instruction from BPSO and stood normal.
##	27.09.2022	7:42	27.09.2022	7:50	0	-3.00	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at both end		Tripped at both end		The cause of tripping was due to transient fault.
##	28.09.2022	18:42	28.09.2022	18:52	0	-2.53	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at both end	Tripping relay 186& 86	Tripped at both end		The cause of tripping was due to transient fault. Test charged after getting clearance from BPSO with charging code 1442.
##	28.09.2022	19:12	28.09.2022	22:46	3	-0.84	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at both end	Tripping relay 186& 86	Tripped at both end		As per instruction from BPSO CB kept openend for 66kV Pling-at our end.
##			28.09.2022	19:16		Idle charge	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr					At 19:16hrs charged 66kV Pling-Malbase with charging code 1444 since CB kept open for 66kV Pling-chukha feeder at our end as per instruction from BPSO. At 22:30hrs CB opened for said feeder with opening code 046 from BPSO and feeder kept under idle charged.
##			29.09.2022	10:23		Idle charge	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr					At 10:23hrs charged 66kV Pling-Malbase with charging code 1452 as per instruction from BPSO. At 22:30hrs CB opened for said feeder with opening code 046 from BPSO and feeder kept under idle charged.
##	29.09.2022	13:30	29.09.2022	13:37	0	-6.27	66kV Pling-Gomtu fdr	66kV Pling-Gomtu fdr	Tripped at both end	186&86	Tripped at both end		The cause of tripping was due to transient fault.
##	30.09.2022	12:32	30.09.2022	12:38	0	-9.19	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at our end	DSTN OPTD, 186&86	Tripped at our end	Tripped on fault	Pling blackout since 66kV Pling-Malbase and Pling-Gomtu feeder got interrupted due to 220kV supply failure from Malbase end
##	30.09.2022	13:05	30.09.2022	13:18	0	-2.26	66kV Chukha-Pling feeder	66kV Chukha-Pling feeder	Tripped at our end	DSTN OPTD, 186&86	Tripped at our end	Tripped on fault	Pling blackout since 66kV Pling-Malbase and Pling-Gomtu feeder got interrupted due to 220kV supply failure from Malbase end
##			30.09.2022	13:19		-5.07	66kV Pling-Malbase fdr	66kV Pling-Malbase fdr					At 13:19hrs CB opened for 66kV Pling-Malbase feeder with opening code 064 from BPSO and feeder kept under idle charged.

(D) 66/33/11 kV Gedu Substation													
1	15.09.2022	22:15	15.09.2022	22:22	0	1.86	66kV Chukha-P/ling	Balckout	Bad weather condition		Line segment		66kV supply charged from Chukha end.
2	15.09.2022	22:39	15.09.2022	22:46	0	1.86	66kV Chukha-P/ling	Balckout	Bad weather condition		Line segment		66kV supply charged from Chukha end.
3	16.09.2022	19:34	16.09.2022	19:42	0	2.71	66kV Chukha-P/ling	Balckout	Bad weather condition		Line segment		66kV supply charged from Chukha end.
4	16.09.2022	23:29	16.09.2022	23:47	0	1.41	66kV Chukha-P/ling	Balckout	Bad weather condition		Line segment		66kV supply charged from Chukha end.
5	22.09.2022	2:49	22.09.2022	3:15	0	1.1	66kV Chukha-P/ling	Balckout	Bad weather condition		Line segment		66kV supply charged from Chukha end.
6	22.09.2022	3:53	22.09.2022	5:13	1	1.1	66kV Chukha-P/ling	Balckout	Bad weather condition		Line segment		66kV supply charged from Chukha end.
7	23.09.2022	1:58	23.09.2022	2:05	0	1.36	66kV Chukha-P/ling	Balckout	Bad weather condition		Line segment		66kV supply charged from Chukha end.
8	28.09.2022	7:43	28.09.2022	7:47	0	2.03	66kV Chukha-P/ling	Balckout	Bad weather condition		Line segment		66kV supply charged from Chukha end.
9	28.09.2022	18:42	28.09.2022	18:52	0	1.87	66kV Chukha-P/ling	Balckout	Bad weather condition		Line segment		66kV supply charged from Chukha end.
10	28.09.2022	19:12	28.09.2022	19:24	0	1.69	66kV Chukha-P/ling	Balckout	Bad weather condition		Line segment		66kV supply charged from Chukha end.
(E) 66/33/11 kV Gomtu Substation													
1	07.09.2022	17:23	07.09.2022	17:28	0	2.23	66kV Phuentsholing feeder	Gomtu substation	Tripped from Chukha	Nil	Line segment	grid fail	Tripped from chukha end and supply resumed at 17:28hrs
2	07.09.2022	17:23	07.09.2022	17:32	0	-6.956	66kV Dhamdhum feeder	Gomtu substation	B-phase & Y-Phase fault	Nil	Line segment	Transient fault	Charged as per the instruction from BPSO and charge withstand
3	11.09.2022	20:35	11.09.2022	20:39	0	3.51	66kV Phuentsholing feeder	Gomtu substation	Grid failed	Nil	Line segment	grid fail	Grid failed and supply resumed at 20:39hrs
4	11.09.2022	20:35	11.09.2022	20:42	0	-9.924	66kV Dhamdhum feeder	Gomtu substation	Three Phase fault	General Trip, Zone 4 Trip, R phase Fault, Y Phase Fault, B Phase fault & Distance relay operated	Line segment	Transient fault	Charged the line as per the instruction received from BPSO and charge withstand
5	15.09.2022	22:39	15.09.2022	23:08	0	1.54	66kV Phuentsholing feeder	Nil	Over current	51 Cx and 51 Bx	Gomtu substation	Transient fault	Charged the line as per the instruction received from BPSO and charge withstand charging code 290
6	15.09.2022	22:41	15.09.2022	22:48	0	-6.54	66kV Dhamdhum feeder	Gomtu substation	Grid failed	Nil	Malbase substation	grid fail	Grid failed and supply resumed at 22:48hrs.
7	16.09.2022	23:28	16.09.2022	23:37	0	-0.22	66kV Phuentsholing feeder	Nil	Over current	51 Cx and 51 Bx	Line segment	Transient fault	Test charged the line as per the instruction of BPSO and kept breaker opned at pling end at charged on 17.09.2022 at 11:04 hrs from pling end
8	16.09.2022				0								
9	20.09.2022	8:31	20.09.2022	8:41	0	2.11	66kV Phuentsholing feeder	Gomtu substation	Grid failed	Nil	Line segment	Transient fault	Tripped from source
10	20.09.2022	8:31	20.09.2022	8:41	0	-6.225	66kV Dhamdhum feeder	Gomtu substation	Grid failed	Nil	Line segment	Transient fault	Tripped from source
11	22.09.2022	4:05	22.09.2022	4:15	0	-7.44	66kV Dhamdhum feeder	Gomtu substation	Grid failed	Nil	Malbase substation	Transient fault	Tripped from Malbasey end and supply resumed at 04:15hrs.
12	22.09.2022	13:30	22.09.2022	13:33	0	2.48	66kV Phuentsholing feeder	Gomtu substation	Grid failed	Nil	Line segment	Transient fault	Tripped from pling end and supply resumed at 13:33hrs
13	22.09.2022	13:30	22.09.2022	13:38	0	-11.096	66kV Dhamdhum feeder	Gomtu substation	Y phase fault	Distance relay operated, General trip, Zone 4 trip, Y phase fault.	Line segment	Transient fault	Charged the line as per the instruction of BPSO and charge withstand.
14	23.09.2022	3:27	23.09.2022	9:05	5	0.01	66/33kV 5MVA Transformer	Nil	Over current	IDMTL 50R & 50B	Line segment	Feeder fault	Tripped along with 33kV Samtse feeder and charged the transformer after keeping 33kV feeder in trip position.
15	23.09.2022	17:27	23.09.2022	17:42	0	-10.977	66kV Dhamdhum feeder	Gomtu substation	Grid failed	Nil	Line segment	Grid Failed	Grid failed from Malbase substation.
16	23.09.2022	17:43	23.09.2022	17;45	0	4.98	66 KV Phuentsholing feeder .	Gomtu substation	Hand tripped as per BPSO	Nil	Gomtu substation	Hand tripped.	Breaker opened as per BPSO instruction , as P/Ling SS could not charge Line.
17	23.09.2022	20:35	23.09.2022	20:45	0	3.25	66 KV Phuentsholing feeder .	Gomtu substation	Grid failed	Grid failed	Line segment	Grid Failed	Grid failed from Malbase substation.
18	23.09.2022	20:35	23.09.2022	20:45	0	-8.849	66kV Dhamdhum feeder	Gomtu substation	Grid failed	Grid failed	Line segment	Grid Failed	Grid failed from Malbase substation.
19	26.09.2022	10:04	26.09.2022	11:20	1	1.55	66kV Phuentsholing feeder	Nil	Shutdown as per BPSO	Nil	Pling ss	Shutdown	Availed shutdown for arresting sparking from Y phase CT terminal pad at Phuentsholing S/S Against opening code No 044 and shutdown withdrawn at 11:20 after charging code No 1423 given from BPSO
20	30.09.2022	12:32	30.09.2022	12:38	0	-16.056	66kV Dhamdhum feeder	Gomtu substation	Grid failed	Nil	Malbasey substation	Transient fault	Tripped from Malbasey end and supply resumed at 12:38hrs.
21	30.09.2022	13:05	30.09.2022	13:17	0	-10.384	66kV Dhamdhum feeder	Gomtu substation	Grid failed	Nil	Malbasey substation	Transient fault	Tripped from Malbasey end and supply resumed at 13:17hrs.
(F) 220/66/33 kV Dhamdum Substation													
1	15.09.2022	22:41	15.09.2022	22:46	0	-8.8	Malabase	Samtse	-	-	-	-	Grid supply fail
2	16.09.2022	19:29	16.09.2022	19:50	0	-10.28	220kV Malabase fdr.	Samtse	Lightining/thunder and heavy rainfall	REL 670	Dhamdum Substation		General trip, Zone 1, Y phase fault supply failed from Malbase end.
3	16.09.2022	19:29	16.09.2022	20:03	0	-3.09	220kV Singye fdr.	Samtse	Lightining/thunder and heavy rainfall	REL 670	Dhamdum Substation		General trip, Zone I trip,R phase fault.supply failed from Malbase end.
4	16.09.2022	22:31	16.09.2022	22:35	0	-0.07	Singeygoan	Samtse	Lightining/thunder and heavy rainfall	REL 670	Dhamdum Substation		General trip, Zone 1, Over current on RØ
5	23.09.2022	17:27	23.09.2022	17:42	0	-11.27	malbase	Samtse			Dhamdum Substation		line triped from malbase end .No equipment was operated from dhamdum s/s.
6	23.09.2022	20:34	23.09.2022	20:44	0	-8.82	220kV Malabase fdr.	Samtse	Cloudy				line triped from malbase end .No equipment was operated from dhamdum s/s.
7	23.09.2023	21:34	23.09.2023	21:44	0	-4.04	220kV Singye fdr.	Samtse	Cloudy		Dhamdum Substation		line triped from malbase end .No equipment was operated from dhamdum s/s.
8	30.09.2022	12:31	30.09.2022	12:37	0	-14.49	220Kv malbase feeder	Samtse	sunny		Dhamdum Substation		line triped from malbase end .No equipment was operated from dhamdum s/s.
9	30.09.2022	13:05	30.09.2022	13:17	0	-10.06	220Kv malbase feeder	Samtse	sunny		Dhamdum Substation		line triped from Malbase end .No equipment was operated from dhamdum s/s.

Sl. No.	Date of Tripping	Time of outages	Date of Normalization	Time of fault was cleared	Duration of Outages (Hrs)	MW before outage (MW)	Feeder Name	Name of the Substation/lines affacted by the fault	Reasons of fault	Relay operations	Exact location of fault [Line segment / Substation]	Type of outages	Remarks
	(A) 66kV Chumdu switching station												
1	16.09.2022	2328hrs	16.09.2022	2347hrs		(-) 7.8MW	66kV Chukha Feeder	Paro,Pangbasa, Jemina	Grid Fail	No operation at chumdo	Generation end	Grid fail	Grid fail
2	22.09.2022	0246hrs	22.09.2022	0255hrs		(-) 7.8MW							
3	22.09.2022	0355hrs	22.09.2022	0453hrs		(-) 5.25MW							
4	24.09.2022	0815hrs	25.09.2022	1320hrs	5hrs	6.46MW	66kV Paro Feeder	Fed from Panbbasa Substation	S/down	CB open Line a & Bus isolator open, E/switch closed.	For 220kV LILO crossing	s/down	S/down by TPO Olakha asper the shutdown approval no.236
5	24.09.2022	1822hrs	24.09.2022	1837hrs		10.01MW	66kV Pangbasa Feeder	Pangbasa substation	Transient fault	CB open ,3Ph	Chumdo	Tripped	Trip due to over
6	24.09.2022	1840hrs	24.09.2022	1847hrs		10.01MW							
7	28.09.2022	0752hrs	29.09.2022	1748hrs	9hrs	8.37MW		Fed from Paro Substation	S/down	CB open Line a & Bus isolator open, E/switch closed.	For 220kV LILO crossing	s/down	S/down by TPO Olakha asper the shutdown approval no.235
	(B) 66/33kV Watsa Substation												
1	16/9/2022	23:28hrs	16/9/2022	23:47hrs		.320MW	66KV IC	Fdr. I and II	66KV IC failed from chukha end	66KV IC failed from chukha end	66KV IC failed from chukha end	Tripped	
2	22/9/2022	2:46hrs	22/9/2022	2:55hrs		.250MW	66KV IC	Fdr. I and II	66KV IC failed from chukha end	66KV IC failed from chukha end	66KV IC failed from chukha end	Tripped	
3	22/9/2022	3:55hrs	22/9/2022	4:53hrs		.250MW	66KV IC	Fdr. I and II	66KV IC failed from chukha end	66KV IC failed from chukha end	66KV IC failed from chukha end	Tripped	
4	28/9/2022	15:03hrs	28/9/2022	15:10hrs		1.57	66KV SF 6 breaker	Fdr. I and II	Over current on ABC phase	Over current relay operated	Fdr. II Chapcha/ Shemagangkha	Tripped	Line tripped due to tree fallen on 33KV damchu line at watsa while TMD Tsimalakha clearing 66Kv ROW

	(C) 66/33kV Olakha Substation												
1	16-09-22	23:28	16-09-22	23:47	0	-7.92	66kV Olakha-Semtokha	All 66kV Olakha-Semtokha and 66kV Olakha-Changidaphu was effected	Grid fail	Under Voltages operated	Transmission line	Grid fail	Grid fail from Chukha and Rurichu. Charged from Chukha end and Rurichu and stand normal
2	16-09-22	23:28	16-09-22	23:47	0	2.41	66kV Olakha-Changidaphu	All 66kV Olakha-Semtokha and 66kV Olakha-Changidaphu was effected	Grid fail	Under Voltages operated	Transmission line	Grid fail	Grid fail from Chukha and Rurichu. Charged from Chukha end and Rurichu and stand normal at Olakha end
3	21-09-22	6:28	21-09-22	6:53	0	4.39	66kV Olakha-Changidaphu	All 66kV Olakha-Semtokha and 66kV Olakha-Changidaphu was effected	Fault	Nil	Transmission line	Transient fault	The supply was tripped from Changidaphu end . There was no relay operation and only under voltage Indication was operated at Olakha Substation
4	22-09-22	2:29	22-09-22	2:56	0	-5.8	66kV Olakha-Semtokha	All 66kV Olakha-Semtokha and 66kV Olakha-Changidaphu was effected	Grid fail	Under Voltages operated	Transmission line	Grid fail	Grid fail from Chukha and Rurichu. Charged from Chukha end and Rurichu and stand normal
5	22-09-22	3:55	22-09-22	4:18	0	-6.34	66kV Olakha-Semtokha	All 66kV Olakha-Semtokha and 66kV Olakha-Changidaphu was effected	Grid fail	Under Voltages operated	Transmission line	Grid fail	Grid fail from Chukha and Rurichu. Charged from Chukha end and Rurichu and stand normal
6	22-09-22	4:27	22-09-22	4:51	0	-6.34	66kV Olakha-Semtokha	All 66kV Olakha-Semtokha and 66kV Olakha-Changidaphu was effected	Grid fail	Under Voltages operated	Transmission line	Grid fail	Grid fail from Chukha and Rurichu. Charged from Chukha end and Rurichu and stand normal
7	22-09-22	2:29	22-09-22	2:56	0	2.41	66kV Olakha-Changidaphu	All 66kV Olakha-Semtokha and 66kV Olakha-Changidaphu was effected	Grid fail	Under Voltages operated	Transmission line	Grid fail	Grid fail from Chukha and Rurichu. Charged from Chukha end and Rurichu and stand normal
8	22-09-22	3:55	22-09-22	4:18	0	2.56	66kV Olakha-Changidaphu	All 66kV Olakha-Semtokha and 66kV Olakha-Changidaphu was effected	Grid fail	Under Voltages operated	Transmission line	Grid fail	Grid fail from Chukha and Rurichu. Charged from Chukha end and Rurichu and stand normal
9	22-09-22	4:27	22-09-22	4:51	0	3.06	66kV Olakha-Changidaphu	All 66kV Olakha-Semtokha and 66kV Olakha-Changidaphu was effected	Grid fail	Under Voltages operated	Transmission line	Grid fail	Grid fail from Chukha and Rurichu. Charged from Chukha end and Rurichu and stand normal
10	23-09-22	3:48	23-09-22	3:51	0	2.92	66kV Olakha-Changidaphu	Only 66kV Olakha-Changidaphu was effected	Fault	Under Voltages operated	Transmission line	Transient fault	No relays was operated at Olakha Substation and charged from Changidaphu and stood normal
11	23-09-22	4:56	23-09-22	5:02	0	5.87	66kV Olakha-Changidaphu	Only 66kV Olakha-Changidaphu was effected	Fault	Under Voltages operated	Transmission line	Transient fault	No relays was operated at Olakha Substation and charged from Changidaphu and stood normal

	(F) 66/33/11kV Jemina Substation												
1	16.09.2022	23:28	16.09.2022	23:47	0	2.76 & 1.86 (boyh imports), Changedaphu & Chumdo respectively	66 kV Line Changedaphu & Chumdo	Black out	Supply failed from source, no operation at the Substation end.	Nil	Generation source	–	Supply failed from generation sources & no operation at the Substation end.
2	22.09.2022	2:50	22.09.2022	2:57	0	1.20 & -1.68, Changedaphu & Chumdo respectively	66 kV Line Changedaphu & Chumdo	Black out	Supply failed from source, no operation at the Substation end.	Nil	Generation source	–	Supply failed from generation sources & no operation at the Substation end.
3	22.09.2022	3:56	22.09.2022	4:54	0	1.20	66 kV Line Chumdo	Black out	Grid fail also tripped the breaker at the Substation end.	SOTF	Grid fail		Supply failed from generation & also tripped the breaker at the Substation end.
4	22.09.2022	3:56	22.09.2022	6:30	2	-1.68	66 kV Line Changedaphu	Black out till 04:54 Hrs	Grid fail also tripped the breaker at the Substation end.	SOTF	Grid fail		Supply failed from generation & also tripped the breaker at the Substation end. As per the recommendation of BPSO, the line charged only at 06:30 Hrs.
	(G) 66/33/11kV Dechencholing substation												
1	16.09.2022	23:26Hrs	16.09.2022	23:46Hrs	0	-22.36	66KV Semtokha Incomer	Whole system blackout	Supply failed from source.				
2	22.09.2022	02:49Hrs	22.09.2022`	02:54Hrs	0	-20.90	66KV Semtokha Incomer	Whole system blackout	Supply failed from source.				
3	22.09.2022	03:55Hrs	22.09.2022	04:18Hrs	0	-21.61	66KV Semtokha Incomer	Whole system blackout	Supply failed from source.				
4	22.09.2022	04:28Hrs	22.09.2022	04:52Hrs	0	-21.61	66KV Semtokha Incomer	Whole system blackout	Supply failed from source.				
	(H) 66/11kV Haa Substation												
1	16.09.2022	23:28	16.09.2022	23:47	0	-0.97	66kV incomer	All	grid fail	O/C	Chukha power house	Supply tripped from the source	
2	18.09.2022	13:42	18.09.2022	13:50	0	-1.63	66kV incomer	All	grid fail	O/C & E/F	Chukha power house	Supply tripped from the source	
3	22.09.2022	2:49	22.09.2022	2:57	0	-0.68	66kV incomer	All	grid fail	O/C & E/F	Chukha power house	Supply tripped from the source	
4	22.09.2022	3:55	22.09.2022	4:45	0	-0.66	66kV incomer	All	grid fail	O/C & E/F	Chukha power house	Supply tripped from the source	
5	24.09.2022	10:10	24.09.2022	10:28	0	-1.64	66kV incomer	All	grid fail	O/C & E/F	Chukha power house	Supply tripped from the source	
6	24.09.2022	18:22	24.09.2022	18:46	0	-2.14	66kV incomer	All	grid fail	O/C	Chukha power house	Supply tripped from the source	
7	28.09.2022	7:52	28.09.2022	17:50	33	-2.23	66kV incomer	All	220 LILO crossing for Jamjee substation	Nil	Chumdo switching station	Shutdown taken by TOP Olakha, Thimphu for 220kV LILO crossing for Jamjee substation , with the opening code No. 784 by BPSO. The same was normalised after getting the clear information with a closing code No. 1455 by	

(I) 220kV Substation Semtokha

1	15.09.2022	18:10hrs	15.09.2022	18:20hrs		66kv Semtokha-Dochula	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I> Trip..IA= 263.2A,I B=5.799 KA,IC= 5.605KA .IN=17.2 6A		Trasient			
2	16.09.2022	23:28hrs	16.09.2022	23:47hrs		220kV Semtokha-Chukha	Semtokha s/s	Grid Failed	Chukha black-out R-PH A-288.6A. Y-PHA-70.39A. B-PH-676.7A.		Trasient			
3	21.09.2022	06:28hrs	21.09.2022	06:48hrs		66kv Semtokha-Dochula	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I> Trip,IA= 263.24,I B=5.799 KA,IC= 5.605KA ,IN=17.2 6A		Trasient			
4	22.09.2022	02:49hrs	22.09.2022	02:56hrs		220kV Semtokha-Ruricht	Semtokha s/s	Grid Failed	Main-2 Optd., RYBph trip		Trasient			
5	22.09.2022	02:49hrs	22.09.2022	03:08hrs		66kv Semtokha-Dochula	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I>2 Trip. O/C		Trasient			
6	22.09.2022	03:55hrs	22.09.2022	04:18hrs		220kV Semtokha-Chukha	Semtokha s/s	Grid Faile	Main 2, RYB triped		Trasient			
7	23.09.2022	03:48hrs	23.09.2022	03:52hrs		66kv Semtokha-Dochula	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I> Trip..IA= 174.A IB=5.74 9KA IC=5.62 3KA IN= 17.05A		Trasient			
8	23.09.2022	04:56hrs	23.09.2022	05:01hrs		66kv Semtokha-Dochula	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I> Trip.IA= 172.1A IB=5.21 2KA IC=5.02 6KA IN=17.0 1A		Trasient			
9	23.09.2022	21:42hrs	23.09.2022	22:01hrs		220kV Semtokha-Ruricht	Semtokha s/s		Main 2 protectio n Optd., RYBph trip.		Trasient			
10	23.09.2022	21:42hrs	23.09.2022	22:04hrs		66kv Semtokha-Dochula	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I> Trip.I		Trasient			
11	24.09.2022	02:47hrs	24.09.2022	02:54hrs		66kv Semtokha-Dochula	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I> Trip.I		Trasient			
12	27.09.2022	10:04hrs	27.09.2022	11:19hrs	1	66kv Semtokha-Dochula	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I> Trip.I		Trasient			
13	28.09.2022	18:37hrs	28.09.2022	18:45hrs		66kv Semtokha-Dochula	Dochula s/s	Y & Bph OC Trip	Backup OC/EF relay optd., Y&Bph I> Trip.I		Trasient			

	(K) 66/33kV Changidaphu Substation												
1	15.09.2022	18:10hrs	15.09.2022	18:32hrs			66kV Cangidaphu-Olakha Line	66kV Cangidaphu-Olakha Line		Distance Protectoin, Zone 2 RYBph Trip		Trasient
2	16.09.2022	23:28hrs	16.09.2022	00:18hrs			66kV Cangidaphu-Olakha Line	66kV Cangidaphu-Olakha Line		Distance Protectoin, Zone 2 RYBph Trip		Trasient
3	21.09.2022	06:28hrs	21.09.2022	06:53hrs			66kV Cangidaphu-Olakha Line	66kV Cangidaphu-Olakha Line		Distance Protectoin, Zone 2 RYBph Trip		Trasient
4	22.09.2022	03:55hrs	22.09.2022	04:23hrs			66kV Cangidaphu-Olakha Line	66kV Cangidaphu-Olakha Line		Distance Protectoin, Zone 2 RYBph Trip		Trasient
5	23.09.2022	03:48hrs	23.09.2022	03:51hrs			66kV Cangidaphu-Olakha Line	66kV Cangidaphu-Olakha Line		Distance Protectoin, Zone 2 RYBph Trip		Trasient
6	23.09.2022	04:56hrs	23.09.2022	05:02hrs			66kV Cangidaphu-Olakha Line	66kV Cangidaphu-Olakha Line		Distance Protectoin, Zone 2 RYBph Trip		Trasient
7	23.09.2022	21:42hrs	23.09.2022	22:05hrs			66kV Cangidaphu-Olakha Line	66kV Cangidaphu-Olakha Line		Distance Protectoin, Zone 2 RYBph Trip		Trasient
8	24.09.2022	02:47hrs	24.09.2022	02:56hrs			66kV Cangidaphu-Olakha Line	66kV Cangidaphu-Olakha Line		Distance Protectoin, Zone 2 RYBph Trip		Trasient
9	28.09.2022	18:37hrs	28.09.2022	18:44hrs			66kV Cangidaphu-Olakha Line	66kV Cangidaphu-Olakha Line		Distance Protectoin, Zone 2 RYBph Trip		Trasient
	(L) 66/33kV Damji Substation												
1	16.09.2022	2328 hrs	16.09.2022	2348 hrs	0	-3.91	66 kV Dechencholing Damji Line	Whole Substation	Trip	NA	NA		Tripped from Semtokha Substation
2	19.09.2022	1008 hrs	19.09.2022	1513 hrs	5	0.01	Power Transformer I	NA	Shutdown	NA	NA		Avail shutdown by Cheki Rinchen for annual maintenance of Transformer
3	21.09.2022	0945 hrs	21.09.2022	1835 hrs	8	3.84	Power Transformer II	NA	Shutdown	NA	NA		Avail shutdown by Cheki Rinchen for annual maintenance of Transformer
4	22.09.2022	0249 hrs	22.09.2022	0254 hrs	0	-4.13	66 kV Dechencholing Damji Line	Whole Substation	Trip	NA	NA		Western Grid Failure
5	22.09.2022	0356 hrs	22.09.2022	0418 hrs	0	-4.12	66 kV Dechencholing Damji Line	Whole Substation	Trip	NA	NA		Western Grid Failure
6	22.09.2022	0936 hrs	22.09.2022	1159 hrs	2	2.19	Power Transformer I	NA	Shutdown	NA	NA		Avail shutdown by Cheki Rinchen for annual maintenance of Transformer i.e. testing of transformer
7	22.09.2022	1214 hrs	22.09.2022	1720 hrs	5	2.02	Power Transformer II	NA	Shutdown	NA	NA		Avail shutdown by Cheki Rinchen for annual maintenance of Transformer i.e. testing of transformer

	(M) 66/11kV Dochula Substation													
1	02-09-22	11:35	02-09-22	12:46	1	-32.31	Dochula			Shut down taken by GE with work permit no.2321,to replace bi-direction energy meter.Opening code no.1005 issued by BPSO.Feeder charged at 12:46hrs with closing code no. 236 given by	Temporary		
2	02-09-22	12:50	02-09-22	13:43		-38.54	Dochula			Shut down taken by GE with work permit no.2322,to replace bi-direction energy meter.Opening code no.1006 issued by BPSO.Feeder charged at 13:43hrs with closing code no.237 given by	Temporary		
3	15-09-22	18:10	15-09-22	18:20		-32.25	66kV Semtokha	Semtokha - Dochula	Transit faul	Under voltage and 86 relay	Semtokha	Temporary	DHI	
4	15-09-22	18:10	15-09-22	18:27		-30.55	66kV Lobeysa	Lobeysa - Dochula	Transit faul	Under voltage and 86 relay	Lobeysa	Temporary	DHI	
5	16-09-22	23:28	17-09-22	0:12		-31.82	66kV Semtokha	Semtokha - Dochula	Transit faul	Under voltage and 86 relay	failed from	Temporary	DHI	
6	16-09-22	23:28	17-09-22	0:12		-30.28	66kV Lobeysa	Lobeysa - Dochula	Transit faul	Under voltage and 86 relay	failed from	Temporary	DHI	
7	21-09-22	6:28	21-09-22	6:46		-31.18	66kV Semtokha	Semtokha - Dochula	Transit faul	Under voltage and 86 relay	Semtokha	Temporary	DHI	
8	21-09-22	6:28	21-09-22	6:44		-30.34	66kV Lobeysa	Lobeysa - Dochula	Transit faul	Under voltage and 86 relay	Lobeysa	Temporary	DHI	
9	22-09-22	2:49	22-09-22	3:10		-31.19	66kV Semtokha	Semtokha - Dochula	Grid Fail from Chukha	Under voltage and 86 relay	kha Black	Temporary	DHI	
10	22-09-22	2:49	22-09-22	3:05		-29.64	66kV Lobeysa	Lobeysa - Dochula	Grid Fail from Chukha	Under voltage and 86 relay	kha Black	Temporary	DHI	
11	22-09-22	3:56	22-09-22	5:00	1	-29.02	66kV Semtokha	Semtokha - Dochula	Grid Fail from Chukha	Under voltage and 86 relay	kha Black	Temporary	DHI	
12	22-09-22	3:56	22-09-22	4:23		-26.12	66kV Lobeysa	Lobeysa - Dochula	Grid Fail from Chukha	Under voltage and 86 relay	kha Black	Temporary	DHI	
13	22-09-22	4:28	22-09-22	4:57		-2.17	66kV Lobeysa	Lobeysa - Dochula	Lobesa Substation hand tripped Dochula Feeder due to overloading at Basochu.	Under voltage and 86 relay	kha Black	Temporary	DHI	
14	23-09-22	3:48	23-09-22	3:53		-30.05	66kV Lobeysa	Lobeysa - Dochula	Transit faul	Under voltage and 86 relay	Lobeysa	Temporary	DHI	
15	23-09-22	3:48	23-09-22	3:54		-31.25	66kV Semtokha	Semtokha - Dochula	Transit faul	Under voltage and 86 relay	Lobeysa	Temporary	DHI	
16	23-09-22	4:56	23-09-22	5:05		-19.05	66kV Lobeysa	Lobeysa - Dochula	Transit faul	Under voltage and 86 relay	Lobeysa	Temporary	DHI	
17	23-09-22	4:56	23-09-22	5:05		-21.11	66kV Semtokha	Semtokha - Dochula	Transit faul	Under voltage and 86 relay	Lobeysa	Temporary	DHI	
18	23-09-22	21:43	23-09-22	22:04		-26.2	66kV Lobeysa	Lobeysa - Dochula	Transit faul	Under voltage and 86 relay	Semtokha	Temporary	DHI	
19	23-09-22	21:43	23-09-22	22:04		-28.25	66kV Semtokha	Semtokha - Dochula	Transit faul	Under voltage and 86 relay	Semtokha	Temporary	DHI	
20	24-09-22	2:47	23-09-22	2:55		-26.31	66kV Lobeysa	Lobeysa - Dochula	Transit faul	Under voltage and 86 relay	Semtokha	Temporary	DHI	
21	24-09-22	2:47	23-09-22	2:55		-28.68	66kV Semtokha	Semtokha - Dochula	Transit faul	Under voltage and 86 relay	Semtokha	Temporary	DHI	
22	28-09-22	18:36	28-09-22	18:49		-28.78	66kV Lobeysa	Lobeysa - Dochula	Transit faul	Under voltage and 86 relay	Semtokha	Temporary	DHI	
23	28-09-22	18:36	23-09-22	18:46		-30.29	66kV Semtokha	Semtokha - Dochula	Transit faul	Under voltage and 86 relay	Semtokha	Temporary	DHI	