



17 March 2022

CFI-LRA-LRA-RGWR-LETR-000351

To,
The Secretary,
Maharashtra Electricity Regulatory Commission
13th Floor, Centre No-1, World Trade Centre,
Cuffe Parade, Colaba
Mumbai 400 005

Dear Sir,

Sub: Partial shutdown in Mumbai on 27th February 2022

This has reference to the grid disturbance on 27th February 2022 wherein power supply to various areas in Mumbai was affected. We are submitting the chronology of events of this disturbance as Appendix to this submission for the information to the Hon'ble Commission.

We trust the same is in order.

Thanking you,

Yours faithfully,

S R Mehendale
17/3/22

S R Mehendale
Chief – Regulatory
The Tata Power Company Limited

Msathe 17/3/2022
OFFICE OF THE
MAHARASHTRA ELECTRICITY
REGULATORY COMMISSION
MUMBAI - 400 005

Encl: Appendix,

TATA POWER

The Tata Power Company Limited

Backbay Receiving Station Regulation Department 148 Lt Gen J Bhonsale Marg Nariman Point Mumbai - 400 021

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Appendix

Partial shutdown to Mumbai on 27th February 2022

A. Condition Prior to Incidence –

1. 220 kV MSETCL Trombay was fed by four incoming lines, viz Kalwa – Trombay, Mulund – Trombay, MSETCL Nerul – AEML Chembur – MSETCL Trombay and MSETCL Sonkhar – Trombay line.
2. MSETCL 220 kV Trombay substation is interconnected with Tata Power Trombay Generating Station at 220 kV and MSETCL Kalwa substation at 220 kV, which facilitates power Transmission to Mumbai.
3. MSETCL 220 kV Kalwa substation is interconnected with Tata Power Trombay generating station through Tata Power Salsette receiving station.
4. 220 kV Sonkhar – Trombay line was having a planned outage since 6th February for MMRDA Metro work.
5. 180 MW Tata Power Trombay, Unit 7 was out since 23rd February, 2022 due to low availability of APM gas. The unit was available on RLNG.
6. 220 kV Trombay – Salsette-1 was under planned outage for Metro work since 26th February 2022.
7. 220 kV Nerul – AEML line was taken out for planned outage on 27th February 2022 at 6:00 am.

Hence at the time of occurrence, out of the four 220 kV incoming lines to MSETCL Trombay two 220 kV lines were on planned outage. In addition one of the 220 kV Trombay Salsette lines which connects 220 kV MSETCL Kalwa to Tata Power Trombay was also under planned outage.

B. Details of Event during Occurrence

1. The demand of South Mumbai was being fed from Tata Power Trombay and Hydro, 220kV MSETCL Trombay tie point and 220 kV Tata Salsette Receiving station.
2. On 27th February 2022, 8:44 am 220 kV MSETCL Mulund – Trombay line tripped on fault, resulting in third incoming line to MSETCL Trombay being out.
3. At 9:49 am, the fourth incoming line to 220 kV MSETCL Trombay viz. 220 kV Kalwa – Trombay line tripped due to a fire below the line in BARC forest area.



4. This tripping led to shifting of power flow on Trombay Salsette line @ 450 MW which was the remaining 220 kV line connecting MSETCL grid to Mumbai at 220 kV. Hence, Trombay Salsette line tripped on back up overcurrent protection. This led to cascade tripping of other lines
5. This led to the formation of isolated network with Trombay and Bhira Generators and Dharavi – Trombay – Carnac – Backbay – Mahalaxmi – Parel – BKC. Khopoli, Bhivpuri and AEML Dahanu remained in normal service connected to Main Grid.
6. In the Islanded form, the demand required to be met was 850 MW and the available Generation of Trombay and Bhira together was 403 MW. Due to very high rate of frequency drop, the DF/DT and under frequency relays operated and demand of 366 MW got disconnected. However, there was still a mismatch in the demand of 484 MW ($850 - 366 = 484 \text{ MW}$) and Generation of 403 MW (Unit 5- 265 MW, U8 – 128 MW, Bhira – 10 MW). This mismatch of Generation and demand led to tripping of Trombay Unit-5 & Unit-8, which resulted in shutdown to balance demand of 484 MW of the Islanded system as well.

The above series of events led to shut down to 850 MW load of South Mumbai and parts of Mumbai Suburban area. The utility wise total loss of load is provided in the table below -

Table 1: Utility Wise Loss of Load during Occurrence

MW					
BEST	TPC D	AEML	Railway	Auxiliary	Total
402	226	177	19	26	850

Note: AEML 177 MW demand include TPC D changeover consumption.

The restoration actions were initiated by charging Trombay Salsette line and supply to various area in Mumbai was restored in a phased manner ensuring essential services were given priority. While the restoration activities were initiated, Tata Power-D initiated the communication with the affected consumers through various mode of communication regarding the load shedding and reason for outage.



The sequence of restoration of load is provided in the table below –

Table 2: Load Restoration details in Mumbai post the occurrence

Area	Station	Load (MW)	Station Charging Time	First Restoration Time	Last Restoration Time
Sion Bandra Mahim	Dharavi	179	1009	1040	1105
Chembur	Trombay	115	1009	1027	1106
South Mumbai	Carnac	60	1013	1030	1038
South Mumbai	Backbay	48	1016	1040	1041
South Mumbai	Mahalaxmi	105	1022	1049	1059
South Mumbai	Grant Road	44	1023	1023	1023
Sion	Antop Hill	20	1026	1026	1026
Railway	Wadala	5	1027	1027	1027
Chembur	AEML CM	68	1027	1027	1027
South Mumbai	Parel	65	1030	1053	1112
Chembur	Chembur	50	1031	1100	1111
Bandra	BKC	49	1037	1101	1102
Railway	Mankhurd	16	1046	1056	1056
	Total	824			
	Auxiliary	26			
	Total	850			