


Frequency Response Characteristic Computation for All India based on NLDC SCADA Data

EVENT: On 31 March 2024, at 0441 hrs 400 kV Bus 3 & 4 tripped at NTPC Barh Stage 2 due to bus bar protection operation. It was reported that the fire broke out at switchyard area which leads to tripping of entire Barh Stage-II (Unit 4 & 5, 660 MW each) generation and associated transmission lines.. The generation loss of 1251 MW as per SCADA data has been considered for FRC computation.

S No	Particulars	Dimension	NR	ER	WR	NER	SR	Nepal	Bhutan	All India
1	Actual Net Interchange before the Event (04:41:04)	MW	5898	-9061	-12202	56	15631	42	-421	179048
2	Actual Net Interchange after the Event (04:42:54)	MW	5641	-7942	-12598	43	15173	36	-423	179009
3	Change in Net Interchange (2-1)	MW	-257	1118	-396	-14	-458	-5	-2	-40
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	0	1251	0	0	0	0	0	1251
5	Control Area Response (3 - 4)	MW	-257	-133	-396	-14	-458	-5	-2	-1291
6	Frequency before the Event (Point A on the frequency graph)	HZ	50.02	50.02	50.02	50.02	50.02	50.02	50.02	50.02
7	Frequency after the Event (Point B on the frequency graph)	HZ	49.96	49.96	49.96	49.96	49.96	49.96	49.96	49.96
8	Change in Frequency (7 - 6)	HZ	-0.059	-0.059	-0.059	-0.059	-0.059	-0.059	-0.059	-0.059
9	Frequency Response Characteristic (5 / 8)	MW/Hz	4381	2261	6761	233	7823	93	40	22023
10	Frequency Response Obligation (FRO) of control area*	MW/Hz	4033	2059	5086	196	3564	21	40	15000
11	Frequency Response Performance (FRP) (9/10)		1.09	1.10	1.33	1.19	2.20	4.44	0.99	1.47
12	FRC for Synchronous Indian Grid (4/8)	MW/Hz	21348							
13	Maximum change in frequency (Point C- Point A on the frequency graph)	Hz	0.112							
14	Power Number (4/13)	MW/Hz	11160							



CGM (SO), NLDC

Note: * Region FRO is aggregate of FRO for control areas in that concerned region
 +ve exchange=> import ; (-)ve exchange => export
 (^) - Data may be constant/suspected during the event