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

EVENT:	On 14th Jan 2023, As reported At 13:03 hrs Due to Multiple tripping at Rajasthan RE complex,Generation loss of around 2340 MW resulted in Rajasthan RE generation loss complex of Northern Region and same has been considered in FRC Calculation.

S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (13:03:28)	MW	4427	-7748	-4393	342	7896
2	Actual Net Interchange after the Event (13:04:28)	MW	6224	-8069	-5396	280	7233
3	Change in Net Interchange (2-1)	MW	1797	-321	-1003	-61.6	-663
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	2340	0	0	0	0
5	Control Area Response (3 - 4)	MW	-543	-321	-1003	-62	-663
6	Frequency before the Event	HZ	50.13	50.13	50.13	50.13	50.13
7	Frequency after the Event	HZ	50.02	50.02	50.02	50.02	50.02
8	Change in Frequency (7 - 6)	HZ	-0.114	-0.114	-0.114	-0.114	-0.114
9	Frequency Response Characteristic (5 / 8)	MW/Hz	4760	2815	8796	540	5816
10	Net System Demand met before the Event	MW	57115	19528	59645	1936	53511
11	Internal Generation before the Event (10 - 1)	MW	52689	27276	64039	1595	45615
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	2285	781	2386	77	2140
13	Ideal generator response assuming 5% droop…….40% per Hz (40% of Row 11)	MW/Hz	21075	10910	25615	638	18246
14	Composite ideal response (12 + 13)	MW/Hz	23360	11691	28001	715	20387
15	Percentage ideal response	%	20.4%	24.1%	31.4%	75.6%	28.5%

(*) - Data may be constant/suspected during the event
Note: +ve exchange=> import ; (-)ve exchange => export

Total Change in (MW)	2340
FRC for NEWS GRID (dp/df) MW/Hz	**20526**
Power Number (net change in MW/maximum change in frequency)	**10263**

Source Wise Generation (MW)	GAS	HYDRO	NUCLEAR	Thermal	WIND	SOLAR
	2149	**9462**	**4796**	**132941**	**2107**	**41300**