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

EVENT:	At 15:30 Hrs Dated 15th-March-2022,As reported bus bar protection operated at 220 KV Raigarh CG S/S of Western Region and resulted in tripping of all elements at 220 KV Raigarh CG S/S.Load loss of around 936 MW reported in the event.Frequency change of 0.1 Hz was observed during the event.

S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (15:30:00)	MW	1986	-8236	-5432	346	10885
2	Actual Net Interchange after the Event (15:32:30)	MW	2373	-8227	-6189	347.0	11226
3	Change in Net Interchange (2 - 1)	MW	387	9	-757	1.0	341
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	0	0	-936	0	0
5	Control Area Response (3 - 4)	MW	387	9	179	1	341
6	Frequency before the Event	HZ	49.94	49.94	49.94	49.94	49.94
7	Frequency after the Event	HZ	50.00	50.00	50.00	50.00	50.00
8	Change in Frequency (7 - 6)	HZ	0.060	0.060	0.060	0.060	0.060
9	Frequency Response Characteristic (5 / 8)	MW/Hz	6450	150	2983	17	5683
10	Net System Demand met before the Event	MW	47599	18665	63379	2138	54684
11	Internal Generation before the Event (10 - 1)	MW	45613	26901	68811	1792	43799
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	1904	747	2535	86	2187
13	Ideal generator response assuming 5% droop…….40% per Hz (40% of Row 11)	MW/Hz	18245	10760	27525	717	17519
14	Composite ideal response (12 + 13)	MW/Hz	20149	11507	30060	802	19707
15	Percentage ideal response	%	32.0%	1.3%	9.9%	2.1%	28.8%

(*) - Data may be constant/suspected during the event Note: +ve exchange=> import ; (-)ve exchange => export	# only interchange of 132kv Surjamani-comilla D/c.

Total Change in (MW)	936
FRC for NEWS GRID (dp/df) MW/Hz	**15600**
Power Number (net change in MW/maximum change in frequency)	**9360**