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

EVENT:	At 12:47 Hrs Dated 27th-March-2022,As reported due to multiple element tripping at 400kV Lapanga station 562 MW(Unit-3) Generation loss at OPGC and 1900 MW load loss at 400kV Sterlite(Vedanta) occured .Effective Load loss of around 1338 MW has been considered in the event for FRC Calculation.

S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (12:47:15)	MW	266	-4607	-6040	136	10466
2	Actual Net Interchange after the Event (12:48:50)	MW	371	-5443	-5264	152.0	10678
3	Change in Net Interchange (2 - 1)	MW	105	-836	776	16.0	212
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	0	-1338	0	0	0
5	Control Area Response (3 - 4)	MW	105	502	776	16	212
6	Frequency before the Event	HZ	49.99	49.99	49.99	49.99	49.99
7	Frequency after the Event	HZ	50.03	50.03	50.03	50.03	50.03
8	Change in Frequency (7 - 6)	HZ	0.035	0.035	0.035	0.035	0.035
9	Frequency Response Characteristic (5 / 8)	MW/Hz	3000	14343	22171	457	6057
10	Net System Demand met before the Event	MW	46274	19612	58750	1740	55751
11	Internal Generation before the Event (10 - 1)	MW	46008	24219	64790	1604	45285
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	1851	784	2350	70	2230
13	Ideal generator response assuming 5% droop…….40% per Hz (40% of Row 11)	MW/Hz	18403	9687	25916	642	18114
14	Composite ideal response (12 + 13)	MW/Hz	20254	10472	28266	711	20344
15	Percentage ideal response	%	14.8%	137.0%	78.4%	64.3%	29.8%

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

Total Change in (MW)	1338
FRC for NEWS GRID (dp/df) MW/Hz	**38229**
Power Number (net change in MW/maximum change in frequency)	**10619**