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

EVENT:	At 15:47 Hrs Dated 20th-April-2022, As reported, due to loss of evacuation paths at 400kV SEIL_P2, unit-1 and 2 of 660 MW capacity each at SEIL_P2 got tripped and resulted in Generation loss of 1270MW. Same figure is considered for FRC Calculation.

S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (15:47:40)	MW	1458	-5562	-5878	-194	9480
2	Actual Net Interchange after the Event (15:48:00)	MW	1303	-5880	-6557	-198.0	10440
3	Change in Net Interchange (2 - 1)	MW	-155	-318	-679	-4.0	960
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	0	0	0	0	1270
5	Control Area Response (3 - 4)	MW	-155	-318	-679	-4	-310
6	Frequency before the Event	HZ	49.72	49.72	49.72	49.72	49.72
7	Frequency after the Event	HZ	49.66	49.66	49.66	49.66	49.66
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	2583	5300	11317	67	5167
10	Net System Demand met before the Event	MW	53382	21572	65311	1863	51412
11	Internal Generation before the Event (10 - 1)	MW	51924	27134	71189	2057	41932
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	2135	863	2612	75	2056
13	Ideal generator response assuming 5% droop…….40% per Hz (40% of Row 11)	MW/Hz	20770	10854	28476	823	16773
14	Composite ideal response (12 + 13)	MW/Hz	22905	11716	31088	897	18829
15	Percentage ideal response	%	11.3%	45.2%	36.4%	7.4%	27.4%

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

Total Change in (MW)	1270
FRC for NEWS GRID (dp/df) MW/Hz	**21167**
Power Number (net change in MW/maximum change in frequency)	**11545**