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

EVENT:	As reported at 19:44 Hrs on 22nd of August 2021,Due to operation of Bus bar at Karcham Wangtoo, Generation loss of around 1400 MW occured in Northern region hydro complex(1080MW at Karcham HEP & 330MW at Baspa HEP).

S No	Particulars	Dimension	NR	ER	WR	NER	SR
1	Actual Net Interchange before the Event (19:44:10)	MW	9680	-4532	-8328	122	2852
2	Actual Net Interchange after the Event (19:45:45)	MW	10699	-4826	-8831	108.7	2712
3	Change in Net Interchange (2 - 1)	MW	1018	-294	-503	-13.2	-141
4	Generation Loss (+) / Load Throw off (-) during the Event	MW	1400	0	0	0	0
5	Control Area Response (3 - 4)	MW	-382	-294	-503	-13	-141
6	Frequency before the Event	HZ	50.03	50.03	50.03	50.03	50.03
7	Frequency after the Event	HZ	49.99	49.99	49.99	49.99	49.99
8	Change in Frequency (7 - 6)	HZ	-0.040	-0.040	-0.040	-0.040	-0.040
9	Frequency Response Characteristic (5 / 8)	MW/Hz	9540	7358	12579	331	3518
10	Net System Demand met before the Event	MW	53454	22270	45448	2870	38311
11	Internal Generation before the Event (10 - 1)	MW	43774	26802	53777	2748	35458
12	Ideal load response assuming 4% per Hz (0.04*Row 10)	MW/Hz	2138	891	1818	115	1532
13	Ideal generator response assuming 5% droop…….40% per Hz (40% of Row 11)	MW/Hz	17509	10721	21511	1099	14183
14	Composite ideal response (12 + 13)	MW/Hz	19648	11612	23329	1214	15716
15	Percentage ideal response	%	48.6%	63.4%	53.9%	27.3%	22.4%

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

Total Change in (MW)	1400
FRC for NEWS GRID (dp/df) MW/Hz	**35000**
Power Number (net change in MW/maximum change in frequency)	**10769**