भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

सं. उक्षेविस/ वाणिज्यिक/ 209/ आर पी सी (53वीं)/2022/ 3149-3196 दिनाँक :27/04/2022

सेवा में / To,

उ.क्षे.वि.स. के सभी सदस्य (संलग्न सूचीनुसार)
Members of NRPC (As per List)

विषय: उत्तर क्षेत्रीय विद्युत समिति की 53वीं बैठक की अतिरिक्त कार्यसूची - 2 ।
Subject: 53rd meeting of Northern Regional Power Committee – Additional Agenda - 2.

Madam/Sir,

उत्तर क्षेत्रीय विद्युत समिति की 53वीं बैठक दिनांक **29** अप्रैल, **2022** को **1100** बजे विडियो कोंफ्रेंसिंग के माध्यम से आयोजित की जाएगी । बैठक की अतिरिक्त कार्यसूची – 2 संलग्न है।

The 53rd meeting of Northern Regional Power Committee (NRPC) will be held at **1100 Hrs** on **29th April, 2022** via video conferencing. Additional agenda – 2 for the same is attached.

भवदीय
Yours faithfully,

Naresh

(नरेश भंडारी) 27/4/22
(Naresh Bhandari)
सदस्य सचिव
Member Secretary

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Contents

उत्तरी क्षेत्रीय विद्युत समिति की 53वीं बैठक

53rd MEETING OF NORTHERN REGIONAL POWER COMMITTEE

Time & Date of NRPC meeting: 29th April, 2022 (11:00 hrs. onward)

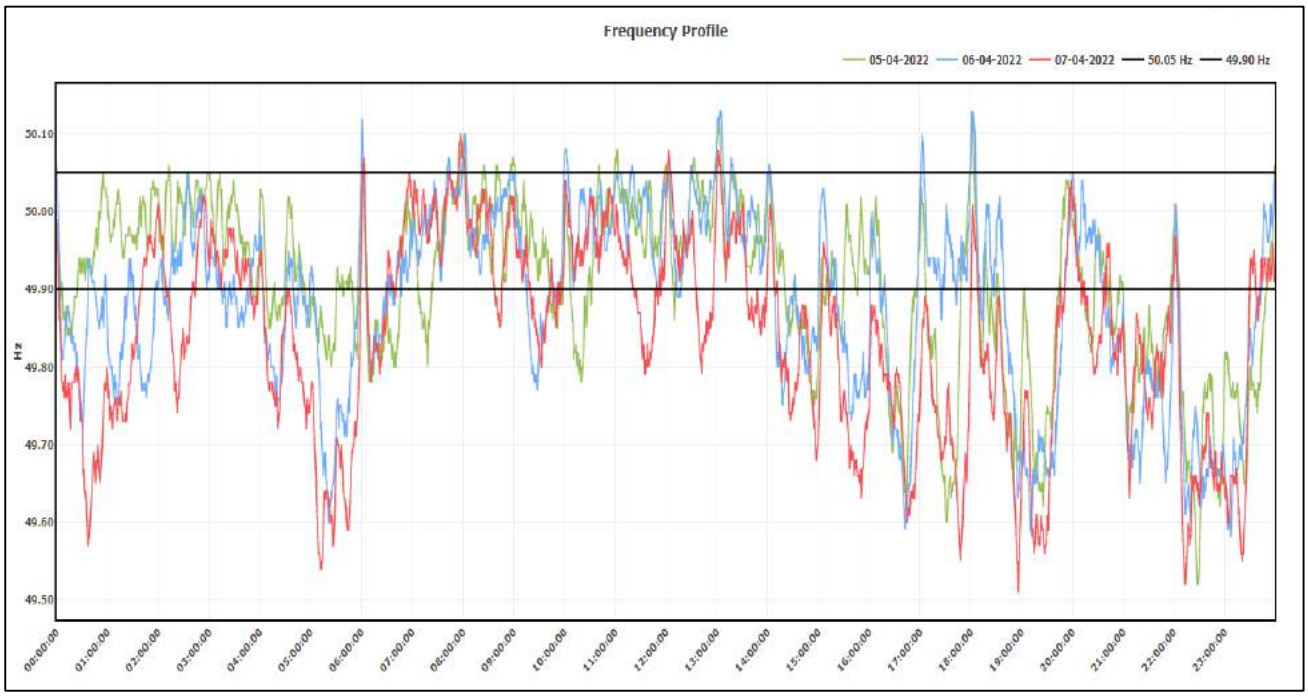
Venue: Video Conferencing

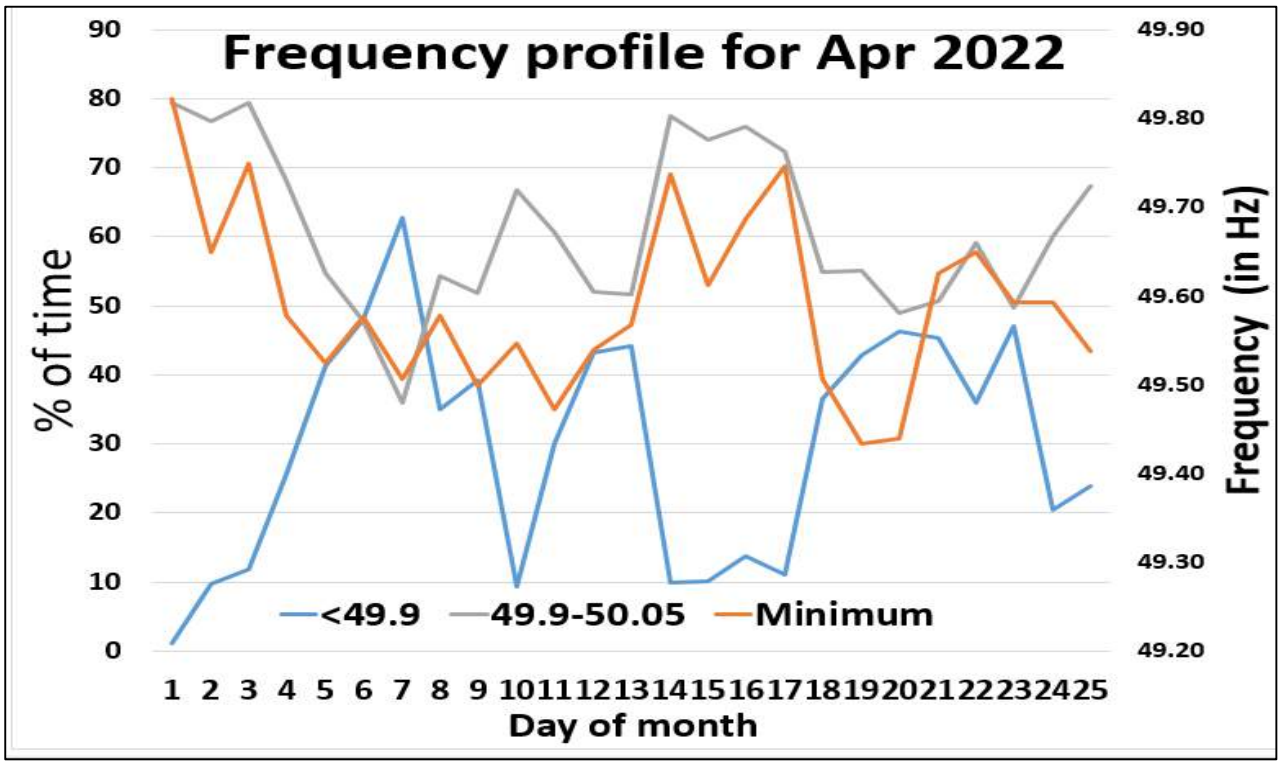
ADDITIONAL AGENDA

AA.1 Low frequency operation of grid (Summer preparedness 2022)

AA.1.1 Demand across the country has remained high over the last several months and therefore operating the grid within IEGC mandated frequency band of 49.9-50.05Hz has been challenging to RLDCs/SLDCs/ DISCOMs. In Mar'22, frequency remained within IEGC band for only 73.42 % of the time. Most of the time frequency continued to remain below the IEGC specified band. During this time, large generation outage or any other contingency event, could result in further drop in frequency and therefore, overdrawals below 49.90 Hz must be controlled quickly in order to keep system secure. All utilities are requested to follow all the measures described subsequently in this agenda point.

AA.1.2 As deliberated in 193 NR-OCC meeting, NR demand has been increasing and is likely to increase further in coming days and therefore keeping system parameters within operational band is extremely important as any laxity could prove to be very costly for the Grid. For the last few weeks, system frequency is running below the operational band for considerable percentage of time especially during afternoon and night hours. Frequency profile for the few days of April (05-07 April 2022) is given below:





AA.1.3 As visible from above plots, frequency profile has sharply deteriorated in last 4-5 weeks and operating at vulnerable lower values. The main reason for the above poor frequency profile is high over drawal by the some of the states including some of the NR states. Accordingly, radial feeders for these states were opened by NRLDC to restrict decline in frequency and limit over drawl of these states (details attached as *Annexure-I*). Some of the states such as Haryana, HP, and J&K continue to overdraw even at the time of low frequency.

AA.1.4 The power prices in country have also gone very high in view of high demand & congestion. Therefore, maximizing all the internal generation as well as load management is necessary for safe and secure operation of the Grid.

AA.1.5 All the concerned are requested to strictly take actions and avoid over drawal from Grid for safe & secure operation of the Grid. Therefore, the following is requested:

1. Managing the demand portfolio and making prearrangements for procurement of power and ensuring portfolio balancing through STOA/RTM market segments
2. More units shall be kept on bar in order to meet the increased demand safely as well as maintaining reserves
3. Keeping sufficient coal stock and maintaining adequate reserves.
4. Restricting deviations from schedule and ensuring no under injection by the generators from schedule.
5. Advance action is required for bringing the units on bar to avoid situation such as encountered in March/ April 2022.
6. Ensure that ADMS is in service and expedite its implementation if not commissioned.

7. Ensure healthiness and availability of AUFLS and df/dt load shedding.
8. In case of inadequate margins in intrastate generators measures for emergency load regulation measures may be taken in interest of grid security.
9. Pursue generators to expedite revival of thermal units under forced outage wherever feasible.

AA.1.6 NRLDC letters dated 06.04.2022 and 08.04.2022 are attached as *Annexure-II*. State specific letters to Uttarakhand, J&K, HP, Rajasthan and UP are attached as *Annexure-III*. Plots depicting over drawl by NR states at the time of low frequency after which radial feeders were opened are attached as *Annexure-IV*. It can be clearly seen that the feeders are opened by NRLDC only in case of overdrawl and low frequency operation of the grid. Moreover, after some time when frequency is within the IEGC band and state is able to maintain its drawl as per schedule, these feeders are closed.

AA.1.7 In this case, the list of radial feeders become very important. Utilities have been requested number of times to update list of radial feeders which can be opened on the directions of NRLDC to regulate the demand. List of such radial feeders has been provided by respective utilities and is part of 'Operating Procedure of Northern Region'. Following are the attributes for such feeders:

- Feeders shall be radial in nature
- They should usually have substantial load flow so that reduction of drawalcan be prominently noticed on opening of such lines.
- such feeders are not part of any other scheme such as any SPS, UFR or df/dt actuated shedding

AA.1.8 Utilities may also intimate in case no radial feeders are available to disconnect. In such a case, NRLDC along with constituent will study the grid connected feeders /ICTs for disconnection which has low impact in the NR Grid. For such states, it is requested to nominate one nodal officer from SLDC which shall coordinate with NRLDC and study about such feeders.

AA.1.9 Telemetry is to be ensured for all such feeders for monitoring in real time by SLDC/ NRLDC. States are also advised to take remedial measures for minimizing sustained over drawal at low frequencies as per the IEGC.

AA.1.10 JK SLDC vide their email dated 10.04.2022 have intimated that following 220kV lines are proposed to replace the existing list (attached) for physical regulation:-

- 220kV D/C Samba-Hiranagar (upto 200MW)
- 220kV New Wampoh-Mirbazar (upto 200MW)

AA.1.11 Uttarakhand SLDC vide email dated 13.04.2022 have intimated that list of radial feeders shall be:

- 132kV Sitarganj-ELDECO
- 132kV Pithoragarh(PG)-Pithoragarh

AA.1.12 All states need to make sure that the list attached as *Annexure-V* is correct, radial and actually provides relief in real-time. Same has also been repeatedly requested

by written communication from NRLDC and discussions in OCC meetings. If no feedback is received, it would be assumed that the list attached at *Annexure-V* is ok.

Members may like to discuss.

AA.2 J&K Telemetry Issues

AA.2.1 Reliability and accuracy of SCADA data and its associated communication system is essential for monitoring and coordinating operations of a large electricity grid. It helps in visualization and management of the critical grid element failure/grid incident in real time and minimizes the possibility of any untoward incidences/disturbances. Network applications in Energy management system (EMS) such as State Estimator (SE), Real Time Contingency Analysis (RTCA) also necessitate reliable and accurate real time analog and digital data. Data communication has to be made through redundant and alternate path communication channel.

AA.2.2 Real-Time data availability from Jammu and Kashmir is very poor. There is zero visibility of data in J&K stations. With poor monitoring of data, it is very difficult to monitor grid in efficient manner.

AA.2.3 The matter has been discussed in various TCC and TeST Meetings but there is no improvement of the same.

Brief details are as follows:

- Under SCADA upgrade project M/s Siemens at all 400KV / 220 KV and 132 KV sub-stations/generating Stations of J&K PDD installed 66 RTUs.
- RTUs were not integrated with Control centre due to non-availability of communication network.
- RTUs were tested locally and commissioned without data availability at Control Centre.
- Due **to Non-availability of data, JK PDD is not able to monitor its drawal from grid and its generation**. It is dependent of Central sector data for monitoring of drawal.

AA.2.4 Matter was also discussed in Special Meeting with J&K on 28.07.2020 where in Representative of J&K informed that they have given consultancy work to POWERGRID for installation of OPGW in J&K. However, due to funding issue OPGW work has been stalled by POWERGRID. According to J&K, almost 95% of the work is complete and once funding issue is resolved, Non-availability of telemetry issue will be resolved.

AA.2.5 Matter was also discussed in 47th TCC-49th NRPC Meeting; J&K confirmed that they will resolve the issues mutually with POWERGRID so that data starts reporting to SLDC/ NRLDC. Matter was also discussed in 19th TeST Meeting where Representative from J&K informed that they are in process of OPGW commissioning and RTU integration. Various meeting has been held between J&K, POWERGRID and Siemens and finalised the priority list and work segregation has been done. He further informed that around 6-8 RTUs will be

integrated by 31st March 2022 and 31st December 2022 all 70 RTUs will be integrated with SLDC.

This is to inform that there is no improvement in this regard.

J&K is requested to apprise the status to the forum.

Annexure - I

Feeder opened on Physical Regulation as per NRLDC instructions

Sr. No.	Name of Over-Drawing State	Over-Drawl (MW)	Frequency (Hz)	Name of Feeder opened on Physical Regulation	Time/Date of Opening	Time/Date of Restoration	Load Relief
1	**J&K**	130 MW	49.54 Hz	220kV Kishenpur - Barn Ck-1	17:47Hrs/08.04.2022	18:01Hrs/08.04.2022	NIL
2	**Haryana**	200 MW	49.53 Hz	Schedule-A feeders(33kV) from Panipat(BBMB)	19:14 Hrs/09.04.2022	19:34Hrs/09.04.2022	25 MW
3	**J&K**	188 MW	49.51Hz	220kV Kishenpur-Barn Ckt-1	19:17Hrs/09.04.2022	20.11Hrs/09.04.2022	137 MW
				220kV Kishenpur-Barn Ckt-2	19.18Hrs/09.04.2022	20.11Hrs/09.04.2022	137 MW
4	**Haryana**	271 MW	49.51 Hz	Schedule-A feeders(33kV) from Panipat(BBMB)	23:28Hrs/09.04.2022	00:51Hrs/10.04.2022	25 MW
				Schedule-B feeders(33kV) from Kurukshetra (BBMB) and Dhulkote (BBMB)	00:10Hrs/10.04.2022	00:43Hrs/10.04.2022	
				132kV Kundli – Narela line	00:25Hrs/10.04.2022	01:00Hrs/10.04.2022	
				132kV Sonipat – Panipat line	00:08Hrs/10.04.2022	00:46Hrs/10.04.2022	
5	**Himachal Pradesh**	100 MW	49.51 Hz	132kV Dehar -Kangoo line from Dehar(BBMB)	23:35Hrs/09.04.2022	00:51Hrs/10.04.2022	
6	**Himachal Pradesh**	100 MW	49.51 Hz	220kV Dehar-Kangoo line from Dehar(BBMB)	23:35Hrs/09.04.2022	00:54Hrs/10.04.2022	
7	**Punjab**	250 MW	49.54 Hz	132kV Jamalpur-Ghulal D/C from Jamalpur(BBMB)	00:12Hrs/10.04.2022	00:49Hrs/10.04.2022	
8	**J&K**	150 MW	49.49Hz	220kV Kishenpur-Barn Ckt-1	18:44Hrs/11.04.2022	19:37Hrs/11.04.2022	125 MW
				220kV Kishenpur-Barn Ckt-2	18:44Hrs/11.04.2022	19:37Hrs/11.04.2022	125 MW
9	**Haryana**	90 MW	49.49 Hz	Schedule-A feeders(33kV) from Panipat(BBMB)	19:01Hrs/11.04.2022	19:55Hrs/11.04.2022	29 MW
		98 MW	49.47 Hz	Schedule-B feeders(33kV) from Kurukshetra (BBMB) and Dhulkote (BBMB)	19:22Hrs/11.04.2022	19:58Hrs/11.04.2022	38 MW
10	**Punjab**	103 MW	49.49Hz	220 KV JALANDHAR(PG)-KANJAL(PS) (PSTCL) CKT-1	18:46Hrs/11.04.2022	20:06Hrs/11.04.2022	30 MW
				220 KV JALANDHAR(PG)-KANJAL(PS) (PSTCL) CKT-2	18:46Hrs/11.04.2022	20:10Hrs/11.04.2022	30 MW
11	**Haryana**	100 MW	49.54 Hz	Schedule-A feeders(33kV) from Panipat (BBMB)	19:23Hrs/12.04.2022	20.46Hrs/12.04.2022	70 MW
				Schedule-B feeders(33kV) from Kurukshetra (BBMB)	19.25Hrs/12.04.2022	20.42Hrs/12.04.2022	
				Schedule-B feeders(33kV) from Dhulkote (BBMB)	19.27Hrs/12.04.2022	20.43Hrs/12.04.2022	
12	**Himachal Pradesh**	100 MW	49.55 Hz	132kV Dehar -Kangoo line from Dehar(BBMB)	17.19 Hrs/18.04.2022	17.44/18.04.2022	20
13	**Himachal Pradesh**	100 MW	49.55 Hz	220kV Dehar-Kangoo line from Dehar(BBMB)	17.19 Hrs/18.04.2022	17.44/18.04.2022	25
14	**J&K**	150 MW	49.55 Hz	220 KV SAMBA(PG)-HIRANAGAR(PDD) (PG) CKT-1	17.23 Hrs/18.04.2022	18.02 Hrs/18.04.2022	73
				220 KV SAMBA(PG)-HIRANAGAR(PDD) (PG) CKT-2	17.23 Hrs/18.04.2022	18.02 Hrs/18.04.2022	73
15	**J&K**	150 MW	49.51 Hz	220KV New Wanpoh - Mirbazar -I	23.15Hrs/18.04.2022	23.33Hrs/18.04.2022	150
				220KV New Wanpoh - Mirbazar -II	23.15Hrs/18.04.2022	23.34Hrs/18.04.2022	150
16	**Rajasthan**	150 MW	49.44 Hz	220KV Bhiwadi(PG) - Kushkhera	23.13Hrs/18.04.2022	23.34Hrs/18.04.2022	140
				220KV Neemrana(PG) - Kushkhera	23.17Hrs/18.04.2022	23.34Hrs/18.04.2022	140
17	**J&K**	150 MW	49.44 Hz	220 KV SAMBA(PG)-HIRANAGAR(PDD) (PG) CKT-1	14:09 Hrs/19.04.2022	16.33 Hrs/19.04.2022	90
				220 KV SAMBA(PG)-HIRANAGAR(PDD) (PG) CKT-2	14:09 Hrs/19.04.2022	17:07 Hrs/19.04.2022	90
18	**UP**	200 MW	49.44 Hz	220 KV ALLAHABAD(PG)-JHUSI(UP) (PG) CKT-1	14:12 Hrs/19.04.2022	14:32 Hrs/19.04.2022	144
19	**UP**	120 MW	49.44 Hz	220 KV SOHAWAL(PG)-BARABANKI(UP) (UP) CKT-1	14:14 Hrs/19.04.2022	14:45 Hrs/19.04.2022	145
			49.44 Hz	220 KV SOHAWAL(PG)-BARABANKI(UP) (UP) CKT-2	14:14 Hrs/19.04.2022	14:48 Hrs/19.04.2022	145

Annexure - II

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेषण केन्द्र/NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
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CIN: U40105L2009GOI188682, Website: www.nrldc.org, www.nrldc.in, Tel.: 01126519406, 26523869, Fax: 011-26852747

संदर्भ सं° : NRLDC/SO-I/151/ 358 - 362 **दिनांक :** 06th April **2022**

To

As per distribution list

Sub : Operational planning and Grid Security during high demand period.

Sir/Ma'am,

In view of ongoing dry weather in Northern Region, Northern Region demand is remaining on higher side persistently and similar demand pattern is likely to continue in the coming days also. due to dry weather forecast by IMD in Northern Region.

For the last few days, the grid frequency has been remaining below 49.90Hz (lower operational band) for considerable time. Such low frequency operation is a threat to the system security.

Date	% of time frequency below 49.90Hz (lower operational band)	Minimum frequency
04-04-2022	25.6%	**49.58Hz at 19:15Hrs**
05-04-2022	41.3%	**49.52Hz at 22:27Hrs**

The frequency has also remained below 49.90Hz (lower operational band) for most of the time from 14:00Hrs onwards for last two days (Plots attached).

In these precarious situations of low frequency operation, some of the NR states have been over-drawing from the Grid. During the low frequency operation, any further tripping of generation unit(s) may lead to untoward incident(s) causing operation of under frequency relays (UFR) and further leading to widespread outage.

In view of high demand, the prices in power exchange have also increased and at times power is unavailable in real time market. Thus too much reliance on RTM should be avoided specially during high demand period.

In order to ensure stability of grid operations and for achieving the maximum economy and efficiency in the operation of the power system, all NR states are requested to ensure the following :

1. ADMS (automatic demand management system) to be kept in service to avoid over-drawl during low frequency conditions and manage the power portfolio meticulously.
2. Expedite the revival of thermal units under forced outage & revive the intra-state thermal/gas based generating stations from RSD in RLNG/SPOTGAS/Liquid fuel to hedge the position of Northern Region against further outage of thermal machines and volatility in market prices in day ahead and RTM apart from maintaining adequate reserves at intra-state level.

3. Maintain drawl from the grid strictly as per schedule by flexing internal generation and revising requisition in ISGS stations including gas based generation on bar in RLNG and liquid fuel and purchase of power through STOA.
4. Maximize intra-state generation including hydro generation during evening & morning peak hours.
5. Ensure fuel adequacy including RLNG and liquid fuel for all thermal/Gas plants in coordination with concerned authority.
6. Utilize all available reactive compensation proactively to maintain grid voltages within permissible limits.
7. N-1 contingency may be ensured by respective control centres, while allowing planned shutdowns of transmission elements in their control areas to secure sufficient Margins in the network for safe operation. All such shutdown shall be returned within stipulated time.
8. All the defence mechanism like RGMO/FGMO, ADMS, UFR, df/dt, SPS shall be ensured to be in service and in healthy condition.

Cooperation from all stakeholders is highly solicited for safe, secure and reliable Grid operation.

Thanks and Regards

Rajiv Kumar Porwal
CGM(I/C), NRLDC

Distribution List :

1. Head of SLDCs in Northern Region

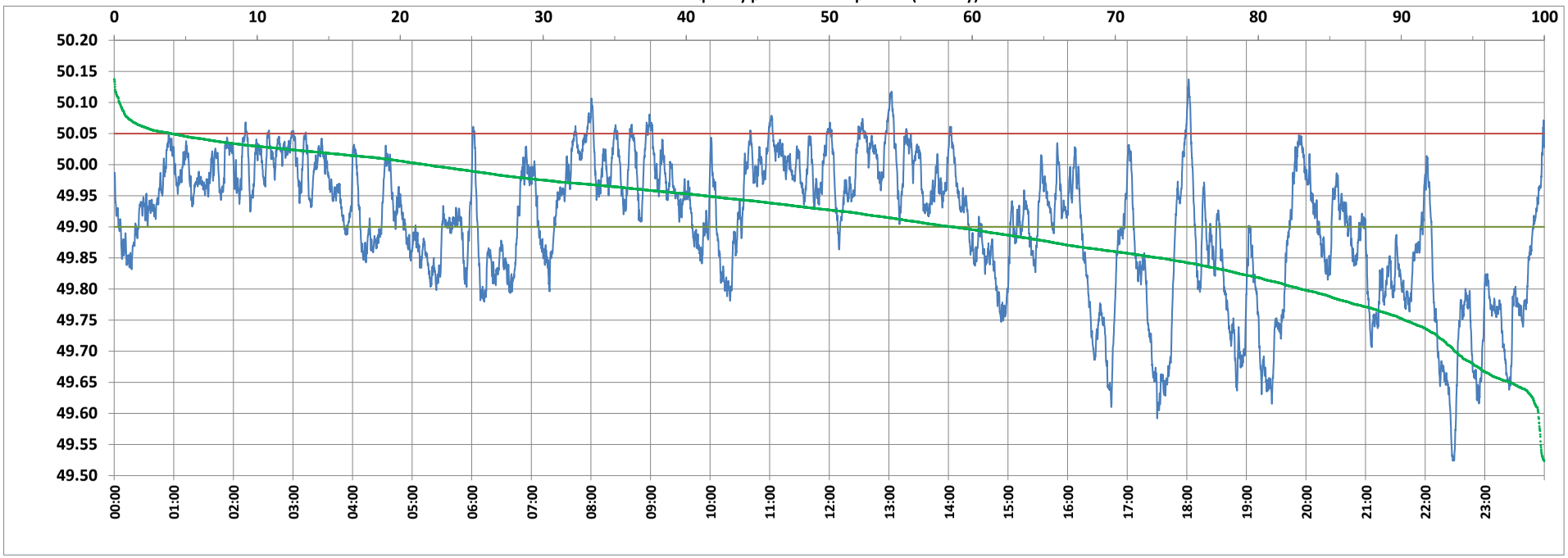
Copy for kind Information :

1. Member(GO&D), CEA
2. Member Secretary, NRPC
3. CMD, POSOCO
4. Executive Director, NLDC

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 05-Apr-2022 (Tuesday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
6.27	41.33	67.63	10.74	24.32	36.90	21.40	0.37	54.68	93.73	22.52	3.62	21.77	9.85	3.99	0.00	58.65	37.36	17.31

Average Frequency : 49.906	Frequency Variation Index : 0.2061	Standard Deviation : 0.1087	Mileage: 41.7	FDI: 45.3

Instantaneous Frequency		
Max	50.137	18:01:40
Min	49.524	22:27:50

15 minute Average Frequency		
Max	50.041	12:45:00
Min	49.620	22:30:00

No. of excursions	
above 50.03 Hz	73
below 49.97 Hz	106
above 50.00 Hz	74
below 50.00 Hz	74

Average time freq per excursion remains	
below 49.97	0:09:11
above 50.03	0:01:57

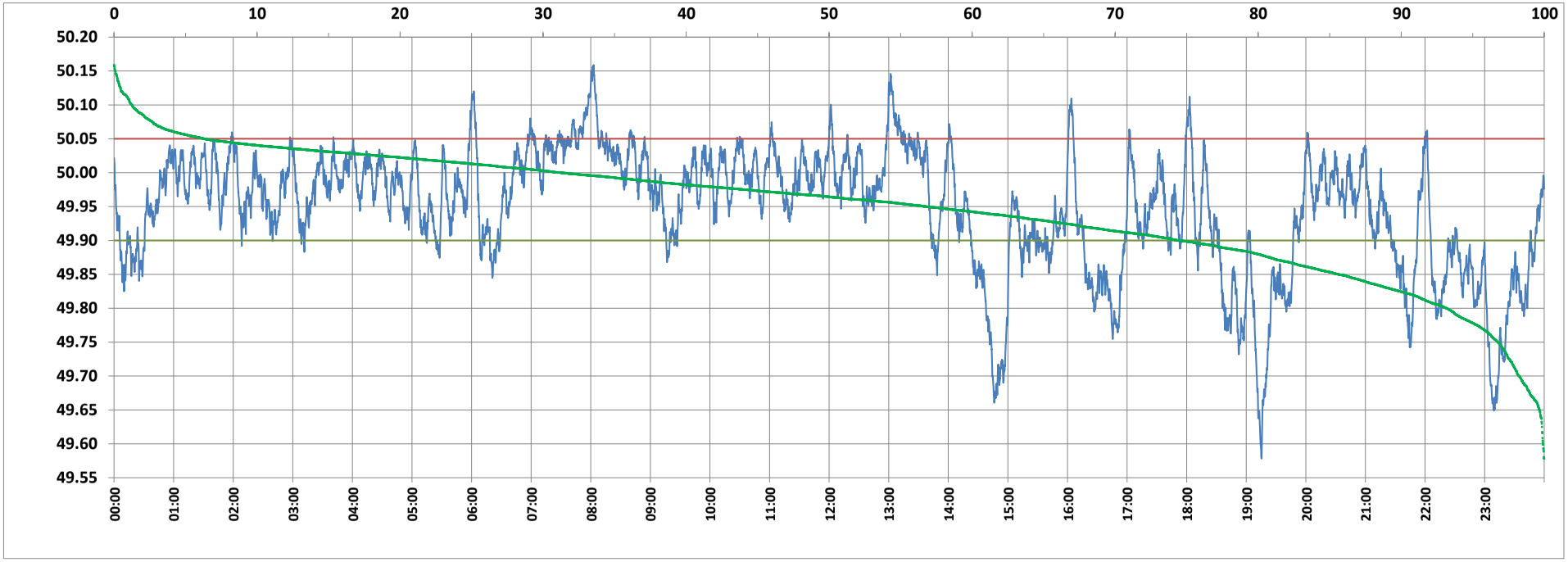
No. of hours freq outside 49.9-50.05 Hz	10:52:40

Source : BONGAIGAON 10 Sec. (8640 samples)

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 04-Apr-2022 (Monday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
1.75	25.56	53.15	5.09	18.72	43.22	29.97	1.26	68.15	98.25	31.19	5.03	31.23	15.66	6.30	0.00	43.23	50.47	17.67

Average Frequency : 49.947	Frequency Variation Index : 0.1066	Standard Deviation : 0.0886	Mileage: 42.2	FDI: 31.9

Instantaneous Frequency		
Max	50.159	8:02:50
Min	49.578	19:15:20

15 minute Average Frequency		
Max	50.085	13:15:00
Min	49.709	15:00:00

No. of excursions	
above 50.03 Hz	113
below 49.97 Hz	109
above 50.00 Hz	108
below 50.00 Hz	107

Average time freq per excursion remains	
below 49.97	0:07:01
above 50.03	0:02:00

No. of hours freq outside 49.9-50.05 Hz	7:38:40

Source : AGRA 10 Sec. (8640 samples)

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
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कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
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संदर्भ सं° : NRLDC/SO-I/151/390 **दिनांक :** 08th April **2022**

To

As per distribution list

Sub : Operational planning and Grid Security during high demand period.

Sir/Ma'am,

In view of ongoing dry weather in Northern Region, Northern Region demand is remaining on higher side persistently and similar demand pattern is likely to continue in the coming days also, due to dry weather forecast by IMD in Northern Region.

For the last few days, the grid frequency has been remaining below 49.90Hz (lower operational band) for considerable time. Such low frequency operation is a threat to the system security. The frequency profile has further deteriorated in the last four days, as given below :

Date	Minimum Frequency (Hz)	Percentage of time for which frequency was less than 49.90 Hz
04-04-2022	49.58 Hz at 19:15 Hrs	25.56%
05-04-2022	49.52 Hz at 22:27 Hrs	41.33%
06-04-2022	49.58 Hz at 23:07 Hrs	48%
07-04-2022	49.53 Hz at 05:11 Hrs 49.51 Hz at 18:56 Hrs 49.51 Hz at 22:13 Hrs	62.67%

In view of persistently high demand, the prices in power exchange (Day Ahead Market as well as Real Time Market) have also increased and at times power is unavailable in DAM/RTM.

As on 08/04/2022, approx. 10775MW generation is under outage (planned + forced) in Northern region (details at Annexure-I) :

Regional Generation Outage Summary (MW) as on 08.04.2022			
	Planned Outage (MW)	Forced Outage (MW)	Total(MW)
Central Sector	1507	2524	4031
State Sector	2485	4259	6744
Total Outage(MW)	3992	6783	10775

It has been observed that on average approx. 1000MW - 1200MW of generation goes under forced outage on a daily basis in northern region.

Therefore, in order to increase availability of generating units for achieving maximum economy and efficiency in the operation of the power system and to ensure reliability of Grid operations, all Generating Plants of Northern Region are requested to ensure the following :

1. Expedite the revival of Inter-state and intrastate generating units which are under reserve shutdown/forced outage.
2. Ensure fuel adequacy including RLNG and liquid fuel for all thermal/Gas plants in coordination with concerned authority.
3. Maintain injection as per schedule and avoid under-injection during low frequency period.
4. Maximize intra-state generation including hydro generation during evening & morning peak hours.
5. All the defence mechanism like RGMO/FGMO, SPS shall be ensured to be in service and in healthy condition.

Cooperation from all stakeholders is highly solicited for safe, secure and reliable Grid operation.

Thanks and Regards

Rajiv Kumar Porwal
CGM(I/C), NRLDC

Distribution List :

1. Head of Generating Plants in Northern Region
2. Head of SLDCs in Northern Region

Copy for kind Information :

1. Member(GO&D), CEA
2. Member Secretary, NRPC
3. CMD, POSOCO
4. Executive Director, NLDC

Generating Unit Outage Details

Annexure-I

A. Planned Outages

S. No	Station	Location	Owner	Unit No	Capacity MW	Reason(s)	Outage	
							Date	Time
	Central Sector (CS)							
	Gas Plants							
1	Faridabad GPS	HARYANA	NTPC, HVPNL	1	138	Reserve Shutdown (Non availability of domestic gas & NIL requisition by Haryana in RLNG/Liquid and Spot Gas).	11-10-2021	14:03
2	Faridabad GPS	HARYANA	NTPC, HVPNL	3	156	Reserve Shutdown (Non availability of domestic gas & NIL requisition by Haryana in RLNG/Liquid and Spot Gas).	13-10-2021	20:16
3	Faridabad GPS	HARYANA	NTPC, HVPNL	2	138	Reserve Shutdown (Non availability of domestic gas & NIL requisition by Haryana in RLNG/Liquid and Spot Gas).	13-10-2021	20:37
	Hydro Units							
1	Bhakra HPS	PUNJAB	BBMB	1	108	Renovation Modernization and upgradation of capacity to 126MW	15-12-2021	12:05
2	Bairasiul HPS	HP	NHPC	1	60	Annual maintenance	10-02-2022	10:00
3	Pong HPS	PUNJAB	BBMB	5	66	Maintenance of stator during low irrigation demand	04-03-2022	20:00
4	Bhakra HPS	PUNJAB	BBMB	5	126	Runner Modifications	21-03-2022	10:03
5	Dehar HPS	HP	BBMB	2	165	Annual Maintenance during low inflow	24-03-2022	15:40
6	TEHRI HPS	UTTARAKHAND	THDC	1	250	Planned Annual Maintenance	25-03-2022	09:00
	Thermal Units							
1	Singrauli STPS	UP	NTPC	2	200	Over hauling	22-03-2022	23:20
	Nuclear Units							
1	RAPS-A	RAJASTHAN	NPCIL	1	100	Subject to regulatory clearance . unit is to be decommissioned.	09-10-2004	22:58
		Sub Total (CS) :			**1507**			
	State Sector (SS)							
	Gas Units							
1	Dholpur GPS	RAJASTHAN	RRVPNL	1	110	Reserve Shutdown (Non availability of domestic gas & NIL requisition by Rajasthan in RLNG and Spot Gas).	25-08-2020	05:48
2	Dholpur GPS	RAJASTHAN	RRVPNL	2	110	Reserve Shutdown (Non availability of domestic gas & NIL requisition by Rajasthan in RLNG and Spot Gas).	05-12-2020	00:35
3	Dholpur GPS	RAJASTHAN	RRVPNL	3	110	Reserve Shutdown (Non availability of domestic gas & NIL requisition by Rajasthan in RLNG and Spot Gas).	05-12-2020	00:40
4	Bawana GPS	DELHI	DTL/Pragati CCGT	6	253	Reserve Shutdown (Non-availability of domestic gas & NIL requisition by Beneficiaries in RLNG and Spot Gas).	15-10-2021	00:30
5	Bawana GPS	DELHI	DTL/Pragati CCGT	1	216	Reserve Shutdown (Non-availability of domestic gas & NIL requisition by Beneficiaries in RLNG and Spot Gas).	19-10-2021	00:00
6	Bawana GPS	DELHI	DTL/Pragati CCGT	3	216	Reserve Shutdown (Non-availability of domestic gas & NIL requisition by Beneficiaries in RLNG and Spot Gas).	28-11-2021	10:03
	Thermal Units							
1	Jhajjar(CLP)	HARYANA	HVPNL	2	660	Overhauling	01-03-2022	00:00
2	Guru Gobind Singh TPS (Ropar)	PUNJAB	PSPCL	5	210	Annual Shutdown	11-03-2022	00:00
3	RGTPP(Khedar)	HARYANA	HVPNL	2	600	Capital Overhauling/turbine replacement	02-03-2021	00:00
		Sub Total (SS) :			**2485**			
		Total Planned Outage (CS+SS) :			**3992**			

B. Forced Outages

S.No	Station	Location	Owner	Unit No	Capacity MW	Reason(s)	Outage	
							Date	Time
	Central Sector (CS)							
	Gas Plants							
1	Dadri GPS	UP	NTPC	5	155	Fuel shortage	21-10-2021	00:49
2	Auraiya GPS	UP	NTPC	6	109	Non availability of gas	21-10-2021	21:29
3	Auraiya GPS	UP	NTPC	4	111	Non availability of gas	21-03-2022	20:17
4	Dadri GPS	UP	NTPC	1	130	Fuel shortage	23-03-2022	20:18
5	Dadri GPS	UP	NTPC	2	130	Fuel shortage	24-03-2022	19:45
6	Auraiya GPS	UP	NTPC	3	111	Bottom sludge in naphtha tank caused the strainer of running GT chocked.	05-04-2022	21:58
7	Anta GPS	RAJASTHAN	NTPC	3	89	Fuel shortage	06-04-2022	03:22
8	Anta GPS	RAJASTHAN	NTPC	2	89	Fuel shortage	06-04-2022	20:08
9	Anta GPS	RAJASTHAN	NTPC	4	153	Fuel shortage	06-04-2022	20:54
10	Anta GPS	RAJASTHAN	NTPC	1	89	Fuel shortage	06-04-2022	22:38
11	Auraiya GPS	UP	NTPC	5	109	Non availability of gas	06-04-2022	23:56
12	Auraiya GPS	UP	NTPC	2	111	Non availability of gas	07-04-2022	00:09
13	Auraiya GPS	UP	NTPC	1	111	Non availability of gas	08-04-2022	00:01
	Hydro Units							
1	Pong HPS	PUNJAB	BBMB	4	66	Failure of compress air system	28-07-2021	15:00
2	Koteshwar HPS	UTTARAKHAND	THDC	1	100	due to fault in GT	04-11-2021	22:58
	Thermal Units							
1	Shree Cement (IPP) TPS	RAJASTHAN	RRVPNL,Sh. Cement	1	150	Shutdown due to Commercial reasons	03-04-2022	02:00
2	Unchahar II TPS	UP	NTPC	1	210	Oil leakage in B-phase GT.	05-04-2022	20:27
3	Rihand-III STPS	UP	NTPC	1	500	Due to flash over in breaker of unit bus.	07-04-2022	00:31
		Sub Total (CS) :			**2524**			
	State Sector (SS)							
	Gas Plants							
1	Delhi Gas Turbines	DELHI	DTL	9	34	STG Governor oil leakage	12-02-2022	20:00
2	Delhi Gas Turbines	DELHI	DTL	5	30	due to tripping of associated STG at 20:00 hrs	12-02-2022	21:04
3	Pragati Gas Turbines	DELHI	DTL/Pragati CCGT	1	105	Reserve Shutdown Reserve Shutdown	27-03-2022	09:53
	Hydro Units							

1	Baglihar (IPP) HPS	J&K	PDD JK	6	150	Hydrological Problems	15-10-2021	09:00
2	Baglihar (IPP) HPS	J&K	PDD JK	4	150	Hydrological Problems	15-10-2021	09:00
3	Baglihar (IPP) HPS	J&K	PDD JK	5	150	Hydrological Problems	15-10-2021	09:00
	Thermal Units							
1	Giral (IPP) LTPS	RAJASTHAN	RRVPNL	1	125	Unit was out on bed material leakage and it is likely to be scrapped.	11-07-2014	08:20
2	Giral (IPP) LTPS	RAJASTHAN	RRVPNL	2	125	Unit was out on bed material leakage and it is likely to be scrapped.	27-01-2016	15:27
3	Chhabra TPS	RAJASTHAN	RRVPNL	4	250	Due to ESP structure damage	09-09-2021	00:47
4	Obra TPS	UP	UPPTCL	13	200	High bearing vibration in turbine	08-01-2022	06:36
5	Goindwal(GVK)	PUNJAB	PSPCL	2	270	Abnormal boiler sound(Coal shortage wef 15:27Hrs on12.02.2022)	07-02-2022	11:17
6	Meja TPS	UP	UPPTCL,NTPC	2	660	Boiler tube leakage (Large scale Inspection under process at Meja.)	07-02-2022	18:59
7	Rosa TPS	UP	UPPTCL	3	300	Turbine Bearing Heavy Oil Leakage	12-03-2022	11:59
8	Suratgarh SCTPS	RAJASTHAN	RRVPNL	7	660	Loss of all fuel.FAILURE OF R PHASE BUSHING OF GT-7A	15-03-2022	01:32
9	Rajwest (IPP) LTPS	RAJASTHAN	RRVPNL	5	135	Bed Material Leakage	23-03-2022	17:42
10	Paricha TPS	UP	UPPTCL	3	210	High vibration in bearing of turbine.	29-03-2022	23:00
11	Kota TPS	RAJASTHAN	RRVPNL	3	210	due to abnormal sound from pedestal of bearing no. 4&5	04-04-2022	22:48
12	Harduaganj-C TPS	UP	UPPTCL	7	110	Coal Shortage	06-04-2022	21:15
13	Rajwest (IPP) LTPS	RAJASTHAN	RRVPNL	6	135	HEAVY BED MATERIAL LEAKAGE	07-04-2022	10:08
14	Chhabra TPS	RAJASTHAN	RRVPNL	1	250	under forced shutdown due to low vacuum, condenser checking and ESP work	07-04-2022	22:00
		Sub Total (SS)			**4259**			
Total Forced Outage (CS+SS)					**6782**			

Regional Generation Outage Summary (MW)

Central Sector			State Sector			Regional Total Outage(MW)
Planned	**Forced**	**Total(CS)**	**Planned**	**Forced**	**Total(SS)**	
1507	**2524**	**4031**	**2485**	**4259**	**6744**	**10775**

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेषण केन्द्र/NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
OFFICE : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN: U40105L2009GOI188682, Website: www.nrldc.org, www.nrldc.in, Tel.: 01126519406, 26523869, Fax: 011-26852747

संदर्भ सं°: NRLDC/SO/151/ 357 - 362 **दिनांक :** 06th April 2022

To

Director (SLDC),
State Load Despatch Centre,
Uttar Pradesh Power Transmission Corporation Limited,
Phase-II, Vibhuti Khand,
Lucknow, Uttar Pradesh - 226010.

Subject : Maintaining Grid frequency and thus system security by avoidance of deviations.

Sir,

This is in continuation to our letter no. NRLDC/SO/151/313 dtd. 28/03/2022 regarding the subject matter.

Please refer to frequency profile of last few days wherein frequency is remaining below 49.90Hz (lower operational band) for considerable time. Such low frequency operation is a threat to the system security.

Date	% of time frequency below 49.90Hz (lower operational band)	Minimum frequency
04-04-2022	25.6%	**49.58Hz at 19:15Hrs**
05-04-2022	41.3%	**49.52Hz at 22:27Hrs**

The frequency has also remained below 49.90Hz (lower operational band) for most of the time from 14:00Hrs onwards for last two days (Plots attached).

Demand for power is increasing in the region/country with increase in temperature due to prevailing heat-wave conditions.

In these precarious conditions, U.P. has been over-drawing from the Grid during low frequency period.

The power portfolio of U.P. during the low frequency period (14:00Hrs onwards) is as given below :

Date	Sale in DAM	Sale in RTM	Max. Over-drawl	Minimum frequency
04-04-2022 (from 14:00hrs to 18:00Hrs)	1000MW to 2400MW	100MW to 450MW	504 MW at 14:47Hrs	49.66Hz at 14:47Hrs
05-04-2022 (from 14:00Hrs to 18:00Hrs)	300MW to 3700MW	180MW to 380MW	1137 MW at 16:44Hrs	49.62Hz at 16:44Hrs

Proper advance planning and coordination could have avoided this mis-match between schedule and drawl.

In view of the above, you are requested to advise the concerned to meticulously manage the power portfolio to avoid deviation of U.P. state control area, for ensuring system security.

Your cooperation shall be highly appreciated for maintaining the Grid parameters within permissible limits for secure and reliable Grid operation.

Thanks and Regards

Rajiv Porwal 06/04
CGM(I/C), NRLDC

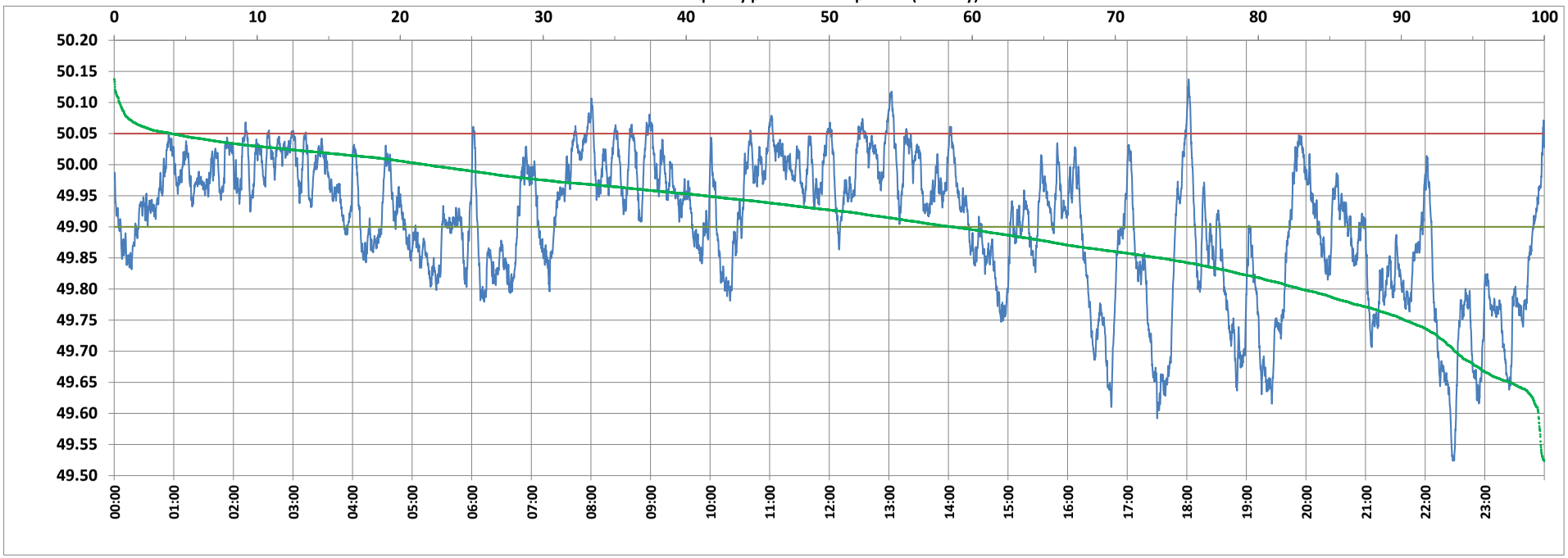
Copy for kind Information :

1. Member(GO&D), CEA
2. Member Secretary, NRPC
3. CMD, POSOCO
4. Executive Director, NLDC
5. Chief Engineer(SLDC), U.P.

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 05-Apr-2022 (Tuesday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
6.27	41.33	67.63	10.74	24.32	36.90	21.40	0.37	54.68	93.73	22.52	3.62	21.77	9.85	3.99	0.00	58.65	37.36	17.31

Average Frequency : 49.906	Frequency Variation Index : 0.2061	Standard Deviation : 0.1087	Mileage: 41.7	FDI: 45.3

Instantaneous Frequency		
Max	50.137	18:01:40
Min	49.524	22:27:50

15 minute Average Frequency		
Max	50.041	12:45:00
Min	49.620	22:30:00

No. of excursions	
above 50.03 Hz	73
below 49.97 Hz	106
above 50.00 Hz	74
below 50.00 Hz	74

Average time freq per excursion remains	
below 49.97	0:09:11
above 50.03	0:01:57

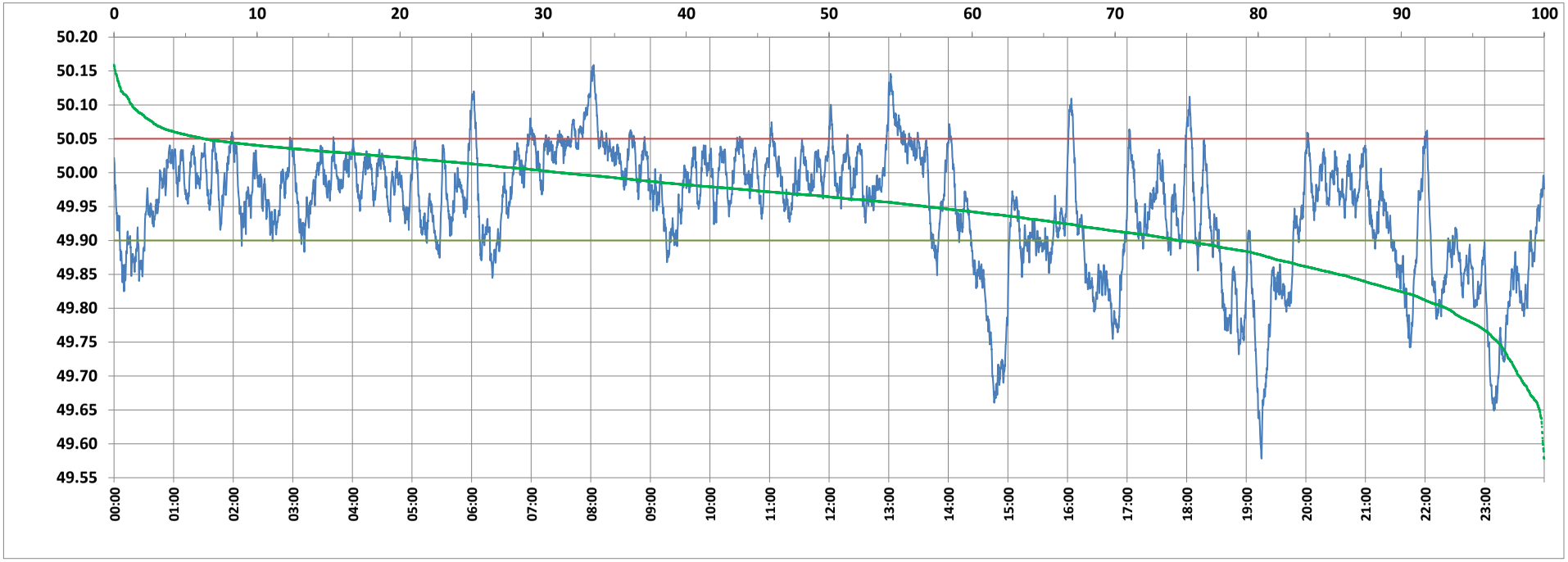
No. of hours freq outside 49.9-50.05 Hz	10:52:40

Source : BONGAIGAON 10 Sec. (8640 samples)

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 04-Apr-2022 (Monday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
1.75	25.56	53.15	5.09	18.72	43.22	29.97	1.26	68.15	98.25	31.19	5.03	31.23	15.66	6.30	0.00	43.23	50.47	17.67

Average Frequency : 49.947	Frequency Variation Index : 0.1066	Standard Deviation : 0.0886	Mileage: 42.2	FDI: 31.9

Instantaneous Frequency		
Max	50.159	8:02:50
Min	49.578	19:15:20

15 minute Average Frequency		
Max	50.085	13:15:00
Min	49.709	15:00:00

No. of excursions	
above 50.03 Hz	113
below 49.97 Hz	109
above 50.00 Hz	108
below 50.00 Hz	107

Average time freq per excursion remains	
below 49.97	0:07:01
above 50.03	0:02:00

No. of hours freq outside 49.9-50.05 Hz	7:38:40

Source : AGRA 10 Sec. (8640 samples)

आज़ादी का अमृत महोत्सव
पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेषण केन्द्र/NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
OFFICE : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN: U40105L2009GOI188682, Website: www.nrldc.org, www.nrldc.in, Tel.: 01126519406, 26523869, Fax: 011-26852747

संदर्भ सं°: NRLDC/SO/151/ 378-383 **दिनांक :** 07th April 2022

To

Managing Director,
Himachal Pradesh State Load Despatch Centre
SLDC Complex, TOTU, Shimla,
Himachal Pradesh-171011

Subject : Maintaining Grid frequency and thus system security by avoidance of deviations.

Sir,

This is in continuation to our letter no. NRLDC/SO/151/ dtd. 22/03/2022 regarding the subject matter.

For the last few days, the grid frequency has been remaining below 49.90Hz (lower operational band) for considerable time. Such low frequency operation is a threat to the system security.

Date	% of time frequency below 49.90Hz (lower operational band)	Minimum frequency
04-04-2022	25.6%	**49.58Hz at 19:15Hrs**
05-04-2022	41.3%	**49.52Hz at 22:27Hrs**
06-04-2022	48%	**49.58Hz at 23:07Hrs**

The frequency has also remained below 49.90Hz (lower operational band) for most of the time from 14:00Hrs onwards for last three days (Plots attached).

Demand for power is increasing in the region/country with increase in temperature due to prevailing heat-wave conditions.

Under these precarious conditions, H.P. has been over-drawing from Grid even during low frequency conditions. Drawl vs Schedule of H.P. for the period 04th April to 06th April 2022 is attached herewith. The max. over-drawl based on 5 minutes' average telemetered data for the last three days is given below :

Date	Max. Over-drawl (MW)	Total Daily Deviation (MU)
04-04-2022	258 MW	0.48
05-04-2022	222 MW	0.14
06-04-2022	198 MW	0.55

Such deviations from schedule are to be avoided to maintain system security.

In view of high demand, the prices in power exchange have also increased and at times power is unavailable in real time market. Thus too much reliance on RTM could be avoided specially during high demand period.

In view of the increasing peak demand and lack of adequate ramping-up reserves during morning and evening peak hours, it is requested to kindly advise the all concerned to ensure following measures to restrict deviations from schedule to mitigate low frequency excursions:

1. Expediting revival of units even costly one (maintaining reserves is important).
2. ADMS (automatic demand management system) to be kept in service to avoid over-drawl during low frequency conditions.
3. Meticulous advance planning for meeting load (load forecast and resource availability/optimization).
4. All defence mechanism like RGMO/FGMO, UFR, df/dt, SPS shall be ensured to be in service and in healthy condition.

Your cooperation shall be highly appreciated for maintaining the Grid parameters within permissible limits for secure and reliable Grid operation.

Thanks and Regards

Rajiv Porwal
CGM(I/C), NRLDC

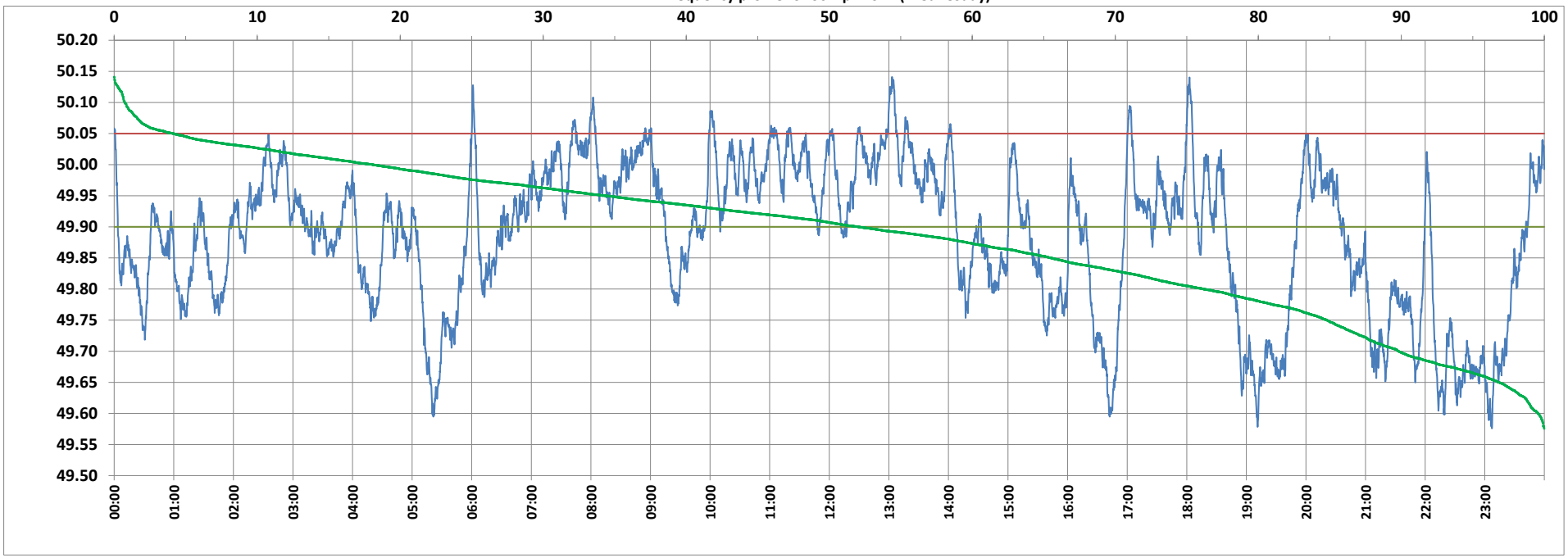
Copy for kind Information :

1. Member(GO&D), CEA
2. Member Secretary, NRPC
3. CMD, POSOCO
4. Executive Director, NLDC
5. Chief Engineer (SLDC), Shimla. H.P.

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 06-Apr-2022 (Wednesday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
10.17	47.95	72.59	13.63	24.14	33.96	17.35	0.74	47.88	89.83	18.43	3.43	18.09	8.98	4.17	0.00	65.58	30.25	17.63

Average Frequency : 49.886	Frequency Variation Index : 0.2687	Standard Deviation : 0.1179	Mileage: 41.6	FDI: 52.1

Instantaneous Frequency		
Max	50.141	13:03:10
Min	49.576	23:07:10

15 minute Average Frequency		
Max	50.058	13:15:00
Min	49.643	23:15:00

No. of excursions	
above 50.03 Hz	61
below 49.97 Hz	84
above 50.00 Hz	75
below 50.00 Hz	74

Average time freq per excursion remains	
below 49.97	0:12:27
above 50.03	0:02:07

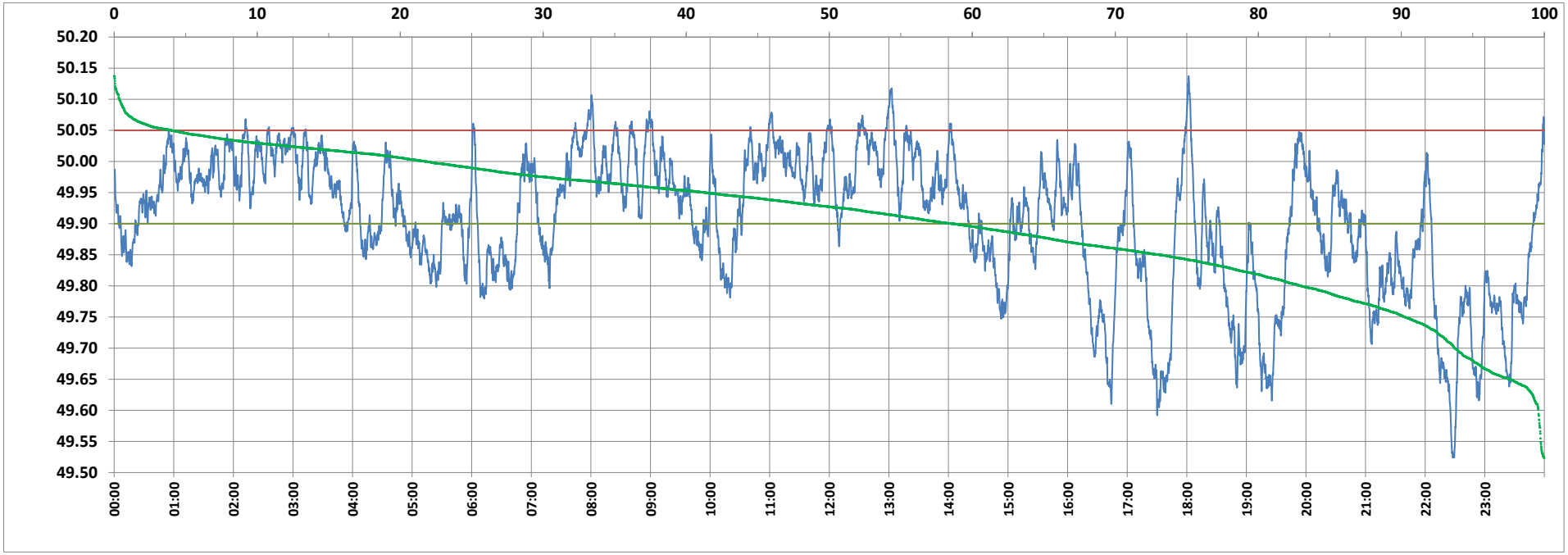
No. of hours freq outside 49.9-50.05 Hz	12:30:30

Source : AGRA 10 Sec. (8640 samples)

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 05-Apr-2022 (Tuesday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
6.27	41.33	67.63	10.74	24.32	36.90	21.40	0.37	54.68	93.73	22.52	3.62	21.77	9.85	3.99	0.00	58.65	37.36	17.31

Average Frequency : 49.906	Frequency Variation Index : 0.2061	Standard Deviation : 0.1087	Mileage: 41.7	FDI: 45.3

Instantaneous Frequency		
Max	50.137	18:01:40
Min	49.524	22:27:50

15 minute Average Frequency		
Max	50.041	12:45:00
Min	49.620	22:30:00

No. of excursions	
above 50.03 Hz	73
below 49.97 Hz	106
above 50.00 Hz	74
below 50.00 Hz	74

Average time freq per excursion remains	
below 49.97	0:09:11
above 50.03	0:01:57

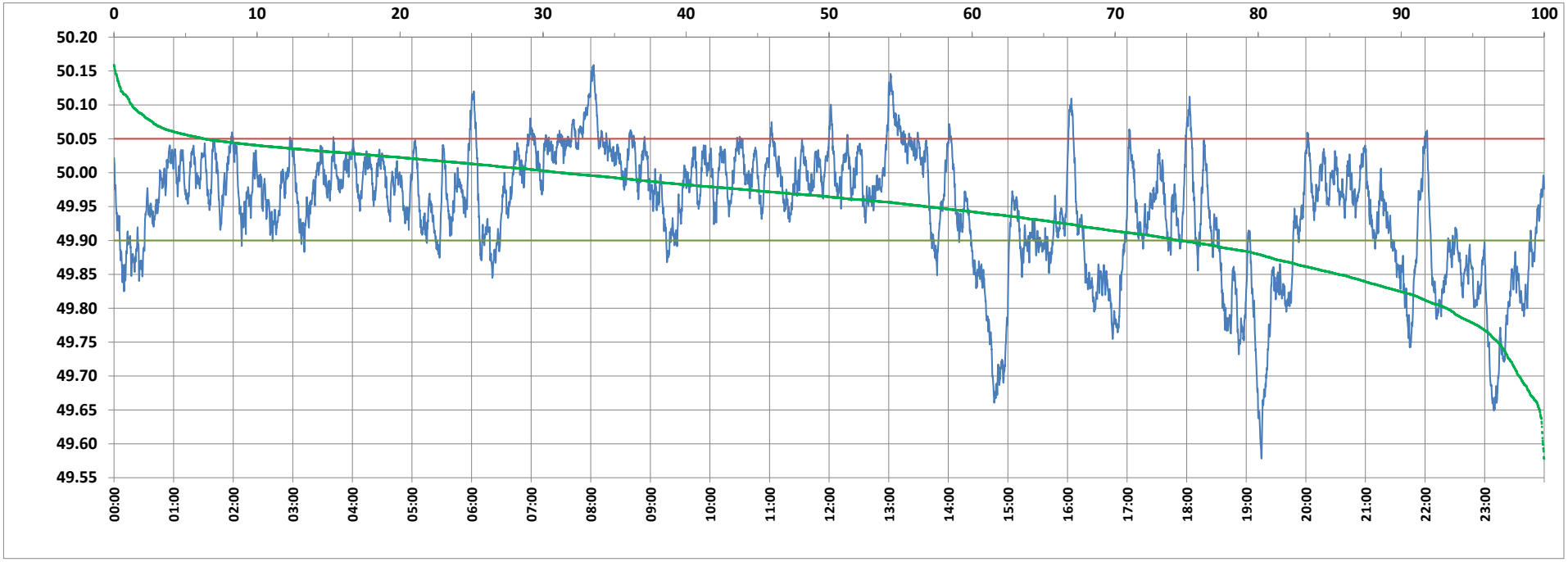
No. of hours freq outside 49.9-50.05 Hz	10:52:40

Source : BONGAIGAON 10 Sec. (8640 samples)

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 04-Apr-2022 (Monday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
1.75	25.56	53.15	5.09	18.72	43.22	29.97	1.26	68.15	98.25	31.19	5.03	31.23	15.66	6.30	0.00	43.23	50.47	17.67

Average Frequency : 49.947	Frequency Variation Index : 0.1066	Standard Deviation : 0.0886	Mileage: 42.2	FDI: 31.9

Instantaneous Frequency		
Max	50.159	8:02:50
Min	49.578	19:15:20

15 minute Average Frequency		
Max	50.085	13:15:00
Min	49.709	15:00:00

No. of excursions	
above 50.03 Hz	113
below 49.97 Hz	109
above 50.00 Hz	108
below 50.00 Hz	107

Average time freq per excursion remains	
below 49.97	0:07:01
above 50.03	0:02:00

No. of hours freq outside 49.9-50.05 Hz	7:38:40

Source : AGRA 10 Sec. (8640 samples)

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेषण केन्द्र/NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
OFFICE : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN: U40105L2009GOI188682, Website: www.nrldc.org, www.nrldc.in, Tel.: 01126519406, 26523869, Fax: 011-26852747

संदर्भ सं°: NRLDC/SO/151/ 384-389 **दिनांक :** 07th April 2022

To

Managing Director,
PTCUL, Vidyut Bhawan,
Near ISBT, Saharanpur Road, Majra,
Dehradun, Uttarakhand-248001

Subject : Maintaining Grid frequency and thus system security by avoidance of deviations.

Sir,

This is in continuation to our letter no. NRLDC/SO/151/ dtd. 22/03/2022 regarding the subject matter.

For the last few days, the grid frequency has been remaining below 49.90Hz (lower operational band) for considerable time. Such low frequency operation is a threat to the system security.

Date	% of time frequency below 49.90Hz (lower operational band)	Minimum frequency
04-04-2022	25.6%	**49.58Hz at 19:15Hrs**
05-04-2022	41.3%	**49.52Hz at 22:27Hrs**
06-04-2022	48%	**49.58Hz at 23:07Hrs**

The frequency has also remained below 49.90Hz (lower operational band) for most of the time from 14:00Hrs onwards for last three days (Plots attached).

Demand for power is increasing in the region/country with increase in temperature due to prevailing heat-wave conditions.

Under these precarious conditions, Uttrakhand has been over-drawing from Grid even during low frequency conditions. Drawl vs Schedule of Uttrakhand for the period 04th April to 06th April 2022 is attached herewith. The max. over-drawl based on 5 minutes' average telemetered data for the last three days is given below :

Date	Max. Over-drawl (MW)	Total Daily Deviation (MU)
04-04-2022	162 MW	0.91
05-04-2022	204 MW	0.35
06-04-2022	213 MW	0.20

Such deviations from schedule are to be avoided to maintain system security.

In view of high demand, the prices in power exchange have also increased and at times power is unavailable in real time market. Thus too much reliance on RTM could be avoided specially during high demand period.

In view of the increasing peak demand and lack of adequate ramping-up reserves during morning and evening peak hours, it is requested to kindly advise the all concerned to ensure following measures to restrict deviations from schedule to mitigate low frequency excursions:

1. Expediting revival of units even costly one (maintaining reserves is important).
2. ADMS (automatic demand management system) to be kept in service to avoid over-drawl during low frequency conditions.
3. Meticulous advance planning for meeting load (load forecast and resource availability/optimization).
4. All defence mechanism like RGMO/FGMO, UFR, df/dt, SPS shall be ensured to be in service and in healthy condition.

Your cooperation shall be highly appreciated for maintaining the Grid parameters within permissible limits for secure and reliable Grid operation.

Thanks and Regards

Rajiv Porwal
CGM(I/C), NRLDC

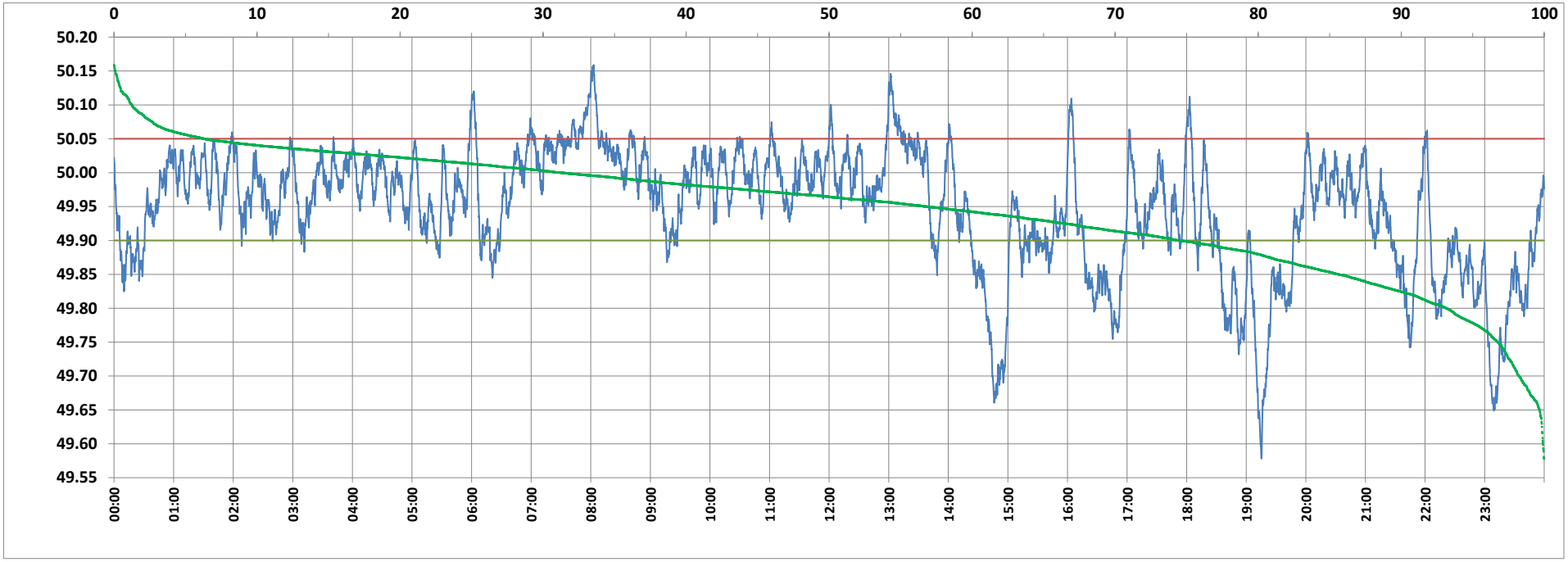
Copy for kind Information .

1. Member(GO&D), CEA
2. Member Secretary, NRPC
3. CMD, POSOCO
4. Executive Director, NLDC
5. Chief Engineer (SLDC), Dehradun, Uttrakhand.

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 04-Apr-2022 (Monday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
1.75	25.56	53.15	5.09	18.72	43.22	29.97	1.26	68.15	98.25	31.19	5.03	31.23	15.66	6.30	0.00	43.23	50.47	17.67

Average Frequency : 49.947	Frequency Variation Index : 0.1066	Standard Deviation : 0.0886	Mileage: 42.2	FDI: 31.9

Instantaneous Frequency		
Max	50.159	8:02:50
Min	49.578	19:15:20

15 minute Average Frequency		
Max	50.085	13:15:00
Min	49.709	15:00:00

No. of excursions	
above 50.03 Hz	113
below 49.97 Hz	109
above 50.00 Hz	108
below 50.00 Hz	107

Average time freq per excursion remains	
below 49.97	0:07:01
above 50.03	0:02:00

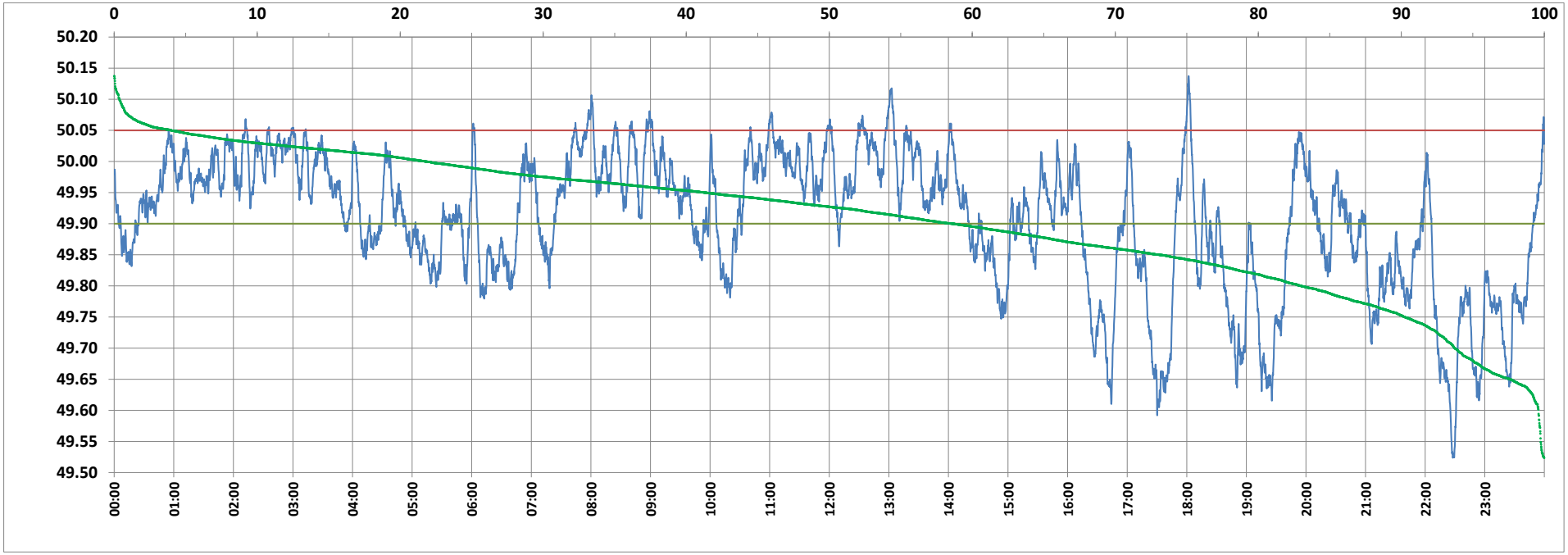
No. of hours freq outside 49.9-50.05 Hz	7:38:40

Source : AGRA 10 Sec. (8640 samples)

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 05-Apr-2022 (Tuesday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
6.27	41.33	67.63	10.74	24.32	36.90	21.40	0.37	54.68	93.73	22.52	3.62	21.77	9.85	3.99	0.00	58.65	37.36	17.31

Average Frequency : 49.906	Frequency Variation Index : 0.2061	Standard Deviation : 0.1087	Mileage: 41.7	FDI: 45.3

Instantaneous Frequency		
Max	50.137	18:01:40
Min	49.524	22:27:50

15 minute Average Frequency		
Max	50.041	12:45:00
Min	49.620	22:30:00

No. of excursions	
above 50.03 Hz	73
below 49.97 Hz	106
above 50.00 Hz	74
below 50.00 Hz	74

Average time freq per excursion remains	
below 49.97	0:09:11
above 50.03	0:01:57

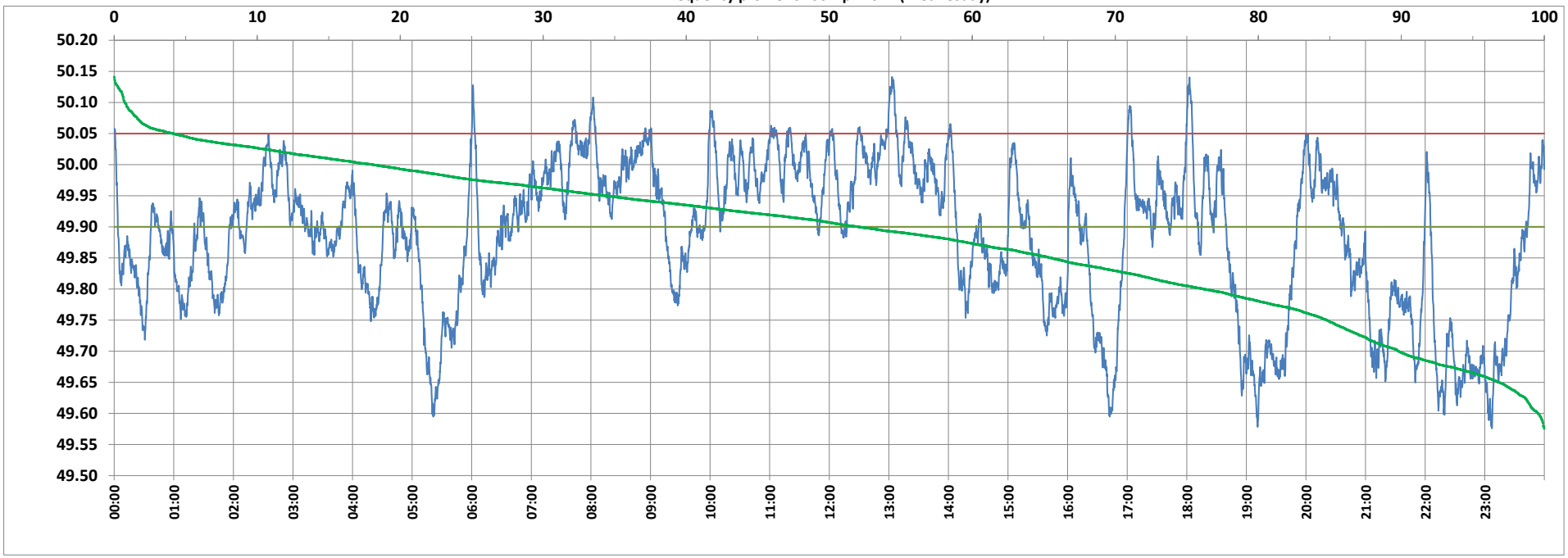
No. of hours freq outside 49.9-50.05 Hz	10:52:40

Source : BONGAIGAON 10 Sec. (8640 samples)

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 06-Apr-2022 (Wednesday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
10.17	47.95	72.59	13.63	24.14	33.96	17.35	0.74	47.88	89.83	18.43	3.43	18.09	8.98	4.17	0.00	65.58	30.25	17.63

Average Frequency : 49.886	Frequency Variation Index : 0.2687	Standard Deviation : 0.1179	Mileage: 41.6	FDI: 52.1

Instantaneous Frequency		
Max	50.141	13:03:10
Min	49.576	23:07:10

15 minute Average Frequency		
Max	50.058	13:15:00
Min	49.643	23:15:00

No. of excursions	
above 50.03 Hz	61
below 49.97 Hz	84
above 50.00 Hz	75
below 50.00 Hz	74

Average time freq per excursion remains	
below 49.97	0:12:27
above 50.03	0:02:07

No. of hours freq outside 49.9-50.05 Hz	12:30:30

Source : AGRA 10 Sec. (8640 samples)

पावर सिस्टम ऑपरेशन कारपोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेशण केन्द्र / NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली- 110016
OFFICE : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi- 110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.org, www.nrldc.in, Tel.: 011- 26519406, 26523869, Fax : 011- 26852747

संदर्भ सं°: NRLDC/SO-I/151/175 दिनांक: 8th March 2022

To

Chief Engineer (SLDC),
Vidyut Bhawan, Saharanpur Road,
Majra, Near ISBT, Dehradun,
Uttarakhand-248001

Sub : Over-drawl and Low Frequency excursions vis-à-vis Deviation by Uttrakhand.

Sir,

This is in reference to deviations & abrupt change in schedule by Uttrakhand at low frequency excursions. Trend of low frequency excursions (5 minutes' average) and corresponding deviation by Uttrakhand from 1st to 7th March 2022 & Schedule vs Drawl of Uttrakhand for 7th March are attached in Annexure-I & Annexure-II respectively. From the Annexures, it may be seen that at low frequency excursions, Uttrakhand is deviating from the schedule which has touched even 300 MW at some instances & abrupt variations in drawl schedule has also been observed.

The matter has been taken up with Uttrakhand multiple times in the form of operational messages and deviation messages from NRLDC control room. These deviations at low frequency excursions occurring almost on daily basis are reducing the grid reliability.

Therefore, it is requested to kindly ensure following measures to restrict deviations from schedule and low frequency excursions :

1. Meticulous load forecasting and operational planning may please be carried out on daily/weekly/monthly basis.
2. Restrict the load variation to the tune of limits specified in IEGC through staggering of load connection/disconnection.

3. Scheduling of available hydro generation shall be carried out during evening/morning peak hours to mitigate over-drawal/load shedding.
4. Maintain drawal from the Grid as per schedule by proper ramping of on bar own generation in consonance with the demand variation.
5. Expedite the possibility of bringing gas based generating stations and schedule of URS in Anta, Auraiya, Dadri available in RLNG and Liquid fuel.
6. Real time portfolio management through sale/purchase of power in STOA (Bilateral contingency and Real time market) and requisition of available URS may please be expedited.

Your constant support is highly solicited for maintaining Grid parameters within permissible limits.

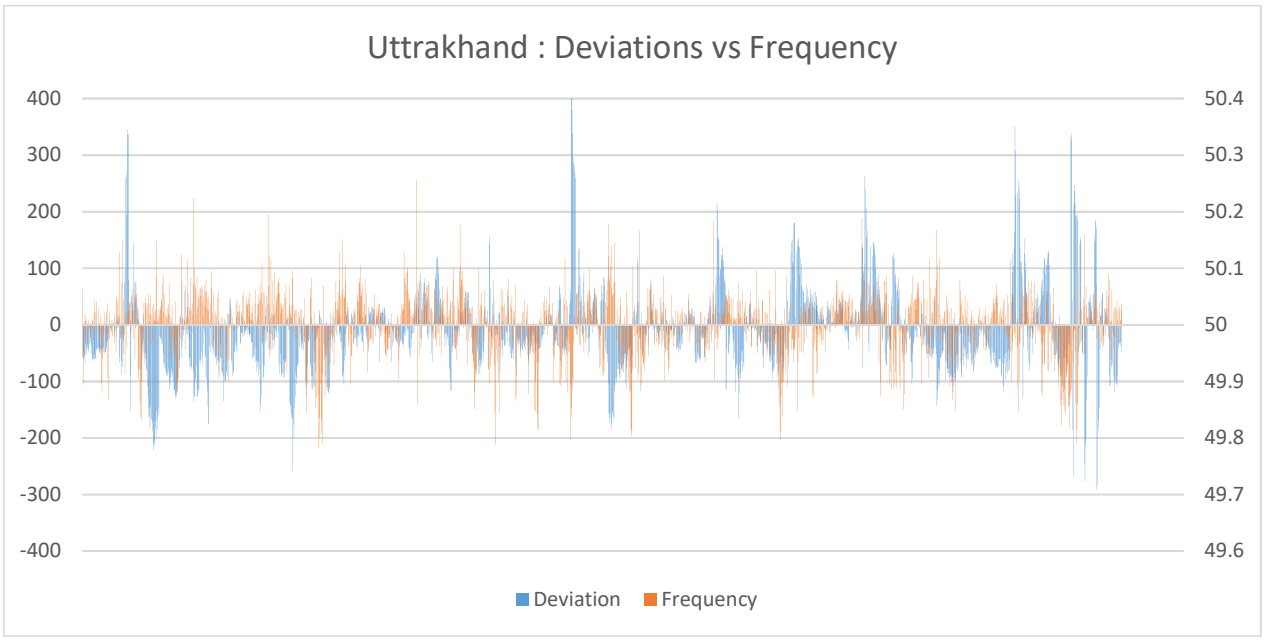
Thanks and Regards,

Alok Kumar
GM (SO), NRLDC

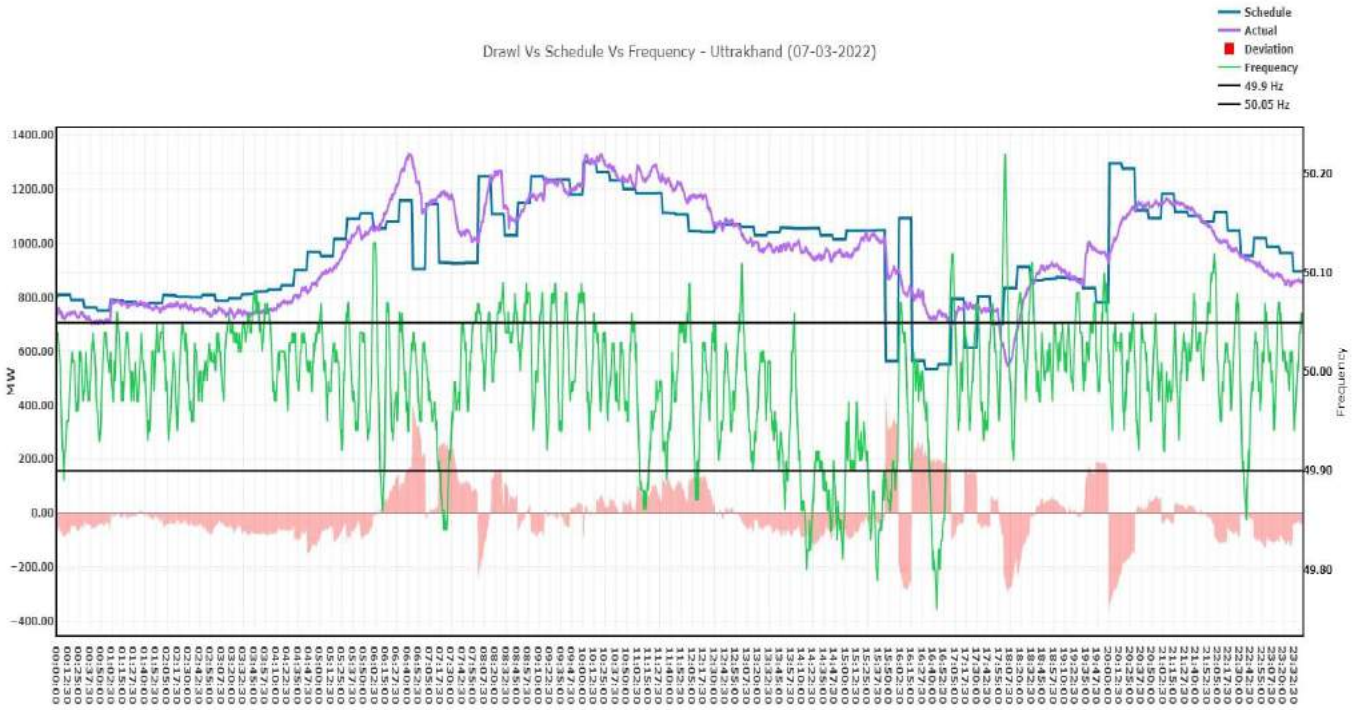
Copy for kind information :-

1. Member Secretary, NRPC
2. ED, NLDC
3. CGM(I/C), NRLDC

Annexure-I


Uttrakhand : Deviations vs Frequency
400
300
200
100
0
-100
-200
-300
-400
50.4
50.3
50.2
50.1
50
49.9
49.8
49.7
49.6
Deviation
Frequency

Annexure-II


Drawl Vs Schedule Vs Frequency - Uttrakhand (07-03-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
50.20
50.10
50.00
49.90
49.80

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेषण केन्द्र/NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
OFFICE : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN: U40105L2009GOI188682, Website: www.nrldc.org, www.nrldc.in, Tel.: 01126519406, 26523869, Fax: 011-26852747

संदर्भ सं°: NRLDC/SO-I/151/ **दिनांक** : 22nd March 2022

To

Chief Engineer (SLDC),
HP SLDC Complex,
TOTU, Shimla,
Himachal Pradesh-171011

Sub : Over-drawl and Low Frequency excursions vis-a-vis Deviation by Himachal Pradesh.

Sir,

This is in reference to deviations from the drawl schedule by H.P. at low frequency excursions. The Grid frequency has touched 49.68Hz at 14:28Hrs on 21/03/2022 and remained below the IEGC band for most of the time during the day. Trend of low frequency excursions (5 minutes' average) and corresponding deviation by H.P. for 21st March is attached at Annexure-I. From the Annexure, it may be seen that at low frequency excursions, H.P. deviation from drawl schedule has crossed 200 MW at some instances.

The matter has been taken up with H.P. multiple times in the form of operational messages and deviation messages from NRLDC control room. These deviations at low frequency excursions occurring almost on daily basis are detrimental to the Grid reliability.

In view of the increasing peak demand and lack of adequate ramping-up reserves during morning and evening peak hours, it is requested to kindly ensure following measures to restrict deviations from schedule to mitigate low frequency excursions:

1. Meticulous load forecasting and operational planning may be carried out on daily/weekly/monthly basis.
2. Restrict the load variation to the tune of limits specified in IEGC through staggering of load connection/disconnection.
3. Scheduling of available hydro generation may be carried out during evening/morning peak hours to mitigate over-drawal/load shedding.

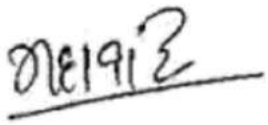
4. Maintain drawal from the Grid as per schedule by proper ramping of on-bar own generation in consonance with the demand variation.

5. Expedite the possibility of bringing gas based generating stations and schedule of URS in Anta, Auraiya, Dadri available in RLNG and Liquid fuel.

6. Real time portfolio management through purchase/sale of power in STOA (Bilateral contingency and Real time market) and requisition of available URS in ISGS may be ensured.

Your constant support is highly solicited for maintaining Grid parameters within permissible limits.

Thanks and Regards,

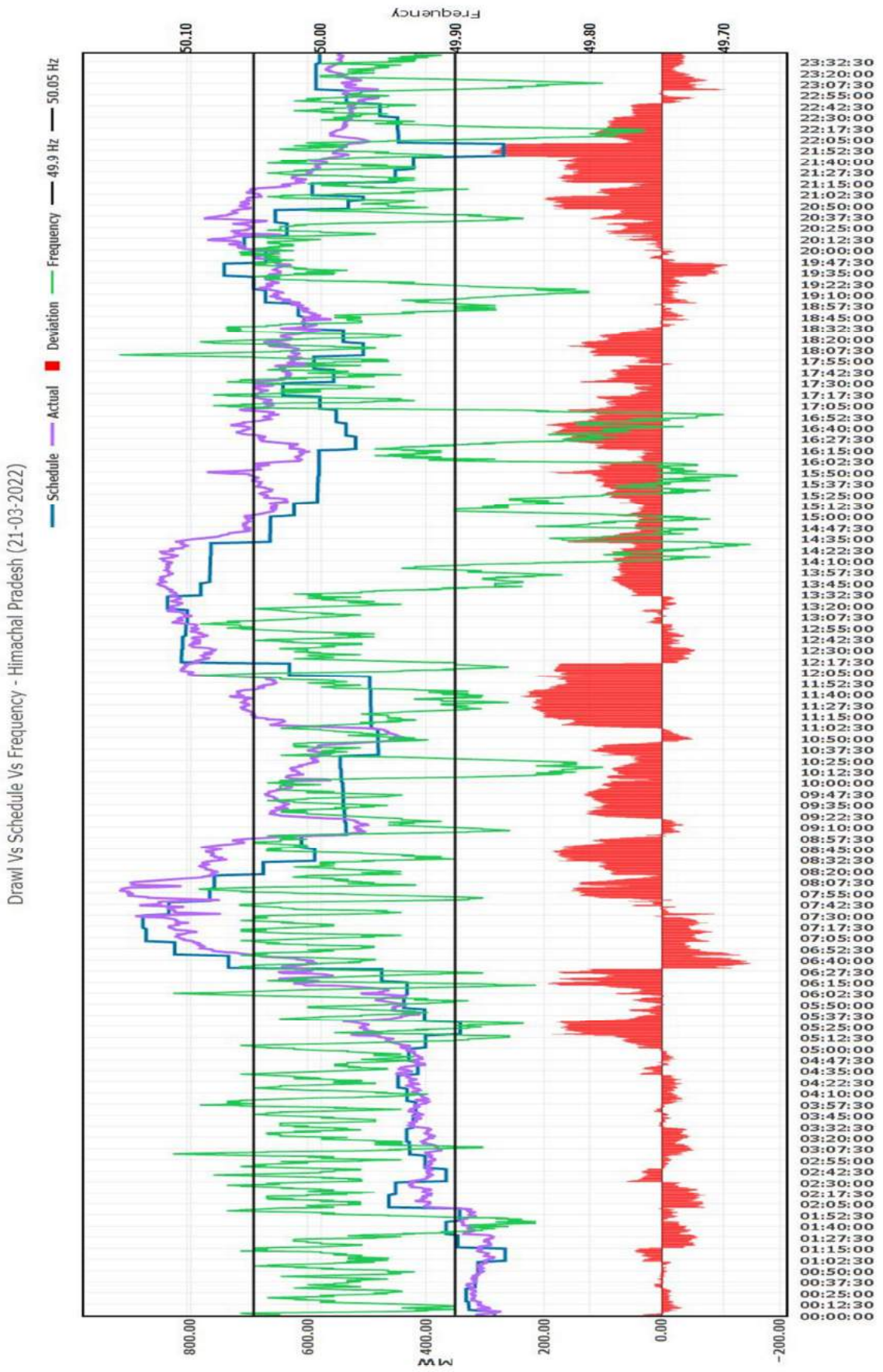


Mahavir Prasad Singh
Sr. DGM(SO), NRLDC

Copy for kind information:

1. Member Secretary, NRPC
2. Executive Director, NLDC
3. CGM(I/C), NRLDC

Annexure-I


Drawl Vs Schedule Vs Frequency - Himachal Pradesh (21-03-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
Frequency
50.10
50.00
49.90
49.80
49.70
MW
800.00
600.00
400.00
200.00
0.00
-200.00

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेषण केन्द्र/NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
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CIN: U40105L2009GOI188682, Website: www.nrldc.org, www.nrldc.in, Tel.: 01126519406, 26523869, Fax: 011-26852747

संदर्भ सं°: NRLDC/SO-I/151/ **दिनांक** : 22nd March 2022

To

Chief Engineer (SLDC),
Rajasthan Rajya Vidyut Prasaran Nigam Ltd.,
Ajmer Road, Heerapura, Jaipur-302024.

Sub : Over-drawl and Low Frequency excursions vis-a-vis Deviation by Rajasthan.

Sir,

This is in reference to deviations from the drawl schedule by Rajasthan at low frequency excursions. The Grid frequency has touched 49.68Hz at 14:28Hrs on 21/03/2022 and remained below the IEGC band for most of the time during the day. Trend of low frequency excursions (5 minutes' average) and corresponding deviation by Rajasthan for 21st March is attached at Annexure-I. From the Annexure, it may be seen that Rajasthan's deviation from the schedule has crossed 500 MW at some instances.

The matter has been taken up with Rajasthan multiple times in the form of operational messages and deviation messages from NRLDC control room. These deviations at low frequency excursions occurring almost on daily basis are detrimental to the Grid reliability.

In view of the increasing peak demand and lack of adequate ramping-up reserves during morning and evening peak hours, it is requested to kindly ensure following measures to restrict deviations from schedule to mitigate low frequency excursions:

1. Meticulous load forecasting and operational planning may be carried out on daily/weekly/monthly basis.
2. Restrict the load variation to the tune of limits specified in IEGC through staggering of load connection/disconnection.
3. Maintain drawal from the Grid as per schedule by proper ramping of on-bar own generation in consonance with the demand variation, to mitigate over-drawal/load shedding.

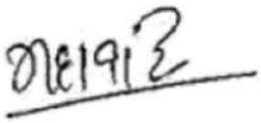
4. The units under reserve shutdown (in state control area) may be brought on-bar to maintain adequate spinning reserves.

5. Expedite the possibility of bringing gas based generating stations and schedule of URS in Anta, Auraiya, Dadri available in RLNG and Liquid fuel.

6. Real time portfolio management through purchase/sale of power in STOA (Bilateral contingency and Real time market) and requisition of available URS in ISGS may be ensured.

Your constant support is highly solicited for maintaining Grid parameters within permissible limits.

Thanks and Regards,

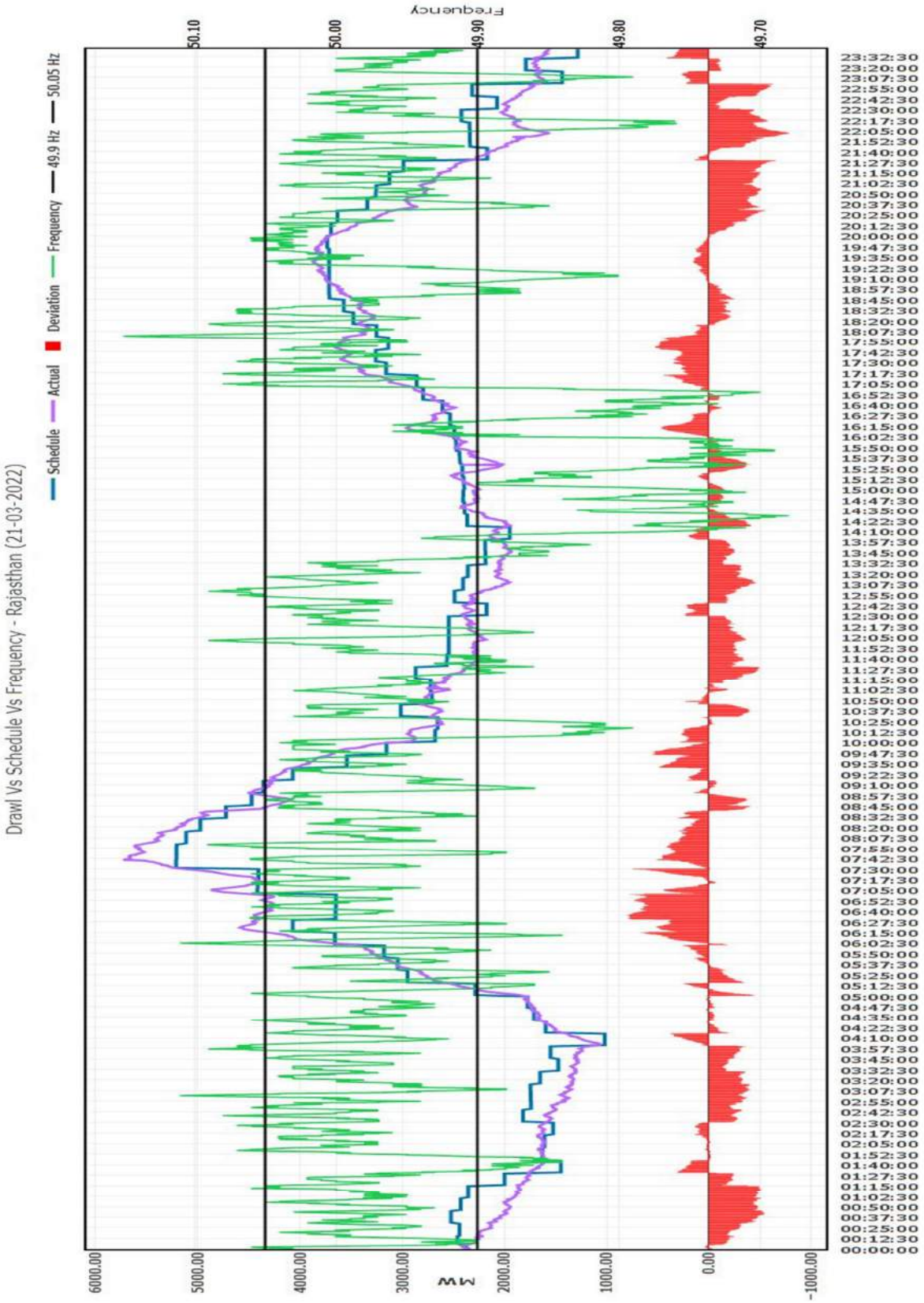


Mahavir Prasad Singh
Sr. DGM(SO), NRLDC

Copy for kind information:

1. Member Secretary, NRPC
2. Executive Director, NLDC
3. CGM(I/C), NRLDC

Annexure-I


Drawl Vs Schedule Vs Frequency - Rajasthan (21-03-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
Frequency
50.10
50.00
49.90
49.80
49.70
MW
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
-1000.00

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
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उत्तरी क्षेत्रीय भार प्रेषण केन्द्र/NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
OFFICE : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
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संदर्भ सं°: NRLDC/SO-I/151/ **दिनांक** : 22nd March 2022

To

Chief Engineer (SLDC),
Vidyut Bhawan, Saharanpur Road,
Majra, Near ISBT, Dehradun,
Uttarakhand-248001

Sub : Over-drawl and Low Frequency excursions vis-a-vis Deviation by Uttrakhand.

Sir,

This is in reference to deviations from the drawl schedule by Uttrakhand at low frequency excursions. The Grid frequency has touched 49.68Hz at 14:28Hrs on 21/03/2022 and remained below the IEGC band for most of the time during the day. Trend of low frequency excursions (5 minutes' average) and corresponding deviation by Uttrakhand for 21st March is attached at Annexure-I. From the Annexure, it may be seen that at low frequency excursions, Uttrakhand's deviation from drawl schedule has crossed 200 MW at some instances.

The matter has been taken up with Uttrakhand multiple times in the form of operational messages and deviation messages from NRLDC control room. These deviations at low frequency excursions occurring almost on daily basis are detrimental to the Grid reliability.

In view of the increasing peak demand and lack of adequate ramping-up reserves during morning and evening peak hours, it is requested to kindly ensure following measures to restrict deviations from schedule to mitigate low frequency excursions:

1. Meticulous load forecasting and operational planning may be carried out on daily/weekly/monthly basis.
2. Restrict the load variation to the tune of limits specified in IEGC through staggering of load connection/disconnection.
3. Scheduling of available hydro generation shall be carried out during evening/morning peak hours to mitigate over-drawal/load shedding.

4. Maintain drawal from the Grid as per schedule by proper ramping of on-bar own generation in consonance with the demand variation.

5. Expedite the possibility of bringing gas based generating stations and schedule of URS in Anta, Auraiya, Dadri available in RLNG and Liquid fuel.

6. Real time portfolio management through purchase/sale of power in STOA (Bilateral contingency and Real time market) and requisition of available URS in ISGS may be ensured.

Your constant support is highly solicited for maintaining Grid parameters within permissible limits.

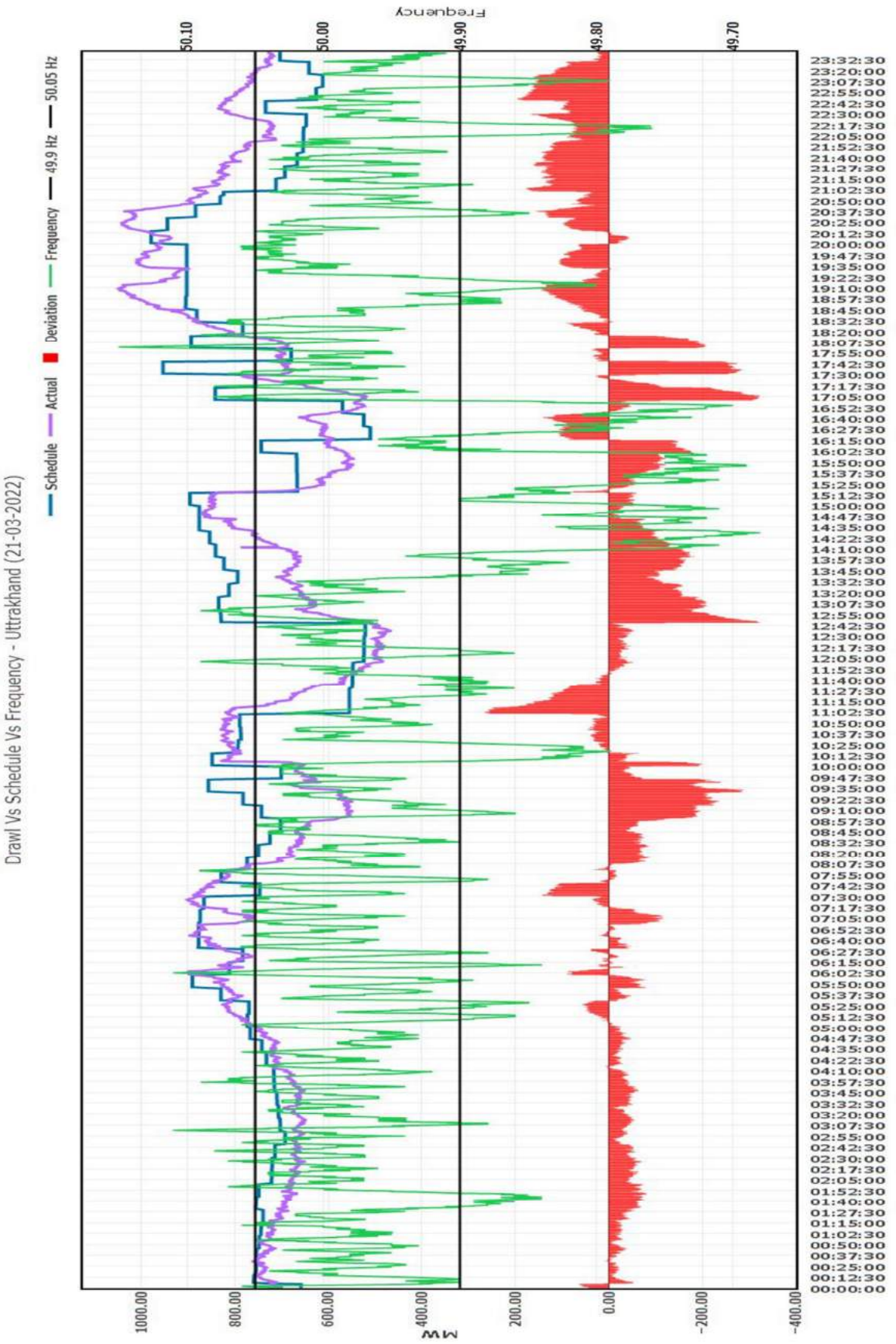
Thanks and Regards,

Mahavir Prasad Singh
Sr. DGM(SO), NRLDC

Copy for kind information:

1. Member Secretary, NRPC
2. Executive Director, NLDC
3. CGM(I/C), NRLDC

Annexure-I


Drawl Vs Schedule Vs Frequency - Uttrakhand (21-03-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
Frequency
50.10
50.00
49.90
49.80
49.70
MW
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेषण केन्द्र/NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
OFFICE : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN: U40105L2009GOI188682, Website: www.nrldc.org, www.nrldc.in, Tel.: 01126519406, 26523869, Fax: 011-26852747

संदर्भ सं°: NRLDC/SO/151/ 257 - 262 **दिनांक :** 24th March 2022

To

Managing Director,
Jammu Power Distribution Corp. Ltd.
Ambedkar Chowk (Panama Chowk),
Jammu (J&K)

Subject : Maintaining Grid frequency and thus system security by avoidance of deviations.

Sir,

Please refer to frequency profile of last few days wherein frequency is remaining below 49.90Hz (lower operational band) for considerable time. Such low frequency operation is threat to the system security.

On 22/03/2022, frequency remained below 49.90Hz for 40.71% of time, and has dropped to 49.54Hz at 22:21Hrs. Again, on 23/03/2022 frequency remained below 49.90Hz for 32.3% of time, and has dropped to 49.57Hz at 22:10Hrs.

Demand for power is increasing in the region/country due to increase in temperature.

Under these precarious conditions, J&K is over-drawing from ISTS Grid to the tune of 240 to 370 MW. The max. over-drawl based on 5 minutes' average telemetered data for last few days is given below :

Date	Max. Over-drawl (MW)	Total Daily Deviation (MU)
20-03-2022	289 MW	1.75
21-03-2022	247 MW	2.83
22-03-2022	378 MW	2.45
23-03-2022	368 MW	3.52

Such deviations from schedule are to be avoided to maintain system security.

In view of high demand, the prices in power exchange have also increased and at times power is unavailable in real time market. Thus too much reliance on RTM could be avoided specially during high demand period.

Therefore, kindly advise all concerned to avoid deviation of J&K state control area. for ensuring system security. For the same following is suggested:

1. Expediting revival of units even costly one (maintaining reserves is important).
2. Ensuring the fuel availability.
3. Advance planning for meeting load (load forecast and resource availability/optimization).

Looking forward to above actions from J&K for safe system operation.

Thanks and Regards

Rajiv Porwal
CGM(I/C), NRLDC 24/03

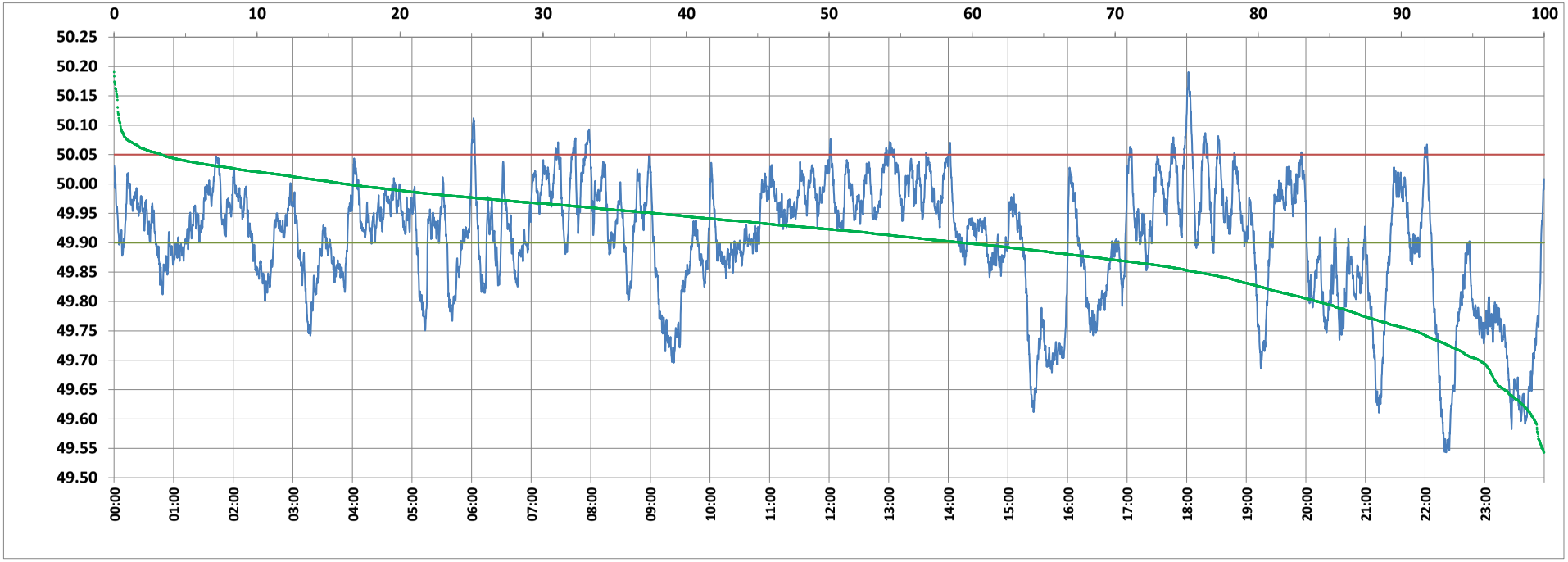
Copy for kind Information :

1. Member(GO&D), CEA
2. Member Secretary, NRPC
3. CMD, POSOCO
4. Executive Director, NLDC
5. Chief Engineer(SLDC), Jammu

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 22-Mar-2022 (Tuesday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
4.54	40.71	71.82	11.34	24.83	43.14	15.72	0.44	56.02	95.46	20.88	2.84	16.16	7.30	3.28	0.00	62.09	34.63	21.39

Average Frequency : 49.905	Frequency Variation Index : 0.1974	Standard Deviation : 0.1031	Mileage: 46.2	FDI: 44.0

Instantaneous Frequency		
Max	50.191	18:01:40
Min	49.543	22:21:20

15 minute Average Frequency		
Max	50.021	18:15:00
Min	49.594	22:30:00

No. of excursions	
above 50.03 Hz	61
below 49.97 Hz	107
above 50.00 Hz	78
below 50.00 Hz	77

Average time freq per excursion remains	
below 49.97	0:09:40
above 50.03	0:01:43

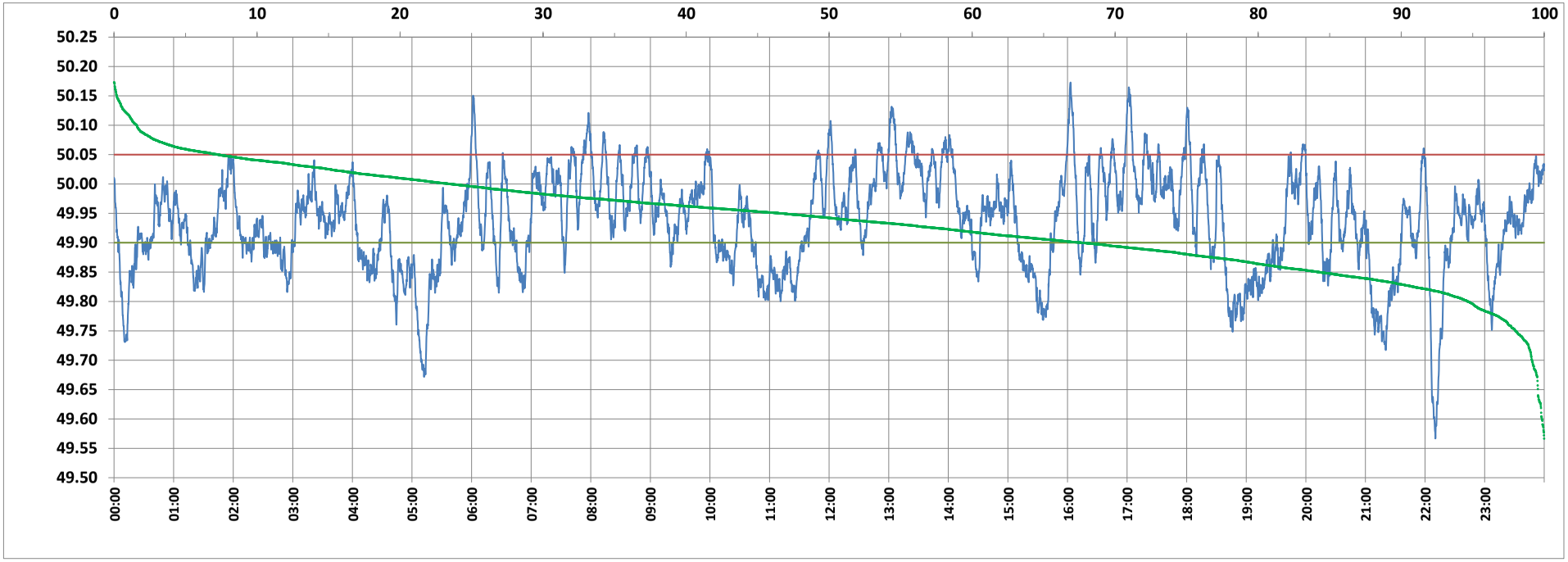
No. of hours freq outside 49.9-50.05 Hz	10:33:20

Source : AGRA 10 Sec. (8640 samples)

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 23-Mar-2022 (Wednesday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
0.86	32.35	63.89	4.48	27.01	44.12	21.94	1.59	60.38	99.14	22.65	5.68	23.52	13.46	7.27	0.00	53.39	39.34	21.04

Average Frequency : 49.936	Frequency Variation Index : 0.1121	Standard Deviation : 0.0845	Mileage: 45.4	FDI: 39.6

Instantaneous Frequency		
Max	50.173	16:03:00
Min	49.567	22:10:20

15 minute Average Frequency		
Max	50.055	13:30:00
Min	49.746	22:15:00

No. of excursions	
above 50.03 Hz	74
below 49.97 Hz	111
above 50.00 Hz	91
below 50.00 Hz	90

Average time freq per excursion remains	
below 49.97	0:08:17
above 50.03	0:02:37

No. of hours freq outside 49.9-50.05 Hz	9:30:30

Source : AGRA 10 Sec. (8640 samples)

आज़ादी का अमृत महोत्सव
पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेषण केन्द्र/NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
OFFICE : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN: U40105L2009GOI188682, Website: www.nrldc.org, www.nrldc.in, Tel.: 01126519406, 26523869, Fax: 011-26852747

संदर्भ सं°: NRLDC/SO/151/ 251-256 **दिनांक :** 24th March 2022

To

Managing Director,
Rajasthan Rajya Vidyut Prasaran Nigam Limited
Vidyut Bhawan, Janpath,
Jaipur, Rajasthan-302005,

Subject : Maintaining Grid frequency and thus system security by avoidance of deviations.

Sir,

Please refer to frequency profile of last few days wherein frequency is remaining below 49.90Hz (lower operational band) for considerable time. Such low frequency operation is threat to the system security.

On 22/03/2022, frequency remained below 49.90Hz for 40.71% of time, and has dropped to 49.54Hz at 22:21Hrs. Again, on 23/03/2022 frequency remained below 49.90Hz for 32.3% of time, and has dropped to 49.57Hz at 22:10Hrs.

Demand for power is increasing in the region/country due to increase in temperature.

Under these precarious conditions, Rajasthan is over-drawing from ISTS Grid to the tune of 400 to 700MW. The max. over-drawl based on 5 minutes' average telemetered data for last few days is given below :

Date	Max. Over-drawl (MW)
20-03-2022	912 MW
21-03-2022	730MW
22-03-2022	579MW
23-03-2022	626MW

Such deviations from schedule are to be avoided to maintain system security.

Further to above, following units are under outage within the state of Rajasthan :

S. No.	Station	Owner	Unit No	Capacity MW	Reason(s)	Outage (Time & Date)	
1	Dholpur GPS	RRVPNL	1	110	Reserve Shutdown	05:48	25-08-2020
2	Dholpur GPS	RRVPNL	2	110	Reserve Shutdown	00:35	05-12-2020
3	Dholpur GPS	RRVPNL	3	110	Reserve Shutdown	00:40	05-12-2020
4	Chhabra TPS	RRVPNL	4	250	Due to ESP structure damage	00:47	09-09-2021
5	Kota TPS	RRVPNL	1	110	Boiler Problem	13:07	04-03-2022
6	Kota TPS	RRVPNL	5	210	Boiler/ESP/Turbine work	11:01	13-03-2022
7	Suratgarh TPS	RRVPNL	6	250	IPP(C&I) problem	12:51	13-03-2022
8	Kota TPS	RRVPNL	3	210	Abnormally high hydrogen consumption	21:20	13-03-2022
9	Suratgarh SCTPS	RRVPNL	7	660	Loss of all fuel	01:32	15-03-2022
10	Suratgarh TPS	RRVPNL	4	250	Steam leakage in boiler	11:25	22-03-2022
11	Suratgarh SCTPS	RRVPNL	8	660	Due to abnormal sound in CW-Inlet duct	12:57	22-03-2022
12	Chhabra SCTPS	RRVPNL	5	660	Boiler tube leakage	15:02	23-03-2022
13	Rajwest (IPP) LTPS	RRVPNL	5	135	Bed Material Leakage	17:42	23-03-2022
14	Rajwest (IPP) LTPS	RRVPNL	7	135	Turbine Problem	18:13	23-03-2022
15	Rajwest (IPP) LTPS	RRVPNL	2	135	due to draining problem	18:35	23-03-2022
16	Rajwest (IPP) LTPS	RRVPNL	3	135	BED MATERIAL LEAKAGE	04:02	20-03-2022
	Total outage (MW) :			4130			

In view of high demand, the prices in power exchange have also increased and at times power is unavailable in real time market. Thus too much reliance on RTM could be avoided specially during high demand period.

Therefore, kindly advise all concerned to avoid deviation of Rajasthan state control area, for ensuring system security. For the same following is suggested:

1. Expediting revival of units even costly one (maintaining reserves is important).
2. Ensuring the fuel availability.
3. Advance planning for meeting load (load forecast and resource availability/optimization).

Looking forward to above actions from Rajasthan for safe system operation.

Thanks and Regards

Rajiv Porwal
CGM(I/C), NRLDC 24/3/22

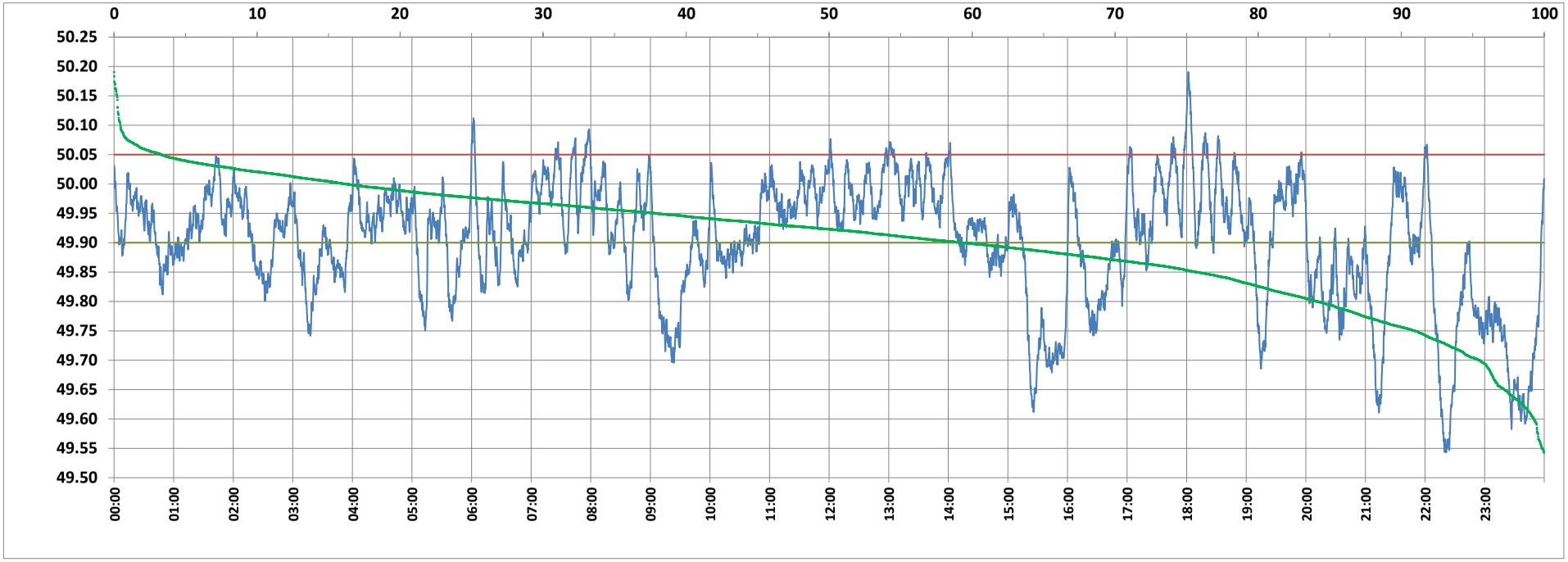
Copy for kind Information :

1. Member(GO&D), CEA
2. Member Secretary, NRPC
3. CMD, POSOCO
4. Executive Director, NLDC
5. Chief Engineer(SLDC), Rajasthan

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 22-Mar-2022 (Tuesday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
4.54	40.71	71.82	11.34	24.83	43.14	15.72	0.44	56.02	95.46	20.88	2.84	16.16	7.30	3.28	0.00	62.09	34.63	21.39

Average Frequency : 49.905	Frequency Variation Index : 0.1974	Standard Deviation : 0.1031	Mileage: 46.2	FDI: 44.0

Instantaneous Frequency		
Max	50.191	18:01:40
Min	49.543	22:21:20

15 minute Average Frequency		
Max	50.021	18:15:00
Min	49.594	22:30:00

No. of excursions	
above 50.03 Hz	61
below 49.97 Hz	107
above 50.00 Hz	78
below 50.00 Hz	77

Average time freq per excursion remains	
below 49.97	0:09:40
above 50.03	0:01:43

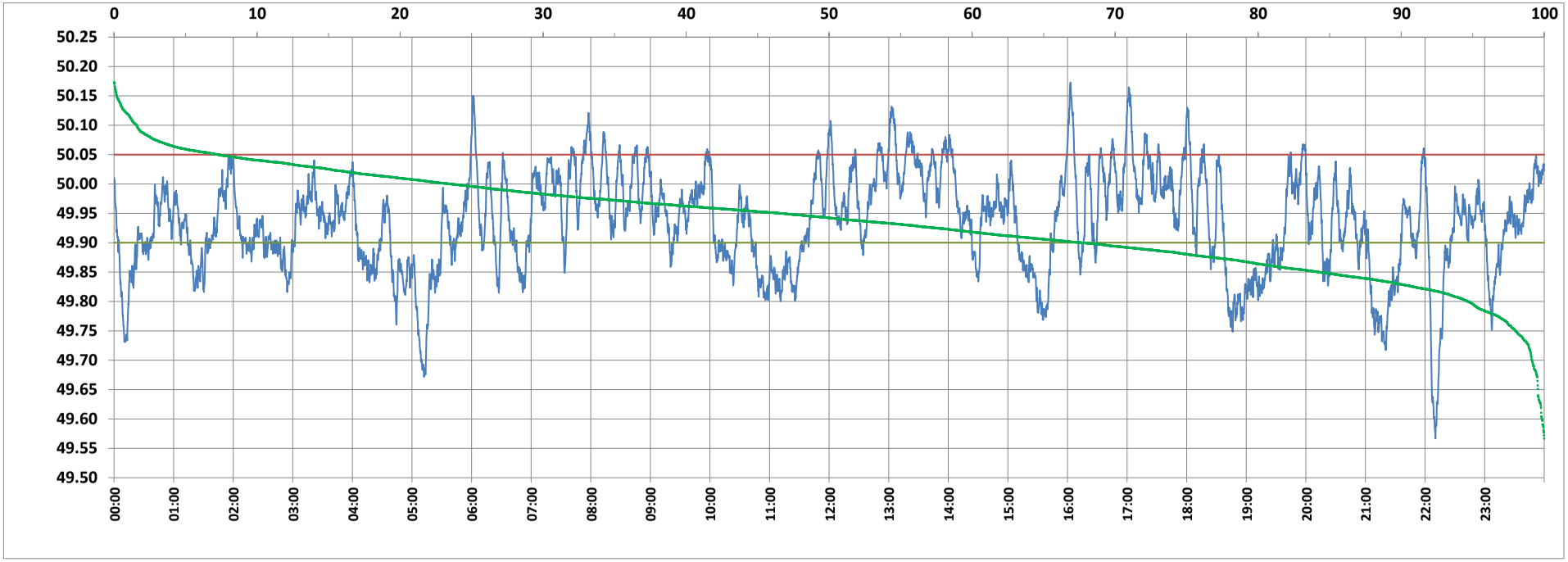
No. of hours freq outside 49.9-50.05 Hz	10:33:20

Source : AGRA 10 Sec. (8640 samples)

POWER SYSTEM OPERATION CORPORATION LIMITED

NATIONAL LOAD DESPATCH CENTRE, NEW DELHI

Frequency profile for 23-Mar-2022 (Wednesday)



<49.7	<49.90	<49.97	49.7-49.8	49.8-49.9	49.9-50.0	50.0-50.1	50.1-50.2	49.90-50.05	49.7-50.2	49.97-50.03	50.05-50.1	>50	>50.03	>50.05	>50.2	<49.95	49.95-50.05	49.90-49.95
0.86	32.35	63.89	4.48	27.01	44.12	21.94	1.59	60.38	99.14	22.65	5.68	23.52	13.46	7.27	0.00	53.39	39.34	21.04

Average Frequency : 49.936	Frequency Variation Index : 0.1121	Standard Deviation : 0.0845	Mileage: 45.4	FDI: 39.6

Instantaneous Frequency		
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15 minute Average Frequency		
Max	50.055	13:30:00
Min	49.746	22:15:00

No. of excursions	
above 50.03 Hz	74
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Average time freq per excursion remains	
below 49.97	0:08:17
above 50.03	0:02:37

No. of hours freq outside 49.9-50.05 Hz	9:30:30

Source : AGRA 10 Sec. (8640 samples)

आज़ादी का अमृत महोत्सव
पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेषण केन्द्र/NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
OFFICE : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN: U40105L2009GOI188682, Website: www.nrldc.org, www.nrldc.in, Tel.: 01126519406, 26523869, Fax: 011-26852747

संदर्भ सं°: NRLDC/SO/151/312 **दिनांक :** 28th March 2022

To

Managing Director,
Jammu Power Distribution Corporation Ltd.
Ambedkar Chowk (Panama Chowk),
Jammu (J&K)

Subject : Maintaining Grid frequency and thus system security by avoidance of deviations.

Sir,

This is in continuation to our letter no. NRLDC/SO/151/257 dtd. 24/03/2022 regarding the subject matter.

Please refer to frequency profile of last few days wherein frequency is remaining below 49.90Hz (lower operational band) for considerable time. Such low frequency operation is threat to the system security.

On 25/03/2022, frequency has remained below 49.90Hz for 43.6% of time, and dropped to 49.60Hz at 06:43Hrs. Again, on 26/03/2022 frequency has remained below 49.90Hz for 21% of time, and has dropped to 49.59Hz at 16:45Hrs.

Demand for power is increasing in the region/country due to increase in temperature.

Under these precarious conditions, J&K has been over-drawing from ISTS Grid to the tune of 200 to 700 MW for the last three days. Drawl vs Schedule of J&K for the period 25th March to 27th March 2022 is attached herewith. The max. over-drawl based on 5 minutes' average telemetered data for the last three days is given below :

Date	Max. Over-drawl (MW)	Total Daily Deviation (MU)
25-03-2022	408 MW	3.56
26-03-2022	499 MW	7.11
27-03-2022	692 MW	5.36

Such deviations from schedule are to be avoided to maintain system security.

In view of high demand, the prices in power exchange have also increased and at times power is unavailable in real time market. Thus too much reliance on RTM could be avoided specially during high demand period.

Therefore, kindly advise all concerned to avoid deviation of J&K state control area. for ensuring system security. For the same following is suggested:

1. Expediting revival of units even costly one (maintaining reserves is important).
2. Ensuring the fuel availability.
3. Advance planning for meeting load (load forecast and resource availability/optimization).

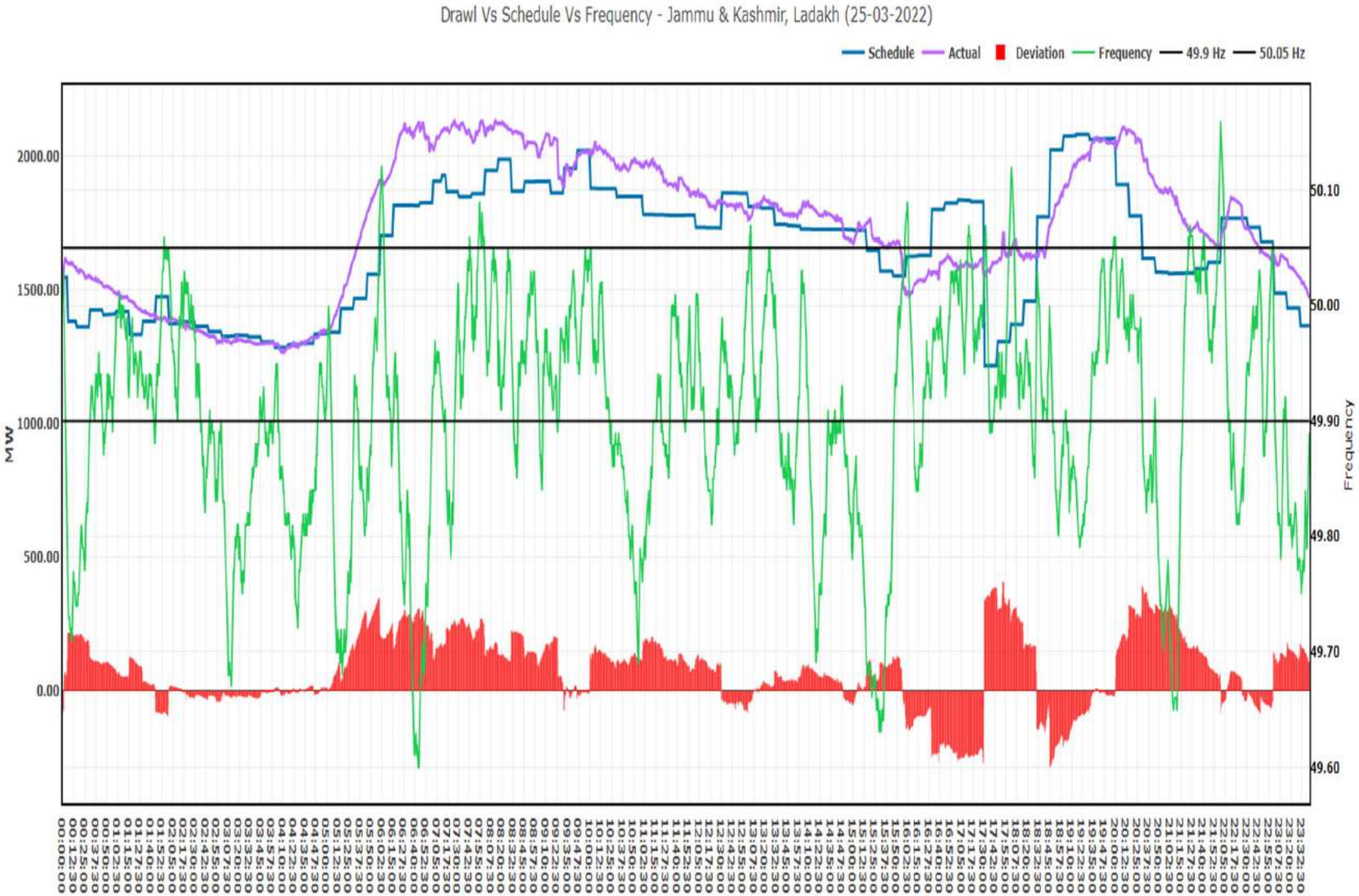
Looking forward to above actions from J&K for safe system operation.

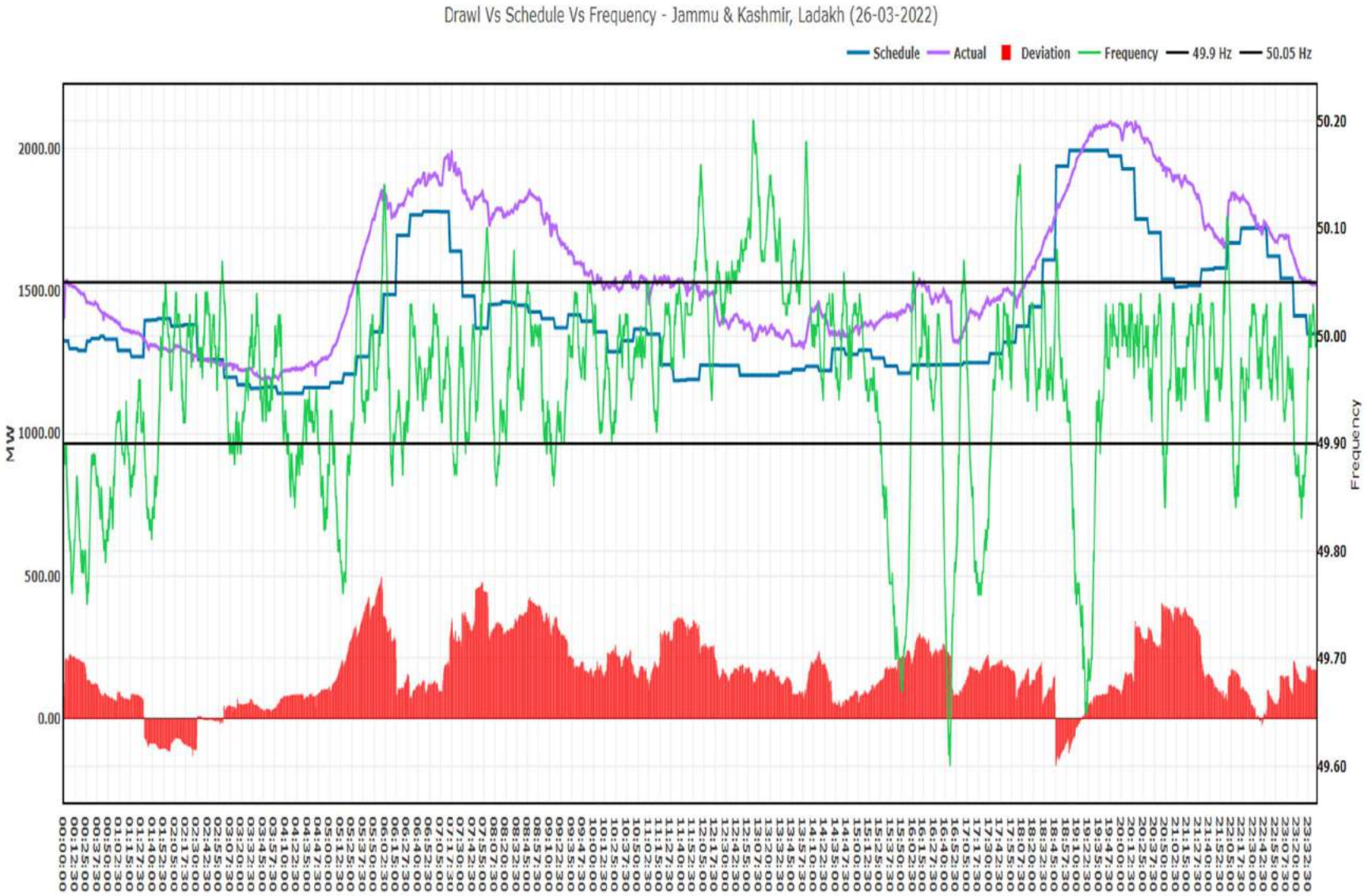
Thanks and Regards

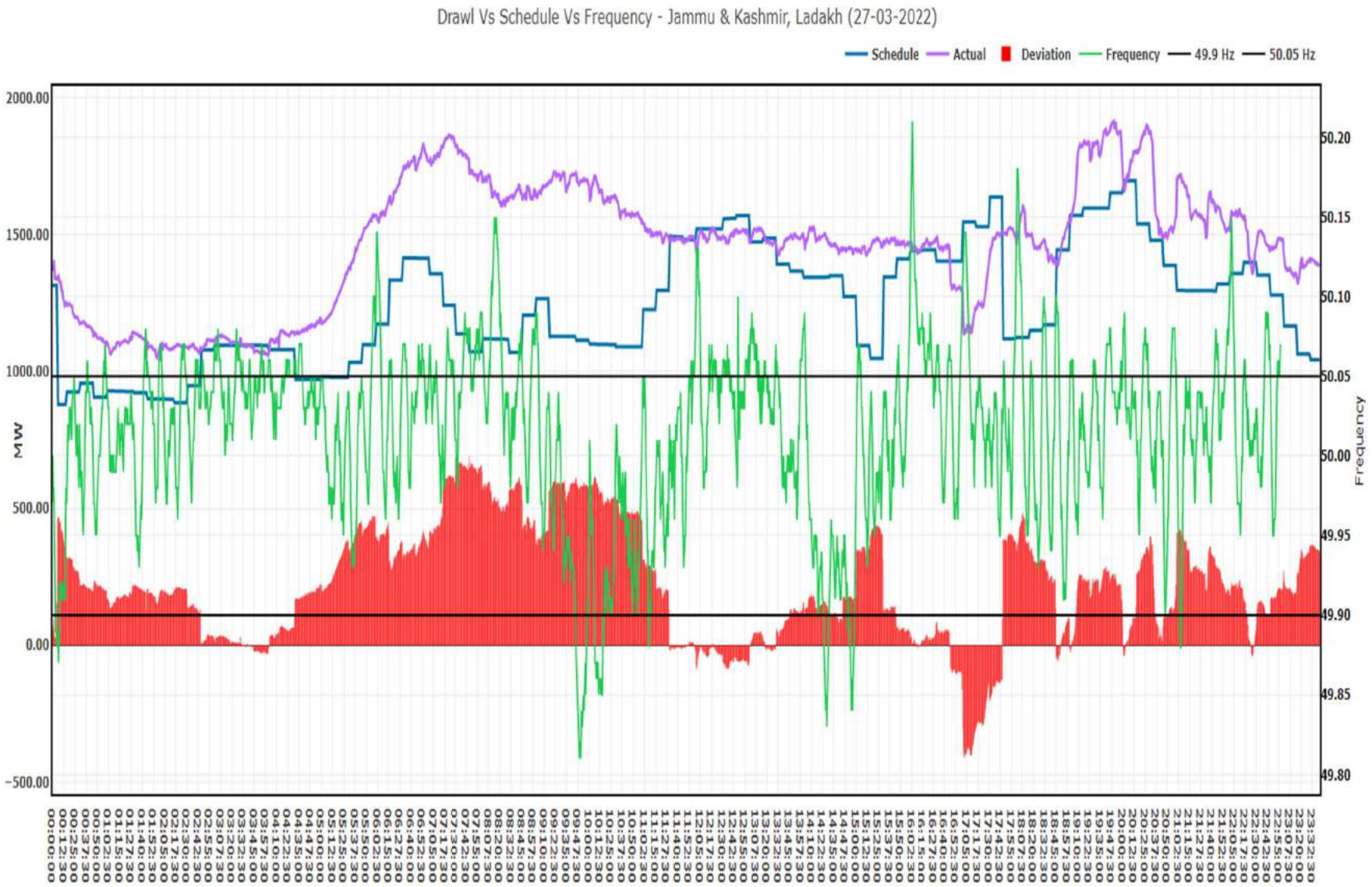
Rajiv Porwal 28/03
CGM(I/C), NRLDC

Copy for kind Information :

1. Member(GO&D), CEA
2. Member Secretary, NRPC
3. CMD, POSOCO
4. Executive Director, NLDC
5. Chief Engineer(SLDC), Jammu


Drawl Vs Schedule Vs Frequency - Jammu & Kashmir, Ladakh (25-03-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
2000.00
1500.00
1000.00
500.00
0.00
50.10
50.00
49.90
49.80
49.70
49.60


Drawl Vs Schedule Vs Frequency - Jammu & Kashmir, Ladakh (26-03-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
2000.00
1500.00
1000.00
500.00
0.00
50.20
50.10
50.00
49.90
49.80
49.70
49.60


Drawl Vs Schedule Vs Frequency - Jammu & Kashmir, Ladakh (27-03-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
2000.00
1500.00
1000.00
500.00
0.00
-500.00
50.20
50.15
50.10
50.05
50.00
49.95
49.90
49.85
49.80

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेषण केन्द्र/NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
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संदर्भ सं°: NRLDC/SO/151/313 **दिनांक :** 28th March 2022

To

Director (SLDC),
State Load Despatch Centre.
Uttar Pradesh Power Transmission Corporation Limited,
Phase-II, Vibhuti Khand,
Lucknow, Uttar Pradesh - 226010.

Subject : Maintaining Grid frequency and thus system security by avoidance of deviations.

Sir,

Please refer to frequency profile of last few days wherein frequency is remaining below 49.90Hz (lower operational band) for considerable time. Such low frequency operation is threat to the system security.

On 25/03/2022, frequency has remained below 49.90Hz for 43.6% of time, and dropped to 49.60Hz at 06:43Hrs. Again, on 26/03/2022 frequency has remained below 49.90Hz for 21% of time, and has dropped to 49.59Hz at 16:45Hrs.

Demand for power is increasing in the region/country due to increase in temperature.

It has been observed that U.P. was selling power in RTM from 11:00Hrs to 18:00Hrs on 26/03/2022 and under-drawing from the Grid between 11:00Hrs to 14:30Hrs due to decrease in load. However, U.P. was continuously over-drawing from the Grid to the tune of 250MW to 1500MW from 15:00Hrs to 17:45Hrs on 26/03/2022 due to increase in the load. Proper advance planning and coordination could have avoided this mis-match between schedule and drawl.

The max. over-drawl based on 5 minutes' average telemetered data for last few days is given below:

Date	Max. Over-drawl (MW)
25-03-2022	645 MW
26-03-2022	1499 MW
27-03-2022	1054 MW

Such deviations from schedule are to be avoided to maintain system security.

Further to above, following units are under outage within the state of U.P. :

S. No.	Station	Owner	Unit No.	Capacity (MW)	Reason(s)	Outage (Time & Date)	
1	Obra TPS	UPPTCL	13	200	High bearing vibration in turbine	06:36	08-01-2022
2	Meja TPS	UPPTCL, NTPC	2	660	Boiler tube leakage	18:59	07-02-2022
3	Rosa TPS	UPPTCL	2	300	Generator Hydrogen gas leakage	05:34	22-02-2022
4	Rosa TPS	UPPTCL	1	300	Problem in generator transformer	16:40	26-02-2022
5	Rosa TPS	UPPTCL	3	300	Turbine Bearing Heavy Oil Leakage	11:59	12-03-2022
6	Lalitpur TPS	UPPTCL, LPGCL	2	660	For Boiler License Renewal	00:00	15-03-2022
7	Anpara TPS	UPPTCL	3	210	Boiler tube leakage	11:14	21-03-2022
	Total Outage (MW) :			2630			

In view of high demand, the prices in power exchange have also increased and at times power is unavailable in real time market. Thus too much reliance on RTM could be avoided specially during high demand period.

Therefore, kindly advise all concerned to avoid deviation of U.P. state control area, for ensuring system security. For the same following is suggested:

1. Expediting revival of units even costly one (maintaining reserves is important).
2. Ensuring the fuel availability.
3. Advance planning for meeting load (load forecast and resource availability/optimization).

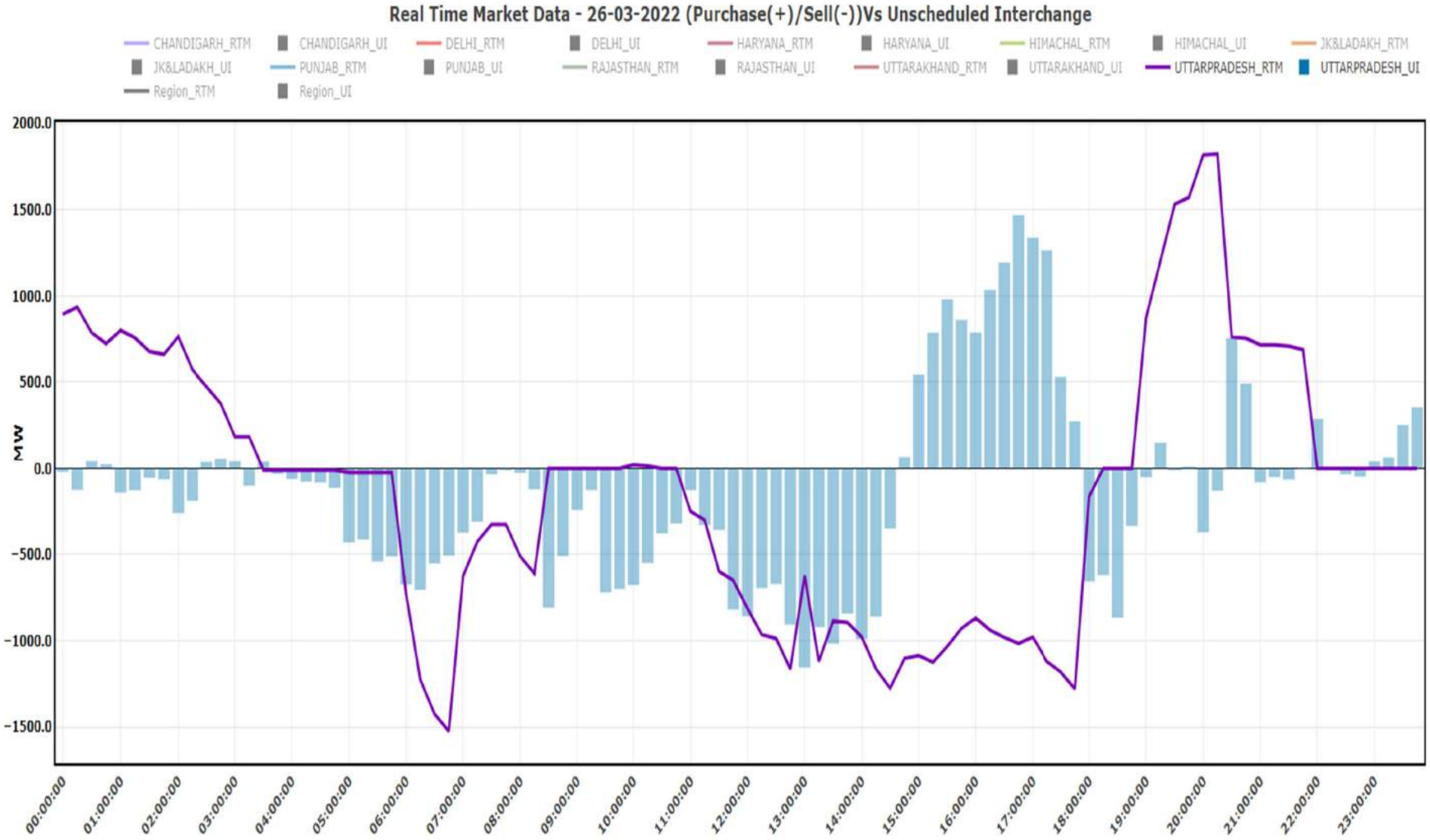
Looking forward to above actions from U.P. for safe system operation.

Thanks and Regards

Rajiv Porwal
CGM(I/C), NRLDC 28/03

Copy for kind Information :

1. Member(GO&D), CEA
2. Member Secretary, NRPC
3. CMD, POSOCO
4. Executive Director, NLDC
5. Chief Engineer(SLDC), U.P.


Real Time Market Data - 26-03-2022 (Purchase(+)/Sell(-))Vs Unscheduled Interchange
CHANDIGARH_RTM
CHANDIGARH_UI
DELHI_RTM
DELHI_UI
HARYANA_RTM
HARYANA_UI
HIMACHAL_RTM
HIMACHAL_UI
JK&LADAKH_RTM
JK&LADAKH_UI
PUNJAB_RTM
PUNJAB_UI
RAJASTHAN_RTM
RAJASTHAN_UI
UTTARAKHAND_RTM
UTTARAKHAND_UI
UTTARPRADESH_RTM
UTTARPRADESH_UI
Region_RTM
Region_UI
MW
2000.0
1500.0
1000.0
500.0
0.0
-500.0
-1000.0
-1500.0
00:00:00
01:00:00
02:00:00
03:00:00
04:00:00
05:00:00
06:00:00
07:00:00
08:00:00
09:00:00
10:00:00
11:00:00
12:00:00
13:00:00
14:00:00
15:00:00
16:00:00
17:00:00
18:00:00
19:00:00
20:00:00
21:00:00
22:00:00
23:00:00

पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेषण केन्द्र/NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
OFFICE : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN: U40105L2009GOI188682, Website: www.nrldc.org, www.nrldc.in, Tel.: 01126519406, 26523869, Fax: 011-26852747

संदर्भ सं°: NRLDC/SO-I/151/ **दिनांक** : 30th March 2022

To

Chief Engineer(SLDC),
SLDC Building, 220kV Gladini Grid Station Complex,
Narwal Bala, Gladini, J&K-180016.

Sub : Over-drawl and Low Frequency excursions vis-a-vis Deviation by J&K.

Sir,

This is in reference to deviations from the drawl schedule by J&K at low frequency excursions. The Grid frequency has touched 49.58Hz at 18:54Hrs on 29/03/2022. Trend of low frequency excursions (5 minutes' average) and corresponding deviation by J&K for 29th March is attached at Annexure-I. From the Annexure, it may be seen that J&K's deviation from drawl schedule has crossed 300MW at some instances.

The matter has been taken up with J&K multiple times in the form of operational messages and deviation messages from NRLDC control room. These deviations at low frequency excursions occurring almost on daily basis are detrimental to the Grid reliability.

In view of the increasing peak demand and lack of adequate ramping-up reserves during morning and evening peak hours, it is requested to kindly ensure following measures to restrict deviations from schedule to mitigate low frequency excursions:

1. Meticulous load forecasting and operational planning may be carried out on daily/weekly/monthly basis.
2. Restrict the load variation to the tune of limits specified in IEGC through staggering of load connection/disconnection.
3. Maintain drawal from the Grid as per schedule by proper ramping of on-bar own generation in consonance with the demand variation, to mitigate over-drawl/load shedding.

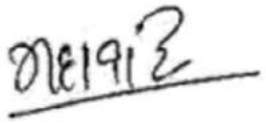
4. The units under reserve shutdown (in state control area) may be brought on-bar to maintain adequate spinning reserves.

5. Expedite the possibility of bringing gas based generating stations and schedule of URS in Anta, Auraiya, Dadri available in RLNG and Liquid fuel.

6. Real time portfolio management through purchase/sale of power in STOA (Bilateral contingency and Real time market) and requisition of available URS in ISGS may be ensured.

Your constant support is highly solicited for maintaining Grid parameters within permissible limits.

Thanks and Regards,

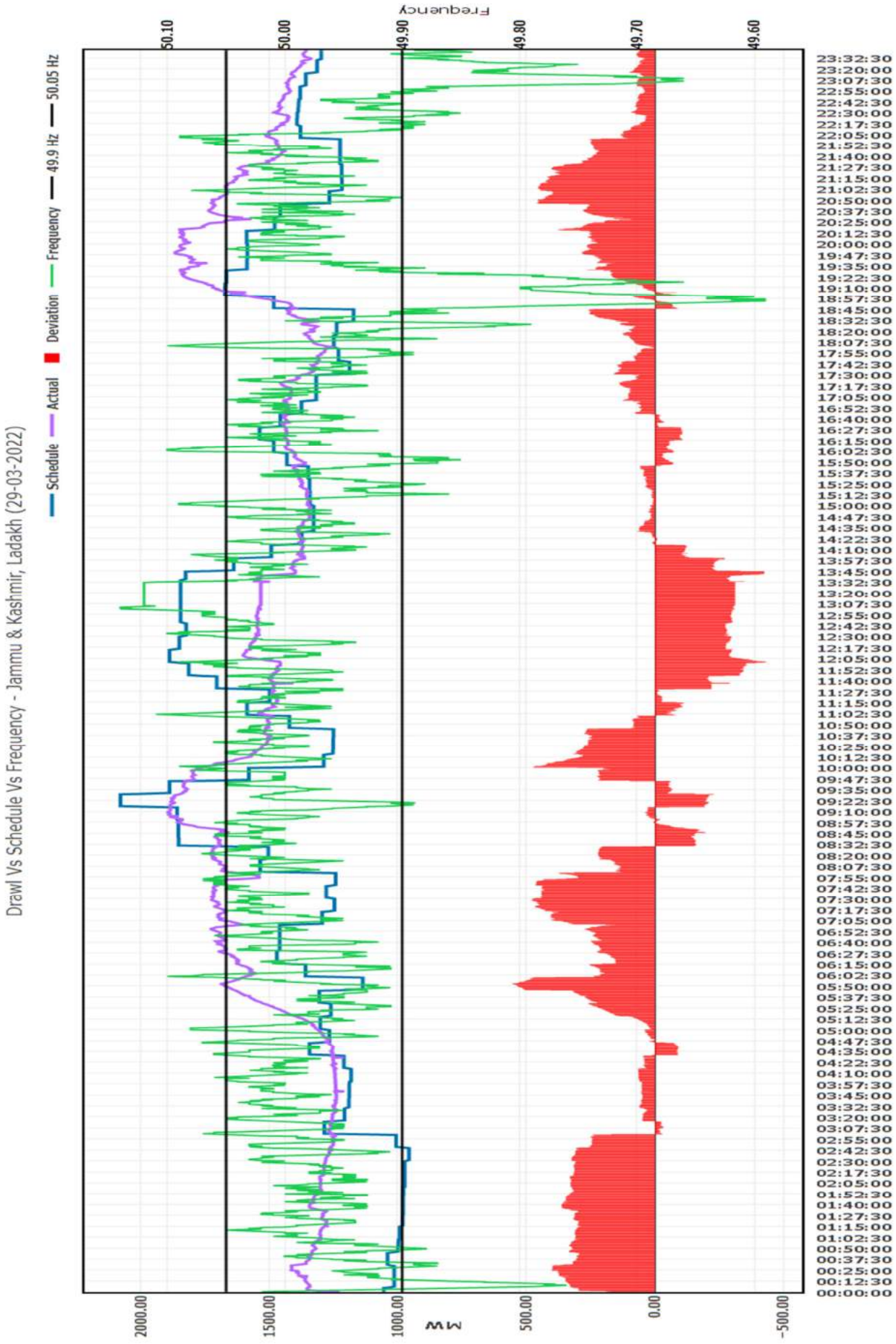


Mahavir Prasad Singh
Sr. DGM(SO), NRLDC

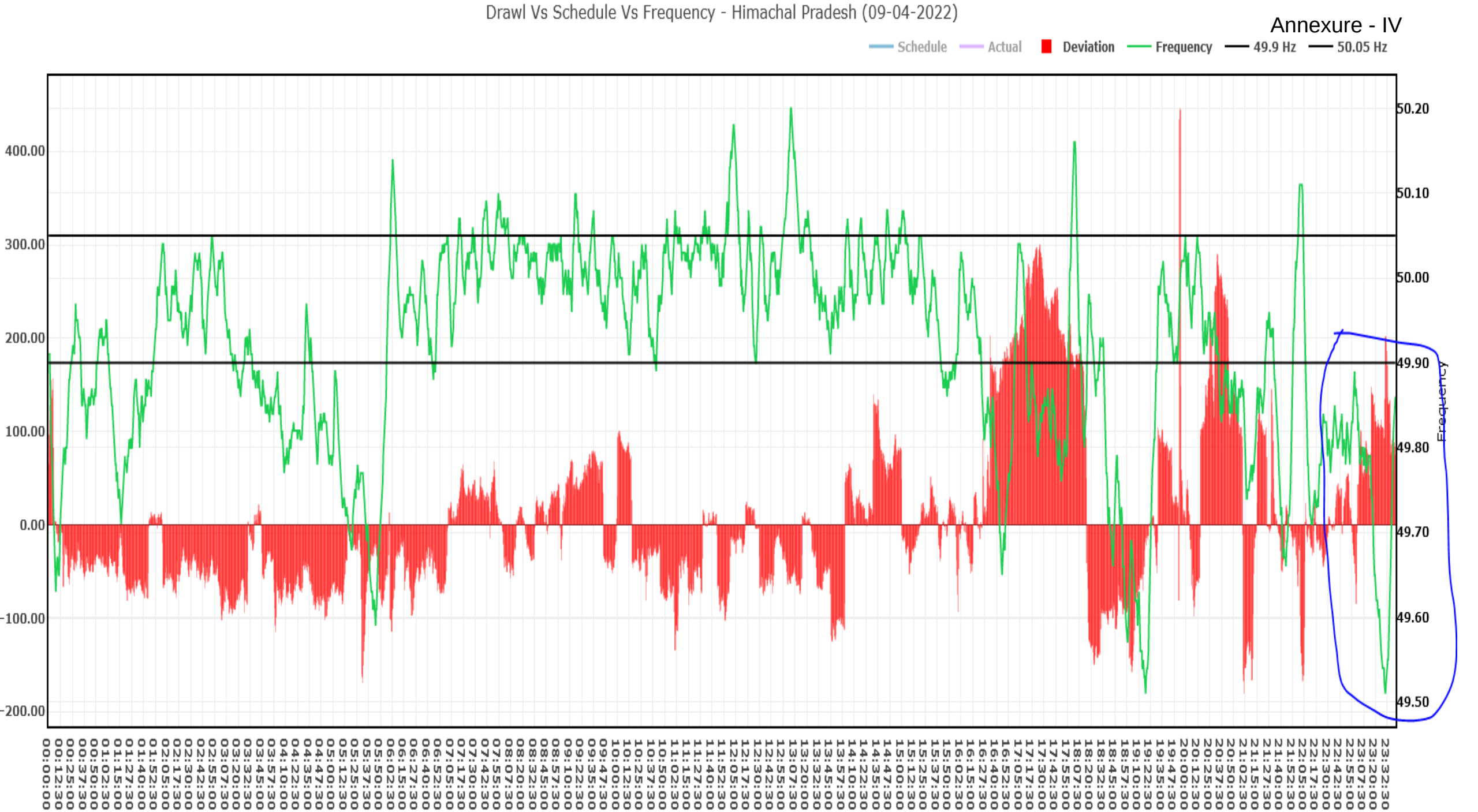
Copy for kind information:

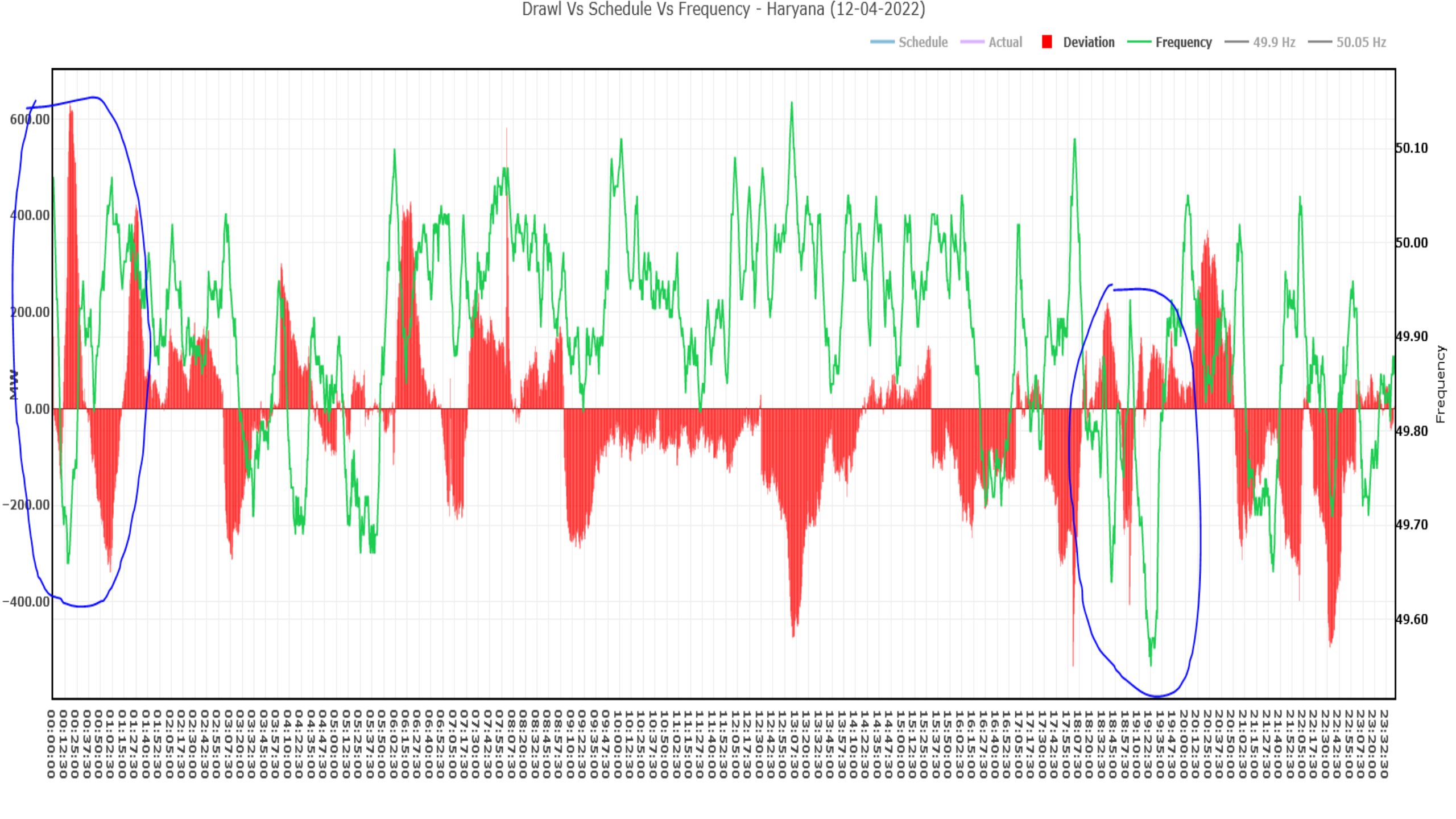
1. Member Secretary, NRPC
2. Executive Director, NLDC
3. CGM(I/C), NRLDC

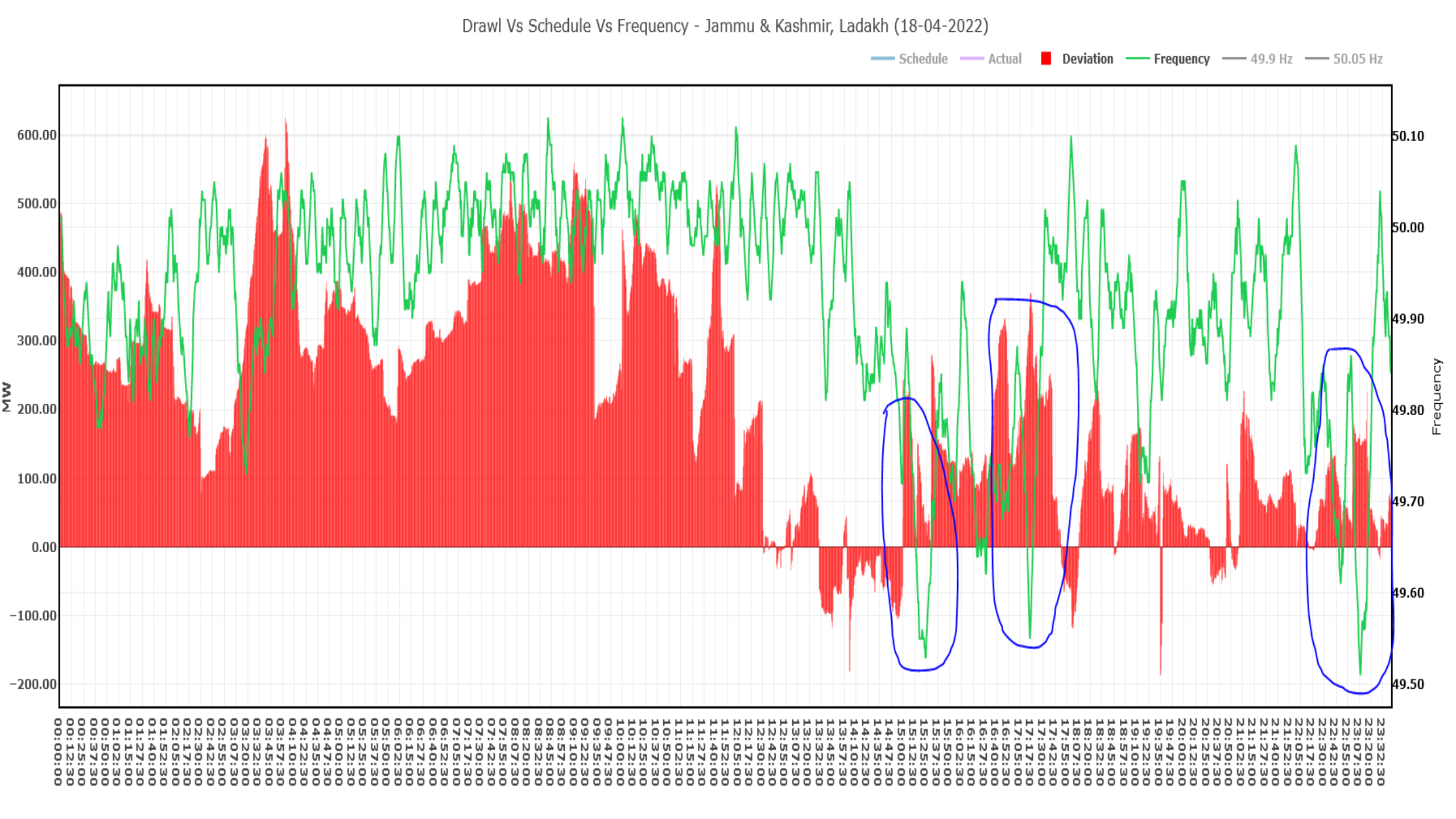
Annexure-I

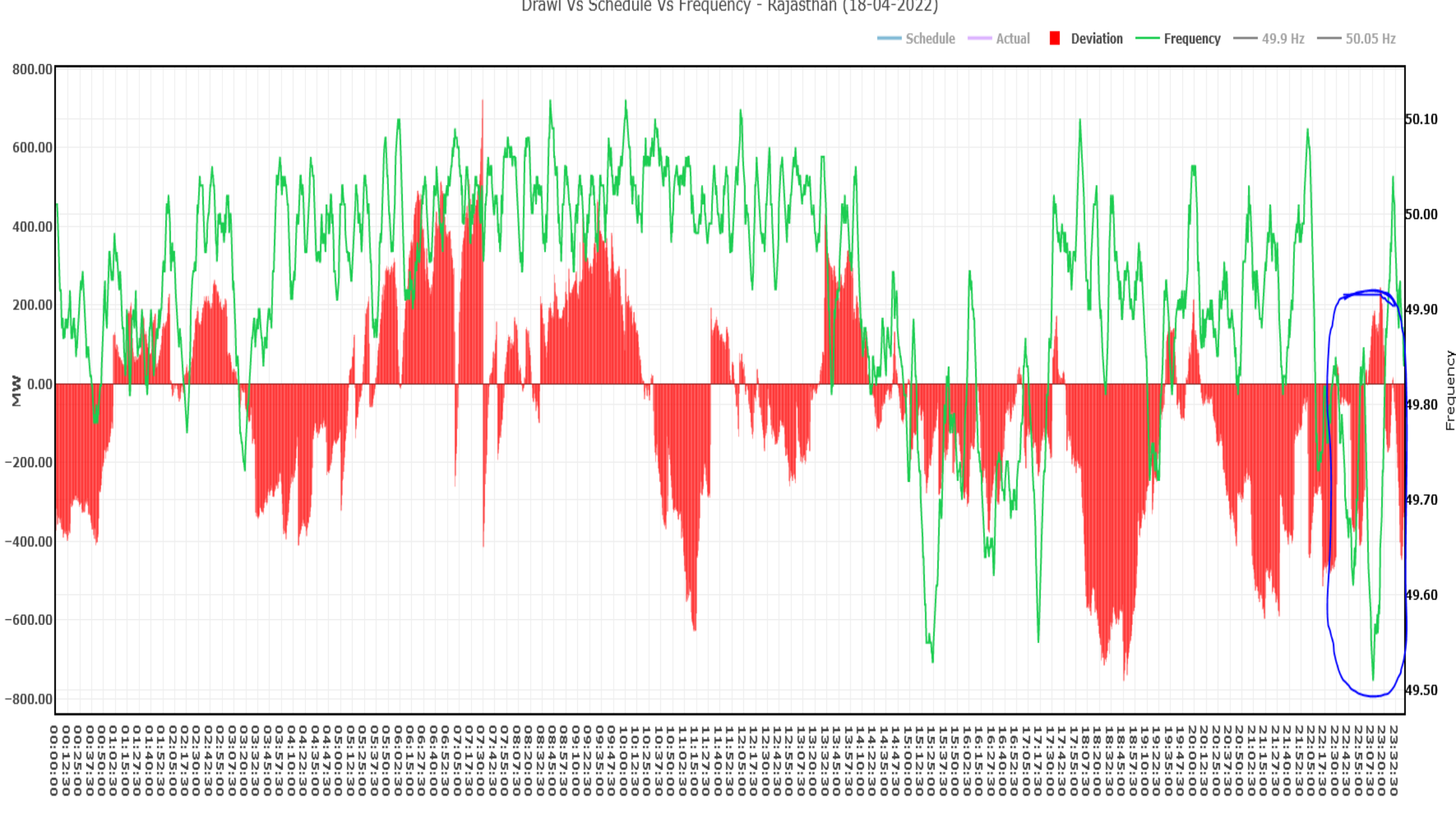

Drawl Vs Schedule Vs Frequency - Jammu & Kashmir, Ladakh (29-03-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
Frequency
50.10
50.00
49.90
49.80
49.70
49.60
MW
2000.00
1500.00
1000.00
500.00
0.00
-500.00
23:32:30
23:20:00
23:07:30
22:55:00
22:42:30
22:30:00
22:17:30
22:05:00
21:52:30
21:40:00
21:27:30
21:15:00
21:02:30
20:50:00
20:37:30
20:25:00
20:12:30
20:00:00
19:47:30
19:35:00
19:22:30
19:10:00
18:57:30
18:45:00
18:32:30
18:20:00
18:07:30
17:55:00
17:42:30
17:30:00
17:17:30
17:05:00
16:52:30
16:40:00
16:27:30
16:15:00
16:02:30
15:50:00
15:37:30
15:25:00
15:12:30
15:00:00
14:47:30
14:35:00
14:22:30
14:10:00
13:57:30
13:45:00
13:32:30
13:20:00
13:07:30
12:55:00
12:42:30
12:30:00
12:17:30
12:05:00
11:52:30
11:40:00
11:27:30
11:15:00
11:02:30
10:50:00
10:37:30
10:25:00
10:12:30
10:00:00
09:47:30
09:35:00
09:22:30
09:10:00
08:57:30
08:45:00
08:32:30
08:20:00
08:07:30
07:55:00
07:42:30
07:30:00
07:17:30
07:05:00
06:52:30
06:40:00
06:27:30
06:15:00
06:02:30
05:50:00
05:37:30
05:25:00
05:12:30
05:00:00
04:47:30
04:35:00
04:22:30
04:10:00
03:57:30
03:45:00
03:32:30
03:20:00
03:07:30
02:55:00
02:42:30
02:30:00
02:17:30
02:05:00
01:52:30
01:40:00
01:27:30
01:15:00
01:02:30
00:50:00
00:37:30
00:25:00
00:12:30
00:00:00

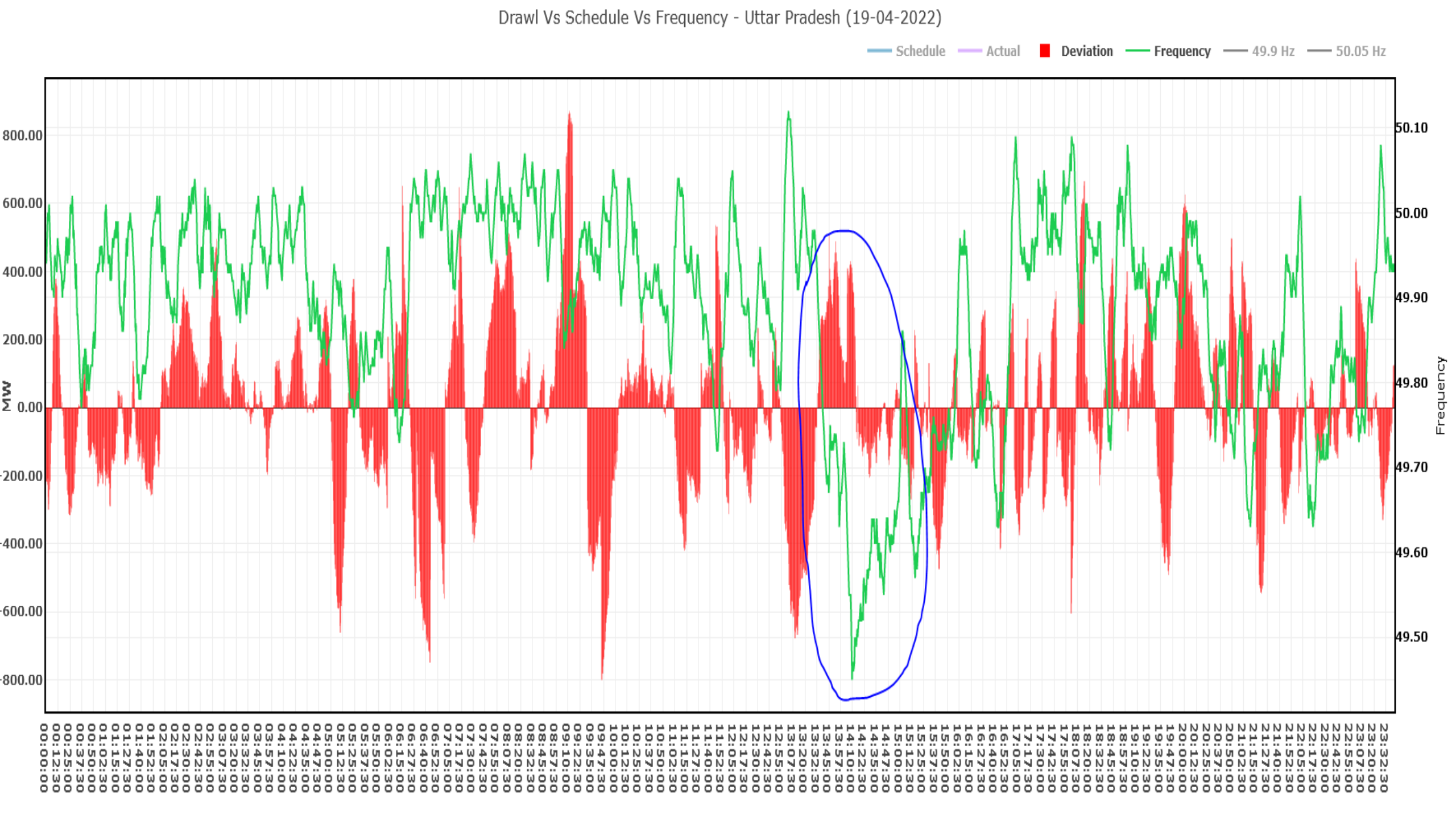
Annexure - IV

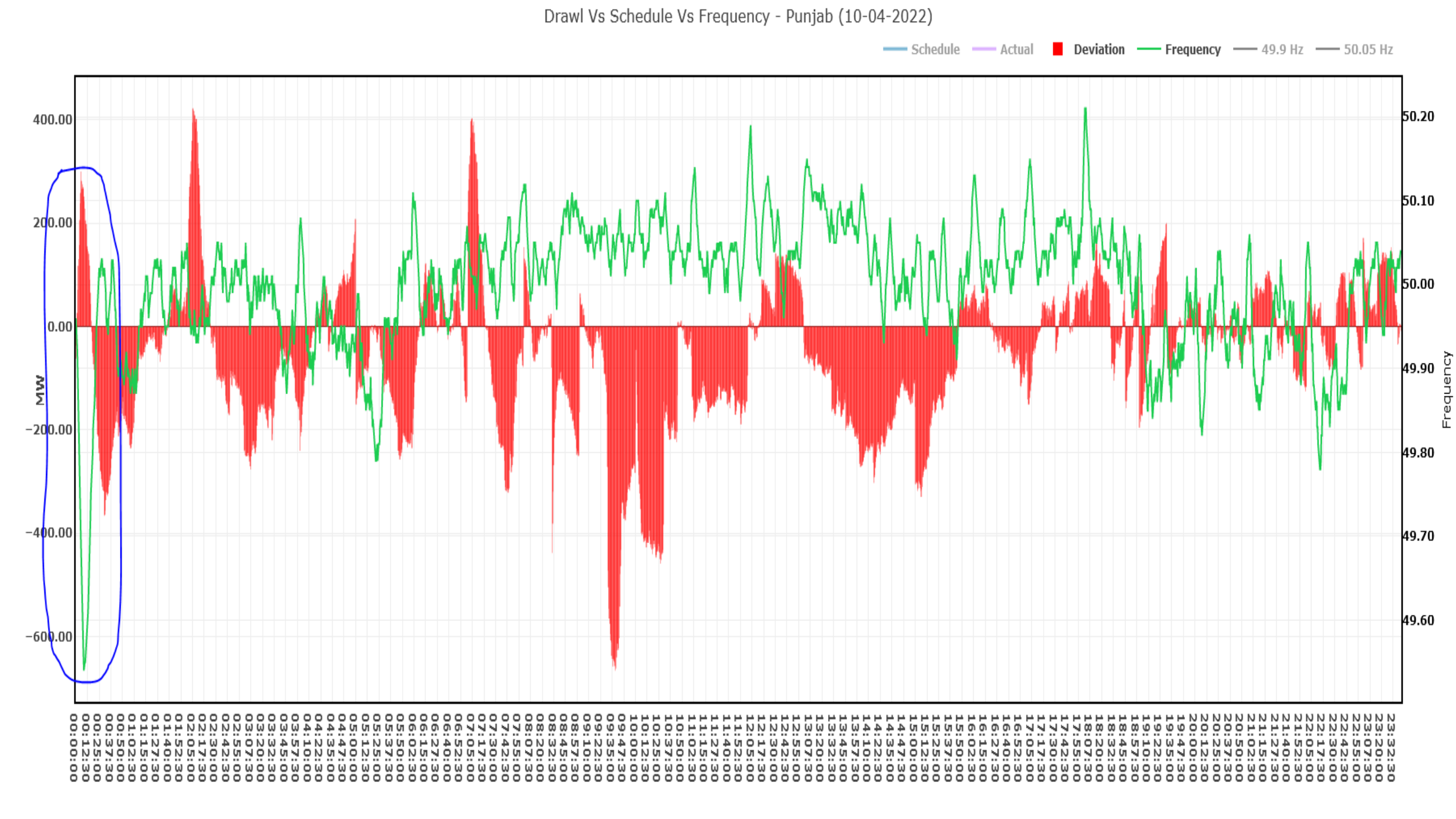

Drawl Vs Schedule Vs Frequency - Himachal Pradesh (09-04-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
400.00
300.00
200.00
100.00
0.00
-100.00
-200.00
50.20
50.10
50.00
49.90
49.80
49.70
49.60
49.50
Frequency


Drawl Vs Schedule Vs Frequency - Haryana (12-04-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
600.00
400.00
200.00
0.00
-200.00
-400.00
50.10
50.00
49.90
49.80
49.70
49.60


Drawl Vs Schedule Vs Frequency - Jammu & Kashmir, Ladakh (18-04-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-100.00
-200.00
50.10
50.00
49.90
49.80
49.70
49.60
49.50


Drawl Vs Schedule Vs Frequency - Rajasthan (18-04-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
50.10
50.00
49.90
49.80
49.70
49.60
49.50


Drawl Vs Schedule Vs Frequency - Uttar Pradesh (19-04-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
50.10
50.00
49.90
49.80
49.70
49.60
49.50


Drawl Vs Schedule Vs Frequency - Punjab (10-04-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
400.00
200.00
0.00
-200.00
-400.00
-600.00
50.20
50.10
50.00
49.90
49.80
49.70
49.60

Annexure

FEEDERS FOR PHYSICAL REGULATION OF SUPPLY IN UTTAR PRADESH

Sl. No	Transmission element to be opened	Affected Area	Approx load relief (MW)	Remarks
1	220kV Meerut- Gajraula	Gajraula	100	Radial feeder, Alternate supply available from 220kV Sambhal, MW loading limited to 25MW.
2	220kV Baghpat (PG)- Baghpat (UP) D/C	Baghpat	60	Radial feeder, Alternate supply available from 132kV Source
3	220kV Allahabad (PG)- Jhusi	Jhusi	200	Radial feeder, Alternate supply available from 220kV Phoolpur
4	220kV Sohawal (PG)- Barabanki D/C	Barabanki	120	Radial feeder
5	220KV Mainpuri (PG)- Neemkarori D/C	Farrukhabad	120	--do--
6	220kV Gorakhpur (PG)- Gola D/C	Gorakhpur	80	--do--
7	132kV Balia (PG)- Bansdeeh	Balia	15	--do--
8	132kV Balia (PG)- Sikandrapur	Balia	30	--do--

FEEDERS FOR PHYSICAL REGULATION OF SUPPLY IN PUNJAB

S No.	Transmission element to be opened	Power supply interruption in	Approx Relief (MW)	Remarks
1	132 kV Jamalpur-Ghulal D/C	Ghulal	91	No alternate supply available
2	66 kV Jamalpur – Chandigarh Road,Ludhiana	Chandigarh Road, Ludhiana	37	These feeders are replacement of Jamalpur-Miliarganj D/C as reported by PSTCL by Memo No. 1162/T-257 dated 23-11-12. In review, it was found that df/dt and UFR was already installed on Jamalpur-Miliarganj D/C
	66 kV Jamalpur-Sherpur, Ludhiana	Sherpur, Ludhiana	13	
3	220/66 kV ICT1, 2 & 3 at Sangrur	Sangrur and adjoining areas	166	No alternate supply available
4	132 kV Amritsar-Naraingarh D/C	Amritsar and Adjoining areas	100	No alternate supply available
5	220 kV Jalandhar-Kanjli D/C	Kapoorthala	64	No alternate supply available

FEEDERS FOR PHYSICAL REGULATION OF SUPPLY IN JAMMU & KASHMIR

S No.	Transmission element to be opened	Power supply interruption in	Approx Relief (MW)	Remarks
1	220 kV Kishenpur-Udhampur D/C 220 kV Sarna-Udhampur	Udhampur	100-150	Limited alternate feed may be available from 132 kV. Generation at Chenani HEP may be affected.
2	220 kV Kishenpur-Barn D/C	Jammu	100	Limited alternate feed may be available from Jammu
3	220 kV Sarna-Hiranagar 220 kV Salal-Jammu D/C	Jammu & Hiranagar	300-400	Entire Jammu region could be affected. Alternate feed may be available from Barn and Udhampur. Generation at Sewa HEP may get affected
4	220 kV Wagoora-Ziankote D/C	Kashmir valley	200-300	Limited alternate feed may be available from Pampore. Generation at Lower Jhelum could get affected
5	220 kV Wagoora-Ziankote D/C 220 kV Wagoora-Pampore D/C 220 kV Kishenpur-Mir Bazar 220 kV Kishenpur-Ramban	Kashmir valley	400-500	Though Uri generation may be evacuated through 400 kV Wagoora-Kishenpur D/C but the security would be affected.

FEEDERS FOR PHYSICAL REGULATION OF SUPPLY IN RAJASTHAN

S No.	Transmission element to be opened	Power supply interruption in	Approx Relief (MW)	Remarks
1	220 kV Bhiwadi (PG)-Kushkhera 220 kV Neemrana (PG)-Kushkhera	Kushkhera and Kishangarh Bas	170	Limited alternate supply may be available. 220 kV Alwar-K. G. Bas-Kushkhera line may get overloaded
2	220 kV Neemrana (PG)-Neemrana 220 kV Bhiwadi (PG)-Neemrana	Neemrana	180	Limited alternate supply may be available from Kotputli & Behror.
3	220 kV Khelna (PG)-Manoharpur	Manoharpur	100	Limited alternate supply of Manoharpur may be available from Kotputli
4	220 kV Anta-Lalsot 220 kV Anta-Sawai Madhopur	Lalsot Sawaimadhopur	180	Limited alternate supply may be available from Dausa
5	220 kV Dadri-Khetri-I 220 kV Dadri-Khetri-II 220 kV Hissar-Chirawa	Khetri Chirawa	120	Limited alternate supply of Khetri and Chirawa may be available from other station

FEEDERS FOR PHYSICAL REGULATION OF SUPPLY IN HARYANA

S No.	Transmission element to be opened	Power supply interruption in	Approx Relief (MW)	Remarks
1	Feeders in Schedule A Panipat: a) 33kV Panipat-Swah(Chhajpur) b) 33kV Panipat-Untla c) 33kV Panipat-Israna d) 33kV Panipat-Narayana e) 33kV Panipat-Sanoli road	Panipat	150 (Approximately)	Radial Lines
2	Feeders in Schedule B Kurukshetra: a) 33kV Kurukshetra-Mathana b) 33kV Kurukshetra-Ajrana c) 33kV Kurukshetra-Kirmich	Kurukestra, Dhulkote,	150 (approximately)	Radial Lines
	d) 11kV Kurukshetra-Bahadurpura e) 11kV Kurukshetra-Pipli Dhulkote: a) 66kV Dhulkote-Ambala b) 66kV Dhulkote-Babyal			
3	132kV Kundli line emanating from Narela BBMB	Rai-Sonepat	55	No alternate supply to Kundli
4	220/132kV, 220/66 kV ICTs at BBMB stations such Hissar, Ch. Dadri, Kurukshetra, Jagadri. Dhulkote, can be opened. However, many 132kV, 66 kV and below feeder are covered under Schedule A & B			

FEEDERS FOR PHYSICAL REGULATION OF SUPPLY IN HIMACHAL PRADESH

S.No.	**Transmission element to be opened**	**Power supply interruption in**	**Approx. Relief (MW)**	**Remarks**
1	66kV Bhakra-Rakkar	Rakkar/Una	10-18	Details awaited
2	66kV Pong- Sansarpur	Sansarpur Terrace	2-5	Details awaited
3	220kV Dehar-Kangoo 132kV Dehar-Kangoo	Kunihar/Shimla	80-140	Limited alternate supply available from 132kV Hamirpur. 400/220kV Dehar ICT may be overloaded.
4	220kV Khodri-Majri 132kV Kulhal-Giri	Giri/Solan	80-140	Limited Alternate supply may be available from 132kV Kunihar. Essential load at Majri: Oxygen plant, administrative offices etc.
5	220kV Nallagarh-Nangal D/C	Nangal/Nallagarh/Baddi	180-315	Industrial load of Nangal may be affected.
6	66kV Pinjore-Parwanoo	Parwanoo	5-13	Alternate supply from Solan.

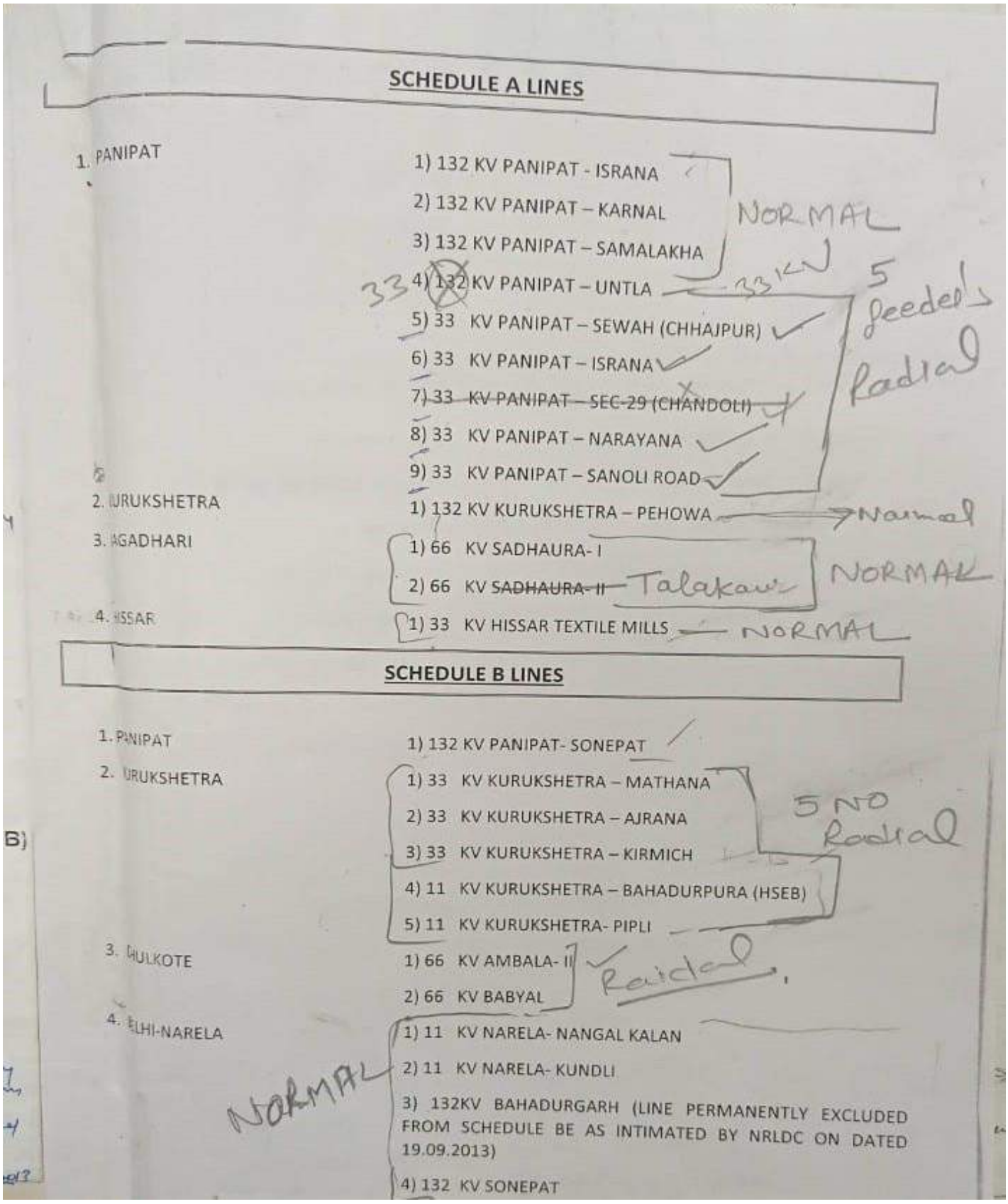
FEEDERS FOR PHYSICAL REGULATION OF SUPPLY IN UT CHANDIGARH

S No.	Transmission element to be opened	Power supply interruption in	Approx Relief (MW)	Remarks
1	220 kV Nalagarh-Kishengarh-D/C	Chandigarh	100-200	No alternate supply available
2	66 kV Mohali- Sector 39 D/C	Chandigarh	30-60	No alternate supply available
3	66 kV Mohali- Sector 56 Ckt-1	Chandigarh	20-50	No alternate supply available

FEEDERS FOR PHYSICAL REGULATION OF SUPPLY IN UTTARAKHAND

S No.	Transmission element to be opened	Power supply interruption in	Approx Relief (MW)	Remarks
1	220 kV Bareilly- Pantnagar	Pant Nagar/ Haldwani	200	Limited alternate supply may be available from 132 kV Kashipur to Haldwani
2	132 kV Nazibad-Kotdwar	Kotdwar	20-50	Generation of Chilla P/H may be interrupted
3	220/132 kV Sitarganj ICTs 132 kV Dohna-Sitarganj 132 kV Dohna -Kichha	Sitarganj, Kichha	50-100	Generation of Khatima will interrupt
4	400/220 kV Roorkee ICTs 220 kV Nara-Roorkee	Roorkee	100-200	Grid disturbance may occur due to overloading of 220kV Rishikesh-Sidkul & 240MVA ICT at 400kV Rishikesh

FEEDERS FOR PHYSICAL REGULATION OF SUPPLY IN BBMB PREMISES



SCHEDULE A LINES

1. PANIPAT	1) 132 KV PANIPAT - ISRANA
	2) 132 KV PANIPAT – KARNAL
	3) 132 KV PANIPAT – SAMALAKHA
	4) 132 KV PANIPAT – UNTLA
	5) 33 KV PANIPAT – SEWAH (CHHAJPUR)
	6) 33 KV PANIPAT – ISRANA
	7) 33 KV PANIPAT – SEC-29 (CHANDOLI)
	8) 33 KV PANIPAT – NARAYANA
	9) 33 KV PANIPAT – SANOLI ROAD
2. URUKSHETRA	1) 132 KV KURUKSHETRA – PEHOWA
3. AGADHARI	1) 66 KV SADHAURA- I
	2) 66 KV SADHAURA- II
4. HISSAR	1) 33 KV HISSAR TEXTILE MILLS

SCHEDULE B LINES

1. PANIPAT	1) 132 KV PANIPAT- SONEPAT
2. URUKSHETRA	1) 33 KV KURUKSHETRA – MATHANA
	2) 33 KV KURUKSHETRA – AJRANA
	3) 33 KV KURUKSHETRA – KIRMICH
	4) 11 KV KURUKSHETRA – BAHADURPURA (HSEB)
	5) 11 KV KURUKSHETRA- PIPLI
3. MULKOTE	1) 66 KV AMBALA- II
	2) 66 KV BABYAL
4. DELHI-NARELA	1) 11 KV NARELA- NANGAL KALAN
	2) 11 KV NARELA- KUNDLI
	3) 132KV BAHADURGARH (LINE PERMANENTLY EXCLUDED FROM SCHEDULE BE AS INTIMATED BY NRLDC ON DATED 19.09.2013)
	4) 132 KV SONEPAT