सत्यमेव जयते

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

सं: उ.क्षे.वि.स./प्रचालन/106/01/2022/8323-8364 दिनांक: 14.09.2022

विषय: प्रचालन समन्वय उप-समिति की199वीं बैठक की कार्यसूची।

Subject: Agenda of 199th OCC meeting.

प्रचालन समन्वय उप-समिति की **199वीं** बैठक का आयोजन वीडियो कॉन्फ्रेंसिंग के माध्यम से दिनांक **16.09.2022** को **11:00** बजे से किया जायेगा। उक्त बैठक की कार्यसूची उत्तर क्षेत्रीय विद्युत् समिति की वेबसाइट http://164.100.60.165 पर उपलब्ध है।

बैठक में सम्मिलित होने के लिए लिंक व पासवर्ड सभी सदस्यों को ई-मेल द्वारा प्रदान किया जाएगा।

कृपया बैठक में उपस्थित होने की सुविधा प्रदान करें।

199th meeting of the Operation Co-ordination sub-committee will be conducted through Video Conferencing on **16.09.2022** from **11:00 Hrs**. The agenda of this meeting has been uploaded on the NRPC web-site http://164.100.60.165.

The link and password for joining the meeting will be e-mailed to respective e-mail IDs in due course.

Kindly make it convenient to attend the meeting.

14/09/2022.

(सौमित्र मजूमदार)
अधीक्षण अभियंता (प्रचालन)

सेवा में : प्रचालन समन्वय उप समिति के सभी सदस्य।
To : All Members of OCC

1. Confirmation of Minutes

The minutes of the 198th OCC meeting were issued vide letter of even number dated 09.09.2022.

Sub-committee may deliberate and kindly confirm the Minutes.

2. Review of Grid operations

2.1 Power Supply Position (Provisional) for August 2022

Anticipated Power Supply Position v/s Actual Power Supply Position (Provisional) of Northern Region during the month of August-2022 is as under:

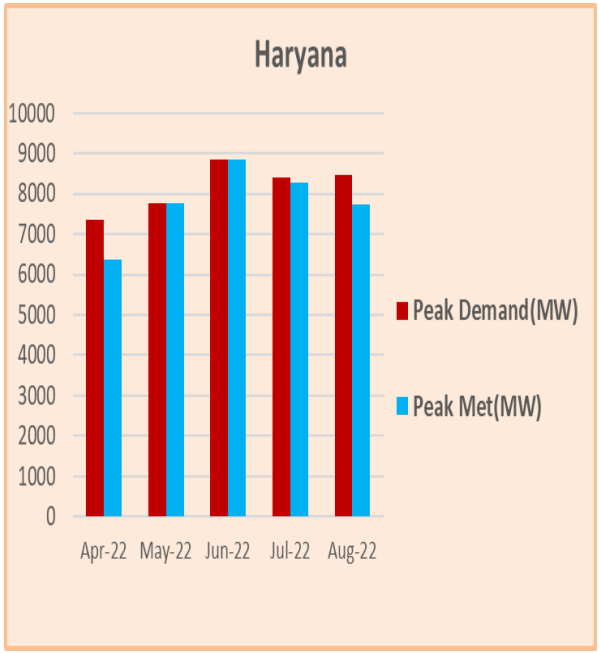
State / UT	Req. / Avl.	Energy (MU)			Peak (MW)		
		Anticipated	Actual	% Variation	Anticipated	Actual	% Variation
CHANDIGARH	(Avl)	230	204	-11.2%	420	381	-9.3%
	(Req)	190	204	7.5%	360	381	5.8%
DELHI	(Avl)	4269	3698	-13.4%	7050	6446	-8.6%
	(Req)	3758	3698	-1.6%	7050	6446	-8.6%
HARYANA	(Avl)	5730	6707	17.1%	11650	12015	3.1%
	(Req)	6680	6740	0.9%	11990	12015	0.2%
HIMACHAL PRADESH	(Avl)	1151	928	-19.4%	1658	1711	3.2%
	(Req)	1072	944	-11.9%	1668	1711	2.6%
J&K and LADAKH	(Avl)	2180	1561	-28.4%	3510	2783	-20.7%
	(Req)	1330	1570	18.1%	2400	2783	15.9%
PUNJAB	(Avl)	7480	9017	20.5%	13400	14295	6.7%
	(Req)	8670	9017	4.0%	14700	14295	-2.8%
RAJASTHAN	(Avl)	9610	7319	-23.8%	18200	13808	-24.1%
	(Req)	7900	7366	-6.8%	14500	13808	-4.8%
UTTAR PRADESH	(Avl)	15190	14687	-3.3%	25500	25327	-0.7%
	(Req)	15500	14771	-4.7%	25500	25437	-0.2%
UTTARAKHAND	(Avl)	1451	1417	-2.3%	2235	2339	4.7%
	(Req)	1457	1431	-1.8%	2300	2339	1.7%
NORTHERN REGION	(Avl)	47291	45538	-3.7%	78500	72000	-8.3%
	(Req)	46557	45742	-1.8%	76100	72600	-4.6%

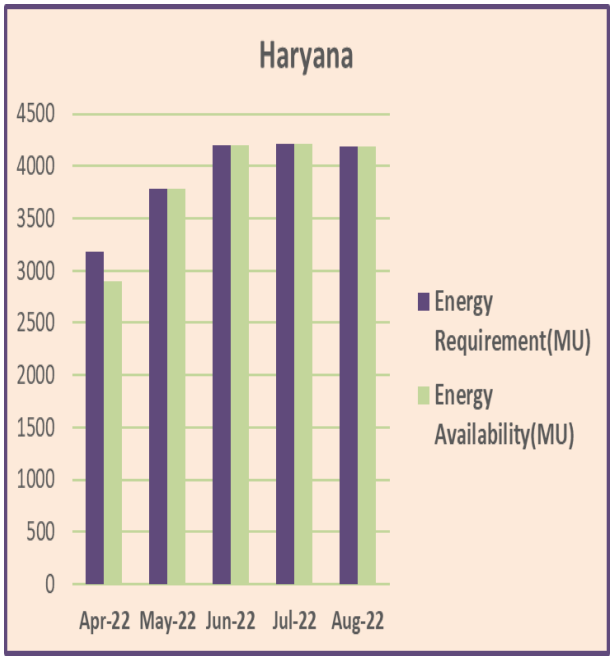
As per above, negative / significant variation (≥5%) in Actual Power Supply Position (Provisional) vis-à-vis Anticipated figures is observed for the month of August-2022 in terms of Energy Requirement for Chandigarh, Delhi, HP, UTs of J&K and Ladakh, Rajasthan, UP, and Uttarakhand and in terms of Peak Demand similar variation is noted for Chandigarh, Delhi, UTs of J&K and Ladakh, Punjab, Rajasthan, UP. These states/UTs are requested to submit reason for such variations so that the same can be deliberated in the meeting.

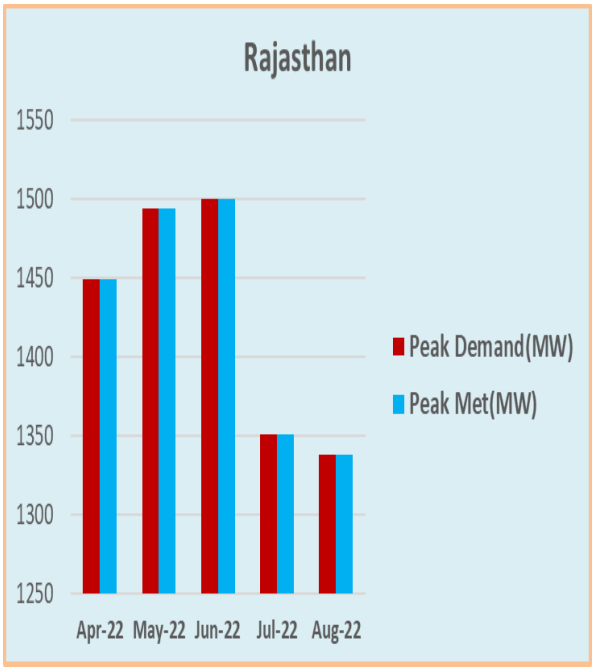
All SLDCs are requested to furnish provisional and revised power supply position in prescribed formats on NRPC website portal by 2nd and 15th day of the month respectively for the compliance of Central Electricity Authority (Furnishing of Statistics, Returns and Information) Regulations, 2007.

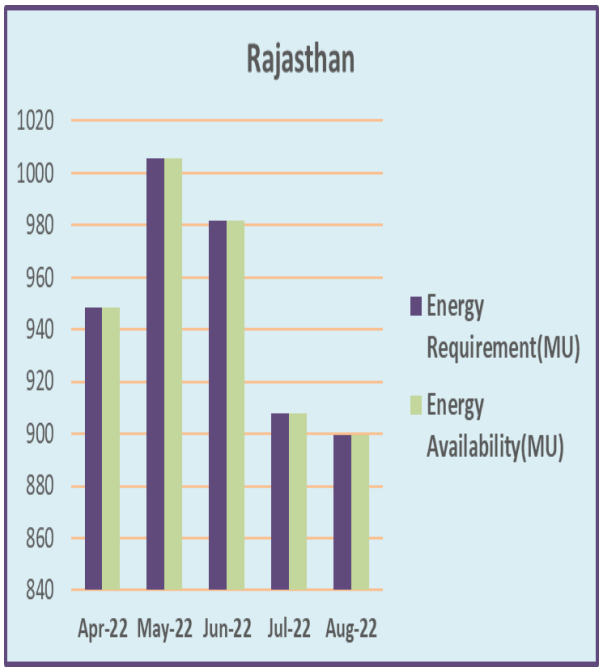
2.2 Power Supply Position of NCR

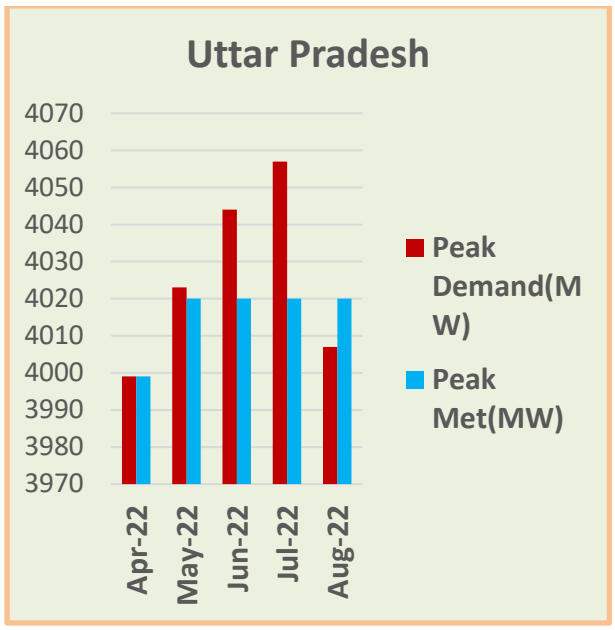
NCR Planning Board (NCRPB) is closely monitoring the power supply position of National Capital Region. Monthly power supply position for NCR till the month of August-2022 is available on NRPC website (http://164.100.60.165). Power supply position during the current financial year is shown as under:

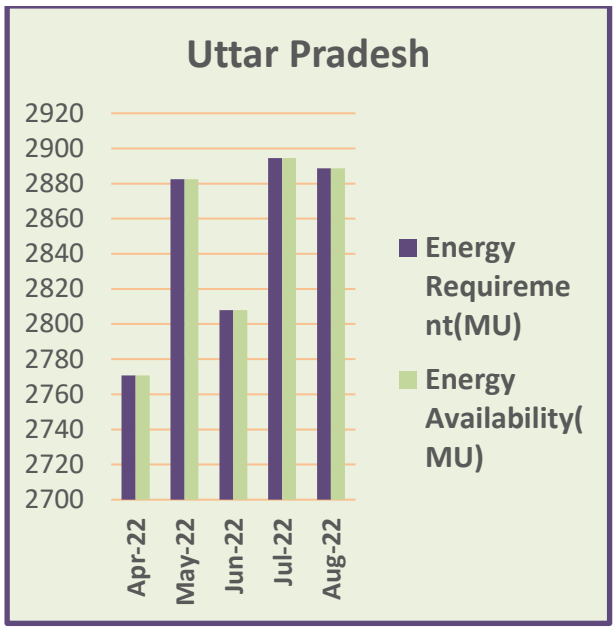


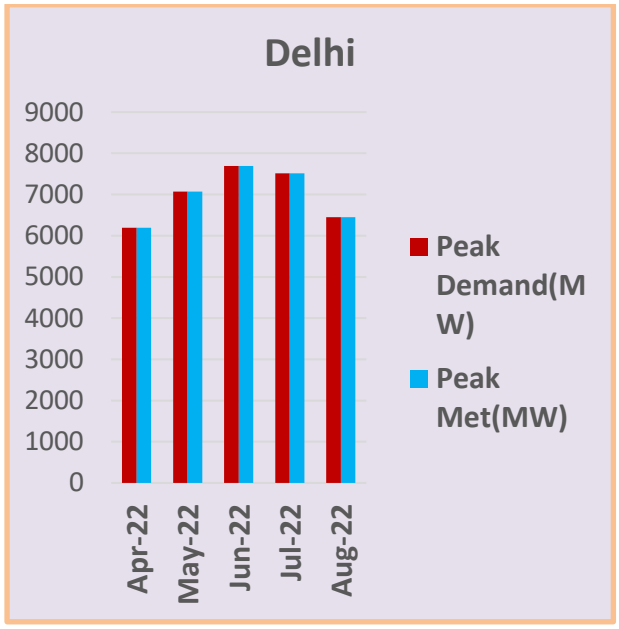


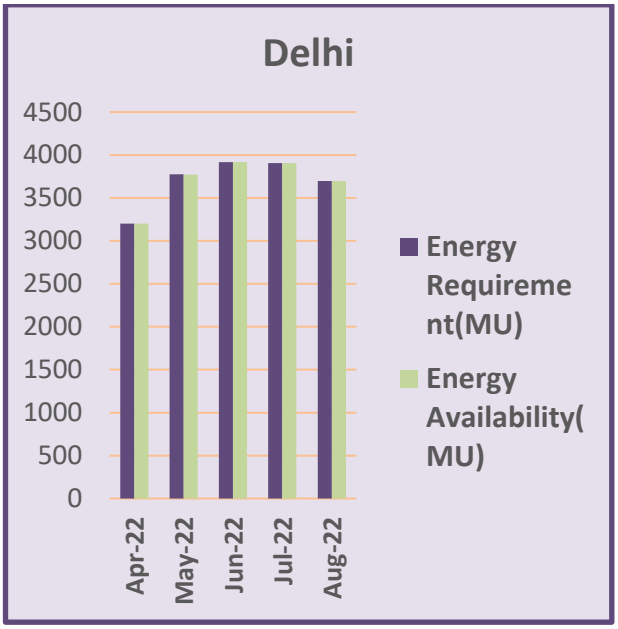












3. Maintenance Programme of Generating Units and Transmission Lines

3.1. Maintenance Programme for Generating Units

The meeting on proposed maintenance programme for Generating Units for the month of October-2022 is scheduled on 15-September-2022 via Video Conferencing

3.2. Outage Programme for Transmission Elements

The meeting on proposed outage programme of Transmission elements for the month of October-2022 is scheduled on 15-September-2022 via Video conferencing.

4. Planning of Grid Operation

4.1. Anticipated Power Supply Position in Northern Region for October 2022

The Anticipated Power Supply Position in Northern Region for October 2022 is as under:

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	140	400	No Revision submitted
	Requirement	110	220	
	Surplus / Shortfall	30	180	
	% Surplus / Shortfall	27.3%	81.8%	
DELHI	Availability	2320	6090	No Revision submitted
	Requirement	2750	5400	
	Surplus / Shortfall	-430	690	
	% Surplus / Shortfall	-15.6%	12.8%	
HARYANA	Availability	4660	11220	7-Sep-22
	Requirement	5750	9356	
	Surplus / Shortfall	-1090	1864	
	% Surplus / Shortfall	-19.0%	19.9%	
HIMACHAL PRADESH	Availability	981	1714	7-Sep-22
	Requirement	961	1740	
	Surplus / Shortfall	20	-26	
	% Surplus / Shortfall	2.1%	-1.5%	
J&K and LADAKH	Availability	1200	3040	No Revision submitted
	Requirement	1510	2470	
	Surplus / Shortfall	-310	570	
	% Surplus / Shortfall	-20.5%	23.1%	
PUNJAB	Availability	5420	11410	No Revision submitted
	Requirement	5060	9440	
	Surplus / Shortfall	360	1970	
	% Surplus / Shortfall	7.1%	20.9%	
RAJASTHAN	Availability	7930	17920	No Revision submitted
	Requirement	8910	14360	
	Surplus / Shortfall	-980	3560	
	% Surplus / Shortfall	-11.0%	24.8%	
UTTAR PRADESH	Availability	12400	23500	12-Sep-22
	Requirement	12090	23500	
	Surplus / Shortfall	310	0	
	% Surplus / Shortfall	2.6%	0.0%	
UTTARAKHAND	Availability	1215	2129	5-Sep-22
	Requirement	1225	2200	
	Surplus / Shortfall	-9	-71	
	% Surplus / Shortfall	-0.8%	-3.2%	
NORTHERN REGION	Availability	36267	72700	
	Requirement	38366	64500	
	Surplus / Shortfall	-2099	8200	
	% Surplus / Shortfall	-5.5%	12.7%	

SLDCs are requested to update the anticipated power supply position of their respective state / UT for the month of October-2022 and submit the measures proposed to be taken to bridge the gap between demand & availability, as well to dispose-off the surplus, if any, in the prescribed format.

5. Submission of breakup of Energy Consumption by the states

5.1 The updated status on the submission of energy consumption breakup is presented below:

State / UT	From	To
DELHI	Apr-2018	Jul-2022
HARYANA	Apr-2018	Jun-2022
HIMACHAL PRADESH	Apr-2018	Jun-2022
PUNJAB	Apr-2018	Mar-2022
RAJASTHAN	Apr-2018	Jun-2022
UTTAR PRADESH	Apr-2018	Jul-2022
UTTARAKHAND	Apr-2018	Mar-2022

All the remaining UTs viz., J&K and Ladakh and Chandigarh are requested to submit the requisite data w.e.f. April 2018 as per the billed data information in the format given as under:

Category→	Consumption by Domestic Loads	Consumption by Commercial Loads	Consumption by Agricultural Loads	Consumption by Industrial Loads	Traction supply load	Miscellaneous / Others
<Month>						

6. Follow-up of issues from previous OCC Meetings- Status update.

The updated status of agenda items is enclosed at ***Annexure-A.I***.

All utilities are requested to update the status.

7. NR Islanding scheme

7.1 Based on the decisions taken in the meeting taken by Hon'ble Minister of State (IC) for Power and New & Renewable Energy on 28.12.2020, Islanding Schemes for NR have been continuously reviewed/discussed in various forums.

7.2 In 187th OCC, it was decided that respective states would submit MIS report before every OCC meeting so that same may be discussed. It was also highlighted that MoP has agreed for PSDF funding for implementation of islanding schemes and states were requested to prepare and submit DPR for the same. Further, a sample DPR on implementation of Islanding scheme for PSDF funding has been already circulated vide email dated 07.10.2021 and requested to expedite the preparation of DPR.

7.3 Utilities were requested to refer and submit SOP for every Islanding scheme in their control area.

7.4 A meeting was also taken by Honorable Cabinet Minister (Power, New & Renewable Energy) on 07.10.2021 wherein emphasis was given on PSDF funding for Islanding schemes and DPR submission for the same. MoM has been issued and copy of the

same was enclosed as Annexure-A.II of 189th OCC agenda.

7.5 In 189th OCC, NRPC representative highlighted no progress from states of Punjab, Uttarakhand, Himachal, J&K, Ladakh.

7.6 In the meeting, UP and Punjab representatives stated that they have sent the offer along with data to CPRI for study of Islanding Schemes. HP intimated that system study is under process at DISCOM end. Rajasthan SLDC assured the submission of RAPS SCADA display on the same day.

7.7 NRLDC submitted that they use PSSE software for system study but Rajasthan has submitted details of Islands in MI Power Software, therefore, they are exploring whether they can use that file.

7.8 MS, NRPC desired to know the reason for sending data to CPRI for system study. He stated that it may be done at state level itself.

7.9 UP representative stated that they are not able to perform dynamic system study as it involves parameters like rotor inertia, hunting, etc.

7.10 MS, NRPC expressed concern regarding apathy of states in implementation of Islanding Schemes. He stated that all SLDCs will intimate the names of Islands for which system study from CPRI is required along with justification for the same by 30th Nov, 2021. He also set timeline of 30th Nov, 2021 for Delhi to submit SOP data. He stated that communication may be sent to RAPS for submission of SOP data at the earliest.

7.11 In the 190th OCC, NRPC representative informed that SOP data in respect of Delhi and RAPS have been received.

7.12 UPSLDC vide email dated 01.12.2021 has submitted the names of islands for which system study from CPRI is required. UPSLDC has highlighted, *inter-alia*, that involvement of long length 765kV line and high number of buses necessitates them to go for system study by CPRI. It has mentioned that SLDC/STU has no expertise in such studies and before doing any investment on the project, proper study is must for successful implementation and operation of Islands.

7.13 HPSLDC vide letter dtd. 18.12.2021 has intimated that a meeting was held on 26.11.2021 between HPSLDC and HPSEBL wherein a team of officers from HPSLDC and HPSEBL has been formed to carry out transient study of all islands within a month.

7.14 In 190th OCC, UPSLDC representative informed that CPRI has asked for some additional details and technical commercial offer would be provided to them by CPRI by 15th Jan 22.

7.15 NRLDC representative informed that report received from Rajasthan regarding the Jodhpur-Barmer-Rajwest islanding scheme and Suratgarh islanding scheme is in order and Rajasthan SLDC can proceed ahead. Further, NRLDC submitted that they use PSSE software for system study but Rajasthan has submitted details of Islands in MI Power Software, therefore, they are not able to access the file.

7.16 Rajasthan SLDC representative informed that they have given the details in the hard copy of the load and generation to be considered for islanding scheme, and based on that have requested NRLDC to simulate it in PSSE software for validation. NRLDC representative agreed to the request of the Rajasthan SLDC.

7.17 Uttarakhand SLDC representative informed that hydro stations near Dehradun are peaking stations and the proposed Dehradun islanding scheme appears to be infeasible. NRPC representative informed that some schemes in NR have been proposed by considering Hydro stations and Dehradun islanding scheme was proposed by the state SLDC itself in view of all factors. Thus, Uttarakhand SLDC shall immediately conduct study on the proposed Islanding Scheme having Khodri & Chibro units and provide status on the feasibility of scheme with supporting data so that same may be communicated to the Ministry.

7.18 In 191st OCC, HPSLDC representative informed that they need further two weeks to submit the outcome of transient study of all islands.

7.19 Uttarakhand representative informed that major hydro stations e.g. Chibro, Khodri etc at Dehradun Region in Yamuna valley are non-must run and peaking stations. Therefore, it is technically not feasible to implement Dehradun as an islanding scheme. However, nominations of nodal officers from various utilities (PTCUL, UJVN Ltd & UPCL) are being sought for the formation of internal committee for accessing the possibility of Dehradun as Islanding scheme and the report shall be submitted to NRPC Secretariat subsequently.

7.20 NRPC representative asked Uttarakhand to expedite the submission regarding the status on feasibility of the proposed Islanding scheme.

7.21 MS, NRPC stated that all constituents that have given their information about the planning of islanding scheme shall take up the work on top priority and submit the progress in time bound manner by submitting the updated MIS format every month.

7.22 NRLDC representative informed that Rajasthan SLDC is modelling data on PSSE software and it is expected to be completed within one week. Thereafter, NRLDC will submit its comments on the same. Rajasthan representative consented for the same.

7.23 UP and Punjab were asked to update the status of their study being done by CPRI. Both informed that there is no progress since last OCC and they are waiting for response from CPRI.

7.24 A meeting was convened by HPSLDC with officials of NRPC Sectt., NRLDC, HPSEBL, & HPPTCL on 11.02.2022 for apprising the status on implementation of Islanding scheme and MoM of the same is awaited. In the meeting, it was observed that system study work has been pending due to pre-occupation of the concerned resource. Therefore, it was decided that HPSLDC shall write letters to MDs of HPSEBL & HPPTCL for expediting the implementation and NRPC Sectt may be kept in copy so that the matter may be apprised to MoP in next review meeting. Further, it was decided to review the status in another meeting in the first week of March 22.

7.25 HPSLDC convened a meeting with the officials of NRPC Sectt., NRLDC, HPSEBL & HPPTCL on 04.03.2022 and presented the results of static and dynamic study of the islanding scheme in the HP control area.

7.26 A meeting was convened by UPSLDC with officials of NRPC Sectt., NRLDC & UPPTCL on 07.03.2022 to review progress of implementation of Unchahar and Agra Islanding schemes and MoM of the same is awaited.

7.27 In the 193rd OCC, Punjab and J&K representative were requested to convene a meeting in the last week of March with the officials of NRPC and NRLDC to deliberate about the updated status of the islanding scheme in their control area.

7.28 Observing slow pace of implementation of Islanding Schemes in NR states, a series of review meetings has been conducted by NRPC Secretariat as detailed below:

State	Meeting Date
Punjab	05/07/2022
Rajasthan	06/07/2022
Uttar Pradesh	07/07/2022
Delhi	13/07/2022
Himachal Pradesh	15/07/2022

States are requested to expedite the submission of data/study results as discussed in meetings above.

Latest status of Islanding Scheme of NR is attached as **Annexure-A.II.**

Members may kindly deliberate.

8. Coal Supply Position of Thermal Plants in Northern Region

8.1 In 186th OCC meeting, it was agreed that coal stock position of generating stations in northern region may be reviewed in the OCC meetings on the monthly basis.

8.2 Accordingly, coal stock position of generating stations in northern region during current month (till 10th September 2022) is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
ANPARA C TPS	1200	78.51	12.4	**1.2**
ANPARA TPS	2630	87.31	12.4	11.1
BARKHERA TPS	90	64.55	20.4	**1.5**
DADRI (NCTPP)	1820	64.18	20.4	12.8
GH TPS (LEH.MOH.)	920	44.05	20.4	20.1
GOINDWAL SAHIB TPP	540	47.60	20.4	**2.0**
HARDUAGANJ TPS	1265	58.00	20.4	**3.8**
INDIRA GANDHI STPP	1500	65.90	20.4	9.5
KAWAI TPS	1320	53.59	20.4	14.3
KHAMBARKHERA TPS	90	59.81	20.4	**1.7**
KOTA TPS	1240	64.82	20.4	4.2
KUNDARKI TPS	90	59.53	20.4	**0.1**
LALITPUR TPS	1980	77.28	20.4	**2.0**
MAHATMA GANDHI TPS	1320	82.24	20.4	11.7
MAQSOODPUR TPS	90	58.66	20.4	**1.7**
MEJA STPP	1320	59.30	20.4	7.8
OBRA TPS	1094	50.78	20.4	**3.0**
PANIPAT TPS	710	85.25	20.4	6.0

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
PARICHHA TPS	1140	57.15	20.4	**2.6**
PRAYAGRAJ TPP	1980	76.98	20.4	5.0
RAJIV GANDHI TPS	1200	72.48	20.4	10.5
RAJPURA TPP	1400	91.43	20.4	25.6
RIHAND STPS	3000	90.26	12.4	25.1
ROPAR TPS	840	54.77	20.4	19.3
ROSA TPP Ph-I	1200	72.88	20.4	**1.5**
SINGRAULI STPS	2000	87.45	12.4	15.7
SURATGARH TPS	1500	42.32	20.4	15.6
TALWANDI SABO TPP	1980	75.13	20.4	7.0
TANDA TPS	1760	62.28	20.4	17.4
UNCHAHAR TPS	1550	73.86	20.4	12.2
UTRAULA TPS	90	65.87	20.4	**1.9**
YAMUNA NAGAR TPS	600	87.01	20.4	21.0
CHHABRA-I PH-1 TPP	500	55.53	20.4	5.5
KALISINDH TPS	1200	74.54	20.4	**2.2**
SURATGARH STPS	1320	0.00	20.4	10.7
CHHABRA-I PH-2 TPP	500	42.17	20.4	9.9
CHHABRA-II TPP	1320	61.14	20.4	7.8

9. Deemed Availability of relocation/height raising of 400kV Jharli-Mundka Transmission line at Silani Chowk in Jhajjar Distt.-reg. (Agenda by RRVPNL)

9.1 NHAI vide letter dtd. 01/09/2022 (**Annexure-A.III**) has requested for shutdown of 400kV Jharli-Mundka for shifting/height raising of affected line between 25th Sept, 2022 to 10th Oct, 2022 suitably so that the work of said transmission line may be completed within stipulated time.

9.2 Further, NHAI vide its aforesaid letter has also requested to grant deemed availability for the above cited shutdown.

Members may kindly deliberate.

10. Third party protection audit at PTCUL sub-stations (Agenda by PTCUL)

10.1 The aforesaid agenda was also deliberated in 196th OCC meeting wherein PTCUL/UJVNL was requested to submit the name and details of the coordinator for this activity and also the details (name, location, distance from Dehradun) of all sub-stations (to be audited). The OCC forum is intimated that cited information has been received from PTCUL.

10.2 Further, in the 196th OCC meeting forum was of view that NRLDC, POWERGRID (NR-

2 & NR-3), THDC shall submit two/three nominations each for the said protection audit to NRPC Sectt. Further to that, PTCUL and UJVN may provide the details of representative to assist the protection audit team. In this regard, it is submitted that till date only two nomination from NRLDC and one nomination from NR-3 Powergrid has been received for this activity.

Members may kindly deliberate.

11. Utilization of 01 no. 500MVA 400/200/33kV Transformer at Maharani Bagh or 01 no. 315MVA 400/200/33kV Transformer available at Ballabhgarh (Agenda by DTL)

11.1. DTL vide its letter dated 07.09.2022 (**Annexure-A.IV**) has mentioned that their 315MVA 400/200/33kV TELK Make Power Transformer at 400kV Tikri Kalan got damaged on 05.09.2022. DTL informed that 01 no. 500MVA 400/200/33kV Transformer at Maharani Bagh and 01 no. 315MVA 400/200/33kV Transformer at Ballabhgarh are available with PGCIL.

11.2. DTL is requesting that one of these 02 transformer may be given to them on loan basis after checking their healthiness so that reliability of Power supply in Delhi can be maintained.

Members may kindly deliberate.

12. Request for shutdown approval of 800kV HVDC Champa- Kurukshetra & 500kV HVDC Rihand-Dadri Transmission Line infringing the Rail network of Jawaharpur thermal Power project being constructed by JVUNL, diversion work being executed by Powergrid (Agenda by Powregrid)

12.1 Diversion work for the 800kV HVDC Champa- Kurukshetra & 500kV HVDC Rihand-Dadri line is being executed by Powergrid for above project. Powergrid has requested for the Shutdown request on continuous basis **(Annexure-A.V)**.

12.2 Powergrid has requested for the Shutdown on continuous basis for 500kV HVDC Rihand-Dadri line from 15th – 20th September 2022 and for 800kV HVDC Champa-Kurukshetra line from 25th – 30th September 2022.

Members may kindly deliberate.

खण्ड-ख: उ.क्षे.भा.प्रे.के.	**Part-B: NRLDC**

13. NR Grid Highlights for August 2022

Maximum energy consumption of Northern Region was 1618.68 Mus on 31st August'22 and it was 0.9 % lower than August' 2021 (1633.79 Mus 18th August'21)

Average energy consumption per day of Northern Region was 1473.63 Mus and it was 5.1 % higher than August'2021 (1402.08 Mus per day)

Maximum Demand met of Northern Region was 72045 MW on 31st August'22 @13:00 hours (based on data submitted by Constituents) as compared to 73191 MW on 18th August'2021 @13:00 hours.

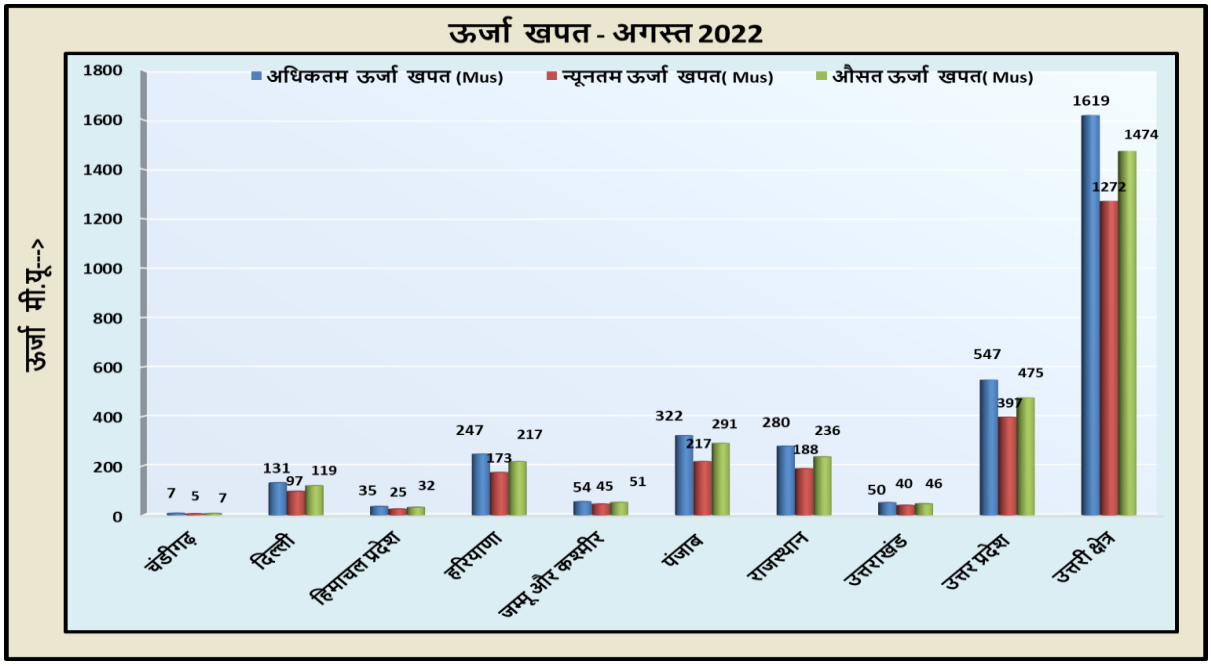
Northern Region all time high value recorded in August'22:

State (Maximum Demand Met)	All Time High Record		Previous Record (upto July-22)	
	Value (MW)	Achieved on	Value (MW)	Achieved on
पंजाब	14267	22.08.2022 at 15:00	14189	29.06.2022 *को* 23:00 *बजे*

State (Max Energy Consumption)	All Time High Record		Previous Record (upto July-22)	
	Value (MU)	Achieved on	Value (MU)	Achieved on
उत्तर प्रदेश	547.36	19.08.2022	541.77	08.07.2022

Hydro Generation	All Time High Record		Previous Record (upto July-22)	
	Value (MU)	Achieved on	Value (MU)	Achieved on
	408.61	22.08.2022	400.08	11.08.2021

Energy Consumption in August 2022



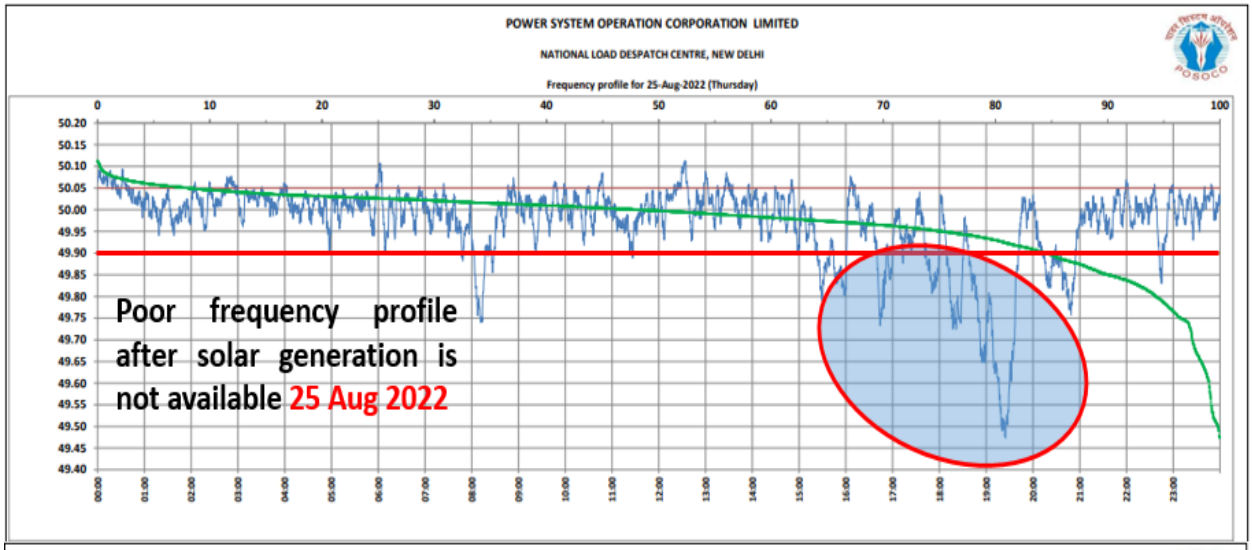
- **Comparison of Average Energy Consumption (MUs/Day) of NR States for the August'21 vs August '22**

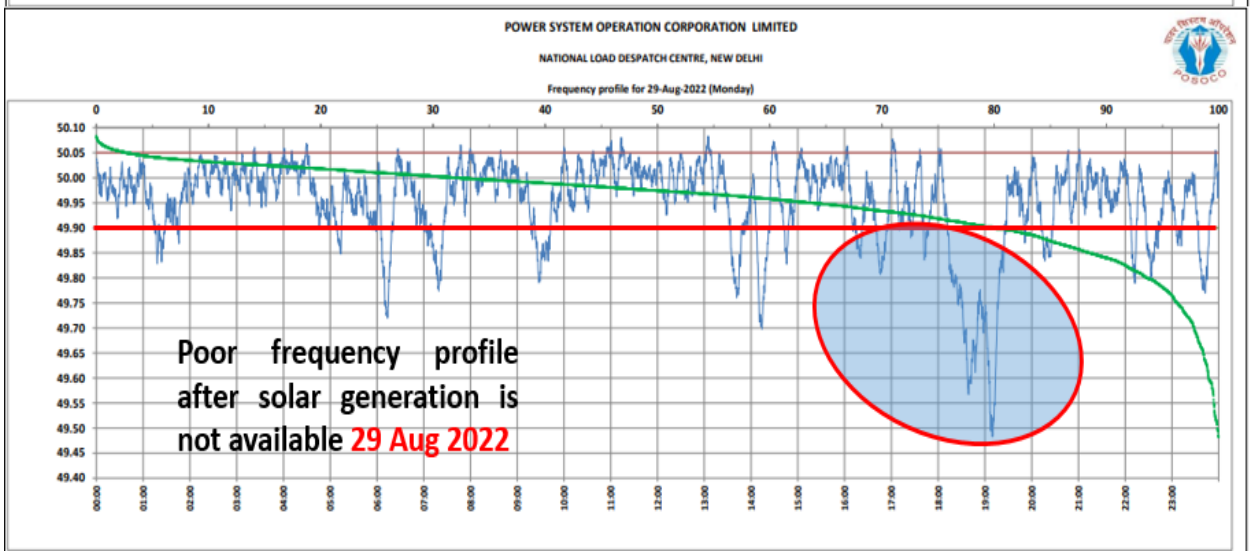
क्षेत्र/राज्य	*अगस्त* **- 2021**	*अगस्त* **- 2022**	**%** *अंतर*
चंडीगढ़	6.0	6.6	9.4
दिल्ली	113.7	119.1	4.7
हिमाचल प्रदेश	31.4	31.6	0.8
हरियाणा	207.2	216.7	4.6
जम्मू और कश्मीर	45.8	51.2	12.0
पंजाब	267.3	290.8	8.8
राजस्थान	264.5	236.5	-10.6
उत्तराखंड	42.5	46.2	8.7
उत्तर प्रदेश	423.8	475.0	12.1
उत्तरी क्षेत्र	**1402.1**	**1473.6**	**5.1**

Frequency Data

Month	Avg. Freq. (Hz)	Max. Freq. (Hz)	Min. Freq. (Hz)	<49.90 (% time)	49.90 – 50.05 (% time)	>50.05 (% time)
Aug'22	50.00	50.31	49.47	8.8	75.8	15.5
Aug'21	50.00	50.22	49.53	7.7	76.9	15.4

In last week of August 2022, on number of occasions low frequency operation of grid was observed as shown below:





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
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.

Members may like to discuss.

14. Winter preparedness

Winter in Northern region is likely to start from mid of October till February end, and the challenges faced during these months are well known to all the utilities. During winter, demand of NR states except Rajasthan and hilly states starts reducing. With decreasing temperatures and festivals, winter also brings some severe challenges to NR grid operators:

(i) Load-generation balance

- Hydro generation resource which becomes all the more important due to ramping requirement; it starts depleting due to limited inflow of water (most of the hydro stations of NR are snow fed). With increasing solar generation during the day-time, the ramping requirements during evening hours are rising and posing serious challenge to the system operators to maintain frequency within the band.
- Inclement weather such as dense fog etc. pose challenges for day to day grid operation.
- Off-peak to peak demand ratio of NR falls to around 0.5 to 0.6 during winter, morning and evening load ramp is quite steep together with limited hydro resources etc. This increases the importance of Portfolio management as per load forecast especially during high ramp up and ramp down periods.
- Generation planning becomes very important especially with the in-surge of renewable integration with the grid, generation resources should be optimally planned, taking care to maintain adequate reserves.

Measures to be taken by utilities to manage load generation balance during winter months as discussed during previous many meetings are mentioned below:

- With increasing complexity, users may develop in house or use third party Software tools for precision of load forecasting & generation planning for daily basis, which can further go for hourly basis also.
- Forecast of demand ramp has also become important and so SLDCs are advised to forecast load ramping so that commensurate ramping of generation can also be planned.
- Minimize generation to technical minimum as per IEGC guidelines /CERC directions during low demand.
- Co-ordination of ramping of generation during morning & evening peak ramping
- Optimum utilization of Hydro resources for meeting peak hour demand.

(ii) High voltages in grid

Another big challenge with decrease in demand, is the high voltages observed in the grid. With NR load reducing significantly, the lines become lightly loaded and are generating MVAR most of the time leading to high voltages in grid. Moreover, with heating loads across most of the NR states the power factor also is improved minimizing any reactive power requirement from the grid. To overcome this challenge number of measures have been discussed earlier and are reiterated for OCC members:

- Ensuring to switch off capacitors & switch on reactors.
- Ensuring healthiness of all commissioned reactors in the system
- Monitoring of reactive power through SCADA displays.
- Reactive power support (absorption) by generating stations as per the capability curve.
- Synchronous condenser operation especially of hydro units during night hours for dynamic voltage support. Some of the generators have already been tested (Tehri, Chamera, Pong, RSD etc.) and shall be available for condenser mode of operation as and when required. States/SLDCs are also advised to explore synchronous condenser operation of Hydro & Gas units in their state control area. It is requested that all utilities may explore possibility of running units as synchronous condenser and provide update on the status attached as **Annexure-B.I**.
- ICT Tap Optimization at 400kV & above is carried out by NRLDC. Same exercise need to be carried out by SLDCs at 220kV & below levels.
- Opening of EHV lines based on expected voltage reduction and also considering security & reliability of system
- To ensure that line reactors available after opening of lines are optimally utilized it is necessary that all the stations where the provision of using line reactors as bus reactors is available at all control centres. The Reactive power document being compiled by NRLDC has the details of all such line reactors. Last updated document is available at NRLDC website under documents section: *https://nrldc.in/download/nr-reactive-power-management-2022/?wpdmdl=9908*. It is requested that all utilities go through document and share any anomaly/mis-representation. The document is being utilized in real-time operation by control room operators at NRLDC, thus it is necessary that list of all reactors where such provision is available are updated in the document.

(iii) **EHV line trip during fog/Smog**

One more challenge during winter months is tripping of EHV lines due to fog. With low temperature across Northern region and sometimes with high humidity in the air, fog starts to appear across Northern region. This problem is generally most severe from 15Dec- 15Feb period. During this time additional care need to be taken by system operator as many multiple element tripping events have been reported in the past

especially in Punjab and Eastern UP. Such trippings are more severe if the lines are tripping from generation complex such as Singrauli-Anpara-Rihand complex. Therefore, utilities are requested to ensure:

- Priority wise cleaning & replacement is carried out.
- Progress on cleaning replacement of porcelain insulator with polymer insulator to be monitored and latest status may be furnished to NRPC/NRLDC.

(iv) Load crash due to inclement weather

During winter months, the demand of Northern region is much lower compared to summer months for which the transmission system is designed. When operating at reduced demand, the internal generation of most of the states is low based on merit order. Several EHV lines are also opened to ensure voltages within IEGC limits. In such a scenario, in case of rainfall/snowfall, it is seen that demand of Northern region falls sharply. With several lines out due to high voltage and more tripping due to bad weather, ensuring safe and secure grid operation becomes a big challenge for system operators. To overcome this challenge, it is important that:

- All system operators and transmission utilities regularly monitor weather forecast site (Weather portal for power sector)
- ERS is available in case of emergency.
- Ensure additional trained manpower especially during night hours at all major control centres/ substations

(v) Ensuring protection settings as approved by NRPC

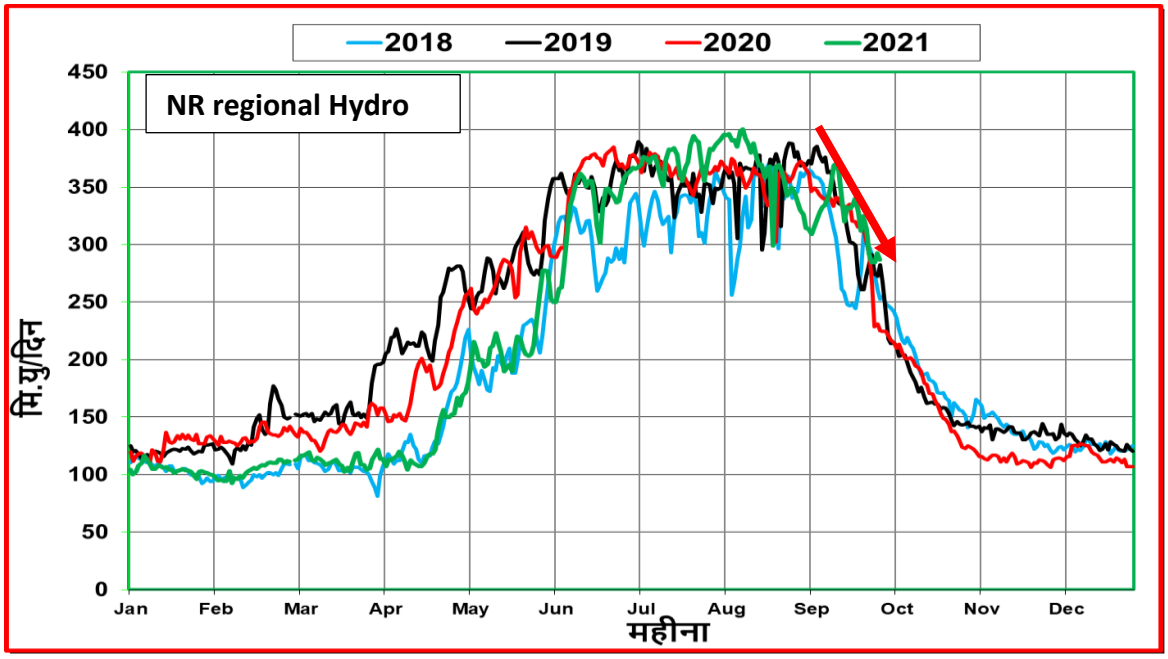
Apart from above, it needs to be made sure that defense mechanism is healthy i.e. ensuring all SPS healthy, protection system intact, monitoring of df/dt& UFR etc; and telemetry especially of MVAr of Generator, temperature & humidity etc. is available and reliable.

During winter months, it has been observed that there is **frequent tripping of ICTs on overflux and lines on overvoltage** especially in Punjab and Haryana areas. On number of occasions, it is seen that utilities are correcting their protection settings after tripping events. It is important all the protection settings are as approved by NRPC. Utilities are requested to confirm the same from field and ensure that protection settings are only as approved by NRPC.

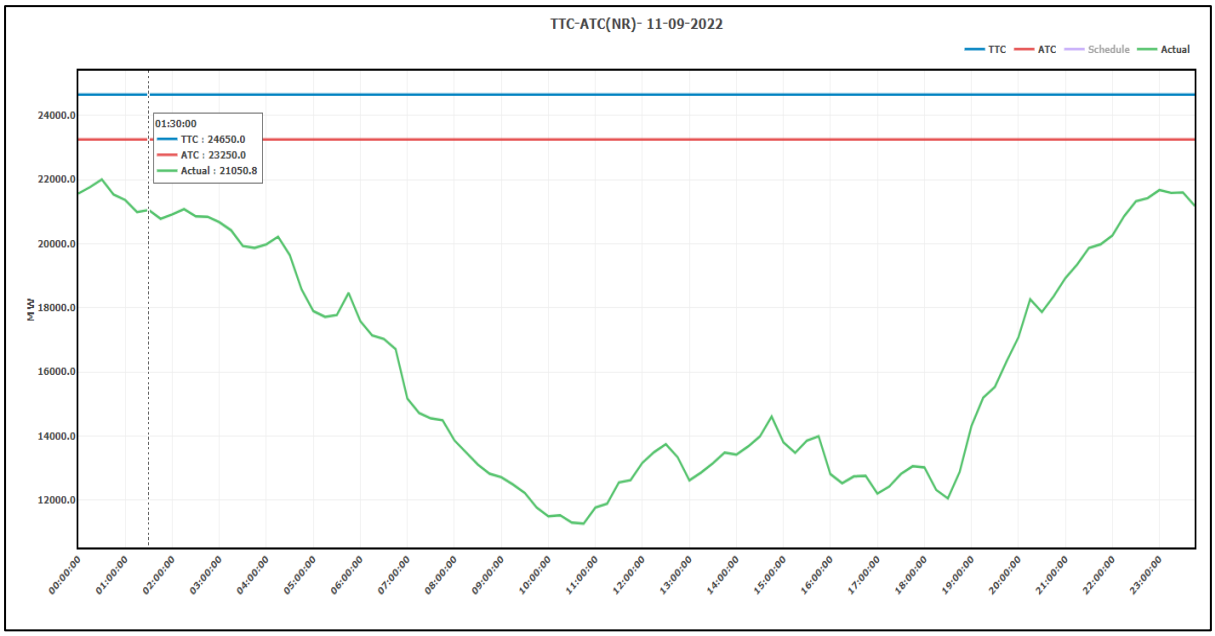
Utilities are requested to prepare plan for measures to be taken by them for carrying out pre-winter maintenance activities. Same may be shared by utilities via mail with NRPC/NRLDC before next OCC meeting. Members may please discuss.

15. Maximizing generation within Northern Region during September month:

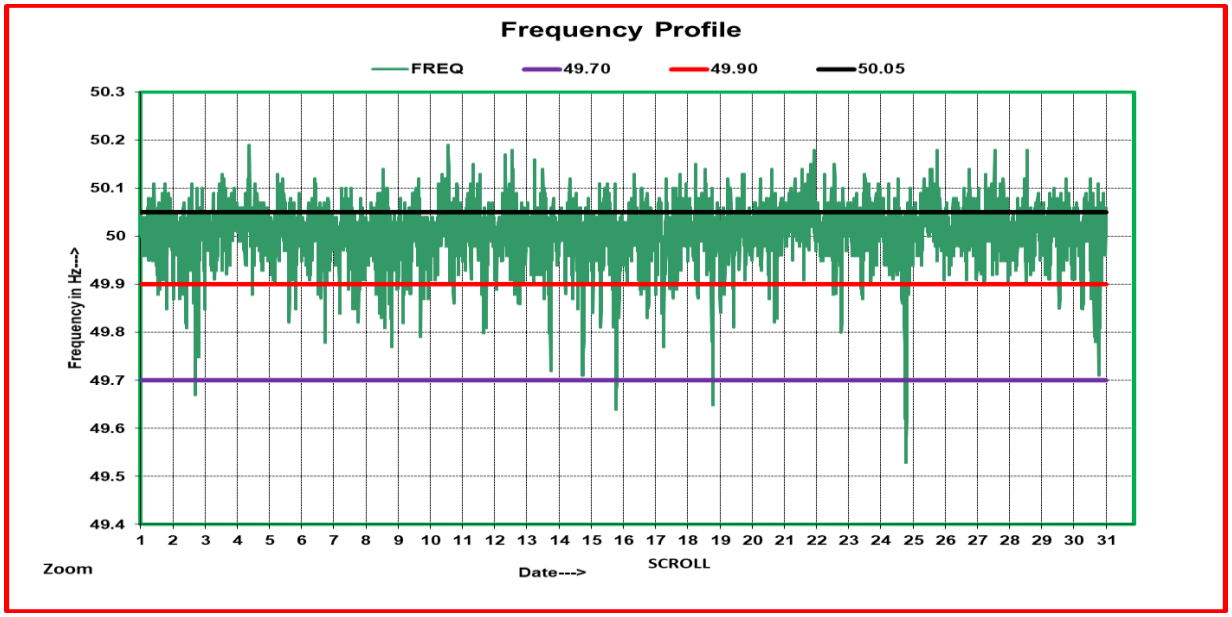
Since start of September due to dry spell of monsoon, demand of Northern Region has remained high considerably in past years. With hydro generation starting to decline, there is need for maximising other generation available in Northern Region.



In past years, during this high demand period some thermal stations had reduced their DC due to coal shortage/ wet coal issues. During this high demand period also some of the units in state control area remain off bar, as a result, import from other regions increases and there is possibility of violation in Inter-regional exchange and WR-NR corridor exchange (ATC violation) at times. **With the forced outage of 765kV Gwalior-Agra Ckt1 due to tower collapse, the inter-regional import capability limits have also been reduced slightly**.



As can be seen from the plot below, that during last September, frequency profile was also poor. On number of occasions, the grid operated with low frequency. Appropriate measures as mentioned in previous agenda may be taken so that such situation is avoided this year.



It may be noted that September month every year being high demand period with more reliance on thermal generation, due importance shall be given to the fuel availability during this period and a minimum number of days coal stock shall be ensured and DC shall be given accordingly ensuring adequate number of state generating units on bar.

Members may please discuss

16. Issues related to Power System Operation of J&K/Ladakh

Major issues related to Power system operation in J&K and Ladakh were discussed in detail in 47th TCC and 49th NRPC meetings and special meeting held on 28.07.2020 to deliberate on the issues related to UT of J&K and Ladakh. These issues were also discussed in 57th NRPC meeting and 198 OCC meeting recently:

Following issues still persist in J&K and Ladakh control areas:

i. Most of the 220 kV voltage level Substations of PDD-J&K, are being operated with only one Main and transfer bus scheme instead of double main transfer (DMT) bus as per CEA planning criteria and therefore bus shutdown requires shutdown of entire station which affects reliability of power supply.

On 29.05.2022, complete shutdown of 220/132kV Hiranagar substation was taken by JKPTCL as there is only single bus and transfer scheme. This led to loss of generation at Sewa-II and load loss in Kathua area which could have been avoided if there were double main and transfer scheme available at 220/132kV Hiranagar substation. Same was also communicated vide NRLDC letter dated 28.06.2022. Moreover, there have also been number of other such events previously. It was also observed that when island was created to allow some generation evacuation, the island didn't survive. Telemetry is not available from most of the substations at NRLDC which is making decision making (including for island survival) difficult. Moreover, all efforts need to be made from NHPC and J&K in future to make island survive.

In 198 OCC meeting, CE, JKPTCL Kashmir informed that in Kashmir area around 90% of substations have double main transfer scheme layout in substations.

CE, JKPTCL Jammu informed in the meeting as well as vide email dated 18.08.2022 (**Annexure-B.II**) that all of the 220/132 kV voltage level Sub Stations of PDD-JK are being operated with only one Main and Transfer bus scheme instead of double main transfer (DMT) bus as per CEA planning criteria. Also due to constraints of load shifting and space, the Bus arrangement of these GSS's at present cannot be changed. However, 02 No.s 220/66KV GSS recently Commissioned at Ghatti (Kathua) and IGC Samba and under Construction GSS's coming up at Nagrota (220/33 kV Level) and Chowadhi {220/132 KV Level) have double main and transfer scheme.

J&K may explore the possibility of providing double main scheme at single main and transfer substations where it is possible to enhance reliability. Current rating of transfer bus also to be checked for double main operation.

ii. As per the agreed quantum relief for NR, total target in respect of J&K for UFR and df/dt are 336 MW and 270 MW respectively. Confirmation on relief quantum is yet to be received from J&K. Moreover, in compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings. Status is still pending from J&K end.

iii. Two stages (450 MW each) of Baglihar HEP (900 MW) operate on two different buses and are being evacuated through two 400 kV lines on each side connected to two different buses operating in disconnected manner. UT-J&K to expedite the coupling of two buses of Baghlihar stage-1 & 2 to minimize the probability of generation loss.

It was discussed that the matter may be taken up with generation wing by JKPTCL and update to be provided in NRPC meeting.

iv. Availability of automatic DR (disturbance recorder) and station event logger needs to be ensured for all the 220 kV and above stations. DR/EL and preliminary report needs to be submitted within the stipulated timelines as per IEGC. Same is also being requested regularly in OCC/ PSC meetings.

v. In order to make connectivity more reliable and for secure power supply to the valley, restoration of 220kV Kishenpur-Mirbazar and commissioning of underlying network at 400/220kV New Wanpoh to be expedited.

vi. Mock black start exercise of URI-I & URI-II HEP, Lower Jhelum HEP is yet to be conducted. ***In 198 OCC meeting, JKPTCL representative agreed that the issue is well known and important and the same would be taken up with SLDC***

vii. Planned and under implementation reactive compensation i.e. reactor & capacitors details to be shared.

viii. Data for monthly PoC case to calculate transmission losses and charges to be shared with NRLDC/NLDC.

In 198 OCC meeting, representative from JKPTCL agreed to provide update on these issues in the upcoming 57th NRPC meeting in last week of August 2022,

however no information was received in 57th NRPC meeting. J&K representative is requested to provide update on these agenda points.

17. TTC/ATC of state control areas for monsoon 2022

Most of the NR states except J&K, Ladakh and Chandigarh U/Ts are sharing basecase and ATC/TTC assessment with NRLDC. OCC has advised all states to timely declare TTC/ATC for prospective months and revise the figures as per requirement.

Based on feedbacks received till date, SLDCs are requested to go through the tentative ATC/TTC limits for October 2022 (**Annexure-B.III**) and provide comments. If no comments are received, these limits will be assumed confirmed and uploaded on NLDC website. SLDCs are also requested to upload these limits in their respective websites. States are also requested to regularly provide update regarding the upcoming transmission elements which would improve import capability of respective state control area.

Loading of 400/220kV ICTs observed above or close to N-1 contingency limits is also attached as **Annexure-B.IV**.

Punjab

In 198 OCC meeting, NRLDC representative presented the loading of different 400/220kV ICTs. It was discussed that loading of 400/220kV Nakodar ICTs was beyond the N-1 limit (SPS implemented). Loading of other 400/220kV ICTs such as Ludhiana, Patran, Moga ICTs was also close to N-1 limits.

Punjab SLDC representative informed that:

- Reconductoring of Jalandhar-Kartarpur 2nd ckt was completed in first week of August'2022.
- SLDC officers are now authorised to sell the power in real-time market and they can now both buy/ sell power in real-time market and can minimise underdrawl/ overdrawl in real-time market.
- Meeting was conducted with TSPL officers in state OCC and the issue of frequent forced outages of TSPL units were discussed in the meeting. Minutes of meeting were shared with NRPC. TSPL has been advised to take necessary preventive maintenance activities during off-peak season to minimise outages during high demand paddy months.

During last 30 days, loading was close to N-1 contingency limits of 400/220kV ICTs at Patiala, Ludhiana, Nakodar, Moga and Patran when import of Punjab was close to their ATC limits.

UP

In 198 OCC meeting, NRLDC representative presented the loading of different 400/220kV ICTs. It was discussed that loading of 400/220kV Obra, Gorakhpur, Azamgarh, Sarnath ICTs was beyond the N-1 limit (SPS implemented). Loading of

other 400/220kV ICTs such as Allahabad(PG), Lucknow(PG), Sohawal(PG) and Nehtaur ICTs was also close to N-1 limits.

UP SLDC representative informed that:

- LoA has been placed for Sohawal SPS. The work is expected to be completed in next 3 months.
- For Obra SPS, budgetary offer is being collected from vendors.
- Regarding change in schedule in consecutive time blocks, it was discussed that the matter has been taken up with PMC cell and now the change in schedule in consecutive blocks has reduced. Same would further reduce in the upcoming few weeks.

UP SLDC to provide update.

During last 30 days, loading was above N-1 contingency limits of 400/220kV ICTs at Gorakhpur(UP), Azamgarh, Sarnath, Allahabad(PG), Lucknow(PG), and Sohawal(PG) when import of UP was close to their ATC limits.

Rajasthan

In 198 OCC meeting, NRLDC representative stated that loading close to N-1 limits was observed at 400/220kV Ajmer, Bikaner, Jodhpur and Chittorgarh ICTs. Rajasthan was also asked to plan SPS for 400/220kV Bikaner ICTs. New ICT has been approved at Ajmer, Merta, Bikaner and Jodhpur. NRLDC representative stated that documents for approval of these ICTs may be shared by RVPN as same would also be required during FTC of elements.

Rajasthan SLDC representative provided following information:

- SPS implementation at Ajmer has been completed.
- SPS for 400/220kV Bikaner and Bhadla would be developed and shared with NRPC/ NRLDC.
- MW logic has been included in recently approved SPS at 400/220kV Jodhpur and Ratangarh S/s.
- RVPN agreed to share approval of new ICTs with NRPC/ NRLDC.

Rajasthan SLDC to provide update.

During last 30 days, loading was above N-1 contingency limits of 400/220kV ICTs at Ajmer(RJ), Jodhpur(RJ), Merta(RJ) and Bikaner(RJ) when import of Rajasthan was close to their ATC limits.

Delhi

In 197 OCC meeting, Delhi SLDC representative informed that issue of N-1 non-compliance at Bawana would be there, however it has been ensured that the ICTs are in split operation i.e. if one split ICT trips, there would be tripping of some load and other ICT would not be overloaded. It was confirmed by Delhi SLDC that there would not be any critical load effected in case of tripping of these ICTs.

In 198 OCC meeting, Delhi representative stated that ATC/TTC limits have been uploaded on SLDC website.

During last 30 days, loading was close to N-1 contingency limits of 400/220kV ICTs at Mundka and Bawana (2 ICTs) when import of Delhi was close to their ATC limits.

Haryana

In 197 OCC meeting, it was discussed that N-1 non-compliance was observed at 400/220kV Deepalpur and Panipat (BBMB) ICTs. It was discussed that Haryana and Delhi may mutually discuss and resolve the issue of loading of 400/220kV Panipat ICTs and in case same is not resolved it could be discussed in separate meeting or next OCC meeting after agenda by Haryana/ Delhi.

NRLDC representative expressed concern on the slow progress of SPS implementation at 400/220kV Kurukshetra and asked HVPN to coordinate with POWERGRID and expedite SPS implementation. It was also discussed that loading of 400/220kV Deepalpur ICTs may be ensured to level such that SPS relief is able to ensure loading of ICTs below their safe limits in case of contingency.

In the meeting, Haryana SLDC representative stated that Delhi SLDC has submitted that their load cannot be shifted from Panipat(BBMB). Panipat(BBMB) has also informed that there is no space for additional ICT at Panipat(BBMB). Accordingly, matter will be taken up with planning division of HVPN. New ICT addition at Deepalpur is delayed due to PPP model and tariff issues. Status of SPS at Kurukshetra and new ICT at Deepalpur would be shared within one week.

OCC advised Haryana for ensuring loading of 400/220kV Deepalpur ICTs such that SPS relief is able to ensure loading of ICTs below their safe limits in case of contingency and expedite SPS implementation at 400/220kV Kurukshetra.

In 198 OCC meeting, no update was received from SLDC Haryana.

Haryana SLDC to provide update.

Uttarakhand

In 198 OCC meeting, it was discussed that Kashipur SPS has been deliberated in internal meeting, however consent of state DISCOM is pending. It was discussed that proposed SPS at Kashipur may be shared with NRLDC/ NRPC and meanwhile consent of DISCOM may be taken. Thereafter, SPS proposal at Kashipur may be included as agenda in next OCC meeting.

During last 30 days, loading was above N-1 contingency limits of 400/220kV ICTs at Kashipur when import of Uttarakhand was close to their ATC limits.

Uttarakhand SLDC to provide update.

HP have shared their ATC/TTC assessment for monsoon 2022. Loading was observed beyond N-1 compliant limit for 400/220kV Nallagarh ICTs. High loading of 220kV Nallagarh-Upernangal D/C was also observed. Same has also been shared with CTU/CEA in quarterly operational feedback

J&K

Not assessing its ATC. J&K representatives had intimated during 47th TCC and 49th NRPC meeting that they would be sharing ATC/TTC assessment with NRLDC from October 2021, however the same is still awaited. J&K and Ladakh U/Ts are once again requested to advise the concerned officers to evaluate their ATC/TTC limits in coordination with NRLDC and share latest assessment with NRLDC and NRPC.

It is again requested that SLDCs may ensure that loading of ICTs and lines are below their N-1 contingency limits. While requisitioning power from various sources, states should take care to limit their scheduled drawl as well as actual drawl in real time within the Available Transfer Capability (ATC) limits assessed by SLDC and NRLDC. NRLDC is continuously sending emails in real-time for ensuring N-1 compliances as well as restricting schedule till ATC limit and maximizing internal generation. SLDCs need to ensure this during real-time operation.

Members may like to discuss.

18. Grid operation related issues

(i) RE related issues in Northern region

In 198 OCC meeting, it was discussed that along with developers the matter also needs to be taken up with plant manufacturers and OEM as even after pursuing the matter with solar generators no/ improper response is received. LVRT/HVRT compliance test at Point of Interconnection is not being done during pre-commissioning field tests and same is only being checked based on real-time events where most of the plants are observed to be LVRT/ HVRT non-compliant.

Discussions for three days with participation from RE developers/Inverter OEM and Power Park controller team were organized at NRLDC from 06-08 Sep 2022. ***Number of RE developers and OEM attended the discussions as per details shown below:***

Solar plant developers
ReNew Power
Eden Renewables Cite Pvt Ltd.
Clean Solar Power Jodhpur Pvt. Ltd. (CSP(J)PL) (Hero Solar).
Adani Green Energy Ltd. (AGEL).
Mahindra Solar
ACME Solar
Tata Power

Azure Power
NTPC Renewable
ABC Renewable
Ayana Power
Thar Surya Pvt. Ltd. did not attend the meeting citing reason of flood at Banglore

OEM
Sungrow
Huawei
TBEA
CLP India
Adaptive (PPC OEM)
SINENG
KEHUA
ARMAX (PPC)
Emerson (PPC)
SEIMENs
ABB
TMEIC

Following points were noted which require improvement at almost all the plants:

1. RE plant developer do not have the access rights to download the implemented settings in inverters, this activity is carried out by inverter OEM. In some cases facility to view the settings has been provided to RE plant developers. It was also informed by few developers that inverter OEM have the facility to remotely download/access the settings. Few RE plants informed that inverters are providing onsite service during the warranty period wherein one person on behalf of inverter OEM is providing services in radius of 50 km.

2. The event logger of inverters at all the plants have a minimum resolution of one minute to capture the events. In some inverters LVRT/HVRT has been defined as event for logger purposes. The event logger shared by inverter OEM had a time drift ranging from few to several minutes.

3. There is no facility for RE developers to record the analog value of current/Voltage or any other parameters in millisecond resolution. Neither plants nor inverter manufacturers could share any relevant data for the event. This way PMU reporting at NRLDC/NLDC become the only source to validate the performance.

4. There appeared a lack of understanding for CEA regulations by RE developers. The teams from RE developers were totally dependent on inverter OEM for compliance of regulations.

5. Inverter OEM have implemented the LVRT/HVRT settings or nearby values on the basis of voltage at inverter terminals, since there is small difference between voltage at POI and inverter terminal, the adopted settings caused unwanted operation of HVRT trigger even when voltage at POI was below threshold (1.1 PU).

6. The performance of inverter controls and PPC depend upon handshake of signals. In most cases it was seen that there is non-adequate coordination between PPC OEM and inverter OEM.

7. There were some inadvertent wrong settings like overvoltage at 220/33 kV level/ anti-islanding protection/ PPC in constant reactive power mode etc. which were rectified by RE developers before coming for meeting.

The suggestions which were broadly shared with RE developers:

1. Establishing high resolution event logger for inverters where events can be captured with millisecond accuracy.

2. Configuring low/high voltage (<0.9 PU and >1.1 PU) as DR trigger in relays at 33 kV and lower level in collector system wherever possible. This would help in observing waveform at lower levels. PMU placement within RE plant was also suggested.

3. RE developers to study the difference in voltage between inverter terminal and POI and provide sufficient margin in the settings of inverters to display the behaviour required at POI.

4. LVRT/HVRT to be added as an event in event logger of inverter, sufficient storage for handling logs to be explored by inverters.

5. RE developers shall take up with inverter OEM to download/modify settings as and when required.

6. PPC OEM were informed to enhance the resolution of set-point change and improve it to 100 msec or lower.

7. PPC OEM were informed to explore the possibility to improve the coordination of PPC set-point with inverter when inverter either enters or leave LVRT/HVRT mode of operation.

Solar developers agreed to take actions agreed in the three day discussion.

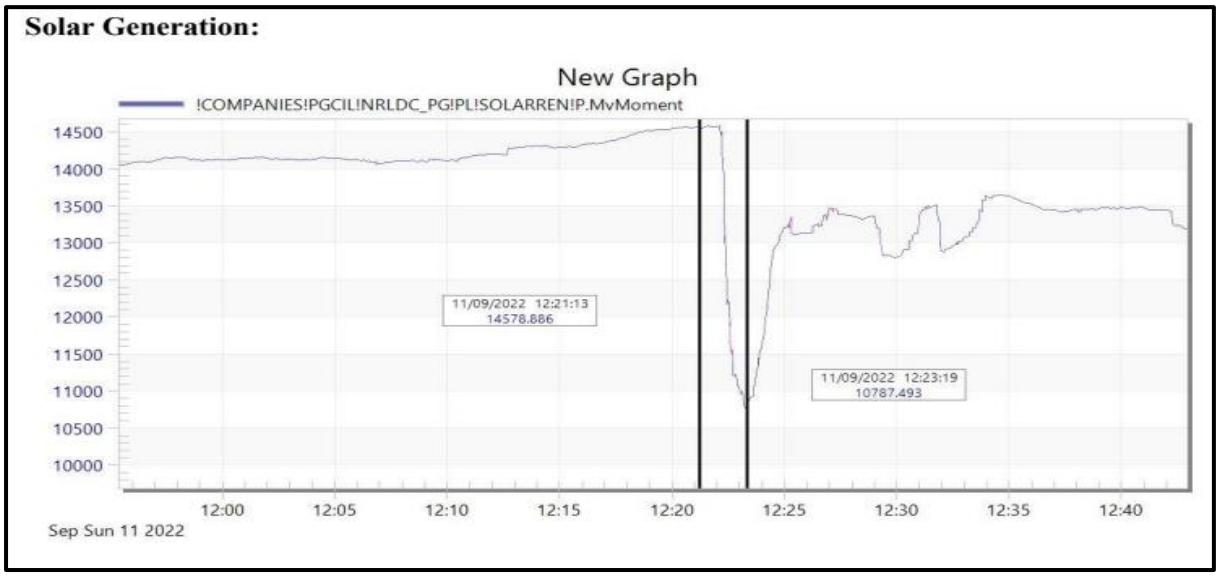
Members may please discuss.

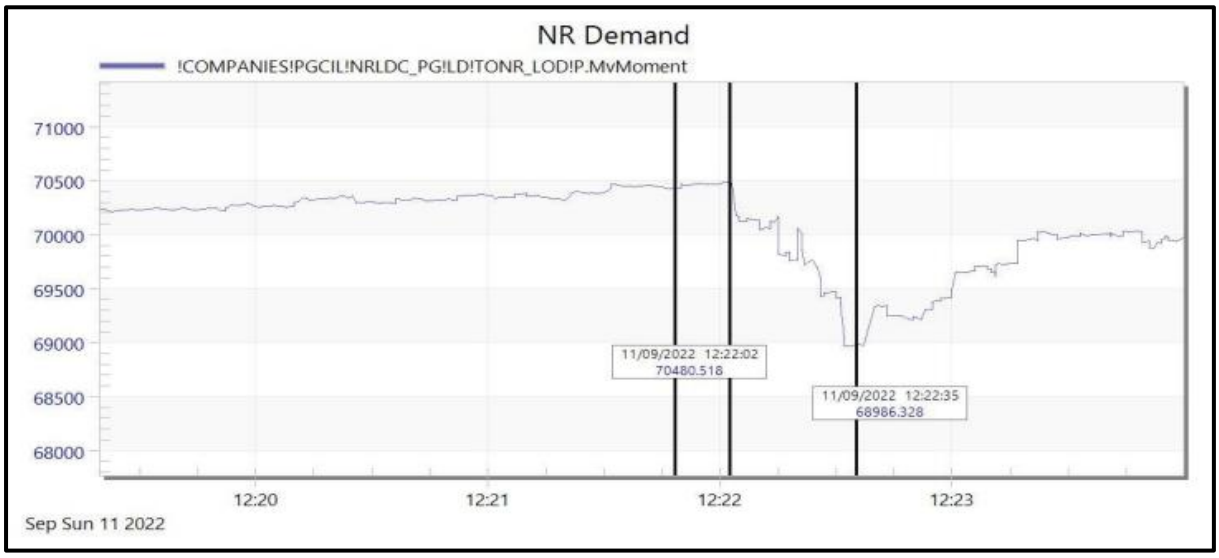
(ii) Generation loss event in ISTS RE complex

Similar to previous many events, another generation loss event was observed in ISTS RE complex on 11.09.2022. In this event, at 12:22 hrs 220kV Bhadla –CSP Jodhpur tripped due to Y-B fault resulting in approximate 3500 MW of solar generation reduction connected to 765 kV Fatehg'h-2, 765 kV Bhadla & 765 kV Bhadla_2 reduced due to Low Bus Voltage as reported by Solar Stations. This reduction in generation caused tripping of four number of 765kV lines emanating from solar complex namely,

- 765 KV FATEHGARH_II(PG)-BHADLA(PG) (FBTL) CKT-1,
- 765 KV BIKANER-BHADLA_2 (PG) CKT-1
- 765 KV BHADLA_2 (PG)-FATEHGARH_II(PG) (PFTL) CKT-2
- 765 KV AJMER-BHADLA_2 (PG) CKT-1

Frequency had fallen to 49.61 Hz from a level of 50.04 Hz narrowly missing the first stage of UFR shedding. If the frequency had been slightly on the lower side i.e. below 50 Hz there would have been a major event including UFR load shedding.





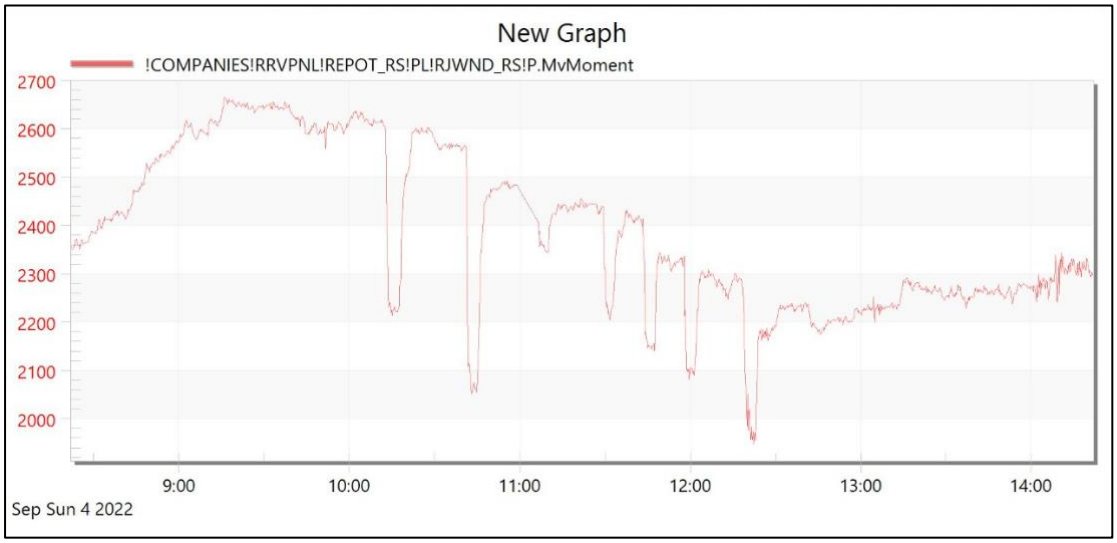
Following points need further analysis and discussion:

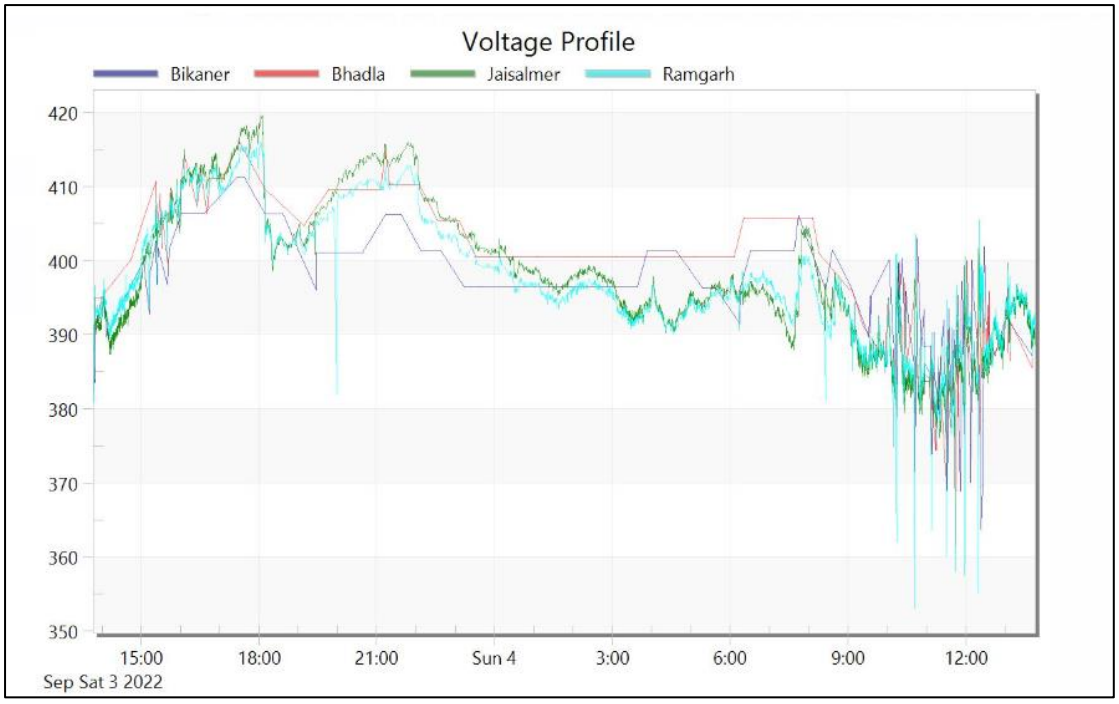
- Behaviour of MW & MVAR as per LVRT operation (as per CEA standard for connectivity).
- Operation of PPC during LVRT operation needs to be reviewed.
- DR, EL & tripping report needs to be shared by all RE stations.
- Load shedding quantum in each state control area to be reported to NRLDC

Members may please discuss.

(iii) Wind generation fluctuation in Rajasthan control area

Various dips were observed in Rajasthan wind generation between 10:10 hrs to 12:30 hrs in the tune of 200 MW to 500MW on 4th September 2022. During this time huge variations in voltage were also observed in RE pooling substations of Rajasthan state control area such as Jaisalmer, Ramgarh, Bikaner and Bhadla.





Reason for dip in Rajasthan wind generation may be furnished by Rajasthan SLDC along with detailed analysis of the event. Rajasthan SLDC may also gather wind speed, voltage profile, MVAR drawl and action taken from RE developers and RE pooling stations. Cut-in & cut-out speed for wind turbines may also be gathered along with actual wind speed data.

Members may please discuss.

(iv) Long outage of transmission elements/ generating units

Reasons and revival date for elements under long outage are being discussed regularly in OCC meetings. Any update on the status of these elements from last OCC meeting may be shared with the forum (**Annexure-B.V**).

All utilities are requested to make it a practice to update status of elements under long outage in the NRLDC outage software portal. Utilities are requested to take necessary actions to revive elements which are under long outage.

Members may please discuss.

Information about new transmission elements/ generating units to be commissioned in next 45 days

In 176th OCC meeting, it was discussed that first time charging procedure is not being diligently followed by some entities. The documents are being submitted at the last minute and thereafter it is being urged to NRLDC to give the code for charging. In the meeting it was also requested that utilities should inform about elements expected for first time charging in the next one month in advance in OCC meeting. This information would be helpful in carrying out studies, SPS requirement/modification etc. in time.

Utilities are also requested to make sure that list of 220kV and underlying intra-state lines and ICTs is readily available with them, so that the same can be shared with NRLDC/NRPC as and when required. This data is to be shared with NRLDC/NRPC for timely updation of Powermaps, PSSe basecase, Protection analysis etc.

In line with the above decisions, all utilities are requested to share the information about transmission elements/ generating units which are expected to be first time charged in the next 45 days.

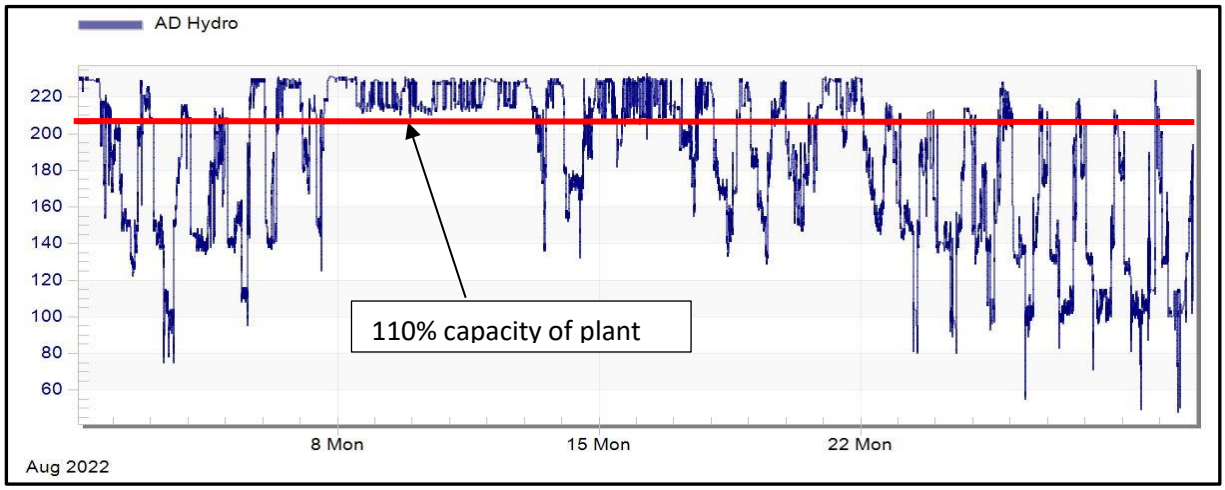
Members may like to discuss.

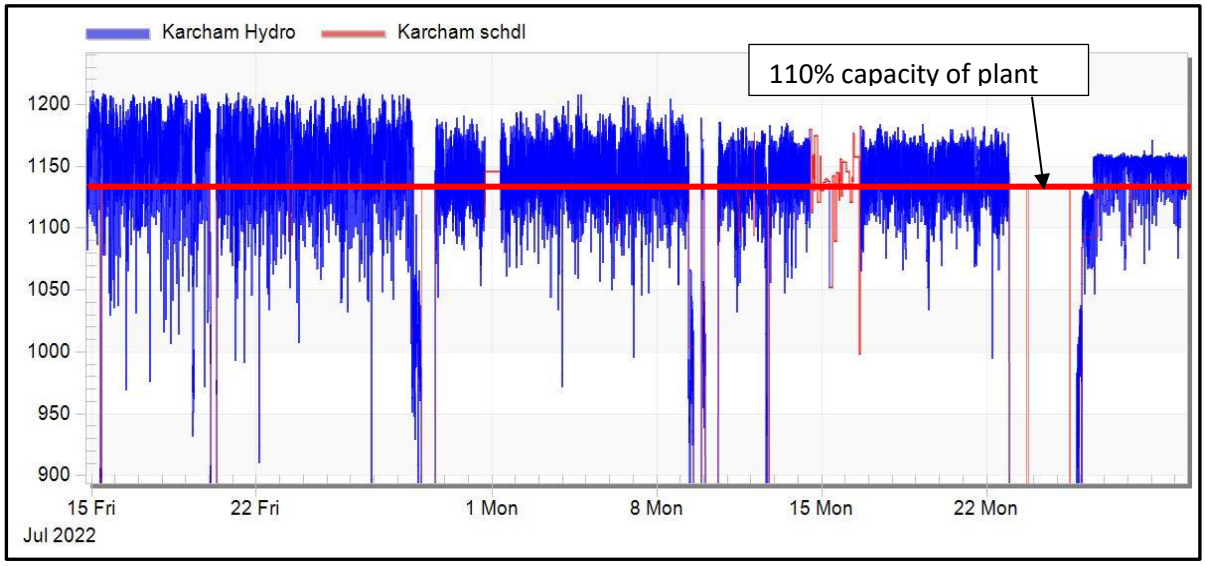
(v) Maximising hydro generation during peak hydro season

Jun-Sep months are generally associated with high hydro generation period and high demand season in Northern region. During this high demand season, it is always desired that the available generation resources are maximised However, it is being observed that some of the generators such as Bairasuil, Chamera-1, Chamera-2, Chamera-3, Dhauliganga, Dulhasti, Kishenganga, Parbati-3, Salal, Sewa-II, Uri and Uri-II have been generating less than 110%.

NRLDC communication in this regard is attached as **Annexure-B.VI**.

It is also being observed that some of the hydro generators such as Karcham Wangtoo HEP, AD Hydro are generating beyond 110% their capacity.





It is requested to provide the reasons for the same and actions taken for maximizing generation during peak hydro season.

Members may like to discuss.

(vi) Calculation of Drawal points based on SLDC end data

In 197 OCC meeting, Haryana SLDC representative informed that SCADA team is working on the issue and trying to determine additional RTUs required for the work. Haryana SLDC was asked to share the details so that same can be incorporated in OCC minutes. However, reply was not received.

Uttarakhand SLDC representative informed that data calculation was already done from SLDC end data and there is difference between the values from NRLDC end and Uttarakhand SLDC end drawl data; few data points are suspected. There are shortages of Multi-Functional Meters, and issues of faulty PLCC links. It was informed by SCADA wing of PTCUL that SCADA had initiated tenders of procurement of MFM and for re-locations of Digital PLCC Panels and expected to be completed by Aug'2022.

Haryana and Uttarakhand SLDCs were requested to provide update on the agenda point.

Haryana representative stated that the issue is arising due to non-availability of redundant points at BBMB stations, the matter is still pending. For these stations 22 points from BBMB s/s are available, if redundant data is required, nearly 70 downstream points need to be added in the list which may take more time for implementation as DISCOM is also involved.

OCC advised Haryana that meanwhile available data from BBMB stations may be used till integration of other end 70 downstream points is completed. It was also discussed that Haryana may mail detailed issues observed with NRLDC SCADA team for further resolution of issue.

Uttarakhand SLDC representative informed that tender is to be awarded within next two weeks.

Haryana and Uttarakhand SLDCs are requested to provide update on the agenda point.

Members may please discuss.

19. Frequent forced outages of transmission elements in the month of August'22

The following transmission elements were frequently under forced outages during the month of **August 22**:

Sl. No.	Element Name	No. of forced outages	Utility/SLDC
1	400 KV Bareilly-Unnao (UP) Ckt-2	4	UP
2	220 KV Nara (UP)-Roorkee (UK) (UP) Ckt-1	6	UP/UK
3	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	4	Raj/RAPS-A
4	220 KV Nallagarh(PG)-HPSEB(HP) (HPSEB) Ckt-1	5	HP/POWERGRID
5	220 KV Meerut (PG)-Nehtaur(UP) (UP) Ckt-1	4	UP/POWERGRID

The complete details are attached at **Annexure-B.VII**. NRLDC letter regarding frequent tripping of 400kV Bareilly-Unnao ckt2 is attached as **Annexure-B.VIII**. It may be noted that frequent outages of such elements affect the reliability and security of the grid. Hence, utilities are requested to analyze the root cause of the tripping and share the remedial measures taken/being taken in this respect.

Members may like to discuss.

20. Multiple element tripping events in Northern region in the month of August '22

A total of 16 grid events occurred in the month of August '22 of which **14** are of GD-1 category. The preliminary report of all the events have been issued from NRLDC. A list of all these events is attached at **Annexure-B.IX.**

Further, despite persistent discussions/follow-up in various OCC/PCC meetings, it is observed that provisions 5.2(r) and 5.9.4(d) of the IEGC, pertaining to reporting of events / tripping to RLDC, is not being complied with by many utilities.

Maximum Fault Duration observed is 2.2 seconds in the event of multiple element tripping at 220kV Barn(J&K). As reported at 05:49hrs, main bus isolator to reserve bus isolator dropper of 132 side of 220/132kV 160 MVA ICT-3 at Barn(JK) damaged. Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **9** events out of **16** grid events occurred in the month. In 2 number of events, fault signature couldn't be captured from PMU data.

Members may take necessary preventive measures to avoid such grid incidents / disturbances in future and report actions taken by respective utilities in OCC & PSC forum. Moreover, utilities may impress upon all concerned for providing the Preliminary Report, DR/EL & Detailed Report of the events to RLDC in line with the regulations.

Members may like to discuss.

21. Details of tripping of Inter-Regional lines from Northern Region for August'22

A total of 6 inter-regional lines tripping occurred in the month of August'22. The list is attached at **Annexure-B.X.** The status of receipt of preliminary reports, DR/EL within 24hrs of the event and fault clearing time as per PMU data has also been mentioned in the table. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 5.2(r) of IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.

Members may please note and advise the concerned for taking corrective action to avoid such tripping as well as timely submission of the information.

22. Status of submission of DR/EL and tripping report of utilities for the month of August'22

The status of receipt of DR/EL and tripping report of utilities for the month of August'2022 is attached at **Annexure-B.XI**. It is to be noted that as per the IEGC provision under clause 5.2 (r), detailed tripping report along with DR & EL has to be furnished within 24 hrs of the occurrence of the event. However, it is evident from the submitted data that reporting status is not satisfactory and needs improvement. Also, it is observed that reporting status has been improved from POWERGRID, CPCC2, Delhi, Haryana Uttarakhand and Uttar Pradesh in August'2022 compared to the previous month.

Members may please note and advise the concerned for timely submission of the information. It is requested that DR/EL of all the trippings shall be **uploaded on Web Based Tripping Monitoring System "http://103.7.128.184/Account/Login.aspx"** within 24 hours of the events as per IEGC clause 5.2.r and clause 15.3 of CEA grid standard. Apart from prints of DR outputs, the corresponding COMTRADE files may please also be submitted in tripping portal / through email.

23. Status of PSS tuning/ re-tuning and Step Response Test of generator

In last 16 OCC meetings, this point was discussed and Utilities were requested to submit the present status of PSS tuning/re-tuning and Step Response Test of their respective generators as per the below mentioned format.

Sl. No.	Name of the Generating Station	Date of last PSS tuning / re-tuning performed (in	Date of last Step Response Test performed (in	Report submitted to NRLDC	Remarks (if any)

		DD/MM/YYYY format)	DD/MM/YYYY format)	(Yes/ No)	

The status of test performed till date is attached at **Annexure-B.XII.**

It is to be noted that as per regulation 5.2(k) of IEGC, Power System Stabilizers (PSS) in AVRs of generating units (wherever provided), shall be got properly tuned by the respective generating unit owner as per a plan prepared for the purpose by the CTU/RPC from time to time.

In 196th OCC meeting, Members were requested to update about their future plan for PSS tuning as there is no significant progress despite including this agenda in every OCC meeting and a separate meeting may be call for detail discussion on this matter.

Members may please discuss.

24. Frequency response characteristic:

Three FRC based event occurred in the month of **August-2022**. Description of the event is as given below:

S. No.	Event Date	Time (In hrs.)	Event Description	Starting Frequency (in Hz)	End Frequency (in Hz)	*Δf*
1	11-August-22	11:22hrs	On 11th Aug'22 at 11:22 hrs, Y-B phase to phase fault occurred on 220kV Bahdla-Clean Solar Jodhpur Ckt. On this fault, almost all the RE stations connected at Bhadla(PG), Bhadla2(PG), Fatehgarh2(PG) & Bikaner(PG) dropped their generation. However generation didn't recover in desired time as per LVRT. Due to sudden generation drop, over voltage in transmission network at Rajasthan RE complex also observed. Many 765kV lines and 220kV lines to RE stations tripped due to over voltage. Total RE generation drop of approx. 6157MW (5807MW Solar & 350MW Wind) observed (as per	50.16	49.63	-0.53

			SCADA). At the same time, load shedding of approx. 400MW in UP, 200MW in Punjab & 150MW in Haryana control area is also observed on df/dt protection operation. Hence, net 5407MW generation loss figure has been considered for FRC calculation.			

Status of Data received till date:

Status of Field Data received of FRC of Grid event occurred at Rajasthan RE complex at 11:22 Hrs on 11.08.2022			
Data Received from		**Data Not Received from**	
Koteshwar HEP	NJPC	Uttarakhand	APCPL Jhajjar
NHPC	UP	Haryana	Rampur HEP
Rajasthan	Dadri NTPC	HP	Unchhahar NTPC
Singrauli NTPC	Tehri HEP	BBMB	Karcham HEP
Koldam NTPC	Delhi		AD Hydro HEP
Rosa Reliance	Punjab		
Tanda NTPC	Rihand NTPC		

PFR as per NRLDC SCADA data and generators field data:

Primary Frequency Response by Generators during Grid Event occurred at Rajasthan RE complex at 11:22 Hrs on 11.08.2022

Sr. No	Generating stations	FRC as per NRLDC SCADA data (in %)	FRC as per generator data (in %)
1	Dadri TPS Stage-1 Unit-1	22%	25%
2	Dadri TPS Stage-1 Unit-3		29%
3	Dadri TPS Stage-1 Unit-4		15%
4	Dadri TPS Stage-2 Unit-1	24%	32%
5	Dadri TPS Stage-2 Unit-2		20%
6	Koteshwar HEP	5%	18%
7	Singrauli Unit-6	10%	29%
8	Singrauli Unit-7		24%
9	Chamera-I	2%	15%
10	Anpara C Unit-1	30%	25%
11	Anpara C Unit-2		40%
12	Nabha Power TPS Unit-1	-4%	24%
13	Nabha Power TPS Unit-2		26%
14	KTPS Unit-1	-1%	29%
15	KTPS Unit-2		0%
16	CTPP Unit-1	3%	9%
17	CTPP Unit-1		-6%
18	Tehri Unit-1	19%	35%
19	Tehri Unit-2		28%

Primary Frequency Response by Generators during Grid Event occurred at Rajasthan RE complex at 11:22 Hrs on 11.08.2022

Sr. No	Generating stations	FRC as per NRLDC SCADA data (in %)	FRC as per generator data (in %)
20	Sewa-II HEP	12%	16%
21	Nathpa Jhakri Unit-1	18%	18%
22	Nathpa Jhakri Unit-2		22%
23	Nathpa Jhakri Unit-3		22%
24	Nathpa Jhakri Unit-4		24%
25	Nathpa Jhakri Unit-5		24%
26	Nathpa Jhakri Unit-6		17%
27	Rihand TPS Unit-1	4%	-12%
28	Rihand TPS Unit-2		2%
29	Rihand TPS Unit-3		1%
30	Rihand TPS Unit-4		5%
31	Rihand TPS Unit-5		3%
32	Rihand TPS Unit-6		4%
33	Kalisindh Unit-1		2%
34	Kalisindh Unit-2		0%
35	Rosa TPS Unit-1	-4%	28%
36	Rosa TPS Unit-2		28%
37	Rosa TPS Unit-3		24%
38	Rosa TPS Unit-4		24%

In line with the decisions taken during various OCC meetings, the time and date of the FRC events were e-mailed to respective utilities***. Constituents may submit the FRC***

of their control areas for the above event and reason of poor response, if observed.

Other utilities are also requested to kindly share the FRC calculations and further action taken at their end.

25. Mock black start exercises in NR:

As per Indian Electricity Grid Code (IEGC) clause 5.8(b)

"*Detailed plans and procedures for restoration after partial/total blackout of each user's/STU/CTU system within a Region, will be finalized by the concerned user's/STU/CTU in coordination with the RLDC. The procedure will be reviewed, confirmed and/or revised once every subsequent year. Mock trial runs of the procedure for different subsystems shall be carried out by the users/CTU/STU at least once every six months under intimation to the RLDC*".

Mock Black-start exercise of power stations therefore needs to be carried out in-order to ensure healthiness of black start facility.

The summary of last conducted mock black start exercise of ISGS hydro & gas stations during 2020-21 & 2021-22 is tabulated below:

Hydro Power Stations:

Name of stations	Last conducted exercise date	Remark
Uri-I, II HEP, Lower Jhelum HEP, Upper Sindh and Kishenganga	_	
Dhauliganga	28th Dec 2021	Exercise carried out successfully
Bairasiul	04th Dec 2020	
Sewa-2	29th May 2022	
N. Jhakri and Rampur	17th Dec 2019	
Karcham and Baspa	29th Dec 2021	Exercise was partially successful
Budhil	_	
Parbati-3 and Sainj	22nd Dec 2020	Black start of only Parbati-3 was carried out successfully. Sainj to explore blackstart capability.
Salal	-	
Chamera-3	-	
Kishenganga	-	
Koteshwar	19th Jan 2022	Exercise carried out successfully
Chamera-1 and Chamera-2	08th Dec 2020	
Malana-2, AD Hydro and Phozal	08th Jan 2021	

Tehri	12th Jan 2022	
Koldam	22nd Jan 2021	Partially successful.

Gas Power Stations:

Name of stations	**Last conducted exercise date**	**Remark**
Anta GPS	09th Feb 2021 (with load) 01st Feb 2022 (without load)	Exercise carried out successfully
Auraiya GPS	-	
Dadri GPS	28th Jan 2022 (without load)	Exercise carried out successfully

The winter months are off peak hydro period and therefore good time to carry out such exercises. Therefore, the schedule of mock exercise dates for different hydro & Gas power station need to be finalized. The power stations may propose the tentative date for mock black start exercise of their generating units. Power stations may confirm and inform to all the concerned persons of control centre/ substations to facilitate the exercise.

Hydro Power Stations:

Name of stations	**Tentative Date for Mock Black start exercise (to be proposed by power plants)**
*Uri-I, II HEP, Lower Jhelum HEP, Upper Sindh and Kishenganga	
Dhauliganga	
*Bairasiul	
Sewa-2	
*N. Jhakri and Rampur	
Karcham and Baspa	
*Budhil	
*Parbati-3 and Sainj	
*Salal	
*Chamera-3	
*Kishenganga	
Koteshwar	
*Chamera-1 and Chamera-2	
*Malana-2, AD Hydro and Phozal	
Tehri	
*Koldam	

Mock Black start exercise not carried out during Year 2021-22

Gas Power Stations:

Name of stations	Tentative Date for Mock Black start exercise (to be proposed by power plants)
Anta GPS	
*Auraiya GPS	
Dadri GPS	

Mock Black start exercise not carried out during Year 2021-22

SLDC's may also carryout mock black-start of station in their respective control area & inform the tentative dates to the OCC as well as outcome of these exercises. The proposed Hydro Power Stations to undergo the exercise are as follows:

Sl. No.	Utility	Hydro Power Station	Installed Capacity(MW)
1	J&K	Baglihar	3x150
2		Baglihar stage-2	3x150
3		Lower Jhelum	3x35
4		Upper Sindh	2x11+3x35
5		Larji	3x42
6		Bhabha	3x40
7		Malana -I	2x43
8		Baspa	3x100
9	Punjab	Anandpur Sahib	4x33.5
10		Ranjit Sagar	4x150
11	Rajasthan	Mahi-I&II	2x25+2x45
12		Rana Pratap Sagar	4x43
13		Jawahar Sagar	3x33
14		Gandhi Sagar	5x23
15		Dholpur GPS	3x110
16		Ramgarh GPS	1x35.5+2x37.5+1x110
17	UP	Rihand	6x50
18		Obra	3x33
19		Vishnuprayag	4x100
20 21		Srinagar (Alaknanda)	4x82.5
	Uttarakhand	Gamma Infra	2x76+1x73
22		Shravanti	6x75
23		Ramganga	3x66
24		Chibro	4x60
25		Khodri	4x30
26		Chilla	4x36

27		Maneri Bhali-I&II	3x30+4x76
28	Delhi	IP Extn GTs	6x30+3x30
29		Pragati GPS	2x104.6+1x121.2
30		Rithala	3x36
31	Haryana	Faridabad GPS	2x137.75+1x156.07

SLDCs shall submit the reports of black start exercise in their respective control area. SLDCs may also identify further generating stations/unit for black start exercise.

Follow up issues from previous OCC meetings

Annexure-A.I

<table>
<tr><td>1</td><td>Down Stream network by State utilities from ISTS Station</td><td>Augmentation of transformation capacity in various existing substations, addition of new substations along with line bays as well as requirement of line bays by STUs for downstream network are under implementation at various locations in Northern Region. Further, 220kV bays have already been commissioned at various substations in NR. For its utilization, downstream 220kV system needs to be commissioned.</td><td>List of downstream networks is enclosed in Annexure-A.I.I.</td></tr>
<tr><td>2</td><td>Progress of installing new capacitors and repair of defective capacitors</td><td>Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Sep-2019
◎ DELHI — Jul-2022
◎ HARYANA — May-2022
◎ HP — Jan-2022
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Jul-2022
◎ RAJASTHAN — Jul-2022
◎ UP — Jun-2022
◎ UTTARAKHAND — Aug-2022
All States/UTs are requested to update status on monthly basis.</td></tr>
<tr><td>3</td><td>Healthiness of defence mechanism: Self-certification</td><td>Report of mock exercise for healthiness of UFRs carried out by utilities themselves on quarterly basis is to be submitted to NRPC Secretariat and NRLDC. All utilities were advised to certify specifically, in the report that “All the UFRs are checked and found functional”.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Not Available
◎ DELHI — Jun-2022
◎ HARYANA — Jun-2022
◎ HP — Jun-2022
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Jun-2022
◎ RAJASTHAN — Jun-2022
◎ UP — Jun-2022
◎ UTTARAKHAND — Jun-2022
◎ BBMB — Jun-2022
All States/UTs are requested to update status for healthiness of UFRs on monthly basis for islanding schemes and on quartely basis for the rest .</td></tr>
<tr><td></td><td></td><td>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</td><td>Status:
◎ CHANDIGARH — Not Available
◎ DELHI — Increased
◎ HARYANA — Increased
◎ HP — Increased
◎ J&K and LADAKH — Not increased
◎ PUNJAB — Increased
◎ RAJASTHAN — Increased
◎ UP — Increased
◎ UTTARAKHAND — Increased
◎ BBMB — Increased</td></tr>
</table>

			BBMB was requested to submit the updated self certification report indicating increase of 0.2 Hz in AUFR settings, within one week. J&K and LADAKH were requested to update status for increasing settings of UFRs.
4	Status of FGD installation vis-à-vis installation plan at identified TPS	List of FGDs to be installed in NR was finalized in the 36th TCC (special) meeting dt. 14.09.2017. All SLDCs were regularly requested since 144th OCC meeting to take up with the concerned generators where FGD was required to be installed. Further, progress of FGD installation work on monthly basis is monitored in OCC meetings.	Status of the information submission (month) from states / utilities is as under: ◎ HARYANA — Mar-2022 ◎ PUNJAB — Aug-2022 ◎ RAJASTHAN — Aug-2022 ◎ UP — Jun-2022 ◎ NTPC — Feb-2022 FGD status details are enclosed as **Annexure-A.I.II.** All States/utilities are requested to update status of FGD installation progress on monthly basis.
5	Information about variable charges of all generating units in the Region	The variable charges detail for different generating units are available on the MERIT Order Portal.	All states/UTs are requested to submit daily data on MERIT Order Portal timely.
6	Status of Automatic Demand Management Sysytem in NR states/UT's	The status of ADMS implementation in NR, which is mandated in clause 5.4.2 (d) of IEGC by SLDC/SEB/DISCOMs is presented in the following table:	Status: ◎ DELHI — Fully implemented ◎ HARYANA — Scheme not implemented ◎ HP — Scheme not implemented ◎ PUNJAB — Scheme not implemented ◎ RAJASTHAN — Under implementation. Likely completion schedule is 31.12.2022. ◎ UP — Scheme implemented by NPCIL only

7	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	Anticipated commissioning: Nov'22 2022
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under final stage inspection. GIS Bay is already available.
iii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under final stage inspection. GIS Bay is already available.
iv	DTL	Mundka	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
v	DTL	Bamnauli	2x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
vi	DTL	Indraprastha	2x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
vii	DTL	Electric Lane	1x50 MVAr at 220 kV	Under Re-tendering due to Single Bid
viii	PUNJAB	Dhuri	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	400kV Reactors - LOA issued on dated. 17.08.2021 and date of completion of project is 18 months from the date of LOA. 220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA.
ix	PUNJAB	Nakodar	1x25 MVAr at 220 kV	220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	Price bid has been opened and is under evaluation
xi	RAJASTHAN	Akal	1x25 MVAr	1x25 MVAR Reactor at Akal has been commissioned on dated 25th July' 2022.

xii	RAJASTHAN	Bikaner	1x25 MVAr	Erection work of 1x25 MVAR Reactors at Bikaner and Suratgarh completed and testing work is pending. The same are likely to be commissioned in Aug / Sept 2022.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	Erection work of 1x25 MVAR Reactors at Bikaner and Suratgarh completed and testing work is pending. The same are likely to be commissioned in Aug / Sept 2022.
xiv	RAJASTHAN	Barmer & others	13x25 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 &work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd.
xv	RAJASTHAN	Jodhpur	1x125 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 &work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd.

Annexure-A-I.I

1. Down Stream network by State utilities from ISTS Station:

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
1	400/220kV, 3x315 MVA Samba	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays.	-	PDD, J&K to update the status.
2	400/220kV, 2x315 MVA New Wanpoh	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV New Wanpoh - Alusteng D/c Line	-	PDD, J&K to update the status.
				• 220 kV New Wanpoh - Mattan D/c Line	-	PDD, J&K to update the status.
3	400/220kV, 2x315 MVA Amargarh	Commissioned: 6 Total: 6	Utilized: 6 Unutilized: 2	• 220kV D/C line from 400/220kV Kunzar - 220/33kV Sheeri	-	PDD, J&K to update the status.
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• 220kV Bhadson (Kurukshetra) – Ramana Ramani D/c line	-	HVPNL to update the status.
5	400/220 kV, 2x315 MVA Dehradun	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• Network to be planned for 4 bays	-	PTCUL to update the status.
6	Shahjahanpur, 2x315 MVA 400/220 kV	Commissioned: 6 Approved/Under Implementation:1 Total: 7	Utilized: 5 Unutilized: 1 (1 bays to be utilized shortly) Approved/Under Implementation:1	• 220 kV D/C Shahajahanpur (PG) - Gola line	Oct'22	Updated in 196th OCC by UPPTCL
				• LILO of Sitapur – Shahjahanpur 220 kV SC line at Shahjahanpur (PG)	Commissioned	Energization date: 25.02.2022 updated by UPPTCL in 196th OCC
7	Hamirpur 400/220 kV Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4 (2 bays to be utilized shortly)	• 220 kV Hamirpur-Dehan D/c line	Commissioned	Commisioned date: 09.06.2022. Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
8	Sikar 400/220kV, 1x 315 MVA S/s	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• LILO of 220 kV Sikar (220 kV GSS)-Dhod S/c line at Sikar (PG)	Commissioned	LILO of 220 kV S/C Sikar-Dhod line at 400 kV GSS PGCIL, Sikar has been charged on dt. 31.03.2022
				• Network to be planned for 2 bays.	-	Against the 3rd ICT at 400 kV GSS Sikar, only 2 bays were constructed and same has been utilized by RVPN by constructing LILO of 220 kV S/C Sikar – Dhod line as updated by RVPNL in 195th OCC
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 0 Unutilized: 6	• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	Dec'22	Updated in 197th OCC by HVPNL
				• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	Dec'22	Issue related to ROW as intimated in 192nd OCC.HVPNL to update the status.
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 192nd OCC.HVPNL to update the status.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0 Approved:4	• LILO of both circuits of 220 kV Jind HVPNL to PTPS D/C line at 400 kV substation PGCIL Khatkar (Jind) with 0.5 sq inch ACSR conductor	May'24	Updated in 197th OCC by HVPNL
11	400/220kV Tughlakabad GIS	Commissioned: 6 Under Implementation: 4 Total: 10	Utilized: 6 Unutilized: 0 Under Implementation:4	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	-	DTL to update the status.
				• Masjid Mor – Tughlakabad 220kV D/c line.	-	DTL to update the status.
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 0 Unutilized: 6	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Mar'23	Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur	Commissioned: 8	Utilized: 0	• LILO of both circuits of 220 KV Pali - Sector 56 D/C line at Kadarpur along with augmentation of existing conductor from 220 KV Sector-56 to LILO point with 0.4 sq inch AL-59 conductor.	Mar'23	Updated in 197th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
13	Sub-station	Total: 8	Unutilized: 8	• LILO of both circuits of 220KV Sector 65 - Pali D/C line at Kadarpur along with augmentation of balance 0.4 sq. inch ACSR conductor of 220 kV Kadarpur - Sector 65 D/C line with 0.4sq inch AL-59 conductor	May'23	Updated in 197th OCC by HVPNL
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 2 Unutilized: 4	• LILO of both circuits of 220kV D/c Sector-69 - Roj Ka Meo line at 400kV Sohna Road	Jun'23	Updated in 197th OCC by HVPNL
				• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	Jun'23	Updated in 197th OCC by HVPNL
15	400/220kV Prithla Sub-station	Commissioned: 8 Total: 8	Utilized: 2 Unutilized: 4 Under Implementation:2	• Prithla - Harfali 220kV D/c line with LILO of one ckt at Meerpur Kurali	Commissioned	Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	-	HVPNL to update the status
				• 220kV D/C for Sector78, Faridabad	02.03.2023	Updated in 198th OCC by HVPNL
				• Prithla - Sector 89 Faridabad 220kV D/c line	31.03.2024	Under Implementation (Mar'24). Updated in 198th OCC by HVPNL
16	400/220kV Sonepat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 2 Under Implementation:2	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat	-	HVPNL to update the status.
				• Sonepat - HSIISC Rai 220kV D/c line	Nov'22	Updated in 196th OCC by HVPNL
17	400/220kV Neemrana Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• LILO of Bhiwadi - Neemrana 220kV S/c line at Neemrana (PG)	Oct'22	In Tendering stage as updated in 192nd OCC by RVPNL.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Kotputli - Pathreda 220kV D/c line	-	Bid documents under approval as updated in 195th OCC by RVPNL.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	May'24	LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Roorkee (PG)-Pirankaliyar 220kV D/c line	Commissioned	Roorkee (PG)-Pirankaliyar 220kV D/c line comiisioned in 2020 as intimated by PTCUL in 197th OCC
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 4 bays	Oct'22	• Lucknow -Kaurasa (Sitapur), 220 kV D/C line expected energization date Oct'22 updated by UPPTCL in 196th OCC _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Dec'22	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line expected energization date Dec'22 updated by UPPCL in 196th OCC
23	400/220kV Fatehpur Sub-station	Commissioned: 8 Under Implementation:2 Total: 10	Utilized: 6 Unutilized: 2 Under Implementation:2	• Network to be planned for 4 bays	-	• UPPTCL intimated that 02 no. of bays under finalization stage _____ • No planning for 2 no. of bays updated by UPPTCL in 196th OCC
24	400/220kV Abdullapur Sub-station	Commissioned: 10 Under Implementation:2 Total: 12	Utilized: 10 Unutilized: 0 Under Implementation:2	• Abdullapur – Rajokheri 220kV D/c line	Oct'22	Updated in 198th OCC by HVPNL
		Commissioned: 8 Under tender:2	Utilized: 2	• Panchkula – Pinjore 220kV D/c line	31.12.2022	Updated in 194th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	31.12.2022	Updated in 194th OCC by HVPNL
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
25	400/220kV Pachkula Sub-station	Total: 10 Out of these 10 nos. 220kV Line Bays, 2 bays would be used by the lines being constructed by POWERGRID (Chandigarh-2) and balance 8 nos. bays would be used by HVPNL	Unutilized: 4 Under Implementation:2	• Panchkula – Sadhaura 220kV D/c line: Sep'23	Sept'23	Updated in 194th OCC by HVPNL
26	400/220kV Amritsar S/s	Commissioned:7 Approved in 50th NRPC- 1 no. Total: 8	Utilized: 6 Unutilized: 1 Approved in 50th NRPC- 1 no.	• Amritsar – Patti 220kV S/c line	May'23	Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th OCC by PSTCL.
				• Amritsar – Rashiana 220kV S/c line (2 bays shall be required for above lines. However, 1 unutilized bay shall be used for Patti and requirement of one additional bay approved for Rashiana by NRPC)	May'23	Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th OCC by PSTCL.
27	400/220kV Bagpat S/s	Commissioned: 8 Total: 8	Utilized:6 Unutilized: 2	• Bagpat - Modipuram 220kV D/c line	Aug'22	Updated in 196th OCC by UPPTCL, within 10 day tentative charging updated in 198th OCC by UPPTCL.
28	400/220kV Bahardurgarh S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.	Mar'24 and July'24	Updated in 198th OCC by HVPNL
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.	-	LILO case of 220 kV Dausa – Sawai Madhopur line at 400 kV GSS Jaipur South (PG) is under WTD approval as updated by RVPNL in 195th OCC
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 8	Utilized: 8	• Sohawal - Barabanki 220kV D/c line	Commissioned	Energization date: 14.04.2018 updated by UPPTCL in 196th OCC
				• Sohawal - New Tanda 220kV D/c line	Commissioned	Energization date: 28.05.2019 updated by UPPTCL in 196th OCC
				• Network to be planned for 2 bays	Commissioned	• Sohawal - Gonda 220kV S/c line (Energization date: 27.04.2020) updated by UPPTCL in 196th OCC _____ • Sohawal - Bahraich 220kV S/c line (Energization date: 15.02.2021) updated by UPPTCL in 196th OCC
31	400/220kV, Kankroli	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	-	RVPNL to update the status
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 4 bays	-	HVPNL to update the status
33	400/220kV, Saharanpur	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	Sept'22	Saharanpur(PG)-Devband D/c line expected energization date Sept'22 updated by UPPTCL in 196th OCC
34	400/220kV, Wagoora	Commissioned: 10 Total: 10	Utilized: 6 Unutilized: 4	• Network to be planned for 4 bays	-	PDD, J&K to update the status.
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	Mar'23	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work expected to be completed by March 2023.Updated in 198th OCC by PSTCL.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
36	400/220kV, Chamba (Chamera Pool)	Commissioned: 3 Under tender:1 Total: 4	Utilized:3 Unutilized: 0 Under tender:1	• Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line	-	Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is not ready.Updated in 198th OCC by HPPTCL
37	400/220kV, Mainpuri	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	-	• 02 no. of bays under finalization stage updated by UPPTCL in 196th OCC
38	400/220kV, Patiala	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays	May'24	2 Nos. bays for 400 kV PGCIL Patiala - 220 kV Bhadson (D/C) line being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.

2. Establishment of new 400/220kV substations in Northern Region:

Sl. No.	Name of Substation	MVA Capacity	Expected Schedule		Downstream connectivity by States
1	400/220kV Dwarka-I GIS (8 nos. of 220kV bays)	4x 500	Mar'22		DTL to update the status
2	220/66kV Chandigarh GIS (8 nos. of 66kV bays)	2x 160	Apr'22		Chandigarh to update the status.
3	400/220kV Jauljivi GIS Out of these 8 nos. 220kV Line Bays, 4 nos. (Pithoragath-2, & Dhauliganga-2) would be used by the lines being constructed by POWERGRID and balance 4 nos. bays would be used by the lines being constructed by PTCUL.	2x315	Feb'22		• 220kV Almora-Jauljibi line • 220kV Brammah-Jauljibi line PTCUL to update the status of lines.

FGD Status

Updated status of FGD related data submission

NTPC (25.02.2022)
MEJA Stage-I (Updated by UP on 18.06.2022)
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (18.06.2022)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (16.08.2022)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (08.08.2022)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Lalitpur Power Gen. Co. Ltd. (18.06.2022)
Lalitpur TPS
Lanco Anpara Power Ltd. (18.06.2022)
ANPARA-C TPS

HGPCL (21.03.2022)
PANIPAT TPS
RAJIV GANDHI TPS
YAMUNA NAGAR TPS

Adani Power Ltd. (18.02.2022)
KAWAI TPS

Rosa Power Supply Company (18.06.2022)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (18.06.2022)
Prayagraj TPP
APCPL (25.02.2022)
INDIRA GANDHI STPP

Pending submissions

GVK Power Ltd.
GOINDWAL SAHIB

NTPC
DADRI (NCTPP)
Talwandi Sabo Power Ltd.
TALWANDI SABO TPP
L&T Power Development Ltd.
Nabha TPP (Rajpura TPP)

Target Dates for FGD Commissioning (Utility-wise)

Adani Power Ltd.	KAWAI TPS U#1 (Target: 31-12-2024), KAWAI TPS U#2 (Target: 31-12-2024)
APCPL	INDIRA GANDHI STPP U#1 (Target: 30-09-2022), INDIRA GANDHI STPP U#2 (Target: 30-09-2022), INDIRA GANDHI STPP U#3 (Target: 30-09-2022)
GVK Power Ltd.	GOINDWAL SAHIB U#1 (Target: 30-04-2020), GOINDWAL SAHIB U#2 (Target: 29-02-2020)
HGPCL	PANIPAT TPS U#6 (Target: 30-04-2021), PANIPAT TPS U#7 (Target: 28-02-2021), PANIPAT TPS U#8 (Target: 31-12-2020), RAJIV GANDHI TPS U#1 (Target: 30-04-2022), RAJIV GANDHI TPS U#2 (Target: 28-02-2022), YAMUNA NAGAR TPS U#1 (Target: 31-12-2021), YAMUNA NAGAR TPS U#2 (Target: 31-10-2021)

NTPC	DADRI (NCTPP) U#1 (Target: 31-12-2020), DADRI (NCTPP) U#2 (Target: 31-10-2020), DADRI (NCTPP) U#3 (Target: 31-08-2020), DADRI (NCTPP) U#4 (Target: 30-06-2020), DADRI (NCTPP) U#5 (Target: 30-06-2022), DADRI (NCTPP) U#6 (Target: 30-06-2022), RIHAND STPS U#1 (Target: 30-06-2024), RIHAND STPS U#2 (Target: 30-06-2024), RIHAND STPS U#3 (Target: 31-12-2023), RIHAND STPS U#4 (Target: 31-12-2023), RIHAND STPS U#5 (Target: 30-06-2023), RIHAND STPS U#6 (Target: 30-06-2023), SINGRAULI STPS U#1 (Target: 30-06-2024), SINGRAULI STPS U#2 (Target: 30-06-2024), SINGRAULI STPS U#3 (Target: 30-06-2024), SINGRAULI STPS U#4 (Target: 30-06-2024), SINGRAULI STPS U#5 (Target: 30-06-2024), SINGRAULI STPS U#6 (Target: 31-03-2023), SINGRAULI STPS U#7 (Target: 31-03-2023), UNCHAHAR TPS U#1 (Target: 31-12-2023), UNCHAHAR TPS U#2 (Target: 31-12-2023), UNCHAHAR TPS U#3 (Target: 30-06-2024), UNCHAHAR TPS U#4 (Target: 30-06-2024), UNCHAHAR TPS U#5 (Target: 30-06-2024), UNCHAHAR TPS U#6 (Target: 30-06-2022), MEJA Stage-I U#1 (Target: 31-12-2022), MEJA Stage-I U#2 (Target: 31-03-2023), TANDA Stage-I U#3 (Target:), TANDA Stage-I U#4 (Target:), TANDA Stage-II U#3 (Target: 31-12-2022), TANDA Stage-II U#4 (Target: 31-12-2022)

L&T Power Development Ltd (Nabha)	Nabha TPP (Rajpura TPP) U#1 (Target: 30-04-2021), Nabha TPP (Rajpura TPP) U#2 (Target: 28-02-2021)
Lalitpur Power Gen. Company Ltd.	LALITPUR TPS U#1 (Target: 31-12-2024), LALITPUR TPS U#2 (Target: 30-09-2024), LALITPUR TPS U#3 (Target: 30-06-2024)
Lanco Anpara Power Ltd.	ANPARA C TPS U#1 (Target: 31-12-2023), ANPARA C TPS U#2 (Target: 31-12-2023)
Prayagraj Power Generation Company Ltd.	PRAYAGRAJ TPP U#1 (Target: 31-12-2024), PRAYAGRAJ TPP U#2 (Target: 31-12-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024)
PSPCL	GH TPS (LEH.MOH.) U#1 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#2 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#3 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#4 (Target: 31-12-2024), GGSSTP, Ropar U#3 (Target: 31-03-2022), GGSSTP, Ropar U#4 (Target: 31-05-2022), GGSSTP, Ropar U#5 (Target: 31-07-2022), GGSSTP, Ropar U#6 (Target: 30-09-2022)

Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2024), ROSA TPP Ph-I U#2 (Target: 31-12-2024), ROSA TPP Ph-I U#3 (Target: 31-12-2024), ROSA TPP Ph-I U#4 (Target: 31-12-2024)
RRVUNL	KOTA TPS U#5 (Target: 31-08-2024), KOTA TPS U#6 (Target: 31-08-2024), KOTA TPS U#7 (Target: 31-08-2024), SURATGARH TPS U#1 (Target: 31-12-2024), SURATGARH TPS U#2 (Target: 31-12-2024), SURATGARH TPS U#3 (Target: 31-12-2024), SURATGARH TPS U#4 (Target: 31-12-2024), SURATGARH TPS U#5 (Target: 31-12-2024), SURATGARH TPS U#6 (Target: 31-12-2024), SURATGARH SCTPS U#7 (Target: 31-12-2024), SURATGARH SCTPS U#8 (Target: 31-12-2024), CHHABRA TPP U#1 (Target: 31-12-2024), CHHABRA TPP U#2 (Target: 31-12-2024), CHHABRA TPP U#3 (Target: 31-12-2024), CHHABRA TPP U#4 (Target: 31-12-2024), CHHABRA SCPP U#5 (Target: 31-12-2024), CHHABRA SCPP U#6 (Target: 31-12-2024), KALISINDH TPS U#1 (Target: 31-12-2024), KALISINDH TPS U#2 (Target: 31-12-2024)
Talwandi Sabo Power Ltd.	TALWANDI SABO TPP U#1 (Target: 28-02-2021), TALWANDI SABO TPP U#2 (Target: 31-12-2020), TALWANDI SABO TPP U#3 (Target: 31-10-2020)
UPRVUNL	ANPARA TPS U#1 (Target: 31-12-2023), ANPARA TPS U#2 (Target: 31-12-2023), ANPARA TPS U#3 (Target: 31-12-2023), ANPARA TPS U#4 (Target: 31-12-2023), ANPARA TPS U#5 (Target: 31-12-2023), ANPARA TPS U#6 (Target: 31-12-2023), ANPARA TPS U#7 (Target: 31-12-2023), HARDUAGANJ TPS U#8 (Target: 31-12-2024), HARDUAGANJ TPS U#9 (Target: 31-12-2024), OBRA TPS U#9 (Target: 31-12-2024), OBRA TPS U#10 (Target: 31-12-2024), OBRA TPS U#11 (Target: 31-12-2024), OBRA TPS U#12 (Target: 31-12-2024), OBRA TPS U#13 (Target: 31-12-2024), PARICHHA TPS U#3 (Target: 30-04-2022), PARICHHA TPS U#4 (Target: 31-12-2024), PARICHHA TPS U#5 (Target: 31-12-2024), PARICHHA TPS U#6 (Target: 31-12-2024)

MIS Report for Status of Islanding Schemes

Implemented Schemes

Sl. No.	Islanding Scheme	SLDC	Status	Submission of Self Certification of Healitheness	SOP	SCADA Display Page	Remarks
1	Delhi IS	Delhi	Implemented	Yes (Sept - 2021)	No	Yes	List of officials in-charge and relays in Delhi IS submitted by DTL on 16.08.2021.
2	NAPS IS	UP	Implemented	Yes (08-10-2021)	Yes	Yes	-
3	RAPS IS	Rajasthan	Implemented	16-Aug-21	Yes	Yes	List of officials in-charge, format for generation, islanding scheme sld and relays in RAPP IS submitted by RVPN on 04.12.2021.

Under Implementation/ Newly Proposed/Under Discussion

Sl. No.	Islanding Scheme	SLDC	Status	Details of progress	DPR for PSDF funding (Required /	Timelines Status - Proposed/Actual									
						Study		Design		Approval		Procurement		Commissioning	
						Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual
1	Lucknow-Unchahar IS	UP	Under Implementation	UP has submitted revised islanding scheme on 20.07.2022 which is under examination in consulatation with NRLDC, UPSLDC and NTPC.		-		-	-	-	-	-	-	-	-
2	Agra IS	UP	Newly Proposed	UP has placed offer to CPRI for dynamic study in July, 2022. The estimated time of study is 5 months from date of acceptance.		-		-	-	-	-	-	-	-	-
3	Jodhpur-Barmer-Rajwest IS	Rajasthan	Newly Proposed	Scheme/Study was approved in 195th OCC meeting held on 24.05.2022. The same was discussed in 56th NRPC meeting held on 29th july, 2022 and RVPN has been requested to submit revised proposal before OCC.	-	-		-	-	-	-	-	-	-	-
4	Patiala-Nabha Power Rajpura IS	Punjab	Newly Proposed	Punjab has submitted islanding scheme on 12.07.2022 which has been examined. Punjab has been requested for clarification on few points. However, reply is awaited.		-		-	-	-	-	-	-	-	-
5	Pathankot-RSD IS	Punjab	Newly Proposed	Punjab has submitted islanding scheme on 12.07.2022 which has been examined. Punjab has been requested for clarification on few points. However, reply is awaited.		-		-	-	-	-	-	-	-	-
6	Talwandi Sabo IS	Punjab	Newly Proposed	Punjab has submitted islanding scheme on 12.07.2022 which has been examined. Punjab has been requested for clarification on few points. However, reply is awaited. However, tentative timeline intimated by Punjab is 2 years to implement TSPL islanding Schemes as some changes in downstream network is under planning phase.		-		-	-	-	-	-	-	-	-
7	Dehradun IS	Uttarakhand	Newly Proposed	Matter is pending at Uttarakhand SLDC for finalization/rejection of scheme.		-	-	-	-	-	-	-	-	-	-
8	Jammu-Salal IS	J &K	Under Discussion	No proposal submitted by J&K.		-	-	-	-	-	-	-	-	-	-
9	Suratgarh IS	Rajasthan	Under Discussion	Scheme/Study was approved in 195th OCC meeting held on 24.05.2022. The same was discussed in 56th NRPC meeting held on 29th july, 2022 and RVPN has been requested to submit revised proposal before OCC.	-	-		-	-	-	-	-	-	-	-
10	Chamba-Chamera IS	HP	Withdrawn	Scheme has been withdrawn by HPSLDC in meeting dtd. 15/07/2022.		-	-	-	-	-	-	-	-	-	-
11	Kangra-Chamba-Bairasuil IS	HP	Withdrawn	Scheme has been withdrawn by HPSLDC in meeting dtd. 15/07/2022.		-	-	-	-	-	-	-	-	-	-
12	Kullu-Dehar IS	HP	Withdrawn	HP has withdrwan this scheme and has proposed Kullu-Manali-Mandi islanding scheme, and Shimla-Solan Islanding scheme in meeting dtd. 15/07/2022.		-	-	-	-	-	-	-	-	-	-
13	Kullu-Manali-Mandi IS	HP	Newly Proposed	Scheme has been discussed on 15/07/2022. Finalization of scheme is under process.											
14	Shimla-Solan IS	HP	Newly Proposed	Scheme has been discussed on 15/07/2022. Finalization of scheme is under process.											
13	Butari-Jamsher-Verpal IS	Punjab	Under Discussion	No proposal submitted by Punjab.		-	-	-	-	-	-	-	-	-	-
14	Kargil-Ladakh IS	Ladakh	Under Discussion	No proposal submitted by J&K.		-	-	-	-	-	-	-	-	-	-

Annexure-A.III

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
(सड़क परिवहन एवं राजमार्ग मंत्रालय, भारत सरकार)
परियोजना कार्यान्वयन इकाई – भिवानी
National Highways Authority of India
(Ministry of Road Transport & Highways, Govt. of India)
Project Implementation Unit – Bhiwani
खेरड़ी मोड, एनएच152डी, रोहतक भिवानी रोड (हरियाणा) – 124113
Kherdi Mor, NH-152D Rohtak-Bhiwani Road (Haryana) – 124113
फोन / Phone: 01258-296006, वेबसाइट /Website: www.nhai.gov.in,
ईमेल / Email: piubhiwani@nhai.org, piubhiwani@gmail.com

भाराराप्रा / पकाईभि / रा.रा.–152डी / 26009 / 2022 / इले. / 10891 01-09-2022

सेवा में,

Member Secretary
Northern Region Power Committee,
18-A, Shaheed Jeet Singh Sansanwal Marg
Katwaria Sarai, New Delhi

विषय: Four laning of Rohtak-Bawal section of NH-71 from Km 363+300 (Design Km 363+300) to Km 450+800 (Design Km. 445+853) under NHDP III in the state of Haryana on Design, Build, Finance, Operate and Transfer (DBFOT) basis- **Deemed Availability of relocation/height raising of 400 kV Jharli-Mundka Transmission line at Silani Chowk (Km. 396+400) in Jhajjar Distt. -reg.**

संदर्भ: 1. M/s APCPL letter dtd 04-07-2022.
2. This office letter no. 10242 dated 05-07-2022.

महोदय,

This has reference to the above letter in the captioned subject. It is submitted that the project of Rohtak - Bawal section of NH-71 (new NH-352) is one of the important project which connects Rohtak & other adjoining cities like Jhajjar, Rewari with NH-44 (Delhi-Jaipur Expressway). The said project is under operation & maintenance.

2. It is intimated that there is a 400kV D/C Jharli - Mundka transmission line which is infringing the proposed underpass at Silani Chowk of NH-71 at Ch. 396+400 whose construction is held-up since more than 1½. The said HT line requires relocation/height raising. The estimate for the said line was submitted by POWERGRID on behalf of M/s APCPL which have already been approved by Competent Authority of NHAI and the supervision charge is already deposited.

3. A Tripartite Agreement between M/s APCPL, POWERGRID & NHAI has been executed on 04-07-2022 & a letter of commencement of work has been issued by M/s PGCIL on 16-08-2022. The work has also been started at site with the help of Duty Magistrate.

4. As per Office Memorandum dated 16.08.2021 of Ministry of Power vide its clause 5.3, it is mentioned that *"that in case of projects of national importance (NHAI projects), deemed availability may be given for the shutdown period availed by transmission licensees for shifting of their transmission lines, provided that transmission customers are not affected by the shutdown."*

5. Further its clause 5.4, in case of NHAI projects, RPC secretariat would provide deemed availability certificate for shutdown period availed by transmission licensees for shifting of their transmission lines, provided that transmission customers are not affected by the shutdown of the line. Shutdown charges would be computed by CEA as per standard norms and would be included in the cost estimates to be provided to NHAI for shifting of lines.

भाराराप्रा / पकाईभि / रा.रा.–152डी / 26009 / 2022 / इले. / 10891 01-09-2022

In view of the above, it is therefore requested to grant deemed availability & provde the shutdown of 400kV Jharli-Munda transmission line to M/s APCPL for shifting/height raising of affected line between 25th Sept, 2022 to 10th Oct, 2022 suitably so that the work of said transmission line may be completed within stipulated time & long pending work of underpass may be resumed at the earliest.

सधन्यवाद्!

भवदीय

1/9/22

(के०एम०शर्मा)
परियोजना निदेशक

संलग्नः– यथोक्त

प्रतिलिपीः

1) महाप्रबंधक(तक०), सह क्षेत्रीय अधिकारी, क्षेत्रीय कार्यालय -चण्डीगढ़– ***for information.***
2) M/s APCPL, Jharli – ***for information***
3) Sh. H.R. Lodha, Sr. GM, POWERGRID – ***for information***
4) Independent Engineer M/s MSV International Inc. with LSI Engineering Consultants Ltd. – ***for information & necessary action please.***

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
(सड़क परिवहन एवं राजमार्ग मंत्रालय, भारत सरकार)
परियोजना कार्यान्वयन इकाई – भिवानी
National Highways Authority of India
(Ministry of Road Transport & Highways, Govt. of India)
Project Implementation Unit – Bhiwani
खेरड़ी मोड, एनएच152डी, रोहतक भिवानी रोड (हरियाणा) – 124113
Kherdi Mor, NH-152D Rohtak-Bhiwani Road (Haryana) – 124113
फोन / Phone: 01258-296005, वेबसाइट /Website: www.nhai.gov.in,
ईमेल / Email: piubhiwani@nhai.org, piubhiwani@gmail.com

भारतमाला
प्रगति के पथ पर अग्रसर

भाराराप्रा / पकाईभि / रारा71 / 26009 / 2022 / इले. / 10242 05-07-2022

सेवा में,

Member Secretary
Northern Region Power Committee,
18-A, Shaheed Jeet Singh Sansanwal Marg
Katwaria Sarai, New Delhi

विषय: Four laning of Rohtak-Bawal section of NH-71 from Km 363+300 (Design Km 363+300) to Km 450+800 (Design Km. 445+853) under NHDP III in the state of Haryana on Design, Build, Finance, Operate and Transfer (DBFOT) basis- **Deemed Availability of relocation/height raising of 400 kV Jharli-Mundka Transmission line at Silani Chowk (Km. 396+400) in Jhajjar Distt. -reg.**

संदर्भ: M/s APCPL letter dtd 04-07-2022.

महोदय,

This has reference to the above letter in the captioned subject. It is submitted that the project of Rohtak - Bawal section of NH-71 (new NH-352) is one of the important project which connects Rohtak & other adjoining cities like Jhajjar, Rewari with NH-44 (Delhi-Jaipur Expressway). The said project is under operation & maintenance.

2. It is intimated that there is a 400kV D/C Jharli - Mundka transmission line which is infringing the proposed underpass at Silani Chowk of NH-71 at Ch. 396+400 whose construction is held-up since more than 1½. The said HT line requires relocation/height raising. The estimate for the said line was submitted by POWERGRID on behalf of M/s APCPL which have already been approved by Competent Authority of NHAI and the supervision charge is already deposited.

3. A Tripartite Agreement between M/s APCPL, POWERGRID & NHAI has been executed on 04-07-2022 & a letter of go ahead for the work has been issued by M/s APCPL on 04-07-2022.

4. Accordingly, the work of foundation of towers is going to be taken up. However, M/s APCPL -

a) is asking for payment of generation outage of 500 MW@Rs. 1.83 cr. per day.
b) they are also demanding the outage charges as Rs. 2,89,093/- per day.

As per Office Memorandum dated 16.08.2021 of Ministry of Power vide its clause 5.3, it is mentioned that *"that in case of projects of national importance (NHAI projects), deemed availability may be given for the shutdown period availed by transmission licensees for shifting of their transmission lines, provided that transmission customers are not affected by the shutdown."*

Further its clause 5.4, in case of NHAI projects, RPC secretariat would provide deemed availability certificate for shutdown period availed by transmission licensees for shifting of their transmission lines, provided that transmission customers are not affected by the shutdown of the line. Shutdown charges would be computed by CEA as per standard norms and would be included in the cost estimates to be provided to NHAI for shifting of lines.

अरावली पावर कम्पनी प्राइवेट लिमिटेड
(एनटीपीसी, एचपीजीसीएल एवं आईपीजीसीएल का संयुक्त उद्यम)
Aravali Power Company Private Limited
(A joint venture of NTPC, HPGCL and IPGCL)

Date: 04.07.2022

To

The Project Director
NHAI, PIU, Bhiwani

Subject: Permission Letter to Go Ahead with the work-SHIFTING AND MODIFICATION OF 400 KV D/C JHARLI – MUNDKA TRANSMISSION LINE OF ARAVALI POWER COMPANY PRIVATE LIMITED DUE TO FOUR LANING OF ROHTAK – BAWAL SECTION OF NH-71 FROM 363.00 KMS TO 450.853 KMS IN THE STATE OF HARYANA NEAR SILANI CHAUK, JHAJJAR Reg.

Dear Sir

In line with the Tripartite agreement between APCPL, POWEGRID and NHAI for the subjected work on dated 04.07.2022 in the office of APCPL at Jharli Power Plant, the go-ahead permission for execution of work at site is hereby granted. You are requested to go ahead with the work in line with the said Tripartite Agreement. And, it is to inform that the overhead lines are in charged condition.

It may further be noted that the activities involving shutdown of existing lines will be dealt separately for clearance from APCPL as per prevailing conditions at that time. This issues with the permission of Competent Authority of APCPL, please.

04/07/2022

K.E.Swamy
AGM(EMD)
On behalf of APCPL

के. ई. स्वामी / K. E. SWAMY
- अपर महाप्रबन्धक (ई.एम.डी.)
Addl. General Manager (EMD)
NTPC Limited - APCPL
ISSTPP, P.O. : Jharli
Distt. Jhajjar - 124141 (HR)

CC: Shri. Laxmidhar Sahoo, GM(O&M)
Shri. Rajiv Sudan, Sr. GM, POWERGRID, Bahadurgarh, Haryana

भा०रा०रा०प्रा०प०का०ई०-भिवानी
आवक सं. 13324 दिनांक 05-07-2022

	प्रबंधक (तक)								लेखाकार			
	उप प्रबंधक (तक)			1	2				IT Expert		कानूनगो/ पटवारी	
	स्थल अभियन्ता								OA		Steno	
	1	2	3	4	5	6	7		1	2	1	2

फा.सं. 26009/1 प.वि.....

5/7/22

Annexure-A.IV

दिल्ली ट्रांस्को लिमिटेड
(दिल्ली सरकार का उपक्रम)
कार्यालय : निदेशक (परिचालन)
मुख्यालय : शक्ति सदन, कोटला रोड,
नई दिल्ली-110002
फोन : 23232715, फैक्स : 23232721
वेबसाइट: www.dtl.gov.in
कॉर्पोरेट स० (सी०आई०एन०)
U40103DL2001SGC111529

DELHI TRANSCO LIMITED
(A Govt. of NCT of Delhi Undertaking)
O/o Director (Operations)
Regd. Office : Shakti Sadan, Kotla Road,
New Delhi - 110002
Tel. : 011-23232715, Fax : 011-23232721
Website : www.dtl.gov.in
Corporate Identification No. (CIN)
U40103DL2001SGC111529

Ref. No .F. DTL/Dir (O)/201/2022-23/F.38/104 Dated: 07/09/22

Director(Operations), PGCIL,
Saudamini, Plot no. 2,
Sector-29, Near IFFCO Chowk,
Gurgaon (Haryana)- 122001.

Sub: Utilization of 01 No.500MVA 400/220/33kV Transformer at Maharani Bagh or 01 no. 315 MVA 400/220/33 kV transformer available at Ballabhgarh.

A 315 MVA 400/220/33 kV TELK Make Power Transformer got damaged on 05.09.2022 at our 400 kV substation Tikri Kalan. We are already in the process of procuring 500 MVA 400/220kV Power Transformers but supply of these transformers may take time as tender for the same could not be materialized and retendering is in process.

अध्यक्ष का कार्यालय, के.वि.प्रा.
डा.सं. 20588
दिनांक 9/9/2022

The damage of said 400kV Transformer, has left our 400kV Tikri Kalan S/Stn with only 02 nos 400kV Power Transformers which may create the power supply reliability issue for transmission system of Delhi as a whole.

In order to replace this damaged transformer, other possible avenues are explored and during the process it has come to the notice that 01No. 500MVA 400/220/33kV Transformer at Maharani Bagh and 01 no. old 315 MVA 400/220/33 kV Power Transformer at Ballabhgrah is available with PGCIL.

O/o MEMBER (GO&D)
Dy. No. 532
Dated 09/09/2022

In this regard, minutes dated 04.02.2013 of the 31st Standing Committee meeting on Power System Planning of Northern Region held on 2nd January,2013 may also be referred wherein PGCIL agreed that these old 400kV ICTs shall be kept as regional spares and shall be available for use by any NR constituent.(copy of minutes attached).

Kindly see pl
Mem(G&D)/MS(NRPC)
M. discuss
-1-
9/9/22

In view of above, it is requested that one of the above referred 02 nos. transformer available at Maharani Bagh or Ballabhgarh substation may be diverted to DTL on loan basis after checking of their healthiness so that reliability of power supply in Delhi is maintained.

Thanking you,

Yours faithfully,

7/9/2022

(Mukesh Kumar Sharma)

Director(Operations)

Copy to:

1. Secy (Power)GNCTD
2. Chairman,CEA
3. Chairman, POWER GRID
4. Member Secretary,NRPC
5. GM(O&M)-I &II:for follow up please

पावरग्रिड
POWERGRID

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprises)

Ref. No.: NR-III/ PGCIL/ JVUNL/ 31801 Date: 02.09.2022

अध्यक्ष का कार्यालय, के.वि.प्रा.
डा०सं० 2081
दिनांक 8/9/2022

To
The Member Secretary
Northern Regional Power Committee
18-A, Qutab Institutional Area, Shaheed Jeet Singh Marg,
Katwaria Sarai, New Delhi-110 016

Kind Attention: Shri Naresh Bhandari

Subject: Request for shutdown approval of 800kV HVDC Champa - Kurukshetra & 500 kV HVDC Rihand-Dadri Transmission Line infringing the Rail network of Jawaharpur thermal Power project being constructed by JVUNL, diversion work being executed by POWERGRID.

Respected Sir,

Jawaharpur Vidyut Utpadan Nigam Ltd. (JVUNL) is constructing rail network for Jawaharpur thermal power plant for which diversion of 800kV HVDC Champa - Kurukshetra & 500 kV HVDC Rihand-Dadri Transmission Line infringing the rail network, is being carried out by POWERGRID.

Construction of rail network is in very advance stage and JVUNL is pressing hard to complete the diversion work at the earliest since vehicle movement is severely affected due to clearance problem. All works of above transmission lines have already been completed by POWERGRID except tapping at both ends and hence shutdown of the existing lines are required. We have applied for shutdown of the aforesaid lines in April'22 but same could not be approved due to system loading /constraints in the summer months.

Further, our contractor has already mobilized the working gangs & resources at site to complete the balance tapping work on these lines. In order to complete the balance tapping work to complete the diversion as well as minimize the idling of working gangs & resources, we request your kind assistance in providing shut down on these lines as per following schedule in Sept'22. It is ensured that we will make all efforts to curtail the shutdown period wherever possible.

S. N.	Name of Transmission Line	Shut Down requested	Remarks
1	500 kV HVDC Rihand-Dadri	15th – 20th Sept'22	Continuous basis
2	800kV HVDC Champa - Kurukshetra	25th – 30th Sept'22	Continuous basis

We therefore seek your kind attention and support in granting shutdown on these lines for facilitating the operationalization of rail network at the earliest.

Thanking you,

MS/NRPC
Pl. discuss on 'x'
9/9/22
Mem (GO+D)

O/o MEMBER (GO&D)
Dy. No. 530
Dated 9/9/2022

Yours sincerely,

(Ravinder Nagpal)
Executive Director

Copy To:

1) Chairperson, Central Electricity Authority, Sector-1, Sewa Bhawan, R.K.Puram, New Delhi-110066
2) Chief Engineer (EC&ET,OM), Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi-110001
3) Director (System Operation), POSOCO, B-9, Qutub Institutional Area, Katwariya Sarai, New Delhi-110016

Annexure-B.I

S. No	Generator	Region	Installed capacity			No. of units operated/operational in Synchronous condenser simultaneously				Remarks
			No. of units	Rating (MW)	Total (MW)	Units	Capacity (MW)	MVAr absorption (MVAr)	Last operated (date)	
1	Pong	NR	6	66	396	3	198		On daily basis	
2	Larji	NR	3	42	126	1	42			Trial run has been done (Some issues in MVAr absorption upto some limit only)
3	Tehri	NR	4	250	1000	2	500		16-01-2022	
4	Chamera -2	NR	3	100	300	1	100			

In 179thOCC meeting, NTPC representative confirmed that facility of condenser mode of operation at Koldam HEP is not available. ALAKNANDA HYDRO POWER COMPANY LTD. confirmed vide its letter Ref: AHPCL:SHEP/Syn. Cond./UPSLDC/2020/02 dated 14th Oct 2020 that Srinagar Hydro Electric Plant does not have provision for Synchronous Condenser mode operation of Generators since its inception. In 139th OCC MoM, NTPC informed that due to clutch arrangement issue the gas stations Anta, Auraiya, Dadri, Bawana are not capable of running in Condenser mode. In 142nd OCC (MoM), Uttarakhand confirmed that no gas unit can run in condenser mode. Shravanti expressed its inability to operate in condenser mode.

In 164th OCC meeting and then 175th OCC, following were discussed:

- NHPC representative informed that synchronous condenser operation facility is not available at any of the station other than Chamera-II HEP (MoM of 42nd TCC & 45th NRPC meeting).
- Rajasthan representative informed that no hydro units can run in synchronous condenser mode. Though, in 175th OCC, Rajasthan asked to take up matter once again including possibility and cost estimates as done by Punjab
- Punjab representative informed that OeM suggested some improvement in RSD to run the unit in synchronous condenser mode. Order has been placed and status as given in 175th OCC is as:
    - 1. Material of magnetic float level indicator has already been received and is likely to commission within this lean season
    - 2. Case of procurement of hp air compressor is currently under process
- Uttar Pradesh confirmed that no provision of condenser operation in present setup of HEPs. UP asked to take up matter once again including possibility and cost estimates as done by Punjab.
- Uttarakhand representative informed that Gamma infra cannot run in synchronous condenser mode.
- HP-SLDC representative agreed to inform the date within 15days.

- BBMB representative informed that Pong HEP can run as and when required (However, during winter 2020-21, pong couldn't operate, BBMB may please update). No problem in running it in synchronous condenser mode.
- MS, NRPC suggested to take up the matter with Hon'ble commission for ISGS generating plant in view of tariff determination and consideration of synchronous condenser mode for grid security. NRPC Sectt. shall share the compiled information with Hon'ble commission.

In 176th OCC meeting, UP representative informed that Vishnuprayag has stated that they would not be able to operate in synchronous condenser mode even after modifications. HP representative informed that Larji can run in synchronous condenser mode but, trips frequently during the operation and hence OEM has been asked to look into the issue.

In 187th OCC meeting, BBMB representative stated that presently only two units of Pong can be simultaneously utilized as synchronous condenser and works are under process for ensuring availability of all three units simultaneously.

In 188th OCC meeting, HP SLDC informed that in case of Larji, OEM visit is awaited. Delhi SLDC stated that review petition has been filed in DERC and govt. approval is pending for Delhi gas stations.

In 189th OCC meeting, Punjab SLDC that work of magnetic float level indicator is still pending and utilization of RSD as synchronous condenser is expected by end of December' 2021.

Brief Note On Operationalization/Bus Bar Scheme of 220KV GSS in Respect of JKPTCL , Jammu

Transmission Wing, JKPTCL, Jammu looks after the Transmission Network of entire Jammu Province and is entrusted with the Job of Construction, Operation & Maintenance of Grid Stations along with 220KV & 132KV Transmission Lines. Besides, it is responsible for the transmission of power from PGCIL owned Grid Stations and Local generation from power stations owned by JKPDC, at 220KV & 132KV level to the distribution utility of Power Development Department in the entire Jammu Province.

220KV Level supply to 220/132KV GSS's and 220/66KV GSS's of JKPDD is provided from PGCIL owned 400/220 KV Grid Station Kishenpur & Jatwal (Samba) being fed from the Northern Grid and generating Hydel Stations like Salal, Sewa-II and Sarna etc.

At present the capacities are as under :-

- **Transmission Capacity Available at 220/132KV Level:** **No. of GSS = 06 Nos. Installed Capacity = 2230 MVA**
- **Transmission Capacity Available at 220/66KV Level:** **No. of GSS = 02 Nos. Installed Capacity = 320 MVA**

DETAILS OF 220KV GRID SUB-STATIONS IN RESPECT OF JKPTCL, JAMMU:-

1. GLADNI

a. Total Capacity at 220/132 KV Level: 710 MVA
b. Bus Scheme Used Main and Transfer bus scheme

2. BARN

a. Total Capacity at 220/132 KV Level: 480 MVA
b. Bus Scheme Used Main and Transfer bus scheme

3. HIRANAGAR

a. Total Capacity At 220/132 KV Level: 320 MVA
b. Bus Scheme Used Main and Transfer bus scheme

4. UDHAMPUR

a. Total Capacity At 220/132 KV Level: 280 MVA
b. Bus Scheme Used Main and Transfer bus scheme

5. RAMBAN

a. Total Capacity At 220/132 KV Level: 120 MVA
b. Bus Scheme Used Main and Transfer bus scheme

6. BISHNAH

a. Total Capacity At 220/132 KV Level: 320 MVA
b. Bus Scheme Used Main and Transfer bus scheme

7. Ghatti (Kathua)

a. Total Capacity At 220/66 KV Level: 160 MVA
b. Bus Scheme Used Double main and Transfer scheme

8. IGC Samba

a. Total Capacity At 220/66 KV Level: 160 MVA
b. Bus Scheme Used Double main and Transfer scheme

All of the 220/132 kV voltage level Sub Stations of PDD-J&K, are being operated with only one Main and Transfer bus scheme instead of double main transfer (DMT) bus as per CEA planning criteria. Also due to constraints of load shifting and space, the Bus arrangement of these GSS's at present cannot be changed.

However, 02 No.s 220/66KV GSS recently Commissioned at Ghatti (Kathua) and IGC Samba and under Construction GSS's coming up at Nagrota (220/33KV Level) and Chowadhi (220/132KV Level) have double main and transfer scheme.

(Er. Bavinder Kundal)
Chief Engineer (Transmission),
JKPTCL, Jammu

Annexure-B.III

National Load Despatch Centre
Import Capability of Uttar Pradesh for October 2022

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st October 2022 to 31st October 2022	00-24	15100	600	14500	8420	6080		https://www.upsldc.org/documents/20182/0/ttc_atc_24-11-16/4c79978e-35f2-4aef-8c0f-7f30d878dbde
Limiting Constraints		N-1 contingency of 400/220kV Azamgarh, Obra, Mau, Sohawal (PG), Gorakhpur (UP), Sarnath, Lucknow (PG) ICTs						

80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

National Load Despatch Centre
Import Capability of Rajasthan for October 2022

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st October 2022 to 31st October 2022	00-24	6200	300	5900	3400	2500		https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads
Limiting Constraints		N-1 contingency of 400/220kV Chittorgarh, Jodhpur, Bikaner, Ajmer, Merta and Bhinmal ICTs						

80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

National Load Despatch Centre
Import Capability of Haryana for October 2022

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st October 2022 to 31st October 2022	00-24	9100	600	8500	3000	5500		https://hvpn.org.in/#/atcttc
Limiting Constraints		N-1 contingency of 400/220kV ICTs at Deepalpur, Panipat(BBMB) and Kurukshetra(PG)						

80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

National Load Despatch Centre
Import Capability of Delhi for October 2022

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st October 2022 to 31st October 2022	00-24	7100	300	6800	4150	2650		
Limiting Constraints	N-1 contingency of 400/220kV Mundka, HarshVihar and Mandola ICTs.							

80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

National Load Despatch Centre
Import Capability of HP for October 2022

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st October 2022 to 31st October 2022	00-24	1400	100	1300	1400	-100		https://hpsldc.com/mrm_category/ttc-atc-report/
Limiting Constraints		N-1 contingency of 400/220kV Nallagarh ICTs. High loading of 220kV Nallagarh-Upernangal D/C and 220kV Hamirpur-Hamirpur D/C						

80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

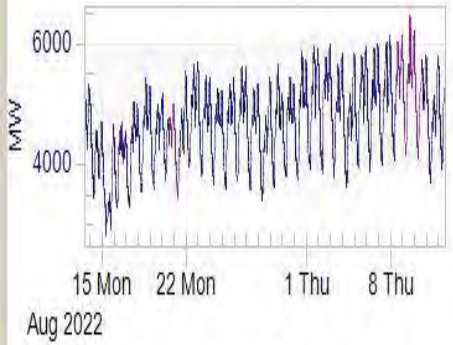
National Load Despatch Centre
Import Capability of Uttarakhand for October 2022

Issue Date: - Issue Time: 1600 Revision No. 0

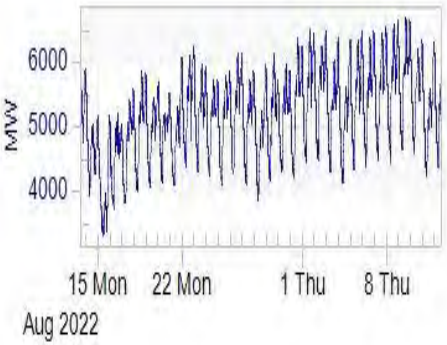
Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st October 2022 to 31st October 2022	00-24	1600	100	1500	1020	480		- http://uksldc.in/transfer-capability
Limiting Constraints		N-1 contingency of 400/220kV Kashipur ICTs. High loading of 220kV Roorkee-Roorkee and 220kV CBGanj-Pantnagar lines						

80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

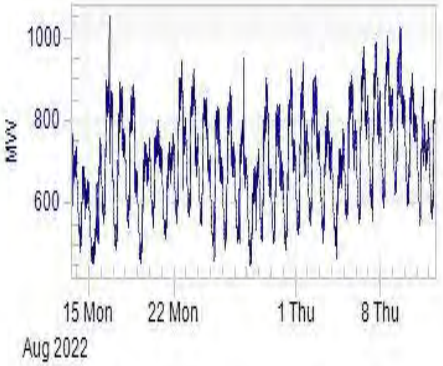
Delhi Import



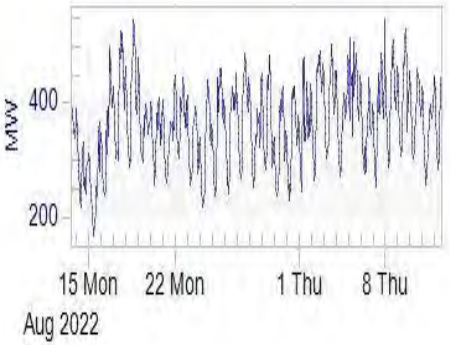
Delhi load



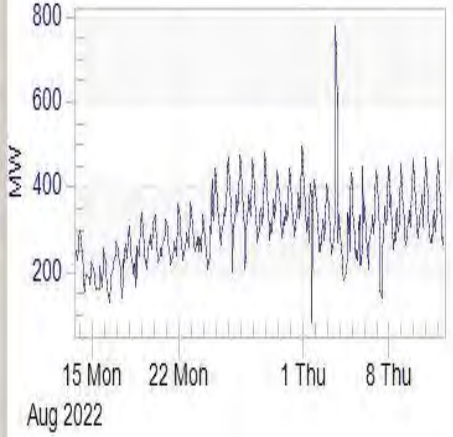
Maharanibagh ICT loading



Harshvihar ICT loading



Bamnoli ICT loading



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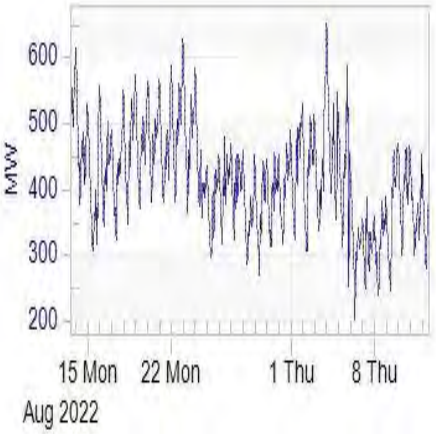

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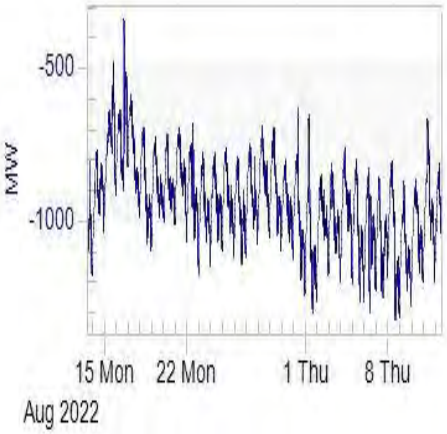

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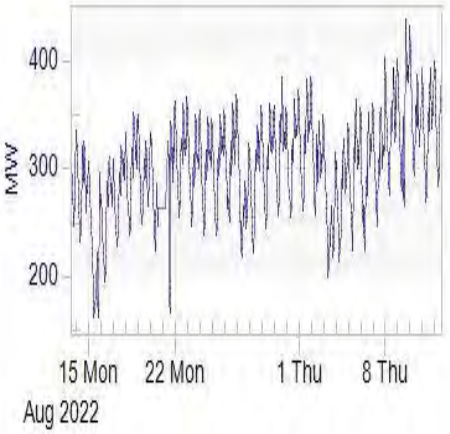

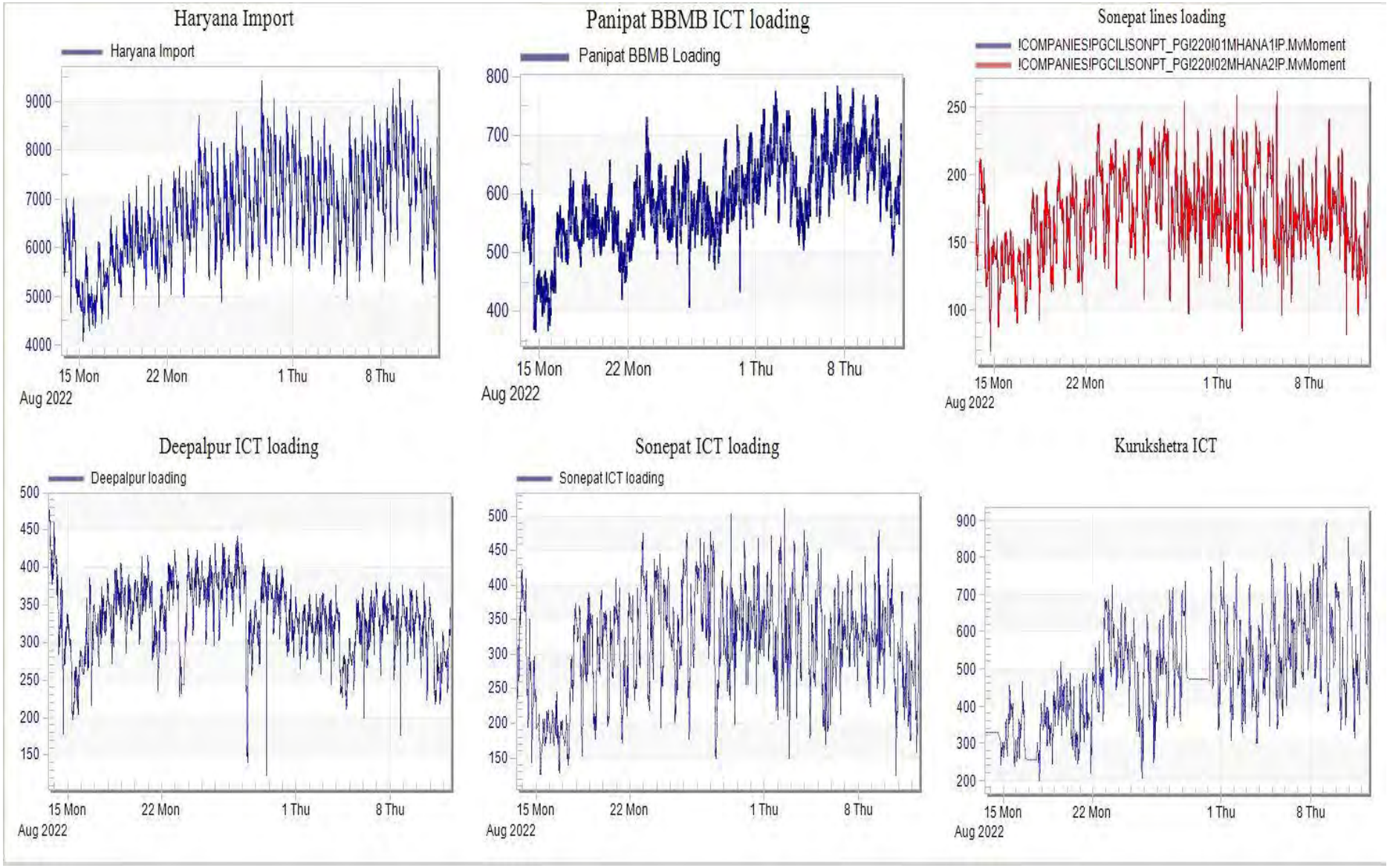
Haryana Import
Haryana Import
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8000
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4000
15 Mon
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Aug 2022
Panipat BBMB ICT loading
Panipat BBMB Loading
800
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600
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400
15 Mon
22 Mon
1 Thu
8 Thu
Aug 2022
Sonepat lines loading
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!COMPANIES!PGCIL!SONPT_PG!220!02MHANA2!P.MvMoment
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200
150
100
15 Mon
22 Mon
1 Thu
8 Thu
Aug 2022
Deepalpur ICT loading
Deepalpur loading
500
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300
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200
150
15 Mon
22 Mon
1 Thu
8 Thu
Aug 2022
Sonepat ICT loading
Sonepat ICT loading
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150
15 Mon
22 Mon
1 Thu
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Aug 2022
Kurukshetra ICT
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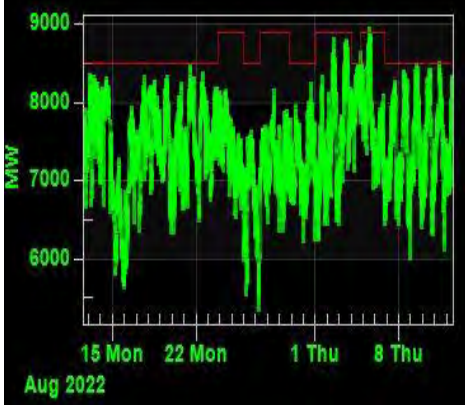
15 Mon
22 Mon
1 Thu
8 Thu
Aug 2022

Punjab Import



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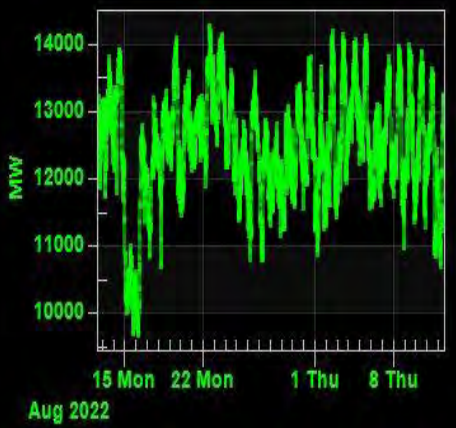
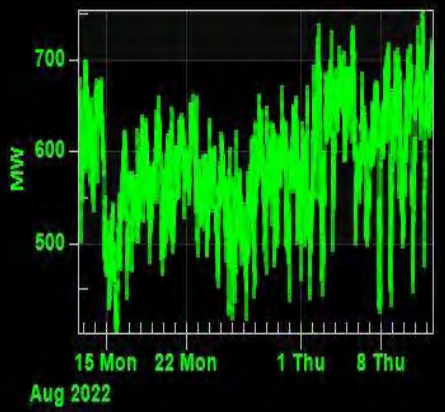


Malerkotla ICT load



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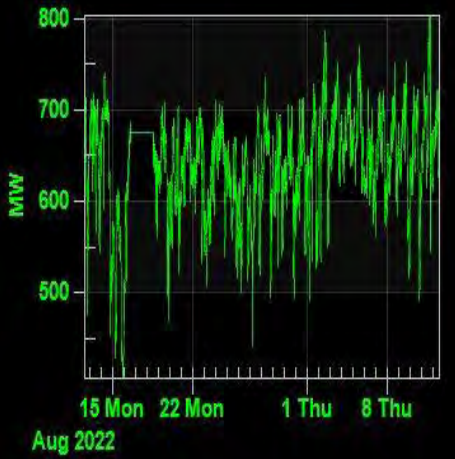
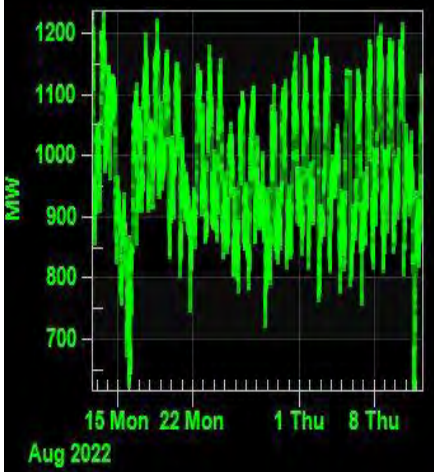


Ludhiana ICT load



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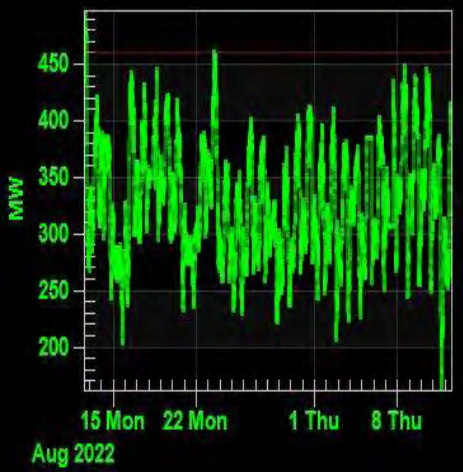
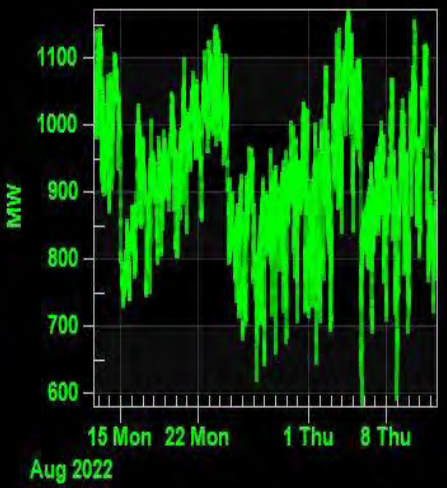


Moga ICT load



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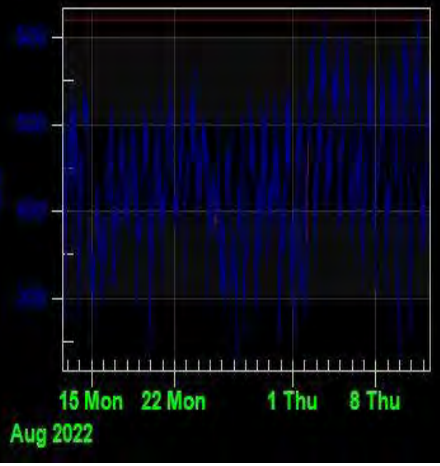
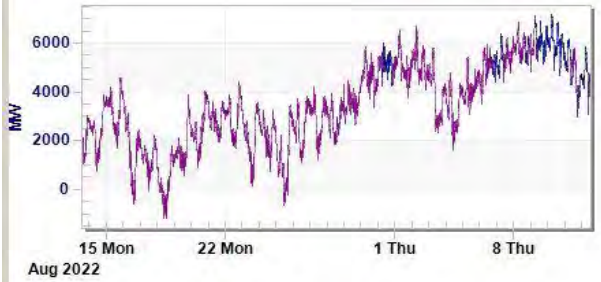
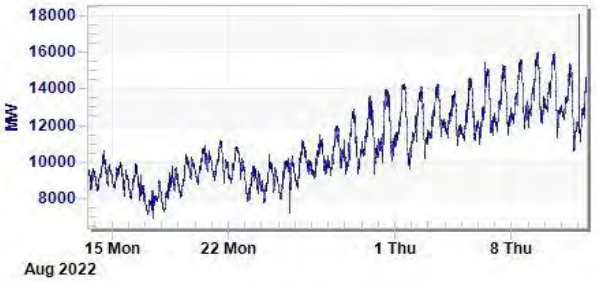


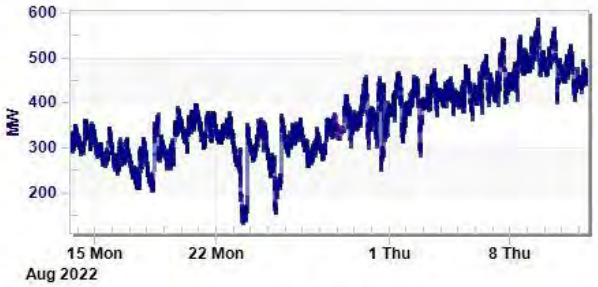
Rajasthan import



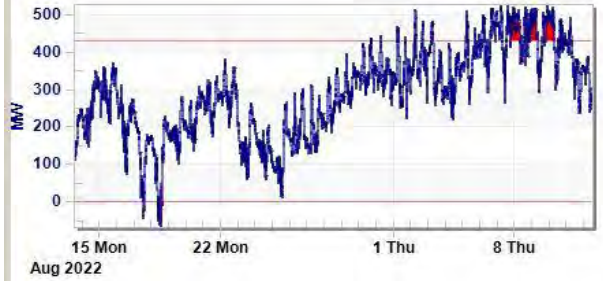
Rajasthan Load



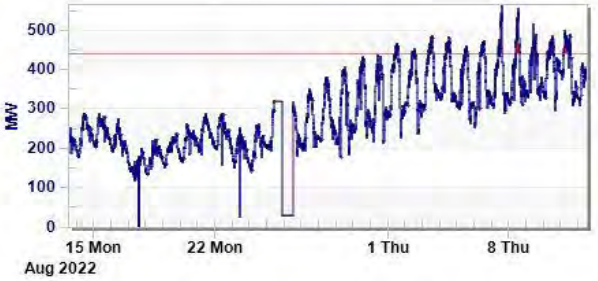
Ajmer ICT loading



Jodhpur ICT loading



Merta ICT loading



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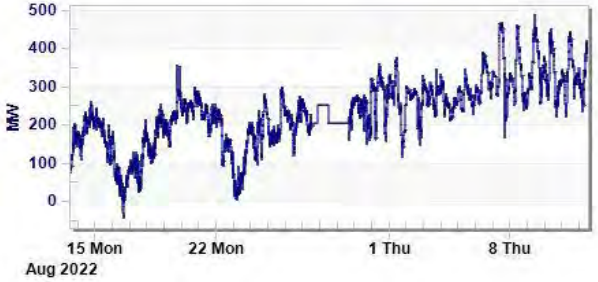
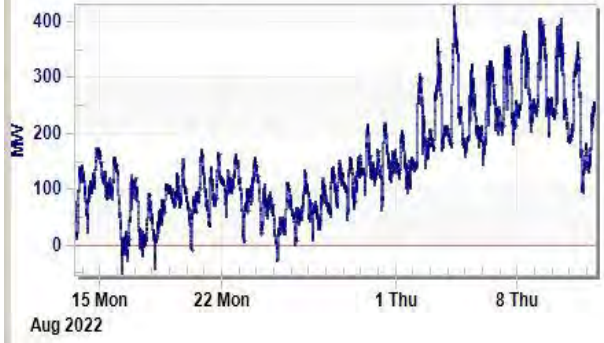


Bhinmal ICT loading



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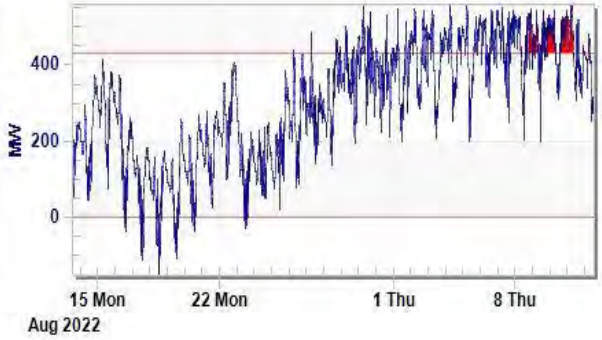
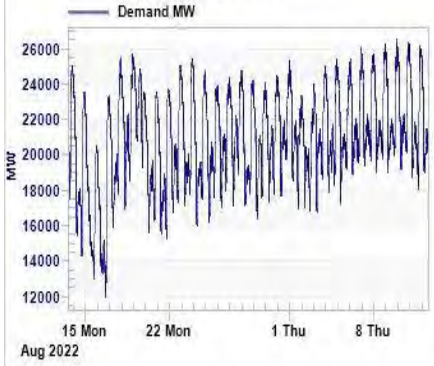


UP Demand



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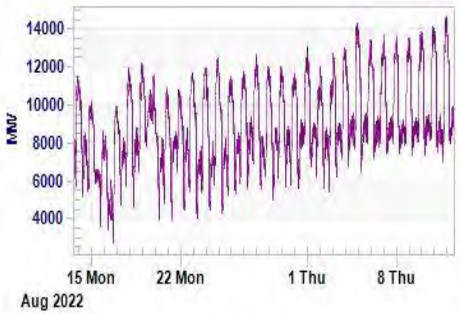
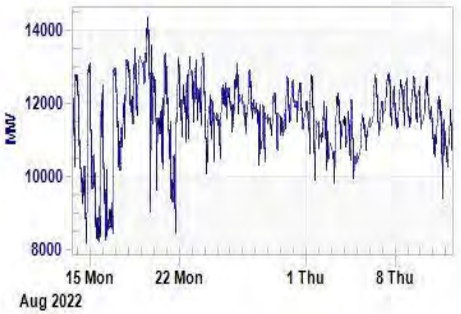
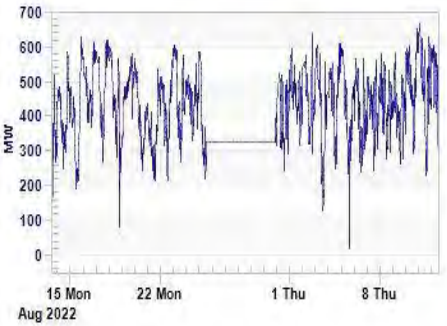


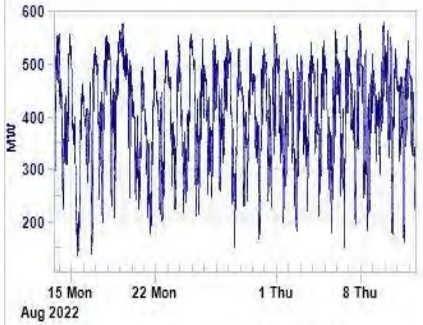
UP own generation



Obra ICT loading



Azamgarh ICT loading



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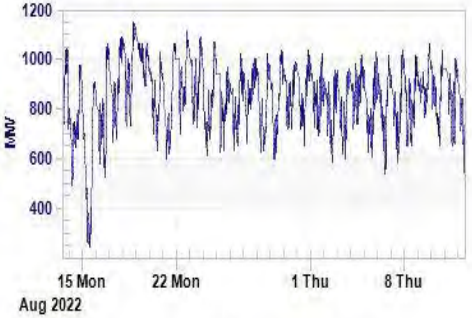

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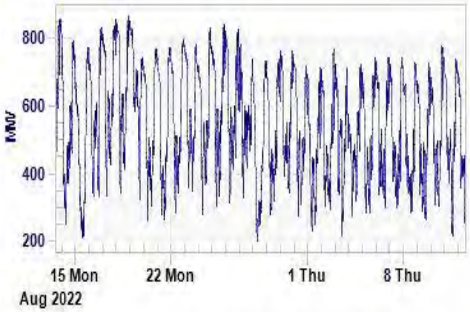

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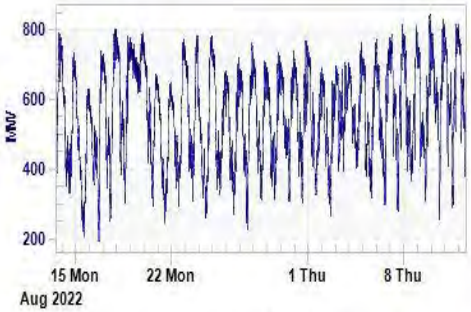
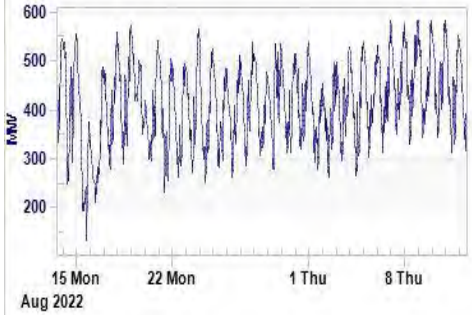


Lucknow(PG) ICT loading



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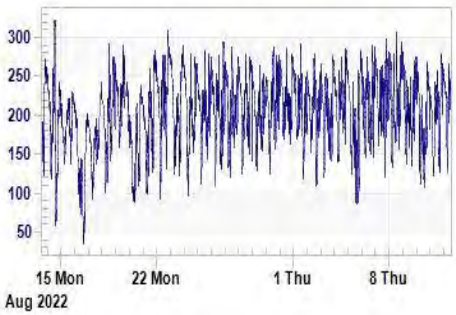
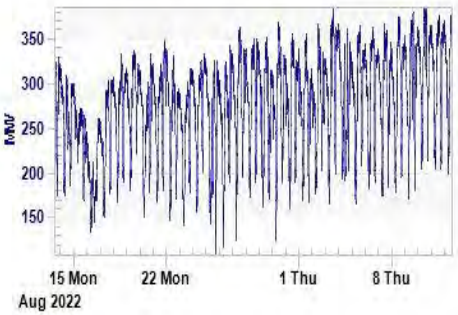
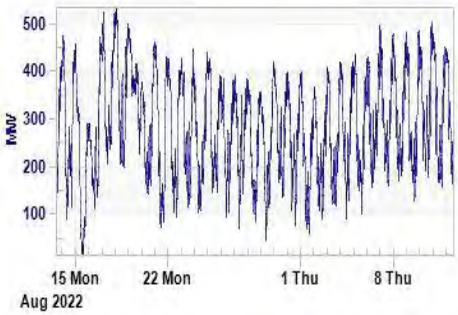
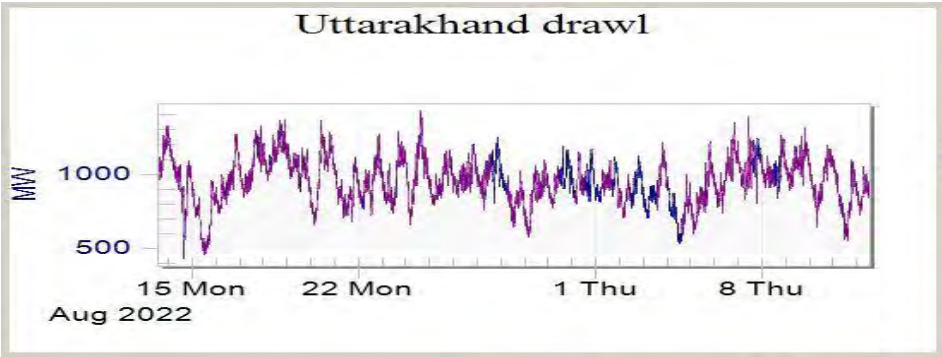


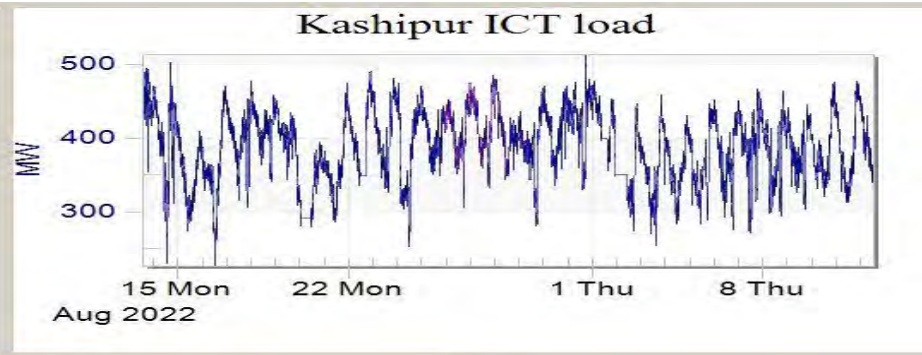
Agra(PG) ICT loading



Sohawal ICT loading




Uttarakhand drawl
MW
1000
500
15 Mon
22 Mon
1 Thu
8 Thu
Aug 2022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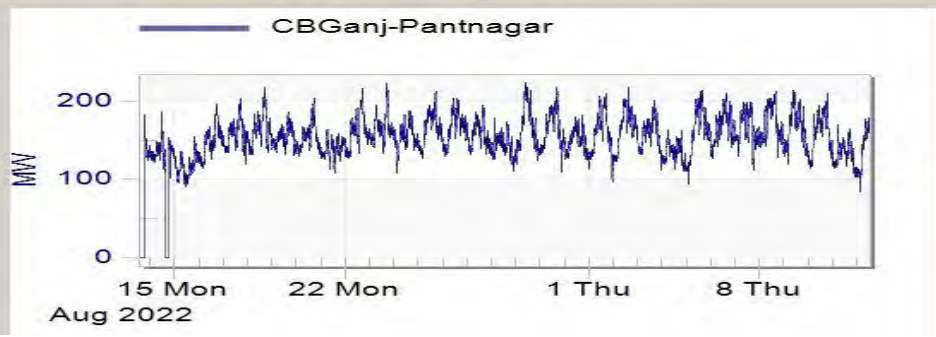
300
15 Mon
22 Mon
1 Thu
8 Thu
Aug 2022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MW
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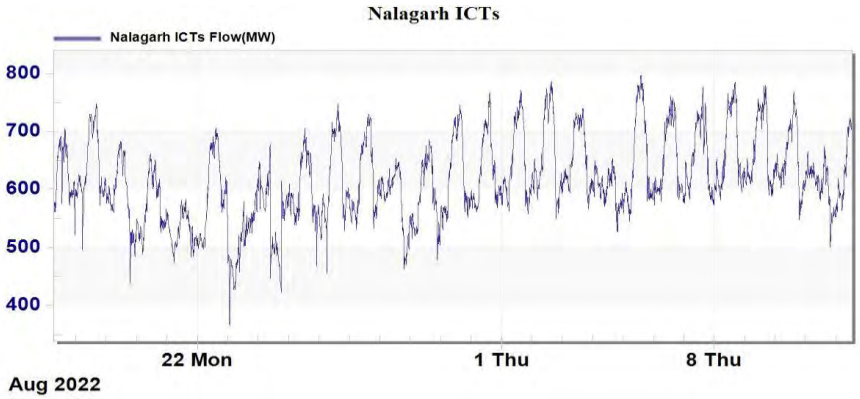
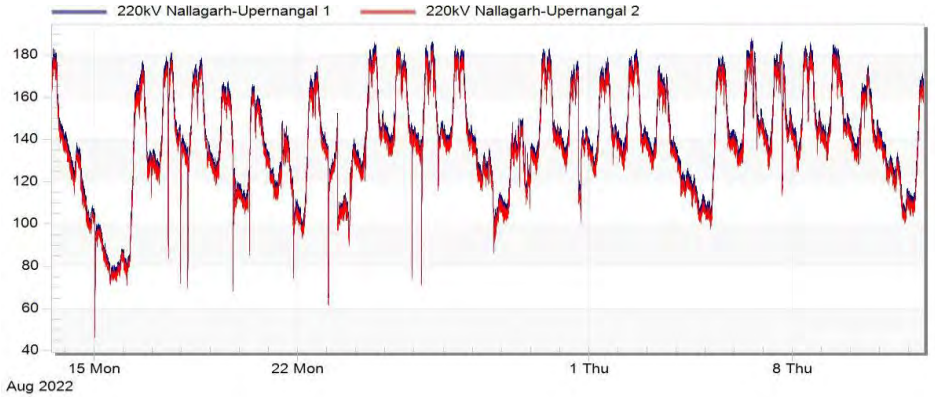
100
0
15 Mon
22 Mon
1 Thu
8 Thu
Aug 2022


Nalagarh ICTs
Nalagarh ICTs Flow(MW)
800
700
600
500
400
22 Mon
1 Thu
8 Thu
Aug 2022


220kV Nallagarh-Upernangal 1
220kV Nallagarh-Upernangal 2
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160
140
120
100
80
60
40
15 Mon
22 Mon
1 Thu
8 Thu
Aug 2022

Annexure-B.V

A. Details of Long Duration Transmission elements Outage as on 12.09.2022:-

S.No	Element Name	Type	Owner	Outage			Reason / Remarks	Status updated during last OCC
1	80 MVAR Bus Reactor No 1 at 400KV Nathpa Jhakri(SJ)	BR	SJVNL	17-10-2019	12:58	1054	Flashover/Fault in 80MVAR Bus Reactor cleared by Bus Bar Protection.	30.09.2022
2	50 MVAR LR on Akal-Jodhpur (RS) Ckt-1 @Akal(RS)	LR	RRVPNL	17-08-2021	23:47		Akal: DT Receive Jodhpur: DT Send, 400 kV Reactor Manually Trip at 400 kV GSS, Jodhpur due to low voltage(before tripping reactor was charged as a bus reactor)	30.11.2022
3	400/220 kV 315 MVA ICT 1 at Muradnagar_1(UP)	ICT	UPPTCL	13-03-2020	02:46	907	Buccholz relay alarm and Local Breaker Backup protection operated. Tripped along with Hapur-Muradnagar line. Flags are not reset because of cable flashover.	TWC approved on 09.12.2021 for replacement with 500MVA new ICT . 30 Dec 2022
4	400/220 kV 500 MVA ICT 2 at Noida Sec 148(UP)	ICT	UPPTCL	19-08-2020	08:12	748	ICT tripped on REF protection. Transformer caught fire and got damaged.	30.09.2022
5	50 MVAR Non-Switchable LR on Agra-Unnao (UP) Ckt-1 @Agra(UP)	LR	UPPTCL	28-10-2021	22:27	312	R and Y phase bushing damaged at Agra(UP). Concerned written to OEM for inspection of reactor. Order placed for testing by manufacturer	Testing done by OEM, Report awaited.
6	400KV Bus 1 at Vishnuprayag(JP)	BUS	JPVL	02-12-2021	14:42	277	Bus bar protection operated at Vishnuprayag. Sparking in Bus Coupler CB.	30 Sep 2022
7	50 MVAR Bus Reactor No 1 at 400KV Moradabad(UP)	BR	UPPTCL	03-12-2021	22:22	266	R-phase bushing damaged.	30 Dec 2022
8	400/220 kV 240 MVA ICT 3 at Moradabad(UP)	ICT	UPPTCL	13-12-2021	22:38	256	Due to high DGA values, Hydrogen gas is above permissible limit.	30 Dec 2022
9	50 MVAR BUS REACTOR NO 1 AT 400KV PANKI(UP)	BR	UPPTCL	29-01-2022	08:56	220	Replacement of 50 MVAR Bus reactor by new 125 MVAR Bus Reactor.	30.08.2022
10	765 KV ANPARA_D-UNNAO (UP) CKT-1	Line	UPPCL	08-02-2022	10:06	210	Shifting of Line Reactor from Anpara-D to Obra-C S/S (OCC 190)	LILO of the line at Obra C under processing. Annexure-B documents awaited.
11	220 KV Kishenpur(PG)-Mir Bazar(PDD) (PDD) Ckt-1	Line	PDD JK	19-02-2022	21:45	198	Tower no. 170 collapsed.	
12	400 KV Parbati_3(NH)-Sainj(HP) (PKTCL) Ckt-1	Line	PKTCL	11-03-2022	03:21	179	Phase to earth fault R-N , Zone-1 from Parbati_3(NH). R-phase XLPE cable has been punctured between GIS and Pothead yard of Parbati-III PS.	
13	400/21 kV 776 MVA GT 7 at Suratgarh SCTPS(RVUN)	ICT	RRVPNL	15-03-2022	01:32	175	Due to failure of R-phase bushing of GT-7A.	15.09.2022
14	125 MVAR Bus Reactor No 1 at 400KV Barmer(RS)	BR	RRVPNL	16-07-2022	18:49	42	Reactor Back-up Impedance protection operated.	
15	401A MAIN BAY - 400/66 KV 250 MVA ICT 1 AT HMEL (PS) (PSTCL) AND 400 KV HMEL (PS) - BUS 1 AT 400 KV HMEL (PS) (PSTCL)	BAY	PSTCL	12-05-2022	14:05	116	Transformer Differential protection operated.	
16	400/66 kV 250 MVA ICT 1 at HMEL (PS)	ICT	PSTCL	12-05-2022	14:05	116	Differential relay operated.	
17	201 MAIN BAY - 220KV BUS 1 AT PATRAN(PATR) (STERLITE) AND FUTURE AT 220 KV PATRAN(PATR) (STERLITE)	BAY	Sterlite	10-06-2022	20:01	87	201 main Bay Y-ph hydraulic pump Is running continuously and the Spring is not getting charged, which may lead to CB Lockout.	
18	203 MAIN BAY - 220 KV BIKANER(PG) - BUS 2 (POWERGRID) AND FUTURE AT 220 KV BIKANER(PG) (POWERGRID)	BAY	POWERGRID	09-07-2022	15:44	32	due to heavy sparking observed in the contact of isolator (203-89C).	
19	FSC of 400 KV Koteshwar-Meerut (PG) Ckt-1 at Meerut(PG)	FSC	POWERGRID	20.02.2020	10:02		FSC out for upgradation work at 765kV. Upgraded to 765kV. Expected revival status awaited from PG-NR1.Waiting for CEA clearance.	FTC under processing
20	FSC of 400 KV Koteshwar-Meerut (PG) Ckt-2 at Meerut(PG)	FSC	POWERGRID	15.05.2020	17:45		FSC out for upgradation work at 765kV. Upgraded to 765kV. Expected revival status awaited from PG-NR1.Waiting for CEA clearance.	
21	FSC of 400 KV Fatehpur-Mainpuri (PG) Ckt-1 at Mainpuri(PG)	FSC	POWERGRID	24.10.2021	21:07	290	BHEL breaker hydraulic pressure could not be developed in B phase and (loss of N2 pressure) doesn't allow the FSC-1 taken into service as reported by CPCC3.	
22	FSC of 400 KV Fatehpur-Mainpuri (PG) Ckt-2 at Mainpuri(PG)	FSC	POWERGRID	29.01.2022	08:25	194	VME protection system was blocking the FSC back in service as reported by CPCC3.	
23	50 MVAR Non-Switchable LR on Akal-Jodhpur (RS) Ckt-1 @Jodhpur(RS)	LR	RRVPNL	07-07-2022	21:10	60	To take-out Line Reactor out of service due to high DGA violation; for internal inspection by OEM.	
24	407 MAIN BAY - 80 MVAR BUS REACTOR NO 1 AT 400KV AGRA SOUTH(UP) AND SELECT	BAY	UPPTCL	21-07-2022	00:00	47	Due To Problem In Reactor Side Isolator While Shut Down Return Of 80 MVAR Bus Reactor. Opened At 15:58 Of 07/04/22	
25	400/220 kV 500 MVA ICT 1 at Bhiwani(BB)	ICT	BBMB	31-07-2022	04:42	37	Tripped due to tripping of 220 KV Bhiwani-Hissar ckt-2.ICT under inspection.	
26	220/33 kV 125 MVA ICT 4 at Saurya Urja Solar(SU)	ICT	Saurya Urja	31-07-2022	16:28	36	Differential, PRD, HV REF and Buchholz tripping	
27	125 MVAR Bus Reactor No 1 at 400KV Chamera_1(NH)	BR	NHPC	14-08-2022	11:31	23	High Acetylene content found during DGA of Y-Phase Bus Reactor.	

B. Details of Long Duration Generating Units Outage :-

S.No	Element Name	Type	Owner	Outage			Reason / Remarks	Status updated during last OCC
1	250 MW Chhabra TPS - UNIT 4		RRVPNL	09-09-2021	00:47	362	Due to Electrostatic precipitators (ESP) structure damage	
2	100 MW Koteshwar HPS - UNIT 1		THDC	04-11-2021	22:58	305	Due to fault in GT	
3	108 MW Bhakra HPS - UNIT 1		BBMB	15-12-2021	12:05	264	Renovation Modernization and upgradation of capacity to 126MW	02-10-2022
4	34 MW Delhi Gas Turbines - UNIT 9		DTL	12-02-2022	20:00	205	STG Governor oil leakage	
5	30 MW Delhi Gas Turbines - UNIT 5		DTL	12-02-2022	21:04	205	Due to tripping of associated STG at 20:00 hrs	
6	660 MW Suratgarh SCTPS - UNIT 7		RRVPNL	15-03-2022	01:32	175	FAILURE OF R PHASE BUSHING OF GT-7A.	15.09.2022
7	210 MW Guru Hargobind Singh TPS (Lehra Mohabbat) - UNIT 2		PSPCL	13-05-2022	21:36	115	ESP breakdown. Rectification works under progress as confirmed by SLDC-PS.	15.09.2022
8	253 MW Bawana GPS - UNIT 5		DTL/Pragati CCGT	03-06-2022	22:04	94	C&I problem	
9	250 MW Suratgarh TPS - UNIT 1		RRVPNL	30-06-2022	18:24	67	Stator earth fault	
10	200 MW Singrauli STPS - UNIT 1		NTPC	23-07-2022	02:39	45	Over hauling	
11	200 MW Obra TPS - UNIT 13		UPPTCL	24-07-2022	22:49	43	Electrical fault in transformer.	
12	130.19 MW Dadri GPS - UNIT 4		NTPC	29-07-2022	02:29	39	Initially out on reserve shutdown. Out on forced outage due to fire in 6.6kV switchgear since 19:40hrs of 29.07.22	

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॰ : उ0क्षे0भा0प्रे0कें0/प्र0सं0/151/ 1102

दिनांक : 22 अगस्त, 2022

सेवा मे,

वितरण सूची के अनुसार

विषय : Regarding generation at 110% capacity by Hydro plants during monsoon season.

महोदय,

At present monsoon season is in its peak in the Northern region. The NR demand is also hovering around 65 – 70 GW since last couple of weeks and it is expected to increase further and may remain on higher side in the coming days. Therefore, there is a need to maximize generation from different resources to meet the high demand.

The generation pattern of NHPC Hydro plants for last two months is attached herewith at Annexure-I. It has been observed that most of the NHPC Hydro plants are not generating at 110% capacity in compliance to IEGC clause 6.3.3(iv), even during peak hours during this monsoon season.

Hence, it is requested that necessary action may please be taken for ensuring maximum generation (up to 110% capacity) during peak hours to meet the persistently high demand in NR.

सादर धन्यवाद

सोमारा

सोमारा लाकरा
व0 महाप्रबंधक (प्रणाली संचालन)
उत्तरी क्षेत्र भार प्रेषण केंद्र, नई दिल्ली

विनम्र सूचनार्थ :

1. सदस्य सचिव, उत्तरी क्षेत्र विद्युत् समिति
2. कार्यपालक निदेशक, राष्ट्रीय भार प्रेषण केंद्र
3. मुख्य महाप्रबंधक (प्रभारी), उत्तरी क्षेत्र भार प्रेषण केंद्र

वितरण सूची :

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3. General Manager, URI PROJ STAGE-II NHPC OFFICE COMPLEX RAJARWANI POST OFF. LAGAMA, TEHSIL URI, DISTT. BARAMULLA J&K - 193 125 E-mail: uri-ii-pho@nhpc.nic.in,
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6. General Manager, Chamera Hydro Electric Project-II, NHPC Ltd., Post Bag No. 2, Karian, Distt. Chamba, Himachal Pradesh- 176 310, E-mail: cps2operation@gmail.com,
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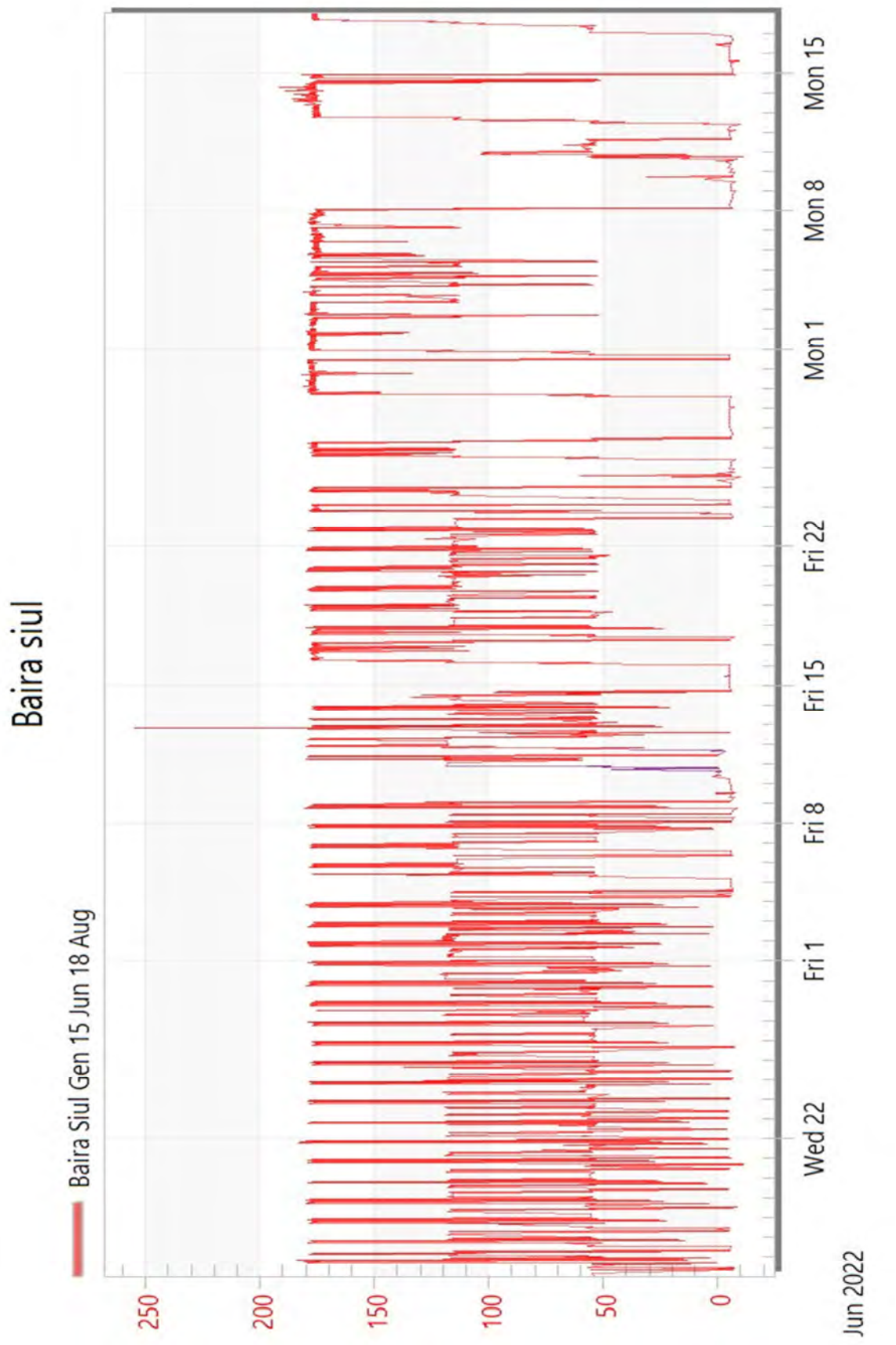
11. General Manager, Sewa –II Hydro Electric Project, NHPC Ltd., Post Bag No. 2, P.O. Khairi, Distt. Chamba, Himachal Pradesh- 176325, E-mail: sewa2ph.nhpc@gmail.com,
12. General Manager, Dulhasti Hydro Electric Project, NHPC Ltd., Chenab Nagar, Sector-II, Dist-Kistwar, J & K- 182 206, E-mail: dulhasti-pho@nhpc.nic.in

ANNEXURE-I


Baira siul
Baira Siul Gen 15 Jun 18 Aug
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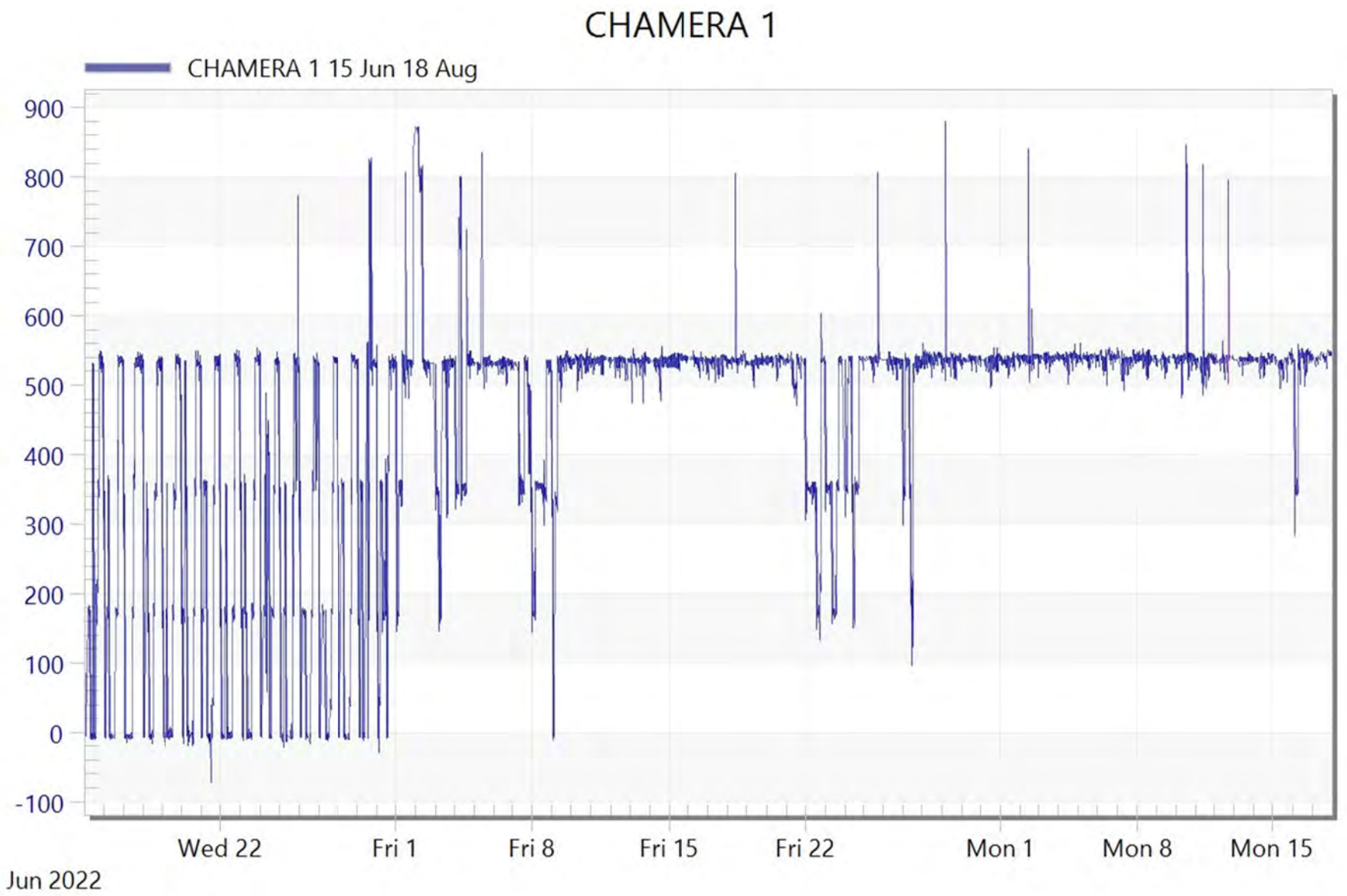
200
150
100
50
0
Wed 22
Fri 1
Fri 8
Fri 15
Fri 22
Mon 1
Mon 8
Mon 15
Jun 2022


CHAMERA 1
CHAMERA 1 15 Jun 18 Aug
900
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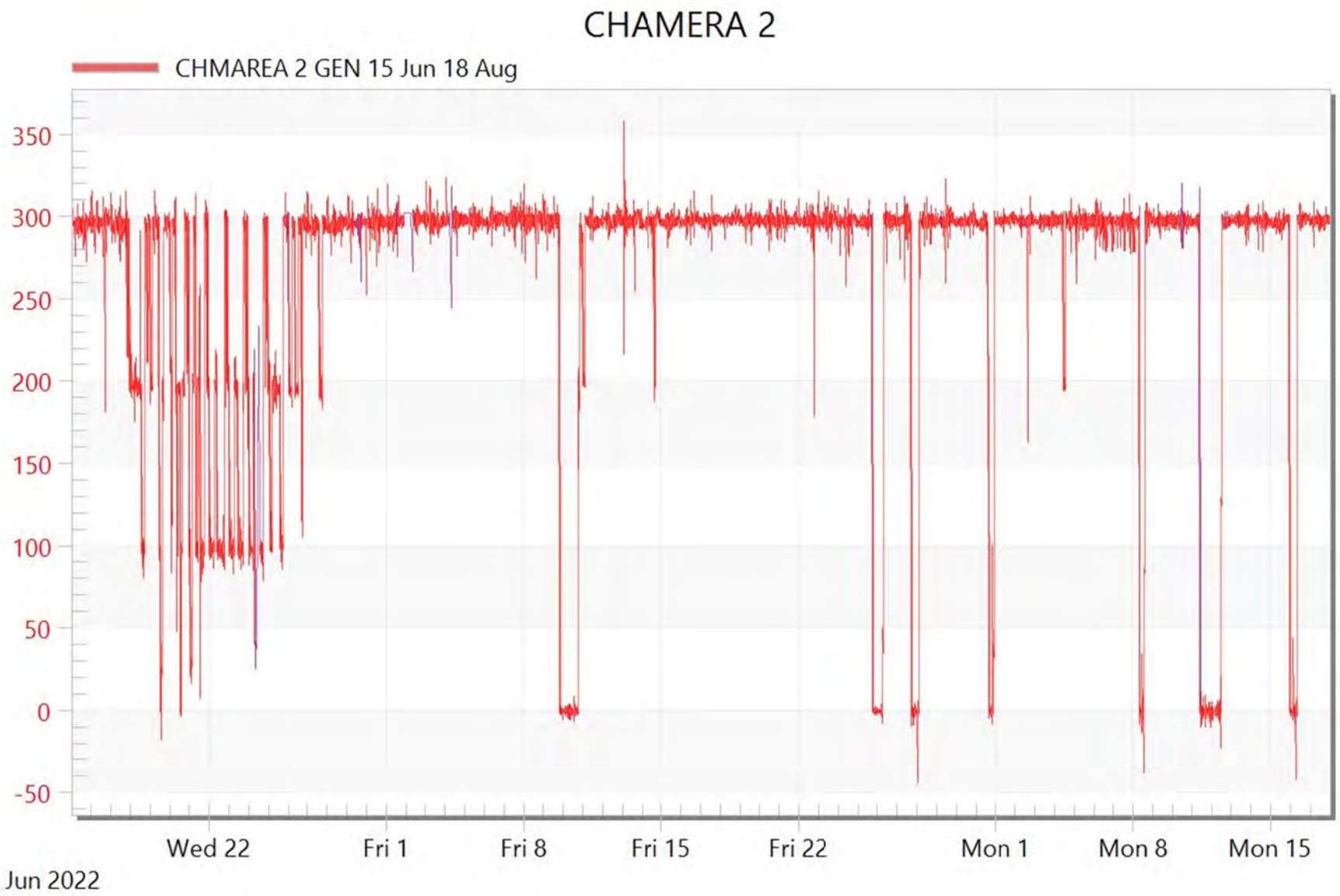
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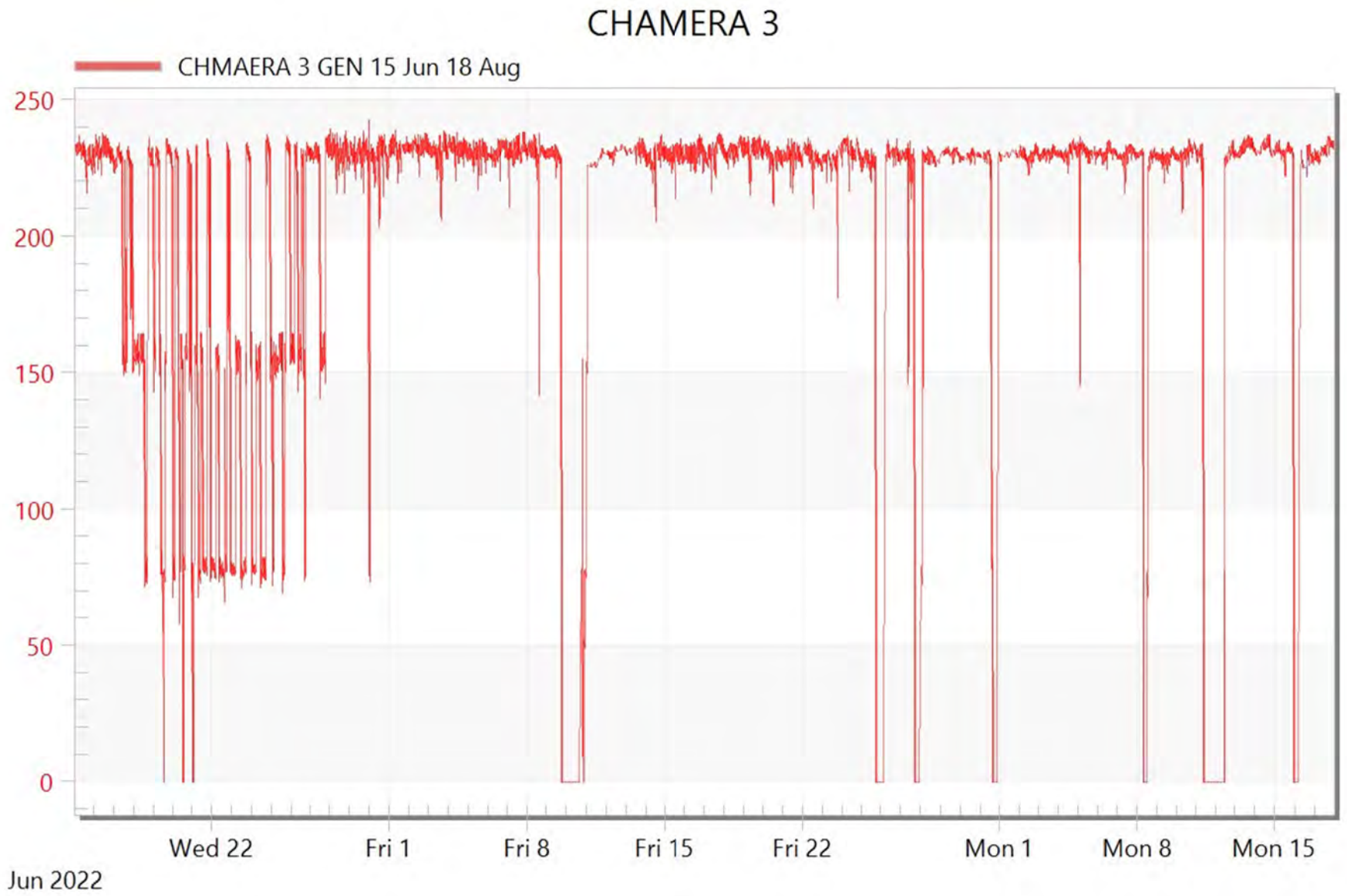
Jun 2022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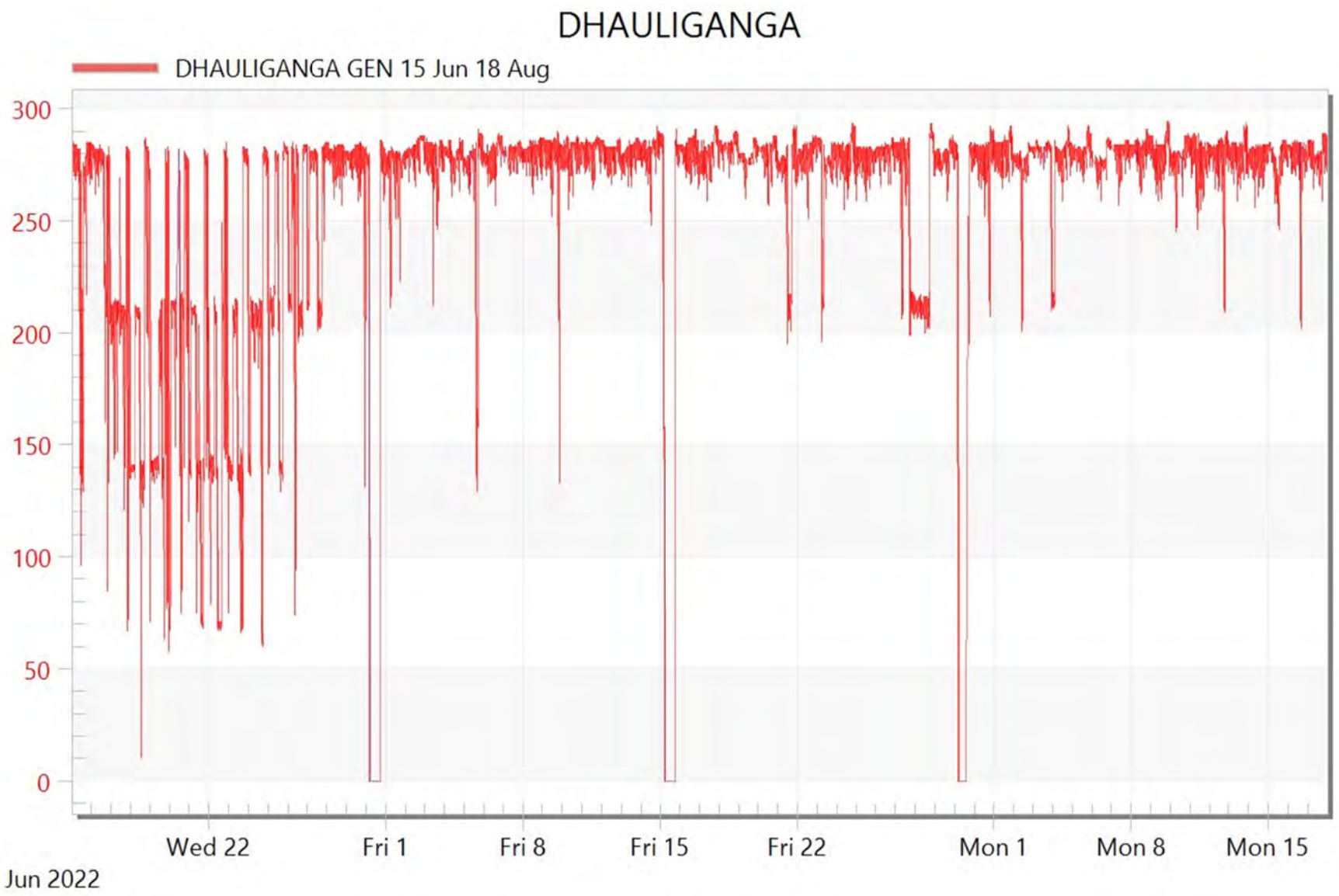
Jun 2022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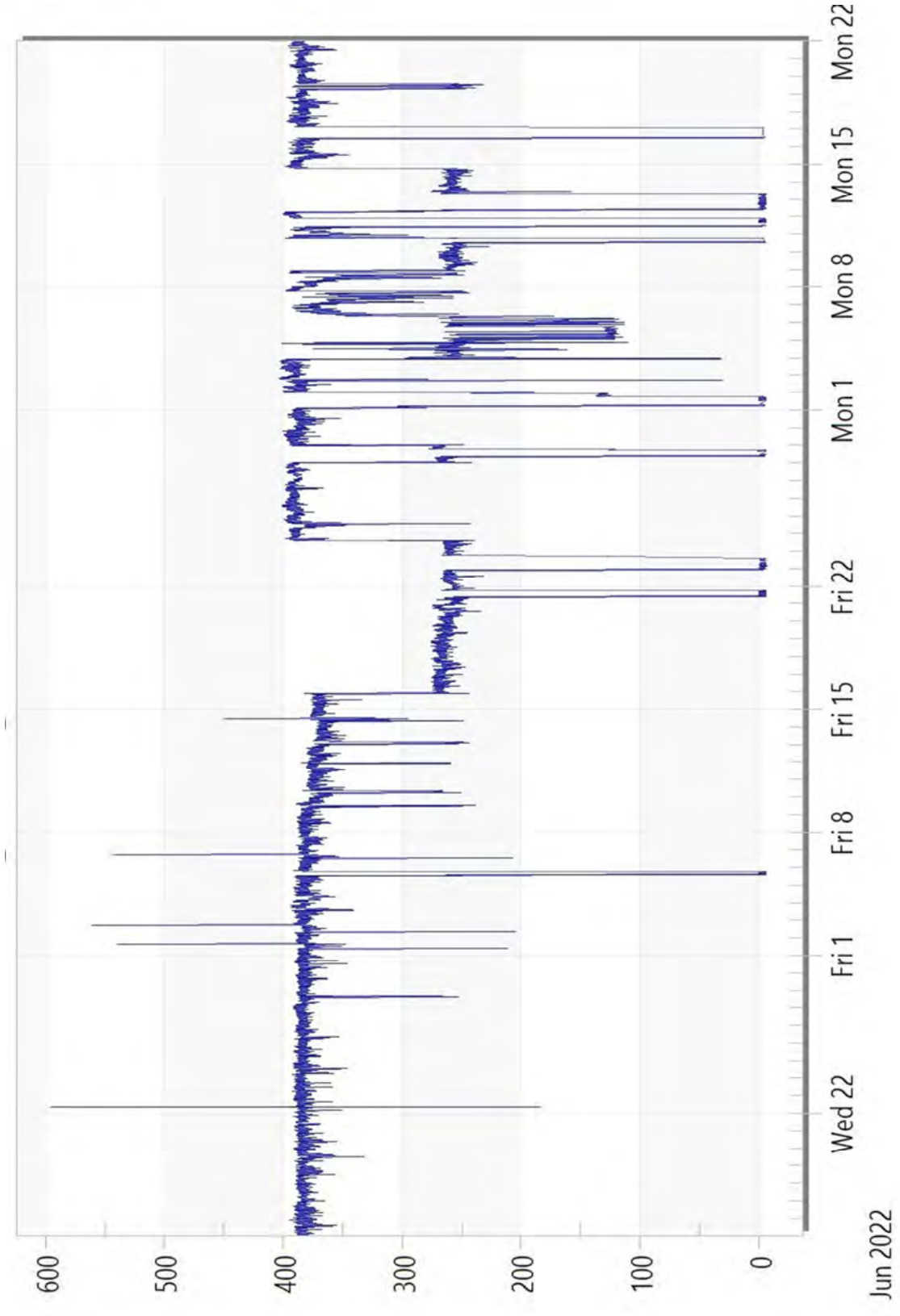
Mon 15
Jun 2022

DULHASTI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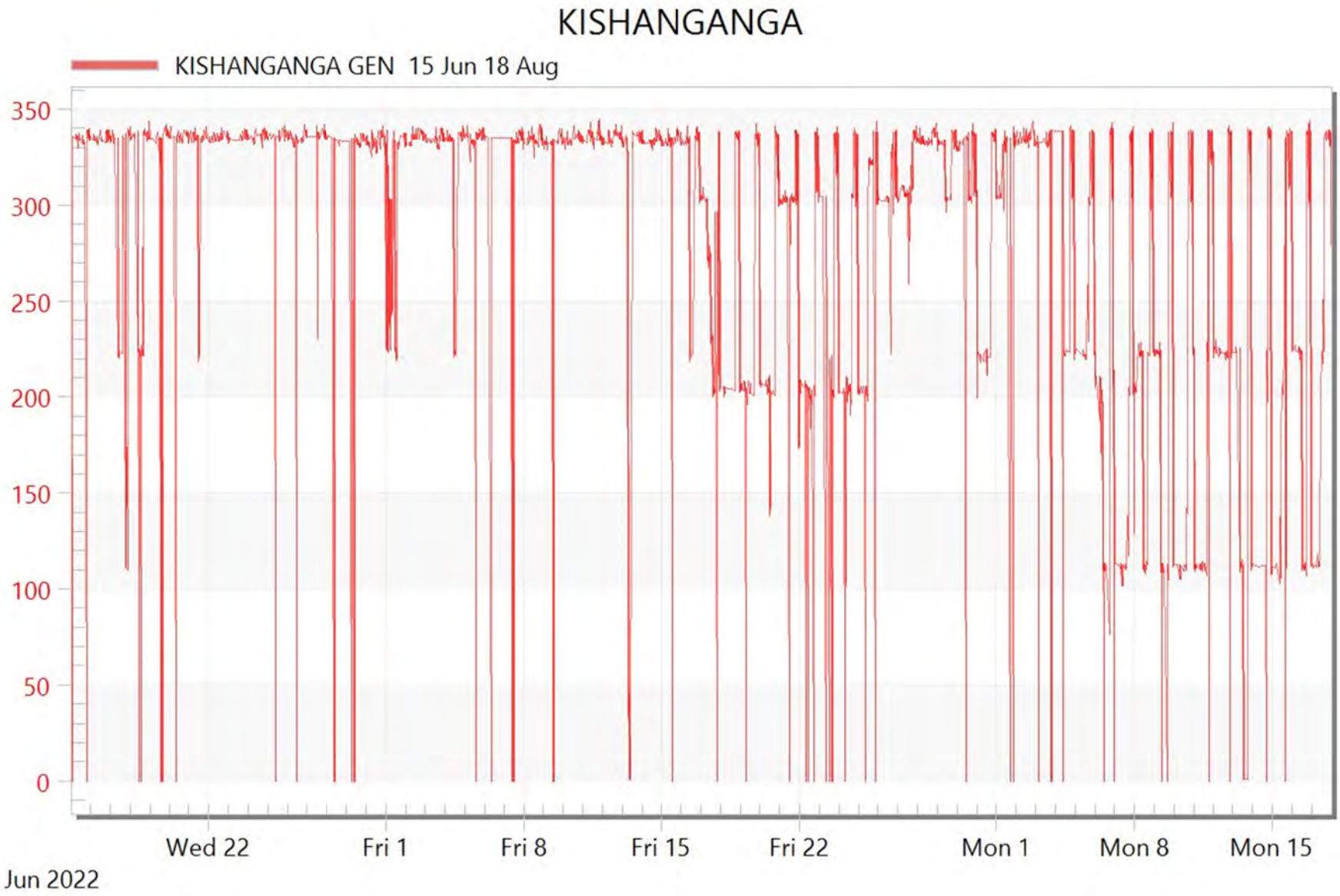
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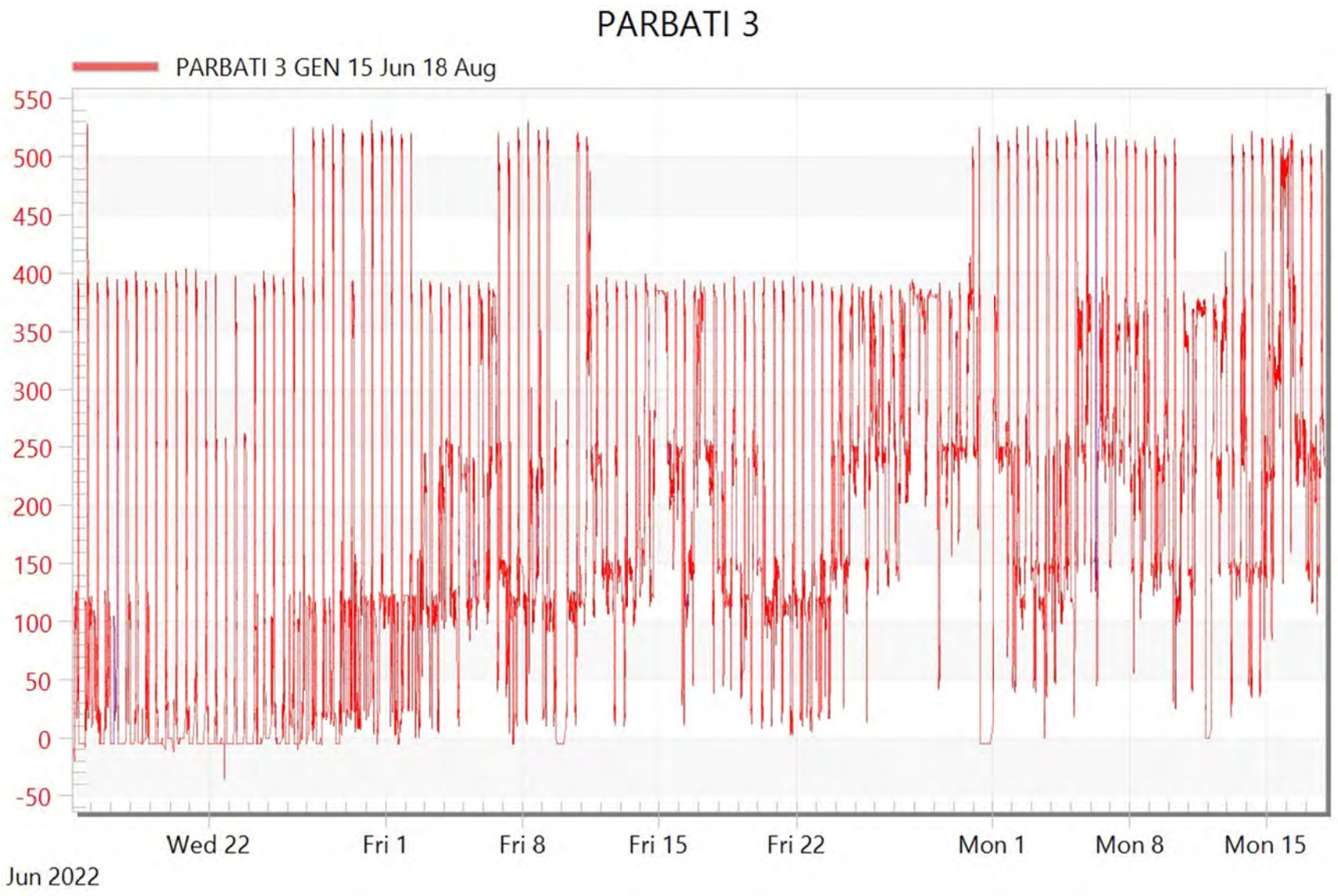
Jun 2022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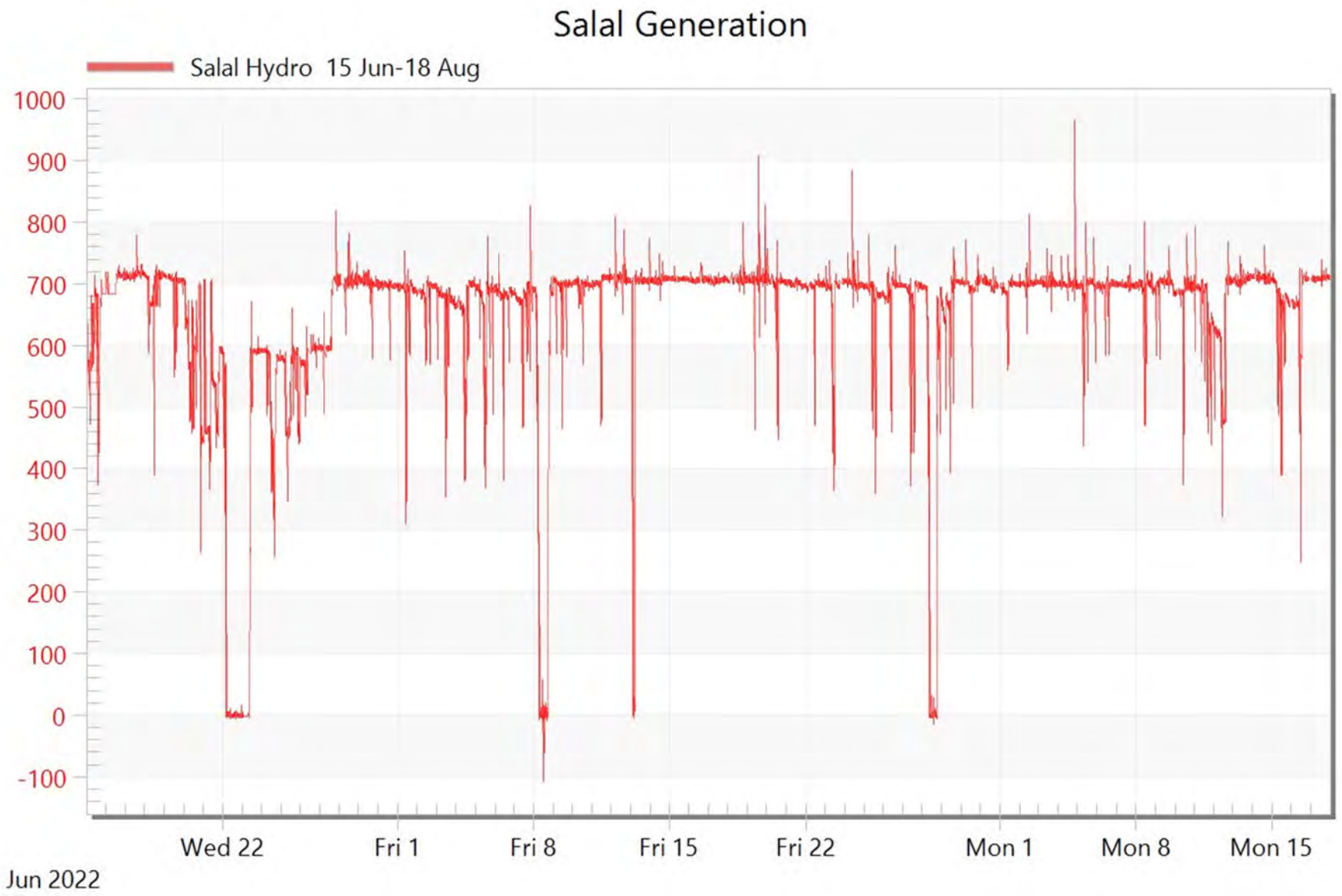
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Salal Hydro 15 Jun-18 Aug
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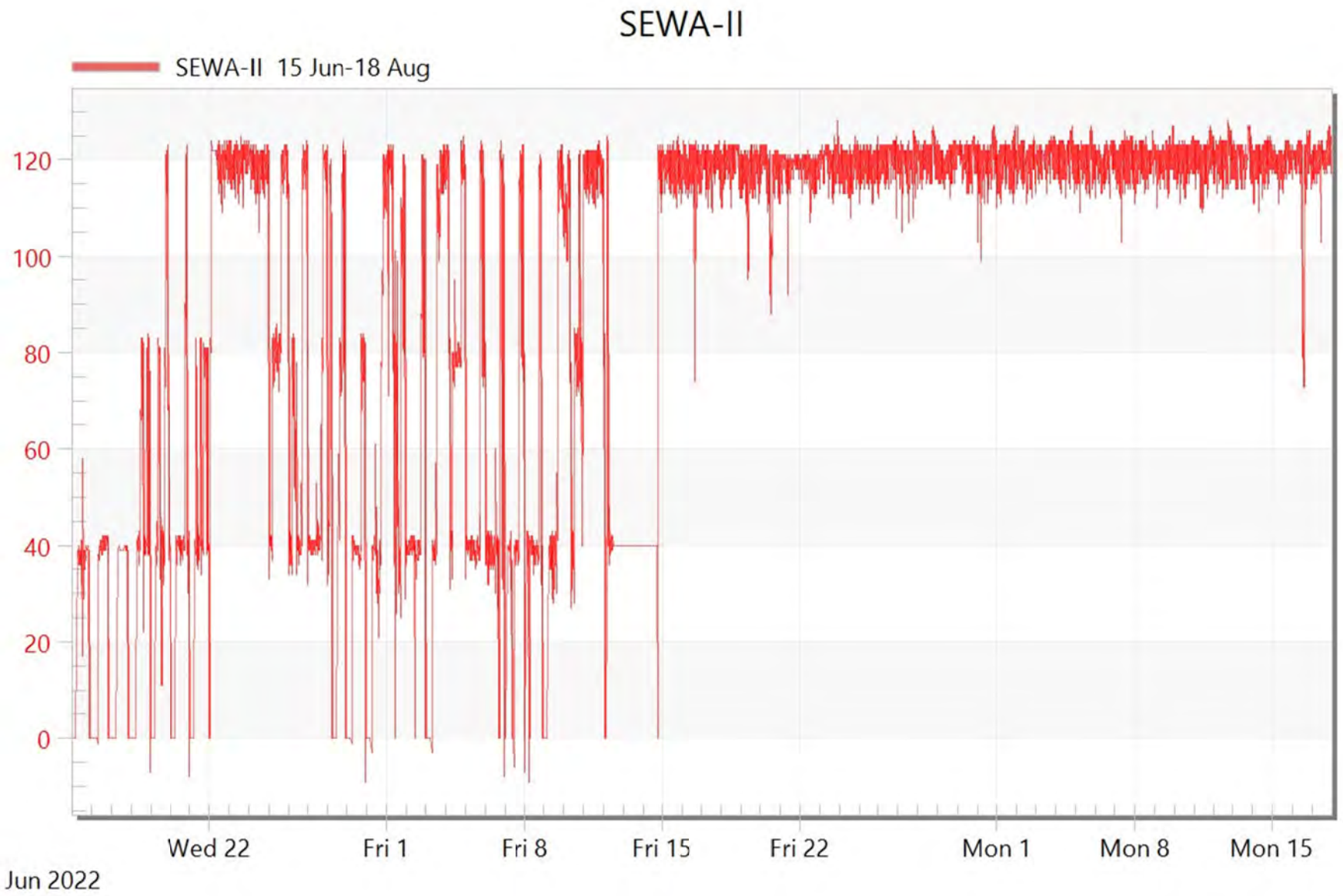
Jun 2022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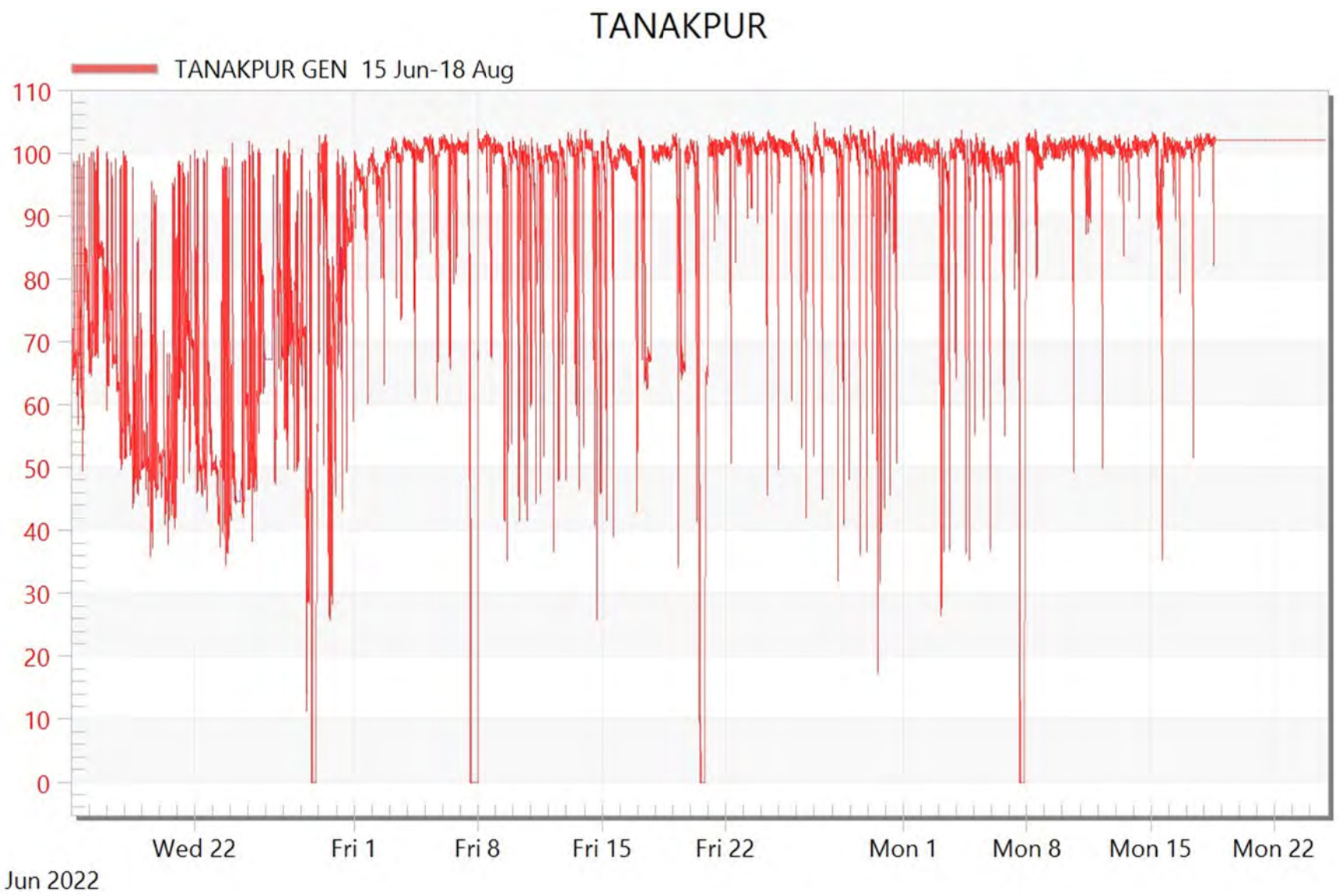
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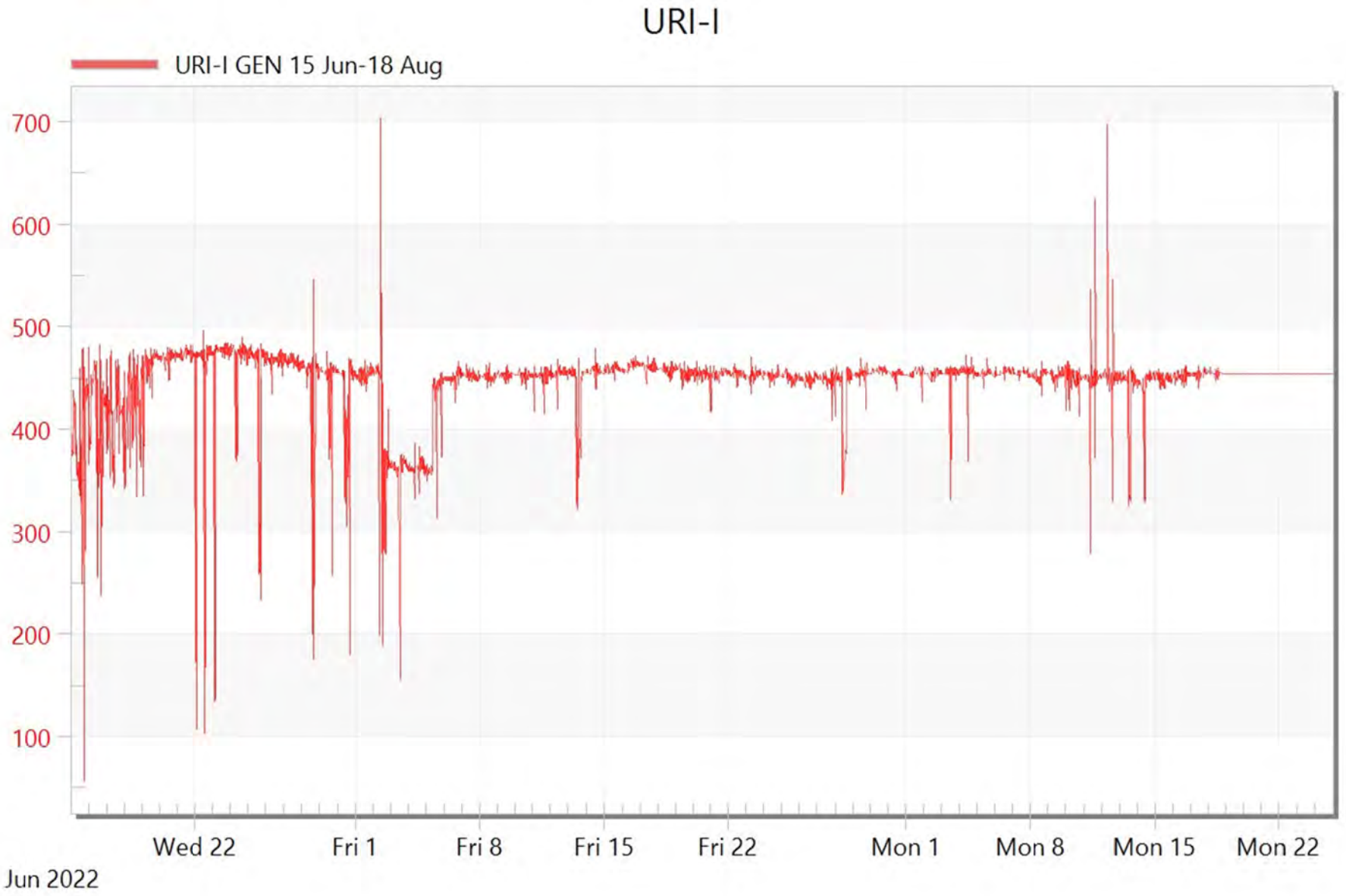
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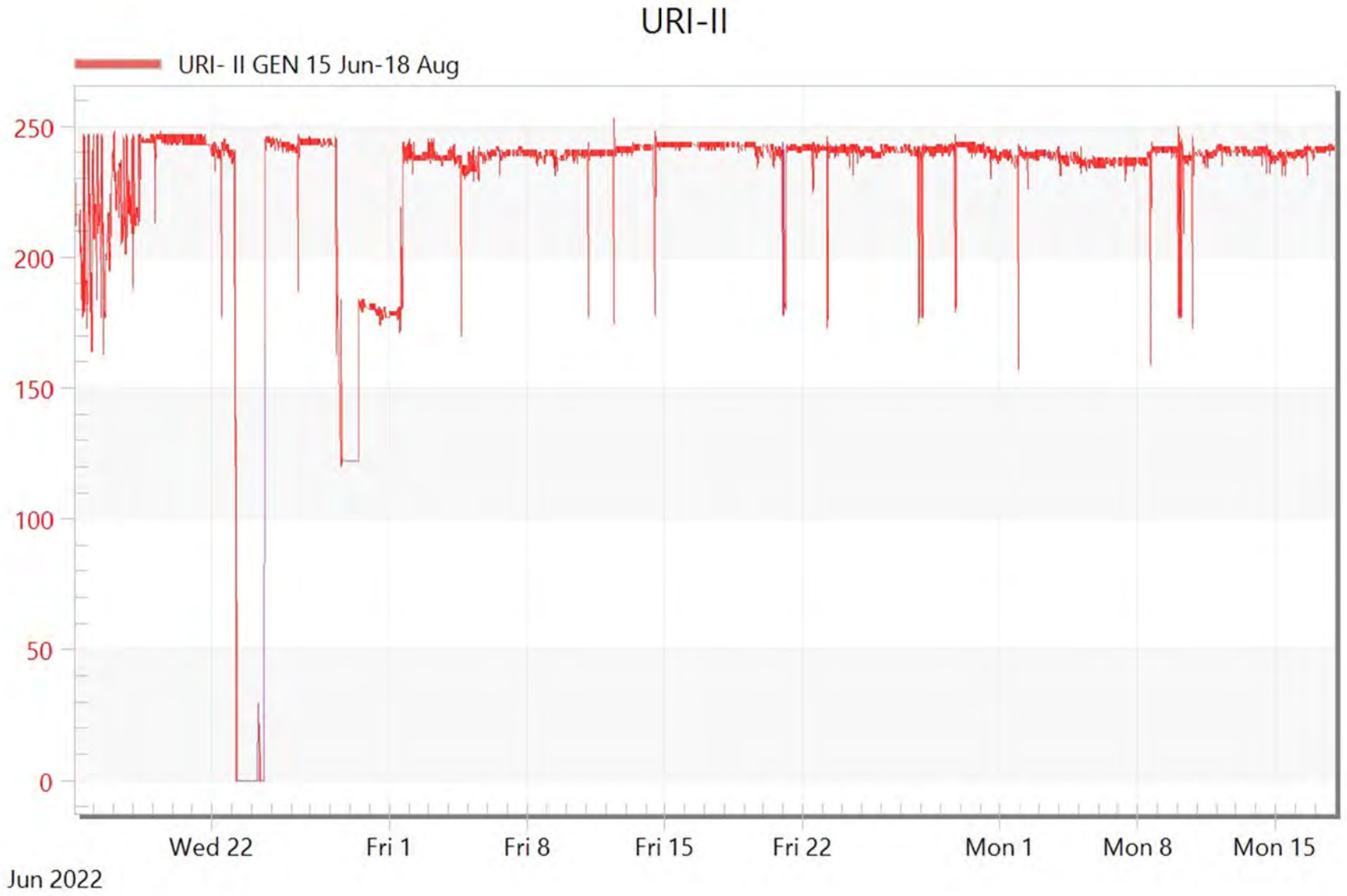
Jun 2022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URI- II GEN 15 Jun-18 Aug
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Fri 1
Fri 8
Fri 15
Fri 22
Mon 1
Mon 8
Mon 15
Jun 2022

Annexure-B.VII

Sr No	Element Name	Outage Date	Outage Time	Reason
1	400 KV Bareilly-Unnao (UP) Ckt-2	05-Aug-22	23:50	As per PMU, R-N fault occured, no auto-reclosing observed.
		06-Aug-22	22:56	As per PMU, Y-N fault occured, no auto-reclosing observed.
		10-Aug-22	05:52	As per PMU, R-N fault occured, no auto-reclosing observed.
		11-Aug-22	05:11	As per PMU, B-N fault occured, no auto-reclosing observed.
2	220 KV Nara(UP)-Roorkee(UK) (UP) Ckt-1	02-Aug-22	13:43	As per PMU, Y-N fault occured, no auto-reclosing observed.
		03-Aug-22	16:55	As per PMU, B-N fault occured, no auto-reclosing observed.
		05-Aug-22	09:48	As per PMU, R-N fault occured, no auto-reclosing observed.
		07-Aug-22	10:44	As per PMU, R-N fault occured, no auto-reclosing observed.
		08-Aug-22	11:43	As per PMU, Y-N fault occured, no auto-reclosing observed.
		24-Aug-22	23:42	As per PMU, R-N fault occured, no auto-reclosing observed.
3	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	09-Aug-22	03:59	As per PMU, Y-N fault occured, no auto-reclosing observed.
		11-Aug-22	02:08	As per PMU, B-N fault occured, no auto-reclosing observed.
		12-Aug-22	06:25	As per PMU, R-N fault occured, no auto-reclosing observed.
		23-Aug-22	09:10	As per PMU, Y-B fault is observed.
4	220 KV Nallagarh(PG)-HPSEB(HP) (HPSEB) Ckt-1	03-Aug-22	00:09	Tripped from HPSEB end only. ,small dip obseved in PMU.
		03-Aug-22	00:35	Tripped from HPSEB end only ,small dip obseved in PMU.
		05-Aug-22	11:09	NO FAULT FOUND , tripped only from HP end,No fault observed in PMU.
		06-Aug-22	05:07	RELAY DIDNOT SENsE ANYTHING ,tripped only from HP end,No fault observed in PMU.
		06-Aug-22	06:18	RELAY DIDNOT SENsE ANYTHING ,tripped only from HP end,No fault observed in PMU.
5	220 KV Meerut(PG)-Nehtaur(UP) (UP) Ckt-1	01-Aug-22	20:08	As per PMU, R-N fault and unsuccessful auto-reclosing observed.
		14-Aug-22	12:28	As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
		18-Aug-22	12:07	As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
		20-Aug-22	01:44	As per PMU, R-N fault occured, no auto-reclosing observed.

Annexure-B.VIII

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॰ : उ0क्षे0भा0प्रे0कें0/प्र0सं0/151/228 दिनांक : 07 सितम्बर, 2022

सेवा मे,

मुख्य अभियंता, राज्य भार प्रेषण केंद्र
उत्तर प्रदेश पावर ट्रांसमिशन कारपोरेशन लिमिटेड
फेज-II, विभूति खंड, लखनऊ, उत्तर प्रदेश-226010

विषय : Regarding frequent tripping of 400kV Bareilly-Unnao(UP) Ckt-1 & 2.

Earlier ref. : NRLDC Letter no. उ0क्षे0भा0प्रे0कें0/प्र0सं0/151/193 दिनांक 10 अगस्त, 2022.

महोदय,

The 400kV Bareilly-Unnao(UP) Ckt-1 & 2 have tripped multiple times during last two months. The tripping details are attached at Annexure-I.

Due to frequent tripping of the said transmission line, 400kV connectivity at Bareilly(UP) gets affected, which may further impact evacuation of generation from Dhauliganga HEP, in case of any further contingency.

In view of the repeated trippings of the said line and on-going high-hydro season, you are requested to advise the concerned sites(s) to take following actions :

(1) To carryout thorough patrolling of line, identify and replace the faulty/damaged insulators in the fault prone areas.
(2) Any other action such as checking & testing of protection system may also be done for mitigating frequent tripping of the line.
(3) The details of actions taken by the site(s) may be intimated to this end.

Your cooperation shall be highly appreciated.

सादर धन्यवाद

सोमारा लाकरा
व0 महाप्रबंधक (प्रणाली संचालन)
उत्तरी क्षेत्र भार प्रेषण केंद्र, नई दिल्ली

विनम्र सूचनार्थ :
1. सदस्य सचिव, उत्तरी क्षेत्र विद्युत् समिति
2. निदेशक, राज्य भार प्रेषण केंद्र, उत्तर प्रदेश
3. मुख्य महाप्रबंधक (प्रभारी), उत्तरी क्षेत्र भार प्रेषण केंद्र

Transmission Element Outage Report from 01-07-2022 to 07-09-2022

ANNEXURE-I

S. No.	Element Name	Outage (Date & Time)		Revival (Date & Time)		Reason
1	400 KV Bareilly-Unnao (UP) Ckt-2	07-07-2022	07:37	07-07-2022	10:03	B-N fault, Zone-1, Fault current 2.74kA, Dist. 139.1km from Bareilly.
2	400 KV Bareilly-Unnao (UP) Ckt-1	09-07-2022	18:39	09-07-2022	23:08	R-B fault, Zone 1, Dist. 133.5km, Fault current Ir 3.58kA, Ib 3.94kA from Unnao & Zone 1, Dist. 132km, Fault current Ir 4.36kA, Ib 4.39kA from Bareilly.
3	400 KV Bareilly-Unnao (UP) Ckt-1	12-07-2022	16:13	13-07-2022	15:42	R-B fault, Zone-1, Dist. 129.3km, Fault current 4.3594kA from Bareilly end.
4	400 KV Bareilly-Unnao (UP) Ckt-2	27-07-2022	05:10	27-07-2022	05:52	Phase to earth fault Y-N , Dist. 7.3km, Fault current 14.6kA from Unnao (UP).
5	400 KV Bareilly-Unnao (UP) Ckt-2	05-08-2022	23:50	06-08-2022	00:56	Phase to earth fault R-N , Zone-1, Dist. 208km, Fault current 1.9423kA from Bareilly end.
6	400 KV Bareilly-Unnao (UP) Ckt-2	06-08-2022	22:56	07-08-2022	11:09	Phase to earth fault Y-N , Zone-1, Dist. 13.5km , Fault current 12.02kA from Unnao (UP).
7	400 KV Bareilly-Unnao (UP) Ckt-2	10-08-2022	05:52	10-08-2022	07:04	R-N fault, Zone-1, Dist. 271km, Fault current 1.35kA from Bareilly & Zone-1, Dist. 1.8km, Fault current 9.56 kA from Unnao.
8	400 KV Bareilly-Unnao (UP) Ckt-2	11-08-2022	05:11	11-08-2022	05:57	B-N fault, Dist. 9.2km, Fault current 13.64kA from Bareilly & Dist. 290.3km, Fault current 1.42kA from Unnao.
9	400 KV Bareilly-Unnao (UP) Ckt-2	25-08-2022	22:56	25-08-2022	23:45	B-N Fault, Zone-1, Dist. 126.27km, Fault current 2.695kA from Bareilly end. Successful A/R operated at Unnao end.
10	400 KV Bareilly-Unnao (UP) Ckt-2	31-08-2022	01:11	31-08-2022	02:02	Phase to earth fault Y-N , Zone-1, Fault current 1.40kA, Dist. 312.9km from Unnao end.
11	400 KV Bareilly-Unnao (UP) Ckt-2	31-08-2022	18:16	01-09-2022	18:42	R- B Fault, Dist. 238.9km, Fault current Ir 1.82kA, Ib 2.12kA from Unnao(UP) & Dist. 1km, Fault current Ir 19.46kA, Ib 20.86kA from Bareilly.
12	400 KV Bareilly-Unnao (UP) Ckt-1	05-09-2022	04:56	05-09-2022	05:50	Y-N fault, Zone-1, Dist. 54.3km, Fault current 6.24kA from Unnao (UP).
13	400 KV Bareilly-Unnao (UP) Ckt-2	07-09-2022	02:18	07-09-2022	03:35	B-N Fault, Zone-1, Dist. 154.66km, Fault current 2.29kA from Unnao(UP).

महावीर प्रसाद सिंह/Mahavir Prasad Singh
उप महाप्रबन्धक/Dy. General Manager
उत्तरी क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड
POWER SYSTEM OPERATION CORPORATION LTD.
18/ए, शहीद जीत सिंह मार्ग, कटवारिया सराय, नई दिल्ली-16
18/A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-16

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
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CIN: U40105L2009GOI188682, Website: www.nrldc.org, www.nrldc.in, Tel.: 01126519406, 26523869, Fax: 011-26852747

संदर्भ सं॰ : उ0क्षे0भा0प्रे0कें0/प्र0सं0/151/ 193

दिनांक : 10 अगस्त, 2022

सेवा मे,

मुख्य अभियंता,
राज्य भार प्रेषण केंद्र
उत्तर प्रदेश पावर ट्रांसमिशन कारपोरेशन लिमिटेड
फेज-II, विभूति खंड, लखनऊ, उत्तर प्रदेश-226010

विषय : Regarding frequent tripping of 400kV Bareilly-Unnao(UP) Ckt-1 & 2.

महोदय,

The 400kV Bareilly-Unnao(UP) Ckt-1 & 2 have tripped multiple times during last one month. The tripping details are attached at Annexure-I.

Due to frequent tripping of the said transmission line, 400kV connectivity at Bareilly (UP) gets affected, which may further impact evacuation of generation from Dhauliganga HEP, in case of any further contingency.

In view of the repeated trippings of the said line and on-going high-hydro season, you are requested to advise the concerned sites(s) to take following actions :

(1) To carryout thorough patrolling of line, identify and replace the faulty/damaged insulators in the fault prone areas.
(2) Any other action such as checking & testing of protection system may also be done for mitigating frequent tripping of the line.
(3) The details of actions taken by the site(s) may be intimated to this end.

Your cooperation shall be highly appreciated.

सादर धन्यवाद

सोमारा

सोमारा लाकरा
व0 महाप्रबंधक (प्रणाली संचालन)
उत्तरी क्षेत्र भार प्रेषण केंद्र, नई दिल्ली

विनम्र सूचनार्थ :
1. सदस्य सचिव, उत्तरी क्षेत्र विद्युत् समिति
2. निदेशक, राज्य भार प्रेषण केंद्र, उत्तर प्रदेश
3. मुख्य महाप्रबंधक (प्रभारी), उत्तरी क्षेत्र भार प्रेषण केंद्र

Transmission Element Outage Report from 01-07-2022 to 10-08-2022

ANNEXURE-I

S. No.	Element Name	Owner	Outage (Date & Time)		Revival (Date & Time)		Reason
1	400 KV Bareilly-Unnao (UP) Ckt-2	UPPTCL	07-07-2022	07:37	07-07-2022	10:03	B-N fault, Zone-1, Fault current 2.74kA, Dist. 139.1km from Bareilly.
2	400 KV Bareilly-Unnao (UP) Ckt-1	UPPTCL	09-07-2022	18:39	09-07-2022	23:08	R-B fault, Zone 1, Dist. 133.5km, Fault current Ir 3.58kA, Ib 3.94kA from Unnao & Zone 1, Dist. 132km, Fault current Ir 4.36kA, Ib 4.39kA from Bareilly.
3	400 KV Bareilly-Unnao (UP) Ckt-1	UPPTCL	12-07-2022	16:13	13-07-2022	15:42	R-B fault, Zone-1, Dist. 129.3km, Fault current 4.3594kA from Bareilly end.
4	400 KV Bareilly-Unnao (UP) Ckt-2	UPPTCL	27-07-2022	05:10	27-07-2022	05:52	Phase to earth fault Y-N , Dist. 7.3km, Fault current 14.6kA from Unnao (UP).
5	400 KV Bareilly-Unnao (UP) Ckt-2	UPPTCL	05-08-2022	23:50	06-08-2022	00:56	Phase to earth fault R-N , Zone-1, Dist. 208km, Fault current 1.9423kA from Bareilly end
6	400 KV Bareilly-Unnao (UP) Ckt-2	UPPTCL	06-08-2022	22:56	07-08-2022	11:09	Phase to earth fault Y-N , Zone-1, Dist. 13.5km , Fault current 12.02kA from Unnao (UP).
7	400 KV Bareilly-Unnao (UP) Ckt-2	UPPTCL	10-08-2022	05:52	10-08-2022	07:04	R-N fault, Zone-1, Dist. 271km, Fault current 1.35kA from Bareilly & Zone-1, Dist. 1.8km, Fault current 9.56 kA from Unnao. Line tripped from Bareilly end only.

Annexure-B.IX

S.No.	Category of Grid Disturbance (GD-I to GD-V)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Outage Duration (hr:mm)	Event (As reported)	Energy Unserved due to Generation loss (MU)	Energy Unserved due to Load loss (MU)	Loss of generation / loss of load during the Grid Disturbance		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Disturbance		Antecedent Generation/Load in the Regional Grid		Fault Clearance time (in ms)
					Date	Time	Date	Time					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)	
1	GD-1	1) 400KV Bus 2 at Dehar(BB) 2) 400/220 kV 315 MVA ICT 1 at Dehar(BB) 3) 165 MW Dehar HPS - UNIT 3 4) 165 MW Dehar HPS - UNIT 4	PUNJAB	BBMB	2-Aug-22	14:48	2-Aug-22	16:30	01:42	1. 400/220kV Dehar(BBMB) have double main bus scheme. 2. In antecedent condition, 165MW Unit-3 & 4 and 400/220kV 315MVA ICT were connected at 400kV Bus-2. And 400kV lines to Panchkula & Rajpura were connected to both the bus with separate breaker. 3. As reported, at 14:47hrs, LBB protection of CB of 165MW Unit-4 at Dehar(BBMB) operated which led to the tripping of all the CB connected at 400kV Bus-2. LBB operated on fault in B-Ph limb of CB of 165MW Unit-4. 4. Due to LBB operation, 400kV Bus-2, 165MA UNit-3 (carrying 103MW) & Unit-4(95MW) and 400/220kV 315MVA ICT at Dehar(BBMB) tripped. 5. As per SCADA, generation loss of approx. 195MW is observed at Dehar HEP. 6. 400kV Bus-2 and 400/220kV 315MVA ICT at Dehar(BBMB) were restored at 16:30hrs. 7. Further at 16:33hrs, during charging of 165MW Unit-4 at Dehar(BBMB), again B-ph fault occurred and LBB of 165MW Unit-4 at Dehar(BBMB) operated which resulted into tripping of 400kV Bus-2 and 400/220kV 315MVA ICT at Dehar(BBMB). 8. As per PMU at Panchkula(PG), drop in B-ph voltage of approx. 1-2kV is observed at 14:47hrs & 16:33hrs.	0	0	195	0	0.336	0.000	57976	63020	NA
2	GD-1	1) 220 KV Nara(UP)-Roorkee(UK) (UP) Ckt-1 2) 220 KV Meerut(PG)-Nara(UP) (PG) Ckt-1	UTTAR PRADESH	UPPTCL	7-Aug-22	10:44	7-Aug-22	13:12	02:28	1. As reported at 10:44hrs, bus bar protection operated at Nara end on R-N phase to earth fault in 220kV Nara-Jansath ckt at distance of ~9km and fault current of ~7.2kA from Nara end. 2. As per SCADA, 220kV lines to Muzaffarnagar1, Jansath, Meerut(PG) & Roorkee(PG) and 220/132kV 160MVA ICT-1 & 200MVA ICT-2 tripped. 3. As per PMU at Meerut(PG0. R-N phase to earth fault with delayed clearance in 320ms is observed. 4. As per SCADA, change in load of approx. 130MW is observed in UP control area. 5. In antecedent condition, 220kV feeders from Jansath, Roorkee, Muzaffarnagar1 & Meerut were carrying 13MW, -44MW, 130MW & 38MW respectively.	0	0.33	0	130	0.000	0.234	49753	55513	320
3	GD-1	1) 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-2 2) 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-1	J & K	PDD JK	7-Aug-22	13:46	7-Aug-22	14:55	01:09	1. 220/132kV Pampore have double main single breaker scheme. Substation is having three (3) 220/132kV 150MVA ICTs. 2. During antecedent condition, double circuit to Wagoora (carrying ~105MW) & Mirbazar and all three ICTs were charged through single bus only at 220kV side and another 220kV Bus was not in service. 3. As reported at 13:43hrs, R-N phase to earth fault occurred on 220kV Mirbazar-Pampore ckt-2. 4. As per telephonic communication with AEE Pampore S/s, on this fault, 220kV Mirbazar-Pampore ckt-2 tripped from Mirbazar end but didn't trip from Pampore end. Hence, later fault cleared with the tripping of 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-1 & Ckt-2 and 220kV Mirbazar-Pampore ckt-2 from Pampore end on over current earth fault protection oepration. 5. As per PMU at New Wanpoh(PG), R-N phase to earth fault with delayed clearance in 880ms is observed. 6. As per SCADA, load loss of approx. 175MW occurred in J&K control area.	0	0.2	0	175	0.000	0.329	48141	53149	880
4	GD-1	1) 220 KV Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-3 2) 220 KV Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-1	NEW DELHI	DTL	10-Aug-22	14:30	10-Aug-22	17:10	02:40	1. 220/66kV South Wazirabad S/s has double main single breaker bus scheme. During antecedent condition, 220kV lines to Mandola-2 & 4, Geeta Colony-1, Kashmiri Gate-1 & Gopalpur-2 were connected to 220kV Bus-1 and 220kV lines to Kashmiri Gate-2. Geeta Colony-2, Madola-1 & 3 & Gopalpur-1 and 220/66kV ICT-1, 2 & 3 were connected at 220kV Bus-2. 2. As reported at 14:30hrs, R-Phase to earth bus fault occurred on 220kV Bus-2 at South Wazirabad, fault occurred due to kite thread. Bus bar protection of Bus-2 operated on this fault. 3. Due to bus bar protection operation, all the elements connected to 220kV Bus-2 tripped. 4. At the same time, 220kV South Wazirabad-Kashmiri gate ckt-1 tripped from Kashmiri Gate only on line differential protection. 5. Due to tripping aforementioned tripping, load loss of approx. 330MW occurred in Delhi control area. 6. As reported by SLDC-Delhi and as per Delhi demand pattern (SCADA), load restored within ~15min.	0	0.08	0	330	0.000	0.505	54898	65285	80
5	GD-1	1) 220 KV Fatehgarh_II(PG)-Renew_Jharkhand 3 SL_FGARH_PG (RSEJ3PL) (RSEJ3PL) Ckt-1 2) 220 KV Renew SunBright SL_FGARH_PG (RSBPL)-Fatehgarh_II(PG) (RENEW SUN BRIGHT (RSBPL)) Ckt-1 3) 220 KV Fatehgarh_II(PG)-AHEJOL PSS HB_FGRAH_PG (AHEJOL) (AHEJOL) Ckt-1 4) 220 KV Fatehgarh_II(PG)-AHEJ3L PSS HB_FGRAH_PG (AHEJ3L) (AHEJ3L) Ckt-1 5) 765 KV Fatehgarh_II(PG)-Bhadla(PG) (FBTL) Ckt-1, 220 KV Fatehgarh_II(PG)-AHEJ2L PSS HB_FGRAH_PG (AHEJ2L) (AHEJ2L) Ckt-1 6) 765 KV Ajmer-Bhadla_2 (PG) Ckt-1 7) 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1 8) 220 KV Renew SolarUrja SL_FGARH_PG (RSUPL)-Fatehgarh_II(PG) (Renew Solar Urja (RSUPL)) Ckt-1 9) 400 KV Bhadla(PG)-Fatehgarh Pooling(FBTL) (FBTL) Ckt-2 10) 400 KV Bhadla(PG)-Fatehgarh Pooling(FBTL) (FBTL) Ckt-1 11) 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-2 12) 765 KV Bikaner-Bhadla_2 (PG) Ckt-1 13) 220/33 kV 150 MVA ICT 2 at AzurePS541 SL_BHD_PG (APFOL) 14) 765 KV Ajmer-Bhadla_2 (PG) Ckt-2 15) 220 KV Bhadla(PG)-CS_Jodhpur SL_BHD_PG (Cleansolar_Jodhpur) (Cleansolar_Jodhpur) Ckt-1	RAJASTHAN	Azure, Cleansolar_Jodhpur, FBTL, POWERGRID, Renew Solar Urja (RSUPL)	11-Aug-22	11:24	11-Aug-22	15:26	04:02	1. At 11:22:59hrs, R-B phase to phase fault occurred on 220kV Bhadla- Clean Solar Jodhpur ckt due to snapping of B-ph jumper which fell on R-ph. As per PMU, R-B phase to phase voltage which cleared within 80ms is observed. 2. As per PMU plots of phase voltage, MW & Mvar of RE stations, it is observed that during the voltage dip of fault, phase voltage at Bhadla, Fatehgarh2, Bhadla2 & Bikaner dropped to 0.59pu, 0.79pu, 0.8pu & 0.82pu respectively. 3. As voltage dropped below 0.85pu, almost all the RE stations dropped their MW except ASPS1 & ASPS2 RE station connected at Fatehgarh1 (ADANI Solar park) on LVRT operation. 4. As per PMU plots of MVAR of RE station, MVAR support is also not observed from most of the RE inverters during voltage dip on fault. 5. It is observed that even voltage recovered to its normal value after clearing of fault within 100ms, MW of RE stations didn't recover in defined time as per LVRT operation. 6. Due to significant drop in MW and inadequate MVAR support from RE stations, rise in voltage is observed at ISTS RE pooling stations. 7. Further after approx. 5-6secs, all four (04) 765kV lines connected at Fatehgarh2 (PG) along with 765kV Ajmer-Bhadla2 D/C & 765kV Bhadla2-Bikaner ckt-1 and few 220kV lines to RE stations tripped on over voltage protection. 8. As per SCADA, loss of approx. 5807MW solar generation connected at Bhadla(PG), Bhadla2(PG), Bikaner(PG), Fatehgarh2(PG) & Fatehgarh1 (ADANI Solar Park) & approx. 350MW wind generation connected at Fatehgarh2 & Fatehgarh1 (ADANI Solar Park) & wind occurred. 9. As reported, load shedding of approx. ~200MW in Punjab, ~150MW in Haryana & ~400MW in UP control area due to df/dt protection operation during the event.	14	0	6157	750	11.702	1.297	52614	57827	80
6	GI-2	1) 400 KV RAPS_D(NP)-Shujalpur(PG) (RTCL) Ckt-1 2) 400 KV RAPS_D(NP)-Shujalpur(PG) (RTCL) Ckt-2	RAJASTHAN	POWERGRID	12-Aug-22	04:14	12-Aug-22	13:31	09:17	1. 400kV RAPP_C&D have one and half breaker bus scheme and 400kV RAPS_D(NP)-Shujalpur(PG) (RTCL) Ckt-1 & Ckt-2 both are on same tower. 2. In antecedent condition 400kV RAPS_D(NP)-Shujalpur(PG) (RTCL) Ckt-1 & Ckt-2 were carrying 137MW & 139MW respectively. 3. As reported at 04:14hrs, 400kV RAPS_D(NP)-Shujalpur(PG) (RTCL) Ckt-1 & Ckt-2 both tripped on Y-B phase to phase fault. As per PMU, YB phase to phase fault which cleared in 80ms is observed. 4. As per SCADA, no change in load of Rajasthan control area is observed.	0	0	0	0	0.000	0.000	44394	55548	80
7	GD-1	1) 400/220 kV 240 MVA ICT 3 at Obra_B(UP) 2) 400/220 kV 315 MVA ICT 1 at Obra_B(UP)	UTTAR PRADESH	UPPTCL	13-Aug-22	12:16	13-Aug-22	15:42	03:26	As per substation 315 MVA ICT-II and 220 kv bus-1 shutdown had been approved via shutdown code NRLD-622 LKO-588 and elements transfer was in progress. During transfer of 220 KV Obra-Rewa Road-II, BUS-II Isolator closes but at time of opening of 220 KV BUS-I Isolator, heavy sparking observed with heavy sound. After physical inspection of above isolator found cracked in its porcelain portion.	0	0.3	0	300	0.000	0.469	54787	63914	600
8	GI-2	1) 400/220 kV 315 MVA ICT 3 at Muradnagar_1(UP), 2)400/220 kV 500 MVA ICT 2 at Muradnagar_1(UP)	UTTAR PRADESH	UPPTCL	15-Aug-22	17:50	15-Aug-22	19:27	01:37	1. 400/220kV Muradnagar_1(UP) have double main transfer bus scheme. It is having 2*315MVA & 1*500MVA 400/220kV ICTs and 220kV feeders to Shibabad, Faridnagar, Pratap Vihar, Muradnagar2 D/C & Loni. 2. In antecedent condition, 400/220 kV 315 MVA ICT 1 was not in service and 400/220 kV 500MVA ICT-2 & 315 MVA ICT 3 were carrying approx. 88MW & 50MW respecively. 3. As reported at 17:50hrs, fault occurred on 220kV Muradnagar1-Muradnagar1 ckt-1. As per PMU at Panki(UP), R-N phase to earth fault with delayed clearance of 880ms is observed. 4. On this fault, 220kV lines to Shibabad, Faridnagar, Pratap Vihar & Muradnagar-2 tripped from remote end in Z-2 & Z-3. 5. At the same time, 400/220 kV 500MVA ICT-2 & 315 MVA ICT 3 tripped. 6. As all the remote stations were having alternate source from other 220kV feeders so no load loss is observed in UP control area.	0	0	0	0	0.000	0.000	47496	47496	880

S.No.	Category of Grid Disturbance (GD-I to GD-V)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Outage Duration (hh:mm)	Event (As reported)	Energy Unserved due to Generation loss (MU)	Energy Unserved due to Load loss (MU)	Loss of generation / loss of load during the Grid Disturbance		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Disturbance		Antecedent Generation/Load in the Regional Grid		Fault Clearance time (in ms)
					Date	Time	Date	Time					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)	
9	GD-1	1) 220 KV Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-4 2) 220 KV Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-3 3) 220 KV Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-2 4) 220 KV Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-1	NEW DELHI	DTL POWERGRID	16-Aug-22	15:58	16-Aug-22	16:24	00:26	1. During antecedent condition, 220kV lines to Mandola-2 & 4, Geeta Colony-1, Kashmiri Gate-1 & Gopalpur-2 and 220/66kV 160MVA ICT-4 were connected to 220kV Bus-1 and 220kV lines to Kashmiri Gate-2, Geeta Colony-2, Madola-1 & 3 & Gopalpur-1 and 220/66kV 100MVA ICT-1, 2 & 3 were connected at 220kV Bus-2. 2. As reported at 15:58hrs, Y-B ph-ph bus fault occurred on 220kV Bus-2 at South Wazirabad. As per PMU at Mandola(PG), Y-B ph-ph fault which cleared within 80ms is observed. 3. Due to bus bar protection operation, all the elements connected to 220kV Bus-2 tripped. 4. At the same time, 220kV South Wazirabad-Mandola CKt-2 & CKt-4 (connected at 220kV Bus-1 at South Wazirabad) tripped from Mandola end only, as per DR of Mandola end, Mandola end relay sensed this fault in Z-1 although fault distance from Mandola end was ~14.7km(~96%) and initiated three phase trip command. 5. Due to tripping of all four(04) line connected to Mandola, load of 66kV South Wazirabad, 220kV Geeta Colony & 220kV Kashmiri Gate affected. As per SCADA, load loss of approx. 500MW occurred in Delhi control area. 6. At 16:05hrs, supply from 220kV Patparganj-Gazipur extended to Geeta Colony and at 16:24hrs, 220kV Mandola-Wazirabad Ckt-1 & 3 charged and thus supply to Wazirabad and Kashmiri Gate also restored. 7. Again at 18:44hrs, 220kV Mandola-South Wazirabad ckt-1 tripped on Y-B phase to phase fault, fault distance was ~102meter (Z-1) from South Wazirabad end and ~14.5km from Mandola end. 8. At the same time, 220kV Mandola-South Wazirabad Ckt-2 & Ckt-3 tripped from Mandola end only, as per DR of Mandola end, Mandola end relay sensed this fault in Z-1 although fault distance from Mandola end was ~14.7km(~96%) and initiated three phase trip command. 9. As 220kV Mandola-South Wazirabad Ckt-4 didn't trip, no load loss occurred in Delhi control area.	0	0.25	0	500	0.000	0.946	52834	52834	80
10	GD-1	1) 220 KV Kishenpur(PG)-Barn(JK) (PDD JK) Ckt-2 2) 220 KV Kishenpur(PG)-Barn(JK) (PDD JK) Ckt-1	J & K	PDD JK	17-Aug-22	05:52	17-Aug-22	07:03	01:11	1. In antecedent condition, 220kV Kishenpur-Barn ckt-1&2 were carrying ~118MW each. 2. As reported at 05:49hrs, main bus isolator to reserve bus isolator dropper of 132 side of 220/132kV 160 MVA ICT-3 at Barn(JK) damaged. As per PMU, Y-N phase to earth fault with delayed clearance in ~2sec is observed. 3. On this fault, 220kV Kishenpur-Barn ckt-1&2 both tripped from Barn end only on over current earth fault protection operation. 4. As per SCADA, change in load of approx. 200MW is observed in J&K control area.	0.24	0.24	0	200	0.000	0.368	54345	54345	2220
11	GD-1	1) 400/220 kV 315 MVA ICT 1 at Obra_B(UP) 2) 400/220 kV 240 MVA ICT 3 at Obra_B(UP)	UTTAR PRADESH	UPPTCL	18-Aug-22	18:42	18-Aug-22	19:21	00:39	1. During antecedent condition, 220kV Obra-A-Rewa Road ckt-1 was under shutdown. 220kV lines to Rewa Road-2, Robertganj, 400/220kV 315MVA ICT-2, 220/132kV 100MVA ICT-1 & 3 were connected to 220kV Bus-1 and 220kV lines to Shahpuri, Mirjapur, 400/220kV 315MVA ICT-1, 400/220kV 240MVA ICT-3 & 220/132kV 100MVA ICT-2 were connected to 220kV Bus-2. 2. As per SCADA SOE, at 18:40hrs, 220kV Obra-A-Rewa Road ckt-1 was charged from Obra_A end. And at 18:42hrs R-N phase to earth fault occurred. As reported, testing of breaker operation was going on in 220kV Obra-A-Rewa Road ckt-1 and meanwhile sparking occurred in R-ph CB after closing CB at Obra_A end (220kV Bus-2). 3. On this fault, 400/220kV 315MVA ICT-1, 400/220kV 240MVA ICT-3 at Obra_B(UP), 220/132kV 100MVA ICT-2 at Obra_A(UP) tripped on over current earth fault protection operation. 4. At the same time, 220kV lines to Robertganj, Mirjapur & Rewa Road-2 tripped from remote end only. 5. As per SCADA, load loss of approx. 290MW is observed in UP control area.	0.18	0.18	0	290	0.000	0.463	62682	62682	760
12	GD-1	1) 400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-1 2) 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-1 3) 400 KV Alaknanda GVK(UPC)-Muzaffarnagar (UP) Ckt-1 4) 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-2 5) 400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt-1 6) 33 MW Singoli Bhatwari HEP - UNIT 2, 33 MW Singoli Bhatwari HEP - UNIT 3	UTTAR PRADESH ; UTTRAKHAND	PTCUL, Singoli(LTUHP), UPPTCL	23-Aug-22	01:12	23-Aug-22	05:54	04:42	1. 400kV Alaknanda (UP) have one and half breaker bus scheme. 2. During antecedent condition, 400 KV Alaknanda GVK(UPC)-Muzaffarnagar (UP) Ckt & 400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt were carrying 457MW & -85MW respectively. 3. As reported, at 01:12hrs, R-N phase to earth fault occurred on 400 KV Alaknanda GVK(UPC)-Muzaffarnagar (UP) Ckt, fault distance was 20.3km & fault current was ~10.5kA from Muzaffarnagar end. As per PMU at Muzaffarnagar(UP), R-N phase to earth fault with delayed clearance in 680ms is observed. 4. As per DR received of 400 KV Alaknanda GVK(UPC)-Muzaffarnagar (UP) Ckt, A/R operation started at Muzaffarnagar end but after approx. 500ms Y & B phase also tripped and at Alaknanda end, R-ph didn't open even after trip command was sent by relay, later three phase tripped after approx. 500ms. 5. As informed by Alaknanda HEP, R-ph Main CB didn't open on tripping command by relay as it was stuck and later line tripped on LBB protection operation. 5. At the same time, 400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt & 400kV Alaknanda-Srinagar ckt-1 & Ckt-2 also tripped on LBB protection operation at Alaknanda end. Due to tripping of both the lines, all for (04) 82.5MW units at Alaknanda HEP also tripped on loss of evacuation path. 6. At the same time, 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-1 & Ckt-2 also tripped on over voltage stage-1 protection operation at Srinagar end followed by tripping of 33 MW Singoli Bhatwari HEP - UNIT 2 & 3 on loss of evacuation path. 7. As per SCADA, change in load of approx. 25MW in Uttarakhand control area, loss in generation of ~342MW at Alaknanda HEP & ~72MW at Singoli Bhaywari HEP occurred.	0.33	0.12	414	25	0.855	0.038	48437	66349	680
13	GD-1	1) 220 KV Jalandhar-Pong (BB) Ckt-2 2) 220 KV Pong(BB)-Dasuya(PS) (BBMB) Ckt-2 3) 220 KV Jessore(HP)-Pong(BB) (PG) Ckt-1 4) 220KV Bus 2 at Pong(BB)	PUNJAB ; HIMACHAL PRADESH	BBMB, POWERGRID	23-Aug-22	08:45	23-Aug-22	10:06	01:21	1. 220kV Pong(BBMB) have double main & transfer bus scheme. 2. During antecedent condition, 220kV lines to Dasuya-1, Jalandhar-1 & Bairasuil and 66MW Unit-1, 3 & 5 were connected at 220kV Bus-1 and 220kV lines to Dasuya-2, Jalandhar-2 & Jessore and 66MW Unit-2, 4 & 6 were connected at 220kV Bus-2 at Pong(BBMB). Bus coupler was in closed condition. 3. At 08:45hrs, all the elements connected at 220kV Bus-2 tripped and bus coupler also opened, all the elements connected at 220kV Bus-1 were remained intact. 4. As per PMU at Jalandhar(PG), no fault is observed. 5. By 10:06hrs, all the tripped elements were restored. 6. Again at 11:02hrs, all the elements connected at 220kV Bus-2 tripped and bus coupler also opened, all the elements connected at 220kV Bus-1 were remained intact. 7. At this time also, no fault is observed at per PMU at Jalandhar(PG). 8. As per SCADA, loss of generation of approx. 200MW observed at Pong(BB) at 08:45hrs & 11:02hrs due to tripping of 66MW Unit-2, 4 & 6. 9. All the tripped elements were restored by 15:15hrs.	0.25	0	200	0	0.398	0.000	50235	59973	NA
14	GD-1	1) 400/132 kV 200 MVA ICT 2 at Mau(UP) 2) 400 KV Azamgarh-Mau (UP) Ckt-1 3) 400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt-1 4) 400 KV Mau(UP)-Balia(PG) (PG) Ckt-1 5) 400/132 kV 200 MVA ICT 1 at Mau(UP)	UTTAR PRADESH	POWERGRID, UPPTCL	24-Aug-22	23:02	25-Aug-22	00:33	01:31	1. 400/132kV Mau(UP) have double main & transfer bus scheme. 2. During antecedent condition, 400/132 kV 200 MVA ICT 1 & 2 at Mau(UP) and 400kV lines to Azamgarh, Balia, Rasra & Anapara were carrying 101MW, 98MW , 398MW, -419MW, 81MW & -333MW respectively. 3. At 23:02:07, 400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt tripped after unsuccessful A/R operation on permanent B-N fault. As per PMU at Anpara(UP), B-N phase to earth fault with unsuccessful A/R operation is observed. As reported, fault distance was ~66km from Anpara end. 4. Further at 23:03:01hrs, 400/132 kV 200 MVA ICT 1 & 2 at Mau(UP) and 400kV lines to Azamgarh & Balia tripped on Bus Bar protection operation of 400kV Bus Bar-2. As reported, fault occurred on B-ph conductor between CT & line side isolator of bay of 400kV Mau-Balia ckt. As per PMU, B-N phase to earth fault with delayed clearance of 400ms is observed. 5. 400kV Mau-Rasra ckt & 400/132kV 200MVA ICT-3 were remained intact. 6. As per SCADA, change in load of approx. 260MW is observed in UP control area.	0	0.39	0	260	0.000	0.386	50479	67336	400
15	GD-1	1) 40 MW Sewa-II HPS - UNIT 1 2) 40 MW Sewa-II HPS - UNIT 3 3) 40 MW Sewa-II HPS - UNIT 2 4) 220 KV Samba(PG)-Hiranagar(PDD) (PG) Ckt-1 5) 220 KV Samba(PG)-Hiranagar(PDD) (PDD JK) Ckt-2	J & K	NHPC, PDD JK, POWERGRID	29-Aug-22	18:00	29-Aug-22	19:41	01:41	1. In antecedent condition, 220kV Sambha-Hirangar ckt-1 & Ckt-2 were carrying 79MW & 75MW respectively and 40MW Unit-1, 2 & 3 at Sewa-2 HEP were carrying 30MW , 21MW & 30MW respectively. 2. As reported at 18:00hrs, R-N phase to earth fault occurred in 220kV Hiranagar-Ghatti ckt, fault distance was ~8.45km & fault current was 7.38kA from Hiranagar end. As per PMU at Sambha(PG), R-N phase to earth fault with delayed clearance in 760ms is observed. 3. CB of 220kV Hiranagar-Ghatti ckt didn't open on this fault and after approx. 750ms other 220kV feeders at Hiranagar tripped and 220kV side of Hiranagar S/s became dead. 220kV Sambha-Hirangar ckt-1 tripped from both end & DT received at Sambha(PG) end and 220kV Sambha-Hirangar ckt-2 tripped from Hiranagar end only. 4. As 220kV side of Hiranagar S/s became dead, island formed with Sewa-2 HEP generation & load at 132kv side of 220/132 Hiranagar(J&K). However, further after approx. 2secs, all three(03) 40MW units of Sewa-2(NHPC) tripped on over current protection operation and 132kV side of Hiranagar S/s also became dead due to loss of power supply. 5. As per SCADA, load loss of approx. 250MW observed in J&K control area & generation loss of approx. 80MW is observed at Sewa-2(NHPC) HEP.	0	0.42	80	250	0.162	0.404	49372	61887	760
16	GD-1	1) 220 KV Khodri(UK)-Majri(HP) (UK) Ckt-1 2) 220 KV Khodri(UK)-Majri(HP) (UK) Ckt-2 3) 30MW Unit-1 at Majri(HP) 4) 30MW Unit-2 at Majri(HP)	UTTRAKHAND	PTCUL	31-Aug-22	12:55	31-Aug-22	14:09	01:14	1. 220/132kV Majri(HP) have double main single breaker bus scheme. In antecedent condition, 132kV lines to Solan, 30MW Unit-2 of Majri HEP and 132/33kV 31.5MVA Transformer-2 were connected to 132kV Bus-1 at Majri(HP) and 220/132kV 100MVA ICT-1 & 2, 132kV lines to Kala Amb & Paont, 132/33kV 31.5MVA Transformer-1 and 30MW Unit-1 at Majri(HP) were connected to 132kV Bus-2 at Majri(HP). 2. At 12:55hrs, 220 KV Khodri(UK)-Majri(HP) (UK) Ckt-1 tripped from both ends on B-N phase to earth fault, fault distance was 22.7km & fault current was 3.5kA from Majri(HP) end. As per PMU, B-N phase to earth fault which cleared within 120ms is observed. 3. At the same time, 220 KV Khodri(UK)-Majri(HP) (UK) Ckt-2 also tripped from Khodri end only on over current earth fault protection operation. 4. With the tripping of both the 220kV lines, 132kV Bus-2 at Majri (HP) became dead led to tripping of 30MW Unit-1 at Majri(HP). 132kV Bus-1 was remained intact. 5. As per SCADA SOE, 30MW Unit-2 at Majri and 132kV lines to Kala Amb & Paont also tripped during the event. 6. As per SCADA, change in load of approx. 230MW is observed in HP control area and generation loss of approx. 60MW observed due to tripping of 30MW Unit-1 & 2 at Majri HEP.	0.074	0.28	60	230	0.102	0.321	58878	71667	120

Northern Regional inter regional lines tripping for July-22

Annexure-B.X

S. No.	Name of Transmission Element Tripped	Owner/ Utility	Outage		Load Loss/ Gen. Loss	Brief Reason (As reported)	Category as per CEA Grid standards	Restoration		# Fault Clearance Time (>100 ms for 400 kV and 160 ms for 220 kV)	*FIR Furnished (YES/NO)	DR/EL provided in 24 hrs (YES/NO)	Other Protection Issues and Non Compliance (inference from PMU, utility details)	Suggestive Remedial Measures	Remarks
			Date	Time				Date	Time						
1	765 KV Agra-Gwalior (PG) Ckt-1	POWERGRID	25-Aug-22	05:12	Nil	Line tripped due to R-N fault caused by collapse of Tower no 247 in chambal river under WR-2 jurisdiction . Agra end details M1 : FD- 37 km, FC- 12.2 kA, M2: FD- 36.6 km, FC- 12.1 kA, Gwalior end details M1	NA	NA	NA	NA	Yes(After 24Hrs)	yes			
2	400 KV RAPS_D(NP)-Shujalpur(PG) (RTCL) Ckt-1	RAPS-D	22-Aug-22	22:54	Nil	Phase to earth fault Y-N	NA	23-Aug-22	09:33	NA	No	No			
3	220 KV Auraiya(NT)-Mehgaon(MP) (MPSEB) Ckt-1	POWERGRID	13-Aug-22	01:35	Nil	Phase to phase fault R-N	NA	13-Aug-22	20:57	NA	yes	Yes(After 24Hrs)			
4	400 KV RAPS_D(NP)-Shujalpur(PG) (RTCL) Ckt-1	RAPS-D	12-Aug-22	04:14	Nil	Phase to phase fault Y-B	GI-2	12-Aug-22	13:31	NA	No	No			
5	400 KV RAPS_D(NP)-Shujalpur(PG) (RTCL) Ckt-2	RAPS-D	12-Aug-22	04:14	Nil	Phase to phase fault Y-B	GI-2	12-Aug-22	14:04	NA	No	No			
6	800 KV HVDC Champa - Kurukshetra(PG) Pole-4	POWERGRID	5-Aug-22	08:47	Nil	Pole-4 was blocked at on PRD protection in YY-R phase converter transformer.	NA	5-Aug-22	11:43	NA	Yes(After 24Hrs)	Yes(After 24Hrs)			

 # Fault Clearance time has been computed using PMU Data from nearest node available and/or DR provided by respective utilities (*Annexure- II)***

****Yes, if written Preliminary report furnished by constituent(s)***

R-Y-B phase sequencing (Red, Yellow, Blue) is used in the list content.All information is as per Northern Region unless specified.

^^ tripping seems to be in order as per PMU data, reported information. However, further details may be awaited.

Reporting of Violation of Regulation for various issues for above tripping

1	Fault Clearance time(>100ms for 400kV and >160ms for 220kV)	1. CEA Grid Standard-3.e 2. CEA Transmission Planning Criteria
2	DR/EL Not provided in 24hrs	1. IEGC 5.2(r) 2. CEA Grid Standard 15.3
3	FIR Not Furnished	1. IEGC 5.9.6.a 2. CEA Grid Standard 12.2 (Applicable for SLDC, ALDC only)
4	Protection System Mal/Non Operation	1. CEA Technical Standard of Electrical Plants and Electric Lines: 43.4.A 2. CEA (Technical Standards for connectivity to the Grid) Regulation, 2007: Schedule Part 1. (6.1, 6.2, 6.3)
5	A/R non operation	1. CEA Technical Standard of Electrical Plants and Electric Lines: 43.4.C 2. CEA Technical Planning Criteria

Annexure-B.XI

Status of submission of FIR/DR/EL/Tripping Report on NR Tripping Portal

Time Period: 1st August 2022 - 31st August 2022

S. No.	Utility	Total No. of elements tripped	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value		%	Value		%	Value		%	
1	ABC RENEWABLE_RJ01	1	1	100	1	0	100	1	0	100	1	0	100	DR/EL & Tripping report needs to be submitted
2	ADANI	2	2	100	2	0	100	2	0	100	2	0	100	
3	AHEJ2L	1	0	0	0	0	0	0	0	0	0	0	0	
4	AHEJ3L	1	0	0	0	0	0	0	0	0	0	0	0	
5	AHEJOL	2	0	0	0	0	0	0	0	0	2	0	100	DR/EL & Tripping report needs to be submitted
6	ANTA-NT	5	2	40	3	0	60	3	0	60	2	0	40	
7	APFOL	2	2	100	2	0	100	2	0	100	2	0	100	
8	AURAIYA-NT	1	0	0	0	0	0	0	0	0	0	0	0	
9	BBMB	40	14	35	17	13	63	16	17	70	17	8	53	DR/EL & Tripping report needs to be submitted
10	BUDHIL	1	0	0	0	0	0	0	0	0	0	0	0	
11	CHAMERA-III-NH	1	1	100	1	0	100	1	0	100	1	0	100	DR/EL & Tripping report needs to be submitted
12	CLEANSOLAR_JODHPUR	3	2	67	3	0	100	3	0	100	2	0	67	
13	CPCC1	93	51	55	50	4	56	51	3	57	57	2	63	
14	CPCC2	37	0	0	0	13	0	0	12	0	0	0	0	
15	CPCC3	34	2	6	2	5	7	2	5	7	2	0	6	DR/EL & Tripping report needs to be submitted
16	DADRI-NT	1	1	100	1	0	100	1	0	100	1	0	100	
17	EDEN (ERCPL)	1	0	0	0	0	0	0	0	0	1	0	100	
18	FARIDABAD-NT	1	0	0	0	0	0	0	0	0	0	0	0	
19	FBTL	3	0	0	0	0	0	0	0	0	0	0	0	
20	JHAJJAR	1	0	0	0	0	0	0	0	0	0	0	0	
21	KOLDAM-NT	1	1	100	1	0	100	1	0	100	1	0	100	DR/EL & Tripping report needs to be submitted
22	Mega_SuryaUrja	1	1	100	1	0	100	1	0	100	1	0	100	
23	NAPP	1	0	0	0	0	0	0	0	0	0	0	0	
24	RAPPA	7	2	29	7	0	100	7	0	100	7	0	100	DR/EL & Tripping report needs to be submitted
25	RAPPB	5	0	0	0	0	0	0	0	0	0	0	0	
26	RAPPC	5	3	60	4	0	80	4	0	80	3	1	75	DR/EL & Tripping report needs to be submitted
27	RENEW SOLARURJA (RSUPL)	1	1	100	1	0	100	1	0	100	1	0	100	
28	RENEW SUN WAVES(RSWPL)	2	0	0	0	0	0	0	0	0	0	0	0	
29	RIHAND-NT	1	1	100	1	0	100	1	0	100	1	0	100	DR/EL & Tripping report needs to be submitted
30	RSEJ3PL	1	0	0	0	0	0	0	0	0	0	0	0	
31	SALAL-NH	1	1	100	0	0	0	0	0	0	1	0	100	DR/EL & Tripping report needs to be submitted
32	SEWA-2-NH	3	0	0	0	3	0	0	3	0	0	0	0	

33	SINGOLI	9	9	**100**	9	0	**100**	8	1	**100**	9	0	**100**	
34	SINGRAULI-NT	2	0	**0**	1	0	**50**	1	0	**50**	1	0	**50**	DR/EL & Tripping report needs to be submitted
35	SLDC-CHD	4	4	**100**	4	0	**100**	4	0	**100**	4	0	**100**	
36	SLDC-DV	30	0	**0**	6	2	**21**	6	2	**21**	6	0	**20**	
37	SLDC-HP	8	0	**0**	0	6	**0**	0	6	**0**	0	1	**0**	
38	SLDC-HR	14	1	**7**	1	0	**7**	1	0	**7**	1	0	**7**	
39	SLDC-JK	12	0	**0**	12	0	**100**	12	0	**100**	12	0	**100**	
40	SLDC-PS	17	6	**35**	11	4	**85**	11	4	**85**	16	1	**100**	
41	SLDC-RS	58	3	**5**	13	0	**22**	13	0	**22**	16	0	**28**	DR/EL & Tripping report needs to be submitted
42	SLDC-UK	22	0	**0**	0	11	**0**	0	12	**0**	1	0	**5**	
43	SLDC-UP	124	16	**13**	16	14	**15**	24	24	**24**	22	1	**18**	
44	STERLITE	4	1	**25**	1	0	**25**	1	0	**25**	1	2	**50**	
45	TANAKPUR-NH	2	0	**0**	0	1	**0**	0	1	**0**	0	0	**0**	
46	TATAPOWER	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**	
47	UNCHAHAR-NT	2	1	**50**	1	0	**50**	1	0	**50**	1	0	**50**	DR/EL & Tripping report needs to be submitted
48	UNCHAHAR-NT	2	1	**50**	1	0	**50**	1	0	**50**	1	0	**50**	

As per the IEGC provision under clause 5.2 (r), detailed tripping report along with DR & EL has to be furnished within 24 hrs of the occurrence of the event

Annexure-B.XII

S. No.	Name of the Generatng Station (Capacity in MW)	Date of last PSS tuning / re-tuning performed (in DD/MM/YYYY format)	Date of last Step Response Test performed (in DD/MM/YYYY format)	Report submitted to NRLDC/NRPC (Yes/ No)	Remarks (if any)	Tentative schedule for PSS tuning / re-tuning in FY 2021-22
1	**THDC**					
	TEHRI HPS(4 * 250)	15.12.2021 to 20.12.2021	15.12.2021 to 20.12.2021	Yes	(Report shared vide email dt.19.01.2019)	
	KOTESHWAR HPS(4 * 100)	17/03/2019 to 19/03/2019	17/03/2019 to 19/03/2019	Yes	(Report shared vide email dt.11.02.2021)	
2	**SJVNL**					
	NATHPA-JHAKRI HPS(Unit1 #250)	10.03.2020	-	No	Excitation system upgraded in 2020	
	NATHPA-JHAKRI HPS(Unit2 #250)	14.03.2013	-	No	The existing excitation system is very old and obsoleted forwhich support for PSS tuning is not available from OEM (Mls Voith Hydro), although NJHPS, SJVN has placed work order on 08/12/201 5. Further being the critical component, it is not possible"io get the PSS tuning done from any other vender except OEM (Mls Voith Hydro) being the system and software specific job. Therefore, prpposal for upgradation of the excitation system of this unit is under process and PSS tuning shall be carried out during upgradation of excitation system.	3rd Quarter
	NATHPA-JHAKRI HPS(Unit3 #250)	03.03.2020	-	No	Excitation system upgraded in 2020	
	NATHPA-JHAKRI HPS(Unit4 #250)	14.03.2013	-	NO	The existing excitation system is very old and obsoleted forwhich support for PSS tuning is not available from OEM (Mls Voith Hydro), although NJHPS, SJVN has placed work order on 08/12/201 5. Further being the critical component, it is not possible"io get the PSS tuning done from any other vender except OEM (Mls Voith Hydro) being the system and software specific job. Therefore, prpposal for upgradation of the excitation system of this unit is under process and PSS tuning shall be carried out during upgradation of excitation system.	3rd Quarter
	NATHPA-JHAKRI HPS(Unit5 #250)	14.05.2016	14.05.2016	NO	Excitation system upgraded in 2013	3rd Quarter
	NATHPA-JHAKRI HPS(Unit6 #250)	14.05.2017	14.05.2017	NO	Excitation system upgraded in 2013	3rd Quarter
	RAMPUR HEP(6 * 68.67)	29.11.2014	27.10.2020,10.02.2021	YES	PSS tuning was done at the time of commissioning of Excitation System by OEM (M/s BHEL). Since then response of PSS is checked regularly and found satisfactory.	
3	**HVPNL**					
	PANIPAT TPS(unit1# 250)	29.03.2016	29.03.2016	YES	--	3rd Quarter
	PANIPAT TPS(unit2# 250)	15.01.2018	15.01.2018	YES	--	3rd Quarter
	DCRTPP (YAMUNA NAGAR)(unit1#300)	19-12-2018	19-12-2018	YES	(Report attached)	3rd Quarter
	DCRTPP (YAMUNA NAGAR)(unit1#300)	Will be carried out shortly				
	RGTPP(KHEDAR) (2*600)	5th to 6th July 2013	5th to 6th July 2013	Report attached. Previous record being looked into	No MW capacity addition after 2013 at RGTPP Khedar. No new line addition in vicinity of station	
	JHAJJAR(CLP) (2*660)	20-05-2017	20-05-2017	YES	--	3rd Quarter
4	**NTPC**					
	Rihand (Unit1#500)	03-03-2017	03-03-2017	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit2#500)	02-07-2016	02-07-2016	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit3#500)	15-08-2015	15-08-2015	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit4#500)	25-05-2017	25-05-2017	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit4#500)	11-12-2014	11-12-2014	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit5#500)	11-12-2014	11-12-2014	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	SINGRAULI STPS(Unit1#200)	-	-	-	Not done in last three years	
	SINGRAULI STPS(Unit2#200)	-	-	-	Not done in last three years	
	SINGRAULI STPS(Unit3#200)	-	-	-	Not done in last three years	
	SINGRAULI STPS(Unit4#200)	-	-	-	Not done in last three years	
	SINGRAULI STPS(Unit5#200)	-	-	-	Not done in last three years	
	SINGRAULI STPS(Unit6#500)	02.05.2018	02.05.2018	NO	--	3rd Quarter

	SINGRAULI STPS(Unit7#500)	15.07.2018	15.07.2018	NO	--	3rd Quarter
	UNCHAHAR I(2 * 210)	29-03-2016	29-03-2016	YES	--	3rd Quarter
	UNCHAHAR II TPS(unit1# 210)	13-07-2019	13-07-2019	YES	--	
	UNCHAHAR II TPS(unit2# 210)	10-08-2018	10-08-2018	YES	--	3rd Quarter
	UNCHAHAR UNIT6#500	-	31.03.2017	YES	--	3rd Quarter
	KOLDAM HPS(4 * 200)	01-07-2015	01-07-2015	YES	--	3rd Quarter
	DADRI GPS(2 * 154.51) (ST- Steam Turbine)	-	18-11-2015	YES	--	3rd Quarter
	ANTA GPS(3 * 88.71)(GT- Gas Turbine)	08-08-2014	08-08-2014	YES	--	3rd Quarter
	ANTA GPS(1 * 153.2)(ST- Steam Turbine)	08-08-2014	08-08-2014	YES	--	3rd Quarter
5	**Aravali Power Company Private Ltd**					
	ISTPP (JHAJJAR)(3 * 500)	-	25-08-2015	YES	--	3rd Quarter
6	**NHPC**					
	CHAMERA HPS (3*180)	06-08-2020	27-12-2019	YES	--	
	CHAMERA II HPS(3 * 100)	11-10-2015	11-10-2015	NO	Replacement of Excitation system in two units	3rd Quarter
	CHAMERA III HPS(Unit1#77)	29-10-2015	07-01-2012	YES	--	3rd Quarter
	CHAMERA III HPS(Unit2,3#77)	29-10-2015	19-06-2012	YES	--	3rd Quarter
	PARBATI III HEP (Unit1# 130)	21-01-2016	21-01-2016	YES	Have been done recetly. The report on PSS turning shall be submitted seperately.	3rd Quarter
	DULHASTI HPS(Unit2#130)	21-01-2020	21-01-2020	YES	--	
	DULHASTI HPS(Unit1#130)	29-12-2019	29-12-2019	YES	--	
	URI HPS(Unit3# 120)	10-01-2021	10-01-2021	YES	--	
	URI HPS(Unit4# 120)	15-02-2021	15-02-2021	YES	--	
	URI HPS(Unit2# 120)	07-03-2016	07-03-2016	YES	--	3rd Quarter
	URI-II HPS(4 * 60)	Mar-14	Mar-14		Re-tunning& Step response test shall be carriedout in 2021-22	
	SALAL HPS (Unit-3,4,5,6 # 115)	16-12-2014	16-12-2014	YES	--	3rd Quarter
	KISHANGANGA(3 * 110)	18-05-20 18	18-05-20 18	YES	--	3rd Quarter
	BAIRASIUL HPS(3 * 60)	30-07-2015	30-07-2016	YES	--	3rd Quarter
	SEWA-II HPS(3 * 40)	09-07-2016	09-07-2016	YES	--	3rd Quarter
	PARBATI III HEP(4 * 130)	16-12-2016	16-12-2016	YES	--	3rd Quarter
	TANAKPUR HPS(Unit1# 31.42)	09-01-2015	09-01-2015	YES	--	3rd Quarter
	TANAKPUR HPS(Unit2,3#31.4)	24-05-2014	24-05-2014	YES	--	3rd Quarter
	DHAULIGANGA HPS(Unit1 ,2# 70)	04-05-2014	17-04-2018	YES	--	3rd Quarter
	DHAULIGANGA HPS(Unit3,4# 70)	26-06-2014	17-04-2018	YES	--	3rd Quarter
7	**PUNJAB**					
	RAJPURA(NPL) TPS(2 * 700)	22-04-2014	22-04-2014	YES	--	3rd Quarter
8	**Rajasthan**					
	KAWAI TPS(Unt1# 660)	08-08-2014	08-08-2014	YES	--	3rd Quarter
	KAWAI TPS(Unt2# 660)	09-10-2014	09-10-2014	YES	--	3rd Quarter
	CHHABRA TPS(Unit 1#250)	22-05-2018	22-05-2018	NO	--	3rd Quarter
	CHHABRA TPS(Unit 2,3,4#250)	04-10-2015	04-10-2015	NO	--	3rd Quarter
	CHHABRA TPS(Unit5# 660)	10-02-2016	10-02-2016	YES	--	3rd Quarter
	CHHABRA TPS(Unit6# 660)	7/28/2018	7/28/2018	YES	--	3rd Quarter
	KALISINDH TPS(Unit1# 600)	10-02-2016	10-02-2016	YES	--	3rd Quarter
	KALISINDH TPS(Unit2# 600)	08-02-2016	08-02-2016	YES	--	3rd Quarter
	KOTA TPS(Unit1#110)	PSS tuning and step response test of Unit#1,2,3,4,6&7 were sucessfully done on 02.03.22 to 04.03.22		YES		3rd Quarter
	KOTA TPS(Unit2#110)				--	3rd Quarter
	KOTA TPS(Unit3#195)				--	
	KOTA TPS(Unit4#195)				--	
	KOTA TPS(Unit6#110)				--	3rd Quarter
	KOTA TPS(Unit7#110)				--	3rd Quarter
	SURATGARH TPS (Unit5#250)	14-03-2022	14-03-2022	Yes	--	3rd Quarter
	SURATGARH TPS (Unit2,4#250)	06-06-2022		Yes	--	
	SURATGARH TPS (Unit1,3,,6#250)	05.02.22 & 06.02.22		Yes	--	
	SURATGARH SSCTPS (Unit 7&8)	PSS tuning and step response test of Unit#7&8 were carried out on 28.11.20 & 30.03.21.				
	RAJWEST (IPP) LTPS(Unit1# 135)	26-04-2016	26-04-2016	No	--	3rd Quarter

	RAJWEST (IPP) LTPS(Unit2# 135)	14-07-2016	14-07-2016	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit3# 135)	03-01-2014	03-01-2014	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit4# 135)	03-11-2015	03-11-2015	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit5# 135)	21-09-2014	21-09-2014	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit6# 135)	14-08-2014	14-08-2014	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit7# 135)	20-02-2016	20-02-2016	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit8# 135)	11-06-2014	11-06-2014	No		3rd Quarter
9	**UTTAR PRADESH**					
	ANPARA-C TPS(Unit1# 600)	22-08-2015	22-08-2015	Yes	--	3rd Quarter
	ANPARA-C TPS(Unit2# 600)	08-03-2016	08-03-2016	Yes	--	3rd Quarter
	ROSA TPS(Unit1 #300)	05-10-2021	05-10-2021	Yes	--	
	ROSA TPS(Unit2# 300)	18/2/2018	18/2/2018	Yes	--	4th Quarter
	ROSA TPS(Unit3 # 300)	03-02-2017	03-02-2017	Yes	--	4th Quarter
	ROSA TPS(Unit4# 300)	05-10-2021	05-10-2021	Yes	--	
	Anpara-A (Unit1#210)	27.09.2021	27.09.2021	Yes	--	
	Anpara-A(Unit2#210)	27.09.2021	27.09.2021	Yes	--	
	Anpara-A(Unit3#210)	25.09.2020	25.09.2020	Yes	--	
	Anpara-B(Unit4#500)	07.12.2014	07.12.2014	Yes		3rd Quarter
	Anpara-B (Unit5#500)	17.08.2014	Dec., 2019	Yes	--	
	Anpara-D(Unit6#500)	15.11.2016	15.11.2016	No	--	3rd Quarter
	Anpara-D (Unit7#500)	15.04.2017	15.04.2017	No	--	3rd Quarter
	Obra-B(Unit9#200)	22.03.2016	22.03.2016	Yes	Report enclosed.	3rd Quarter
	Obra-B(Unit10#200)	28.06.2016	20.06.2016	Yes	Report enclosed.	3rd Quarter
	Obra-B (Unit11#200)	21.01.2017	21.01.2017	Yes	Report enclosed.	3rd Quarter
	Obra-B (Unit12#200)	Unit taken on load after R&M on 22		-	PSS tuning and SRT scheduled in April, 2021.	
	Obra-B(Unit13#200)	Unit closed under R&M.		-	PSS tuning and SRT scheduled in April, 2021.	
	Parichha-B(Unit3#210)	08.01.2016	08.01.2016	Yes	--	3rd Quarter
	Parichha-B (Unit4#210)	08.01.2016	08.01.2016	Yes	--	3rd Quarter
	Parichha-C (Unit5#250)	08.02.2020	08.02.2020	No	--	
	Parichha-C(Unit3#250)	09.01.2016	09.01.2016	No	--	3rd Quarter
	Harduaganj (Unit8#250)	20.08.2015	20.08.2015	No	--	3rd Quarter
	Harduaganj (Unit3#250)	13.04.2016	13.04.2016	No	--	3rd Quarter
	Harduaganj(Unit7#105)	16.07.2021	16.07.2021	yes	--	
	Harduaganj(Unit9#250)	16.07.2021	16.07.2021	yes	--	
	LALITPUR TPS(Unit1# 660)	23.02.2022	23.02.2022	yes	--	
	LALITPUR TPS(Unit2# 660)	30.03.2021	30.03.2021	yes	--	
	LALITPUR TPS(Unit3# 660)	15.01.2022	15.01.2022	yes	--	
	ALAKNANDA HEP(Unit1# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	ALAKNANDA HEP(Unit2# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	ALAKNANDA HEP(Unit3# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	ALAKNANDA HEP(Unit4# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	MEJA TPS(Unit1#660)	16.10.2018	05.09.2017	yes	--	3rd Quarter
	MEJA TPS(Unit2#660)	16.01.2021	18.05.2020	yes	--	
	Bara Unit#1				Step test for PSS checking was not performed since commissioning by erstwhile owner as per information available. PSS tuning along with step test will be performed in next AOH (May 2022 or planned shutdown)	
	Bara Unit#2	01.02.2022	01.02.2022	Yes		
	Bara Unit#3				Step test for PSS checking was not performed since commissioning by erstwhile owner as per information available. PSS tuning along with step test will be performed in next AOH (May 2022 or planned shutdown)	
	Vishnuprayag Unit#1	06/02/2021	06/02/2021	Submitted in the prescribed format provided by		
	Vishnuprayag Unit#2	06/04/2021	06/04/2021			
	Vishnuprayag Unit#3	06/04/2021	06/04/2021			

	Vishnuprayag Unit#4	05/02/2021	05/02/2021	NRLDC to SE (R&A)		
10	**BBMB**					
	BHAKRA HPS(Unit1#108)	--	--	No	PSS is not provided ,shall be provided in ongoing RM&U	
	BHAKRA HPS(Unit1#108)	24.07.2015	24.07.2015	No	--	3rd Quarter
	BHAKRA HPS(Unit3#126)	--	--	No	PSS is not provided ,shall be provided in ongoing RM&U	
	BHAKRA HPS(Unit4#126)	--	--	No	--	
	BHAKRA HPS(Unit5#126)	--	--	No	--	
	BHAKRA HPS(Unit6#157)	--	--	No	The original Rusian excitation system is under replacement PO issued Hence,PSS not got tuned.	
	BHAKRA HPS(Unit7#157)	--	--	No	The original Rusian excitation system is under replacement PO issued Hence,PSS not got tuned.	
	BHAKRA HPS(Unit7#157)	--	--	No	The original Rusian excitation system is under replacement PO issued Hence,PSS not got tuned.	
	BHAKRA HPS(Unit7#157)	18.02.2016	18.02.2016	No	--	3rd Quarter
	BHAKRA HPS(Unit7#157)	18.02.2017	18.02.2017	No	--	3rd Quarter
	DEHAR HPS(Unit#1 165)	08.08.2017	08.08.2017	No	--	3rd Quarter
	DEHAR HPS(Unit#2 165)	08.08.2018	08.08.2018	No	--	3rd Quarter
	DEHAR HPS(Unit#3 165)	08.08.2019	08.08.2019	No	--	
	DEHAR HPS(Unit#4 165)	02.07.2017	02.07.2017	No	--	3rd Quarter
	DEHAR HPS(Unit#5 165)	08.08.2019	08.08.2019	No	--	
	DEHAR HPS(Unit#6 165)	02.07.2017	02.07.2017	No	--	3rd Quarter
	PONG HPS(6 * 66)	--	--	--	PSS not provided.RM&U agenda under considration.	