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/106/01/2021/8586-8627 दिनांक: 14.09.2021

विषय: प्रचालन समन्वय उप-समिति की 187वीं बैठक की कार्यसूची।
Subject: Agenda of 187th OCC meeting.

प्रचालन समन्वय उप-समिति की **187वीं** बैठक का आयोजन वीडियो कॉन्फ्रेंसिंग के माध्यम से दिनांक **21.09.2021** 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।

187th meeting of the Operation Co-ordination sub-committee will be conducted through Video Conferencing on **21.09.2021** 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.

सौमित्र
14/09/2021.

(सौमित्र मजूमदार)
अधीक्षण अभियंता (प्रचालन)

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

1. Confirmation of Minutes

The minutes of the 186th OCC meeting which was held on 18.08.2021 through video conferencing were issued vide letter of even number dated 08.09.2021.

Sub-committee may deliberate and kindly confirm the Minutes.

2. Review of Grid operations of August 2021

2.1 Power Supply Position (Provisional) for August 2021

Anticipated Power Supply Position v/s Actual Power Supply Position (Provisional) of Northern Region during the month of August-2021 is as under:

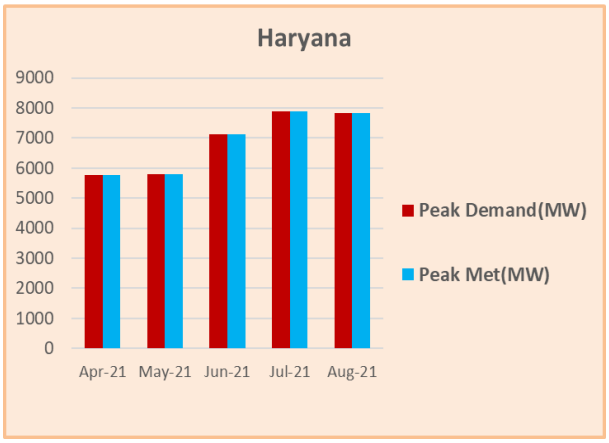
State / UT	Req. / Avl.	Energy (MU)			Peak (MW)		
		Anticipated	Actual	% Variation	Anticipated	Actual	% Variation
CHANDIGARH	(Avl)	200	187	-6.7%	350	356	1.7%
	(Req)	170	187	9.8%	340	356	4.7%
DELHI	(Avl)	5065	3545	-30.0%	7301	6550	-10.3%
	(Req)	3650	3545	-2.9%	6900	6550	-5.1%
HARYANA	(Avl)	6280	6421	2.2%	11650	11378	-2.3%
	(Req)	6050	6433	6.3%	11260	11378	1.1%
HIMACHAL PRADESH	(Avl)	1014	1034	2.0%	1440	1589	10.3%
	(Req)	987	1037	5.1%	1485	1589	7.0%
J&K and LADAKH	(Avl)	2080	1418	-31.8%	3370	2385	-29.2%
	(Req)	1330	1629	22.5%	2400	2585	7.7%
PUNJAB	(Avl)	7900	8366	5.9%	13500	13151	-2.6%
	(Req)	7543	8366	10.9%	13550	13151	-2.9%
RAJASTHAN	(Avl)	9840	8205	-16.6%	18880	14690	-22.2%
	(Req)	7750	8288	6.9%	13200	14690	11.3%
UTTAR PRADESH	(Avl)	13485	13131	-2.6%	24500	23603	-3.7%
	(Req)	13330	13335	0.0%	24500	23963	-2.2%
UTTARAKHAND	(Avl)	1410	1299	-7.9%	2750	2269	-17.5%
	(Req)	1370	1323	-3.4%	2010	2269	12.9%
NORTHERN REGION	(Avl)	47274	43605	-7.8%	76400	73200	-4.2%
	(Req)	42180	44143	4.7%	71800	73500	2.4%

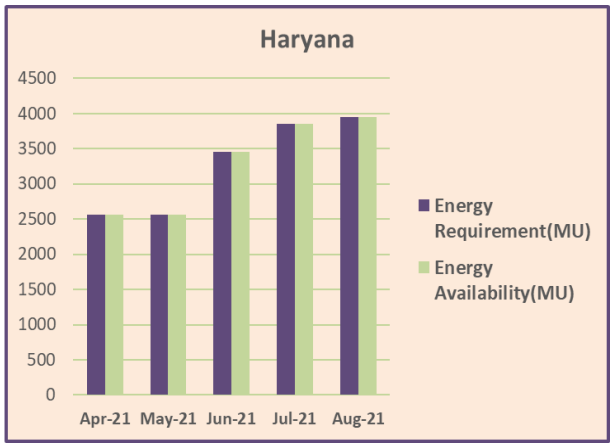
As per above, negative / significant variation (≥5%) in Actual Power Supply Position (Provisional) vis-à-vis Anticipated figures is observed for the month of August-2021 in terms of Energy Requirement for Chandigarh, Delhi, Haryana, HP, UTs of J&K and Ladakh, Punjab, Rajasthan, and Uttarakhand and in terms of Peak Demand similar variation is noted for Delhi, HP, UTs of J&K and Ladakh, Punjab, Rajasthan, UP, and Uttarakhand. These states/UTs are requested to submit reason for such variations so that the same can be deliberated in the meeting.

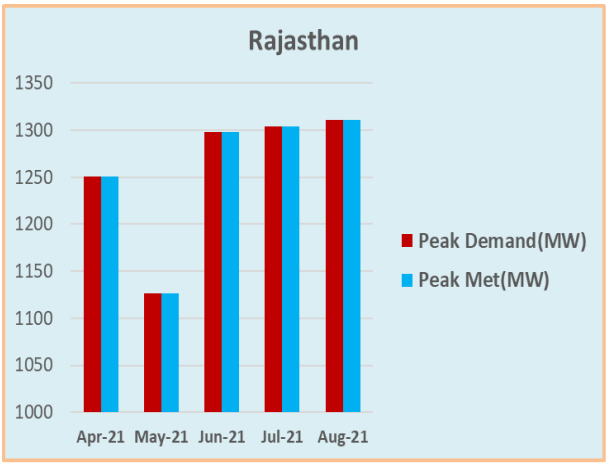
All SLDCs are requested to furnish provisional and revised power supply position in prescribed formats on NRPC website portal by 2nd and 15th day of the month respectively for the compliance of Central Electricity Authority (Furnishing of Statistics, Returns and Information) Regulations, 2007.

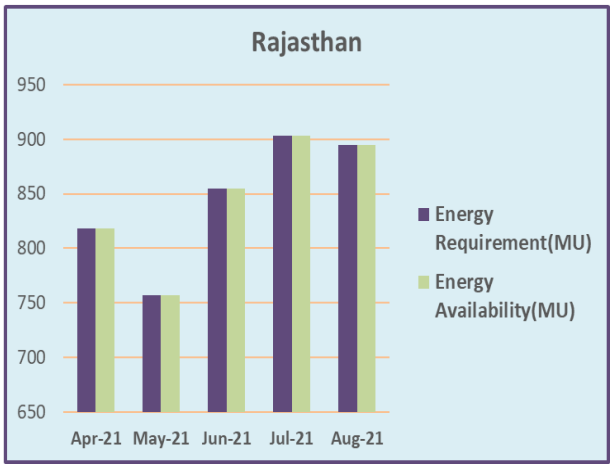
2.2 Power Supply Position of NCR

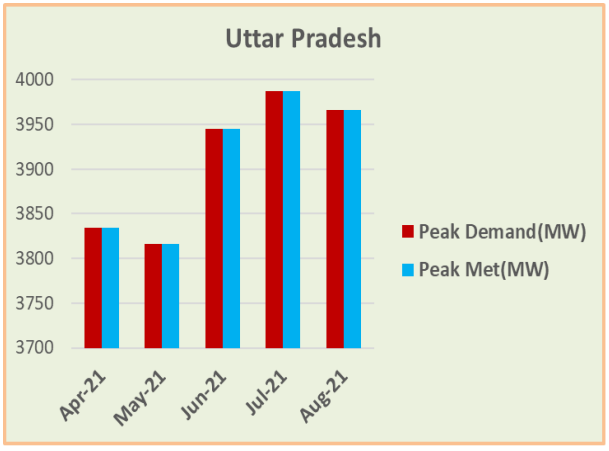
NCR Planning Board (NCRPB) is closely monitoring the power supply position of National Capital Region. Monthly power supply position for NCR till the month of August-2021 is placed on NRPC website (http://nrpc.gov.in/operationcategory/power-supply-position). Power supply position during the current financial year is shown as under:

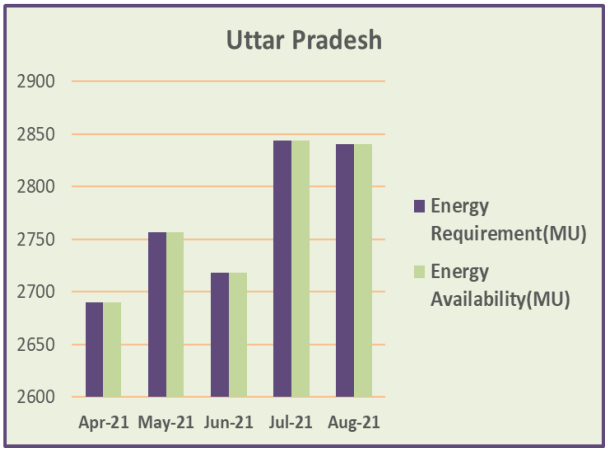


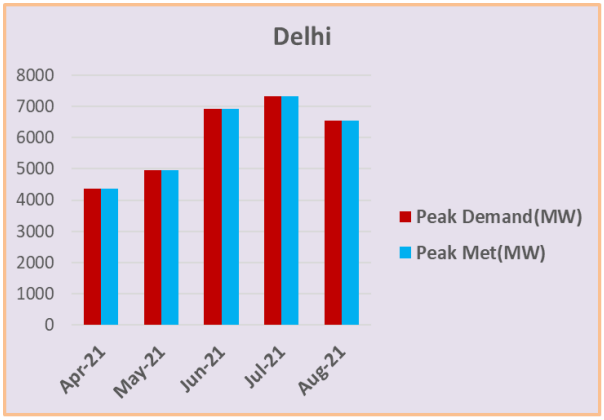


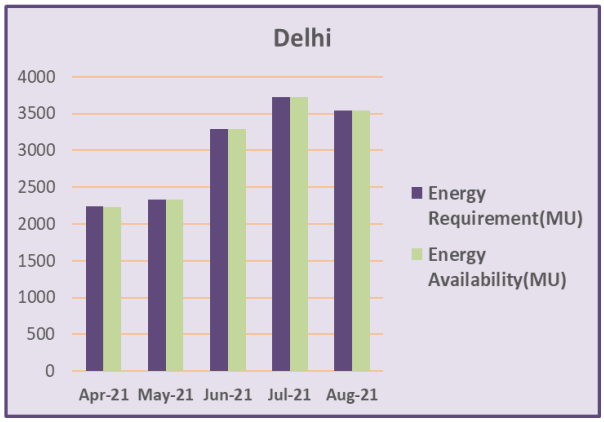












3. Maintenance Programme of Generating Units and Transmission Lines

3.1. Maintenance Programme for Generating Units

a. The meeting on proposed maintenance programme for Generating Units for the month of October-2021 is scheduled on 20-September-2021 via Video Conferencing.

3.2. Outage Programme for Transmission Elements

The meeting on proposed outage programme of Transmission elements for the month of October-2021 is scheduled on 20-September-2021 via Video conferencing.

4. Planning of Grid Operation

4.1. Anticipated Power Supply Position in Northern Region for October 2021

The Anticipated Power Supply Position in Northern Region for October 2021 is as under:

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)
CHANDIGARH	Availability	120	330
	Requirement	110	220
	Surplus / Shortfall	10	110
	% Surplus / Shortfall	9.1%	50.0%
DELHI	Availability	2710	6110
	Requirement	2650	4850
	Surplus / Shortfall	60	1260
	% Surplus / Shortfall	2.3%	26.0%
HARYANA	Availability	4710	10260
	Requirement	5030	8850
	Surplus / Shortfall	-320	1410
	% Surplus / Shortfall	-6.4%	15.9%
HIMACHAL PRADESH (revised on 07-09-21)	Availability	902	1545
	Requirement	889	1551
	Surplus / Shortfall	13	-6
	% Surplus / Shortfall	1.5%	-0.4%

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)
J&K and LADAKH	Availability	1230	3320
	Requirement	1490	2480
	Surplus / Shortfall	-260	840
	% Surplus / Shortfall	-17.4%	33.9%
PUNJAB	Availability	4700	9210
	Requirement	4870	9210
	Surplus / Shortfall	-170	0
	% Surplus / Shortfall	-3.5%	0.0%
RAJASTHAN	Availability	7590	16740
	Requirement	8080	13610
	Surplus / Shortfall	-490	3130
	% Surplus / Shortfall	-6.1%	23.0%
UTTAR PRADESH (revised on 14-09-21)	Availability	11160	21500
	Requirement	11005	21500
	Surplus / Shortfall	155	0
	% Surplus / Shortfall	1.4%	0.0%
UTTARAKHAND	Availability	970	2640
	Requirement	1160	1960
	Surplus / Shortfall	-190	680
	% Surplus / Shortfall	-16.4%	34.7%
NORTHERN REGION	Availability	34092	67300
	Requirement	35284	60300
	Surplus / Shortfall	-1192	7000
	% Surplus / Shortfall	-3.4%	11.6%

SLDCs are requested to update the anticipated power supply position of their respective state / UT for the month of October-2021 and submit the measures proposed to be taken to bridge the gap between demand & availability, as well to dispose of the surplus, if any, in the prescribed format.

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. Submission of breakup of Energy Consumption by the states

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

State / UT	From	To
DELHI	Apr-2018	Jun-2021
HARYANA	Apr-2018	May-2021
HIMACHAL PRADESH	Apr-2018	Jun-2021
PUNJAB	Apr-2018	Mar-2021
RAJASTHAN	Apr-2018	Jul-2021
UTTAR PRADESH	Apr-2018	Jul-2021

All the remaining states/UTs viz., Uttarakhand, UTs of J&K and Ladakh and Chandigarh are again 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>						

7. System Study for Capacitor requirement in NR for the year 2019-20

7.1. In the 45th TCC/ 48th NRPC meeting, it was decided that the study report for 2019-20 along with the guidelines for finding the capacitor requirement at 11/33 kV level in NR would be submitted by CPRI. In the meeting, CPRI representative had stated that as there were diversified network configurations at the level of DISCOMs, the guidelines to be provided would be generalized and may also include some empirical formula along with examples which may guide the DISCOMs for finding out the capacitor requirement.

7.2. Based on the above deliberation, CPRI submitted the system study report (enclosed in the agenda of 177th OCC meeting) and which was circulated among all the SLDCs and STUs vide e-mail dated 02.11.2020.

7.3. In the 177thOCC meeting, representatives of Punjab, Rajasthan, Delhi and Haryana stated that the capacitors considered in the study were far less than already installed. In the meeting, it was decided that states shall first analyze the PSSE file considered by CPRI in its study and bring out the locations wherein capacitors are already installed in the network, but are not modelled along with their comments.

7.4. The list of bus-wise available MVAr and the additionally required MVAr computed in the CPRI report was shared separately by NRPC Sectt with SLDCs of Punjab, Haryana, Rajasthan, Delhi and Uttarakhand on 07.01.2021 with the request to provide available MVAr values in those buses. In 179thOCC meeting, it was decided that any submission of MVAr data / feedback from the states would be would be allowed till 22.01.2021 and thereafter CPRI would conduct the modelling and simulation work for the purpose of final capacitor study report. Accordingly, feedbacks received from Punjab, Rajasthan, Haryana and Delhi was forwarded to CPRI for carrying out study and submission of report.

7.5. CPRI has submitted the revised report on 24.02.2021 and thereafter same was shared with the constituent states. The recommended capacitor compensation, additionally required as per the report is 352MVAr. The report has brought out the additional requirement of 137MVar and 215MVar compensation for Punjab and J&K respectively. Moreover, empirical relationship for capacitor requirement against voltage profile at 11 kV, based on two configurations has been worked out in the report.

7.6. In the 45th TCC / 48th NRPC meeting, it was decided after the submission of report for 2019-20 and the guidelines, the same would be studied by the same Committee who had earlier recommended for guidelines and foreclosure of the contract. Based on Committee's recommendations, NRPC Sectt. can process the pending bills of Rs. 14 lakhs (Rs. 2 + 12 Lakhs), excluding taxes along with foreclosure of the contract. Accordingly, submitted report needs to be examined by the Committee.

7.7. In the 181st OCC meeting, the sub-group comprising of ten members was advised to study the CPRI report and submit its recommendation within two weeks.

7.8. NRPC Sectt. asked comments/observations on the CPRI report from all the states via e-mail. Comment from Delhi had been received. Rajasthan, HP, Punjab, Haryana had submitted NIL comment. Comment from rest of the members was not received.

7.9. In the 182nd OCC meeting, forum decided that a video-conferencing meeting may be held by members of sub-group to finalize the comments latest by 30th April, 2021 and compiled comments may be sent to CPRI for necessary correction in the report.

7.10. In the 183rd OCC, NRPC representative informed that the meeting of sub-group was held on 03.05.21 (in place of originally schedule meeting on 30.04.21, delayed as per request of some sub-group members due to health related concerns). Representative from Rajasthan could not attend as she was suffering from covid-19 while Uttarakhand representative informed in the meeting that there is an acute shortage of available officers at this time and they will agree to the remarks made by NRLDC. Further, PSSE file was requested from CPRI as per request of all sub-group members for better understanding and the same was shared with them.

7.11. NRPC representative requested for any other comments on the CPRI report, if remaining, from any of the members. Sub-group committee member from Rajasthan stated that since the CPRI report is for the year 2019-20, old data needs to be collected and then values in the CPRI report would be checked. It was further intimated that around 2-3 days time would be required for this task. Rajasthan representative was requested to send their observation/comments via e-mail to NRPC Sectt. at the earliest.

7.12. Forum decided that after receiving observations/comments from Rajasthan, the compiled observations/comments may be sent to CPRI so that necessary corrections may be done in the draft report.

7.13. In 184th OCC, forum was apprised that compiled comments have been mailed to CPRI vide email dated 28th May'21 with a request to submit the corrected report within two weeks' time. CPRI vide email dated 31st May'21 communicated that majority of comments are on the modeling of base case PSSE file. Since the file is given by NRPC and CPRI has not modeled it; so, they are not in position to make any comment on the accuracy & modeling of file. Forum decided that a reminder may be sent to CPRI for submission of corrected Report as two weeks has already passed.

7.14. In 185th OCC, NRPC representative intimated the forum that CPRI has submitted its

point-wise reply on the observations of sub-group along with updated report on 28th June 2021.

7.15. MS, NRPC expressed concern over inordinate delay in finalizing the report. Forum decided that issues highlighted by the sub-group in the report and clarifications/comments thereon of CPRI need to be converged at the earliest and thus a video-conferencing meeting may be held between the sub-group and CPRI for resolution of issues and enabling report finalization.

7.16. In 186th OCC, NRPC representative intimated that the meeting was held on 06.08.2021 at 11:00 a.m. under the chairmanship of MS, NRPC through Video Conferencing. It was attended by members of the sub-group (constituted for studying the CPRI report), CPRI representatives, and officials from NRPC Sectt & NRLDC.

7.17. In the meeting, comments of the sub-group on the latest version of CPRI report was deliberated in detail. After weighing the merits of the original & both revisions of the report, following were decided:

- First Report submitted by CPRI in September, 2020 shall be considered as the reference report. CPRI confirmed that the basecase of 11.07.2018 at 00:45 hrs. received from NRPC Sectt has been used for preparing September, 2020 report.
- Comments from all utilities and NRLDC on September 2020 report must be submitted to NRPC Sectt, latest by 24.08.2021.
- NRPC Sectt, after examination, shall share with CPRI the compiled comments of the utilities and NRLDC, latest by 31.08.2021.
- Thereafter, CPRI shall submit its reply on the compiled comments sent by NRPC Sectt, latest by 15.09.2021.

7.18. Base case file (11.07.2018 00:45 hrs) and CPRI September 2020 report has been e-mailed to all sub-group members on 10.08.2021 requesting to submit comments/observations thereon latest by 24.08.2021 as per decision of the meeting dtd. 06.08.2021.

7.19. Although last date for submission of comments was 24.08.2021, NRPC Sectt. received comments from Himachal Pradesh, Punjab, Rajasthan, Delhi, and NRLDC vide mails dtd. 24.08.2021, 25.08.2021, 26.08.2021, 31.08.2021, and 03.09.2021 respectively. As the received comments were also on the base-case data, a meeting was held on 06.09.2021 among officers of NRPC Sectt, NRLDC and above four states for discussing comments before sending to CPRI. After detailed discussions, following were decided:

A. Himachal Pradesh:

a) It was apprised by NRLDC that generation data of micro IPPs has not been modelled by them in base-case due to their small quantity. Further, Capacitor at Baddi needs to be removed from base-case.

b) HP was requested to submit within 3 days data regarding (11.07.2018 00:45 HRS):

i. Generation break-up along with details of micro IPPs.

ii. Capacitors at 132 kV level

iii. Nodes of major voltage profile mismatch

iv. Load factor of state (current scenario if data of past is not available)

c) It was decided that after getting above data from HP, base-case will be tuned by NRLDC before sending to CPRI.

B. Punjab:

a) All switched reactors/capacitors to be converted into fixed & net shunt capacitor value in the base-case to be corrected as per Punjab's comment.

b) Punjab was requested to submit low voltage nodes (11.07.2018 00:45 HRS) within 3 days.

c) Based on data from Punjab, initial tuning to be done by NRLDC for Q values of generators. CPRI may be required to do further tuning.

C. Rajasthan:

a) Except low voltage points, power factor needs to be upgraded in the base-case.

b) Rajasthan representative confirmed that most of the capacitors were off during the time for which modelling is done, so lumped capacitor at 132kV needs to be deleted.

c) Rajasthan was requested to submit

i. List of bus-wise capacitors and their status (OFF/ON condition) on 11.07.2018 00:45 HRS.

ii. Voltage profile of generator buses.

D. Delhi:

a) Delhi was requested to submit voltage profile of generator buses.

It was decided that after receiving data from above four states, NRLDC will tune the base case initially and will also ensure that regional generators shall not absorb reactive power in the base-case and then base case will be sent to CPRI along with compiled comments.

7.20. HP & Delhi has submitted some data. Data from Punjab and Rajasthan is awaited.

Sub-Committee may kindly note.

8. Automatic Demand Management System

8.1 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:

State/ Utility	Status
Punjab	**Scheme not implemented.** At SLDC level, remote tripping of 100 feeders at 66 kV is possible. At 11 kV feeder level, ADMS is to be implemented by Distribution Company.
Delhi	**Fully implemented** by TPDDL, BRPL and BYPL. NDMC implementation was scheduled to be completed by

State/ Utility	Status
	31.03.2020 but got delayed due to some changes incorporated in the scheme.
Rajasthan	**Under implementation.** LoA placed on 12.12.2018 with an execution period of 18 months for ADMS at the level of 33 kV feeders at EHV Substation of RVPN under SCADA / EMS part of project. Supply is in progress. Work is under execution and likely to completed by June'2021. ADMS functionality at 11 kV feeders from 33/11 kV substation is under the jurisdiction of the DISCOMs.
UP	**Scheme implemented by NPCL only.** Remote operation of 50 feeders at 132 kV level being operated from SLDC. Further, the solution proposed by M/s Siemens was found to be non-economical and was not accepted by the management. Noida Power Company Ltd have implemented Intelligent Load Shedding (ILS) scheme, in compliance of IEGC requirements for automatic demand management.
Haryana	**Scheme not implemented.** More than 1700 feeders were tested from SLDC control room for remote operation. Regarding the implementation of ADMS at DISCOM level, the matter is being taken up with the DISCOMs.
HP	**Scheme not implemented.** 02 feeders could be operated from SLDC through manual intervention. Letter has been sent by HPSEB to HP-SLDC for making its operation automatic.

8.2 As decided in the 175th OCC meeting, the nominations for matter specific meeting has been received from HVPN, UHBVN/DHBVN, PSPCL, RVPN (SLDC & Automation), UPPTCL, KESCO (DISCOM-UP), NPCL (DISCOM-UP).

8.3 Meetings on ADMS implementation road map have been held with the officers of Haryana, Himachal Pradesh, Punjab and UP on 05.02.2021, 19.02.2021, 05.03.2021, and 14.07.2021 respectively. In these meetings, issues and apprehensions on ADMS were discussed along with vital aspects like addressing the commercial issues, basic architecture for scheme and funding possibilities for the scheme.

8.4 As per request of states for DPR of any state that has got PSDF support for ADMS, website link of PSDF Sectt. has been shared with Haryana, Himachal Pradesh, Punjab and Uttar Pradesh for accessing DPR. SLDCs were also requested to expedite the submission of pending nominations.

8.5 In 186th OCC, in-charge, NRLDC stated that as per IEGC, implementation of ADMS is mandatory. It helps in reducing DSM charges also. States must take it seriously.

8.6 MS, NRPC stated that non-implementation of ADMS by states is indistinguishably non-

adherence to directions of CERC.

8.7 NRPC representative added that initial deadline for ADMS implementation was 1st January 2011 as per para 5.4.2 (d) of IEGC. Later, CERC has taken suo-motu cognizance of non-implementation of ADMS by states and given 31.06.2016 as deadline vide its order dtd. 31.12.2015 in petition no. 5/SM/2014. Implementation deadline given by the statutory and regulatory body need to complied by concerned SLDC / SEB / distribution licensee as per regulation no. 5.4.2 (a) & (b) of IEGC. Moreover, hand holding process for project proposal preparation in respect of four NR states has already been done by NRPC

8.8 Forum decided that NRLDC may file a report to CERC based on compiled status of ADMS implementation in states of Northern Region.

***Members may kindly note*.**

9. 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.

10. Deemed availability of outage of Transmission lines due to tripped caused by kite thread / flying (Agenda by POWERLINKS Transmission Limited)

POWERLINKS Transmission Limited has intimated vide letter dtd. 07.09.2021 (attached as ***Annexure-A.II***) that they are facing problem of line tripping due to kite thread / kite flying and they have requested for deemed availability of the same.

Members may kindly deliberate.

11. Regarding Installation of Proposed SPS Scheme at 400kV S/S Lucknow (PG) & Sohawal (PG) (Agenda by UP SLDC)

11.1 Commissioning of SPS (System Protection Scheme) at 400kV Lucknow (PG) and Sohawal (PG) was discussed in the 184th OCC meeting and it was decided that proposal for SPS at 400kV s/s Lucknow (PG) & Sohawal (PG) shall be submitted by UP SLDC. Thereafter, SPS logic may be discussed in the OCC meeting and subsequently can be placed before TCC/NRPC for approval.

11.2 UPSLDC vide email dt. 06.09.2021 has submitted the SPS logic details attached as ***Annexure-A.III.***

***Members may kindly deliberate*.**

12. Tower failure report of 400 KV Kaithal – Bagpat D/C Line in Northern Region (Agenda by NR-II, POWERGRID)

12.1 NR-II, POWERGRID vide e-mail dtd. 16.07.2021 has requested for considering the following tower failure during availability certification for the month of July 2021.

Affected tower Loc. No.: - 388, 389, 390 & 391

Type of Tower: - All DA+0

Wind Zone: - 4

Configuration: - Double Circuit Type Tower

Date of Tower Failure: 20:51 hrs at 08/07/2021

Date of Restoration:	20:44 hrs at 15/07/2021
Extent of Damage:	(i) Tower no. 388 – One earth wire peak damaged (ii) Tower no. 389 – Tower Collapsed (iii) Tower no. 390 – Both earth wire peak damaged (iv) Tower no. 391 – One middle cross arm damaged

12.2 A committee of POWERGRID officials was nominated to find out the cause of occurrence and committee has submitted their report which is attached as ***Annexure-A.IV***.

12.3 The reason of failure identified by committee members is as under:

"Based on the observation of damaged trees in the vicinity, it appears that the high-speed windstorm/ thunderstorm was prevailing in the vicinity of affected stretch of transmission line.

The tower at location no-389 collapsed in transverse direction of line and subsequently due to jerk during collapse, peak of tower at location no-388, 390 and cross arm at location no-391 were also damaged".

12.4 POWERGRID has claimed that reason of failure of said tower is due to highly localized thunderstorm, which comes under natural calamity and beyond the control of POWERGRID. During the storm, the uprooting of high growth trees and LT electric pole were also noticed. They have requested considering the same during availability certification for the month of July 2021.

Members may kindly deliberate.

13. Report on SPS operation during grid event at 500kV HVDC Rihand-Dadri at 04:15 hrs on 21st August,2021

13.1 UPSLDC vide e-mail dtd. 01.09.2021 has submitted the report on SPS operation during grid event at 500KV HVDC Rihand-Dadri at 04:15 hrs on 21st August, 2021 (attached as ***Annexure-A.V)***.

13.2 UPPTCL has informed that load shedding at 220 kV Substation Modipuram and Muradnagar did not occur as per planned operation. As per field authority, SPS is not healthy at 220kV substation Modipuram and Muradnagar and same has been intimated by UPSLDC to POWERGRID vide letters dtd. 15.04.2021 & 20.04.2021.

Members may kindly deliberate.

14. Frequent outages of Wind/Solar generation in Northern Region

14.1 There have been instances of frequent outages of renewable generation in Rajasthan area during the last one year. The list of incidents along with frequency observed during these incidents is attached as ***Annexure-A.VI.***

14.2 Based on the information available at NRLDC, it appears that generation loss is primarily due to either evacuation loss or inability of inverters to ride through the low voltage/high voltage conditions as specified in regulations.

14.3 NLDC has suggested a separate sub-group with members from RE developers, RVPNL, NRLDC, CTU, POWERGRID and NRPC may be formed specifically for the deliberations of incidents resulting in loss of RE based generation. In this regard, stakeholders are requested to nominate officials for this sub-group to deliberations of

incidents resulting in loss of RE based generation.

Members may kindly deliberate.

15. Coal Supply Position of Thermal Plants in Northern Region

15.1 BRPL vide letter dtd. 03.09.2021 (attached as ***Annexure-A.VII***) has brought to notice severe coal shortage in the Central Generating power plants supplying power in the NCT of Delhi. Similar issues have been highlighted by other states also.

15.2 Considering the severity of the situation, it is proposed that coal stock position of generating stations in northern region may be reviewed in the OCC meetings on the monthly basis.

15.3 Accordingly, coal stock position of generating stations in northern region during current month (till 10th September 2021) is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
ANPARA C TPS	1200	84.25	15	**1.5**
ANPARA TPS	2630	66.42	15	10.8
BARKHERA TPS	90	57.93	20	**3.9**
CHHABRA TPP	2320	56.10	25	**0.0**
DADRI (NCTPP)	1820	41.22	30	**0.1**
GH TPS (LEH.MOH.)	920	57.98	30	8.6
GOINDWAL SAHIB TPP	540	67.69	30	**2.7**
HARDUAGANJ TPS	605	41.31	30	**1.1**
INDIRA GANDHI STPP	1500	48.12	30	**3.0**
KAWAI TPS	1320	70.50	25	6.2
KHAMBARKHERA TPS	90	57.93	20	5.9
KOTA TPS	1240	48.53	30	**2.4**
KUNDARKI TPS	90	70.46	25	7.8
LALITPUR TPS	1980	75.44	25	5.0
MAHATMA GANDHI TPS	1320	77.69	25	6.3
MAQSOODPUR TPS	90	58.11	20	4.1
MEJA STPP	1320	78.32	20	**0.2**
OBRA TPS	1094	45.34	20	9.5
PANIPAT TPS	710	33.18	30	11.5
PARICHHA TPS	1140	51.28	30	**2.5**
PRAYAGRAJ TPP	1980	68.38	20	**3.9**
RAJIV GANDHI TPS	1200	30.00	30	8.7
RAJPURA TPP	1400	91.57	25	9.0
RIHAND STPS	3000	85.13	15	7.1

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
ROPAR TPS	840	50.73	30	14.3
ROSA TPP Ph-I	1200	59.90	25	**3.3**
SINGRAULI STPS	2000	68.71	15	4.0
SURATGARH TPS	1500	29.83	30	**1.3**
TALWANDI SABO TPP	1980	41.99	25	11.9
TANDA TPS	1760	69.29	25	**2.0**
UNCHAHAR TPS	1550	63.89	25	**1.9**
UTRAULA TPS	90	66.70	20	**3.5**
YAMUNA NAGAR TPS	600	33.79	25	9.4

Members may kindly deliberate.

16. Operational challenges in despatch of Gas based stations under RRAS

16.1. NRLDC vide letter dtd. 18.08.2021 (attached as ***Annexure-A.VIII***) has informed operational challenges in dispatch of Gas based stations under RRAS as below: -

i Revision of DC by plant at the time of despatch instruction.

ii Ensuring fuel adequacy by plant as per the provisions of tariff regulations.

iii Lack of sufficient man power in plants.

iv Delayed execution/Non-execution of NLDC/NRLDC instructions regarding maintenance of hot reserves.

v Non-utilization of closed cycle mode of operation.

vi Declaration of ramp-rates by plants.

vii Furnishing of data regarding ambient temperature-installed capacity curve of GTs.

Members may kindly deliberate.

17. Streamlining of RLDC FTC Procedure and Software Modification (Agenda by POWERGRID)

17.1. NR-1/POWERGIRD has intimated vide mail dtd. 13.09.2021 that clearances for First Time Charging of New elements are being obtained in line with the latest procedure updated by NLDC dated 3rd June 2020. Since after adopting the online procedure for submission of application and subsequent approval, little modifications are required to be made in software to overcome some practical problems observed as below;

17.2. Undertaking for statutory clearances has to be submitted in Annex.B-5, however it is insisted to submit the Final CEA Certificate for processing of other internal clearances on part of NRLDC/ NLDC without any relevance, since both are different and independent entity. Hence submission of Annexure B-5, should not be a pre-condition and may be done separately.

17.3. It is observed that complete application is rejected by NRLDC for requirement of some additional data, clarification etc. sought by its own departments and that too cannot be accepted/ uploaded in the software until its complete rejection. This delays total process of clearances, hence there should be following provisions in the software;

i. Requirement of any such data/ document may be informed to the applicant through mail/ notification so that it may be submitted accordingly.

ii. Such data/ document/clarification should be accepted by NRLDC through mail, also with a provision for uploading in the portal by themselves OR by the applicant directly

Members may kindly deliberate.

18. Abnormal humming in GTs at APRL, Kawai and nearby stations (Agenda by Adani Power Ltd)

18.1 This has reference to the previous agenda placed by APRL Kawai in the OCC meetings for the abnormal humming sound at Power transformers at APRL, Kawai, Chhabra, Kalisindh and ICTs at Anta from 1600 hrs of 21st April'21.

18.2 It is to communicate once again that humming noise of generator transformer-1 has found subdued between 24.08.2021 19.00 Hrs to 25.08.2021 11.00 Hrs. In this regard, Adani Power Ltd have received the list of approved outages from NRLDC for the date 24.08.2021, where two elements were common with earlier event.

Sr. No.	Voltage level	Element name
1.	220 kV	Charki-Dadri – Khetri -I
2.	400 kV	Akal – Ramgarh -I

18.3 Adani Power Ltd has requested for analysis and to share the actual line tripping and restoration details for the period 24.08.2021 18.00 Hrs to 25.08.2021 11.00 Hrs in NR region as well as in Rajasthan control area. The requested details may give an indication of the root cause of the observed behavior.

18.4 In this context, Adani Power Ltd had a meeting with Director Technical, RVPN on 23.07.2021, wherein the officials from RVPN, SLDC and APRL Kawai were present.

18.5 The issue is still unresolved, Adani Power Ltd has requested for kind intervention of the OCC forum and early resolution of the issue.

Members may kindly deliberate.

खण्ड-ख: उ.क्षे.वि.स. Part-B: NRLDC

19. Revision of 186th OCC Minutes of Meeting

In table agenda of 186 OCC meeting, regarding SEM-SCADA data mismatch agenda by Punjab SLDC, following was discussed:

CGM (In-charge) NRLDC informed that NRLDC is analysing the reason for error in calculation. It was emphasized in reference of various past meetings where in Punjab was repeatedly requested for having its own calculation of the drawal and NRLDC calculation could only be used for cross-verification like other states which is still pending at Punjab end. It was requested that drawal calculation should be calculated at PSTCL end also to avoid such mis-happening in future.

Member Secretary, NRPC also informed that PSTCL should use its own drawal calculation from its 220 KV lines to cross-verify the ICT data. It was emphasized that

PSTCL should not rely on ICT data (single source) where huge commercial implication is involved and they should cross-verify the data in real-time based on PSTCL sub-station end value. He further expressed his concern that this mismatch is bound to happen in future if proper cross-check is not being done by SLDC.

It is requested that the above mentioned comments from CGM (I/C) NRLDC and MS, NRPC may be included in the minutes of 186th OCC meeting.

20. 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).
- Inclement weather such as dense fog etc. pose challenges for day to day grid operation.
- Off-peak to peak demand ratio of NR fall 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 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. Latest status available with NRLDC is 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 centers. 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-2021/?wpdmdl=8772. It is requested that all utilities got 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.
- Exploring reactive support possible from grid connected invertor based devices, especially during no generation period.

(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 tripping 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 may be 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 centers/ 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.

21. Computation of TTC/ATC of respective control areas

In last several OCC meetings, NRLDC had shared monthly ATC/TTC limits of NR control areas, worked out by respective SLDCs in coordination with NRLDC. Need for involvement of SLDC officials in ATC/TTC assessment has also been deliberated number of times. As per section4 of the detailed procedure approved by CERC, for relieving congestion in real time it is the responsibility of SLDCs to assess their ATC/TTC and get it vetted by NRLDC. To facilitate the same, NRLDC has also conducted many workshops and Video Conferences over the last few years.

Most of the NR states except Uttarakhand, J&K U/T and Ladakh U/T and Chandigarh are sharing basecase and ATC/TTC assessment with NRLDC. ATC/TTC assessed by SLDCs in coordination with NRLDC and reliability issues expected for the upcoming months are mentioned below. SLDCs are requested to go through the tentative ATC/TTC limits for October 2021 (**Annexure-B.II**) and provide comments.

Reliability issues faced/ expected for next few months are highlighted below:

Punjab: ATC/TTC limit of 7300/7900 MW (daytime) and 7700/8300MW (night time) have been declared till 15th Sep due to forced outage of Talwandi Saboo Unit-1. Punjab has also implemented SPS at Nakodar which has helped in enhancing ATC/TTC limits of Punjab. Punjab SLDC has informed that working hours of general industries in Nakodar, Gobindgarh(Rajpura) and Ludhiana area is 9am-6pm. Therefore, loading is lower in these area during night hours. Moreover, solar power from Bikaner is also not available at Moga during non-solar hours.

400kV Bus-split work at 765/400/220kV Moga has been completed and it is likely to increase ATC/TTC of Punjab state control area by 300MW. Punjab SLDC has shared that after bus-split they would be shifting some load from Ludhiana and Nakodar to Moga to utilize the margins created at 400/220kV Moga after bus-split.

Plots showing ATC and N-1 violations at 400/220kV Rajpura, Nakodar, Moga and Ludhiana ICTs are attached in **Annexure-B.III**. Punjab SLDC is requested to ensure high generation at 220kV level during high demand, which would help in meeting high demand & also improve voltage profile. Loading of 400/220kV ICTs may also be ensured within their N-1 contingency limit.

Since from October, demand of Punjab is reduced, it is requested that if 220kV generating units are expected to remain out for more number of days, same shall be duly intimated to NRLDC alongwith revised ATC/TTC limits for October 2021***.***

UP: ATC/TTC assessed by UP SLDC in coordination with NRLDC is:

State Gen	**TTC**	**ATC**
11000	13800	13200
11500	13500	12900
12000	13300	12700

Loading above N-1 contingency limits were observed at 400/220kV Azamgarh, Allahabad(PG), Sarnath, Gorakhpur(UP), Sohawal(PG), Lucknow(PG) ICTs. UP SLDC is requested to ensure high intra-state generation during high demand, which would help in meeting high demand & also improve voltage profile. It is also requested to ensure loading at 400/220kV ICTs within their N-1 contingency limit.

Since from October, demand of UP starts reducing, it is requested that the revised ATC/TTC limits for October 2021 alongwith anticipated generation scenario may be timely shared with NRLDC***.***

Haryana: Haryana SLDC had shared revised studies for ATC/TTC assessment after meeting held on 7th July 2021 with UHBVN, Haryana SLDC, NRPC and NRLDC to discuss issues related to import capability of Haryana state control area. Subsequently, NRLDC has shared its observations on 13th July 2021.

N-1 violations at 400/220kV Deepalpur and Kurukshetra ICTs are still being observed attached as **Annexure-B.III**. Loading of 400/220kV Sonepat and Panipat ICTs were also close to their N-1 limits.

Haryana SLDC has shared revised ATC/TTC calculation with NRLDC on 01.09.2021 after carrying out load management at 220kV Nissing, 220kV Durala and 132kV. NRLDC has shared their observations on the study shared on 08.09.2021.

Haryana SLDC is once again requested to expedite implementation of SPS at 400/220kV Deepalpur and Kurukshetra (PG) and carry out load management at Sonepat and Panipat to enhance their ATC/TTC limits at the earliest.

Delhi: Delhi SLDC have assessed ATC/TTC limits as 6500/6800 MW and had shared results with NRPC as well as NRLDC. Constraints observed in assessment by Delhi SLDC are at, 400/220kV Bamnauli and Mundka ICTs. Due to radial feeding of load from most of the stations, reliability is reduced and requirement of SPS may be explored by Delhi SLDC to avoid complete load loss as was seen in few events in July 2021. With SPS, loss of power supply to critical loads such as DMRC may be avoided.

Moreover, Delhi SLDC is advised to display ATC/TTC limits on their website. As of now only violations of ATC/TTC are being displayed on Delhi SLDC website.

Rajasthan: Revised ATC/TTC figures have been shared with NRLDC for Jul-Aug 2021 and are as:

State Gen	**TTC**	**ATC**
8200	6200	5900
4100	8100	7800

Rajasthan SLDC is requested to take up the matter for implementation of SPS at Jodhpur and other stations with STU and ensure loading below N-1 contingency limit at constrained 400/220kV ICTs.

Moreover, ATC/TTC assessed for states such as HP, Uttarakhand, J&K and Ladakh U/T is shown below:

State	**State Generation**	**TTC (MW)**	**RM (MW)**	**ATC (MW)**	**Limiting constraint**
J&K and Ladakh	Low Hydro	1700	150	1550	N-1 contingency of 400/220kV Amargarh ICTs
HP	Low Hydro	1200	100	1100	N-1 contingency of 400/220kV Nallagarh ICTs and 220kV Nallagarh-Uperanangal D/C
Uttarakhand	Low Hydro	1600	100	1500	N-1 contingency of 400/220kV Dehradun and Kashipur ICTs

As discussed in last several OCC meetings, all SLDCs need to furnish ATC/TTC details of their control area at respective SLDC websites. Now, it is being observed that most of the SLDCs except Uttarakhand, J&K and Delhi (real-time violation available) are uploading ATC/TTC limits on their websites.

SLDC	Link for ATC on website
UP	https://www.upsldc.org/documents/20182/0/ttc_atc_24-11-16/4c79978e-35f2-4aef-8c0f-7f30d878dbde
Punjab	https://www.punjabsldc.org/downloads/ATC-TTC0321.pdf
Haryana	https://hvpn.org.in/#/atcttc

Delhi	NA (real-time violation reporting available)
Rajasthan	https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads
HP	https://hpsldc.com/mrm_category/ttc-atc-report/
Uttarakhand	NA
J&K and Ladakh U/T	NA

J&K and Ladakh U/Ts and Uttarakhand 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.

Plots suggesting N-1 non-compliance at several 400/220kV ICTs is attached as **Annexure-B.III**. It is again requested that SLDCs may ensure that loading of ICTs and lines are below their N-1 contingency limits.

All SLDCs are requested to share basecase as well as ATC/TTC assessment with NRLDC/NRPC on monthly basis as well as upload on their websites.

Members may like to discuss.

22. Grid operation related issues

(i) SPS Implementation at Bhadla (PG)

The SPS logic decided in the 45th TCC meeting and approved in the 48th NRPC meeting was The SPS logic decided in the 45th TCC meeting and approved in the 48th NRPC meeting was explained to OCC members in 181 OCC meeting. POWERGRID representative had intimated that QR for the SPS tender has already been finalized and NIT may be floated within next two weeks

In 183 OCC meeting, POWERGRID representative stated that presently QR has been approved and tender documents are being prepared by C&M department. It is expected that the work is likely to awarded by June end. OCC expressed concern on the slow progress and asked POWERGRID to expedite the work in view of increasing solar generation and importance of SPS in the complex. NRLDC representative also highlighted the importance of SPS in the complex and asked POWERGRID to expedite the work as it is pending since long.

In 186 OCC meeting, POWERGRID representative stated that work is in tendering stage and is expected to be awarded in September 2021. NRLDC representative more generation is being commissioned at Bhadla and nearby Fatehgarh and Bikaner stations. The importance of SPS in the complex was once again highlighted and OCC expressed concern on the slow progress of work. POWERGRID was asked to expedite the work as same status is being furnished in last several OCC meetings. It was also mentioned that since new solar plants are being commissioned at Bhadla, there may be need to slightly modify the SPS.

POWERGRID may kindly share the latest status with OCC forum.

(ii) 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.IV**).

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.

(iii) 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.

(iv) Maintaining frequency profile of the grid

In last several OCC meetings, SLDCs were asked to take necessary actions to minimize large fluctuations during real-time.

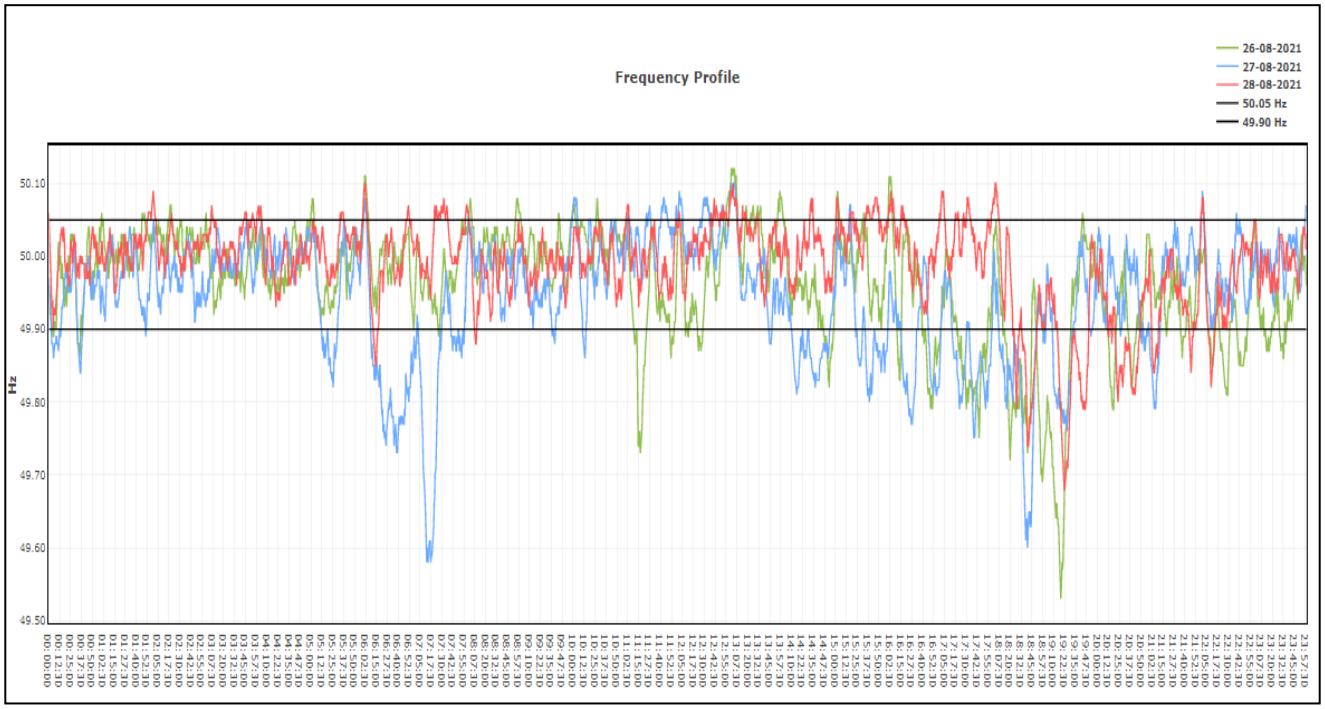
In 181st OCC meeting, it was deliberated that some improvement was seen in frequency profile and excursions were reduced in last month, however there is still need for significant improvement in load changeover and primary frequency response from generators. Still frequency excursion can be observed which need to be further minimized.

UP representative stated that they are regularly taking up the matter for primary frequency response from generators after every event. State generators have been asked to conduct primary frequency response testing. Initiatives are also being taken to minimize sudden load change at hourly boundaries.

Punjab representative informed that performance of generators is being monitored regularly and quarterly reports are being sent to SERC. The primary frequency response of generators under Punjab state control area has improved over the years.

In 182 OCC meeting, UP SLDC representative stated that they are trying to stagger supply hours such that some areas are provided supply five minutes before or after block change so as to minimize the change in demand during hourly/ block boundary. Apart from this, they are regularly taking up the matter for primary frequency response from generators after every event.

In spite of such persuasion, it is observed that there are frequency excursions especially at hourly boundaries. Moreover, on several occasions continuous low frequency operation was observed. To minimize this, as has been requested many times, all utilities shall try and ensure maximum possible intrastate generation.



Frequency profile for 26-28 Aug 2021 showing continuous low frequency operation

Due to unfavorable weather conditions during last week of August, All India demand was on the higher side. On several days, it was observed that frequency was below the band for most of the time. All India demand being on the higher side, touched 191567MW at 10:55hrs on 27.08.2021, and frequency remained below IEGC band in morning hours, touched 49.58 Hz at 07:14 hrs. All available RRAS (UP) margin was dispatched and no margins was available.

During this time some of the NR states had overdrawal as shown in **Annexure-B.V**. In order to maintain the Grid security all SLDCs were requested to take proactive steps as follows:

- Ensure that ADMS is in service
- Ensure healthiness and availability of AUFLS and df/dt load shedding.
- Ensure revival of intra-state generators under economic shutdown/RSD
- Ensure portfolio balancing through STOA/RTM market segments
- Ensure no under injection by the generators from schedule
- In case of inadequate margins in intrastate generators measures for emergency load regulation measures may be taken in interest of grid security.
- Pursue generators to expedite revival of thermal units under forced outage wherever feasible.
- Concurrence of beneficiaries to be taken in real-time before allowing planned outage of ISGS thermal units.

In this case, the list of radial feeders become very important. Utilities have been requested number of times to update list of radial feeders which can be opened on the directions of NRLDC to regulate the demand. List of such radial feeders has been provided by respective utilities and is part of 'Operating Procedure of Northern Region'. Latest updated document is available at https://nrldc.in/download/operating-procedure-of-northern-region-for-2017-18-2/?wpdmdl=8251. Following are the attributes for such feeders:

- Feeders shall be radial in nature
- They should usually have substantial load flow so that reduction of drawal can be prominently noticed on opening of such lines.

List of radial feeders have been received from Rajasthan, UP and Punjab SLDC, they are requested to provide above mentioned information also. Even after repeated requests, the respective information is pending from many utilities.

The opening of feeders is generally an extreme step which shall be required in case of threat to grid security and non-adherence to RLDC instructions to manage overdrawl by SLDCs/ DISCOMs. In such a case, every utility needs to take actions to support RLDC by following their instructions including opening of feeders.

SLDCs are once again requested to review and share the list of the following:

- Intrastate 132kV feeders and 220/132 kV and 132kV / 33 kV transformers which supply load radially within the state and can be disconnected at the instruction of SLDC
- Tie lines which supply load radially within the state, which can be switched off from the substation belonging to a different entity, at the instruction of RLDC
- 400/220kV and 220/132kV ICTs at state boundary, which cater load radially and can be switched off from the substation belonging to ISTS or other entity

SLDCs are once again requested to verify that

- list of feeders are actually radial in nature and are likely to provide the expected relief
- such feeders are not part of any other scheme such as any SPS, UFR or df/dt actuated shedding

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

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

NR Constituents are once again requested to take initiatives to minimise sudden load changeovers at hourly boundaries and also monitor performance of generators under their jurisdiction when the frequency is having large excursions. Following necessary actions may be taken to minimize frequency excursions during real-time:

- Improving accuracy of load forecasting

- Backing down intra-state generation
- Buying/ Selling power in real-time market
- Surrendering/ Requesting ISGS power timely
- Avoiding manual opening of feeders in coordination with DISCOMs
- RGMO/FGMO shall be ensured in service by advising all state owned and intra-state generators and their compliance needs to be monitored and taken up with SERC if required in addition to staggering of loads.

Members may like to discuss.

23. Frequent forced outages of transmission elements in the month of Aug'21:

The following transmission elements were frequently under forced outages during the month of **Aug''21**:

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt-1	4	UP
2	400 KV Orai-Mainpuri (UP) Ckt-2	3	UP
3	220 KV Badarpur(NT)-Alwar MIA(RS) (RS) Ckt-1	8	NTPC/Rajasthan
4	220 KV Duni(RS)-Kota(PG) (RS) Ckt-1	4	POWERGRID/Rajasthan
5	220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2	4	DTL/POWERGRID
6	220 KV Meerut(PG)-Simbholi(UP) (PG) Ckt-1	4	UP/POWERGRID
7	220 KV Unchahar(NT)-Fatehpur(UP) (UP) Ckt-2	4	NTPC/UP

The complete details are attached at **Annexure-B.VI.** Frequent outages of such elements affect the reliability and security of the grid. Hence, utilities are requested to analyse the root cause of the trippings and share the remedial measures taken/being taken in this respect.

Members may like to discuss.

24. Multiple element tripping events in Northern region in the month of Aug'21:

A total of **20** grid events occurred in the month of Aug'21 of which**15** are of GD-1 category. The preliminary report of all the events have been issued from NRLDC. A list of all these events along with the status of details received by 05-September-2021 is attached at **Annexure-B.VII.**

Further, despite persistent discussions/follow-up in various OCC/PCC meetings, the compliance of the regulations is still much below the desired level.

Maximum Fault Duration is **2040ms** in the event of multiple element tripping at 400/220 kV Bareilly (UP)on 08-Aug-21 at 15:11hrs.

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **10** events out of **20** grid events occurred in the month. In 4number 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 discuss the same. Moreover, utilities may impress upon all concerned for providing the Preliminary Report, DR/EL & Detailed Report of the events in line with the regulations.

Members may like to discuss.

25. Details of tripping of Inter-Regional lines from Northern Region for Aug'21:

One inter-regional line tripping occurred in the month of Aug'21. The details of which is attached at **Annexure-B.VIII.** Out of 1 number of tripping's, no tripping incidents was related to HVDC system. 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.

Members may like to discuss.

26. Status of submission of DR/EL and tripping report of utilities for the month of Aug'21.

The status of receipt of DR/EL and tripping report of utilities for the month of Aug 2021 is attached at **Annexure-B.IX**. 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 CPCC1, CPCC2, CPCC3,Delhi,HP, UP, RajasthanandHaryana in Aug, 2021 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.

27. Frequency response characteristic:

Four FRC based event has occurred in the month of **Aug-2021**. 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	06-Aug-21	10:42hrs	At SEIL P2 (2x660 MW), 400kV SEIL P2 - NPS -1 was under planned outage (concurrence taken from SRPC Forum & SEIL P2) for OPGW repair works by POWERGID from 10:27 Hrs and at 10:41 Hrs 400kV SEIL P2 - NPS -2 tripped due to B-N Fault (Conductor Snapping). Generation Loss of 1230 MW due to tripping of evacuation lines.	50.02	49.99	-0.03
2	15-Aug-21	10:06hrs	As reported, on 15th August 2021 at 10:05 hrs, 400/220kV 500MVA ICT-2 tripped due to differential protection operation and 400/220kV 500MVA ICT-1 and ICT-3 at Bhadla (RS) tripped at 10:06 hrs on overcurrent protection operation. Due to tripping of all three 400/220kV ICTs at Bhadla (RS), approx. 1100MW solar generation loss has occurred as per SCADA.	49.97	49.92	-0.05
3	22-Aug-21	19:44hrs	On 22nd of August 2020 at 19:44 hrs, As reported bus bar protection operated at 400kV Karcham Wangtoo (JSW) resulted into 1400MW generation loss (1080MW at Karcham HEP & 330MW at Baspa HEP).	50.03	49.99	-0.04
4	26-Aug-21	11:13hrs	On 26th of August 2021 at 11:13 hrs, As reported, Solar generation loss of around 1700 MW(scada figure) has been occurred	49.89	49.75	-0.14

			in solar generation complex of Northern region at 765kV Bhadla(PG) & 400kV Fatehgarh2(PG) S/s.			

The Hon'ble CERC approved procedure has already been shared with all concerned during previous OCC meetings. FRC observed for each state control area for the events is tabulated below:

States	06-Aug-21 event	Remarks
PUNJAB	98%	
HARYANA	-142%	
RAJASTHAN	67%	
DELHI	231%	
UTTAR PRADESH	-47%	Demand was in increasing trend
UTTARAKHAND	24%	
CHANDIGARH	38%	
HIMACHAL PRADESH	35%	
JAMMU & KASHMIR	-132%	
NR	31%	

States	15-Aug-21 event	Remarks
PUNJAB	19%	
HARYANA	24%	
RAJASTHAN	415%	Affected Control Area
DELHI	50%	
UTTAR PRADESH	13%	
UTTARAKHAND	70%	
CHANDIGARH	-253%	
HIMACHAL PRADESH	26%	
JAMMU & KASHMIR	-26%	
NR	29%	

States	22-Aug-21 event	Remarks
PUNJAB	89%	
HARYANA	-424%	
RAJASTHAN	26%	
DELHI	256%	
UTTAR PRADESH	16%	
UTTARAKHAND	9%	
CHANDIGARH	-169%	
HIMACHAL PRADESH	309%	
JAMMU & KASHMIR	-8%	
NR	41%	

States	26-Aug-21 event	Remarks
PUNJAB	15%	
HARYANA	-4%	
RAJASTHAN	27%	
DELHI	-1%	
UTTAR PRADESH	13%	
UTTARAKHAND	39%	
CHANDIGARH	59%	
HIMACHAL PRADESH	15%	
JAMMU & KASHMIR	0%	
NR	10%	

FRC calculation of ISGS stations based on NRLDC SCADA data is tabulated below:

Generator	06-Aug-21 event	Generator	06-Aug-21 event
Singrauli TPS	76%	Salal HEP	0%
Rihand-1 TPS	52%	Tanakpur HEP	33%
Rihand-2 TPS	181%	Uri-1 HEP	14%
Rihand-3 TPS	0%	Uri-2 HEP	-36%
Dadri-1 TPS	No generation	Dhauliganga HEP	64%
Dadri -2 TPS	No generation	Dulhasti HEP	12%
Unchahar TPS	675%	Sewa-II HEP	No generation
Unchahar stg-4 TPS	162%	Parbati-3 HEP	0%
Jhajjar TPS	392%	Jhakri HEP	10%
Dadri GPS	No generation	Rampur HEP	0%
Anta GPS	No generation	Tehri HEP	94%
Auraiya GPS	No generation	Koteswar HEP	146%
Narora APS	130%	Karcham HEP	69%
RAPS-B	-2%	Malana-2 HEP	Suspected SCADA Data
RAPS-C	23%	Budhil HEP	6%
Chamera-1 HEP	2%	Bhakra HEP	3%
Chamera-2 HEP	-1%	Dehar HEP	10%
Chamera-3 HEP	27%	Pong HEP	22%
Bairasiul HEP	-22%	Koldam HEP	-10%
		AD Hydro HEP	162%

Generator	15-Aug-21 event	Generator	15-Aug-21 event
Singrauli TPS	-7%	Salal HEP	1%
Rihand-1 TPS	87%	Tanakpur HEP	-14%
Rihand-2 TPS	81%	Uri-1 HEP	25%
Rihand-3 TPS	0%	Uri-2 HEP	0%
Dadri-1 TPS	106%	Dhauliganga HEP	72%
Dadri -2 TPS	151%	Dulhasti HEP	19%
Unchahar TPS	-3%	Sewa-II HEP	No generation
Unchahar stg-4 TPS	92%	Parbati-3 HEP	Suspected SCADA Data
Jhajjar TPS	176%	Jhakri HEP	-2%
Dadri GPS	No generation	Rampur HEP	-23%
Anta GPS	No generation	Tehri HEP	187%
Auraiya GPS	No generation	Koteswar HEP	0%
Narora APS	No generation	Karcham HEP	58%
RAPS-B	1%	Malana-2 HEP	0%
RAPS-C	-16%	Budhil HEP	0%
Chamera-1 HEP	59%	Bhakra HEP	-2%
Chamera-2 HEP	107%	Dehar HEP	-1%
Chamera-3 HEP	9%	Pong HEP	8%
Bairasiul HEP	5%	Koldam HEP	6%
		AD Hydro HEP	-43%

Generator	22-Aug-21 event	Generator	22-Aug-21 event
Singrauli TPS	-3%	Salal HEP	18%
Rihand-1 TPS	No generation	Tanakpur HEP	-22%
Rihand-2 TPS	13%	Uri-1 HEP	33%
Rihand-3 TPS	0%	Uri-2 HEP	0%
Dadri-1 TPS	No generation	Dhauliganga HEP	138%
Dadri -2 TPS	31%	Dulhasti HEP	13%
Unchahar TPS	-9%	Sewa-II HEP	No generation
Unchahar stg-4 TPS	177%	Parbati-3 HEP	0%
Jhajjar TPS	88%	Jhakri HEP	770%
Dadri GPS	176%	Rampur HEP	267%
Anta GPS	No generation	Tehri HEP	48%
Auraiya GPS	No generation	Koteswar HEP	21%
Narora APS	120%	Karcham HEP	-6272%
RAPS-B	-4%	Malana-2 HEP	Suspected SCADA Data
RAPS-C	22%	Budhil HEP	4%
Chamera-1 HEP	-5%	Bhakra HEP	16%
Chamera-2 HEP	7%	Dehar HEP	-6%
Chamera-3 HEP	21%	Pong HEP	-7%
Bairasiul HEP	-4%	Koldam HEP	367%
		AD Hydro HEP	127%

Generator	26-Aug-21 event	Generator	26-Aug-21 event
Singrauli TPS	0%	Salal HEP	1%
Rihand-1 TPS	-1%	Tanakpur HEP	13%
Rihand-2 TPS	11%	Uri-1 HEP	51%
Rihand-3 TPS	13%	Uri-2 HEP	-10%
Dadri-1 TPS	8%	Dhauliganga HEP	No generation
Dadri -2 TPS	1%	Dulhasti HEP	1%
Unchahar TPS	1%	Sewa-II HEP	No generation
Unchahar stg-4 TPS	27%	Parbati-3 HEP	Suspected SCADA Data
Jhajjar TPS	94%	Jhakri HEP	0%
Dadri GPS	No generation	Rampur HEP	Suspected SCADA Data
Anta GPS	No generation	Tehri HEP	No generation
Auraiya GPS	No generation	Koteswar HEP	0%
Narora APS	40%	Karcham HEP	0%
RAPS-B	13%	Malana-2 HEP	Suspected SCADA Data
RAPS-C	3%	Budhil HEP	2%
Chamera-1 HEP	3%	Bhakra HEP	0%
Chamera-2 HEP	11%	Dehar HEP	1%
Chamera-3 HEP	25%	Pong HEP	3%
Bairasiul HEP	No generation	Koldam HEP	2%
		AD Hydro HEP	0%

FRC calculation of major state generators based on NRLDC SCADA data is tabulated below:

Generator	06-Aug-21 event	Generator	06-Aug-21 event
PUNJAB		UP	
Ropar TPS	288%	Obra TPS	Suspected SCADA Data
L.Mohabbat TPS	No generation	Harduaganj TPS	342%
Rajpura TPS	35%	Paricha TPS	0%
T.Sabo TPS	98%	Rosa TPS	-9%
Goindwal Sahib TPS	719%	Anpara TPS	-7%
Ranjit Sagar HEP	-14%	Anpara C TPS	Suspected SCADA Data
Anandpur Sahib HEP	21%	Anpara D TPS	51%
HARYANA		Bara TPS	7%
Panipat TPS	No generation	Lalitpur TPS	1%
Khedar TPS	No generation	Meja TPS	-20%
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	Suspected SCADA Data
CLP Jhajjar TPS	-16%	Alaknanda HEP	72%
Faridabad GPS	No generation	Rihand HEP	18%
RAJASTHAN		Obra HEP	2%
Kota TPS	103%	UTTARAKHAND	
Suratgarh TPS	No generation	Gamma Infra GPS	No generation
Kalisindh TPS	80%	Shravanti GPS	128%
Chhabra TPS	No generation	Ramganga HEP	No generation
Chhabra stg-2 TPS	8%	Chibra HEP	Suspected SCADA Data
Kawai TPS	259%	Khodri HEP	13%
Dholpur GPS	No generation	Chilla HEP	-14%
Mahi-1 HEP	No generation	HP	
Mahi-2 HEP	No generation	Baspa HEP	14%
RPS HEP	No generation	Malana HEP	Suspected SCADA Data
JS HEP	15%	Sainj HEP	0%
DELHI		Larji HEP	12%
Badarpur TPS	No generation	Bhabha HEP	-19%
Bawana GPS	-29%	Giri HEP	9%
Pragati GPS	-30%	J&K	
		Baglihar-1&2 HEP	9%
		Lower Jhelum HEP	No generation

Generator	15-Aug-21 event	Generator	15-Aug-21 event
PUNJAB		UP	
Ropar TPS	-2%	Obra TPS	Suspected SCADA Data
L.Mohabbat TPS	60%	Harduaganj TPS	17%
Rajpura TPS	13%	Paricha TPS	-96%
T.Sabo TPS	33%	Rosa TPS	3%
Goindwal Sahib TPS	189%	Anpara TPS	10%
Ranjit Sagar HEP	0%	Anpara C TPS	0%
Anandpur Sahib HEP	-8%	Anpara D TPS	12%
HARYANA		Bara TPS	2%
Panipat TPS	Suspected SCADA Data	Lalitpur TPS	-3%
Khedar TPS	29%	Meja TPS	0%
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	Suspected SCADA Data
CLP Jhajjar TPS	94%	Alaknanda HEP	2%
Faridabad GPS	No generation	Rihand HEP	-2%
RAJASTHAN		Obra HEP	12%
Kota TPS	10%	UTTARAKHAND	
Suratgarh TPS	23%	Gamma Infra GPS	No generation
Kalisindh TPS	19%	Shravanti GPS	0%
Chhabra TPS	No generation	Ramganga HEP	No generation
Chhabra stg-2 TPS	36%	Chibra HEP	Suspected SCADA Data
Kawai TPS	10%	Khodri HEP	-19%
Dholpur GPS	No generation	Chilla HEP	-8%
Mahi-1 HEP	No generation	HP	
Mahi-2 HEP	No generation	Baspa HEP	7%
RPS HEP	No generation	Malana HEP	-5%
JS HEP	No generation	Sainj HEP	0%
DELHI		Larji HEP	0%
Badarpur TPS	No generation	Bhabha HEP	-6%
Bawana GPS	-39%	Giri HEP	-3%
Pragati GPS	19%	J&K	
		Baglihar-1&2 HEP	-4%
		Lower Jhelum HEP	No generation

Generator	22-Aug-21 event	Generator	22-Aug-21 event
PUNJAB		UP	
Ropar TPS	No generation	Obra TPS	Suspected SCADA Data
L.Mohabbat TPS	No generation	Harduaganj TPS	172%
Rajpura TPS	49%	Paricha TPS	-11%
T.Sabo TPS	120%	Rosa TPS	19%
Goindwal Sahib TPS	No generation	Anpara TPS	-8%
Ranjit Sagar HEP	393%	Anpara C TPS	Suspected SCADA Data
Anandpur Sahib HEP	-13%	Anpara D TPS	2%
HARYANA		Bara TPS	4%
Panipat TPS	Suspected SCADA Data	Lalitpur TPS	59%
Khedar TPS	71%	Meja TPS	-21%
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	Suspected SCADA Data
CLP Jhajjar TPS	-21%	Alaknanda HEP	3%
Faridabad GPS	No generation	Rihand HEP	22%
RAJASTHAN		Obra HEP	0%
Kota TPS	32%	UTTARAKHAND	
Suratgarh TPS	2%	Gamma Infra GPS	-13%
Kalisindh TPS	No generation	Shravanti GPS	0%
Chhabra TPS	No generation	Ramganga HEP	No generation
Chhabra stg-2 TPS	49%	Chibra HEP	Suspected SCADA Data
Kawai TPS	136%	Khodri HEP	7%
Dholpur GPS	No generation	Chilla HEP	-61%
Mahi-1 HEP	No generation	HP	
Mahi-2 HEP	No generation	Baspa HEP	-6281%
RPS HEP	No generation	Malana HEP	2%
JS HEP	No generation	Sainj HEP	Suspected SCADA Data
DELHI		Larji HEP	0%
Badarpur TPS	No generation	Bhabha HEP	-8%
Bawana GPS	-45%	Giri HEP	-18%
Pragati GPS	-1%	J&K	
		Baglihar-1&2 HEP	7%
		Lower Jhelum HEP	No generation

Generator	26-Aug-21 event	Generator	26-Aug-21 event
PUNJAB		UP	
Ropar TPS	-1%	Obra TPS	Suspected SCADA Data
L.Mohabbat TPS	10%	Harduaganj TPS	39%
Rajpura TPS	9%	Paricha TPS	5%
T.Sabo TPS	3%	Rosa TPS	-12%
Goindwal Sahib TPS	76%	Anpara TPS	3%
Ranjit Sagar HEP	0%	Anpara C TPS	26%
Anandpur Sahib HEP	4%	Anpara D TPS	0%
HARYANA		Bara TPS	-10%
Panipat TPS	0%	Lalitpur TPS	11%
Khedar TPS	22%	Meja TPS	0%
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	Suspected SCADA Data
CLP Jhajjar TPS	20%	Alaknanda HEP	2%
Faridabad GPS	No generation	Rihand HEP	3%
RAJASTHAN		Obra HEP	-2%
Kota TPS	-3%	UTTARAKHAND	
Suratgarh TPS	No generation	Gamma Infra GPS	Suspected SCADA Data
Kalisindh TPS	No generation	Shravanti GPS	Suspected SCADA Data
Chhabra TPS	No generation	Ramganga HEP	No generation
Chhabra stg-2 TPS	14%	Chibra HEP	-1%
Kawai TPS	27%	Khodri HEP	7%
Dholpur GPS	No generation	Chilla HEP	0%
Mahi-1 HEP	No generation	HP	
Mahi-2 HEP	No generation	Baspa HEP	3%
RPS HEP	No generation	Malana HEP	3%
JS HEP	No generation	Sainj HEP	-1%
DELHI		Larji HEP	1%
Badarpur TPS	No generation	Bhabha HEP	-2%
Bawana GPS	63%	Giri HEP	-68%
Pragati GPS	-9%	J&K	
		Baglihar-1&2 HEP	-1%
		Lower Jhelum HEP	No generation

Primary Frequency Response by Generators during Grid Event at SEIL on 06th Aug 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
1	**AD Hydro Unit 1**	0.16	Poor response (Unit was running on full load)
2	**AD Hydro Unit 2**	350.92	Satisfactory response
3	**APCPL Jhajjar Unit 1**	270.76	Satisfactory response
4	**APCPL Jhajjar Unit 2**	179.21	Satisfactory response
5	**Koldam HEP**	0.00	Units were running on full capacity, no margin was available.
6	**Chamera I**	123.92	Satisfactory response
7	**N. Jhakri Unit 1**	0.00	Units were running on almost 110% load.
8	**N. Jhakri Unit 2**	27.91	
9	**N. Jhakri Unit 3**	3.10	
10	**N. Jhakri Unit 4**	12.36	

Primary Frequency Response by Generators during Grid Event at SEIL on 06th Aug 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
11	N. Jhakri Unit 5	-19.14	Units were running on almost 110% load.
12	N. Jhakri Unit 6	24.67	
13	KTPS	50.40	Unsatisfactory response
14	STPS+SSCTPS	-9.18	Poor response
15	CTPP	12.34	Unsatisfactory response
16	KALISINDH	61.62	Unsatisfactory response
17	ADANI	187.95	Satisfactory response
18	Singrauli Unit 6	26.80	Unsatisfactory response
19	Tehri HEP	94.57	Satisfactory response
20	TSPL	199.11	Satisfactory response

Primary Frequency Response by Generators during Grid Event at Bhadla on 15th Aug 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
1	Chamera I	86.23	Satisfactory response
2	Rosa TPS Unit 1	-32.19	Poor response
3	Rosa TPS Unit 2	75.07	Satisfactory response
4	Rosa TPS Unit 3	6.76	Unsatisfactory response
5	Rosa TPS Unit 4	-18.14	Poor response
6	N. Jhakri Unit 1	0.00	Units were running on almost 110% load.
7	N. Jhakri Unit 2	3.71	
8	N. Jhakri Unit 3	0.00	
9	N. Jhakri Unit 4	-5.56	
10	N. Jhakri Unit 5	-13.40	

Primary Frequency Response by Generators during Grid Event at Bhadla on 15th Aug 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
11	**N. Jhakri Unit 6**	13.00	Units were running on almost 110% load.
12	**KTPS**	34.05	Unsatisfactory response
13	**STPS+SSCTPS**	6.39	Unsatisfactory response
14	**CTPP**	0.00	Poor response
15	**KALISINDH**	18.83	Unsatisfactory response
16	**ADANI(Kawai)**	27.98	Unsatisfactory response
17	**CSCTPP**	0.00	Poor response
18	**Singrauli Unit 6**	108.02	Satisfactory response (Time mismatch with PMU data)
19	**Tehri HEP**	215.47	Satisfactory response
20	**TSPL**	22.80	Unsatisfactory response

Primary Frequency Response by Generators during Grid Event at Karcham on 22nd Aug 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
1	**AD Hydro Unit 1**	213.34	Satisfactory response
2	**AD Hydro Unit 2**	3.98	Unsatisfactory response
3	**Chamera I**	86.92	Satisfactory response
4	**Singrauli Unit 6**	35.67	Unsatisfactory response
5	**Singrauli Unit 7**	8.34	Unsatisfactory response

Primary Frequency Response by Generators during Grid Event at Bhadla on 26th Aug 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
1	**Rosa unit 1**	-21.68	Poor response
2	**Rosa unit 2**	-19.03	Poor response
3	**Rosa unit 3**	-13.34	Poor response
4	**Rosa unit 4**	-23.72	Poor response
5	**Chamera I**	26.79	Unsatisfactory response
6	**Singrauli Unit 6**	66.43	Unsatisfactory response
7	**Singrauli Unit 7**	1.19	Unsatisfactory response

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.***

For event on 06th Aug, 2021, FRC information has been received from AD Hydro, NHPC, NJPC, Koldam, TSPL, Tehri, Singrauli, Delhi, Haryana & Rajasthancontrol area.

For event on 15th Aug, 2021, FRC information has been received from AD Hydro, NHPC, NJPC, Koldam, TSPL, Tehri, Singrauli, UP, Haryana & Rajasthan control area.

For event on 22nd Aug, 2021, FRC information has been received from AD Hydro, NHPC, Singrauli & UP control area.

For event on 26th Aug, 2021, FRC information has been received from Rosa, NHPC, Singrauli & UP control area.

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

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

Maintaining properly tuned Power System Stabilizers in service is essential for damping of inter area and local mode of oscillations in the grid. As we all know, Indian electricity grid is continuously expanding and lots of Power Electronics devices were also

commissioned in recent years changing the dynamics of grid. As possibility of development of power oscillations under certain operating conditions cannot be ruled out, PS S tuning /re-tuning is required for damping of oscillations.

In this regard one committee at NRPC level was formed in year 2014 and it was agreed that If results of Step Response Test on concerned grid connected generators indicate sufficient damping, generating company would perform next Step Test after three year or at the time of major overhauling of the machine, whichever will be earlier and Generating Companies would arrange for re-tuning of PSS, if Step Response Test indicates insufficient damping of oscillations.

In 180th, 181st, 182nd, 183rd, 184th & 185th OCC meeting, 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.

S. No.	**Name of the Generating Station**	**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 (Yes/ No)**	**Remarks (if any)**

Status report in above format updated till 08thSeptember 2021 and tentative schedule for next tuning exercise is attached as **Annexure-B.X.**

It may be noted that except Anpara-A U-3, Parichha-C U-5, Baspa U-2, Unchahar-II U-1, Jhakri U-1&3, all units of Tehri and Koteshwar, and all units of Rampur HPS, PSS of other major units were last tuned several years ago. Therefore, once again all utilities are requested to arrange exciter step-response test or tuning of their respective units and submit the report of PSS tuning/ re-tuning/ Step Response Test through email to NRPC and NRLDC at seo-nrpc@nic.in and nrldcso2@gmail.com respectively.

Members may kindly accord due priority in this regard and update about their future plan for PSS tuning as there is no progress despite including this agenda in every OCC meeting.

29. Multiple element tripping at 400/220 kV Gr.Noida(UP):

A major grid event of multiple element tripping at 400/220 kV Gr.Noida (UP) occurred on 06thSeptember, 2021 which led to load loss of approximately 650MW in UP Control area.

As reported, R-N phase to earth fault occurred on 220kV Gr. Noida-Noida sec 20 ckt-2. While closing of CB during A/R operation, R-phase LA of 220kV Gr. Noida-Noida sec 20 ckt-2 at Gr. Noida end got blasted, line isolator of same line & Bus isolator at Gr.Noida

(UP) also got damaged due to persisted fault which resulted into bus bar protection operation. Due to bus bar protection operation, 400/220 kV 315 MVA ICT 1 & ICT 5, 220kV Gr.Noida-Noida sec 20 ckt-1 & Ckt-2, 220kV Gr.Noida-RC Green ckt-3 and 220kV Gr.Noida-Noida sec 129 (UP) ckt-1 all tripped. At the same time, 400/220 kV 500 MVA ICT 6 at Gr.Noida (UP) also tripped on PRV protection operation. As per PMU, R-N phase to earth fault with delayed clearance in 640ms is observed. As per SCADA, load loss of approx. 650MW is observed. In antecedent condition, 400/220 kV 315 MVA ICT 1 & ICT 2 and 400/220 kV 500 MVA ICT 5 & ICT 6 at Gr.Noida(UPC) were carrying 132MW, 143MW, 218MW & 221MW respectively.

As per the information received, equipment damage occurred during charging of line on persistent fault. Therefore, utilities are requested to avoid taking charging attempt after tripping of line on fault, and proper patrolling may be carried to ensure healthiness of line before taking the charging code.

Such delayed clearance of fault, non-operation of auto-reclosure during line to ground fault and sensitive protection setting may lead to multiple elements tripping which affect the reliability and security of the grid.

Therefore, it is requested that the events may be analyzed in detail and shortcomings in the operation and protection system may be immediately resolved. A confirmation of the actions taken along with detailed report may please be submitted to NRLDC/ NRPC.

Members may like to discuss.

*****

Annexure-A.I

Follow up issues from previous OCC meetings

1	Sub-stations likely to be commissioned by next two years.	All the concerned states had been requested in past OCC meetings to submit the details of the downstream network associated specially with POWERGRID substations along with the action plan of their proposed / approved networks.	Status details of downstream networks mentioned in **Annexure-A.I.I**.
2	Progress of installing new capacitors and repair of defective capacitors	Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.	Data upto following months, received from various states / UTs: ◎ CHANDIGARH — Sep-2019 ◎ DELHI — Aug-2021 ◎ HARYANA — Apr-2021 ◎ HP — Mar-2021 ◎ J&K and LADAKH — Not Available ◎ PUNJAB — Mar-2021 ◎ RAJASTHAN — Aug-2021 ◎ UP — May-2021 ◎ UTTARAKHAND — Jun-2021 All States/UTs are requested to furnish updated status on monthly basis.
3	Healthiness of defence mechanism: Self-certification	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”.	Data upto following months, received from various states / UTs: ◎ CHANDIGARH — Not Available ◎ DELHI — Mar-2021 ◎ HARYANA — Jun-2021 ◎ HP — Jun-2021 ◎ J&K and LADAKH — Not Available ◎ PUNJAB — Mar-2021 ◎ RAJASTHAN — Jun-2021 ◎ UP — Jun-2021 ◎ UTTARAKHAND — Mar-2021 ◎ BBMB — Jun-2021 All States/UTs are requested to furnish updated status on monthly basis.
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 — Feb-2021 ◎ PUNJAB — May-2021 ◎ RAJASTHAN — Jul-2021 ◎ UP — Jul-2021 ◎ NTPC — May-2021 FGD status details are enclosed as **Annexure-A.I.II**. All States/utilities are requested to furnish updated status of FGD installation progress on monthly basis.

5	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	Anticipated commissioning: Dec' 2021 (delay due to pending supplies by GE)
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under stage inspection. GIS Bay is already available. Work expected to be completed by Dec.21
iii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under stage inspection. GIS Bay is already available. Work expected to be completed by Dec.21
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	PR No 1100002374, Under Tendering
viii	PUNJAB	Dhuri	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	Retendering to be done for 400kV reactors. LOA placed for 220kV reactors.
ix	PUNJAB	Nakodar	1x25 MVAr at 220 kV	Technical bids opened on 14.01.2021.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	Already submitted to PSDF. On hold due to policy decision
xi	RAJASTHAN	Akal	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment would be forwarded to NLDC, POSOCO. The target date is Nov' 2021.
xii	RAJASTHAN	Bikaner	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment would be forwarded to NLDC, POSOCO. The target date is Nov' 2021.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment would be forwarded to NLDC, POSOCO. The target date is Nov' 2021.
xiv	RAJASTHAN	Barmer & others	13x25 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Installment received on dt.19.02.21. Bidding document is under approval.
xv	RAJASTHAN	Jodhpur	1x125 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Installment received on dt.19.02.21. Bidding document is under approval.

Annexure-A.I.I

Sl. No.	Substation	Downstream network bays	Commissioning status of ICTs / Bays	Planned 220 kV system	Revised Target	Remarks
1	Shahjahanpur, 2x315 MVA 400/220 kV	4 Nos. of 220 kV bays to be utilized	Commissioning of ICT Commissioning of Bays Jun/Sep'14	Shajahnapur-Azimpur D/C line		Connected to load on 28.07.2021
				LILO of 220kV Shajahanpur - Sitapur at Shajahanpur PG	Sep'21	Updated in 186th OCC
2	Hamirpur 400/220 kV 2x 315 MVA S/s (Augmentation by 3x105 MVA ICT)	2 nos. bays utilized under ISTS. Balance 6 nos to be utilized	Commissioning of ICT 1st -Dec'13 2nd - Mar'14 3rd - Mar'19 Commissioning of Bays 4 bays - Dec'13 2 bays - Mar'14 2 bays - Mar'19	220 kV D/C Hamirpur-Dehan line. Original schedule: Dec' 2020	Oct'21	Updated in 186th OCC
3	Sikar 400/220kV, 1x 315 MVA S/s	2 Nos. of 220 kV bays	Commissioned (date not available)	Not available	Sep'21	Work order was placed on dt. 13.04.2020 to M/s A to Z Ltd. Works start on dt. 4.12.2020. S/S-32/32, T/E-31/32 (T/E at 27 no. location is pending due to Rajasthan High Court stay), T/S-2.09/8.122 km completed. Targeted to be completed by June'2021.
4	Bhiwani 400/220kV S/s	6 nos. of 220kV bays	Commissioned (date not available)	220kV Bhiwani (PG) - Isherwal (HVPNL) D/c line	Dec'21	Delayed due to RoW issue
5	400/220kV Tughlakabad GIS	10Nos. of 220kV bays	Commissioned (date not available)	RK Puram – Tughlakabad (UG Cable) 220kv D/c line	Jul'22	PO for supply and ETC of D/C UG cable awarded.
				Masjid Mor – Tughlakabad 220kv D/c line	Mar'22	PO for supply and ETC of D/C UG cable awarded.
6	400/220kV Kala Amb GIS (TBCB)	6 Nos. of 220kV bays	Commissioned in Jul'2017	220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Dec'21	Details for utilizing remaining 4 bays is not available

FGD Status

Updated status of FGD related data submission

NTPC (16.06.2021)
MEJA Stage-I
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (16.08.2021)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (17.08.2021)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (16.08.2021)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Lalitpur Power Gen. Co. Ltd. (24.07.2021)
Lalitpur TPS
Lanco Anpara Power Ltd. (24.07.2021)
ANPARA-C TPS

Rosa Power Supply Company (24.07.2021)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (24.07.2021)
Prayagraj TPP
APCPL (17.08.2021)
INDIRA GANDHI STPP

Pending submissions

Adani Power Ltd.
KAWAI TPS
GVK Power Ltd.
GOINDWAL SAHIB
HGPCL
PANIPAT TPS
RAJIV GANDHI TPS
YAMUNA NAGAR TPS

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: 31-08-2020), KAWAI TPS U#2 (Target: 30-06-2020)
APCPL	INDIRA GANDHI STPP U#1 (Target: 31-12-2021), INDIRA GANDHI STPP U#2 (Target: 31-03-2022), INDIRA GANDHI STPP U#3 (Target: 30-06-2022)
GVK Power Ltd.	GOINDWAL SAHIB U#1 (Target: 30-04-2020), GOINDWAL SAHIB U#2 (Target: 29-02-2020) – initial target
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) – initial target

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: 30-04-2020), DADRI (NCTPP) U#6 (Target: 29-02-2020), RIHAND STPS U#1 (Target: 28-02-2022), RIHAND STPS U#2 (Target: 31-12-2021), 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: 31-08-2022), SINGRAULI STPS U#2 (Target: 31-08-2022), SINGRAULI STPS U#3 (Target: 31-08-2022), SINGRAULI STPS U#4 (Target: 31-08-2022), SINGRAULI STPS U#5 (Target: 31-08-2022), SINGRAULI STPS U#6 (Target: 31-08-2022), SINGRAULI STPS U#7 (Target: 31-08-2022), UNCHAHAR TPS U#1 (Target: 30-09-2023), UNCHAHAR TPS U#2 (Target: 30-09-2023), UNCHAHAR TPS U#3 (Target: 30-09-2023), UNCHAHAR TPS U#4 (Target: 30-09-2023), UNCHAHAR TPS U#5 (Target: 30-09-2023), UNCHAHAR TPS U#6 (Target: 31-03-2023), MEJA Stage-I U#1 (Target: 31-03-2022), MEJA Stage-I U#2 (Target: 31-03-2022), TANDA Stage-I U#1 (Target:), TANDA Stage-I U#2 (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) – initial target
Lalitpur Power Gen. Company Ltd.	LALITPUR TPS U#1 (Target: 01-01-2024), LALITPUR TPS U#2 (Target: 01-01-2024), LALITPUR TPS U#3 (Target: 01-01-2024)
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: 31-05-2024), PRAYAGRAJ TPP U#2 (Target: 30-09-2024), 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: 31-10-2024), ROSA TPP Ph-I U#4 (Target: 31-10-2024)
RRVUNL	KOTA TPS U#5 (Target: 31-12-2022), KOTA TPS U#6 (Target: 31-12-2022), KOTA TPS U#7 (Target: 31-12-2022), 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) – initial target
UPRVUNL	ANPARA TPS U#1 (Target: 31-10-2022), ANPARA TPS U#2 (Target: 31-08-2022), ANPARA TPS U#3 (Target: 30-06-2022), ANPARA TPS U#4 (Target: 30-04-2022), ANPARA TPS U#5 (Target: 28-02-2022), ANPARA TPS U#6 (Target: 30-06-2021), ANPARA TPS U#7 (Target: 30-04-2021), HARDUAGANJ TPS U#8 (Target: 31-12-2021), HARDUAGANJ TPS U#9 (Target: 31-12-2021), OBRA TPS U#9 (Target: 31-08-2022), OBRA TPS U#10 (Target: 31-10-2022), OBRA TPS U#11 (Target: 31-12-2022), OBRA TPS U#12 (Target: 30-06-2022), OBRA TPS U#13 (Target: 30-04-2022), PARICHHA TPS U#3 (Target: 30-04-2022), PARICHHA TPS U#4 (Target: 30-04-2022), PARICHHA TPS U#5 (Target: 28-02-2022), PARICHHA TPS U#6 (Target: 31-12-2021)

Annexure-A.II

POWERLINKS TRANSMISSION LIMITED

(A Joint Venture of Tata Power & POWERGRID)
An ISO-9001: ISO-14001 and OHSMS-18001 Certified Company

Ref No.: PTL/CC/NRPC/ **Agenda**/ 2022
Dated: 07th September 2021.

To,
Northern Regional Power Committee,
Shaheed Jeet Singh Marg, Qutab Institutional Area
New Delhi - 110016

Kind Attn.: Mr. Saumitra Mazumdar

Subject: Agenda in OCC meeting for Powerlinks - Discussion to consider the line tripping due to kite flying/thread in Deemed availability

Dear Sir,

Since last some year, we are facing problem that our line is being tripped due to kite thread / kite flying. So, you are requested to consider it in Deemed Availability.
We want to discuss this problem in OCC meeting.
So, you are requested to consider subjected matter it in OCC Agenda.

Thanking You,
Yours Faithfully,
For Powerlinks Transmission Ltd.

(S.K. Shukla)
Group Head-Procurement, IT, BD & Compliance
Powerlinks, New Delhi.
Office- 011-45159524
Mob: - 08948904562.

उत्तरप्रदेशराज्य भारप्रेषणकेन्द्र
उ0प्र0पॉवरट्रांसमिशनकारपोरेशन लि0
(उत्तर प्रदेशसरकारका उपक्रम)
यू0पी0एस0एल0डी0सी0 परिसर, विभूति खण्ड–।।
गोमतीनगर, लखनऊ–226010
दूरभाष:
ई–मेल : sera@upsldc.org

U.P. State Load De
U.P. Power Transmission Corporation Ltd.
(A U.P. Govt. Undertaking)
UPSLDC Complex, VibhutiKhand – II
Gomti Nagar, Lucknow- 226010
Phone:
E-mail: sera@upsldc.org

Annexure-A.III

No: - 2175 /CE(PSO)/SE(R&A)/EE-II/SPS Dated: - 6-9- 2021

Member Secretary,
NRPC 18-A, SJSS Marg,
Katwaria Sarai, New Delhi – 110016

Subject: - Regarding inclusion of proposed SPS Scheme at 400kV S/S Lucknow PG & Sohawal PG in the agenda for 187th OCC meeting of NRPC, New Delhi.

As discussed in the 186th OCC meeting of NRPC, New Delhi, kindly find enclosed herewith logic of proposed SPS at 400kV S/S Sohawal (PG) & Lucknow (PG). You may include it in the main agenda of upcoming 187th OCC meeting of NRPC.

Encl: As above

06/9/21
(Zahir Ahmad)
Chief Engineer (PSO)

No: - 2175 /CE(PSO)/SE(R&A)/EE-II/SPS Dated: - 6-9- 2021

Copy forwarded to following for information and necessary action:-

1. Director (SLDC), Vibhuti Khand – II, Gomti Nagar, Lucknow.
2. Director (Operation), UPPTCL, 11th Floor, Shakti Bhawan Extn., Lucknow. (director_op@upptcl.org)
3. Director (Commercial & Planning), UPPTCL, 5th Floor Shakti Bhawan, Lucknow.
4. Chief Engineer (C&S), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
5. Chief Engineer (Transmission Central), Pareshan Bhawan, Vibhuti Khand, Gomti Nagar, Lucknow (**With a request to ensure representation at 187th OCC meeting to discuss subject issue**).
6. Chief General Manager (Incharge), NRLDC, 18 – A SJSS Marg, Katwaria Sarai, New Delhi, 110016.
7. Superintending Engineer (SC), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.

06/9/21
(Zahir Ahmad)
Chief Engineer (PSO)

Logic for Proposed SPS (System Protection Scheme) at Sohawal (PG) & Lucknow (PG)

Name of Substation	ICT Rating	Tripping Logic -I		Tripping Logic -II		Tripping logic-III (applicable when one of the ICT trip)		Priority of feeders for load cutoff (Review Required by UPPTCL)
		%setting	Time Delay	%setting	Time Delay	%setting	Time Delay	Priority andName of elements
400kV s/s Sohawal PG	315MVA ICT-I	Above 90 % of Rating	5 sec	Above 95 % of Rating	5 sec	215 MVA	Instantneous	1. 220 KV Barabanki-I 2.220 KV Barabanki-II 3.220KV Bahraich 4. Gonda
	315MVA ICT-II	Above 90 % of Rating	5 sec	Above 95 % of Rating	5 sec	215 MVA	Instantneous	
400kV s/s Lucknow PG	500MVA ICT-I	Above 90 % of Rating	5 sec	Above 95 % of Rating	5 sec	330 MVA	Instantneous	1. 220 KV Kursi Road-I 2.220 KV Kursi Road-II 3.220KV BKT
	500MVA ICT-II	Above 90 % of Rating	5 sec	Above 95 % of Rating	5 sec	330 MVA	Instantneous	

O/C

उ0प्र0पावर ट्रान्समिशन कारपोरेशन लिमिटेड

OFFICE OF THE CHIEF ENGINEER(T.C.)
U.P. Power Transmission Corporation Ltd.
Pareshan Bhawan", Near Mantri Awas
Vibhuti Khand-II, Gomti Nagar,
Lucknow- 226010 (U.P.)
E-mail- cetc@upptcl.org
CIN : U40101UP2001SGC028687

कार्यालय मुख्य अभियन्ता (पा0म0),
उ0प्र0 पावर ट्रान्समिशन कारपोरेशन लि0,
पारेषण भवन, निकट मंत्री आवास
विभूति खण्ड–II, गोमतीनगर,
लखनऊ –226010(यू0पी0)
GSTIN : 09AACU8823E1Z9

पत्रांक 1454 –मु0अ0(पा0म0)/ SLDC

दिनांक 12-07-2021

Subject :- Regarding installation of SPS (System Protection Scheme) at 400KV Lucknow (PG) & Sohawal (PG) substations.

Chief Engineer (C&S)
SLDC Campus, Vibhuti Khand,
Gomti Nagar,
Lucknow

In continuation to this office letter no. 1373 CE(TC)/SLDC Dated 02.07.2021 regarding installation of SPS (System Protection Scheme) at 400KV Lucknow (PG) & Sohawal (PG) substations. In this regard it is to inform that setting of SPS is to made at 90% loading of ICTs or incase of tripping of any ICTs at 400KV S/S and find the revised priority/name of feeders which are to be disconnected at the time of operation of SPS as a given below ;-

Sl.No.	Name of Substation	Priority/Name of 220KV Feeders
1.	400KV S/S Lucknow(PG)	220KV Kursi Road-I 220KV Kursi Road-II 220KV BKT
2.	400KV S/S Sohawal(PG)	220KV Barabanki-I 220KV Barabanki-II 220KV Bahraich

Submitted for kind information and necessary action.

(Piush Garg)
Chief Engineer(TC)

CC:-

1. Superintending Engineer UPPTCL, Electricity Transmission Circle-I Lucknow/Sultanpur.
2. Superintending Engineer UPPTCL, Electricity Testing & Comm. Circle- Lucknow

SE(EA)/ SE(OA & SCH)/ SE(RAU)/ SE(SCADA) & IT)/ SE(SC)/ SE(R&A)/ SE(HQ)

CE(C&S)
13-07-21

EE-II
13/7/21

AE-1
13-7-21

UPSLDC.ORG
Uttar Pradesh State Load Despatch Centre

Superintending Engineer (R&A) <sera@upsldc.org>

Minutes of Meeting for proposed SPS (system Protection Scheme) at Sohwal (PG) & Lucknow (PG) held on 02.08.2021

2 messages

Superintending Engineer (R&A) <sera@upsldc.org> Wed, Aug 11, 2021 at 1:59 PM
To: director_op <director_op@upptcl.org>, cetc <cetc@upptcl.org>, NRLDC SO-II <nrldcso2@gmail.com>, NRLDC SO 2 <nrldcso2@posoco.in>, cpcc nr3 <cpcc.nr3@powergrid.co.in>, cpccnr1@powergrid.co.in
Cc: "Director (SLDC)" <directorsldc@upsldc.org>, Chief Engineer <cecs@upsldc.org>, "Superintending Engineer (SC)" <sesc@upsldc.org>, "Superintending Engineer (SCADA & IT)" <sescadait@upsldc.org>, SE TNC Lucknow <setnclko@upptcl.org>

Sir,
PFA

IMG_0002.pdf
4065K

CPCC NR III <cpcc.nr3@powergrid.co.in> Mon, Aug 16, 2021 at 1:28 PM
To: "Superintending Engineer (SC)" <sesc@upsldc.org>, "Chief Engineer (PSO)" <cepso@upsldc.org>, Chief Engineer <cecs@upsldc.org>, directorsldc <directorsldc@upsldc.org>, director op <director_op@upptcl.org>, director project <director_project@upptcl.org>, cetne <sera@upsldc.org>, cetne <cetne@upptcl.org>
Cc: "Devanand Kushwaha, {डी. कुशवाहा}" <DevanandKushwaha@powergrid.in>, nverma <nverma@powergrid.in>, Ashish Kumar Sir आशीष कुमार सिंह <ashishkumarsingh@powergrid.in>

Dear Sir,

This has reference to MOM iro proposed System Protection Scheme(SPS) at 400 KV Lucknow and Sohawal Sub-Station by UPPTCL, Value of X and T are proposed as below-

400 KV Sohawal Sub-Station	Proposed: Whenever ICT-1 or ICT-2 crosses 90% (5 Sec) loading then feeder- I (To be decided by UPPTCL) will trip through SPS.
	Proposed: Whenever ICT-1 or ICT-2 crosses 95% (5 Sec) loading then feeder-II/III (To be decided by UPPTCL) will trip through SPS.
400 KV Lucknow Sub-Station	Proposed: Whenever ICT-1 or ICT-2 crosses 90% (5 Sec) loading then feeder-I (To be decided by UPPTCL) will trip through SPS.
	Proposed: Whenever ICT-1 or ICT-2 crosses 95% (5 Sec) loading then feeder-II/III (To be decided by UPPTCL)will trip through SPS.

Above SPS shall be implemented through PLC based logic controller.

Regards
Shift In-charge
RTAMC/CPCC,NR-3
POWERGRID, Lucknow
C/R No: 8004915790, 7800109748

From: sera@upsldc.org
To: "director op" <director_op@upptcl.org>, cetc@upptcl.org, nrldcso2@gmail.com, nrldcso2@posoco.in, "CPCC NR III" <cpcc.nr3@powergrid.co.in>, "cpcc NR I" <cpccnr1@powergrid.co.in>
Cc: directorsldc@upsldc.org, cecs@upsldc.org, sesc@upsldc.org, sescadait@upsldc.org, setnclko@upptcl.org
Sent: Wednesday, August 11, 2021 1:59:40 PM
Subject: Minutes of Meeting for proposed SPS (system Protection Scheme) at Sohwal (PG) & Lucknow (PG) held on 02.08.2021

कार्यालय अधीक्षण अभियन्ता
विद्युत परीक्षण एवं परिचालन मण्डल,
उ0प्र0पावर ट्रॉसमिशन कारपोरेशन लि0.
तृतीय तल,पारेषण भवन, विभूति खण्ड,
गोमती नगर, लखनऊ–226010
दूरभाष–9450909474

OFFICE OF THE SUPERINTENDING ENGINEER
ELECTRICITY TEST & COMMISSIONING CIRCLE,
U.P.POWER TRANSMISSION CORPORATION LTD.,
3rd FLOOR, PAARESHAN BHAWAN, VIBHUTI KHAND,
GOMTI NAGAR, LUCKNOW-226010
E-mail- setncilko@upptcl.org

No.पत्रांक: 253 ET&CC (L) /वि.परी.एवं परि.मं.(ल.)/ Dated/दिनांक: 04-09-/2021

Subject:- Regarding SPS system at 400KV PGCIL S/s, Sohawal.

Superintending Engineer (R&A)
UPSLDC,
UPSLDC, Bhawan, Gomti Nagar
Lucknow

With reference to the subject cited above the priority of tripping in case of tripping of any of the ICTs shall be as below:-

1. 220KV Barabanki- I
2. 220KV Barabanki- II
3. 220KV Bahraich
4. 220KV Gonda

(Md. Reza Ahmad)
Superintending Engineer

No. / ET&CC (L)/ of dated

Copy forwarded to the following information and necessary action:-

1 Chief Engineer (T.C.), U.P.P.T.C.L., Pareshan Bhawan, Gomti Nagar, Lucknow.

(Md. Reza Ahmad)
Superintending Engineer

Annexure-A.IV

REPORT

ON

TOWER COLLAPSE/DAMAGE

IN

400kV D/C (QUAD) KAITHAL-BAGHPAT TL

POWER GRID CORPORATION OF INDIA LTD.
GURGAON

JULY 2021

SUB: REPORT ON TOWER COLLAPSED/DAMAGED IN 400kV D/C (QUAD) KAITHAL-BAGHPAT TL

1.0 BACKGROUND

400kV D/C (Quad) Kaithal-Baghpat Ckt-I & Ckt-II tripped on line fault on 08.07.2021 at 20:51hrs. The fault distance was 144 km from Kaithal end and 9.3 km from Baghpat end. During emergency patrolling, it was found that tower at location 389 (DA+0) has collapsed. The cross arm/earthwire/OPGW peak damages has also been observed at location no. 388(DA+0), 390(DA+0) & 391(DA+0). Thunderstorm activities was reported at the time of tripping.

1.1 As per the Office Memorandum No. 5-41\Secy\CEA\2001\2070 dated 05/09/2002, every incident of tower failure must be reported to CEA for investigation by a Standing Committee of Experts constituted by CEA. The incident was intimated to CEA on 09.07.2021.

1.2 Vide e- office note dated 09.07.2021, a team comprising following officials from CC-Engg, CC-AM & RHQ-AM/Site representatives was constituted for investigation of the tower collapse/damage..

1) Sh.G K Gupta, Sr.DGM (CC-Engg-TL)
2) Sh.Ranjeet Kumar, Chief Manager (CC-AM)
3) Sh. Paramjit Singh, Chief Manager (Patiala,NR-II)

Committee members along with CEA officials Sh. Akshay Dubey & Sh. Mohit Mudgal has visited the tower collapsed locations on 09-07-2021 for analys the reason of collapse/damages.

2.0 Brief History

2.1 Originally, 400kV D/C (Quad) Kaithal-Meerut line was constructed in the year Nov' 2010. LILO of the line was done at Baghpat in May'2016 which was constructed by M/s Jyoti Structures Ltd. The tower collapse has occurred in LOOP in portion of 400kV D/C (Quad) Kaithal-Baghpat TL(LILO) (WZ-IV) .

2.2 The suspension towers of this line were designed for basic wind speed of 47 m/s corresponding to Wind Zone-IV reliability level 1 as per IS 802-1995. Also narrow front wind on tower body & 75% of wind in broken wire condition has been considered. As per NBC wind map-2016, affected area now lies in WZ-V. The tower was designed with Quad ACSR Moose conductor with double I string having porcelain disc insulators. At present, the is having polymer insulators

3.0 Observations:

3.1 **Tower Spotting Details:** The details of tower spotting in the relevant sections are as follows:

Sl. No.	Loc. No.	Type of Tower	Forward Span (m)	Angle of Dev.	Extent of damage
	386	DD+18	**393**	26⁰ 44′ 01″ LT	
1	387	DA+0	325		
2	388	DA+0	275		One earth wire Peak damage.
3	**389**	**DA+0**	**341**		**Tower collapse**
4	390	DA+0	317		Both earth wire peak damage
5	391	DA+0	350		One middle cross arm damage
6	392	DB+0	242	07⁰ 59′ 04″ RT	

3.2 **Observations in respect of Failure/ damages**:

(a) The above affected suspension towers are located in the plain field area near village-,Bijraul, Dist.-Baghpat around 9.3km from Baghpat S/S. This is 1st incident of tower collapse/damages in this line.

(b) Location wise failure details are as follows:

- Location 388: Earth wire peak of Ckt-I side damaged.
- Location 389: Tower collapsed from 1st panel.
- Location 390: Both earth wire peak damaged.
- Location 391: Middle cross arm of Ckt-II damaged.

(c) Failed tower were examined for missing members and bolt & nuts. It was found that there were no missing members and bolts & nuts. Further, as per the data available in PATROSOFT, the patrolling of above tower location was carried out on 23.06.2021 and no major defects like missing members, missing nuts & bolts were reported.

Further, towers adjacent to failed location were also examined for any missing members and no missing members were found.

(d) During the visit to collapsed/ damaged locations, Back to back dimension at stub top were measured. No appreciable difference were observed when compared with the values indicated in the drawings.

(f) From the failure pattern, it appears that this tower has collapsed due to high intensity localized thunderstorm.

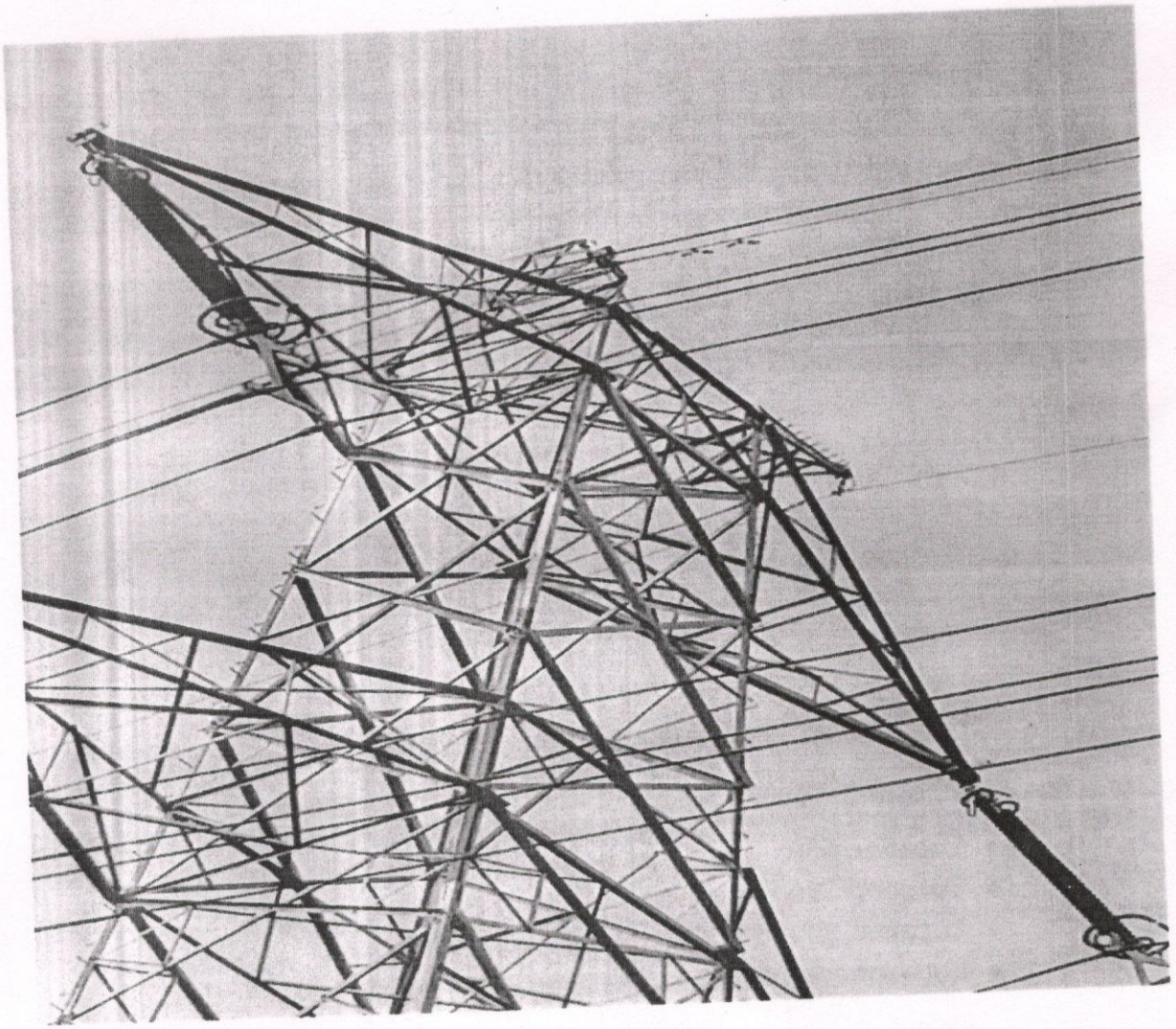


Figure 1 Photograph of damaged earth wire peak at Loc no 388

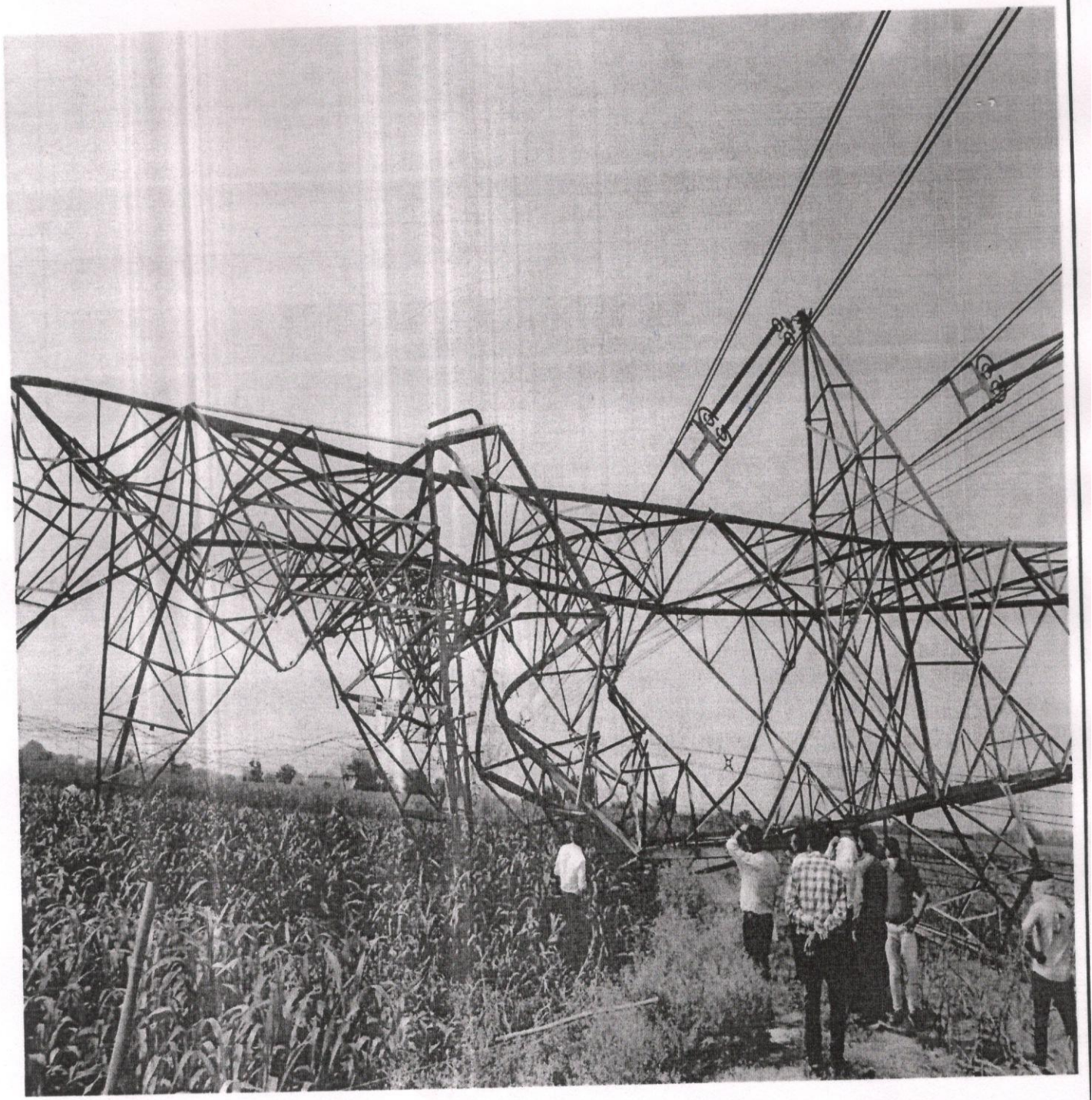


Figure 2 Photograph of Collapsed tower at Loc no 389

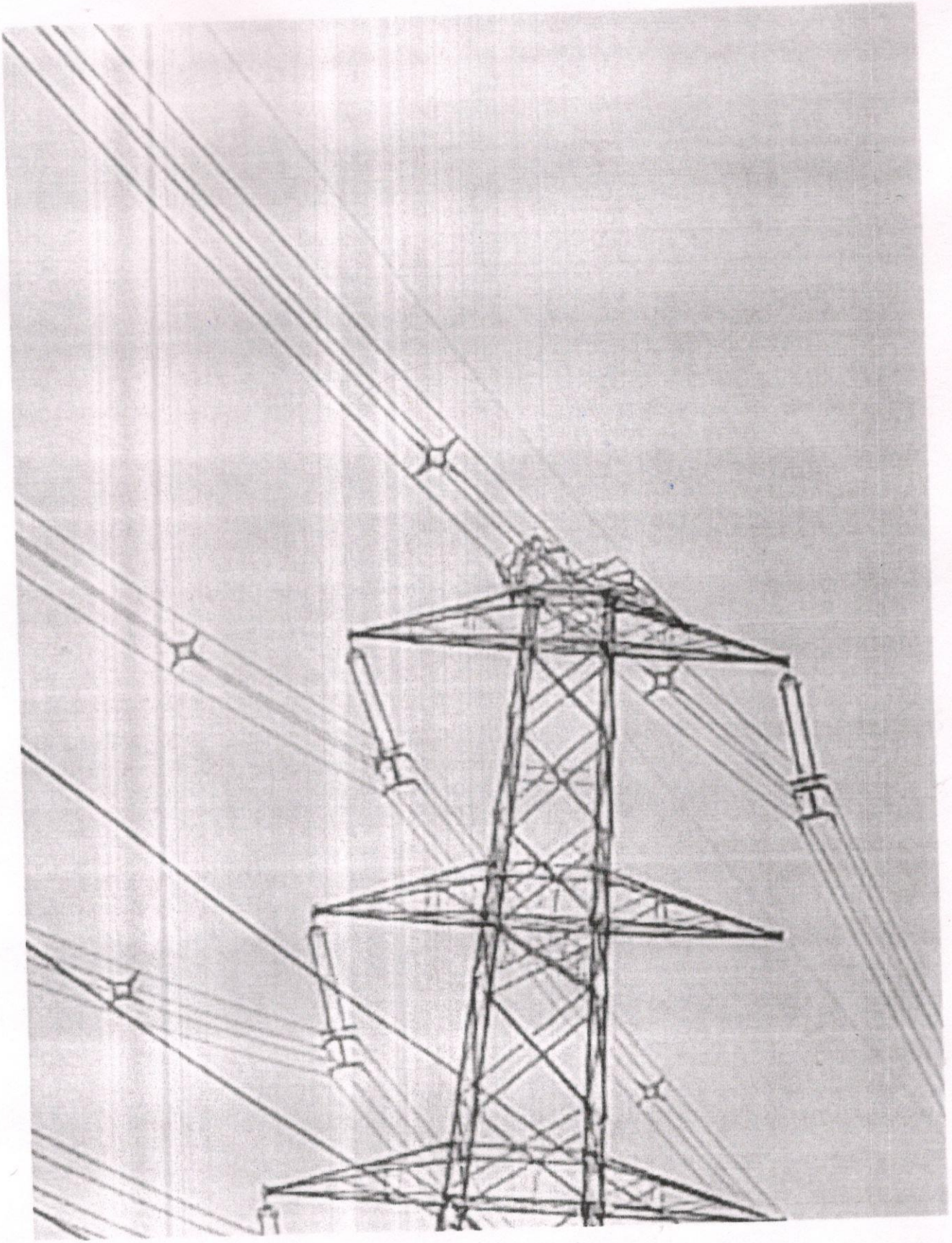


Figure 3 Photograph of damaged cross arm & Peak at Loc no 390

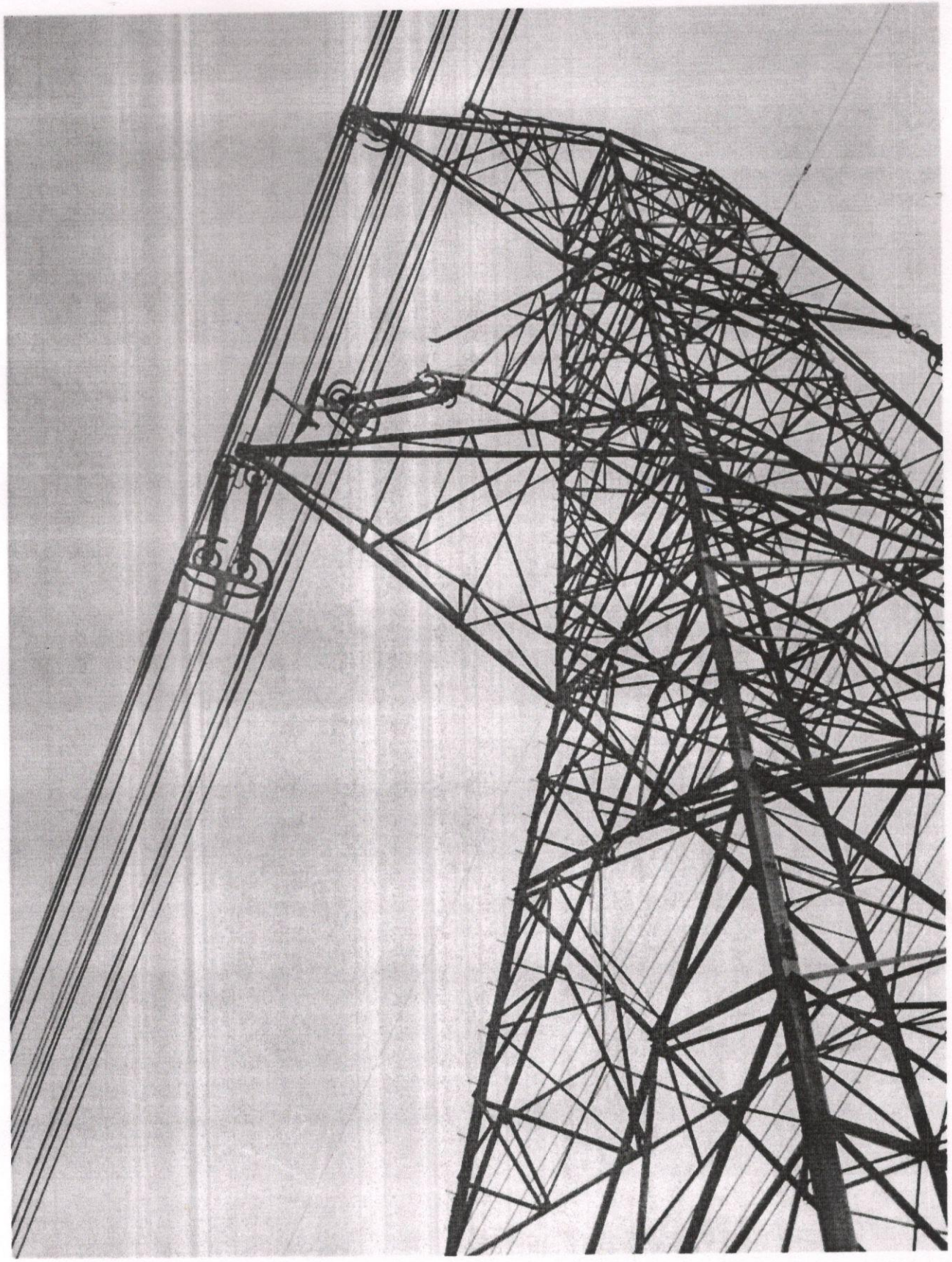


Figure 4 Photograph of damaged cross arm at Loc no 391

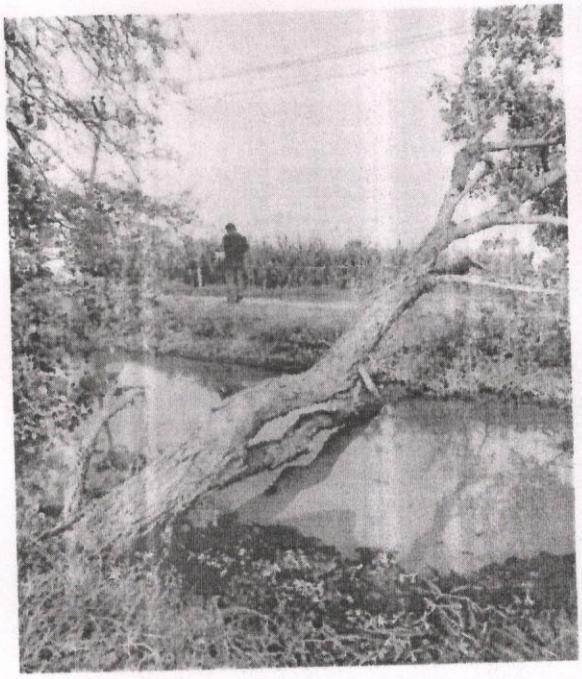


Figure 5 Damaged trees in the vicinity

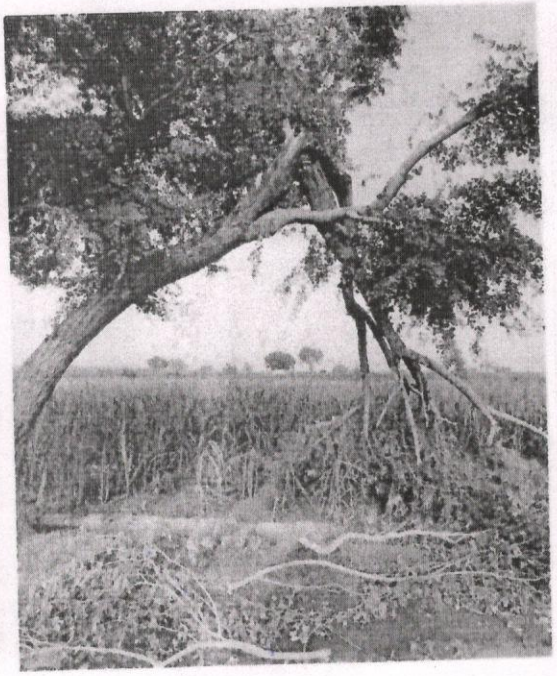


Figure 6 Damaged trees in the vicinity

Figure 7 Damaged trees in the vicinity

Figure 08 damaged electric pole

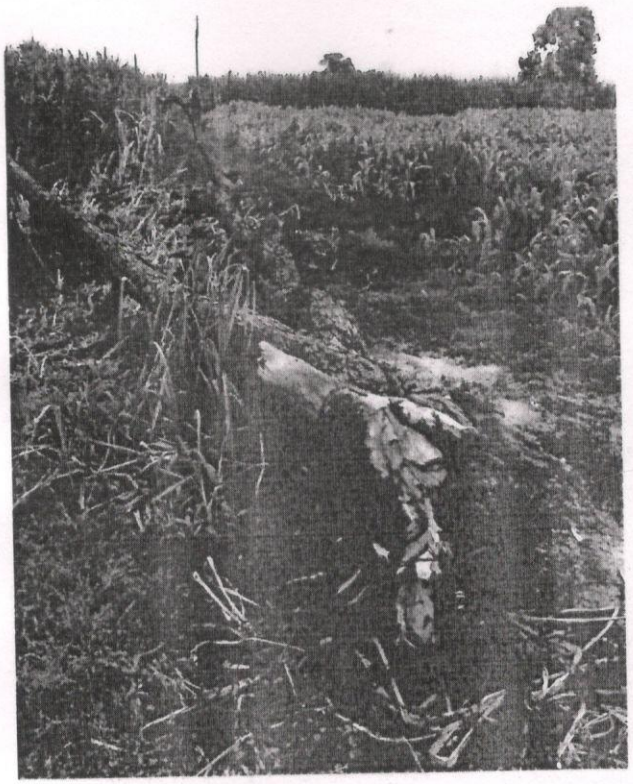


Figure 9 Damaged trees in the vicinity

आंधी में टूटे विद्युत पोल, क

कटौती मुक्त बिजली सप्लाई देने की घोषणा पहले दिन ही फेल

बिजरौल गांव के जंगल में देर रात तूफान में टूटा हाईटेंशन का टॉवर। स्वयं

विद्युत निगम को हुआ सात लाख का नुकसान

Figure 10 New paper report

4.0 Damage to other infrastructure in the vicinity:

a) Discussion with the local people in the nearby villages revealed that wind with exceptionally high velocity blew at the time of tower collapse in the area.

b) Trees along the nearby village road were also damaged due to heavy wind. The tree were located at about 40- 50m away from tower locations. From this it appeared that wind in narrow width might had hit the tower.

c) The event was widely reported in the local print media (Copy enclosed). As per the newspaper reports, heavy damage occurred in the area on 08-07-2021 due to high intensity localized thunderstorm. HT & LT lines were also found fallen in nearby area.

5.0 Reasons for failure:

Based on the observation of damaged trees in the vicinity, it appears that the high speed windstorm/thunderstorm was prevailing in the vicinity of affected stretch of transmission line.

The tower at location no-389 collapsed in transverse direction of line and subsequently due to jerk during collapse, peak of tower at location no-388,390 and cross arm at location no-391 were also damaged.

6.0 Restoration plan:

Transmission line had been restored on 15.07.2021 on normal towers.

7.0 Material testing:

Sample of tower material of location no 389 were identified and sent for testing in NABL accredited lab for determining the UTS (Ultimate Tensile Strength) and Chemical composition.

16/07/21	16/07/21	16/7/21
G K Gupta	Ranjeet Kumar	Pramjit Singh
Sr.DGM (Engg), CC	CM (AM), CC	CM, Patiala, NR-II

उत्तर प्रदेश राज्य भार प्रेषण केन्द्र
उ0प्र0पॉवर ट्रांसमिशन कारपोरेशन लि0
(उत्तर प्रदेश सरकार का उपक्रम)
यू0पी0एस0एल0डी0सी0 परिसर, विभूति खण्ड–।।
गोमतीनगर, लखनऊ–226010
दूरभाष:
ई–मेल : sera@upsldc.org

U.P. State Load De
U.P. Power Transmission Corporation Ltd.
(A U.P. Govt. Undertaking)
UPSLDC Complex, VibhutiKhand – II
Gomti Nagar, Lucknow- 226010
Phone:
E-mail: sera@upsldc.org

Annexure-A.V

No: - 2130 /CE(PSO)/SE(R&A)/EE-II/ SPS Dated: - 01-09- 2021

Executive Director,
NRLDC 18-A, SJSS Marg,
Katwaria Sarai, New Delhi – 110016

Subject: - Report on SPS operation during grid event at 500KV HVDC Rihand-Dadri at 04:15 hrs on 21 August, 2021

Kindly find enclosed herewith report on SPS operation detail during grid event at 500kV HVDC Rihand-Dadri at 04:15 hrs on dated 21.08.2021 as required by NRLDC vide email received on 24.08.2021. It has been informed by concerned authority of UPPTCL that load shedding at 220kV Substation Modipuram and Muradnagar did not occur as per planned operation. As per field authority, SPS is not healthy at 220kV substation Modipuram and Muradnagar and information of the same has been given to PGCIL (as SPS system is maintained by PGCIL) vide letter no- 892/वि0पा0ख0(ई0टी0डी0)मेरठ(एमआरटी) dated 15.04.2021 & 1037/वि0पा0ख0 (ई0टी0 सी0)मेरठ(एमआरटी) dated 20.04.2021 and letter No- 862EM TSD/MUN/M-1 dated 19.02.2021.

This is for your kind information.

01/9/21
(Zahir Ahmad)
Chief Engineer (PSO)

No: - 2130 /CE(PSO)/SE(R&A)/EE-II/ SPS Dated: - 01-9- 2021

Copy forwarded to following via email for information and necessary action:-

1. Director (SLDC), Vibhuti Khand – II, Gomti Nagar, Lucknow.
2. Director (Operation), UPPTCL, 11th Floor, Shakti Bhawan Extn., Lucknow
3. Executive Director NR – 1, Power Grid corporation of India Ltd., B9, Qutub Institutional Area, Katwaria Sarai, New Delhi, Delhi – 110019 (hkmallick@powergridindia.com) **(With the request to rectify issues with SPS system at 220 kV substations Modipuram and Muradnagar at the earliest).**
4. Chief Engineer (C&S), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
5. Superintending Engineer (Operation), NRPC, 18 – A SJSS Marg, Katwaria Sarai, New Delhi, 110016.

01/9/21
(Zahir Ahmad)
Chief Engineer (PSO)

SPS Operation Report due to tripping of 500kV HVDC Rihand-Dadri(PG) ckt-1 & ckt-2 at 04:52 hrs on dated 21 August 2021

S.No	Category of SPS	Name of SPS Scheme	Date (dd-mmm-yy)	Time (in hrs)	Event Description	SPS logic	Planned operation	Actual operation	Relief occurred (MW)	Whether SPS is helathy(Including Any Remarks)
1	SPS related to tripping of critical line / Corridor	SPS for 1500 MW HVDC Rihand-Dadri Bipole related contingency	21-08-2021	04:52 hrs	At 04:52 Hrs on 21st Aug 2021, 500kV HVDC Rihand-Dadri(PG) ckt-1 & ckt-2 tripped, resulting in power order reduction of 1000MW of 500kV HVDC Rihand-Dadri(PG)	As per HVDC Rihand-Dadri SPS case-2, following actions are desired 1. Immediately load shedding in Groups A, B, C and D 2. Reduce generation at Singrauli/ Rihand by 500 MW	As per planned operation Load shedding of 100 MW each at 220 KV substation Modipuram and Muradnagar is required	No Load shedding has been observed	NA	**SPS is not healthy at 220 KV Substation Modipuram(Synchronisation Alarm is coming on SPS) and Muradnagar(DTPC Panel is lying defective)**

UPSLDC.ORG
Uttar Pradesh State Load Despatch Centre

Superintending Engineer (R&A) <sera@upsldc.org>

SPS operation detail during grid event at 500kV HVDC Rihand-Dadri on 21st Aug 2021

2 messages

NRLDC SO-II <nrldcso2@gmail.com> Tue, Aug 24, 2021 at 5:58 PM
To: "Superintending Engineer (R&A)" <sera@upsldc.org>, "A.J. Siddiqui" <ajsiddi@rediffmail.com>, Energy Accounting Cell SLDC Delhi <dtldata@gmail.com>, PC PSTCL SLDC PUNJAB <pcpstcl@gmail.com>, XEN LD&PC Panipat <sldcharyanacr@gmail.com>, SLDC Rajasthan <celd12@yahoo.co.in>, D RVPNL <ldrvpnl@gmail.com>, "O/o SE (SOLD), RVPN, Jaipur" <se.ldrvpnl@gmail.com>, NTPC RIHAND <scerihand@gmail.com>, Sanjay Kumar Dubey संजय कुमार दुबे <skdubey02@ntpc.co.in>, Narayan Prasad Dewangan <npdewangan@ntpc.co.in>, MANOJBARSAIYAN@ntpc.co.in
Cc: "Surajit Banerjee (सुरजीत बनर्जी) <surajit.banerjee@posoco.in>,, M M Hassan (एम एम हसन) <mm.hassan@posoco.in>,, Alok Kumar (आलोक कुमार) <alok.kumar@posoco.in>,, Nitin Yadav <nitinyadav@posoco.in>,, Amit Gupta (अमित गुप्ता)" <amitgupta@posoco.in>, "Alok Kumar (आलोक कुमार)" <alok.kumar@posoco.in>, sheikhshadruddin@posoco.in, Nitin Yadav <nitinyadav@posoco.in>, abhishek.deepak@posoco.in, Deepak Kumar <deepak.kr@posoco.in>

Sir,

At 04:52 Hrs on 21st Aug 2021, 500kV HVDC Rihand-Dadri(PG) ckt-1 & ckt-2 tripped, resulting in power order reduction of 1000MW of 500kV HVDC Rihand-Dadri(PG).

As per HVDC Rihand-Dadri SPS case-2, following actions are desired:
1. Immediately load shedding in Groups A, B, C and D.
2. Reduce generation at Singrauli/ Rihand by 500 MW.

As per NRLDC SCADA, tripping of 220kV Mandola-Narela ckt-1 & ckt-2 (feeders in Group A, Delhi control area) is observed during the event.
SLDC-UP, SLDC-Pun, SLDC-Har, SLDC-Del, SLDC-Raj and Singrauli/Rihand(NTPC) may share the details of SPS action at their end. In case of non operation, kindly share the reason for non operation of SPS action.

आभार ,
दीपक कुमार
संरक्षण विभाग
उ० क्षे० भा० प्रे० के०
नई दिल्ली

Superintending Engineer (R&A) <sera@upsldc.org> Wed, Aug 25, 2021 at 11:43 AM
To: "SE TNC Mrt." <setncmrt@upptcl.org>

[Quoted text hidden]

UPSLDC.ORG
Uttar Pradesh State Load Despatch Centre

Superintending Engineer (R&A) <sera@upsldc.org>

Regarding SPS operation on dated 21.8.21

2 messages

SE T&C Meerut <setncmrt@upptcl.org> Thu, Aug 26, 2021 at 12:40 PM
To: "Superintending Engineer (R&A)" <sera@upsldc.org>

Sir
On dated 21.8.21 no SPS operation occurred at 220KV Modipuram and 220KV Muradnagar S/S due to an unhealthy SPS system as reported by concerned EE T & C.Letter attached herewith.Although Nodal person for DTPC SPS is concerned EE Transmission.T&C wing has already informed for unhealthiness and rectification of SPS to transmission wing.

2 attachments

SE Sahaab.pdf
355K

Grid Event.pdf
355K

SE T&C Meerut <setncmrt@upptcl.org> Thu, Aug 26, 2021 at 12:42 PM
To: "Superintending Engineer (R&A)" <sera@upsldc.org>

DTPC SPS System is being maintained by M/s PGCIL.

On Thu, Aug 26, 2021 at 12:40 PM SE T&C Meerut <setncmrt@upptcl.org> wrote:

> Sir
> On dated 21.8.21 no SPS operation occurred at 220KV Modipuram and 220KV Muradnagar S/S due to an unhealthy SPS system as reported by concerned EE T & C.Letter attached herewith.Although Nodal person for DTPC SPS is concerned EE Transmission.T&C wing has already informed for unhealthiness and rectification of SPS to transmission wing.

कार्यालय
अधिशासी अभियन्ता
विद्युत परीक्षण एवं परिचालन खण्ड
उ0प्र0 पावर ट्रांसमिशन कारपोरेशन लि0
130 डी प्रथम तल पारेषण भवन
विक्टोरिया पार्क मेरठ–250003
मोबाईल न0 – 9412749819

UPPTCL

OFFICE OF THE
EXECUTIVE ENGINEER
ELECTY TEST & COMMISSIONING DIVISION
U.P. POWER TRANSMISSION CORPORATION LTD.
130-D, 1st Floor, Paresan Bhawan,
Victoriya Park, Meerut-250003
Mobil No. - 9412749819

प्रत्रांक 318 वि0प0प0ख0मे0 / ETCDMT/ दिनांक / Date 26/8/2021

Subject :-SPS Operation detail of 220 KV S/S Modipuram during grid event at 500 KV HVDC. Rihand-Dadri on 21st August-2021

Superintending Engineer
Electricity Test & Commissioning Circle
Meerut.

Sir,

On subject matter it is to inform you that no tripping took place at 220 KV S/S Modipuram. This may be due to synchronization alarm coming on S.P.S. at Modipuram.

One letter on the said subject is recently written on 15.04.2021 (Letter No. 152/ETCD/MT) for rectification of fault & copy was also sent to your office.

Encl :- As above

(Hemanshu Pundir)
Executive Engineer

कार्यालय
अधिशासी अभियन्ता
विद्युत परीक्षण एवं परिचालन खण्ड
उ0प्र0 पावर ट्रांसमिशन कारपोरेशन लि0
132 के0वी0 उपकेन्द्र लालकुँआ
गाजियाबाद (उ0प्र0)-201001
eetncgzb@upptcl.org

U.P. POWER TRANSMISSION CORPORATION LIMITED
UPPTCL

OFFICE OF THE
EXECUTIVE ENGINEER
ELECTRICITY TEST & COMMISSIONING DIVISION
U.P. POWER TRANSMISSIONCORPO. LTD.
132 KV Sub-Station Lalkuan
GHAZIABAD- 201001
Tel. No. 0120-2866019
eetncgzb@upptcl.org

पत्राक/No. 725/वि0प0प0ख0गा0 **Dated/दिनांक** 25/08/2021

Subject: SPS operation of DTPC relay at 220kv muradnagar substation detail during grid event at 500kv HVDC Rihand - Dadri on 21st Aug.

To,
Superintending Engineer,
Electricity Test & Commissioning Circle,
Meerut.

It is informed that no tripping took place related to SPS (DTPC) at 220 kv Muradnagar.On Dated 21-08-2021, In this connection, it is informed that DTPC relay owned, established and maintaining at 220kv s/s, Muradnagar by power grid, Corporation, which in lying diffective since long.
communicatd to PGCIL by our microave wing.
It is also added their following feeders are connected with DTPC relay
1. 132kv Niwari road
2. 132kv modi steel
3. 132kv morta

Submitted for your kind information for necessary action.

Encl : As above.

(Virendra Kumar Sharma)
Executive Engineer

कार्यालय
अधीक्षण अभियन्ता
विद्युत पारेषण मण्डल,
उ0प्र0 पावर ट्रांसमिशन कारपोरेशन लि0,
"पारेषण भवन", प्रथम तल, 130–डी0 विक्टोरिया
पार्क, मेरठ 250001
☎ 0121–2646624
फैक्स नं0: –0121–2646624

Office of the
Superintending Engineer
Electricity Transmission Circle,
U.P. Power Transmission Corporation Ltd.
"Paareshan Bhawan", I[st] Floor, 130-D
Victoria Park, Meerut-250001
☎ 0121–2646624
Fax No.: 0121–2646624
E.mail- setmrt@upptcl.org

CIN NO U40101UP2004SGC028687

पत्रांक/No 1037 /विपापमण(E.T.C.)/मेरठ(MRT)/ Date:- 20-04-2021

Subject: Regarding rectification of continous Synchronization Alram in SPS installed at 220 KV Sub-Station Modipuram.

DGM/GM
400 KV Sub-Station, Mataur
Power Grid Corporation of India Ltd.
Meerut

Sir,

Kindly take a reference of letter no. 892 dated 15.04.2021 of E.E., ETD, Meerut on above subject vide which it has been informed to you that continous "Synchronization Alram" is appearing on SPS control panel at 220 KV S/S Mpodipuram, since September 2020. Details of which has been already sent to Mr. Neeraj, PGCIL on Whatsapp but no action has been taken from your side till date. It is important to keep SPS system, installed at 220 KV Sub-Station Modipuram, healthy to avoid any grid failure/overdrawl through interstate line during summer season.

Thus it is requested to kindly depute your Service Engineer to rectify the fault of SPS system installed at 220 KV Sub-Station Modipuram on urgent basis.

(Jitendra Kumar)
Superintending Engineer

No. /ETC/MT/ Dated

1. Chief Engineer (TW), UPPTCL, 130-D, Victoria Park, Meerut. (Through Email).
2. Executive Engineer, Electricity Transmission Division, UPPTCL, Meerut. (Through Email).

(Jitendra Kumar)
Superintending Engineer

कार्यालय
अधिशासी अभियन्ता
विद्युत पारेषण खण्ड,
उ0प्र0 पावर ट्रांसमिशन कारपोरेशन लि0
'पारेषण भवन' द्वितीय तल, 130-डी0 विक्टोरिया पार्क, मेरठ
250001
0121-2647227 09412749809
Email- eeetdmrt@upptcl.org

Office of the
Executive Engineer
Electricity Transmission Division,
U.P. Power Transmission Corporation Ltd.
"Paareshan Bhawan", II[nd] Floor, 130-D Victoria
Park, Meerut-250001
0121-2647227 09412749809
Email- eeetdmrt@upptcl.org

पत्रांक / No. 892 / वि0पा0ख0(E.T.D.) / मेरठ(MRT)/ Date:- 15/4/2021

Subject: - Regarding rectification of continuous synchronization alarm in SPS installed at 220 KV S/S Modipuram.

DGM/ GM
400 KV Sub-Station, Mataur
Power Grig Corporation of Idia Ltd.
Meerut

Sir,

In reference to above cited subject kindly take the reference of letter No. 548 / वि0पा0उ0ख0- द्वितीय / मोटीपुरम / G-1 dt 13.04.2021 (copy enclosed) of Sub-Divisional Officer-II, 220 KV S/S Modipuram vide which he informed that continuous **"Synchonization Alarm"** appeared on SPS control panel since Sep 2020. He has already send details of above to Mr. Neeraj, PGCIL on whatsapp (mob No. 9411442335), but no action has been taken from PGCIL end till date. As the summer has already been arrived and to avoid grid failure / overdrawal of inter state line, it is important to keep the SPS system installed at 220 KV S/S Modipuram in healthy mode.

Kindly depute service engineer at site at the earliest to rectify the fault of SPS system installed at at 220 KV S/S Modipuram.

Please treat it as very important.

Encl: As above

o/c

(Naveen Kumar)
EXECUTIVE ENGINEER

पत्रांक / No. 892 / वि0पा0ख0(E.T.D.) / मेरठ(MRT)/ Date:- 15/4/2021

Copy forwarded to the following for information and necessary action

1. Superintending Engineer, ETC, Meerut
2. Executive Engineer, Electricity Test & Commissioning Division, Meerut.
3. SDO, ETSD- II, 220 KV Modipuram, Meerut.

o/c

(Naveen Kumar)
EXECUTIVE ENGINEER

E:\Annexure\H-2021

उपखण्ड अधिकारी
विद्युत अनुतरंग एवं दूरसंचार उपखण्ड
उ0प्र0 पॉवर ट्रांसमिशन कारपोरेशन लि0
220के0वी0 विद्युत उपकेन्द्र
मुरादनगर-201206 (गाजि0)

Office of the Sub Divisional Officer
Electy. Microwave & Telecom Sub division
U.P. Power Transmission Corporation Ltd
220 K.V. Sub Station,
Muradnagar-201206 (Gzb)

No. 862 EMTSD/MUN/M-1 Dated - 19.02.2021

ई-मेल द्वारा

विषय- दिनांक 22.01.2021 को HVDC Rihand- Dadri की ट्रिपिंग व SPS आपरेशन के सम्बन्ध में,

अधिशासी अभियन्ता,
विद्युत अनुतरंग एवं दूरसंचार खण्ड,
मेरठ

आपके कार्यालय के पंत्राक 133/EMTD/ MT, दिनांक 19.02.21 के अनुपालन में अवगत करना है कि दिनांक 22.01.2021 को HVDC Rihand- Dadri लाइन की ट्रिपिंग से मुरादनगर में स्थापित DTPC द्वारा 132 के0वी0 की लाइनें मोदीस्टील व निवाडीरोड पर ट्रिपिंग नही आ सकी, क्योकिं काफी समय से DTPC- NSD70D के DSP कार्ड पर SYN व BER के अलार्म आये हुऐ है जो Reset के बाद भी नही जा रहे है। इसकी मौखिक सूचना पावरग्रिड दादरी को दी जा चुकी है। उपरोक्त DTPC पावरग्रिड द्वारा स्थापित है एंव इसका रखरखाव भी पावरग्रिड द्वारा ही किया जाता है। सूचनार्थ एंव आवश्यक कार्यवाही हेतु प्रेषित है।

(प्रदीप कुमार)
उपखण्ड अधिकारी

पत्रांक-862 वि0अ0दू0उ0ख0/मु/एम-1 दिनांक- 19.02.2021

प्रतिलिपि- श्री नीरज कुमार गहलोत, neerajkumargahlot@powergridindia.com पावरग्रिड दादरी को इस आशय के साथ प्रेषित कि उपरोक्त DTPC को जल्दी ही ठीक कराने की कृपा करें।

(प्रदीप कुमार)
उपखण्ड अधिकारी

Annexure-A.VI

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

केन्द्रीय कार्यालय : 61, आई एफ सी आई टावर, 8 एवं 9वीं मंजिल, नेहरु प्लेस, नई दिल्ली -110019
Corporate Office : 61, IFCI Tower, 8 & 9th Floor, Nehru Place, New Delhi - 110019
CIN : U40105DL2009GOI188682, Website : www.posoco.in, E-mail : posococc@posoco.in, Tel.: 011- 40234672

संदर्भ: POSOCO/NLDC/SO/RE Outages/ दिनांक:06th Sep 2021

सेवा मे,

Member Secretary
Northern Regional Power Committee
Shaheed Jeet Singh Marg,
Qutab Institutional Area,
New Delhi 110016

विषय: Regarding – Frequent outages of Wind/Solar generation in Northern Region

महोदय,

Please refer to the large outages of renewable generation in Rajasthan area during the last one year. There have been eight number of incidents resulting in more than 500 MW loss of RE based generation. The list of incidents along with frequency observed during these incidents is enclosed as Annexe-1. These incidents have caused significant impact on the power system. There were low frequency operations during several instances. The Quarterly Operational Feedback of POSOCO (available at https://posoco.in/documents/operational-feedback-on-transmission-constraints/) has been regularly highlighting such incidents.

Based on the information available at RLDC, it appears that generation loss is primarily due to either evacuation loss or inability of inverters to ride through the low voltage/high voltage conditions as specified in regulations. NRPC is conducting regular meetings for all trippings but these may be getting less time due to number of trippings. In the interest of system security, it is desirable that all such events are thoroughly analysed and corrective measures taken to avoid occurrence of such incidents.

Therefore, it is suggested that a separate sub-group with members from RE developers, RVPNL, NRLDC, CTU, POWERGRID and NRPC may be formed specifically for the deliberation of incidents resulting in loss of RE based generation. This could help in analysis of such incidents alongwith timely implementation of remedial measures.

सधन्यवाद,

भवदीय

(आर॰के॰ पोरवाल)
मुख्य-महाप्रबंधक-रा॰भा॰प्रे॰कें॰

प्रतिलिपि सूचनार्थ:

1. CGM(I/c), NRLDC, New Delhi
2. Member (GO &D), CEA, New Delhi
3. COO-CTU, New Delhi

Annexure I

Details of Grid Events involving loss of RE based generation of more than 500 MW from August 2020 to August 2021 in Northern Region

Sl No.	Category of Grid Event	Affected Area	Time and Date of occurrence of Grid Event	Time and Date of Restoration	Duration	Loss of generation / loss of load during the Grid Event		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Event		Antecedent Generation/Load in the Regional Grid*		Brief details of the event (pre fault and post fault system conditions)	Elements Tripped	Frequency Plots
	(GI 1or 2/ GD-1 to GD-5)					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)			
1	GD-1	RAJASTHAN	06-Aug-2020 13:50	06-Aug-2020 14:30	00:40	1250	0	3.482	0.000	36461	53514	400 KV Akal-Jodhpur (RS) Ckt-1 tripped due to DT received at Jodhpur end. At the same time, 400/220 kV 315 MVA ICT 1 & 315 MVA ICT 2 at Barmer(RS) also tripped. As per PMU, R-Y fault with delayed clearance is observed in the system. In antecedent conditions, 400 KV Akal-Jodhpur (RS) Ckt-1 carrying 229MW. Wind generation loss of around 1250MW is observed as per SCADA data.	1) 400 KV Akal-Jodhpur (RS) Ckt-1 2) 400/220 kV 315 MVA ICT 2 at Barmer(RS) 3) 400/220 kV 315 MVA ICT 1 at Barmer(RS)	Annexure a)
2	GD-1	RAJASTHAN	24-Dec-2020 23:23	25-Dec-2020 00:01	00:38	650	160	2.334	0.427	27846	37436	As reported, 220 kV Amarsagar-FLODI1 (RS) Ckt-1 tripped because R-Phase Jumper of 220 kV Amarsagar FLODI-1 snapped in switchyard at Amarsagar. At the same time, 220 kV Amarsagar-Akal (RS) Ckt-1, 220 kV Amarsagar-Dechu (RS) Ckt-1, 220 kV Amarsagar-Mada (RS) Ckt-1, 220 kV Amarsagar-Ramgarh (RS) Ckt-1, 220 kV Amarsagar-RGTPP (RS) Ckt-1, 220/132 kV 100 MVA ICT-1 & ICT-2 at Amarsagar(RS) also tripped. Fault distance was 172.4km from FLODI end. As per PMU, R-N phase to earth fault is observed. As per SCADA, load loss of approx. 160MW & wind generation loss of approx. 650MW is observed. In antecedent condition, 220 kV Amarsagar-FLODI1 (RS) Ckt-1, 220 kV Amarsagar-Akal (RS) Ckt-1, 220 kV Amarsagar-Mada (RS) Ckt-1, 220/132 kV 100 MVA ICT-1, ICT-2 & ICT-3 at Amarsagar(RS) carrying 153MW, 11MW, 14MW, 8MW, 11MW & 6MW respectively.	1) 220 kV Amarsagar-Akal (RS) Ckt-1 2) 220 kV Amarsagar-Dechu (RS) Ckt-1 3) 220 kV Amarsagar-FLODI1 (RS) Ckt-1 4) 220 kV Amarsagar-Mada (RS) Ckt-1 5) 220 kV Amarsagar-Ramgarh (RS) Ckt-1 6) 220 kV Amarsagar-RGTPP (RS) Ckt-1 7) 220/132 kV 100 MVA ICT-1 at Amarsagar(RS) 8) 220/132 kV 160 MVA ICT-2 at Amarsagar(RS)	Annexure b)
3	GD-1	RAJASTHAN	19-Feb-2021 15:26	20-Feb-2021 02:41	11:15	1300	0	3.915	0.000	33205	40928	220 KV Bhadla(PG)-ACME Solar(ACM) (UNDEF) Ckt-1, 220 KV Bhadla(PG)-Bhadla Solar(Adani) (UNDEF) Ckt-1 & Ckt-2, 220 KV Bhadla(PG)-Mahoba Solar(Adani) (UNDEF) Ckt-1, 220 KV Bhadla(PG)-Saurya Urja Solar(SU) (UNDEF) Ckt-1 & Ckt-2, 220 KV Bhadla(PG)-TPREL Solar(TP) (UNDEF) Ckt-1 and 400/220 kV 500 MVA ICT 2 & ICT 3 at Bhadla(PG) all tripped on Bus Bar protection operation at bus 1 due to flash over in B-phase compartment of Bus 1 isolator of Mahoba line. As per PMU, B-N phase to earth fault is observed. As per SCADA, generation loss of approx 1300MW is observed. In antecedent condition, 400/220 kV 500 MVA ICT 1,2,3 & 4 at Bhadla(PG) carrying approx. 220MW each.	1) 220 KV Bhadla(PG)-ACME Solar(ACM) (UNDEF) Ckt-1 2) 220 KV Bhadla(PG)-Bhadla Solar(Adani) (UNDEF) Ckt-1 3) 220 KV Bhadla(PG)-Bhadla Solar(Adani) (UNDEF) Ckt-2 4) 220 KV Bhadla(PG)-Mahoba Solar(Adani) (UNDEF) Ckt-1 5) 220 KV Bhadla(PG)-Saurya Urja Solar(SU) (UNDEF) Ckt-1 6) 220 KV Bhadla(PG)-Saurya Urja Solar(SU) (UNDEF) Ckt-2 7) 220 KV Bhadla(PG)-TPREL Solar(TP) (UNDEF) Ckt-1 8) 400/220 kV 500 MVA ICT 2 at Bhadla(PG) 9) 400/220 kV 500 MVA ICT 3 at Bhadla(PG)	Annexure c)

Details of Grid Events involving loss of RE based generation of more than 500 MW from August 2020 to August 2021 in Northern Region

Sl No.	Category of Grid Event	Affected Area	Time and Date of occurrence of Grid Event	Time and Date of Restoration	Duration	Loss of generation / loss of load during the Grid Event		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Event		Antecedent Generation/Load in the Regional Grid*		Brief details of the event (pre fault and post fault system conditions)	Elements Tripped	Frequency Plots
	(GI 1or 2/ GD-1 to GD-5)					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)			
4	GD-1	RAJASTHAN	24-Mar-2021 12:16	24-Mar-2021 12:20	00:04	2000	450	5.259	1.036	38032	43446	400 KV Bikaner-Bhadla (RS) Ckt-1, 400 KV Bikaner(PG)-Bikaner(RS) (PG) Ckt-1, 400 KV Suratgarh SCTPS(RVUN)-Bikaner(RS) (RS) Ckt-1, 400 KV Bikaner(RS)-Deedwana(MTS) (RS) Ckt-1, 400 KV Bikaner-Merta (RS) Ckt-1 & 400 KV Bikaner(RS)-Sikar(PG) (RS) Ckt-2 all tripped on bus bar protection operation due to heavy spark at Bus isolator of 50 MVAR Bus reactor. At the same time, 220 KV Bhadla(PG)-Saurya Urja Solar(SU) (Saurya Urja) Ckt-1 tripped due to over volatge on DT received at at Bhadla end and 220 KV Bhadla(PG)-Saurya Urja Solar(SU) (Saurya Urja) Ckt-2 tripped due to under volatge on DT received at at Bhadla end. As per PMU, R-Y phase to phase fault is observed. As per SCADA, load loss of approx. 450MW is observed and solar generation loss of approx. 2000MW is observation. In antecedent condition,Azure Power 34, Mahoba Solar, ACME, TATA Power, Saurya Urja I & II carrying 129MW, 317MW, 244MW, 152MW, 228MW & 305MW respectively.	1) 220 KV Bhadla(PG)-Saurya Urja Solar(SU) (Saurya Urja) Ckt-2 2) 400 KV Bikaner-Bhadla (RS) Ckt-1 3) 400 KV Bikaner(PG)-Bikaner(RS) (PG) Ckt-1 4) 400 KV Suratgarh SCTPS(RVUN)-Bikaner(RS) (RS) Ckt-1 5) 400 KV Bikaner(RS)-Deedwana(MTS) (RS) Ckt-1 6) 400 KV Bikaner-Merta (RS) Ckt-1 7) 220 KV Bhadla(PG)-Saurya Urja Solar(SU) (Saurya Urja) Ckt-1 8) 400 KV Suratgarh(RVUN)-Bikaner(RS) (RS) Ckt-1 9) 400 KV Bikaner(RS)-Sikar(PG) (RS) Ckt-2	Annexure d)
5	GD-1	RAJASTHAN	11-Jun-2021 16:02	11-Jun-2021 18:19	02:17	1500	0	3.259	0.000	46026	57868	220kV Akal-Bhu ckt-1 & Ckt-2 both tripped due to snapping of B-ph jumper. 400MW wind generation loss occurred due to tripping of Akal-Bhu D/C and 800MW wind generation loss occur due to may be non compliance of LVRT. At the same time, 400kV Barmer-Jaisalmer-2 Ckt-1 & Ckt-2 tripped on overvoltage may be due to loss of wind generation. 300MW solar generation also tripped connected at 400/220kV Jaisalmer-2 during the voltage dip. As per PMU, R-Y-B three phase fault is observed with delayed clearance in 320ms. As per SCADA, solar & wing generation loss of 300MW & 1200MW respectively is observed.	1) 400 KV Jaisalmer-Barmer (RS) Ckt-1 2) 400 KV Jaisalmer-Barmer (RS) Ckt-2	Annexure e)
6	GD-1	RAJASTHAN	20-Jul-2021 10:25	20-Jul-2021 12:05	01:40	1550	0	3.506	0.000	44210	54168	220 KV Akal-Dangri Ckt-1 & Ckt-2 tripped from Akal end on R-Y phase to phase fault.Fault distance was 174.8meter and fault currents were Ir=17.49kA & Iy=18.14kA from Akal end. At the same time, 220kV Akal-Bhu Ckt-1 & Ckt-2 and 220kV Akal-Jajia ckt also tripped from remote end only. As per PMU, R-Y phase to phase fault is observed which cleared within 100ms. As per SCADA, wind generation loss of approximately 1550MW is observed. In antecedent condition, 220 KV Akal-Dangri Ckt-1 & Ckt-2, 220kV Akal-Bhu Ckt-1 & Ckt-2 and 220kV Akal-Jajia ckt carrying 165MW, 48MW, 155MW, 168MW & 176MW respectively.	1) 220kV Akal–Dangri (RS) ckt-1 2) 220kV Akal–Dangri (RS) ckt-2 3) 220kV Akal–Bhu (RS) ckt-1 4) 220kV Akal–Bhu (RS) ckt-2 5) 220kV Akal-Jajiya (RS) Ckt	Annexure f)
7	GD-1	RAJASTHAN	15-Aug-2021 10:06	15-Aug-2021 10:27	00:21	1100	0	2.133	0.000	51582	61065	At 09:50 Hrs, 400/220kV 500MVA ICT 2 at Bhadla(RS) tripped on differential protection operation. At 10:06Hrs, 400/220kV 500MVA ICT 1 & ICT 3 at Bhadla(RS) both tripped on Over current protection operation. As per PMU, no fault is observed. As per SCADA, total solar generation loss in Rajasthan of approx. 1100MW is observed. At 10:05:40 Hrs total MW flow of ICT1 & ICT3 was 1103MW as per SCADA.	1) 400/220 kV 500 MVA ICT 2 at Bhadla(RS) 2) 400/220 kV 500 MVA ICT 1 at Bhadla(RS) 3) 400/220 kV 500 MVA ICT 3 at Bhadla(RS)	Annexure g)

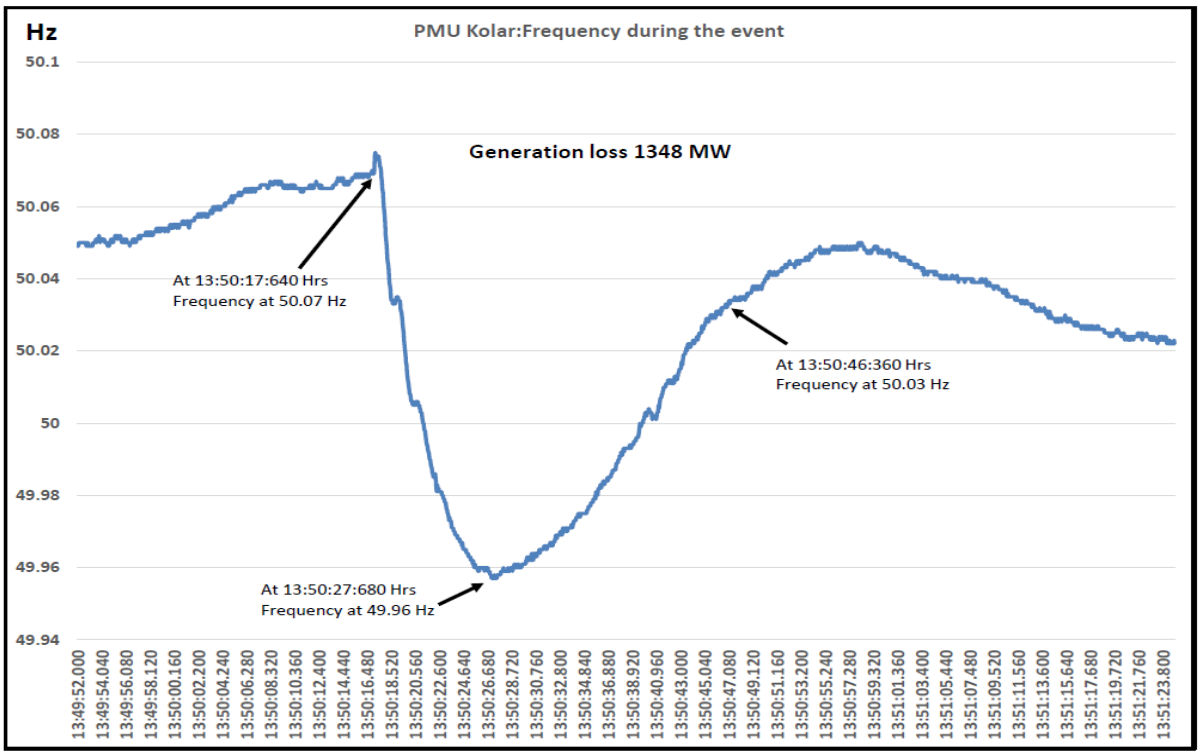
Details of Grid Events involving loss of RE based generation of more than 500 MW from August 2020 to August 2021 in Northern Region

Sl No.	Category of Grid Event	Affected Area	Time and Date of occurrence of Grid Event	Time and Date of Restoration	Duration	Loss of generation / loss of load during the Grid Event		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Event		Antecedent Generation/Load in the Regional Grid*		Brief details of the event (pre fault and post fault system conditions)	Elements Tripped	Frequency Plots
	(GI 1or 2/ GD-1 to GD-5)					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)			
8	GD-1	RAJASTHAN	26-Aug-2021 11:13	26-Aug-2021 11:32	00:19	1700	0	3.338	0	50935	63095	765 KV Bhadla-Bikaner ckt-1 tripped due to over voltage at Bhadla during opening of L/R at Bikaner of Bhadla-2 ckt-1 line at 11:13 hrs, DT received at Bikaner end. As per PMU, no fault is observed. As per SOE, at 11:13:19:417 Hrs, line reactor of 765kV Bikaner-Bhadla2(PG) Ckt-1 at Bikaner(PG) was opened. In antecedent condition, line reactor was absorbing approx. 330MVAR and bus voltage at 765kV Bikaner(PG) was 756kV. At the same time, 220kV bus voltage at 220kV Bhadla(PG) & 220kV Fatehgarh2(PG) rose up to 234kV & 237kV respectively (as per SCADA data). Simultaneously, tripping of solar generation connected at 765/400/220kV Bhadla(PG) and 400kV Fatehgarh2(PG) occurred resulted into loss of approx. 1700MW solar generation (as per SCADA data). As per SOE and details received, at 11:13:48:610 Hrs, 765kV Bhadla-Bikaner(PG) Ckt-1 tripped on over voltage protection operation at 765kV Bhadla end, DT received at Bikaner(PG) end. As per SCADA, bus voltage at 765kV Bhadla(PG) went up to 823kV. As per telephonically communication with solar plants, tripping occurred at 220/33kV power transformer and 33kV incomer side on over voltage protection. However as per SOE, tripping of solar blocks is also observed in case of ADANI solar which is connected at Fatehgarh2(PG). In antecedent condition, 765kV Bhadla-Bikaner(PG) Ckt-1 was carrying 1178MW.	1) 765 KV Bhadla-Bikaner (PG) Ckt-1 2) 220/33 kV 100 MVA ICT 3 at Mahindra SL_BHD_PG (MAHINDRA) 3) 220/33 kV 100 MVA ICT 2 at Mahindra SL_BHD_PG (MAHINDRA) 4) 220/33 kV 100 MVA ICT 1 at Mahindra SL_BHD_PG (MAHINDRA)	Annexure h)

Frequency Plots:

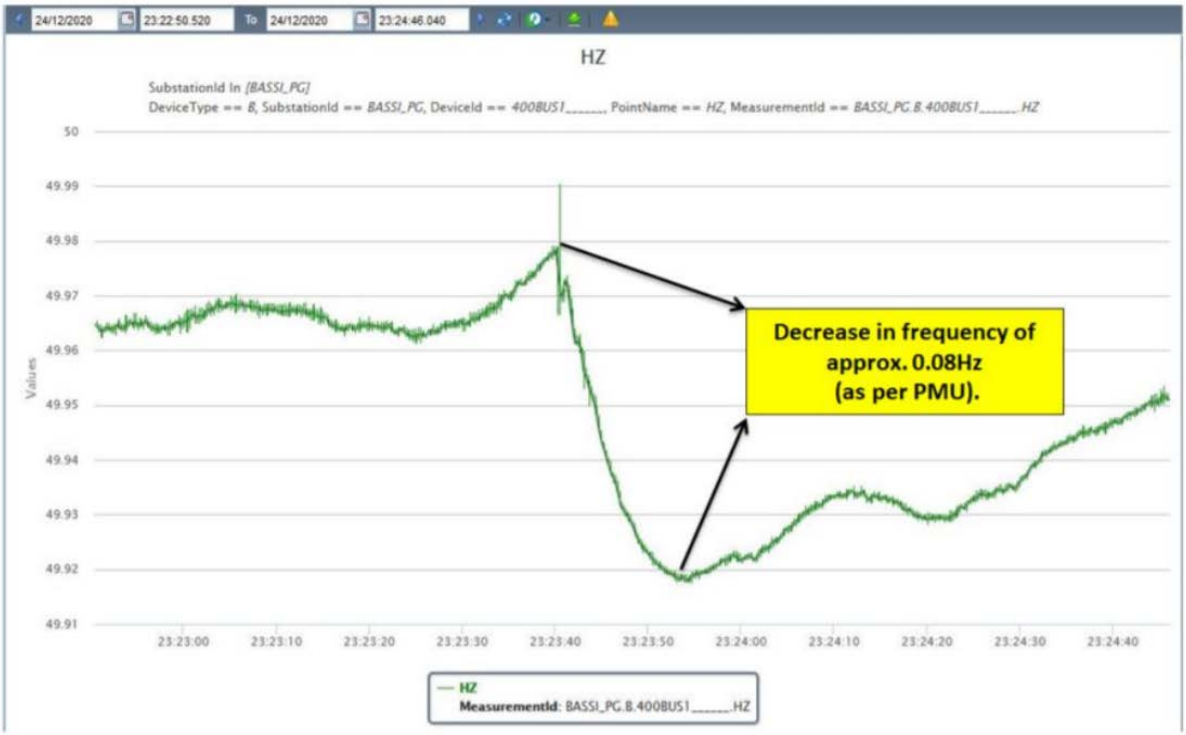
Annexure a)

Date and Time of occurrence of Grid Event: 06-Aug-2020 & 13:50 hrs



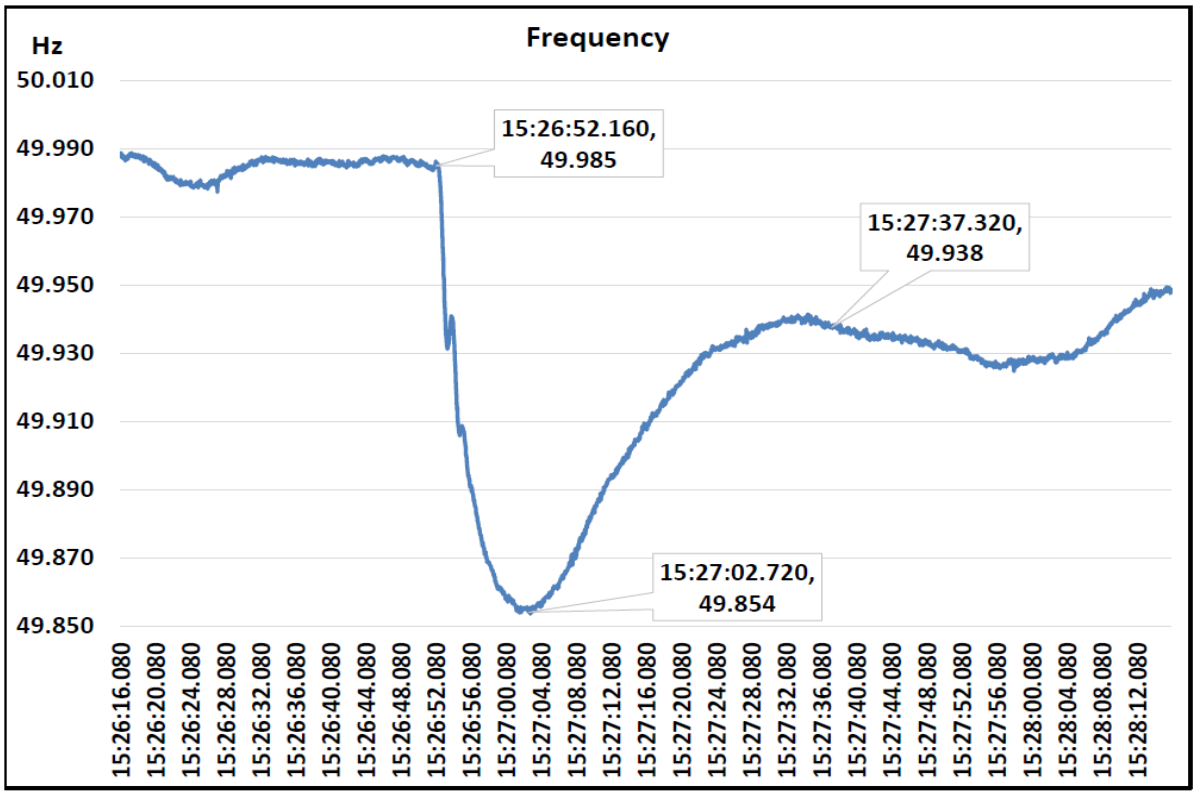
Annexure b)

Date and Time of occurrence of Grid Event: 24-Dec-2020 & 23:23 hrs



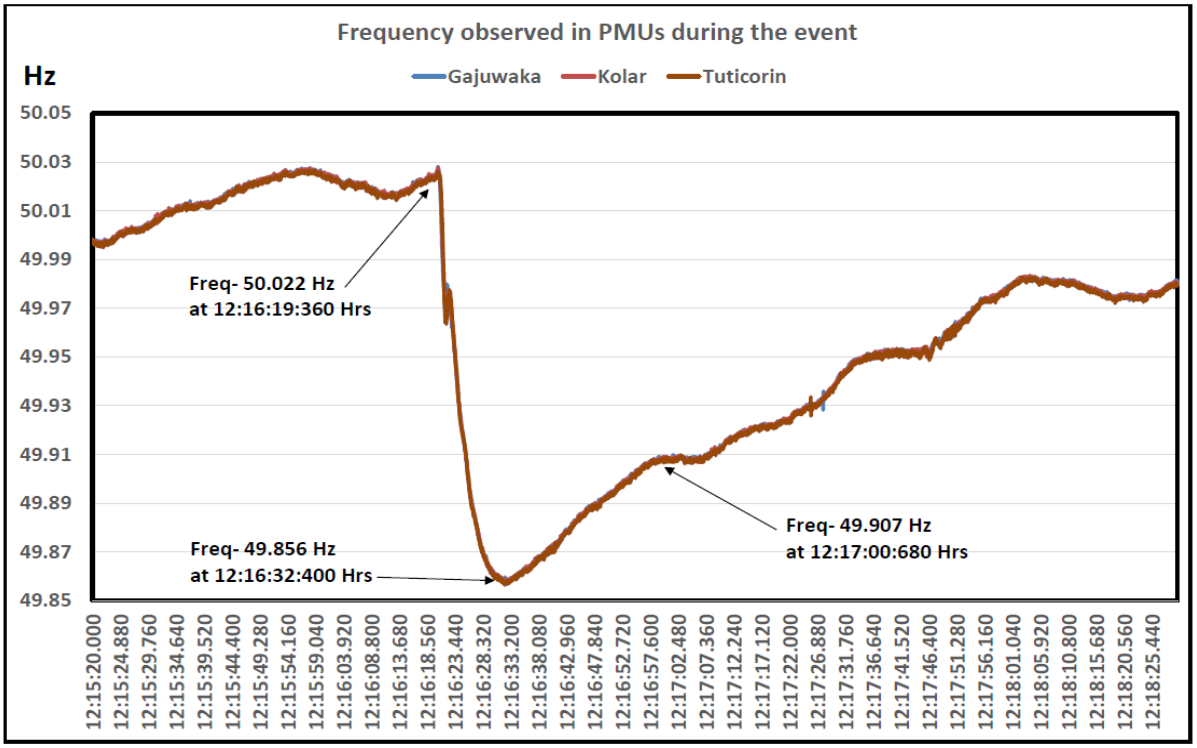
Annexure c)

Date and Time of occurrence of Grid Event: 19-Feb-2021 & 15:26 hrs



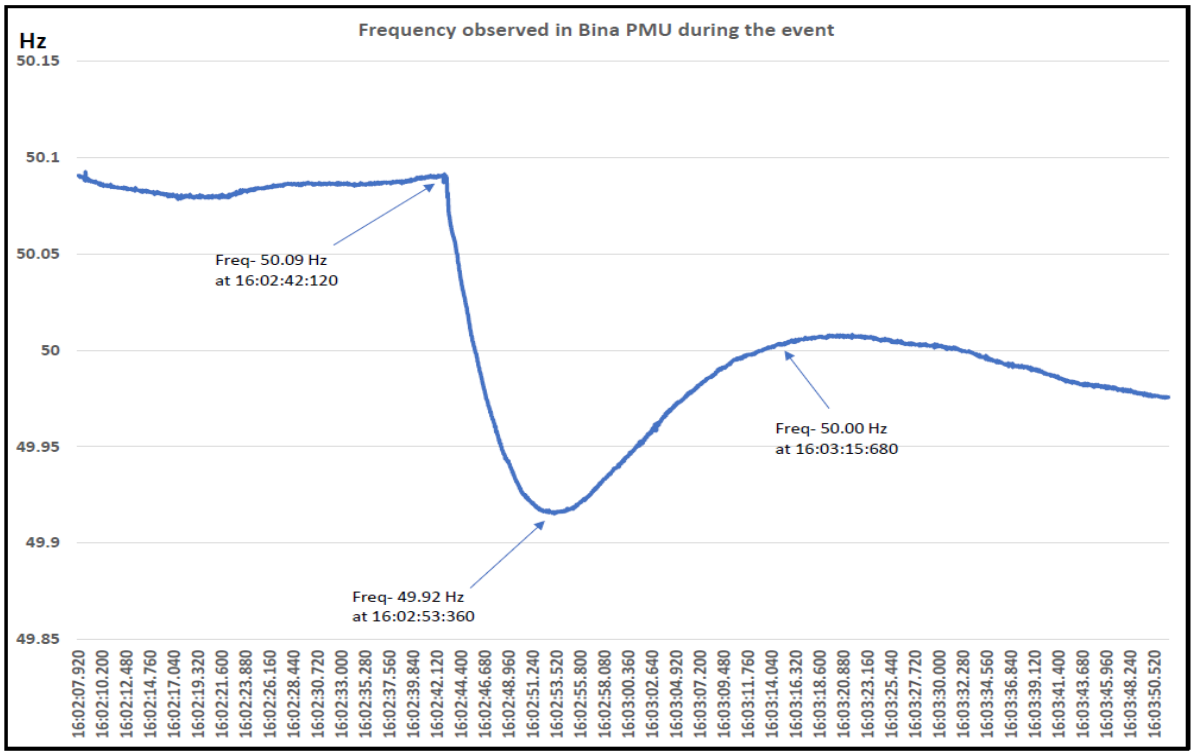
Annexure d)

Date and Time of occurrence of Grid Event: 24-Mar-2021 & 12:16 hrs



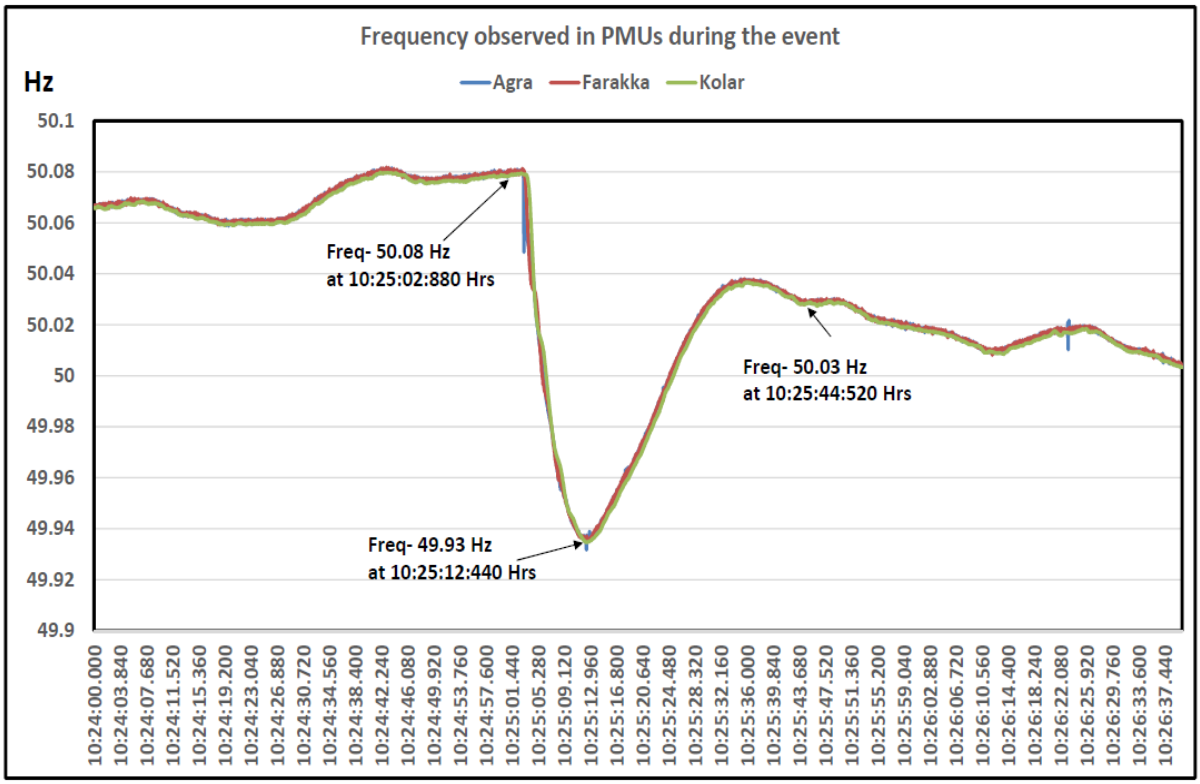
Annexure e)

Date and Time of occurrence of Grid Event: 11-Jun-2021 & 16:02 hrs



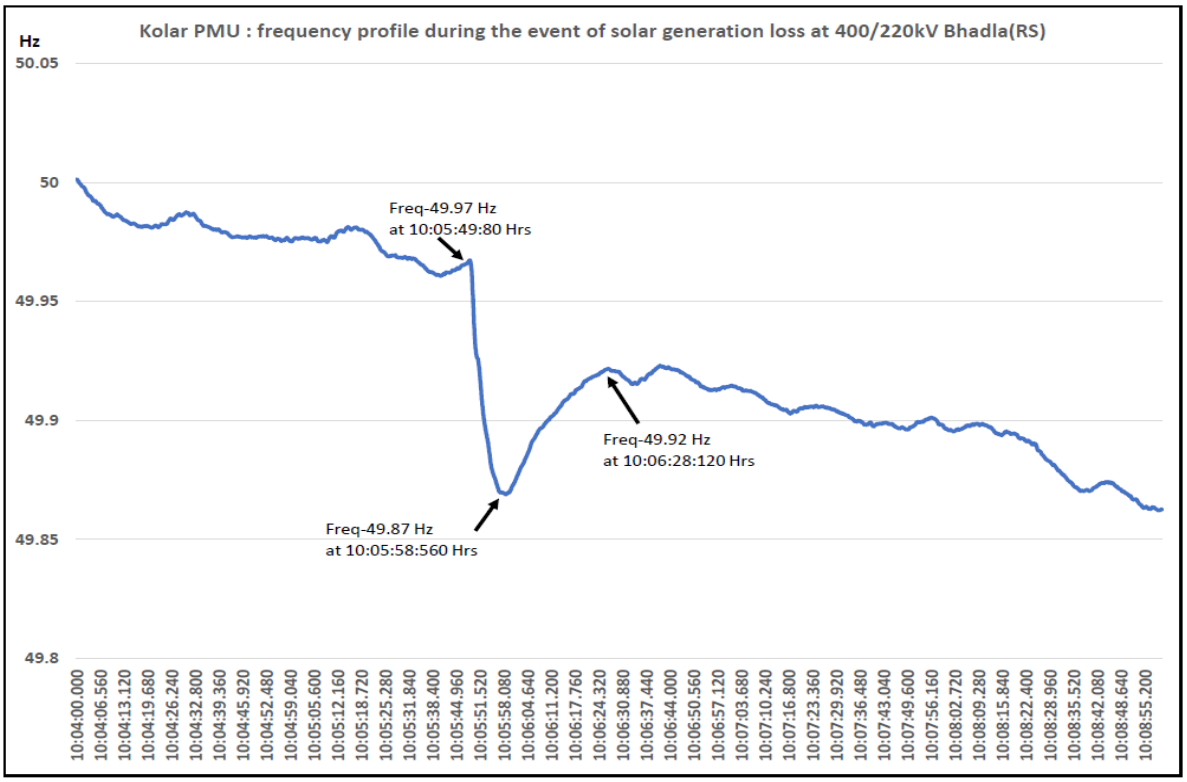
Annexure f)

Date and Time of occurrence of Grid Event: 20-Jul-2021 & 10:25



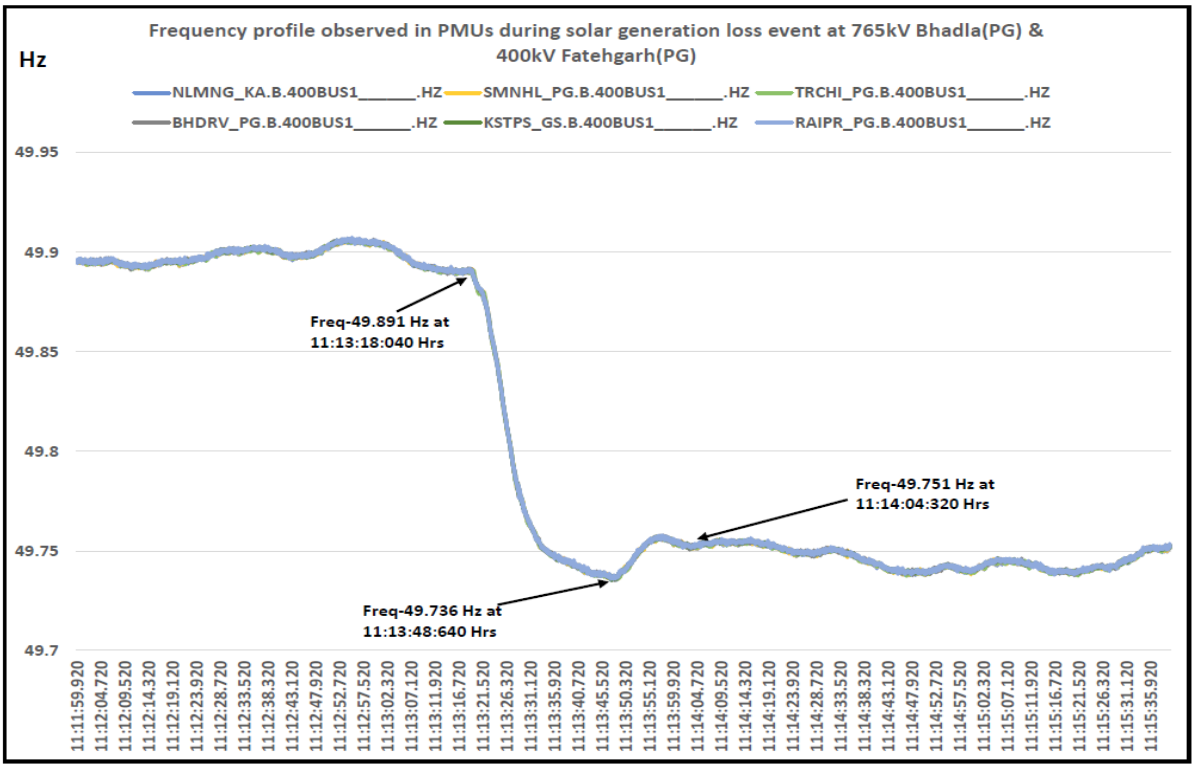
Annexure g)

Date and Time of occurrence of Grid Event: 15-Aug-2021 & 10:06 hrs



Annexure h)

Date and Time of occurrence of Grid Event: 26-Aug-2021 & 11:13 hrs



BSES
BSES Rajdhani Power Limited
Powering Delhi,
Empowering Consumers

Rajesh Bansal
Chief Executive

CIN : U40109DL2001PLC111527

CEO (BRPL)/21-22/1868
September 3, 2021

The Secretary (Power)
Ministry of Power
Government of India
Shram Shakti Bhawan,
Rafi Marg
New Delhi – 110 001.

Sub : Severe Coal Shortage in Dadri-II and other plants supplying power to Delhi

Respected Sir,

We wish to bring to your kind attention about prevailing severe coal shortage in the Central Generating power plants supplying power in the NCT of Delhi. The present situation needs to be kindly addressed immediately as it may lead to disruption of power supply in the NCT of Delhi. The coal stock position as per CEA coal report dated 31.08.2021 for major power plants supplying power in the NCT of Delhi is as under:

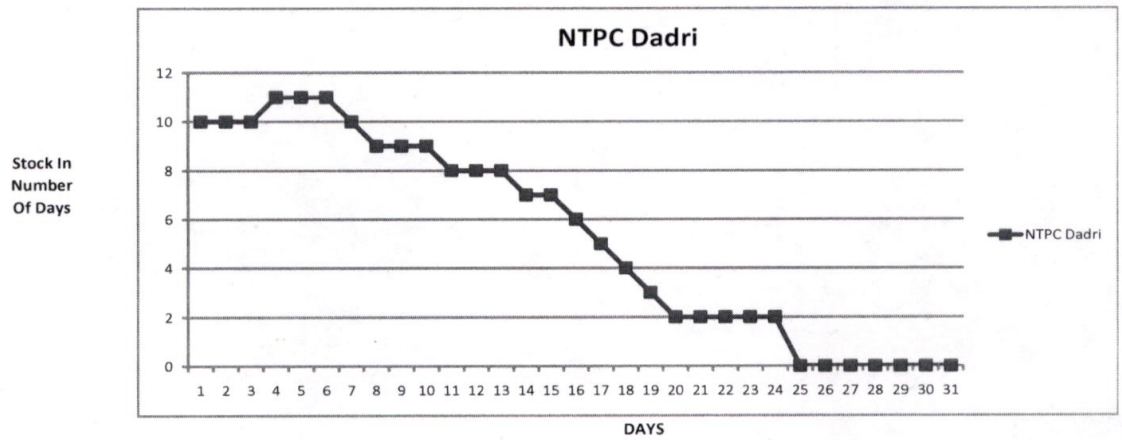
Coal Stock Position as on 31.08.2021 (Source -CEA)			
Sl.No	**Name of Station**	**Delhi allocation Mw**	**Coal Stock in Days/' Allocation for Delhi**
1	NTPC Dadri -II	728	0
2	Jhajhar	693	3
3	Rihand	358	6
4	DVC(CTPS)	300	7
5	Singrauli	150	4
6	Mejia	100	4
	Total Allocation (Mw)	**2329**	

Dadri Stage-II is one of the major power source of power for Delhi it has allocation of 727 MW which is about 10% of Delhi s Peak Demand .As evident from the CEA report above, Dadri Stage-II has zero days coal stock. This is confirmed by NTPC vide its mail 29.08.2021, that Dadri Stage – II does not have even one day's coal stock and they are running the plant as per daily receipt of coal from railway wagons.

A tabulated position of the coal stock of Dadri Stage –II for August 21, showing sharp deterioration of the coal stock position in last 10- 15 days is as under

Registered Office : BSES Rajdhani Power Limited - BSES Bhawan, Nehru Place, New Delhi - 110 019, India. CIN : U40109DL2001PLC111527
Tel.: +91 11 4920 9838, +91 11 4920 9786 Fax: +91 11 2641 9833 rajesh.m.bansal@relianceada.com www.bsesdelhi.com
www.facebook.com/bsesdelhi | https://twitter.com/BSESDELHI

Coal Stock Position Aug'21 as per CEA report



Any outage of the Dadri Stage – II coupled with the other plants mentioned herein above may cause difficulty in maintaining uninterrupted reliable supply of power to consumers in BRPL's area of supply. The situation is alarming as plant is at high risk of shutting down at any moment due to coal shortage. Such sudden outage may be difficult to manage and may result into great inconvenience to large consumer base specially in these unprecedented and trying times. Department of Power by e-mail dated 25.03.2020 has mandated BRPL to maintain continuity and reliability of supply. Further continuity and reliability of supply is essential to cater to the requirements of various strategic and essential services like the cold chains for the vaccination drives, hospitals, health care centers, Covid care centers etc.

We request your kind intervention for ensuring coal supply for Dadri stage –II and other plants mentioned herein above as this situation is continuing to prevail in September month and also it may continue in forthcoming festival months. . This will assist in maintaining uninterrupted reliable power supply to the consumers in BRPL's area of supply.

Thanking you,

Yours sincerely,

(Rajesh Bansal)

CC : The Joint Secretary (R&R), Ministry of Power, Govt. of India
The Joint Secretary (Thermal), Ministry of Power , Govt of India
The Chairman, Central Electricity Authority
The Chairman, NTPC
The Executive Director, (Traffic), Railway Board
The Head of Plant, NCPP, Dadri –II (Plant)
The General Manager, NRLDC
The Member Secretary, NRPC

पावर सिस्टम ऑपरेशन कारपोरेशन 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 : U40105DL2009GOI188682, Website : www.nrldc.org, www.nrldc.in, Tel.: 011- 26519406, 26523869, Fax : 011- 26852747

संदर्भसं°: NRLDC/SO-I/151/ **दिनांक: 18th August 2021**

To

The Director Operation, NTPC Limited
NTPC Bhawan, SCOPE Complex, Institutional Area, Lodhi Road,
New Delhi - 110003

Sub: Operational challenges in despatch of Gas based stations under RRAS

Sir/Ma'am,

In view of ongoing dry weather in Northern Region, Northern Region demand is on higher side since last couple of weeks and is likely to remain same in coming days. As on date all the ISGS and state sector thermal machines (Except under forced outage) of Northern Region are on Bar and even gas based generating stations are being brought on Bar in liquid/RLNG fuel under RRAS, almost on daily basis to meet evening peak demand. In view of above machines availability and fuel adequacy is utmost important. However, since past two weeks numerous operational challenges mentioned below are being faced while despatching Gas based stations under RRAS.

1. **Availability declaration**: - Gas based stations is declaring availability as DC under various fuels as per fuel availability in line with timelines mentioned in IEGC. However, while despatch instruction is given, same is being revised downward either due to plant operational constraints or real time fuel availability issue. This results artificial escalation of cold reserves, which could not be despatched at need of hour and hence endangering to grid security.

2. **Fuel adequacy**:- There are recent incidents wherein NR gas plants have reduced their availability downwards due to fuel shortage, Change of DC trend for a sample date 17.08.2021 for Anta, Auraiya and Dadri is attached as Annexure-I, similar pattern has been observed for most of the dates. It is pertinent to mention that provisions to claim interest on working capital already exists under Chapter 34 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations 2019. Therefore concerned may be advised to ensure fuel adequacy as per the provisions of tariff regulations. Letter send to head of plants to ensure adequate fuel supply is attached as Annexure 2

3. **Deployment of Sufficient Man power:-** While executing NLDC/NRLDC instructions of bringing Dadri GPS in close cycle mode of operation on 17/08/2021 NTPC Dadri GPS pleaded that due to non-availability of sufficient manpower both the modules cannot be brought on bar under RRAS. Even while taking up with them telephonically the issue of manpower was highlighted by NTPC Dadri GPS. Therefore, sufficient manpower may be deployed for seamless execution of NLDC/NRLDC instructions of bringing the machines within stipulated timelines to cater the ramping demand.

4. **Abiding of NLDC/NRLDC instructions:-** Suo-moto instructions of NRLDC shall be abided by the plants so that adequate hot reserves may be maintained as per operational planning. NLDC/NRLDC instructions given during last 15 days and their execution time for Northern Region plants is tabulated as Annexure-3. From the Annexure delayed execution/Non-execution of NLDC/NRLDC instructions may be seen several times. Therefore, concerned may be advise to execute NLDC/NRLDC instructions promptly in the interest of grid security.

5. **Close cycle mode of operation:-** From past week it may be seen that frequency is remaining towards the lower side even after exhausting all available support including GTs operation in open cycle. In such a scenario, 680.82 MW capacities of steam turbines associated with gas turbines in Northern region can not be left unutilized. Therefore, based on resource adequacy, GPS may be instructed to bring machines under close cycle mode of operation as per timelines declared by them in RRAS format.

   However, when asked for operating the station under close cycle mode of operation some of stations remain reluctant in bringing the machines as per instructions. This result diminished spinning reserves in the system. DOP on Reserve Shutdown and Compensation Mechanism also provides for 3 hrs. Minimum run time for gas based generating stations. Relevant extract is given as under:

   7.2 One or more beneficiaries of the generating station as well as the generating station may decide for revival of unit(s) under RSD with commitment for technical minimum schedule with minimum run time of 8 hrs for Coal based generating stations and 3 hrs for Gas based generating stations post revival. In such situations, the generating station shall revise the On Bar and Off Bar DC (with due consideration to ramp up/down capability).

   In addition to above while bringing the machines under close cycle mode of operation, GTs and corresponding HRSG systems are being brought on bar one by one in a serial manner. However, possibility of parallel firing of GTs while bringing the ST in close cycle

mode of operation may please be expedite to optimize start-up timings of module in close cycle mode of operation.

6. **Ramp-rates declaration**:- As gas based stations have inherent capability to provide high ramp-up rates to the tune of hydro stations. However, the ramp rates by the stations are being declared conservatively and same for all blocks irrespective of on Bar DC, which are even less than mandated 1% ramp-rates of thermal stations in some cases. Concerned may be directed to furnish ramp-rates to the tune of inherent capability of gas based machines so that adequate ramp support may be extend to the system during ramping hours.

7. **Ambient temperature vs Installed capacity: -** GTs installed capacity is significantly affected by the ambient air temperature. Ambient air temperature vs installed capacity curves of gas-based stations may be shared with NRLDC for better insight of the seasonal effective installed capacity of GPS so that same may be factored in reserves assessment.

In view of above, it is requested to kindly intervene to streamline operational challenges in respect of gas-based stations for reliable and secure system operation.

Your cooperation shall be highly appreciated.

Thanks and Regards

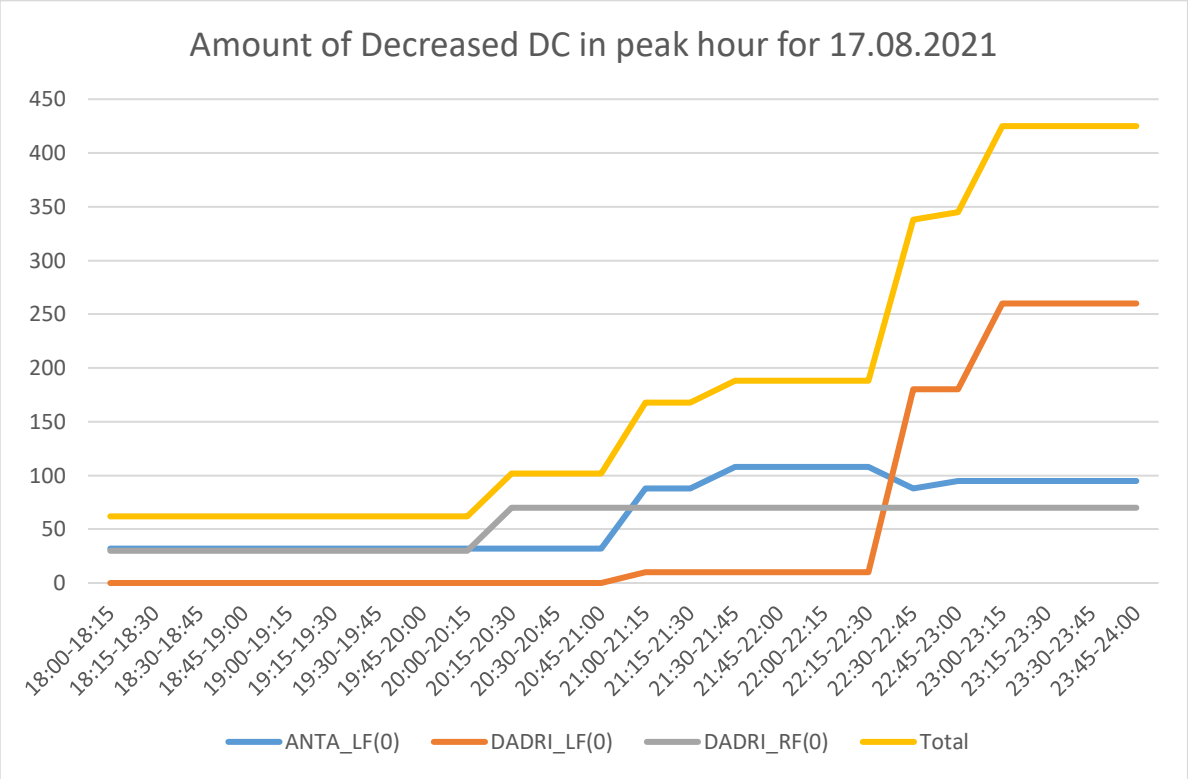
18/8/21

N. Nallarasan
CGM(I/C), NRLDC

Copy for kind Information: -

1. Member Secretary, NRPC
2. Director (SO), POSOCO
3. Director (MO), POSOCO
4. ED, NLDC

Annexure-I


Amount of Decreased DC in peak hour for 17.08.2021
450
400
350
300
250
200
150
100
50
0
18:00-18:15
18:15-18:30
18:30-18:45
18:45-19:00
19:00-19:15
19:15-19:30
19:30-19:45
19:45-20:00
20:00-20:15
20:15-20:30
20:30-20:45
20:45-21:00
21:00-21:15
21:15-21:30
21:30-21:45
21:45-22:00
22:00-22:15
22:15-22:30
22:30-22:45
22:45-23:00
23:00-23:15
23:15-23:30
23:30-23:45
23:45-24:00
ANTA_LF(0)
DADRI_LF(0)
DADRI_RF(0)
Total

Annexure-II

Date	Gas plants which were given instruction	Instruction passing time	Synchronisation of units	Stoppage time of units
03.08.21	**Dadri 2GT+1ST**	**12:39**	**GT#1 SYNC at 18:05 hrs**	GT # 1 - 23:55 hrs (03.08.21)
			GT#2 SYNC at 18:27 hra	GT # 2 - 23:59 hrs 03.08.21
			GT#4 SYNC at 19:08 hrs	GT # 4 - 23:59 hrs 03.08.21
	Auraiya 2GT+1ST	**12:39**	**GT#3 SYNC at 19:28 hrs**	GT # 3 - 00:07 hrs (04.08.21)
			GT#4 SYNC at 18:36 hrs	GT # 4 - 00:04 hrs (04.08.21)
04.08.21	**DADRI 4 GTs**	**12:56**	**GT#1 SYNC at 18:05 hrs**	GT # 1 - 00:00 hrs 05.08.21
			GT#2 SYNC at 21:44 hrs	GT # 2 - 00:00 hrs 05.08.21
			GT#3 SYNC at 17:53 hrs	GT # 3 - 00:00 hrs 05.08.21
			GT#4 SYNC at 18:22 hrs	GT # 4 - 00:00 hrs 05.08.21
	AURAIYA 4 GTs	**12:56**	**GT#1 synchronised at 17:49 hrs.**	GT # 1 - 23:57 hrs (04.08.21)
			GT#2 synchronised at 17:45hrs	GT # 2 - 23:59 hrs (04.08.21)
			GT#3 synchronised at 18:09 hrs.	GT # 3 - 23:58 hrs (04.08.21)
			GT#4 synchronised at 18:15 hrs.	GT # 4 - 23:57 hrs (04.08.21)
05.08.21	**DADRI 4 GTs**	**10:37**	**units were not synhronised due to instruction given by NLDC in evening hours**	
	AURAIYA 4 GTs			

06.08.21	**DADRI 4 GTs**	**13:03**	**GT#1 SYNC at 17:55 hrs**	GT # 1 - 00:00 hrs
			GT#2 SYNC at 18:16 hrs	GT # 2 - 00:00 hrs
			GT#3 SYNC at 18:41 hrs	GT # 3 - 01:30 hrs
			GT#4 SYNC at 19:11 hrs	GT # 4 - 01:30 hrs
	AURAIYA 4 GTs	**13:03**	**GT#1 synchronised at 17:48 hrs.**	GT # 1 - 01:24 hrs
			GT#2 synchronised at 18:49hrs	GT # 2 - 01:24 hrs
			GT#3 synchronised at 21:35 hrs.	GT # 3 - 01:20 hrs
				GT # 4 - 01:17 hrs
07.08.21	**DADRI 4sGTs**	**13:09**	**GT#1 SYNC at 20:54 hrs**	GT # 1 - 00:00 hrs
			GT#2 SYNC at 19:30 hrs	GT # 2 - 00:00 hrs
			GT#3 SYNC at 18:21 hrs	GT # 3 - 00:06 hrs
			GT#4 SYNC at 18:59 hrs	GT # 4 - 23:54 hrs
	AURAIYA 4sGTs	**13:09**	**GT#1 synchronised at 17:46 hrs.**	GT # 1 - 23:58 hrs
			GT#2 synchronised at 18:06 hrs	GT # 2 - 23:596hrs
			GT#3 synchronised at 20:57 hrs.	GT # 3 - 23:58 hrs
			GT#4 synchronised at 19:03 hrs.	GT # 4 - 23:46 hrs
	ANTA 3 GTs	**16:09**	**GT#1 SYNC at 21:10 hrs**	GT # 1 - 23:15 hrs
			GT#2 SYNC at 19:29 hrs	GT # 2 - 23:57 hrs
			GT#3 SYNC at 20:16 hrs	GT # 3 - 22:58 hrs
12.08.21	**DADRI 4 GTs**	**12:01**	**GT#1 SYNC at 17:31 hrs**	GT # 1 - 21:30 hrs
			GT#2 SYNC at 18:13 hrs	GT # 2 - 23:58 hrs
			GT#3 SYNC at 17:041 hrs	GT # 3 - 23:58 hrs
			GT#4 SYNC at 19:11 hrs	GT # 4 - 01:30 hrs

	AURAIYA 4 GTs	**12:01**	**GT#1 synchronised at 17:34 hrs.**	GT # 1 - 23:58 hrs
			GT#2 synchronised at 18:24 hrs	GT # 2 - 23:59 hrs
			GT#3 synchronised at 18:38 hrs.	GT # 3 - 23:57 hrs
			GT#4 synchronised at 18:15 hrs.	GT # 4 - 23:46 hrs
	ANTA 3 GTs	**12:01**	**GT#1 SYNC at 17:08 hrs**	GT # 1 - 23:23 hrs
			GT#2 SYNC at 17:58 hrs	GT # 2 - 23:50 hrs
			GT#3 SYNC at 19:24 hrs	GT # 3 - 23:36 hrs
13.08.21	**DADRI 4 GTs**	**12:01**	**GT#1 SYNC at 20:18 hrs**	GT # 1 - 22:54 hrs
			GT#2 SYNC at 18:18 hrs	GT # 2 - 22:49 hrs
			GT#3 SYNC at 17:20 hrs	GT # 3 - 22:20 hrs
	AURAIYA 4 GTs	**12:01**	**GT#1 synchronised at 18:10 hrs.**	GT # 1 - 23:58 hrs
			GT#2 synchronised at 18:02 hrs	GT # 2 - 23:59 hrs
			GT#4 synchronised at 21:18 hrs.	GT # 3 - 23:57 hrs
	ANTA 3 GTs	**12:01**	**GT#1 SYNC at 17:04 hrs**	GT # 1 - 23:06 hrs
			GT#2 SYNC at 18:07 hrs	GT # 2 - 23:21 hrs
			GT#3 SYNC at 19:09 hrs	GT # 3 - 22:17 hrs
16.08.21	**DADRI 4 GTs**	**13:15**	**GT#1 SYNC at 19:21 hrs**	GT # 1 - 23:48 hrs
			GT#2 SYNC at 17:05 hrs	GT # 2 - 23:53 hrs
			GT#3 SYNC at 17:18 hrs	GT # 3 - 23:59 hrs
			GT#4 SYNC at 17:29 hrs	GT # 4 - 23:56 hrs
	AURAIYA 4 GTs	**13:15**	**GT#1 synchronised at 18:16 hrs.**	GT # 1 - 23:35 hrs
			GT#2 synchronised at 17:45 hrs	GT # 2 - 23:41 hrs

	ANTA 3 GTs	**13:15**	**GT#1 SYNC at 17:17 hrs**	GT # 1 - 23:52 hrs
			GT#2 SYNC at 18:11 hrs	GT # 2 - 23:48hrs
			GT#3 SYNC at 19:00 hrs	GT # 3 - 23:58 hrs
17.08.21	**DADRI 4 GT + 2 ST**	**23:17 (16.08.21)**	**GT#1 SYNC at 12:23 hrs**	GT # 1 - 00:48 hrs
			GT#2 SYNC at 17:30 hrs	GT # 2 - 00:17 hrs
			GT#3SYNC at 17:45 hrs	GT # 3 - 00:32 hrs
			ST#1SYNC at 17:01 hrs	ST # 1 - 00:34 hrs
	AURAIYA 4 GT + 2 ST	**23:17 (16.08.21)**	**GT#2 synchronised at 12:19 hrs.**	GT # 1 - 01:00 hrs
			ST#1 synchronised at 16:04 hrs	GT # 2 - 00:55 hrs
			GT#1 synchronised at 17:00 hrs.	ST # 1 - 00:52 hrs
	ANTA 3 GT+1ST	**23:17 (16.08.21)**	**GT#1 SYNC at 11:15 hrs**	GT # 1 - 01:17 hrs
			GT#2 SYNC at 15:43 hrs	GT # 2 - 00:11 hrs
			GT#3 SYNC at 17:00 hrs	GT # 3 - 00:44 hrs
			ST#1 SYNC at 15:29 hrs	ST # 1 - 00:59 hrs

पावर सिस्टम ऑपरेशन कारपोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)
उत्तरी क्षेत्रीय भार प्रेशण केन्द्र / NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय :18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली- 110016
OFFICE :18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi- 110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.org, www.nrldc.in, Tel.: 011- 26519406, 26523869, Fax : 011- 26852747

संदर्भसं°: NRLDC/SO-I/151/ **दिनांक: 16th August 2021**

To

Head, NTPC DadriT1&2, Unchahaar-I, II, III, IV, Tanda2, Rihand-I, II, III, Singrauli, Jhajjar, Anta, Auraiya, Dadri (Gas)

Sub: Ensuring availability of adequate fuel stock

Sir/Ma'am,

In view of ongoing dry weather in Northern Region, Northern Region demand is remaining on higher side since past week and same demand pattern is likely to continue over coming days. As on date all ISGS thermal machines (Except under forced outage) of Northern Region are on Bar and even gas based generating stations are being brought on Bar in liquid/RLNG fuel under RRAS, almost on daily basis to meet evening peak demand. In view of above machines availability and fuel adequacy is of utmost important.

Since last week, it has been observed that some of the NTPC stations have revised their DC downward due to fuel shortage. Your kind attention is being drawn towards the provisions of interest on working capital towards fuel stock covered under Chapter 34 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations. The relevant extract in respect of coal and gas based stations is quoted as under.

34. Interest on Working Capital: (1) The working capital shall cover: (a) For Coal-based/lignite-fired thermal generating stations: (i) Cost of coal or lignite and limestone towards stock, if applicable, for 10 days for pit-head generating stations and 20 days for non-pit-head generating stations for generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity whichever is lower;

(b) For Open-cycle Gas Turbine/Combined Cycle thermal generating stations: (i) Fuel cost for 30 days corresponding to the normative annual plant availability factor, duly taking into account mode of operation of the generating station on gas fuel and liquid fuel; (ii) Liquid fuel stock for 15 days corresponding to the normative annual plant availability factor, and in case of use of more than one liquid fuel, cost of main liquid fuel duly taking into account mode of operation of the generating stations of gas fuel and liquid fuel;

पावर सिस्टम ऑपरेशन कारपोरेशन 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 : U40105DL2009GOI188682, Website : www.nrldc.org, www.nrldc.in, Tel.: 011- 26519406, 26523869, Fax : 011- 26852747

Therefore it is requested to ensure adequate fuel stock and continuity of fuel supply to avoid closure of thermal machines on fuel shortage in the interest of secure and reliable system operation. Gas based stations are also requested to line up adequate GAS/RLNG/LIQUID fuel to ensure round the clock machines availability.

You are further requested to furnish the status of coal stock and its continuity of supply on daily basis as per the format enclosed as Annexure-I at nrldcso@posoco.in and nrldcscheduling@posoco.in to carryout meticulous reserves assessment and operational planning.

Your cooperation in this regard is highly solicited.

Thanks and Regards,

(M. M. Hassan)
GM (SO-I), NRLDC

Copy for kind Information: -

1. Member Secretary, NRPC
2. Director (SO), POSOCO
3. ED, NLDC
4. CGM (I/c), NRLDC
5. CGM (SO-1), NRLDC

Annexure-I

Northern Region Coal Stock Position							
Date and Time:	0000 Hrs. of dd/mm/yyyy						
S.No	**Name of generating station**	**Capacity**	**OWNER**	**Fuel type (Coal/GF/RF/LF)***	**Available fuel Stock (in No. of Days)**	**Continuity of fuel supply (Yes/No)**	**Remarks**
1							
2							
3							
--							
--							
--							
N							
*In case of gas based stations status of contracted capacity for various type of fuels may be furnished separately in fuel stock column							

S. No	Generator	Installed capacity			Units operational in synchronous condenser mode	No. of units operated/operational in Synchronous condenser simultaneously				remarks
		No. of units	Rating (MW)	Total (MW)	No. of units	Units	Capacity (MW)	MVAR absorption	Last operated (date)	
1	Pong	6	66	396	6	3	198		On daily basis	In winter 2020-21, Pong couldn't run as synchronous mode
2	Larji	3	42	126	1	1	42			Trial run of one unit has been done (Some issues in MVAr absorption upto some limit only), however, larji has not operated in synchronous condenser mode yet
3	Tehri	4	250	1000	2	2	500		08-12-2019	Tehri units operated for 14.25 hrs, details of Tehri operation in 2020-21 is enclosed in **Annex-I**
4	Chamera -2	3	100	300	1	1	100		Trial run in 2018-19	Not operated as synchronous condenser mode during winter 2020-21

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.

National Load Despatch Centre

Import of Uttar Pradesh Transfer Capability for October 2021

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 2021 to 31st October 2021	00-24	13800	600	13200	8480	4720		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 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 of Rajasthan Transfer Capability for October 2021

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 2021 to 31st October 2021	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 ICTs and Ajmer ICTs						

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

National Load Despatch Centre

Import of Haryana Transfer Capability for October 2021

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 2021 to 31st October 2021	00-24	8500	600	7900	2980	4920		https://hvpn.org.in/#/atcttc
Limiting Constraints		N-1 contingency of 400/220kV ICTs at Deepalpur and Kurukshetra(PG)						

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

National Load Despatch Centre

Import of Delhi Transfer Capability for October 2021

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 2021 to 31st October 2021	00-24	6800	300	6500	4200	2300		
Limiting Constraints		N-1 contingency of 400/220kV Mundka and Bamnauli ICTs.						

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

National Load Despatch Centre
Import of Punjab Transfer Capability for October 2021

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 2021 to 31st October 2021	00-24	7400	600	6800	4800	2000		https://www.punjabsldc.org/downloads/ATC-TTC0321.pdf
Limiting Constraints		N-1 contingency of 400/220kV Rajpura and Nakodar ICTs.						

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

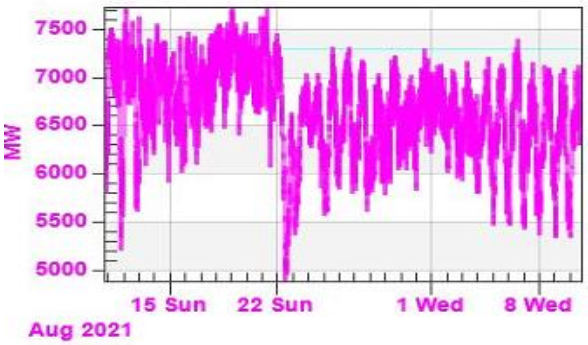
National Load Despatch Centre
Import of HP Transfer Capability for October 2021

Issue Date: Issue Time: 1600 Revision No. 0

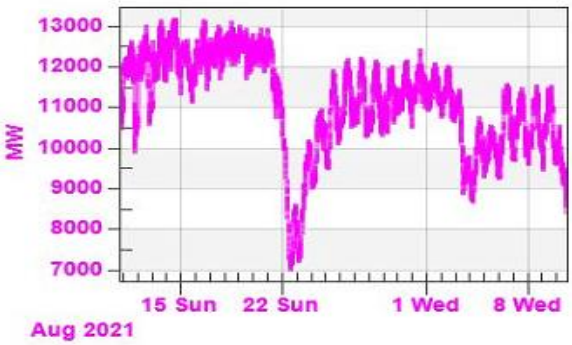
Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st October 2021 to 31st October 2021	00-24	1200	100	1100	1400	-300		https://hpsldc.com/mrm_category/ttc-atc-report/
Limiting Constraints		N-1 contingency of 400/220kV Nallagarh ICTs.						

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

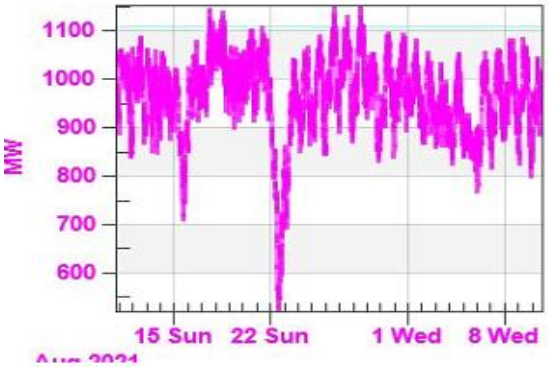
Punjab Import



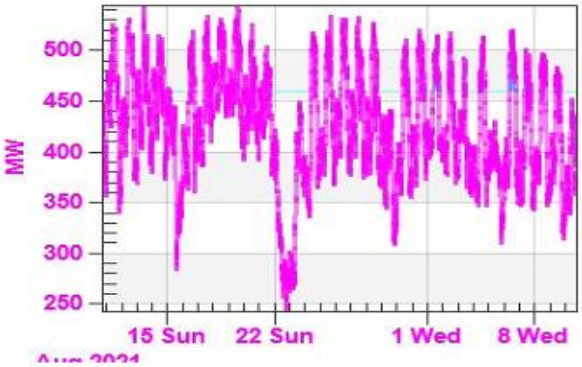
Punjab load



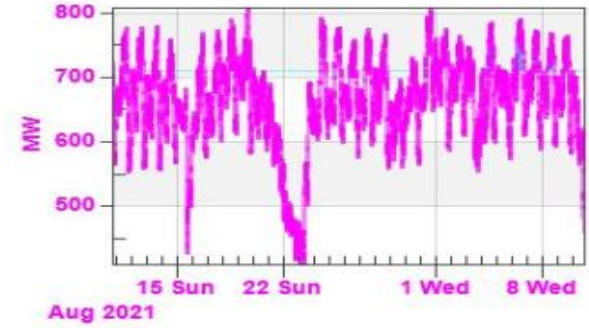
Ludhiana ICT load



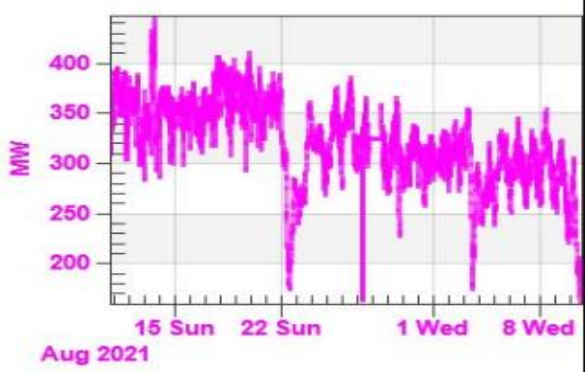
Nakodar ICT load



Rajpura ICT load



Makhu ICT load



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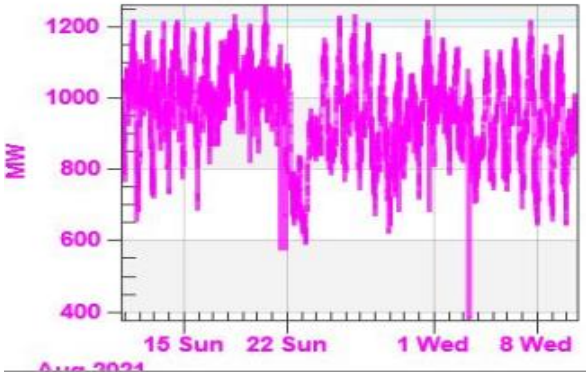

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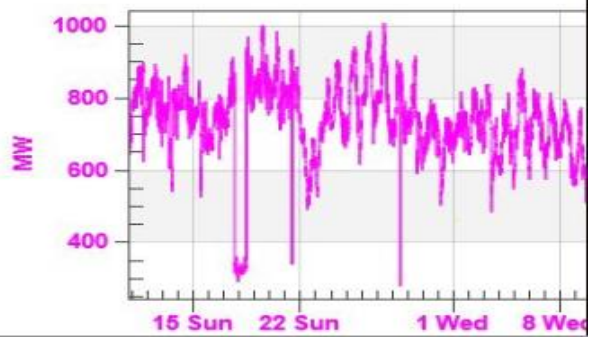

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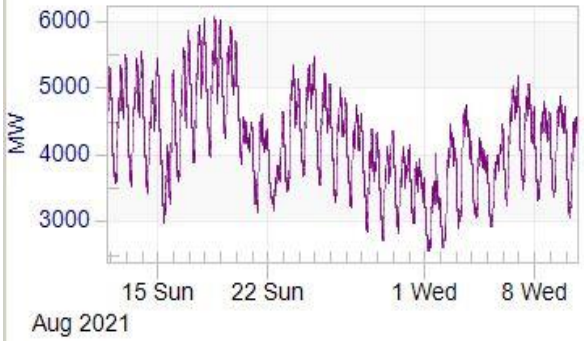

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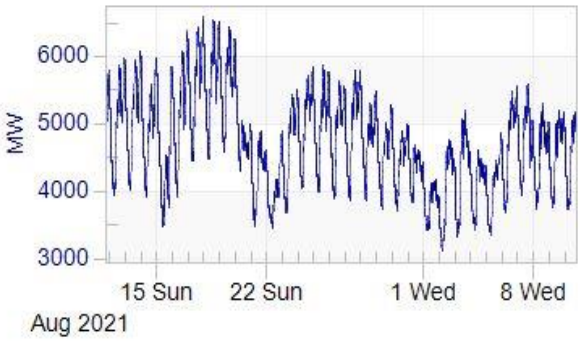
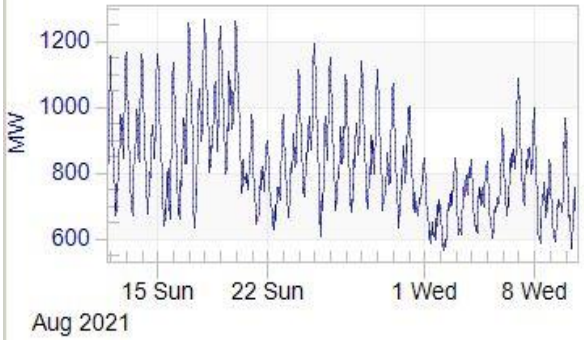
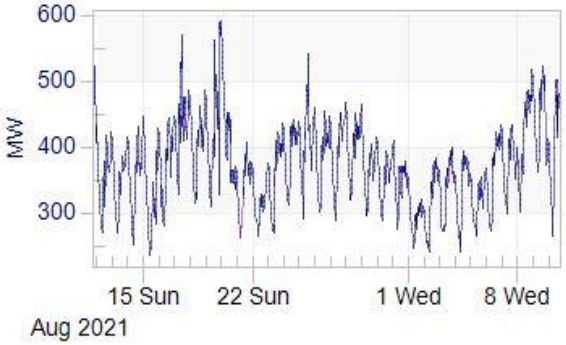
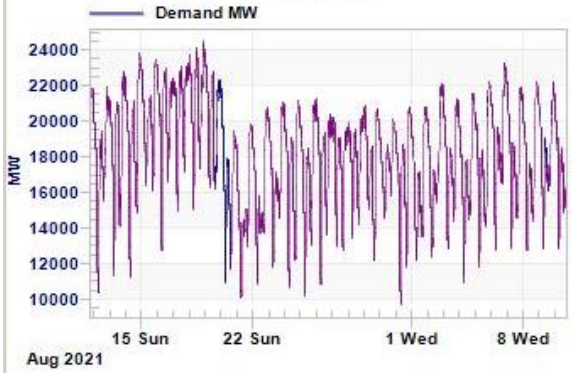


Mundka ICT loading





UP Demand



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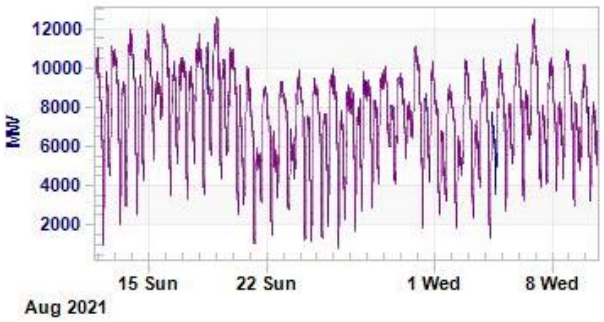

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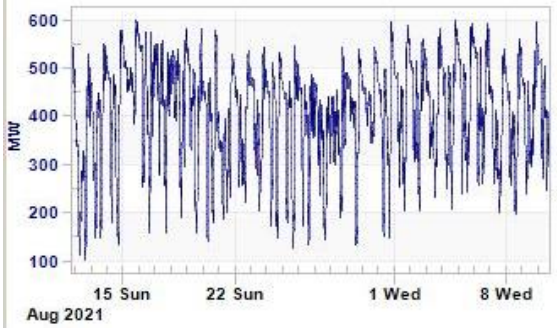

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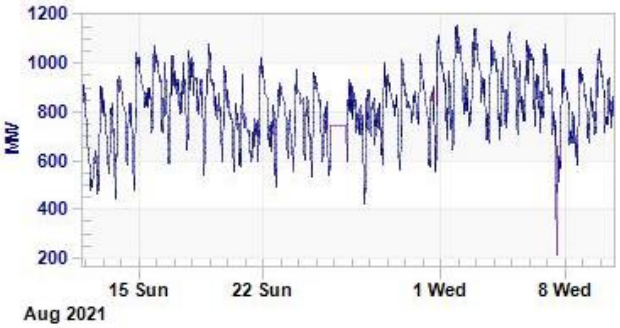
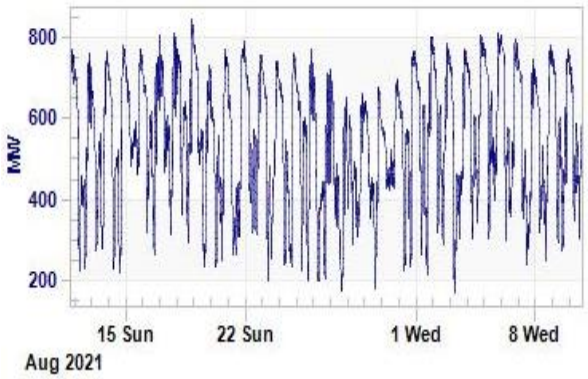
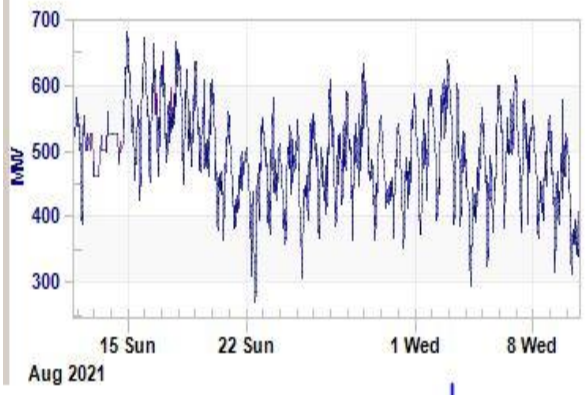


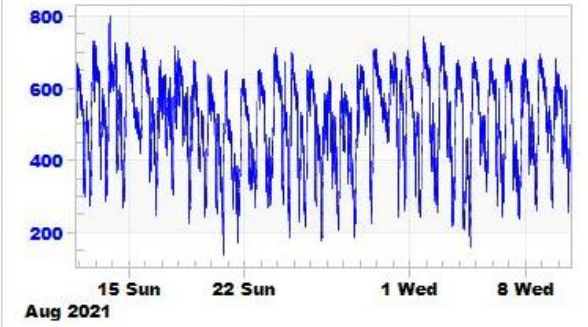
Gorakhpur UP ICT loading



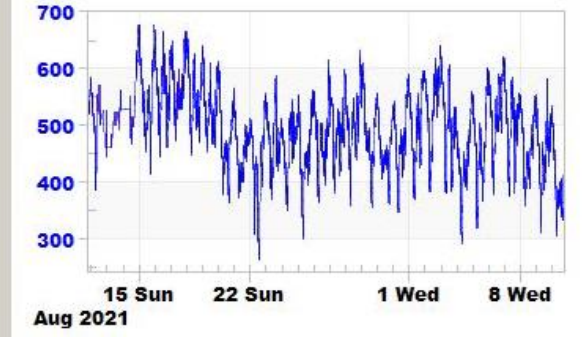
Lucknow(PG) ICT loading



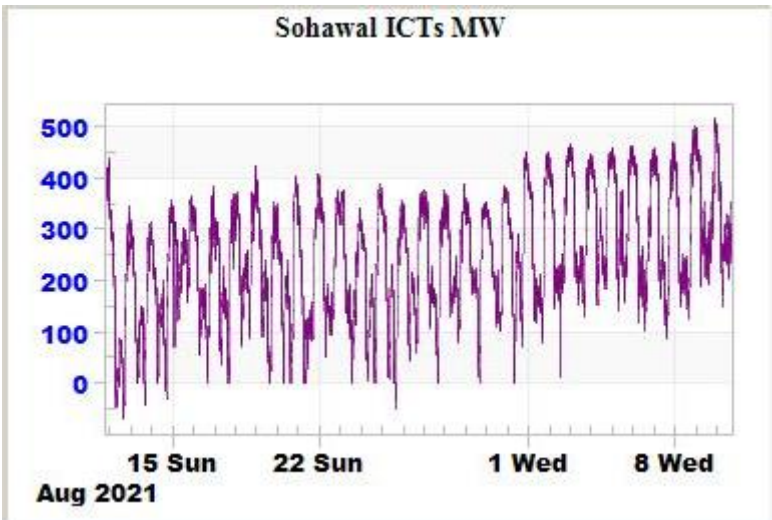
Allahabad PG ICTs MW



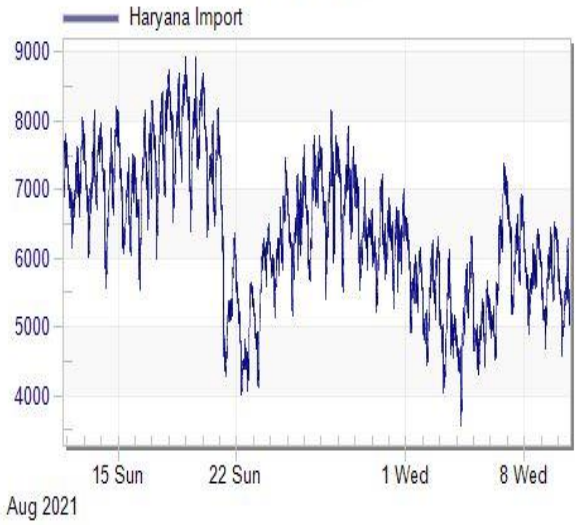
LucknowPG ICTs MW



Sohawal ICTs MW



Haryana Import



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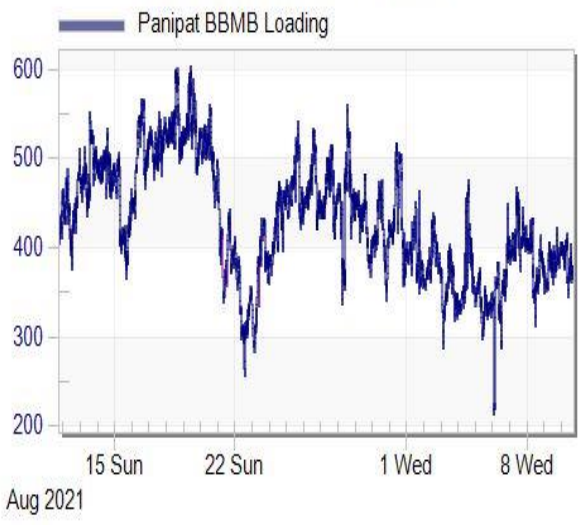

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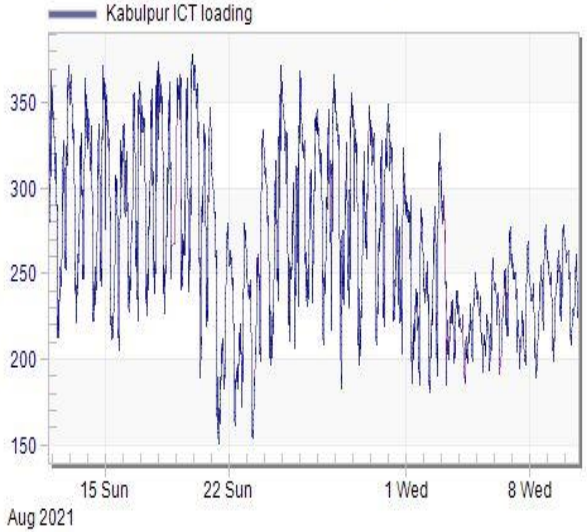
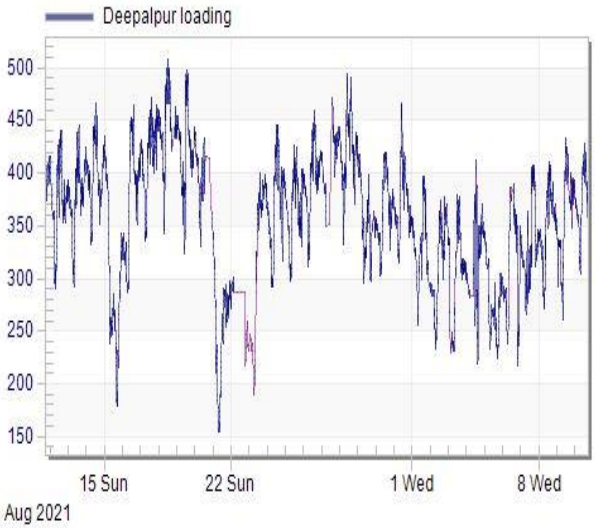


Deepalpur ICT loading



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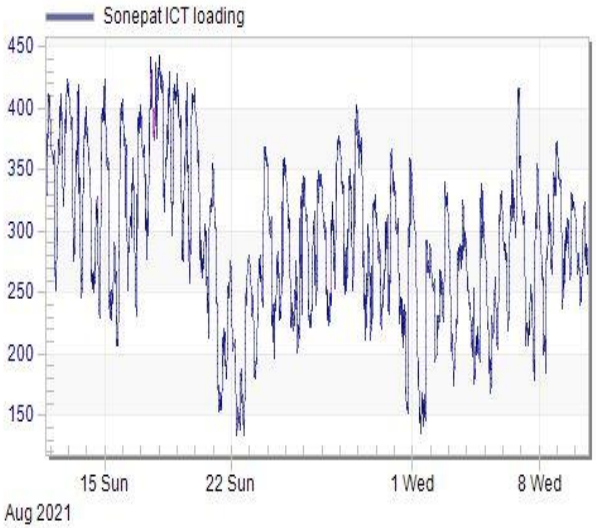
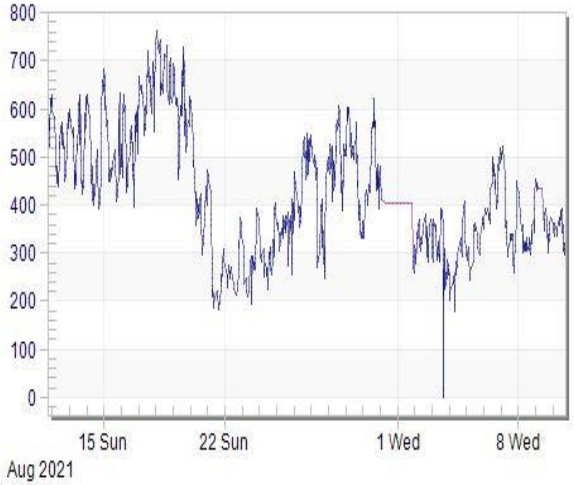
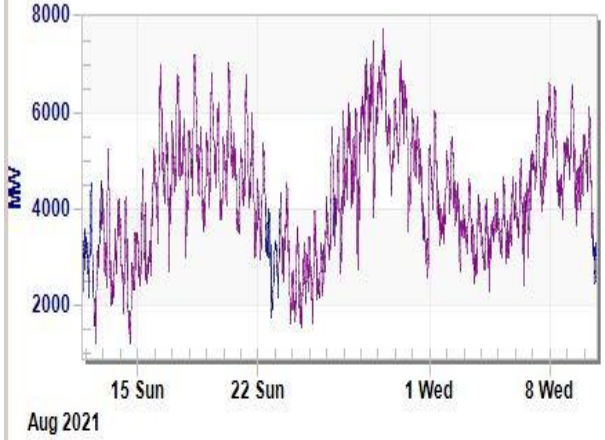


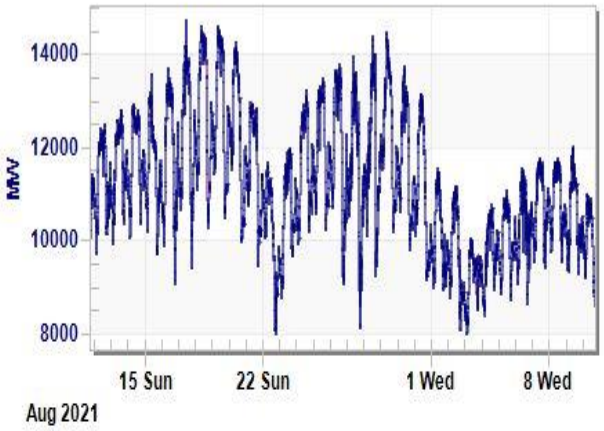
Kurukshetra ICT



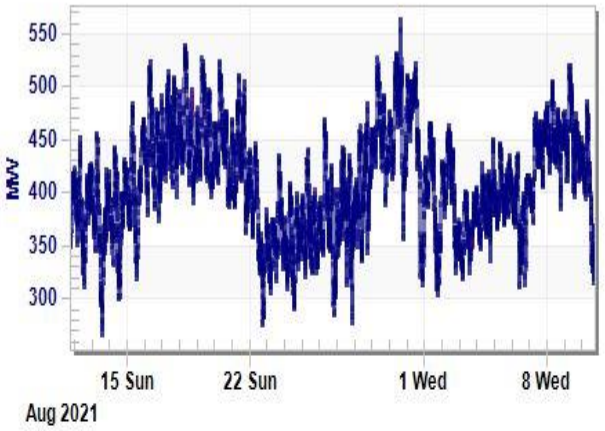
Rajasthan import



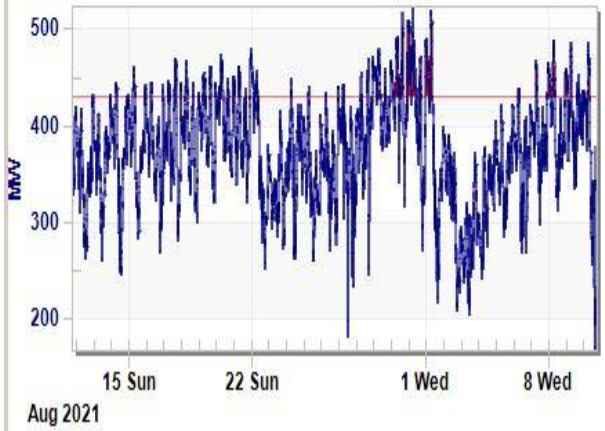
Rajasthan Load



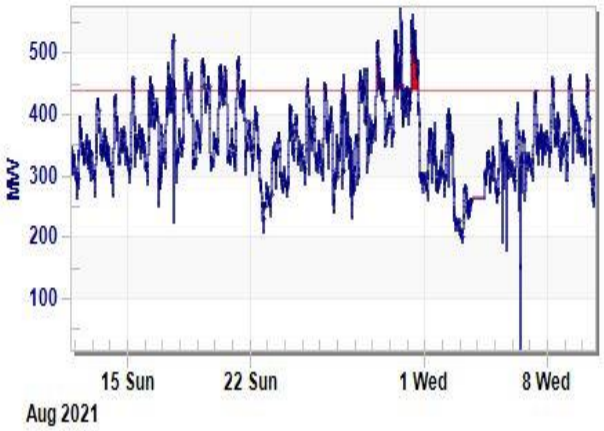
Ajmer ICT loading



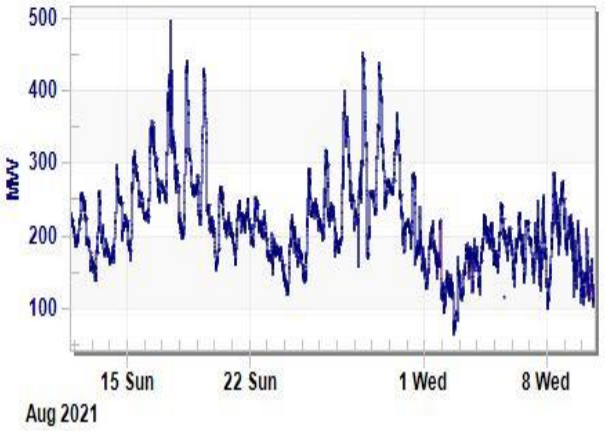
Jodhpur ICT loading



Merta ICT loading



Chittorgarh ICT loading



Annexure-B.IV

S. No`	Element Name	Type	Owner	Outage Date and Time		Outage days	Reason / Remarks	Discussion in 186 OCC meeting
A	LINE							
1	220 KV Kishenpur(PG)-Ramban(PDD) (PDD) Ckt-1	Line	PDD JK	31-03-2020	16:43	485	Due to heavy land slide near village Dalwas at Ramban damages occurred to 220 KV D/C KPTL at Location No :-187,188 &189 and there is every apprehension of collapsing Tower Loc No 189 .	
2	400 KV BHADLA(PG)-FATEHGARH POOLING(FBTL) (FBTL) CKT-1	Line	FBTL	28-07-2021	11:03	17	for contingency LILO arrangement at Fatehgarh-2	
B	BUS & BAYS							
1	714 TIE BAY - 765/400 KV 1500 MVA ICT 3 AT JHATIKARA(PG) AND FUTURE	BUS	POWERGRID	04-06-2021	10:19	71	For Erection of CT Isolator Breaker IPS tube ii) Testing & commissioning of switchyard equipments i.e Isolator CT Breaker (OCC-183)	Outage due to future bay construction. Expected by Aug end
2	713 MAIN BAY - 765 KV BHADLA(PG) - BUS 1 AND FUTURE AT BHADLA(PG)	BAY	POWERGRID	05-04-2021	09:43	131	Major Annual Maintenance.	
3	400 KV Kadarpur (GPTL) - Bus 1	BUS	GPTL	17-04-2021	13:18	118	E/S/D taken due to abnormal humming sound observed from 400KV B-phase BUS-1 CVT at Kadarpur. Replacement of VT pending.	
4	413 MAIN BAY - 50 MVAR BUS REACTOR NO 1 AT 400KV MOGA(PG)	BAY	POWERGRID	22-07-2021	08:31	23	Splitting of 400KV Bus is under progress at Moga due to increased fault level. Removal of dropper from Jack Bus for bay No 413 (B/R), installation of GAB (Gas to Air Bushings) HV Testing and protection shifting etc. (OCC 184)	
5	425 MAIN BAY - 765/400KV 1500 MVA ICT 2 AT MOGA(PG)	BAY	POWERGRID	23-07-2021	08:12	22	Removal of dropper from Jack Bus for bay No 425 (765KV ICT-2), installation of GAB (Gas to Air Bushings) and protection shifting etc.(OCC-185)	
6	717 TIE BAY - 765 KV BHADLA-BIKANER (PG) CKT-2 AND FUTURE AT BIKANER(PG)	BAY	POWERGRID	24-07-2021	12:43	20	SD taken by Adani for Commissioning of Future Bay No 716 (Khetri Line-2) with Tie breaker & its associated equipment and integration with existing system (OCC 184)	Outage due to future bay construction. Expected by Aug end
7	419 MAIN BAY - 400 KV KISHENPUR-MOGA (PG) CKT-2 (POWERGRID)	BAY	POWERGRID	25-07-2021	10:26	20	Splitting of 400KV Bus is under progress at Moga due to increased fault level. Removal of dropper from Jack Bus for bay No 419(Kishenpur-2), installation of GAB (Gas to	

S.No	Element Name	Type	Owner	Outage		Outage days	Reason / Remarks	Discussion in 186 OCC meeting
C	ICT							
1	400/220 kV 315 MVA ICT 1 at Bhilwara(rs)	ICT	RRVPNL	12-05-2019	23:42	824	Oil leakage in transformer. Expected revival in Dec-2021.	
2	400/220 kV 315 MVA ICT 1 at Muradnagar_1(UP)	ICT	UPPTCL	13-03-2020	02:46	519	Buccholz relay alarm and Local Breaker Backup protection operated. Tripped along with Hapur-Muradnagar line. Flags are not reset because of cable flashover. To be replaced by 500 MVA ICT. Expected revival in May-2021.	
3	400/220 kV 315 MVA ICT 2 at Bawana(DV)	ICT	DTL	30-03-2021	17:35	136	400kV side B-phase bushing blasted. Tripped on differential protection, REF protection. ICT catches fire and damaged.	
4	400/220 kV 500 MVA ICT 2 at Noida Sec 148(UP)	ICT	UPPTCL	19-08-2020	16:30	360	500 MVA ICT-I also got damaged due to fire in ICT-II, for protection testing. Expected revival in June-2021.	
5	400/220 kV 315 MVA ICT 2 at Orai(UP)	ICT	UPPTCL	22-03-2021	15:51	144	R-phase HV (400kV) & MV (220kV) Bushing of 315 MVA ICT-2 got damaged at 400 KV S/S ORAI.	
6	400/220 kV 315 MVA ICT 2 at Mundka(DV)	ICT	DTL	20-09-2019	00:419	694	Due to fire in ICT.	
7	220/33 kV 125 MVA ICT 1 at Saurya Urja Solar(SU)	ICT	Saurya Urja	27-05-2021	23:42	79	Operation of transformer protection	
8	400/220 kV 315 MVA ICT 1 at Lahal(HP)	ICT	HPSEB	18-04-2021	19:42	117	To attend low oil level alarm in ICT.	

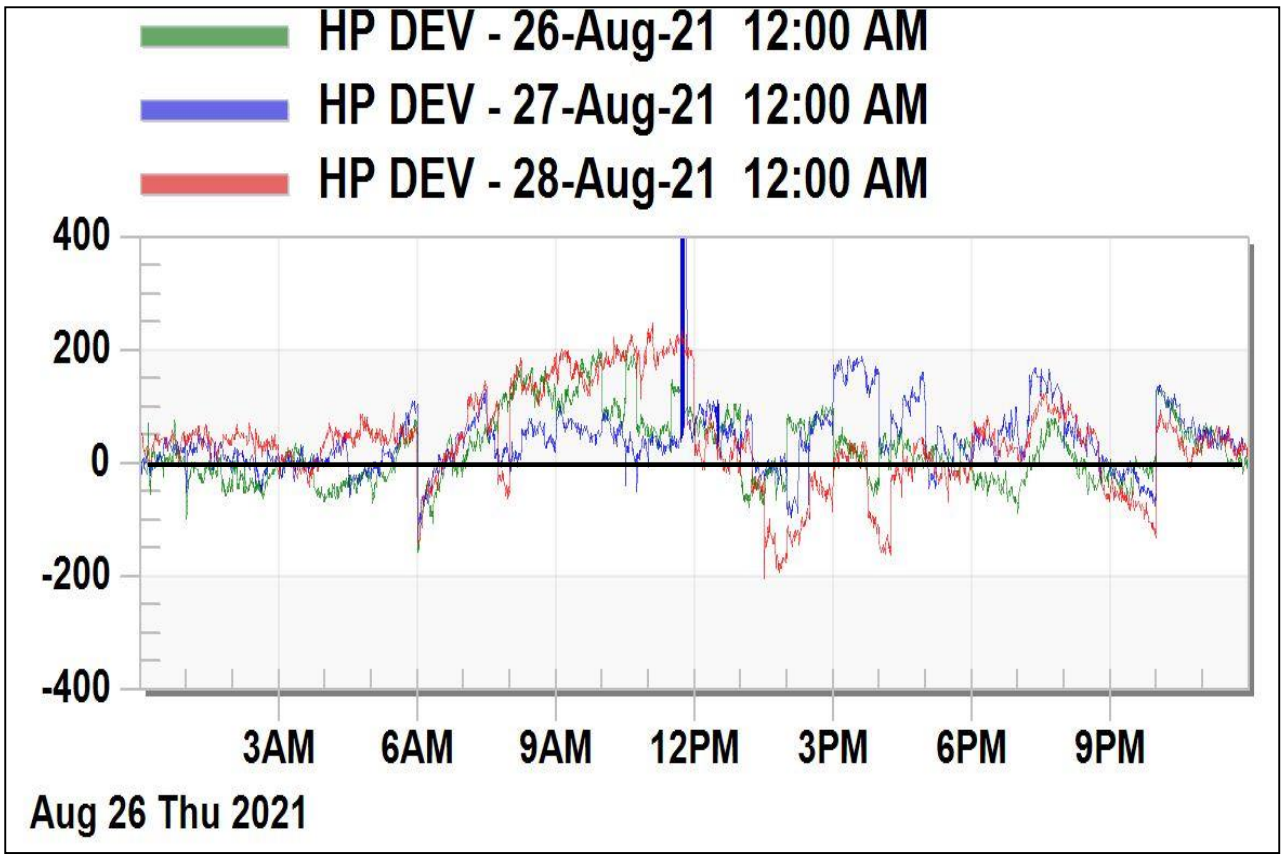
D	BUS REACTORS							Discussion in 186 OCC meeting
1	80 MVAR Bus Reactor No 1 at 400KV Nathpa Jhakri(SJ)	BR	SJVNL	17-10-2019	12:58	666	Flashover/Fault in 80MVAR Bus Reactor cleared by Bus Bar Protection. Expected revival in Nov-2021.	
2	125 MVAR BUS REACTOR NO 3 AT 400KV VINDHYACHAL(PG)	BR	POWERGRID	04-06-2021	21:52	70	REFURBISHMENT OF COMMON SYSTEM AND CONTROL AND PROTECTION OF NORTH SIDE BUS REACTOR AR4 UNDER ADD CAP (OCC 183)	
3	125 MVAR BUS REACTOR NO 4 AT 400KV VINDHYACHAL(PG)	BR	POWERGRID	04-06-2021	21:52	70	REFURBISHMENT OF COMMON SYSTEM AND CONTROL AND PROTECTION OF NORTH SIDE BUS REACTOR AR4 UNDER ADD CAP (OCC 183)	
4	93 MVAR BUS REACTOR NO 2 AT 400KV VINDHYACHAL(PG)	BR	POWERGRID	04-06-2021	21:52	70	REFURBISHMENT OF COMMON SYSTEM AND CONTROL AND PROTECTION OF NORTH SIDE BUS REACTOR AR4 UNDER ADD CAP (OCC 183)	
5	93 MVAR BUS REACTOR NO 1 AT 400KV VINDHYACHAL(PG)	BR	POWERGRID	04-06-2021	22:40	70	REFURBISHMENT OF COMMON SYSTEM AND CONTROL AND PROTECTION OF NORTH SIDE BUS REACTOR AR4 UNDER ADD CAP (OCC 183)	

E	HVDC POLE							Discussion in 186 OCC meeting
1	70 KV VINDHYACHAL(PG) POLE-2	HVDC POLE	POWERGRID	20-04-2021	09:35	116	REFURBISHMENT OF HVDC BLOCK#2 UNDER O&M ADD CAP vide CERC Petition 543/TT/2014 (OCC-181)	

F	FSC							Discussion in 186 OCC meeting
1	SVC No 1(-140/+140MVAR) at 400 KV Kanpur(PG)	SVC	POWERGRID	24-08-2020	17:33	354	Hand tripped at 17:33hrs on 24.08.2020 after observation of heavy sparking in TSC Capacitor bank. Due to non support from OEM, the element has been decapitalized by Powergrid.	

G	GENERATING UNITS						Discussion in 186 OCC meeting
S.No	Station	Owner	Outage Reason	Outage Date	Outage Time	Outage duration(in days)	
1	126 MW Bhakra HPS - Unit 3	BBMB	Renovation and Maintenance work. Expected by July-2021.	01-04-2019	09:20	866	
2	126 MW Bhakra HPS - Unit 7	BBMB	Renovation and Maintenance work. Expected by July-2021	05-10-2020	08:43	313	
3	40 MW Sewa-II HPS - UNIT 2	NHPC	Excessive leakage in HRT between audit-II and Dam. Expected by Jan-2022.	25-09-2020	00:00	323	
4	40 MW Sewa-II HPS - UNIT 3	NHPC	Excessive leakage in HRT between audit-II and Dam. Expected by Jan-2022.	25-09-2020	00:00	323	
5	40 MW Sewa-II HPS - UNIT 1	NHPC	Excessive leakage in HRT between audit-II and Dam. Expected by Jan-2022.	25-09-2020	00:00	323	
6	600 MW RGTPP (Khedar) - UNIT 2	HVPNL	Capital Overhauling. Expected date to be confirmed from HVPNL.	02-03-2021	00:00	165	Dec 2021
7	60 MW Bairasiul HPS - UNIT 3	NHPC	Renovation and modernization of unit. Expected by September 2021	27-11-2020	10:00	260	Sep 2021

S.No	Station	Owner	Reason(s)	Outage Date & Time		Outage duration(in days)	
8	165 MW Dehar HPS - UNIT 4	BBMB	Penstock Inspection. Expected by July 2021.	28-10-2020	11:50	290	
9	200 MW Singrauli STPS - UNIT 7	NTPC	Overhauling	29-06-2021	00:00	46	
10	660 MW Talwandi Sabo TPS - UNIT 1	PSPCL	Due to abnormal sound in boiler.	04-07-2021	01:16	41	15 Sep 2021
11	300 MW DCRTPP (Yamuna Nagar) - UNIT 1	HVPNL	Furnace pressure high.	08-07-2021	17:16	36	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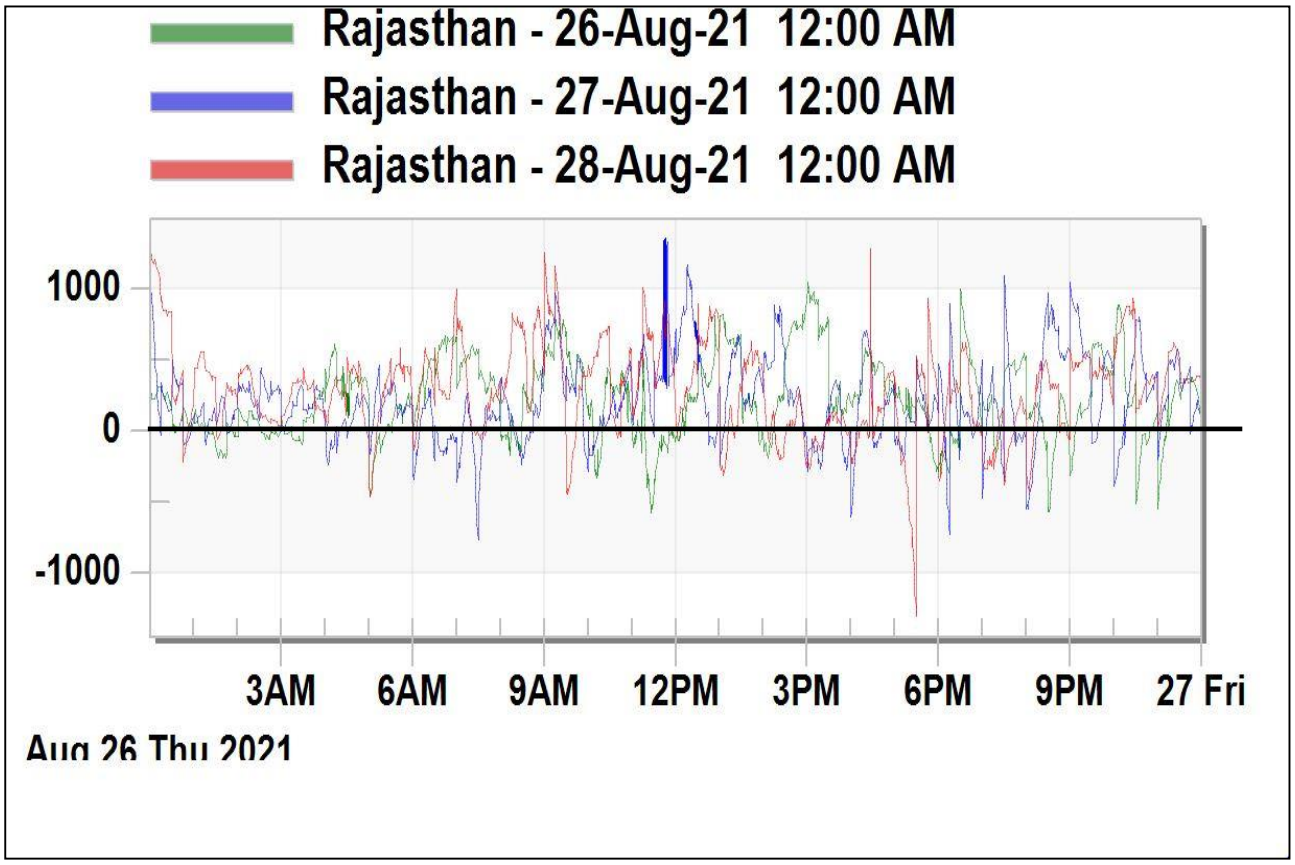
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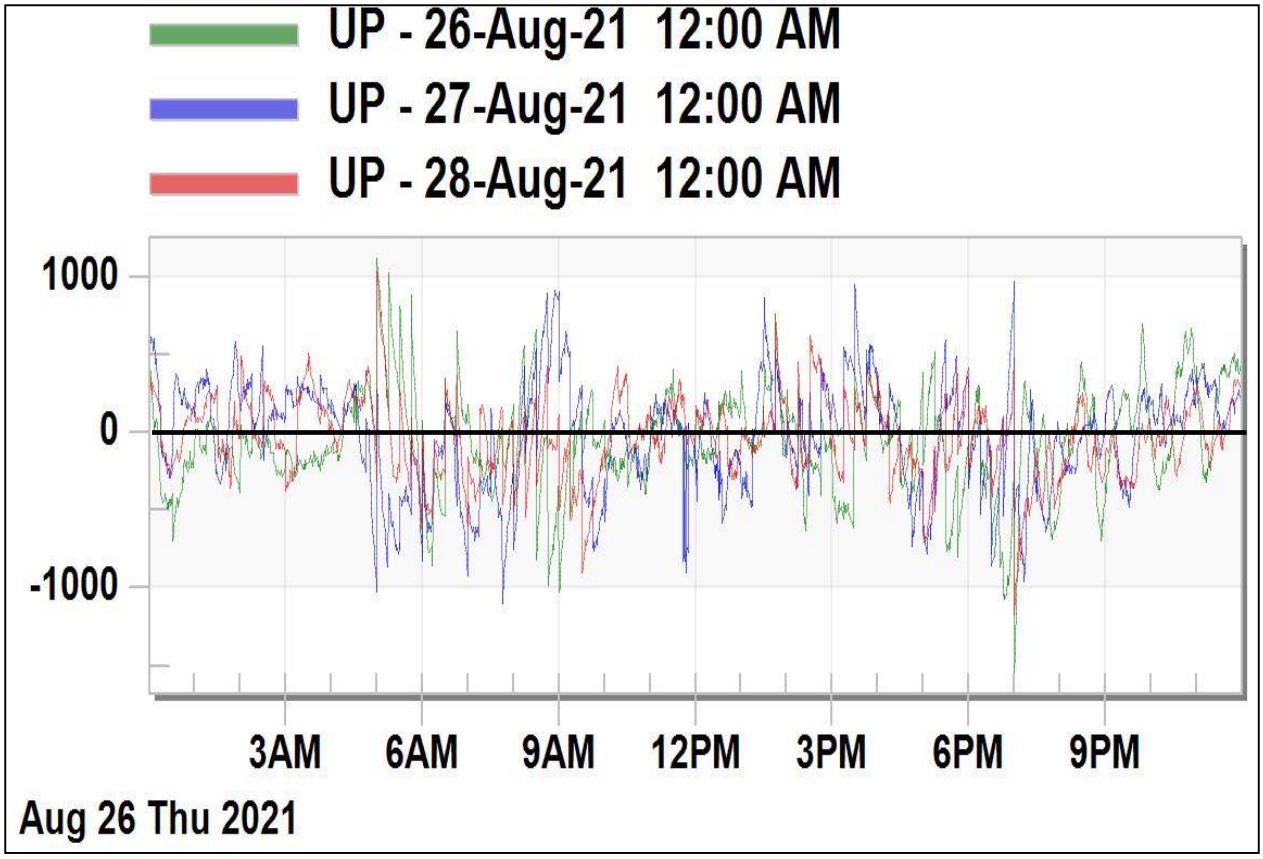
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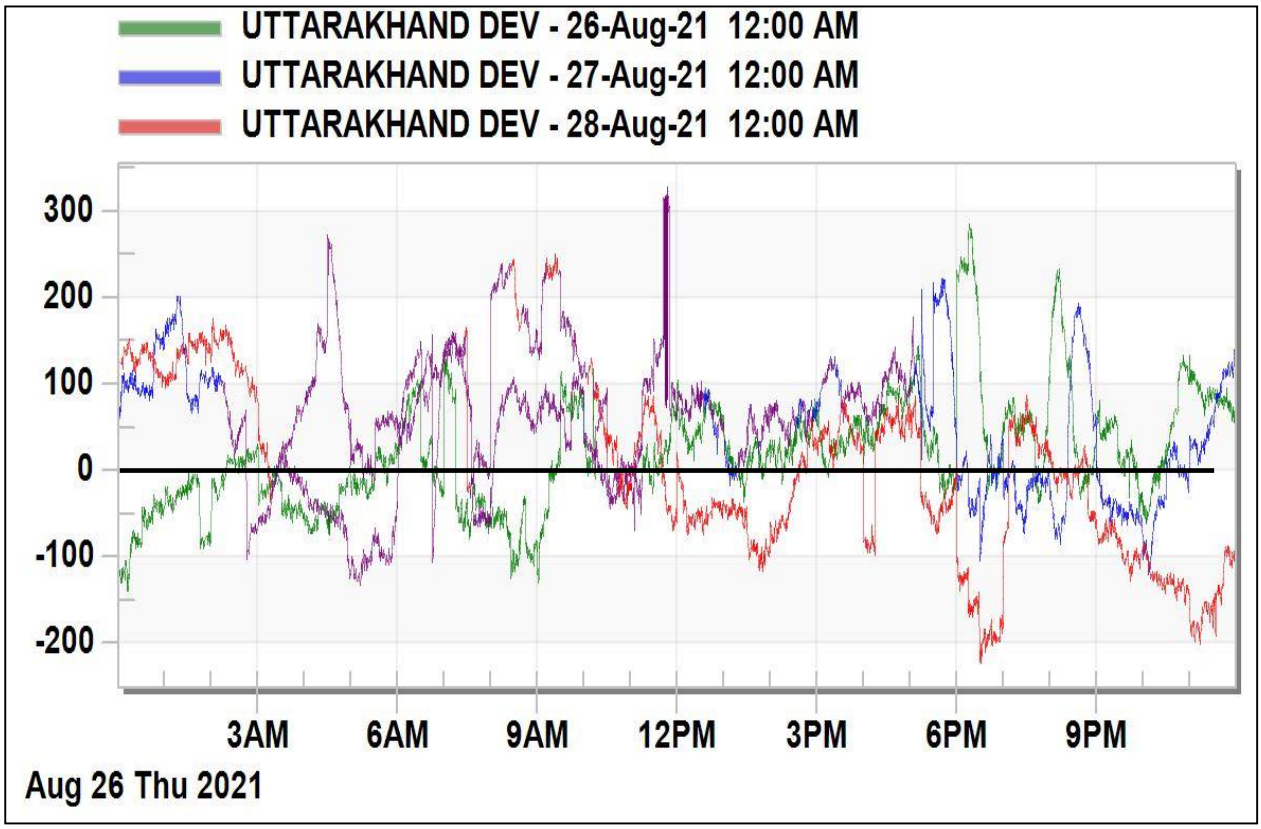
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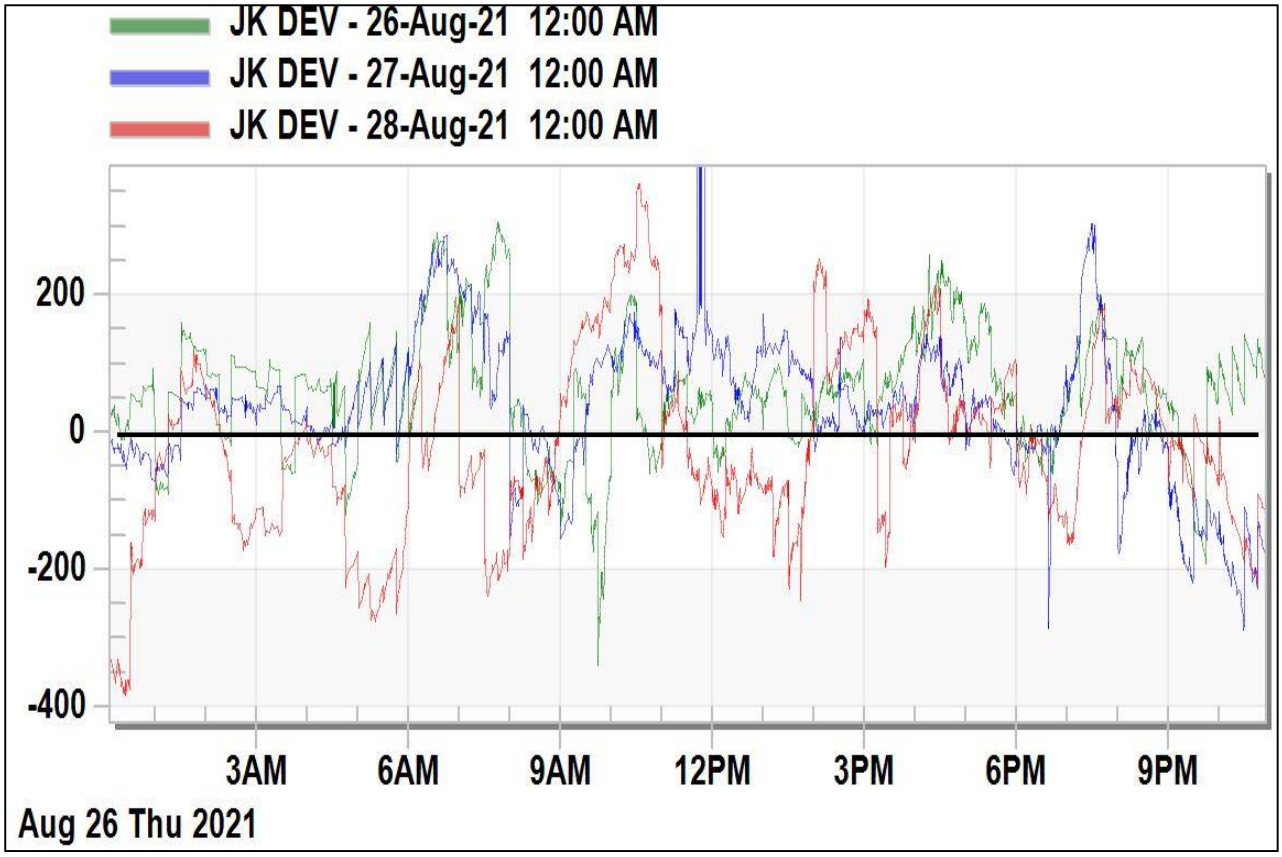
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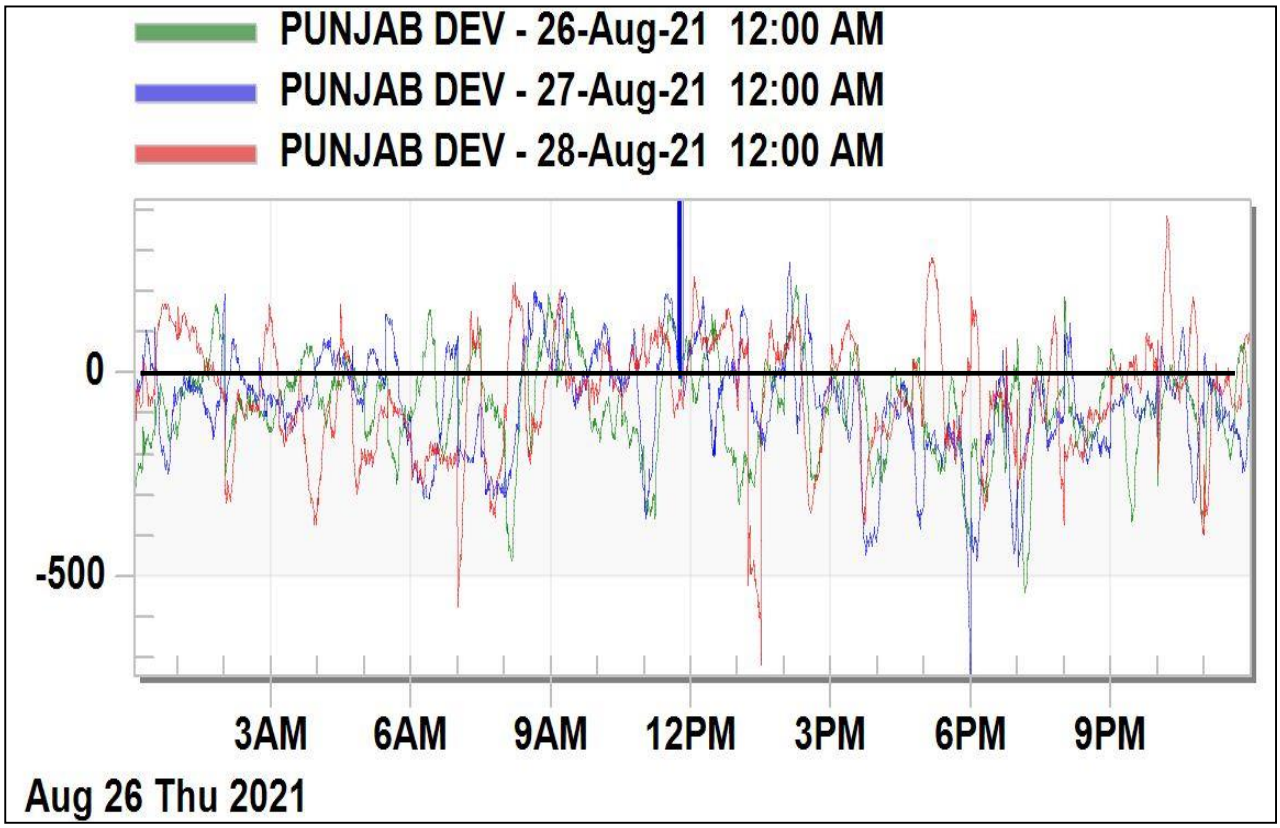
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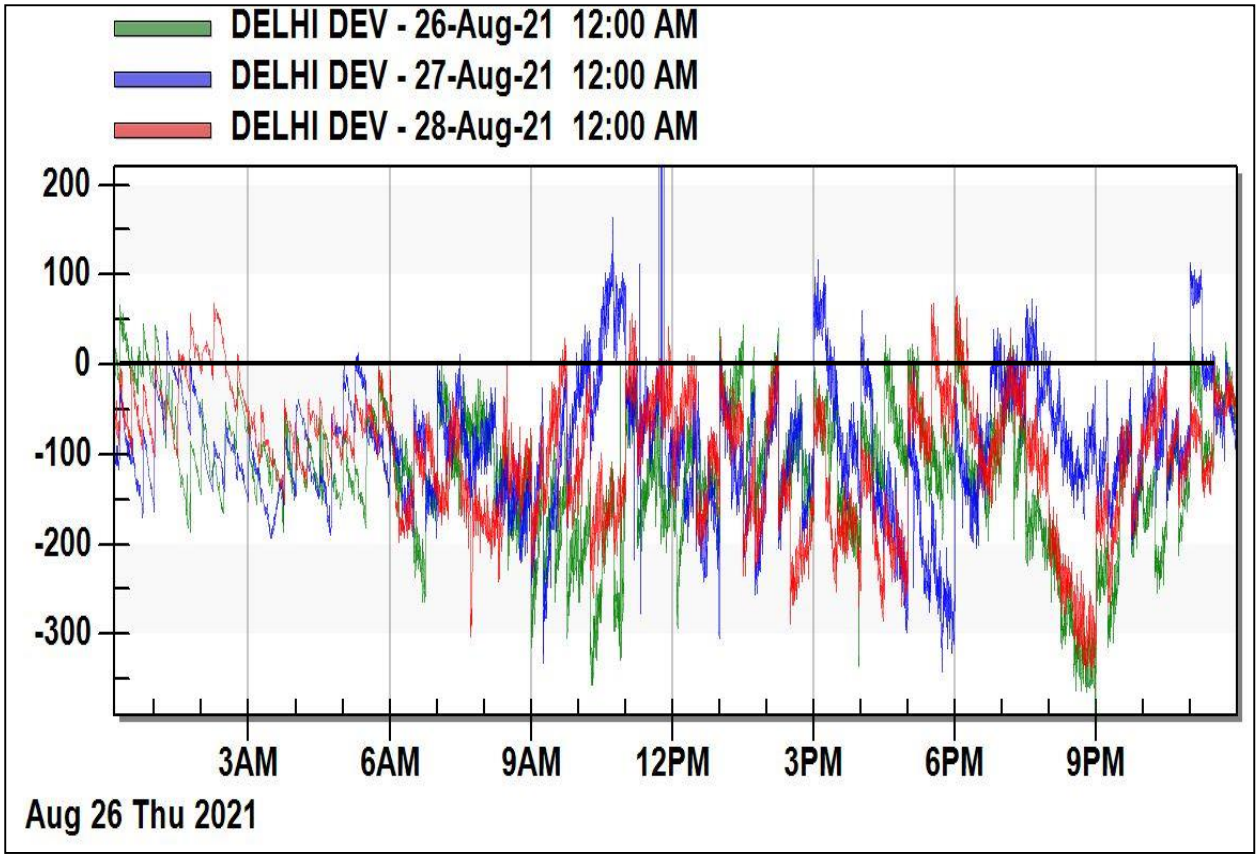
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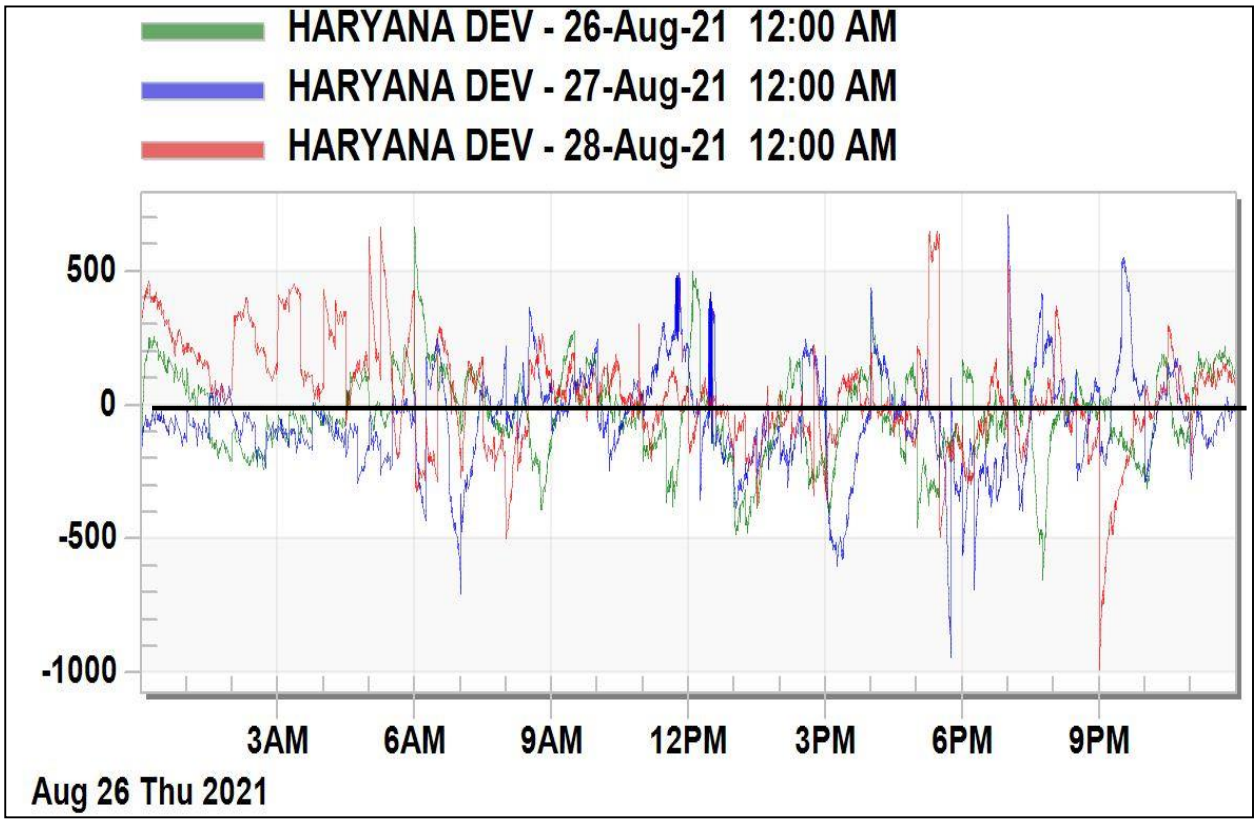
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Sr No	Element Name	Outage Date	Outage Time	Reason
1	400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt-1	5-Aug-21	15:15	R-N fault. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
		5-Aug-21	18:02	R-N fault. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
		7-Aug-21	6:45	R-N fault, 63.57km from Vishnu prayag end. As per PMU, R-N fault occured, no auto-reclosing observed.
		10-Aug-21	20:28	B-N fault. As per PMU, R-N fault occurred and delayed clearance of 1520ms with no auto-reclosing observed.
2	400 KV Orai-Mainpuri (UP) Ckt-2	1-Aug-21	2:13	Y-N fault. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
		1-Aug-21	6:01	Overvoltage. As per PMU, No fault observed.
		8-Aug-21	17:02	Over-voltage stage-1 operated at Mainpuri(UP). DT received received at Orai. As per PMU, No fault observed.
3	220 KV Badarpur(NT)-Alwar MIA(RS) (RS) Ckt-1	1-Aug-21	15:41	B-N fault, Zone-2, Dist. 115.7km, Fault current 1.42kA from Alwar end. As per PMU, No fault observed.
		2-Aug-21	17:00	R-N fault, Zone-2, Dist. 122.5km, Fault current 1.355kA from Alwar MIA(RS) end. As per PMU, No fault observed.
		8-Aug-21	21:19	B-N fault, Zone-1, Dist. 99.79km, Fault current 1.591kA from Alwar MIA. As per PMU, No fault observed.
		9-Aug-21	8:02	B-N fault, Zone-1, Dist. 120.8km, Fault current 1.350kA from Alwar MIA. As per PMU, No fault observed.
		10-Aug-21	10:39	R-N fault, Zone-2, Dist. 127.8km, Fault current 1.26kA from Alwar MIA. As per PMU, No fault observed.
		12-Aug-21	11:48	R-N fault, Zone-2, Dist. 131.1km, Fault current 1.110kA from Alwar MIA. As per PMU, No fault observed.
		14-Aug-21	13:11	R-N fault, Zone-2, Dist. 108.5km, Fault current 1.43kA from Alwar MIA. As per PMU, No fault observed.
		22-Aug-21	14:28	B-N fault. As per PMU, No fault observed.
4	220 KV Duni(RS)-Kota(PG) (RS) Ckt-1	4-Aug-21	6:35	B-N fault, Zone-1, Dist. 44.1km from Duni(RS). Line tripped from Duni(RS) only; line remain charged from Kota(PG). As per PMU, No fault observed.
		5-Aug-21	16:35	R-N fault, 63 km from Dhuni end. As per PMU, R-N fault occured, no auto-reclosing observed.
		21-Aug-21	18:30	R-N fault, 65.3 km from Dhuni end. As per PMU, R-N fault occured, no auto-reclosing observed.
		31-Aug-21	18:07	R-N fault, Zone-1, Fault current 8.7kA, Dist. 64.6km from Duni(RS) end. As per PMU, R-N fault occured, no auto-reclosing observed.
5	220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2	18-Aug-21	12:46	B-N fault, Dist. 4.299km, Fault current 5.836kA from Narela end. As per PMU, B-N fault occured, no auto-reclosing observed.
		20-Aug-21	9:25	SNTP failure at Narela end. As per PMU, No fault observed.
		21-Aug-21	4:52	DT received at Mandola end. As per PMU, No fault observed.
		24-Aug-21	18:50	Tripped on B-phase differential trip. As per PMU, B-N fault occured, no auto-reclosing observed.
6	220 KV Meerut(PG)-Simbholi(UP) (PG) Ckt-1	1-Aug-21	9:35	Y-N fault, Dist.19.13km, Fault current 8.19 KA from Meerut. As per PMU, Y-N fault occured, no auto-reclosing observed.
		4-Aug-21	2:46	R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed.
		21-Aug-21	2:23	R-N fault, 12.58 KA, 10.07km from meerut end. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
		28-Aug-21	18:18	Tripped at simbholi end and auto recloses at meerut pg end. As per PMU, R-Y-B three fault is observed.
7	220 KV Unchahar(NT)-Fatehpur(UP) (UP) Ckt-2	2-Aug-21	20:18	Tripped from Unchahar end only. As per PMU, R-Y phase to phase fault is observed.
		11-Aug-21	5:25	B-N fault, Dist. 37.3km from Fatehpur(UP). As per PMU, No fault observed.
		25-Aug-21	5:35	R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed.
		26-Aug-21	2:40	R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed.

S.No.	Region	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Event (As reported)	Generation Loss(MW)	Load Loss(MW)	Category as per CEA Grid Standards	Energy Unserved (in MU)	Preliminary Report receipt status			DR/EL receipt status			Detailed Report receipt status		Fault Clearance time (in ms)
					Date	Time						within 24hrs	after 24hrs	Not Received	within 24hrs	after 24hrs	Not Received	Received	Not Received	
1	NR	1) 220 KV Amritsar(PG)-Verpal(PS) (PSTCL) Ckt-2 2) 220 KV Amritsar(PG)-Verpal(PS) (PSTCL) Ckt-1	PUNJAB	PSTCL	2-Aug-21	17:22	Y-N & B-N phase to earth faults occurred in 220 KV Amritsar(PG)-Verpal(PS) (PSTCL) Ckt-1 due to burning of Y-ph jumper of wavetrap at Verpal end and snapping of B-ph condutor at Amritsar end respectively. During the event, 220kV Amritsar-Varpal Ckt-1 tripped from Amritasr(PG) end in Z-1 but didn't trip from Verpal(PS) end, following which 220kV Amritsar-Varpal Ckt-2 tripped from Verpal end only. 220kV feeders to 220 kV Wadala Granthia also tripped and feeders to 220 kV Patti & 220 kV Rashiana got de-energized. As per PMU, Y-B phase to phase fault is observed with delayed clearance in 440ms. As per SCADA, load loss of approx. 480MW is observed in Punjab Control area.	0	480	GD-1	1.04	Y(PG) Y(Pun)			Y(PG)	Y(Pun)		Y(PG)	Y(Pun)	440
2	NR	1) 220 KV AD hydro(AD)-Phozal(HP) (ADHPL) Ckt-1 2) 220 KV Phozal(HP)-Nallagarh(PG) (ADHPL) Ckt-1	HIMACHAL PRADESH	ADHPL	6-Aug-21	13:52	At 13:52 Hrs 220 KV Phozal(HP)-Nallagarh(PG) (ADHPL) Ckt-1 tripped on B-N phase to earth fault. Fault distance was 46.7km and fault current was 1.6kA from Phozal end. At the same time, 220 KV AD hydro(AD)-Phozal(HP) (ADHPL) Ckt-1 also tripped as 220 KV AD hydro(AD)-Nallagarh(PG) (ADHPL) Ckt-1 was already out since 13:16 Hrs on B-N fault. 96MW AD Hydro Unit 1 & Unit 2 both tripped due to non availability of evacuation path. As per PMU, B-N phase to earth fault is observed. As per SCADA, generation loss of approx. 170MW is observed at AD Hydro(AD). In antecedent condition, 220kV AD Hydro-Phozal Ckt and 220kV Phozal-Nallgarh Ckt were carrying 170MW & 215MW respectively.	170	0	GD-1	0.23	Y(AD Hydro) Y(HP)	Y(PG)		Y(AD Hydro) Y(HP)	Y(PG)		Y(AD Hydro) Y(HP) Y(PG)		120
3	NR	1) 400/220 kV 500 MVA ICT 4 at Muzaffarnagar(UP) 2) 400 KV Muzaffarnagar-Ataur (UP) Ckt-1 3) 400 KV Roorkee(PG)-Muzaffarnagar(UP) (PTCUL) Ckt-1 4) 400 KV Muzaffarnagar(UP)-Vishnuprayag(JP) (UP) Ckt-1 5) 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-2 6) 400/220 kV 315 MVA ICT 3 at Muzaffarnagar(UP) 7) 400/220 kV 315 MVA ICT 1 at Muzaffarnagar(UP) 8) 400 KV Meerut(PG)-Muzaffarnagar(UP) (PG) Ckt-1 9) 82.5 MW Alakhanda HEP - UNIT 4 10) 82.5 MW Alakhanda HEP - UNIT 2 11) 82.5 MW Alakhanda HEP - UNIT 3 12) 82.5 MW Alakhanda HEP - UNIT 1 13) 110 MW Vishnuparyag HPS - UNIT 2 14) 110 MW Vishnuparyag HPS - UNIT 3 15) 110 MW Vishnuparyag HPS - UNIT 1 16) 110 MW Vishnuparyag HPS - UNIT 4 17) 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-1 18) 400 KV Alaknanda GVK(UPC)-Muzaffarnagar (UP) Ckt-1 19) 400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-1 20) 400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-2	UTTAR PRADESH	POWERGRID, PTCUL, UPPTCL	7-Aug-21	3:02	400/220 kV 315 MVA ICT 3 at Muzaffarnagar(UP) tripped on differential protection operation on blast of R-ph CT of ICT 3, ICT 3 was connected to bus 2. At the same time, bus bar 1 protection operated which resulted into tripping of ICT 1, ICT 4, 400kV lines to Meerut, Ataur and Vishnuprayag which were connected to Bus 1. 400 KV Alaknanda-Muzaffarnagar Ckt-1 also tripped on B-N phase to earth fault on B-ph CT damaged at Muzaffarnagar S/s, fault distance was 116meter(Z-1) from Muzaffarnagar end. 400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-1 & Ckt-2 both tripped on DT received at Srinagar end. Due to tripping of all evacuating lines all the units of Alaknanda HEP, Vishnuprayag HEP and Sinoli Bhatwari tripped. As per PMU, R-N & B-N fault followed by Y-N fault observed with delayed clearance in 760ms. As per SCADA, generation loss of approx. 870MW is observed in Alaknanda HEP, Vishnuprayag HEP & Singoli Bhatwari total. In antecedent condition, 400/220 kV 315 MVA ICT 1 & ICT 3 at Muzaffarnagar(UP) and 400/220 kV 500 MVA ICT 4 at Muzaffarnagar(UP) were carrying 108MW, 115MW & 174MW respectively.	870	0	GD-1	0.2		Y(UP) Y(Utt) UI(PG)			Y(UP) Y(SINGOLI) UI(PG)	Y(Utt)		Y(UP) UI(PG)	Y(Utt) Y(SINGOLI)	760
4	NR	1) 400/220 kV 240 MVA ICT 3 at Obra_B(UP) 2) 400/220 kV 315 MVA ICT 1 at Obra_B(UP) 3) 400/220 kV 315 MVA ICT 2 at Obra_B(UP)	UTTAR PRADESH	UPPTCL	7-Aug-21	23:50	At 23:50Hrs, 400/220 kV 315 MVA ICT 1 at Obra_B(UP) tripped on differential protection operation due to damage of R-Y-N phase bushing and Y-ph LA at 220kV side. At the same time, 400/220 kV 240 MVA ICT 3 at Obra_B(UP) tripped on directional E/F protection operation. Due to tripping of above elements, loading of 400/220 kV 315 MVA ICT 2 at Obra_B(UP) rose upto 371MW following which ICT 2 tripped on over current protection operation at 23:55 Hrs. As per PMU, Y-N phase to earth fault is observed. In antecedent condition, 400/220 kV 315 MVA ICT 1 & ICT 2 at Obra_B(UP) carrying 206MW & 200MW respectively.	0	0	GI-2	0		Y(UP)			Y(UP)			Y(UP)		120
5	NR	1) 220 KV Pantnagar(UK)-Bareilly(UP) (UP) Ckt-1 2) 400/220 kV 315 MVA ICT 1 at Bareilly(UP) 3) 70 MW Dhauliganga HPS - UNIT 1 4) 70 MW Dhauliganga HPS - UNIT 2 5) 70 MW Dhauliganga HPS - UNIT 3 6) 70 MW Dhauliganga HPS - UNIT 4	UTTAR PRADESH	NHPC, UPPTCL	8-Aug-21	15:11	220 KV Pantnagar(UK)-Bareilly(UP) (UP) Ckt-1 tripped on R-ph jumper of Pantnagar line snapped and R-ph LA of CB Ganj_2(UP) line damaged at Bareilly(UP) end. At the same time, 400/220 kV 315 MVA ICT 1 at Bareilly(UP) tripped on direction earth fault protection operation. All the units of 220kV Dhauliganga(NH) tripped on negative sequence stage 2 protection operation. As per PMU, B-N phase to earth fault followed by R-N phase to earth fault with delayed clearance in 2040ms is observed. As per SCADA, generation loss of approx. 280MW is observed at Dhauliganga(NH). In antecedent condition, 220 KV Pantnagar(UK)-Bareilly(UP) (UP) Ckt-1 and 400/220 kV 315 MVA ICT 1 at Bareilly(UP) were carrying 92MW & 103MW respectively.	280	0	GD-1	0.41	Y(NHPC)	Y(UP) Y(Utt)		Y(NHPC)	Y(UP)		Y(NHPC) Y(UP) Y(Utt)		2040
6	NR	1) 220 KV Amargarh(NRSS XXIX)-Zainkote(JK) (PDD JK) Ckt-1 2) 220 KV Amargarh(NRSS XXIX)-Zainkote(JK) (PDD JK) Ckt-2 3) 220 KV Wagoora(PG)-Zainkote(JK) (PDD JK) Ckt-1	J & K	PDD JK	9-Aug-21	14:29	220 KV Wagoora(PG)-Zainkote(JK) (PDD JK) Ckt-1 tripped on B-N phase to earth fault. Fault distance was 23.54km and fault current was 5.9kA from Wagoora(PG) end. At the same time, 220 KV Amargarh(NRSS XXIX)-Zainkote(JK) (PDD JK) Ckt-1 & Ckt-2 both tripped from Zainkote end only. As per PMU, B-N phase fault cleared in 120ms is observed. As per SCADA, load loss of approx. 130MW is observe in J&K control area. In antecedent condition, 220 KV Wagoora(PG)-Zainkote(JK) (PDD JK) Ckt-1, 220kv Amargarh-Zainkote Ckt-1 & ckt-2 were carrying 40MW, 114MW & 114MW respectively.	0	130	GD-1	0.2	Y(PG) Y(NRSS 29)	Y(JK)		Y(PG) Y(NRSS 29)	Y(JK)		Y(PG)	Y(JK) Y(NRSS 29)	120
7	NR	1) 82.5 MW Alakhanda HEP - UNIT 4 2) 82.5 MW Alakhanda HEP - UNIT 2 3) 82.5 MW Alakhanda HEP - UNIT 3 4) 82.5 MW Alakhanda HEP - UNIT 1 5) 400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt-1 6) 33 MW Singoli Bhatwari HEP - UNIT 1 7) 33 MW Singoli Bhatwari HEP - UNIT 2 8) 33 MW Singoli Bhatwari HEP - UNIT 3	UTTAR PRADESH	Singoli(LTUHP), UPPTCL	10-Aug-21	20:28	400 KV Alaknanda GVK(UPC)-Vishnuprayag (JP) (UP) Ckt-1 tripped on B-N phase to earth fault. Fault was in Z-1 from Alaknanda end. At the same time, all four 82.5MW units of Alaknanda HEP and all three 33MW units of Singoli Bhatwari tripped. As per PMU, R-N phase to earth fault with delayed clearance in 560ms is observed. As per SCADA, generation loss of approx. 315MW at Alaknanda HEP and 108MW at Singoli Bhatwari is observed.	423	0	GD-1	0.08		Y(UP)	Y(Utt) , Y(SINGOLI)		Y(UP)	Y(Utt) , Y(SINGOLI)		Y(UP)	Y(Utt) , Y(SINGOLI)	560
8	NR	1) 220 KV NAPP(NP)-Atrauli(UP) (UP) Ckt-1 2) 220 KV NAPP(NP)-Khurja(UP) (UP) Ckt-1 3) 220 KV NAPP(NP)-Sambhal(UP) (UP) Ckt-1 4) 220 KV NAPP(NP)-Debai(UP) (UP) Ckt-1 5) 220 KV NAPP(NP)-Simbholi(UP) (UP) Ckt-1 6) 220 MW NAPP UNIT 1, 220 MW NAPP UNIT 2	UTTAR PRADESH	NPCIL, UPPTCL	11-Aug-21	13:26	R-ph CVT of 220kV NAPP-Sambhal Ckt got burst at NAPP end which converted into R_Y phase to phase fault. 220kV lines to Smabhal, Khurja, Atrauli, Simbholi and Debai all tripped from remote end in Z-2 and from NAPP end in main protection operation. At the same time, NAPP Unit 1 tripped on Class A (Over fluxing stage-2) protection operation. After 20sec, NAPP Unit 2 tripped on over freuqnecy protection opertion as frequency rose up to 51.5Hz for 20sec. As per PMU, R-Y phase to phase fault is observed. As per SCADA, generation loss of approx. 365MW is observed at NAPP. In antecedent condition, 220kV lines to Smabhal, Simbholi, Atrauli, Khurja and Debai were carrying 67MW, 55MW, 59MW, 27MW and 139MW respectively.	365	0	GD-1	0	Y(UP) Y(NAPP)			Y(UP) Y(NAPP)			Y(UP) Y(NAPP)		400
9	NR	1) 250 MW Harduaganj-D TPS - UNIT 8 2) 110 MW Harduaganj-C TPS - UNIT 7 3) 250 MW Harduaganj-D TPS - UNIT 9 4) 400/220 kV 315 MVA ICT 1 at Harduaganj (UP)	UTTAR PRADESH	UPPTCL, UPRVUNL	12-Aug-21	8:28	100MVA, 220/132KV ICT-2T of Harduaganj TPS tripped & caught fire at 08:13Hrs, at 08:27 Hrs both 220KV Main Bus-I & II of Harduaganj(UP) tripped. At the same time, 220KV side CB of 315MVA, 400/220KV ICT-1, 220kV feeders to Sikandararao, Etah, Boner & Jhanjirabad and 110 MW Harduaganj-C TPS - UNIT 7, 250 MW Harduaganj-D TPS - UNIT 8 & UNIT 9 also tripped. As per PMU, B-N phase to earth fault cleared in 200ms is observed. As per SCADA, generation loss of approx. 260MW is observed at Harduaganj TPS.	260	0	GD-1	0		Y(UP)			Y(UP)			Y(UP)		200
10	NR	1) 400/220 kV 315 MVA ICT 2 at Aligarh(UP) 2) 400/220 kV 500 MVA ICT 1 at Aligarh(UP)	UTTAR PRADESH	UPPTCL	12-Aug-21	10:35	400/220 kV 500 MVA ICT 1 & 400/220 kV 315 MVA ICT 2 at Aligarh(UP) tripped on overloading. As per PMU, no fault is observed. As per SCADA. load loss of approx. 800MW is observed in UP control area.	0	800	GD-1	0.61		Y(UP)		Y(UP)			Y(UP)		NA
11	NR	1) 400/220 kV 500 MVA ICT 2 at Bhadla(RS) 2) 400/220 kV 500 MVA ICT 1 at Bhadla(RS) 3) 400/220 kV 500 MVA ICT 3 at Bhadla(RS)	RAJASTHAN	RRVPNL	15-Aug-21	10:06	At 09:50 Hrs, 400/220kV 500MVA ICT 2 at Bhadla(RS) tripped on differential protection operation. At 10:06Hrs, 400/220kV 500MVA ICT 1 & ICT 3 at Bhadla(RS) both tripped on Over current protection operation. As per PMU, no fault is observed. As per SCADA, total solar generation loss in Rajasthan of approx. 1100MW is observed. At 10:05:40 Hrs total MW flow of ICT1 & ICT3 was 1103MW as per SCADA.	1100	0	GD-1	0.68		Y(Raj)				Y(Raj)		Y(Raj)		NA
12	NR	1) 220kV Muzaffarnagar_2(UP)-Roorkee(UK) (UP) Ckt 2) 220kV Muzaffarnagar_2-Jansat (UP) Ckt 3) 220kV Muzaffarnagar_2-Muzaffarnagar_1 (UP) Ckt 4) 220kV Muzaffarnagar_2(UP)-Meerut(PG) (PG) Ckt	UTTAR PRADESH	POWERGRID, UPPTCL	17-Aug-21	12:40	220kV Muzaffarnagar_2(UP)-Roorkee(UK) (UP) Ckt, 220kV Muzaffarnagar_2-Jansat (UP) Ckt, 220kV Muzaffarnagar_2-Muzaffarnagar_1 (UP) Ckt and 220kV Muzaffarnagar_2(UP)-Meerut(PG) (PG) Ckt all tripped at 12:40 Hrs. 220kV Muzaffarnagar_2(UP)-Roorkee(UK) (UP) and 220kV Muzaffarnagar_2(UP)-Meerut(PG) (PG) Ckt tripped in Z-3. Due to tripping of all 220kV lines load loss of approx. 180MW is observed. As per PMU, Y-N phase to earth fault with delayed clearance in 1240ms observed. As per SCADA, load loss of approx. 180MW is observed. In antecedent condition, 220kV Muzaffarnagar_2(UP)-Roorkee(UK) (UP) Ckt, 220kV Muzaffarnagar_2-Jansat (UP) Ckt, 220kV Muzaffarnagar_2-Muzaffarnagar_1 (UP) Ckt and 220kV Muzaffarnagar_2(UP)-Meerut(PG) (PG) Ckt were carrying 69MW, 3MW, 195MW & 74MW respectively.	0	180	GD-1	0.11		Y(UP)	Y(Utt) Y(PG)			Y(UP) Y(Utt) Y(PG)		Y(UP)		1240
13	NR	1) 220 KV Meerut(PG)-Partapur(UP) (UP) Ckt-1 2) 220 KV Meerut(PG)-Jagriti Vihar (UP) (UP) Ckt-1 3) 220 KV Meerut(PG)-Simbholi(UP) (PG) Ckt-1 4) 220 KV Meerut(PG)-Modipuram(UP) (PG) Ckt-2	UTTAR PRADESH	UPPTCL	21-Aug-21	2:23	220kV Meerut-Jagriti Vihar Ckt-1 tripped on R-N phase to earth fault, fault distance was 4.9km(Z-1) & fault current was 21.9kA from Meerut(PG) end, successfully auto-reclosed from Meerut(PG) end. At the same time, 220kV Meerut(PG)-Partapur(UP) (UP) Ckt-1 and 220kV Meerut(PG)-Simbholi(UP) (PG) Ckt-1 also tripped. As per DR, 220kV Meerut(PG)-Simbholi(UP) (PG) Ckt-1 tripped in Z-2 on R-N fault, 220kV Meerut(PG)-Modipuram(UP) (PG) Ckt-2 also tripped during same time on Y-N fault occurred due to earth wire broken at tower no. 13. As per PMU, Y-N fault followed by R-n fault cleared in 240ms is observed. In antecedent condition, 220 KV Meerut(PG)-Partapur(UP) (UP) Ckt-1, 220 KV Meerut(PG)-Simbholi(UP) (PG) Ckt-1 and 220 KV Meerut(PG)-Modipuram(UP) (PG) Ckt-2 were carrying 34M, 9WW & 44MW respectively.	0	0	GI-1	0	Y(UP)	Y(PG)		Y(UP)	Y(PG)		Y(PG) Y(UP)		240

S.No.	Region	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Event *(As reported)*	Generation Loss(MW)	Load Loss(MW)	Category as per CEA Grid Standards	Energy Unserved (in MU)	Preliminary Report receipt status			DR/EL receipt status			Detailed Report receipt status		Fault Clearance time (in ms)
					Date	Time						within 24hrs	after 24hrs	Not Received	within 24hrs	after 24hrs	Not Received	Received	Not Received	
14	NR	1) 500 kV HVDC Rihand-Dadri (PG) Ckt-1 2) 500 kV HVDC Rihand-Dadri (PG) Ckt-2 3) 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 4) 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2	UTTAR PRADESH	DTL, POWERGRID	21-Aug-21	4:52	500 kV HVDC Rihand-Dadri (PG) Ckt-1 & Ckt-2 both tripped on loss of last 11/13 filter on disconnect alarm at Dadri. At the same time, 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 & Ckt-2 tripped on DT received at Mandola(PG). As per PMU, RYB three phase fault is observed. As per SCADA, load loss of approx. 120MW is observed in Delhi control area. In antecedent condition, 500 kV HVDC Rihand-Dadri (PG) Ckt-1 & Ckt-2 were carrying total 1000MW and 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 & ckt-2 were carrying 76MW each. Due to tripping of 500kV HVDC Rihand-Dadri (PG) Ckt-1 & Ckt-2, power order reduced by 1000MW(>750MW). It seems that case-2 of HVDC Rihand-Dadri SPS operated and 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 & Ckt-2 tripped as per action under SPS case-2 for load relief in Group A.	0	120	GD-1	0.12		Y(PG) Y(DTL)			Y(PG)		Y(PG) Y(DTL)		80
15	NR	1) 400 KV Agra-Unnao (UP) Ckt-1 2) 400 KV Unnao-Panki (UP) Ckt-1	UTTAR PRADESH	UPPTCL	21-Aug-21	5:02	400 KV Unnao-Panki (UP) Ckt-1 tripped on R-N phase to earth fault, fault distance was 1.6km & fault current was 23kA from Unnao end. As per DR, line successfully autoreclosed from Unnao end but tripped from Panki end. At the same time, 400 KV Agra-Unnao (UP) Ckt-1 also tripped from Agra end only. As per DR of Agra end, fault distance was 275km(100%) and line tripped in Z-1. As per PMU, R-N phase to earth fault is observed. In antecedent condition, 400 KV Unnao-Panki (UP) Ckt-1 and 400 KV Agra-Unnao (UP) Ckt-1 were carrying 10MW & 135MW respectively.	0	0	GI-2	0		Y(UP)			Y(UP)		Y(UP)		120
16	NR	1) 100 MW Baspa (IPP) HPS - UNIT 1 2) 250 MW Karcham Wangtoo HPS - UNIT 2 3) 100 MW Baspa (IPP) HPS - UNIT 2 4) 250 MW Karcham Wangtoo HPS - UNIT 1 5) 400 KV Nathpa Jhakri(SJ)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1 6) 400 KV Baspa(JP)-Karcham Wangtoo(JSW) (HBPCL) Ckt-2 7) 400 KV Karcham Wangtoo(JSW)-Wangto_GIS(HP) (HPPTCL) Ckt-2 8) 400 KV Nathpa Jhakri(SJ)-Karcham Wangtoo(JSW) (HBPCL) Ckt-2 9) 400 KV Baspa(JP)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1 10) 400 KV Karcham Wangtoo(JSW)-Wangto_GIS(HP) (HPPTCL) Ckt-1 11) 100 MW Baspa (IPP) HPS - UNIT 3 12) 250 MW Karcham Wangtoo HPS - UNIT 4 13)250 MW Karcham Wangtoo HPS - UNIT 3	HIMACHAL PRADESH	HPPTCL, JSW	22-Aug-21	19:44	Bus bar protection operated at 400kV Karcham Wangtoo HEP(JSW) which resulted into tripping of 400kV D/C to Nathpa Jhakri, Wangtoo(HP) and Baspa(JP). Due to tripping of all lines from 400kV karcham Wangtoo(JSW), all 4 units of 250MW karcham Wangtoo HEP and all 3 units of 100MW Baspa(JP) also tripped. As per PMU, no fault is observed. As per SCADA, generation loss of 1080MW at Karcham HEP and 330MW at Baspa HEP observed. In antecedent condition, 400kV Karcham Wangtoo-Baspa Ckt-1& Ckt2, 400kV Karcham Wangtoo-Nathpa Jhakri Ckt-1 & Ckt2 and 400kV Karcham Wangtoo-Wangtoo Ckt-1 & Ckt2 were carrying 164MW, 165MW, 277MW, 276MW, 421MW & 431MW respectively.	1400	0	GD-1	0	Y(SJVNL)	Y(JSW) Y(HP)		Y(SJVNL) Y(JSW) Y(HP)			Y(SJVNL) Y(HP)	Y(JSW)	NA
17	NR	1) 220 KV Samba(PG)-Hiranagar(PDD) (PG) Ckt-1 2) 220 KV Samba(PG)-Hiranagar(PDD) (PDD JK) Ckt-2	J & K	PDD JK, POWERGRID	23-Aug-21	15:15	220 KV Samba(PG)-Hiranagar(PDD) (PG) Ckt-1 & Ckt-2 both tripped on over current earth fault protection operation. As per PMU, B-N phase to earth fault with delayed clearance in 240ms is observed, As per SCADA, load loss of approx. 160MW is observed. In antecedent condition, 220 KV Samba(PG)-Hiranagar(PDD) (PG) Ckt-1 & Ckt-2 were carrying 131MW & 123MW respectively.	0	160	GD-1	0.75	Y(PG) Y(JK)			Y(PG)	Y(JK)		Y(PG)	Y(JK)	240
18	NR	1) 765 KV Bhadla-Bikaner (PG) Ckt-1 2) 220/33 kV 100 MVA ICT 3 at Mahindra SL_BHD_PG (MAHINDRA) 3) 220/33 kV 100 MVA ICT 2 at Mahindra SL_BHD_PG (MAHINDRA) 4) 220/33 kV 100 MVA ICT 1 at Mahindra SL_BHD_PG (MAHINDRA)	RAJASTHAN	MAHINDRA, POWERGRID	26-Aug-21	11:13	765 KV Bhadla-Bikaner ckt-1 tripped due to over voltage at Bhadla during opening of L/R at Bikaner of Bhadla-2 ckt-1 line at 11:13 hrs, DT received at Bikaner end. As per PMU, no fault is observed. As per SOE, at 11:13:19:417 Hrs, line reactor of 765kV Bikaner-Bhadla2(PG) Ckt-1 at Bikaner(PG) was opened. In antecedent condition, line reactor was absorbing approx. 330MVAR and bus voltage at 765kV Bikaner(PG) was 756kV. At the same time, 220kV bus voltage at 220kV Bhadla(PG) & 220kV Fatehgarh2(PG) rose up to 234kV & 237kV respectively (as per SCADA data). Simultaneously, tripping of solar generation connected at 765/400/220kV Bhadla(PG) and 400kV Fatehgarh2(PG) occurred resulted into loss of approx. 1700MW solar generation (as per SCADA data). As per SOE and details received, at 11:13:48:610 Hrs, 765kV Bhadla-Bikaner(PG) Ckt-1 tripped on over voltage protection operation at 765kV Bhadla end, DT received at Bikaner(PG) end. As per SCADA, bus voltage at 765kV Bhadla(PG) went up to 823kV. As per telephonically communication with solar plants, tripping occurred at 220/33kV power transformer and 33kV incomer side on over voltage protection. However as per SOE, tripping of solar blocks is also observed in case of ADANI solar which is connected at Fatehgarh2(PG). In antecedent condition, 765kV Bhadla-Bikaner(PG) Ckt-1 was carrying 1178MW.	1700	0	GD-1	0.57		Y(PG)	Y(MAHINDRA)		Y(PG)	Y(MAHINDRA)	Y(PG)	Y(MAHINDRA)	NA
19	NR	1) 400 KV Kanpur-Agra (PG) Ckt-1 2) 800 KV HVDC Agra(PG) Pole-3	UTTAR PRADESH	POWERGRID	30-Aug-21	5:09	400 KV Kanpur-Agra (PG) Ckt-1 tripped on R-N phase to earth fault. Fault distance was 1.8km from Agra end. Line successfully autoreclosed at Agra end but tripped from Kanpur end. At the same time, 800 KV HVDC Agra(PG) Pole-3 also tripped due to converter differential protection operation. As per PMU, R-N phase to earth fault is observed. In antecedent condition, 400 KV Kanpur-Agra (PG) Ckt-1 & 800 KV HVDC Agra(PG) Pole-3 were carrying 128MW & 500MW respectively.	0	0	GI-2	0		Y(PG)			Y(PG)		Y(PG)		120
20	NR	1) 400KV Bus 1 at Rewa Road(UP) 2) 125 MVAR Bus Reactor No 1 at 400KV Rewa Road(UP) 3) 400 KV Banda-Rewa Road (UP) Ckt-1 4) 400 KV Meja TPS(MUN)-Rewa Road(UP) (UP) Ckt-1 5) 400 KV Rewa Road-Panki (UP) Ckt-1 6) 400/220 kV 315 MVA ICT 1 at Rewa Road(UP) 7) 400 KV Obra_B-Rewa Road (UP) Ckt-1 8) 220kV Rewa Road-Chitrakoot(UP) ckt-1	UTTAR PRADESH	UPPTCL	30-Aug-21	15:54	There was B-N phase to earth fault in 400 KV Rewa Road-Panki (UP) Ckt-1, fault distance and fault current was 2.89km & 15.27kA from Rewa Road end. CB of Panki line didn't open which resulted into LBB operation leading to tripping of 400 KV Banda-Rewa Road (UP) Ckt-1, 400/220 kV 315 MVA ICT 1 at Rewa Road(UP), 400 KV Meja TPS(MUN)-Rewa Road(UP) (UP) Ckt-1 and 125 MVAR Bus Reactor No 1 at 400KV Rewa Road(UP) cnnected to Bus-1. At the same time, 400 KV Obra_B-Rewa Road (UP) Ckt-1 also tripped from Obra_b end only on R-N fault in its Z-3(42Skm). As per PMU, B-N & R-N fault is observed with delayed clearance in 280ms. As per SCADA SOE at NRLDC, 400kV Obra_B-Rewa Road line tripped from Obra_B end only approx. 250ms before tripping of other lines. In antecedent condition, 400 KV Rewa Road-Panki (UP) Ckt-1, 400 KV Banda-Rewa Road (UP) Ckt-1, 400/220 kV 315 MVA ICT 1 at Rewa Road(UP), 400 KV Obra_B-Rewa Road (UP) Ckt-1 and 400 KV Meja TPS(MUN)-Rewa Road(UP) (UP) Ckt-1 were carrying 265MW, 208MW, 110MW 241MW and 510MW respectively.	0	0	GI-2	0	Y(UP)			Y(UP)			Y(UP)		280

Northern Regional inter regional lines tripping for Aug-21

Annexure-I

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	220 KV Auraiya(NT)-Malanpur(MP) (PG) Ckt-1	POWERGRID	30-Aug-21	19:32	Nil	R-N fault.	NA	30-Aug-21	20:45	NO	Yes	Yes	No auto-reclosing observed.	A/R needs to be checked and corrected.	From PMU, R-N fault is observed in the system and auto-reclosing not observed.

 # 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

S. No.	Utility	1st Aug 2021 - 31st Aug 2021											
		Total No. of tripping	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)
			Value	%	Value		%	Value		%	Value		%
1	AD HYDRO	3	0	**0**	0	2	**0**	0	0	**0**	0	0	**0**
2	ANTA-NT	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
3	APL	2	2	**100**	2	0	**100**	2	0	**100**	2	0	**100**
4	AURAIYA-NT	1	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
5	BBMB	22	2	**9**	2	8	**14**	8	10	**67**	2	3	**11**
6	CPCC1	59	5	**8**	6	5	**11**	6	9	**12**	5	3	**9**
7	CPCC2	20	0	**0**	1	2	**6**	0	2	**0**	2	0	**10**
8	CPCC3	42	3	**7**	3	2	**8**	3	2	**8**	3	2	**8**
9	DHAULIGANGA-NH	4	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
10	DULHASTI-NH	1	0	**0**	0	1	**0**	0	0	**0**	0	0	**0**
11	INDIGRID	1	0	**0**	0	0	**0**	0	0	**0**	1	0	**100**
12	JHAJJAR	2	2	**100**	2	0	**100**	2	0	**100**	2	0	**100**
13	KARCHAM	10	4	**40**	4	0	**40**	4	0	**40**	10	0	**100**
14	KOTESHWAR	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
15	MAHINDRA	6	6	**100**	6	0	**100**	6	0	**100**	6	0	**100**
16	NAPP	14	2	**14**	3	6	**38**	3	6	**38**	2	2	**17**
17	NJPC	2	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
18	NLDC	11	10	**91**	10	0	**91**	10	0	**91**	10	0	**91**
19	RAILWAYS	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
20	RAPPA	6	3	**50**	6	0	**100**	6	0	**100**	6	0	**100**
21	RAPPB	2	1	**50**	2	0	**100**	2	0	**100**	2	0	**100**
22	RAPPC	1	0	**0**	1	0	**100**	1	0	**100**	1	0	**100**
23	RIHAND-NT	2	2	**100**	2	0	**100**	2	0	**100**	2	0	**100**
24	SINGOLI	10	10	**100**	8	0	**80**	10	0	**100**	10	0	**100**
25	SLDC-CHD	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
26	SLDC-DV	30	2	**7**	11	6	**46**	11	7	**48**	11	0	**37**
27	SLDC-HP	16	0	**0**	0	10	**0**	0	8	**0**	0	0	**0**
28	SLDC-HR	9	0	**0**	0	3	**0**	0	3	**0**	1	1	**13**
29	SLDC-JK	10	1	**10**	1	8	**50**	1	9	**100**	2	2	**25**
30	SLDC-PS	12	2	**17**	9	1	**82**	9	1	**82**	11	1	**100**
31	SLDC-RS	67	1	**1**	20	0	**30**	20	0	**30**	16	1	**24**
32	SLDC-UK	22	16	**73**	20	2	**100**	20	2	**100**	20	0	**91**
33	SLDC-UP	166	16	**10**	20	39	**16**	25	73	**27**	34	4	**21**
34	STERLITE	5	0	**0**	0	0	**0**	0	0	**0**	3	0	**60**
35	TANAKPUR-NH	4	0	**0**	0	1	**0**	0	0	**0**	0	0	**0**
36	TANDA-NT	2	0	**0**	0	1	**0**	0	1	**0**	0	0	**0**

37	UNCHAHAR-NT	9	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**

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)	07/01/2019 to 10/01/2019	07/01/2019 to 10/01/2019	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	27.10.2020,10.02.2012 1	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)	12/19/2018	12/19/2018	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)	5/20/2017	5/20/2017	YES	--	3rd Quarter
4	**NTPC**					
	Rihand (Unit1#500)	3/3/2017	3/3/2017	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit2#500)	7/2/2016	7/2/2016	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit3#500)	8/15/2015	8/15/2015	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit4#500)	5/25/2017	5/25/2017	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit4#500)	12/11/2014	12/11/2014	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit5#500)	12/11/2014	12/11/2014	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)	3/29/2016	3/29/2016	YES	--	3rd Quarter
	UNCHAHAR II TPS(unit1# 210)	7/13/2019	7/13/2019	YES	--	
	UNCHAHAR II TPS(unit2# 210)	8/10/2018	10-08-2018	YES	--	3rd Quarter
	UNCHAHAR UNIT6#500	-	31.03.2017	YES	--	3rd Quarter
	KOLDAM HPS(4 * 200)	7/1/2015	7/1/2015	YES	--	3rd Quarter
	DADRI GPS(2 * 154.51) (ST- Steam Turbine)	-	11/18/2015	YES	--	3rd Quarter
	ANTA GPS(3 * 88.71)(GT- Gas Turbine)	8/8/2014	8/8/2014	YES	--	3rd Quarter
	ANTA GPS(1 * 153.2)(ST- Steam Turbine)	8/8/2014	8/8/2014	YES	--	3rd Quarter
5	**Aravali Power Company Private Ltd**					
	ISTPP (JHAJJAR)(3 * 500)	-	8/25/2015	YES	--	3rd Quarter
6	**NHPC**					
	CHAMERA HPS (3*180)	8/6/2020	12/27/2019	YES	--	
	CHAMERA II HPS(3 * 100)	10/11/2015	10/11/2015	NO	Replacement of Excitation system in two units	3rd Quarter
	CHAMERA III HPS(Unit1#77)	10/29/2015	1/7/2012	YES	--	3rd Quarter
	CHAMERA III HPS(Unit2,3#77)	10/29/2015	6/19/2012	YES	--	3rd Quarter
	PARBATI III HEP (Unit1# 130)	1/21/2016	1/21/2016	YES	Have been done recetly. The report on PSS turning shall be submitted seperately.	3rd Quarter
	DULHASTI HPS(Unit2#130)	1/21/2020	1/21/2020	YES	--	
	DULHASTI HPS(Unit1#130)	12/29/2019	12/29/2019	YES	--	
	URI HPS(Unit3# 120)	1/10/2021	1/10/2021	YES	--	
	URI HPS(Unit4# 120)	2/15/2021	2/15/2021	YES	--	
	URI HPS(Unit2# 120)	3/7/2016	3/7/2016	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)	12/16/2014	12/16/2014	YES	--	3rd Quarter
	KISHANGANGA(3 * 110)	18-05-20 18	18-05-20 18	YES	--	3rd Quarter
	BAIRASIUL HPS(3 * 60)	7/30/2015	7/30/2016	YES	--	3rd Quarter
	SEWA-II HPS(3 * 40)	7/9/2016	7/9/2016	YES	--	3rd Quarter
	PARBATI III HEP(4 * 130)	12/16/2016	12/16/2016	YES	--	3rd Quarter
	TANAKPUR HPS(Unit1# 31.42)	1/9/2015	1/9/2015	YES	--	3rd Quarter
	TANAKPUR HPS(Unit2,3#31.4)	5/24/2014	5/24/2014	YES	--	3rd Quarter
	DHAULIGANGA HPS(Unit1 ,2# 70)	5/4/2014	4/17/2018	YES	--	3rd Quarter
	DHAULIGANGA HPS(Unit3,4# 70)	6/26/2014	4/17/2018	YES	--	3rd Quarter
7	**PUNJAB**					
	RAJPURA(NPL) TPS(2 * 700)	4/22/2014	4/22/2014	YES	--	3rd Quarter
8	**Rajasthan**					
	KAWAI TPS(Unt1# 660)	8/8/2014	8/8/2014	YES	--	3rd Quarter
	KAWAI TPS(Unt2# 660)	10/9/2014	10/9/2014	YES	--	3rd Quarter
	KOTA TPS (2*110+2*195+3*210)	4/17/2015	4/17/2015	YES	This is date of last test performed on unit 4 and 5 ,other units test were performed at earlier date.	3rd Quarter
	CHHABRA TPS(Unit 1#250)	5/22/2018	5/22/2018	NO	--	3rd Quarter
	CHHABRA TPS(Unit 2,3,4#250)	10/4/2015	10/4/2015	NO	--	3rd Quarter
	CHHABRA TPS(Unit5# 660)	2/10/2016	2/10/2016	YES	--	3rd Quarter
	CHHABRA TPS(Unit6# 660)	7/28/2018	7/28/2018	YES	--	3rd Quarter
	KALISINDH TPS(Unit1# 600)	2/10/2016	2/10/2016	YES	--	3rd Quarter
	KALISINDH TPS(Unit2# 600)	2/8/2016	2/8/2016	YES	--	3rd Quarter
	KOTA TPS(Unit1#110)	1/2/2015	1/2/2015	NO		3rd Quarter
	KOTA TPS(Unit2#110)	9/16/2014	9/16/2014	NO	--	3rd Quarter
	KOTA TPS(Unit3#195)	10/14/2019	10/14/2019	NO	--	
	KOTA TPS(Unit4#195)	3/6/2020	3/6/2020	NO	--	
	KOTA TPS(Unit2#110)	9/18/2014	9/18/2014	NO	--	3rd Quarter
	KOTA TPS(Unit2#110)	9/16/2014	9/16/2014	NO	--	3rd Quarter
	KOTA TPS(Unit2#110)	9/16/2014	9/16/2014	NO	--	3rd Quarter
	SURATGARH TPS (Unit1#250)	3/14/2019	3/14/2019	NO	--	
	SURATGARH TPS (Unit2#250)	2/6/2016	2/6/2016	Yes	--	3rd Quarter

	SURATGARH TPS (Unit3,4,5,6#250)	1/12/2016	1/12/2016	Yes	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit1# 135)	4/26/2016	4/26/2016	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit2# 135)	7/14/2016	7/14/2016	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit3# 135)	1/3/2014	1/3/2014	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit4# 135)	11/3/2015	11/3/2015	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit5# 135)	9/21/2014	9/21/2014	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit6# 135)	8/14/2014	8/14/2014	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit7# 135)	2/20/2016	2/20/2016	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit8# 135)	6/11/2014	6/11/2014	No		3rd Quarter
9	**UTTAR PRADESH**					
	ANPARA-C TPS(Unit1# 600)	8/22/2015	8/22/2015	Yes	--	3rd Quarter
	ANPARA-C TPS(Unit2# 600)	3/8/2016	3/8/2016	Yes	--	3rd Quarter
	ROSA TPS(Unit1 #300)	2/3/2017	2/3/2017	Yes	--	3rd Quarter
	ROSA TPS(Unit2# 300)	18/2/2018	18/2/2018	Yes	--	3rd Quarter
	ROSA TPS(Unit3 # 300)	2/3/2017	2/3/2017	Yes	--	3rd Quarter
	ROSA TPS(Unit4# 300)	2/3/2017	2/3/2017	Yes	--	3rd Quarter
	Anpara-A (Unit1#210)	01.05.2016	19.02.2021	No	--	3rd Quarter
	Anpara-A(Unit2#210)	17.11.2017	17.11.2017	No	--	3rd Quarter
	Anpara-A(Unit3#210)	25.09.2020	25.09.2020	No	--	3rd Quarter
	Anpara-B(Unit4#500)	07.12.2014	07.12.2014	Yes	Overhauling is overdue since 2014 and is proposed in Nov., 2021 PSS tuning/SRT will be done at same time.	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 January,		-	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)	19.05.2017	19.05.2017	yes	--	3rd Quarter
	LALITPUR TPS(Unit1# 660)	30.03.2021	30.03.2021	yes	--	
	LALITPUR TPS(Unit1# 660)	24.08.2017	24.08.2017	yes	--	3rd Quarter
	ALAKHANANDA HEP(Unit1# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	ALAKHANANDA HEP(Unit2# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	ALAKHANANDA HEP(Unit3# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	ALAKHANANDA 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	--	
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.	