सत्यमेव जयते

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

सं: उ.क्षे.वि.स./प्रचालन/106/01/2022/335-376 दिनांक: 13.01.2022

**विषय: प्रचालन समन्वय उप-समिति की191वीं बैठक की कार्यसूची।**
**Subject: Agenda of 191st OCC meeting.**

प्रचालन समन्वय उप-समिति की **191वीं** बैठक का आयोजन वीडियो कॉन्फ्रेंसिंग के माध्यम से दिनांक **18.01.2022** को **10:30** 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।

**191st** meeting of the Operation Co-ordination sub-committee will be conducted through Video Conferencing on **18.01.2022** from **10:30 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.

13/01/2022.

(सौमित्र मजूमदार)
अधीक्षण अभियंता (प्रचालन)

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

## 1. Confirmation of Minutes

The minutes of the 190th OCC meeting were issued vide letter of even number dated 05.01.2022.

***Sub-committee may deliberate and kindly confirm the Minutes.***

## 2. Review of Grid operations

### 2.1 Power Supply Position (Provisional) for December 2021

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

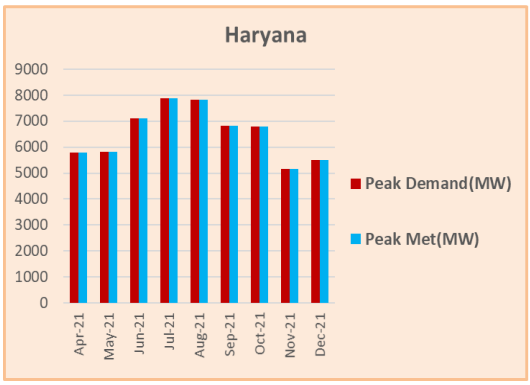
| State / UT | Req. / Avl. | Energy (MU) | | | Peak (MW) | | |
|---|---|---|---|---|---|---|---|
| | | Anticipated | Actual | % variation | Anticipated | Actual | % variation |
| CHANDIGARH | (Avl) | 110 | 110 | -0.4% | 230 | 250 | 8.7% |
| | (Req) | 120 | 110 | -8.7% | 270 | 250 | -7.4% |
| DELHI | (Avl) | 3549 | 2090 | -41.1% | 5250 | 4685 | -10.8% |
| | (Req) | 2250 | 2090 | -7.1% | 5250 | 4685 | -10.8% |
| HARYANA | (Avl) | 4790 | 3976 | -17.0% | 10770 | 7613 | -29.3% |
| | (Req) | 4160 | 3984 | -4.2% | 7080 | 7613 | 7.5% |
| HIMACHAL PRADESH | (Avl) | 983 | 1025 | 4.3% | 1870 | 1955 | 4.5% |
| | (Req) | 968 | 1048 | 8.3% | 1890 | 1955 | 3.4% |
| J&K and LADAKH | (Avl) | 1030 | 1729 | 67.9% | 3650 | 2743 | -24.8% |
| | (Req) | 2060 | 1900 | -7.8% | 2920 | 2993 | 2.5% |
| PUNJAB | (Avl) | 4710 | 4112 | -12.7% | 9280 | 7329 | -21.0% |
| | (Req) | 3961 | 4148 | 4.7% | 7220 | 7329 | 1.5% |
| RAJASTHAN | (Avl) | 8380 | 8217 | -1.9% | 18710 | 15752 | -15.8% |
| | (Req) | 8370 | 8234 | -1.6% | 14710 | 15752 | 7.1% |
| UTTAR PRADESH | (Avl) | 9610 | 9319 | -3.0% | 18200 | 18587 | 2.1% |
| | (Req) | 9145 | 9319 | 1.9% | 18200 | 18587 | 2.1% |
| UTTARAKHAND | (Avl) | 1197 | 1204 | 0.6% | 2250 | 2318 | 3.0% |
| | (Req) | 1178 | 1205 | 2.3% | 2287 | 2318 | 1.4% |
| NORTHERN REGION | (Avl) | 34358 | 31781 | -7.5% | 70300 | 55500 | -21.1% |
| | (Req) | 32212 | 32039 | -0.5% | 54800 | 55700 | 1.6% |

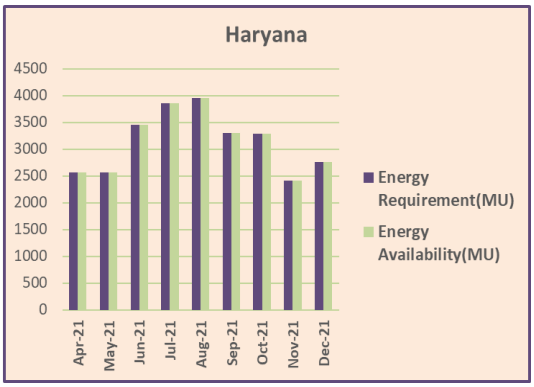
As per above, negative / significant variation (≥5%) in Actual Power Supply Position (Provisional) vis-à-vis Anticipated figures is observed for the month of December-2021 in terms of Energy Requirement for Chandigarh, Delhi, Haryana, HP, UTs of J&K and Ladakh, Rajasthan and in terms of Peak Demand similar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

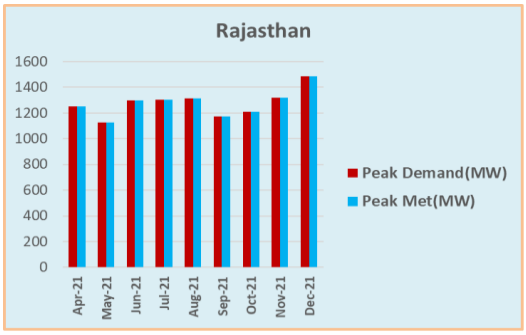
All SLDCs are requested to furnish provisional and revised power supply position in prescribed formats on NRPC website portal by 2nd and 15th day of the month respectively for the compliance of Central Electricity Authority (Furnishing of Statistics, Returns and Information) Regulations, 2007.

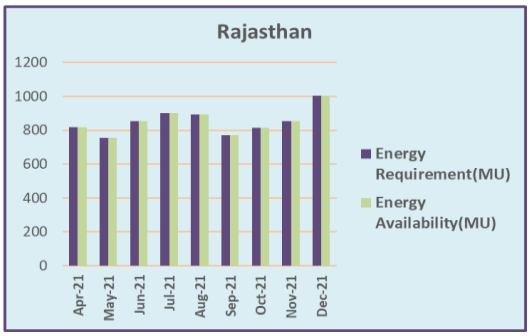
## 2.2 Power Supply Position of NCR

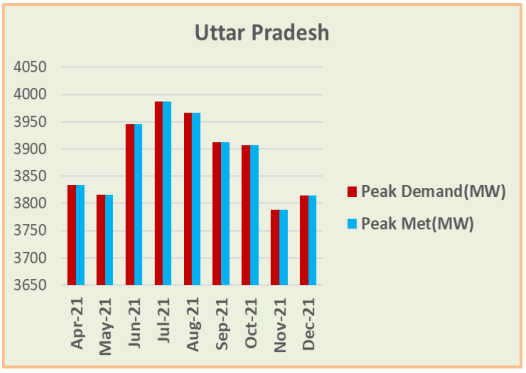
NCR Planning Board (NCRPB) is closely monitoring the power supply position of National Capital Region. Monthly power supply position for NCR till the month of December-2021 is available on NRPC website (http://164.100.60.165). Power supply position during the current financial year is shown as under:

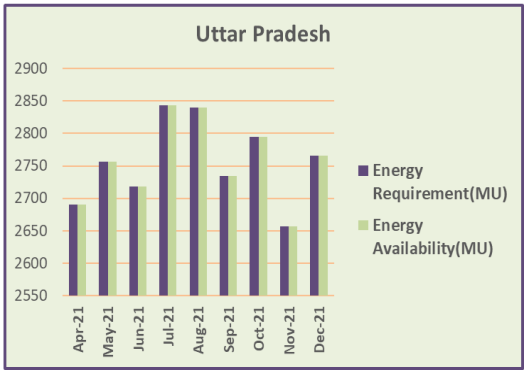


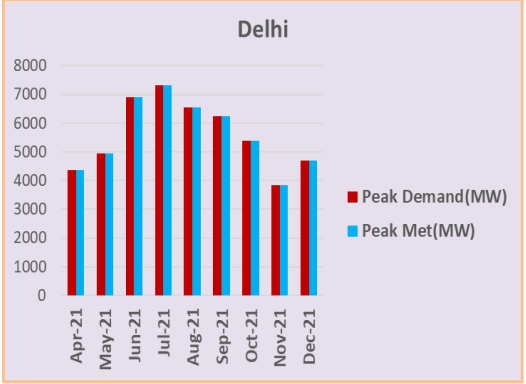



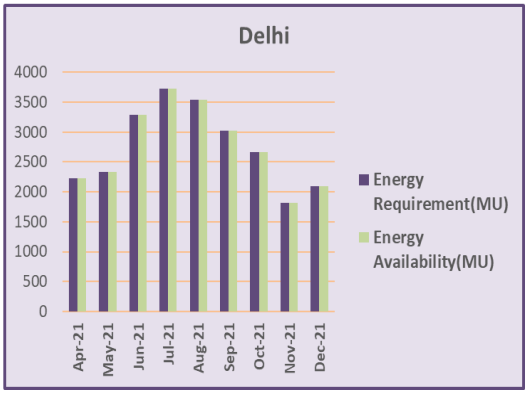



## 3. Maintenance Programme of Generating Units and Transmission Lines

### 3.1. Maintenance Programme for Generating Units

The meeting on proposed maintenance programme for Generating Units for the month of February-2022 is scheduled on 17-January-2022 via Video Conferencing.

### 3.2. Outage Programme for Transmission Elements

The meeting on proposed outage programme of Transmission elements for the month of February-2022 is scheduled on 17-January-2022 via Video conferencing.

## 4. Planning of Grid Operation

### 4.1. Anticipated Power Supply Position in Northern Region for February 2022

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

| State / UT | Availability / Requirement | Revised Energy (MU) | Revised Peak (MW) |
|---|---|---|---|
| CHANDIGARH | Availability | 100 | 250 |
| | Requirement | 120 | 240 |
| | Surplus / Shortfall | -20 | 10 |
| | % Surplus / Shortfall | -16.7% | 4.2% |
| DELHI | Availability | 3148 | 5062 |
| | Requirement | 1950 | 4600 |
| | Surplus / Shortfall | 1198 | 462 |
| | % Surplus / Shortfall | 61.5% | 10.0% |
| HARYANA | Availability | 4470 | 10920 |
| | Requirement | 3730 | 7900 |
| | Surplus / Shortfall | 740 | 3020 |
| | % Surplus / Shortfall | 19.8% | 38.2% |
| HIMACHAL PRADESH | Availability | 873 | 1825 |
| | Requirement | 888 | 1810 |
| | Surplus / Shortfall | -15 | 15 |
| | % Surplus / Shortfall | -1.6% | 0.8% |
| J&K and LADAKH | Availability | 950 | 3810 |
| | Requirement | 1720 | 2890 |
| | Surplus / Shortfall | -770 | 920 |
| | % Surplus / Shortfall | -44.8% | 31.8% |
| PUNJAB | Availability | 4322 | 7500 |
| | Requirement | 4136 | 7290 |
| | Surplus / Shortfall | 186 | 210 |
| | % Surplus / Shortfall | 4.5% | 2.9% |
| RAJASTHAN | Availability | 9352 | 18950 |
| | Requirement | 7700 | 15300 |
| | Surplus / Shortfall | 1652 | 3650 |
| | % Surplus / Shortfall | 21.5% | 23.9% |
| | Availability | 8680 | 18500 |

| State / UT | Availability / Requirement | Revised Energy (MU) | Revised Peak (MW) |
|---|---|---|---|
| UTTAR PRADESH | Requirement | 8260 | 18500 |
| | Surplus / Shortfall | 420 | 0 |
| | % Surplus / Shortfall | 5.1% | 0.0% |
| UTTARAKHAND | Availability | 1084 | 2270 |
| | Requirement | 1092 | 2340 |
| | Surplus / Shortfall | -8 | -70 |
| | % Surplus / Shortfall | -0.8% | -3.0% |
| NORTHERN REGION | Availability | 32979 | 64400 |
| | Requirement | 29596 | 56800 |
| | Surplus / Shortfall | 3383 | 7600 |
| | % Surplus / Shortfall | 11.4% | 13.4% |

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

## 5. Submission of breakup of Energy Consumption by the states

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

| State / UT | From | To |
|---|---|---|
| DELHI | Apr-2018 | Sep-2021 |
| HARYANA | Apr-2018 | Sep-2021 |
| HIMACHAL PRADESH | Apr-2018 | Nov-2021 |
| PUNJAB | Apr-2018 | Jul-2021 |
| RAJASTHAN | Apr-2018 | Nov-2021 |
| UTTAR PRADESH | Apr-2018 | Oct-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> | | | | | | |

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

6.1 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.

6.2 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.

6.3 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.

6.4 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.

6.5 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.

6.6 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.

6.7 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.

6.8 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.

6.9 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.

6.10 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.

6.11 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.

6.12 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.

6.13 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.

6.14 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.

6.15 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.

6.16 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.

6.17 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.

6.18 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.

6.19 In the 187th OCC, forum was apprised that 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.

6.20 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.

6.21 In the meeting, UP representative stated that they will send reply on mail of NRPC Sectt. dtd. 10.08.2021 for submission of their comments.

6.22 It was decided that data received at NRPC Sectt. may be sent to NRLDC for tuning of base-case.

6.23 NRLDC representative stated that base-case tuning may be completed by 30.09.2021.

6.24 CPRI vide e-mail dtd. 23.09.2021, requested to send comments at the earliest. NRPC Sectt. vide e-mail dtd. 23.09.2021 apprised the CPRI that as per decisions

6.25 of meeting dtd. 06.09.2021, tuning of base-case file is being done by NRLDC so

6.26 that no new issue arises in future.

6.27 CPRI vide e-mail dtd. 24.09.2021 has requested that any change in loading & generation profile will be a new base case and this will be a fresh study for new base case. It will require an extensive time and efforts. CPRI has requested to ensure that load/generation profile in tuned PSSE should be same as was given to CPRI for PSSE base 11.7.2018 at 00.45.

6.28 In view of CPRI's request, NRLDC was requested vide e-mail dtd. 24.09.2021 to halt tuning of base-case till further discussion.

6.29 A meeting was held between NRPC Sectt. and NRLDC on 04.10.2021, wherein it was decided that without incorporating corrective comments of states, the report is not acceptable w.r.t drawing any conclusion on requirement of capacitor. Accordingly, NRLDC was requested vide e-mail dtd. 08.10.2021 to complete tuning of base-case at the earliest.

6.30 In 188th OCC meeting, NRLDC representative informed that tuned base-case will be submitted by NRLDC by 28.10.2021. It was decided that the same will be sent to CPRI for necessary correction in report.

6.31 NRLDC vide e-mail dtd. 10.11.2021 submitted the tuned base-case to NRPC Sectt. mentioning that Base-case has been tuned considering the feedback/inputs received from states (Punjab, Delhi, Rajasthan, HP and UP) and considering NRLDC SCADA data of 11th July 2018.

6.32 In 189th OCC, NRPC representative apprised that tuned base-case along with comments of states will be sent to CPRI for necessary correction in the report.

6.33 Tuned base case along with comments of states has been sent to CPRI vide mail dt. 30.11.2021 for correction in the report.

6.34 A meeting was held between members of the sub-group, CPRI representatives, and officials from NRPC Sectt & NRLDC on 05.01.2022, wherein it was decided that CPRI shall tune the $Q_{gen}$ value taking help of NRLDC. Tuning may be done for some machines of Punjab (such as Talwandi Sabo), Uttarakhand (such as Shravanti),

Himachal Pradesh, and Jammu. CPRI shall also tune $Q_{gen}$ of Central Sector machines such as Salal, Rampur, Bhakra, Dehar etc. These $Q_{gen}$ tunings shall be done in spirit to relieve machines from absorbing MVARs and to avoid over compensation in system due to recommended capacitors. CPRI has intimated 20th Jan'22 as target date for the activity.

***Sub-Committee may kindly note.***

## 7. Automatic Demand Management System

7.1 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.**<br>At SLDC level, remote tripping of 100 feeders at 66 kV is possible.<br>At 11 kV feeder level, ADMS is to be implemented by Distribution Company. |
| **Delhi** | **Fully implemented** by TPDDL, BRPL and BYPL.<br>NDMC implementation was scheduled to be completed by 31.03.2020 but got delayed due to some changes incorporated in the scheme. |
| **Rajasthan** | **Under implementation.**<br>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.<br>ADMS functionality at 11 kV feeders from 33/11 kV substation is under the jurisdiction of the DISCOMs. |
| **UP** | **Scheme implemented by NPCL only.**<br>Remote operation of 50 feeders at 132 kV level being operated from SLDC.<br>Further, the solution proposed by M/s Siemens was found to be non-economical and was not accepted by the management.<br>Noida Power Company Ltd have implemented Intelligent Load Shedding (ILS) scheme, in compliance of IEGC requirements for automatic demand management. |
| **Haryana** | **Scheme not implemented.**<br>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.**<br>02 feeders could be operated from SLDC through manual intervention. Letter has been sent by HPSEB to HP-SLDC for making its operation automatic. |

7.2 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).

7.3 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.

7.4 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.

7.5 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.

7.6 MS, NRPC stated that non-implementation of ADMS by states is indistinguishably non-adherence to directions of CERC.

7.7 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

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

7.9 In 187th OCC meeting, NRLDC representative quoted the texts of CERC order dtd. 31.12.2015 in petition no. 5/SM/2014. He apprised the status of ADMS implementation till 2015. Further, he requested the states to update the status so that NRLDC may file petition in CERC on the basis of compiled status.

7.10 In the 188th OCC, NRLDC informed that it has not received comments from states in this matter. Accordingly, all SLDC/DISCOMs are requested to furnish the latest status of ADMS implementation in their respective control areas latest by 31st October 2021 to NRLDC. Status as received till 31.10.2021 would be reported to CERC by NRLDC.

7.11 In the 189th OCC, NRLDC informed that status of ADMS has been sent to CERC twice (Aug'16 and Sep'16) in the past. The same is recorded in MoM of 127th OCC also.

7.12 In 189th OCC, NRLDC representative informed that CERC will be apprised again within next 10 days about the latest status of ADMS as per the updated information available with them.

7.13 In 190th OCC, NRLDC representative informed that vide letter dated 09.12.2021 (enclosed as Annexure-A.I of 190th OCC MoM), CERC has been apprised about the latest status of ADMS as per the updated information available with them.

***Members may kindly note*.**

## 8. 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.

## 9. NR Islanding scheme

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

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

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

9.4. A meeting was also taken by Honorable Cabinet Minister (Power, New & Renewable Energy) on 07.10.2021 wherein emphasis was given on PSDF funding for Islanding schemes and DPR submission for the same. MoM has been issued and copy of the same was enclosed as Annexure-A.II of 189th OCC agenda.

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

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

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

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

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

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

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

9.12. UPSLDC vide email dated 01.12.2021 has submitted the names of islands for which system study from CPRI is required. UPSLDC has highlighted, *inter-alia*, that involvement of long length 765kV line and high number of buses necessitates them

to go for system study by CPRI. It has mentioned that SLDC/STU has no expertise in such studies and before doing any investment on the project, proper study is must for successful implementation and operation of Islands.

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

9.14. In 90th OCC, UPSLDC representative informed that CPRI has asked for some additional details and technical commercial offer would be provided to them by CPRI by 15th Jan 22.

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

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

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

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

***Members may kindly deliberate.***

## 10. Coal Supply Position of Thermal Plants in Northern Region

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

10.2. Accordingly, coal stock position of generating stations in northern region during current month (till 09th January 2022) is as follows:

| Station | Capacity (MW) | PLF % (prev. months) | Normative Stock Reqd (Days) | Actual Stock (Days) |
|---|---|---|---|---|
| ANPARA C TPS | 1200 | 80.14 | 16 | 13.7 |
| ANPARA TPS | 2630 | 81.24 | 16 | 16.7 |
| BARKHERA TPS | 90 | 0.00 | 24 | 9.8 |
| DADRI (NCTPP) | 1820 | 2.91 | 24 | 13.8 |
| GH TPS (LEH.MOH.) | 920 | 0.00 | 24 | 20.1 |
| GOINDWAL SAHIB TPP | 540 | 0.00 | 24 | 4.4 |

| Station | Capacity (MW) | PLF % (prev. months) | Normative Stock Reqd (Days) | Actual Stock (Days) |
|---|---|---|---|---|
| HARDUAGANJ TPS | 605 | 0.00 | 24 | 22.1 |
| INDIRA GANDHI STPP | 1500 | 59.27 | 24 | 18.5 |
| KAWAI TPS | 1320 | 70.14 | 24 | 5.5 |
| KHAMBARKHERA TPS | 90 | 0.00 | 24 | 5.6 |
| KOTA TPS | 1240 | 80.48 | 24 | 5.3 |
| KUNDARKI TPS | 90 | 10.65 | 24 | 11.6 |
| LALITPUR TPS | 1980 | 19.69 | 24 | 9.4 |
| MAHATMA GANDHI TPS | 1320 | 63.28 | 24 | **2.4** |
| MAQSOODPUR TPS | 90 | 0.00 | 24 | 12.2 |
| MEJA STPP | 1320 | 49.80 | 24 | 22.9 |
| OBRA TPS | 1094 | 46.18 | 24 | 7.1 |
| PANIPAT TPS | 710 | 46.86 | 24 | 12.3 |
| PARICHHA TPS | 1140 | 0.00 | 24 | 9.1 |
| PRAYAGRAJ TPP | 1980 | 65.09 | 24 | **2.3** |
| RAJIV GANDHI TPS | 1200 | 4.81 | 24 | 18.8 |
| RAJPURA TPP | 1400 | 61.44 | 24 | 16.4 |
| RIHAND STPS | 3000 | 91.95 | 16 | 11.7 |
| ROPAR TPS | 840 | 0.00 | 24 | 20.8 |
| ROSA TPP Ph-I | 1200 | 29.78 | 24 | 16.1 |
| SINGRAULI STPS | 2000 | 93.65 | 16 | 17.6 |
| SURATGARH TPS | 1500 | 35.82 | 24 | 4.4 |
| TALWANDI SABO TPP | 1980 | 60.35 | 24 | **1.2** |
| TANDA TPS | 1760 | 42.57 | 24 | 22.9 |
| UNCHAHAR TPS | 1550 | 39.19 | 24 | 9.2 |
| UTRAULA TPS | 90 | 0.00 | 24 | 12.5 |
| YAMUNA NAGAR TPS | 600 | 10.83 | 24 | 25.8 |
| CHHABRA-I PH-1 TPP | 500 | 75.33 | 24 | **0.2** |
| KALISINDH TPS | 1200 | 73.39 | 24 | **3.5** |
| SURATGARH STPS | 1320 | 0.00 | 24 | **3.4** |
| CHHABRA-I PH-2 TPP | 500 | 0.00 | 24 | 9.0 |
| CHHABRA-II TPP | 1320 | 57.86 | 24 | **3.6** |

**11. Tanda-Basti line (220KV) tripping on unbalanced loading (Agenda by NTPC)**

11.1. NTPC has intimated vide mail dated 04.01.2022 that Instances of 220KV Tanda-Basti line tripping on Broken Conductor Protection occurred in recent past. Each time it is observed that there is no actual open conductor fault, instead there is a large, unbalanced loading pattern among 3 phases, hence relay sensed open conductor protection operating condition (Negative phase sequence component of current above the limit w.r.t. Positive sequence component) and giving trip command, causing 3 pole tripping of breaker at Tanda end.This Protection has operated four times in recent past, details of line tripping are given.

11.2. Tripping details of 220KV Basti line on Broken Conductor Protection are as follows:

| S. No. | Date | Time | Current | Setting |
|---|---|---|---|---|
| 1. | 01Oct.2020 | 15:23:00 | | I2/I1>0.2,20sec Time delay |
| 2. | 17Oct.2020 | 15:09:00 | | I2/I1>0.2,20sec Time delay |
| 3. | 25June2021 | 07:58:44 | Ir=258.01,Iy=246.18,Ib=198.85 | I2/I1>0.2,20sec Time delay |
| 4. | 01Aug.2021 | 16:51:20 | Ir=197.65,Iy=152.78,Ib=116.61 | I2/I1>0.2,20sec Time delay |
| 5. | 22Sep.2021 | 06:44:00 | Ir=277,Iy=234,Ib=188 | I2/I1>0.2,20sec Time delay |
| 6. | 31Dec.2021 | 09:02:00 | Ir=218,Iy=190,Ib=132 | I2/I1>0.2,20sec Time delay |

11.3. In view of importance of this heavily loaded line particularly during peak hours for power evacuation, the issue of 3 phase unbalanced loading needs to be addressed on priority to ensure Grid stability.

11.4. Last target date for ICT Commissioning at Govind Garh was 30.11.2021, however still there have been outages of this line.

***Members may kindly deliberate.***

**12. Primary Frequency response test of NTPC NR NCR Generators (Agenda by NTPC)**

12.1 NTPC has intimated vide mail dated 04.01.2022 that PFR test is being carried out by external agency in NTPC Stations under NRLDC Guidance as per IEGC. The procedure as defined in Regulation have been followed. The test has been carried out at different levels as per test procedure & unit load has been maintained accordingly.

12.2 During the actual test, schedule as required by test conditions, have not been provided by NRLDC, hence Generators have to reduce DC to meet test conditions even though station have full generation capacity. Reduction of DC in real time results in under recovery of fix cost. Post facto DC correction may be done.

***Members may kindly deliberate.***

**13. Operation and Maintenance of 400 kV D/C Twin Moose Sambha – Amargarh Transmission Line of NRSS XXIX Transmission Limited ('NTL') - BRO road**

**construction affecting tower and possible damage to line (Agenda by NRSS-XXIX Transmission Limited)**

13.1 NRSS XXIX Transmission Limited has informed vide mail dtd 09.01.2022 that NTL letter dated 22.10.2021 and letter dated 20.12.2021 raised the issue of impact of road expansion work (Bufliaz to Rajouri) being carried out by Border Road Organization (BRO) alongside the Tower Locations of 400 kV D/C Sambha – Amargarh Transmission Line. As was informed due to large quantum of hill cutting carried out by BRO at one of the locations of the aforementioned transmission line (Loc.#286), the complete hill slope in that region / hill section had become unstable, leading to damage to tower location as well as the adjoining buildings. NTL had followed up with BRO to take remedial measures alongwith stopping of work at the location. However, BRO did not take any remedial steps to safeguard the hill slope. This had resulted in damage to the Tower#286 with a threat to entire operation of transmission line and even collapse of instant tower location.

13.2 Subsequently NTL with the intervention of CEA had carried out multiple meetings and site visits with BRO at the affected locations. Various steps were taken by NTL to safeguard the entire hill slope as well as the tower location. NTL had permanently mobilized manpower at the instant location with continuous monitoring of all the parameters. NTL have provided permanent backstay arrangement, additional strengthening of tower, additional revetment along the upper and lower ridges of the hill, bolder pitching to prevent further soil erosion etc. This resulted in safeguarding the location temporarily and no variation in parameters was observed. However, it is pertinent to mention that the above situation is an outcome of uninformed and unauthorized construction of BRO, which is beyond the purview and control of NTL. This is a kind of Force Majeure event to the NTL as the situation has arisen out of no fault of NTL.

13.3 Based on the instruction of CEA, NTL has also carried out geo-technical investigation of the affected area as well as the other locations getting impacted due to aforementioned expansion work carried out by BRO. However, recently on 08.01.2022 sudden inclement snowfall has been observed at location #286 of the subject transmission line. This has resulted in additional stress on the tower body and has also considerably increased the threat to the hill slope as a whole, which may lead to probable tower collapse, including threat to human life and property due to hill slide / land slide. As you may kindly be aware, the subject transmission line is crucial from the perspective of power to the UT of Jammu and Kashmir your kind consideration and guidance is required to adequately resolve the situation. This is for your kind information and cognizance kindly.

13.4 NTL has submitted the latest status report on the above sequence of events capturing the latest developments at (08.01.2022) location#286. The same is attached as **Annexure-A.III.**

***Members may kindly deliberate.***

## 14. Refurbishment & Commissioning of HVDC Rihand-Dadri Bipole system under Add-Cap: Regularization of Outage period (Agenda by POWERGRID-NR-III)

14.1 POWERGRID-NR-III has intimated vide email dated 10.01.2022 that refurbishment work of HVDC Rihand-Dadri Bipole system has been successfully completed in time

with few modifications in testing and commissioning schedule due to site and system constraints including the statutory clearances under new construction activities.

Details are as follows:

| Sl. No. | OCC No. | Name of Elements | Approved Outage Period | Actual Outage Period | Remarks |
|---|---|---|---|---|---|
| 1 | 187 | 500kV Rihand- Dadri HVDC P-2 | 04/10/21 to 10/11/21 | 04/10/21 10:14 to 13/11/21 03:11 | Refurbishment, testing & commissioning. |
| 2 | 187 | 500kV Rihand- Dadri HVDC P-1 | 25/10/21 to 03/12/21 | 25/10/21 10:05 to 04/12/21 21:56 | Refurbishment, testing & commissioning. |
| 3 | 187 | 500kV Rihand- Dadri HVDC Bipole System | 24/11/21 to 03/12/21 | 24/11/21 to 04/12/21 | Bipole system testing and final commissioning. |

14.2 The Bipole HVDC system was finally put in normal operation w.e.f. 4th Dec'21. Powergrid has requested that the outage period for the refurbishment work may kindly be consented accordingly.

***Members may kindly deliberate.***

## 15. Augmentation of 1x315 MVA ICT with 500 MVA at PGCIL 400 KV S/S Ludhiana (Agenda by PSTCL)

15.1 PSTCL has intimated vide letter dated 29.12.2021 that in order to meet power requirement of Punjab during next paddy season (2022), enhancement in ATC/TTC is urgently required to import power through ISTS points. (copy of the letter is attached as **Annexure-A.IV**).

15.2 PSTCL in the above-mentioned letter has highlighted following two issues:

- Work of Augmentation at Ludhiana is required to be carried out before May 2022. As consented by PSTCL, spare 500 MVA ICT lying at PGCIL 400kV Malerkotla is to be shifted to Ludhiana, for which BOD of PGCIL is to give approval for expenditure to be incurred as per NRPC decision.
- PSTCL is bringing up new 400kV S/S Dhanansu, near Ludhiana. The ICT for the project was to be spared from PSTCL's substation Nakoder, which has been delayed. Given the high loading conditions/demand of the state, energisation of 400kV S/S Dhanansu is required before Paddy season 2022 for increasing the ATC/TTC limit of Punjab. The work of construction of substation yard is going on & is likely to be completed by May 2022. It is requested that 315 MVA ICT being spared from Ludhiana in Punjab control area be provided to PSTCL on the residual book value for installation at Dhanansu.

***Members may kindly deliberate.***

## 16. Status of Generating Units in Northern region under Outage for more than 3 months

16.1 GM division, CEA vide email dated 11.01.2022 has highlighted the issue of long outages of the generating units and their status of availability during the ensuing year 2022-23.

16.2 NRPC vide its mail dated 11.01.2022 on the above cited matter had requested respective SLDC's (Haryana, Punjab, Rajasthan, U.P) to submit the status for these generating units and also their expected revival date. Status received is attached as **Annexure-A.V.**

16.3 Further, SLDCs are requested that in case any of these generating units have been scrapped/retired or, proposed to be scrapped/retired, the concerned generating utility may be advised to report the same to PDM Division of CEA as well for amendment of the All India Generating Installed Capacity.

**Members may kindly update.**

## 17. Transmission constraints in Northern Region

17.1 A meeting was chaired by JS (OM & RR), MoP on 12.01.2022 wherein transmission constraint was discussed. A list of such lines in NR is attached as **Annexure-A.VI**. Concerned utilities are requested to submit updated action plan to mitigate the constraint.

**Members may kindly update.**

## 18. Abnormal humming in GTs at APL, Kawai and nearby stations (Agenda by APRL)

18.1 The agenda has been discussed in 183rd and 187th OCC meetings for the abnormal humming sound at Power transformers at APL, Kawai, Chhabra, Kalisindh and ICTs at Anta from 1600 hrs of 21st April'21.

18.2 APL, Kawai has intimated vide mail dated 03.01.2022 that on 14th May around 16:30 hrs, sound had subdued and it had again started on 15th May at 17:25 Hrs. The humming noise of generator transformer again subdued on 25.08.2021 at 11.00 Hrs.

18.3 In this context, APL had a meeting held with Director Technical RVPN on 23.07.2021 on the above subject, wherein the officials from RVPN, SLDC and APRL Kawai were present during the meeting.

18.4 Humming sound has again appeared on 14.12.2021 from 7 pm onwards to 80 dB. Chabbra and Kalisindh units had also found the sound on higher side

18.5 APL have downloaded the tripping and restoration list of grid elements from NRDLC website, but no conclusion is derived.

18.6 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***.

## 19. Forced Shifting of Tower no. 169 of 400kv D/C Roorki-Kashipur I & II line on new Pile Foundation due to Change in Natural River course: Deemed availability of the Outage (Agenda by POWERGRID)

The soil under two legs of Tower No. 169 (DC+9 with 3mtr raised Chimney) of 400kV

D/c Roorki-Kashipur line washed away due to erosion and natural change of the course of KHO river, therefore it has become critically endangered and requires two be shifted on new Pile Foundation urgently to avoid it's falling and line break down.

A detailed letter has been sent by CGM(AM), NR-1, POWERGRID to MS, NRPC in this regard (**Annexure-A-VII**). POWERGRID has taken emergency steps for shifting of line by erection of new D/C tower on pile foundation at a distance of approx. 60mtr in same alignment of the line.

To minimize the outage of this D/C line, it is proposed to shift both the lines on ERS first so that to facilitate the erection of new tower and final shifting of lines accordingly. The requirement of shutdown for above work is planned as below:

1. Shifting of lines on ERS: 27-01-22 to 10-02-22 (continuous basis)

2. Restoration on new tower: 01-03-22 to 15-03-22 (-DO-)

POWERGRID has requested to consider above outage as deemed available, being Forced Majeure due to natural change of river course which is beyond control of the transmission licensee.

***Members may kindly discuss***.

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

### 20. Grid Highlights for December 2021

Maximum energy consumption of Northern Region was 1088 Mus on 22th Dec'21 and it was 3.1 % higher than Dec' 2020 (1055 Mus 30th Dec'20)

Average energy consumption per day of Northern Region was 1020 Mus and it was 3.81 % higher than Dec'20 (983 Mus per day)

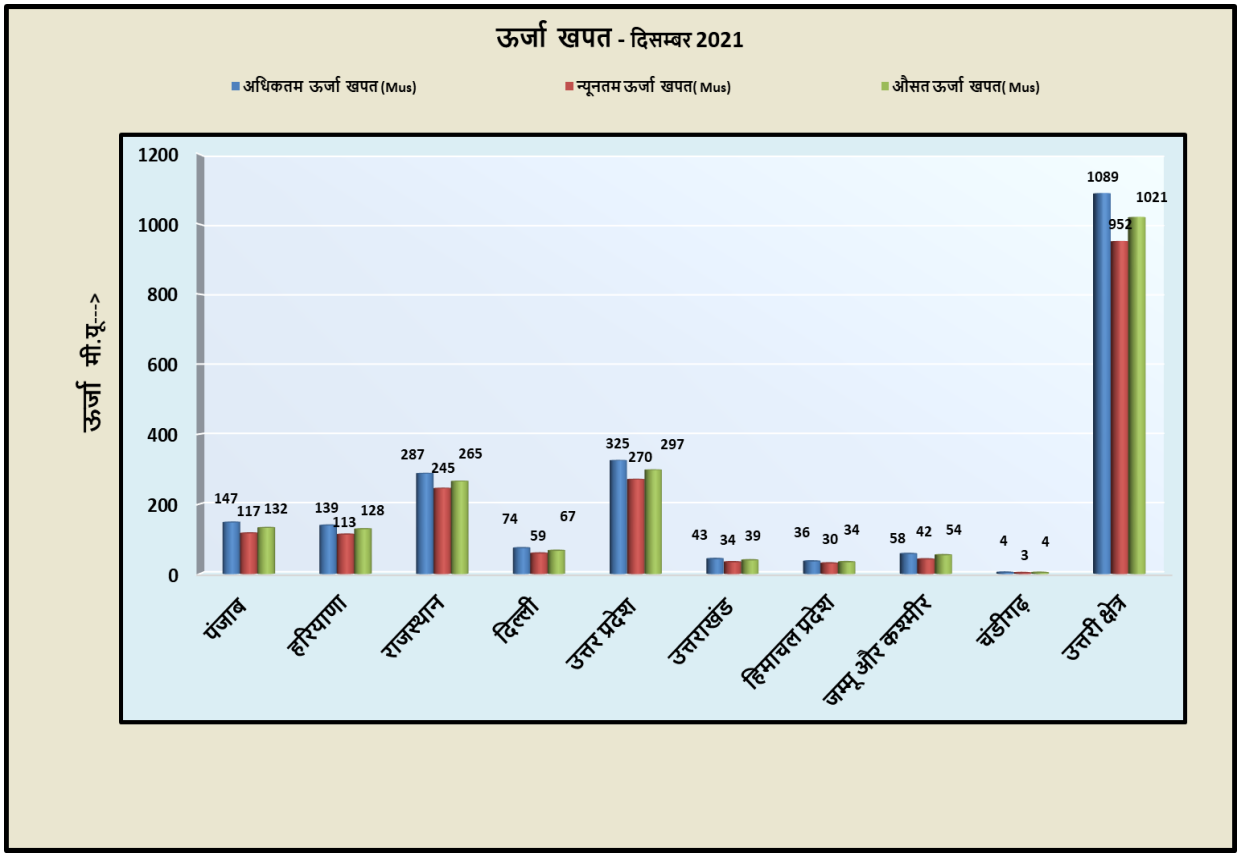
Maximum Demand met of Northern Region was 55546 MW met on 20th Dec'21@ 11:00 hours (Based on data submitted by Constituents) as compared to 55604 MW met on 25th Dec'20 @ 10:00 hours

Northern Region all time high value recorded in December'21:

| Max Demand Met | All Time High Record | | Previous Record (upto Nov-21) | |
|---|---|---|---|---|
| | Value (MW) | Achieved on | Value (MW) | Achieved on |
| राजस्थान | 15696 | 24-12-2021<br>10:00 hrs | 14578 | 18-08-2021<br>10:00 hrs |
| हिमाचल प्रदेश | 1969 | 31.12.2021<br>09:00 hrs | 1931 | 23.01.2021<br>10:00 hrs |
| | 2743 | 31.12.2021 | 2680 | 20.01.2021 |

| | | | | |
|---|---|---|---|---|
| जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT) | | 19:00 hrs | | 19:00 hrs |

| Energy Consumption | All Time High Record | | Previous Record (upto Nov-21) | |
|---|---|---|---|---|
| | Value (MU) | Achieved on | Value (MU) | Achieved on |
| जम्मू और कश्मीर (UT) तथालद्दाख़ (UT) | 57.52 | 31.12.21 | 55.30 | 16.01.21 |




Comparison of Average Energy Consumption (MUs/Day) of NR States for the Dec'20 vs Dec '21

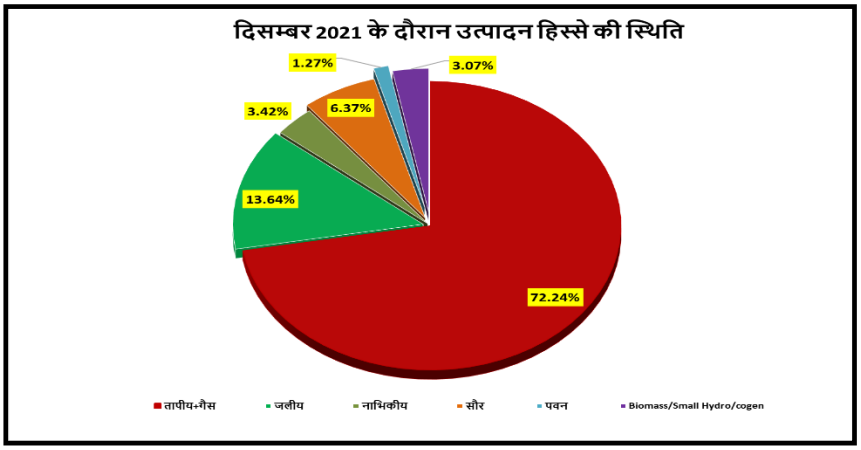
| क्षेत्र/राज्य | दिसंबर- 2020 | दिसंबर-2021 | % अंतर |
|---|---|---|---|
| पंजाब | 122.98 | 132.04 | 7.36 |
| हरियाणा | 130.37 | 128.43 | -1.48 |
| राजस्थान | 251.94 | 265.07 | 5.21 |
| दिल्ली | 65.99 | 66.63 | 0.96 |

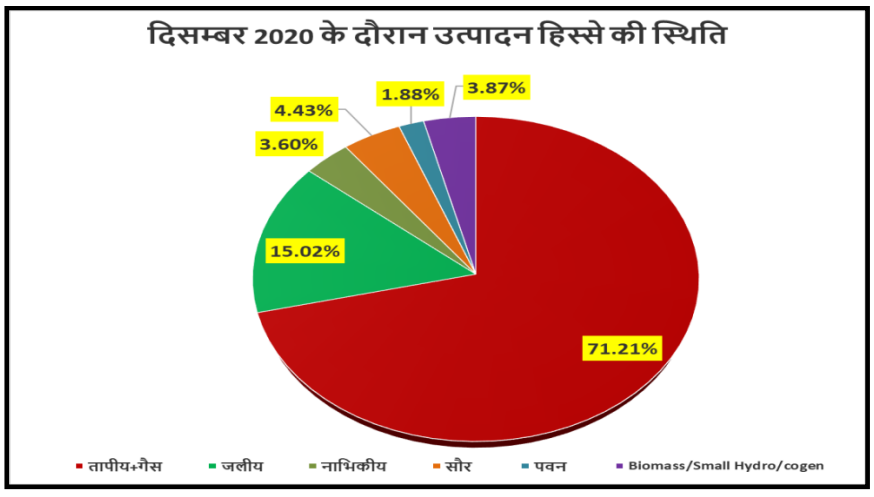
| क्षेत्र/राज्य | दिसंबर- 2020 | दिसंबर-2021 | % अंतर |
|---|---|---|---|
| उत्तरप्रदेश | 285.89 | 297.49 | 4.06 |
| उत्तराखंड | 38.77 | 39.37 | 1.54 |
| चंडीगढ़ | 3.62 | 3.54 | -2.13 |
| हिमाचलप्रदेश | 31.60 | 33.97 | 7.51 |
| जम्मूऔरकश्मीर | 51.87 | 53.99 | 4.09 |
| उत्तरीक्षेत्र | 983.03 | 1020.52 | 3.81 |

Frequency Data Comparison

| Month | Avg.Freq. (Hz) | Max.Freq. (Hz) | Min. Freq. (Hz) | <49.90 (%time) | 49.90–50.05 (%time) | >50.05 (%time) |
|---|---|---|---|---|---|---|
| Dec'21 | 50.00 | 50.34 | 49.62 | 6.9 | 73.1 | 19.9 |
| Dec'20 | 50.00 | 50.26 | 49.66 | 5.6 | 75.8 | 18.6 |

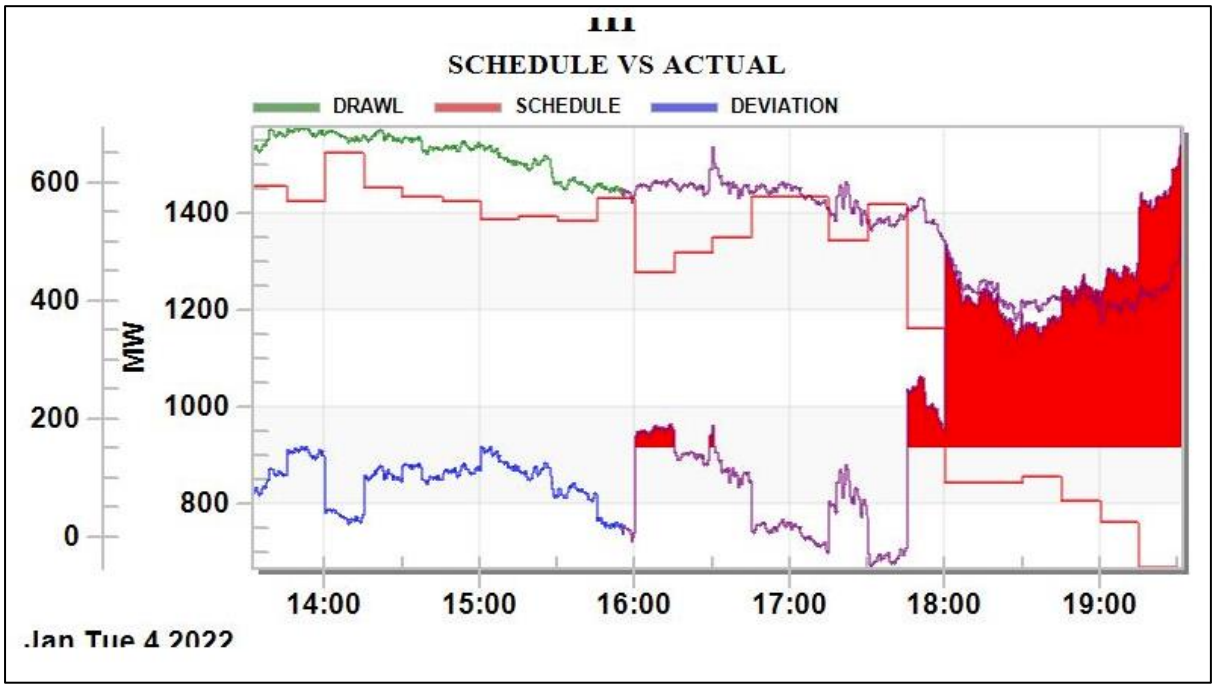
- Total average per day energy generation by Northern region was 807.88 Mus in the month of Dec'21 in comparison of 747.25 Mus in Dec'20.
- The fuel wise share of generation is shown below:

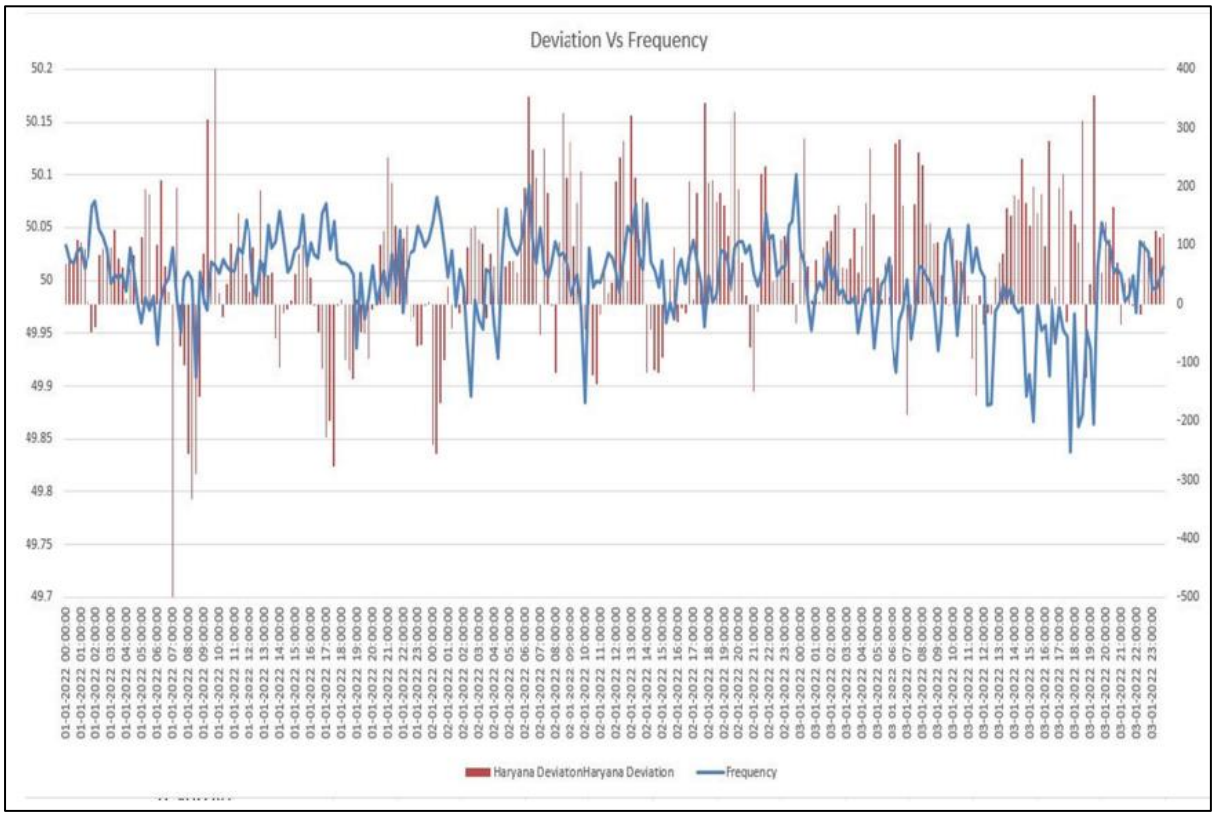


In Dec'21, Frequency remained within IEGC band for only 73% of the time. Emergent contingency events during such times such as large generation outage, could result in further drop in frequency and therefore, over-drawals below 49.90 Hz must be controlled quickly in order to keep system secure.

During this month some of the NR states such as HP & Haryana had over-drawal contributing to low frequency operation. NRLDC has been continuously requesting all states to maintain its drawl within schedule during low frequency instances and also take necessary measures for revival of intrastate generating units. NRLDC communication in this regard is attached as **Annexure-B-I.**



NR Constituents are once again requested to take initiatives to minimize sudden load changeovers at hourly boundaries and also monitor performance of generators under their jurisdiction when the frequency is having large excursions. All utilities are asked to ensure that RGMO/FGMO of generators under their control areas are in service and are responding as per frequency changes.

**Members may like to discuss.**

**21. Sharing of hourly Load shedding under different categories on NRLDC Reporting Software**

As discussed in 189th OCC meeting, recently, Secretary, Ministry of Power, emphasized the importance of ensuring accuracy of the hourly load shedding (MW) and energy not met (MU) figures being received from various SLDCs on daily basis in respect of their own states, and classifying them under different heads like low availability, transmission constraints, financial constraints, planned maintenance of transmission / distribution system within state, etc.

Although SLDCs are uploading the hourly load shedding figures of the previous day on the web-based reporting software of NRLDC the next day, but reason for the shedding or unserved demand at any hour is not segregated into the possible different categories. UP, Haryana, Uttarakhand and HP are providing reasons whereas some other states such as ***Rajasthan, Punjab, Delhi, J&K and Chandigarh are not furnishing the reasons for load shedding.***

In view of the above, it is once again requested to kindly classify the reason of shedding in the detail sheet of hourly load shedding, in the daily power supply report, before uploading it to the web-based reporting software on daily basis.

***Members may like to discuss.***

**22. Action Plan for pre-winter maintenance of transmission lines**

In 187thand 188thOCC meeting, it was discussed that winter in Northern region is likely to start from mid of October till February end, and the challenges faced during these months were also discussed in the meeting. The challenges expected and actions to be taken by utilities such as SLDCs, ISGS, intrastate generators, ISTS licenses, STUs were discussed in the meeting alongwith actions to be taken by respective utilities. However, details regarding actions taken by them are yet to be received from most of the utilities.

In 190th OCC meeting, Punjab SLDC had stated that work of magnetic float level indicator is still pending and utilization of RSD as synchronous condenser is expected by end of January' 2022. Punjab SLDC was asked to expedite the work as same has not been completed as per the timelines promised in 47th TCC and 49th NRPC meeting.

**Frequent tripping lines due to fog**

It can be seen that out of 66 lines tripping between 13.12.2021 to 20.12.2021, 43 have occurred between 09pm-09am. There have also been many fog suspected tripping in Punjab state control area. The importance for carrying out prewinter maintenance cleaning and insulator replacement was once again highlighted. Transmission licensees were asked to share details about the prewinter maintenance activities including insulator replacement carried out/planned by them for this winter.

Punjab SLDC representative stated that tripping were observed when severe fog was observed during night for last 2-3 days. However, the system is operating normal afterwards and no tripping have been reported. Punjab and Haryana SLDC representative stated that they shall submit latest status of pre-winter maintenance activities carried out by them.

Following elements have tripped during 12.12.2021 to 12.01.2021 day-wise from 21:00hrs to 09:00hrs:

| Name of Line | Tripping Instances | Owner |
|---|---|---|
| 220 KV Dhauliganga(NH)-Pithoragarh(PG) (PG) Ckt-1 | 5 | POWERGRID |
| 220 KV Duni(RS)-Jaipur South(PG) (RS) Ckt-1 | 4 | RVPNL |
| 220 KV Duni(RS)-Kota(PG) (RS) Ckt-1 | 4 | RVPNL |
| 400 KV Bareilly-Unnao (UP) Ckt-1 | 4 | UPPTCL |
| 400 KV Hindaun(RS)-Chhabra(RVUN) (RS) Ckt-1 | 4 | RVPNL |
| 220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2 | 3 | RVPNL |
| 400 KV Talwandi Saboo(PSG)-Muktsar(PS) (PS) Ckt-1 | 3 | PSTCL |
| 765 KV Anpara_D-Unnao (UP) Ckt-1 | 3 | UPPTCL |
| 765 KV Bara-Mainpuri (UP) Ckt-2 | 3 | UPPTCL |
| 765 KV Orai-Aligarh (PG) Ckt-1 | 3 | UPPTCL |
| 400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-1 | 2 | PTCUL |
| 400 KV Amargarh(NRSS XXIX)-Samba(PG) (NRSS XXIX) Ckt-2 | 2 | NRSSXIX |
| 400 KV Amritsar(PG)-Makhu(PS) (PSTCL) Ckt-1 | 2 | PSTCL |
| 400 KV Amritsar(PG)-Makhu(PS) (PSTCL) Ckt-2 | 2 | PSTCL |
| 400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2 | 2 | UPPTCL |
| 400 KV Badaune(UP)-Rosa(UPC) (OCBTL) Ckt-1 | 2 | UPPTCL |
| 400 KV Banda-Orai (UP) Ckt-2 | 2 | UPPTCL |
| 400 KV Bareilly-Unnao (UP) Ckt-2 | 2 | UPPTCL |
| 400 KV Baspa(JP)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1 | 2 | HBPCL |
| 400 KV Bhilwara(RS)-Chhabra(RVUN) (RS) Ckt-1 | 2 | RVPNL |
| 400 KV Dadri(NT)-Muradnagar_2(UP) (PG) Ckt-1 | 2 | POWERGRID |
| 400 KV Kala Amb(PKTL)-Wangto_GIS(HP) (HPPTCL) Ckt-1 | 2 | HPPTCL |
| 400 KV Muktsar-Makhu (PS) Ckt-2 | 2 | PSTCL |
| 400 KV Muradnagar_2-Mathura (UP) Ckt-1 | 2 | UPPTCL |
| 400 KV Roorkee(PG)-Muzaffarnagar(UP) (PTCUL) Ckt-1 | 2 | PTCUL |
| 400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-1 | 2 | RVPNL |

In 190th OCC meeting, utilities were asked to share action plan for measures to be taken by them for carrying out pre-winter maintenance activities and other actions agreed in 187th, 188th and 189th OCC meeting. Details received only from HVPN, NR-1 and NR-3 even after reminder emails (**Annexure-B-II**). Other transmission utilities are also requested to share the action plan and activities carried out for pre-winter maintenance.

***Members may kindly discuss.***

## 23. MVAR support from generators

Following has been discussed and agreed in TCC /NRPC meetings and OCC meetings of the Northern region:

- All generators (including intrastate) shall absorb MVAr as per capability curve
- Reactive power support performance and MVAR telemetry issues will be reviewed in monthly OCC meetings.
- Reactive power capability testing will be carried out after discussion in OCC meeting.

Reactive power response of generating stations is being regularly discussed in OCC meetings.

Reactive power response in respect of MVAr vs Voltage for **past 20 days (21.12.2021 - 10.01.2022)** as per NRLDC SCADA data is enclosed as **Annexure-B-III** in agenda. Based on available data, it is observed that there are margins available as per capability curves for most of the generating stations. In addition, telemetry (sign and magnitude of MVAR) of various state generating station is yet to be corrected.

| S.No. | Station | Capacity | Geographical location | MVAR capacity as per capability curve | MVAR performance (-) Absorption (+) Generation | Voltage absorption above (in KV) |
|---|---|---|---|---|---|---|
| 1 | Dadri NTPC | 980 | Delhi-NCR | -294 to | -300 to 100 | 410 |
| 2 | Singrauli NTPC | 2000 | UP | -600 to | -250 to 0 | 400 |
| 3 | Rihand NTPC | 2000 | UP | -600 to | -320 to -140 | 400 |
| 4 | Kalisindh RS | 1200 | Rajasthan | -360 to | -250 to 100 | Voltage data static |
| 5 | Rosa UP | 1200 | UP | -360 to | -100 to 300 | |
| 6 | Anpara C UP | 1200 | UP | -360 to | -200 to 100 | 765 |
| 7 | TalwandiSaboo PB | 1980 | Punjab | -594 to 1188 | -100 to 400 (seems MVAR data sign) reversal | 415 |
| 8 | Kawai RS | 1320 | Rajasthan | -396 to | -120 to 0 | 404 |
| 9 | Anpara TPS | 1630 | UP | -489 to | -100 to 150 | 406 |
| 10 | IGSTPP Jhajjar | 1500 | Haryana | -594 to 1188 | -200 to 100 (improved performance) | 410 |
| 11 | Bawana | 1000 | Rajasthan | -300 to | -60 to 100 | 415 |
| 12 | Rajpura (NPL) | 1400 | Punjab | -420 to 840 | 100 to 230 (seems MVAR data sign) | 410 |
| 13 | Khedar | 1200 | Haryana | -360 to | -150 to 100 | 410 |
| 14 | MGTPS | 1320 | Haryana | -396 to | -300 to 0 | 408 |
| 15 | Bara PPGCL | 1980 | UP | -594 to | -90 to 130 | 778, 765 |
| 16 | Lalitpur TPS | 1980 | UP | -594 to | -10 to 250 | 775, 785 |

It was agreed in previous OCC meetings that states shall also develop MVAr vs voltage plots for generators under their jurisdiction. This would also help to improve telemetry of MVAr data and eventually, more reliable MVArvs voltage plots will be available and the generators can be instructed accordingly.

NRLDC has sent communication to IGSTPP Jhajjar, Delhi SLDC (Bawana), UP SLDC (Bara and Lalitpur) to improve their reactive power performance.

In 190th OCC meeting:

- Rajasthan SLDC representative agreed to look into the telemetry issues of Kalisindh TPS.
- IGSTPP Jhajjar representative stated that they have shared GT tap position and AVR setting with NRLDC. They are trying to extract data from their end and observe the performance of the machine. They shall also share this data with NRLDC within one week. IGSTPP Jhajjar had submitted the data on 05.01.2022, however; from the shared data, it seems that IGSTPP Jhajjar units were absorbing upto 70MVAR and generating maximum of 150MVAR from 01.12.2021-14.12.2021 (absorbing only when grid voltages are higher than 415-420kV). It is well known and also has been deliberated in OCC meetings that winter months are associated with high voltages in the Northern region and therefore generators are generally required to absorb maximum MVAR as per their capability curve. Same was communicated to IGSTPP Jhajjar on 06.01.2022.
- Delhi SLDC representative stated that they are regularly sending messages and asking CCGT-Bawana to absorb MVAr as per its capability curve, however they are not absorbing sufficient MVAr. SLDC representative stated that they shall take up the issue again with Bawana and share the actions taken by plant with NRLDC/NRPC.
- Lalitpur representative stated that new bus reactor is expected to be commissioned shortly which would reduce the MVAr requirement from machine. MVAr absorption by plant has to be limited due to the limitation of increased voltage at 11kV side. NRLDC representative asked Lalitpur representative to submit in detail the reasons for the lower MVAr absorption along with plant Single line diagram. Also, the GT tap position and AVR settings and any other relevant settings may also be shared with NRLDC.
- Bara TPS was also requested to share reasons for limited MVAr absorption and not as per their capability curve and grid requirements. UP SLDC and Bara agreed to share the reasons and ensure MVAR performance as per grid requirement and capability curve of machines.
- Other generating stations such as Kalisindh TPS, Chhabra TPS, Rajpura TPS, TalwandiSaboo were requested to resolve any issues related to telemetry and make sure that correct MVAR data from all units are available at RLDC/ SLDC and MVAr is absorbed is as per grid requirement and capability curve of machine.

***Above generators/ SLDCs are requested to provide update on the respective issue***.

All generating stations are requested to resolve any issues related to telemetry and make sure that MVAr absorption is as per grid requirement and capability curve of machine. Generating stations need to make sure that the AVR settings and GT tap positions are optimized to achieve the reactive power performance as per grid requirements. It is also requested to share these details with NRLDC.

**Members may like to discuss.**

As already discussed in TCC/NRPC meeting, subgroup was formed at NRPC level to look after RE integration to take up the issues at their level. Major areas for discussion include:

- Operation of solar plants in voltage control mode as per grid requirements
- Reactive power performance (absorption/generation) of solar plants during day & night time
- Harmonization of settings among different solar plants including protection settings at lower voltage levels (within plant) to avoid unintended disconnection/ generation reduction
- LVRT/HVRT compliance in real-time grid events
- Installation of adequate reactive compensation before project commissioning stage as per CEA regulations

In 189th OCC meeting, it was decided that separate sub-group meeting would be convened by NRPC to discuss all these issues and several actions have also been finalized. It was discussed that a working group has been constituted by Member (GO&D), CEA and this group would be submitting its recommendations shortly. As an interim measure, these recommendations may be implemented in NR.

In 189th OCC meeting, it was discussed that a pilot project has been carried out by SRLDC/SRPC and a report is being prepared in this regard and the same is expected in a week's time. SE (O), NRPC stated that sub group meeting would be called in November 2021 before next OCC meeting to discuss RE related issues and the report prepared by SRPC/SRLDC shall also be referred.

In 190th OCC meeting, it was informed that SRLDC has issued the report which is available @ *https://srldc.in/UploadFiles/NewsAndUpdate/Draft%20Report%20on%20Night%20Mode%20Operation%20(Trial)%20of%20PV%20Inverters.pdf.*

The key points from SRLDC report were presented in the meeting.

- Inverters are having reactive capability of 33%, 66% and 88%, or in some case up to 100% of active power depending upon the manufacturer and model.
- 986MVAR dynamic reactive capability is available in the PV inverters at Pavagada Ultra Mega Solar Park.
- Night Mode facility is available in 1575MW out of 2050MW installed capacity.
- For 775MW having reactive power capability of 441.5MVAR, the night mode/Static VAR Generator (SVG) feature can be enabled during generation hours only Whereas Night mode/SVG Feature can be enabled at any time of the day for 800MW of installed Capacity of inverters having reactive capability of 544.5MVAR
- A total of 4.16MUs of energy has been consumed for this exercise which was included in regional loss during the two months trial period.
- Maximum active power of 14.5MW was consumed from the grid at 220kV level during the trial operation when maximum 456MVAR was absorbed at 220kV level PoC

- Active power consumption per 100MVAR of reactive power absorption is in the range of ~2 to 2.5MW which is ~2% to 2.5%.
- All lines at 400kV Pavagada were in closed condition during this experiment period except on few occasions which was due to issues at other connected station
- Night mode feature may be made mandatory by including the requirement of facility in the CEA Technical Standards for Connectivity

NRLDC and NRPC representatives stated that separate meeting may be called with solar ISGS by sub-group formed at NRPC level so that such capability of NR plants may be discussed and accordingly further course of action may be decided.

**Members may like to discuss.**

## 24. TTC/ATC of state control areas for winter 2021-22

In 188th OCC meeting, it was discussed that 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. SLDCs are once again requested to go through the tentative ATC/TTC limits for February 2022 (**Annexure-B-IV**) and provide comments. However, ATC/TTC assessment has only been received only from HP so far. Rajasthan had shared ATC/TTC calculations with NRLDC on 22.10.2021. On 28.10.2021, NRLDC has shared their observations on basecase as well as simulation studies carried out by Rajasthan. If no comments are received, these limits will be assumed confirmed and uploaded on NLDC website. SLDCs are also requested to upload the limits for winter 2021-22 in their respective websites.

**Punjab**

Punjab SLDC is requested to ensure sufficient intrastate generation on bar during winter months, which would help in providing the required MVAR absorption to limit high voltages during winter months.

**UP**

SPS for Sohawal and Lucknow to be expedited.

**Rajasthan**

Rajasthan had shared ATC/TTC calculations with NRLDC on 22.10.2021. On 28.10.2021, NRLDC has shared their observations on basecase as well as simulation studies carried out by Rajasthan.

Rajasthan was requested to share the revised simulation studies with NRLDC alongwith details of bus-split, other operational changes in system. Rajasthan SLDC was asked 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.

**Delhi**

ATC is not being uploaded in website, only violation of ATC is being shown.

In 190th OCC meeting, Delhi SLDC representative stated that the limits would be reassessed for next summer season shortly with commissioning of 400/220kV Dwarka substation and accordingly revised ATC/TTC limits would be uploaded on website.

NRLDC representative suggested that present ATC/TTC limits may be uploaded on SLDC website and with commissioning of 400/220kV Dwarka substation, revised ATC/TTC may be uploaded.

Delhi SLDC was asked to implement SPS at Mundka and Bamnoli to save supercritical loads under N-1 contingency of one ICT. Delhi representative stated SPS at Mundka would be implemented before next summer season.

**Haryana**

Haryana SLDC was once again requested to expedite implementation of SPS at 400/220kV Deepalpur and Kurukshetra (PG) to enhance their ATC/TTC limits at the earliest

**HP**

HP has started sharing its ATC assessment since last 3 months in consultation with NRLDC. It was discussed that mostly intrastate constraints were highlighted by HP and the studies were done for lesser import values. HP was advised to assess possible tie-line/ICT constraints with import close to real-time values. One to one meeting was organized on 03.12.2021 between NRLDC and HP SLDC officials to overcome the challenges being faced by SLDC in ATC/TTC assessment and other issues in PSSe.

**Uttarakhand**

Uttarakhand has also shared its ATC assessment with NRLDC for winter 2021-22.

**J&K**

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

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 |

As discussed during last meeting, since from October/ November, demand of most of the NR states starts changing, it is requested that the revised ATC/TTC limits for winter 2021 along with anticipated generation scenario may be timely shared with NRLDC***.***

As discussed, and agreed in 190th OCC meeting, 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. Basecase and ATC assessment shall be shared with NRLDC by the 10th of every month. NRLDC will incorporate these changes in All India basecase and share the updated basecase as well as observations on ATC/TTC by the 20th of every month. Monthly/quarterly online meetings will also be organized involving reliability coordinators of SLDCs/RLDC to discuss reliability issues and measures required. It is also requested that net scheduled power requested by states is within their ATC limits.

Plot suggesting loading above n-1 contingency limit and ATC are attached as **Annexure-B-V**. It is again requested that SLDCs may ensure that loading of ICTs and lines are below their N-1 contingency limits. While requisitioning power from various sources, states should take care to limit their scheduled drawl as well as actual drawl in real time within the Available Transfer Capability (ATC) limits assessed by SLDC and NRLDC.

***Members may like to discuss.***

**25. Grid operation related issues**

**(i) 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-VI**).

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

***Members may kindly discuss.***

**(ii) 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 Power maps, 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.***

**(iii) 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.

181 OCC: QR finalized, tender may be floated in next week

183 OCC: QR approved, tender documents being prepared

186 OCC: Tendering stage, likely to be awarded in Sep'2021

In 187 OCC meeting, POWERGRID representative stated that work is still in tendering stage and the bid opening is scheduled on 23.09.2021.

189 OCC meeting, POWERGRID representative stated that one bid has been received for the work. However, it is new party so evaluation is under process. On enquiry from NRLDC representative, it was stated that order is likely to be placed before next OCC meeting. OCC once again expressed concern on the slow progress of the work.

190 OCC meeting, POWERGRID representative stated that two bids have been received and price bid will be opened shortly and the contract is likely to be awarded in January 2021.

***POWERGRID to provide update on the latest status.***

**(iv) Calculation of Drawal points based on SLDC end data**

As discussed in the 6$^{th}$TeST meeting all SLDCs shall maintain its own drawal calculation (alternate calculation based on the SLDC drawal points) for proper monitoring and SLDC also shall be responsible for calculation of its own drawl based on their drawal points at their respective feeders/ICTS. SLDC shall use its own calculated value of monitoring real-time drawal from the grid along with ISTS drawal to ensure the correctness and corrective measures shall be taken accordingly. UP and Delhi are using their end calculation as primary calculation for monitoring of drawal whereas Rajasthan is entirely dependent on STU data.

However, Punjab, Haryana, Jammu and Kashmir, Uttarakhand are dependent on RLDC end drawal values. All concerned are requested to kindly compute drawal values at SLDC end also, so that same can be verified with NRLDC end value and any discrepancy can be rectified immediately.

In 188$^{th}$ OCC meeting, MS NRPC expressed concern and asked all the states which are only dependent on RLDC end data to take necessary actions and compute drawl values at SLDC end also. It was also suggested that the agenda be continued in OCC meeting till resolution of issue by all states.

In 189th OCC meeting, MS NRPC stated that NRLDC may request all SLDCs to confirm the status via email. Based on the feedback received, issue may be discussed in next OCC meeting.

Accordingly, an email was circulated to respective SLDCs on 10.12.2021. However, response from SLDCs is yet to be received.

In 190$^{th}$ OCC meeting, Punjab SLDC representative informed that data calculation from SLDC end data is complete and display for difference between the values from NRLDC end and Punjab SLDC end data is also available at SLDC control room. Punjab SLDC will share screen shot of display available at their control center with NRLDC.

Haryana SLDC representative stated that data from some stations such as 220kV Bawal is not available at SLDC. It was also informed that drawl data is being monitored from both NRLDC and HVPN end data. Data from 56 points out of 101 points of Haryana end data is telemetered while for remaining data they are using NRLDC end data only due to telemetry issues and other issues such as 220/66kV station being BBMB station, 66kV data is not available.

Uttarakhand SLDC representative stated that at 2-3 stations, RTU is faulty and replacement work is being carried out which would ensure availability of SLDC end data for drawl calculation. Till the replacement work, they are relying on NRLDC end data. NRLDC representative asked Uttarakhand to expedite replacement of faulty RTUs and ensure drawl data availability from SLDC end data also.

SLDCs are requested to provide update on the agenda point.

***Members may kindly discuss.***

**(v) Replacement/Rectification of faulty Interface Energy Meter (IEM) & DCD in Northern region**

As per metering regulation of CEA, CTU is responsible for installation and replacement of IEM at ISTS level for the purpose of electricity accounting and billing of regional entities. NRLDC vide their letter NRLDC/MO dtd19th July 2021 &dtd 12th Nov 2021 has requested for replacement/rectification of faulty IEM & DCD and list was also provided in the letter. Further detail list is again attached at **Annexure-B-VII** for reference. This issue has already been deliberated in 43rd commercial subcommittee meeting held on 13th April, 2021.

Weekly energy account is based on the IEM and due to faulty meter in some of the feeders, NRLDC is using other end IEM data for calculation of net injection/drawl of Utilities. In such scenario there is no redundancy to measure the energy flow and in case of outage of other end IEM, it is not possible to measure the electricity flow on the feeders and net drawl/Injection calculation would be wrong which may turn to huge commercial impacts on utilities.

Further the above issue was also deliberated in 49th meeting of Northern Regional Power Committee and 47th meeting of TCC held on 23rd, 24th & 27th Sept. 2021, wherein, it was decided that CTU/POWERGRID shall take action for replacement of defective IEM & DCD and complete the same by 31.12.2021 in all respect.

Therefore, it is requested to take suitable necessary action from your side for replacement of the IEM & DCD and action plan and time line for the completion of the work may be intimated to NRLDC.

POWERGRID may kindly provide update.

***Members may kindly discuss.***

***(vi)*** **Utilisation *of line reactor at Karcham of 400kV Karcham-Wangtoo(HP) lines***

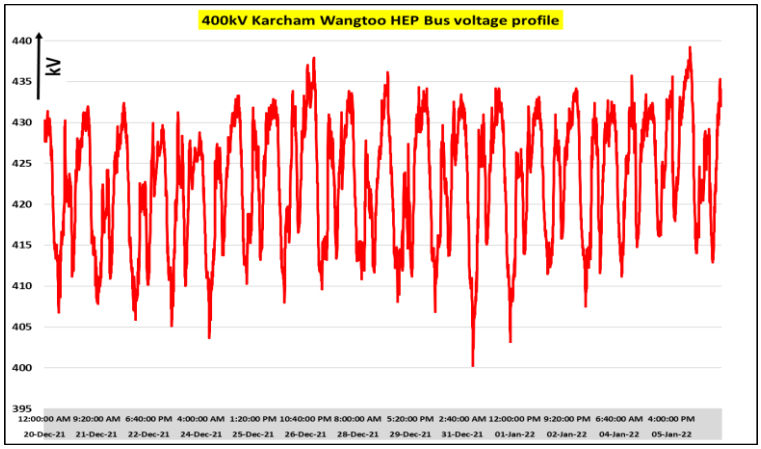
Originally planned 400kV Karcham-Abdullapur D/C line has been LILOed at Wangtoo(HP) and Sorang HEP substations after Kala Amb. Morevoer, FSC has also been installed at Kala Amb after LILO at Kala Amb to utilize full capacity of the Quad Moose line. However, with subsequent LILO of line the line lengths of 400kV Karcham-Wangtoo(HP) has reduced to nearly 1km only because of which originally

commissioned line reactors at Karcham have become redundant and remain out of service.


One way could be charging these line reactors of 400kV Karcham-Wangtoo(HP) line which would in controlling the bus voltages in 400kV Karcham-Wangtoo complex. The voltage trend at 400kV Karcham is shown below.

The usage of line reactors at Karcham will definitely help to reduce the voltages in Karcham complex in steady state, however its impact on transient faults can be severe. Over the years, it has been observed that higher percentage compensation leads to L-C resonance and oscillations. L-C oscillations in such overcompensated lines may lead to over-voltages including tripping on overvoltage and possibility of damage to terminal equipments/ line insulators.

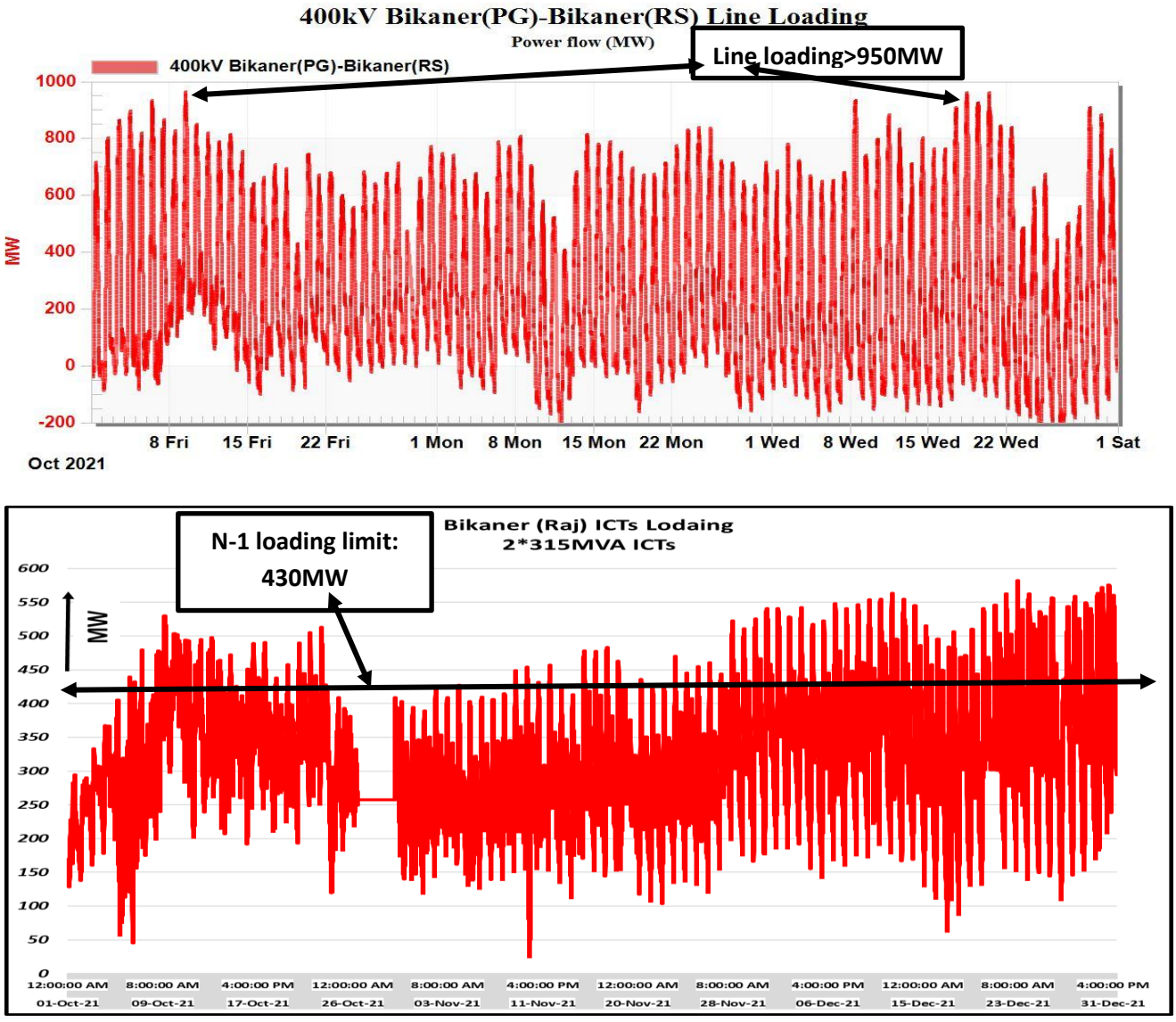
Same was also highlighted by POSOCO in their letter dated 25th Jun 2020 to CEA and CTU (copy attached). In some stations, remedial actions such as tripping reactor (possible only in case of switchable reactor) under line faults to avoid resonance have also been taken.




There is need to consider above mentioned facts also before utilizing the line reactors at Karcham end of Karcham-Wangtoo line. CTU is also requested to provide views in this regard.

Moreover, since with the commissioning of FSC in 400kV KalaAmb-Wangtoo line, the power flow is directed towards Wangtoo/ Abdullapur. Moreover, additional generation will be coming up upstream of Wangtoo i.e., at Kaza Solar park and JhangiThopan HEP, which is likely to make the network connectivity stronger in the area. Therefore, all the generators in the complex are requested to share dynamic data for analysis purpose (data received from Sorang HEP). NRLDC has also communicated the same vide letter dated 29.12.2021 in this regard (attached as **Annexure-B-VIII**).

Moreover, high loading of 400kV Bikaner(PG)-Bikaner(Raj) (Quad Moose) is being observed at the time of high solar generation in Rajasthan. This is also increasing loading of 400/220kV Bikaner ICTs and loading above N-1 contingency limits given that winter is high demand period in Rajasthan control area. On N-1 contingency of this line, the entire power from Bikaner(PG) will be evacuated through the 2X1500 MVA 765/400kV ICTs towards 765kV system. This would cause the Bikaner (PG) voltage to fall by around 6kV, but the resulting voltage would still be within the IEGC specified lower limit (380kV). Rajasthan STU/SLDC and CTU may provide update on the futuristic actions to control loading of this line.




ICTs loading of 400/220kV, 315MVA Bikaner(RS) (01.10.21-31.12.21)

As 400kV Bikaner(PG)-Bikaner(RS) is the least impedance path from Bikaner(PG) to Rajasthan load center, sensitivity of this line to the power injected from solar plants at

Bikaner(PG) will always be much higher than that of the 765/400kV ICTs at Bikaner. With further addition of RE capacity at Bikaner(PG), peak line flow may reach 1200MW or more.

Rajasthan/PGCIL may explore feasibility of the following options to minimize the post contingency impact of this line on the system:

a) Adding one more 400kV Quad Moose circuit parallel to the existing line

b) Shifting the supply of part of Rajasthan load to some S/Stn other than Bikaner(PG)

c) Installing SPS to shed some load whenever power flow through Bikaner(PG)-Bikaner(RS) line sustains above 800MW for 3 minutes

d) Keeping Bikaner(PG)-Bikaner(RS) 400kV line open, till another circuit or a suitable SPS is commissioned.

***Members may kindly discuss.***

### *(vii) Frequent forced outages of TalwandiSaboo generating units*

Generally, the period from June-Sep is associated with very high demand in Punjab state control area and Northern region. The import capability of state is also limited due to major transmission constraints such as 400/220kV ICTs at Rajpura, Nakodar, Ludhiana and several 220kV lines. At the time of this very high demand, it is obvious that maximum internal generation should be available to help in meeting demand safely. However, due to forced outage of generating units especially at TalwandiSaboo generating units, there is major issue in meeting demand in safe and secure manner. In 2021, there were numerous forced outages of TalwandiSaboo units (each 660MW capacity) as shown below. Even in the lean season during 2021-22, there have been numerous outages of TalwandiSaboo units including those due to coal shortage issues.

| Unit No | Reason | Outage Date & Time | | Revival Date & Time | |
|---|---|---|---|---|---|
| 3 | Due to abnormal sound in boiler. | 27-02-2021 | 19:34 | 30-07-2021 | 22:34 |
| 1 | Reserve Shutdown | 31-05-2021 | 22:15 | 08-06-2021 | 01:23 |
| 1 | ABNORMAL SOUND IN BOILER | 15-06-2021 | 13:15 | 17-06-2021 | 05:48 |
| 2 | Abnormal sound in boiler | 18-06-2021 | 01:14 | 21-06-2021 | 06:47 |
| 2 | Air Pre-heater tripped | 09-07-2021 | 15:55 | 12-07-2021 | 05:56 |
| 2 | Boiler Air preheater current hunting problem | 07-08-2021 | 00:15 | 09-08-2021 | 03:35 |
| 2 | Malfunction of HP LP bypass valve | 11-09-2021 | 10:25 | 11-09-2021 | 12:33 |

Punjab SLDC is requested to take up the matter on top priority with TSPL and try and ensure maximum generation capacity availability during peak demand season.

Other SLDCs are also requested to identify and take up the matter with generating stations which are out on forced outage especially during peak demand months from May-Sep.

***Members may kindly discuss.***

### *(viii) Frequent tripping of 400kV Kishenpur-New Wanpoh ckts and 765kV Anpara D- Unnao*

The 765kV Anpara-D–Unnao line was first time charged at 16:53hrs on 01/11/2021. The said line has tripped four times in the last two months. As per the tripping details, it is suspected that the fault has been occurring at the same location/area. On telephonic inquiry, it has come to our knowledge that the complete transmission line is having porcelain disc insulators. The availability of the said transmission line is critical for the safe evacuation of generation from the Anpara complex.

| S No | NAME OF ELEMENT | OUTAGE TIME | CHARGING TIME | REASON |
|---|---|---|---|---|
| 1 | 765 KV ANPARA_D-UNNAO (UP) CKT-1 | 10-01-2022 13:09 | 10-01-2022 16:54 | For attending hot-spot in R-phase Line Isolator at Unnao (UP). |
| 2 | 765 KV ANPARA_D-UNNAO (UP) CKT-1 | 31-12-2021 23:38 | 01-01-2022 10:12 | B-N fault, Zone-1, Dist. 292.5km, Fault current 2.311kA from Anpara end. |
| 3 | 765 KV ANPARA_D-UNNAO (UP) CKT-1 | 28-12-2021 05:39 | 30-12-2021 22:27 | R-N fault, Zone-1, Fault current 2.24kA, Dist. 261.5km from Unnao(UP). |
| 4 | 765 KV ANPARA_D-UNNAO (UP) CKT-1 | 27-12-2021 05:51 | 27-12-2021 15:34 | R-N fault, Zone-1, Fault current 2.33kA, Dist. 261km from Unnao(UP). |
| 5 | 765 KV ANPARA_D-UNNAO (UP) CKT-1 | 11-11-2021 20:35 | 12-11-2021 18:19 | Phase to earth fault B-N , Dist. 117.2km, Fault current 3.77kA from Unnao (UP). |

In view of the repeated tripping of the said line and ongoing foggy weather, UP is requested to advise the concerned sites(s) to take the following actions:

i. To carry out thorough patrolling of lines and identify the pollution-prone areas.
ii. To replace the porcelain insulators with polymer insulators in pollution-prone areas.
iii. To carry out washing of porcelain insulators in the line.

Frequent tripping observed in 400kV Kishenpur- New Wanpoh ckts- 1 to 4 is listed below. In case of multiple tripping of these lines in winter may cause constraint in meeting demand of JK valley. Therefore, POWERGRID-NR2 is requested to take necessary actions and share details for maintenance of these lines.

| S No | NAME OF ELEMENT | OUTAGE TIME | CHARGING TIME | REASON |
|---|---|---|---|---|
| 1 | 400 KV KISHENPUR-NEWWANPOH (PG) CKT-3 | 10-01-2022 03:09 | | Line tripped on R-B-N fault, Zone-1 from New Wanpoh (Tripped due to heavy snowfall.). Charging attempt taken at 14:57Hrs, but the line did not hold. |
| 2 | 400 KV KISHENPUR-NEWWANPOH (PG) CKT-2 | 08-01-2022 14:40 | 08-01-2022 15:38 | Phase to earth fault B-N, Dist. 79.22km, Fault current 4.29kA from Kishenpur& Dist. 35.1km, Fault current 4.6kA from New Wanpoh. Tripped due to bad weather (heavy snowfall, Lightening). |
| 3 | 400 KV KISHENPUR-NEWWANPOH (PG) CKT-1 | 08-01-2022 12:00 | 08-01-2022 12:45 | Phase to earth fault R-N, Dist. 89.57km, Fault current 3.31kA from Kishenpur& Dist. 33.1km, Fault current 5kA from New Wanpoh. Line tripped due to bad weather (heavy snowfall & Lightening). |

| S No | NAME OF ELEMENT | OUTAGE TIME | CHARGING TIME | REASON |
|---|---|---|---|---|
| 4 | 400 KV KISHENPUR-NEWWANPOH (PG) CKT-1 | 08-01-2022 03:46 | 08-01-2022 05:41 | Over voltage. Line tripped on Over voltage at Kishenpur. |
| 5 | 400 KV KISHENPUR-NEWWANPOH (PG) CKT-2 | 07-01-2022 23:17 | 07-01-2022 23:50 | Phase to earth fault B-N, Dist. 123km, Fault current 2.745kA from Kishenpur& Dist. 1.7km, Fault current 9.5kA from New Wanpoh. |
| 6 | 400 KV KISHENPUR-NEWWANPOH (PG) CKT-4 | 05-01-2022 21:35 | 06-01-2022 11:26 | Phase to earth fault B-N, Fault current 3.7kA, Dist. 107km from Kishenpur. Line tripped during bad weather and snowfall. |
| 7 | 400 KV KISHENPUR-NEWWANPOH (PG) CKT-4 | 01-01-2022 12:53 | 01-01-2022 18:44 | Y-N fault, Fault current 1.32kA, Dist. 105km from Kishenpur. |

***Members may kindly discuss.***

### *(ix) Multiple tripping at Mandola PG*

Multiple trippings occurred at Mandola PG due to 220kV Bus bar protection operation at 20.42 Hrs on 26.12.2021. During this incident, all 04 ICTs and 220kV lines emanating from Mandola PG got tripped resulting in a load loss of approx. 600 MW in Delhi. There was power interruption in Delhi metro network also which was restored immediately through alternate source.

There has been considerable delay in obtaining charging clearance from site for restoration of tripped elements. Further, there has been a significant delay in charging of elements even after issuance of codes by NRLDC. This has led to power supply shortage in Delhi for considerable duration.

A letter dtd. 27.12.2021 (**Annexure-B-IX**) was sent by NRLDC to CPCC, NR-1 to investigate and intimate the reasons for the delay attributed to restoration of elements. Powergrid, NR-1 is requested to submit the detailed report regarding the said trippings and also advise the concerned sites to ensure earliest restoration of tripped elements in future for reliable Grid operation.

***Members may kindly discuss.***

## 26. Frequent forced outages of transmission elements in the month of Dec'21

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

| S. NO. | Element Name | No. of forced outages | Utility/SLDC |
|---|---|---|---|
| 1 | 400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2 | 3 | UP |
| 2 | 400 KV Bareilly-Unnao (UP) Ckt-1 | 4 | UP |
| 3 | 400 KV Bareilly-Unnao (UP) Ckt-2 | 4 | UP |
| 4 | 765 KV Anpara_D-Unnao (UP) Ckt-1 | 3 | UP |
| 5 | 400 KV Suratgarh(RVUN)-Bikaner(RS) (RS) Ckt-1 | 3 | Rajasthan |

| | | | |
|---|---|---|---|
| 6 | 220 KV Delhi RR(BB)-Narela(DV) (BBMB) Ckt-2 | 7 | BBMB/Delhi |
| 7 | 220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2 | 7 | Rajasthan/NPCIL |
| 8 | 220 KV Duni(RS)-Jaipur South(PG) (RS) Ckt-1 | 9 | Rajasthan/POWERGRID |
| 9 | 220 KV Duni(RS)-Kota(PG) (RS) Ckt-1 | 5 | Rajasthan/POWERGRID |

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

***Members may like to discuss.***

**27. Multiple element tripping events in Northern region in the month of Dec'21**

A total of **20** grid events occurred in the month of Dec'21 of which **11** 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 detailed report received by NRLDC till 05-January-2022 is attached at **Annexure-B-XI.**

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

Maximum Fault Duration observedis**440ms** in the event of multiple element tripping at400kV Moradabad (UP) on 03-Dec-21 at 22:17hrs.)

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **4** events out of **20** grid events occurred in the month. In 7number of events, fault signature couldn't be captured from PMU data.

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

***Members may like to discuss.***

**28. Details of tripping of Inter-Regional lines from Northern Region for Dec'21**

A total of 9 inter-regional lines tripping occurred in the month of Dec'21. The list is attached at **Annexure-B-XII.** Out of 9 number of tripping's, 4 tripping incident are 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. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 5.2(r) of IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.

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

**29. Status of submission of DR/EL and tripping report of utilities for the month of Dec'21**

The status of receipt of DR/EL and tripping report of utilities for the month of Dec2021 is attached at **Annexure-B-XIII**. It is to be noted that as per the IEGC provision under clause 5.2 (r), detailed tripping report along with DR & EL has to be furnished within 24 hrs of the occurrence of the event. However, it is evident from the submitted data that reporting status is not satisfactory and needs improvement. Also, it is observed that reporting status has been improved from POWERGRID NR2, HP, UP and Rajasthan in Nov, 2021 compared to the previous month.

Members may kindly 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 kindly be submitted in tripping portal / through email.

**30. Frequency response characteristic**

One FRC based event occurred in the month of **Nov-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 | 15-Nov-21 | 13:11hrs | At 13:11Hrs, 220 KV Bhadla (PG)-ESUCRL SL_BHD_PG (ESUCRL) (ESUCRL) Ckt-1 tripped due to snapping of conductor. At the same time, 220 KV Bhadla(PG)-SauryaUrja Solar(SU) (SauryaUrja) Ckt-1&2 and 220 KV Bhadla(PG) - Mahoba Solar(Adani) (Adani) Ckt-1 tripped from remote (solar plant) end. As per SCADA, total solar generation loss of approx. 1787MW is observed at Bhadla (PG) (1430MW), Fatehgarh2 (PG) (240MW) and Bhadla (RS)(117MW). | 50.00 | 49.91 | -0.09 |

The event has already been discussed in 190th OCC meeting.

Status of Data received before 190th OCC meeting:

| Status of Data received of FRC of Grid event occurred at Bhadla on 15.11.2021 | | | |
|---|---|---|---|
| Data Received from | | Data Not Received from | |
| UP | Singrauli NTPC (Field data) | HP | Rihand NTPC |
| Delhi | TSPL (Field data) | UK | APCPL Jhajjar |
| Haryana | NHPC | J&K | Tehri HEP |
| | Rosa(Reliance) (Field data) | Punjab | ADANI (Kawai) |
| | Koteshwar HEP (Field data) | BBMB | Others |
| | | Rajasthan | |

Status of  Data received till date:

| Status of Data received of FRC of Grid event occurred at Bhadla on 15.11.2021 | | | |
|---|---|---|---|
| Data Received from | | Data Not Received from | |
| UP | Singrauli NTPC (Field data) | UK | APCPL Jhajjar |
| Delhi | TSPL (Field data) | J&K | Others |
| Haryana | NHPC | Punjab | |
| HP | Rosa(Reliance) (Field data) | BBMB | |
| Rajasthan | Koteshwar HEP (Field data) | | |
| | ADANI (Kawai) | | |
| | Rihand NTPC | | |
| | | | |

PFR as per generators field data

Primary Frequency Response by Generators during Grid Event at Bhadla(PG) on 15th Nov 2021:

| Sr. No | Generating stations | FRC as per generator data (in %) | FRC as per SCADA data at NRLDC (in %) | Response category/Remark |
|---|---|---|---|---|
| 1 | Singrauli Unit 6 | 13.18 | 3 | Unsatisfactory response |
| 2 | Singrauli Unit 7 | 15.29 | | |
| 3 | TSPL | 70 | 3 | Satisfactory response |
| 4 | Rosa TPS | 16.58 | -3 | Unsatisfactory response |
| 5 | Kawai (Adani) Unit 1 | 65.52 | 33 | Unsatisfactory response |
| 6 | Kawai (Adani) Unit 2 | -2.39 | | Poor response |
| 7 | Rihand Unit 3 | 51.42 | 15 | Unsatisfactory response |
| 8 | Rihand Unit 5<br>Rihand Unit 6 | 11.66<br>0 | 0 | Poor response |
| 9 | Koteshwar HEP | 23.35 | Suspected SCADA data | 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.

It is to be noted that in spite of discussion in 190th OCC meeting for the abovementioned event, only HP and Kawai have share the FRC of their control area. No information has been received from other utility.

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

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

In last 11 OCC meetings, this point was discussed and Utilities were requested to submit the present status of PSS tuning/re-tuning and Step Response Test of their respective generators as per the below mentioned format.

| 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) |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

It may be noted that Tehri HEP conducted PSS tuning/ Step response test of their units and submitted report. However, no further updates have been received from other utilities till date.

It is to be noted that as per regulation 5.2(k) of IEGC, Power System Stabilizers (PSS) in AVRs of generating units (wherever provided), shall be got properly tuned by the

respective generating unit owner as per a plan prepared for the purpose by the CTU/RPC from time to time.

In 190th OCC meeting, Members were requested to accord due priority in this regard and update about their future plan for PSS tuning by 30th December, 2021 and it was decided to call a separate meeting for detail discussion on this matter.

***Members may kindly discuss.***

**32. Mock black start exercises in NR**

As per Indian Electricity Grid Code (IEGC) clause 5.8(b) "Mock trial runs of the procedure for different sub-systems shall be carried out by the Users/ CTU/ STU at least once every six months under intimation to the RLDC".

Mock Black-start exercise of power stations therefore needs to be carried out in-order to ensure healthiness of black start facility. The winter months are lean hydro period and therefore appropriate time to carry out such exercises.

Therefore, the schedule of mock exercise dates for different hydro & Gas power station is proposed. The power stations may confirm and inform to all the concerned persons of control centre/ substations to facilitate the exercise.

The proposed schedule for the Mock Black start exercise is as follows:

Hydro Power Stations:

| Date | Revised Schedule date | Name of stations | Comment and Remarks |
|---|---|---|---|
| 26-Nov-21 | | * Uri-I, II HEP, Lower Jhelum HEP, Pampore GT's, Upper Sindh and Kishanganga. | Yet to be carried out. No information has been received from J&K about URI-I, Uri-II.<br><br>Integration of Mock black start exercise in SCADA system at Kishanganga power station yet to be done by BHEL (OEM). BHEL is being pursued for its expedition. Hence the Mock exercise at Kishanganga shall be possible only after completion of above by OEM. |
| 01-Dec-21 | 28-Dec-21 | * Dhauliganga | Conducted successfully except a heavy jerk at Dhauliganga HEP is observed during synchronization at Bareilly end. |
| 04-Dec-21 | 23-Dec-21 | Bairasiul | To be carried out. As requested by HP SLDC. |
| 08-Dec-21 | | *Sewa-2 | Mock Black start exercise is not possible as Power Station is under complete shutdown due to HRT repair works. |
| 10-Dec-21 | Last week of December,21 | * N. Jhakri and Rampur | Yet to be carried out. As requested by Jhakri HEP & HP SLDC. |
| 15-Dec-21 | 29-Dec-21 | Karcham and Baspa | Exercise unsuccessful due to tripping of Wangtoo-kala Amb line during island build up. |
| 17-Dec-21 | After 15 Jan 2022. | *Budhil | Yet to be carried out. As discussed with Budhil HEP the exercise is planned to be carried out after 15th January, 2022. |

| Date | Revised Schedule date | Name of stations | Comment and Remarks |
|---|---|---|---|
| 22-Dec-21 | | Parbati-3 and Sainj | Yet to be carried out. |
| 24-Dec-21 | | *Salal | Yet to be carried out. No information has been received from J&K for load management. |
| 29-Dec-21 | During March 2022 | *Chamera-3 | As requested by NHPC. |
| 31-Dec-21 | 19th January, 2022 | Koteshwar | As requested by Koteshwar HEP. |
| 05-Jan-22 | After 25 Jan 2022. | Chamera-1 and Chamera-2 | Considering the proposed complete s/d of CH-1 PS for HRT inspection w.e.f. 01st Dec. 2021, the mock black start exercise may be postponed and same may be scheduled after 25 Jan 2022. |
| 08-Jan-22 | Third week of January, 2022 | Malana-2, AD Hydro and Phozal | Yet to be carried out. |
| 12-Jan-22 | | Tehri | Yet to be carried out. |
| 15-Jan-22 | | Koldam | Yet to be carried out. |

* Mock Black start exercise not carried out during Year 2020-21.

Mock Black start procedure circulated during last exercise/ previous year may be used. The unit to be selected for black start, may preferably be different from the one tested during last year exercise. Also, **Constituents are requested to adhere to the finalized schedule of mock exercises during the current season**.

Gas Power Stations:

| Date | Name of stations |
|---|---|
| 19-Jan-22 | Anta GPS |
| 21-Jan-22 | *Auraiya GPS |
| 28-Jan-22 | *Dadri GPS |

*As informed by Bawana GPS, it does not have black start capability.*

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

| S. NO. | Utility | Hydro Power Station | Installed Capacity (MW) |
|---|---|---|---|
| 1 | J&K | Baglihar | 3x150 |
| 2 | | Baglihar stage-2 | 3x150 |
| 3 | | Lower Jhelum | 3x35 |
| 4 | | Upper Sindh | 2x11+3x35 |
| 5 | | Larji | 3x42 |
| 6 | | Bhabha | 3x40 |
| 7 | | Malana -I | 2x43 |
| 8 | | Baspa | 3x100 |
| 9 | Punjab | Anandpur Sahib | 4x33.5 |
| 10 | | RanjitSagar | 4x150 |
| 11 | | Mahi-I&II | 2x25+2x45 |
| 12 | | Rana PratapSagar | 4x43 |

| S. NO. | Utility | Hydro Power Station | Installed Capacity (MW) |
|---|---|---|---|
| 13 | Rajasthan | JawaharSagar | 3x33 |
| 14 | | Gandhi Sagar | 5x23 |
| 15 | | Dholpur GPS | 3x110 |
| 16 | | Ramgarh GPS | 1x35.5+2x37.5+1x110 |
| 17 | UP | Rihand | 6x50 |
| 18 | | Obra | 3x33 |
| 19 | | Vishnuprayag | 4x100 |
| 20 | | Srinagar (Alaknanda) | 4x82.5 |
| 21 | | | |
| | Uttarakhand | Gamma Infra | 2x76+1x73 |
| 22 | | Shravanti | 6x75 |
| 23 | | Ramganga | 3x66 |
| 24 | | Chibro | 4x60 |
| 25 | | Khodri | 4x30 |
| 26 | | Chilla | 4x36 |
| 27 | | ManeriBhali-I&II | 3x30+4x76 |
| 28 | Delhi | IP Extn GTs | 6x30+3x30 |
| 29 | | Pragati GPS | 2x104.6+1x121.2 |
| 30 | | Rithala | 3x36 |
| 31 | Haryana | Faridabad GPS | 2x137.75+1x156.07 |

During last winter, SLDCs had been requested to carry out mock drills in respect of intra-state generators and share their reports. However, the report of such exercises was not received except for Rihand Hydro in Uttar Pradesh. The information may kindly be shared by SLDCs and program for this year's mock black start exercises may kindly be apprised to NRLDC.

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

***Members may kindly discuss.***

**33. Revision of document for Reactive Power Management for Northern Region:**

Reactive Power Management document for Northern region has been revised on 30th December and the same was intimated to all constituents through letter dated 30thDecember 2021. The document can be downloaded from the link given below: https://nrldc.in/download/nr-reactive-power-management-2022/

NRLDC letter in this regard is attached as **Annexure-B-XIV**.

***All the state SLDCs are also requested to kindly prepare the reactive power document for its own control area.***

**34. Revision of document for System Restoration Procedure (SRP) for Northern Region:**

System restoration procedure document for Northern region was revised on 31stJan 2021 and document link is as below:

https://nrldc.in/wp-content/uploads/2021/01/System-Restoration-Procedure_NR_2021.pdf

Document is password protected and for password request can be sent to nrldcso2@gmail.com Constituents are requested to go through the document and indicate any modification/addition in respect of their system till date, which needs to be incorporated in the document. SLDC/Generating utilities are requested to kindly update and share the restoration procedure in respect of their state/generating station.

- Constituents asked to provide the feedback, suggestion and updated information by 31st Dec 2021.
- Data from Tehri has been received till date.
- It is once again requested to all the NR constituents to provide the feedback, suggestions and updated information's by 15th Jan 2022.

All the NR constituent may kindly go through these documents and provide the feedback, suggestion if any. All the state SLDCs are also requested to kindly prepare these documents for their own control area.

***Member 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:<br>◎ CHANDIGARH — Sep-2019<br>◎ DELHI — Nov-2021<br>◎ HARYANA — Apr-2021<br>◎ HP — Mar-2021<br>◎ J&K and LADAKH — Not Available<br>◎ PUNJAB — Aug-2021<br>◎ RAJASTHAN — Nov-2021<br>◎ UP — Oct-2021<br>◎ UTTARAKHAND — Dec-2021<br>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:<br>◎ CHANDIGARH — Not Available<br>◎ DELHI — Sep-2021<br>◎ HARYANA — Sep-2021<br>◎ HP — Oct-2021<br>◎ J&K and LADAKH — Not Available<br>◎ PUNJAB — Mar-2021<br>◎ RAJASTHAN — Sep-2021<br>◎ UP — Sep-2021<br>◎ UTTARAKHAND — Mar-2021<br>◎ BBMB — Sep-2021<br>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.<br>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:<br>◎ HARYANA — Feb-2021<br>◎ PUNJAB — Nov-2021<br>◎ RAJASTHAN — Dec-2021<br>◎ UP — Nov-2021<br>◎ NTPC — Sep-2021<br>FGD status details are enclosed as **Annexure-A.I.II**.<br>All States/utilities are requested to furnish updated status of FGD installation progress on monthly basis. |
| 5 | Information about variable charges of all generating units in the Region | The variable charges detail for different generating units are available on the MERIT Order Portal. | All states/UTs are requested to submit daily data on MERIT Order Portal timely. |

| 6 | 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 | Under Re-tendering due to Single Bid |
| viii | PUNJAB | Dhuri | 1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV | 400kV Reactors - LOA issued on dated. 17.08.2021 and date of completion of project is 18 months from the date of LOA.<br>220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA. |
| ix | PUNJAB | Nakodar | 1x25 MVAr at 220 kV | 220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA. |
| x | PTCUL | Kashipur | 1x125 MVAR at 400 kV | 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 forwarded to NLDC, POSOCO on dt. 29.04.2021. Targeted to be completed by March' 2022. |
| xii | RAJASTHAN | Bikaner | 1x25 MVAr | LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment forwarded to NLDC, POSOCO on dt. 29.04.2021. Targeted to be completed by March' 2022. |
| xiii | RAJASTHAN | Suratgarh | 1x25 MVAr | LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment forwarded to NLDC, POSOCO on dt. 29.04.2021. Targeted to be completed by March' 2022. |

| | | | | |
|---|---|---|---|---|
| xiv | RAJASTHAN | Barmer & others | 13x25 MVAr | Agreement signed on dt. 22.06.2020. Grant of Ist Installment received on dt.19.02.21 & technical bid opened on dt.22.10.2021. Now, the shortfalls in the bids have been uploaded and are |
| xv | RAJASTHAN | Jodhpur | 1x125 MVAr | Agreement signed on dt. 22.06.2020. Grant of Ist Installment received on dt.19.02.21 & technical bid opened on dt.22.10.2021. Now, the shortfalls in the bids have been uploaded and are |

**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<br>Commissioning of Bays<br>Jun/Sep'14 | Shajahnapur-Azimpur D/C line | | Connected to load on 28.07.2021 |
| | | | | LILO of 220kV Shajahanpur - Sitapur at Shajahanpur PG | Dec'21 | Updated in 188th 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<br>1st -Dec'13<br>2nd - Mar'14<br>3rd - Mar'19<br>Commissioning of Bays<br>4 bays - Dec'13<br>2 bays - Mar'14<br>2 bays - Mar'19 | 220 kV D/C Hamirpur-Dehan line.<br>Original schedule: Dec' 2020 | Dec'21 | Updated in 188th OCC |
| 3 | Sikar 400/220kV, 1x 315 MVA S/s | 2 Nos. of 220 kV bays | Commissioned (date not available) | Not available | Dec'21 | Work order was placed on dt. 13.04.2020 to M/s A to Z Ltd. Work started on dt. 4.12.2020. S/S-32/32, T/E-31/32 (T/E at 27 no. location was pending due to Rajasthan High Court stay), T/S- 7.62/8.122 km completed. Now the stay has been vacated and balance work started. Tentative date of completion of work / line charging is 31.12.2021. |
| 4 | Bhiwani 400/220kV S/s | 6 nos. of 220kV bays | Commissioned (date not available) | 220kV Bhiwani (PG) - Isherwal (HVPNL) D/c line | Mar'22 | 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 (30.09.2021)** |
| --- |
| MEJA Stage-I |
| RIHAND STPS |
| SINGRAULI STPS |
| TANDA Stage-I |
| TANDA Stage-II |
| UNCHAHAR TPS |
| **UPRVUNL (20.12.2021)** |
| ANPARA TPS |
| HARDUAGANJ TPS |
| OBRA TPS |
| PARICHHA TPS |

| **PSPCL (20.12.2021)** |
| --- |
| GGSSTP, Ropar |
| GH TPS (LEH.MOH.) |
| **RRVUNL (09.12.2021)** |
| CHHABRA SCPP |
| CHHABRA TPP |
| KALISINDH TPS |
| KOTA TPS |
| SURATGARH SCTPS |
| SURATGARH TPS |

# Updated status of FGD related data submission

| |
|---|
| **Lalitpur Power Gen. Co. Ltd. (22.10.2021)** |
| Lalitpur TPS |
| **Lanco Anpara Power Ltd. (22.10.2021)** |
| ANPARA-C TPS |

| |
|---|
| **HGPCL (17.12.2021)** |
| PANIPAT TPS |
| RAJIV GANDHI TPS |
| YAMUNA NAGAR TPS |

| |
|---|
| **Adani Power Ltd. (28.10.2021)** |
| KAWAI TPS |

| |
|---|
| **Rosa Power Supply Company (22.10.2021)** |
| Rosa TPP Phase-I |
| **Prayagraj Power Generation Company Ltd. (03.01.2022)** |
| Prayagraj TPP |
| **APCPL (30.09.2021)** |
| INDIRA GANDHI STPP |

# Pending submissions

| **GVK Power Ltd.** |
| --- |
| GOINDWAL SAHIB |

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

# Target Dates for FGD Commissioning (Utility-wise)

| | |
|---|---|
| **Adani Power Ltd.** | KAWAI TPS U#1 (Target: 31-08-2020), 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) |
| **HGPCL** | PANIPAT TPS U#6 (Target: 30-04-2021), PANIPAT TPS U#7 (Target: 28-02-2021), PANIPAT TPS U#8 (Target: 31-12-2020), RAJIV GANDHI TPS U#1 (Target: 30-04-2022), RAJIV GANDHI TPS U#2 (Target: 28-02-2022), YAMUNA NAGAR TPS U#1 (Target: 31-12-2021), YAMUNA NAGAR TPS U#2 (Target: 31-10-2021) |

| | |
|---|---|
| **NTPC** | DADRI (NCTPP) U#1 (Target: 31-12-2020), DADRI (NCTPP) U#2 (Target: 31-10-2020), DADRI (NCTPP) U#3 (Target: 31-08-2020), DADRI (NCTPP) U#4 (Target: 30-06-2020), DADRI (NCTPP) U#5 (Target: 30-06-2022), DADRI (NCTPP) U#6 (Target: 30-06-2022), RIHAND STPS U#1 (Target: 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: 31-03-2023), SINGRAULI STPS U#2 (Target: 31-03-2023), SINGRAULI STPS U#3 (Target: 31-03-2023), SINGRAULI STPS U#4 (Target: 31-03-2023), SINGRAULI STPS U#5 (Target: 31-03-2023), SINGRAULI STPS U#6 (Target: 31-01-2023), SINGRAULI STPS U#7 (Target: 31-01-2023), UNCHAHAR TPS U#1 (Target: 30-09-2023), UNCHAHAR TPS U#2 (Target: 30-09-2023), UNCHAHAR TPS U#3 (Target: 31-12-2023), UNCHAHAR TPS U#4 (Target: 31-12-2023), UNCHAHAR TPS U#5 (Target: 31-12-2023), UNCHAHAR TPS U#6 (Target: 30-09-2022), MEJA Stage-I U#1 (Target: 31-12-2022), MEJA Stage-I U#2 (Target: 31-12-2022), TANDA Stage-I U#3 (Target: ), TANDA Stage-I U#4 (Target: ), TANDA Stage-II U#3 (Target: 31-12-2022), TANDA Stage-II U#4 (Target: 31-12-2022) |

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

| | |
|---|---|
| **Rosa Power Supply Company** | ROSA TPP Ph-I U#1 (Target: 31-12-2024), ROSA TPP Ph-I U#2 (Target: 31-12-2024), ROSA TPP Ph-I U#3 (Target: 31-10-2024), 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) |
| **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**

**MIS Report for Status of Islanding Schemes**

**Implemented Schemes**

| Sl. No. | Islanding Scheme | SLDC | Status | Submission of Self Certification of Healitheness | SOP | SCADA Display Page | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | Delhi IS | Delhi | Implemented | Yes | Yes | Yes | List of officials in-charge and relays in Delhi IS submitted by DTL on 21.12.2021. |
| 2 | NAPS IS | UP | Implemented | Yes | Yes | Yes | - |
| 3 | RAPS IS | Rajasthan | Implemented | Yes | Yes | Yes | List of officials in-charge, format for generation, islanding scheme sld and relays in RAPP IS submitted by RVPN on 04.12.2021. |

**Under Implementation/ Newly Proposed/Under Discussion**

| Sl. No. | Islanding Scheme | SLDC | Status | Details of progress | DPR for PSDF funding (Required / Not Required) | Timelines Status - Proposed/Actual | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Study | | Design | | Approval | | Procurement | | Commissioning | |
| | | | | | | Proposed | Actual | Proposed | Actual | Proposed | Actual | Proposed | Actual | Proposed | Actual |
| 1 | Lucknow-Unchahar IS | UP | Under Implementation | UP has sent the request to CPRI vide letter dtd 09.11.2021 to provide the techno-commercial offer for stability study and hardware requirement of Islanding Schemes. | | - | | - | - | - | - | - | - | - | - |
| 2 | Agra IS | UP | Newly Proposed | UP has sent the request to CPRI vide letter dtd 09.11.2021 to provide the techno-commercial offer for stability study and hardware requirement of Islanding Schemes. | | - | | - | - | - | - | - | - | - | - |
| 3 | Jodhpur-Barmer-Rajwest IS | Rajasthan | Newly Proposed | NRPC Sectt. has forwarded the scheme to NRLDC for examination on 26.10.2021 | RVPN will propose to avail PSDF funding | - | | - | - | - | - | - | - | - | - |
| 4 | Patiala-Nabha Power Rajpura IS | Punjab | Newly Proposed | Punjab has sent the offer to CPRI for study of Islanding Schemes. | | - | | - | - | - | - | - | - | - | - |
| 5 | Pathankot-RSD IS | Punjab | Newly Proposed | Punjab has sent the offer to CPRI for study of Islanding Schemes. | | - | | - | - | - | - | - | - | - | - |
| 6 | Talwandi Sabo IS | Punjab | Newly Proposed | Punjab has sent the offer to CPRI for study of Islanding Schemes. | | - | | - | - | - | - | - | - | - | - |
| 7 | Dehradun IS | Uttarakhand | Newly Proposed | - | | - | - | - | - | - | - | - | - | - | - |
| 8 | Jammu-Salal IS | J &K | Under Discussion | - | | - | - | - | - | - | - | - | - | - | - |
| 9 | Suratgarh IS | Rajasthan | Under Discussion | NRPC Sectt. has forwarded the scheme to NRLDC for examination on 26.10.2021 | RVPN will propose to avail PSDF funding | - | | - | - | - | - | - | - | - | - |
| 10 | Chamba-Chamera IS | HP | Under Discussion | - | | - | - | - | - | - | - | - | - | - | - |
| 11 | Kangra-Chamba-Bairasuil IS | HP | Under Discussion | - | | - | - | - | - | - | - | - | - | - | - |
| 12 | Kullu-Dehar IS | HP | Under Discussion | - | | - | - | - | - | - | - | - | - | - | - |
| 13 | Butari-Jamsher-Verpal IS | Punjab | Under Discussion | - | | - | - | - | - | - | - | - | - | - | - |
| 14 | Kargil-Ladakh IS | Ladakh | Under Discussion | - | | - | - | - | - | - | - | - | - | - | - |

Ref No.: NTL/R&C/21-22/310 Date: 09.01.2022

To,
**Chief Engineer (PSE&TD)**
**Central Electricity Authority**
Ministry of Power, Government of India
Sewa Bhawan, Rama Krishna Puram
Sector-1, New Delhi-110066

**Subject: Operation and Maintenance of 400 kV D/C Twin Moose Sambha – Amargarh Transmission Line of NRSS XXIX Transmission Limited ('NTL') - BRO road construction affecting tower and possible damage to line Reg. - Utmost Urgent**

**Reference:** Detailed references enclosed as Annexure-1.

Sir,

1. As a part of periodic update NTL had submitted the fortnightly status report on location of subject transmission line impacted due to the road expansion work carried out by BRO. NTL would like to submit an intermittent status update on account of inclement weather conditions at location #286 and resulting changes in the conditions. NTL would like to inform you that there has been fresh rainfall accompanied by snowfall on 08.01.2022 at the location resulting into additional stress on the complete section including upper hill and lower hill ridges at location #286 of subject transmission line.

2. Observations at the above-mentioned location are detailed as under: -
    - Fresh cracks have been observed in the new revetment constructed, suggesting further settlement of soil and downhill landmass movement.
    - There is settlement of nearby excavated soil, also settlement of soil near chimney of leg C of the tower at location 286.
    - Stress is observed in the welded joints, which indicates that there is further change in dimensions of the tower body.
    - Photographs giving details of cracks in revetment, settlement of soil, stress in welded joints & snowfall aforementioned conditions are attached as Annexure-II.
    - As per the measurements taken corresponding to change in foundation/tower footing parameters, no changes were observed till 07.01.2022.
    - Measurements for 08.01.22 to till date could not be taken because of heavy snowfall.
    - As provided in our fortnightly report dated 05.01.22, NTL has mobilized the ERS (Under transit) as a backup. However, placement of ERS in case of complete hill slide is still doubtful and will depend upon the actual site conditions at that point in time.
    - We have also sensitised local administration for resettlement of locals near the tower area, considering the probable threat of hill slide and consequent tower collapse.

With the above turn of events, specifically rain and snowfall, the stress on the tower has considerably increased, which may result into tower collapse, including threat to human life and property.

This is for the kind information and records of CEA.

Thanking You.
Yours Sincerely,

**Authorised Signatory**
For NRXX-XXIX Transmission Limited

Copy To: -

1. **Shri Goutam Roy**
   **Member (Power System)**
   Central Electricity Authority
   Ministry of Power
   Government of India
   Sewa Bhawan, Rama Krishna Puram,
   Sector-1, New Delhi-110066.

2. **Member Secretary,**
   **Northern Region Power Committee**
   Shaheed Jeet Singh Marg,
   Qutab Institutional Area,
   New Delhi – 110016

3. **The Chief Electrical Inspector,**
   **Central Electricity Authority,**
   **Ministry of Power**
   Government of India
   NRPC Building, 18-A, Shaheed Jeet
   Singh Marg, Katwaria Sarai,
   New Delhi-110016.Sewa Bhawan, New Delhi

4. **In-Charge,**
   **Northern Regional Load Dispatch Centre**
   18A- Shaheed Jeet Singh Marg,
   Qutab Institutional Area,
   New Delhi – 110016

**Annexure-1**

**Correspondences on the subject matter:-**

1. NTL Letter: NRSS XXIX/2020-21/46 dt 10.08.21
2. BRO Letter: 80843/42/EPC Cell dt 24.08.2021
3. Mail dated 07.10.2021 at 2000 Hrs by the Project Director of M/s Dharamraj Contracts India Pvt. Ltd. (EPC Contractor of BRO)
4. NTL E-mail dated 07.10.2021 at 2330 Hrs in response to mail mentioned at 3 above
5. Your Letter No. 8291/CE(P)SPK/01/EPC/2020-21/153/E8 dated 08.10.2021 submitted vide mail of the same date in response to our e-mail mentioned at 4 above
6. NTL letter dated 09.12.2021 to BRO.
7. Different Meetings convened by Central Electricity Authority (CEA) of 02.11.2021 and 01.12.2021 and corresponding minutes released for the same.
8. NTL Mail to BRO dated 15.12.2021 informing details of geo-technical investigation on date 23.12.2021.
9. Letter from M/s Dharamraj Contracts (I) Pvt. Ltd. Ref no. DCIPL/RTS Jammu/Indigrid/362 Dated 17.12.2021.

10. NTL letter number NRSS-XXIX/R&C/2021-22/281 to BRO dated 20.12.2021.

**Annexure-II**

Fig: - Photograph showing cracks in new revetment.

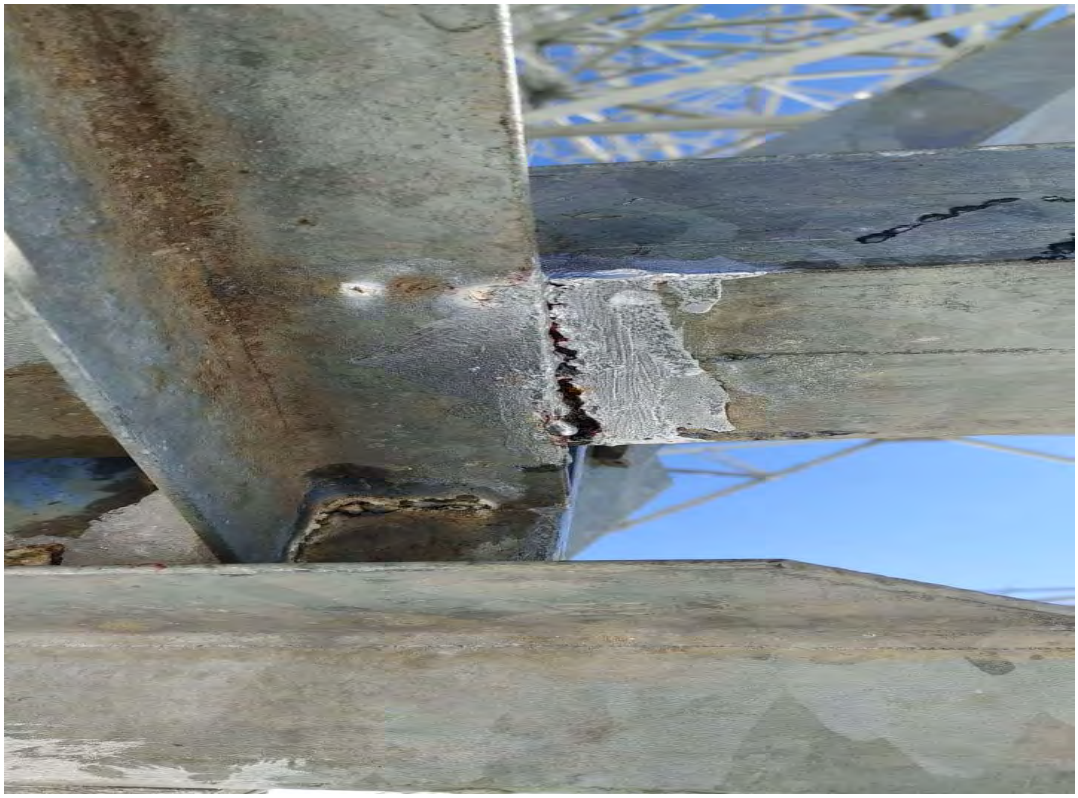


Fig:- Photograph Showing stress in welded joints of tower at location 286.

Fig:- Photograph showing cracks

Fig:- Photograph showing settlement of soil.

Fig:- Photograph showing stress in welded joints.

**Annexure-A-IV**

PUNJAB STATE TRANSMISSION CORPORATION LIMITED

PUNJAB STATE TRANSMISSION CORPORATION LIMITED
Regd. Office: - PSEB Head Office, The Mall, Patiala - 147001, Punjab, India.
CIN - U40109PB2010SGC033814

NRPC Diary
दिनांक/Date.....

To

Sh. K. Sreekant,
CMD/Power Grid,
Gurgaon,

उ.क्षे.वि.स. डायरी
पत्र सं./No. 33
दिनांक/Date 11/01/2022
NRPC Diary

**Subject:** **Augmentation of 1×315 MVA ICT with 500 MVA at PGCIL 400 KV S/S Ludhiana.**

In order to meet power requirement of Punjab during next paddy season (2022), enhancement in ATC/TTC is urgently required to import power through ISTS points. In 4thNRPCTP held on 05-10-21 and 12-10-21 requirement put up by PSTCL for augmentation of 315 MVA, 400/220 kV ICT at Ludhiana (PGCIL) and Patiala (PGCIL) for Paddy 2022 and 2023 respectively was deliberated and agreed upon. The matter was also deliberated in 47th TCC and 49th NRPC meeting wherein it was, however, decided to bring up the matter in NRPCTP first as meeting of NRPCTP happened after TCC/NRPC meeting.

In this regard following issues are required to be dealt with urgently.

1) Work of Augmentation at Ludhiana is required to be carried out before May 2022. As consented by PSTCL, spare 500 MVA ICT lying at PGCIL 400 KV Malerkotla is to be shifted to Ludhiana, for which BOD of PGCIL is to give approval for expenditure to be incurred as per NRPC decision

2) PSTCL is bringing up new 400 KV S/S Dhanansu, near Ludhiana. The ICT for the project was to be spared from PSTCL's substation Nakoder, which has been delayed. Given the high loading conditions/demand of the state, energisation of 400KV S/S Dhanansu is required before Paddy season 2022 for increasing the ATC/ TTC limit of Punjab. The work of construction of substation yard is going on & is likely to be completed by May 2022. It is requested that 315 MVA ICT being spared from Ludhiana in Punjab control area be provided to PSTCL on the residual book value for installation at Dhanansu.

**A Venu Prasad, IAS**
**CMD PSTCL**

NO-641-648/SPS/DG
Dt- 29-12-2021

**CC:-**
1. Union Power Secretary, MOP, GOI, New Delhi.
2. Member Secretary, NRPC, New Delhi.

# Augmentation of 1x315 MVA ICT with 500 MVA at PGCIL 400 kV S/S Ludhiana.

From: SE Planning (se-planning@pstcl.org)

To: secy-power@nic.in; ms-nrpc@nic.in

Cc: ce-tl@pstcl.org; srxen-dir-tech@pstcl.org

Date: Friday, December 31, 2021, 12:02 PM GMT+5:30

For necessary action please.

Regards

SE/Planning,
PSTCL, Patiala.

CC.pdf
551.4kB

**Annexure-A-V**

## GENERATING UNITS UNDER OUTAGE FOR MORE THAN THREE (3) MONTHS

**Northern Region**

| State | Station | Unit No. | Date of going into Maintenance | Planned Maintenance (MW) | Forced Maintenance (Major) (MW) | Forced Maintenance (Minor) (MW) | Others Maintenance (MW) | Inputs from States | Status in NRLDC report |
|---|---|---|---|---|---|---|---|---|---|
| Haryana | PANIPAT TPS | 6 | 23-Jul-20 | 0.00 | 210.00 | 0.00 | 0.00 | Out due to non-approval of tariff rate by HERC. | Tariff not approved by HERC |
| Haryana | RAJIV GANDHI TPS | 2 | 2-Mar-21 | 0.00 | 600.00 | 0.00 | 0.00 | Overhauling work commenced on 02.03.2021. During carrying out inspection of the HIP turbine, a crack was found throughout the periphery of balancing drum (HP side) of HIP rotor. Rotor is being replaced and RGTPS Khedar Unit-2 is likely to be ready for operation by **08.04.2022**. | Capital Overhauling/turbine replacement. Likely revival data: 01-09-2022 |
| Punjab | GH TPS (LEH.MOH.) | 2 | 21-Sep-21 | 0.00 | 210.00 | 0.00 | 0.00 | NA | Reserve Shutdown |
| Rajasthan | DAE (RAJASTHAN) | 1 | 9-Oct-04 | 0.00 | 100.00 | 0.00 | 0.00 | NA | Subject to regulatory clearance. unit is to be decommissioned. |
| Rajasthan | CHHABRA-I PH-2 TPP | 3 | 9-Sep-21 | 0.00 | 250.00 | 0.00 | 0.00 | NA | Due to ESP structure damage |
| Rajasthan | CHHABRA-I PH-2 TPP | 4 | 9-Sep-21 | 0.00 | 250.00 | 0.00 | 0.00 | NA | Due to ESP structure damage |
| Rajasthan | GIRAL TPS | 1 | 10-Jul-14 | 0.00 | 125.00 | 0.00 | 0.00 | NA | Unit was out on bed material leakage and it is likely to be scrapped. |
| Rajasthan | GIRAL TPS | 2 | 27-Jan-16 | 0.00 | 125.00 | 0.00 | 0.00 | NA | Unit was out on bed material leakage and it is likely to be scrapped. |
| Uttar Pradesh | HARDUAGANJ TPS | 7 | 12-Aug-21 | 0.00 | 105.00 | 0.00 | 0.00 | Harduaganj unit no 7 of 105 MW is under Reserve shutdown as per Merit Order Stack | Reserve Shutdown |
| Uttar Pradesh | OBRA TPS | 7 | 26-Jun-10 | 0.00 | 94.00 | 0.00 | 0.00 | Unit is obsolete. | |
| Uttar Pradesh | PARICHHA TPS | 1 | 7-Jul-16 | 0.00 | 110.00 | 0.00 | 0.00 | Parichha A unit no 1 of 110 MW is obsolete | |
| Uttar Pradesh | PARICHHA TPS | 2 | 30-Dec-19 | 0.00 | 110.00 | 0.00 | 0.00 | Parichha A unit no 2 of 110 MW is obsolete | |

# State-wise details of Transmission constraints

# Statewise transmission constraints in Northern Region

| Sl.NO. | Name of the state | Antecedent condition | Likely constraints | Future element to relieve constraints | | Executing agency | Details of SCM/plan/forum | Date of approval | Expected date of SCOD |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Punjab | Demand >12500MW; Import >7000MW | N-1 non-compliance of 400/220kV ICTs at Rajpura, Nakodar, Ludhiana. High loading of 220kV lines such as 220kV Muktsar-Malout, Amritsar-Verpal D/C, 220kV Dhuri-Sunam D/C, 220kV Rajpura-Gobindgarh D/C, 220kV Ludhiana-Laltokalan and 220 kV Jalandhar-Kartarpur | ISTS | 400kV Dhanansu planned to relieve loading of Ludhiana ICTs. Till commissioning of Dhanansu substation SPS may be installed (if required) by PGCIL after discussions with PSTCL/ NRLDC. | PSTCL | 3 NRSCT | 24-May-19 | Mar-23 |
| | | | | Intra State | 500MVA ICT at Rajpura, augmentation at Nakodar from 2*315MVA to 2*500MVA | PSTCL | Rajpura- 3 NRSCT held on 24.05.2019, Nakodar- 3 NRPCTP held on 19.02.2021 | | Rajpura ICT (Apr-2022), Nakodar ICTs (May-2023) |
| 2 | Haryana | Demand >11000MW; Import >8000MW | N-1 non-compliance at 400/220kV Deepalpur, Kurukshetra and Panipat ICTs. High loading of 220kV Hisar-HisarIA | ISTS | 500MVA ICT at Kurukshetra | PGCIL | 4 NRPCTP | 05-Oct-21 | NA |
| | | | | Intra State | 500MVA ICT at Deepalpur | HVPNL | 4 NRPCTP | 05-Oct-21 | NA |
| 3 | UP | Demand>24000 MW; Import >13000MW | N-1 non-compliance at 400/220kV Sohawal(PG), Tanda, Lucknow(PG), Sarnath, Azamgarh, Gorakhpur(UP) ICTs . | ISTS | 500MVA ICT at Sohawal | PGCIL | 3 NRPCTP | 19-Feb-21 | NA |
| | | | | Intra State | Capacity augmentation at Gorakhpur(UP) from 1055MVA to 1315MVA. 400/220kV Basti substation likely to ease constraints at Sohawal & Tanda (400kV commissioned) | UPPTCL | Meeting between CEA, CTU, POSOCO held on 31.12.2021 | | NA |
| 4 | Rajasthan | Demand>13000 MW; Import >6000MW | N-1 non-compliance at 400/220kV Ajmer, Bikaner, Bhinmal, Merta, Jodhpur, Chittorgarh ICTs. Severe low voltages at Hindaun & Alwar (340-350kV). High loading of 400kV Anta-Kota. Highly loading of 220kV Bassi-Dausa, 220kV Sikar-Sikar, 220kV Kankroli-Kankroli | ISTS | Feedback shared with CEA/CTU through operational feedbacks. Also, regularly discussed in OCC meetings. | NA | NA | NA | NA |
| | | | | Intra State | | NA | NA | NA | NA |
| 5 | Delhi | Demand >7000MW; Import >6000MW | N-1 non-compliance of 400/220kV ICTs at Mundka and Bamnauli | ISTS | 400/220kV S/s Dwarka by LILO of 400kV Bamnauli-Jhatikara S/C | PGCIL | 34 NRSCT | 08-Aug-14 | 220 KV GIS charged in March'20. 400 kV GIS is ready but charging will be done matching with LILO line getting delayed due to forest clearance issue in Delhi. |
| | | | | Intra State | One ICT under long outage at 400/220kV Mundka due to fire since 20.09.2019. 400/220kV Gopalpur substation under construction by LILO of under commissioning 400kV Bawana-Maharanibagh D/C. | DTL | NA | NA | NA |

# Statewise transmission constraints in Northern Region

| Sl.NO. | Name of the state | Antecedent condition | Likely constraints | Future element to relieve constraints | | Executing agency | Details of SCM/plan/forum | Date of approval | Expected date of SCOD |
|---|---|---|---|---|---|---|---|---|---|
| 6 | J&K and Ladakh U/Ts | Import >2000MW | 400/220kV Amargarh ICTs, High loading of 220kV lines from Wagoora & Sambha | ISTS | Addition of new 1x315 MVA( or 1x500 MVA if possible), 400/220kV ICT at Amargarh | STERLITE | 3 NRPCTP | 19-Feb-21 | Apr-26 |
| | | | | Intra State | | NA | NA | NA | NA |
| 7 | Uttarakhand | Import >1500MW | High loading of 400/220kV Dehradun and Kashipur ICTs.<br>High loading of 220kV Khodri-Majri D/c | ISTS | | NA | NA | NA | NA |
| | | | | Intra State | | NA | NA | NA | NA |
| 8 | HP | Import>1300MW | High loading of 400/220kV Nallagarh ICTs<br>High loading of 220kV Nallagarh-Upernangal D/C and 220kV Hamirpur-Hamirpur D/C | ISTS | | NA | NA | NA | NA |
| | | | | Intra State | | NA | NA | NA | NA |

**Annexure-A-VII**

पावरग्रिड POWERGRID

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

Ref:- N1/AM/

Date:- 12th January'20221

**Member Secretary (NRPC),**
18-A, Shaheed Jeet Singh Sansanwal Marg,
Katwaria Sarai, New Delhi - 110016

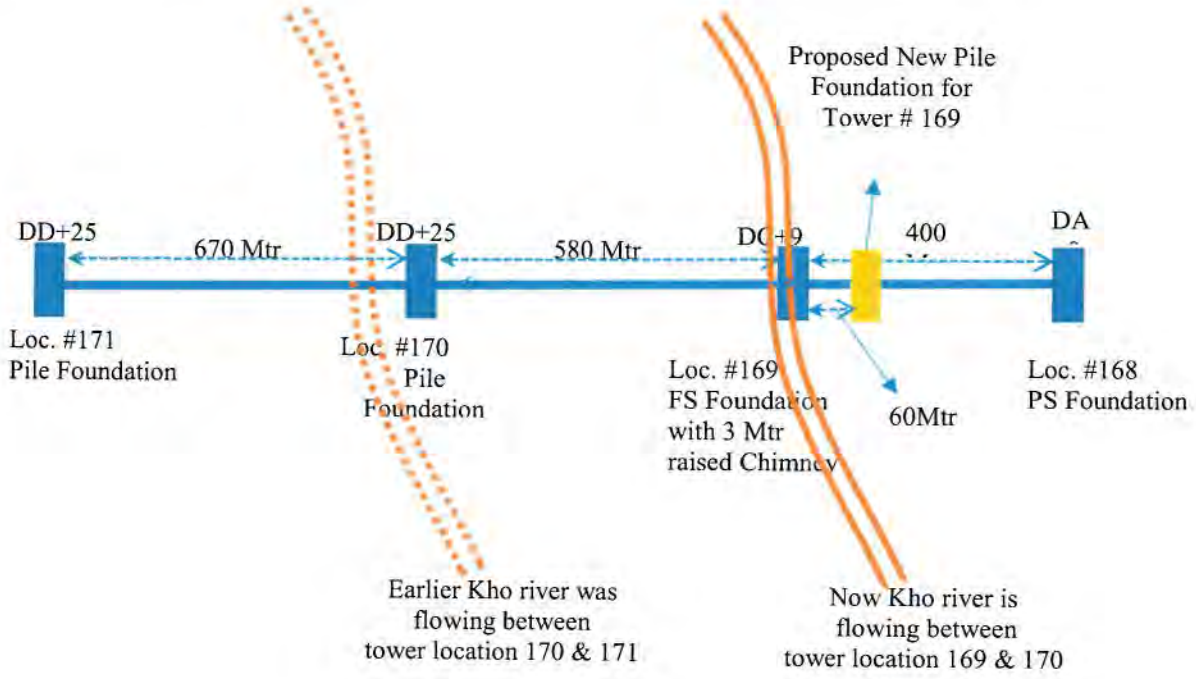
Subject:- **Outage required for remedial action / rectification to be carried out in submerged tower no. # 169 in 400KV D/C Roorkee-Kashipur Line due to change in river course under natural calamity ( i.e. deemed available) .**

**Sir,**

During routine patrolling of the aforesaid said line, it was found that soil at 02 legs of foundation of Tower Loc. # 69 (DC+9) washed away by the Kho River due to change of River course. Presently, B &C legs of foundation are found totally submerged in water and leg A & D found approx. 5&7 mtrs away from the river bank.

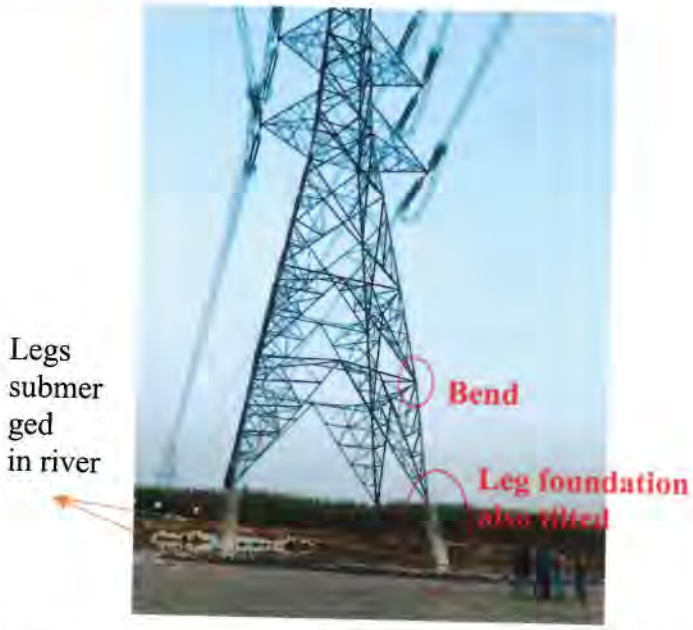
| | |
|---|---|
| Name of Line :- | 400KV D/C Roorkee - Kashipur |
| Line length :- | 150.8Kms |
| DOC :- | 23/12/2015 |
| Affected tower location:- | 169 |
| Type of tower :- | DC+9 with 3mtr raised chimney |
| Reason :- | Change in Kho river course |

A sketch in this regard is as below:-



As can been seen from sketch, the river was earlier flowing between tower no. 170 & 171, therefore the foundations of tower no. 170 & 171 were constructed as pile foundation and tower loc. #169 was approx. 580Mtr away from river bank. Now as per information received from villagers that the river has changed his course recently (as per verbal discussion with villagers) resulted two legs of foundation submerged in river and is in critical condition.

The leg B & C of tower no. 169 members is found bend and deformation of few bracing member were also noticed. The present condition is as below:-




Tower Loc. #169 of 400KV Roorkee – Kashipur Line

Therefore, we are forced to shift this tower after constructing a new pile foundation. Meanwhile, the said line to be shifted on ERS towers and tentative outage required for this purpose is as below:-

**For shifting of line on ERS towers:-** 15days – in Jan'21/ Feb'21
**For shifting of line on normal tower after constructing new pile foundation:-** 15days – March'21 / April'21

In view of above, it is submitted herewith that as this shifting of tower on pile foundation as well on ERS towers is being done by POWERGRID in view of change in river course, **which come under natural calamity and outage required for this purpose is required for consideration as deemed available**.

Thanking You,

Your's faithfully

12/01/2022

**(A. K. Behera)**
Chief GM(AM), NR1

**Copy :-**

i) **Executive Director** (NRLDC)
Power System Operation Corporation Limited
B-9, 1st Floor, Qutab Institution Area, Katwaria Sarai, New Delhi – 110 016

**Copy for kind information please:-**

i) ED, NR1
ii) ED(AM),CC

**Annexure-B-I**

# Fw: Regarding continuous overdrawl from grid.

Alok Kumar (आलोक कुमार)

Wed 05-01-2022 10:10

To: Gaurav Malviya (गौरव मालवीय) <gauravmalviya@posoco.in>;

1 attachments (54 KB)

hp drawl.JPG;

---

**From:** NRLDC SO
**Sent:** Tuesday, January 4, 2022 7:32 PM
**To:** pcshimla2003@gmail.com
**Cc:** N Nallarasan (एन न रासन); H K Chawla (एच के चावला); M M Hassan (एम एम हसन); nrldc_hods_tech; NRLDC Scheduling
**Subject:** Regarding continuous overdrawl from grid.

Sir,

It is being observed that HP is overdrawing to the tune of 200-680 MW since last 6 blocks . Your current overdrawl is 670 MW.

You are requested to increase your internal generation, take full requisition in ISGS ,book available URS and purchase through RTM/STOAs and maintain drawl as per schedule and facilitate in keeping frequency within IEGC band for safe and reliable grid operation.

Overdrawl messages have already been issued and you have repeatedly been asked to maintain your drawl as per schedule.

Thanks & Regards,

Thanks & Regards,

NRLDC, SO-I Dept.

NRLDC, Power System Operation Corporation Ltd.
18-A, Saheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016
Ph. : 011-26519406, 46560411,40224601, 40224602
Orange : 20112012/14/15/ 20112151/52
M. - 08448167373
EPbax : 116

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

**संदर्भ सं°:** NRLDC/SO-I/151/ **दिनांक :** 4th January 2022

**To**

Chief Engineer (SO & Comml.),
Haryana Vidyut Prasaran Nigam Ltd.,
Shakti Bhawan, Sector-6,
Panchkula, Haryana-134 109

**Sub:** Low Frequency excursions vis-a-vis over-drawal by Haryana.

Sir,

This is in reference to over-drawal by Haryana at low frequency excursions. Trend of low frequency excursions (5 minutes' average) and corresponding over-drawal by Haryana on 01, 02 & 03 January 2022 is attached as Annexure-I. From the annexure, it may be seen that at low frequency excursions, Haryana has been over-drawing from the Grid, which has crossed even 300MW at some instances.

It has been taken up with the SLDC multiple times in the form of operational messages and deviation messages from NRLDC control room, however Haryana is still unable to maintain its drawal within schedule during low frequency instances. These over-drawal at low frequency excursions occurring almost on daily basis are reducing the grid reliability and endangering the grid security.

As you are aware, persistent demand of Northern Region, coupled with forced outage and reserve shutdown of multiple thermal generating units has resulted alarming situation for the Grid operators. In addition to above, hydro and wind generation of Northern region have also started depleting. In such a scenario, any generation reduction due to tripping of machines and over-drawal by beneficiaries may result NR Inter regional imports breaching ATC/TTC limits, which may lead to serious threat to Grid security.

Therefore, it is requested to kindly advise the concerned to take following measures to restrict these low frequency excursions :

1. Meticulous load forecasting and operational planning may be carried out.
2. Restrict the load variation to the tune of limits specified in IEGC through staggering of load.

3. Expedite the revival of intra-state thermal machines under reserve shutdown and minor maintenance.
4. Maintain drawal from the grid as per schedule by proper ramping of on bar own generation in consonance with the demand variation.
5. Real time portfolio management through sale/purchase of power in STOA (bilateral, contingency and Real time market) and requisition of available URS from ISGS.

Your cooperation shall be highly appreciated for maintaining the Grid parameters within permissible limits.

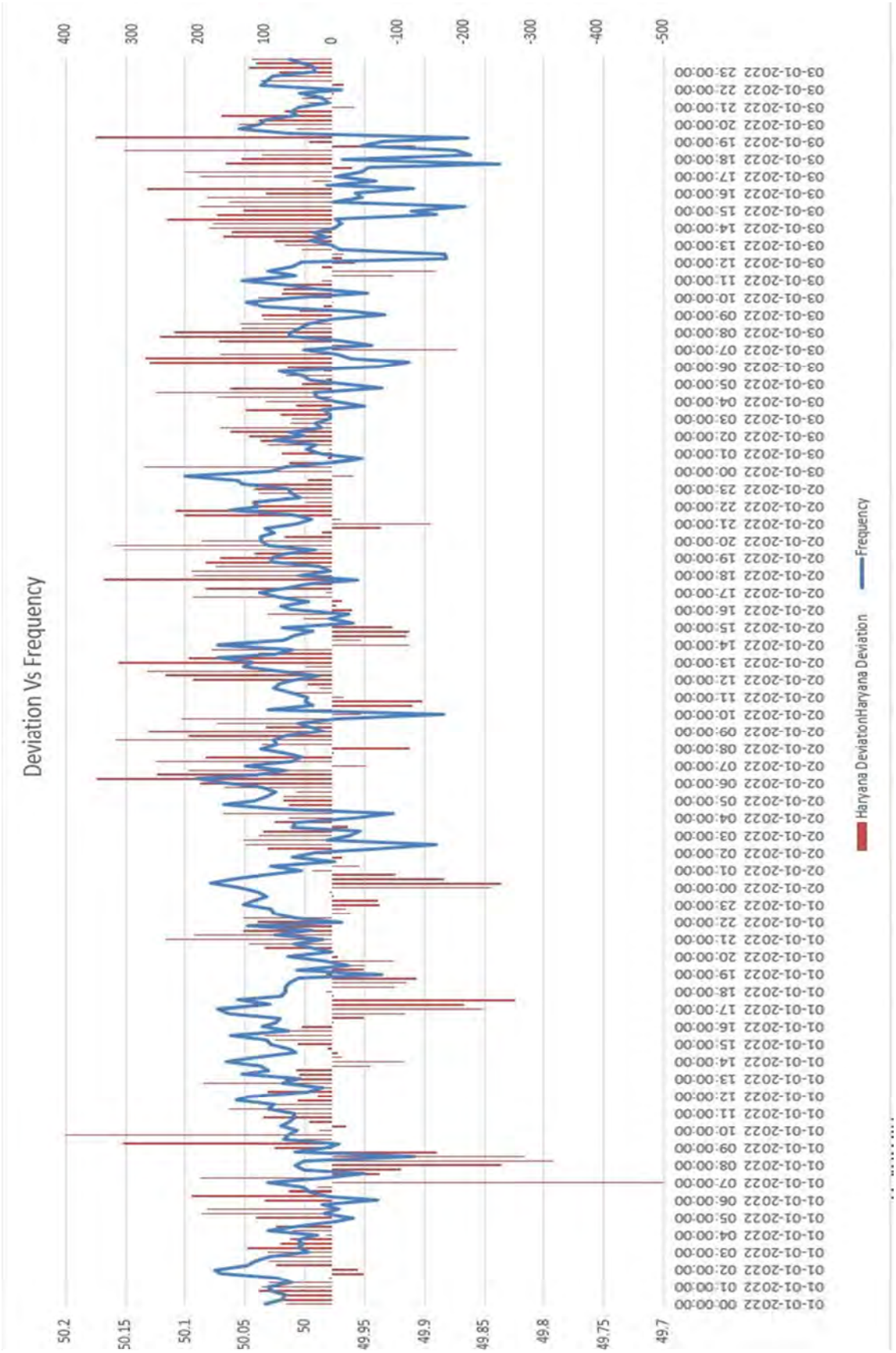
Thanks and Regards

H.K.Chawla

H. K. Chawla
CGM(SO-I & SL-II), NRLDC

Copy for kind Information :

1. Member Secretary, NRPC
2. Executive Director, NLDC
3. Executive Director, NRLDC


Deviation Vs Frequency
Haryana Deviation
Frequency
400
300
200
100
0
-100
-200
-300
-400
-500
50.2
50.15
50.1
50.05
50
49.95
49.9
49.85
49.8
49.75
49.7
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03-01-2022 19:00:00
03-01-2022 20:00:00
03-01-2022 21:00:00
03-01-2022 22:00:00
03-01-2022 23:00:00

**Annexure-B-II**

Gmail

**NRLDC SO-II <nrldcso2@gmail.com>**

# Pre-winter maintenance of transmission lines

**NRLDC SO-II** <nrldcso2@gmail.com> Wed, Jan 5, 2022 at 3:27 PM
To: rtamc jammu <rtamcjammu@powergrid.co.in>, Power System <system.uppcl@gmail.com>, ASE Operation <ase-sldcop@pstcl.org>, XEN LD&PC Panipat <sldcharyanacr@gmail.com>, Energy Accounting Cell SLDC Delhi <dtldata@gmail.com>, "Superintending Engineer (R&A)" <sera@upsldc.org>, "O/o SE (SOLD), RVPN, Jaipur" <se.ldrvpnl@gmail.com>
Cc: "Alok Kumar (आलोक कुमार)" <alok.kumar@posoco.in>

**REMINDER-I**

Sir,

As per trailing mail and discussions in 187, 188, 189 & 190 OCC meeting, it is once again requested to provide details of the lines for which pre-winter maintenance activities have been carried out along with the plan for remaining lines.

On Mon, Nov 15, 2021 at 3:21 PM NRLDC SO-II <nrldcso2@gmail.com> wrote:

> Sir,
>
> With reference to discussion in 187 and 188 OCC meeting, it is requested to provide details of the lines for which pre-winter maintenance activities have been carried out along with the plan for remaining lines.
>
> आभार ,
> गौरव मालवीय
> उ० ◌े० भा० ◌े० के०
> नई दिी

--
आभार ,
गौरव मालवीय
उ० ◌े० भा० ◌े० के०
नई दिी

**Annexure-B-III**

MW

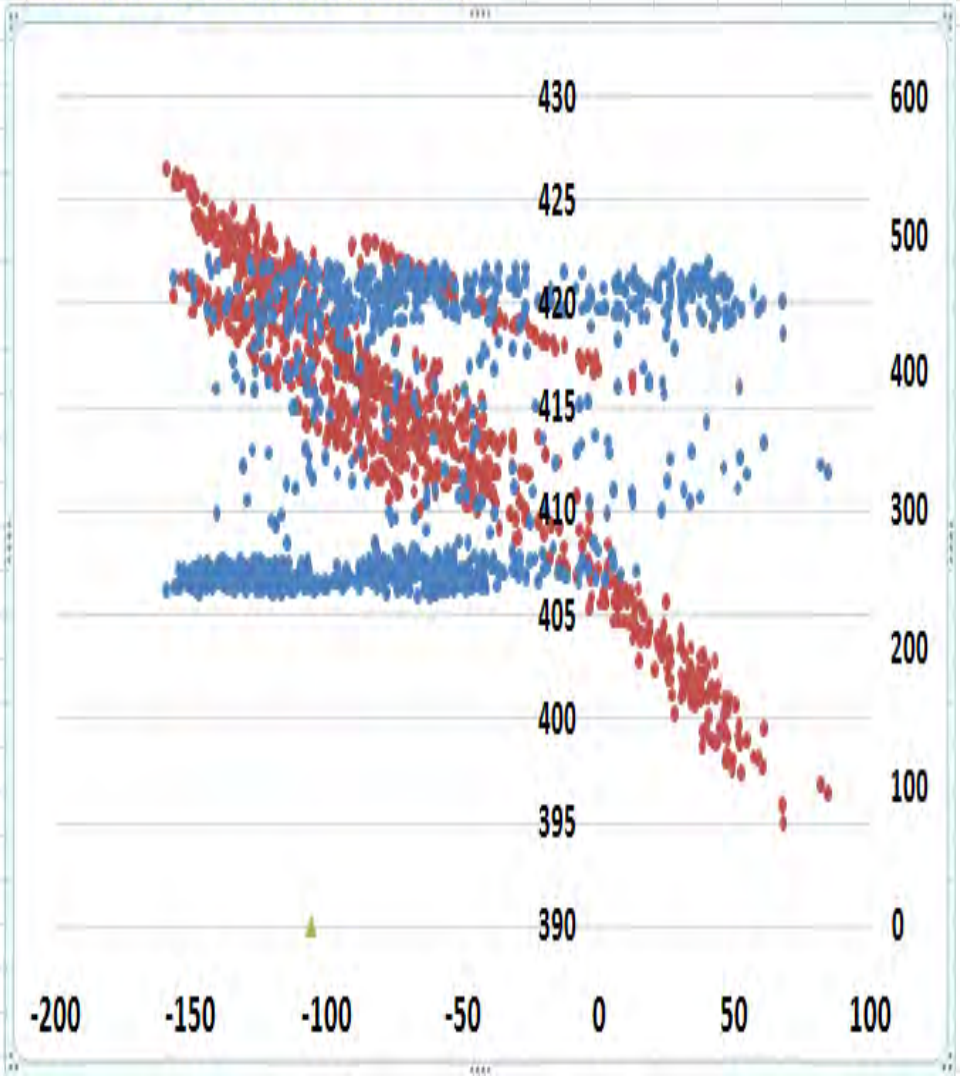
MNRL.SCADA01.PGCIL/DTHM_NT/400/LIG5/P/MvMoment

MVAR

MNRL.SCADA01.PGCIL/DTHM_NT/400/LIG5/Q/MvMoment

VOLTAGE

MNRL.SCADA01.PGCIL/DTHM_NT/400/BB1/V/MvMoment




MW

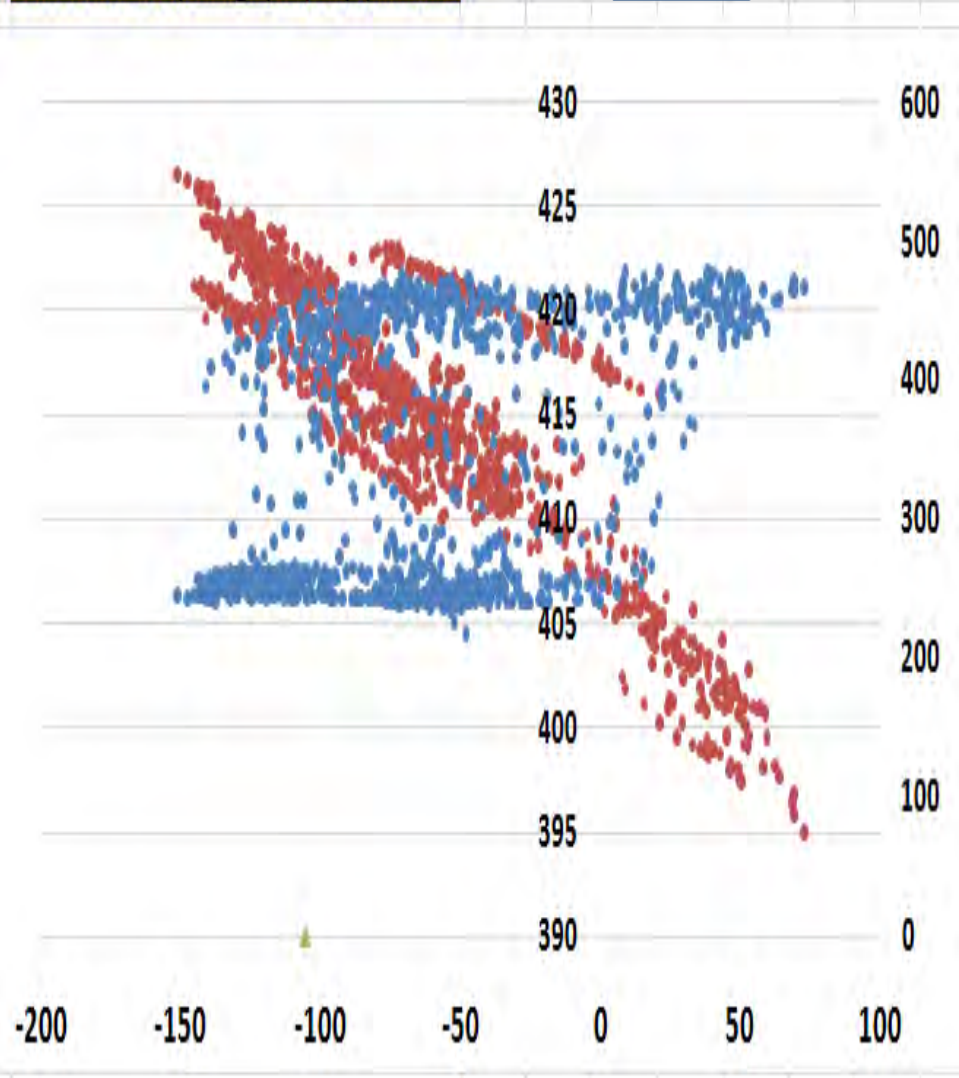
MNRL.SCADA01.PGCIL/DTHM_NT/400/LIG6/P/MvMoment

MVAR

MNRL.SCADA01.PGCIL/DTHM_NT/400/LIG6/Q/MvMoment

VOLTAGE

MNRL.SCADA01.PGCIL/DTHM_NT/400/BB1/V/MvMoment



| MW |
| --- |
| !COMPANIES!PGCIL!JHAJR_PG!15!U2G2!P.MvMoment |

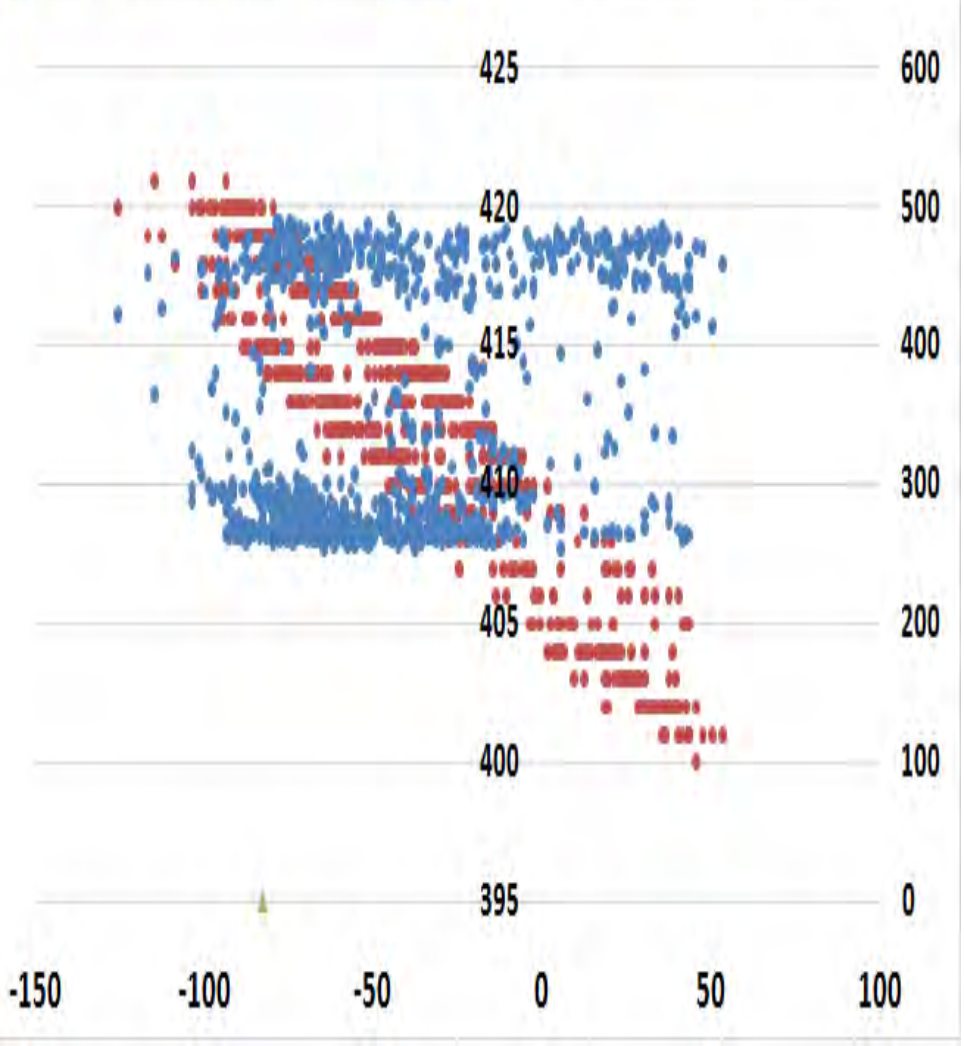
| MVAR |
| --- |
| !COMPANIES!PGCIL!JHAJR_PG!15!U2G2!Q.MvMoment |

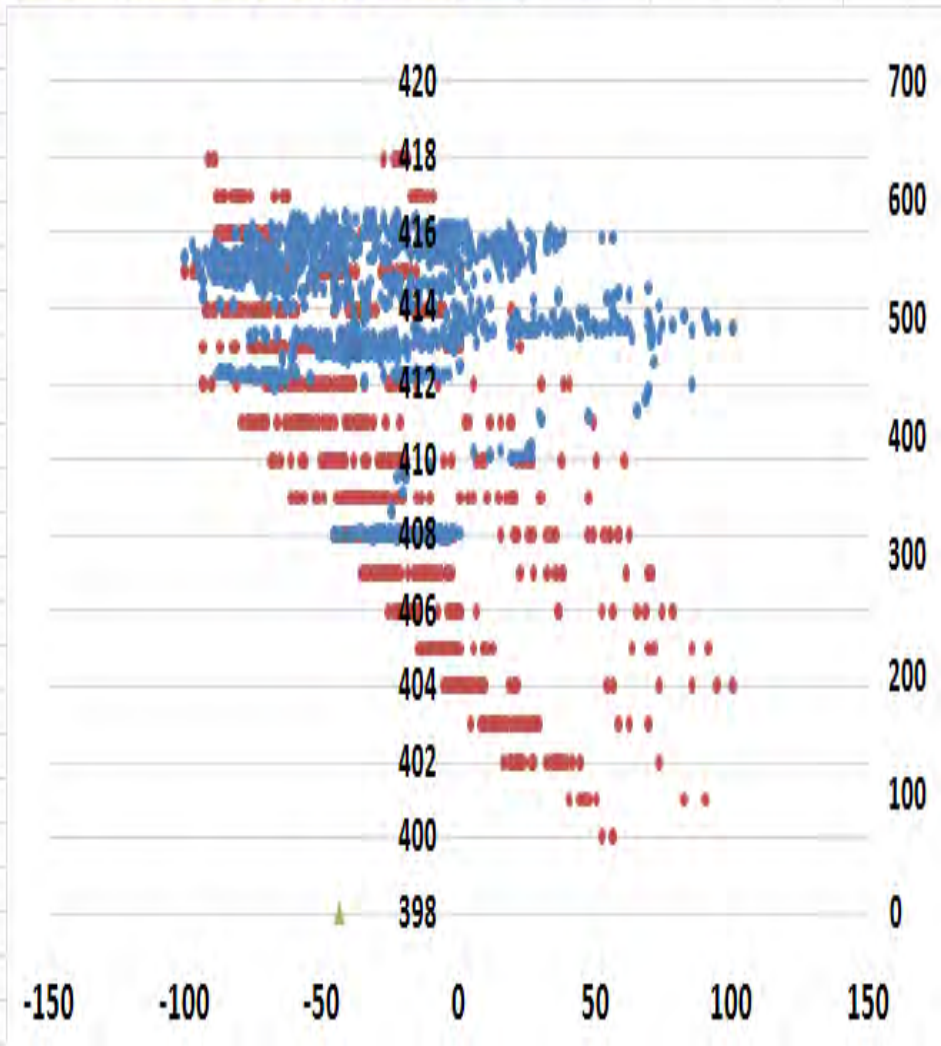
| VOLTAGE |
| --- |
| !COMPANIES!PGCIL!JHAJR_PG!400!BB1!V.MvMoment |

| MW |
| --- |
| MNRL.SCADA04.RRVPNL/CHTPS_RS/400/LIU6/P/MvMoment |

| MVAR |
| --- |
| MNRL.SCADA04.RRVPNL/CHTPS_RS/400/LIU6/Q/MvMoment |

| VOLTAGE |
| --- |
| MNRL.SCADA01.RRVPNL/CHTPS_RS/400/BB1/V/MvMoment |



MW

MNRL.SCADA04.RRVPNL/CHTPS_RS/400/LIU5/P/MvMome

MVAR

MNRL.SCADA04.RRVPNL/CHTPS_RS/400/LIU5/Q/MvMoment

VOLTAGE

MNRL.SCADA01.RRVPNL/CHTPS_RS/400/BB1/V/MvMoment

MW

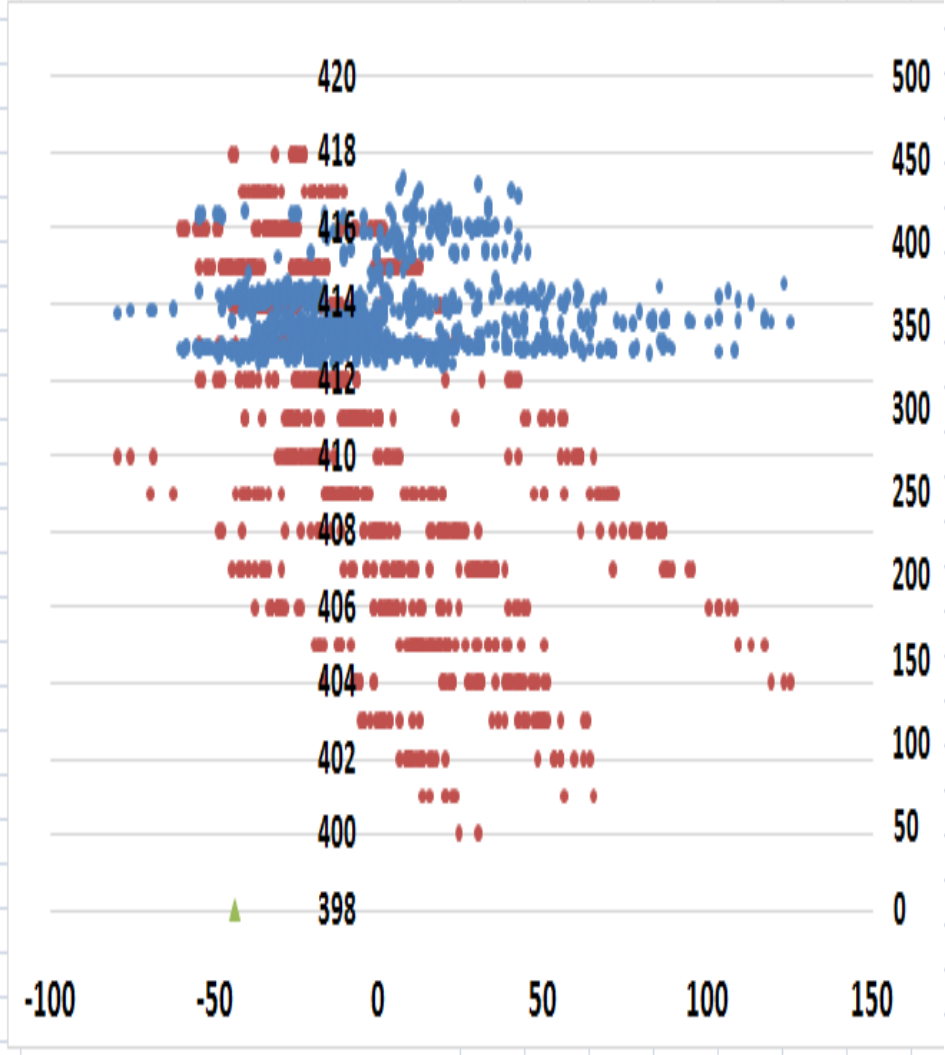
MNRL.SCADA03.UPPTCL/ANPAD_UP/765/09U06/P/MvMoment

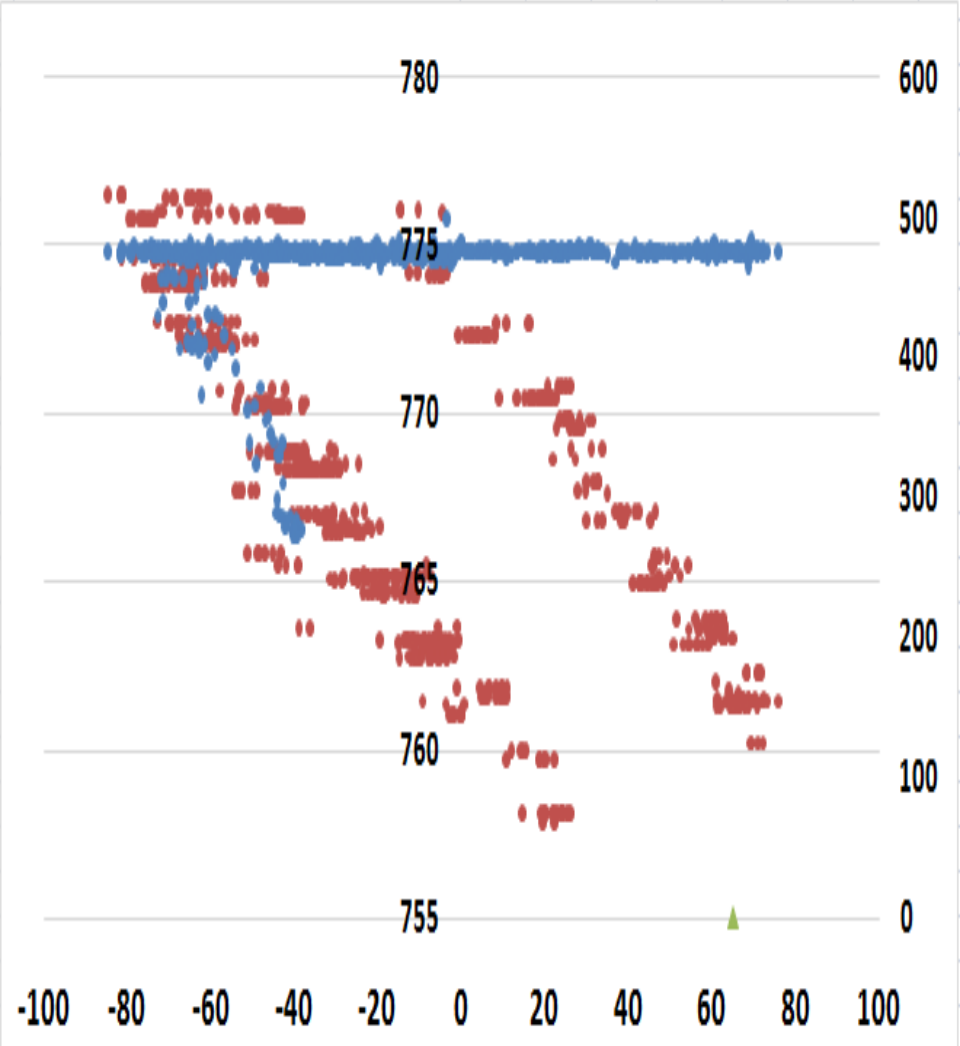
MVAR

MNRL.SCADA03.UPPTCL/ANPAD_UP/765/09U06/Q/MvMoment

VOLTAGE

MNRL.SCADA03.UPPTCL/ANPAD_UP/765/BB1/V/MvMoment



MW

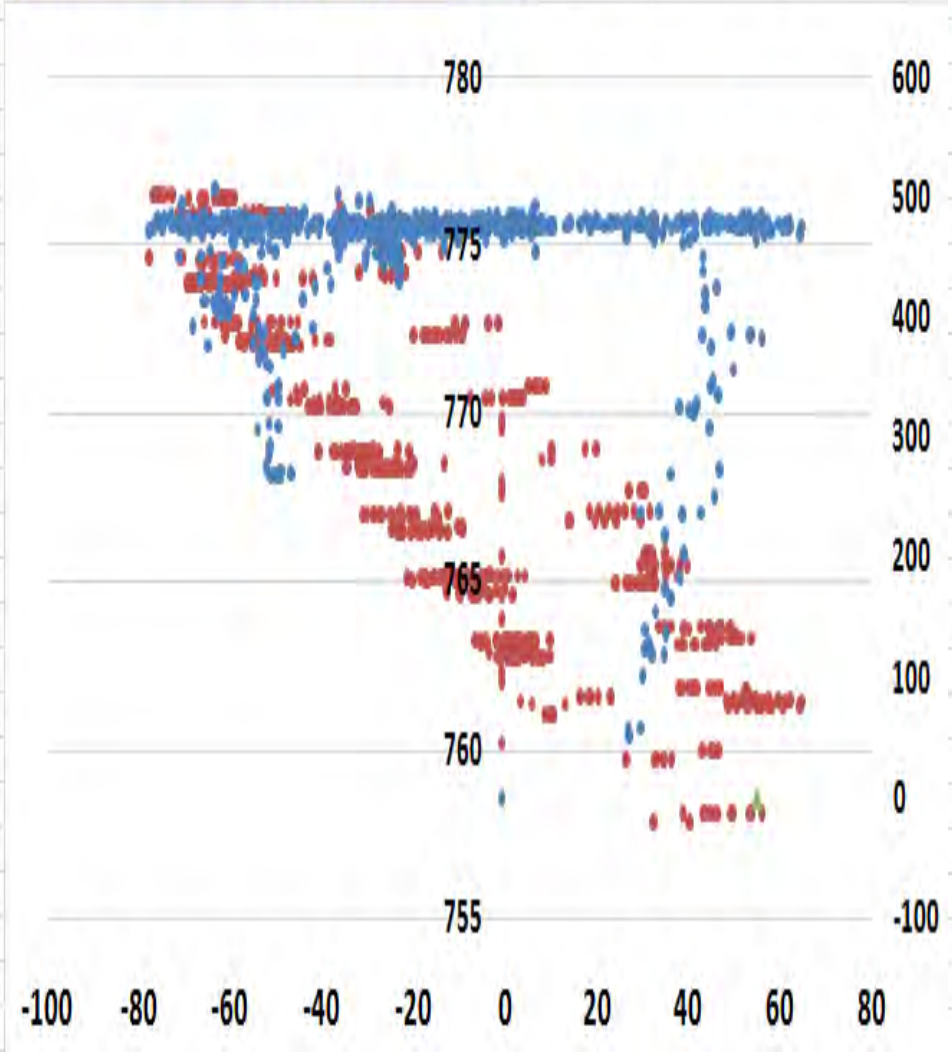
MNRL.SCADA03.UPPTCL/ANPAD_UP/765/03U07/P/MvMoment

MVAR

MNRL.SCADA03.UPPTCL/ANPAD_UP/765/03U07/Q/MvMoment

VOLTAGE

MNRL.SCADA03.UPPTCL/ANPAD_UP/765/BB1/V/MvMoment




MW

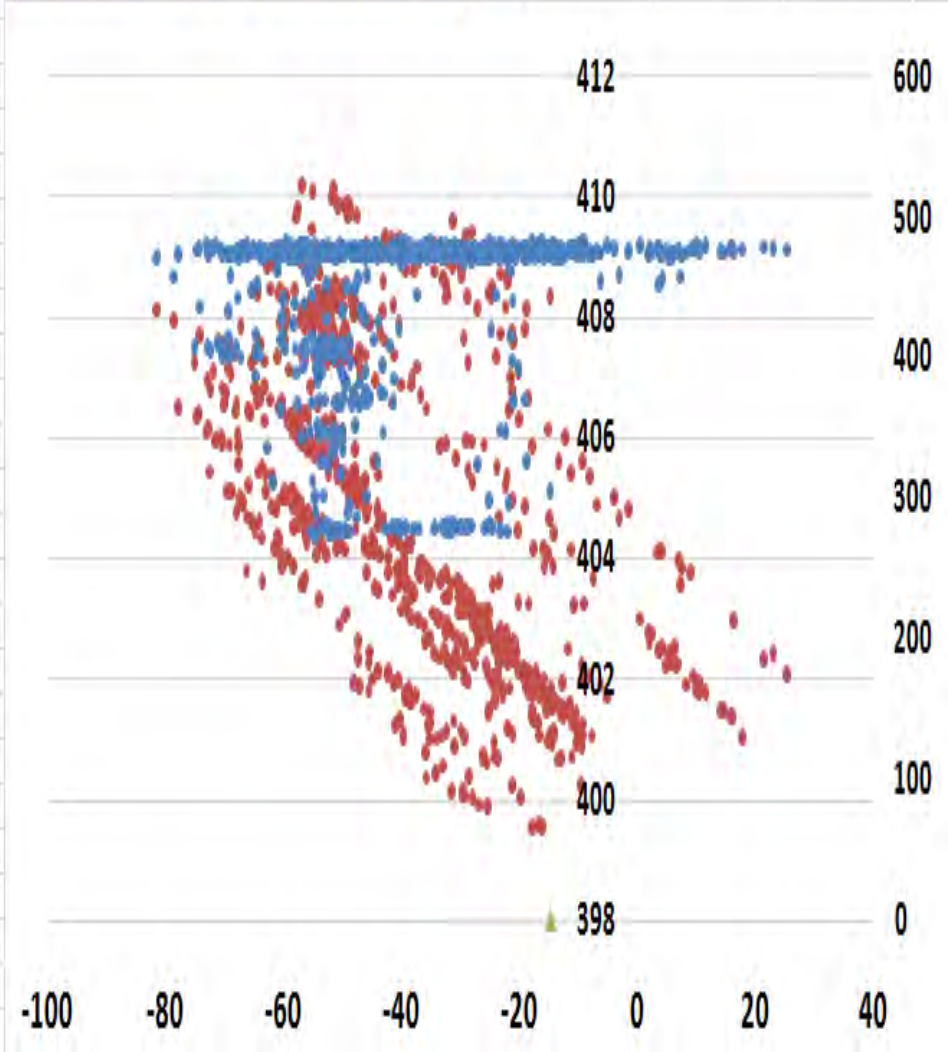
MNRL.SCADA02.UPPTCL/ANPAR_UP/400/13U05/P/MvMoment

MVAR

MNRL.SCADA02.UPPTCL/ANPAR_UP/400/13U05/Q/MvMoment

VOLTAGE

MNRL.SCADA02.UPPTCL/ANPAR_UP/400/BB1A/V/MvMoment



MW

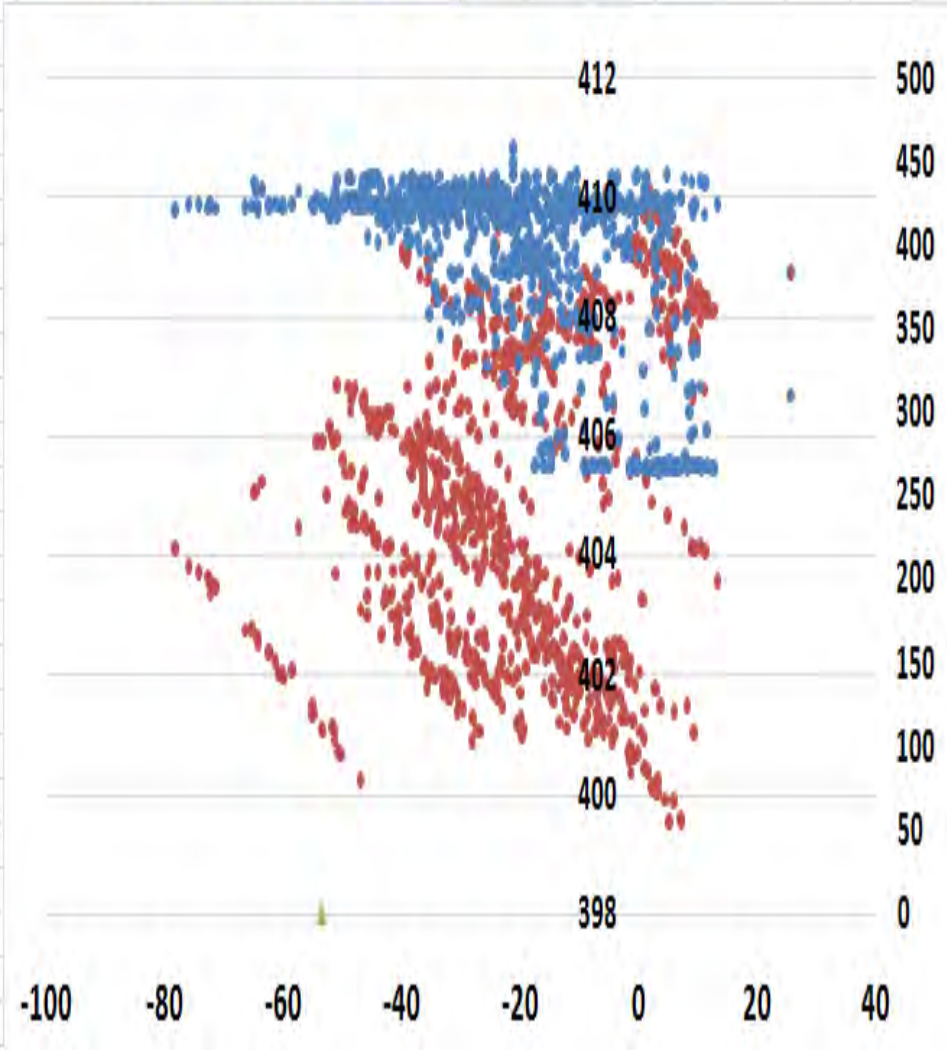
MNRL.SCADA02.UPPTCL/ANPAR_UP/400/12U04/P/MvMoment

MVAR

MNRL.SCADA02.UPPTCL/ANPAR_UP/400/12U04/Q/MvMoment

VOLTAGE

MNRL.SCADA02.UPPTCL/ANPAR_UP/400/BB1A/V/MvMoment




MW

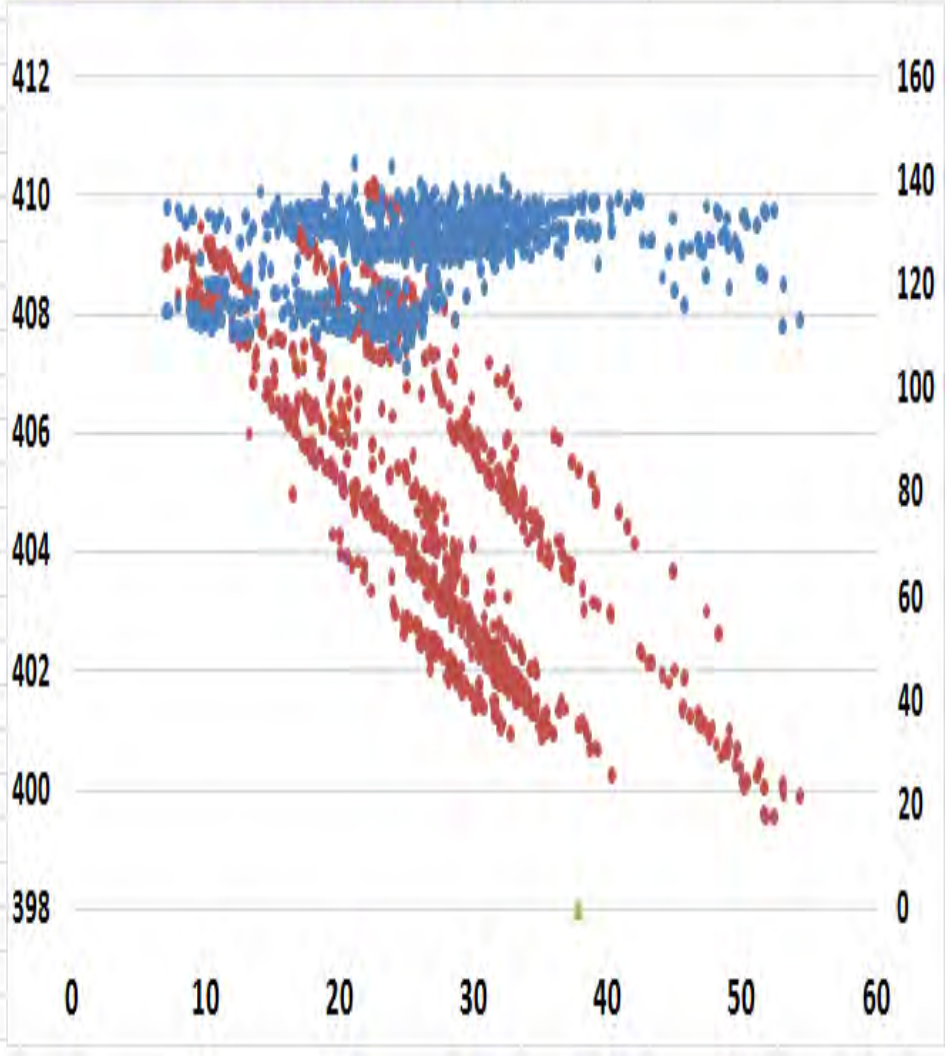
MNRL.SCADA02.UPPTCL/ANPAR_UP/400/10U03/P/MvMoment

MVAR

MNRL.SCADA02.UPPTCL/ANPAR_UP/400/10U03/Q/MvMoment

VOLTAGE

MNRL.SCADA02.UPPTCL/ANPAR_UP/400/BB1A/V/MvMoment



MW

MNRL.SCADA02.UPPTCL/ANPAR_UP/400/06U01/P/MvMoment

MVAR

MNRL.SCADA02.UPPTCL/ANPAR_UP/400/06U01/Q/MvMoment

VOLTAGE

MNRL.SCADA02.UPPTCL/ANPAR_UP/400/BB1A/V/MvMoment

MW

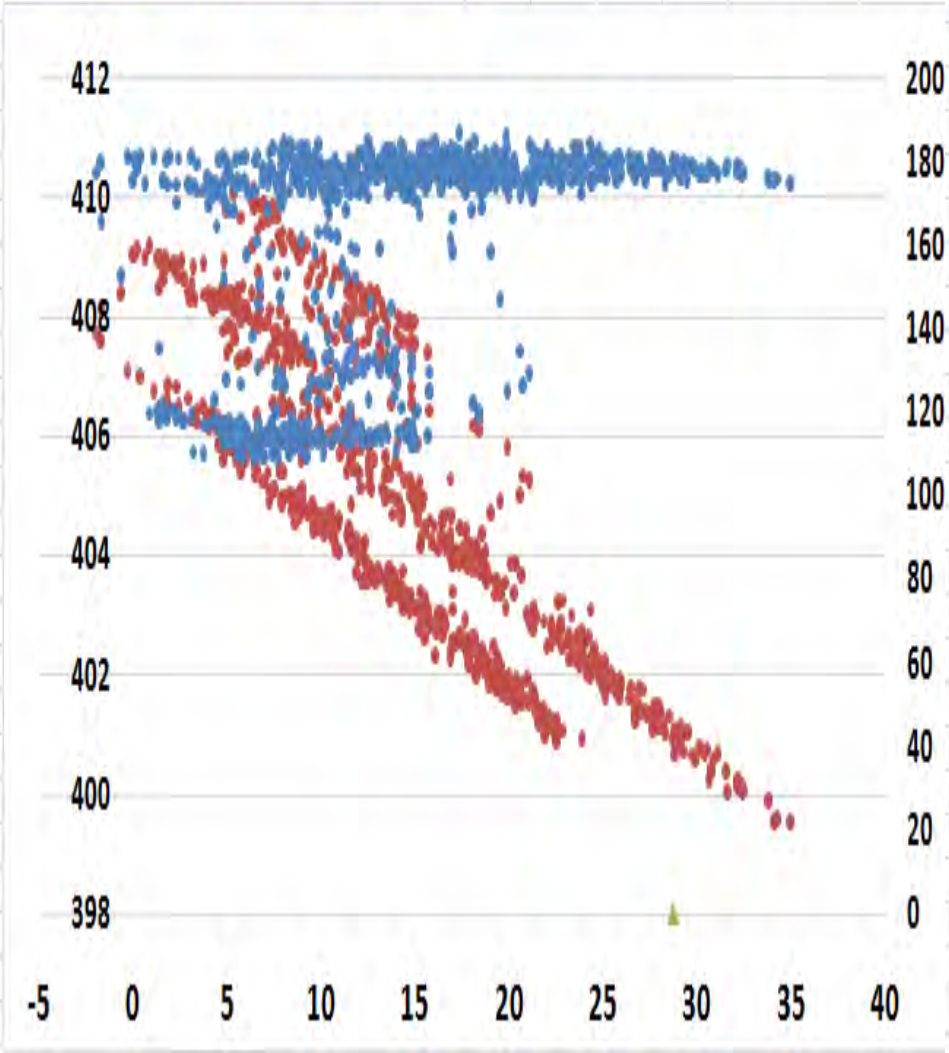
MNRL.SCADA02.RRVPNL/SURTP_RS/400/LIGT6/P/MvMoment

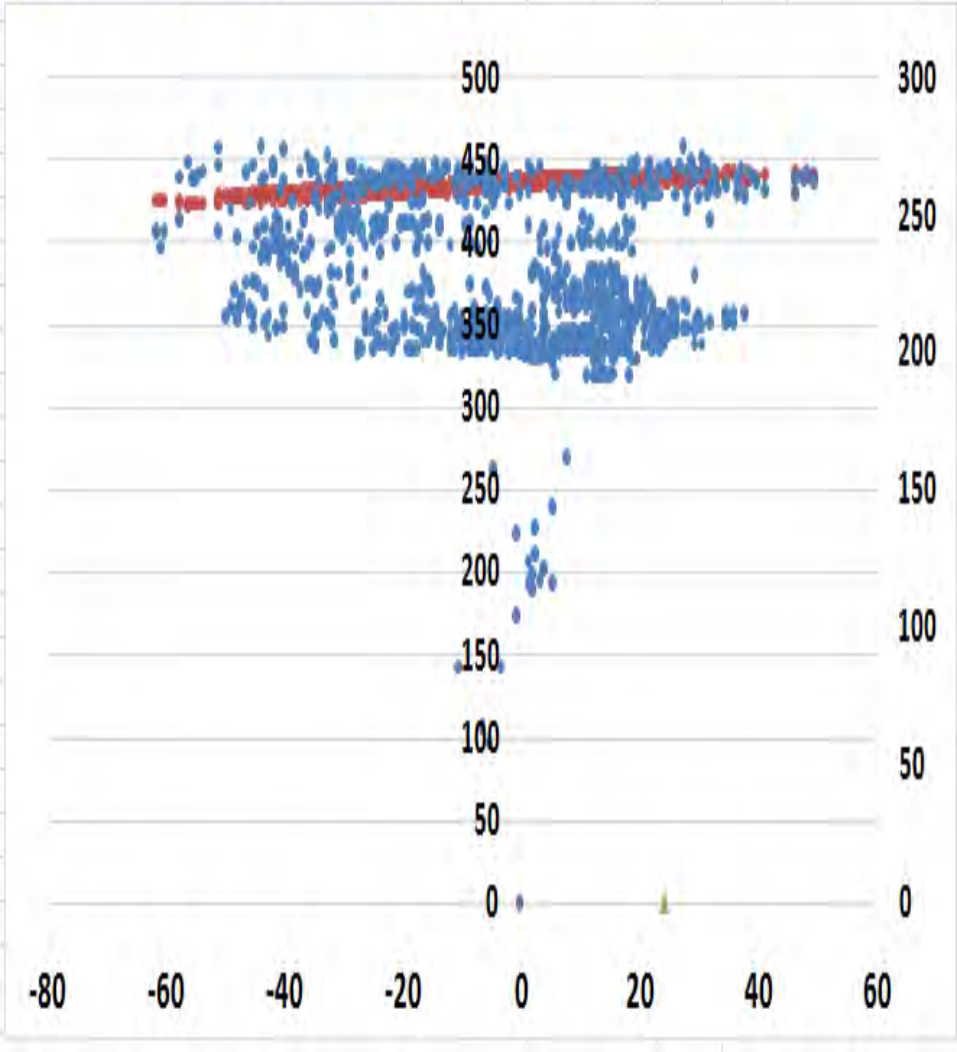
MVAR

MNRL.SCADA02.RRVPNL/SURTP_RS/400/LIGT6/Q/MvMoment

VOLTAGE

MNRL.SCADA04.RRVPNL/SURTP_RS/400/BB2A/V/MvMoment



MW

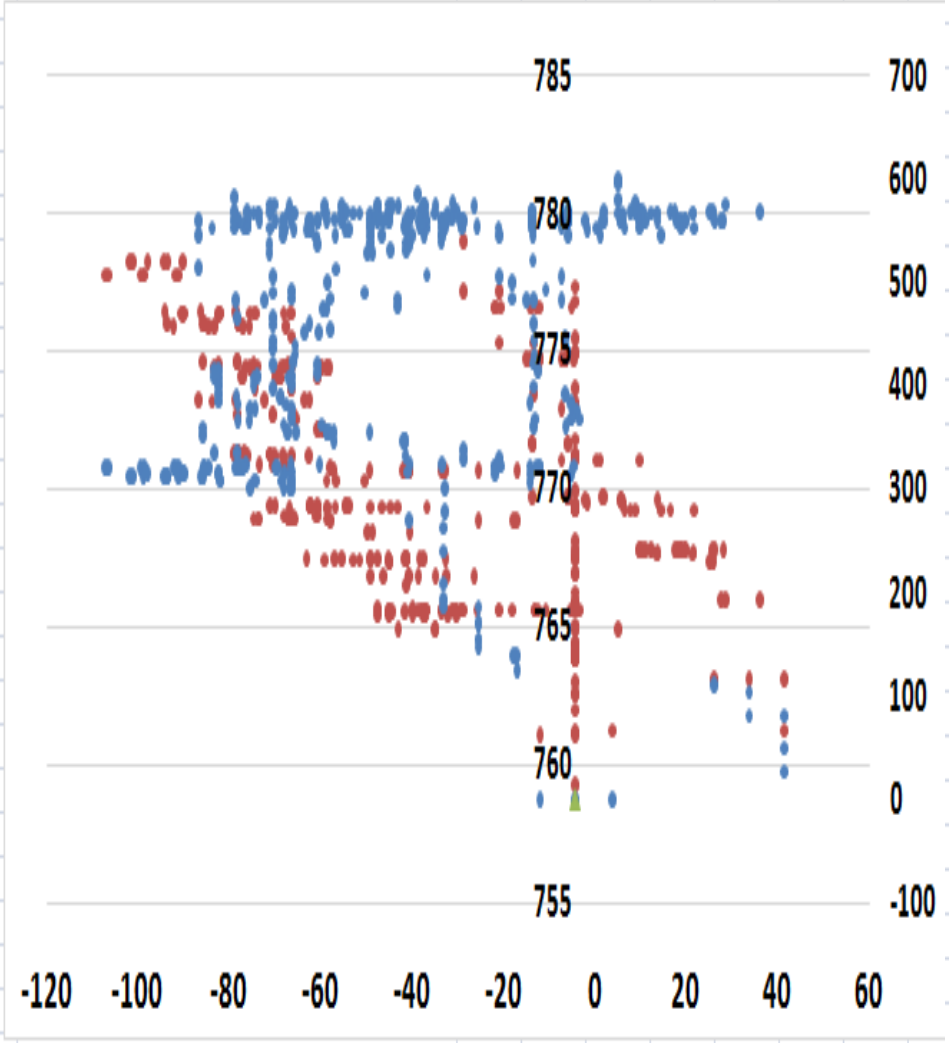
MNRL.SCADA02.UPPTCL/ANPAC_UP/765/LIU01/P/MvMoment

MVAR

MNRL.SCADA02.UPPTCL/ANPAC_UP/765/LIU01/Q/MvMoment

VOLTAGE

MNRL.SCADA02.UPPTCL/ANPAC_UP/765/BB2A/V/MvMoment




MW

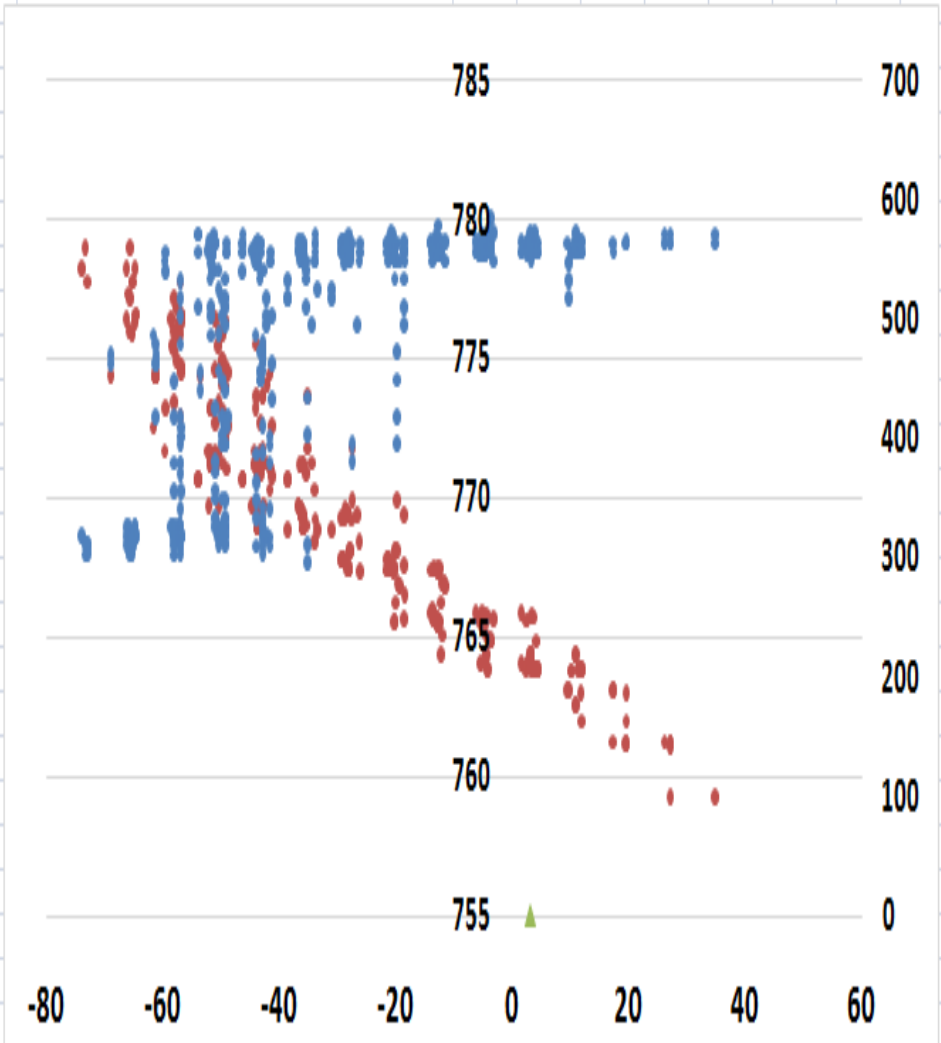
MNRL.SCADA02.UPPTCL/ANPAC_UP/765/LIU02/P/MvMoment

MVAR

MNRL.SCADA02.UPPTCL/ANPAC_UP/765/LIU02/Q/MvMoment

VOLTAGE

MNRL.SCADA02.UPPTCL/ANPAC_UP/765/BB2A/V/MvMoment



MW

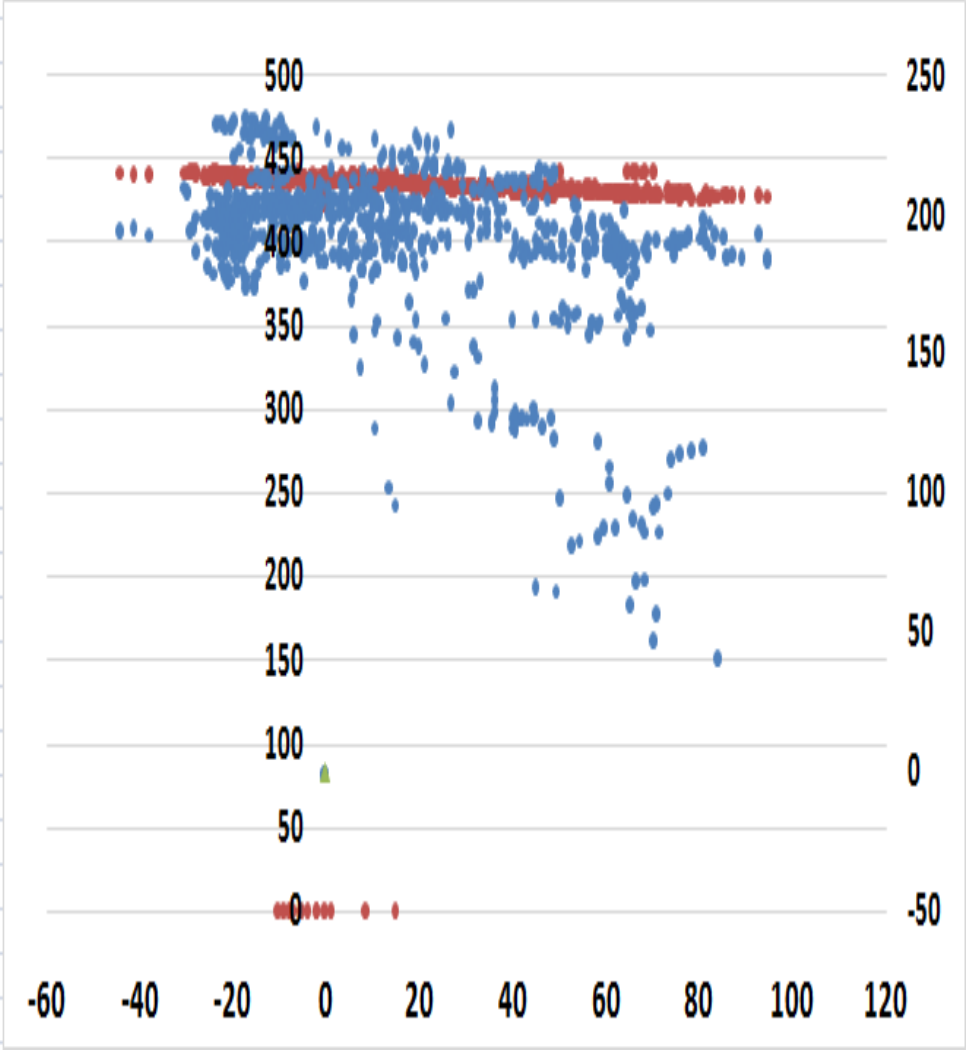
MNRL.SCADA02.RRVPNL/SURTP_RS/400/LIGT5/P/MvMom

MVAR

MNRL.SCADA02.RRVPNL/SURTP_RS/400/LIGT5/Q/MvMoment

VOLTAGE

MNRL.SCADA04.RRVPNL/SURTP_RS/400/BB2A/V/MvMoment




MW

MNRL.SCADA02.RRVPNL/SURTP_RS/400/LIGT3/P/MvMom

MVAR

MNRL.SCADA02.RRVPNL/SURTP_RS/400/LIGT3/Q/MvMoment

VOLTAGE

MNRL.SCADA04.RRVPNL/SURTP_RS/400/BB2A/V/MvMoment

MW

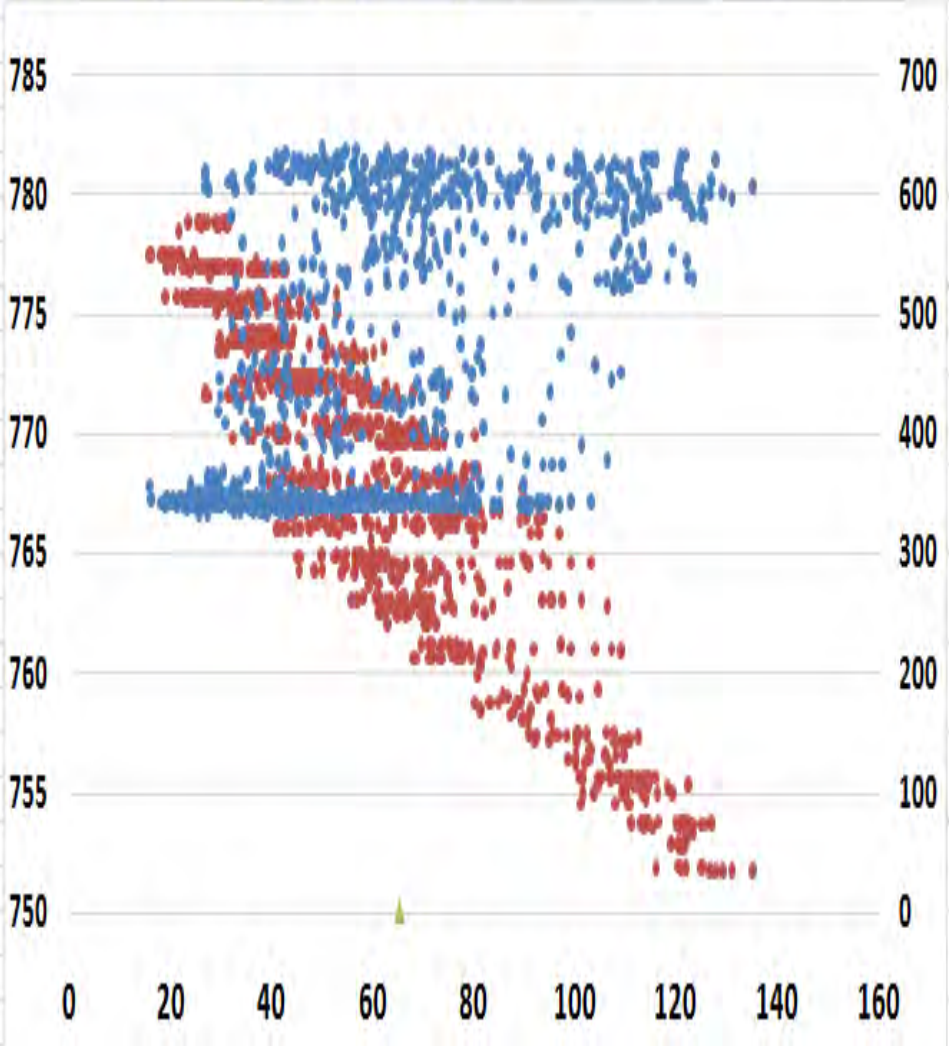
MNRL.SCADA04.UPPTCL/LALIT_UP/765/01U01/P/MvMoment

MVAR

MNRL.SCADA04.UPPTCL/LALIT_UP/765/01U01/Q/MvMoment

VOLTAGE

MNRL.SCADA03.UPPTCL/LALIT_UP/765/BB1/V/MvMome




MW

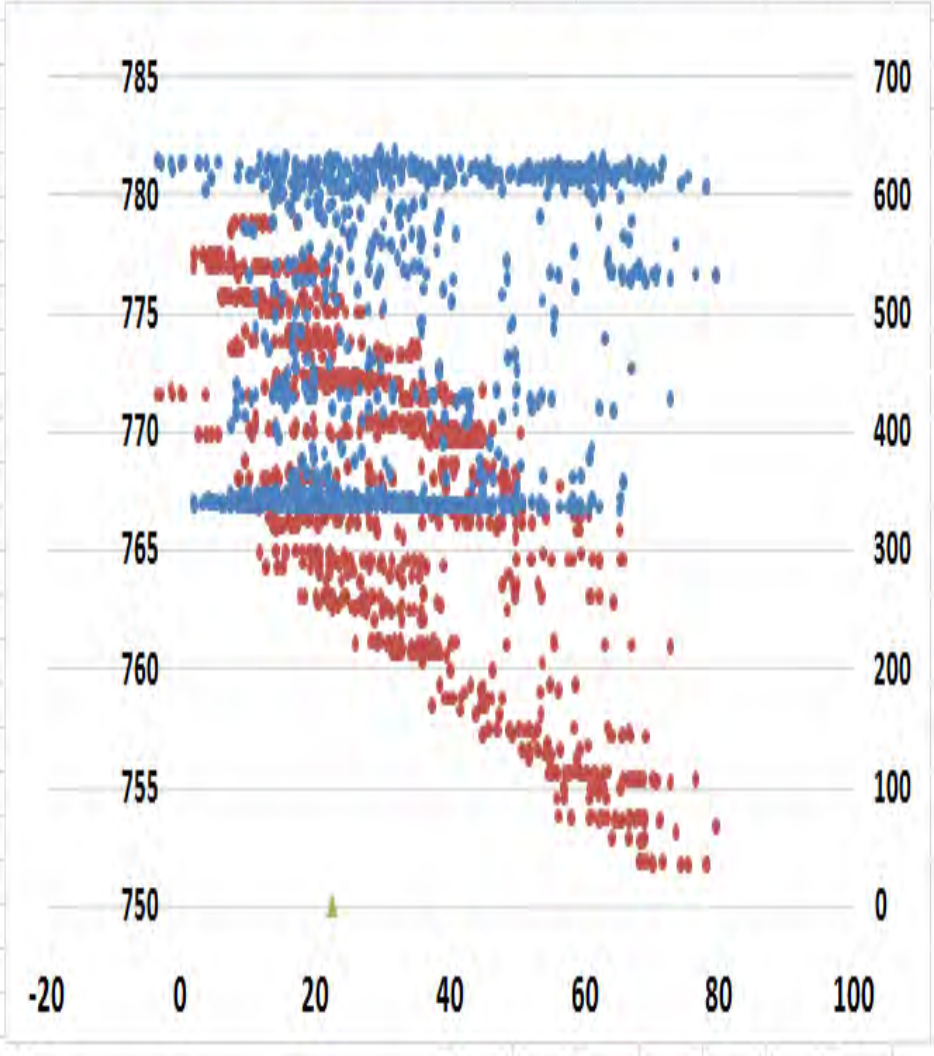
MNRL.SCADA04.UPPTCL/LALIT_UP/765/07U02/P/MvMom

MVAR

MNRL.SCADA04.UPPTCL/LALIT_UP/765/07U02/Q/MvMoment

VOLTAGE

MNRL.SCADA03.UPPTCL/LALIT_UP/765/BB1/V/MvMoment



MW

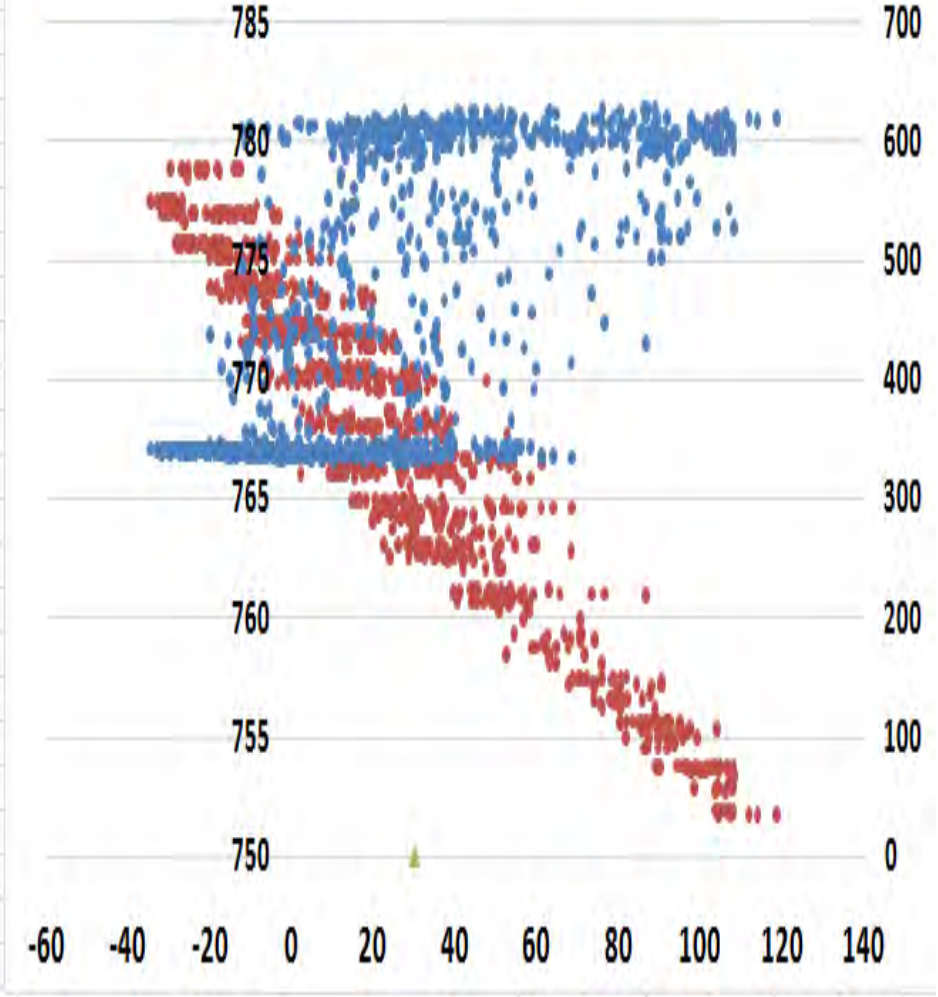
MNRL.SCADA04.UPPTCL/LALIT_UP/765/10U03/P/MvMom

MVAR

MNRL.SCADA04.UPPTCL/LALIT_UP/765/10U03/Q/MvMoment

VOLTAGE

MNRL.SCADA03.UPPTCL/LALIT_UP/765/BB1/V/MvMoment




MW

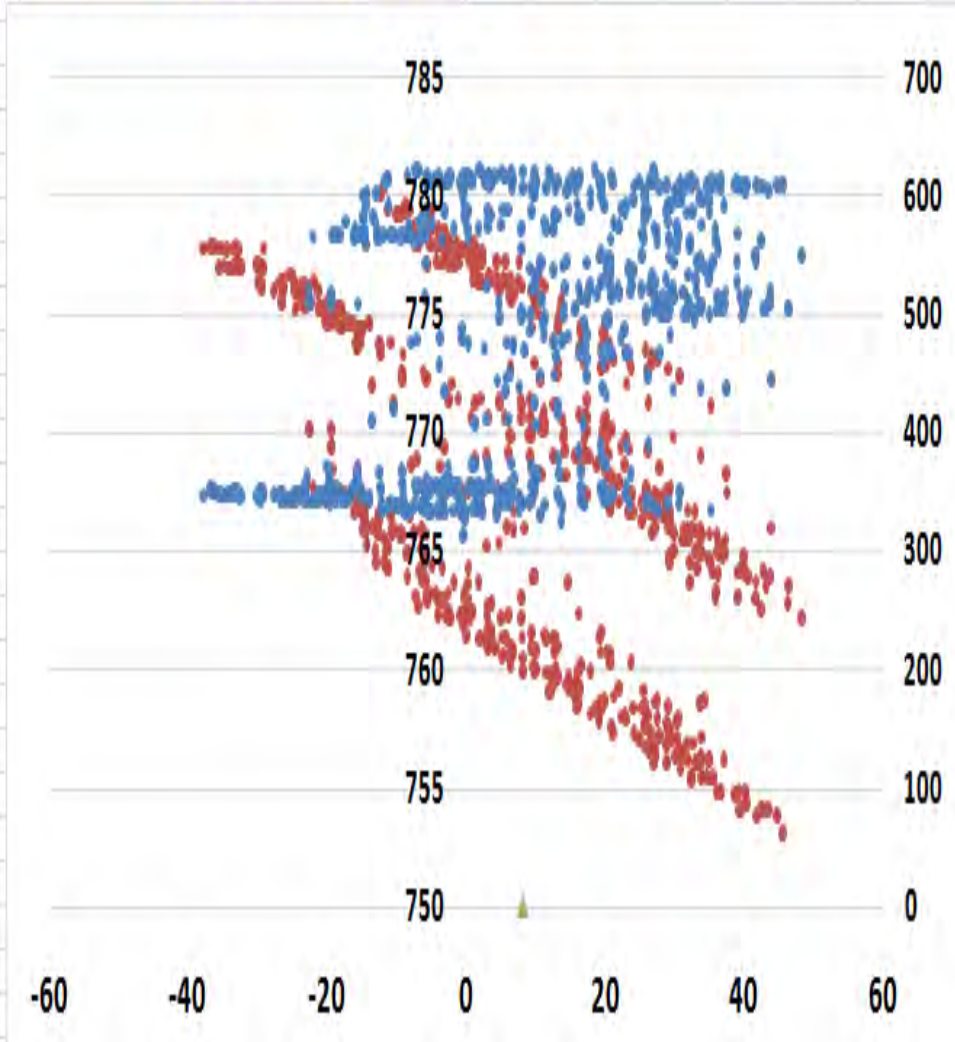
MNRL.SCADA02.UPPTCL/BARA_UP/765/LIGT1/P/MvMome

MVAR

MNRL.SCADA02.UPPTCL/BARA_UP/765/LIGT1/Q/MvMoment

VOLTAGE

MNRL.SCADA02.UPPTCL/BARA_UP/765/BB1/V/MvMoment



MW

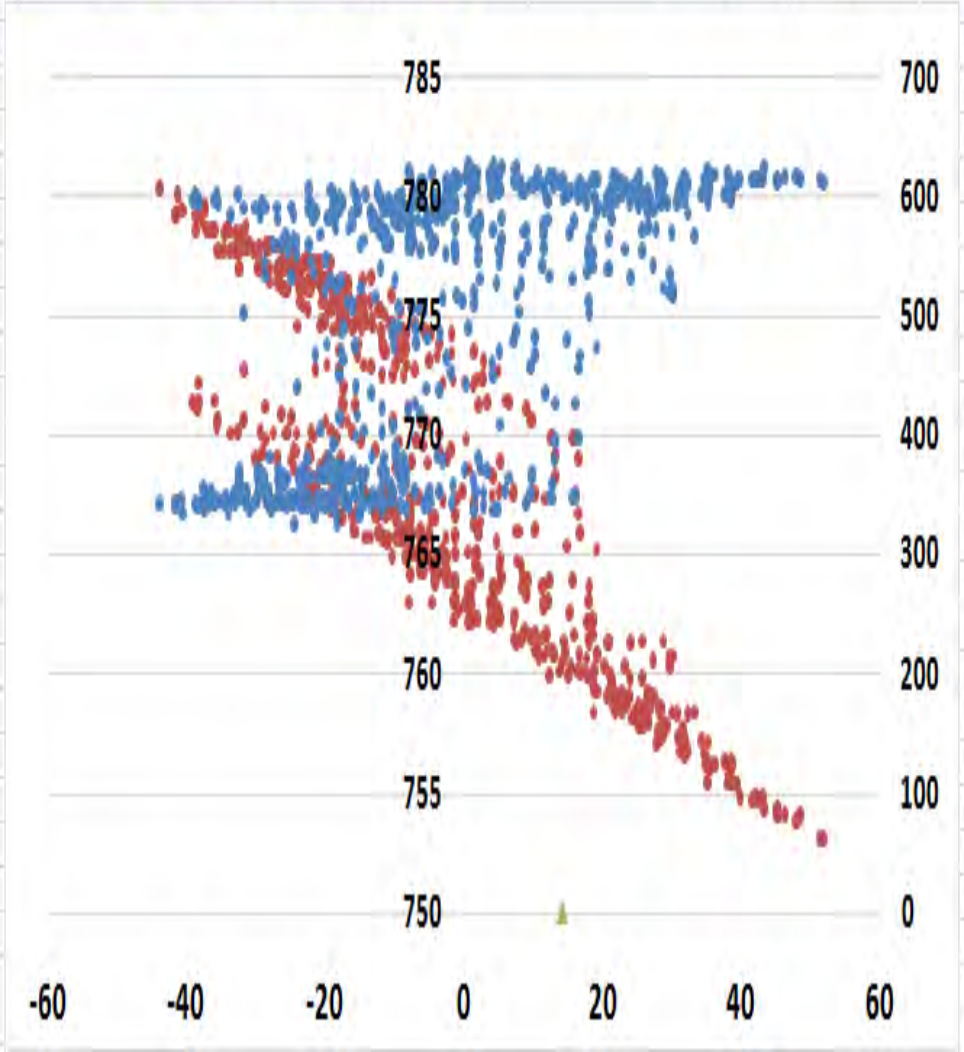
MNRL.SCADA02.UPPTCL/BARA_UP/765/LIGT2/P/MvMome

MVAR

MNRL.SCADA02.UPPTCL/BARA_UP/765/LIGT2/Q/MvMoment

VOLTAGE

MNRL.SCADA02.UPPTCL/BARA_UP/765/BB1/V/MvMoment




MW

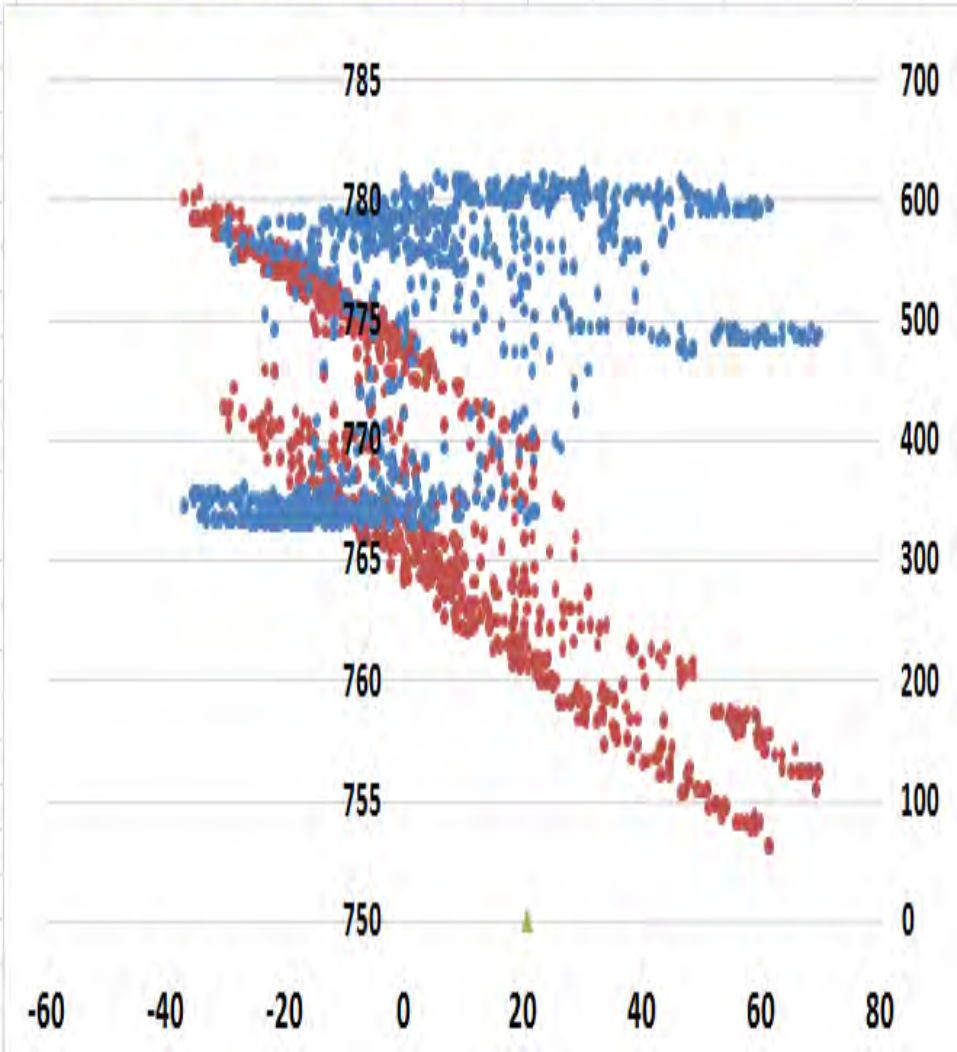
MNRL.SCADA02.UPPTCL/BARA_UP/765/LIGT3/P/MvMome

MVAR

MNRL.SCADA02.UPPTCL/BARA_UP/765/LIGT3/Q/MvMoment

VOLTAGE

MNRL.SCADA02.UPPTCL/BARA_UP/765/BB1/V/MvMoment



| MW |
| --- |
| MNRL.SCADA01.DTL/CCGTB_DV/400/LIGT3/P/MvMoment |

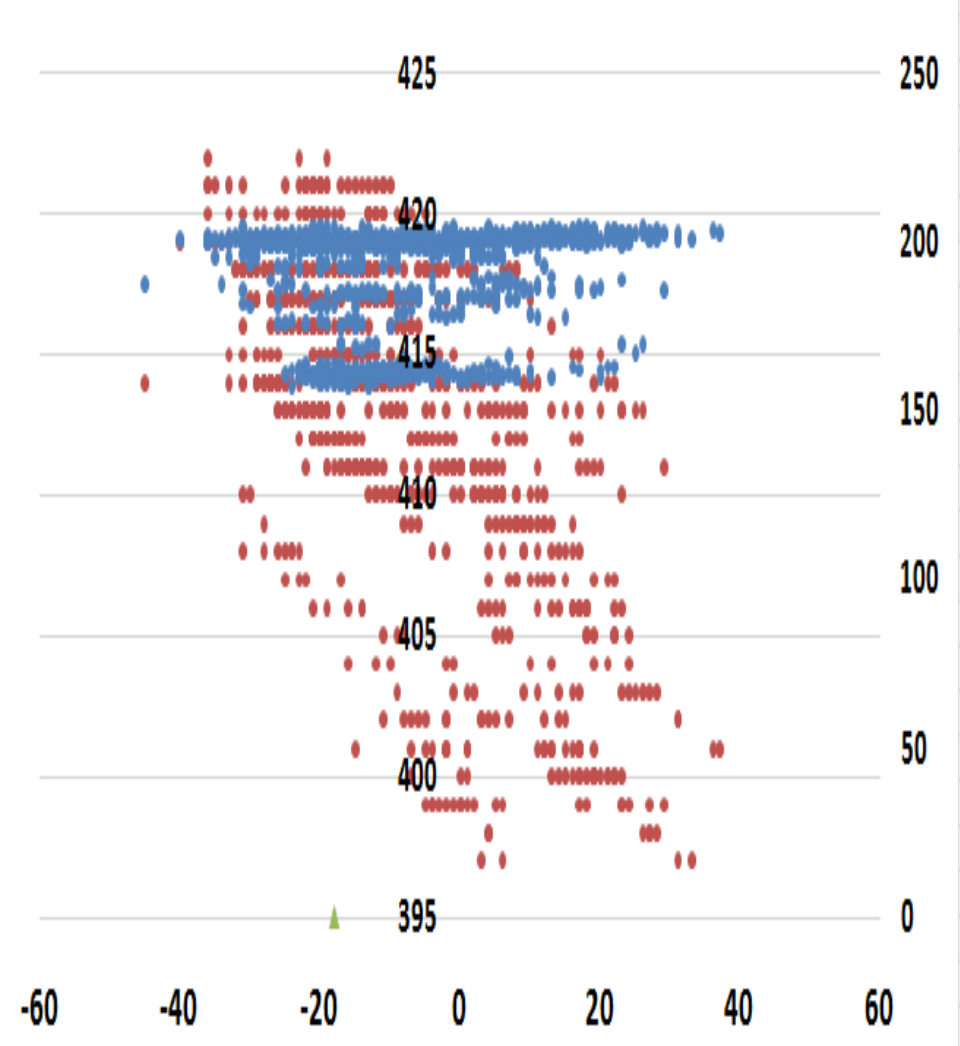
| MVAR |
| --- |
| MNRL.SCADA01.DTL/CCGTB_DV/400/LIGT3/Q/MvMoment |

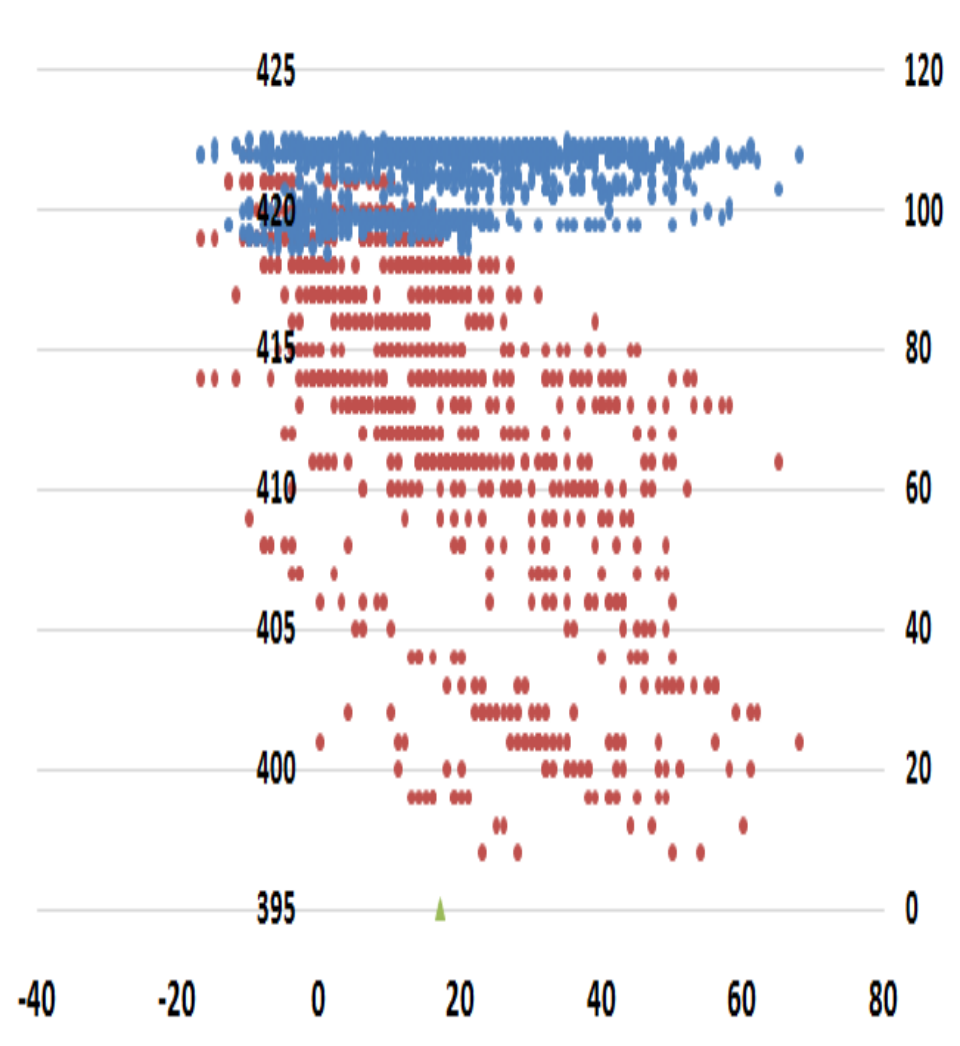
| VOLTAGE |
| --- |
| MNRL.SCADA01.DTL/CCGTB_DV/400/BB2A/V/MvMoment |

| MW |
| --- |
| MNRL.SCADA01.DTL/CCGTB_DV/400/LIST2/P/MvMoment |

| MVAR |
| --- |
| MNRL.SCADA01.DTL/CCGTB_DV/400/LIST2/Q/MvMoment |

| VOLTAGE |
| --- |
| MNRL.SCADA01.DTL/CCGTB_DV/400/BB2A/V/MvMoment |



**Annexure-B-IV**

# National Load Despatch Centre
## Import Capability of Uttar Pradesh for February 2022

Issue Date: 14-01-2021 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 February 2022 to 28th February 2022 | 00-24 | 13800 | 600 | 13200 | 8380 | 4820 | | 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 Capability of Rajasthan for February 2022

Issue Date: 14-01-2021 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 February 2022 to 28th February 2022 | 00-24 | 6200 | 300 | 5900 | 3400 | 2500 | | https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads |
| **Limiting Constraints** | | N-1 contingency of 400/220kV Chittorgarh, Jodhpur, Bikaner, Ajmer, Merta and Bhinmal ICTs | | | | | | |

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

# National Load Despatch Centre

## Import Capability of Haryana for February 2022

Issue Date: 14-01-2021 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 February 2022 to 28th February 2022 | 00-24 | 8500 | 600 | 7900 | 3000 | 4900 | | 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 Capability of Delhi for February 2022

Issue Date: 14-01-2021 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 February 2022 to 28th February 2022 | 00-24 | 6800 | 300 | 6500 | 4180 | 2320 | | |
| **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 Capability of HP for February 2022

Issue Date: 14-01-2021 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 February 2022 to 28th February 2022 | 00-24 | 1400 | 100 | 1300 | 1400 | -100 | 200 | https://hpsldc.com/mrm_category/ttc-atc-report/ |
| **Limiting Constraints** | | N-1 contingency of 400/220kV Nallagarh ICTs. High loading of 220kV Nallagarh-Upernangal D/C and 220kV Hamirpur-Hamirpur D/C | | | | | | |

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

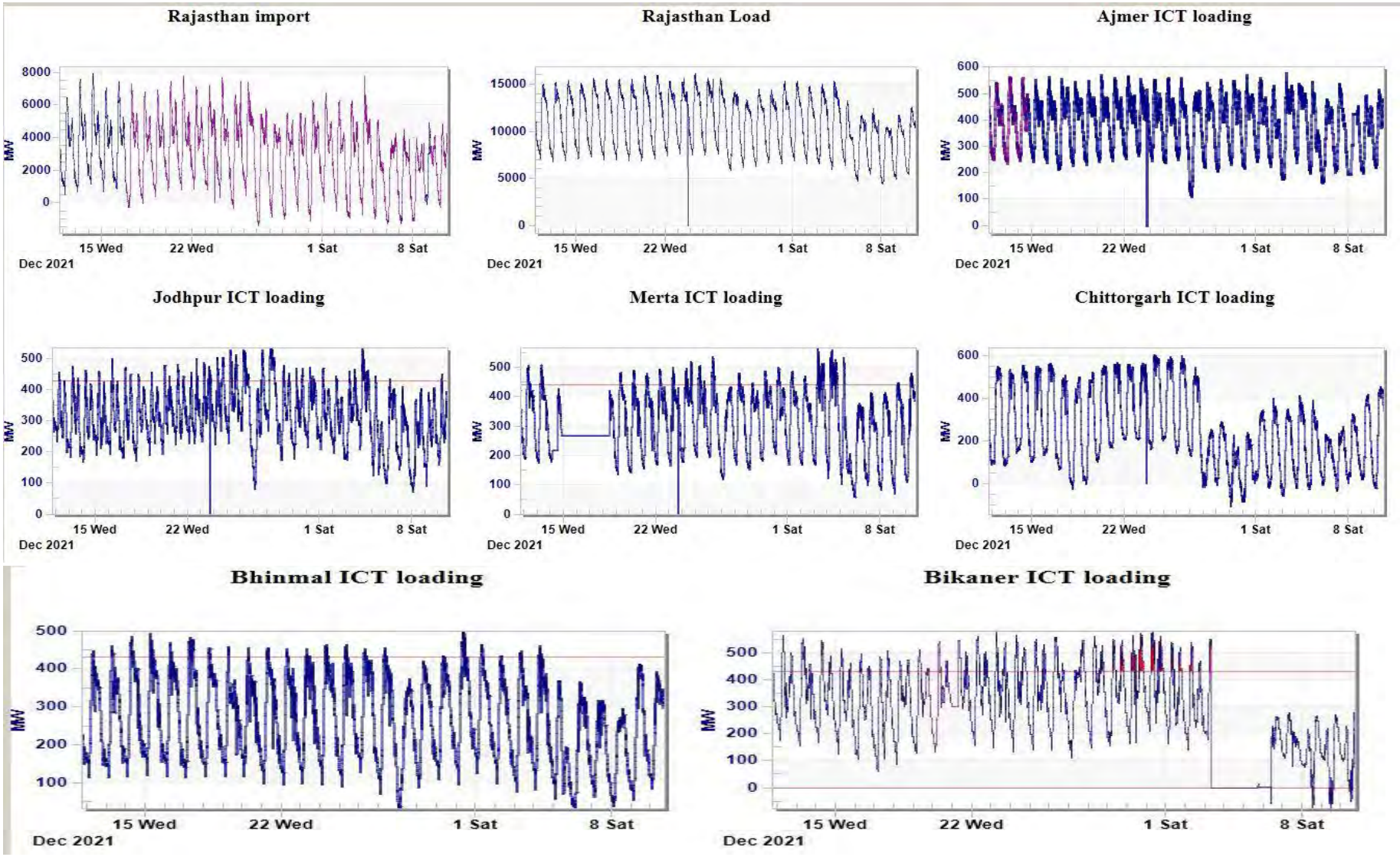
# National Load Despatch Centre
## Import Capability of Uttarakhand for February 2022

Issue Date: 14-01-2021 Issue Time: 1600 Revision No. 0

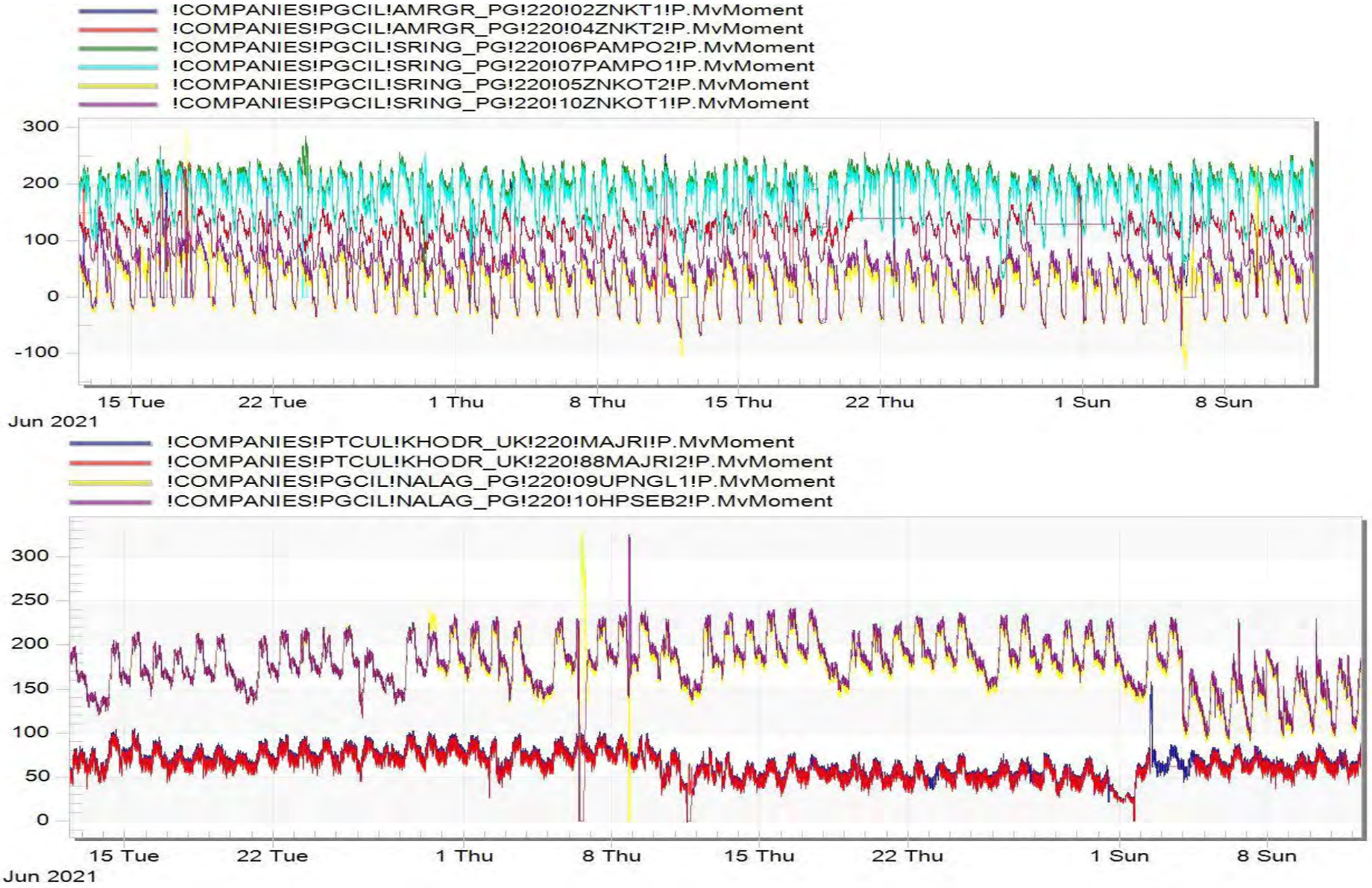
| Date | Time Period in IST (hrs) | Total Transfer Capability (TTC) (MW) | Reliability Margin (MW) | Available Transfer Capability (ATC) (MW) | Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW) | Margin Available for Short Term Open Access (STOA) (MW) | Changes in TTC w.r.t. Last Revision | Comments |
|---|---|---|---|---|---|---|---|---|
| 1st February 2022 to 28th February 2022 | 00-24 | 1600 | 100 | 1500 | 1020 | 480 | | |
| **Limiting Constraints** | | N-1 contingency of 400/220kV Kashipur ICTs. High loading of 220kV Khodri-Majri D/c | | | | | | |

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

**Annexure-B-V**


Rajasthan import
MW
8000
6000
4000
2000
0
15 Wed
22 Wed
1 Sat
8 Sat
Dec 2021
Rajasthan Load
MW
15000
10000
5000
0
15 Wed
22 Wed
1 Sat
8 Sat
Dec 2021
Ajmer ICT loading
MW
600
500
400
300
200
100
0
15 Wed
22 Wed
1 Sat
8 Sat
Dec 2021
Jodhpur ICT loading
MW
500
400
300
200
100
0
15 Wed
22 Wed
1 Sat
8 Sat
Dec 2021
Merta ICT loading
MW
500
400
300
200
100
0
15 Wed
22 Wed
1 Sat
8 Sat
Dec 2021
Chittorgarh ICT loading
MW
600
400
200
0
15 Wed
22 Wed
1 Sat
8 Sat
Dec 2021
Bhinmal ICT loading
MW
500
400
300
200
100
15 Wed
22 Wed
1 Sat
8 Sat
Dec 2021
Bikaner ICT loading
MW
500
400
300
200
100
0
15 Wed
22 Wed
1 Sat
8 Sat
Dec 2021

**Annexure-B-V**


!COMPANIES!PGCIL!AMRGR_PG!220!02ZNKT1!P.MvMoment
!COMPANIES!PGCIL!AMRGR_PG!220!04ZNKT2!P.MvMoment
!COMPANIES!PGCIL!SRING_PG!220!06PAMPO2!P.MvMoment
!COMPANIES!PGCIL!SRING_PG!220!07PAMPO1!P.MvMoment
!COMPANIES!PGCIL!SRING_PG!220!05ZNKOT2!P.MvMoment
!COMPANIES!PGCIL!SRING_PG!220!10ZNKOT1!P.MvMoment
300
200
100
0
-100
15 Tue
22 Tue
1 Thu
8 Thu
15 Thu
22 Thu
1 Sun
8 Sun
Jun 2021
!COMPANIES!PTCUL!KHODR_UK!220!MAJRI!P.MvMoment
!COMPANIES!PTCUL!KHODR_UK!220!88MAJRI2!P.MvMoment
!COMPANIES!PGCIL!NALAG_PG!220!09UPNGL1!P.MvMoment
!COMPANIES!PGCIL!NALAG_PG!220!10HPSEB2!P.MvMoment
300
250
200
150
100
50
0
15 Tue
22 Tue
1 Thu
8 Thu
15 Thu
22 Thu
1 Sun
8 Sun
Jun 2021

# LONG OUTAGES REPORT AS ON 12-01-2022

Annexure-B-VI

| S. No` | Element Name | Type | Owner | Outage Date and Time | | Outage days | Reason / Remarks |
|---|---|---|---|---|---|---|---|
| A | LINE | | | | | | |
| 1 | 220 KV Kishenpur(PG)-Ramban(PDD) (PDD) Ckt-1 | Line | PDD JK | 31-03-2020 | 16:43 | 651 | 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 | 220 KV Abdullapur(PG)-RailwayHR(RLY) (HVPNL) Ckt-1 | Line | HVPNL | 13-05-2021 | 13:25 | 243 | For cleaning of allied equipment installed in the switchyard of 220kV S/Stn. Railway traction. |
| 3 | 220 KV Sohawal(PG)-Gonda(UP) (UP) Ckt-1 | Line | UPPTCL | 12-08-2021 | 09:00 | 153 | Emergency shutdown of line taken, as tower no. 34 is affected by flood. |
| 4 | 220 KV Sohawal(PG)-Bahraich(UP) (UP) Ckt-1 | Line | UPPTCL | 12-08-2021 | 09:12 | 153 | Emergency shutdown of line taken, as tower no. 34 is affected by flood. |
| 5 | 400 KV UNNAO-PANKI (UP) CKT-1 | Line | UPPTCL | 11-10-2021 | 10:02 | 93 | Shutdown required due to PTPS Panki (Diversion work due to Extension of PTPS Panki. |
| 6 | 220 KV JIND(PG)-MUND (HV) (HVPNL) CKT-1 | Line | HVPNL | 18-11-2021 | 11:42 | 55 | SD taken by Haryana for Augmentation of Conductor 0. Sq inch zebra to HTLS Conductor 1200A (D-3) |
| 7 | 220 KV JIND(PG)-MUND (HV) (HVPNL) CKT-2 | Line | HVPNL | 18-11-2021 | 11:44 | 55 | SD taken by Haryana for Augmentation of Conductor 0. Sq inch zebra to HTLS Conductor 1200A (D-3) |
| 8 | 220 KV AGRA(PG)-FEROZABAD(UP) (UP) CKT-1 | Line | UPPTCL | 27-11-2021 | 09:55 | 46 | Jumpering work for making Lilo point of 220 kv Firozabad(400)-Agra(765) PG line at 220 kv Tundla. FTC process completed but yet to be charged due to PLCC issue at Tundla end. |
| B | BAYS | | | | | | |
| 1 | 419 MAIN BAY - 50 MVAR BUS REACTOR NO 1 AT 400KV AMARGARH(NRSS XXIX) AND 400KV BUS 2 AT AMARGARH(NRSS XXIX) | BAY | NRSS XXIX | 07-07-2020 | 09:34 | 554 | CEA clearance awaited |
| 2 | 40452B MAIN BAY - 400KV SURATGARH(RVUN)-RATANGARH(RS) (RS) CKT-1 AT Ratangarh(RS) | BAY | RRVPNL | 25-12-2020 | 17:05 | 382 | Emergency shutdown for refilling of SF6 gas in R-phase of Circuit Breaker. Later leakage found. Revival delayed due to non-availability of required spare parts. |
| 3 | 400 KV Kadarpur (GPTL) - Bus 1 | BUS | GPTL | 17-04-2021 | 13:18 | 269 | E/S/D taken due to abnormal humming sound observed from 400KV B-phase BUS-1 CVT at Kadarpur. |
| 4 | 425 MAIN BAY - 400/220KV 500 MVA ICT 3 AT DADRI(NT) | BAY | NTPC | 20-11-2021 | 16:20 | 52 | Due to 400KV Main breaker 2552 of ICT 3 opening/ closing problem from remote the bay was kept out while ICT 3 was charged thru tie bay breaker 2652. |

| S.No | Element Name | Type | Owner | Outage | | Outage days | Reason / Remarks |
|---|---|---|---|---|---|---|---|
| C | ICT | | | | | | |
| 1 | 400/220 kV 315 MVA ICT 1 at Bhilwara(rs) | ICT | RRVPNL | 12-05-2019 | 23:42 | 975 | 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 | 670 | 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 Dec-2021. |
| 3 | 400/220 kV 315 MVA ICT 2 at Bawana(DV) | ICT | DTL | 30-03-2021 | 17:35 | 287 | 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 | 511 | 500 MVA ICT-I also got damaged due to fire in ICT-II, for protection testing. Expected revival in Oct-2021. |
| 5 | 400/220 kV 315 MVA ICT 2 at Mundka(DV) | ICT | DTL | 20-09-2019 | 00:419 | 845 | Due to fire in ICT. |
| 6 | 765/400 kV 1500 MVA ICT 2 at Gr.Noida_2(UPC) | ICT | UPPTCL | 12-11-2021 | 14:22 | 60 | PRV- 1 & 2 Trip, Differential protection and Buchholz Trip. inspected our 1500 MVA ICT-2 (R-Ph), During inspection it is found that the IV Bushing got damaged and oil flowed out from the bushing. During complete internal inspection by OEM M/s BHEL winding found faulty |
| 7 | 400/220 kV 315 MVA ICT 4 at Mundka(DV) | ICT | DTL | 13-11-2021 | 19:15 | 59 | Buchholz trip. |
| 8 | 400/220 kV 240 MVA ICT 3 at Moradabad(UP) | ICT | UPPTCL | 13-12-2021 | 22:38 | 29 | Due to high DGA values, Hydrogen gas is above permissible limit. |
| 9 | 220/33 kV 125 MVA ICT 4 at Saurya Urja Solar(SU) | ICT | SAURYA URJA | 20-12-2021 | 20:15 | 22 | ICT-4 tripped due to operation of of PRD, REF, Differential and Buchholz relay. |

| D | LINE REACTOR | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 50 MVAR Non-Switchable LR on Agra-Unnao (UP) Ckt-1 @Agra(UP) | LR | UPPTCL | 28-10-2021 | 22:27 | 75 | R and Y phase bushing damaged at Agra(UP). |
| 2 | 50 MVAR Non-Switchable LR on Allahabad-Fatehpur (PG) Ckt-2 @Allahabad(PG) | LR | POWERGRID | 27-11-2021 | 00:32 | 46 | After multiple emails and telephonic conversations to furnish the reason for the outage no reply has been obtained from CPCC-3. |
| 3 | 50 MVAR Non-Switchable LR on Allahabad-Fatehpur (PG) Ckt-1 @Allahabad(PG) | LR | POWERGRID | 27-11-2021 | 00:32 | 46 | After multiple emails and telephonic conversations to furnish the reason for the outage no reply has been obtained from CPCC-3. |
| **E** | **BUS REACTOR** | | | | | | |
| 1 | 80 MVAR Bus Reactor No 1 at 400KV Nathpa Jhakri(SJ) | BR | SJVNL | 17-10-2019 | 12:58 | 817 | Flashover/Fault in 80MVAR Bus Reactor cleared by Bus Bar Protection. Expected revival in Dec-2021. |
| 2 | 50 MVAR Bus Reactor No 1 at 400KV Moradabad(UP) | BR | UPPTCL | 03-12-2021 | 22:22 | 39 | R-phase bushing damaged. |

| F | GENERATING UNITS | | | | | |
|---|---|---|---|---|---|---|
| **S.No** | **Station** | **Owner** | **Outage Reason** | Outage Date | Outage Time | Outage duration(in days) |
| 1 | 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 | 474 |
| 2 | 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 | 474 |
| 3 | 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 | 474 |
| 4 | 600 MW RGTPP (Khedar) - UNIT 2 | HVPNL | Capital Overhauling. Expected date to be confirmed from HVPNL. Expected by Dec-2021. | 02-03-2021 | 00:00 | 316 |
| 5 | 66 MW Pong HPS - UNIT 4 | BBMB | Failure of compressed air system of Breaking. Expected by Oct-2021 end. | 28-07-2021 | 15:00 | 167 |
| 6 | 250 MW Chhabra TPS - UNIT 4 | RRVPNL | Due to ESP structure damage | 09-09-2021 | 00:47 | 124 |
| 7 | 35 MW Budhil HPS (IPP) - UNIT 1 | Greenko Budhil | Flooding of power house due to damage of Main Inlet Valve at Budhil. | 26-10-2021 | 17:00 | 77 |
| 8 | 100 MW Koteshwar HPS - UNIT 1 | THDC | due to fault in GT | 04-11-2021 | 22:58 | 68 |
| 9 | 250 MW Suratgarh TPS - UNIT 2 | RRVPNL | Due to a problem in the PLC System of Wet Evacuation of ESP Hoppers, it is not possible to evacuate Ash from ESP Hoppers. | 30-11-2021 | 03:06 | 43 |

| F | GENERATING UNITS | | | | | |
|---|---|---|---|---|---|---|
| **S.No** | **Station** | **Owner** | **Outage Reason** | Outage Date | Outage Time | Outage duration(in days) |
| 10 | 180 MW Chamera I HPS - UNIT 1 | NHPC | Annual Maintenance | 30-11-2021 | 19:35 | 42 |
| 11 | 180 MW Chamera I HPS - UNIT 2 | NHPC | Annual Maintenance | 01-12-2021 | 00:01 | 42 |
| 12 | 180 MW Chamera I HPS - UNIT 3 | NHPC | Annual Maintenance | 01-12-2021 | 00:05 | 42 |
| 13 | 126 MW Bhakra HPS - UNIT 4 | BBMB | Annual Maintenance | 01-12-2021 | 09:30 | 42 |
| 14 | 130 MW Parbati III HEP - UNIT 1 | NHPC | Annual Maintenance | 01-12-2021 | 13:05 | 41 |

**Annexure-B-VII**

## List of Faulty Interface Energy Meter (IEM) in Northern Region.

| S.No | Serial No | Type | Feeder name | Region | Remarks |
|---|---|---|---|---|---|
| 1 | NR-4523-A | M | 220kV Gazipur (DTL) at Sec-20 Noida-UPPCL | NR-1 | Faulty |
| 2 | NP-5183-A | M | 220kV Gazipur(DTL) at Sec-62 Noida-UPPCL | NR-1 | Faulty |
| 3 | NR-4600-A | M | 400 kV ICT-2 at Prithala-Sterlite | NR-1 | Read less |
| 4 | NP-1035-B | M | 220kV RAPSB at Kota-RVPNL | NR-1 | Time Drift>1 day |
| 5 | NR-4570-A | M | ICT-1 (400 kV) at Sikar-PG(Raj drwl) | NR-1 | Date not correct |
| 6 | NR-3775-A | M | 400 kV Rishikesh(UK) at Nehtaur-UPPCL | NR-1 | Faulty |
| 7 | NR-3708-A | C | 400 kV Basti-2 at Tanda Stage-2 | NR-1 | Faulty |
| 8 | NP-1336-A | S | 220/132kV ICT-1(132kV) at Hissar-BBMB | NR-1 | Faulty |
| 9 | NP-1347-A | S | 220kV Chirawa at Hissar-BBMB | NR-1 | Faulty |
| 10 | NR-3729-A | L | 765 kV Varanasi-I at Kanpur(GIS)PG | NR-1 | Empty file on conversion |
| 11 | NR-3730-A | L | 765 kV Jhatikra at Kanpur(GIS)PG | NR-1 | Empty file on conversion |
| 12 | NR-3625-A | L | 400 kV Allahabad-II at Kanpur(GIS)PG | NR-1 | Empty file on conversion |
| 13 | NR-4405-A | S | 400/220 kV ICT-1(220 kV) at Fatehpur-PG | NR-1 | Empty file on conversion |
| 14 | NP-3027-A | L | 400 kV Bareilly-1 at Meerut-PG | NR-1 | Faulty |
| 15 | NR-3368-A | M | 220kV Kishenpur-1 at Salal HPS | NR-2 | Meter replaced but Site not able to dump new meter data of WR series |
| 16 | NP-1628-A | M | GT-9(220 kV) at Bhakra Right Bank | NR-2 | Faulty |
| 17 | NP-1673-A | M | GT-2(220 kV) at Pong HPS | NR-2 | Faulty |
| 18 | NR-3651-A | M | 220kV Bhiwani(HVPN)-1 at Bhiwani-BBMB | NR-2 | Faulty |
| 19 | NP-1433-A | S | 220/132kV ICT-2(132kV) at Kurukshetra-BBMB | NR-2 | Faulty |
| 20 | NR-3234-A | S | 220kV Dhulkote-2 at Panipat-BBMB | NR-2 | Faulty |
| 21 | New Meter | S | 220kV Sangrur-1 at Jamalpur-BBMB | NR-2 | Faulty |
| 22 | NP-6962-A | M | 400 kV Abdullapur-PG at Dipalpur-HVPNL | NR-2 | Time drift >1day |
| 23 | NR-3642-A | S | 20kV Chirawa at Hissar-BBMB | NR-2 | Read abrupt |
| 24 | NP-1829-A | M | 132 kV Bassi-2 at Shanan-PSEB | NR-2 | Time drift more than 12 hrs |
| 24 | NP-1588-A | S | 220 kV Jallandhar(PG)-1 at Kartarpur-PSEB | NR-2 | Time drift |
| 25 | NR-3266-A | L | 765KV Bikaner-1 at Moga-PG | NR-2 | Faulty |
| 26 | WR-2168-A | S | 400kV Genr-4 at Uri-II HPS | NR-2 | Empty file on conversion |
| 27 | NR-3375-A | S | 400 kV Koldam at Banala PG | NR-2 | Empty file on conversion |
| 28 | NP-9889-A | M | 400kV Allahabad- 2 at Singrauli STPS(NP-1553-A changed)_#Singrauli STPS | NR-3 | Data not getting converted |
| 29 | NP-9888-A | M | 33KV Singrauli STPS at Singrauli Hydro (NR-4493-A changed)_#Singrauli Solar | NR-3 | Data not getting converted |
| 30 | NP-1311-A | C | 220kV Swaimadhopur at Anta CCPP | NR-3 | Faulty |
| 31 | NP-1286-A | M | 132kV Morwa at Bina-UPPCL | NR-3 | Faulty |
| 32 | NP-1792-A | M | 132kV Thakurdwara/Moradabad at Mahuakheraganj(pre Kashipur)-UPCL | NR-3 | Faulty |
| 33 | NP-1788-A | M | 132kV Nehtaur-1 at Laksar-UPCL | NR-3 | Faulty |
| 34 | NP-8206-A | M | 220kV Tanakpur-1 at CB Gunj-UPPCL | NR-3 | Faulty |
| 35 | NP-8056-A | M | 220kV NAPS at Simbhauli-UPPCL | NR-3 | Faulty |
| 36 | NR-3625-A | L | 400 kV Allahabad-II at Kanpur(GIS)PG | NR-3 | Faulty |
| 37 | NR-4383-A | S | 400KV Unchahar-I at Fatehpur-PG | NR-3 | Faulty |

| | | | | | |
|---|---|---|---|---|---|
| 38 | NP-1239-A | M | 220kV Kanpur at 220kV Raniya-UPPCL | NR-3 | Software not available for data dump |
| 39 | NR-3994-A | S | 400 kV Biharsharif-I at Varanasi PG | NR-3 | Faulty |
| 40 | NP-8237-A | M | ICT-4 (400 kV) at Bamnauli-DTL | NR-3 | Faulty |
| **Total IEM requirement** | | | | | 40 |

## List of DCD replacement/requirement at Various Substations in Northern Region

| S.No | Name of the Substation | No of DCD | Region | Remarks |
|---|---|---|---|---|
| 1 | 400 kV Dhanonda-HVPNL | 1 | NR-2 | DCD defective. |
| 2 | 220 kV Anta-NTPC | 1 | NR-3 | DCD defective. |
| 3 | 220 kV MIA-RVPNL | 1 | NR-1 | DCD required for time correction only however data is received at NRLDC through AMR |
| 4 | 400 kV Ratangarh-RVPNL | 1 | NR-1 | ----------do---------- |
| 5 | 132 kV Amarpura-Tehdi-RVPNL | 1 | NR-1 | ----------do---------- |
| 6 | 220 kV Swaimadhopur-RVPNL | 1 | NR-1 | ----------do---------- |
| 7 | 220 kV Khetri-RVPNL | 1 | NR-1 | ----------do---------- |
| 8 | 400 kV Chittoragarh-RVPNL | 1 | NR-1 | ----------do---------- |
| 9 | 220 kV Chittoragarh-RVPNL | 1 | NR-1 | ----------do---------- |
| 10 | 765 kV Phagi-RVPNL | 1 | NR-1 | ----------do---------- |
| 11 | 220 kV Bagru-RVPNL | 1 | NR-1 | ----------do---------- |
| 12 | 220 kV Dausa-RVPNL | 1 | NR-1 | ----------do---------- |
| 13 | 220 kV Lalsot-RVPNL | 1 | NR-1 | ----------do---------- |
| 14 | 220 kV Bhilwara-RVPNL | 1 | NR-1 | DCD defective. |
| 15 | 400 kV Ajmer-RVPNL | 1 | NR-1 | DCD defective. |

| | | | | |
|---|---|---|---|---|
| 16 | 400 kV Merta-RVPNL | 1 | NR-1 | DCD defective |
| 17 | 220 kV Chirawa-RVPNL | 1 | NR-1 | DCD defective. |
| 18 | 400 kV Babai-RVPNL | 1 | NR-1 | DCD defective |
| 19 | Sri Nagar-PTCUL | 1 | NR-1 | DCD Disk full |
| 20 | BBMB Pong | 1 | NR-2 | DCD defective. |
| 21 | Bhakra-Left BBMB | 1 | NR-2 | DCD defective. |
| | **Total DCD requirement** | 21 | | |

**Annexure-B-VIII**

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

Ref: NRLDC/SO-II/TS-158/1934 Date: 29 December, 2021

**Plant Head,**
**JSW Hydro Energy Limited K. Wangtoo H.E Project,**
**Sholtu Colony, P.O Tapri-172104,**
**Distt. Kinnaur-Himachal Pradesh**

**Subject: Submission of Dynamics Data of JSW Generators**

Sir,

Dynamic data of generator models is extremely useful in transient and dynamic simulation studies. In view of large renewable penetration and complex growing grid, dynamic data and studies have become significant for studying the dynamic behaviors of the system. The importance of this data has also been discussed in several TCC/NRPC and OCC meetings (latest in 43rd TCC and 46th NRPC meeting and 180th OCC meeting).

Presently, partial generator and governor data is available for KWHEP whereas none of the dynamic data of exciter and stabilizer models of KWHEP generating station is available at NRLDC. Dynamic data of exciter, generator, governor and stabilizer models of Baspa generating station is not available at NRLDC.

The dynamic data would be helpful in assessing the power that can safely be evacuated under different contingencies and exploring possibility of modifying the SPS in Baspa-Karcham-Jhakri-Rampur-Sorang complex.

It is hereby requested to kindly send the dynamics data of generator models required for simulation studies in PSSe, as per the format given at following link: **https://nrldc.in/download/dynamic-data-modeling-templates/?wpdmdl=7337)** at the earliest.

Thanking you.

आलोक

**(Alok Kumar)**
**General Manager (System Operation -II)**

Copy:

1) CGM (I/C), NRLDC, 18-A SJSS Marg, New Delhi - 110016
2) Member Secretary , NRPC , 18-A SJSS Marg, New Delhi – 110016
3) Chief Engineer, HP State Load Dispatch Centre, Totu, Shimla-171 001
4) CGM (SO -II), NRLDC, NEW DELHI-16.

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
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संदर्भ: उ क्षे भा प्रे के/संचालन प्रणाली-II/158/1935 दिनांक: 29 दिसम्बर, 2021

सेवा में,

**मुख्य महाप्रबंधक (सी एवं एस ओ)**
**एसजेवीएन कॉर्पोरेट कार्यालय परिसर**
**शनान, शिमला - 171006**

**विषय: Submission of Dynamics Data of SJVN Generators**

महोदय,

Dynamic data of generator models is extremely useful in transient and dynamic simulation studies. In view of large renewable penetration and complex growing grid, dynamic data and studies have become significant for studying the dynamic behaviors of the system. The importance of this data has also been discussed in several TCC/NRPC and OCC meetings (latest in 43rd TCC and 46th NRPC meeting and 180th OCC meeting). The present status of availability of dynamic data of generator, exciter, governor and stabilizer models of SJVN generating stations at NRLDC is as follows:

| Plant | Generator | Exciter | Governor | Stabilizer |
|---|---|---|---|---|
| Nathpa Jhakri | Partial | Not available | Partial | Not available |
| Rampur | Partial | Not available | Partial | Not available |

The dynamic data would be helpful in assessing the power that can safely be evacuated under different contingencies and exploring possibility of modifying the SPS in Baspa-Karcham-Jhakri-Rampur-Sorang complex.

It is hereby requested to kindly send the dynamics data of generator models required for simulation studies in PSSe, as per the format given at following link: **https://nrldc.in/download/dynamic-data-modeling-templates/?wpdmdl=7337)** at the earliest.

Thanking you.

आलोक

**(आलोक कुमार)**
**महाप्रबंधक (प्रणाली प्रचालन -II)**

प्रतिलिपि:
1) मुख्य महाप्रबंधक (प्रभारी), उ क्षे भा प्रे के, 18-ए एस जे एस एस मार्ग, नई दिल्ली - 110016
2) सदस्य सचिव , उ क्षे वि स , 18-ए एस जे एस एस मार्ग, नई दिल्ली - 110016
3) मुख्य महाप्रबंधक (SO-II), उ क्षे भा प्रे के.

**Annexure-B-IX**

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
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**संदर्भ सं°**: NRLDC/SO-I/151/ 1926-1931 **दिनांक** : 27th Dec. 2021

To

Sr. DGM,
CPCC, NR-1,
Powergrid, New Delhi

**Sub : Regarding multiple trippings at 400/220kV Mandola(PG) at 20:42Hrs on 26.12.2021.**

Sir,

Multiple trippings have occurred due to operation of 220kV Bus-bar protection at Mandola(PG) at 20:42 Hrs on 26.12.2021. During this incident, all 04(four) nos. 400/220kV, 500MVA ICTs and the 220kV lines connected to Mandola(PG) have got tripped. These trippings have led to a load loss of approx. 600MW in the Delhi and there has been interruption in the power supply of Delhi Metro network also.

Although, power supply to metro network was restored through alternate source immediately, however, there has been considerable delay in obtaining the charging clearance (from site) for restoration of the tripped elements at Mandola(PG). Moreover, even after issuance of charging codes by NRLDC, there has been a significant delay in charging the tripped elements. This has led to power supply shortage in Delhi for a considerable duration.

You are requested to investigate the cause of multiple trippings at Mandola(PG) and also intimate the reason for delay in restoration of the tripped elements.

You are also requested to advise the concerned sites(s) to ensure earliest restoration of tripped elements in future for reliable Grid operation.

Your cooperation shall be highly appreciated.

Thanks & Regards,

27/12/2021

Mahavir Prasad Singh
DGM(SO-I), NRLDC

Copy for kind information :
(1) Executive Director, NRLDC
(2) CGM(SO-1&SL-2), NRLDC
(3) CGM(AM), Powergrid, RHQ, NR-1, New Delhi.
(4) GM(SO-1& SL-2), NRLDC
(5) General Manager (SLDC), Delhi Transco Ltd.

**Annexure-B-X**

| Sr No | Element Name | Outage Date | Outage Time | Reason |
|---|---|---|---|---|
| 1 | 400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2 | 03-Dec-21 | 11:10 | NO FLAG AT ANPARA END.DT RECIEVED FROM SARNATH END. As per PMU, No fault observed. |
| | | 04-Dec-21 | 05:00 | Y-N fault, 8.14KA ,DISTANCE=24.6KM from Sarnath end. As per PMU, Y-N fault and unsuccessful auto-reclosing observed. |
| | | 29-Dec-21 | 02:29 | B-N fault, Dist. 60 km, Fault current 6.12kA from Anpara. Tripped from Anpara end only. As per PMU, Y-N fault occured, no auto-reclosing observed. |
| 2 | 400 KV Bareilly-Unnao (UP) Ckt-1 | 01-Dec-21 | 03:04 | R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed. |
| | | 15-Dec-21 | 23:53 | B-N fault, Dist. 82.8km, Fault current 4.41kA from Unnao end. As per PMU, B-N fault occured, no auto-reclosing observed. |
| | | 17-Dec-21 | 06:07 | Y-N fault, Dist. 45.55km, Fault current 5.91kA from Bareilly end. As per PMU, Y-N fault occured, no auto-reclosing observed. |
| | | 29-Dec-21 | 01:34 | Y-N fault, Dist. 146.8km, Fault current 2.96kA from Unnao end. As per PMU, Y-N fault occured, no auto-reclosing observed. |
| 3 | 400 KV Bareilly-Unnao (UP) Ckt-2 | 12-Dec-21 | 22:16 | R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed. |
| | | 23-Dec-21 | 05:44 | R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed. |
| | | 24-Dec-21 | 08:25 | B-N fault, 144.41 km, 2.4 kA at Bareilly end. Line tripped at only Bareilly end. As per PMU, B-N fault occured, no auto-reclosing observed. |
| | | 29-Dec-21 | 19:05 | R-N fault. As per PMU, R-N fault occurred and delayed clearance of 280ms with no auto-reclosing observed. |
| 4 | 765 KV Anpara_D-Unnao (UP) Ckt-1 | 27-Dec-21 | 05:51 | R-N fault, Fault current 2.33kA, Dist. 261km from Unnao(UP). As per PMU, R-N fault occured, no auto-reclosing observed. |
| | | 28-Dec-21 | 05:39 | R-N fault, Fault current 2.24kA, Dist. 261.5km from Unnao(UP). As per PMU, R-N fault occured, no auto-reclosing observed. |
| | | 31-Dec-21 | 23:38 | B-N fault, Dist. 292.5km, Fault current 2.311kA from Anpara end. As per PMU, B-N fault occured, no auto-reclosing observed. |
| 5 | 400 KV Suratgarh(RVUN)-Bikaner(RS) (RS) Ckt-1 | 01-Dec-21 | 23:33 | R-N fault. As per PMU, Y-N fault occured, no auto-reclosing observed. |
| | | 02-Dec-21 | 13:17 | B-N fault, Dist. 50.97km, Fault current 5.30kA from Suratgarh end. As per PMU, Y-N fault occured, no auto-reclosing observed. |
| | | 23-Dec-21 | 15:20 | R-N fault, Fault current 4.039kA, Dist. 79.28km from Bikaner(RS) end. As per PMU, Y-N fault occured, no auto-reclosing observed. |
| 6 | 220 KV Delhi RR(BB)-Narela(DV) (BBMB) Ckt-2 | 10-Dec-21 | 22:37 | Tripped from Narela end only. Master trip relay tripped. As per PMU, No fault observed. |
| | | 21-Dec-21 | 13:13 | Line tripped from Narela end only. As per PMU, No fault observed. |
| | | 22-Dec-21 | 11:10 | Line tripped from Delhi Rohtak Road(BBMB) only. As per PMU, No fault observed. |
| | | 26-Dec-21 | 12:50 | Line tripped from Narela end only. As per PMU, No fault observed. |
| | | 26-Dec-21 | 14:49 | Line tripped from Narela end only. As per PMU, No fault observed. |
| | | 26-Dec-21 | 20:45 | Line tripped from Narela(DTL) only. As per PMU, No fault observed. |
| | | 27-Dec-21 | 11:40 | Relay maloperation. As per PMU, No fault observed. |
| | | 03-Dec-21 | 19:24 | R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed. |
| | | 03-Dec-21 | 23:25 | R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed. |

| | | | | |
|---|---|---|---|---|
| 7 | 220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2 | 04-Dec-21 | 02:54 | R-N fault, 31.74Km,Ia=3.01KA from RAPP-A end. As per PMU, R-N fault occured, no auto-reclosing observed. |
| | | 05-Dec-21 | 00:15 | R-N fault, 24.74Km,Ia=4.8KA from RAPP-A end. As per PMU, R-N fault occured, no auto-reclosing observed. |
| | | 07-Dec-21 | 21:27 | Y-N fault, Dist. 32.17km, Fault current 4.923kA from RAPP-A and Dist. 2.1km, Fault current 9.33kA from Sakatpura(RS) end. As per PMU, Y-N fault occured, no auto-reclosing observed. |
| | | 22-Dec-21 | 17:17 | R-N fault, Dist. 25.46km, Fault current 4.21kA from Sakatpur end. As per PMU, R-N fault occured, no auto-reclosing observed. |
| | | 27-Dec-21 | 06:26 | R-N fault, Dist. 11.92km, Fault current 5.66kA from Sakatpura(RS) end. . As per PMU, R-N fault occured, no auto-reclosing observed. |
| 8 | 220 KV Duni(RS)-Jaipur South(PG) (RS) Ckt-1 | 17-Dec-21 | 17:27 | DT received at Jaipur South(PG) end. As per PMU, No fault observed. |
| | | 18-Dec-21 | 16:40 | DT received at Jaipur South(PG) end. As per PMU, No fault observed. |
| | | 19-Dec-21 | 16:38 | DT received at Jaipur South(PG) end. As per PMU, No fault observed. |
| | | 22-Dec-21 | 03:58 | No relay Indication. As per PMU, No fault observed. |
| | | 28-Dec-21 | 04:02 | R-N fault. As per PMU, R-N fault occurred and delayed clearance of 480ms with unsuccessful auto-reclosing observed. |
| | | 29-Dec-21 | 07:54 | R-N fault. As per PMU, R-N fault occurred and delayed clearance of 560ms with unsuccessful auto-reclosing observed. |
| 9 | 220 KV Duni(RS)-Kota(PG) (RS) Ckt-1 | 10-Dec-21 | 10:40 | DT received at Duni(RS) end. As per PMU, No fault observed. |
| | | 22-Dec-21 | 00:44 | Tripped due to fire in Y-Phase CT of ICT-2 220KV side Main Bay (203). As per PMU, Y-N fault occured, no auto-reclosing observed. |
| | | 24-Dec-21 | 07:20 | R-N fault, Zone-1, Dist. 48.10km from Duni(RS). As per PMU, R-N fault occured, no auto-reclosing observed. |
| | | 28-Dec-21 | 04:02 | R-N fault. As per PMU, R-N fault occurred and delayed clearance of 480ms with unsuccessful auto-reclosing observed. |
| | | 29-Dec-21 | 07:58 | R-N fault, 12.3 Km from Dooni end. As per PMU, R-N fault occurred and delayed clearance of 560ms with unsuccessful auto-reclosing observed. |

# Annexure-B-XI

| 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 24Hours | after 24Hours | Not Received | within 24Hours | after 24Hours | Not Received | Received | Not Received | |
| 1 | NR | 1) 220 KV Samaypur(BB)-Palli(HV) (HVPNL) Ckt-2<br>2) 220 KV Samaypur(BB)-Palli(HV) (HVPNL) Ckt-1<br>3) 220 KV Faridabad(NT) - Bus 1<br>4) 220 KV Faridabad(NT)-Palla(HV) (PG) Ckt-1<br>5) 220 KV Faridabad Sec-58 (HV)-Faridabad(NT) (HVPNL) Ckt-1 | HARYANA | HVPNL, POWERGRID | 2-Dec-21 | 03:32 | Blue Phase CT of 220 KV Pali - Samaypur Ckt - 2 blasted and caught fire which led to bus bar protection operation of 220kV Bus-2 at Palli. Due to bus bar protection operation, 220 KV Samaypur(BB)-Palli(HV) (HVPNL) Ckt-1 & Ckt-2, 220kV Pali- Sector 56 Gurgaon ckt-1 & Ckt-2 and 220/66kV Transformer-1 at Palli all tripped as all were connected to 220kV Bus-2. At the same time, 220 KV Faridabad(NT)-Palla(HV) (PG) Ckt-1 & 220 KV Faridabad Sec-58 (HV)-Faridabad(NT) (HVPNL) Ckt-1 also tripped. As per PMU, B-N phase to earth fault with delayed clearance in 400ms is observed. As per SCADA, load loss of approx. 80MW is observed in Haryana control area. In antecedent condition, 220 KV Samaypur(BB)-Palli(HV) (HVPNL) Ckt-1&2 carrying 40MW each. | 0 | 80 | GD-1 | 0.19 | | Y(Har)<br>Y(BBMB)<br>Y(NTPC) | | Y(Har)<br>Y(BBMB) | Y(NTPC) | | Y(Har)<br>Y(BBMB)<br>Y(NTPC) | | 400 |
| 2 | NR | 1) 400 KV Avaada Pooling SL_BKN_PG (AEPL)-Bikaner(PG) (AEPL) Ckt-1<br>2) 400/33 kV 150 MVA ICT 7 at Avaada Pooling SL_BKN_PG (AEPL)<br>3) 400/33 kV 150 MVA ICT 5 at Avaada Pooling SL_BKN_PG (AEPL)<br>4) 400/33 kV 150 MVA ICT 6 at Avaada Pooling SL_BKN_PG (AEPL) | RAJASTHAN | Avaada Pooling | 2-Dec-21 | 14:17 | 400 KV Avaada Pooling SL_BKN_PG (AEPL)-Bikaner(PG) (AEPL) Ckt-1 along with 400/33 kV 150 MVA ICT 5, ICT 6 & ICT 7 at Avaada Pooling SL_BKN_PG (AEPL) tripped on three phase to earth fault at 33kV side of 400/33 kV 150 MVA ICT 6 at Avaada Pooling. As per PMU, R-Y-B three phase fault is observed. | 0 | 0 | GI-2 | 0 | | Y(ASEPL)<br>Y(PG) | | | Y(ASEPL)<br>Y(PG) | | Y(ASEPL)<br>Y(PG) | | 80 |
| 3 | NR | 1) 400KV Bus 1 at Vishnuprayag(JP)<br>2) 400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt-1<br>3) 400 KV Muzaffarnagar(UP)-Vishnuprayag(JP) (UP) Ckt-1 | UTTAR PRADESH | UPPTCL | 2-Dec-21 | 14:42 | 400KV Bus 1 at Vishnuprayag(JP), 400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt-1 and 400 KV Muzaffarnagar(UP)-Vishnuprayag(JP) (UP) Ckt-1 tripped on three phase to earth fault at 33kV side of 400/33 kV 150 MVA ICT 6 at Avaada Pooling. As per PMU, R-Y-B three phase fault is observed. | 105 | 0 | GD-1 | 0 | Y(UP) | | | Y(UP) | | | Y(UP) | | 80 |
| 4 | NR | 1) 400 KV Hapur(UP)-Moradabad(UP) (PG) Ckt-1<br>2) 400 KV Moradabad(UP)-Kashipur(UK) (UK) Ckt-1<br>3) 400 KV Bareilly(PG)-Moradabad(UP) (PG) Ckt-2<br>4) 400 KV Bareilly(PG)-Moradabad(UP) (PG) Ckt-1 | UTTAR PRADESH | POWERGRID, PTCUL | 3-Dec-21 | 22:17 | R-ph bushing of 50MVAR bus reactor at 400 KV S/S Moradabad got burst which was charged through transfer bus. As fault was outside the range of differential protection of bus reactor and bus bar protection also not operated, fault cleared with the tripping of 400 KV Hapur(UP)-Moradabad(UP) (PG) Ckt-1, 400 KV Moradabad(UP)-Kashipur(UK) (UK) Ckt-1, 400 KV Bareilly(PG)-Moradabad(UP) (PG) Ckt-1 & Ckt-2 from the remote end. 220kV feeders to Almora and Sambhal also tripped from remote end only. 400/220 kV 500 MVA ICT 1, ICT 2 & 240MVA ICT 3 at Moradabad(UP) were hand tripped from LV side. As per PMU, R-N phase to earth fault followed by Y-N & B-N fault with delayed clearance in 440ms is observed. As per SCADA, load loss of approx. 110MW is observed in UP control area. In antecedent condition, 400 KV Hapur(UP)-Moradabad(UP) (PG) Ckt-1, 400 KV Moradabad(UP)-Kashipur(UK) (UK) Ckt-1, 400 KV Bareilly(PG)-Moradabad(UP) (PG) Ckt-1 & Ckt-2 were carrying 120MW, 98MW, 200MW & 200MW respectively. | 0 | 110 | GD-1 | 0.11 | Y(UP) | Y(PG) | | Y(UP) | Y(PG) | | Y(UP)<br>Y(PG) | | 440 |
| 5 | NR | 1) 400 KV Chamera_2(NH)-Chamera_1(NH) (PG) Ckt-1<br>2) 400 KV Chamera_2(NH)-Kishenpur(PG) (PG) Ckt-1 | HIMACHAL PRADESH | POWERGRID | 5-Dec-21 | 14:12 | 400 KV Chamera_2(NH)-Chamera_1(NH) (PG) Ckt-1 and 400 KV Chamera_2(NH)-Kishenpur(PG) (PG) Ckt-1 both tripped on R-B phase to phase fault at distance approx. 20km from Chamera II end during inclement weather condition. Length of 400 KV Chamera_2(NH)-Chamera_1(NH) (PG) Ckt-1 & 400 KV Chamera_2(NH)-Kishenpur(PG) (PG) Ckt-1 is 36km & 135Km respectively and both lines are on same tower upto 36km from Chamera II end. As per PMU, R-B phase to phase fault is observed. In antecedent condition, 400 KV Chamera_2(NH)-Chamera_1(NH) (PG) Ckt-1 and 400 KV Chamera_2(NH)-Kishenpur(PG) (PG) Ckt-1 were carrying 71MW & 160MW respectively. | 0 | 0 | GI-2 | 0 | Y(PG)<br>Y(NHPC) | | | Y(PG)<br>Y(NHPC) | | | Y(NHPC) | | 80 |
| 6 | NR | 1) 400 KV Obra_C_TPS-Obra_B (UP) Ckt-1<br>2) 400 KV Anpara-Obra_B (UP) Ckt-1<br>3) 400 KV Obra_B-Sultanpur (UP) Ckt-1<br>4) 400 KV Obra_B-Rewa Road (UP) Ckt-1<br>5) 200 MW Obra TPS - UNIT 10<br>6) 200 MW Obra TPS - UNIT 11<br>7) 200 MW Obra TPS - UNIT 12<br>8) 400KV Bus 2 at Obra_B(UP)<br>9) 400KV Bus 1 at Obra_B(UP)<br>10) 400/220 kV 240 MVA ICT 3 at Obra_B(UP)<br>11) 400/220 kV 315 MVA ICT 2 at Obra_B(UP) | RAJASTHAN | UPPTCL | 6-Dec-21 | 18:27 | While synchronizing the 200MW Unit-13 at Obra_B TPS, B-ph circuit breaker of Unit-13 got blast which was connected to Bus-1. On this fault, bus bar of Bus-1 operated and due to delay in opening of bus coupler, bus bar protection of bus-2 also operated resulted into tripping of all connected transmission lines, ICTs and generating units. As per PMU, B-N phase to earth fault is observed. As per SCADA, generation loss of approx. 500MW is observed at Obra_B TPS due to tripping of 200MW Unit-10,11&12. In antecedent condition, 400 KV Anpara-Obra_B (UP) Ckt-1, 400 KV Obra_B-Sultanpur (UP) Ckt-1, 400 KV Obra_B-Rewa Road (UP) Ckt-1 and 400/220 kV 240 MVA ICT 3 at Obra_B(UP) were carrying 310MW, 208MW, 229MW & 210MW respectively. | 500 | 0 | GD-1 | 0 | | Y(UP) | | | | Y(UP) | Y(UP) | | 80 |
| 7 | NR | 1) 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1<br>2) 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2 | NEW DELHI | DTL | 10-Dec-21 | 17:38 | At 17:38 Hrs on 10.12.2021, current leakage occurred at secondary CT of 220/66kV Transformer-1 at 220/66kV Narela(DV) (connected at 220kV Bus-2) due to insulation failure. It came under the zone of bus bar 2 protection and Bus bar protection of Bus-2 operated. On operation of Bus bar proection, 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 & Ckt-2, 220/66kV 100MVA Transformer -1,2 & 3 at Narela(DV) all tripped. As per PMU, no fault is observed. As per SCADA, load loss of approx. 110MW is observed in Delhi control area. In antecedent condition, 220kV Panipat-Narela ckt-1,2&3 were off and 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 & Ckt-2 were carrying 90MW each. | 0 | 110 | GD-1 | 0.38 | | Y(PG)<br>Y(Del) | | | Y(Del) | | Y(Del) | | NA |
| 8 | NR | 1) 400/220 kV 315 MVA ICT 1 at Gumma (HP)<br>2) 400/220 kV 315 MVA ICT 2 at Gumma (HP)<br>3) 400/220 kV 315 MVA ICT 1 at Gumma (HP)<br>4) 400/220 kV 315 MVA ICT 2 at Gumma (HP)<br>5) 400/220 kV 315 MVA ICT 1 at Gumma (HP)<br>6) 400/220 kV 315 MVA ICT 2 at Gumma (HP) | HIMACHAL PRADESH | HPSEB | 11-Dec-21 | 12:00 | As reported on 11.12.2021, multiple tripping of 400/220 kV 315 MVA ICT 1 & ICT 2 at Gumma (HP) is observed at 12:00Hrs, 16:06Hrs and 19:10Hrs. SF6 gas density monitor of R-phase and B-phase of Tie CB(402 Bay) compartment have been found faulty, which was initiating LBB tripping command. As 400/220 kV 315 MVA ICT 1 & ICT 2 at Gumma (HP) were connected in same dia through Main CB, multiple tripping of both ICTs were observed. As per PMU, no fault is observed. As per SCADA, generation loss of approx. 80MW is observed at Sawra kuddu HEP. In antecedent condition, 400/220 kV 315 MVA ICT 1 & ICT 2 at Gumma (HP) were carrying 40MW each at 19:08 Hrs. | 80 | 0 | GD-1 | 0.2 | Y(HP) | | | Y(HP) | | | Y(HP) | | NA |
| 9 | NR | 1) 400/220 kV 315 MVA ICT 2 at Obra_B(UP)<br>2) 400/220 kV 240 MVA ICT 3 at Obra_B(UP) | UTTAR PRADESH | UPPTCL | 19-Dec-21 | 17:39 | 400/220 kV 315 MVA ICT 2 & 400/220 kV 240 MVA ICT 3 at Obra_B(UP) tripped on over current protection operation. As per PMU, no fault is observed. As per SCADA, load loss of approx. 160MW is observed. In antecedent condition, 400/220 kV 315 MVA ICT 2 at Obra_B(UP) was carrying 305MW. | 0 | 160 | GD-1 | 0.11 | | Y(UP) | | | Y(UP) | | Y(UP) | | NA |
| 10 | NR | 1) 400/220 kV 315 MVA ICT 1 at Gumma (HP)<br>2) 400/220 kV 315 MVA ICT 2 at Gumma (HP) | HIMACHAL PRADESH | HPSEB | 21-Dec-21 | 12:28 | 400/220 kV 315 MVA ICT 1 & ICT 2 at Gumma (HP) tripped on LBB operation of Tie CB (402 Bay) on SF6 gas low stage-2 flag. Earlier on 11.12.2021 also, multiple tripping of both ICTs was observed. During investigation SF6 gas density monitor of R-phase and B-phase of Tie CB(402 Bay) compartment was found faulty and same was replaced and kept under observation. After two days observation when Tie CB was charged, again 402 Bay Tie CB LBB operated on SF6 gas low stage-2 flag and both ICTs tripped. There was no generation at Sawrakuddu during the tripping of ICTs. As per PMU, no fault is observed. | 0 | 0 | GI-2 | 0 | | | Y(HP) | | Y(HP) | | | Y(HP) | NA |
| 11 | NR | 1) 400/220 kV 315 MVA ICT 2 at Kota(PG)<br>2) 220KV Bus 1 at Kota(PG)<br>3) 220 KV Kota(PG)-KTPS(RVUN) (RS) Ckt-2<br>4) 220 KV Duni(RS)-Kota(PG) (RS) Ckt-1 | RAJASTHAN | POWERGRID, RRVPNL | 22-Dec-21 | 00:44 | Due to fire in Y-ph CT at 220kV side (203 Bay) of 400/220 kV 315 MVA ICT 2 at Kota(PG) which was connected to Bus-1, bus bar protection of 220kV Bus-1 operated. Due to bus bar protection of bus-1 operation, elements connected to 220kV Bus-1 i.e, 220 KV Kota(PG)-KTPS(RVUN) (RS) Ckt-2, 220 KV Dhuni(RS)-Kota(PG) (RS) Ckt-1 and 400/220 kV 315 MVA ICT 2 at Kota(PG) all tripped. As per PMU, Y-N phase to earth fault is observed. In antecedent condition, 220 KV KTPS(RVUN)-Kota(PG)(RS) Ckt-2, 220 KV Kota(PG)-Dhuni(RS)(RS) Ckt-1 and 400/220 kV 315 MVA ICT 2 at Kota(PG) were carrying 100MW, 66MW and 13MMW (towards 400kV side). | 0 | 0 | GI-2 | 0 | | Y(PG)<br>Y(Raj) | | | Y(PG)<br>Y(Raj) | | Y(PG)<br>Y(Raj) | | 80 |
| 12 | NR | 1) 400/220 kV 315 MVA ICT 1 at Alwar(ATIL)<br>2) 400 KV Alwar(ATIL)-Hindaun(RS) (ATIL) Ckt-1<br>3) 400/220 kV 315 MVA ICT 1 at Hindaun(RS)<br>4) 400 KV Heerapura-Hindaun (RS) Ckt-1<br>5) 400/220 kV 315 MVA ICT 2 at Alwar(ATIL)<br>6) 400/220 kV 315 MVA ICT 2 at Hindaun(RS) | RAJASTHAN | ATSL, RRVPNL | 22-Dec-21 | 07:27 | 400/220 kV 315 MVA ICT 1 & ICT 2 at Hindaun(RS) tripped on over load. At the same time, 400 KV Alwar(ATIL)-Hindaun(RS) (ATIL) Ckt-1 and 400 KV Heerapura-Hindaun (RS) Ckt-1 tripped on DC supply failure at Hindaun. With the tripping of 400 KV Alwar(ATIL)-Hindaun(RS) (ATIL) Ckt-1, both 400/220kV ICT and 220kV feeders at Alwar also tripped. SCADA data of antecedent condition also not available with SLDC-Rajasthan due to DC supply failure during the tripping event. As per PMU, no fault observed. As per SCADA, load loss of approx. 600MW is observed in Rajasthan control area. In antecedent condition, 400 KV Alwar(ATIL)-Hindaun(RS) (ATIL) Ckt-1 was carrying 101MW and SCADA data at 400/220kV Hindaun(RS) was suspected. | 0 | 600 | GD-1 | 3 | | Y(Raj) | | | Y(Raj) | | Y(Raj) | | NA |
| 13 | NR | 1) 220 KV Kishenpur(PG)-Salal(NH) (PG) Ckt-2<br>2) 220 KV Kishenpur(PG)-Salal(NH) (PG) Ckt-3<br>3) 220 KV Salal(NH)-Jammu(PDD) (PG) Ckt-1<br>4) 220KV Bus 2 at Salal(NH)<br>5) 220 KV Salal(NH)-Jammu(PDD) (PG) Ckt-2 | J & K | POWERGRID | 23-Dec-21 | 15:29 | Bus Bar protection of 220KV Bus 2 at Salal(NH) operated during Dismantling of old MOM and installation of new MOM and annual maintenance of isolator work on 220 KV Kishenpur(PG)-Salal(NH) (PG) Ckt-1. As per PMU, Y-B fault is observed in the system. In antecedent conditions, Unit#3 at Salal(NH) generating 30MW. 220 KV Salal(NH)-Jammu(PDD) (PG) Ckt-1 & 2 carrying 96MW & 85MW respectively. | 30 | 0 | GD-1 | 0 | Y(NHPC) | Y(PG)<br>Y(JK) | | Y(NHPC) | | | Y(NHPC) | | 80 |

| 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 24Hours | after 24Hours | Not Received | within 24Hours | after 24Hours | Not Received | Received | Not Received | |
| 14 | NR | 1) 400/220 kV 315 MVA ICT 1 at Bikaner(RS)<br>2) 400/220 kV 315 MVA ICT 2 at Bikaner(RS) | RAJASTHAN | RRVPNL | 24-Dec-21 | 17:50 | 400/220 kV 315 MVA ICT 1 & 315 MVA ICT 2 at Bikaner(RS) tripped due to O/C trip. As per PMU, No fault is observed in the system. In antecedent conditions, 400/220 kV 315 MVA ICT 1 & 315 MVA ICT 2 at Bikaner(RS) carrying 253MW & 257MW respectively. | 0 | 250 | GD-1 | 0.28 | | Y(Raj) | | | | Y(Raj) | | Y(Raj) | NA |
| 15 | NR | 1) 80 MVAR Bus Reactor No 1 at 400KV Ballabhgarh(PG)<br>2) 400/220 kV 500 MVA ICT 4 at Ballabhgarh(PG)<br>3) 400KV Bus 3 at Ballabhgarh(PG)<br>4) 400KV Bus 1 at Ballabhgarh(PG) | HARYANA | POWERGRID | 25-Dec-21 | 23:47 | Bus Bar protection at 400/220kV Ballabhgarh(PG) operated due to R-ph CB of Mainpuri -2 main CB blasted at 23:47 hrs while opening of line on voltage regulation. As per PMU, R-N fault is observed in the system. In antecedent conditions, 400/220 kV 500 MVA ICT 4 at Ballabhgarh(PG) carrying 138MW. | 0 | 0 | GI-2 | 0 | | Y(PG) | | | Y(PG) | | Y(PG) | | 80 |
| 16 | NR | 1) 220KV Bus 1 at Mandola(PG)<br>2) 220KV Bus 2 at Mandola(PG)<br>3) 220KV Bus 4 at Mandola(PG)<br>4) 220 KV Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-1<br>5) 220 KV Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-2<br>6) 220 KV Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-4<br>7) 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1<br>8) 220 KV Mandola(PG)-South Wazirabad(DV) (DTL) Ckt-3<br>9) 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2<br>10) 220 KV Mandola(PG)-Gopalpur(DTL) (DTL) Ckt-2<br>11) 400/220 kV 500 MVA ICT 1 at Mandola(PG)<br>12) 400/220 kV 500 MVA ICT 4 at Mandola(PG)<br>13) 220KV Bus 3 at Mandola(PG)<br>14) 400/220 kV 500 MVA ICT 3 at Mandola(PG)<br>15) 400/220 kV 500 MVA ICT 2 at Mandola(PG) | NEW DELHI | DTL, POWERGRID | 26-Dec-21 | 20:42 | Y-Ph Circuit Breaker of 220 KV Manolda Gopalpur Ckt-2 blasted at Mandola End. This resulted in 220 kV Bus Bar Operation leading to tripping of all 4 ICTs at Mandola & all 220 kV circuits emanating from Mandola Station. Approx. 600 MW Load Loss was observed at 220 KV Narela, 220 KV South Wazirabad, 220 KV Gopalpur in Delhi. As per PMU, three phase fault is observed in the system. In antecedent conditions, 400/220 kV 500 MVA ICT 1, ICT 2, ICT 3 & ICT 4 at Mandola(PG) carrying 179MW, 178MW, 178MW & 177MW respectively. | 0 | 600 | GD-1 | 0.3 | Y(Del) | Y(PG) | | | Y(PG)<br>Y(Del) | | Y(PG)<br>Y(Del) | | 240 |
| 17 | NR | 1) 400KV Bus 1 at Jalandhar(PG)<br>2) 400/220 kV 315 MVA ICT 1 at Jalandhar(PG)<br>3) 400 KV Jalandhar(PG)-Nakodar(PSG) (PG) Ckt-1<br>4) 400 KV Chamba-Jalandhar (PG) Ckt-1<br>5) 400 KV Moga-Jalandhar (PG) Ckt-2 | PUNJAB | POWERGRID | 27-Dec-21 | 06:54 | B-phase CT of 404 bay (Chamba-1 main bay at Jalandhar) got blast. This fault led to bus bar protection operation of 400kV Bus-1 at Jalandhar(PG). All main CBs connected to 400kV Bus-1 opened. With the opening of Main CBs, 400/220 kV 315 MVA ICT 1 at Jalandhar(PG), 400 KV Jalandhar(PG)-Nakodar(PSG) (PG) Ckt-1, 400 KV Chamba-Jalandhar (PG) Ckt-1 and 400 KV Moga-Jalandhar (PG) Ckt-2 all tripped as their Tie CBs were not charged during the event. As informed by CPCC-2, the lines which tripped were opened in night hours on voltage regulation and restored in morning. During the event time, charging of Tie CB of these lines were due. As per PMU, B-N phase to earth fault is observed. | 0 | 0 | GI-2 | 0 | | Y(PG)<br>Y(Pun) | | | Y(Pun) | Y(PG) | | Y(PG) | 80 |
| 18 | NR | 1) 400/220 kV 200 MVA ICT 1 at Rosa(UPC)<br>2) 400 KV Badaune(UP)-Rosa(UPC) (OCBTL) Ckt-1 | UTTAR PRADESH | UPPTCL | 29-Dec-21 | 01:00 | DT signal received at 400kV Rosa & Badaun end. Due to this line tripped at 400kV Badaun end but at 400kV Rosa end only B-phase opened, other phase pole did not open.This initiated LBB protection due to which 200MVA ICT- | also tripped. As per PMU, No fault is observed in the system. | 0 | 0 | GI-2 | 0 | Y(UP) | | | Y(UP) | | | Y(UP) | | NA |
| 19 | NR | 1) 800 KV HVDC Kurukshetra(PG) Pole-1<br>2) 800 KV HVDC Kurukshetra(PG) Pole-03 | HARYANA | POWERGRID | 29-Dec-21 | 18:24 | 800 KV HVDC Kurukshetra(PG) Pole-1 blocked on HVHS reclose protection at Champa end and 800 KV HVDC Kurukshetra(PG) Pole-03 blocked on CAT B protection at Champa end. As per PMU, R-B fault is observed in the system. | 0 | 0 | GI-2 | 0 | | | Y(PG) | | | Y(PG) | | Y(PG) | 80 |
| 20 | NR | 1) 400/220 kV 315 MVA ICT 3 at Unnao(UP)<br>2) 400/220 kV 315 MVA ICT 2 at Unnao(UP)<br>3) 400 KV Unnao(UP)-Jehta_Hardoi Road (UP) (PG) Ckt-1<br>4) 400 KV Bareilly-Unnao (UP) Ckt-2<br>5) 765/400 kV 1000 MVA ICT 2 at Unnao(UP) | UTTAR PRADESH | UPPTCL | 29-Dec-21 | 19:05 | 400kV Bus Bar 2 at Unnao tripped due to LBB operation on 400kV Unnao Bareilly-2 line as 400kV Unnao-Bareilly-2 line CB failed to clear R phase fault. As per PMU, R-N fault with delayed clearance of 160ms is observed in the system. | 0 | 0 | GI-2 | 0 | Y(UP) | | | Y(UP) | | | Y(UP) | | 160 |

## Northern Regional inter regional lines tripping for December-21

**Annexure-B-XII**

| 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 | 800 KV HVDC Kurukshetra(PG) Pole-4 | POWERGRID | 2-Dec-21 | 09:55 | Nil | Converter Differential protection mal-operated at Champa end. | NA | 2-Dec-21 | 11:03 | NA | NO | NO | Details of the tripping yet to be received. | | From PMU, No AC system fault is observed. |
| 2 | 800 KV HVDC Kurukshetra(PG) Pole-4 | POWERGRID | 27-Dec-21 | 01:28 | Nil | Tripped on external block command at Kurukshetra end. | NA | 27-Dec-21 | 05:19 | NA | NO | NO | Details of the tripping yet to be received. | | From PMU, No AC system fault is observed. |
| 3 | 765 KV Phagi(RS)-Gwalior(PG) (PG) Ckt-2 | POWERGRID | 27-Dec-21 | 05:14 | Nil | Y-N fault, Dist. 181km, Fault current 3.20kA from Phagi. Auto-reclosed successfully from Gwalior end but tripped from Phagi(RRVPNL) end. Line remain charged from Gwalior end. | NA | 27-Dec-21 | 06:58 | NO | Yes(After 24Hrs) | Yes(After 24Hrs) | No auto-reclosing observed. | A/R needs to be checked and corrected. | From PMU, Y-N fault is observed in the system and auto-reclosing not observed. |
| 4 | 765 KV Agra-Gwalior (PG) Ckt-1 | POWERGRID | 28-Dec-21 | 13:01 | Nil | Y-N fault. | NA | 29-Dec-21 | 03:05 | NO | Yes(After 24Hrs) | Yes(After 24Hrs) | | | From PMU, Y-N fault is observed in the system and unsuccessful auto-reclosing is observed. |
| 5 | 800 KV HVDC Kurukshetra(PG) Pole-1 | POWERGRID | 29-Dec-21 | 18:24 | Nil | Pole-1 blocked on HVHS reclose protection at Champa end. | GI-2 | 29-Dec-21 | 22:56 | NA | NO | NO | Details of the tripping yet to be received. | | From PMU, No AC system fault is observed. |
| 6 | 800 KV HVDC Kurukshetra(PG) Pole-03 | POWERGRID | 29-Dec-21 | 18:24 | Nil | Pole-3 blocked on CAT B protection at Champa end & block command at Kurukshetra. | GI-2 | 29-Dec-21 | 21:45 | NA | NO | NO | Details of the tripping yet to be received. | | From PMU, No AC system fault is observed. |
| 7 | 765 KV Fatehpur-Sasaram (PG) Ckt-1 | POWERGRID | 31-Dec-21 | 06:46 | Nil | B-N fault. | NA | 31-Dec-21 | 19:29 | NO | NO | NO | Details of the tripping yet to be received. | A/R needs to be checked and corrected. | From PMU, B-N fault is observed in the system and auto-reclosing not observed. |
| 8 | 400 KV Gorakhpur(PG)-Motihari(BS) (PG) Ckt-1 | POWERGRID | 31-Dec-21 | 15:30 | Nil | R-Y fault. | NA | 31-Dec-21 | 18:52 | NO | NO | NO | Details of the tripping yet to be received. | | From PMU, R-Y fault is observed in the system. |

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

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

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

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

Reporting of Violation of Regulation for various issues for above tripping

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

**Annexure-B-XIII**

| S. No. | Utility | 1st Dec 2021 - 31st Dec 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 | ADANI | 1 | 1 | **100** | 1 | 0 | **100** | 1 | 0 | **100** | 1 | 0 | **100** |
| 2 | ANTA-NT | 1 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** |
| 3 | ASEPL | 5 | 4 | **80** | 4 | 0 | **80** | 4 | 0 | **80** | 4 | 0 | **80** |
| 4 | BBMB | 26 | 7 | **27** | 7 | 12 | **50** | 8 | 12 | **57** | 9 | 7 | **47** |
| 5 | BUDHIL | 1 | 1 | **100** | 1 | 0 | **100** | 1 | 0 | **100** | 1 | 0 | **100** |
| 6 | CHAMERA-II-NH | 2 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** |
| 7 | CHAMERA-I-NH | 1 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** |
| 8 | CPCC1 | 71 | 25 | **35** | 28 | 10 | **46** | 29 | 7 | **45** | 26 | 3 | **38** |
| 9 | CPCC2 | 43 | 13 | **30** | 15 | 8 | **43** | 15 | 5 | **39** | 26 | 0 | **60** |
| 10 | CPCC3 | 33 | 13 | **39** | 13 | 2 | **42** | 13 | 2 | **42** | 13 | 2 | **42** |
| 11 | DADRI-NT | 2 | 0 | **0** | 0 | 1 | **0** | 0 | 1 | **0** | 0 | 1 | **0** |
| 12 | DHAULIGANGA-NH | 2 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** |
| 13 | ESUCRL | 1 | 1 | **100** | 1 | 0 | **100** | 1 | 0 | **100** | 1 | 0 | **100** |
| 14 | FARIDABAD-NT | 3 | 0 | **0** | 1 | 0 | **33** | 1 | 0 | **33** | 0 | 0 | **0** |
| 15 | KARCHAM | 6 | 6 | **100** | 6 | 0 | **100** | 6 | 0 | **100** | 6 | 0 | **100** |
| 16 | KOLDAM-NT | 3 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** |
| 17 | NAPP | 2 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** |
| 18 | NJPC | 3 | 2 | **67** | 2 | 0 | **67** | 2 | 0 | **67** | 2 | 0 | **67** |
| 19 | RAPPA | 13 | 2 | **15** | 13 | 0 | **100** | 13 | 0 | **100** | 13 | 0 | **100** |
| 20 | RAPPB | 1 | 0 | **0** | 1 | 0 | **100** | 1 | 0 | **100** | 1 | 0 | **100** |
| 21 | RIHAND-NT | 1 | 0 | **0** | 0 | 1 | **0** | 0 | 1 | **0** | 0 | 0 | **0** |
| 22 | SALAL-NH | 5 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** |
| 23 | SAURYA | 3 | 3 | **100** | 3 | 0 | **100** | 3 | 0 | **100** | 3 | 0 | **100** |
| 24 | SINGRAULI-NT | 1 | 1 | **100** | 1 | 0 | **100** | 1 | 0 | **100** | 1 | 0 | **100** |
| 25 | SLDC-DV | 25 | 0 | **0** | 9 | 8 | **53** | 9 | 0 | **36** | 9 | 0 | **36** |
| 26 | SLDC-HP | 22 | 8 | **36** | 8 | 6 | **50** | 8 | 6 | **50** | 8 | 0 | **36** |
| 27 | SLDC-HR | 14 | 2 | **14** | 5 | 0 | **36** | 5 | 2 | **42** | 2 | 0 | **14** |
| 28 | SLDC-JK | 8 | 1 | **13** | 1 | 7 | **100** | 1 | 7 | **100** | 4 | 1 | **57** |
| 29 | SLDC-PS | 28 | 0 | **0** | 6 | 7 | **29** | 10 | 7 | **48** | 26 | 0 | **93** |
| 30 | SLDC-RS | 72 | 0 | **0** | 28 | 0 | **39** | 28 | 0 | **39** | 21 | 0 | **29** |
| 31 | SLDC-UK | 3 | 3 | **100** | 3 | 0 | **100** | 3 | 0 | **100** | 3 | 0 | **100** |
| 32 | SLDC-UP | 132 | 15 | **11** | 28 | 16 | **24** | 31 | 13 | **26** | 26 | 4 | **20** |
| 33 | SORANG | 1 | 1 | **100** | 1 | 0 | **100** | 1 | 0 | **100** | 1 | 0 | **100** |
| 34 | INDIGRID | 4 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | 3 | 0 | **75** |
| 35 | TANDA-NT | 2 | 1 | **50** | 1 | 0 | **50** | 1 | 0 | **50** | 1 | 0 | **50** |

**Annexure-B-XIV**

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

संदर्भ: उ क्षे भा प्रे के \TS-13\

दिनांक: 30 दिसम्बर 2021

सेवा में,

वितरण सूची के अनुसार

विषय: **'Reactive Power Management & Voltage Control in Northern Region'** दस्तावेज़ का नवीकरण

महोदय,

**NRLDC** के पत्र **NRLDC/SO-II/TS-13/** दिनांकित **28th** अक्टूबर **2021** एवं उत्तर क्षेत्र की **188, 189** एवं **190** वी प्रचालन समिति की बैठक मे चर्चा के बाद आपके सुझावो/टिप्पणियो के आधार पर उपरोक्त दस्तावेज़ का नवीकरण किया गया है । यह दस्तावेज़, ग्रिड प्रचालन मे उपयोग के लिए निम्न लिंक पर **NRLDC** की वैबसाइट पर उपलब्ध है।

https://nrldc.in/download/nr-reactive-power-management-2022/

उपरोक्त दस्तावेज़ पासवर्ड सुरक्षित है एवं पासवर्ड: **nrrpm@2022** है।

इस दस्तावेज़ के नवीकरण मे आपके सहयोग एवं सहायता के लिए, उत्तरी क्षेत्रीय भार प्रेषण केंद्र आपका आभारी है। हमे विश्वास है कि यह ग्रिड प्रचालन मे सहायक सिद्ध होगा।

हम आशा करते है कि इसके संशोधन एवं इसको और अधिक प्रभावी बनाने के लिए आपके सुझाव व टिप्पणिया सदैव मिलते रहेगे एवं वह सदैव सादर आमंत्रित है।

धन्यवाद,

भवदीय,

आलोक

(आलोक कुमार)

महाप्रबंधक

उ०क्षे०भा०प्रे०के०

प्रतिलिपि सूचनार्थ :

1. कार्यपालक निदेशक, रा॰भा॰प्रे॰के॰, पोसोको, नई दिल्ली, बी-9, कुतुब इन्स्टीट्यूशनल एरिया, नई दिल्ली - 110 016
2. सदस्य सचिव, उत्तर क्षेत्रीय विद्युत समिति, 18ए, कुतब इंस्टीट्यूशनल एरिया, नई दिल्ली- 110016
3. मुख्य महाप्रबंधक (I/C) उ० क्षे० भा० प्रे० के०
4. मुख्य महाप्रबंधक (SO-I/SL/SO-II)