सत्यमेव जयते

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

सं: उ.क्षे.वि.स./प्रचालन/106/01/2021/10685-10726 दिनांक: 17.11.2021

विषय: प्रचालन समन्वय उप-समिति की189वीं बैठक की कार्यसूची।
Subject: Agenda of 189th OCC meeting.

प्रचालन समन्वय उप-समिति की **189वीं** बैठक का आयोजन वीडियो कॉन्फ्रेंसिंग के माध्यम से दिनांक **23.11.2021** 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।

189th meeting of the Operation Co-ordination sub-committee will be conducted through Video Conferencing on **23.11.2021** 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.

-sd-

(सौमित्र मजूमदार)
अधीक्षण अभियंता (प्रचालन)

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

1. Confirmation of Minutes

The minutes of the 188th OCC meeting which was held on 22.10.2021 through video conferencing were issued vide letter of even number dated 09.11.2021.

Sub-committee may deliberate and kindly confirm the Minutes.

2. Review of Grid operations of October 2021

2.1 Power Supply Position (Provisional) for October 2021

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

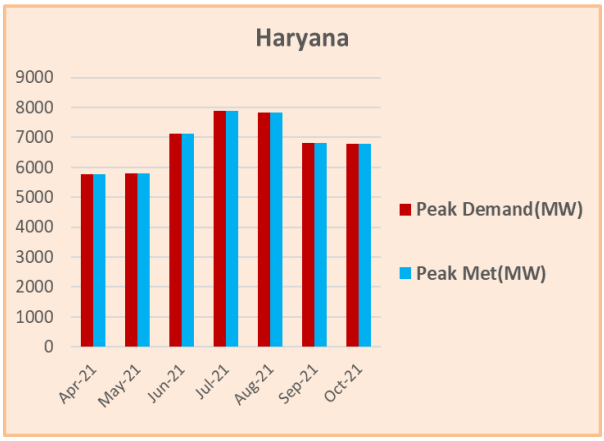
State / UT	Req. / Avl.	Energy (MU)			Peak (MW)		
		Anticipated	Actual	% variation	Anticipated	Actual	% variation
CHANDIGARH	(Avl)	120	126	5.2%	330	269	-18.5%
	(Req)	110	126	14.7%	220	269	22.3%
DELHI	(Avl)	3502	2661	-24.0%	5225	5391	3.2%
	(Req)	2650	2662	0.4%	4925	5391	9.5%
HARYANA	(Avl)	4710	4615	-2.0%	10260	8803	-14.2%
	(Req)	4508	4728	4.9%	8470	8811	4.0%
HIMACHAL PRADESH	(Avl)	902	969	7.4%	1545	1732	12.1%
	(Req)	889	970	9.2%	1551	1732	11.7%
J&K and LADAKH	(Avl)	1230	1366	11.0%	3320	2443	-26.4%
	(Req)	1490	1473	-1.2%	2480	2643	6.6%
PUNJAB	(Avl)	4700	4866	3.5%	9210	9629	4.5%
	(Req)	4870	4987	2.4%	9210	9629	4.5%
RAJASTHAN	(Avl)	7590	7025	-7.4%	16740	12767	-23.7%
	(Req)	8080	7267	-10.1%	13610	12767	-6.2%
UTTAR PRADESH	(Avl)	11160	10362	-7.1%	21500	20174	-6.2%
	(Req)	11005	10562	-4.0%	21500	20174	-6.2%
UTTARAKHAND	(Avl)	970	1125	15.9%	2640	2066	-21.7%
	(Req)	1160	1139	-1.8%	1960	2066	5.4%
NORTHERN REGION	(Avl)	34884	33115	-5.1%	70200	57500	-18.1%
	(Req)	34762	33914	-2.4%	59900	57900	-3.3%

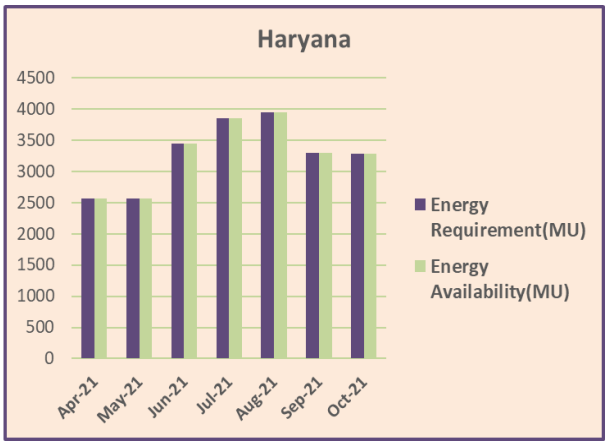
As per above, negative / significant variation (≥5%) in Actual Power Supply Position (Provisional) vis-à-vis Anticipated figures is observed for the month of October-2021 in terms of Energy Requirement for Chandigarh, HP, UTs of J&K and Ladakh, Rajasthan, UP, and Uttarakhand and in terms of Peak Demand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

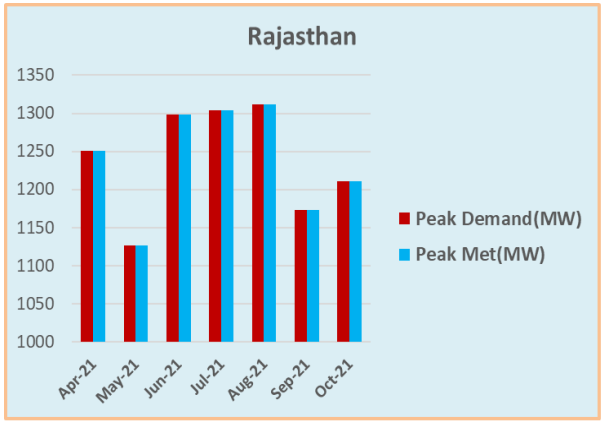
All SLDCs are requested to furnish provisional and revised power supply position in prescribed formats on NRPC website portal by 2nd and 15th day of the month respectively for the compliance of Central Electricity Authority (Furnishing of Statistics, Returns and Information) Regulations, 2007.

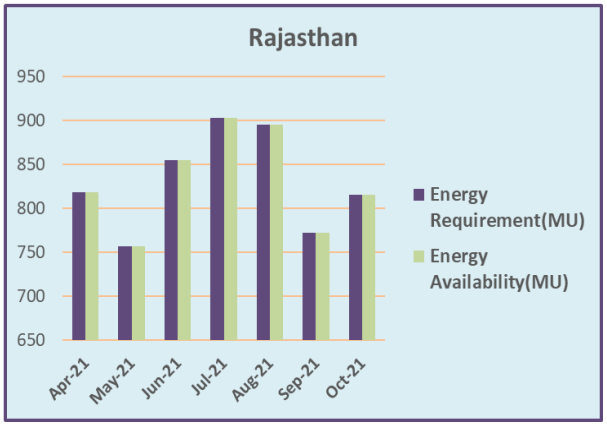
2.2 Power Supply Position of NCR

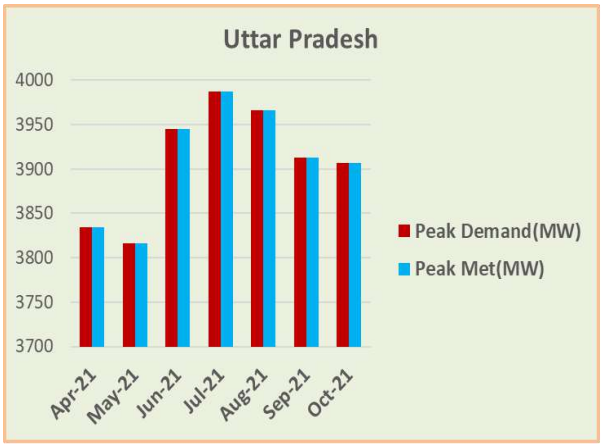
NCR Planning Board (NCRPB) is closely monitoring the power supply position of National Capital Region. Monthly power supply position for NCR till the month of October-2021 is placed on NRPC website (http://nrpc.gov.in/operationcategory/power-supply-position). Power supply position during the current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

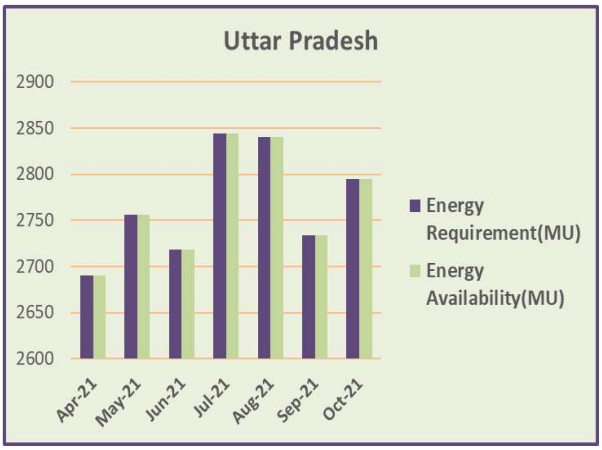


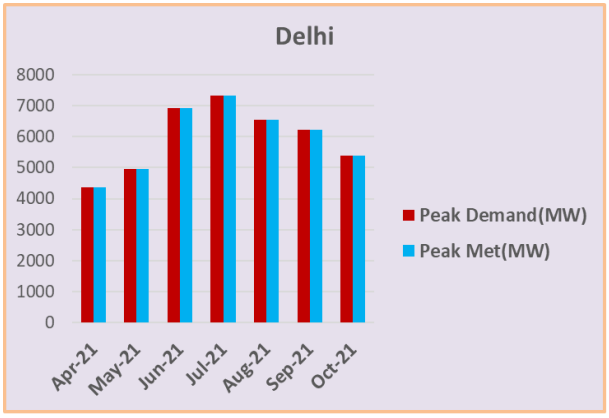


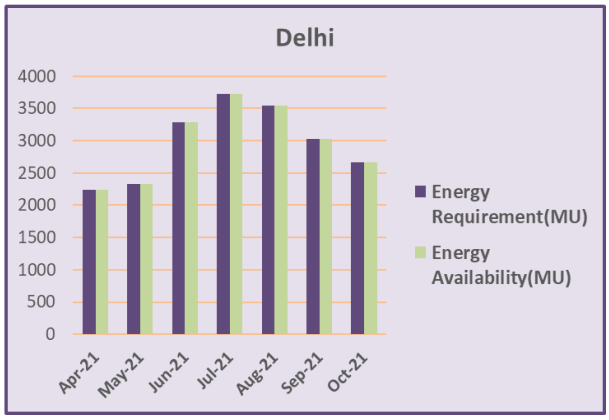












3. Maintenance Programme of Generating Units and Transmission Lines

3.1. Maintenance Programme for Generating Units

The meeting on proposed maintenance programme for Generating Units for the month of December-2021 is scheduled on 22-November-2021 via Video Conferencing.

3.2. Outage Programme for Transmission Elements

The meeting on proposed outage programme of Transmission elements for the month of December-2021 is scheduled on 22-November-2021 via Video conferencing.

4. Planning of Grid Operation

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

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

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)
CHANDIGARH	Availability	110	230
	Requirement	120	270
	Surplus / Shortfall	-10	-40
	% Surplus / Shortfall	-8.3%	-14.8%
DELHI	Availability	2720	6210
	Requirement	2250	5300
	Surplus / Shortfall	470	910
	% Surplus / Shortfall	20.9%	17.2%
HARYANA	Availability	4790	10770
	Requirement	4160	7080
	Surplus / Shortfall	630	3690
	% Surplus / Shortfall	15.1%	52.1%
HIMACHAL PRADESH (revised on 11.11.21)	Availability	983	1870
	Requirement	968	1890
	Surplus / Shortfall	15	-20

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)
	% Surplus / Shortfall	1.5%	-1.1%
J&K and LADAKH	Availability	1030	3650
	Requirement	2060	2920
	Surplus / Shortfall	-1030	730
	% Surplus / Shortfall	-50.0%	25.0%
PUNJAB	Availability	4710	9280
	Requirement	3850	7220
	Surplus / Shortfall	860	2060
	% Surplus / Shortfall	22.3%	28.5%
RAJASTHAN	Availability	8380	18710
	Requirement	8370	14710
	Surplus / Shortfall	10	4000
	% Surplus / Shortfall	0.1%	27.2%
UTTAR PRADESH (revised on 16.11.21)	Availability	9610	18200
	Requirement	9145	18200
	Surplus / Shortfall	465	0
	% Surplus / Shortfall	5.1%	0.0%
UTTARAKHAND (revised on 03.11.21)	Availability	1197	2250
	Requirement	1178	2287
	Surplus / Shortfall	19	-37
	% Surplus / Shortfall	1.6%	-1.6%
NORTHERN REGION	Availability	33529	64900
	Requirement	32101	54600
	Surplus / Shortfall	1428	10300
	% Surplus / Shortfall	4.4%	18.9%

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

5. Submission of breakup of Energy Consumption by the states

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

State / UT	From	To
DELHI	Apr-2018	Sep-2021
HARYANA	Apr-2018	Aug-2021
HIMACHAL PRADESH	Apr-2018	Aug-2021
PUNJAB	Apr-2018	Jul-2021

State / UT	From	To
RAJASTHAN	Apr-2018	Aug-2021
UTTAR PRADESH	Apr-2018	Jul-2021

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

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

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 basecase 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 of meeting dtd. 06.09.2021, tuning of base-case file is being done by NRLDC so that no new issue arises in future.

6.25 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.

6.26 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.

6.27 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.

6.28 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.

6.29 NRLDC vide e-mail dtd. 10.11.2021 submitted the tuned base-case to NRPC Sectt. mentioning that Basecase 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.

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.** At SLDC level, remote tripping of 100 feeders at 66 kV is possible. At 11 kV feeder level, ADMS is to be implemented by Distribution Company.
Delhi	**Fully implemented** by TPDDL, BRPL and BYPL. NDMC implementation was scheduled to be completed by 31.03.2020 but got delayed due to some changes incorporated in the scheme.
Rajasthan	**Under implementation.** LoA placed on 12.12.2018 with an execution period of 18 months for ADMS at the level of 33 kV feeders at EHV Substation of RVPN under SCADA / EMS part of project. Supply is in progress. Work is under execution and likely to completed by June'2021. ADMS functionality at 11 kV feeders from 33/11 kV substation is under the jurisdiction of the DISCOMs.
UP	**Scheme implemented by NPCL only.** Remote operation of 50 feeders at 132 kV level being operated from SLDC. Further, the solution proposed by M/s Siemens was found to be non-economical and was not accepted by the management. Noida Power Company Ltd have implemented Intelligent Load Shedding (ILS) scheme, in compliance of IEGC requirements for automatic demand management.
Haryana	**Scheme not implemented.** More than 1700 feeders were tested from SLDC control room for

State/ Utility	Status
	remote operation. Regarding the implementation of ADMS at DISCOM level, the matter is being taken up with the DISCOMs.
HP	**Scheme not implemented.** 02 feeders could be operated from SLDC through manual intervention. Letter has been sent by HPSEB to HP-SLDC for making its operation automatic.

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-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.

***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.

9.3. Further, a sample DPR on implementation of Islanding scheme for PSDF funding has been already circulated vide email dated 07.10.2021. States can refer sample DPR, if PSDF funding is needed for implementation of Islanding schemes. In case PSDF funding is needed, it is requested to expedite the preparation of DPR on implementation of Islanding. A meeting was also held by Honourable 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.

9.4. In view of the above, states were requested to update the status of DPR, if PSDF funding is needed.

9.5. In 187th OCC, forum was apprised that a Standard Operating Procedure for Islanding schemes has been issued by NPC, CEA. Utilities are requested to refer and submit SOP for every Islanding scheme in their control area.

9.6. Minutes of the meeting held on 07.10.2021 under the chairmanship of Hon'ble Minister of Power and Renewable Energy 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 10th November 2021) is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
ANPARA C TPS	1200	85.94	15	**3.8**
ANPARA TPS	2630	74.76	15	7.2
BARKHERA TPS	90	40.60	20	5.0
CHHABRA TPP	500	34.23	25	**0.7**
DADRI (NCTPP)	1820	42.76	30	16.3

GH TPS (LEH.MOH.)	920	18.66	30	12.7
GOINDWAL SAHIB TPP	540	53.26	30	**0.0**
HARDUAGANJ TPS	605	56.35	30	16.4
INDIRA GANDHI STPP	1500	54.11	30	16.1
KAWAI TPS	1320	63.57	25	6.0
KHAMBARKHERA TPS	90	37.01	20	5.0
KOTA TPS	1240	64.99	30	6.4
KUNDARKI TPS	90	67.96	25	7.9
LALITPUR TPS	1980	72.12	25	12.1
MAHATMA GANDHI TPS	1320	71.31	25	4.6
MAQSOODPUR TPS	90	53.70	20	13.0
MEJA STPP	1320	79.75	20	9.7
OBRA TPS	1094	47.16	20	4.1
PANIPAT TPS	710	31.02	30	4.7
PARICHHA TPS	1140	43.05	30	13.3
PRAYAGRAJ TPP	1980	69.87	20	**2.8**
RAJIV GANDHI TPS	1200	35.83	30	11.0
RAJPURA TPP	1400	69.39	25	4.1
RIHAND STPS	3000	80.25	15	9.6
ROPAR TPS	840	14.11	30	9.1
ROSA TPP Ph-I	1200	62.85	25	8.1
SINGRAULI STPS	2000	94.66	15	11.7
SURATGARH TPS	1500	19.84	30	**3.9**
TALWANDI SABO TPP	1980	49.05	25	6.9
TANDA TPS	1760	25.46	25	14.5
UNCHAHAR TPS	1550	57.93	25	10.9
UTRAULA TPS	90	57.07	20	6.6
YAMUNA NAGAR TPS	600	39.67	25	8.3

11. Declaration of spell of heavy rain fall and heavy snowfall during the period of 23rd and 24th Oct 2021 as state specific Natural disaster under SDRF Norms (Agenda by NR-2/POWERGRID)

11.1. NR-2 POWERGRID vide email dated 12.11.2021 submitted that there was spell of heavy rain fall and heavy snowfall during the period of 23rd and 24th Oct 2021 in Hilly terrain of Jammu and Kashmir and Department of Disaster management, Relief Rehabilitation and Reconstruction had declared it as STATE SPECIFIC NATURAL DISASTER under SDRF Norms for Udhampur, Kishtwar, Reasi, Samba, Kathua, Anantnag, Kulgam and Sophian Districts of J&K. Copy of order issues by Department of Disaster management, Relief Rehabilitation and Reconstruction UT of J&K attached as ***Annexure-A.III.***

11.2. In view of above, outage of elements on 23rd and 24th Oct'2021 in the area declared as Natural disaster may please be considered outage under natural calamity.

Members may kindly deliberate.

12. Modification in SPS for reliable evacuation of power from 400/220kV Chamera Pooling (Chamba) Substation required for evacuation of power from 180 MW Bajoli-Holi HEP in interim arrangement (Agenda by HPPTCL)

12.1. HPPTCL vide email dated 12.11.2021 submitted that a meeting with CTU, POSOCO, HPPTCL, HPSEBL, GMR, Greenko, was held on 17-06-2021 under the Chairmanship of Chief Engineer (PSPA-1) CEA regarding the issues related to transmission system for evacuation of power from Bajoli-Holi HEP (180 MW). (Minutes of the above said meeting attached at ***Annexure-A.IV).***

12.2. In this respect, it is intimated that HPPTCL had on 07-07-2020 commissioned the 220/33kV Substation at Lahal and 220kV S/C Lahal-Budhil Transmission Line for evacuation of power from Small HEPS coming at Lahal Substation.

12.3. The permission for commissioning of this system which is also part of interim evacuation system of Bajoli-Holi HEP was granted after the implementation of SPS by HPPTCL to avoid overloading of 2x315 MVA Transformer bank at Chamera-III and to avoid overloading of 220kV Transmission Line from Chamera-III to Chamera Pooling which was then on breakdown and only one ckt. was functioning through ERS with restricted power flow.

12.4. Now this transmission line has been restored to its full capacity. The SPS scheme was approved by NRLDC vide email dt. 29-06-2020 (copy of implemented SPS Scheme along with testing report is enclosed at ***Annexure-A.V***).

12.5. In order to evacuate power from 180 MW Bajoli-Holi HEP through this interim arrangement 220 kV Bajoli-Holi Lahal Transmission Line is nearing completion and one ckt. of this line has already been test charged on 10.11.2021. HPPTCL has already filed a petition with Hon'ble UERC for evacuation of 26 MW power for SHP's & 60 MW of Bajoli Holi HEP till March 2022. With this interim arrangement the total power to be evacuated through 220kV S/C Budhil-Chamera Line shall be less than its capacity i.e. 180 MW.

12.6. In view of the above, the SPS scheme already implemented needs to be revised. A draft SPS scheme for the new proposed interim arrangement has been prepared and

a copy of the same is attached as ***Annexure-A.VI***). This draft scheme was also shared with NRLDC and they have vide their email dt. 12th Nov 2021 conveyed their concurrence to the proposal.

12.7. It is requested that proposed modifications in the SPS scheme may please be considered & approved by Sub-Committee so that based on the final approval, work for implementation of the same can be taken up before commissioning of the Bajoli-Holi HEP.

***Members may kindly deliberate*.**

13. Deemed availability of outage of Transmission lines for installation of Bird Diverter as per requirement of NGT (Agenda by NR-1/POWERGRID)

13.1 In the 183rd OCC meeting, POWERGRID brought agenda for considering the outage needed for installing Bird Diverters (under the NGT order) as deemed available. In the meeting, POWERGRID was advised to submit the details of estimated number of bird diverters required for each line and estimated outage days needed for each line in order to accomplish the said work.

13.2 Forum decided that since installation of bird diverters is being done on the direction of court and NGT, the number of outage days projected by POWERGRID for eleven lines (enclosed as Annexure-A-IV of 185th Agenda) may be considered as deemed available.

13.3 Now, POWERGRID vide letter dt. 02.11.2021 has submitted the details for installation of bird diverters in 2nd phase (enclosed as **Annexure-A.VII**) for consideration of deemed availability.

***Members may kindly deliberate*.**

14. Installation of good quality bird flight diverter (BFD)

14.1 CEA has issued a letter dtd 10.11.2021 that they are getting various complaints on installation of poor-quality bird diverters. Sometimes disc of bird diverters are found strewn in land below transmission lines. It may be due to poor quality of product, inadequate design by manufacturer or improper installation.

14.2 CEA has issued technical specifications for bird diverter that may be complied by utilities for ensuring proper installation of bird diverters.

***Members may kindly deliberate*.**

15. Review of SPS for evacuation of generation of Lalitpur TPS (Agenda by UP SLDC)

15.1 UP SLDC vide letter dated 15.11.2021 has submitted the proposed revised logic for SPS for evacuation of Lalitpur TPS in view of commissioning of 765kV Fatehabad – Greater Noida line. UP SLDC has submitted the old & the proposed logic along with the comments of Lalitpur TPS and requested for the approval of the revised scheme (copy of letter is attached at ***Annexure-A.VIII).***

***Members may kindly deliberate*.**

खण्ड-ख: उ.क्षे.वि.स. Part-B: NRLDC

16. Procedure for Planning of Inter-State Transmission System (ISTS)

A Draft Procedure for planning of Inter-state Transmission System has been prepared in accordance with Electricity (Transmission System Planning, Development and Recovery of Inter-State Transmission Charges) Rules, 2021. This procedure shall be applicable to stakeholders such as Central Government, State Governments, Central Transmission Utility (CTU), Central Electricity Authority (CEA), Regional Power Committees (RPCs), State Transmission Utilities (STUs), Generation companies, System Operators (National, Regional, and State), Licensees, and any other person notified by the Central Government in this behalf. This Procedure shall come into effect from the date it is published on CTU website. The Draft Procedure is available at CTU website along with Annexures for observations of stakeholders. All utilities are requested to send their comments to CTU with copy to NRPC/NRLDC by 22.11.2021.

Members may like to discuss.

17. Grid Highlights for October 2021

In Oct'21, the Maximum energy consumption of Northern Region was 1238 Mus on 12th Oct'21 and it was 1 % lower than Oct' 2020 (1252 Mus 1st Oct'20)

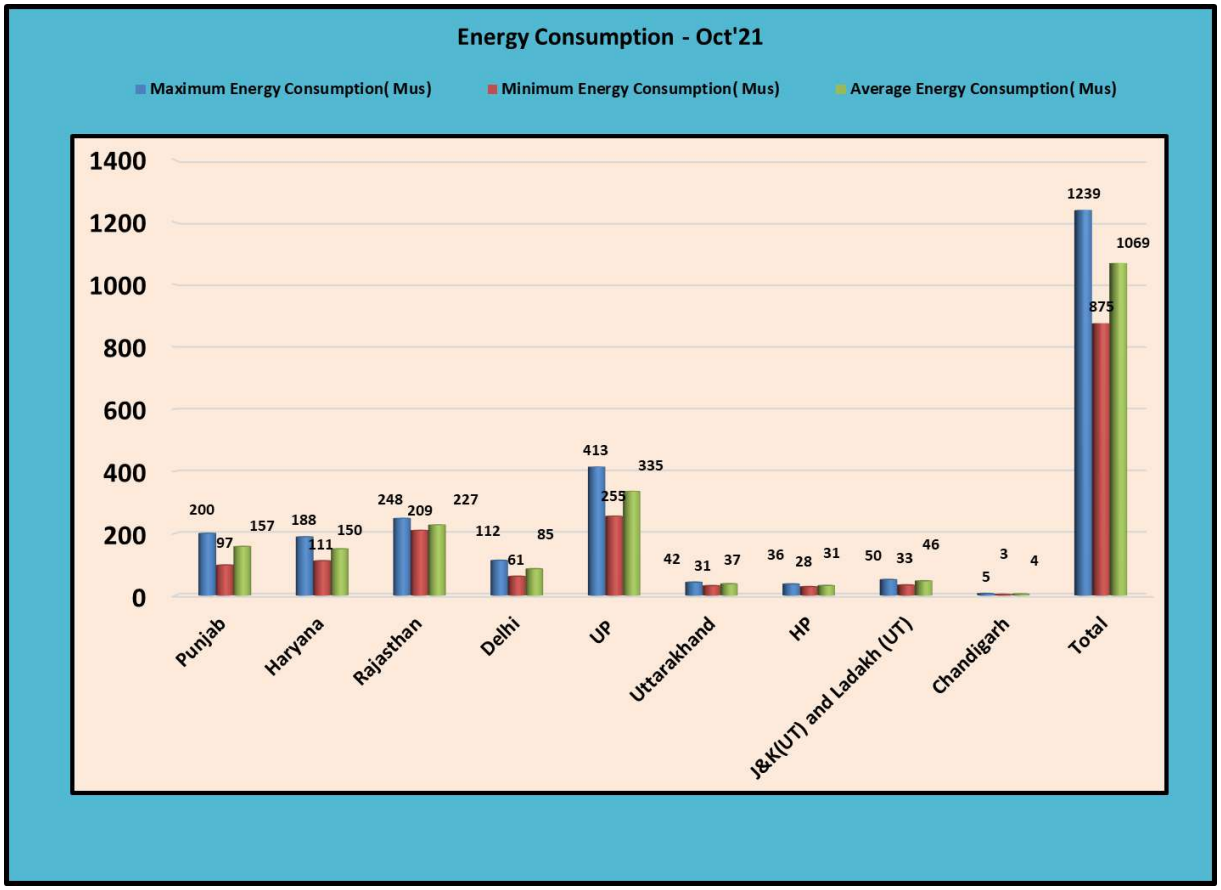
In Oct'21, the Average energy consumption per day of Northern Region was 1070 Mus and it was 2 % lower than Oct'20 (1093 Mus per day)

In Oct'21, the Maximum Demand met of Northern Region was 57491 MW met on 12th Oct'21@ 13:00 hours (Based on data submitted by Constituents) as compared to 57975 MW met on 1st Oct'20 @ 20:00 hours

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

Energy Generation	All Time High Record		Previous Record (upto Sept-21)	
	Value (MU)	Achieved on	Value (MU)	Achieved on
Solar Generation	**68.20**	**25.10.21**	60.49	16.09.21

NR maximum solar generation of 9515MW achieved on 31.10.2021 at 12:51hrs.

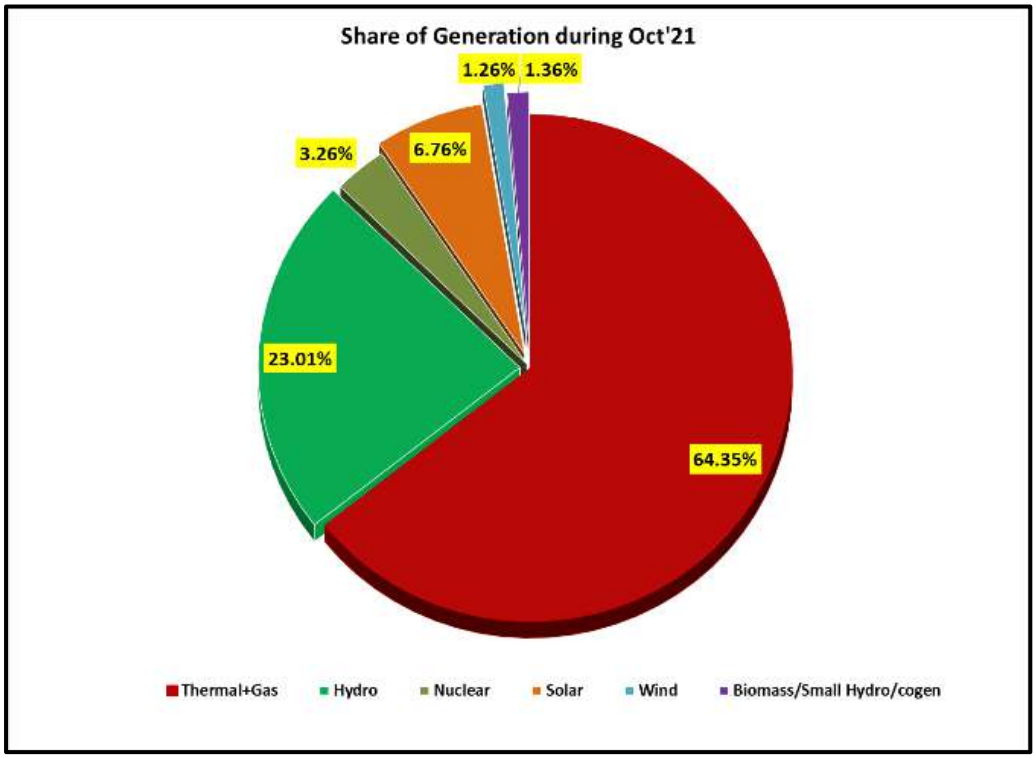


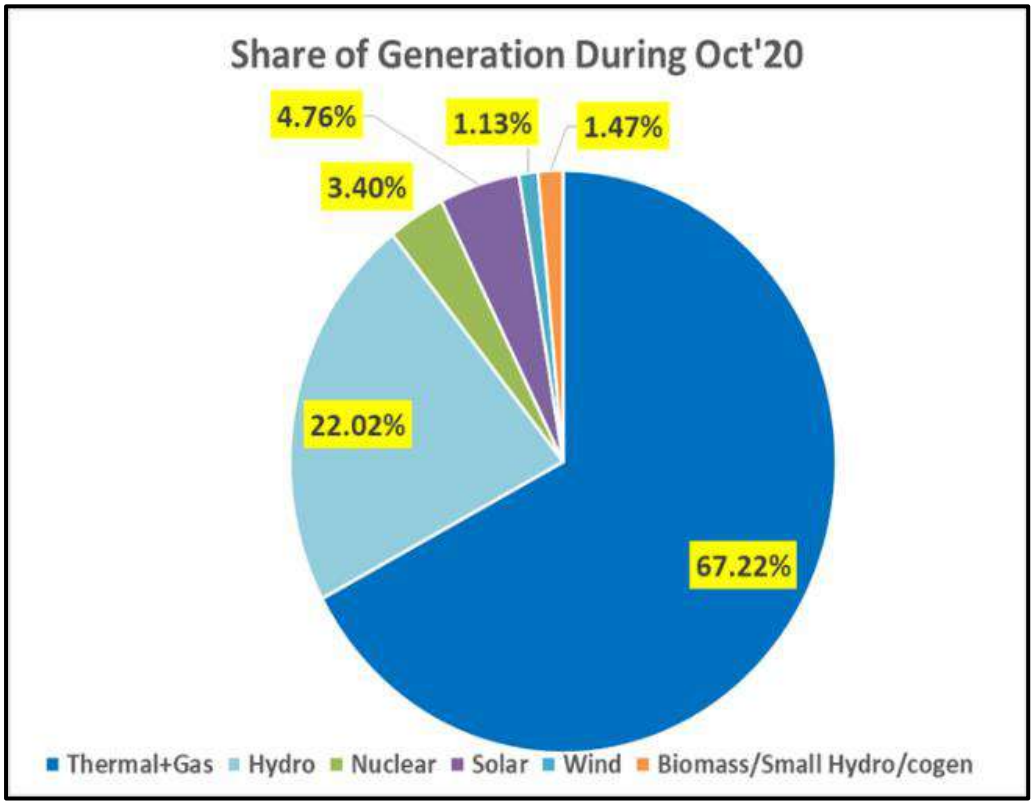
Comparison of Average Energy Consumption (MUs/Day) of NR States for the Oct'2020 vs Oct '21

Region/State	Oct- 2020	Oct-2021	% Of Variation
पंजाब	152.42	157.30	3.20
हरियाणा	155.20	149.51	-3.67
राजस्थान	242.28	226.56	-6.49
दिल्ली	80.12	85.38	6.57
उत्तर प्रदेश	347.62	334.79	-3.69
उत्तराखंड	36.53	36.88	0.95
चंडीगढ़	3.65	4.07	11.53
हिमाचल प्रदेश	29.18	31.31	7.30
जम्मू और कश्मीर	46.34	44.05	-4.93
उत्तरी क्षेत्र	1093.35	1069.85	-2.15

In Oct'21, Frequency remained within IEGC band for 74.00% of the time.

Total average per day energy production by Northern region was 919.42 Mus in the month of Oct'21 in comparison of 782.46 Mus in Oct'20. The fuel wise share of generation is shown below.





In Oct'21, Frequency remained within IEGC band for only 74% of the time. Emergent contingency events during such times such as large generation outage, could result in further drop in frequency and therefore, overdrawals below 49.90 Hz must be controlled quickly in order to keep system secure.

Freq. band	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	Jun 2021	Jul 2021	Aug 2021	Sep 2021	Oct 2021
< 49.7 Hz(%)	0.00	0.01	0.01	0.00	0.02	0.01	0.00	0.02	0.07	0.04	0.17	0.21	0.31

<49.8 Hz(%)	0.20	0.17	0.36	0.24	0.46	0.65	0.93	0.50	1.06	0.67	1.3	0.69	2.43
<49.9 Hz(%)	3.91	4.46	4.79	4.86	7.12	7.13	7.96	6.63	6.12	5.35	7.67	4.18	11.10
49.90-50.05 Hz(%)	81.88	79.81	75.72	76.10	76.27	72.78	75.06	74.49	74.81	75.06	76.93	77.01	74.38
50.05-50.10 Hz(%)	12.82	13.82	16.42	15.82	14.10	16.78	13.51	15.41	14.74	16.71	14.14	15.83	12.70
>50.10 Hz(%)	1.39	1.87	3.20	3.16	2.52	3.21	2.49	2.89	3.18	2.78	1.25	2.26	1.81
>50.20 Hz(%)	0.00	0.03	0.05	0.06	0.08	0.10	0.04	0.07	0.09	0.10	0.01	0.03	0.06
औसत आवृत्ति	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.01	50.00	50.00	49.99

During this month some of the NR states also had overdrawal 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

NR Constituents are once again requested to take initiatives to minimise sudden load changeovers at hourly boundaries and also monitor performance of generators under their jurisdiction when the frequency is having large excursions.

Members may like to discuss.

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

During a recent review of the country's power supply scenario, 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.

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

Members may like to discuss.

19. Action Plan for Winter Preparedness 2021-22

In 187th and 188th OCC 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

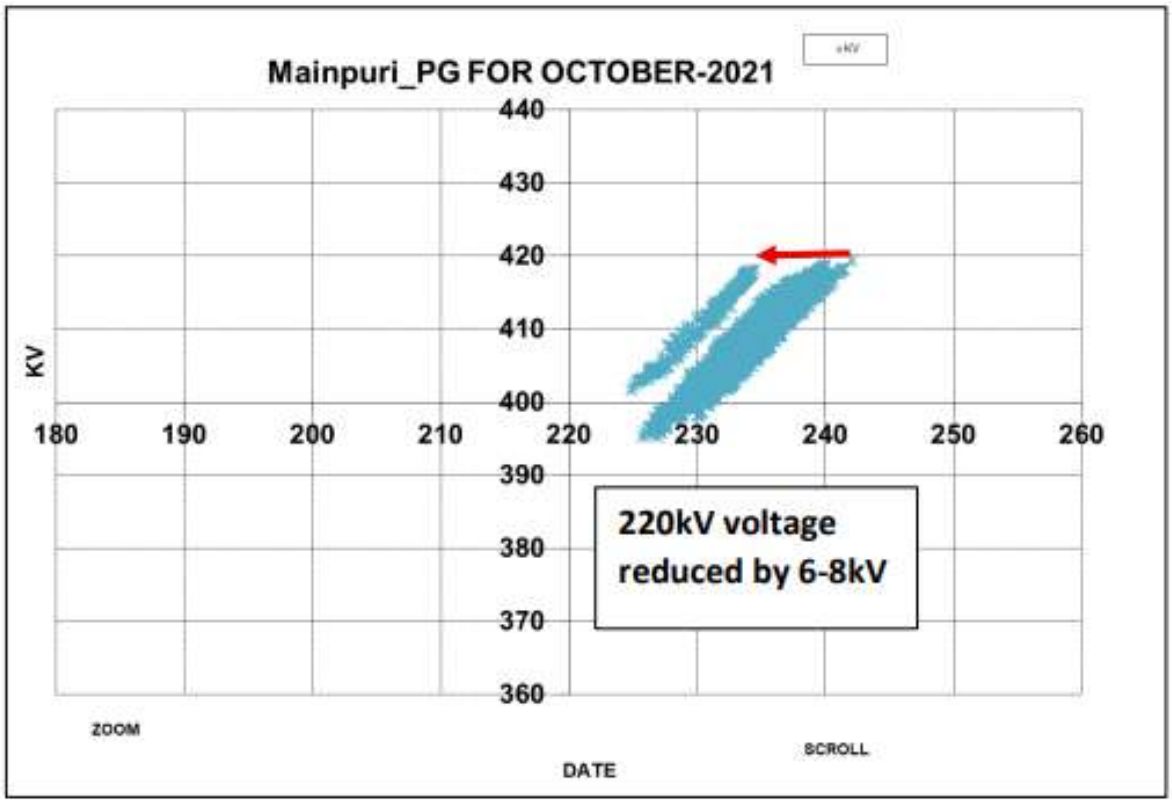
months were also discussed in the meeting. With decreasing temperatures and festivals, winter also brings some severe challenges to NR grid operators. The challenges expected and actions to be taken by utilities were discussed in the meeting along with actions to be taken by respective utilities. However, details regarding actions taken by them are yet to be received.

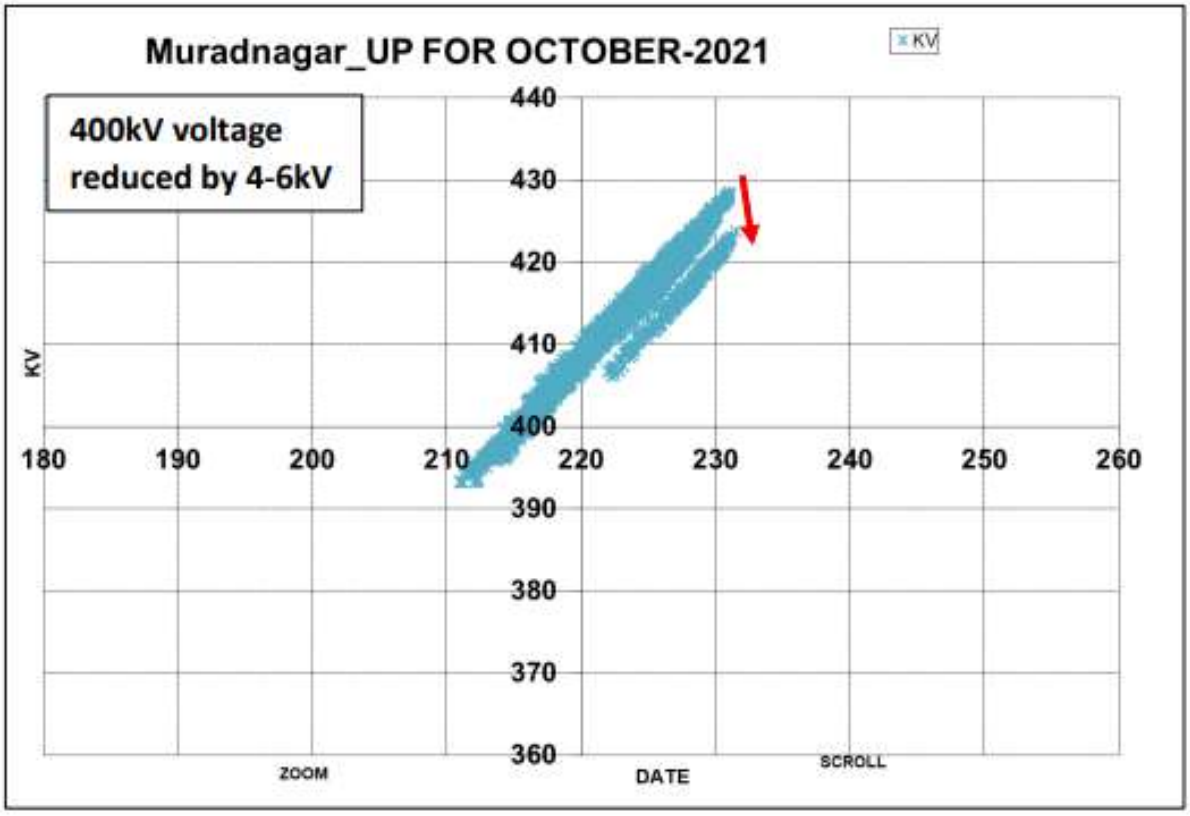
a*) Load generation balance:*

- In line with section 5.3 of the IEGC, all constituents to have precise load forecasting & generation planning and forecast demand ramp on daily, weekly and monthly basis so that commensurate ramping of generation can also be planned*(Action by SLDCs)*
- SLDCs to optimally schedule hydro and gas generation to make sure that demand as well as ramp requirements are safely met *(Action by SLDCs)*.
- Minimize generation to technical minimum as per IEGC guidelines /CERC directions during low demand (*Action by ISGS, intrastate generators, NRLDC, SLDCs*).
- Delay in charging the lines after issuance of code (in the morning hours) to be minimised (*Action by ISTS licensees/ STUs*)
- Hydro generators to ensure to declare their maximum DC particularly during non-solar period, to ensure better management of power portfolio by the beneficiaries. (*Action by ISGS, intrastate generators)*

b) *High voltage management:*

- Ensuring disconnection of capacitors. To be confirmed by all STUs and SLDCs (*Action by SLDCs/ STUs/DISCOMs*).
- Ensuring healthiness of all commissioned reactors in the system (*Action by ISTS licensees/ STUs*)
- Monitoring of reactive power of generators and exchange of reactive power with ISTS through SCADA displays*(Action by SLDCs)*.
- Ensuring reactive power support (absorption) from generating stations by operating units upto their capability limits. (*Action by ISGS, intrastate generators, NRLDC, SLDCs*). To be discussed in detail in next agenda.
- Synchronous condenser operation especially of hydro units during night hours for dynamic voltage support. Some of the generators have already been tested successfully (Tehri, Chamera, Pong etc.) in synchronous condenser mode and shall be available for condenser mode of operation as and when required. ***Punjab SLDC to update the status of utilization of RSD as synchronous condenser.***
- ICT Tap Optimization at 400kV & above carried out by NRLDC. Same exercise needs to be carried out by SLDCs at 220kV & below levels. Scatter plots for these stations alongwith improvement observed are attached as **Annexure-B.II**. Improvement in voltage profile of some of the stations after tap change carried out at 400/220kV level is shown below:





- Haryana and UP requested in 188 OCC meeting, to check tap position change requirement at Panchkula(PG) and Rewa-road respectively. However, scatter plots of these stations as per NRLDC data do not suggest any need for tap change. Details attached as **Annexure-B.II**. ***Utilities may present their case for tap change.*** SLDCs are also requested to provide the tap change exercise carried out by them or proposed to be carried out before winter. *(Action by SLDCs)*.

- All utilities are requested to go through the Reactive Power document available at NRLDC website and report if any incorrect or missing information is noticed. The document is being utilized in real-time operation by control room operators at NRLDC, and thus it is necessary that updated document is available.
- Additional manpower if required, may be placed at critical substations (***Action by ISTS licensees/ STUs***).

c) EHV line trip during fog/Smog

Utilities were requested to ensure:

- Priority wise cleaning & replacement of damaged insulators.
- Monitor progress of cleaning and replacement of porcelain insulator with polymer insulator and furnish updated status to NRPC/NRLDC. (***Action by ISTS licensees/ STUs***).

As agreed in 187th and 188th OCC meeting, utilities are requested to share action plan for measures to be taken by them for carrying out pre-winter maintenance activities and other actions agreed in 187th and 188th OCC meeting.

Members may please discuss.

20. 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 30 days (15.10.2021 - 15.11.2021)** as per NRLDC SCADA data is enclosed as **Annexure-B.III.a** 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	415
2	Singrauli NTPC	2000	UP	-600 to	-250 to 0	400
3	Rihand NTPC	2000	UP	-600 to	-320 to -140	400

S. No.	Station	Capacity	Geographical location	MVAR capacity as per capability curve	MVAR performance (-) Absorption (+) Generation	Voltage absorption above (in KV)
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	1980	Punjab	-594 to	-400 to 100	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	1980	Haryana	-594 to	-200 to 200	410
11	Tanda	1320	UP	-396 to	-100 to 300	415
12	Rajpura (NPL)	1400	Punjab	-420 to 840	100 to 500 (seems MVAR data	410
13	Khedar	1200	Haryana	-360 to	-150 to 100	410
14	MGTPS	1320	Haryana	-396 to	-300 to 0	405
15	Bawana	1000	Rajasthan	-300 to	-60 to 100	415
16	Bara PPGCL	1320	UP	-396 to 792	-50 to 80	778

UP SLDC has also shared MVAR plots developed at their end. UP SLDC letter in this regard is attached as **Annexure-B.III.b**.

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 MVAr vs voltage plots will be available and the generators can be instructed accordingly.

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.

Capability of solar plant based inverters can be used to provide voltage support during critical system needs on continuous basis and during night the entire inverter capacity can be used for reactive power support.

It has already been deliberated in OCC meetings that PV inverters generally have three modes of operation selectable by the plant:

1. Voltage control mode in which voltage of the reference point is monitored by inverters/PPC and reactive power drawl/ injection is varied accordingly w.r.t a voltage set point.

2. Reactive Power or Q-control mode in which inverter supplies/absorbs a fixed amount of reactive power from the grid.

3. Power Factor control mode is one in which inverter operates within a defined power factor range.

Plots depicting ISGS Solar reactive power performance is attached as Annexure-B.IV.

From data, it is being observed that the reactive power absorption of solar plant is increasing with increase in generated active power. Though the plant is keeping up with the recommended CEA connectivity standards by running within 0.95 limits but the effect of this plant along with other operating in same manner i.e. at lagging pf, is absorption of reactive power at POI proportional to real power output resulting in reduction of voltage to critically low levels during peak solar generation.

Moreover, numerous tripping have been reported related to RE generation in recent past suggesting possible non-compliance by RE generators. The details of these events are attached as **Annexure-B.IV**. As already discussed in TCC/NRPC meeting, subgroup formed at NRPC level to look after RE integration may immediately 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
- Harmonisation 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.

Members may like to discuss.

21. 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 December 2021 (**Annexure-B.V**) 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.

State	Available Transfer Capability (ATC) (MW) (TTC-RM)	Limiting Constraints	Remarks
Punjab	**7100 (Solar)** **7400 (non-solar)**	N-1 contingency of 400/220kV Rajpura, Nakodar, Moga and Ludhiana ICTs .	Punjab SLDC is requested to ensure sufficient intrastate generation on bar during winter months, which would help in providing the required MVAR

State	Available Transfer Capability (ATC) (MW) (TTC-RM)	Limiting Constraints	Remarks
			absorption to limit high voltages during winter months
UP	**13200**	N-1 contingency of 400/220kV Sohawal (PG), Gorakhpur (UP), Sarnath, Obra and Agra(PG) ICTs, 400/132kV Mau ICTs	UP is assessing its ATC on regular basis in consultation with NRLDC and uploading it at its website. SPS for Sohawal and Lucknow to be expedited.
Rajasthan	**5900**	N-1 contingency of 400/220kV Chittorgarh, Merta, Jodhpur ICTs, Bhilwara and Ajmer ICTs Rajasthan SLDC is requested to take up the matter for implementation of SPS at Jodhpur and other stations with STU and ensure loading below N-1 contingency limit at constrained 400/220kV ICTs.	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. NRLDC shared the latest basecase and suggested: • While studying N-1 contingency of 400/220kV ICT at stations it is mentioned that ICTs at other stations are not overloaded even in case of outage of all ICTs at station due to N-1 non-compliance. It is requested to kindly check the loading of 220kV lines also for all such cases. • For controlling loading of 220kV Agra-Bharatpur, it is mentioned that bus-spit would be done at Bharatpur to control loading. It is requested to please share details of same and if possible also incorporate in basecase. Similarly, measures for controlling loading of other highly loaded 220kV lines may also be shared. • Low voltage at Hindaun, Alwar may also be considered as limiting constraint if voltages are getting low. • Keeping all above factors, it is requested that revised ATC/TTC limits be calculated and shared with NRLDC.

State	Available Transfer Capability (ATC) (MW) (TTC-RM)	Limiting Constraints	Remarks
Haryana	**7900**	N-1 contingency of 400/220kV ICTs at Deepalpur, Kurukshetra(PG), Sonepat(PG), Panipat	Haryana SLDC is once again requested to expedite implementation of SPS at 400/220kV Deepalpur and Kurukshetra (PG) to enhance their ATC/TTC limits at the earliest
Delhi	**6500**	N-1 contingency of 400/220kV Mundka and Bamnauli ICTs.	ATC is not being uploaded in website, only violation of ATC is being shown. Delhi SLDC to implement SPS at Mundka and Bamnoli to save supercritical loads under N-1 contingency of one ICT.
J&K and Ladakh	**1550**	N-1 contingency of 400/220kV Amargarh ICTs	Not assessing its ATC
HP	**1100**	N-1 contingency of 400/220kV Nallagarh ICTs and 220kV Nallagarh-Uperanangal D/C. HP SLDC has also shared that 132kV lines from Kangoo are also heavily loaded.	HP has started sharing its ATC assessment since last 3 months in consultation with NRLDC
Uttarakhand	**1500**	N-1 contingency of 400/220kV Dehradun and Kashipur ICTs	Uttarakhand has also shared its ATC assessment with NRLDC for winter 2021-22.

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.

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

SLDC	Link for ATC on website
UP	https://www.upsldc.org/documents/20182/0/ttc_atc_24-11-16/4c79978e-35f2-4aef-8c0f-7f30d878dbde
Punjab	https://www.punjabsldc.org/downloads/ATC-TTC0321.pdf
Haryana	https://hvpn.org.in/#/atcttc
Delhi	NA (real-time violation reporting available)
Rajasthan	https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads
HP	https://hpsldc.com/mrm_category/ttc-atc-report/
Uttarakhand	NA
J&K and Ladakh U/T	NA

J&K and Ladakh U/Ts are once again requested to advise the concerned officers to evaluate their ATC/TTC limits in coordination with NRLDC and share latest assessment with NRLDC and NRPC.

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

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 alongwith anticipated generation scenario may be timely shared with NRLDC***.***

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.

Members may like to discuss.

22. 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.VII**).

All constituents are requested to obtain necessary CEA Clearance before putting up-request for charging of the elements wherever any additions/alterations of any electrical installations is involved. {as per Clause no. 43, CEA(Measures relating to safety and Electric Supply) Regulations 2010, it is mandatory to obtain the approval of CEA electrical inspector for any additions/alterations of any electrical installation}.

"The owner of any installation of voltage exceeding 650 V who makes any addition or alteration to his installation shall not connect to the supply his apparatus or electric supply lines., comprising the said alterations or additions unless and until such alteration or addition has been approved in writing by the Electrical Inspector".

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.

After issuance of provisional approval for charging (format-IV), utilities shall ensure charging of elements within three days from issuance days.

It has been observed in few cases that after approval for first time charging, the elements were charged only through main bay without charging tie bay/ dia. This results in reduction of reliability of the transmission element. Hence, all utilities are requested to charge the element with complete dia. Trial operation certificates will be processed only after charging of the elements with complete dia.

Members may please 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 Powermaps, PSSebasecase, 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) MVAR flow from underlying network to 400kV grid:

Recently, it is being observed that there is MVAR flow from 220kV side to 400kV side due to high MVAR generation by lightly loaded lines. This leads to very high voltages in 400kV and 765kV grid and to manage these, even a large number of lines are being opened on regular basis. Based on SCADA data (Oct-2021) available at NRLDC (**Annexure**-**B.VIII**), the list of several such 400/220kV substations is shown below:

S. No.	Location	Substation Name
1	Punjab	Malerkotla
2		Makhu
3		Muktsar
4		Nakodar
5	Delhi	Mandola
6		Maharanibagh
7		Bamnauli
8		Mundka
9		Bawana
10	Haryana	Kirori
11		Manesar
12	Rajasthan	Jaipur South
13		Heerapura
14	UP	Kanpur (PG)
15		Muradnagar

Utilities are requested to analyse the reasons for MVAR flows from 220kV side to 400kV side and share their plan to mitigate this to minimize high voltages in the grid. Delhi, Haryana, Punjab and Rajasthan are requested to share action plan for high voltage management during winter 2021-22.

(iv) Modification of Anpara-Unnao SPS with commissioning of 765kV AnparaD-Unnao

765kV AnparaD-Unnao line was scheduled for commissioning in 2012 to facilitate evacuation from Anpara-D. Line was successfully charged on 01.11.2021 and has helped in providing one additional path for evacuation from the complex. As approved in 162 OCC meeting, SPS in Anpara-Unnao complex is as follows:

Tripping of two ICT at 765/400kV Unnao			
Sl. No.	Real time flow on 765 kV Anpara-Unnao Line (X) (MW) prior to tripping	Proposed Scheme by UP (after 161 OCC)	NRLDC Remarks
1	1200 <X ≤ 1400	Tripping of one unit at Anpara-C or Anpara-D shall be carried out through SPS. (The logic shall be build such that in one such event tripping of unit shall take place at Anpara-C and in next such event at Anpara-D and so on)	Ok. It seems logic would be able to take care of contingency
2	X > 1400	One unit each shall be tripped simultaneously at Anpara C and Anpara D. In addition to it, for safety of the powergrid, load-shedding of 600MW shall be carried out in UP power system	Ok. It seems logic would be able to take care of contingency. However, UP may clarify whether load-shedding will be automatic/manual

Tripping of three ICT at 765/400kV Unnao or 765kV Anpara C-Unnao line			
Sl. No.	Real time flow on 765 kV Anpara-Unnao Line (X) (MW) prior to tripping	Proposed Scheme by UP (after 161 OCC)	NRLDC Remarks
1	X<1100	No automatic backing down. UP SLDC shall take backing down actions if loadings on other lines are high	Ok. It seems logic would be able to take care of contingency
2	1100<X<1400	Tripping of one unit at Anpara-C or Anpara-D shall be carried out through SPS. (The logic shall be build such that in one such event tripping of unit shall take place at Anpara-C and in next such event at Anpara-D and so on)	Ok. It seems logic would be able to take care of contingency
3	X>1400	One unit each shall be tripped simultaneously at Anpara C and Anpara D. In addition to it, for safety of the powergrid, load-shedding of 600MW shall be carried out in UP power system	Ok. It seems logic would be able to take care of contingency. However, UP may clarify whether load-shedding will be automatic/manual

However, with the commissioning of 765kV AnparaD-Unnao, there is need to revise the SPS conditions for different possible contingencies. Study carried out by POSOCO in this regard is attached as **Annexure-B.IX.** Study suggest no major issue with outage of one of either 765kV AnparaC-Unnao or AnparaD-Unnao.

UP SLDC is requested to study and discuss the possible revisions in SPS of Anpara-Unnao complex with the commissioning of 765kV AnparaD-Unnao.

Members may like to discuss.

(v) Order of Commission for Air Quality Management in National Capital Region and Adjoining Areas

The Commission for Air Quality Management in National Capital Region and Adjoining Areas has issued a slew of directions to improve the air quality in Delhi and surrounding areas. Of the 11 thermal power plants located within 300 km radius of Delhi, only five should be allowed to schedule their operations while the rest have to remain inoperative at least till November 30, 2021.

The five plants which have been allowed operate are NTPC, Jhajjar; Mahatma Gandhi TPS, CLP Jhajjar; Panipat TPS, HPGCL; Nabha Power Ltd. TPS Rajpura and Talwandi Sabo TPS, Mansa.

For kind information to members. All SLDCs are advised to ensure load-generation balance

(vi) 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 finalised, 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.

POWERGRID to provide update on the latest status.

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

As discussed in the 6th 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 please 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 188th 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.

Members may like to discuss.

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

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

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-2	5	Rajasthan
2	400 KV Agra-Unnao (UP) Ckt-1	3	UP
3	400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-1	3	UP/Uttarakhand
4	400 KV Kishenpur-NewWanpoh (PG) Ckt-3	3	POWERGRID
5	220 KV Alusteng(JK)-Drass(JK) (PDD JK) Ckt-1	4	J&K
6	220 KV Phozal(HP)-Nallagarh(PG) (ADHPL) Ckt-1	4	HP/POWERGRID/AD Hydro

The complete details are attached at **Annexure-B.X.** Frequent outages of such elements affect the reliability and security of the grid. Frequent outages of 400 KV Kishenpur-NewWanpoh (PG) Ckt-3 & 220 KV Alusteng(JK)-Drass(JK) (PDD JK) Ckt-1 affect the reliable power supply of Kashmir valley and Ladakh region respectively. Hence, utilities are requested to analyise the root cause of the trippings and share the remedial measures taken/being taken in this respect.

Members may like to discuss.

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

A total of **13** grid events occurred in the month of Oct'21 of which **5** are of GD-1 category. The preliminary report of all the events have been issued from NRLDC. A list of all these events along with the status of details received by 05-November-2021 is attached at **Annexure-B.XI.**

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

Maximum Fault Duration is **1800ms** in the event of multiple element tripping at 400/220 kV Bareilly (UP) on 23-Oct-21 at 16:28hrs.)

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **5** events out of **13** grid events occurred in the month. In 4 number of events, fault signature couldn't be captured from PMU data.

Members may take necessary preventive measures to avoid such grid incidents / disturbances

In future and discuss the same. Moreover, utilities may impress upon all concerned for providing the Preliminary Report, DR/EL & Detailed Report of the events in line with the regulations.

Members may like to discuss.

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

A total of 9 inter-regional lines tripping occurred in the month of Oct'21. The list is attached at **Annexure-B.XII.** Out of 9 number of tripping's, 2 tripping incidents 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 is in violation of various regulations. 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 mandated by CEA (Grid Standard) Regulations.

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

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

The status of receipt of DR/EL and tripping report of utilities for the month of Oct 2021 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, Delhi, HP, Rajasthan and Haryana in Oct, 2021 compared to the previous month.

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

27. Frequency response characteristic:

One FRC based event has occurred in the month of **Oct-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	21-Oct-21	14:32hrs	At 13:47 Hrs Dated 21st Oct 2021,400KV Teesta III-Kishanganj tripped on Y-B fault, further 400KV-Teesta III-Dikchu line tripped at 14:32 Hrs on B-N fault causing loss of evacuation path from Teesta-III and resulted in	49.87	49.85	-0.02

			Generation loss of 1086 MW at Teesta-III.			

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

States	21-Oct-21 event	Remarks
PUNJAB	240%	
HARYANA	188%	
RAJASTHAN	-32%	
DELHI	181%	
UTTAR PRADESH	-33%	
UTTARAKHAND	-49%	
CHANDIGARH	-56%	
HIMACHAL PRADESH	-66%	
JAMMU & KASHMIR	119%	
NR	35%	

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

Generator	21-Oct-21 event	Generator	21-Oct-21 event
Singrauli TPS	-111%	Salal HEP	-10%
Rihand-1 TPS	-139%	Tanakpur HEP	No generation
Rihand-2 TPS	76%	Uri-1 HEP	50%
Rihand-3 TPS	-119%	Uri-2 HEP	73%
Dadri-1 TPS	-24%	Dhauliganga HEP	Suspected SCADA data
Dadri -2 TPS	-31%	Dulhasti HEP	113%
Unchahar TPS	No generation	Sewa-II HEP	No generation
Unchahar stg-4 TPS	372%	Parbati-3 HEP	No generation
Jhajjar TPS	92%	Jhakri HEP	1%
Dadri GPS	-52%	Rampur HEP	Suspected SCADA data
Anta GPS	-18%	Tehri HEP	37%
Auraiya GPS	36%	Koteswar HEP	256%
Narora APS	45%	Karcham HEP	No generation
RAPS-B	42%	Malana-2 HEP	Suspected SCADA data
RAPS-C	-68%	Budhil HEP	No generation
Chamera-1 HEP	No generation	Bhakra HEP	2%
Chamera-2 HEP	No generation	Dehar HEP	No generation
Chamera-3 HEP	No generation	Pong HEP	No generation
Bairasiul HEP	Suspected SCADA data	Koldam HEP	No generation
		AD Hydro HEP	No generation

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

Generator	21-Oct-21 event	Generator	21-Oct-21 event
PUNJAB		UP	
Ropar TPS	No generation	Obra TPS	Suspected SCADA data
L.Mohabbat TPS	No generation	Harduaganj TPS	No generation
Rajpura TPS	248%	Paricha TPS	No generation
T.Sabo TPS	405%	Rosa TPS	101%
Goindwal Sahib TPS	654%	Anpara TPS	17%
Ranjit Sagar HEP	-62%	Anpara C TPS	Suspected SCADA data
Anandpur Sahib HE	No generation	Anpara D TPS	2%
HARYANA		Bara TPS	13%
Panipat TPS	Suspected SCADA data	Lalitpur TPS	14%
Khedar TPS	Suspected SCADA data	Meja TPS	-116%
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	Suspected SCADA data
CLP Jhajjar TPS	-10%	Alaknanda HEP	-15%
Faridabad GPS	No generation	Rihand HEP	-5%
RAJASTHAN		Obra HEP	-55%
Kota TPS	55%	UTTARAKHAND	
Suratgarh TPS	10%	Gamma Infra GPS	No generation
Kalisindh TPS	Suspected SCADA data	Shravanti GPS	No generation
Chhabra TPS	No generation	Ramganga HEP	No generation
Chhabra stg-2 TPS	Suspected SCADA data	Chibra HEP	Suspected SCADA data
Kawai TPS	-28%	Khodri HEP	-133%
Dholpur GPS	No generation	Chilla HEP	No generation
Mahi-1 HEP	Suspected SCADA data	HP	
Mahi-2 HEP	No generation	Baspa HEP	5%
RPS HEP	No generation	Malana HEP	No generation
JS HEP	-100%	Sainj HEP	-23%
DELHI		Larji HEP	16%
Badarpur TPS	No generation	Bhabha HEP	-38%
Bawana GPS	Suspected SCADA data	Giri HEP	-20%
Pragati GPS	75%	J&K	
		Baglihar-1&2 HEP	3%
		Lower Jhelum HEP	No generation

Status of Data received of FRC for the event at Teesta III on 21st Oct 2021:

Data Received from		Data Not Received from	
UP	Singrauli NTPC	HP	Rihand NTPC
	NJHPC	UK	Dadri-1 TPS
	NHPC	J&K	Rampur HEP
	Tehri HEP	Punjab	APCPL Jhajjar
	Koteshwar HEP	BBMB	ADANI (Kawai)
	CTPP Chhabra	Haryana	Others
		Rajasthan	
		Delhi	

Primary Frequency Response by Generators (as per generator data) during Grid Event at Teesta III on 21st Oct 2021

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
1	**Dhauliganga HEP**	42.46	Unsatisfactory response
2	**N. Jhakri Unit 2**	34.04	Early die out of response
3	**Singrauli Unit 7**	307.73	Satisfactory response
4	**Anpara A & C**	0	Poor response (Field raw data not received)
5	**Obra B & H**	0	Poor response (Field raw data not received)
6	**Lalitpur**	14	Unsatisfactory response (Field raw data not received)
7	**Koteshwar HEP**	220.35	Satisfactory response (Field raw data not received)

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.***

FRC information has been received from NHPC, NJPC, Tehri, Singrauli, & UP control area. Utilities are requested to submit field data as per the measurement in generating plant.

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

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

In 180th, 181st, 182nd, 183rd, 184th, 185th 186th, 187th & 188th OCC meeting, this point was discussed and Utilities were requested to submit the present status of PSS tuning/re-tuning and Step Response Test of their respective generators as per the below mentioned format.

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

Status report in above format updated till 08th November 2021 is attached as **Annexure-B.XIV.**

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

Members may kindly Accord due priority in this regard and update about their future plan for PSS tuning by 30th November, 2021 as there is no progress despite including this agenda in every OCC meeting.

29. 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 off peak hydro period and therefore good time to carry out such exercises.

Therefore, the schedule of mock exercise dates for different hydro & Gas power station was discussed in last OCC meeting and agreed. 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	Name of stations
26-Nov-21	* Uri-I, II HEP, Lower Jhelum HEP, Pampore GT's, Upper Sindh and Kishanganga
01-Dec-21	* Dhauliganga
04-Dec-21	Bairasiul
08-Dec-21	*Sewa-2
10-Dec-21	* N. Jhakri and Rampur
15-Dec-21	Karcham and Baspa
17-Dec-21	*Budhil
22-Dec-21	Parbati-3 and Sainj
24-Dec-21	*Salal
29-Dec-21	*Chamera-3
31-Dec-21	Koteshwar
05-Jan-22	Chamera-1 and Chamera-2
08-Jan-22	Malana-2, AD Hydro and Phozal

12-Jan-22	Tehri
15-Jan-22	Koldam

* 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 selection may be changed from the one taken during last year exercise. Also **Constituents are requested to adhere to the finalized schedule of mock exercises during the 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		Ranjit Sagar	4x150
11	Rajasthan	Mahi-I&II	2x25+2x45
12		Rana Pratap Sagar	4x43
13		Jawahar Sagar	3x33
14		Gandhi Sagar	5x23
15		Dholpur GPS	3x110
16		Ramgarh GPS	1x35.5+2x37.5+1x110
17	UP	Rihand	6x50
18		Obra	3x33
19		Vishnuprayag	4x100
20			
21		Srinagar (Alaknanda)	4x82.5
	Uttarakhand	Gamma Infra	2x76+1x73
22		Shravanti	6x75
23		Ramganga	3x66
24		Chibro	4x60
25		Khodri	4x30
26		Chilla	4x36
27		Maneri Bhali-I&II	3x30+4x76

28	Delhi	IP Extn GTs	6x30+3x30
29		Pragati GPS	2x104.6+1x121.2
30		Rithala	3x36
31	Haryana	Faridabad GPS	2x137.75+1x156.07

During last winter, SLDCs had been requested to carry out mock drills and share their reports. However, the report of such exercises was not received except for Rihand Hydro in Uttar Pradesh. The information may please be shared by SLDCs and program for this year's mock black start exercises shall also be shared.
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 please discuss.

30. Revision of document for Reactive Power Management and System Restoration Procedure (SRP) for Northern Region:

Reactive Power Management document for Northern region has been revised on 31st Dec 2020 & updated document link is as below:

https://nrldc.in/download/nr-reactive-power-management-2021/.

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

Document is password protected and password was already informed to all the NR constituents through letter dated 31st Dec 2020.

System restoration procedure document for Northern region has been revised on 31stJan 2021& updated 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 provide any modification/addition in respect of their system. SLDC/Generating utilities are requested to kindly update and share the restoration procedure in respect of their state/generating station.

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

Follow up issues from previous OCC meetings

<table>
<tr><td>1</td><td>Sub-stations likely to be commissioned by next two years.</td><td>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.</td><td colspan="3">Status details of downstream networks mentioned in Annexure-A.I.I.</td></tr>
<tr><td rowspan="11">2</td><td rowspan="11">Progress of installing new capacitors and repair of defective capacitors</td><td rowspan="11">Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.</td><td colspan="3">Data upto following months, received from various states / UTs:</td></tr>
<tr><td>◎</td><td>CHANDIGARH</td><td>Sep-2019</td></tr>
<tr><td>◎</td><td>DELHI</td><td>Oct-2021</td></tr>
<tr><td>◎</td><td>HARYANA</td><td>Apr-2021</td></tr>
<tr><td>◎</td><td>HP</td><td>Mar-2021</td></tr>
<tr><td>◎</td><td>J&K and LADAKH</td><td>Not Available</td></tr>
<tr><td>◎</td><td>PUNJAB</td><td>Mar-2021</td></tr>
<tr><td>◎</td><td>RAJASTHAN</td><td>Sep-2021</td></tr>
<tr><td>◎</td><td>UP</td><td>Sep-2021</td></tr>
<tr><td>◎</td><td>UTTARAKHAND</td><td>Oct-2021</td></tr>
<tr><td colspan="3">All States/UTs are requested to furnish updated status on monthly basis.</td></tr>
<tr><td rowspan="10">3</td><td rowspan="10">Healthiness of defence mechanism: Self-certification</td><td rowspan="10">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</td><td colspan="3">Data upto following months, received from various states / UTs:</td></tr>
<tr><td>◎</td><td>CHANDIGARH</td><td>Not Available</td></tr>
<tr><td>◎</td><td>DELHI</td><td>Sep-2021</td></tr>
<tr><td>◎</td><td>HARYANA</td><td>Sep-2021</td></tr>
<tr><td>◎</td><td>HP</td><td>Oct-2021</td></tr>
<tr><td>◎</td><td>J&K and LADAKH</td><td>Not Available</td></tr>
<tr><td>◎</td><td>PUNJAB</td><td>Mar-2021</td></tr>
<tr><td>◎</td><td>RAJASTHAN</td><td>Sep-2021</td></tr>
<tr><td>◎</td><td>UP</td><td>Sep-2021</td></tr>
</table>

<table>
<tr><td></td><td></td><td>and found functional”.</td><td>◎ UTTARAKHAND | Mar-2021
◎ BBMB | Sep-2021
All States/UTs are requested to furnish updated status on monthly basis.</td></tr>
<tr><td>4</td><td>Status of FGD installation vis-à-vis installation plan at identified TPS</td><td>List of FGDs to be installed in NR was finalized in the 36th TCC (special) meeting dt. 14.09.2017. All SLDCs were regularly requested since 144th OCC meeting to take up with the concerned generators where FGD was required to be installed.
Further, progress of FGD installation work on monthly basis is monitored in OCC meetings.</td><td>Status of the information submission (month) from states / utilities is as under:
◎ HARYANA | Feb-2021
◎ PUNJAB | Sep-2021
◎ RAJASTHAN | Oct-2021
◎ UP | Sep-2021
◎ NTPC | May-2021
FGD status details are enclosed as Annexure-A.I.II.
All States/utilities are requested to furnish updated status of FGD installation progress on monthly basis.</td></tr>
<tr><td>5</td><td>Information about variable charges of all generating units in the Region</td><td>The variable charges detail for different generating units are available on the MERIT Order Portal.</td><td>All states/UTs are requested to submit daily data on MERIT Order Portal timely.</td></tr>
<tr><td>6</td><td colspan="3">Reactive compensation at 220 kV/ 400 kV level at 15 substations</td></tr>
<tr><td></td><td>State / Utility</td><td>Substation</td><td>Reactor</td><td>Status</td></tr>
<tr><td>i</td><td>POWERGRID</td><td>Kurukshetra</td><td>500 MVAr TCR</td><td>Anticipated commissioning: Dec’2021 (delay due to pending supplies by GE)</td></tr>
<tr><td>ii</td><td>DTL</td><td>Peeragarhi</td><td>1x50 MVAr at 220 kV</td><td>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</td></tr>
</table>

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. 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 would be forwarded to NLDC, POSOCO. The target date is Nov'2021.

xii	RAJASTHAN	Bikaner	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment would be forwarded to NLDC, POSOCO. The target date is Nov'2021.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment would be forwarded to NLDC, POSOCO. The target date is Nov'2021.
xiv	RAJASTHAN	Barmer & others	13x25 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Installment received on dt.19.02.21. Technical bid opened on 22.10.2021
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 22.10.2021

Sl. No.	Substation	Downstream network bays	Commissioning status of ICTs / Bays	Planned 220 kV system	Revised Target	Remarks
1	Shahjahanpur, 2x315 MVA 400/220 kV	4 Nos. of 220 kV bays to be utilized	Commissioning of ICT Commissioning of Bays Jun/Sep'14	Shajahnapur-Azimpur D/C line		Connected to load on 28.07.2021
				LILO of 220kV Shajahanpur - Sitapur at Shajahanpur PG	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 1st -Dec'13 2nd - Mar'14 3rd - Mar'19 Commissioning of Bays 4 bays - Dec'13 2 bays - Mar'14 2 bays - Mar'19	220 kV D/C Hamirpur-Dehan line. Original schedule: Dec' 2020	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	Sep'21	Work order was placed on dt. 13.04.2020 to M/s A to Z Ltd. Works start on dt. 4.12.2020. S/S-32/32, T/E-31/32 (T/E at 27 no. location is pending due to Rajasthan High Court stay), T/S-2.09/8.12 2 km completed. Targeted to be completed

						by June'2021 .
4	Bhiwani 400/220kV S/s	6 nos. of 220kV bays	Commissioned (date not available)	220kV Bhiwani (PG) - Isherwal (HVPNL) D/c line	Dec'21	Delayed due to RoW issue
5	400/220kV Tughlakabad GIS	10Nos. of 220kV bays	Commissioned (date not available)	RK Puram – Tughlakabad (UG Cable) 220kv D/c line	Jul'22	PO for supply and ETC of D/C UG cable awarded.
				Masjid Mor – Tughlakabad 220kv D/c line	Mar'22	PO for supply and ETC of D/C UG cable awarded.
6	400/220kV Kala Amb GIS (TBCB)	6 Nos. of 220kV bays	Commissioned in Jul'2017	220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Dec'21	Details for utilizing remaining 4 bays is not available

FGD Status

Updated status of FGD related data submission

NTPC (16.06.2021)
MEJA Stage-I
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (20.10.2021)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (22.10.2021)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (14.10.2021)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Adani Power Ltd. (28.10.2021)
KAWAI TPS
Lalitpur Power Gen. Co. Ltd. (22.10.2021)
Lalitpur TPS
Lanco Anpara Power Ltd. (22.10.2021)
ANPARA-C TPS
Rosa Power Supply Company (22.10.2021)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (22.10.2021)
Prayagraj TPP
APCPL (17.08.2021)
INDIRA GANDHI STPP

Pending submissions

GVK Power Ltd.
GOINDWAL SAHIB
HGPCL
PANIPAT TPS
RAJIV GANDHI TPS
YAMUNA NAGAR TPS
NTPC
DADRI (NCTPP)
Talwandi Sabo Power Ltd.
TALWANDI SABO TPP
L&T Power Development Ltd.
Nabha TPP (Rajpura TPP)

Target Dates for FGD Commissioning (Utility-wise)

Adani Power Ltd.	KAWAI TPS U#1 (Target: 31-12-2024), KAWAI TPS U#2 (Target: 31-12-2024)
APCPL	INDIRA GANDHI STPP U#1 (Target: 31-12-2021), INDIRA GANDHI STPP U#2 (Target: 31-03-2022), INDIRA GANDHI STPP U#3 (Target: 30-06-2022)
GVK Power Ltd.	GOINDWAL SAHIB U#1 (Target: 30-04-2020), GOINDWAL SAHIB U#2 (Target: 29-02-2020) – initial target
HGPCL	PANIPAT TPS U#6 (Target: 30-04-2021), PANIPAT TPS U#7 (Target: 28-02-2021), PANIPAT TPS U#8 (Target: 31-12-2020), RAJIV GANDHI TPS U#1 (Target: 30-04-2022), RAJIV GANDHI TPS U#2 (Target: 28-02-2022), YAMUNA NAGAR TPS U#1 (Target: 31-12-2021), YAMUNA NAGAR TPS U#2 (Target: 31-10-2021) – initial target
NTPC	DADRI (NCTPP) U#1 (Target: 31-12-2020), DADRI (NCTPP) U#2 (Target: 31-10-2020), DADRI (NCTPP) U#3 (Target: 31-08-2020), DADRI (NCTPP) U#4 (Target: 30-06-2020), DADRI (NCTPP) U#5 (Target: 30-04-2020), DADRI (NCTPP) U#6 (Target: 29-02-2020), RIHAND STPS U#1 (Target: 28-02-2022), RIHAND STPS U#2 (Target: 31-12-2021), RIHAND STPS U#3 (Target: 31-12-2023), RIHAND STPS U#4 (Target: 31-12-2023), RIHAND STPS U#5 (Target: 30-06-2023), RIHAND STPS U#6 (Target: 30-06-2023), SINGRAULI STPS U#1 (Target: 31-08-2022), SINGRAULI STPS U#2 (Target: 31-08-2022), SINGRAULI STPS U#3 (Target: 31-08-2022), SINGRAULI STPS U#4 (Target: 31-08-2022), SINGRAULI STPS U#5 (Target: 31-08-2022), SINGRAULI STPS U#6 (Target: 31-08-2022), SINGRAULI STPS U#7 (Target: 31-08-2022), UNCHAHAR TPS U#1 (Target: 30-09-2023), UNCHAHAR TPS U#2 (Target: 30-09-2023), UNCHAHAR TPS U#3 (Target: 30-09-2023), UNCHAHAR TPS U#4 (Target: 30-09-2023), UNCHAHAR TPS U#5 (Target: 30-09-2023), UNCHAHAR TPS U#6 (Target: 31-03-2023), MEJA Stage-I U#1 (Target: 31-03-2022), MEJA Stage-I U#2 (Target: 31-03-2022), TANDA Stage-I U#1 (Target:), TANDA Stage-I U#2 (Target:), TANDA Stage-II U#3 (Target: 31-12-2022), TANDA Stage-II U#4 (Target: 31-12-2022)

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

Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2024), ROSA TPP Ph-I U#2 (Target: 31-12-2024), ROSA TPP Ph-I U#3 (Target: 31-12-2024), ROSA TPP Ph-I U#4 (Target: 31-12-2024)
RRVUNL	KOTA TPS U#5 (Target: 31-12-2022), KOTA TPS U#6 (Target: 31-12-2022), KOTA TPS U#7 (Target: 31-12-2022), SURATGARH TPS U#1 (Target: 31-12-2024), SURATGARH TPS U#2 (Target: 31-12-2024), SURATGARH TPS U#3 (Target: 31-12-2024), SURATGARH TPS U#4 (Target: 31-12-2024), SURATGARH TPS U#5 (Target: 31-12-2024), SURATGARH TPS U#6 (Target: 31-12-2024), SURATGARH SCTPS U#7 (Target: 31-12-2024), SURATGARH SCTPS U#8 (Target: 31-12-2024), CHHABRA TPP U#1 (Target: 31-12-2024), CHHABRA TPP U#2 (Target: 31-12-2024), CHHABRA TPP U#3 (Target: 31-12-2024), CHHABRA TPP U#4 (Target: 31-12-2024), CHHABRA SCPP U#5 (Target: 31-12-2024), CHHABRA SCPP U#6 (Target: 31-12-2024), KALISINDH TPS U#1 (Target: 31-12-2024), KALISINDH TPS U#2 (Target: 31-12-2024)
Talwandi Sabo Power Ltd.	TALWANDI SABO TPP U#1 (Target: 28-02-2021), TALWANDI SABO TPP U#2 (Target: 31-12-2020), TALWANDI SABO TPP U#3 (Target: 31-10-2020) – initial target
UPRVUNL	ANPARA TPS U#1 (Target: 31-10-2022), ANPARA TPS U#2 (Target: 31-08-2022), ANPARA TPS U#3 (Target: 30-06-2022), ANPARA TPS U#4 (Target: 30-04-2022), ANPARA TPS U#5 (Target: 28-02-2022), ANPARA TPS U#6 (Target: 30-06-2021), ANPARA TPS U#7 (Target: 30-04-2021), HARDUAGANJ TPS U#8 (Target: 31-12-2021), HARDUAGANJ TPS U#9 (Target: 31-12-2021), OBRA TPS U#9 (Target: 31-08-2022), OBRA TPS U#10 (Target: 31-10-2022), OBRA TPS U#11 (Target: 31-12-2022), OBRA TPS U#12 (Target: 30-06-2022), OBRA TPS U#13 (Target: 30-04-2022), PARICHHA TPS U#3 (Target: 30-04-2022), PARICHHA TPS U#4 (Target: 30-04-2022), PARICHHA TPS U#5 (Target: 28-02-2022), PARICHHA TPS U#6 (Target: 31-12-2021)

सं. 22-1306/37/2020-ओएम
भारतसरकार
Government of India
विद्युत् मंत्रालय
Ministry of Power
श्रमशक्तिभवन, रफ़ीमार्ग, नयीदिल्ली-110 001
Shram Shakti Bhawan, Rafi Marg, New Delhi-110 001

Dated 09th November, 2021

OFFICE MEMORANDUM

Subject:- Minutes of the Meeting on "Status of Islanding Scheme" held on 7th October, 2021 under the Chairmanship of Hon'ble Minister of Power and New & Renewable Energy -reg.

****

Please find enclosed herewith a copy of the minutes of the meeting on the above subject held on 07.10.2021 under the Chairmanship of Hon'ble Minister of Power and New & Renewable Energy for necessary action.

Encl: as above

(Raja Ramaswamy)
Under Secretary to Govt. of India
Telefax: 23719229
Email: opmonitor-power@nic.in

Distribution: As per list annexed

Copy to:

PS to Hon'ble Minister/ Sr.PPS to Secretary/Sr. PPS to JS (OM)/ PS to DS(OM)

Minutes of the Meeting on "Status of Islanding Scheme" held on 7th October, 2021 under the Chairmanship of Hon'ble Minister of Power and New & Renewable Energy

1. A Meeting on "Status of Islanding Scheme" was held on 7th October, 2021 under the Chairmanship of Hon'ble Minister of Power and New & Renewable Energy. The list of participants is given at **Annexure**.

2. Shri Ghanshyam Prasad, Joint Secretary, Ministry of Power introducing the subject of discussion said that during the meeting under the Chairmanship of Secretary, Ministry of Power, Central Electricity Authority (CEA) was entrusted with the task of operationalizing the existing Islanding Schemes and formulating new Islanding Schemes where they are required. Ms. Rishika Saran, Chief Engineer, Central Electricity Authority then made a Presentation on the Status of Islanding Scheme.

3. After a detailed discussion, the following action points emerged , which are required to be completed :

(i) Islanding Scheme operates during extreme emergency situations so that electricity continues to flow uninterruptedly. This principle must be adhered to by all utilities while designing the Islanding Scheme. Cost of electricity should not be an impediment in such extreme conditions.

[Action: **CEA/POSOCO/ States**]

(ii) Regarding Mumbai Islanding Scheme, all the planned additional infrastructure and the additional sub-station in Navi Mumbai is to be commissioned by July, 2023. Shri S.Satyanaryan, Member Secretary, WRPC was asked by Hon'ble Minister to brief him about the matter separately.

[Action: PGCIL, CEA, **Member-Secretary, WRPC**]

(iii) During exigencies like the recent power outage in Mumbai, there should not be any hesitation to clip the non-critical loads so that the essential services like railways and health services are not affected. Hon'ble Minister directed that the possibility of carrying out rehearsals and drills in all major cities in this context and bringing out a mechanism that will inform people of such activities be explored.

[Action: **MoP, CEA**]

(iv) Hon'ble Minister directed that while considering Islanding Schemes, consultations should also be held with the Engineering Branch of Ministry of Defence. Hon'ble Minister also said that he will hold consultation with the Chiefs of the Air Staff and the Army Staff about the requirement for strengthening of power system in any area.

[Action: **MOP**]

(v) Regarding funding of the projects, it was suggested that the funding may be done through Power System Development Fund (PSDF). In this context, Hon'ble Minister has directed that if there are problems with allocation of the funds, other sources of funds can be identified for the purpose.

[Action: **MoP (OM), CEA, NLDC**]

4. The Meeting ended with thanks to the Chair.

Annexure

List of Participants

1.	Hon'ble Minister of Power and New & Renewable Energy – Chairman
	Ministry of Power
1.	Shri Ghanshyam Prasad, Joint Secretary
2.	Shri Devashis Bose, Deputy Secretary
3.	Shri Arun Kumar Garg, Deputy Secretary
	Central Electricity Authority
1.	Shri Dinesh Chandra, Chairperson
2.	Shri B.K. Arya, Member
3.	Ms. Rishika Sharan, Chief Engineer
	Western Regional Power Committee
1.	Shri S. Satyanaryan, Member-Secretary
	Eastern Regional Power Committee
1.	Shri N.S. Mondal, Member-Secretary
	Southern Regional Power Committee
1.	Shri N.R.L.K. Prasad, Member-Secretary
	Northern Regional Power Committee
1.	Shri Naresh Bhandari, Member-Secretary
	Northern Regional Load Despatch Centre
1.	Shri N. Nallasaran, In-Charge
	Southern Regional Load Despatch Centre
1.	Shri V. Suresh, Executive Director
	POSOCO
1.	Shri K.V.S. Baba, CMD
2.	Shri S.R. Narashiman, Director (Systems Operation)
	PGCIL
1.	Shri K. Sreekant, CMD

Government of Jammu and Kashmir,
Department of Disaster Management, Relief, Rehabilitation & Reconstruction
Civil Secretariat, Jammu

Subject:- Declaration of the spell of heavy rainfall/heavy snowfall during the period of 23rd and 24th October, 2021 as State Specific Natural Disaster under SDRF Norms.

Government Order No.: 77-JK-DMRRR of 2021
D a t e d: 31 - 10 - 2021

Sanction is hereby accorded to the following:-

1. Declaration of the spell of heavy rainfall/heavy snowfall during the period of 23rd and 24th of October, 2021 as "State Specific Calamity" in-terms of para 3 (ii) of State Disaster Response Fund (SDRF) guidelines issued by MHA, GoI, vide no.33-5/2015-NDM-I dated 30.07.2015; for purpose of providing relief to the affected families and Departments from SDRF.
2. Districts covered under above declaration for spell of heavy Rainfall/Snowfall are Anantnag, Kulgam, Shopian of Kashmir Division and Jammu, Udhampur, Kishtwar, Reasi, Samba and Kathua, of Jammu Division.

By order of the Government of Jammu and Kashmir.

Sd/-
(Nazim Zai Khan)JKAS
Secretary to Government
Department of DMRRR
Dated: 31.10.2021

No:DMRRR-ER /86/2021
Copy to the:-

1. All Financial Commissioners.
2. Principal Secretary to Hon'ble Lieutenant Governor.
3. All Principal Secretaries to the Government.
4. Joint Secretary (J&K), Ministry of Home Affairs. GoI, New Delhi.
5. All Commissioner/Secretaries to the Government.
6. Divisional Commissioner, Jammu/Kashmir.
7. All concerned Deputy Commissioners.

Annexure-A.IV

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केन्द्रीय विद्युत प्राधिकरण

Central Electricity Authority

विद्युत प्रणाली योजना एवं मूल्यांकन-I प्रभाग

Power System Planning & Appraisal-I Division

सेवा में / To,

1. COO, CTUIL, Saudamini, Plot no. 2, Sector -29, Gurgaon-122 001
2. CMD, POWERGRID, Saudamini, Plot no. 2, Sector -29, Gurgaon-122 001
3. Director (System Operation), POSOCO, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi- 110010
4. Managing Director, HPPTCL, Himfed Bhawan, New ISBT Road, Panjari, Shimla-171005
5. Managing Director, HPSEBL, Vidyut Bhawan, Shimla- 171004
6. GM, GMR Bajoli Holi Hydro Power Private Limited, Airport Building, 302, 1st Floor, New Shakti Bhawan, Near Terminal 3, IGI Airport, New Delhi-37
7. SVP, M/s Greenko Budhil HEP, 1131/A, Sai Square Building, Road No. 36, Jubilee Hills, Hyderabad- 500033
8. Vice President, JSW Energy, JSW Centre, Bandra Kurla Complex, Bandra (East)-400051
9. SGM, AD Hydro Power Limited, Bhilwara Towers, A-12, Sector 1, Noida-201301

विषय /Subject: Minutes of the meeting held on 17.06.2021 through video conferencing to discuss issues related with transmission projects in Himachal Pradesh

Madam/Sir,

Please find enclosed the minutes of the meeting held on 17.06.2021 through video conferencing to discuss issues related to transmission projects in Himachal Pradesh.

भवदीय / Yours faithfully,

(मंजरी चतुर्वेदी/Manjari Chaturvedi)

निदेशक/Director

सेवा भवन, आर. के. पुरम-I, नई दिल्ली-110066 टेलीफैक्स: 011-26102045 ईमेल:cea-pspa1@gov.in वेबसाइट:www.cea.nic.in
Sewa Bhawan, R.K Puram-I, New Delhi-110066Telefax: 011-26102045 email: cea-pspa1@gov.inWebsite: www.cea.nic.in

Minutes of the meeting held on 17.06.2021 through video conferencing to discuss issues related with transmission projects in Himachal Pradesh

List of participants is enclosed at **Annex-I**.

Chief Engineer (PSPA-I), CEA, welcomed the participants and requested Director (PSPA-I), CEA, to take up the agenda of the meeting.

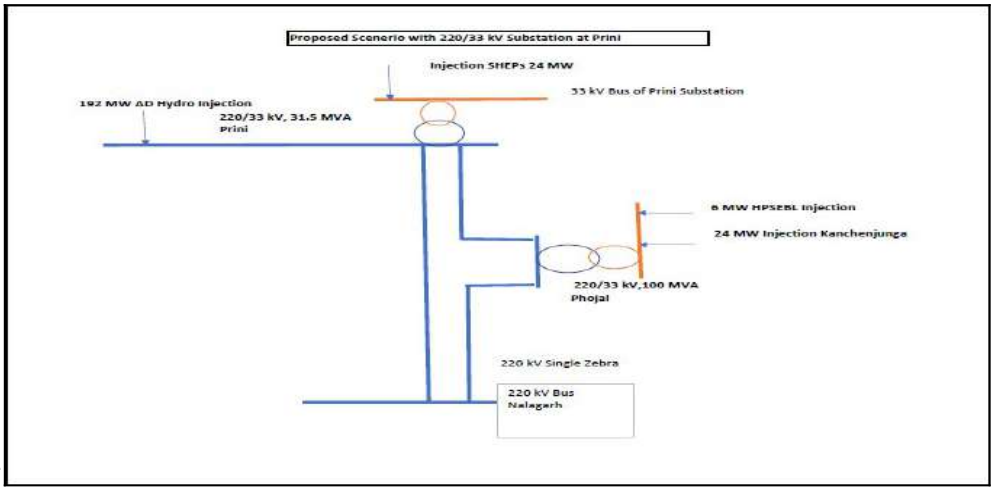
1: Construction of 220/33 kV, 31.5 MVA Substation in AD Hydro Switchyard at Prini by HPPTCL

(i) Director (PSPA-I), CEA, stated that AD Hydro Power Ltd. has developed 192 MW project at Prini in Himachal Pradesh. In order to evacuate power from the project, CTU had granted connectivity to ADHPL at 400/220 kV Nalagarh Substation through 220 kV D/C Prini to Nalagarh Line of ADHPL. AD Hydro had also agreed to provide space for one additional 220 kV bay in its Switchyard at Prini for injection & drawl of power at Prini by HP.

She added that HPPTCL had established 220/33 kV, 100 MVA Phojal Substation by S/c LILO of 220 kV D/c AD Hydro - Nalagarh line. Further, HPTTCL had informed that to facilitate injection of power from Small Hydro Electric Projects, AD hydro has also agreed for construction of 220/33 kV, 31.5 MVA substation in the switch yard of AD Hydro at Prini. The substation had been planned to facilitate injection of power from Small Hydro Electric Projects (SHEPs) in summers and to provide drawl of power to Manali area in winter. Currently power from the small hydro projects is being evacuated through 220/33 kV, 100 MVA Phojal Substation of HPPTCL. HPPTCL had informed that due to constraints in 33 kV system of HPSEBL, the SHEPs have to back down during peak generation period i.e. Summer. With the construction of 220/33 kV, 31.5 MVA Prini Substation, SHEPs will be able to inject power directly at Prini Substation. This will result in shifting of peak summer injection from Phojal S/Stn to Prini Substation & similarly winter drawl of Manali area will shift from Phojal S/Stn to Prini S/Stn.

The peak injection and drawl at Prini and Phojal S/s as intimated by HPPTCL is given below:

Sl. No.	Name of Substation	Peak Injection (MW) (Summer)	Peak Drawl (MW) (Winter)
1.	220/33 kV, 31.5 MVA Prini S/Stn.	24	24
2.	220/33 kV, 100 MVA Phojal S/Stn.	30	8
	Total	**54**	**32**



(ii) Director (PSPA-I), CEA, further stated that the matter was deliberated in the 3rd meeting of NRPC(TP) held on 19.02.2021 wherein members agreed to the above proposal of HPPTCL and it was decided that the commercial arrangements for usage of the line may be settled mutually between HPPTCL and M/s AD Hydro Power Ltd (ADHPL). However, ADHPL had requested CEA to convene a meeting to discuss the issues associated with the proposed substation of HPPTCL. Then, she requested ADHPL to elaborate their issues.

(iii) Representative of ADHPL raised the following issues:

- Representative of ADHPL stated there is neither any clearance including forest, environment, TEC approval etc. nor any order of the Apex Court which has directed ADHPL for any obligation to transmit power of any other generation project through its dedicated transmission line, except the approval of CEA during the meeting held on 1st March 2016 for use of ADHPL's dedicated transmission line by HPPTCL so that power of small IPPs in the valley does not get bottled up, based on which Phojal Sub-station of HPPTCL had been connected to ADHPL's dedicated transmission line. Further, connectivity of Phojal substation had been agreed only on interim basis
- He further stated that agreement had been signed in 2016 between ADHPL and HPPTCL for transmission of 11.4 MW power of HPSEBL utilising the dedicated transmission line of ADHPL. In the 156th NRPC OCC meeting held in February 2019, HPPTCL admitted connectivity of more number of small hydro projects and transmission of 27 MW power of HPSEBL through the dedicated line of ADHPL. However, HPPTCL and HPSEBL revised their Transmission Agreement from 11.4 MW to 27 MW w.e.f. December 2020 only. Even after signing of the agreement for revised capacity of 27 MW, it has been revealed through RTI that against 27 MW, about 33 MW capacity projects are connected and actual power flowing is in the range of 35-40 MW, either for drawl or injection. The Transmission Agreement between ADHPL and HPPTCL is yet to be revised corresponding to the increased quantum of power flow.
- ADHPL also raised the issue that HPPTCL has proposed shifting of small hydro projects from Phojal to Prini substation and stated that as per the single line diagram of 33/220 kV, 31.5 MVA Prini Sub-Station under construction, there are 5 nos. of 33 kV bays which comprise of 1 no. incomer bay from 31.5 MVA, 220/33 kV transformer, 2 nos.

bays of HPSEBL through underground cables and another 2 nos. of bays for 33 kV D/c transmission line from Palchan HPPTCL to Prini for the injection of power of small HEPs which are situated upstream of 192 MW Allain Duhangan HEP. With this arrangement, it won't be possible to shift the generation capacity from Phojal sub-station to Prini sub-station.

- ADHPL highlighted that in a meeting held in CEA in March, 2016, connectivity of Phojal substation to the dedicated line of ADHPL had been agreed only as an interim measure. If the dedicated line of ADHPL is to be used for transfer of power from small HEPs on permanent basis, the same need to be deliberated. ADHPL stated that as mentioned by HPPTCL, the load drawl would be floating between Prini and Phojal substation; ADHPL- Nallagarh line being a radial line, floating use of this line may create bottlenecks for transmission of ADHPL power. Therefore, there is a need for two separate Transmission Agreements for the two separate contracted capacities which are connected at these two substations because apart from the HPSEBL injection/drawl feeders, there are two feeders of 33 kV terminating at Prini sub-station for the injection of power of small HEPs which are situated upstream of 192 MW Allain Duhangan HEP.
- ADHPL representative further stated that the total capacity of 33/220 kV 100 MVA Phojal sub-station which is connected to ADHPL dedicated transmission line is 90 MW and total capacity of 31.50 MVA 33/220 kV Prini substation which is proposed to be connected to ADHPL dedicated transmission line is approximately 29 MW. Hence, the total capacity of the HPPTCL's sub-stations which have been proposed to be connected to dedicated transmission line of ADHPL is approximately 120 MW. ADHPL requested that HPSEBL/HPPTCL must clearly indicate the quantum of power to be injected in the dedicated transmission line (ADHPL-Nalagarh) by HPSEBL and ensure that transmission charges are paid to ADHPL for the said quantum of power.

(iv) MD, HPSEBL stated that though the 220 kV D/c line from AD Hydro to Nallagarh is a dedicated line of AD Hydro, this line was also to be used for evacuation of power from small HEPs in the valley, based on which Phojal and Prini substations have been planned.

Regarding the issue of more power flow than agreed capacity of 27 MW, HPSEBL stated that as per existing regulation, the transmission charges towards over injection upto 20% from the contracted capacity in any time block shall be payable at the same rate and beyond this limit, additional transmission charges shall be payable, which shall be 25% higher than the yearly transmission charge calculated pro-rata for the block.

Regarding shifting of load from Phojal to Prini, HPSEBL clarified that Prini substation has been designed not to shift the entire load of Phojal sub-station. But since these are interconnected at 33 kV level, sometimes the load would be shifted to Phojal and sometimes to Prini.

(v) Chief Engineer (PSPA-I), CEA, stated that as the ADHPL- Nalagarh 220 kV D/c line is a dedicated line of AD Hydro, therefore, HPSEBL and HPPTCL need to discuss and resolve the operational and commercial issues regarding the use of this line with ADHPL.

(vi) MD, HPPTCL, stated that the commercial and operational issues raised by ADHPL would be discussed and sorted out mutually between ADHPL, HPPTCL and HPSEBL.

(vii) NRLDC representative stated that under N-1 contingency, injection on the line would need to be restricted by HPSEBL/HPPTCL. NRLDC representative further stated that metering and other requirements at Prini would be similar to the arrangement at Phojal and the same may be discussed with concerned team of NRLDC.

(viii) After deliberations, it was decided that as suggested by MD, HPPTCL, all the operational and commercial issues related to the use of ADHPL's dedicated transmission line (ADHPL- Nalagarh line) by HPSEBL/HPPTCL would be discussed and mutually sorted out by HPPTCL and HPSEBL with ADHPL. Regarding metering arrangement, ADHPL, HPPTCL and HPSEBL need to approach NRLDC.

2: Grant of Connectivity to Kutehr HEP (240 MW) by S/C LILO of 400 kV D/C (Twin Moose) line from 400/220 kV, 2 x 315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL at Rajera.

(i) Director (PSPA-I), CEA, stated that following system is under implementation for evacuation of power from Hydro Projects in Ravi Basin-

a) 400/220 kV, 2 x315 MVA Sub-Station at Lahal.

b) 400 kV D/C (Twin Moose) line from 400/220 kV, 2 x315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL at Rajera.

c) 220 kV D/C (Twin Moose) line from Bajoli Holi to Lahal.

Kutehr HEP (240 MW) of M/s JSW was originally granted connectivity at 220 kV level at 400/220 kV, 2x315 MVA Lahal Substation in the year 2012 by HPPTCL. In the meantime, HPPTCL had received Long Term Access Applications from Bajoli Holi HEP (180 MW) and four Small HEPs with aggregate capacity of 51 MW, thus about 230 MW of capacity out of 315 MVA available at Lahal Substation had been committed. Further, additional 25 to 30 MW of Small Hydro Potential is also planned to be evacuated through Lahal Substation. Thus, total injection on 220 kV Bus at Lahal Substation would be around 260 MW.

In view of the capacity constraints envisaged at Lahal substation, HPPTCL had conveyed to M/s JSW regarding requirement for review of evacuation arrangement for Kutehr HEP (240 MW) by changing connectivity from 220 kV level to 400 kV level. Subsequently, it was conveyed to M/s JSW that Kutehr HEP (240 MW) would be provided connectivity through LILO of one circuit of 400 kV D/C (Twin Moose) line from 400/220 kV, 2 x315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL at Rajera.

(ii) Director, CEA, further stated the matter had been deliberated in the 3rd meeting of NRPC(TP) held on 19.02.2021 wherein HPPTCL had requested to approve the evacuation system of Kutehr HEP (240 MW) by S/C LILO of 400 kV D/C (Twin Moose) line from 400/220 kV, 2 x315 MVA, Lahal Sub-Station to 400/220 kV Chamera P.S. of PGCIL at Rajera. HPPTCL further intimated that JSW had started the work of Kutehr HEP. However, as JSW was not represented in the meeting, no decision regarding change in connectivity could be finalized in the meeting.

(iii) Representative of JSW submitted that they have no issue with revised connectivity at 400kV by S/c LILO of 400 kV D/c (Twin Moose) Lahal to Chamera line of HPPTCL and the revised connectivity has already been issued by HPPTCL.

(iv) Director, CEA further highlighted that there is an issue of high voltage in the area which has also been raised by POSOCO, for which HPPTCL had been requested to explore the possibility of installation of bus reactor at Lahal substation

(v) Representative of HPPTCL stated that there is space constraint as well as transportation issue for bus reactor installation at Lahal substation and therefore, they have proposed installation of bus reactor at Kutehr substation. CEA stated that the issue of transportation can be handled by considering single phase units of reactors instead of three phase units.

(vi) JSW stated that considering the small length of the line between Kutehr to Lahal, no reactor was envisaged at Kutehr and as such no provision of reactor has been kept at their switchyard. Further, considering the space constraints, it would not be possible to install any reactor.

(vii) CTU stated that this kind of issue of non- availability of space for installation of reactors at substations has been witnessed in many instances and same needs to be addressed as it is very crucial for stability of the grid. CTU further suggested that for safety of switchyard equipment and as per system requirement, reactor is mandatorily required in the complex. This would help in limiting damages to the equipments due to High Voltage.

On a query from CTU regarding the beneficiary of the power from Kutehr HEP, JSW representative clarified that power from Kutehr HEP would be exported outside HP. CTU stated that in that case, though connectivity of Kutehr HEP has been issued by HPPTCL, JSW needs to apply to CTU for LTA. JSW agreed for the same.

(viii) Regarding issue of space constraint for installation reactor at Lahal/ Kutehr substations, CTU and POSOCO suggested that a site visit may be carried out to explore the feasibility of installing reactor at Lahal/ Kutehr substations.

(ix) After deliberations, following was agreed:

a) Kutehr HEP (240 MW) will be connected to the grid through LILO of one circuit of 400 kV D/C (Twin Moose) line from Lahal Sub-Station to Chamera (Rajera) Pooling station.

b) JSW to apply for LTA to CTU for evacuation of power from Kutehr HEP (240 MW).

c) A site visit to be carried out at Lahal and Kutehr substations to explore the feasibility of installing bus reactor at either Lahal or Kutehr substation.

3: Evacuation arrangement for Bajoli Holi HEP (180 MW)

(i) Director (PSPA-I), CEA, stated that the transmission system for evacuation of power of Bajoli Holi HEP comprises of following elements under implementation by HPPTCL:

(a) 33/220/400 kV GIS substation at Lahal

(b) 220 kV D/c line (Twin Moose) from Bajoli Holi HEP to 33/220/400 kV Lahal substation.

(c) Lahal- Chamera PS (PGCIL) 400 kV D/c line

HPPTCL has intimated that Lahal substation has been commissioned, 220 kV Bajoli Holi HEP- Lahal D/c line is nearing completion and would be commissioned in the matching timeframe of Bajoli Holi HEP whereas Lahal- Chamera 400 kV D/c line is delayed.

She further stated that GMR vide its letter dated 09.06.2021 has intimated that Bajoli Holi HEP is in advanced stage of construction with approx. 98% work completed and is expected to be commissioned in August 2021. In view of the delay of Lahal- Chamera 400 kV D/c line, GMR has requested for an interim arrangement for power evacuation through Lahal- Budhil- Chamera III- Chamera PS 220 kV line, till the commissioning of Lahal- Chamera 400 kV D/c line.

(ii) Director (PSPA-I), CEA, further stated that earlier HPPTCL had requested for evacuation of 24 MW power from small HEPs which are getting connected at Lahal substation and they are also proposed to be evacuated through Lahal- Budhil- Chamera III- Chamera PS 220 kV line as an interim arrangement till the commissioning of Lahal- Chamera 400 kV D/c line. System studies have been carried out considering the 24 MW power from small HEPs and 2 units of Bajoli Holi HEPs (60 MW each) getting connected at Lahal substation can be evacuated till commissioning of Lahal- Chamera 400 kV D/c line through following existing lines with implementation of SPS at Bajoli Holi HEP:
   (a) Lahal- Budhil 220 kV S/c line
   (b) Budhil- Chamera III 220 kV S/c line
   (c) Chamera III- Chamera PS 220 kV D/c line

(iii) CTU enquired the revised schedule of Lahal- Chamera 400 kV D/c line which was intimated by HPPTCL as December 2021.

(iv) Chief Engineer (PSPA-I), CEA, stated that following constraints are observed in the proposed interim arrangement:
   (a) Budhil to Chamera III line is a 220 kV S/c line and the total power that is being planned to be evacuated through this line would be 274 MW (180 MW of Bajoli Holi HEP, 24 MW of small HEPs at Lahal substation and 70 MW of Budhil HEP), which exceeds the capacity of the line.
   (b) N-1 contingency issue of 400/220 kV ICTs at Chamera PS.

   Chief Engineer (PSPA-1) suggested that to address the above issues, the generation from Bajoli Holi HEP and small HEPs connected at Lahal substation would need to be restricted.

(v) Greenko stated that Budhil- Chamera III 220 kV S/c line is a dedicated line of Greenko and loading capacity of the line is 180 MW only. Further, since Budhil has LTA for supplying its full capacity to Uttarakhand, it should have the first priority for evacuation through the constrained corridor. There is a need for SPS to ensure that under n-1 contingency of 400/220 kV ICT at Chamera PS, Budhil generation can be safely evacuated. Also, as Budhil- Chamera III 220 kV S/c line is under regulation of UERC, HPPTCL needs to file petition in UERC for the quantum of power planned to be evacuated through this path. At present, UERC has agreed for evacuation of 26 MW SHEP from Lahal till Sep'2021.

(vi) NRLDC stated that total injection from 220kV side of the 2x315MVA ICTs at Chamera PS would be nearly 650MW under full generation in the complex and accordingly SPS

would need to be revised. NRLDC further requested HPPTCL to expedite the Lahal-Chamera 400 kV D/c line.

(vii) CTU suggested that many small HEPs are coming up in the area. Therefore, keeping in the view the difficulty in implementation of EHV corridors, option to disperse the power from small HEPs at distribution level may be explored by HPPTCL and HPSEBL.

(viii) GMR representative requested for allowing evacuation of 180 MW power from their hydro plant if margin is available for evacuation through this path, for only 4 hours a day during the lean hydro period till the commissioning of 400 kV Lahal-Chamera PS line. It was informed that these operational issues need to be decided in real time by the load dispatcher, depending on the dispatch of Budhil HEP and Chamera-III HEP, and the available margin.

(ix) After deliberations, following was agreed:

a. Evacuation of power from Bajoli Holi HEP may be allowed only with SPS through Lahal- Budhil- Chamera III- Chamera PS 220 kV line as an interim arrangement till the commissioning of Lahal- Chamera 400 kV D/c line Also, first priority of power evacuation through the existing lines is of Budhil HEP and Chamera III HEP. It is worth mentioning that the Budhil- Chamera III 220 kV S/c line is a dedicated line of Greenko for Budhil HEP.

b. Injection of power from Bajoli Holi HEP and small hydro stations connected at Lahal should be such that it does not overload the 220kV S/c line from Budhil to Chamera –III HEP considering the injection of power from Budhil HEP. In case of outage of one ICT at Chamera Pooling Station, the generation projects connected at Lahal need to be backed down.

c. HPPTCL needs to file petition in UERC for the quantum of power planned to be evacuated through this path.

4: Evacuation arrangement for small hydro projects in Himachal Pradesh:

(i) Director (PSPA-I), CEA, stated that HPPTCL vide letter dated 09.6.2021 has proposed some interim arrangement for evacuation of 51 MW power from small HEPs in Bharmour Valley in Rabi Basin of Himachal Pradesh. The original system planned for evacuation of 51 MW power from small HEPs in Bharmour Valley is through Heiling substation of HPPTCL which is to be implemented through LILO of one circuit of 220 kV Bajoli Holi HEP- Lahal D/c line.

(ii) Director (PSPA-I) further stated that HPPTCL has intimated that at present, 24 MW of small HEPs have been commissioned. However, Heiling substation is delayed, due to which, the power from small HEPs are being evacuated through 33 kV lines of HPSEBL at Lahal with constraints. As full power of Bajoli Holi HEP can be evacuated only after commissioning of Lahal- Chamera 400 kV D/c line, HPPTCL has proposed to charge one circuit of 220 kV Bajoli Holi – Lahal D/c line at 33 kV level which shall be utilized for evacuation of small HEPS and power of Bajoli Holi HEP shall be evacuated through 2nd circuit of the line. In the event of outage of this circuit, solid tap at 1st circuit charged at 33 kV shall be removed and this circuit shall be charged at 220 kV to take care of N-1 contingency of Bajoli Holi HEP. This interim arrangement is proposed till the commissioning of Heiling substation, the revised schedule of which is December 2022.

(iii) CTU stated that in case of contingency in 2nd circuit from Bajoli Holi HEP to Lahal, changing taps at 1st circuit charged at 33 kV to charge at 220 kV would take some time and the system cannot be termed as N-1 compliant.

(iv) GMR stated that as the interim arrangement is proposed beyond the commissioning of Lahal- Chamera 400 kV D/c line till the commissioning of Heiling substation, in case of any contingency in the line, the arrangement to change the voltage level of 1st circuit from 33 kV to 220 kV would take time and as a result considerable generation loss of their HEP could occur. Therefore, they need to consult their top management to take decision on the issue.

(v) After deliberations, it was decided that GMR would discuss the interim arrangement proposed by HPPTCL for evacuation of 51 MW power from small HEPs in Bharmour Valley with their management and convey the decision to CEA and HPPTCL.

Meeting ended with the thanks to the chair.

Annexure I

List of participants:

S.No.	Name	Designation
CEA		
1	Ishan Sharan	Chief Engineer
2	Manjari Chaturvedi	Director
3	Nitin Deswal	Asst. Director
4	Kanhaiya Singh Kushwaha	Asst. Director
CTUIL		
5	Ashok Pal	CGM
6	Kashish Bhambhani	SR DGM
7	Ankita Singh	Chief Manager
POSOCO		
8	Alok Kumar	GM, NRLDC
9	Gaurav Malviya	DM, NRLDC
POWERGRID		
10	Tarun Bajaj	CGM
HPPTCL		
11	Ranvir Singh Jalta	MD
HPSEBL		
12	R. K. Sharma	MD
AD Hydro		
13	Sumit Garg	SGM
JSW		
14	Pritpal Singh	Sr. Manager
Greenko Budhil Hydro Power Private Limited		
15	Y K Sehgal	ED
GMR Bajoli Holi		
16	Gopendra Saraswat	Head Tr. Project

ANNEXURE-A.V

HP POWER TRANSMISSION CORPORATION LIMITED
HPPTCL

Parikshit Pal <dmprojects2@hpptcl.in>

Annexure-A.V

Fwd: Interim evacuation arrangements for evacuation of 26 MW Small HEPs through 220 kV Lahal-Budhil S/C line of Greenko in Himachal Pradesh-Regarding

Vijay Singh <gmprojects@hpptcl.in> Mon, Oct 18, 2021 at 1:39 PM
To: Parikshit Pal <dmprojects2@hpptcl.in>

---------- Forwarded message ---------
From: **Vipan Pal Singh** <md@hpptcl.in>
Date: Mon, Jun 29, 2020 at 11:14 AM
Subject: Fwd: Interim evacuation arrangements for evacuation of 26 MW Small HEPs through 220 kV Lahal-Budhil S/C line of Greenko in Himachal Pradesh-Regarding
To: Madan Lal Sharma <dgmchamba@hpptcl.in>, Rajinder Sharma <dgmdesign@hpptcl.in>, Bhupesh Uppal <gmprojects@hpptcl.in>

---------- Forwarded message ---------
From: **Alok Kumar (आलोक कुमार)** <alok.kumar@posoco.in>
Date: Mon, 29 Jun 2020 at 11:07
Subject: RE: Interim evacuation arrangements for evacuation of 26 MW Small HEPs through 220 kV Lahal-Budhil S/C line of Greenko in Himachal Pradesh-Regarding
To: Sandeep Kumar Sharma <gmcd@hpptcl.in>, goutamroy.cea@nic.in <goutamroy.cea@nic.in>, mkhanna@powergridindia.com <mkhanna@powergridindia.com>
Cc: Vipan Pal Singh <md@hpptcl.in>, Keshav Singh Attri <directorpc@hpptcl.in>, Gaurav Malviya (गौरव मालवीय) <gauravmalviya@posoco.in>, S. S. Barpanda (एस. एस. बरपंडा) <ssbarpanda@posoco.in>, N Nallarasan (एन नल्लारासन) <nallarasan@posoco.in>, Manoj Kumar Agarwal (मनोज कुमार अग्रवाल) <mkagarwal@posoco.in>, M M Hassan (एम एम हसन) <mm.hassan@posoco.in>, H K Chawla (एच के चावला) <hkchawla@posoco.in>, Nitin Yadav (नितिन यादव) <nitinyadav@posoco.in>, ms-nrpc@nic.in <ms-nrpc@nic.in>, seo-nrpc@nic.in <seo-nrpc@nic.in>

Sir

Please find attached inputs of NRLDC regarding SPS.

With Regards

Alok Kumar
Sr.DGM, NRLDC
09999039321

From: Sandeep Kumar Sharma [gmcd@hpptcl.in]
Sent: Saturday, June 27, 2020 12:23 PM
To: H K Chawla (एच के चावला); Manoj Kumar Agarwal (मनोज कुमार अग्रवाल); Alok Kumar (आलोक कुमार); Nitin Yadav (नितिन यादव); goutamroy.cea@nic.in; mkhanna@powergridindia.com
Cc: Vipan Pal Singh; Keshav Singh Attri
Subject: Interim evacuation arrangements for evacuation of 26 MW Small HEPs through 220 kV Lahal-Budhil S/C line of Greenko in Himachal Pradesh-Regarding

Sir,

PFA HPPTCL letter dated 27.6.2020 along with enclosures on the subject matter for information and necessary action plz.

Regards

GM (C & D)
HPPTCL, Shimla

--
MD HPPTCL
SHIMLA

--
Thanks & Regards

(Er. Vijay Singh Thakur)
General Manager (Projects),
HPPTCL, Himfed Bhawan,Panjari.
Shimla-,171005.

NRLDC input Lahal SPS_Final.docx
131K

NRLDC input for SPS logic to be implemented by HP (Himachal Pradesh) for evacuation of small hydro generation from 220 kV Lahal-Budhil-Chamera3-Chamba section

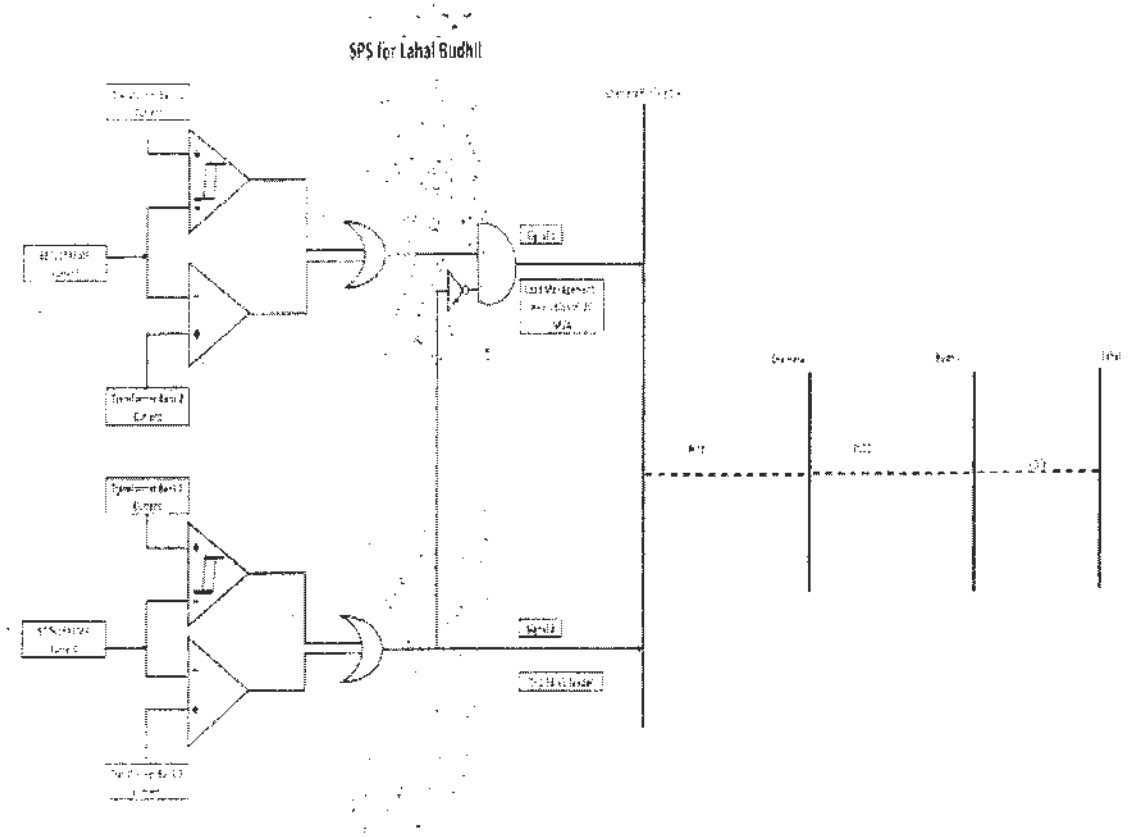
In the complex of Chamera-III HEP, Budhil HEP and Chamba pooling station, existing generation and transformation capacity is as below:

1. Chamera-3 HEP: 3 units of 77 MW, total 254 MW including 10% overload
2. Budhil HEP: 2 units of 35 MW, total 77 MW including 10% overload
3. Karian SHEP: 34 MW capacity (directly connected at Chamba)
4. Chamba station: 2*315 MVA 400/220 kV ICTs

Additional Generation to be allowed:

5. SHEP at Lahal: 26 MW capacity (Allowed on opportunity basis)

SPS logic submitted by HP (Himachal Pradesh) is as below:



In this logic condition 1 "transformer loading more than 65%" is not required. Only second logic of tripping of feeders in case of ICTs loading more than 90% of its capacity on any of the transformers will suffice for taking care of transformers loading.

Apart from above, logic of line loading of 220 kV Chamba (Chamera Pool)-Chamera 3 ckt-1 (healthy ckt on ERS tower) more than 360MVA also to be added in this SPS scheme.

Tripping of 220 kV Budhil-Lahal ckt at both end needs to be planned instead of 33 kV feeders as it may be resulted into some additional time delay in final tripping.

Final Logic can be devised like:

Condition A. Loading on 400/220 kV 315 MVA ICT1 more than 408A (90% of 454 A full load current at 400 kV side of ICT-1) for 2 seconds

OR Logic

Condition B. Loading on 400/220 kV 315 MVA ICT2 more than 408A (90% of 454 A full load current at 400 kV side of ICT-2) for 2 seconds

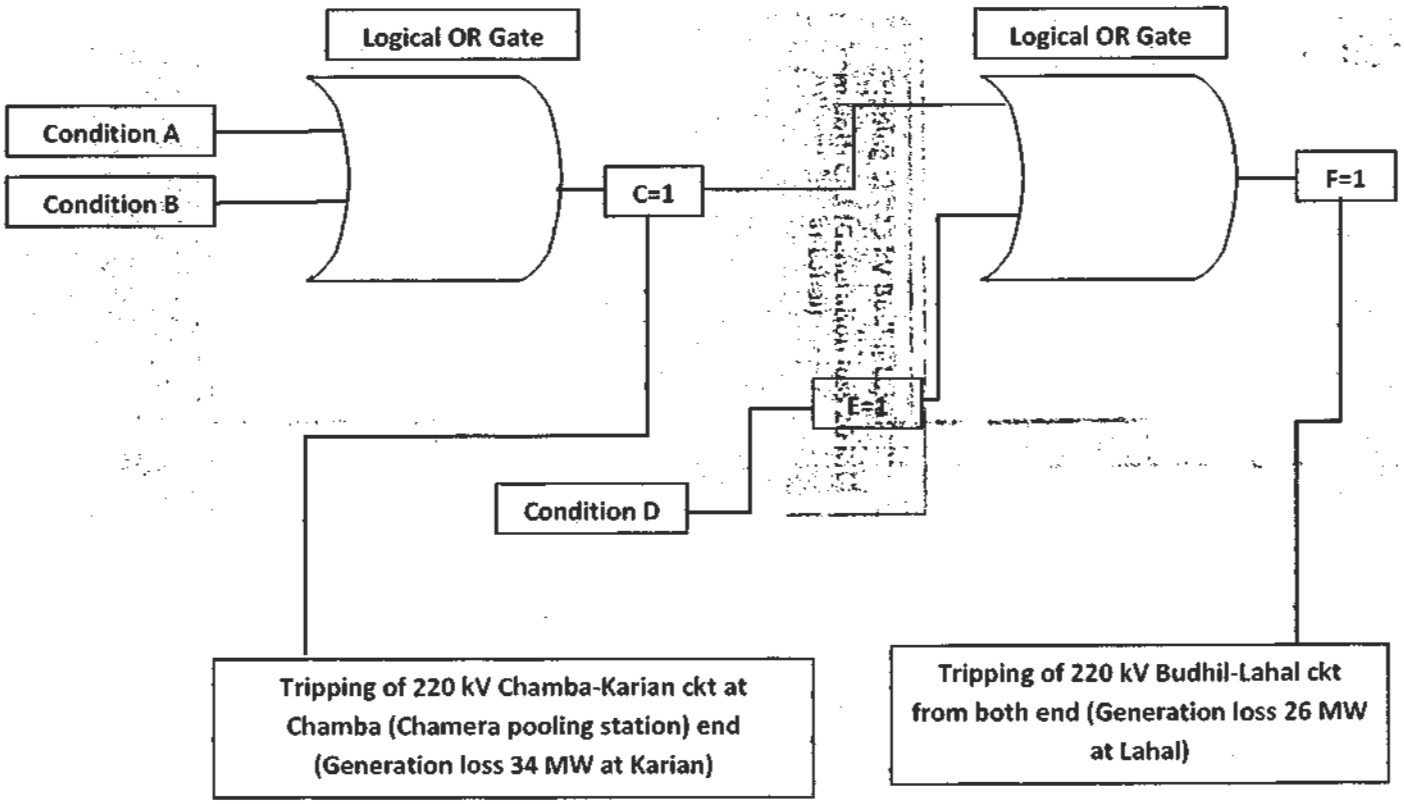
(Output of above two conditions- **C**)

Condition D. Loading on 220 kV Chamera3-Chamba ckt-1 more than 360 MW for 1.5 seconds than output is **E**

On the basis of outcome C=1: Tripping of 220 kV Chamba-Karian ckt at Chamba (Chamera pooling station) end (34 MW Generation will be tripped at Karian)

If **C=1** Logical **OR E=1** than output is **F=1**

On the basis of outcome F=1: Tripping of 220 kV Budhil-Lahal ckt from both ends (26 MW Generation will be tripped at Lahal)



Other points for consideration:

- SPS tripping shall be achieved within 100ms of SPS initiation.
- As approved in earlier NRPC meeting, Any New SPS scheme is being implemented than its signal shall be wired in station SoE (Sequence of Event recorder) or SAS based event logger. Accordingly, SPS signal shall be wired at Chamba (Chamera pooling station) station SoE, Budhil HEP station SoE and Lahal station SoE. In case of actual operation these details shall be shared with NRPC/ NRLDC
- SPS will be reviewed after charging of 220 kV Chamera3-Chamba ckt-2 and removal of ERS tower in 220 kV Chamera3-Chamba ckt-1. In that case, only condition D (line loading) could be removed but SPS for Chamba ICTs need to continue till installation of 3rd ICT at Chamba station.
- Any modification in SPS scheme shall be approved in OCC/NRPC meeting.
- Power evacuation shall only be allowed after successful implementation of SPS scheme along with mock trial operation.

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Dated: 08.07.2020

(Detailed Report regarding providing special protection scheme implementation and testing thereof.)

As per the minutes of meeting held on Dated. 03.01.2020 with CEA under the chairmanship of Chief Engineer (PSPA1), wherein it was decided that HPPTCL shall implement SPS (Special protection scheme) to avoid overloading of ICTS (400/220 kV 2x 315 MVA) installed at 400/220 Chamera III Pooling s/station (PGCIL). In response,it is intimated that final modified/approved special protection scheme by NRLDC and duly vetted by Chief General Manager (AM) PGCIL Jammu has been successfully tested and implemented at the PGCIL Chamera III pooling station.

The scheme envisages the following provisions:

I. If the load/current of ICT1 or ICT2 or both exceeds 90% of full load i.e. 744 amps of 315 MVA , 220 kV S/C Lahal Budhil transmission line as well as 220 kV S/C Karian-Rajera transmission line shall be tripped as per approved logic.
II. If the current of 220 kV Chamera III-PGCIL Rajera transmission line Ckt I exceeds 942 amps corresponding to 360 MW load, the CB's of both ends of 220 kV S/C Lahal Budhil transmission line shall trip.

The sequence wise testing carried out on dated 8.07.2020 after taking necessary testing code from NRLDC and observing all the codal formalities is discussed below:

1) The trip signal was temporarily made **high** by reducing the setting in ICT-1 BCU with time delay of 2 seconds. This signal was transmitted from power grid end and received at Lahal and Budhil end relays causing the tripping of relays provided at both ends. As far as 220 kV S/C Karian Rajera transmission line is concerned signal was only checked but no real tripping was issued.
2) The same procedure was adopted for generating direct trip in respect of load exceeding in ICT-2 also.
3) The signal from REL670 relay provided at PGCIL end of 220 kV Chamera III –PGCIL Line Ckt-1 was made **high** by temporarily reducing settings. The tripping signal so generated tripped the relays of both ends of 220 kV Lahal Budhil transmission line.

The time of issuance and receiving/tripping of the relays at Lahal/Budhil line ends are under:

Issuance time:	Receiving/tripping time at Lahal/Budhil
12.59.21.578	12.59.21.657

The PLCC transmit/receive i.e. Tx/Rx Chart showing the initial counter readings and subsequent counter readings, consequent upon the testing is also enclosed for ready reference. From the perusal of this chart, it is evident that there is no cross interference of the intended signal to be received at Budhil via Chamera III HEP PLCC cabinets/panels.

The testing sequence is supported by DR (Disturbance record) of PGCIL Chamera III pooling station and HPPTCL 400/220/33 kV GIS S/station Lahal.

From the ongoing discussions it is certified that all the intended conditions have been met and tested accordingly.

PLCC Counter Record

Budhil (At Chamera End)

	Before testing		After ICT-1 testing		After ICT-2 testing		After Load testing	
Code	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
A	49	28	49	28	49	28	49	28
B	49	69	49	69	49	69	49	69
C	0	0	0	0	0	0	0	0
D	1	0	2	0	3	0	4	0

220 KV Chamera Line-1 at Chamera end

	Before testing		After ICT-1 testing		After ICT-2 testing		After testing-3	
Code	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
A	0	27	0	27	0	27	0	27
B	0	15	0	15	0	15	0	15
C	12	69	12	69	12	69	12	69
D	13	34	13	34	13	34	13	34

220 Kv Chamera Line-2 at Chamera end

	Before testing		After ICT-1 testing		After ICT-2 testing		After Load testing	
Code	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
A	0	22	0	22	0	22	0	22
B	0	3	0	3	0	3	0	3
C	13	35	13	35	13	35	13	35
D	4	9	4	10	4	11	4	12

AT Budhil HEP

	Before testing		After ICT-1 testing		After ICT-2 testing		After Load testing	
Code	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
A	26	42	26	42	26	42	26	42
B	77	42	77	42	77	42	77	42
C	0	0	0	0	0	0	0	0
D	0	0	0	1	0	2	0	3

ABB

Disturbance Short Report

Disturbance Recordings Information

Device Information

Recorder ID	1
IED type	REL670
IED version	1p1r25
Station name	GIS CHAMBA
Object name	220 KV LINE-1
IED name	Unit name

Fault Information

Trig date and time	7/8/2020 12:59:20.066 PM
Trigger signal name	SPS_TRIP_STAR
Recording number	172
Total recording time	4499 ms
Pre-trig recording time	500 ms
Post trig recording time	0 ms
Max. recording time	4000 ms

General Recordings Information

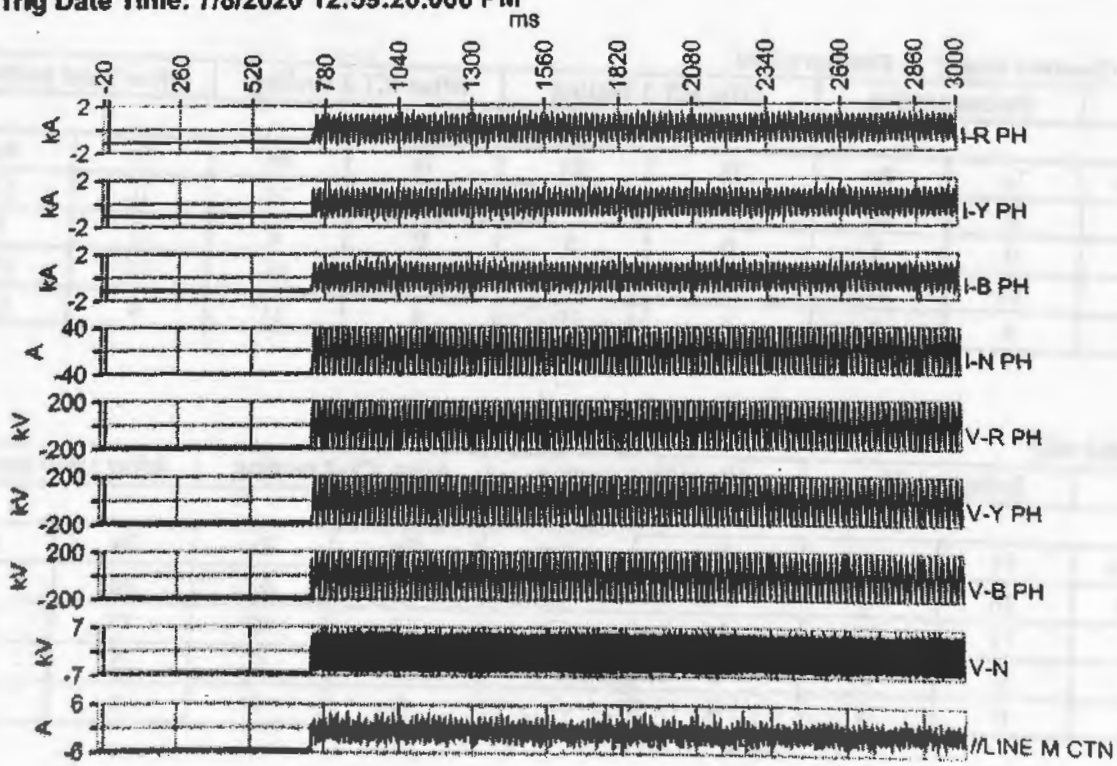
Disturbance recorder	Installed
Event recorder	Installed
System frequency	50 Hz
Sampling frequency	1 kHz
Active setting group during recording	1

Fault Location Information

Fault loop type	Not applicable
Fault location	Not applicable
Status of fault calculation	Not applicable
Fault direction	Not applicable

Analog Time Diagram

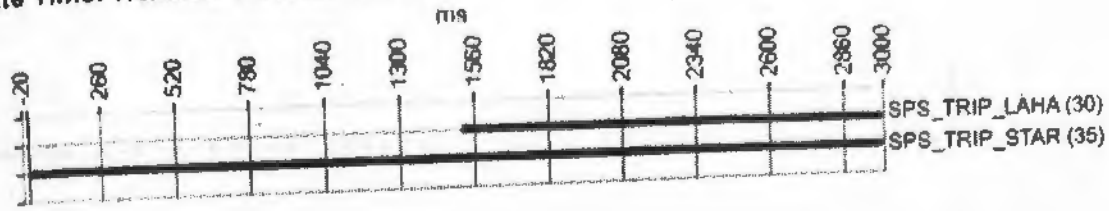
Trig Date Time: 7/8/2020 12:59:20.066 PM



ABB

Binary Time Diagram

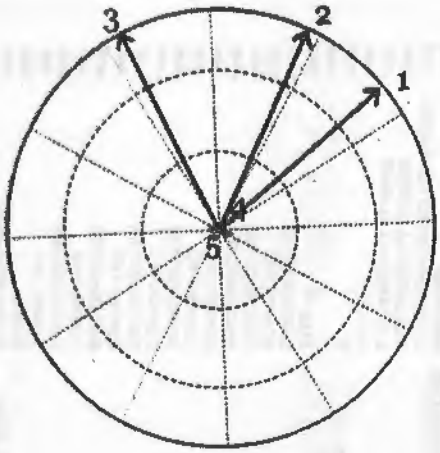
Trig Date Time: 7/8/2020 12:59:20.066 PM



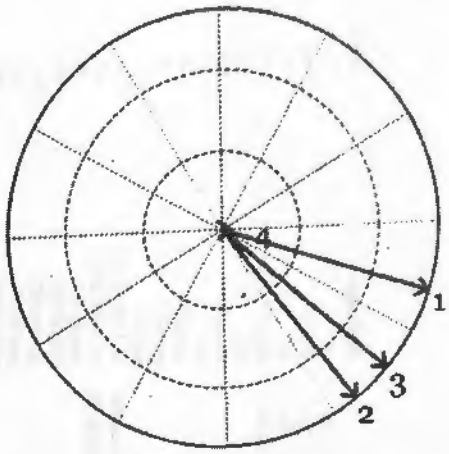
Vector Diagrams

Calculation Time Period : 0 ms to 19 ms

Currents



Voltages



No.	Name	RMS	Angle
1	I-R PH	1106.364(A)	38.7°
2	I-Y PH	1115.379(A)	63.4°
3	I-B PH	1133.409(A)	114.9°
4	I-N PH	39.453(A)	63.4°
5	//LINE M CTN	5.556(A)	200.9°

No.	Name	RMS	Angle
1	V-R PH	181691.188 (V)	341.6°
2	V-Y PH	182229.297 (V)	306.9°
3	V-B PH	181927.641 (V)	318.4°
4	V-N	6176.001(V)	4.9°

Events List

Channel Number	Name	Status	Time
35	SPS_TRIP_STAR	On	7/8/2020 12:59:20.066 PM
30	SPS_TRIP_LAHA	On	7/8/2020 12:59:21.578 PM

Printed by Server on 2020-07-08 16:09:21

Date	Origin	Description	Message			
2020-07-08 13:00:41.961	LANAL / AUXILLARY / AUXILLAR BCU-1 / AMF PANEL	BATTERY CHARGER-2 ON	SET			
2020-07-08 13:00:41.939	LANAL / AUXILLARY / AUXILLAR BCU-1 / AMF PANEL	BATTERY CHARGER-1 OFF	RESET			
2020-07-08 13:00:41.939	LANAL / AUXILLARY / AUXILLAR BCU-1 / AMF PANEL	BATTERY CHARGER-1 ON	SET			
2020-07-08 13:00:41.936	LANAL / AUXILLARY / AUXILLAR BCU-1 / AMF PANEL	BATTERY CHARGER-2 OFF	RESET			
2020-07-08 13:00:32.272	LANAL / AUXILLARY / AUXILLAR BCU-1 / MSB-1A BC	BUS COUPLER ON	SET			
2020-07-08 13:00:32.258	LANAL / AUXILLARY / AUXILLAR BCU-1 / MSB-1A BC	BUS COUPLER OFF	RESET			
2020-07-08 13:00:26.136	LANAL / AUXILLARY / AUXILLAR BCU-1 / MSB-1A IC-2	INCOMER-2 ON	SET			
2020-07-08 13:00:26.121	LANAL / AUXILLARY / AUXILLAR BCU-1 / MSB-1A IC-2	INCOMER-2 OFF	RESET			
2020-07-08 12:58:24.337	LANAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	CB R PH OPEN	RESET			
2020-07-08 12:58:24.321	LANAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	MAIN-2 PROTECTION	RESET			
2020-07-08 12:58:24.312	LANAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	DIRECT TRIP SPS FROM 21M1	NOT RECIEVED			
2020-07-08 12:58:24.312	LANAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	DIRECT TRIP SPS FROM 21M2	NOT RECIEVED			
2020-07-08 12:58:21.678	LANAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86A TRIP RELAY	OPERATED			
2020-07-08 12:58:21.678	LANAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86A TRIP	OPERATED			
2020-07-08 12:58:21.677	LANAL / 220kV / 206 BUDHIL LINE1 / 21M1_GOOSE	86A TRIP RELAY	OPERATED			
2020-07-08 12:58:21.660	LANAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	MAIN-2 PROTECTION	OPERATED			
2020-07-08 12:58:21.660	LANAL / 220kV / 206 BUDHIL LINE1 / PROTECTION	AR LO RELAY	OPERATED			
2020-07-08 12:58:21.651	LANAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	86B TRIP RELAY	OPERATED			
2020-07-08 12:58:21.651	LANAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	CB R PH OPEN	SET			
2020-07-08 12:58:21.651	LANAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86A TRIP RELAY SUPERVISION	FAULTY			
[redacted]	LANAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	[redacted]	[redacted]			
2020-07-08 12:58:21.651	LANAL / 220kV / 206 BUDHIL LINE1 / A/R MANUAL	A/R BLOCK	SET			
2020-07-08 12:58:21.648	LANAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	86B TRIP RELAY SUPERVISION	FAULTY			
[redacted]	LANAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	DIRECT TRIP SPS FROM 21M2	RECEIVED			
2020-07-08 12:57:50.146	SUPERVISION / HMI / OBSERVR	STATUS	a ACKNOWLEDGED ALL ALARMS	Valid	OBSERVR	0
2020-07-08 12:57:49.899	SUPERVISION / HMI / OBSERVR	STATUS	a CLEARED ALL ALARMS	Valid	OBSERVR	0
2020-07-08 12:57:47.191	SUPERVISION / HMI / OBSERVR	STATUS	a CLEARED ALL ALARMS	Valid	OBSERVR	0
2020-07-08 12:56:33.287	LANAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	MAIN-2 RELAY	HEALTHY	Valid		2
2020-07-08 12:56:33.186	LANAL / 220kV / 206 BUDHIL LINE1 / 21M2_FAULT	FAULT DISTANCE IN KM	0	Valid		0
2020-07-08 12:56:33.186	LANAL / 220kV / 206 BUDHIL LINE1 / 21M2_FAULT	FAULT IMPEDANCE	0	Valid		0
2020-07-08 12:56:32.807	LANAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	MAIN-2 RELAY	FAULTY	Valid		2
2020-07-08 12:56:07.235	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OBSERVR	1
2020-07-08 12:54:46.705	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OBSERVR	0
2020-07-08 12:54:46.677	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OBSERVR	1
2020-07-08 12:54:38.411	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OBSERVR	1
2020-07-08 12:53:54.696	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OBSERVR	0
2020-07-08 12:53:46.264	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OBSERVR	0
2020-07-08 12:49:34.348	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OBSERVR	1
2020-07-08 12:46:15.223	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OBSERVR	0
2020-07-08 12:46:01.473	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OBSERVR	1
2020-07-08 12:46:00.697	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OBSERVR	0
2020-07-08 12:45:48.249	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OBSERVR	1
2020-07-08 12:43:46.397	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OBSERVR	0
2020-07-08 12:42:36.440	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OBSERVR	1
2020-07-08 12:40:11.146	SBUS / BCU-04 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OBSERVR	0
[redacted]	LANAL / 220kV / 206 BUDHIL LINE1 / PROTECTION	AR LO RELAY	RESET	Valid		0
[redacted]	LANAL / 220kV / 206 BUDHIL LINE1 / PROTECTION	A/R LOCKOUT TRIP RELAY	ORDER SENT RESET	Valid	OBSERVR	0
[redacted]	LANAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	86B TRIP RELAY	RESET	Valid		0
[redacted]	LANAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	86B TRIP RELAY SUPERVISION	HEALTHY	Valid		0
[redacted]	LANAL / 220kV / 206 BUDHIL LINE1 / A/R MANUAL	A/R BLOCK	RESET	Valid		0
[redacted]	LANAL / 220kV / 206 BUDHIL LINE1 / PROTECTION	86B TRIP RELAY	ORDER SENT RESET	Valid	OBSERVR	0
[redacted]	LANAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86A TRIP RELAY SUPERVISION	HEALTHY	Valid		0

Footer

Printed by Server on 2020-07-08 16:09:21

Date	Origin	Description	Message	Signal Quality	Command Origin	Gravity
2020-07-08 12:39:38.490	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86A TRIP RELAY	RESET	Valid		0
2020-07-08 12:39:38.490	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86A TRIP	RESET	Valid		0
2020-07-08 12:39:38.489	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_GOOSE	86A TRIP RELAY	RESET	Valid		0
2020-07-08 12:39:38.381	LAHAL / 220kV / 206 BUDHIL LINE1 / PROTECTION	86A TRIP RELAY	ORDER SENT RESET	Valid	OISERVR	0
2020-07-08 12:39:00.906	SUPERVISION / HMI / OISERVR	STATUS	a ACKNOWLEDGED ALL ALARMS	Valid	OISERVR	0
2020-07-08 12:38:56.065	SUPERVISION / HMI / OISERVR	STATUS	a CLEARED ALL ALARMS	Valid	OISERVR	0
2020-07-08 12:38:50.822	SUPERVISION / HMI / OISERVR	STATUS	a LOGGED IN	Valid	OISERVR	0
2020-07-08 12:35:29.264	LAHAL / SWITCH / EFS-A1 / PS	Port 04 Status	Connected	Valid		0
2020-07-08 12:35:53.392	LAHAL / SWITCH / EFS-A1 / PS	Port 04 Status	Disconnected	Valid		1
2020-07-08 12:35:36.061	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR	1
2020-07-08 12:35:17.009	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR	0
2020-07-08 12:35:01.146	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR	1
2020-07-08 12:34:42.103	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR	0
2020-07-08 12:34:03.922	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR	1
2020-07-08 12:33:44.829	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR	0
2020-07-08 12:27:13.517	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR	1
2020-07-08 12:26:51.228	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR	0
2020-07-08 12:25:38.805	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR	1
2020-07-08 12:25:15.535	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR	0
2020-07-08 12:22:27.009	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR	1
2020-07-08 12:22:10.519	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	CB R PH OPEN	RESET	Valid		0
2020-07-08 12:22:10.518	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	MAIN-2 PROTECTION	RESET	Valid		0
2020-07-08 12:22:10.515	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	DIRECT TRIP SPS FROM 21M1	NOT RECIEVED	Valid		0
2020-07-08 12:22:10.496	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	DIRECT TRIP SPS FROM 21M2	NOT RECIEVED	Valid		0
2020-07-08 12:22:07.874	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR	0
2020-07-08 12:22:07.864	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	CB R PH OPEN	SET	Valid		1
2020-07-08 12:22:07.853	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	MAIN-2 PROTECTION	OPERATED	Valid		1
[redacted]	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	DIRECT TRIP SPS FROM 21M1	RECEIVED	Valid		1
[redacted]	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	DIRECT TRIP SPS FROM 21M2	RECEIVED	Valid		1
2020-07-08 12:20:01.661	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR	1
2020-07-08 12:19:42.769	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR	0
2020-07-08 12:19:40.547	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR	1
2020-07-08 12:19:40.875	LAHAL / SWITCH / EFS-A1 / PS	Port 04 Status	Connected	Valid		0
2020-07-08 12:19:36.461	LAHAL / SWITCH / EFS-A1 / PS	Port 04 Status	Connected	Valid		0
2020-07-08 12:19:03.967	LAHAL / SWITCH / EFS-A1 / PS	Port 04 Status	Disconnected	Valid		1
2020-07-08 12:18:00.793	LAHAL / SWITCH / EFS-A1 / PS	Port 04 Status	Disconnected	Valid		1
2020-07-08 12:18:00.637	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR	0
2020-07-08 12:15:19.009	LAHAL / 220kV / 206 BUDHIL LINE1 / METERING_TVM 1	R-PHASE VOLTAGE	Normal 127.023376	OldData		0
2020-07-08 12:15:19.004	SBUS / BCU206 / Modbus / SECURE_C / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid		1
2020-07-08 12:15:18.774	LAHAL / 220kV / 206 BUDHIL LINE1 / METERING_TVM M	R-PHASE VOLTAGE	Normal 127.015648	OldData		0
2020-07-08 12:15:18.769	SBUS / BCU206 / Modbus / SECURE_M / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid		1
2020-07-08 12:15:14.622	LAHAL / AUXILLARY / AUXILLAR BCU-1 / MSB-1A BC	BUS COUPLER OFF	SET	Valid		0
2020-07-08 12:15:14.620	LAHAL / AUXILLARY / AUXILLAR BCU-1 / MSB-1A BC	BUS COUPLER ON	RESET	Valid		0
2020-07-08 12:15:14.616	LAHAL / 220kV / 206 BUDHIL LINE1 / METERING_TMU	Y PHASE VOLTAGE	LowLowLow 0	Valid (LowLowLow)		0
2020-07-08 12:15:14.616	LAHAL / AUXILLARY / AUXILLAR BCU-1 / MSB-1A I/C-2	INCOMER-2 OFF	SET	Valid		0
2020-07-08 12:15:14.612	LAHAL / AUXILLARY / AUXILLAR BCU-1 / MSB-1A I/C-2	INCOMER-2 ON	RESET	Valid		0
2020-07-08 12:15:14.570	LAHAL / AUXILLARY / AUXILLAR BCU-1 / ACDB-2A	B/C BREAKER CLOSE	SET	Valid		0
2020-07-08 12:15:14.566	LAHAL / AUXILLARY / AUXILLAR BCU-1 / AMF PANEL	MAIN-1 BREAKER OFF	SET	Valid		0
2020-07-08 12:15:14.566	LAHAL / AUXILLARY / AUXILLAR BCU-1 / ACDB-2A	B/C BREAKER OPEN	RESET	Valid		1
2020-07-08 12:15:14.565	LAHAL / AUXILLARY / AUXILLAR BCU-1 / AMF PANEL	MAIN-1 BREAKER ON	RESET	Valid		0
2020-07-08 12:15:14.558	LAHAL / AUXILLARY / AUXILLAR BCU-1 / AMF PANEL	BATTERY CHARGER-2 OFF	SET	Valid		0
2020-07-08 12:15:14.556	LAHAL / AUXILLARY / AUXILLAR BCU-1 / AMF PANEL	BATTERY CHARGER-2 ON	RESET	Valid		0

Footer

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[illegible]	Origin	Description	Message	Signal Quality	Command Origin	Severity
2020-07-08 12:02:33.567	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 B-PH PROTECTION	OPERATED			
2020-07-08 12:02:33.567	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 PROTECTION	OPERATED			
2020-07-08 12:02:33.567	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 Y-PH PROTECTION	OPERATED			
2020-07-08 12:02:33.567	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 R-PH PROTECTION	RESET			
2020-07-08 12:02:15.846	LAHAL / 400kV / 407 LINE-1 / AR_SYST	AR LOCKOUT	RESET	Valid		[illegible]
2020-07-08 12:02:14.499	LAHAL / 400kV / 407 LINE-1 / 21M1_FAULT 1	FAULT IMPEDANCE IN OHMS	22.658321	Valid		[illegible]
2020-07-08 12:02:14.479	LAHAL / 400kV / 407 LINE-1 / 21M1_FAULT 1	FAULT DISTANCE IN KMS	74381.78125	Valid		[illegible]
2020-07-08 12:02:13.432	LAHAL / 400kV / 406 TIE BAY / 50LBB_SYST	LINE-1/2 LBB R PH INTIATION	RESET	Valid		[illegible]
2020-07-08 12:02:13.432	LAHAL / 400kV / 406 TIE BAY / 50LBB_SYST	LINE-1/2 LBB Y PH INTIATION	RESET	Valid		[illegible]
2020-07-08 12:02:13.430	LAHAL / 400kV / 407 LINE-1 / AR_PROT	A/R INITIATION R PHASE	RESET	Valid		[illegible]
2020-07-08 12:02:13.429	LAHAL / 400kV / 406 TIE BAY / 50LBB_SYST	LINE-1/2 LBB B PH INTIATION	RESET	Valid		[illegible]
2020-07-08 12:02:13.428	LAHAL / 400kV / 407 LINE-1 / AR_PROT	A/R INITIATION Y PHASE	RESET	Valid		[illegible]
2020-07-08 12:02:13.426	LAHAL / 400kV / 407 LINE-1 / AR_PROT	A/R INITIATION B PHASE	RESET	Valid		[illegible]
2020-07-08 12:02:13.409	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 PROTECTION	RESET	Valid		[illegible]
2020-07-08 12:02:13.409	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 B-PH PROTECTION	RESET	Valid		[illegible]
2020-07-08 12:02:13.409	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 Y-PH PROTECTION	RESET	Valid		[illegible]
2020-07-08 12:02:13.397	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 R-PH PROTECTION	RESET	Valid		[illegible]
2020-07-08 12:02:13.396	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 PROTECTION	RESET	Valid		[illegible]
2020-07-08 12:02:13.388	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 B-PH PROTECTION	RESET	Valid		[illegible]
2020-07-08 12:02:13.387	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 B-PH PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.387	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.387	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 Y-PH PROTECTION	RESET	Valid		[illegible]
2020-07-08 12:02:13.387	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 R-PH PROTECTION	RESET	Valid		[illegible]
2020-07-08 12:02:13.386	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 B-PH PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.386	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.386	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 Y-PH PROTECTION	RESET	Valid		[illegible]
2020-07-08 12:02:13.386	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 R-PH PROTECTION	RESET	Valid		[illegible]
2020-07-08 12:02:13.381	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.348	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 R-PH PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.348	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 B-PH PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.348	LAHAL / 400kV / 407 LINE-1 / AR_SYST	AR LOCKOUT	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.348	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 Y-PH PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.347	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 B-PH PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.347	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 R-PH PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.347	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 Y-PH PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.346	LAHAL / 400kV / 407 LINE-1 / AR_PROT	A/R INITIATION Y PHASE	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.345	LAHAL / 400kV / 407 LINE-1 / AR_PROT	A/R INITIATION B PHASE	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.345	LAHAL / 400kV / 407 LINE-1 / AR_PROT	A/R INITIATION R PHASE	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.345	LAHAL / 400kV / 406 TIE BAY / 50LBB_SYST	LINE-1/2 LBB R PH INTIATION	SET	Valid		[illegible]
2020-07-08 12:02:13.343	LAHAL / 400kV / 406 TIE BAY / 50LBB_SYST	LINE-1/2 LBB B PH INTIATION	SET	Valid		[illegible]
2020-07-08 12:02:13.343	LAHAL / 400kV / 406 TIE BAY / 50LBB_SYST	LINE-1/2 LBB Y PH INTIATION	SET	Valid		[illegible]
2020-07-08 12:02:13.334	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.333	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 B-PH PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.333	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 PROTECTION	RESET	Valid		[illegible]
2020-07-08 12:02:13.333	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 Y-PH PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:02:13.333	LAHAL / 400kV / 407 LINE-1 / 21M1_PROT 1	ZONE-1 R-PH PROTECTION	OPERATED	Valid		[illegible]
2020-07-08 12:00:53.827	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OBSERVING	[illegible]
2020-07-08 12:00:34.552	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OBSERVING	[illegible]
2020-07-08 12:00:27.588	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	CB R PH OPEN	RESET	Valid		[illegible]
2020-07-08 12:00:27.588	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	MAIN-2 PROTECTION	RESET	Valid		[illegible]
2020-07-08 12:00:27.582	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	DIRECT TRIP SPS FROM 21M1	NOT RECIEVED	Valid		[illegible]
2020-07-08 12:00:27.567	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	DIRECT TRIP SPS FROM 21M2	NOT RECIEVED	Valid		[illegible]

Event List

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Date	Origin	Description	Message	Signal Quality	Command Origin	Gateway
2020-07-08 12:00:24.936	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86A TRIP RELAY	OPERATED	valid		
2020-07-08 12:00:24.936	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86A TRIP	OPERATED	valid		
2020-07-08 12:00:24.937	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_GOOSE	86A TRIP RELAY	OPERATED	valid		
2020-07-08 12:00:24.923	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86A TRIP RELAY SUPERVISION	FAULTY	valid		
2020-07-08 12:00:24.923	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	MAIN-2 PROTECTION	OPERATED	valid		
2020-07-08 12:00:24.921	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	86B TRIP RELAY	OPERATED	invalid		
2020-07-08 12:00:24.921	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	CB R PH OPEN	SET	valid		
2020-07-08 12:00:24.918	LAHAL / 220kV / 206 BUDHIL LINE1 / A/R MANUAL	A/R BLOCK	SET	valid		
[redacted]	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	[redacted]	RECEIVED	valid		
2020-07-08 12:00:24.909	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	86B TRIP RELAY SUPERVISION	FAULTY	valid		
[redacted]	[redacted] / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	[redacted]	RECEIVED	valid		
2020-07-08 11:58:56.222	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	valid	DSERVR	

HIMACHAL PRADESH POWER TRANSMISSION CORPORATION LTD
(A State Govt. under taking)
HPPTCL PIU LAHAL -176309 E-mail-smlahal@hpptcl.in

No: HPPTCL/DGM-4/2020-21-411
To

Dated: 02/07/2020

The GM (E),
NHPC,Chamera-III
Chamba.

Subject: **Energisation of 220kV & 33kV GIS a/w 220/33kV, 63.5 MVA T/F on No load at 400/220/33kV GIS S/Stn at Lahal (relay coordination parameter).**

Sir,

With reference to the subject cited matter, it is informed that HPPTCL intends to charge 220kV & 33kV GIS a/w 220/33kV, 63.5MVA transformer on No Load at 400/220/33kV GIS S/Stn Lahal. The transformer is being charged through 220kV Lahal Budhil transmission line. The relay settings (over-current and earth fault) of Lahal-Budhil line and Budhil Chamera line are studied and found that over-current setting of Budhil-Chamera line at Budhil end need to be revised.
The present and proposed relay settings are hereby mentioned as below:

Ref	Present setting at lahal			Present setting at Budhil	Proposed setting for Budhil	Present setting at Chamera
	Budhil Line Feeder Main-1 relay	Budhil Line Feeder Main-2 relay	63.5MVA trafo -87T relay			
iff. setting:						
F Diff	Enabled	Enabled	Enabled			
1 in P.U	0.2	0.2	0.2			
	30%	30%	30%			
2 in P.U	1	1	1			
	150%	80%	70%			
ff	0s	0s	0s			
ver current setting:						
ratio	1000/1A	1000/1A	300/1A	1200/1A	1200/1A	1800/1A
er current	DISABLED	DISABLED	Enabled	Enabled	Enabled	
	NA	NA	0.6	0.254	0.6A	3A
ectionality	NA	NA	Directional-forward	Non-directional	Directional-forward	

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Curve	NA	NA	IDMT	DT	IDMT (SI) (Note:-If DT selected time delay must be minimum 1sec and 2nd stage will be disabled)	DT
TMS / Time delay	NA	NA	0.2	0	0.3	1.2s
I>2	NA	NA	4.69	NA	1.5A	NA
Directionality	NA	NA	Non-directional	NA	--	
Curve	NA	NA	DT	NA	DT	
Time delay	NA	NA	0s	NA	100ms	

Earth fault setting:

IN>1	0.2A	0.2A	0.15A	0.254A	0.254A	30.00%
Directionality	Directional-forward	Directional-forward	Directional-forward	Non-directional	Non-directional	Directional-forward
Curve	DT	DT	IDMT SI	DT	DT	DT
TMS / Time delay	0	0	0.32	0s	0.6s	1s
IN>2	DISABLED	DISABLED	4.69A	NA	NA	NA
Curve	NA	NA	DT	NA	NA	
TMS / Time delay	NA	NA	0s	NA	NA	

It is therefore requested to kindly vet the relay coordination parameters at Budhil, and Chamera-III end with respect to lahal end settings . It is for your information and necessary action please.

Yours faithfully,

AGM (Projects)
HPPTCL Chamba Zone

(39)

HIMACHAL PRADESH POWER TRANSMISSION CORPORATION LTD
(A State Govt. under taking)
HPPTCL Chamba Zone, Chamba E-mail-dgmchamba@hpptcl.in

No: HPPTCL/CBA/DGM-09/2020-21-480-85 **Dated:13/07/2020**

To

The Managing Director,
HPSLDC,Govt of HP,
SLDC Complex,Totu Shimla-11.

Subject: Relay Coordination of 220 kV Lahal-Budhil and 220 kV Budhil-Chamera Transmission Lines.

Sir,

With reference to the subject cited matter, it is informed that HPPTCL has charged 220/33kV GIS ,220/33kV 63.5MVA transformer a/w 33kV Bharmour Transmission line. The relay settings (over-current and earth fault) of Lahal-Budhil line and Budhil- Chamera line are studied and found that over-current setting of Budhil-Chamera line at Budhil end are set at lower side and need to be revised.

The present relay settings are hereby mentioned as below:

Ref	Present setting at Lahal.			Present setting at Budhil	Present setting at Chamera
	Budhil Line Feeder Main-1 relay	Budhil Line Feeder Main-2 relay	63.5MVA trafo -87T relay		
Diff. setting:					
T/F Diff	Enabled	Enabled	Enabled		
1S1 in P.U	0.2	0.2	0.2		
k1	30%	30%	30%		
1s2 in P.U	1	1	1		
k2	150%	80%	70%		
tdiff	0s	0s	0s		
Over current setting:					
CT ratio	1000/1A	1000/1A	300/1A	1200/1A	1800/1A
Over current	DISABLED	DISABLED	Enabled	Enabled	
I>1	NA	NA	0.6	0.254 A	3A

HIMACHAL PRADESH POWER TRANSMISSION CORPORATION
(A State Govt. under taking)
HPPTCL PIU , Chamba, Distt. Chamba (H.P.)-176318.Tel. /Fax no.01899-220830
Head Office: -HPPTCL, Himfed Bhawan Shimla-171005, www.hpptcl.gov.in

Dated: 08.07.2020

(Detailed Report regarding providing special protection scheme implementation and testing thereof.)

As per the minutes of meeting held on Dated. 03.01.2020 with CEA under the chairmanship of Chief Engineer (PSPA1), wherein it was decided that HPPTCL shall implement SPS (Special protection scheme) to avoid overloading of ICTS (400/220 kV 2x 315 MVA) installed at 400/220 Chamera III Pooling s/station (PGCIL). In response,it is intimated that final modified/approved special protection scheme by NRLDC and duly vetted by Chief General Manager (AM) PGCIL Jammu has been successfully tested and implemented at the PGCIL Chamera III pooling station.

The scheme envisages the following provisions:

I. If the load/current of ICT1 or ICT2 or both exceeds 90% of full load i.e. 744 amps of 315 MVA , 220 kV S/C Lahal Budhil transmission line as well as 220 kV S/C Karian-Rajera transmission line shall be tripped as per approved logic.

II. If the current of 220 kV Chamera III-PGCIL Rajera transmission line Ckt I exceeds 942 amps corresponding to 360 MW load, the CB's of both ends of 220 kV S/C Lahal Budhil transmission line shall trip.

The sequence wise testing carried out on dated 8.07.2020 after taking necessary testing code from NRLDC and observing all the codal formalities is discussed below:

1) The trip signal was temporarily made high by reducing the setting in ICT-1 BCU with time delay of 2 seconds. This signal was transmitted from power grid end and received at Lahal and Budhil end relays causing the tripping of relays provided at both ends. As far as 220 kV S/C Karian Rajera transmission line is concerned signal was only checked but no real tripping was issued.
2) The same procedure was adopted for generating direct trip in respect of load exceeding in ICT-2 also.
3) The signal from REL670 relay provided at PGCIL end of 220 kV Chamera III –PGCIL Line Ckt-1 was made high by temporarily reducing settings. The tripping signal so generated tripped the relays of both ends of 220 kV Lahal Budhil transmission line.

The time of issuance and receiving/tripping of the relays at Lahal/Budhil line ends are under:

HIMACHAL PRADESH POWER TRANSMISSION CORPORATION LTD
(A State Govt. under taking)
HPPTCL Chamba Zone, Chamba E-mail-dgmchamba@hpptcl.in

Directionality	NA	NA	Directional-forward	Non-directional	-
Curve	NA	NA	IDMT	DT	DT
TMS / Time delay	NA	NA	0.2	0	1.2s
I>2	NA	NA	4.69	NA	NA
Directionality	NA	NA	Non-directional		
Curve	NA	NA	DT		
Time delay	NA	NA	0s		
Earth fault setting:					
IN>1	0.2A	0.2A	0.15A	0.254A	30.00%
Directionality	Directional-forward	Directional-forward	Directional-forward	Non-directional	Directional-forward
Curve	DT	DT	IDMT SI	DT	DT
TMS / Time delay	0	0	0.32	0s	1s
IN>2	DISABLED	DISABLED	4.69A	NA	NA
Curve	NA	NA	DT		
TMS / Time delay	NA	NA	0s		

Whereas due to DT (zero lag) settings of relay at Budhil, the faults of 33 KV Feeder connected at Lahal Sub-Station may back travel and trip the breaker of Budhil -Chamera Line at Budhil, Today at 12:30 PM a severe over-current earth fault on 33 KV Bharmour Line 1 has tripped the breaker of 33 KV Line at Lahal Sub-Station and simultaneously breaker of Budhil-Chamera Line at Budhil GIS also got tripped.

This matter of relay coordination has been discussed by this office with Budhil HEP many times but could not succeeded to resolve the issue. Therefore, it is requested that necessary directions may be got issued to Budhil HEP to coordinate the relay settings to avoid disruptions in the system please.

Yours faithfully,

AGM (Projects)
HPPTCL Chamba Zone

Issuance time:	Receiving/tripping time at Lahal/Budhil
12.59.21.578	12.59.21.657

The PLCC transmit/receive i.e. Tx/Rx Chart showing the initial counter readings and subsequent counter readings, consequent upon the testing is also enclosed for ready reference. From the perusal of this chart, it is evident that there is no cross interference of the intended signal to be received at Budhil via Chamera III HEP PLCC cabinets/panels.

The testing sequence is supported by DR (Disturbance record) of PGCIL Chamera III pooling station and HPPTCL 400/220/33 kV GIS S/station Lahal.

From the ongoing discussions it is certified that all the intended conditions have been met and tested accordingly.

(Er.M.L.Sharma)
Dy.Chief engineer/AGM (P)
HPPTCL Zone Chamba

ABB

Disturbance Short Report

Disturbance Recordings Information

Device Information

Recorder ID	1
IED type	REL670
IED version	1p1r26
Station name	GIS CHAMBA
Object name	220 KV LINE-1
IED name	Unit name

Fault Information

Trig date and time	7/8/2020 12:59:20.066 PM
Trigger signal name	SPS_TRIP_STAR
Recording number	172
Total recording time	4499 ms
Pre-trig recording time	500 ms
Post trig recording time	0 ms
Max. recording time	4000 ms

General Recordings Information

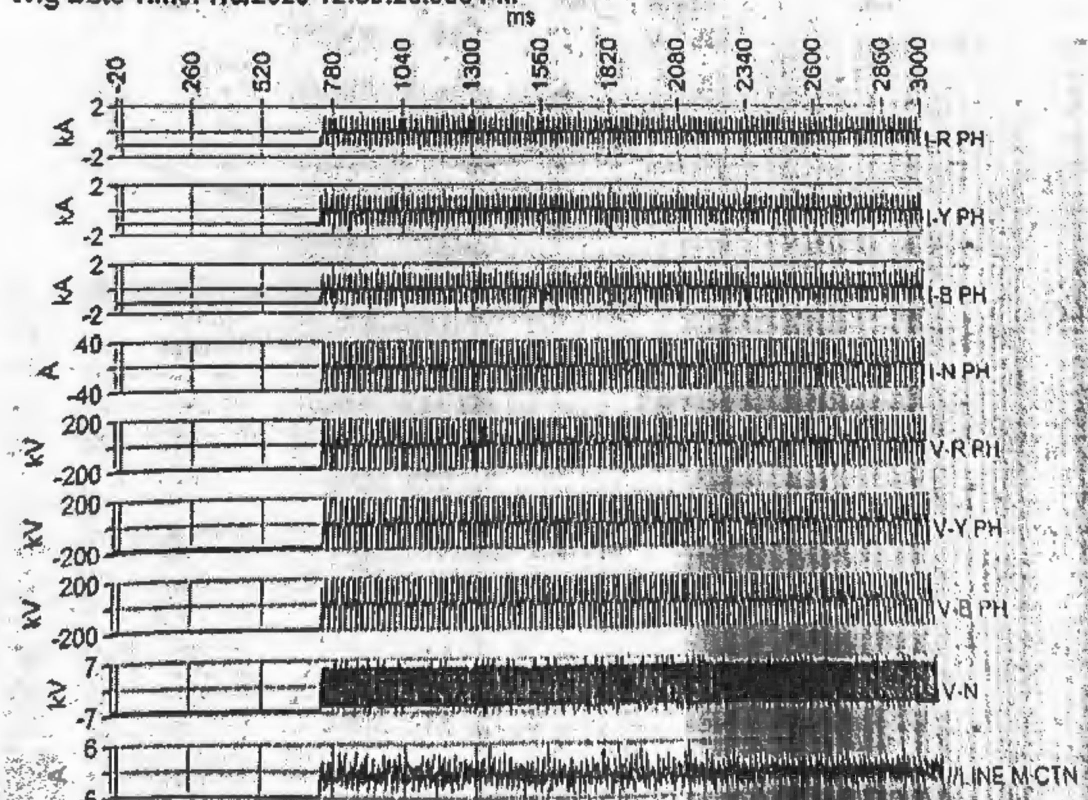
Disturbance recorder	Installed
Event recorder	Installed
System frequency	50 Hz
Sampling frequency	1 kHz
Active setting group during recording	1

Fault Location Information

Fault loop type	Not applicable
Fault location	Not applicable
Status of fault calculation	Not applicable
Fault direction	Not applicable

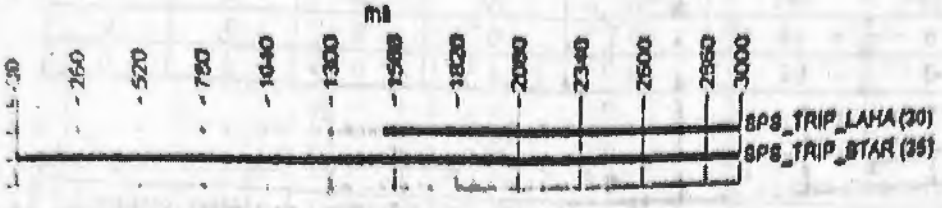
Analog Time Diagram

Trig Date Time: 7/8/2020 12:59:20.066 PM



ABB

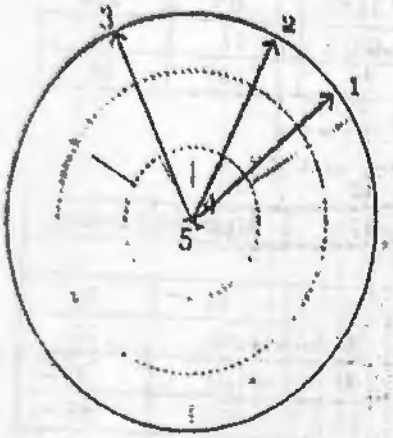
Binary Time Diagram
Trig Date Time: 7/8/2020 12:59:20.066 PM



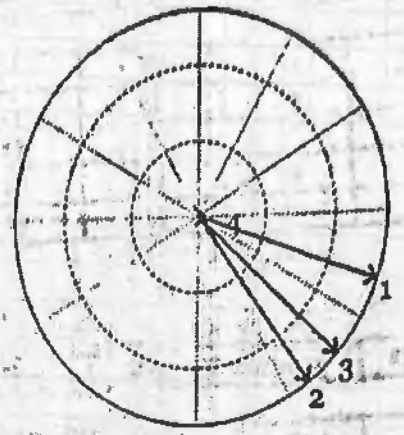
Vector Diagrams

Calculation Time Period : 0 ms to 19 ms

Currents



Voltages



No.	Name	RMS	Angle	No.	Name	RMS	Angle
1	I-R PH	1106.364(A)	38.7°	1	V-R PH	181691.188 (V)	341.6°
2	I-Y PH	1115.379(A)	63.4°	2	V-Y PH	182229.297 (V)	306.9°
3	I-B PH	1133.409(A)	114.9°	3	V-B PH	181927.641 (V)	318.4°
4	I-N PH	39.453(A)	63.4°	4	V-N	6176.001(V)	4.9°
5	I/LINE M CTN	5.556(A)	200.9°				

Events List

Channel Number	Name	Status	Time
35	SPS_TRIP_STAR	On	7/8/2020 12:59:20.066 PM
30	SPS_TRIP_LAHA	On	7/8/2020 12:59:21.578 PM

08/07/2020

08/07/2020

Dinesh Kumar
POWERGRID CHAMBA

PLCC Counter Record

dhil (At Chamera End)

	Before testing		After ICT-1 testing		After ICT-2 testing		After Load testing	
Code	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
A	49	28	49	28	49	28	49	28
B	49	69	49	69	49	69	49	69
C	0	0	0	0	0	0	0	0
D	1	0	2	0	3	0	4	0

220 KV Chamera Line-1 at Chamera end

	Before testing		After ICT-1 testing		After ICT-2 testing		After testing-3	
Code	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
A	0	27	0	27	0	27	0	27
B	0	15	0	15	0	15	0	15
C	12	69	12	69	12	69	12	69
D	13	34	13	34	13	34	13	34

220 Kv Chamera Line-2 at Chamera end

	Before testing		After ICT-1 testing		After ICT-2 testing		After Load testing	
Code	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
A	0	22	0	22	0	22	0	22
B	0	3	0	3	0	3	0	3
C	13	35	13	35	13	35	13	35
D	4	9	4	10	4	11	4	12

AT Budhil HEP

	Before testing		After ICT-1 testing		After ICT-2 testing		After Load testing	
Code	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
A	26	42	26	42	26	42	26	42
B	77	42	77	42	77	42	77	42
C	0	0	0	0	0	0	0	0
D	0	0	0	1	0	2	0	3

08/07/2020
GAGANDEEP SINGH
AM, POWERGRID

08/07/2020
Dinesh Kumar

Printed by Server on 2020-07-08 16:09:21

Date	Origin	Description	Value	Value	Value
2020-07-08 13:00:41.941	LAHAL / AUXILLARY / AUXILLAR BCU-1 / AUX PANEL	BATTERY CHARGER-1 ON	SET	Valid	0
2020-07-08 13:00:41.836	LAHAL / AUXILLARY / AUXILLAR BCU-1 / AUX PANEL	BATTERY CHARGER-1 OFF	RESET	Valid	0
2020-07-08 13:00:41.930	LAHAL / AUXILLARY / AUXILLAR BCU-1 / AUX PANEL	BATTERY CHARGER-1 ON	SET	Valid	0
2020-07-08 13:00:41.938	LAHAL / AUXILLARY / AUXILLAR BCU-1 / AUX PANEL	BATTERY CHARGER-1 OFF	RESET	Valid	0
2020-07-08 13:00:32.272	LAHAL / AUXILLARY / AUXILLAR BCU-1 / MBB-1A BC	BUS COUPLER ON	SET	Valid	1
2020-07-08 13:00:32.288	LAHAL / AUXILLARY / AUXILLAR BCU-1 / MBB-1A BC	BUS COUPLER OFF	RESET	Valid	1
2020-07-08 13:00:25.136	LAHAL / AUXILLARY / AUXILLAR BCU-1 / MBB-1A IC-2	INCOMER-2 ON	SET	Valid	1
2020-07-08 13:00:25.121	LAHAL / AUXILLARY / AUXILLAR BCU-1 / MBB-1A IC-2	INCOMER-2 OFF	RESET	Valid	1
2020-07-08 12:59:24.331 (*)	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	CB R PH OPEN	RESET	Valid	0
2020-07-08 12:59:24.331	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	MAIN-2 PROTECTION	RESET	Valid	0
2020-07-08 12:59:24.327	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	DIRECT TRIP CPS FROM 21M1	NOT RECEIVED	Valid	0
2020-07-08 12:59:24.312 (*)	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	DIRECT TRIP CPS FROM 21M2	NOT RECEIVED	Valid	0
2020-07-08 12:58:21.678	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86A TRIP RELAY	OPERATED	Valid	1
2020-07-08 12:58:21.678	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_GOOSE	86A TRIP	OPERATED	Valid	1
2020-07-08 12:56:21.677	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86A TRIP RELAY	OPERATED	Valid	1
2020-07-08 12:56:21.663	LAHAL / 220kV / 206 BUDHIL LINE1 / PROTECTION	MAIN-2 PROTECTION	OPERATED	Valid	1
2020-07-08 12:59:21.663 (*)	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	AR LO RELAY	OPERATED	Valid	1
2020-07-08 12:59:21.661 (*)	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	86B TRIP RELAY	SET	Valid	1
2020-07-08 12:59:21.661	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	CB R PH OPEN	SET	Valid	1
2020-07-08 12:59:21.657	LAHAL / 220kV / 206 BUDHIL LINE1 / AR MANUAL	86A TRIP RELAY SUPERVISION	FAULTY	Valid	1
2020-07-08 12:59:21.657	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	DIRECT TRIP CPS FROM 21M2	RECEIVED	Valid	1
2020-07-08 12:59:21.646 (*)	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_SYST	AR BLOCK	SET	Valid	1
2020-07-08 12:58:21.640 (*)	SUPERVISION / HMI / OISERVR	86B TRIP RELAY SUPERVISION	FAULTY	Valid	1
2020-07-08 12:57:50.348	SUPERVISION / HMI / OISERVR	DIRECT TRIP CPS FROM 21M2	RECEIVED	Valid	1
2020-07-08 12:57:45.889	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	STATUS	4 ACKNOWLEDGED ALL ALARMS	Valid	OISERVR
2020-07-08 12:57:41.171	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_FAULT	STATUS	4 CLEARED ALL ALARMS	Valid	OISERVR
2020-07-08 12:56:33.207	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M2_FAULT	STATUS	4 CLEARED ALL ALARMS	Valid	
2020-07-08 12:56:33.186	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	HEALTHY		Valid	
2020-07-08 12:56:33.186	SBUS / BCU404 / DEVICE LINK	MAIN-2 RELAY	0	Valid	1
2020-07-08 12:56:27.007	SBUS / BCU404 / DEVICE LINK	FAULT DISTANCE IN KM	0	Valid	1
2020-07-08 12:56:07.226	SBUS / BCU404 / DEVICE LINK	FAULT IMPEDANCE	0	Valid	1
2020-07-08 12:54:46.706	SBUS / BCU404 / DEVICE LINK	MAIN-2 RELAY	FAULTY	Valid	OISERVR
2020-07-08 12:54:16.677	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR
2020-07-08 12:54:09.411	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR
2020-07-08 12:53:58.899	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR
2020-07-08 12:53:53.204	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR
2020-07-08 12:49:34.245	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR
2020-07-08 12:45:15.225	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR
2020-07-08 12:41:41.472	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR
2020-07-08 12:41:29.477	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR
2020-07-08 12:41:24.743	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	DISCONNECTED	Valid	OISERVR
2020-07-08 12:41:15.207	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	CONNECTED	Valid	OISERVR
2020-07-08 12:41:11.430	SBUS / BCU404 / DEVICE LINK	DEVICE LINK	RESET	Valid	
2020-07-08 12:40:[illegible]	SBUS / BCU404 / DEVICE LINK	AR LO RELAY	ORDER SENT RESET	Valid	
2020-07-08 12:40:[illegible]	LAHAL / 220kV / 206 BUDHIL LINE1 / PROTECTION	AR LOCKOUT TRIP RELAY	RESET	Valid	
2020-07-08 12:39:[illegible]	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86B TRIP RELAY	HEALTHY	Valid	
2020-07-08 12:39:[illegible]	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	86B TRIP RELAY SUPERVISION	RESET	Valid	OISERVR
2020-07-08 12:37:[illegible]	LAHAL / 220kV / 206 BUDHIL LINE1 / 21M1_SYST	AR BLOCK	ORDER SENT RESET	Valid	
2020-07-08 12:37:[illegible]	LAHAL / 220kV / 206 BUDHIL LINE1 / AR MANUAL	86B TRIP RELAY	HEALTHY	Valid	
2020-07-08 12:37:[illegible]	LAHAL / 220kV / 206 BUDHIL LINE1 / PROTECTION	86B TRIP RELAY SUPERVISION			

Footer

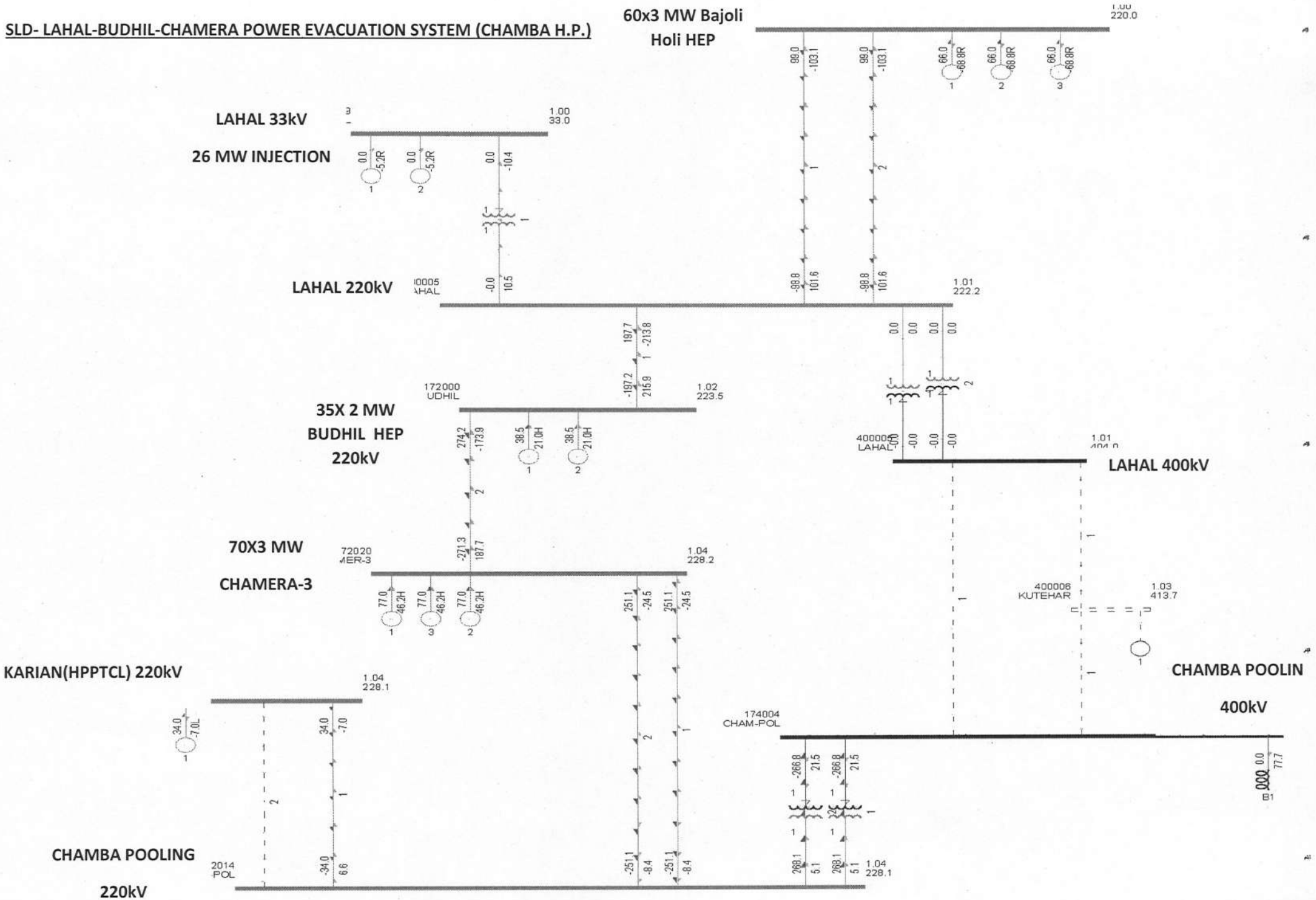
08/07/2020

ANNEXURE-B

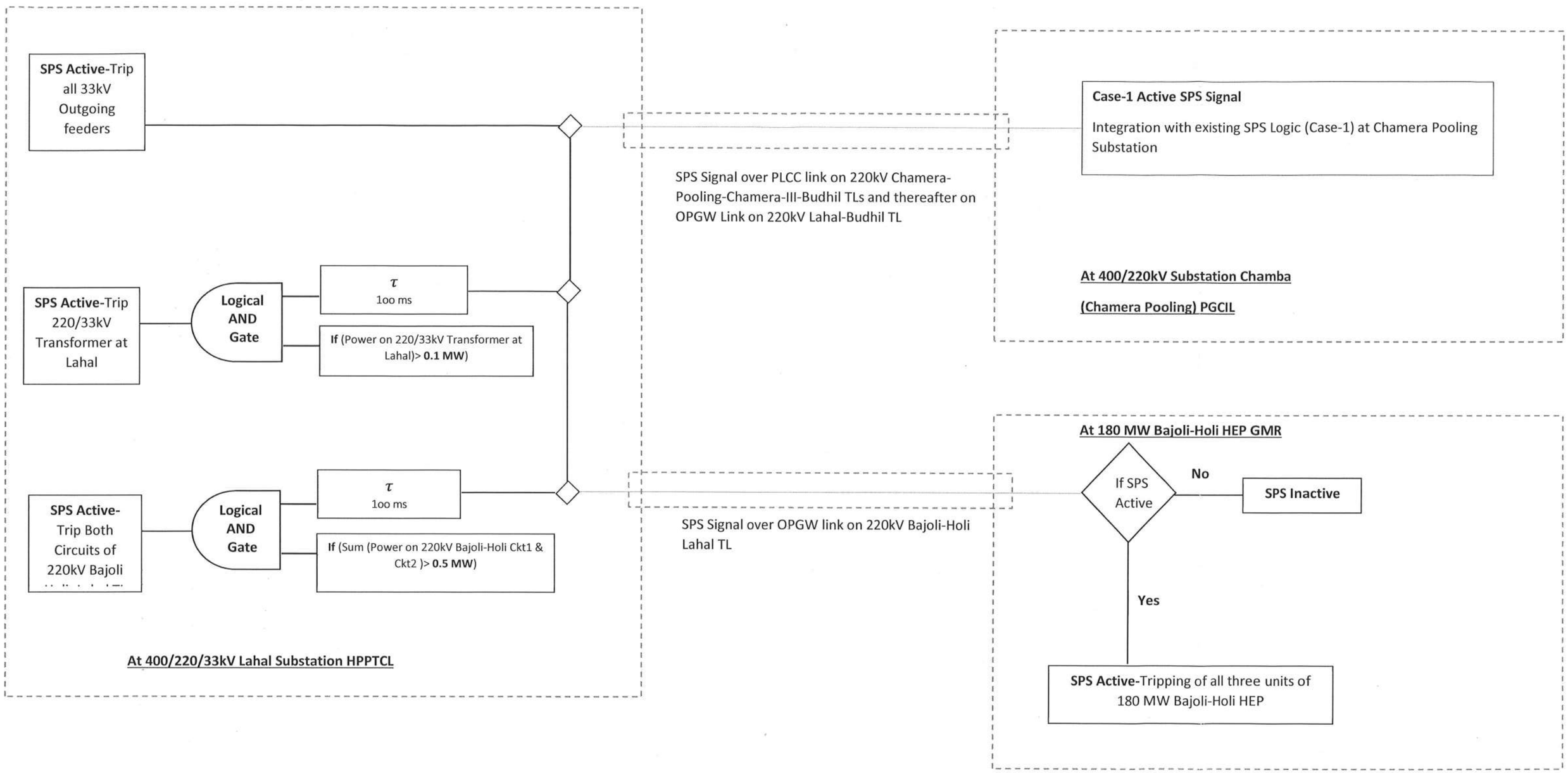
PROPOSED MODIFICATION TO SPS SCHEME

Case	Contingency (Existing)	Contingency (Proposed to be modified)	Action (Existing)	Actions (Proposed to be Modified)
Case-1 **(Modification)**	Loading on either of 400/220 kV 315 MVA ICTs exceeds 408A (90% of 454 A full load current at 400 kV side of ICTs) for 2 seconds	-No Change-	**1**. Trip of 220 kV S/C Chamba (Chamera pooling station)-Karian(HPPTCL) end **2.** Trip 220 kV S/c Budhil (Greenko)-Lahal(HPPTCL) TL	**1**. Trip 220 kV S/C Chamba (Chamera pooling station)-Karian (HPPTCL) end **2.** Trip all 3 Units of Bajoli-Holi HEP **3.** Trip all 33kV Feeders at Lahal Substation **4.** In case of failure of SPS action 2 within 100ms of initiation of SPS, Trip both circuits of 220kV Bajoli-Holi-Lahal TL **5.** In case of failure of SPS action 3 within 100ms of initiation of SPS, trip 220/33kV Transformer at Lahal
Case-2 **(Proposed to be removed)**	Loading on 220 kV Chamera-III(NHPC)-Chamba(Chamera-Pooling) Ckt-I more than 360 MW for 1.5 seconds	Since the then deployed ERS on 220kV Chamera-III-Chamba TL has been removed and Twin Moose TL has been restored to its full capacity, this SPS case is not required and hence proposed to be removed -	**1.** Trip 220 kV S/c Budhil (Greenko)-Lahal(HPPTCL) TL	-SPS case Proposed to be removed-

SLD- LAHAL-BUDHIL-CHAMERA POWER EVACUATION SYSTEM (CHAMBA H.P.)



Draft Logic Scheme: Modification in SPS for reliable evacuation of power from 400/220kV Chamba (Chamera Pooling) to include Bajoli-Holi HEP:



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/NRPC 2914

Date :- 2nd November'2021

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

Subject :- ***Outage of Transmission lines required for installation of Bird Diverters in 2nd phase as per requirement of NGT in POWERGRID, NR1***

This has reference to 185th OCC meeting, wherein it was agreed that the outage to be availed of installation of bird diverters as per NGT requirement in following line shall be considered as deemed available.

i) 765KV Ajmer – Bikaner
ii) 765KV Bikaner – Moga
iii) 765KV Bhadla – Bikaner
iv) 765KV Banaskantha – Chittorgarh
v) 765KV Jhatikara – Kanpur
vi) 400KV Bhadla – Bikaner
vii) 400KV Bhadla (POWERGRID) – Bhadla (RRVPNL)
viii) 400KV Ajmer – Ajmer
ix) 400KV Agra – Bhiwadi

In this regard, Bird Diverters has been supplied at site and we are in the process of installation of the same. Accordingly, shutdown requirement is being applied progressively against aforesaid lines.

Meanwhile, the additional requirement of Bird Diverters has been envisaged in following other transmission lines as well in 2nd phase.

Sl. No.	Name of Lines	Unit	No. of Bird Diverter planned for installation in 2nd phase	Shutdown required for no. of Days
				Considering 1 gang can able to do installation of 40 Bird Diverter in a day and considering 8 gangs shall be deployed for the work
i)	765KV Fatehgarh2-Bhadla2	No.	14679	46
ii)	765KV Fatehgarh2-Fatehgarh1 – Loop IN	No.	3134	10
iii)	765KV Fatehgarh2 – Fatehgarh1 – Loop Out	No.	3246	10
iv)	400KV Bhadla1 - Bhadla2	No.	3751	12
	Total	No.	**24810**	

Accordingly, the shutdown requirement of transmission lines for installation of Bird Diverters in 2nd phase w.r.t. NR1 has been worked out and tabulated above considering 1 gang can able to do installation of 40 Bird Diverters in day & POWERGRID is planning to deploy 10 difference gangs in different stretch *(considering required T&P i.e. special type of chair / canopy).*

As bird diverters are available at site, shutdown shall be available w.e.f. 3rd week of Novemeber'2021 progressively. May kindly allow.

Further, it is also to be mentioned here that in line with discussion had in 185th OCC meeting the shutdown availed for installation of Bird Diverters in 2nd phase as well may kindly be considered under ***Deemed Availability.***

Thanking Your,

Your's faithfully

02/11/2021

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

Copy for kind information please:-

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

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

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

Annexure-A-VIII

No: -2755 /CE(PSO)/SE(R&A)/EE-II/SPS Dated: - 15-11- 2021

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

Subject: - Regarding review of SPS scheme for evacuation of generation at Lalitpur TPS.

Kindly find enclosed herewith revised SPS logic for evacuation of generation from Lalitpur TPS following the commissioning of 765kV Fatehabad-Gr Noida line. It is requested to kindly approve the logic so that the same may be implemented.

Encl: Old and New Logic
Simulation study details
Comment of M/s Lalitpur on Logic

12.11.21

(Emaduddin khan)
Chief Engineer (PSO)

O/C

No: -2755 /CE(PSO)/SE(R&A)/EE-II/SPS 12/11/21 Dated: - 15-11 - 2021

Copy forwarded to following for information and necessary action:-

1. Director (SLDC), Vibhuti Khand – II, Gomti Nagar, Lucknow.
2. Director (Technical), UPRVUNL, 8th Floor, Shakti Bhawan Extension, Lucknow.
3. Chief Engineer (C&S), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
4. Chief Engineer, (Trans South west), U.P. Power Transmission Corporation Ltd., 64, Khambha, By pass Road, Agra -282007 (cets@upptcl.org).
5. Superintending Engineer (T&C) Circle, 64 Khambha Bypass Road, Agra -282007.
6. Superintending Engineer (System Control), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
7. M/s Lalitpur Power Generating Company Ltd, TC-13, Vibhuti Khand, near JSV Hyundai Service center Gomti Nagar, Lucknow 226010 (scrlpgcl.ltp@lpgcl.com)

O/C

(Emaduddin khan)
Chief Engineer (PSO)

SN.	OLD LOGIC		REVISED LOGIC		
	CONDITION	**ACTION**	**CONDITION OF CONTIGENCY**	**ANTECEDENT CONDITION**	**ACTION**
1	**Case-1:** If the total loads on 765kV Lalitpur –Fatehabad (Agra) (UP) circuit – I & II is below 1400MW and both 1500MVA ICTs are in service at Fatehabad (UP) and one ICT gets tripped.	*Action- In this situation generation at Lalitpur TPS available machines should not exceed 1400MW and 'Generation Raise Command' be blocked at 1400MW.*	**Case-1:** Both 1500MVA ICTs at Fatehabad (UP) tripped **OR** 765 KV Fatehabad- Gr Noida line **AND** Any one of two1500MVA ICTs at Fatehabad (UP)tripped **OR** One of the two 765 KV Lalitpur - Fatehabad line tripped	Both 765kV Lalitpur –Fatehabad (Agra) (UP) circuit – I & II are in service and carry load below 1400MW **AND** Both 1500MVA ICTs at Fatehabad (UP) are in service **AND** 765 KV Fatehabad- Gr Noida line is in service	*Action- In this situation generation at Lalitpur TPS available machines should not exceed 1400MW and 'Generation Raise Command' be blocked at 1400MW.*
2	**Case-2:** If the total loads on 765kV Lalitpur TPS- Fatehabad (UP) circuit –I & II is more than 1400MW and one ICT gets tripped at 765kV sub-station Fatehabad.	*Action: In case of total load on 765kV Lalitpur TPS-Fatehabad (UP) circuit –I & II is more than 1400MW and both ICTs (1500MVA each) are in circuit, the total load on both ICTs may be more than 1500MVA. In such situation if one of the ICTs got tripped, it would lead to overloading of the remaining ICT. To avoid such situation:* *In this condition if three machines are in operation at Lalitpur TPS, SPS be designed so that one of the machines should come on house load at once. Generation Raise command should be blocked at 1400MW.*	**Case-2:** 765 KV Fatehabad- Gr Noida line **AND** Any one of two1500MVA ICTs at Fatehabad (UP)tripped	Both 765kV Lalitpur –Fatehabad (Agra) (UP) circuit – I & II are in service and carry above 1400MW **AND** Both 1500MVA ICTs at Fatehabad (UP) are in service **AND** 765 KV Fatehabad- Gr Noida line is in service	*In this condition if three machines are in operation at Lalitpur TPS, SPS be designed so that one of the machines should come on house load at once. Generation Raise command should be blocked at 1400MW.*

O/C
Mr Rajesh

3	**Case-3: If both 1500MVA ICTs at Fatehabad (UP) or both765kV Lalitpur TPS-Fatehabad (UP) circuit –I & II got tripped at 765kV sub-station Fatehabad.**	*Action: In this condition, to safe guard the running units of Lalitpur TPS, it will be essential to bring down the generation immediately of running units to house load. Both 220kV circuits of i.e. 220kV Jhansi & Lalitpur should also get opened from Lalitpur TPS end.* *In this regard it is suggested that Lalitpur TPS should be considered to be taken into 'Islanding Scheme'.*	**Case-3:** Both 1500MVA ICTs at Fatehabad (UP) tripped **OR** One of the two 765 KV Lalitpur - Fatehabad line tripped	Both 765kV Lalitpur –Fatehabad (Agra) (UP) circuit – I & II are in service and carry above 1400MW **AND** Both 1500MVA ICTs at Fatehabad (UP) are in service **AND** 765 KV Fatehabad- Gr Noida line is in service	*In this condition if three machines are in operation at Lalitpur TPS, SPS command must be initiated to Lalitpur TPS to bring down generation to 1400 MW as soon as possible and 'Generation Raise Command' be blocked at 1400MW.*
4	**Case-4: If load on any 400kV line emanating from 765kV substation Fatehabad (UP) exceeds 800MW.**	*Action: SPS command must be initiated to Lalitpur TPS to bring down generation so that the subject line loading comes below 800MW*	**Case-4:** Both765kV Lalitpur TPS-Fatehabad (UP) circuit –I & II get tripped **OR** If both 1500MVA ICTs at Fatehabad (UP) **AND** 765 KV Fatehabad- Gr Noida line get tripped	Both 765kV Lalitpur –Fatehabad (Agra) (UP) circuit – I & II are in service **AND** Both 1500MVA ICTs at Fatehabad (UP) are in service **AND** 765 KV Fatehabad- Gr Noida line is in service	*Action: In this condition, to safe guard the running units of Lalitpur TPS, it will be essential to bring down the generation immediately of running units to house load. Both 220kV circuits of i.e. 220kV Jhansi & Lalitpur should also get opened from Lalitpur TPS end.* *In this regard it is suggested that Lalitpur TPS should be considered to be taken into 'Islanding Scheme'.*
			Case-5: If load on any 400kV line emanating from 765kV substation Fatehabad (UP) exceeds 800MW.	Both 765kV Lalitpur –Fatehabad (Agra) (UP) circuit – I & II are in service **AND** Both 1500MVA ICTs at Fatehabad (UP) are in service **AND** 765 KV Fatehabad- Gr Noida line is in service	*Action: SPS command must be initiated to Lalitpur TPS to bring down generation so that the subject line loading comes below 800MW*

O/C

Loading scenarion as per PSSE Study

Sl. No.	Total Generation of Lalitpur	Cases	Detail of Contingency	Loading on 765kV Lalitpur-Fatehabad DC line	Loading on 765kV Fatehabad - Gr. Noida line	Loading on 220kV Lalitpur TPS- Lalitpur (220kV) DC line	Loading on Lalitpur (TPS)-Jhansi DC line	Loading on 1500MVA ICT-1 at 765kV Fatehabad	Loading on 1500MVA ICT-2 at 765kV Fatehabad	Whether loading on 400kV lines emanating from 765kV Fatehabdad is more than 800MW
1	1400 MW	Case-1	No Contingency	675 MW each	562 MW	26 MW each	2 MW (negative) each	390 MW	390 MW	NO
			Both 1500MVA ICTs at Fatehabad (UP) tripped	662 MW each	1319 MW	26 MW each	11 MW each	NA	NA	NO
			765 KV Fatehabad- Gr Noida line AND Any one of two1500MVA ICTs at Fatehabad (UP)tripped	656 MW each	NA	26 MW each	17 MW each	NA	1307 MW	NO
			One of the two 765 KV Lalitpur -Fatehabad line tripped	1300 MW	540 MW	26 MW each	17 MW each	380 MW	380 MW	NO
2	1875 MW	Case-2	No Contingency	900 MW each	785 MW	26 MW each	9 MW each	500 MW	500 MW	NO
	1875 MW		765 KV Fatehabad- Gr Noida line AND Any one of two1500MVA ICTs at Fatehabad (UP)tripped	875 MW each	NA	26 MW each	36 MW each	1738 MW	NA	NO
	1250 MW			587 MW	NA	26 MW each	11 MW each	1170 MW	NA	NO
3	1875 MW	Case-3	Both 1500MVA ICTs at Fatehabad (UP) tripped	885 MW each	1760 MW	26 MW each	26 MW each	NA	NA	NO
			One of the two 765 KV Lalitpur -Fatehabad line tripped	1750 MW	753 MW	26 MW each	36 MW each	480 MW	490 MW	NO

UPSLDC.ORG
Uttar Pradesh State Load Despatch Centre

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

Revised SPS scheme for evacuation of Lalitpur TPS generation

R. N. Bedi <rnbedi.ltp@lpgcl.com> Tue, Nov 2, 2021 at 10:27 AM
To: "Superintending Engineer (R&A)" <sera@upsldc.org>
Cc: Alhad Narayan Sar <ansar.ltp@lpgcl.com>, Manoj Mehta <manojm.ltp@lpgcl.com>, Avinash Kumar <avinashkumar.ltp@lpgcl.com>, Vikash Kumar Sharma <vksharma.ltp@lpgcl.com>, SCR LPGCL Lalitpur <scrlpgcl.ltp@lpgcl.com>

Dear Sir

Please refer to our email dated 01.07.2021 for the subject. The final approved SPS scheme may please be in line with our comments furnished vide email dated 01.07.2021.
Our email dated 01.07.2021 is reproduced below for your reference please. Requested to arrange a meeting with NRLDC , if required.

" *This has reference to your letter no 1528/CE(PSO)/SE(R&A)/EE-II/SPS dated 28-06-2021.*

Our point wise reply to the MOM on revised SPS scheme for evacuation of Generation of Lalitpur TPS is as furnished below.

Sl no-1 , Case-1:

LPGCL Reply: *Acceptable*

Sl no-2 , Case-2:

As mentioned in the MOM, when the Ex-bus power is above 1400MW (all three machines are in service) , if 765KV Fatehabad-Greater Noida line trips & any one out of two ICTs trips then action required is to bring one machine at house load condition along with command block to raise load.

LPGCL Reply: *Instead of bringing one machine to house load condition, it is recommended to trip one selected machine (in view to prevent un-desirable severe thermal stresses on machine from full load to house load operation) and the command block is not required as the ex-bus power of two remaining machines will be max 1237.5MW.*

Sl no-3 , Case-3:
As mentioned in the MOM, when Ex-bus power is above 1400MW, both 1500MVA ICTs at Fatehabad tripped or one of the 765KV Lalitpur-Fatehabad line tripped, it is recommended to implement the logic to bring down Ex-bus power to 1400MW through automatic back down in case SPS is actuated

LPGCL Reply: *As checked at LPGCL end , implementation of Run back through SPS signal is not at all a desirable option as it may lead to unstable condition of boiler and result in tripping of the unit.*

a) In case Both 1500MVA ICTs at Fatehabad tripped, power is getting evacuated through both Lalitpur Fatehabad lines and Fatehabad Greater Noida line. Hence there will not be any case of over loading in Fatehabad-Greater Noida line for shortest span of time
b) In case One of the 765KV Lalitpur-Fatehabad line tripped , power is getting evacuated through one no Lalitpur Fatehabad line, two ICTs and Fatehabad Greater Noida line. Hence there will not be any case of over loading in Fatehabad-Greater Noida line for shortest span of time.

Hence it is recommended to reduce load manually at LPGCL end within shortest time period.

Sl no-4 , Case-4:
LPGCL Reply: *Acceptable*

Sl no-5 , Case-5:
LPGCL Reply: *Implementation of logic based on N number of 400KV lines tripping at Fatehabad is not possible. Hence the load limiting in Unit-3 from 660MW to 456MW is sufficient to take care the overloading in any of the 400KV lines in case of tripping of one no of 400KV lines at Fatehabad end. Further in case of Unit-3 is not in service, the*

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. No.: NRLDC /MIS/2020-21/02 **Date :22-10-2021**

To,

As per Distribution list.

Sub: Sharing of hourly Load shedding under different categories on NRLDC Reporting Software

Sir,

During a recent review of the country's power supply scenario, 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.

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

Your kind cooperation in this regard is earnestly solicited.

Thanking you,

Yours faithfully,

(Surajit Banerjee)
Chief General Manager (SO-II)
NRLDC, POSOCO

Copy to: 1 Chief General Manager(I/C), NRLDC, POSOCO-For kind information please
2 Executive Director, NLDC, POSOCO-For kind information please
3 Chief General Manager (SO), NLDC, POSOCO -For kind information please

Annexure- I: Hourly Load shedding format under different categories Date:

Load Not Served due to									
Hrs	Low availability (in MW)	Financial constraints (in MW)	Emergency load shedding due to Security and reliability of the Grid- Over Drawal) (in MW)	Planned Maintenance in Transmission System (in MW)	Transmission constraint (in MW)	Planned Maintenance in Distribution System (in MW)	Distribution constraints (in MW)	Any other reason (to be specified) (MW)	Total (in MW)
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
Total									

Distribution List

State Load Despatch Centre

1. Chief Engineer,
   Punjab SLDC Ablowal, Patiala,SLDC Building,
   Near 220KV Grid Substation, PSTCL, Ablowal,
   Patiala-147001

2. Chief Engineer,
   Haryana SLDC, HVPNL, Sewah Panipat,
   XEN/LD & PC, SLDC Complex, Behind 400KV BBMB Power House,
   Sewah, Panipat-132108

3. Chief Engineer,
   HP Load Dispatch Society, SLDC complex,
   Totu, Shimla-171011

4. Chief Engineer,
   J&K Gladni, Jammu, SLDC Building,
   220 kV Grid Station Narwal,
   Jammu, Jammu/ Kashmir-180007

5. Chief Engineer,
   State Load Despatch Centre,
   Rajasthan Rajya Vidyut Prasaran Nigam Limited,
   Ajmer Road, Heerapura,
   Jaipur-302024

6. Chief Engineer,
   Power System,
   UP Power Transmission Corporation Ltd.,
   5th Floor, Shakti Bhawan, 14 Ashok Marg,
   Lucknow-226001

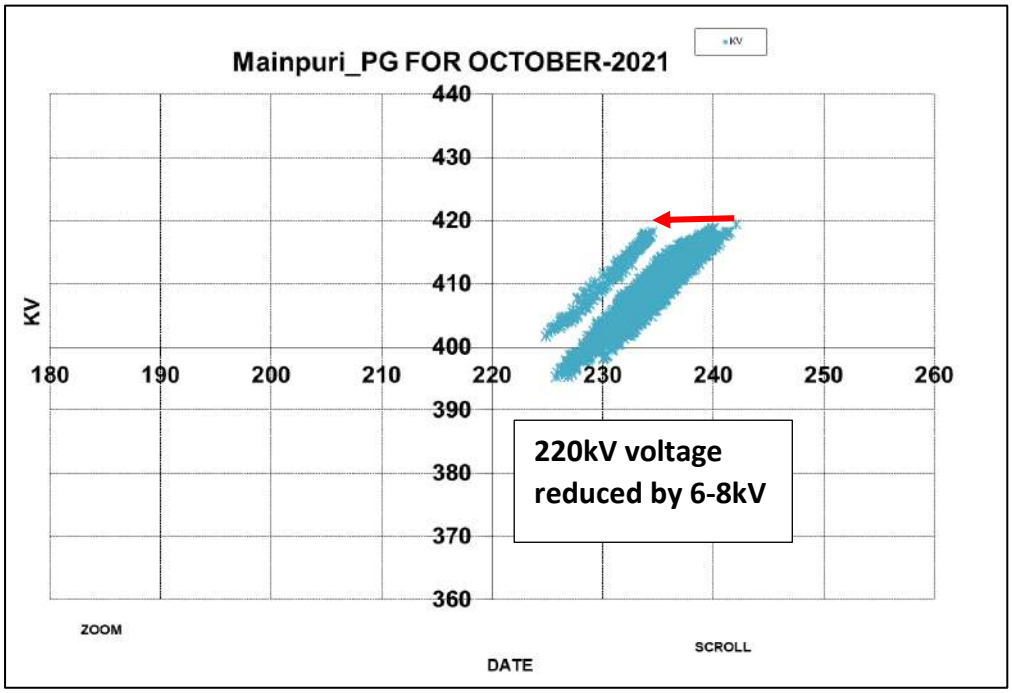
7. Chief Engineer,
   Vidyut Bhawan Saharanpur Road Majra,
   Near ISBT Dehradun-248001
   Uttarakhand, INDIA

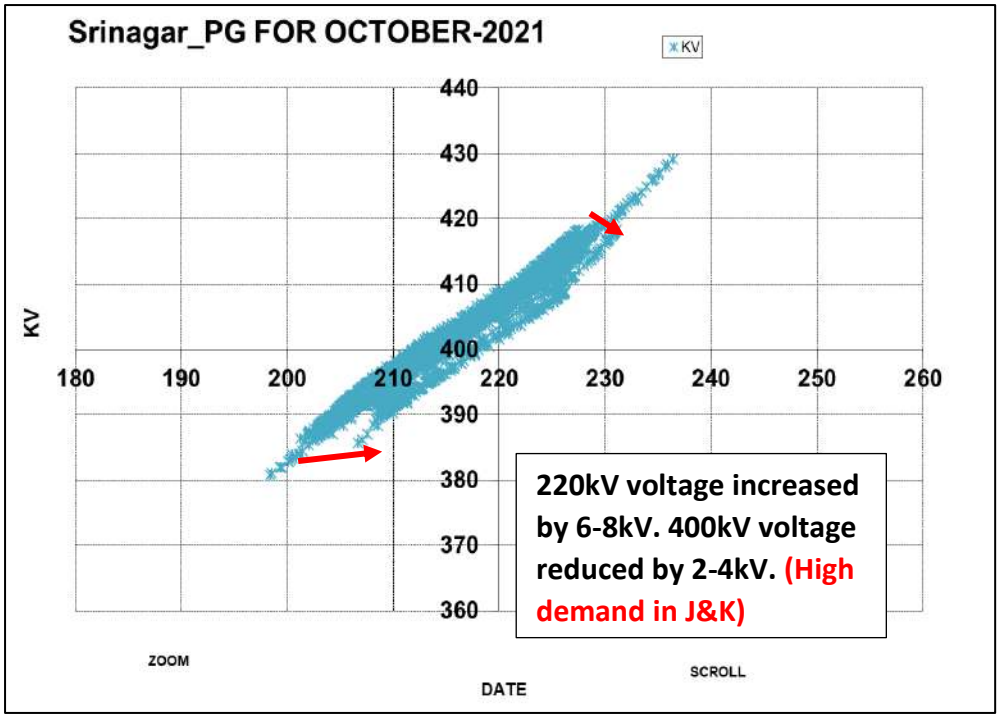
8. General Manager,
   Delhi, SLDC,33kV, Sub Station Building,
   Minto Road, New Delhi-110002

9. Chief Engineer (SO),
   System Load Despatch Centre,
   Bhakra Beas Management Board,
   SLDC Complex, Industrial Area, Phase-I,
   Madhya Marg, Chandigarh-160002

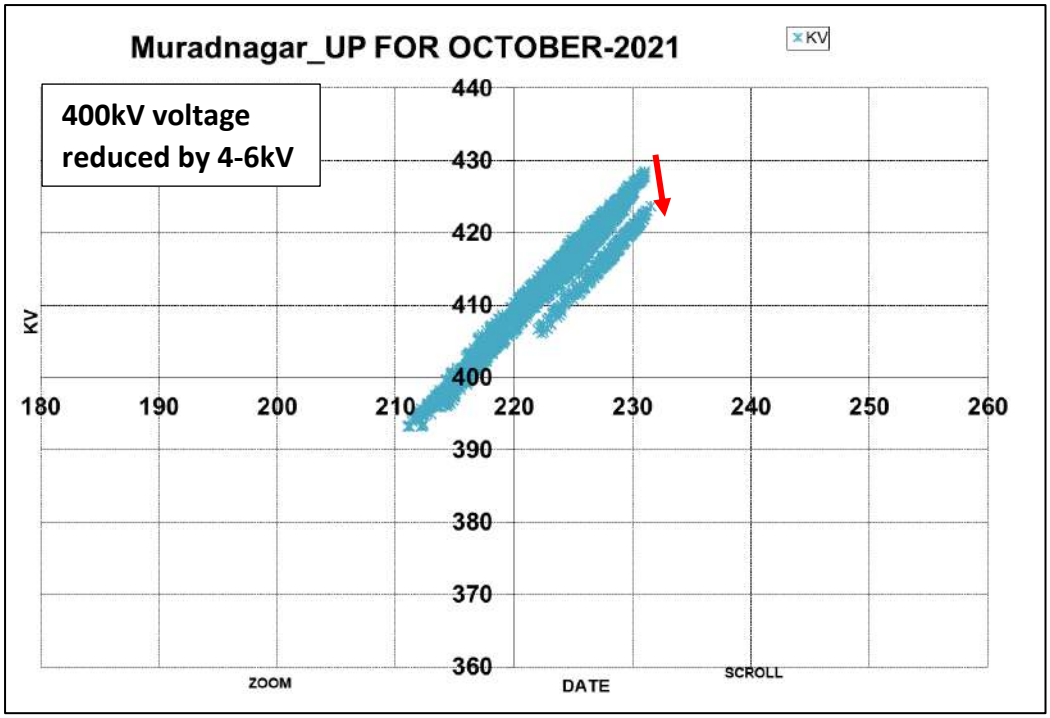
Scatter Plots for October 2021

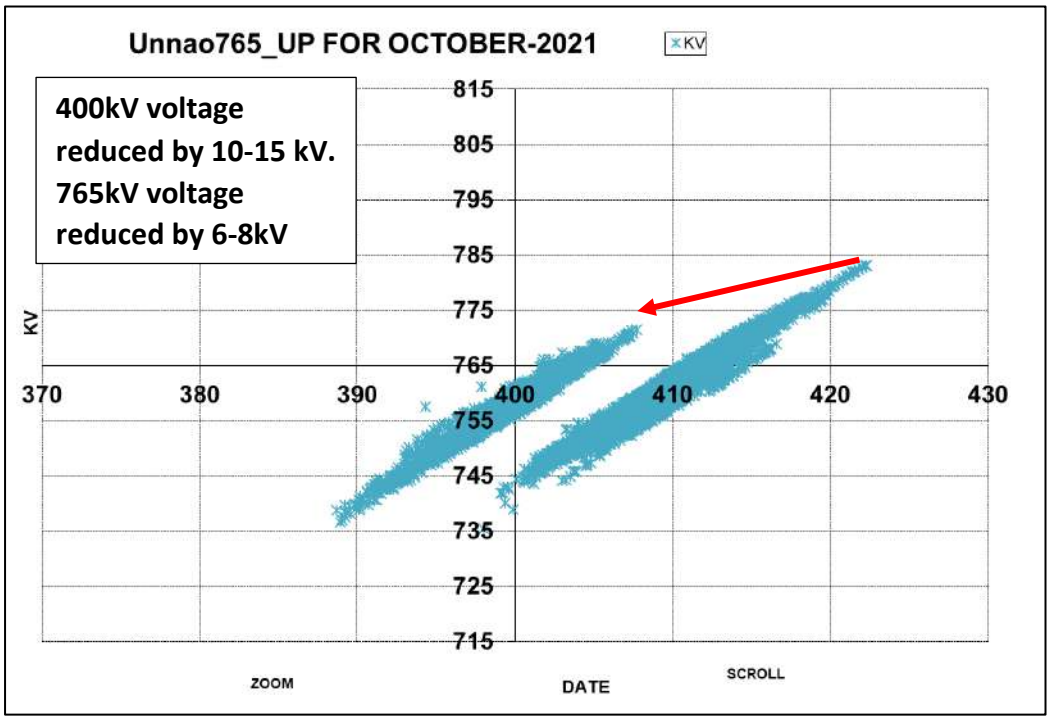
Stations at which tap position changed in Oct'2021



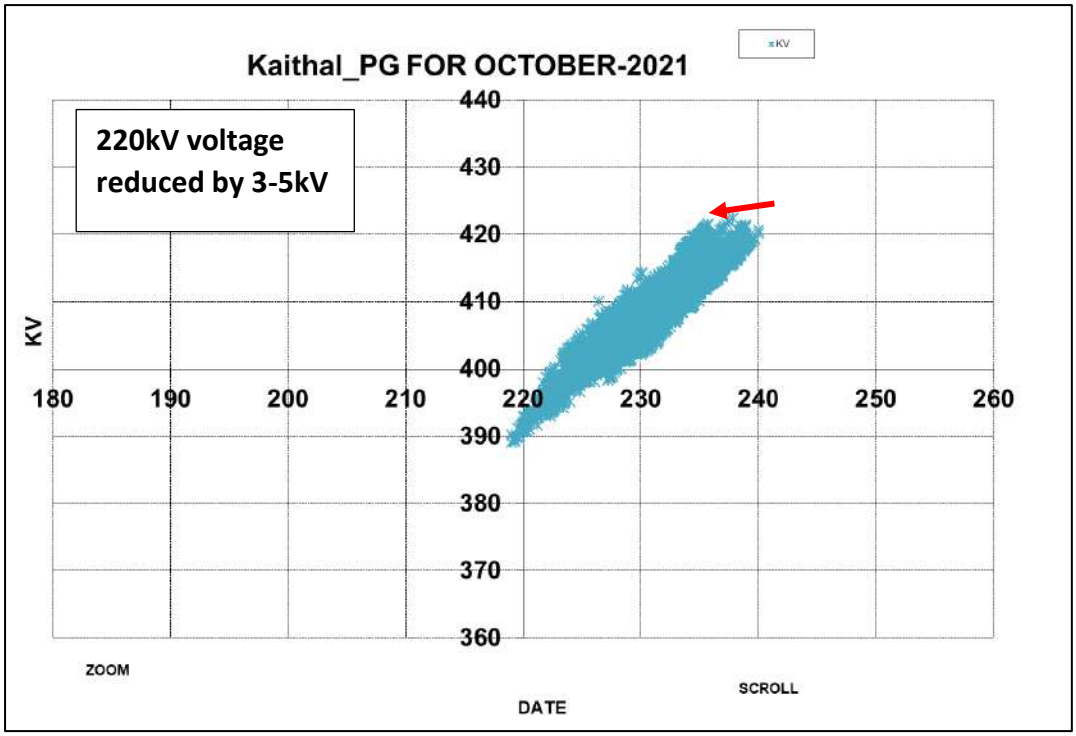


Scatter Plots for October 2021

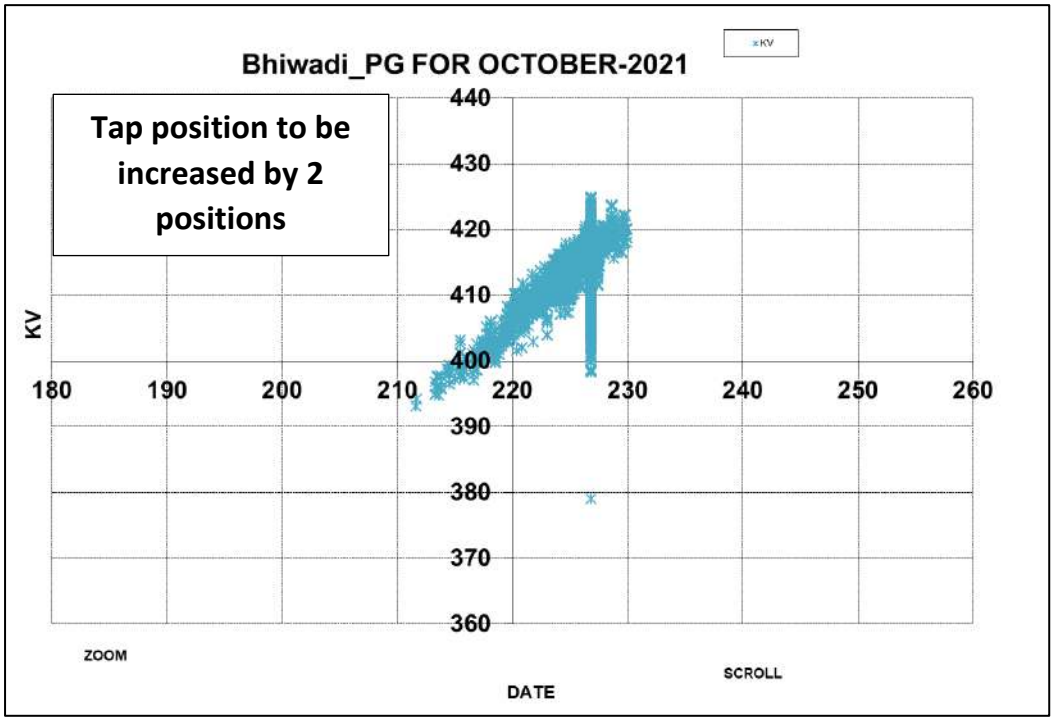




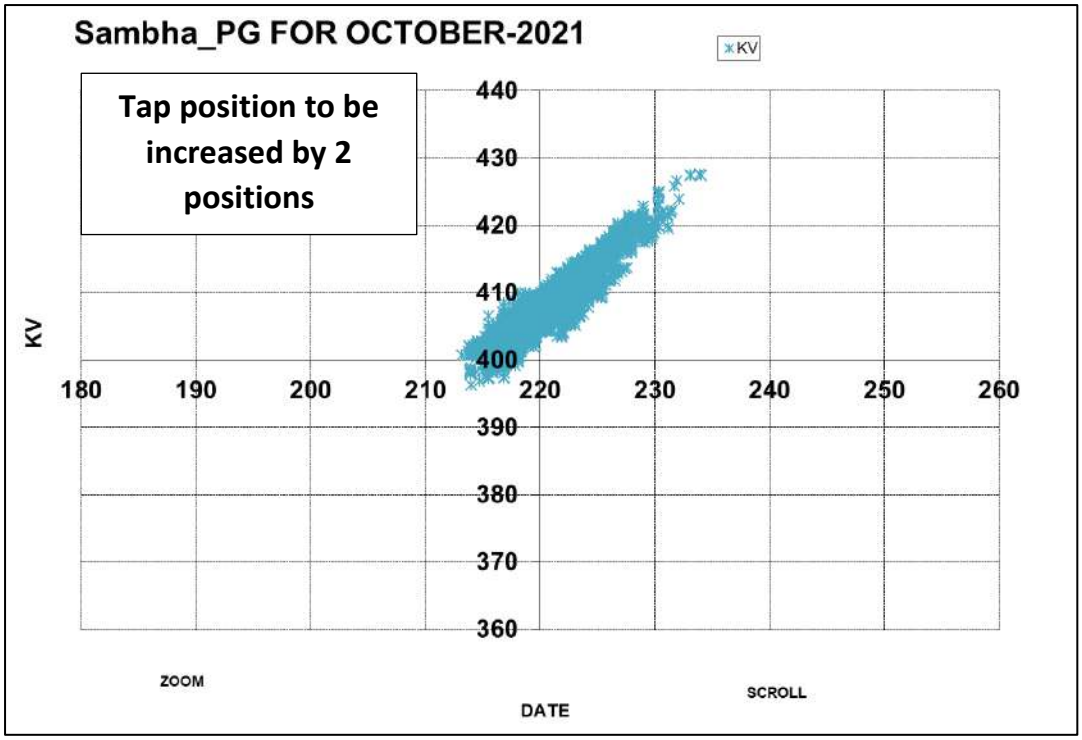
Scatter Plots for October 2021

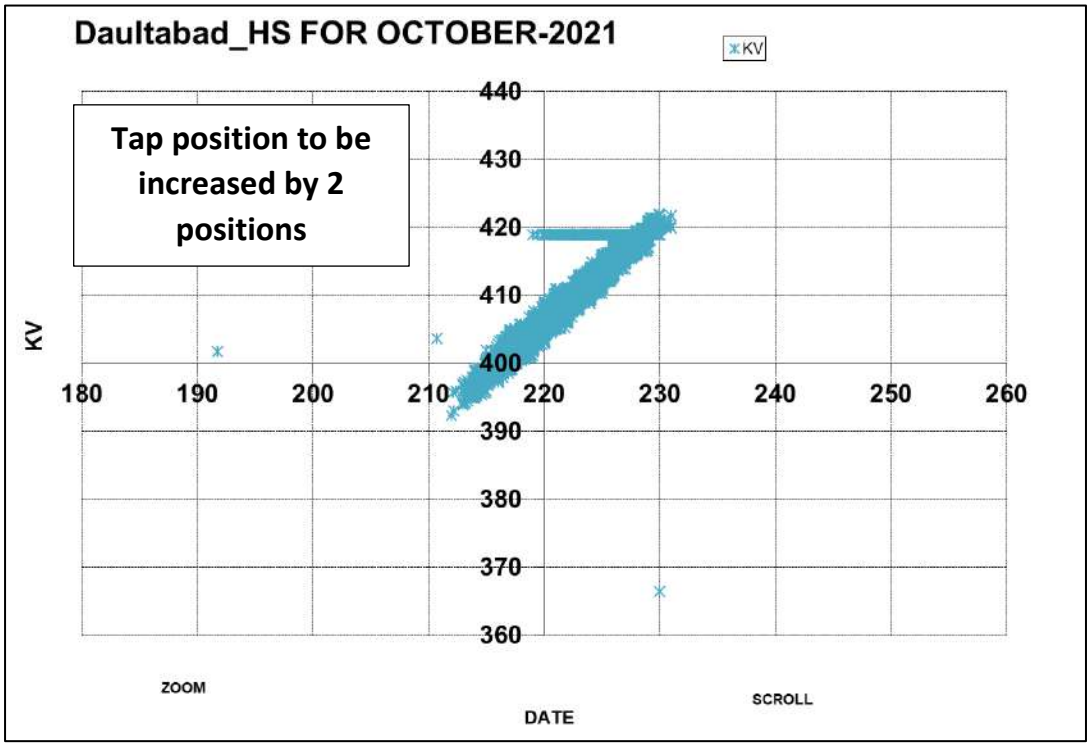


Tap changes to be done

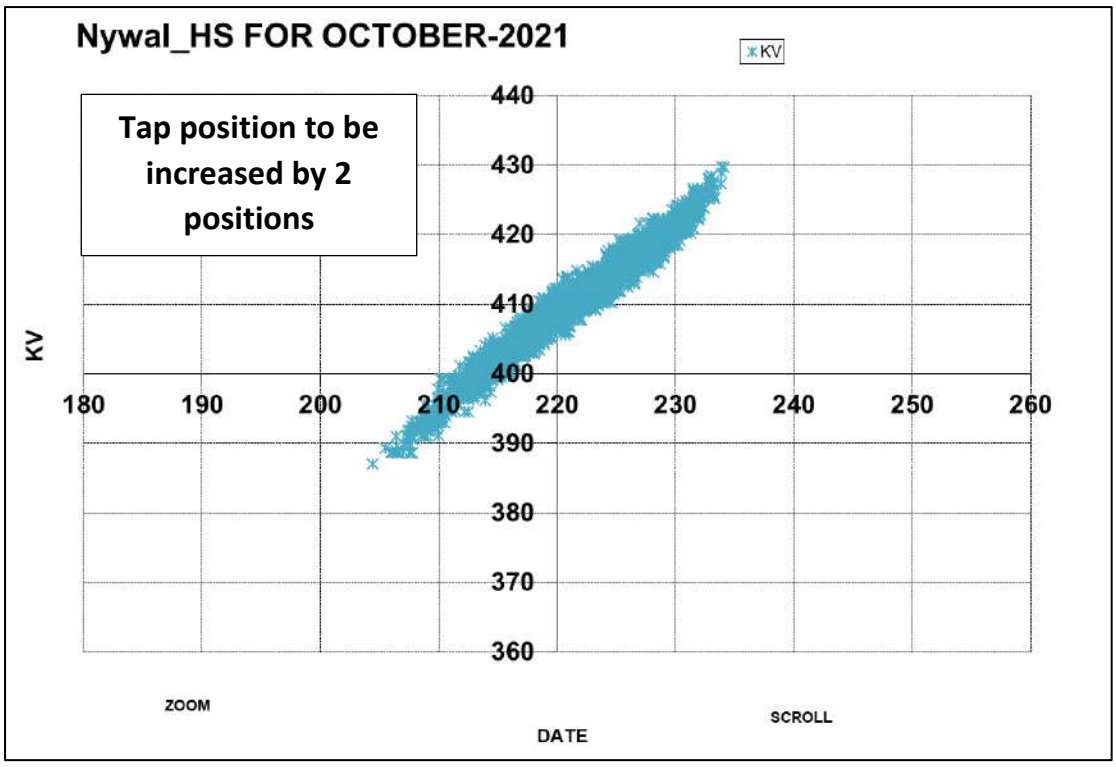


Scatter Plots for October 2021

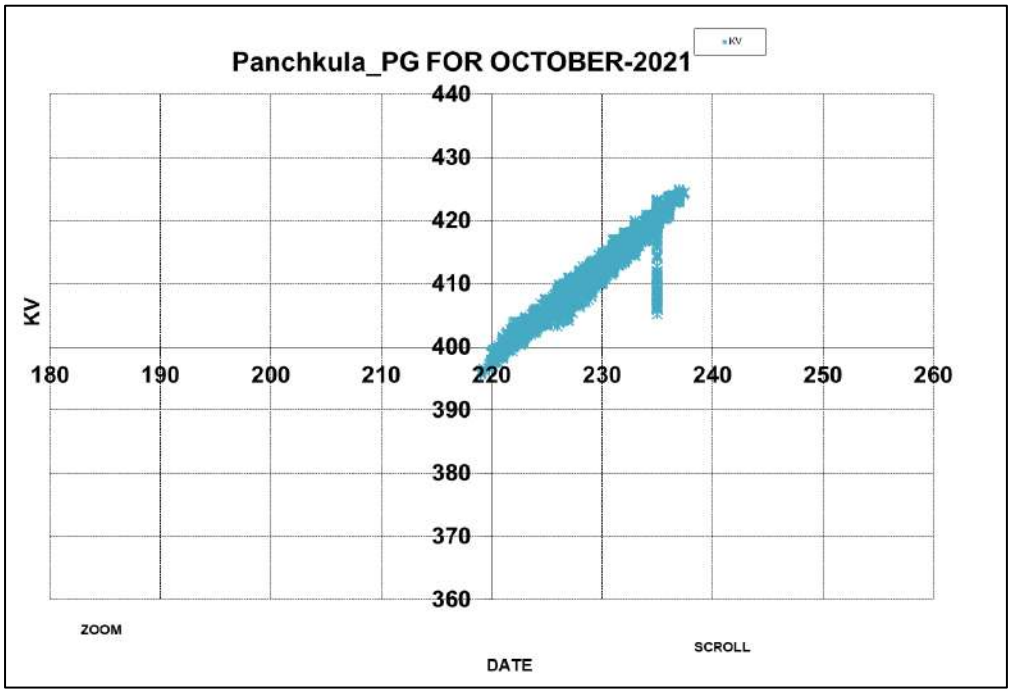




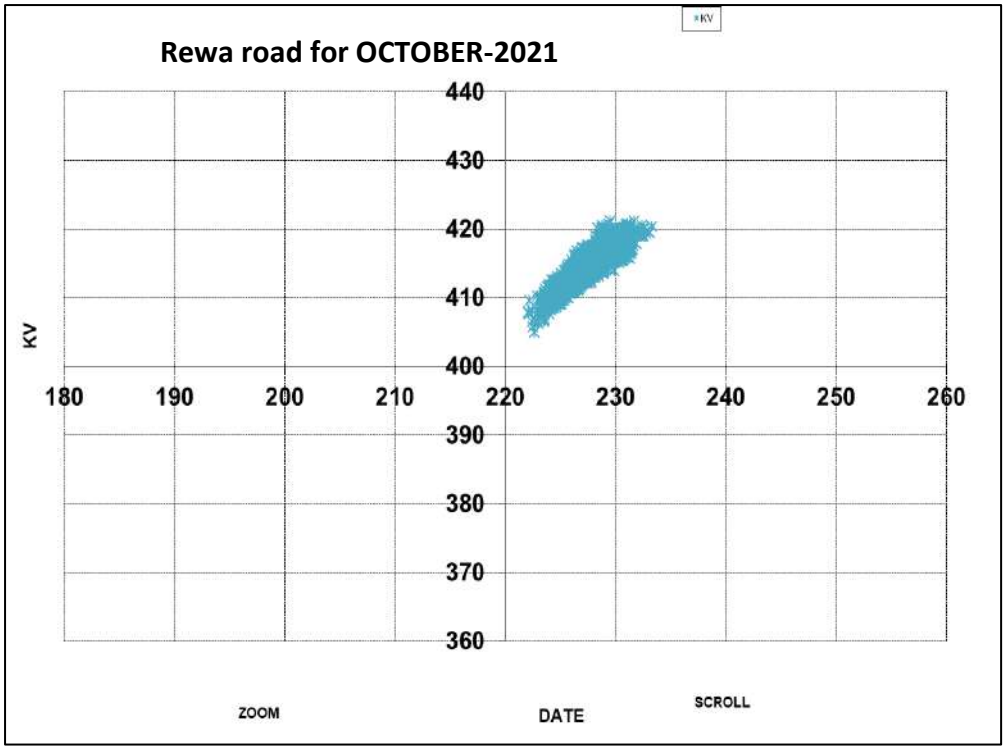
Scatter Plots for October 2021

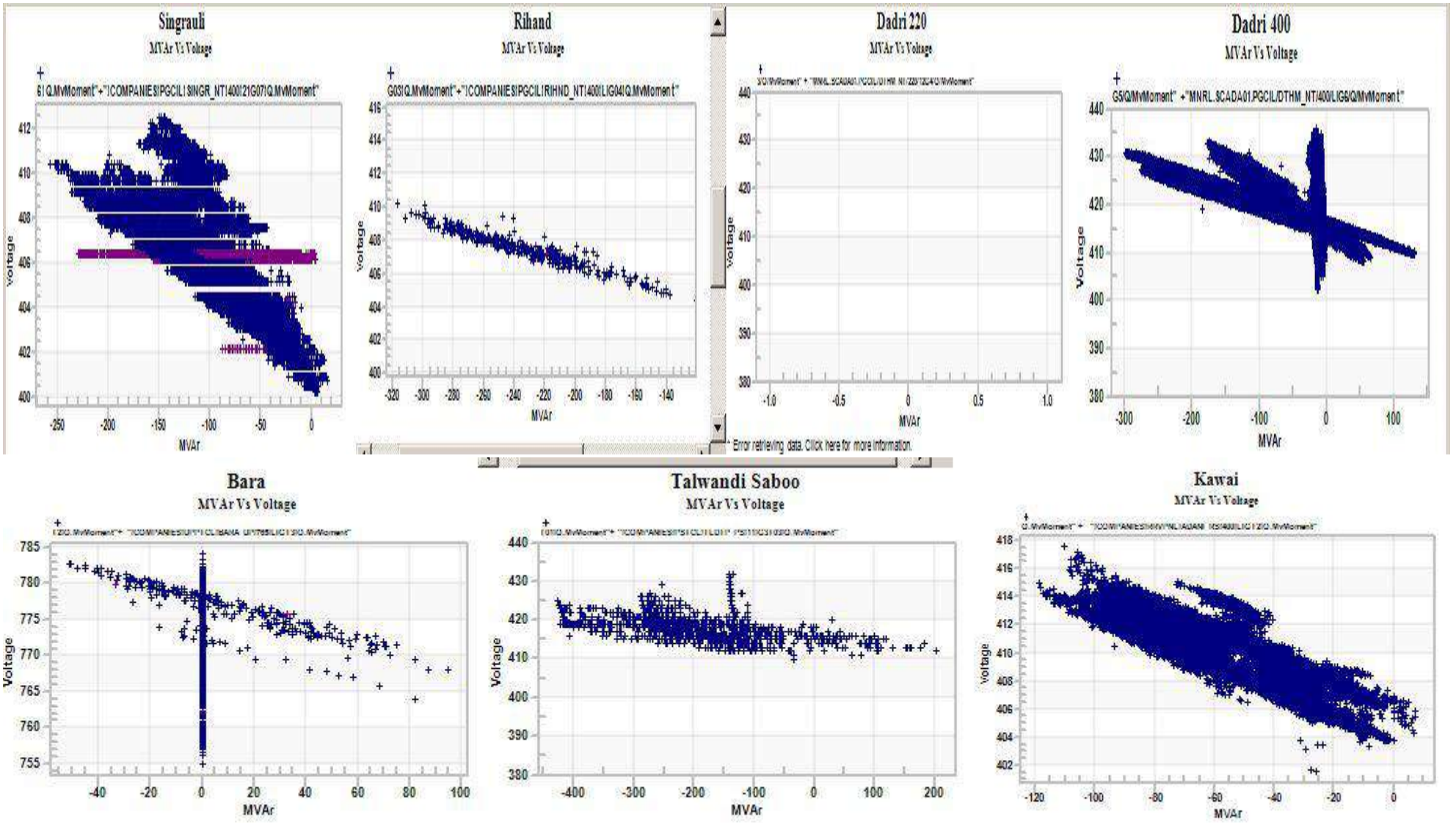


Haryana and UP requested in 188 OCC meeting, to check tap position change requirement at Panchkula(PG) and Rewa-road respectively. However, scatter plots of these stations as per NRLDC data do not suggest any need for tap change.



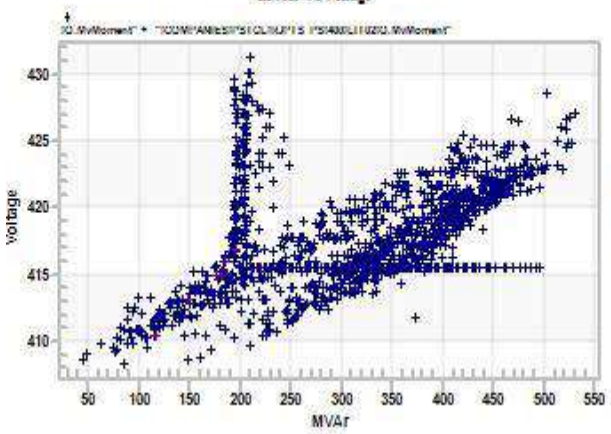
Scatter Plots for October 2021




Singrauli
MVAr Vs Voltage
Rihand
MVAr Vs Voltage
Dadri 220
MVAr Vs Voltage
Dadri 400
MVAr Vs Voltage
Bara
MVAr Vs Voltage
Talwandi Saboo
MVAr Vs Voltage
Kawai
MVAr Vs Voltage
Voltage
MVAr
Error retrieving data. Click here for more information.

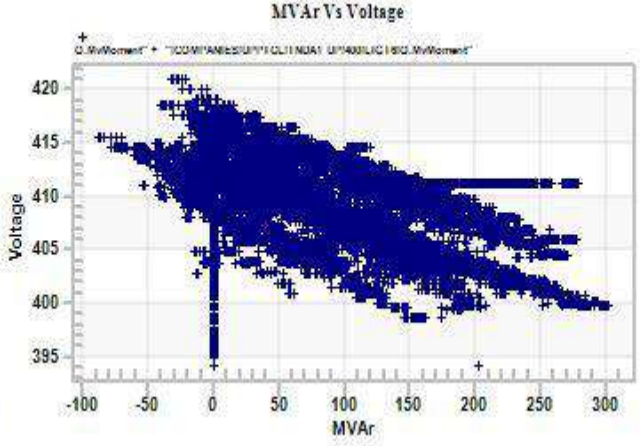
Rajpura

MVAr Vs Voltage



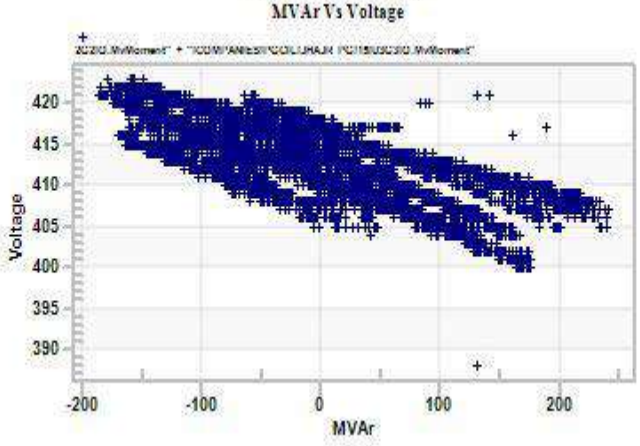
Tanda 400

MVAr Vs Voltage



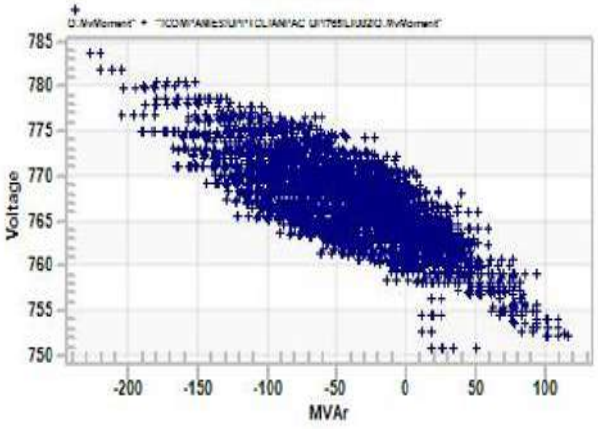
IGSTPP Jhajjar

MVAr Vs Voltage



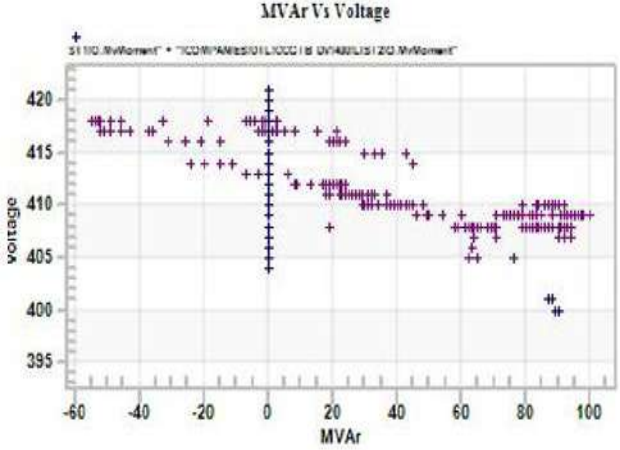
Anpara C

MVAr Vs Voltage



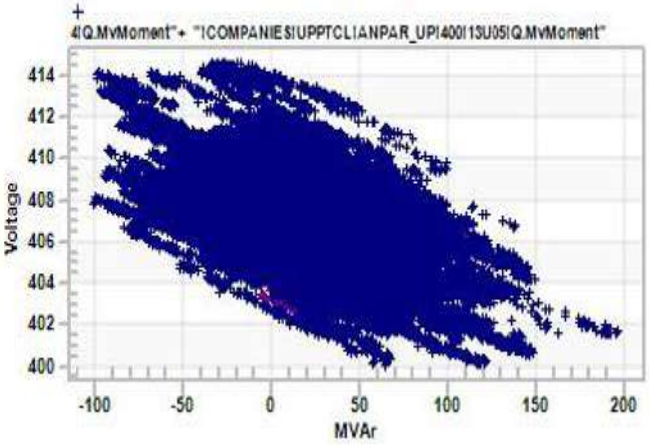
Bawana

MVAr Vs Voltage



Anpara

MVAr Vs Voltage



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

U.P. State Load Despatch Centre
U.P. Power Transmission Corporation Ltd.
(A U.P. Govt. Undertaking)
UPSLDC Complex, Vibhuti Khand – II
Gomti Nagar, Lucknow- 226010
Phone:
E-mail: cepso@upsldc.org

No: - 2754 /CE(PSO)/SE(R&A)/EE-II/OCC Dated: - 15-11- 2021

Chief Engineer (Thermal Operation), UPRVUNL, 14th Floor, Shakti Bhawan Extn.,Lucknow.(cgm.to@uprvunl.org)	**President, M/s Prayag Raj Thermal Power Plant,** Village-Khansemra, PO-Lohgara, Tehsil-Bara, Distt-Allahbad 212107.	**M/s Rosa Power Supply, Company Limited,** 520, F – Block, 5th Floor, Kasmanda House, 02 Park Road, Hazratganj,Lucknow226001)
M/s LANCO – Anpara Power Ltd, 411/09 River Side Apartment, New Hyderabad Lucknow-226007(arun.tholia@lancogroup.com)	**General Manager, Meja Thermal Power Plant Meja** Tehsil, Allahabad.	**M/s Lalitpur Power Generating Company Ltd**, TC-13, Vibhuti Khand, near JSV Hyundai Service center Gomti Nagar, Lucknow 226010 (scrlpgcl.ltp@lpgcl.com)

Subject:- Regarding Reactive Power Performance of Generator.

In view of upcoming winter and high voltage in the grid, generator should absorb the Reactive Power as per respective capability curve. In this regard scattered plot of voltage & MVAr is attached herewith.

It is requested to manage reactive power of generator depending upon voltage of the grid in your jurisdiction. In addition to this voltage & MVAr data at Rosa TPS and Lanco TPS is intermittent which may be resolved at earliest.

Encl: As Above

(Emaduddin khan)
Chief Engineer (PSO)

O/C
12/11/21

No: - 2754 /CE(PSO)/SE(R&A)/EE-II/OCC Dated: - 15-11- 2021

Copy forwarded to following for information and necessary action:-

1. Director (SLDC), Vibhuti Khand – II, Gomti Nagar, Lucknow.
2. Director (Operation), UPPTCL, 11th Floor, Shakti Bhawan Extn., Lucknow. (director_op@upptcl.org)
3. Chief Engineer (C&S), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
4. General Manager, NRLDC18-A, SJSS Marg, Katwaria Sarai, New Delhi – 110016
5. Superintending Engineer (System Control), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
6. Superintending Engineer (SCADA& IT), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
7. Superintending Engineer (Operation), NRPC, 18 – A SJSS Marg, Katwaria Sarai, New Delhi, 110016.

O/C

(Emaduddin khan)
Chief Engineer (PSO)

Reactive Power performance between 01.09.2021 to 20.10.2021			
Sr. No.	Name of the Generating Station	Unit No.	MVAR VS V GRAPH STATUS
1	Anpara-A	(Unit1#210)	Not satisfactory needs improvement
2		Unit2#210	Not satisfactory needs improvement
3		Unit3 #210	Not satisfactory needs improvement
4	Anpara-B	(Unit4#500)	Satisfactory
5		(Unit5#500)	Satisfactory
6	ANPARA-C	(Unit1# 600)	Data is not healthy
7		(Unit2# 600)	Data is not healthy
8	Anpara-D	(Unit6#500)	Not satisfactory needs improvement
9		(Unit7#500)	Not satisfactory needs improvement
10	Obra-B	(Unit9#200)	Satisfactory but need improvement
11		(Unit10#200)	Satisfactory but need improvement
12		(Unit11#200)	Satisfactory but need improvement
13		(Unit12#200)	Satisfactory but need improvement
14		(Unit13#200)	Under Shutdown
15	Parichha-C	(Unit5#250)	Satisfactory
16		(Unit6#250)	Satisfactory
17	Harduaganj	(Unit7#105)	Data is not healthy
18		(Unit8#250)	Satisfactory
19		(Unit9#250)	Satisfactory
20	ROSA A TPS	Unit1 #300	Data is not healthy
21		Unit2 #300	Data is not healthy
22	ROSA B TPS	Unit3 #300	Data is not healthy
23		Unit4 #300	Data is not healthy
24	LALITPUR TPS	(Unit 1 # 660)	Not satisfactory needs improvement
25		(Unit 2 # 660)	Not satisfactory needs improvement
26		(Unit 3 # 660)	Not satisfactory needs improvement
27	Meja Urja Nigam	Unit-1 #660	Not satisfactory needs improvement
28		Unit-2 #660	Satisfactory but need improvement
29	Bara	(Unit-1# 660)	Satisfactory but need improvement
30		(Unit-2 # 660)	Satisfactory but need improvement
31		(Unit-3 # 660)	Satisfactory but need improvement

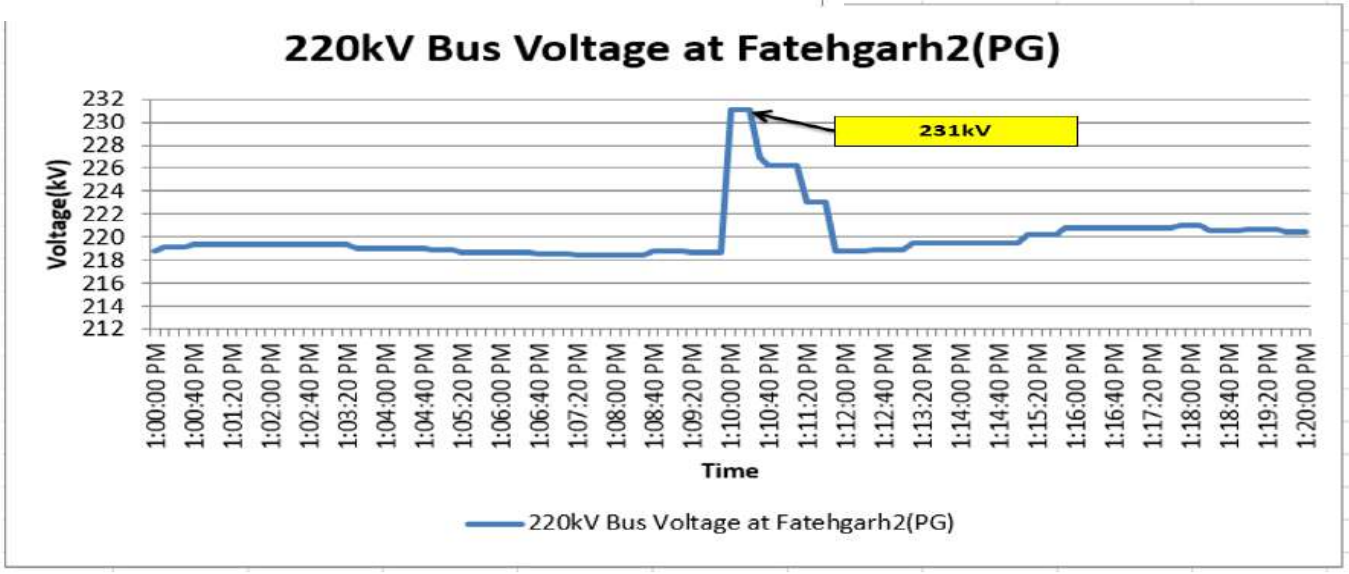
Large RE Generation Outage Apr'19-Oct'21

S.No	Date & Time	Event Description	Major plants affected	Solar/wind generation loss	Observations	Remark
1	At 13:10 Hrs on 13.10.2021	As reported, 33kV feeders at solar generations connected at 400/220kV Fatehgarh2 (PG) tripped due to sudden high voltage at 33kV level. As per SCADA SOE at NRLDC, no switching operation is observed/reported during antecedent condition.	Connected at 220kV Fatehgarh2(PG): AHEJOL solar RENEW Jharkhand3 solar RENEW SUNWAVE solar	Approx. 650MW	Tripping of feeders and transformers is observed at RENEW Jharkhand3 solar. No tripping of feeders reported from other solar plants	Voltage at 220kV bus was in permissible limit. Other solar plants connected to the same bus didn't trip during the event. So, it seems that tripping occurred due to sensitive over voltage protection settings of feeders and non compliance of HVRT.

13-Oct-21/13:10hrs, Solar generation loss connected at Fatehgarh2(PG)

PMU Plot of phase voltage magnitude at Fatehgarh2(PG)

13:09hrs/13-Sept-21

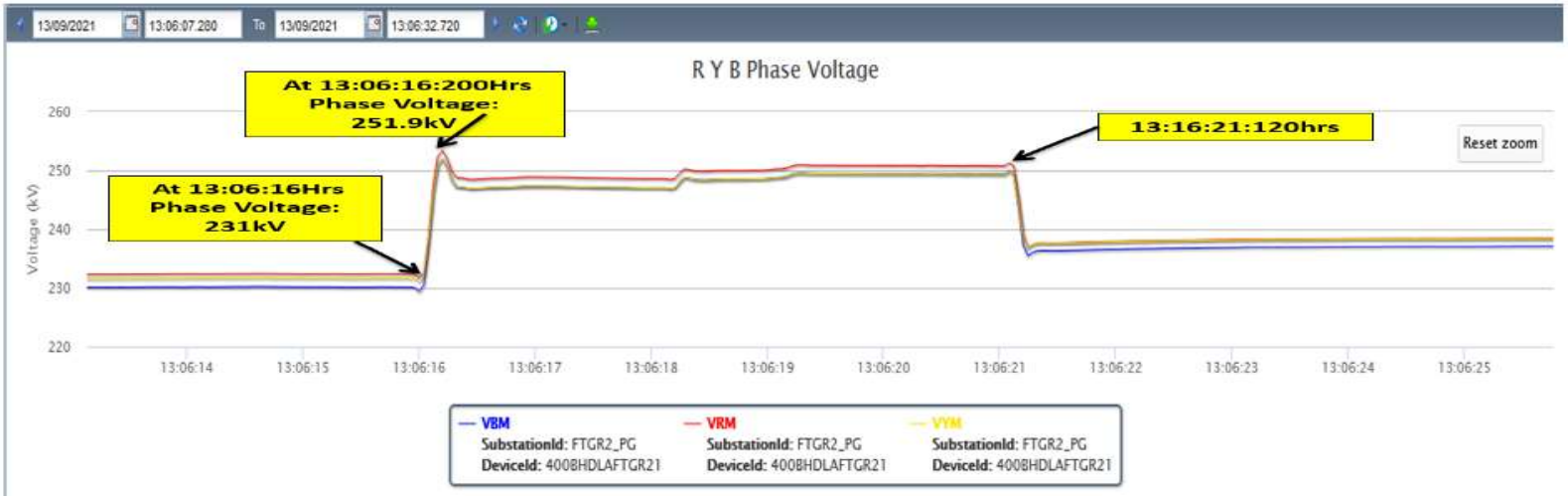


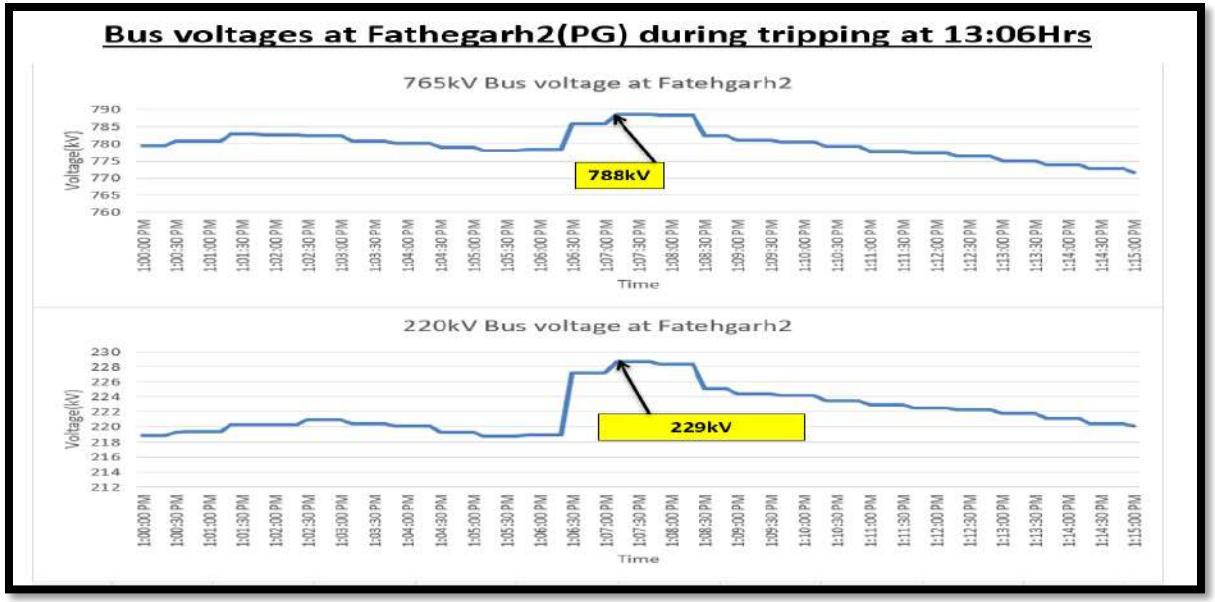
S. No	Date & Time	Event Discreption	Major plants affected	Solar/wind generation loss	Observations	Remark
2	At 13:06Hrs & 13:49Hrs on 13.09.2021	At 13:06 Hrs, 765kV Bhadla_2-Ajmer ckt-1 was charged from Bhadla_2 end only, resulted into sudden shoot up of voltage at Bhadla_2(PG). Due to over voltage, 765 KV Bhadla_2 - Fatehgarh_2 (PG) Ckt-1 tripped on over voltage stage-1 operation at Bhadla_2(PG) end & DT received at Fatehgarh_2(PG) end. At the same time, solar generation loss of approx. 500MW connected to Fatehgarh2(PG) is observed. Again at 14:49Hrs, 765kV Bhadla_2-Ajmer ckt-1 was charged from Bhadla_2 end which might have led to sudden shoot up of voltage resulted into loss of 700MW solar generation connected at Fatehagrh2(PG).As per PMU, no fault is observed and voltage shoot up is observed.	Renew Jharkhand3 Solar Renew Sunwave Solar	Approx. 500MW at 13:06Hrs & Approx. 750MW at 14:49Hrs	Tripping of feeders and transformers is observed at RENEW Jharkhand3 solar. No tripping of feeders reported from other solar plants	Voltages at 220kV & 765kV Bus at Fatehgarh_2 were in permissible. Voltages at 220kV & 765kV Bus at Fatehgarh_2 were in permissible range 229kV & 788kV Respectively. Other solar plants connected to the same bus didn't trip during the event. So, it seems that tripping occurred due to sensitive over voltage protection settings of feeders and non compliance of HVRT.

13-Sept-21/13:06hrs, Solar generation loss connected at Fatehgarh2(PG)

PMU Plot of phase voltage magnitude at 400kV Fatehgahr2(PG)

13:06hrs/13-Sept-21



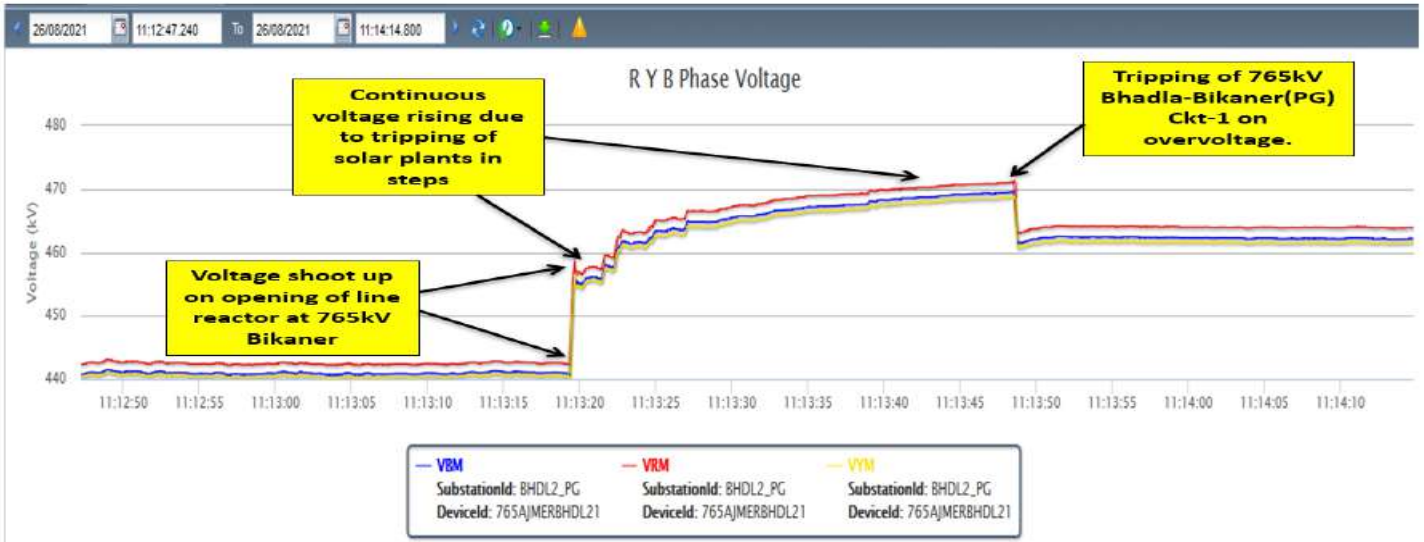


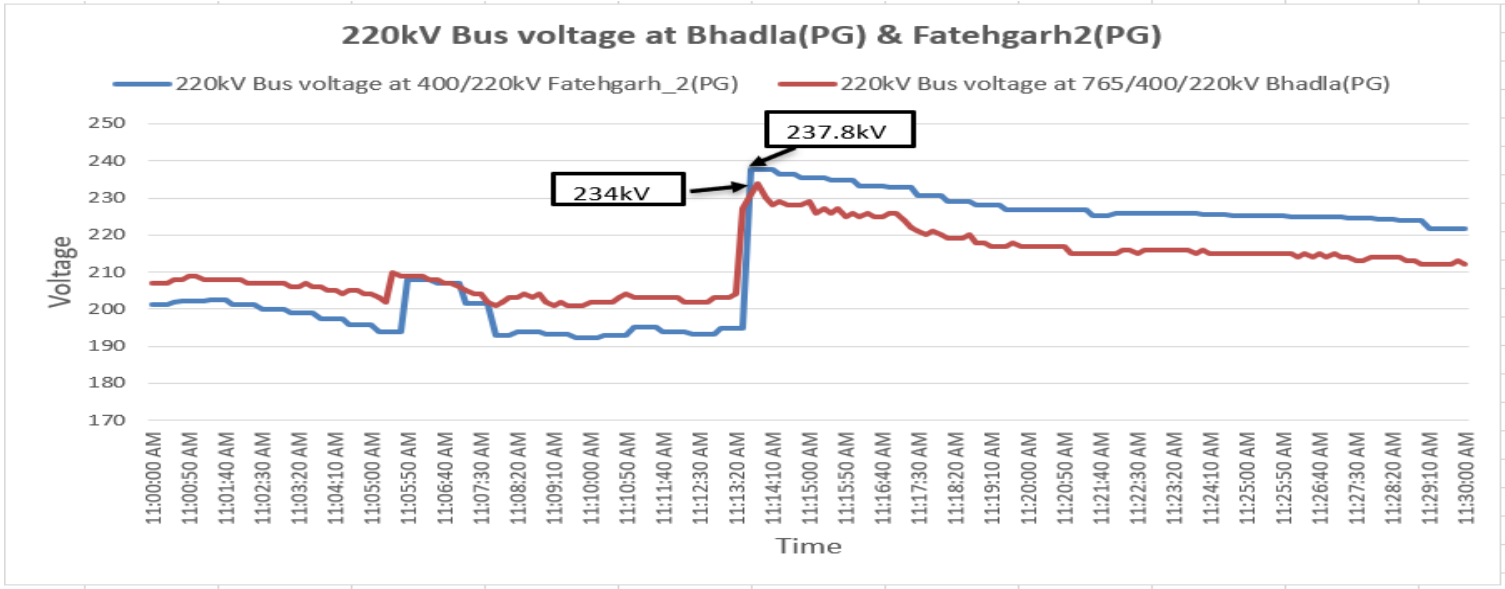
S.No	Date & Time	Event Discreption	Major plants affected	Solar/wind generation loss	Observations	Remark
3	At 11:13 Hrs on 26.08.2021	As reported, 765 KV Bhadla-Bikaner (PG) ckt-1 tripped due to over voltage at Bhadla during opening of line reactor of 765kV Bikaner-Bhadla2(PG) Ckt-1 at Bikaner(PG) at 11:13 hrs, DT received at Bikaner end. At the same time, solar generation loss of approx. 1700MW connected at 765/400/220kV Bhadla(PG) and 400kV Fatehgarh2(PG) occurred on over	Connected at 220kV Fatehgarh2(PG): EDEN solar RENEW Sunwave solar AHEJOL solar Connected at 765/400/220kV Bhadla(PG): MRPL Solar ACME solar Azure Power 34 Solar ESSEL solar	Approx. 1700MW	In some plants feeders at 33kV side tripped on over voltage stage 1 protection operation and in some plants solar blocks also tripped.	Voltage at 220kV bus was in permissible limit. Other solar plants connected to the same bus didn't trip during the event. So, it seems that tripping occurred due to sensitive over voltage protection settings of feeders and non compliance of HVRT.

26-Aug-21/11:13hrs, Solar generation loss connected at Fatehgarh2(PG) & Bhadla(PG)

PMU Plot of phase voltage magnitude at Bhadla2(PG)

11:13hrs/26-Aug-21



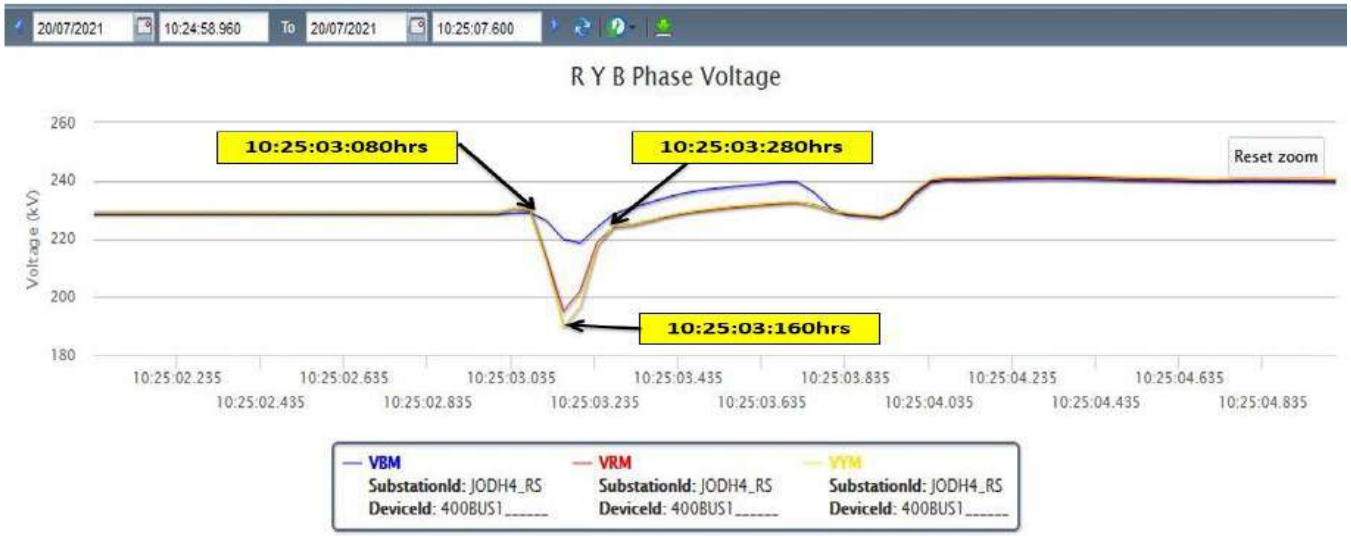


S.No	Date & Time	Event Discreption	Major plants affected	Solar/wind generation loss	Observations	Remark
4	At 10:23 Hrs on 20.07.2021	As reported at 10:23 Hrs, 220 KV Akal-Dangri Ckt-1 & Ckt-2 tripped from Akal end on R-Y phase to phase fault. At the same time, wind generation loss of approx. 1550MW is observed from the 220kV feeders connected at 220kV Akal(Raj) due to tripping from remote end.	220kV Wind generation feeders connected at Akal: Mada, Rajgarh, Amarsagar Jajia, Bhu 1&2, Mulana & Bhensda.	Approx. 1550MW	No tripping of feeders other than Dangri Ckt-1&2 observed from 220kV Akal(Raj) end.	It seems that wind generation loss occurred due to LVRT no compliance of the wind generators connected to 400/220 Akal S/s.

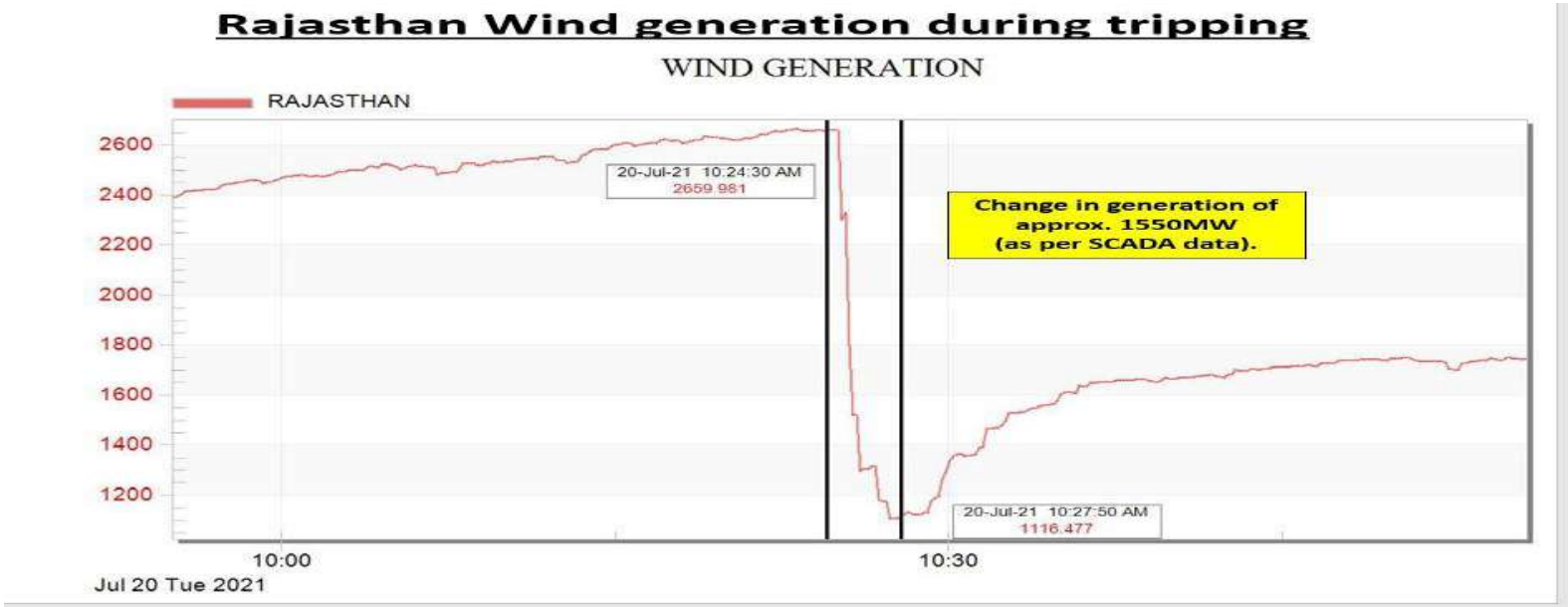
20-Jul-21/10:23hrs, Wind generation loss connected at Akal(Raj)

PMU Plot of phase voltage magnitude at Jodhpur(RS)

10:25hrs/20-July-21



Rajasthan Wind generation during tripping

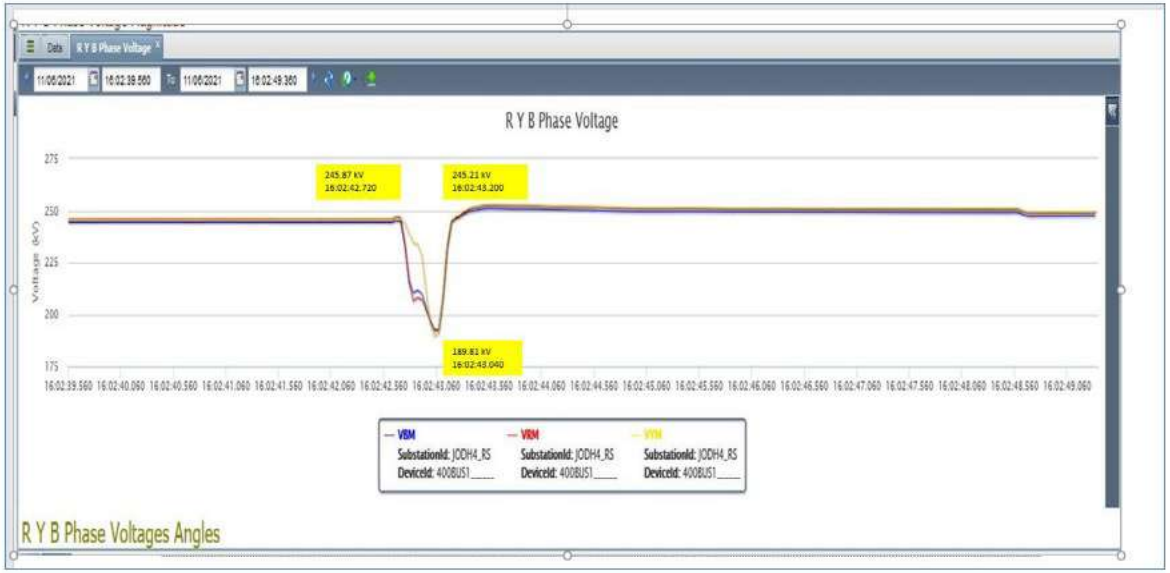


S. No	Date & Time	Event Discreption	Major plants affected	Solar/wind generation loss	Observations	Remark
5	At 16:02 Hrs on 11.06.2021	As reported, 220kV Akal-Bhu ckt-1 & Ckt-2 both tripped due to snapping of B-ph jumper. 400MW wind generation loss occurred due to tripping of Akal-Bhu D/C and 800MW wind generation loss occur due to may be non compliance of LVRT. At the same time, 400kV Barmer-Jaisalmer-2 Ckt-1 & Ckt-2 tripped on overvoltage may be due to loss of wind generation. 300MW solar generation also tripped connected at 400/220kV Jaisalmer-2 during the voltage dip.	220kV Wind generation feeders connected at Akal: Mada, Rajgarh, Amarsagar, Jajia, Bhu 1&2, Mulana & Bhensda.	Approx. 1200MW	No tripping of feeders other than Bhu Ckt-1&2 observed from 220kV Akal(Raj) end.	It seems that wind generation loss occurred due to LVRT no compliance of the wind generators connected to 400/220 Akal S/s.

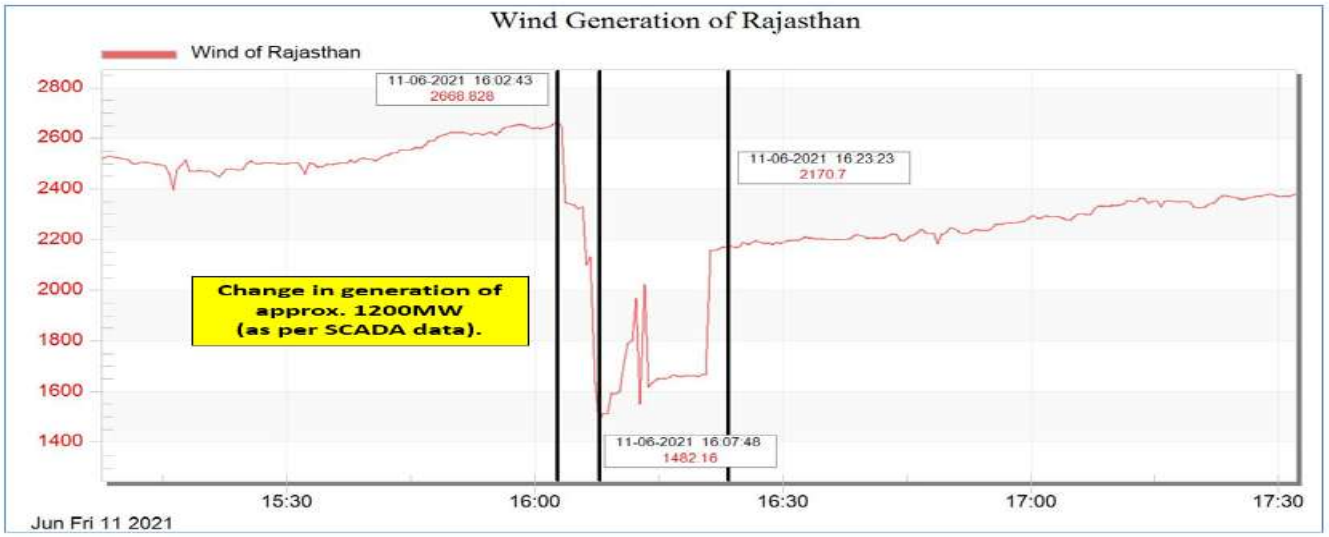
11-June-21/16:02hrs, Wind generation loss connected at Akal(Raj)

PMU Plot of phase voltage magnitude at Jodhpur(RS)

16:02hrs/11-June-21



Rajasthan Wind generation during tripping

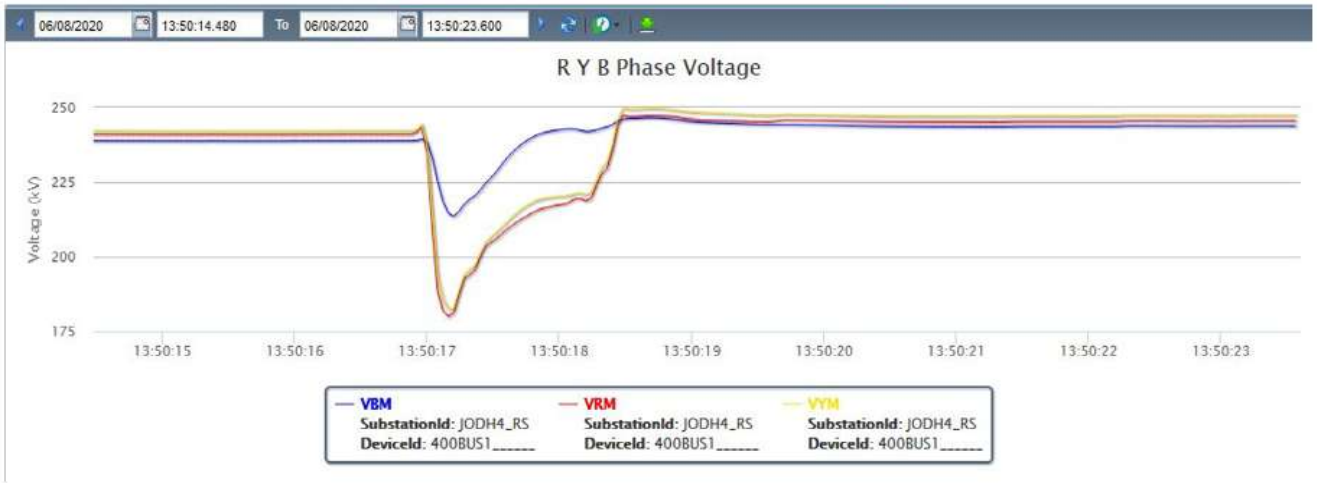


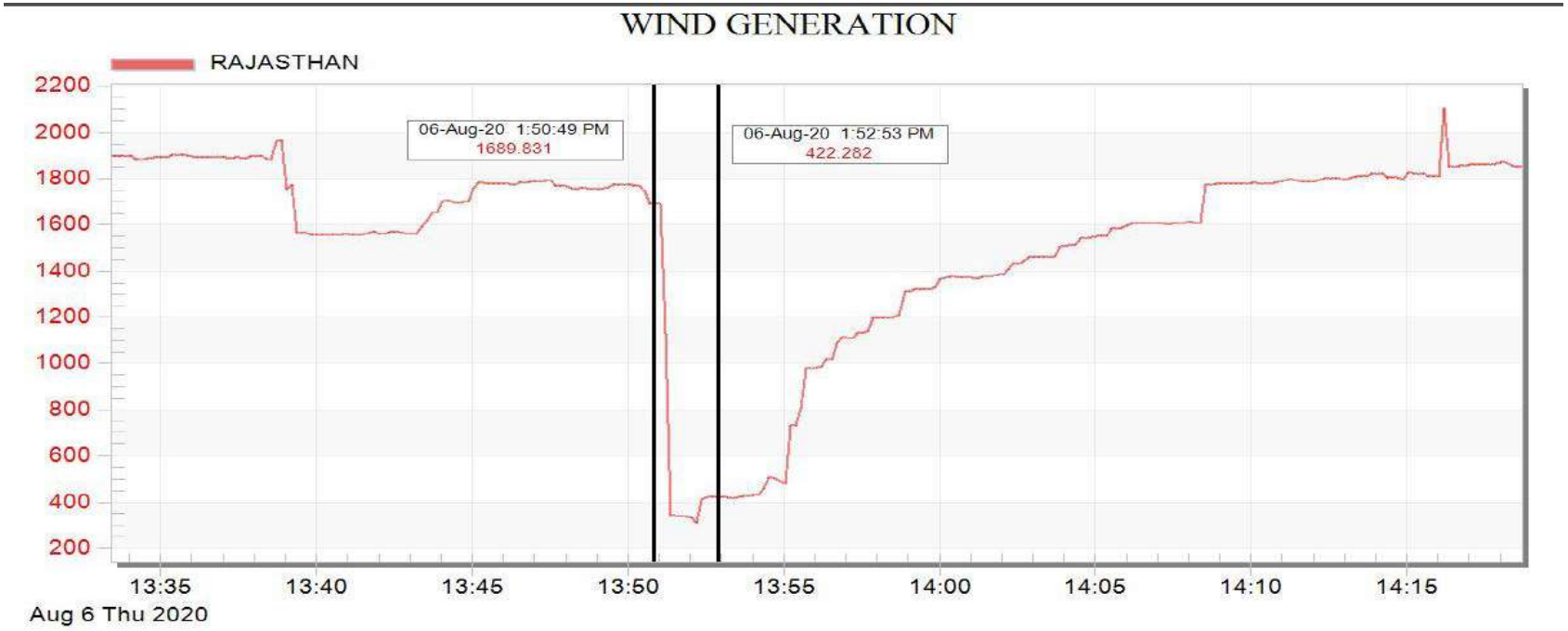
S. No	Date & Time	Event Discreption	Major plants affected	Solar/wind generation loss	Observations	Remark
6	At 13:50 Hrs on 06.08.2020	As reported, 400 KV Akal-Jodhpur (RS) Ckt-1 tripped due to DT received at Jodhpur end. At the same time, 400/220kV 315 MVA ICT 1 & 315 MVA ICT 2 at Barmer(RS) also tripped. As per PMU, R-Y fault with delayed clearance is observed in the system. In antecedent conditions, 400 KV Akal-Jodhpur (RS) Ckt-1 carrying 229MW. Wind generation loss of around 1250MW is observed as per SCADA data.	220kV Wind generation feeders connected at Akal: Akal 1&2, Dangri 1&2, Mada, Amarsagar, Rajgarh, Jajia, Bhu 1&2, Mulana & Bhensda.	Approx. 1250MW	No tripping of feeders observed from 220kV Akal(Raj) end.	It seems that wind generation loss occurred due to LVRT no compliance of the wind generators connected to 400/220 Akal S/s.

06-Aug-20/13:50hrs, Wind generation loss connected at Akal(Raj)

PMU Plot of phase voltage magnitude at Jodhpur(RS)

13:50hrs/06-Aug-20



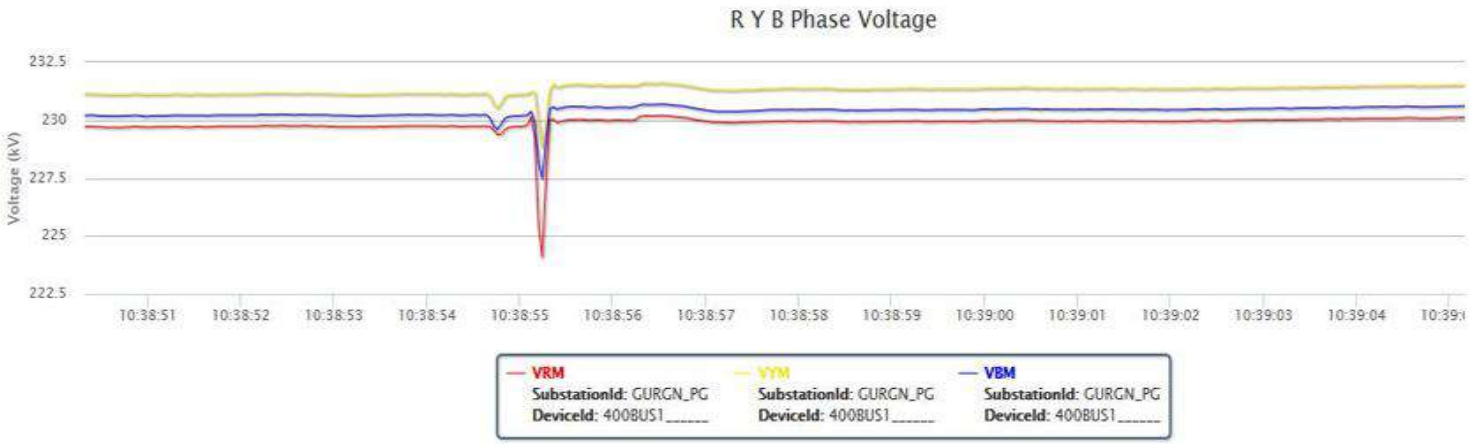


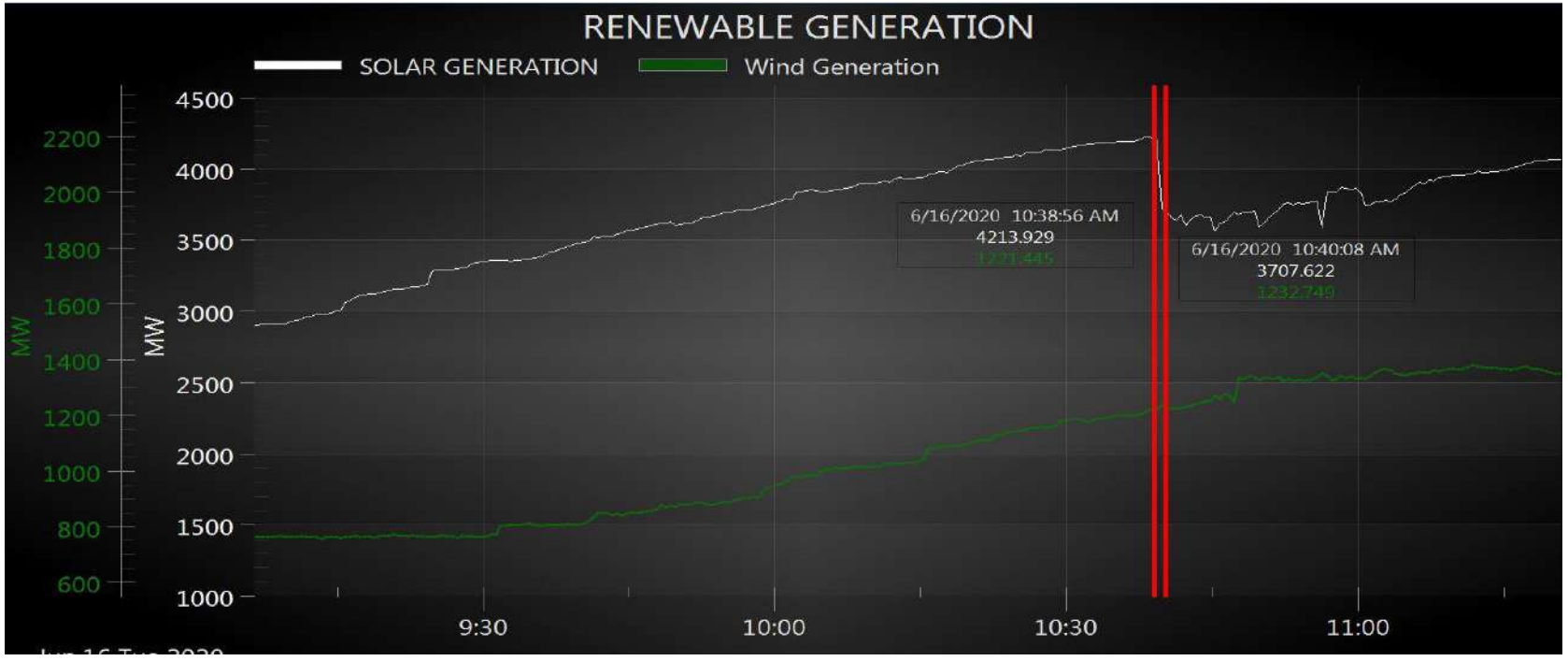
S. No	Date & Time	Event Discerption	Major plants affected	Solar/wind generation loss	Observations	Remark
7	At 10:39 Hrs on 16.06.2020	As reported, 765kV Bhadla-Bikaner ckt 2 auto-reclose successful at 10:39 hrs on R-N fault. Further 220kV Saurya Urja - Bhadla(PG) ckt 1&2 tripped at 10:39 hrs from Saurya Urja end only due to this transient fault. RE-generation loss is 450 MW is reported by Saurya-Urja(Bhadla).	Saurya Urja Solar connected at Bhadla(PG)	Approx. 450MW	There was no fault in 220kV Saurya urja - Bhadla(PG) ckt 1&2.	Similar incident of solar generation loss at Saurya Urja occurred on 17th May 2020 and 13th & 14th June 2020. It seems that loss of solar generation occurred due to may be LVRT non compliance.

16-June-20/10:39hrs, Solar generation loss connected at Bhadla(PG)

PMU Plot of phase voltage

10:39hrs/16-Jun-19



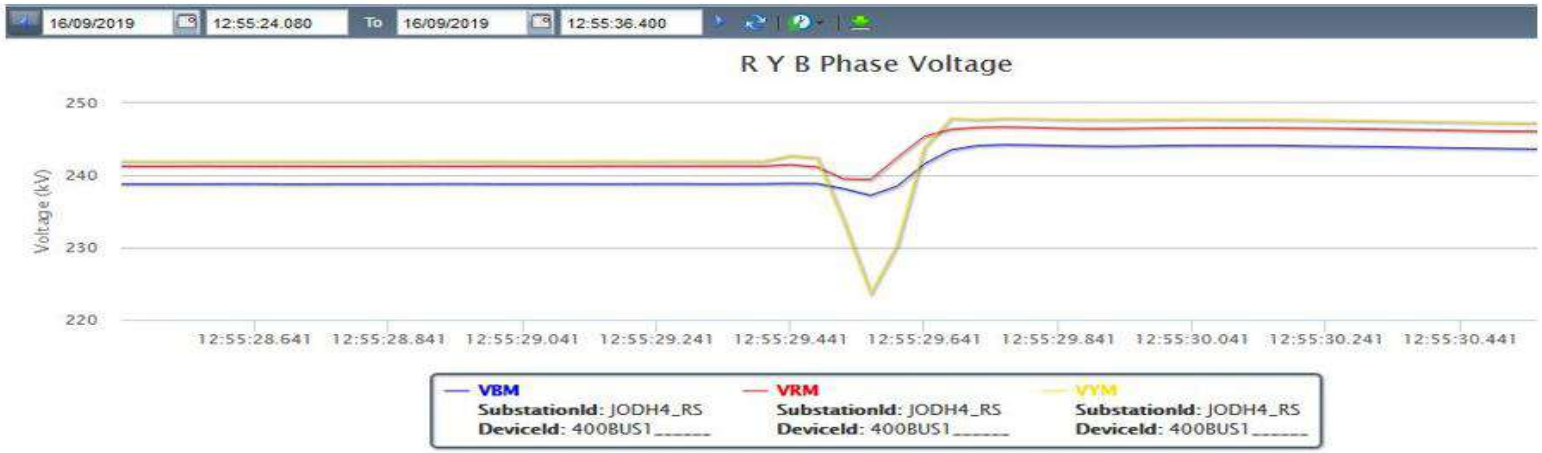


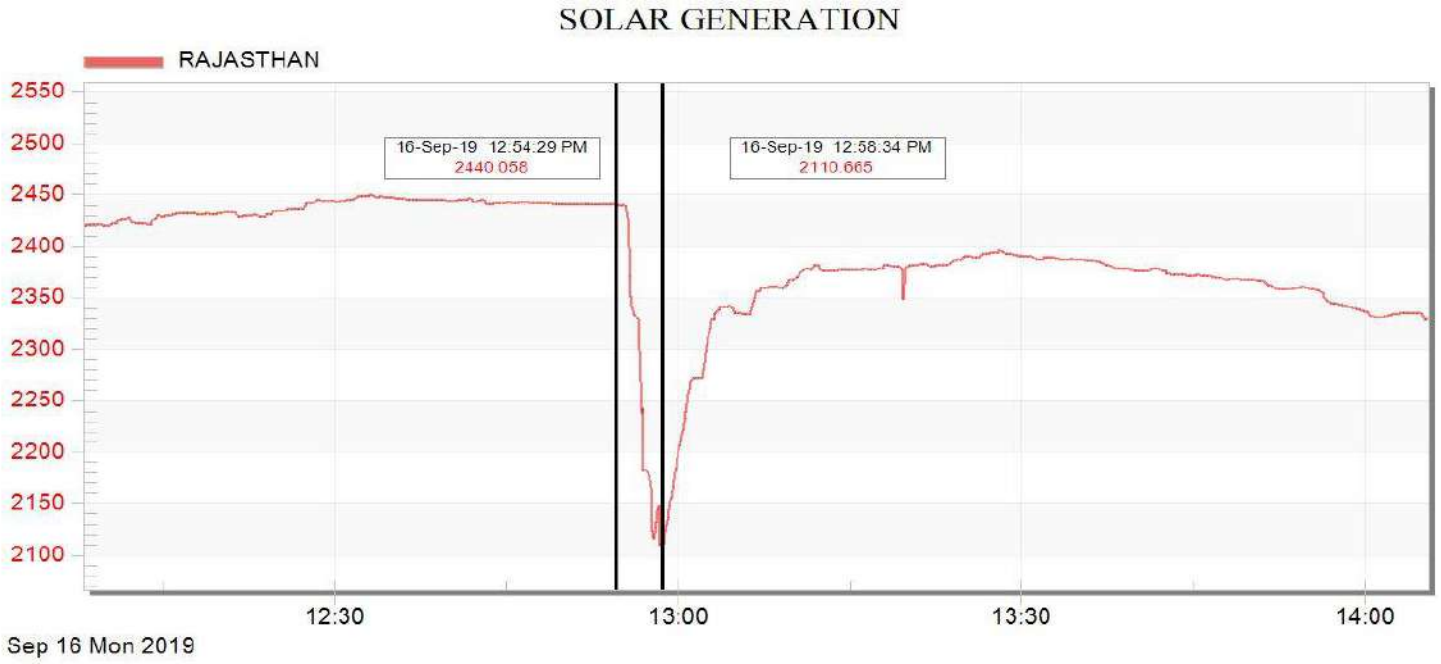
S. No	Date & Time	Event Discreption	Major plants affected	Solar/wind generation loss	Observations	Remark
8	At 12:56 Hrs on 16.09.2019	As reported, due to voltage dip in Y-phase during Y-N phase to earth fault in POWERGRID substation, solar generation loss from 220kV feeders of TPREL, Mahoba Solar, Saurya Urja and Azure Power occurred.	Mahoba Solar TRPEL Solar Saurya Urja Solar Azure Power Solar	Approx. 1050MW	Fault was not on the feeders of Solar generation.	It seems that loss of solar generation occurred due to may be LVRT non compliance.

16-Sept-19/12:56hrs, Solar generation loss connected at Bhadla(PG)

PMU Plot of phase voltage magnitude at Jodhpur(RS)

12:56hrs/16-Sept-19



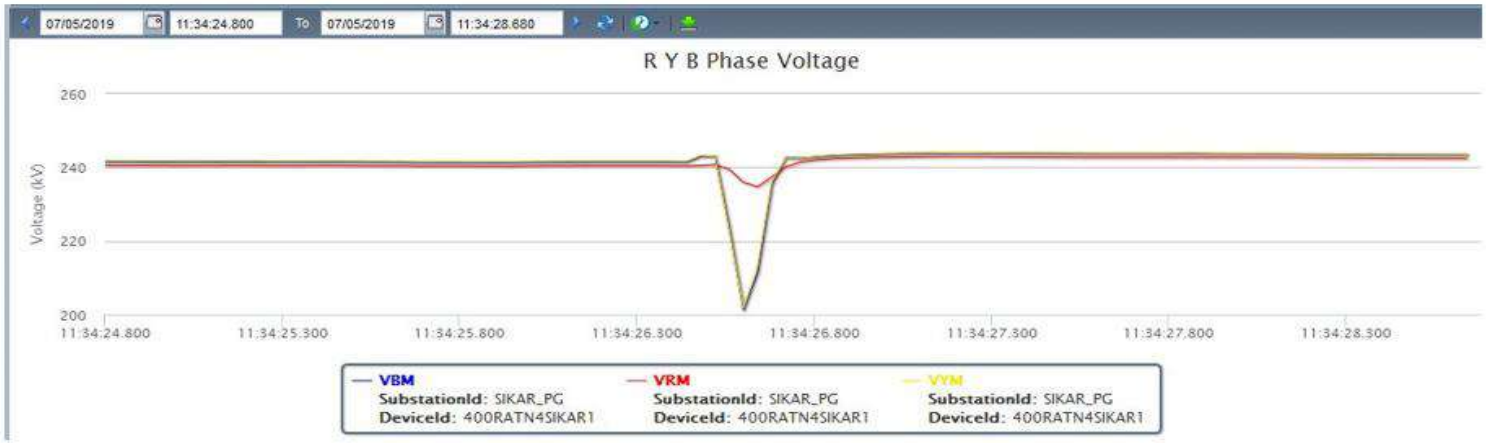


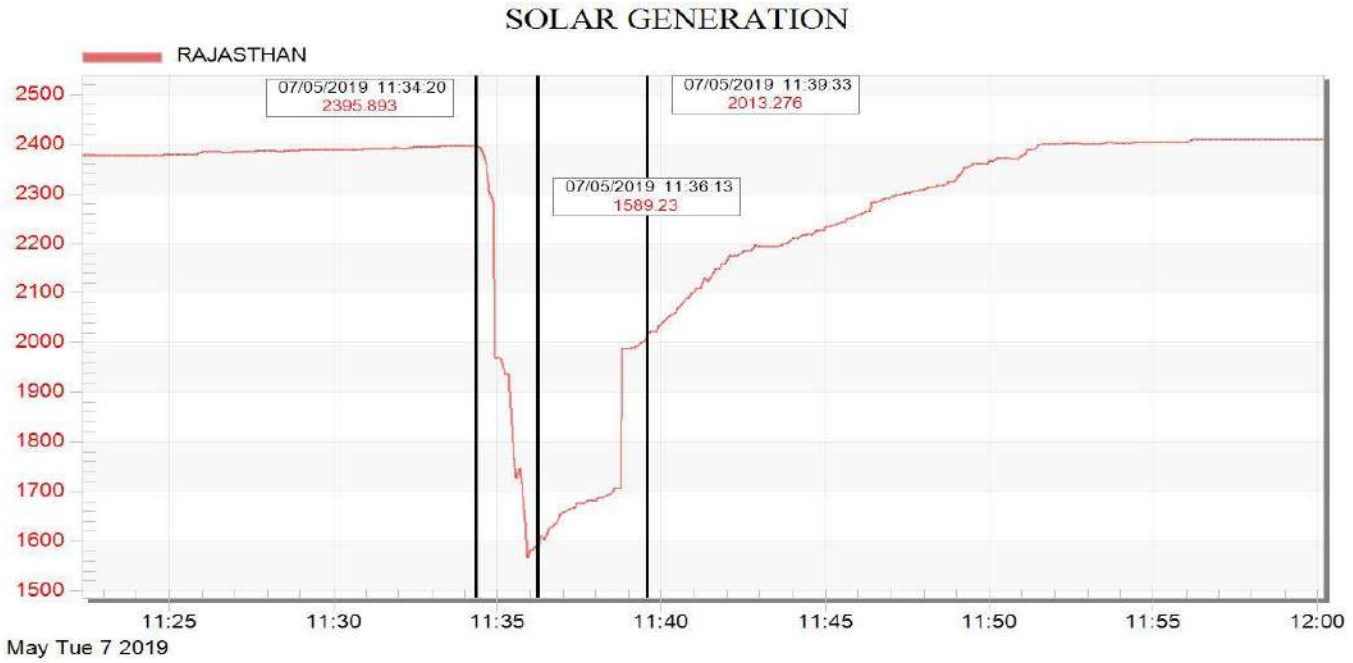
S. No	Date & Time	Event Discreption	Major plants affected	Solar/wind generation loss	Observations	Remark
9	At 11:34 Hrs on 07.05.2019	As reported, 400kV Bikaner-Bhadla-II tripped on Y-B phase to phase fault (at the same time, 400kv Bikaner-Sikar ckt-I & II have also tripped) but other lines from 40O-kV Bhadla (Rai) and Bikaner remained in service. From the phasor Measurement unit (PMU) data, it has been observed that fault clearance was less than 100ms. Solar generation loss of around 1000 MW is observed during the event.	Solar generation connected at Bhadla(PG): SB Energy Solar Azure Power	Approx. 1000MW	The generation at these locations had picked up only after 2-3 minutes even though faults clearance and thus voltage revival was within 100ms.	This large outage of solar generation could be interpreted as failure of Fault Ride Through or LVRT capability of solar plants at these locations.

07-May-19/11:34hrs, Solar generation loss connected at Bhadla(PG)

PMU Plot of phase voltage

11:34hrs/07-May-19



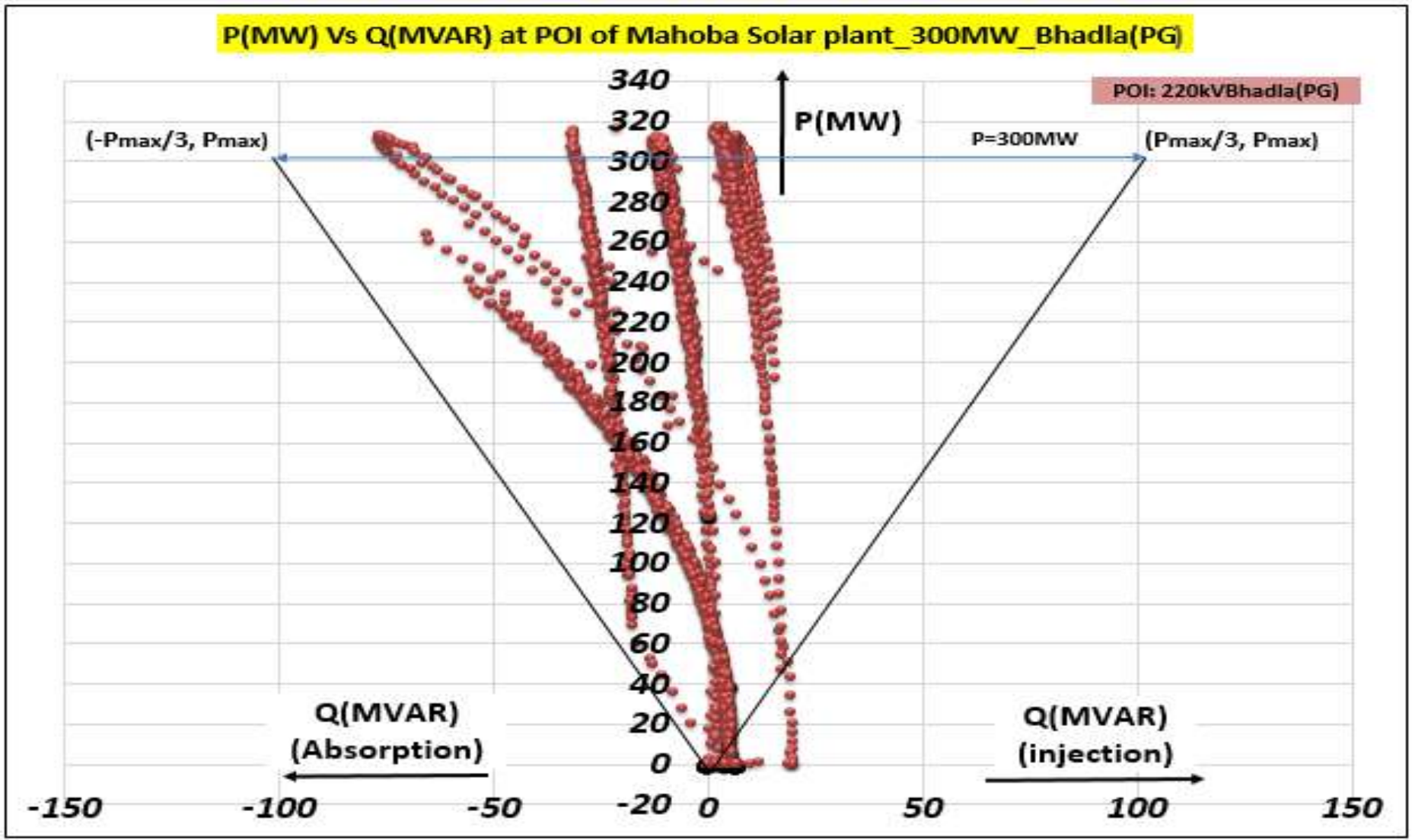


Plants not operated in voltage control mode

- Adani Bhadla (Bhadla-PG)
- SBSR (Bikaner-PG)
- Azure 43 (Bikaner-PG)
- ACME (Bhadla-PG)

21 Oct -5Nov 2021 Plots

- Mahoba Solar



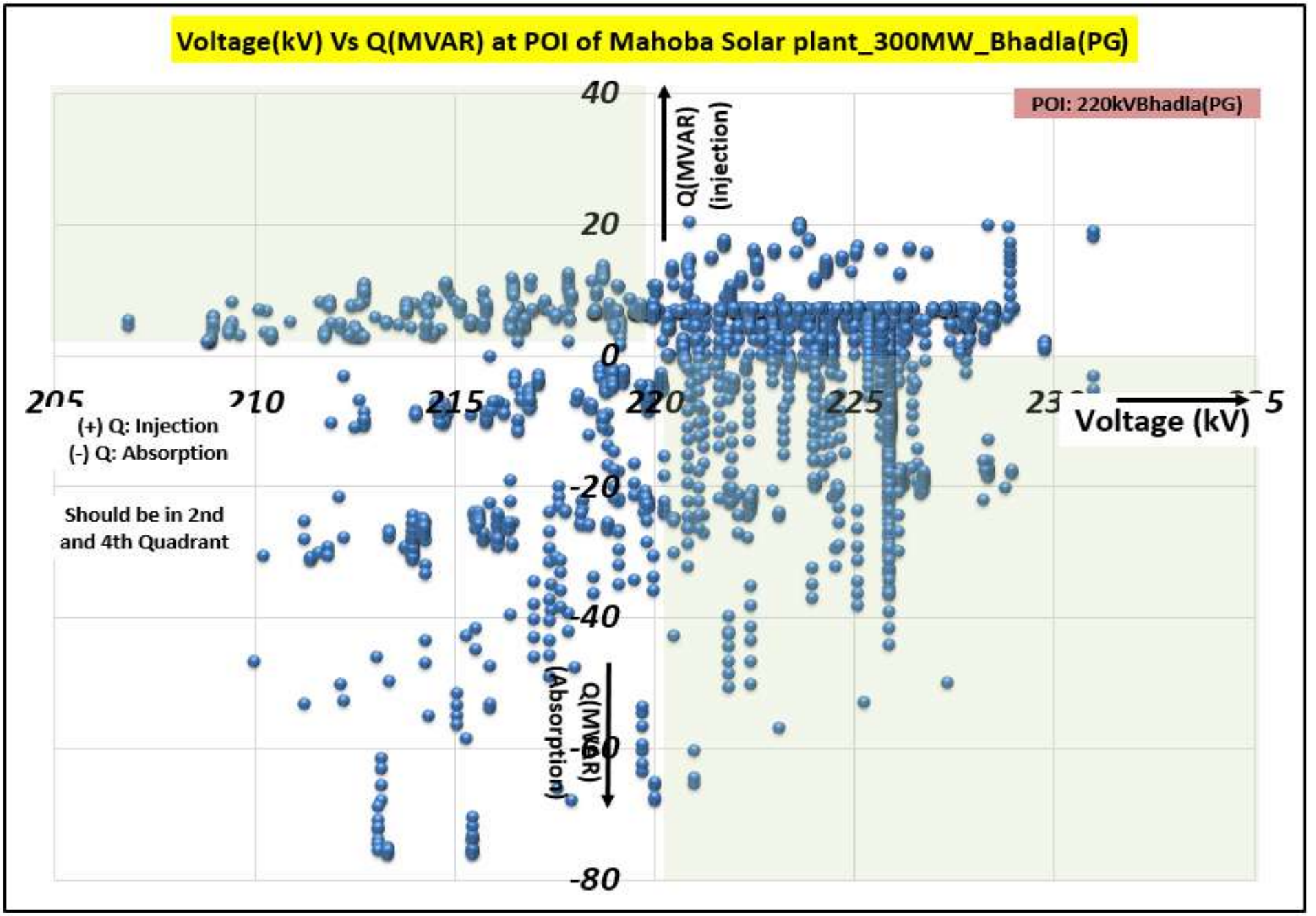

Voltage(kV) Vs Q(MVAR) at POI of Mahoba Solar plant_300MW_Bhadla(PG)
POI: 220kVBhadla(PG)
40
20
0
-20
-40
-80
Q(MVAR) (injection)
Q(MVAR) (Absorption)
205
210
215
220
225
Voltage (kV)
(+) Q: Injection
(-) Q: Absorption
Should be in 2nd and 4th Quadrant


Chart Title
350
300
250
200
150
100
50
0
-50
-100
1
77
153
229
305
381
457
533
609
685
761
837
913
989
1065
1141
1217
1293
1369
1445
1521
1597
1673
1749
1825
1901
1977
2053
2129
2205
2281
2357
2433
2509
2585
2661
2737
2813
2889
2965
3041
3117
3193
3269
3345
3421
3497
3573
3649
3725
3801
3877
3953
4029
4105
4181
4257
Series1
Series2

P and Q plots

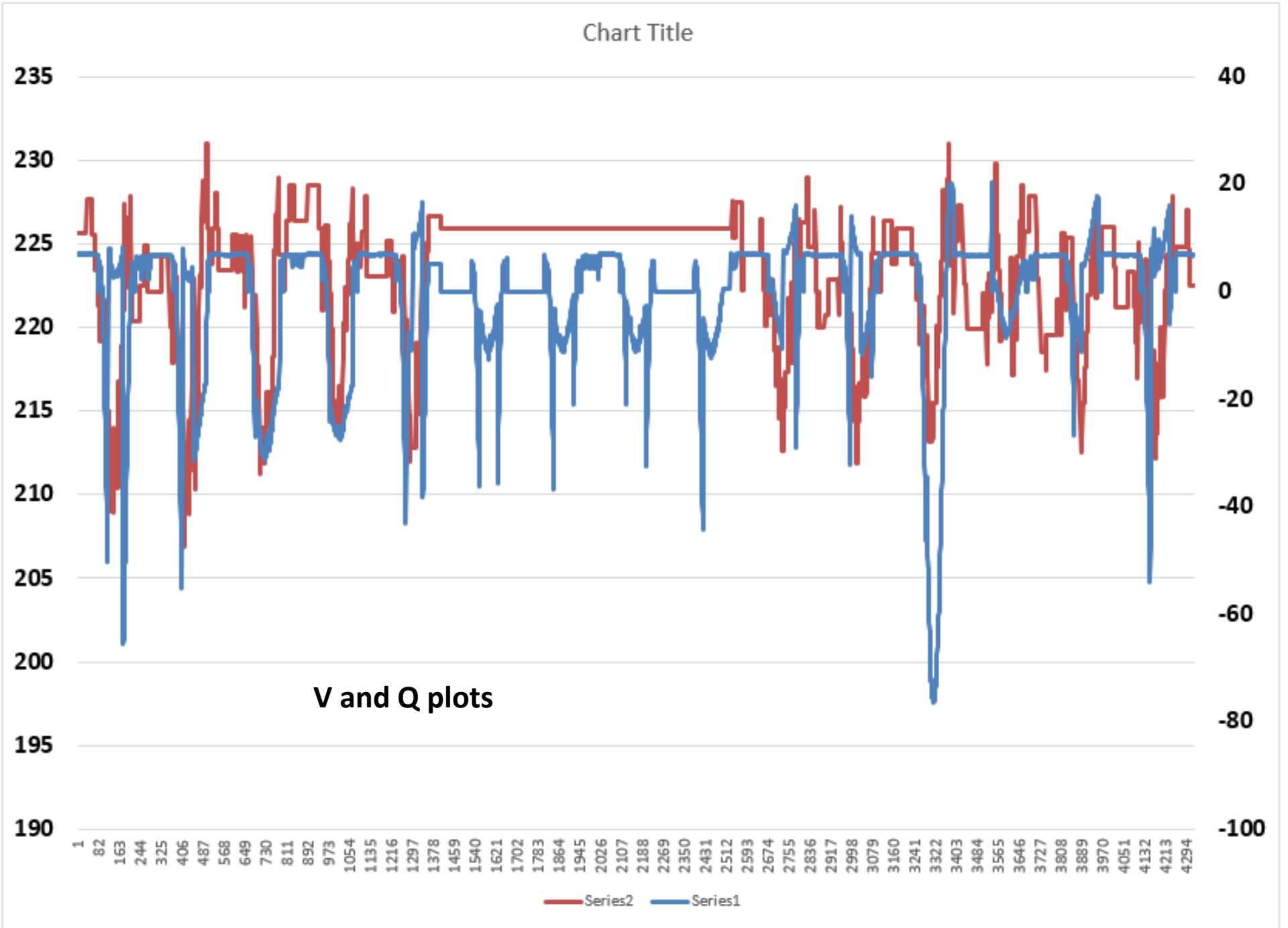
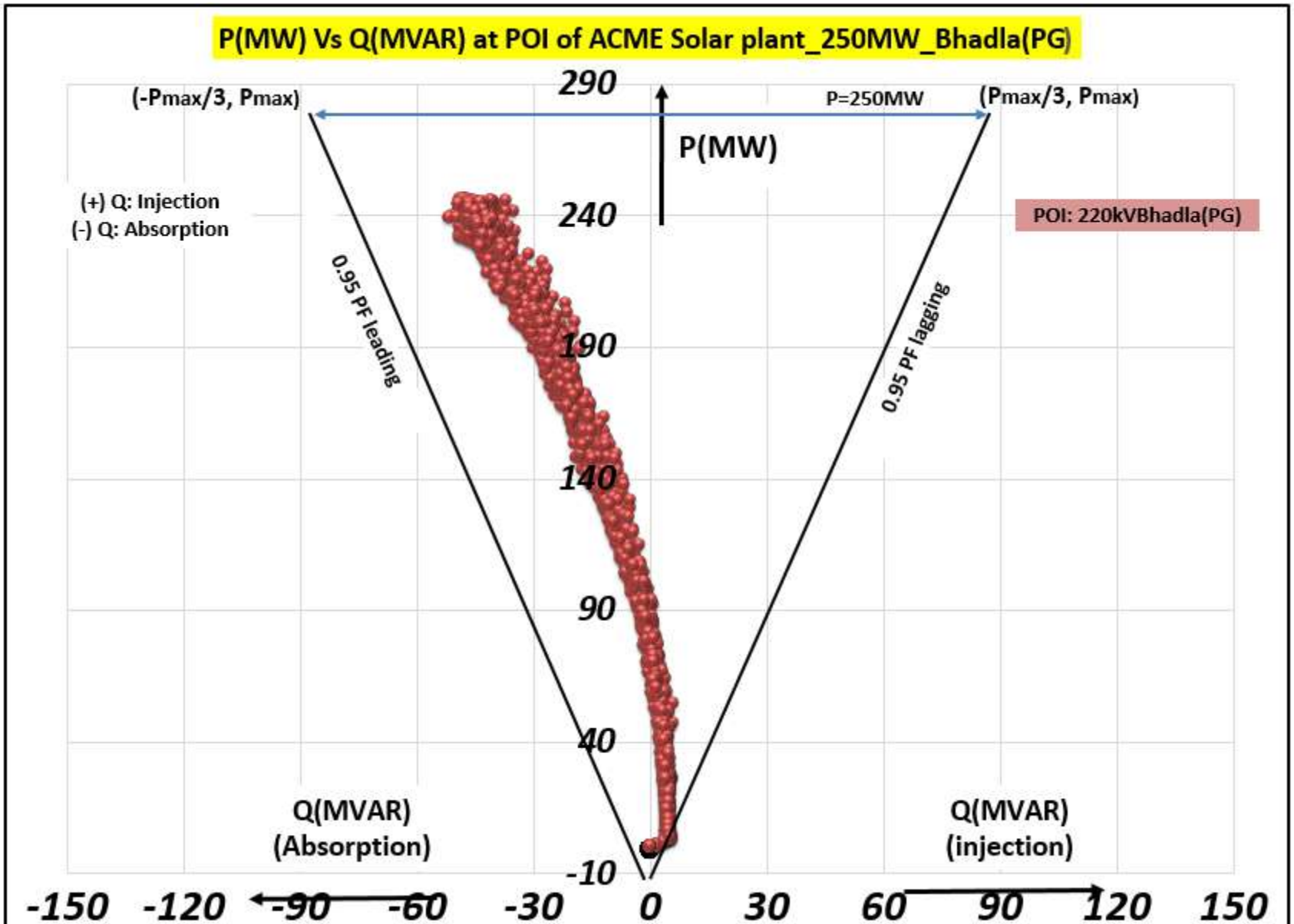
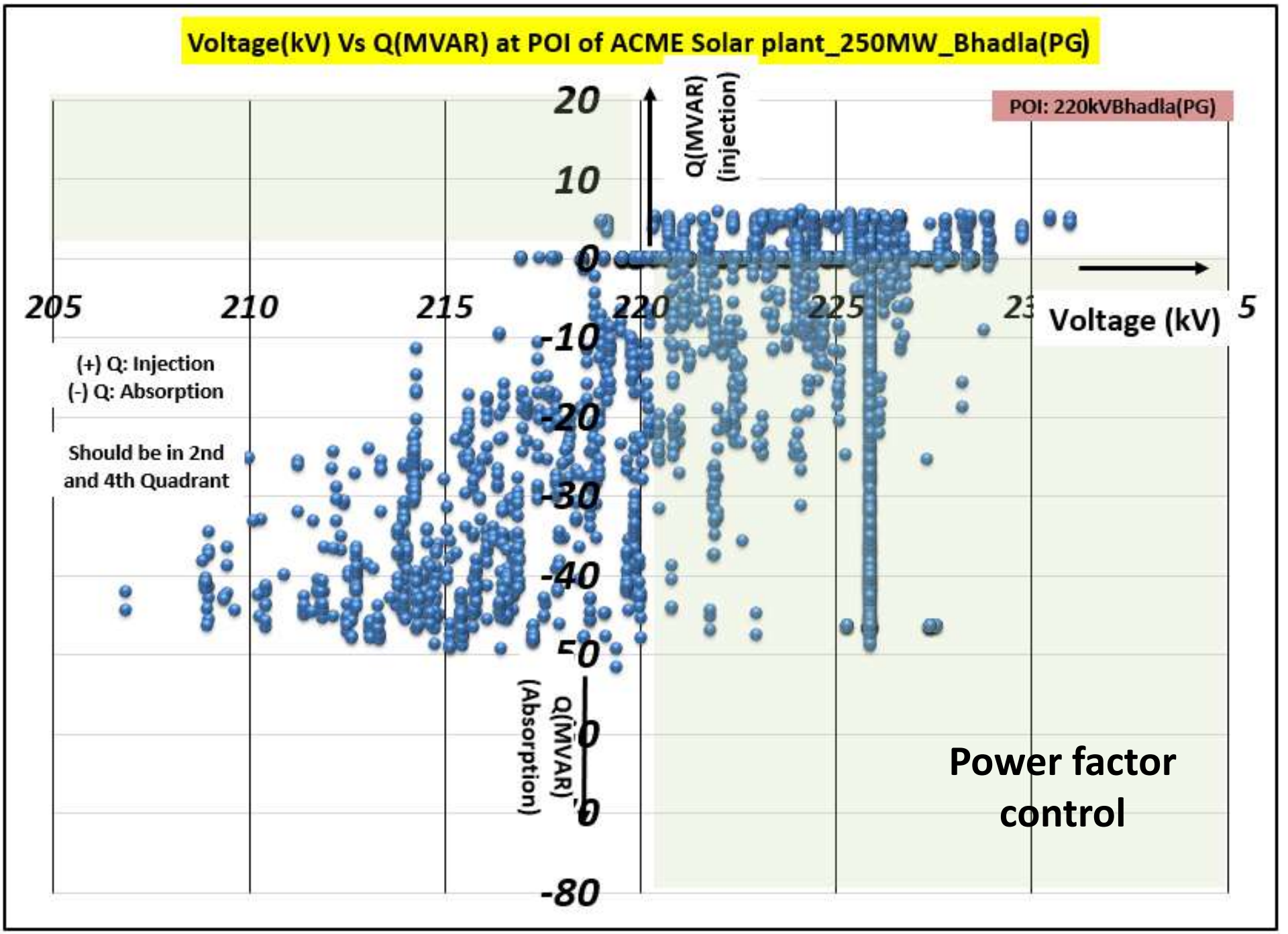


Chart Title
235
230
225
220
215
210
205
200
195
190
40
20
0
-20
-40
-60
-80
-100
1
82
163
244
325
406
487
568
649
730
811
892
973
1054
1135
1216
1297
1378
1459
1540
1621
1702
1783
1864
1945
2026
2107
2188
2269
2350
2431
2512
2593
2674
2755
2836
2917
2998
3079
3160
3241
3322
3403
3484
3565
3646
3727
3808
3889
3970
4051
4132
4213
4294
V and Q plots
Series2
Series1

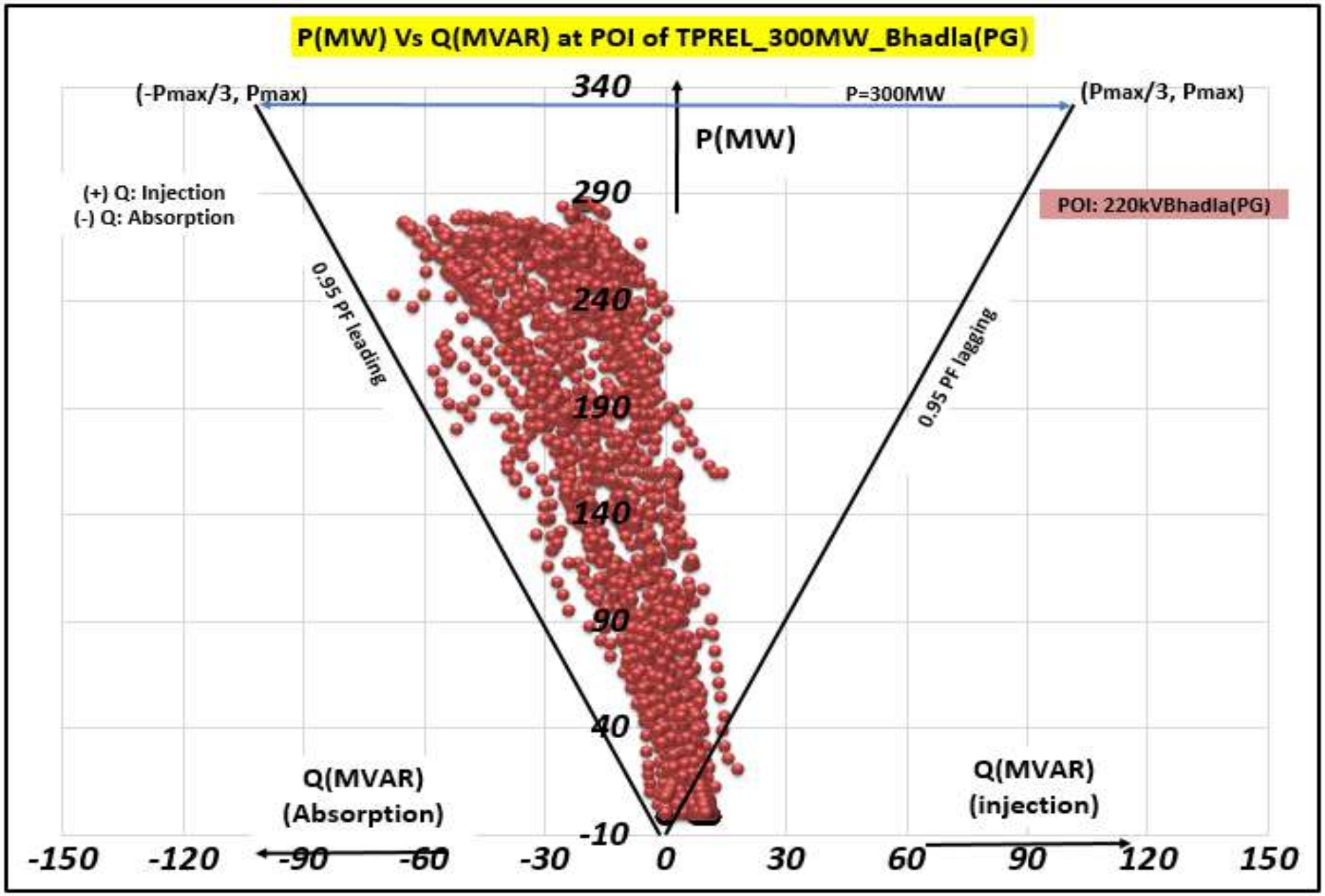
Acme Bhadla

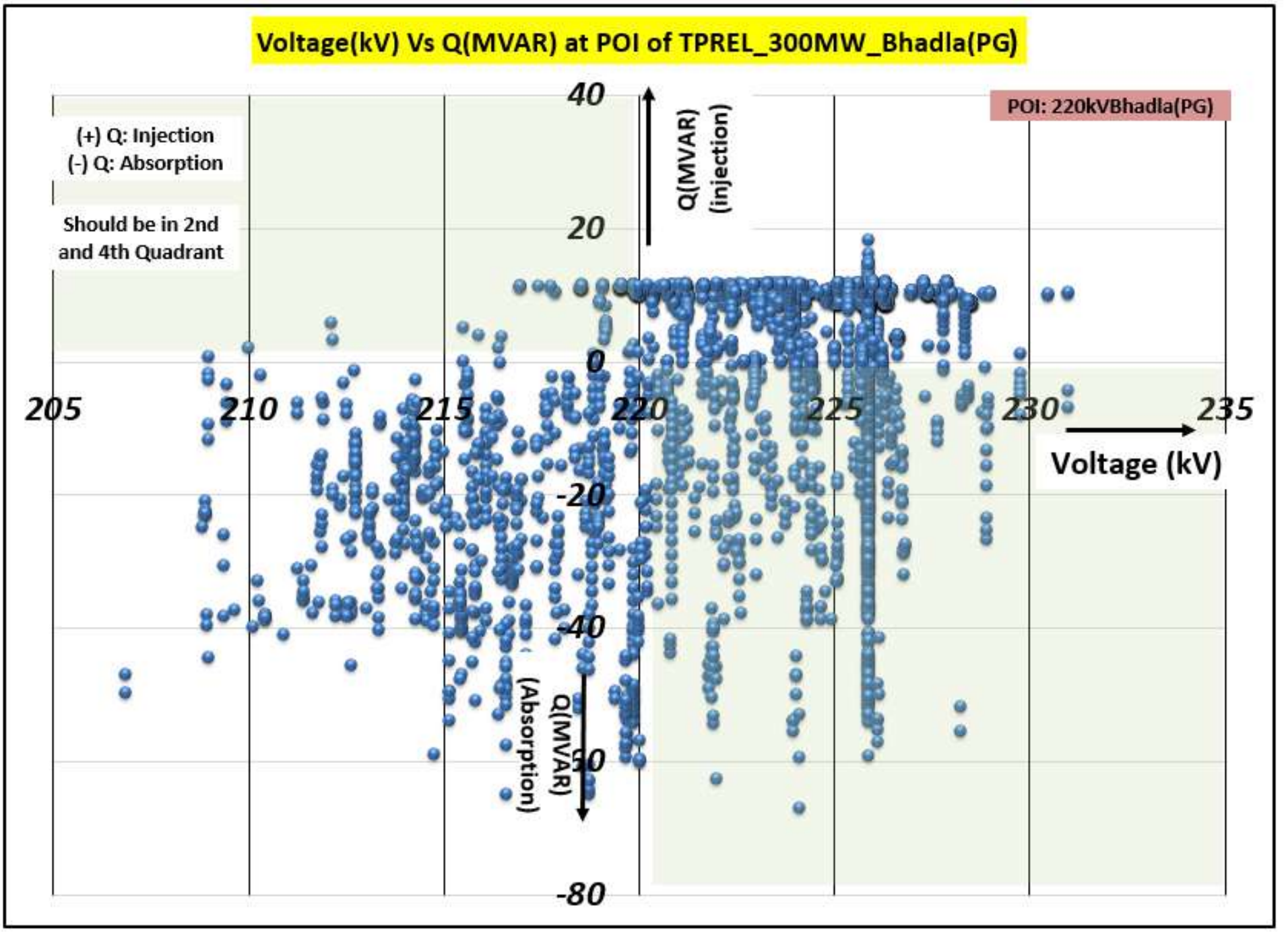
Power factor control

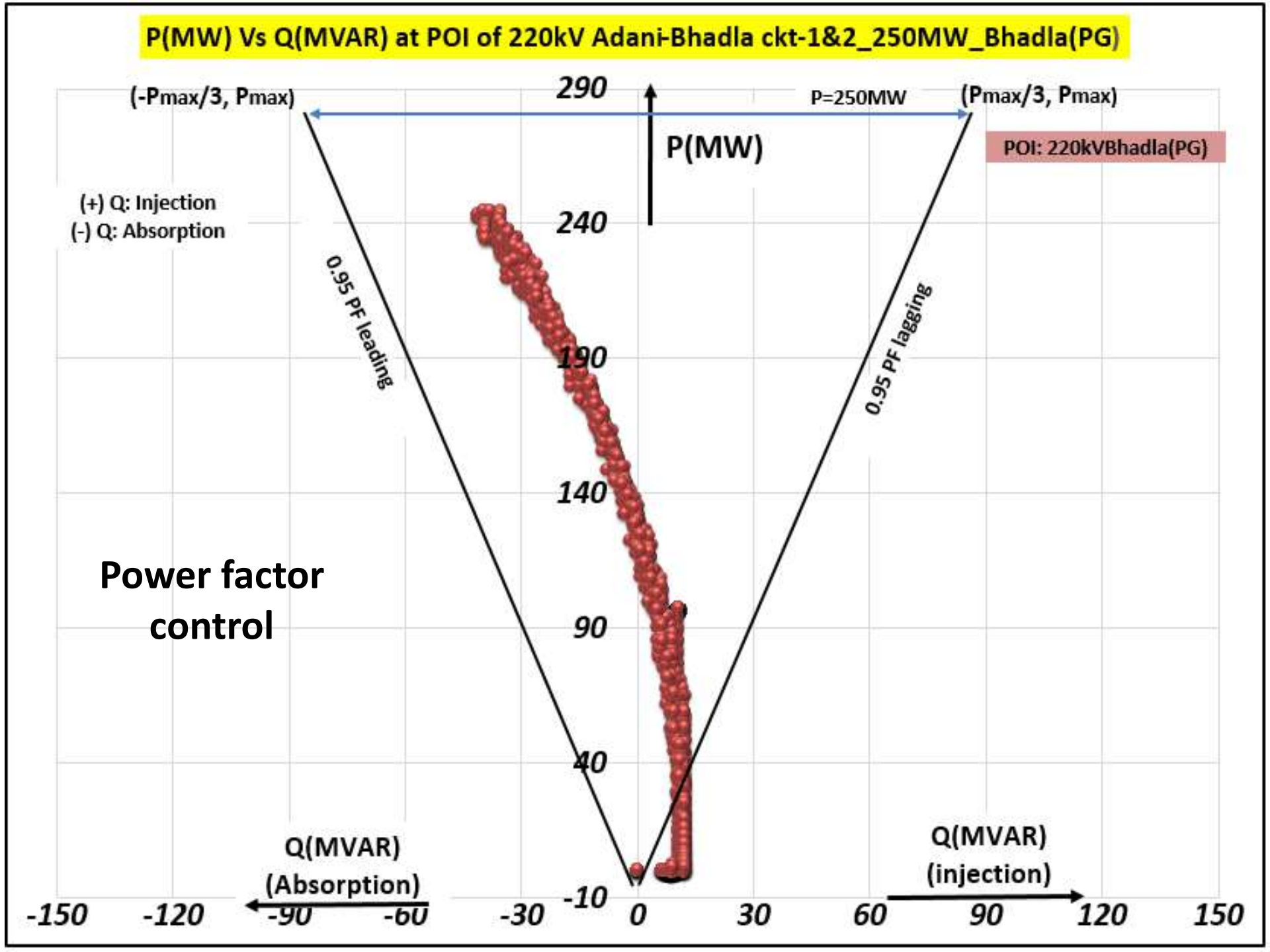


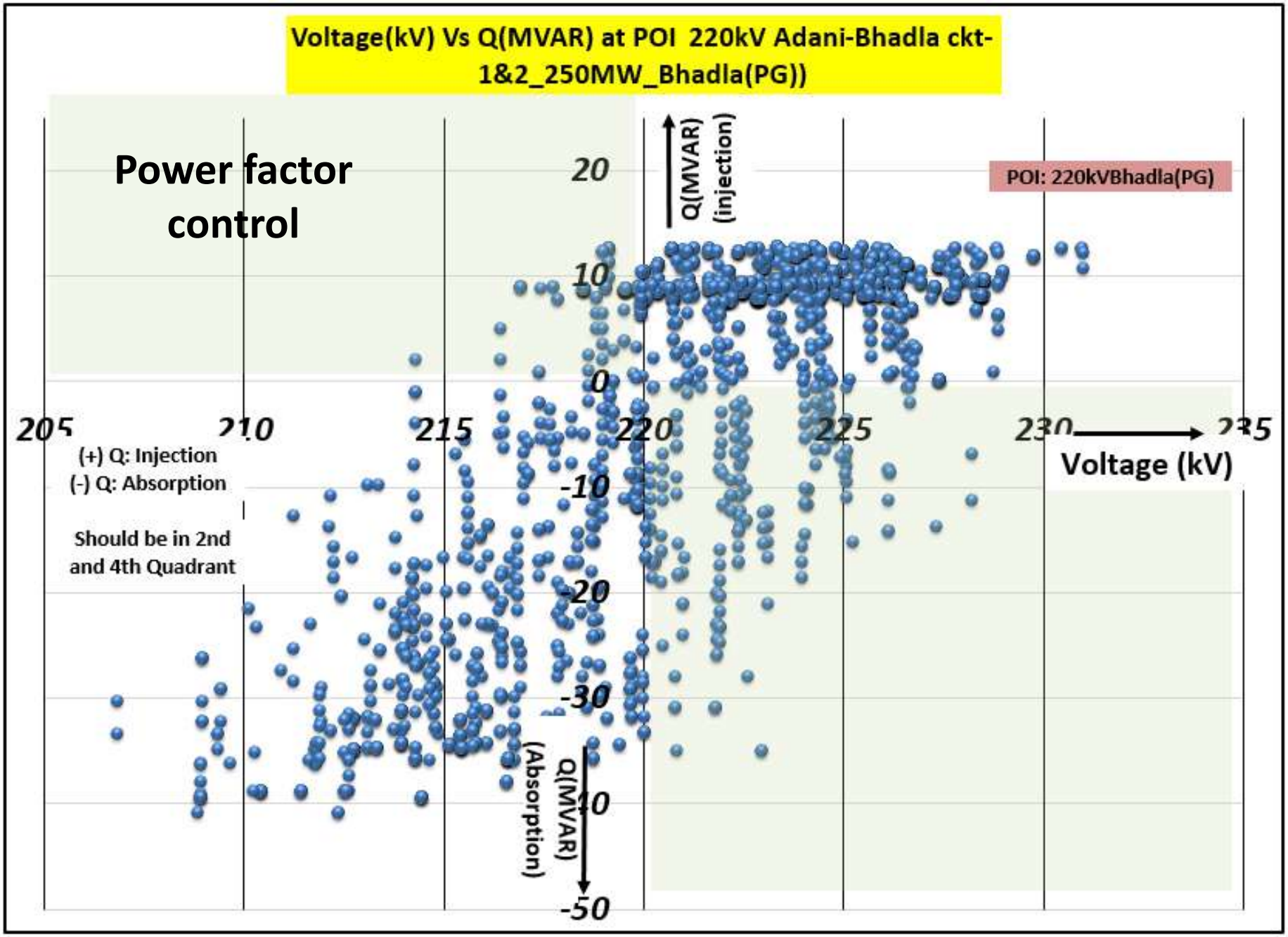

Voltage(kV) Vs Q(MVAR) at POI of ACME Solar plant_250MW_Bhadla(PG)
POI: 220kVBhadla(PG)
Q(MVAR) (injection)
Q(MVAR) (Absorption)
Voltage (kV)
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
205
210
215
220
225
(+) Q: Injection
(-) Q: Absorption
Should be in 2nd and 4th Quadrant
Power factor control

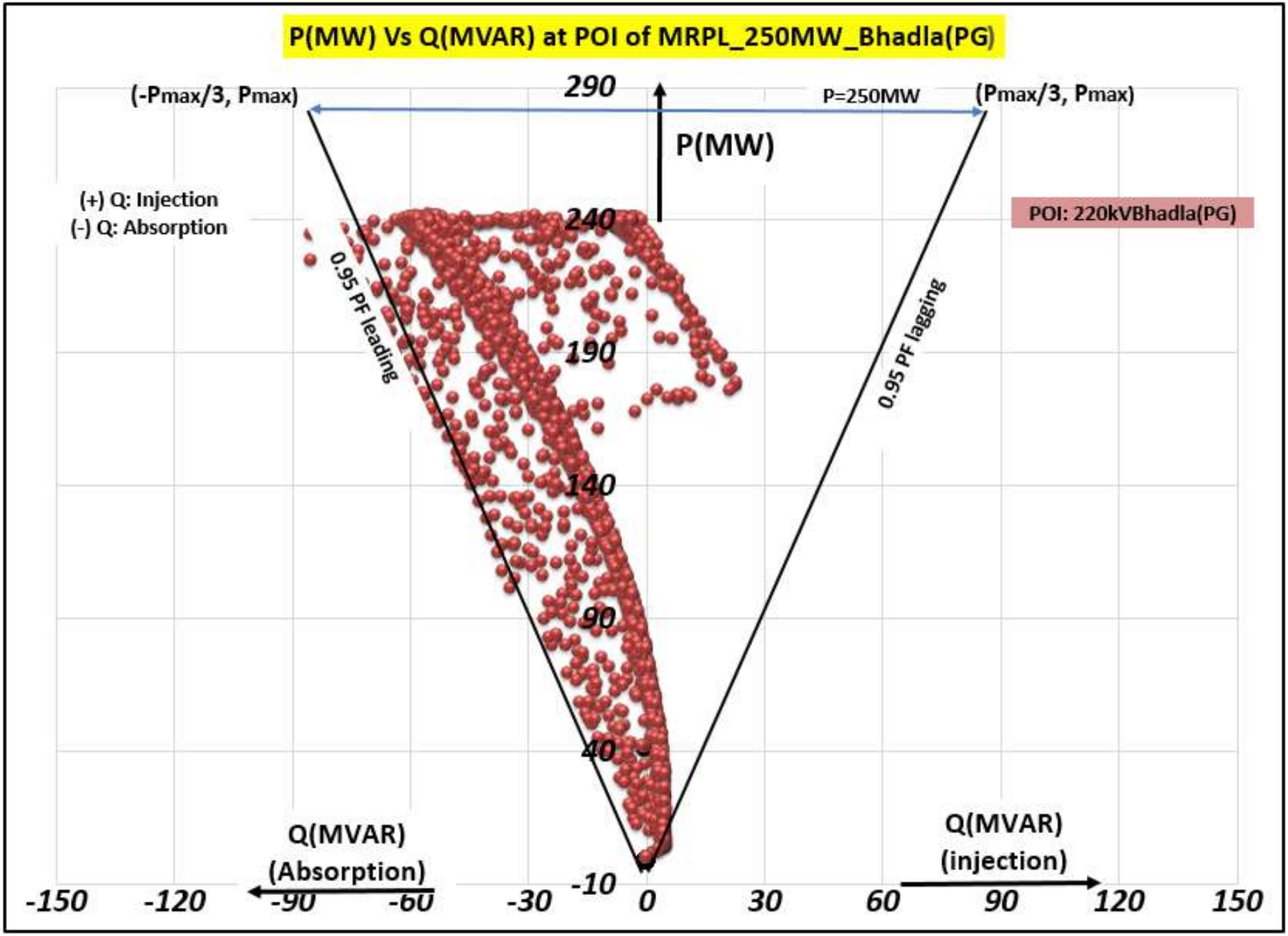
TPREL Bhadla

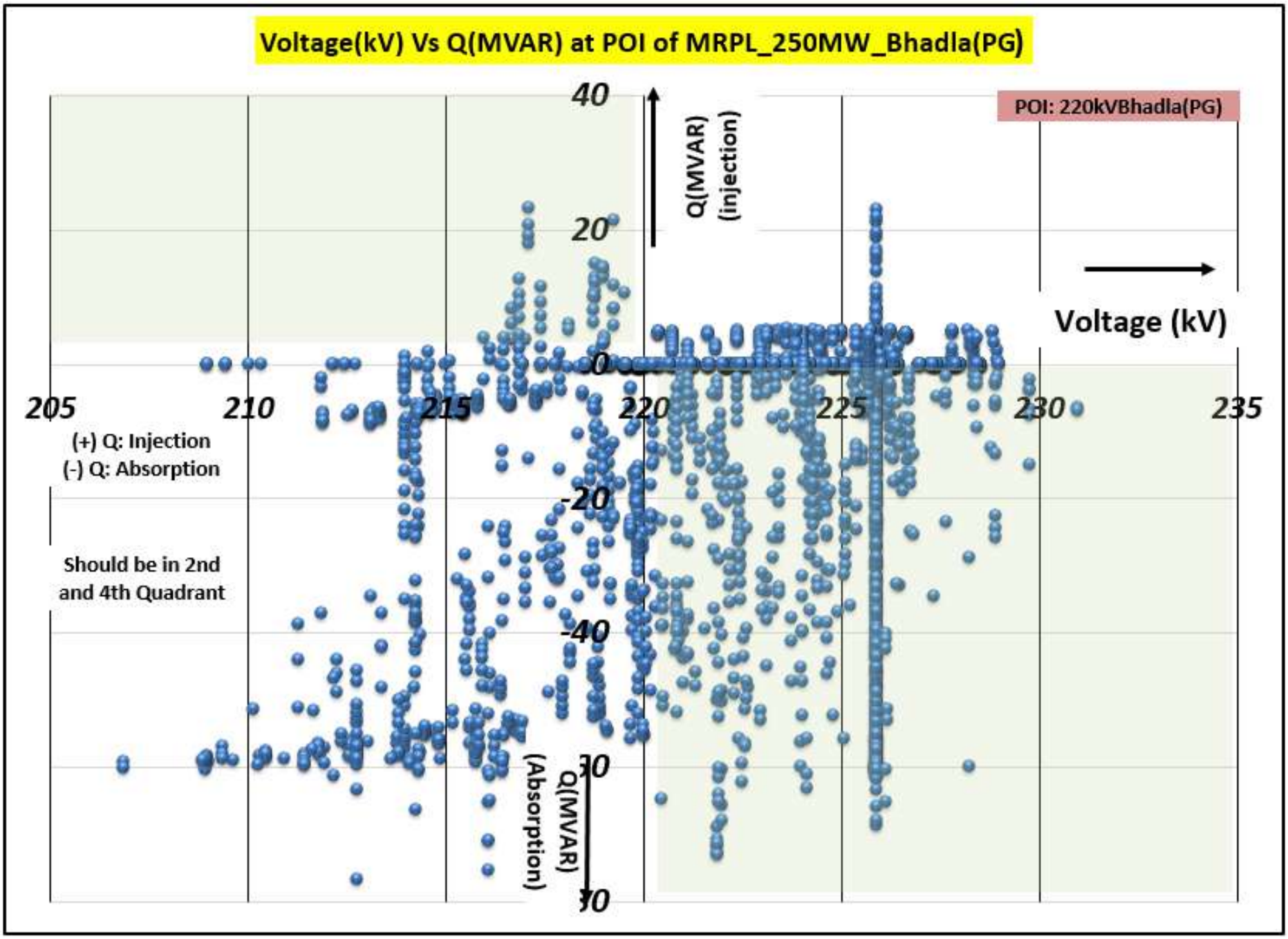


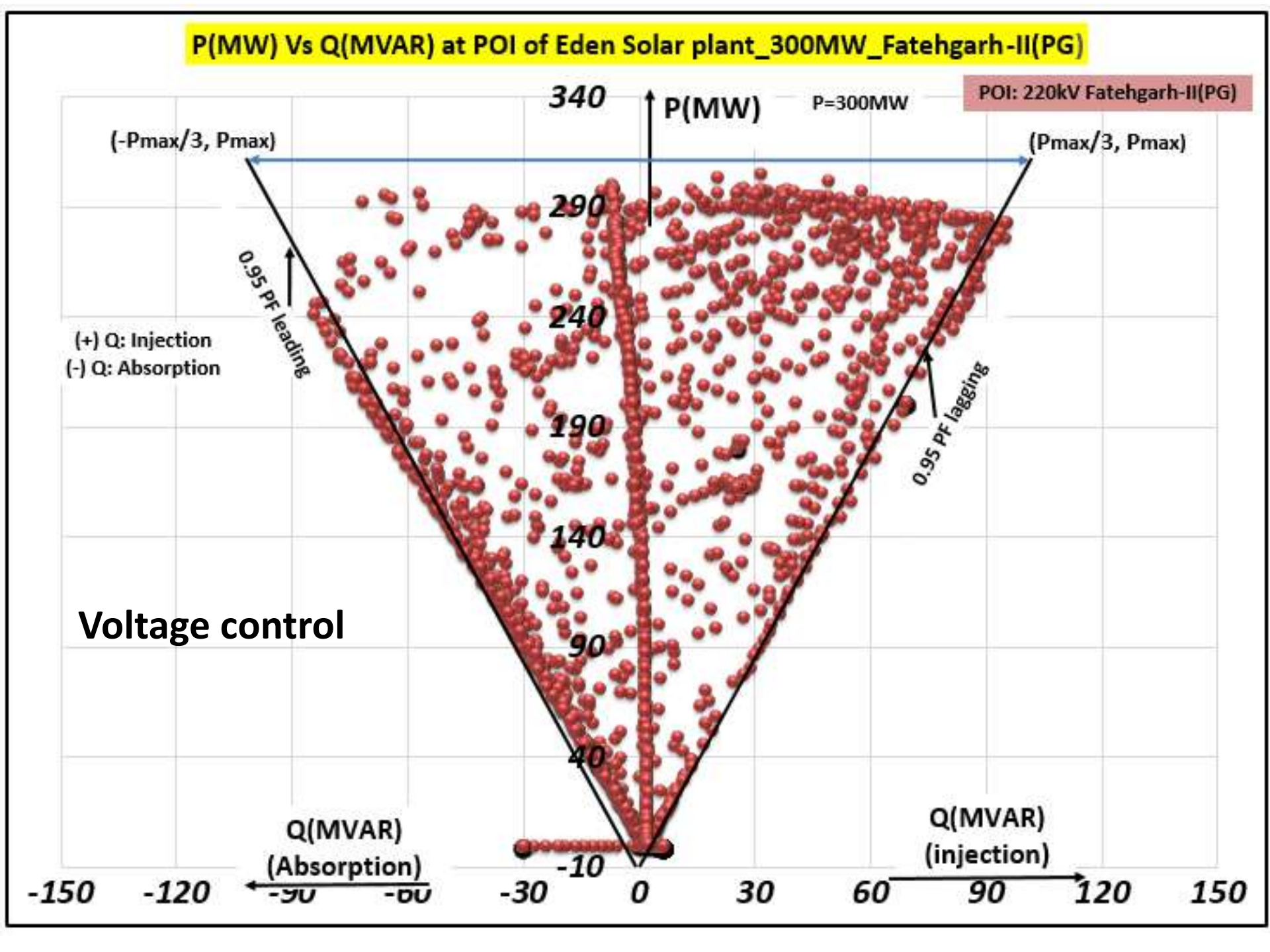

Voltage(kV) Vs Q(MVAR) at POI of TPREL_300MW_Bhadla(PG)
POI: 220kVBhadla(PG)
(+) Q: Injection
(-) Q: Absorption
Should be in 2nd and 4th Quadrant
Q(MVAR) (injection)
Q(MVAR) (Absorption)
Voltage (kV)
40
20
0
-20
-40
-80
205
210
215
220
225
230
235

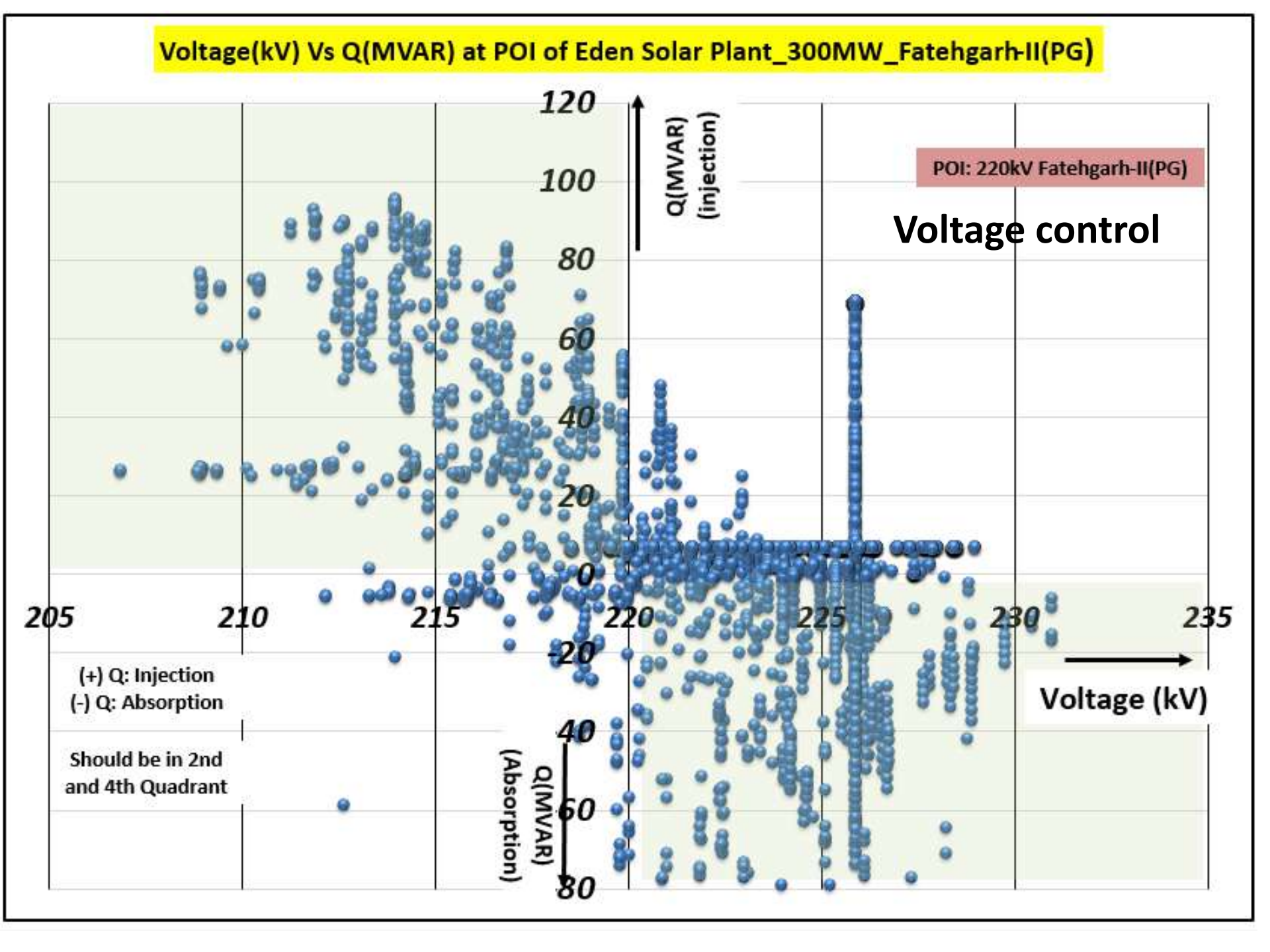

P(MW) Vs Q(MVAR) at POI of 220kV Adani-Bhadla ckt-1&2_250MW_Bhadla(PG)
(-Pmax/3, Pmax)
P=250MW
(Pmax/3, Pmax)
POI: 220kVBhadla(PG)
P(MW)
290
240
190
140
90
40
-10
(+) Q: Injection
(-) Q: Absorption
0.95 PF leading
0.95 PF lagging
Power factor control
Q(MVAR) (Absorption)
Q(MVAR) (injection)
-150
-120
-90
-60
-30
0
30
60
90
120
150

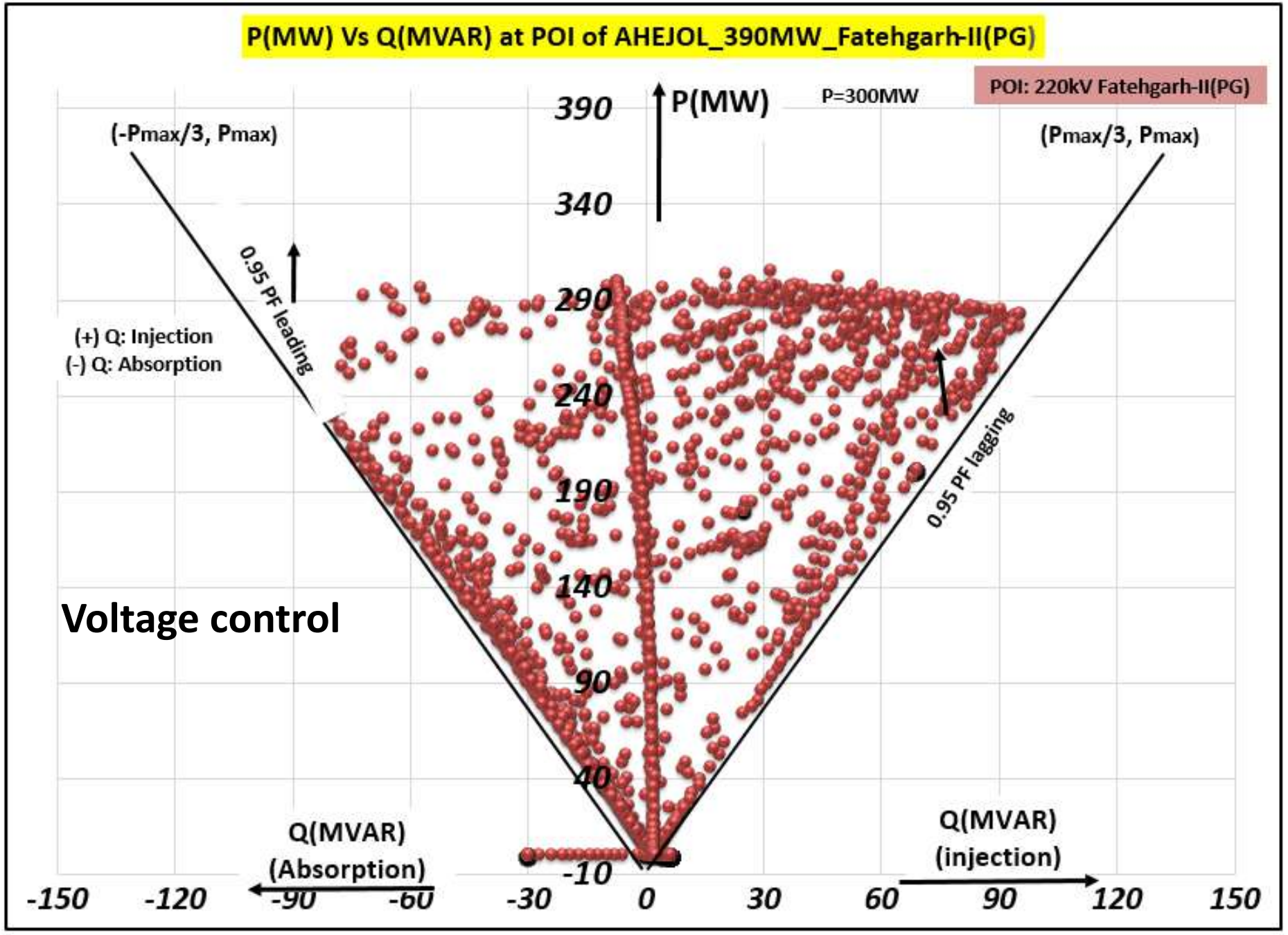

Voltage(kV) Vs Q(MVAR) at POI 220kV Adani-Bhadla ckt-1&2_250MW_Bhadla(PG))
Power factor control
POI: 220kVBhadla(PG)
Q(MVAR) (injection)
Q(MVAR) (Absorption)
20
10
0
-10
-20
-30
-50
205
210
215
220
225
230
235
Voltage (kV)
(+) Q: Injection
(-) Q: Absorption
Should be in 2nd and 4th Quadrant

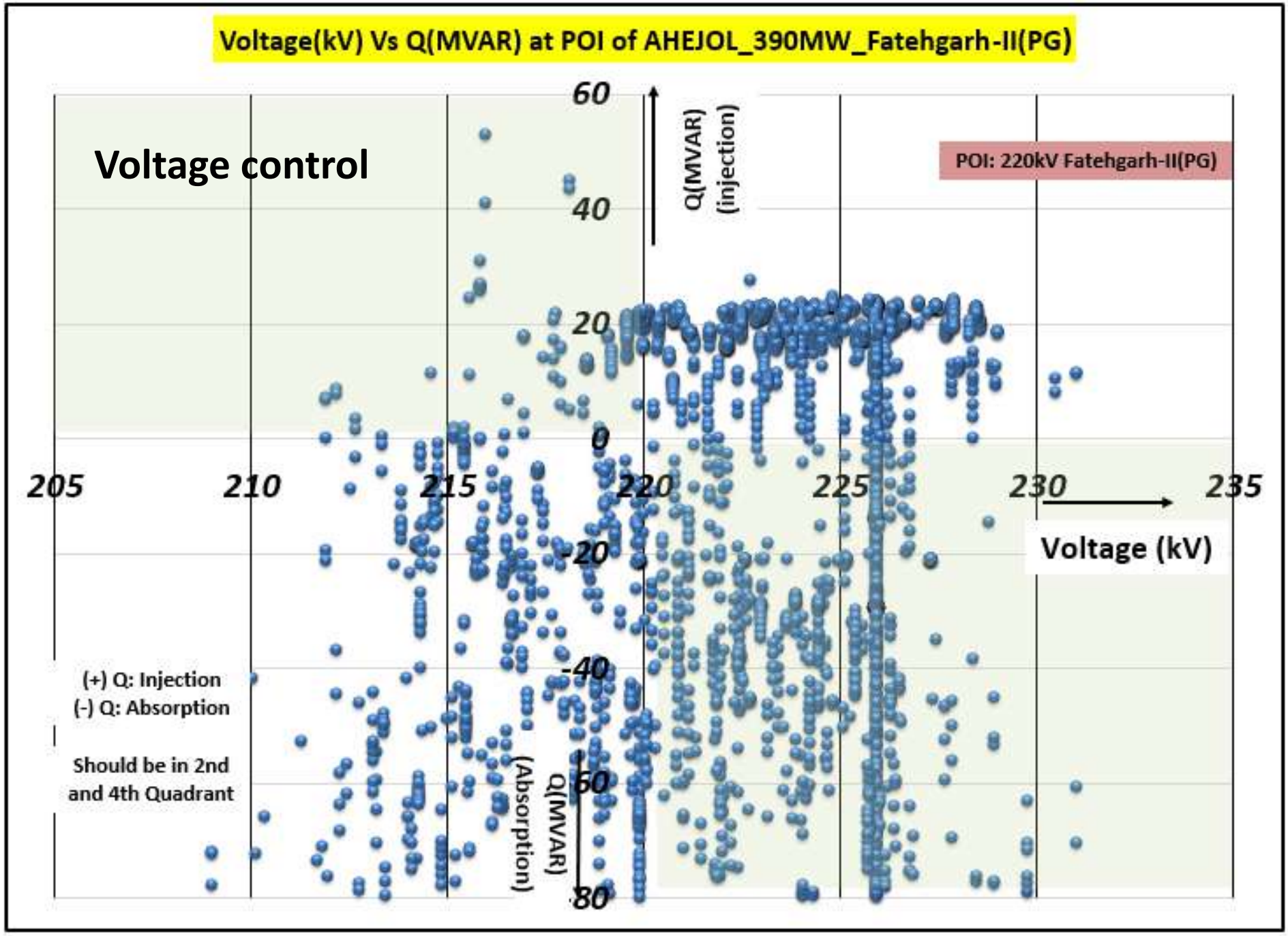

P(MW) Vs Q(MVAR) at POI of MRPL_250MW_Bhadla(PG)
(-Pmax/3, Pmax)
290
P=250MW
(Pmax/3, Pmax)
P(MW)
(+) Q: Injection
(-) Q: Absorption
POI: 220kVBhadla(PG)
240
190
140
90
40
-10
0.95 PF leading
0.95 PF lagging
Q(MVAR)
(Absorption)
Q(MVAR)
(injection)
-150
-120
-90
-60
-30
0
30
60
90
120
150


Voltage(kV) Vs Q(MVAR) at POI of MRPL_250MW_Bhadla(PG)
POI: 220kVBhadla(PG)
40
20
0
-20
-40
-60
Q(MVAR) (injection)
Q(MVAR) (Absorption)
Voltage (kV)
205
210
215
220
225
230
235
(+) Q: Injection
(-) Q: Absorption
Should be in 2nd and 4th Quadrant


P(MW) Vs Q(MVAR) at POI of Eden Solar plant_300MW_Fatehgarh-II(PG)
POI: 220kV Fatehgarh-II(PG)
P=300MW
P(MW)
340
290
240
190
140
90
40
-10
(-Pmax/3, Pmax)
(Pmax/3, Pmax)
0.95 PF leading
0.95 PF lagging
(+) Q: Injection
(-) Q: Absorption
Voltage control
Q(MVAR)
(Absorption)
Q(MVAR)
(injection)
-150
-120
-90
-60
-30
0
30
60
90
120
150


Voltage(kV) Vs Q(MVAR) at POI of Eden Solar Plant_300MW_Fatehgarh-II(PG)
120
100
80
60
40
20
0
-20
-40
-60
-80
Q(MVAR) (injection)
Q(MVAR) (Absorption)
POI: 220kV Fatehgarh-II(PG)
Voltage control
205
210
215
220
225
230
235
Voltage (kV)
(+) Q: Injection
(-) Q: Absorption
Should be in 2nd and 4th Quadrant


P(MW) Vs Q(MVAR) at POI of AHEJOL_390MW_Fatehgarh-II(PG)
POI: 220kV Fatehgarh-II(PG)
P=300MW
P(MW)
390
340
290
240
190
140
90
40
-10
(-Pmax/3, Pmax)
(Pmax/3, Pmax)
0.95 PF leading
0.95 PF lagging
(+) Q: Injection
(-) Q: Absorption
Voltage control
Q(MVAR)
(Absorption)
Q(MVAR)
(injection)
-150
-120
-90
-60
-30
0
30
60
90
120
150


Voltage(kV) Vs Q(MVAR) at POI of AHEJOL_390MW_Fatehgarh-II(PG)
Voltage control
POI: 220kV Fatehgarh-II(PG)
Q(MVAR) (injection)
Q(MVAR) (Absorption)
Voltage (kV)
60
40
20
0
-20
-40
-60
-80
205
210
215
220
225
230
235
(+) Q: Injection
(-) Q: Absorption
Should be in 2nd and 4th Quadrant

National Load Despatch Centre

Import of Uttar Pradesh Transfer Capability for December 2021

Issue Date: 16-11-2021 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 December 2021 to 31st December 2021	00-24	00-24	600	13200	8490	4710		https://www.upsldc.org/documents/20182/0/ttc_atc_24-11-16/4c79978e-35f2-4aef-8c0f-7f30d878dbde
Limiting Constraints		N-1 contingency of 400/220kV Sohawal (PG), Gorakhpur (UP), Sarnath, Lucknow (PG) ICTs						

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

National Load Despatch Centre
Import of Rajasthan Transfer Capability for December 2021

Issue Date: 16-11-2021 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 December 2021 to 31st December 2021	00-24	6200	300	5900	3400	2500		https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads
Limiting Constraints		N-1 contingency of 400/220kV Chittorgarh, Jodhpur ICTs and Ajmer ICTs						

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

National Load Despatch Centre

Import of Haryana Transfer Capability for December 2021

Issue Date: 16-11-2021 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 December 2021 to 31st December 2021	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 of Delhi Transfer Capability for December 2021

Issue Date: 16-11-2021 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 December 2021 to 31st December 2021	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 of HP Transfer Capability for December 2021

Issue Date: 16-11-2021 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 December 2021 to 31st December 2021	00-24	1200	100	1100	1400	-300		https://hpsldc.com/mrm_category/ttc-atc-report/
Limiting Constraints		N-1 contingency of 400/220kV Nallagarh ICTs. 132kV lines from Kangoo are also heavily loaded						

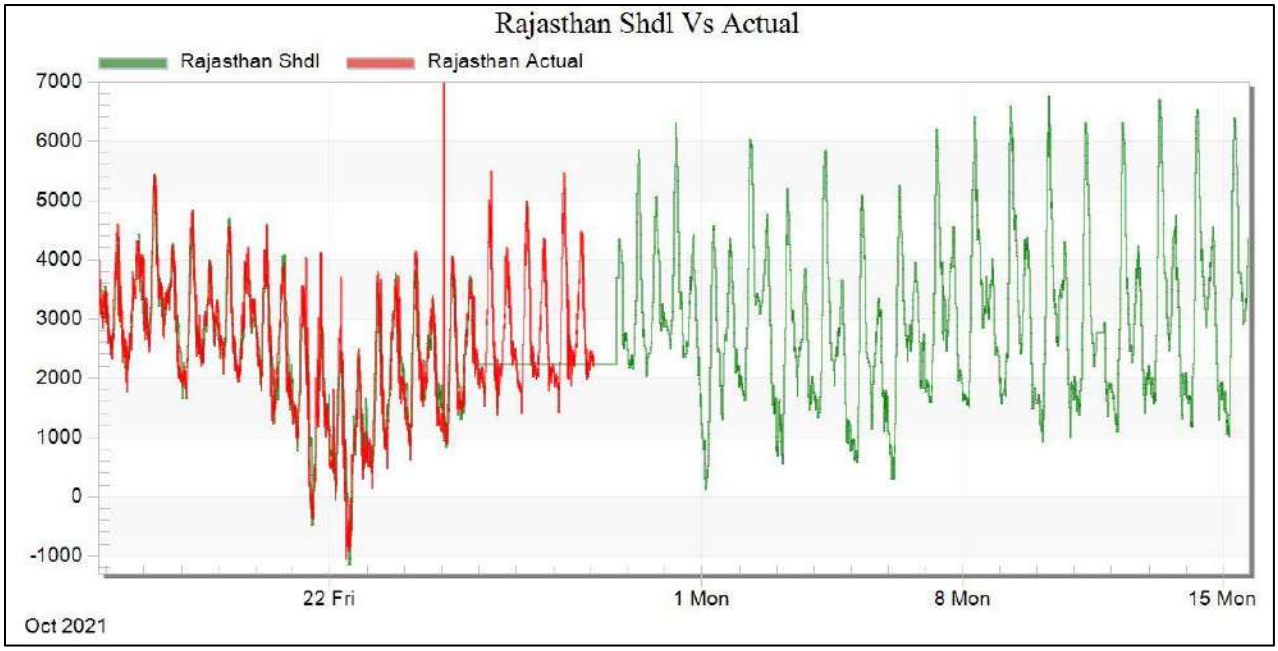
80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

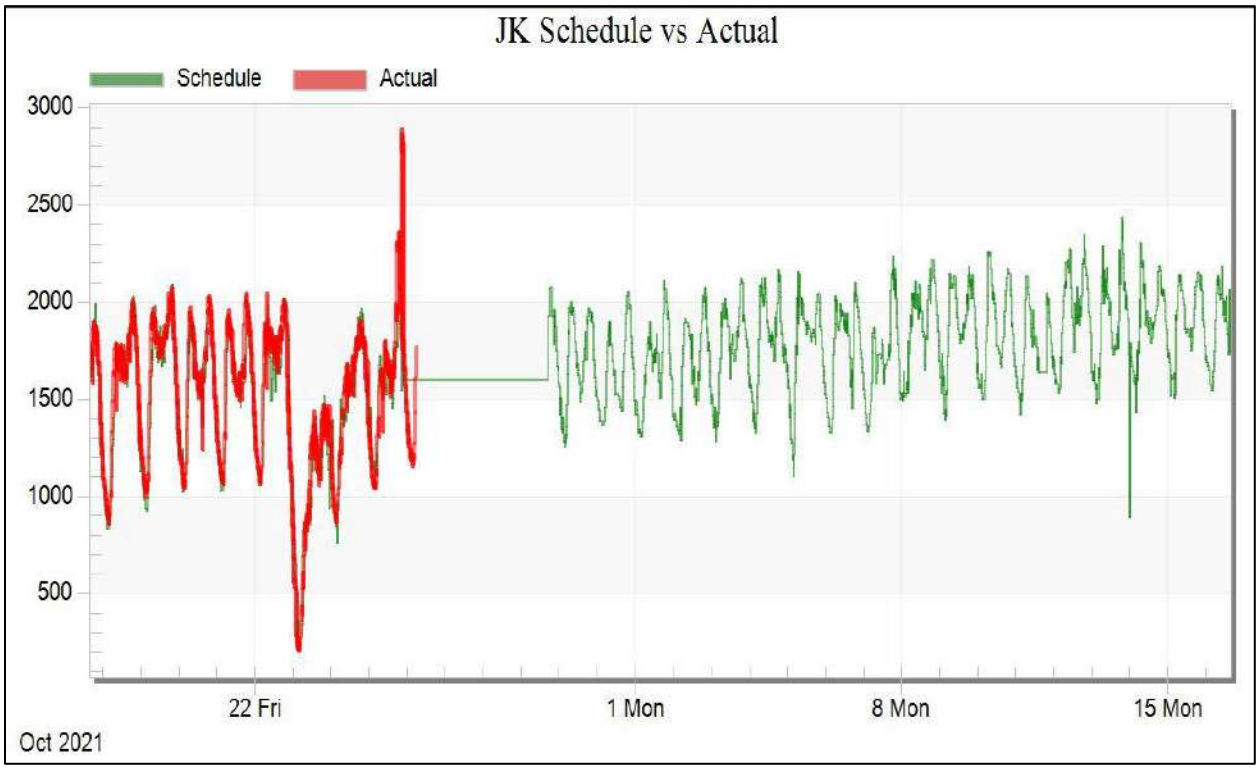
National Load Despatch Centre
Import of Uttarakhand Transfer Capability for December 2021

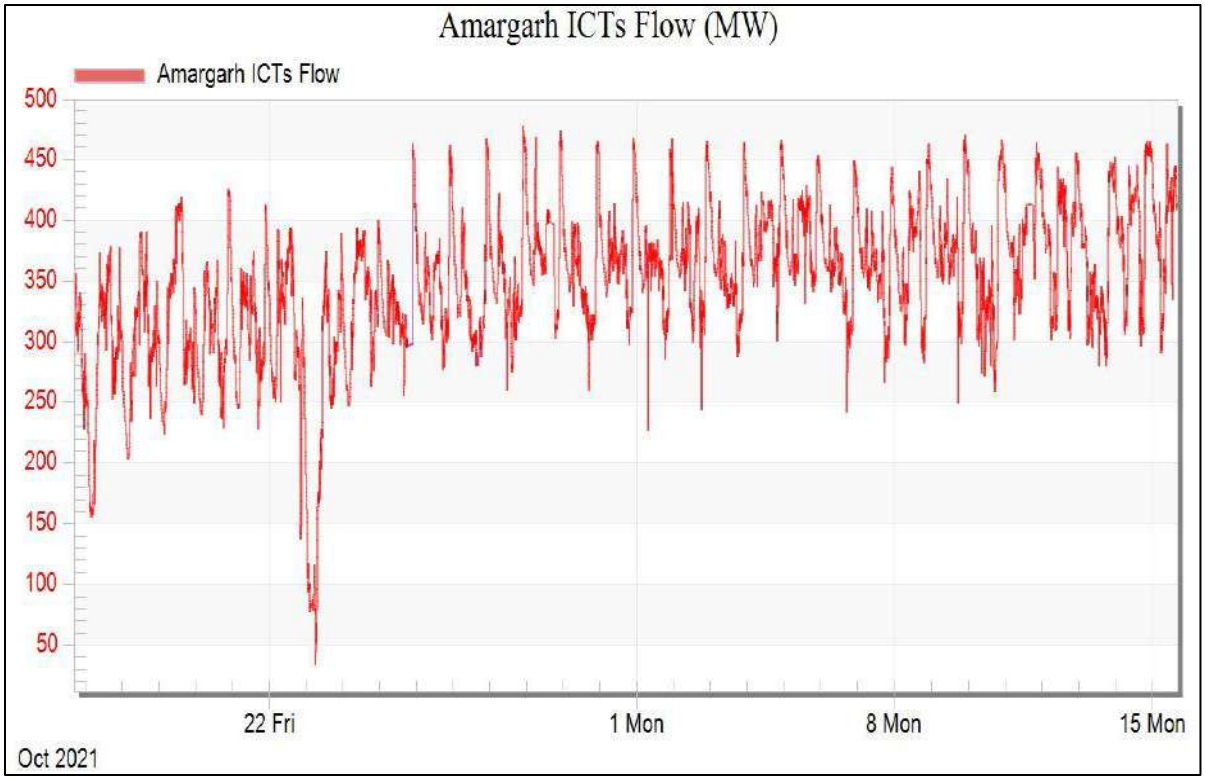
Issue Date: 16-11-2021 Issue Time: 1600 Revision No. 0

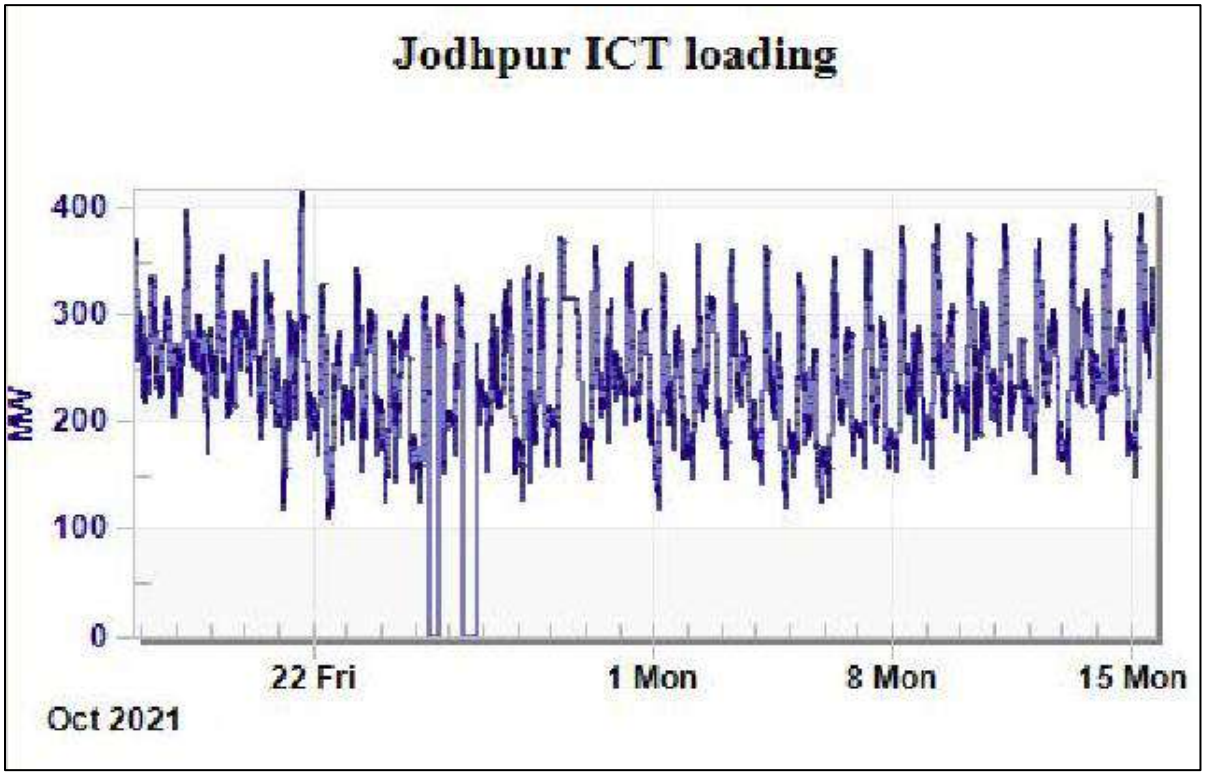
Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st December 2021 to 31st December 2021	00-24	1600	100	1500	1200	300		
Limiting Constraints		N-1 contingency of 400/220kV Nallagarh ICTs. 132kV lines from Kangoo are also heavily loaded						

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

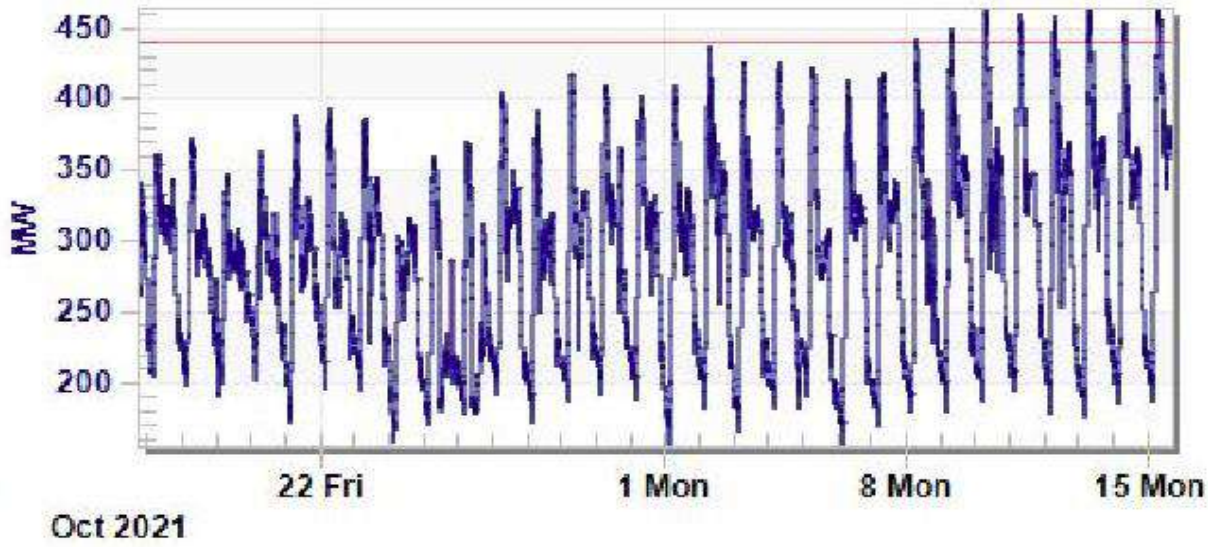

Rajasthan Shdl Vs Actual
Rajasthan Shdl
Rajasthan Actual
7000
6000
5000
4000
3000
2000
1000
0
-1000
22 Fri
1 Mon
8 Mon
15 Mon
Oct 2021


JK Schedule vs Actual
Schedule
Actual
3000
2500
2000
1500
1000
500
22 Fri
1 Mon
8 Mon
15 Mon
Oct 2021

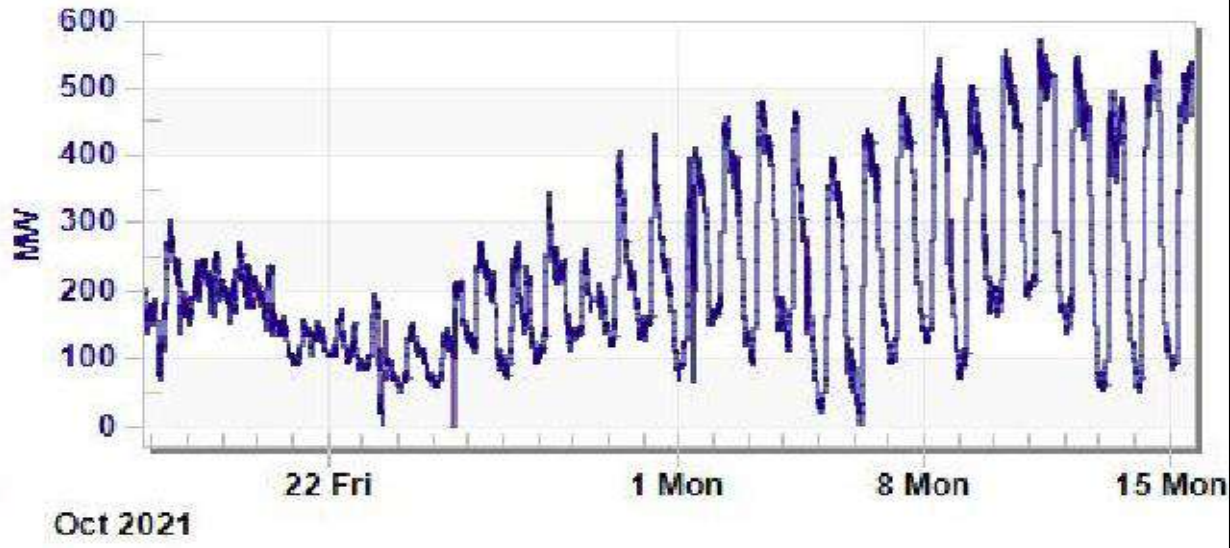

Amargarh ICTs Flow (MW)
Amargarh ICTs Flow
500
450
400
350
300
250
200
150
100
50
22 Fri
1 Mon
8 Mon
15 Mon
Oct 2021


Jodhpur ICT loading
MW
400
300
200
100
0
22 Fri
1 Mon
8 Mon
15 Mon
Oct 2021

Merta ICT loading



Chittorgarh ICT loading



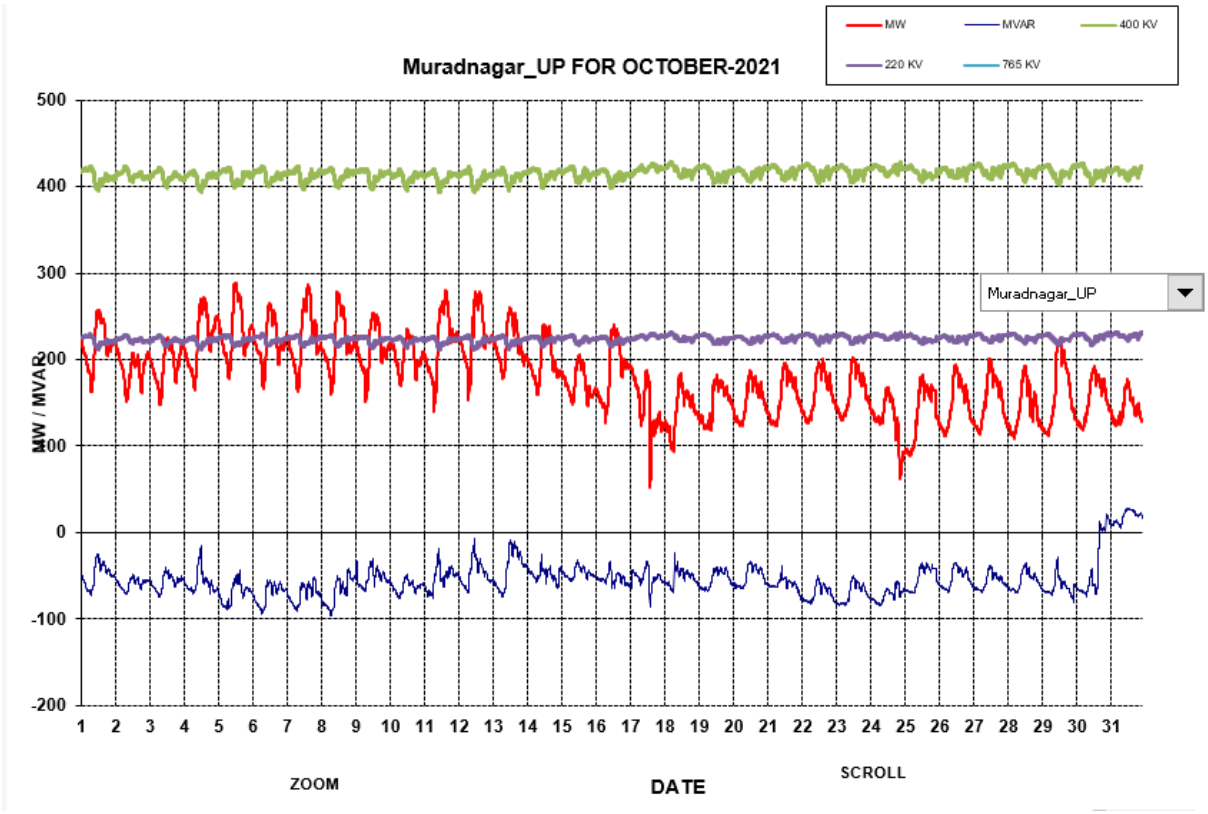
LONG OUTAGES REPORT AS ON 14-10-22021

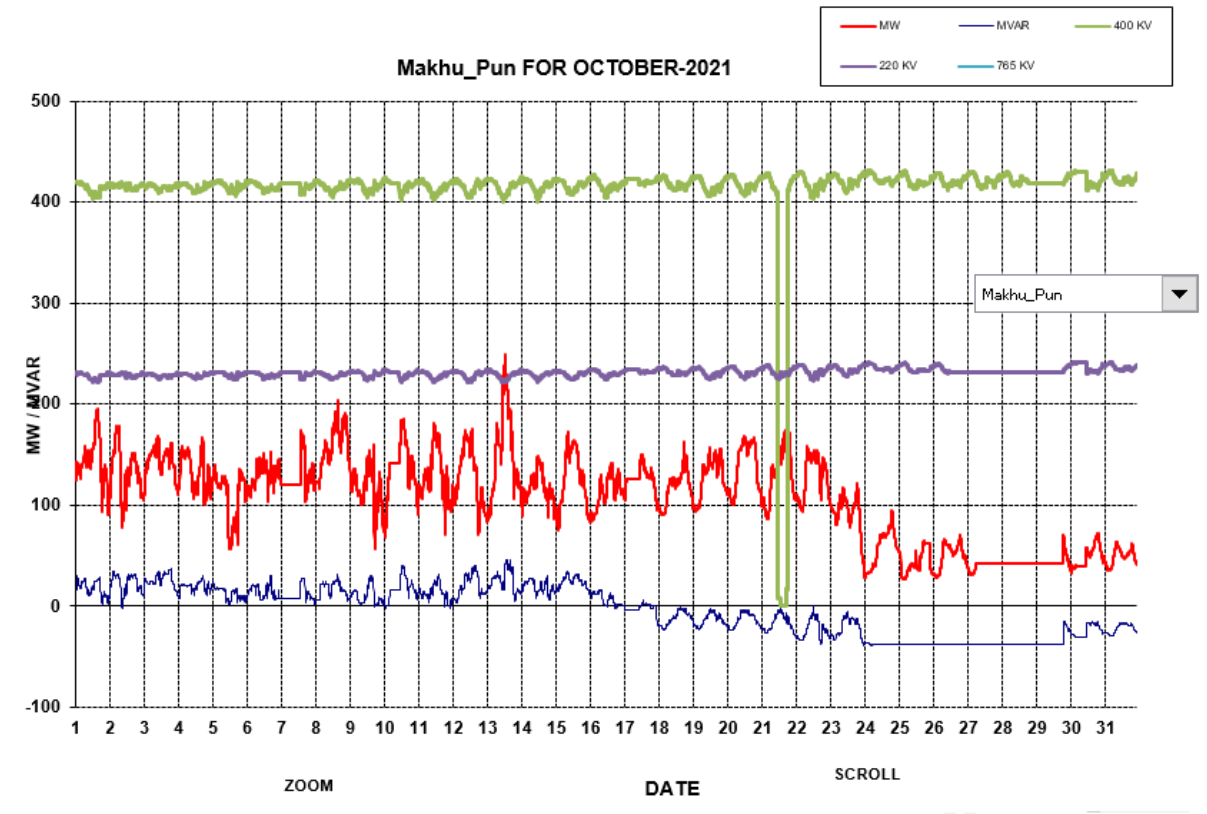
Annexure-B.VII

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	595	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 New Tanda (UP)-Sohawal(PG) (UP) Ckt-1	Line	UPPTCL	06-09-2021	23:37	71	Phase to phase fault Y-B Fault current Iy 4.28kA, Ib 4.24kA, Dist. 39.3km from new Tanda end.Tower damage reported.
3	220 KV New Tanda (UP)-Sohawal(PG) (UP) Ckt-2	Line	UPPTCL	06-09-2021	23:37	71	Phase to earth fault B-N , Fault current 2.49kA, Dist. 35.6 km from new Tanda end. Tower damage reported.
4	400 KV Kishenpur-NewWanpoh (PG) Ckt-3	Line	POWERGRID	23-10-2021	10:05	25	Phase to earth fault R-N , Dist. 47.3km, Fault current 5.14kA from Kishenpur & Dist. 82km, Fault current 2.7kA from New Wanpoh. Line tripped during heavy rain & lightening. Tower collapsed at loc. no. 145.
5	220 KV Sohawal(PG)-Gonda(UP) (UP) Ckt-1	Line	UPPTCL	12-08-2021	09:00	97	Emergency shutdown of line taken, as tower no. 34 is affected by flood.
6	220 KV Sohawal(PG)-Bahraich(UP) (UP) Ckt-1	Line	UPPTCL	12-08-2021	09:12	97	Emergency shutdown of line taken, as tower no. 34 is affected by flood.
7	400 KV BASSI-BHIWADI (PG) CKT-1	Line	POWERGRID	10-10-2021	08:33	38	S/D for Shifting/Diversion work of due to NHAI
8	400 KV UNNAO-PANKI (UP) CKT-1	Line	UPPTCL	11-10-2021	10:02	37	Shutdown required due to PTPS Panki (Diversion work due to Extension of PTPS Panki.
9	765 KV ORAI-ALIGARH (PG) CKT-1	Line	POWERGRID	28-10-2021	10:08	20	for diversion work due to construction of Bundelkhand Expressway
10	765 KV ORAI-ALIGARH (PG) CKT-2	Line	POWERGRID	28-10-2021	10:40	20	for diversion work due to construction of Bundelkhand Expressway
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	498	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	326	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	213	E/S/D taken due to abnormal humming sound observed from 400KV B-phase BUS-1 CVT at Kadarpur.
4	402 TIE BAY - 400KV KURUKSHETRA-SONIPAT (PG) CKT-2 AND FUTURE AT Sonipat(PG)	BAY	POWERGRID	29-10-2021	12:38	18	For attending CB trouble alarm in 402 tie bay.
5	70452B MAIN BAY - 765 KV AJMER(PG)-PHAGI(RS) (PG) CKT-2 AT PHAGI (POWERGRID)	BAY	POWERGRID	30-10-2021	13:35	17	For attending sudden SF6 gas leakage detected in G-42 compartment (Y-phase CT).
6	704-52A MAIN BAY - 765 KV ANTA-PHAGI (RS) CKT-1 (RRVPNL) AT 765KV ANTA(RS)	BAY	RRVPNL	23-09-2021	18:04	54	Mechanical fault in the main Circuit Breaker 704-52A at Anta(RS).

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	919	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	614	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	231	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	455	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	789	Due to fire in ICT.
6	400/220 kV 315 MVA ICT 2 at Parbati Pooling Banala(PG)	ICT	POWERGRID	31-10-2021	15:50	16	DGA violation has found in 400/220KV 315MVR ICT-2 (B-Phase) at GIS Banala. During testing of transformer oil Acetylene (17.7ppm) and Hydrogen (132ppm) have increased beyond the violation limits.
7	400/220 KV 315 MVA ICT 2 AT BHILWARA(RS)	ICT	RRVPNL	01-11-2021	10:24	16	For Necessary testing of transformer by protection wing
D	**BUS REACTOR**						
1	80 MVAR Bus Reactor No 1 at 400KV Nathpa Jhakri(SJ)	BR	SJVNL	17-10-2019	12:58	761	Flashover/Fault in 80MVAR Bus Reactor cleared by Bus Bar Protection. Expected revival in Nov-2021.
E	**FSC**						
1	FSC(40%) of 400 KV Kanpur-Ballabhgarh (PG) Ckt-2 at Ballabhgarh(PG)	FSC	POWERGRID	23-10-2021	13:37	24	Bypassed due to operation of R-phase capacitor unbalance protection.

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	418
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	418
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	418
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	260
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	111
6	250 MW Chhabra TPS - UNIT 4	RRVPNL	Due to ESP structure damage	09-09-2021	00:47	69
7	250 MW Chhabra TPS - UNIT 3	RRVPNL	Due to ESP Structure damage	09-09-2021	03:00	69
8	210 MW Unchahar TPS - UNIT 2	NTPC	Over hauling	10-10-2021	00:35	38
9	270 MW Goindwal(GVK) - UNIT 2	PSPCL	Coal Shortage	17-10-2021	00:00	31


MW
MVAR
400 KV
220 KV
765 KV
Muradnagar_UP FOR OCTOBER-2021
Muradnagar_UP
MW / MVAR
500
400
300
200
100
0
-100
-200
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
ZOOM
DATE
SCROLL


MW
MVAR
400 KV
220 KV
765 KV
Makhu_Pun FOR OCTOBER-2021
Makhu_Pun
MW / MVAR
500
400
300
200
100
0
-100
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
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DATE
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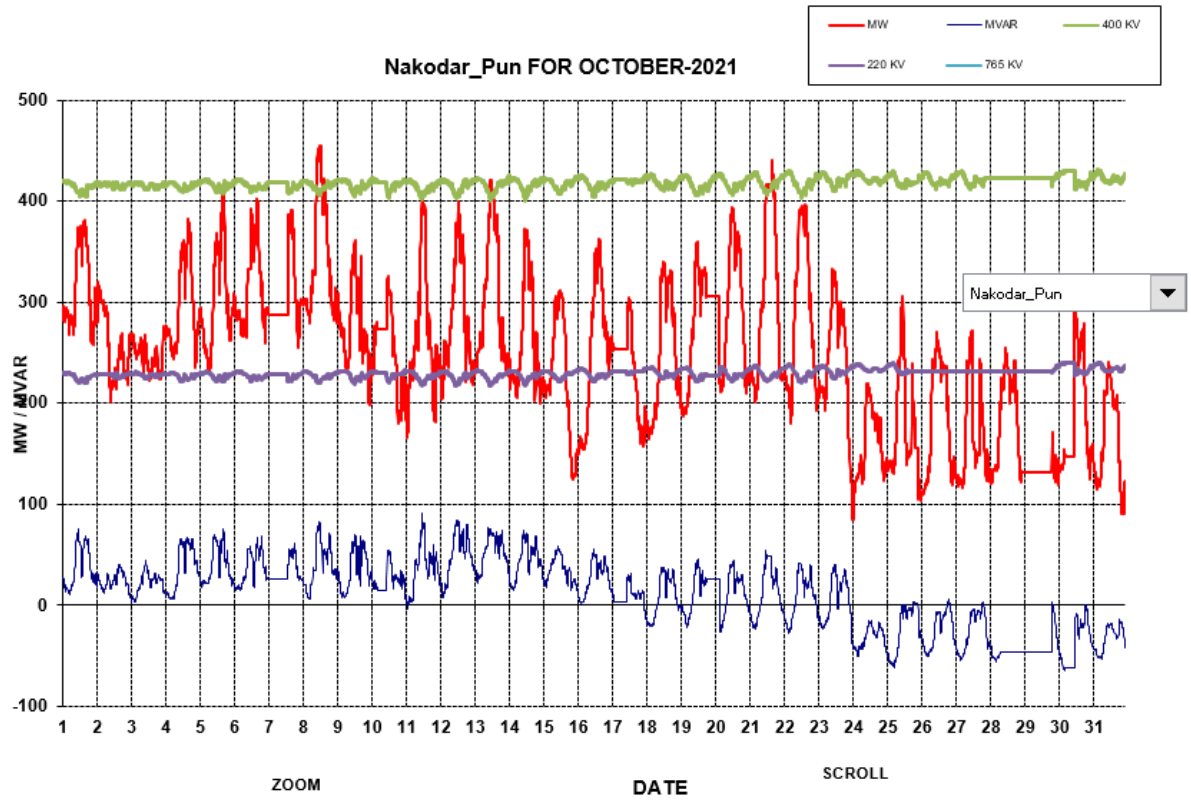
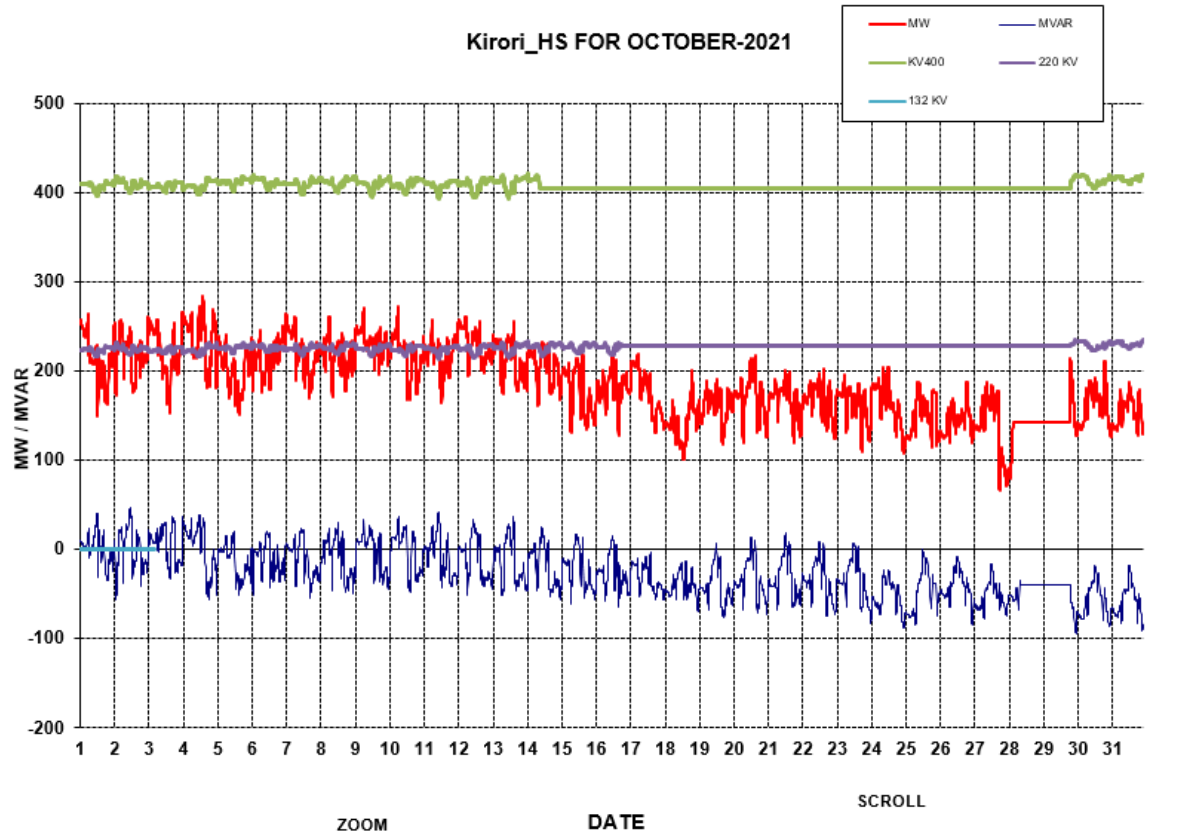
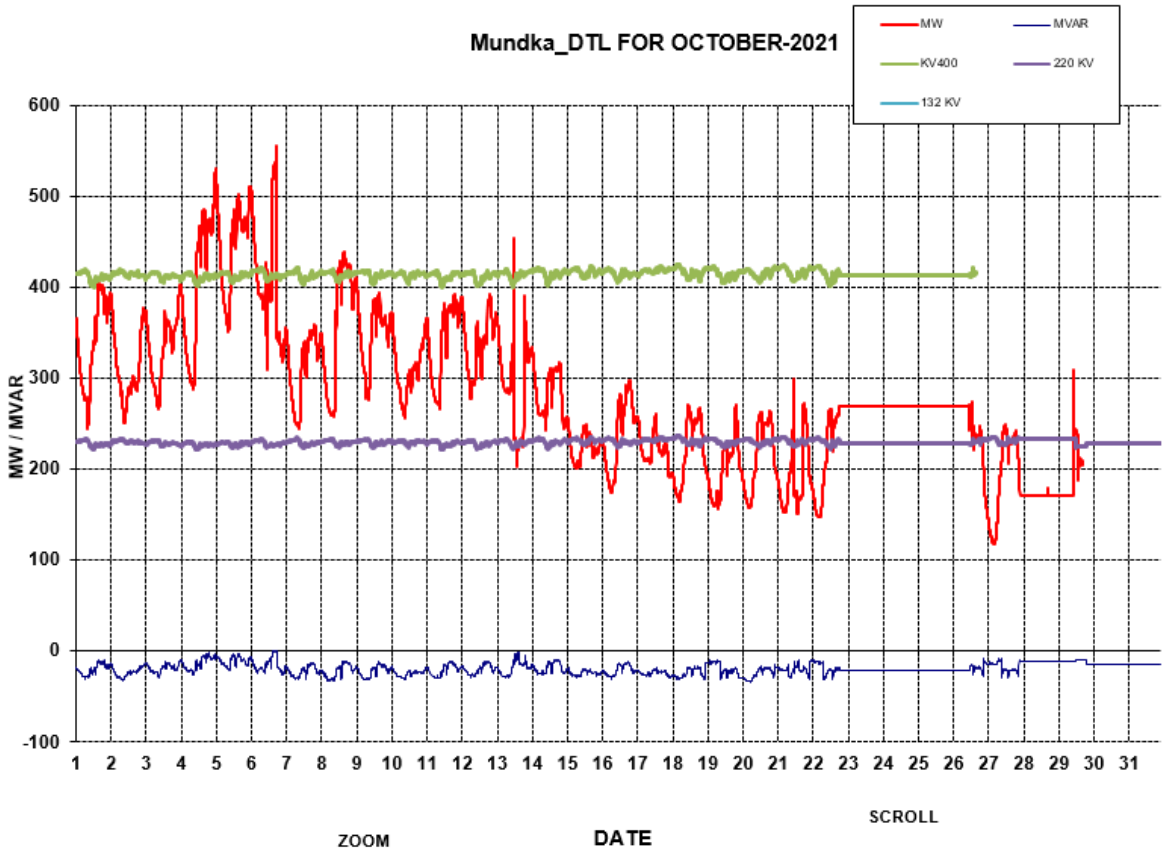

MW
MVAR
400 KV
220 KV
765 KV
Nakodar_Pun FOR OCTOBER-2021
Nakodar_Pun
MW / MVAR
500
400
300
200
100
0
-100
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
ZOOM
DATE
SCROLL


MW
MVAR
KV400
220 KV
132 KV
Kirori_HS FOR OCTOBER-2021
MW / MVAR
500
400
300
200
100
0
-100
-200
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
ZOOM
DATE
SCROLL


Mundka_DTL FOR OCTOBER-2021
MW
MVAR
KV400
220 KV
132 KV
MW / MVAR
600
500
400
300
200
100
0
-100
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
SCROLL
ZOOM
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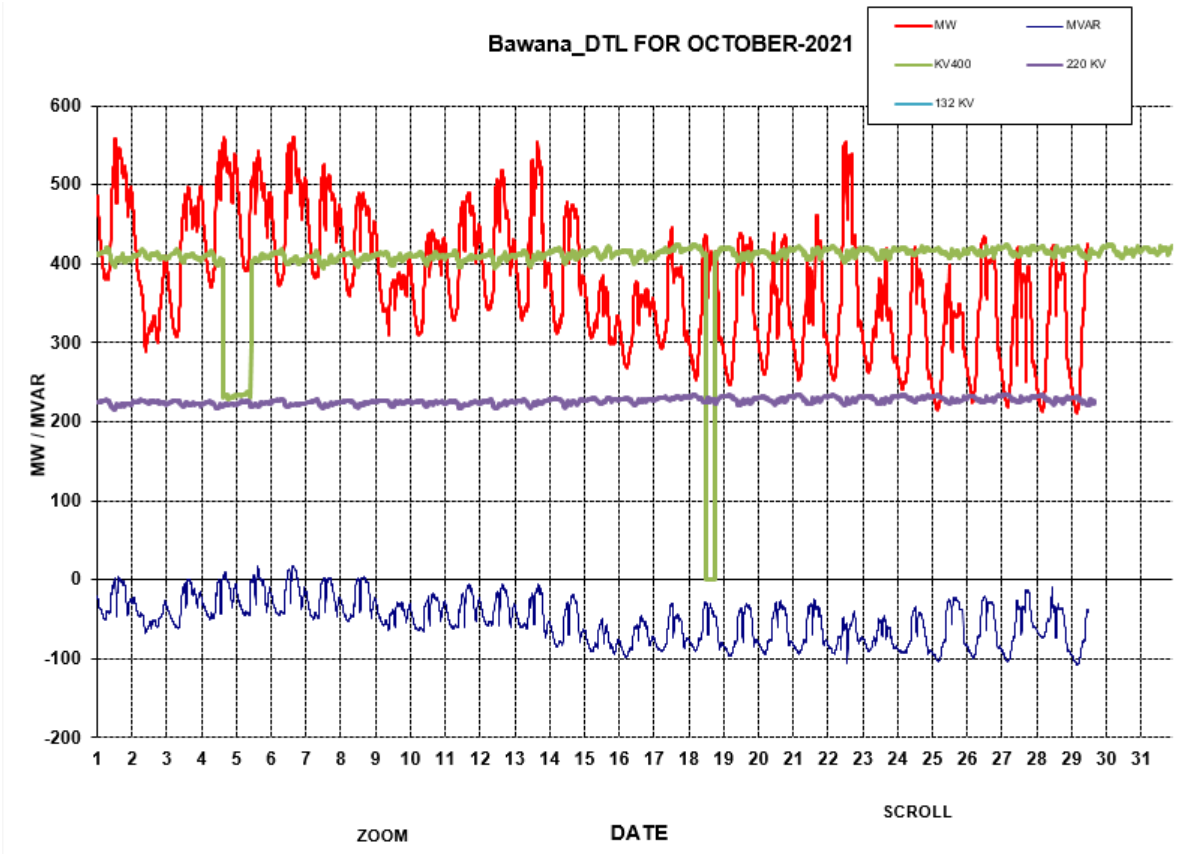
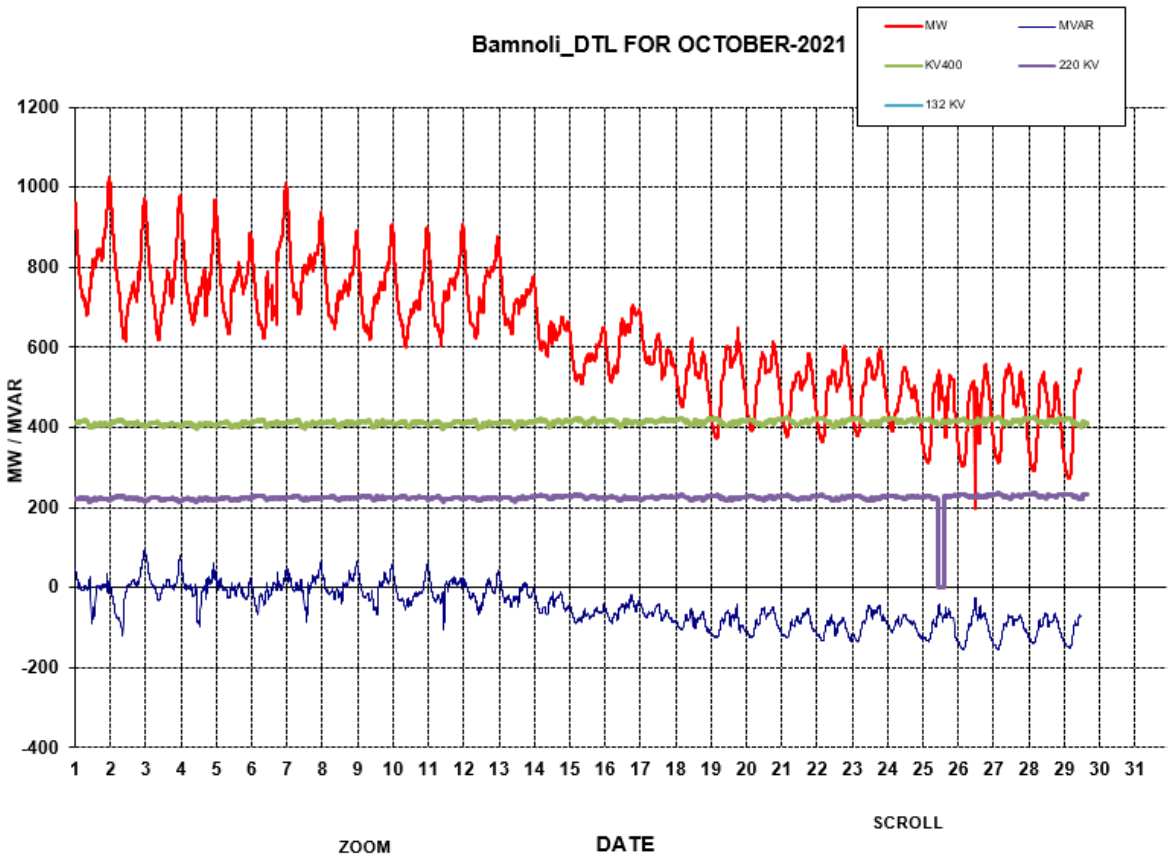
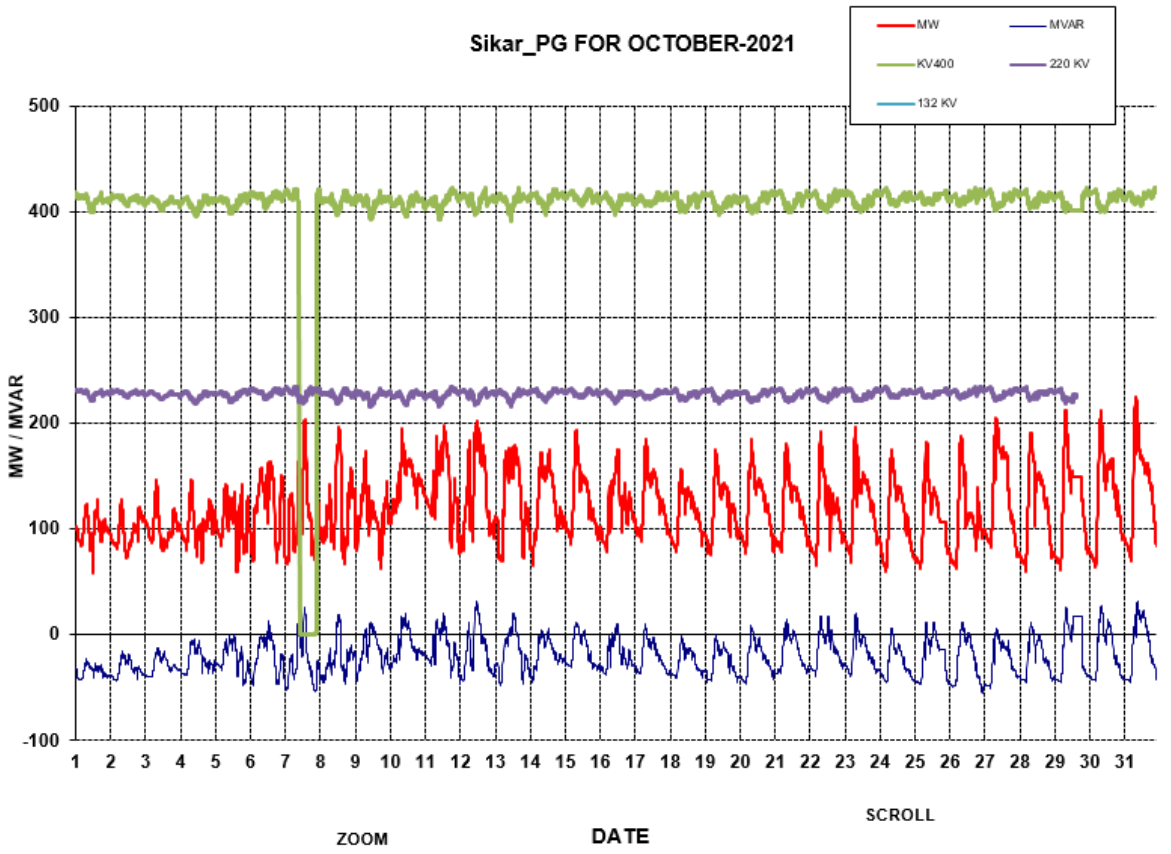

Bawana_DTL FOR OCTOBER-2021
MW
MVAR
KV400
220 KV
132 KV
MW / MVAR
600
500
400
300
200
100
0
-100
-200
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
SCROLL
ZOOM
DATE


Bamnoli_DTL FOR OCTOBER-2021
MW
MVAR
KV400
220 KV
132 KV
MW / MVAR
1200
1000
800
600
400
200
0
-200
-400
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
SCROLL
ZOOM
DATE


Sikar_PG FOR OCTOBER-2021
MW
MVAR
KV400
220 KV
132 KV
MW / MVAR
500
400
300
200
100
0
-100
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
SCROLL
ZOOM
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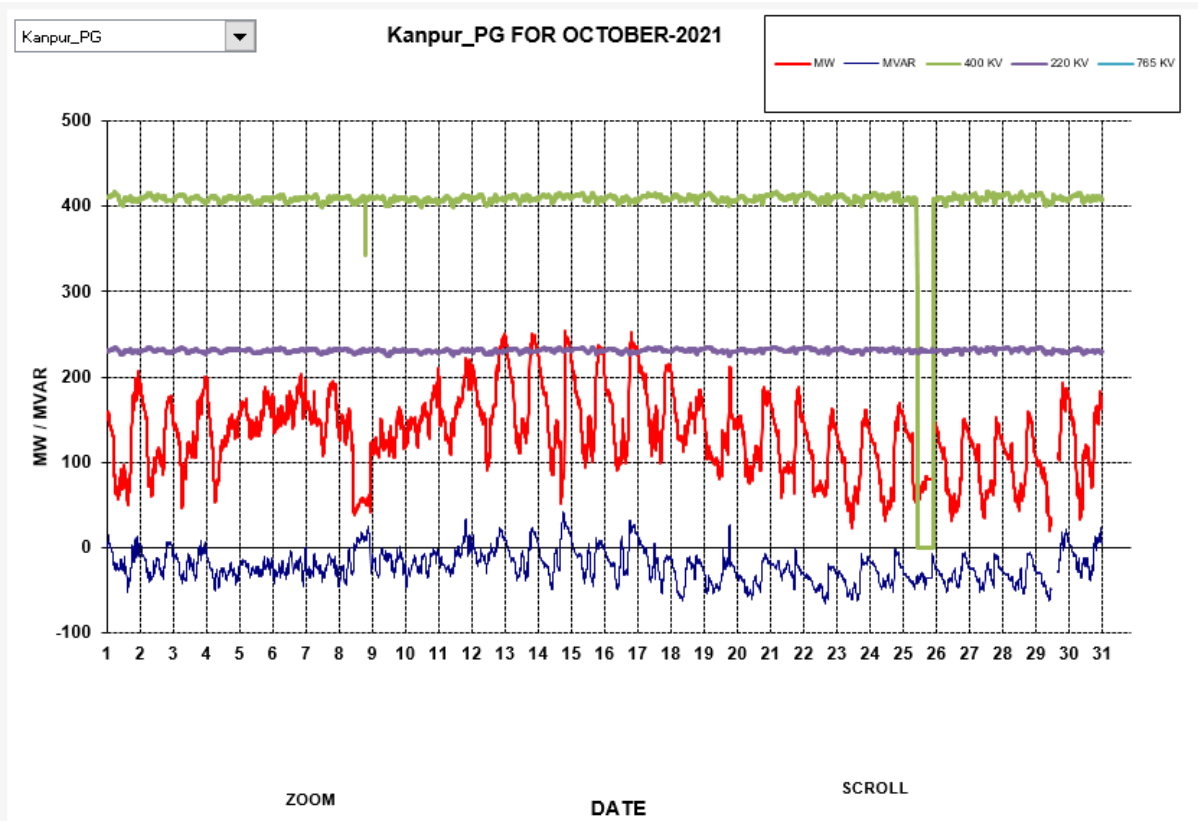
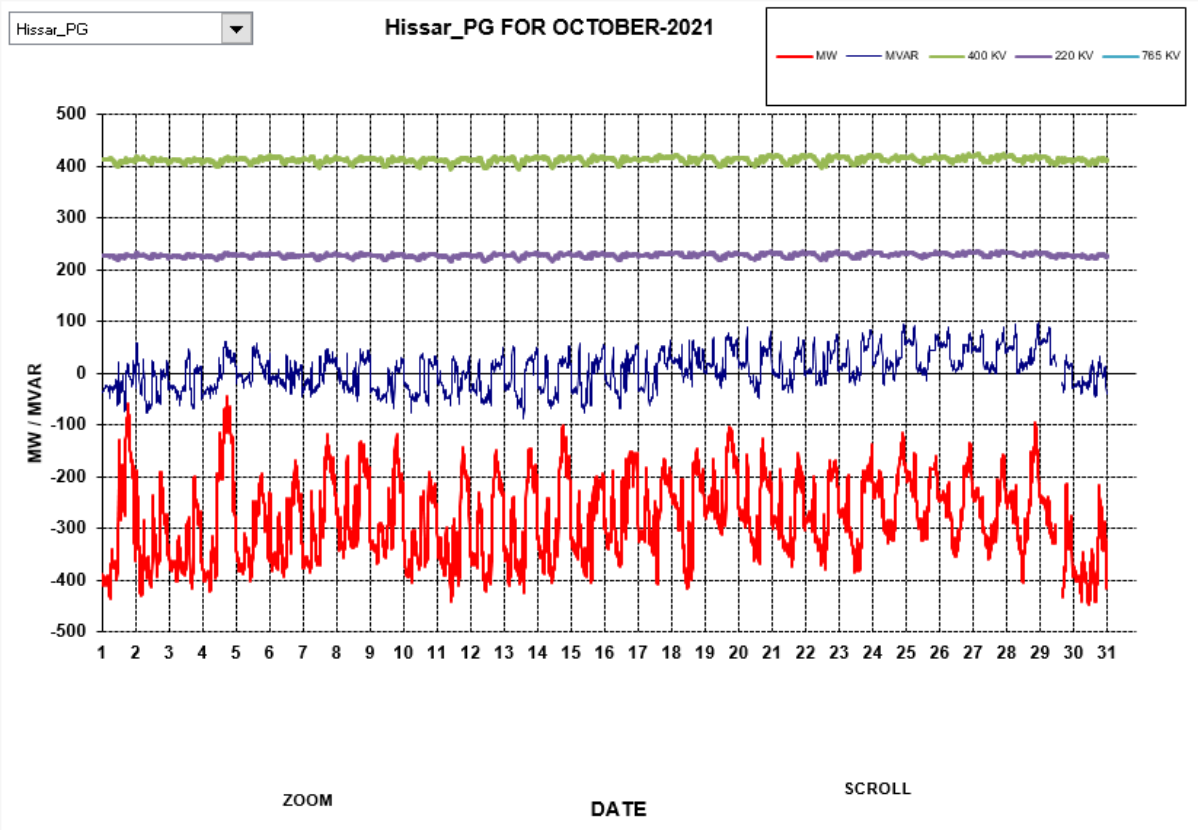

Kanpur_PG
Kanpur_PG FOR OCTOBER-2021
MW
MVAR
400 KV
220 KV
765 KV
MW / MVAR
500
400
300
200
100
0
-100
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
ZOOM
DATE
SCROLL


Hissar_PG
Hissar_PG FOR OCTOBER-2021
MW
MVAR
400 KV
220 KV
765 KV
MW / MVAR
500
400
300
200
100
0
-100
-200
-300
-400
-500
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
ZOOM
DATE
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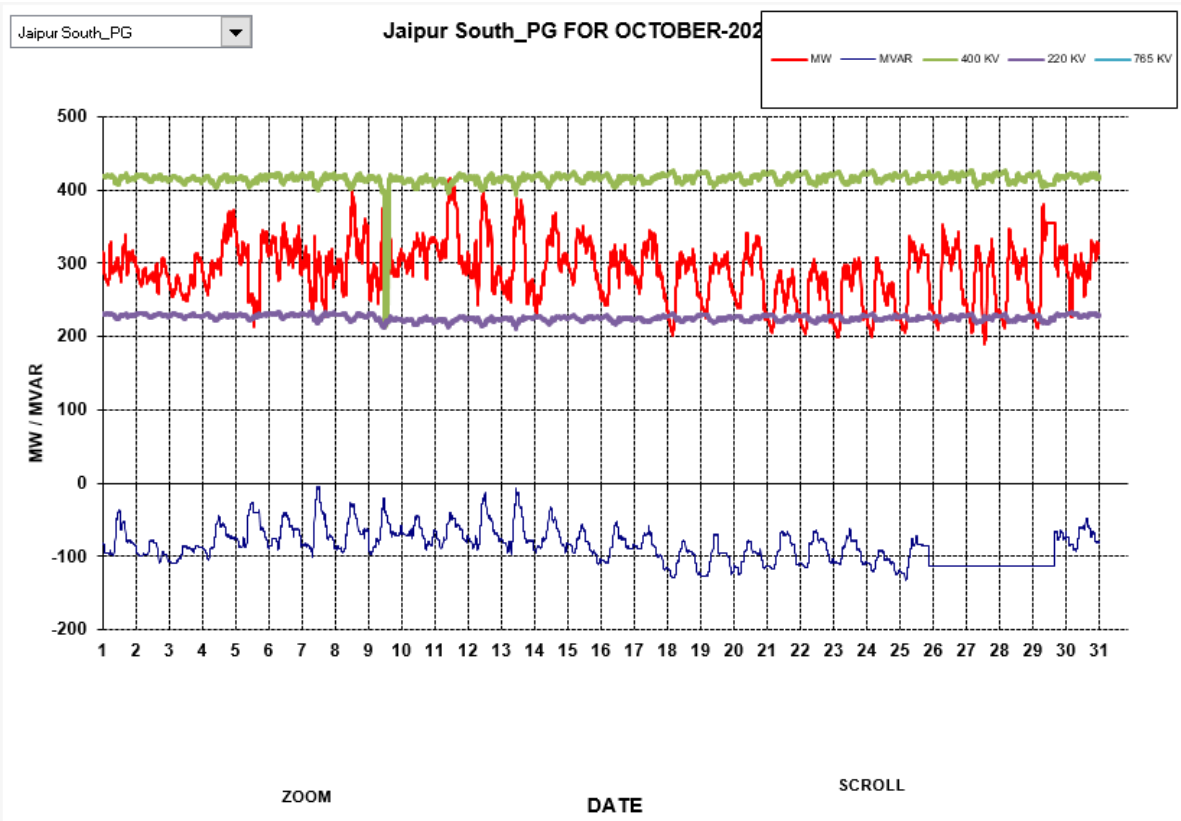
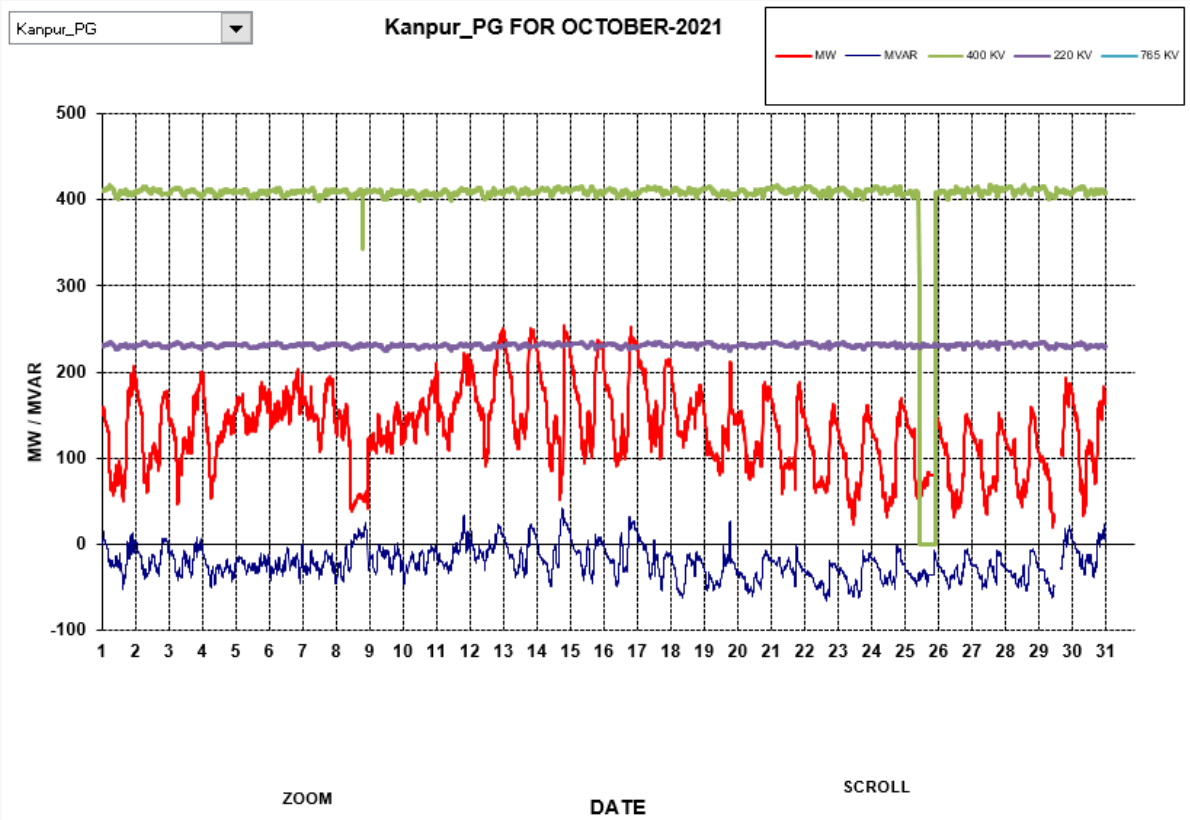
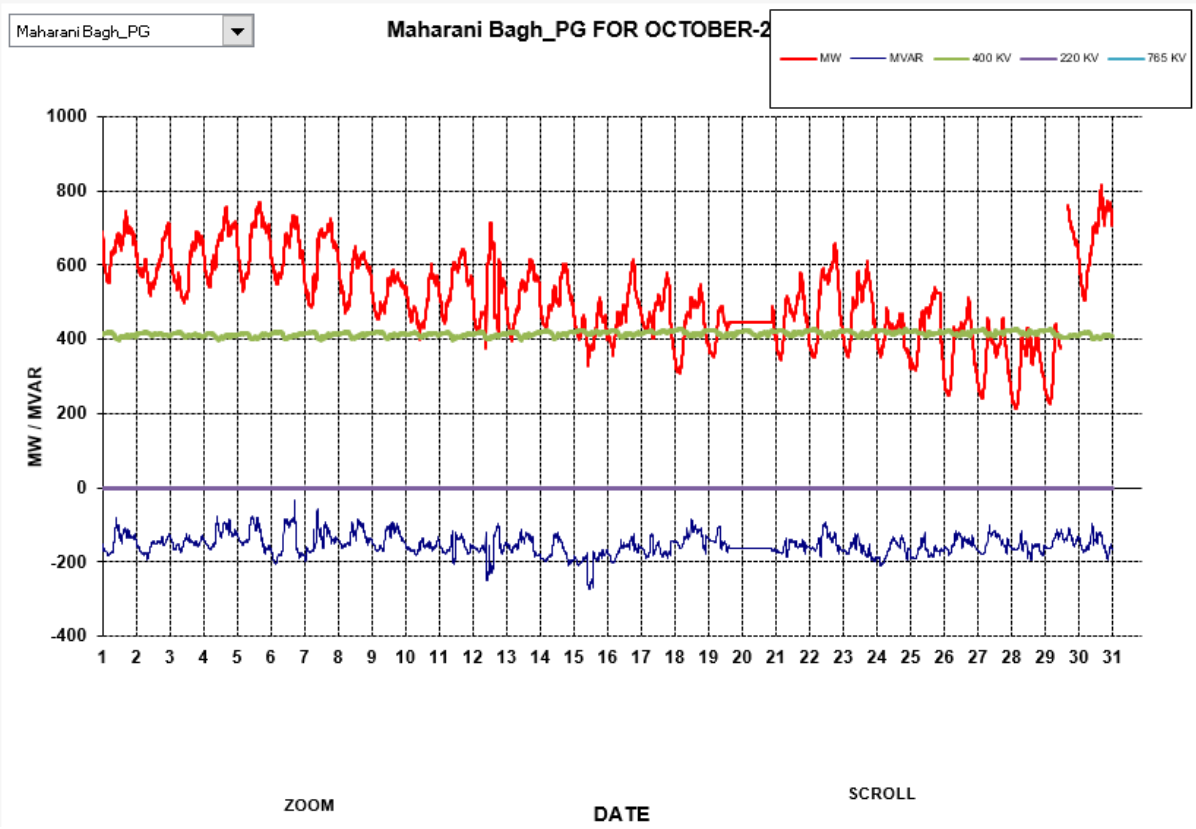
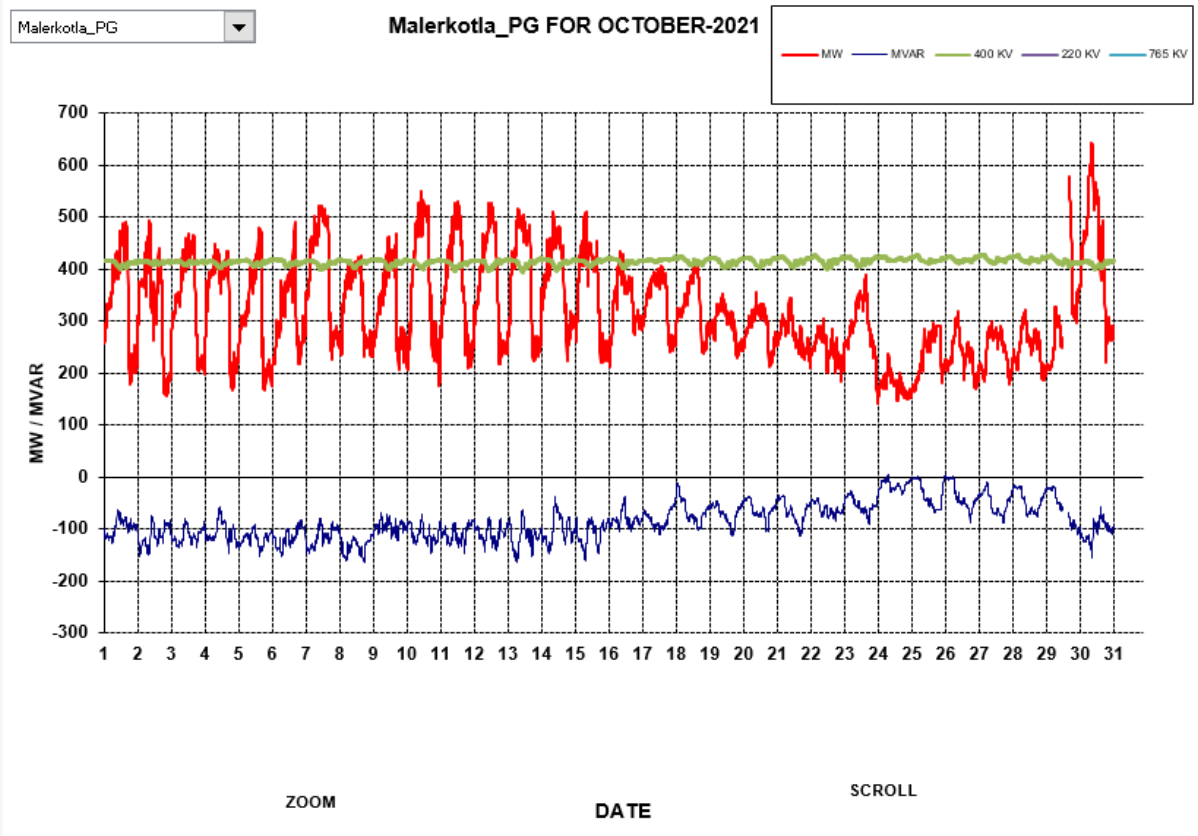
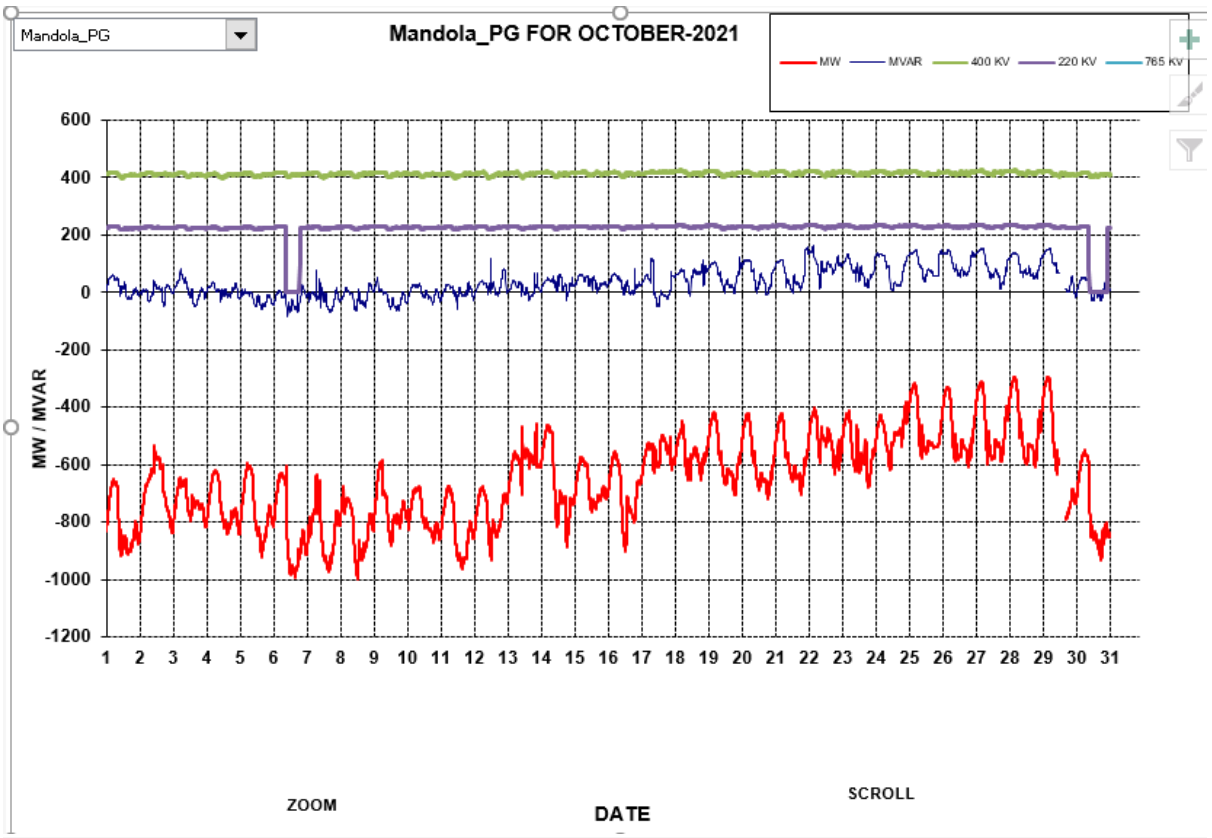
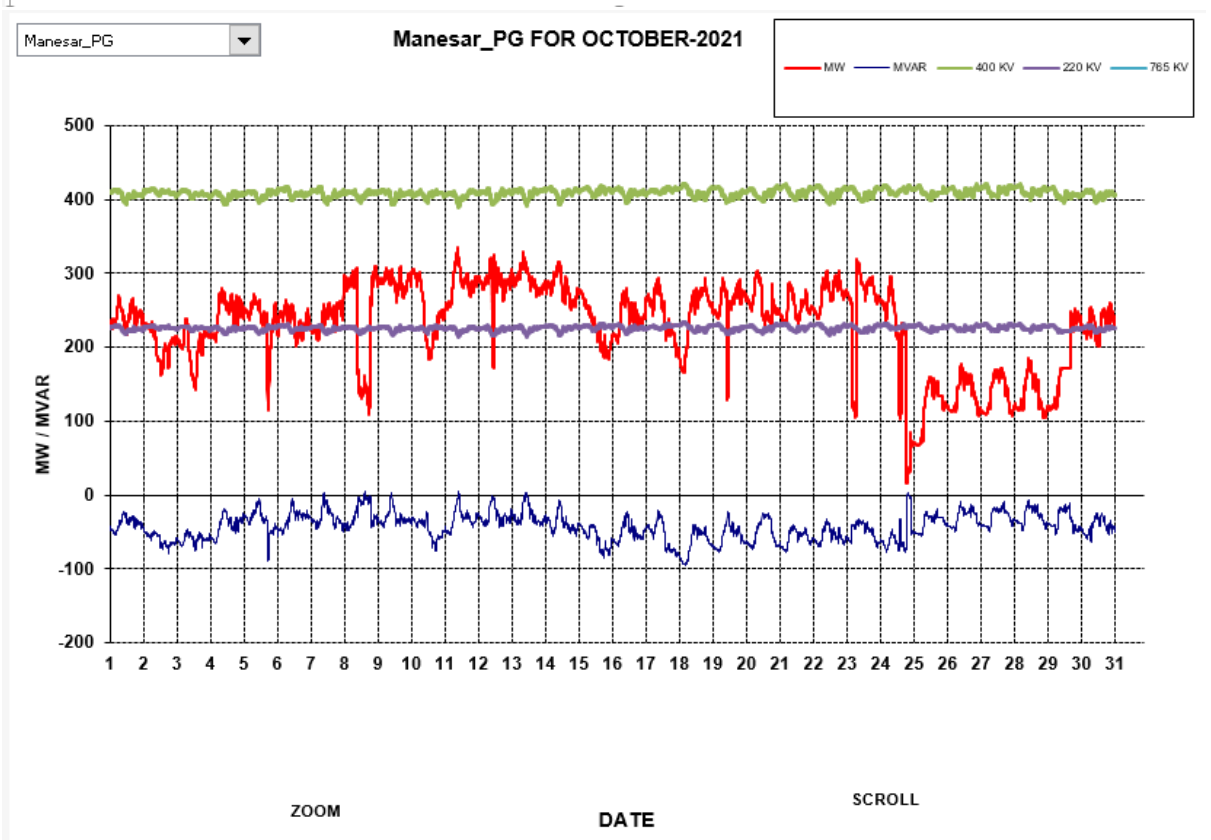

Jaipur South_PG
Jaipur South_PG FOR OCTOBER-202
MW
MVAR
400 KV
220 KV
765 KV
MW / MVAR
500
400
300
200
100
0
-100
-200
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
ZOOM
DATE
SCROLL


Kanpur_PG
Kanpur_PG FOR OCTOBER-2021
MW
MVAR
400 KV
220 KV
765 KV
MW / MVAR
500
400
300
200
100
0
-100
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
ZOOM
DATE
SCROLL


Maharani Bagh_PG
Maharani Bagh_PG FOR OCTOBER-2
MW
MVAR
400 KV
220 KV
765 KV
MW / MVAR
1000
800
600
400
200
0
-200
-400
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
ZOOM
DATE
SCROLL


Malerkotla_PG
Malerkotla_PG FOR OCTOBER-2021
MW
MVAR
400 KV
220 KV
765 KV
MW / MVAR
700
600
500
400
300
200
100
0
-100
-200
-300
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
ZOOM
DATE
SCROLL


Mandola_PG
Mandola_PG FOR OCTOBER-2021
MW
MVAR
400 KV
220 KV
765 KV
MW / MVAR
600
400
200
0
-200
-400
-600
-800
-1000
-1200
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
ZOOM
DATE
SCROLL


Manesar_PG
Manesar_PG FOR OCTOBER-2021
MW
MVAR
400 KV
220 KV
765 KV
MW / MVAR
500
400
300
200
100
0
-100
-200
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
ZOOM
DATE
SCROLL

REFERENCE FOR MAJOR CONTINGENCIES IN ANPARA COMPLEX

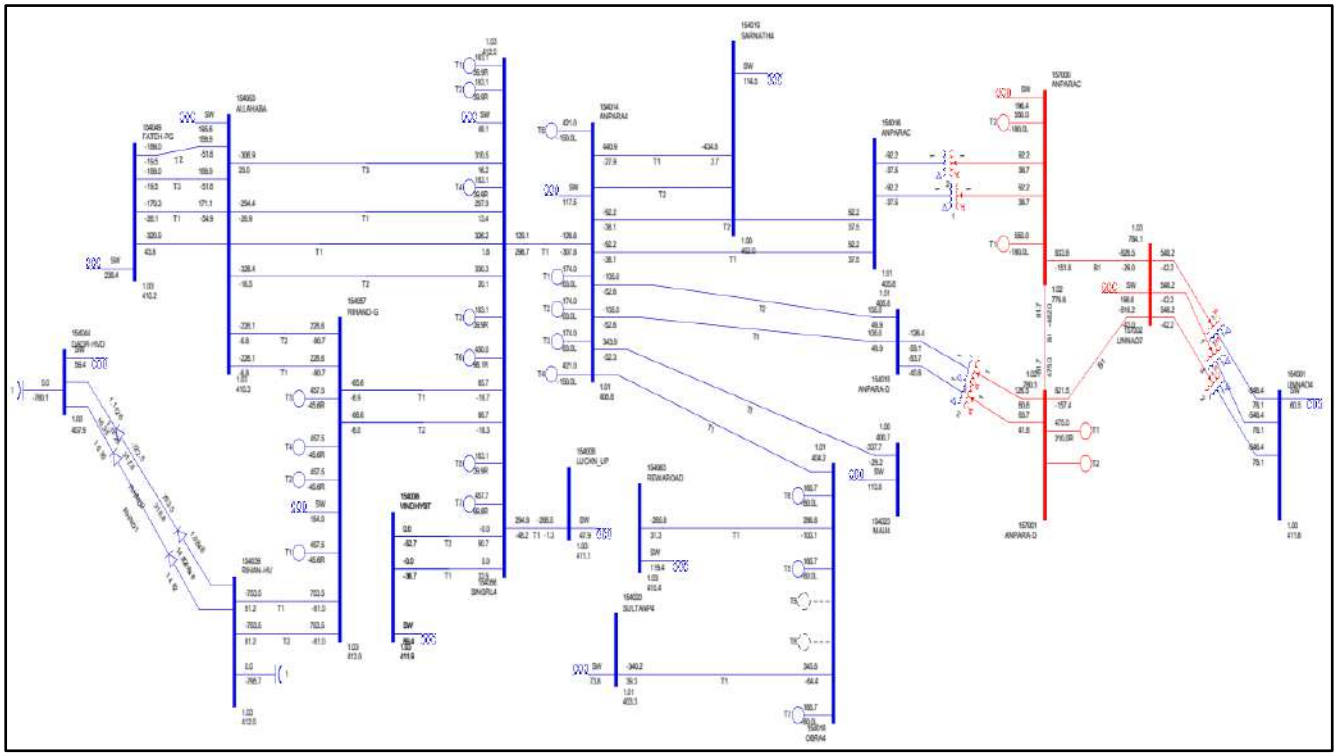
STUDY ASSUMPTIONS:

- All India Peak case has been used for the study.
- The case was scaled to match with the real-time loadings during peak hours in present scenario.
- The base case generation of stations at Anpara Complex is given here

Generating Station	Base Case Generation (MW)
Anpara – A & B	1360
Anpara – C	1100
Anpara – D	950
Singrauli	1800
Rihand – I & II	1830
Obra	495

- HVDC Vindhyachal kept in blocked condition in base case.
- HVDC Rihand – Dadri – 1500 MW

CONTINGENCY STUDY:



- The sensitivity of all generations at Anpara Complex on the major line loadings is given here under the base case scenario. The same can be referred to, in real time, for managing the line loadings at Anpara Complex.

TRANSMISSION ELEMENT	SENSITIVITY OF GENERATION & HVDC							
	RIHAND - III	SINGRAULI	ANPARA - A & B	ANPARA - C	OBRA	ANPARA - D	RIHAND - DADRI HVDC	HVDC Vindhyachal (NR-WR)
400kV Singrauli-Anpara	40.5%	4.6%	-79.8%	-2.5%	66.7%	-18.9%	-39.9%	-45.0%
400kV Singrauli-Lucknow	5.5%	0.4%	-3.3%	-0.2%	-4.8%	1.3%	-5.5%	-6.0%
400 kV Singrauli - Allahbad 1	7.2%	1.8%	-4.8%	0.5%	-11.5%	3.8%	-6.8%	-9.0%
400 kV Singrauli - Allahbad 2	8.1%	1.8%	18.5%	-17.6%	-12.1%	3.4%	-7.5%	-9.5%
400 kV Singrauli - Allahbad 3	7.4%	1.8%	-4.8%	0.4%	-11.5%	5.9%	-7.1%	-9.3%
400 kV Singrauli - Rihand D/C (Each Circuit)	-37.4%	8.1%	35.4%	0.4%	-7.9%	-47.8%	-21.3%	-6.0%
400 kV Rihand - Allahbad D/C (Each Circuit)	11.8%	-5.5%	-3.3%	0.4%	-7.9%	2.3%	-11.7%	-6.5%
400kV Anpara-Obra	8.8%	1.3%	5.7%	1.6%	-102.4%	33.3%	-8.9%	-10.0%
400kV Anpara-Mau	5.5%	0.4%	1.9%	0.9%	-18.2%	5.1%	-4.5%	-5.8%
400kV Anpara-Sarnath-D/C (Each Ckt)	5.9%	0.7%	2.4%	0.9%	-21.2%	6.1%	-5.1%	-6.5%
765kV Anpara C- Unnao	7.0%	0.7%	3.6%	8.4%	-49.7%	14.1%	-7.5%	-7.8%
765kV Anpara D- Unnao	6.8%	0.7%	3.3%	7.8%	-47.3%	14.3%	-7.5%	-7.5%
400kV Obra- Rewa Road	3.1%	0.7%	2.9%	0.7%	-2.4%	0.0%	-3.2%	-3.8%
400kV Obra-Sultanpur1	3.3%	0.2%	1.0%	1.3%	-4.2%	-0.2%	-3.1%	-3.5%
765/400kV Unnao ICT-1,2 & 3 (Each ICT)	4.6%	0.2%	2.4%	5.3%	-31.5%	9.3%	-4.9%	-5.0%

(+ve sensitivity indicate reduction in generation or HVDC Power Order will reduce the line flows, whereas -ve sensitivity indicate reduction in reduction in generation or HVDC Power Order will increase the line flows)

Load flow study was conducted for some worst contingencies is given here & observations are summarized after it.

TRANSMISSION LINE FLOW	BASE CASE LOADING	HVDC RIHAND DADRI SINGLE POLE OUTAGE	HVDC RIHAND DADRI BOTH POLES OUTAGE	765 kV ANPARA - C - UNNAO TRIPPING ALONG WITH OUTAGE OF HVDC RIHAND DADRI BOTH POLES	765 kV ANPARA - C - UNNAO & ANPARA D - UNNAO TRIPPING ALONG WITH OUTAGE OF HVDC RIHAND DADRI BOTH POLES	765 kV ANPARA D - UNNAO WITH 2 ICTS AT UNNAO TRIPPING ALONG WITH OUTAGE OF HVDC RIHAND DADRI BOTH POLES
HVDC RIHAND - DADRI	1500	750	0	0	0	0
400kV Singrauli-Anpara	129	428	728	506	-215	-405
400kV Singrauli-Lucknow	295	336	376	415	485	433
400 kV Singrauli - Allahbad 1	298	349	409	442	488	457
400 kV Singrauli - Allahbad 2	330	386	453	490	541	506
400 kV Singrauli - Allahbad 3	310	363	426	460	508	476
400 kV Singrauli - Rihand D/C (Each Circuit)	66	226	521	498	251	487
400 kV Rihand - Allahbad D/C (Each Circuit)	229	317	405	428	430	438
400kV Anpara-Obra	560	627	694	816	1071	872
400kV Anpara-Mau	344	378	412	467	604	491
400kV Anpara-Sarnath-D/C (Each Ckt)	441	479	516	576	727	604
765kV Anpara C- Unnao	834	890	947	0	0	1107
765kV Anpara D- Unnao	821	877	934	1351	0	0
400kV Obra- Rewa Road	289	313	337	383	480	404
400kV Obra-Sultanpur1	346	369	393	463	526	456
765/400kV Unnao ICT-1,2 & 3 (Each ICT)	548	585	622	445	0	1097

1. **Outage of HVDC Rihand Dadri Poles**
   a) In case of tripping of one or both poles of HVDC Rihand – Dadri, no constraint was found to have hit in base case. Whereas, in real-time the loading of lines can be regulated by deciding suitable power order of HVDC Vindhyachal as per the sensitivity table given above.

2. **Outage of HVDC Rihand Dadri Poles & contingency at 765 kV Level**
   a) In case of 765 Kv Anpara - C - Unnao tripping along with outage of HVDC Rihand Dadri both Poles, the loading of lines at Anpara complex were found to be remaining within the (N-1) limits in base case. However, under real-time conditions, loading may be controlled by regulating HVDC flows.
   b) In case of 765 Kv Anpara - C - Unnao & Anpara D - Unnao tripping along with outage of HVDC Rihand Dadri both Poles, loading of 400 kV Anpara - Mau, Anpara – Sarnath D/C, Anpara – Obra was found to be breaching (N-1) limits.

- Under this case, generation backdown in proposed at Anpara A & B, Anpara C & Anpara D stations. The generation backdown at these stations can be done on pro-rata basis in order to bring down the line loadings.

Transmission Line	Sensitivity on line loading of Generation at Anpara A & B, Anpara C & Anpara D
400 kV Anpara – Mau	12%
400 kV Anpara – Sarnath D/C	12%
400 kV Anpara - Obra	22%

c) In case of 765 kV Anpara D - Unnao with 2 ICTs at Unnao tripping along with HVDC Rihand Dadri both Poles, loading of 400 kV Anpara - Mau, Anpara – Sarnath D/C, Anpara – Obra & 765/400 kV ICT at Unnao was found to be breaching (N-1) limits.

- Under this case, generation backdown in proposed at Anpara A & B, Anpara C & Anpara D stations. The generation backdown at these stations can be done on the basis of sensitivity table given below in order to bring down the line loadings.

Transmission Line	Sensitivity on line loading of Generation at Anpara A & B	Sensitivity on line loading of Generation at Anpara C & Anpara D
400 kV Anpara – Mau	10%	10%
400 kV Anpara – Sarnath	10%	10%
400 kV Anpara - Obra	20%	20%
765/400 kV ICT at Unnao	10%	15%

3. **Outage of HVDC Rihand Dadri Poles & contingency at 400 kV Level**

SERIAL NO.	TRIPPED ELEMENTS	OVERLOADED ELEMENTS (N-1)	SUGGESTED ACTION
1	400 kV Anpara – Sarnath one circuit along with outage of Rihand – Dadri Both Poles	Not Observed in base case	Action may be taken depending upon real-time grid conditions
2	400 kV Anpara – Mau along with outage of Rihand – Dadri Both Poles	Not Observed in base case	Action may be taken depending upon real-time grid conditions
3	400 kV Rihand – Allhabad S/C along with outage of Rihand – Dadri Both Poles	Not Observed in base case	Action may be taken depending upon real-time grid conditions
4	400 kV Singrauli – Allahabad S/C along with outage of Rihand – Dadri Both Poles	400 kV Anpara - Singrauli	Generation Backdown at Singrauli (Sensitivity = 54%) & Rihand (Sensitivity = 48%)
5	Two circuits of 400 kV Singrauli – Allahabad along with outage of Rihand – Dadri Both Poles	400 kV Anpara - Singrauli	Generation Backdown at Singrauli (Sensitivity = 54%) & Rihand (Sensitivity = 48%)
6	400 kV Rihand - Allahabad along with outage of Rihand – Dadri Both Poles	400 kV Anpara - Singrauli	Generation Backdown at Rihand (Sensitivity = 48%)
7	400 kV Singrauli - Allahabad along with outage of Rihand – Dadri Both Poles	400 kV Anpara – Singrauli & 400 kV Rihand – Singrauli D/C	Generation Backdown at Rihand (Sensitivity of 42% & 49% on the line loadings)
8	400 kV Anpara – Sarnath D/C along with outage of Rihand – Dadri Both Poles	400 kV Anpara - Obra	Generation Backdown at Anpara – A & B (20%), Anpara – C (15%), Anpara – D (15%)
9	400 kV Anpara – Sarnath S/C, 400 kV Anpara - Mau along with outage of Rihand – Dadri Both Poles	400 kV Anpara - Obra	Generation Backdown at Anpara – A & B (22%), Anpara – C (15%), Anpara – D (15%)

Sr No	Element Name	Outage Date	Outage Time	Reason
1	400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-2	15-Oct-21	23:06	Overvoltage. As per PMU, No fault observed.
		16-Oct-21	1:29	Overvoltage. As per PMU, No fault observed.
		17-Oct-21	18:13	B-N fault. As per PMU, Y-N fault occured, no auto-reclosing observed.
		18-Oct-21	18:03	B-N fault, fault Current- 6.228 kA, 42.53 Km from suratgarh end. As per PMU, Y-N fault occured, no auto-reclosing observed.
		20-Oct-21	2:57	R-N fault. As per PMU, Y-N fault occured, no auto-reclosing observed.
2	400 KV Agra-Unnao (UP) Ckt-1	18-Oct-21	12:51	CB Pole discrepancy , CB trip ckt 1/2 faulty. No Flag in relay. As per PMU, No fault observed.
		28-Oct-21	22:27	R-N Fault, Fault current 18.43kA, Dist. 0.340km from Agra end. As per PMU, R-N fault occured, no auto-reclosing observed.
		31-Oct-21	21:16	R-N Fault, Fault current 5.074kA, Dist. 63.28km from Agra end. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
3	400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-1	15-Oct-21	12:44	Tripped only from Srinagar end. As per PMU, No fault observed.
		16-Oct-21	16:16	DT received at Srinagar end. Line remained charged from Alaknanda end. As per PMU, No fault observed.
		17-Oct-21	6:14	D T Received, 86A 86B oprtd. at Srinagar. As per PMU, B-N fault occured, no auto-reclosing observed.
4	400 KV Kishenpur-NewWanpoh (PG) Ckt-3	11-Oct-21	2:06	R-N fault. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
		23-Oct-21	9:36	R-N fault. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
		23-Oct-21	10:05	R-N fault. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
5	220 KV Alusteng(JK)-Drass(JK) (PDD JK) Ckt-1	17-Oct-21	1:05	R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed.
		26-Oct-21	2:06	R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed.
		26-Oct-21	3:26	R-N fault, Dist. 38.16km, Fault current 0.435kA from Drass. As per PMU, R-N fault occured, no auto-reclosing observed.

		26-Oct-21	4:03	R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed.
6	220 KV Phozal(HP)-Nallagarh(PG) (ADHPL) Ckt-1	5-Oct-21	8:31	Tripped from Phozal end due to alarm of low SF6 gas pressure (in GIS). As per PMU, No fault observed.
		9-Oct-21	20:14	R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed.
		10-Oct-21	19:11	False Alarm false alarm/tripping of low SF6 gas pressure in breaker chamber of Bay no 201 Phojal -ADHPL. As per PMU, No fault observed.
		15-Oct-21	9:21	R-N fault. As per PMU, R-N fault occured, no auto-reclosing observed.

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)
				within 24Hours	after 24Hours	Not Received	within 24Hours	after 24Hours	Not Received	Received	Not Received	
0	0	GI-2	0			Y(PG) Y(EDEN) (AHEJOL) Y(RSWPL) Y(RSJ3PL)			Y(PG) Y(EDEN) (AHEJOL) Y(RSWPL) Y(RSJ3PL)		Y(PG) Y(EDEN) (AHEJOL) Y(RSWPL) Y(RSJ3PL)	NA
0	0	GI-1	0	Y(Raj)	Y(NTPC)			Y(Raj) Y(NTPC)		Y(Raj) Y(NTPC)		320
150	0	GD-1	0	Y(SJVNL), Y(PG)			Y(SJVNL), Y(PG)			Y(SJVNL)		80
0	0	GI-2	0	Y(NTPC)		Y(UP)		Y(NTPC)	Y(UP)	Y(NTPC)	Y(UP)	920
0	0	GI-2	0		Y(PG) Y(UP)	Y(NTPC)	Y(PG)	Y(UP)	Y(NTPC)	Y(PG) Y(UP)		80

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)
				within 24Hours	after 24Hours	Not Received	within 24Hours	after 24Hours	Not Received	Received	Not Received	
0	0	GI-2	0		Y(UP)			Y(UP)		Y(UP)		80
0	95	GD-1	0.18	Y(Pun)	Y(PG)			Y(PG)	Y(Pun)	Y(PG)		NA
0	0	GI-2	0		Y(UP)			Y(UP)		Y(UP)		80
270	0	GD-1	0.27		Y(UP) Y(NHPC) Y(PG)	Y(Utt)		Y(UP) Y(NHPC) Y(PG)	Y(Utt)	Y(UP)		1800
0	0	GI-2	0	Y(UP)			Y(UP)			Y(UP)		320
0	0	GI-2	0	Y(Har)		Y(PG)		Y(Har)	Y(PG)	Y(Har)	Y(PG)	400

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)
				within 24Hours	after 24Hours	Not Received	within 24Hours	after 24Hours	Not Received	Received	Not Received	
100	0	GD-1	0	Y(UP)			Y(UP)			Y(UP)		NA
60	0	GD-1	0.3		Y(NHPC) Y(HP)	Y(BBMB)		Y(NHPC)		Y(NHPC)		NA

Northern Regional inter regional lines tripping for October-21

Annexure-I

S. No.	Name of Transmission Element Tripped	Owner/ Utility	Outage		Load Loss/ Gen. Loss	Brief Reason (As reported)	Category as per CEA Grid standards	Restoration		# Fault Clearance Time (>100 ms for 400 kV and 160 ms for 220 kV)	*FIR Furnished (YES/NO)	DR/EL provided in 24 hrs (YES/NO)	Other Protection Issues and Non Compliance (inference from PMU, utility details)	Suggestive Remedial Measures	Remarks
			Date	Time				Date	Time						
1	800 KV HVDC Kurukshetra(PG) Pole-2	POWERGRID	1-Oct-21	9:20	Nil	Pole-2 blocked at instability detection due to tap hunting in transformer.	NA	1-Oct-21	9:58	NA	Yes(After 24Hrs)	Yes(After 24Hrs)			From PMU, three phase fault is observed in the system.
2	400 KV Gorakhpur(PG)-Muzaffarpur(PG) (POWERLINK) Ckt-1	POWERLINK	2-Oct-21	8:22	Nil	Over voltage.	NA	2-Oct-21	9:33	NA	NO	NO	Details of the tripping yet to be received.	Voltage and time grading of 400kV lines for Stage-I overvoltage tripping from Gorakhpur & Muzaffarpur station needs to be checked.	From PMU, No fault observed in the system.
3	800 KV HVDC Agra-Bishwanath Chariali (PG) Ckt-1	POWERGRID	2-Oct-21	12:06	Nil	DC line earth fault,FD=1560.3km from Agra(NER Jurisdiction).	NA	2-Oct-21	13:38	NA	NO	NO		Details of the tripping yet to be received.	From PMU, No AC system fault observed.
4	400 KV Balia-Patna (PG) Ckt-2	POWERGRID	3-Oct-21	16:50	Nil	Y-N fault.	GI-2	3-Oct-21	17:31	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.
5	765 KV Phagi(RS)-Gwalior(PG) (PG) Ckt-2	POWERGRID	5-Oct-21	13:17	Nil	Y-N fault, Zone-1, Dist. 186.2km, Fault current 3.5kA from Phagi end.	GI-2	5-Oct-21	14:40	NO	Yes(After 24Hrs)	NO			From PMU, Y-N fault is observed in the system and unsuccessful auto-reclosing is observed.
6	220 KV Sahupuri(UP)-Pusauli(BS) (UP) Ckt-1	UPPTCL	6-Oct-21	11:08	Nil	R-B fault.	NA	6-Oct-21	16:30	NO	Yes(After 24Hrs)	Yes(After 24Hrs)			From PMU, R-B fault is observed in the system.
7	220 KV Auraiya(NT)-Mehgaon(MP) (PG) Ckt-1	POWERGRID	12-Oct-21	2:40	Nil	R-N fault.	NA	12-Oct-21	4:42	NO	Yes	Yes	No auto-reclosing observed.	A/R needs to be checked and corrected.	From PMU, R-N fault is observed in the system and auto-reclosing not observed.
8	400 KV Vindhyachal(PG)-Vindhyachal(NT) (PG) Ckt-2	POWERGRID	18-Oct-21	20:28	Nil	Over voltage.	NA	19-Oct-21	1:33	NA	Yes(After 24Hrs)	Yes(After 24Hrs)		Voltage and time grading of 400kV lines for Stage-I overvoltage tripping from Vindhyachal station needs to be checked.	From PMU, No fault observed in the system.
9	765 KV Chittorgarh-Banaskantha (PG) Ckt-1	POWERGRID	26-Oct-21	13:01	Nil	Tripped on operation of over voltage Protection stage 1 at 765kv Chittorgarh .	GI-2	26-Oct-21	16:00	NA	NO	NO	Details of the tripping yet to be received.	Voltage and time grading of 765kV lines for Stage-I overvoltage tripping from Chittorgarh station needs to be checked.	From PMU, No fault 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

S. No.	Utility	1st Oct 2021 - 31st Oct 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	ACME	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
2	AD HYDRO	3	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
3	AHEJOL	2	2	**100**	2	0	**100**	2	0	**100**	2	0	**100**
4	ANTA-NT	8	1	**13**	1	2	**17**	1	3	**20**	1	0	**13**
5	APTFL	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
6	AURAIYA-NT	5	2	**40**	2	0	**40**	3	0	**60**	1	0	**20**
7	BAIRASUIL-NH	4	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
8	BBMB	14	4	**29**	6	5	**67**	6	5	**67**	5	0	**36**
9	BUDHIL	3	3	**100**	2	0	**67**	2	0	**67**	2	0	**67**
10	CHAMERA-III-NH	2	0	**0**	0	1	**0**	0	1	**0**	0	0	**0**
11	CHAMERA-II-NH	2	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
12	CPCC1	45	25	**56**	24	5	**60**	25	7	**66**	25	4	**61**
13	CPCC2	53	2	**4**	9	2	**18**	2	3	**4**	25	0	**47**
14	CPCC3	41	10	**24**	10	6	**29**	9	5	**25**	10	2	**26**
15	DADRI-NT	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
16	DHAULIGANGA-NH	2	0	**0**	0	1	**0**	0	1	**0**	0	0	**0**
17	DULHASTI-NH	1	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
18	EDEN (ERCPL)	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
19	KISHENGANGA-NH	1	0	**0**	0	1	**0**	0	1	**0**	0	0	**0**
20	KOLDAM-NT	2	2	**100**	2	0	**100**	2	0	**100**	2	0	**100**
21	NAPP	1	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
22	NJPC	2	1	**50**	1	0	**50**	1	0	**50**	2	0	**100**
23	RAMPUR	4	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
24	RAPPA	6	3	**50**	6	0	**100**	5	0	**83**	6	0	**100**
25	RAPPB	3	2	**67**	2	0	**67**	2	0	**67**	2	0	**67**
26	RENEW SUN WAVES(RSWPL)	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
27	RSEJ3PL	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
28	SALAL-NH	2	0	**0**	0	1	**0**	0	2	**0**	0	0	**0**
29	SAURYA	2	2	**100**	2	0	**100**	2	0	**100**	2	0	**100**
30	SBSRPC-11	2	2	**100**	2	0	**100**	2	0	**100**	2	0	**100**
31	SEWA-2-NH	1	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
32	SLDC-CHD	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
33	SLDC-DV	14	1	**7**	7	1	**54**	7	1	**54**	7	0	**50**
34	SLDC-HP	15	0	**0**	0	7	**0**	0	7	**0**	0	1	**0**
35	SLDC-HR	15	3	**20**	5	2	**38**	5	2	**38**	3	0	**20**
36	SLDC-JK	19	5	**26**	5	14	**100**	5	14	**100**	8	5	**57**
37	SLDC-PS	21	4	**19**	11	4	**65**	11	4	**65**	19	0	**90**
38	SLDC-RS	49	0	**0**	28	0	**57**	28	0	**57**	27	0	**55**
39	SLDC-UK	19	14	**74**	13	1	**72**	19	0	**100**	16	0	**84**
40	SLDC-UP	130	25	**19**	32	21	**29**	35	27	**34**	29	1	**22**
41	INDIGRID	3	0	**0**	0	0	**0**	0	0	**0**	3	0	**100**

42	TANAKPUR-NH	2	2	**100**	2	0	**100**	2	0	**100**	2	0	**100**
43	TANDA-NT	1	0	**0**	0	0	**0**	0	1	**0**	0	0	**0**
44	UNCHAHAR-NT	4	1	**25**	0	0	**0**	0	0	**0**	0	0	**0**
45	URI-I-NH	1	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**

S. No.	Name of the Generatng Station (Capacity in MW)	Date of last PSS tuning / re-tuning performed (in DD/MM/YYYY format)	Date of last Step Response Test performed (in DD/MM/YYYY format)	Report submitted to NRLDC/NRPC (Yes/ No)	Remarks (if any)	Tentative schedule for PSS tuning / re-tuning in FY 2021-22
1	**THDC**					
	TEHRI HPS(4 * 250)	07/01/2019 to 10/01/2019	07/01/2019 to 10/01/2019	Yes	(Report shared vide email dt.19.01.2019)	
	KOTESHWAR HPS(4 * 100)	17/03/2019 to 19/03/2019	17/03/2019 to 19/03/2019	Yes	(Report shared vide email dt.11.02.2021)	
2	**SJVNL**					
	NATHPA-JHAKRI HPS(Unit1 #250)	10.03.2020	-	No	Excitation system upgraded in 2020	
	NATHPA-JHAKRI HPS(Unit2 #250)	14.03.2013	-	No	The existing excitation system is very old and obsoleted forwhich support for PSS tuning is not available from OEM (Mls Voith Hydro), although NJHPS, SJVN has placed work order on 08/12/201 5. Further being the critical component, it is not possible"io get the PSS tuning done from any other vender except OEM (Mls Voith Hydro) being the system and software specific job. Therefore, prpposal for upgradation of the excitation system of this unit is under process and PSS tuning shall be carried out during upgradation of excitation system.	3rd Quarter
	NATHPA-JHAKRI HPS(Unit3 #250)	03.03.2020	-	No	Excitation system upgraded in 2020	
	NATHPA-JHAKRI HPS(Unit4 #250)	14.03.2013	-	NO	The existing excitation system is very old and obsoleted forwhich support for PSS tuning is not available from OEM (Mls Voith Hydro), although NJHPS, SJVN has placed work order on 08/12/201 5. Further being the critical component, it is not possible"io get the PSS tuning done from any other vender except OEM (Mls Voith Hydro) being the system and software specific job. Therefore, prpposal for upgradation of the excitation system of this unit is under process and PSS tuning shall be carried out during upgradation of excitation system.	3rd Quarter
	NATHPA-JHAKRI HPS(Unit5 #250)	14.05.2016	14.05.2016	NO	Excitation system upgraded in 2013	3rd Quarter
	NATHPA-JHAKRI HPS(Unit6 #250)	14.05.2017	14.05.2017	NO	Excitation system upgraded in 2013	3rd Quarter
	RAMPUR HEP(6 * 68.67)	29.11.2014	27.10.2020,10.02.2012 1	YES	PSS tuning was done at the time of commissioning of Excitation System by OEM (M/s BHEL). Since then response of PSS is checked regularly and found satisfactory.	
3	**HVPNL**					
	PANIPAT TPS(unit1# 250)	29.03.2016	29.03.2016	YES	--	3rd Quarter
	PANIPAT TPS(unit2# 250)	15.01.2018	15.01.2018	YES	--	3rd Quarter
	DCRTPP (YAMUNA NAGAR)(unit1#300)	12/19/2018	12/19/2018	YES	(Report attached)	3rd Quarter
	DCRTPP (YAMUNA NAGAR)(unit1#300)	Will be carried out shortly				
	RGTPP(KHEDAR) (2*600)	5th to 6th July 2013	5th to 6th July 2013	Report attached. Previous record being looked into	No MW capacity addition after 2013 at RGTPP Khedar. No new line addition in vicinity of station	
	JHAJJAR(CLP) (2*660)	5/20/2017	5/20/2017	YES	--	3rd Quarter
4	**NTPC**					
	Rihand (Unit1#500)	3/3/2017	3/3/2017	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit2#500)	7/2/2016	7/2/2016	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit3#500)	8/15/2015	8/15/2015	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit4#500)	5/25/2017	5/25/2017	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter

	Rihand (Unit4#500)	12/11/2014	12/11/2014	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit5#500)	12/11/2014	12/11/2014	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	SINGRAULI STPS(Unit1#200)	-	-	-	Not done in last three years	
	SINGRAULI STPS(Unit2#200)	-	-	-	Not done in last three years	
	SINGRAULI STPS(Unit3#200)	-	-	-	Not done in last three years	
	SINGRAULI STPS(Unit4#200)	-	-	-	Not done in last three years	
	SINGRAULI STPS(Unit5#200)	-	-	-	Not done in last three years	
	SINGRAULI STPS(Unit6#500)	02.05.2018	02.05.2018	NO	--	3rd Quarter
	SINGRAULI STPS(Unit7#500)	15.07.2018	15.07.2018	NO	--	3rd Quarter
	UNCHAHAR I(2 * 210)	3/29/2016	3/29/2016	YES	--	3rd Quarter
	UNCHAHAR II TPS(unit1# 210)	7/13/2019	7/13/2019	YES	--	
	UNCHAHAR II TPS(unit2# 210)	8/10/2018	10-08-2018	YES	--	3rd Quarter
	UNCHAHAR UNIT6#500	-	31.03.2017	YES	--	3rd Quarter
	KOLDAM HPS(4 * 200)	7/1/2015	7/1/2015	YES	--	3rd Quarter
	DADRI GPS(2 * 154.51) (ST- Steam Turbine)	-	11/18/2015	YES	--	3rd Quarter
	ANTA GPS(3 * 88.71)(GT- Gas Turbine)	8/8/2014	8/8/2014	YES	--	3rd Quarter
	ANTA GPS(1 * 153.2)(ST- Steam Turbine)	8/8/2014	8/8/2014	YES	--	3rd Quarter
5	**Aravali Power Company Private Ltd**					
	ISTPP (JHAJJAR)(3 * 500)	-	8/25/2015	YES	--	3rd Quarter
6	**NHPC**					
	CHAMERA HPS (3*180)	8/6/2020	12/27/2019	YES	--	
	CHAMERA II HPS(3 * 100)	10/11/2015	10/11/2015	NO	Replacement of Excitation system in two units	3rd Quarter
	CHAMERA III HPS(Unit1#77)	10/29/2015	1/7/2012	YES	--	3rd Quarter
	CHAMERA III HPS(Unit2,3#77)	10/29/2015	6/19/2012	YES	--	3rd Quarter
	PARBATI III HEP (Unit1# 130)	1/21/2016	1/21/2016	YES	Have been done recetly. The report on PSS turning shall be submitted seperately.	3rd Quarter
	DULHASTI HPS(Unit2#130)	1/21/2020	1/21/2020	YES	--	
	DULHASTI HPS(Unit1#130)	12/29/2019	12/29/2019	YES	--	
	URI HPS(Unit3# 120)	1/10/2021	1/10/2021	YES	--	
	URI HPS(Unit4# 120)	2/15/2021	2/15/2021	YES	--	
	URI HPS(Unit2# 120)	3/7/2016	3/7/2016	YES	--	3rd Quarter
	URI-II HPS(4 * 60)	Mar-14	Mar-14		Re-tunning& Step response test shall be carriedout in 2021-22	
	SALAL HPS (Unit-3,4,5,6 # 115)	12/16/2014	12/16/2014	YES	--	3rd Quarter
	KISHANGANGA(3 * 110)	18-05-20 18	18-05-20 18	YES	--	3rd Quarter
	BAIRASIUL HPS(3 * 60)	7/30/2015	7/30/2016	YES	--	3rd Quarter
	SEWA-II HPS(3 * 40)	7/9/2016	7/9/2016	YES	--	3rd Quarter
	PARBATI III HEP(4 * 130)	12/16/2016	12/16/2016	YES	--	3rd Quarter
	TANAKPUR HPS(Unit1# 31.42)	1/9/2015	1/9/2015	YES	--	3rd Quarter
	TANAKPUR HPS(Unit2,3#31.4)	5/24/2014	5/24/2014	YES	--	3rd Quarter
	DHAULIGANGA HPS(Unit1 ,2# 70)	5/4/2014	4/17/2018	YES	--	3rd Quarter
	DHAULIGANGA HPS(Unit3,4# 70)	6/26/2014	4/17/2018	YES	--	3rd Quarter
7	**PUNJAB**					
	RAJPURA(NPL) TPS(2 * 700)	4/22/2014	4/22/2014	YES	--	3rd Quarter
8	**Rajasthan**					
	KAWAI TPS(Unt1# 660)	8/8/2014	8/8/2014	YES	--	3rd Quarter
	KAWAI TPS(Unt2# 660)	10/9/2014	10/9/2014	YES	--	3rd Quarter
	KOTA TPS (2*110+2*195+3*210)	4/17/2015	4/17/2015	YES	This is date of last test performed on unit 4 and 5 ,other units test were performed at earlier date.	3rd Quarter
	CHHABRA TPS(Unit 1#250)	5/22/2018	5/22/2018	NO	--	3rd Quarter

	CHHABRA TPS(Unit 2,3,4#250)	10/4/2015	10/4/2015	NO	--	3rd Quarter
	CHHABRA TPS(Unit5# 660)	2/10/2016	2/10/2016	YES	--	3rd Quarter
	CHHABRA TPS(Unit6# 660)	7/28/2018	7/28/2018	YES	--	3rd Quarter
	KALISINDH TPS(Unit1# 600)	2/10/2016	2/10/2016	YES	--	3rd Quarter
	KALISINDH TPS(Unit2# 600)	2/8/2016	2/8/2016	YES	--	3rd Quarter
	KOTA TPS(Unit1#110)	1/2/2015	1/2/2015	NO		3rd Quarter
	KOTA TPS(Unit2#110)	9/16/2014	9/16/2014	NO	--	3rd Quarter
	KOTA TPS(Unit3#195)	10/14/2019	10/14/2019	NO	--	
	KOTA TPS(Unit4#195)	3/6/2020	3/6/2020	NO	--	
	KOTA TPS(Unit2#110)	9/18/2014	9/18/2014	NO	--	3rd Quarter
	KOTA TPS(Unit2#110)	9/16/2014	9/16/2014	NO	--	3rd Quarter
	KOTA TPS(Unit2#110)	9/16/2014	9/16/2014	NO	--	3rd Quarter
	SURATGARH TPS (Unit1#250)	3/14/2019	3/14/2019	NO	--	
	SURATGARH TPS (Unit2#250)	2/6/2016	2/6/2016	Yes	--	3rd Quarter
	SURATGARH TPS (Unit3,4,5,6#250)	1/12/2016	1/12/2016	Yes	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit1# 135)	4/26/2016	4/26/2016	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit2# 135)	7/14/2016	7/14/2016	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit3# 135)	1/3/2014	1/3/2014	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit4# 135)	11/3/2015	11/3/2015	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit5# 135)	9/21/2014	9/21/2014	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit6# 135)	8/14/2014	8/14/2014	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit7# 135)	2/20/2016	2/20/2016	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit8# 135)	6/11/2014	6/11/2014	No		3rd Quarter
9	**UTTAR PRADESH**					
	ANPARA-C TPS(Unit1# 600)	8/22/2015	8/22/2015	Yes	--	3rd Quarter
	ANPARA-C TPS(Unit2# 600)	3/8/2016	3/8/2016	Yes	--	3rd Quarter
	ROSA TPS(Unit1 #300)	2/3/2017	2/3/2017	Yes	--	3rd Quarter
	ROSA TPS(Unit2# 300)	18/2/2018	18/2/2018	Yes	--	3rd Quarter
	ROSA TPS(Unit3 # 300)	2/3/2017	2/3/2017	Yes	--	3rd Quarter
	ROSA TPS(Unit4# 300)	2/3/2017	2/3/2017	Yes	--	3rd Quarter
	Anpara-A (Unit1#210)	01.05.2016	19.02.2021	No	--	3rd Quarter
	Anpara-A(Unit2#210)	17.11.2017	17.11.2017	No	--	3rd Quarter
	Anpara-A(Unit3#210)	25.09.2020	25.09.2020	No	--	3rd Quarter
	Anpara-B(Unit4#500)	07.12.2014	07.12.2014	Yes	Overhauling is overdue since 2014 and is proposed in Nov., 2021 PSS tuning/SRT will be done at same time.	3rd Quarter
	Anpara-B (Unit5#500)	17.08.2014	Dec., 2019	Yes	--	
	Anpara-D(Unit6#500)	15.11.2016	15.11.2016	No	--	3rd Quarter
	Anpara-D (Unit7#500)	15.04.2017	15.04.2017	No	--	3rd Quarter
	Obra-B(Unit9#200)	22.03.2016	22.03.2016	Yes	Report enclosed.	3rd Quarter
	Obra-B(Unit10#200)	28.06.2016	20.06.2016	Yes	Report enclosed.	3rd Quarter
	Obra-B (Unit11#200)	21.01.2017	21.01.2017	Yes	Report enclosed.	3rd Quarter
	Obra-B (Unit12#200)	Unit taken on load after R&M on 22 January,		-	PSS tuning and SRT scheduled in April, 2021.	
	Obra-B(Unit13#200)	Unit closed under R&M.		-	PSS tuning and SRT scheduled in April, 2021.	
	Parichha-B(Unit3#210)	08.01.2016	08.01.2016	Yes	--	3rd Quarter
	Parichha-B (Unit4#210)	08.01.2016	08.01.2016	Yes	--	3rd Quarter
	Parichha-C (Unit5#250)	08.02.2020	08.02.2020	No	--	
	Parichha-C(Unit3#250)	09.01.2016	09.01.2016	No	--	3rd Quarter
	Harduaganj (Unit8#250)	20.08.2015	20.08.2015	No	--	3rd Quarter
	Harduaganj (Unit3#250)	13.04.2016	13.04.2016	No	--	3rd Quarter
	Harduaganj(Unit7#105)	16.07.2021	16.07.2021	yes	--	

	Harduaganj(Unit9#250)	16.07.2021	16.07.2021	yes	--	
	LALITPUR TPS(Unit1# 660)	19.05.2017	19.05.2017	yes	--	3rd Quarter
	LALITPUR TPS(Unit1# 660)	30.03.2021	30.03.2021	yes	--	
	LALITPUR TPS(Unit1# 660)	24.08.2017	24.08.2017	yes	--	3rd Quarter
	ALAKHANANDA HEP(Unit1# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	ALAKHANANDA HEP(Unit2# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	ALAKHANANDA HEP(Unit3# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	ALAKHANANDA HEP(Unit4# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	MEJA TPS(Unit1#660)	16.10.2018	05.09.2017	yes	--	3rd Quarter
	MEJA TPS(Unit2#660)	16.01.2021	18.05.2020	yes	--	
10	**BBMB**					
	BHAKRA HPS(Unit1#108)	--	--	No	PSS is not provided ,shall be provided in ongoing RM&U	
	BHAKRA HPS(Unit1#108)	24.07.2015	24.07.2015	No	--	3rd Quarter
	BHAKRA HPS(Unit3#126)	--	--	No	PSS is not provided ,shall be provided in ongoing RM&U	
	BHAKRA HPS(Unit4#126)	--	--	No	--	
	BHAKRA HPS(Unit5#126)	--	--	No	--	
	BHAKRA HPS(Unit6#157)	--	--	No	The original Rusian excitation system is under replacement PO issued Hence,PSS not got tuned.	
	BHAKRA HPS(Unit7#157)	--	--	No	The original Rusian excitation system is under replacement PO issued Hence,PSS not got tuned.	
	BHAKRA HPS(Unit7#157)	--	--	No	The original Rusian excitation system is under replacement PO issued Hence,PSS not got tuned.	
	BHAKRA HPS(Unit7#157)	18.02.2016	18.02.2016	No	--	3rd Quarter
	BHAKRA HPS(Unit7#157)	18.02.2017	18.02.2017	No	--	3rd Quarter
	DEHAR HPS(Unit#1 165)	08.08.2017	08.08.2017	No	--	3rd Quarter
	DEHAR HPS(Unit#2 165)	08.08.2018	08.08.2018	No	--	3rd Quarter
	DEHAR HPS(Unit#3 165)	08.08.2019	08.08.2019	No	--	
	DEHAR HPS(Unit#4 165)	02.07.2017	02.07.2017	No	--	3rd Quarter
	DEHAR HPS(Unit#5 165)	08.08.2019	08.08.2019	No	--	
	DEHAR HPS(Unit#6 165)	02.07.2017	02.07.2017	No	--	3rd Quarter
	PONG HPS(6 * 66)	--	--	--	PSS not provided.RM&U agenda under considration.	

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 संख्या: NRLDC/SO-II/TS-13/ दिनांक: 28 अक्टूबर 2021

सेवा मे,

वितरण सूची के अनुसार

विषय: Reactive resources data compilation regarding.

महोदय,

Reactive Power document of Northern Region needs to be reviewed/updated in consultation with all users, STU, SLDC, CTU and RPC secretariat. Document was last updated in December 2020. Subsequently, there has been addition of several new generation and transmission elements in Northern Regional Grid. Therefore, the document is due for revision. The same has also been discussed in recent 188th OCC meeting as well.

Please find attached the details available with NRLDC on the above subject in respect of your organization/control area under following groups (Details format/data is given at ***Annexure-I***).

1) List of HVDC, 765kV, 400kV and 220kV transmission line
2) List of Line reactors
3) List of Bus Reactors
4) List of FSC/TCSC & SVC
5) List of tertiary reactors on 33kV side of 400/ 220/ 33 kV ICT's.
6) List of shunt capacitors
7) Tap changer details of ICT's or GT's
8) List of Over Voltage setting of 400kV & above transmission line
9) Cable information of 220 kV and above transmission line (with MVAr generation)
10) Generator reactive power capability curve for Generating stations including renewable generators (Check the existing details in the document)
11) Complete details are available at the link https://docs.google.com/spreadsheets/d/16fxC5MJb17oiKbQDv5Jz9vSJD7hxpL-7/edit?usp=sharing&ouid=101952646418859842988&rtpof=true&sd=true

The present version of Reactive Power Document of NRLDC is available at following URL:

https://nrldc.in/download/nr-reactive-power-management-2021/?wpdmdl=8772

The document is password protected with following password: **nrrpm@2021**

It is requested that the concerned may please be advised to go through the above list and corrections/deletions/additions if any, be advised to us along with the data for new facilities expected to be available during 2020-21 & 2021-22 in same format, by 30th नवम्बर 2021.

The information, feedback & comments may please also be e-mailed to: nrldcso2@posoco.in, nrldcso2@gmail.com

धन्यवाद,

भवदीय,

आलोक

(आलोक कुमार)
महाप्रबंधक

Annexure-1

Formats

1) Details of 765kV, 400kV & 220kV lines

Sl.No.	Utility	Name of Line	Ckt	KM	Conductor

2) Details of Line reactor

Sl.No	Utility	Name of Line	Ckt	Rating of reactor (MVAR)	Installed at Station	Switchable **	Provision to use as bus reactor	Healthiness

**** Switchable means provision of separate breaker for reactor other than line circuit breaker**

3) Details of Bus reactor

Sl.No	Utility	Name of Substation	Rating of reactor (MVAR)	Healthiness

4) Details of FSC/TCSC& SVC

Sl. No.	Utility	Line on which FSC/TCSC is installed	Substation	Make	Capacity	% compensation	kV rating of Bus on which capacitor is installed

S.No.	SVC Located at	ID	Rating MVAr	Remarks
1				
2				

5) Details of shunt capacitor

Sl. No.	Utility	Substation	Capacity	kV rating of Bus on which capacitor is installed

Progress of installation of HT Shunt Capacitors (rated 11kV and above) in Northern Region as on Nov, 2020								
State	**HT shunt Capacitors (rated 11kV level and above) installed as on 31.03.2020**	**New Capacitors required in 2020-21 (including balance of previous year)**	**Defective Capacitors as on 31.03.2020**	**Balance Backlog of capacitors to be added as on 31.03.2020**	**New Capacitor added in FY 2020-21**	**Balance Capacitors to be added during 2020-21**	**Total Capacitors installed in the State as on 30.11.2020**	**Total Shortage as on 30.11.2020**
	A	**B**	**C**	**D= B+C**	**E**	**F=B-E**	**G= A+E**	**H= F+C**

6) Details of OLTC of ICT or GT tap

Sl. No.	Utility	Station Name	voltage Ratio	Rating (MVA)	Make	TT	NT	Step		PT
								%	kV	

Note :TT - Total no. of Turns, NT - Nominal Tap, PT - Present Tap

7) List of 33kV Tertiary reactors on 33kV side of 400/220/33 kV ICT's

Sl.No	Utility	Name of Substation	Rating of reactor (MVAR)	rating of installed Bus	Healthiness

8) List of Over Voltage setting of 400kV & above transmission line:

S.No	**Name of Line**	**Line Length (in kM)**	**First end setting**				**Second end setting**			
			Voltage setting stage I (%)	**Time delay (sec)**	**Voltage setting stage 2 (%)**	**Time delay (sec)**	**Voltage setting stage I (%)**	**Time delay (sec)**	**Voltage setting stage 2 (%)**	**Time delay (sec)**

9) Cable information of 220 kV and above transmission line:

S. No.	Voltage level	Name of line	Length	Charging MVAr

Distribution list:

1. Managing Director, Delhi Transco Ltd., Shakti Sadan Building Kotla Road, New Delhi-110 002
2. General Manager (SLDC), Delhi Transco Ltd., SLDC Building, 33kV Substation Building, Minto Road, New Delhi-110 002.
3. Chairman & Managing Director, Rajasthan Rajya Vidyut Prasaran Nigam Limited, Vidyut Bhawan, Janpath, Jaipur- 302005
4. Chief Engineer(LD), State Load Despatch Centre, Rajasthan Rajya Vidyut Prasaran Nigam Ltd., Ajmer Road, Heerapura, Jaipur-302024
5. Chairman & Managing Director, Punjab State Transmission Corporation Ltd. Regd. Office, PSEB Head office, The Mall, Patiala-147 001.
6. Chief Engineer (SLDC), SLDC Building, near 220KV grid substation, PSTCL, Ablowal, Patiala-147001.
7. Managing Director, PTCUL, Vidyut Bhawan, Near I.S.B.T. crossing, Sharanpur Road, Majra, Dehradun-248 001.
8. Chief Engineer(SLDC), Vidyut Bhawan, Saharanpur Road, Majra, Near ISBT, Dehradun-248001, Uttarakhand
9. Managing Director, HPSEB Limited, Kumar House, Vidyut Bhawan, Shimla-171 004Himachal Pradesh.
10. Director (SLDC), HP State Load Dispatch Centre, Totu, Shimla-171 001.
11. Chairman & Managing Director, Haryana Vidyut Prasaran Nigam Ltd., Shakti Bhawan, Sector-6, Panchkula, Distt. Ambala, Haryana-134 109.
12. Chief Engineer (SO & SLDC), Haryana Vidyut Prasaran Nigam Ltd., Shakti Bhawan, Sector-6, Panchkula, Distt. Ambala, Haryana-134 109. Ph: 0172-2560547.
13. Chief Engineer (Power System), 5th-floor Uttar Pradesh Power transmission Corporation Ltd., Shakti Bhawan, 14-Ashok Marg, Lucknow-226 001.Ph: 2287879.
14. Chairman & Managing Director, Uttar Pradesh Power transmission Corporation Ltd., Shakti Bhawan, 14-Ashok Marg, Lucknow-226 001.
15. Director (SLDC), Vibhuti Khand, Phase-2, Gomti Nagar, Lucknow-226010, Uttar Pradesh
16. Development Commissioner, Power Development Department (J&K),Lottery Building, Behind Civil Secretariat, Srinagar, J&K Pin code: 190009
17. Development Commissioner, Power Development Department (J&K), Grid Station Complex, janipur, Jammu. 0191-2530265
18. Executive Engineer, SLDC Building, 220kV Gladini Grid Station Complex, Narwal Bala, Gladini-180016, J&K.
19. Chief Engineer, UT of Chandigarh (Elecy. Deptt. 1st Floor), Sector 9-D, Chandigarh-160019.
20. Superintending Engineer (Elect. Op), UT of Chandigarh (Elecy. Deptt. 5th Floor), Sector 9-D, Chandigarh-160019.
21. Director (Operation), Nuclear Power Corporation of India Ltd, 16th Floor, Centre-I, World Trade Centre, Cuffe Parade, Colaba, Mumbai - 400 005, India.
22. Station Director, Narora Atomic Power Station, Narora, Distt.- Bulandshahar, Uttar Pradesh-202389
23. Station Director, Rajasthan Atomic Power Station (B & C), Anu Shakti via Kota, Anu Shakti, Rajasthan-323303
24. Executive Director (OS), NTPC, Core-6, Scope Complex, Lodhi Road-110003, New Delhi
25. Regional Executive Director (NC), NTPC, NCR Headquarters, EOC Building, 11th Floor, OS Dept., Plot No.-8A, Sector-24, Noida, Uttar Pradesh-201301.
26. Regional Executive Director (NR), NTPC, Northern Region Headquarters, TC 33/V-1, Vibhuti Khand, Gomti Nagar, Lucknow-226010.
27. Executive Director (O&M) NHPC Ltd., NHPC Office Complex, Sector-33, Faridabad-121003, Haryana.
28. Chairman and Manager Director, SJVN Ltd, Shakti Sadan, Corporate Office Complex, Shanan, Shimla-171006, Himachal Pradesh.

29. General Manager (OMS, QA & Safety), THDC India Ltd., Pragatipuram, ByPass Road, Rishikesh-249201, Uttarakhand

30. Head of the plant, Karcham Wangtoo Hydro Electric Project (KWHEP), Sholto colony, Post office- Tapri, Tehsil-Nichar, District-Kinnaur (HP), Pincode-172104

31. Chairman, Bhakra Beas Management Board, sector-19-B, Madhya Marg, Chandigarh-160019

32. CEO, Power links Transmission Ltd. 10th Floor, DLF Tower A, District Centre Jasola, New Delhi -110025.

33. CEO, Jaypee Powergrid Ltd., JA House, 63, Basant Lok, Vasant Vihar, New Delhi-110057.Fax: +91 11 26148890, 26142726

34. Executive Director (NR-1), POWERGRID, B-9, Qutub institutional area, Katwaria Sarai, New Delhi-110016

35. Executive Director (NR-2), POWERGRID, Grid Bhawan, Rail Head Complex, Jammu-180012.

36. Executive Director, NR-3, POWERGRID, 12, Maharana Pratap Marg, Near Sikandar Bag Chauraha, Lucknow-226001

37. Director, Adani Power Ltd, Adani House, Plot No.83, Institutional Area, Sector 32, Gurgaon, Haryana-122001

38. Head Plant, Greenko Budhil Hydro Power Project, Village- Thalla, P.O.- Ghared, Tehsil- Bharmour, Distt.-Chamba, Himachal Pradesh-176315.

39. General Manager, Shree Cement TPS, Bangur Nagar, Post Box No. 33, Beawar-305901, Distt.-Ajmer (Rajasthan)

40. Chairman & Managing Director, Parbati Koldam Transmission Company Ltd., JMD Galleria 5th floor, plot no. 12-D, Sector 48, Sohna road Gurgaon-122001

41. Adani Transmission (I) Ltd, 7-A, Sambhav building, Judges Bungalow Road, Bodakdev, Ahmedabad- 380015

42. General Manager, JAYPEE POWERGRID Limited, JA House, 63, Basant Lok, Vasant Vihar, New Delhi-110057

43. The Sr. Manager, RENEW SOLAR POWER Pvt. Ltd, Commercial Block-1, Zone 6, Golf Course Road, DLF City phase-V, Gurugram 122009, Haryana

44. The Vice President, O&M, Azure Power India Pvt Ltd. (Bhadla SPD), 3rd Floor, Asset 301-304 &307, Word Mark-3, Aerocity, New Delhi 110037

45. The Vice President, O&M, SB Energy Four Limited, 1st Floor, Wordmark-2, Asset Area-8 Hospitality, Aerocity, NH-8, Delhi-110037

46. Associate Vice President (BD- HOD), Mahoba Solar (UP) Pvt Ltd, 4th floor, South Wing, Adani Corporate House, Shantigram, Near Vaishnav Devi Circle, SG Highway, Ahmedabad 382421, Gujarat

47. The Project Head, Tata Power Renewable Energy Ltd. , Corporate Centre, A Block, 34, Sant Tukaram Road, Camac Bunder, Mumbai – 400009

48. Manager, O&M Solar, ACME Chittorgarh Solar Energy Pvt. Ltd. Plot #152, Sector - 44, Gurgaon, Haryana-122002

49. AGM, Renew Solar Power Pvt Ltd, Rnew Hub, Commercial Block-1, Zone-6, Golf Course Road, DLF City Phase V, Gurugram-122002 (Haryana)

50. Azure Power Thirty Four Pvt. Ltd, 3rd Floor, Asset 301-304 and 307, World Mark-3, Aerocity, New Delhi - 110037

Copy to:

51. Member Secretary, NRPC, 18-A, SJSS Marg, Katwaria Sarai, Delhi-110016