सत्यमेव जयते

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

संख्या: उ.क्षे.वि.स./ प्रचालन/106/01/2022/96-137 दिनांक: 06.01.2023

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 202वीं बैठक का कार्यवृत |

Subject: Minutes of 202th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 202वीं बैठक दिनांक 16.12.2022 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत्त उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट http://164.100.60.165 पर उपलब्ध है। यदि कार्यवृत पर कोई टिप्पणी हो तो कार्यवृत जारी करने के एक सप्ताह के अन्दर इस कार्यालय को भेजें |

202nd meeting of the Operation Co-ordination Sub-Committee of NRPC was held on 16.12.2022. The Minutes of this meeting has been uploaded on the NRPC website http://164.100.60.165. Any comments on the minutes may kindly be submitted within a week of issuance of the minutes.

संलग्नक: यथोपरि

06.01.2023

(प्रदीप कुमार)
कार्यपालक अभियंता (प्रचालन)

सेवा में,

उ.क्षे.वि.स. के प्रचालन समन्वय उप-समिति के सभी सदस्य

18-ए, शहीद जीत सिंह मार्ग, कटवारिया सराय, नई दिल्ली- 110016 फोन:011-26513265 ई-मेल: seo-nrpc@nic.in वेबसाईट: www.nrpc.gov.in
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उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 202वीं बैठक का कार्यवृत्त

202nd meeting of OCC of NRPC was held on 16.12.2022 through video conferencing.

खण्ड-क: उ.क्षे.वि.स. **PART-A:NRPC**

1. Confirmation of Minutes

Minutes of 201st OCC meeting was issued on 07.12.2022. OCC confirmed the minutes.

2. Review of Grid operations of November 2022

2.1. Anticipated vis-à-vis Actual Power Supply Position (Provisional) for November 2022

Reasons submitted by states for significant deviation of actual demand from anticipated figures during the month of November 2022 are as under:

- **Himachal Pradesh**

The Anticipation in Peak Demand in respect of Himachal Pradesh for the month of November, 2022 came on the higher side due to the heavy inrush of tourists and consistent dry weather.

- **Haryana**

The variations between actual and anticipated demand and energy consumption for the month of Novemebr-2022 is due increase in industrial and urban demand.

- **Punjab**

It is intimated that actual maximum demand and actual energy requirement are more as compared to anticipated maximum demand and anticipated energy requirement respectively because of dry spell and late onset of winters in the state of Punjab during the month of November 2022.

- **Rajasthan**

Peak demand of Rajasthan state for the month of November-2022 was observed as 16023 MW which is 10.5% higher than anticipated state demand for the month i.e 14500 MW. The reason of this high variation is overlapping of agriculture block supply in day hours by DISCOMs looking to high solar generation in day hours.

3. Maintenance Programme of Generating units and Transmission Lines

The maintenance programme of generating units and transmission lines for the month of January 2023 was deliberated in the meeting on 15.12.2022.

Following s/d proposed in May'23 were reviewed in the OCC and their revised dates for LGBR 2023-34 are as below:

Element Name	Owner	Capacity	Reason	Revised Outage From	Revised Outage To	OCC Remarks
CTPP CHHABRA UNIT 3	RUVN	250 MW	Annual Boiler Overhaul	16-May-23	14-Jun-23	OCC agreed to revised dates for incorporation in LGBR 2023-24
RAJIV GANDHI TPS HISAR UNIT 1	HPGCL	600 MW	Annual Overhauling	01-Oct-23	05-Dec-23	OCC agreed to revised dates for incorporation in LGBR 2023-24
UNCHAHAR-III TPS UNIT 1	NTPC	210 MW	Boiler+RLA of Boiler+ Boiler acid cleaning+ Generator +HP/IP SV/CV	01-Oct-23	04-Nov-23	OCC agreed to revised dates for incorporation in LGBR 2023-24
SSCTPP SURATGARH UNIT 8	RUVN	660 MW	Annual Boiler Overhaul	16-May-23	04-Jun-23	OCC agreed to revised dates for incorporation in LGBR 2023-24

4. Planning of Grid Operation

4.1. **Anticipated Power Supply Position in Northern Region for January 2023**

The updated anticipated Power Supply Position for January 2023 is as below:

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	120	270	No Revision submitted
	Requirement	130	280	
	Surplus / Shortfall	-10	-10	
	% Surplus / Shortfall	-7.7%	-3.6%	
DELHI	Availability	3183	5500	15-Dec-22
	Requirement	2400	5500	
	Surplus / Shortfall	783	0	
	% Surplus / Shortfall	32.6%	0.0%	
HARYANA	Availability	4630	11110	No Revision submitted
	Requirement	4190	7930	
	Surplus / Shortfall	440	3180	
	% Surplus / Shortfall	10.5%	40.1%	
HIMACHAL PRADESH	Availability	1113	2060	09-Dec-22
	Requirement	1116	2080	
	Surplus / Shortfall	-3	-20	
	% Surplus / Shortfall	-0.3%	-1.0%	
J&K and LADAKH	Availability	920	3240	No Revision submitted
	Requirement	1930	3000	
	Surplus / Shortfall	-1010	240	
	% Surplus / Shortfall	-52.3%	8.0%	
PUNJAB	Availability	5160	11390	16-Dec-22
	Requirement	3970	7450	
	Surplus / Shortfall	1190	3940	
	% Surplus / Shortfall	30.0%	52.9%	
RAJASTHAN	Availability	8520	19200	16-Dec-22
	Requirement	9130	16200	
	Surplus / Shortfall	-610	3000	
	% Surplus / Shortfall	-6.7%	18.5%	
UTTAR PRADESH	Availability	9920	20500	12-Dec-22
	Requirement	10075	20500	
	Surplus / Shortfall	-155	0	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	% Surplus / Shortfall	-1.5%	0.0%	
UTTARAKHAND	Availability	1302	2450	06-Dec-22
	Requirement	1333	2550	
	Surplus / Shortfall	-31	-100	
	% Surplus / Shortfall	-2.3%	-3.9%	
NORTHERN REGION	Availability	34867	71000	
	Requirement	34274	61400	
	Surplus / Shortfall	593	9600	
	% Surplus / Shortfall	1.7%	15.6%	

5. Submission of breakup of Energy Consumption by the states

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

State / UT	From	To
Delhi	Apr-2018	Oct-2022
Haryana	Apr-2018	Oct-2022
Himachal Pradesh	Apr-2018	Nov-2022
Punjab	Apr-2018	Oct-2022
Rajasthan	Apr-2018	Sep-2022
Uttar Pradesh	Apr-2018	Oct-2022
Uttarakhand	Apr-2018	Sep-2022

5.2. OCC forum again raised expressed concern on non-submission of energy breakup data by UTs of J&K & Ladakh, and Chandigarh despite repeated reminders.

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

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

6.2. In 195th OCC, SLDCs were requested to again to coordinate with respective Transmission utilities of states/UT's and submit details about the updated status of Down Stream network by State utilities from ISTS Station (enclosed as ***Annexure-A-I.I***) before every OCC meeting.

7. NR Islanding scheme

7.1. In the meeting (202nd OCC), EE (P&SS), NRPC apprised that Unchahar Islanding Scheme has been approved in 59th NRPC Meeting (held on 31st Oct'22).

7.2. Further, he also intimated that in 60th NRPC Meeting (held on 30th Nov 2022), following islanding schemes have also been approved:

a) Rajasthan
   i. Suratgarh STPS Islanding Scheme
   ii. Jodhpur-Barmer-Rajwest LTPS Islanding Scheme
b) Himachal Pradesh
   i. Shimal Solan Islanding schemes
   ii. Kullu Mandi and Manali Islanding Scheme
c) Punjab
   i. NPL Rajpura Islanding scheme
   ii. Ranjit Sagar Dam Islanding scheme

7.3. UP representative apprised members that a committee to review the progress of implementation of Unchahar and Agra Islanding scheme has been constituted by Director(Operations), UPPTCL. Further, he intimated that the first meeting of the committee was held on 03.12.2022 and in the said meeting, it was decided that it would be appropriate that UFR's to be installed at NTPC Unchahar and PGCIL end be installed and maintained by respective entity.

7.4. UP representative also informed forum that around 40 sub-stations are covered in both the islanding scheme of UP and procurement for UFR's for 20 sub-station has already being done and for rest 20 sub-station it is under progress. Further, he highlighted that there are total 4 to 5 sub-stations of NTPC and PGCIL covered under UP islanding scheme and opined that UFR's at these sub-stations shall be installed and maintained by respective entity.

7.5. MS, NRPC opined that there shall be single ownership for the activity of installation and maintenance of UFR's and UP may take the responsibility for the said work as UP is the beneficiary for the cited islanding scheme. However, if UP desires it may have a meeting with both NTPC and Powergrid and deliberate on the aforesaid matter and thereafter communicate the discussion of the meeting to NRPC Sectt..

7.6. NRPC representative apprised forum that UP has communicated that CPRI has completed the steady state study for Agra islanding scheme and the draft for dynamic study would be shared by CPRI with them by 25.12.2022

7.7. With regard to Delhi islanding scheme, NRPC representative intimated that revised scheme was received on 15.12.2022 and after scrutiny by NRPC Sectt.. a separate meeting will be held amongst officials of NRPC, NRLDC and Delhi SLDC.

7.8. HPSLDC intimated that OEM has informed that Malana-I HEP Under frequency setting cannot be set below 48.5 Hz.

7.9. EE (P&SS), NRPC stated that as per SOP issued by NPC Division, CEA, islanding frequency shall be 47.9 Hz, therefore, NPC Division, CEA may be asked for reviewing the frequency.

7.10. MS, NRPC stated that a separate meeting may be called with HP for resolution of the issue.

8. Coal Supply Position of Thermal Plants in Northern Region

8.1. In the meeting, NRPC representative apprised the forum about the coal stock position of generating stations in northern region during current month (till 10th December 2022).

8.2. Average coal stock position of generating stations in northern region, having critical stock, during first nine days of December 2022 is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
GOINDWAL SAHIB TPP	540	32.09	23	3.2
KOTA TPS	1240	71.17	23	3.5
PRAYAGRAJ TPP	1980	78.01	23	2.3
TALWANDI SABO TPP	1980	51.98	23	3.3
CHHABRA-I PH-1 TPP	500	71.31	23	0.7
CHHABRA-I PH-2 TPP	500	39.67	23	1.4
CHHABRA-II TPP	1320	59.10	23	2.2

8.3. In the meeting, above mentioned generating stations were requested to take adequate measures.

9. Regularization of shutdown of 765kV S/C Moga -Bhiwani line taken for diversion work on request of M/s Northern Railways for construction of New Railway line in Meham – Hassi section by them. (Agenda by Powergrid, NR-1)

9.1. In Powergrid, NR-1 vide letter dated 01.12.2022 (copy attached as Annexure-A.IV of agenda) requested for regularization of outage of 765kV S/C Moga - Bhiwani line taken for diversion work on request of M/s Northern Railways for construction of New Railway line in Meham – Hassi section by them.

9.2. The shutdown was availed by Powergrid, NR-1 from 18.10.2022 to 17.11.2022. In outage meeting of 200th OCC the outage was approved from 18th Oct'22 to 05th Nov'22. The detailed reasons of the extension of the outage period of 765kV S/C Moga -Bhiwani line for the cited work is mentioned in the aforesaid letter.

9.3. MS, NRPC stated that decision on deemed availability would be dealt separately after examination of the cited matter by NRPC Sectt. as per tariff regulations.

10. Testing of circuit breakers at PPGCL BARA UNIT 1,2,3 (Agenda by PPGCL)

10.1. PTCUL MS, NRPC directed PPGCL to apply the shutdown on d-3 basis to NRLDC/NLDC.

10.2. NRLDC representative stated that upon receiving the formal request on d-3 basis from PPGCL, the cited shutdowns would be facilitated.

11. Additional Agenda No.1: SPS implementation to relive transmission congestions in Bikaner complex (Agenda by Powergrid, NR-1 and CTU)

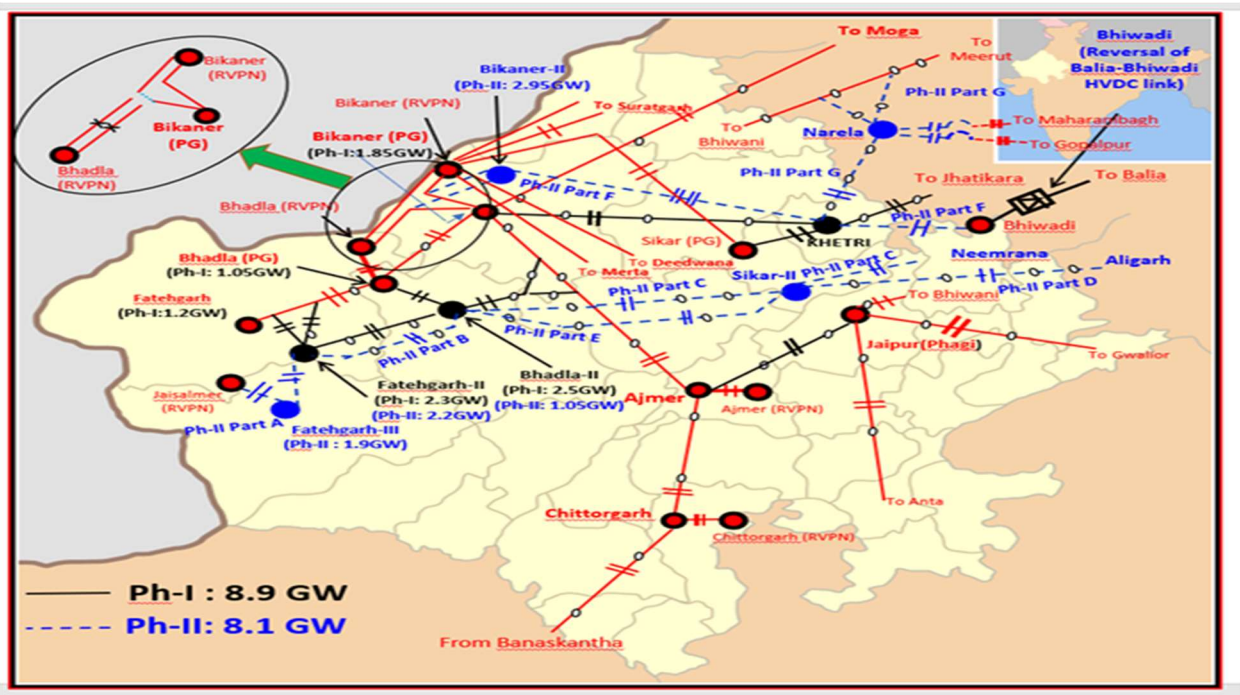
11.1. CTU vide mail dated 16.102.2022 communicated that issue of STOA curtailment in peak solar hours is being faced by various RE Generators in Western Rajasthan due to delay in requisite transmission system (Ph-II Part-F/F1) by POWERGRID.

11.2. In this regard, CTU has evolved a unique interim arrangement to relive transmission congestions in Bikaner complex till availability of planned Ph-II Part-F/F1 (Bikaner-II onwards system).

11.3. CTU representative apprised forum that the scheme was discussed in joint meeting held on 15.12.2022 with RVPN, CEA, NRPC & Grid-India. In the meeting, it was also decided that above proposed SPS arrangement shall be put up to ensuing NR-OCC meeting for their consideration & approval. Based on the deliberations in the meeting on 15.12.2022, following was agreed.

(a) Interim Arrangement

To interconnect one part of LILO to 400 kV Bhadla (RVPN)- Bikaner (RVPN) line so as to form 400kV Bikaner (PG)- Bikaner(RVPN) 2 circuits and isolate 400kV Bhadla (RVPN) with both Bikaner (PG) & Bhadla (RVPN).



Interim solution will be restored after availability of Ph-II Part-F/F1 [Bikaner-II onwards] scheme (expected by Mar'23 end).

(b) Proposed SPS Arrangement

Considering above interim arrangement in place with 400kV Bikaner-Sikar one circuit in service and its other circuit is out of service, following may be implemented:

Case	Action
Load on any circuit of 400kV Bikaner (PG)-Bikaner(RVPN) D/c line exceeds 1450 MW	• Tripping of RE Generations connected at 220kV Bikaner(PG) [Existing-737.5 MW]
	• Even after above trip, in case of loading of 400kV Bikaner (PG)-Bikaner (RVPN) line >1450 MW, 400kV Bikaner (RVPN)-Sikar (PG) line (in service) shall be tripped

It was also agreed that in case of any operational issue such as voltage instability, transmission constraints etc. are observed after the proposed interim arrangement, then present arrangement shall be restored.

11.4. At Stage-2, OCC constituents suggested that instead of tripping of 400kV Bikaner-Sikar line, Tripping of other RE Generation [Renew] connected at 400kV Bikaner(PG), who are in STOA for part quantum, may be carried out.

In Stage-3, 400kV Bikaner (RVPN)-Sikar (PG) line (in service) shall be tripped. It was also decided that some delay must be kept between all three stages.

11.5. Therefore, the SPS Arrangement approved in OCC meeting is as below:

Case	**Action**
Load on any circuit of 400kV Bikaner (PG)-Bikaner(RVPN) D/c line exceeds 1450 MW	Stage-I • Tripping of RE Generations connected at 220kV Bikaner(PG) [Existing-737.5 MW]
	Stage-2 • Tripping of RE Generation [Renew] connected at 400kV Bikaner(PG)
	Stage-3 • Even after above trip, in case of loading of 400kV Bikaner (PG)-Bikaner (RVPN) line >1450 MW, 400kV Bikaner (RVPN)-Sikar (PG) line (in service) shall be tripped

11.6. Powergrid representative intimated forum that within 6-7 days they would be able to implement the above interim arrangement along with SPS and all the costs in this regard as well as its restoration to planned configuration shall be borne by them

11.7. OCC agreed to above interim arrangement along with proposed SPS arrangement with following observations:

1. Lines in this section to be kept in anti-theft charging condition to avoid conductor theft as well as to keep voltage profile under control in peak solar period.
2. Till the new elements are commissioned, Powergrid shall keep its gangs ready for the lines in Bikaner complex so that in case of any tripping (400kV Bikaner(PG)- Bikaner(RVPN) lines) due to maloperation or other reasons like faults etc, immediately the line is restored back.

11.8. Further, OCC forum was of view that considering urgency of the scheme, Powergrid shall implement above interim arrangement along with SPS to relieve transmission congestions in Bikaner complex on urgent basis so as to reap out benefit of clean energy resources without any curtailment.

12. NR Grid Highlights for November 2022

NRLDC representative highlighted following points related to NR grid operation for Oct 2022:

NRLDC representative highlighted following points related to NR grid operation for Nov 2022:

- Maximum energy consumption of Northern Region was **1081 MUs** on 25th November'22 and it was 10.9 % higher than November' 2021 (975 Mus 30th November'21)

- Average energy consumption per day of Northern Region was **1042 MUs** and it was 13.75 % higher than November'21 (916 Mus per day)

- Maximum Demand met of Northern Region was **54006 MW** on 25th November'22 @11:00 hours (*based on data submitted by Constituents)* as compared to 49319 MW on 26th November'21 @11:00 hours

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

क्षेत्र/राज्य	नवम्बर - 2021	नवम्बर - 2022	% अंतर
चंडीगढ़	3.0	3.3	11.2
दिल्ली	60.4	67.7	11.9
हिमाचल प्रदेश	29.9	32.2	7.8
हरियाणा	115.2	129.0	12.0
जम्मू और कश्मीर	51.3	54.3	5.8
पंजाब	112.2	127.0	13.1
राजस्थान	239.4	291.8	21.9
उत्तराखंड	33.9	36.2	6.8
उत्तर प्रदेश	270.7	300.8	11.1
उत्तरी क्षेत्र	**916.1**	**1042.3**	**13.8**

Frequency Data

Month	Avg. Freq. (Hz)	Max. Freq. (Hz)	Min. Freq. (Hz)	<49.90 (% time)	49.90 – 50.05 (% time)	>50.05 (% time)
Nov'22	50.00	50.27	49.44	6.7	77.0	16.3

Nov'21	50.00	50.27	49.63	8.0	74.1	17.9

Detailed presentation on grid highlights of Nov'2022 shared by NRLDC in OCC meeting is attached as Annexure-B.I.

13. Actions to control over drawl as directed by Hon'ble Commission:

NRLDC representative stated that in the matter of dealing with over drawal from grid by the regional entities leading to insecure operation of the grid and other associated matters, Hon'ble commission has directed actions at SLDC as well as RLDC level.

NRLDC had pointed out the number of instances when the over-drawal status was not changed to under drawal by the Constituents after the issuance of over-drawal messages by NRLDC (including when the frequency was below 49.85 Hz) from 1st March – 24th to April, 2022.

NRLDC even had to take emergency physical regulatory measures such as the opening of identified radial feeds to contain the over-drawal and to restore the grid frequency within the safe operating limits.

CERC vide their order dated 29.11.2022 (Annexure-B.I of agenda) has directed NRLDC to convene a meeting with the SLDCs of the concerned region and to prepare a State-wise report inter-alia including the actions measures to be taken by the concerned SLDCs at the State level in the event of overdrawals at the lower frequencies after having the detailed discussions/consultations in this regard and file a report within fifteen days thereafter. A meeting with the staff of the Commission, if required, be also convened subsequently.

It was discussed that meetings are proposed to be held between RLDC and each SLDC in last fortnight of Dec 2022 and accordingly all states were requested to provide their inputs at the earliest so that the same can be examined at NRLDC level and discussed in meeting.

Haryana and UP mentioned that they are preparing data on action points as suggested by NRLDC and would be submitted to NRLDC shortly.

All states agreed to take actions as directed by Hon'ble commission.

14. Restoration of 400kV Jhajjar-Mundka Ckt1 and 2

NRLDC representative stated shutdown of 400kV Jhajjar-Mundka Ckt 1& 2 line was allowed from 08:00Hrs of 03.11.22 – 18:00Hrs of 17.11.22 on continuous basis after detailed discussion in special meeting called by NRPC on 27.11.22.

Due to this Shutdown, Haryana was directed to defer the planned Shutdown of 400kV Jhajjar-Daulatabad Transmission line for replacement of porcelain insulator with polymer insulator till the revival of 400kV Jhajjar-Mundka D/C, even though this activity is extremely important before winters for system resiliency.

Further, it was categorically advised to NHAI to expedite the mobilization of manpower/gang for the cited Shutdown and complete the work before 15.11.2022.

On 02.12.2022 at 04:05 Hrs 400kV Jhajjar-Daulatabad Ckt-1 tripped due to Phase to Earth fault (R-N). Any further tripping of Ckt-2 would have caused total loss of generation at APCPL Jhajjar. 400kV Jhajjar-Daulatabad D/C is not n-1 compliant for evacuation of the generation of all three units.

Delhi and Haryana are major beneficiaries of APCPL Jhajjar generation. In case of loss of generation of APCPL Jhajjar due to weak evacuation path, it may have caused hardship of load shedding in Delhi and Haryana.

NRLDC has been regularly following up with Transmission licensee and well as NHAI through mail and also through our earlier letter उ0क्षे0भा0प्रे0कें0/प्र0सं0/151/337 dated 28.11.2022 and उ0क्षे0भा0प्रे0कें0/प्र0सं0/151 dated 02.12.2022.

Revival of the above line has been inordinately delayed (delay of 100% days) and there was lack of update from NHAI side regarding likely date of completion of work. Line was subsequently charged on 08.12.2022.

Haryana SLDC representative stated that due to delay in returning of shutdown of 400kV Jhajjar-Mundka Ckt 1 and 2, shutdown of 400kV Jhajjar-Daultabad could not be availed and now since the size of crops has increased, there is strong resistance from farmers during line maintenance activities.

OCC members expressed concern on delayed shutdown return by NHAI and it was advised to make sure that the shutdown of grid elements is returned within the approved dates.

MS NRPC also expressed concern on delayed return of shutdown and stated that since NHAI representative is not present in this OCC meeting, matter would be taken up with NHAI subsequently by OCC.

15. Grid Operation related issues

a) Delay in submission of FTC documents in LILO/Multiple ownership cases

NRLDC representative stated that as deliberated and agreed in OCC-185th (refer clause 17 (iii) in MoM and 194th meeting, Utilities were asked to advise the concerned to ensure timely intimation for processing the consent and charging of elements within stipulated time as per new element charging procedure. It was also discussed that protection settings should be shared by all concerned utilities in case of LILO or transmission lines involving multiple agencies to NRLDC to ensure smooth process during first time charging. However, in some cases, the remote end utilities has not submitted the documents on time resulting in delay in charging of transmission lines after completion of works.

NRLDC representative stated that separate session was taken by NRLDC (Grid-India) representative regarding first time charging procedure and the issues were discussed in detail. This needs to be comprehensively followed by all utilities.

b) Submission of PTCC Advisory after line diversion works

As deliberated in meeting with CEI (CEA) dated 10.05.2022 and CEA clarification vide No. PTCC/Misc/200/391-393 dated 06.05.2022, utilities are advised to ensure submission of Electrical safety clearance, Annexure-B7 undertaking and Fresh PTCC Clearance or Suitable Advisory on requirement of fresh PTCC Clearance by CEA (Not required for increase in tower height only). It was also discussed and agreed in OCC-195 (refer clause 16 in MoM).

However, in some cases, delay in submission of PTCC Clearance or Suitable Advisory results in delay in revival of transmission lines after completion of diversion works.

Procedure for Charging/Energization and Integration of Altered (including modified/replaced/upgraded) Power System Elements issued by NLDC/RLDC has already been circulated.

All the utilities were once again requested to follow the procedure in coordination with concerned PCD division.

c) Long outage of transmission elements

Following important grid elements are out since long time:

S. No.	Element Name	**Owner**	Outage Date	Reason	**Update as received in 202 OCC meeting**
1	400/220 kV 500 MVA ICT 1 at Bhiwani(BB)	**BBMB**	31-07-2022	Tripped due to tripping of 220 KV Bhiwani-Hissar ckt-2.ICT under inspection.	Transformer being diverted from Panipat(BBMB). Timeline to be intimated separately.
2	400/220 kV 315 MVA ICT 3 at Mundka(DV)	**DTL**	05-09-2022	Fire observed on both sides bushing of 315 MVA ICT-3.	Works on borrowing Transformer from POWERGRID. Would be charged before summer season.
3	400KV Bus 1 at Vishnuprayag (JP)	**JPVL**	02-12-2021	Bus bar protection operated at Vishnuprayag. Sparking in Bus Coupler CB.	–
4	400KV Bus 2 at Parbati_3(NH)	**NHPC**	14-09-2022	Rectification work in Generator GIS Bay CB.	–
5	400KV Bus 2 at Parbati_2(NH)	**NHPC**	29-07-2020	Fire incident took place in Generating unit, control cables of Bus coupler CB damaged.	–

6	220 KV Kishenpur(PG)-Mir Bazar(PDD) (PDD) Ckt-1	**PDD JK**	19-02-2022	Tower no. 170 collapsed.	–
7	FSC(40%) of 400 KV Kala Amb(PKTL)-Sorang(Greenko) (Greenko) Ckt-1 at Kala Amb(PKTL)	**POWERGRID**	26-09-2022	To attend Unbalance current that is rapidly increasing in B phase.	Not in service due to low current
8	50 MVAR Non-Switchable LR on Allahabad-Fatehpur (PG) Ckt-2 @Allahabad(PG)		27-11-2021	Requirement of reactor being studied by CTUIL. Update to be provided by POWERGRID	–
9	50 MVAR Non-Switchable LR on Allahabad-Fatehpur (PG) Ckt-1 @Allahabad(PG)		27-11-2021		–
10	FSC(40%) of 400 KV Fatehpur-Mainpuri (PG) Ckt-1 at Mainpuri(PG)		24-10-2021	VME protection system was blocking the FSC back to in service	–
11	FSC(40%) of 400 KV Fatehpur-Mainpuri (PG) Ckt-2 at Mainpuri(PG)		29-01-2022		–
12	705 TIE BAY - 765 KV BIKANER-BHADLA_2 (PG) CKT-1 (POWERGRI		22-11-2022	Mechanical structure of operating mechanism of R-phase pole of 705 CB has got broken.	–

	D) AND 330 MVAR BUS REACTOR NO 1 AT 765 KV BIKANER(PG)				
13	400 KV Parbati_3(NH)-Sainj(HP) (PKTCL) Ckt-1		11-03-2022	R-phase XLPE cable has been punctured between GIS and Pothead yard of Parbati-III PS.	–
14	50 MVAR LR ON 400 KV AKAL-RAMGARH (RS) CKT-1 @RAMGARH (RS)		23-04-2018	Reactor is out as line is yet to be commissioned. Shifted to Bhadla line.	–
15	50 MVAR Non-Switchable LR on Akal-Jodhpur (RS) Ckt-1 @Jodhpur(RS)	**RRV PNL**	07-07-2022	To take-out Line Reactor out of service due to high DGA violation; for internal inspection by OEM.	–
16	50 MVAR LR on Akal-Jodhpur (RS) Ckt-1 @Akal(RS)		17-08-2021	NA	–
17	125 MVAR Bus Reactor No 1 at 400 KV Jaisalmer(RS)		01-11-2022	To replace the burnt TB in the M.K Box and wiring to be done in M.K box.	–
18	125 MVAR Bus Reactor No 1 at 400 KV Akal(RS)		30-11-2022	Buchholz relay trip as conservator tank is empty.	–
19	50 MVAR BUS REACTOR NO 1 AT 400KV PANKI(UP)	**UPPTCL**	29-01-2022	Replacement of 50 MVAR Bus reactor by new 125 MVAR Bus Reactor.	Erection work completed except one bus Isolator of Bay, 30 Jan 2023

20	220 KV Gazipur(DTL) -Noida Sec62(UP) (UP) Ckt-1		30-04-2022	Tower tilted on one side at tower no 10 from Gazipur (DTL) end.	Line under break down , no further status till now . Fund not provided by MCD, Delhi.
21	400/220 kV 315 MVA ICT 1 at Muradnagar_ 1(UP)		13-03-2020	Buccholz relay alarm and Local Breaker Backup protection operated.	TWC approved on 09.12.2021 for replacement with 500MVA new ICT . November 2023
22	400/220 kV 500 MVA ICT 2 at Noida Sec 148(UP)		19-08-2020	ICT tripped on REF protection. Transformer caught fire and got damaged.	ICT received from BHEL , December 2022
23	50 MVAR Non-Switchable LR on Agra-Unnao (UP) Ckt-1 @Agra(UP)		28-10-2021	R and Y phase bushing damaged at Agra(UP).	Testing done by OEM, Report awaited. BHEL submitted report that it is irreparable Now further Design unit UPPTCL will decide. Design Unit advised to propose 63 MVAR line reactor, Dec 2023
24	50 MVAR Bus Reactor No 1 at 400KV Moradabad(UP)		03-12-2021	R-phase bushing damaged.	Alloted from 400 kV design , Jan 2023
25	400KV Bus 3 at Gorakhpur(UP)		21-02-2022	Disc insulator of B phase 400 kV transfer Bus coupler damaged	Bus healthy
26	220 KV Gazipur(DTL) - Shahibabad(UP) (UP) Ckt-2		30-04-2022	Line remains charge at No load from UP end. Manually open at 19:30 on 30/04/22 due bending of tower no. 4	Line under break down , no further status till now . Fund not provided by MCD, Delhi.
27	400/220 kV 240 MVA ICT 2 at Orai(UP)		24-09-2022	Differential protection Trip, REF protection Trip.	Testing from outside agency was done. Result sent to higher authority. New ICT will be planned.

It was requested to expedite restoration of the above-mentioned Grid elements at the earliest and also provide an update regarding their expected restoration date/time through outage software portal.

Members agreed to expedite revival of these elements and also regularly update status on Outage software.

16. Winter action plan by state control areas:

It was discussed that issue of high voltages were discussed in 199, 200 and 201 OCC meetings, wherein utilities were asked to take necessary actions which would help in ensuring safe and secure operation of grid and managing high voltages in the grid.

In 200 OCC meeting, all states were requested to prepare and share high voltage management plan for winter months with NRPC/ NRLDC. MS NRPC had also stated that such plan developed by states should be readily available with NRLDC as well as SLDC control room officials so that effective voltage control is possible during winter months and real-time operator at SLDC as well as RLDC end are aware of the actions to be taken. Same was also requested vide NRLDC letter NRLDC/TS-65/ 1324 dated 14.11.2022.

SCADA snapshots of some of the 400/220kV stations such as Maharanibagh, Dhanonda, Mandola, Sohna Road, Patran, Makhu for 03:00hrs were presented in meeting and it was mentioned that there are several 400/220kV nodes where MVAR flow is from 220kV side to 400kV side and samples are being shown in the meeting. MVAR injection from 220kV to 400kV side as presented in the meeting were Maharanibagh (230MVAR), Dhanonda (130MVAR), Mandola (120MVAR), Sohna Road (90MVAR), Patran (80MVAR), Makhu (70MVAR). All utilities were asked to take necessary actions to minimize MVAR injection from 220kV side to 400kV side.

It was also mentioned that states are paying reactive energy charges for MVAR injection from low voltage side to high voltage side. Some of such nodes identified for 7-13 November 2022 as presented in the meeting are shown below:

State	Name of Drawal Point
Delhi	Bamnauli, Bawana, Dadri, Maharani Bagh, Mandola, Tughlakabad, Mundka
Haryana	Sohna, Abdullapur, Dhanoda, Gurgaon, Hisar, Jhajjar, Jind, Manesar
Punjab	Amritsar, Moga, Patran, Ludhiana
Others	Gumma, Karcham, Lucknow(PG), Kanpur(PG), Shahjahapur

In view of above and anticipated high voltage scenario during winter months, actions at lower voltage level also become critical for managing high voltage at regional grid level. Therefore, it was requested that all preparations for winter 2022-23 are reviewed at utility end and action plan, inclusive of at least following points be submitted to NRLDC/NRPC at the earliest:

a. Actions taken/ to be taken at utility level for High Voltage management including analysis of nodes injecting MVAR from low voltage level to high voltage level.
b. Ensuring healthiness of Reactive power resources such as reactors, SVCs, STATCOMs etc. (NRLDC reactive power document available @ *https://nrldc.in/download/nr-reactive-power-management-2022/?wpdmdl=9908* may also be referred)
c. Reactive Power absorption utilizing full capability of on-bar generating units to control voltages
d. Running units in synchronous condenser mode wherever applicable for voltage control.
e. Maintaining availability of lines/avoiding tripping during fog by pre-action of insulator replacement/insulator cleaning etc.
f. Ready list of EHV lines to be opened for high voltage management, including any prioritization.
g. Confirmation that Over Voltage settings of lines and Over flux settings of transformers are as approved by NRPC.
h. Ensuring switching off capacitors and switching on reactors

UP, HP and Delhi have shared their action plan which is attached as Annexure-B.II. Other states were asked to submit their winter management plan with NRPC/NRLDC at the earliest.

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

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

Based on feedbacks received till date, SLDCs were requested to go through the tentative ATC/TTC limits for January 2023 (Annexure-B.II of agenda) and provide comments. If no comments are received, these limits will be assumed confirmed and uploaded on NLDC website. SLDCs were also requested to upload these limits in their respective websites. States were also requested to regularly provide update regarding the upcoming transmission elements which would improve import capability of respective state control area.

Loading of 400/220kV ICTs and important 220kV lines observed above or close to N-1 contingency limits is also attached as Annexure-B.III of agenda.

Punjab

Punjab SLDC was requested to share:

- ATC/TTC limits for low demand period i.e. winter months based on anticipated state generation scenario.
- Plan to control high voltages during winter months including list of 220kV lines that are being kept open continously during winter months

No update was received in the meeting.

UP

UP SLDC was asked to provide update on:

- ATC/TTC limits for low demand period i.e. winter months based on anticipated state generation scenario.
- Status of Obra and Sohawal SPS

In 201 OCC meeting, UP representative stated that testing of SPS of Sohawal is completed and will be operational in 2-3 days. Regarding SPS of Obra, order been placed to Siemens and work will be completed within 30 days.

In 202 OCC meeting, UP representative stated that Obra SPS is likely to be commissioned by end of Jan 2023. For Sohawal SPS, some work regarding SCADA is pending and would be commissioned shortly.

NRLDC representative stated that UP needs to make sure that both SPS are implemented well before the high demand season during 2023.

Rajasthan

As discussed in 59 and 60 NRPC meeting, RVPN was asked to submit pointwise reply to following issues:

- Action plan to meet the 16000-17000MW peak demand during winter
- **Establishing additional connectivity of 400 kV Alwar from Bhiwadi / Bassi / Phagi. Gas generation at Dholpur may also help till connectivity established**
- Minimising planned/ forced outage of intrastate thermal generating units
- Operating intrastate RE generators in voltage control mode
- **Load MVAR drawl management including identification of nodes at 220kV and 132kV level which are drawing huge MVAR from the grid**
- Expediting upgradation of 400kV Jodhpur (Kankani) to 765kV along with associated 765kV lines
- Additional reactive power support devices for maintaining grid voltages within IEGC prescribed limits

Same is still pending from RVPN end.

Rajasthan SLDC was asked to provide update.

Rajasthan SLDC informed that they are awaiting response from STU for some points.

NRLDC representative asked Rajasthan SLDC to submit reply for points that have been compiled at their end and for other points reply may be submitted after receipt of same from STU. Rajasthan SLDC agreed for the same.

From, the available data it can be seen that loading of 400/220kV ICTs is remaining very high since last two weeks (under import of 6500-7000MW), therefore, it is

requested that loading of 400/220kV ICTs may be kept below their N-1 contingency limits and at places where SPS is installed, loading needs to be such that SPS relief is able to manage loading within safe limits in case of N-1 contingency. Plots showing loading of highly loaded 400/220kV ICTs such as Jodhpur, Merta, Ajmer, Chittorgarh, Bikaner, Bhilwara, Bhinmal along with their N-1 contingency limits is attached as Annexure-B.III of agenda and were presented in the meeting. It was deliberated that as per information available with NRLDC, there is no SPS implemented at 400/220kV Bikaner, Bhinmal and Bhilwara ICTs and therefore loading of these ICTs needs to be below their N-1 contingency limits.

Delhi

Delhi SLDC is requested to share:

- Plan to control high voltages during winter months
- Status of commissioning of reactors.

In 201 OCC meeting, Delhi representative stated that undergroud cables are opened as and when required during high voltage scenario. Further ICT tap positions are optimized to minimize high voltages.

Delhi representative stated that reactor status is also provided in high voltage management plan attached as Annexure-B.II. It was also informed that reactors of 1x50 MVAr at 220 kV Peeragarhi and 2x50 MVAr at 220 kV Harshvihar are expected to be charged by 31.12.2022.

Haryana

Haryana SLDC to provide update on:

- ATC/TTC limits for low demand period i.e. winter months based on anticipated state generation scenario.
- Plan to manage loading of 400/220kV Deepalpur and Panipat ICTs.
- Plan to control high voltages during winter months

In 201 OCC meeting, Haryana representative agreed to submit the above data in 7-10 days to NRPC/NRLDC. However, it is still pending.

No update was received in the meeting.

Uttarakhand

It was informed that SPS has been implemented at 400/220kV Kashipur and accordingly .

HP

HP SLDC was asked to provide update on:

- Revised ATC/TTC limits of HP state control area for winter 2022-23. It was submitted by HP SLDC.
- Switchgear capacity augmentation at Nallagarh (220kV) for 220kV Nallagarh-Upernangal line. No update was received in the meeting.

J&K

NRLDC representative stated that loading of 400/220kV Amagarh ICTs was above N-1 contingency limits for last 30 days. It was mentioned that proposal for capacity augmentation was discussed in OCC/ NRPC meeting but could not be finalised. Therefore, till capacity is augmented at 400/220kV Amargarh, any N-1 contingency is likely to lead to tripping of both ICTs as they are loaded beyond their N-1 contingency limit and there would be load loss in valley area.

Not assessing its ATC. J&K representatives had intimated during 47th TCC and 49th NRPC meeting that they would be sharing ATC/TTC assessment with NRLDC from October 2021, however the same is still awaited.

J&K and Ladakh U/Ts are once again requested to advise the concerned officers to evaluate their ATC/TTC limits in coordination with NRLDC and share latest assessment with NRLDC and NRPC. ***J&K officers may also take online/ offline assistance from NRLDC officers if required.***
It was again requested that SLDCs may ensure that loading of ICTs and lines are below their N-1 contingency limits. While requisitioning power from various sources, states should take care to limit their scheduled drawl as well as actual drawl in real time within the Available Transfer Capability (ATC) limits assessed by SLDC and NRLDC. NRLDC is continuously sending emails in real-time for ensuring N-1 compliances as well as restricting schedule till ATC limit and maximizing internal generation. SLDCs need to ensure this during real-time operation.

18. MVAR support from generators

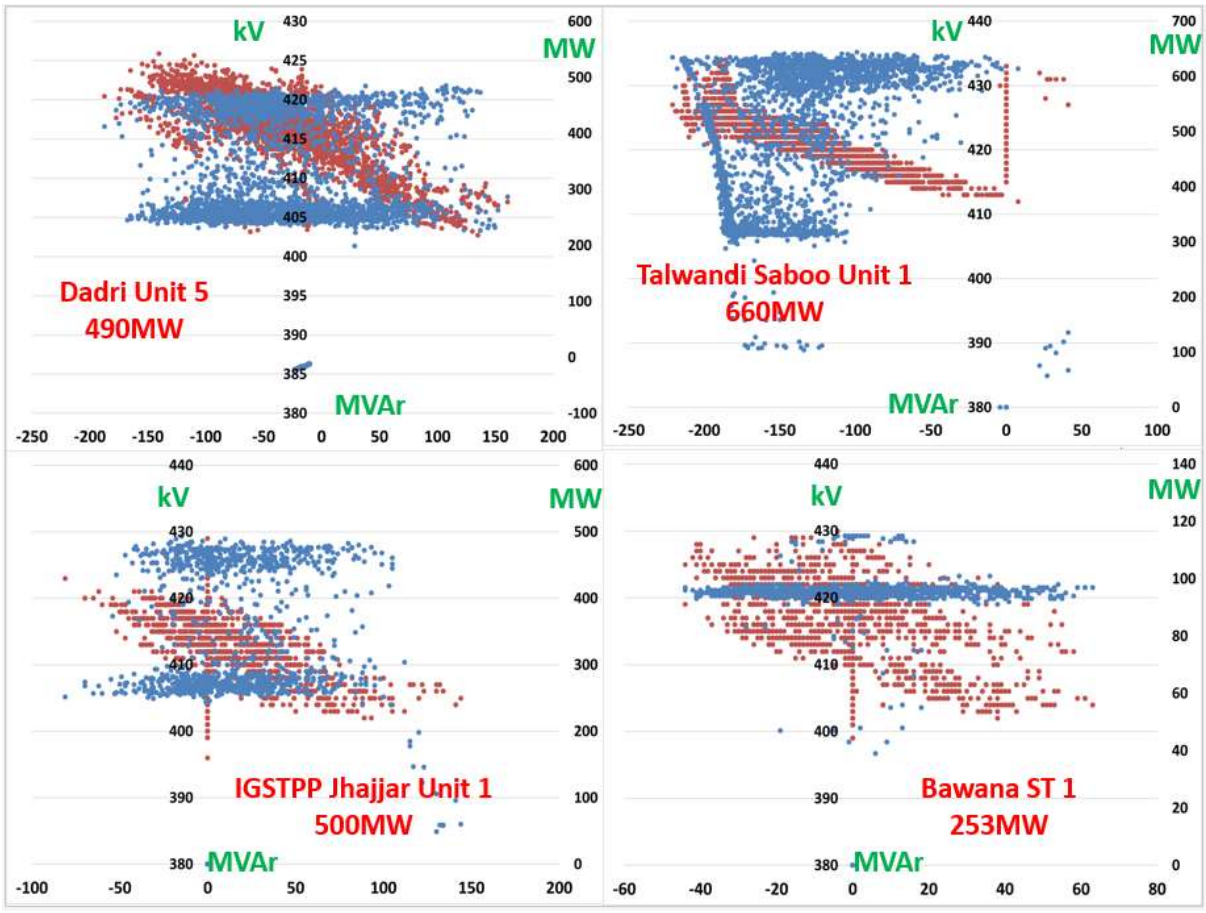
It was discussed that during winter season, demand of Northern region is low and high voltages are a common phenomenon predominantly in Punjab, Haryana and Delhi area. Even after several actions being taken by control centers, it is seen that there is persistent high voltage in Northern region. The reactive power absorption by generators becomes an important resource that helps in managing high voltages in the grid. However, even after continuous follow up in OCC meetings, it is seen that MVAR data telemetry is poor/ inaccurate from most of the generating stations. For some of the generators it is seen that there is inadequate reactive power absorption based on their capability curve especially during night hours. The performance of generators in absorption of reactive power for last 30 days (10 Nov 2022 – 10 Dec 2022) as presented in the meeting is shown below:

S.No.	Station	Unit No.	Capacity	Geographical location	MVAR capacity as per capability curve (on LV side)	MVAR performance (-) Absorption (+) Generation (HV side data)	Voltage absorption above (in KV)

1	Dadri NTPC	1	490	Delhi-NCR	-147 to 294	-170 to 150	415
		2	490		-147 to 294	-150 to 80	415
2	Singrauli NTPC	1	200	UP	-60 to 120	-30 to 10	405
		2	200		-60 to 120	-20 to 10	408
		3	200		-60 to 120	-20 to 20	408
		4	200		-60 to 120	-35 to 0	402
		5	200		-60 to 120	-40 to 20	408
		6	500		-150 to 300	-70 to 20	405
		7	500		-150 to 300	-70 to 20	405
3	Rihand NTPC	1	500	UP	-150 to 300	-	-
		2	500		-150 to 300	-60 to 60	408
		3	500		-150 to 300	-130 to 0	402
		4	500		-150 to 300	-90 to 10	402
4	Kalisindh RS	1	600	Rajasthan	-180 to 360	-130 to 100	404
		2	600		-180 to 360	-150 to 70	404
5	Anpara C UP	1	600	UP	-180 to 360	-60 to 80	765
		2	600		-180 to 360	-20 to 40	765
6	Talwandi Saboo PB	1	660	Punjab	-198 to 396	-200 to 0	410
		2	660		-198 to 396	-200 to 0	410
		3	660		-198 to 396	-	-
7	Kawai RS	1	660	Rajasthan	-198 to 396	-120 to 50	405
		2	660		-198 to 396	-100 to 50	400
8	IGSTPP Jhajjar	1	500	Haryana	-150 to 300		
		2	500		-150 to 300	-75 to 100	415
		3	500		-150 to 300	-75 to 100	415
9	Rajpura (NPL)	1	700	Punjab	-210 to 420	-	-

		2	700		-210 to 420	-250 to 30	405
10	MGTPS	1	660	Haryana	-198 to 396	-150 to 120	415
		2	660		-198 to 396	-150 to 70	412
11	Bawana	1	216	Delhi-NCR	-65 to 130	-60 to 40	415
		2	216		-65 to 130	-	-
		3	216		-65 to 130	-70 to 20	410
		4	216		-65 to 130	-	-
		5	253		-65 to 130	-40 to 60	420
		6	253		-65 to 130	-40 to 60	415
12	Bara PPGCL	1	660	UP	-198 to 396	-60 to 60	775
		2	660		-198 to 396	-50 to 60	775
		3	660		-198 to 396	-50 to 70	775
13	Lalitpur TPS	1	660	UP	-198 to 396	-70 to 100	765
		2	660		-198 to 396	-60 to 60	765
		3	660		-198 to 396	-100 to 80	760
14	Anpara D UP	1	500	UP	-150 to 300	-60 to 40	760
		2	500		-150 to 300	-80 to 50	765
15	Chhabra TPS	1	250	Rajasthan	-75 to 150	-80 to 0	404
		2	250		-75 to 150	-0 to 20	405
		3	250		-75 to 150	-	-
		4	250		-75 to 150	-	-
		5	660		-198 to 396	-60 to 100	408
		6	660		-198 to 396	-60 to 90	408

Some of the generating units such as Dadri, Bawana, IGSTPP Jhajjar need to explore possibility of further MVAR absorption. Generators may also set their Vsch (voltage set point) such that units are absorbing MVAR as per their capability and grid requirement. Sample plots of such units were presented in the meeting as shown below:



The performance of Talwandi Saboo units was also presented and it was mentioned that units are continuously absorbing MVAr and supporting in controlling the high voltages in the grid. OCC forum appreciated their reactive power performance.

All generating stations were requested to resolve any issues related to telemetry and make sure that MVAr absorption is as per grid requirement and capability curve of machine.

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

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

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	400 KV Bareilly-Unnao (UP) Ckt-1	4	UP
2	400 KV Gr.Noida_2(UPC)-Gr.Noida(UPC) (UP) Ckt-2	3	UP
3	400/220 kV 315 MVA ICT 2 at Hindaun(RS)	3	Rajasthan

The complete details are attached at Annexure-B.IV of agenda.

Discussion during the meeting:

- **400kV Bareilly-Unnao(UP) ckt-1:** *UPPTCL representative informed that there is a design defect in line i.e., distance between tower part and middle phase conductor is less. Due to this defect, line is prone to faults during over voltage condition. NRLDC representative emphasized to take some remedial measures to minimise the frequency of fault in future.*

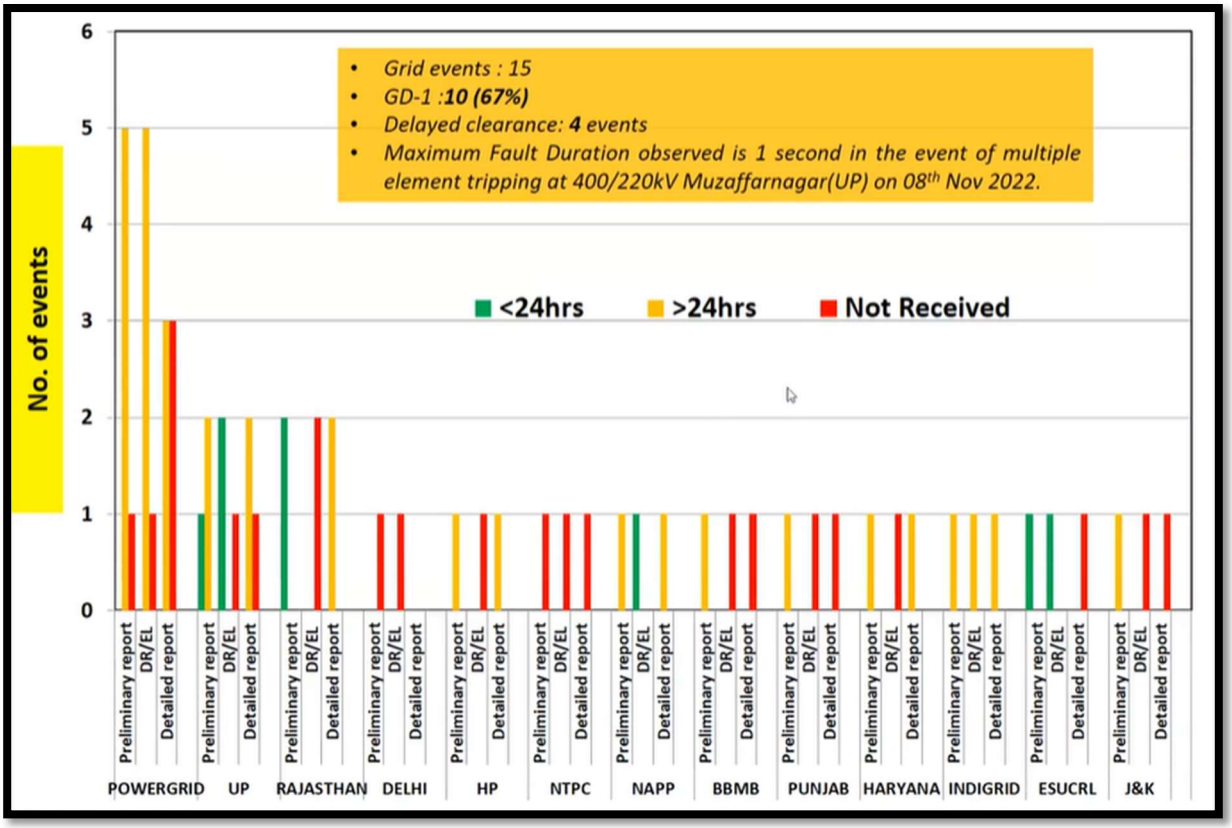
- **400 KV Gr.Noida_2(UPC)-Gr.Noida(UPC) (UP) Ckt-2-:** *UPPTCL representative informed that on 03rd Nov'22, fault was of transient in nature and on stated that there were 27th & 28th Nov'22, fault occurred due to balloon. It was further informed that A/R operated at Gr.Noida(UP) end but it didn't operate at Gr.Noida_2(UP) end. It was informed that issue w.r.t. A/R at Gr.Noida_2(UP) is being taken up by WUPPTCL with relay engineer.*

- **400/220 kV 315 MVA ICT 2 at Hindaun(RS): Rajasthan** *representative informed that on 29th Dec'22, tripping occurred on operation of trip circuit supervision relay due to DC fault and on 17th Dec'22 there was transient fault on 220kV Dausa-Sikrai ckt and line tripped on distance protection operation. NRLDC representative stated that as per PMU, no fault observed in line on 17th Dec'22. He further asked Rajasthan representative to check the healthiness of distance protection relay.*

NRLDC representative emphasized that A/R (auto re-closer) issue was found in many of these tripping. He further sensitized all the utilities to ensure healthiness/ in service of A/R in 220 kV and above transmission lines in compliance to CEA Grid Standards. He further informed that most of the tripping are transient in nature but due to non-operation of A/R, it resulted into tripping of the transmission element thus and reducing the reliability of the grid. All the utilities shall endeavor to keep auto re-closer in service and in healthy condition for 220 kV and above voltage level transmission line.

Frequent outages of such elements affect the reliability and security of the grid. Hence, utilities are once again requested to look into such frequent outages and share the remedial measures taken/being taken in this respect

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



A total of **15** grid events occurred in the month of November '22 of which **10** are of GD-1 category **05** is of GI-2 Category. The preliminary report of all the events have been issued from NRLDC. A list of all these events is attached at Annexure-B.V of agenda.

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

Maximum Fault Duration observed is 1000 msec in the event of multiple element tripping at 400/220kV Muzaffarnagar(UP). As reported at 07:04 hrs, while charging of 220kV Muzaffarnagar-Jansath ckt, Y-N phase to earth fault occurred. However, line didn't not trip. As fault was still persisting, all four ICTs tripped on over current earth fault protection operation. At the same time, 220kV feeders to Nara tripped on distance protection operation in Z-1, 220kV feeder to Shamli in Z-4 and 220kV feeders to Modipuram & Charla tripped in Z-3.

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total 4 events out of **15** grid events occurred in the month.

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

UPPTCL representative informed that fault was on 220kV Muzaffarnagar-Jansath line and protection at Muzaffarnagar end didn't operate due to issue in auxiliary contacts and thus fault later cleared with the tripping of lines from remote end and 400/220kC ICTs at Muzaffarnagar on O/C. During patrolling broken earth wire was found at distance approx. 6.5km from Muzaffarnagar end. It was further informed that issue related to auxiliary contacts has been resolved and now protection is healthy at Muzaffarnagar end.

NRLDC representative asked about the status of bus bar protection at 220kV side of 400/220kV Muzaffarnagar(UP). On the query of NRLDC, UP representative informed that bus bar protection is healthy and functional at 220kV side of Muzaffarnagar(UP) but one (01) of the 400/220kV ICT is not included in the bus bar logic. He further stated that they will take the follow up action to incorporate that ICT also in Bus bar protection logic.

NRLDC representative raised concern about poor status of report updation by NTPC, Punjab, BBMB & J&K on the tripping portal. He further stated that timely report submission is an important activity and all constituents are advised to take this on priority and upload the reports.

OCC suggested all the NR constituents to update the information on tripping portal developed by NRLDC. All the constituents agreed to take proactive actions in this regard to minimize the tripping.

Members were asked to take expeditious actions to avoid such tripping in future, 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 agreed to take action in this regard.

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

S. No.	Name of Transmission Element Tripped	Owner/ Utility	Date	Time	Load Loss/ Gen. Loss	Brief Reason (As reported)	# 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)	Remarks
1	800 KV HVDC Kurukshetra(PG) Pole-4	POWERGRID	4-Nov-22	13:38	Nil	Blocked from HVDC Champa end due to filter unbalance at Champa.	NA	No	No	
2	800 KV HVDC Kurukshetra(PG) Pole-03	POWERGRID	4-Nov-22	13:38	Nil	Blocked from HVDC Champa end due to filter unbalance at Champa.	NA	No	No	
3	765 KV Chittorgarh-Banaskantha (PG) Ckt-1	POWERGRID	5-Nov-22	15:32	Nil	Line tripped on overvoltage protection at Chittorgarh (817kV). DT received at Banaskantha end. CVT secondary core from CVT MB to Kiosk panel at Chittorgarh found damaged.	NA	yes	yes	Faulty CVT. 765 kV R-phase CVT of Siemens make has been replaced
4	400 KV Kankroli-Zerda (PG) Ckt-1	POWERGRID	9-Nov-22	08:50	Nil	R-N fault, Fault current 5.2kA, Dist. 49.5km from Kankroli. R-phase insulator broken at Tower Loc. no. 546.	NA	yes (After 24 hrs)	yes (After 24 hrs)	Permanent fault, A/R operated
5	220 KV Auraiya(NT)-Malanpur(MP) (PG) Ckt-1	MPPTCL	21-Nov-22	04:27	Nil	Phase to earth fault Y-N	NA	yes (After 24 hrs)	yes (After 24 hrs)	A/R operation issue
6	220 KV Auraiya(NT)-Malanpur(MP) (PG) Ckt-1	MPPTCL	28-Nov-22	03:49	Nil	Phase to earth fault R-N	NA	yes	yes	A/R operation issue
7	765 KV Agra-Gwalior (PG) Ckt-1	POWERGRID	28-Nov-22	09:44	Nil	Phase to earth fault Y-N	NA	yes (After 24 hrs)	yes	Permanent fault, A/R operated
8	800 KV HVDC Kurukshetra(PG) Pole-1	POWERGRID	26-Nov-22	20:41	Nil	Due to filter power limit protection operated at Kurukshetra end during power ramp down.	NA	yes (After 24 hrs)	yes (After 24 hrs)	ACVS control (this control feature is incorporated in latest version 6 software) at Kurukshetra end maloperated
9	800 KV HVDC Kurukshetra(PG) Pole-02	POWERGRID	26-Nov-22	20:41	Nil	Due to filter power limit protection operated at Kurukshetra end during power ramp down.	NA	yes (After 24 hrs)	yes (After 24 hrs)	
10	800 KV HVDC Kurukshetra(PG) Pole-1	POWERGRID	28-Nov-22	16:12	Nil	Tripped due to Bipole-1 both communication lanes got faulty at Champa end leading to Blocking of Pole-1 and Pole-3.	NA	yes (After 24 hrs)	yes (After 24 hrs)	Pole-1 & Pole-3 blocked on CAT B protection operation at Champa end, protection operated due to unavailability of both communication lane of Bipole-1 at Champa end
11	800 KV HVDC Kurukshetra(PG) Pole-03	POWERGRID	28-Nov-22	16:12	Nil	Tripped due to Bipole-1 both communication lanes got faulty at Champa end leading to Blocking of Pole-1 and Pole-3.	NA	yes (After 24 hrs)	yes (After 24 hrs)	
12	765 KV Orai-Jabalpur (PG) Ckt-1	POWERGRID	29-Nov-22	14:34	Nil	R-N fault, Dist. 221.4km, Fault current 2.6kA from Jabalpur & Dist. 148.7km, Fault current 4.19kA from Orai,.	NA	yes	yes	A/R was in non auto mode due to ongoing OPGW work

A total of 12 inter-regional lines tripping occurred in the month of November'22. The list is attached at Annexure-B.VI of agenda**.** The status of receipt of preliminary reports, DR/EL within 24hrs of the event and fault clearing time as per PMU data has also been mentioned in the table. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 5.2(r) of IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.

NRLDC representative raised concerned over frequent tripping of 800kV HVDC Kurukshetra Poles on protection maloperation. As 800kV Champa-Kurukshetra HVDC link is important inter regional link, its reliability and healthiness of protection system need to be ensured. It was deliberated that POWERGRID NR-1 shall take corrective actions to ensure the healthiness of protection system.

NRLDC representative requested members to advise the concerned for taking corrective action to avoid such tripping as well as timely submission of the information.

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

The status of receipt of DR/EL and tripping report of utilities for the month of November'2022 is attached at Annexure-B.VII of agenda. 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.

NRLDC representative stated that status of Punjab, NTPC & NHPC is not satisfactory and needs improvement.

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

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

Since 182nd 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)

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

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

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

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

NRLDC representative informed that all the units who have done Step response test before 2018 were requested to plan the exciter step-response test as soon as possible and submit the tentative schedule of step-response test on the units with NRPC/ NRLDC. He further informed that till date Schedule has been received from Rajasthan and UP Control area. He further requested that members may kindly accord due priority in this regard and update about their future plan for PSS tuning as there is little progress despite including this agenda in every OCC meeting.

24. Mock black start exercises in NR:

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

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

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

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

Hydro Power Stations:

Name of stations	**Last conducted exercise date**	**Remark**
Uri-I, II HEP, Lower Jhelum HEP, Upper Sindh and Kishenganga	–	
Dhauliganga	28th Dec 2021	Exercise carried out successfully
Bairasiul	04th Dec 2020	
Sewa-2	29th May 2022	
N. Jhakri and Rampur	17th Dec 2019	
Karcham and Baspa	29th Dec 2021	Exercise was partially successful
Budhil	–	

Parbati-3 and Sainj	22nd Dec 2020	Black start of only Parbati-3 was carried out successfully. Sainj to explore blackstart capability.
Salal	-	
Chamera-3	-	
Kishenganga	-	
Koteshwar	19th Jan 2022	Exercise carried out successfully
Chamera-1 and Chamera-2	08th Dec 2020	
Malana-2, AD Hydro and Phozal	08th Jan 2021	
Tehri	12th Jan 2022	
Koldam	22nd Jan 2021	Partially successful.

Gas Power Stations:

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

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

Hydro Power Stations:

Name of stations	Tentative Date for Mock Black start exercise (Proposed by power plants)
*Uri-I, II HEP, Lower Jhelum HEP, Upper Sindh and Kishenganga	**31st Jan 2023**
Dhauliganga	**28th Feb 2023**
*Bairasiul	**Conducted successfully on 30th Nov 2022**

Sewa-2	**12th Jan 2023**
*N. Jhakri and Rampur	**Conducted successfully on 09th Dec 2022**
Karcham and Baspa	
*Budhil	
*Parbati-3 and Sainj	**To be rescheduled**
*Salal	**To be rescheduled**
*Chamera-3	**27th Jan 2023**
*Kishenganga	
Koteshwar	**Conducted successfully on 07th Dec 2022**
*Chamera-1 and Chamera-2	**Conducted successfully on 02nd Dec 2022**
*Malana-2, AD Hydro and Phozal	**12th Dec 2022 (o be rescheduled)**
Tehri	**Conducted successfully on 14th Dec 2022**
*Koldam	**Conducted successfully on 11th Nov 2022**

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

Gas Power Stations:

Name of stations	**Tentative Date for Mock Black start exercise (proposed by power plants)**
Anta GPS	23rd Jan 2023
*Auraiya GPS	Mar 2023
Dadri GPS	Jan 2023

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

NRLDC representative requested other constituents also to share their schedule for mock black start exercise of Hydro/Gas units.

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		Srinagar (Alaknanda)	4x82.5
21	Uttarakhand	Gamma Infra	2x76+1x73
22		Shravanti	6x75
23		Ramganga	3x66
24		Chibro	4x60
25		Khodri	4x30
26		Chilla	4x36
27		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

Rajasthan representative stated that they will not be able to conduct the mock black start exercise of any of the plants due to power crisis issue.
Punjab representative informed that there is some compressor related issue in RSD HEP and they will conduct mock black start exercise of RSD HEP as soon issue is resolved.

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.

25. Revision of document for Reactive Power Management and System Restoration

Procedure (SRP) for Northern Region:

NRLDC has been issuing 'Reactive Power document of Northern Region' on annual basis. Reactive Power Management document for Northern region was last revised on 31st Dec 2021 & updated document link is as below:

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

Document is password protected and password was already informed to all the NR constituents through letter dated 31st Dec 2021.

In view of new addition/modification of transmission & generation element in NR grid since Dec'21, the document is being review for update.

Constituents were requested to provide the feedback, suggestion and updated information by 30th Nov 2022.

A communication regarding the same from NRLDC has already been shared with all the constituents vide letter dated 03rd Nov 2022.

Data from Punjab not received yet.

NRLDC representative requested Punjab to share the details at the earliest.

System restoration procedure document for Northern region has been revised on 31stJan 2022 & updated document link is as below:

https://nrldc.in/wp-content/uploads/2022/01/System-Restoration-Procedure_NR_2022.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.

Constituents were requested to provide the feedback, suggestion and updated information by 31st Dec 2022.

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

26. RE related special agenda

As per Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2013, Part-II, clause B2, Sub-clause (1) states for RE generators that

"The generating station shall be capable of supplying dynamically varying reactive power support so as to maintain power factor within the limits of 0.95 lagging to 0.95 leading".

As per the above clause Plant should be capable of delivering MVAR=33% of MW at POI at plant rated MW(considering 0.95 lagging pf). In order to support MVAR during low voltages same is expected from RE Plants.

It has been observed on numerous occasions that RE Plant is not providing Reactive Power (MVAR) support as per CEA clause B2(1) according to the grid conditions even at low voltages at point of interconnection(POI).

It has been already discussed in the NRLDC meetings (dated 13th June 2022, 21st June 2022 and 06-08 Sept2022) with RE developers to operate their plants in Voltage Control Mode of operation to supply dynamically varying reactive power support to the grid.

Performance of RE plants for Nov 2022 is attached as Annexure-B.III**.**

Regarding this several communication have been sent via mail/telephonically to plant to reduce the MAVR drawl but no fruitful action is being observed yet.

Hence it was again requested to take the necessary action and maintain the 220kV/400kV Bus voltage by operating PPC in voltage control mode and provide adequate reactive support at POI.

Follow up issues from previous OCC meetings

Annexure-A.I

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

<table>
<tr><td></td><td></td><td></td><td colspan="3">BBMB was requested to submit the updated self certification report indicating increase of 0.2 Hz in AUFR settings, within one week. J&K and LADAKH were requested to update status for increasing settings of UFRs.</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 colspan="3">Status of the information submission (month) from states / utilities is as under:
◎ HARYANA Sep-2022
◎ PUNJAB Sep-2022
◎ RAJASTHAN Nov-2022
◎ UP Sep-2022
◎ NTPC Feb-2022
FGD status details are enclosed as Annexure-A.I.II.
All States/utilities are requested to update status of FGD installation progress on monthly basis.</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 colspan="3">All states/UTs are requested to submit daily data on MERIT Order Portal timely.</td></tr>
<tr><td>6</td><td>Status of Automatic Demand Management Sysytem in NR states/UT's</td><td>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:</td><td colspan="3">Status:
◎ DELHI Fully implemented
◎ HARYANA Scheme not implemented
◎ HP Scheme not implemented
◎ PUNJAB Scheme not implemented
◎ RAJASTHAN Under implementation. Likely completion schedule is 31.03.2023.
◎ UP Scheme implemented by NPCIL only</td></tr>
</table>

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

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

Annexure-A-I.I

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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
1	400/220kV, 3x315 MVA Samba	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays.	-	PDD, J&K to update the status.
2	400/220kV, 2x315 MVA New Wanpoh	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV New Wanpoh - Alusteng D/c Line	-	PDD, J&K to update the status.
				• 220 kV New Wanpoh - Mattan D/c Line	-	PDD, J&K to update the status.
3	400/220kV, 2x315 MVA Amargarh	Commissioned: 6 Total: 6	Utilized: 6 Unutilized: 2	• 220kV D/C line from 400/220kV Kunzar - 220/33kV Sheeri	-	PDD, J&K to update the status.
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• 220kV Bhadson (Kurukshetra) – Ramana Ramani D/c line	-	HVPNL to update the status.
5	400/220 kV, 2x315 MVA Dehradun	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• Network to be planned for 4 bays	-	PTCUL to update the status.
6	Shahjahanpur, 2x315 MVA 400/220 kV	Commissioned: 6 Approved/Under Implementation:1 Total: 7	Utilized: 5 Unutilized: 1 (1 bays to be utilized shortly) Approved/Under Implementation:1	• 220 kV D/C Shahajahanpur (PG) - Gola line	Feb'23	Updated in 201st OCC by UPPTCL
				• LILO of Sitapur – Shahjahanpur 220 kV SC line at Shahjahanpur (PG)	Commissioned	Energization date: 25.02.2022 updated by UPPTCL in 196th OCC
7	Hamirpur 400/220 kV Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4 (2 bays to be utilized shortly)	• 220 kV Hamirpur-Dehan D/c line	Commissioned	Commisioned date: 09.06.2022. Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
8	Sikar 400/220kV, 1x 315 MVA S/s	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• LILO of 220 kV Sikar (220 kV GSS)-Dhod S/c line at Sikar (PG)	Commissioned	LILO of 220 kV S/C Sikar-Dhod line at 400 kV GSS PGCIL, Sikar has been charged on dt. 31.03.2022
				• Network to be planned for 2 bays.	-	Against the 3rd ICT at 400 kV GSS Sikar, only 2 bays were constructed and same has been utilized by RVPN by constructing LILO of 220 kV S/C Sikar – Dhod line as updated by RVPNL in 195th OCC
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 0 Unutilized: 6	• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	Commissioned	Updated in 202nd OCC by HVPNL
				• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	Jun'23	Issue related to ROW as intimated in 202nd OCC by HVPNL.
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 192nd OCC.HVPNL to update the status.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0 Approved:4	• LILO of both circuits of 220 kV Jind HVPNL to PTPS D/C line at 400 kV substation PGCIL Khatkar (Jind) with 0.5 sq inch ACSR conductor	May'24	Updated in 197th OCC by HVPNL
11	400/220kV Tughlakabad GIS	Commissioned: 6 Under Implementation: 4 Total: 10	Utilized: 6 Unutilized: 0 Under Implementation:4	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	-	DTL to update the status.
				• Masjid Mor – Tughlakabad 220kV D/c line.	-	DTL to update the status.
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 0 Unutilized: 6	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Mar'23	Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur	Commissioned: 8	Utilized: 0	• LILO of both circuits of 220 KV Pali - Sector 56 D/C line at Kadarpur along with augmentation of existing conductor from 220 KV Sector-56 to LILO point with 0.4 sq inch AL-59 conductor.	Mar'23	Updated in 197th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
13	Sub-station	Total: 8	Unutilized: 8	• LILO of both circuits of 220KV Sector 65 - Pali D/C line at Kadarpur along with augmentation of balance 0.4 sq. inch ACSR conductor of 220 kV Kadarpur - Sector 65 D/C line with 0.4sq inch AL-59 conductor	May'23	Updated in 197th OCC by HVPNL
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 2 Unutilized: 4	• LILO of both circuits of 220kV D/c Sector-69 - Roj Ka Meo line at 400kV Sohna Road	Jun'23	Updated in 197th OCC by HVPNL
				• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	Jun'23	Updated in 197th OCC by HVPNL
15	400/220kV Prithla Sub-station	Commissioned: 8 Total: 8	Utilized: 2 Unutilized: 4 Under Implementation:2	• Prithla - Harfali 220kV D/c line with LILO of one ckt at Meerpur Kurali	Commissioned	Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	-	HVPNL to update the status
				• 220kV D/C for Sector78, Faridabad	02.03.2023	Updated in 198th OCC by HVPNL
				• Prithla - Sector 89 Faridabad 220kV D/c line	31.03.2024	Under Implementation (Mar'24). Updated in 198th OCC by HVPNL
16	400/220kV Sonepat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 2 Under Implementation:2	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat	-	HVPNL to update the status.
				• Sonepat - HSIISC Rai 220kV D/c line	Mar'23	Line work is complete howere substation work is under progress. Updated in 201st OCC by HVPNL
17	400/220kV Neemrana Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• LILO of Bhiwadi - Neemrana 220kV S/c line at Neemrana (PG)	-	Work order is finalized as updated in 201st OCC by RVPNL.. 5 months from layout finalization.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Kotputli - Pathreda 220kV D/c line	-	Bid documents under approval as updated in 195th OCC by RVPNL.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	May'24	LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Roorkee (PG)-Pirankaliyar 220kV D/c line	Commissioned	Roorkee (PG)-Pirankaliyar 220kV D/c line comiisioned in 2020 as intimated by PTCUL in 197th OCC
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	Jan'23	• Lucknow -Kanduni, 220 kV D/C line expected energization date Jan'23 updated by UPPTCL in 201st OCC _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Feb'23	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line expected energization date Feb'23 updated by UPPCL in 202nd OCC
23	400/220kV Fatehpur Sub-station	Commissioned: 8 Under Implementation:2 Total: 10	Utilized: 6 Unutilized: 2 Under Implementation:2	• Network to be planned for 2 bays	-	• UPPTCL intimated that 02 no. of bays under finalization stage. In 201st OCC, UPPTCL intimated that it is finalized that Khaga s/s will be connected (tentative time 1.5 years). _____ • No planning for 2 no. of bays updated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
24	400/220kV Abdullapur Sub-station	Commissioned: 10 Under Implementation:2 Total: 12	Utilized: 10 Unutilized: 0 Under Implementation:2	• Abdullapur – Rajokheri 220kV D/c line	Oct'22	Updated in 198th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
25	400/220kV Pachkula Sub-station	Commissioned: 8 Under tender:2 Total: 10 Out of these 10 nos. 220kV Line Bays, 2 bays would be used by the lines being constructed by POWERGRID (Chandigarh-2) and balance 8 nos. bays would be used by HVPNL	Utilized: 2 Unutilized: 4 Under Implementation:2	• Panchkula – Pinjore 220kV D/c line	31.12.2022	Updated in 194th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	31.12.2022	Updated in 194th OCC by HVPNL
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL
				• Panchkula – Sadhaura 220kV D/c line: Sep'23	Sept'23	Updated in 194th OCC by HVPNL
26	400/220kV Amritsar S/s	Commissioned:7 Approved in 50th NRPC- 1 no. Total: 8	Utilized: 6 Unutilized: 1 Approved in 50th NRPC- 1 no.	• Amritsar – Patti 220kV S/c line	May'23	Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th OCC by PSTCL.
				• Amritsar – Rashiana 220kV S/c line (2 bays shall be required for above lines. However, 1 unutilized bay shall be used for Patti and requirement of one additional bay approved for Rashiana by NRPC)	May'23	Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th OCC by PSTCL.
27	400/220kV Bagpat S/s	Commissioned: 8 Total: 8	Utilized:6 Unutilized: 2	• Bagpat - Modipuram 220kV D/c line	Commissioned	Updated in 201st OCC by UPPTCL
28	400/220kV Bahardurgarh S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.	Mar'24 and July'24	Updated in 198th OCC by HVPNL
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.	-	LILO case of 220 kV Dausa – Sawai Madhopur line at 400 kV GSS Jaipur South (PG) is under WTD approval as updated by RVPNL in 195th OCC
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 8	Utilized: 8	• Sohawal - Barabanki 220kV D/c line	Commissioned	Energization date: 14.04.2018 updated by UPPTCL in 196th OCC
				• Sohawal - New Tanda 220kV D/c line	Commissioned	Energization date: 28.05.2019 updated by UPPTCL in 196th OCC
				• Network to be planned for 2 bays	Commissioned	• Sohawal - Gonda 220kV S/c line (Energization date: 27.04.2020) updated by UPPTCL in 196th OCC _____ • Sohawal - Bahraich 220kV S/c line (Energization date: 15.02.2021) updated by UPPTCL in 196th OCC
31	400/220kV, Kankroli	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	-	RVPNL to update the status
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 4 bays	-	One bay 220 kV Manesar (PG)-Panchgaon ckt commissioned on 05.09.2022
33	400/220kV, Saharanpur	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	Jan'23	Saharanpur(PG)-Devband D/c line expected energization date Jan'23 updated by UPPTCL in 202nd OCC
34	400/220kV, Wagoora	Commissioned: 10 Total: 10	Utilized: 6 Unutilized: 4	• Network to be planned for 4 bays	-	PDD, J&K to update the status.
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	Mar'23	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work expected to be completed by March 2023.Updated in 198th OCC by PSTCL.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
36	400/220kV, Chamba (Chamera Pool)	Commissioned: 3 Under tender:1 Total: 4	Utilized:3 Unutilized: 0 Under tender:1	• Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line	-	Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is not ready.Updated in 198th OCC by HPPTCL
37	400/220kV, Mainpuri	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	-	• 02 no. of bays under finalization stage updated by UPPTCL in 196th OCC. Mainpuri S/s planned. Land is not finalized, therefore timeline not available as intimated by UPPTCL in 201st OCC.
38	400/220kV, Patiala	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays	May'24	2 Nos. bays for 400 kV PGCIL Patiala - 220 kV Bhadson (D/C) line being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.

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

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

FGD Status

Updated status of FGD related data submission

NTPC (25.02.2022)
MEJA Stage-I (Updated by UP on 18.06.2022)
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (14.11.2022)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (14.11.2022)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (14.11.2022)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Lalitpur Power Gen. Co. Ltd. (17.10.2022)
Lalitpur TPS
Lanco Anpara Power Ltd. (18.06.2022)
ANPARA-C TPS

HGPCL (14.09.2022)
PANIPAT TPS
RAJIV GANDHI TPS
YAMUNA NAGAR TPS

Adani Power Ltd. (18.02.2022)
KAWAI TPS

Rosa Power Supply Company (18.06.2022)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (17.10.2022)
Prayagraj TPP
APCPL (25.02.2022)
INDIRA GANDHI STPP

Pending submissions

GVK Power Ltd.
GOINDWAL SAHIB

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

Target Dates for FGD Commissioning (Utility-wise)

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

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

L&T Power Development Ltd (Nabha)	Nabha TPP (Rajpura TPP) U#1 (Target: 30-04-2021), Nabha TPP (Rajpura TPP) U#2 (Target: 28-02-2021)
Lalitpur Power Gen. Company Ltd.	LALITPUR TPS U#1 (Target: 31-12-2026), LALITPUR TPS U#2 (Target: 30-09-2026), LALITPUR TPS U#3 (Target: 30-06-2026)
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)

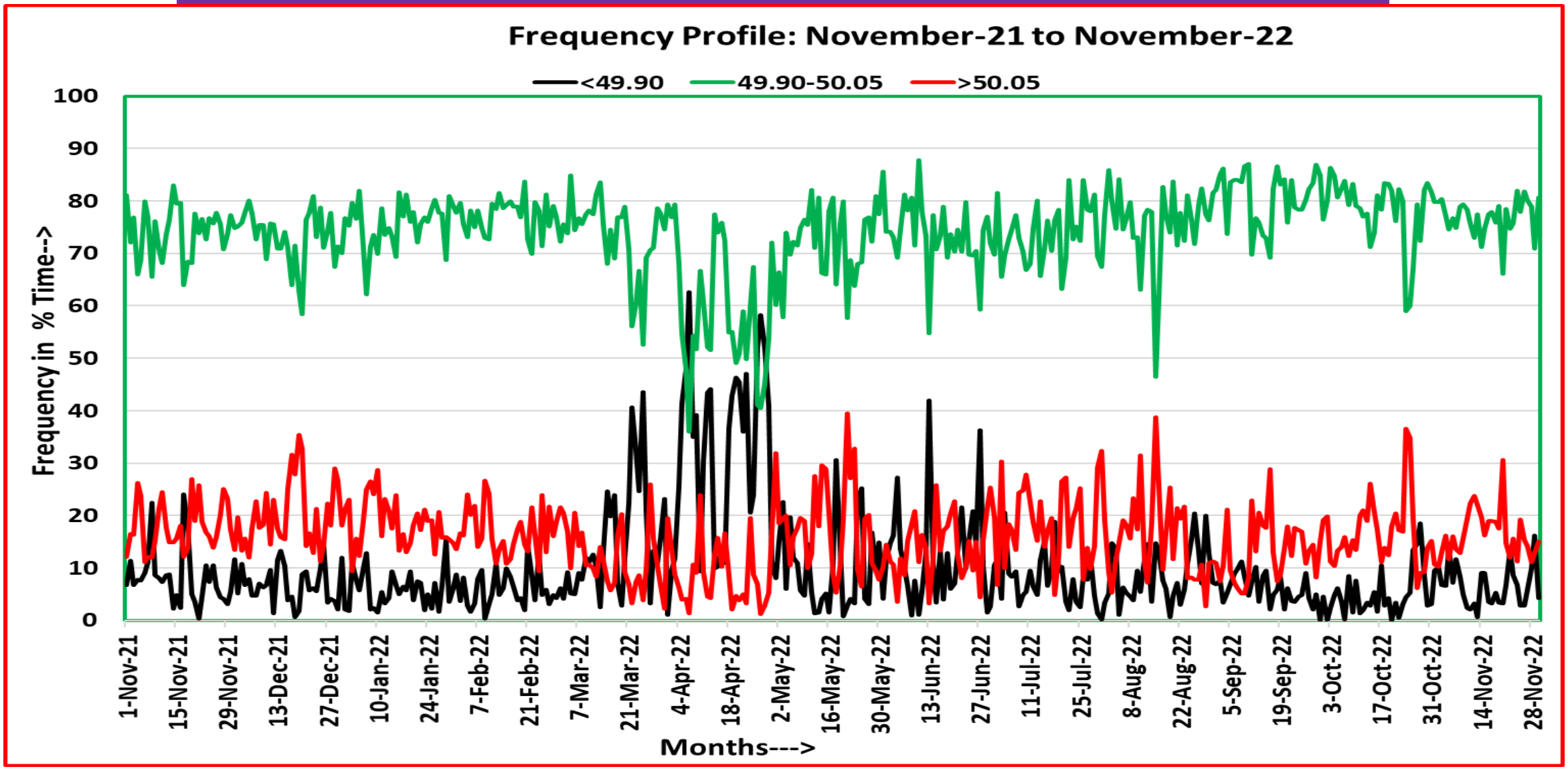
Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2026), ROSA TPP Ph-I U#2 (Target: 31-12-2026), ROSA TPP Ph-I U#3 (Target: 31-12-2026), ROSA TPP Ph-I U#4 (Target: 31-12-2026)
RRVUNL	KOTA TPS U#5 (Target: 31-08-2022), KOTA TPS U#6 (Target: 31-08-2022), KOTA TPS U#7 (Target: 31-08-2022), SURATGARH TPS U#1 (Target: 31-12-2026), SURATGARH TPS U#2 (Target: 31-12-2026), SURATGARH TPS U#3 (Target: 31-12-2026), SURATGARH TPS U#4 (Target: 31-12-2026), SURATGARH TPS U#5 (Target: 31-12-2026), SURATGARH TPS U#6 (Target: 31-12-2026), SURATGARH SCTPS U#7 (Target: 28-02-2025), SURATGARH SCTPS U#8 (Target: 28-02-2025), CHHABRA TPP U#1 (Target: 31-12-2026), CHHABRA TPP U#2 (Target: 31-12-2026), CHHABRA TPP U#3 (Target: 31-12-2026), CHHABRA TPP U#4 (Target: 31-12-2026), CHHABRA SCPP U#5 (Target: 28-02-2025), CHHABRA SCPP U#6 (Target: 28-02-2025), KALISINDH TPS U#1 (Target: 28-02-2025), KALISINDH TPS U#2 (Target: 28-02-2025)
Talwandi Sabo Power Ltd.	TALWANDI SABO TPP U#1 (Target: 28-02-2021), TALWANDI SABO TPP U#2 (Target: 31-12-2020), TALWANDI SABO TPP U#3 (Target: 31-10-2020)
UPRVUNL	ANPARA TPS U#1 (Target: 31-12-2023), ANPARA TPS U#2 (Target: 31-12-2023), ANPARA TPS U#3 (Target: 31-12-2023), ANPARA TPS U#4 (Target: 31-12-2023), ANPARA TPS U#5 (Target: 31-12-2023), ANPARA TPS U#6 (Target: 31-12-2023), ANPARA TPS U#7 (Target: 31-12-2023), HARDUAGANJ TPS U#8 (Target: 31-12-2024), HARDUAGANJ TPS U#9 (Target: 31-12-2024), OBRA TPS U#9 (Target: 31-12-2024), OBRA TPS U#10 (Target: 31-12-2024), OBRA TPS U#11 (Target: 31-12-2024), OBRA TPS U#12 (Target: 31-12-2024), OBRA TPS U#13 (Target: 31-12-2024), PARICHHA TPS U#3 (Target: 30-04-2022), PARICHHA TPS U#4 (Target: 31-12-2024), PARICHHA TPS U#5 (Target: 31-12-2024), PARICHHA TPS U#6 (Target: 31-12-2024)

प्रचालन समन्वय उपसमिति की बैठक
नवम्बर - 2022

पिछले एक साल मे आवृत्ति की स्थिति

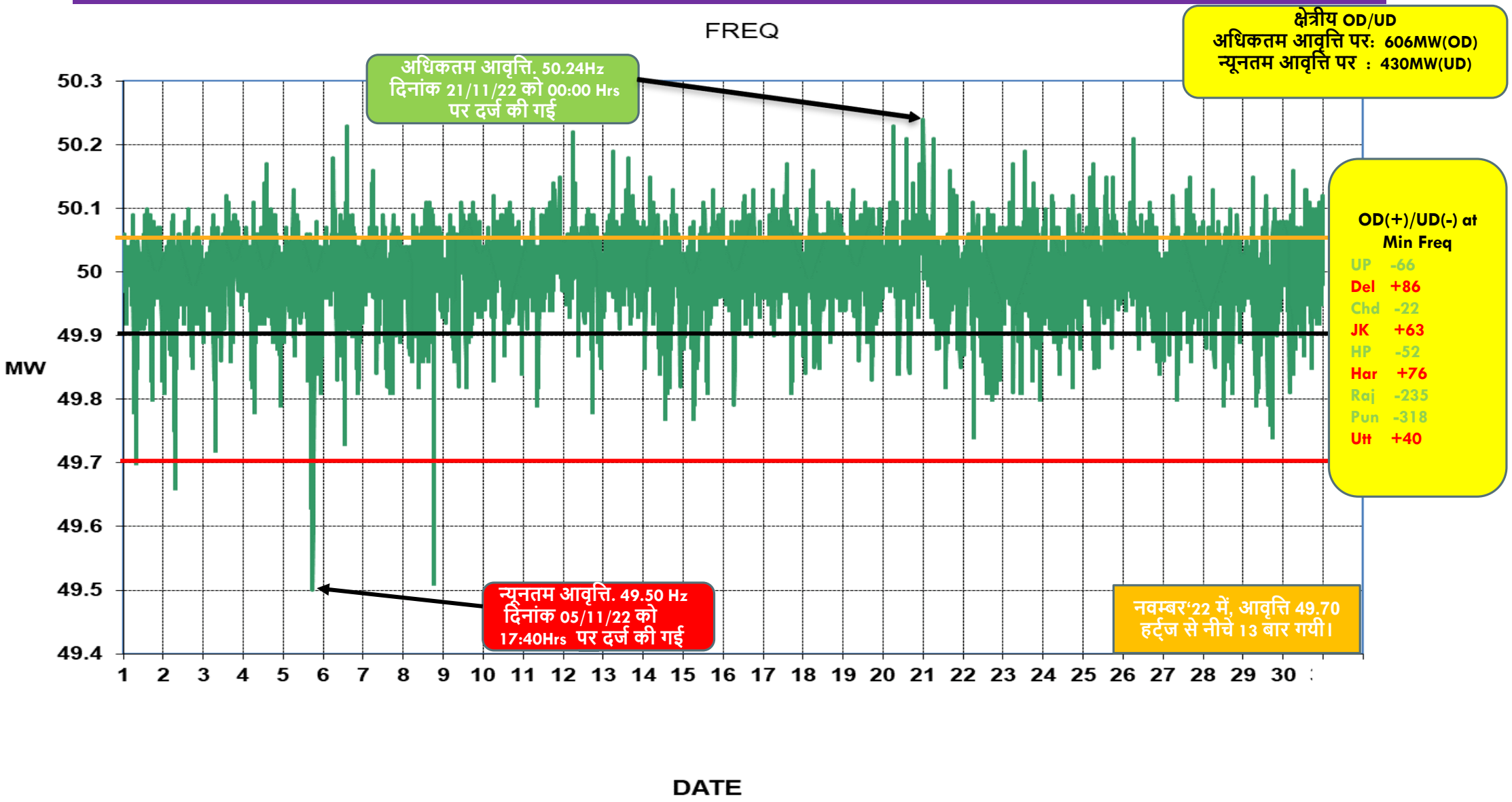
आवृत्ति बैंड	नवम्बर 2021	दिसम्बर 2021	जनवरी 2022	फ़रवरी 2022	मार्च 2022	अप्रैल 2022	मई 2022	जून 2022	जुलाई 2022	अगस्त 2022	सितम्बर 2022	अक्टूबर 2022	नवम्बर 2022
< 49.7 Hz(%)	0.09	0.03	0.02	0.08	0.46	4.94	0.27	0.42	0.42	0.49	0.17	0.04	0.13
<49.8 Hz(%)	1.17	0.71	0.53	0.55	2.92	13.60	1.94	2.41	1.78	2.02	0.91	0.46	0.76
<49.9 Hz(%)	8.02	6.92	5.84	5.99	14.50	31.98	9.83	12.45	7.82	8.77	5.94	4.88	6.70
49.90-50.05 Hz(%)	**74.10**	**73.14**	**75.66**	**77.06**	**73.42**	**59.30**	**72.23**	**73.38**	**73.45**	**75.77**	**80.77**	**78.27**	**77.00**
50.05-50.10 Hz(%)	14.77	15.09	15.17	14.36	10.28	7.35	12.95	11.46	14.84	11.99	11.55	14.04	13.88
>50.10 Hz(%)	3.05	3.89	3.21	2.51	1.72	1.35	4.11	2.43	3.58	3.00	1.65	2.63	2.30
>50.20 Hz(%)	0.07	0.25	0.11	0.08	0.08	0.08	0.88	0.28	0.31	0.47	0.08	0.18	0.12
औसत आवृत्ति	50.00	50.00	50.00	50.00	49.98	49.93	50.00	49.99	50.00	50.00	50.00	50.00	50.00

आवृत्ति की स्थिति: नवम्बर -2021 से 2022



नवम्बर -2022 के दौरान आवृत्ति की स्थिति

(As per 5 Minute SCADA data)



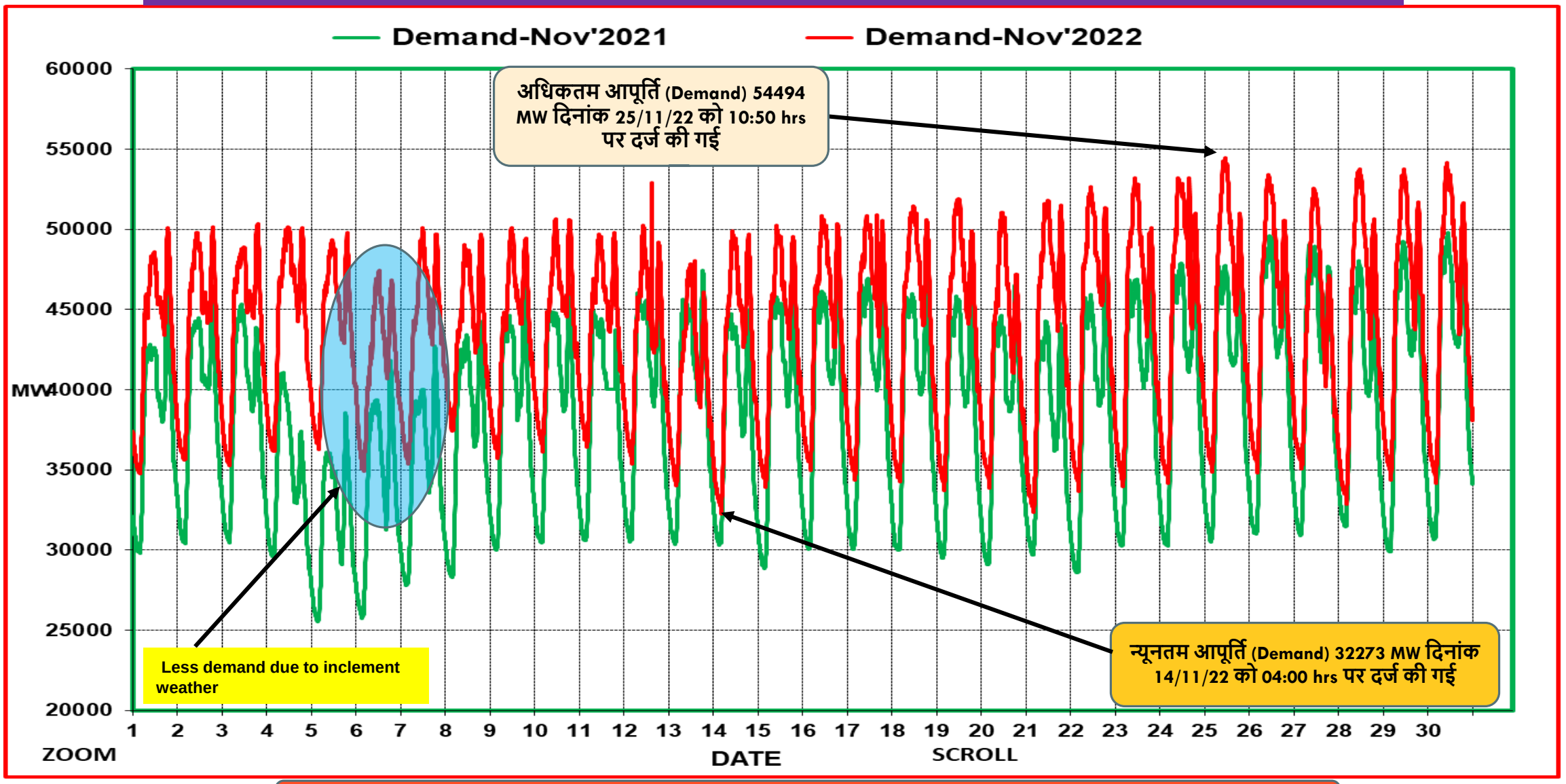
नवम्बर -2022 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)

ग्रिड-इंडिया GRID-INDIA

राज्य	अधिकतम मांग (MW) (in Nov'22)	दिनांक / समय	रिकॉर्ड अधिकतम मांग (in MW) (upto Oct'22)	दिनांक / समय	अधिकतम ऊर्जा खपत (MU) (in Nov'22)	दिनांक	रिकॉर्ड अधिकतम ऊर्जा खपत (MU) (Upto Oct'22)	दिनांक
पंजाब	7253	30.11.22 at 09:30	14295	22.08.22 को 14:45 बजे	139.43	25.11.22	334.45	29.06.22
हरियाणा	7578	30.11.22 at 12:30	12768	28.06.22 को 11:56 बजे	137.25	29.11.22	266.15	07.07.21
राजस्थान	16023	28.11.22 at 11:30	16012	28.06.22 को 14:00 बजे	305.35	29.11.22	328.86	09.09.22
दिल्ली	3941	08.11.22 at 18:43	7695	29.06.22 को 15:10 बजे	74.82	11.11.22	153.52	28.06.22
उत्तर प्रदेश	17387	08.11.22 at 19:20	26589	09.09.22 को 21:39 बजे	308.96	08.11.22	547.360	19.08.22
उत्तराखंड	2064	25.11.22 at 07:00	2594	14.06.22 को 21:00 बजे	38.44	25.11.22	54.27	15.06.22
हिमाचल प्रदेश	1965	30.11.22 at 08:00	2030	07.01.22 को 10:00 बजे	34.15	23.11.22	36.91	28.06.22
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	2764	08.11.22 at 19:00	2967	30.09.22 को 07:00 बजे	58.77	29.11.22	59.95	17.01.22
चंडीगढ़	254	15.11.22 at 10:00	426	08.07.21 को 15:00 बजे	3.52	02.11.22	8.41	08.07.21
उत्तरी क्षेत्र #	54494	25.11.22 at 10:50	77006	28.06.22 को 11:50 बजे	1081.16	25.11.22	1737.09	28.06.22

उत्तरी क्षेत्र अधिकतम मांग (Demand Met) as per SCADA Data

क्षेत्रीय विद्युत आपूर्ति (Demand) नवम्बर 2021 बनाम नवम्बर 2022 (As per 5 Minute SCADA data)

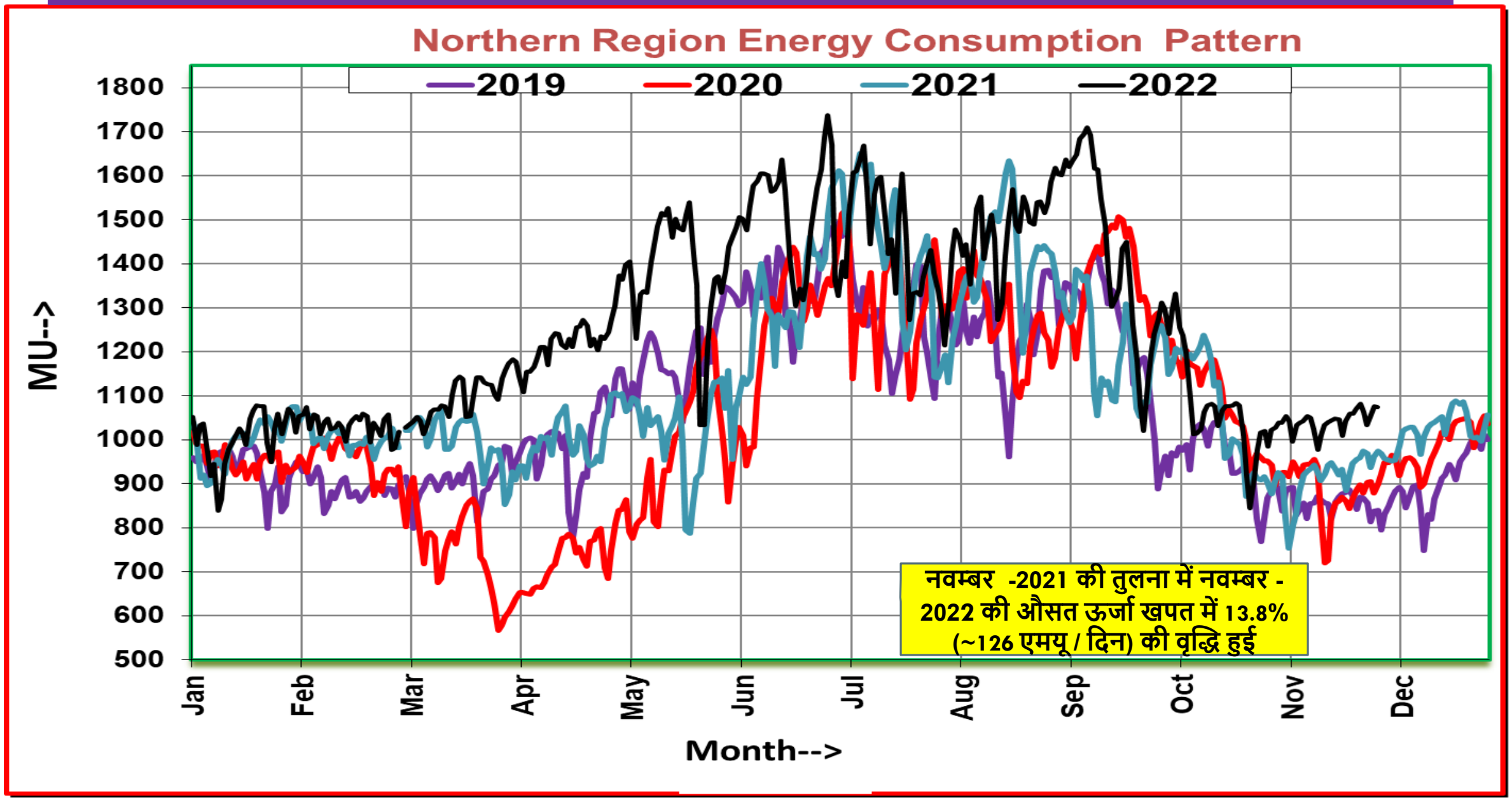


नवम्बर -2021(38634MW) की तुलना में नवम्बर -2022(43754MW) की औसत विद्युत आपूर्ति में 13.25% (~5120MW) की वृद्धि हुई

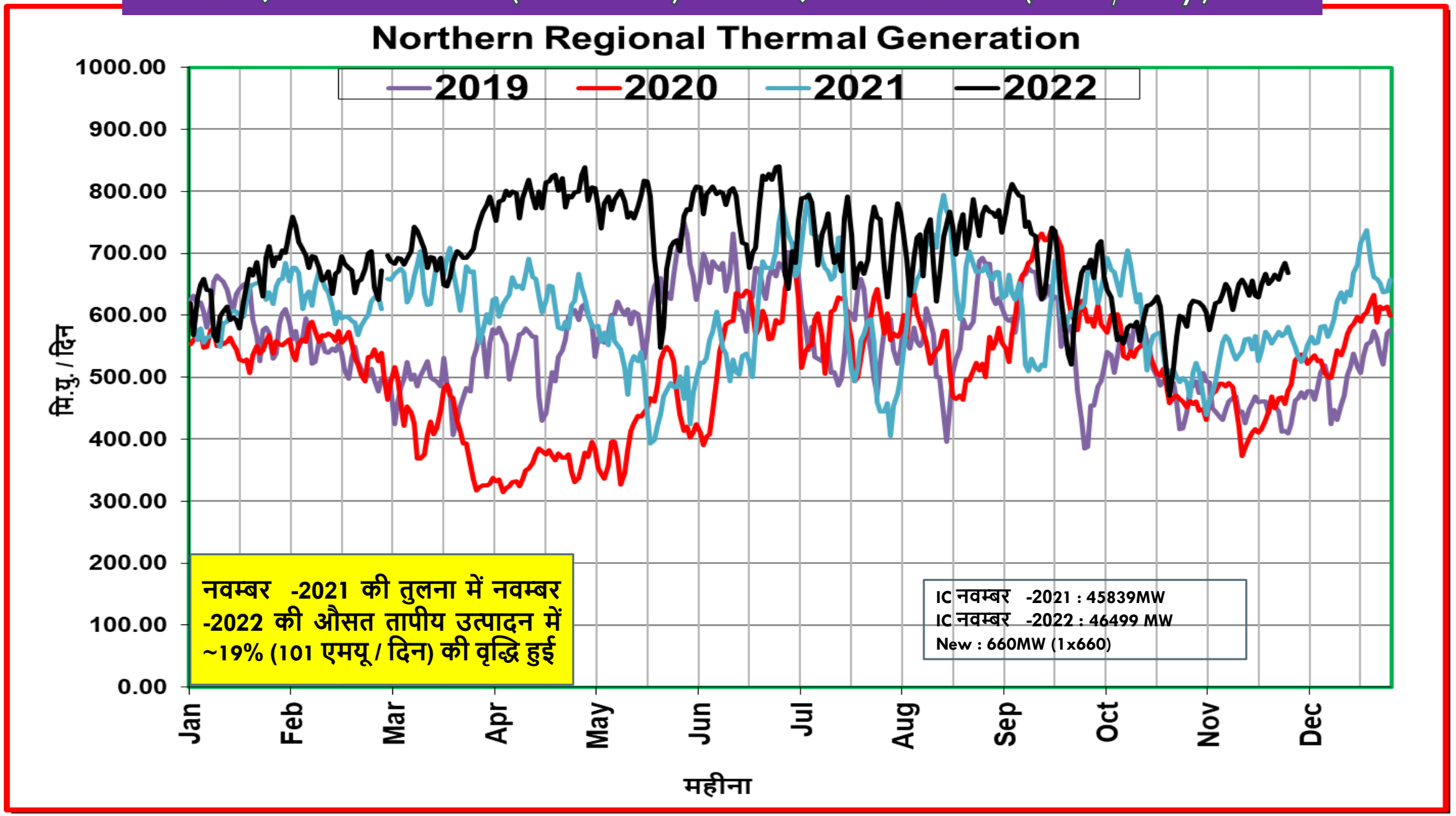
उत्तरी क्षेत्र की औसत ऊर्जा खपत में वृद्धि(% में) नवम्बर -2022/ नवम्बर -2021 / नवम्बर -2020

राज्य	नवम्बर -2020	नवम्बर -2021	नवम्बर -2022	% वृद्धि (नवम्बर -2021 vs नवम्बर -2020)	% वृद्धि (नवम्बर -2022 vs नवम्बर -2021)
पंजाब	104.52	112.23	126.97	7.37%	13.13%
हरियाणा	114.21	115.18	129.03	0.85%	12.02%
राजस्थान	236.12	239.41	291.78	1.39%	21.88%
दिल्ली	60.83	60.44	67.66	-0.65%	11.95%
उत्तर प्रदेश	258.45	270.74	300.84	4.76%	11.12%
उत्तराखंड	34.26	33.92	36.21	-1.00%	6.75%
चंडीगढ़	3.03	2.98	3.31	-1.52%	11.17%
हिमाचल प्रदेश	28.25	29.91	32.25	5.87%	7.82%
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	48.05	51.30	54.27	6.76%	5.79%
उत्तरी क्षेत्र	887.73	916.11	1042.31	3.20%	13.78%

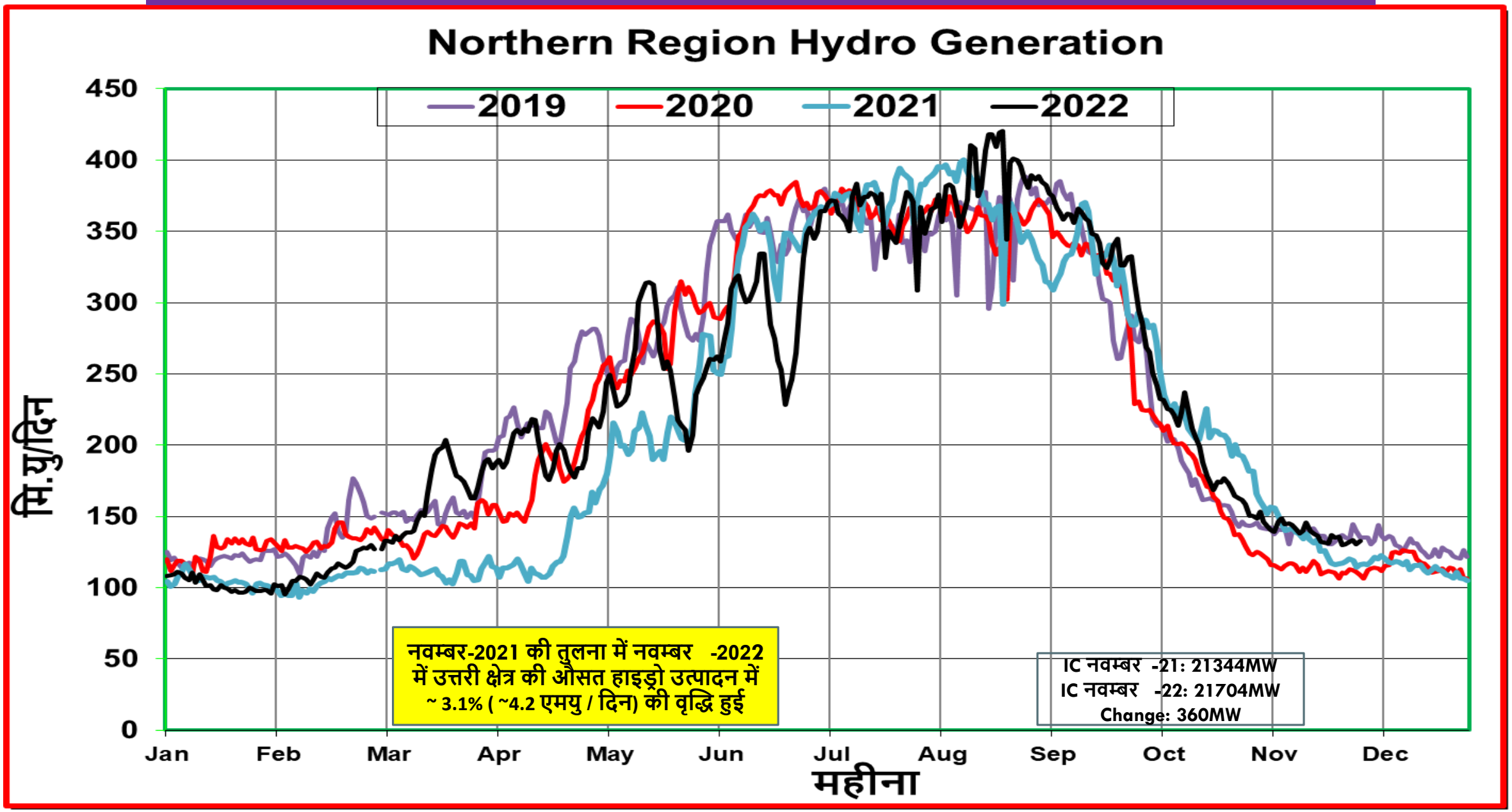
उत्तरी क्षेत्र की ऊर्जा खपत(MUs)



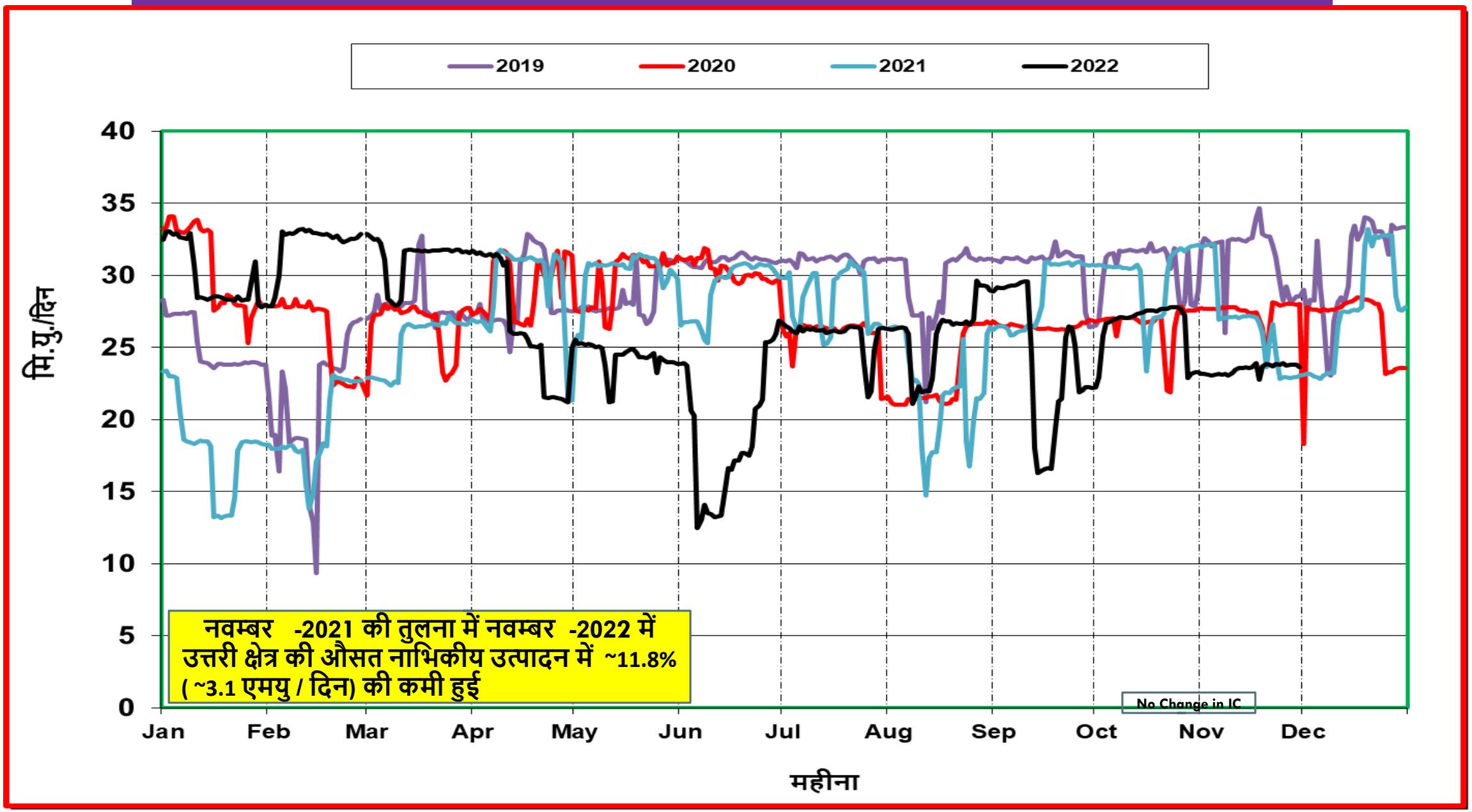
उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति(Mus/Day)



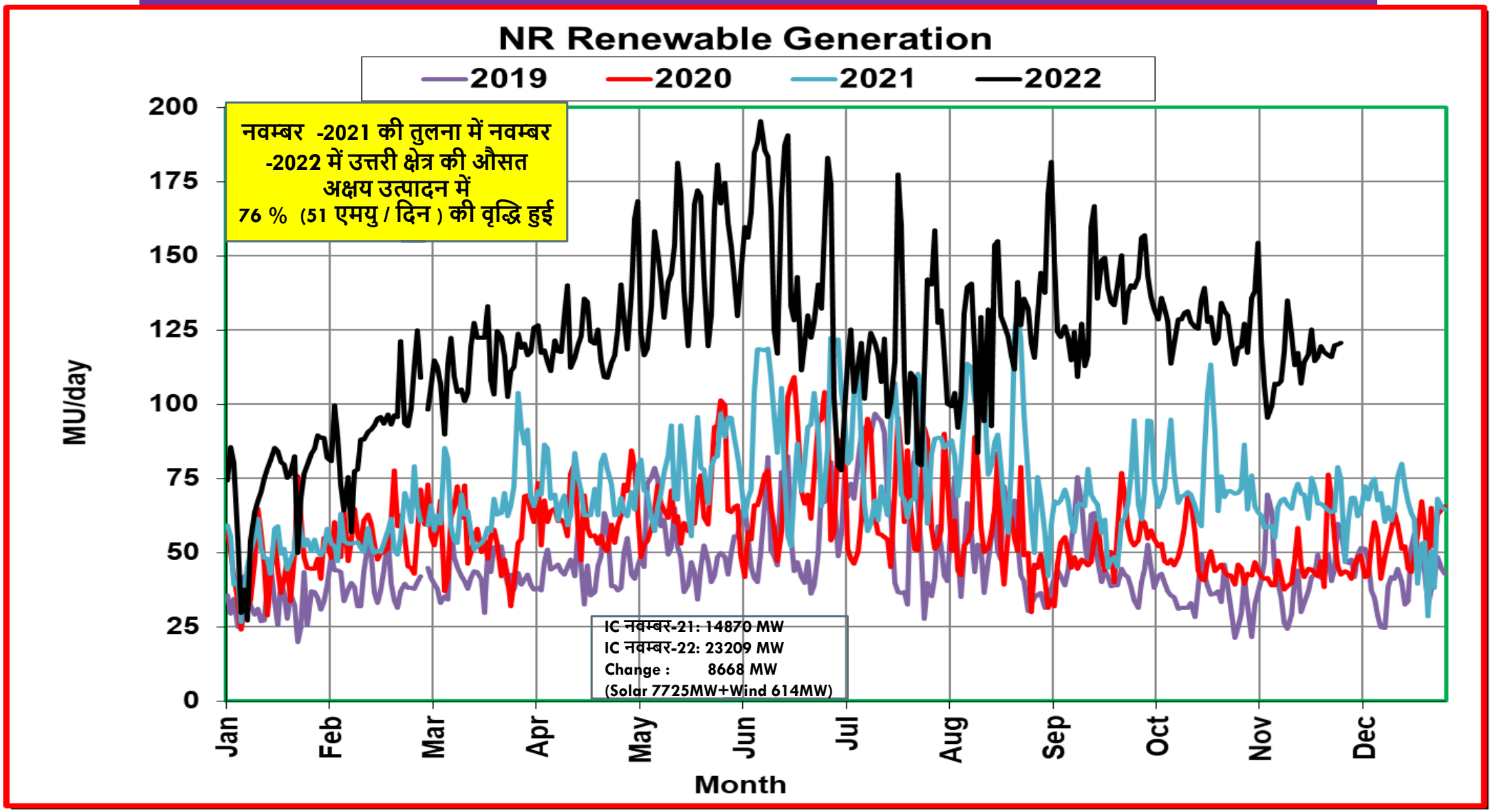
उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति(Mus/Day)



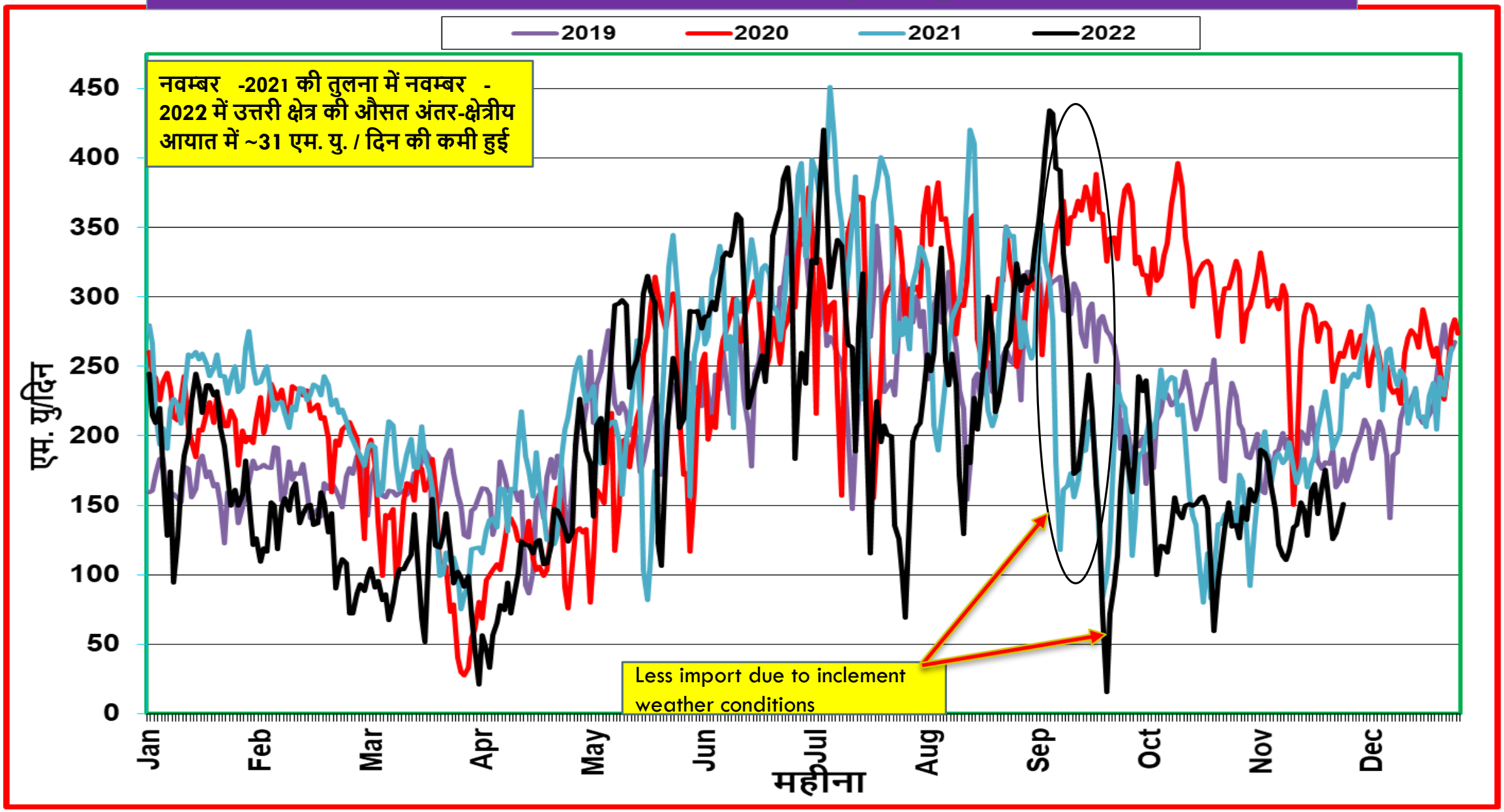
उत्तरी क्षेत्र की नाभिकीय उत्पादन की स्थिति (Mus/Day)



उत्तरी क्षेत्र की अक्षय (Renewable) उत्पादन की स्थिति (Mus/Day)



अंतर-क्षेत्रीय आयात(Mus/Day) की स्थिति



RE Penetration

	Maximum Daily MU Penetration			
	November '2022		Record upto October '2022	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	5.97	13-11-2022	12.28	01-04-2020
Rajasthan	18.92	05-11-2022	36.47	22-10-2021
UP	3.35	13-11-2022	4.07	30-10-2021
NR	14.79	05-11-2022	15.90	25-10-2022

	Maximum Instantaneous Penetration in MW			
	November '2022		Record upto October '2022	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	9.80	13-11-2022	26.87	22-04-2020
Rajasthan	35.00	05-11-2022	68.38	31-03-2020
UP	10.85	01-11-2022	15.13	01-04-2021
NR	33.03	01-11-2022	42.96	25-10-2022

B.20

Outage Summary For November 2022									
CONSTITUENTS	PLANNED (A)	FORCED OUTAGES (B=C+D)	EMERGENCY SHUTDOWNS (C)	TRIPPING (D)	% PLANNED SHUTDOWNS (A/(A+C))	% EMERGENCY SHUTDOWNS(C/(A+C))	% ESD SHUTDOWNS(C/B)	% TRIPPING (D/B)	TOTAL OUTAGES (A+B)
POWERGRID	491	205	142	63	77.6%	22.4%	69.3%	30.7%	696
UPPTCL	90	90	28	62	76.3%	23.7%	31.1%	68.9%	180
PSTCL	110	10	8	2	93.2%	6.8%	80.0%	20.0%	120
RRVPNL	48	64	31	33	60.8%	39.2%	48.4%	51.6%	112
BBMB	71	14	5	9	93.4%	6.6%	35.7%	64.3%	85
HVPNL	37	10	6	4	86.0%	14.0%	60.0%	40.0%	47
HPPTCL	33	10	0	10	100.0%	0.0%	0.0%	100.0%	43
ADHPL	24	3	0	3	100.0%	0.0%	0.0%	100.0%	27
JPL,HBPCL	26	1	0	1	100.0%	0.0%	0.0%	100.0%	27
DTL	10	14	12	2	45.5%	54.5%	85.7%	14.3%	24
NTPC	8	10	1	9	88.9%	11.1%	10.0%	90.0%	18
PDD JK	6	11	2	9	75.0%	25.0%	18.2%	81.8%	17
Renew Power	16	1	0	1	100.0%	0.0%	0.0%	100.0%	17
PKTCL	12	3	1	2	92.3%	7.7%	33.3%	66.7%	15
Adani Solar	7	5	3	2	70.0%	30.0%	60.0%	40.0%	12
SJVNL	11	0	0	0	100.0%	0.0%	0.0%	0.0%	11
Avaada Solar	3	6	6	0	33.3%	66.7%	100.0%	0.0%	9
PTCUL	5	4	1	3	83.3%	16.7%	25.0%	75.0%	9
NTPC Solar	3	5	2	3	60.0%	40.0%	40.0%	60.0%	8
MEGA_SURYAURJA	7	0	0	0	100.0%	0.0%	0.0%	0.0%	7
FBTL	7	0	0	0	100.0%	0.0%	0.0%	0.0%	7
PFTL	6	0	0	0	100.0%	0.0%	0.0%	0.0%	6
PKTSL	6	0	0	0	100.0%	0.0%	0.0%	0.0%	6
MAHINDRA	5	0	0	0	100.0%	0.0%	0.0%	0.0%	5
THDC	5	0	0	0	100.0%	0.0%	0.0%	0.0%	5
ACME	0	3	3	0	0.0%	100.0%	100.0%	0.0%	3
NRSS XXIX	3	0	0	0	100.0%	0.0%	0.0%	0.0%	3
POWERLINK	3	0	0	0	100.0%	0.0%	0.0%	0.0%	3
Greenko	0	3	0	3	0.0%	0.0%	0.0%	100.0%	3
ABC Solar	2	0	0	0	100.0%	0.0%	0.0%	0.0%	2
APCPL	2	0	0	0	100.0%	0.0%	0.0%	0.0%	2
Azure	1	1	1	0	50.0%	50.0%	100.0%	0.0%	2
Chandigarh SEB	2	0	0	0	100.0%	0.0%	0.0%	0.0%	2
ESUCRL	1	1	0	1	100.0%	0.0%	0.0%	100.0%	2
GTL	2	0	0	0	100.0%	0.0%	0.0%	0.0%	2
Indigrid	2	0	0	0	100.0%	0.0%	0.0%	0.0%	2
Tata Power	2	0	0	0	100.0%	0.0%	0.0%	0.0%	2
PFTL	0	1	1	0	0.0%	100.0%	100.0%	0.0%	1
PAPTL	0	1	1	0	0.0%	100.0%	100.0%	0.0%	1
ATIL	1	0	0	0	100.0%	0.0%	0.0%	0.0%	1
Cleansolar_Jodhpur	1	0	0	0	100.0%	0.0%	0.0%	0.0%	1
GPTL	1	0	0	0	100.0%	0.0%	0.0%	0.0%	1
NHPC	1	0	0	0	100.0%	0.0%	0.0%	0.0%	1
PATRAN	1	0	0	0	100.0%	0.0%	0.0%	0.0%	1
TOTAL	**1072**	**476**	**254**	**222**	**80.8%**	**19.2%**	**53.4%**	**46.6%**	**1548**

B.20

OUTAGE SUMMARY OF LAST THREE MONTHS							
MONTH	PLANNED	FORCED OUTAGES	EMERGENCY SHUTDOWNS	TRIPPING	% PLANNED as of TOTAL S/D	% EMERGENCY SHUTDOWNS	TOTAL OUTAGES (A+B)
	(A)	(B=C+D)	(C)	(D)	(A/(A+C))	(C/(A+C))	
August-22	458	626	278	348	62.2%	37.8%	1084
September-22	676	724	375	349	64.3%	35.7%	1400
October-22	818	648	309	339	72.6%	27.4%	1466
November-22	**1072**	**476**	**254**	**222**	**80.8%**	**19.2%**	**1548**

B.20

New Elements First Time Charged During November 2022

S. No.	Type of transmission element	Total No
1	400/220kV lines	04
2	LILO of existing lines	03
3	ICTs	04
4	Bus/Line Reactors	03
5	Capacitor Banks	02
6	400kV, 220 kV Bays & Buses	57
Total New Elements charged		73

B.20

TRANSMISSION LINES

S.NO.	Agency/Owner	LINE NAME	Length (KM)	Conductor Type	DATE	Remarks
1	UPPTCL	400kV Varanasi(PG)-Jaunpur (UP)-2 (Charged on no load)	72.695	Twin Moose	18-Nov-2022	
2	POWERGRID	220kV Jauljivi (PG)-Pithoragarh(PG)-2	24.319	ZEBRA	25-Nov-2022	
3	NTPC_NOKHRA	220kV Bhadla_2 (PG)-Nokhra SL_BHD2 (NTPC)-1	20	AL59 Moose	25-Nov-2022	
4	POWERGRID	220kV Jauljivi (PG)-Pithoragarh(PG)-1	24.319	ZEBRA	30-Nov-2022	

LILO OF EXISTING TRANSMISSION LINES

S.NO.	Agency/Owner	LINE NAME	Length (KM)	Conductor Type	DATE	Remarks
1	POWERGRID	400kV Jauljivi (PG)-Bareilly_2(PG)-2 (LILO Length-1.6KM at Jauljivi(PG) AND 7.866KM at Bareilly_2(PG) end)	204.727	Twin Moose	18-Nov-2022	LILO of 400kV Bareilly(UP) - Dhauliganga(NH) D/C Line (Initially charged at 220kV) at Jauljivi (PG)
2	POWERGRID	220kV Jauljivi (PG)-Dhauliganga(NH)-2 (LILO Length-1.156 KM)	35.52	ZEBRA	25-Nov-2022	
3	POWERGRID	220kV Dhauliganga(NH)-Jauljivi (PG)-1 (LILO Length-1.156 KM)	35.52	Twin Moose	25-Nov-2022	

B.20

ICTs/ GTs / STs

S.NO.	Agency/Owner	SUB-STATION	ICT NO	Voltage Level (kV)	CAPACITY (MVA)	DATE	Remarks
1	POWERGRID	Jauljivi (PG)	2	400/220/33kV	315	18-Nov-2022	
2	POWERGRID	Jauljivi (PG)	1	400/220/33kV	315	18-Nov-2022	
3	NTPC_NOKHRA	Nokhra SL_BHD2 (NTPC)	1	220/33	100	25-Nov-2022	
4	RENEW SURYARAVI (RSRPL)	Renew SuryaRavi SL_BKN_PG (RSRPL)	1	400/33	150	28-Nov-2022	

BUS/LINE REACTORS

S.NO.	Agency/Owner	SUB-STATION	BR NO	Voltage Level (kV)	CAPACITY (MVA)	DATE
1	SJVNL	Nathpa Jhakri (SJ)	1	400	80 (Replacement of old 80 MVAR BR)	21-Nov-2022
2	UPPTCL	63 MVAr Non-Switchable Line reactor of 765 KV Agra Fatehabad- Ghatampur TPS Line at Agra Fatehabad(UP)	1	765	63 (Spare reactor charged in place of 1-ph reactor)	16-Nov-2022
3	POWERGRID	63MVAr (3*21MVAr) Switchable Line reactor of 400kV Jauljivi (PG)-Bareilly_2(PG)-2 at Jauljivi (PG)	2	400	63	16-Nov-2022

CAPACITOR BANKS

S.NO.	Agency/Owner	ELEMENT NAME	SUBSTATION	Voltage Level (kV)	DATE
1	EDEN	16 MVAR (2+5+9) Capacitor Bank 2 associated with 33kV Feeder 26	EDEN SL_FGRAH_PG (ERCPL)	33	02-Nov-2022
2	EDEN	16 MVAR (3+6+7) Capacitor Bank 1 associated with 33kV Feeder 20	EDEN SL_FGRAH_PG (ERCPL)	33	02-Nov-2022

B.20

GENERATING UNITS							
SL. NO.	**Location**	**OWNER/UNIT NAME**	**Unit No/Source**	**Capacity added (MW)**	**Total/Installed Capacity (MW)**	**DATE**	**Remarks**
1	Rajasthan	Thar Surya1_Bikaner (PG)	Solar	64	300	19.11.2022	
2	Rajasthan	NTPC Devikot_Fatehgarh_2 (PG)	Solar	120	240	05.11.2022	
		Total Solar Generation addition		**184**			


धन्यवाद

Annexure-B.II

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

No: - 3603 /SE(R&A)/EE-II/Over Voltage Dated: - 20-12- 2022

Shift Incharge,

Group A/Group B/Group C/Group D,

UPSLDC, Lucknow.

Subject-Regarding Active Plan for Management of Over Voltage in forthcoming winter season (2022-23)

Kindly find enclosed herewith **"Action Plan for management of Over Voltage in forthcoming winter season (2022-23)"** for your kind information and necessary action.

Encl: As above.

o/c for Superintending Engineer (R&A)

No: - 3603 /SE(R&A)/EE-II/Over Voltage Dated: -20/12- 2022

Copy forwarded to following for kind information and necessary action:

1. Director, UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
2. Director (Operation), UPPTCL, 11th Floor, Shakti Bhawan Extn., Lucknow.
3. Senior Adviser, UPPTCL, Vibhuti Khand – II, Gomti Nagar, Lucknow.
4. Chief Engineer (C&S/PSO), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
5. General Manager, NRLDC18-A, SJSS Marg, Katwaria Sarai, New Delhi – 110016.
6. SE (Operations), 18 – A SJSS Marg, Katwaria Sarai, New Delhi, 110016. (seo-nrpc@nic.in).
7. Superintending Engineer (System Control), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.

o/c for Superintending Engineer (R&A)

उ०प्र०पा०ट्रा०का०लि०

टिप्पणी तथा आदेश

Chief Engineer (PSO)/Director (UPSLDC)

In view of the forthcoming winter season an action plan have been prepared to ensure safe and secure grid operation. Details are as below:-

Action Plan for Management of Over Voltage in Forthcoming Winter Season (2022-23)

Reliable operation of transmission network is important to carry out secure grid operation and for ensuring uninterrupted supply of power in the state. In forthcoming winter season, due to low demand, high voltages, foggy conditions may cause multiple tripping of transmission lines. Advance planning and action in this regards will help in secure and reliable grid operation. In order to ensure that grid parameters remain within limit and to avoid any interruption in power supply following steps has been taken on part of UPSLDC.

A. UPSLDC has issued general guidelines to all stakeholders viz Distribution Licensees, Transmission Licensee, Generators vide letter no 2736/Dir (SLDC)/SE(R&A)/EE-II/Reliability dated 22.09.2022 (copy attached as Annexure -1). The general guideline comprises of following point:

1. Cleaning of disc insulator/replacement of porcelain disc insulator from polymer insulator may be carried out before 30th November-2022.
2. Tower strengthening/jumper tightening work may be carried out in advance to avoid unwanted/forced outages of transmission lines.
3. Proper patrolling may be carried out of Transmission/Distribution line and proper clearance of corridor of transmission/distribution line may be ensured to avoid tripping of lines on transient faults.
4. Testing of Tan Delta of transformer bushing, CT, CVT/PT should be carried out at regular intervals so that equipment failure may be avoided.

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टिप्पणी तथा आदेश

5. Testing of opening/closing time of breaker should be carried out at regular intervals so that equipment failure may be avoided.
6. Maintenance/replacement of reactors to be planned before winter season.
7. All capacitor banks must be switched off on nominal voltage.
8. To maintain the oil level of transformer, CT, CVT/PT within specified limits.
9. Tap optimization of 400/220kV and 220/132kV ICTs by respective authorities based on the voltage profile at respective substation to be done.
10. All generating units to absorb adequate Reactive power as per their capability curves in accordance with grid requirement.
11. All the defense mechanism like UFR, df/dt and SPS must be in service and in healthy condition.
12. All generating units shall ensure the healthiness of RGMO/FGMO for requisite output.
13. SCADA data availability must be ensured for better visualization and proactive actions.
14. Revival of power system elements (lines/ICTs/reactors etc) within schedule time which were under planned outage may be ensured.

B. In addition to this, UPSLDC has prepared a list of measures (as given below) to be taken by grid operators to tackle over voltage scenario during forthcoming winter season (2022-23).

1. **Absorption of the Reactive Power by Generating Stations** - Based on the capability curve of the generators, generators may be asked to absorb Reactive Power to control the grid voltage in case of High Voltages are observed in the grid.
2. **Regulating Tap setting of GTs and ICTs:**
   The Tap setting of Generating Transformers (GTs) at Generating Station and ICTs can be changed to control the over voltage in the grid.

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3. **Shunt reactors (Line/Bus Reactors)**

   By switching in the Shunt Reactor (Line/Bus Reactors) in the grid, over voltages can be controlled. It is worth mentioning here that the line reactors of the transmission lines which are under outages may be used as bus reactor (if possible) to control the high voltages in the grid. UPSLDC has created a separate display on SCADA for Line and Bus Reactor to ensure the monitoring of the healthiness of the same.

4. **Circuit switching:** At a time of high voltage switching out one of the lightly loaded double circuit lines or single circuit lines. This increases power flows and reactive power loss on remaining circuits which results in reduction in voltage in the grid. However care must be taken not to reduce network security and reliability.

5. **Switching off capacitor:** Real time grid operator shall ensure that capacitors installed in the transmission and distribution network are out of service during high voltage in the grid.

6. **Telephone directory of critical substation/generators and concerned officers:** A telephone directory comprising of phone numbers of critical substation/generators and concerned officer has been prepared by UPSLDC. The same is kept at UPSLDC Control Room for Grid Operators so that instruction may be passed on directly to the concerned substation/generators to control the over voltage in the grid.

7. **Monitoring of adverse weather condition**

   Fog or other conditions of high humidity cause an increased risk of insulation flashover which can be minimized by reducing voltage levels. Therefore, grid operators may monitor the areas where fog is observed and priorities their voltage reduction efforts in those area.

उ०प्र०पा०ट्रा०का०लि०

टिप्पणी तथा आदेश

8. **Line Charging Guidelines for grid operators:**

1. In case, line reactor is available at only one end, it is preferable to charge the line from the end without reactor and synchronize at the end with reactor.
2. If the line is to be opened, open from the end where line reactor is available.
3. Thumb rule is "synchronize or open from the end where line reactor is available".
4. The line should be charged from the end with higher fault level (3 phase short circuit MVA) in order to limit the over voltage at charging end. If two buses have almost same short circuit level (3-ph) and neither is a generation station, charge the line from the bus with lower voltage.

C. Considering the importance of Overvoltage protection settings of Transmission lines, UPSLDC has made a communication with all transmission lines vide letter no 3380/Dir(SLDC)/SE(R&A)/EE-II/Over Voltage dated 23.11.2022 (copy attached as Annexure-2) advising them to review their overvoltage setting of transmission lines to avoid unnecessary tripping.

D. Other steps by Reliability Unit of UPSLDC

1. Scattered Plot of ICTs of substations where over voltages is observed, is made and accordingly field units are intimated to change the tap settings of the ICTs.
2. Scattered plot between Voltage and Reactive power generated/absorbed by generators is prepared and accordingly generators are intimated to improve the Reactive Power performance. The same for duration from 16.11.2022-30.11.2022 is attached as Annexure-3.
3. Exchange of Reactive Power with ISTS elements is also monitored and accordingly steps are taken in case Reactive Power is injected in the grid by the Intra State transmission system.

उ०प्र०पा०ट्रा०का०लि०

टिप्पणी तथा आदेश

Real time system operators working in UPSLDC Control Room shall ensure compliance of above action plan.

Submitted for kind information.

15/12/22

(Mohsin Khan)
Assistant Engineer (R&A)
UPSLDC

(Ram Sharan Singh)
Executive Engineer (R&A)
UPSLDC

15/12/22

(A.J. Siddiqui)
Superintending Engineer (R&A)
UPSLDC

Full name

CE (PSO)

15/12/2022

kindly circulate to all CEs

EE (R&A)-II

for n.a.

16/12/22

Annexure - I

उत्तर प्रदेश राज्य भार प्रेषण केन्द्र
उ0प्र0पॉवर ट्रांसमिशन कारपोरेशन लि0
(उ0 प्र0 शासन का उपक्रम)
यू0पी0एस0एल0डी0सी0 परिसर, विभूति खण्ड–II
गोमती नगर, लखनऊ–226010
ई–मेल : directorsldc@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
E-mail: directorsldc@upsldc.org

No: 2736 /Dir (SLDC)/SE(R&A)/EE-II/Reliability Dated: - 23.09.2022

Director (Operation), UPPTCL, 11th Floor, Shakti Bhawan Extn., Lucknow.	**Director (Distribution), UPPCL, Shakti Bhawan, 14 Ashok Marg, Lucknow.**	**Director (Technical), UPRVUNL, 8th Floor, Shakti Bhawan Extension, Lucknow.**

Subject:-Operation planning and ensuring reliability of grid in view of upcoming winter season.

Reliable operation of transmission network is important to carry out secure grid operation and for ensuring uninterrupted supply of power in the state. In forthcoming winter season, due to low demand, high voltages, foggy conditions many cause multiple tripping of transmission lines. Advance planning and action in this regards will help in secure and reliable grid operation.

In this regards following action plan may be taken to minimize any kind of disturbance in the grid:

1. Cleaning of disc insulator/replacement of porcelain disc insulator from polymer insulator may be carried out before 30th November-2022.
2. Tower strengthening/jumper tightening work may be carried out in advance to avoid unwanted/forced outages of transmission lines.
3. Proper patrolling may be carried out of Transmission/Distribution line and proper clearance of corridor of transmission/distribution line may be ensured to avoid tripping of lines on transient faults.
4. Testing of Tan Delta of transformer bushing, CT, CVT/PT should be carried out at regular intervals so that equipment failure may be avoided.
5. Testing of opening/closing time of breaker should be carried out at regular intervals so that equipment failure may be avoided.
6. Maintenance/replacement of reactors to be planned before winter season.
7. All capacitor banks must be switched off on nominal voltage.
8. To maintain the oil level of transformer, CT, CVT/PT within specified limits.
9. Tap optimization of 400/220kV and 220/132kV ICTs by respective authorities based on the voltage profile at respective substation to be done.
10. All generating units to absorb adequate Reactive power as per their capability curves in accordance with grid requirement.
11. All the defense mechanism like UFR, df/dt and SPS must be in service and in healthy condition.
12. All generating units shall ensure the healthiness of RGMO/FGMO for requisite output.
13. SCADA data availability must be ensured for better visualization and proactive actions.
14. Revival of power system elements (lines/ICTs/reactors etc) within schedule time which were under planned outage may be ensured.

It is therefore, requested to instruct the concerned officials to look into these action plan & take necessary measure and other best practices to enhance transmission system reliability. A copy of action plan and action taken in this regard may be sent to this office also.

Matter may be treated as urgent.

(Amrendra Singh Kushwaha)
Director (SLDC)

No: -2736 /Dir (SLDC)/SE(R&A)/EE-II/Reliability Dated: - 22-09 2022

Copy forwarded to following for information:-

1. Chief Engineer (PSO), UPSLDC, Gomti Nagar, Lucknow.
2. Superintending Engineer (System Control/SCADA& IT), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.

(Amrendra Singh Kushwaha)
Director (SLDC)

No: -2736 /Dir (SLDC)/SE(R&A)/EE-II/Reliability Dated: -22-09- 2022

Copy forwarded to following for necessary action (via E-mail) :-

1. Chief Engineer (Trans.West), Pareshan Bhawan, 130D, Hydel Colony, Victoria Park, Meerut – 250001
2. Chief Engineer (Trans. North - East), 132kv Sub-station complex Mohaddipur old Gorakhpur-273008.(cetne@upptcl.org)
3. Chief Engineer (Trans. Central),UPPTCL, Pareshan Bhawan, Vibhuti Khand, 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. Chief Engineer (Trans. South - East), U.P. Power Transmission Corporation Ltd., 57, George Town, Allahabad - 211003.(cete@upptcl.org)
6. Chief Engineer (Trans. South -Central), UPPTCL., 132KV Sub-station Hasari, Lalitpur Road Jhansi-284135 (cetsc@upptcl.org).
7. Chief Engineer (Thermal Operation), UPRVUNL., 14th Floor, Shakti Bhawan Extn., Lucknow.(cgm.to@uprvunl.org)
8. Chief Engineer (O&M), UPJVNL., 12th Floor, Shakti Bhawan Extn., Lucknow (ceonmjvnl@gmail.com).
9. Chief General Manager, Anpara, Thermal Power Station, Anpara.
10. Chief General Manager, (Obra) Thermal Power Station, Obra, Sonbhadra Pin code-231219.
11. Chief Engineer (I.-I), Harduaganj thermal power station, P.O. Kasimpur, Aligarh, 202127 (gm.harduaganj@uprvunl.org)

12. Chief General Manager, Parichha, Thermal Power Station, Parichha Distt. –Jhansi (cgm.parichha@uprvunl.org).
13. Executive Director, Tanda Thermal Power Plant, Post- Vidyut Nagar, Distt.-Ambedkarnagar-224238
14. General Manager, Meja Thermal Power Plant Meja Tehsil, Allahabad.
15. M/s Rosa Power Supply, Company Limited,520, F – Block, 5th Floor, Kasmanda House, 02 Park Road,Hazratganj,Lucknow226001.(sumeet.notani@relianceada.com,surendra.kum.singh@relainceada.com)
16. M/s LANCO – Anpara Power Ltd, 411/09 River Side Apartment, New Hyderabad Lucknow-226007(arun.tholia@lancogroup.com)
17. M/s Lalitpur Power Generating Company Ltd, TC-13, Vibhuti Khand, near JSV Hyundai Service center Gomti Nagar, Lucknow 226010 (serlpgcl.ltp@lpgcl.com)
18. President, M/s Prayag Raj Thermal Power Plant, Village-Khansemra, PO-Lohgara, Tehsil-Bara, Distt-Allahbad 212107.
19. M/s Jaypee Vishnu Prayag HEP Station, Vishnupuram (Marwari Colony), Dist; Chamoli – 246443 (Uttrakhand).
20. M/s Alaknanda Hydro Power Company Ltd., Srinagar Hydro Electric project, Koteshwar Colony, Srinagar, Garhwal – 246174 (Uttrakhand). (sadanand.saw@gvk.com, shepcontrol@gvk.com)
21. Managing Director, NPCL, Gautam Buddh Nagar,Uttar Pradesh (SSrivastava@noidapower.com).
22. CGM, WUPPTCL 400/220/33KV Sub- Station, Indirapurm, Kala Pathar, Ghaziabad- 201014.
23. CGM (SEUPPTCL), Lavana Cyber Height, Ist Floor, Office No. – 116, Vibhuti Khand, Gomti Nagar, Lucknow – 226010.
24. Power Grid, Jawaharpur Firozabad Transmission Limited, Power Grid Corporation of India Limited, Agra 765/400/220kV substation 12.6km Milestone, Shamshabad Road, P.O. Shayama, Agra-283125.
25. Power grid Rampur Sambhal Transmission Limited, B-9, Qutub Institutional Area, Katarina Sarai, New Delhi-110016 (ramendra.kumar@powergrid.in).
26. M/s Ghatampur Transmission Limited, Adani Corporate House, Shantigram S.G Highway, Ahmedabad-382420, Gujrat.
27. M/s Obra-C Badaun Transmission Limited, Adani Corporate House, Shantigram S.G Highway, Ahmedabad-382420, Gujrat.

(Amrendra Singh Kushwaha)
Director (SLDC)

Annexure - II

उत्तर प्रदेश राज्य भार प्रेषण केन्द्र
उ0प्र0पॉवर ट्रांसमिशन कारपोरेशन लि0
(उ0प्र0 सरकार का उपक्रम)
यू0पी0एस0एल0डी0सी0 परिसर, विभूति खण्ड-II
गोमती नगर, लखनऊ-226010
ई-मेल : directorsldc@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
E-mail: directorsldc@upsldc.org

No: 3380/Dir (SLDC)/SE(R&A)/EE-II/Over Voltage Dated: - 23-11-2022

To,
As per distribution list (Via E-mail)

Subject: - Regarding over voltage setting of transmission lines and over flux setting of 765/400kV and 400/220kV ICTs.

As you are aware that over voltage issues are observed in winter season. Such over voltages cause tripping of transmission lines on over voltage protection and ICTs on over flux protection. As a part of action plan to tackle high voltage in the grid during forthcoming winter season, accurate over voltage settings of transmission lines and over flux settings of transformers are important to avoid false tripping of transmission elements. In this regard you may also refer to NRLDC communication vide letter no. NRLDC/TS-65/1324 dated 14.11.2022 (copy enclosed).

It is requested that in case over voltage settings of 400kV and above transmission lines are not as per the recommendation of Ramkrishna Task Force and over flux settings of ICTs are not as per the recommendation of Ramkrishna Task Force or OEM, UPSLDC may please be apprised of the action taken in this regard. Recommendation of Ramkrishna Task Force with regard of over voltage settings of transmission line and over flux settings of transformers are as follows -:

1. **Line Overvoltage Protection Settings:**

   For 400kV lines: Low set stage (Stage-I) may be set in the range of 110% - 112 % (typically 110%) with a time delay of 5 seconds. High set stage (Stage-II) may be set in the range 140% - 150% with a time delay of 100 milliseconds.

   For 765kV lines: Low set stage (Stage-I) may be set in the range of 106% - 109 %(typically 108%) with a time delay of 5 seconds. High set stage (Stage-II) may be set in the range 140% - 150% with a time delay of 100milliseconds.

   However, for over voltage Stage-I protection, a time grading of 1 to 3 seconds may be provided between overvoltage relays of double circuit lines. Grading on overvoltage tripping for various lines emanating from a station may be considered and same can be achieved using voltage as well as time grading. Longest timed delay should be checked with expected operating time of Over-fluxing relay of the transformer to ensure disconnection of line before tripping of transformer.

   It is desirable to have Drop-off to pick-up ratio of overvoltage relay better than 97 % (Considering limitation of various manufacturers relay on this aspect).

2. **Transformer Over flux Settings**

V/f (%)	Time set delay (s)
110	9000
118	90
126	49.5
134	18
142	4
150	1

It is also requested that field units may please be instructed to provide the final over voltage and over flux setting in prescribed format (copy enclosed) before 30.11.2022 (in MS Excel format to sera@upsldc.org).

Correct protection setting is basic requirement for safe and secure operation of the grid.

Encl: - As above.

Amrendra Singh Kushwaha
Senior Advisor UPPTCL

No: - /Dir (SLDC)/SE(R&A)/EE-II/Over Voltage Dated: - 2022

Copy forwarded to following for information:-

1. PS to MD, UPPTCL, 7th Floor, Shakti Bhawan, Lucknow.
2. Director (Operation), UPPTCL, 11th Floor, Shakti Bhawan Extn., Lucknow.
3. Director (Technical), UPRVUNL, 8th Floor, Shakti Bhawan Extension, Lucknow.
4. Chief Engineer (PSO), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
5. General Manager, NRLDC, 18-A, SJSS Marg, Katwaria Sarai, New Delhi – 110016.
6. Superintending Engineer (Operation), NRPC, 18 – A SJSS Marg, Katwaria Sarai, New Delhi, 110016.

Amrendra Singh Kushwaha
Senior Advisor UPPTCL

Distribution List

1. Chief Engineer (Trans.West), Pareshan Bhawan, 130D, Hydel Colony, Victoria Park, Meerut – 250001
2. Chief Engineer (Trans. North - East), 132kv Sub-station complex Mohaddipur old Gorakhpur-273008.(cetne@upptcl.org)
3. Chief Engineer (Trans. Central), UPPTCL, Pareshan Bhawan, Vibhuti Khand, 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. Chief Engineer (Trans. South - East), U.P. Power Transmission Corporation Ltd., 57, George Town, Allahabad - 211003.(cete@upptcl.org)
6. Chief Engineer (Trans. South -Central), UPPTCL, 132KV Sub-station Hasari, Lalitpur Road Jhansi-284135 (cetsc@upptcl.org).
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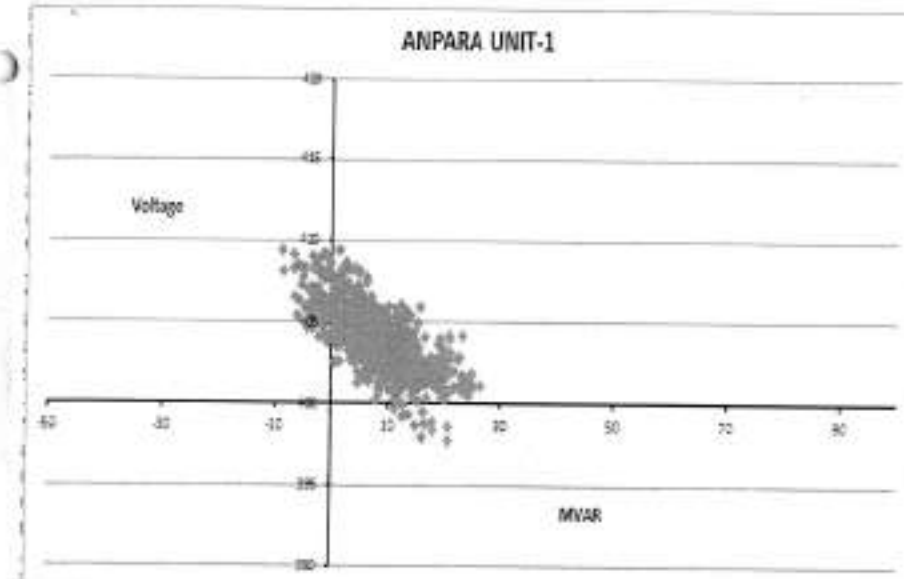
9. Chief General Manager, (Obra) Thermal Power Station, Obra, Sonbhadra Pin code-231219.
10. Chief Engineer (L-1), Harduaganj thermal power station, P.O. Kasimpur, Aligarh. 202127 (gm.harduaganj@uprvunl.org)
11. Chief General Manager, Parichha, Thermal Power Station, Parichha Distt. –Jhansi (cgm.parichha@uprvunl.org).
12. Executive Director, Tanda Thermal Power Plant, Post- Vidyut Nagar, Distt.-Ambedkarnagar-224238.
13. General Manager, Meja Thermal Power Plant Meja Tehsil, Allahabad.
14. M/s Rosa Power Supply, Company Limited,520, F – Block, 5th Floor, Kasmanda House, 02 Park Road,Hazratganj,Lucknow226001.(sumeet.notani@relianceada.com,surendra.kum.singh@relaincea da.com)
15. M/s LANCO – Anpara Power Ltd, 411/09 River Side Apartment, New Hyderabad Lucknow-226007(arun.tholia@lancogroup.com)
16. M/s Lalitpur Power Generating Company Ltd, TC-13, Vibhuti Khand, near JSV Hyundai Service center Gomti Nagar, Lucknow 226010 (serlpgcl.ltp@lpgcl.com)
17. President, M/s Prayag Raj Thermal Power Plant, Village-Khansemra, PO-Lohgara, Tehsil-Bara, Distt-Allahbad 212107.
18. M/s Jaypee Vishnu Prayag HEP Station, Vishnupuram (Marwari Colony), Dist: Chamoli – 246443 (Uttrakhand).

Annexure – III

Reactive Power Performance of Generators in UP Control Area from (16.11.2022 to 30.11.2022)				
Name of generating station that produce Reactive Power during high voltage				
S.No.	**Name of Generating Station**	**Unit**	**Reactive Power Injection/Absorption in MVAR**	**Observation**
1	Anpara ATPS	2	+30 to +55	Reactive Power must be absorved during high voltage condition
		3	+5 to +40	
2	Anpara DTPS	1	0 to +100	
		2	+25 to +130	
3	Parichha BTPS	3	0 to 90	
		4	+20 to + 100	
4	Harduaganj TPS Ext.-II	10	-70 to 100	
Name of generating station which require to improve their Reactiv Power Performance				
S.No.	**Name of Generating Station**	**Unit**	**Reactive Power Injection/Absorption in MVAR**	**Observation**
1	Anpara ATPS	1	-10 to +25	Generator may explore posibility of furhter MVAR absorption during high voltage condition
2	Bara TPS	1	-50 to +50	
		2	-50 to +50	
		3	-40 to +60	
3	Lalitpur TPS	1	-10 to +150	
		2	-50 to +50	
4	Anpara C	1	-25 to +75	
		2	-10 to +30	
5	Rosa TPS	1	-30 to +50	
		2	-25 to +50	
		3	Data not available	
		4	-20 to +70	
6	Vishnuprayag	1	SCADA data not available	
		2		
		3		
		4		
7	Obra B	9	-5 to 30	
		10	-5 to 30	
		11	-10 to +10	
		12	-10 to +30	
		13	-15 to +25	
8	Harduaganj TPS Ext.-I	8	SCADA data not available	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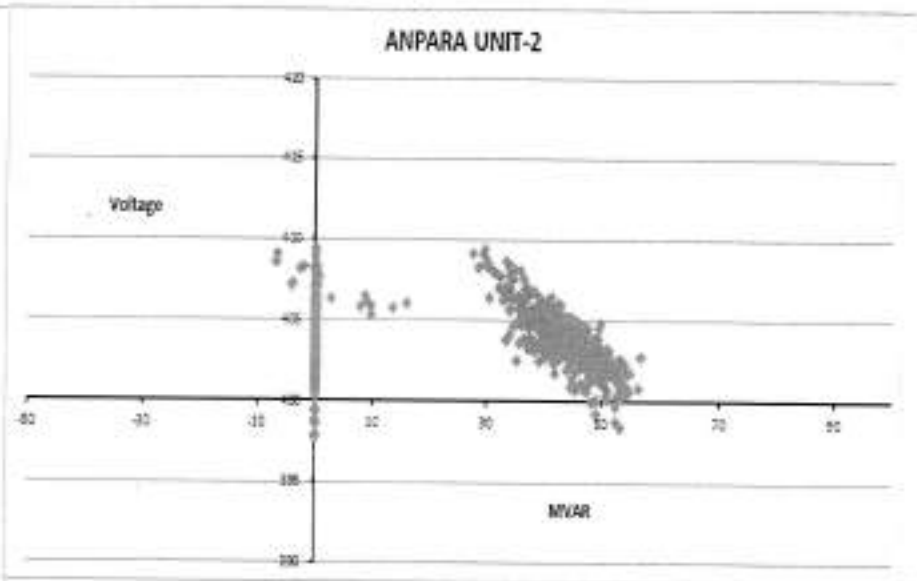
MVAR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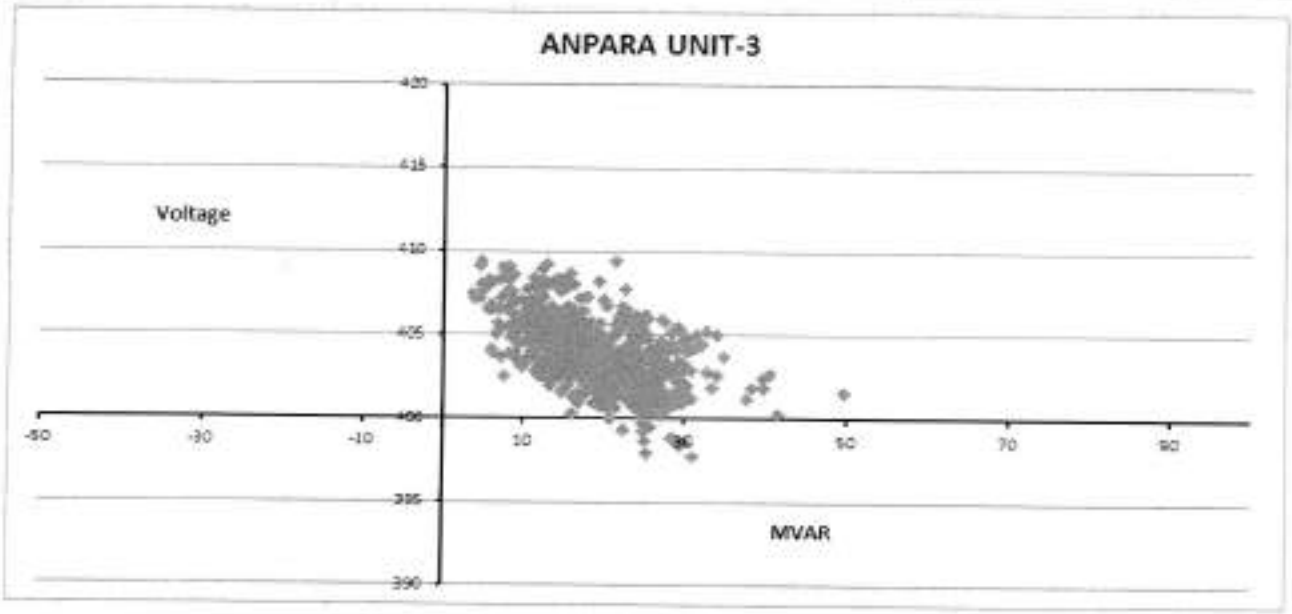
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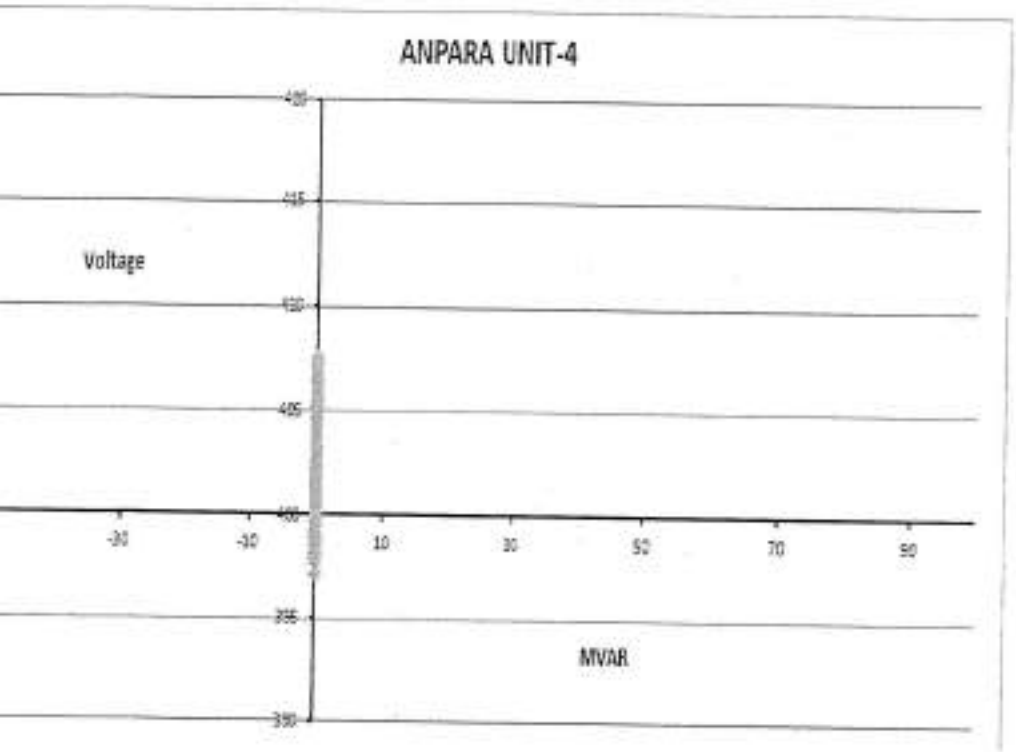
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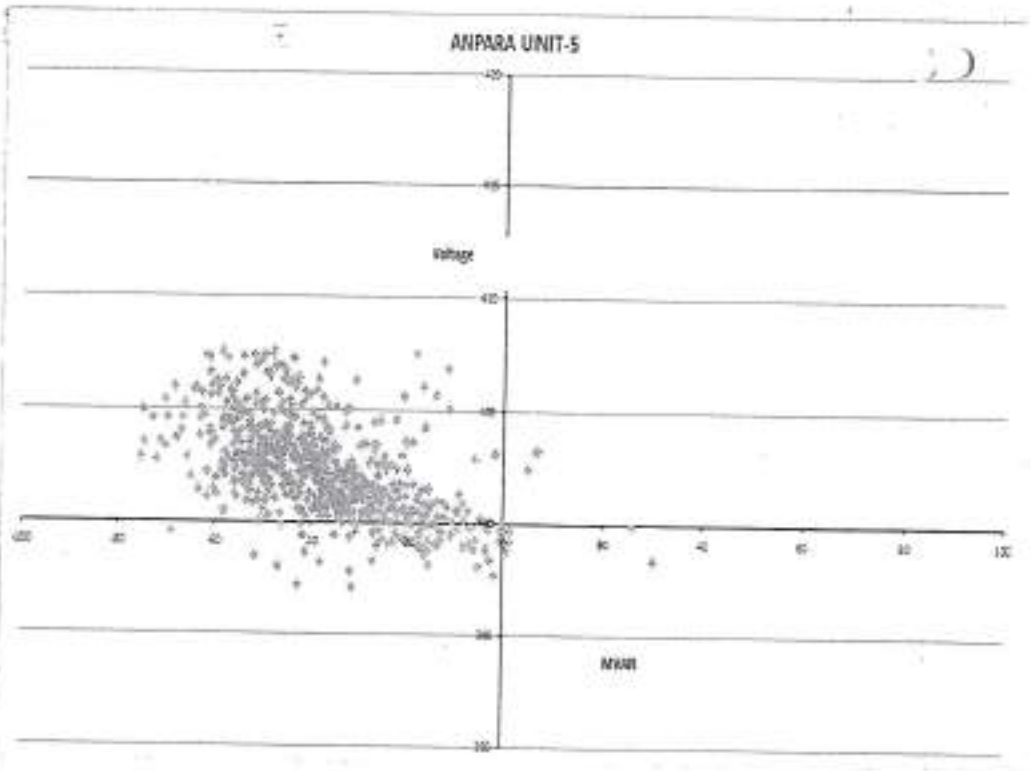
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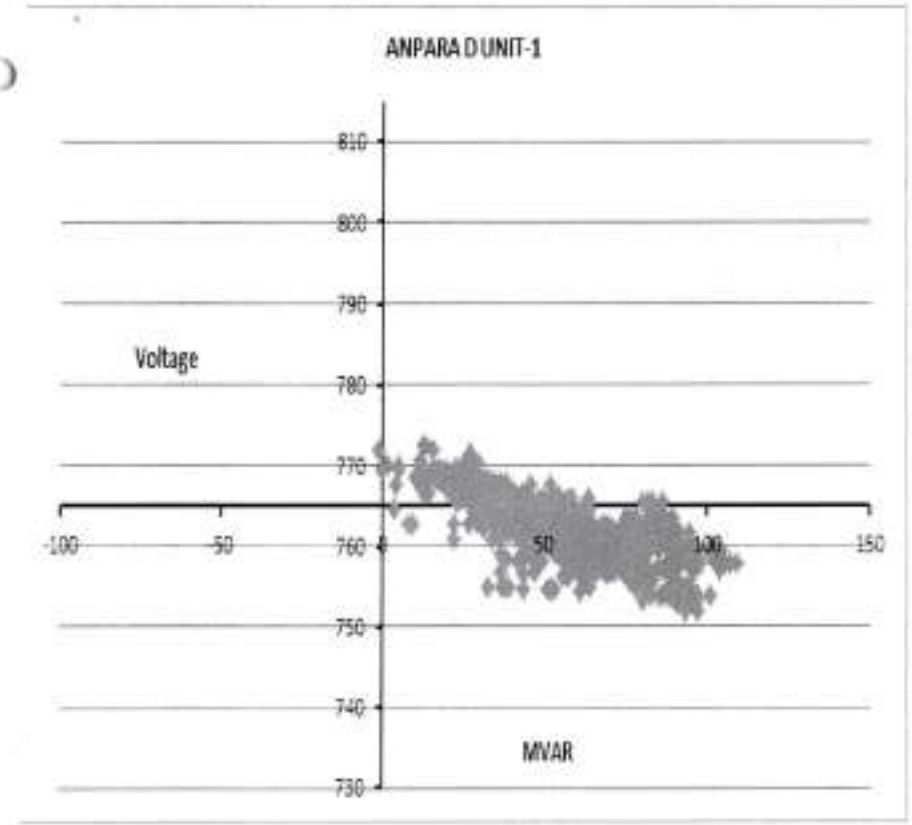
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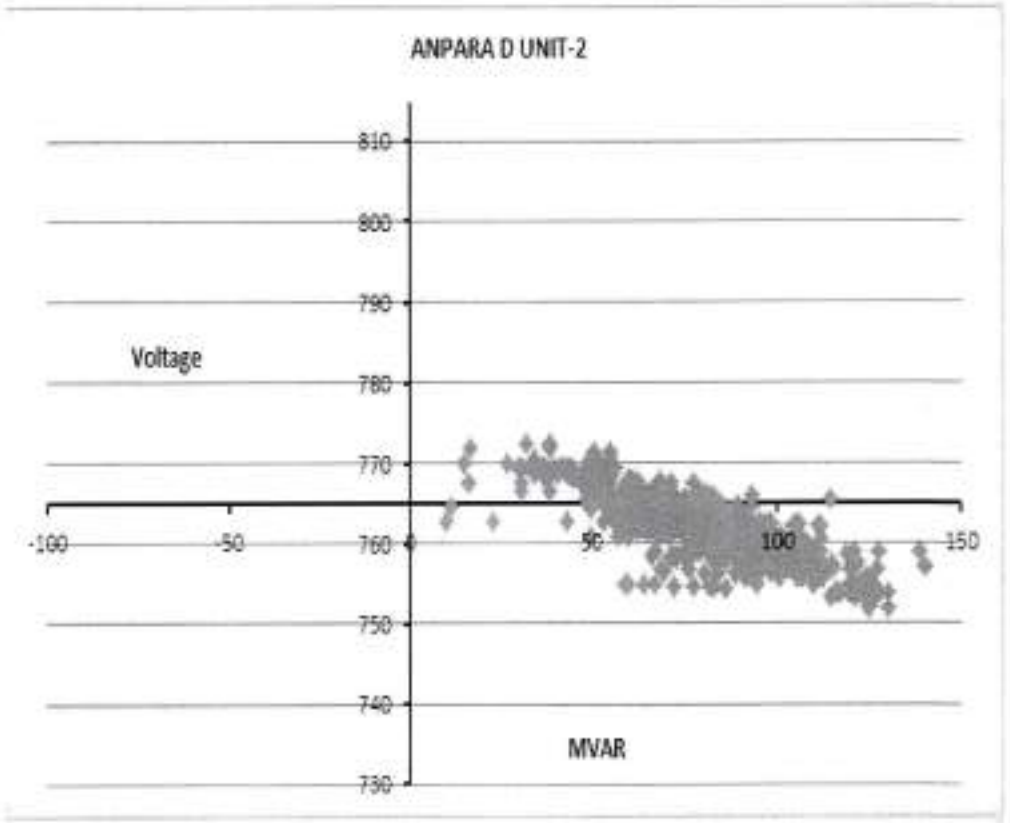
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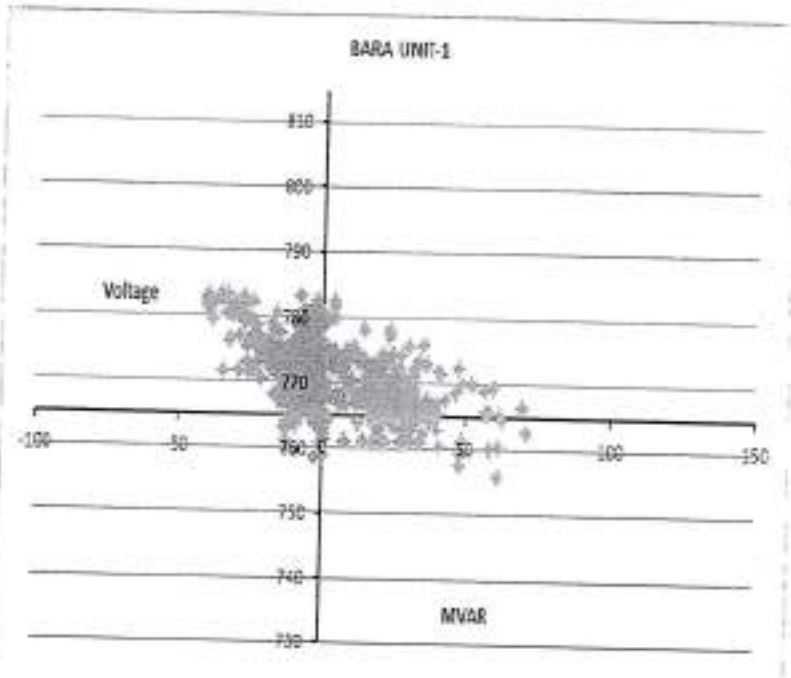
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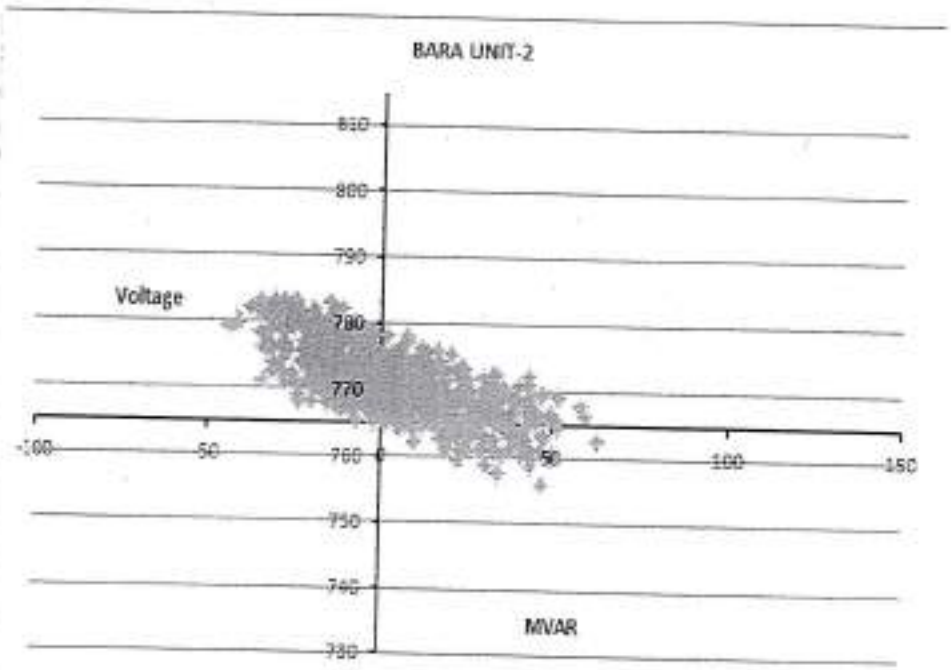
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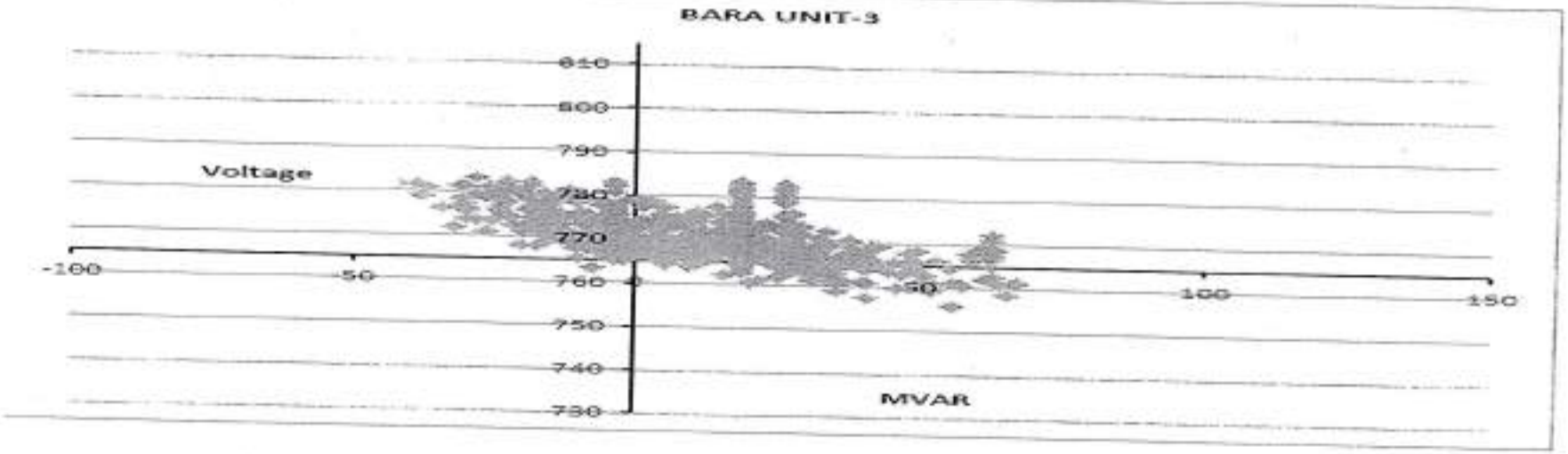
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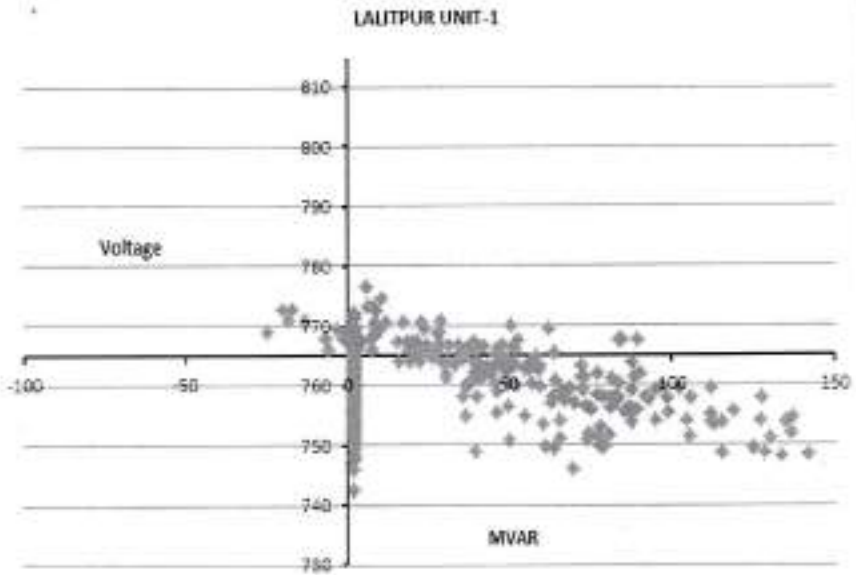
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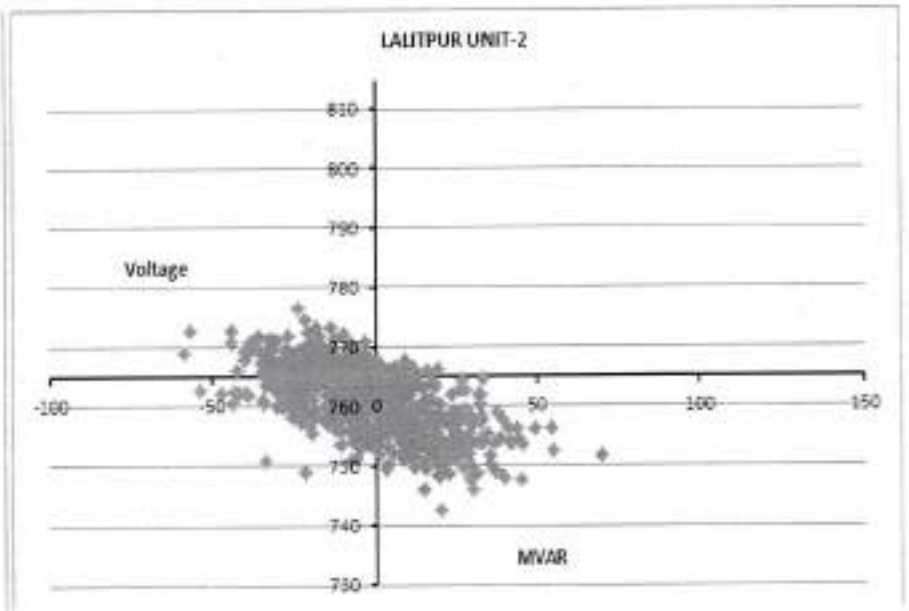
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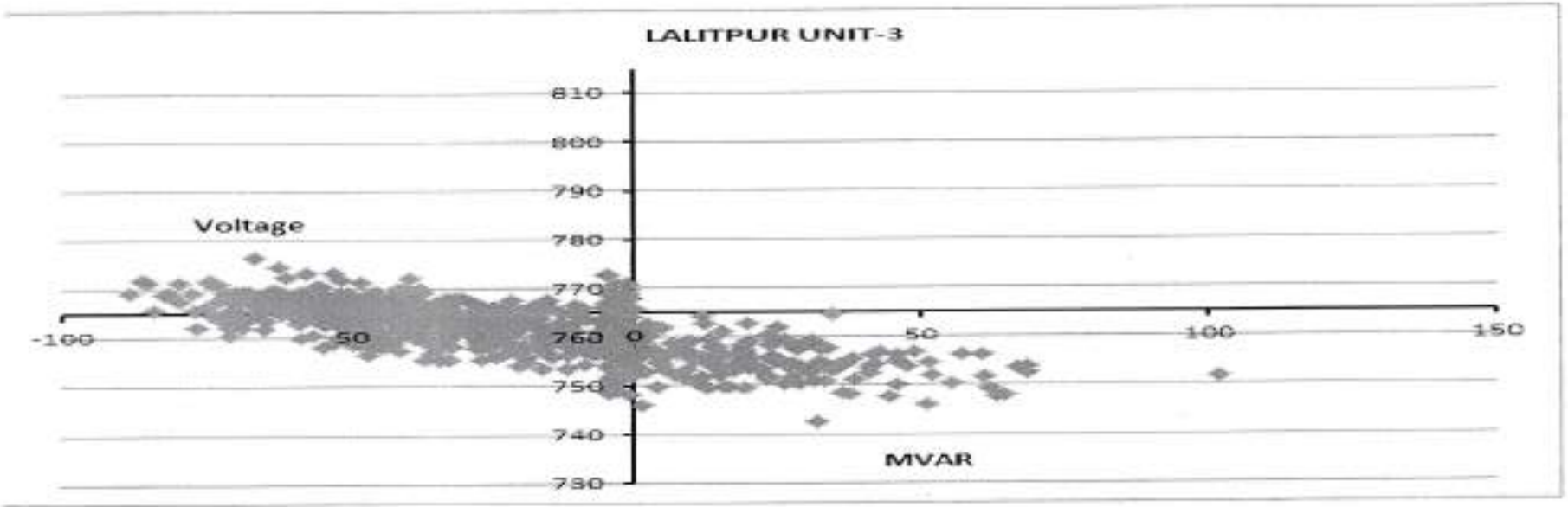
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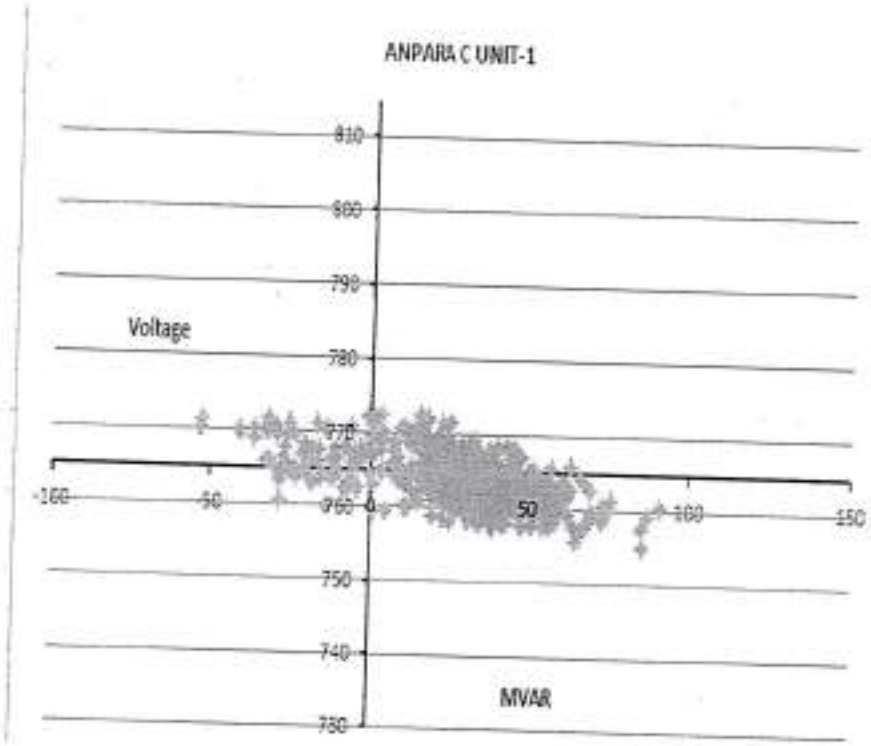
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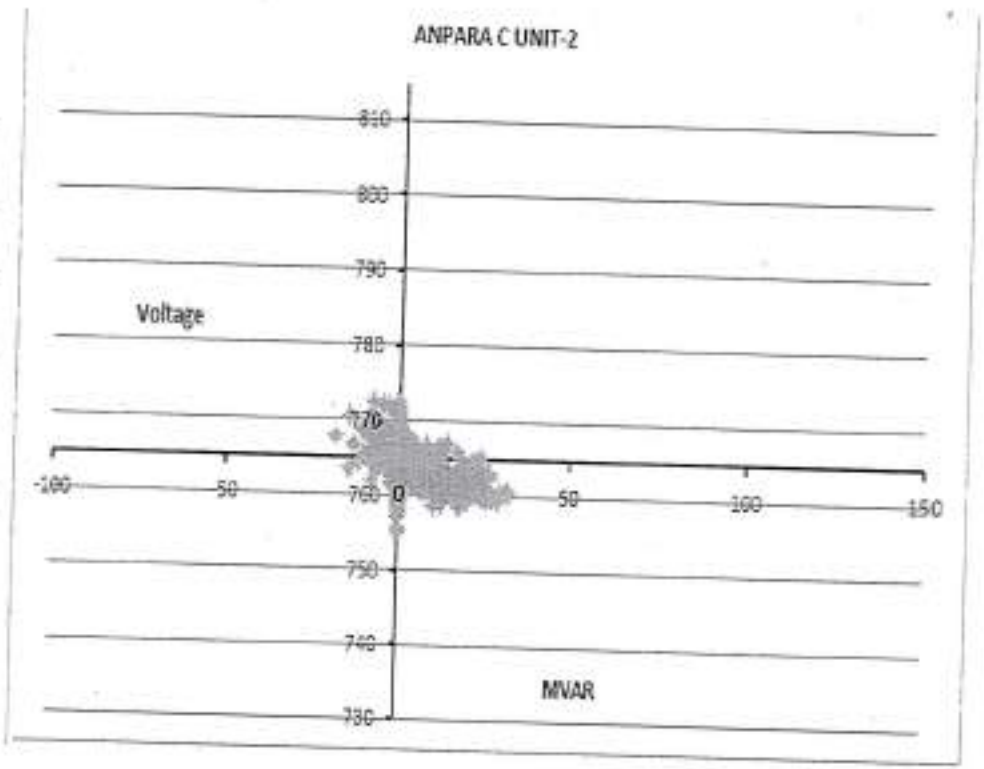
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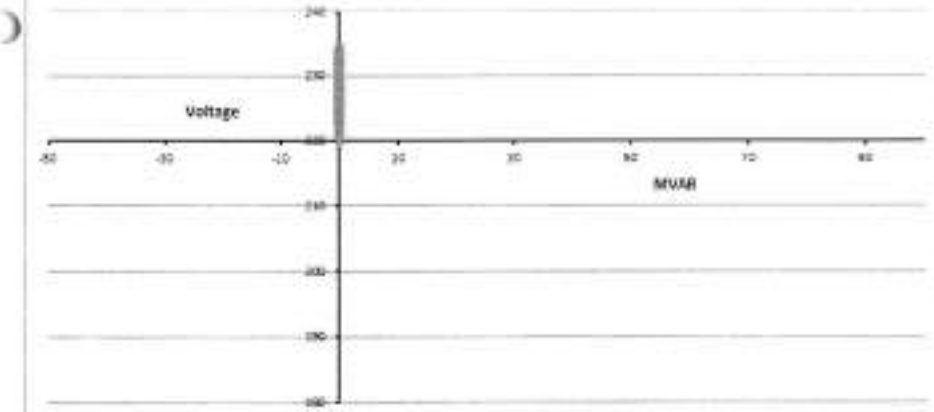
100
150

HARDUAGANJ UNIT NO-7



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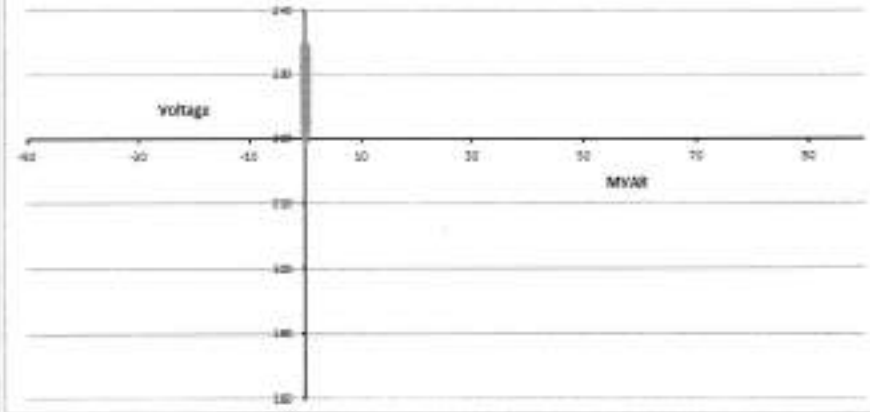

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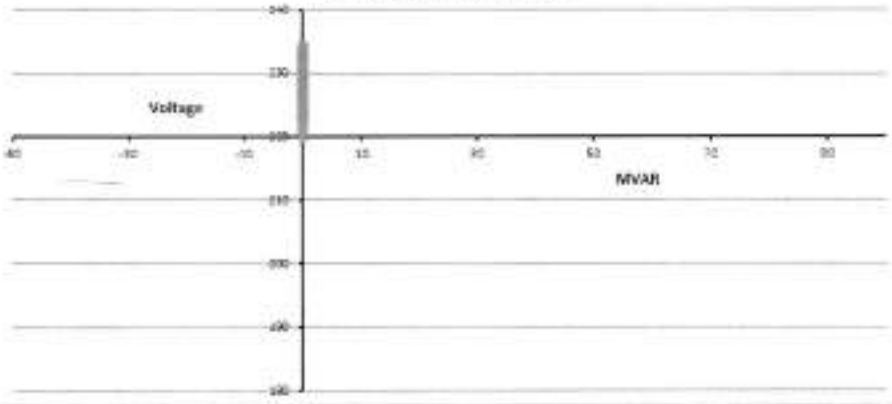

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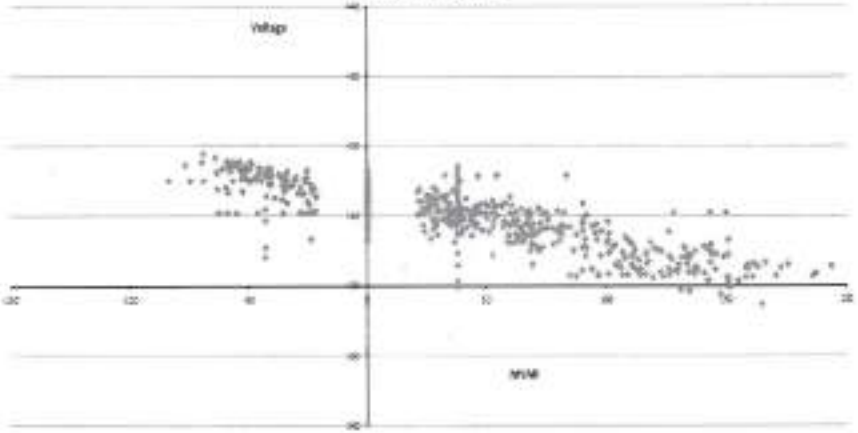

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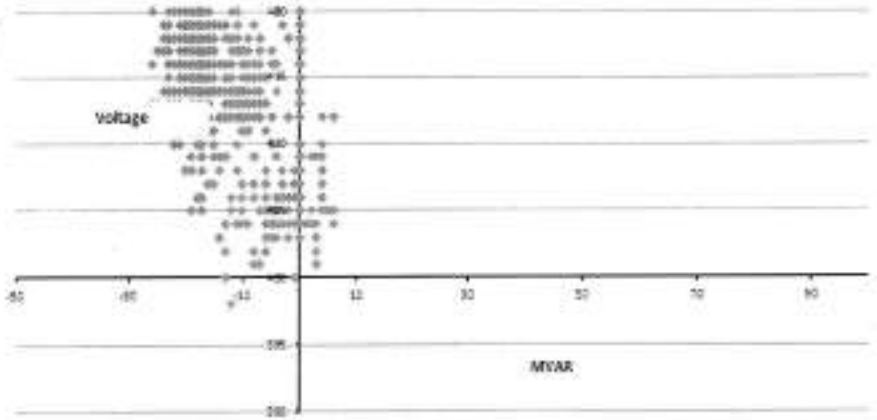

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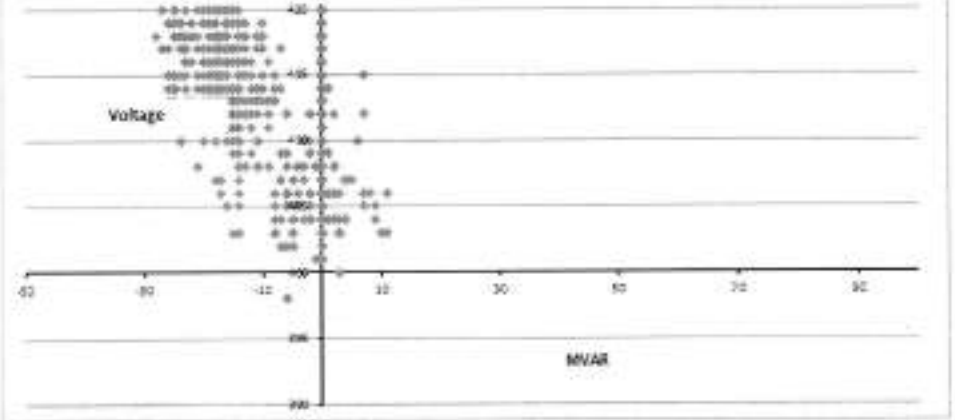

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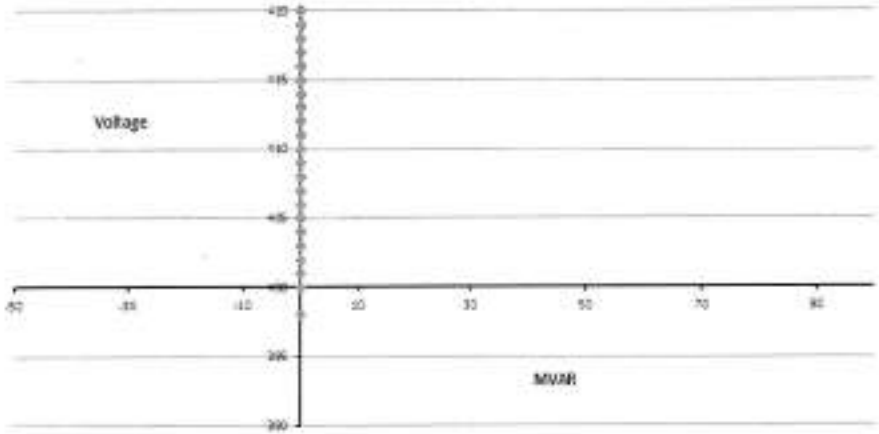

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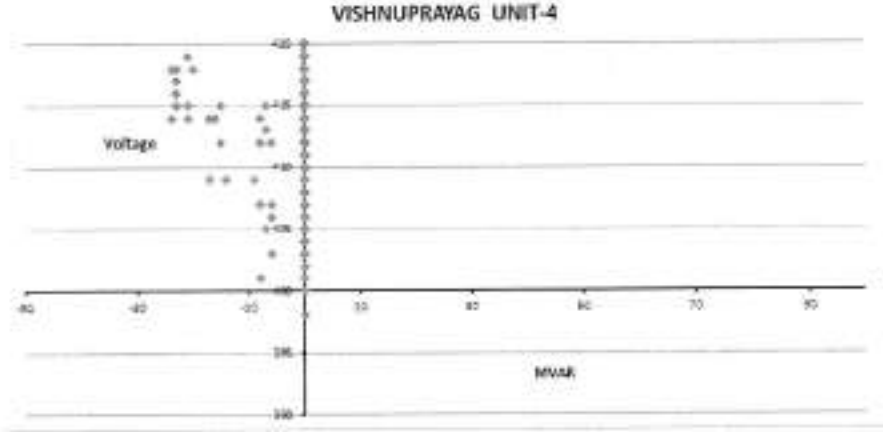

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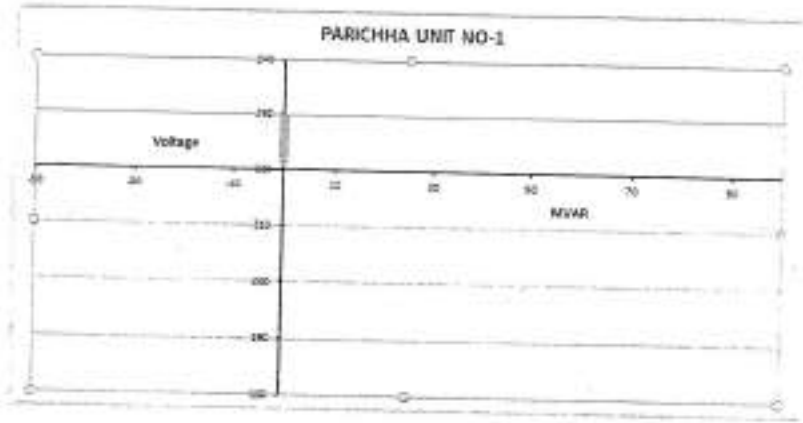

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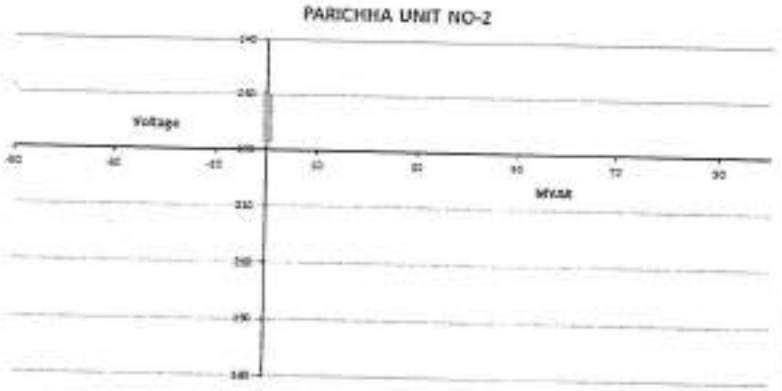

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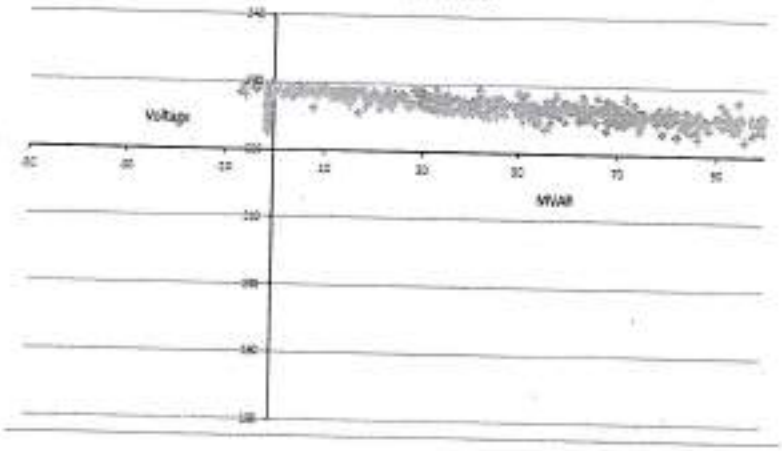

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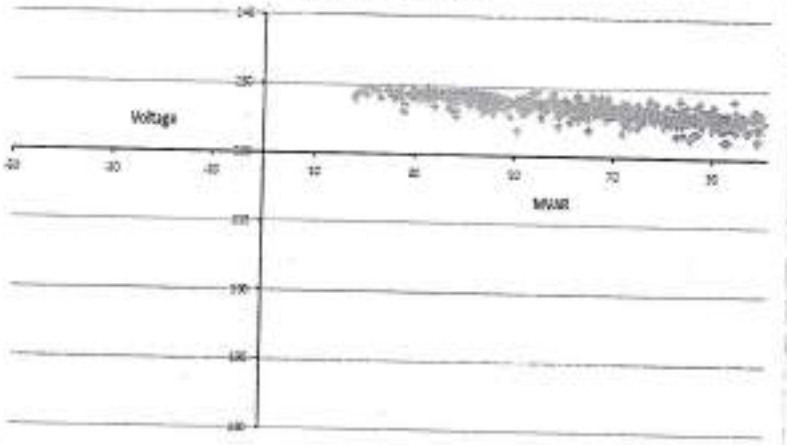

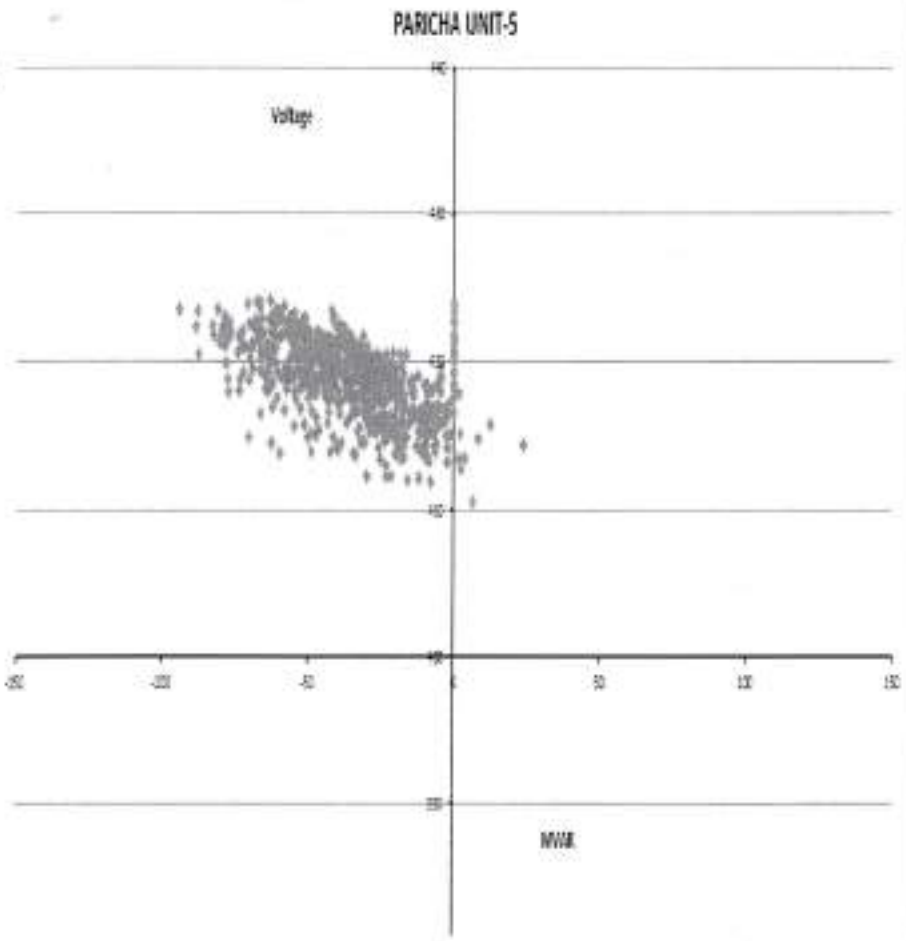
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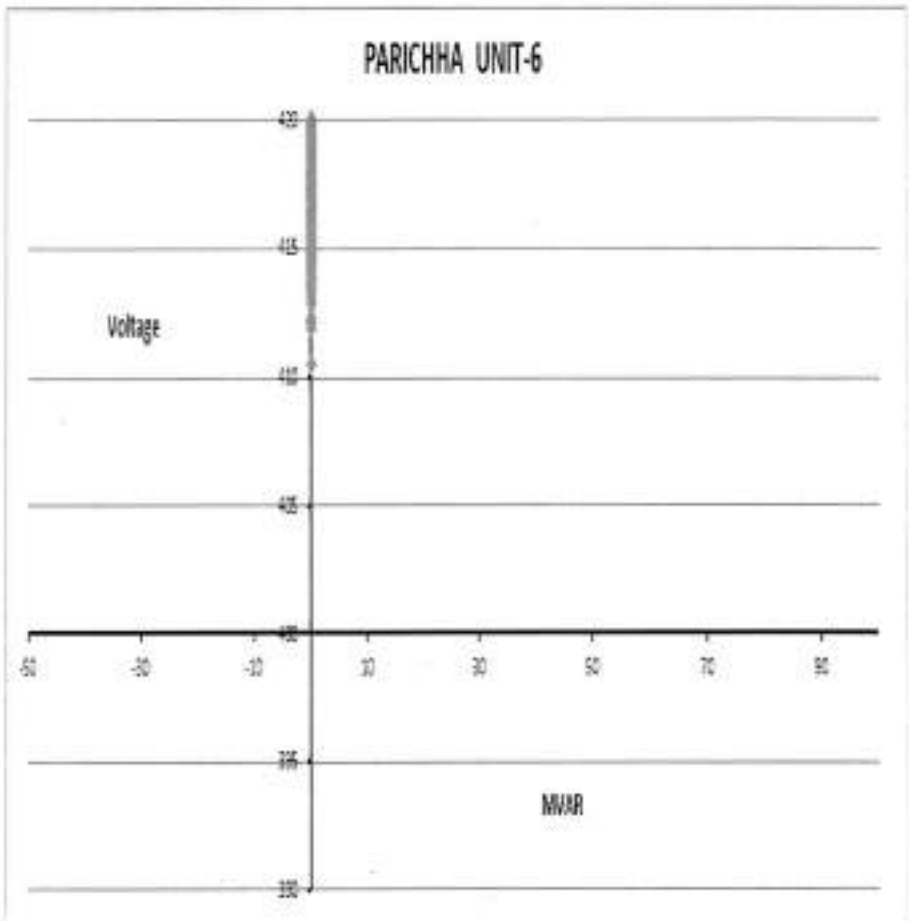
Voltage
MVAR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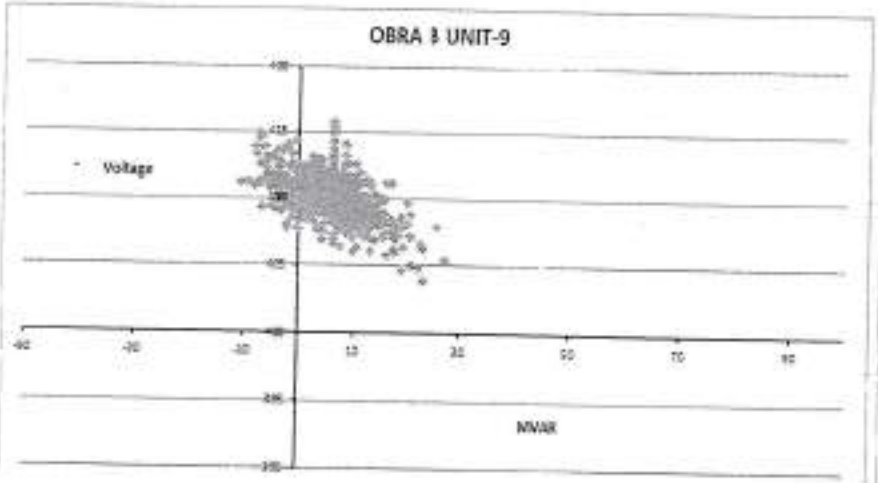
Voltage
MVAR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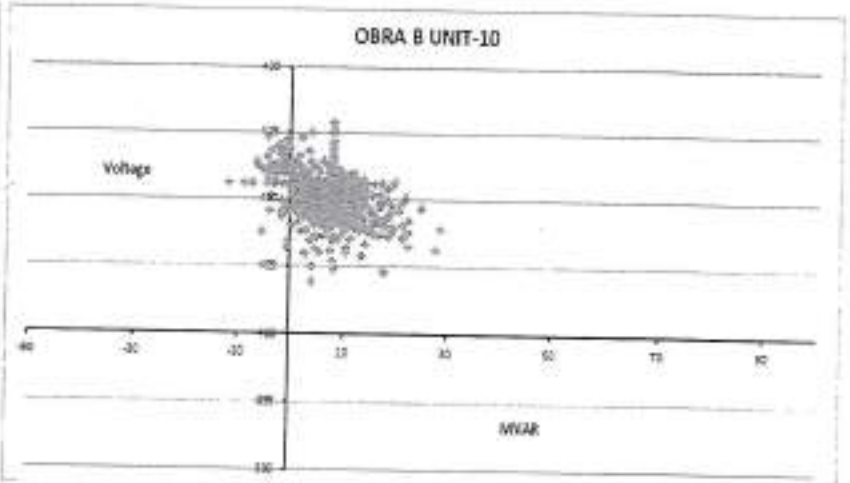
Voltage
MVAR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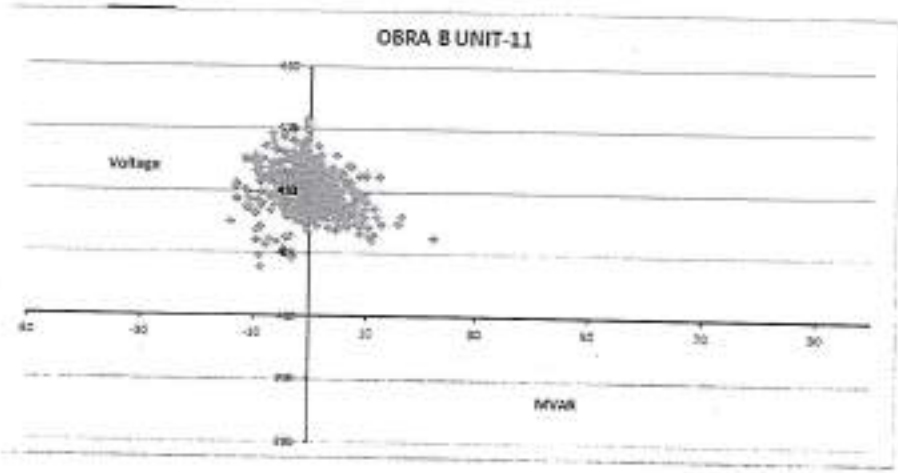
Voltage
MVAR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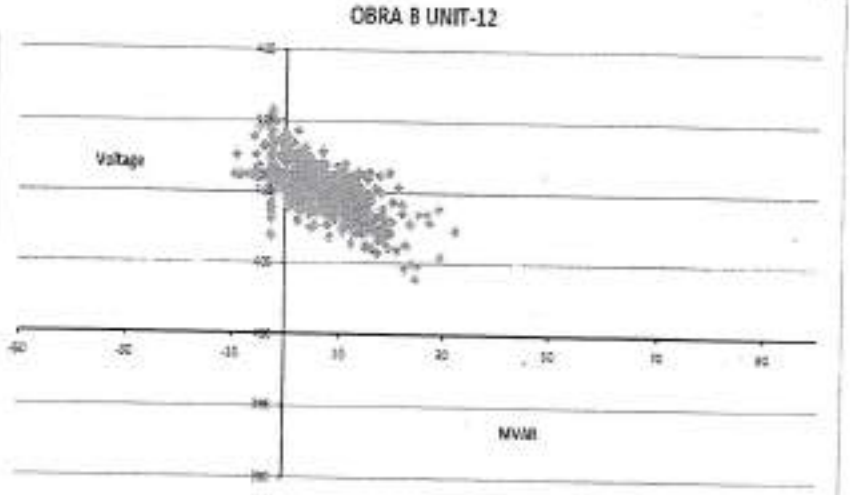
Voltage
MVAR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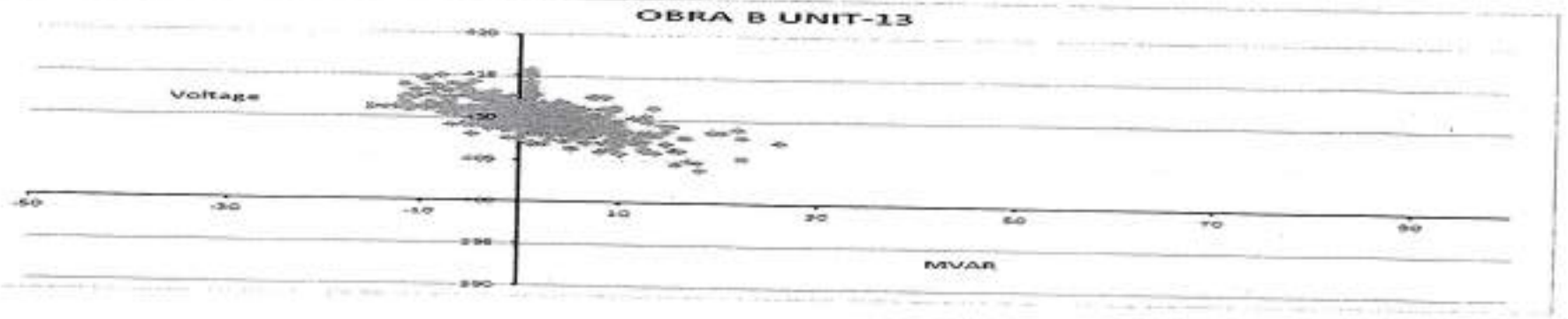
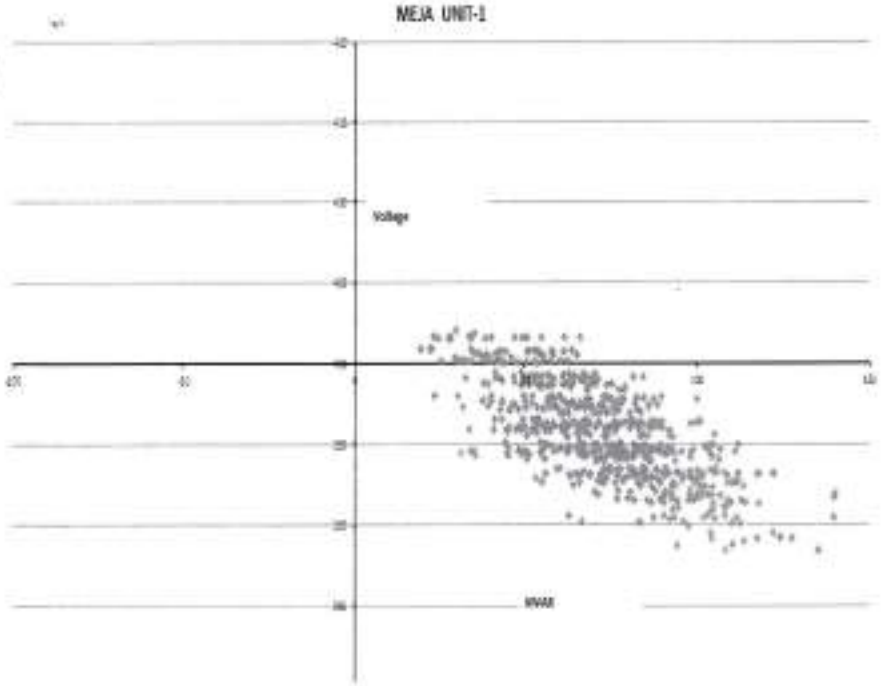
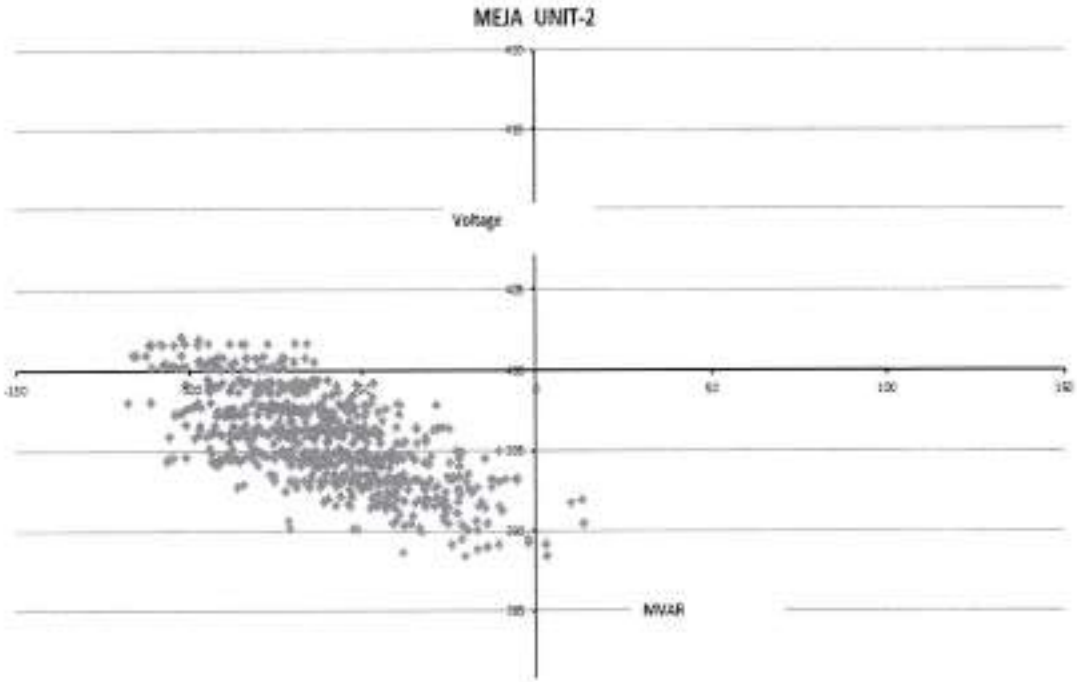
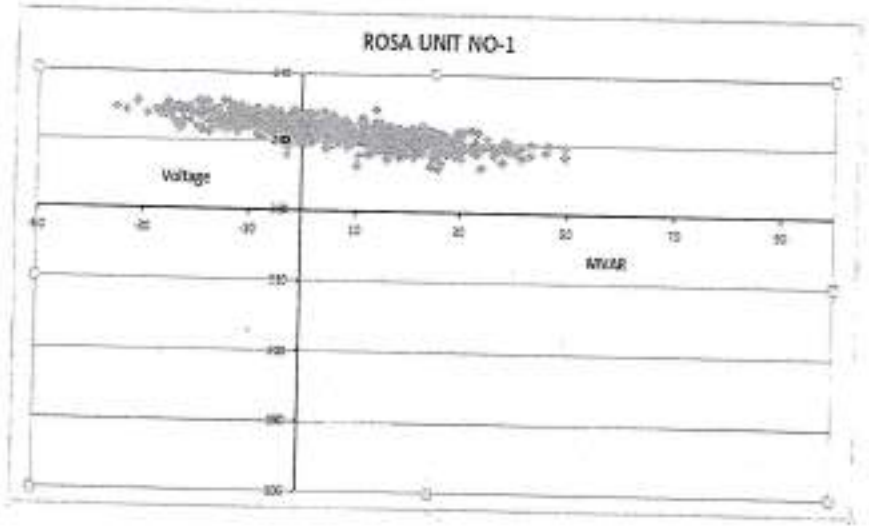
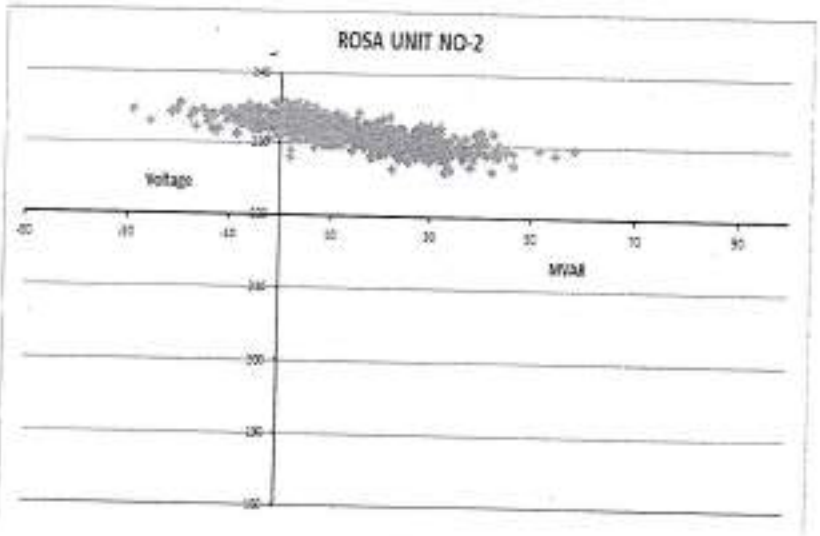
Voltage
MVAR

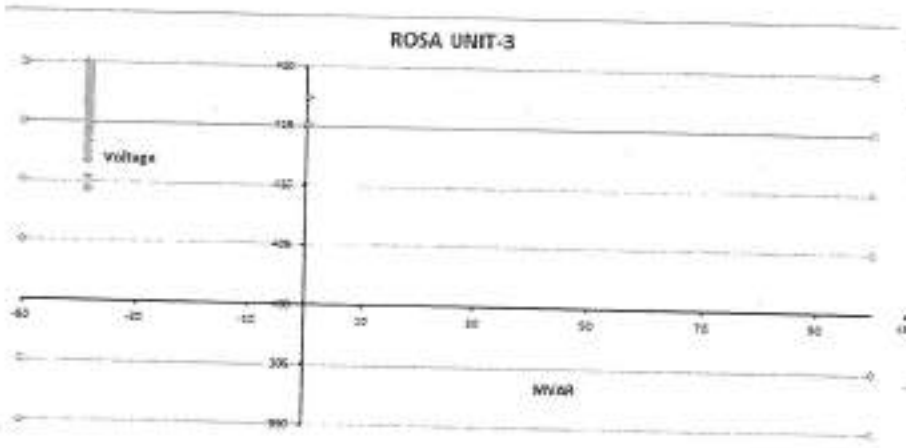

OBRA B UNIT-13
Voltage
MVAR

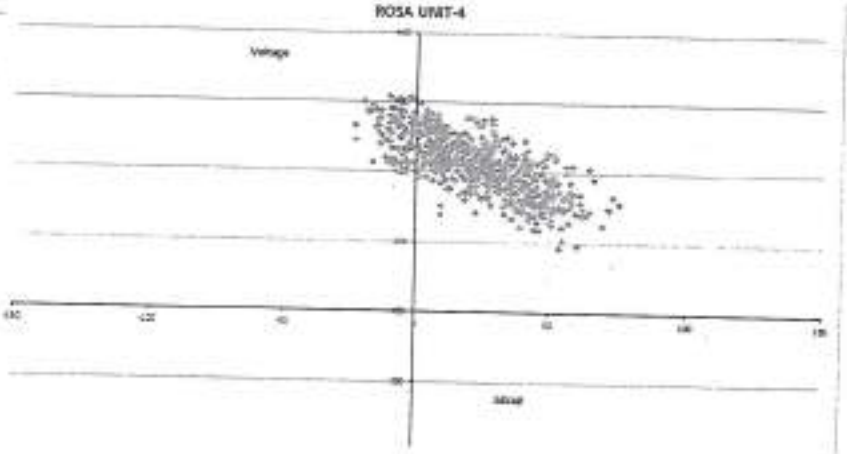

MEJA UNIT-1
Voltage
MVAR


MEJA UNIT-2
Voltage
MVAR


ROSA UNIT NO-1
Voltage
MVAR


ROSA UNIT NO-2
Voltage
MVAR


ROSA UNIT-3
Voltage
MVAR


ROSA UNIT-4
Voltage

HIMACHAL PRADESH STATE LOAD DESPATCH CENTRE

(AN APEX BODY)

GOVERNMENT OF HIMACHAL PRADESH

No. HPSLDC/Scheduling/Vol.-III/2022-23- 8450 Dated: 14-12-2022

To

The General Manager,
Northern Regional Load Despatch Centre,
18-A, Shaheed Jeet Marg, New Delhi – 110016.

Subject: **High Voltage Management Action Plan for Winter 2022-23**

Reference: **Your office letter No. NRLDC\TS-65\1324 dated 14.11.2022.**

Sir,

This is with reference to your office letter under reference vide which it was requested to submit the point wise action plan for high voltage management during the winter months 2022-23. The point wise reply to the requisite information is as under: -

Sr. No.	Description	Reply
1.	Action taken / to be taken at your level for high voltage management.	Opening of the EHV lines and the list of the lines which may be opened for voltage control is mentioned as under: **A. Interstate Lines / Elements** i) 220 kV Jessore Bairasuil Line ii) 220 kV Jessore Pong/RSDPH (any one) iii) 220 kV D/C Nalagarh UPNGL Ckt. (any one ckt.) iv) 400 kV Karcham Baspa v) 220 kV Dehar Kangoo vi) 132 kV Dehar Kangoo vii) 400 kV Wangtoo Kalaamb/Sorang (any one) viii) 400 kV Jhakri Gumma/Pachkula (any one) ix) 220 kV Baddi Pinjore x) 220 kV Giri Khodri xi) 220 kV Hamirpur (PG) Mattansidh (HP) xii) 400 kV D/C Karcham Wangtoo **B. Intrastate Lines / Elements** i) 220 kV Baddi Kunihar ii) 220/132 kV Transformer bank at Jassore S/stn. iii) 220/132 kV Transformer bank at Mattansidh S/stn. iv) 220/132 kV Transformer bank at Kunihar S/stn.
2.	Reactive power resources available for voltage control including healthiness of all such resources such as reactors, SVCs, STATCOMs etc.	The reactive power resource for voltage control is being maintained by switching capacitor bank. But, there are no reactors, SVCs and STATCOMs available.
3.	Reactive Power absorption utilizing full capability of on-bar generating units to control voltages.	Reactive power absorption is 10% of the rated capacity.
4.	Running units in synchronous condenser mode wherever applicable for voltage control.	Not Available

SLDC Complex, Totu, Shimla-171011
Phone: 0177-2838666, Telefax: 0177-2837649 GST No. 02AAAAH7757E1ZX
Email: sehpsldc@gmail.com, cehpsldc@gmail.com, mdhpsldc@gmail.com, Web: www.hpsldc.com

5.	Maintaining availability of lines / avoiding tripping during fog by pre-action of insulator replacement / insulator cleaning etc.	For winter 2022-23 complete patrolling and maintenance of weak points along with insulator replacement has been done by field units in advance.
6.	Handy list of EHV lines to be opened for high voltage management.	Same as reply No. 1
7.	Confirmation that Over-voltage setting of lines and O/F setting of Transformer are as approved by NRPC.	The over-voltage setting of lines and O/F setting of Transformer are as approved by NRPC.
8.	Ensuring switching off capacitors and switching on reactors.	Switching off of capacitors are ensured. However, there is no reactor installed.

This is for your kind information please.

Yours sincerely,

Chief Engineer,
HP State Load Despatch Centre,
Govt. of HP, Totu, Shimla-11(H.P.).

Sub. : High Voltage management action plan for winter 2022-23

Ref. : NRLDC/T5-65/1324 Dated 14.11.2022

a. Action taken/to be taken at your level for High Voltage management.

Action taken by SLDC for High Voltage management are as follows:

1. SLDC is regularly sensitizing/pursuing the High Voltage issue and actions to be taken by Delhi stake holders in Delhi OCC Meetings.

2. As decided in the last Delhi OCC Meetings the most of the Tap positions is of 220/66kV and 220/33kV Transformers has been changed at 220kV DTL S/Stns in coordination with O&M, DTL and Delhi Discoms.

3. The lightly loaded cables are being opened during night hours and some of the regularly being opened lines from both ends as per system requirement are as under :

S. No.	Name of the Ckt.
1	220kV Patparganj-Preet Vihar Ckt. I, II or both.
2	220kV Harsh Vihar-Preet Vihar Ckt. I or II
3	220kV Maharani Bagh-Trauma Centre I or II
4	220kV Trauma Centre-R.K.Puram Ckt. I or II
5	220kV R.K.Puram-Tuglakabad Ckt. I, II or both.
6	220kV R.K.Puram-Ridge Valley Ckt. I or II
7	220kV Gazipur-Patparganj Ckt
8	220kV Maharani Bagh-HCML Ckt. I, II or both.
9	220kV Maharani Bagh-Masjid Moth Ckt. I or II
10	220kV Naraina – Ridge Valley Ckt.

DMRC is also being requested to take action for controlling the high voltage issues. Delhi Discoms are also being advised to give name of U/G feeders on daily basis which has to be opened.

4. Some 400kV Lines are also being opened as per advise of NRLDC.

5. Status of reactor installation or progress in DTL System is being intimated to NRPC/NRLDC in monthly NRPC OCC Meeting.

b. Reactive power resources available for voltage control including healthiness of all such resources such as reactor, SVCs, STATCOMs etc.

As deliberated in last Delhi OCC meeting, DTL/Planning Deptt. has given status on installation of reactors in Delhi network and apprised OCC that erection work of 2x50MVAR Reactor at 400kV Harsh Vihar & 1x50 MVAR reactor at 220kV Peeragarhi Sub-station has already completed and planned to energize by 31.12.2022.

c. Reactive Power absorption utilizing full capability of on-bar generating units to control voltages,

SLDC is requesting regularly to Delhi Generators to absorb the reactive power absorption as per their capability.

d. Running units in synchronous condenser mode wherever applicable for voltage control.

Presently no running units in synchronous mode operation.

e. Maintaining availability of lines/avoiding tripping during fog by pre-action of insulator replacement/insulator cleaning etc.

SLDC is regularly apprizing DTL through Delhi OCC Forum for maintaining availability of lines/avoiding tripping during fog by pre-action of insulator replacement/insulator cleaning etc

f. Handy list of EHV lines to be opened for high voltage management.

The handy list of EHV lines to be opened for high voltage management is enclosed as Annexure-I.

g. Confirmation that Over Voltage settings of lines and O/F settings of transformers are as approved by NRPC.

DTL Protection Department has been requested to submit the Over Voltage settings of lines and O/F settings of transformers and it was intimated that the requisite details shall be submitted separately to NRLDC.

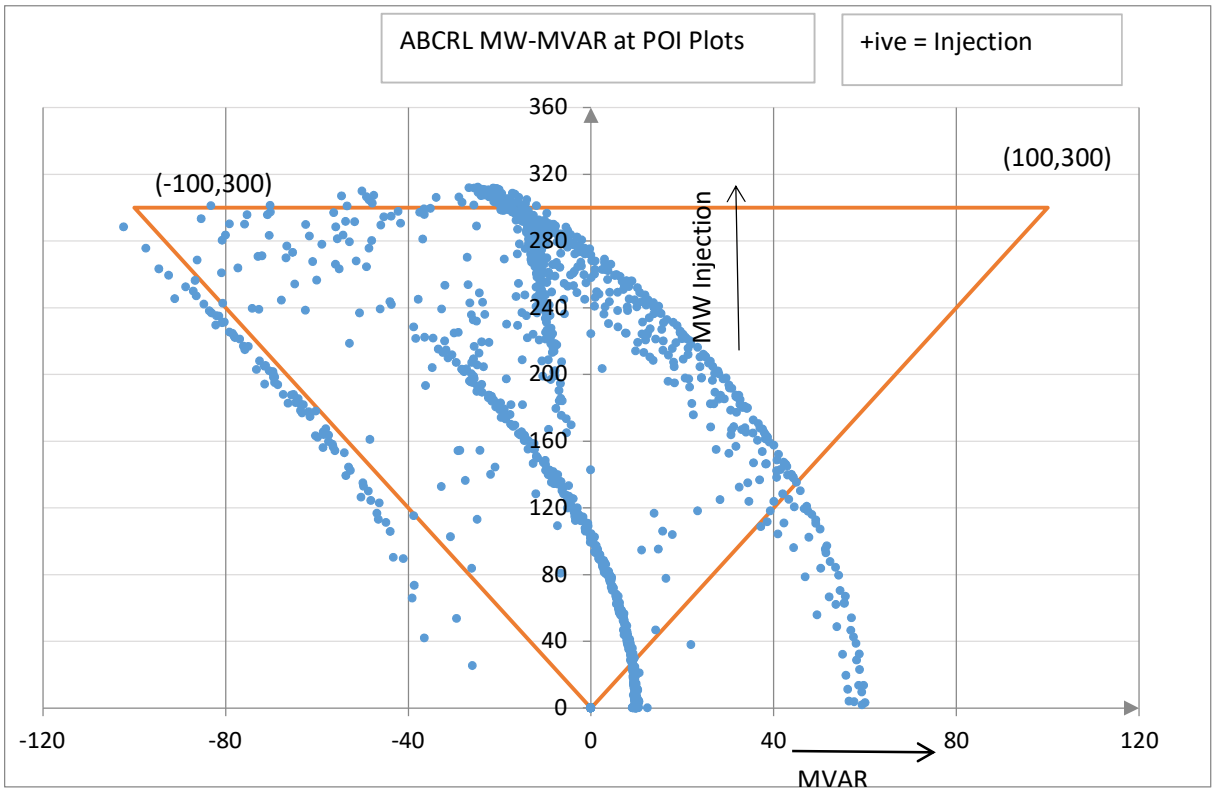
h. Ensuring switching off capacitors and switching on reactors.

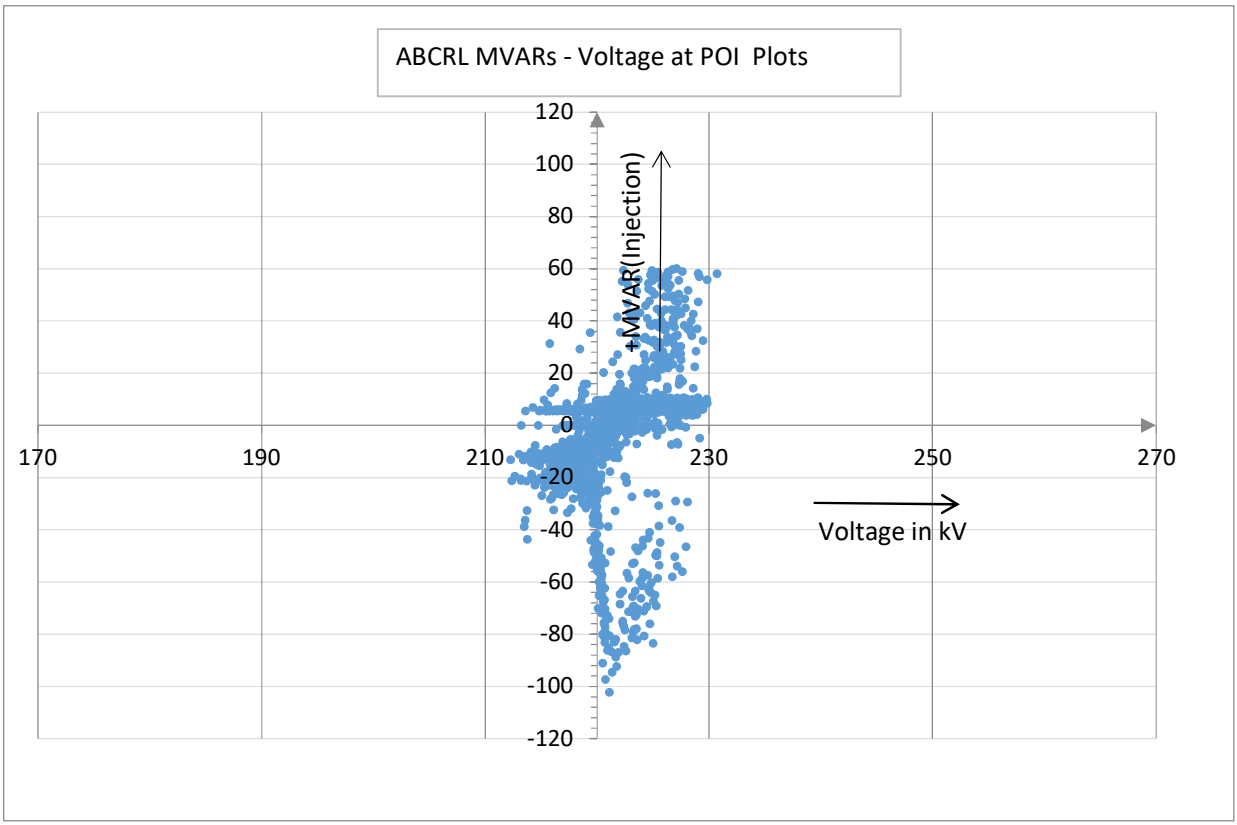
Switching off capacitors has been done in Delhi in coordination with Delhi Discoms. At present there is not any reactor in operation in Delhi network system.

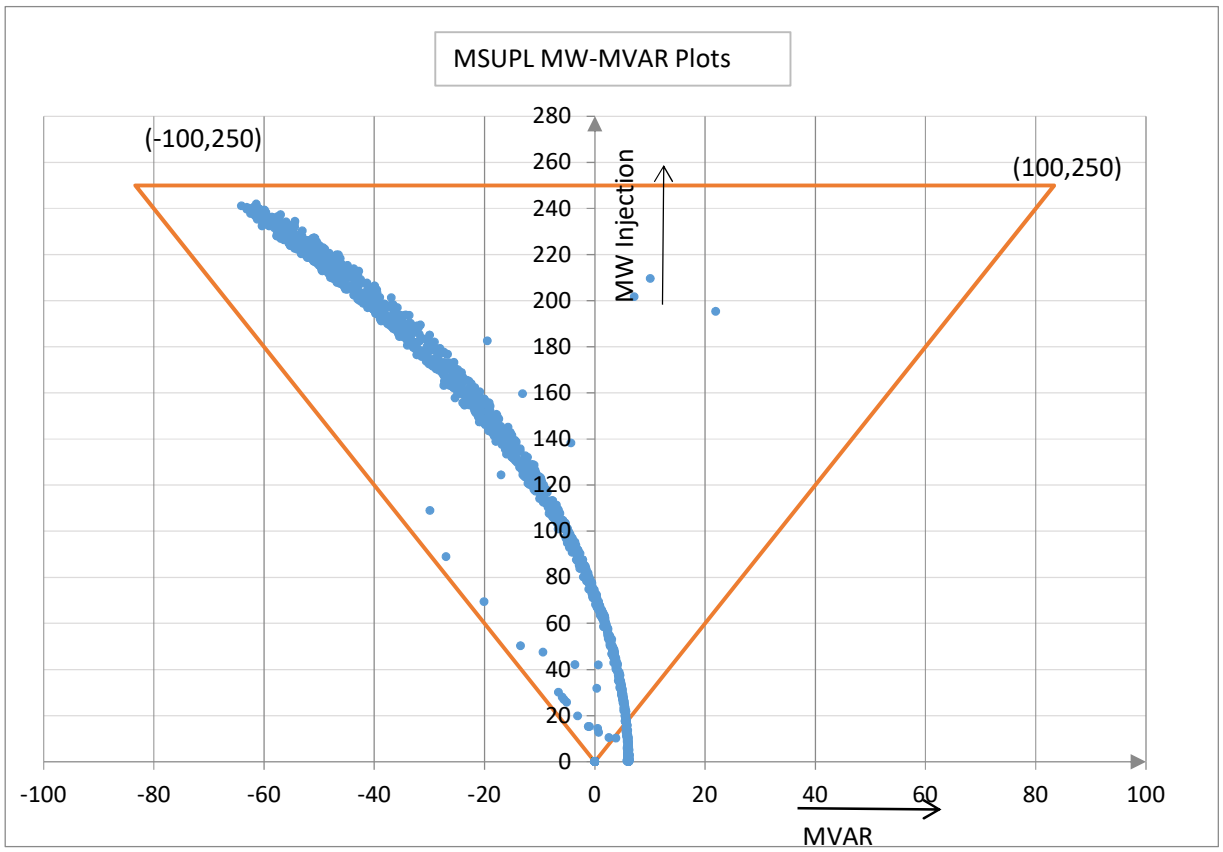
The list of following 220kV Cables which can be open during high voltage conditions during winter season. (2022-2023)

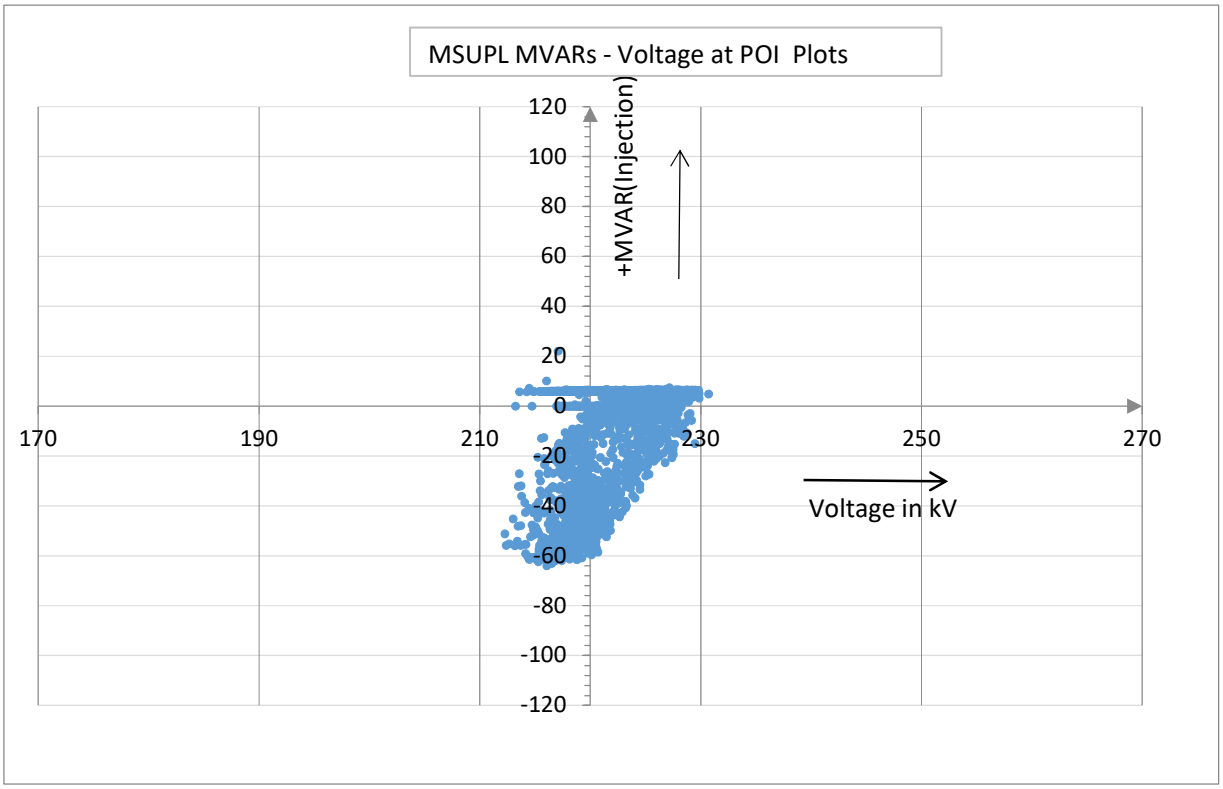
Sr. No	Name of Stn.	Name of Ckt.	OFF TIME	ON TIME	220kV VOLTAGE before opening	220kV VOLTAGE after opening
1	R.K.Puram	Ridge Valley Ckt.				
2		Trauma Centre Ckts.				
3	Mundka	Peeragarhi Ckts.				
4	Peeragarhi	Wazirpur Ckts.				
5	Shalimarbagh	Wazirpur Ckts.				
6	Pragati	Park street Ckts.				
7	Maharani Bagh	Masjid moth ckts.				
8		Electric Lane Ckts.				
9		Trauma Centre ckts				
10	Vasant Kunj	R.K.Puram ckts				
11	Kashmiri Gate	DMRC Ckts.				
12	Shalimarbagh	DMRC Ckts.				
13	Harsh Vihar	Preet Vihar Ckts.				
14	Patparganj	Preet Vihar Ckts.				
15		Gazipur Ckt.				
16	Bamnauli	Dial Ckts.				
17	Naraina	Ridge Valley Ckt.				
18	Dwarka	Bodella Ckts.				
19		Papankalan-I Ckts.				
20		Papankalan-II Ckts.				
21	Mehrauli	Dial Ckts.				
22	Tuglakabad	R.K.Puram Ckts.				

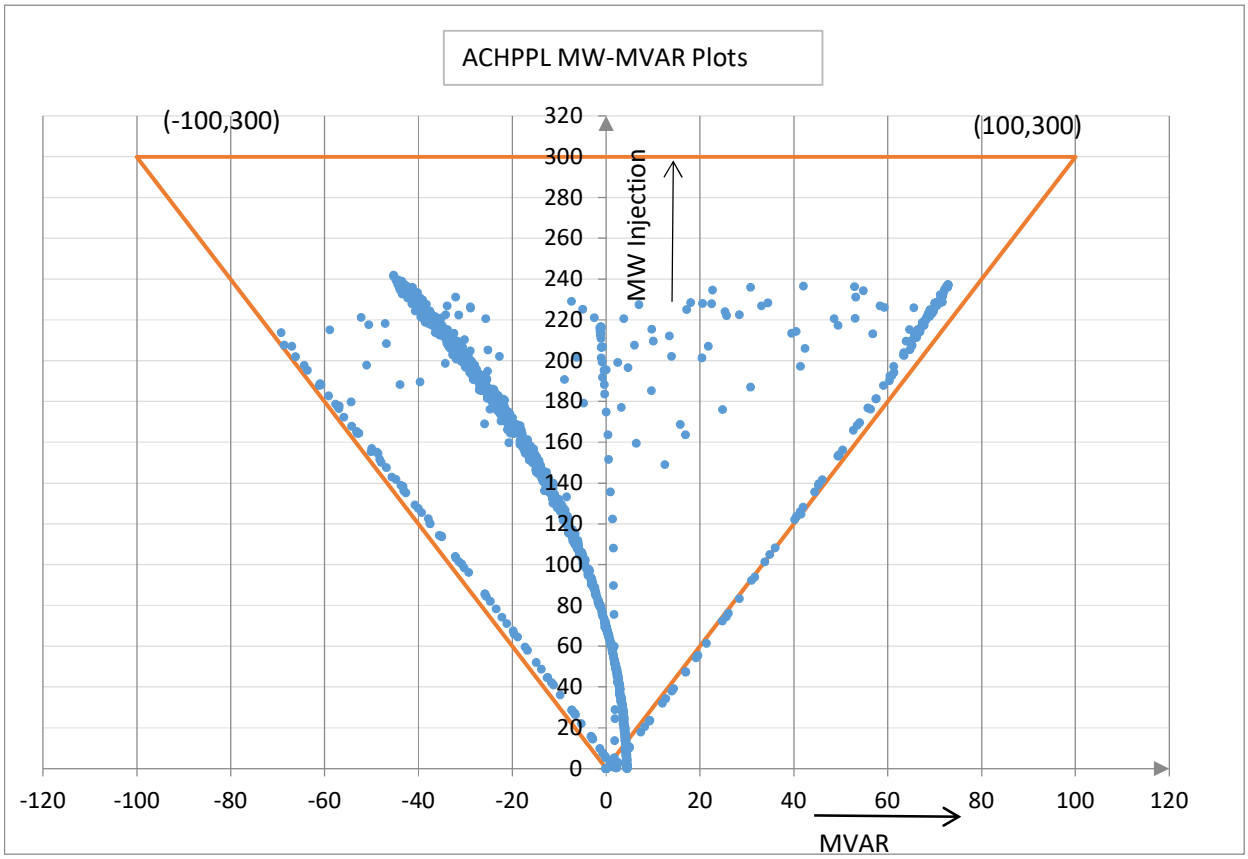
1. Switching OFF lines is subject to real time conditions and system requirement.
2. While charging the lines during normalization, it should be ensured that line be charged from low voltage end
3. For switching of 220kV level, double ckt U/G cables, OCC advised switching of U/G cable circuits on alternate basis to ensure the healthiness of both the ckts.

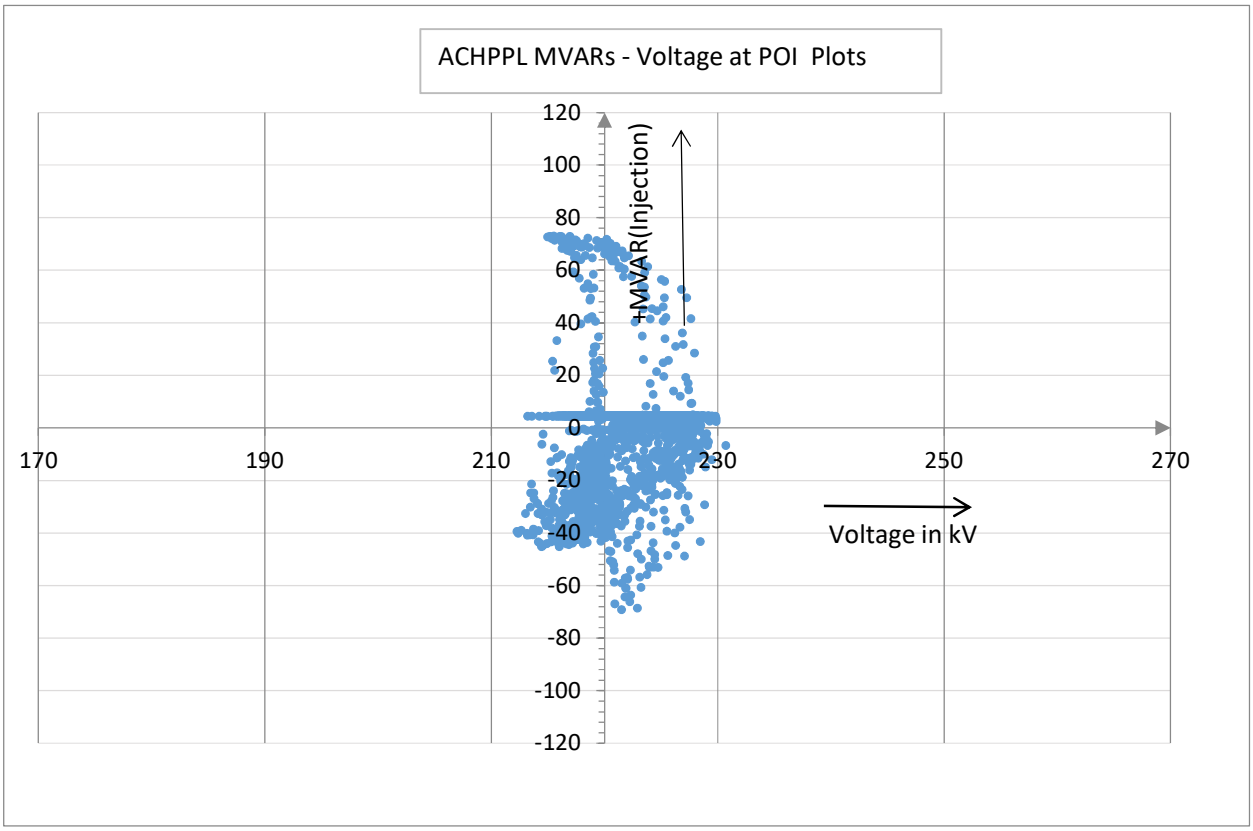

ABCRL MW-MVAR at POI Plots
+ive = Injection
(-100,300)
(100,300)
MW Injection
MVAR
360
320
280
240
200
160
120
80
40
0
-120
-80
-40
0
40
80
120

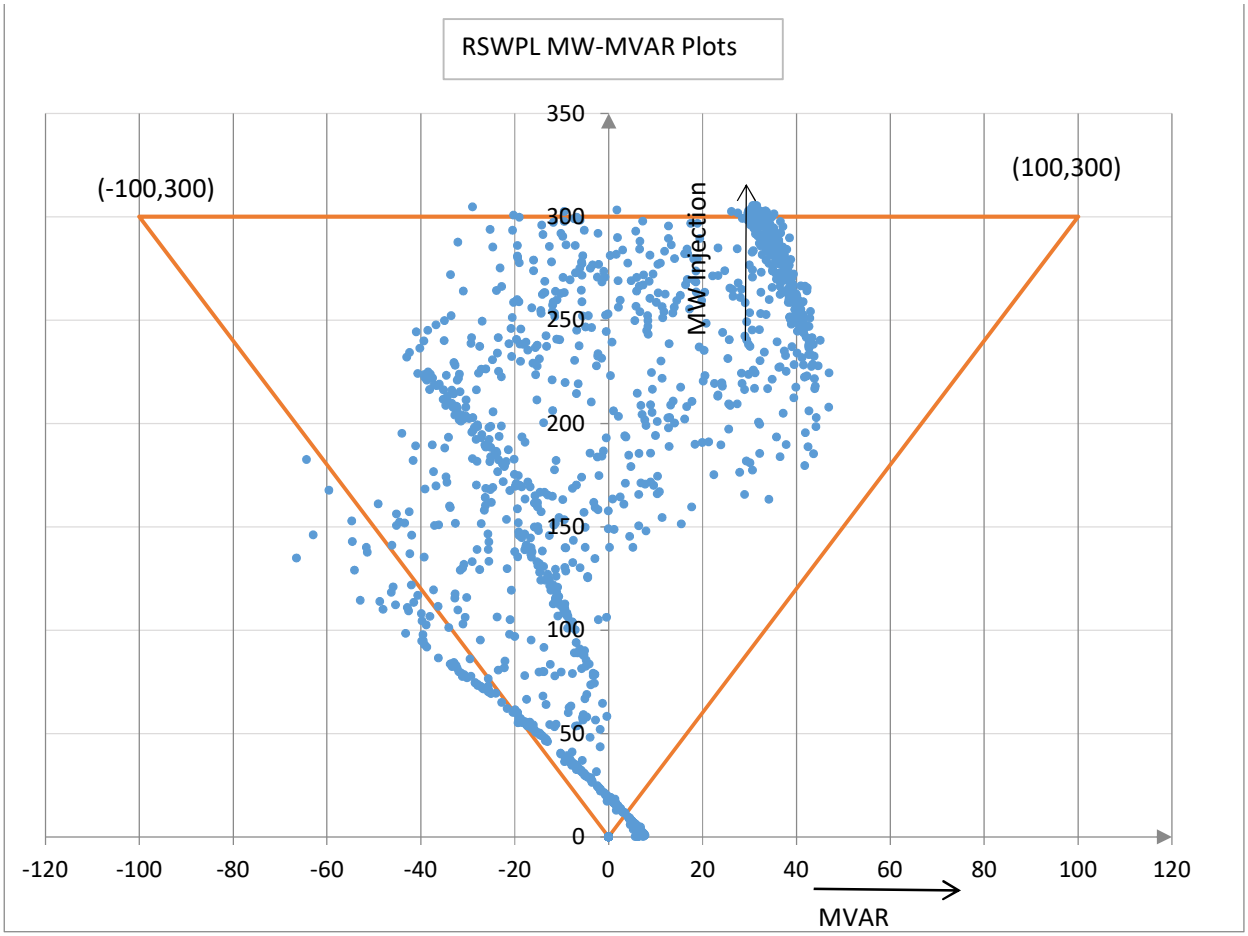

ABCRL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

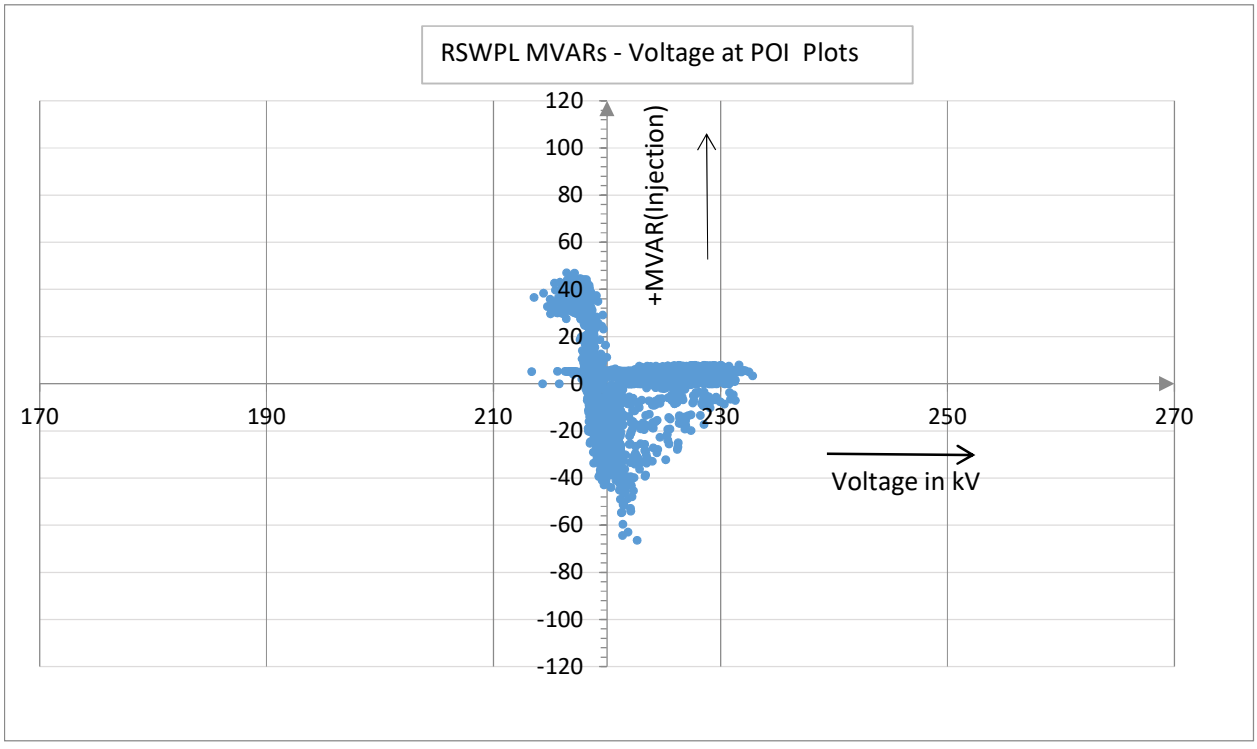

MSUPL MW-MVAR Plots
(-100,250)
(100,250)
MW Injection
MVAR
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-100
-80
-60
-40
-20
0
20
40
60
80
100

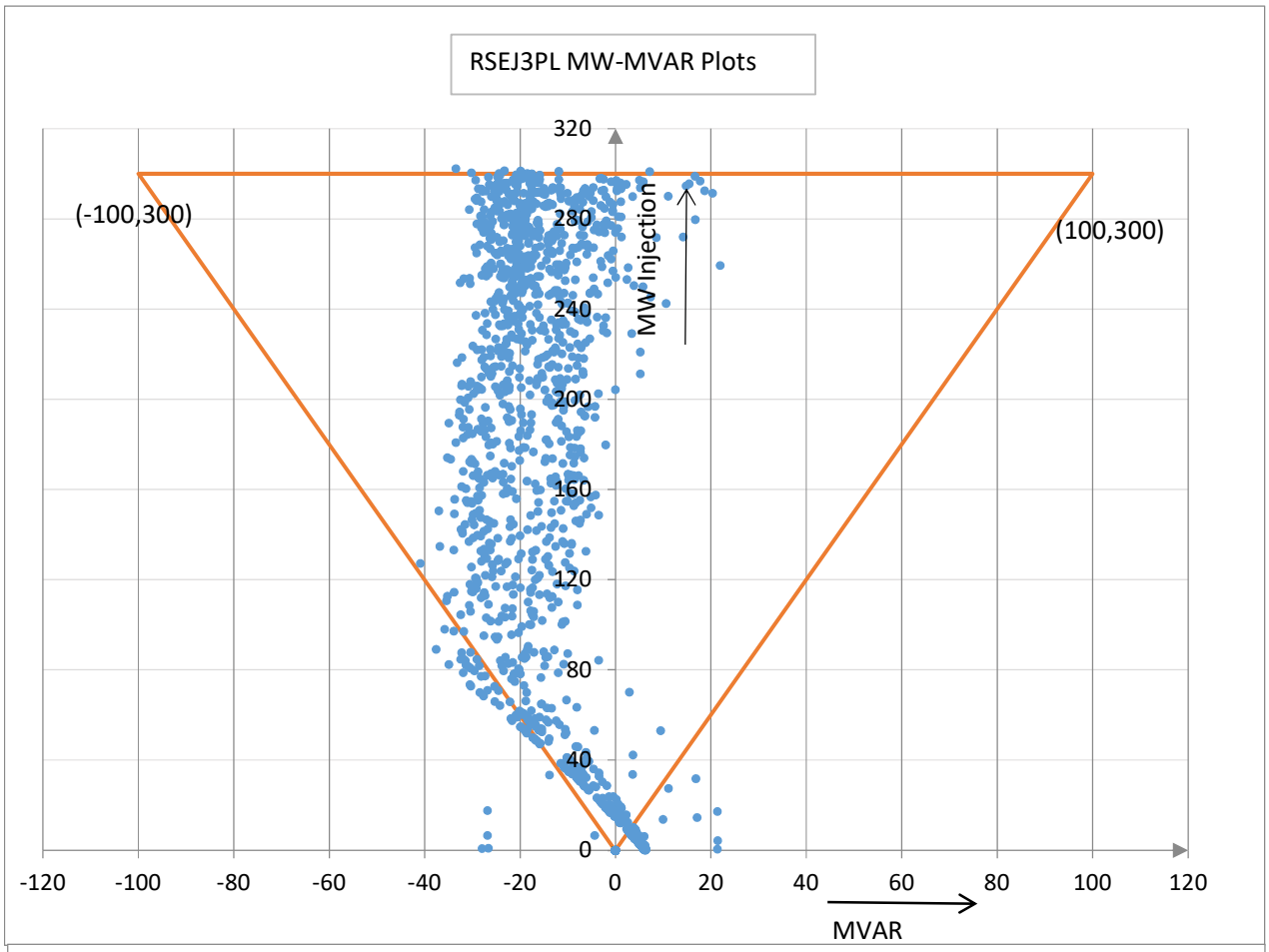

MSUPL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

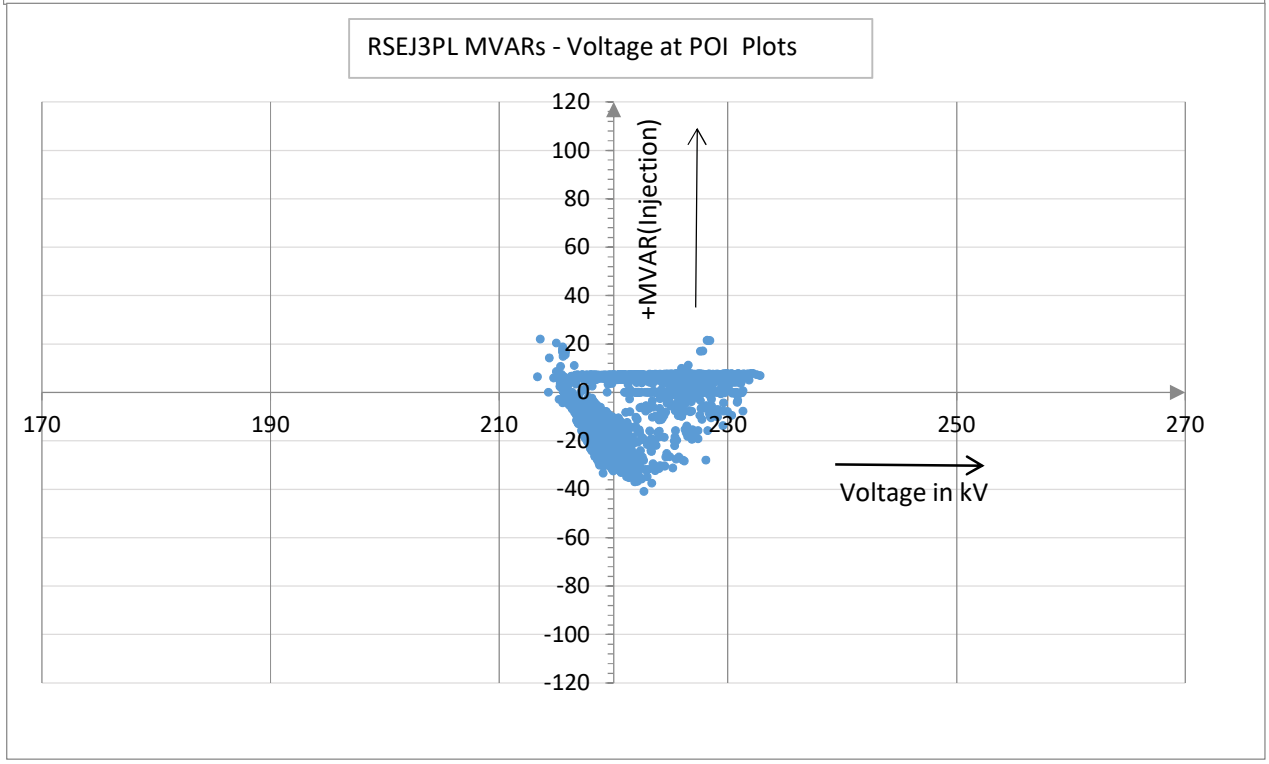

ACHPPL MW-MVAR Plots
(-100,300)
(100,300)
MW Injection
MVAR
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

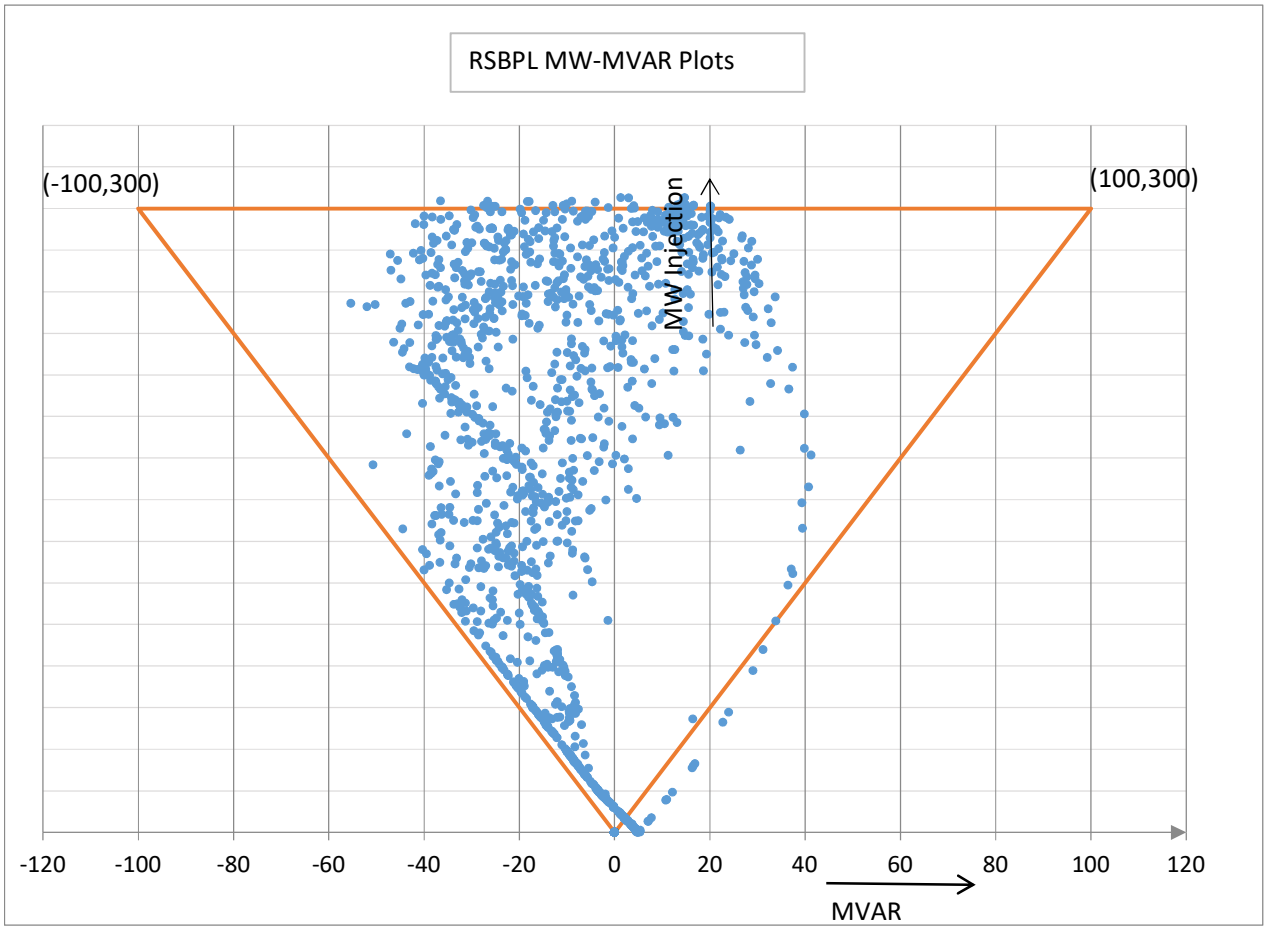

ACHPPL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

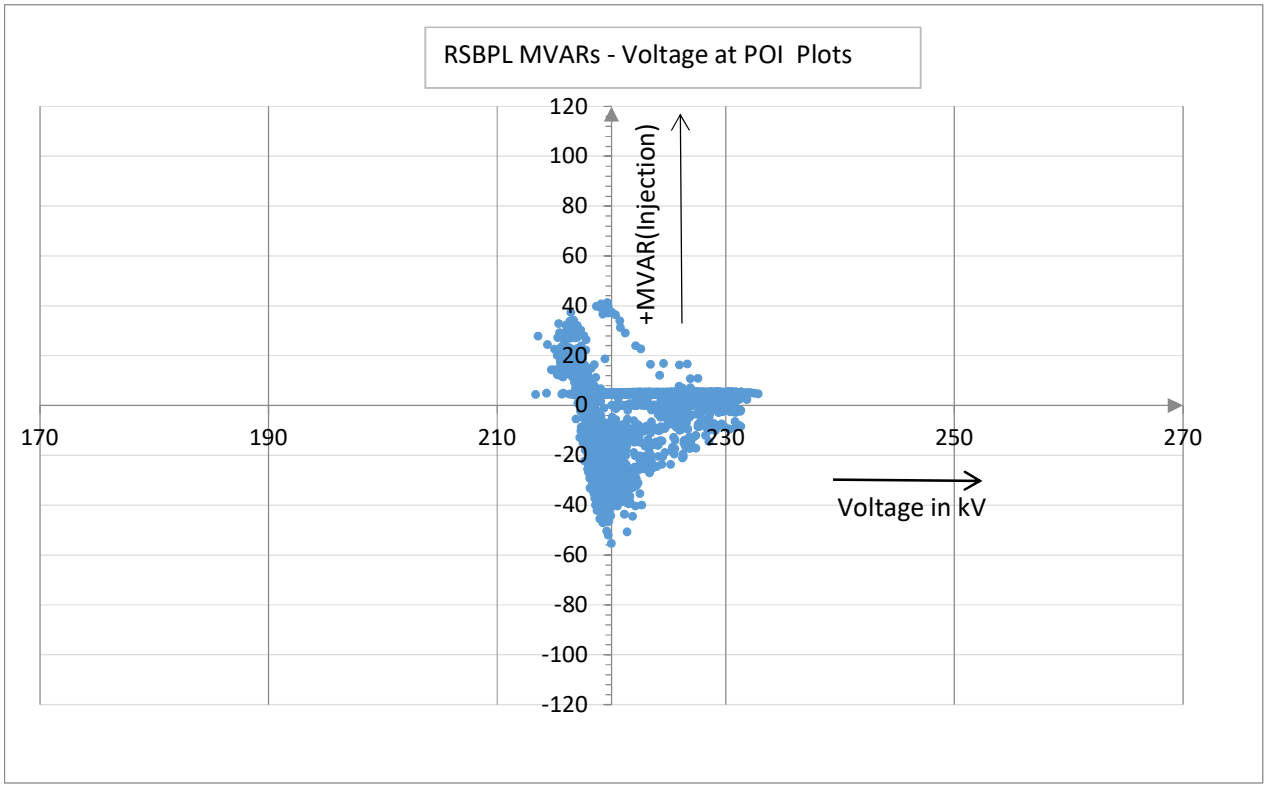

RSWPL MW-MVAR Plots
(-100,300)
(100,300)
MW Injection
MVAR
350
300
250
200
150
100
50
0
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

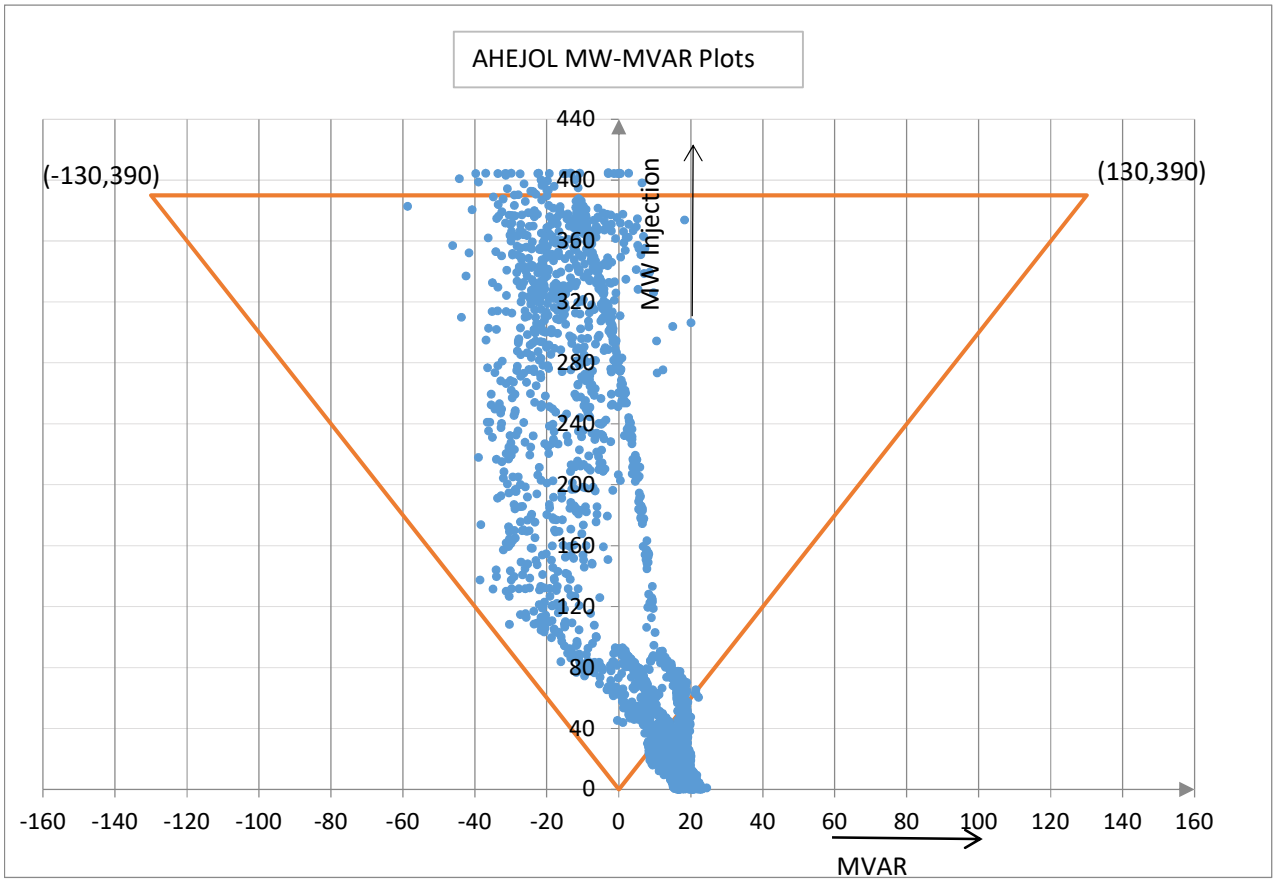

RSWPL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

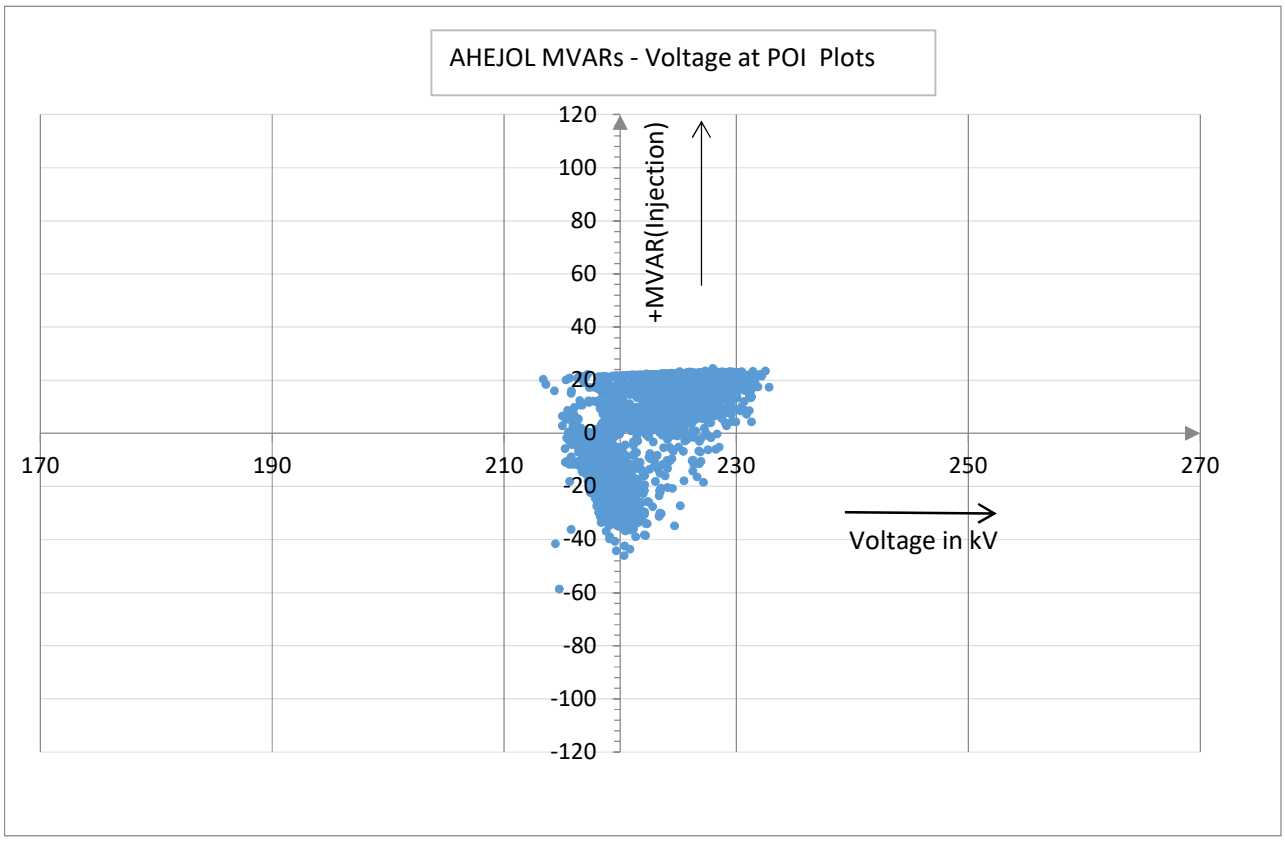

RSEJ3PL MW-MVAR Plots
320
280
240
200
160
120
80
40
0
(-100,300)
(100,300)
MW Injection
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120
MVAR

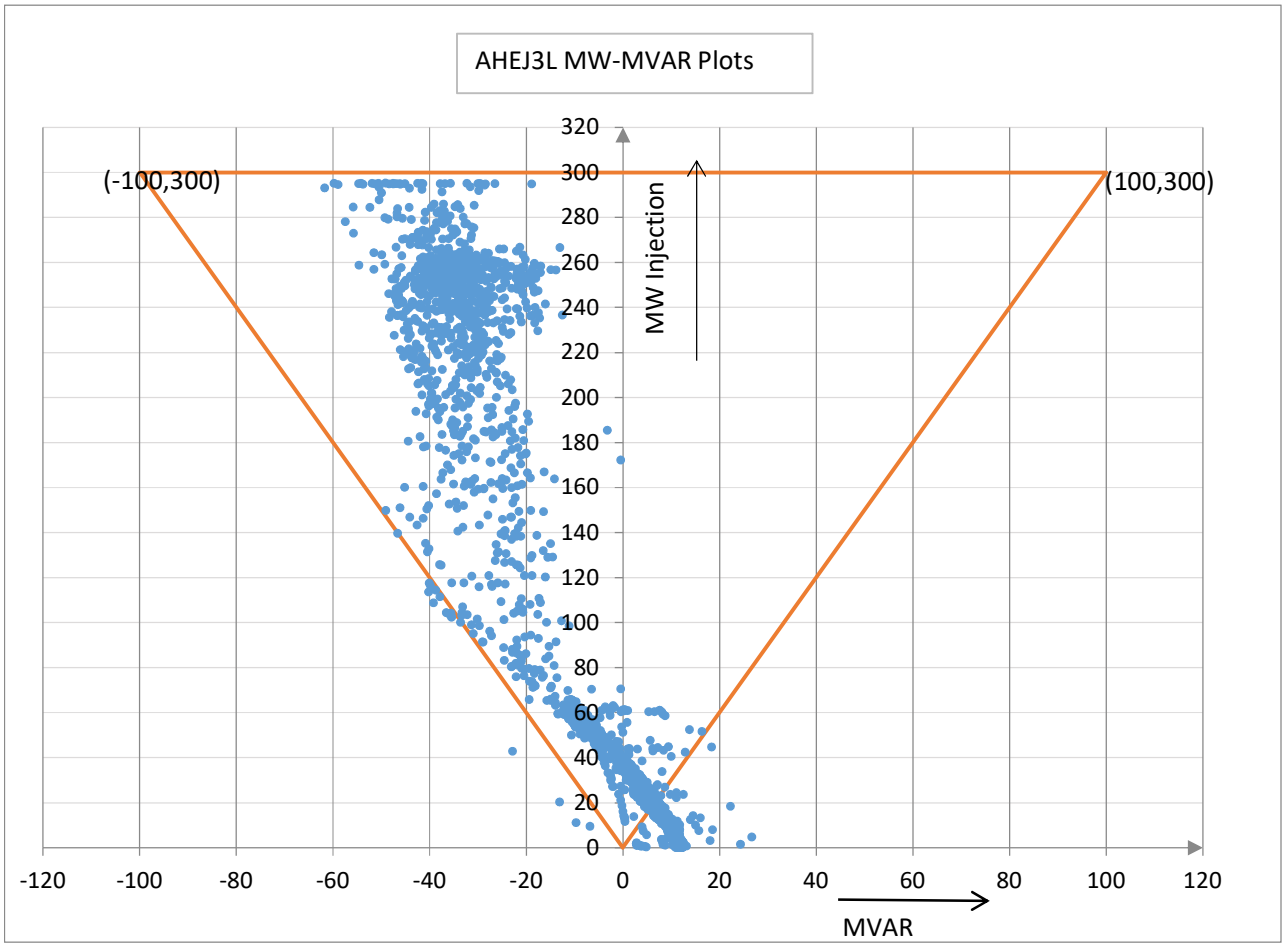

RSEJ3PL MVARs - Voltage at POI Plots
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
+MVAR(Injection)
170
190
210
230
250
270
Voltage in kV

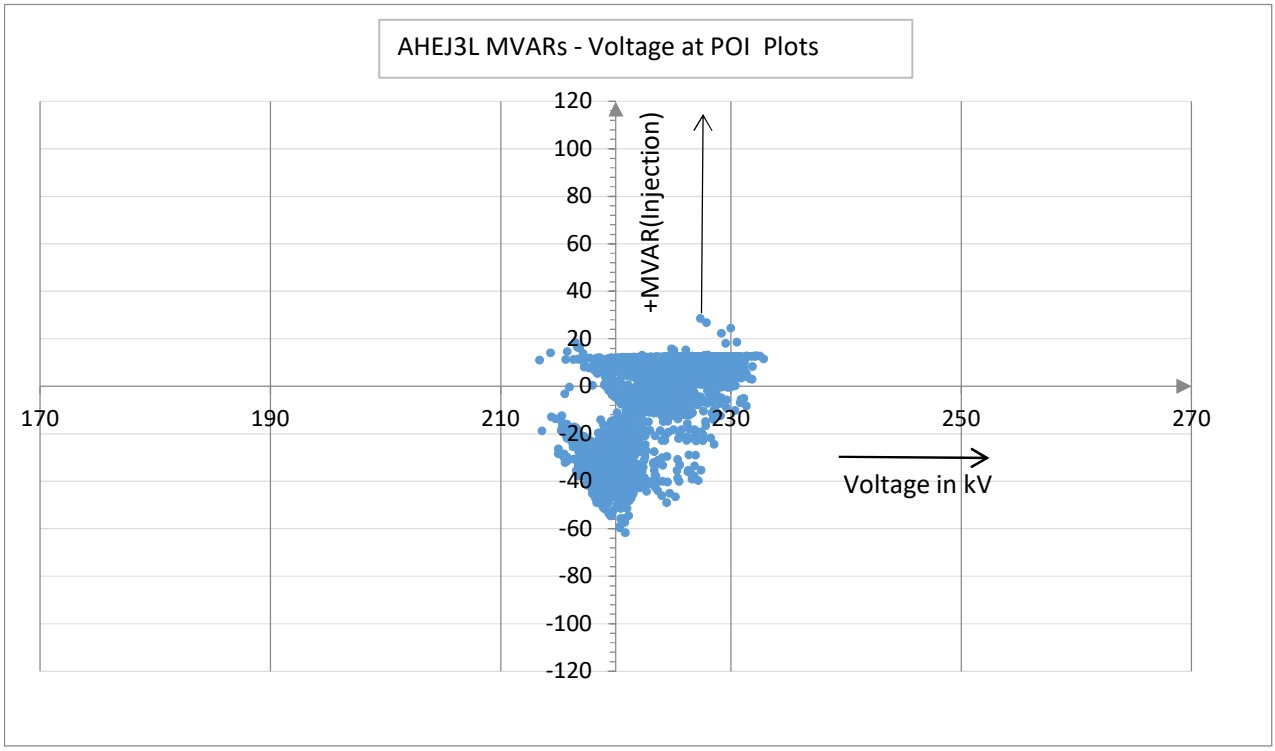

RSBPL MW-MVAR Plots
(-100,300)
(100,300)
MW Injection
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120
MVAR

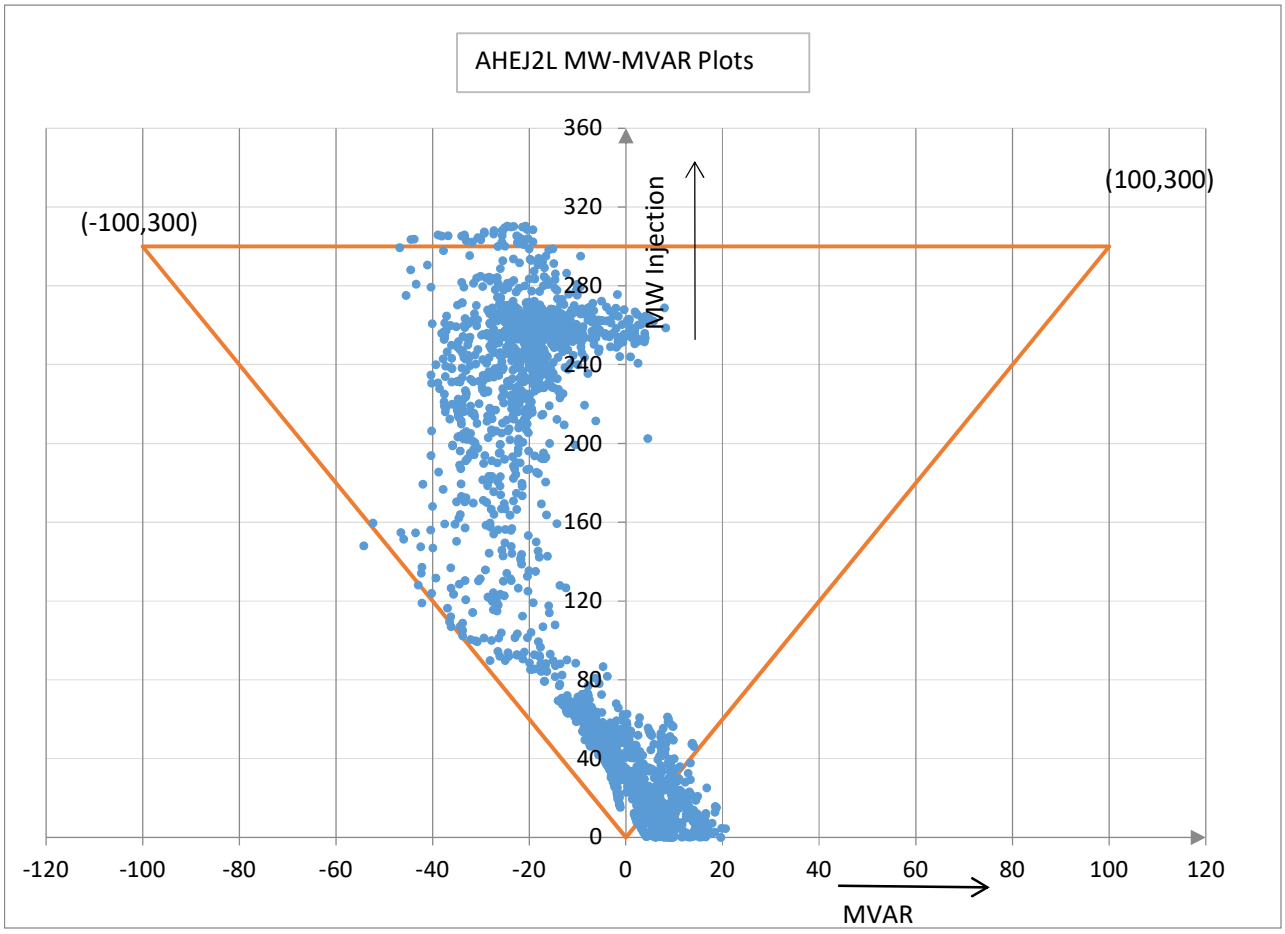

RSBPL MVARs - Voltage at POI Plots
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
+MVAR(Injection)
170
190
210
230
250
270
Voltage in kV

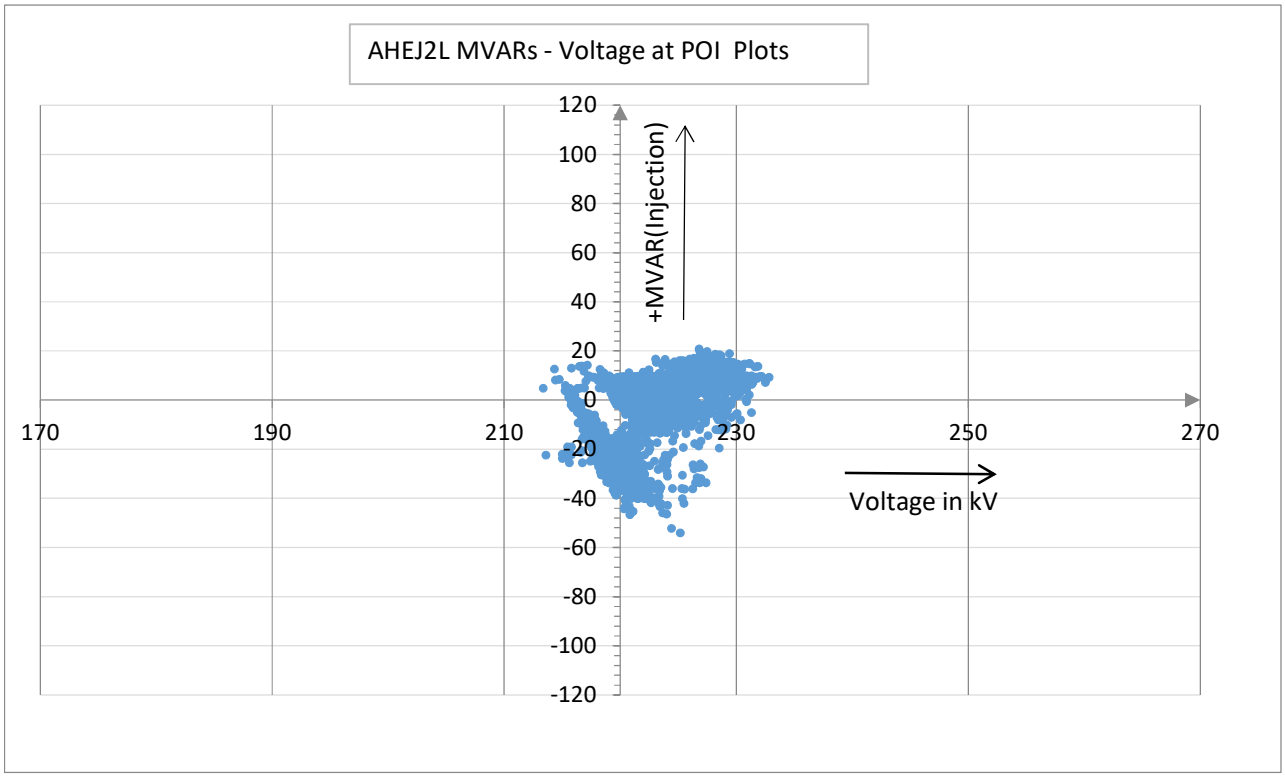

AHEJOL MW-MVAR Plots
(-130,390)
(130,390)
MW Injection
MVAR
440
400
360
320
280
240
200
160
120
80
40
0
-160
-140
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120
140
160

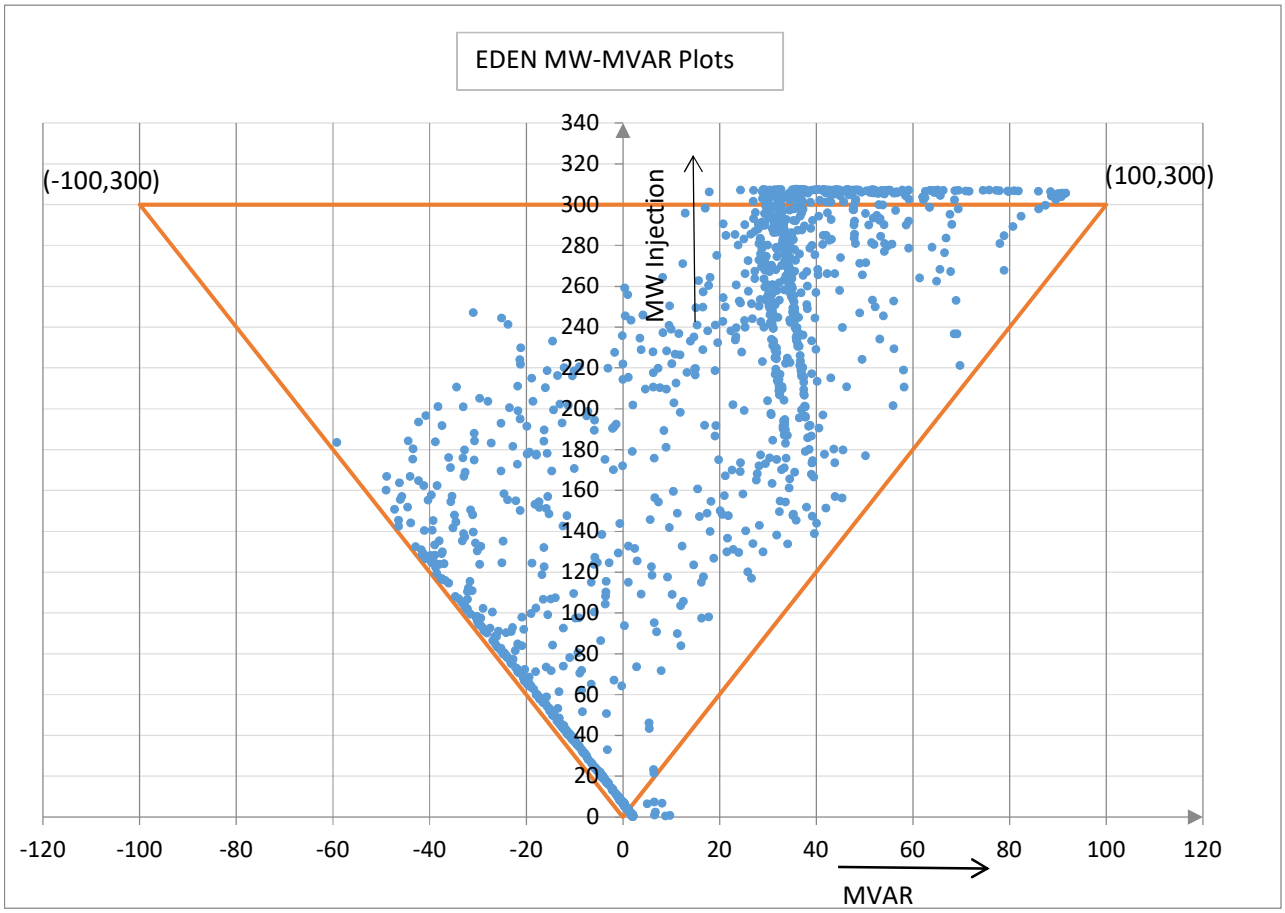

AHEJOL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

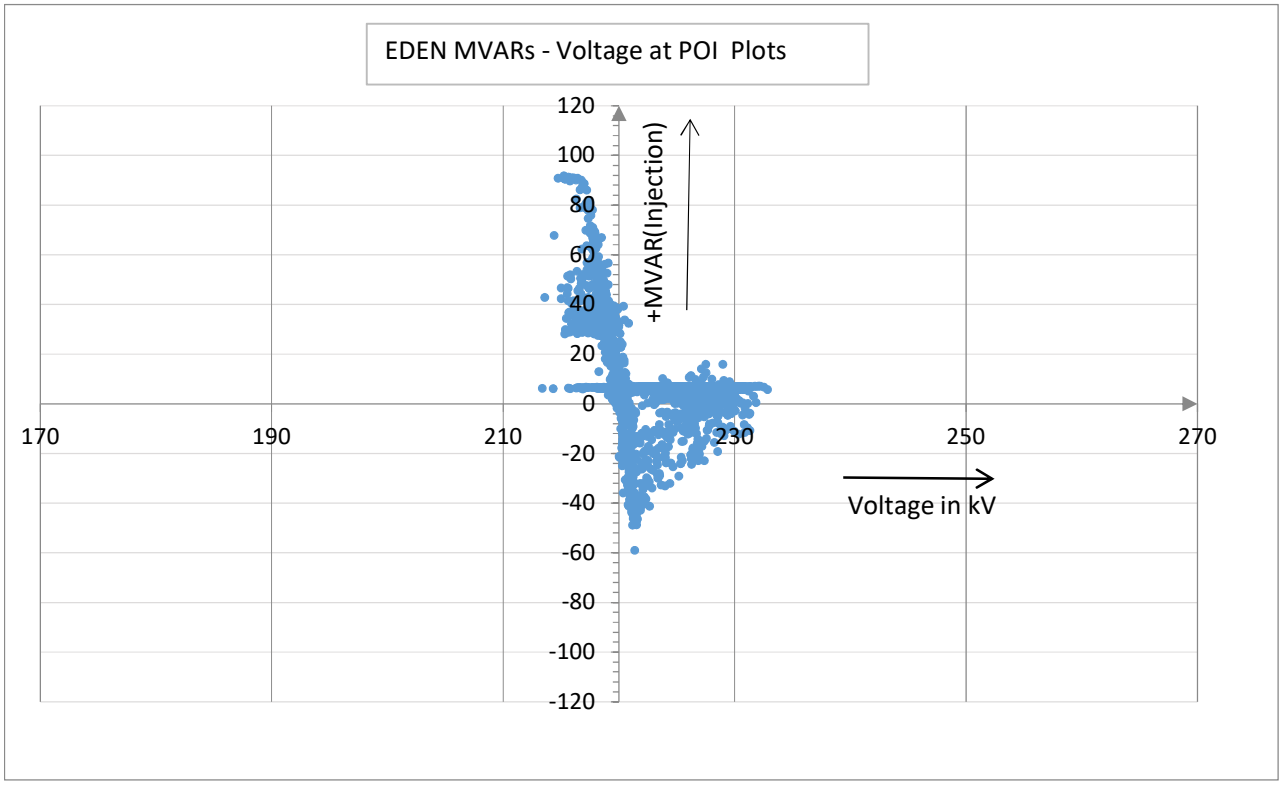

AHEJ3L MW-MVAR Plots
(-100,300)
(100,300)
MW Injection
MVAR
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

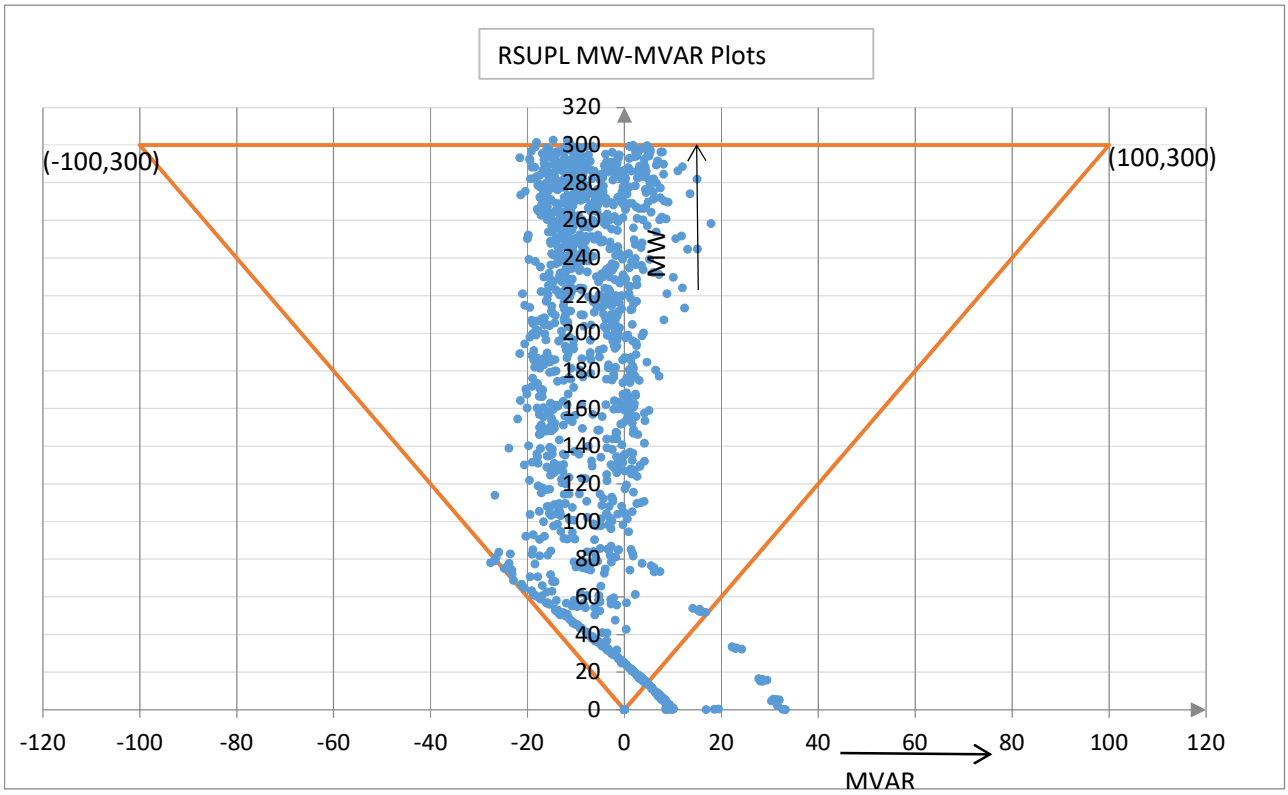

AHEJ3L MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

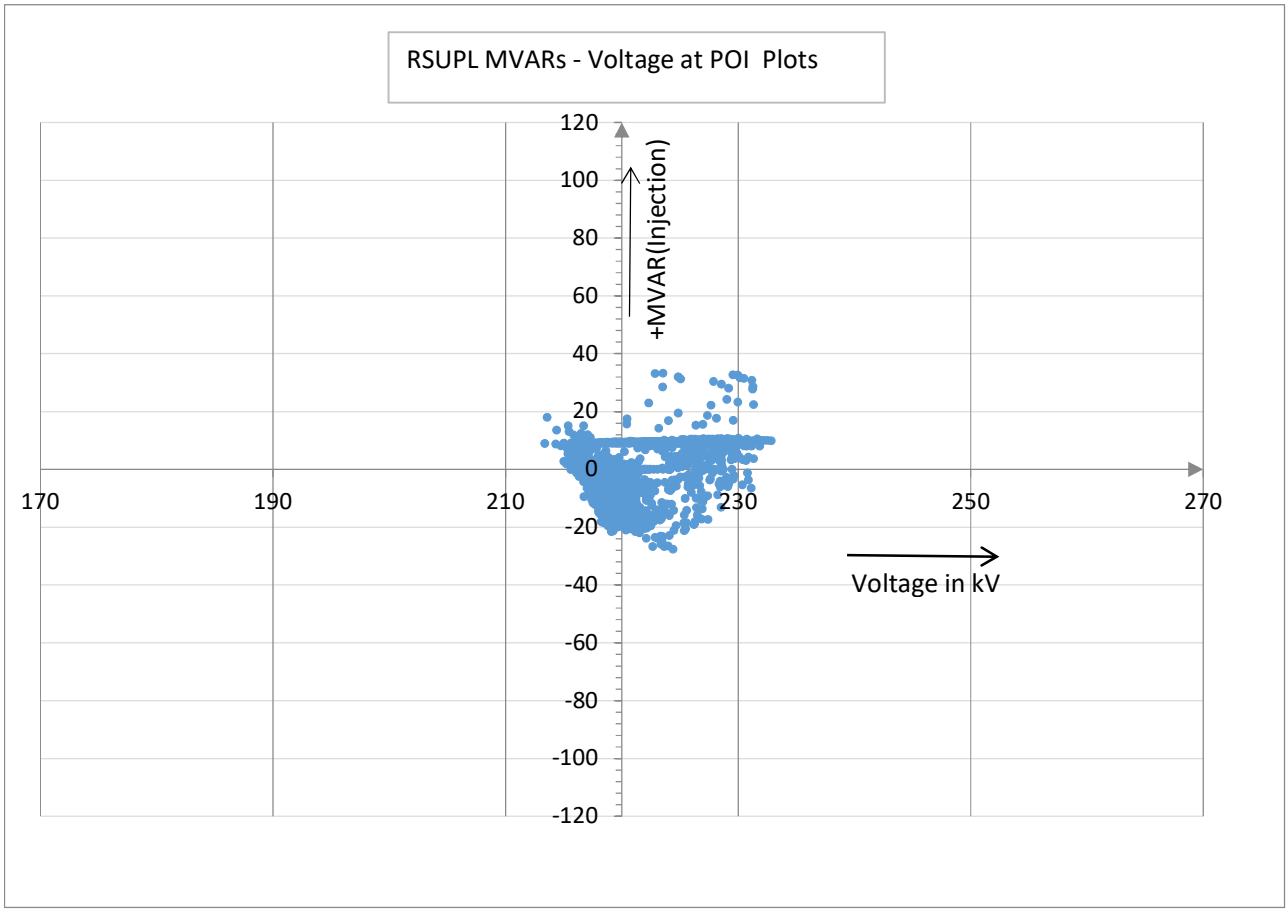

AHEJ2L MW-MVAR Plots
(-100,300)
(100,300)
MW Injection
MVAR
360
320
280
240
200
160
120
80
40
0
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

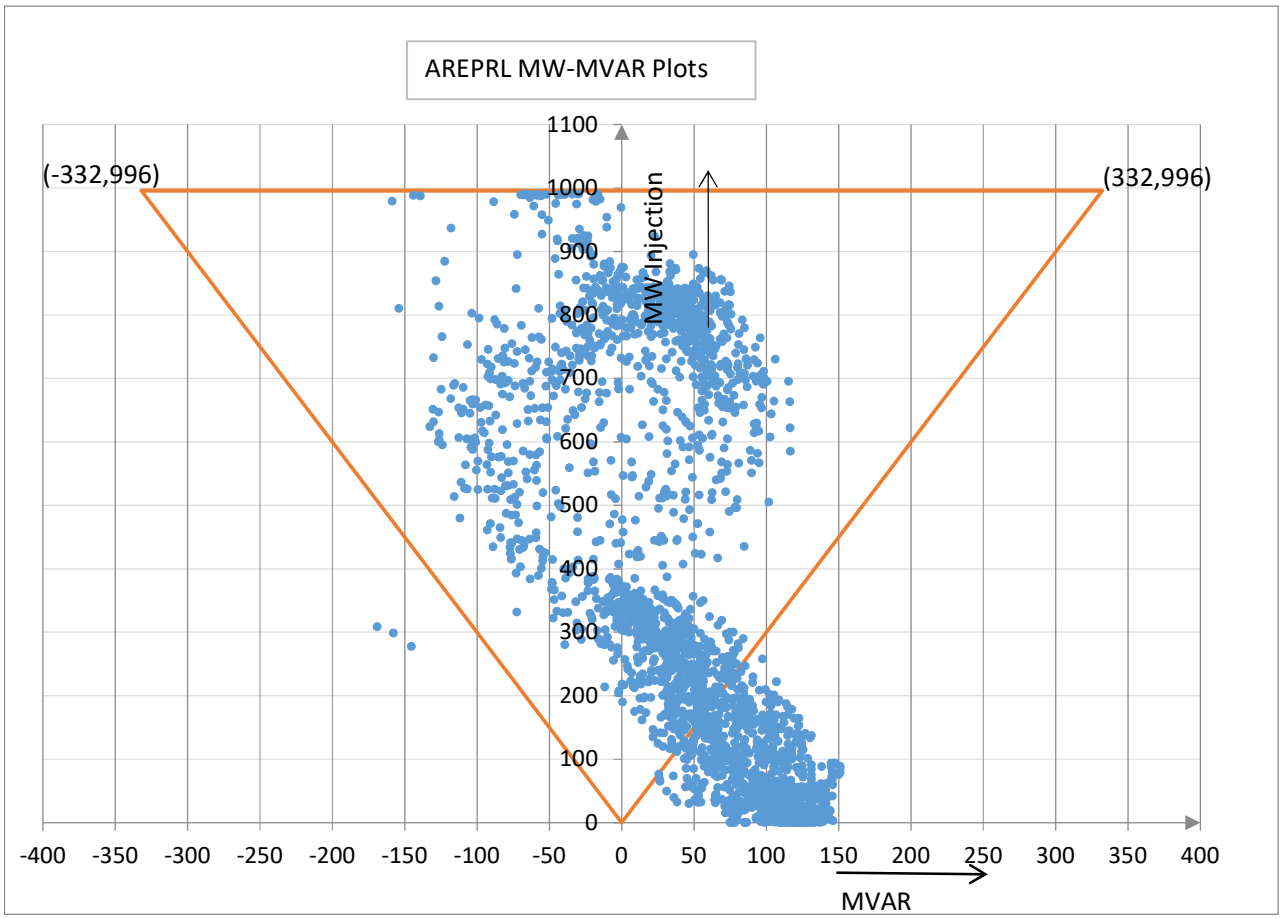

AHEJ2L MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

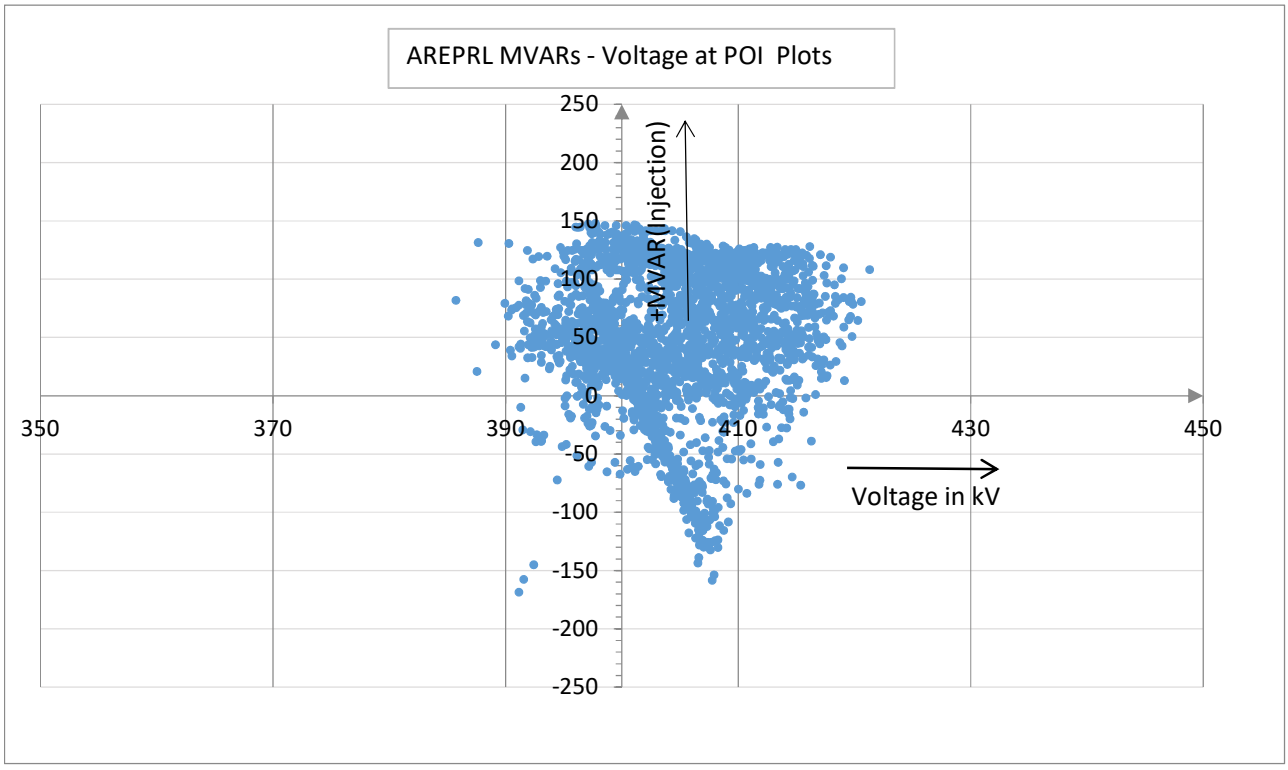

EDEN MW-MVAR Plots
(-100,300)
(100,300)
MW Injection
MVAR
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

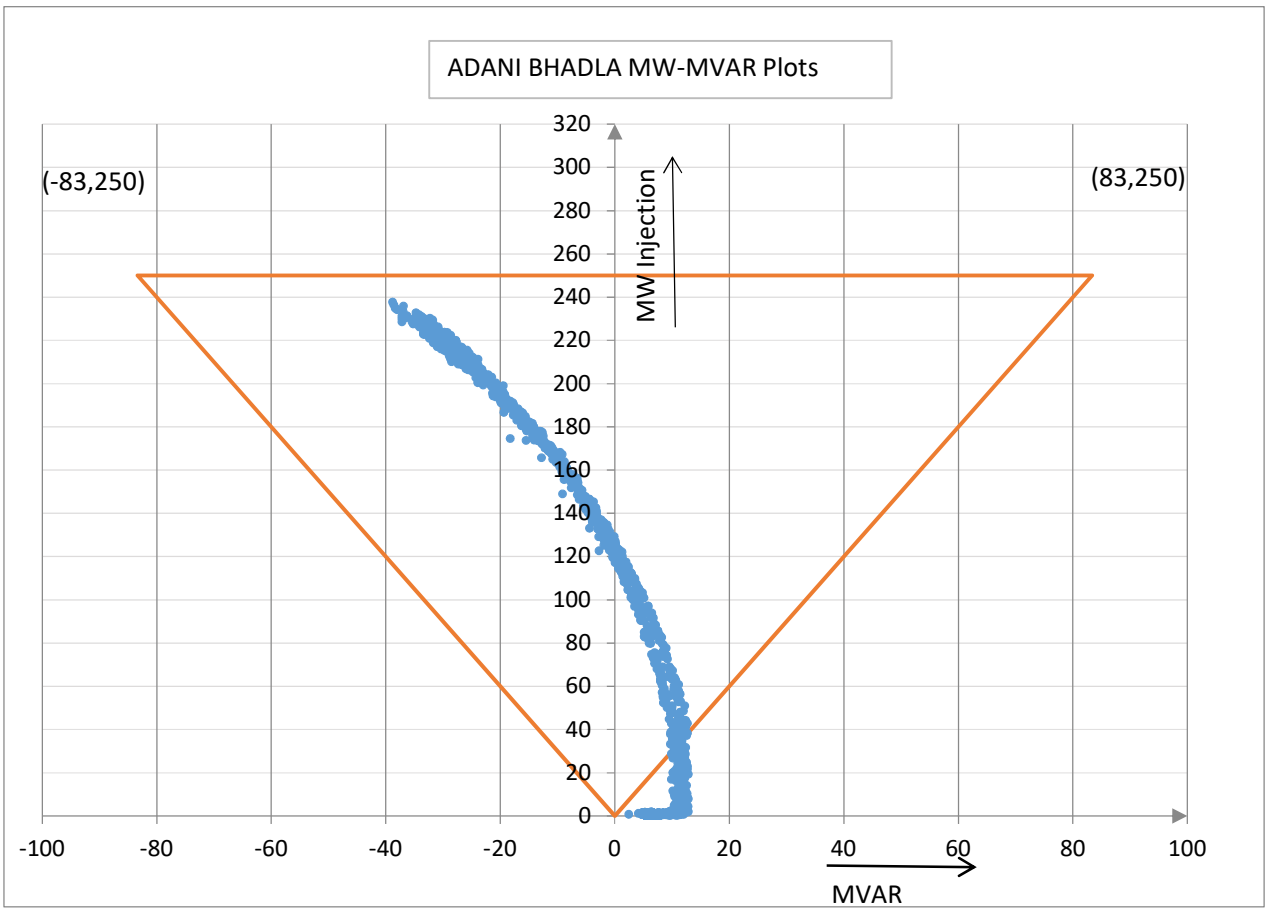

EDEN MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

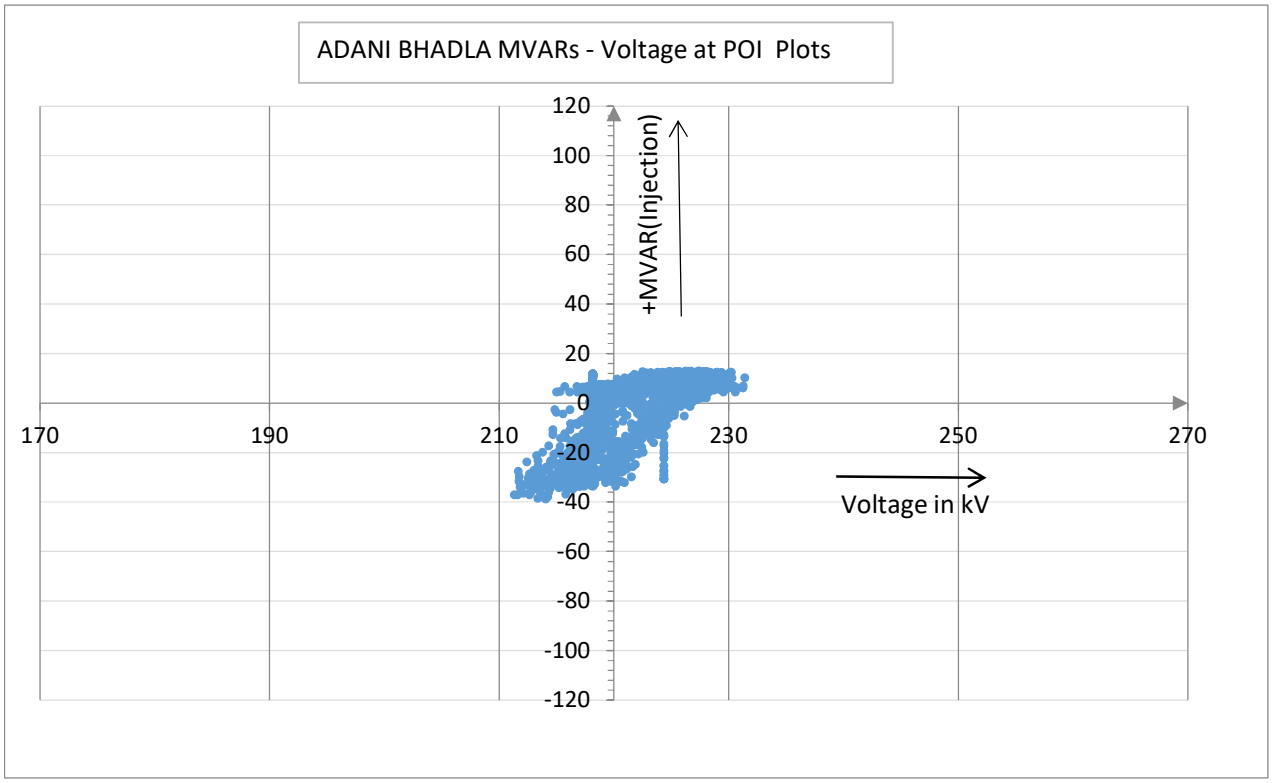

RSUPL MW-MVAR Plots
(-100,300)
(100,300)
MW
MVAR
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

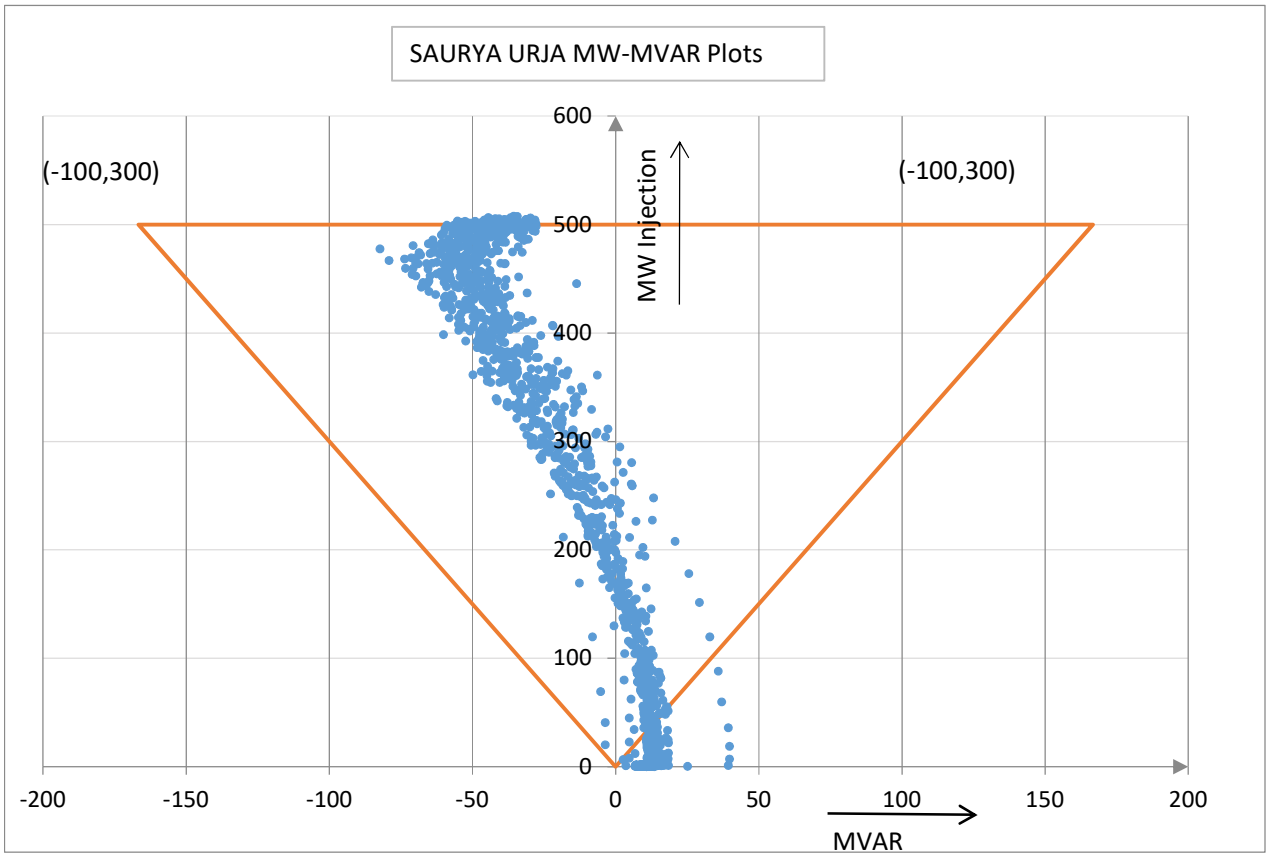

RSUPL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

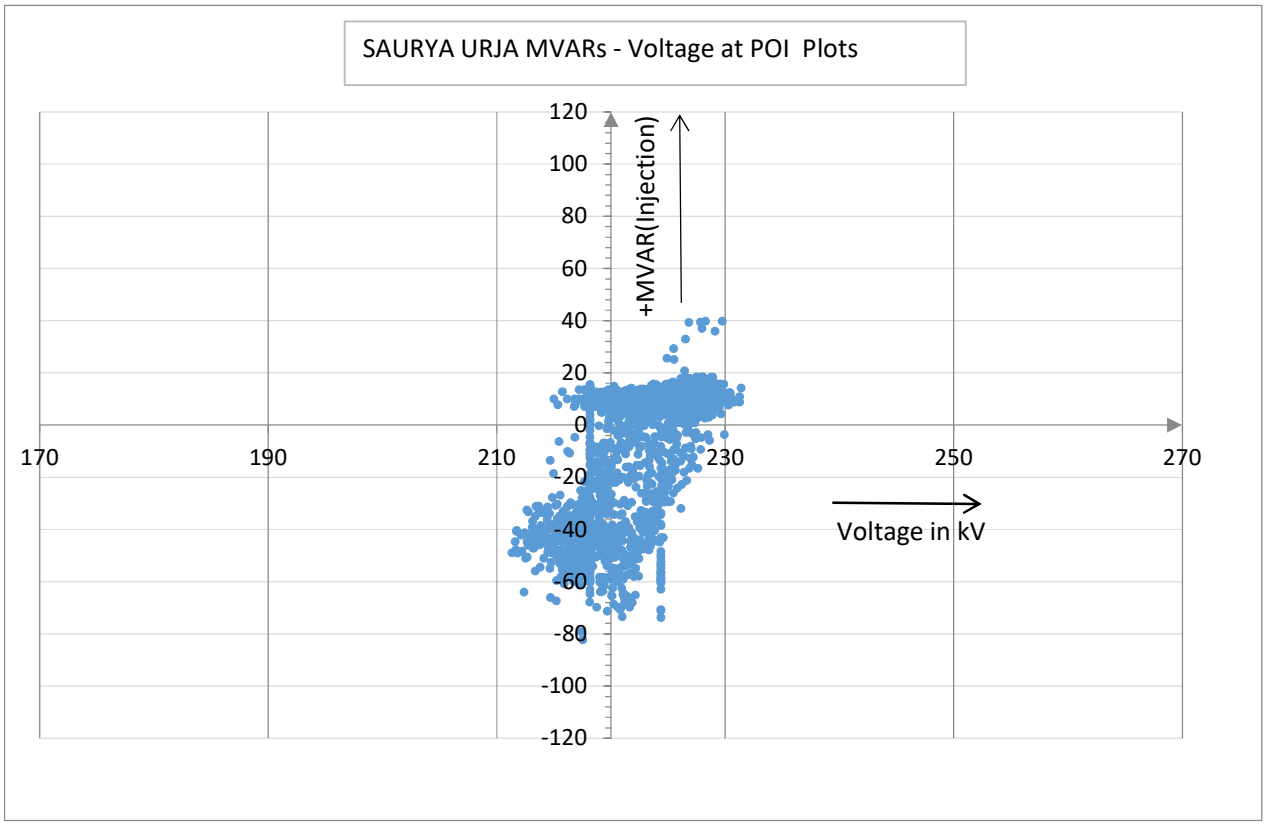

AREPRL MW-MVAR Plots
(-332,996)
(332,996)
MW Injection
MVAR
1100
1000
900
800
700
600
500
400
300
200
100
0
-400
-350
-300
-250
-200
-150
-100
-50
0
50
100
150
200
250
300
350
400

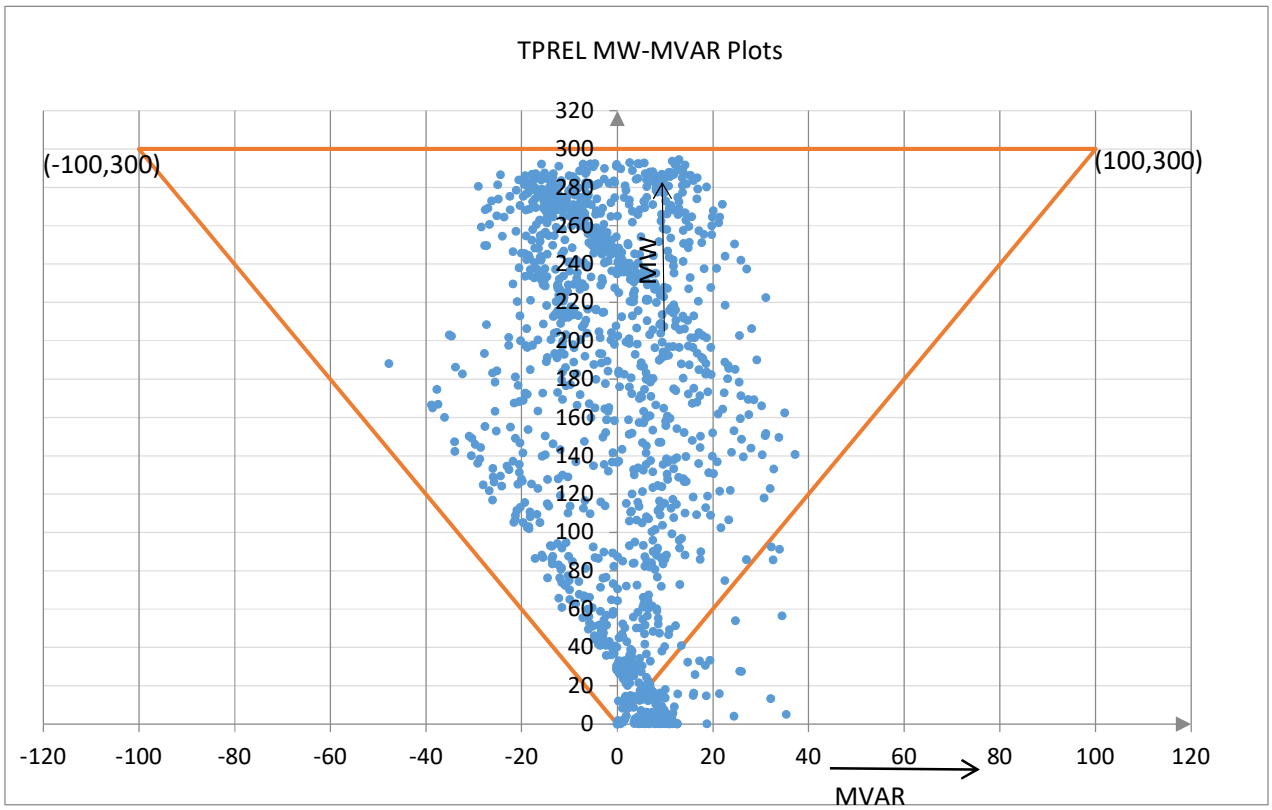

AREPRL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
250
200
150
100
50
0
-50
-100
-150
-200
-250
350
370
390
410
430
450

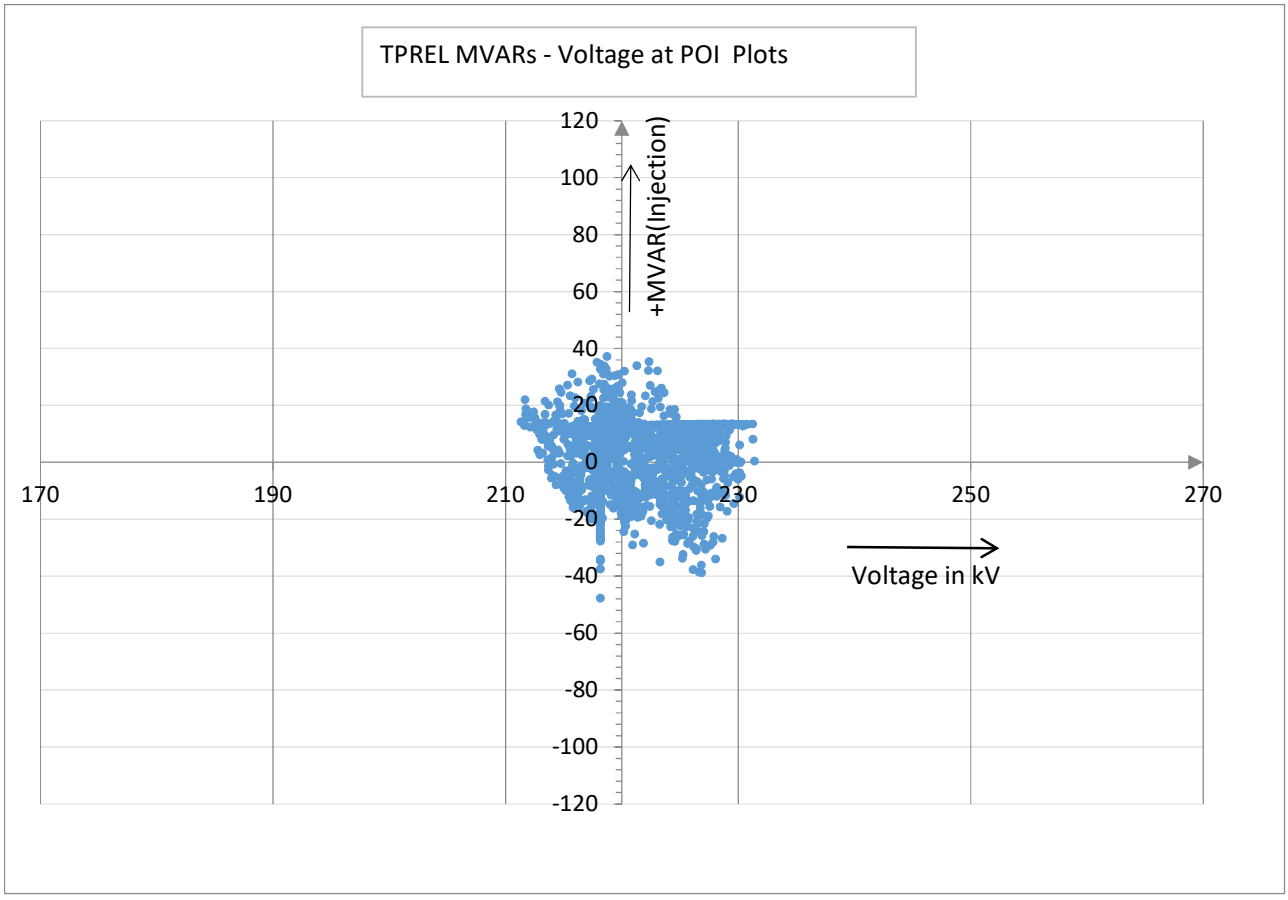

ADANI BHADLA MW-MVAR Plots
(-83,250)
(83,250)
MW Injection
MVAR
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-100
-80
-60
-40
-20
0
20
40
60
80
100

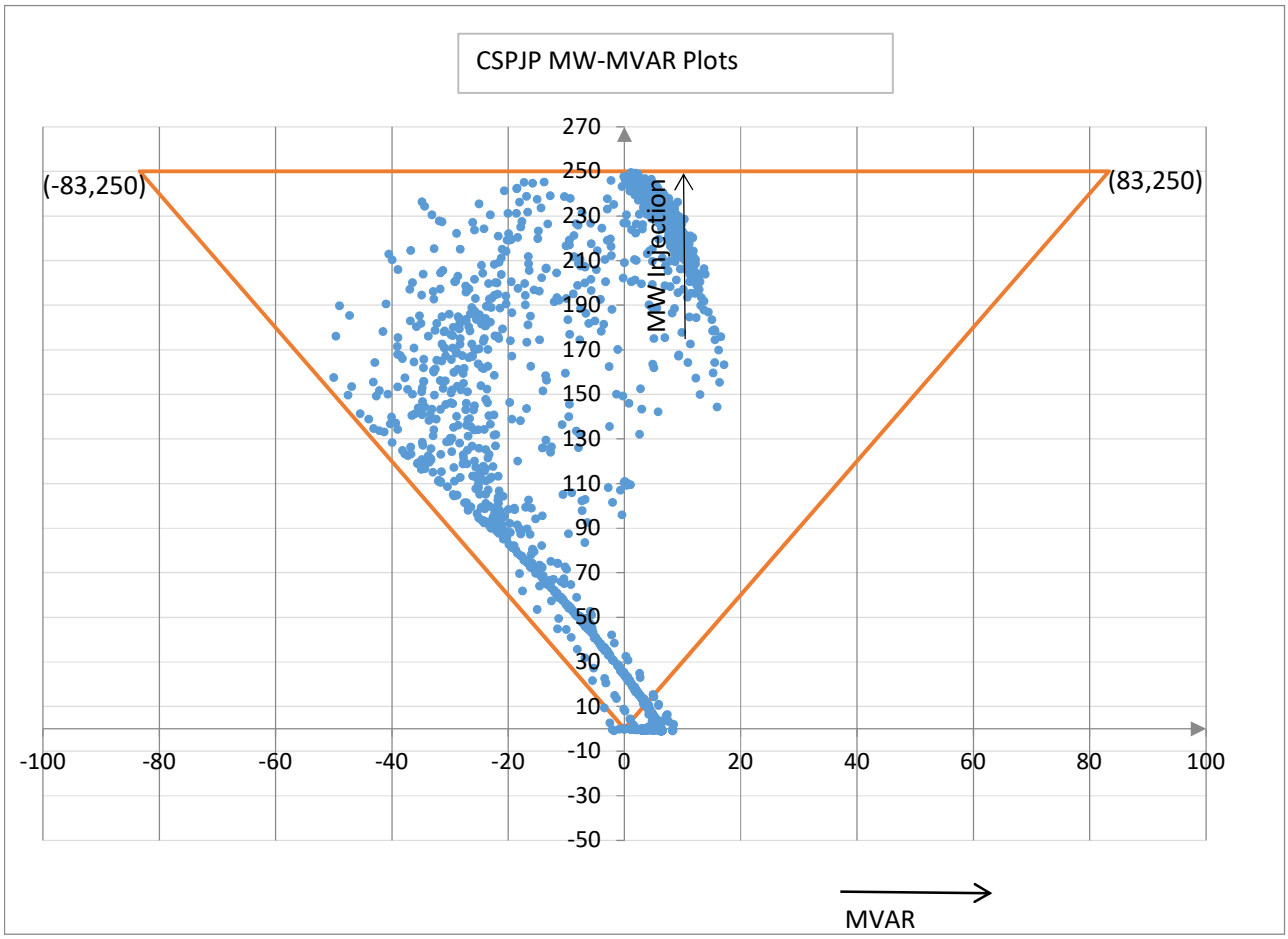

ADANI BHADLA MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

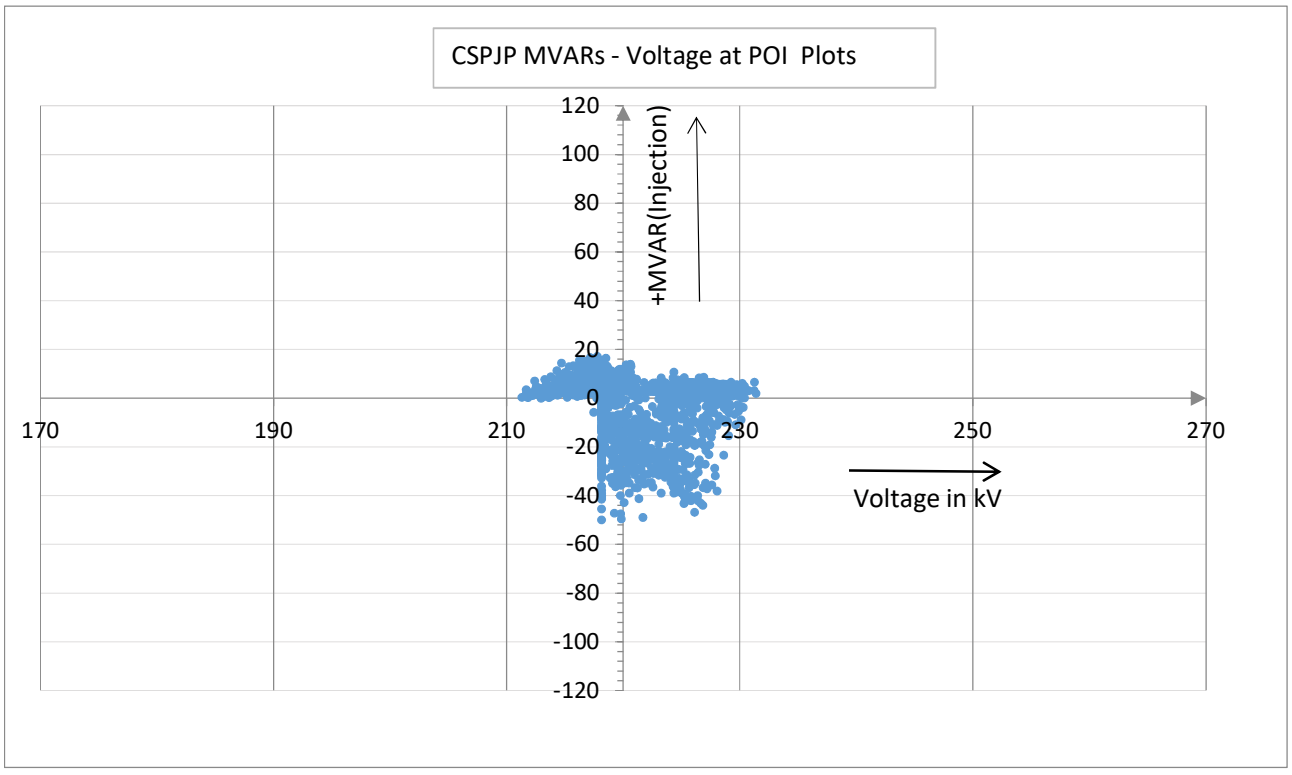

SAURYA URJA MW-MVAR Plots
(-100,300)
(-100,300)
MW Injection
MVAR
600
500
400
300
200
100
0
-200
-150
-100
-50
0
50
100
150
200

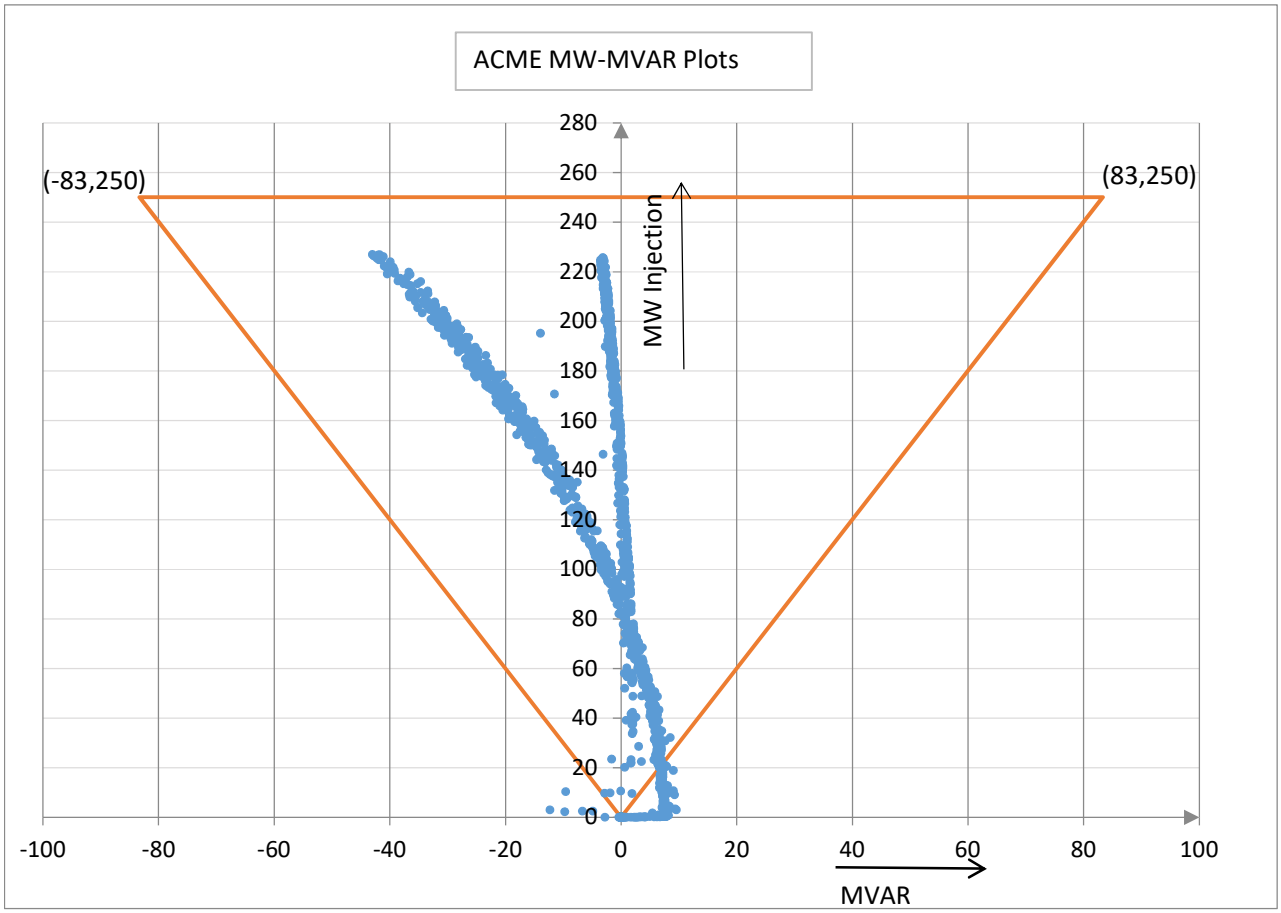

SAURYA URJA MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

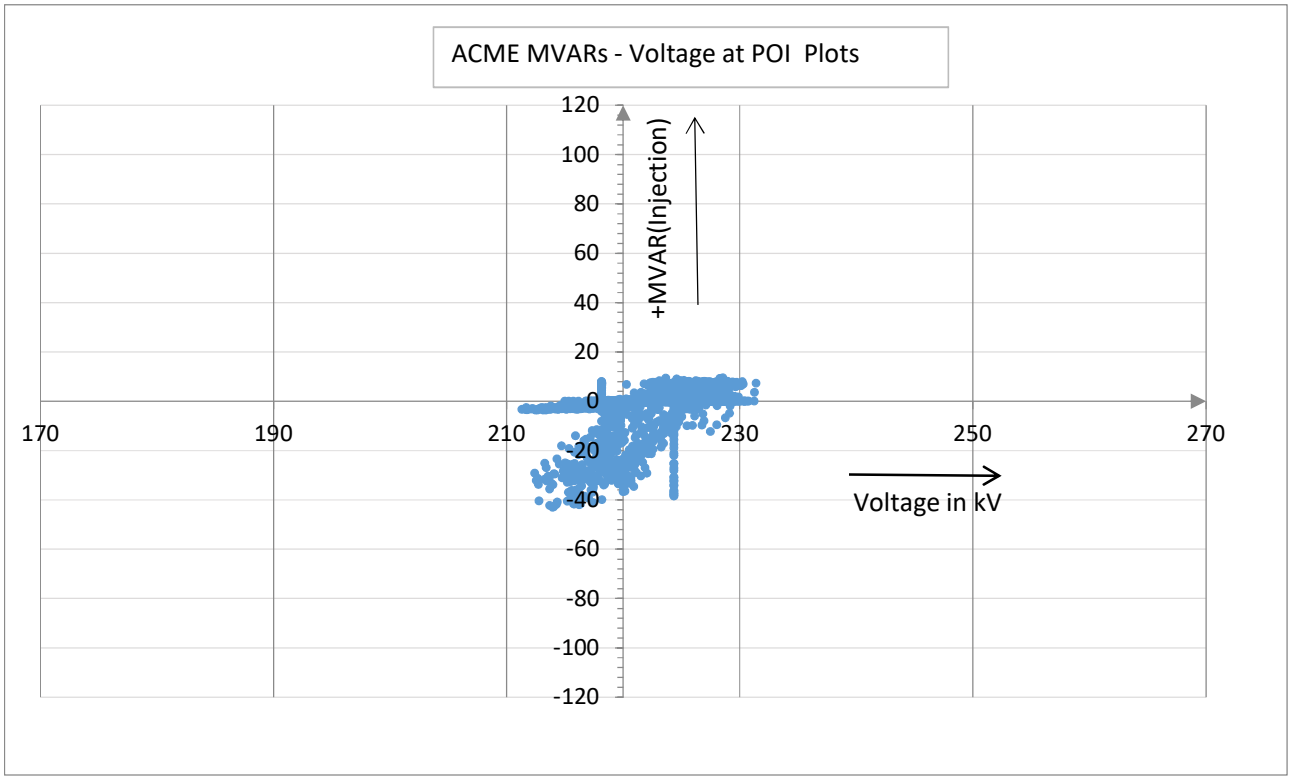

TPREL MW-MVAR Plots
(-100,300)
(100,300)
MW
MVAR
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

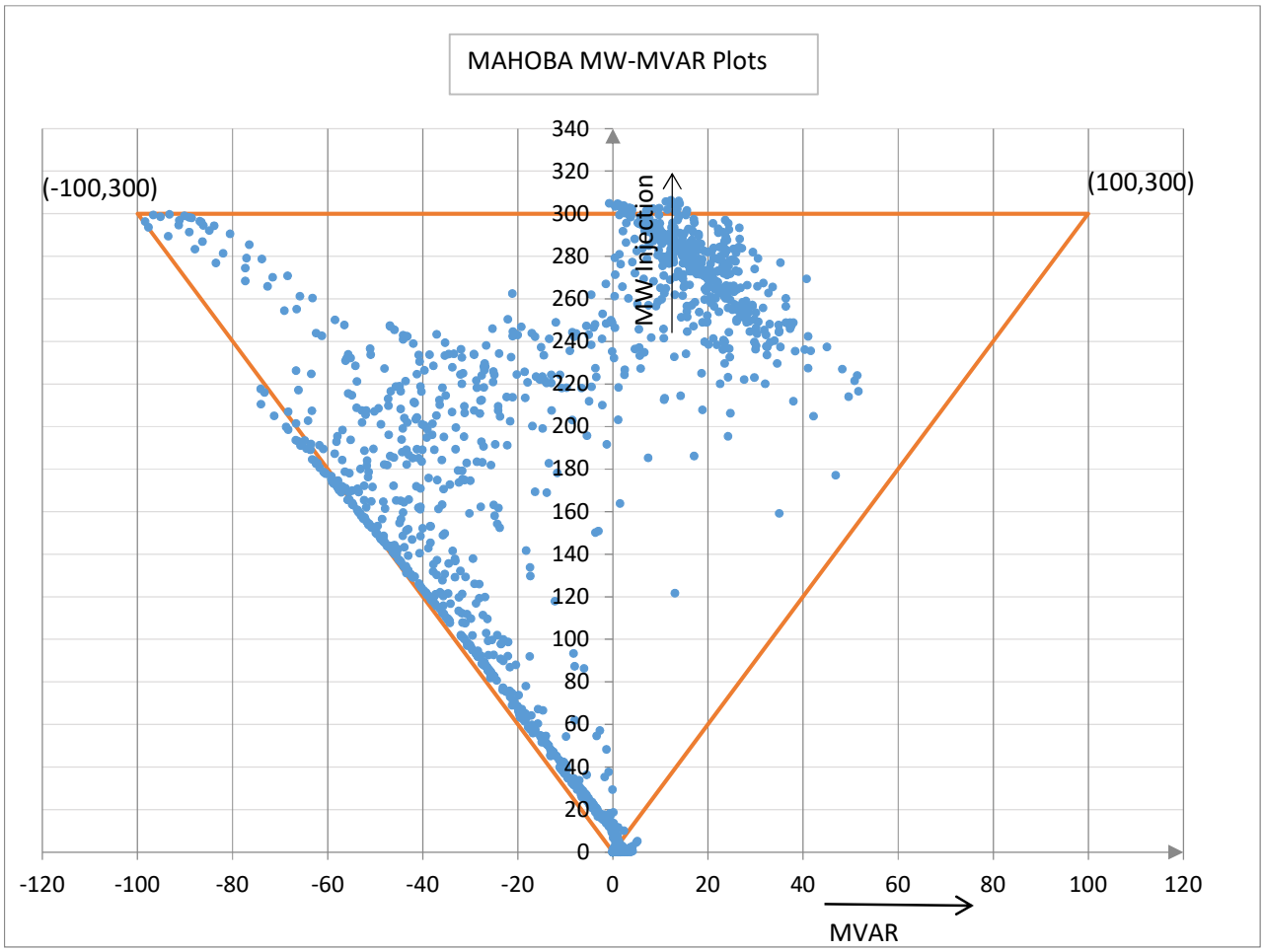

TPREL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

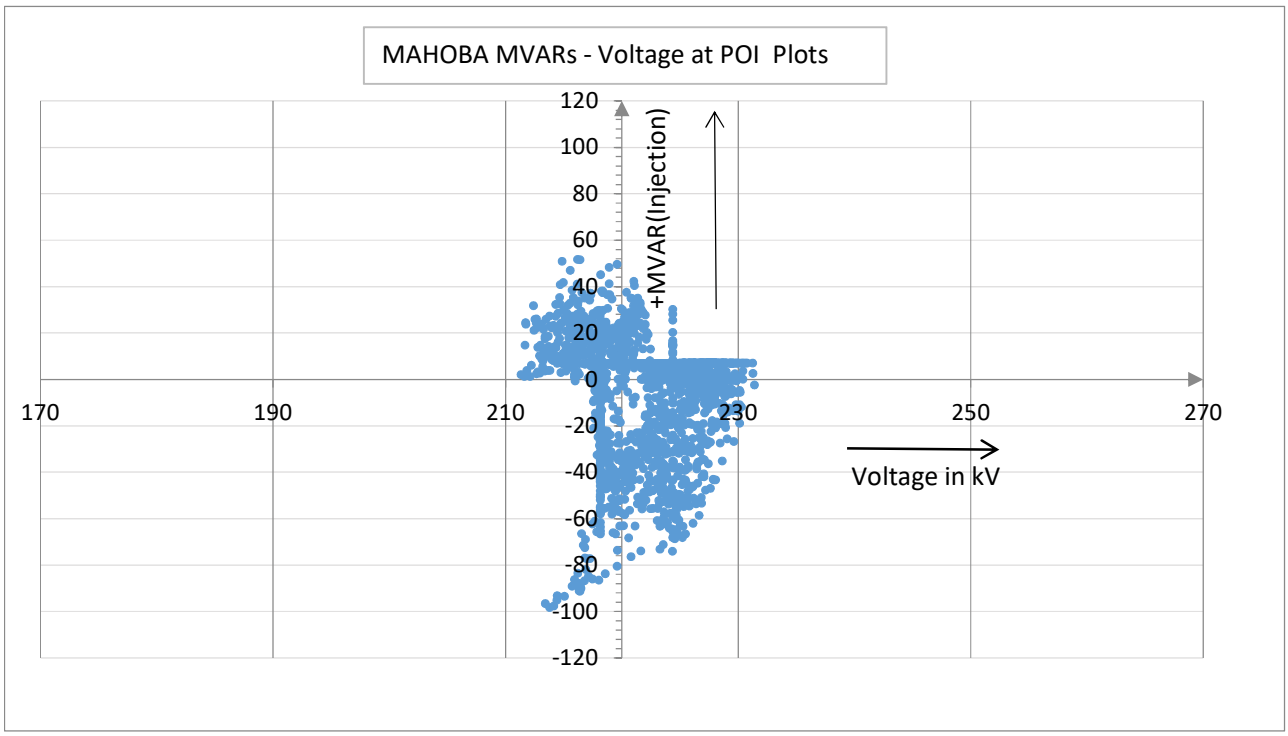

CSPJP MW-MVAR Plots
(-83,250)
(83,250)
MW Injection
MVAR
270
250
230
210
190
170
150
130
110
90
70
50
30
10
-10
-30
-50
-100
-80
-60
-40
-20
0
20
40
60
80
100

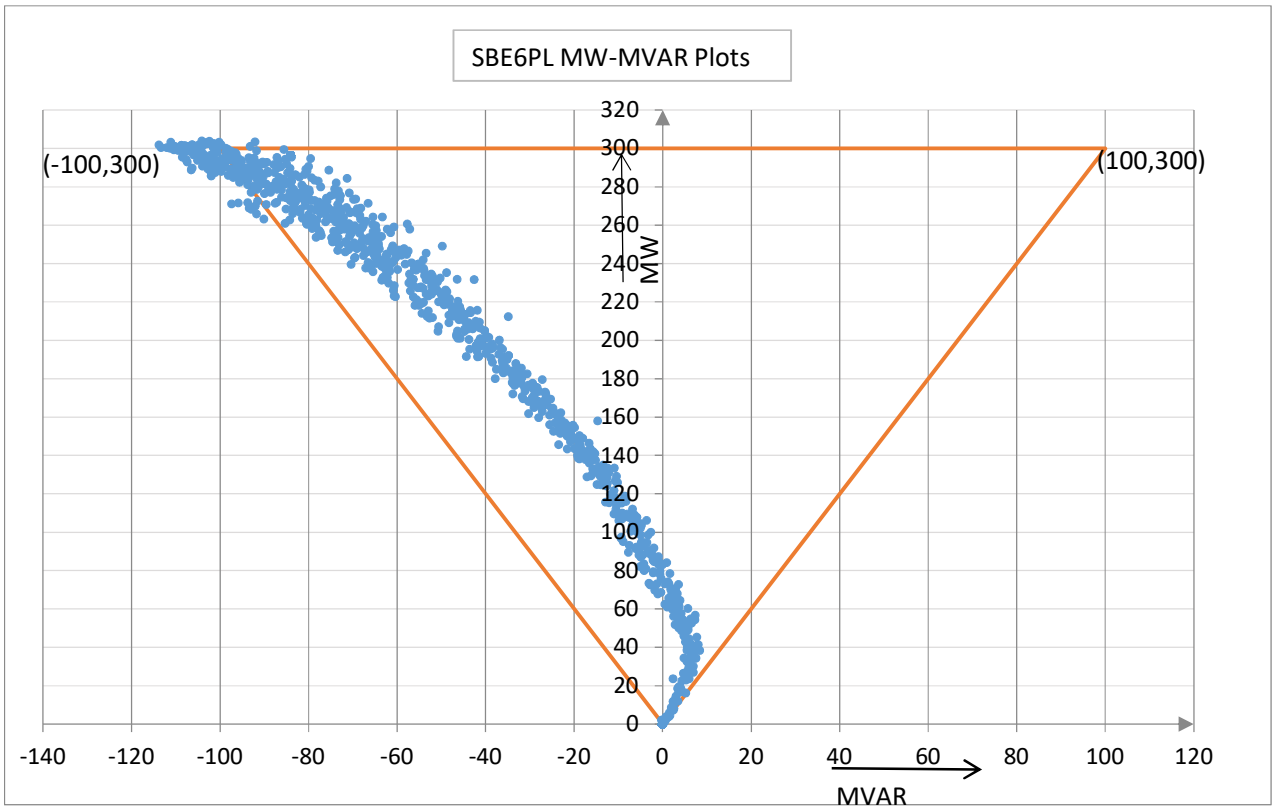

CSPJP MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

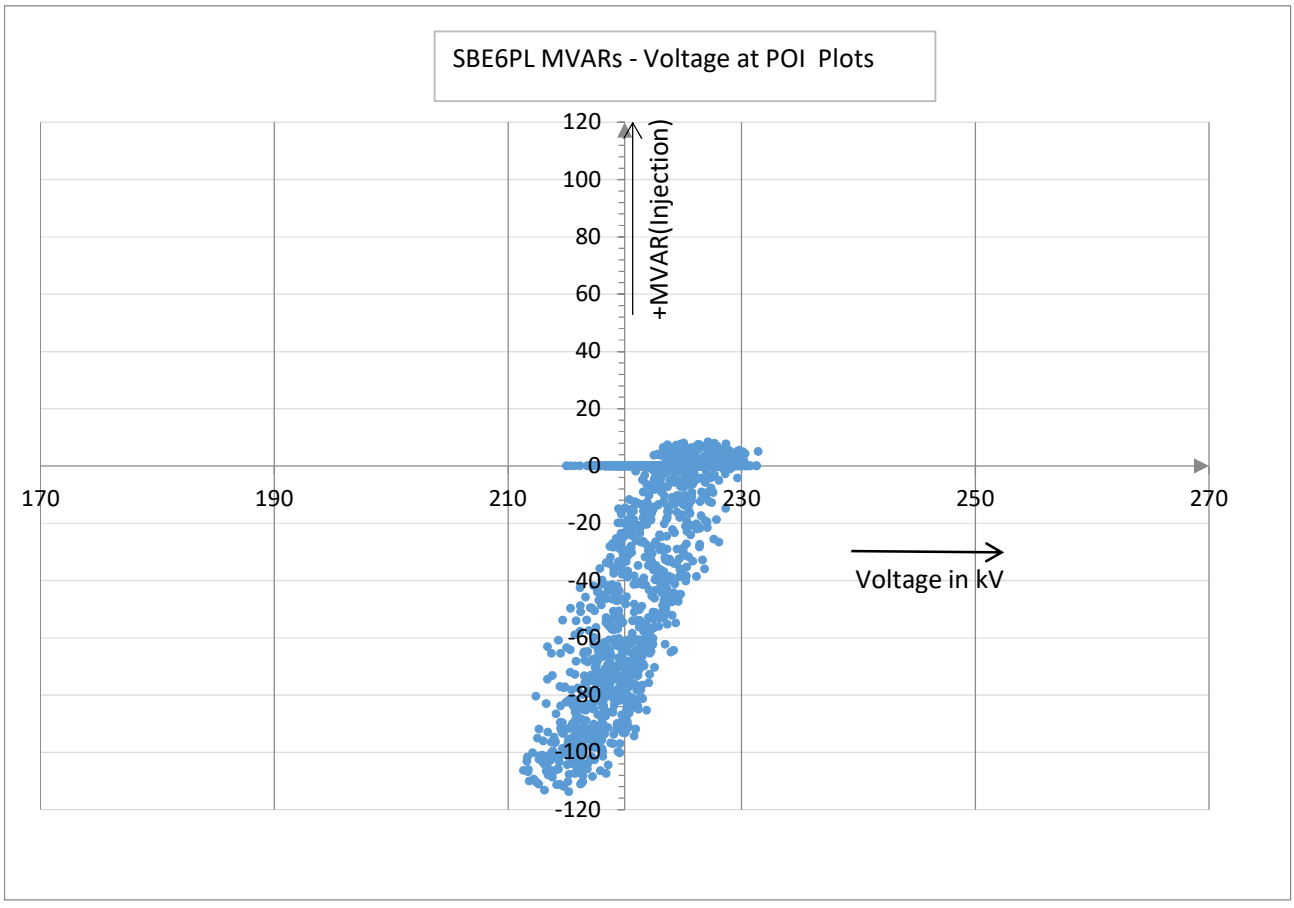

ACME MW-MVAR Plots
(-83,250)
(83,250)
MW Injection
MVAR
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-100
-80
-60
-40
-20
0
20
40
60
80
100

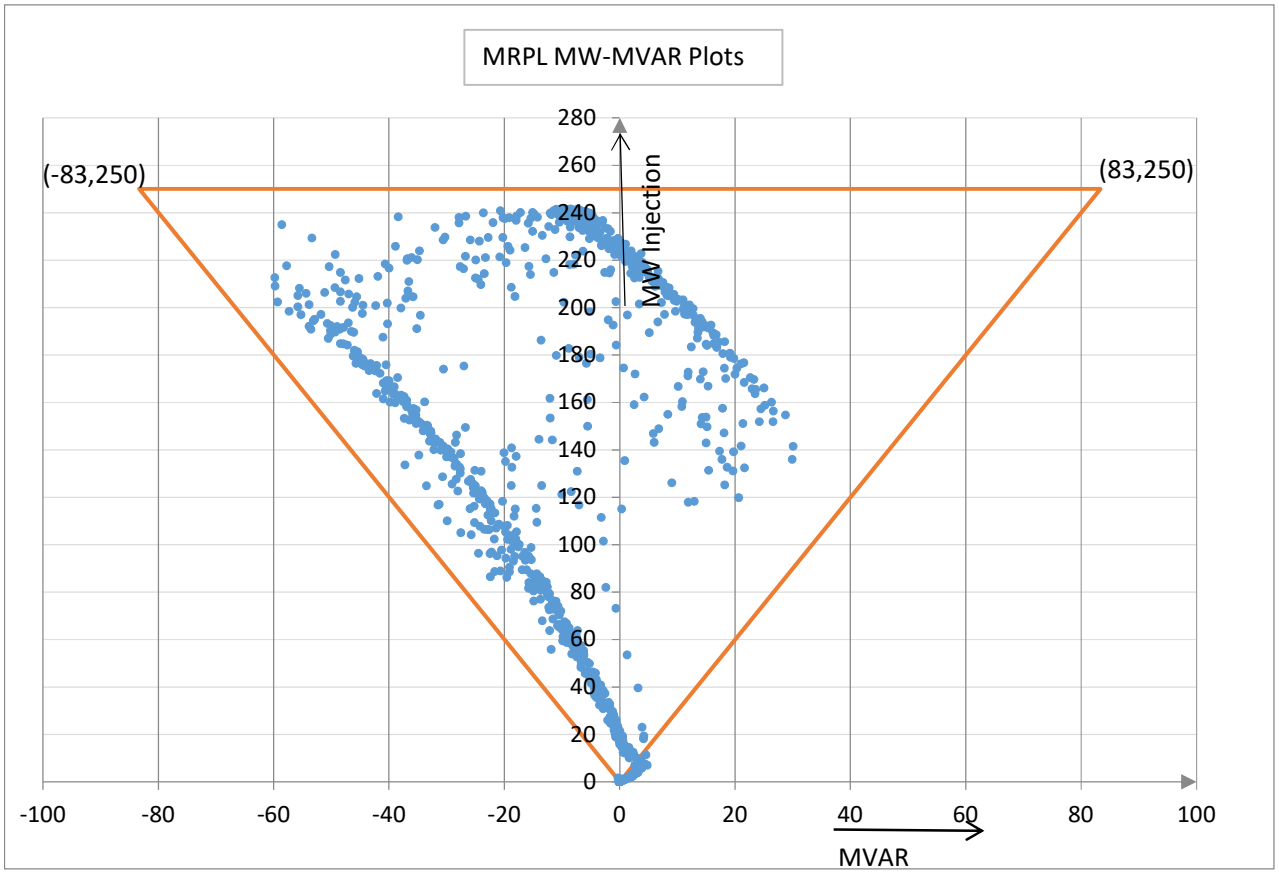

ACME MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

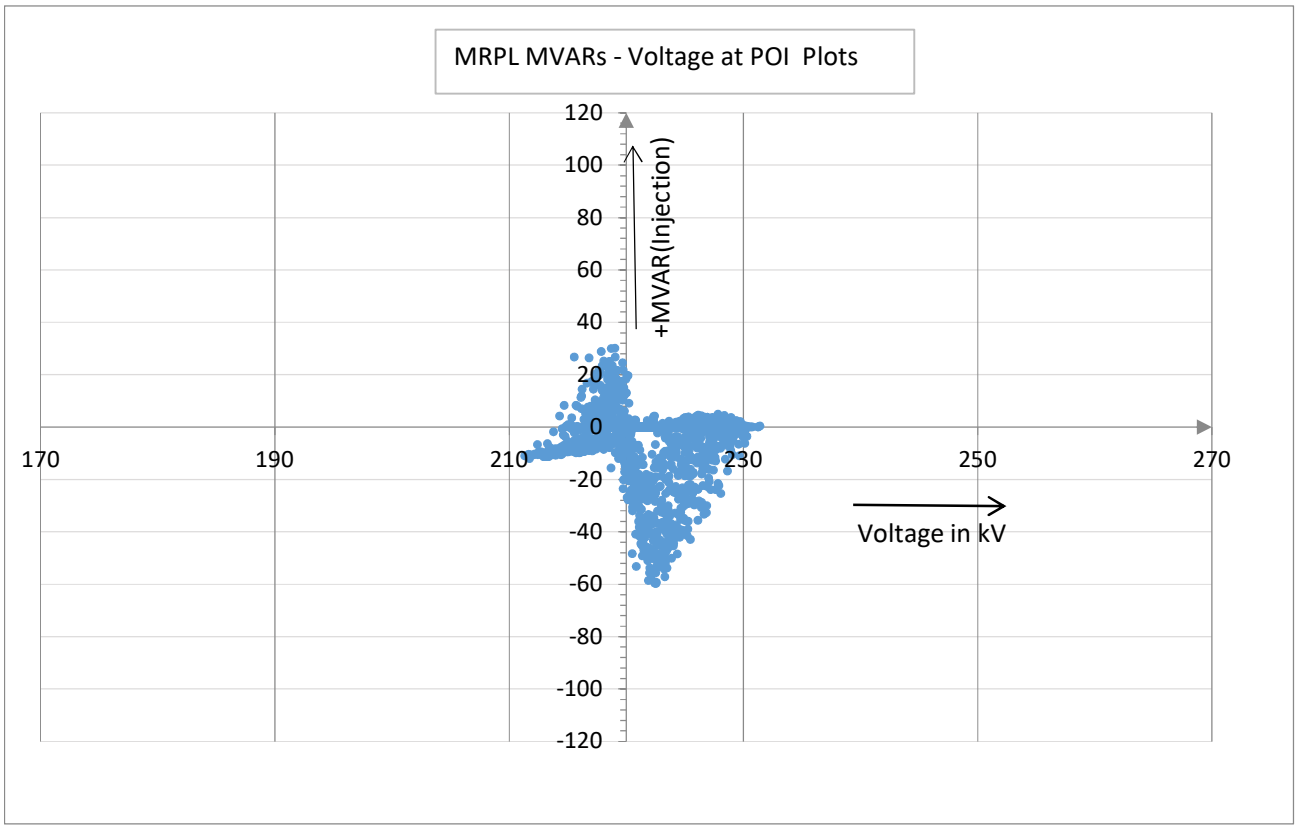

MAHOBA MW-MVAR Plots
(-100,300)
(100,300)
MW Injection
MVAR
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

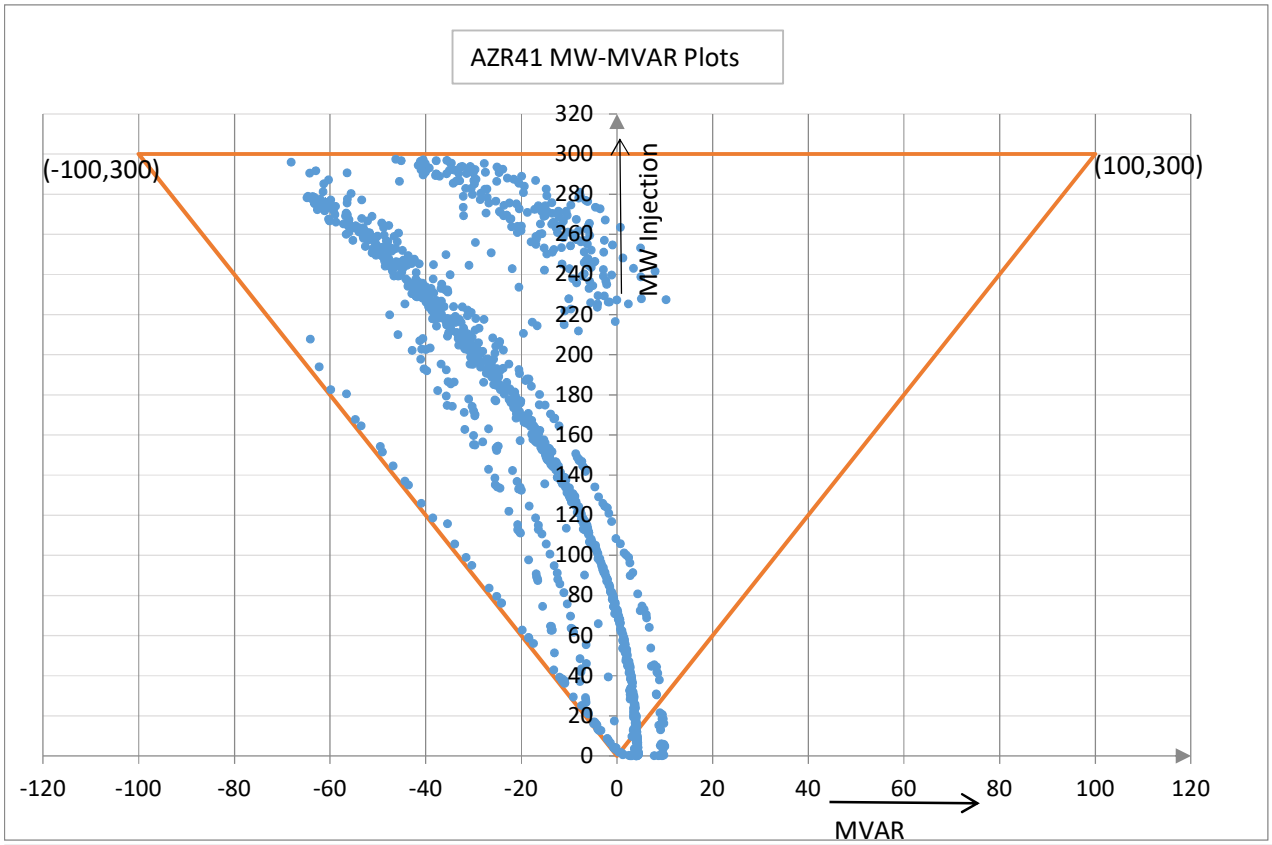

MAHOBA MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

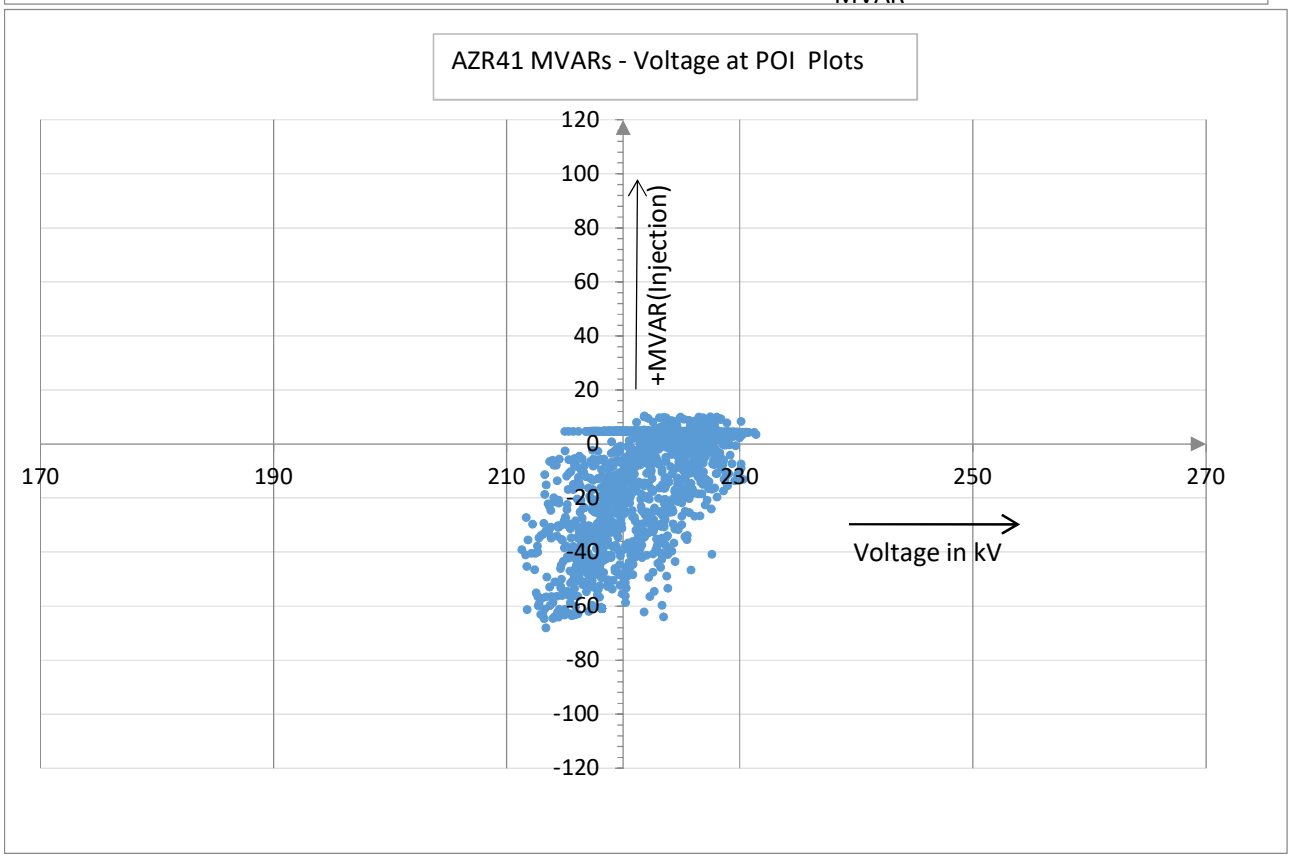

SBE6PL MW-MVAR Plots
(-100,300)
(100,300)
MW
MVAR
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-140
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

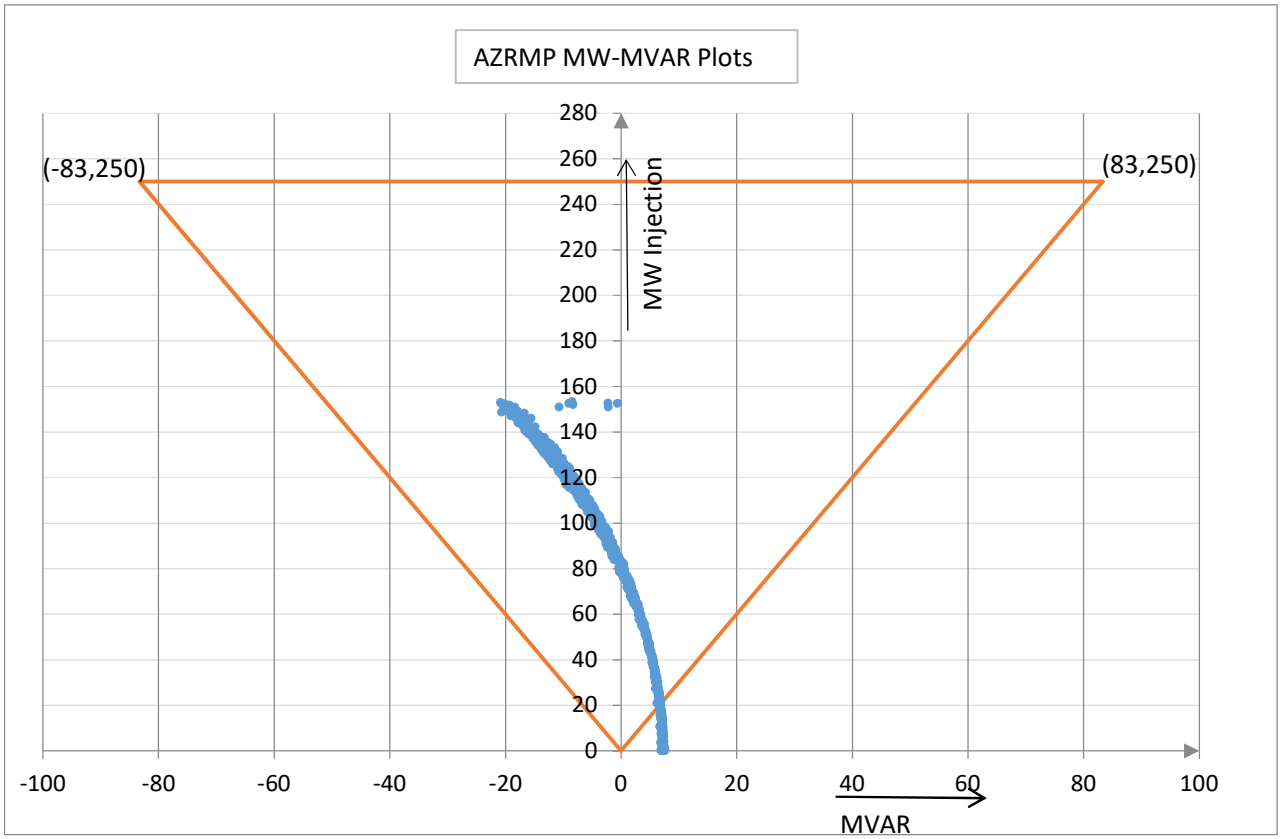

SBE6PL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

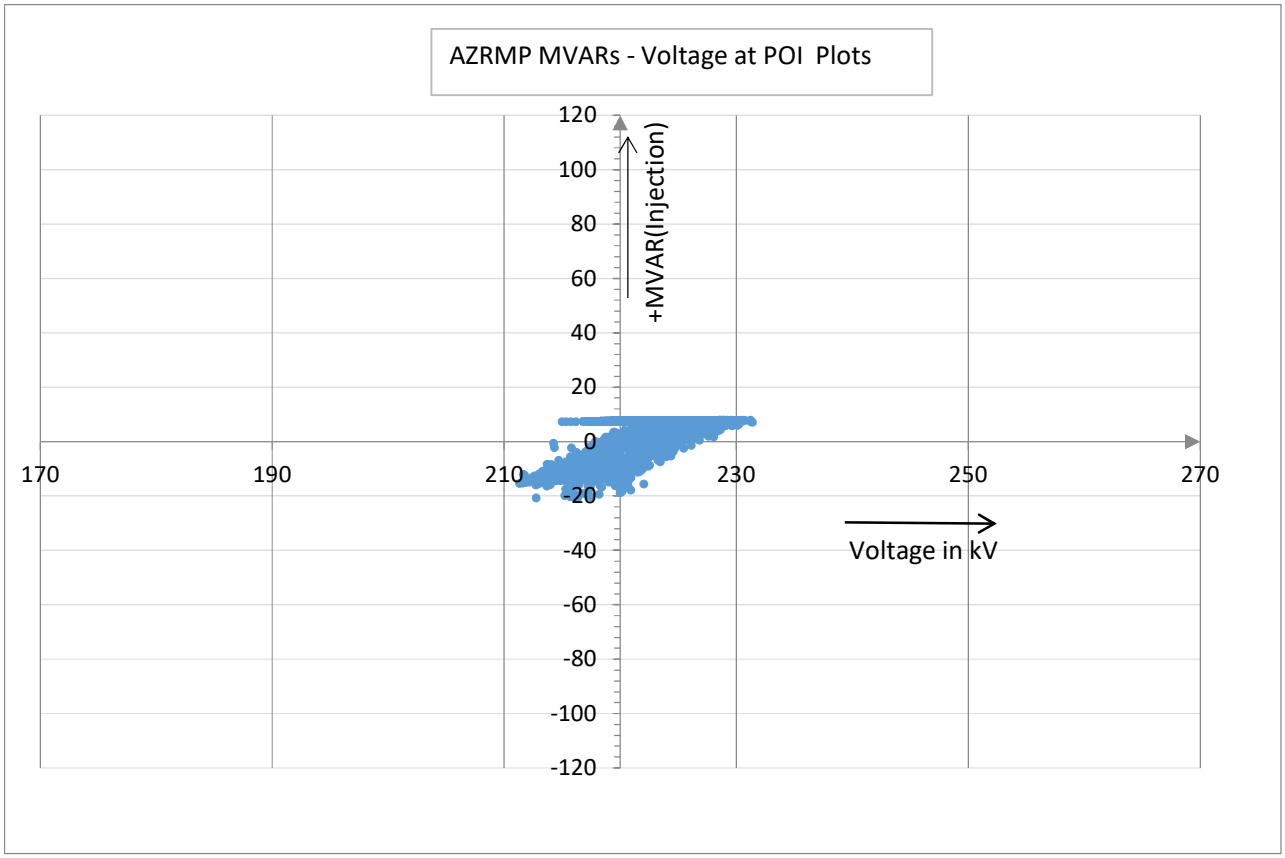

MRPL MW-MVAR Plots
(-83,250)
(83,250)
MW Injection
MVAR
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-100
-80
-60
-40
-20
0
20
40
60
80
100

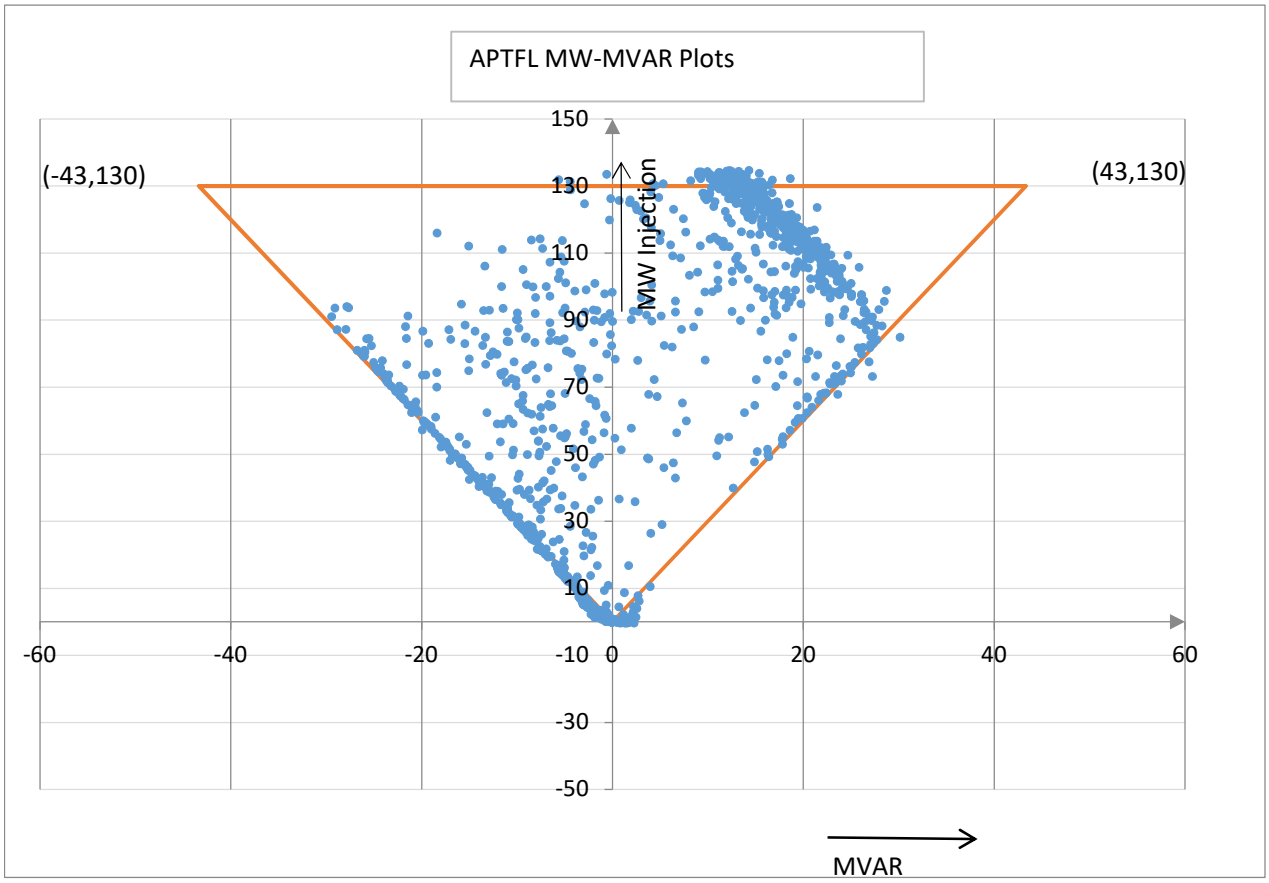

MRPL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

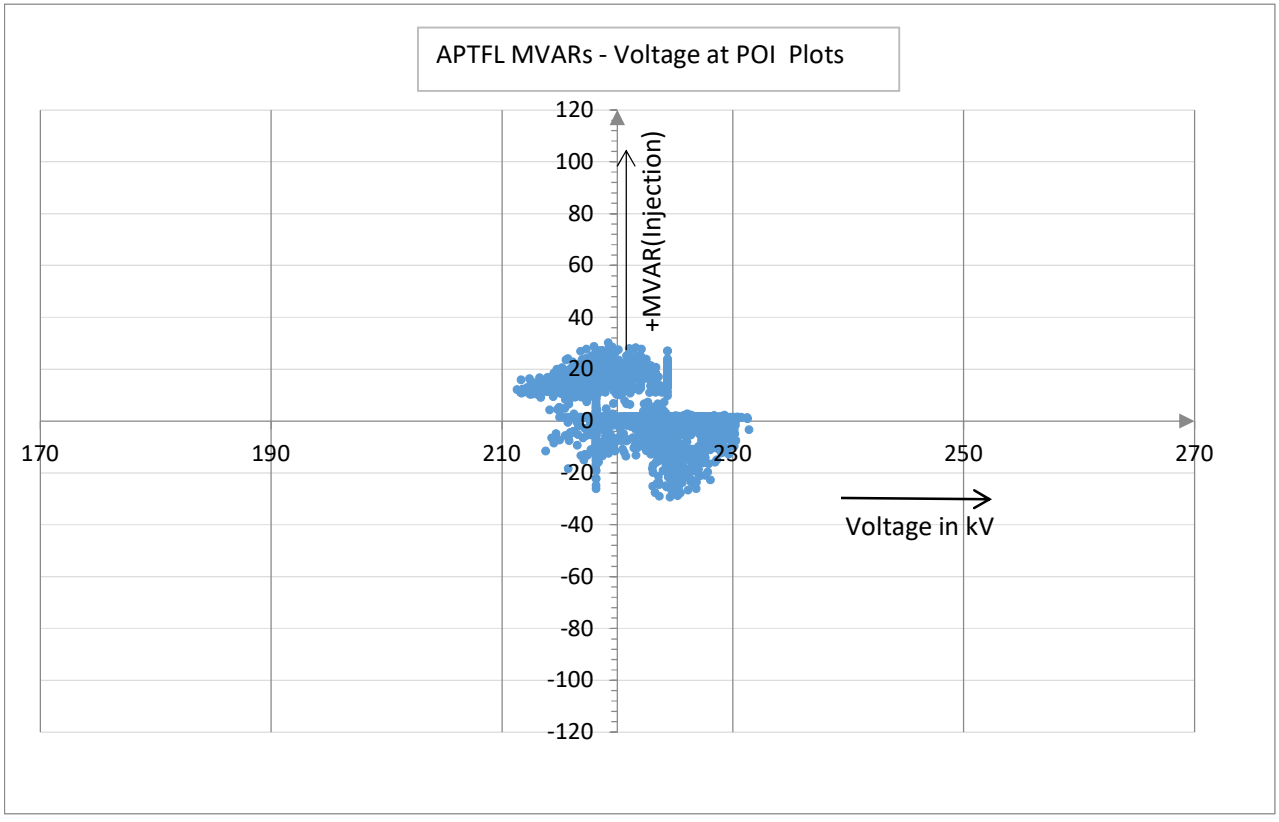

AZR41 MW-MVAR Plots
(-100,300)
(100,300)
MW Injection
MVAR
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

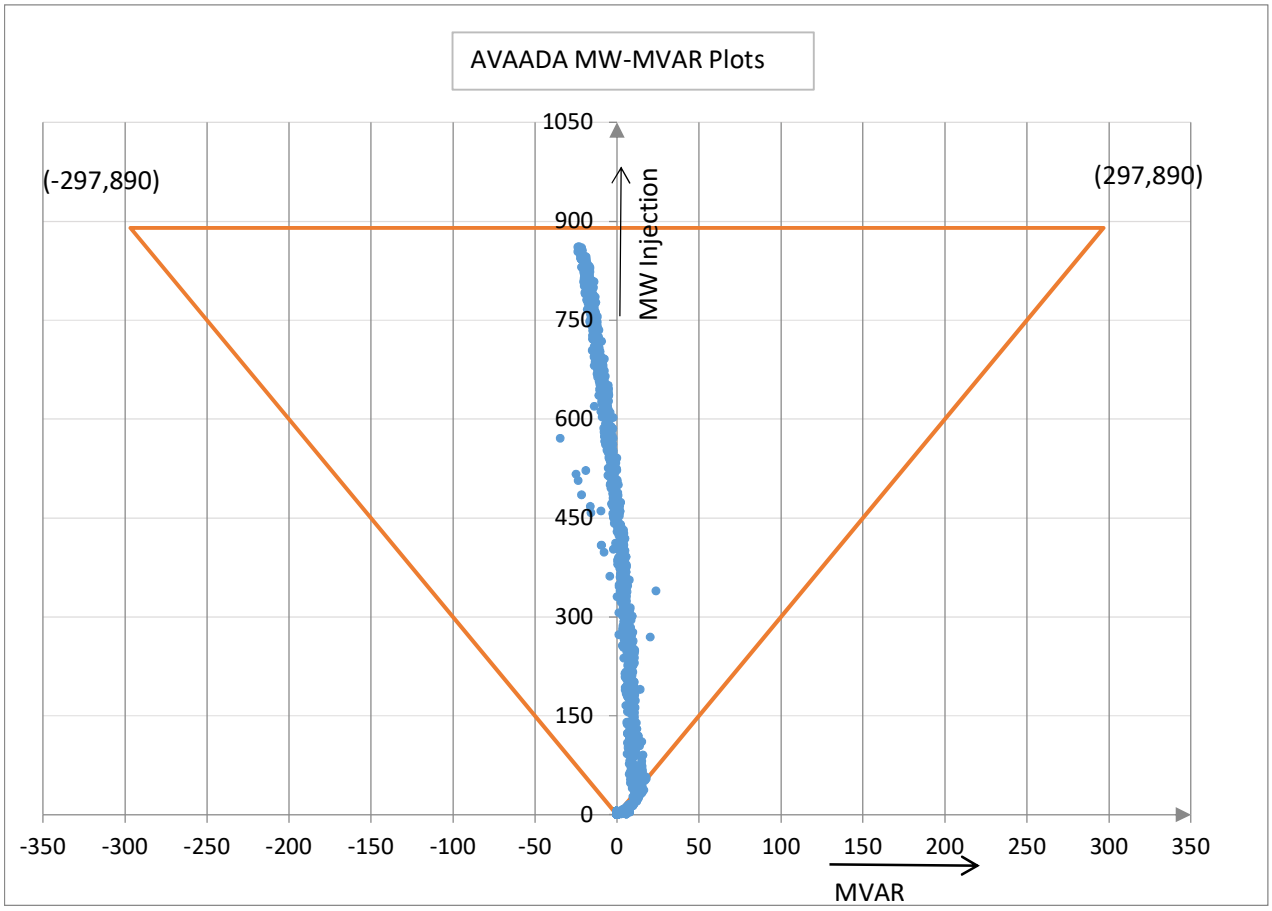

AZR41 MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

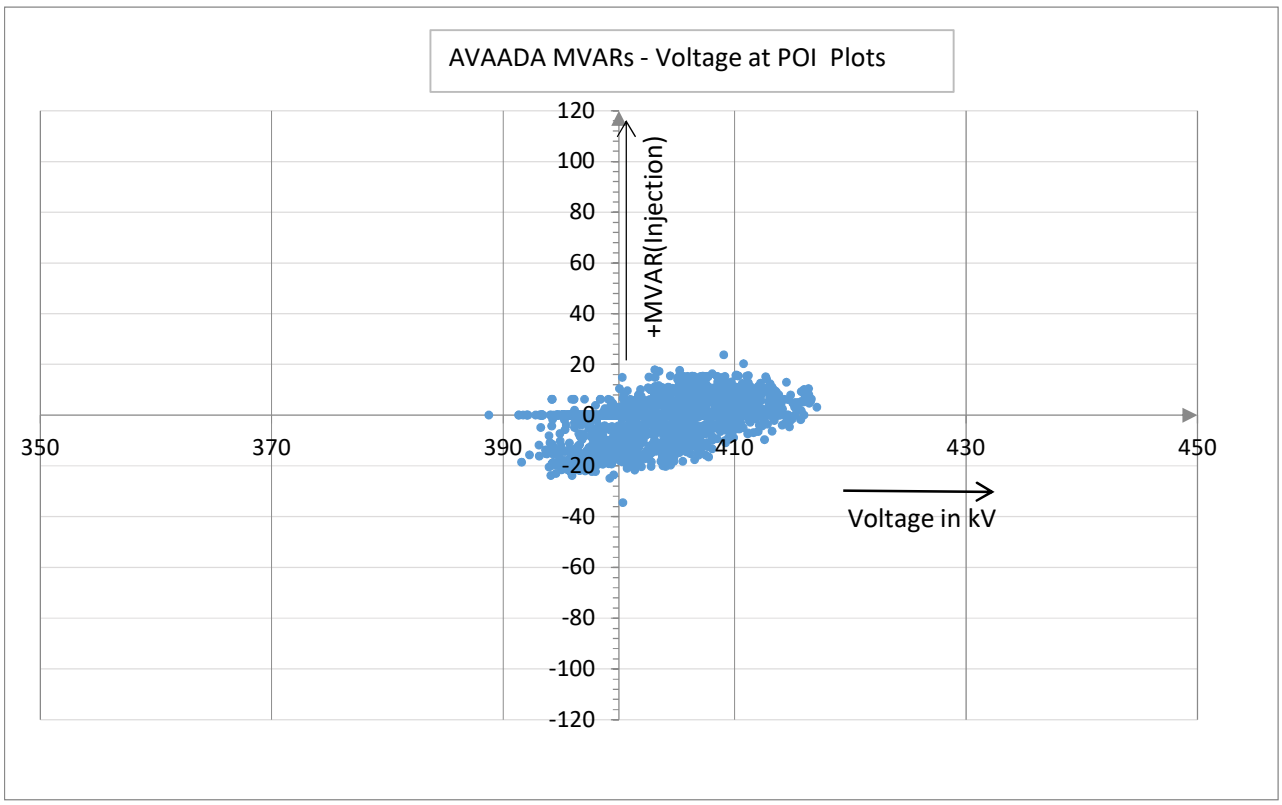

AZRMP MW-MVAR Plots
(-83,250)
(83,250)
MW Injection
MVAR
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-100
-80
-60
-40
-20
0
20
40
60
80
100

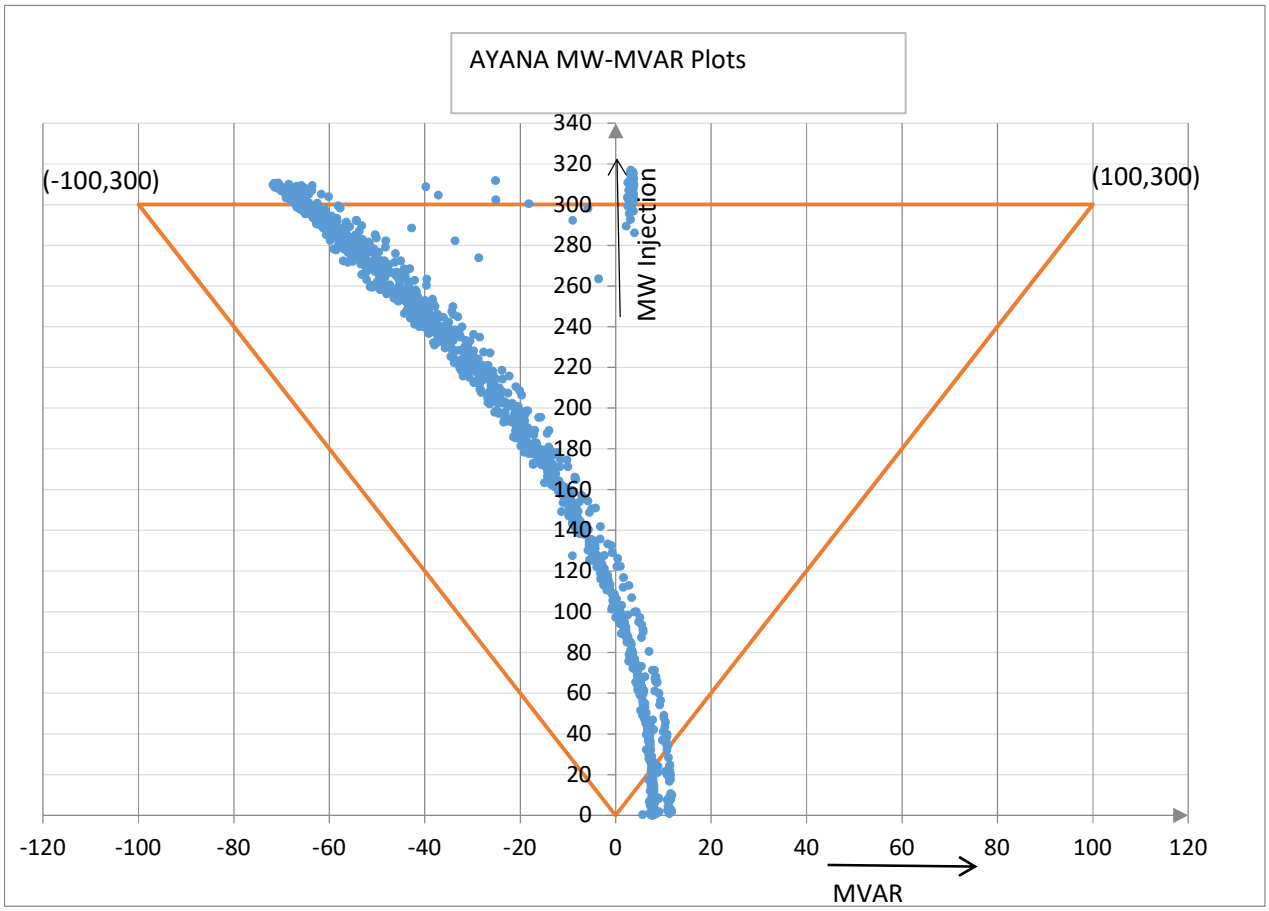

AZRMP MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

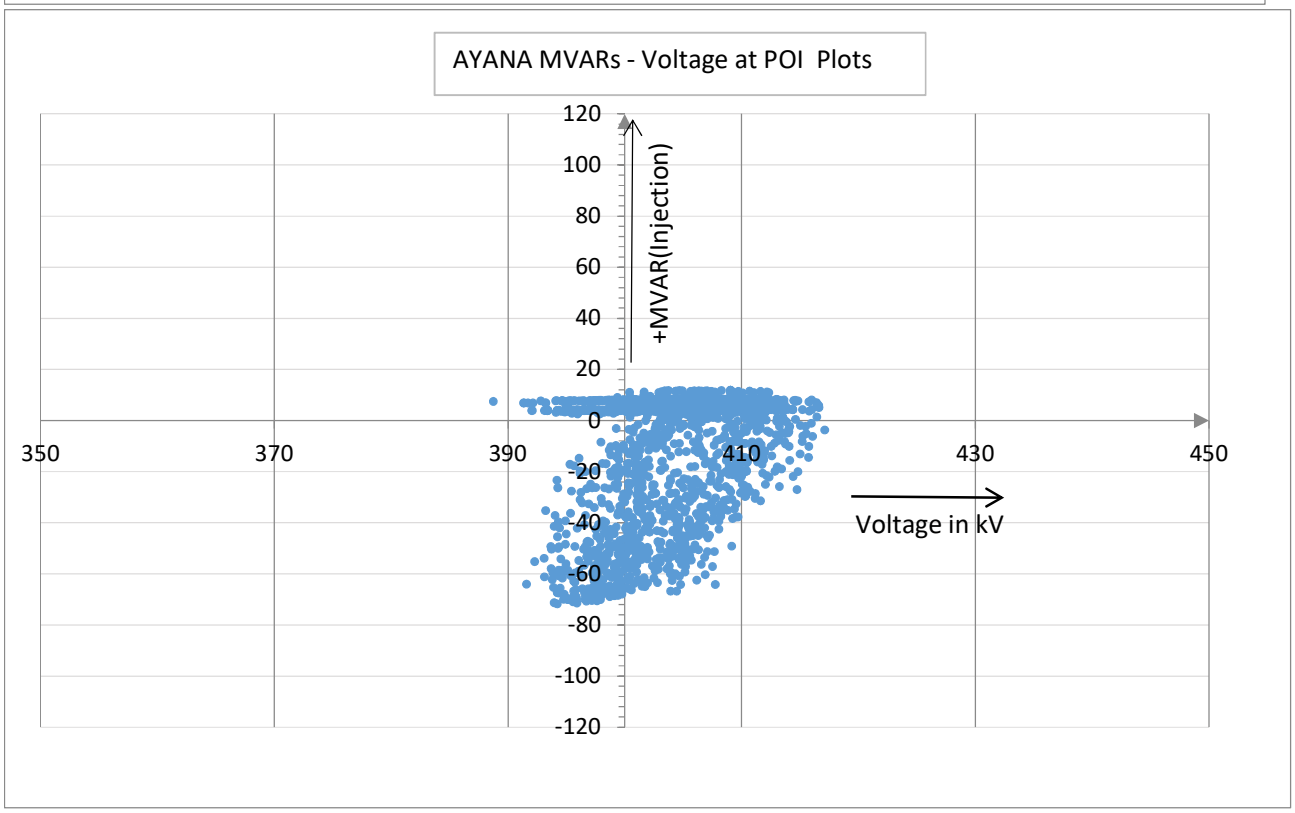

APTFL MW-MVAR Plots
(-43,130)
(43,130)
MW Injection
MVAR
150
130
110
90
70
50
30
10
-30
-50
-60
-40
-20
-10
0
20
40
60

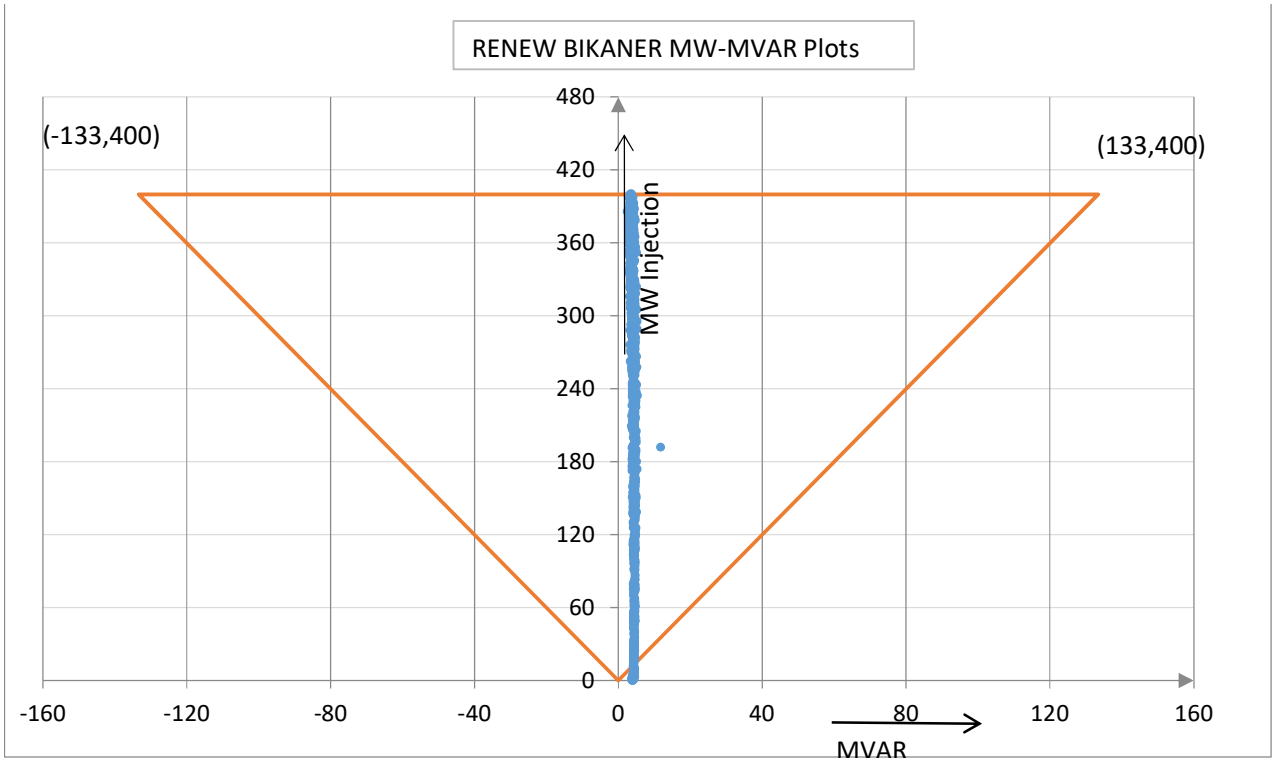

APTFL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

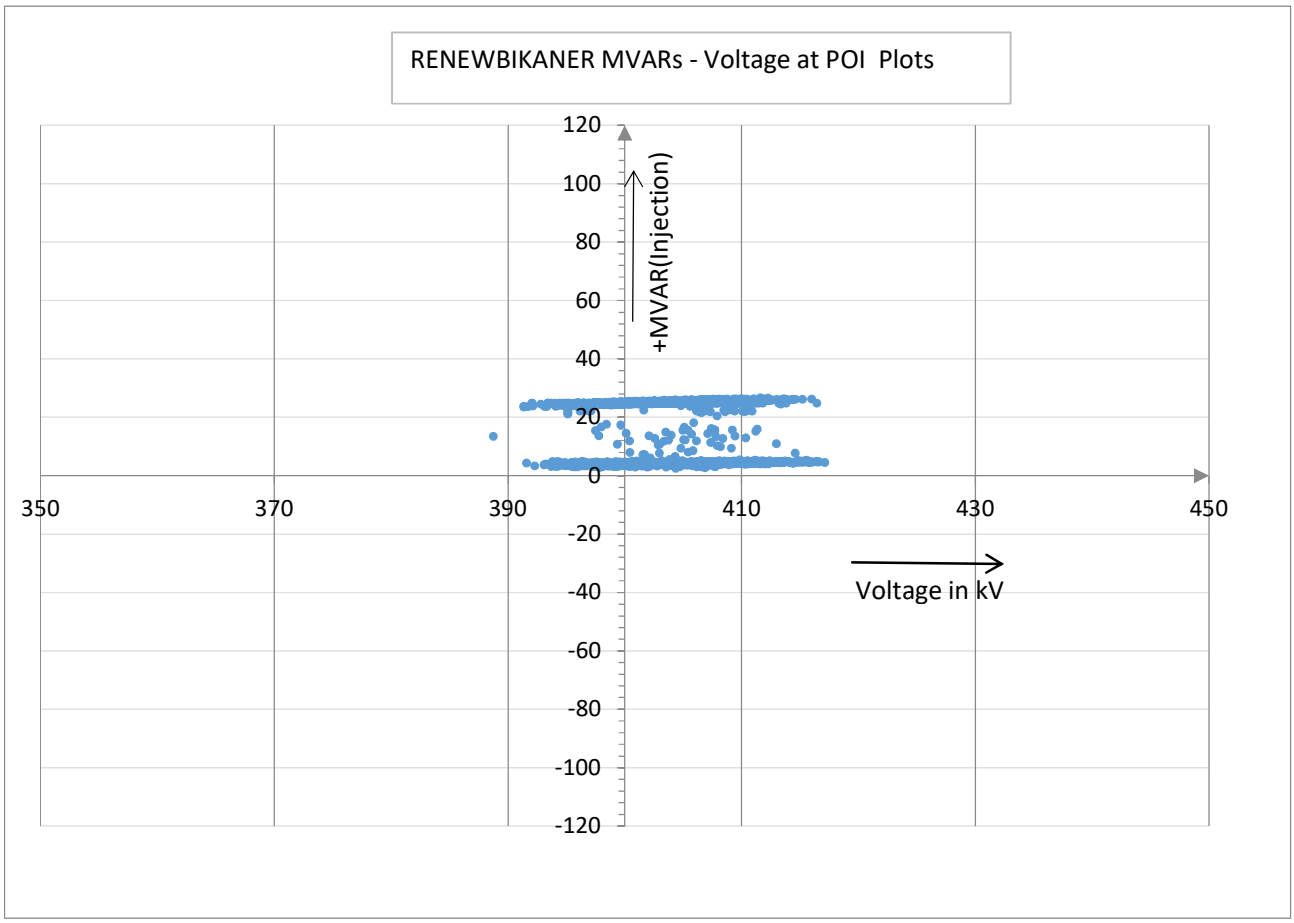

AVAADA MW-MVAR Plots
(-297,890)
(297,890)
MW Injection
MVAR
1050
900
750
600
450
300
150
0
-350
-300
-250
-200
-150
-100
-50
0
50
100
150
200
250
300
350

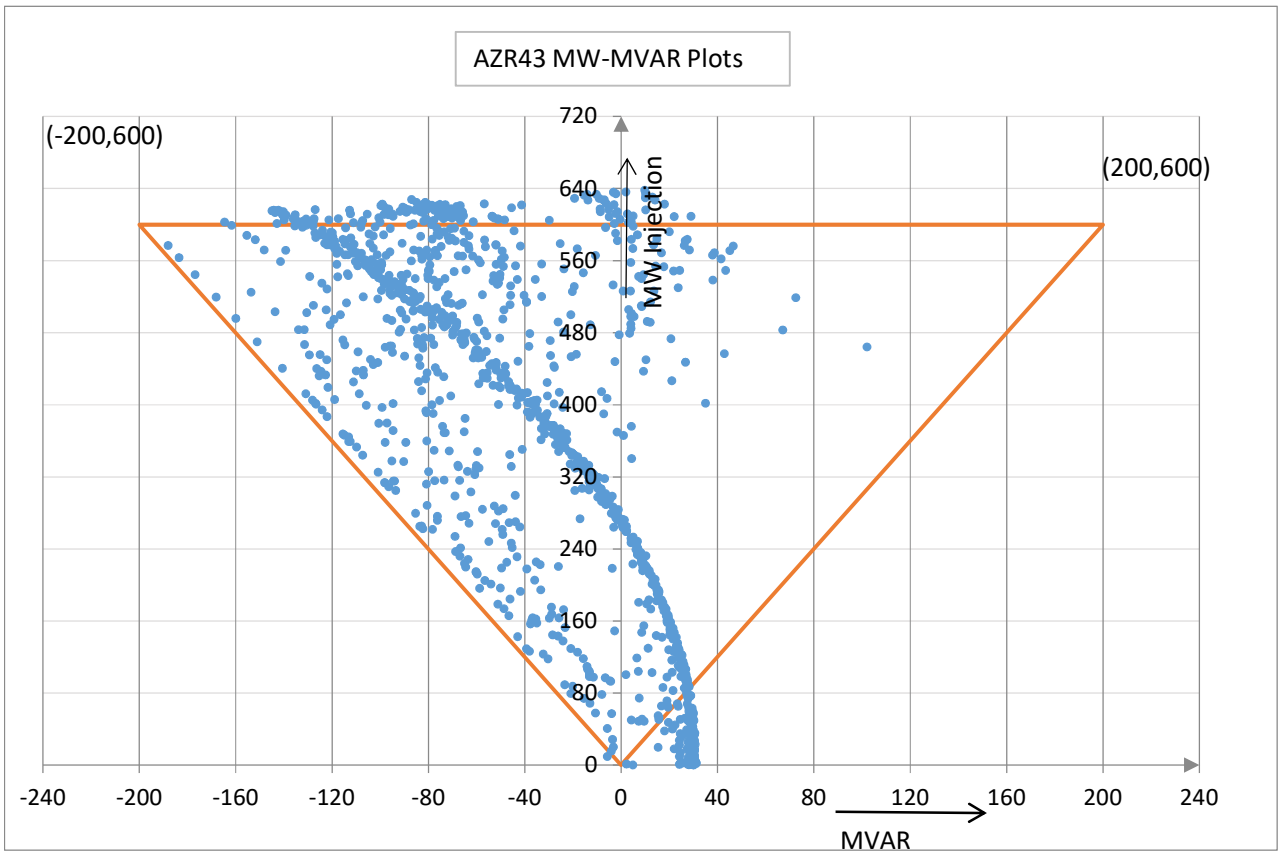

AVAADA MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
350
370
390
410
430
450

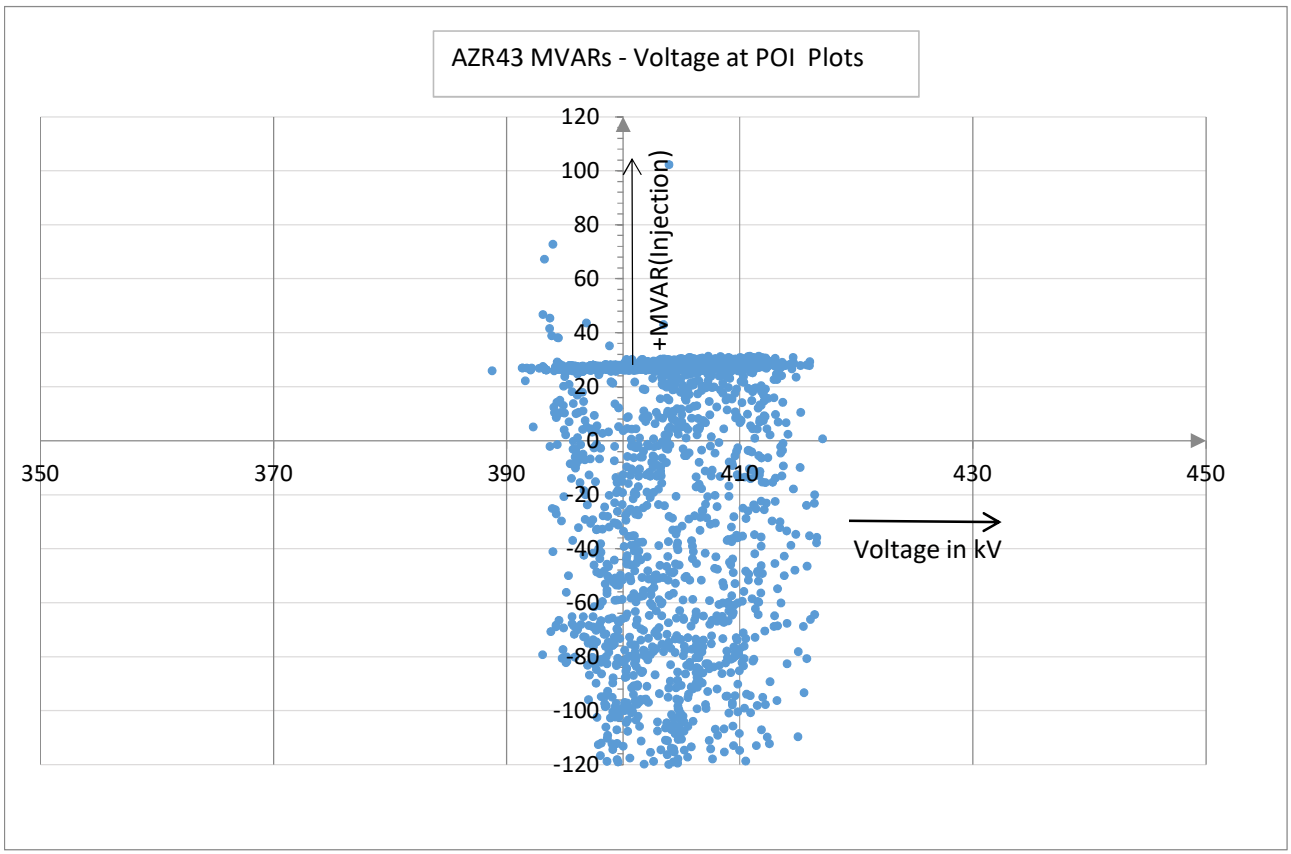

AYANA MW-MVAR Plots
(-100,300)
(100,300)
MW Injection
MVAR
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

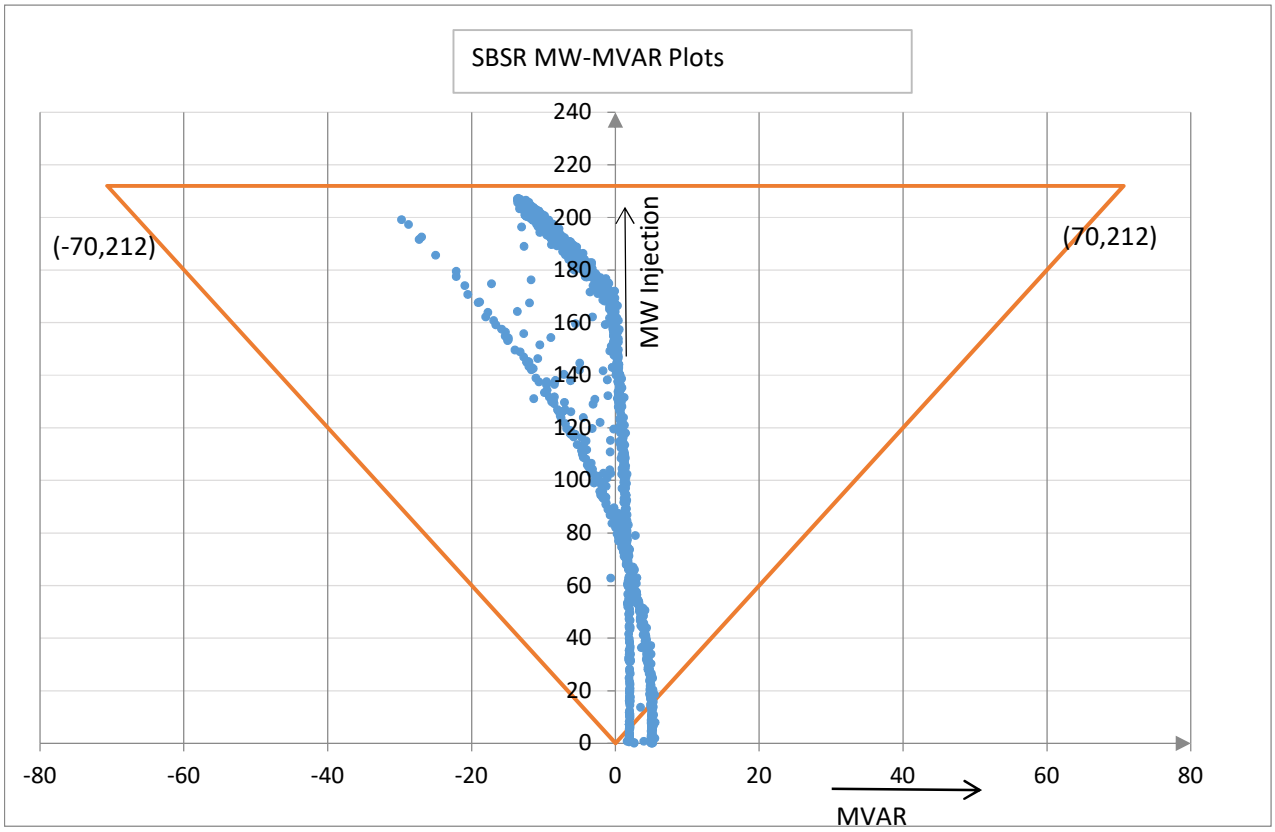

AYANA MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
350
370
390
410
430
450

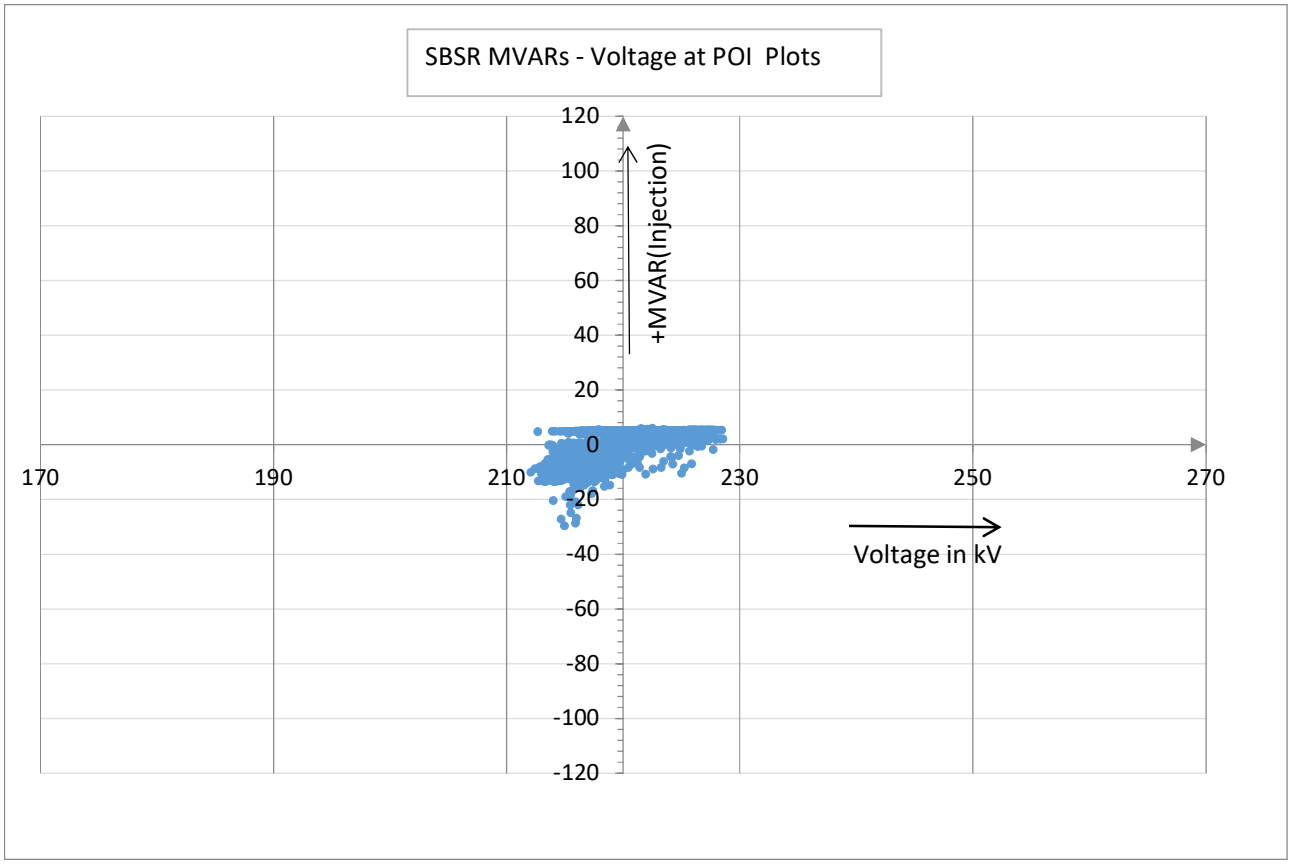

RENEW BIKANER MW-MVAR Plots
(-133,400)
(133,400)
480
420
360
300
240
180
120
60
0
MW Injection
-160
-120
-80
-40
0
40
80
120
160
MVAR

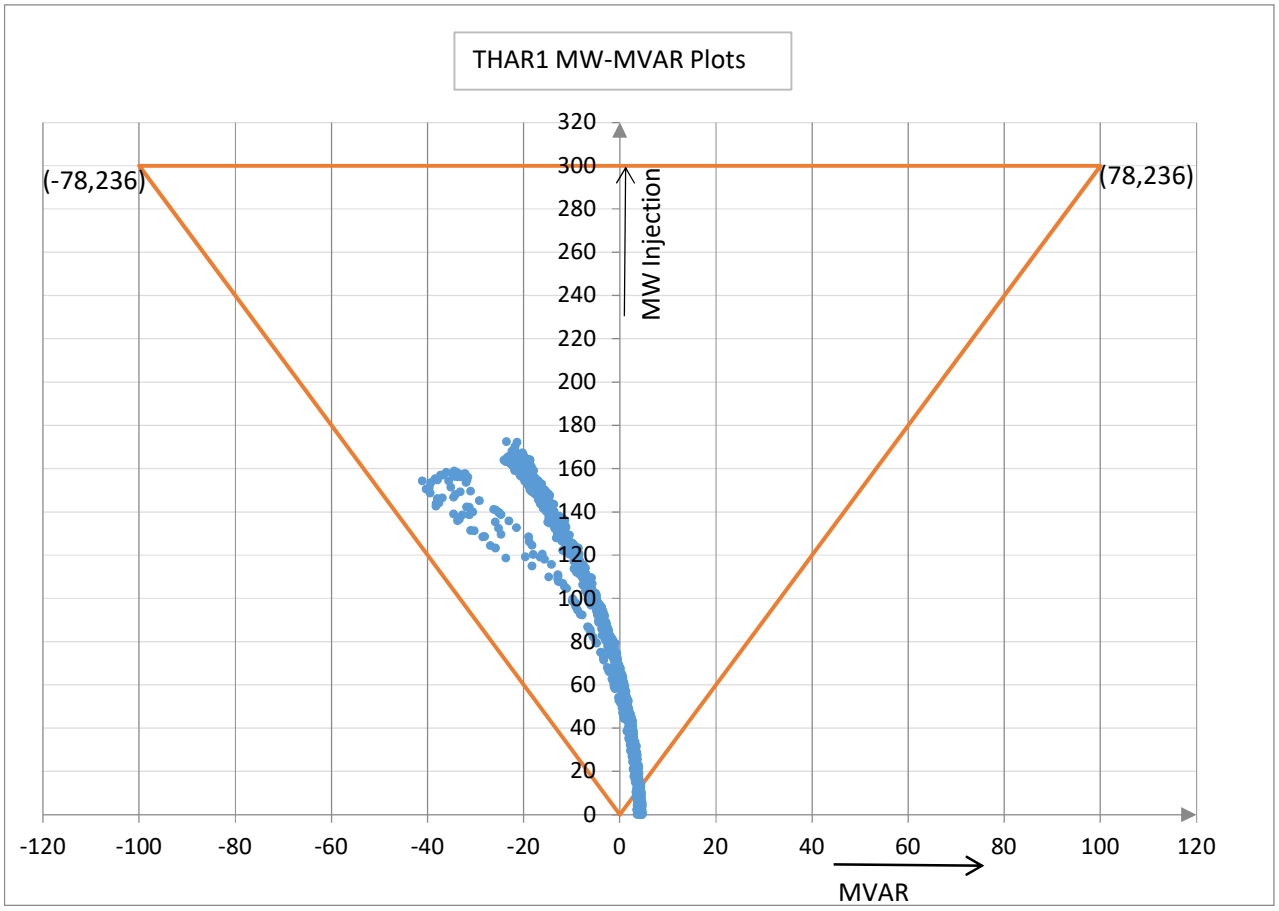

RENEWBIKANER MVARs - Voltage at POI Plots
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
+MVAR(Injection)
350
370
390
410
430
450
Voltage in kV

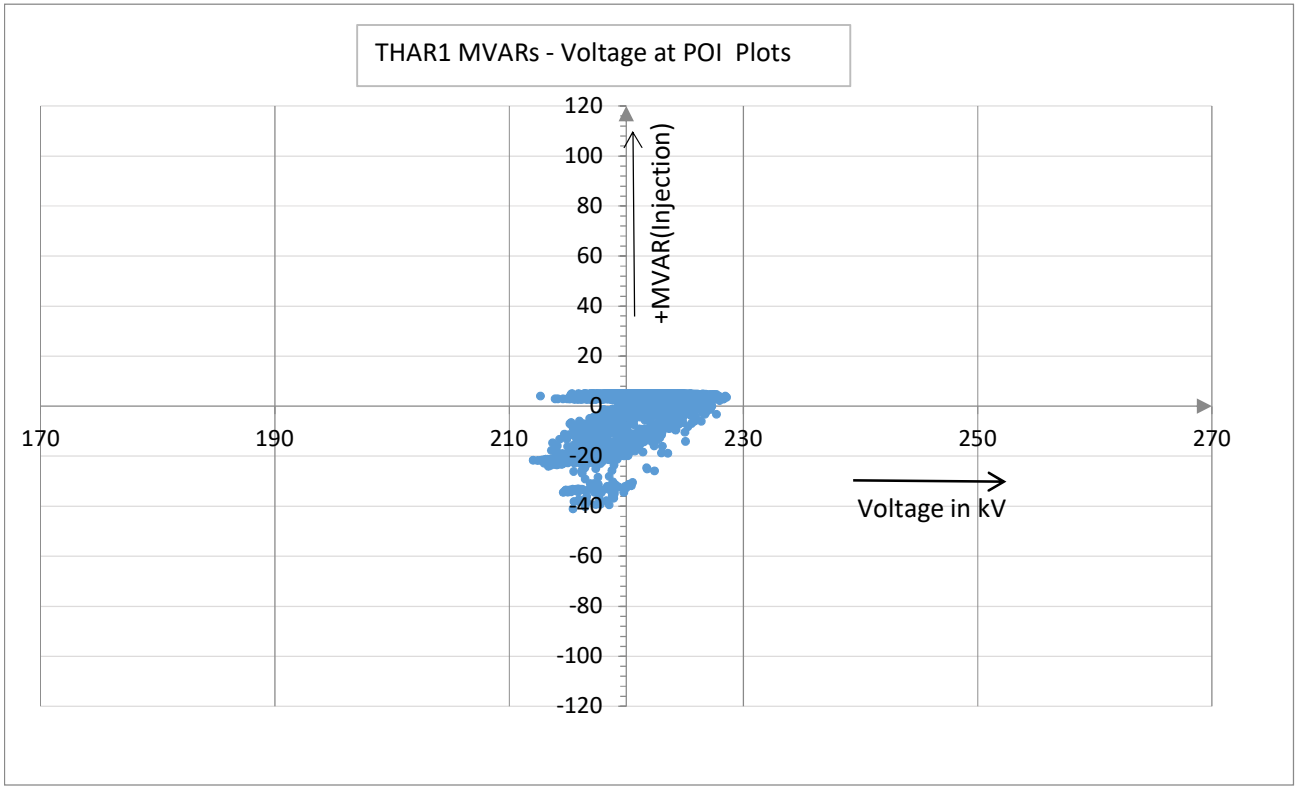

AZR43 MW-MVAR Plots
(-200,600)
(200,600)
MW Injection
MVAR
720
640
560
480
400
320
240
160
80
0
-240
-200
-160
-120
-80
-40
0
40
80
120
160
200
240

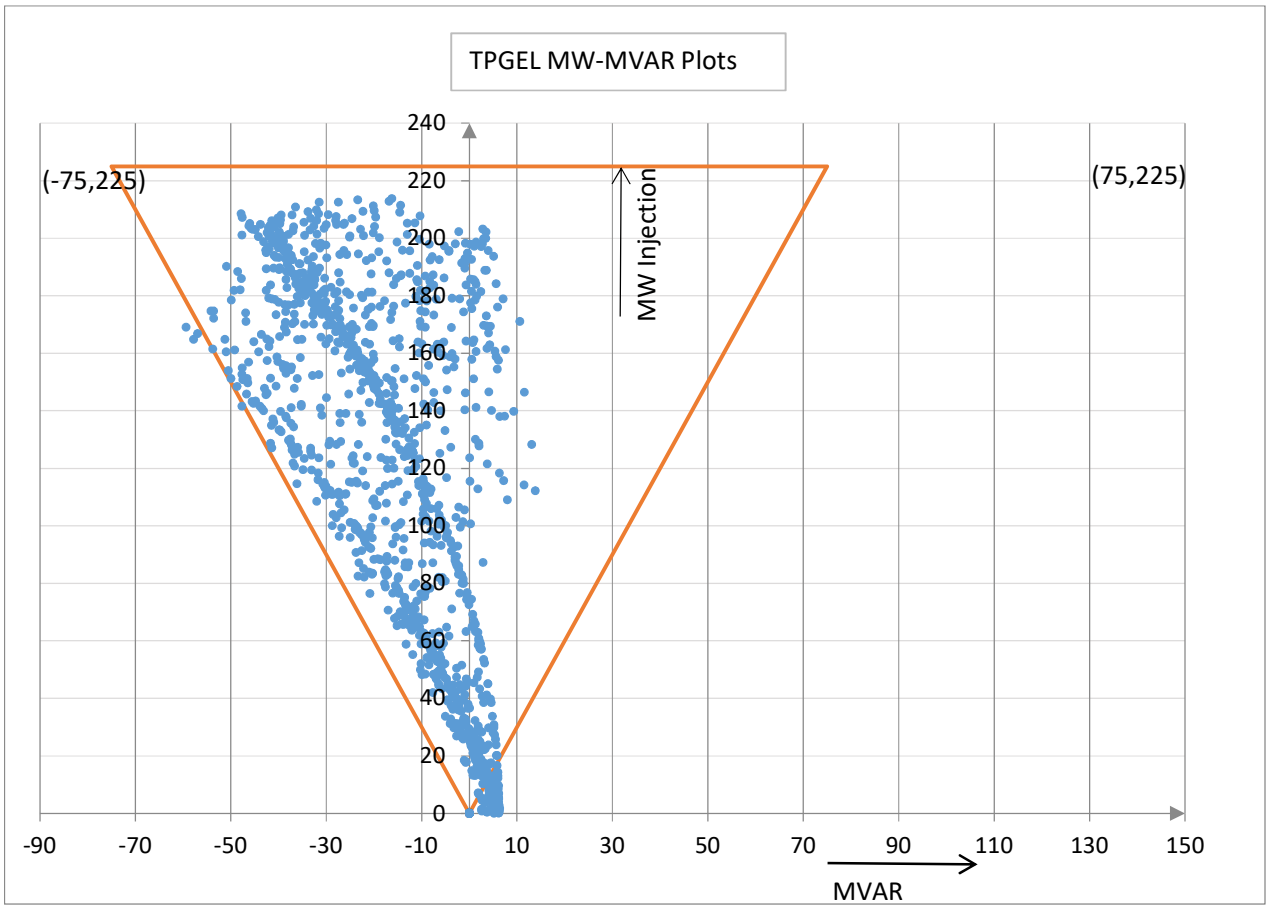

AZR43 MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
350
370
390
410
430
450

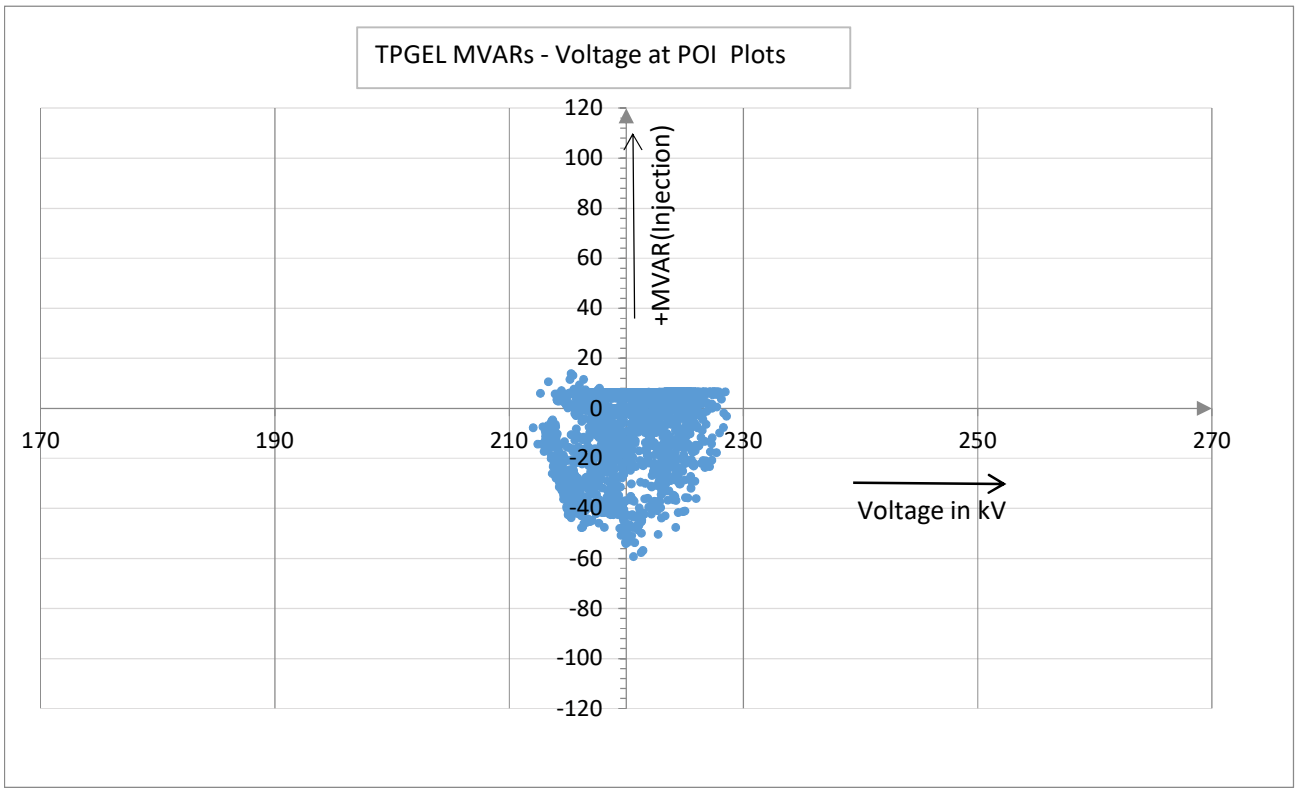

SBSR MW-MVAR Plots
240
220
200
180
160
140
120
100
80
60
40
20
0
-80
-60
-40
-20
0
20
40
60
80
MW Injection
MVAR
(-70,212)
(70,212)

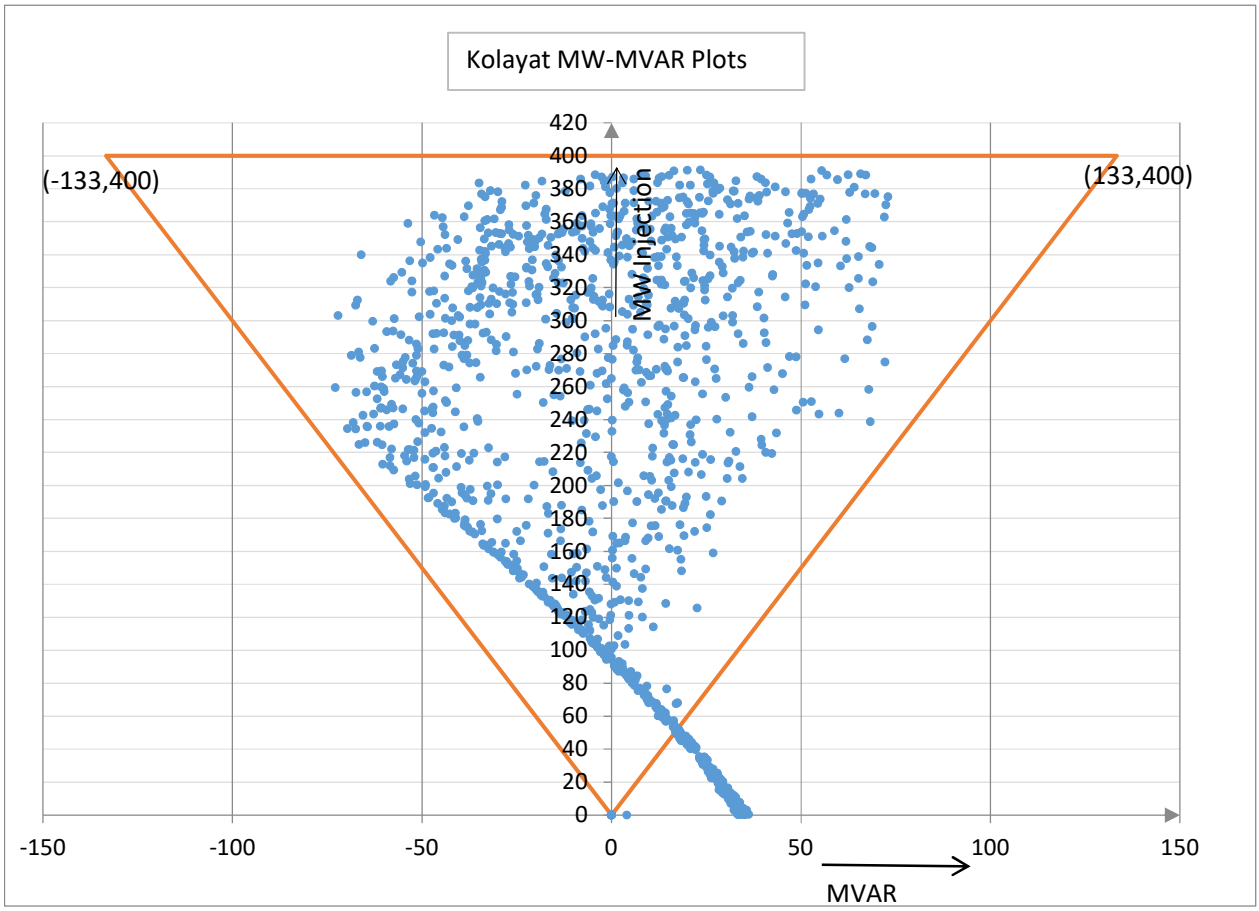

SBSR MVARs - Voltage at POI Plots
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270
+MVAR(Injection)
Voltage in kV

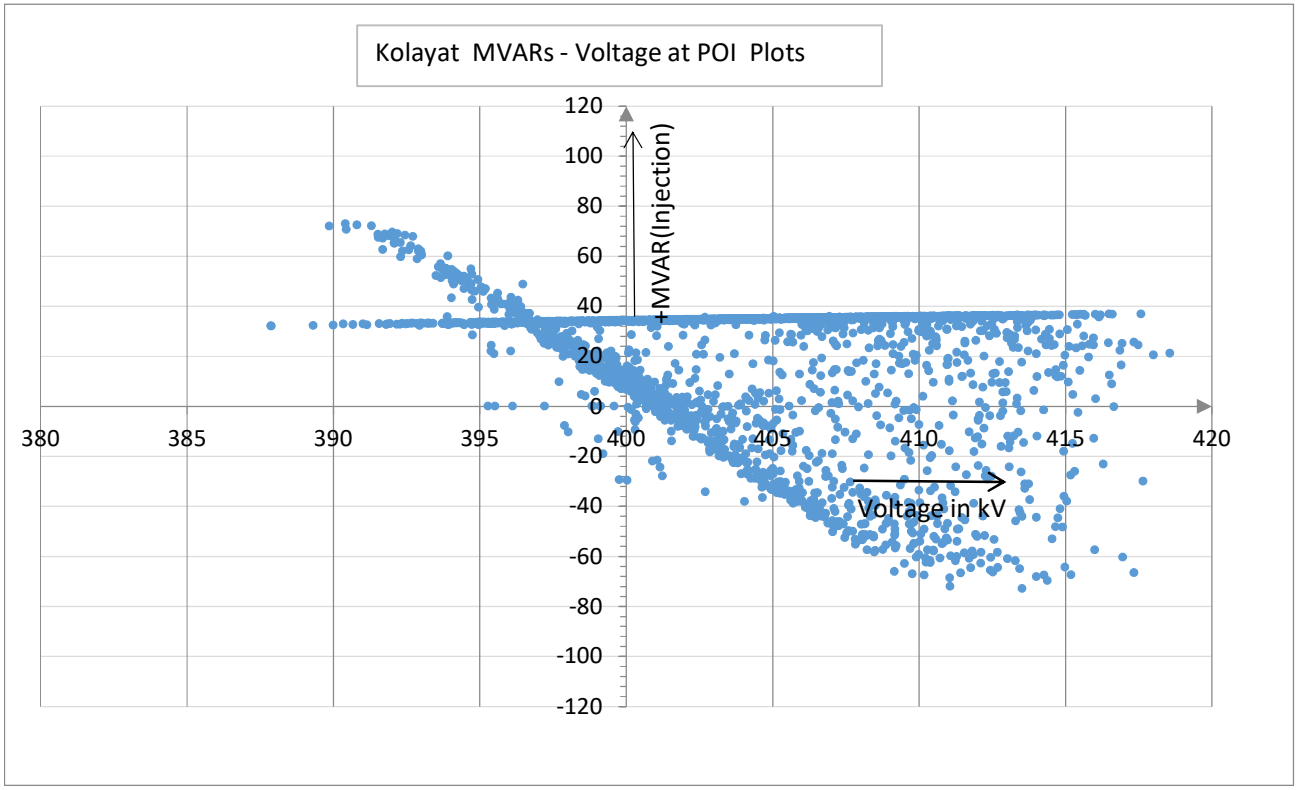

THAR1 MW-MVAR Plots
(-78,236)
(78,236)
MW Injection
MVAR
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120

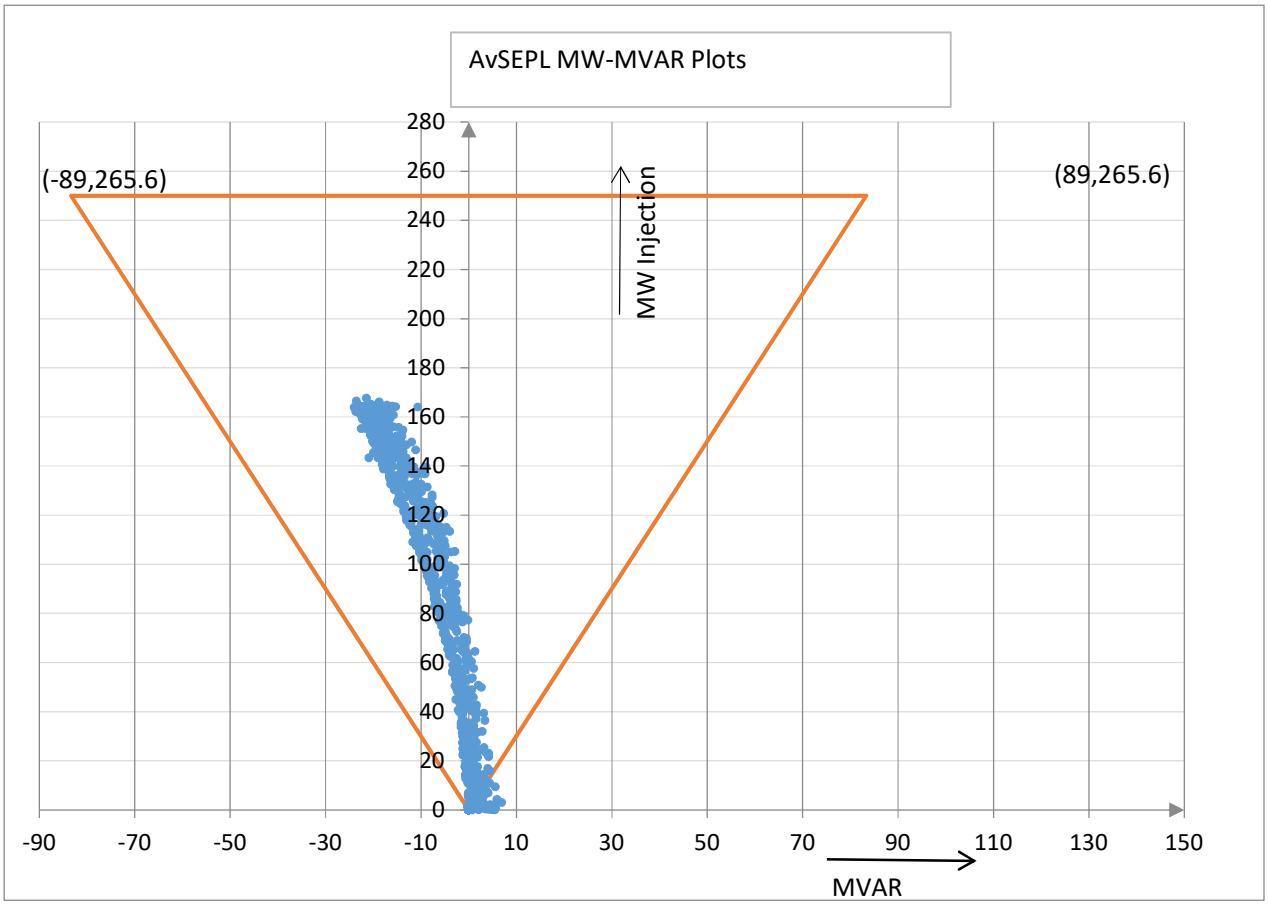

THAR1 MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

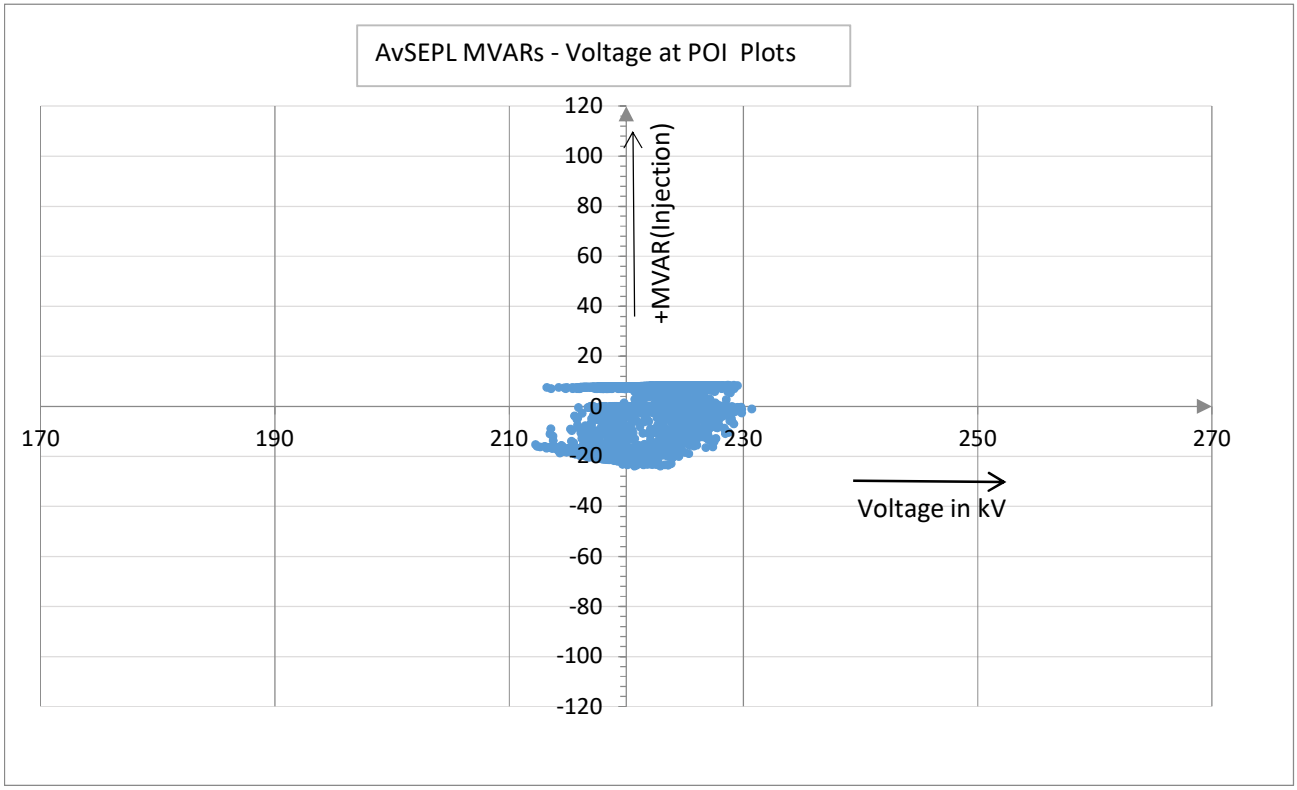

TPGEL MW-MVAR Plots
(-75,225)
(75,225)
MW Injection
MVAR
240
220
200
180
160
140
120
100
80
60
40
20
0
-90
-70
-50
-30
-10
10
30
50
70
90
110
130
150

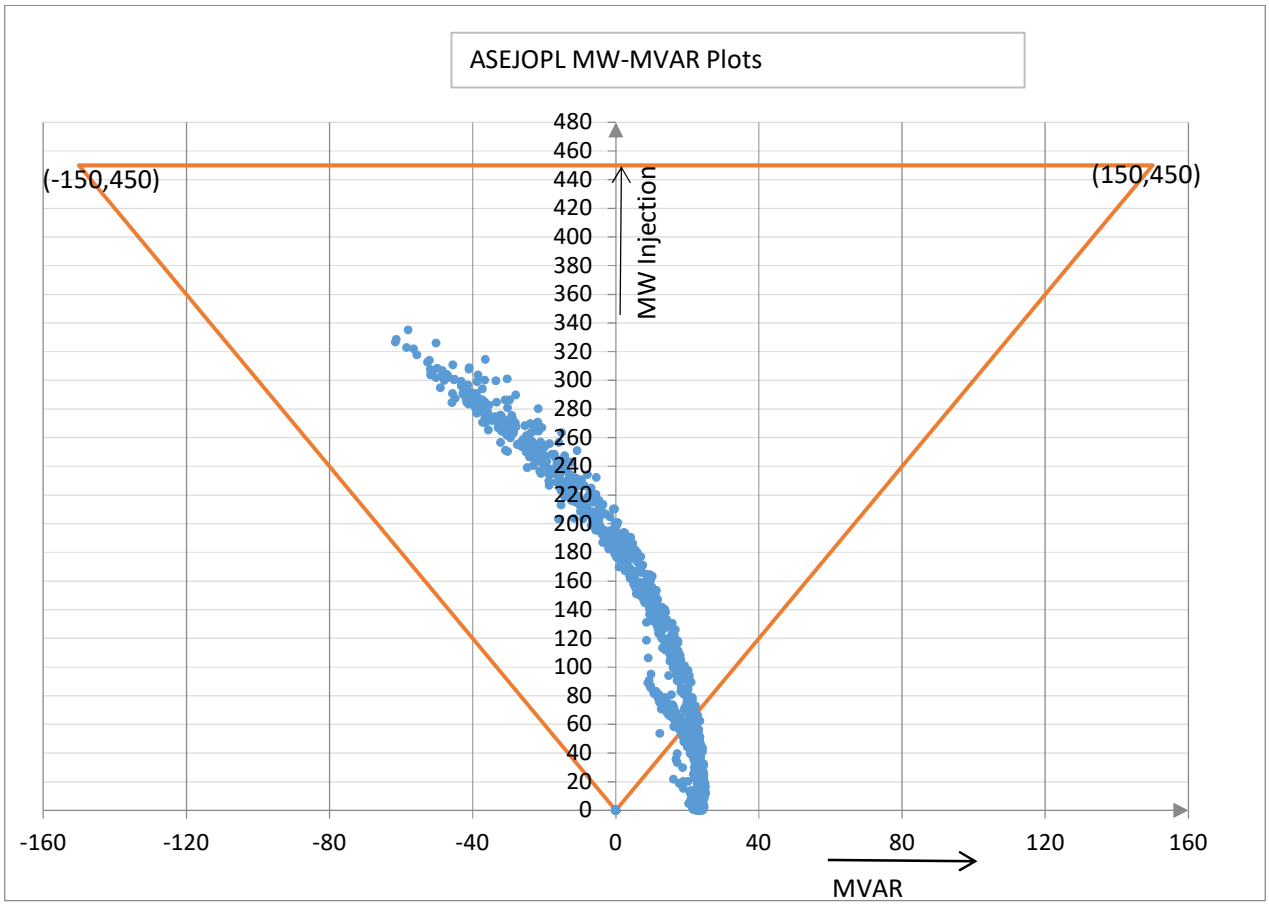

TPGEL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270

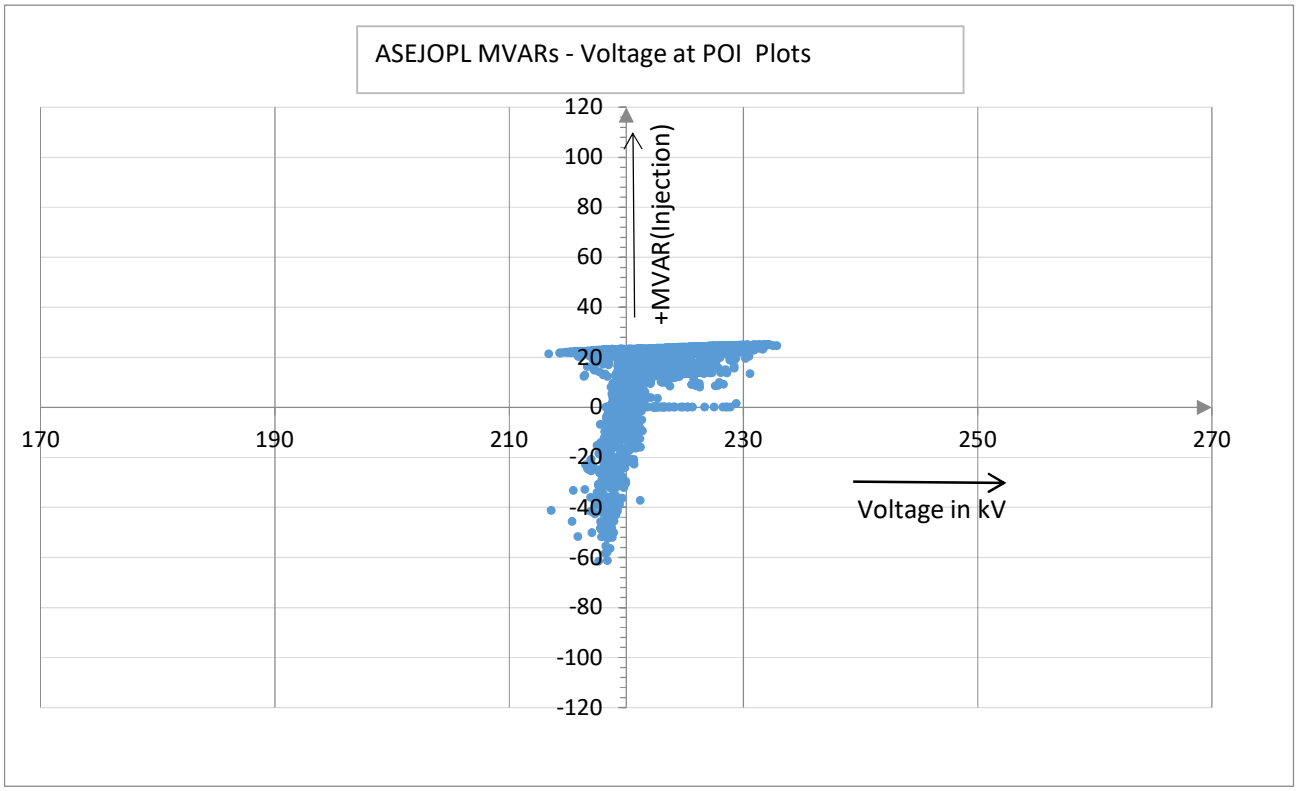

Kolayat MW-MVAR Plots
(-133,400)
(133,400)
MW Injection
MVAR
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-150
-100
-50
0
50
100
150


Kolayat MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
380
385
390
395
400
405
410
415
420


AvSEPL MW-MVAR Plots
(-89,265.6)
(89,265.6)
MW Injection
MVAR
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-90
-70
-50
-30
-10
10
30
50
70
90
110
130
150


AvSEPL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270


ASEJOPL MW-MVAR Plots
(-150,450)
(150,450)
MW Injection
MVAR
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-160
-120
-80
-40
0
40
80
120
160


ASEJOPL MVARs - Voltage at POI Plots
+MVAR(Injection)
Voltage in kV
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
170
190
210
230
250
270