सत्यमेव जयते

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

विषय: प्रचालन समन्वय उप-समिति की 224वीं बैठक की कार्यसूची।

Subject: Agenda of the 224th OCC meeting.

प्रचालन समन्वय उप-समिति की **224वीं** बैठक दिनांक **18.10.2024** (**सुबह 10:00)** जयपुर, राजस्थान में होगी। बैठक की मेजबानी जेएसडब्ल्यू हाइड्रो एनर्जी लिमिटेड द्वारा की जा रही है। उक्त बैठक की कार्यसूची संलग्न है। कृपया बैठक में भाग लेने की कृपा करें।

यह अनुरोध किया जाता है कि प्रतिभागी (**प्रत्येक सदस्य संगठन से एक**) एनआरपीसी सचिवालय को अपनी यात्रा का विवरण एक्सेल शीट लिंक पर निर्धारित प्रारूप में 15.10.2024 तक सूचित कर सकते हैं।

The **224th** meeting of the Operation Co-ordination sub-committee (**OCC**) will be held on **18.10.2024** (**10:00 A.M.)** at Jaipur, Rajasthan. Meeting is being hosted by JSW Hydro Energy Limited. Agenda for the same is attached. Kindly make it convenient to attend the meeting.

It is requested that participants (**preferably one from each organization**) may intimate their journey details to NRPC Secretariat latest by 15.10.2024 in prescribed format at excel sheet link enclosed in the mail.

Nodal officer(s) for facilitating meeting are as below:

Name	Designation	Contact No	Email
Sh. Anurag Agarwal	GM	+91-9004046998	agarwal.anurag@jsw.in
Sh. Anshuman Purohit	AGM	+91-9772205231	anshuman.purohit@jsw.in

Signed by Dharmendra Kumar Meena
Date: 11-10-2024 15:52:04
(डी. के. मीना)
अधीक्षण अभियंता (प्रचालन)

List of addressee (via mail)			
OCC Members for FY 2024-25			
S. No.	**OCC Member**	**Category**	**E-mail**
1	NLDC	National Load Despatch Centre	nomination awaited rk.porwal@grid-india.in
2	NRLDC	Northern Regional Load Despatch Centre	somara.lakra@grid-india.in
3	CTUIL	Central Transmission Utility	kashish@powergrid.in
4	PGCIL	Central Government owned Transmission Company	rtamc.nr1@powergrid.in rtamcjammu@powergrid.in cpcc.nr3@powergrid.in
5	NTPC	Central Generating Company	hrastogi@ntpc.co.in
6	BBMB		powerc@bbmb.nic.in
7	THDC		ravindrasrana@thdc.co.in
8	SJVN		sjvn.cso@sjvn.nic.in
9	NHPC		surendramishra@nhpc.nic.in
10	NPCIL		df@npcil.co.in
11	Delhi SLDC	State Load Despatch Centre	gmsldc@delhisldc.org
12	Haryana SLDC		cesocomml@hvpn.org.in
13	Rajasthan SLDC		ce.ld@rvpn.co.in
14	Uttar Pradesh SLDC		cepso@upsldc.org
15	Uttarakhand SLDC		se_sldc@ptcul.org
16	Punjab SLDC		ce-sldc@pstcl.org
17	Himachal Pradesh SLDC		cehpsldc@gmail.com
18	DTL	State Transmission Utility	bl.gujar@dtl.gov.in
19	HVPNL		cetspkl@hvpn.org.in
20	RRVPNL		ce.ppm@rvpn.co.in
21	UPPTCL		smart.saxena@gmail.com
22	PTCUL		ce_oandmk@ptcul.org
23	PSTCL		ce-tl@pstcl.org
24	HPPTCL		gmprojects.tcl@hpmail.in
25	IPGCL	State Generating Company	ncsharma@ipgcl-ppcl.nic.in
26	HPGCL		seom2.rgtpp@hpgcl.org.in
27	RRVUNL		ce.ppmcit@rrvun.com
28	UPRVUNL		cgm.to@uprvunl.org
29	UJVNL		gm_engg_ujvn@yahoo.co.in
30	HPPCL		gm_generation@hppcl.in
31	PSPCL	State Generating Company & State owned Distribution Company	ce-ppr@pspcl.in
32	UHBVN	State owned Distribution Company (alphabetical	nomination awaited (md@uhbvn.org.in)

33	Jodhpur Vidyut Vitran Nigam Ltd.	rotaional basis/nominated by state govt.)	addlcehqjdvvnl@gmail.com
34	Paschimanchal Vidyut Vitaran Nigam Ltd.		nomination awaited (md@pvvnl.org)
35	UPCL		cgmupcl@yahoo.com
36	HPSEB		cesysophpsebl@gmail.com
37	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	sanjay.bhargava@tatapower.com
38	Aravali Power Company Pvt. Ltd		amit.hooda01@gmail.com
39	Apraave Energy Ltd.,		rajneesh.setia@apraava.com
40	Talwandi Sabo Power Ltd.		ravinder.thakur@vedanta.co.in
41	Nabha Power Limited		Durvesh.Yadav@larsentoubro.com
42	MEIL Anpara Energy Limited		arun.tholia@meilanparapower.com
43	Rosa Power Supply Company Ltd		Suvendu.Dey@relianceada.com
44	Lalitpur Power Generation Company Ltd		avinashkumar.ltp@lpgcl.com
45	MEJA Urja Nigam Ltd.		rsjuneja@ntpc.co.in
46	Adani Power Rajasthan Limited		manoj.taunk@adani.com
47	JSW Energy Ltd. (KWHEP)		roshan.zipta@jsw.in
48	TATA POWER RENEWABLE	IPP having less than 1000 MW installed capacity (alphabetical rotational basis)	nomination awaited (dhmahabale@tatapower.com)
49	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.	sojpdd@gmail.com
50	UT of Ladakh		cepdladakh@gmail.com
51	UT of Chandigarh		elop2-chd@nic.in
52	Noida Power Company limited	Private Distribution Company in region (alphabetical rotational basis)	nomination awaited (ssrivastava@noidapower.com)
53	Fatehgarh Bhadla Transmission Limited	Private transmission licensee (nominated by central govt.)	nomination awaited (nitesh.ranjan@adani.com)
54	NTPC Vidyut Vyapar Nigam Ltd.	Electricity Trader (nominated by central govt.)	nomination awaited (ceonvvn@ntpc.co.in)

उत्तर क्षेत्रीय विद्युत समिति

NORTHERN REGIONAL POWER COMMITTEE

Agenda of the

224th meeting of

Operational Co-ordination Sub-Committee

of

Northern Regional Power Committee

Date: 18th October 2024

Time: 10:00 AM

Venue: Jaipur, Rajasthan

Contents

खण्ड-क: उ.क्षे.वि.स. Part-A: NRPC

A.1. Confirmation of Minutes

223rd OCC meeting was held on 13.09.2024. Minutes of the meeting were issued vide letter dt. 04.10.2024. No observations received from utilities.

Decision required from Forum:

Forum may approve the minutes of 223rd OCC meeting.

A.2. Status of action taken on decisions of 223rd OCC meeting of NRPC

A.2.1. Status of action taken on decisions of 223rd NRPC meeting is attached as **Annexure- A.0**.

A.3. Review of Grid operations

A.3.1. **Power Supply Position (Provisional) for September 2024**

Anticipated Power Supply Position v/s Actual Power Supply Position (Provisional) of Northern Region during the month of September-2024 is as under:

State / UT	Req. / Avl.	Energy (MU)			Peak (MW)		
		Anticipated	Actual	% Variation	Anticipated	Actual	% Variation
CHANDIGARH	(Avl)	210	189	-10.1%	390	397	1.8%
	(Req)	196	189	-3.7%	444	397	-10.6%
DELHI	(Avl)	4969	3546	-28.6%	7100	6780	-4.5%
	(Req)	3900	3546	-9.1%	7100	6785	-4.4%
HARYANA	(Avl)	7430	6455	-13.1%	12507	12414	-0.7%
	(Req)	7263	6455	-11.1%	13423	12414	-7.5%
HIMACHAL PRADESH	(Avl)	1279	1073	-16.2%	1962	1884	-4.0%
	(Req)	1128	1077	-4.5%	1830	1884	3.0%
J&K and LADAKH	(Avl)	1680	1565	-6.8%	3060	2836	-7.3%
	(Req)	1624	1574	-3.1%	3485	3236	-7.2%
PUNJAB	(Avl)	8300	8585	3.4%	14200	15310	7.8%
	(Req)	8600	8585	-0.2%	15712	15310	-2.6%
RAJASTHAN	(Avl)	9180	8886	-3.2%	18360	16292	-11.3%
	(Req)	9200	8902	-3.2%	17200	16292	-5.3%
UTTAR PRADESH	(Avl)	17100	14400	-15.8%	31500	29347	-6.8%
	(Req	16800	14404	-14.3%	31500	29347	-6.8%

	)						
UTTARAKHAND	(Avl)	1371	1422	3.7%	2320	2489	7.3%
	(Req)	1398	1425	1.9%	2400	2564	6.8%
NORTHERN REGION	(Avl)	51519	46121	-10.5%	83600	80700	-3.5%
	(Req)	50109	46157	-7.9%	89700	80700	-10.0%

As per above, negative / significant variation (≥5%) in Actual Power Supply Position (Provisional) vis-à-vis Anticipated figures is observed for the month of September-2024 in terms of Energy Requirement for Chandigarh, Delhi, Haryana, HP, UTs of J&K and Ladakh, Punjab, Rajasthan & UP and in terms of Peak Demand similar variation is noted for Chandigarh, Delhi, Haryana, UTs of J&K and Ladakh, Punjab, Rajasthan, UP, and Uttarakhand. These states/UTs are requested to submit reason for such variations so that the same can be deliberated in the meeting.

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

A.4. Maintenance Programme of Generating Units and Transmission Lines

A.4.1. Maintenance Programme for Generating Units

The meeting on proposed maintenance programme for Generating Units for the month of November-2024 is scheduled on 16-October-2024 via Video Conferencing

A.4.2. Outage Programme for Transmission Elements

The meeting on proposed outage programme of Transmission elements for the month of November-2024 is scheduled on 16-October-2024 via Video conferencing.

A.5. Planning of Grid Operation

A.5.1. Anticipated Power Supply Position in Northern Region for November 2024

The Anticipated Power Supply Position in Northern Region for November 2024 is as under:

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	110	310	No Revision submitted
	Requirement	118	302	
	Surplus / Shortfall	-8	8	
	% Surplus / Shortfall	-6.8%	2.7%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Availability	2820	5280	
DELHI	Requirement	2083	4080	No Revision submitted
	Surplus / Shortfall	737	1200	
	% Surplus / Shortfall	35.4%	29.4%	
HARYANA	Availability	5910	10180	No Revision submitted
	Requirement	4356	8336	
	Surplus / Shortfall	1554	1844	
	% Surplus / Shortfall	35.7%	22.1%	
HIMACHAL PRADESH	Availability	1012	1930	07-Oct-24
	Requirement	1070	2036	
	Surplus / Shortfall	-58	-106	
	% Surplus / Shortfall	-5.4%	-5.2%	
J&K and LADAKH	Availability	1140	3000	No Revision submitted
	Requirement	1832	3431	
	Surplus / Shortfall	-692	-431	
	% Surplus / Shortfall	-37.8%	-12.6%	
PUNJAB	Availability	5960	10480	No Revision submitted
	Requirement	4424	8006	
	Surplus / Shortfall	1536	2474	
	% Surplus / Shortfall	34.7%	30.9%	
RAJASTHAN	Availability	8110	17270	No Revision submitted
	Requirement	10398	17238	
	Surplus / Shortfall	-2288	32	
	% Surplus / Shortfall	-22.0%	0.2%	
UTTAR PRADESH	Availability	9750	19800	07-Oct-24
	Requirement	9600	19800	
	Surplus / Shortfall	150	0	
	% Surplus / Shortfall	1.6%	0.0%	
UTTARAKHAND	Availability	1200	2200	07-Oct-24
	Requirement	1230	2250	
	Surplus / Shortfall	-30	-50	
	% Surplus / Shortfall	-2.4%	-2.2%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Availability	36012	65600	
NORTHERN REGION	Requirement	35111	61000	
	Surplus / Shortfall	901	4600	
	% Surplus / Shortfall	2.6%	7.5%	

SLDCs are requested to update the anticipated power supply position of their respective state / UT for the month of November-2024 and submit the measures proposed to be taken to bridge the gap between demand & availability, as well to dispose-off the surplus, if any, in the prescribed format.

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

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

All utilities are requested to update the status.

A.7. NR Islanding scheme

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

Members may kindly deliberate.

Note: There would be Presentation on Grid Islanding Solutions by M/s Valiant Communications Ltd

A.8. Coal Supply Position of Thermal Plants in Northern Region

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

A.8.2 Accordingly, coal stock position of generating stations in northern region during current month (till 08th October 2024) is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
ANPARA C TPS	1200	0.70	13	11.0
ANPARA TPS	2630	0.73	13	8.4
BARKHERA TPS	90	0.56	21	19.6
DADRI (NCTPP)	1820	0.54	21	22.3
GH TPS (LEH.MOH.)	920	0.61	21	16.7
GOINDWAL SAHIB TPP	540	0.51	21	15.9

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
HARDUAGANJ TPS	1265	0.55	21	33.1
INDIRA GANDHI STPP	1500	0.65	21	36.2
KAWAI TPS	1320	0.69	21	13.1
KHAMBARKHERA TPS	90	0.44	21	22.1
KOTA TPS	1240	0.66	21	4.3
KUNDARKI TPS	90	0.43	21	24.5
LALITPUR TPS	1980	0.77	21	14.3
MAHATMA GANDHI TPS	1320	0.56	21	26.3
MAQSOODPUR TPS	90	0.56	21	19.0
MEJA STPP	1320	0.55	21	20.3
OBRA TPS	1094	0.46	21	10.3
PANIPAT TPS	710	0.69	21	20.4
PARICHHA TPS	1140	0.48	21	14.1
PRAYAGRAJ TPP	1980	0.57	21	21.6
RAJIV GANDHI TPS	1200	0.62	21	16.7
RAJPURA TPP	1400	0.80	21	17.6
RIHAND STPS	3000	0.88	13	17.9
ROPAR TPS	840	0.72	21	20.5
ROSA TPP Ph-I	1200	0.67	21	19.7
SINGRAULI STPS	2000	0.79	13	10.0
SURATGARH TPS	1500	0.62	21	3.8
TALWANDI SABO TPP	1980	0.55	21	3.5
TANDA TPS	1760	0.66	21	22.3
UNCHAHAR TPS	1550	0.65	21	14.0
UTRAULA TPS	90	0.43	21	24.3
YAMUNA NAGAR TPS	600	0.57	21	24.6
CHHABRA-I PH-1 TPP	500	0.75	21	8.7
KALISINDH TPS	1200	0.56	21	8.7
SURATGARH STPS	1320	0.28	21	7.4
CHHABRA-I PH-2 TPP	500	0.72	21	9.7
CHHABRA-II TPP	1320	0.56	21	12.0

Members may kindly deliberate.

A.9. Status of availability of ERS towers in Northern Region (Agenda by NRPC Sectt.)

A.9.1 In the 68th meeting of NRPC issues arising due to non-availability of sufficient ERS were discussed and it was decided that ERS availability monitoring shall be taken as rolling/follow-up agenda in OCC meetings for regular monitoring of ERS under different utilities in Northern region.

A.9.2 Subsequently matter was deliberated in 211th OCC meeting wherein NRLDC representative briefed about the Requirement of ERS, recent experience in Northern Region, CEA Regulation on ERS, Govt. Guidelines and Present situation on ERS.

A.9.3 NRPC Sectt. vide letter dated 26.09.2023 requested all transmission utilities of NR to furnish the length of transmission line (ckt-kms) and number of ERS towers available with them at different voltage levels (e.g. 220 kV, 400 KV 765 KV and + -500 kV HVDC via email at **seo-nrpc@nic.in**.

A.9.4 In this regard, inputs received from utilities are attached as **Annexure-A.III.**

Transmission utilities of NR to update the latest status.

A.10. Updating outage Details by Generating Station/utilities (Agenda by CEA)

A.10.1. To enhance the monitoring of approved Planned Maintenance schedules, Member (GO&D), CEA has directed that actual maintenance availed against approved planned maintenance is to be updated on priority by respective RPCs regularly on monthly basis.

A.10.2. In the 221st OCC meeting of NRPC, forum asked generating stations of NR to update the status of Planned Maintenance schedules versus actual maintenance availed for the previous month before every OCC meeting and it was decided that to enhance the monitoring of approved Planned Maintenance schedules the said agenda item shall be taken as rolling/follow-up agenda in OCC meetings.

A.10.3. In this regard, list of Planned Maintenance schedules versus actual maintenance availed for the year 2024-25 for the month of September 2024 is attached as **Annexure-A.IV.**

A.10.4. In this regard, Generating Station/utilities of NR are requested to submit each month details of the maintenance activities that transpired against the originally planned schedule. Further, any deviations from the planned schedule shall be explained by the concerned generating entities.

Generating utilities of NR to update status.

A.11. Flexible Operation of Coal Based Thermal Power Plants (Agenda by CEA)

A.11.1. As per the CEA Gazette Notification dated January 30, 2023, coal-based thermal power generating units shall have flexible operation capability with a minimum power level 55%, along with specified ramp rates, January 2024. Additionally, a phased implementation plan for achieving a 40% minimum technical load (MTL) has been notified, with specific targets and timelines for compliance.

A.10.5. The said matter was also deliberated in 218th OCC meeting of NRPC, wherein MS, NRPC enquired to CEA about the list of thermal generating station in northern

region that have not met 55% Technical Minimum Load (TML) till date. CEA has shared the list of thermal generating units in NR which are not complying with 55% MTL regulation. In 223rd OCC meeting, MS, NRPC asked these thermal generating units to submit their technical minimum load status. Updated status of this is attached as **Annexure-A.V**.

A.11.2. In this regard, CEA vide letter dated 01.08.2024 (copy attached as **Annexure-A.VI**) has requested following information:

1. **Regarding 55% MTL (Minimum Technical Load)**

   a. Achievement of 55% TML: Whether the target of achieving 55% Technical Minimum Load (TML) has been met. If not, please provide the reasons and the tentative date for achieving the same.

   b. Adherence to Ramp Rates: Whether the specified ramp rates, i.e., 3% for 100-70% load and 2% for 70%-55% load, have been adhered to. If not, please provide the reasons and the tentative date for achieving the same.

   c. Operator Training: How many operators have been trained in the organization?

   Generators are requested to submit Progress report (**Annexure-A.VII**) as per enclosed format.

2. **Regarding 40% MTL (Minimum Technical Load) and Status of units under Pilot phase**

PILOT PHASE (May, 2023-March, 2024)

Phase	Sector	Organization	Name of Project	Unit No.	Capacity (MW)	Region
Pilot	Central	NTPC	MAUDA TPS	1	500	WR
Pilot	Central	NTPC	SIMHADRI	3	500	SR
Pilot	Central	NTPC	DADRI	6	490	NR
Pilot	Central	DVC	MEJIA TPS	8	500	ER
Pilot	Central	NEYVELI LIGNITE	NEYVELI NEW TPP	2	500	SR
Pilot	State	KPCL	YERMARUS TPS	1	800	SR
Pilot	State	GSECL	WANAKBORI TPP	6	800	WR
Pilot	State	RRVUNL	SURATGARH SCTPP	8	660	NR
Pilot	State	WBPDC	SAGARDIGHI TPS	3	500	ER

Pilot	Private	CEPL	MUTHIARA	2	600	SR
Pilot Phase Total				**10**	**5850**	
Pilot Phase Total (Percentage of Total Capacity)				**1.70%**	**2.76%**	

a. Achievement of 40% TML: Whether the target of achieving 40% Technical Minimum Load (TML) has been met. If not, please provide the reasons and the tentative date for achieving the same.

b. Adherence to Ramp Rates: Whether the specified ramp rates, i.e., 3% for 100-70% load, 2% for 70%-55% load and 1% for 40%-55% load, have been adhered to. If not, please provide the reasons and the tentative date for achieving the same.

Generators are requested to submit the Progress Report in duly filled (**Annexure-A.VIII**) as per enclosed format.

A.11.3. Generating units in NR that have not been able to achieve the technical minimum level of 55% are requested to confirm submission of the reasons of same to CEA as per the decision of 222nd OCC meeting.

A.11.4. As per the discussion in 222nd OCC, NTPC and RVUNL are requested to confirm submission of their learnings/observations to CEA highlighting the difficulties faced by them to achieve the minimum load operation of 40%.

A.11.5. MS, NRPC has written a letter to State GENCOs of Punjab, Haryana & Rajasthan and IPPs namely MEIL Anpara Power Ltd., Rosa Power Supply Company Ltd. and JSW Energy (Barmer) Limited to submit requisite information (**Annexure-A.VII**) to CEA.

Generating utilities of NR to update status.

A.12. Furnishing the Data for finalization of Generation programme 2025-26 (Agenda by OPM Division CEA)

A.12.1 OPM division, CEA vide letter dated 30.09.2024 (copy enclosed as **Annexure-A.IX**) has sought the following information in the prescribed formats from generating utilities of the country for the preparation of electricity generation program for the year 2025-26. In this regard, please find enclosed herewith the prescribed formats (data formats) and the inputs desired;

- *Unit-wise monthly generation proposed during 2025-26 taking into account likely fuel availability, the anticipated loss of generation on account of various factors such as grid constraint, low schedule/Reserve shut down due to high cost, coal/lignite quality etc., if any.,*

A.12.2 Aforesaid Generating Stations in the cited list that have not submitted the requisite information till date are requested to submit the above information in the prescribed formats by email to **targetopmcea@gmail.com** or **ceopm-cea@gov.in** latest by 15th October 2024.

Generating utilities of NR to update status.

A.13. Transmission Infrastructure for upcoming RE Projects (Agenda by CEA)

A.13.1. This has reference to point no. (iii) of action point (copy attached as **Annexure-A.X**) of the subject cited meeting held under the chairmanship of Advisor to PM, wherein CEA has been entrusted with the task of identification of State-wise Intra-State sub-stations (132kV and above) where transmission capacity is readily available for evacuating RE.

A.13.2. In this regard, NRPC vide letter dated 16.08.2024 and subsequent reminder dated 05.09.2024 have requested respective SLDCs/STU's of Northern Region to submit the requisite information in prescribed format (copy attached as **Annexure-A.XI**) for Intra-State sub-stations (132kV and above), however inputs from concerned entities are still awaited.

A.13.3. In the cited matter, inputs have been received from Haryana, Rajasthan and HP. Information in respect of rest of the States/UT's of NR is still awaited.

A.13.4. The said information may kindly be submitted in the prescribed format by email to **seo-nrpc@nic.in** at the earliest.

STU's/SLDC's of NR to update status.

A.14. Assessment & usability of the Interstate lines i.e. 220 kV S/C MIA (Alwar) -BTPS (Badarpur) Line and 132 kV S/C Hisar-Sadulpur (Rajgarh) (Agenda by RVPN)

A.14.1 RVPN has submitted that in the 57th meeting of Northern Regional Power Committee held on dated 27.09.2022 (copy of MoM attached as **Annexure-A.XII**), wherein at Sr.no.A.8, assessment and usability of the interstate lines i.e. 220 KV S/C MIA (Alwar) BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh) was deliberated as per agenda submitted by RVPN for decisions on following:

i. Assessment & usability of these Interstate lines i.e 220 KV S/C MIA (Alwar)-BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh) line.

ii. Recovery of capital expenditure on renovation and refurbishment through YTC for these Interstate lines, in case NRPC decides to retain these interstate line.

A.14.2 It was informed by RVPN in the meeting that these lines are not useful for them and expressed willingness that POWERGRID may acquire these lines. POSOCO stated that States may express their views on utility of lines and also confirmed no significant use of the lines from power flow point of view. Also, Haryana intimated that comment may be shared after consultation with planning wing. Finally, the Forum decided that Delhi and Haryana may intimate their comment in this regard to RVPN and NRPC/CTU and then the matter may be brought by RVPN to upcoming NRPC Meeting for decision.

A.14.3 The comments in respect of above was desired from HVPN and DTL vide this office letter dated 29.07.24 and 28.08.24 (copy attached as **Annexure-A.XIII**) but the same has not been received so far both from HVPN and DTL.

A.14.4 Further, during discussions held on 75th meeting of NRPC held on dated 28.08.24, the same issue was again discussed and RVPN was requested to take up the matter in the next OCC Meeting.

A.14.5 Thereafter, during discussions in the 223rd OCC Meeting held on dated 13.09.24, DTL and HVPN were again requested to provide the comments on the aforesaid issue.

BACKGROUND & DETAILS of the matter:

A. 220 kV S/C MIA (Alwar) -BTPS (Badarpur) line

• 220 kV S/C MIA (Alwar) -BTPS (Badarpur) line is an interstate line owned by RVPN, commissioned in 1976, line length 131 kms., 428 nos. towers involved & present book value is Rs.1.08 Crore. The line condition is deteriorating day by day resulting in frequently breaking of line conductor and earth wire.

• The line is charged since 07.10.2020 on No Load. In normal conditions, there is no use of said line at 220 kV GSS MIA from loading point of view.
• The Yearly Transmission Charges (YTC) allowed by CERC in petition no. 362/TT/2019 for the said line is 64.02 lakh.

• The case for the refurbishment work of 220 kV S/C MIA (Alwar) -BTPS (Badarpur) as R&M requires 9.89 crores and still after spending Rs. 9.89 crores, only half of the line is refurbished.

B. 132 kV S/C Hisar-Sadulpur (Rajgarh) line

• 132 kV S/C Hisar-Sadulpur (Rajgarh) line interconnecting 220 kV GSS BBMB Hisar and 132 kV GSS Sadulpur (Rajgarh) which is an interstate line owned by RVPN, commissioned on dated 13.12.1959, line length 78 kms., 281 nos. towers involved & present book value is Rs. 8.57 Crore.

• The line condition is also deteriorating. Generally, this line remains charged on no-load since commissioning of 132 kV Bhadra-Sadulpur line in the year 2010 and there is no use of said line and may be dismantled.

• The Yearly Transmission Charges (YTC) allowed by CERC in petition no. 362/TT/2019 for the said line is 37.94 lakh. The YTC allowed is only towards O&M expenses and interest on working capital as useful life of 25 years has already been over.

• The work of replacement of line conductor with associated hardware, disc insulator, etc. requires estimated cost amounting Rs.7.021 crores.

A.14.6 Based on the above facts as discussed above, RVPN has requested the deliberation in 224th OCC meeting:

i. Assessment & usability of these Interstate lines i.e. 220 kV S/C MIA (Alwar) - BTPS (Badarpur) line and 132 kV S/C Hisar-Sadulpur (Rajgarh) line.

ii. Recovery of capital expenditure on renovation & refurbishment through YTC for these Interstate lines, in case NRPC decides to retain these Interstate lines.

Members may kindly deliberate.

A.15. N-1 contingency violation in 400/220/33KV 315MVA ICT-I at BBMB Dehar (Agenda by Powergrid NR-2)

A.15.1 The subject cited matter was also deliberated in 220th OCC meeting of NRPC. In the meeting, Powergrid NR-2 intimated forum that 315 MVA ICT at 400/220KV BBMB Dehar S/s is overloaded. On 315MVA ICT, load remains in the range of 300-315MW. In the said meeting, Punjab SLDC has also highlighted that they have also experienced problems due to the overloading of BBMB Dehar S/s.

A.15.2 In 220th OCC meeting, Forum asked Powergrid, PSTCL, HPPTCL and BBMB to internally have a discussion/study on the SPS as temporary relief for Transformer overloading at BBMB Dehar and submit accordingly. Further, for installation of new transformer at BBMB Dehar S/s, proposal may be submitted by Powergrid to CTU for study.

A.15.3 Powergrid has mentioned that accordingly, after discussion, it was understood that in case of overloading of ICT at Dehar, disconnection of one circuit of 220KV Dehar Ganguwal can provide relief to overloading ICT.

A.15.4 Further, Powergrid have stated that that loading on ICT at Dehar will further increase after commissioning of upcoming 2nd circuit of 220KV Dehar Kangoo by HPPTCL.

Members may kindly deliberate.

A.16. Regarding installation of CSD in 400KV Kalaamb Wangtoo and 400KV Kalaamb Sorang to control switching surges (Agenda by Powergrid NR-2)

A.16.1 In 222nd OCC Meeting, POWERGRID NR-2 proposed for installation of Control switch devices in 400KV Kalaamb Wangtoo and Kalaamb Sorang lines at PKATL Substation KALAAMB to control switching surges and subsequently forum asked POWERGRID to submit report including space related constraint in reactor shifting and effectiveness of CSD relay. In view of above, following is submitted:

(1) Space is not available at Kalaamb for installation of Line Reactors. However, space availability at Wangtoo and Sorang may be informed by the concerned

(2) Regarding effectiveness of CSD relay, report is attached as **Annexure-A.XIV**.

A.16.2 As Kalaamb Substation is a TBCB Station and requirement of CSD has arisen due to change in network. Forum may please agree for installation of CSD on 400KV Wangtoo & 400KV Sorang Lines at Kalaamb S/S to control switching surges. Total financial implication is INR 70.0 Lacs

Members may kindly deliberate.

A.17. Restoration of Bays at Sahupuri GIS (UPPTCL) of 400 KV Varanasi-Shahupuri-2

line (Agenda by Powergrid NR-3)

A.17.1. Powergrid NR-3 has submitted that 400 KV Varanasi-Sahupuri-2 Line tripped on date 10.07.24 at 19:26 Hrs due to breakdown of GIS Bays at Sahupuri (UPPTCL). Since then the line is in idle charged/antitheft charged condition.

A.17.2. 400 KV Varanasi -Sahupuri ckt-1 &2 line also provide inter regional connectivity with ER and NR connecting POWERGRID Varanasi (NR) via Sahupuri(UP) and POWERGRID Biharsharif (ER).

A.17.3. As due to above GIS issue at Sahupuri, Varanasi s/s is presently connected with Sahupuri with only ckt-1, in case of any tripping of ckt-1, connectivity of Varanasi (NR) with Biharsharif (ER) would be lost and will impact reliability of ER-NR Link.

A.17.4. It is also worth mentioning that in previous OCC meetings (222 & 223) matter of early restoration of the same has been discussed by NRLDC citing reliability of ER-NR Link, however UPPTCL is yet to restore the bays at Sahupuri end.

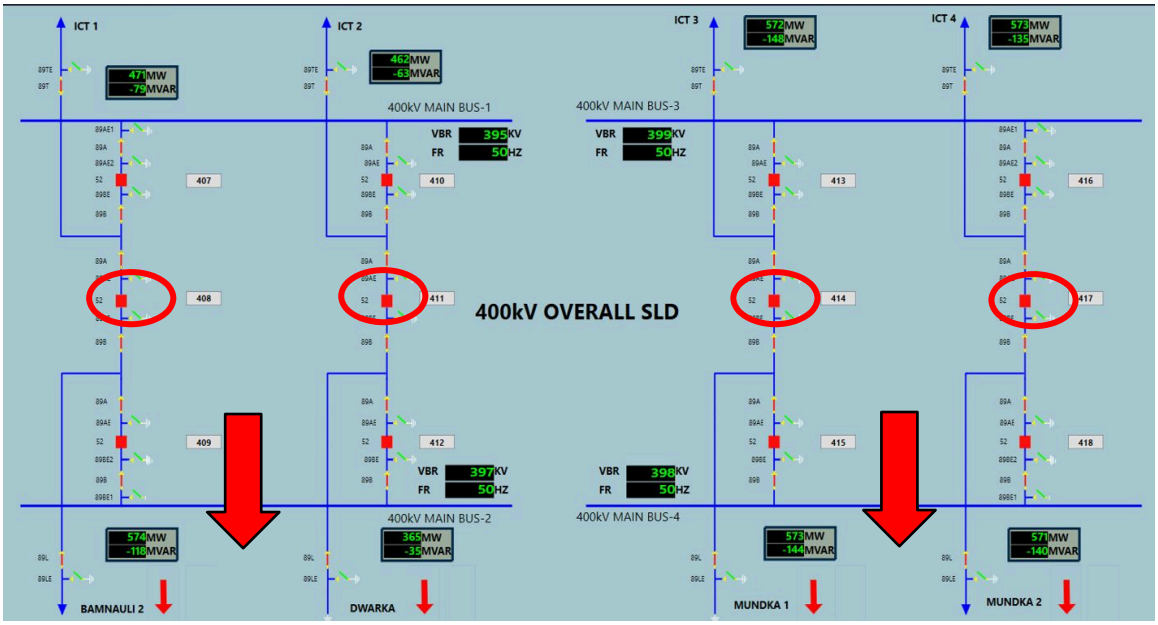
A.17.5. Accordingly, Powergrid has requested forum to kindly advise UPPTCL to expedite the restoration process.

Members may kindly deliberate.

A.18. Power flow congestion to Delhi Ring Main unit through 400 kV Switchyard at 765/400KV Jhatikra substation (Agenda by Powergrid NR-1)

A.18.1. Powergrid NR-1 has stated that Jhatikra Substation Caters approx. 3500-4400MW power requirement (>50% load of Delhi) part of NCR, Delhi through 04 Nos. of 400KV Lines namely 02 Nos. of Mundka, 01 No. of Dwarka and 01 No. of Bamnauli line. Following issues related to power flow from Jhatikra has been observed which requires urgent attention before next summer peak loading: -

- Loading congestion at 400 kV Switchyard at Jhatikra:- 400 kV Bus at Jhatikra is sectionalised in 02 sections (Section-1 feeds load to Bamnauli/Dwarka SS through 765/400 kV ICT-1&2, Section-II feeds loads to Mundka SS through 765/400 kV ICT-3&4)



Max load recorded through both the sections in 2024 Summer peak is ~ 2500 MW (~ 4000 Amp). In case of breakdown of any tie bay across 400 kV switchyard, the power flow through remaining tie bay in section is 4000 Amps which is much higher than bay equipment rating of (3150 Amp). In order to overcome the situation, following is proposed for consideration of the forum: -

Option 1 :- **Upgradation of rating of switchyard equipment of 400 kV tie bay at Jhatikra from 3150 to 4000 Amp.**
Option 2 :- **Provision of additional bus coupler in both sections of 400 kV buses to share the load in case of tie bay contingency**
Option 3:- **Considering time duration in implementation of above proposed solutions, direct coupling arrangement of 400 kV buses may be allowed from April-Oct'25 to cater smooth power transition to Delhi.**

- Jhatikra:- Critical N-1 situation has been observed for 765/400 ICT-1&2 connected at Bus section-1 and 765/400 kV ICT-3&4 connected at Bus section-II with violation of N-1 criteria on regular basis from April-June'25. Any tripping of one of the 765/400 ICT at Jhatikra may lead to cascading tripping and eventual power interruption to Delhi. In order to overcome the situation, following is proposed for consideration of the forum:-

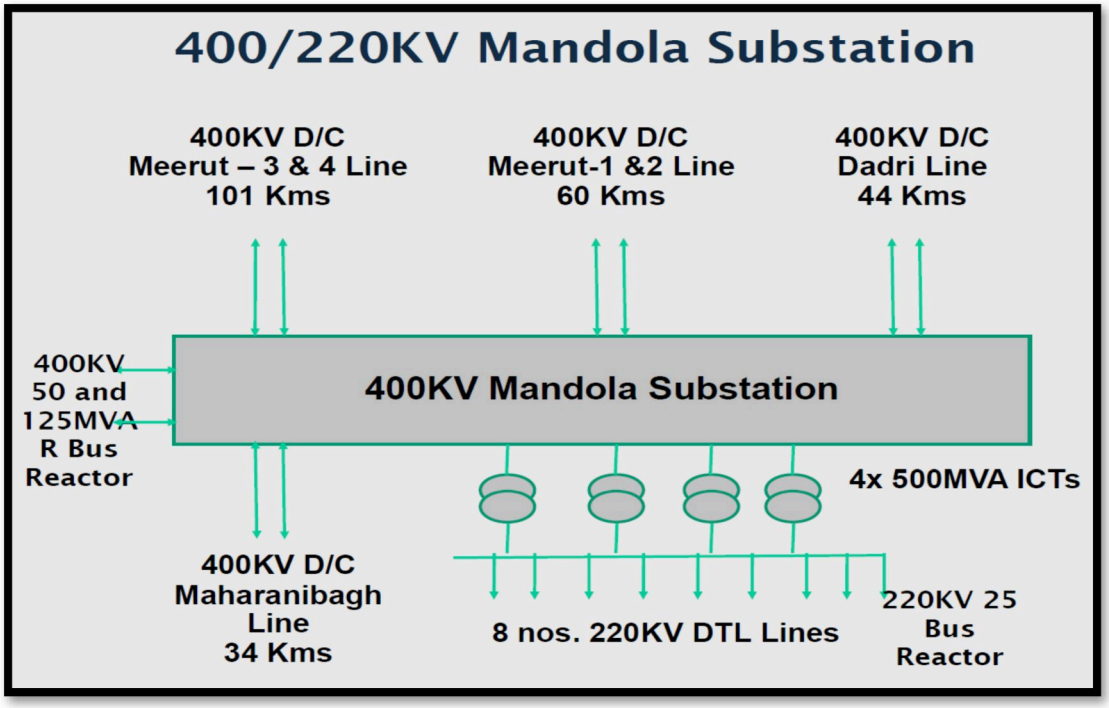
Option: -1 SPS arrangement for load shedding in case of tripping of 765/400 kV ICTs at Jhatikra
Option 2:- Direct coupling arrangement of 400 kV buses may be allowed from April-Oct'25 to cater smooth power transition to Delhi.

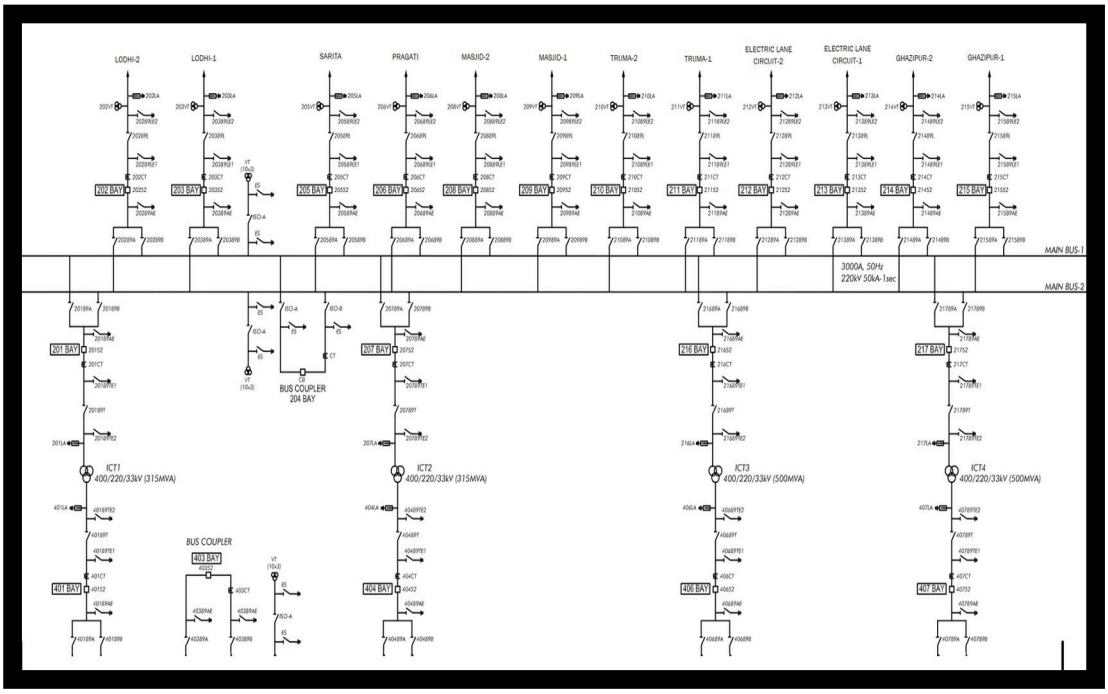
Members may kindly deliberate.

A.19. SPS arrangement for load shedding at 400/220 kV Mandola & Maharani Bagh Substation in view of N-1 criteria violation (Agenda by Powergrid NR-1)

A.19.1. Powergrid NR-1 has mentioned that 400/220 kV Mandola & Maharani Bagh are critical substations of POWERGRID feeding directly to Delhi through 220 kV DTL feeders. N-1 criteria violation has been observed at both the substations in June'24 on regular basis. Cascading trippings of ICTs at Mandola on 11th June'2024 led to power interruption in major parts of East/Noth Delhi.

A.19.2. Further, Powergrid has stated that as the projected peak load in 2025 is expected to be higher than record loading in 2024, SPS arrangement for load shedding in case of tripping of ICT at both Mandola & Maharnibagh may be implemented to avoid power interruption in Delhi





Members may kindly deliberate.

A.20. Discussion on N-1 criteria violation at POWERGRID Substations in Northern Region (Agenda by Powergrid NR-1)

A.20.1. Powergrid NR-1 has informed that matter regarding N-1 criteria violation in 23 nos. substations from April-June'24 in Northern Region-1 has been taken up with NRLDC and it has been advised by NRLDC to take up the augmentation capacity of following substations in consultation with CTU/respective state utilities: -

Substation	Volt Level (KV)	Rating (MVA)	N-1 limit	Max loading	NRLDC Comments
BHIWANI765	765	2000	1500	**+2000 as well as -2000**	To be discussed in detail
JHATIKARA765	765	3000	1900	**2500**	To be discussed in detail
KURUKSHETRA	400	1500	1200	1200	ICT Augmentation may be taken up in discussion with CTUIL/HVPNL
MAHARANIBAGH400	400	1630	1200	1250	ICT augmentation taken up in 34 CMETS on 20.09.2024
MANDOLA400	400	2000	1560	**1660**	ICT Augmentation may be taken up in discussion with

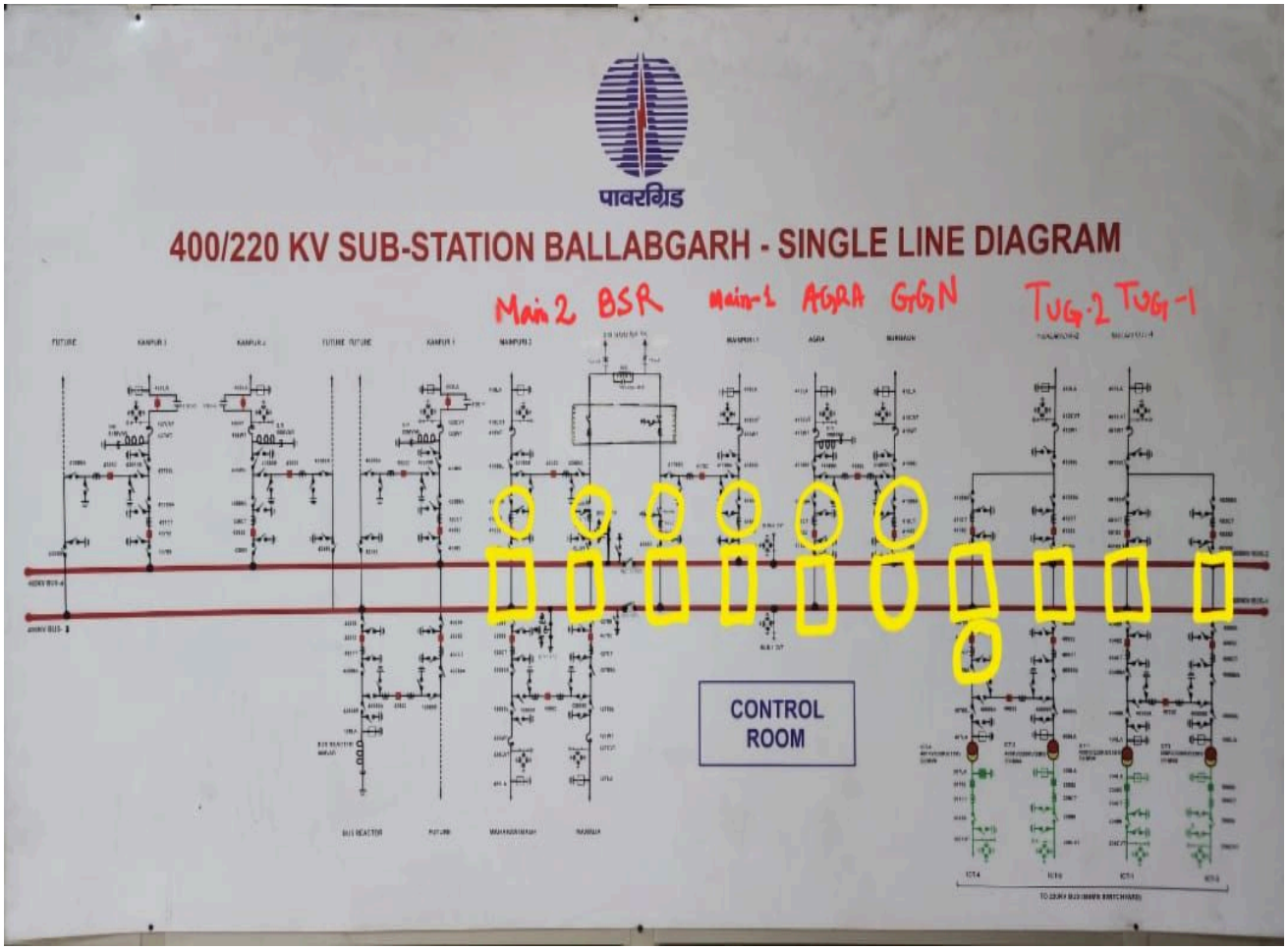
					CTUIL/DTL
NEEMRANA400	400	815	490	510	ICT Augmentation may be taken up in discussion with CTUIL/RVPNL
SAHARANPUR	400	1130	770	820	ICT Augmentation may be taken up in discussion with CTUIL/UPPTCL
JAIPURSOUTH400	400	1000	660	700	ICT Augmentation may be taken up in discussion with CTUIL/RVPNL
KOTPUTLI400	400	630	380	500	ICT Augmentation may be taken up in discussion with CTUIL/RVPNL
SIKAR400	400	1130	820	950	

A.20.2. As respective state utilities are part of forum, the operational constraints due to violation of N-1 criteria at above POWERGRID substations is put up for deliberations and approval for augmentation capacity at above substations for smooth power transmission.

Members may kindly deliberate.

A.21. Requirement of complete 400 kV Bus-1 &2 shutdown at Mandola & Ballabgarh S/s for replacement of damaged sections 400 kV jack buses (Agenda by Powergrid NR-1)

A.21.1. Powergrid NR-1 has mentioned that 400/220 kV Ballabgarh & Mandola Substations were commissioned in 1990 & 1991 respectively with D-type layout. Most of the equipment's at above substations has been replaced on account ageing however jack buses of 400 KV Bus-1 & 2 has not been replaced due to requirement of complete shutdown of both 400 kV buses.


पावरग्रिड
400/220 KV SUB-STATION BALLABGARH - SINGLE LINE DIAGRAM
Main 2 BSR
Main-1 AGRA GRGN
TUG-2 TUG-1
CONTROL ROOM


Jack Bus
Main Bus
Galaxy S22 Ultra
400kV Ballabgarh

A.21.2. Over period of years, damages in the jack bus conductors have been attended by repair sleeves & parallel support however the damaged portions require complete replacement in view of peak loading in summers to avoid any risk of breakdown.

A.21.3. Thus, Powergrid has requested for shutdown of complete 400 kV Bus-1 &2 sections at Mandola & Ballabgarh for 06 days on daily basis/03 days on continuous basis is proposed for replacement of jack bus conductors. The loading to Delhi & Haryana through Mandola & Ballabgarh shall be Nil during above proposed shutdown.

Members may kindly deliberate.

A.22. Regarding changing of period of half yearly feedback of constraints in State Transmission network to STU (Agenda by UPSLDC)

A.22.1. UPSLDC has submitted that in 24th TCC/27th NRPC meeting held on 30th November 2012, it was decided that SLDCs should give feedback to STU regarding bottlenecks, constraints and overloading in the State transmission network for proper transmission planning at half yearly intervals i.e. on 1st January and 1st July of every year.

A.22.2. UPSLDC has mentioned that as peak and off-peak season in UP control area is from April to September and from October to March respectively. It is proposed that feedback of bottlenecks, constraints and overloading in State Transmission network to STU on the basis of peak and off season every year i.e. for peak season, feedback to be provided in October and for off-peak season, feedback to be provided in April.

Members may kindly deliberate.

A.23. Frequent fluctuations in some of the generating parameters i.e. Generating Voltage, MW, MVAR etc. of Kota TPS during morning hours. (Agenda by RRVUN)

A.23.1. RUVN has mentioned that from past few weeks the fluctuations in some of the generating parameters i.e. Generating Voltage, MW, MVAR etc of Kota TPS during morning around 10:30 Hours to 12:00 Hours. has been observed. This might be due to Grid disturbances and adversely affecting the smooth running of the KTPS units.

A.23.2. During this time period, the fluctuations have been observed, while on several occasions resulted in the tripping of Generating Units on Rotor E/F protection on dated 19.07.2024, 07.09.2024 & 22.09.2024.
It is suspected that the variations may be due to **Inverter Based gird resources**.

A.23.3. Details of fluctuations at Kota TPS is attached as **Annexure-A.XV**

Members may kindly deliberate.

A.24. Critical issues of the Switchyards of 6x250MW, STPS, RRVUNL, Suratgarh (Agenda by RRVUN)

A.24.1. RUVN vide mail dated 09.10.2024 has highlighted critical issues of the Switchyards of 6x250MW, STPS, RRVUNL, Suratgarh.

220 kV, 440kV Switch Yard layout of STPS, Suratgarh and 400kV switch yard layout of SSCTPP is attached as **Annexure-A.XVI.**

Power evacuation from STPS (6x250MW) & SSCTPP (2x660MW) at RRUVNL is explained in block diagram attached as **Annexure-A.XVII**

i. Issue at 220KV Network Level

- There are four power sources (2x250MW units of STPS + 2x315MVA ILTs i.e. approx. 850MW availability of power after considering 150MW of auxiliary power required for STPS) and six outgoing feeders are connected at 220KV Switchyard of STPS out of which three are the radial feeders catering load of Hanumangarh & Sriganganagar districts having almost 500-650MW load. So, due to the less power sources as compared to the feeders at 220KV Switchyard of STPS, power demand on all the feeders could not be met.

ii. Issue at 400KV Network Level

- (a) Presently, three feeders (2x400KV STPS-Ratangarh + 1x400KV STPS-Bikaner) and six power sources are connected at 400KV Switchyard of STPS i.e**. feeders are less as compared to sources at 400KV Switchyard of STPS** causing overloading of both the STPS-Ratangarh feeders. The details of six sources are as under:

A). 4x250MW units of STPS
B). 2x400KV STPS- SSCTPP Interconnectors

Due to inadequate evacuation of power from the 2x660MW SSCTPP plant, their considerable generation evacuates through 400KV switchyard of STPS plant causing overloading of power elements of 400KV Switchyard of STPS. The details of Power Evacuation system of SSCTPP, Suratgarh (2x660MW) is as under:

- (b) Power Evacuation system of SSCTPP, Suratgarh (2x660MW):

There are four 400KV feeders (2x400KV SSCTPP-Babai + 2x400KV SSCTPP-Bikaner). The 2x400KV SSCTPP-Babai Lines were to be commissioned with the COD of both units of SCTPP but still not commissioned from the last 6-7 years. Besides this 2x400KV SSCTPP-Bikaner feeders remains in floating/import/light load mode due to ample solar power available at Bikaner during RE hours. Besides this, the load demand during the off RE hours is also very less (600-750MW) at Bikaner i.e. all the three feeders of Bikaner (two from SSCTPP and one from STPS) are operating at 25% capacity. In nutshell, SSCTPP is not having stable power evacuation system and entirely depends on both the interconnectors through the STPS only.

iii. High Demand of MVARs and low voltage profile at Suratgarh Generating Stations:

- There is excessive loading of the MVARs on the Generators of STPS & SSCTPP due to in nearby Solar plants and the Reactors installed in SSCTPP which restricts active power generation. Also, excessive drawl of MVAR from our units causing bad effect on our Generators (Low pf than the design value, low Gen voltage, heating in Exciter etc.)

Following Bus & Lines reactors are operational at SSCTPP, Suratgarh:

S. No.	Reactors installed at SSCTPP	Remark
1.	2x125 Bus Reactor	These are made off by LD during RE hours. But during foggy season these are always in service.
2.	2x80 MVAR Reactor on Babai Lines	Babai lines are charged for anti-theft length but Reactors are not in service presently but used intermittently
3.	2x50 MVAR Reactor on Bikaner lines	These are always in service.

iv. Hunting in Generating parameters:

- Due to nearby solar power, hunting in generating parameters were observed frequently between 10:00am to 12.30am at STPS, SSCTPP (Hunting in load was 30-35 MW in 660MW units) and KTPS. This hunting has affected the various HT and LT equipment's of the plant.

v. LILO the SSCTPP-Bikaner line in place of STPS-Bikaner line.

- As per DPR by RVPNL for the proposed 400KV GSS at Kenchiya, Distt Hanumangarh, there is proposal of the LILO of the 400KV STPS-Bikaner line. It is clear from the SLD of 400KV switchyard of STPS that there will be no relief 400KV STPS switchyard from the overloading. So, it is proposed to LILO of 400kV feeders of SSCTPP-Bikaner in place of STPS(O&M)-Bikaner feeder otherwise loading on STPS Switchyard through both the SSCTPP-STPS Interconnectors

vi. Continuous Overloading of both the Switchyards of STPS:

- Due to continuous running of both the Switchyards of STPS on full load capacity/overload, it is not possible to maintain power elements in planned manner and we are facing various issues like frequent breakdown maintenance & difficulty in availing shutdowns even after approved by OCC. The entire matter has already been taken up in previous OCCs and also by our Hon'ble CMD vide letter dtd 07.06.22 and 23.01.24 to Hon'ble CMD(RVPN).

A.24.2. RUVN has also mentioned that both the Generating stations at STPS & SSCTPP Suratgarh having full generating capacity of 2820MW are dependent mainly on 400KV Ratangarh GSS because of aforesaid issues related with Babai and Bikaner GSS. So, following proposals are herein made by RUVN:

a) Arrange to conduct load flow studies to connect Suratgarh with other 400KV GSS because disturbance/demand at Ratangarh load centers affects our generation as the LD directs to desynchronize the units of STPS very frequently (FY 21-22:41Nos; FY22-23:20Nos; FY23-24:49 Nos) causing huge loss to RRVUNL on account of oil consumption and frequent on/off of units.
b) It is proposed to shift the one 400KV STPS- Ratangarh line emanating from STPS to the SSCTPP-Babai bay as it will take long time for the commissioning of 2x400 KV SSCTPP-Babai Lines. It is to be noted that both the lines are in the same direction and requires minimum efforts and work involvement. This will give relief 400 KV STPS(O&M) Switchyard. So, in this regard the RVPN officials may like to consider for a visit at Suratgarh Generating stations.
c) A 220KV GSS is sanctioned at Rajiasar, so, to LILO of 220KV radial feeders emanating from STPS Switchyard is proposed which will connect radial feeder with Ring system. So, in this regard the RVPN officials may like to consider for a visit at Suratgarh O&M Generating station.

Members may kindly deliberate.

A.25. LILO of 132 kV Sahupuri (220)- Karmnasha (Bihar) Ckt-II at 132 kV Chandauli (Chandauli) S/s (Agenda by UPPTCL)

A.25.1. UPPTCL has informed regarding e-mail dated 25 June 2024 of CTU for LILO of 132 kV Sahupuri (220)- Karmnasha (Bihar) Ckt-II at 132 kV Chandauli (Chandauli) S/s, where the Bus scheme at 132 kV Chandauli S/s of UPPTCL is Single main while as per the CEA (Technical Standard for Construction of Electrical Plants and Electric Lines) Regulation, 2022 (page 160, Table 7), 132 kV shall be “Main and Transfer bus scheme or Double bus scheme”.

A.25.2. In this regard, UPPTCL has submitted that that 132 kV S/s Chandauli was constructed in year 1992(limited space) with LILO of 132 kV Sahupuri (220) - Karmnasha (Bihar) Ckt-I at 132 kV Chandauli (Chandauli) S/s. Further, the approval of 2nd Ckt. LILO of 132 kV Sahupuri (220)- Karmnasha (Bihar) approval has been taken in 3rd meeting of NRPC (TP) held on 19.02.2021 and same in 4th meeting of Eastern Region Power Committee (Transmission Planning) (ERPCTP) held on 23rd July 2021 after NOC by BSPTCL, Patna.

A.25.3. Further, UPPTCL has mentioned that generally, there is no power flow at 132 kV Sahupuri (220) - Karmnasha (Bihar) Ckt-II. In emergency UPPTCL withdrawal 15-20 MW power from Karmnasha (Bihar) at 132 kV S/s Chandauli. To ensure reliable alternate supply to 132 kV S/s Chandauli LILO of 132 kV Sahupuri (220) - Karmshana (Bihar) Ckt- II (4 km) is constructed and required charging code.

A.25.4. Therefore now UPPTCL has requested forum to allow the charging of 2nd ckt LILO of 132 kV Sahupuri(220) Karmnasha(Bihar) at 132kV Chandauli S/s

Members may kindly deliberate.

A.26. Declaration of High Flow Season for FY 2024-25 (Agenda by NRPC Sectt.)

A.26.1. Regulation 45.8(a) of CERC (IEGC) Regulations, 2023 which came into effect on 01.10.2023 provides that

> *‘Hydro generating stations may declare ex-bus Declared Capacity more than 100% MCR less auxiliary power consumption limited to overload capability during high inflow periods. Further that a high inflow period for this purpose shall be notified by the respective RPC.’*

A.26.2. Further, Regulation 12.1(a) of CERC (Sharing of ISTS charges and losses) Regulations provides that

> *‘For the purpose of calculation of Transmission Deviation for a hydro-generating station by RPC, overload capacity of 10% during peak season shall be taken into account.’*

A.26.3. In view of the above, the high-flow season for regional hydro generators was declared during the 49th Commercial Subcommittee Meeting held on 11.03.2024. However, for some plants, the high-flow season was not declared due to the unavailability of the information regarding water inflow series for the past 5 years. This data has now been provided by ADHPL, Sorang HEP, Singoli Bhatwari and Sainj HEP. Based on water inflow series information and scheduling data, the high-

flow season for these hydro generators for FY 2024-25, in compliance with Regulation 45.8(a) of the IEGC, 2023, is proposed as follows:

S. No.	Hydro Generating Station	High inflow season for FY 2024-25
1	ADHPL	16th May to 15th September
2	Sorang HEP	16th May to 15th September
3	Singoli Bhatwari	20th June to 19th October
4	Sainj HEP	June to September

A.26.4. Further, all concerned Hydro Generators are requested to furnish water inflow series data for the past 5 years annually by January of the following year since declaration of high flow season is a recurring activity.

Members may kindly deliberate.

A.27. Annual protection audit plan for FY 2024-25 and third-party protection audit plan (Agenda by NRPC Secretariat)

Annual Internal Audit Plan:

A.27.1. As per clause 15(1) of IEGC 2023;

Annual audit plan for the next financial year shall be submitted by the users to their respective RPC by 31st October. The users shall adhere to the annual audit plan and report compliance of the same to their respective RPC

A.27.2. In view of above, some utilities have submitted their annual audit plans for FY 2024-25. However, several utilities have not submitted their annual audit plans or submitted it partially (enclosed as **Annexure- A.XVIII**) even after the same was highlighted in previous Protection Sub-Committee (PSC) meetings.

A.27.3. The agenda was discussed in 52nd PSC meeting (held on 20.09.2024), and it was decided to send letters to concerned utilities for sensitizing senior officers.

A.27.4. Accordingly, a letter dated 04.10.2024 (enclosed as **Annexure-A.XIX**) has also been sent to concerned utilities for expediting submission of Annual Internal Protection Audit Plan for FY 2024-25. SLDCs have also been requested to send the compiled data of all utilities (GENCOs, & TRANSCOs) under their jurisdiction.

A.27.5. It was also discussed in 52nd PSC meeting that agenda may be taken in OCC meeting for wider sensitization.

Third party protection audit:

A.27.6. Further, as per clause 15(2) of IEGC 2023:

All users shall also conduct third party protection audit of each sub-station at 220 kV and above (132 kV and above in NER) once in five years or earlier as advised by the respective RPC.

A.27.7. In view of above, some utilities have submitted their third-party protection audit plans However, some utilities have not submitted the same or submitted it partially (enclosed as **Annexure-A.XX)**. This agenda is being discussed in Protection Sub-Committee (PSC) meetings regularly.

A.27.8. In view of above, concerned utilities may send 3rd Party Protection audit plan. SLDCs may send the compiled data of all utilities (GENCOs, & TRANSCOs) under their jurisdiction.

A.27.9. The agenda was discussed in 52nd PSC meeting (held on 20.09.2024), wherein it was discussed that agenda may be taken in OCC meeting for wider sensitization.

A.27.10. Utilities may submit annual audit plan for FY 2024-25 & 3rd Party Protection audit plan and comply the same timely. Compliance report for the audited substation may be submitted to NRPC within 30 days of audit.

A.28. Submission of protection performance indices to NRPC Secretariat on monthly basis (Agenda by NRPC Secretariat)

A.28.1. As per clause 15 (6) of IEGC 2023;

- *Users shall submit the following protection performance indices of previous month to their respective RPC and RLDC on monthly basis for 220 kV and above (132 kV and above in NER) system, which shall be reviewed by the RPC:*

  *a) The **Dependability Index** defined as* $D = Nc/Nc+Nf$

  *b) The **Security Index** defined as* $S = Nc/Nc+Nu$

  *c) The **Reliability Index** defined as* $R = Nc/ Nc+Ni$

  where,
  Nc is the number of correct operations at internal power system faults,
  Nf is the number of failures to operate at internal power system faults,
  Nu is the number of unwanted operations,

  Ni is the number of incorrect operations and is the sum of Nf and Nu

A.28.2. Further, as per clause 15 (7) of IEGC 2023;

- *Each user shall also submit the reasons for performance indices less than unity of individual element wise protection system to the respective RPC and action*

plan for corrective measures. The action plan will be followed up regularly in the respective RPC.

A.28.3. In earlier PSC meeting, it was decided that each utility shall submit the Performance indices of previous month by 7th day of next month.

A.28.4. Accordingly, the status of the utilities who have not sent indices for the month of August-2024 or shared it partially, is attached as **Annexure-A.XXI.**

A.28.5. The agenda was discussed in 52nd PSC meeting (held on 20.09.2024), and it was decided to send letters to concerned utilities for sensitizing senior officers.

A.28.6. Accordingly, a letter dated 01.10.2024 (enclosed as **Annexure-A.XXII**) has been sent to concerned utilities, who have not submitted the Performance indices for any of month from June,2024 to August,2024, for directing the concerned officials to submit the Protection Performance indices of previous month by 7th day of next month. SLDCs have also been requested to send the compiled data of all utilities (GENCOs, & TRANSCOs) under their jurisdiction.

A.28.7. It was also discussed in 52nd PSC meeting that agenda may be taken in OCC meeting for wider sensitization.

A.28.8. In view of above, utilities may submit the performance indices of previous month by 7th day of next month element wise along with the reason for indices less than unity and corrective action taken.

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

B.1. NR Grid Highlights for September 2024

Detailed presentation on grid highlights of September'2024 will be shared by NRLDC in OCC meeting.

Demand met details of NR

S.No.	Constituents	Max Demand met (in MW)	Date & Time of Max Demand met	Max Consumption (in MUs)	Date of Max Consumption	Average Demand met (in Mus)
1	Chandigarh	397	24.09.24 at 15:00	7.9	24.09.24	6.3
2	Delhi	6780	24.09.24 at 15:22	140.0	25.09.24	118.7
3	Haryana	12414	24.09.24 at 15:00	40.0	24.09.24	35.8
4	H.P.	1884	25.09.24 at 07:00	258.4	24.09.24	215.2

5	J&K	2836	24.09.24 at 19:00	57.4	25.09.24	52.2
6	Punjab	15310	21.09.24 at 15:00	340.1	25.09.24	287.3
7	Rajasthan	16292	25.09.24 at 14:15	354.8	25.09.24	296.0
8	U.P	29347	03.09.24 at 21:55	585.2	03.09.24	479.7
9	Uttarakhand	2489	24.09.24 at 19:00	53.6	24.09.24	48.0
10	Northern Region	80678	24.09.24 at 12:00	1793.1	24.09.24	1539.2

***As per SCADA**

- In Sep'24, the Maximum energy consumption of Northern Region was 1793 MUs on 24th Sep'24 and it was 0.02 % higher than Sep'23 (1793 MU 04th Sep'23)

- In Sep'24, the Average energy consumption per day of Northern Region was 1539 MUs and it was 1 % lower than Sep'23 (1554 MUs/day)

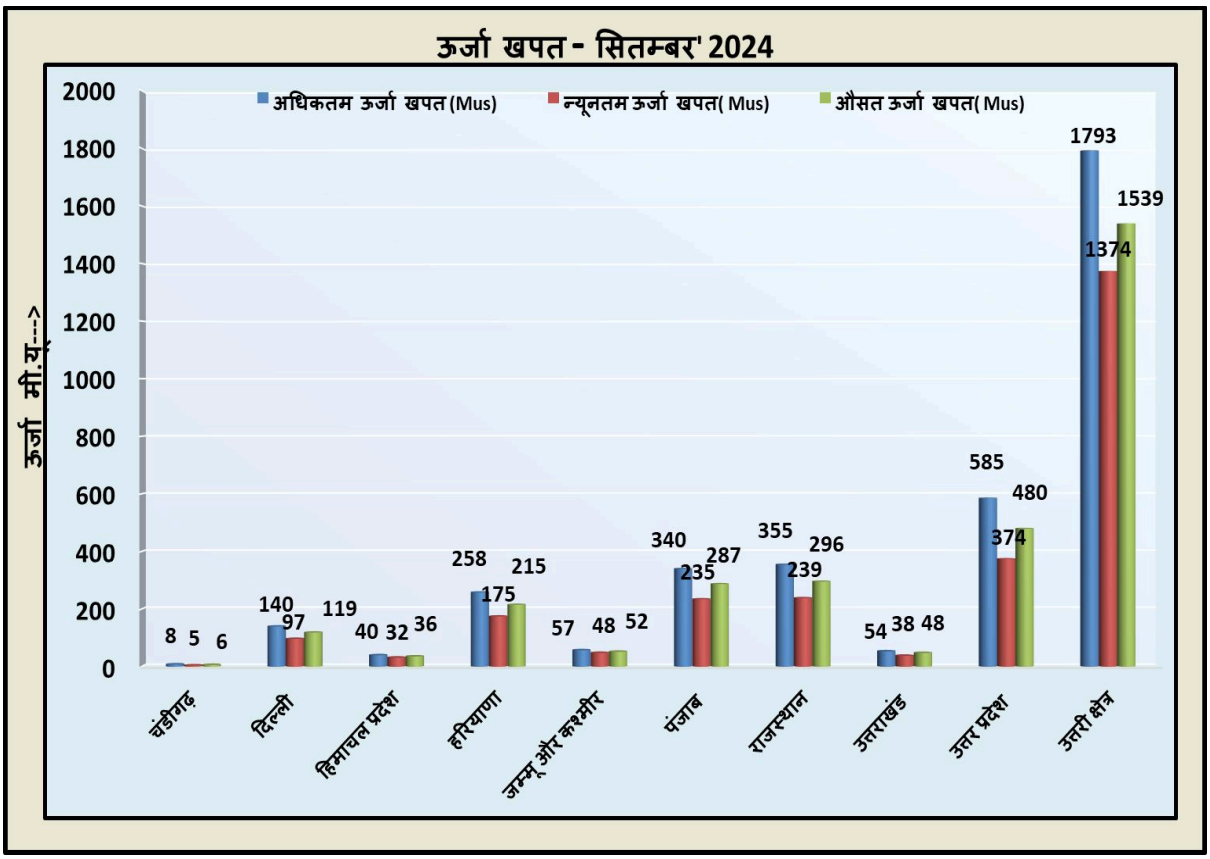
- In Sep'24, the Maximum Demand met of Northern Region was 80678 MW on 24th Sep'24 @12:00 hours (*as per SCADA data)* as compared to 81048 MW on 04th Sep'23 @14:30hours.

- **Comparison of Average Energy Consumption (MUs/Day) of NR States for the Sep'23 vs Sep'24**

क्षेत्र/राज्य	सितम्बर- 2023	सितम्बर- 2024	% अंतर
चंडीगढ़	6.5	6.3	-2.9%
दिल्ली	123.7	118.7	-4.0%
हिमाचल प्रदेश	34.6	35.8	3.4%
हरियाणा	226.3	215.2	-4.9%
जम्मू और कश्मीर	49.2	52.2	6.1%
पंजाब	271.2	287.3	5.9%
राजस्थान	309.5	296.0	-4.4%
उत्तराखंड	46.6	48.0	3.0%

उत्तर प्रदेश	486.8	479.7	-1.4%
उत्तरी क्षेत्र	1554.3	1539.2	-1.0%

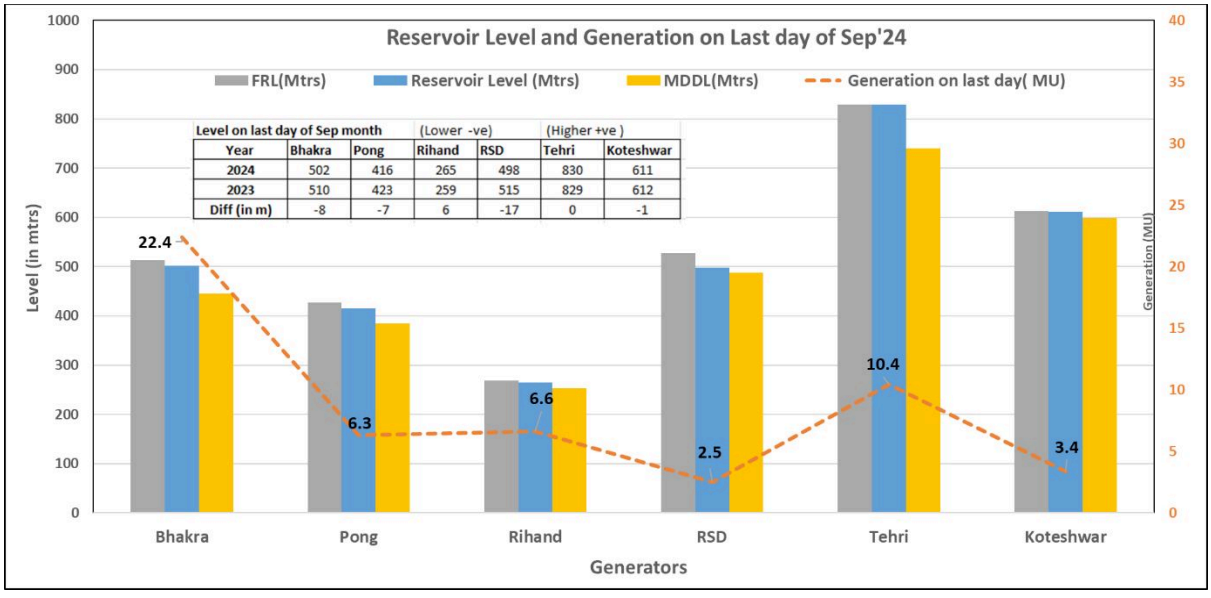
Energy Consumptions



Frequency profile

Month	Avg. Freq. (Hz)	Max. Freq. (Hz)	Min. Freq. (Hz)	<49.90 (% time)	49.90 – 50.05 (% time)	>50.05 (% time)
Sep'24	50.00	50.38 (27.08.24 at 13:02:50 hrs)	49.46 (13.08.24 at 19:20:20 hrs)	6.1	77.1	16.8
Sep'23	50.00	50.30 On 02.08.23 at 13:18:10 hrs	49.52 on 31.08.23 at 22:25:00 hrs	5.3	77.9	16.8

Reservoir Level and Generation on Last Day of Month



Demand forecasting related

With reference to the Clause 31(2) of Central Electricity Regulatory Commission-IEGC Regulations, 2023 and the Operating Procedure of NRLDC prepared in accordance with the same, each SLDC has to furnish the demand estimation for day ahead, week ahead, month ahead (with time block wise granularity) and demand estimation for year ahead (with hour granularity). The sub-clause 31(2) (h) of IEGC-2023 states the following timeline for the submission of demand estimate data to RLDC.

Type of Demand Estimation	Timeline
Daily	10:00 hours of previous day
Weekly	First working day of previous week
Monthly	Fifth day of previous month
Yearly	30th September of previous year

The following is the status regarding forecast data submission.

Region	State	Demand Estimation							
		Daily*		Weekly		Monthly		Yearly	
		Estimation (Y/N)	Data submission (Y/N)	Estimation (Y/N)	Data submission (Y/N)	Estimation (Y/N)	Data submission (Y/N)	Estimation (Y/N)	Data submission (Y/N)
NR	Punjab	Y	Y	N	N	N	N	N	N
	Haryana	Y	Y	N	N	N	N	N	N
	Rajasthan	Y	Y	N	N	N	N	N	N
	Delhi	Y	Y	N	N	N	N	Y*	Y*
	UP	Y	Y	N	N	N	N	Y*	Y*
	Uttarakhand	Y	Y	N	N	N	N	N	N
	HP	Y	Y	Y	Y	N	N	Y*	Y*
	J&K	Y	Y	N	N	N	N	N	N
	Chandigarh	Y	Y	N	N	N	N	N	N
	Railways_NR	N	N	N	N	N	N	N	N

***Submitted for FY-24-25. Data is awaited for FY 25-26**

Further, day-ahead information is also not regular and being missed on several occasions. Status for last one week is shown below:

s.no	State	09-Sep	08-Sep	07-Sep	06-Sep	05-Sep	04-Sep	03-Sep	Own Generation
1	JK & Ladakh(UT)	Y	Y	Y	N	N	N	N	Y
2	Punjab	Y	Y	Y	N	N	N	N	Y
3	UP	Y	Y	Y	Y	Y	Y	Y	Y
4	Uttrakhand	Y	Y	Y	Y	Y	Y	Y	Y
5	Chandigarh	Y	Y	Y	Y	Y	Y	Y	Y

6	Rajasthan	Y	Y	Y	Y	Y	Y	Y	N
7	Delhi	Y	Y	Y	Y	Y	N	N	Y
8	Haryana	Y	N	N	Y	Y	Y	Y	Y
9	HP	Y	Y	Y	Y	Y	Y	Y	Y

In accordance with above, all SLDCs are requested to furnish the demand estimation data as per the formats available at *https://drive.google.com/drive/folders/1KWY4G9gTBLV5wTJkhGEIeRptKP-QbhjL?usp=drive_link* to NRLDC through mail (nrldcmis@grid-india.in) and FTP as per above timeline.

Members may please discuss.

B.2. Critical operation of Rajasthan Grid during upcoming winter season:

Issues related to grid operation in Rajasthan state control area have been highlighted from NRLDC side in last several OCC/TCC/NRPC meetings. It is to be noted that such issues get aggravated during winter months when agricultural demand in state is on the higher side. Several issues were encountered in Rajasthan control area during last winter season. Some of these are listed below:

a) Non-compliance issues during day time and shifting of load to day time

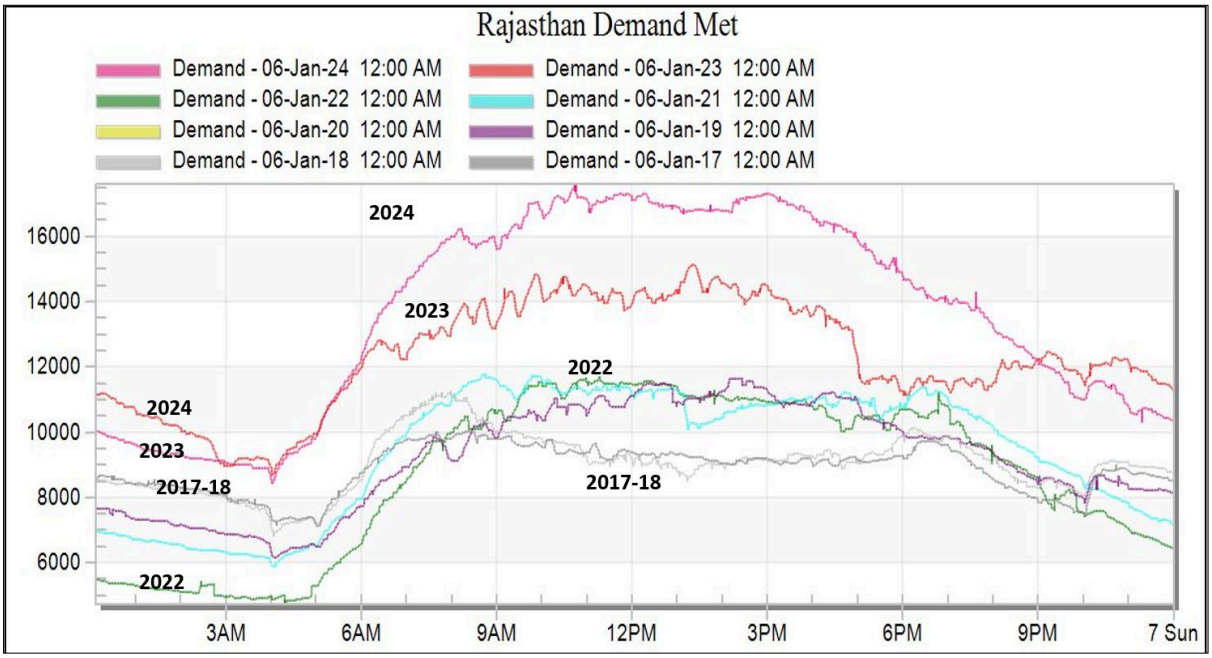
From the data available at NRLDC, it is being observed that the loading of almost all 400/220kV substations (intrastate as well as interstate) in Rajasthan is beyond their N-1 contingency limit during day-time. Such situation has led to load loss in particular area of N-1 non-compliance apart from possibilities of major grid disturbance in Rajasthan control area.

Last year for a number of ICTs, it was observed that loading of 400/220kV ICTs in Rajasthan were non-compliant. Tabulated information based on loading observed last year during winter months Dec'23-Jan'24 is mentioned below:

Name of Substation	MVA Capacity	Total Loading (MW) (variations throughout day during Dec'23-Jan'24)	SPS Status as available with NRLDC
Bhiwadi(PG)	3*315=945	300-700	Not implemented
Neemrana(PG)	315+500=815	200-450	Not implemented
Bassi(PG)	2*315+500=1130	300-1000	Not implemented
Sikar(PG)	2*315+500=1130	150-750	Not implemented
Jaipur South(PG)	2*500=1000	150-650	Not implemented
Kankroli(PG)	3*315=945	250-650	Not implemented
Kotputli(PG)	2*315=630	150-500	Not implemented
Hindaun (RVPN)	2*315 =630	250-550	Implemented

Chittorgarh (RVPN)	3*315 =945	200-700	Implemented
Ajmer (RVPN)	2*315 =630	200-600	Implemented
Merta (RVPN)	2*315 =630	250-550	Implemented
Bikaner (RVPN)	2*315 =630	100-550	Implemented
Jodhpur (RVPN)	2*315 =630	200-500	Implemented
Heerapura(RVPN)	3*250+315=1065	300-900	Not implemented
Bhilwara (RVPN)	1*500+1*315 =815	300-550	Under Implementation
Ratangarh(RVPN)	3*315=945	300-750	Implemented
Deedwana(RVPN)	2*315=630	150-500	Not implemented
Suratgarh(RVPN)	2*315=630	100-500	Implemented

Moreover, from the data at NRLDC & past discussions in OCC, it is seen that there has been considerable shifting of load in day-time by Rajasthan.



During 73 NRPC meeting, NRLDC requested Rajasthan to:

- Address the transmission and distribution related issues being encountered while shifting of agricultural load to day time
- Explore fund from RDSS to separate agricultural feeder as discussed in last TCC/NRPC meeting and communication received from MoP.
- Till the transmission and distribution related issues are resolved, it is requested to manage the agricultural supply for constrained locations during day time to avoid issues during grid operation.

RVPN representative stated that actions for funds from RDSS scheme is yet to be explored.

Rajasthan SLDC representative stated that they have communicated the same to Zonal T&Cs, and asked them to take up the same with DISCOMs. Reply is awaited from DISCOM side.

Forum also discussed on the communication from MoP side which mentioned that:

"It is requested that the shifting agricultural load to solar hours be implemented by end of March, 2024. Some states have reported constraints in transmission / distribution because of which the shift could be delayed. In such cases, the shift can be in phases. The Transmission and distribution bottlenecks can be addressed by using fund from the RDSS to separate agriculture feeder."

As requested earlier, no technical study has been shared from SLDC/STU/DISCOM side w.r.t. decision of shifting major load to day-time.

Since Rajasthan grid faces, critical operation of grid with shifting of agricultural demand to day-time, it is once again requested that SLDC takes up the matter with DISCOMs for shifting of agricultural demand being provided in day-time till transmission network capacity augmentation takes place.

b) Frequent tripping of line and maintenance issues due to forest area

NRLDC had raised concern on number of occasions regarding frequent tripping of transmission lines from RAPP(A) and RAPP(B) and maintenance work being done for these lines by RVPNL.

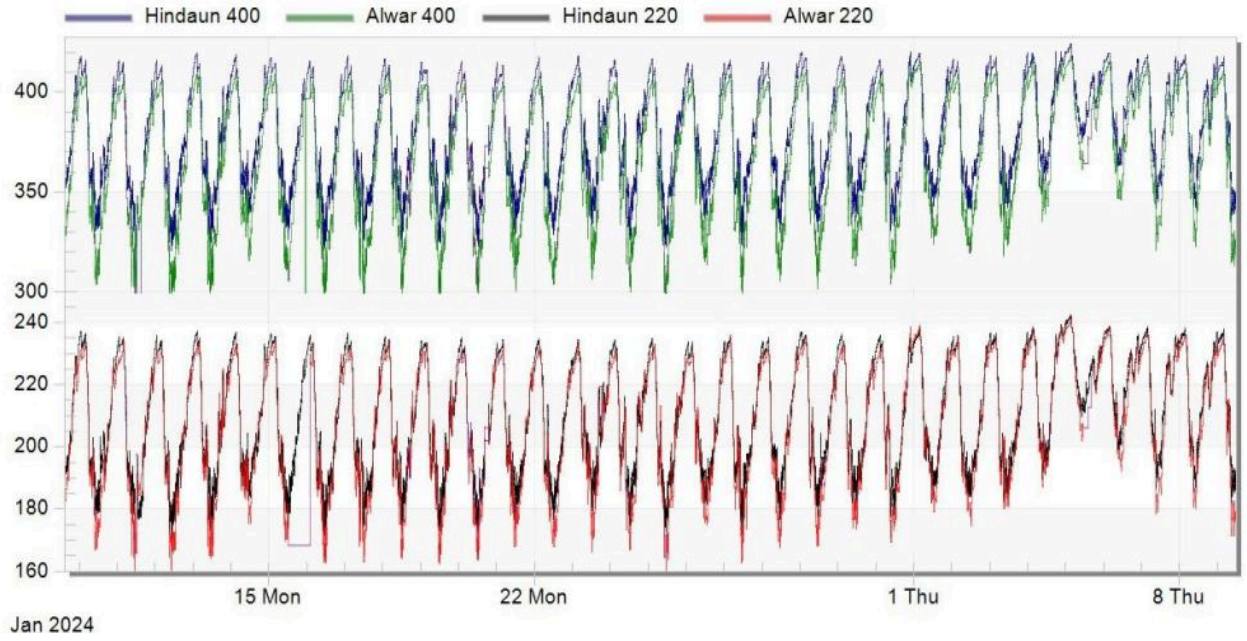
Chief Engineer, SLDC Rajasthan had earlier informed that all these lines from RAPS where frequent tripping were observed were passing through forest area of Chambal region and workmen of contractor assigned to carry out the work were dissuaded from carrying out any tree pruning works by the forest rangers.

It is requested that RVPN may expedite their measures and take up the matter with forest officials and carry out maintenance of the lines to avoid tripping during upcoming winter season.

c) Generation of Dholpur TPS to minimise low voltages in Hindaun & Alwar region

Various letters and emails from NRLDC Control room have been given to Rajasthan SLDC highlighting the low Voltage issues at Hindaun, Alwar and Dholpur and requesting the running of Dholpur units to improve the Voltage profile.

Voltage profile for last year Jan 2024 is shown below:



It is requested that SLDC Rajasthan may timely take up the matter with their higher management and respective DISCOMs so that Dholpur generation is made available during the upcoming winter season.

Rajasthan SLDC is requested to take up the matter with respective state agencies the issues highlighted above and any other related issues so that smooth and secure grid operation is possible during the upcoming winter season.

B.3. Winter preparedness 2024-25

Winter in Northern region is likely to start from mid of October till February end, and the challenges faced during these months are well known to all the utilities. During winter, demand of NR states except Rajasthan and hilly states is on the lower side. With decreasing temperatures and festivals, onset of winter also brings some severe challenges to NR grid operators. Moreover, there is possibility for severe winter during this season due to the impact of LA-NINA. IMD in their press release dated 05.09.2024, Extended range Forecast for next two weeks (5- 18 Sept, 2024) mentioned that "*The latest MMCFS forecast indicates higher likelihood of La Niña conditions are likely to develop during end of monsoon season*". Accordingly, number of measures were discussed and implemented for better grid operation during winter months:

Based on the detailed discussion held in last OCC meeting, following actions were suggested:

- Transmission utilities to prepare plan for measures to be taken by them for carrying out pre-winter maintenance activities. It was agreed that same may be shared by utilities via mail with NRPC/NRLDC before next OCC meeting.

- To carry out tap change exercise at 220kV and below voltage level. NRLDC will also be studying voltage profile of 400/220kV substations in NR for the month of Oct 2024. Accordingly, tap changes at following 400/220kV substations will be proposed in next OCC meeting.

- With low temperature across Northern region and with high humidity in the air, fog starts to appear across the Northern region. This problem is generally most severe from 15Dec- 15Feb period & more prominent in areas having high pollution. During this time, additional care need to be taken by system operator as many multiple element tripping events have been reported in the past especially in Punjab, Rajasthan, Haryana and Eastern UP. Such tripping are more severe if the lines are tripping from generation complex.

  To furnish details of Progress on cleaning and replacement of porcelain insulator with polymer insulator. NRLDC has already requested vide email dated 26.09.2024 all transmission utilities to furnish the utility-wise latest status of the replacement of porcelain insulators with polymer insulators so that crucial lines for which such works are pending may be identified & prioritized. List is also attached as **Annexure-B.I**.

- To ensure that all over flux setting of transformers and overvoltage settings of transmission lines are as per approved protection philosophy of NRPC.

  On number of occasions, it is seen that utilities are correcting their protection settings after tripping events. It is important all the protection settings are as approved by NRPC. Utilities are requested to confirm the same from field and ensure that protection settings are only as approved by NRPC.

- OCC expressed concern on the lack of progress of DTL reactors and asked them to expedite their works. Status of reactors under commissioning in Delhi control area in Northern region as per discussion in 223 OCC MoM is shown below:

Substation	Reactor	Status as per 222 OCC MoM
Mundka	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	Bay work completed on 25.03.2023. Reactor part tender is dropped and at present same is under revision.
Bamnauli	2x25 MVAr at 220 kV	Bay work completed on 25.03.2023. Reactor part tender is dropped and at present same is under revision.
Electric Lane	1x50 MVAr at 220 kV	Under Re-tendering due to Single Bid
Indraprastha	2x25 MVAr at 220 kV	Bay work completed on 07.11.2023. Reactor part tender is dropped and at present same is under revision.

NRLDC representative also presented the voltage profile of these substations for last winter season in the meeting and emphasized on urgent requirement of these reactors. It is requested to expedite the commissioning of these reactors apart from the measures listed above.

- Some of the generators have already been tested (Tehri, Chamera, Pong, RSD etc.) and shall be available for condenser mode of operation as and when required. States/SLDCs are also advised to explore synchronous condenser operation of Hydro & Gas units in their state control area. It was requested that all other utilities may explore possibility of running units as synchronous

condenser. It was highlighted that since reactive energy charges are now payable to generators also therefore, it would also be providing them financial support in case units are supporting through synchronous condenser mode of operation.

- Utilities to submit feedback on NRLDC reactive power document including for line reactors which can be used as bus reactors as per requirement.

- Utilities to ensure maximum availability of bus reactors and line reactors including provision of using line reactors as bus reactors incase of opening of lines on high voltage. Following are some of the bus reactors which are under long outage as per NRLDC Outage Management software portal:

1. 125 MVAR BUS REACTOR NO 1 AT 400KV PARICHA(UPUN)
2. 50 MVAR BUS REACTOR NO 1 AT 400KV RISHIKESH(UK)
3. 80 MVAR BUS REACTOR NO 1 AT 400KV BALLABHGARH(PG)
4. 125 MVAR Bus Reactor No 1 at 400 KV Jaisalmer(RS)
5. 80 MVAR Bus Reactor No 1 at 400KV Kaithal(PG)
6. 63 MVAR Bus Reactor No 1 at 400KV Unnao(UP)
7. 125 MVAR Bus Reactor No 1 at 400 KV Kadarpur (GPTL)
8. 125 MVAR Bus Reactor No 1 at 400KV Chamera_1(NH)

Respective utilities are requested to provide update.

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

B.4. Status of 765kV Sikar-II substation and anticipated issues thereof

Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part C was approved in 5th meeting of NRSCT held on 13.09.2019. Subsequently, SPV named POWERGRID Sikar Transmission Ltd., was acquired on 04.06.2021 and as per TSA implementation schedule was provided as Dec 2022 for commissioning of 765/400kV Sikar-II and associated transmission system.

There has been delay of more than one and half year with respect to commissioning of 765 KV Sikar 2 PG sub-station. Due to non-availability of Sikar 2 sub-station the Rajasthan ISTS RE system is already deeply stressed and the lines from RE complex remain heavily loaded. Nearly 5200 MW RE generation has been connected in Western Rajasthan which does not have its associated EHVAC transmission system. There are issues related to high loadings in the RE complex and not feasible to provide major shutdowns of existing transmission lines such as outage of 765 KV Bikaner-Moga D/C line as it would further stress the available transmission system

In case of availability of 765 KV Bhadla2-Sikar-2 line, 765 KV-Bhadla 2-Sikar-2 lines and 765kV Sikar2- Aligarh and 400kV Sikar-2-Neemrana lines, the RE complex would be connected to load centers. Interconnection with load will also help to stabilise the grid and the impact of frequent transient fault impact could be minimized.

Recently, the proposed shutdown of 765kV Bikaner-Moga are regularly being discussed at OCC levels, wherein it has been discussed that if this shutdown is

allowed at present, there shall be RE curtailment of the order of 1500 MW to 3500 MW under different scenarios. In view of above, shutdown of 765 KV Bikaner - Moga D/C cannot be allowed in the present scenario considering the quantum of RE curtailment.

Accordingly, NRLDC has requested POWERGRID to expedite commissioning of 765 KVBhadla-2-Sikar-2, 765kV Sikar-2- Aligarh and 400kV Sikar-2-Neemrana transmission lines along with Sikar-2 substation to ensure safe evacuation of RE generation and to facilitate required shutdowns in the RE complex.

In the remaining portion of the current financial year (2024-25), approx. 4000 MW additional RE is proposed to be integrated progressively in the Rajasthan RE complex. However, with the existing transmission network, it is not possible to evacuate further RE generation, till additional transmission system including Sikar-II system is charged. The present grid is already under lot of stress in Western Rajasthan and all efforts are being made from NRLDC side to maximize the evacuation of RE power. Therefore, actions are required from POWERGRID side on war footing basis. Although 765kV Bhadla2-Fatehgarh2 2nd D/C helped to strengthen network at Fatehgarh-II, however, this would further increase loading on 765kV Bhadla-2-Ajmer D/C transmission lines which is already heavily loaded. Therefore, commissioning of 765/400kV Sikar-II along with associated transmission system is required at the earliest.

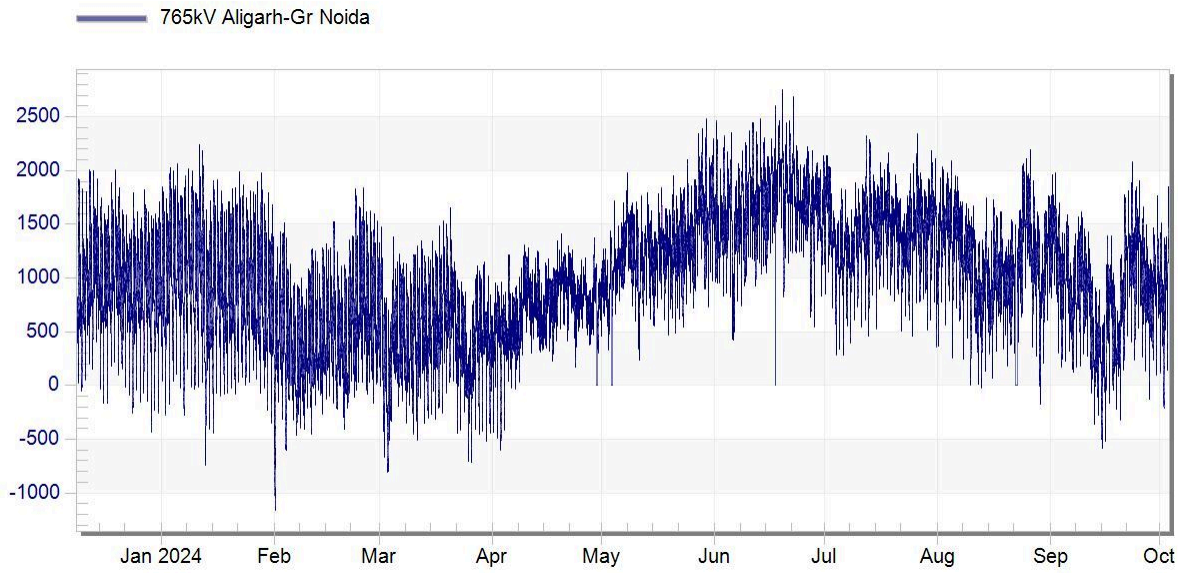
During 73 NRPC meeting, POWERGRID was requested to expedite commissioning of 765 KV-Bhadla 2-Sikar-2 lines and 765kV Sikar2- Aligarh and 400kV Sikar-2-Neemrana lines transmission lines along with 765/400kV Sikar2 substation. POWERGRID representative informed that land was provided to POWERGRID in Dec 2023 for Sikar-II and accordingly the project was slightly delayed. Following timelines were provided for anticipated transmission elements during the meeting:

- 765kV Bhadla2-Sikar-2 D/C is expected by Nov-Dec 2024.
- 400kV Sikar-2-Neemrana D/C lines is expected by Sep 2024 end.
- 765kV Sikar-2-Aligarh D/C lines is expected by Sep 2024 end.

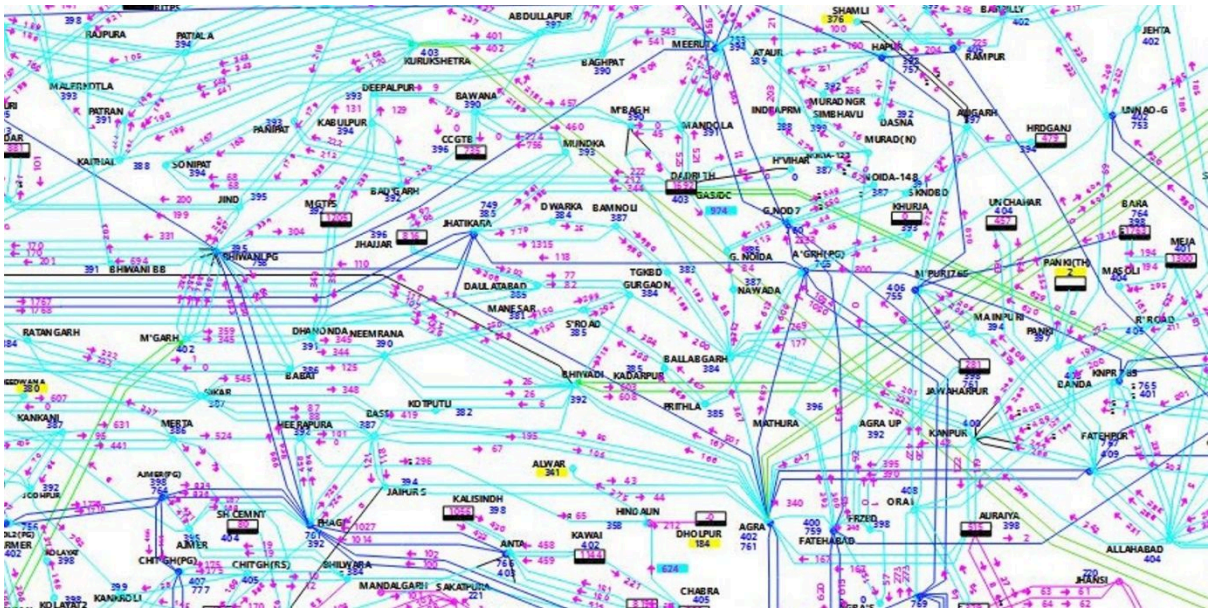
With the commissioning of 765kV Sikar-II and inflow of RE power from Sikar-II to Aligarh, the loading of 765kV Aligarh-Gr. Noida is further expected to increase.

When importing power from Western region to Northern region, apart from the already known constraint of 765kV Vindhyachal-Varanasi D/C line, another constraint is that N-1 contingency of 765 KV Bara- Mainpuri will overload 765 KV Aligarh-Gr. Noida.

Loading pattern of 765kV Aligarh-Gr. Noida for last one year is shown below:



Even during the day of major load loss event in NR on 17.06.2024, just before the event, the loading of 765kV Aligarh-Gr. Noida was around 2300MW as shown below:



As per simulation studies carried out at NRLDC end, with commissioning of 765kV Bhadla2-Sikar2-Aligarh link, the flow on 765kV Aligarh-Gr. Noida is further expected to increase by 600-800MW. Thus, loading of 765kV Aligarh-Gr. Noida will be one of the limiting factors for importing power from Western region also.

NRLDC had continuously requested POWERGRID NR-3 to furnish the safe loadability limit of 765kV Aligarh-Gr. Noida vide emails dated 27.08.2024, 06.09.2024 & 27.09.2024, however, reply from POWERGRID is yet to be received.

Accordingly, it is requested that:

- POWERGRID NR-1 may furnish the latest status of commissioning of 765kV Bhadla2-Sikar2 D/C line and other transmission lines from RE complex.
- POWERGRID NR-3 may furnish the safe loadibility of 765kV Aligarh-Gr. Noida considering the rating of terminal's equipment to be considered while performing simulation studies.

- CTUIL/STUs may provide their comments on the anticipated loading scenario for loading of 765kV Aligarh-Gr. Noida line with commissioning of 765kV Bhadla2-Sikar2-Aligarh link and any suggestions thereof.

Members may please discuss.

B.5. J&K and Ladakh grid operation related issues anticipated during winter 2024-25

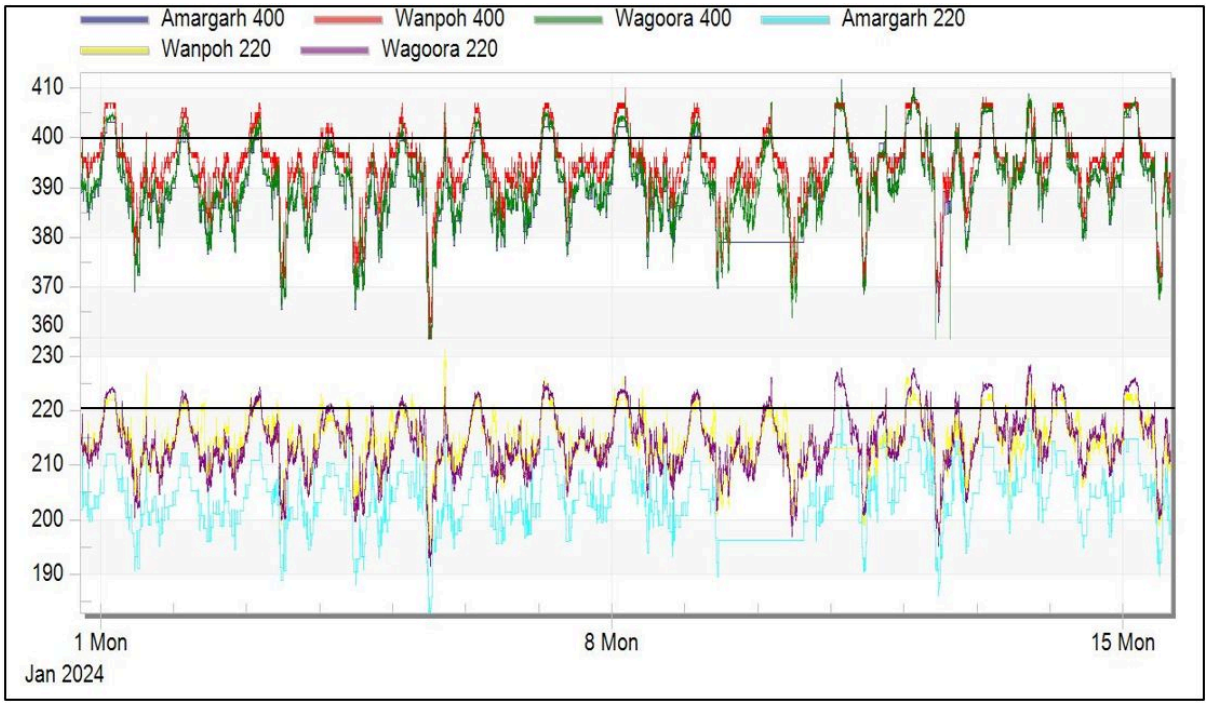
J&K grid being weakly connected from the rest of the grid and due to its isolated location suffers from issues of severe low voltage. During winter months when hydro generation is not available and demand in J&K control area is high due to heating load requirements, the issue of low voltage gets aggravated. J&K also has to pay large amounts as reactive energy charges to pool due to high MVAr drawl from ISTS grid at the time of low voltage.

It has been discussed and suggested to J&K to plan & expedite commissioning of reactive power devices especially capacitors at lower voltage level to improve the voltage profile in valley area and also avoid large sums payable as reactive energy charges.

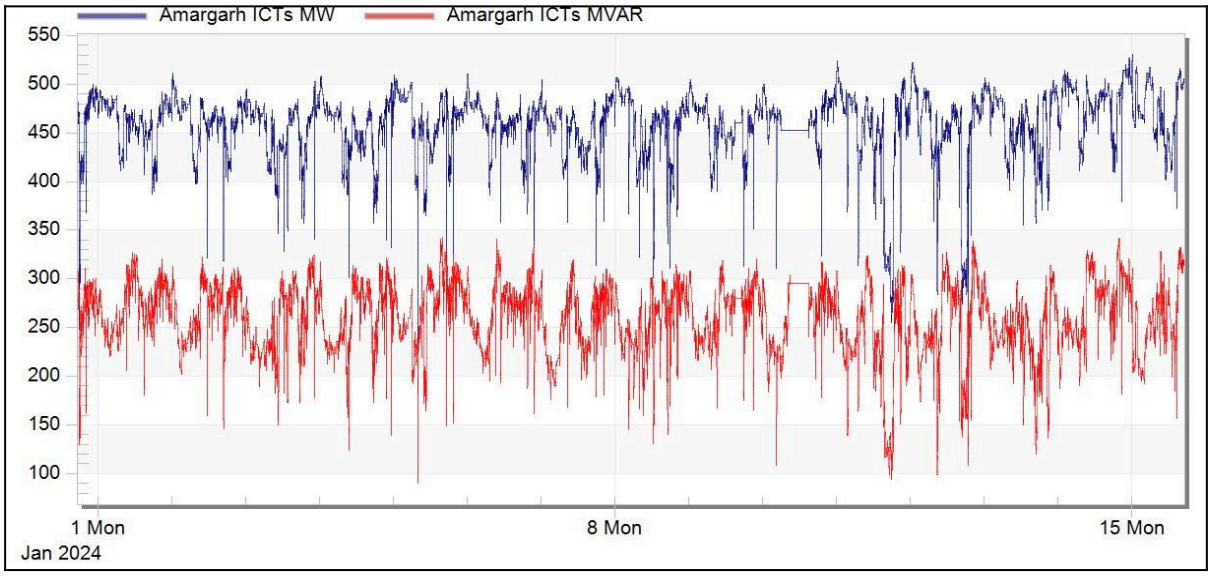
Low voltage related issues of J&K and Ladakh (UT) has been regularly shared by NRLDC with CEA and CTUIL in Grid-India's quarterly operational feedback report. The issue has been continuously raised in NRPC as well as OCC meetings still the issues of low voltage persist in J&K especially Kashmir valley during winter season.

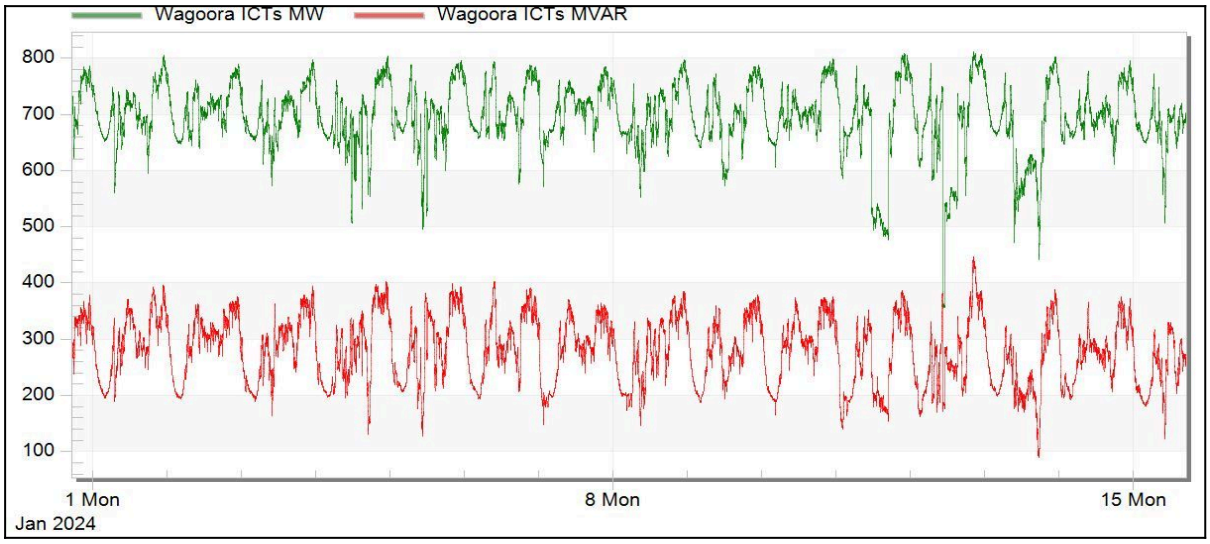
As can be seen from plots for the month of Jan 2024, 400kV voltages are reaching 370kV at Amargarh, Wagoora and Wanpoh substations. Even the SVC at New Wanpoh is being fully utilized and no margin is available for dynamic support. Plots of 400kV and 220kV bus voltages of Amargarh, Wagoora and Wanpoh substations for Jan 2024 are shown below:

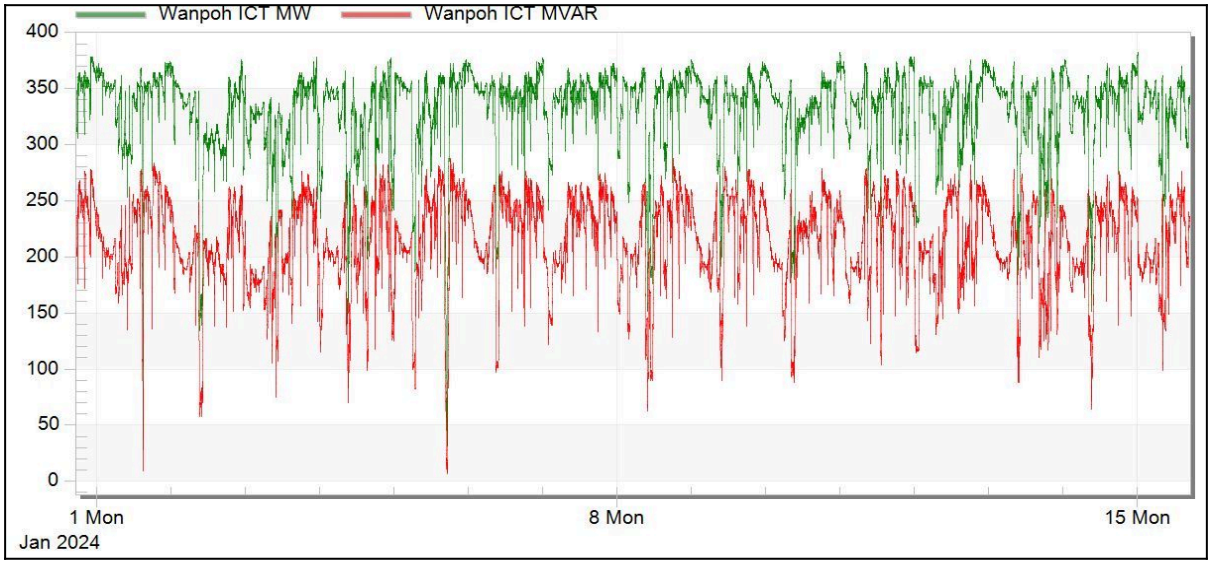
`



Pattern of MW and MVAR drawl by 400/220kV ICTs at ISTS substations such as Amargarh, Wagoora and New Wanpoh suggest, there is urgent requirement of reactive compensation in intrastate network. From the plots it is clear that the reactive drawl is atleast half of the MW drawl of 400/220kV ICTs. This increases % loading of transmission elements and also leads to low voltages in the grid. The power factor at 400/220kV ISTS substations is in range of 0.8-0.9.







The issue was also discussed in detail in 71 NRPC meeting. In 71 NRPC meeting, NHPC representative stated that the voltages are also remaining low in Uri & Uri-II hydro stations. Low voltage at these stations also are stressing hydro units at these stations.

In the meeting, it was discussed that capacitors and supply of reactive power at local level is the only solution.

J&K representative stated that only 78MVAr capacitors are functional as on date in Kashmir area. They shall submit plan to improve the voltage profile in the area. It was further informed that 220kV Alusteng-Mirabzar is under commissioning and 50km line works are pending and expected to be charged before next winter.

J&K and Ladakh representatives are requested to provide update on the actions taken from their side to attend these low voltage issues and also their preparation for avoiding such issues during the upcoming winter season.

B.6. Reactive power performance of generators

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 18 days (20 Sep 2024 – 07 Oct 2024) 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	-150 to 110	408
		2	490		-147 to 294	-150 to 110	407
2	Singrauli NTPC	1	200	UP	-60 to 120	5 to 30	405
		2	200		-60 to 120	0 to 30	404
		3	200		-60 to 120	0 to 30	402
		4	200		-60 to 120	-30 to 0	396
		5	200		-60 to 120	-10 to 20	398
		6	500		-150 to 300	0 to 60	404
		7	500		-150 to 300	0 to 60	402
3	Rihand NTPC	1	500	UP	-150 to 300	-	-

		2	500		-150 to 300	-50 to 50	397
		3	500		-150 to 300	-70 to 30	395
		4	500		-150 to 300	-90 to 10	395
4	Kalisindh RS	1	600	Rajasthan	-180 to 360	-130 to 100	-
		2	600		-180 to 360	-140 to 10	-
5	Anpara C UP	1	600	UP	-180 to 360	-110 to 50	765
		2	600		-180 to 360	-90 to 30	768
6	Talwandi Saboo PB	1	660	Punjab	-198 to 396	-150 to 150	410
		2	660		-198 to 396	-150 to 150	410
		3	660		-198 to 396	-	-
7	Kawai RS	1	660	Rajasthan	-198 to 396	-100 to 20	402
		2	660		-198 to 396	-100 to 20	405
8	IGSTPP Jhajjar	1	500	Haryana	-150 to 300		
		2	500		-150 to 300	-90 to 150	412
		3	500		-150 to 300	-130 to 80	408
9	Rajpura (NPL)	1	700	Punjab	-210 to 420	-180 to 100	402
		2	700		-210 to 420	-200 to 140	402
10	MGTPS	1	660	Haryana	-198 to 396	-130 to 150	408
		2	660		-198 to 396	-140 to 180	408
11	Bawana	1	216	Delhi-NCR	-65 to 130	-60 to 40	406
		2	216		-65 to 130	-60 to 40	406
		3	216		-65 to 130	-	-
		4	216		-65 to 130	-	-
		5	253		-65 to 130	-60 to 60	410
		6	253		-65 to 130	-	-
12	Bara PPGCL	1	660	UP	-198 to 396	20 to 100	780
		2	660		-198 to 396	0 to 100	780
		3	660		-198 to 396	-0 to 0	760
13	Lalitpur TPS	1	660	UP	-198 to 396	-80 to 40	758

		2	660		-198 to 396	-60 to 60	760
		3	660		-198 to 396	-100 to 80	760
14	Anpara D UP	1	500	UP	-150 to 300	-200 to 10	-
		2	500		-150 to 300	-180 to 10	-
15	Chhabra TPS	1	250	Rajasthan	-75 to 150	-40 to 20	408
		2	250		-75 to 150	-30 to 30	410
		3	250		-75 to 150	-30 to 30	410
		4	250		-75 to 150	-	-
		5	660		-198 to 396	-70 to 70	410
		6	660		-198 to 396	-80 to 50	410

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

Since with IEGC 2023 implementation, reactive energy performance also has financial impact, it is desirable that all generating stations continue to support grid voltages by having reactive power performance as per their capability curve and grid requirement.

Some of the generating units such IGSTPP Jhajjar, MGTPS Jhajjar, Bara need to explore possibility of further MVAR absorption. Further, intrastate generators in Rajasthan control area may be asked to support through adequate reactive power generation during day-time when Rajasthan grid experiences low voltage.

All generating stations are requested to resolve any issues related to telemetry and make sure that MVAr absorption is as per grid requirement and capability curve of machine. Generators may also set their Vsch (voltage set point) such that units are absorbing MVAR as per their capability and grid requirement with intimation to RLDC/SLDC.

B.7. Sharing of ATC/TTC assessment and base-case with NRLDC

All NR states except Chandigarh UT 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.

CERC vide their order dated 29.09.2023 has granted approval of "'Detailed Procedure for Allocation of Transmission Corridor for Scheduling of General Network Access and Temporary General Network Access under Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022".

Detailed roles and responsibilities for State Load Dispatch Centers in various timelines of the approved procedure are provided in the table below.

Purpose	***S No***	***Action of Stakeholder***	***Responsibili***	***Submission***	***Data/ Informat***

			ty	***to***	***ion Submiss ion Time line***
1. Revision 0 TTC/ATC Declaration for Month 'M'	*1(a)*	*Submission of node wise Load and generation data along with envisaged*	*SLDC*	*RLDC*	*10th Day of 'M-12' month*
		scenarios for assessment of transfer capability			
		Assessment of TTC/ATC of the import/export capability of the state and intra-state system and sharing of updated network simulation models			
	1(b)	*Declaration of TTC/ATC of the intra- state system by SLDC in consultation with RLDC*			*26th Day of 'M-12' month*
2. Interconnect ion Studies for elements to be integrated in the month 'M'	*2(a)*	*Submission of node-wise load and generation data & sharing of network simulation models for intra-state elements coming in the next six months*	*SLDC*	*RLDC*	*8th Day of 'M- 6' month*
	2(b)	*Sharing of inter-connection study results*			*21st Day of 'M-6' month*
3. Month Ahead TTC/ATC Declaration & Base case for Operational Studies for Month 'M'	*3(a)*	*Submission of node wise Load and generation data along with envisaged scenarios for assessment of transfer capability*	*SLDC*	*RLDC*	*8th Day of 'M- 1' month*
		Assessment of TTC/ATC of the intra- state system and sharing of updated network simulation models			
	3(b)	*Declaration of TTC/ATC of the intra- state system in consultation with RLDC*	*SLDC*	*RLDC*	*22nd Day of 'M-1' month*

To encourage participation from SLDCs regarding basecase preparation and ATC/TTC assessment, two workshops have been conducted from Grid-India/NRLDC side. One workshop was conducted 31.08.2023 before the finalization of the procedure and another on 10.01.2024 recently to involve further participation from SLDCs.

Although all SLDCs are now involved in preparation of basecase & ATC/TTC assessment, it is seen that the timelines as per CERC approved procedure are not being followed and number of times basecases are not received from SLDC side.

B.7.1 ATC/TTC assessment sharing 11 months in advance

The procedure mentions that:

“SLDCs in consultation with RLDCs shall declare the import and export TTC, ATC, and TRM of the individual control/bid areas within the region in accordance with Regulation 44 (3) of the Grid Code 2023. RLDCs shall assess the import and export TTC, TRM and ATC for the group of control/bid areas within the region (if required). The computed TTC, TRM and ATC figures shall be published on the website of respective SLDCs and RLDCs, along with the details of the basis of calculations, including assumptions, if any, **at least eleven (11) months in advance**. The specific constraints indicated in the system study shall also be published on the website.”

Accordingly, SLDCs are requested to send the PSSE cases for four scenarios for Oct'25 i.e. Afternoon Peak, Solar Peak, Evening Peak & Off-Peak hours as communicated from NRLDC side. It is requested that the basecases as well as ATC/TTC assessments may be shared with NRLDC as per CERC approved procedure. Further, the above exercise needs to be carried out regularly monthly.

It was discussed in last several OCC meetings & all states were requested to share basecase as well as ATC/TTC assessments for M-12 scenarios on monthly basis with NRLDC as per CERC approved procedure. Accordingly, it is requested to submit the basecase as well as ATC/TTC assessments.

B.7.2 Sharing of Data and study results for interconnection studies

As per **Regulation 33 of IEGC 2023,**

(9) Each SLDC shall undertake a study on the impact of new elements to be commissioned in the intra-state system in the next six (6) months on the TTC and ATC for the State and share the results of the studies with RLDC.
(10) Each RLDC shall undertake a study on the impact of new elements to be commissioned in the next six (6) months in (a) the ISTS of the region and (b) the intra-state system on the inter-state system and share the results of the studies with NLDC.
(11) NLDC shall undertake study on the impact of new elements to be commissioned in the next six (6) months in (a) inter-regional system, (b) cross-border link and (c) intra-regional system on the inter-regional system.

In line with above, utilities are requested to share the list of elements/LGB data/interconnection study results etc as per the approved procedure which are expected to be commissioned within next six months. This needs to be practised as monthly exercise on regular basis.

The agenda was discussed in last several OCC meetings & all utilities were requested to share list of elements/LGB data/interconnection study results etc as per the approved procedure on monthly basis.

B.7.3 TTC/ATC of state control areas for monsoon 2024 (M-1)

As discussed in previous OCC meetings, most of the NR states except Ladakh and Chandigarh U/Ts are sharing basecase and ATC/TTC assessment with NRLDC.

Based on simulation studies and discussions between SLDCs and NRLDC, ATC/TTC limits for NR states for the month of Nov'2024 are attached as **Annexure-B.II**.

OCC has advised all states to timely declare TTC/ATC for prospective months and revise the figures as per requirement.

The agenda was also discussed in last several OCC meetings wherein all states agreed to send the data as well as PSSE basecases on time for all three (M-1, M-6, M-11) scenarios.

In 223 OCC meeting,

- NRLDC representative stated that the agenda was also discussed in last several OCC meeting wherein all states agreed to send the data as well as PSSE basecases on time for all three (M-1, M-6, M-11) scenarios. CGM NRLDC asked states to get help from NRLDC in case of any difficulty and emphasized on the need for regularity in sharing the data.
- NRLDC representative presented the status of basecase and data sharing by NR states for the last six months.
- It was mentioned that UP, Punjab and J&K are regularly sharing basecase as well ATC/TTC assessment with NRLDC. Rajasthan has also shared the basecase and data in this month. Haryana, Delhi, Uttarakhand and HP are sharing data, but on some occasions, it is getting missed. It was requested that all SLDCs may timely share the same.
- All SLDCs agreed to share basecase as well as ATC/TTC assessment as per CERC approved procedure.

Still it is being observed that response from some SLDCs is not as per desired levels.

May 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (June-24)		M-11 (May-25)		M-6 (Nov-24)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	Yes	Yes	No	No
Haryana	No	No	No	No	No	No
Himachal	No	No	No	No	No	No
J &K	Yes	No	Yes	No	Yes	No
Ladakh	No	No	No	No	No	No
Punjab	No	No	No	No	No	No
Rajasthan	No	No	No	No	No	No
Uttar Pradesh	Yes	Yes	No	No	Yes	Yes
Uttarakhand	No	No	No	No	No	No

June 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (July-24)		M-11 (June-25)		M-6 (Dec-24)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	Yes	Yes	No	No
Haryana	No	No	No	No	No	No
Himachal	No	No	No	No	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	No	No	No
Rajasthan	No	No	No	No	No	No
Uttar Pradesh	Yes	Yes	Yes	Yes	No	No
Uttarakhand	No	No	No	No	No	No

July 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (August-24)		M-11 (July-25)		M-6 (Jan-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	No	No	No	No
Haryana	No	No	No	No	No	No
Himachal	No	No	No	No	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	No	No	No	No
Rajasthan	No	No	No	No	No	No
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	Shared only for 1 cardinal point	No	No	No	No

August 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (September-24)		M-11 (August-25)		M-6 (Feb-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	Yes	Yes	No	No
Haryana	No	Shared only for 1 cardinal point	No	No	No	No
Himachal	No	No	No	No	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Yes
Rajasthan	No	No	No	No	No	No
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	No	No	No	No	No

September 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (October-24)		M-11 (September-25)		M-6 (Mar-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	No	No	No	No
Haryana	No	No	No	No	No	No
Himachal	No	No	No	No	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Yes
Rajasthan	Yes	Yes	Yes	Yes	Yes	Yes
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	No	No	No	No	No

October 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (November-24)		M-11 (October-25)		M-6 (Apr-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh						
Delhi						
Haryana						
Himachal						
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh						
Punjab					Yes	Yes
Rajasthan						
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand						

All SLDCs are requested to provide update.

Members may please discuss.

B.8. Mock testing of islanding scheme and simulation studies

In recently concluded 223rd NR OCC, where the SOP for the mock testing of the islanding scheme was approved. For your reference, the MoM can be accessed via this link: http://164.100.60.165/Meetings/OCC/OCC223/OCC223_MN.pdf

Following islanding schemes have been implemented in NR:

1. NAPS (UP)
2. RAPS (Rajasthan)
3. Bawana (Delhi)
4. Pathankot-RSD (Punjab)
5. Unchahar (UP)

In line with the approved SOP, SLDCs are requested to prepare and share their plan for conducting the mock testing of the Islanding scheme in their control area. This is essential for ensuring the operational readiness of the scheme. As per the IEGC 2023 regulations, it is mandated to conduct mock drills of the islanding scheme annually [Clause 29(11)].

Also, as agreed in OCC 223 meeting, it is requested to expedite the preparation of SCADA network map of the island for easy visualization by control room operators and ensure that error-free telemetry of all elements which are part of island is available at SLDC/NRLDC control room.

During 223 OCC meeting, NRLDC representative presented the updated display of NAPS islanding scheme.

NAPS ISLANDING
LOAD DISPLAY

FREQUENCY (HZ) 50.06 HZ 13 . 9 . 24 11 : 1 :17

NAME OF SUBSTATION	ELEMENT NAME	LOADING	
		WHEN ONE MACHINE IS RUNNING	WHEN BOTH THE MACHINE ARE RUNNING
220KV NAPP	SUT-1	11.23	11.23
	SUT-II	9.43	9.43
220KV SIMBHOLI	63 MVA ICT-1	0.02	0.02
	63 MVA ICT-2		
	40 MVA ICT-3	3.17	3.17
	132KV GARHMUKTESHWAR	-0.00	-0.00
	132KV SUGAR MILL	1.48	1.48
220KV KHURJA	132 KV ANOOPSHAHAR	N / APP	6.66
	132 KV KHURJA-II	N / APP	0.00
	63 MVA ICT-1	N / APP	9.85
	40 MVA ICT-2	N / APP	9.23
	40 MVA ICT-3	N / APP	10.12
TOTAL LOAD		37.99	104.6
RANGE OF REQUIRED LOAD		70-90 MW	150-280 MW

220KV NAPP-GENERATION	GENERATION(MW)	G/L RATIO(%)
UNIT-I	199.1	5.26
UNIT-II	9.43	4.47
TOTAL	407.5	3.82

NRLDC representative appreciated the efforts from UP SLDC side and enquired about telemetry of 220kV Khurja.

UP SLDC representative informed that 220kV Khurja had a fire incident and telemetry is not available since then.

NRLDC representative stated that till telemetry is available monthly maximum, minimum and average load may be obtained from hourly readings available from site and accordingly islanding feasibility may be checked.

NRLDC representative also presented the islanding displays of islanding schemes under RVPN control area.

RAPP A & B ISLANDING SCHEME (RAJASTHAN)

13.9.24 11:3:17

INSTANTANEOUS FREQ.			50.06 HZ	ISLANDING FREQ.	50.06 HZ
NAME OF FEEDER	LOAD	STATUS (As per Scheme)	STATUS (As per SCADA) OPERATIVE BLOCKED	RAPP-A GENERATION	170
RAPP-A End				RAPP-B GENERATION	183
220 KV RAPP A-DEBARI	73	BLOCKED		TOTAL GENERATION	353
220 KV RAPP A-KOTA I	-1	OPERATIVE		EX BUS GENERATION	374
220 KV RAPP A-KOTA II	-1	OPERATIVE		TOTAL BLOCKED/ISLANDED LOAD	0
220 KV RAPP A-RAPP B	14	BLOCKED		TOTAL OPERATIVE LOAD	0
RAPP-B End					
220 KV RAPP B-KOTA III	-5	OPERATIVE			
220 KV RAPP B-DEBARI	61	BLOCKED			
220 KV RAPP B-RAPP C TIE LINE-1	35	BLOCKED			

RAJWEST (JSW) ISLANDING SCHEME (RAJASTHAN)

13.9.24 11:8:49

STANTANEOUS FREQ.	50.04 HZ			
NAME OF FEEDER	LOAD	STATUS (As per Schema)	1-OPERATIVE 0-BLOCKED	STATUS (As per SCADA) OPERATIVE BLOCKED
AJWEST-BARMER	-313	BLOCKED		
AJWEST-JODHPUR	398	BLOCKED		
AJWEST-KANKANI	335	BLOCKED		
AJWEST-BARMER	70	BLOCKED		
AJWEST-DHAURIMANNA	77	BLOCKED		
ARMER-JAISALMER II	-421	OPERATIVE		
ARMER-JAISALMER I(AKAL)	30	OPERATIVE		
ARMER-BHINMAL	0	OPERATIVE		
ARMER-DHAURIMANNA	82	BLOCKED		

ISLANDING FREQ.	50.04 HZ
TOTAL GENERATION	632
EX BUS GENERATION	567
TOTAL BLOCKED/ISLANDED LOAD	0
TOTAL OPERATIVE LOAD	196

STPS ISLANDING SCHEME (RAJASTHAN)

13.9.24 11:9:29

NEOUS FREQ.	50.04 HZ			
ER	LOAD	STATUS (As per Schema)	1-OPERATIVE 0-BLOCKED	STATUS (As per SCADA) OPERATIVE BLOCKED
KANER	-54	OPERATIVE		
-BIKANER	-108	OPERATIVE		
CONN.	542	BLOCKED		
ATANGARH	966	BLOCKED		
	-271	OPERATIVE		
(PG)	654	OPERATIVE		
	175	BLOCKED		
RH	-9	BLOCKED		
	128	BLOCKED		

ISLANDING FREQ.	50.04 HZ
TOTAL GENERATION	1543
EX BUS GENERATION	1398
TOTAL BLOCKED/ISLANDED LOAD	0
TOTAL OPERATIVE LOAD	499

Rajasthan SLDC was asked to include G/L ratio of island in their displays and also check for missing load values so that correct total island load data is available.

Rajasthan SLDC representative agreed for the same.

NRLDC representative further informed that display of RSD islanding scheme is not available at NRLDC end and enquired from Punjab SLDC about the same.

Punjab SLDC representative informed that display is available at SLDC end. However, due to issue in SCADA at SLDC end, they are not able to share the display or even add new elements in their SCADA and SLDC SCADA team is taking up with vendor SIEMENS regarding this issue.

OCC forum asked all utilities to furnish their comments on SOP shared by NRLDC for mock testing exercise of islanding schemes by 30th September 2024. Thereafter, mock testing of islanding schemes shall be carried out progressively from October onwards.

OCC forum appreciated the efforts of SLDCs and asked them to attend to all the comments as discussed in the meeting so that displays as per the format shared by NRLDC are available at both SLDC as well as RLDC end.

Additionally, it is requested to provide the updated Islanding basecases of the islanding schemes with different load-generation balance scenarios for Summer: Peak/Off peak, Winter: Peak/ Off peak along with dynamic data of the generators in the island for conducting dynamic simulation studies on the island.

Members may please discuss.

B.9. Multiple element tripping events in Northern region in the month of September '24:

A total of 18 grid events occurred in the month of September'24 of which **09** are of GD-1 category, **05** are of GI-2 Category and **04** are of GI-1 Category. The tripping report of all the events have been issued from NRLDC. A list of all these events is attached at **Annexure-B.III.**

Maximum delayed clearance of fault observed in event of multiple elements tripping at 400/220kV Akal(RS) on 13th September, 2024 (As per PMU at Bhadla(PG), R-B phase to phase fault converted into R-Y-B three phase fault with delayed fault clearance time of 1120 msec is observed).

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **08** events out of **18** grid events occurred in the month. In 02 (no.) of grid events, there was no fault in the grid.

Remedial actions taken by constituents to avoid such multiple elements tripping may be shared.

As per IEGC clause 37.2 (c), Disturbance Recorder (DR), station Event Logger (EL), Data Acquisition System (DAS) shall be submitted within 24 hrs of the event and as per IEGC clause 37.2 (e), the user shall submit a detailed report in the case of grid disturbance or grid incidence within one (1) week of the occurrence of event to RLDC and RPC.

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

Members may like to discuss.

B.10. Details of tripping of Inter-Regional lines from Northern Region for September' 24:

A total of 18 inter-regional lines tripping occurred in the month of September'24. The list is attached at **Annexure-B.IV.** 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 37.2(c) of

IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.

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

Members may like to discuss.

B.11. Status of submission of DR/EL and tripping report of utilities for the month of September'24.

The status of receipt of DR/EL and tripping report of utilities for the month of September'24 is attached at **Annexure-B.V**. It is to be noted that as per the IEGC provision under clause 37.2 (c), 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.

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 37.2(c) 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.

Members may like to discuss.

B.12. Frequency response performance for the reportable events of month of September 2024:

In the month of September 2024, only 1 no. of reportable event on 13th September 2024 was notified by NLDC for which FRC/ FRP need to be calculated and the same along with high resolution data need to be submitted to RLDC. Description of the event is as given below:
Table:

S. No.	Event Date	Time (In hrs.)	Event Description	Starting Frequency (in Hz)	Nadir Frequency (in Hz)	End Frequency (in Hz)	*Δf*	NR FRP during the event
1	13-Sep-24	13:15 hrs	As reported, at 13:15 hrs on 13th September, 2024, RE generation loss event of	50.229	50.099	50.144	-0.085	0.72

			around 850 MW occured in RE generation complex of Rajasthan, NR. Hence net generation loss of 850 MW is considered for FRC/FRP Calculation.					

As per IEGC 2023 Clause 30.8, "The primary response of the generating units shall be verified by the Load Despatch Centres (LDCs) during grid events. The concerned generating station shall furnish the requisite data to the LDCs within two days of notification of reportable event by the NLDC."
As per IEGC 2023 Clause 30.10.(n), "Each control area shall assess its frequency response characteristics and share the assessment with the concerned RLDC along with high resolution data of at least 1 (one) second for regional entity generating stations and energy storage systems and 10 (ten) seconds for the state control area."

As per sub-clause (a(v)) of clause (9) of IEGC 2023 Annexure-2, "All the SLDCs shall work out FRC for all the intra-state entities (for events indicated by the Regional Load Despatch Centres) based on the HDR available at their respective SLDCs and submit the same to respective RLDC within six (6) working days after the event. (Format as per Table-B)."

As per sub-clause (a(vi)) of clause (9) of IEGC 2023 Annexure-2, "All regional entity generating stations shall also assess the FRC for their respective stations and submit the same to respective RLDC within six (6) working days. (Format as per Table-B). The high-resolution data (1 second or better resolution) of active power generation and frequency shall also be shared with RLDC."

Status of details received from constituents as on 07th September, 2024 is:

S. No	Control Area	Event Date
		13-09-2024
1	Punjab	Not Received
2	Haryana	Received
3	Rajasthan	Not Received
4	Delhi	Received*
5	Uttar Pradesh	Received*
6	Uttarakhand	Not Received
7	Chandigarh*	NA
8	Himachal Pradesh	Not Received
9	J&K(UT) and Ladakh(UT)	Not Received
10	Dadri -1 (TH)	Received
11	Dadri -2 (TH)	Received
12	Jhajjar (TH)	Received
13	Rihand-1 (TH)	Not Received
14	Rihand-2 (TH)	Not Received

15	**Rihand-3 (TH)**	Not Received
16	**Shree Cement (TH)**	Not Received
17	**Singrauli (TH)**	Not Received
18	**Tanda-2 (TH)**	Received
19	**Unchahar stg-4 (TH)**	Not Received
20	**Unchahar (TH)**	Not Received
21	**Anta (G)**	No Gen
22	**Auraiya (G)**	Received
23	**Dadri (G)**	No Gen
24	**AD Hydro (H)**	No Gen
25	**Bairasiul (H)**	No Gen
26	**Bhakra (H)**	Received
27	**Budhil (H)**	Not Received
28	**Chamera-1 (H)**	Received
29	**Chamera-2 (H)**	Not Received
30	**Chamera-3 (H)**	No Gen
31	**Dehar (H)**	Not Received
32	**Dhauliganga (H)**	Not Received
33	**Dulhasti (H)**	Received
34	**Karcham (H)**	Not Received
35	**Kishanganga**	Not Received
36	**Koldam (H)**	Received
37	**Koteshwar (H)**	Not Received
38	**Malana-2 (H)**	Received
39	**Nathpa Jhakri (H)**	Received
40	**Parbati-2 (H)**	NA
41	**Parbati-3 (H)**	Received
42	**Pong (H)**	Not Received
43	**Rampur (H)**	Not Received
44	**Sainj (H)**	Received
45	**Salal (H)**	Received
46	**Sewa-II (H)**	Not Received
47	**Singoli Bhatwari (H)**	Not Received
48	**Sorang (H)**	No Gen
49	**Tanakpur (H)**	Not Received
50	**Tehri (H)**	Not Received
51	**Uri-1 (H)**	No Gen
52	**Uri-2 (H)**	Received

Frequency Response Performance (FRP) of generating stations for each reportable event are calculated based on the submitted high resolution data from generating stations. However, the generating stations for which data is not received till 07th September, 2024, FRC/FRP as per NRLDC HDR data is used for computation of Average Monthly Frequency Response Performance, Beta 'β' for Generating Stations.

FRP values as considered (as per NRLDC HDR data/ generator high resolution data) for the events of September, 2024 is as follows:

S. No	Control Area	Event Date

		13-09-2024
1	Punjab	0.64
2	Haryana	1.07
3	Rajasthan	0.28
4	Delhi	-1.76
5	Uttar Pradesh	0.50
6	Uttarakhand	-0.19
7	Chandigarh*	NA
8	Himachal Pradesh	-1.54
9	J&K(UT) and Ladakh(UT)	-0.08
10	Dadri -1 (TH)	-1.63
11	Dadri -2 (TH)	0.03
12	Jhajjar (TH)	-0.09
13	Rihand-1 (TH)	0.04
14	Rihand-2 (TH)	0.11
15	Rihand-3 (TH)	0.00
16	Shree Cement (TH)	3.60
17	Singrauli (TH)	-0.33
18	Tanda-2 (TH)	-0.08
19	Unchahar stg-4 (TH)	-0.14
20	Unchahar-I TPS	0.02
21	Unchahar-II TPS	No Gen
22	Unchahar-III TPS	4.51
23	Anta (G)	No Gen
24	Auraiya (G)	No Gen
25	Dadri (G)	No Gen
26	AD Hydro (H)	-0.01
27	Bairasiul (H)	0.00
28	Bhakra (H)	-0.37
29	Budhil (H)	0.17
30	Chamera-1 (H)	No Gen
31	Chamera-2 (H)	1.43
32	Chamera-3 (H)	1.64
33	Dehar (H)	-1.33
34	Dhauliganga (H)	10.42
35	Dulhasti (H)	4.32
36	Karcham (H)	5.87
37	Kishenganga	-0.22
38	Koldam (H)	4.28
39	Koteshwar (H)	21.83
40	Malana-2 (H)	NA
41	Nathpa Jhakri (H)	3.12
42	Parbati-2 (H)	0.00
43	Parbati-3 (H)	0.00
44	Pong (H)	-1.01
45	Rampur (H)	6.43
46	Sainj (H)	0.00
47	Salal (H)	-0.18
48	Sewa-II (H)	No Gen

49	**Singoli Bhatwari (H)**	0.69
50	**Sorang (H)**	-0.21
51	**Tanakpur (H)**	No Gen
52	**Tehri (H)**	15.89
53	**Uri-1 (H)**	4.49
54	**Uri-2 (H)**	0.00

ISGS were requested to confirm whether FGMO as per IEGC 2023 has been implemented at their respective stations or not. Updated sheet on the basis of details receicved is as follows:

Sl. No.	Entity	Capacity(MW)	Governor Mode (FGMO as per IEGC 2023) Yes or No	Droop setting (%)	Remarks (if any)
1	Dadri-1 (TH)	4*200			
2	Dadri -2 (TH)	2*490			
3	Jhajjar (TH)	3*500			
4	Rihand-1 (TH)	2*500	Yes	5.0	Under Implementation
5	Rihand-2 (TH)	2*500	Yes	5.0	Under Implementation
6	Rihand-3 (TH)	2*500	Yes	5.0	Under Implementation
7	Shree Cement (TH)	(2 * 150)			
8	Singrauli (TH)	2*500+5*200			
9	Tanda-2 (TH)	2*660			
10	Unchahar stg-4 (TH)	1*500			
11	Unchahar (TH)	2*210			
12	Anta (G)	(1 * 153.2 + 3 * 88.71)			
13	Auraiya (G)	(2 * 109.3 + 4 * 111.19)			
14	Dadri (G)	(2 * 154.51 + 4 * 130.19)			
15	AD Hydro (H)	(2 * 96)	YES	4.0	-
16	Bairasiul (H)	(3 * 60)	Yes	4.0	
17	Bhakra (H)	(5 * 126 + 5 * 157)			
18	Budhil (H)	(2 * 35)			
19	Chamera-1 (H)	(3 * 180)	Yes	5.0	
20	Chamera-2 (H)	(3 * 100)	Yes	5.0	
21	Chamera-3 (H)	(3 * 77)	Yes	4.0	
22	Dehar (H)	(6 * 165)			

23	Dhauliganga (H)	(4 * 70)	Yes	5.0	
24	Dulhasti (H)	(3 * 130)	Yes	5.0	
25	Karcham (H)	(4 * 261.25)	Yes	5.0	
26	Kishenganga	(3 * 110)	Yes	4.0	
27	Koldam (H)	(4 * 200)	Yes	4.0	
28	Koteswar (H)	(4 * 100)	Yes	4.0	
29	Malana-2 (H)	(2 * 50)			
30	Nathpa Jhakri (H)	(6 * 250)	Yes	5.5	
31	Parbati-2 (H)	(4 * 200)			
32	Parbati-3 (H)	(4 * 130)	Yes	4.0	
33	Pong (H)	(6 * 66)			
34	Rampur (H)	(6 * 68.67)			
35	Sainj (H)	(2 * 50)			
36	Salal (H)	(6 * 115)	Yes	3.0	
37	Sewa-II (H)	(3 * 40)	Yes	4.0	
38	Singoli Bhatwari (H)	(3 * 33)			
39	Sorang (H)	(2 * 50)			
40	Tanakpur (H)	(1 * 31.42 + 2 * 31.4)	Yes	4.0	
41	Tehri (H)	(4 * 250)	Yes	4.0	
42	Uri-1 (H)	(4 * 120)	Yes	6.0	
43	Uri-2 (H)	(4 * 60)	Yes	5.0	

Constituents are requested to share the details at the earliest.

Memebers are requested to analyse the frequency response of their respective control area and share the FRC/FRP analysis of generating stations along with unit wise 01 sec data as per timeline for ensuring IEGC compliance.

Members are also requested to reconcile the FRP values as considered for the events of September, 2024.

On 03rd September 2024, NRLDC has conducted an online workshop on Frequency Response Performance of Generators and States of Northern Region. Members from SLDCs, ISGS & State generating stations attended the worlshop. Approx. 185 participants were connected in the meeting. NRLDC presented and explained IEGC clauses related to Governor response FRC/ FRO methodology for computation of FRC/FRO/FRP, methodology for computation of Beta (average monhtly FRP value for incentive related claculation).

NRLDC highlighted non compliance / unsatisfactory data submission status and requested all the memebers for timley computation of FRC/FRP and analysi of governor response of their trespective control area.

Members may like to discuss.

B.13. Mock trial run and testing of black start facilities at generating stations in Northern Region

As per Indian Electricity Grid Code (IEGC) clause 34.3

"*Detailed procedures for restoration post partial and total blackout of each user system within a region shall be prepared by the concerned user in coordination with the concerned SLDC, RLDC or NLDC, as the case may be. The concerned user shall review the procedure every year and update the same. The user shall carry out a mock trial run of the procedure for different sub-systems including black-start of generating units along with grid forming capability of inverter based generating station and VSC based HVDC black-start support at least once a year under intimation to the concerned SLDC and RLDC. Diesel generator sets and other standalone auxiliary supply source to be used for black start shall be tested on a weekly basis and the user shall send the test reports to the concerned SLDC, RLDC and NLDC on a quarterly basis*".

Hydro and gas-based plants are capable of self-black-start. Conducting periodic mock black start exercises are extremely important to ensure the healthiness of black start facilities and also to build awareness as well as confidence among the system operators.

In view of above, regional entity generating stations shall conduct the dead bus charging of their units on rotation basis as per availability of schedule under intimation to the NRLDC. Testing of Diesel generator sets and other standalone auxiliary supply source to be used for black start shall also be done on a weekly basis. SLDC shall also ensure the same in their respective control area. This will ensure the healthiness of blackstart facility at generating stations. Further, NRLDC shall coordinate with the ISGS and states to conduct the mock black start exercise of subsystems.

Therefore, regional entity generating stations and SLDCs are requested to share the annual schedule plan for conducting dead bus charging / mock black start exercise of generating stations / sub-systems during 2024-25 in the format attached as **Annexure-B.VI**. Constituents are also requested to share the test report of diesel generators / auxiliary supply on a quarterly basis. In this regard, a communication has already been sent to constituents through NRLDC letter dated 24.04.2024.

Details received from AD Hydro HEP, Tehri HEP, Karcham Wangtoo HEP, Koteshwar HEP, SJVN, NHPC, Budhil, Auraiya GPS, Singoli Bhatwari HEP, Koldam HEP, Dadri GPS, Delhi, Punjab and Uttarakhand.

Members are requested to share the tentative schedule of mock black start exercise of generating stations in their respective control area. SLDCs are also requested to share the tentative schedule plan of mock black start exercise of generating stations in their respective control area and share the report of the same.

Members may like to discuss.

B.14. Mock testing of System Protection Schemes (SPS) in Northern Region

As per IEGC clause 16.2

''For the operational SPS, RLDC or NLDC, as the case may be, in consultation with the
concerned RPC(s) shall perform regular load flow and dynamic studies and mock testing for reviewing SPS parameters & functions, at least once in a year. RLDC or NLDC shall share the report of such studies and mock testing including any short comings to respective RPC(s). The data for such studies shall be provided by CTU to the concerned RPC, RLDC and NLDC.''

As per IEGC clause 16.3

''The users and SLDCs shall report about the operation of SPS immediately and detailed
report shall be submitted within three days of operation to the concerned RPC and RLDC in the format specified by the respective RPCs.''

There are 53 numbers of System Protection Scheme (SPS) approved in Northern Region out of which 05 number of SPS are under implementation stage. These SPS are implemented at major generation complexes, important evacuating transmission lines and ICTs which are N-1 non complaint. Details of SPS in Northern Region is available on NRLDC website at link https://nrldc.in/download/nr-sps-2024/?wpdmdl=13255&lang=en .

SPS is designed to detect abnormal system conditions and take predetermined, corrective action to preserve system integrity and provide acceptable system performance. Therefore, correct operation of SPS as per designed logic is important to serve its purpose. To ensure this, mock testing of SPS needs to be conducted at a regular period. Clause 16.2 of IEGC 2023 also mandates the mock testing of SPS for reviewing SPS parameters & functions, at least once a year.

In view of the above, concerned constituents / utility are requested to share the tentative schedule plan for conducting mock testing of SPS in their respective control area during 2024-25 in format attached as **Annexure-B. VII.** In this regard, a communication has already been sent to constituents through NRLDC letter dated 01.05.2024.

This is also to inform you an online meeting was scheduled on 05.08.2024 among NLDC, WRLDC, NRLDC, SLDC Gujarat, SLDC Delhi, SLDC UP, SLDC Haryana, SLDC Punjab, SLDC Rajasthan and ATL team to discuss the mock testing of SPS of 500kV HVDC Mundra-Mahindergarh and some challenges were highlighted during the meeting regarding changes in identified load feeders and load shedding in Punjab, Haryana, Delhi, UP and Rajasthan.

As per IEGC clause 16.1

"SPS for identified system shall have redundancies in measurement of input signals and

communication paths involved up to the last mile to ensure security and dependability."

SPS link of HVDC Mundra-Mahindergarh inter regional link is also not healthy. Follow up and discussion for necessary remedial actions are being done. In view of the same, concerned constituents were requested to share the nodal officer for coordination with the ADANI team for further remedial actions.

Details only received from UP, Rajasthan & Haryana. Punjab and Delhi are requested to share the details of their control area at the earliest.

Members are requested to share the tentative schedule of mock testing of SPS implemented on their control area and share the report of the same.

Members may like to discuss.

B.15. Availability and Standardization of recording instrument (Disturbance recorder and Station Event Logger) and status of work regarding undertaking submitted during First Time Charging of elements:

As per IEGC clause 17

1) *All users shall keep the recording instruments (disturbance recorder and event logger) in proper working condition.*
2) *The disturbance recorders shall have time synchronization and a standard format for recording analogue and digital signals.*

IEGC clause 37.2 (c) also mandates the submission of Disturbance Recorder (DR), station Event Logger (EL), Data Acquisition System (DAS) within 24 hrs of the event.

Data of recording instruments (DR/EL) are very helpful in grid event analysis and also is being used in availability verification of transmission lines. Complete and conclusive analysis of any grid event is not possible without these recording instruments and thus their standardization is very important.

Therefore, availability of disturbance recorder with standardization, time sync and correct nomenclature and station event logger need to be ensured by users at the station of their respective control area.

In view of the above, all the constituents are requested to share the details w.r.t. availability and standardization of disturbance recorder and event logger at the station of their respective control area in format attached as **Annexure-B.VIII.**

Details only received from Haryana & UP.

This is also to inform you that in some special cases First Time Charging of Elements were allowed for some critical elements on user request based on undertaking submitted by the user. Majority of these undertaking are related to installation of station event logger or non-functionality of station event logger.

In this view, you are requested to submit the status of work regarding undertaking submitted during First Time Charging of elements listed in **Annexure-B.IX**.

Members are requested to share the share the details w.r.t. availability and standardization of disturbance recorder and event logger at the station of their respective control area. Members are also requested to submit the status of work regarding undertaking submitted during First Time Charging of elements.

Members may like to discuss.

Status of action taken on decision of 223rd OCC meeting of NRPC

S.N.	Agenda	Decision of 223rd OCC meeting of NRPC	Status of action taken
1	A.12. Installation of Control switch devices in 400KV Kalaamb Wangtoo and Kalaamb Sorang lines at PKATL Substation KALAAMB to control switching surges (Agenda by Powergrid NR-2)	Forum asked POWERGRID to submit report including space related constraint in reactor shifting and effectiveness of CSD relay. Thereafter, decision may be taken in next OCC meeting.	POWERGRID has submitted an agenda in this regard.

Follow up issues from previous OCC meetings

Annexure-A.I

<table>
<tr><td>1</td><td>Down Stream network by State utilities from ISTS Station</td><td>Augmentation of transformation capacity in various existing substations, addition of new substations along with line bays as well as requirement of line bays by STUs for downstream network are under implementation at various locations in Northern Region. Further, 220kV bays have already been commissioned at various substations in NR. For its utilization, downstream 220kV system needs to be commissioned.</td><td>List of downstream networks is enclosed in Annexure-A.I.I.</td></tr>
<tr><td>2</td><td>Progress of installing new capacitors and repair of defective capacitors</td><td>Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Sep-2019
◎ DELHI — Jul-2024
◎ HARYANA — Aug-2024
◎ HP — Jun-2024
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Jul-2024
◎ RAJASTHAN — Aug-2024
◎ UP — Sep-2024
◎ UTTARAKHAND — Sep-2024
All States/UTs are requested to update status on monthly basis.</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Healthiness of defence mechanism: Self-certification</td><td>Report of mock exercise for healthiness of UFRs carried out by utilities themselves on quarterly basis is to be submitted to NRPC Secretariat and NRLDC. All utilities were advised to certify specifically, in the report that “All the UFRs are checked and found functional”.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Not Available
◎ DELHI — Jun-2024
◎ HARYANA — Sep-2024
◎ HP — Aug-2024
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Mar-2024
◎ RAJASTHAN — Jun-2024
◎ UP — Jun-2024
◎ UTTARAKHAND — Sep-2024
◎ BBMB — Jun-2024
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>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</td><td>Status:
◎ CHANDIGARH — Not Available
◎ DELHI — Increased
◎ HARYANA — Increased
◎ HP — Increased
◎ J&K and LADAKH — Increased
◎ PUNJAB — Increased
◎ RAJASTHAN — Increased
◎ UP — Increased</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td>
<table>
<tr><td>◎</td><td>UTTARAKHAND</td><td>Increased</td></tr>
<tr><td>◎</td><td>BBMB</td><td>Increased</td></tr>
</table>
</td></tr>
<tr><td>4</td><td>Status of FGD installation vis-à-vis installation plan at identified TPS</td><td>List of FGDs to be installed in NR was finalized in the 36th TCC (special) meeting dt. 14.09.2017. All SLDCs were regularly requested since 144th OCC meeting to take up with the concerned generators where FGD was required to be installed.
Further, progress of FGD installation work on monthly
basis is monitored in OCC meetings.</td><td>Status of the information submission (month) from states / utilities is as under:
<table>
<tr><td>◎</td><td>HARYANA</td><td>Jun-2024</td></tr>
<tr><td>◎</td><td>PUNJAB</td><td>Jun-2024</td></tr>
<tr><td>◎</td><td>RAJASTHAN</td><td>Jul-2024</td></tr>
<tr><td>◎</td><td>UP</td><td>Jan-2024</td></tr>
<tr><td>◎</td><td>NTPC</td><td>Feb-2023</td></tr>
</table>
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>Submission of breakup of Energy Consumption by the states</td><td>All states/UTs are requested to submit the requisite data as per the billed data information in the format given as under:
<table>
<tr><td>Category→</td><td>Consumption by Domestic Loads</td><td>Consumption by Commercial Loads</td><td>Consumption by Agricultural Loads</td><td>Consumption by Industrial Loads</td><td>Traction supply load</td><td>Miscellaneous / Others</td></tr>
<tr><td><Month></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table></td><td>Status of the information submission (month) from states / utilities is as under:
<table>
<tr><td></td><td>State / UT</td><td>Upto</td></tr>
<tr><td>◎</td><td>CHANDIGARH</td><td>Not Submitted</td></tr>
<tr><td>◎</td><td>DELHI</td><td>Jun-24</td></tr>
<tr><td>◎</td><td>HARYANA</td><td>Jul-24</td></tr>
<tr><td>◎</td><td>HP</td><td>Aug-24</td></tr>
<tr><td>◎</td><td>J&K and LADAKH</td><td>JPDCL- Mar’24
KPDCL- Not Submitted</td></tr>
<tr><td>◎</td><td>PUNJAB</td><td>Jul-24</td></tr>
<tr><td>◎</td><td>RAJASTHAN</td><td>Jul-24</td></tr>
<tr><td>◎</td><td>UP</td><td>Jun-24</td></tr>
<tr><td>◎</td><td>UTTARAKHAND</td><td>Mar-24</td></tr>
</table>
Chandigarh is requested to submit the requisite data w.e.f. April 2018 as per the billed data information in the given format</td></tr>
<tr><td>6</td><td>Information about variable charges of all generating units in the Region</td><td>The variable charges detail for different generating units are available on the MERIT Order Portal.</td><td>All states/UTs are requested to submit daily data on MERIT Order Portal timely.</td></tr>
<tr><td>7</td><td>Status of Automatic Demand Management System 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>The status of ADMS implementation in NR is enclosed in Annexure-A.I.II.
<table>
<tr><td>◎</td><td>DELHI</td><td>Scheme Implemented but operated in manual mode.</td></tr>
<tr><td>◎</td><td>HARYANA</td><td>Scheme not implemented</td></tr>
<tr><td>◎</td><td>HP</td><td>Scheme not implemented</td></tr>
<tr><td>◎</td><td>PUNJAB</td><td>Scheme not implemented</td></tr>
<tr><td>◎</td><td>RAJASTHAN</td><td>Under implementation.</td></tr>
<tr><td>◎</td><td>UP</td><td>Scheme implemented by NPCIL only</td></tr>
</table></td></tr>
</table>

			◎	UTTARAKHAND	Scheme not implemented

8	Reactive compensation at 220 kV/ 400 kV level at 8 substations			
	State / Utility	Substation	Reactor	Status
i	DTL	Peeragarhi	1x50 MVAr at 220 kV	1x50 MVAr Reactor at Peeragarhi has been commissioned on dated 18.09.2023
ii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	2x50 MVAR Reactor at Harsh Vihar has been commissioned on dated 31th March 2023.
iii	DTL	Mundka	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	Bay work completed on 25.03.2023. Reactor part tender is dropped and at present same is under revision.
iv	DTL	Bamnauli	2x25 MVAr at 220 kV	Bay work completed on 25.03.2023. Reactor part tender is dropped and at present same is under revision.
v	DTL	Indraprastha	2x25 MVAr at 220 kV	Bay work completed on 07.11.2023. Reactor part tender is dropped and at present same is under revision.
vi	DTL	Electric Lane	1x50 MVAr at 220 kV	Under Re-tendering due to Single Bid
vii	PTCUL	Kashipur	1x125 MVAR at 400 kV	SLDC informed that PTCUL has intimated that bid extension has been done till 18.07.2024. In 220th OCC meeting, PTCUL was suggested to seek assistance from Powergrid in
viii	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. 07.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months. 01 No. of 125 MVAR reactor is under testing which is expected to done by end of May 2024. Tentaive charging plan is to be intimated by Rajasthan SLDC.

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.	Mar'25	02 No. of bays shall be utilized for LILO-II of 220kV Jatwal-Bishnah Transmission Line, the work of which is delayed due to persisting RoW issues. expected date of completion is Mar 2025 subject to availability of funds and resolving of RoW issues), Updated in 220th OCC by JKPTCL.
2	400/220kV, 2x315 MVA New Wanpoh	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV New Wanpoh - Alusteng D/c Line	Mar'25	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Alusteng D/c Line. RoW issues persisting; At present new-wampoh-mirbazar 5km and harwan-alstung 16km have been completed, expected date of completion is Mar 2025 subject to availability of funds and resolving of RoW issues), Updated in 214th OCC by JKPTCL.
				• 220 kV New Wanpoh - Mattan D/c Line	End of 2024	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Mattan D/c Line. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
3	400/220kV, 2x315 MVA Amargarh	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• 220kV D/C line from 400/220kV Kunzar - 220/33kV Sheeri	End of 2024	02 No. of bays are proposed to be utilized for connecting 220/132 kV GSS Loolipora. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• 220kV Bhadson (Kurukshetra) – Ramana Ramani D/c line	Mar'25	Under construction.Updated in 222nd OCC by HVPNL
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	Utilized: 7	• 220 kV D/C Shahajahanpur (PG) - Gola line	Commissioned	Energization date: 26.10.2023 updated by UPPTCL in 215th OCC
				• 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	• 220 kV Hamirpur-Dehan D/c line	Commissioned	HPPTCL has commissioned the Planned 220kV Dehan-Hamirpur TL utilizing 2 No. 220kV Bays.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: 2 Unutilized: 4	• 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.	Dec'24	Issue related to ROW as intimated in 218th OCC by HVPNL. **Status:** Work was stalled since 29.07.2021 due to ROW issues and farmers agitation and further restarted on 9.10.2023 with the help of district administration. Now, work was again stalled since30.11.2023 due to severe ROW issues. Expected to be completed by 31.12.2024. Foundation 209/212. Erection 193/212. Stinging 37.8/50.3 km
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	Oct'25	Line work awarded to M/s R S Infra Projects Pvt. Ltd. Noida, Uttar Pardesh on dated 09.03.2024. Work of route plan and route alignment has been started by the firm as intimated in 218th OCC by HVPNL.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0	• 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	Dec'24	Work in progress. Updated in 220th OCC by HVPNL.
11	400/220kV Tughlakabad GIS	Commissioned: 6 Under Implementation: 4	Utilized: 6 Unutilized: 0	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	Commissioned	Updated in 216th OCC by DTL
				• Masjid Mor – Tughlakabad 220kV D/c line.	Commissioned	Updated in 216th OCC by DTL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 2 Under Implementation:2	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Commissioned	Energization date: 31.05.2024 updated by HPPTCL in 220th OCC
				• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Giri S/s	-	Tendering process is yet to be started.Updated in 219th OCC by HPPTCL
				• Network to be planned for 2 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur Sub-station	Commissioned: 8 Total: 8	Utilized: 0 Unutilized: 8	• D/C line Kadarpur - Sec-56 Gurugram.	Not awarded yet	Initial proposal of LILO of 220kV Pali-Sector 56 Line and Pali-Sector 52 line was descoped due to forest issue. Proposal to evacuate power from 220kV D/C Pali-Sector 56 line to Sector 56 and 52 with bunching of lines is under consideration. Updated in 218th OCC by HVPNL
				• S/C line Kadarpur - Sec-52 Gurugram	Not awarded yet	Initial proposal of LILO of 220kV Pali-Sector 56 Line and Pali-Sector 52 line was descoped due to forest issue. Proposl to evacuate power from 220kV D/C Pali-Sector 56 line to Sector 56 and 52 with bunching of lines is under consideration. Updated in 218th OCC by HVPNL
				• S/C line Kadarpur - Pali	Not awarded yet	Initial proposal of LILO of 220kV Pali-Sector 56 Line and Pali-Sector 52 line was descoped due to forest issue. Proposl to evacuate power from 220kV D/C Pali-Sector 56 line to Sector 56 and 52 with bunching of lines is under consideration. Updated in 218th OCC by HVPNL
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• LILO of both circuits of 220kV D/c Sohna-Rangla Rajpur at Roj Ka Meo line at 400kV Sohna Road	Dec'24	Updated in 216th OCC by HVPNL
				• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	-	The matter is subjudice in Hon'ble Punjab & Haryana High court, Chandigarh Updated in 205th OCC by HVPNL. **Status:-** Earlier 02 nos 220 kV line bays were to be utilized for the 220 kV GIS S/Stn. Sec-77, Gurugram but due to denotification of land of the 220 kV GIS S/Stn. Sec-77 the said substation is now going to be dismantled and a new substation is proposed at Sec-75A, Gurugram. Now, these 02 no. 220 kV line bays may be utilized at 220 kV GIS S/Stn Sec-75A, Gurugram.
15	400/220kV Prithla Sub-station	Commissioned: 8 Aprroved: 2 Total: 10	Utilized: 4 Unutilized: 4 Under Implementation:2	• 220kV D/C line from Prithla to Harfali with LILO of one circuit at 220kV Meerpur Kurali	Mar'25	Contract awarded on 08.08.23 to M/s Skipper with completion in March 25.Updated in 218th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	Commissioned	Energization date: 31.12.2021. Updated in 198th OCC by HVPNL
				• 220kV D/C for Sector78, Faridabad	30.09.2024	Issue related to ROW and Pending crossing approval from Northern Railways and DFCCIL. as intimated in 218th OCC by HVPNL.
				• Prithla - Sector 89 Faridabad 220kV D/c line	Jul'25	Work awarded to M/s Man Structurals Pvt Ltd. JV M/s Aquarian Enterprises on 09.01.2024. Contractual date: 06.05.2025 and Tentative date of completion :06.05.2025 Route has been approved and further work is in progress.Updated in 218th OCC by HVPNL
16	400/220kV Sonepat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 4 Under Implementation:2	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat	31.10.2024	Updated in 222nd OCC by HVPNL. **Status:** The stringing work between TL No. 19 & 20, TL No. 22 & 23 and TL No. 22 & 24 is pending for want of necessary consent from the forest department. The case has already been uploaded on Parivesh portal and is currently pending at the O/o AIGF, Forest Dept. Panchkula.
				• Sonepat - HSIISC Rai 220kV D/c line	Commissioned	Energization date: 31.05.2024 updated by HVPNL in 220th OCC
				• Sonepat - Kharkhoda Pocket A 220kV D/c line	08.03.2025	Updated in 212th OCC by HVPNL. **Status:** Work order has been issued to M/s R.S Infra on dated 09.08.2023 by O/o CE/PD&C, Panchkula for construction of line. Both bays are under construction and erection of electrical equipment is under progress. Tetative date of completion of both bays at PGCIL end is end of July 2024.
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 is under progres. Stub Setting: 14/2017. Permission for Highway is awaited from concerned department as updated in 218th OCC by RVPNL.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Kotputli - Pathreda 220kV D/c line	-	Date of bid opening has been extended up to 30.04.2024 as updated in 218th OCC by RVPNL.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	Nov'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. 6 months more are needed due to ROW issues as updated by PSTCL in 220th OCC
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 commissioned 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	Commissioned	• Lucknow -Kanduni, 220 kV D/C line work energized on 05.10.2023. Updated in 212th OCC by UPPTCL. _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Commissioned	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line energized on 27.09.2023 updated by UPPTCL in 212th 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	Sep'24	Line charged from Rajokheri end on 09.02.2020. The work of construction was awarded to M/s IKE ltd but due to non completion of work firm is blacklisted, Now the pending work of SCADA , Telemetry and Data Integration is being carried out departmentally through OeM M/s ZIV . After completion of these statutory requirement of NRLDC the load will be taken from the Abdullapur. Tentative date of completion of work will be 30.09.2024. Updated in 218th OCC by HVPNL
25	400/220kV Pachkula Sub-station	Commissioned: 8 Under tender:2 Total: 10 Out of these 10 nos. 220kV	Utilized: 2 Unutilized: 4 Under Implementation:2	• Panchkula – Pinjore 220kV D/c line	Commissioned	Updated in 218th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	Commissioned	Energization date: 24.05.2024 updated by HVPNL in 220th OCC
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL
				• Panchkula – Sadhaura 220kV D/c line: Sep'23	Mar'25	Updated in 222nd OCC by HVPNL
26	400/220kV Amritsar S/s	Commissioned:7 Approved in 50th NRPC- 1 no. Total: 8	Utilized: 6 Under Implementation:2	• Amritsar – Patti 220kV S/c line	31.08.2024	Issue in connectivity agreement with CTU. Updated in 222nd 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)	31.08.2024	Issue in connectivity agreement with CTU. Updated in 222nd 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 Approved: 4 Total: 8	Utilized:2 Unutilized: 2	• LILO of 220 kV Nunamajra- Daultabad S/c line at 400 kV Bahadurgarh PGCIL	Mar'25	Updated in 220th OCC by HVPNL. **Status:** NIT has been floated vide NIT No. EPC-D-96 dated 15.10.23 to be opened on 22.12.23. • Now, the tender has been dropped and likely to be refloated by 31.07.2024.
				• Bahadurgarh - METL 220kV D/c line (Deposit work of M/s METL)	Mar'25	Updated in 220th OCC by HVPNL. **Status:** • Revised BOQ forwarded from Design wing to contract wing. • Tender has floated vide NIT No. EPC-D-100 dated 04.01.2024 with tender opening date of 26.02.2024. • Tender has been opened on 26.03.24 and 03 nos. bids has been received. The work is likely to be awarded by the 31.07.2024.
				• Bahadurgarh - Kharkhoda Pocket B 220kV D/c line	08.03.2025	Updated in 220th OCC by HVPNL. **Status:** Contract awarded on 09.08.23 to M/s R S Infra Noida. Work has been started.
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• LILO of 220 kV S/C Dausa – Sawai Madhopur line at 400 kV GSS Jaipur South (PG)	06.10.2025	Work order has been issued on 06.10.2023, work under progress as updated by RVPNL in 215th 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	• 220 kV D/C Kankroli(PG) - Nathdwara line	-	Standard bid document has been finalized on 13.08.2024 and bid is under preparation as updated by RVPN in 222nd OCC.
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	-	Status:- 2nos bays are being utilised for 220 kV D/C Panchgaon (PGCIL)-Panchgaon Ckt-I & 220 kV D/C Panchagon (PGCIL)-Panchgaon Ckt-II, charged on dated 05.09.2022 & 20.10.2022 respectively. The 2nos bays may be utilised by HVPNL in future.
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	Commissioned	Saharanpur(PG)-Devband D/c line (Energization date: 20.04.2023) updated by UPPTCL in 207th 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.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	Commissioned	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work completed , final agrrement is expected to be signed by May'24. Updated in 218th OCC by PSTCL.
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	Commissioned	Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is commissioned on 20.01.2024. Updated in 217th 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'25	2 Nos. bays for 400 kV PGCIL Patiala - 220 kV Bhadson (D/C) line being planned. Tender is yet to be awarded. Timeline one year communicated by PSTCL in 220th OCC meeting

Status of ADMS implementation in NR:

Sl. No.	State / UT	Status	Remarks
1	DELHI	Scheme Implemented but operated in manual mode.	A committee has been constituted under the chairmanship of GM, SLDC Delhi to formulate the logic for implementation of ADMS. Delhi SLDC informed that two meetings have been held by the committee and based on the delibration in those meetings, SoP has been formed by the committee. Delhi SLDC has shared the logic for implementation of ADMS with NRLDC for their observation and upon examination of same NRLDC has submitted its views/comments to Delhi SLDC. In 222nd OCC meeting Delhi SLDC intimated that they would be shortly having a meeting with its Discoms and NRLDC views would be delibrated in the said meeting.
2	HARYANA	Scheme not implemented	Haryana SLDC intimated that the matter has been taken up with Powergrid by XEN/SLDC Design, HVPNL, Panchkula regarding the LSS /ADMS application in ULDC Phase-III for SCADA/EMS upgradation project of SLDCs of Northern region. HVPNL has sought comments & suggestions from Powergrid that LSS/ADMS under SCADA upgradation project will suffice the purpose of ADMS or this LSS/ADMS software is meant for emergency control for SLDC only. Technical specifications are yet to be finalized. MS NRPC asked Haryana SLDC to co-ordiante with its HVPN Design Wing and expedite the matter.
3	HP	Scheme not implemented	HP SLDC imentioned that HPSEB had intimated that initially 142 Nos. of feeders were identified for operation under ADMS functionality but most of these feeders were from same sub-station. Therefore, now they have increased the no. of sub-station and identified the non-critical feeders. Load relief to be given through these feeders is under finalization. The revised feeder list to be shared by HPSEBL with the SLDC within one month.
4	PUNJAB	Scheme not implemented	i. A committee comprising of following officers of PSPCL & PSTCL has been constituted to finalize the logic regarding implementation of Automatic Demand Management System in Punjab Control Area. A meeting in this regard was held on dated 26-02-2024 at PSLDC Complex, Patiala. The committee deliberated various loading scenarios and proposed the following logic for the management of demand: 1. If the frequency sustains below 49.90 Hz for duration of 3 minutes, the Automatic Demand Management System will initiate a 50% reduction in the Over Drawl. 2. In case the frequency falls further below 49.85 Hz, the Over Drawl will be reduced to zero. 3. The software at the SLDC end for ADMS shall be available with ULDC phase –III SCADA system which is under implementation. ii. In 222nd OCC, MS NRPC asked Punjab to co-ordiante with Powergrid for integration of their propsoed logic with the ULDC phase-III SCADA system for timely implementation.
5	RAJASTHAN	Under implementation. Likely completion schedule is 31.03.2024	RVPN informed that the issue of cyber security of link between SATNAM centre and SLDC control room has been resolved. Pilot testing has been done and for different logic combination/cases testing is under progress.
6	UP	Scheme implemented by NPCIL only	i. A meeting regarding ADMS was held on 15.01.2023 with the UPPCL under the chairmanship of MD UPPTCL ii. A committee formed for identification of load at 33 kV level under the chairmanship of Director (Distribution), UPPCL. iii. Another committee under the chairmanship of Director UPSLDC shall identify the technical and operational requirement for ADMS implementation iv. The software at the SLDC end for ADMS shall be available with ULDC phase –III SCADA system which is under implementation and likely to be commissioned by March 2025. v. In order to operate identified 33 kV feeders under ADMS scheme, integration of 132 kV substations with SCADA system is under implementation in the Reliable Communication Scheme and expected date of completion of the scheme is October 2024.
7	UTTARAKHAND	Scheme not implemented	i. UPCL has prepared a system architecture in which all the non-monitored sub-stions have been selected and 11kV feeders have been considered for ADMS operation. For the scheme, discom has also done group-wise selection of feeders and quantum of MW relief to be given for automatic demand response at 11kV level has also been decided. UPCL has awarded the tender for implementation of the aforementioned scheme to M/s Metergy Pvt.Ltd. ii. As per the status report submitted by M/s Metergy Pvt.Ltd, the survey work of 30 nos. incomer sites have been completed and order has been placed by UPCL for hardware equipments. iii. Uttarakhand SLDC informed that feeder list at 11kV level has been finalized and logic of ADMS implementation is under finalization. iv. In 222nd OCC meeting, Uttarakhand intiamted that commissioning of servers and related software has been done and supply of field equipment and infrastructure is under process . Further, New API has to be develop and integrate as new API for WBES for fetching real time schedule has been created by NRLDC. NRLDC has been requested to provide design document(having URL, data structure and credentials etc) of new API.

FGD Status

Updated status of FGD related data submission

NTPC (27.02.2023)
MEJA Stage-I
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (10.01.2024)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (18.06.2024)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (09.07.2023)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Lalitpur Power Gen. Co. Ltd. (10.01.2024)
Lalitpur TPS
Lanco Anpara Power Ltd. (01.01.2024)
ANPARA-C TPS

HGPCL (14.06.2024)
PANIPAT TPS
RAJIV GANDHI TPS
YAMUNA NAGAR TPS

Adani Power Ltd. (18.02.2022)
KAWAI TPS

Rosa Power Supply Company (01.01.2024)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (05.01.2024)
Prayagraj TPP
APCPL (01.05.2024)
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#2 (Target: 30-09-2023), INDIRA GANDHI STPP U#3 (Target: 30-06-2023)
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: 31-12-2026), PANIPAT TPS U#7 (Target: 31-12-2026), PANIPAT TPS U#8 (Target: 31-12-2026), RAJIV GANDHI TPS U#1 (Target: 31-12-2024), RAJIV GANDHI TPS U#2 (Target: 31-12-2024), YAMUNA NAGAR TPS U#1 (Target: 31-12-2024), YAMUNA NAGAR TPS U#2 (Target: 31-12-2024)

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: 31-03-2023), RIHAND STPS U#1 (Target: 31-10-2025), RIHAND STPS U#2 (Target: 30-06-2026), RIHAND STPS U#3 (Target: 31-12-2024), RIHAND STPS U#4 (Target: 31-03-2025), RIHAND STPS U#5 (Target: 30-06-2025), RIHAND STPS U#6 (Target: 31-10-2025), SINGRAULI STPS U#1 (Target: 31-12-2024), SINGRAULI STPS U#2 (Target: 31-12-2024), SINGRAULI STPS U#3 (Target: 31-12-2024), SINGRAULI STPS U#4 (Target: 31-12-2024), SINGRAULI STPS U#5 (Target: 31-03-2025), SINGRAULI STPS U#6 (Target: 31-06-2024), SINGRAULI STPS U#7 (Target: 31-03-2024), UNCHAHAR TPS U#1 (Target: 31-12-2023), UNCHAHAR TPS U#2 (Target: 31-12-2023), UNCHAHAR TPS U#3 (Target: 30-09-2023), UNCHAHAR TPS U#4 (Target: 30-09-2023), UNCHAHAR TPS U#5 (Target: 30-09-2023), UNCHAHAR TPS U#6 (Target: 31-08-2022), MEJA Stage-I U#1 (Target: 31-10-2023), MEJA Stage-I U#2 (Target: 30-06-2023), TANDA Stage-I U#3 (Target:), TANDA Stage-I U#4 (Target:), TANDA Stage-II U#3 (Target: 31-03-2023), TANDA Stage-II U#4 (Target: 30-09-2023)

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: 31-12-2025), ANPARA C TPS U#2 (Target: 31-12-2025)
Prayagraj Power Generation Company Ltd.	PRAYAGRAJ TPP U#1 (Target: 31-12-2026), PRAYAGRAJ TPP U#2 (Target: 31-12-2026), PRAYAGRAJ TPP U#3 (Target: 31-12-2026)
PSPCL	GH TPS (LEH.MOH.) U#1 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#2 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#3 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#4 (Target: 31-12-2026), GGSSTP, Ropar U#3 (Target: 31-12-2026), GGSSTP, Ropar U#4 (Target: 31-12-2026), GGSSTP, Ropar U#5 (Target: 31-12-2026), GGSSTP, Ropar U#6 (Target: 30-12-2026)

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: 31-08-2024), KOTA TPS U#6 (Target: 31-08-2024), KOTA TPS U#7 (Target: 31-08-2024), 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: 31-12-2025), ANPARA TPS U#2 (Target: 31-12-2025), ANPARA TPS U#3 (Target: 31-12-2025), ANPARA TPS U#4 (Target: 31-12-2025), ANPARA TPS U#5 (Target: 31-12-2025), ANPARA TPS U#6 (Target: 31-12-2025), ANPARA TPS U#7 (Target: 31-12-2025), HARDUAGANJ TPS U#8 (Target: 31-12-2026), HARDUAGANJ TPS U#9 (Target: 31-12-2026), OBRA TPS U#9 (Target: 31-12-2026), OBRA TPS U#10 (Target: 31-12-2026), OBRA TPS U#11 (Target: 31-12-2026), OBRA TPS U#12 (Target: 31-12-2026), OBRA TPS U#13 (Target: 31-12-2026), PARICHHA TPS U#3 (Target: 31-12-2026), PARICHHA TPS U#4 (Target: 31-12-2026), PARICHHA TPS U#5 (Target: 31-12-2026), PARICHHA TPS U#6 (Target: 31-12-2026)

Annexure-A.II

MIS Report for Status of Islanding Schemes

Implemented Schemes

Sl. No.	Islanding Scheme	SLDC	Status	Submission of Self Certification of Healitheness	SOP	SCADA Display	Remarks
1	NAPS IS	UP	Implemented	Yes (08-10-2021)	Yes	Yes	-
2	RAPS IS	Rajasthan	Implemented	16-Aug-21	Yes	Yes	List of officials in-charge, format for generation, islanding scheme sld and relays in RAPP
3	Delhi IS	Delhi	Implemented				
4	Pathankot-RSD IS	Punjab	Implemented				

Under Implementation/ Newly Proposed/Under Discussion

Sl. No.	Islanding Scheme	SLDC	Status	Details of progress	DPR for PSDF funding	Timelines Status - Proposed/Actual									
						Study		Design		Approval		Procurement		Commissioning	
						Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual
1	Lucknow-Unchahar IS	UP	Under Implementation	Scheme has been approved in 59th NRPC meeting held on 31.10.2022. In the 223rd OCC meeting, UPPTCL representative apprised that Unchahar-Lucknow Islanding scheme has been successfully implemented and same is visible at SCADA of UPSLDC also (except 03 Substation: Namely 132 kV S/s tripula, 132 kV S/s bachhrawan and 132 kV S/s Hussainganj.) The data of above 03 substation is not available at UPSLDC due to lack of OPGW. The work of laying OPGW cable is under progress and same shall be completed by next month.		-		-	-	-	-	-	-	-	-
2	Agra IS	UP	Under Implementation	Scheme has been approved in 71th NRPC meeting held on 29.01.2024. In 223rd OCC, UPPTCL representative apprised forum that tender for UFR shall be floated by month end with delivery schedule within 3 months and thereafter 3 months shall take for implementation i.e. by March 2025.		-		-	-	-	-	-	-	-	-
3	Jodhpur-Barmer-Rajwest IS	Rajasthan	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. In 223rd OCC, RRVPNL representative mentioned logic for Jodhpur-Barmer-Rajwest islanding scheme is is finalized and tender shall be floated by month end with delivery schedule within 3 months and thereafter 3 months shall take for implementation i.e. by March 2025.	-	-		-	-	-	-	-	-	-	-
4	Suratgarh IS	Rajasthan	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. In 223rd OCC, RRVPNL representative mentioned DPR for implementation of Suratgarh islanding scheme is under finalization.	-	-		-	-	-	-	-	-	-	-
5	Patiala-Nabha Power Rajpura IS	Punjab	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. In 223rd OCC, Punjab SLDC representative apprised forum that as per their management direction, project is approved from state regulatory authority for PSDF funding, if funding mechanism is to be changed then again regulatory approval would be required and that would take time. Implementation of scheme cannot be done by internal finance and they are willing to wait for PSDF funding till March'25. NRLDC said that at least a parallel recourse may be started for the implementation of the scheme in case if PSDF funding could not be arranged after March 2025. Punjab SLDC said that they would apprise the management with the views of forum.		-		-	-	-	-	-	-	-	-
6	Kullu-Manali-Mandi IS	HP	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. In 223rd OCC, HPSLDC representative informed that proposed UFR scheme for both Kullu- Manali has been recommended by the Appraisal Committee of the State PSDF for approval of Hon'ble HPERC. The islanding scheme will go to Monitoring committee for State PSDF funding approval. Monitoring committee is expected to be scheduled in November first week.		-		-	-	-	-	-	-	-	-
7	Shimla-Solan IS	HP	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. A meeting was held on 18.09.24 with stakeholders under the chairmanship of MS NRPC. HPSEBL informed in the meeting that payment to GE shall be made within two months and subsequently implementation of settings shall be completed within one month. HPSLDC was requested to follow up with all stakeholders within the scheme for implementation and expedite the same.											

Status of availability of ERS towers in NR

Sl. No.	Transmission Utility	Voltage Level (220kV/400kV/765kV/ 500 kV HVDC etc.)	Length of the transmission lines owned by the Utility (Ckt. Kms.)	Number of ERS Sets (towers) available (Nos.)	ERS Set (towers) required as per the Govt. norms.	Location	Remarks
1	PTCUL	400kV	418.394	NIL	1		Tender has been opened and contract activities under process
		220kV	1045.135	NIL	1		
2	Powergrid NR-1	220 KV	1842.88	NIL	1		
		400 KV	11074.26	12 Towers	3	All 400kV ERS at Ballabhgarh	make-Lindsey
		765 KV	4721.85	15 Towers	1	All 765kV ERS at Meerut	Make-SBB
		500 KV HVDC	653.88	NIL	1		
		800 KV HVDC	416.58	NIL	1		
3	Powergrid NR-2	66 KV	37.56	Nil	1		ERS tower available for 400KV rating can be used in place of lower as well as higher voltage Towers. In case used for 765KV Line, No of towers can be erected will reduce due to increase in Tower Hight.
		132 KV	262.7	Nil	1		
		220 KV	2152	Nil	1		
		400 KV	8097.3	02 Set (32 Towers)	2	Kishenpur & Jalandhar	
		765 KV	337.5	Nil	1		
4	Powergrid NR-3	800KV HVDC	2205	NIL	1		400KV ERS will be also be used in other voltage level lines
		500KV HVDC	2566	NIL	1		
		765KV	4396	NIL	1		
		400KV	12254	26 Towers	3	Kanpur	
		220KV	1541	NIL	1		
		132KV	207	NIL	1		
5	PARBATI KOLDAM TRANSMISSION COMPANY LIMITED	400kV	457	NIL	1		Procurement under process.
6	PATRAN TRANSMISSION COMPANY LTD	400kV	0.4	NIL	1	It is kept in Bhopal and on need basis is moved across region	Not available, will tie up based on the requirements in future. However the parent company IndiGrid owns one set of ERS for all five regions.
7	NRSS-XXIX TRANSMISSION LTD	400kV	853	NIL	1		
8	GURGAON PALWAL TRANSMISSION LTD	400kV	272	NIL	1		
9	RAPP Transmission Company Limited.	400kV	402	NIL	1		
10	NRSS XXXVI Transmission Limited	400kV	301.924	NIL	1		Element I - Operational comprising of 3 kms. Element II - Work Under Progress comprising of 221.924 kms. Element II - Work Under Progress comprising of 77 kms.
11	HPPTCL	220 kV	659	NIL	1		
		400 kV	75.7	NIL	1		
12	RVPN	132 kV	18969.958	1	4	01 No. ERS available at 220 kV GSS Heerapura, Jaipur	ERS proposed : 01 Set at 400 kV GSS, Jodhpur. 01 set at 400 kV GSS Bikaner
		220 kV	16227.979		3		
		400 kV	6899.386		2		
		765 kV	425.498		1		

Sl. No.	Transmission Utility	Voltage Level (220kV/400kV/765kV/ 500 kV HVDC etc.)	Length of the transmission lines owned by the Utility (Ckt. Kms.)	Number of ERS Sets (towers) available (Nos.)	ERS Set (towers) required as per the Govt. norms.	Location	Remarks
13	DTL	220kV	915.498	NIL	1	400kV Bamnauli Sub station	ERS tower available for 400KV rating can also be used for lower voltage lines as well
		400kV	249.19	02 Sets (32 towers)	1		
14	JKPTCL						JKPTCL, Jammu: being procured
15	HVPN						JKPTCL, Kashmir:10 tower procured (out of which 3 on loan to JKPTCL, Jammu)
16	PSTCL	400 kV	1666.43	2	2		
		220 kV	7921.991				
17	UPPTCL 1- Meerut	132KV	27508.321	24 Nos(15 Running+9 Angle)		400 kV S/s Gr. Noida	ERS will be also be used in other voltage level lines.
		220KV	14973.453				
		400KV	6922.828				
	UPPTCL 2-Prayagraj	765KV	839.37	24 Towers		220 kv S/s phulpur	ERS will also be used in other voltage lines.
		400KV	1804.257				
		220KV	2578.932				
		132KV	4714.768				
18	POWERLINK						
19	POWERGRID HIMACHAL TRANSMISSION LTD						
20	Powergrid Ajmer Phagi Transmission Limited						
21	Powergrid Fatehgarh Transmission Limited						
22	POWERGRID KALA AMB TRANSMISSION LTD						
23	Powergrid Unchahar Transmission Ltd						
24	Powergrid Khetri Transmission Limited						
25	POWERGRID VARANASI TRANSMISSION SYSTEM LTD						
26	ADANI TRANSMISSION INDIA LIMITED		2090	1 Set (12 towers)	1 set (12 towers)	Sami (Gujarat)	Make-Lindsey ERS set available for 400KV & 500KV rating can be used for lower as well as higher voltage Towers. In case used for 765KV Line, No of towers can reduce due to increase in Tower Height & nos of conductors.
27	BIKANER KHETRI TRANSMISSION LIMITED		482				
28	FATEHGARH BHADLA TRANSMISSION LIMITED	500 kV HVDC 400 kV HVAC	291				
29	NRSS-XXXI(B) TRANSMISSION LTD	400 kV	577.74	Not Available	Not Available		In the advance stage of process of finalising arrangement for providing ERS on need basis with other transmission utility (M/s INDIGRID).
30	ARAVALI POWER COMPANY PVT LTD	765 kv HVAC					

*The transmission Utility with line length less than 500 ckt kms (of 400 KV lines) may be given option either to procure ERS or have agreement with other transmission utilities for providing ERS on mutually agreed terms, when need arises. (As per MoP directions)

Annexure-A.IV

											Approved Planned Outage-1			Actual Planned Outage-1		
Capacity (MW) 30-11-2023	Name of Station	UNIT_NM	STN_TYPE_ID	SECTOR	REGION_NM	ST_NM	SH_NM	IPP	FUEL_NM	Capacity (MW) 31-03-2025	Start Date	End Date	Reason	Start Date	End Date	Reason for any deviation
135	JALIPA KAPURDI TPP	3	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	01-Sep-24	12-Sep-24	Boiler Inspection			
135	JALIPA KAPURDI TPP	4	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	14-Sep-24	21-Sep-24	AOH			
135	JALIPA KAPURDI TPP	8	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	22-Sep-24	29-Sep-24	Boiler Inspection			
660	CHHABRA TPP	6	T	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL	660	01-Sep-24	05-Oct-24	AOH			
210	DADRI (NCTPP)	3	T	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	COAL	210	01-Sep-24	25-Sep-24	Boiler Overhauling			
225	KASHIPUR CCPP	1	T	IPP SECTOR	Northern	Uttarakhand	SrEPL	FALSE	NATURAL GAS	225	01-Sep-24	03-Sep-24	Offline Waterwash			

Annexure-A.V

Sr. No.	State	Organisation	Name of Project	Unit No	Total Capacity (MW)	Technical Minimum Load Status (%) achieved by the Unit
1	Punjab	GPGSL (GVK)	GOINDWAL SAHIB	2	270.00	60%
2	Punjab	GPGSL (GVK)	GOINDWAL SAHIB	1	270.00	60%
3	Haryana	HPGCL	PANIPAT TPS	8	250.00	Haryana SERC has given exemption
4	Haryana	HPGCL	PANIPAT TPS	7	250.00	Haryana SERC has given exemption
5	Haryana	HPGCL	PANIPAT TPS	6	210.00	Haryana SERC has given exemption
6	Uttar Pradesh	LAPPL	ANPARA C TPS	2	600.00	55%
7	Uttar Pradesh	LAPPL	ANPARA C TPS	1	600.00	55%
8	Uttar Pradesh	RPSCL	ROSA TPP Ph-I	4	300.00	55%
9	Uttar Pradesh	RPSCL	ROSA TPP Ph-I	3	300.00	55%
10	Uttar Pradesh	RPSCL	ROSA TPP Ph-I	2	300.00	55%
11	Uttar Pradesh	RPSCL	ROSA TPP Ph-I	1	300.00	55%
12	Rajasthan	RWPL (JSW)	JALIPA KAPURDI TPP	7	135.00	70%
13	Rajasthan	RWPL (JSW)	JALIPA KAPURDI TPP	6	135.00	70%
14	Rajasthan	RWPL (JSW)	JALIPA KAPURDI TPP	8	135.00	70%
15	Rajasthan	RWPL (JSW)	JALIPA KAPURDI TPP	5	135.00	70%
16	Rajasthan	RWPL (JSW)	JALIPA KAPURDI TPP	4	135.00	70%
17	Rajasthan	RWPL (JSW)	JALIPA KAPURDI TPP	3	135.00	70%
18	Rajasthan	RWPL (JSW)	JALIPA KAPURDI TPP	2	135.00	70%
19	Rajasthan	RWPL (JSW)	JALIPA KAPURDI TPP	1	135.00	70%
20	Punjab	PSPCL	GH TPS (LEH.MOH.)	4	250.00	68%
21	Punjab	PSPCL	GH TPS (LEH.MOH.)	3	250.00	68%
22	Punjab	PSPCL	GH TPS (LEH.MOH.)	2	210.00	79%
23	Punjab	PSPCL	GH TPS (LEH.MOH.)	1	210.00	79%
24	Punjab	PSPCL	ROPAR TPS	6	210.00	75%
25	Punjab	PSPCL	ROPAR TPS	5	210.00	75%
26	Punjab	PSPCL	ROPAR TPS	4	210.00	75%
27	Punjab	PSPCL	ROPAR TPS	3	210.00	75%
28	Rajasthan	RRVUNL	KALISINDH TPS	2	600.00	66.33%
29	Rajasthan	RRVUNL	CHHABRA TPP	4	250.00	72.20%
30	Rajasthan	RRVUNL	KALISINDH TPS	1	600.00	66.33%
31	Rajasthan	RRVUNL	CHHABRA TPP	3	250.00	72.20%
32	Rajasthan	RRVUNL	CHHABRA TPP	2	250.00	72.20%
33	Rajasthan	NLC	BARSINGSAR LIGNITE	2	125.00	47.03%
34	Rajasthan	NLC	BARSINGSAR LIGNITE	1	125.00	47.03%
35	Rajasthan	RRVUNL	KOTA TPS	7	195.00	72.26%
36	Rajasthan	RRVUNL	SURATGARH TPS	6	250.00	72.13%
37	Rajasthan	RRVUNL	GIRAL TPS	2	125.00	Under is under shutdown from 2012 and likely to be scrapped as intimated by Rajasthasn SLDC
38	Rajasthan	RRVUNL	CHHABRA TPP	1	250.00	72.20%
39	Rajasthan	RRVUNL	GIRAL TPS	1	125.00	Under is under shutdown from 2012 and likely to be scrapped as intimated by Rajasthasn SLDC
40	Rajasthan	RRVUNL	KOTA TPS	6	195.00	72.26%
41	Rajasthan	RRVUNL	SURATGARH TPS	5	250.00	72.13%
42	Rajasthan	RRVUNL	SURATGARH TPS	4	250.00	72.13%
43	Rajasthan	RRVUNL	SURATGARH TPS	3	250.00	72.13%
44	Rajasthan	RRVUNL	SURATGARH TPS	2	250.00	72.13%
45	Rajasthan	RRVUNL	SURATGARH TPS	1	250.00	72.13%
46	Rajasthan	RRVUNL	KOTA TPS	5	210.00	72.26%
47	Rajasthan	RRVUNL	KOTA TPS	4	210.00	72.26%
48	Rajasthan	RRVUNL	KOTA TPS	3	210.00	72.26%
49	Rajasthan	RRVUNL	KOTA TPS	2	110.00	72.26%
50	Rajasthan	RRVUNL	KOTA TPS	1	110.00	72.26%

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
तापीय परियोजना नवीनीकरण एवं आधुनिकीकरण प्रभाग
Thermal Project Renovation & Modernization Division

No. 2/3/Flex/2024/ 688 - 692 Date: 01.08.2024

Subject: Agenda Note on Flexible Operation of Coal Based Thermal Power Plants for regular discussion in OCC meeting- reg

Reference is invited to letter no. 2/3/Flex/2024/248-255 dated 03.04.2024, wherein the guidelines and action items pertaining to the flexible operation of coal-based thermal power generating units were outlined. As per the CEA Gazette Notification dated January 30, 2023, coal-based thermal power generating units shall have flexible operation capability with a minimum power level of 55%, along with specified ramp rates, by January 2024. Additionally, a phased implementation plan for achieving a 40% minimum technical load (MTL) has been notified, with specific targets and timelines for compliance.

In this regard, it is requested to provide updates on the following agenda items:

Agenda: Regarding 55% MTL (Minimum Technical Load)

a. Achievement of 55% TML: Whether the target of achieving 55% Technical Minimum Load (TML) has been met. If not, please provide the reasons and the tentative date for achieving the same.

b. Adherence to Ramp Rates: Whether the specified ramp rates, i.e., 3% for 100-70% load and 2% for 70%-55% load, have been adhered to. If not, please provide the reasons and the tentative date for achieving the same.

c. Operator Training: How many operators have been trained in the organization?

Agenda: Regarding 40% MTL (Minimum Technical Load) and Status of Units Under Pilot Phase

Phase	Sector	Organisation	Name of Project	Unit No.	Capacity (MW)	Region
Pilot	Central	NTPC	MAUDA TPS	1	500	WR
Pilot	Central	NTPC	SIMHADRI	3	500	SR
Pilot	Central	NTPC	DADRI	6	490	NR
Pilot	Central	DVC	MEJIA TPS	8	500	ER
Pilot	Central	NEYVELI LIGNITE	NEYVELI NEW TPP	2	500	SR
Pilot	State	KPCL	YERMARUS TPS	1	800	SR
Pilot	State	GSECL	WANAKBORI TPP	6	800	WR
Pilot	State	RRVUNL	SURATGARH SCTPP	8	660	NR
Pilot	State	WBPDC	SAGARDIGHI TPS	3	500	ER
Pilot	Private	CEPL	MUTHIARA	2	600	SR
Pilot Phase Total				**10**	**5850**	
Pilot Phase Total (Percentage of Total Capacity)				**1.70%**	**2.76%**	

a. Achievement of 40% TML: Whether the target of achieving 40% Technical Minimum Load (TML) has been met. If not, please provide the reasons and the tentative date for achieving the same.

b. Adherence to Ramp Rates: Whether the specified ramp rates, i.e., 3% for 100-70% load, 2% for 70%-55% load, and 1% for 40%-55% load, have been adhered to. If not, please provide the reasons and the tentative date for achieving the target.

Furthermore, it is requested to provide progress reports and outcomes related to the achievement of both 55% and 40% MTL as early as possible.

Narender Singh
01/08/24.

(Narender Singh)

Chief Engineer, TPRM

To:

1. Member Secretary , NRPC
2. Member Secretary , SRPC
3. Member Secretary , WRPC
4. Member Secretary , ERPC
5. Member Secretary , NERPC

Annexure-A.VII

Progress Report regarding achievement of 55% MTL

S. No	Details	Unit 1	Unit2	Unit3	-------
1	Name of Utility				
2	Plant Name and Address				
3	Capacity, MW				
4	Date of Commissioning				
5	Type of Unit: Supercritical/Subcritical/....				
6	Net Heat rate: Design/Actual				
7	Coal Quality (i) GCV (ii) Volatile matter (iii) Ash Content				
8	Maximum Generation (last 2 years) MW				
9	Minimum Generation (last 2 years) MW				
10	Maximum Ramp Rate Up (last 2 years)				
11	Maximum Ramp Rate Down (last 2 years)				
12	Whether 55% Minimum load Achieved (YES/NO) (i) If YES, specify the duration and time (ii) If NO, specify the reason for the same				
14	Any other details				

Progress Report regarding achievement of 40% MTL

S. No	Details	Unit 1	Unit2	Unit3	-------
1	Name of Utility				
2	Plant Name and Address				
3	Capacity, MW				
4	Date of Commissioning				
5	Type of Unit: Supercritical/Subcritical/....				
6	Net Heat rate: Design/Actual				
7	Coal Quality (i) GCV (ii) Volatile matter (iii) Ash Content				
8	Maximum Generation (last 2 years) MW				
9	Minimum Generation (last 2 years) MW				
10	Maximum Ramp Rate Up (last 2 years)				
11	Maximum Ramp Rate Down (last 2 years)				
12	Whether 40% Minimum load Achieved (YES/NO) (i) If YES, specify the duration and time (ii) If NO, specify the reason for the same (iii) Whether low load test conducted at 40% (YES/NO) (a) If YES, measures identified/implemented for achieving the same. (b) If No, any action taken in this regard				
14	Any other details				

Annexure-A.IX

सत्यमेव जयते

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

विषय: Electricity Generation Program for the year 2025-26-reg.

Central Electricity Authority vide its letter dated 30.09.2024 (copy enclosed) has sought the following information in the prescribed formats from generating utilities of the country for the preparation of electricity generation program for the year 2025-26. In this regard, please find enclosed herewith the prescribed formats (data formats) and the inputs desired;

- *Unit-wise monthly generation proposed during 2025-26 taking into account likely fuel availability, the anticipated loss of generation on account of various factors such as grid constraint, low schedule/Reserve shut down due to high cost, coal/lignite quality etc., if any.,* ***(Annex)***

Generating utilities (**list of generating stations of NR attached**) are requested to submit the above information in the prescribed formats by email to targetopmcea@gmail.com or ceopm-cea@gov.in latest by **15th October 2024** with a copy to seo-nrpc@nic.in.

This issues with the approval of Member Secretary, NRPC.

Signed by Dharmendra Kumar Meena
Date: 04-10-2024 13:36:22

(डी. के. मीना)
अधीक्षण अभियंता **(प्रचालन)**

To,
List of Generating Stations of NR (attached)

सत्यमेव जयते

भारत सरकार / Government of India

विद्युत मंत्रालय / Ministry of Power

केंद्रीय विद्युत प्राधिकरण / Central Electricity Authority

प्रचालन निष्पादन प्रबोधन प्रभाग / Operation Performance Monitoring Division

विषय: 2025-26 के Electricity Generation Programme/Target के सम्बन्ध में |

As you are aware, Annual assessment and finalization of the Generation Programme and Planned Maintenance Schedules of generating units is undertaken by CEA every year. This process involves fixing up the Overall Generation Target for the country (involving Fuel-wise fixation of Generation Target also) based on last year generation, anticipated demand, likely economic growth etc. Following this, Fuel Wise target will be allocated to the various generating stations based on their past performances, planned maintenance schedule and the future planning as submitted by the respective generating station.

In this regard, all power generating stations are requested to furnish the below mentioned details as per enclosed formats:

a) Unit-wise monthly generation proposed during 2025-26 taking into account likely fuel availability, the anticipated loss of generation on account of various factors such as grid constraint, low schedule/ Reserve shut down due to high cost, coal/lignite quality etc., if any **(Annex)**.

b) The Unit-wise schedule of planned Maintenance for the year 2025-26, as approved by the respective MS-RPCs (Regional Power Committees) should be submitted to the GM Division to facilitate planning at All India level.

As per timelines decided by the Member (GO&D), Generation Programme for the year 2025-26 needs to be finalized by the 31st January 2025. Therefore, Regional Power Committees (RPCs) are requested to ensure the timely submission of the requisite Generation Programme details as mentioned in point (a) from the generating stations in their respective regions by **15th October, 2024** at targetopmcea@gmail.com or ceopm-cea@gov.in enabling us to take further necessary action. (List of generating stations attached RPC-wise).

LRinsanga 30/9/2024

(लालरिनसांगा / Lalrinsanga)
मुख्य अभियन्ता(ओ.पी.एम) / Chief Engineer I/C (OPM)

Member Secretary (NRPC/WRPC/ERPC/SRPC/NERPC)

No. CEA-GO-11-24/1/2024-OPM Division **Dated:30 .09.2024**

NR based Generating Stations (Thermal & Nuclear)

STATION ID	STATION NAME	CAP	STN_TYPE_ID	SECTOR_TYPE	REGION_NM	ST_NM	SH_NM	IPP	FUEL_NM
100353	ADANI POWER LIMITED KAWAI TPP	1320.00	THERMAL	IPP SECTOR	Northern	Rajasthan	APL	TRUE	COAL
100137	ANPARA C TPS	1200.00	THERMAL	IPP SECTOR	Northern	Uttar Pradesh	LAPPL	TRUE	COAL
100030	ANPARA TPS	2630.00	THERMAL	STATE SECTOR	Northern	Uttar Pradesh	UPRVUNL	FALSE	COAL
100663	ANTA CCPP	419.33	THERMAL	CENTRAL SECTOR	Northern	Rajasthan	NTPC Ltd.	FALSE	NATURAL GAS
100664	AURAIYA CCPP	663.36	THERMAL	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	NATURAL GAS
100170	BARKHERA TPS	90.00	THERMAL	IPP SECTOR	Northern	Uttar Pradesh	BEPL	TRUE	COAL
100313	BARSINGSAR LIGNITE	250.00	THERMAL	CENTRAL SECTOR	Northern	Rajasthan	NLC	FALSE	LIGNITE
100778	BETA CCPP	0.00	THERMAL	IPP SECTOR	Northern	Uttarakhand	BIPL	TRUE	NATURAL GAS
100848	CHHABRA-II TPP	1320.00	THERMAL	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL
100060	CHHABRA-I PH-1 TPP	500.00	THERMAL	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL
100847	CHHABRA-I PH-2 TPP	500.00	THERMAL	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL
100726	DADRI CCPP	829.78	THERMAL	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	NATURAL GAS
100152	DADRI (NCTPP)	1820.00	THERMAL	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	COAL
100669	DAE (RAJASTHAN)	100.00	NUCLEAR	CENTRAL SECTOR	Northern	Rajasthan	DAE	FALSE	NUCLEAR
100336	DHOLPUR CCPP	330.00	THERMAL	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	NATURAL GAS
100727	FARIDABAD CCPP	431.59	THERMAL	CENTRAL SECTOR	Northern	Haryana	NTPC Ltd.	FALSE	NATURAL GAS
100779	GAMA CCPP	225.00	THERMAL	IPP SECTOR	Northern	Uttarakhand	GIPL	TRUE	NATURAL GAS
100843	GHATAMPUR TPP	0.00	THERMAL	CENTRAL SECTOR	Northern	Uttar Pradesh	NUPPL	FALSE	COAL

100154	GH TPS (LEH.MOH.)	920.00	THERMAL	STATE SECTOR	Northern	Punjab	PSPCL	FALSE	COAL
100236	GIRAL TPS	250.00	THERMAL	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	LIGNITE
100680	GOINDWAL SAHIB TPP	540.00	THERMAL	STATE SECTOR	Northern	Punjab	PSPCL	FALSE	COAL
100156	HARDUAGANJ TPS	1265.00	THERMAL	STATE SECTOR	Northern	Uttar Pradesh	UPRVUNL	FALSE	COAL
100035	INDIRA GANDHI STPP	1500.00	THERMAL	CENTRAL SECTOR	Northern	Haryana	APCPL	FALSE	COAL
100239	I.P.CCPP	270.00	THERMAL	STATE SECTOR	Northern	Delhi	IPGCL	FALSE	NATURAL GAS
100256	JALIPA KAPURDI TPP	1080.00	THERMAL	IPP SECTOR	Northern	Rajasthan	JSWBL	TRUE	LIGNITE
100842	JAWAHARPUR STPP	660.00	THERMAL	STATE SECTOR	Northern	Uttar Pradesh	UPRVUNL	FALSE	COAL
100233	KALISINDH TPS	1200.00	THERMAL	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL
100169	KHAMBARKHERA TPS	90.00	THERMAL	IPP SECTOR	Northern	Uttar Pradesh	BEPL	TRUE	COAL
100857	KHURJA TPP	0.00	THERMAL	CENTRAL SECTOR	Northern	Uttar Pradesh	THDC	FALSE	COAL
100346	KOTA TPS	1240.00	THERMAL	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL
100319	KUNDARKI TPS	90.00	THERMAL	IPP SECTOR	Northern	Uttar Pradesh	BEPL	TRUE	COAL
100044	LALITPUR TPS	1980.00	THERMAL	IPP SECTOR	Northern	Uttar Pradesh	LPGCL	TRUE	COAL
100320	MAHATMA GANDHI TPS	1320.00	THERMAL	IPP SECTOR	Northern	Haryana	JhPL(HR)	TRUE	COAL
100168	MAQSOODPUR TPS	90.00	THERMAL	IPP SECTOR	Northern	Uttar Pradesh	BEPL	TRUE	COAL
100797	MEJA STPP	1320.00	THERMAL	CENTRAL SECTOR	Northern	Uttar Pradesh	MUNPL	FALSE	COAL
100673	NARORA A.P.S.	440.00	NUCLEAR	CENTRAL SECTOR	Northern	Uttar Pradesh	NPCIL	FALSE	NUCLEAR
100148	OBRA TPS	1660.00	THERMAL	STATE SECTOR	Northern	Uttar Pradesh	UPRVUNL	FALSE	COAL
100711	PAMPORE GPS (Liq.)	175.00	THERMAL	STATE SECTOR	Northern	Jammu and Kashmir	JKSPDC	FALSE	HIGH SPEED DIESEL

100149	PANIPAT TPS	710.00	THERMAL	STATE SECTOR	Northern	Haryana	HPGCL	FALSE	COAL
100850	PANKI TPS EXT	0.00	THERMAL	STATE SECTOR	Northern	Uttar Pradesh	UPRVUNL	FALSE	COAL
100317	PARICHHA TPS	920.00	THERMAL	STATE SECTOR	Northern	Uttar Pradesh	UPRVUNL	FALSE	COAL
100657	PRAGATI CCGT-III	1500.00	THERMAL	STATE SECTOR	Northern	Delhi	PPCL	FALSE	NATURAL GAS
100734	PRAGATI CCPP	330.40	THERMAL	STATE SECTOR	Northern	Delhi	PPCL	FALSE	NATURAL GAS
100616	PRAYAG RAJ TPP	1980.00	THERMAL	IPP SECTOR	Northern	Uttar Pradesh	PPGCL (Jaypee)	TRUE	COAL
100689	RAJASTHAN A.P.S.	1080.00	NUCLEAR	CENTRAL SECTOR	Northern	Rajasthan	NPCIL	FALSE	NUCLEAR
100037	RAJIV GANDHI TPS	1200.00	THERMAL	STATE SECTOR	Northern	Haryana	HPGCL	FALSE	COAL
100384	RAJPURA TPP	1400.00	THERMAL	IPP SECTOR	Northern	Punjab	NPL	TRUE	COAL
100050	RAMGARH CCPP	273.50	THERMAL	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	NATURAL GAS
100422	RIHAND STPS	3000.00	THERMAL	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	COAL
100362	RITHALA CCPP	108.00	THERMAL	IPP SECTOR	Northern	Delhi	TPDDL	TRUE	NATURAL GAS
100003	ROPAR TPS	840.00	THERMAL	STATE SECTOR	Northern	Punjab	PSPCL	FALSE	COAL
100171	ROSA TPP Ph-I	1200.00	THERMAL	IPP SECTOR	Northern	Uttar Pradesh	RPSCL	TRUE	COAL
100860	SHREE CEMENT LTD TPS	300.00	THERMAL	PVT SECTOR	Northern	Rajasthan	SCL	TRUE	COAL
100423	SINGRAULI STPS	2000.00	THERMAL	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	COAL
100777	SRAVANTHI CCPP	439.00	THERMAL	IPP SECTOR	Northern	Uttarakhand	SrEPL	TRUE	NATURAL GAS
100846	SURATGARH STPS	1320.00	THERMAL	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL
100012	SURATGARH TPS	1500.00	THERMAL	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL
100387	TALWANDI SABO TPP	1980.00	THERMAL	IPP SECTOR	Northern	Punjab	TSPL	TRUE	COAL
100440	TANDA TPS	1760.00	THERMAL	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	COAL
100441	UNCHAHAR TPS	1550.00	THERMAL	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	COAL

100321	UTRAULA TPS	90.00	THERMAL	IPP SECTOR	Northern	Uttar Pradesh	BEPL	TRUE	COAL
100316	YAMUNA NAGAR TPS	600.00	THERMAL	STATE SECTOR	Northern	Haryana	HPGCL	FALSE	COAL

Annexure-A.X

सत्यमेव जयते

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

विषय: Implementation of the Action Points of Meeting held in PMO on 20th May, 2024 on the subject 'Transmission Infrastructure for upcoming RE Projects'-reg.

This has reference to point no. (iii) of action point (copy attached) of the subject cited meeting held under the chairmanship of Advisor to PM, wherein CEA has been entrusted with the task of identification of State-wise Intra-State sub-stations (132kV and above) where transmission capacity is readily available for evacuating RE.

2. In this regard, requested to all SLDCs to submit the requisite information in prescribed format (copy attached) in co-ordination with STUs of their respective state for **Intra-State sub-stations (132kV and above)** at the earliest via mail at **seo-nrpc@nic.in**. The format in which above information is desired is attached for reference.

This issues with the approval of Member Secretary, NRPC

Signed by Dharmendra Kumar Meena
Date: 16-08-2024 18:24:38

(डी. के. मीना)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

1. General Manager, Delhi SLDC (**gmsldc@delhisldc.org)**
2. Chief Engineer, Punjab SLDC (**ce-sldc@pstcl.org**)
3. Chief Engineer, Rajasthan SLDC (**ce.ld@rvpn.co.in**)
4. Chief Engineer, Uttar Pradesh SLDC (**cepso@upsldc.org)**
5. Chief Engineer, Haryana SLDC (**cesocomml@hvpn.org.in**)
6. Chief Engineer, Uttarakhand SLDC (**se_sldc@ptcul.org**)
7. Chief Engineer, Himachal Pradesh SLDC (**cehpsldc@gmail.com**)
8. Chief Engineer, UT of J&K and Ladakh SLDC (**sojpdd@gmail.com**)
9. Chief Engineer, Electricity Department UT of Chandigarh (**elop2-chd@nic.in**)

Action Points	Status
(i) Prepare strategies to maximize the use of the current RE evacuation infrastructure. For each strategy, outline the responsibilities of relevant agencies like CERC. Establish a bidding process for transmission allocation at existing pooling stations for entities supplying stored energy during non-solar hours. Develop a mechanism for determining tariffs under existing PPAs for supplying stored energy during solar ramp-up/down hours.	R&R/NRE/RCM Division to add comments MNRE to add its comments
(ii)Establish an institutional mechanism for continuous engagement with the RE developers and Transmission Service Providers (TSPs). A website similar to PMG may be deployed where RE developers and TSPs may resolve their issues.	**CTU's comment** - CTU holds Joint Coordination Committee (JCC) meetings with RE developers and Transmission Service Providers (TSPs) every quarter, where issues are discussed. Minutes of these meetings are also uploaded on CTU website. Development of a separate portal to address the issues of RE developers and TSPs is to be deliberated with all concerned viz. MoP, MNRE, CEA, SECI, other REIAs and CTU. **MNRE to add its comment**

(iii) State-wise InSTS/ISTS substations (132 kV and above) where transmission capacity is readily available for evacuating RE may be identified.These capacities may be updated and published periodically.	**CTU's comment**-Connectivity margins on existing as well as RE polling stations are already available on the portal of CTUIL for ISTS substations and the same is updated every month. **CEA to supplement for InSTS substations**.
(iv) MNRE may consider pre-specifying evacuation dates prior to calling for bids.	**MNRE/SECI's comment**: Availability of evacuation system and its planning are displayed on CTU's website, and the same is being considered by the RE developers while bidding in the tenders, among other factors. This data is highly dynamic. SECI's tenders' scope is limited to specifying a Scheduled Commissioning Date of 24 months from PPA signing. This Date gets automatically extended in case of mismatch between Project commissioning and substation readiness timelines. Pre-specifying evacuation dates at the bidding stage is not feasible, in view of the dynamic nature of connectivity at ISTS substations.
(v) Examine the issue of addressing delayed generation where transmission capacity is lying idle	**CTU's comment**- The Joint Coordination Committee (JCC) meetings convened every quarter by CTU with RE Generators and Transmission Service providers focus on this issue. **MNRE may add its comments**

(vi) MNRE may facilitate sale of RE generation to OA consumers wherever PSAs with Discoms are delayed so that the project can be commissioned and transmission system is put to use.	**MNRE/SECI's comment**: This is allowed in SECI's tenders. The tenders contain the provision that the Developer will be issued NoC by SECI in case the project is commissioned early but PSAs are not signed, to allow third party sale of such power.
(vii)Address the issue of enabling full reverse flow in Raigarh-Pugulur HVDC line.	**PGCIL**-PGCIL has taken up this issue with M/sHitachi Energy, the original equipment manufacturer of this line, to carry out studies for enhancement of reverse flow upto 6000 MW. Terms and conditions are under finalization. **CEA and Grid India to add their comments**
(viii)Prescribe storage trajectory for both existing and new VRE generation. For the existing VRE generation, facilitate sale of the additional storage energy to the willing Discoms through an appropriate mechanism	**NRE Division to add its comments** **MNRE to add its comments**
(viii) Prepare proposal for funding ISTS/InSTS system and storage to accelerate energy transition.	**NRE Division to add its comments**

Format - Transmission Infrastructure for upcoming RE Projects

S.No.	Name of State/UT	Name of Intra-State sub-stations (132kV and above)	Existing Transformer Capacity	Connectivity Granted/ Agreed					Margin avilable for evacuating RE					Remarks
				132kV	220kV	400kV	765kV	Total (MW)	132kV	220kV	400kV	765kV	Total (MW)	

Annexure I

Annexure-A.XII

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

सं. उक्षेविस/ वाणिज्यिक/ 209/ आर पी सी (57वीं)/2022/9162 - 9209 दिनाँक: 27,सितम्बर , 2022

सेवा में / To,

उ.क्षे.वि.स. के सभी सदस्य (संलग्न सूचीनुसार)
Members of NRPC (As per List)

विषय: उत्तर क्षेत्रीय विद्युत समिति की 57वीं बैठक का कार्यवृत ।
Subject: 57th meeting of Northern Regional Power Committee – MoM

महोदय / Sir,

उत्तर क्षेत्रीय विद्युत समिति की 57वीं बैठक दिनांक **31 अगस्त, 2022** को **1100** बजे विडियो कॉंफ्रेंसिंग के माध्यम से आयोजित की गयी थी । बैठक का कार्यवृत संलग्न है। यह उ.क्षे.वि.स. की वेबसाइट (http://164.100.60.165/) पर भी उपलब्ध है।

The 57th meeting of Northern Regional Power Committee (NRPC) was held at **1100 Hrs** on **31st August, 2022** via video conferencing. MoM of the same is attached herewith. The same is also available on NRPC Sectt. website (http://164.100.60.165/).

भवदीय
Yours faithfully,

(नरेश भंडारी) 27/9/22
(Naresh Bhandari)
सदस्य सचिव
Member Secretary

18-ए, शहीद जीत सिंह मार्ग, कटवारिया सराय, नई दिल्ली- 110016 फोन:011-26513265 ई-मेल ms -nrpc@nic.in वेबसाईट www.nrpc.gov.in
18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016 Phone: 011-26513265 e- mail: ms-nrpc@nic.in Website: www.nrpc.gov.in

A.8 Assessment and usability of the interstate lines i.e 220 KV S/C MIA (Alwar) – BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh) (Agenda by RRVPNL)

A.8.1 Forum was informed that RRVPNL vide letter dtd. 08/07/2022 (Annexure-A.II of agenda) has submitted that interstate lines i.e., 220 KV S/C MIA (Alwar)-BTPS (Badarpur) and 132 KV S/C Hisar-Sadulpur (Rajgarh) lines are very old and the-line condition is deteriorating day by day resulting in frequently breaking of the conductor and its accessories.

A.8.2 Yearly transmission charges (YTC) allowed by CERC in petition no. 362/TT/2019 for the line 220 KV S/C MIA (Alwar)-BTPS (Badarpur) is Rs.64.02 Lakh. The refurbishment work of line as R&M requires Rs.9.89 Cr and still after spending Rs.9.89 Cr, only half of the line is refurbished.

A.8.3 YTC allowed by CERC in petition no. 362/TT/2019 for the said line is Rs.37.94 Lakh. The YTC allowed is only towards O&M expenses and interest on working capital as useful life of 25 years has already been over. The work of replacement of line conductor with associated hardware, disc insulator, etc. requires estimated cost amounting Rs. 7.021 crores.

A.8.4 Based on above facts, following points need to be deliberated:

i. Assessment & usability of these Interstate lines i.e 220 KV S/C MIA (Alwar)-BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh) line.

ii. Recovery of capital expenditure on renovation and refurbishment through YTC for these Interstate lines, in case NRPC decides to retain these interstate line.

A.8.5 This issue was also deliberated in 198th OCC meeting held on 17.08.2022 wherein it was decided that agenda may be taken up in the NRPC meeting.

A.8.6 RVPN informed that Alwar-Badarpur line is 46 years old and Hisar-Sadulpur line is 63 years old.

A.8.7 CTU informed that there is no inter-state utilisation of theses line as such, considering very less power flow requirement. POSOCO may also supplement on the historical load profile of these lines. However, these 220kV lines may be upgraded to 400 kV depending on availability of RoW.

A.8.8 POSOCO stated that states may express their views on utility of lines and also confirmed no significant use of the lines from power flow point of view.

A.8.9 RVPN informed that these lines are not useful for them and they expressed their willingness that POWERGRID may acquire the line. It was also informed that Alwar-Badarpur line is charged from Alwar end only. On Hisar-Sadulpur, load comes rarely.

A.8.10 On request to comment on the issue, Haryana intimated that comment may be shared after consultation with planning wing.

A.8.11 No representative was available for comment from Delhi side.

A.8.12 Forum decided that Delhi and Haryana may intimate their comment in this regard to RVPN and NRPC/CTU and then the matter may be brought by RVPN to upcoming

NRPC meeting for decision. MS NRPC opined that RVPN may follow up with planning wing of HVPN and DTL for seeking comments.

A.9 Deemed Enhancement of ATC/TTC for Punjab due to unprecedented load growth of summer/paddy season. (Agenda by PSTCL)

A.9.1 The demand of the state during the current paddy season has been recorded as 14,208 MW by the SLDC which has been met successfully with ATC/TTC limits of 8500/9000 and full generation at 400 kV/220 kV/132kV generating nodes. In order to meet the state demand, ATC limit is required to be increased to at least 10,000 MW (for paddy 2023).

A.9.2 State distribution utility PSPCL has informed that there will be no significant addition of generation within the State in the coming year. State of Punjab has to deal with peculiar load profile wherein demand is nearly double during Paddy season i.e., June to September than that during the rest of the year.

A.9.3 The peak demand for next summer/paddy season is projected as 15,500 to 16,000 MW, which is likely to reach up to 18,000 MW by the year 2025. Hence, to meet the increasing power demand, immediate enhancement of ATC/TTC limits up to 10,000/10,500 MW and subsequently to 12,000 MW in the next 3 years is required.

A.9.4 Punjab is bringing the following 400 kV substations in the upcoming years:

Sr. No.	Substation name and installed capacity	ISTS connectivity	Approved in	Timeline (MM/YYYY)
1.	**400 kV Dhanansu** **Stage 1:** 1X315 MVA, 400/220 kV ICT	LILO of 1 circuit of 400 kV Jalandhar – Kurukshetra line	3rd NRSCT meeting held on 24.05.2019.	09/2023
	Stage 2: 1X315 MVA + 1X500 MVA, 400/220 kV ICTs	LILO of 1 circuit of 400 kV Nakodar – Kurukshetra line	Meeting held with CEA on 18.11.2021 through VC.	
2.	**400 kV Ropar** **Stage 1:** 2X500 MVA, 400/220 kV ICTs	LILO of 1 circuit of 400 kV Ludhiana – Koldam line	43rd TCC/46th NRPC meeting dated 24.09.2019.	12/2023
		Stage 2: LILO of 1 circuit of 400 kV Ludhiana – Koldam (via Nanje) line	Meeting to deliberate the transmission system for Luhri HEP dated 21.01.2022.	
3.	**400 kV Behman Jassa Singh** Switching station	LILO of 400 kV Talwandi Sabo – Moga line	40th meeting of Standing committee on	12/2025

Annexure-A.XIII

RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM LIMITED.
[Corporate Identity Number (CIN):U40109RJ2000SGC016485]
(Regd. Office: Vidyut Bhawan, Jan Path, Jyoti Nagar, Jaipur - 302 005)
OFFICE OF THE SUPERINTENDING ENGINEER (PROJECT & PLANNING)
) +91-141-2740623,Fax:+91-141-2740794;
e-mail: se.pp@rvpn.co.in; website:www.rvpn.co.in
RVPN An ISO 9001:2000 Certified Company

No. RVPN/SE(P&P)/XEN-2(P&P)/AE-2/ F. /D 799 Jaipur, Dt. 8/7/22

The Member Secretary,
NRPC, 18A, Shaheed Jeet Singh Marg,
Katwaria Sarai, New Delhi-110016.

Sub: Regarding inclusion of agenda on assessment & usability of the Interstate lines i.e. 220 kV S/C MIA (Alwar) -BTPS (Badarpur) Line and 132 kV S/C Hisar-Sadulpur (Rajgarh) in next NRPC Meeting.

Dear Sir,

On the above cited subject, it is submitted that the Interstate lines i.e. 220 kV S/C MIA (Alwar) -BTPS (Badarpur) and 132 kV S/C Hisar-Sadulpur (Rajgarh) lines are very old and the line condition is deteriorating day by day resulting in frequently breaking of line conductor and its accessories.

In this regard, kindly find enclosed herewith the agenda on assessment & usability of these Interstate lines i.e. 220 kV S/C MIA (Alwar) -BTPS (Badarpur) line and 132 kV S/C Hisar-Sadulpur (Rajgarh) line for deliberation & decision in next NRPC Meeting.

Encl: as above.

Your's faithfully,

(K.K. Meena)
Addl. Chief Engineer (PP&D)

Agenda Note for consideration & decision on Capital Expenditure to be incurred on Renovation & Refurbishment of existing Interstate lines i.e. 220 kV S/C MIA (Alwar) - BTPS (Badarpur) Line and 132 kV S/C Hisar-Sadulpur (Rajgarh) line

I. BACKGROUND & DETAILS:

There is an interstate line i.e. 220 kV S/C MIA (Alwar) -BTPS (Badarpur) owned by RVPN, commissioned in 1976, line length 131 kms., 428 nos. towers involved & present book value is Rs.1.08 Crore. The line condition is deteriorating day by day resulting in frequently breaking of line conductor and earth wire. The line is charged since 07.10.2020 on No Load. In normal conditions, there is no use of said line at 220 kV GSS MIA from loading point of view. The Yearly Transmission Charges (YTC) allowed by CERC in petition no. 362/TT/2019 for the said line is 64.02 lakh. The case for the refurbishment work of 220 kV S/C MIA (Alwar) -BTPS (Badarpur) as R&M requires 9.89 crores and still after spending Rs. 9.89 crores, only half of the line is refurbished.

Similarly, another interstate line i.e. 132 kV S/C Hisar-Sadulpur (Rajgarh) line interconnecting 220 kV GSS BBMB Hisar and 132 kV GSS Sadulpur (Rajgarh) is owned by RVPN, commissioned on dated 13.12.1959, line length 78 kms., 281 nos. towers involved & present book value is Rs. 8.57 Crore. The line condition is also deteriorating. Generally, this line remains charged on no-load since commissioning of 132 kV Bhadra-Sadulpur line in the year 2010 and there is no use of said line and may be dismantled. The Yearly Transmission Charges (YTC) allowed by CERC in petition no. 362/TT/2019 for the said line is 37.94 lakh. The YTC allowed is only towards O&M expenses and interest on working capital as useful life of 25 years has already been over. The work of replacement of line conductor with associated hardware, disc insulator, etc. requires estimated cost amounting Rs.7.021 crores.

II. DELIBERATION/DECISION:

Based on the above facts as discussed above, the following is to be deliberated in NRPC meeting:

i. Assessment & usability of these Interstate lines i.e. 220 kV S/C MIA (Alwar) - BTPS (Badarpur) line and 132 kV S/C Hisar-Sadulpur (Rajgarh) line.

ii. Recovery of capital expenditure on renovation & refurbishment through YTC for these Interstate lines, in case NRPC decides to retain these Interstate lines.

Annexure-II

RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM LIMITED.
[Corporate Identity Number (CIN):U40109RJ2000SGC016485]
(Regd. Office: Vidyut Bhawan, Jan Path, Jyoti Nagar, Jaipur - 302 005)
OFFICE OF THE SUPERINTENDING ENGINEER (PROJECT & PLANNING)
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e-mail: se.pp@rvpn.co.in; website:www.rvpn.co.in
RVPN An ISO 9001:2000 Certified Company

No. RVPN/SE(P&P)/XEN-3(P&P)/AE-2/ F./D 207 Jaipur, Dt. 29/7/24

The Managing Director,
Haryana Vidyut Prasaran Nigam Ltd.,
SHAKTI BHAWAN, C-4, Sector-6, Panchkula-134109.

The Managing Director,
Delhi Transco Ltd.,
Shakti Sadan, Kotla Marg, New Delhi-110002

Sub: Regarding assessment and usability of the interstate lines i.e 220 KV S/C MIA (Alwar) BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh)

Ref: Sr.no.A.8 of MoM of 57th meeting of Northern Regional Power Committee held on dated 27.09.2022 **(copy enclosed).**

Sir,

This has reference to MoM of 57th meeting of Northern Regional Power Committee held on dated 27.09.2022 wherein at Sr.no.A.8, assessment and usability of the interstate lines i.e 220 KV S/C MIA (Alwar) BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh) was discussed. In the meeting, RVPN has submitted agenda for decisions on following for deliberations in the meeting:

i. Assessment & usability of these Interstate lines i.e 220 KV S/C MIA (Alwar)- BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh) line.
ii. Recovery of capital expenditure on renovation and refurbishment through YTC for these Interstate lines, in case NRPC decides to retain these interstate line.

It was informed by RVPN in the meeting that these lines are not useful for them and expressed willingness that POWERGRID may acquire these lines. POSOCO stated that States may express their views on utiiity of lines and also confirmed no significant use of the lines from power flow point of view.

Further, Haryana intimated that comment may be shared after consultation with planning wing. Finally, the Forum decided that Delhi and Haryana may intimate their comment in this regard to RVPN and NRPC/CTU and then the matter may be brought by RVPN to upcoming NRPC Meeting for decision.

The reply on above has not been received so far both from HVPN and DTL to this office. Therefore, in this regard, it is requested to kindly provide comments to this office at the earliest for further appraisal in the next NRPC Meeting for decision on usability of these Interstate lines i.e 220 KV S/C MIA (Alwar)- BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh) line.

Encl: as above

Yours Sincerely

(S.C.Meena)
Chief Engineer(PP&D)

Copy submitted to Member Secretary, NRPC, 18A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016 for kind information and further needful.

Chief Engineer(PP&D)

RajKaj Ref 5227675

Signature valid
Digitally signed by Subash Chand Meena
Designation: Chief Engineer
Date: 2024.07.29 13:01:17 IST
Reason: Approved

RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM LIMITED.
[Corporate Identity Number (CIN):U40109RJ2000SGC016485]
(Regd. Office: Vidyut Bhawan, Jan Path, Jyoti Nagar, Jaipur - 302 005)
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RVPN
An ISO 9001:2000 Certified Company

No. RVPN/SE(P&P)/XEN-3(P&P)/AE-2/ F. /D 306 Jaipur, Dt. 28/8/24

The Managing Director,
Haryana Vidyut Prasaran Nigam Ltd.,
SHAKTI BHAWAN, C-4, Sector-6, Panchkula-134109.

The Managing Director,
Delhi Transco Ltd.,
Shakti Sadan, Kotla Marg, New Delhi-110002

Sub: Regarding assessment and usability of the interstate lines i.e 220 KV S/C MIA (Alwar) BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh)

Ref: This office earlier letter dated 29.07.24

Sir,

This has reference to this office earlier letter dated 29.07.24, vide which it was requested to provide comments for decision on usability of these Interstate lines i.e 220 KV S/C MIA (Alwar)- BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh) line for further appraisal in the next NRPC Meeting.

Earlier, as per MoM of 57th meeting of Northern Regional Power Committee held on dated 27.09.2022, at Sr.no.A.8, assessment and usability of the interstate lines i.e 220 KV S/C MIA (Alwar) BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh) was discussed. In the meeting, RVPN has submitted agenda for decisions on following for deliberations in the meeting:

i. Assessment & usability of these Interstate lines i.e 220 KV S/C MIA (Alwar)- BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh) line.
ii. Recovery of capital expenditure on renovation and refurbishment through YTC for these Interstate lines, in case NRPC decides to retain these interstate line.

It was informed by RVPN in the meeting that these lines are not useful for them and expressed willingness that POWERGRID may acquire these lines. POSOCO stated that States may express their views on utility of lines and also confirmed no significant use of the lines from power flow point of view.

Further, Haryana intimated that comment may be shared after consultation with planning wing. Finally, the Forum decided that Delhi and Haryana may intimate their comment in this regard to RVPN and NRPC/CTU and then the matter may be brought by RVPN to upcoming NRPC Meeting for decision.

The reply on above is still not received by this office both from HVPN and DTL. Therefore, you are again requested to provide your comments at the earliest, so that further decision may be taken for usability of these Interstate lines i.e 220 KV S/C MIA (Alwar)- BTPS (Badarpur) line and 132 KV S/C Hisar-Sadulpur (Rajgarh) line.

Encl: as above

Yours Sincerely

(S.C.Meena)
Chief Engineer (PP&D)

Copy submitted to Member Secretary, NRPC, 18A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016 for kind information and further needful.

Chief Engineer (PP&D)

Document created by SURESH CHAND MEENA <mhi4371@gmail.com>.
Digitally Signed by SURESH CHAND MEENA
Designation: Chief Engineer
Date :28-08-2024 10:11:07

Raj Ref No.: 10028035

Report on installation of Control switch devices in 400KV Kalaamb Wangtoo and Kalaamb Sorang lines at PKATL Substation KALAAMB to control switching surges

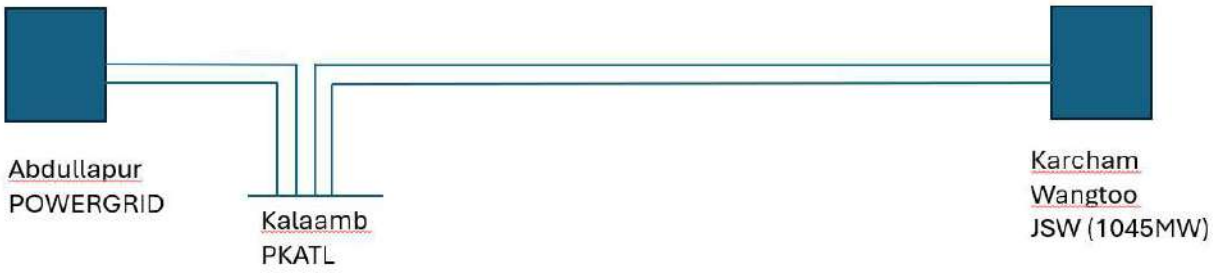
By

POWERGRID KALA AMB TRANSMISSION LIMITED
(An SPV of POWERGRID Infrastructure Investment Trust)

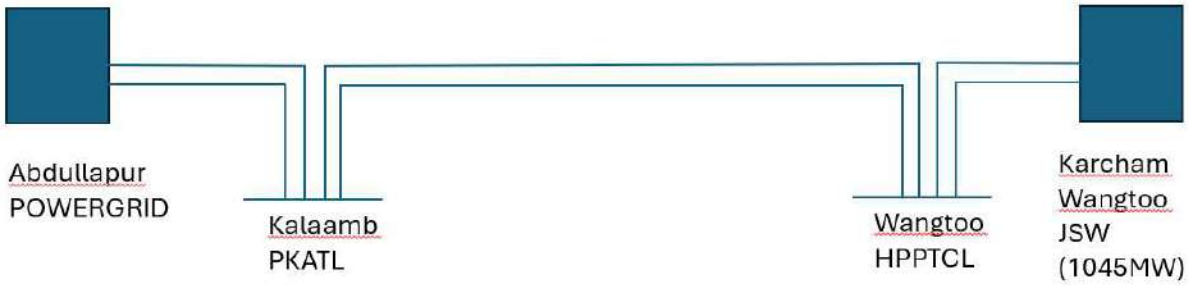
Contents

A) Background

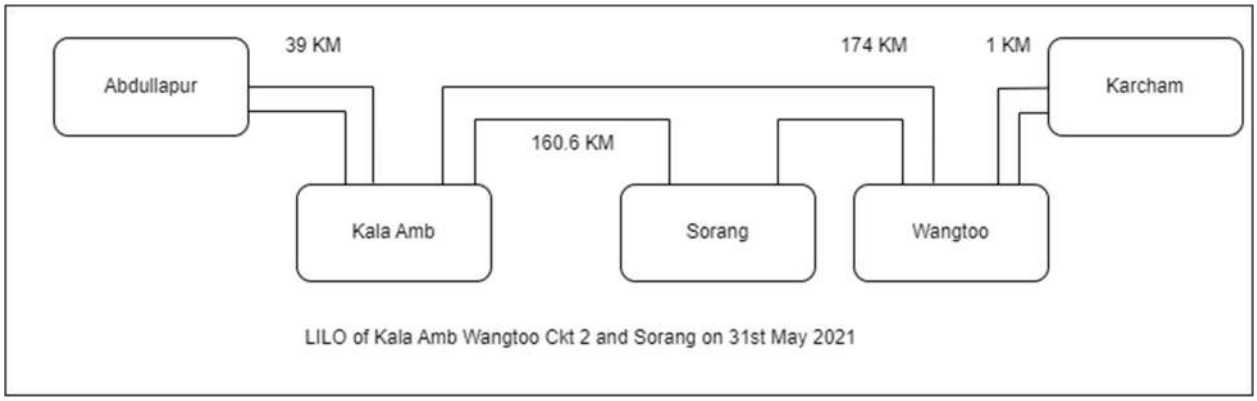
Nov'2017: LILO of 400KV Abdullapur-KW 1 &2 at Kalaamb by PKATL



Nov'2019: LILO of 400KV Kalaamb Karchamwangtoo at Kalaamb by HPPTCL



May'2021 : LILO OF 400KV Kalaamb Karchamm Wangtoo 2 at SORANG



B) LOADING PATTERN

- Lines remain heavily loaded during April to October and lightly loaded during the November to March period.
- Due to light loading and absence of LR, system voltage often rises in the area.
- Due to Rise in system voltage, these Lines were frequently opened for voltage regulation.
- Switching operations at high voltage, absence of LR resulted in the generation of switching surges and tripping of the Lines.

INDICATIONS FOR SWICHING SURGES

- SOTF (SWITCH ON TO FAULT) operated whenever line charging was unsuccessful.
- Conduction in Surge Arrestor due to switching surges at remote end. Surge arrestor counter was also found increased during these events.

C) Details of lines tripping on SOTF during charging of the Line :

SL No.	Element Name	Tripping Date	Tripping Time	Fault Type	Current (KA)	Fault Location	Remarks
1	Kala Karcham Wangtoo Ckt - 2	27-Jan-19	05:35	R-G	-	-	Charging attempt taken from Karcham Wangtoo end but did not hold.
2	Kala Karcham Wangtoo Ckt - 2	27-Jan-19	06:22	R-G	17	-	Charging attempt taken from Kala Amb but did not hold.
3	Kala Karcham Wangtoo Ckt - 2	27-Jan-19	07:28	R-G	14.7	-	Flashover in R-phase Q6 isolator compartment of Wangtoo 2 line at Kala Amb during charging.
4	Kala Amb Wangtoo	12-Jun-21	03:01	R-B-G	1.1 , 3.3	101	Charging attempt taken from Wangtoo but tripped on SOTF.
5	Kala Amb Wangtoo	12-Jun-21	09:51	Y-G	2.1	-	Charging attempt taken from Kalaamb but tripped on SOTF.
6	Kala Amb Wangtoo	13-Sep-21	13:16	Y-G	3.5	170	Charging attempt taken from Kalaamb but tripped on SOTF.
7	Kala Amb Wangtoo	20-Sep-21	00:10	B-G	3.4	157	Charging attempt taken from Kalaamb but tripped on SOTF.
8	Kala Amb Wangtoo	2-Nov-21	07:09	Y-B-G	4.7, 4.4	-	Charging attempt taken from Kalaamb but tripped on SOTF.
9	Kala Amb Wangtoo	7-Nov-21	05:08	R-Y-G	4.4, 4.8	-	Charging attempt taken from Kalaamb but tripped on SOTF.

10	Kala Amb Wangtoo	12-Nov-21	05:53	Y-B-G	4.2, 4.3	-	Charging attempt taken from Kalaamb but tripped on SOTF.
11	Kala Amb Wangtoo	14-Nov-21	05:16	R-G	2.9	141	Charging attempt taken from Wangtoo but tripped on SOTF.
12	Kala Amb Wangtoo	14-Nov-21	07:20	R-G	3.1	136	Charging attempt taken from Wangtoo but tripped on SOTF.
13	Kala Amb Wangtoo	14-Nov-21	11:20	R-Y-G	15.8,3.7	-	Charging attempt taken from Kala Amb and Line tripped on SOTF.
14	Kala Amb Wangtoo	14-Nov-21	19:22	R-G	3.2	133	Charging attempt taken from Wangtoo End, Line Tripped. testing with Offline fault locator indicated no fault
15	Kala Amb Wangtoo	16-Nov-21	20:12	R-G	16.2	-	Flashover detected in in Rph GC 06 Compartment (Outdoor Duct) of Kala Amb Wangtoo Line at Kala Amb.
16	Kala Amb Wangtoo	29-Nov-21	06:40	R-G	-	-	After rectification, Line charged from Wangtoo but did not hold.
17	Kala Amb Wangtoo	29-Nov-21	07:04	R-Y-B-G	16.5,4.1,4.9	-	Flashover detected in GC 06 Compartment R Phase of Kala Amb Wangtoo Line at Kala Amb. GIS repaired on 7th December 2021 at 17:23 Hrs.
18	Kala Amb Wangtoo	15-Dec-21	06:25	Y-B-G	4.5, 4.6	136	Charging attempt taken from Kala Amb but Line tripped on SOTF.
19	Kala Amb Wangtoo	15-Dec-21	11:09	B-G	3.2	136	Charging attempt taken from Kala Amb but Line tripped on SOTF.
20	Kala Amb Wangtoo	10-Jan-22	00:18	B-G	2.3	151	Charging attempt taken from Kala Amb but Line tripped on SOTF.
21	Kala Amb Wangtoo	10-Jan-22	14:49	Y-G	3.3	162	Charging attempt taken from Kala Amb but Line tripped on SOTF.
22	Kala Amb Wangtoo	11-Jan-22	07:29	Y-B-G	4.3, 4.3	148	Charging attempt taken from Kala Amb but Line tripped on SOTF.
23	Kala Amb Wangtoo	08-Feb-22	18:09	Y-G	3.8	132	Charging attempt taken from Kala Amb but Line tripped on SOTF.

24	Kala Amb Wangtoo	04-Mar-22	18:07	Y-G	3.2	159	Charging attempt taken from Kala Amb but Line tripped on SOTF.

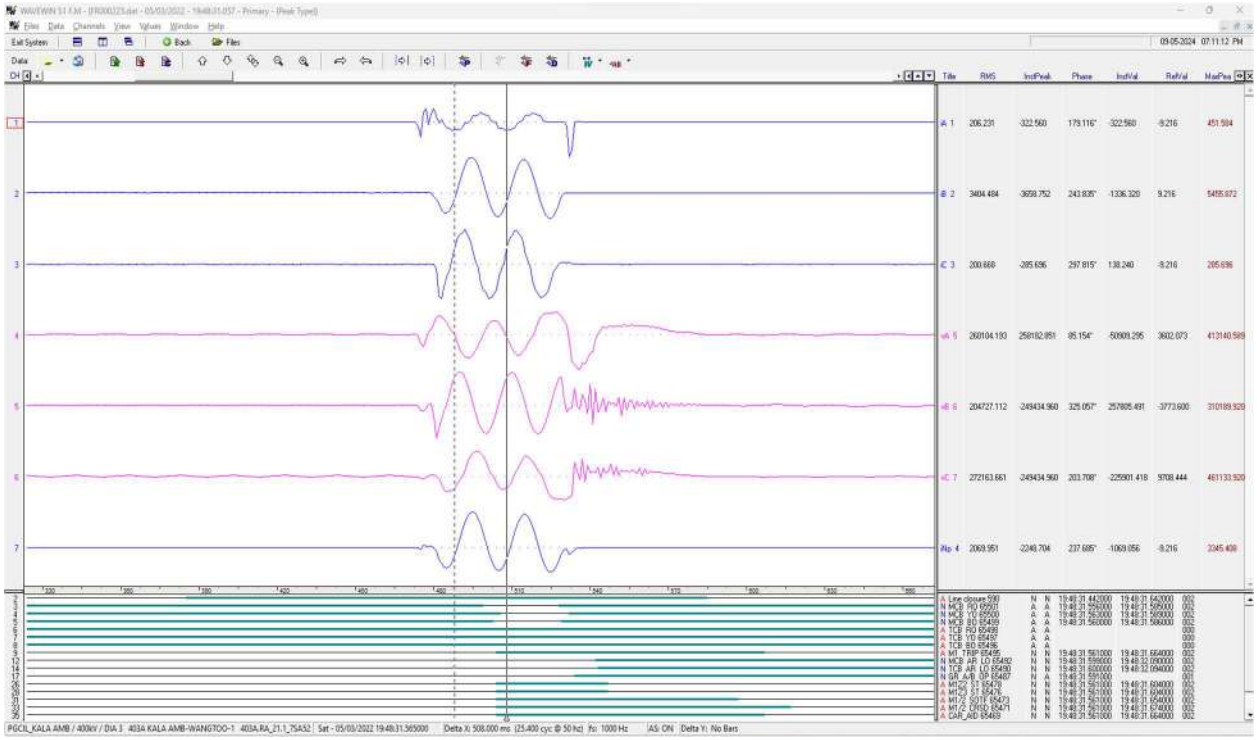
- While charging from Kalaamb, whenever Line tripped on SOTF, fault location was around 80% to 100% and fault current >15KA.
- We started monitoring LA counters and it increased during Line tripping

To mitigate these switching surges, one number of CSD was taken on loan basis from other site and installed on Kala Amb Wangtoo line on trial basis on 5th March 2022 .

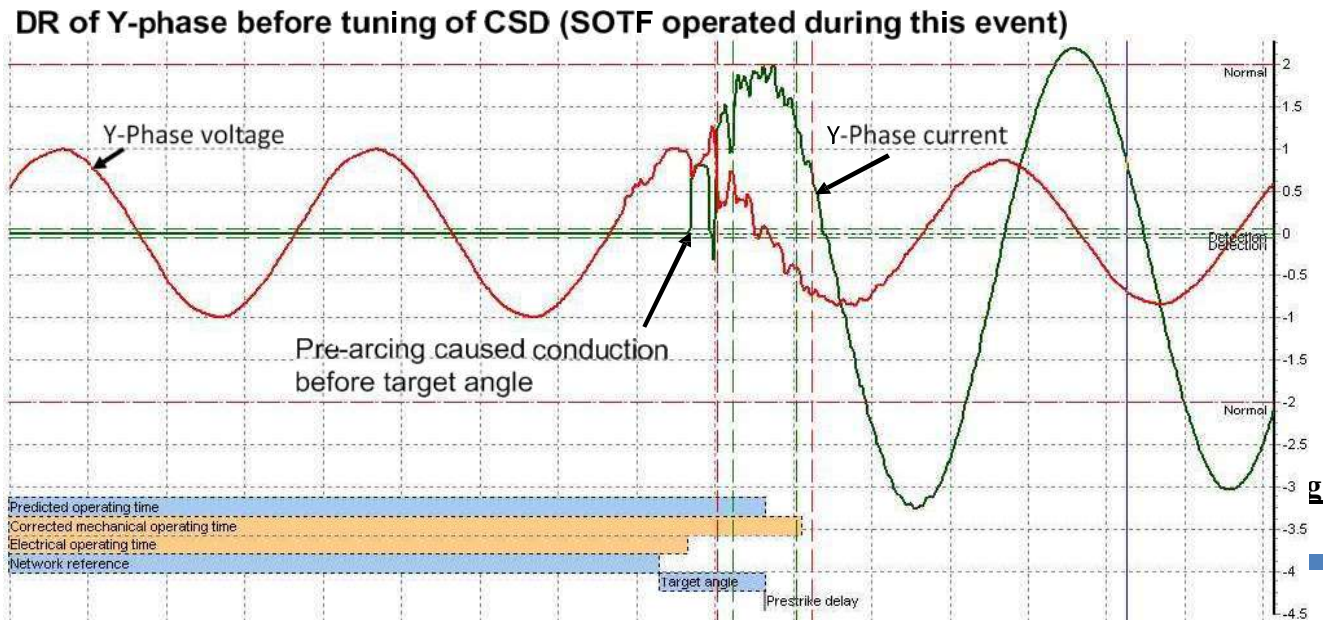
D) CSD commissioned with standard settings and Line Charged. Line again tripped on SOTF with phase wise current as under:

Sr No	Phase	Current(Amp)
1	IR	366
2	IY	3404
3	IB	201

Line Relay DR



CSD DR:



CSD Fine tunned and Line Charged successfully and phase wise Line current were as under:

Sr No	Phase	Current (Amp) before CSD commissioning	Current (Amp) before CSD commissioning
1	IR	366	241
2	IY	3404	246
3	IB	201	256

Line DR & CSD DR after CSD fine tunning

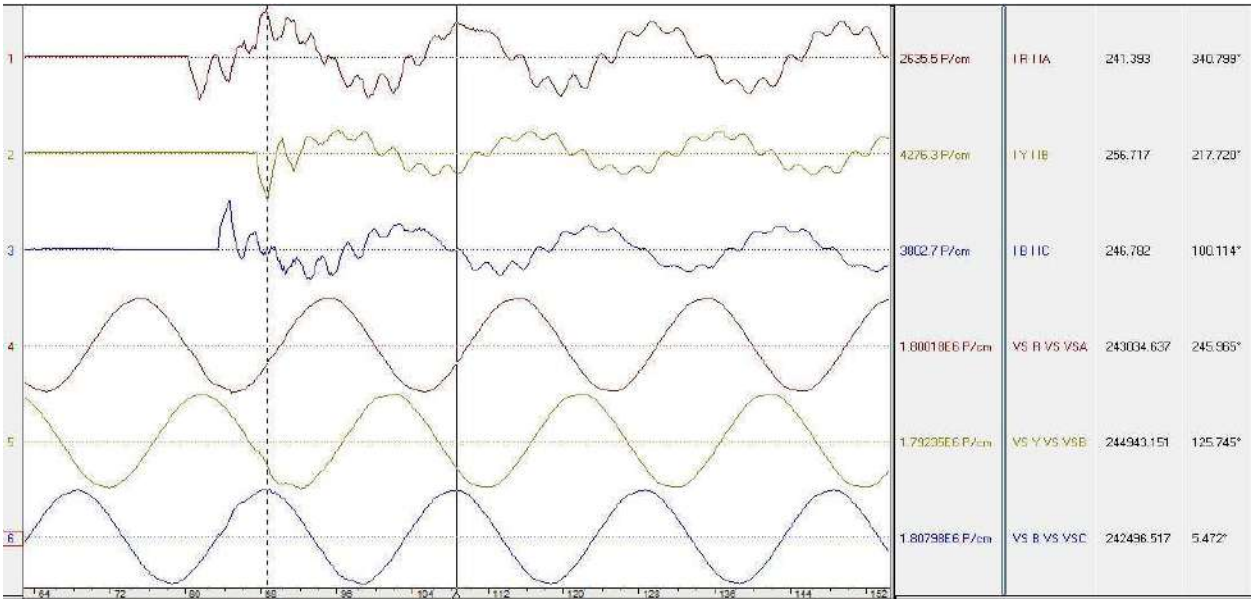


Figure 2: Disturbance record indicating balance current in all 3 phases post charging of Kala Amb Wangtoo Line with CSD

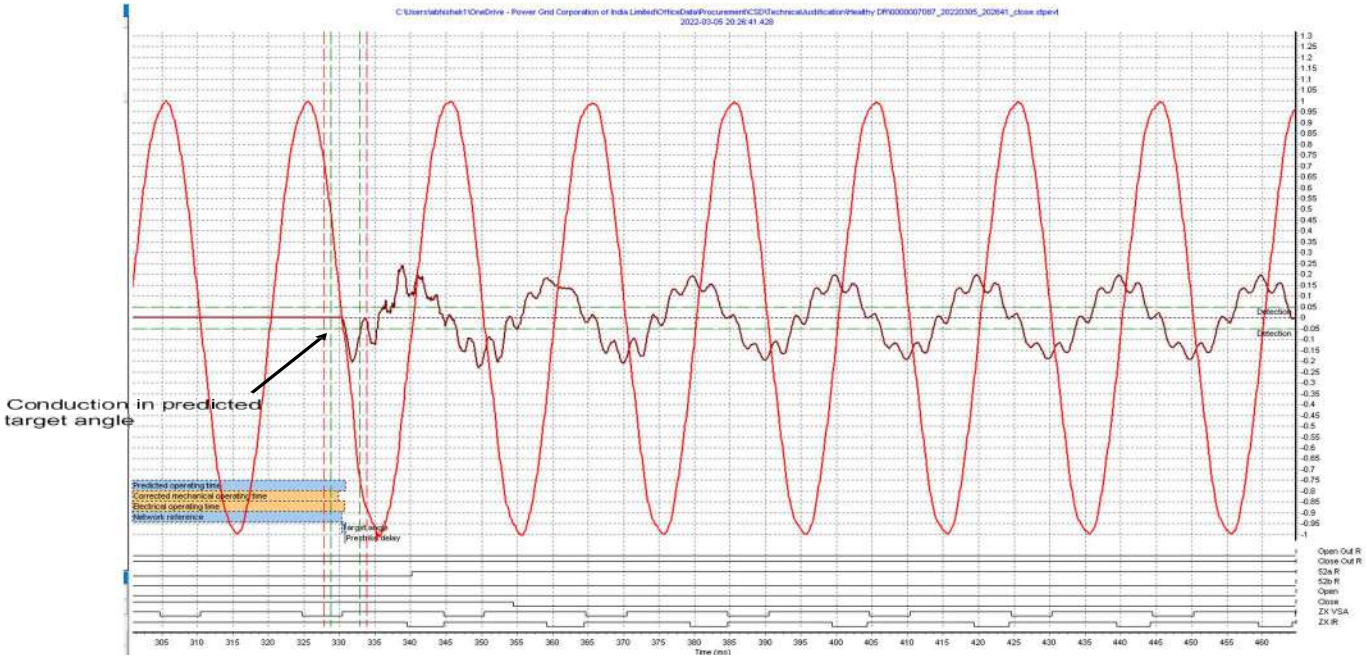
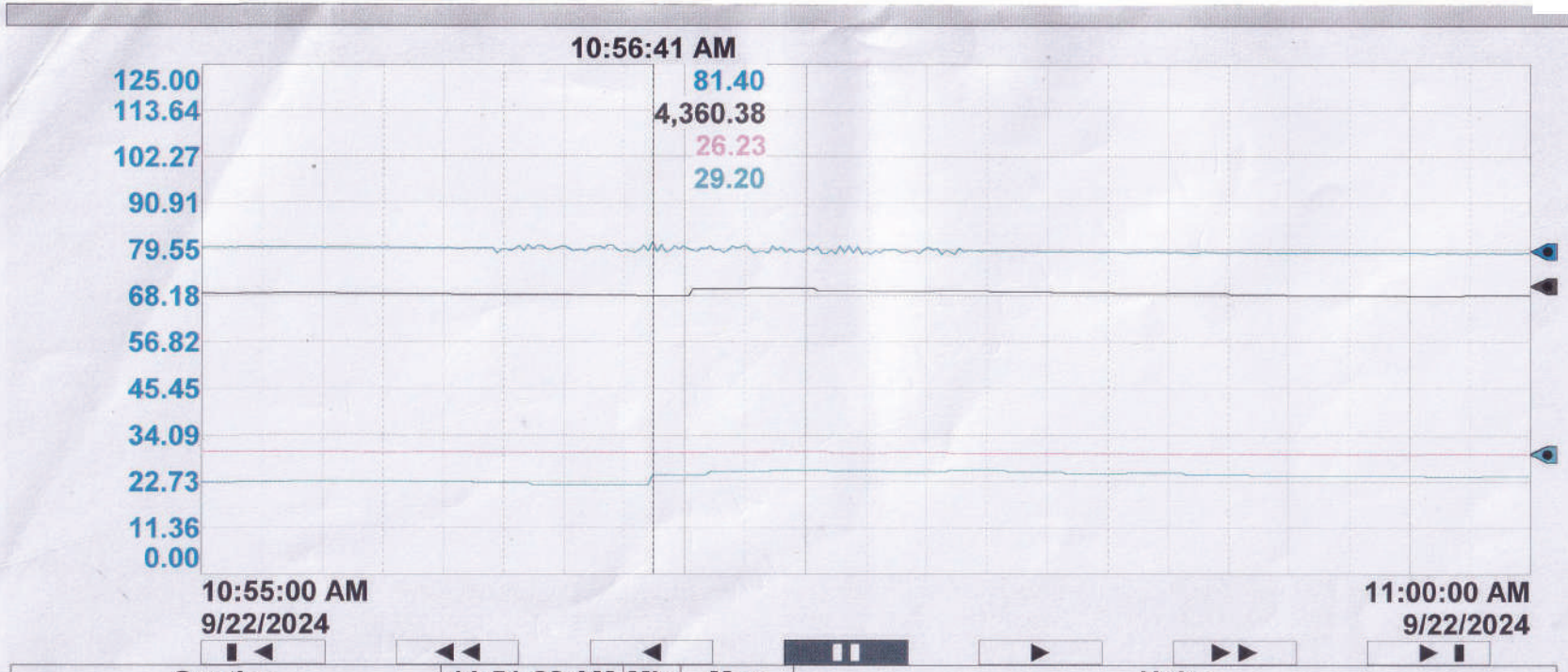


Figure 3: Y phase delay angle set to 30 degree indicates smooth closing as there is no disturbance in bus voltage post-closing

E) Conclusion

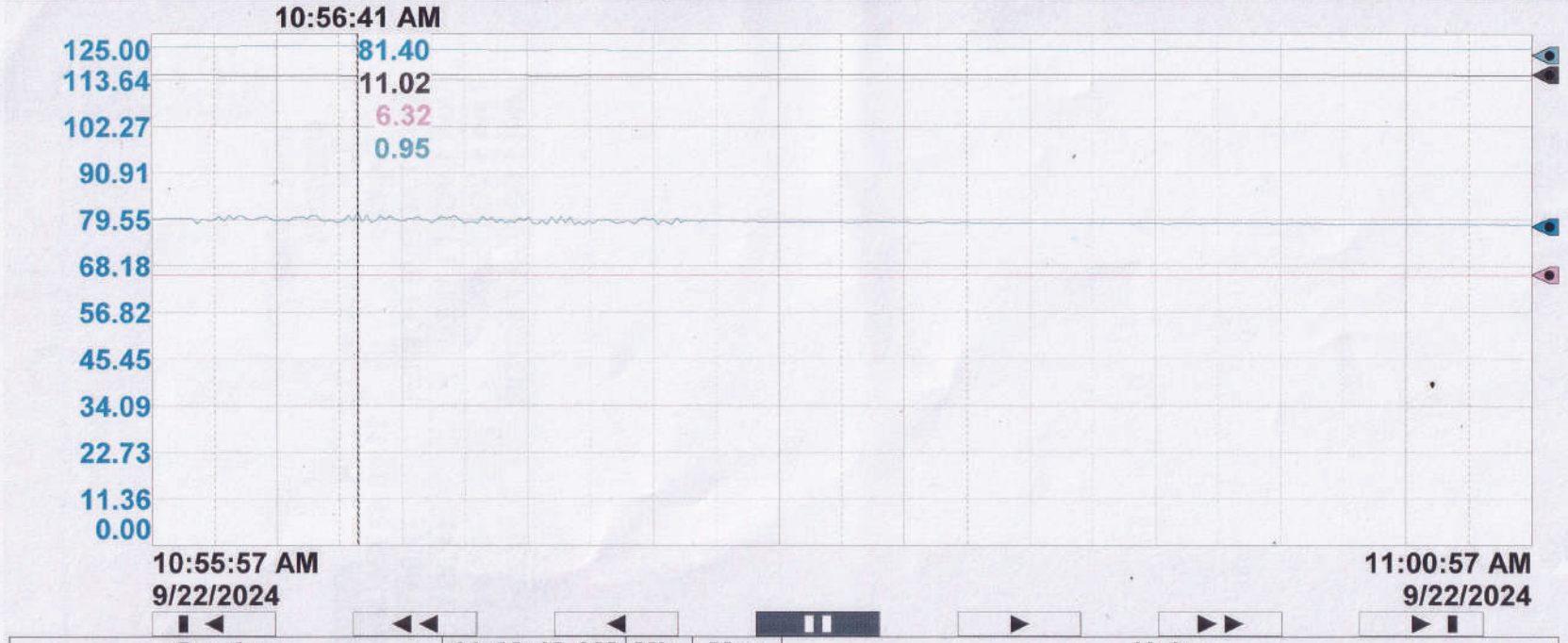
- No SOTF events have been observed at Kala Amb Wangtoo line post CSD installation.
- CSD Installation cost INR 46 Lacs per Line.

Annexure-A.XV

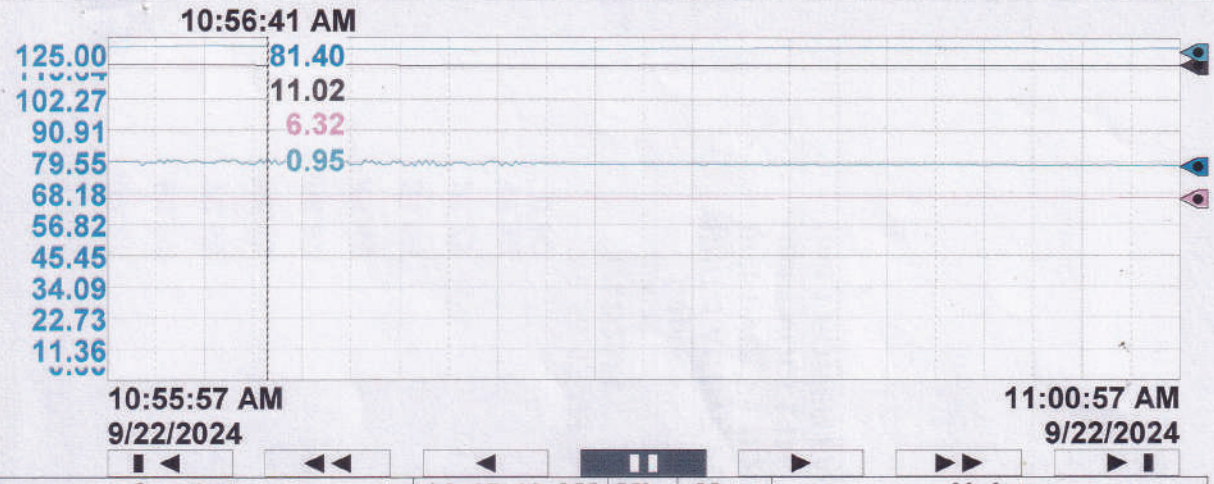


U71.

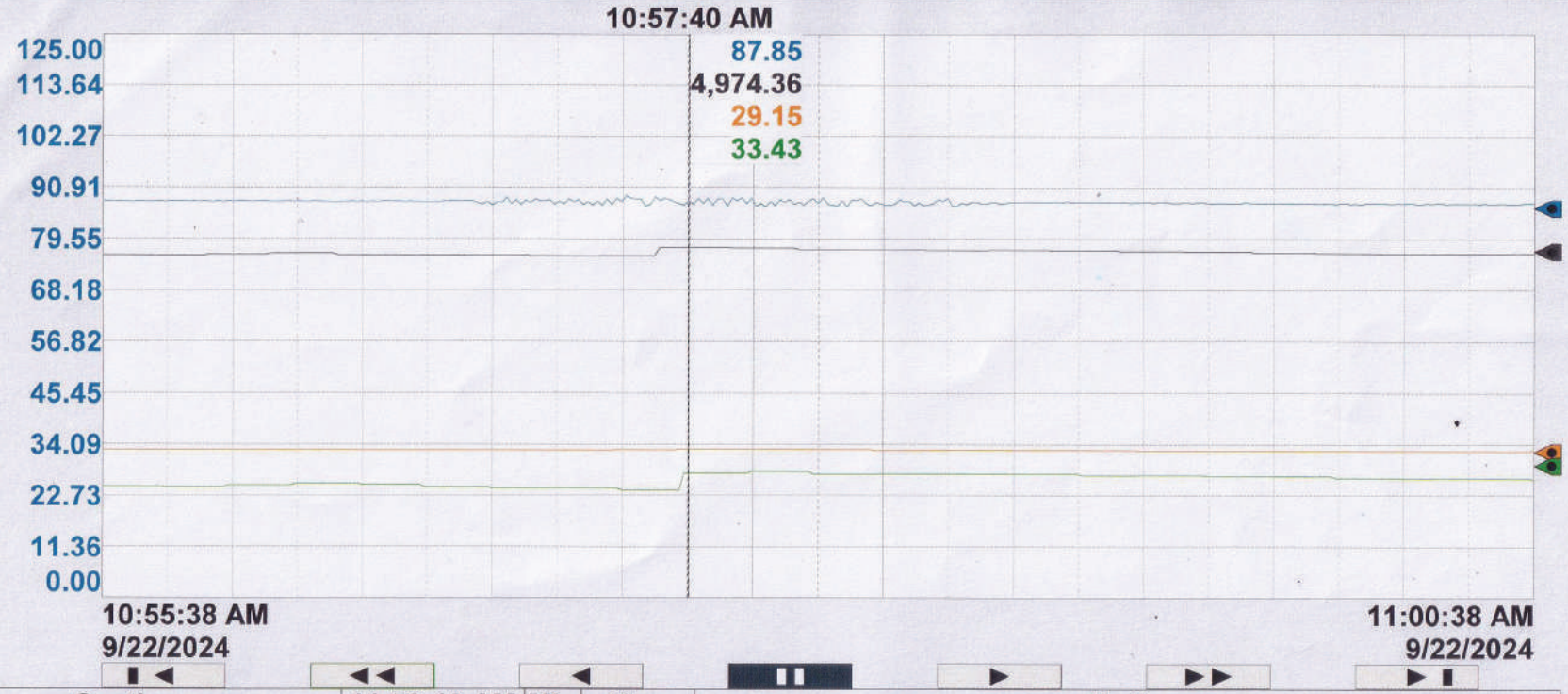
Caption	11:51:22 AM	Min	Max	Units
UNIT 1 ACTIVE POWER	79.11	0.00	125.00	MW
Unit 1 L1 AMP	4,518.46	0.00	8,000.00	Amp
Unit 1 L1 LOAD	26.02	0.00	110.00	Mw
Unit 1 TOTAL MVAR	35.25	0.00	150.00	Mvar



Caption	11:46:40 AM	Min	Max	Units
UNIT 1 ACTIVE POWER	77.85	0.00	125.00	MW
Unit 1 VOLT L1L2	11.04	0.00	12.00	Kv
Unit 1 VOLT L1N	6.34	0.00	12.00	Kv
Unit 1 POWER FACTOR	0.92	-1.00	1.00	



Caption	11:45:43 AM	Min	Max	Units
UNIT 1 ACTIVE POWER	77.80	0.00	125.00	MW
Unit 1 VOLT L1L2	11.05	0.00	12.00	Kv
Unit 1 VOLT L1N	6.34	0.00	12.00	Kv
Unit 1 POWER FACTOR	0.92	-1.00	1.00	



U72.

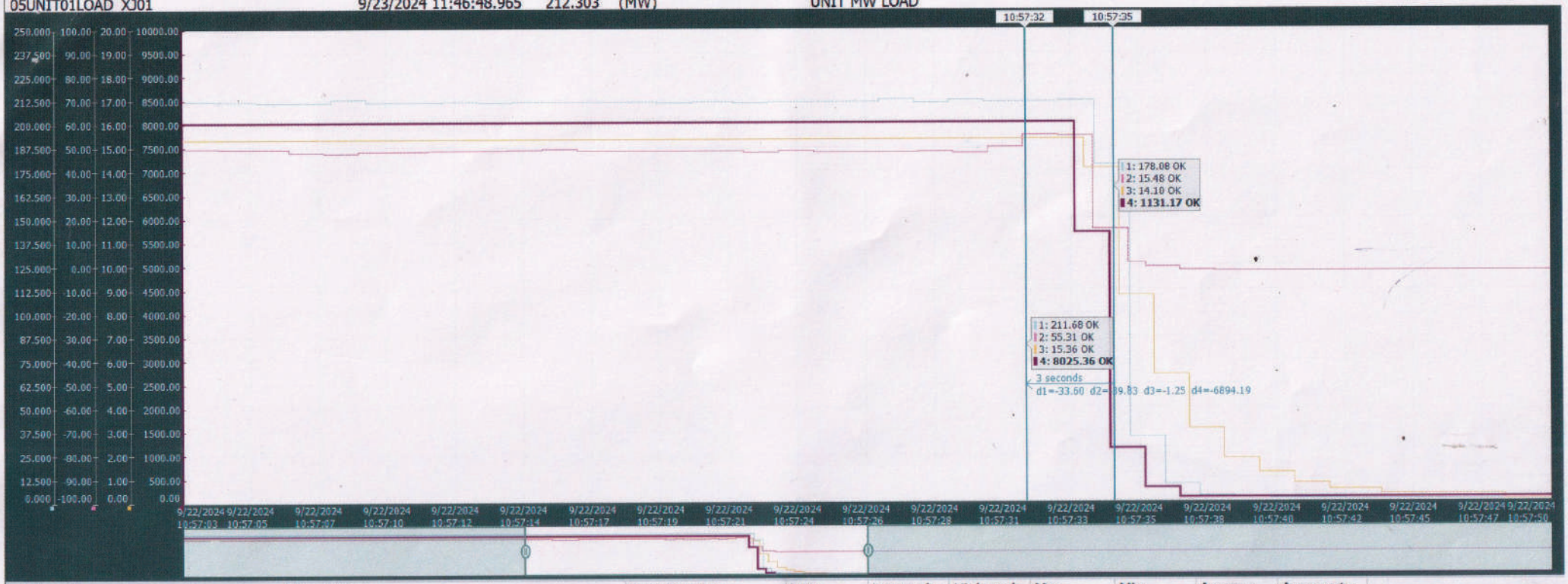
Caption	11:53:19 AM	Min	Max	Units
UNIT 2 ACTIVE POWER	86.44	0.00	125.00	mw
Unit 2 L1 AMP	4,914.35	0.00	8,000.00	Amp
Unit 2 L1 LOAD	28.59	0.00	110.00	Mw
Unit 2 TOTAL MVAR	35.34	0.00	150.00	Mvar

Caption	11:59:45 AM	Min	Max	Units
UNIT 2 ACTIVE POWER	87.95	0.00	125.00	mw
Unit 1 Load	78.19	0.00	125.00	MW
Unit 3 Load	166.99	0.00	250.00	MW
Unit 4 Load	191.13	0.00	250.00	MW
Unit 5 Load	212.00	0.00	250.00	MW
Unit 6 Load	193.20	0.00	250.00	MW
Unit 7 Load	208.81	0.00	250.00	MW
Grid Frequency	49.96	45.00	55.00	Hz

Unable to connect S+ Operations Server

05UNIT01LOAD_XJ01 - Operating Parameters

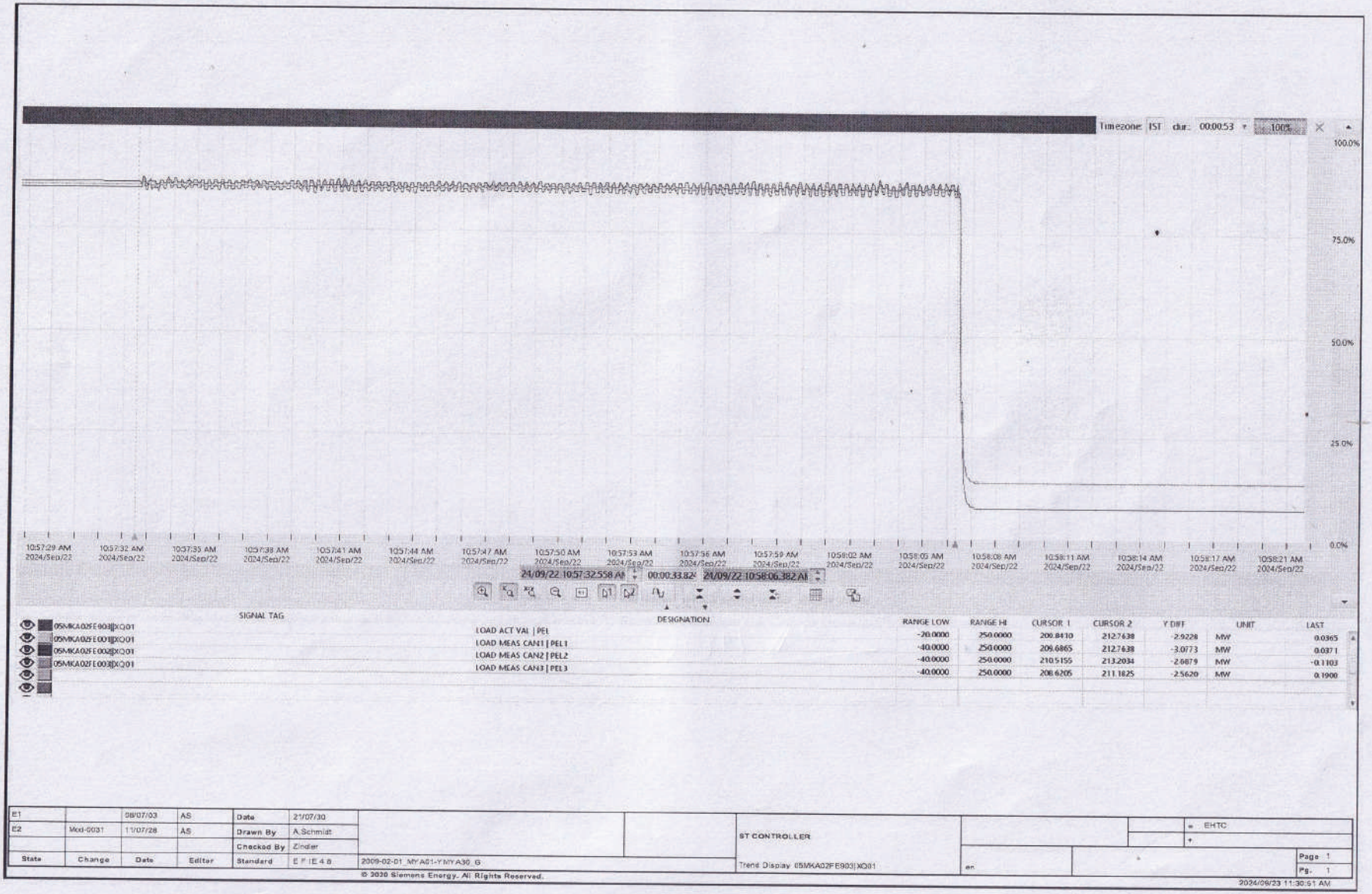
Name	Time	Value	Description
05UNIT01LOAD_XJ01	9/23/2024 11:46:48.965	212.303 (MW)	UNIT MW LOAD



	Tag	Description	Current value	Unit	Low scale	High scale	Max	Min	Average	Aggregate
1	05UNIT01LOAD_XJ01	UNIT MW LOAD	212.303	MW	0.000	250.000	212.776	1.353	146.959	None
2	05BAC11EH027_XJ01	GEN REACTIVE POWER U #5 (MVAR)	68.71		-100.00	100.00	55.31	-2.31	32.48	None
3	05BAC10CE010_XJ01	GENERATOR VOLTAGE -RY	15.39	kv	0.00	20.00	15.36	0.10	11.07	None
4	05BAC10CE002_XJ01	GEN CURRENT R PHASE	8231.81	AMPS	0.00	10000.00	8025.36	81.17	5440.21	None

UNIT #5

4 of 5.



E1		08/07/03	AS	Date	21/07/30					
E2	Mod-0031	11/07/28	AS	Drawn By	A.Schmidt					
				Checked By	Zindler					
State	Change	Date	Editor	Standard	E F IE 4 8	2009-02-01_MYA61-YMYA30_G		ST CONTROLLER		
								Trend Display 05MKA02FE903|XQ01		

EHTC

Page 1
Pg. 1

2024/09/23 11:30:51 AM

U73.

TAG COLOR	SIGNAL TAG	DESIGNATION	RANGE LOW	RANGE HI	CURSOR 1	CURSOR 2	Y DIFF	UNIT	LAST
	03MKA02FE903||XQ01	LOAD ACT VAL | PEL	-20.0000	250.0000	184.3164	174.1602	10.1562	MW	200.8789
	03MKA02FE001||XQ01	LOAD MEAS CAN1 | PEL1	-20.0000	250.0000	180.5078	170.5664	9.9414	MW	196.5625
	03MKA02FE002||XQ01	LOAD MEAS CAN2 | PEL2	-40.0000	250.0000	173.1641	183.6719	-10.5078	MW	199.7852
	03MKA02FE003||XQ01	LOAD MEAS CAN3 | PEL3	-40.0000	250.0000	184.3164	174.1406	10.1758	MW	200.6641

				Date	14/11/25
				Drawn By	
				Checked By	
State	Change	Date	Editor	Standard	

Trend Display 03MKA02FE903|XQ01

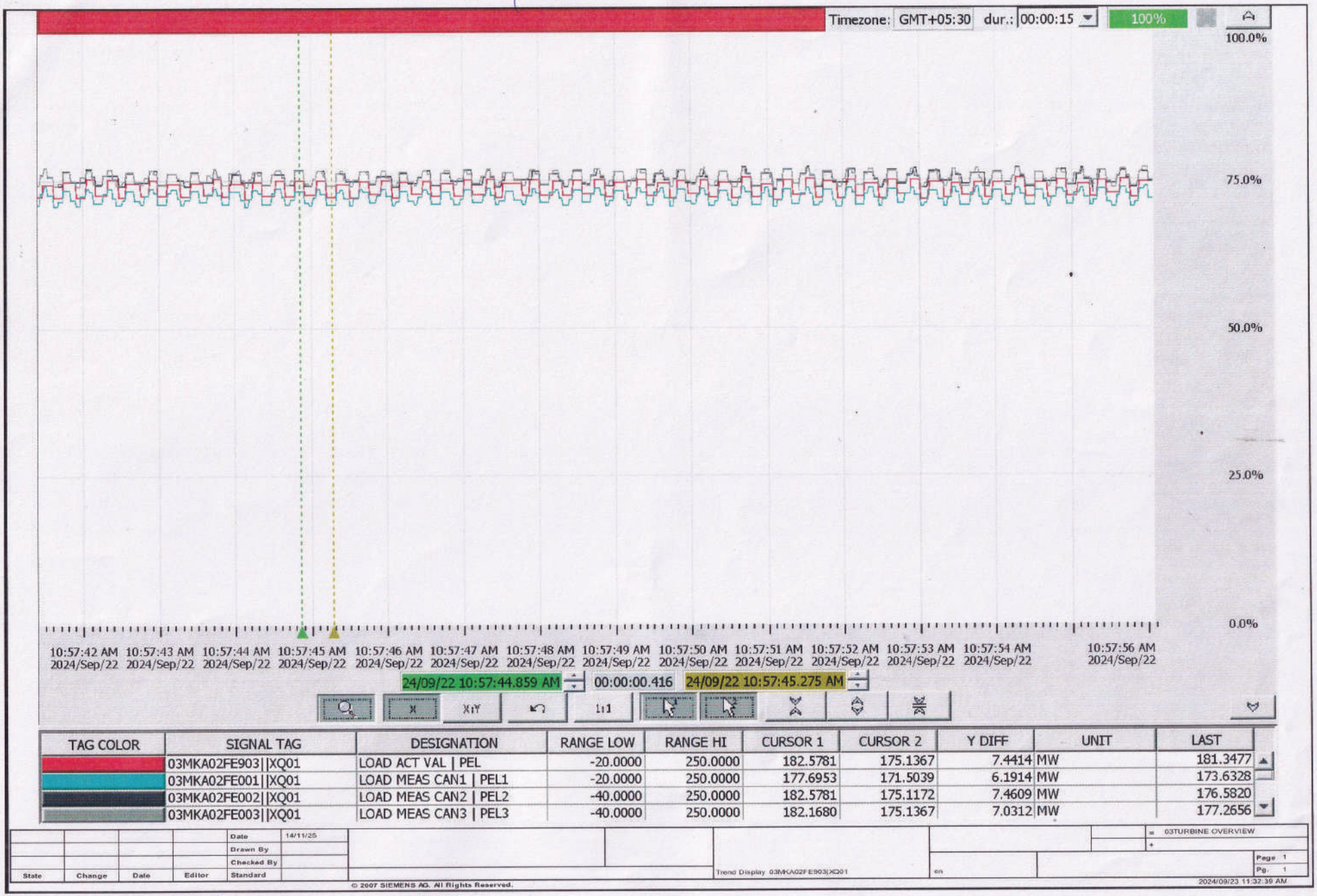
en

03TURBINE OVERVIEW

Page 1
Pg. 1

2024/09/23 11:33:52 AM

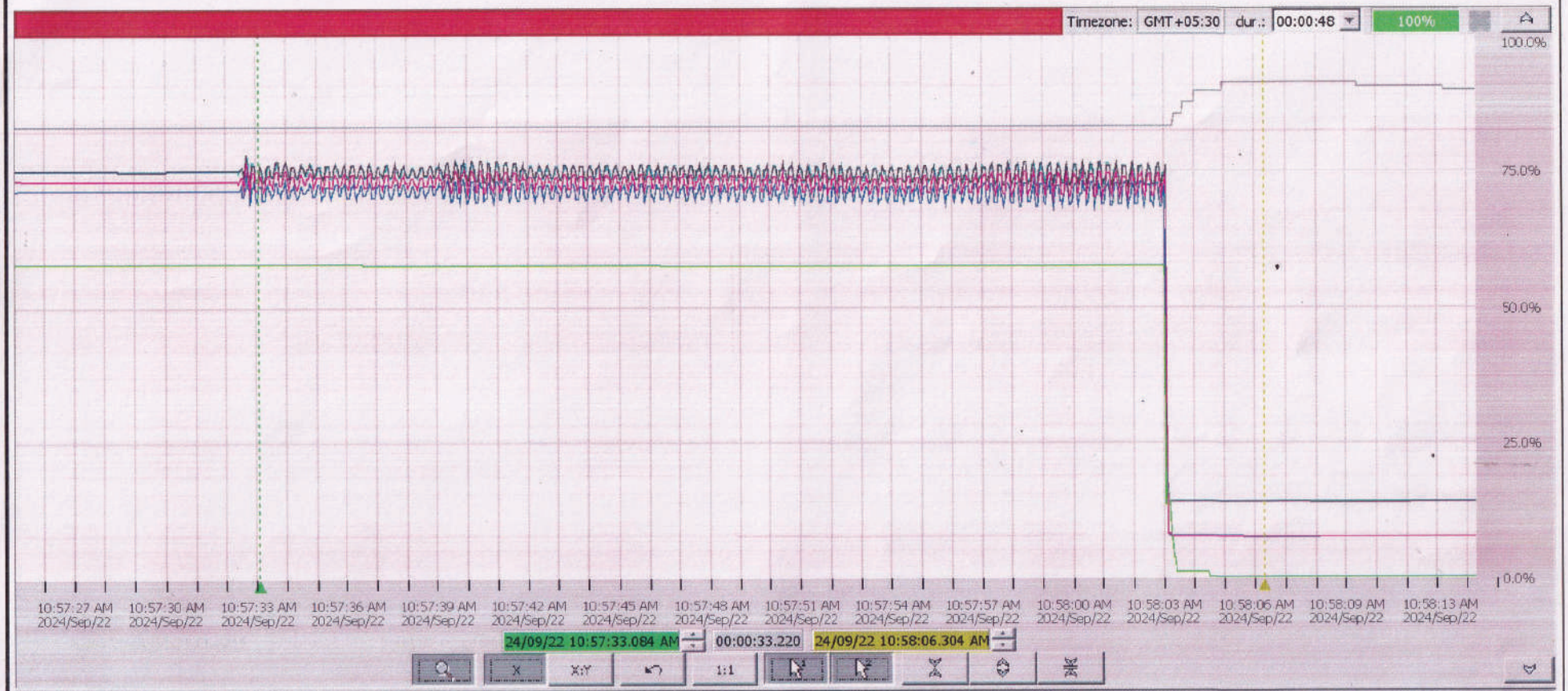
U73.



TAG COLOR	SIGNAL TAG	DESIGNATION	RANGE LOW	RANGE HI	CURSOR 1	CURSOR 2	Y DIFF	UNIT	LAST
	03MKA02FE903||XQ01	LOAD ACT VAL | PEL	-20.0000	250.0000	182.5781	175.1367	7.4414	MW	181.3477
	03MKA02FE001||XQ01	LOAD MEAS CAN1 | PEL1	-20.0000	250.0000	177.6953	171.5039	6.1914	MW	173.6328
	03MKA02FE002||XQ01	LOAD MEAS CAN2 | PEL2	-40.0000	250.0000	182.5781	175.1172	7.4609	MW	176.5820
	03MKA02FE003||XQ01	LOAD MEAS CAN3 | PEL3	-40.0000	250.0000	182.1680	175.1367	7.0312	MW	177.2656

Date 14/11/25
Drawn By
Checked By
State | Change | Date | Editor | Standard
Trend Display 03MKA02FE903|XQ01
= 03TURBINE OVERVIEW
Page 1
Pg. 1
2024/09/23 11:32:39 AM

unit #4

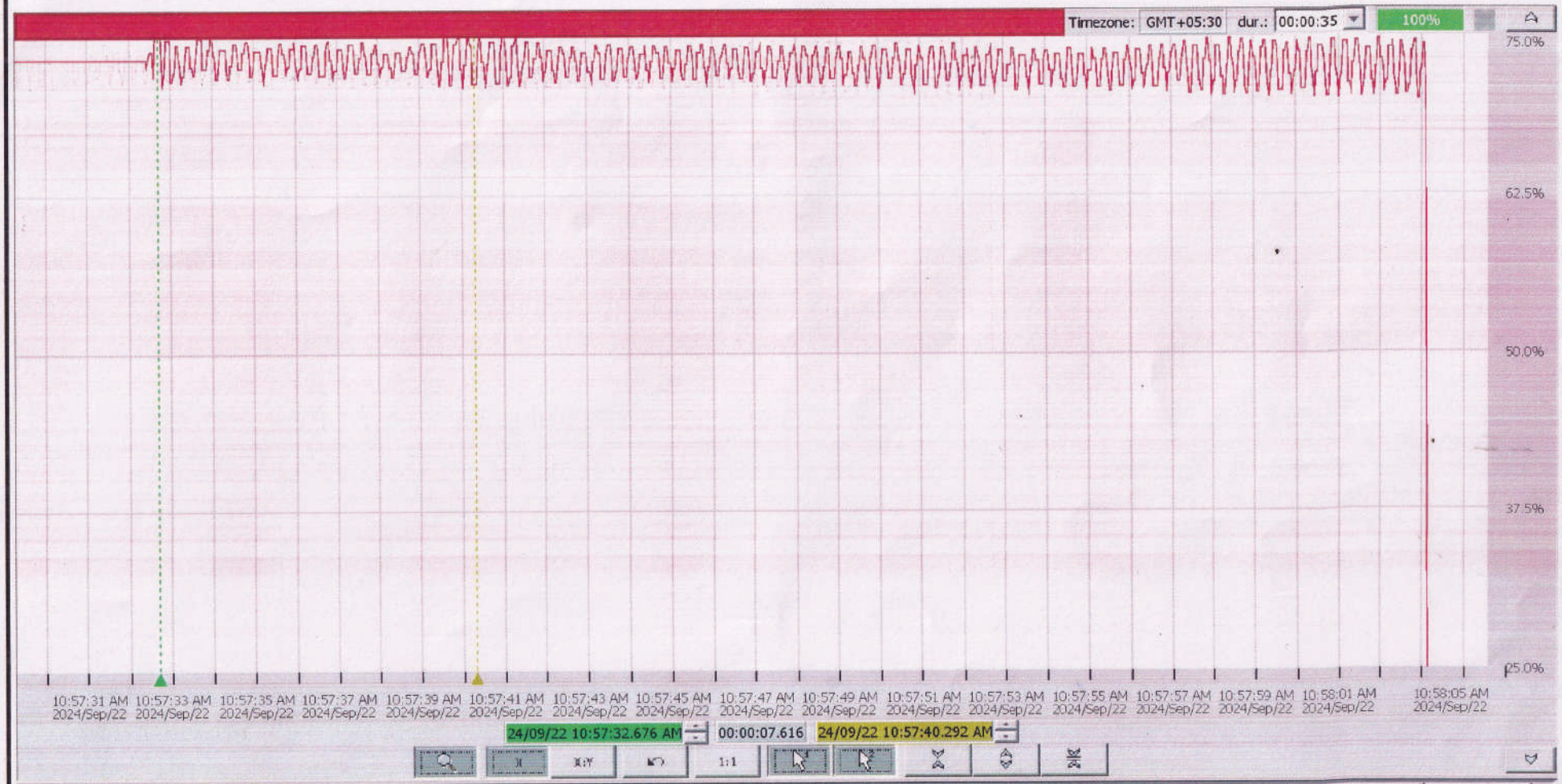


TAG COLOR	SIGNAL TAG	DESIGNATION	RANGE LOW	RANGE HI	CURSOR 1	CURSOR 2	Y DIFF	UNIT	LAST
	04MKA02FE001||XQ01	LOAD MEAS CAN1 | PEL1	-20.0000	250.0000	175.0000	-0.0391	175.0391	MW	0.2734
	04MKA02FE002||XQ01	LOAD MEAS CAN2 | PEL2	-40.0000	250.0000	175.1758	0.3711	174.8047	MW	0.3711
	04MKA02FE003||XQ01	LOAD MEAS CAN3 | PEL3	-40.0000	250.0000	173.2422	0.3125	172.9297	MW	0.2734
	04MYA01EG002||XQ10	SPD ACT VAL	0.0000	3600	2998	3286	-287.9644	RPM	3236
	04MYA01DU060||XQ01	ADMN SETP HP CTRL-V1 | OSFD1	-25.0000	102.0000	48.6967	-25.0000	73.6967	%	-25.0000
	04MKA02FE903||XQ01	LOAD ACT VAL | PEL	-20.0000	250.0000	175.1758	0.2734	174.9023	MW	0.2734

E1		09/11/16	AS	Date	15/03/03			YMYA20	= 04MKA02FE001
				Drawn By	A.Schmidt		LOAD MEAS CAN1		+
				Checked By	Zindler				Page 1
State	Change	Date	Editor	Standard	EFIE 4.8	2006-02-01_MYA01-YMYA30_G	Trend Display 04MKA02FE001|XQ01	en	Pg. 1

2024/09/23 11:24:38 AM

Unit #4

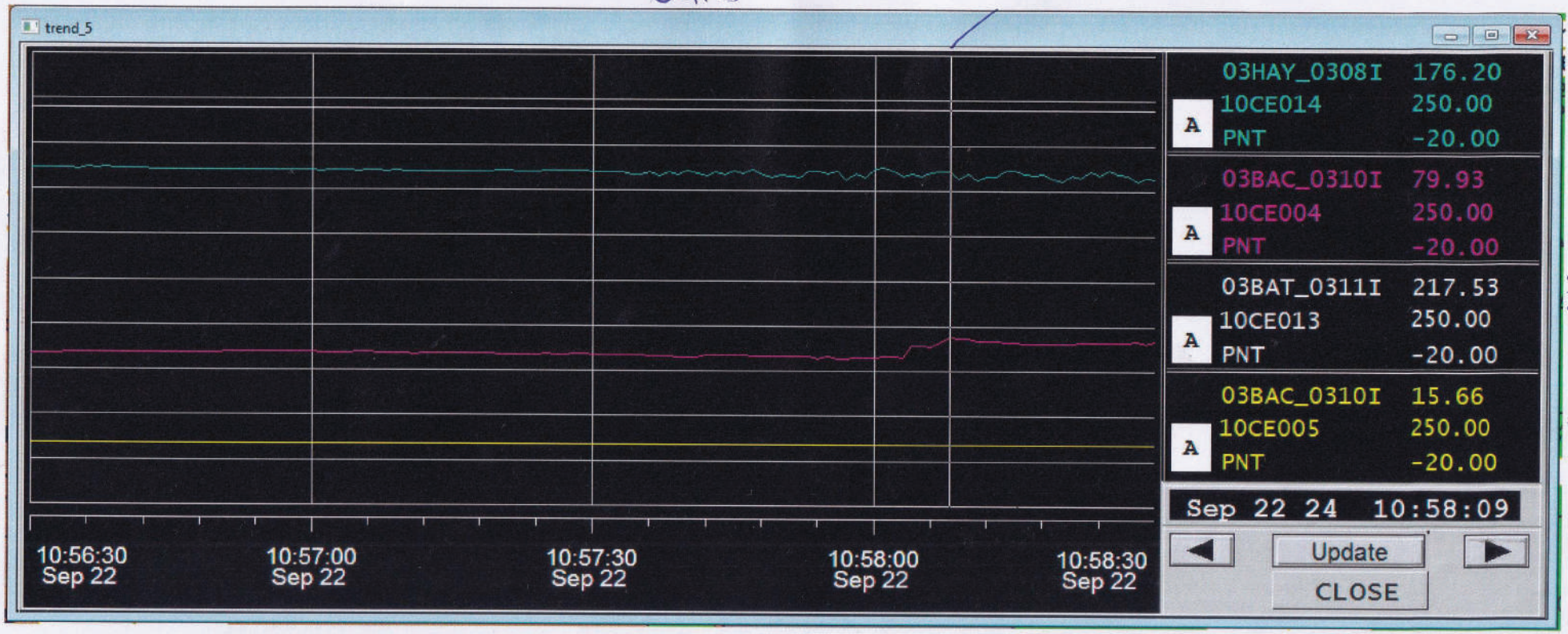


TAG COLOR	SIGNAL TAG	DESIGNATION	RANGE LOW	RANGE HI	CURSOR 1	CURSOR 2	Y DIFF	UNIT	LAST
	04MKA02FE903||XQ01	LOAD ACT VAL | PEL	-20.0000	250.0000	183.2031	172.5977	10.6055	MW	0.2734

E1		08/07/03	AS	Date	15/03/03			ST CONTROLLER			= EHTC
E2	Mod-0031	11/07/28	AS	Drawn By	A.Schmidt						+
				Checked By	Zindler						Page 1
State	Change	Date	Editor	Standard	E F IE 4 8	2006-02-01_MYA01-YMYA36_G		Trend Display 04MKA02FE903|XQ01	en		Pg. 1

2024/09/23 11:29:41 AM

U#3



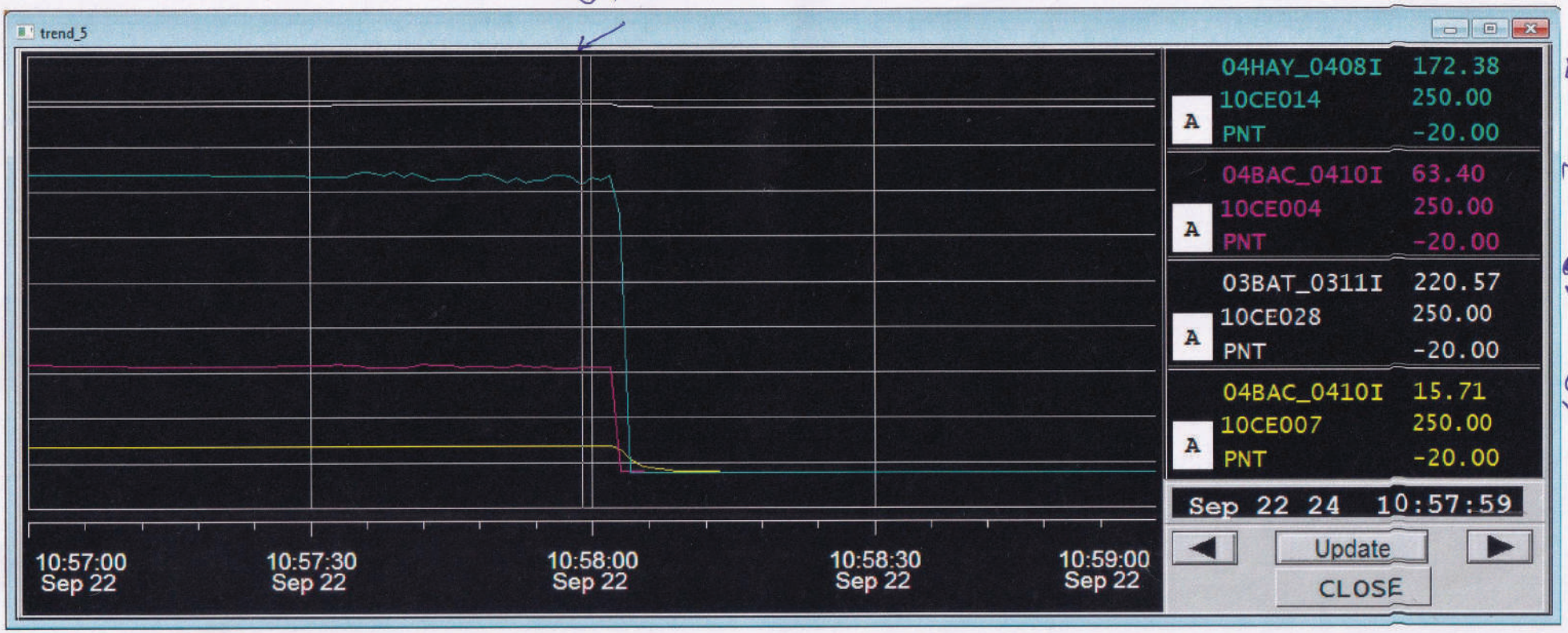
Load

MWAR

Bus Voltage

Gen Voltage

U#4



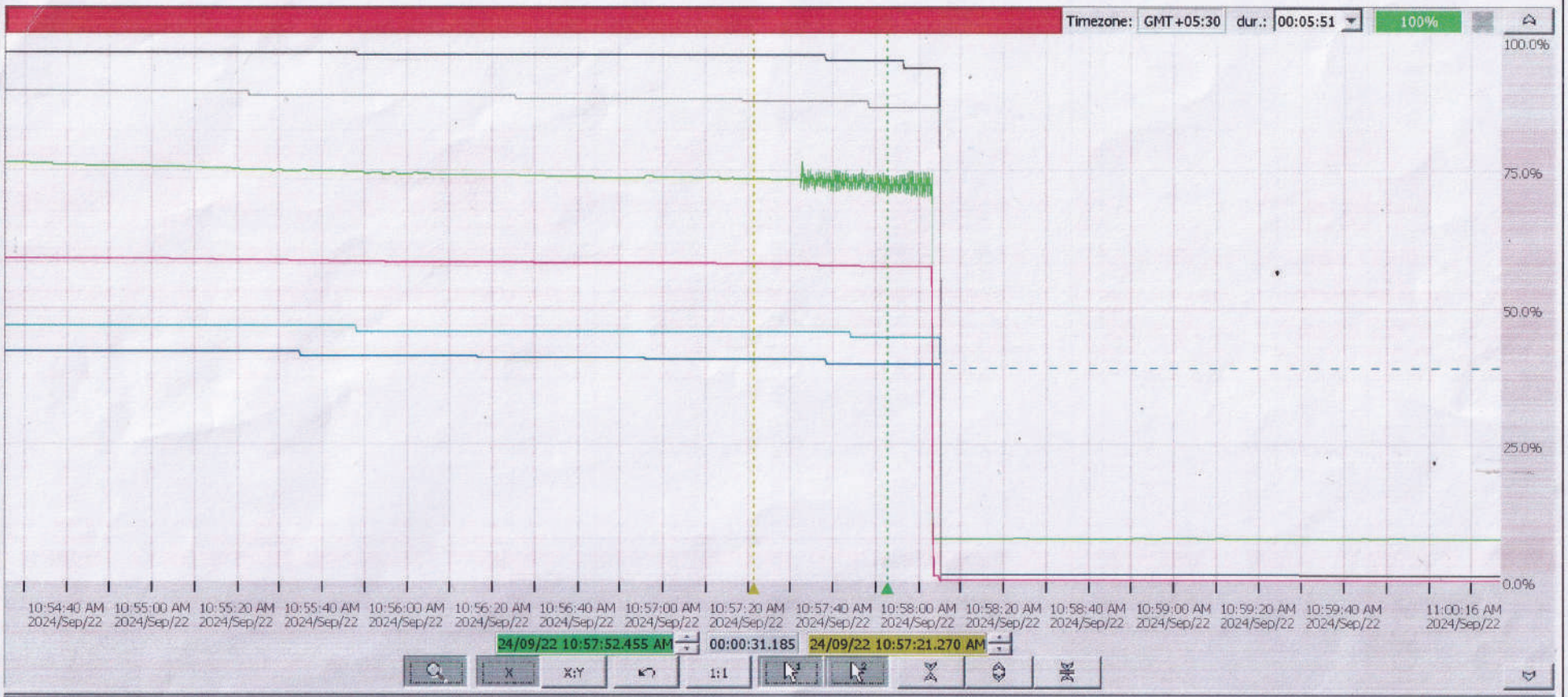
Load

MVAR

Bus Voltage

Gen Voltage

Unit #4

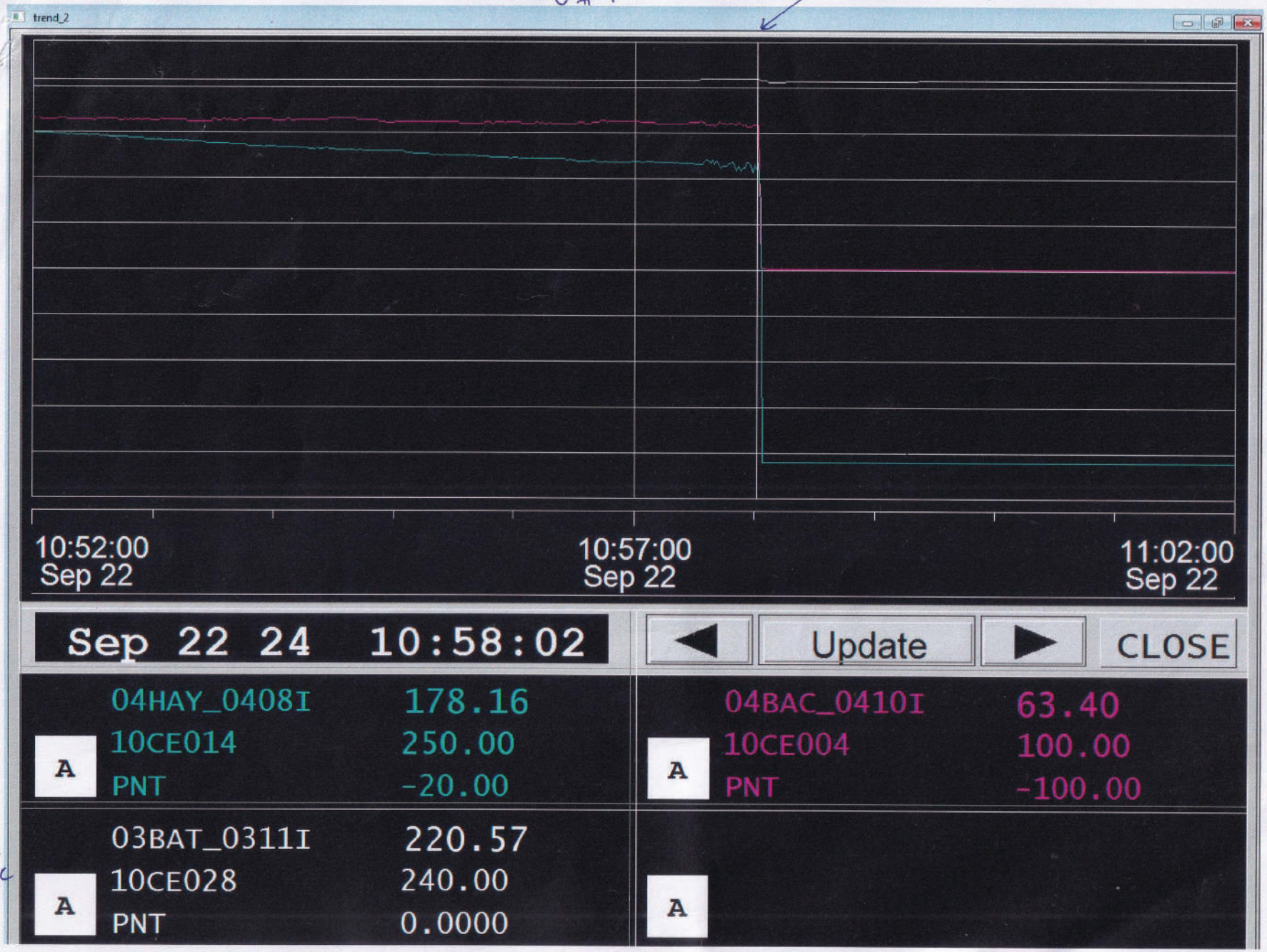


TAG COLOR	SIGNAL TAG	DESIGNATION	RANGE LOW	RANGE HI	CURSOR 1	CURSOR 2	Y DIFF	UNIT	LAST
	04MAA10CG002A||XQ10	HP CTRL VLV 1 POSITION	0.0000	100.0000	39.6123	40.4803	-0.8681	%	U 38.9468
	04MAA20CG002A||XQ10	HP-CTRL VLV 2 POSITION	0.0000	100.0000	44.4444	45.5440	-1.0995	%	-1.4757
	04MAB10CG002A||XQ10	INTERCEPT CONT. VLV 1 POSITION	0.0000	100.0000	95.1678	96.1227	-0.9549	%	0.8970
	04MAB20CG002A||XQ10	INTERCEPT CTRL VLV 2 POSITION	0.0000	100.0000	86.4873	87.6736	-1.1863	%	-0.5208
	04MKA02FE903||XQ01	LOAD ACT VAL | PEL	-20.0000	250.0000	171.1914	178.1836	-6.9922	MW	0.3320
	04MYA01DU060||XQ01	ADMN SETP HP CTRL-V1 | OSFD1	-25.0000	102.0000	47.9985	48.6967	-0.6982	%	-25.0000

E1		08/07/03	AS	Date	15/03/03			ST CONTROLLER	= EHTC
E2	Mod-0031	11/07/28	ÁS	Drawn By	A.Schmidt				+
				Checked By	Zindler				Page 1
State	Change	Date	Editor	Standard	E F IE 4 8	2009-02-01_MYA01-YMYA30_G		Trend Display 04MAA10CG002A|XQ10	en Pg. 1

2024/09/23 10:44:32 AM

U#4



Load

MVAR

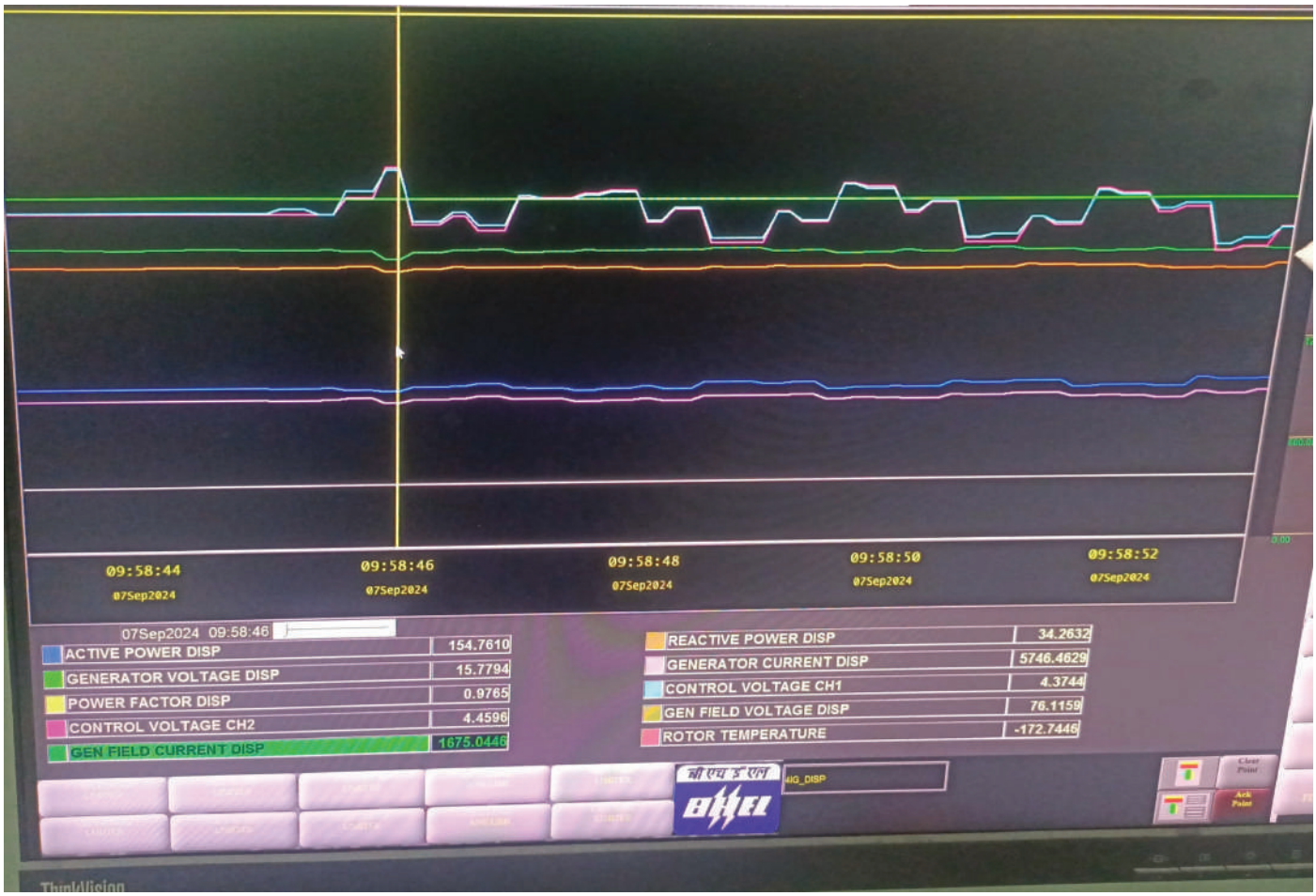
Bus Voltage

U#3

Load

MVAR

Bus Voltage




GENERATOR CURRENT DISP
0.1562 A
11:02:43
24Sep24
MENU
LAST
SYSTEM
TRENDS
SOE
GEN. CAP CURVE
LOCAL
10:30:00
10:32:00
10:34:00
10:36:00
10:38:00
10:40:00
24Sep2024 10:35:00
ACTIVE POWER DISP
GENERATOR VOLTAGE DISP
CONTROL VOLTAGE CH2
GEN FIELD CURRENT DISP
REACTIVE POWER DISP
POWER FACTOR DISP
CONTROL VOLTAGE CH1
GEN FIELD VOLTAGE DISP
ROTOR TEMPERATURE
UNIT-3 POINT 1 TO 5
UNIT-4 POINT 6 TO 10


MENU
LAST
SYSTEM
TRENDS
SOE
GEN.CAP CURVE
LOCAL
11:12:18
11:12:22
11:12:26
11:12:30
11:12:34
11:12:38
11:12:42
11:12:46
11:12:50
11:12:54
11:12:58
11:13:02
24Sep2024 11:13:05
4MW_DISP.out
4UG_DISP.out
4PF_DISP.out
4UC2_DISP.out
4GEN_IP_DISP.out
4CH1_R_L.Out.Sample
Pending...
4MVAR_DISP.out
4UC1_DISP.out
4GEN_UP_DISP.out
4RTRC_DISP.out
4CH1_R_L.Out.Start
Pending...
ThinkVision

Tool Box

UF_DISP.out | GEN FIELD VOLTAGE DISP | 0.2198 V

600.00
480.00
360.00
240.00
120.00
0.00

14:49:56
22Sep24
Security: 3

MENU
LAST
SYSTEM
TRENDS
SOE
GEN. CAP CURVE
LOCAL
SPEED > 90%
ULR SET
ULR RESET
GCB ON
GCB OFF
DPU BACKUP UNHEALTHY
DPU C/O OR REBOOT TOOK PLACE
DPU I/O UNHEALTHY
FIELD FLASHING ON

10:18:40 22Sep2024 | 10:19:00 22Sep2024 | 10:19:20 22Sep2024 | 10:19:40 22Sep2024 | 10:20:00 22Sep2024 | 10:20:20 22Sep2024 | 10:20:40 22Sep2024 | 10:21:00 22Sep2024 | 10:21:20 22Sep2024

22Sep2024 10:21:36

ACTIVE POWER DISP	181.8774	REACTIVE POWER DISP	58.4170
GENERATOR VOLTAGE DISP	15.6862	POWER FACTOR DISP	0.9896
GENERATOR CURRENT DISP	9.1563	CONTROL VOLTAGE CH1	3.2857
CONTROL VOLTAGE CH2	3.3141	GEN FIELD VOLTAGE DISP	0.2198
GEN FIELD CURRENT DISP	1989.2872	ROTOR TEMPERATURE	-234.7116

बी एच ई एल BHEL

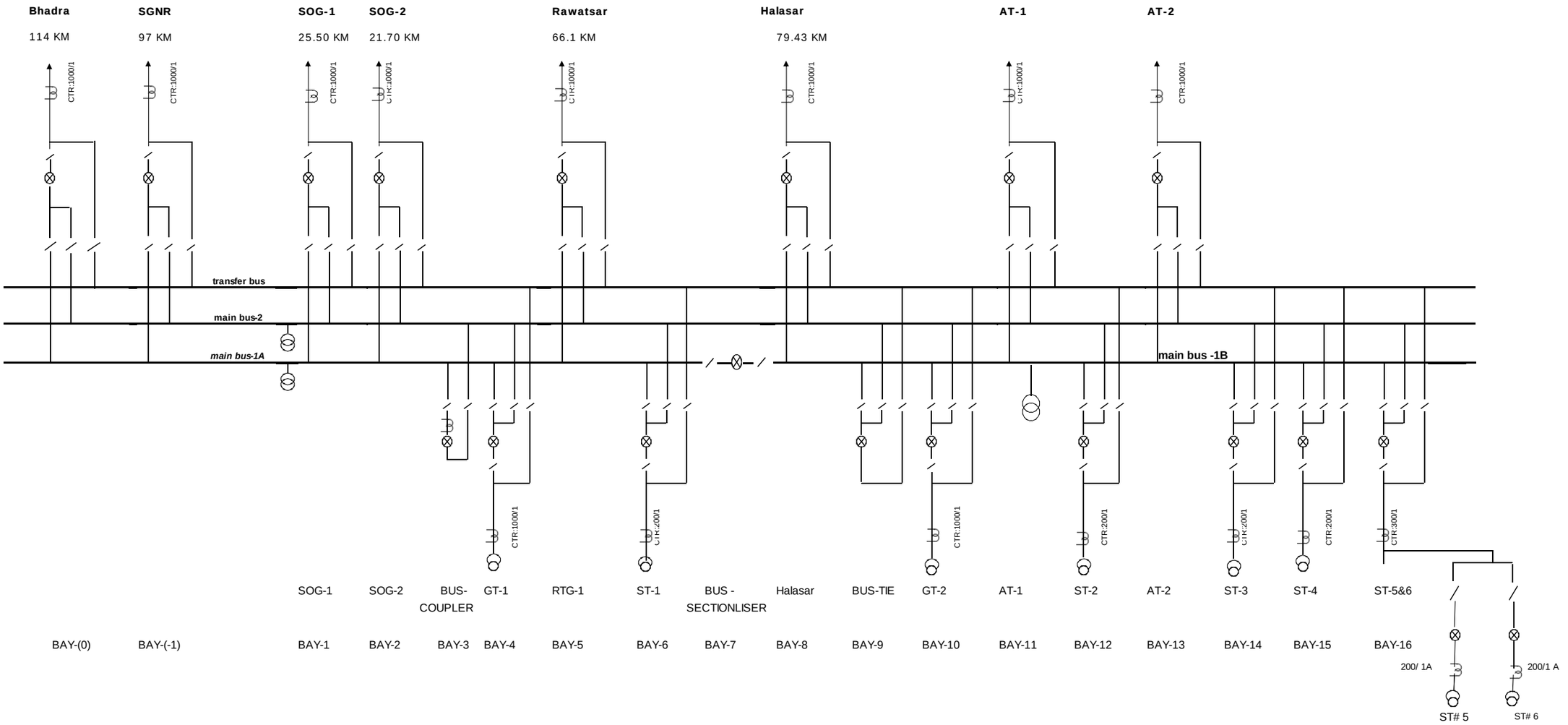
3CH1CH2ON

Clear Point
Ack Point

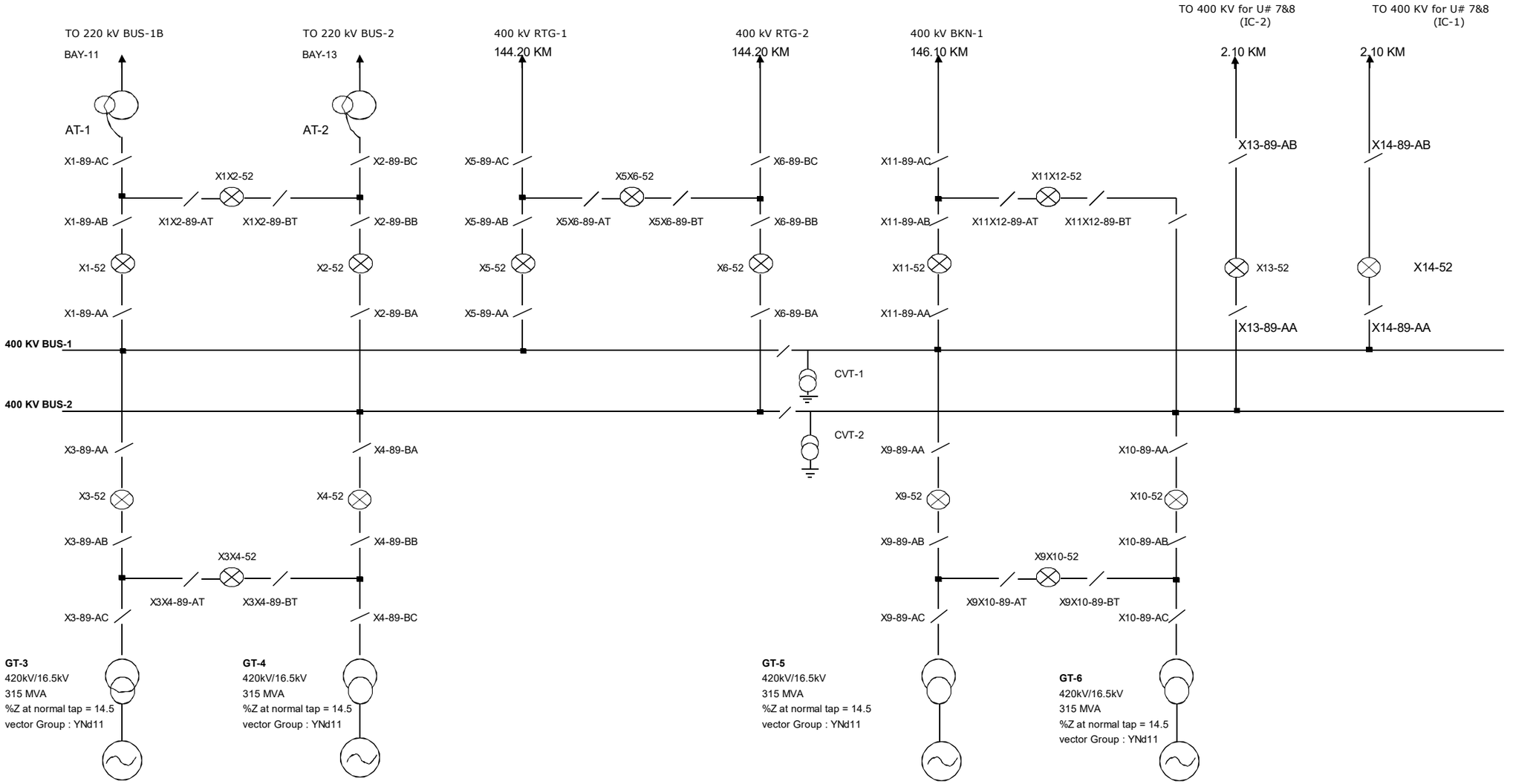
ThinkVision


nrpodhs2:6330/web-server/ui/Application.html
Search
Frequency
DF/DT
MW
MVar
R_Y_B Voltages
R_Y_B Currents
PositiveSeq Voltage
R_Y_B Voltages
R Y B Phase Voltage Magnitude
Data
R Y B Phase Voltage
22/09/2024
10:57:46.960
To
22/09/2024
10:58:10.520
10:59:00.000
R Y B Phase Voltage
Voltage (kV)
237.5
235
232.5
230
227.5
10:58:00.388
10:58:00.588
10:58:00.788
10:58:00.988
10:58:01.188
10:58:01.388
10:58:01.588
VBM
SubstationId: KOTA_PG
DeviceId: 400BEAWRKOTA_1
VRM
SubstationId: KOTA_PG
DeviceId: 400BEAWRKOTA_1
VYM
SubstationId: KOTA_PG
DeviceId: 400BEAWRKOTA_1
R Y B Phase Voltages Angles
Data
Timestamp
SubstationId
DeviceType
DeviceId
VRA
VYA
VBA
22/09 10:55:00.000
KOTA_PG
L
400BEAWRKOTA_1
34.417576
-85.874917
154.228786
22/09 10:55:00.000
KOTA_PG
L
400JAPRSKOTA_1
0
0
0
22/09 10:55:00.000
KOTA_PG
L
400KOTA_MERTA1
34.578003
-85.720213
154.074082
22/09 10:55:00.000
KOTA_PG
L
400KOTA_RAPPC1
34.555085
22/09 10:55:00.040
KOTA_PG
L

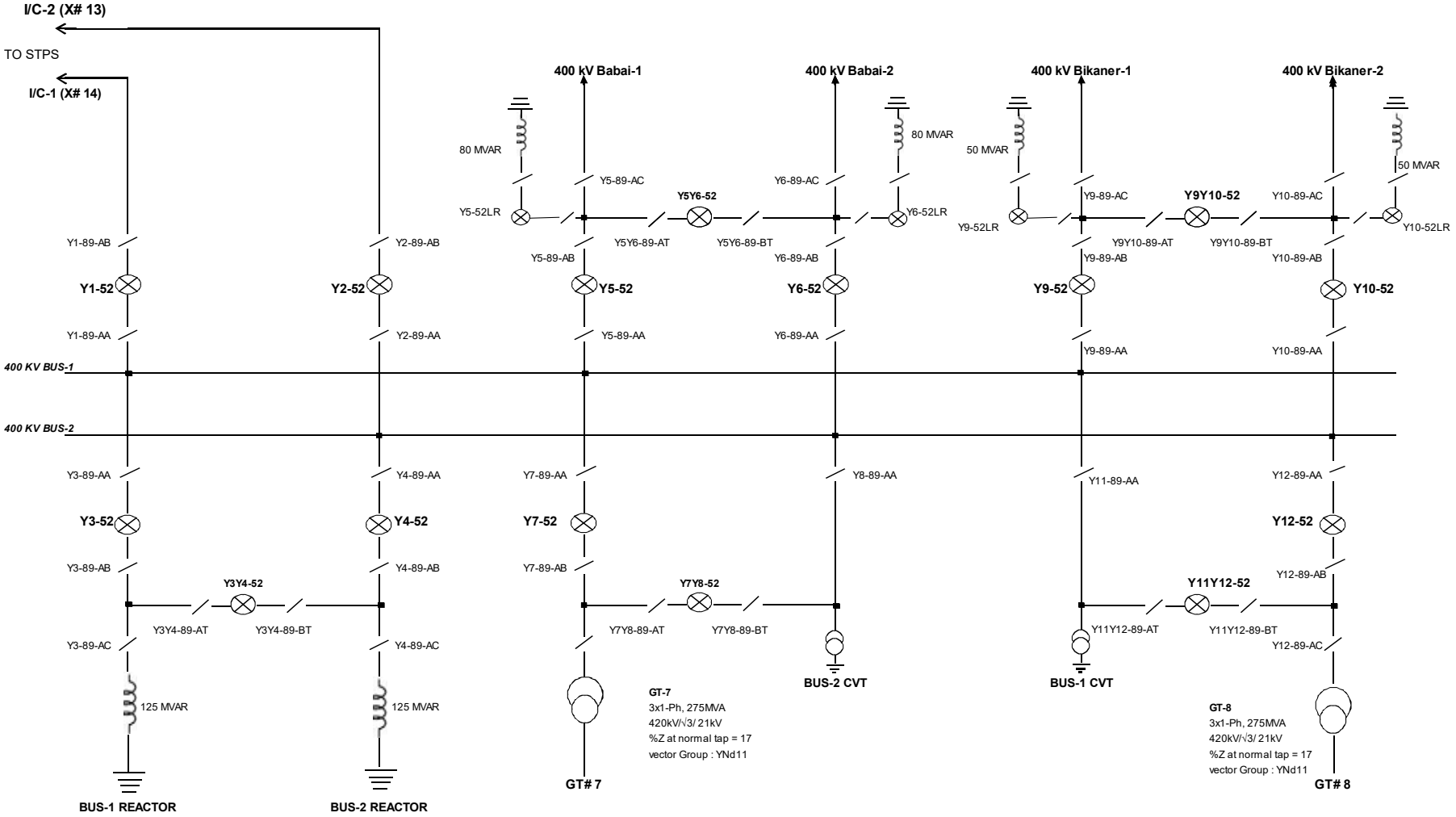
220 KV SWITCH YARD LAYOUT OF STPS, SURATGARH



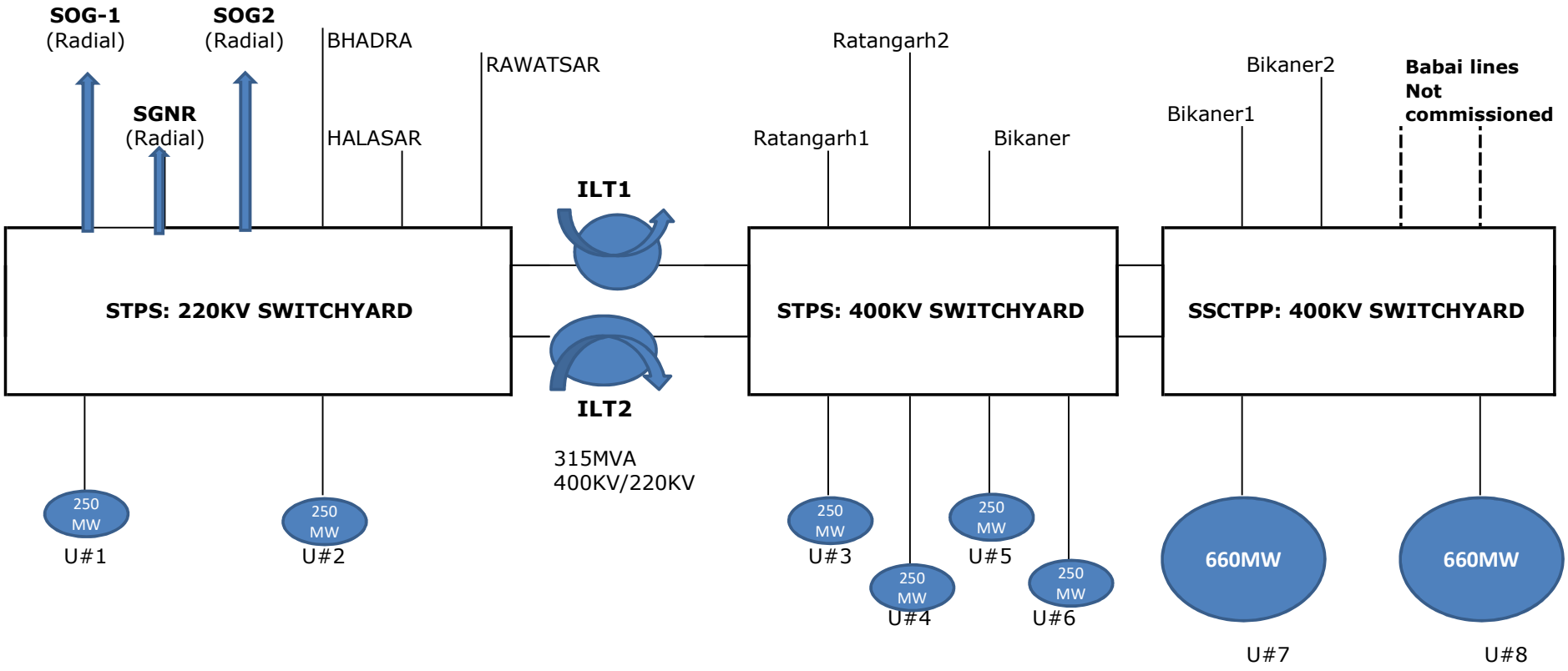
400 KV SWITCH YARD LAYOUT OF STPS , SURATGARH



400 kV SWITCH YARD LAYOUT OF SCTPS , SURATGARH



POWER EVACUATION FROM STPS(6x250MW) & SSCTPP (2x660MW) AT RRVUNL



Status of Internal Protection Audit Plan for FY 2024 -25

S. No.	NRPC Member	Category	Status
1	SJVN		Received (Rampur)
2	NPCIL		
3	IPGCL	State Generating Company	Received (PPCL)
4	HPGCL		
5	UPRVUNL		Received (obra -B, Anpara-B switch yard, Harduganj-C,D,E))
6	UJVNL		Received (Khodri, Chibro, Vyasi)
7	HPPCL		
8	PSPCL	State Generating Company & State owned Distribution Company	
9	HPSEBL	Distribution company having Transmission connectivity ownership	
10	Talwandi Sabo Power Ltd.		
11	Nabha Power Limited		
12	MEIL Anpara Energy Ltd		
13	MEJA Urja Nigam Ltd.		
14	Tata Power Renewable Energy Ltd.		Recevied (TPGEL, BTPSL)
15	UT of J&K	UT of Northern Region	
16	UT of Ladakh		
17	UT of Chandigarh		
18	POWERLINK		
19	Sekura Energy Limited		
20	WUPPTCl	Other transmission licensee in UP	
21	SEUPPTCL	Other transmission licensee in UP	
22	Alaknanda Hydro Electric Plant (GVK)	Other Generating Units in UP	

Annexure-A.XIX

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

दिनांक: 04 अक्टूबर, 2024

सेवा में / To,

संरक्षण उप-समिति (पीएससी) की सूची के अनुसार / As per Protection Sub-Committee (PSC) addressee list

विषय: वित्तीय वर्ष 2024-25 के लिए वार्षिक आंतरिक सुरक्षा आडिट प्लान प्रस्तुत करने के संदर्भ में ।
Subject: Submission of Annual Internal Protection Audit Plan for FY 2024-25 - reg.

Ref: IEGC 2023 & discussion of 52nd Protection Sub-Committee (PSC) meeting, held on 20.09.2024.

It is to mention that as per clause 15 (1) of IEGC 2023, all users shall conduct internal audit of their protection systems annually, and any shortcomings identified shall be rectified and informed to their respective RPC. The audit report along with action plan for rectification of deficiencies detected, if any, shall be shared with respective RPC for users connected at 220 kV and above (132 kV and above in NER). Further, as per clause 15 (5) of IEGC 2023, **Annual audit plan for the next financial year shall be submitted by the users to their respective RPC by 31st October**. The users shall adhere to the annual audit plan and report compliance of the same to their respective RPC*:*

NRPC Secretariat is regularly discussing the status of Annual Internal Protection Audit Plan in Protection Sub-Committee (PSC) Meetings and concerned are being directed to submit the same accordingly.

However, some organizations have not submitted the Annual Internal Protection Audit Plan and some have submitted partially even after the same was highlighted in previous Protection Sub-Committee (PSC) meetings.

Therefore, it is requested to direct the concerned officials to submit the Annual Internal Protection Audit Plan for FY 2024-25 at the earliest and comply the same timely. Further, audit report along with action plan for deficiency detected, if any may also be submitted. SLDCs may send the compiled data of all utilities (GENCOs, & TRANSCOs) under their jurisdiction.

Signed by Dharmendra Kumar Meena
Date: 05-10-2024 10:53:48

(डॉ. के. मीणा)
अधीक्षण अभियंता (संरक्षण)

Addressee list			
S. No.	**NRPC Member**	**Email-ID**	**Current Status**
1	SJVN	sjvn.cso@sjvn.nic.in	Received (Rampur)
2	NPCIL	df@npcil.co.in rajeshsharma@npcil.co.in	Not Received
3	Delhi SLDC	gmsldc@delhisldc.org	Not Received
4	Haryana SLDC	cesocomml@hvpn.org.in	Not Received
5	Rajasthan SLDC	ce.ld@rvpn.co.in	Not Received
6	Uttar Pradesh SLDC	sera@upsldc.org	Not Received
7	Uttarakhand SLDC	anupam_singh@ptcul.org	Not Received
8	Punjab SLDC	ce-sldc@punjabsldc.org	Not Received
9	Himachal Pradesh SLDC	cehpsldc@gmail.com	Not Received
10	IPGCL	arif.ipgcl@gmail.com	Received (PPCL)
11	HPGCL	semt.rgtpp@hpgcl.org.in	Not Received
12	UPRVUNL	ce.ppmm@uprvunl.org	Received (obra -B, Anpara-B switch yard, Harduganj-C,D,E))
13	UJVNL	mdujvnl@ujvnl.com	Received (Khodri, Chibro, Vyasi)
14	HPPCL	md@hppcl.in	Not Received
15	PSPCL	ce-ghtp@pspcl.in	Not Received
16	HPSEBL	md@hpseb.in	Not Received
17	Talwandi Sabo Power Ltd.	Vibhav.Agarwal@vedanta.co.in	Not Received
18	Nabha Power Limited	sk.narang@larsentoubro.com	Not Received
19	MEIL Anpara Energy Ltd	sudheer.kothapalli@meilanparapower.com	Not Received
20	MEJA Urja Nigam Ltd.	SPSPUNDIR@NTPC.CO.IN	Not Received
21	Tata Power Renewable Energy Ltd.	dhmahabale@tatapower.com	Recevied (TPGEL, BTPSL)
22	UT of J&K	cejkpcl2@gmail.com	Not Received
23	UT of Ladakh	cepdladakh@gmail.com	Not Received
24	UT of Chandigarh	elop2-chd@nic.in	Not Received
25	POWERLINK	sandeep.shukla@tatapower.com	Not Received

Status of 3rd Party Protection Audit Plan

S. No.	NRPC Member	Category	Status	Schedule submitted as per utililty	Present Status Comlpleted (yes/no)
1	PGCIL	Central Government owned Transmission Company			
2	NTPC	Central Generating Company	Received (Tanda)	By 17.07.2025	
3	BBMB				
4	THDC		Received (Tehri)	March 2026	
5	SJVN		Received	FY-2025-26 for RHPS, Nov 24- March 25 for NJHPS	
6	NPCIL				
7	DTL	State Transmission Utility			
8	HVPNL				
9	RRVPNL				
10	UPPTCL				
11	PTCUL				
12	PSTCL				
13	HPPTCL				
14	IPGCL	State Generating Company			
15	HPGCL				
16	RRVUNL				
17	UPRVUNL		Received (DTPS-Anpara)	01.05.2024	Revised schedule will be submitted
18	UJVNL				
19	HPPCL				
20	PSPCL	State Generating Company & State owned Distribution Company			
21	HPSEBL	Distribution company having Transmission connectivity ownership			
22	Aravali Power Company Pvt. Ltd				
23	Talwandi Sabo Power Ltd.				
24	Nabha Power Limited				
25	MEIL Anpara Energy Ltd				
26	MEJA Urja Nigam Ltd.				
27	Adani Power Rajasthan Limited		Received (Kawai)	September, 2024	May update the status
28	Tata Power Renewable Energy Ltd.	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)			
29	UT of J&K	UT of Northern Region			
30	UT of Ladakh				
31	UT of Chandigarh				
32	INDIGRID				
33	POWERLINK				
34	ADHPL		Received	30.09.2024	May update the status
35	Sekura Energy Limited				
36	WUPPTCl	Other transmission licensee in UP	Received	*2024-25	May update the status
37	SEUPPTCL	Other transmission licensee in UP			
38	Vishnuprayag Hydro Electric Plant (J.P.)	Other Generating Units in UP			
39	Alaknanda Hydro Electric Plant (GVK)	Other Generating Units in UP			

* Revised Schedule

Annexure-A.XXI

Status of perfomance indices report of August 2024		
S. No.	**Utility**	**Status of Protection Performance indices**
1	PGCIL	Received (NR-1,2)
2	NTPC	Received (Dadri, Unchahar, Tanda, Anta)
3	BBMB	Received (Transmission)
4	PSTCL	Not Recevied
5	IPGCL	Received (PPCL)
6	HPGCL	Not Recevied
7	UPRVUNL	Received (DTPS-Anpara)
8	UJVNL	Received (Dharashu, Uttrakashi)
9	HPPCL	Not Recevied
10	PSPCL	Received (GGSSTPS, 220kV GATPL, 220kV GHTP)
11	HPSEBL	Not Recevied
12	MEIL Anpara Energy Ltd	Not Recevied
13	MEJA Urja Nigam Ltd.	Not Recevied
14	JSW Energy Ltd. (KWHEP)	Not Recevied
15	UT of J&K	Not Recevied
16	UT of Ladakh	Not Recevied
17	UT of Chandigarh	Not Recevied
18	POWERLINK	Not Recevied
19	Sekura Energy Limited	Not Recevied
20	SEUPPTCL	Not Recevied
21	Vishnuprayag Hydro Electric Plant (J.P.)	Not Recevied
22	Alaknanda Hydro Electric Plant (GVK)	Not Recevied

Annexure-A.XXII

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

दिनांक: 01.10. 2024

सेवा में / To,

As per Protection Sub-Committee (PSC) addressee list

विषय: मासिक आधार पर एनआरपीसी सचिवालय को एक से कम सूचकांकों के लिए कारण और सुधारात्मक कार्रवाई के साथ सुरक्षा प्रदर्शन सूचकांक प्रस्तुत करने के संदर्भ में।

Subject: Submission of Protection Performance indices along with reason and corrective action taken for indices less than unity to NRPC Secretariat on monthly basis -reg.

Ref: IEGC 2023 & discussion of 52nd Protection Sub-Committee (PSC) meeting, held on 20.09.2024.

It is to mention that as per clause 15 (6) of IEGC 2023, users shall submit the protection performance indices of previous month to their respective RPC and RLDC on monthly basis for 220 kV and above (132 kV and above in NER) system. Further, as per clause 15 (7) of IEGC 2023, each user shall also submit the reasons for performance indices less than unity of individual element wise protection system to the respective RPC and action plan for corrective measures. The action plan will be followed up regularly in the respective RPC.

NRPC Secretariat is regularly discussing protection performance indices, received from utilities, in Protection Sub-Committee (PSC) Meetings. **In earlier PSC meetings, it was decided that each utility shall submit the Performance indices of previous month by 7th day of next month.**

However, it has been found that Performance indices have not been submitted from your organization for any of the months from June,2024 to August,2024 even after the same was highlighted in previous Protection Sub-Committee (PSC) meetings.

Therefore, it is requested to direct the concerned officials to submit the Protection Performance indices of previous month by 7th day of next month element wise along with corrective action taken for indices less than unity at seo-nrpc@nic.in. SLDCs may send the compiled data of all utilities (GENCOs, & TRANSCOs) under their jurisdiction.

Signed by Dharmendra Kumar Meena
Date: 01-10-2024 16:47:07

(डी. के. मीणा)
अधीक्षण अभियंता (संरक्षण)

Addressee List

S. No.	Organization	Designation	Email-ID
1	HPGCL	SE/M&T RGTPP	semt.rgtpp@hpgcl.org.in
2	UPRVUNL	Chief Engineer, (L-2)	ce.ppmm@uprvunl.org
3	HPPCL	Managing Director	md@hppcl.in
4	HPSEB	Managing Director	md@hpseb.in
5	Delhi SLDC	General Manager	gmsldc@delhisldc.org
6	Haryana SLDC	Chief Engineer (SO&C)	cesocomml@hvpn.org.in
7	Rajasthan SLDC	Chief Engineer (LD)	ce.ld@rvpn.co.in
8	Uttar Pradesh SLDC	Director	directorsldc@upsldc.org
9	Uttarakhand SLDC	Chief Engineer	anupam_singh@ptcul.org
10	Punjab SLDC	Chief Engineer	ce-sldc@punjabsldc.org
11	Himachal Pradesh SLDC	Managing Director	mdhpsldc@gmail.com
12	UT of J&K	Chief Engineer, JKPCL	cejkpcl2@gmail.com
13	UT of Ladakh	Chief Engineer, LPDD	cepdladakh@gmail.com
14	UT of Chandigarh	Executive Engineer	elop2-chd@nic.in
15	MEIL Anpara Energy Ltd	President	sudheer.kothapalli@meilanparapower.com
16	MEJA Urja Nigam Ltd.	AGM-EMD	SPSPUNDIR@NTPC.CO.IN
17	JSW Energy Ltd. (KWHEP)	Head Regulatory & Power Sales	jyotiprakash.panda@jsw.in
18	POWERLINK	Group Head-Procurement, IT & BE	sandeep.shukla@tatapower.com

S.No.	Voltage Level	Name of Line	Circuit ID	Tower Configura	Line Length	O&M by	Agency at		Type of conductor	Remarks	Replaced with Polymer Insulator (As a % of Total Line	Remarks
							End-I	End-II				
1. HVDC lines												
ISTS LINES												
A. POWERGRID												
1	± 800kV	Agra-Bishwanath Chariali Pole-I	1	Bi-pole	1728	POWERGRID	POWERGRID	POWERGRID	Hexagon Lapwing	HVDC capcacity 6000 MW, only two physical lines	Partial (11%)	
2	± 800kV	Agra-Bishwanath Chariali Pole-II	2	Bi-pole	1728	POWERGRID	POWERGRID	POWERGRID	Hexagon Lapwing		Partial (11%)	
3	± 800kV	Agra-Alipurduar Pole-I	1	Bi-pole	1296*	POWERGRID	POWERGRID	POWERGRID	Hexagon Lapwing		Partial (11%)	
4	± 800kV	Agra-Alipurduar Pole-II	2	Bi-pole	1296*	POWERGRID	POWERGRID	POWERGRID	Hexagon Lapwing		Partial (11%)	
5	± 800kV	Kurukshetra-Champa Pole-I	1	Bi-pole	1305	POWERGRID	POWERGRID	POWERGRID	Hexagon Lapwing	HVDC capcacity 6000 MW, only two physical lines	Partial (11%)	
6	± 800kV	Kurukshetra-Champa Pole-II	2	Bi-pole	1305	POWERGRID	POWERGRID	POWERGRID	Hexagon Lapwing		Partial (11%)	
7	± 800kV	Kurukshetra-Champa Pole-III	3	Bi-pole	1305	POWERGRID	POWERGRID	POWERGRID	Hexagon Lapwing		Partial (11%)	
8	± 800kV	Kurukshetra-Champa Pole-IV	4	Bi-pole	1305	POWERGRID	POWERGRID	POWERGRID	Hexagon Lapwing		Partial (11%)	
9	± 500kV	Balia-Bhiwadi Pole-I	1	Bi-pole	790	POWERGRID	POWERGRID	POWERGRID	ACSR Quad Bersimis	HVDC capacity 2500 MW	Partial (15%)	
10	± 500kV	Balia-Bhiwadi Pole-II	2	Bi-pole	790	POWERGRID	POWERGRID	POWERGRID			Partial (15%)	
11	± 500kV	Rihand-Dadri Pole-I	1	Bi-pole	815	POWERGRID	POWERGRID	POWERGRID	ACSR Quad Bersimis	HVDC capacity 1500 MW	Partial (62%)	
12	± 500kV	Rihand-Dadri Pole-II	2	Bi-pole	815	POWERGRID	POWERGRID	POWERGRID			Partial (43%)	
B. Adani Power Ltd (Adani Transmission India Ltd.)												
1	± 500kV	Adani Mundra - Mahindergarh Pole-I	1	Bi-pole	990	ATIL	APL Mundra	ATIL	ACSR Quad Bersimis	HVDC capacity 2500 MW	Partial (43%)	
2	± 500kV	Adani Mundra - Mahindergarh Pole-II	2	Bi-pole	990	ATIL	APL Mundra	ATIL			Partial (43%)	
2. 765kV Transmission Line												
ISTS LINES												
A. POWERGRID												
1	765kV	Agra-Aligarh	1	D/C	123	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis	LILO of Agra-Gr. Noida at Aligarh (LILO portion	Polymer Insulator	
2	765kV	Aligarh-Gr.Noida	1	D/C	51	POWERGRID	POWERGRID	WUPPTCL	Quad Bersimis		Polymer Insulator	
3	765kV	Agra-Fatehpur	1	S/C	335	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Conventional	
4	765kV	Agra-Fatehpur	2	S/C	334	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Conventional	
5	765kV	Agra-Jhatikara	1	S/C	252	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Polymer Insulator	
6	765kV	Ajmer-Chittorgarh	1	D/C	211	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra		Not Available	
7	765kV	Ajmer-Chittorgarh	2	D/C	211	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra		Not Available	
8	765kV	Ajmer-Bhadla II	1	D/C	326	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra	LILO of 765kV D/C Ajmer-Bikaner-1 at Bhadla II(PG)	Not Available	
9	765kV	Ajmer-Bhadla II	2	D/C	326	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra	LILO of 765kV D/C Ajmer-Bikaner-2 at Bhadla II(PG)	Not Available	
10	765kV	Balia - Lucknow765 (N)	1	S/C	319	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Conventional	
11	765kV	Bikaner - Bhadla	1	D/C	167	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra		Not Available	
12	765kV	Bikaner - Bhadla	2	D/C	167	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra		Not Available	
13	765kV	Bikaner- Moga	1	D/C	367	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra		Not Available	
14	765kV	Bikaner- Moga	2	D/C	367	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra		Not Available	
15	765kV	Bikaner-Bhadla II	1	D/C	197	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra	LILO of 765kV D/C Ajmer-Bikaner-1 at Bhadla II(PG)	Not Available	
16	765kV	Bikaner-Bhadla II	2	D/C	197	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra	LILO of 765kV D/C Ajmer-Bikaner-2 at Bhadla II(PG)	Not Available	
17	765kV	Kanpur(GIS)-Aligarh	1	D/C	322	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis	LILO of Kanpur-Jhatikara at Aligarh	Polymer Insulator	
18	765kV	Aligarh-Jhatikara	1	D/C	158	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Polymer Insulator	
19	765kV	Jhatikara-Bhiwani (PG)	1	S/C	85	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Polymer Insulator	
20	765kV	Koteshwar(PG)-Meerut	1	S/C	176	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis	Earlier charged at 400kV	Not Available	
21	765kV	Koteshwar(PG)-Meerut	2	S/C	176	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Not Available	
22	765kV	Lucknow-Bareilly	1	S/C	252	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Conventional	
23	765kV	Meerut-Bhiwani(PG)	1	S/C	174	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Partial (99%)	

24	765kV	Meerut-Gr.Noida	1	S/C	119	POWERGRID	POWERGRID	WUPPTCL	Quad Bersimis	Agra-Meerut LILOed at G. Noida by UPPTCL	Polymer Insulator	
25	765kV	Moga- Bhiwani (PG)	1	S/C	273	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Partial (96%)	
26	765kV	Moga-Meerut	1	S/C	338	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Polymer Insulator	
27	765kV	Orai-Aligarh	1	D/C	331	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra		Not Available	
28	765kV	Orai-Aligarh	2	D/C	331	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra		Not Available	
29	765kV	Phagi-Bhiwani(PG)	1	S/C	272	POWERGRID	RRVPNL	POWERGRID	Quad Bersimis		Partial (18%)	
30	765kV	Phagi-Bhiwani(PG)	2	S/C	277	POWERGRID	RRVPNL	POWERGRID	Quad Bersimis		Partial (16%)	
31	765kV	Varanasi-Balia	1	S/C	166	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Conventional	
32	765kV	Varanasi-Fatehpur	1	S/C	223	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis	LILO of Gaya (ER)-Fatehpur at Varanasi	Conventional	
33	765kV	Varanasi-Kanpur(GIS)	1	S/C	326	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra		Polymer Insulator	
34	765kV	Varanasi-Kanpur(GIS)	2	S/C	326	POWERGRID	POWERGRID	POWERGRID	Hexa Zebra		Polymer Insulator	
B. PKTSL												
1	765kV	Khetri-Jhatikara	1	D/C	146	PKTSL	PKTSL	POWERGRID	Hexa Zebra		Not Available	
2	765kV	Khetri-Jhatikara	2	D/C	146	PKTSL	PKTSL	POWERGRID	Hexa Zebra		Not Available	
C. PFTL												
1	765kV	Fatehgarh II-Bhadla II	1	D/C	186	PFTL	POWERGRID	POWERGRID	Hexa Zebra		Not Available	
2	765kV	Fatehgarh II-Bhadla II	2	D/C	186	PFTL	POWERGRID	POWERGRID	Hexa Zebra		Not Available	
D. FBTL												
1	765kV	Fatehgarh II-Bhadla	1	D/C	175	FBTL	POWERGRID	POWERGRID	Hexa Zebra	Loop in of 400kV Fatehgarh (FBTL)-	Polymer Insulator	
2	765kV	Fatehgarh II-Bhadla	2	D/C	175	FBTL	POWERGRID	POWERGRID	Hexa Zebra		Polymer Insulator	
E. BKTL												
1	765kV	Bikaner-Khetri	1	D/C	241	BKTL	POWERGRID	PKTSL	Hexa Zebra		Polymer Insulator	
2	765kV	Bikaner-Khetri	2	D/C	241	BKTL	POWERGRID	PKTSL	Hexa Zebra		Polymer Insulator	
F. PAPTL												
1	765kV	Ajmer-Phagi	1	D/C	134	PAPTL	POWERGRID	RRVPNL	Hexa Zebra		Not Available	
2	765kV	Ajmer-Phagi	2	D/C	134	PAPTL	POWERGRID	RRVPNL	Hexa Zebra		Not Available	
G. PASTL												
1	765kV	Aligarh(PG)-SIKAR_2	1	D/C	265	PASTL	PSTL	POWERGRID	Hexa Zebra	Anti theft charged from Aligarh(PG) Upto	Not Available	
2	765kV	Aligarh(PG)-SIKAR_2	2	D/C	265	PASTL	PSTL	POWERGRID	Hexa Zebra		Not Available	
STATE LINES												
A. UPPTCL												
1	765kV	Agra Fatehabad-Ghatampur	1	S/C	229	UPPTCL	UPPTCL	UPPTCL	Quad Bersimis		Not Available	
2	765kV	Agra Fatehabad-Gr. Noida	1	S/C	159	UPPTCL	UPPTCL	UPPTCL	ACSR Quad Bersimis		Not Available	
3	765kV	Agra(Fatehbad)-Lalitpur	1	S/C	337	UPPTCL	UPPTCL	LPGCL	Quad Bersimis		Not Available	
4	765kV	Agra(Fatehbad)-Lalitpur	2	S/C	335	UPPTCL	UPPTCL	LPGCL	Quad Bersimis		Not Available	
5	765kV	AnparaC-AnparaD	1	S/C	3	UPPTCL	LANCO	UPRVUNL	Quad Bersimis		Not Available	
6	765kV	AnparaC-Unnao	1	S/C	409	UPPTCL	LANCO	UPPTCL	Quad Bersimis		Conventional	AnparaB-Unnao shifted to AnparaC and charged at 765kV
7	765kV	AnparaD-Obra_C	1	D/C	53	UPPTCL	UPRVUNL	UPPTCL	Quad Bersimis	After LILO of 765 KV ANPARA D-UNNAO LINE	Not Available	
8	765kV	Obra_C-Unnao	1	D/C	390	UPPTCL	UPRVUNL	UPPTCL	Quad Bersimis		Not Available	
9	765kV	Bara-Mainpuri	1	S/C	377	UPPTCL	UPPTCL	UPPTCL	Quad Bersimis		Not Available	
10	765kV	Gr. Noida-Meerut_PMSTL	1	S/C	100	UPPTCL	UPPTCL	UPPTCL	Quad Bersimis	After LILO of 765 KV GREATER NOIDA	Not Available	
11	765kV	Meerut_PMSTL-Hapur	1	S/C	37	UPPTCL	UPPTCL	UPPTCL	Quad Bersimis		Not Available	
12	765kV	Gr. Noida-Jawaharpur	1	D/C	162	UPPTCL	UPPTCL	UPPTCL	Quad Bersimis	After LILO of 765 KV MAINPURI(SEUPPTCL)-	Not Available	
13	765kV	Jawaharpur-Mainpuri	1	D/C	40	UPPTCL	UPPTCL	UPPTCL	Quad Bersimis		Not Available	
14	765kV	Hapur(UP)-Rampur_PRSTL (UP)	1	S/C	230	UPPTCL	UPPTCL	UPPTCL	Quad Bersimis	LILO of 765kV Hapur-Ghatampur at Rampur. LILO portion is on D/C tower 2.5km 5towers	Not Available	

15	765kV	Mainpuri(UP)-Hapur(UP)	1	S/C	217	UPPTCL	UPPTCL	UPPTCL	Quad Bersimis		Not Available	
B. RRVPNL												
1	765kV	Anta-Phagi	1	S/C	214	RRVPNL	RRVPNL	RRVPNL	Quad Bersimis		Not Available	
2	765kV	Anta-Phagi	2	S/C	212	RRVPNL	RRVPNL	RRVPNL	Quad Bersimis		Not Available	
3. 765kV Transmission Line charged at 400kV												
ISTS LINES												
A. POWERGRID												
1	765kV charged at 400kV	Kishenpur-Moga	1	S/C	275	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Partial (1%)	
2		Kishenpur-Moga	2	S/C	287	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis		Partial (1%)	
3		Tehri-Koteshwar(PG)	1	S/C	15	POWERGRID	THDC	POWERGRID	Quad Bersimis		Conventional	
4		Tehri-Koteshwar(PG)	2	S/C	17	POWERGRID	THDC	POWERGRID	Quad Bersimis		Conventional	
5		Rihand-Vindhyachal Pool	1	S/C	31	POWERGRID	NTPC	POWERGRID	Quad Bersimis		Not Available	
6		Rihand-Vindhyachal Pool	2	S/C	31	POWERGRID	NTPC	POWERGRID	Quad Bersimis		Not Available	
4. 400kV HVAC Transmission Line												
ISTS LINES												
A. POWERGRID												
1	400kV	Abdullapur- Bawana	1	D/C	167	POWERGRID	POWERGRID	DTL	Triple Snowbird		Partial (99%)	
2	400kV	Abdullapur- Deepalpur	1	D/C	141	POWERGRID	POWERGRID	KT Jhajjar	Triple Snowbird	LILO of Abdullapur-Bawana one ckt at Deepalpur by Jhajjar KT	Partial (99%)	LILO of Abdullapur-Bawana one ckt at Deepalpur
3	400kV	Abdullapur-Kurukshetra	1	D/C	52	POWERGRID	POWERGRID	POWERGRID	Triple Snowbird+Twin HTLS for LILO	LILO of Abdullapur-Sonipat line at Kurukshetra	Polymer Insulator	LILO of Abdullapur-Sonepat ckts at Kurukshetra
4	400kV	Abdullapur-Kurukshetra	2	D/C	52	POWERGRID	POWERGRID	POWERGRID		LILO of Abdullapur-Sonipat line at Kurukshetra	Polymer Insulator	
5	400kV	Agra-Agra(Fatehbad)	1	S/C	45	POWERGRID	POWERGRID	UPPTCL	Twin Moose	LILO of Agra(PG)-Agra(UP) ckt-2 at Fatehabad (765kV Agra UP)	Polymer Insulator	
6	400kV	Agra(UP)-Agra(Fatehbad)	1	S/C	56	POWERGRID	UPPTCL	UPPTCL	Twin Moose		Polymer Insulator	
7	400kV	Agra-Agra(UP)	1	D/C	30	POWERGRID	POWERGRID	UPPTCL	Twin Moose		Polymer Insulator	
8	400kV	Agra-Ballabgarh	1	S/C	181	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
9	400kV	Agra-Bassi	1	S/C	211	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	Planned for insulator replacement in 321nos towers under NR3
10	400kV	Agra-Bhiwadi	1	D/C	209	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
11	400kV	Agra-Bhiwadi	2	D/C	209	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
12	400kV	Agra-Jaipur South	1	D/C	254	POWERGRID	POWERGRID	POWERGRID	Twin Moose	LILO of Agra-Bassi D/C at Jaipur South	Partial (4%)	LILO of Agra-Bassi D/C at Jaipur South
13	400kV	Agra-Jaipur South	2	D/C	254	POWERGRID	POWERGRID	POWERGRID	Twin Moose	LILO of Agra-Bassi D/C at Jaipur South	Partial (4%)	
14	400kV	Agra-Sikar	1	D/C	386	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (3%)	
15	400kV	Agra-Sikar	2	D/C	386	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (3%)	
16	400kV	Ajmer-Ajmer(PG)	1	D/C	66	POWERGRID	RRVPNL	POWERGRID	Quad Moose		Not Available	
17	400kV	Ajmer-Ajmer(PG)	2	D/C	66	POWERGRID	RRVPNL	POWERGRID	Quad Moose		Not Available	
18	400kV	Allahabad-Fatehpur	3	S/C	154	POWERGRID	POWERGRID	POWERGRID	Twin Moose	LILO of Allahabad-Kanpur one ckt at Fatehpur	Polymer Insulator	
19	400kV	Allahabad-Fatehpur	1	D/C	140	POWERGRID	POWERGRID	POWERGRID	Twin Moose	Lilo of Allahabad-Mainpuri (PG) D/C at Fatehpur	Conventional	
20	400kV	Allahabad-Fatehpur	2	D/C	140	POWERGRID	POWERGRID	POWERGRID	Twin Moose	Lilo of Allahabad-Mainpuri (PG) D/C at Fatehpur	Conventional	
21	400kV	Allahabad-Varanasi	1	D/C	99	POWERGRID	POWERGRID	POWERGRID	Twin Moose	Allahabad-Sarnath shifted from Sarnath to varanasi	Conventional	
22	400kV	Allahabad-Kanpur	1	S/C	225	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
23	400kV	Allahabad-Kanpur(New 765)	1	D/C	240	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Not Available	
24	400kV	Allahabad-Kanpur(New 765)	2	D/C	240	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Not Available	
25	400kV	Allahabad-Meja(NTPC)	1	D/C	28	POWERGRID	POWERGRID	MUNPL	Twin Moose		Polymer Insulator	MUNPL is joint venture between NTPC and UPRVUN
26	400kV	Allahabad-Meja(NTPC)	2	D/C	28	POWERGRID	POWERGRID	MUNPL	Twin Moose		Polymer Insulator	

27	400kV	Amritsar-Jalandhar	1	S/C	60	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
28	400kV	Amritsar-Jalandhar	2	D/C	71	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	LILO of 400kV Amritsar-Hamirpur at Jalandhar
29	400kV	Amritsar-ParbatiPooling (Banala)	1	D/C	251	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (49%)	
30	400kV	Auraiya-Agra	1	D/C	166	POWERGRID	NTPC	POWERGRID	Twin Moose		Partial (86%)	
31	400kV	Auraiya-Agra	2	D/C	166	POWERGRID	NTPC	POWERGRID	Twin Moose		Partial (90%)	
32	400kV	Baglihar II-Kishenpur	1	S/C	130	POWERGRID	JKSPDCL	POWERGRID	Twin Moose	LILO of 400kV Kishenpur-New Wanpoh ckt-2 at Baglihar. LILO portion is of JK PDD	Conventional	
33	400kV	Baghlihar II-New Wanpoh	1	S/C	130	POWERGRID	JKSPDCL	POWERGRID	Twin Moose		Not Available	
34	400kV	Bagpat-Kaithal	1	D/C	154	POWERGRID	POWERGRID	POWERGRID	Quad Moose	LILO of Meerut-Kaithal DC at Baghpat	Polymer Insulator	
35	400kV	Bagpat-Kaithal	2	D/C	154	POWERGRID	POWERGRID	POWERGRID	Quad Moose	LILO of Meerut-Kaithal DC at Baghpat	Polymer Insulator	
36	400kV	Bagpat-Saharanpur	1	D/C	121	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Partial (41%)	
37	400kV	Bagpat-Dehradun	1	D/C	165	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Partial (40%)	
38	400kV	Bahadurgarh-Kabulpur	1	S/C	42	POWERGRID	POWERGRID	HVPNL	Twin Moose		Polymer Insulator	LILO of Bahadurgarh-Bhiwani at Kabulpur
39	400kV	Bahadurgarh-Sonepat	1	D/C	53	POWERGRID	POWERGRID	POWERGRID	Triple Snowbird		Polymer Insulator	
40	400kV	Bahadurgarh-Sonepat	2	D/C	53	POWERGRID	POWERGRID	POWERGRID	Triple Snowbird		Polymer Insulator	
41	400kV	Balia-Mau	1	D/C	9	POWERGRID	POWERGRID	UPPTCL	Twin Moose		Conventional	
42	400kV	Balia-Sohawal	1	D/C	229	POWERGRID	POWERGRID	POWERGRID	Twin Moose	LILO of Balia-LUCKNOW D/C at Sohawal	Conventional	LILO of Balia-Lucknow (316 KM) D/C at Sohawal
43	400kV	Balia-Sohawal	2	D/C	229	POWERGRID	POWERGRID	POWERGRID	Twin Moose	LILO of Balia-LUCKNOW D/C at Sohawal	Conventional	LILO of Balia-Lucknow (316 KM) D/C at Sohawal
44	400kV	Ballabgarh-Tughlakabad	1	M/C	40	DTL	POWERGRID	POWERGRID	HTLS INVAR (LILO portion) & Bersimis (before LILO)	Tower is quad circuit tower	Polymer	
45	400kV	Ballabgarh-Tughlakabad	2	M/C	40	DTL	POWERGRID	POWERGRID		Tower is quad circuit tower	Polymer	
46	400kV	Ballabhgarh-Gurgaon	1	S/C	43	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
47	400kV	Ballabhgarh-Maharanibagh	1	D/C	61	POWERGRID	POWERGRID	POWERGRID	Quad Bersimis	Bypassed at Maharanibagh to form Dadri-Ballabgarh	Polymer Insulator	
48	400kV	Ballabhgarh-Nawada	1	D/C	13	POWERGRID	POWERGRID	HVPNL	Quad Bersimis		Polymer Insulator	Ballabhgarh-Gnoida LILOed at Nawada (Faridabad,Haryana)
49	400kV	Bareilly PG-Moradabad	1	D/C	93	POWERGRID	POWERGRID	UPPTCL	Twin Moose		Partial (3%)	
50	400kV	Bareilly PG-Rampur_PRSTL	1	S/C	40	POWERGRID	POWERGRID	UPPTCL	Twin Moose	After LILO of 400 KV BAREILLY(PG)-MORADABAD(UPPTCL) CIRCUIT-II at RAMPUR(PRSTL)	Not Available	
51	400kV	Rampur_PRSTL-Moradabad	1	S/C	57	POWERGRID	UPPTCL	UPPTCL	Twin Moose	After LILO of 400 KV BAREILLY(PG)-MORADABAD(UPPTCL) CIRCUIT-II at RAMPUR(PRSTL)	Not Available	
52	400kV	Bareilly PG-Bareilly (765kV)	1	D/C	2	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Conventional	
53	400kV	Bareilly PG-Bareilly (765kV)	2	D/C	2	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Conventional	

54	400kV	Bareilly PG(765kV)-Kashipur	1	D/C	101	POWERGRID	POWERGRID	PTCUL	Quad Moose		Partial (90%)	
55	400kV	Bareilly PG(765kV)-Kashipur	2	D/C	101	POWERGRID	POWERGRID	PTCUL	Quad Moose		Partial (90%)	
56	400kV	Bassi-Bhiwadi	2	S/C	220	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
57	400kV	Bassi-Heerapura	1	D/C	48	POWERGRID	POWERGRID	RRVPNL	Twin Moose		Polymer Insulator	
58	400kV	Bassi-Heerapura	2	D/C	49	POWERGRID	POWERGRID	RRVPNL	Twin Moose		Polymer Insulator	
59	400kV	Bassi-Kotputli	1	S/C	106	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
60	400kV	Bassi-Phagi	1	D/C	48	POWERGRID	POWERGRID	RRVPNL	Quad Moose		Partial (26%)	
61	400kV	Bassi-Phagi	2	D/C	48	POWERGRID	POWERGRID	RRVPNL	Quad Moose		Partial (26%)	
62	400kV	Bassi-Sikar	1	D/C	170	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (16%)	
63	400kV	Bassi-Sikar	2	D/C	170	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (17%)	
64	400kV	Bawana(CCGT)-Bahadurgarh	1	D/C	49	POWERGRID	DTL/Pragati CCGT	POWERGRID	Twin Moose		Polymer Insulator	
65	400kV	Bhadla-Bhadla(PG)	1	D/C	27	POWERGRID	RRVPNL	POWERGRID	Quad Moose		Not Available	
66	400kV	Bhadla-Bhadla(PG)	2	D/C	27	POWERGRID	RRVPNL	POWERGRID	Quad Moose		Not Available	
67	400kV	Bhadla-Bhadla II	1	D/C	52	POWERGRID	POWERGRID	POWERGRID	Twin HTLS+Hexa Zebra	48.309KM Twin HTLS conductor of POWERGRID and 3.73 KM HEXA Zebra of FBTL	Not Available	
68	400kV	Bhadla-Bhadla II	2	D/C	52	POWERGRID	POWERGRID	POWERGRID	Twin HTLS+Hexa Zebra		Not Available	
69	400kV	Bhinmal-Kankroli	1	D/C	202	POWERGRID	POWERGRID	POWERGRID	Twin Moose	Bypassed at Bhinmal to form 400kV Kankroli Zerda ckt-2	Polymer Insulator	
70	400kV	Bhiwadi-Gurgaon	1	S/C	83	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
71	400kV	Bhiwadi-Hissar	1	S/C	212	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
72	400kV	Bhiwadi-Hissar	2	D/C	144	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	LILO of Bhiwadi-Moga both ckts at Hisar
73	400kV	Bhiwadi-Hissar	3	D/C	144	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
74	400kV	Bhiwadi-NeemranaPG	1	D/C	48	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
75	400kV	Bhiwadi-NeemranaPG	2	D/C	48	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
76	400kV	Bhiwani BBMB - Hissar	1	S/C	35	POWERGRID	POWERGRID	POWERGRID	Twin Moose	Bypassed at Hissar to form Bhiwani BBMB-Fatehabad	Polymer Insulator	
77	400kV	Bhiwani (PG) - Hissar	1	S/C	64	POWERGRID	POWERGRID	POWERGRID	Twin Moose	Bypassed at Hissar to form Moga-Bhiwani(PG)	Polymer Insulator	LILO of Bawana-Hisar (132KM) at Bhiwani PG
78	400kV	Bhiwani (PG) - Hissar	2	D/C	57	POWERGRID	POWERGRID	POWERGRID	Twin Moose	Bypassed at Bhiwani(PG) to form Mahindergarh(ATIL)	Polymer Insulator	
79	400kV	Bhiwani (PG) - Hissar	3	D/C	57	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
80	400kV	Bhiwani PG - Jind	1	D/C	82	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
81	400kV	Bhiwani PG - Jind	2	D/C	82	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
82	400kV	Bhiwani PG- BawanaCCGT	1	D/C	97	POWERGRID	POWERGRID	DTL/ CCGT	Twin Moose		Polymer Insulator	LILO of Bawana-Hisar (132KM) at Bhiwani PG
83	400kV	Bhiwani PG- Bhiwani BBMB	1	S/C	34	POWERGRID	POWERGRID	BBMB	Twin Moose		Polymer Insulator	LILO of Bhiwani (BBMB)- Bahadurgarh (84km) at Bhiwani (PG)
84	400kV	Bhiwani PG-Kabulpur	1	S/C	48	POWERGRID	POWERGRID	HVPNL	Twin Moose		Polymer Insulator	LILO of Bahadurgarh-Bhiwani at Kabulpur
85	400kV	Bikaner_2 (PBTSL)-Bikaner(PG)	1	D/C	43	POWERGRID	PBTSL	POWERGRID	Quad Moose		Not Available	
86	400kV	Bikaner_2 (PBTSL)-Bikaner(PG)	2	D/C	43	POWERGRID	PBTSL	POWERGRID	Quad Moose		Not Available	
87	400kV	Chamba pool - Jalandhar	1	D/C	162	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (48%)	
88	400kV	Chamba pool - Jalandhar	2	D/C	162	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (48%)	
89	400kV	Chamera-II - Chamba Pool	1	S/C	0.38	POWERGRID	NHPC	POWERGRID	Twin Moose		Conventional	Two tower is S/C and one tower is D/C
90	400kV	Chamera-II-Chamera-I	1	S/C	36	POWERGRID	NHPC	NHPC	Twin Moose		Conventional	
91	400kV	Chamera-II-Kishenpur	1	S/C	135	POWERGRID	NHPC	POWERGRID	Twin Moose		Conventional	

92	400kV	Chamera-I-Jalandhar	1	D/C	152	POWERGRID	NHPC	POWERGRID	Twin ACAR		Partial (43%)	
93	400kV	Chamera-I-Jalandhar	2	D/C	152	POWERGRID	NHPC	POWERGRID	Twin ACAR		Partial (43%)	
94	400kV	Chittorgarh-Chittorgarh(PG)	1	D/C	49	POWERGRID	RRVPNL	POWERGRID	Quad Moose		Not Available	
95	400kV	Chittorgarh-Chittorgarh(PG)	2	D/C	49	POWERGRID	RRVPNL	POWERGRID	Quad Moose		Not Available	
96	400kV	Chittorgarh-Kankroli	1	D/C	71	POWERGRID	RRVPNL	POWERGRID	Twin Moose		Polymer Insulator	LILO of 400 kV Rapp C-Kankroli at Chhitorgarh
97	400kV	Dadri NCTPP-G. Noida	1	D/C	13	POWERGRID	NTPC	UPPCL	Quad Bersimis		Polymer Insulator	
98	400kV	Dadri NCTPP-Maharanibagh	1	D/C	54	POWERGRID	NTPC	POWERGRID	Quad Bersimis	Bypassed at Maharanibagh to form Dadri-Ballabgarh	Polymer Insulator	
99	400kV	Dadri NCTPP-Kaithal	1	S/C	213	POWERGRID	NTPC	POWERGRID	Twin Moose	LILO of Dadri-Malerkotla at Kaithal	Polymer Insulator	
100	400kV	Dadri NCTPP-Mandola	1	D/C	46	POWERGRID	NTPC	POWERGRID	Quad Bersimis		Polymer Insulator	
101	400kV	Dadri NCTPP-Mandola	2	D/C	46	POWERGRID	NTPC	POWERGRID	Quad Bersimis		Polymer Insulator	
102	400kV	Dadri NCTPP-Muradnagar New	1	S/C	33	POWERGRID	NTPC	UPPTCL	Twin Moose		Polymer Insulator	Line shifted from Muradnagar to Muradnagar New (UPPTCL)
103	400kV	Dadri NCTPP-Panipat	1	S/C	112	POWERGRID	NTPC	BBMB	Twin Moose		Polymer Insulator	
104	400kV	Dadri NCTPP-Panipat	2	S/C	117	POWERGRID	NTPC	BBMB	Twin Moose		Polymer Insulator	
105	400kV	Deepalpur-Bawana	1	D/C	26	POWERGRID	KT-Jhajjar	DTL	Triple Snowbird	LILO of 400kV Bawana-Abdullapur one circuit at Deepalpur by Jhajjar KT	Polymer Insulator	
106	400kV	Dehradun-Abdullapur	1	D/C	89	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Not Available	
107	400kV	Dehradun-Abdullapur	2	D/C	89	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Not Available	
108	400kV	Dulhasti-Kishenpur	1	S/C	120	POWERGRID	NHPC	POWERGRID	Quad Moose		Conventional	
109	400kV	Dulhasti-Kishenpur	2	S/C	120	POWERGRID	NHPC	POWERGRID	Quad Moose		Conventional	
110	400kV	Dwarka-Jhatikara	1	S/C	18	POWERGRID	POWERGRID	POWERGRID	Twin HTLS	After LILO of 400kV Jhatikara-Bamnoli-I at Dwarka(PG)	Not Available	
111	400kV	Dwarka-Bamnauli	1	S/C	10	POWERGRID	POWERGRID	DTL	Twin HTLS		Not Available	
112	400kV	Fatehbad PG-Hissar	1	D/C	89	POWERGRID	POWERGRID	POWERGRID	Twin Moose	Bypassed at Hissar to form Bhiwani BBMB-Fatehabad	Polymer Insulator	
113	400kV	Fatehpur-Kanpur	1	S/C	100	POWERGRID	POWERGRID	POWERGRID	Twin Moose	Bypassed at Kanpur to form Fatehpur-Panki	Polymer Insulator	LILO of Singrauli-Kanpur at Fatehpur
114	400kV	Fatehpur-Kanpur	2	S/C	107	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (64%)	LILO of Allahabad-Kanpur one ckt at Fatehpur
115	400kV	Kanpur-Panki	1	S/C	6	POWERGRID	POWERGRID	UPPTCL	Twin Moose	Bypassed at Kanpur to form Fatehpur-Panki	Polymer Insulator	
116	400kV	Kanpur-Panki	2	S/C	6	POWERGRID	POWERGRID	UPPTCL	Twin Moose		Polymer Insulator	
117	400kV	Fatehpur-Mainpuri	1	D/C	260	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	LILO of Allahabad-Mainpuri (363 KM) D/C at Fatehpur Series compensated line (Degree of comp. - 40%)
118	400kV	Fatehpur-Mainpuri	2	D/C	260	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	
119	400kV	G.Noida-Nawada	1	D/C	30	POWERGRID	UPPTCL	HVPNL	Quad Bersimis	Lilo of Ballabgarh-G.Noida at Nawada	Polymer Insulator	Ballabhgarh-Gnoida LILOed at Nawada (Faridabad,Haryana)
120	400kV	Gorakhpur PG-Gorakhpur UP	1	D/C	46	POWERGRID	POWERGRID	UPPCL	Twin Moose		Polymer Insulator	Partial Planning has been completed
121	400kV	Gorakhpur PG-Gorakhpur UP	2	D/C	46	POWERGRID	POWERGRID	UPPCL	Twin Moose		Polymer Insulator	Partial Planning has been completed

122	400kV	Gorakhpur PG-Lucknow PG	1	D/C	264	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (3%)	At crossing
123	400kV	Gorakhpur PG-Lucknow PG	2	D/C	264	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (3%)	At crossing
124	400kV	Gorakhpur PG-Basti (UP)	1	D/C	117	POWERGRID	POWERGRID	UPPTCL	Twin Moose	LILO of 400kV Gorakhpur PG-Lucknow PG ckt-4 at Basti (UP). LILO portion is of UP	Not Available	
125	400kV	Gorakhpur PG-Basti (UP)	2	D/C	108	POWERGRID	POWERGRID	UPPTCL	Twin Moose	LILO of 400kV Lucknow-Gorakhpur-3 at Basti. LILO portion is of UP	Not Available	
126	400kV	Basti (UP)-Lucknow PG	1	D/C	204	POWERGRID	UPPTCL	POWERGRID	Twin Moose		Not Available	
127	400kV	Gurgaon-Sohna Road	1	D/C	7	POWERGRID	POWERGRID	GPTL	Quad Moose	LILO of 400kV Gurgaon-Manesar D/C at Sohna Road by GPTL	Not Available	
128	400kV	Gurgaon-Sohna Road	2	D/C	7	POWERGRID	POWERGRID	GPTL	Quad Moose		Not Available	
129	400kV	Hamirpur-ParbatiPooling (Banala)	1	D/C	77	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	LILO of Amritsar-Banala-1 at Hamirpur
130	400kV	Jaipur South-Bassi	1	D/C	37	POWERGRID	POWERGRID	POWERGRID	Twin Moose	LILO of Agra-Bassi D/C at Jaipur South	Polymer Insulator	LILO of Agra-Bassi D/C at Jaipur South
131	400kV	Jaipur South-Bassi	2	D/C	37	POWERGRID	POWERGRID	POWERGRID	Twin Moose	LILO of Agra-Bassi D/C at Jaipur South	Polymer Insulator	
132	400kV	Jaipur South-Kota	1	D/C	180	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Not Available	
133	400kV	Jaipur South-RAPP D	1	D/C	228	POWERGRID	POWERGRID	NPCIL	Twin Moose		Not Available	
134	400kV	Jalandhar-Nakodar	1	D/C	42	POWERGRID	POWERGRID	PSTCL	Quad Moose		Polymer Insulator	
135	400kV	Jalandhar-Hamirpur	1	D/C	135	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (43%)	LILO of 400kV Amritsar-Hamirpur at Jalandhar
136	400kV	Kaithal-Hissar	1	D/C	113	POWERGRID	POWERGRID	POWERGRID	Triple Snowbird		LILO of Patiala-Hissar at Kaithal	
137	400kV	Kaithal-Hissar	2	D/C	113	POWERGRID	POWERGRID	POWERGRID	Triple Snowbird		LILO of Patiala-Hissar at Kaithal	
138	400kV	Kaithal-Malerkotla	1	S/C	135	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
139	400kV	Kankroli-Jodhpur	1	S/C	188	POWERGRID	POWERGRID	RRVPNL	Twin HTLS		Conventional	
140	400kV	Kanpur-Agra	1	S/C	240	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	
141	400kV	Kanpur-Auraiya	1	D/C	73	POWERGRID	POWERGRID	NTPC	Twin Moose		Conventional	
142	400kV	Kanpur-Auraiya	2	D/C	73	POWERGRID	POWERGRID	NTPC	Twin Moose		Conventional	
143	400kV	Kanpur-Ballabgarh	1	S/C	386	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	*Series Compensated,Ckt 1-35%, Ckt-2 & 3-40%
144	400kV	Kanpur-Ballabgarh	2	D/C	371	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	*Series Compensated,Ckt 1-35%, Ckt-2 & 3-40%
145	400kV	Kanpur-Ballabgarh	3	D/C	371	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	*Series Compensated,Ckt 1-35%, Ckt-2 & 3-40%
146	400kV	Kanpur-Kanpur(GIS)	1	D/C	21	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Polymer Insulator	
147	400kV	Kanpur-Kanpur(GIS)	2	D/C	21	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Polymer Insulator	
148	400kV	Kanpur(GIS)-Lucknow(765)	1	D/C	160	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Not Available	
149	400kV	Kanpur(GIS)-Lucknow(765)	2	D/C	160	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Not Available	
150	400kV	Kishenpur-NewWanpoh	1	D/C	130	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	
151	400kV	Kishenpur-NewWanpoh	3	D/C	135	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	
152	400kV	Kishenpur-NewWanpoh	4	D/C	135	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Not Available	
153	400kV	Kishenpur-Samba	1	D/C	35	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Not Available	
154	400kV	Kishenpur-Samba	2	D/C	35	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	
155	400kV	Kota-Merta	1	D/C	256	POWERGRID	POWERGRID	RRVPNL	Twin Moose		Conventional	

156	400kV	Kotputli-Bhiwadi	1	S/C	132	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	LILO of Bassi-Bhiwadi-2 at Kotputli
157	400kV	Kurukshetra-Jind	1	D/C	103	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Not Available	
158	400kV	Kurukshetra-Jind	2	D/C	103	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Not Available	
159	400kV	Kurukshetra-Sonipat	1	D/C	125	POWERGRID	POWERGRID	POWERGRID	Triple Snowbird (Twin HTLS for LILOportion)	LILO of Abdullapur-Sonipat line at Kurukshetra	Partial (99%)	LILO of Abdullapr-Sonipat ckts at
160	400kV	Kurukshetra-Sonipat	2	D/C	125	POWERGRID	POWERGRID	POWERGRID			Partial (99%)	
161	400kV	Kurukshetra(PG)-Dhanansu(PS)	1	D/C	165	POWERGRID	POWERGRID	PSTCL	Quad Moose	LILO of 400kv Kurukshetra-Jalandhar (LILO portion is of	Polymer Insulator	LILO portion to be checked
162	400kV	Dhanansu(PS)-Jalandhar(PG)	1	D/C	106	POWERGRID	PSTCL	POWERGRID	Quad Moose		Polymer Insulator	
163	400kV	Kurukshetra-Nakodar	1	D/C	234	POWERGRID	POWERGRID	PSTCL	Quad Moose		Polymer Insulator	
164	400kV	Lucknow-Basti	1	D/C	203	POWERGRID	POWERGRID	UPPTCL	Twin Moose		Not Available	
165	400kV	Lucknow-Basti	2	D/C	203	POWERGRID	POWERGRID	UPPTCL	Twin Moose		Not Available	
166	400kV	Lucknow PG-Lucknow UP	1	S/C	63	POWERGRID	POWERGRID	UPPTCL	Twin Moose		Conventional	
167	400kV	Lucknow PG-Unnao	1	D/C	74	POWERGRID	POWERGRID	UPPTCL	Twin Moose		Conventional	
168	400kV	Lucknow PG-Unnao	2	D/C	74	POWERGRID	POWERGRID	UPPTCL	Twin Moose		Conventional	
169	400kV	Lucknow UP-Bareilly PG	1	S/C	279	POWERGRID	UPPTCL	POWERGRID	Twin Moose		Conventional	
170	400kV	765 Lucknow (PG) - Lucknow (PG)	1	D/C	3	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Polymer Insulator	
171	400kV	765 Lucknow (PG) - Lucknow (PG)	2	D/C	3	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Polymer Insulator	
172	400kV	LucknowPG-Sohawal	1	D/C	98	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	LILO of Balia-Lucknow (316 KM) D/C at Sohawal
173	400kV	LucknowPG-Sohawal	2	D/C	98	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	
174	400kV	Lucknow PG-Shahjahanpur	1	D/C	170	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (10%)	
175	400kV	Lucknow PG-Shahjahanpur	2	D/C	170	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Partial (10%)	
176	400kV	Lucknow-Jehta	1	D/C	32	POWERGRID	POWERGRID	UPPTCL	Twin Moose	LILO of 400kV Lucknow-Unnao DC at Jehta (UP). LILO portion is of	Not Available	
177	400kV	Lucknow-Jehta	2	D/C	32	POWERGRID	POWERGRID	UPPTCL	Twin Moose		Not Available	
178	400kV	Ludhiana-Jalandhar	1	S/C	85	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
179	400kV	Ludhiana-Malerkotla	1	S/C	36	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
180	400kV	Ludhiana-Patiala	1	D/C	76	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
181	400kV	Ludhiana-Patiala	2	D/C	76	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
182	400kV	Mainpuri-Ballabgarh	1	D/C	236	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
183	400kV	Mainpuri-Ballabgarh	2	D/C	236	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
184	400kV	Malerkotla-Patiala	1	S/C	62	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
185	400kV	Manesar- Sohna Road	1	D/C	17	POWERGRID	POWERGRID	GPTL	Quad Moose	LILO of 400kV Gurgaon-Manesar D/C at Sohna Road by GPTL	Not Available	
186	400kV	Manesar- Sohna Road	2	D/C	17	POWERGRID	POWERGRID	GPTL	Quad Moose		Not Available	
187	400kV	Mandola-Maharanibagh	1	D/C (LILO towers are M/C)	29	POWERGRID	POWERGRID	POWERGRID	Twin HTLS	After LILO of 400KV Mandola-Bawana D/C Lines at 400KV Maharanibagh(PG)	Not Available	
188	400kV	Mandola-Maharanibagh	2	D/C (LILO towers are M/C)	29	POWERGRID	POWERGRID	POWERGRID	Twin HTLS		Not Available	
189	400kV	Maharanibagh-Bawana	1	D/C	29	POWERGRID	POWERGRID	DTL	Twin HTLS		Not Available	
190	400kV	Maharanibagh-Bawana	2	D/C	29	POWERGRID	POWERGRID	DTL	Twin HTLS		Not Available	
191	400kV	Meerut-Bagpat	1	D/C	71	POWERGRID	POWERGRID	POWERGRID	Twin Moose	LILO of Meerut-Kaithal DC at Baghpat	Polymer Insulator	
192	400kV	Meerut-Bagpat	2	D/C	71	POWERGRID	POWERGRID	POWERGRID	Twin Moose	LILO of Meerut-Kaithal DC at Baghpat	Polymer Insulator	
193	400kV	Meerut-Mandola	1	D/C	60	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
194	400kV	Meerut-Mandola	2	D/C	60	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
195	400kV	Meerut-Muzzafarnagar	1	S/C	37	POWERGRID	POWERGRID	UPPTCL	Twin Moose		Polymer Insulator	
196	400kV	Moga-Fatehabad	1	D/C	179	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
197	400kV	Moga-Hissar	1	D/C	209	POWERGRID	POWERGRID	POWERGRID	Twin Moose	Bypassed at Hissar to form Moga-Bhiwani(PG)	Polymer Insulator	

198	400kV	Moga-Hissar	2	D/C	206	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	LILO of Bhiwadi-Moga both ckts at Hisar
199	400kV	Moga-Hissar	3	D/C	206	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
200	400kV	Moga-Jalandhar	1	D/C	85	POWERGRID	POWERGRID	POWERGRID	Twin ACAR		Polymer Insulator	
201	400kV	Moga-Jalandhar	2	D/C	85	POWERGRID	POWERGRID	POWERGRID	Twin ACAR		Polymer Insulator	
202	400kV	Muradnagar-Hapur	1	S/C	28	POWERGRID	UPPTCL	UPPTCL	Twin Moose	Moradabad-Muradnagar LILOed at Hapur; LILO portion of	Not Available	
203	400kV	Moradabad-Hapur	2	S/C	109	POWERGRID	UPPTCL	UPPTCL	Twin Moose		Not Available	
204	400kV	Nallagarh-Koldam	1	D/C	46	POWERGRID	POWERGRID	NTPC	Quad Moose		Conventional	Koldam to Parbati pool section is of
205	400kV	Nallagarh-Patiala	1	D/C	94	POWERGRID	POWERGRID	POWERGRID	Triple Snowbird		Polymer Insulator	
206	400kV	Nallagarh-Patiala	2	D/C	94	POWERGRID	POWERGRID	POWERGRID	Triple Snowbird		Polymer Insulator	
207	400kV	Nathpa Jhakri-Gumma	1	D/C	55	POWERGRID	SJVNL	HPPTCL	Triple Snowbird	LILO of DC Jhakri-Panchkula line at Gumma	Not Available	
208	400kV	Nathpa Jhakri-Gumma	2	D/C	55	POWERGRID	SJVNL	HPPTCL	Triple Snowbird		Not Available	
209	400kV	Gumma-Panchkula	1	D/C	112	POWERGRID	HPPTCL	POWERGRID	Triple Snowbird		Not Available	
210	400kV	Gumma-Panchkula	2	D/C	112	POWERGRID	HPPTCL	POWERGRID	Triple Snowbird		Not Available	
211	400kV	Nathpa Jhakri-RampurHEP	1	D/C	21	POWERGRID	SJVNL	SJVNL	Triple Snowbird	Nathpa Jhakri-Nallagarh LILOed at Rampur HEP	Conventional	LILO of Jhakri-Nalagarh-1 at RampurHEP
212	400kV	Nathpa Jhakri-RampurHEP	2	D/C	21	POWERGRID	SJVNL	SJVNL	Triple Snowbird		Conventional	
213	400kV	NeemranaPG-Manesar	1	D/C	67	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
214	400kV	NeemranaPG-Manesar	2	D/C	67	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
215	400kV	NeemranaPG-Babai	1	D/C	85	POWERGRID	POWERGRID	RRVPNL	Twin Moose	LILO PORTION IF OF NRSS36(B), LILO of 400kV Neemrana-Sikar-1 at Babai	Not Available	LILO of 400kV Neemrana-Sikar at Babai by NRSSXXXVI (Essel group): Earlier 29% of Neemrana-Sikar PG
216	400kV	NeemranaPG-Sikar	2	D/C	176	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Not Available	
217	400kV	NewWanpoh-Wagoora	1	D/C	57	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	
218	400kV	NewWanpoh-Wagoora	2	D/C	57	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	
219	400kV	Orai(PG)-Orai	1	D/C	42	POWERGRID	POWERGRID	UPPTCL	Quad Moose		Not Available	
220	400kV	Orai(PG)-Orai	2	D/C	42	POWERGRID	POWERGRID	UPPTCL	Quad Moose		Not Available	
221	400kV	Panchkula -Abdullapur	1	D/C	63	POWERGRID	POWERGRID	POWERGRID	Triple Snowbird		Polymer Insulator	LILO of Jhakri-Abdullapur at Panchkula
222	400kV	Panchkula -Abdullapur	2	D/C	63	POWERGRID	POWERGRID	POWERGRID	Triple Snowbird		Polymer Insulator	LILO of Jhakri-Abdullapur at
223	400kV	Patiala-Panchkula	1	D/C	65	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
224	400kV	Patiala-Panchkula	2	D/C	65	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Polymer Insulator	
225	400kV	Patiala-Patran	1	D/C	79	POWERGRID	POWERGRID	PTCL	Triple Snowbird	LILO of 400kV D/C Patiala – Kaithal Line at Patran SS under the ownership of PTCL.	Polymer Insulator	LILO of 400 kV Kaithal-
226	400kV	Patiala-Patran	2	D/C	79	POWERGRID	POWERGRID	PTCL	Triple Snowbird		Polymer Insulator	
227	400kV	Patran-Kaithal	1	D/C	47	POWERGRID	PTCL	POWERGRID	Triple Snowbird		Polymer Insulator	
228	400kV	Patran-Kaithal	2	D/C	47	POWERGRID	PTCL	POWERGRID	Triple Snowbird		Polymer Insulator	
229	400kV	RampurHEP-Nallagarh	1	D/C	128	POWERGRID	SJVNL	POWERGRID	Triple Snowbird	Nathpa Jhakri-Nallagarh LILOed at Rampur HEP	Conventional	LILO of Jhakri-Nalagarh-1 at RampurHEP
230	400kV	RampurHEP-Nallagarh	2	D/C	128	POWERGRID	SJVNL	POWERGRID	Triple Snowbird		Conventional	
231	400kV	RAPS-C-Chittorgarh	1	D/C	155	POWERGRID	NPCIL	RRVPNL	Twin Moose		Partial (38%)	LILO of 400 kV Rapp C-Kankroli at Chhitorgarh
232	400kV	RAPS-C-Kankroli	1	D/C	199	POWERGRID	NPCIL	POWERGRID	Twin Moose		Partial (51%)	

233	400kV	RAPS-C-Kota	1	S/C	51	POWERGRID	NPCIL	POWERGRID	Twin Moose		Partial (55%)	400kV RAPS-Jaipur line whose work was completed till Kota section is connected with 400kV Raps-Kota#2 (for antitheft purpose) and hence 400kV RapsC-Kota #2 is now two twin moose lines connected in parallel paths
234	400kV	RAPS-C-Kota	2	D/C	55	POWERGRID	NPCIL	POWERGRID	Twin Moose	D/C with 400kV Jaipur-RAPP D line	Not Available	
235	400kV	Rasra-Balia	1	S/C	46	POWERGRID	UPPTCL	POWERGRID	Twin Moose	LILO of 400kV Balia-Mau-II at Rasara. LILO portion is of UP	Not Available	
236	400kV	Rasra-Mau	1	S/C	38	POWERGRID	UPPTCL	UPPTCL	Twin Moose		Not Available	
237	400kV	Rihand-Allahabad	1	D/C	279	POWERGRID	NTPC	POWERGRID	Twin Moose		Conventional	
238	400kV	Rihand-Allahabad	2	D/C	279	POWERGRID	NTPC	POWERGRID	Twin Moose		Conventional	
239	400kV	Roorkee-Kashipur	1	D/C	151	POWERGRID	POWERGRID	PTCUL	Quad Moose		Partial (72%)	
240	400kV	Roorkee-Kashipur	2	D/C	151	POWERGRID	POWERGRID	PTCUL	Quad Moose		Partial (72%)	
241	400kV	Roorkee-Saharanpur	1	D/C	36	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Polymer Insulator	
242	400kV	Roorkee-Dehradun	1	D/C	80	POWERGRID	POWERGRID	POWERGRID	Quad Moose		Partial (50%)	
243	400kV	Sarnath-Varanasi	1	D/C	70	POWERGRID	UPPTCL	POWERGRID	Quad Moose		Partial (52%)	LILO of Sarnath-Allahabad (144 KM) at 765/400kV Varanasi
244	400kV	Sarnath-Varanasi	2	D/C	107	POWERGRID	UPPTCL	POWERGRID	Quad Moose		Partial (52%)	
245	400kV	Shahjahanpur-Bareilly PG	1	D/C	116	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	
246	400kV	Shahjahanpur-Bareilly PG	2	D/C	116	POWERGRID	POWERGRID	POWERGRID	Twin Moose		Conventional	
247	400kV	Shahjahanpur-Rosa	1	D/C	8	POWERGRID	POWERGRID	UPPCL	Twin Moose		Not Available	
248	400kV	Shahjahanpur-Rosa	2	D/C	8	POWERGRID	POWERGRID	UPPCL	Twin Moose		Not Available	
249	400kV	Shree Cement-Kota	1	D/C	208	POWERGRID	Sh. Cement	POWERGRID	Twin Moose		Polymer Insulator	
250	400kV	Shree Cement-Merta	2	D/C	103	POWERGRID	Sh. Cement	RRVPNL	Twin Moose		Polymer Insulator	
251	400kV	Sikar-Babai	1	D/C	95	POWERGRID	POWERGRID	RRVPNL	Twin Moose	LILO PORTION IF OF NRSS36(B), LILO of 400kV Neemrana-Sikar-1 at Babai	Not Available	
252	400kV	Sikar-Ratangarh	1	D/C	76	POWERGRID	POWERGRID	RRVPNL	Twin Moose		Conventional	
253	400kV	Sikar-Ratangarh	2	D/C	76	POWERGRID	POWERGRID	RRVPNL	Twin Moose		Conventional	
254	400kV	Singrauli-Allahabad	1	S/C	224	POWERGRID	NTPC	POWERGRID	Twin Moose		Conventional	
255	400kV	Singrauli-Allahabad	2	S/C	202	POWERGRID	NTPC	POWERGRID	Twin Moose		Conventional	
256	400kV	Singrauli-Allahabad	3	S/C	215	POWERGRID	NTPC	POWERGRID	Twin Moose		Not Available	
257	400kV	Singrauli-Anpara	1	S/C	25	POWERGRID	NTPC	UPPTCL	Twin Moose		Partial (91%)	
258	400kV	Singrauli-Fatehpur	1	S/C	331	POWERGRID	NTPC	POWERGRID	Twin Moose		Conventional	LILO of Singrauli-Kanpur at Fatehpur
259	400kV	Singrauli-LucknowUP	1	S/C	409	POWERGRID	NTPC	UPPTCL	Twin Moose		Conventional	
260	400kV	Singrauli-Rihand	1	S/C	42	POWERGRID	NTPC	NTPC	Twin Moose		Conventional	
261	400kV	Singrauli-Rihand	2	S/C	44	POWERGRID	NTPC	NTPC	Twin Moose		Conventional	
262	400kV	Singrauli-Vindhyachal	1	S/C	3	POWERGRID	NTPC	POWERGRID	Twin Moose		Conventional	
263	400kV	Singrauli-Vindhyachal	2	S/C	5	POWERGRID	NTPC	POWERGRID	Twin Moose		Conventional	
264	400kV	Koteswar(PG)-Koteswar(THDC)	1	D/C	3	POWERGRID	POWERGRID	THDC	Twin Moose		Conventional	
265	400kV	Koteswar(PG)-Koteswar(THDC)	2	D/C	3	POWERGRID	POWERGRID	THDC	Twin Moose		Conventional	
266	400kV	Tehri-Koteshwar(PG)	3	S/C	14	POWERGRID	THDC	POWERGRID	Quad Moose		Not Available	

267	400kV	Unnao-Jehta	1	D/C	70	POWERGRID	UPPTCL	UPPTCL	Twin Moose	LILO of 400kV Lucknow-Unnao DC at Jehta (UP). LILO portion is of UP	Not Available	
268	400kV	Unnao-Jehta	2	D/C	70	POWERGRID	UPPTCL	UPPTCL	Twin Moose	LILO of 400kV Lucknow-Unnao DC at Jehta (UP). LILO portion is of UP	Not Available	
269	400kV	Uri-II - Uri-I	1	S/C	10	POWERGRID	NHPC	NHPC	Twin Moose		Conventional	LILO of 400kV Uri-I - Wagoora D/C at Amargarh
270	400kV	Uri-II - Wagoora	1	S/C	105	POWERGRID	NHPC	POWERGRID	Twin Moose		Conventional	
271	400kV	Jauljivi-Bareilly_2	1	D/C	205	POWERGRID	POWERGRID	POWERGRID	Twin Moose	After LILO of 400kV Dhauliganga - Bareilly(UP) Double circuit line(Initially LILOed at Pithoragarh and charged at 220kV level) at Jauljivi(PG)	Not Available	
272	400kV	Jauljivi-Bareilly_2	2	D/C	205	POWERGRID	POWERGRID	POWERGRID	Twin Moose	After LILO of 400kV Dhauliganga - Bareilly(UP) Double circuit line(Initially LILOed at Pithoragarh and charged at 220kV level) at Jauljivi(PG)	Not Available	
B. POWERLINK Transmission Ltd												
1	400kV	Bareilly PG-Meerut	1	D/C	250	POWERLINK	POWERGRID	POWERGRID	Twin Moose		Conventional	LILO of Bareilly PG-Mandola-1 (241 Km) at
2	400kV	Bareilly PG-Meerut	2	D/C	250	POWERLINK	POWERGRID	POWERGRID	Twin Moose		Conventional	
3	400kV	Bareilly UP-Bareilly PG	1	D/C	14	POWERLINK	UPPTCL	POWERGRID	Twin Moose		Polymer Insulator	
4	400kV	Bareilly UP-Bareilly PG	2	D/C	14	POWERLINK	UPPTCL	POWERGRID	Twin Moose		Polymer Insulator	
5	400kV	Gorakhpur PG-Lucknow PG	1	D/C	246	POWERLINK	POWERGRID	POWERGRID	Twin Moose		Conventional	*Series compensated line
6	400kV	Gorakhpur PG-Lucknow PG	2	D/C	246	POWERLINK	POWERGRID	POWERGRID	Twin Moose		Conventional	
7	400kV	Meerut-Mandola	3	D/C	102	POWERLINK	POWERGRID	POWERGRID	Twin Moose		Conventional	LILO of Bareilly PG-Mandola-1&2 (241 Km)
8	400kV	Meerut-Mandola	4	D/C	102	POWERLINK	POWERGRID	POWERGRID	Twin Moose		Conventional	
C. PKTSL												
1	400kV	Khetri-Sikar	1	D/C	78	PKTSL	PKTSL	POWERGRID	Twin HTLS		Not Available	
2	400kV	Khetri-Sikar	2	D/C	78	PKTSL	PKTSL	POWERGRID	Twin HTLS		Not Available	
D. Adani Transmission India Ltd.												
1	400kV	Mahindergarh (APL)-Bhiwani PG	1	D/C	50	ATIL	APL	POWERGRID	Twin Moose		Conventional	
2	400kV	Mahindergarh (APL)-Bhiwani PG	2	D/C	50	ATIL	APL	POWERGRID	Twin Moose		Conventional	
3	400kV	Mahindergarh (APL)-Bhiwani PG	3	D/C	56	ATIL	APL	POWERGRID	Twin Moose	Bypassed at 400kV Bhiwani to form 400kV Bypassed at Dhanonda to form	Not Available	
4	400kV	Mahindergarh (APL)-Bhiwani PG	4	D/C	56	ATIL	APL	POWERGRID	Twin Moose		Not Available	
5	400kV	MahindergarhHVDC-Dhanonda	1	D/C	5	ATIL	APL	HVPNL	Quad Moose		Conventional	
6	400kV	MahindergarhHVDC-Dhanonda	2	D/C	5	ATIL	APL	HVPNL	Quad Moose		Conventional	
E. APCPL (Aravali Power Corporation Pvt Ltd.)												
1	400kV	Jhajjar (IGSTPS)-Mundka	1	D/C	66	APCPL	APCPL	DTL	Twin Moose		Polymer	
2	400kV	Jhajjar (IGSTPS)-Mundka	2	D/C	66	APCPL	APCPL	DTL	Twin Moose		Polymer	
F. PHTL (Powergrid Himachal Transmission Limited)												
1	400kV	Abdullapur-Kala Amb	1	D/C	39	PHTL	POWERGRID	PKATL	Quad Moose		Conventional	
2	400kV	Abdullapur-Kala Amb	2	D/C	39	PHTL	POWERGRID	PKATL	Quad Moose		Conventional	
3	400kV	Kala Amb- Wangtoo (HP)	1	D/C	174	PHTL	PKATL	HPPTCL	Quad Moose	Karcham-Kala Amb LILOed at Wangtoo (HP)	Not Available	
4	400kV	Karcham Wangtoo - Wangtoo (HP)	1	D/C	1	PHTL	JSW	HPPTCL	Quad Moose		Not Available	
5	400kV	Karcham Wangtoo - Wangtoo (HP)	2	D/C	1	PHTL	JSW	HPPTCL	Quad Moose		Not Available	
6	400kV	Baspa-Karcham Wangtoo	1	D/C	22	PHTL	JPVL	JSW	Triple snowbird		Conventional	
7	400kV	Baspa-Karcham Wangtoo	2	D/C	22	PHTL	JPVL	JSW	Triple snowbird		Conventional	
8	400kV	Karcham Wangtoo-NJPC	1	D/C	34	PHTL	JSW	SJVNL	Triple snowbird		Conventional	

9	400kV	Karcham Wangtoo-NJPC	2	D/C	34	PHTL	JSW	SJVNL	Triple snowbird		Conventional	
10	400kV	Sorang-Wangtoo	1	D/C	21	PHTL	SORANG	HPPTCL	Quad Moose		Not Available	
11	400kV	Sorang-Kala Amb	1	D/C	160	PHTL	SORANG	PKATL	Quad Moose		Not Available	
G. PKTCL (Parbati-Koldam Transmission)												
1	400kV	Koldam-Ludhiana	1	D/C	151	PKTCL	NTPC	POWERGRID	Triple Snowbird		27% Polymer & 73% porcelain	
2	400kV	Koldam-Ludhiana	2	D/C	151	PKTCL	NTPC	POWERGRID	Triple Snowbird		27% Polymer & 73% porcelain	
3	400kV	Koldam-Banala	1	D/C	67	PKTCL	NTPC	POWERGRID	Quad Moose		100% porcelain	
4	400kV	Nallagarh-Banala	1	D/C	62	PKTCL	POWERGRID	POWERGRID	Quad Moose		100% porcelain	Powergrid owned 46.38km
5	400kV	Parbati-II- ParbatiPooling (Banala)	1	S/C	13	PKTCL	NHPC	POWERGRID	Quad Moose		100% porcelain	Some portion is of Powergrid
6	400kV	Parbati-III- ParbatiPooling (Banala)	1	S/C	4	PKTCL	NHPC	POWERGRID	Quad Moose		100% porcelain	
7	400kV	Parbati II- Sainj	1	S/C	1	PKTCL	NHPC	HPPCL	Quad Moose		100% porcelain	LILO of 400kV Parbati II-Parbati III at Sainj
8	400kV	Parbati III- Sainj	1	S/C	9	PKTCL	NHPC	HPPCL	Quad Moose		100% porcelain	
H. INDIGRID:NRSS-29 Transmission Company Limited												
1	400kV	Jalandhar-Samba	1	D/C	135	NRSS-29	POWERGRID	POWERGRID	Twin Moose		Polymer	
2	400kV	Jalandhar-Samba	2	D/C	135	NRSS-29	POWERGRID	POWERGRID	Twin Moose		Polymer	
3	400kV	Amargarh-Samba	1	D/C	286	NRSS-29	NRSS-29	POWERGRID	Twin Moose		Polymer	
4	400kV	Amargarh-Samba	2	D/C	286	NRSS-29	NRSS-29	POWERGRID	Twin Moose		Polymer	
5	400kV	Uri-I - Amargarh	1	D/C	62	NRSS-29	NHPC	NRSS-29	Twin Moose	LILO of 400kV D/C Uri-I – Wagoora Line at Amargarh SS under the ownership of NRSS-XXIX.	Polymer	
6	400kV	Uri-I - Amargarh	2	D/C	62	NRSS-29	NHPC	NRSS-29	Twin Moose		Polymer	
7	400kV	Amargarh - Wagoora	1	D/C	36	NRSS-29	NRSS-29	POWERGRID	Twin Moose		Polymer	
8	400kV	Amargarh - Wagoora	2	D/C	36	NRSS-29	NRSS-29	POWERGRID	Twin Moose		Polymer	
I. Powergrid Unchahar Transmission Ltd.												
1	400kV	Fatehpur-Unchahar	1	D/C	54	PUTL	POWERGRID	NBPPL	Twin Moose		Not Available	
2	400kV	Fatehpur-Unchahar	2	D/C	54	PUTL	POWERGRID	NBPPL	Twin Moose		Not Available	
J. NRSSXXXI(B) (Sekura Energy)												
1	400kV	Amritsar-Malerkotla	1	D/C	149	NRSSXXXI(B)	POWERGRID	POWERGRID	Twin Moose		Polymer	
2	400kV	Amritsar-Malerkotla	2	D/C	149	NRSSXXXI(B)	POWERGRID	POWERGRID	Twin Moose		Polymer	
3	400kV	Kurukshetra-Malerkotla	1	D/C	139	NRSSXXXI(B)	POWERGRID	POWERGRID	Twin Moose		Polymer	
4	400kV	Kurukshetra-Malerkotla	2	D/C	139	NRSSXXXI(B)	POWERGRID	POWERGRID	Twin Moose		Polymer	
K. Gurgaon Palwal Transmission Ltd.												
1	400kV	Dhanoda-Neemrana	1	D/C	47	GPTL	HVPNL	POWERGRID	Twin HTLS	Bypassed at Dhanonda to form	Polymer	
2	400kV	Dhanoda-Neemrana	2	D/C	47	GPTL	HVPNL	POWERGRID	Twin HTLS		Polymer	
3	400kV	Prithala-Kadarpur	1	D/C	29	GPTL	GPTL	GPTL	Twin HTLS		Polymer	
4	400kV	Prithala-Kadarpur	2	D/C	29	GPTL	GPTL	GPTL	Twin HTLS		Polymer	
5	400kV	Prithala(GPTL)-Aligarh(PG)	1	D/C	49	GPTL	GPTL	POWERGRID	Twin HTLS		Polymer	
6	400kV	Prithala(GPTL)-Aligarh(PG)	2	D/C	49	GPTL	GPTL	POWERGRID	Twin HTLS		Polymer	
7	400kV	Kadarpur-Sohna Road	1	D/C	10	GPTL	GPTL	GPTL	Twin HTLS		Polymer	
8	400kV	Kadarpur-Sohna Road	2	D/C	10	GPTL	GPTL	GPTL	Twin HTLS		Polymer	
L. FBTL												
1	400kV	AREPRL-Fatehgarh Pooling	1	D/C	1	FBTL	FBTL	FBTL	Quad moose		Not Available	
2	400kV	AREPRL-Fatehgarh Pooling	2	D/C	1	FBTL	FBTL	FBTL	Quad moose		Not Available	
3	400kV	Fatehgarh II-Fatehgarh Pooling	1	D/C	45	FBTL	POWERGRID	FBTL	Hexa Zebra+ Twin HTLS	LILO of 400kV Fatehgarh I-Bhadla-1 at Fatehgarh II. LILO Portion is of Powergrid	Not Available	
4	400kV	Fatehgarh II-Fatehgarh Pooling	2	D/C	45	FBTL	POWERGRID	FBTL	Hexa Zebra+ Twin HTLS		Not Available	
M. PBTSL												
1	400kV	Bikaner_2 (PBTSL)-Khetri (PKTSL)	1	D/C (some towers M/C)	275	PBTSL	PBTSL	PKTSL	Twin HTLS		Not Available	

2	400kV	Bikaner_2 (PBTSL)-Khetri (PKTSL)	2	D/C (some towers M/C)	275	PBTSL	PBTSL	PKTSL	Twin HTLS		Not Available
3	400kV	Bikaner_2 (PBTSL)-Khetri (PKTSL)	3	D/C (some towers M/C)	275	PBTSL	PBTSL	PKTSL	Twin HTLS		Not Available
4	400kV	Bikaner_2 (PBTSL)-Khetri (PKTSL)	4	D/C (some towers M/C)	275	PBTSL	PBTSL	PKTSL	Twin HTLS		Not Available
5	400kV	Khetri (PKTSL)-Bhiwadi(PG)	1	D/C	126	PBTSL	PKTSL	POWERGRID	Twin HTLS		Not Available
6	400kV	Khetri (PKTSL)-Bhiwadi(PG)	2	D/C	126	PBTSL	PKTSL	POWERGRID	Twin HTLS		Not Available
N. PRTL											
1	400kV	Jaisalmer(RS)-Fatehgarh_III(PG)	1	D/C	50	PRTL	RAJASTHAN	PRTL	Twin HTLS		Not Available
2	400kV	Jaisalmer(RS)-Fatehgarh_III(PG)	2	D/C	50	PRTL	RAJASTHAN	PRTL	Twin HTLS		Not Available
3	400kV	Fatehgarh_III(PG)- Fatehgarh_II(PG)	1	D/C	44	PRTL	PRTL	POWERGRID	Twin HTLS		Not Available
4	400kV	Fatehgarh_III(PG)- Fatehgarh_II(PG)	2	D/C	44	PRTL	PRTL	POWERGRID	Twin HTLS		Not Available
O. NRSS-36											
1	400kV	Babai(RS)-Bhiwani(PG)	1	D/C	111	NRSS-36	NRSS-36	POWERGRID	Twin Moose		Not Available
2	400kV	Babai(RS)-Bhiwani(PG)	2	D/C	111	NRSS-36	NRSS-36	POWERGRID	Twin Moose		Not Available
RE Connected at ISTS Dedicated Lines											
A. RENEW											
1	400kV	Bikaner(PG) - Bikaner (Renew)	1	S/C	5	RENEW	POWERGRID	RENEW	Twin Moose		Not Available
B. Avaada											
1	400kV	Bikaner(PG)-Avaada	1	S/C	14	AEPL	POWERGRID	AEPL	Twin Moose		Not Available
C. ARPOPL											
1	400kV	Bikaner(PG)-Ayana	1	S/C	12	ARPOPL	PGCIL	Ayana	ACSR Twin Moose+AL 59		Not Available
D. Azure											
1	400kV	Bikaner(PG)-Azure 43 PSS	1	S/C	9	Azure	POWERGRID	Azure 43 PSS	Twin Moose		Not Available
2	400kV	Azure43(RSS)-Azure 43 PSS	1	S/C	3	Azure	Azure 43 PSS	Azure 43 RSS	Twin Moose		Not Available
E. RSRPL											
1	400kV	Bikaner(RENEW) - Renew Surya Ravi	1	S/C	13	RSRPL	RENEW	RSRPL	Twin Moose		Not Available
F. NTPC											
1	400kV	Bhadla II - Kolayat	1	D/C	29	NTPC	POWERGRID	NTPC	Quad Moose		Not Available
2	400kV	Kolayat - Kolayat_2	1	D/C	2	NTPC	NTPC	NTPC	Quad Moose		Not Available
STATE LINES											
A. DTL											
1	400kV	Bamnauli-Tughlakabad	1	M/C	68	DTL	DTL	POWERGRID		Tower is quad circuit tower	Polymer Insulator
2	400kV	Bamnauli-Tughlakabad	2	M/C	68	DTL	DTL	POWERGRID		Tower is quad circuit tower	Polymer Insulator
3	400kV	Bamnoli-Jhatikara	1	D/C	12	DTL	DTL	POWERGRID	Quad bersimis		Polymer Insulator
4	400kV	Bamnoli-Jhatikara	2	D/C	12	DTL	DTL	POWERGRID	Quad bersimis		Polymer Insulator
5	400kV	Bawana-Mundka	1	D/C	18	DTL	DTL	DTL	Quad bersimis		Polymer Insulator
6	400kV	Bawana-Mundka	2	D/C	18	DTL	DTL	DTL	Quad bersimis		Polymer Insulator
7	400kV	Jhatikara-Mundka	1	D/C	17	DTL	POWERGRID	DTL	Quad bersimis		Polymer Insulator
8	400kV	Jhatikara-Mundka	2	D/C	17	DTL	POWERGRID	DTL	Quad bersimis		Polymer Insulator
B. HVPNL											
1	400kV	CLP Jhajjar -Dhanonda	1	D/C	20	HVPNL	CLP Jhajjar	HVPNL	Twin Moose		Conventional
2	400kV	CLP Jhajjar -Dhanonda	2	D/C	20	HVPNL	CLP Jhajjar	HVPNL	Twin Moose		Conventional
3	400kV	CLP Jhajjar- Kabulpur	1	D/C	35	JKTPL	CLP Jhajjar	HVPNL	Quad Moose		Already had Anti fog
4	400kV	CLP Jhajjar- Kabulpur	2	D/C	35	JKTPL	CLP Jhajjar	HVPNL	Quad Moose		Polymer Insulator
5	400kV	Deepalpur-Kabulpur	1	D/C	67	JKTPL	KT Jhajjar	HVPNL	Quad Moose		Installed on every
6	400kV	Deepalpur-Kabulpur	2	D/C	67	JKTPL	KT Jhajjar	HVPNL	Quad Moose		towers

7	400kV	Dhanoda-Daultabad	1	D/C	73	HVPNL	HVPNL	HVPNL	Quad Moose		Already had Polymer Insulator	
8	400kV	Dhanoda-Daultabad	2	D/C	73	HVPNL	HVPNL	HVPNL	Quad Moose			
9	400kV	Gurgaon-Daultabad	1	D/C	21	HVPNL	POWERGRID	HVPNL	Quad Moose			Six towers multi-circuit with Bamnauli-
10	400kV	Gurgaon-Daultabad	2	D/C	21	HVPNL	POWERGRID	HVPNL	Quad Moose			
11	400kV	Jhajjar-Daulatabad	1	D/C	64	HVPNL	APCPL	HVPNL	Twin Moose		Polymer Insulator	Partial (84%), Remaining pending
12	400kV	Jhajjar-Daulatabad	2	D/C	64	HVPNL	APCPL	HVPNL	Twin Moose		Polymer Insulator	
13	400kV	Khedar-Fatehabad	1	D/C	40	HVPNL	HPGCL	POWERGRID	Twin Moose		Conventional	Presently there is no planning of replacment of Convention disc Insulator with Polymer Insulators
14	400kV	Jind-Kirori	1	D/C	51	HVPNL	POWERGRID	HVPNL	Twin Moose		Polymer Insulator	
15	400kV	Jind-Kirori	2	D/C	51	HVPNL	POWERGRID	HVPNL	Twin Moose		Polymer Insulator	
16	400kV	Khedar-Kirori	1	D/C	6.2	HVPNL	HPGCL	HVPNL	Twin Moose		Conventional	Presently there is no planning of replacment
17	400kV	Khedar-Kirori	2	D/C	6	HVPNL	HPGCL	HVPNL	Twin Moose			
18	400kV	Khedar-Nuhiawali	1	D/C	114	HVPNL	HPGCL	HVPNL	Twin Moose		Conventional	Existing disc insulator are of Porcelain
19	400kV	Nuhiawali-Fatehabad	1	D/C	78	HVPNL	HVPNL	POWERGRID	Twin Moose		Conventional	
C. PDD (Jammu & Kashmir)												
1	400kV	Baglihar(stage 1)-Kishenpur	1	D/C	68	JK PDD	JKSPDCL	POWERGRID	Twin Moose		Conventional	
2	400kV	Baglihar(stage 1)-Kishenpur	2	D/C	68	JK PDD	JKSPDCL	POWERGRID	Twin Moose		Not Available	
D. PSTCL												
1	400kV	Behman Jassa- HMEL	1	D/C	17	PSTCL	PSTCL	PSTCL	Twin Moose		Not Available	
2	400kV	Behman Jassa- HMEL	2	D/C	17	PSTCL	PSTCL	PSTCL	Twin Moose		Not Available	
3	400kV	Behman Jassa- Moga	1	S/C	113	PSTCL	PSTCL	PSTCL	Twin Moose	After LILO of 400 KV TSPL to 400 KV Moga at 400 KV Behman Jassa Singh	Not Available	
4	400kV	Makhu-Amritsar	1	D/C	64	PSTCL	PSTCL	PSTCL	Twin Moose		Partial (10%)	
5	400kV	Makhu-Amritsar	2	D/C	64	PSTCL	PSTCL	PSTCL	Twin Moose		Partial (10%)	
6	400kV	Muktsar-Makhu	1	D/C	96	PSTCL	PSTCL	PSTCL	Twin Moose		Conventional	
7	400kV	Muktsar-Makhu	2	D/C	96	PSTCL	PSTCL	PSTCL	Twin Moose		Conventional	
8	400kV	Nakodar-Makhu	1	D/C	52	PSTCL	PSTCL	PSTCL	Twin Moose		Conventional	
9	400kV	Nakodar-Makhu	2	D/C	52	PSTCL	PSTCL	PSTCL	Twin Moose		Conventional	
10	400kV	Nakodar-Moga	1	S/C	78	PSTCL	PSPCL	POWERGRID	Twin Moose		Not Available	LILO of 400kV Talwandi sabo-Nakodar at Moga
11	400kV	Rajpura-Dhuri	1	D/C	86	PSTCL	PSTCL	PSTCL	Twin Moose		Conventional	Lilo of Rajpura th-Dhuri 1 at 400kV Rajpura
12	400kV	Rajpura TPS- Rajpura	1	D/C	9	PSTCL	PSPCL	PSTCL	Twin Moose		Conventional	
13	400kV	Rajpura-Dhuri	2	D/C	86	PSTCL	PSTCL	PSTCL	Twin Moose		Conventional	Lilo of Rajpura th-Dhuri 2 at 400kV Rajpura
14	400kV	Rajpura TPS- Rajpura	2	D/C	9	PSTCL	PSPCL	PSTCL	Twin Moose		Not Available	
15	400kV	Rajpura TPS-Nakodar	1	D/C	139	PSTCL	PSPCL	PSTCL	Twin Moose		Conventional	
16	400kV	Rajpura TPS-Nakodar	2	D/C	139	PSTCL	PSPCL	PSTCL	Twin Moose		Conventional	
17	400kV	Talwandi Saboo- Dhuri	1	D/C	175	PSTCL	PSPCL	PSTCL	Twin Moose		Partial (22%)	
18	400kV	Talwandi Saboo- Dhuri	2	D/C	175	PSTCL	PSPCL	PSTCL	Twin Moose		Partial (22%)	
19	400kV	Talwandi Saboo- Behman Jassa	1	D/C	20	PSTCL	PSPCL	PSTCL	Twin Moose	After LILO of 400 KV TSPL to 400 KV Moga at 400 KV Behman Jassa Singh	Not Available	
20	400kV	Talwandi Saboo- Nakodar	1	D/C	180	PSTCL	PSPCL	PSTCL	Twin Moose		Conventional	
21	400kV	Talwandi Saboo- Muktsar	1	D/C	100	PSTCL	PSPCL	PSTCL	Twin Moose		Conventional	
22	400kV	Talwandi Saboo- Muktsar	2	D/C	100	PSTCL	PSPCL	PSTCL	Twin Moose		Conventional	
E. PTCUL												
1	400kV	Alaknanda(GVK)-Srinagar(PTCUL)	1	D/C	14	PTCUL	GVKPIL	PTCUL	Twin Moose		Conventional	
2	400kV	Alaknanda(GVK)-Srinagar(PTCUL)	2	D/C	14	PTCUL	GVKPIL	PTCUL	Twin Moose		Conventional	
3	400kV	Muradabad-Kashipur	1	S/C	108	PTCUL	UPPTCL	PTCUL	Twin Moose		Conventional	
4	400kV	Rishikesh-Nehtaur	1	D/C	124	PTCUL	PTCUL	UPPTCL	Twin Moose		Not Available	LILO of 400kV

5	400kV	Nehtaur-Kashipur	2	D/C	80	PTCUL	UPPTCL	PTCUL	Twin Moose		Not Available	Rishikesh-Kashipur
6	400kV	Roorkee-Rishikesh	1	S/C	50	PTCUL	POWERGRID	PTCUL	Twin Moose	LILO portion is of POWERGRID	Not Available	
7	400kV	Roorkee-Muzaffarnagar	1	S/C	71	PTCUL	POWERGRID	UPPTCL	Twin Moose		Not Available	
F. RRVPNL												
1	400kV	Ajmer-Bhilwara	1	D/C	160	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
2	400kV	Ajmer-Bhilwara	2	D/C	160	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
3	400kV	Akal-Barmer	1	S/C	124	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Conventional	
4	400kV	Akal-Jodhpur	1	S/C	225	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Conventional	
5	400kV	Akal-Ramgarh	1	D/C	99	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
6	400kV	Akal-Ramgarh	2	D/C	99	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
7	400kV	Anta-Chhabra	1	S/C	90	RRVPNL	RRVPNL	RVUNL	Quad Moose	Bypassed at Anta to form Chhabra-Kota(PG)	Not Available	
8	400kV	Anta-Chhabra SC	1	D/C	89	RRVPNL	RRVPNL	RVUNL	Quad Moose		Not Available	
9	400kV	Anta-Chhabra SC	2	D/C	89	RRVPNL	RRVPNL	RVUNL	Quad Moose		Not Available	
10	400kV	Anta-Kalisindh	1	D/C	80	RRVPNL	RRVPNL	RVUNL	Quad Moose		Not Available	
11	400kV	Anta-Kalisindh	2	D/C	80	RRVPNL	RRVPNL	RVUNL	Quad Moose		Not Available	
12	400kV	Anta-Kawai	1	D/C	50	RRVPNL	RRVPNL	Kawai(Adani)	Quad Moose		Not Available	
13	400kV	Anta-Kawai	2	D/C	50	RRVPNL	RRVPNL	Kawai(Adani)	Quad Moose		Not Available	
14	400kV	Anta-Kota (PG)	1	S/C	91	RRVPNL	RRVPNL	POWERGRID	Twin Moose	Bypassed at Anta to form Chhabra-Kota(PG)	Not Available	
15	400kV	Barmer-Bhinmal	1	D/C	144	RRVPNL	RRVPNL	POWERGRID	Twin Moose		Not Available	
16	400kV	Barmer-Bhinmal	2	D/C	144	RRVPNL	RRVPNL	POWERGRID	Twin Moose		Not Available	
17	400kV	Barmer-Jaisalmer-II (Bhaesada)	1	D/C	117	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
18	400kV	Barmer-Jaisalmer-II (Bhaesada)	2	D/C	117	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
19	400kV	Barmer-Rajwest	1	D/C	15	RRVPNL	RRVPNL	RAJWEST	Twin Moose		Conventional	
20	400kV	Bhadla-Jodhpur	1	D/C	106	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
21	400kV	Bhilwara-Chhabra	1	S/C	303	RRVPNL	RRVPNL	RVUNL	Twin Moose		Conventional	
22	400kV	Bhilwara-Chittorgarh(RRVPNL)	1	D/C	49	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
23	400kV	Bhilwara-Chittorgarh(RRVPNL)	2	D/C	49	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
24	400kV	Bikaner-Bhadla	1	D/C	189	RRVPNL	RRVPNL	RRVPNL	Quad Moose		Not Available	
25	400kV	Bikaner-Bhadla	2	D/C	189	RRVPNL	RRVPNL	RRVPNL	Quad Moose		Not Available	
26	400kV	Bikaner-Merta	1	S/C	172	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
27	400kV	Bikaner-Sikar(PG)	1	D/C	171	RRVPNL	RRVPNL	POWERGRID	Twin Moose		Not Available	
28	400kV	Bikaner-Sikar(PG)	2	D/C	171	RRVPNL	RRVPNL	POWERGRID	Twin Moose		Not Available	
29	400kV	Chhabra - Kawai SCTPS	1	S/C	45	RRVPNL	RVUNL	APRL	Twin Moose		Conventional	
30	400kV	Chhabra-Chhabra SC	1	D/C	2	RRVPNL	RRVPNL	RVUNL	Quad Moose		Not Available	
31	400kV	Chhabra-Chhabra SC	2	D/C	2	RRVPNL	RRVPNL	RVUNL	Quad Moose		Not Available	
32	400kV	Heerapura-Hindaun	1	S/C	192	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Conventional	
33	400kV	Hindaun-Chhabra	1	S/C	305	RRVPNL	RRVPNL	RVUNL	Twin Moose		Conventional	
34	400kV	Kakani (Jodhpur New)-Jodhpur	2	S/C	102	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
35	400kV	Kankani (Jodhpur New)-Akal	1	D/C	223	RRVPNL	RRVPNL	RRVPNL	Quad Moose		Not Available	
36	400kV	Kankani(Jodhpur New)-Jaisalmer-II(Bhainsra)	1	D/C	177	RRVPNL	RRVPNL	RRVPNL	Quad Moose	LILO of 400kV Kankani(Jodhpur New)-Akal ckt-2	Not Available	
37	400kV	Jaisalmer-II(Bhainsra)-Akal	1	D/C	61	RRVPNL	RRVPNL	RRVPNL	Quad Moose		Not Available	
38	400kV	Kankani (Jodhpur New)-Jodhpur	1	S/C	67	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
39	400kV	Kankani (Jodhpur New)-Merta	1	S/C	140	RRVPNL	RRVPNL	RRVPNL	Twin Moose	LILO of 400kV Jodhpur-Merta-1 at Kakani	Not Available	
40	400kV	Merta-Bhadla	1	D/C	175	RRVPNL	RRVPNL	RRVPNL	Twin Moose	LILO of 400kV Jodhpur-Merta-2 at Bhadla	Not Available	
41	400kV	Merta-Heerapura	1	S/C	175	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Conventional	
42	400kV	Merta-Ratangarh	1	S/C	173	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Conventional	

43	400kV	Phagi-Ajmer(RRVPNL)	1	D/C	109	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
44	400kV	Phagi-Ajmer(RRVPNL)	2	D/C	109	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
45	400kV	Phagi-Heerapura	1	D/C	52	RRVPNL	RRVPNL	RRVPNL	Quad Moose		Not Available	
46	400kV	Phagi-Heerapura	2	D/C	52	RRVPNL	RRVPNL	RRVPNL	Quad Moose		Not Available	
47	400kV	Rajwest - Kankani (Jodhpur New)	1	S/C	209	RRVPNL	RRVPNL	RRVPNL	Twin Moose	LILO of 400kV Jodhpur-Rajwest-I at Kakani	Not Available	
48	400kV	Rajwest-Jodhpur	1	D/C	209	RRVPNL	RWPL	RRVPNL	Twin Moose		Conventional	
49	400kV	Ramgarh-Bhadla	1	D/C	160	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
50	400kV	Ramgarh-Bhadla	2	D/C	160	RRVPNL	RRVPNL	RRVPNL	Twin Moose		Not Available	
51	400kV	Suratgarh-Bikaner	1	S/C	146	RRVPNL	RVUNL	RRVPNL	Twin Moose		Conventional	
52	400kV	Suratgarh-Ratangarh	1	S/C	144	RRVPNL	RVUNL	RRVPNL	Twin Moose		Conventional	
53	400kV	Suratgarh-Ratangarh	2	S/C	144	RRVPNL	RVUNL	RRVPNL	Twin Moose		Conventional	
54	400kV	Suratgarh-Suratgarh SC	1	S/C	2	RRVPNL	RVUNL	RVUNL	Quad Moose		Not Available	
55	400kV	Suratgarh SC-Bikaner	1	D/C	140	RRVPNL	RVUNL	RRVPNL	Twin Moose		Not Available	
56	400kV	Suratgarh SC-Bikaner	2	D/C	140	RRVPNL	RVUNL	RRVPNL	Twin Moose		Not Available	
G. UPPTCL												
1	400kV	Agra (Fatehbad)-Agra South	1	D/C	70	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
2	400kV	Agra (UP)-Agra(Fatehbad)	1	S/C	104	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	LILO of 400 kV Agra(UP)-Muradnagar(N) at Fatehabad(UP)
3	400kV	Agra UP-Unnao	1	S/C	279	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Partial (25%)	
4	400kV	Agra(Fatehbad)-Mathura	1	S/C	142	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
5	400kV	Agra(Fatehbad)-Mathura	2	D/C	151	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	LILO of 400 kV Fatehabad(UP)-Muradnagar at Mathura
6	400kV	Alakhnanda-Vishnuprayag	1	D/C	109	UPPTCL	GVKPIL	JPVL	Twin Moose		Not Available	
7	400kV	Aligarh-Mainpuri	1	D/C	93	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
8	400kV	Aligarh-Mainpuri	2	D/C	93	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
9	400kV	Aligarh-Muradnagar	1	S/C	177	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	*Series Compensated line (40%). It would be shifted
10	400kV	Aligarh-Sikandrabad	1	D/C	95	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
11	400kV	Aligarh-Harduaganj	1	S/C	40	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
12	400kV	AnparaB-AnparaC	1	D/C	0.05	UPPTCL	UPRVUNL	LANCO	Quad Moose		Conventional	
13	400kV	AnparaB-AnparaC	2	D/C	0.05	UPPTCL	UPRVUNL	LANCO	Quad Moose		Conventional	
14	400kV	AnparaB-AnparaD	1	D/C	5	UPPTCL	UPRVUNL	UPPTCL	Twin Moose		Not Available	
15	400kV	AnparaB-AnparaD	2	D/C	5	UPPTCL	UPRVUNL	UPPTCL	Twin Moose		Not Available	
16	400kV	AnparaB-Mau	1	S/C	262	UPPTCL	UPRVUNL	UPPTCL	Twin Moose		Partial (13%)	
17	400kV	AnparaB-Obra B	1	S/C	40	UPPTCL	UPRVUNL	UPPTCL	Twin Moose		Partial	
18	400kV	AnparaB-Sarnath	1	D/C	158	UPPTCL	UPRVUNL	UPPTCL	Twin Moose		Partial	
19	400kV	AnparaB-Sarnath	2	D/C	158	UPPTCL	UPRVUNL	UPPTCL	Twin Moose		Conventional	
20	400kV	Ataur-Hapur	1	D/C	52	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
21	400kV	Ataur-Hapur	2	D/C	52	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
22	400kV	Ataur-Indirapuram	1	D/C	15	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
23	400kV	Ataur(UP)-Noida Sec 123(UP)	1	D/C	19	UPPTCL	UPPTCL	UPPTCL	Quad Moose (LILO portion Twin HTLS)	LILO of 400 KV ATAUR-INDIRAPURAM CKT-II at 400 KV NOIDA SECTOR 123	Not Available	
24	400kV	Indirapuram(UP)-Noida Sec 123(UP)	1	D/C	17	UPPTCL	UPPTCL	UPPTCL	Quad Moose (LILO portion Twin HTLS)		Not Available	
25	400kV	Azamgarh-Mau	1	S/C	48	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Partial (79%)	
26	400kV	Azamgarh-Tanda	1	D/C	153	UPPTCL	UPPTCL	NTPC	Twin Moose		Not Available	
27	400kV	Badaun-Sambhal	1	D/C	77	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
28	400kV	Badaun-Sambhal	2	D/C	77	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
29	400kV	Banda-Orai	1	D/C	108	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	

30	400kV	Banda-Orai	2	D/C	108	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
31	400kV	Banda-Rewa road	1	D/C	177	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
32	400kV	Banda-Rewa road	2	D/C	177	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
33	400kV	Bara-Meja	1	D/C	32	UPPTCL	UPPTCL	MUNPL	Quad Moose		LILO of 400kV Bara-Rewa road D/C at Meja	
34	400kV	Bara-Meja	2	D/C	32	UPPTCL	UPPTCL	MUNPL	Quad Moose			
35	400kV	Bareilly UP-Unnao	1	D/C	271	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Partial (15%)	*Series Compensated line (45%)
36	400kV	Bareilly UP-Unnao	2	D/C	271	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Partial (15%)	*Series Compensated line (45%)
37	400kV	Gorakhpur UP-Azamgarh	1	S/C	90	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Partial (76%)	
38	400kV	Gr. Noida(765)-Sector 148	1	D/C	47	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
39	400kV	Gr. Noida(765)-Sector 148	2	D/C	47	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
40	400kV	Gr. Noida-Gr. Noida (765)	1	D/C	45	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
41	400kV	Gr. Noida-Gr. Noida (765)	2	D/C	45	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
42	400kV	Gr.Noida-Sikandrabad	1	D/C	17	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
43	400kV	Gr.Noida-Sikandrabad	2	D/C	17	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
44	400kV	Hapur-Dasna	1	D/C	14	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
45	400kV	Hapur-Dasna	2	D/C	14	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
46	400kV	Hapur-Moradabad	1	S/C	109	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
47	400kV	Hapur-Muradnagar	1	S/C	28	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
48	400kV	Harudaganj-Sikandarabad	1	S/C	115	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
49	400kV	Mainpuri(UP)-Mainpuri(PG)	1	D/C	25	UPPTCL	UPPTCL	POWERGRID	Twin Moose		Not Available	LILO of 400kV Orai-Mainpuri(PG) at Mainpuri(UP)
50	400kV	Mainpuri(UP)-Mainpuri(PG)	2	D/C	26	UPPTCL	UPPTCL	POWERGRID	Twin Moose		Not Available	
51	400kV	Meja-Musauli	1	D/C	65	UPPTCL	MUNPL	UPPTCL	Quad Moose		Not Available	
52	400kV	Meja-Rewa road	1	D/C	45	UPPTCL	MUNPL	UPPTCL	Quad Moose		Not Available	
53	400kV	Muradnagar New- Mathura	1	D/C	246	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	LILO of 400 kV Fatehabad(UP)-Muradnagar at Mathura
54	400kV	Muradnagar-Ataur	2	D/C	18	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
55	400kV	Musauli-Rewa road	1	D/C	34	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
56	400kV	Muzaffarnagar-Alakhnanda	1	D/C	189	UPPTCL	UPPTCL	GVKPIL	Twin Moose		Not Available	
57	400kV	Muzaffarnagar-Ataur	1	D/C	121	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
58	400kV	Muzaffarnagar-Vishnuprayag	1	D/C	280	UPPTCL	UPPTCL	JPVL	Twin Moose		Conventional	
59	400kV	Noida Sec 148 - Noida Sec 123	1	D/C	20	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
60	400kV	Noida Sec 148 - Noida Sec 123	2	D/C	20	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
61	400kV	Noida Sec 148-Noida Sec 123	1	D/C	20	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
62	400kV	Noida Sec 148-Noida Sec 123	2	D/C	20	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
63	400kV	Obra-Rewa road	1	S/C	179	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
64	400kV	Obra-Sultanpur	1	S/C	230	UPPTCL	UPRVUNL	UPPTCL	Twin Moose		Conventional	
65	400kV	Obra B - Obra C	1	S/C	1	UPPTCL	UPRVUNL	UPRVUNL	Twin Moose		Not Available	
66	400kV	Orai-Mainpuri(UP)	1	D/C	176	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
67	400kV	Orai-Mainpuri(UP)	2	D/C	176	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
68	400kV	Orai-Paricha	1	D/C	111	UPPTCL	UPPTCL	UPRVUNL	Twin Moose		Not Available	
69	400kV	Orai-Paricha	2	D/C	111	UPPTCL	UPPTCL	UPRVUNL	Twin Moose		Not Available	

70	400kV	Panki-Aligarh	1	S/C	285	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Partial (24%)	
71	400kV	Rewa road -Panki	1	S/C	210	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	LILO of Bara-Panki at 400kV Rewa Road
72	400kV	Rosa-Badaun	1	D/C	85	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
73	400kV	Rosa-Badaun	2	D/C	85	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
74	400kV	Sarnath-Azamgarh	1	S/C	97	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
75	400kV	Lucknow_1(PG)-Mohanlalganj (PGYTL)	1	S/C	58	UPPTCL	POWERGRID	UPPTCL	Twin Moose	LILO of 400kV LUCKNOW(PG)-	Conventional	
76	400kV	Sultanpur(UP)-Mohanlalganj (PGYTL)	1	S/C	133	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Conventional	
77	400kV	Sultanpur-Tanda	1	D/C	103	UPPTCL	UPPTCL	NTPC	Twin Moose		Not Available	
78	400kV	Tanda-Basti	1	D/C	44	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
79	400kV	Tanda-Basti	2	D/C	44	UPPTCL	UPPTCL	UPPTCL	Quad Moose		Not Available	
80	400kV	Mohanlalganj (PGYTL)-Unnao(UP)	1	S/C	104	UPPTCL	UPPTCL	UPPTCL	Twin Moose	LILO of 400 KV SAROJANI	Partial (13%)	Status after LILO?
81	400kV	Lucknow(UP)-Mohanlalganj (PGYTL)	1	S/C	89	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Partial (13%)	
82	400kV	Unnao-Panki	1	S/C	49	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Partial (41%)	
83	400kV	Varanasi-Jaunpur	1	D/C	73	UPPTCL	POWERGRID	UPPTCL	Twin Moose		Not Available	
84	400kV	Varanasi-Jaunpur	2	D/C	73	UPPTCL	POWERGRID	UPPTCL	Twin Moose		Not Available	
85	400kV	Jaunpur (UP)-Obra_B(UP)	1	D/C	177	UPPTCL	UPPTCL	UPPTCL	Twin Moose	After LILO of 400 KV	Not Available	
86	400kV	Obra_C_TPS(UP)-Jaunpur (UP)	1	D/C	176	UPPTCL	UPPTCL	UPPTCL	Twin Moose	OBRA B- OBRA-C CKT-	Not Available	
87	400kV	Sambhal-Rampur	1	D/C	74	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
88	400kV	Sambhal-Rampur	2	D/C	74	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
89	400kV	Simbholi-Meerut_PMSTL	1	D/C	29	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
90	400kV	Simbholi-Meerut_PMSTL	2	D/C	29	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
91	400kV	Simbholi_PMSTL (UP)-Muradnagar_2(UP)	1	D/C	71	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
92	400kV	Simbholi_PMSTL (UP)-Muradnagar_2(UP)	2	D/C	71	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
93	400kV	Panki-Panki_TPS	1	S/C	1	UPPTCL	UPPTCL	UPPTCL	Twin Moose		Not Available	
H. PJFTL												
1	400kV	Firozabad-Jawaharpur	1	D/C	40	PJFTL	PJFTL	UPRVUNL	Quad Moose	Anti-theft charging	Not Available	
2	400kV	Firozabad-Jawaharpur	2	D/C	40	PJFTL	PJFTL	UPRVUNL	Quad Moose	from Firozabad(PJFTL)	Not Available	
3	400kV	Agra South-Firozabad PJFTL	1	D/C	79	PJFTL	UPPTCL	PJFTL	Twin Moose	LILO of 400kV Agra South-Agra Fatehabad ckt-2 at Firozabad PJFTL	Not Available	
4	400kV	Agra(Fatehabad)-Firozabad PJFT	1	D/C	79	PJFTL	UPPTCL	PJFTL	Twin Moose		Not Available	
I. GTL												
1	400kV	Kanpur(PG)-Ghatampur_TPS(UP)	1	D/C	49	GTL	POWERGRID	UPPTCL	Twin Moose	Antitheft charging from	Not Available	
2	400kV	Kanpur(PG)-Ghatampur_TPS(UP)	2	D/C	49	GTL	POWERGRID	UPPTCL	Twin Moose	Kanpur(PG) Upto DEAD	Not Available	
J. HPPTCL												
1	400kV	Lahal-Chamba	1	D/C	35	HPPTCL	HPPTCL	POWERGRID	Twin Moose		Not Available	
2	400kV	Lahal-Chamba	2	D/C	35	HPPTCL	HPPTCL	POWERGRID	Twin Moose		Not Available	
K. NTPC JV												
1	400kV	Dadri-Loni (Harsh Vihar)	1	D/C	54	NTPC	NTPC	DTL	Twin Moose		Polymer	
2	400kV	Dadri-Loni (Harsh Vihar)	2	D/C	54	NTPC	NTPC	DTL	Twin Moose		Polymer	
L. MTSCL												
1	400kV	Ajmer-Deedwana	1	S/C	110	MTSCL	RRVPNL	MTSCL	Twin Moose		Not Available	
2	400kV	Bikaner-Deedwana	1	S/C	129	MTSCL	RRVPNL	MTSCL	Twin Moose		Conventional	
M. Aravali Transmission Service Company Ltd (ATSCL)												
1	400kV	Alwar-Hindaun	1	S/C	96	ATSCL	ATSL	RRVPNL	Twin Moose		Not Available	Partly owned by Aravali Transmission Services lLtd.
N. BBMB												
1	400kV	Dehar-Rajpura	1	S/C	129	BBMB	BBMB	PSTCL	Twin Morkulla+ LILO portion is of twin moose	Dehar-Bhiwani LILOed at Rajpura	Antifog	LILO of Dehar-Bhiwani at Rajpura
2	400kV	Bhiwani(BBMB)-Rajpura	1	S/C	213	BBMB	BBMB	PSTCL		Dehar-Bhiwani LILOed at Rajpura	Antifog	

3	400kV	Dehar-Panchkula	1	S/C	125	BBMB	BBMB	POWERGRID	Twin Morkulla+ LILO portion is of twin moose	POWERGRID owned LILO portion of 9.034Km	Antifog	LILO of Dehar-Panipat at Panchkula
4	400kV	Panchkula-Panipat	1	S/C	155	BBMB	POWERGRID	BBMB			Antifog	
OTHER DEDICATED LINES												
A. THDC												
1	400kV	Aligarh-Khurja	1	D/C	35	THDC	POWERGRID	THDC	Twin Moose		Not Available	
2	400kV	Aligarh-Khurja	2	D/C	35	THDC	POWERGRID	THDC	Twin Moose		Not Available	
5. 400kV Transmission Line charged at 220kV												
STATE LINES												
A. RRVPNL												
1	400kV charged at 220kV	Dholpur-Hindaun	1	S/C	100	RRVPNL	RRVUNL	RRVPNL	Twin Moose		Conventional	
2	400kV charged at 220kV	Kota-KTPS	1	D/C	7	RRVPNL	POWERGRID	RRVUNL	Twin Moose		Conventional	
3	400kV charged at 220kV	Kota-KTPS	2	D/C	7	RRVPNL	POWERGRID	RRVUNL	Twin Moose		Conventional	

* - Fixed series capacitor (FSC) is owned by POWERGRID

National Load Despatch Centre
Import Capability of Punjab for November 2024

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st November 2024 to 30th November 2024	00-24	10300	500	9800	5497	4303		https://www.punjabsldc.org/ATC_TTC.aspx
Limiting Constraints		N-1 contigency of 400/220KV ICT at Rajpura, Ludhiana, Jalandhar, Muktsar Loading close to N-1 contingency limits of 400/220kV Patran, Malerkotla and Patiala ICTs 220 kV underlying network at Jalandhar, Ludhiana and Amritsar						

National Load Despatch Centre
Import Capability of Uttar Pradesh for November 2024

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st November 2024 to 30th November 2024	00-24	17300	600	16700	10165	6535		https://www.upsldc.org/documents/20182/0/ttc_atc_24-11-16/4c79978e-35f2-4aef-8c0f-7f30d878dbde
Limiting Constraints	N-1 contingency of 400/220kV Obra, Allahabad(PG), Gorakhpur (UP), Agra(PG), Lucknow (PG) ICTs							

National Load Despatch Centre
Import Capability of Haryana for November 2024

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st November 2024 to 30th November 2024	00-24	10300	300	10000	5418	4582		https://hvpn.org.in/#/atcttc
Limiting Constraints	N-1 contingency of 400/220kV ICT at Deepalpur, Hisar, Kabulpur and Panipat(BBMB)							

National Load Despatch Centre
Import Capability of Rajasthan for November 2024

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st November 2024 to 30th November 2024	00-24	7600	600	7000	5755	1245		https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads
Limiting Constraints	N-1 contingency of 400/220kV Heerapura, Jodhpur, Bikaner, Ajmer, Merta, Hindaun and Ratangarh ICTs							

National Load Despatch Centre
Import Capability of Delhi for November 2024

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st November 2024 to 30th November 2024	00-24	7300	300	7000	4810	2190		https://www.delhisldc.org/resources/atcttcreport.pdf
Limiting Constraints	N-1 contingency of 400/220kV Mundka, HarshVihar and Bawana (bus-split) ICTs.							

National Load Despatch Centre
Import Capability of Uttarakhand for November 2024

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st November 2024 to 30th November 2024	00-24	1700	100	1600	1402	198		https://uksldc.in/ttc-atc
Limiting Constraints		N-1 contingency of 400/220kV Kashipur ICTs. High loading of 220kV Roorkee-Roorkee and 220kV CBGanj-Pantnagar lines						

National Load Despatch Centre
Import Capability of HP for November 2024

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st November 2024 to 30th November 2024	00-24	1680	100	1580	1130	450		https://hpsldc.com/mrm_category/ttc-atc-report/
Limiting Constraints		High loading of 220kV Hamirpur-Hamirpur D/C. Overloading of 2*200MVA Kunihar transformers						

National Load Despatch Centre
Import Capability of J&K for November 2024

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st November 2024 to 30th November 2024	00-24	2800	100	2700	1977	723		
Limiting Constraints		N-1 contigency of 400/220KV ICTs at Amargarh 220 kV underlying network at Amargarh, Wagoora						

National Load Despatch Centre
Import Capability of Chandigarh for November 2024

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st November 2024 to 30th November 2024	00-24	400	20	380	342	38		
Limiting Constraints		N-1 contigency of 220kV Nallagarh-Kishengarh						

Grid Event summary for September 2024

S.No.	Category of Grid Incident/ Disturbance (GI-I to GD-V)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Duration (hh:mm)	Event (As reported)	Energy Unserved due to Generation loss (MU)	Energy Unserved due to Load loss (MU)	Loss of generation / loss of load during the Grid Disturbance		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Disturbance		Antecedent Generation/Load in the Regional Grid		Fault Clearance time (in ms)
					Date	Time	Date	Time					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)	
1	GI-1	1)220 KV Dehar(BBMB)-Kangoo(HP) (HP) Ckt-1 2)220 KV Dehar-Ganguwal (BBMB) Ckt-2 3)132 KV Dehar(BBMB)-Kangoo(HP) (HPPTCL) Ckt	Himachal Pradesh	HPPTCL, BBMB	5-Sep-24	11:40	5-Sep-24	13:30	01:50	i)400/220kV Dehar(BBMB) has double main bus arrangement at 400kV voltage level and single bus arrangement at 220kV voltage level. ii)As reported, at 11:40 hrs, 220 KV Dehar-Gangukwal (BBMB) Ckt-2 tripped on R-N phase to earth fault with fault distance of 16.28km and fault current of Ir=~4.8kA from Dehar end. Line tripped on zone-1 distance protection from Dehar end. iii)At the same time 132 KV Dehar(BBMB)-Kangoo(HP) (HPPTCL) Ckt & 220 KV Dehar(BBMB)-Kangoo(HP) (HP) Ckt-1 also tripped from Dehar end. 220 KV Dehar(BBMB)-Kangoo(HP) (HP) Ckt-1 tripped on backup protection. Reason of tripping of 132 KV Dehar(BBMB)-Kangoo(HP) (HPPTCL) Ckt is yet to be received. iv)As per PMU at Panchkula(PG), R-N phase to earth fault with fault clearing time of 120 msec is observed. v)As per SCADA, change in demand of approx. 90 MW is observed in HP control area.	0	0.165	0	90	0.000	0.138	58567	65019	120
2	GD-1	1)220 KV Khodri(UK)-Majri/Giri(HP) (UK) Ckt-1 2)220 KV Khodri(UK)-Majri/Giri(HP) (UK) Ckt-2 3)220 KV Khodri(UK)-Sarsawan(UP) (UP) Ckt 4)220 KV Khodri – Jhajra (UK) Ckt 5)30 MW Khodri Unit-1 6)30 MW Khodri Unit-2 7)30 MW Khodri Unit-3 8)30 MW Khodri Unit-4 9)60 MW Chhibro Unit-1 10)60 MW Chhibro Unit-2 11)60 MW Chhibro Unit-3 12)60 MW Chhibro Unit-4 13)11.25 MW Dhakrani Unit-2 14)11.25 MW Dhakrani Unit-3 15)30 MW Giri – Unit-1	Uttarakhand & Himachal Pradesh	HPPTCL, PTCUL	5-Sep-24	11:54	5-Sep-24	12:25	00:31	i)During antecedent condition, all the four 30MW units of Khodri HEP, all four 60 MW units of Chhibro HEP, 11.25MW Unit-2 & Unit-3 of Dhakrani HEP and both 30 MW units of Giri HEP were running and total active power generation of Khodri HEP, Chhibro HEP, Dhakrani HEP & Giri HEP were approx. 90 MW, 200 MW, 19 MW & 58 MW (as per SCADA). Total generation of Chhibro HEP was evacuating through 220 KV Khodri-Chhibro (UK) Ckt-1 & 2. 11.25 MW Unit-1 of Dhakrani HEP and 220 KV Saharanpur(UP)-Khodri(UK) (UP) Ckt were not in service during the event. ii)As reported, at 11:54 hrs, 220 KV Khodri(UK)-Sarsawan(UP) (UP) Ckt tripped on R-N phase to earth fault with fault distance of 44 km & 61 km and fault current of 2.5 kA & 2 kA from Khodri(UK) and Sarsawan(UP) end respectively. Line tripped on zone-1 distance protection from both ends. iii)At the same time, 220 KV Khodri(UK)-Majri/Giri(HP) (UK) D/C tripped on over voltage protection from both the ends and 30 MW Giri – Unit-1 & 220 KV Khodri – Jhajra (UK) Ckt also tripped (exact reason of tripping is yet to be received). iv)Due to tripping of 220kV lines from Khodri(UK) end, all the four 30MW units of Khodri(UK), all four 60 MW units of Chhibro(UK) and 11.25MW Unit-2 & Unit-3 of Dhakrani(UK) tripped due to loss of evacuation path. v)As per PMU at Saharanpur(PG), R-N phase to earth fault with fault clearing time of 80msec is observed. vi)Due to tripping all 220kV lines at Khodri(UK) and all generating Units at Khodri HEP(UK), Chhibro HEP(UK) and Dhakrani HEP(UK), blackout occurred at 220kV Khodri(UK), 220kV Chhibro(UK) & 132kV Dhakrani(UK). vii) As per SCADA, change in demand and generation of approx. 50 MW and 308 MW respectively in Uttarakhand control area. However, SLDC-Uttarakhand reported generation loss of approx. 307 MW and load loss of approx. 29 MW in Uttarakhand control area. viii)As per SCADA, change in demand and generation of approx. 140 MW and 28 MW in HP control area. However, SLDC-HP reported load loss of approx. 160 MW in HP control area.	0	0.098	335	189	0.573	0.290	58456	65133	80
3	GD-1	1)220 KV Meerut(PG)-Nara(UP) (PG) Ckt 2)220 KV Nara(UP)-Roorkee(UK) (UP) Ckt 3)220 KV Nara-Jansath (UP) Ckt 4)220 KV Nara-Muzaffarnagar (UP) Ckt 5)200/132kV 160MVA ICT-1 at Nara(UP) 6)200/132kV 200MVA ICT-2 at Nara(UP)	Uttar Pradesh	PGCIL, UPPTCL, PTCUL	10-Sep-24	13:18	10-Sep-24	14:05	00:47	i)220kV Nara(UP) has main and transfer bus scheme at 220kV level. ii)As reported, at 13:18 hrs, due to lightning and inclement weather conditions, R-N phase to earth fault occurred on 220kV main bus which led to bus bar protection operation at Nara(UP) S/s. iii)Due to bus bar protection operation, all elements connected to 220kV main bus i.e. 220 KV Meerut(PG)-Nara(UP) (PG) Ckt, 220 KV Nara(UP)-Roorkee(UK) (UP) Ckt, 220 KV Nara-Jansath (UP) Ckt, 220 KV Nara-Muzaffarnagar (UP) Ckt, 200/132kV 160MVA ICT-1 & 200MVA ICT-2 tripped at Nara(UP) S/s which led to blackout at 220kV Nara(UP) S/s. iv)As per PMU at Roorkee(PG), R-N phase to earth fault with delayed fault clearance time of 320msec is observed. v)As per SCADA, change in demand of approx. 120 MW & 60 MW in UP and Uttarakhand control area respectively. However, SLDC-UP has reported load loss of approx. 208 MW in UP control area.	0	0.21	0	268	0.000	0.407	59493	65808	320
4	GD-1	1)220 KV Khodri(UK)-Majri/Giri(HP) (UK) Ckt-2 2)220 KV Khodri(UK)-Majri/Giri(HP) (UK) Ckt-1 3)220 KV Khodri(UK)-Sarsawan(UP) (UP) Ckt 4)220 KV Khodri – Jhajra (UK) Ckt 5)220 KV Khodri(UK)-Saharanpur(UP) (UP) Ckt 6)30 MW Khodri Unit-1 7)30 MW Khodri Unit-2 8)30 MW Khodri Unit-3 9)30 MW Khodri Unit-4 10)60 MW Chhibro Unit-1 11)60 MW Chhibro Unit-2 12)60 MW Chhibro Unit-3 13)60 MW Chhibro Unit-4 14)11.25 MW Dhakrani Unit-2 15)11.25 MW Dhakrani Unit-3 16)220kV Khodri-Chibro (UK) Ckt-1 17)220kV Khodri-Chibro (UK) Ckt-2	Uttarakhand, Himachal Pradesh & Uttar Pradesh	HPPTCL, PTCUL, UPPTCL	11-Sep-24	08:17	11-Sep-24	08:39	00:22	i)During antecedent condition, all the four 30MW units of Khodri HEP, all four 60 MW units of Chhibro HEP, 11.25MW Unit-2 & Unit-3 of Dhakrani HEP and both 30 MW units of Giri HEP were running and total active power generation of Khodri HEP, Chhibro HEP, Dhakrani HEP & Giri HEP were approx. 90 MW, 200 MW, 19 MW & 58 MW (as per SCADA). Total generation of Chhibro HEP was evacuating through 220 KV Khodri-Chhibro (UK) Ckt-1 & 2. 11.25 MW Unit-1 of Dhakrani HEP was not in service during the event. ii)As reported, at 08:17 hrs, B-phase LA of HV side of 220/132kV 100 MVA ICT burst which caused B-N phase to earth fault. On this fault, 220/132kV 100 MVA ICT didn't trip (exact reason yet to be received). iii)On this fault, all four 30MW units of Khodri HEP & all four 60 MW units of Chhibro HEP tripped on over current protection. 220 KV Khodri(UK)-Giri(HP) (UK) Ckt-2 tripped on directional earth fault protection from Giri(HP) end. iv)220kV lines from Khodri(UK) to Giri(HP) ckt-1, Sarsawan(UP), Jhajra(UK), Chibro(UK) ckt-1 & 2 and Saharanpur(UP) ckt tripped on zone-2 distance protection operation from remote end. It is reported that, at Khodri(UK) end, time setting in zone-4 distance protection is kept at 1000msec. Due to more time delay in zone-4 distance protection at Khodri(UK) end as compared to time delay of zone-2 distance protection of remote ends, all 220kV lines (except 220 KV Khodri(UK)-Giri(HP) (UK) Ckt-2) from Khodri(UK) S/s tripped from remote ends. v)At the same time, 11.25 MW Dhakrani Unit-2 & Unit-3 also tripped (exact reason of tripping is yet to be received). vi)As per PMU at Saharanpur(PG), B-N phase to earth fault with delayed fault clearing time of 440 msec is observed. vii) Due to tripping all 220kV lines at Khodri(UK) and all generating Units at Khodri HEP(UK), Chhibro HEP(UK) and Dhakrani HEP(UK), blackout occurred at 220kV Khodri(UK), 220kV Chhibro(UK) & 132kV Dhakrani(UK). viii)As per SCADA, change in demand and generation of approx. 50 MW and 310 MW respectively in Uttarakhand control area. However, SLDC-Uttarakhand reported generation loss of approx. 308 MW and load loss of approx. 38 MW in Uttarakhand control area. ix)As per SCADA, change in demand of approx. 195 MW in HP control area.	0	0.085	308	233	0.603	0.403	51107	57813	440
5	GI-2	1)400 KV Obra_C_TPS-Obra_B (UP) Ckt 2)400 KV Jaunpur -Obra_C_TPS (UP) Ckt 3)660MW OBRA C_TPS(UP) - UNIT 1	Uttar Pradesh	UPPTCL	11-Sep-24	10:03	11-Sep-24	11:05	01:02	i)765/400kV Obra-C TPS(UP) has one and half breaker bus scheme at 400kV & 765kV level. ii)During antecedent condition, 660 MW Unit-1 at Obra-C TPS was generating approx. 350 MW and 400 KV Jaunpur -Obra_C_TPS (UP) Ckt was anti-theft charged from Obra-C end. iii)As reported, at 10:03 hrs, 400 KV Jaunpur -Obra_C_TPS (UP) Ckt tripped on R-N phase to earth fault with fault current of Ir=~6.8kA and fault distance of approx. 35.49km from Obra-C TPS(UP) end. Line tripped on zone-1 distance protection from Obra-C end. iv)At the same time, 400 KV Obra_C_TPS-Obra_B (UP) Ckt tripped on over current protection from Obra-B end. During the event, the current recorded was approx. Ir=~7.5kA at Obra-B end. It is reported that over current protection is enabled with current setting of 2kA and time setting of definite time characteristic without any time delay at Obra-B end for 400 KV Obra_C_TPS-Obra_B (UP) Ckt. v) Due to tripping of 400 KV Obra_C_TPS-Obra_B (UP) Ckt, both 100MVA station transformers became dead with led to tripping of 660 MW Obra C_TPS(UP) – Unit-1 due to disruption in auxiliary supply of Unit-1. It is reported that, auxiliary supply of 660 MW Unit-1 at Obra-C TPS is tapped from both 100 MVA STFs(station transformer) and 40 MVA UAT(Unit auxiliary transformer) which does not provide the redundancy in the auxiliary supply of 660 MW Unit-1 at Obra-C TPS. vi)As per PMU at Anpara(UP), R-N phase to earth fault with fault clearance time of 80 msec is observed. vii)As per DR of Obra-B end of 400 KV Obra_C_TPS-Obra_B (UP) Ckt, line tripped on over current protection with max current observed was approx. Ir=~7.5kA. viii) As per SCADA, no change in demand of UP control area. However, SLDC-UP has reported generation loss of approx. 350 MW at Obra-C TPS (as per SCADA also).	0	0	350	0	0.597	0.000	58587	64190	80
6	GI-2	1)400/220 kV 500 MVA ICT 1 at Akal(RS) 2)400/220 kV 500 MVA ICT 2 at Akal(RS) 3)400/220 kV 315 MVA ICT 3 at Akal(RS) 4)400/220 kV 500 MVA ICT 4 at Akal(RS) 5)220 KV Akal-Giral Ckt 6)220 KV Akal-Amarsagar Ckt 7)220kV Akal-Bhensara Ckt-1 8)220kV Akal-Bhensara Ckt-2	Rajasthan	RRVPNL	13-Sep-24	02:49	13-Sep-24	05:01	02:12	i)400/220kV Akal(RS) has one and half breaker scheme at 400kV level and double main and transfer bus scheme at 220kV level. ii)During antecedent condition, 400/220 kV 500 MVA ICT-1 & ICT-2 were connected to 400kV bus-1 and 400/220 kV 315 MVA ICT-3 & 500 MVA ICT-4 were connected to 400kV bus-2. iii)As reported, at 02:49 hrs, Y-phase jumper of 220kV bus-1 of 220kV Akal-Bhensara Ckt-1 and R-phase jumper of 220kV bus-2 of 220KV Akal-Bhensara Ckt-2 snapped which created bus fault on both 220kV buses at Akal(RS). iv)On this fault, 400/220 kV 500 MVA ICT-1, ICT-2 tripped on earth fault protection and 400/220 kV 315 MVA ICT-3 & 500 MVA ICT-4 tripped on over current protection at Akal(RS) S/s. 220kV lines from Akal(RS) to Giral & Amarsagar tripped on zone-4 distance protection from Akal(RS) end. v)220kV Akal-Bhensara Ckt-1 tripped only from Bhensara end on zone-2 distance protection on R-Y phase to phase fault with fault distance of 53.2km and with fault current of Ir=~2.87kA & Iy=~2.88kA. vi) 220kV Akal-Bhensara Ckt-2 tripped only from Bhensara end on zone-1 distance protection on R-Y-B three phase fault with fault current of Ir=~1.6kA, Iy=~1.2kA & Ib=~5.9kA. vii) As per PMU at Bhadla(PG), R-B phase to phase fault converted into R-Y-B three phase fault with delayed fault clearance time of 1120 msec is observed. viii)Due to tripping of all four ICTs at Akal(RS), evacuation path lost for all the wind power plants connected at 220kV bus-1 & bus-2 at Akal(RS). On this, both 220kV buses became dead at Akal(RS) S/s. ix)During this event, dip in Rajasthan wind generation of approx. 1295 MW is observed out of which approx. 170 MW recovered within 13 minutes. (As per SCADA). x)As per SCADA, no change in demand is observed in Rajasthan control area.	0	0	1125	0	2.579	0.000	43616	52184	1120
7	GD-1	1)220 kV Bhadla(PG)-Azure Power 34 Solar(APTFL) (APTFL) Ckt	Rajasthan	PGCIL, APTFL	13-Sep-24	13:15	13-Sep-24	20:10	06:55	i)Generation of 220/33kV Azure Power 34 (APTFL) (IP) station evacuates through 220 kV Bhadla(PG)-Azure Power 34 Solar(APTFL) (APTFL) Ckt. During antecedent condition, Azure Power 34 (APTFL) (IP) station was generating approx. 132MW (as per PMU). ii)As reported, at 13:05hrs, 220 kV Bhadla(PG)-Azure Power 34 Solar(APTFL) (APTFL) Ckt tripped due to B-N phase to earth fault (B phase jumper broken); fault sensed in zone-1 from APTFL end (exact reason and location of fault yet to be shared). iii)Due to tripping of 220 kV Bhadla(PG)-Azure Power 34 Solar(APTFL) (APTFL) Ckt, Azure Power 34 (APTFL) (IP) S/s lost its connectivity from grid and blackout occurred at 220/33kV Azure Power 34 (APTFL) (IP) S/s. iv)As per PMU at Bhadla(PG), R-Y phase to phase fault is observed with fault clearing time of 80ms. Voltage dipped upto 0.881 p.u. at Bhadla(PG). v)As per PMU, solar generation loss of approx. 132 MW is observed at Azure Power 34 (APTFL) (IP). vi)As per SCADA, during this event, dip in solar generation of approx. 770 MW is observed in NR control area. vii)Due to a significant dip in RE generation, frequency dropped by 0.13 Hz (from 50.229 Hz to 50.099 Hz). viii)As per SCADA, no change in demand is observed in Rajasthan control area.	0	0	770	0	1.302	0.000	59120	60174	80
8	GD-1	1)220kV Park Street-Pragati (DTL) Ckt-1 2)220kV Park Street-Pragati (DTL) Ckt-2	Delhi	DTL	17-Sep-24	15:05	17-Sep-24	15:18	00:13	i)220kV Park Street(DTL) S/s has double main bus arrangement at 220kV level. 220kV Dev Nagar(DTL) has only one 220kV line i.e. 220kV Dev Nagar-Park Street (DTL) Ckt. ii)During antecedent condition, incoming power at Park Street(DTL) through 220kV Park Street-Pragati (DTL) Ckt-1 & 2 were approx. 175 MW & 110 MW respectively. 220kV bus coupler was in open condition. iii)As reported, power flow was not equal in 220kV Park Street-Pragati (DTL) Ckt-1 & Ckt-2 before 15:05 hrs. At 15:05 hrs, 220kV bus coupler was attempted to close at Park Street(DTL) S/s to make equal power flow in both circuits and to avoid over loading of 220kV Park Street-Pragati (DTL) Ckt-1. iv)As 220kV bus coupler closed at Park Street(DTL) S/s, 220kV Park Street-Pragati (DTL) Ckt-1 tripped only from Park Street(DTL) end on over current protection which led to complete shifting of power flow of 220kV Park Street-Pragati (DTL) Ckt-1 to 220kV Park Street-Pragati (DTL) Ckt-2. Due to over loading, 220kV Park Street-Pragati (DTL) Ckt-2 also tripped from Pragati(DTL) end on over current protection. v)Due to tripping of 220kV Park Street-Pragati (DTL) Ckt-1 & Ckt-2, blackout occurred at 220kV Park Street(DTL) and 220kV Dev Nagar(DTL). vi)As per PMU at Maharani Bagh(PG), no fault is observed in the system. However, fluctuation in voltage was observed. vii)As per SCADA, change in demand of approx. 330 MW is observed in Delhi control area. However, SLDC-Delhi has reported load loss of approx. 290 MW.	0	0.063	0	290	0.000	0.452	58751	64228	NA

S.No.	Category of Grid Incident/ Disturbance	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Duration (hh:mm)	Event (As reported)	Energy Unserved due to Generation loss (MU)	Energy Unserved due to Load loss (MU)	Loss of generation / loss of load during the Grid Disturbance		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Disturbance		Antecedent Generation/Load in the Regional Grid		Fault Clearance time (in ms)
	(GI-1 to GD-V)				Date	Time	Date	Time					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)	
9	GI-2	1)400 KV Agra-Unnao (UP) Ckt 2)400 KV Unnao(UP)-Jehta_Hardoi Road (UP) (PG) Ckt-1 3)400/220 kV 315 MVA ICT 3 at Unnao(UP) 4)400 KV Bareilly-Unnao (UP) Ckt-2 5)765/400 kV 1000 MVA ICT 1 at Unnao(UP) 6)400KV Bus 2 at Unnao(UP) 7)406 BUS COUPLER BAY - 400KV BUS 1 AT UNNAO(UP) AND 400KV BUS 2 AT UNNAO(UP)	Uttar Pradesh	UPPTCL	17-Sep-24	20:09	17-Sep-24	22:15	02:06	i)765/400/220kV Unnao(UP) has double main and transfer bus scheme at 400kV level. ii)During antecedent condition, 400kV lines from Unnao(UP) to Agra(UP), Jehta_Hardoi Road(UP) & Bareilly Ckt-1 and 765/400 kV 1000 MVA ICT-1 & 400/220kV 315 MVA ICT-3 were connected to 400kV bus-2 at unnao(UP) S/s. iii)As reported, at 20:09 hrs, B-N phase to earth fault occurred on 400 kV Agra-Unnao (UP) Ckt with fault distance of approx. 174km & 86km from Agra(UP) and Unnao(UP) end respectively. Line tripped from Agra(UP) end on receiving DT from Unnao(UP) end but B-phase pole of line CB could not properly open from Unnao(UP) end which led to LBB operation in bay of 400 kV Agra-Unnao (UP) Ckt at Unnao(UP) end. iv)On LBB operation at Unnao(UP) S/s, all elements connected to 400kV bus-2 (400kV lines from Unnao(UP) to Agra(UP), Jehta_Hardoi Road(UP) & Bareilly Ckt-1 and 765/400 kV 1000 MVA ICT-1 & 400/220 kV 315 MVA ICT-3) tripped at Unnao(UP) S/s. v)As per PMU at Unnao(UP), B-N phase to earth fault with delayed fault clearance time of 520msec is observed. vi)As per SCADA, no change in demand of UP control area.	0	0	0	0	0.000	0.000	48097	65626	520
10	GI-1	1)220kV Mehrauli (DTL)- DIAL Ckt-1 2)220kV Tughlakabad-Mehrauli (DTL) Ckt-1 3)220kV Tughlakabad-Mehrauli (DTL) Ckt-2	Delhi	DTL	18-Sep-24	11:59	18-Sep-24	12:05	00:06	i)During antecedent condition, incoming power at Mehrauli(DTL) through 220kV Tughlakabad-Mehrauli (DTL) Ckt-1 & 2 were approx. 90 MW each and outgoing power from Mehrauli(DTL) to DIAL through 220kV Mehrauli (DTL)- DIAL Ckt-1 was approx. 27 MW. 220kV Mehrauli (DTL)- DIAL Ckt-2 was not in service. ii)As reported, at 11:59 hrs, 220kV Mehrauli (DTL)- DIAL Ckt-1 tripped on Y-B phase to phase fault (exact reason and location of fault is yet to be received). iii)Due to this fault, 220kV Tughlakabad-Mehrauli (DTL) Ckt-1 & 2 also tripped sensing the fault in zone-2 at Mehrauli end (exact reason yet to be shared). iv)As per PMU at Ballabhgarh(PG), Y-B phase to phase fault with fault clearing time of 80msec is observed. v)As per SCADA, change in demand of approx. 245MW is observed in Delhi control area. vi)During the same time, a dip in solar generation of approx. 740 MW is also observed in NR control area (as per SCADA) (inverter tripping details yet to be shared). vii)As reported by SLDC Delhi, at 12:05 hrs, supply at Mehrauli restored through 220 KV Vasant Kunj – Mehrauli (DTL) Ckt-1 & 2.	0	0.025	0	245	0.000	0.378	61973	64761	80
11	GI-1	1)220 KV Khodri(UK)-Majri/Giri(HP) (UK) Ckt-2 2)220 KV Khodri(UK)-Majri/Giri(HP) (UK) Ckt-1 3)220kV Khodri-Chibro (UK) Ckt-2 4)30 MW Khodri Unit-1 5)30 MW Khodri Unit-2 6)30 MW Khodri Unit-3	Uttarakhand & Himachal Pradesh	PTCUL, HPPTCL	19-Sep-24	11:53	19-Sep-24	12:20	00:27	i)During antecedent condition, all the four 30MW units of Khodri HEP & all four 60 MW units of Chhibro HEP were running and total active power generation of Khodri HEP & Chhibro HEP were approx. 90 MW & 200 MW (as per SCADA). Total generation of Chhibro HEP was evacuating through 220 KV Khodri-Chhibro (UK) Ckt-1 & 2. Loading of 220 KV Khodri(UK)-Majri(HP) (UK) D/C was approx. 145 MW. 30 MW Khodri Unit-3, 220 KV Khodri(UK)-Majri(HP) (UK) Ckt-1 & 220kV Khodri-Chibro (UK) Ckt-2 connected to 220kV bus-1 and other elements connected to 220kV bus-2 at Khodri HEP. ii)As reported, at 11:53 hrs, 220 KV Khodri(UK)-Majri(HP) (UK) Ckt-2 tripped on R-N phase to earth fault with fault current of Ir=~7kA & Ir=~1.7kA and fault distance of approx. 15.7km & 25.4km from Khodri HEP(UK) & Giri(HP) end respectively. iii)On this fault, 30MW Unit-1, 2 & 3 of Khodri HEP tripped on over current protection. Due to tandem connection of Khodri HEP and Chibro HEP, generation at Chibro HEP backed down by approx. 160 MW within 8 minutes. iv)As reported, CB of 30 MW Unit-3 of Khodri HEP took approx. 210 msec in opening process which led to LBB operation of 30 MW Unit-3 bay at Khodri HEP. On LBB operation, 220 KV Khodri(UK)-Majri(HP) (UK) Ckt-1 and 220kV Khodri-Chibro (UK) Ckt-2 also tripped from Khodri HEP end. v)As per PMU at Saharanpur(PG), R-N phase to earth fault with fault clearing time of 80 msec is observed. vi)As per SCADA, generation loss of approx. 70 MW in Uttarakhand control area. vii) As per SCADA and SLDC-HP, load loss of approx. 160 MW in HP control area.	0	0.072	70	160	0.114	0.257	61190	62208	80
12	GI-2	1)800 kV HVDC Kurukshetra(PG) Pole-01 2)800 kV HVDC Kurukshetra(PG) Pole-02	Haryana	PGCIL	20-Sep-24	16:05	20-Sep-24	17:14	01:09	i)During antecedent condition, 800 kV HVDC Kurukshetra(PG) Pole-1, 2, 3 & 4 were carrying approx. 250 MW each and hence total 1000 MW power was flowing from Champa to Kurukshetra. ii)As reported at 16:05 hrs, 800 kV HVDC Kurukshetra (PG) Pole-1 & 2 blocked due to tripping of AC filters at Champa end. (Reason of tripping of filters and bipole-1 only need to be shared.) iii)As 800 kV HVDC Kurukshetra(PG) Pole-1 and Pole-2 blocked, power flow of Pole-1 and Pole-2 shifted on Pole-3 and Pole-4 hence, there was no reduction in power order. iv)As per PMU, no fault is observed in the system. However, fluctuation in voltage was observed. v)As per SCADA, no change in demand of Haryana control area.	0	0	0	0	0.000	0.000	56131	62857	NA
13	GI-2	1)400/220 kV 500 MVA ICT 1 at Jaisalmer(RS) 2)400/220 kV 500 MVA ICT 2 at Jaisalmer(RS) 3)220KV Jaisalmer(RS)-Renew Solar Ckt 4)220KV Jaisalmer(RS)-Fortum Solar Ckt 5)220kV Jaisalmer(RS)-Akal Ckt-1 6)220kV Jaisalmer(RS)-Akal Ckt-2 7)220kV Jaisalmer(RS)-ACME Aklera Ckt 8)220kV Jaisalmer(RS)-Clean Solar Ckt 9)220kV Jaisalmer(RS)-NTPC Renewable Ckt	Rajasthan	RRVPNL, NTPC	20-Sep-24	12:00	20-Sep-24	13:02	01:02	i)400/220kV Jaisalmer(RS) has one and half breaker scheme at 400kV level and double main and transfer bus scheme at 220kV level. ii)During antecedent condition, Renew Solar, Fortum Solar, NTPC Renewable, ACME Aklera and Clean solar was injecting approx. 107 MW, 240 MW, 160 MW, 260 MW and 250 MW respectively to Jaisalmer(RS) at 220kV level. Active power was going out to Akal(RS) through 220kV Jaisalmer(RS)-Akal Ckt-1 & 2 carrying approx. 235 MW each. 400/220 kV 500 MVA ICT 1 & 2 at Jaisalmer(RS) were carrying approx. 282 MW and 268 MW respectively from 220kV level to 400kV level. iii)As reported, at 12:00 hrs, Y-phase jumper of 220kV Jaisalmer -Akal Ckt-2 broke at Jaisalmer end. iv)At the same time, bus bar protection operated at 220kV level of Jaisalmer and all the elements connected at 220kV level of Jaisalmer tripped and both the 220kV buses became dead. v)As per PMU at Fatehgarh3(PG), Y-N phase to earth fault with delayed fault clearance time of 600 msec is observed. vi)During this event, as per SCADA, solar generation loss of approx. 1070 MW is observed in Rajasthan control area. Dip in total solar generation of approx. 1790 MW is observed in NR control area out of which 980 MW is recovered within 3 minutes. vii)As per SCADA, no change in demand is observed in Rajasthan control area.	0	0	1790	0	4.104	0.000	43616	52184	600
14	GD-1	1)220/33 kV 100 MVA ICT 3 at Mahindra SL_BHD_PG (MAHINDRA) 2)220 KV Bhadla(PG)-Mahindra SL_BHD_PG (MAHINDRA) (MAHINDRA) Ckt 3)220/33 kV 100 MVA ICT 1 at Mahindra SL_BHD_PG (MAHINDRA) 4)220/33 kV 100 MVA ICT 2 at Mahindra SL_BHD_PG (MAHINDRA)	Rajasthan	PGCIL, MRPL_IP	21-Sep-24	02:58	21-Sep-24	04:37	01:39	i)220kV Mahindra Solar(IP) S/s has double main bus arrangement at 220kV level. ii)During antecedent condition, no solar generation at 220kV Mahindra Solar(IP). 220/33kV 100MVA ICT-3 and 33kV/415V 300kVA auxillary transformer were connected on the same 33kV bus at Mahindra Solar(IP). iii)As reported at 02:58 hrs, Y-B doble phase to earth fault occurred on 33kV/415V 300kVA auxiliary transformer which led to tripping of 220/33kV 100MVA ICT-3 on earth fault protection at Mahindra Solar(IP) S/s. iv)At the same time, 220/33kV 100MVA ICT-1 & ICT-2 and 220 KV Bhadla(PG)-Mahindra SL_BHD_PG (MAHINDRA) (MAHINDRA) Ckt tripped on master trip relay operation (exact reason for operation of master trip relay is yet to be received). v)As per PMU at MRPL(IP), Y-B double phase to earth fault is observed with fault clearing time of 80msec. vi)As per SCADA, no generation loss at 220kV Mahindra Solar(IP) S/s and no change in demand of Rajasthan control area (as per SCADA).	0	0	0	0	0.000	0.000	46731	62228	80
15	GI-1	1) 220 KV Hissar(BB)-Hissar IA(HV) (HVPNL) Ckt-1 2) 220 KV Hissar(BB)-Hissar IA(HV) (HVPNL) Ckt-2 3) 220 KV Hissar-Sangrur (BB) Ckt-1 4) 220 KV Hissar-Sangrur (BB) Ckt-2 5) 220kV Bus-1 at Hissar(BB)	Haryana	BBMB, HVPNL	23-Sep-24	09:44	23-Sep-24	12:54	03:10	i)220/132/33kV Hissar(BB) S/s has double main bus scheme at 220kV level. ii)As reported, at 09:44hrs, Y-phase clamp of 220 KV Hissar-Sangrur (BB) Ckt-2 burnt and jumper snapped. iii)During the same time, all the lines connected at 220kV Bus-1 at Hissar(BB) also tripped (Exact reason yet to be shared). iv)As per DR and details received, 220 KV Hissar-Sangrur (BB) Ckt-1 & 2 tripped from Sangrur end only sensing the fault in zone-2. Fault current was 966.2A and 1.036kA respectively and fault distance was 169.2km and 167.1km respectively from Sangrur end. v)220 KV Hissar(BB)-Hissar IA(HV) (HVPNL) Ckt-1 tripped from Hissar(BB) end only sensing the fault in zone-4. Fault current was 4.984kA and fault distance was 468.2m from Hissar(BB) end. vi)220 KV Hissar(BB)-Hissar IA(HV) (HVPNL) Ckt-2 tripped from both the ends sensing the fault in zone-4 at Hissar(BB) end and zone-2 at Hissar IA(HV) end. Fault current was 3.676kA and 4.392 kA and fault distance was 0m and 5.022km from Hissar(BB) and Hissar IA(HV) end respectively. vii)Due to tripping of all the elements connected to bus-1, 220kV Bus-1 at Hissar(BB) became dead. viii)As per PMU at Hissar(PG), R-N phase to earth fault (phase sequence issue observed) with delayed fault clearing time of 360ms is observed. ix)As per SCADA, change in demand of approx. 75MW is observed in Haryana control area.	0	0.238	0	75	0.000	0.102	62338	73243	360
16	GD-1	1) 400 KV Bareilly-Unnao (UP) Ckt-1 2) 400 KV Bareilly-Unnao (UP) Ckt-2 3) 400 KV Mohanlalganj (PGYTL)-Unnao(UP) (PGYTL) Ckt 4) 400 KV Agra-Unnao (UP) Ckt 5) 400 KV Unnao-Panki (UP) Ckt 6) 400 KV Unnao(UP)-Jehta_Hardoi Road (UP) (PG) Ckt-1 7) 400 KV Unnao(UP)-Jehta_Hardoi Road (UP) (PG) Ckt-2 8) 400/220 kV 315 MVA ICT 1 at Unnao(UP) 9) 400/220 kV 500 MVA ICT 2 at Unnao(UP) 10) 400/220 kV 315 MVA ICT 3 at Unnao(UP) 11) 765/400 kV 1000 MVA ICT 1 at Unnao 765(UP) 12) 765/400 kV 1000 MVA ICT 2 at Unnao 765(UP) 13) 765/400 kV 1000 MVA ICT 3 at Unnao 765(UP) 14) 765 KV Obra_C TPS-Unnao 765(UP) Ckt 15) 765 KV Anpara_C(LAN)-Unnao 765(UP) (UP) Ckt	Uttar Pradesh	UPPTCL, PGCIL, LANCO	23-Sep-24	19:52	23-Sep-24	22:09	02:17	i)During antecedent condition, 400 kV Unnao-Agra(UP) Ckt was charged through transfer bus coupler at Unnao end which was coupled to 400kV Bus-1. ii)As reported, at 19:52 hrs, due to blast in B-phase circuit breaker of transfer bus coupler, bus fault occurred at Unnao, but bus bar protection didn't operate (exact reason yet to be shared and bus bar relay is of static type). iii)As per DR, distance protection relay in most of the lines sensed fault in zone-4 at Unnao end and in 400 KV Unnao(UP)-Jehta_Hardoi Road (UP) (PG) Ckt-1 remote end sensed fault in zone-2. 400 KV Unnao-Panki (UP) Ckt, line tripped on SOTF after unsuccessful A/R from Panki end (reason of the same not identified yet, suspected due to overreach of Z-1 DPR at Panki end as per DR). iv)400/220 kV 315 MVA ICT 1 & 3 and 500 MVA ICT-2 at Unnao(UP) and 765/400 kV 1000 MVA ICT 1, 2 & 3 at Unnao 765(UP) tripped on O/C E/F protection operation (after 700 ms to 900 ms). v)As all the elements connected at both the buses tripped, complete blackout occurred at 400/220kV Unnao(UP) S/s. vi)During the same time, 765kV Unnao-Anpara-C Ckt and 765kV Unnao-Obra-C Ckt tripped on over-voltage protection operation and complete blackout occurred at 765/400kV Unnao 765(UP) S/s. As per DR and event logger details, DT received at Anpara-C and Obra-C end. vii)As per PMU at Abdullapur(PG), B-N phase to earth fault with delayed fault clearing time of 560 ms is observed. Maximum MW loading of 400 kV Anpara-TH-Obra-B Ckt reached upto ~1042 MW as per PMU at Anpara-TH end. viii)Due to contingency related to overloading of 400 kV Anpara-Obra B line, "SPS for safe evacuation of Generation of Anpara Complex" operated and thermal backing of approximately 1200 MW imposed on Anpara-TH, C & D. As per SPS log received from Anpara-D: At 19:52:39:100 hrs: Case-1 of SPS operated, At 19:52:44:100 hrs: Case-2 of SPS operated, At 19:52:45:100 hrs: Again Case-1 of SPS operated. ix)As per information received from Anpara-D, at 19:53:11 hrs, 200 MW backdown started at Unit-7 however, it was not executed as observed from SCADA data (exact reason yet to be received). As per event logger details received, at 19:53:15 hrs, Unit-7 switched to manual mode from Auto mode. x)As reported by Anpara-D, SPS backing command could not be executed in Unit-6 as machine was already kept in manual mode due to disturbance in parameters. During SPS Case-2 execution, Anpara-C GT-1 or GT-2 didn't trip though SPS command was sent (exact reason yet to be received from Anpara-C). xi)As per SCADA, change in demand of approx. 700 MW is observed in UP control area and generation backdown of ~510MW at Anpara C (between 19:52 hrs-20:00 hrs) and ~325MW at Anpara-TH & ~75MW at Anpara-D (between 20:00 hrs-20:15 hrs) are also observed.	0	1.598	0	700	0.000	0.963	55163	72675	560

S.No.	Category of Grid Incident/ Disturbance	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Duration (hh:mm)	Event (As reported)	Energy Unserved due to Generation loss (MU)	Energy Unserved due to Load loss (MU)	Loss of generation / loss of load during the Grid Disturbance		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Disturbance		Antecedent Generation/Load in the Regional Grid		Fault Clearance time (in ms)
	(GI-I to GD-V)				Date	Time	Date	Time					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)	
17	GD-1	1) 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 2) 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2	Delhi	DTL, PGCIL	24-Sep-24	12:52	24-Sep-24	13:01	00:09	i)220kV Narela(DTL) S/s has double main bus arrangement at 220kV level. ii)During antecedent condition, incoming power at Narela(DTL) through 220 KV Mandola(PG)-Narela(DV) (DTL) D/C was approx. 330MW. 220 KV Mandola(PG)-Narela(DV) (DTL) D/C was feeding load of 220kV Narela(DTL) and 220kV DSIDC(DTL). 220 KV Mandola(PG)-Narela(DV) (DTL) D/C, 220kV Narela-DSIDC (DTL) D/C, 220/66kV 100MVA ICT-1, ICT-2 & ICT-3 were connected to 220kV bus-2 at Narela(DTL) S/s. 220kV DSIDC-Bawana (DTL) D/C was not in service. 220kV bus coupler was in open condition at Narela(DTL) S/s. iii)As reported, at 12:52hrs, 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2 tripped on B-N phase to earth fault with fault distance of 8.47km from Narela end. As per DR, 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2 tripped on B-N phase to earth fault with fault current of Ib=~7.9kA & Ib=~8.9kA from Narela(DTL) and Mandaula(PG) end respectively. Line tripped on zone-1 distance protection from both ends. A/R operation not observed from both ends (exact reason of fault is yet to be received). iv)Due to tripping of 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2, complete load shifted on 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1. 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 also tripped approx. 75 seconds after the tripping of 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2 on Y-B-N double phase to earth fault. (exact reason and location of fault is yet to be received). v)As per DR of 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1, B-N phase to earth fault converted into Y-B-N double phase to earth fault is observed with fault current of Ib=~3.7kA & Iy=~2.8kA and Ib=~9.4kA & Iy=~10.6kA from Narela(DTL) and Mandaula(PG) end respectively. Line tripped on zone-1 distance protection from Narela(DTL) end and on zone-2 distance protection from mandaula(PG) end. A/R initiated at Narela(DTL) end. vi)As per PMU at Maharani Bagh(PG), B-N phase to earth fault followed by B-N phase to earth fault converted into Y-B phase to phase fault with fault clearing time of 120msec and 240msec is observed. vii)Due to tripping of 220 KV Mandola(PG)-Narela(DV) (DTL) D/C, 220/66kV 100MVA ICT-1, ICT-2 & ICT-3 at 220kV Narela(DTL) S/s and complete 220kV DSIDC(DTL) S/s became dead which led to blackout of 220kV DSIDC(DTL) S/s. viii)As per SCADA, change in demand of approx. 300 MW is observed in Delhi control area. However, SLDC-Delhi has reported load loss of approx. 338 MW. ix)During the tripping event, 220MW load of 220kV DSIDC Bawana(DTL) and 118MW load of 220kV Narela(DTL) got affected. At 13:01 hrs, 220kV DSIDC-Bawana (DTL) D/C closed and load of 220kV DSIDC(DTL) S/s normalized (as per SLDC-Delhi).	0	0.051	0	338	0.000	0.420	65983	80387	240
18	GD-1	1) 220 kV Fatehabad(PG)-Fatehabad(HR) (HVPNL) Ckt-1 2) 220 kV Fatehabad(PG)-Fatehabad(HR) (HVPNL) Ckt-2 3) 220 kV Hissar(PG)-Fatehabad(HR) (HVPNL) Ckt-1 4) 220 kV Hissar(PG)-Fatehabad(HR) (HVPNL) Ckt-2 5) 220 kV Rania-Fatehabad(HR) Ckt 6) 220kV Bus-1 at Fatehabad(HR) 7) 220kV Bus-2 at Fatehabad(HR) 8) 220/132kV ICT-1 at Fatehabad(HR) 9) 220/132kV ICT-2 at Fatehabad(HR) 10) 220/132kV ICT-3 at Fatehabad(HR)	Haryana	PGCIL, HVPNL	29-Sep-24	19:41	29-Sep-24	20:40	00:59	i)220/132kV Fatehabad(HR) S/s has double main bus scheme at 220kV level. ii)As reported, at 19:41hrs, R phase CT of 220kV Bus Coupler at Fatehabad(HR) blasted which led to bus bar protection operation at both the buses of 220kV level at Fatehabad(HR). iii)Due to tripping of all the connected elements to both the buses at 220kV Fatehabad(HR), supply lost to 132kV level also and complete blackout occurred at 220/132kV Fatehabad(HR) S/s. iv)As per PMU at Hissar(PG), R-N phase to earth fault with fault clearing time of 120ms is observed. v)As per SCADA, change in demand of approx. 190MW is observed in Haryana control area.	0	0.187	0	190	0.000	0.285	50716	66734	120

Annexure-B.IV

S. No.	Name of Transmission Element Tripped	Owner/ Utility	Outage		Load Loss/ Gen. Loss	Brief Reason (As reported)	Category as per CEA Grid standards	# Fault Clearance Time (>100 ms for 400 kV and 160 ms for 220 kV)	*FIR Furnished (YES/NO)	DR/EL provided in 24 hrs (YES/NO)	Other Protection Issues and Non Compliance (inference from PMU, utility details)	Suggestive Remedial Measures	Remarks
			Date	Time									
1	400 KV Bara(UP)-Meja TPS(MUN) (UP) Ckt-1	UPPTCL	01-Sep-24	06:05	Nil	PLCC maloperation	NA	NA	YES (After 24 hrs)	YES (After 24 hrs)	No fault in system		As per PMU and DR (Bara end), no fault is observed.
2	800 KV HVDC Kurukshetra(PG) Pole-2	POWERGRID	02-Sep-24	11:29	Nil	Maloperation of Relay	NA	NA	YES (After 24 hrs)	YES			As per PMU, fluctuation in voltage is observed. As reported, Pole-2 tripped on DC differential protection in Lane 2 due to DCCT maloperation at Champa end.
3	800 KV HVDC Kurukshetra(PG) Pole-2	POWERGRID	02-Sep-24	21:53	Nil	Tripped due to CAT-A1 protection operated at Kurukshetra end.	NA	NA	YES (After 24 hrs)	YES			As per PMU, fluctuation in voltage is observed. As reported, CAT A1 alarm appeared in SCADA. After analysing apex logs it was found that tripping was initiated from VBE (responsible for firing thyristors) panel.
4	800 KV HVDC Agra-Bishwanath Chariali (PG) Ckt-1	POWERGRID	05-Sep-24	05:22	Nil	Earth fault	NA	NA	YES (After 24 hrs)	YES (After 24 hrs)			As per PMU, fluctuation in voltage is observed. As reported, line tripped on DC line fault.
5	765 KV Agra-Gwalior (PG) Ckt-1	POWERGRID	11-Sep-24	19:22	Nil	Phase to earth fault Y-N	NA	NA	YES	YES			As per PMU and DR (Agra end), Y-N fault and unsuccessful auto-reclosing observed.
6	765 KV Agra-Gwalior (PG) Ckt-1	POWERGRID	12-Sep-24	18:07	Nil	Phase to earth fault R-N	NA	NA	YES	YES			As per PMU and DR (Agra end), R-N fault and unsuccessful auto-reclosing observed.
7	220 KV Auraiya(NT)-Malanpur(MP) (PG) Ckt-1	POWERGRID	14-Sep-24	19:49	Nil	Phase to earth fault B-N	NA	1320 ms	NO	NO	No A/R operation		As per PMU, Y-N fault occurred and delayed clearance of 1320ms with no auto-reclosing observed.
8	800 KV HVDC Kurukshetra(PG) Pole-1	POWERGRID	16-Sep-24	21:11	Nil	Maloperation of Relay	GI-2	NA	YES (After 24 hrs)	YES (After 24 hrs)			As per PMU, fluctuation in voltage is observed. As reported, Pole-1 and Pole-3 blocked Due to Control interface card(CIB) failed in pole 1 and generated Cat-B in Pole-3.
9	800 KV HVDC Kurukshetra(PG) Pole-03	POWERGRID	16-Sep-24	21:11	Nil	Maloperation of Relay		NA	YES (After 24 hrs)	YES (After 24 hrs)			
10	800 KV HVDC Kurukshetra(PG) Pole-1	POWERGRID	20-Sep-24	16:05	Nil	Tripped due to AC filter tripping at Champa.	GI-2	NA	YES (After 24 hrs)	YES (After 24 hrs)			As per PMU, fluctuation in voltage is observed. As reported, Pole -1 and Pole-2 blocked due to tripping of AC filters at Champa end.
11	800 KV HVDC Kurukshetra(PG) Pole-2	POWERGRID	20-Sep-24	16:05	Nil	Tripped due to AC filter tripping at Champa.		NA	YES (After 24 hrs)	YES (After 24 hrs)			
12	220 KV Modak(RS)-Bhanpura(MP) (MPSEB) Ckt-1	MPSEB	22-Sep-24	09:22	Nil	Phase to earth fault B-N	NA	NA	YES (After 24 hrs)	NO			As per PMU, fluctuation in voltage is observed. As reported, 132 KV B phase CT of 132 KV B/ Coupler got bursted at 220kV Modak(RS). DR not received.
13	220 KV Auraiya(NT)-Mehgaon(MP) (MPSEB) Ckt-1	POWERGRID	24-Sep-24	05:42	Nil	Phase to earth fault B-N	NA	240 ms	NO	YES (After 24 hrs)	No A/R operation		As per PMU and DR (Auraiya end), B-N fault occurred and delayed clearance of 240ms with no auto-reclosing observed. Successful A/R operation is observed from Mehgaon end.
14	220 KV Auraiya(NT)-Malanpur(MP) (PG) Ckt-1	POWERGRID	25-Sep-24	09:41	Nil	Phase to earth fault B-N	NA	NA	NO	YES	No A/R operation		As per PMU and DR (Auraiya end), B-N fault occurred with no auto-reclosing observed. Time sync issue in DR of Auraiya end.
15	400 KV Vindhyachal(PG)-Vindhyachal(NT) (PG) Ckt-1	POWERGRID	26-Sep-24	10:27	Nil	400kV Vindhyachal(NTPC) - Vindhyachal(PG) feeder#1 (AWL-1 feeder) opened at 10:27Hrs from NTPC end, resulting is tripping of HVDC Block#1 due to loss of voltage. Problem at NTPC end.	NA	NA	YES (After 24 hrs)	NO	No fault in system		As per PMU, fluctuation in voltage is observed. As reported, line tripped due to loss of voltage caused by 400KV Vindhyachal(NTPC)-Vindhyachal HVDC feeder-1 (AWL-1 feeder) opened from NTPC Vindhyachal end. Problem at NTPC Vindhyachal end. DR not received.
16	132 KV Rihand(UP)-Garwa(JS) (UP) Ckt-1	UPPTCL	27-Sep-24	18:49	Nil	Phase to earth fault Y-N	NA	NA	YES	YES			As per DR (Rihand end), Y-N phase to earth fault is observed. (.dat/.cfg) DR file not received.
17	132 KV Rihand(UP)-Garwa(JS) (UP) Ckt-1	UPPTCL	27-Sep-24	23:16	Nil	Phase to earth fault B-N	NA	NA	YES	YES			As per DR (Rihand end), B-N phase to earth fault is observed. (.dat/.cfg) DR file not received.
18	800 KV HVDC Kurukshetra(PG) Pole-4	POWERGRID	29-Sep-24	00:20	Nil	Pole-4 blocked from Kurukshetra on DC Differential Protection due to Control card failure.	NA	NA	YES (After 24 hrs)	YES (After 24 hrs)			As per PMU, fluctuation in voltage is observed. As reported, Pole -4 tripped on DC Differential Protection due control card malfunction/failure at Kurukshetra end.

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

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

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

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

Reporting of Violation of Regulation for various issues for above tripping

1	Fault Clearance time(>100ms for 400kV and >160ms for 220kV)	1. CEA Grid Standard-3.e 2. CEA Transmission Planning Criteria
2	DR/EL Not provided in 24hrs	1. IEGC 37.2(c) 2. CEA Grid Standard 15.3
3	FIR Not Furnished	1. IEGC 37.2(b) 2. CEA Grid Standard 12.2 (Applicable for SLDC, ALDC only)
4	Protection System Mal/Non Operation	1. CEA Technical Standard of Electrical Plants and Electric Lines: 43.4.A 2. CEA (Technical Standards for connectivity to the Grid) Regulation, 2007: Schedule Part 1. (6.1, 6.2, 6.3)
5	A/R non operation	1. CEA Technical Standard of Electrical Plants and Electric Lines: 43.4.C 2. CEA Technical Planning Criteria

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

Time Period: 1st September 2024 - 30th September 2024

S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value		%	Value		%	Value		%	
1	AD HYDRO	2	1	50	1	0	50	1	0	50	1	0	50	
2	ALTRA XERGI POWER PVT LTD	1	1	100	1	0	100	1	0	100	1	0	100	
3	ANTA-NT	2	1	50	1	0	50	1	0	50	1	0	50	
4	APTFL	1	1	100	1	0	100	1	0	100	1	0	100	
5	AURAIYA-NT	4	4	100	2	0	50	2	0	50	4	0	100	
6	BAIRASUIL-NH	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
7	BANDERWALA_TPSL	2	2	100	2	0	100	2	0	100	2	0	100	
8	BBMB	51	9	18	11	18	33	11	19	34	9	7	20	
9	CHAMERA-I-NH	2	2	100	2	0	100	2	0	100	2	0	100	
10	CPCC1	68	1	1	2	14	4	2	14	4	1	0	1	
11	CPCC2	29	0	0	0	8	0	0	8	0	0	0	0	Details received
12	CPCC3	37	2	5	2	3	6	0	3	0	3	0	8	
13	DHAULIGANGA-NH	1	1	100	1	0	100	1	0	100	1	0	100	
14	ESUCRL	1	1	100	1	0	100	1	0	100	1	0	100	
15	GRIAN ENERGY PRIVATE LIMITED	2	2	100	2	0	100	2	0	100	2	0	100	
16	JHAJJAR	3	0	0	0	2	0	0	2	0	2	0	67	
17	KHURJA STPP	3	3	100	3	0	100	3	0	100	3	0	100	DR, EL & Tripping report not submitted
18	KISHENGANGA-NH	1	1	100	1	0	100	1	0	100	1	0	100	
19	KOLDAM-NT	1	1	100	1	0	100	1	0	100	1	0	100	
20	KOTESHWAR	1	1	100	1	0	100	1	0	100	1	0	100	
21	MAHINDRA	9	9	100	9	0	100	9	0	100	9	0	100	
22	NAPP	2	0	0	0	0	0	0	0	0	0	0	0	Details received
23	PKTSL	1	0	0	0	1	0	0	1	0	0	0	0	

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

Time Period: 1st September 2024 - 30th September 2024

S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value		%	Value		%	Value		%	
24	RAPPA	2	0	**0**	2	0	**100**	2	0	**100**	0	0	**0**	DR, EL & Tripping report not submitted
25	RAPPB	3	0	**0**	0	0	**0**	0	0	**0**	1	0	**33**	
26	RAPPC	3	2	**67**	3	0	**100**	3	0	**100**	3	0	**100**	
27	RENEW SURYA ROSHNI PRIVATE	4	4	**100**	4	0	**100**	4	0	**100**	4	0	**100**	
28	RENEW SURYA VIHAAN PRIVATE LIMITED	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**	
29	RENEW SURYARAVI (RSRPL)	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**	
30	RIHAND-NT	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**	
31	SEWA-2-NH	4	4	**100**	4	0	**100**	4	0	**100**	4	0	**100**	
32	SHREE CEMENT	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**	
33	SLDC-CHD	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**	
34	SLDC-DV	17	0	**0**	4	3	**29**	0	3	**0**	0	0	**0**	
35	SLDC-HP	21	0	**0**	19	2	**100**	19	2	**100**	0	0	**0**	
36	SLDC-HR	23	4	**17**	4	7	**25**	4	6	**24**	4	1	**18**	
37	SLDC-JK	17	0	**0**	15	2	**100**	15	2	**100**	11	6	**100**	
38	SLDC-PS	28	2	**7**	15	6	**68**	14	3	**56**	20	0	**71**	
39	SLDC-RS	50	23	**46**	34	0	**68**	34	0	**68**	34	0	**68**	
40	SLDC-UK	36	0	**0**	2	12	**8**	2	12	**8**	3	0	**8**	
41	SLDC-UP	175	6	**3**	9	41	**7**	15	48	**12**	8	8	**5**	
42	STERLITE	5	1	**20**	1	1	**25**	1	1	**25**	1	3	**50**	
43	TANAKPUR-NH	3	3	**100**	3	0	**100**	3	0	**100**	3	0	**100**	
44	UNCHAHAR-NT	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**	
Total in NR Region		**622**	**99**	**16**	**170**	**120**	**34**	**169**	**124**	**34**	**149**	**25**	**25**	

As per the IEGC provision under clause 37.2 (c), detailed tripping report along with DR & EL has to be furnished within 24 hrs of the occurrence of the event

Mock trial run/black start schedule plan for 2024-25						Remarks
S.No.	Name of Generatiing Station	Fuel Type	Compliance to 34.3 of IEGC for mock trial runs (Last date on which mock drill carried out)	Tentaive schedule plan for mock trial run		
				Black start exercise of generating unit (dead bus charging)	Mock black start of subsytem (black start of generating unit / island operation / synchronidation)	
NTPC						
1	Dadri GPS	Gas	16-Dec-23	31-Oct-24	NA	
2	Anta GPS	Gas	29-Feb-24			
3	Auraiya GPS	Gas		09-07-2024	09-07-2024	
4	Faridabad GPS	Gas				
5	Koldam HEP	Hydro	14-Mar-24	12-03-2025	12-03-2025	
NHPC						
6	Bairasuil	Hydro	30-Nov-22	2nd week of November	2nd week of November	
7	Salal Stage-I	Hydro	02-Nov-18	3rd week of October	3rd week of October	
8	Salal Stage-II	Hydro		3rd week of October	3rd week of October	
9	Tanakpur HPS	Hydro		4th week of December	4th week of December	
10	Chamera HPS-I	Hydro	02-Dec-22	1st week of December	1st week of December	
11	Chamera HPS-II	Hydro	02-Dec-22	1st week of December	1st week of December	
12	Chamera HPS-III	Hydro	04-Dec-17	1st week of December	1st week of December	
13	URI-I	Hydro	20-Dec-16	1st week of December	1st week of December	
14	URI-II	Hydro	20-Dec-16	1st week of December	1st week of December	
15	Dhauliganga	Hydro	28-Dec-21	4th week of December	4th week of December	
16	Dulhasti	Hydro		4th week of November	4th week of November	
17	Sewa-II	Hydro	29-May-22	3rd week of November	3rd week of November	
18	Parbati-3	Hydro	22-Dec-20	4th week of December	4th week of December	
19	Kishanganga	Hydro		4th week of October	4th week of October	
SJVNL						
20	Nathpa-Jhakri	Hydro	09-Dec-22	20.11.2024	20.11.2024	
21	Rampur	Hydro	09-Dec-22	20.11.2024	20.11.2024	
THDC						
22	Tehri	Hydro	07-11-23	06-11-24	06-11-24	
23	Koteshwar	Hydro	14-Mar-24	Dec-24	Dec-24	
BBMB						
24	Bhakra (L)	Hydro	31-Dec-22			
25	Bhakra (**R**)	Hydro	26-Dec-22			
26	Ganguwal	Hydro				
27	Kotla	Hydro				
28	Dehar	Hydro				
29	Pong	Hydro	08-Jun-14			
*: Rampur can be black started only after starting of Nathpa Jhakri units due to Tandem operation						
IPPGCL(Indraprashta power generating Corporation Ltd.)/ Delhi Gencos						
30	I.P. Gas Turbine (IPGCL G.T.)	Gas	20-Feb-19	10-04-2024	10-04-2024	Conducted
31	Pragati Gas Turbine (PPCL)	Gas				
32	Bawana GT	Gas				
33	Rithala(TPPDL)	Gas				Not in operation
Haryana						
34	Western Yamuna Canal (WYC-I & II)	Hydro				
Himachal Pradesh						
35	Bhabha	Hydro				
36	Bassi	Hydro				
37	Ghanvi	Hydro				
38	Giri	Hydro				
39	Larji	Hydro				
40	Phojal	Hydro				
41	Sainj HEP	Hydro				
42	Swara Kuddu HEP	Hydro				
43	Bajoli Holi HEP	Hydro				
Malana Power Company Ltd.						

Mock trial run/black start schedule plan for 2024-25						Remarks
S.No	Name of Generatiing	Fuel	Compliance to 34.3 of IEGC for mock trial runs (Last date on	Tentaive schedule plan for mock trial run		
44	Malana-I	Hydro	12-Mar-24			
Everest Power Company Ltd.						
45	Malana-II	Hydro	03-Jan-19			
AD Hydro Power Ltd.						
46	AD Hydro	Hydro	27-Jan-23	**24-02-2025**	**24-02-2025**	
JSW						
47	Karcham Wangtoo	Hydro	29-Dec-21			It is submitted that we shall perform black start Mock trial test after completion of M4 and M5 of GIS overhauling. In the meantime, Karcham Wangtoo HEP can carry out black start exercise of generating unit only at this point (dead bus charging).
48	Baspa	Hydro				
Greenco						
49	Budhil	Hydro				inability to carry out Mock Black start exercise keeping in view the Unit safety being installed capacity low and issue of Governing system. The Governing system of Budhil HEP is of M/S Dong Fong China make and we are not ge□ng any support from OEM a□er COVID-19.. The planning for changing the governing system is in Process.
50	Sorang HEP	Hydro				
Jammu & Kashmir						
51	Baghlihar-I	Hydro				
52	Baghlihar-II	Hydro				
53	Lower Jhelum	Hydro	20-Dec-16			
54	Upper Sindh	Hydro	20-Dec-16			
Punjab						
55	Jogendernagar/ Shanan	Hydro				
56	UBDC	Hydro				
57	Mukerian	Hydro				
58	Anandpur Sahib (APS)	Hydro				
59	Ranjit Sagar (Thein Dam)	Hydro		04-05-2024	04-05-2024	
Rajasthan						
60	Ramgarh GT Extn.	Gas				
61	Dholpur CCPP	Gas				
62	Rana Pratap Sagar (RPS)	Hydro	16-Jan-11			
63	Jawahar Sagar	Hydro				
64	Mahi Bajaj Sagar I	Hydro	21-Jul-15			
65	Mahi Bajaj Sagar II	Hydro	24-Mar-16			
Uttar Pradesh						
66	Rihand (H) or Pipri	Hydro	16-Feb-24			
67	Obra(H)	Hydro	16-Feb-24			
68	Khara	Hydro				
69	Matatila	Hydro				
GVK						
70	Alaknanda HEP	Hydro				
Jaiprakash power Venture Ltd.						
71	Vishnu Prayag IPP	Hydro				
Uttrakhand						
72	Ramganga	Hydro				
73	Chibro	Hydro				
74	Dhalipur	Hydro				
75	Khodri	Hydro				
76	Khatima	Hydro				
77	Chilla	Hydro				
78	Maneri Bhali-I	Hydro				
79	Maneri Bhali-II	Hydro				
80	Vyasi HEP	Hydro				
81	Dhakrani HEP	Hydro				
82	Kulhal HEP	Hydro				
83	Gamma GPS	Gas				
84	Sravanti GPS	Gas	NA	NA	NA	
L&T						

Mock trial run/black start schedule plan for 2024-25						Remarks
S.No	Name of Generatiing	Fuel	Compliance to 34.3 of IEGC for mock trial runs (Last date on	Tentaive schedule plan for mock trial run		
85	Singoli Bhatwari	Hydro	Not done yet	03rd Dec 2024	03rd Dec 2024	Consent did not given for mock drill by SLDC Dehradun due to constraint of partial power evacuation

Sr. No.	Scheme Name	State Control Area	Date of review of SPS	Last date on which Mock testing carried out	Tentaitve schedule of SPS Mock testing during 2024-25	Remarks
1	SPS for WR-NR corridor - 765kV Agra-Gwalior D/C	POWERGRID		12-03-2024		
2	SPS for contingency due to tripping of HVDC Mundra-Mahendergarh	ADANI				
3	SPS for high capacity 400 kV Muzaffarpur-Gorakhpur D/C Inter-regional tie-line related contingency	POWERGRID				
4	SPS for 1500 MW HVDC Rihand-Dadri Bipole related contingency	POWERGRID				
5	System Protection Scheme (SPS) for HVDC Balia-Bhiwadi Bipole	POWERGRID				
6	SPS for contingency due to tripping of multiple lines at Dadri(NTPC)	NTPC				
7	SPS for reliable evacuation of power from NJPS, Rampur, Sawra Kuddu, Baspa Sorang and Karcham Wangtoo HEP	SJVN/HPPTCL/JSW				
8	SPS for Reliable Evacuation of Ropar Generation	Punjab				
9	SPS for Reliable Evacuation of Rosa Generation	Uttar Pradesh		07-05-2022	counducted on 20-04-2024	
10	SPS for contingency due to tripping of evacuating lines from Narora Atomic Power Station	NAPS				
11	SPS for evacuation of Kawai TPS, Kalisindh TPS generation complex	Rajasthan				
12	SPS for evacuation of Anpara Generation Complex	Uttar Pradesh		06-07-2020		
13	SPS for evacuation of Lalitpur TPS Generation	Uttar Pradesh		14-07-2018	counducted on 21.05.2024	
14	SPS for Reliable Evacuation of Bara TPS Generation	Uttar Pradesh				
15	SPS for Lahal Generation	Himachal Pradesh		08-07-2020		
16	SPS for Transformers at Ballabhgarh (PG) substation	POWERGRID				
17	SPS for Transformers at Maharanibagh (PG) substation	POWERGRID				
18	SPS for Transformers at Mandola (PG) substation	POWERGRID				
19	SPS for Transformers at Bamnauli (DTL) Substation	Delhi				
20	SPS for Transformers at Moradabad (UPPTCL) Substation	Uttar Pradesh			counducted on 20-04-2024	
21	SPS for Transformers at Muradnagar (UPPTCL) Substation	Uttar Pradesh		07-02-2023	counducted on 20-04-2024	
22	SPS for Transformers at Muzaffarnagar(UPPTCL) Substation	Uttar Pradesh			counducted on 20-04-2024	
23	SPS for Transformers at Greater Noida(UPPTCL) Substation	Uttar Pradesh			SPS Unhealthy	
24	SPS for Transformers at Agra (UPPTCL) Substation	Uttar Pradesh		12-07-2023		
25	SPS for Transformers at 400kV Sarojininagar (UPPTCL) Substation	Uttar Pradesh		17-05-2023		
26	SPS for Transformers at 220kV Sarojininagar (UPPTCL) Substation	Uttar Pradesh		18-05-2022		
27	SPS for Transformers at 400kV Unnao (UPPTCL) Substation	Uttar Pradesh		19-05-2023	SPS Unhealthy	
28	SPS for Transformers at 220kV Unnao (UPPTCL) Substation	Uttar Pradesh				
29	SPS for Transformers at 400kV Sultanpur (UPPTCL) Substation	Uttar Pradesh			SPS Unhealthy	
30	SPS for Transformers at 400kV Bareilly (UPPTCL) Substation	Uttar Pradesh				
31	SPS for Transformers at 400kV Azamgarh (UPPTCL) Substation	Uttar Pradesh		14-05-2023	counducted on 06-05-2024	
32	SPS for Transformers at 400kV Mau (UPPTCL) Substation	Uttar Pradesh		17-01-2019	counducted on 27-04-2024	
33	SPS for Transformers at 400kV Gorakhpur (UPPTCL) Substation	Uttar Pradesh		14-05-2023	counducted on 27-04-2024	
34	SPS for Transformers at 400kV Sarnath (UPPTCL) Substation	Uttar Pradesh		19-05-2023	counducted on 23-05-2024	
35	SPS for Transformer at 400kV Rajpura (PSTCL) Substation	Punjab				
36	SPS for Transformers at 400kV Mundka (DTL) Substation	Delhi		19-06-2023		
37	SPS for Transformers at 400kV Deepalpur (JKTPL) Substation	Haryana				
38	SPS for Transformers at 400kV Ajmer (RVPN) Substation	Rajasthan				
39	SPS for Transformers at 400kV Merta (RVPN) Substation	Rajasthan				
40	SPS for Transformers at 400kV Chittorgarh (RVPN) Substation	Rajasthan				
41	SPS for Transformers at 400kV Jodhpur (RVPN) Substation	Rajasthan				
42	SPS for Transformers at 400kV Bhadla (RVPN) Substation	Rajasthan				
43	SPS for Transformers at 400kV Ratangarh (RVPN) Substation	Rajasthan				
44	SPS for Transformers at 400kV Nehtaur(UPPTCL) Substation	Uttar Pradesh		05-07-2022		
45	SPS for Transformers at Obra TPS	Uttar Pradesh			counducted on 20-05-2024	
46	SPS for Transformers at 400KV Kashipur (PTCUL) substation	Uttarakhand		03-09-2023	Septemeber 2024	
47	SPS for Transformers at 400KV Fatehgarh Solar Park (AREPRL)	ADANI				
48	SPS to relive transmission congestion in RE complex (Bhadla2)	POWERGRID				
49	SPS for Transformers at 400kV Bikaner (RVPN) Substation	Rajasthan				
50	SPS for Transformers at 400kV Bawana (DTL) Substation	Delhi		06-09-2023		
51	SPS for Transformers at 400kV Bhilwara (RVPN) Substation	Rajasthan				
52	SPS for Transformers at 400kV Hinduan (RVPN) Substation	Rajasthan				
53	SPS for Transformers at 400kV Suratgarh (RVPN) Substation	Rajasthan				

Status of Recording Instruments (220kV & above stations)						
Sr. No	Station Name	Voltage Level	Disturbance Recorder/Station Event logger healthy (Yes or No)	Standardisation (Yes or No)	Time Sync (Yes or No)	Remarks

Annexure-B.IX

Sr No	Case ID	Station	FTC Element Name	Undertaking date	Undertaking Period.	Undertaking	Compliance	Reminder mail / letter
1	1118756	220kV Deoband	220kV Deoband-Saharanpur- DC	05.04.2023	45 days	Station Event Log to installed.		30-Jul-24
2	1118797	315 MVA ICT-4	Sultanpur	24.05.2023	one month	Station Event Log to installed.		30-Jul-24
3	1118818	500MVA ICT-1 Ramgarh(Rajasthan)	Ramgarh	22.05.23	Two Months	Station Event Log hanging and GPS clock not working.		30-Jul-24
4	1118792/ 8793	Panki(UP) & Fatehpur(PG)	By-pass of 400 kV Kanpur Panki 1 and 400 kV Kanpur Fatehpur Line 1 & 2 through 402 Tie bay CB at 400 kV Kanpur Substation			Consent Given On The Basis Of Undertaking Given By POWERGRID. POWERGRID Shall Submit The Revised DR/EL Sample		30-Jul-24
5	1118828	Mundka	315MVA 400/220/33kV ICT 3 at 400kV Mundka	27.06.2023	1-2 month	Station Event logger		30-Jul-24
6	1118913	Budgam	220 kV Wagoora- Budgam T/L	10.10.2023	3 DAYS	DR/EL of GSS Budgam		30-Jul-24
7	1118894	RSDCL PPS-4 of Nokh Solar Park	220kV all emements	16.10.2023	31.12.2023.	Station Event Logger		30-Jul-24
8	1118924	Muzaffarnagar(UP)	400/220/33kV ICT-3	20.10.2023	4 month	Station Event Logger		30-Jul-24
9	1118904	NTPC auraiya	Safai bay	02.11.2023	1 year	Station Event Logger		30-Jul-24
10	1119094	AT 400 KV UNNAO	500 MVA ICT-II AT 400 KV UNNAO	22.04.2024	1 month	Insufficient no of ports available in GPS Clock		30-Jul-24
11	1119125	GORAKHPUR -UP	500 MVA ICT-II AT 400 KV MOTIRAM ADDA,GORAKHPUR	20.06.2024	6 week	Nomanclacure		30-Jul-24
12	1119177	ReNew Hans Urja Private Limited	400 kV S/c line from 400 kV GSS Jaisalmer-2 to Renew Hans Urja Pvt. Ltd.	24-Jul-24	1 week	Electrical Inspector Safety clearance certificate of 401 402 bay		
13	1119165	Samaypur BBMB()	208 bay for 220KV FGPP-Samaypur Ckt-1	29-Jul-24	15 days	time sync between DR and EL within next 15 days		
14	1119217	Powergrid	415 Main Bay at Bhadla_2 PG	06-Sep-24	5-6 months	correction in nomenclature in station event logger.		