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

दिनांक: 20.05.2025

सेवा में
As per attached list of Members and Other invitees

विषय: संरक्षण उप-समिति की 60 वीं बैठक की कार्यसूची |
Subject: Agenda for 60th Protection Sub-Committee Meeting.

संरक्षण उप-समिति की **60 वीं बैठक, दिनांक 26.05.2025 को 10:30 बजे** से एनआरपीसी सचिवालय, कटवारिया सराय, नई दिल्ली में आयोजित की जाएगी | उक्त बैठक की कार्यसूची संलग्न है । यह उत्तर क्षेत्रीय विद्युत् समिति की वेबसाइट (http://164.100.60.165/) पर भी उपलब्ध है | 56 वीं पीएससी बैठक के निर्णयों के अनुसार, आईईजीसी 2023 के सुरक्षा कोड का अनुपालन सुनिश्चित करने के लिए एनआरपीसी सदस्य के अलावा अन्य विद्युत उपयोगिताओं को भी बैठक के लिए आमंत्रित किया गया है। कृपया बैठक मे उपस्थिति सुनिश्चित करें ।

The **60th meeting** of Protection Sub-Committee is scheduled to be held on **26.05.2025** at **10:30 Hrs** at NRPC Secretariat, Katwaria Sarai, New Delhi. The agenda for the meeting is attached herewith. The same is also available on NRPC website (http://164.100.60.165/). As per decisions of 56th PSC meeting, utilities other than NRPC member have also been invited for meeting for ensuring compliance of protection code of IEGC 2023. Kindly make it convenient to attend the same.

Signed by Dharmendra Kumar Meena
Date: 20-05-2025 15:19:21

डी. के. मीणा
निदेशक (संरक्षण)

Agenda of 60th Protection Sub-Committee Meeting (26th May, 2025)

Contents

Agenda for 60th Meeting of Protection Sub-Committee (PSC) of Northern Regional Power Committee

Date and time of meeting : ***26.05.2025 10.30 Hrs.***

Venue : ***NRPC Secretariat, Katwaria Sarai, New Delhi***

Part-A: Agenda by NRPC Secretariat

A.1. Confirmation of minutes of 59th meeting of Protection Sub-Committee

A.1.1 59th PSC meeting was held on 23.04.2025. Minutes of the meeting were issued vide letter dtd. 08.05.2025. No comment has been received till the date.

A.1.2 NHPC vide mail dated 08.05.2025 submitted the comments on the issued minutes of 58th PSC meeting related to Agenda item B.3 Multiple elements tripping at 400kV Sainj(HP) & Parbati3(NH) at 19:35 hrs on 03rd February, 2025. The submitted comments are attached as **Annexure-A.0**. Accordingly, NHPC has requested to revise the analysis of the fault mentioned at page no-194 of 58th PSC meeting minutes.

Decision required from Forum:

Forum may approve the minutes of 59th meeting as issued and consider to amend minutes of 58th PSC meeting based on comment of NHPC.

A.2. Status of action taken on decisions of 59th Protection Sub-Committee meeting (agenda by NRPC Secretariat)

A.2.1 Status of action taken on the decisions of 59th PSC meeting is attached as **Annexure-A.I.**

***Decision* required from Forum**

Status may be deliberated for timely action on issues.

A.3. Submission of protection performance indices along with reason and corrective action taken for indices less than unity to NRPC Secretariat for month of April-2025 (agenda by NRPC Secretariat)

A.3.1 *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

- *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.3.2 In the earlier PSC's meetings, it was decided that each power utility shall submit the performance **indices of previous month by 7th day of next month as per IEGC 2023 .**

A.3.3 Accordingly, the status of the indices reported for the month of **April-2025** is attached as **Annexure-A.II.**

A.3.4 Further, based on submitted data by the utilities as on date, the summary of events that caused indices less than unity is also attached as **Annexure-A.III.**

A.3.5 **Submitted data has following issues:**

Some Utilities have not submitted data for April-2025	As mention in Annexure-A.II.
Utilities have submitted data for some plants but not all.	**NTPC (Anta. Auriya, Koldam, Rihand, Singrauli)** **POWERGRID (NR-2)** **NPCIL (NAPS)** **THDC (Koteshwar)** **HPGCL (PTPS, DCRTPP)** **UJVNL (Khodri, Chibro, Vyasi)** **PSCPL (RSD)** **HPSEBL (Shimla circle)** **RE Plants and Other utilities as mentioned in Annexure-A.II**
Some utilities have sent data after cut-off date of 7th	As mention in Annexure-A.II.

Decision required from Forum:

i. Forum may discuss cases where indices are less than 1.

ii. Forum may direct utilities to 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.

A.4. Intimation of performance of SPS (agenda by NRPC Secretariat)

A.4.1 As per clause 16 of IEGC 2023;

- *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.*
- *The performance of SPS shall be assessed as per the protection performance*

indices specified in these Regulations. In case, the SPS fails to operate, the concerned User shall take corrective actions and submit a detailed report on the corrective actions taken to the concerned RPC within a fortnight.

A.4.2 However, it has been observed that reporting of operation/failure of operation of SPS is not being reported regularly by the utilities.

A.4.3 In view of above, following may be complied by utilities:

i. Utilities 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.

ii. SLDCs may submit protection performance indices for SPS on monthly basis by 7th date of each month in the same format as that of protection performance indices of elements (lines/ICT etc).

Decision required from Forum:

Forum may direct the utilities to comply the above.

A.5. Annual protection audit report for FY 2024-25 (agenda by NRPC Secretariat)

A.5.1 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).*

A.5.2 All power utilities were requested in every PSC meeting starting from 48th PSC to submit the annual protection audit plan and report. Status of annual audit plan and report is enclosed as **Annexure- A.IV**.

A.5.3 In 59th PSC meeting, Utilities (other than non-compliant) were asked to submit report and compliance status within one month of completion of audit, **latest by 30.04.2025.**

A.5.4 Audit Reports have been received from POWERGRID and RVUN.

Decision required from Forum:

Utilities may submit reports of internal audit done in FY 2024-25. Compliance report for the audited substation may be submitted.

A.6. Annual protection audit plan for FY 2025-26 (agenda by NRPC Secretariat)

A.6.1 As per clause 15 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.6.2 In view of above, all utilities were requested to submit the annual protection audit plan for FY-2025-26 latest by 31st October 2024 in the 53rd PSC meeting. Further, concerned utilities were requested to submit the same at the earliest in every PSC meeting since then.

A.6.3 Accordingly, annual audit plans submitted by utilities have been compiled (enclosed as **Annexure- A.V**).

Decision required from Forum:

Forum may direct utilities who have not submitted audit plan for FY 2025-26 as deadline of 31st October 2024 has already passed.

A.7. Third-party protection audit plan (agenda by NRPC Secretariat)

A.7.1 As per clause 15 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.7.2 In view of above, third party audit plans submitted by utilities have been compiled (enclosed as **Annexure-A.VI)**.

Decision required from Forum:

Forum may direct utilities to update the status of 3rd party protection audit as per the submitted audit plans. Subsequently, the audit reports along with compliance status

may be submitted to NRPC Secretariat.

A.8. Discussion on audit reports submitted by utilities and compliance of recommendations of protection audit (agenda by NRPC Secretariat)

A.8.1 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).*

A.8.2 As per clause 15 (4) of IEGC 2023*;*

The third-party protection audit report shall contain information sought in the format enclosed as Annexure–1 (IEGC). The protection audit reports, along with **action plan for rectification of deficiencies detected, if any, shall be submitted to the respective RPC and RLDC or SLDC, as the case may be, within a month of submission of third-party audit report.** The necessary compliance to such protection audit report shall be followed up regularly in the respective RPC.

A.8.3 Following utilities have submitted the internal audit report (FY 2024-25) based on the audit done at their substations:

S.N.	Utility	Stations
1	POWERGRID	NR-3 765kV Sub-stations: Bareilly, Aligarh, Fatehpur, Orai, Rampur, Varanasi 400kV Sub-stations: Allhabad, Bareilly,Firozabad, Jauljibi, Mainpuri, Mohanlalganj, Pithoragarh, Sambhal, Sohawal
2	RVUNL	KSTPS, Kota

A.8.4 Following utilities have submitted reports of 3rd Party audit:

S.N.	Utility	Stations
1	Talwandi Sabo Power Ltd.	Switchyard
2	RE Plant	220kV Substation Altra Xergi Power Private Limited 380 MW Solar Power Plant

A.8.5 Compliance/ action plan on recommendation of audit has not been submitted by any utilities after 59th PSC meeting.

A.8.6 **The above submitted reports and action plan are available at NRPC website: http://164.100.60.165/meetings/prsub.html**

Decision required from Forum:

Forum may discuss audit report as well as action taken by utilities on recommendations of audit. Further, other utilities may be directed to submit the protection audit report (for audited S/s as per submitted plan) to NRPC Secretariat and may update the compliance status regularly.

A.9. Review of Standard protection philosophy to be adopted in various cases (agenda by POWERGRID Nr-3)

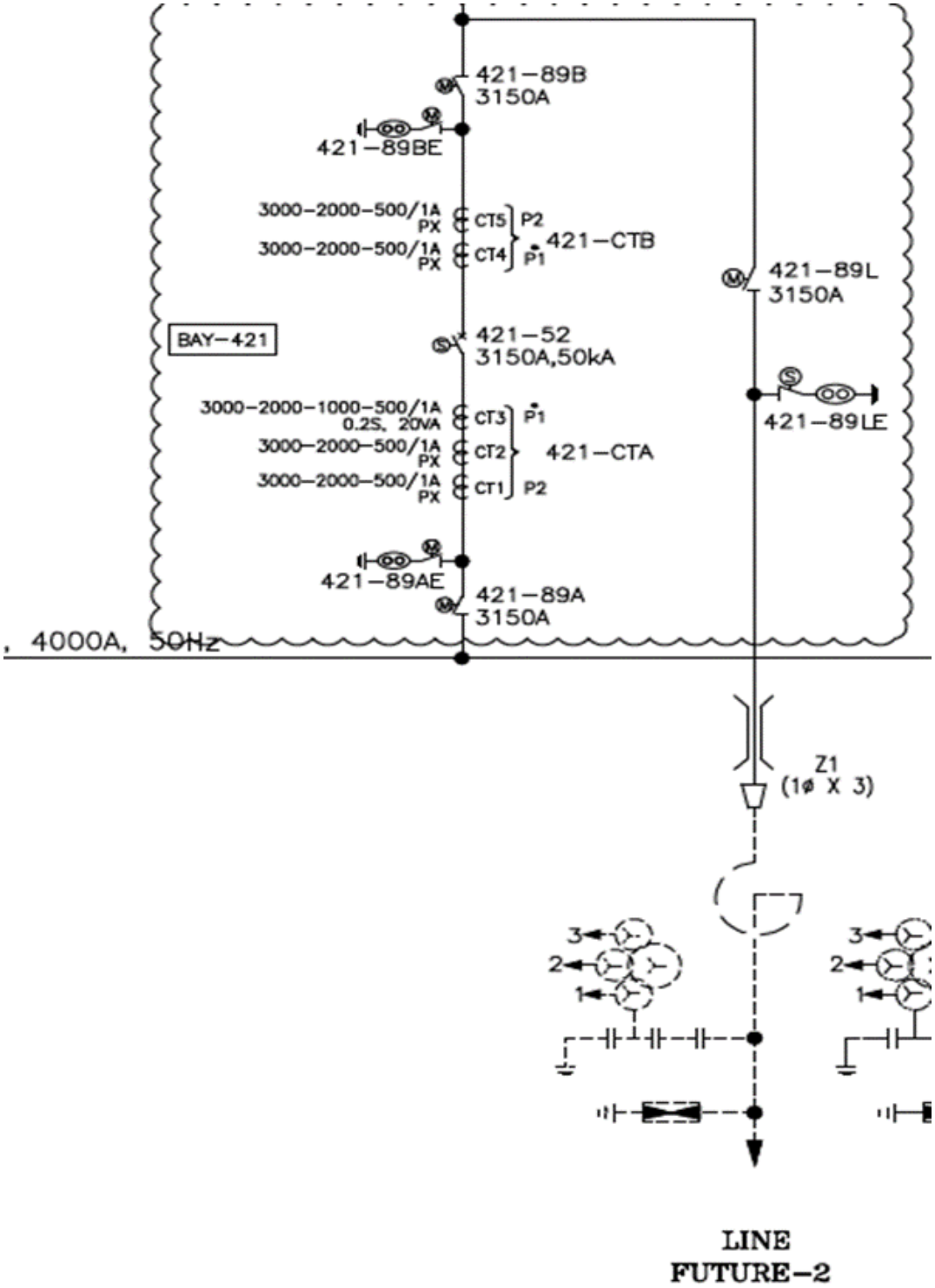
A.9.1 In 59th PSC meeting, POWERGRID NR-3 submitted that protection philosophy may be reviewed and standardised for various cases as per below-

a. Protection setting for idle charging or Anti-theft charging of transmission line (765kV, 400kV and 220kV)

b. Protection settings for idle charge of future bay up to **LA** (Lightning arrestor) in case of GIS (Gas insulated S/S) or AIS

I. Future Bay equipped with all standard protection (Main-I, Main-II, LBB and BCU)

II. Future Bay equipped with LBB & BCU protection.



c. Protection settings of connected transmission line element, ICT and Bus Reactor in case of Bus Bar out of service due to retrofitting work.

A.9.2 During the discussion in the 59th PSC meeting, for case of Protection settings for idle charge of future bay up to LA (Lightning arrestor), UPPTCL representative conveyed that distance relay would be needed for protection. HVPN representative mentioned that overcurrent protection may be kept with definite time because of such short line, distance relay protection are not much accurate. RVUN representative highlighted that any phase over current protection would be better.

A.9.3 MS, NRPC stated that inputs from all the members may be sought via mail after the meeting and the agenda may be discussed in the next PSC meeting.

A.9.4 Accordingly, mail was sent to all members on 24.04.2025. AESL and BBMB have shared comments.

A.9.5 AESL has share the following philosophy for antitheft Line charging

I. Zone-2 setting time delay should be Zero.

II. Over Voltage setting should be 105% and 3 sec delay.

III. Auto reclosure function should be OFF.

IV. Overcurrent setting with minimum (20%) with instantaneous trip.

A.9.6 BBMB has shared the following comments as below-

i. For idle charging or Anti-theft charging of transmission line (765kV, 400kV and 220kV), Zone-1 setting in the distance protection relay may be kept as 110 % of the protected line with instantaneous time setting as per protection philosophy for radial lines.

ii. For idle charge of future bay up to LA (Lightening arrestor) in case of GIS (Gas Insulated S/S) or AIS

a) **Future Bay equipped with all standard protection (Main-1, Main-II, LBB and BCU)** - In BCU (it is assumed having backup protection) and Main-I and Main-II relays second stage of High set with instantaneous time setting with appropriate current settings be enabled for both over current and earth fault protection functions.

b) **Future Bay equipped with LBB & BCU protection**- In BCU (it is assumed having backup protection) second stage of High set with instantaneous time setting with appropriate current settings may be enabled for both over current and earth fault protection functions.

iii. Protection settings of connected transmission line element, ICT and Bus Reactor in case of Bus Bar out of service due to retrofitting work

a) In case of transmission line element, Zone-4 time setting should be kept as 160msec with reach adequate to cover Bus faults during the period Bus Bar Protection is kept out of service.

b) In case of ICT and Bus reactor, High set protection function stage with instantaneous time setting be introduced and current setting of such function be coordinated with existing High set protection function stages.

Decision required from Forum:

Members may deliberate and consider to include the above proposed cases in finalized protection philosophy.

A.10. Tripping of 400 kV Transmission Lines and Delay in Restoration of these 400kV lines emanating from JPL Power Station (agenda by Apraava Energy)

A.10.1 JPL Power Station comprises **two units of 660 MW each**, with power evacuated through four 400 kV transmission circuits:

- Two circuits to **Kabulpur substation**, owned and operated by **M/s Indigrid**
- Two circuits to **Dhanoda substation**, owned and operated by **HVPNL**

A.10.2 Apraava Energy has submitted that on **May 2, 2025, at 05:22:41 hrs**, JPL Power Station experienced a **complete blackout** due to the **tripping of all four 400 kV transmission lines** emanating from the station. The incident led to a total loss of generation evacuation and station power. Approximately **three hours later**, one 400 kV line was successfully recharged, enabling the restoration of station auxiliaries and startup of generating units.

A.10.3 **Investigation into Tripping of 400 kV Transmission Lines-** Apraava Energy has requested that

- **Root cause analysis** is required for the sequence of events involving the tripping of **JPL–Kabulpur 400 kV lines**:
  - At 04:07:32 hrs, auto-reclosure occurred in R-phase of **Kabulpur Ckt-2**, with the fault current of 15 kA in R-phase. Our generator transformer fed 15KA current. It is detrimental for the transformer.
  - JPL team immediately informed M/s Indigrid for on-ground verification.

- At 04:25:57 hrs, both **Kabulpur Ckt-I** and **Ckt-II** tripped on Zone-2 protection from the JPL end.
- As a result, the entire generation load shifted to the two Dhanoda 400 kV lines.
- At 05:22:41 hrs, both Dulatabad lines at Dhanoda substation tripped, leading to total evacuation failure and unit tripping on over frequency due to lack of load.

- The **reason for the delayed protection action** at **Kabulpur substation**—which contributed to the Zone-2 operation at JPL—needs to be established.
- M/s **Indigrid** may be requested to furnish a **detailed protection report and fault analysis** for the Kabulpur lines.
- M/s **HVPNL Dhanoda team** may be requested to furnish a **detailed protection report and fault analysis** for the Dhanonda lines.
- **Recommendations** for preventing recurrence may include:
  - Review of distance protection settings and grading.

A.10.4 **Delay in Restoration of 400 kV Supply-** Apraava Energy has requested that

- The **restoration of 400 kV lines took approximately 3 hours**, which is significant and impacted startup operations.
- Root cause analysis of delays in line charging, coordination, and switching actions is needed.
- Proposal for developing and implementing a **Standard Operating Procedure (SOP)** for expedited restoration of at least one 400 kV circuit under emergency blackout scenarios.

A.10.5 In view of above, Apraava Energy has requested Forum for-

- Deliberation and directions on the above issue.
- **Inputs from Indigrid, HVPNL, and SLDC for joint resolution for preventive such incident in future.**

Decision required from Forum:

Members may discuss.

Part-B: Agenda by NRLDC

B.1 Status of remedial actions recommended during previous PSC meeting (agenda by NRLDC)

B.1.1 As per the discussion in pervious PSC meetings, necessary remedial actions were recommended based on the analysis and discussion of the grid events. It is expected that necessary actions would have taken place. In view of the same, constituents are requested to share the status of remedial actions taken. List of points to be discussed in 60th PSC meeting is attached as **Annexure-B.I**. Constituents can email the details via mail to NRLDC and NRPC.

Decision required from Forum:

Members may like to discuss.

B.2 Multiple elements tripping events in Northern region in the month of April 2025 (agenda by NRLDC)

B.2.1 A total of **24** Nos. grid events occurred in the month of **April 2025** of which **16** are of GD-1 category, **03** are of GI-2 Category and **05** 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.II**.

B.2.2 Maximum delayed clearance of fault observed in event of multiple elements tripping at 400/220kV Gurgaon(PG) and 220kV Gurgaon Sec72(HR) at 13:59 hrs on 17th April, 2025 (As per PMU at Gurgaon(PG), B-N phase to earth fault converted into Y-B fault with delayed clearance of ~1800msec is observed).

B.2.3 Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total 08 events out of 24 grid events occurred in the month. In 01 (no.) of grid event, there was no fault in the grid.

B.2.4 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.

B.2.5 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.

Decision required from Forum:

Members may like to discuss.

B.3 Analysis of the tripping events occurred during April-2025 and status of remedial action taken (agenda by NRLDC)

a) Frequent elements tripping during April 2025:

B.3.1 The following transmission elements were frequently tripping during the month of **April'25**:

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	4	NPCIL/Raj
2	400 KV Amritsar(PG)-Makhu(PS) (PSTCL) Ckt-1	4	PGCIL/Punjab
3	200 MW Parbati II HEP - UNIT 1	3	NHPC
4	200 MW Parbati II HEP - UNIT 2	3	NHPC
5	220 KV Anta(NT)-Bhilwara(RS) (PG) Ckt-2	3	NTPC/Raj/ PGCIL
6	220 KV Ballabhgarh-Charkhi Dadri (BB) Ckt-1	3	BBMB
7	220 KV Hissar(BB)-Chirawa(RS) (BB) Ckt-1	3	BBMB/Raj
8	220 KV Malwan (UP)-Unchahar(NT) (UP) Ckt-1	3	NTPC/UP
9	220 KV NAPP(NP)-Khurja(UP) (UP) Ckt-1	3	NPCIL/UP
10	220 KV Patran(PATR)-Mansa(PSTCL) (PSTCL) Ckt-1	3	INDIGRID/ Punjab
11	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	3	NPCIL/Raj
12	220 KV Samba(PG)-Hiranagar(PDD) (PG) Ckt-1	3	PGCIL/J&K
13	220/33 kV 150 MVA ICT 1 at ABCRenew_RJ01_SL_BHD2_PG	3	ABCRenew
14	400 KV Balia-Bihartshariff (PG) Ckt-2	3	PGCIL
15	400 KV Jaisalmer(RS)-M/s Renew Hans urja pvt Ltd (RS) (Renew Hans urja pvt Ltd) Ckt-1	3	Renew/Raj
16	765 KV Bhadla_2 (PG)-Sikar_2(PSTL) (PSTL) Ckt-2	3	PGCIL

List of tripping is attached as **Annexure-B.III**.

B.3.2 It may be noted that frequent tripping of such elements affects the reliability and security of the grid. Hence, utilities are requested to analyse the root cause of the tripping and share the remedial measures taken/being taken in this respect.

b) Protection related issues in multiple elements tripping, detailed analysis of the events and status of remedial measures:

B.3.3 The list of major tripping events occurred during April 2025 is attached as **Annexure-B.IV.** Concerned constituents/utilities are requested to share the detailed analysis of the tripping elements along with status of remedial action taken/to be taken.

Decision required from Forum:

Utilities are requested to prepare detailed analysis report and present the event details during 60th PSC meeting. Events involving more than one utility may be jointly prepared and presented in Forum.

B.4 Details of tripping of Inter-Regional lines from Northern Region for April 2025 (agenda by NRLDC)

B.4.1 A total of 09 inter-regional lines tripping occurred in the month of April 2025. The list is attached at **Annexure-B.V.** 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.

Decision required from Forum:

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

B.5 Mock testing of System Protection Schemes (SPS) in Northern Region (agenda by NRLDC)

B.5.1 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.''

B.5.2 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.''

B.5.3 There are 55 numbers of System Protection Scheme (SPS) approved in Northern Region. These SPS are implemented at major generation complexes, important evacuating transmission lines and ICTs which are N-1 non-complaint. System Protection Scheme Document of Northern Region has been revised/updated on 31st January 2025.

B.5.4 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.

B.5.5 In this regard, communication has already been sent to constituents through NRLDC letter dated 01.05.2024, 21.02.2025, 05.03.2025 & 04.04.2025 and continuous follow up is being done in OCC & PSC meeting since May 2024.

B.5.6 Mock testing of most of the SPS has been conducted in FY 2024-25, however it is pending at some of the stations / complex shown in table below:

Not conducted Mock Testing of SPS in 2024-25				
Sr. No.	**Scheme Name**	**Control Area**	**Remarks**	**Date of Last Mock testing conducted**
1	SPS for contingency due to tripping of HVDC Mundra-Mahendergarh	ADANI	Not healthy. Review is being done at OCC/PSC forum	
2	System Protection Scheme (SPS) for HVDC Balia-Bhiwadi Bipole	POWERGRID	Schedule not received. Review of SPS is needed.	
3	SPS for high capacity 400 kV Muzaffarpur-Gorakhpur D/C Inter-regional tie-line related contingency	POWERGRID	Schedule not received. Review of SPS is needed.	
4	SPS for Reliable Evacuation of Ropar Generation	Punjab	Schedule not received	
5	SPS for contingency due to tripping of evacuating lines from Narora Atomic Power Station	NAPS	Schedule not received	
6	SPS for Lahal Generation	Himachal Pradesh	Schedule not received	08-07-2020
7	SPS for evacuation of Kawai TPS, Kalisindh TPS generation complex	Rajasthan	Partially conducted on 14-03-2025. Complete exercise needs to be conducted.	
8	SPS for Transformers at Ballabhgarh (PG) substation	POWERGRID	Not in service, Review is being done in OCC/PSC forum	
9	SPS for Transformers at Maharanibagh (PG) substation	POWERGRID	Not in service, Review is being done in OCC/PSC forum	
10	SPS for Transformers at Mandola (PG) substation	POWERGRID	Not in service, Review is being done in OCC/PSC forum	
11	SPS for Transformers at Bamnauli (DTL) Substation	Delhi	Schedule not received; Review is being done at OCC/PSC forum	
12	SPS for Transformers at 400kV Deepalpur (JKTPL) Substation	Haryana	Schedule not received	
13	SPS for Transformers at	ADANI	Schedule not	

	400KV Fatehgarh Solar Park (AREPRL)		received	
14	SPS for Transformers at 400kV Unnao (UPPTCL) Substation	Uttar Pradesh	SPS Unhealthy	19-05-2023

B.5.7 Concerned constituents / utility were requested to conduct the mock testing of pending SPS (mentioned in above table) by the end of April 2025 month through NRLDC letter dated 04.04.2025.

B.5.8 Mock testing of the following SPS have been conducted recently w.r.t 2025-26 year:

i. ICTs at Moradabad(UP): 02.04.2025
ii. Lalitpur TPS: 09.04.2025
iii. Rosa TPS: 12.04.2025
iv. 400KV Fatehgarh Solar Park (AREPRL): 19.04.2025

B.5.9 Utilities are also requested to conduct the mock testing of SPS schemes in their respective control area w.r.t. year 2025-26.

B.5.10 In compliance with IEGC clause 16.2, users shall ensure that mock testing along with the review of SPS logic of all the SPS is conducted at least once a year.

B.5.11 Further In compliance with IEGC clause 16.3, users shall also share the detailed report of SPS operation in their respective control area within 3 days of its operation. Presently, no such report is being received.

B.5.12 Utilities are also requested to share the tentative schedule plan for conducting mock testing of SPS in their respective control area during 2025-26 in format attached as **Annexure-B.VI**

Decision required from Forum:

Members may like to discuss.

B.6 Protection related issues in J&K control area (agenda by NRLDC)

a) Frequent tripping events in J&K(UT) control area (multiple events of load loss)

B.6.1 Frequent events of multiple elements tripping leading to load loss has been observed in J&K (UT) control area. Majorly affected substation are 220kV Ziankote, Barn, Mirbazar, Jammu(Gladini) & Pampore and 400kV Baglihar. Details of tripping events occurred at aforementioned sub stations during period of Jan'24-April'25 are enclosed in **Annexure-B.VII**. Such frequent grid events are very detrimental to the safety and security of the state grid as well as to that of regional and national grid.

b) Protection non-compliance in J&K control area

B.6.2 During analysis of the grid events occurred in J&K control area based on the available data, following protection related issue are observed:

i. Non-operation of A/R during single phase to earth fault. During 46th PSC meeting J&K stated that ''in next financial year, work of installation of OPGW in all the transmission lines will be started. Follow-up actions are being done regarding the same. OPGW work will be followed by installation of PLCC''. However, no further update received from J&K.

ii. Issue related protection settings in transmission elements. Protection system are also not well coordinated with remote substations. Unwanted tripping of the elements are also observed. Hence, reviewing protection settings of transmission elements at J&K(UT) substations and ensuring its proper coordination with the nearby substation is need to be ensured.

B.6.3 J&K(UT) is requested to share the details of actions taken to address aforementioned issues. Also share status of follow-up actions taken/to be taken in this regard.

c) Non submission of Disturbance recorder (DR), Event logger (EL) and tripping reports of Tripping events

B.6.4 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 and detail report of the event is to be submitted within a week of event. However, no DR/EL & tripping report of any have been received from J&K control area for any of the grid event till date. Data submission status for period of Jan'24-April'25 is attached as **Annexure-B.VIII**. Field data is very much important for complete analysis of the grid events.

B.6.5 J&K representatives may please note and advise the concerned for timely submission of the DR/EL & tripping details. It is requested that DR/EL of all the tripping shall be uploaded on Web Based Tripping Monitoring System **"https://postda.nrldc.in/Account/Login.aspx"** within 24 hours of the events as per IEGC clause 37.2(c) and clause 15.3 of CEA grid standard.

Decision required from Forum:

Members may like to discuss.

B.7 Corrective action for healthiness of 500kV Mundra-Mahindergarh SPS (agenda by NRLDC)

B.7.1 On 17th May 2024 on outage of both pole (carrying total ~1500MW), SPS of 500kV HVDC Mundra-Mahindergarh inter regional link didn't operate. This issue was discussed during 51st PSC meeting and ADANI was requested to share the details w.r.t. SPS operation during the meeting.

B.7.2 Further, NRLDC in coordination with NLDC conducted an online discussion meeting with concerned stakeholders (SLDCs, ADANI, POWERGRID) on 12th August 2024, for further remedial actions required to make this SPS healthy.

B.7.3 Following actions were decided during the meeting:

i. POWERGRID, ADANI and concerned states were requested to identify the issue in communication links and take expeditious actions to make the all the communication link healthy. POWERGRID & ADANI shall review the healthiness of SPS system at different load centres and communication path between them in coordination with the SLDCs.

ii. States were requested to go through the details of load feeders mentioned in SPS document and share the changes / modifications as per present scenario and share the inputs w.r.t. unavailability in identified load feeders and load shedding. SLDCs shall share the revised updated feeder details (radial) along with expected average/peak load relief through respective feeders.

iii. SLDCs in coordination with their transmission and protection team shall share the status and healthiness of existing SPS system along with details of availability of communication path for incorporation of proposed

revised/additional feeders.

B.7.4 Load end details have been received from UP, Haryana, Punjab, Rajasthan & Delhi. Details and communications are attached as **Annexure-B.IX**.

B.7.5 ADANI via mail dated 29.08.2024 has submitted the status of healthiness of communication network and hardware system at different locations on the basis of preliminary inspection. As per details submitted, counter status was found OFF at Alwar, Ratangarh, Gobindgarh, Malerkotla, Bamnauli, Shamli and Dhanonda.

B.7.6 Details of nodal officer of different substation involved in SPS scheme has already been shared with ADANI team for coordination and further remedial actions.

B.7.7 During 53rd PSC meeting, ADANI was requested to coordinate with the respective states to rectify the issues in the SPS system and share the status of remedial action taken / planned to be taken. Desired remedial actions need to be expedited.

B.7.8 ADANI agreed for the same and stated that update would be given within 01 week. However, no detail received yet from ADANI.

B.7.9 During discussion in 55th PSC meeting it was decided that ADANI shall take lead in rectification work as this SPS scheme was commissioned by them. Protection nodal officers from States will provide possible necessary assistance from their end. Further, states were also requested to ensure incorporation of revised decided feeders during work at their stations. States representative assured to provide all necessary coordination from their end.

B.7.10 During 56th PSC meeting, ADANI was requested to apprise the forum about the present status of remedial actions. ADANI representative stated that they have raised service order to COMTEL (OEM) for approval. After approval of this service order, COMTEL engineers will visit all the sites in coordination with nodal officers from respective stations. It is expected that identification of issues and estimate hardware requirement will be completed by the end March 2025. Thereafter, after financial approval, rectification of issues will be done. ADANI was requested to ensure completion of whole work before summer 2025. State representatives were also requested to coordinate with the ADANI team and ensure incorporation of identified revised feeders for load relief in SPS.

B.7.11 Further, through mail dt 3rd March 2025, ADANI has informed that they awarded the rectification work service to M/s COMTEL for survey and restoration of possible elements installed at the locations and engineers from M/s COMTEL shall be visiting

respective stations as per the schedule.

B.7.12 During 57th PSC meeting, ADANI representative informed that visit by COMTEL engineers at all the sites is completed and COMTEL will submit the report within 10 days.

B.7.13 ADANI was requested to share the report at the earliest and make Action Plan accordingly to ensure completion of whole work before summer 2025.

B.7.14 ADANI agreed to take expeditious actions and to share the action plan at the earliest.

B.7.15 During 58th PSC meeting, ADANI representative shared the observations made by COMTEL engineers and informed that it would at least require 6 months to complete the work.

B.7.16 NRLDC CGM (SO) highlighted that in view of envisaged growth in demand in next summer season, it is important to ensure rectification of issues and healthiness of SPS.

B.7.17 ADANI representative further informed that cost implication in this case is estimated as approx. Rs. 1.5 Cr. Till now they conducted technical assessment and made cost estimation. He submitted to allow the cost recovery of this under ADDCAP. MS, NRPC conveyed that Adani may bring the separate agenda for approval of cost recovery mode with proper justification. Adani representative mentioned that he will look into the regulatory aspect and will present accordingly.

B.7.18 During 59th PSC meeting, ADANI representative informed that they are doing discussions with ULDC for allocation of necessary links between locations. They have also initiated internal approval for placing necessary orders to the partner for execution of upgradation activity. They are expecting to complete the execution within 4-5 months in collaboration with all the stakeholders from respective utilities and ULDC team. Communication from ATIL in this regard is also sent to NRLDC through letter dated 10th April 2025.

B.7.19 PSC Forum emphasized that considering the growing energy demands in summer season, healthiness of 500kV Mundra-Mahindergarh SPS is of utmost importance for secure & reliable grid operation. State representatives were also requested to coordinate with the ADANI team and also ensure incorporation of identified revised feeders for load relief in SPS. Desired remedial actions need to be expedited.

B.7.20 ADANI is requested to apprise the Forum about identified issues at various stations, action plan and progress in rectification work.

Decision required from Forum:

Members may like to discuss.

B.8 Confirmation regarding implementation of proposed Overvoltage protection setting by committee (agenda by NRLDC)

B.8.1 The committee formed by NRPC (during 52nd PSC meeting held on 20.09.2024) to review the Overvoltage Protection settings of 400kV and 765kV transmission lines in NR finalized the philosophy for overvoltage protection and proposed the revised overvoltage protection setting for 400kV and 765kV transmission lines in NR. The proposed protection settings were discussed and approved in 58th Protection Sub-Committee (PSC) meeting held on 26.03.2025. The PSC Forum requested all the utilities to implement the proposed overvoltage protection settings in 400kV and 765kV transmission lines in their respective control area. Details of the revised overvoltage protection setting to be implemented at site is attached as **Annexure-B.X**.

B.8.2 Further, the agenda in this regard was again discussed in 230th OCC meeting held on 17.04.2025 and members were requested to ensure the implementation of proposed overvoltage settings by the end of April 2025.

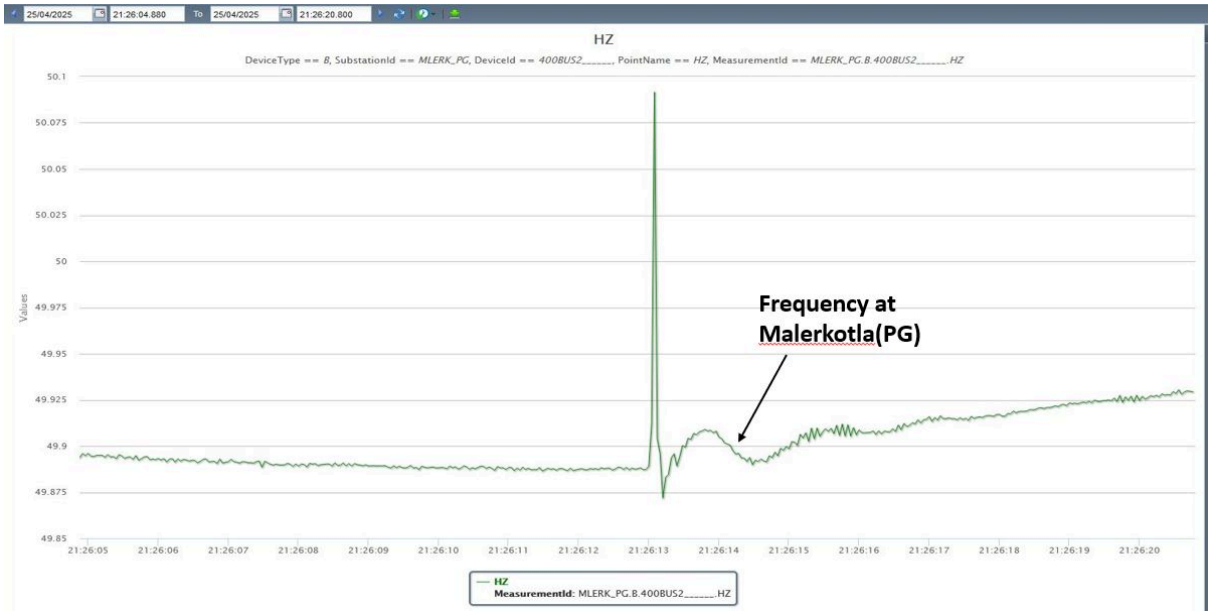
B.8.3 Therefore, all the utilities are requested to share the confirmation regarding implementation of revised overvoltage protection setting in 400kV and 765kV transmission lines in their respective control area.

Decision required from Forum:

Members may like to discuss.

B.9 Review of df/dt(ROCOF) operation and uniformity of df/dt protection setting in Northern Region (agenda by NRLDC)

B.9.1 On 25.04.2025 at 21:26 hrs., significant quantum of load loss (~425 MW) occurred in Punjab control area during a fault incident at 400kV Malerkotla(PG). As reported, load loss occurred due to df/dt operation in Punjab control area.



Frequency profile during the event

B.9.2 No load loss reported from other states during the event.

B.9.3 During May-June 2024 also, multiple incidents of df/dt operation leading to significant quantum of load loss were observed in Punjab control area. Details of recent df/dt operation and during May-June 2024 is attached as **Annexure-B.XI.**

B.9.4 Punjab confirmed that they have reviewed the df/dt setting and settings has been kept in line with the philosophy. However, the recent operation of df/dt on 25.04.2025 indicates issue in df/dt settings in Punjab control area.

B.9.5 In view of the above, review of UFR and df/dt settings is required to avoid unwanted tripping of feeders and load loss in states. Major review is needed in Punjab control area.

B.9.6 States are requested to provide details of stage wise quantum of load relief on df/dt operation and protection setting adopted (average cycle, time delay etc.)

Decision required from Forum:

Members may like to discuss.

Part-C: Agenda for final approval of protection settings by PSC Forum for FTCs which have been provisionally allowed by NRLDC/SLDCs

C.1. First Time Charging of transmission lines/Bays/Transformer/Reactor etc. by NRLDC

A. April 2025

C.1.1 NRLDC has submitted the FTCs allowed in month of April-2025. The same may be found on NRPC website: http://164.100.60.165/meetings/prsub.html

C.1.2 As per approved procedure of NRPC, utilities have to put up agenda in PSC forum for final approval of settings.

C.1.3 Following utility has submitted agenda for approval of settings:

i. PRTL
ii. RVPNL

C.1.4 However, none of the settings have been put up by following utilities:

i. UPRVUNL
ii. PPGCL
iii. XL_XPPL
iv. ASSPL_Bikaner 2
v. Karinsar Solar Plant NHPC Ltd
vi. RENEW SURYA JYOTI PRIVATE LIMITED
vii. Neemba Solar Plant Renew Surya Vihaan Private Limited
viii. GORBEA SOLAR PRIVATE LIMITED
ix. XL Xergi Power Private Limited
x. ACME Sikar Solar Private Limited

C.1.5 These all submitted settings are available at NRPC website: http://164.100.60.165/meetings/prsub.html.

C.1.6 It is to highlight that as per decisions of 54th PSC meeting:

Quote

NRLDC shall give provisional protection clearance during FTC on conditional basis subject to submission of agenda in next Protection Sub-Committee

***meetings (not later than 2nd next PSC meeting). If utility does not put up the agenda within time, further FTC clearance would not be granted to the concerned*.**

Unquote

Decision required from Forum:

Members may refer settings put up by utilities for any correction required. Accordingly, settings may be approved by Forum. Concerned members may be directed to submit the agenda for final approval of protection settings.

*****

Members of Protection Sub-Committee (FY 25-26)

S. No.	NRPC Member Organization	Designation	Email-ID
1	Member (GO&D), CEA	Director, NPC Division	skdotancea@nic.in
2	NTPC Vidyut Vyapar Nigam Ltd.	CEO	ceonvvn@ntpc.co.in
3	CTUIL	Sr.GM	schakraborty@powergrid.in
4	PGCIL	GM	gunjan.agrawal@powergrid.in
5	NLDC*	Executive Director	scsaxena@grid-india.in
6	NRLDC	CGM(SO)	somara.lakra@grid-india.in
7	NTPC	DGM(OS-NR)	rameshsingh@ntpc.co.in, asbhogal@ntpc.co.in
8	BBMB	Director (P&C)	dirpc@bbmb.nic.in
9	THDC*	AGM (O&M) ,Tehri	ravindrasrana@thdc.co.in
10	SJVN	General Manager	sjvn.cso@sjvn.nic.in
11	NHPC	General Manager (O&M)	hod-om-co@nhpc.nic.in
12	NPCIL*	Director (Finance), SO/F, TSU(E&I)	df@npcil.co.in rajeshsharma@npcil.co.in
13	Delhi SLDC	General Manager	gmsldc@delhisldc.org
14	Haryana SLDC	Chief Engineer (SO&C)	cesocomml@hvpn.org.in
15	Rajasthan SLDC	Chief Engineer (LD)	ce.ld@rvpn.co.in
16	Uttar Pradesh SLDC	Superintending Engineer (R&A)	sera@upsldc.org
17	Uttarakhand SLDC	Chief Engineer	anupam_singh@ptcul.org
18	Punjab SLDC	Chief Engineer	ce-sldc@punjabsldc.org
19	Himachal Pradesh SLDC	Chief Engineer	cehpsldc@gmail.com
20	DTL	AGM-Protection	bharatgujardtl@gmail.com
21	HVPNL	Chief Engineer (TS)	cetspkl@hvpn.org.in
22	RRVPNL	CE (M&P)	ce.mps@rvpn.co.in
23	UPPTCL*	Managing Director	md@upptcl.org
24	PTCUL	SE(T&C)	setandchld@gmail.com
25	PSTCL	Chief Engineer (P&M)	ce-pm@pstcl.org
26	HPPTCL*	Managing Director	md.tcl@hpmail.in
27	IPGCL	DGM (Protection)	arif.ipgcl@gmail.com
28	HPGCL	SE/M&T RGTPP	semt.rgtpp@hpgcl.org.in
29	RRVUNL*	CMD	cmd@rrvun.com
30	UPRVUNL	Chief Engineer, (L-2)	ce.ppmm@uprvunl.org
31	UJVNL*	Managing Director	mdujvnl@ujvnl.com
32	HPPCL*	Managing Director	md@hppcl.in
33	PSPCL	Chief Engineer/GHTP	ce-ghtp@pspcl.in
34	DHBVN	Chief Engineer	ctorapdrp@dhbvn.org.in semp@dhbvn.org.in
35	Ajmer Vidyut Vitran Nigam Ltd.	Managing Director	MD.AVVNL@RAJASTHAN.GOV.IN
36	Purvanchal Vidyut Vitaran Nigam Ltd.	Managing Director	md@puvvnl.in
37	UPCL*	Managing Director	md@upcl.org
38	HPSEB*	Managing Director	md@hpseb.in
39	Prayagraj Power Generation Co. Ltd.*	Head (Commercial & Regulatory), DGM - Elect	sanjay.bhargava@tatapower.com, dhananjay.singh@ppgcl.co.in
40	Aravali Power Company Pvt. Ltd*	CEO	brahmajig@ntpc.co.in
41	Apraava Energy Private Limited*	GM-Electrical	navin.chaturvedi@apraava.com
42	Talwandi Sabo Power Ltd. *	COO	Vibhav.Agarwal@vedanta.co.in
43	Nabha Power Limited*	CEO	sk.narang@larsentoubro.com
44	MEIL Anpara Energy Ltd	COO & WTD, Executive Director	anandkumar.singh@meilanparapower.com arun.tholia@meilanparapower.com
45	Rosa Power Supply Company Ltd	GM-ELECTRICAL	Kesarinandan.pandey@reliancegroupindia.com
46	Lalitpur Power Generation Company Ltd	Head of Maintenance, GM Electrical	alokkumar.ltp@lpgcl.com, aupadhyay.ltp@lpgcl.com
47	MEJA Urja Nigam Ltd.	AGM-EMD	SPSPUNDIR@NTPC.CO.IN
48	Adani Power Rajasthan Limited*	GM	Ashish.Baviskar@adani.com
49	JSW Energy Ltd. (KWHEP)*	Head Regulatory & Power Sales	jyotiprakash.panda@jsw.in
50	Transition Cleantech Services Private Limited*	Deputy Manager	kswamidoss@evrenenergy.com
51	UT of J&K*	MD, JKPTCL CE, JKPCL	mdjkptcl1@gmail.com, cejkpcl2@gmail.com
52	UT of Ladakh*	Chief Engineer, LPDD	cepdladakh@gmail.com
53	UT of Chandigarh	Executive Engineer	elop2-chd@nic.in
54	Tata Power Delhi Distribution Limited*	HOG-PMG	sandeep.k@tatapowerddl.com
55	Gurgaon Palwal Transmission Limited*	Head Regulatory	Lokendra.Ranawat@indigrid.com
56	PTC India Limited*	AVP	bibhuti.prakash@ptcindia.com
57	ReNew Power Private Limited*	CEO	sumant@renew.com
58	NTPC Green Energy Limited*	CEO, Sr. Mgr	rajivgupta@ntpc.co.in, sandeepdahiya@ntpc.co.in
59	Azure Power India Pvt. Limited*	CEO	sunil.gupta@azurepower.com
60	Avaada Energy Private Limited*	CEO	kishor.nair@avaada.com
61	Adani Green Energy Limited	AVP	sanjay.bhatt@adani.com

* *Organizations from where nominations are not received for PSC, memebers of NRPC have been mentioned. Nomination for PSC forum may be sent at the earliest.*

List of Members of Rnenewable Energy Sub-committee

S. No.	Members of RE Sub-committiee	Representative Email ID
1	Ministy of New and Renewable Energy	anindya.parira@nic.in;
2	National Load Despatch Center	suhasd@grid-india.in;
3	Northern Regional Load Despatch Center	somara.lakra@grid-india.in;
4	Central Transmission Utility	Kashish@powergrid.in;
5	Powergrid Corporation of India Ltd.	saroj.mishra@powergrid.in; yashpal@powergrid.in
6	Rajasthan Rajya Vidyut Prasaran Nigam Ltd.	se.pp@rvpn.co.in;
7	Rajasthan State Load Despatch Center	se.ldrvpnl@rvpn.co.in;
8	Solar Energy Corporation of India	sanjaysharma@seci.co.in; vkumar@seci.co.in;
9	National Solar Energy Federation of India	ankur.kumar@nsefi.in; ceooffice@nsefi.in;
10	Indian Wind Power Association	secretarygeneral@indianwindpower.com;
11	ABC Renewable Pvt. Ltd	aman.chaturvedi@petronas.com; deepak.asopa@petronas.com; urvika.acharya@petronas.com
12	ACME Heeragarh powertech Pvt. Ltd	prachi.chauhan@acme.in; planthead.badisidd.solar@acme.in; ashutosh.singh@acme.in;
13	ACME Chittorgarh Solar Energy Pvt Ltd	sandeeptak@ayanapower.com; yogesh@ayanapower.com;
14	Adani Hybrid Energy Jaisalmer One Ltd.	
15	Adani Hybrid Energy Jaisalmer Two Ltd.	
16	Adani Hybrid Energy Jaisalmer Three Ltd.	
17	Adani Hybrid Energy Jaisalmer Four Ltd.	
18	Adani Renewable Energy (RJ) limited Rawara	
19	Adani Solar Energy Jaisalmer One Pvt. Ltd._450MW (Solar)	
20	Adani Solar Enegry Four Private Limited	
21	Adani Solar Energy Jaisalmer Two Private Limited	kailash.nagora@adani.com;
22	Adani Solar Energy Jaisalmer Two Private Limited Project Two	sanjay.bhatt@adani.com;
23	SB ENERGY FOUR PRIVATE LIMTED, Bhadla	
24	SB Energy Six Private Limited, Bhadla	
25	Adani Solar Enegry Jodhpur Two Limited, Rawara	
26	Adept Renewable Technologies Pvt. Ltd.	
27	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)	
28	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)	
29	Adani Green Energy 19 Limited	

30	Altra Xergi Pvt. Ltd.	mahendra.kumar@O2power.in;
31	AMP Energy Green Five Pvt. Ltd.	vbhattacharya@ampenergyindia.com;
32	AMP Energy Green Six Pvt. Ltd.	vbhattacharya@ampenergyindia.com;
33	Amplus Ages Private Limited	manish.tak@amplussolar.com;
34	Avaada RJHN_240MW	alpesh.prajapati@avaada.com;
35	Avaada sunce energy Pvt limited	
36	Avaada Sunrays Pvt. Ltd.	
37	Avaada Sustainable RJ Pvt. Ltd.	
38	Ayana Renewable Power Three Private Limited	Venkatraman@ayanapower.com;
39	Ayaana Renewable Power One Pvt. Ltd.	rajeshshukla@ayanapower.com;
40	Azure Power Forty One Pvt limited	sourin.nandi@azurepower.com;
41	Azure Power Forty Three Pvt. Ltd._RSS	manohar.reddy@azurepower.com;
42	Azure Maple Pvt. Ltd.	sourin.nandi@azurepower.com;
43	AZURE POWER INDIA Pvt. Ltd., Bhadla	yogesh.kumar@adani.com;
44	Azure Power Thirty Four Pvt. Ltd.	manohar.reddy@azurepower.com;
45	Clean Solar Power (Jodhpur) Pvt. Ltd.	simhadri.kesapragada@herofutureenergies.com; atul.tomar@herofutureenergies.com; sushant.sinha@herofutureenergies.com;
46	Clean Solar Power (Bhadla) Pvt. Ltd	
47	Eden Renewable Cite Private Limited	dejendra.sharma@eden-re.com
48	Grian Energy private limited	mehul.sharma@amplussolar.com;
49	Mahindra Renewable Private Limited	mehar.rahmatulla@mahindra.com; patil.saurabh2@mahindra.com;
50	Mega Surya Urja Pvt. Ltd. (MSUPL)	msupl_250mw_ists@mahindra.com;
51	AURAIYA Solar	rajivgupta@ntpc.co.in;
52	DADRI SOLAR	
53	SINGRAULI SOLAR	
54	Anta Solar	
55	Unchahar Solar	
56	NTPC Devikot Solar plant_240MW	
57	NTPC Kolayat_400kV	
58	Nedan Solar NTPC	
59	NTPC Nokhra_300MW	
60	One Volt energy Pvt. Ltd.	amarjeet.thakur@amplussolar.com;
61	ReNew Solar Energy (Jharkhand Three) Private Limited	purnendu.chaubey@renew.com; kailash.pandey@renew.com;
62	RENEW SOLAR POWER Pvt. Ltd. Bhadla	
63	ReNew Solar Urja Private Limited	
64	Renew Sun Bright Pvt. Ltd. (RSBPL)	
65	Renew Sun Waves Private Limited (RSEJ4L)	
66	Renew Surya Partap Pvt. Ltd.	
67	Renew Surya Ravi Pvt. Ltd.	
68	Renew Surya Roshni Pvt. Ltd.	
69	Renew Surya Vihan Pvt. Ltd.	
70	Renew Surya Ayaan Pvt. Ltd.	
71	RENEW SOLAR POWER Pvt. Ltd. Bikaner	

72	Rising Sun Energy-K Pvt. Ltd.	tushar.gahlot@risingsunenergy.in;
73	Serentica Renewables India 4 Private Limited	prateek.rai@serenticaglobal.com;
74	Tata Power Green Energy Ltd. (TPGEL)	vinod.kumar@tatapower.com;
75	Tata Power Renewable Energy Ltd. (TPREL)	dhmahabale@tatapower.com; imran.khan@tatapower.com;
76	Thar Surya Pvt. Ltd.	kiran.tidke@enel.com; mario.dematteis@enel.com;
77	TP Surya Pvt. Ltd.	sivanarayana@tatapower.com; sagar.potdar@tatapower.com;
78	Banderwala Solar Plant TP Surya Ltd.	arun.sahoo@tatapower.com;
79	TRANSITION ENERGY SERVICES PRIVATE LIMITED	kak@evrenenergy.com;
80	Transition Green Energy Private Limited	
81	Transition Sustainable Energy Services Private Limited	

Address List of ISTS Transmission Licensees (other than NRPC members)

S.N.	TBCB/ Licensee Name	Owner Company	E-mail ID
1	Gurgaon Palwal Transmission Ltd	INDIGRID	vivek.karthikeyan1@indigrid.com
2	NRSS-XXIX Transmission Ltd		
3	Parbati Koldam Transmission Company Limited		
4	Patran Transmission Company Ltd		
5	NRSS-XXXI(B) Transmission Ltd	SEKURA	neeraj.verma@energy-sel.com
6	NRSS XXXVI Transmission Ltd	TATA POWER	rajnishmehrotra@tatapower.com
7	AD Hydro Power Limited	-	sumitgarg@lnjbhilwara.com
8	Aravali Power Company Private Limited		amit.hooda01@apcpl.co.in
9	POWERLINKS TRANSMISSION LIMITED (PTL)	-	sandeep.shukla@tatapower.com
10	Adani Transmission India Limited	ADANI	Sunil.Raval@adani.com
11	Bikaner Khetri Transmission Limited		

Annexure-A.0

Tripping of Parbati-III-Banala Line#1 on 03/02/2025 at 19:35 Hrs

on onm-protection@nhpc.nic.in <onm-protection@nhpc.nic.in>
Thu, 08 May 2025 8:01:11 PM +0530

To "pandeyr cea" <pandeyr.cea@gov.in>, "lokesh cea" <lokesh.cea@gov.in>, "nrldcso2" <nrldcso2@posoco.in>

Cc "I P. Ranjan" <ipranjan@nhpc.nic.in>, "surendra kumar mishra" <surendramishra@nhpc.nic.in>

Ref- 1) 58th PSC meeting MOM

This has reference to 58th PSC meeting MOM (Annexure-B-II, Sl No-3) vide which it was mentioned the tripping of Parbati-III-Banala Line was tripped on operation of LBB Protection. In this regard, it is pertinent to mention here that the relevant DR, EL & Analysis report is already given on NRLDC tripping monitoring portal. The detail analysis for the incidence happened at Parbati-III end is given below.

1.During the incidence, only one unit was in running condition and both Parbati-III-Banala Line & Parbati-III-Sainj Line were in charged condition.

2.Fault occurred on Parbati-III-Banala Line and distance protection relay at Parbati-III end sense the fault in Z2 at R-N Phase fault and got resetted within 170 msec. However, R-Phase External Trip was received and Auto Reclose was blocked at 19:26:47.692 Hrs.

3. In SCADA event, "Direct Trip-2 Receive" was recorded which led to activate three phase tripping from Parbati-III end.

4.Line CB of Parbati-III-Sainj Line remained in closed condition from Parbati-III end and tripped from Sainj end.

5.Due to unavailability of power evacuation path, the running unit i.e. Unit#4 tripped on operation of over frequency protection.

Therefore it is requested to revise the analysis of the fault mentioned at page no-194 of 58th PSC meeting MOM.

Thanks

(Jaganath Pani)
Sr. Manager(E)
O&M Division
NHPC Ltd


Azadi Ka
Amrit Mahotsav

Status of action taken on decisions of 59th PSC

S.N.	Agenda No.	Agenda	Decision of 59th PSC	Status of action Taken
1	A.3	Submission of protection performance indices along with reason and corrective action taken for indices less than unity to NRPC Secretariat on monthly basis (agenda by NRPC Secretariat)	Non-compliant utilities were asked to submit the Protection performance indices timely by 7th day of month element wise along with corrective action taken for indices less than unity.	Status of reporting of indices has been taken as an agenda.
2	A.5	Annual protection audit plan for FY 2025-26 (agenda by NRPC Secretariat)	Non-compliant utilities were asked to submit annual audit plan 2025-26 without any further delay. Other utilities were asked to submit report and compliance status within one month of completion of audit. PSTCL, PTCUL, APCPL, HPGCL and J&K representative ensured to arrange the internal protection audit plan after the meeting.	Some utilities have submitted audit report. Same has been taken as agenda. HPGCL vide mail dated 06.05.2025 submitted that report for internal protection Audit of 400KV Switchyard, RGTPP and 220 KV Switchyard, DCRTPP, HPGCL, Yamuna Nagar for

				the year 2025-26 may be submitted by Aug-Sept-2025.
3	A.6	Third-party protection audit plan (agenda by NRPC Secretariat)	Forum directed utilities to submit the third-party protection audit plan. Subsequently, the audit reports along with compliance status may be submitted to NRPC Secretariat within one month of completion of audit.	Some utilities have submitted audit report. Same has been taken as agenda.
4	A.9	Review of Standard protection philosophy to be adopted in various cases (agenda by POWERGRID Nr-3)	MS, NRPC stated that inputs from all the members may be sought via mail after the meeting and the agenda may be discussed in the next PSC meeting.	In this regard, mail was sent on 24.04.2025. BBMB, AESL have shared the comments. Agenda has been taken.

Status of action taken on decisions of 59th PSC

5	A.10.	Implementation of SPS for ICTs at POWERGRID Substations (agenda by POWERGRID NR-1)	Forum directed Rajasthan SLDC to submit the feeder details to NRLDC within 10 days for the SPSs at mentioned locations. Rajasthan SLDC may also plan the SPS for Heerapura and Deedwana if commissioning of new ICT gets delayed by end of May, 2025. MS, NRPC directed to complete the implementation of mentioned SPSs latest by 10.05.2025	Rajasthan SLDC may update.
4	B.9	Corrective action for healthiness of 500kV Mundra-Mahindergarh SPS (agenda by NRLDC)	Forum emphasized the importance of 500kV Mundra-Mahindergarh SPS and its healthiness is important to ensure rectification of issues in SPS system before summer 2025. State representatives were also requested to coordinate	Adani may update.

			with the ADANI team and also ensure incorporation of identified revised feeders for load relief in SPS. Desired remedial actions need to be expedited.	

Status of perfomance indices report of April 2025 (Last date of submission 07.05.2025)							
S. No.	**Member Utility**		**Received Status (Yes/No)**	**Vide mail dated**	**Remarks**	**Indices less than 1 (Yes/No)**	**Reason submitted and corrective action taken**
1	PGCIL	Central Government owned Transmission Company	Yes	06.05.2025	NR-1	No	NA
					NR-2		
			Yes	06.05.2025	NR-3	No	NA
2	NTPC	Central Generating Company			Anta		
					Auriya		
			Yes	08.05.2025	Dadri	No	NA
					Koldam		
					Rihand		
					Singrauli		
			Yes	08.05.2025	Unchahar	No	NA
			Yes	02.05.2025	Tanda	No	NA
3	BBMB						
4	THDC		Yes	05.05.2025	Tehri	No	NA
					Koteshwar		
5	SJVN		Yes	03.05.2025	RHPS	No	NA
			Yes	05.05.2025	NJHPS	No	NA
6	NHPC		Yes	02.05.2025		Yes	Yes
7	NPCIL		Yes	06.05.2025	RAPS-A	NO	NA
			Yes	05.05.2025	RAPS-B	No	NA
			Yes	05.05.2025	RAPS-C(5&6)	Yes	No
					NAPS-1&2		
8	DTL	State Transmission Utility	Yes	07.05.2025		NO	NA
9	HVPNL		Yes	07.05.2025		Yes	No
10	RRVPNL		Yes	07.05.2025		Yes	Yes
11	UPPTCL		Yes	03.05.2025	Meerut Circle	Yes	Yes
			Yes	03.05.2025	Agra Circle	No	NA
			Yes	03.05.2025	Jhansi Circle	No	NA
			Yes	03.05.2025	Prayagraj Circle	No	NA
			Yes	03.05.2025	Gorakhpur Circle	No	NA
			Yes	03.05.2025	Lucknow Circle	No	NA
12	PTCUL		Yes	07.05.2025		No	NA
13	PSTCL						
14	HPPTCL		Yes	13.05.2025		No	NA
15	IPGCL	State Generating Company	Yes	05.05.2025	PPS-I	No	NA
			Yes	05.05.2025	PPS-III, Bawana	No	NA
16	HPGCL				PTPS, Panipat		
					DCRTPP, Yamunanagar		
			Yes	06.05.2025	RGTPP (Khedar)	No	NA
17	RRVUNL		Yes	07.05.2025	KTPS	No	NA
			Yes	05.05.2025	CSCTPP Chhabra	No	NA
			Yes	02.05.2025	RGTPP, Ramgarh	No	NA
			Yes	07.05.2025	Ctpp,Chhabra	No	NA
			Yes	07.05.2025	DCCPP, Dholpur	No	NA
			Yes	07.05.2025	kATPP, Jhalawar	No	NA
			Yes	07.05.2025	STPS Suratgarh	No	NA
			Yes	07.05.2025	SSCTPS Suratgarh	No	NA
18	UPRVUNL		Yes	07.05.2025	Parichha B (220 kV)	No	NA
			Yes	02.05.2025	Parichha C (400 kV)	No	NA
			Yes	06.05.2025	DTPS Anpara	No	NA
			Yes	17.05.2025	Obra A & B	No	NA
			Yes	07.05.2025	Obra C	No	NA
			Yes	07.05.2025	Harduaganj 400 kV	No	NA
			Yes	05.05.2025	Ghatampur 765 kV	No	NA
			Yes	09.05.2025	Anpara-A&B	Yes	Yes
			Yes	07.05.2025	Panki TPS	No	NA
			Yes	07.05.2025	Jawaharpur	No	NA
19	UJVNL		Yes	03.05.2025	Dharasu	No	NA
			Yes	03.05.2025	Tiloth	No	NA
					Khodri		
					Chibro		
					Vyasi		
20	HPPCL		Yes	14.05.2025	Kashang HEP	No	NA
			Yes	14.05.2025	Sawara Kuddu	No	NA
			Yes	14.05.2025	Sainj	No	NA
21	PSPCL	State Generating Company & State owned Distribution Company			RSD		
			Yes	05.05.2025	GGSTPS, Rupnagar	No	NA
			Yes	06.05.2025	GVK Power Goindwal Shahib Ltd.	No	NA
			Yes	06.05.2025	GHSTPS, Lehra Mohabbat	No	NA

22	HPSEBL	Distribution company having Transmission connectivity ownership	Yes	06.05.2025	Hamirpur Circle	No	NA
					Shimla Circle		
23	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Yes	03.05.2025		No	NA
24	Aravali Power Company Pvt. Ltd		Yes	05.05.2025		No	NA
25	Apraava Energy Private Limited		Yes	06.05.2025		No	NA
26	Talwandi Sabo Power Ltd.		Yes	07.05.2025		No	NA
27	Nabha Power Limited		Yes	01.05.2025		No	NA
28	MEIL Anpara Energy Ltd (Anpara-C)		Yes	05.05.2025		No	NA
29	Rosa Power Supply Company Ltd		Yes	02.05.2025		No	NA
30	Lalitpur Power Generation Company Ltd		Yes	03.05.2025		No	NA
31	MEJA Urja Nigam Ltd.		Yes	07.05.2025		No	NA
32	Adani Power Rajasthan Limited		Yes	07.05.2025		No	NA
33	JSW Energy Ltd. (KWHEP)						
34	RENEW Power Pvt Ltd	RE Generating Company having more than 1000 MW installed capacity					
35	NTPC Green Energy Limited						
36	Azure Power India Pvt. Ltd.						
37	Avaada Energy Private Limited						
38	Adani Green Energy Limited						
39	UT of J&K	UT of Northern Region					
40	UT of Ladakh						
41	UT of Chandigarh						
	ISTS Transmission Utilities						
42	INDIGRID		Yes	13.05.2025		No	NA
43	POWERLINK						
44	ADHPL		Yes	07.05.2025		No	NA
45	NRSSXXXVI's Northern Region Transmission System	Tata Power					
46	Adani Transmission Limited	AESL					
47	Bikaner Khetri Transmission Limited						
48	Fatehgarh Bhadla Transmission Limited						
49	Powergrid Sikar Transmission Limited	POWERGRID, NR-1					
50	Powergrid Aligarh Sikar Transmission Limited						
51	Powergrid Ajmer Phagi Transmission Limited						
52	Powergrid Bikaner Transmission System Limited						
53	Powergrid Khetri Transmission System Limited						
54	Powergrid Ramgarh Transmission Limited						
55	Powergrid Fatehgarh Transmission Limited						
56	Powergrid Bhadla Transmission Limited						
57	Powergrid Meerut Simbhavli Transmission Limited						
58	Powergrid Kala Amb Transmission Limited	POWERGRID, NR-2					
	State Utilities						
	Uttar Pradesh						
59	Vishnuprayag Hydro Electric Plant (J.P.)						
60	Alaknanda Hydro Electric Plant (GVK)		Yes	06.05.2025		No	NA
61	Khara Power House (Khara)		Yes	08.05.2025		Yes	Yes
62	WUPPTCL		Yes	03.05.2025		No	NA
63	SEUPPTCL						
64	ATSCL	**AESL**					
65	GTL	**AESL**					
66	HPTSL	**AESL**					
67	MTSCL	**AESL**					
68	OCBTL	**AESL**					
	Rajasthan						
69	Barsingsar Plant	**NLC**					

	RE Utilities						
70	ABC Renewable Pvt. Ltd						
71	ACME Heeragarh powertech Pvt. Ltd						
72	ACME Chittorgarh Solar Energy Pvt Ltd						
73	Adani Hybrid Energy Jaisalmer One Ltd.						
74	Adani Hybrid Energy Jaisalmer Two Ltd.						
75	Adani Hybrid Energy Jaisalmer Three Ltd.						
76	Adani Hybrid Energy Jaisalmer Four Ltd.						
77	Adani Renewable Energy (RJ) limited Rawara						
78	Adani Solar Energy Jaisalmer One Pvt. Ltd._450MW (Solar)						
79	Adani Solar Enegry Four Private Limited						
80	Adani Hybrid Energy Jaisalmer Four Ltd. (AEML 2-350)						
81	Project Two						
82	SB Energy Six Private Limited, Bhadla						
83	Adani Solar Enegry Jodhpur Two Limited, Rawara						
84	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)						
85	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)						
86	Adani Green Energy 24 Limited (Bhimsar)						

87	Adani Green Twenty-Five Limited (Badisid)						
88	Altra Xergi Pvt. Ltd.		Yes	06.05.2025		No	NA
89	AMP Energy Green Five Pvt. Ltd.						
90	AMP Energy Green Six Pvt. Ltd.						
91	Amplus Ages Private Limited	AmPlus Solar	Yes	08.05.2025		No	NA
92	Avaada RJHN_240MW	Avaada					
93	Avaada sunce energy Pvt limited						
94	Avaada Sunrays Pvt. Ltd.						
95	Avaada Sustainable RJ Pvt. Ltd.						
96	Ayana Renewable Power Three Private Limited						
97	Ayaana Renewable Power One Pvt. Ltd.						
98	Azure Power Forty One Pvt limited						
99	Azure Power Forty Three Pvt. Ltd._RSS						
100	Azure Maple Pvt. Ltd.						
101	AZURE POWER INDIA Pvt. Ltd., Bhadla						
102	Azure Power Thirty Four Pvt. Ltd.						
103	Clean Solar Power (Jodhpur) Pvt. Ltd.						
104	Clean Solar Power (Bhadla) Pvt. Ltd						
105	Eden Renewable Cite Private Limited						
106	Grian Energy private limited	AmPlus Solar	Yes	08.05.2025		No	NA
107	Mahindra Renewable Private Limited						
108	Mega Surya Urja Pvt. Ltd. (MSUPL)						
109	AURAIYA Solar						
110	DADRI SOLAR						
111	SINGRAULI SOLAR						
112	Anta Solar						
113	Unchahar Solar						
114	NTPC Devikot Solar plant_240MW						
115	NTPC Kolayat_400kV						
116	Nedan Solar NTPC						
117	NTPC Nokhra_300MW						
118	One Volt energy Pvt. Ltd.	AmPlus Solar	Yes	08.05.2025		No	NA
119	ReNew Solar Energy (Jharkhand Three) Private Limited	RENEW					
120	RENEW SOLAR POWER Pvt. Ltd. Bhadla						
121	ReNew Solar Urja Private Limited						
122	Renew Sun Bright Pvt. Ltd. (RSBPL)						
123	Renew Sun Waves Private Limited (RSEJ4L)						
124	Renew Surya Partap Pvt. Ltd.						
125	Renew Surya Ravi Pvt. Ltd.						
126	Renew Surya Roshni Pvt. Ltd.						
127	Renew Surya Vihan Pvt. Ltd.						
128	Renew Surya Ayaan Pvt. Ltd.						
129	Renew Solar Photovoltaic Pvt Ltd						
130	RENEW SOLAR POWER Pvt. Ltd. Bikaner						
131	Rising Sun Energy-K Pvt. Ltd.						
132	Serentica Renewables India 4 Private Limited						
133	Tata Power Green Energy Ltd. (TPGEL)		Yes	05.05.2025		No	NA
134	Tata Power Renewable Energy Ltd. (TPREL)		Yes	05.05.2025		No	NA
135	Banderwala Solar Plant TP Surya Ltd.	TATA POWER	Yes	05.05.2025		No	NA
136	Thar Surya Pvt. Ltd.						
137	TP Surya Pvt. Ltd.						
138	TRANSITION ENERGY SERVICES PRIVATE LIMITED						
139	Transition Green Energy Private Limited						
140	Transition Sustainable Energy Services Private Limited						

S.No.	Substation	Element name	Date & Time of the tripping	Categorization (F/U) F = Failures to operate at internal power system faults U = Unwanted operations	Reason for failures/Unwanted operation	Corrective action taken/ to be taken
1	Anpara BTPS	Anpara-Sarnath ckt-2	06.03.2025 13:12:10 HR	U	PLCC failure	Gain has been increased.PLCC is now in healthy condition.However OEM is being called to check the PLCC panel.

Annexure-X

Format No.-PI-01

Reporting of performance indices for protection system

(for elements connected at 220 kV and above)

Name of Utility: HVPNL

Month: April, 2025

S.N.	Substation	Unit (SPS/Line/ICT/GT/ etc)	Nc	Nf	Nu	Ni	Dependability Index (D=Nc/Nc+Nf)	Security Index (S=Nc/Nc+Nu)	Reliability Index (R=Nc/Nc+Ni)
M&P Division Gurugram									
1	220KV Deroli Ahir	220KV Dhanonda-Deroli AhirCkt-1	**1**	**0**	**0**	**0**	**1**	**1**	**1**
2	220KV Deroli Ahir	220KV Dhanonda-Deroli AhirCkt-2	**1**	**0**	**0**	**0**	**1**	**1**	**1**
3	220KV Deroli Ahir	220KV Deroli Ahir-Narnaul Ckt-1	**1**	**0**	**0**	**0**	**1**	**1**	**1**
4	220KV Deroli Ahir	220KV Deroli Ahir-Narnaul Ckt-2	**1**	**0**	**0**	**0**	**1**	**1**	**1**
5	220KV Mau	220/66KV 100MVA T-2	**1**	**0**	**0**	**0**	**1**	**1**	**1**
6	220KV Badshahpur	220KV S/Pur (BBMB)-Badshahpur Ckt-1	**1**	**0**	**0**	**0**	**1**	**1**	**1**
7	400KV D/Bad	400KV D/Bad-Dhanonda Ckt-1	**1**	**0**	**0**	**0**	**1**	**1**	**1**
8	220KV Sec-1 IMT Manesar	220KV D/Bad-Manesar Line	**1**	**0**	**0**	**0**	**1**	**1**	**1**
9	220KV D/Bad	220KV D/bad to Sec-85 Line	**1**	**0**	**0**	**0**	**1**	**1**	**1**
10	220KV Mau	220KV Mau-MSIL Line	**1**	**0**	**0**	**0**	**1**	**1**	**1**
11	220KV Sec-95 GGN	220KV Sec-95 GGN to MSIL Line	**1**	**0**	**0**	**0**	**1**	**1**	**1**
12	220KV B/Pur	220KV B/pur-Manesar Ckt-2	**1**	**0**	**0**	**0**	**1**	**1**	**1**
13	400KV Daultabad	400KV Jhajjar-Daultabad Ckt-2	**1**	**0**	**0**	**0**	**1**	**1**	**1**
14	220KV GIS Transport Hub Sector-8 IMT Manesar	220/66KV 100MVA T-1	**1**	**0**	**0**	**0**	**1**	**1**	**1**

15	220KV Sec-72 GGN	220KV Sec-72 to Sec-52 GGN Line	**0**	**1**	**0**	**1**	**0**	**1**	**0**
M&P Division Hisar									
1	400 KV S/Stn. Kirori	400 KV Jind PG – Kirori Ckt. 2	**0**	**0**	**1**	**0**	**0**	**0**	**0**
2	220 KV S/Stn. Fatehabad	220 KV Fatehabad PG – Fatehabad HVPNL Ckt. 01	**1**	**0**	**0**	**0**	**1**	**1**	**1**
3	220 KV S/Stn. Fatehabad	220 KV Fatehabad PG – Fatehabad HVPNL Ckt. 02	**1**	**0**	**0**	**0**	**1**	**1**	**1**
4	220 KV S/Stn. Fatehabad	220 KV Hisar PG – Fatehabad HVPNL Ckt. 01	**1**	**0**	**0**	**0**	**1**	**1**	**1**
5	220 KV S/Stn. Fatehabad	220 KV Hisar PG – Fatehabad HVPNL Ckt. 02	**1**	**0**	**0**	**0**	**1**	**1**	**1**
6	220 KV S/Stn. Bhiwani	220 KV BBMB Bhiwani – Bhiwani Ckt. 01	**1**	**0**	**0**	**0**	**1**	**1**	**1**
7	220 KV S/Stn. Bhiwani	220 KV Bhiwani PGCIL – Bhiwani Ckt. 01	**1**	**0**	**0**	**0**	**1**	**1**	**1**
8	220 KV S/Stn. Bhiwani	220 KV Bhiwani PGCIL – Bhiwani Ckt. 02	**1**	**0**	**0**	**0**	**1**	**1**	**1**
9	220 KV S/Stn. Sirsa	220 KV Fatehabad PGCIL – Sirsa Line	**1**	**0**	**0**	**0**	**1**	**1**	**1**
10	220 KV S/Stn. BBMB Bhiwani	220 KV BBMB Bhiwani – Bhiwani Ckt. 01	**1**	**0**	**0**	**0**	**1**	**1**	**1**
11	220 KV S/Stn. Sirsa	220 KV Fatehabad PGCIL – Sirsa Line	**1**	**0**	**0**	**0**	**1**	**1**	**1**
M&P Division Faridabad									
1	220KV Rangala Rajpur	220KV Sohna Road-Rangala Rajpur Ckt-2	**1**	**0**	**0**	**0**	**1**	**1**	**1**
2	220KV Rangla Rajpur	220KV Rangla Rajpur-Prithala Ckt-2	**1**	**0**	**0**	**0**	**1**	**1**	**1**
3	400KV Nawada	220/33KV 100MVA T-6	**1**	**0**	**0**	**0**	**1**	**1**	**1**
4	220KV Palla	220KV FGPP-Palla Ckt-1	**1**	**0**	**0**	**0**	**1**	**1**	**1**
M&P Division Dhulkote									
1	220 KV Pinjore	220 kV Pinjore- Naggal PG ckt-1	**1**	**0**	**0**	**0**	**1**	**1**	**1**
2	220 KV Pinjore	220 kV Pinjore- Naggal PG ckt-2	**1**	**0**	**0**	**0**	**1**	**1**	**1**

3	220 KV Rampur Kamboyan	220 KV Rampur- DCRTPP ckt-1	**1**	**0**	**0**	**0**	**1**	**1**	**1**
4.	220 KV Rajokheri	220kV Rajo Kheri - Abdulapur Ckt.-2	**1**	**0**	**0**	**0**	**1**	**1**	**1**
5.	220 KV Rajokheri	220kV Rajo Kheri - Tepla Ckt.-1	**1**	**0**	**0**	**0**	**1**	**1**	**1**
M&P Division Rohtak									
1	220kV PTPS	220kV PTPS - Rohtak Ckt.-1	**1**	**0**	**0**	**0**	**1**	**1**	**1**
2	220kV Nuna Majra	220kV Nuna Majra - Bahadurgarh _PG Ckt.-1	**1**	**0**	**0**	**0**	**1**	**1**	**1**
3		220kV Nuna Majra - Bahadurgarh _PG Ckt.-2	**1**	**0**	**0**	**0**	**1**	**1**	**1**
M&P Division Karnal									
1	220KV substation Kaul	220KV kaul- Kurukshetra PG Ckt-2	**1**	**0**	**0**	**0**	**1**	**1**	**1**
2	220KV Substation Mund	220kV Mund - Jind_PG Ckt 2	**1**	**0**	**0**	**0**	**1**	**1**	**1**

Note: Justification for less than one index may be attached separately.

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.

Sr. No.	Dated	Divn.	Name of sub/ station	Tripping /Break down element	Length of line	Duration of Tripping /Break down			Relays Operated along with Relay Data		Reasons of Tripping /break-down	Area Affected if any	Analysis of Tripping/Break down by designated committee.	Remarks if any.
						From (Hrs.)	To (Hrs.)	Total (Hrs.)	This end (Reporting Substation)	Other end (in case of line)				
1	17.04.25	XEN TS Gurugram	220KV Sec-72 GGN	220KV Sec-72 to Sec-52 GGN Line	11.5 Km	13:59	07:55 18.04.25	17:56	No relay	PSB optd in DPR, E/F & master86	Gas pipe line burst under T. No. 45-46 causing heavy fire which melted conductors	1. 220KV Sec-72(supply restored at 14:28hrs) 2. 220KV Sec-33(supply restored at 16:18hrs) 3. 220KV Sec-15(supply restored at 14:38hrs) 4. 220KV Sec-56(supply restored at 15:05hrs) 5. 220KV Sec-52(supply restored at 15:15hrs 6. 220KV Sec-57(supply restored at 15:26hrs 7. 220KV Sec-20(supply	Tripping of 220 kV Sec 72-Sec 52 line did not occur at Sec 72 (HVPN) due to missing of PT supply in DPR owing to defective PT selection relay. Remedial measure: PT supply was restored in the DPR relays after replacement of PT selection relay.	

												restored at 16:20hrs		
2	03.04.25	XEN TS Palwal	220KV Rangala Rajpur	220KV Sohna Road-Rangala Rajpur Ckt-2	69.31 Km	21:08	01:00 (04.04.25)	3:52	DPR, Z-1, D=53.76km, main-1&2, E/F, B-ph, master86	Not tripped	Transient fault	NIL	The 220kV Sohna Road – Rangala Rajpur Ckt-2 tripped from 400kV Sohna Road S/Stn. end with the operation of DPS M-1, Z-1, B-PH 53.76 KM, 3.014 kA and DPS M-2, Z-1, B - PH 52.6 KM, 2.104 kA. No tripping occurred at 220kV Rangala Rajpur S/Stn. end. Line probably tripped due to transient fault. NO fault found during patrolling of the line.	• The line should be thoroughly patrolled from time to time to prevent any unnecessary tripping of the line. • Night patrolling and thermo vision scanning of the line be also carried out periodically to prevent tripping of th line die to occurrence of any hot points in the line. Trimming of tree branches in the vicinity of ROW of the line be carried out to prevent undue

														tripping during windstorm and rain in the region

Protection Performance Indices (PPI) for the month of April 2025 of KPH, Khara.

S.No.	Substation	Element name	Date & Time of the Tripping	Categorization (F/U) F = Failures to operate at internal power system faults U = Unwanted operations	Reason for failures/Unwanted operation	Corrective action taken/ to be taken
1	Khara Power House (Khara)	220 KV Khara - Saharanpur (PG)	18/04/2025, 19:50 Hrs	F	Over Current Trip, SOTF	Relay setting reviewed and changed according to other end relay setting after consultation with Testing & Commissioning Engineer.
2		220 KV Khara - Behat	18/04/2025, 19:50 Hrs	F	Over Current Trip, SOTF	
3		220 KV Khara - Saharanpur (PG)	18/04/2025, 23:31 Hrs	F	Over Current Trip, SOTF	
4		220 KV Khara - Behat	18/04/2025, 23:31 Hrs	F	Over Current Trip, SOTF	
5		220 KV Khara - Behat	25/04/2025, 11:50 Hrs	F	SOTF	
6		220 KV Khara - Behat	27/04/2025, 16:02 Hrs	F	SOTF	
7		220 KV Khara - Saharanpur (PG)	27/04/2025, 16:02 Hrs	F	SOTF	

Reporting of performance indices for protection system
(For element connected at 220kV and above)
Name of Utility : ET&CC,UPPTCL,MEERUT
Month : April-2025

ET&CD, Gr. Noida

S.N.	Sub-station	Unit (SPS/Line/ICT/GT/etc)	Nc	Nf	Nu	Ni	Dependability Index (D)	Security Index (S)	Reliability Index (R)	REMARK
1	220 kV.Rukhi	220 K.V Rukhi-Harduaganj line	1	0	0	0	1	1	1	
2	220 kV KHURJA	CB No. - 84 , 220kV Khurja- 220kV Napp Line	3	0	0	0	1	1	1	
		220 kV NAPP LINE	1	0	0	0	1	1	1	
		200 MVA T/F-I	1	0	0	0	1	1	1	
			1	0	0	0	1	1	1	
3	220 kV Simbhaoli	220 kV NAPP line	1	0	0	0	1	1	1	
		200 MVA T/F-I	2	0	0	0	1	1	1	

ET&CD, Ghaziabad

S.N.	Sub-station	Unit (SPS/Line/ICT/GT/etc)	Nc	Nf	Nu	Ni	Dependability Index (D)	Security Index (S)	Reliability Index (R)	REMARK
1	400 kV Muradnagar-I	400 kV Aligarh line	5	0	0	0	1	1	1	
		220 kV Faridnagar line	1	0	0	0	1	1	1	
		220 kV Interconnector-I line	1	0	0	0	1	1	1	
		220 kV Interconnector-II line	1	0	0	0	1	1	1	
		220 kV Pratapvihar line	2	0	0	0	1	1	1	
2	400 kV -II Muradnagar	400kV MATHURA LINE	5	0	0	0	1	1	1	
		220kV MORTA LINE	4	0	0	0	1	1	1	
3	220 kV Muradnagar	220 kV Ataur line	1	0	0	0	1	1	1	
		220 kV Ataur line	1	0	0	0	1	1	1	
		220 kV I/C -IInd line MDR-400kV S/S-Ist	1	0	0	0	1	1	1	
4	220kV Faridnagar	220 kV line 400kV Muradnagar-Ist	1	0	0	0	1	1	1	
5	220kV Sahibabad	CB NO.86 220kV SBB-Pratapvihar Line	1	0	0	0	1	1	1	
6	220kV Morti	220kV MORTI-ATAUR LINE I	1	0	0	0	1	1	1	
7	220kV Sahibabad	CB NO.83 220kV Bhushan Steel Line	1	0	0	0	1	1	1	
8	220kV Pratap Vihar	160 MVA T/F I	1	0	0	0	1	1	1	
		220kV Sahibabad Line	1	0	0	0	1	1	1	
		220kV Muradnagar Line	1	0	0	0	1	1	1	

ET&CD, Moradabad-I

S.N.	Sub-station	Unit (SPS/Line/ICT/GT/etc)	Nc	Nf	Nu	Ni	Dependability Index (D)	Security Index (S)	Reliability Index (R)	REMARK
1	400 kV Moradabad	400 kV Moradabad-Hapur Line	1	0	0	0	1	1	1	
		400 kV Moradabad-Kashipur Line	1	0	0	0	1	1	1	
2	220 kV Moradabad	220 kV Moradabad -C.B. Ganj Line	2	0	0	0	1	1	1	

ET&CD, Moradabad-II

S.N.	Sub-station	Unit (SPS/Line/ICT/GT/etc)	Nc	Nf	Nu	Ni	Dependability Index (D)	Security Index (S)	Reliability Index (R)	REMARK
1	220 kV Amroha	220 kV Amroha Nehtaur line	1	0	0	0	1	1	1	
2	220 kV Nehtaur	220 kV NEHTAUR- MATAUR (PGCIL) Line	2	0	0	0	1	1	1	
		220 kV NEHTAUR- AMROHA Line	1	0	0	0	1	1	1	During 220kV Nehtaur Amroha line fault, unwanted operation of 220kV Bus bar differential protection occured due to faulty Y Phase CT cable of busbar protn core 5. (CT terminal box to CT Junction box). **Remedial action taken: After identification of CT cable fault, cable between CT terminal box to CT junction box was replaced.**
		220 kV BUSBAR Protection	0	0	1	1	Not defined	0	0	

ET&CD, Muzaffarnagar

S.N.	Sub-station	Unit (SPS/Line/ICT/GT/etc)	Nc	Nf	Nu	Ni	Dependability Index (D)	Security Index (S)	Reliability Index (R)	REMARK
1	220 kV SHAMLI	220 SHAMLI- BAGHPAT LINE	1	0	0	0	1	1	1	
		220 kV SHAMLI -MZN LINE	1	0	0	0	1	1	1	
		220 kV SHAMLI- SRE PGCIL LIEN	1	0	0	0	1	1	1	
2	400 kV GIS SHAMLI	400 kV SHAMLI- ALIGARH LINE	2	0	0	0	1	1	1	
		400 kV SHAMLI -THDC KHURJA LINE	2	0	0	0	1	1	1	
		220 kV SHAMLI - NANAUTA LINE	1	0	0	0	1	1	1	
3	220 kV Nanauta	220 kV Shamli line	1	0	0	0	1	1	1	
4	220kV Nara	220kV Nara- Roorkee LINE	1	0	0	0	1	1	1	
		220kV Nara- Mator LINE(A/R)	2	0	0	0	1	1	1	
5	220kV SARSAWA	220kV PGCIL -I LINE	1	0	0	0	1	1	**1**	
		220kV PGCIL -II LINE	1	0	0	0	1	1	**1**	
		220kV KHODRI LINE	1	0	0	0	1	1	**1**	
6	220kV SAHARANPUR	220kV BEHAT LINE	2	0	0	0	1	1	1	
		220kV KHODRI LINE	1	0	0	0	1	1	**1**	
7	220kV BEHAT	220kV KHARA LINE	2	0	0	0	1	1	1	

ET&CD, NOIDA

S.N.	Sub-station	Unit (SPS/Line/ICT/GT/etc)	Nc	Nf	Nu	Ni	Dependability Index (D)	Security Index (S)	Reliability Index (R)	REMARK
1	400 kV Sec 148 Noida	220/33 kV 100 MVA Transformer I	2	0	0	0	1	1	1	
		220/33 kV 100 MVA Transformer II	2	0	0	0	1	1	1	
		220 kV KP5 Line	1	0	0	0	1	1	1	
2	220 kV Dadri	220 kV Dadri - Khurja Line	1	0	0	0	1	1	1	
3	220 kV KP5	220 kV KP5 - Metro Depot Line	1	0	0	0	1	1	1	

ET&CD, MEERUT

S.N.	Sub-station	Unit (SPS/Line/ICT/GT/etc)	Nc	Nf	Nu	Ni	Dependability Index (D)	Security Index (S)	Reliability Index (R)	REMARK
1	220kV BAGHPAT	220 kV Baghpat- Baghpat (PG)-1	1	0	0	0	1	1	1	
		GRAND TOTAL	**75**	**0**	**1**	**1**				

PERFORMANCES INDICES FROM TW ZONE UPPTCL

Dependability index (D) D=(Nc/(Nc+Nf))	1
Security Index (S) S=(Nc/(Nc+Nu))	0.99
Relibality Index (R) R=(Nc/(Nc+Ni))	0.99

NOTE:- (i) Reason for performance indices less than unity is mentioned in respective element remark.

Nc - No. of correct operations at internal power system faults
Nf - No. of failures to operate at internal power system faults
Nu - No. of unwanted operations
Ni - No. of incorrect operations, (Ni=Nf+Nu)

(Pramod Kumar Mishra)
Superintending Engineer

Reporting of Performance Indices for NHPC Power Stations In NR-Region
Month-APRIL '2025

Sl No	Name of Utility	Name of PS	Elements (Line/ Unit)	From		To		Total Outage	Outage Reason	Nc	Nf	Nu	Ni	Dependability Index (D=Nc/(Nc+Nf))	Security Index (S=Nc/(Nc+Nu))	Reliability Index (R=Nc/(Nc+Ni))	Reason for wrong operation	Action Taken
1	NHPC Ltd	SEWA-II	132 KV Sewa-II-Kathua Line#2	1-Apr-25	04:37	1-Apr-25	05:49	1:12	Distance Protection relay operated in Z1 at B-N phase fault	1	0	0	0	1	1	1	NA	NA
2	NHPC Ltd	TANAKPUR	132 KV Tanakpur-Mahendranagar Line#3	4-Apr-25	09:38	4-Apr-25	10:41	1:03	Over Current protection operated due to overdrawal from Tanakpur end	1	0	0	0	1	1	1	NA	NA
3	NHPC Ltd	BAIRASUIL	220KV Birasuil-Pong Line#1	16-Apr-25	21:13	16-Apr-25	22:24	1:11	Distance Protection relay operated in Z2 at R-N Phase fault	1	0	1	0	1	0.5	1	Auto reclose operation started , however within 90 msec "CBF retrip command" was extended from busbar protection relay and three phase tripping occurred from Bairasuil end.	Matter is taking up with relay OEM
4	NHPC Ltd	SEWA-II	132 KV Sewa-II-Mahanpur Line#1	16-Apr-25	20:16	16-Apr-25	22:30	2:14	Islanding from grid from remote end. Line CB was remained in closed condition from Sewa-II end	1	0	0	0	1	1	1	NA	NA
5	NHPC Ltd	SEWA-II	132 KV Sewa-II-Kathua Line#2	16-Apr-25	20:16	16-Apr-25	22:30	2:14	Islanding from grid from remote end. Line CB was remained in closed condition from Sewa-II end	1	0	0	0	1	1	1	NA	NA
6	NHPC Ltd	SALAL	220KV Salal-Jammu Line#1	16-Apr-25	19:43	16-Apr-25	23:24	3:41	Busbar protection operated in Bus#2	1	0	0	0	1	1	1	NA	NA
7	NHPC Ltd	SALAL	220 KV Salal-Kishanpur Line#1	16-Apr-25	19:43	16-Apr-25	23:24	3:41	Busbar protection operated in Bus#2	1	0	0	0	1	1	1	NA	NA

8	NHPC Ltd	SALAL	220 KV Salal-Kishanpur Line#2	16-Apr-25	19:43	16-Apr-25	23:11	3:28	Busbar protection operated in Bus#2	1	0	0	0	1	1	1	NA	NA
9	NHPC Ltd	SALAL	220 KV Salal-Jammu Line#2	16-Apr-25	19:43	16-Apr-25	23:49	4:06	Master trip relay operated	1	0	1	0	1	0.5	1	No fault sense by Distance Protetion relay and fault was in Bu#2	Reason for master trip relay is under investigation
10	NHPC Ltd	SALAL	220 KV Salal-Kishanpur Line#3	16-Apr-25	19:43	16-Apr-25	21:40	1:57	Master trip relay operated	1	0	1	0	1	0.5	1	No fault sense by Distance Protetion relay and fault was in Bus#2	Reason for master trip relay is under investigation
11	NHPC Ltd	SALAL	220 KV Salal-Kishanpur Line#4	16-Apr-25	19:43	16-Apr-25	23:12	3:29	Master trip relay operated	1	0	1	0	1	0.5	1	No fault sense by Distance Protetion relay and fault was in Bu#2	Reason for master trip relay is under investigation
12	NHPC Ltd	KISHANGANGA	KISHANGANGA-Dalina Line#1	19-Apr-25	16:40	19-Apr-25	18:37	1:57	Distance Protection relay operated in Z1 at R-N Phase fault	1	0	0	0	1	1	1	Auto reclose operation operation bloked due to Direct Trip recived from remote end.	Matter has been communicated to remote end
13	NHPC Ltd	KISHANGANGA	KISHANGANGA-Dalina Line#2	19-Apr-25	10:33	19-Apr-25	13:34	3:01	Distance Protection relay operated in Z1 at B-N Phase fault	1	0	0	0	1	1	1	Auto reclose operation operation bloked due to Direct Trip recived from remote end.	Matter has been communicated to remote end
14	NHPC Ltd	BAIRASUIL	220KV Birasuil-Pong Line#1	26-Apr-25	14:16	26-Apr-25	16:27	2:11	Distance Protection relay operated in Z2 at R-N Phase fault	1	0	1	0	1	0.5	1	Auto reclose operation started , however within 30 msec "CBF retrip command" was extended from busbar protection relay and three phase tripping occurred from Bairasuil end.	Matter is taking up with relay OEM
No Line tripping has been observed from other Power Stations of NHPC of NR region for Month of April'2025																		

न्यूक्लियर पॉवर कॉर्पोरेशन ऑफ इण्डिया लिमिटेड
(भारत सरकार का उद्यम)
राजस्थान परमाणु बिजलीघर–5 व 6
Nuclear Power Corporation of India Ltd.
(A Government of India Enterprise)
Rajasthan Atomic Power Station-5&6

डाक: अणुशक्ति, वाया: कोटा (राज.) PO: Anushakti–323303 Via: Kota (Raj.)
E-mail address: csgupta@npcil.co.in Mob: +919414185101, Phone (O): 01475-242244

No.रा.रा.सा RRS/इकाई Unit-5व 6/व.त.अ.(वि.&उ.व क्षे.अभि.)STE(E&I and FE)/2025/S/86. दिनांक: 05.05.2025

Sub: - Reporting of Protection Performance Indices of 220KV & 400KV transmission lines emanating from RAPS-C(RAPS-5&6) for the month of April-2025.

1. RAPS-C to ANTA 220KV LINE: -

Dependability Index (D)	Security Index (S)	Reliability Index (R)	Remark
Nc = 0	Nc = 0	Nc =0	No outage reported.
Nf = 0	Nu = 0	Ni = 0	
D= Nc/Nc+Nf	S= Nc/Nc+Nu	R= Nc/Nc+Ni	
D= Not Applicable	S= Not Applicable	R= Not Applicable	

2. RAPS-C TO RAPS-B 220 KV LINE-1: -

Dependability Index (D)	Security Index (S)	Reliability Index (R)	Remark
Nc = 0	Nc = 0	Nc =0	No outage reported.
Nf = 0	Nu = 0	Ni = 0	
D= Nc/Nc+Nf	S= Nc/Nc+Nu	R= Nc/Nc+Ni	
D= Not Applicable	S= Not Applicable	R= Not Applicable	

3. RAPS-C TO RAPS-B 220 KV LINE-2: -

Dependability Index (D)	Security Index (S)	Reliability Index (R)	Remark
Nc = 1	Nc = 1	Nc =1	Line tripped due to fault in inter trip control cable.
Nf = 0	Nu = 1	Ni =1	
D= Nc/Nc+Nf	S= Nc/Nc+Nu	R= Nc/Nc+Ni	
D= 1	S= 0.5	R= 0.5	

4. CHITTORGARH 400KV LINE: -

Dependability Index (D)	Security Index (S)	Reliability Index (R)	Remark
Nc = 1	Nc = 1	Nc =1	One tripping is reported.
Nf = 0	Nu = 0	Ni = 0	
D= Nc/Nc+Nf	S= Nc/Nc+Nu	R= Nc/Nc+Ni	
D= 1	S= 1	R= 1	

5. KANKROLI 400KV LINE: -

Dependability Index (D)	Security Index (S)	Reliability Index (R)	Remark
Nc = 0	Nc = 0	Nc = 0	No outage reported.
Nf = 0	Nu = 0	Ni = 0	
D= Nc/Nc+Nf	S= Nc/Nc+Nu	R= Nc/Nc+Ni	
D=Not Applicable	S= Not Applicable	R= Not Applicable	

6. KOTA-1 400KV LINE: -

Dependability Index (D)	Security Index (S)	Reliability Index (R)	Remark
Nc = 0	Nc = 0	Nc =0	No outage reported.
Nf = 0	Nu = 0	Ni = 0	
D= Nc/Nc+Nf	S= Nc/Nc+Nu	R= Nc/Nc+Ni	
D= Not Applicable	S= Not Applicable	R= Not Applicable	

5/5/25

(डी.के श्रृंगी)
व.अ. (ई व आई)
TE (E&I) RAPS-5&6

5/5/25

चंद्र शेखर गुप्ता(C.S. Gupta)
व. त. अ. (वि.एवं उप.)
STE (E&I) RAPS-5&6

To,

SE (O), NRPC, New Delhi
seo-nrpc@nic.in

CC:

SD/CS for kind information please.
TSS/OS/MS
Sh. Ruchir v oza, ACE, HQ, NPCIL (rvoza@npcil.co.in)
STE (E&I)
FILE

Reason for Performance Indices less than Unity- April 2025 (RVPN)

Case-1 765/400 KV 500 MVA ICT- 1 at 765 KV GSS ANTA on 08.04.2025

No. of Unwanted operation – 1

Reason of unwanted operation –

Interruption may be occurred due to DC fault

Corrective Action taken – Partial

Complete wiring has been checked, Cubicles cleaned, but pin pointed reason could not be ascertained.

Case-2 220 KV BHILWARA - ANTA LINE at 220KV GSS Bhilwara on 13.04.2025

No. of Unwanted operation – 1

Reason of unwanted operation –

Interruption occurred due to defective Bus Bar Protection scheme at ANTA (NTPC).

Corrective Action taken – YES

ANTA (NTPC), has been asked to sort out the problem.

Case-3 220/132 KV 100 MVA TELK TR. at 220KV GSS JODHPUR on 11.04.2025

No. of Unwanted operation – 1

Reason of unwanted operation –

NDR setting in TRIP.

Corrective Action taken – YES

Relay setting revised and changed to ALARM.

Case-4 220/132 KV, 160 MVA, BHEL Make T/F-II at 220 KV GSS KHINVSAR on 12.04.2025

No. of Unwanted operation – 1

Reason of unwanted operation –

Tripping occurred due to RVT output high and NDR setting in TRIP.

Corrective Action taken – YES

Relay setting revised and changed to ALARM.

Case-5 220/132KV, 100MVA NGEF TRANSFORMER-II at 220 KV GSS ASPUR on 30.04.2025

No. of Unwanted operation – 1

Reason of unwanted operation –

Radiator valves remained closed and caused rise in OIL temperature.

Corrective Action taken – YES

Valve position corrected.

Status of Internal Protection Audit Plan for FY 2024 -25									
S. No.	NRPC Member	Category	Status	Schedule submitted as per utililty	Present Status Comlpleted (yes/no)	Audit Completed Date	Report Submission Date by audit party	Discussion held in PSC meeting number	Compliance status
1	PGCIL	Central Government owned Transmission Company	Received		POWERGRID NR-3 (765kV Bareilly, Aligarh, Fatehpur, Orai, Rampur, Varanasi, 400kV Allhabad, Bareilly,Firozabad, Jauljibi, Mainpuri, Mohanlalganj, Pithoragarh, Sambhal, Sohawal	May, July, Sept, Oct, Dec- 2024, Jan-Feb-March, 2025	21.03.2025 (by mail)	60	
2	NTPC	Central Generating Company	Received						
3	BBMB		Received						
4	THDC		Received		Tehri	Feb-25	28.02.2025	58	
5	SJVN		Received		RHPS, NJHPS	Mar-25	25-.03.2025	59	
6	NHPC		Received						
7	NPCIL								
8	Delhi SLDC	SLDC							
9	Haryana SLDC								
10	Rajasthan SLDC								
11	Uttar Pradesh SLDC		Ghatampur Thermal Power Station		Yes		25.02.2025	59	
			ALAKNANDA		Yes		Feb, 2025	59	
			Vishnuprayag		Yes		27.7.2024	52	
			WUPPTCL		Greater Noida, Sikandrabad, Dasna, Indirapuram, Nahtaur, ataur, hapur)		(25.03.2025)	59	
12	Uttarakhand SLDC								
13	Punjab SLDC								
14	Himachal Pradesh SLDC								
15	DTL	State Transmission Utility	Received						
16	HVPNL		Received		Mohana	Jan-25	17.1.2025	58	complied
17	RRVPNL		Received		220kV Substations Bhadla, Basani, Aau,Amarsagar, Badisid, Balotra, BAP, Bhinmal, Kanasar, Phalodi, Ramgarh, Reodar, Sirohi, Hamirgarh, PPS4 Nokh, RSDCL-I, RSDCL-II, Sawa			59	
					Ratangarh, Badnu, Bikaner, Chhatargarh, Gajner, Halasar, Goner, NPH, Sangnaer, SEZ, VKIA, Shri Dungargarh, Sujangarh, Tehendesar, Akal, Chittorgarh			58	Pending
					BARLI, NPH, TINWARI, ALWAR, BANSUR, BEHROR, BHARATPUR, BHIWADI, CHHONKARWADA, DHOLPUR, KG BAS, KHUSKHERA, KOTPUTALI, MANDAWAR, MANOHARPUR, NADBAI, NEEMRANA, PHAGI, AJMER, DOONI, GGC, SIKRAI, HINDAUN, SWM, BHENSARA, ANTA, BHILWARA, RAMGARH, RATANGARH, LALSOT			57	Pending
					220 kV Chaksu 220 kV Mansarovar 765 kV Anta 220 kv Mandalgarh 220 kV Pratapgarh			56	Pending
18	UPPTCL		Received for Jhansi, Lucknow, Meerut, Gorakhpur, Prayagraj, Agra zone)						
19	PTCUL		Received						
20	PSTCL		Received						
21	HPPTCL		Received		Gumma, Lahal, Phozal			56	Pending
22	IPGCL	State Generating Company	Received (PPCL-I,III)						
23	HPGCL		Received		RGTPP (Khedar)	Jan-25	07.02.2025	58	Pending
24	RRVUNL		Received		KSTPS, Kota	Jan-25	22.02.2025	60	
					CSCTPP, Chhabra	Dec-24	19.02.2025	58	
					DCCPP, Dholpur	Nov-24	19.02.2025	58	
					SSTPS, Suratgarh	Jan-25	06.02.2025	58	
					Ramgarh Gas Sutargarh Supercritical			56	Pending
25	UPRVUNL		Received (obra -B, Anpara-B,D switch yard, Harduganj-C,D,E))		Parichha BTPS	Jan-25	08.03.2025	58	
					Parichha CTPS	Feb-25	07.03.2025	58	
					Harduaganj, Anpara-B, C, D			57	Pending
					Obra A & B	Jan-Feb 2025	18.02.2025	59	
26	UJVNL		Received (Khodri, Chibro, Vyasi, Dharasu , Tiloth)		Dharasu			58	
27	HPPCL								
28	PSPCL	State Generating Company & State owned Distribution Company	Received (Ranjet sagar dam, GHTP, GGSSTP, GATP)						
29	HPSEBL	Distribution company having Transmission connectivity ownership	Received						
30	Prayagrai Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Received		Yes	24.07.2024	12.09.2024	56	Pending
31	Aravali Power Company Pvt. Ltd		Received						
32	Apraava Energy Private Limited		Received						
33	Talwandi Sabo Power Ltd.		Completed		Nov'24	Nov' 24			
34	Nabha Power Limited		Received		400 kV NPL Sub-station			56	Pending
35	MEIL Anpara Energy Ltd		Received						
36	Rosa Power Supply Company Ltd		Received			Jan-25	11.02.2025	59	
37	Lalitpur Power Generation Company Ltd		Received		Yes	Oct-Nov 2024	30.11.2024	57	Pending
38	MEJA Urja Nigam Ltd.								
39	Adani Power Rajasthan Limited		Received						
40	JSW Energy Ltd. (KWHEP)		Received						
41	AESL	Other transmission licensee	Received (ATIL -400kV Mohindergarh S/s, OBTL, FBTL, MTSCL, ATSCL, HPTSL, BKTL, GTL)						
42	Tata Power Renewable Energy Ltd.		Recevied (TPGEL, BTPSL)		300MW TPREL Chhayan	28.02.2025	11.03.2025	58	
					300MW TP Saurya Banderwala Solar Plant	01.03.2025	11.03.2025	58	
					225MW TPGEL and 110MW KSEB Solar Plant	28.02.2025	11.03.2025	58	
43	UT of J&K	UT of Northern Region							
44	UT of Ladakh								
45	UT of Chandigarh								
46	INDIGRID		Received						
47	ADHPL		Received		Completed	Mar-25	08.03.2025	58	issue taken up with HPPTCL

Status of Internal Protection Audit Plan for FY 2025 -26								
S. No.	**NRPC Member**	**Category**	**Status**	**Schedule submitted as per utililty**	**Present Status Comlpleted (yes/no)**	**Report Submission Date by audit party**	**Discussion held in PSC meeting number**	**Compliance status**
1	PGCIL	Central Government owned Transmission Company	Received (NR-1,2,3)					
2	NTPC	Central Generating Company	Received					
3	BBMB		Received					
4	THDC		Received	Tehri- March, 2026 Koteshwar- December, 2025				
5	SJVN		Received (NJHPS, RHPS)					
6	NHPC		Received					
7	NPCIL							
8	Delhi SLDC	SLDC						
9	Haryana SLDC							
10	Rajasthan SLDC							
11	Uttar Pradesh SLDC		Received (Jaypee Vishnuprayag, WUPPTCL, SEUPPTCL, Alaknanda, GTL)	GTL- Jan'2026 & Feb'2026				
12	Uttarakhand SLDC							
13	Punjab SLDC							
14	Himachal Pradesh SLDC							
15	DTL	State Transmission Utility	Received					
16	HVPNL		Received					
17	RRVPNL		Received					
18	UPPTCL		Received (All zones)	Jan-March 2026				
19	PTCUL							
20	PSTCL							
21	HPPTCL		Received					
22	IPGCL	State Generating Company	Received (PPS-III, I)					
23	HPGCL							
24	RRVUNL		Received					
25	UPRVUNL		Received (Anpara B)	Jun-25				
			Received (Obra A & B)	Jan - March 2026				
			Received (Anpara D)	May-25				
			Received (Harduaganj)	April -May 2025				
			Received (Harduaganj D)	April -May 2025				
			Received (Harduaganj E)	April -May 2025				
			Received (Parichha)	May-25				
			Received (Parichha Ext)	Feb-26				
			Received (Obra C)	Mar-26				
			Received (Jawaharpur)	Jul-25				
26	UJVNL		Received (Dharashu, Tiloth)					
27	HPPCL		Received (Kasheng HEP, Sawara Kuddu, Sainj)	Nov'25-Mar'26				
28	PSPCL	State Generating Company & State owned Distribution Company	Received (GHTP, GGSSTP, GATP, RSD)					
29	HPSEBL	Distribution company having Transmission connectivity ownership	Received					
30	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Received	Aug'25				
31	Aravali Power Company Pvt. Ltd							
32	Apraava Energy Private Limited		Received	May'25				
33	Talwandi Sabo Power Ltd.		Received	May'25				
34	Nabha Power Limited		Received	May'25				
35	MEIL Anpara Energy Ltd		Received	May'25				
36	Rosa Power Supply Company Ltd		Received	Jan'26				
37	Lalitpur Power Generation Company Ltd		Received	Oct - Nov 2025				
38	MEJA Urja Nigam Ltd.							
39	Adani Power Rajasthan Limited							
40	JSW Energy Ltd. (KWHEP)		Received	Nov-25 to Feb 26				
41	Tata Power Renewable Energy Ltd.	UT of Northern Region						
42	UT of J&K							
43	UT of Ladakh							
44	UT of Chandigarh							
	ISTS Transmission Utilities							
45	INDIGRID		Received	Aug-25 to March-26				
46	POWERLINK							
47	ADHPL							
48	NRSSXXXVI's Northern Region Transmission System							
49	Adani Transmission Limited							
50	Bikaner Khetri Transmission Limited							
51	Fatehgarh Bhadla Transmission Limited							
52	Powergrid Sikar Transmission Limited		Received	Sikar- August,25				
53	Powergrid Aligarh Sikar Transmission Limited		Received	Aligarh- April, 25 Sikar- August,25				
54	Powergrid Ajmer Phagi Transmission Limited		Received	March,2025				
55	Powergrid Bikaner Transmission System Limited		Received	Bikaner-II Feb,2025				
56	Powergrid Khetri Transmission System Limited		Received	Khetri-Feb,2025				
57	Powergrid Ramgarh Transmission Limited		Received	Fatehgarh-II Dec, 2025 Fatehgarh-III May, 2025				
58	Powergrid Fatehgarh Transmission Limited		Received	Fatehgarh-II Dec, 2025 Bhadla-II Jan, 2025				
59	Powergrid Bhadla Transmission Limited		Received	Fatehgarh-II Dec, 2025 Bhadla-II Jan, 2025				
60	Powergrid Meerut Simbhavli Transmission Limited		Received	Nov, 2025				
61	Powergrid Kala Amb Transmission Limited		Received	September, 2025				
	State Utilities							
	Uttar Pradesh							
62	Vishnuprayag Hydro Electric Plant (J.P.)		Received	Jun-25				
63	Alaknanda Hydro Electric Plant (GVK)		Received	Dec'25 -Mar'26				
64	Ghatampur TPS		Received	February, 26				
65	Khara Power House (Khara)							
66	WUPPTCL		Received	Oct-25				
67	SEUPPTCL		Received	Jan-26				
68	ATSCL							
69	GTL							
70	HPTSL							
71	MTSCL							
72	OCBTL		Received	Jan'2026				
	Rajasthan							
73	Barsingsar Plant							
	RE Utilities							
74	ABC Renewable Pvt. Ltd							
75	ACME Heeragarh powertech Pvt. Ltd		Received	Jun-25				
76	ACME Pholidi		Received	Jun-25				
77	ACME Deagarh		Received	Jun-25				
78	ACME Raisar		Received	Jun-25				
79	ACME Dhoulpar		Received	Jun-25				
80	ACME Chittorgarh Solar Energy Pvt Ltd							
81	Adani Hybrid Energy Jaisalmer One Ltd.		Received	Jul-25				
82	Adani Hybrid Energy Jaisalmer Two Ltd.		Received	Jul-25				
83	Adani Hybrid Energy Jaisalmer Three Ltd.		Received	Aug-25				
84	Adani Hybrid Energy Jaisalmer Four Ltd.		Received	Aug-25				
85	Adani Renewable Energy (RJ) limited Rawara		Received	Sep-25				
86	Adani Solar Energy Jaisalmer One Pvt. Ltd. 450MW (Solar)		Received	Oct-25				
87	Adani Solar Enegry Four Private Limited		Received	Sep-25				

88	Adani Hybrid Energy Jaisalmer Four Ltd. (AEML 2-350)		Received	Sep-25				
89	Adani Solar Energy Jaisalmer Two Private Limited Project Two		Received	Oct-25				
90	SB Energy Six Private Limited, Bhadla		Received	Oct-25				
91	Adani Solar Enegry Jodhpur Two Limited, Rawara		Received	Sep-25				
92	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)		Received	Nov-25				
93	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)		Received	Nov-25				
94	Adani Green Energy 24 Limited (Bhimsar)		Received	Nov-25				
95	Adani Green Twenty-Five Limited (Badisid)		Received	Dec-25				
96	Altra Xergi Pvt. Ltd.							
97	AMP Energy Green Five Pvt. Ltd.							
98	AMP Energy Green Six Pvt. Ltd.							
99	Amplus Ages Private Limited							
100	Avaada RJHN_240MW							
101	Avaada sunce energy Pvt limited							
102	Avaada Sunrays Pvt. Ltd.							
103	Avaada Sustainable RJ Pvt. Ltd.							
104	Ayana Renewable Power Three Private Limited							
105	Ayaana Renewable Power One Pvt. Ltd.							
106	Azure Power Forty One Pvt limited							
107	Azure Power Forty Three Pvt. Ltd._RSS							
108	Azure Maple Pvt. Ltd.							
109	AZURE POWER INDIA Pvt. Ltd., Bhadla							
110	Azure Power Thirty Four Pvt. Ltd.							
111	Clean Solar Power (Jodhpur) Pvt. Ltd.							
112	Clean Solar Power (Bhadla) Pvt. Ltd							
113	Eden Renewable Cite Private Limited							
114	Grian Energy private limited							
115	Mahindra Renewable Private Limited							
116	Mega Surya Urja Pvt. Ltd. (MSUPL)							
117	AURAIYA Solar							
118	DADRI SOLAR							
119	SINGRAULI SOLAR							
120	Anta Solar							
121	Unchahar Solar							
122	NTPC Devikot Solar plant_240MW							
123	NTPC Kolayat_400kV							
124	Nedan Solar NTPC							
125	NTPC Nokhra_300MW							
126	One Volt energy Pvt. Ltd.							
127	ReNew Solar Energy (Jharkhand Three) Private Limited							
128	RENEW SOLAR POWER Pvt. Ltd. Bhadla							
129	ReNew Solar Urja Private Limited							
130	Renew Sun Bright Pvt. Ltd. (RSBPL)							
131	Renew Sun Waves Private Limited (RSEJ4L)							
132	Renew Surya Partap Pvt. Ltd.							
133	Renew Surya Ravi Pvt. Ltd.							
134	Renew Surya Roshni Pvt. Ltd.							
135	Renew Surya Vihan Pvt. Ltd.							
136	Renew Surya Ayaan Pvt. Ltd.							
137	Renew Solar Photovoltaic Pvt Ltd							
138	RENEW SOLAR POWER Pvt. Ltd. Bikaner							
139	Rising Sun Energy-K Pvt. Ltd.							
140	Serentica Renewables India 4 Private Limited							
141	Tata Power Green Energy Ltd. (TPGEL) (225MW)		Received	30-1-2026				
142	Tata Power Renewable Energy Ltd. (TPREL) (300MW)		Received	28-1-2026				
143	Thar Surya Pvt. Ltd.							
144	TP Surya Ltd., Noorsar (110MW)		Received	30-1-2026				
145	Banderwala Solar Plant TP Surya Ltd. (300MW)		Received	28-02-2026				
146	TRANSITION ENERGY SERVICES PRIVATE LIMITED							
147	Transition Green Energy Private Limited							
148	Transition Sustainable Energy Services Private Limited							

Status of 3rd Party Protection Audit Plan								
S. No.	NRPC Member	Category	Status	Schedule submitted as per utility	Present Status Comlpeted (yes/no)	Report Submission Date by audit party	Discussion held in PSC meeting number	Compliance status
1	PGCIL	Central Government owned Transmission Company	Received (7 S/s of NR-1, 1 S/s of NR-2, 4 S/s of Nr-3)	By Jan 2025				
2	NTPC	Central Generating Company	Received (Singrauli, Rihand, Unchahar, Dadri, Dadri Gas, Auraiya Gas, Faridabad Gas, Anta Gas Power Station)	By Oct 2028				
			Received (Tanda)	By 17.07.2025				
3	BBMB		Received	Feb-27				
4	THDC		Received	March 2026-Tehri, F.Y. 2025-26- Koteshwar				
5	SJVN		Received	Nov-Dec 2025 for RHPS, Nov 24- March 25 for NJHPS				
6	NHPC		Received	FY-2025-26				
7	NPCIL		Completed (220kV) (NAPS)	Jan'25	Completed	18.01.2025	57	
8	Delhi SLDC	SLDC						
9	Haryana SLDC							
10	Rajasthan SLDC							
11	Uttar Pradesh SLDC		Received (Tanda extension)	17.07.2025				
			Received (Tanda)	17.07.2025				
12	Uttarakhand SLDC							
13	Punjab SLDC							
14	Himachal Pradesh SLDC							
15	DTL	State Transmission Utility	Received					
16	HVPNL							
17	RRVPNL							
18	UPPTCL		Received	2025	Under tendering			
19	PTCUL		Received	By Jan 2025				
20	PSTCL							
21	HPPTCL		Received	FY 25-26				
22	IPGCL	State Generating Company	Received (PPS-III)	FY 25-26				
23	HPGCL							
24	RRVUNL		Received					
25	UPRVUNL		Obra-B	2026-27				
			Obra-C					
			Anpara D	2025	Under tendering			
			Anpara B	2025	Under tendering			
			Harduaganj	2025	Under tendering			
			Harduaganj D	2025	Under tendering			
			Parichha	2025	Under tendering			
			Parichha Ext	2025	Under tendering			
			Jawaharpur	2025	Under tendering			
			Paricha BTPS	2026				
			Panki					
26	UJVNL		Dharasu		Completed in Nov, 2024		56	submitted
27	HPPCL		Swara Kuddu	2026				
			Kashang HEP	FY 2025-26				
28	PSPCL	State Generating Company & State owned Distribution Company	Reeceived (GHTP)	Dec. 2025				
			Received (GATP)	May 2025				
			GGSSTP	2026				
			RSD/ Sahapur Kandi					
29	HPSEBL	Distribution company having Transmission connectivity ownership	Kunihar	Conducted			55	
			Upper Nangal	Conducted				
			Baddi	Conducted				
30	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Received	Dec-24	Januray 2025	08.01.2025	59	
31	Aravali Power Company Pvt. Ltd							
32	Apraava Energy Private Limited		Received	By May, 2025				
33	Talwandi Sabo Power Ltd.		Conducted	Dec'22	completed	20.12.2024	60	
34	Nabha Power Limited		Received	By December, 2025				
35	MEIL Anpara Energy Ltd		Received	* May 2025				
36	Rosa Power Supply Company Ltd		Conducted	By 30.09.2024	08.08.2024	13.01.2025	57	
37	Lalitpur Power Generation Company Ltd		Conducted	26.03.2024				
38	MEJA Urja Nigam Ltd.		Conducted		Completed in Oct, 2024	22.03.2025	59	
39	Adani Power Rajasthan Limited		Conducted	November, 2024	Kawai		56	Pending
40	JSW Energy Ltd. (KWHEP)		Received	December 2024 to March 2025	Completed		57	Pending
41	Tata Power Renewable Energy Ltd.	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)						
42	UT of J&K	UT of Northern Region						
43	UT of Ladakh							
44	UT of Chandigarh							
	ISTS Transmission Utilities							
45	INDIGRID		Received (PTCL)	FY 25-26				
			Received (NRSS 29)	FY 24-25				
46	POWERLINK							
47	ADHPL		Received	* September 2026				
48	NRSSXXXVI's Northern Region Transmission System							
49	Adani Transmission Limited		Received	400kV Mohindergarh SS- Q2 , FY 2025-26				
50	Bikaner Khetri Transmission Limited		Received	BKTL-Q3 , FY 2026-27				
51	Fatehgarh Bhadla Transmission Limited		Received	FBTL-Q3 , FY 2025-26				
52	Powergrid Sikar Transmission Limited							
53	Powergrid Aligarh Sikar Transmission Limited							
54	Powergrid Ajmer Phagi Transmission Limited							
55	Powergrid Bikaner Transmission System Limited							
56	Powergrid Khetri Transmission System Limited							
57	Powergrid Ramgarh Transmission Limited							
58	Powergrid Fatehgarh Transmission Limited							
59	Powergrid Bhadla Transmission Limited							
60	Powergrid Meerut Simbhavli Transmission Limited							
61	Powergrid Kala Amb Transmission Limited							
	State Utilities							
	Uttar Pradesh							
62	Vishnuprayag Hydro Electric Plant (J.P.)		Received	December, 2028				
63	Alaknanda Hydro Electric Plant (GVK)		Received	Mar-25				
64	Ghatampur TPS							
65	Khara Power House (Khara)							
66	WUPPTCL		Conducted		Completed		59	
67	SEUPPTCL		Completed on Oct 2024		Completed		59	
68	ATSCL		Received	ATSCL-Q1 , FY 2026-27				
69	GTL		Received	Q3 & Q4 , FY 2026-27				
70	HPTSL		Received	HPTSL- Q2 , FY 2026-27				
71	MTSCL		Received	MTSCL-Q4 , FY 2025-26				
72	OCBTL		Received	Q1 , FY 2025-26				
	Rajasthan							
73	Barsingsar Plant							
	RE Utilities							
74	ABC Renewable Pvt. Ltd							
75	ACME Heeragarh powertech Pvt. Ltd							
76	ACME Pholidi							
77	ACME Deagarh							
78	ACME Raisar							
79	ACME Dhoulpar							
80	ACME Chittorgarh Solar Energy Pvt Ltd							
81	Adani Hybrid Energy Jaisalmer One Ltd.							
82	Adani Hybrid Energy Jaisalmer Two Ltd.							
83	Adani Hybrid Energy Jaisalmer Three Ltd.							
84	Adani Hybrid Energy Jaisalmer Four Ltd.							
85	Adani Renewable Energy (RJ) limited Rawara							
86	Adani Solar Energy Jaisalmer One Pvt. Ltd._450MW (Solar)							
87	Adani Solar Enegry Four Private Limited							
88	Adani Hybrid Energy Jaisalmer Four Ltd. (AEML 2-350)							

89	Adani Solar Energy Jaisalmer Two Private Limited Project Two							
90	SB Energy Six Private Limited, Bhadla							
91	Adani Solar Energy Jodhpur Two Limited, Rawara							
92	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)							
93	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)							
94	Adani Green Energy 24 Limited (Bhimsar)							
95	Adani Green Twenty-Five Limited (Badisid)							
96	Altra Xergi Pvt. Ltd.		Conducted		Completed	03.02.2025-04.02.2025	60	
97	AMP Energy Green Five Pvt. Ltd.							
98	AMP Energy Green Six Pvt. Ltd.							
99	Amplus Ages Private Limited							
100	Avaada RJHN 240MW							
101	Avaada sunce energy Pvt limited							
102	Avaada Sunrays Pvt. Ltd.							
103	Avaada Sustainable RJ Pvt. Ltd.							
104	Ayana Renewable Power Three Private Limited							
105	Ayaana Renewable Power One Pvt. Ltd.		Conducted		09.03.2025		59	
106	Azure Power Forty One Pvt limited							
107	Azure Power Forty Three Pvt. Ltd. RSS							
108	Azure Maple Pvt. Ltd.							
109	AZURE POWER INDIA Pvt. Ltd., Bhadla							
110	Azure Power Thirty Four Pvt. Ltd.							
111	Clean Solar Power (Jodhpur) Pvt. Ltd.							
112	Clean Solar Power (Bhadla) Pvt. Ltd							
113	Eden Renewable Cite Private Limited							
114	Grian Energy private limited							
115	Mahindra Renewable Private Limited							
116	Mega Surya Urja Pvt. Ltd. (MSUPL)							
117	AURAIYA Solar							
118	DADRI SOLAR							
119	SINGRAULI SOLAR							
120	Anta Solar							
121	Unchahar Solar							
122	NTPC Devikot Solar plant 240MW							
123	NTPC Kolayat 400kV							
124	Nedan Solar NTPC							
125	NTPC Nokhra 300MW							
126	One Volt energy Pvt. Ltd.							
127	ReNew Solar Energy (Jharkhand Three) Private Limited							
128	RENEW SOLAR POWER Pvt. Ltd. Bhadla							
129	ReNew Solar Urja Private Limited							
130	Renew Sun Bright Pvt. Ltd. (RSBPL)							
131	Renew Sun Waves Private Limited (RSEJ4L)							
132	Renew Surya Partap Pvt. Ltd.							
133	Renew Surya Ravi Pvt. Ltd.							
134	Renew Surya Roshni Pvt. Ltd.							
135	Renew Surya Vihan Pvt. Ltd.							
136	Renew Surya Ayaan Pvt. Ltd.							
137	Renew Solar Photovoltaic Pvt Ltd							
138	RENEW SOLAR POWER Pvt. Ltd. Bikaner							
139	Rising Sun Energy-K Pvt. Ltd.							
140	Serentica Renewables India 4 Private Limited							
141	Tata Power Green Energy Ltd. (TPGEL) (225MW)		Received	31-03-2027				
142	Tata Power Renewable Energy Ltd. (TPREL) (300MW)		Received	31-03-2027				
143	Thar Surya Pvt. Ltd.							
144	TP Surya Ltd., Noorsar (110MW)		Received	31-03-2027				
145	Banderwala Solar Plant TP Surya Ltd. (300MW)		Received	31-03-2027				
146	TRANSITION ENERGY SERVICES PRIVATE LIMITED							
147	Transition Green Energy Private Limited							
148	Transition Sustainable Energy Services Private Limited							

* Revised Schedule

Status of actions points recommended during previous PSC meetings (to be discussed in 60th PSC meeting) Annexure-B.I

S. No	Agenda	Remdial actions recommended during PSC meeting	Status of remdial action taken	
			59th PSC (23.04.2025)	60th PSC (26.05.2025)
1	Frequent multiple elements tripping at 220kV Kunihar, Baddi, Upperla Nangal complex and load loss event in HP control area	**51 PSC:** PSC Forum requested HP to complete the protection audit as per mentioned timelines (protection audit of 220kV Kunihar has been awarded and it would be completed within next 15-20 days. In next phase, by 15th September, protection audit of substations in downstream and upstream of 220kV Kunihar S/s would be completed.) and resolve the protection related issues. HP was also requested to share the reports of protection audit to NRPC & NRLDC after completion of audits.	HPSEBL representative stated that status is same and as major work is of relay replacement they will need PSDF fund for rectification of issues. *PSC forum requested HPSEBL to take expeditious actions at their end and ensure the healthiness of protection system in this complex.*	
2	Multiple elements tripping at 220kV Hissar(BBMB) 07th May 2024, 11:16 hrs	**51 PSC:** a) Expedite the implementation of differential protection in short lines to avoid undesired operation of distance protection.	HVPNL representative informed that tendering is in process. Exact timeline will be shared in next PSC. *PSC forum recommended HVPNL to expedite the implementation of differential protection in short lines and also share the expected timeline.*	
3	Multiple elements tripping at 400kV Sainj (HP), 400kV Parbati2 & Parbti3 (NHPC) Stations on 07th May 2024, 16:17 hrs	**51 PSC:** a) NHPC shall follow up with the relay engineer and taken necessary remedial actions to ensure proper operation of A/R scheme at Parbati2 end. b) NHPC and HPPTCL shall review the healthiness of PLCC at Parbati3 and Sainj end and take necessary actions to ensure their proper operation. c) Expedite the implementation of differential protection in 400kV Parbati2-Sainj line. d) Standardisation of recording instruments (DR/EL) need to be ensured.	NHPC representative informed that relay will be purchased by 15th May 2025, but they will be commissioned after OPGW work is completed. *PSC forum recommended NHPC & HPPCL to take expeditious action at their end and ensure healthiness of protection system.*	
4	Multiple elements tripping at 400kV Koteshwar(PG) on 17th May 2024, 17:21 hrs	**51 PSC:** a) In view of short line length of 400KV Koteshwar(PG)-Tehri D/C, POWERGRID shall plan for the differential protection in the line on priority in near future to avoid overreach of distance protection.	POWERGID(NR-1) representative informed that different tender was issued for 400kV Koteshwar(PG)-Tehri(TH) D/C which got cancelled and hence retendering is in progress. This will need at least 6 months to complete the work. However, during shutdown they have implemented and tested carried-aided DEF protection operation which will take care of faults in the meantime. *PSC forum requested POWERGID to expedite the work related to implementation of differential protection scheme on 400kV Koteshwar(PG)-Tehri(TH) D/C.*	
5	Multiple elements tripping at 220kV Sarna (PS) on 04th May 2024, 07:10 hrs	**51 PSC:** a) Punjab shall expedite the commissioning of new bus scheme. B) POWERGRID shall revise the Z-4 time delay setting of Kishenpur lines at Sarna (PS) end as 160msec till bus bar get operational.	PSTCL representative informed that material inspection is done and installation process has started. Bus bar protection at 220kV Sarna will be commissioned within 1 month. PSC forum requested PSTCL to expedite the work related to implementation of bus bar protection at Sarna S/s.	
6	Multiple elements tripping at 220kV KTPS (RVUN) on 21st June 2024, 11:37 hrs	**51 PSC:** a) Commissioning of bus coupler between 220kV Bus-3 & 5 need to be expedited.	RVUNL representative stated that tender bid has been opened and techno-commercial evaluation is in progress. *PSC forum requested RVUNL for expeditious actions at their end.*	
7	Frequent tripping of 220 KV Anta(NT)-Sakatpura(RS) (RS) Ckt-1	**52 & 53 PSC:** RVPN was requested to expedite the process of relay replacement and rectification of issues related to A/R operation.	RVPNL representative informed that A/R will be enabled in the old panel s.t. shutdown availability, otherwise as civil work is almost completed at Sakatpura S/s, new panel will be installed in new control room by end of May 2025. *PSC forum requested RVPNL to expedite the actions at their end.*	
8	Frequent tripping of 220 KV Khara(UP)-Saharanpur(PG) (UP) Ckt-1	**52 & 53 PSC:** UP was requested to expedite the process of relay replacement at Khara end. POWERGRID shall review and ensure the A/R operation at their end.	SLDC UP representative informed that relay replacement in unit-1 is completed on 30th March 2025. The same in unit-2 & 3 will be done within next 6 months. *PSC forum requested UPPTCL to expedite the replacement of relay at Khara(UP) end.*	
9	Multiple elements tripping event at Patiala(PG) on 19th July 2024, 18:50 hrs	**52 & 53 PSC:** POWERGRID was requested to expedite the process of commissioning of new bus bar scheme.	POWERGRID(NR-2) representative informed that implementation of bus bar protection at Patiala(PG) will be completed by May 2025. *PSC forum requested POWERGRID(NR-2) to expedite the process.*	

10	Multiple elements tripping at 220kV Khodri HEP & Chibro HEP on 5th, 11th & 19th September 2024	**53 PSC:** a)Timely submission of disturbance recorder (DR) and event logger (EL) files need to be ensured. 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. b)HPPTCL shall taken necessary actions to rectify the protection related issue in 220kV Khdori-Majri ckt-2. c)OV protection needs to be disabled in 220kV lines at the earliest. d)Over frequency and over current protection operation in units at Khodri HEP need to be reviewed. e)A/R should be made operational in Sarsawan line at the earliest. f)UJVNL shall share the CPRI audit report and details of remedial action taken within one week. g)Replacement of Units breakers need to be expedited.	UJVUNL representative informed that open tender process is in progress and it will take at least 4-5 months to complete the work. *PSC forum requested UJVUNL & HPSEBL to take necessary remedial action at their end and ensure proper operation of protection system. UJVUNL shall expedite the action plan and HPSEBL shall review the protection setting of 220kV Khodri-Majri line-II.*	
11	Multiple elements tripping at 400/220kV Obra_A(UP) on 9th October 2024	**54 PSC Recommendations:** a)UPPTCL & Obra_A(UP) shall ensure the implementation of LBB protection at the earliest at 220kV side. b)GPS scheme shall be implemented at Obra_B(UP) by the **end of January 2025** and time sync of recording devices will be ensured.	UPPTCL representative informed that work is further delayed due to delay in visit by ABB engineers. *PSC forum requested UPPTCL for expedited corrective actions.*	
12	Multiple elements tripping at 220/132kV Obra_A(UP) on 9th October 2024	**54 PSC Recommendations:** Commissioning and Implementation of numerical relays in 132kV ICT-1&2 at Obra_A(UP) need to be expedited. Timely commissioning of the same need to be ensured.	UPPTCL representative informed that work is further delayed due to delay in visit by ABB engineers. *PSC forum requested UPPTCL for expedited corrective actions.*	
13	Multiple elements tripping at 220kV Dausa(RS) on 21st October 2024 and on 29th December, 2024	**54 & 56 PSC Recommendations:** a) RVPNL will expedite the replacement of all the static relays at 220kV Dausa S/s with numerical relays. b) Time synchronization of all the recording instruments need to be ensured. c) Healthiness of protection system and their proper operation need to be ensured. d) Timely submission of disturbance recorder (DR) and event logger (EL) files need to be ensured.	RVPNL representative informed that total three relays are replaced till now. In rest two elements one relay (Main-I/II) is numerical and other one is static. In those 2 static relays DR extraction facility is made available through Main-I/II numerical relay till they are replaced. *PSC forum requested RVPNL for expedited corrective actions.*	
14	Frequent tripping of 220 KV RAPS_A(NP)-Sakatpura (RS) (RS) Ckt-1 &2	**55 PSC Recommendations: E**xpeditious corrective actions to minimise frequent faults in line.	RVPNL representative informed that work in 220kV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-1 & 2 is complete except some broken earth wires need to be attended. It was also stated that 10-20km from Sakatpura end of 220kV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-1 & 2 passes through forest area and faults are often of transient nature. A/R is disabled at RAPS_A end although it is enabled at Sakatpura end. Communication from RVPNL is sent to RAPS_A to enable A/R and replace CB at RAPS_A end if any issue is there, but no reply is received so far. Work in 220kV RAPS_B(NP)- Sakatpura (RS) (RS) Ckt is in progress. *PSC forum requested NPCIL to enable A/R at RAPS_A end of 220kV RAPS_A(NP)-Sakatpura (RS) (RS) Ckt-1 & 2. RVPNL is also requested for expedited corrective actions at their end.*	
15	Frequent tripping of 400 KV Amritsar(PG)-Makhu(PS) (PSTCL) Ckt-1 & 400 KV Talwandi Saboo(PSG)-Nakodar (PSG) (PS) Ckt-1	**55 PSC Recommendations:** PSTCL was requested to plan replacement of porcelain insulators with polymer type.	PSTCL representative informed that status is same (insulator replacement will be completed before next winter season 2025). NRLDC representative requested PSTCL for expedite the replacement of insulators in these lines (by October 2025) to minimise the tripping events due to fog during next winter season. PSTCL agreed for the same. *PSC forum requested PSTCL to for expeditious actions for insulators replacement.*	
16	Multiple element tripping event at 400kV Aligarh(UP) on 02nd November, 2024	**55 PSC Recommendations:** UPPTCL shall ensure the healthiness of carrier communication and A/R operation at Muradnagar_1(UP) end.	UPPTCL representative informed that carrier cabinet is to be installed at both Aligarh(UP) and Muradnagar_1(UP) end, but they are yet not allotted. *PSC forum requested UPPTCL for expedited corrective actions.*	
17	Frequent tripping of 220 KV Agra(PG)-Bharatpur(RS) (PG) Ckt-1	**57 PSC Recommendations:** Impedance measurement and distance relay settings of the line need to be reviewed before summer (high demand period).	RVPNL informed that insulator disc replacement is almost done. Two towers need to be changed due to less ground clearance. POWERGRID (NR-3) informed that impedance measurement and distance relay settings review is done and settings are corrected. *PSC forum requested RVPNL for expedited corrective actions.*	
18	Frequent tripping of 400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2	**57 PSC Recommendations:** Healthiness of carrier communication need to be reviewed.	UPPTCL informed that one carrier cabinet is needed and requirement/demand for the same is already placed. It will be installed once allotted. *PSC forum requested UPPTCL for expedited corrective actions.*	

19	Frequent tripping of 400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1	**57 PSC Recommendations:** a) Timely submission of disturbance recorder (DR) and event logger (EL) files need to be ensured. b) Time sync issue need to be addressed. c) Issue in A/R non-operation need to be resolved.	UPPTCL representative informed that A/R non-operation issue is yet to be resolved at Noida Sec 123 end and it is delayed due to delay in visit by GE engineers. If work gets delayed further, then it will be attended by third party during SAS (automation) work at another substation. *PSC forum requested UPPTCL to take necessary follow up actions for expeditious completion of work.*	
20	Frequent tripping of 400 KV Merta-Ratangarh (RS) Ckt-1	**57 PSC Recommendations:** a) DR standardization need to be checked (DR time window of ~800ms is not as per standard). b) Phase sequence issue need to be resolved. c) Status of A/R operation at Ratangarh end need to be reviewed.	RVPNL informed that they have applied for shutdown on 19th and 20th May 2025. One relay replacement and review of A/R operation will be done during shutdown. *PSC forum requested RVPNL for expedited corrective actions.*	
21	Multiple elements tripping at 220/132kV Ropar(PS) on 06th January, 2025	**57 PSC Recommendations:** PSTCL need to share the DR/EL & tripping details within one week	PSPCL representative was not present. *PSC forum requested PSPCL to share detailed report along with observations and remedial action taken.*	
22	Multiple elements tripping at 400/220KV Heerapura(RS) on 10th January, 2025	**57 PSC Recommendations:** a) Instantaneous OC relay (High set) settings of ICTs at Heerapura(RS) may be reviewed. b) Replacement of remaining electromechanical/ static relays & schemes with numerical relay need to be expedited at Heerapura(RS).	RVPNL representative informed that all electromechanical/ static relays are replaced with numerical relays except busbar relay. *PSC forum requested RVPNL to share the timeline of replacement of relays and take expedited corrective actions at their end.*	
23	Frequent tripping of 220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	**58 PSC Recommendations: E**xpeditious corrective actions to minimise frequent faults in line.	RVPNL representative informed that complete line need refurbishment which will require long shutdown. For now, insulator disc replacement are being done as and when shutdown opportunity is there. *PSC forum requested RVPNL to take expeditious corrective action to minimise frequent faults in line.*	
24	Frequent tripping of 400 KV Bareilly-Unnao (UP) Ckt-1	**59 PSC Recommendations:** A/R issue at Bareilly end need to be resolved at the earliest.	UPPTCL representative stated that carrier was unhealthy in both the channels. Issue is resolved from Unnao end. Testing will be done at Bareilly end during shutdown. *PSC forum requested UPPTCL to resolve A/R issue at Bareilly end at the earliest.*	
25	Frequent tripping of 400 KV Merta-Kankani (RS) Ckt-1	**59 PSC Recommendations:** A/R operation need to be reviewed at both the ends.	*PSC forum requested RVPNL to review A/R operation at both the ends.*	
26	Multiple elements tripping at 220KV Dasuya(PS) at 14:32 hrs on 10th March, 2025	**59 PSC Recommendations:** PSTCL shall share the DR/EL & tripping details within one week.	*PSTCL representative informed that they will share DR/EL & tripping details within one week.*	
27	Multiple elements tripping at 220/132/33kV Baraut(UP) at 01:06 hrs on 12th March, 2025	**59 PSC Recommendations:** DT scheme of 220 KV Baghpat(PG)-Shamli(UP) (UP) Ckt need to be checked during earliest available shutdown.	*PSC forum requested UPPTCL to check DT scheme of 220 KV Baghpat(PG)-Shamli(UP) (UP) Ckt during earliest available shutdown.*	
28	Multiple elements tripping at 220/66/33kV Delhi Rohtak Road(BB) at 18:34 hrs on 14th March, 2025	**59 PSC Recommendations:** a) Resistive reach settings of zones need to be reviewed. b) In stead of keeping Main-2 relay out of service, it can be kept in service with zone-1 settings of 100 ms until it is being replaced by new relay.	*PSC forum requested to review resistive reach settings of zones and to keep Main-2 relay in service with zone-1 settings of 100 ms until it is being replaced by new relay.*	
29	Multiple elements tripping at 400kV Parbati_3(NH) and 400kV Sainj HEP(HP) at 14:46 hrs on 16th March, 2025	**59 PSC Recommendations:** SLDC HP need to ensure under-voltage at Sainj end of 400 KV Parbati_2(NH)-Sainj(HP) (PKTCL) Ckt is disabled**.**	*PSC forum requested SLDC HP to ensure under-voltage at Sainj end of 400 KV Parbati_2(NH)-Sainj(HP) (PKTCL) Ckt is disabled.*	
30	Multiple elements tripping at 400kV AGE25L & 220kV Nokhra(IP) at 10:00 hrs on 18th March, 2025	**59 PSC Recommendations:** NTPC need to ensure over-voltage is disabled at Nokhra end of 220kV Nokhra-Bhadla2 Ckt.	NTPC representative informed that 220 KV NOKHRA SL_BHD2 (NTPC)-BHADLA_2 (PG) (NOKHRA) CKT-1 tripped on over-voltage protection operation at Nokhra end. *PSC forum requested NTPC to ensure over-voltage is disabled at Nokhra end of 220kV Nokhra-Bhadla2 Ckt.*	

Grid Event summary for April 2025

S.No.	Category of Grid Incident/ Disturbance	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Loss of generation / loss of load during the Grid Disturbance		Fault Clearance time (in ms)	Compliance of Protection Protocol/Standard		
	(GI-I to GD-V)				Date	Time	Generation Loss(MW)	Load Loss (MW)		Flash Report Submission (Y/N)	DR/EL Submission (Y/N)	Detail Tripping Report Submission (Y/N)
1	GD-1	1) 400 KV AYANA1 SL_BKN_PG (ARP1PL)-ARP3PL_SL_BIK_PG (Ayana_RP3PL) Ckt 2) 400kV SJVN Solar-Bikaner2(PG) ckt	Rajasthan	Ayana_RP3PL(ARP3PL), PGCIL, SGEL	2-Apr-25	14:45	1060	0	120	N	N	N
2	GI-2	1) 125 MVAR Bus Reactor No 1 at 400 KV Jaisalmer(RS) 2) 400 KV Kankani-Jaisalmer (RS) Ckt 3) 400 KV Jaisalmer(RS)-M/s Renew Hans urja pvt Ltd (RS) (RHUPL) Ckt-1 4) 400/220 kV 500 MVA ICT 1 at Jaisalmer(RS) 5) 400/220 kV 500 MVA ICT 2 at Jaisalmer(RS) 6) 400/220 kV 500 MVA ICT 3 at Jaisalmer(RS) 7) 400kV Bus-2 at Jaisalmer(RS)	Rajasthan	RVPNL, Renew Hans Urja	2-Apr-25	17:26	140	0	80	Y(d)	Y(d)	Y(d)
3	GD-1	1) 220 KV Bhadla(PG)-Azure Power 34 Solar(APTFL) (APTFL) Ckt	Rajasthan	PGCIL, APTFL	6-Apr-25	13:47	130	0	120	N (Partial details received)	N (Partial details received)	N (Partial details received)
4	GD-1	1) 220/33 kV 160 MVA ICT 1 at Thar Surya1 SL_BKN_PG (TS1PL)	Rajasthan	Thar Surya1(IP)	7-Apr-25	10:02	155	0	240	N	N	N
5	GD-1	1) 220 KV Moga(PG)-Mehal kalan (PS) (PSTCL) Ckt-1 2) 220 KV Moga(PG)-Mehal kalan (PS) (PSTCL) Ckt-2 3) 220 KV Pakhwal-Mehal kalan (PS) (PSTCL) Ckt-1 4) 220 KV Pakhwal-Mehal kalan (PS) (PSTCL) Ckt-2 5) 220/66 kV ICT 1 at MehalKalan(PS) 6) 220/66 kV ICT 2 at MehalKalan(PS)	Punjab	PGCIL, PSTCL	8-Apr-25	22:20	0	85	80	Y(d)	N (Partial details received)	N (Partial details received)
6	GD-1	1) 220 KV Fatehabad(PG)-Fatehabad(HV) (HVPNL) Ckt-1 2) 220 KV Fatehabad(PG)-Fatehabad(HV) (HVPNL) Ckt-2 3) 220 KV Hissar(PG)-Fatehabad(HV) (HVPNL) Ckt-1 4) 220 KV Hissar(PG)-Fatehabad(HV) (HVPNL) Ckt-2 5) 220 KV Rania- Fatehabad(HV) (HVPNL) Ckt 6) 220/132 kV 200 MVA ICT 1 at Fatehabad(HV) 7) 220/132 kV 160 MVA ICT 2 at Fatehabad(HV) 8) 220/132 kV 200 MVA ICT 3 at Fatehabad(HV)	Haryana	PGCIL, HVPNL	9-Apr-25	02:06	0	85	480	Y(d)	N (Partial details received)	N (Partial details received)
7	GD-1	1) 220 KV Singoli Bhatwari (Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-1 2) 220 KV Singoli Bhatwari (Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-2 3) 33MW Unit-1 at Singoli Bhatwari HEP	Uttarakhand	Singoli, PTCUL	9-Apr-25	13:58	32	0	120	Y(d)	Y(d)	N (Partial details received)
8	GD-1	1) 400 KV Kala Amb(PKTL)-Sorang(Greenko) (Greenko) Ckt 2) 50 MW Unit-1 at Sorang (Greenko) 3) 50 MW Unit-2 at Sorang (Greenko)	Himachal Pradesh	PKTL, Greenko	10-Apr-25	17:29	26	0	NA	N	N	N
9	GD-1	1) 220 KV DandhariKalanI(PS)-Ludhiana(PG) (PSTCL) Ckt-1 2) 220 KV DandhariKalanI(PS)-Ludhiana(PG) (PSTCL) Ckt-2	Punjab	PGCIL, PSTCL	11-Apr-25	14:19	0	180	560	Y(d)	N (Partial details received)	N (Partial details received)
10	GD-1	1) 220 KV Renew SunBright SL_FGARH_PG (RSBPL)-Fatehgarh_II(PG) (RENEW SUN BRIGHT (RSBPL)) Ckt	Rajasthan	PGCIL, Renew Sun Bright	11-Apr-25	10:48	50	0	120	N (Partial details received)	N (Partial details received)	N (Partial details received)
11	GI-1	1) 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1 2) 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-2 3) 220 KV Unchahar(NT)-Raebareilly(PG) (PG) Ckt-3 4) 220/6 kV 50 MVA ST 3 at Unchahar(NT) 5) 210 MW Unchahar II TPS - UNIT 1 6) 210 MW Unchahar III TPS - UNIT 1	Uttar Pradesh	PGCIL, NTPC	13-Apr-25	05:54	320	0	640	Y(d)	Y(d)	N (Partial details received)
12	GD-1	i)400 KV Muzaffarnagar(UP)-Vishnuprayag(JP) (UP) Ckt ii)110 MW Vishnuparyag HPS - UNIT 2 iii)110 MW Vishnuparyag HPS - UNIT 3	Uttar Pradesh	UPPTCL	17-Apr-25	03:16	150	0	120	N (Partial details received)	N (Partial details received)	N (Partial details received)
13	GD-1	i)220 KV Salal(NH)-Jammu(PDD) (PG) Ckt-1 ii)220 KV Salal(NH)-Jammu(PDD) (PG) Ckt-2 iii)220 KV Kishenpur(PG)-Salal(NH) (PG) Ckt-1 iv)220 KV Kishenpur(PG)-Salal(NH) (PG) Ckt-2 v)220 KV Kishenpur(PG)-Salal(NH) (PG) Ckt-3 vi)220 KV Kishenpur(PG)-Salal(NH) (PG) Ckt-4 vii)115 MW Salal HPS - UNIT 1 viii)115 MW Salal HPS - UNIT 2 ix)115 MW Salal HPS - UNIT 4 x)115 MW Salal HPS - UNIT 6	J&K	NHPC, PGCIL and JKPDD	16-Apr-25	19:43	455	0	120	Y(d)	N (Partial details received)	N (Partial details received)
14	GI-1	i)220 KV JESSORE(HP)-PONG(BB) (PG) CKT-1 ii)220KV BUS 2 AT PONG(BB) iii)220 KV JALANDHAR-PONG (BB) CKT-2 iv)220 KV PONG(BB)-DASUYA(PS) (BBMB) CKT-2 v)220 KV PONG(BB)-DASUYA(PS) (BBMB) CKT-1 vi)66MW Unit-6 at Pong(BB)	Himachal Pradesh	BBMB & HPSEB	16-Apr-25	21:18	52	0	120	Y(d)	N (Partial details received)	N (Partial details received)
15	GD-1	i)220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt ii)60 MW Bairasiul HPS - UNIT 1 iii)60 MW Bairasiul HPS - UNIT 2 iv)60 MW Bairasiul HPS - UNIT 3	Himachal Pradesh	NHPC & BBMB	16-Apr-25	21:28	180	0	400	N	N	N

S.No.	Category of Grid Incident/ Disturbance	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Loss of generation / loss of load during the Grid Disturbance		Fault Clearance time (in ms)	Compliance of Protection Protocol/Standard		
	(GI-I to GD-V)				Date	Time	Generation Loss(MW)	Load Loss (MW)		Flash Report Submission (Y/N)	DR/EL Submission (Y/N)	Detail Tripping Report Submission (Y/N)
16	GD-1	i)220 KV Sec 72 – Sec52 (HVPNL) ii)400/220kV 315 MVA ICT 1 at Gurgaon(PG) iii)400/220kV 315 MVA ICT 2 at Gurgaon(PG) iv)400/220kV 500 MVA ICT 3 at Gurgaon(PG) v)400/220kV 500 MVA ICT 4 at Gurgaon(PG) vi)220 KV Gurgaon(PG)-GurgaonSec72(HV)(HVPNL)-3	Haryana	HVPNL & PGCIL	17-Apr-25	13:59	0	815	1800	Y(d)	N (Partial details received)	Y(d)
17	GI-1	i)220 Akal-Lala(RS) line ii)220 Akal-Suzlon(RS) line	Rajasthan	RVPNL	18-Apr-25	12:51	865	0	120	N	N	N
18	GI-1	i)400/220 KV 315 MVA ICT 1 AT JAUNPUR (UP) ii)220/132 kV 160 MVA ICT-II at Jaunpur (UP) iii)220kV Bus Coupler iv)220kV BUS 2 at Jaunpur	Uttar Pradesh	UPPTCL	21-Apr-25	14:06	0	211	120	N (Partial details received)	N (Partial details received)	N (Partial details received)
19	GI-2	i)765 KV RAMPUR_PRSTL -GHATAMPUR_TPS (UP) CKT-1 ii)765 KV Ghatampur_TPS(UP) - Bus 2 iii)765 KV Ghatampur_TPS(UP) - Bus 1 iv)330 MVAR Bus Reactor No 1 at 765 KV Ghatampur_TPS(UP) v)330MVAR Line Reactor of 765 KV RAMPUR_PRSTL -GHATAMPUR_TPS (UP) CKT-1 at Ghatampur vi)660MW GHATAMPUR TPS - UNIT 1	Uttar Pradesh	NUPPL & UPPTCL	23-Apr-25	12:45	387	0	120	N (Partial details received)	N (Partial details received)	N (Partial details received)
20	GI-2	i)765 KV RAMPUR_PRSTL -GHATAMPUR_TPS (UP) CKT-1 ii)765 KV Ghatampur_TPS(UP) - Bus 2 iii)765 KV Ghatampur_TPS(UP) - Bus 1 iv)330MVAR Line Reactor of 765 KV RAMPUR_PRSTL -GHATAMPUR_TPS (UP) CKT-1 at Ghatampur v)660MW GHATAMPUR TPS - UNIT 1	Uttar Pradesh	NUPPL & UPPTCL	24-Apr-25	11:45	380	0	120	N (Partial details received)	N (Partial details received)	N (Partial details received)
21	GI-1	i)220 KV BHIWANI-CHARKHI DADRI (BB) CKT-1 ii)220 KV BHIWANI-CHARKHI DADRI (BB) CKT-2 iii)220 KV BHIWANI-CHARKHI DADRI (BB) CKT-3 iv)220 KV BHIWANI-CHARKHI DADRI (BB) CKT-4 v)220 KV CHARKHI DADRI-SAMAYPUR (BB) CKT-1 vi)220 KV BALLABHGARH-CHARKHI DADRI (BB) CKT-1 vii)220 KV PANIPAT-CHARKHI DADRI (BB) CKT-1	Haryana	BBMB	25-Apr-25	16:52	0	109	360	Y(d)	N	N
22	GD-1	i)220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 ii)220 KV Anta(NT)-Lalsote(RS) (PG) Ckt-1	Rajasthan	PGCIL, NTPC & RVPNL	26-Apr-25	17:06	0	116	360	N (Partial details received)	N (Partial details received)	N (Partial details received)
23	GD-1	i)400 KV ROPAR(PSTCL) - BUS 2 ii)400/220 KV 500 MVA ICT 1 AT ROPAR(PSTCL) iii)400/220 KV 500 MVA ICT 2 AT ROPAR(PSTCL) iv)404 MAIN BAY - 400 KV KOLDAM(NT)-ROPAR(PSTCL) (PKTCL) CKT-1 (PSTCL) AT 400 KV ROPAR(PSTCL)	Punjab	PSTCL &PKTCL	28-Apr-25	19:08	0	368	120	N	N (Partial details received)	N
24	GD-1	i)220 KV GrianPSS_BIK2(AMPLUS)-Bikaner_2 (PBTSL) (GRIAN ENERGY PRIVATE LIMITED) Ckt ii)220/33 kV 100 MVA ICT 1 at GrianPSS_BIK2_(AMPLUS) iii)220/33 kV 100 MVA ICT 2 at GrianPSS_BIK2_(AMPLUS) iv)220/33 kV 100 MVA ICT 3 at GrianPSS_BIK2_(AMPLUS)	Rajasthan	AMPLUS	28-Apr-25	15:11	263	0	80	N	N	N

Annexure-B.III

Sr No	Element Name	Outage Date	Outage Time	Reason
1	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	04-Apr-25	16:12	Phase to earth fault B-N
		05-Apr-25	11:50	Phase to earth fault B-N
		05-Apr-25	15:01	Phase to earth fault R-N
		10-Apr-25	12:37	Transient fault
2	400 KV Amritsar(PG)-Makhu(PS) (PSTCL) Ckt-1	09-Apr-25	13:24	Phase to Ground Fault Y-N
		13-Apr-25	10:56	Phase to earth fault R-N
		14-Apr-25	14:42	Phase to earth fault R-N
		15-Apr-25	17:47	Auto reclosed
3	200 MW Parbati II HEP - UNIT 1	07-Apr-25	19:39	GT trip
		19-Apr-25	09:54	Tripped due to sudden choking of cooling water filter.
		20-Apr-25	13:45	Synchronization failure
4	200 MW Parbati II HEP - UNIT 2	10-Apr-25	17:45	Synchronization failure
		19-Apr-25	09:50	Tripped due to Governor Oil Pressure Unit system malfunction.
		21-Apr-25	14:07	Maloperation of Relay
5	220 KV Anta(NT)-Bhilwara(RS) (PG) Ckt-2	12-Apr-25	22:29	Bus Bar Protection Operated
		23-Apr-25	16:18	Tripped during erection and commissioning of the busbar protection panel of 220KV Anta-Bhilwara-I at NTPC Anta.
		25-Apr-25	12:42	Phase to Phase Fault Y-B
6	220 KV Ballabhgarh-Charkhi Dadri (BB) Ckt-1	11-Apr-25	18:47	Phase to earth fault B-N
		23-Apr-25	14:12	Phase to earth fault R-N
		25-Apr-25	16:49	Phase to earth fault B-N
7	220 KV Hissar(BB)-Chirawa(RS) (BB) Ckt-1	09-Apr-25	14:42	Transient fault
		10-Apr-25	16:34	Phase to earth fault B-N
		11-Apr-25	13:13	Phase to earth fault R-N
8	220 KV Malwan (UP)-Unchahar(NT) (UP) Ckt-1	10-Apr-25	01:43	Earth fault
		10-Apr-25	10:30	R Phase Jumper Broken
		13-Apr-25	21:45	Phase to earth fault Y-N
9	220 KV NAPP(NP)-Khurja(UP) (UP) Ckt-1	10-Apr-25	21:01	Earth fault
		18-Apr-25	22:47	Phase to earth fault R-N
		26-Apr-25	12:27	Phase to earth fault R-N
10	220 KV Patran(PATR)-Mansa(PSTCL) (PSTCL) Ckt-1	02-Apr-25	12:40	Earth fault
		11-Apr-25	17:58	Phase to Phase Fault R-Y
		18-Apr-25	17:34	Phase to earth fault Y-N
11	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	04-Apr-25	13:13	Phase to earth fault B-N
		07-Apr-25	14:55	Phase to earth fault B-N
		25-Apr-25	13:26	Phase to earth fault R-N
12	220 KV Samba(PG)-Hiranagar(PDD) (PG) Ckt-1	16-Apr-25	20:05	Phase to Phase Fault R-B
		24-Apr-25	17:09	Over loading
		30-Apr-25	14:55	Phase to earth fault B-N
13	220/33 kV 150 MVA ICT 1 at ABCRenew_RJ01_SL_BHD2_PG	16-Apr-25	09:15	Phase to Ground Fault B-N
		16-Apr-25	09:15	Phase to Ground Fault B-N
		16-Apr-25	18:50	Phase to earth fault B-N
14	400 KV Balia-Bihartshariff (PG) Ckt-2	12-Apr-25	22:42	Phase to earth fault B-N
		12-Apr-25	09:52	Snapping of Earth wire
		10-Apr-25	15:47	Phase to earth fault B-N
15	400 KV Jaisalmer(RS)-M/s Renew Hans urja pvt Ltd (RS) (Renew Hans urja pvt Ltd) Ckt-1	02-Apr-25	17:25	LBB operated
		07-Apr-25	23:21	Tripped during testing of 400kV main Bus-I at Jaisalmer(RS).
		09-Apr-25	00:00	86 relay operated during Bus stability testing of 400kV Main Bus -II at Jaisalmer.
16	765 KV Bhadla_2 (PG)-Sikar_2(PSTL) (PSTL) Ckt-2	06-Apr-25	12:18	Phase to earth fault Y-N
		07-Apr-25	12:04	Phase to earth fault Y-N
		08-Apr-25	12:45	Phase to earth fault Y-N

Annexure-B.IV

Grid Events to be discussed in 60th PSC Meeting

S.No.	Category of Grid Incident/ Disturbance (GI-I to GD-V)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Event (As reported)	Loss of generation / loss of load during the Grid Disturbance		Fault Clearance time (in ms)	Points of discussion
					Date	Time		Generation Loss(MW)	Load Loss (MW)		
1	GD-1	1) 220/33 kV 160 MVA ICT 1 at Thar Surya1 SL_BKN_PG (TS1PL)	Rajasthan	Thar Surya1(IP)	7-Apr-25	10:02	i)Generation of 220/33 KV Thar Surya1 (IP) station evacuates via 220 KV Bikaner(PG)-Thar Surya1(IP) Ckt through 220/33 kV 160 MVA ICT 1 & 2 at Thar Surya1 SL_BKN_PG (TS1PL). During antecedent condition, 220/33 kV 160 MVA ICT 2 at Thar Surya1 SL_BKN_PG (TS1PL) was already out (tripped at 14:27 hrs on 06.04.2025 due to pressure release valve operated). 220 KV Thar Surya1 (IP) was generating approx. 155 MW (as per PMU). ii)As reported, at 10:02hrs, 220/33 kV 160 MVA ICT 1 at Thar Surya1 SL_BKN_PG (TS1PL) tripped due to heavy sparking on LV side bay 309 (exact nature, location and reason of fault yet to be received). iii)Due to tripping of 220/33 kV 160 MVA ICT 1 at Thar Surya1 SL_BKN_PG (TS1PL), 220 KV Thar Surya1 (IP) S/s lost its connectivity from grid and blackout occurred at 220 KV Thar Surya1 (IP) S/s. iv)As per PMU at 400kV Bikaner(IP), R-N phase to phase fault is observed with delayed fault clearing time of 240ms. v)As per PMU, solar generation loss of approx. 155 MW was observed at 220 KV Thar Surya1 (IP).	155	0	240	Details analysis of the event and remedial action taken details.
2	GD-1	1) 220 KV Fatehabad(PG)-Fatehabad(HV) (HVPNL) Ckt-1 2) 220 KV Fatehabad(PG)-Fatehabad(HV) (HVPNL) Ckt-2 3) 220 KV Hissar(PG)-Fatehabad(HV) (HVPNL) Ckt-1 4) 220 KV Hissar(PG)-Fatehabad(HV) (HVPNL) Ckt-2 5) 220 KV Rania- Fatehabad(HV) (HVPNL) Ckt 6) 220/132 kV 200 MVA ICT 1 at Fatehabad(HV) 7) 220/132 kV 160 MVA ICT 2 at Fatehabad(HV) 8) 220/132 kV 200 MVA ICT 3 at Fatehabad(HV)	Haryana	PGCIL, HVPNL	9-Apr-25	02:06	i)220/132KV Fatehabad(HV) has double main bus scheme at 220kV level. ii)As reported, at 22:20 hrs, R-phase CT of 220kV bus-coupler damaged which further led to bus bar protection operation at both the 220kV buses of Fatehabad(HV). iii)Due to busbar operation, all the elements connected to 220kV Bus-1 & 2 at Fatehabad(HV) tripped and complete blackout occurred at 220/132KV Fatehabad(HV). iv)As per PMU at Fatehabad(PG), R-N phase to earth fault is observed with delayed fault clearing time of 480 ms. v)As per SCADA, change in demand of approx. 85 MW is observed in Haryana control area.	0	85	480	Details analysis of the event and remedial action taken details.
3	GD-1	1) 220 KV DandhariKalanI(PS)-Ludhiana(PG) (PSTCL) Ckt-1 2) 220 KV DandhariKalanI(PS)-Ludhiana(PG) (PSTCL) Ckt-2	Punjab	PGCIL, PSTCL	11-Apr-25	14:19	i)During antecedent condition, 220kV Jamalpur(BB)-Dandharikalan(PS) (PSTCL) Ckt-1 and 2 were under planned shutdown. ii)As reported, at 14:19 hrs, 220 KV DandhariKalanI(PS)-Ludhiana(PG) (PSTCL) Ckt-1 and 2 tripped on B-N phase to earth fault (exact nature, location and reason of fault yet to be shared). iii)Due to tripping of all the 220kV elements complete blackout occurred at 220/66KV Dandharikalan(PS). iv)As per PMU at Ludhiana(PG), two consecutive B-N phase to earth fault is observed with fault clearing time of 120ms and 560ms (delayed) respectively. v)As per SCADA, change in demand of approx. 180 MW is observed in Punjab control area.	0	180	560	Details analysis of the event and remedial action taken details.
4	GI-1	1) 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1 2) 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-2 3) 220 KV Unchahar(NT)-Raebareilly(PG) (PG) Ckt-3 4) 220/6 kV 50 MVA ST 3 at Unchahar(NT) 5) 210 MW Unchahar II TPS - UNIT 1 6) 210 MW Unchahar III TPS - UNIT 1	Uttar Pradesh	PGCIL, NTPC	13-Apr-25	05:54	i)During antecedent condition, 210 MW Unchahar II TPS - UNIT 1 and 210 MW Unchahar III TPS - UNIT 1 were generating approx. 185 MW and 135 MW respectively (as per SCADA). ii)As reported, at 05:54 hrs, line CB at Unchahar end of 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1 failed and LBB protection operated. This led to tripping of 220kV Bus-3 at Unchahar TPS. iii)Due to LBB protection operation 210 MW Unchahar II TPS - UNIT 1 and 210 MW Unchahar III TPS - UNIT 1 also tripped. iv)During the same time, 220 KV Unchahar(NT)-Raebareilly(PG) (PG) Ckt-3 tripped on directional earth fault protection operation (exact reason yet to be shared). v)As per PMU at Kanpur(PG), R-N phase to earth fault is observed with delayed fault clearing time of 640ms. vi)As per SCADA, generation loss of approx. 185 MW at Unchahar-II TPS and approx. 135 MW at Unchahar-III TPS is observed.	320	0	640	Details analysis of the event and remedial action taken details.
5	GD-1	i)220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt ii)60 MW Bairasiul HPS - UNIT 1 iii)60 MW Bairasiul HPS - UNIT 2 iv)60 MW Bairasiul HPS - UNIT 3	Himachal Pradesh	NHPC & BBMB	16-Apr-25	21:28	i)During antecedent condition, 220kV Jessore(HP)-Pong(BB) (PG) Ckt and 220kV Jessore(HP)-RSDPH Ckt were not in service. 60 MW Bairasiul HPS - UNIT 1, 2 and 3 were generating 60 MW each (as per SCADA). ii)As reported, at 21:28 hrs, 220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt tripped on R-N phase to ground fault with fault distance of 79km from Bairasiul end due to inclement weather conditions. iii)Due to tripping of 220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt and with 220kV Jessore(HP)-Pong(BB) (PG) Ckt and 220kV Jessore(HP)-RSDPH Ckt already not in service, 60 MW Bairasiul HPS - UNIT 1, 2 and 3 tripped on over-speeding due to loss of evacuation path and complete blackout occurred at 220kV Bairasiul(NH) S/s. iv)Further at 22:06 hrs, CBs of 220 KV Bairasiul(NH)-Jessore(HP) (PG) Ckt were manually opened (no power flow). v)As per PMU at Pong(BB), two consecutive R-N phase to earth faults were observed with fault clearing time of 80ms and 400ms (delayed) respectively. vi)As per SCADA, generation loss of approx. 180 MW at Bairasiul HEP (NH) is observed.	180	0	400	Details analysis of the event and remedial action taken details.
6	GD-1	i)220 KV Sec 72 – Sec52 (HVPNL) ii)400/220kV 315 MVA ICT 1 at Gurgaon(PG) iii)400/220kV 315 MVA ICT 2 at Gurgaon(PG) iv)400/220kV 500 MVA ICT 3 at Gurgaon(PG) v)400/220kV 500 MVA ICT 4 at Gurgaon(PG) vi)220 KV Gurgaon(PG)-GurgaonSec72(HV)(HVPNL)-3	Haryana	HVPNL & PGCIL	17-Apr-25	13:59	i)400/220KV Gurgaon(PG) and 220/66/33KV Gurgaon sec72 has double main bus system in 220KV side. 220kV Sec72 Gurgaon(HR) has source from 400/220kV Gurgaon(PG) station through four 220kV feeders. 220kV Gurgaon(PG)-Sec72 Gurgaon ckt-4 was under shutdown since 02.12.2024. ii)As reported, at 13:59 hrs, Y-B fault occurred on 220 kV Sec72 Gurgaon –Sec52 Gurgaon (HR) line. Fault occurred due to fire incident due to blast in HCG (Haryana City Gas) pipeline under the line(tower no 45-46), leading to melting of Y & B ph conductor. At the same time B-ph CT of 220 kV Sec72 Gurgaon –Sec52 Gurgaon (HR) line at Sec72 Gurgaon(HR) end also got damaged (blast). iii)As per PMU at Gurgaon(PG), B-N phase to earth fault converted into Y-B fault with delayed clearance of ~1800msec is observed. iv)On this fault, distance protection as well as back up Dir. E/F O/C protection at Sec72 Gurgaon(HR) end didn't operate. v)Fault cleared with the tripping of all four 400/220kV ICTs (2*315 + 2*500MVA) at Gurgaon(PG) on back up overcurrent protection operation. 220kV Gurgaon(PG)-Gurgaon72 ckt-3 also tripped from Gurgaon(PG) end on overcurrent protection. vi)With the tripping of all four ICTs at Gurgaon(PG), supply to 220kV Sec72 Gurgaon(HR) got lost. vii)As per SCADA, change in demand of approx. ~815MW in Haryana control area is observed. viii)400/220kV ICTs at Gurgaon(PG) restored back between 15:13 hrs- 15:50 hrs and supply to Sec72 Gurgaon(HR) restored.	0	815	1800	Details analysis of the event and remedial action taken details.
7	GI-1	i)220 KV BHIWANI-CHARKHI DADRI (BB) CKT-1 ii)220 KV BHIWANI-CHARKHI DADRI (BB) CKT-2 iii)220 KV BHIWANI-CHARKHI DADRI (BB) CKT-3 iv)220 KV BHIWANI-CHARKHI DADRI (BB) CKT-4 v)220 KV CHARKHI DADRI-SAMAYPUR (BB) CKT-1 vi)220 KV BALLABHGARH-CHARKHI DADRI (BB) CKT-1 vii)220 KV PANIPAT-CHARKHI DADRI (BB) CKT-1	Haryana	BBMB	25-Apr-25	16:52	i)220KV Charkhi_Dadri(HR) has double main scheme in 220KV. ii)During antecedent condition, 220 KV BHIWANI-CHARKHI DADRI (BB) Ckt 1, 2 , 3, 4, were carrying 50MW, 51MW, 52MW and 49MW respectively. iii)As reported, at 16:49 hrs, 220 KV BALLABHGARH-CHARKHI DADRI (BB) CKT-1 tripped due to R-N phase to earth fault. Z-2 distance protection operated and Fault Location – 129.3KM from Ballabhgarh end. iv)At 16:52 hrs, 220 KV PANIPAT-CHARKHI DADRI (BB) CKT-1 tripped due to R-N fault. Z-2 distance protection operated, the fault current is 1.72KA and fault location is 110KM from Panipat(BBMB) s/stn. v)At 16:53 hrs, 220 KV CHARKHI DADRI-SAMAYPUR (BB) CKT-1 tripped due to R-N fault. Z-1 protection operated, fault current = 4.6KA and the fault distance was 116KM from Samaypur end. vi)At 16:55 hrs, 220 KV BHIWANI-CHARKHI DADRI (BB) CKT-1, Ckt-2, Ckt-3 and Ckt-4 were hand tripped due to fire at Charkhi Dadri s/stn. Exact cause of fire in s/stn needs to be shared. vii)During this event, change in demand of 109 MW was observed in SLDC Haryana control area as per SCADA. viii)As per PMU, R-N phase to earth-fault was observed and delayed fault clearance time of upto 360msec observed.	0	109	360	Details analysis of the event and remedial action taken details.
8	GD-1	i)220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 ii)220 KV Anta(NT)-Lalsote(RS) (PG) Ckt-1	Rajasthan	PGCIL, NTPC & RVPNL	26-Apr-25	17:06	i)220/132kV Lalsote(RS) has double main bus scheme at both 220KV and 132KV voltage level. ii)During antecedent condition, 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 and 220 KV Anta(NT)-Lalsote(RS) (PG) Ckt-1 were carrying 30MW and 49MW of load respectively. iii)As reported, at 17:06 hrs, 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 tripped due to B-N phase to earth fault. Z-2 distance protection operated and fault current was 4.95KA. It is interesting to note that Z-4 protection for the same line operated after Z-2 distance protection operated. iv)Consequently, at the same time 220 KV Anta(NT)-Lalsote(RS) (PG) Ckt-1 also tripped due B-N phase to earth fault only. The fault current observed was 6.84KA. v)Following these events due to loss of both transmission line in 220KV side, complete blackout of 220/132KV Lalsote s/stn occurred. vi)During this event, change in demand of 116 MW was observed in Rajasthan control area as per SCADA. vii)As per PMU, B-N phase to earth-fault was observed with unsuccessful A/R and delayed fault clearance time of upto 360msec observed.	0	116	360	Details analysis of the event and remedial action taken details.

Utilities are requested to prepare detailed analysis report and present the event details during 58th PSC meeting of following grid events (Events involving more than one utility may be jointly prepared and presented):

Annexure-B.V

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)	Remarks
			Date	Time								
1	800 KV HVDC Agra-Bishwanath Chariali (PG) Ckt-2	POWERGRID	06-Apr-25	12:45	Nil	Earth fault	NA	NA	Yes	Yes		As per DR, EL & tripping report received, line-2 tripped during DC fault in line after unsuccessful restart attempt due to permanent fault. As per PMU at Agra(PG) end, fluctuation in voltage is osberved.
2	400 KV Balia-Biharshariff (PG) Ckt-2	POWERGRID	12-Apr-25	09:52	Nil	Snapping of Earth wire	NA	NA	Yes (After 24 hours)	No	DR/EL & tripping report not received	As reported, line tripped on B-N fault in ER-1 jurisdiction. DR/EL not received. As per PMU at Balia(PG) end, no fault in system is observed. DR/EL not received.
3	400 KV Balia-Biharshariff (PG) Ckt-2	POWERGRID	12-Apr-25	22:42	Nil	Phase to earth fault B-N	NA	80	Yes (After 24 hours)	Yes (After 24 hours)		As per DR of Balia(PG) end, line tripped on B-N fault after unsuccessful A/R operation on permanent fault.
4	765 KV Fatehpur-Sasaram (PG) Ckt-1	POWERGRID	14-Apr-25	15:46	Nil	Phase to Phase Fault R-B	NA	560 (delayed fault clearance)	Yes (After 24 hours)	Yes (After 24 hours)	Carrier communication healthiness may be reviewed.	As per DR of Fatehpur end, R-B fault in Z-2 with delayed clearance of ~560msec is observed. Carrier received signal not observed in DR. Main-1 carrier faulty flag is observed in Fatehpur end Station event logger.
5	765 KV Chittorgarh-Banaskantha (PG) Ckt-1	POWERGRID	17-Apr-25	07:00	Nil	Phase to earth fault B-N	NA	80	Yes (After 24 hours)	Yes (After 24 hours)		As per DR of Chittorgarh(PG) end, line tripped on B-N (Z-1) fault after unsuccessful A/R operation on permanent fault. Fault distance was 241km(79%)and fault current was ~4.5kA from Chittorgarh end.
6	400 KV Kankroli-Zerda (PG) Ckt-2	POWERGRID	18-Apr-25	15:33	Nil	Phase to earth fault R-N	NA	80	Yes	Yes		As per DR of kankroli end, line tripped on R-N fault in reclaim time (within 1sec). Fault current wa ~8.5kA from Kankroli end.
7	765 KV Phagi(RS)-Gwalior(PG) (PG) Ckt-1	POWERGRID	24-Apr-25	13:07	Nil	Phase to earth fault R-N	NA	80	Yes (After 24 hours)	Yes (After 24 hours)		As per DR of Phagi end, line tripped on R-N fault in reclaim time (within 1.6sec). Fault current was ~2.35kA from Phagi end.
8	765 KV Phagi(RS)-Gwalior(PG) (PG) Ckt-2	POWERGRID	24-Apr-25	13:08	Nil	Phase to earth fault B-N	NA	80	Yes (After 24 hours)	Yes (After 24 hours)		As per DR of Phagi end, line tripped on B-N fault after unsuccessful A/R operation on permanent fault. Fault current was ~2.89kA from Phagi end.
9	800 KV HVDC Agra-Bishwanath Chariali (PG) Ckt-2	POWERGRID	28-Apr-25	02:39	Nil	Earth fault	NA	NA	Yes (After 24 hours)	No	DR/EL & tripping report not received	As reported, line tripped on earth fault, fault distance was ~982.1km from Agra end. As per PMU at Agra(PG) end, fluctuation in voltage is osberved.

 # 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 Mock Test of SPS in NR during 2025-26

Sr. No.	Scheme Name	Control Area	Mock testing conducted before 2025-26	Tentative Schedule of SPS Mock testing to be conducted during 2025-26	Date of SPS Mock testing conducted during 2025-26	Remarks
1	SPS for WR-NR corridor - 765kV Agra-Gwalior D/C	POWERGRID	27-03-2025			
2	SPS for contingency due to tripping of HVDC Mundra-Mahendergarh	ADANI				Review is being done at OCC/PSC forum
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	19-03-2025 and 20-03-2025			
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				Review is being done at OCC/PSC forum (SPS Not required)
7	SPS for reliable evacuation of power from NJPS, Rampur, Sawra Kuddu, Baspa Sorang and Karcham Wangtoo HEP	SJVN/HPPTCL/JSW	19-12-2024			
8	SPS for Reliable Evacuation of Ropar Generation	Punjab				
9	SPS for Reliable Evacuation of Rosa Generation	Uttar Pradesh	20-04-2024		12-04-2025	
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	14-03-2025 (Partial)			
12	SPS for evacuation of Anpara Generation Complex	Uttar Pradesh	08-10-2024 (unit-7) and 19-10-2024 (unit-6)			
13	SPS for evacuation of Lalitpur TPS Generation	Uttar Pradesh	21-05-2024		09-04-2025	
14	SPS for Reliable Evacuation of Bara TPS Generation	Uttar Pradesh	20-11-2024			
15	SPS for Lahal Generation	Himachal Pradesh	08-07-2020			
16	SPS for Transformers at Ballabhgarh (PG) substation	POWERGRID				Not in service, Review is being done in OCC/PSC forum
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				Review is being done at OCC/PSC forum
20	SPS for Transformers at Moradabad (UPPTCL) Substation	Uttar Pradesh	20-04-2024		02-04-2025	
21	SPS for Transformers at Muradnagar (UPPTCL) Substation	Uttar Pradesh	20-04-2024			
22	SPS for Transformers at Muzaffarnagar(UPPTCL) Substation	Uttar Pradesh	20-04-2024			
23	SPS for Transformers at Greater Noida(UPPTCL) Substation	Uttar Pradesh				SPS Unhealthy; SPS not required now, as informed by Transmission wing; Hence SPS may be reviewed
24	SPS for Transformers at Agra (UPPTCL) Substation	Uttar Pradesh	21-03-2025			
25	SPS for Transformers at 400kV Sarojininagar (UPPTCL) Substation	Uttar Pradesh	15-05-2024			
26	SPS for Transformers at 220kV Sarojininagar (UPPTCL) Substation	Uttar Pradesh	06-06-2024			
27	SPS for Transformers at 400kV Unnao (UPPTCL) Substation	Uttar Pradesh	19-05-2023			SPS Unhealthy; SPS need to be made healthy; Expected functioning before 20-03-2025, as informed by Transmission wing-
28	SPS for Transformers at 220kV Unnao (UPPTCL) Substation	Uttar Pradesh				
29	SPS for Transformers at 400kV Sultanpur (UPPTCL) Substation	Uttar Pradesh				SPS Unhealthy; SPS not required now, as informed by Transmission wing; Hence SPS may be reviewed
30	SPS for Transformers at 400kV Bareilly (UPPTCL) Substation	Uttar Pradesh				SPS has been shifted (Not in service)
31	SPS for Transformers at 400kV Azamgarh (UPPTCL) Substation	Uttar Pradesh	06-05-2024			
32	SPS for Transformers at 400kV Mau (UPPTCL) Substation	Uttar Pradesh	27-04-2024			
33	SPS for Transformers at 400kV Gorakhpur (UPPTCL) Substation	Uttar Pradesh	27-04-2024			
34	SPS for Transformers at 400kV Sarnath (UPPTCL) Substation	Uttar Pradesh	23-05-2024			
35	SPS for Transformer at 400kV Rajpura (PSTCL) Substation	Punjab	31-01-2025			
36	SPS for Transformers at 400kV Mundka (DTL) Substation	Delhi	03-02-2025			
37	SPS for Transformers at 400kV Deepalpur (JKTPL) Substation	Haryana				
38	SPS for Transformers at 400kV Ajmer (RVPN) Substation	Rajasthan	10-09-2024			
39	SPS for Transformers at 400kV Merta (RVPN) Substation	Rajasthan	12-09-2024			
40	SPS for Transformers at 400kV Chittorgarh (RVPN) Substation	Rajasthan	31-08-2024 and 05-09-2024			
41	SPS for Transformers at 400kV Jodhpur (RVPN) Substation	Rajasthan	24-09-2024			
42	SPS for Transformers at 400kV Bhadla (RVPN) Substation	Rajasthan	27-09-2024			
43	SPS for Transformers at 400kV Ratangarh (RVPN) Substation	Rajasthan	20-09-2024			
44	SPS for Transformers at 400kV Nehtaur(WUPPTCL) Substation	Uttar Pradesh	11-01-2025			
45	SPS for Transformers at Obra TPS	Uttar Pradesh	20-05-2024			
46	SPS for Transformers at 400KV Kashipur (PTCUL) substation	Uttarakhand	Septemeber 2024			
47	SPS for Transformers at 400KV Fatehgarh Solar Park (AREPRL)	ADANI			12-04-2025	
48	SPS to relive transmission congestion in RE complex (Bhadla2)	POWERGRID				
49	SPS for Transformers at 400kV Bikaner (RVPN) Substation	Rajasthan	26-09-2024			
50	SPS for Transformers at 400kV Bawana (DTL) Substation	Delhi	04-01-2025			
51	SPS for Transformers at 400kV Bhilwara (RVPN) Substation	Rajasthan	09-07-2024 and 10-07-2024			
52	SPS for Transformers at 400kV Hinduan (RVPN) Substation	Rajasthan	26-09-2024			
53	SPS for Transformers at 400kV Suratgarh (RVPN) Substation	Rajasthan				Implemented in 2024-25
54	SPS for Transformers at 400kV Babai(RS) Substation	Rajasthan				
55	SPS for Transformers at 400kV Allahabad(PG) Substation	Uttar Pradesh				
56	SPS for Transformers at 400kV Jaunpur(UP) Substation	Uttar Pradesh				Yet to be implemented

Summary of Grid Event occurred in J&K control area during Jan'24-Apr'25

S.No.	Category of Grid Disturbance (GD-I to GD-V)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Event (As reported)	Loss of generation / loss of load during the Grid Disturbance		Fault Clearance time (in ms)
					Date	Time		Generation Loss(MW)	Load Loss (MW)	
1	GD-1	1) 220 KV Alusteng-Dras (PG) Ckt	Jammu and Kashmir	PGCIL, JKPTCL	19-Feb-24	19:19	i) 220/66kV Drass(PG) have double main bus arrangement at 220kV side. ii) During antecedent condition, approx. 25MW power was coming from Alusteng to Drass and approx. 23MW power was going out from Drass to Kargil. iii) As reported, at 19:19 hrs, 220 KV Alusteng-Dras (PG) Ckt tripped on B-N phase to earth fault with distance of 96km from Dras end. iv) Due to this tripping supply to 220 KV Dras (PG)-Kargil Ckt was lost and blackout occurred at 220/66kV Drass(PG) S/s. v) As per PMU at Amargarh, B-N phase to earth fault is observed with fault clearing time of 280ms. vi) As per SCADA, change in demand of approx. 260MW is observed in J&K control area.	0	260	280
2	GD-1	1) 220 KV Alusteng-Dras (PG) Ckt	Jammu and Kashmir	PGCIL, JKPTCL	21-Feb-24	10:00	i) 220/66kV Drass(PG) have double main bus arrangement at 220kV side. ii) During antecedent condition, approx. 47MW power was coming from Alusteng to Drass and approx. 45MW power was going out from Drass to Kargil. iii) As reported, at 10:00 hrs, 220 KV Alusteng-Dras (PG) Ckt tripped on R-B phase to phase fault with fault current of 2kA and 2.2kA from Alusteng end in R and B phases respectively and fault distance of 61km from Alusteng end and 64.9km from Drass end. iv) Due to this tripping supply to 220 KV Dras (PG)-Kargil Ckt was lost and blackout occurred at 220/66kV Drass(PG) S/s. v) As per PMU at Amargarh, R-B phase to phase fault is observed with fault clearing time of 80ms. vi) As per SCADA, change in demand of approx. 115MW is observed in J&K control area.	0	115	80
3	GD-1	1) 220 KV Alusteng-Dras (PG) Ckt	Jammu and Kashmir	PGCIL, JKPTCL	3-Mar-24	00:19	i) 220/66kV Drass(PG) have double main bus arrangement at 220kV side. 220kV Drass is connected with 220/132kV Kargil which is further connected with Khalsti and Leh. Chutak HEP is connected at 66kV level at 220/66kV Kargil and Nimmo Bazgo HEP is connected at 66kV levl at 220/66kV Leh. ii) During antecedent condition (at 00:17hrs) approx. 23MW power was coming from Alusteng to Drass and approx. 22MW power was going out from Drass to Kargil. iii) As reported, at 00:19 hrs, 220 KV Alusteng-Dras (PG) Ckt tripped on B-N phase to earth fault. iv) Due to this tripping supply to 220 KV Dras (PG)-Kargil Ckt was lost and blackout occurred at 220/66kV Drass(PG), Kargil, Khalsti and Leh. v) 220 KV Dras (PG)-Kargil Ckt was charged at 01:31 hrs and supply was restored. vi) As per PMU at Amargarh, B-N phase to earth fault is observed with fault clearing time of 120ms. vii) As per SCADA, load loss of approx. 23MW at 00:19hrs is observed in J&K control area.	0	23	120
4	GD-1	1) 220 KV Alusteng-Dras (PG) Ckt	Jammu and Kashmir	PGCIL, JKPTCL	3-Mar-24	03:09	i) During antecedent condition (at 03:07hrs) approx. 04MW power was coming from Alusteng to Drass and approx. 03MW power was going out from Drass to Kargil. Chutak HEP was generating ~10MW. ii) At 03:39hrs, 220 KV Alusteng-Dras (PG) Ckt tripped on B-N phase to earth fault. This again resulted into blackout at 220/66kV Drass(PG), Kargil, Khalsti and Leh. iii) Due to this tripping supply to 220 KV Dras (PG)-Kargil Ckt was lost and blackout occurred at 220/66kV Drass(PG) S/s. iv) 220 KV Dras (PG)-Kargil Ckt was charged at 04:26 hrs and supply to Dras was restored. v) As per PMU at Amargarh, B-N phase to earth fault is observed with fault clearing time of 120ms. vi) As per SCADA, load loss of approx.14MW at 03:09hrs is observed in J&K control area.	0	14	120
5	GI-1	1) 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 2) 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2	Jammu and Kashmir	INDIGRID, PDD JK	18-Mar-24	04:15	i)220/132kV Zainkote S/s have two bus at 220kV side i.e., main bus & reserve bus. ii)During antecedent condition, 220kV Amargarh(INDIGRID) –Zainkote(JK) D/C (carrying 162MW each) was feeding Zainkote load. iii)As reported, at 04:15 hrs, 220 KV Amargarh(INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2 tripped on B-N phase to earth fault from Zainkote end only. But as per DR at Amargarh end, current in R- and Y- phase increased upto ~0.89kA and ~1.43kA respectively. (Exact reason, nature and location of fault yet to be shared) iv)As further reported, at the same time, 220 KV Amargarh(INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 also tripped on B-N phase to earth fault from Zainkote end only. But as per DR at Amargarh end, current in B- phase increased upto ~1.02kA. (Exact reason, nature and location of fault yet to be shared) v)As per PMU at Amargarh(PG), rise in B-ph voltage is observed.	0	225	NA
6	GD-1	1) 220 KV Alusteng-Dras (PG) Ckt	Jammu and Kashmir	PGCIL	29-Apr-24	06:06	i)Power flows from Alusteng(PG) to Drass(PG) to Kargil to Khalsti to Leh (radial connection). Generation of Chutak is connected to Kargil and generation of Nimoo bazgo is connected to Leh. ii)As reported, at 06:06 hrs, 220 KV Alusteng-Dras (PG) Ckt tripped on R-B phase to phase fault with fault distance of 38.4km from Drass(PG). iii)With the tripping of 220 KV Alusteng-Dras (PG) Ckt, complete blackout occurred at 220/66kV Drass(PG) and supply to Kargil, Khalsti and Leh also failed. iv)Generation of Chutak and Nimoo Bazgo tripped due to loss of evacuation path resulting in generation loss of approx. 7MW each at Chutak and Nimoo Bazgo (as per SCADA). v)As per PMU at Amargarh(INDIGRID), R-B phase to phase fault is observed with fault clearing time of 120ms. vi)As per SCADA, change in demand of approx. 15MW is observed in J&K control area.	14	15	120
7	GI-1	1)220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 2)220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2	Jammu and Kashmir	INDIGRID, JKPTCL	10-May-24	13:06	i)220/132kV Zainkote S/s have two buses at 220kV side i.e., main bus & reserve bus. ii)During antecedent condition, 220kV Amargarh(INDIGRID) –Zainkote(JK) D/C (carrying 70MW each) was feeding Zainkote load. iii)As reported, at 13:06 hrs, 220 KV Amargarh(INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 tripped on R-Y phase to phase fault with fault current of Ir=~2.11kA and Iy=~2.363kA and fault distance of 4.714km from Zainkote(JK) end; fault sensed in zone-1 at Zainkote(JK) end. (Exact reason yet to be shared) iv)As further reported, at the same time, 220 KV Amargarh(INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2 also tripped on over-current protection operation. v)As per PMU at Amargarh(INDIGRID), R-Y phase to phase fault with fault clearing time of 120ms is observed. vi)As per SCADA, change in demand of approx. 130MW is observed in J&K control area.	0	130	120
8	GD-1	1) 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-1 2) 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-2	Jammu and Kashmir	PDD-JK, PGCIL	23-May-24	14:49	i)220/132kV Pampore(PDD) has Double main Bus arrangement at 220kV side. ii)During antecedent condition, power flow from Wagoora(PG) S/s to Pampore(PDD) S/s was approx. 200 MW through 220 KV Wagoora(PG)-Pampore(PDD) (PG) D/C. 220kV Pampore-Mirbazar(PDD) D/C was not in service. iii)As reported, at 14:49 hrs, 220 KV Wagoora(PG)-Pampore(PDD) (PG) D/C tripped from Wagoora(PG) end on R-N phase to earth fault on 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-2 with fault distance of 2.38km from Wagoora(PG) end. From Pampore(PDD JK) end, only 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-2 tripped. iv)As per DR of Wagoora(PG) end of 220 KV Wagoora(PG)-Pampore(PDD) (PG) ckt-1 & ckt-2, R-N phase to earth fault is observed in zone-2 and zone-1 for 220 KV Wagoora(PG)-Pampore(PDD) (PG) ckt-1 & ckt-2 respectively. Fault current observed is Ir=~7.9kA & Ir=~12.9kA for 220 KV Wagoora(PG)-Pampore(PDD) (PG) ckt-1 & ckt-2 respectively. From relay flags, it is suspected that fault was on 220 KV Wagoora(PG)- Pampore(PDD) (PG) ckt-2 and ckt-1 tripped from Wagoora(PG) end due to delayed clearance from Pampore end. Details of Pampore end yet to be received. v)As per PMU at Warpshi(PG), R-N phase to earth fault is observed with delayed fault clearing time of 520ms. vi)As per SCADA, change in demand of approx. 235MW is observed in J&K control area.	0	235	520
9	GD-1	1)220 kV Barn(JK)-Kishenpur(PG) Ckt-1 2)220 kV Barn(JK)-Kishenpur(PG) Ckt-2	Jammu and Kashmir	PDD JK, PGCIL	3-Jun-24	17:33	i)As reported, at 17:33hrs, 220 kV Barn(JK)-Kishenpur(PG) Ckt-1 tripped on R-N phase to earth fault with fault current of 5.094kA from Kishepur(PG) end (as per DR). As per DR, zone-1 distance protection operated at Kishepur(PG) end (exact reason and location of fault yet to be shared). ii)During the same time, 220 kV Barn(JK)-Kishenpur(PG) Ckt-2 also tripped from Barn(JK) end only on R-N phase to earth fault with fault current of 3.9kA from Kishepur(PG) end (as per DR). As per DR, fault sensed in zone-2 at Kishenpur(PG) and line remained charged from Kishenpur (PG) end. iii)Due to tripping of both 220 kV Barn(JK)-Kishenpur(PG) Ckt-1 & 2, complete blackout occurred at 220/132kV Barn(J&K) S/s. iv)As per PMU at Kishenpur(PG), R-N phase to earth fault with fault clearing time of 120ms is observed. v)As per SCADA, load loss of approx. 120MW occurred in J&K control area.	0	120	120
10	GD-1	1) 220 KV Alusteng-Dras (PG) Ckt	Jammu and Kashmir	PGCIL	4-Jun-24	19:31	i)Power flows from Alusteng(PG) to Drass(PG) to Kargil to Khalsti to Leh (radial connection). Generation of Chutak is connected to Kargil and generation of Nimoo bazgo is connected to Leh. ii)As reported, at 19:31 hrs, 220 KV Alusteng-Dras (PG) Ckt tripped on B-N phase to earth fault with fault distance of 115km from Alusteng(PG). iii)With the tripping of 220 KV Alusteng-Dras (PG) Ckt, complete blackout occurred at 220/66kV Drass(PG) and supply to Kargil, Khalsti and Leh also failed. iv)Generation of Chutak and Nimoo Bazgo tripped due to loss of evacuation path resulting in generation loss of approx. 37MW & 24MW at Chutak and Nimoo Bazgo respectively (as per SCADA). v)As per PMU at Amargarh(INDIGRID), B-N phase to earth fault is observed with fault clearing time of 80ms. vi)As per SCADA, no change in demand is observed in J&K control area.	61	0	80
11	GI-1	1)220/132kV 160MVA ICT 2 at Barn(J&K) 2)220/132kV 160MVA ICT 1 at Barn(J&K) 3)220/132kV 160MVA ICT 3 at Barn(J&K)	Jammu and Kashmir	PDD JK	7-Jun-24	16:29	i)As reported, at 16:29hrs, 220/132kV 160MVA ICT 2 at Barn(J&K) tripped on over current earth fault protection operation (exact reason, location and type of fault yet to be shared). ii)Due to shifting of loading of 220/132kV 160MVA ICT 2 to 220/132kV 160MVA ICT 1 & 3, both ICTs also tripped on overloading. iii)As per PMU at Kishenpur(PG), R-B phase to phase fault with delayed fault clearing time of 2160 ms is observed. iv)As per SCADA, load loss of approx. 363MW occurred in J&K control area.	0	363	2160
12	GI-1	1)220 KV Samba(PG)-Hiranagar(PDD) (PG) Ckt-1 2)220 KV Samba(PG)-Hiranagar(PDD) (PDD JK) Ckt-2	Jammu and Kashmir	PGCIL, PDD JK	13-Jun-24	06:48	i)220/132kV Hiranagar(J&K) has double main Bus arrangement at 220kV voltage side. ii)As reported, at 06:28hrs, 220 KV Samba(PG)-Hiranagar(PDD) (PG) Ckt-1 tripped on Y-N phase to earth fault. Fault sensed in zone-1, fault current Iy=~4.9kA and fault distance was 0.8km from Hiranagar end (Exact reason of fault yet to be recieved). iii)At the same time, 220 KV Samba(PG)-Hiranagar(PDD) (PDD JK) Ckt-2 also tripped from Hiranagar(J&K) end on overcurrent protection operation. iv)220 KV Samba(PG)-Hiranagar(PDD) (PG) Ckt-1 tripped from both ends(Samba and Hiranagar) and 220 KV Samba(PG)-Hiranagar(PDD) (PDD JK) Ckt-2 tripped from Hiranagar end only. v)As per PMU at Samba(PG), Y-N phase to earth followed by R-B phase to phase fault with fault clearing time of 80 msec is observed. vi)As per SCADA, load loss of approx. 360MW in J&K control area is observed. However, as per SLDC J&K, approx. 100MW load loss is observed in J&K control area.	0	100	80
13	GI-1	1) 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 2) 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2	Jammu and Kashmir	PDD JK, INDIGRID	18-Jul-24	11:01	i)220/132kV Zainkote S/s have two bus at 220kV side i.e., main bus & reserve bus. 220kV Amargarh-Zainkote ckt-1&2 are on the same tower (D/C tower) and line length is ~21.4km. ii)During antecedent condition, 220kV Amargarh(INDIGRID) –Zainkote(JK) D/C was carrying 109 MW each and feeding Zainkote load. iii)As reported, at 11:01 hrs, 220 KV Amargarh(INDIGRID)-Zainkote(JK) (PDD JK) D/C tripped from both ends on B-N phase to earth fault. During patrolling it was found that fault occurred due to vegetation fire in bottom of the line. iv)As per DR of both the circuits of Amargarh end, Amargarh end distance protection relay sensed B-N fault in Z-1 (15.66km) in line-1 and in Z-2(21.69km) in line-2. Both the lines tripped instantaneously from Amargarh end. Fault current was ~4kA. v)As confirmed by Amargarh(INDIGRID), in view of non-availability of carrier communication and A/R scheme at Zainkote end, A/R has been kept disabled at Amargarh end and time delay of Z-2 also kept as instantaneous at Amargarh end. vi)As per PMU at Amargarh(PG), B-N phase to earth fault which cleared within 120 msec is observed. vii)As per SCADA, change in demand of approx. 210MW is observed in J&K control area.	0	210	120
14	GI-1	1)220/132kV 160MVA ICT-1 at Barn (JK) 2)220/132kV 160MVA ICT-2 at Barn (JK) 3)220/132kV 160MVA ICT-3 at Barn (JK) 4)132kV Barn-Canal (JK) Ckt-1 5)132kV Barn-Canal (JK) Ckt-2	Jammu and Kashmir	JK PDD	2-Aug-24	15:03	i)As reported, at 15:03hrs, 220/132kV 160MVA ICT-1, 132kV Barn-Canal (JK) D/C tripped at Barn(JK) S/s on Y-B phase to phase fault which occurred on 132kV Barn-Canal (JK) D/C (exact reason, location of fault and type of protection operated is yet to be received). ii)As reported, due to tripping of ICT-1, the complete load shifted on 220/132kV 160MVA ICT-2 & 3 which led to tripping of 220/132kV 160MVA ICT-2 & 3 on overloading at Barn(JK) S/s. iii)As per PMU at Kishenpur(PG), Y-B phase to phase fault with fault clearing time of 120ms is observed. iv)As per SCADA, load loss of approx. 345MW occurred in J&K control area.	0	345	120
15	GI-1	1)220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 2)220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2	Jammu and Kashmir	PDD JK, INDIGRID	26-Aug-24	13:53	i)220/132kV Zainkote S/s have two bus at 220kV side i.e., main bus & reserve bus. 220kV Amargarh-Zainkote ckt-1&2 are on the same tower (D/C tower) and line length is ~21.4km. ii)During antecedent condition, 220kV Amargarh(INDIGRID) –Zainkote(JK) D/C was carrying 104 MW each and feeding Zainkote load. iii)As reported, at 13:53 hrs, 220 KV Amargarh(INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2 tripped from both ends on R-Y phase to phase fault with fault distance of 6.6km and fault current of Ir=~2.15kA & Iy=~2.37kA from Zainkote(JK) end. 220 KV Amargarh(INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 tripped only from Amargarh(INDIGRID) end on the same R-Y phase to phase fault (Exact reason of fault is yet to be received). iv)As per DR of Amargarh(INDIGRID) end of 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1, R-Y phase to phase fault is observed in zone-2 with fault current of Ir=~2.5kA & Iy=~2.1kA. v)As per DR of Amargarh(INDIGRID) end of 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2, R-Y phase to phase fault is observed in zone-1 with fault current of Ir=~5.2kA & Iy=~4.9kA. vi)As confirmed by Amargarh(INDIGRID), in view of non-availability of carrier communication and A/R scheme at Zainkote end, A/R has been kept disabled at Amargarh end and time delay of Z-2 also kept as instantaneous at Amargarh end. vii)As per PMU at Amargarh(PG), R-Y phase to phase fault which cleared within 120 msec is observed. viii)As per SCADA, change in demand of approx. 180MW is observed in J&K control area.	0	180	120
16	GI-1	1)220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 2)220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2	Jammu and Kashmir	JKPDD & INDIGRID	11-Oct-24	10:03	i)220/132kV Zainkote S/s have two bus at 220kV side i.e., main bus & reserve bus. 220kV Amargarh-Zainkote ckt-1&2 are on the same tower (D/C tower) and line length is ~21.4km. ii)During antecedent condition, 220kV Amargarh(INDIGRID) –Zainkote(JK) D/C was carrying 114 MW each and feeding Zainkote load. iii)As reported, at 10:03 hrs, 220 KV Amargarh(INDIGRID)-Zainkote(JK) (PDD JK) D/C tripped from both ends on Y-B phase to phase fault. During patrolling it was found that the fault had occurred between Tower no. 76 and 77, as some locals were cutting trees in the vicinity of line and branches of tree had fallen on the line. iv)As per PMU at Amargarh(PG), B-N phase to earth fault which cleared within 80 msec is observed. v)As per SCADA, change in demand of approx. 175MW is observed in J&K control area.	0	175	80
17	GI-1	1) 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-1 2) 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-2	Jammu and Kashmir	PDD-JK & PGCIL	16-Oct-24	13:45	i)220/132kV Pampore(PDD) has single main and transfer Bus arrangement at 220kV side. ii)During antecedent condition, power flow from Wagoora(PG) S/s to Pampore(PDD) S/s was approx. 140 MW (70 MW each) through 220 KV Wagoora(PG)-Pampore(PDD) (PG) D/C. iii)As reported, at 13:45 hrs, Y-phase disc ruptured in 220kV main Bus at Pampore. iv)Due to this, 220kV Wagoora(PG)-Pampore(PDD) (PG) Ckt-1 tripped from Pampore end on Y-N phase to earth fault (exact location of fault and nature of protection operated yet to be shared). v)During the same time, 220kV Wagoora(PG)-Pampore(PDD) (PG) Ckt-2 also tripped from Wagoora end sensing the fault in zone-2 with fault distance of 11.91km from Wagoora end. vi)As per PMU at Amargarh(INDIGRID), Y-N phase to earth fault converted to Y-B-N double phase to earth fault with delayed fault clearing time of 1000ms is observed. vii)As per SCADA, change in demand of approx. 350 MW is observed in J&K control area.	0	350	1000
18	GI-1	1) 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 2) 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2	Jammu and Kashmir	JKPDD, INDIGRID	26-Nov-24	14:13	i)220/132kV Zainkote S/s have two bus at 220kV side i.e., main bus & reserve bus. 220kV Amargarh-Zainkote ckt-1&2 are on the same tower (D/C tower) and line length is ~21.4km. ii)During antecedent condition, 220kV Amargarh (INDIGRID) –Zainkote(JK) D/C was carrying 138 MW each and feeding Zainkote load. iii)As reported, at 14:13 hrs, 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 tripped on B-N phase to earth fault with fault distance of 22.34 km (as per EL) and fault current of Ib=~2.81kA (as per DR) from Amargarh end. Fault sensed in zone-2 at Amargarh end. iv)During the same time, 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2 also tripped on B-N phase to earth fault with fault distance of 27.46km (as per EL) and fault current of Ib=~3.43kA (as per DR) from Amargarh end. Fault sensed in zone-2 at Amargarh end. v)As confirmed by Amargarh (INDIGRID), in view of non-availability of carrier communication and A/R scheme at Zainkote end, A/R has been kept disabled at Amargarh end and time delay of Z-2 also kept as instantaneous at Amargarh end. vi)As per PMU at Amargarh (PG), B-N phase to earth fault which cleared within 80 msec is observed. vii)As per SCADA, change in demand of approx. 260 MW is observed in J&K control area.	0	260	80
19	GI-1	i)220 KV Amargarh(NRSS XXII)-Delina(PDD) (PDD JK) Ckt-1 ii)220 KV Amargarh(NRSS XXII)-Delina(PDD) (PDD JK) Ckt-2	Jammu and Kashmir	INDIGRID and JKPDD	31-Dec-24	05:57	i)400/220kV Amargarh S/s have two bus at 220kV side i.e., main bus & reserve bus. ii)During antecedent condition, 220 KV Amargarh (NRSS XXII)-Delina(PDD) (PDD JK) Ckt-1 and Ckt-2 were carrying 105 and 107 MW respectively and feeding Delina load. iii)As reported, at 05:57 hrs, 220 KV Amargarh (NRSS XXII)-Delina(PDD) (PDD JK) D/C tripped from both ends on B-N phase to earth fault. iv)As per PMU at Amargarh(PG), two successive B-N phase to earth fault which cleared within 120 msec is observed. v)As per SCADA, change in demand of approx. 225MW is observed in J&K control area.	0	225	120
20	GI-1	i)220 KV SAMBA(PG)-BISHNAH(JK) (PDD JK) CKT-1 ii)132KV/33KV 50MVA ICT-1 BISHNAH	Jammu and Kashmir	JKPDD	31-Dec-24	13:33	i)220/132/33kV Bisnah S/s have two bus at 220kV side i.e., main bus & reserve bus. ii)During antecedent condition, 132 KV SAMBA(PG)-BISHNAH(JK) (PDD JK) CKT-1 was carrying 76 MW load and feeding Bisnah load. iii)As reported, at 13:33 hrs, 132KV/33KV 50MVA ICT-1 BISHNAH tripped on account of fire incident. At the same time 220 KV SAMBA(PG)-BISHNAH(JK) (PDD JK) CKT-1 also tripped. The tripping details are still awaited. iv)As per PMU at Amargarh(INDIGRID), Y-N phase to earth fault with delayed fault clearing time of 880 msec is observed. v)As per SCADA, change in demand of approx. 78 MW is observed in J&K control area.	0	78	880
21	GI-1	i)220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 ii)220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2	Jammu and Kashmir	INDIGRID and JKPDD	31-Dec-24	19:47	i)220/132kV Zainkote S/s have two bus at 220kV side i.e., main bus & reserve bus. 220kV Amargarh-Zainkote ckt-1&2 are on the same tower (D/C tower) and line length is ~21.4km. ii)During antecedent condition, 220kV Amargarh (INDIGRID) –Zainkote(JK) D/C was carrying 157 MW each and feeding Zainkote load. iii)As reported, at 19:47 hrs, 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 tripped on R-N phase to earth fault with fault distance of 13.18 km and fault current of Ir=~1.199 kA from Zainkote end. Fault sensed in zone-1 at Zainkote end. iv)This led to overloading of 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2 and this line tripped from Zainkote end only on over-current protection operation. v)As per PMU at Amargarh(INDIGRID), R-N phase to earth fault with fault clearing time of 80 msec is observed. vi)As per SCADA, change in demand of approx. 235 MW is observed in J&K control area.	0	235	80
22	GI-1	i) 220/132KV 160MVA ICT -1 at Delina (JK) ii) 220/132KV 160MVA ICT -2 at Delina (JK) iii) 220/132KV 160MVA ICT -3 at Delina (JK)	Jammu and Kashmir	PDD-JK	17-Feb-25	0.62083333	i)220/132kV Delina substation has Double main and transfer bus scheme. ii)During antecedent condition, 220kV Amargarh (INDIGRID) –Delina(JK) D/C was carrying 106 MW each and feeding Delina load. iii)As reported, at 14:54 hrs, 132KV Delina – Pattan line tripped due to broken jumper condition while returning the same line from shutdown (exact reason, nature and location of fault need to be shared). iv)During the same time, 220/132KV 160MVA ICT -1 at Delina(JK) tripped on earth fault (exact nature of protection operated need to be shared). v)Subsequently, this led to overloading of 220/132KV 160MVA ICT -2 & 3 at Delina(JK) and got tripped on over-current protection operation. vi)As per PMU at Amargarh (INDIGRID), R-Y-B 3 phase to earth fault with fault clearing time of 80 msec is observed. vii)As per SCADA, change in demand of approx. 210 MW is observed in J&K control area.	0	210	80
23	GI-1	i)220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-1 ii)220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2	Jammu and Kashmir	INDIGRID & JKPDD	28-Feb-25	0.14583333	i)220/132kV Zainkote S/s have two bus at 220kV side i.e., main bus & reserve bus. 220kV Amargarh-Zainkote ckt-1&2 are on the same tower (D/C tower) and line length is ~21.4km. ii)During antecedent condition, 220kV Amargarh (INDIGRID) –Zainkote (JK) ckt-2 was carrying 139 MW and feeding Zainkote load. 220kV Amargarh (INDIGRID) –Zainkote (JK) ckt-1 was already tripped at 02:40 hrs on R-N fault. iii)As reported, at 03:30 hrs 220 KV Amargarh (INDIGRID)-Zainkote(JK) (PDD JK) Ckt-2 also tripped on R-N fault (details of cause of fault and location of fault yet to be received). iv)As per PMU at Amargarh (INDIGRID), no fault was observed in system. v)As per SCADA, change in demand of approx. 126 MW is observed in J&K control area.	0	126	NA

24	GD-1	i)220 KV LEH(PG) - BUS 1 ii)220/66 KV 50 MVA ICT 1 AT LEH(PG) iii)220 KV KHALSTI-LEH (PG) CKT-1	Jammu and Kashmir	JKPDD & PGCIL	26-Mar-25	0.19722222	i)220/66KV Leh has double main bus system. Nimmo Bazgo HEP is connected at 66kV level at 220/66kV Leh S/s. ii)During antecedent condition, 220 KV KHALSTI-LEH (PG) CKT-1 was carrying 12MW, while 220/66KV, 50MVA ICT-1 and ICT-2 were loaded 6 MW each. iii)As reported, at 04:44 hrs, 220KV Bus Bar protection operated due to flashover in GIS of Bus Coupler Bay resulting in outage of 220KV Khalsti-Leh Line & 220/66kV 50MVA ICT-1 at Leh (PG). Subsequently, 220KV Bus-2 and 220/66kV 50MVA ICT-2 also tripped (Details awaited). iv)Due to tripping of both the ICTs, the generator at Nimoo Bazgo HWP also tripped due to loss of evacuation path along with other 66KV feeders. This led to complete blackout of 220KV Leh substation. v)As per PMU, R-N phase to earth fault with fault clearance time of 120msec was observed. vi)As per SCADA, load loss of approx. 21 MW in J&K control area and generation loss of approx. 6 MW at Nimoo were observed.	6	21	120

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

Time Period: Jan 2024- Apr 2025

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)
			Value	%	Value		%	Value		%	Value		%
1	Jan-24	1	0	**0**	1	0	**100**	1	0	**100**	1	0	**100**
2	Feb-24	21	3	**14**	21	0	**100**	21	0	**100**	18	0	**86**
3	Mar-24	9	4	**44**	4	5	**100**	4	5	**100**	4	4	**80**
4	Apr-24	13	6	**46**	7	1	**58**	8	1	**67**	6	0	**46**
5	May-24	23	3	**13**	4	19	**100**	3	20	**100**	4	8	**27**
6	Jun-24	29	2	**7**	28	0	**97**	28	0	**97**	12	0	**41**
7	Jul-24	11	0	**0**	11	0	**100**	11	0	**100**	11	0	**100**
8	Aug-24	16	0	**0**	16	0	**100**	16	0	**100**	16	0	**100**
9	Sep-24	17	0	**0**	15	2	**100**	15	2	**100**	11	6	**100**
10	Nov-24	9	4	**44**	4	5	**100**	5	4	**100**	4	3	**67**
11	Dec-24	11	1	**9**	11	0	**100**	11	0	**100**	8	0	**73**
12	Jan-25	1	0	**0**	1	0	**100**	1	0	**100**	0	0	**0**
13	Feb-25	5	4	**80**	4	1	**100**	4	1	**100**	4	0	**80**
14	Mar-25	8	0	**0**	8	0	**100**	8	0	**100**	8	0	**100**
14	Apr-25	21	0	**0**	21	0	**100**	21	0	**100**	21	0	**100**
Total in NR Region		**195**	**27**	**14**	**156**	**33**	**96**	**157**	**33**	**97**	**128**	**21**	**74**

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

 Annexure-B.IX

Fw: Mundra-Mohindergarh HVDC , SPS-NR defect resolutions

Deepak Kumar

Tue 04-Feb-25 17:04

To:Sugata Bhattacharya (सुगाता भट्टाचार्या) <sugata@grid-india.in>;

1 attachments (23 KB)

Revised Schedule for Site Visit.xlsx;

From: Sumeet Sharma <Sumeet.Sharma@adani.com>
Sent: Monday, February 3, 2025 6:58 PM
To: aen.com; m.alwar@rvpn.co.in; aen.mpt&s.rtg@rvpn.co.in; aen.comm.ratangarh@rvpn.co.in; aen.subsldc.bhl@rvpn.co.in; xen.mpts.bhl@rvpn.co.in; aen.prot.mertacity@RVPN.CO.IN; aen.comm.merta@RVPN.CO.IN; nainwal@powergrid.in; vinaykumargupta@powergrid.in; ravindra_kumar@powergrid.in; smahajan1999@powergrid.in; rkagrawal83@powergrid.in; dharmendrameena@powergrid.in; vineet@powergrid.in; bhakalramjash@powergrid.in; dhanonda400kv@gmail.com; sse220kvlulaahir@hvpn.org.in; sse220kvrwr@hvpn.org.in; sse132kvdadri@hvpn.org.in; ae-220kvg1-mgg@pstcl.org; sse-pm-lalton@pstcl.org; sse-pm-mlrk@pstcl.org; eeetdshamli@upptcl.org; ee400mrd2@upptcl.org; aeprotection@upsldc.org; ase-sldcop@pstcl.org; bl.gujar@dtl.gov.in; ce.ld@rvpn.co.in; ce-sldc; dtldata@yahoo.co.in; dtlscheduling@gmail.com; eesldccontrol@upsldc.org; ldrvpnl@rvpn.co.in; ldshutdown@gmail.com; ldshutdown@rvpn.co.in; paritosh.joshi@dtl.gov.in; pccont@bbmb.nic.in; pc-sldcop@pstcl.org; rajbir-walia79@yahoo.com; rtamc.nr1@powergrid.in; pankaj.jha@powergrid.in; neerajk@powergrid.in; se.mpts.udr@rvpn.co.in; se.prot.engg@rvpn.co.in; se.sold@rvpn.co.in; sera@upsldc.org; sesc@upsldc.org; sesldcop@hvpn.org; se-sldcop; setncmrt@upptcl.org; sldcdata@gmail.com; sldcharyanacr@gmail.com; sldcmintoroad@gmail.com; system.uppcl@gmail.com; xenemtcbhpp2@bbmb.nic.in; xenmpccggn@hvpn.org; xenplgss@hvpn.org
Cc: NRLDC SO 2; Somara Lakra (सोमारा लाकरा); Mahavir Prasad Singh (महावीर प्रसाद सिंह); Deepak Kumar; Sunil Kumar Raval; Namandeep Matta; Kali Charan Sahu; RAVINDRA ATALE; Nihar Raj; Milan Popat; Abhishek Kukreja; Naman Vyas; Abhishek Kumar Singh
Subject: Mundra-Mohindergarh HVDC , SPS-NR defect resolutions

Dear Sirs,

This refers to the matter discussed during recent Protection subcommittee (PSC) meetings with regards to the requirement of rectifications of SPS-NR implemented for Mundra-Mohindergarh HVDC transmission. We have awarded the service to M/s commtel for survey and restoration of possible elements installed at the locations.

Please note that Engineers from M/s Commtel shall be visiting your stations as per the attached schedule and necessary coordination shall be done by Mr. Abhishek Singh (Station -in charge) of Mohindergarh HVDC station (AESL-GD). He can be contacted at Mobile: 9671306831.

We request your kind permission and necessary support in carrying out the observations/possible restorations of the installations at your respective stations.

Thank you.

Regards,

Sumeet Sharma
Head- Automation, Communications , OT-Cyber & Technology
Adani Energy Solutions Limited.(Grid Division)
Mob +91 90990 05648 | sumeet.sharma@adani.com | www.adani.com
KP Epitome|10th Floor South Wing | SG Highway |Ahmedabad-382421| Gujarat

Project : To check Sytem healthiness anc configuration of system installed Under M/s Adani

S. No	Site name	Region	Site visit
1	laltokalan	Punjab	03.02.2025
2	Gobidngarh		04.02.2025
3	Malerkotla		05.02.2025
4	Mandula	UP	06.02.2025
5	Bamnauli	DTL	07.02.2025
6	Ratangarh	Rajasthan	06.02.2025
7	Bhilwara		07.02.2025
8	Merta		07.02.2025
9	Alwar		08.02.2025
10	PG Bhiwani	Haryana	10.02.2025
11	BBMB bhiwani		10.02.2025
12	Hissar		11.02.2025
13	Dadri		11.02.2025
14	Bahadurgah		12.02.2025
15	Dhanoda		12.02.2025
16	Shamli	UP	12.02.2025

RE: Mock testing of SPS of 500kV HVDC Mundra-Mahindergarh link

Thu 8/29/2024 7:29 PM

To:NRLDC SO 2 <nrldcso2@grid-india.in>; CPCC1 <rtamc.nr1@powergrid.in>;

Cc:seo-nrpc <seo-nrpc@nic.in>; Somara Lakra (सोमारा लाकरा) <somara.lakra@grid-india.in>; Mahavir Prasad Singh (महावीर प्रसाद सिंह) <mahavir@grid-india.in>; Arunkumar P <Arunkumar.P@adani.com>; Sugata Bhattacharya (सुगाता भट्टाचार्या) <sugata@grid-india.in>; Deepak Kumar <deepak.kr@grid-india.in>; AMIT SHARMA <amsharma@grid-india.in>; Bikas Kumar Jha (बिकास कुमार झा) <bikaskjha@grid-india.in>; Manas Ranjan Chand (मानस रंजन चंद) <manas@grid-india.in>; Aman Gautam (अमन गौतम) <amangautam@grid-india.in>; Gnanaguru . <Gnanaguru.1@adani.com>; Sumeet Sharma <Sumeet.Sharma@adani.com>; Naman Vyas <Namany.Vyas@adani.com>; Milan Popat <Milan.Popat@adani.com>; Nihar Raj <nihar.raj@adani.com>; Abhishek Kukreja <Abhishek.Kukreja@adani.com>;

5 attachments (9 MB)

Counter (2).jpg; Counter.jpg; TPS (2).jpg; TPS.jpg; 220KV Alwar ss.jpg;

Dear Sir,

Please find the attached Photos. on 28-08-2024, a representative from M/s. Commtel Networks visited the Mahendragarh site and confirmed the healthiness of the SDH and TPS, along with their associated cards.

All SPS System equipment are functioning properly. The 15 TPS installed in the remote substation.

The details and status of TPS and Counter at Mahendragarh End.

S.No	TPS	TPS Status	Counter	Counter Status
1	PG Hissar	ON	17	OKAY
2	Bhiwani	ON	17	OKAY
3	Dadari	ON	17	OKAY
4	Alwar	ON	-	OFF
5	Bhilwara	ON	12	OKAY
6	Merta	ON	14	OKAY
7	Ratangarh	ON	-	OFF
8	Gobinugarg	ON	-	OFF
9	Malerkotla	ON	-	OFF
10	Laton Kalan	ON	6	OKAY
11	Mandula	ON	12	OKAY
12	Bamnauli	ON	-	OFF
13	Shamli	ON	-	OFF
14	Bahadurgarh	ON	10	OKAY

15	Dhanonda	ON	-	OFF

There alarms on the system are due to the following reasons.

1. Equipment Failure/ card failure/ power failure at Remote Sites.
2. Cable connectivity break between the remote System and cable coming from Field.
3. E1 connectivity outage at remote Sites.

Our team, with support from Commtel Networks, visited the nearest TPS installed at the 220/132 kV Alwar Substation to check its healthiness. However, during the inspection, the panel was found to be de-energized, necessitating an end-to-end test. (Photo Attached) Similarly, each substation needs to be ensured the healthiness of the TPS by respective Substation owner.

We request you to please confirm the healthiness of the Sr no 1 and 2 .

Thanks and Regards,

Kalicharan Sahu
(O&M) HVDC & EHV Substations,
Adani Energy Solutions Limited
| ±500kV HVDC Mahendragarh Terminal Sub Station I
Village-Kheri- Aghiyar, Taluka- Kanina, Mahendragarh 123 029, Haryana, India
Mob +91 9764006167| Off +91 1285 277326

From: NRLDC SO 2 <nrldcso2@grid-india.in>
Sent: Tuesday, August 27, 2024 10:07 AM
To: SLDC Punjab <se-sldcprojects@pstcl.org>; PC PSTCL SLDC PUNJAB <pcpstcl@gmail.com>; Haryana <sldcharyanacr@gmail.com>; Delhi <sldcmintoroad@gmail.com>; UP <sera@upsldc.org>; Rajasthan <SE.LDRVPNL@RVPN.CO.IN>; ce.ld@rvpn.co.in; CPCC1 <rtamc.nr1@powergrid.in>; neerajk@powergrid.in; setncmrt@upptcl.org; bharatlalgujar@gmail.com; akashdeep3433786@gmail.com; xenemtcbhpp2@bbmb.nic.in; PC Control Room <pccont@bbmb.nic.in>; se.prot.engg@rvpn.co.in; Arunkumar P <Arunkumar.P@adani.com>; Kali Charan Sahu <Kalicharan.Sahu@adani.com>; rajbir-walia79@yahoo.com; ase-sldcop@pstcl.org; sesldcop@hvpn.org.in; cepso@upsldc.org; se-sldcop <se-sldcop@pstcl.org>; SICHVDC Controlroom <SICHVDC.Controlroom@adani.com>
Cc: seo-nrpc <seo-nrpc@nic.in>; somara.lakra <somara.lakra@grid-india.in>; Mahavir Prasad Singh (महावीर प्रसाद सिंह) <mahavir@grid-india.in>; Sugata Bhattacharya (सुगाता भट्टाचार्या) <sugata@grid-india.in>; deepak.kr <deepak.kr@grid-india.in>; AMIT SHARMA <amsharma@grid-india.in>; bikaskjha <bikaskjha@grid-india.in>; Manas Ranjan Chand (मानस रंजन चंद) <manas@grid-india.in>; Aman Gautam (अमन गौतम) <amangautam@grid-india.in>
Subject: Re: Mock testing of SPS of 500kV HVDC Mundra-Mahindergarh link

Sir,

उत्तर प्रदेश राज्य भार प्रेषण केन्द्र लि०
यू०पी०एस०एल०डी०सी०परिसर, विभूति
खण्ड II,गोमती नगर, लखनऊ–226010
ई मेल : sera@upsldc.org

U.P. State Load Despatch Centre Ltd.
UPSLDC Complex, Vibhuti Khand II
Gomti Nagar, Lucknow- 226010
E-mail: sera@upsldc.org

No: - 2661 /SE(R&A)/EE-II/SPS Dated:- 07/08/ 2024

General Manager, NRLDC18-A,
SJSS Marg, Katwaria Sarai,
New Delhi – 110016

Subject- Regarding SPS of HVDC Mundra-Mahendargarh line

Kindly refer to SE (ETC) Muzaffarnagar letter no/062/E.T.C./MZN/400 kV S/S Shamli dated 05.05.2024. (copy enclosed) regarding feeder wise load of Shamli area. As per the letter, at present complete load relief (i.e. 300MW) may not be provided by 220 kV Shamli, so that alternatively feeder and load details of 400 kV Shamli has also been provided. Also it is informed that at present SPS system at 220 kV Shamli is not healthy which is being maintained by PGCIL.

It is therefore requested to kindly instruct the concerned to incorporate 132 kV feeders of 220 kV Shamli & 400 kV Shamli in SPS of HVDC Mundra-Mahendargarh line so that appropriated load relief may be provided from UP Control area and take necessary action regarding healthiness of SPS system

Sangeet

(Sangeeta)
Superintending Engineer (R&A)

No: - /SE(R&A)/EE-II/SPS Dated: - 2024

Copy forwarded to following via e-mail for kind information and necessary action:-

1. Director, UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
2. Director (Operation), UPPTCL, 11th Floor, Shakti Bhawan Extn., Lucknow.
3. Chief Engineer (PSO), Vibhuti Khand – II, Gomti Nagar, Lucknow.
4. Chief Engineer (Trans. West),PareshanBhawan, 130D, Hydel Colony, Victoria Park, Meerut 250001.
5. SE (Operations), 18 – A SJSS Marg, Katwaria Sarai, New Delhi, 110016.

(Sangeeta)
Superintending Engineer (R&A)

कार्यालय
अधीक्षण अभियन्ता
विद्युत पारेषण मण्डल
उ०प्र०पावर ट्रांसमिशन कारपोरेशन लि०
132 के०वी० भोपारोड उपकेन्द्र
मुजफ्फरनगर-251001

OFFICE OF THE
SUPERINTENDING ENGINEER
Electricity Transmission Circle
U.P. Power Transmission Corporation Ltd.
132 KV Bhopa Road Sub-station
Muzaffarnagar-251001

दूरभाष [0131-2608038
Ph.[0131-2608038
E-mail : seetcmzn@upptcl.org, seetcmzn@gmail.com

संख्या / No. 1062 /E.T.C./MZN/400 KV S/S Shamli दिनांक / DATED 05/08/24

Subject: - Regarding SPS of HVDC Mundra-Mahendargarh.

Superintending Engineer (R & A)
U.P State Load Despatch Centre Ltd.
UPSLDC Complex, Vibhuti Khand-II
Gomti Nagar, Lucknow.
Email. sera@upsldc.org

Please refer to your office letter no. 2187 dt. 01.07.2024, forwarded to this office by SE (T&C), Meerut vide endorsement no. 2237/CE(TW)/MT/SPS dt. 23.07.2024 vide which it has been requested to provide details of 132 KV feeders for planned relief to HVDC Mundra-Mahendargarh SPS.

In this reference, it is to apprise that following is the details of 132 KV feeders being fed from 220 KV Sub-Station Shamli.

S.No.	Name of feeder	Connected Load (MVA)	Maximum Load (MW)	Average Load (MW)
1	132 KV Lalukheri	63+63	72	47
2	132 KV Jhinjhana	63+40+40	80	52
3	132 KV Kairana-I/II	63+63	41	27
4	132 KV Jasala	63+40	58	38
	Total		251	164

1. Following Case wise Trippings of 132 KV Feeders at 220 KV Sub-Station, Shamli for tripping of HVDC Mundra-Mahendergarh Line may be used.

(A) In Maximum Load Condition:-

S. No.	State.L.S quantum	Name of feeding substation	Feeder/line/ equipment	MW	Case-1 50 MW	Case-2 100 MW	Case-3 200MW	Case-4 300 MW
1	Uttar Pradesh Case-1 =50 MW Case-2 =100 MW Case-3 =200 MW Case-4 300 MW	220 KV Subsatatio n, Shamli	132 KV Jasala	58	1	1	1	1
2			132 KV Kairana-I	20.5		1		1
3			132 KV Kairana-II	20.5	-	1		1
4			132 KV Lalukheri	72	-	-	1	1
5			132 KV Jinjhana	80	-		1	1
			Total Relief	251	58	99	210	251

(B) In Average Load Condition :-

S. No.	State.L.S quantum	Name of feeding substation	Feeder/line/ equipment	MW	Case-1 50 MW	Case-2 100 MW	Case-3 200MW	Case-4 300 MW
1	Uttar Pradesh Case-1 =50 MW Case-2 =100 MW Case-3 =200 MW Case-4 =300 MW	220 KV Subsatatio n, Shamli	132 KV Jasala	38	1		1	1
2			132 KV Kairana-I	13.5	1		1	1
3			132 KV Kairana-II	13.5	-		1	1
4			132 KV Lalukheri	47	-	1	1	1
5			132 KV Jinjhana	52	-	1	1	1
			Total Relief	164	51.5	99	164	164

Alternatively HVDC Mundra-Mahendargarh SPS may be shifted to 400 KV Sub-Station Shamli, details of 132 KV feeders from 400 KV Sub-Station Shamli with its Maximum and Average load is as follows :

S.No.	Name of feeder	Connected Load (MVA)	Maximum Load (MW)	Average Load (MW)
1	132 KV Budhana	63+40	82	53
2	132 KV Kharad	63+40	78	51
3	132 KV Jalalpur	40+40	41	27
4	132 KV Thanabhawan	63+63+40	74	48
5	132 KV Kaniyan	40+40	35	23
	Total		310	202

2. Following Case wise Trippings of 132 KV Feeders at 400 KV Sub-Station, Shamli for tripping of HVDC Mundra-Mahendergarh Line is hereby recommended

(A). In Maximum Load Condition :-

S. No.	State.L.S quantum	Name of feeding substation	Feeder/line/ equipment	MW	Case-1 50 MW	Case-2 100 MW	Case-3 200MW	Case-4 300 MW
1	Uttar Pradesh Case-1 =50 MW Case-2 =100 MW Case-3 =200 MW Case-4 =300 MW	400 KV Subsatatio n, Shamli	132 KV Budhana	82	-	-	1	1
2			132 KV Kharad	78	-	-	1	1
3			132 KV Jalalpur	41	1	-	1	1
4			132 KV Thanabhawan	74	-	1	-	1
5			132 KV Kaniyan	35	1	1	-	1
			Total Relief	310	76	109	201	310

(B). In Average Load Condition :-

S. No.	State.L.S quantum	Name of feeding substation	Feeder/line/ equipment	MW	Case-1 50 MW	Case-2 100 MW	Case-3 200MW	Case-4 300 MW
1	Uttar Pradesh Case-1 =50 MW Case-2 =100 MW Case-3 =200 MW Case-4 =300 MW	400 KV Subsatatio n, Shamli	132 KV Budhana	53	-	1	1	1
2			132 KV Kharad	51	1	1	1	1
3			132 KV Jalalpur	27	-	-	1	1
4			132 KV Thanabhawan	48	-	-	1	1
5			132 KV Kaniyan	23	-		1	1
			Total Relief	202	51	104	202	202

Submitted for information and necessary action

(Nikhil Kumar)
Superintending Engineer

संख्या / No. /E.T.C./MZN/ दिनांक / DATED

Copy forwarded to the following for information and necessary action :

1. Chief Engineer (TW) UPPTCL Meerut.
2. Superintending Engineer, Electricity (T&C) Circle, UPPTCL Meerut.
3. Executive Engineer Electricity Transmission Division, Shamli

(Nikhil Kumar)
Superintending Engineer

कार्यालय
अधीक्षण अभियन्ता
विद्युत परीक्षण एवं परिचालन मण्डल
उ0प्र0 पावर ट्रांसमिशन कारपोरेशन लि0
प्रथम तल पारेषण भवन, 130–डी, विक्टोरिया पार्क
मेरठ– 250 003
मोबाइल: 9412749817

OFFICE OF THE
SUPERINTENDING ENGINEER
Electricity Test & Commissioning Circle
U.P. POWER TRANSMISSION CORPORATION LTD.
1st Floor Pareshan Bhawan, 130-D, Victoria Park,
Meerut 250 003
Mobile: 9412749817

No. 82 / ETCC-MT / Dated- 30/05/24

Sub :- SPS related to HVDC Mundra-Mahendargarh.

Superintending Engineer (R&A) (By e-mail)
UPSLDC Vibhuti Khand ,
Gomti Nagar,
Lucknow.

In reference to the above cited subject, UPSLDC via email on 22.05.2024 informed that on 17.05.2024 at 16:20 hrs, Case-3 of SPS related to HVDC Mundra - Mahendergarh operated. As per action in case-3 operation of this line SPS, 200MW load relief at 220kV Shamli (UP) is desired. However, no load relief at 220kV Shamli was observed at given date and time. It is to bring in your notice that due to commissioning of 400kV Shamli S/s entire power flow scenario has been changed. Current situation is summarized as below.

At 220kV Shamli S/s feeders shown in the list	Planned load relief (MW)	Current situation
Thana Bhawan -1	25	The only line cateting Thana Bhawan has been made LILO at 132kV Jalalpur. Now Jalalpur is fed from 220kV Shamli S/s while load of Thana Bhawan is fed from 400kV Shamli S/s.
Thana Bhawan -2	25	
Jasala-1	25	Only one line exists.
Jasala-2	25	
Kharad-1	50	Only one line exists which is normally kept open at Kharad and load of Kharad is normally fed from 400kV Shamli S/s.
Kharad-2	50	
Baraut-1	150 (case-4)	No such line exist at 220kV Shamli S/s.
Baraut-2	150 (case-4)	

In view of the above facts, entire load relief strategy needs to be reviewed and redesigned for SPS. On 17.05.2024 at 16:20 hrs, no tripping observed at 220kV S/S Shamli as SPS system is unhealthy, which is being maintained by M/s PGCIL.

Hence it is requested to you to kindly coordinate with M/s PGCIL for modification of the scheme and rectification of the fault in SPS.

(Pramod Kumar Mishra)
Superintending Engineer

No. 82 /ETCC-MT/ Dated/– 30/05/24

Copy forwarded to the following for information & necessary action:-

1. Chief Engineer (TW), UPPTCL Victoria Park, Meerut.
2. Executive Engineer, Electricity Test & Commissioning Div., Muzaffarnagar.

(Pramod Kumar Mishra)
Superintending Engineer

SK/SENew/NewEngLetter01

Rajasthan Details

Revised updated feeder details (radial) along with expected average Load Relief

S.No.	Name of Sub- Station	Feeder name as per existing detail	Revised name of Existing Feeder /Line/Equipment	Average Load relief (MW)	Remark
1	220 kV GSS Alwar	132 kV GSS Mundawar	132 kV GSS Pinan	25	
		132 kv GSS Bansoor	132 kV GSS Telco	45	
		132 kV GSS Ramgarh	132 kV GSS Ramgarh	65	
		132 kV GSS Malakhera	132 kV GSS Malakhera	50	
		132 kV Alwar (LOCAL)	132 kV GSS Alwar (LOCAL)	120	
2	220 kV GSS Ratangarh	132 kV Sardar Sher			Generally Feed from 220 kV Halasar
3	220 kV GSSV Bhilwara	132 kV GSS Gangapur	132 kv GSS Karoi	15	
		132 kV GSS Danta	132 kV GSS Danta	30	
		132 kV GSS Devgarh	132 kV GSS Bankali	18	
		132 kV GSS Kareda			
4	400 kV GSS Merta	132 kV GSS Kuchera	132 kV GSS Dhawa	25	
		132 kV GSS Lamba	132 kV GSS Lamba jatan	55	
		132 kV GSS Gotan			

Email **Control Room CONTROL ROOM SLDC**

Re: Review of SPS installed for 500kV HVDC Mundra - Mahindergarh.

From : Executive Engineer TS Rewari <xentsrwr@hvpn.org.in> Thu, Aug 29, 2024 01:20 PM

Subject : Re: Review of SPS installed for 500kV HVDC Mundra - Mahindergarh.

To : Control Room CONTROL ROOM SLDC <controlroomsldc@hvpn.org.in>

Cc : SE TS GGN <setsggn@hvpn.org.in>, Executive Engineer Executive Engineer <xen400kvdhanoda@hvpn.org.in>, Substation Engineer <sse220kvlulaahir@hvpn.org.in>

In continuation of trailing email and discussion held today telephonically, it is gathered that desired load relief shall not get as load of 220 kV Lula Ahir shall be fed through 220 kV Dadri-Lula Ahir line being synchronized. Therefore, it is proposed that in the existing scheme SPS, the tripping of 220 kV D/C Lula Ahir line at 400 kV Dhanonda end may be removed and tripping of all incomers (2 no. 132 kV Incomers of 100 MVA 220/132 kV TFs and one no. 33 kV incomer of 100 MVA 220/33 kV TF) at 220 kV Lula Ahir substation may be added.

The maximum load (for FY 2023-24) on three no. 100 MVA TFs installed at 220 kV Lula Ahir is 53.46 MVA, 86.26 MVA and 87.02 MVA

The average load on three no. 100 MVA TFs installed at 220 kV Lula Ahir is 50 MVA, 70 MVA and 70 MVA

From: "Executive Engineer TS Rewari" <xentsrwr@hvpn.org.in>
To: "Control Room CONTROL ROOM SLDC" <controlroomsldc@hvpn.org.in>
Cc: "SE TS GGN" <setsggn@hvpn.org.in>, "Executive Engineer Executive Engineer" <xen400kvdhanoda@hvpn.org.in>, "Substation Engineer" <sse220kvnarnaul@hvpn.org.in>
Sent: Wednesday, August 28, 2024 12:46:13 PM
Subject: Re: Review of SPS installed for 500kV HVDC Mundra - Mahindergarh.

In reference of trailing email it is submitted that 220 kV Lula Ahir is connected with 400 kV Dhanonda through 220kV D/C line and with 220 kV Dadri through 220kV S/C line and with 220 kV Rewari with 220kV S/C line.
In general circuits of 400 kV Dhanonda and 220 kV Dadri runs in synchronization. The maximum load (for FY 2023-24) on three no. 100 MVA TFs installed at 220 kV Lula Ahir is 53.46 MVA, 86.26 MVA and 87.02 MVA. It is further added that in general 220 kV Dadri takes load from 220 kV Lula Ahir substation and thus act as sink.

In case of operation of SPS at 400 kV Dhanonda, the desired load relief as mentioned in trailing email (90+95 MW) can be achieved through existing scheme (by outage of three no. 100 MVA TFs and 220 kV Dadri (acting as sink)).

Regards
XEN/TS Division
HVPNL Rewari.

From: "Control Room CONTROL ROOM SLDC" <controlroomsldc@hvpn.org.in>
To: "Executive Engineer TS Rewari" <xentsrwr@hvpn.org.in>, "Executive Engineer TS Rohtak" <xentsrtk@hvpn.org.in>, "Executive Engineer Ts Bhiwani" <xentsbhw@hvpn.org.in>, "Executive Engineer Executive Engineer" <xen400kvdhanoda@hvpn.org.in>, xendhanonda@gmail.com
Cc: "Chief Engineer SO Commercial" <cesocomml@hvpn.org.in>, "Chief Engineer TS Panchkula" <cetspkl@hvpn.org.in>, "Chief Engineer TS Hisar" <cetshsr@hvpn.org.in>, "Superintending Engineer SLDC OP" <sesldcop@hvpn.org.in>, "SE TS Rohtak" <setsrtk@hvpn.org.in>, "SE TS GGN" <setsggn@hvpn.org.in>, "Superintending Engineer TS Hisar" <setshsr@hvpn.org.in>, "Superintending Engineer MP CC Dhulkote" <sempccdkt@hvpn.org.in>, "Superintending Engineer MP CC Delhi" <sempccdelhi@hvpn.org.in>, "Executive Engineer MP Rohtak" <xenmpccrtk@hvpn.org.in>, "XEN MP Hisar" <xenmpcchsr@hvpn.org.in>, "XEN MP CC" <xenmpccggn@hvpn.org.in>
Sent: Wednesday, August 21, 2024 11:57:59 AM
Subject: Review of SPS installed for 500kV HVDC Mundra - Mahindergarh.

Sir,

Please see the attachments.

--
Regards,
SCE (पाली प्रभारी अभियंता)/SLDC Control room,
HVPNL Panipat
Contact No- 9053090722,9053090721,0180-2664095

Fwd: Review of SPS installed for 500kV HVDC Mundra - Mahindergarh.

Control Room CONTROL ROOM SLDC <controlroomsldc@hvpn.org.in>

Fri 8/30/2024 12:44 PM

To:NRLDC SO 2 <nrldcso2@grid-india.in>; NRLDC SO-II <nrldcso2@gmail.com>; Deepak Kumar <deepak.kr@grid-india.in>;

Cc:Superintending Engineer SLDC OP <sesldcop@hvpn.org.in>;

2 attachments (209 KB)

Email SPS Rewari.pdf; Regarding SPS Bhiwani.pdf;

Sir,

In reference to the SPS installed for 500kV HVDC Munda - Mahindergarh link the information received from TS wing (copy attached) is as under:

1. At 400kV Dhanonda through Lula Ahir substation:- It is proposed that in the existing scheme SPS, the tripping of 220 kV D/C Lula Ahir line at 400 kV Dhanonda end may be removed and tripping of all incomers (2 no. 132 kV Incomers of 100 MVA 220/132 kV TFs and one no. 33 kV incomer of 100 MVA 220/33 kV TF) at 220 kV Lula Ahir substation may be added. The maximum load (for FY 2023-24) on three no. 100 MVA TFs installed at 220 kV Lula Ahir is 53.46 MVA, 86.26 MVA and 87.02 MVA. The average load on three no. 100 MVA TFs installed at 220 kV Lula Ahir is 50 MVA, 70 MVA and 70 MVA.

2. At 400/220kV Bhiwani BBMB: It is proposed that in the existing scheme SPS, the tripping of 220 kV Bapora (Bhiwani HVPNL) D/C line at Bhiwani BBMB end may be removed and tripping of all incomers (2 no. 132 kV Incomers of 100 MVA 220/132 kV T-1 & T-2 TFs) at 220 kV Bapora (Bhiwani HVPNL) substation may be added. The maximum load on two no. 100 MVA TFs installed at 220kV Bhiwani HVPNL is 80 MW and 85 MW respectively. The average load on two no. 100 MVA TFs installed at 220kV Bhiwani HVPNL is 70 MW and 70 MW respectively.

3. At 132kV Charkhi Dadri: It is proposed that in the existing scheme SPS, the tripping of 132kV Kalanaur line at Dadri BBMB end may be removed and tripping of 132kV Haluwas & 132kV Dadri old at Dadri BBMB may be added. The maximum load on 132kV Haluwas & 132kV Dadri old line is 45 MW and 50 MW respectively. The average load on 132kV Haluwas & 132kV Dadri old line is 40 MW and 40 MW respectively.

Rest information kept unchanged. It is also added here that the fiber connectivity is also available on all the above substations.
It is also pertinent to mention here that 700 MW load relief is expected from Haryana. Rest of the states have been allotted with a relative less amount of relief as compared to Haryana for 500kV HVDC Mundra - Mahendargarh link. The Haryana share from APL Mundra has also been reduced now. In view of the above, the expected load relief from the NR states is required to be reviewed accordingly. The same was also pointed out by this office during the online meeting held on dated 20.08.2024.

This is for information & further necessary action please.

From: "Executive Engineer TS Rewari" <xentsrwr@hvpn.org.in>
To: "Control Room CONTROL ROOM SLDC" <controlroomsldc@hvpn.org.in>
Cc: "SE TS GGN" <setsggn@hvpn.org.in>, "Executive Engineer Executive Engineer" <xen400kvdhanoda@hvpn.org.in>, "Substation Engineer" <sse220kvlulaahir@hvpn.org.in>
Sent: Thursday, August 29, 2024 1:20:08 PM
Subject: Re: Review of SPS installed for 500kV HVDC Mundra - Mahindergarh.

In continuation of trailing email and discussion held today telephonically, it is gathered that desired load relief shall not get as load of 220 kV Lula Ahir shall be fed through 220 kV Dadri-Lula Ahir line being synchronized. Therefore, it is proposed that in the existing scheme SPS, the tripping of 220 kV D/C Lula Ahir line at 400 kV Dhanonda end may be removed and tripping of all incomers (2 no. 132 kV Incomers of 100 MVA 220/132 kV TFs and one no. 33 kV incomer of 100 MVA 220/33 kV TF) at 220 kV Lula Ahir substation may be added.

The maximum load (for FY 2023-24) on three no. 100 MVA TFs installed at 220 kV Lula Ahir is 53.46 MVA, 86.26 MVA and 87.02 MVA
The average load on three no. 100 MVA TFs installed at 220 kV Lula Ahir is 50 MVA, 70 MVA and 70 MVA

From: "Executive Engineer TS Rewari" <xentsrwr@hvpn.org.in>
To: "Control Room CONTROL ROOM SLDC" <controlroomsldc@hvpn.org.in>
Cc: "SE TS GGN" <setsggn@hvpn.org.in>, "Executive Engineer Executive Engineer" <xen400kvdhanoda@hvpn.org.in>, "Substation Engineer" <sse220kvnarnaul@hvpn.org.in>
Sent: Wednesday, August 28, 2024 12:46:13 PM
Subject: Re: Review of SPS installed for 500kV HVDC Mundra - Mahindergarh.

In reference of trailing email it is submitted that 220 kV Lula Ahir is connected with 400 kV Dhanonda through 220kV D/C line and with 220 kV Dadri through 220kV S/C line and with 220 kV Rewari with 220kV S/C line.
In general circuits of 400 kV Dhanonda and 220 kV Dadri runs in synchronization. The maximum load (for FY 2023-24) on three no. 100 MVA TFs installed at 220 kV Lula Ahir is 53.46 MVA, 86.26 MVA and 87.02 MVA. It is further added that in general 220 kV Dadri takes load from 220 kV Lula Ahir substation and thus act as sink.

In case of operation of SPS at 400 kV Dhanonda, the desired load relief as mentioned in trailing email (90+95 MW) can be achieved through existing scheme (by outage of three no. 100 MVA TFs and 220 kV Dadri (acting as sink)).

Regards
XEN/TS Division
HVPNL Rewari.

From: "Control Room CONTROL ROOM SLDC" <controlroomsldc@hvpn.org.in>
To: "Executive Engineer TS Rewari" <xentsrwr@hvpn.org.in>, "Executive Engineer TS Rohtak" <xentsrtk@hvpn.org.in>, "Executive Engineer Ts Bhiwani" <xentsbhw@hvpn.org.in>, "Executive Engineer Executive Engineer" <xen400kvdhanoda@hvpn.org.in>, xendhanonda@gmail.com
Cc: "Chief Engineer SO Commercial" <cesocomml@hvpn.org.in>, "Chief Engineer TS Panchkula" <cetspkl@hvpn.org.in>, "Chief Engineer TS Hisar" <cetshsr@hvpn.org.in>, "Superintending Engineer SLDC OP" <sesldcop@hvpn.org.in>, "SE TS Rohtak" <setsrtk@hvpn.org.in>, "SE TS GGN" <setsggn@hvpn.org.in>, "Superintending Engineer TS Hisar" <setshsr@hvpn.org.in>, "Superintending Engineer MP CC Dhulkote" <sempccdkt@hvpn.org.in>, "Superintending Engineer MP CC Delhi" <sempccdelhi@hvpn.org.in>, "Executive Engineer MP Rohtak" <xenmpccrtk@hvpn.org.in>, "XEN MP Hisar" <xenmpcchsr@hvpn.org.in>, "XEN MP CC" <xenmpccggn@hvpn.org.in>
Sent: Wednesday, August 21, 2024 11:57:59 AM
Subject: Review of SPS installed for 500kV HVDC Mundra - Mahindergarh.

Sir,

Please see the attachments.

--
Regards,
SCE (पाली प्रभारी अभियंता)/SLDC Control room,
HVPNL Panipat
Contact No- 9053090722,9053090721,0180-2664095

--
Regards,
SCE (पाली प्रभारी अभियंता)/SLDC Control room,
HVPNL Panipat
Contact No- 9053090722,9053090721,0180-2664095

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HARYANA VIDYUT PRASARAN NIGAM LIMITED

Regd. Office: Shakti Bhawan, Plot No. C-4, Sector-6, Panchkula, 134109.
Corporate Identity Number: U40101HR1997SGC033683
Website: www.hvpn.org.in, E-mail - xentsbhw@hvpn.org.in
Phone No: 01664-242797(O)

To

The Executive Engineer,
LDPC, HVPNL,
Panipat.

Memo No.Ch-116/OMBE-7 Dated: 29.08.2024

Subject: SPS scheme at HVPNL substations for getting load relief due to tripping of 500Kv HVDC Mundra – Mahendargarh

Please refer to this O/Memo No. 108/OMBE-7 dated 27.08.2024 and O/Email dated 09.08.2024 on the subject cited matter.

In this continuation to above, the details of SPS under TS division, HVPNL, Bhiwani is as under:

S No.	Name of feeding S/Stn	Feeder/Line/Equipment	SPS Installed	Max. Load	Load Relief (Avg Load)	Remarks
1	220KV S/Stn Bhiwani	132KV IA Bhiwani Line	UFR	50MW	40 MW	SPS (UFR)Installed and healthy
2	220KV S/Stn Bhiwani	132KV Bhiwani Ckt 2	UFR	50MW	40 MW	SPS (UFR)Installed and healthy
3	220KV S/Stn Bhiwani	132KV Tosham	UFR	-	-	SPS (UFR) Installed and healthy but line is running on No load as 2nd source to 132KV Tosham
4	220KV S/Stn Bhiwani	132KV Incomer of Transformer 100MVA Transformer T2	-	85MW	70 MW	SPS may be provided for load relief as mentioned on subject above.
5	220KV S/Stn Bhiwani	132KV Incomer of 100MVA Transformer T1	-	80MW	70 MW	SPS may be provided for load relief as mentioned on subject above.
6	132kV substation Dadri-2	132kV Dadri-kalanaur ckt	Yes		Nil	SPS Installed and healthy but line is running on No load as 2nd source to 132KV Kalanaur
7	132kV substation Dadri-2	132kV Dadri-Makrani ckt	Yes		Nil	SPS Installed and healthy but line is running on No load as 2nd source to 132KV Makrani
8	132kV substation Dadri-2	132kV Dadri-Haluwas ckt	-	45MW	40MW	SPS may be provided for load relief as mentioned on subject above.
9	132kV substation Dadri-2	132kV Dadri-Dadri old	-	50MW	40MW	SPS may be provided for load relief as mentioned on subject above.

This is for kind information and necessary action please.

Executive Engineer,
Transmission System Division,
HVPNL, Bhiwani

CC to:

1. SE/TS Circle, HVPNL, Hisar for kind information, please.

Delhi Details

Re: Mock testing of SPS of 500kV HVDC Mundra-Mahindergarh link

SLDC, DELHI <sldcmintoroad@gmail.com>

Wed 8/28/2024 3:48 PM

To:NRLDC SO 2 <nrldcso2@grid-india.in>;

Cc:sinha.surendra <sinha.surendra@yahoo.com>; dgmsodelhisldc@gmail.com <dgmsodelhisldc@gmail.com>; Manager (T) SO <managersogd@gmail.com>;

In reference to trailing mail, the maximum load on 220kV feeders covered under SPS of 500kV HVDC Mundra-Mahindergarh link are as under:

S. No.	Name of the Element	MW
1	220 KV BAMNAULI-PAPANKALAN-I CKT.-I	120
2	220 KV BAMNAULI-PAPANKALAN-I CKT.-II	120
3	220 KV MANDAULA- GOPALPUR CKT.-I	212
4	220 KV MANDAULA- GOPALPUR CKT.-II	214

Regards,
SLDC Delhi

On Tue, Aug 27, 2024 at 10:07 AM NRLDC SO 2 <nrldcso2@grid-india.in> wrote:

> Sir,
>
> In reference of the trailing mail, it is to be mentioned that inputs have received from Rajasthan only. Members agreed to shared the details by 22nd August 2024, however no further details received from Haryana, Punjab, Delhi, UP & ADANI.
>
> Kindly share the details as discussed during the meeting held on 20th August 2024, so that further remedial actions can be initiated on the basis of those details.
>
> सादर धन्यवाद/ Thanks & Regards
> प्रणाली संचालन-II/ System Operation-II
> उ॰क्षे॰भा॰प्रे॰के॰/ NRLDC
> ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड/ Grid Controller of India Limited
> Formerly known as
> पोसोको / POSOCO

Punjab Details

	Name of S/S	66kV Feeders	Average Demand(Amp.)	Maximum Demand(Amp.)
Punjab Control Area	220/66kV Gobindgarh	66kV Talwara-19(ADANI SPS)	375	430
		66kV Talwara-2(ADANI SPS)	375	430
	220/66kV Lalton kalan	66kV Gill road-1(DADRI SPS)	543	610
		66kV Gill Road-2(DADRI SPS)	518	692
		66kV Dugri(DADRI SPS)	325	450
	220/66kV Malerkotla	66kV Malerkotla(ADANI SPS)	213	403
		66kV Amargarh(ADANI SPS)	238	405
		66kV Malaud ckt 1(DTPC SPS)	257	356

Note: 66kV Malaud at 220kV S/S Malerkotla was bifurcated into two circuits in the month of July 2024.

Nodal officers details

Control Area	Station Name	Nodal Person (SPS, communication system)	Contact details	Email Id
Rajasthan	220/132kV Alwar	Sh. Vijaypal Yadav XEN (Prot.) Ms. Pooja Verma AEN (Comm)	9413361407 9413375366	xen.prot.alwar@rvpn.co.in aen.comm.alwar@rvpn.co.in
	220/132kV Ratangarh	Sh. Mukesh Somra AEN (MPT&S) , Sh. Dharmender Singh (Comm.)	9414061442 9413383246	aen.mpt&s.rtg@rvpn.co.in aen.comm.ratangarh@rvpn.co.in
	220/132kV Bhilwara	Sh. Madhusudan Sharma, AEN (SLDC-comm Sh. Suresh Garg, XEN (MPT&S)	9413383176 9414061424	aen.subsldc.bhl@rvpn.co.in xen.mpts.bhl@rvpn.co.in
	220/132kV Merta	Mukesh Kumar (AEN Prot.) Mahip Singh (Aen) Comm)	7734806466 9413362995	aen.prot.mertacity@RVPN.CO.IN aen.comm.merta@RVPN.CO.IN
BBMB	400/220kV Bhiwani(BBMB)			
POWERGRID	400/220kV Hissar(PG)			
	Bhiwani(PG)			
	400/220kV Bahadurgarh(PG)			
Haryana	400/220kV Dhanonda	Gautam / SSE, 400kV Dhanonda	9313472669	dhanonda400kv@gmail.com
	220kV Lulahir	Er. Subhash Chander	9416373135	sse220kvlulaahir@hvpn.org.in
	220kV Rewari	Er. Kavinder Yadav	9315315649	sse220kvrwr@hvpn.org.in
	132kV Charkhi Dadri	Vivek Sangwan	9034459489	sse132kvdadri@hvpn.org.in
Punjab	220/66kV Gobindgarh	Er. Harwinder Singh	96461-18184	ae-220kvg1-mgg@pstcl.org
	220/66kV Laltokalan	Er. Supinder Singh	96461-24495	sse-pm-lalton@pstcl.org
	220/66kV Malerkotla	Er. Sanju Bala	96461-64007	sse-pm-mlrk@pstcl.org
UP	Shamli	Er. Krishna Nand	9412756631	eeetdshamli@upptcl.org,
	400kV Muradnagar	Er. D.S. Sengar	9412748666	ee400mrd2@upptcl.org
Delhi	400/220kV Bamnauli			
	400/220kV Mandola			

ULDC network for SPS Mundra-Mohindergarh 500kV HVDC

Sumeet Sharma <Sumeet.Sharma@adani.com>

Thu 4/10/2025 5:42 PM

To:nkmeena@powergrid.in <nkmeena@powergrid.in>;

Cc:Deepak Kumar <deepak.kr@grid-india.in>; seo-nrpc <seo-nrpc@nic.in>; Mahavir Prasad Singh (महावीर प्रसाद सिंह) <mahavir@grid-india.in>; Somara Lakra (सोमारा लाकरा) <somara.lakra@grid-india.in>; Afak Pothiawala <afak.pothiawala@adani.com>; Nihar Raj <nihar.raj@adani.com>; Milan Popat <Milan.Popat@adani.com>; Abhishek Kumar Singh <Abhishekk.Singh@adani.com>; Abhishek Kukreja <Abhishek.Kukreja@adani.com>; Sunil Kumar Raval <Sunil.Raval@adani.com>; Naman Vyas <Namany.Vyas@adani.com>; Namandeep Matta <Namandeep.Matta@adani.com>;

1 attachments (323 KB)

20250408 ULDC discussion..pdf;

Dear Meena ji,

Kindly accept my sincere thanks for the courtesy extended during our meeting on 08-Apr-25 with regards to the subject requirements.

I also express my thanks on the confirmation from your end with regards to availability of the 'E1' links between Mohindergarh and respective locations where the SPS commands are being extended. Kindly find attached the list discussed and agreed, for our reference.

Looking forward to your continued support and cooperation during the execution of this activity.

Regards,

Sumeet Sharma
Head- Automation, Communications & OT-Cyber Technology
Adani Energy Solutions Limited.(Grid Division)
Mob +91 90990 05648 | sumeet.sharma@adani.com | www.adani.com
KP Epitome|10th Floor South Wing | SG Highway |Ahmedabad-382421| Gujarat

SPS Protection scheme for Mohindergarh-Mundra HVDC Transmisison System

Sr. No.	Load Station	Equipment Make	Tripping command Station	Equipment Make	Remarks	Comments
1	Mohindergarh	Tejas	Bhiwani BBMB	Tejas		
2	Mohindergarh	Tejas	Hissar PG	Tejas		
3	Mohindergarh	Tejas	Bahadurgarh- PG	Tejas		
4	Mohindergarh	Tejas	HVPNL Charki Dadri	Fibrehome	HVPNL Network	Inter-Patching at nearest Tejas Site
5	Mohindergarh	Tejas	Gobindgarh PSTCL	Fibrehome	PSTCL Network	Inter-Patching at nearest Tejas Site
6	Mohindergarh	Tejas	Lalokalan PSTCL	Fibrehome	PSTCL Network	Inter-Patching at nearest Tejas Site
7	Mohindergarh	Tejas	Malerkotla PSTCL	Fibrehome	PSTCL Network	Inter-Patching at nearest Tejas Site
8	Mohindergarh	Tejas	Alwar	Tejas		
9	Mohindergarh	Tejas	Ratangarh	Fibrehome	New Tejas equipment is being installed within 3 months	
10	Mohindergarh	Tejas	Bhilwada	Tejas		
11	Mohindergarh	Tejas	Merta City	Fibrehome	New Tejas equipment is being installed within 3 months	
12	Mohindergarh	Tejas	Samli - UPPTCL	Fibrehome	UPPTCL Network	Inter-Patching at nearest Tejas Site
13	Mohindergarh	Tejas	Bamnauli	Tejas		
14	Mohindergarh	Tejas	Mondola PG	Tejas		

adani
Energy Solutions

Ref No. : ATIL_NRPC_SPS-NR_20250410_1 10-Apr-25

To,
The Deputy General Manager (Grid-Operations)
Northern Region Load Dispatch Center
18-A, Shaheed Jeet Singh Marg
Katwaria Sarai
New Delhi,110016

Ref: Your letter # NRLDC/TS-15, dated 02-Apr-25

Subject: Corrective action for healthiness of +/- 500kV HVDC Mundra-Mohindergarh SPS

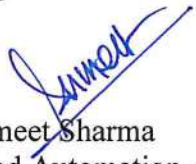
Sir,
We acknowledge the receipt of your letter mentioned in the reference above with regards to ensuring the healthiness of the SPS scheme implemented in 2012 during commissioning of the subject HVDC link.

It is to be noted that the systems and components installed at the commissioning time have lived their life and are now declared obsolete by the partner who has commissioned this system. Also the ULDC network which had been used to provide the E1 communication for the DTPCs to execute the commands and provide the required relief, has also undergone changes impacting the communication between the DTPCs. We are in discussion with ULDC for allocation of necessary links between the locations.

In order to make the scheme operational again in full, we had ordered a survey of the scheme by the original systems provider who have reverted with their observations and recommendations for upgrading the systems by the latest one. This upgrade requires activities from basics i.e. Designing, Manufacturing, Testing, transporting, installation , configuration and final field testing. We have initiated the internal approval for placing necessary orders to the partner for execution under RTM. We expect that complete execution of this activity in totality shall take 4-5 months in collaboration with all the stake holders from respective utilities and ULDC team.

We assure you of our best efforts towards comprehensive and timely completion of this scheme at the earliest and seek your guidance and support for necessary coordination between the respective stake holders during this process.

Regards



Sumeet Sharma
Head Automation, Communication and OT-Cyber
Adani Transmission (India)ltd.

Adani Transmission (India) Ltd
Adani Corporate House
Adani Shantigram, S.G Highway
Ahmedabad 382421
CIN: U40101GJ2013PLC077700

Tel +91 79 2555 6900
Fax +91 79 2555 7155
info@adani.com
www.adani.com

Registered Office: Adani House, Nr Mithakhali Six Roads, Navrangpura, Ahmedabad 380 009, Gujarat, India

Proposed overvoltage protection setting for 400kV & 765kV lines in NR (approved in 58th PSC meeting held on 26.03.2025)

The philosophy to decide the overvoltage protection setting was finalised by the committee formed by NRPC to review the over voltage protection settings. The philosophy is as follows:

i. Pick up voltage & time delay setting of Antitheft lines to be kept low with sufficient time gap from other lines at S/s. In case of 400kV lines, it may be kept as 105%-107% pick up with 3-4 secs time delay and in case of 765kV lines, it may be kept as 104%-106% pick up with 3-4 secs time delay. Further, it may be decided on case-to-case basis.

ii. Parallel lines grading to be done such that one line should trip early by setting at low voltage and other line should trip last by keeping setting at high voltage. Stage-1 of over voltage protection setting in all the 400kV lines to be kept as 110 % with 5 sec delay and stage-2 setting to be kept as 140-150 % with 100msec delay.

iii. In case of parallel lines, both voltage and time grading need to be done (in line with the NRPC protection philosophy of lines). Voltage grading (110% & 112% with 5 & 6 sec time delay for double circuits and 110%, 111% & 112% with 5,6 & 7 sec time delay for triple circuits).

iv. Highly loaded lines should be given last priority in tripping.

v. Net MVAr relief (based on the line charging MVAr & MVAr compensation in line) based on the simulation to be considered for arriving at the priority of line tripping. Lines providing high net MVAr relief to be tripped early.

vi. Grading to be done in such a manner that one major incoming and outgoing line shall remain connected after tripping of lines at any node.

vii. Protection setting of remote end station of a line need to be coordinated so as to avoid tripping of line from the other end.

viii. Drop-off to pick-up ratio of relays implemented for overvoltage protection shall be more than 99%. In case of old relays in which there is no option for changing this setting, utilities may take up this issue with OEM for increasing this setting to 99% or higher.

S. No	Name of the Line	Circuit ID	Proposed Over Voltage protection setting							
			End I				End II			
			stage I pick up(%)	time (s)	stage II pick up(%)	time (s)	stage I pick up(%)	time (s)	stage II pick up(%)	time (s)
1. 765kV Transmission Line										
A. POWERGRID										
1	Agra-Aligarh	1	108	5	150	0.1	108	5	150	0.1
2	Agra-Fatehpur	1	107	5	150	0.1	107	5	150	0.1
3	Agra-Fatehpur	2	108	9	150	0.1	108	9	150	0.1
4	Agra-Gwalior IR	1	108	5	150	0.1	WR			
5	Agra-Gwalior IR	2	109	9	150	0.1	WR			
6	Agra-Jhatikara	1	106	5	140	0.1	106	5	140	0.1
7	Ajmer(PG)-Bhadla_2(PG)	1	109	8	140	0.1	109	8	140	0.1
8	Ajmer(PG)-Bhadla_2(PG)	2	110	15	140	0.1	110	15	140	0.1
9	Ajmer(PG)-Chittorgarh(PG)	1	110	9	140	0.1	110	9	140	0.1
10	Ajmer(PG)-Chittorgarh(PG)	2	110	15	140	0.1	110	15	140	0.1
11	Ajmer(PG)-Phagi(RS)	1	108	7	140	0.1	108	7	140	0
12	Ajmer(PG)-Phagi(RS)	2	110	12	140	0.1	110	12	140	0
13	Aligarh(PG) - Sikar_2(PSTL)	1	108	5	150	0.1	108	5	140	0.1
14	Aligarh(PG) - Sikar_2(PSTL)	2	108	9	150	0.1	108	9	140	0.1
15	Aligarh-Gr.Noida	1	109	7	150	0.1	109	7	140	0.1
16	Balia-Gaya IR	1	108	7	150	0.1	ER			
17	Balia-Lucknow_2(PG)	1	108	9	150	0.1	108	9	150	0.1
18	Bhadla_II(PG)-Sikar_2(PG)	1	109	6	150	0.1	109	6	150	0.1
19	Bhadla_II(PG)-Sikar_2(PG)	2	110	15	150	0.1	110	15	150	0.1
20	Bhiwani-Jhatikara	1	109	10	140	0.1	109	10	140	0.1
21	Bhiwani-Meerut	1	109	7	140	0.1	109	7	140	0.1
22	Bhiwani-Phagi	1	109	5	140	0.1	109	5	140	0
23	Bhiwani-Phagi	2	109	7	140	0.1	109	7	140	0
24	Bikaner(PG) - Bhadla(PG)	1	109	8	140	0.1	109	8	140	0.1
25	Bikaner(PG) - Bhadla(PG)	2	110	15	140	0.1	110	15	140	0.1

26	Bikaner(PG)-Bhadla_2(PG)	1	108	7	140	0.1	108	7	140	0.1
27	Bikaner(PG)-Bhadla_2(PG)	2	110	15	140	0.1	110	15	140	0.1
28	Bikaner(PG)-Moga	1	108	5	140	0.1	108	5	140	0.1
29	Bikaner(PG)-Moga	2	110	13	140	0.1	110	13	140	0.1
30	Chittorgarh(PG)-Banaskantha IR	1	110	9	140	0.1	WR			
31	Chittorgarh(PG)-Banaskantha IR	2	110	15	140	0.1	WR			
32	Fatehpur- Sasaram IR	1	108	5	150	0.1	ER			
33	Fatehgarh_2(PG)-Bhadla_2(PG)	1	109	9	140	0.1	109	9	140	0.1
34	Fatehgarh_2(PG)-Bhadla_2(PG)	2	110	15	140	0.1	110	15	140	0.1
35	Fatehgarh_2(PG)-Bhadla_2(PG)	3	107	5	140	0.1	107	5	140	0.1
36	Fatehgarh_2(PG)-Bhadla_2(PG)	4	108	8	140	0.1	108	8	140	0.1
37	Jhatikara-Aligarh	1	107	7	140	0.1	107	7	150	0.1
38	Jhatikara(PG)-Khetri(PKTSL)	1	108	5	140	0.1	108	5	140	0.1
39	Jhatikara(PG)-Khetri(PKTSL)	2	109	6	140	0.1	109	6	140	0.1
40	Kanpur(GIS)-Aligarh	1	109	9	150	0.1	109	9	150	0.1
41	Lucknow_2(PG)-Bareilly_2(PG)	1	109	5	150	0.1	109	5	150	0.1
42	Meerut-G. Noida	1	109	7	140	0.1	109	7	140	0.1
43	Meerut-Koteshwar(PG)	1	107	7	140	0.1	107	7	140	0.1
44	Meerut-Koteshwar(PG)	2	109	9	140	0.1	109	9	140	0.1
45	Moga-Bhiwani(PG)	1	109	5	140	0.1	109	5	140	0.1
46	Moga-Meerut	1	108	5	140	0.1	108	5	140	0.1
47	Orai-Aligarh	1	107	5	150	0.1	107	5	150	0.1
48	Orai-Aligarh	2	108	7	150	0.1	108	7	150	0.1
49	Orai-Jabalpur IR	1	107	5	150	0.1	WR			
50	Orai-Jabalpur IR	2	109	5	150	0.1	WR			
51	Orai-Satna IR	1	108	5	150	0.1	WR			
52	Orai-Gwalior IR	1	108	6	150	0.1	WR			
53	Phagi-Gwalior IR	1	110	5	140	0.1	WR			
54	Phagi-Gwalior IR	2	110	7	140	0.1	WR			
55	Varanasi-Balia	1	109	5	150	0.1	109	5	150	0.1
56	Varanasi-Fatehpur	1	109	5	150	0.1	109	5	150	0.1
57	Varanasi-Gaya IR	1	108	5	150	0.1	ER			

58	Varanasi-Gaya IR	2	109	9	150	0.1	ER			
59	Varanasi-Kanpur	1	108	5	150	0.1	108	5	150	0.1
60	Varanasi-Kanpur	2	110	5	150	0.1	110	5	150	0.1
61	Varanasi-Vindhyachal Pooling	1	108	5	150	0.1	WR			
62	Varanasi-Vindhyachal Pooling	2	109	9	150	0.1	WR			
B. Adani Transmission India Ltd. (ATIL) (BKTL, FBTL)										
1	Bikaner(PG)-Khetri(PKTSL)	1	109	9	140	0.1	109	9	140	0.1
2	Bikaner(PG)-Khetri(PKTSL)	2	110	15	140	0.1	110	15	140	0.1
3	Fatehgarh_II(PG)-Bhadla(PG)	1	108	6	140	0.1	108	6	140	0.1
4	Fatehgarh_II(PG)-Bhadla(PG)	2	110	12	140	0.1	110	12	140	0.1
C. UPPTCL										
1	Agra Fatehabad-Ghatampur	1	108	7	140	0.1	108	7	140	0.1
2	Agra Fatehabad-Gr. Noida	1	109	5	140	0.1	109	5	140	0.1
3	Anpara C-Anpara D	1	108	5	140	0.1	108	5	140	0.1
4	Anpara C-Unnao	1	109	5	140	0.1	110	7	140	0.1
5	Anpara D-Obra_C	1	110	7	140	0.1	110	7	140	0.1
6	Bara-Mainpuri	2	108	7	140	0.1	108	7	140	0.1
7	Ghatampur-Rampur_PRSTL	1	109	5	140	0.1	109	5	140	0.1
8	Hapur(UP)-Meerut_PMSTL	1	110	7	140	0.1	110	7	140	0.1
9	Hapur(UP)-Rampur_PRSTL	1	108	5	140	0.1	108	5	140	0.1
10	Hapur-Mainpuri	1	109	7	140	0.1	109	7	140	0.1
11	Jawaharpur-Gr.NOIDA	1	110	5	140	0.1	110	5	140	0.1
12	Lalitpur - Agra Fatehabad	1	108	5	140	0.1	108	5	150	0.1
13	Lalitpur - Agra Fatehabad	2	110	9	140	0.1	110	9	140	0.1
14	Meerut_PMSTL-G.Noida	1	110	5	140	0.1	110	5	140	0.1
15	Mainpuri(UP)-Jawaharpur	1	110	9	140	0.1	110	9	140	0
16	Obra_C-Unnao	1	110	5	140	0.1	110	5	140	0.1
D. Rajasthan										
1	Anta-Phagi	1	110	5	140	0.1	110	5	140	0.1

2	Anta-Phagi	2	110	7	140	0.1	112	6	140	0.1
2. 765kV Transmission Line charged at 400kV										
A. POWERGRID										
1	Kishenpur-Moga	1	110	5	150	0.1	110	5	150	0.1
2	Kishenpur-Moga	2	112	6	150	0.1	112	6	150	0.1
3	Tehri(TH)-Koteshwar(PG)	1	110	5	140	0.1	110	5	150	0.1
4	Tehri(TH)-Koteshwar(PG)	2	112	6	140	0.1	111	6	150	0.1
B. Adani Transmission India Ltd. (ATIL) (FBTL)										
1	Fatehgarh Pooling-Fatehgarh_II	1	110	5	150	0.1	110	5	150	0.1
2	Fatehgarh Pooling-Fatehgarh_II	2	112	6	150	0.1	111	5	150	0.1
3. 400kV HVAC Transmission Line										
A. POWERGRID										
2	Abdullapur(PG)-Deepalpur(JHKT)	1	112	6	150	0.1	112	6	150	0.1
1	Abdullapur(PG)-Bawana(DV)	1	110	5	150	0.1	110	5	150	0.1
3	Abdullapur- Kala Amb	1	110	5	150	0.1	110	5	150	0.1
4	Abdullapur- Kala Amb	2	112	6	150	0.1	112	6	150	0.1
5	Abdullapur-Kurukshetra	1	110	5	150	0.1	110	5	150	0.1
6	Abdullapur-Kurukshetra	2	112	6	150	0.1	112	6	150	0.1
7	Agra(PG)-Agra(UP)	1	110	5	150	0.1	111	6	150	0.1
8	Agra-Ballabgarh	1	110	5	150	0.1	110	5	150	0.1
9	Agra-Bassi	1	110	5	150	0.1	110	5	150	0.1
10	Agra-Bhiwadi	1	110	5	150	0.1	110	5	150	0.1
11	Agra-Bhiwadi	2	112	6	150	0.1	112	6	150	0.1
12	Agra PG-Fatehabad (765kV Agra UP)	1	112	6	150	0.1	110	5	150	0.1
13	Agra-Jaipur South	1	110	5	150	0.1	110	5	150	0.1
14	Agra-Jaipur South	2	112	6	150	0.1	112	6	150	0.1
15	Agra-Sikar	1	110	5	150	0.1	110	5	150	0.1
16	Agra-Sikar	2	112	6	150	0.1	112	6	150	0.1
17	Ajmer(RS)-Ajmer(PG)	1	110	5	150	0.1	110	5	150	0.1
18	Ajmer(RS)-Ajmer(PG)	2	112	6	150	0.1	112	6	150	0.1
19	Allahabad-Fatehpur	3	110	5	150	0.1	110	5	150	0.1

20	Allahabad-Fatehpur	1	111	6	150	0.1	111	6	150	0.1
21	Allahabad-Fatehpur	2	112	7	150	0.1	112	7	150	0.1
22	Allahabad-Kanpur	1	110	5	150	0.1	110	5	150	0.1
23	Allahabad-Kanpur_GIS(765/400kV)	1	112	6	150	0.1	111	6	150	0.1
24	Allahabad-Kanpur_GIS(765/400kV)	2	110	5	150	0.1	111	7	150	0.1
25	Allahabad(PG)-Meja(NT)	1	110	5	150	0.1	110	5	140	0.1
26	Allahabad(PG)-Meja(NT)	2	112	6	150	0.1	110	5	140	0.1
27	Allahabad-Sasaram IR	1	110	5	150	0.1	ER			
28	Allahabad-Varanasi	1	110	6	150	0.1	110	5	150	0.1
29	Amritsar-Jalandhar	1	110	5	150	0.1	110	5	150	0.1
30	Amritsar-Jalandhar	2	112	6	150	0.1	112	6	150	0.1
31	Amritsar-Parbati Pool Banala	1	110	5	150	0.1	110	5	150	0.1
32	Auraiya(NT)-Agra(PG)	1	110	5	140	0.1	110	5	150	0.1
33	Auraiya(NT)-Agra(PG)	2	112	5	140	0.1	112	6	150	0.1
34	Baghpat-Kaithal	1	110	5	150	0.1	110	5	150	0.1
35	Baghpat-Kaithal	2	112	6	150	0.1	112	6	150	0.1
36	Baghpat-Saharanpur	1	110	6	150	0.1	110	5	150	0.1
37	Bahadurgarh(PG)-Kabulpur(HV)	1	110	6	150	0.1	110	5	150	0.1
38	Bahadurgarh-Sonepat	1	110	5	150	0.1	110	5	150	0.1
39	Bahadurgarh-Sonepat	2	112	6	150	0.1	112	6	150	0.1
40	Balia-Biharshariff IR	1	110	5	150	0.1	ER			
41	Balia-Biharshariff IR	1	112	6	150	0.1	ER			
42	Balia(PG)-Mau(UP)	1	110	5	150	0.1	110	5	150	0.1
43	Balia-Naubatpur IR	1	111	6	150	0.1	ER			
44	Balia-Patna IR	1	110	5	150	0.1	ER			
45	Balia-Patna IR	2	112	6	150	0.1	ER			

46	Balia-Patna IR	3	110	6	150	0.1	ER			
47	Balia-Rasra	1	112	6	150	0.1	110	5	140	0.1
48	Balia-Sohawal	1	110	5	150	0.1	110	5	150	0.1
49	Balia-Sohawal	2	112	6	150	0.1	112	6	150	0.1
50	Ballabgarh-Gurgaon	1	110	5	150	0.1	110	5	150	0.1
51	Ballabgarh(PG)-Nawada(HV)	1	110	6	150	0.1	110	6	---	---
52	Bamnoli(DV)-Dwarka(PG)	1	110	5	150	0.1	110	5	150	0.1
53	Bareilly PG-Lucknow (UP)	1	111	6	150	0.1	110	5	150	0.1
54	Bareilly(PG)-Meerut	1	110	5	150	0.1	110	5	150	0.1
55	Bareilly(PG)-Meerut	2	112	6	150	0.1	112	6	150	0.1
56	Bareilly(PG)-Moradabad(UP)	1	110	5	150	0.1	110	5	150	0.1
57	Bareilly(PG)-Rampur_PRSTL	1	111	6	150	0.1	111	6	150	0.1
58	Bareilly(UP)-Bareilly(PG)	1	110	5	150	0.1	110	5	150	0.1
59	Bareilly(UP)-Bareilly(PG)	2	112	6	150	0.1	112	6	150	0.1
60	Bareilly_2(765/400)(PG)-Bareilly(PG)	1	110	5	150	0.1	110	5	150	0.1
61	Bareilly_2(765/400)(PG)-Bareilly(PG)	2	112	6	150	0.1	112	6	150	0.1
62	Bareilly_2(765/400)(PG)-Jauljivi(PG)	1	110	5	150	0.1	110	5	150	0.1
63	Bareilly_2(765/400)(PG)-Jauljivi(PG)	2	112	6	150	0.1	112	6	150	0.1
64	Bareilly_2(765/400)(PG)-Kashipur(UK)	1	110	5	150	0.1	110	5	150	0.1
65	Bareilly_2(765/400)(PG)-Kashipur(UK)	2	112	6	150	0.1	112	6	150	0.1
66	Baspa-Karcham Wangtoo	1	110	5	140	0.1	110	5	140	0.1
67	Baspa-Karcham Wangtoo	2	112	6	140	0.1	112	6	140	0.1
68	Bassi-Bhiwadi	1	110	6	150	0.1	110	5	150	0.1
69	Bassi(PG)-Heerapura(RS)	1	110	5	150	0.1	110	5	150	0.1
70	Bassi(PG)-Heerapura(RS)	2	112	6	150	0.1	112	6	150	0.1
71	Bassi-Kotputli	1	110	6	150	0.1	110	5	150	0.1
72	Bassi(PG)-Phagi(RS)	1	110	5	150	0.1	110	5	140	0.1

73	Bassi(PG)-Phagi(RS)	2	112	6	150	0.1	112	6	140	0.1
74	Bassi-Sikar	1	110	5	150	0.1	110	5	150	0.1
75	Bassi-Sikar	2	112	6	150	0.1	112	6	150	0.1
76	Basti (UP)-Lucknow(PG)	1	110	5	150	0.1	110	5	150	0.1
77	Basti (UP)-Lucknow(PG)	2	112	6	150	0.1	112	6	150	0.1
78	Bawana(CCGTB)(DTL)-Bahadurgarh(PG)	1	110	5	150	0.1	110	5	150	0.1
79	Bawana(CCGTB)(DTL)-Bhiwani(PG)	1	112	6	150	0.1	112	6	150	0.1
80	Bhadla(PG)-Bhadla(RS)	1	110	5	150	0.1	110	5	150	0.1
81	Bhadla(PG)-Bhadla(RS)	2	112	6	150	0.1	112	6	150	0.1
82	Bhensra (Jaisalmer2)(RS)-Fatehgarh_III(PG)	1	110	5	150	0.1	110	5	150	0.1
83	Bhensra (Jaisalmer2)(RS)-Fatehgarh_III(PG)	2	112	6	150	0.1	112	6	150	0.1
86	Bhiwadi-Gurgaon	1	110	6	150	0.1	110	5	150	0.1
87	Bhiwadi-Hissar	1	110	5	150	0.1	110	5	150	0.1
88	Bhiwadi-Hissar	2	111	6	150	0.1	111	6	150	0.1
89	Bhiwadi-Hissar	3	112	7	150	0.1	112	7	150	0.1
90	Bhiwadi-Neemrana(PG)	1	110	5	150	0.1	110	5	150	0.1
91	Bhiwadi-Neemrana(PG)	2	112	6	150	0.1	112	6	150	0.1
92	Bhiwani(PG)-Bhiwani(BB)	1	110	5	150	0.1	110	5	150	0.1
93	Bhiwani(BB)-Hissar(PG)	1	112	7	150	0.1	112	7	150	0.1
94	Bhiwani(PG)-Jind	1	110	5	150	0.1	110	5	150	0.1
95	Bhiwani(PG)-Jind	2	112	7	150	0.1	112	7	150	0.1
96	Bhiwani(PG)-Kabulpur(HV)	1	111	6	150	0.1	111	6	150	0.1
97	Bhiwani(PG)-Hissar-Moga(PG)	1	110	5	150	0.1	110	5	150	0.1
98	Bikaner_2-Bikaner(PG)	1	110	5	150	0.1	110	5	150	0.1
99	Bikaner_2-Bikaner(PG)	2	112	6	150	0.1	112	6	150	0.1
100	Bikaner_2(PG)-Khetri(PG)	1	110	5	150	0.1	110	5	150	0.1

101	Bikaner_2(PG)-Khetri(PG)	2	111	6	150	0.1	111	6	150	0.1
102	Bikaner_2(PG)-Khetri(PG)	3	112	6	150	0.1	112	6	150	0.1
103	Bikaner_2(PG)-Khetri(PG)	4	112	7	150	0.1	112	7	150	0.1
104	Chamera-II - Chamba(GIS)	1	110	5	150	0.1	110	5	150	0.1
105	Chamera-II-Chamera-I	1	111	6	150	0.1	111	6	150	0.1
106	Chamera-II-Kishenpur	1	112	7	150	0.1	112	7	150	0.1
107	Chamera-I-Jalandhar	1	110	5	150	0.1	110	5	150	0.1
108	Chamera-I-Jalandhar	2	112	6	150	0.1	112	6	150	0.1
109	Chittorgarh(RS)-Kankroli	2	110	6	150	0.1	110	6	150	0.1
110	Chittorgarh(PG)-Chittorgarh(RS)	1	110	5	150	0.1	110	5	150	0.1
111	Chittorgarh(PG)-Chittorgarh(RS)	2	112	6	150	0.1	112	6	150	0.1
112	Dadri NCTPP-G. Noida	1	110	5	140	0.1	110	5	150	0.1
113	Dadri(NT)-Maharanibagh(PG)-Ballabhgahr(PG)	1	111	6	140	0.1	111	6	150	0.1
114	Dadri(NT)-Mandola	1	110	5	140	0.1	110	5	150	0.1
115	Dadri(NT)-Mandola	2	112	6	140	0.1	112	6	150	0.1
116	Dadri(NT)-Muradnagar_2(UP)	1	110	5	140	0.1	110	5	140	0.1
117	Dadri(NT)-Panipat(BB)	1	110	5	140	0.1	110	5	150	0.1
118	Dadri(NT)-Panipat(BB)	2	112	7	140	0.1	112	7	150	0.1
119	Dadri(NT)-Kaithal	1	111	6	140	0.1	111	6	150	0.1
120	Deepalpur(JHKT)-Bawana(DV)	1	112	6	150	0.1	112	6	150	0.1
121	Dehradun(PG)-Abdullapur	1	110	5	150	0.1	110	5	150	0.1
122	Dehradun(PG)-Abdullapur	2	112	6	150	0.1	112	6	150	0.1
123	Dehradun-Baghpat	1	110	5	150	0.1	110	5	150	0.1
124	Dehradun(PG)-Roorkee(PG)	1	110	6	150	0.1	110	5	150	0.1
125	Dulhasti-Kishenpur	1	110	5	150	0.1	110	5	150	0.1

126	Dulhasti-Kishenpur	2	111	6	150	0.1	111	6	150	0.1
127	Dwarka-Jhatikra	1	110	5	150	0.1	110	5	150	0.1
128	Fatehabad-Hissar-Bhiwani	1	110	5	150	0.1	110	5	150	0.1
129	Fatehgarh_II(PG)-Fatehgarh_III(PG)	1	110	5	150	0.1	110	5	150	0.1
130	Fatehgarh_II(PG)-Fatehgarh_III(PG)	2	112	6	150	0.1	112	6	150	0.1
131	Fatehpur-Kanpur-Panki	1	112	6	150	0.1	112	6	150	0.1
132	Fatehpur-Kanpur-Panki	2	110	5	150	0.1	110	5	150	0.1
133	Fatehpur-Mainpuri (PG)	1	110	5	150	0.1	110	5	150	0.1
134	Fatehpur-Mainpuri (PG)	2	112	6	150	0.1	112	6	150	0.1
135	Fatehpur - Unchahar	1	110	5	150	0.1	110	5	140	0.1
136	Fatehpur - Unchahar	2	112	6	150	0.1	112	6	140	0.1
137	G.Noida-Nawada	1	110	5	140	0.1	110	5	140	0.1
138	Gorakhpur(PG)-Gorakhpur(UP)	1	110	5	150	0.1	110	5	150	0.1
139	Gorakhpur(PG)-Gorakhpur(UP)	2	112	6	150	0.1	112	6	150	0.1
140	Gorakhpur PG-Lucknow(PG)	1	110	5	150	0.1	110	5	150	0.1
141	Gorakhpur PG-Lucknow(PG)	2	112	6	150	0.1	112	6	150	0.1
142	Gorakhpur PG-LUCKNOW7 PG	1	110	5	150	0.1	110	5	150	0.1
143	Gorakhpur PG-LUCKNOW7 PG	2	112	6	150	0.1	112	6	150	0.1
144	Gorakhpur-Motihari IR	1	110	5	150	0.1	ER			
145	Gorakhpur-Motihari IR	2	112	6	150	0.1	ER			
146	Gorakhpur-Muzaffarpur IR	1	110	5	150	0.1	ER			
147	Gorakhpur-Muzaffarpur IR	2	112	6	150	0.1	ER			
148	Gorakhpur(PG)-Basti(UP)	1	110	5	150	0.1	110	5	150	0.1
149	Gorakhpur(PG)-Basti(UP)	2	112	6	150	0.1	112	6	150	0.1
150	Gumma(HP)-Panchkula(PG)	1	110	5	150	0.1	110	5	150	0.1

151	Gumma(HP)-Panchkula(PG)	2	112	6	150	0.1	112	6	150	0.1
152	Gurgaon-Sohna Road	1	110	5	150	0.1	110	5	140	0.1
153	Gurgaon-Sohna Road	2	112	6	150	0.1	112	6	140	0.1
154	Hamirpur-Parbati Pool Banala	1	112	6	150	0.1	112	6	150	0.1
155	Hamirpur-Jalandhar	1	112	6	150	0.1	112	6	150	0.1
156	Jaipur South-Bassi	1	110	5	150	0.1	110	5	150	0.1
157	Jaipur South-Bassi	2	112	6	150	0.1	112	6	150	0.1
158	Jaipur South(PG)-RAPP D(NP)	1	110	5	150	0.1	110	5	150	0.1
159	Jalandhar-Chamba(GIS)	1	110	5	150	0.1	110	5	150	0.1
160	Jalandhar-Chamba(GIS)	2	112	6	150	0.1	112	6	150	0.1
161	Jalandhar-Dhanansu(PS)	1	110	5	150	0.1	110	5	150	0.1
162	Jalandhar-Nakodar	1	112	6	150	0.1	112	6	150	0.1
163	Kaithal-Hissar	1	110	5	150	0.1	110	5	150	0.1
164	Kaithal-Hissar	2	112	6	150	0.1	112	6	150	0.1
165	Kankroli-Jodhpur	1	110	5	150	0.1	110	5	140	0.1
166	Kankroli-Zerda IR	1	110	5	150	0.1	WR			
166	Kankroli-Zerda IR	2	112	6	150	0.1	WR			
167	Kanpur - Kanpur GIS(765/400)	1	110	5	150	0.1	110	5	150	0.1
168	Kanpur - Kanpur GIS(765/400)	2	112	7	150	0.1	112	6	150	0.1
169	Kanpur-Agra	1	111	6	150	0.1	110	5	150	0.1
170	Kanpur-Auraiya(NT)	1	110	5	150	0.1	110	5	140	0.1
171	Kanpur-Auraiya(NT)	2	112	6	150	0.1	112	6	140	0.1
172	Kanpur-Ballabgarh	1	110	5	150	0.1	110	5	150	0.1
173	Kanpur-Ballabgarh	2	111	6	150	0.1	111	6	150	0.1
174	Kanpur-Ballabgarh	3	112	7	150	0.1	112	7	150	0.1
175	Karcham Wangtoo-Nathpa Jhaki	1	110	5	140	0.1	110	5	150	0.1
176	Karcham Wangtoo-Nathpa Jhaki	2	112	6	140	0.1	112	6	150	0.1
177	Karcham Wangtoo-Wangtoo(HP)	1	110	5	140	0.1	110	5	140	0.1

178	Karcham Wangtoo-Wangtoo(HP)	2	112	6	150	0.1	112	6	140	0.1
179	Khetri- Bhiwadi	1	110	5	150	0.1	110	5	150	0.1
180	Khetri- Bhiwadi	2	112	6	150	0.1	112	6	150	0.1
181	Kishenpur-New Wanpoh	1	110	5	150	0.1	110	5	150	0.1
182	Kishenpur-New Wanpoh	3	110	5	150	0.1	110	5	150	0.1
183	Kishenpur-New Wanpoh	4	111	6	150	0.1	111	6	150	0.1
184	Kishenpur-Samba	1	110	5	150	0.1	110	5	150	0.1
185	Kishenpur-Samba	2	111	6	150	0.1	111	6	150	0.1
186	Koldam-Nallagarh	1	112	6	150	0.1	112	6	150	0.1
187	Kota-Jaipur South	1	111	6	150	0.1	111	6	150	0.1
188	Kota-Merta(RS)	1	110	5	150	0.1	110	5	150	0.1
189	Koteshwar(PG)-Koteswar(TH)	1	110	5	150	0.1	110	5	140	0.1
190	Koteshwar(PG)-Koteswar(TH)	2	112	6	150	0.1	112	6	140	0.1
191	Kotputli-Bhiwadi	1	110	5	150	0.1	110	5	150	0.1
192	Kurukshetra-Dhanansu(PS)	1	110	5	150	0.1	110	5	140	0.1
193	Kurukshetra-Jind	1	110	5	150	0.1	110	5	150	0.1
194	Kurukshetra-Jind	2	112	6	150	0.1	112	6	150	0.1
195	Kurukshetra-Nakodar(PS)	1	110	6	150	0.1	110	6	140	0.1
196	Kurukshetra-Sonipat	1	110	5	150	0.1	110	5	150	0.1
197	Kurukshetra-Sonipat	2	112	6	150	0.1	112	6	150	0.1
198	Lucknow(PG)-Lucknow UP	1	111	6	150	0.1	111	6	150	0.1
199	Lucknow(PG)-Jehta	1	110	5	150	0.1	110	5	140	0.1
200	Lucknow(PG)-Jehta	2	112	6	150	0.1	112	6	140	0.1
201	Jehta-Unnao	1	110	5	140	0.1	110	5	150	0.1
202	Jehta-Unnao	2	112	6	140	0.1	112	6	150	0.1
203	Lucknow_2(765/400)(PG) - Lucknow(PG)	1	110	5	150	0.1	110	5	150	0.1
204	Lucknow_2(765/400)(PG) - Lucknow(PG)	2	112	6	150	0.1	112	6	150	0.1
205	Lucknow_2(765/400) - Kanpur GIS(765/400)	1	110	5	150	0.1	110	5	150	0.1

206	Lucknow_2(765/400) - Kanpur GIS(765/400)	2	112	6	150	0.1	112	6	150	0.1
207	Ludhiana-Jalandhar	1	110	5	150	0.1	110	5	150	0.1
208	Ludhiana-Malerkotla	1	112	6	150	0.1	112	6	150	0.1
209	Ludhiana-Patiala	1	110	5	150	0.1	110	5	150	0.1
210	Ludhiana-Patiala	2	112	6	150	0.1	112	6	150	0.1
211	Mahendergarh-Bhiwani(PG)-Hissar	3	111	5	150	0.1	111	5	150	0.1
212	Mahendergarh-Bhiwani(PG)-Hissar	4	112	6	150	0.1	112	6	150	0.1
213	Mainpuri-Ballabgarh	1	110	5	150	0.1	110	5	150	0.1
214	Mainpuri-Ballabgarh	2	112	6	150	0.1	112	6	150	0.1
215	Malerkotla-Kaithal	1	110	5	150	0.1	110	5	150	0.1
216	Malerkotla-Patiala	1	112	6	150	0.1	112	6	150	0.1
217	Manesar-Sohna Road	1	110	5	150	0.1	110	5	140	0.1
218	Manesar-Sohna Road	2	112	6	150	0.1	112	7	140	0.1
219	Meerut-Baghpat	1	110	5	150	0.1	110	5	150	0.1
220	Meerut-Baghpat	2	112	6	150	0.1	112	6	150	0.1
221	Meerut-Mandola	1	112	5	150	0.1	112	5	150	0.1
222	Meerut-Mandola	2	112	6	150	0.1	112	6	150	0.1
223	Meerut-Mandola	3	110	5	150	0.1	110	5	150	0.1
224	Meerut-Mandola	4	111	6	150	0.1	111	6	150	0.1
225	Meerut(PG)-Muzzafarnagar(UP)	1	110	5	150	0.1	110	5	150	0.1
226	Moga-Fatehabad	1	110	5	150	0.1	110	5	150	0.1
227	Moga-Hissar	2	110	5	150	0.1	110	5	150	0.1
228	Moga-Hissar	3	112	6	150	0.1	112	6	150	0.1
229	Moga-Jalandhar	1	110	5	150	0.1	110	5	150	0.1
230	Moga-Jalandhar	2	112	6	150	0.1	112	6	150	0.1
231	Moradabad(UP)-Hapur(UP)	1	110	5	150	0.1	110	5	140	0.1
232	Muradnagar(UP)-Hapur(UP)	1	110	5	150	0.1	112	6	150	0.1
233	Nallagarh-Patiala	1	110	5	150	0.1	110	5	150	0.1
234	Nallagarh-Patiala	2	112	6	150	0.1	112	6	150	0.1
235	Nathpa Jhakri(SJ)-Rampur(SJ)	1	110	5	150	0.1	110	5	140	0.1
236	Nathpa Jhakri(SJ)-Rampur(SJ)	2	112	6	150	0.1	112	6	140	0.1

237	Nathpa Jhakri(SJ)-Gumma(HP)	1	110	5	140	0.1	110	5	140	0.1
238	Nathpa Jhakri(SJ)-Gumma(HP)	2	112	6	140	0.1	112	6	140	0.1
239	Neemrana(PG)-Manesar	1	110	5	150	0.1	110	5	150	0.1
240	Neemrana(PG)-Manesar	2	112	6	150	0.1	112	6	150	0.1
241	Neemrana(PG)-Dhanonda(HV)-Mohindergarh(APL)	1	110	5	150	0.1	110	5	150	0.1
242	Neemrana(PG)-Dhanonda(HV)-Mohindergarh(APL)	2	112	6	150	0.1	112	6	150	0.1
243	Neemrana(PG)-Sikar	2	111	6	150	0.1	111	6	150	0.1
244	New Wanpoh-Wagoora	1	110	5	150	0.1	110	5	150	0.1
245	New Wanpoh-Wagoora	2	111	6	150	0.1	111	6	150	0.1
246	Orai(PG)-Orai (UP)	1	110	5	150	0.1	110	5	150	0.1
247	Orai(PG)-Orai (UP)	2	112	7	150	0.1	112	7	150	0.1
248	Panchkula - Abdullapur	1	110	5	150	0.1	110	5	150	0.1
249	Panchkula - Abdullapur	2	112	6	150	0.1	112	6	150	0.1
250	Patiala-Panchkula	1	110	5	150	0.1	110	5	150	0.1
251	Patiala-Panchkula	2	112	6	150	0.1	112	6	150	0.1
252	Patiala-Patran	1	110	5	150	0.1	110	5	150	0.1
253	Patiala-Patran	2	112	6	150	0.1	112	6	150	0.1
254	Patran-Kaithal	1	110	5	150	0.1	110	5	150	0.1
255	Patran-Kaithal	2	112	6	150	0.1	112	6	150	0.1
256	Rampur(SJ)-Nallagarh(PG)	1	110	5	150	0.1	110	5	150	0.1
257	Rampur(SJ)-Nallagarh(PG)	2	112	6	150	0.1	112	6	150	0.1
258	Rampur_PRSTL-Moradabad(UP)	1	111	6	150	0.1	111	6	150	0.1
259	RAPP-D(NP)-Kota(PG)	1	110	5	150	0.1	110	5	150	0.1
260	RAPS-C(NP)-Chittorgarh(RS)	2	110	5	150	0.1	110	5	150	0.1
261	RAPS-C(NP)-Kankroli(PG)	1	111	6	150	0.1	111	6	150	0.1
262	RAPS-C(NP)-Kota(PG)	1	110	6	150	0.1	110	6	150	0.1

263	Rihand(NT)-Allahabad(PG)	1	110	5	140	0.1	110	5	150	0.1
264	Rihand(NT)-Allahabad(PG)	2	112	6	140	0.1	112	6	150	0.1
265	Rihand3-Vindhyachal IR	1	110	5	150	0.1	WR			
266	Rihand3-Vindhyachal IR	2	112	6	150	0.1	WR			
267	Roorkee(PG)-Kashipur(UK)	1	110	5	150	0.1	110	5	150	0.1
268	Roorkee(PG)-Kashipur(UK)	2	112	6	150	0.1	112	6	150	0.1
269	Roorkee-Saharanpur	1	111	6	150	0.1	111	6	150	0.1
270	Sambhal(UP)-Rampur(PRSTL)	1	110	5	150	0.1	110	5	140	0.1
271	Sambhal(UP)-Rampur(PRSTL)	2	112	6	150	0.1	112	7	140	0.1
272	Sarnath(UP)-Varanasi(PG)	1	110	5	150	0.1	110	5	150	0.1
273	Sarnath(UP)-Varanasi(PG)	2	112	6	150	0.1	112	6	150	0.1
274	Shahjahanpur(PG)-Bareilly(PG)	1	110	5	150	0.1	110	5	150	0.1
275	Shahjahanpur(PG)-Bareilly(PG)	2	112	6	150	0.1	112	6	150	0.1
276	Shahjahanpur(PG)-Lucknow(PG)	1	110	5	150	0.1	110	5	150	0.1
277	Shahjahanpur(PG)-Lucknow(PG)	2	112	6	150	0.1	112	6	150	0.1
278	Shahjahanpur PG-Rosa	1	110	5	150	0.1	110	5	140	0.1
279	Shahjahanpur PG-Rosa	2	112	6	150	0.1	112	6	140	0.1
280	Shree Cement(SCL)-Kota(PG)	1	110	5	150	0.1	110	5	150	0.1
281	Shree Cement-Merta	2	111	6	150	0.1	111	6	150	0.1
282	Sikar-Khetri	1	110	5	150	0.1	110	5	150	0.1
283	Sikar-Khetri	2	112	6	150	0.1	112	6	150	0.1
284	Sikar(PG)-Ratangarh(RS)	1	110	5	150	0.1	110	5	150	0.1
285	Sikar(PG)-Ratangarh(RS)	2	112	6	150	0.1	112	6	150	0.1
286	Sikar_2(PSTL)-Neemrana(PG)	1	110	5	150	0.1	110	5	150	0.1

287	Sikar_2(PSTL)-Neemrana(PG)	2	112	6	150	0.1	112	6	150	0.1
288	Singrauli(NT)-Allahabad(PG)	1	110	5	140	0.1	110	5	150	0.1
289	Singrauli(NT)-Allahabad(PG)	2	111	6	140	0.1	111	6	150	0.1
290	Singrauli(NT)-Allahabad(PG)	3	112	7	150	0.1	112	7	150	0.1
291	Singrauli(NT)-Anpara(UP)	1	110	6	140	0.1	110	6	140	0.1
292	Singrauli(NT)-Fatehpur(PG)	1	110	5	140	0.1	110	5	150	0.1
293	Singrauli(NT)-Lucknow(UP)	1	111	6	140	0.1	111	6	150	0.1
294	Singrauli(NT)-Rihand(NT)	1	110	5	140	0.1	110	5	140	0.1
295	Singrauli(NT)-Rihand(NT)	2	112	6	140	0.1	112	6	140	0.1
296	Singrauli(NT)-Vindhyachal(PG)	1	110	5	140	0.1	110	5	150	0.1
297	Singrauli(NT)-Vindhyachal(PG)	2	112	6	140	0.1	112	6	150	0.1
298	Sohawal-Lucknow(PG)	1	110	5	150	0.1	110	5	150	0.1
299	Sohawal-Lucknow(PG)	2	112	6	150	0.1	112	6	150	0.1
300	Sorang(Greenko)-Kala Amb	1	112	6	150	0.1	112	6	150	0.1
301	Tehri(THDC)-Koteshwar(PG)	3	112	7	150	0.1	112	7	150	0.1
302	Uri-II(NH) - Uri-I(NH)	1	111	6	140	0.1	111	6	140	0.1
303	Uri-II(NH) - Wagoora(PG)	1	110	5	150	0.1	110	5	150	0.1
304	Uri-I(NH) - Amargarh(INDIGRID)	1	110	5	150	0.1	110	5	150	0.1
305	Uri-I(NH) - Amargarh(INDIGRID)	2	111	6	150	0.1	111	6	150	0.1
306	Varanasi(PG)-Sahupuri(UP)	1	110	5	150	0.1	110	5	140	0.1
307	Varanasi(PG)-Sahupuri(UP)	2	112	6	150	0.1	112	6	150	0.1
308	varanasi-Sasaram IR	1	111	6	150	0.1	ER			
309	varanasi-Biharshariff IR	1	110	5	150	0.1	ER			

310	varanasi-Biharshariff IR	2	112	6	150	0.1	ER			
311	Wagoora-Amargarh	1	110	5	150	0.1	110	5	150	0.1
312	Wagoora-Amargarh	2	111	6	150	0.1	111	6	150	0.1
313	Wangtoo(HP)-Kala Amb	1	110	5	150	0.1	110	5	150	0.1
314	Wangtoo(HP)-Sorang(Greenko)	1	112	6	150	0.1	112	6	150	0.1
B. Adani Transmission India Ltd. (ATIL) (FBTL)										
1	Alwar(ATIL)-Hindaun(RS)	1	110	5	150	0.1	110	5	150	0.1
2	Bhiwani(PG) - Mohindergarh(APL)	1	110	5	150	0.1	110	5	150	0.1
3	Bhiwani(PG) - Mohindergarh(APL)	2	112	6	150	0.1	112	6	150	0.1
4	Bhadla(PG)-Bhadla_II	1	110	5	150	0.1	110	5	150	0.1
5	Bhadla(PG)-Bhadla_II	2	112	6	150	0.1	112	6	150	0.1
C. UPPTCL (Uttar Pradesh)										
1	Agra UP-Fatehabad (765kV Agra UP)	1	110	5	140	0.1	110	5	140	0.1
2	Agra UP-Fatehabad (765kV Agra UP)	2	112	6	150	0.1	112	6	150	0.1
3	Agra Fatehabad(UP)-Firozabad	1	110	6	150	0.1	110	6	140	0.1
4	Agra UP-Unnao	1	110	5	140	0.1	110	5	140	0.1
5	Alakhnanda-Vishnuprayag	1	110	5	140	0.1	110	5	140	0.1
6	Aligarh-Mainpuri765 (UP)	1	110	5	150	0.1	110	5	140	0.1
7	Aligarh-Mainpuri765 (UP)	2	112	6	150	0.1	112	6	140	0.1
8	Aligarh-Muradnagar	1	110	6	150	0.1	110	6	150	0.1
9	Aligarh-Panki	1	110	6	140	0.1	110	6	140	0.1
10	Aligarh(UP)-Shamli(UP)	1	110	5	150	0.1	110	5	140	0.1
11	Aligarh(UP)-Shamli(UP)	2	112	6	150	0.1	112	6	140	0.1

12	Aligarh-Sikandrabad	1	111	6	140	0.1	111	6	140	0.1
13	Aligarh-Harduaganj	1	111	6	150	0.1	111	6	150	0.1
14	AnparaB-AnparaC	1	Only a Extension of Bus therefore overvoltage protection is not enable							
15	AnparaB-AnparaC	2								
16	AnparaB-AnparaD	1	110	5	140	0.1	110	5	140	0.1
17	AnparaB-AnparaD	2	112	6	140	0.1	112	6	140	0.1
18	AnparaB-Mau	1	110	6	140	0.1	110	6	140	0.1
19	AnparaB-Obra	1	111	6	140	0.1	111	6	140	0.1
20	AnparaB-Sarnath	1	110	5	140	0.1	110	5	140	0.1
21	AnparaB-Sarnath	2	112	6	140	0.1	112	6	140	0.1
22	Ataur-Indirapuram	1	112	6	140	0.1	112	6	140	0.1
23	Ataur-Noida sec123	1	110	5	140	0.1	110	5	140	0.1
24	Azamgarh-Mau	1	110	5	150	0.1	110	5	140	0.1
25	Azamgarh-Tanda Stage-II	1	112	6	140	0.1	112	6	140	0.1
26	Badaun-Sambhal	1	110	6	140	0.1	110	5	150	0.1
27	Badaun-Sambhal	2	112	6	140	0.1	112	6	150	0.1
28	Banda-Orai	1	110	5	150	0.1	110	5	150	0.1
29	Banda-Orai	2	112	6	150	0.1	112	6	150	0.1
30	Banda-Rewa Road	1	110	5	140	0.1	110	5	140	0.1
31	Banda-Rewa Road	2	112	6	140	0.1	112	6	140	0.1
32	Bareilly(UP)-Unnao	1	112	6	145	0.1	112	6	140	0.1
33	Bareilly(UP)-Unnao	2	110	5	145	0.1	110	5	140	0.1
34	Fatehabad(UP)-Agra(South)-I	1	110	5	140	0.1	110	5	140	0.1
35	Fatehabad(UP)-Mathura	1	110	5	150	0.1	110	5	150	0.1
36	Fatehabad(UP)-Mathura	2	112	6	150	0.1	112	6	150	0.1
37	Firozabad-Agra(South)	1	111	6	140	0.1	112	6	150	0.1
38	Firozabad-Jawaharpur	1	110	5	150	0.1	110	5	150	0.1
39	Firozabad-Jawaharpur	2	112	6	150	0.1	112	6	150	0.1
40	Gorakhpur UP-Azamgarh	1	111	6	140	0.1	111	6	140	0.1
41	Gr.Noida4-Gr.Noida7	1	110	5	150	0.1	110	5	140	0.1
42	Gr.Noida4-Gr.Noida7	2	112	6	150	0.1	112	6	140	0.1
43	Gr.Noida7-Sikandrabad	1	110	5	140	0.1	110	5	140	0.1

44	Gr.Noida7-Sikandrabad	2	112	6	140	0.1	112	6	140	0.1
45	Gr.Noida(765kV)-Noida Sec 148	1	110	5	140	0.1	110	5	140	0.1
46	Gr.Noida(765kV)-Noida Sec 148	2	112	6	140	0.1	112	6	140	0.1
47	Hapur-Ataur	1	110	5	140	0.1	110	5	140	0.1
48	Hapur-Ataur	2	112	6	140	0.1	112	6	140	0.1
49	Hapur-Dasna	1	110	5	140	0.1	110	5	140	0.1
50	Hapur-Dasna	2	112	6	140	0.1	112	6	140	0.1
51	Harduaganj-Sikandrabad	1	110	5	150	0.1	110	5	150	0.1
52	Jaunpur- Obra C	1	110	5	140	0.1	110	5	140	0.1
53	Kanpur765-Ghatampur	1	110	5	150	0.1	110	5	150	0.1
54	Kanpur765-Ghatampur	2	112	6	150	0.1	112	6	150	0.1
55	Lucknow(PG)-Mohanlalganj(PGYTL)	1	110	5	150	0.1	110	5	150	0.1
56	Lucknow(UP)-Mohanlalganj(PGYTL)	1	110	5	150	0.1	112	6	150	0.1
57	Mainpuri(UP)-Mainpuri(PG)	1	110	5	140	0.1	110	5	150	0.1
58	Mainpuri(UP)-Mainpuri(PG)	2	112	6	140	0.1	112	6	150	0.1
59	Mainpuri(UP)-Orai-I	1	110	5	140	0.1	110	5	140	0.1
60	Mainpuri(UP)-Orai-2	2	112	6	140	0.1	112	6	140	0.1
61	Meja(NTPC)-Bara	1	110	5	140	0.1	110	5	140	0.1
62	Meja(NTPC)-Bara	2	112	6	140	0.1	112	6	140	0.1
63	Meja-Masauli	1	110	5	140	0.1	110	5	140	0.1
64	Meja(NTPC)-Rewa Road	1	111	6	140	0.1	111	6	140	0.1
65	Muradnagar-Ataur	1	110	5	150	0.1	110	5	140	0.1
66	Muradnagar New-Mathura	1	110	5	150	0.1	110	5	140	0.1
67	Muzaffarnagar-Ataur	1	111	6	150	0.1	111	6	140	0.1
68	Muzaffarnagar-Vishnuprayag	1	110	5	150	0.1	110	5	140	0.1
69	Muzaffarnagar-Alakhnanda	1	112	6	150	0.1	112	6	140	0.1
70	Noida sec123-Indirapuram	1	110	5	140	0.1	110	5	140	0.1

71	Noida Sec 148-Noida Sec 123	1	110	5	140	0.1	110	5	140	0.1
72	Noida Sec 148-Noida Sec 123	2	112	6	140	0.1	112	6	140	0.1
73	Obra-B-Sultanpur	1	110	5	140	0.1	110	5	140	0.1
74	Obra-B - Jaunpur	1	112	6	140	0.1	112	6	140	0.1
75	Orai-Paricha	1	110	5	140	0.1	110	5	140	0.1
76	Orai-Paricha	2	112	6	140	0.1	112	6	140	0.1
77	Panki- Panki TPS	1	110	5	140	0.1	110	5	140	0.1
78	Panki- Panki TPS	2	112	6	140	0.1	112	6	140	0.1
79	Rasra-Mau	1	112	6	150	0.1	112	6	150	0.1
80	Rewa Road-Masauli	1	110	5	140	0.1	110	5	140	0.1
81	Rewa road-Obra	1	110	6	140	0.1	110	6	140	0.1
82	Rewa road-Panki	1	111	6	140	0.1	111	6	140	0.1
83	Roorkee-Muzaffarnagar	1	111	6	150	0.1	111	6	150	0.1
84	Rosa-Badaun	1	110	5	140	0.1	110	5	140	0.1
85	Rosa-Badaun	2	112	6	140	0.1	112	6	140	0.1
86	Sarnath-Azamgarh	1	110	5	140	0.1	110	5	140	0.1
87	Simbholi-Muradnagar II	1	110	5	150	0.1	110	5	150	0.1
88	Simbholi-Muradnagar II	2	112	6	150	0.1	112	6	150	0.1
89	Simbholi-Meerut	1	110	5	150	0.1	110	5	150	0.1
90	Simbholi-Meerut	2	112	6	150	0.1	112	6	150	0.1
91	Sultanpur(UP)-Mohanlalganj(PGY TL)	1	110	5	140	0.1	110	5	150	0.1
92	Sultanpur-Tanda Stage II	1	111	6	150	0.1	111	6	150	0.1
93	Tanda-Basti	1	110	5	140	0.1	110	5	150	0.1
94	Tanda-Basti	2	112	6	140	0.1	112	6	150	0.1
95	Unnao(UP)-Mohanlalganj(PGY TL)	1	110	5	140	0.1	110	5	150	0.1
96	Unnao-Panki	1	111	6	140	0.1	111	6	140	0.1
97	Varanasi(PG)-Jaunpur	1	110	5	140	0.1	110	5	140	0.1
98	Varanasi(PG)-Jaunpur	2	112	6	140	0.1	112	6	141.8	0.1
D. THDCIL										
1	Aligarh(PG)-Khurja STPP(TH)	1	110	5	150	0.1	110	5	140	0.1
2	Aligarh(PG)-Khurja STPP(TH)	2	112	6	150	0.1	112	6	140	0.1
E. Rajasthan										

1	Ajmer-Bhilwara-I	1	110	5	140	0.1	110	5	140	0.1
2	Ajmer-Bhilwara-II	2	112	6	140	0.1	112	6	140	0.1
3	Ajmer-Deedwana	1	110	5	140	0.1	110	5	150	0.1
4	Akal-Barmer	1	110	5	150	0.1	110	5	150	0.1
5	Akal-Bhensra (Jaisalmer2)	1	111	6	150	0.1	111	6	150	0.1
6	Akal-Jodhpur	1	111	6	150	0.1	110	6	150	0.1
7	Akal-Kankani (Jodhpur New)	1	112	6	150	0.1	112	6	150	0.1
8	Akal-Ramgarh	1	110	5	148	0.1	110	5	148	0.1
9	Akal-Ramgarh	2	112	6	150	0.1	112	6	150	0.1
10	Anta-Chhabra SCTPS	1	110	5	140	0.1	110	5	140	0.1
11	Anta-Chhabra SCTPS	2	112	6	140	0.1	112	6	140	0.1
12	Anta-Kalisindh	1	110	5	140	0.1	110	5	140	0.1
13	Anta-Kalisindh	2	112	6	140	0.1	112	6	140	0.1
14	Anta-Kawai SCTPS	1	110	5	140	0.1	110	5	140	0.1
15	Anta-Kawai SCTPS	2	112	6	140	0.1	112	6	140	0.1
16	Babai - Suratgarh SCTPS	1	106	3	150	0.1	Both lines i.e. 400 KV Babai-SCTPS CKT-I &II CHARGED UP-TO 77 KM ON ANTI-THEFT BASIS FROM 400 KV GSS BABAI END ,SINCE DT. 06.01.2024.			
17	Babai - Suratgarh SCTPS	2	106	4	150	0.1				
18	Barmer-Bhinmal (PG)	1	110	5	150	0.1	110	5	150	0.1
19	Barmer-Bhinmal (PG)	2	112	6	150	0.1	112	6	150	0.1
20	Barmer-Rajwest	1	111	6	150	0.1	111	6	150	0.1
21	Barmer-Bhensra (Jaisalmer2)	1	110	5	150	0.1	110	5	150	0.1
22	Barmer-Bhensra (Jaisalmer2)	2	112	6	150	0.1	112	6	150	0.1
23	Bhadla(RS)-Jodhpur	1	110	5	140	0.1	110	5	140	0.1
25	Bikaner(RS)-Bhadla(RS)	1	110	5	150	0.1	110	5	140	0.1
26	Bikaner(RS)-Bhadla(RS)	2	112	6	150	0.1	112	6	140	0.1
27	Bikaner(RS)-Sikar(PG)	1	110	5	150	0.1	110	5	150	0.1
24	Bikaner(RS)-Deedwana	1	111	6	150	0.1	111	6	140	0.1
28	Bikaner(RS)-Sikar(PG)	2	112	6	150	0.1	112	6	150	0.1

29	Bikaner(RS)-Suratgarh SCTPP	1	110	5	150	0.1	110	5	150	0.1
30	Bikaner(RS)-Suratgarh SCTPP	2	112	6	150	0.1	112	6	150	0.1
31	Bhilwara-Chhabra	1	111	6	150	0.1	111	6	150	0.1
32	Bhilwara-Chittorgarh(RS)	1	110	5	150	0.1	110	5	150	0.1
33	Bhilwara-Chittorgarh(RS)	2	112	6	150	0.1	112	6	150	0.1
34	Chhabra-Chhabra SCTPS	1	Only an Extension of Bus therefore overvoltage protection is not enabled							
35	Chhabra-Chhabra SCTPS	2								
36	Chhabra-Kawai	1	110	5	140	0.1	110	5	140	0.1
37	Chhabra-Anta (RS) -Kota (PG)	1	112	6	140	0.1	112	6	150	0.1
38	Heerapura-Hindaun	1	110	5	150	0.1	110	5	150	0.1
39	Hindaun-Chabra TPS	1	112	7	150	0.1	112	7	150	0.1
40	Jaisalmer(RS)-Renew hans Urja Pvt Ltd	1	110	5	150	0.1	110	5	150	0.1
41	Jaisalmer(RS)-Corneight Parks Pvt. Ltd	1	111	6	150	0.1	111	6	150	0.1
42	Kankani (Jodhpur New)- Bhensra (Jaisalmer2)	1	111	5	148	0.1	111	5	148	0.1
43	Kankani (Jodhpur New)-Merta	1	110	5	150	0.1	110	5	150	0.1
44	Kankani (Jodhpur New)-Jodhpur	1	110	5	140	0.1	110	5	140	0.1
45	Kankani (Jodhpur New)-Jodhpur	2	112	6	140	0.1	110	5	140	0.1
46	Kankani (Jodhpur New)-Pachpadra	1	111	6	150	0.1	111	6	150	0.1
47	Rajwest-Pachpadra	1	111	5	150	0.1	110	5	150	0.1
48	Merta-Bikaner(RS)	1	110	5	150	0.1	110	5	150	0.1
49	Merta-Heerapura	1	111	6	150	0.1	111	6	150	0.1
50	Merta-Bhadla(RS)	1	112	5	150	0.1	112	6	150	0.1
51	Merta-Ratangarh	1	112	6	150	0.1	112	6	150	0.1
52	Phagi-Ajmer(RS)	1	110	5	140	0.1	110	5	140	0.1
53	Phagi-Ajmer(RS)	2	112	6	140	0.1	112	6	140	0.1
54	Phagi-Heerapura	1	110	5	140	0.1	110	5	150	0.1
55	Phagi-Heerapura	2	112	6	140	0.1	112	6	150	0.1
56	Rajwest-Jodhpur	1	110	5	150	0.1	110	5	140	0.1

57	Ramgarh-Bhadla(RS)	1	110	5	150	0.1	110	5	150	0.1
58	Ramgarh-Bhadla(RS)	2	112	6	150	0.1	112	6	150	0.1
59	Suratgarh-Bikaner(RS)	1	111	6	150	0.1	111	6	150	0.1
60	Suratgarh-Ratangarh	1	110	5	150	0.1	110	5	150	0.1
61	Suratgarh-Ratangarh	2	112	6	150	0.1	112	6	150	0.1
62	Suratgarh-Suratgarh SSCTPP	1	Only an Extension of Bus therefore overvoltage protection is not enabled							
63	Suratgarh-Suratgarh SSCTPP	2								
F. HVPNL (Haryana)										
1	CLP Jhajjar (MGSTPS) - Dhanonda	1	110	5	150	0.1	110	5	140	0.1
2	CLP Jhajjar (MGSTPS) - Dhanonda	2	112	6	150	0.1	112	6	140	0.1
3	CLP Jhajjar(MGSTPS)-Kabulpur	1	110	5	150	0.1	110	5	150	0.1
4	CLP Jhajjar(MGSTPS)-Kabulpur	2	112	6	150	0.1	112	6	150	0.1
5	Deepalpur-Kabulpur	1	110	5	150	0.1	110	5	150	0.1
6	Deepalpur-Kabulpur	2	112	6	150	0.1	112	6	150	0.1
7	Dhanonda-Daulatabad	1	110	5	140	0.1	110	5	150	0.1
8	Dhanonda-Daulatabad	2	112	6	140	0.1	112	6	150	0.1
9	Gurgaon-Daulatabad	1	110	5	150	0.1	110	5	150	0.1
10	Gurgaon-Daulatabad	2	112	6	150	0.1	112	6	150	0.1
11	Jhajjar(IGSTPS)-Daulatabad	1	110	5	150	0.1	110	5	150	0.1
12	Jhajjar(IGSTPS)-Daulatabad	2	112	6	150	0.1	112	6	150	0.1
13	Jind-Kirori	1	110	5	150	0.1	110	5	150	0.1
14	Jind-Kirori	2	112	6	150	0.1	112	6	150	0.1
15	Khedar-Fathehabad	1	111	6	150	0.1	111	6	150	0.1
16	Khedar-Kirori	1	110	5	150	0.1	110	5	150	0.1

17	Khedar-Kirori	2	112	6	150	0.1	112	6	150	0.1
18	Khedar-Nuhiyawali	1	111	6	150	0.1	111	6	150	0.1
19	Nuhiawali-Fathehabad	1	110	5	150	0.1	110	5	150	0.1
G.APCPL										
1	Jhajjar (IGSTPS)-Mundka	1	110	5	140	0.1	110	5	150	0.1
2	Jhajjar (IGSTPS)-Mundka	2	112	6	140	0.1	112	6	150	0.1
H. DTL (Delhi)										
1	Ballabgarh(PG)-Tughlakabad(PG)	1	110	5	150	0.1	110	5	150	0.1
2	Ballabgarh(PG)-Tughlakabad(PG)	2	112	6	150	0.1	112	6	150	0.1
3	Bamnoli-Jhatikra	2	111	6	150	0.1	111	6	150	0.1
4	Bamnauli(PG)-Tughlakabad(PG)	1	110	5	150	0.1	110	5	150	0.1
5	Bamnauli(PG)-Tughlakabad(PG)	2	112	6	150	0.1	112	6	150	0.1
6	Bawana(DV)-Maharanibagh(PG)	1	110	5	150	0.1	110	5	150	0.1
7	Bawana(DV)-Maharanibagh(PG)	2	112	6	150	0.1	112	6	150	0.1
8	Jhatikra(PG)-Mundka(DV)	1	110	5	150	0.1	110	5	150	0.1
9	Jhatikra(PG)-Mundka(DV)	2	112	6	150	0.1	112	6	150	0.1
10	Mandola(PG)-Maharanibagh(PG)	1	110	5	150	0.1	110	5	150	0.1
11	Mandola(PG)-Maharanibagh(PG)	2	112	6	150	0.1	112	6	150	0.1
12	Bawana-Mundka	1	110	5	150	0.1	110	5	150	0.1
13	Bawana-Mundka	2	112	6	150	0.1	112	6	150	0.1
I. PDD (J&K)										
1	Baglihar-Kishenpur	1	110	5	150	0.1	110	5	150	0.1
2	Baglihar-Kishenpur	2	111	6	150	0.1	111	6	150	0.1
3	Baglihar-Kishenpur	3	112	7	150	0.1	112	7	150	0.1
4	New Wanpoh-Baglihar(JK)	1	111	6	150	0.1	111	6	150	0.1
J. PSTCL (Punjab)										
1	Behman Jassa Singh-HMEL	1	110	5	150	0.1	110	5	150	0.1
2	Behman Jassa Singh-HMEL	2	112	6	150	0.1	112	6	150	0.1
3	Behman Jassa Singh-Moga	1	112	6	150	0.1	112	6	150	0.1
4	Makhu-Amritsar	1	110	5	150	0.1	110	5	150	0.1

5	Makhu-Amritsar	2	112	6	150	0.1	112	6	150	0.1
6	Makhu-Mukatsar	1	110	5	150	0.1	110	5	150	0.1
7	Makhu-Mukatsar	2	112	6	150	0.1	112	6	150	0.1
8	Nakodar-Makhu	1	110	5	150	0.1	110	5	150	0.1
9	Nakodar-Makhu	2	112	6	150	0.1	112	6	150	0.1
10	Nakodar-Moga	1	110	5	150	0.1	110	5	150	0.1
11	Rajpura-Rajpura TPS	1	110	5	150	0.1	110	5	150	0.1
12	Rajpura-Dhuri	1	110	5	150	0.1	110	5	150	0.1
13	Rajpura-Rajpura TPS	2	112	6	150	0.1	112	6	150	0.1
14	Rajpura-Dhuri	2	112	6	150	0.1	112	6	150	0.1
15	Rajpura TPS-Nakodar	1	110	5	140	0.1	110	5	150	0.1
16	Rajpura TPS-Nakodar	2	112	6	140	0.1	112	6	150	0.1
17	Talwandi Sabo-Dhuri	1	110	5	140	0.1	110	5	150	0.1
18	Talwandi Sabo-Dhuri	2	112	6	140	0.1	112	6	150	0.1
19	Talwandi Sabo-Behman-Jassa	1	111	6	140	0.1	111	6	150	0.1
21	Talwandi Sabo-Nakodar	1	112	6	140	0.1	112	6	150	0.1
22	Talwandi Sabo-Mukatsar	1	110	5	140	0.1	110	5	150	0.1
23	Talwandi Sabo-Mukatsar	2	112	6	140	0.1	112	6	150	0.1
K. PTCUL (Uttrakhand)										
1	Muradabad-Kashipur	1	110	5	150	0.1	110	5	150	0.1
2	Rishikesh-Nehtaur	1	110	5	140	0.1	110	5	140	0.1
3	Kashipur-Nehtaur	1	110	5	140	0.1	112	6	140	0.1
4	Roorkee-Muzaffarnagar	1	110	5	150	0.1	110	5	150	0.1
5	Roorkee-Rishikesh	1	112	6	150	0.1	112	6	140	0.1
6	Srinagar-Alakhnanda (GVK)	1	110	5	150	0.1	110	5	150	0.1
7	Srinagar-Alakhnanda (GVK)	2	112	6	150	0.1	112	6	150	0.1
L. HPPTCL										
1	Chamba(PG)-Lahal(HP)	1	110	5	150	0.1	110	5	150	0.1
2	Chamba(PG)-Lahal(HP)	2	112	6	150	0.1	112	6	150	0.1
M. BBMB										

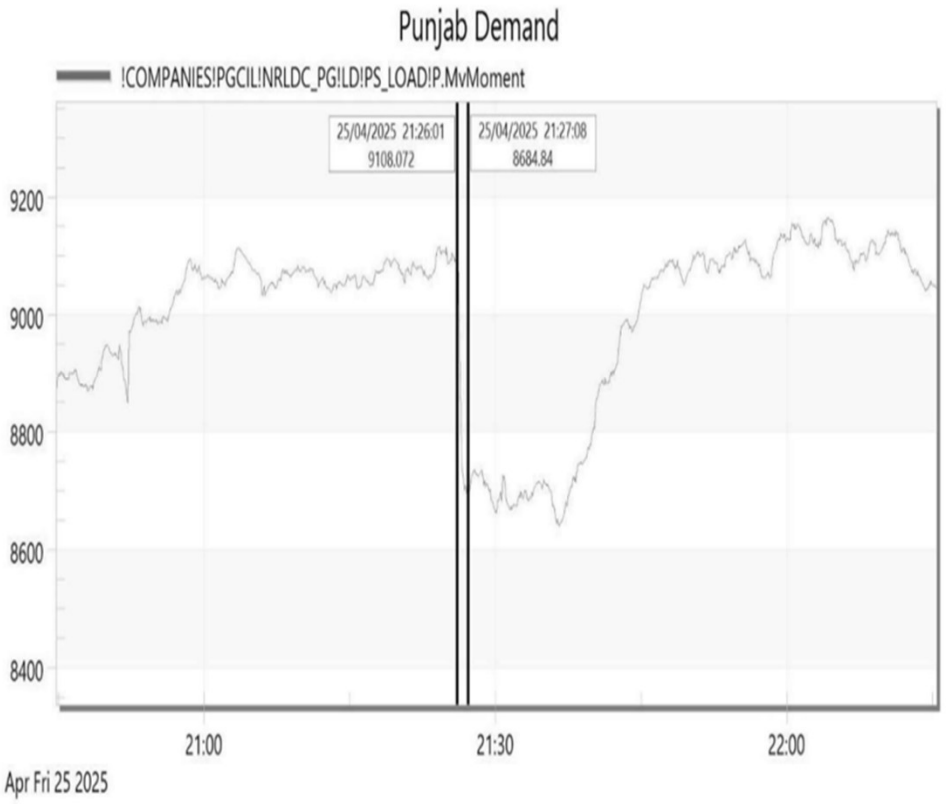
1	Bhiwani-Rajpura	1	111	6	150	0.1	111	6	150	0.1
2	Dehar-Rajpura	1	112	6	150	0.1	112	6	140	0.1
3	Dehar-Panchkula	1	110	5	150	0.1	110	5	150	0.1
4	Panchkula-Panipat	1	111	6	150	0.1	111	6	150	0.1
N. INDIGRID										
1	Amargarh-Samba	1	110	5	150	0.1	110	5	150	0.1
2	Amargarh-Samba	2	111	6	150	0.1	111	6	150	0.1
3	Jalandhar-Samba	1	110	5	150	0.1	110	5	150	0.1
4	Jalandhar-Samba	2	112	6	150	0.1	112	6	150	0.1
5	Koldam-Parbati Pooling Banala	2	112	6	150	0.1	112	6	150	0.1
6	Ludhiana-Koldam	1	110	5	150	0.1	110	5	150	0.1
7	Koldam-Ropar	1	112	6	140	0.1	112	6	140	0.1
8	Parbati Pool Banala-Nallagarh	1	110	5	150	0.1	110	5	150	0.1
9	Parbati-II- Parbati Pooling Banala	2	112	5	150	0.1	112	6	150	0.1
10	Parbati-III- Parbati Pooling Banala	2	112	6	150	0.1	112	6	150	0.1
11	Prithala(GPTL)-Kadarpur	1	110	5	150	0.1	110	5	140	0.1
12	Prithala(GPTL)-Kadarpur	2	112	6	150	0.1	112	6	140	0.1
13	Prithala(GPTL)-Aligarh(PG)	1	110	5	150	0.1	110	5	150	0.1
14	Prithala(GPTL)-Aligarh(PG)	2	112	6	150	0.1	112	6	150	0.1
15	RAPPC-Shujalpur IR	1	110	5	150	0.1	110	5	140	0.1
16	RAPPC-Shujalpur IR	2	112	6	150	0.1	112	6	140	0.1
17	Ropar(PS)-Ludhiana(PG)	1	112	6	150	0.1	112	6	150	0.1
18	Sainj(HP)-Parbati II	1	110	5	140	0.1	110	5	140	0.1
19	Sainj(HP)-Parbati III	1	110	5	140	0.1	110	5	140	0.1
20	Sohna Road(GPTL)-Kadarpur	1	110	5	150	0.1	110	5	140	0.1
21	Sohna Road(GPTL)-Kadarpur	2	112	6	150	0.1	112	6	140	0.1
O. NTPC										
1	Dadri(NT)-Loni Road/ Harsh Vihar	1	110	5	140	0.1	110	5	140	0.1
2	Dadri(NT)-Loni Road/ Harsh Vihar	2	112	6	140	0.1	112	6	140	0.1
P. NRSS36										

1	Babai(RS)-Bhiwani(PG)	1	110	5	150	0.1	110	5	150	0.1
2	Babai(RS)-Bhiwani(PG)	2	112	6	150	0.1	112	6	150	0.1
3	Babai(RS)-Neemrana(PG)	1	110	5	150	0.1	110	5	150	0.1
4	Babai(RS)-Sikar(PG)	1	112	6	150	0.1	112	6	150	0.1
Q. NRSSXXXI(B) (Sekura Energy)										
1	Amritsar-Malerkotla	1	110	5	150	0.1	110	5	150	0.1
2	Amritsar-Malerkotla	2	112	6	150	0.1	112	6	150	0.1
3	Kurukshetra-Malerkotla	1	110	5	150	0.1	110	5	150	0.1
4	Kurukshetra-Malerkotla	2	112	6	150	0.1	112	6	150	0.1
R. RENEW Power Limited										
1	Bikaner(PG) - Bikaner (ReNew)	1	110	5	150	0.1	110	5	150	0.1
1	Renew SuryaRavi SL_BKN_PG-Bikaner RENEW Solar	1	110	5	150	0.1	110	5	150	0.1
S. Azure										
1	Bikaner(PG)-Azure43 PSS	1	110	5	150	0.1	110	5	150	0.1
2	Azure43 PSS-Azure43 RSS	1	110	5	150	0.1	110	5	150	0.1
T. AEPL										
1	Bikaner(PG)-Avada	1	110	5	150	0.1	110	5	150	0.1
U. AYANA										
1	Ayana-ARP3PL	1	110	5	150	0.1	110	5	150	0.1
2	Bikaner(PG)-Ayana	1	110	5	150	0.1	110	5	150	0.1
V. ADANI GREEN										
1	AGE25L-Bhadla2(PG)	1	110	5	150	0.1	110	5	150	0.1
2	AREPRL-Fatehgarh Pooling	1	110	5	150	0.1	110	5	150	0.1
3	AREPRL-Fatehgarh Pooling	2	112	6	150	0.1	112	6	150	0.1
W. NTPC GREEN										
1	Bhadla_2 (PG)-Kolayat Solar NTPC_1	1	110	5	150	0.1	110	5	150	0.1
2	Kolayat Solar NTPC_1 Kolayat Solar NTPC_2	1	110	5	150	0.1	110	5	150	0.1

X. ACME										
1	Fatehgarh Pooling(FBTL)-ACME Deoghar	1	110	5	150	0.1	110	5	150	0.1

Review of df/dt(ROCOF) operation and uniformity of df/dt protection setting in Northern Region

Punjab Demand: 425 MW load loss



df/dt operation in Punjab on 25.04.2025

132KV MOGA (PS) S/S:				
1.	132 KV MOGA-MOGA INETRLINK CKT	21:26	22:02	Due to df/dt relay operation
2.	132 KV MOGA-DHALEKE CKT		22:03	
220KV DERABASSI S/S:				
1.	66 kV Mubarakpur Ckt 1&2	21:27	21:35	Due to df/dt relay operation
2.	66 kV Rama petro		21:40	
3.	66 kV Lalru Ckt 1&2		21:45	
220KV BANUR S/S:				
1.	66 kv Bhubat ckt 1	21:27	21:33	Due to df/dt relay operation
2.	66 kv Ramgarh Bhudda and Bhubat Ckt.2			
220 KV BADSHAHPUR S/S:				
1.	66 KV Chitti	21:27	21:32	Due to df/dt relay operation
2.	66 KV Kot Sadiq			
220kV NURMAHAL S/S:				
1.	66kV Samrai CKT-3	21:26	21:31	Due to df/dt relay operation
2.	66kV Talwan CKT-4			
3.	66kV Shamshabad CKT-2			

Review of df/dt(ROCOF) operation and uniformity of df/dt protection setting in Northern Region

Summary of df/dt operation during May-June 2024

Date	Time	Load throw-off quantum (State-wise)						Total Load throw-off quantum	Remarks
		Delhi	Punjab	Haryana	Rajasthan	UP	Uttarakhand		
25-05-2024	12:46	82	1375	0	140	172	0	1769	as reported by SLDCs
27-05-2024	14:36	280	0	540	0	140	100	1060	as per SCADA data at NRLDC, SLDCs have not confirmed yet
01-06-2024	13:26	0	440	0	0	100	0	540	as per SCADA data at NRLDC, SLDC-Punjab have confirmed
01-06-2024	13:44	270	580	120	0	220	0	1190	SLDC-Punjab & UP have confirmed
03-06-2024	05:28	0	300	0	0	0	0	300	as reported by SLDC-Punjab
04-06-2024	12:35	0	400	0	0	0	0	400	as per SCADA data at NRLDC, SLDC-Punjab have confirmed
09-06-2024	11:21	0	435	0	0	0	0	435	as per SCADA data at NRLDC, SLDC-Punjab have not confirmed yet
19-06-2024	12:42	0	723	0	107	220	0	1050	as reported by SLDCs
23-06-2024	09:11	0	880	0	0	0	0	0	as reported by SLDC-Punjab

Review of df/dt(ROCOF) operation and uniformity of df/dt protection setting in Northern Region

	df/dt settings (average cycles considered, time delay etc)	Maximum quantum of relief (MW)		
Name of State		**Stage-1**	**Stage-2**	**Stage-3**
Haryana	HVPNL Dhulkote: 0.13sec (time delay) HVPNL Karnal: 0.12sec (time delay) HVPNL Rohtak: 0.16sec (time delay)	187.11	415.2	266.85
Rajasthan	Average cycle: 8 (10 at Bhinmal & Bhilwara and 25 at 132kV Bherunda kalan) Time delay:0 Holding time: 5 sec	507	647	289
UP		691	198	753.06

State wise quantum of load relief under different stages of UFR

State/UT	Stage-1 49.4 Hz (5%)	Stage-2 49.2 Hz (6%)	Stage-3 49.0 Hz (7%)	Stage-4 48.8 Hz (7%)	Total
	Stage-1 Relief	Stage-2 Relief	Stage-3 Relief	Stage-4 Relief	
Chandigarh	15.850	19.020	22.190	22.190	**79.248**
Delhi	299.338	359.205	419.073	419.073	**1496.690**
Haryana	526.332	631.599	736.865	736.865	**2631.661**
Himachal Pradesh	97.246	116.695	136.145	136.145	**486.231**
UT J&K & Ladakh	145.406	174.487	203.569	203.569	**727.031**
Punjab	601.638	721.966	842.293	842.293	**3008.190**
Rajasthan	811.056	973.268	1135.479	1135.479	**4055.282**
Uttar Pradesh	1191.769	1430.122	1668.476	1668.476	**5958.843**
Uttarakhand	113.069	135.682	158.296	158.296	**565.343**
Total	**3801.704**	**4562.045**	**5322.386**	**5322.386**	**19008.52**