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

दिनांक: 14.02.2025

सेवा में : संरक्षण उप-समिति के सदस्य (सूची के अनुसार) ।
To: Members of Protection Sub-Committee (As per mail list)

विषय: संरक्षण उप-समिति की 57 वीं बैठक की कार्यसूची |
Subject: Agenda for 57th Protection Sub-Committee Meeting.

संरक्षण उप-समिति की **57 वीं बैठक, दिनांक 20.02.2025 को 11:00 बजे** से एनआरपीसी सचिवालय, कटवारिया सराय, नई दिल्ली में **हाइब्रिड माध्यम** से 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। **बैठक एनआरपीसी सचिवालय, कटवारिया सराय, नई दिल्ली के प्रथम तल सम्मेलन कक्ष में आयोजित की जाएगी। कृपया बैठक मे उपस्थिति सुनिश्चित करें । बैठक में नीचे दिए गए वीसी लिंक से भी जुड़ा जा सकता है:**

https://nrpc.webex.com/nrpc/j.php?MTID=mf4cadf380e7bc1a68f109f3143565c0c

The **57th meeting** of Protection Sub-Committee is scheduled to be held on **20.02.2025** at **11:00 Hrs** at NRPC Secretariat, Katwaria Sarai, New Delhi **via Hybrid mode**. 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. **The meeting shall be held in the first floor Conference Hall of NRPC Secretariat, Katwaria Sarai, New Delhi.** Kindly make it convenient to attend the same. **Meeting may also be joined by VC Link as below:**
https://nrpc.webex.com/nrpc/j.php?MTID=mf4cadf380e7bc1a68f109f3143565c0c

Signed by Reeturaj Pandey
Date: 14-02-2025 17:58:04

डी. के. मीणा
निदेशक (संरक्षण)

Contents

Agenda for
57th Meeting of Protection Sub-Committee (PSC) of
Northern Regional Power Committee

Date and time of meeting	***:***	***20.02.2025 11.00 Hrs.***
Venue	***:***	***NRPC Secretariat, Katwaria Sarai, New Delhi (Hybrid)***

Part-A: Agenda by NRPC Secretariat

A.1. Confirmation of minutes of 56th meeting of Protection Sub-Committee

A.1.1 56th PSC meeting was held on 20.01.2025. Minutes of the meeting were issued vide letter dtd. 12.02.2025. No comment has been received till the date.

Decision required from Forum:

Forum may approve the minutes of meeting.

A.2. Status of action taken on decisions of 56th Protection Sub-Committee meeting (agenda by NRPC Secretariat)

A.2.1 Status of action taken on the decisions of 56th 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 Jan-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 earlier PSC meeting, it was decided that each utility shall submit the performance **indices of previous month by 7th day of next month.**

A.3.3 Accordingly, the status of the indices reported for the month of **Jan-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 Jan-2025	As mention in Annexure-A.II.
Utilities have submitted date for some plants but not all.	**NTPC (Singrauli)** **NPCIL (RAPS-A)** **UPRVUNL (Harduaganj)** **HPPCL (Kashang, Sainj)** **HPSEBL (Shimla Circle)**
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. Annual protection audit plan for FY 2024-25 (agenda by NRPC Secretariat)

A.4.1 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.4.2 Starting from 48th PSC and in every PSC meetings, all utilities were requested to submit the annual protection audit plan.

A.4.3 In view of above, annual audit plans submitted by utilities have been compiled (enclosed as **Annexure- A.IV**).

Decision required from Forum:

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

A.5. Annual protection audit plan for FY 2025-26 (agenda by NRPC Secretariat)

A.5.1 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.5.2 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.5.3 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.6. Third-party protection audit plan (agenda by NRPC Secretariat)

A.6.1 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.6.2 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 regularly.

A.7. Discussion on audit reports submitted by utilities and compliance of recommendations of protection audit (agenda by NRPC Secretariat)

A.7.1 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.7.2 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.7.3 Following utilities have submitted the internal audit report (FY 2024-25) based on the audit done at their substations:

S.N.	Utility	Stations

1	RVPN	30 stations 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 Note: Pachpadra not signed
2	UPRVUN	Harduaganj, Anpara-B, C, D
3	Other Genco	Vishnuprayag, Lalitpur
4	WUPPTCL	Greater Noida

A.7.4 Following utilities have submitted reports of 3rd Party audit:

S.N.	Utility	Stations
1	PTCUL	1. 400kV S/s Rishikesh 2. 400 kV S/s Kashipur 3. 220kV S/s Chamba 4. 220kV S/s Rishikesh 5. 220kV S/s Roorkee 6. 220kV S/s Haridwar (SIDCUL) 7. 220kV S/s Jhajra. 8. 220 kV S/s Pantnagar. 9. 220 kV S/s Haldwani. 10.220kV S/s Mahuakheraganj
2	JSW	KWHEP
3	NPCIL	Narora
4	RPSCL	Rosa 220/400kV SWITCHYARD

A.7.5 Compliance/ action plan on recommendation of audit has been submitted by following:

S.N.	Utility	Stations
1	NPCIL	NAPS
2	RPSCL	Rosa Plant
3	UJVN	Dharasu

A.7.6 **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.8. Tripping of Type-3 filters (5/27) on overload protections at HVDC Rihand & Dadri terminals (agenda by POWERGRID, NR-3)

A.8.1 HVDC Rihand and Dadri are experiencing tripping of Type-3 filters (Z13, Z23, & Z33) due to overload protections. There are three Type-3 Filter Banks, named Z13, Z23, and Z33, installed at each terminal to prevent the 5th and 27th order harmonics.

A.8.2 It has been observed that whenever any of the Type-3 Filter Banks (5/27) are charged either from RPC or manually, they trip on resistive or reactive overload protections, all three Type-3 filter banks (Z13, Z23, and Z33) are currently isolated at both HVDC Rihand and Dadri terminals.

A.8.3 The analysis concluded that the converter-generated harmonics are within the design limits, but external 5th harmonics present in the Grid are causing the Type-3 Filters to trip on Resistor and Reactor Overload Protection. Details are attached as **Annexure-A.VII.**

A.8.4 It is proposed to review the 5th harmonics in the Grid and resolve the issue.

Decision required from Forum:

Members may deliberate on issue and suggest solution.

A.9. Un-necessary Trippings on 220KV ANTA-LALSOT Line (agenda by RVPN)

A.9.1 220 kV GSS Lalsot has two sources of supply, (i) 220 kV Anta line (NTPC) and (ii) 220kV Dausa line (RVPN), out of which, CB of 220 kV Dausa line normally remains open at Dausa end. Practically, 220 kV Anta line is generally the only source of supply to 220 kV Lalsot GSS.

A.9.2 Abnormal trippings have occurred in recent past on 220 kV Anta- Lalsot line at Anta end. Some of these interruptions are detailed below:-

(i) On dated 09.08.2024 a fault occurred on 132 kV Main Bus at 220 kV GSS Lalsot and 220 kV Anta- Lalsot line tripped from Anta end. Although, both 220 kV transformers tripped at 220 kV GSS Lalsot and the fault was cleared, there should be no tripping on 220 kV Anta Lalsot line.

(ii) On dated 23.08.2024 and 05.09.2024 Auto reclose operated at Lalsot end but 220 kV Anta- Lalsot line remained tripped from Anta end.

(iii) On dated 10.10.2024 a CT of 132 kV feeder burst at 220 kV GSS Lalsot and Bus

Bar protection operated at Anta end.

(iv) On dated 01.11.2024 and 14.01.2025 a fault occurred on 220 kV Dausa line, which is charged from 220 kV Lalsot and CB open at Dausa end. The CB at 220kV GSS Lalsot cleared the fault in Z1 time but simultaneously 220 kV Lalsot- Anta line also tripped from Anta end.

(v) On dated 17.01.2025 a fault occurred on 132kV feeder and 220 kV Lalsot- Anta line also tripped from Anta end with this fault.

A.9.3 RVPN engineers are regularly contacting the engineers at Anta (NTPC) and it was appraised by Anta (NTPC) engineers that Bus Bar protection PU of 220 kV Anta- Lalsot line is defective and the supply to 220 kV GSS is given through transfer bus. This defective PU causes the operation of Bus Bar protection with external faults of low intensity.

A.9.4 Even after pursuance several times **NTPC is neither blocking the defective PU nor revising the settings to avoid such unnecessary interruptions.**

Decision required from Forum:

NTPC may submit their issues to forum. Accordingly, members may deliberate on issue and suggest solution.

A.10. Bus bar protection scheme and provision of event logger at J&K sub-stations (agenda by NRPC Secretariat)

A.10.1 Issue was discussed in meeting on 23.12.2024 chaired by Member (Power System), CEA in relation to FTC of 1x25 MVAR, 220 kV bus reactor at 220/66 kV Alusteng S/s of JKPTCL. (MoM attached as **Annexure-A.VIII**)

A.10.2 In the meeting, it was decided that the issue of bus bar protection scheme and provision of event logger at J&K sub-stations to be taken up in TCC/OCC/PCC meetings of NRPC.

Decision required from Forum:

JKPTCL may submit their issues to forum. Accordingly, members may deliberate on issue and suggest solution.

A.11. Review of Distance Protection requirement Philosophy for Renewable plants having one evacuation line (agenda by Adani Green Energy Limited)

A.11.1 The agenda was discussed in the 1st RE Sub-Committee meeting held on 24.10.2024 wherein all RE members were requested to send their comment on the proposal of AGEL. However, no comments have been received as of now.

A.11.2 The agenda was again in 54th PSC meeting on 25.11.2024 and it was decided to discuss the agenda after receiving the inputs of RE members on the proposals of AGEL. However, no comments have been received as of now.

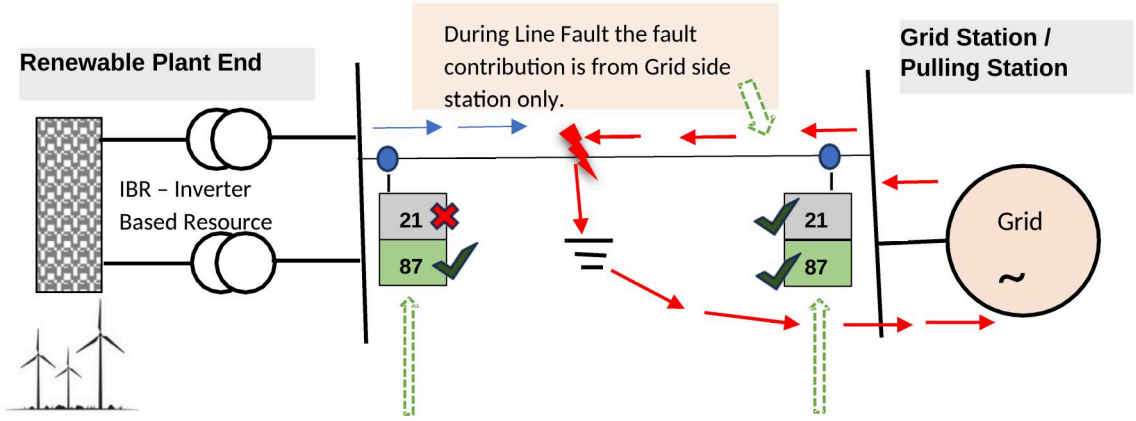
A.11.3 AGEL has mentioned that for Renewable plants with a single evacuation line, the requirement of Line Distance Protection at Renewable Plant needs to be reviewed due to following reasons:

1. During the line fault the contribution from Renewable plant is negligible, the fault is fed from grid side source or connected station end only, as being a Radial feeder.
2. Due to (1) above, the operation of distance protection employed at Renewable plant cannot detect and interpret the fault impedance as compared to opposite end i.e. Grid source and there is no operation of distance protection at Renewable Plant end. However, operation of the distance protection may happen due to voltage dip and coincidental measurement of impedance within the Zone with normal cur-

rent.

3. The Line Differential Protection employed at both ends detect the fault on current differential principle and assures the protection as required.
4. The following conceptual schematic indicates the operation of protection for fault on the single line connected with renewable plant with Grid station:

Conceptual Schematic indicating the Non detection of Fault by Distance Protection at Renewable plant end having single evacuation Line



The Distance Protection at Grid end station is assured however the same at Renewable Station can not detect the fault as distance protection.

The Line Differential Protection at both end is assured to operate due to difference of current as per the setting.

Fault Current fed from Grid side end

Normal Current from Renewable plant end

A.11.4 Looking to the above phenomena, to avoid complexity of scheme and undesired operations at Renewable Plant end following is suggested:

- The Line Distance Protection (Impedance based measurement) at Renewable plant end is not required as to be considered as Radial Feeder.
- For 220 kV and above lines, Redundant i.e. two Main Protections (main-1 and Main-2) Current based Line Differential Protection with Back up Earth fault protection is required.
- For such Lines, other schemes like interstrip signaling, Direct Trip & Auto reclosure scheme based on Differential Protection and other schemes as per Philosophy are required.
- The Distance Protection at Grid End station is to be considered as per philosophy without any change.
- The Back Up Earth fault Protection at Grid End Station should be co-ordinated with the Renewable Plant Power Transformer HV side or Main Substation Bus coupler, as the case may be.

Decision required from Forum:

RE companies may submit their concern on above proposal. Accordingly, members may deliberate on issue and suggest solution.

A.12. Review of protection setting of Thermal, Hydro, IBR based generations/HVDC and FACTS (agenda by NLDC)

A.12.1 Agenda was discussed in 54th PSC meeting wherein following was decided:

i. Forum requested all generating members to share the inputs for protection settings for conventional generators.

ii. Forum directed NLDC to seek the inputs on protection philosophy of IBR based RE generations/HVDC and FACTS from RE generators, HVDC owners, NRLDC, other RPCs & RLDCs and compile the received inputs. Accordingly, a meeting a may be called by NRPC for discussion and philosophy may be finalized.

A.12.2 NLDC has proposed that the existing HVDC operational philosophy is vendor specific. Due to proprietary nature the settings have been shared in a limited domain. So, in order of annual review of the HVDC protection control (LCC and VSC) a committee may be formed by PSC.

Decision required from Forum:

Forum may deliberate and decide.

A.13. Miscellaneous agenda by NLDC

A.13.1 NLDC has requested discussion on following issues:

A.RE complex black start: RE complex in Rajasthan is a major power injection hub in NR to all important load centers. During high solar period the availability of RE complex is highly important. Hence, PSC Sub Committee may advise concerned SLDC and RLDC reliability to be assigned task for finding the suitable cranking paths and carrying out black start process of RE complex.

B. PSS operation and settings: During inter area oscillations on 08.12.2024 power swings observed in almost all generators in Northern Region. This would cause pole slip and rotor damage. PSC sub-committee is requested to review the PSS operation and settings in all generators in region.

Decision required from Forum:

Forum may deliberate and decide.

A.14. Proposed settings of 765 kv lines in Northern Region by committee constituted to review the Overvoltage Protection settings of 400kV and 765kV transmission lines in Northern Region (agenda by NRPC Secretariat)

A.14.1 In 52nd Protection Sub-Committee (PSC) meeting, held on 20.09.2024, it was decided to constitute a committee to review the Overvoltage Protection settings of 400kV and 765kV transmission lines in Northern Region.

A.14.2 The committee has discussed the settings in 4 meetings held virtually. Settings has been finalized for 400 kv and 765 kv level. Settings of 400 kv may be found at below link:

https://docs.google.com/spreadsheets/d/1j5uY4m2W26X-1mJ9IQRxQyQU1Y7yr09uQHt6Nr5JZ1Y/edit?usp=sharing

A.14.3 Settings of 765 kV may be found at **Annexure-A.IX.**

A.14.4 As, the above committee has no members from some states, therefore, settings may be examined for any issue.

Decision required from Forum:

Forum may deliberate and decide.

A.15. Training on Electrical Protection of Power System for officials of NRPC Constituents (agenda by NRPC Secretariat)

A.15.1 The agenda was discussed in 52nd TCC & 77th NRPC meeting held during 27-28 Dec 2024, wherein forum approved for training on electrical protection of power system.

A.15.2 Accordingly, NRPC Secretariat is planning a 5-day residential training program for approx. 130 nos of officers covering following topic:

A. Brief theory on protection of following topic:

i. Protection of Transmission Lines and Cables including compensated lines

ii. Generator and Generator Transformer Protection including Protection of RE plants (Solar/Wind/Hydro)

iii. Protection of Power Transformers & Shunt Reactor

iv. Protection of Busbar & Local Breaker Backup Protection

v. Protection of Facts (FSC/TCSC/SVC/STATCOM)

vi. Protection of HVDC Systems

B. Calculation of settings for above sr. no. i to vi with examples.

C. Protection Co-ordination.

D. Hands on for seeding settings in relay. Downloading of DR/EL from relay.

E. Fault analysis using DR/EL.

Decision required from Forum:

Members may suggest to design training module.

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 57th 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 January 2025 (agenda by NRLDC)

B.2.1 A total of 11 grid events occurred in the month of January 2025 of which 06 are of GD-1 category, 04 are of GI-2 Category and 01 is 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 Akal(RS) on 12th January, 2025 (As per PMU at Bhadla(PG), B-N phase to earth fault converted into Y-B-N double phase to earth fault with delayed fault clearing time of 2120ms is observed).

B.2.3 Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total 05 events out of 11 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.

B.2.5 As per IEGC clause 37.2 (c), Disturbance Recorder (DR), station Event Logger (EL), Data Acquisition System (DAS) shall be submitted within 24 hrs of the event and as per IEGC clause 37.2 (e), the user shall submit a detailed report in the case of grid disturbance or grid incidence within one (1) week of the occurrence of event to RLDC and RPC.

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

Decision required from Forum:

Members may like to discuss.

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

a) Frequent elements tripping during January 2025:

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

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-1	8	NPCIL/Raj
2	220 KV Agra(PG)-Bharatpur(RS) (PG) Ckt-1	5	PG/Raj
3	400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2	3	UP
4	400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1	3	UP
5	132 KV Dehar(BB)-Kangoo(HP) (HPPTCL) Ckt-1	3	BBMB/HP
6	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	3	NPCIL/Raj
7	220 KV Sohawal(PG)-Barabanki(UP) (UP) Ckt-1	3	PG/UP
8	400 KV Merta-Ratangarh (RS) Ckt-1	3	Raj
9	400 KV Mohanlalganj (PGYTL)-Unnao(UP) (PGYTL) Ckt-1	3	PG/UP

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 January 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 57th PSC meeting. Events involving more than one utility may be jointly

prepared and presented in forum.

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B.4 Details of tripping of Inter-Regional lines from Northern Region for Jan'25

B.4.1 A total of 5 inter-regional lines tripping occurred in the month of January 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

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 56 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. Revised version of the document is available on the NRLDC website in Document section and can be accessed at below link: https://newnr.nrldc.in/documents/Documents.

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 view of the above, concerned constituents / utility were requested to share the tentative schedule plan for conducting mock testing of SPS in their respective control area during 2024-25 in format attached as **Annexure-B.VI**. In this regard, communication has already been sent to constituents through NRLDC letter dated 01.05.2024 and continuous follow up is being done in OCC & PSC meeting since May 2024.

B.5.6 Update in this regard received from Uttarakhand, Rajasthan & UP only.

B.5.7 Members are requested to conduct the mock testing of SPS in their respective control area, share the tentative schedule of mock testing of SPS and share the report of the same.

Decision required from Forum:

Members may like to discuss.

B.6 Corrective action for healthiness of 500kV Mundra-Mahindergarh SPS

B.6.1 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.6.2 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.6.3 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.6.4 Load end details have been received from UP, Haryana, Punjab Rajasthan & Delhi. Details and communications are attached as **Annexure-B.VII.**

B.6.5 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.6.6 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.6.7 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.6.8 ADANI agreed for the same and stated that update would be given within 01 week. However, no detail received yet from ADANI.

B.6.9 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.6.10 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 February 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.6.11 Further, through mail dt 3rd February 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.6.12 ADANI agreed to take expeditious actions and to share the action plan at the earliest.

B.6.13 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.

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 in month of Jan-2025

A.Jan-2025

C.1.1 NRLDC has submitted the FTCs allowed in month of Jan-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 utilities have submitted agenda for approval of settings:

i. POWERGRID

ii. PBTSL

iii. RVPN

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

i. UPPTCL

ii. AGE24L

iii. AMP_EG4PL

iv. AMP Energy Green Four Private Limited

v. Adani Green Energy Twenty Four Limited

vi. Kolayat Solar Power Plant NTPC Limited

C.1.5 Further, HVPN has submitted settings for FTC allowed at Haryana SLDC level.

B.Dec-2024

C.1.6 Indigrid has submitted settings for FTC allowed in Dec-2024 for augmentation Scheme at 400/220 kV Patran (GIS) Substation to Patran Transmission Company Limited.

C.1.7 Settings are available at NRPC website: http://164.100.60.165/meetings/prsub.html

C.1.8 It is 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.

*****

Members of Protection Sub-Committee (FY 24-25)

S. No.	NRPC Member Organization	Designation	Email-ID
1	Member (GO&D), CEA	Director, NPC Division	skdotancea@nic.in
2	Member (PS), CEA	Chief Engineer, PSPA-I Division	i.sharan@nic.in
3	CTUIL	Sr.GM	schakraborty@powergrid.in
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5	NLDC*	Executive Director	scsaxena@grid-india.in
6	NRLDC	CGM(SO)	somara.lakra@grid-india.in
7	NTPC	GM(OS-NR)	dmandal@ntpc.co.in
8	BBMB	Director (P&C)	dirpc@bbmb.nic.in
9	THDC*	Chief General Manager (EM-Design)	rrsemwal@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	UHBVN	Managing Director	md@uhbvn.org.in
35	Jodhpur Vidyut Vitran Nigam Ltd.	Managing Director	MD.JDVVNL@RAJASTHAN.GOV.IN
36	Paschimanchal Vidyut Vitaran Nigam Ltd.	Managing Director	md@pvvnl.org
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@relianceada.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	TATA POWER RENEWABLE*	Zonal Head, NR	dhmahabale@tatapower.com
51	UT of J&K*	Chief Engineer, JKPCL	cejkpcl2@gmail.com
52	UT of Ladakh*	Chief Engineer, LPDD	cepdladakh@gmail.com
53	UT of Chandigarh	Executive Engineer	elop2-chd@nic.in
54	Noida Power Company Limited	Head – Power Purchase	ssrivastava@noidapower.com
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56	NTPC Vidyut Vyapar Nigam Ltd.	CEO	ceonvvn@ntpc.co.in
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;
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13	ABC Renewable Pvt. Ltd	dasopa@evrenenergy.com; achaturvedi@evrenenergy.com;
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15	ACME Chittorgarh Solar Energy Pvt Ltd	sandeeptak@ayanapower.com; yogesh@ayanapower.com;
16	Adani Hybrid Energy Jaisalmer One Ltd.	
17	Adani Hybrid Energy Jaisalmer Two Ltd.	
18	Adani Hybrid Energy Jaisalmer Three Ltd.	
19	Adani Hybrid Energy Jaisalmer Four Ltd.	
20	Adani Renewable Energy (RJ) limited Rawara	
21	Adani Solar Energy Jaisalmer One Pvt. Ltd._450MW (Solar)	
22	Adani Solar Enegry Four Private Limited	
23	Adani Solar Energy Jaisalmer Two Private Limited	
24	Adani Solar Energy Jaisalmer Two Private Limited Project Two	kailash.nagora@adani.com; sanjay.bhatt@adani.com;
25	SB ENERGY FOUR PRIVATE LIMTED, Bhadla	
26	SB Energy Six Private Limited, Bhadla	
27	Adani Solar Enegry Jodhpur Two Limited, Rawara	
28	Adept Renewable Technologies Pvt. Ltd.	
29	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)	
30	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)	
31	Adani Green Energy 19 Limited	

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

74	Rising Sun Energy-K Pvt. Ltd.	tushar.gahlot@risingsunenergy.in;
75	Limited	prateek.rai@serenticaglobal.com;
76	Tata Power Green Energy Ltd. (TPGEL)	vinod.kumar@tatapower.com;
77	Tata Power Renewable Energy Ltd. (TPREL)	dhmahabale@tatapower.com; imran.khan@tatapower.com;
78	Thar Surya Pvt. Ltd.	kiran.tidke@enel.com; mario.dematteis@enel.com;
79	TP Surya Pvt. Ltd.	sivanarayana@tatapower.com; sagar.potdar@tatapower.com;
80	Banderwala Solar Plant TP Surya Ltd.	arun.sahoo@tatapower.com;
81	PRIVATE LIMITED	kak@evrenenergy.com;
82	Transition Green Energy Private Limited	
83	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		

Status of action taken on decisions of 56th PSC

S.N.	Agenda No.	Agenda	Decision of 55th 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)	i.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. ii.All utilities (having elements of 220 kV and above) including RE Generators shall be called in PSC meetings so that discussion can be done on indices, protection audit and compliance etc. Meeting may be kept in hybrid mode (physical as well as Video-Conferencing).	i. Status of reporting of indices has been taken as an agenda. ii. All utilities (having elements of 220 kV and above) including RE Generators has been called in meeting.
2	A5	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.	Some utilities have submitted audit report. Same has been taken as agenda.

3	A6	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	B.1	Status of remedial actions recommended during previous PSC meetings	Forum requested members to take necessary preventive measures to avoid such grid incidents / disturbances in future and report actions taken to RPC/RLDC.	Status has been taken as agenda.
5	B.6	Corrective action for healthiness of 500kV Mundra-Mahindergarh SPS (agenda by NRLDC)	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	Vide mail dt 3rd February 2025, ADANI has informed that they have 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

			requirement will be completed by the end February 2025. Thereafter, after financial approval, rectification of issues will be done.	COMTEL shall be visiting respective stations as per the schedule.

Annexure-A.II

Status of perfomance indices report of Jan 2025 (Last date of submission 07.02.2025)							
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	05.02.2025	NR-1	No	NA
			Yes	07.02.2025	NR-2	Yes	NA
			Yes	12.02.2025	NR-3	No	NA
2	NTPC	Central Generating Company	Yes	06.02.2025	Anta	No	NA
			Yes	07.02.2025	Auriya		
			Yes	06.02.2025	Dadri	No	NA
			Yes	06.02.2025	Koldam		
			Yes	08.02.2025	Rihand		
					Singrauli		
			Yes	07.02.2025	Unchahar		
			Yes	06.02.2025	Tanda	No	NA
3	BBMB						
4	THDC		Yes	04.02.2025		No	NA
5	SJVN		Yes	07.02.2025	RHPS	Yes	Yes
			Yes	07.02.2025	NJHPS	No	NA
6	NHPC		Yes	04.02.2025		Yes	Yes
7	NPCIL				RAPS-A		
			Yes	10.02.2025	RAPS-B	NO	NA
			Yes	07.02.2025	RAPS-C(5&6)	NO	NA
			Yes	04.02.2025	NAPS-1&2	NO	NA
8	DTL	State Transmission Utility	Yes	12.02.2025		Yes	Yes
9	HVPNL						
10	RRVPNL		Yes	13.02.2025		Yes	Yes
11	UPPTCL		Yes	03.02.2025	Meerut Circle	Yes	Yes
			Yes	04.02.2025	Agra Circle	Yes	Yes
			Yes	03.02.2025	Jhansi Circle	No	NA
			Yes	04.02.2025	Prayagraj Circle	No	NA
			Yes	04.02.2025	Gorakhpur Circle	Yes	Yes
			Yes	04.02.2025	Lucknow Circle	Yes	Yes
12	PTCUL		Yes	06.02.2025		No	NA
13	PSTCL						
14	HPPTCL						
15	IPGCL	State Generating Company	Yes	04.02.2025	PPS-I	No	NA
			Yes	04.02.2025	PPS-III, Bawana	No	NA
16	HPGCL						
17	RRVUNL						
18	UPRVUNL		Yes	07.02.2025	Parichha B (220 kV)	No	NA
			Yes	06.02.2025	Parichha C (400 kV)	Yes	Yes
			Yes	04.02.2025	DTPS Anpara	No	NA
			Yes	07.02.2025	Obra B	No	NA
			Yes	07.02.2025	Obra C	No	NA
					Harduaganj 400 kV		
			Yes	07.02.2025	Ghatampur 765 kV	No	NA
			Yes	07.02.2025	Anpara-A&B	No	NA
					Jawaharpur		
19	UJVNL		YES	03.02.2025	Dharasu	No	NA
			YES	03.02.2025	Tiloth	No	NA
			YES	06.02.2025	Khodri	No	NA
			YES	06.02.2025	Chibro	No	NA
			YES	06.02.2025	Vyasi	No	NA
20	HPPCL				Kashang HEP		
			Yes	07.02.2025	Sawara Kuddu	No	NA
					Sainj		
21	PSPCL	State Generating Company & State owned Distribution Company	Yes	01.02.2025	RSD	No	NA
			Yes	10.02.2025	GGSTPS, Rupnagar	No	NA
			Yes	10.02.2025	GHSTPS, Lehra Mohabbat	No	NA
22	HPSEBL	Distribution company having Transmission connectivity ownership	Yes	07.02.2025	Hamirpur Circle	No	NA
			Yes	13.02.2025	Shimla Circle	No	NA
23	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Yes	07.02.2025		No	NA
24	Aravali Power Company Pvt. Ltd						
25	Apraava Energy Private Limited						
26	Talwandi Sabo Power Ltd.		YES	11.02.2025		No	NA
27	Nabha Power Limited		YES	03.02.2025		No	NA
28	MEIL Anpara Energy Ltd (Anpara-C)		YES	04.02.2025		No	NA
29	Rosa Power Supply Company Ltd		YES	07.02.2025		No	NA
30	Lalitpur Power Generation Company Ltd		YES	03.02.2025		Yes	Yes
31	MEJA Urja Nigam Ltd.		YES	10.02.2025		No	NA
32	Adani Power Rajasthan Limited						

Status of perfomance indices report of Jan 2025 (Last date of submission 07.02.2025)							
S. No.	**Member Utility**		**Received Status (Yes/No)**	**Vide mail dated**	**Remarks**	**Indices less than 1 (Yes/No)**	**Reason submitted and corrective action taken**
33	JSW Energy Ltd. (KWHEP)		Yes	04.02.2025		No	NA
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	Tata Power Renewable Energy Ltd.	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)					
40	UT of J&K	UT of Northern Region					
41	UT of Ladakh						
42	UT of Chandigarh						
	Non-Member Transmission Utilities						
43	INDIGRID		Yes	07.02.2025		No	NA
44	POWERLINK						
45	ADHPL						
46	NRSSXXXI(B)'s Northern Region Transmission System	Sekura Energy Limited					
47	NRSSXXXVI's Northern Region Transmission System	Tata Power					
48	Adani Transmission Limited	AESL	Yes	04.02.2025		No	NA
49	Bikaner Khetri Transmission Limited		Yes	07.02.2025		No	NA
50	Fatehgarh Bhadla Transmission Limited		Yes	07.02.2025		No	NA
	State Utilities						
51	Vishnuprayag Hydro Electric Plant (J.P.)	Uttar Pradesh	YES	07.02.2025		No	NA
52	Alaknanda Hydro Electric Plant (GVK)		YES	03.02.2025		No	NA
53	Khara Power House (Khara)		YES	07.02.2025		No	NA
54	WUPPTCL		YES	03.02.2025		No	NA
55	SEUPPTCL		YES	07.02.2025		No	NA
56	Obra-C Badaun Transmission Ltd						
	RE Utilities						
57	ABC Renewable Pvt. Ltd						
	ACME Heeragarh powertech Pvt. Ltd						
	ACME Chittorgarh Solar Energy Pvt Ltd						
	Adani Hybrid Energy Jaisalmer One Ltd.						
	Adani Hybrid Energy Jaisalmer Two Ltd.						
	Adani Hybrid Energy Jaisalmer Three Ltd.						
	Adani Hybrid Energy Jaisalmer Four Ltd.						
	Adani Renewable Energy (RJ) limited Rawara						
	Adani Solar Energy Jaisalmer One Pvt. Ltd._450MW (Solar)						
	Adani Solar Enegry Four Private Limited						
	Adani Solar Energy Jaisalmer Two Private Limited						
	Adani Solar Energy Jaisalmer Two Private Limited						
	SB ENERGY FOUR PRIVATE LIMTED, Bhadla						
	SB Energy Six Private Limited, Bhadla						
	Adani Solar Enegry Jodhpur Two Limited, Rawara						
	Adept Renewable Technologies Pvt. Ltd.						
	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)						
	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)						
	Adani Green Energy 19 Limited						
	Altra Xergi Pvt. Ltd.						
	AMP Energy Green Five Pvt. Ltd.						
	AMP Energy Green Six Pvt. Ltd.						
	Amplus Ages Private Limited						
	Avaada RJHN_240MW						
	Avaada sunce energy Pvt limited						
	Avaada Sunrays Pvt. Ltd.						
	Avaada Sustainable RJ Pvt. Ltd.						
	Ayana Renewable Power Three Private Limited						
	Ayaana Renewable Power One Pvt. Ltd.						
	Azure Power Forty One Pvt limited						
	Azure Power Forty Three Pvt. Ltd._RSS						
	Azure Maple Pvt. Ltd.						
	AZURE POWER INDIA Pvt. Ltd., Bhadla						

Status of perfomance indices report of Jan 2025 (Last date of submission 07.02.2025)							
S. No.	**Member Utility**		**Received Status (Yes/No)**	**Vide mail dated**	**Remarks**	**Indices less than 1 (Yes/No)**	**Reason submitted and corrective action taken**
	Azure Power Thirty Four Pvt. Ltd.						
	Clean Solar Power (Jodhpur) Pvt. Ltd.						
	Clean Solar Power (Bhadla) Pvt. Ltd						
	Eden Renewable Cite Private Limited						
	Grian Energy private limited						
	Mahindra Renewable Private Limited						
	Mega Surya Urja Pvt. Ltd. (MSUPL)						
	AURAIYA Solar						
	DADRI SOLAR						
	SINGRAULI SOLAR						
	Anta Solar						
	Unchahar Solar						
	NTPC Devikot Solar plant_240MW						
	NTPC Kolayat_400kV						
	Nedan Solar NTPC						
	NTPC Nokhra_300MW						
	One Volt energy Pvt. Ltd.						
	ReNew Solar Energy (Jharkhand Three) Private Limited						
	RENEW SOLAR POWER Pvt. Ltd. Bhadla						
	ReNew Solar Urja Private Limited						
	Renew Sun Bright Pvt. Ltd. (RSBPL)						
	Renew Sun Waves Private Limited (RSEJ4L)						
	Renew Surya Partap Pvt. Ltd.						
	Renew Surya Ravi Pvt. Ltd.						
	Renew Surya Roshni Pvt. Ltd.						
	Renew Surya Vihan Pvt. Ltd.						
	Renew Surya Ayaan Pvt. Ltd.						
	RENEW SOLAR POWER Pvt. Ltd. Bikaner						
	Rising Sun Energy-K Pvt. Ltd.						
	Serentica Renewables India 4 Private Limited						
	Tata Power Green Energy Ltd. (TPGEL)						
	Tata Power Renewable Energy Ltd. (TPREL)						
	Thar Surya Pvt. Ltd.						
	TP Surya Pvt. Ltd.						
	Banderwala Solar Plant TP Surya Ltd.						
	TRANSITION ENERGY SERVICES PRIVATE LIMITED						
	Transition Green Energy Private Limited						
	Transition Sustainable Energy Services Private Limited						

Annexure-A.III

PROTECTION PERFORMANCES INDICES POWERGRID NR2

ELEMENT NAME	OUTAGE	RESTORATION	category code	Fault details	Type of tripping	Remarks
800KV KISHENPUR-MOGA-II	1/30/2025 11:52	1/30/2025 12:12	OMST	Line tripped during online reactification of DC earth fault at Kishenpur Substation.	Nu is the number of unwanted operations,	
DEHAR 315 MVA ICT-I	1/10/2025 9:15	1/10/2025 11:19	OMST	ICT tripped on operation of differential protection due to external flashover in 33kV bushing caused by Monkey.	Nu is the number of unwanted operations,	
220KV WAGOORA-KISHANGANGA-II	1/13/2025 21:36	1/14/2025 0:54	SBBU	Line remains charged from Wagoora(PG) but tripped from NHPC Kishenganga due to maloperation of BB protection at NHPC Kishenganga. Following documents has been attached for reference: 1. Voltage graph from Wagoora (PG) showing line remains charged. 2. DR from Kishenganga (NHPC) end showing maloperation of busbar relay (87B). 3. Mail from Kishenganga (NHPC) indicating maloperation of Bus Bar protection	Nc is the number of correct operations at internal power system faults	220KV BB protection maloperation at NHPC Kishenganga
400KV KISHENPUR-SAMBA-II	1/23/2025 12:44	1/23/2025 13:04	SPLT	Line tripped from Kishenpur SS during CSD testing.	Nu is the number of unwanted operations,	
220KV BAIRASIUL-PONG	1/16/2025 2:02	1/16/2025 8:25	SRMU	Line tripped from Bairasuil(NHPC) due to maloperation of Overvoltage protection at NHPC Bairasuil. Following documents has been attached for reference: 1.Tipping report from NHPC Bairasuil 2.DR from Bairasiul (NHPC) end showing CB open 2.Tripping report	Nc is the number of correct operations at internal power system faults	O/V Protction maloperation at NHPC Bairasuil
220KV HAMIRPUR-NEHRIAN (HPSEB)-I	1/25/2025 20:11	1/25/2025 21:02	SRMU	Line Auto-reclosed on R-N fault from Hamirpur(PG) but tripped from Nehrian(HPSEB) due to Auto-reclose Relay maloperation at Nehrian(HPSEB). Bay at Nehrain (HPSEB) is owned and maintained by Nehrian (HPSEB). FLR Hamirpur (AFAS): R-N fault ,FL= 7.149 km,8.96 kA. Following Documents attached. 1. DR from Hamirpur(PG) showing line successful Autoreclose 2. Mail from HPSEB regarding tripping at their end. 2. Voltage graph at Hamirpur(PG)	Nc is the number of correct operations at internal power system faults	A/R Scheme maloperation at HPPTCL Nehrian

	Total tripping including LNCC & successful autoreclosures	21
NC	Nc is the number of correct operations at internal power system faults	18
NF	Nf is the number of failures to operate at internal power system faults,	0
NU	Nu is the number of unwanted operations,	3
NI	Ni is the number of incorrect operations and is the sum of Nf and Nu	3
	The Dependability Index defined as $D = Nc/(Nc+Nf)$	100.00%
	The Security Index defined as $S = Nc/(Nc+Nu)$	85.71%
	The Reliability Index defined as $R = Nc/(Nc+Ni)$	85.71%

Protection Performance Indices of Rampur HPS

Tripping of 80 MVAR Bus Reactor of Rampur HPS on 20.01.2025.

Number of unwanted operations = 1

Reason for unwanted operation – Bus Reactor tripped due to electromagnetic relay malfunction.

Corrective action –Electromagnetic relay was replaced with spare available.

Taken- Yes (Corrective action has been taken)

Reporting of Performance Indices for NHPC Power Stations In NR-Region
Month-JAN'25

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	KISHANGANGA	220 KV KISHANGANGA-WOOGORA LINE#4	13-Jan-25	21:46	14-Jan-25	00:54	3:08	Busbar Protection operated	1	0	1	1	1	0.5	0.5	Due to improper feedback status of earth switch at Control Room, Bus Isolator was closed while earth switch was physically in closed condition	The feedback status of earth switch has been corrected and operators were sensetized to check phycal status of earth switches, before charging.
2	NHPC Ltd	Biarasuil	220 KV Biarasuil-Pong Line#1	16-Jan-25	02:02	16-Jan-25	08:25	6:23	Over Voltage stage-1 protection operated	1	0	0	0	1	1	1		

No Line tripping has been observed from other Power Stations of NHPC of NR region for Minth of January'2025

Format No.-PI-01

Reporting of performance indices for protection system

(for elements connected at 220 kV and above

Name of Utility: Delhi Transco Ltd

Month: January 2025

S. No.	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))	Remedial Action Taken (if applicable)
1	400kV Bawana	315MVA ICT-I	0	0	1	1	0	0	0	Buchholz relay maloperated. Problem rectified.
		400kV Mundka Ckt-I	1	0	0	0	1	1	1	
		220kV DSIDC Bawana Ckt-II	1	0	0	0	1	1	1	
		220kV DSIDC Bawana Ckt-I	1	0	0	0	1	1	1	
2	220kV Maharani Bagh	220kV Sarita Vihar	2	0	0	0	1	1	1	
3	220kV Naraina	220kV Dwarka Ckt-II	1	0	0	0	1	1	1	
4	220kV South of Wazirabad	220kV Geeta Colony Ckt-1	1	0	0	0	1	1	1	
5	220kV Geeta Colony	220kV South of Wazirabad Ckt-1	1	0	0	0	1	1	1	
6	220kV Patparganj	220kV Geeta Colony Ckt-I	1	0	0	0	1	1	1	
7	220kV South of Wazirabad	220kV Geeta Colony Ckt-I	1	0	0	0	1	1	1	
8	400kV Bamnauli	400kV Jhatikara Ckt-2	1	0	0	0	1	1	1	
		400kV Dwarka	1	0	0	0	1	1	1	
9	220kV Maharani Bagh	220kV Sarita Vihar	2	0	0	0	1	1	1	
10	220kV Sarita Vihar	220kV Maharani Bagh	2	0	0	0	1	1	1	
		220kV Pragati Ckt-1	1	0	0	0	1	1	1	
11	220kV BTPS	220kV Alwar Ckt-I	1	0	0	0	1	1	1	
		220kV Ballabgarh Ckt-II	1	0	0	0	1	1	1	
		220kV Okhla Ckt-1	2	0	0	0	1	1	1	
12	220kV Patparganj	220kV Geeta Colony Ckt-II	1	0	0	0	1	1	1	
13	400kV Bamnauli	400kV Tuglakabad Ckt-II	1	0	0	0	1	1	1	
14	220kV Tuglakabad	220kV Mehrauli Ckt-I	1	0	0	0	1	1	1	
		220kV Mehrauli Ckt-II	1	0	0	0	1	1	1	
15	220kV Dwarka	220kV Naraina Ckt-II	1	0	0	0	1	1	1	
16	220kV Naraina	220kV Dwarka Ckt-II	1	0	0	0	1	1	1	

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

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

Case-1 400/200 KV, 315 MVA, ICT-I at 400KV GSS Jodhpur on 20.01.2025
No. of Unwanted operation – 1

Reason of unwanted operation –

Wrong operation of differential relay, due to incorrect relay setting.

Corrective Action taken – YES

Relay setting revised, presently tripping is out and relay is under observation.

Case-2 400/220/33 KV, 500 MV ICT-III at 400 KV GSS HINDAUN on 25.01.2025

No. of Unwanted operation – 1

Reason of unwanted operation –

Newly commissioned ICT, tripped due to wrong Thermal overload setting.

Corrective Action taken – YES

Relay setting revised.

Case-3 400/220/33 KV, 315 MVA ICT-IV at 400 KV GSS HEERAPURA on 28.01.2025

No. of Unwanted operation – 1

Reason of unwanted operation –

Mal-operation of KBCH differential relay.

Corrective Action taken – Partial

Planning to replace relay. Relay arranged, waiting for shutdown.

Case-4 220KV NPH-Heerapura U/G Cable at 400 KV GSS Heerapura on 10.01.2025
No. of Unwanted operation – 1

Reason of unwanted operation –

Mal-operation of line differential element of relay.

Corrective Action taken – NO

Line differential element put out of ckt.

Case-5 220 kV Chittorgarh-Debari-Madri line at 400 KV GSS Chittorgarh on 17.01.2025
No. of Unwanted operation – 1

Reason of unwanted operation –

Z3 /PSB setting found incorrect.

Corrective Action taken – YES

Z3 /PSB setting revised.

Case-6 220 KV Lalsot Anta Line from ANTA (NTPC) on 17.01.2025
No. of Unwanted operation – 1

Reason of unwanted operation –

Due to defective PU of Bus Bar protection scheme at ANTA (NTPC).

Corrective Action taken – NO

ANTA (NTPC) has been asked to replace the defective PU or revise the pickup setting according to fault MVA of Bus to prevent unwanted trippings.

Case-7 220/132KV, 160MVA, BBL Make Transformer -II & 132KV Incomer-II at 220 kV GSS Niwana on 14.01.2025
No. of Unwanted operation – 1

Reason of unwanted operation –

OSR relay defective.

Corrective Action taken – YES

OSR relay replaced.

Case-8 220/132 KV, 100MVA TRF-I at 220 KV GSS RATANGARH on 27.01.2025
No. of Unwanted operation – 1

Reason of unwanted operation –

DC fault.

Corrective Action taken –Partial

DC fault checked but no fault found relay automatically reset.

कार्यालय
निदेशक (आपरेशन)

U.P. Power Transmission Corporation Ltd.
Shakti Bhawan Extn.
14 Ashok Marg, Lucknow– 226001
Tel/Fax: 0522–2287833/2286476
Email: director_op@upptcl.org

No: 660 **/Dir (Op)/ NRPC** **Date:** 04/02/2025

Subject: **Performance indices of protection system.**

SEO
NRPC
New Delhi.

Through E- Mail

Mail ID – seo-nrpc@nic.in

Kindly find enclosed herewith copy of compiled Performance indices along with the Performance indices obtained from all 06 Zonal offices of UPPTCL for the month of January, 2025.

It is for your kind information.

Hchandra
04/02/2025

(Harishchandra Verma)
Executive Engineer (A)

No: **/Dir (Op)/** **Date:**

Copy to :-

Director (Operation) UPPTCL, Lucknow for information.

(Harishchandra Verma)
Executive Engineer (A)

Perfomance Indices

S.No	Transmission Zone	Dependability index	Security index	Reliability index	Remark
1	TC, Lucknow	1	0.99	0.99	**At 220 kV S/S Sitapur :** 220 kV Sitapur- SPN (PGCIL) line tripped on 23.01.25 at 08:45 Hrs. due to malfunctioning of Breaker. Fault has been rectified on 29.01.25 at 20:18 Hrs.
2	TSC, Jhansi	1	1	1	---
3	TW, Meerut	1	0.98	0.98	**At 220 kV S/S Sambhal :** 160 MVA T/F-II tripped on REF protection. REF relay was programmed as two winding T/F instead of auto T/F which has been corrected.
4	TNE, Gorakhpur	1	0.722	0.722	1. **400 kV GIS S/S Rasra :** 400 kV Rasra- Kasara line tripped. Because at 400 kV Kasara Mau end 400 kV Mau-Rasara Main Breaker was in shutdown for Breaker replacement. Line was charged through Tranfer breaker. During CB/Annunciation testing (by PGCIL Team) on pressing Annunciation test push button DT Command send through channel-2 (i) DT wiring from TNC switch Bus Breaker was not connected in Transfer Bus Panner as per Scheme. (ii) DT wiring was connected in Bus Coupler Pannel in Place of Transfer Bus Pannel. (iii) DT wiring was connected to isolator interlock circuit of Azamgarh line in Bus coupler pannel which was on DC. (iv) When DC was changed to DC selection switch in Mau-Rasara Pannel DC2 of DT channel 2 was mixed with DC1. (v) Mixing of DC Sources caused Potential Difference in PLCC DT terminal which resulted in "DT sent" through PLCC channel-2 on dated 17.01.25. Action taken : DT wiring issues has been resloved. DT wiring has been connected in bus transfer panel TNC switch on dated 31.01.25 2- **At 220 kV S/S Maharajganj :** Busbar protection operated on dated 18.01.25. In busbar protection pannel the MCU relay patch cord and connection part of 220 kV Maharajganj - PGCIL line found damgae that was caused differential current in Busbar relay consequently Busbar Protection operated and multiple element tripped. Action taken : Faulty Patch cord and port has been replaced on dated : 18.01.25
5	TSW, Agra	1	0.91	0.91	**At 220 Kv S/S Sikandara :** Bus Bar protection opreated on dated 23.01.25 at 04:26 Hrs. due to 220 kV Kirawali line Y-Phase CT jumper damaged and CT heavy leakage.
6	TSE, Prayagraj	1	1	1	---
Total indices value		**1.000**	**0.934**	**0.934**	---

H.Chandra
04/02/25
HARISHCHANDRA VERMA
Executive Engineer (A)
Director (Operation)
U.P.P.T.C.L.

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	400KV PARICHHA	400KV PARICHHA-ORAI CIRCUIT 1	1/19/2024 8:22	U	During a single-phase transient fault, Auto reclose lockout shot recorded at Parichha end becaude of continuously persisting COS (carrier out of service) alarm.	Testing of Distance relay at Parichha end has been completed and found that carrier healthy signal must be received continuosly for auto reclose operation.Transmission wing has planned to check and rectify the issue in their 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: Lalitpur Power Generation Company Limited

Month: JAN - 2025

S.N.	Sub- station	Unit (SPS/Line/ICT/ GT/ etc)	Nc	Nf	Nu	Ni	Dependabilit y Index (D) Nc/(Nc+Nf)	Security Index (S) Nc/(Nc+Nu)	Reliability Index (R) Nc/(Nc+Ni)
1	LPGCL	765 kV & 220 kV Switchyard	1	1	0	0	**0.5**	**1**	**1**

Note : 765 kV LPGCL- FATEHABAD (AGRA) Circuit-1 tripped on Dated 28-Jan-2025 on Single B-Phase to ground fault

LPGCL End: Main Breaker Auto reclosure was sucessful but TIE Breaker tripped as A/R Block fuction was operated due to unhealthy status of Breaker . Immedialty corrective action taken and resolved the issue.

Fatehabad End (UPPTCL Susbation): Both Main & TIE Breaker was tripped as Auto reclose block fuction was operated .Suitable action is pending to resolved the matter by UPPTCL

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

Annexure-A.IV

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						
2	NTPC	Central Generating Company	Received						
3	BBMB		Received						
4	THDC		Received						
5	SJVN		Received						
6	NHPC		Received						
7	NPCIL								
8	Delhi SLDC	SLDC							
9	Haryana SLDC								
10	Rajasthan SLDC								
11	Uttar Pradesh SLDC		Vishnuprayag, WUPPTCL						
12	Uttarakhand SLDC								
13	Punjab SLDC								
14	Himachal Pradesh SLDC								
15	DTL	State Transmission Utility	Received						
16	HVPNL		Received						
17	RRVPNL		Received		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						
24	RRVUNL		Received		Ramgarh Gas Sutargarh Supercritical			56	Pending
25	UPRVUNL		Received (obra -B, Anpara-B,D switch yard, Harduganj-C,D,E))						
26	UJVNL		Received (Khodri, Chibro, Vyasi, Dharasu , Tiloth)						
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	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Received		Yes			56	Pending
31	Aravali Power Company Pvt. Ltd		Received						
32	Apraava Energy Private Limited		Received						
33	Talwandi Sabo Power Ltd.		Completed	-	Nov'24		Pending		
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						
37	Lalitpur Power Generation Company Ltd		Received						
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)						
43	UT of J&K	UT of Northern Region							
44	UT of Ladakh								
45	UT of Chandigarh								
46	INDIGRID		Received						
47	ADHPL		Received						
48	Sekura Energy Limited								

Annexure-A.V

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					
2	NTPC	Central Generating Company	Received					
3	BBMB							
4	THDC		Received (Tehri)					
5	SJVN		Received (NJHPS)					
6	NHPC		Received					
7	NPCIL							
8	Delhi SLDC	SLDC						
9	Haryana SLDC							
10	Rajasthan SLDC							
11	Uttar Pradesh SLDC		Received (Jaypee Vishnuprayag, WUPPTCL, SEUPPTCL)					
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)					
19	PTCUL							
20	PSTCL							
21	HPPTCL		Received					
22	IPGCL	State Generating Company	Received (PPS-III, I)					
23	HPGCL							
24	RRVUNL		Received					
25	UPRVUNL		Received (Obra- A, B)					
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					
31	Aravali Power Company Pvt. Ltd							
32	Apraava Energy Private Limited							
33	Talwandi Sabo Power Ltd.			May'25				
34	Nabha Power Limited		Received					
35	MEIL Anpara Energy Ltd							
36	Rosa Power Supply Company Ltd		Received					
37	Lalitpur Power Generation Company Ltd		Received					
38	MEJA Urja Nigam Ltd.							
39	Adani Power Rajasthan Limited							
40	JSW Energy Ltd. (KWHEP)							
41	AESL	Other transmission licensee						
42	Tata Power Renewable Energy Ltd.							
43	UT of J&K	UT of Northern Region						
44	UT of Ladakh							
45	UT of Chandigarh							
46	INDIGRID							
47	ADHPL							
48	Sekura Energy Limited							

Annexure-A.VI

Status of 3rd Party Protection Audit Plan								
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 (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							
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)	Jan'25	Completed	18.01.2025	57	
8	Delhi SLDC	SLDC						
9	Haryana SLDC							
10	Rajasthan SLDC							
11	Uttar Pradesh SLDC		Alaknanda	March 2025				
			Received (Tanda extension)	17.07.2025				
			Received (Tanda)	17.07.2025				
			SEUPPTCL	Conducted (Oct 2024)				
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		Received (Obra-B)	2026-27				
			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			
26	UJVNL				Dharasu		56	Pending
27	HPPCL		Kashang HEP	FY 2025-26				
28	PSPCL	State Generating Company & State owned Distribution Company	Reeceived (GHTP)	Dec. 2025				
			Received (GATP)	May 2025				
			GGSSTP					
			RSD/ Sahapur Kandi					
29	HPSEBL	Distribution company having Transmission connectivity ownership						
30	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Received	Dec-24				
31	Aravali Power Company Pvt. Ltd							
32	Apraava Energy Private Limited		Received	By May, 2025				
33	Talwandi Sabo Power Ltd.		Conducted	Dec'22		Pending		
34	Nabha Power Limited		Received	By December, 2025				
35	MEIL Anpara Energy Ltd		Received	* Feb 2025				
36	Rosa Power Supply Company Ltd		Conducted	By 30.09.2024	08.08.2024	13.01.2025		
37	Lalitpur Power Generation Company Ltd		Conducted	26.03.2024				
38	MEJA Urja Nigam Ltd.							
39	Adani Power Rajasthan Limited		Conducted	November, 2024	Kawai		56	Pending
40	JSW Energy Ltd. (KWHEP)		Received	December 2024 to March 2025				
41	AESL	Other Transmission Licensee	Received (ATIL -400kV Mohindergarh S/s.)	400kV Mohindergarh SS- Q2 , FY 2025-26				
			Received (OBTL)	OBTL-Q1 , FY 2025-26				
			Received (FBTL)	FBTL-Q3 , FY 2025-26				
			Received (MTSCL)	MTSCL-Q4 , FY 2025-26				
			Received (ATSCL)	ATSCL-Q1 , FY 2026-27				
			Received (HPTSL)	HPTSL- Q2 , FY 2026-27				
			Received (BKTL)	BKTL-Q3 , FY 2026-27				
			Received (GTL)	GTL- Q3 & Q4, FY 2026-27				
42	Tata Power Renewable Energy Ltd.	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)						
43	UT of J&K	UT of Northern Region						
44	UT of Ladakh							
45	UT of Chandigarh							
46	INDIGRID		Received (NRSS 29)	FY 24-25				
47	ADHPL		Received	* September 2026				
48	Sekura Energy Limited							
* Revised Schedule								
	State Utilities							
	Uttar Pradesh							
	Vishnuprayag		Not received					
	Alaknanda		Received	Mar-25				
	WUPPTCL		No schedule provided					
	SEUPPTCL		Completed on Oct 2024					
	OCBTL		Q1 , FY 2025-26					
	GTL		Q3 & Q4 , FY 2026-27					

SUPPORTING DATA/DOCUMENTS FOR ANALYSIS AT RIHAND END

1. There are total 03 nos. of Type 3 Filter Banks named Z13, Z23 & Z33 are installed at HVDC Rihand and it has been observed that whenever any of the Type-3 Filter Bank (5/27) charged either from RPC or manually, filter banks got tripped on resistive or reactive overload protections due to higher 5th Order Harmonics coming from Grid.
2. On 22.06.2022 at 12:31 Hrs Filter Bank Z13 was connected and at 12:42 Hrs Filter bank got tripped on Reactor Overload of R phase. However Tripping setting is 51 A and Recorded Current before tripping was 52 A **(TFR of 22.06.2022 at 12:31 hrs is saved in folder)**
3. On 11.01.2023 at 11:52 Hrs Filter Bank Z33 was connected and at12:52 Hrs Filter bank got tripped on Reactor Overload of R phase. Recorded Current before tripping was 53 A (**TFR of 11.01.2023 at 12:52 hrs is saved in folder**)
4. To analyze, measurement of 5th Harmonics were carried out during both poles in service on 05.02.2024 and during Bipole Shutdown on 12.02.2024. **(The Details of Harmonics is saved in folder**)

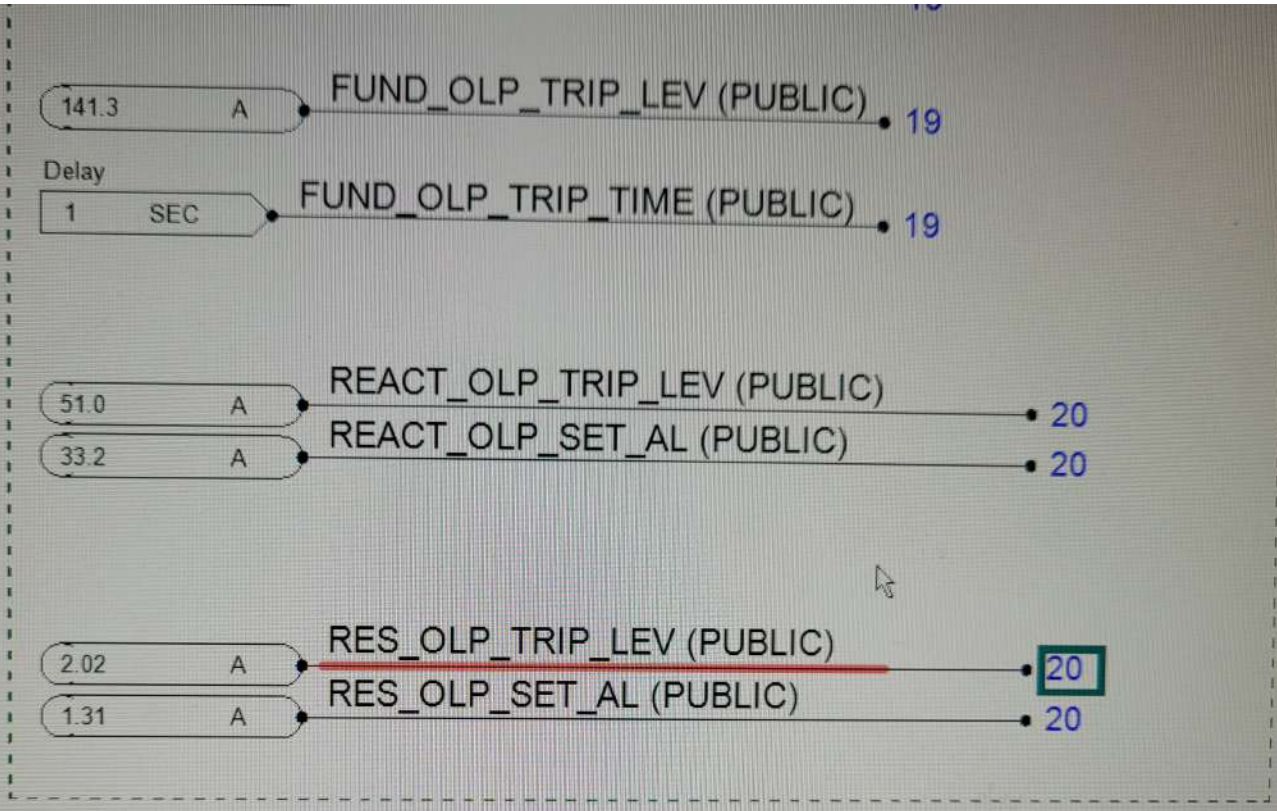
SUPPORTING DATA/DOCUMENTS FOR ANALYSIS AT DADRI END

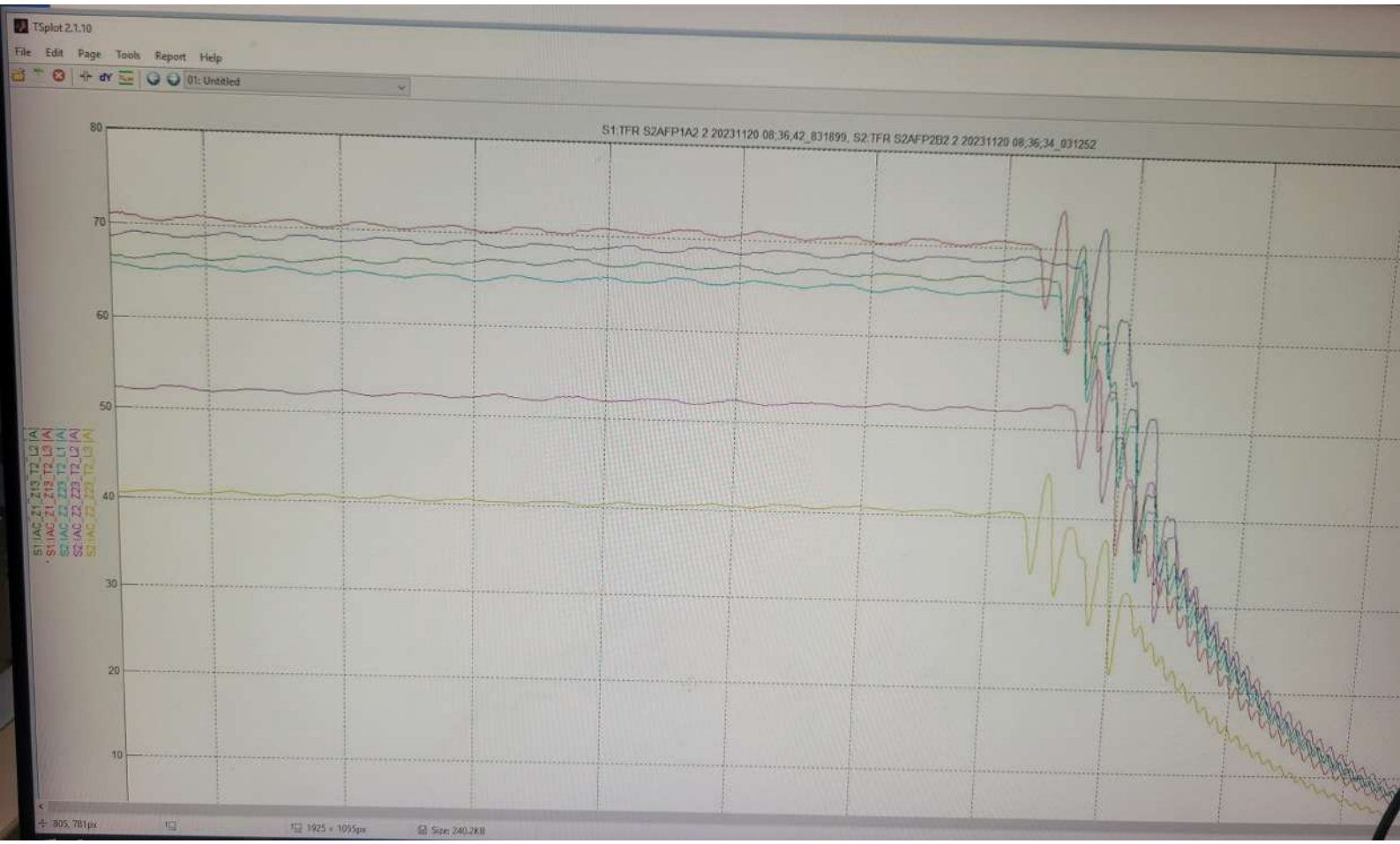
At the HVDC Dadri Sub-station, three Type 3 (5/27) filter banks, designated as Z13, Z23, and Z33 are installed.

Similar tripping incidents of these filter banks due to Resistor and Reactor Overload Protection, as highlighted in Note 1, have also been observed at Dadri Sub-station.

On 20th November 2023 at 08:34 Hrs., during the Bipole Shutdown of HVDC Link two Type 3 Filter Banks (Z13, Z23) were taken into service at Dadri Sub-station while all other filter banks and both HVDC poles were isolated. At 08:36 Hrs., both filter banks tripped on Resistor Overload Protection.
Subsequent analysis revealed a significant presence of the 5th harmonic component in the current measured on the Overload Protection CT. A detailed harmonic analysis of the current, measured at the Overload CT, is **saved in folder**. The event list and TFR associated with this tripping are also **enclosed**.

In view of the above, the issue of Type 3 Filter Bank tripping due to overload protection at the Dadri Sub-station is submitted for further discussion and resolution with NRPC.




TSplot 2.1.10
File Edit Page Tools Report Help
01: Untitled
S1:TFR S2AFP1A2 2 20231120 08;36;42_831899, S2:TFR S2AFP2B2 2 20231120 08;36;34_031252
80
70
60
50
40
30
20
10
S1:IAC_Z1_Z13_T2_L3 [A]
S1:IAC_Z1_Z13_T2_L3 [A]
S1:IAC_Z2_Z23_T2_L1 [A]
S2:IAC_Z2_Z23_T2_L2 [A]
S2:IAC_Z2_Z23_T2_L3 [A]
805, 781px
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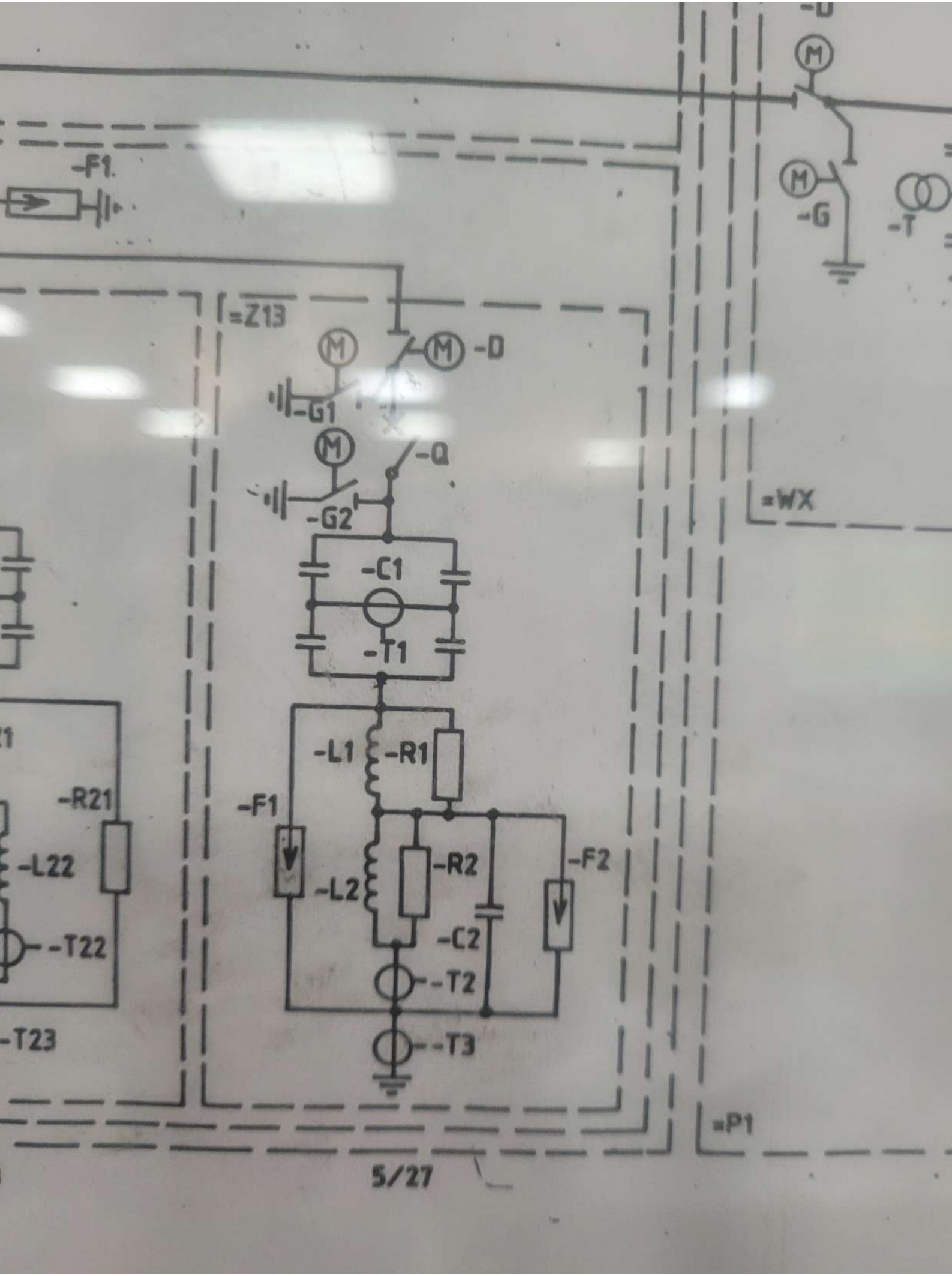
Size: 240.2KB


-F1
=Z13
M
-D
-G1
-G2
-Q
-C1
-T1
-L1
-R1
-F1
-L2
-R2
-C2
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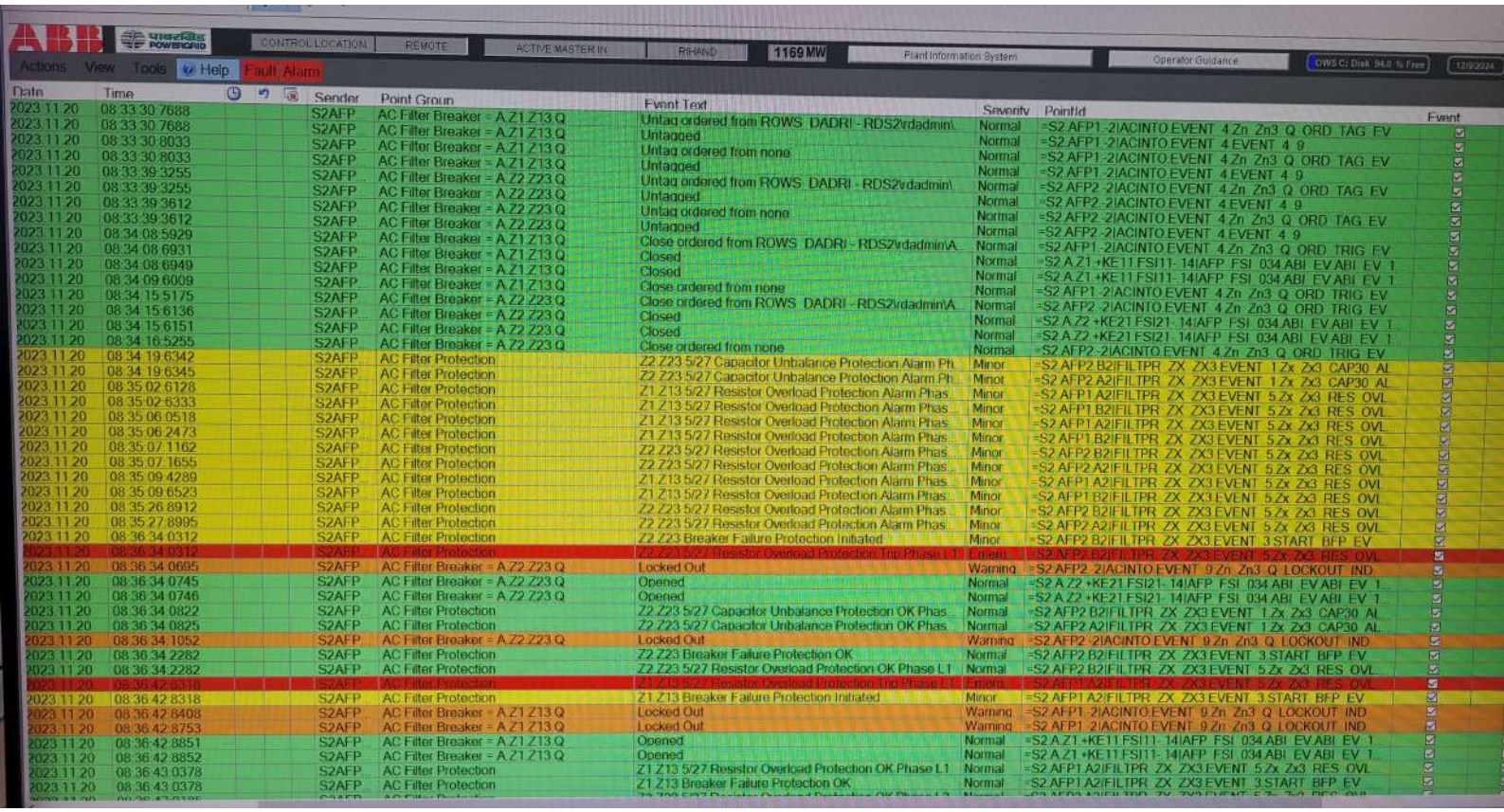
-G
-T
=WX
=P1



CONTROL LOCATION | REMOTE | ACTIVE MASTER IN: | RHAND | 1169 MW | Plant Information System | Operator Guidance | DWS C: Disk: 94.0 % Free | 12/9/2024

Actions View Tools Help Fault Alarm

Date	Time	Sender	Point Group	Event Text	Severity	PointId	Event
2023.11.20	08:33:30.7688	S2AFP	AC Filter Breaker = A.Z1.Z13.Q	Untag ordered from ROWS_DADRI - RDS2\rdadmin\	Normal	=S2.AFP1_2|ACINTO.EVENT_4.Zn_Zn3_Q_ORD_TAG_EV	
2023.11.20	08:33:30.7688	S2AFP	AC Filter Breaker = A.Z1.Z13.Q	Untagged	Normal	=S2.AFP1_2|ACINTO.EVENT_4.EVENT_4_9	
2023.11.20	08:33:30.8033	S2AFP	AC Filter Breaker = A.Z1.Z13.Q	Untag ordered from none	Normal	=S2.AFP1_2|ACINTO.EVENT_4.Zn_Zn3_Q_ORD_TAG_EV	
2023.11.20	08:33:30.8033	S2AFP	AC Filter Breaker = A.Z1.Z13.Q	Untagged	Normal	=S2.AFP1_2|ACINTO.EVENT_4.EVENT_4_9	
2023.11.20	08:33:39.3255	S2AFP	AC Filter Breaker = A.Z2.Z23.Q	Untag ordered from ROWS_DADRI - RDS2\rdadmin\	Normal	=S2.AFP2_2|ACINTO.EVENT_4.Zn_Zn3_Q_ORD_TAG_EV	
2023.11.20	08:33:39.3255	S2AFP	AC Filter Breaker = A.Z2.Z23.Q	Untagged	Normal	=S2.AFP2_2|ACINTO.EVENT_4.EVENT_4_9	
2023.11.20	08:33:39.3612	S2AFP	AC Filter Breaker = A.Z2.Z23.Q	Untag ordered from none	Normal	=S2.AFP2_2|ACINTO.EVENT_4.Zn_Zn3_Q_ORD_TAG_EV	
2023.11.20	08:33:39.3612	S2AFP	AC Filter Breaker = A.Z2.Z23.Q	Untagged	Normal	=S2.AFP2_2|ACINTO.EVENT_4.EVENT_4_9	
2023.11.20	08:34:08.5929	S2AFP	AC Filter Breaker = A.Z1.Z13.Q	Close ordered from ROWS_DADRI - RDS2\rdadmin\A...	Normal	=S2.AFP1_2|ACINTO.EVENT_4.Zn_Zn3_Q_ORD_TRIG_EV	
2023.11.20	08:34:08.6931	S2AFP	AC Filter Breaker = A.Z1.Z13.Q	Closed	Normal	=S2.A.Z1.+KE11.FSI11-14|AFP_FSI_034.ABI_EV.ABI_EV_1	
2023.11.20	08:34:08.6949	S2AFP	AC Filter Breaker = A.Z1.Z13.Q	Closed	Normal	=S2.A.Z1.+KE11.FSI11-14|AFP_FSI_034.ABI_EV.ABI_EV_1	
2023.11.20	08:34:09.6009	S2AFP	AC Filter Breaker = A.Z1.Z13.Q	Close ordered from none	Normal	=S2.AFP1_2|ACINTO.EVENT_4.Zn_Zn3_Q_ORD_TRIG_EV	
2023.11.20	08:34:15.5175	S2AFP	AC Filter Breaker = A.Z2.Z23.Q	Close ordered from ROWS_DADRI - RDS2\rdadmin\A...	Normal	=S2.AFP2_2|ACINTO.EVENT_4.Zn_Zn3_Q_ORD_TRIG_EV	
2023.11.20	08:34:15.6136	S2AFP	AC Filter Breaker = A.Z2.Z23.Q	Closed	Normal	=S2.A.Z2.+KE21.FSI21-14|AFP_FSI_034.ABI_EV.ABI_EV_1	
2023.11.20	08:34:15.6151	S2AFP	AC Filter Breaker = A.Z2.Z23.Q	Closed	Normal	=S2.A.Z2.+KE21.FSI21-14|AFP_FSI_034.ABI_EV.ABI_EV_1	
2023.11.20	08:34:16.5255	S2AFP	AC Filter Breaker = A.Z2.Z23.Q	Close ordered from none	Normal	=S2.AFP2_2|ACINTO.EVENT_4.Zn_Zn3_Q_ORD_TRIG_EV	
2023.11.20	08:34:19.6342	S2AFP	AC Filter Protection	Z2.Z23 5/27 Capacitor Unbalance Protection Alarm Ph...	Minor	=S2.AFP2.B2|FILTPR_ZX_ZX3.EVENT_1.Zx_Zx3_CAP30_AL	
2023.11.20	08:34:19.6345	S2AFP	AC Filter Protection	Z2.Z23 5/27 Capacitor Unbalance Protection Alarm Ph...	Minor	=S2.AFP2.A2|FILTPR_ZX_ZX3.EVENT_1.Zx_Zx3_CAP30_AL	
2023.11.20	08:35:02.6128	S2AFP	AC Filter Protection	Z1.Z13 5/27 Resistor Overload Protection Alarm Phas...	Minor	=S2.AFP1.A2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:35:02.6333	S2AFP	AC Filter Protection	Z1.Z13 5/27 Resistor Overload Protection Alarm Phas...	Minor	=S2.AFP1.B2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:35:06.0518	S2AFP	AC Filter Protection	Z1.Z13 5/27 Resistor Overload Protection Alarm Phas...	Minor	=S2.AFP1.A2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:35:06.2473	S2AFP	AC Filter Protection	Z1.Z13 5/27 Resistor Overload Protection Alarm Phas...	Minor	=S2.AFP1.B2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:35:07.1162	S2AFP	AC Filter Protection	Z2.Z23 5/27 Resistor Overload Protection Alarm Phas...	Minor	=S2.AFP2.B2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:35:07.1655	S2AFP	AC Filter Protection	Z2.Z23 5/27 Resistor Overload Protection Alarm Phas...	Minor	=S2.AFP2.A2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:35:09.4289	S2AFP	AC Filter Protection	Z1.Z13 5/27 Resistor Overload Protection Alarm Phas...	Minor	=S2.AFP1.A2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:35:09.6523	S2AFP	AC Filter Protection	Z1.Z13 5/27 Resistor Overload Protection Alarm Phas...	Minor	=S2.AFP1.B2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:35:26.8912	S2AFP	AC Filter Protection	Z2.Z23 5/27 Resistor Overload Protection Alarm Phas...	Minor	=S2.AFP2.B2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:35:27.8995	S2AFP	AC Filter Protection	Z2.Z23 5/27 Resistor Overload Protection Alarm Phas...	Minor	=S2.AFP2.A2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:36:34.0312	S2AFP	AC Filter Protection	Z2.Z23 Breaker Failure Protection Initiated	Minor	=S2.AFP2.B2|FILTPR_ZX_ZX3.EVENT_3.START_BFP_EV	
2023.11.20	08:36:34.0312	S2AFP	AC Filter Protection	Z2.Z23 5/27 Resistor Overload Protection Trip Phase L1	Critical	=S2.AFP2.B2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:36:34.0695	S2AFP	AC Filter Breaker = A.Z2.Z23.Q	Locked Out	Warning	=S2.AFP2_2|ACINTO.EVENT_9.Zn_Zn3_Q_LOCKOUT_IND	
2023.11.20	08:36:34.0745	S2AFP	AC Filter Breaker = A.Z2.Z23.Q	Opened	Normal	=S2.A.Z2.+KE21.FSI21-14|AFP_FSI_034.ABI_EV.ABI_EV_1	
2023.11.20	08:36:34.0746	S2AFP	AC Filter Breaker = A.Z2.Z23.Q	Opened	Normal	=S2.A.Z2.+KE21.FSI21-14|AFP_FSI_034.ABI_EV.ABI_EV_1	
2023.11.20	08:36:34.0822	S2AFP	AC Filter Protection	Z2.Z23 5/27 Capacitor Unbalance Protection OK Phas...	Normal	=S2.AFP2.B2|FILTPR_ZX_ZX3.EVENT_1.Zx_Zx3_CAP30_AL	
2023.11.20	08:36:34.0825	S2AFP	AC Filter Protection	Z2.Z23 5/27 Capacitor Unbalance Protection OK Phas...	Normal	=S2.AFP2.A2|FILTPR_ZX_ZX3.EVENT_1.Zx_Zx3_CAP30_AL	
2023.11.20	08:36:34.1052	S2AFP	AC Filter Breaker = A.Z2.Z23.Q	Locked Out	Warning	=S2.AFP2_2|ACINTO.EVENT_9.Zn_Zn3_Q_LOCKOUT_IND	
2023.11.20	08:36:34.2282	S2AFP	AC Filter Protection	Z2.Z23 Breaker Failure Protection OK	Normal	=S2.AFP2.B2|FILTPR_ZX_ZX3.EVENT_3.START_BFP_EV	
2023.11.20	08:36:34.2282	S2AFP	AC Filter Protection	Z2.Z23 5/27 Resistor Overload Protection OK Phase L1	Normal	=S2.AFP2.B2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:36:42.8318	S2AFP	AC Filter Protection	Z1.Z13 5/27 Resistor Overload Protection Trip Phase L1	Critical	=S2.AFP1.A2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:36:42.8318	S2AFP	AC Filter Protection	Z1.Z13 Breaker Failure Protection Initiated	Minor	=S2.AFP1.A2|FILTPR_ZX_ZX3.EVENT_3.START_BFP_EV	
2023.11.20	08:36:42.8408	S2AFP	AC Filter Breaker = A.Z1.Z13.Q	Locked Out	Warning	=S2.AFP1_2|ACINTO.EVENT_9.Zn_Zn3_Q_LOCKOUT_IND	
2023.11.20	08:36:42.8753	S2AFP	AC Filter Breaker = A.Z1.Z13.Q	Locked Out	Warning	=S2.AFP1_2|ACINTO.EVENT_9.Zn_Zn3_Q_LOCKOUT_IND	
2023.11.20	08:36:42.8851	S2AFP	AC Filter Breaker = A.Z1.Z13.Q	Opened	Normal	=S2.A.Z1.+KE11.FSI11-14|AFP_FSI_034.ABI_EV.ABI_EV_1	
2023.11.20	08:36:42.8852	S2AFP	AC Filter Breaker = A.Z1.Z13.Q	Opened	Normal	=S2.A.Z1.+KE11.FSI11-14|AFP_FSI_034.ABI_EV.ABI_EV_1	
2023.11.20	08:36:43.0378	S2AFP	AC Filter Protection	Z1.Z13 5/27 Resistor Overload Protection OK Phase L1	Normal	=S2.AFP1.A2|FILTPR_ZX_ZX3.EVENT_5.Zx_Zx3_RES_OVL	
2023.11.20	08:36:43.0378	S2AFP	AC Filter Protection	Z1.Z13 Breaker Failure Protection OK	Normal	=S2.AFP1.A2|FILTPR_ZX_ZX3.EVENT_3.START_BFP_EV	

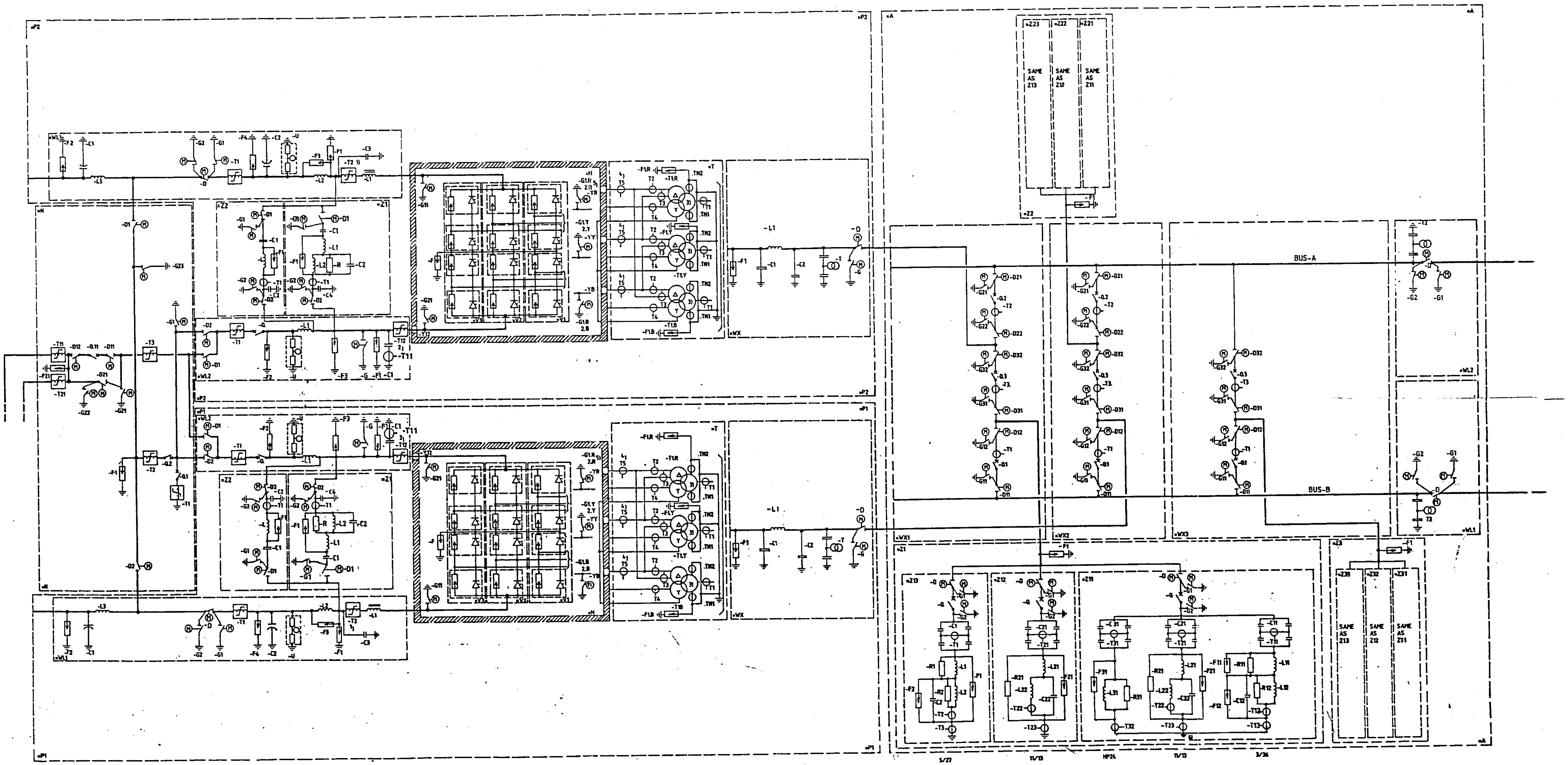
Filter Type 3 Harmonic Table.txt - Notepad

File Edit Format View Help

Result from frequency analysis
Fundamental frequency: 50.0
Used frequency deviation when finding max values: 5.00

Signal 1: S2:IAC_Z2_Z23_T2_L1 [A]
Signal 2: S2:IAC_Z2_Z23_T2_L2 [A]
Signal 3: S2:IAC_Z2_Z23_T2_L3 [A]
Signal 4: S1:IAC_Z1_Z13_T2_L1 [A]
Signal 5: S1:IAC_Z1_Z13_T2_L2 [A]
Signal 6: S1:IAC_Z1_Z13_T2_L3 [A]

N [pu]	Signal 1 [A]	Signal 2 [A]	Signal 3 [A]	Signal 4 [A]	Signal 5 [A]	Signal 6 [A]
1	96.038	101.690	96.659	101.943	98.753	97.512
2	4.197	4.739	3.149	4.574	4.278	3.037
3	1.973	2.743	1.318	1.509	2.527	0.943
4	2.153	2.238	0.631	1.646	2.295	0.856
5	59.635	49.127	36.199	65.028	60.913	62.743
6	2.483	2.213	1.825	2.706	2.407	3.246
7	3.961	3.354	4.150	3.775	2.955	4.570
8	0.271	0.978	0.756	1.222	0.356	1.066
9	0.171	0.853	0.642	1.155	0.323	0.764
10	0.117	0.533	0.455	0.760	0.172	0.647
11	0.341	0.614	0.496	0.826	0.405	0.655
12	0.155	0.464	0.307	0.618	0.046	0.586
13	0.179	0.463	0.429	0.577	0.083	0.574
14	0.260	0.462	0.289	0.576	0.319	0.485
15	0.104	0.379	0.273	0.482	0.132	0.373
16	0.064	0.321	0.230	0.473	0.122	0.338
17	0.057	0.306	0.213	0.445	0.117	0.344
18	0.105	0.300	0.191	0.383	0.100	0.323
19	0.066	0.274	0.182	0.397	0.085	0.291
20	0.415	0.348	0.296	0.716	0.552	0.453
21	0.079	0.250	0.172	0.349	0.080	0.286
22	0.161	0.333	0.297	0.257	0.231	0.273
23	0.101	0.256	0.197	0.310	0.096	0.318
24	0.183	0.291	0.146	0.275	0.096	0.302
25	0.109	0.213	0.140	0.301	0.104	0.230
26	0.175	0.213	0.158	0.348	0.132	0.332
27	0.035	0.180	0.150	0.255	0.058	0.181
28	0.129	0.256	0.191	0.284	0.100	0.257
29	0.045	0.176	0.129	0.234	0.077	0.176



NOTES:
1) DIRECT CURRENT TRANSDUCER -T2 IS PLACED AT THE DC LINE BUSHING OF THE SMOTHING REACTOR
2) DIRECT CURRENT TRANSDUCER -T12 IS PLACED IN THE NEUTRAL BUS WALL BUSHING.
3) CURRENT TRANSFORMERS -T1-T4 AND TH1-TH2 ARE PLACED AT THE CONVERTER TRANSFORMER BUSHINGS.
4) CURRENT TRANSFORMERS -T5 ARE PLACED IN THE DELTA WALL BUSHINGS.
5) VALVE HALL GROUNDING SWITCH H-G1 IS FOR Δ CONNECTION & H-G2 FOR Y CONNECTION
6) AC FILTER NEUTRAL - MIDDLE PHASE DIRECTLY GROUNDED OUTER PHASES GROUNDED VIA ARRESTERS ; -F1, -F2

Rev	Revision	Appd	Year Week
8	Curr.Transf.P1.WL2 -T11 and P2.WL2 -T11 installed		93 27
7	CAP. P.Z1-C3 MOVED TO P.WL1-C3		87 39
6	REDRAWN: CONV. TRANSFORMER GROUNDING		87 22
5	REDRAWN: DC FILTERS		87 06
4	REDRAWN: FILTERS ADJUSTED: DISCONNECT AND EARTHINGSWITCHES		87 02
3	REDRAWN. AC FILTERS ADJUSTED		86 24
2	REDRAWN. AC FILTERS ADDED.		86 18
1	COMPLETELY REDRAWN		86 08

NTPC नेशनल थरमल पावर कारपोरेशन National Thermal Power Corporation (A GOVT. OF INDIA ENTERPRISE)

RIHAND-DELHI
HVDC TRANSMISSION SYSTE

SINGLE LINE DIAGRAM

RIHAND

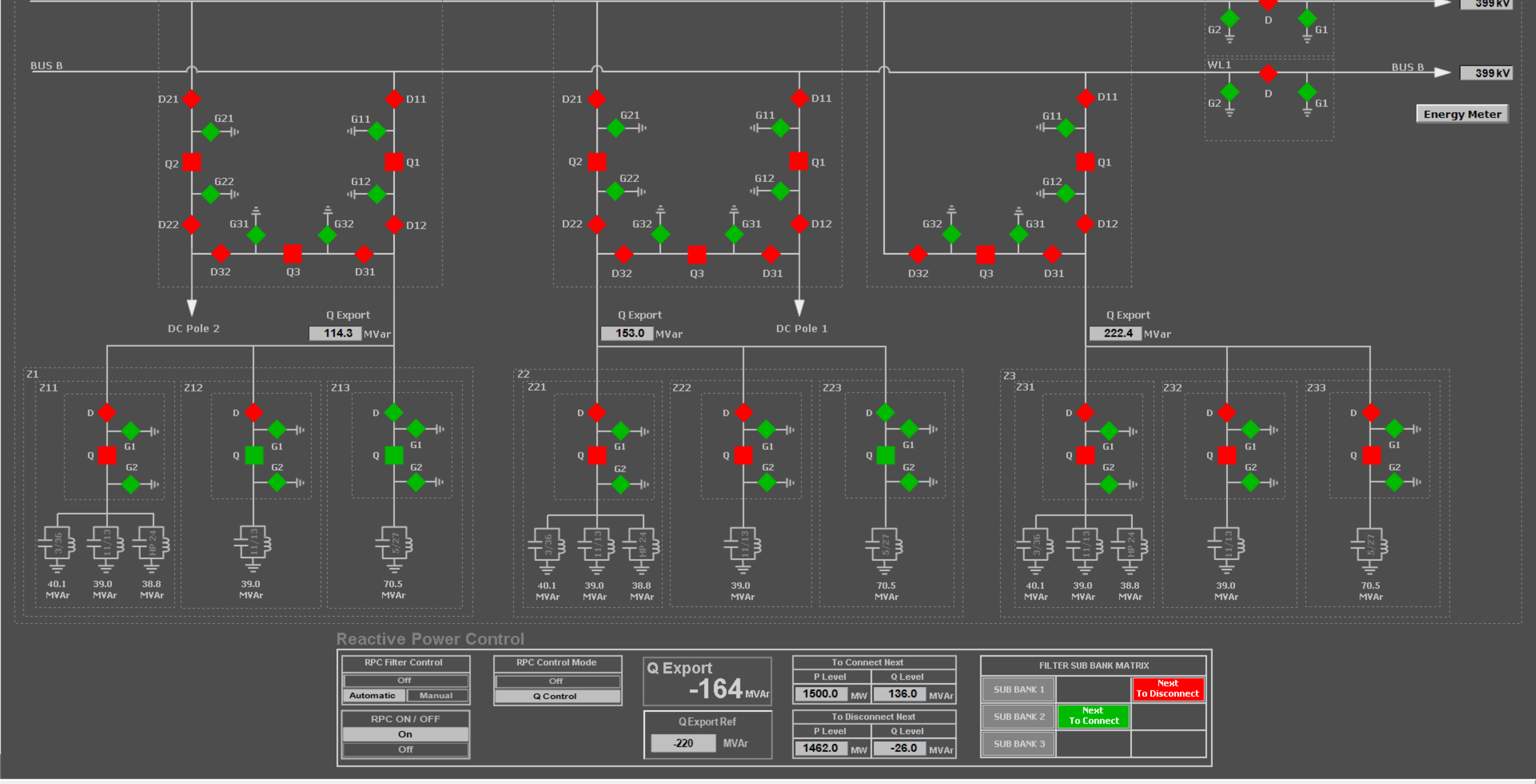
Drawn by: OW

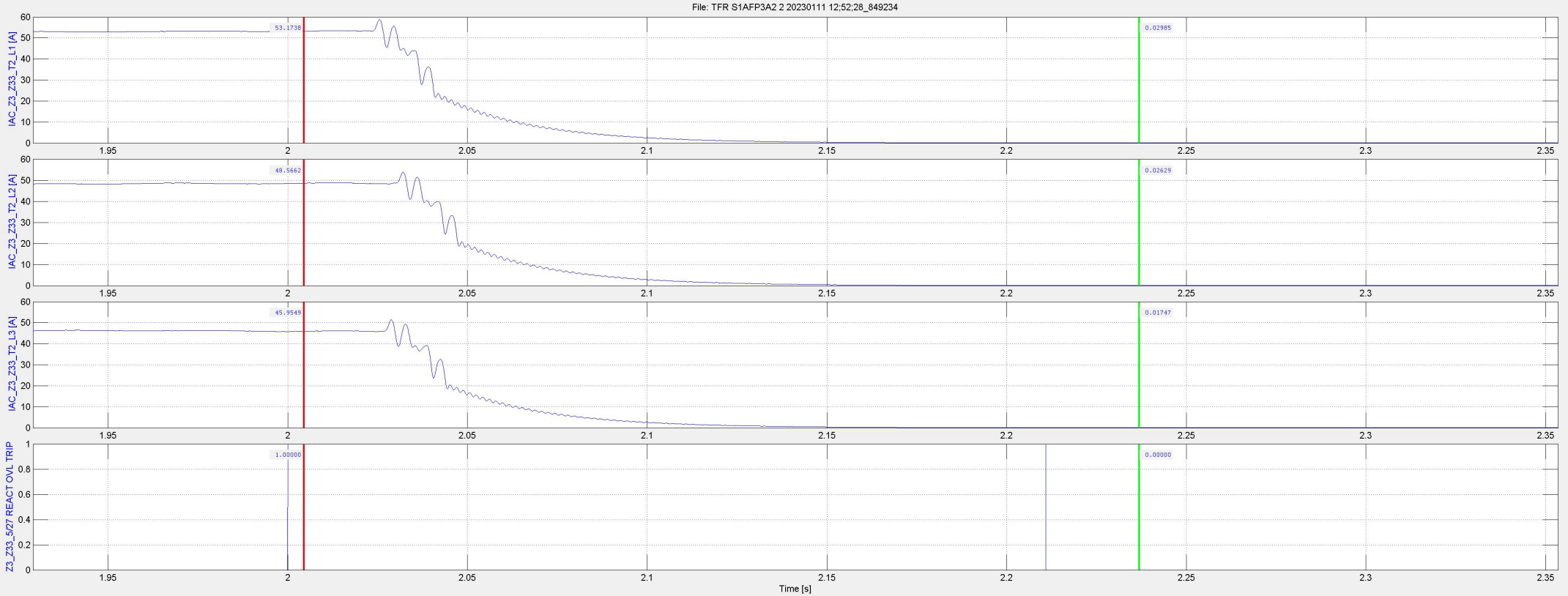
Drawing checked by: L.LINDSTRÖM — NTK02 84 45

ASEA

L 5598.1008
XN 840 156-AB

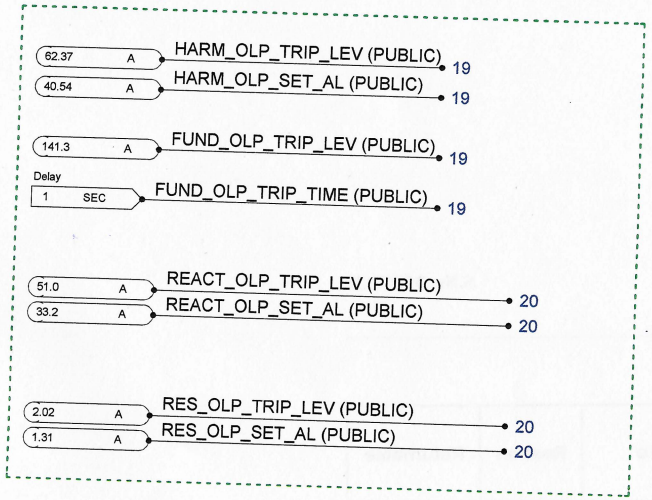
7


399 kV
G2
D
G1
BUS B
WL1
BUS B
399 kV
D
G2
G1
Energy Meter
D21
G21
G11
D11
Q2
Q1
G22
G12
D22
G31
G32
D12
D32
Q3
D31
DC Pole 2
Q Export
114.3 MVar
DC Pole 1
Q Export
153.0 MVar
Q Export
222.4 MVar
Z1
Z11
Z12
Z13
Z2
Z21
Z22
Z23
Z3
Z31
Z32
Z33
D
Q
G1
G2
3/36
11/13
HP 24
5/27
40.1 MVAr
39.0 MVAr
38.8 MVAr
39.0 MVAr
70.5 MVAr
Reactive Power Control
RPC Filter Control
Off
Automatic
Manual
RPC ON / OFF
On
Off
RPC Control Mode
Off
Q Control
Q Export
-164 MVAr
Q Export Ref
-220 MVAr
To Connect Next
P Level
Q Level
1500.0 MW
136.0 MVAr
To Disconnect Next
P Level
Q Level
1462.0 MW
-26.0 MVAr
FILTER SUB BANK MATRIX
SUB BANK 1
SUB BANK 2
SUB BANK 3
Next To Disconnect
Next To Connect


File: TFR S1AFP3A2 2 20230111 12;52;28_849234
IAC_Z3_Z33_T2_L1 [A]
53.1738
0.02985
IAC_Z3_Z33_T2_L2 [A]
48.5662
0.02629
IAC_Z3_Z33_T2_L3 [A]
45.9549
0.01747
Z3_Z33_5/27 REACT OVL TRIP
1.00000
0.00000
Time [s]

OLP External Settings

Overload Settings



Application Directory

Base Application

Name: SET_OLP Settings Breaker Failure Protection	Prepared by: Manikandan Devaraj Approved by: Jorgen Bertals	Functional Block Diagram AC Filter Protections	Project: Rihand-Dadri Refurbishment		Target System: MainCPU
Type: Subtask	Responsible Department: PGGI/2222/T2	ABB AB, HVDC	Release Date: 2020-01-08	Identification number: 1JNL739377-FILTPR_Zx_Zx3	Rev Ind: 00 / Sheet: 41 / Cont: ...

F:/Rihand-Dadri Refurbishment/Rihand/App Software/AFP1/MC2/Main/Protection/FILTPR_Zx_Zx3/FILTPR_Zx_Zx3.hafx - SET_OLP

Back-up protections

- The back-up unbalance protection

4.3
AC filter overload protections

4.3.1
AC filter high voltage capacitor, reactor and resistor overload protection QHLA 278

Protective zone

The high voltage capacitor strings

The high voltage reactor. 3/36, 5/27, 11/13 = LH.HP24 = L

The high voltage resistor. 3/36, 5/27, = RH.HP24 = R

Primary objective

- To detect short circuits in the high voltage capacitor of such nature that they will not be detected by the unbalance protection.
- To protect the filter reactors and resistors against thermal overload

Detection principles

The protection has two functions. One part detects the fundamental frequency component of the total filter current indicating partial short circuits within the high voltage capacitor. Another part detects the harmonic current by an inverse time characterstic function . The measuring point is in the neutral of the filter, measuring the total filter current.

Protective switching actions

- Trip of sub-bank a.c. circuit breaker

Settings

BRANCH	HARMONIC OVERLOAD SETTINGS			FUNDAMENTAL OVERLOAD SETTINGS	
	I_{TRIP}	I_{ALARM}	TIME KONSTANT	I_{TRIP}	TIME DELAY
	(A)	(A)	(S)	(A)	(S)
11/13	137.9	89.6	300	78.5	1.0
3/36	50.38	32.74	60	78.5	1.0
5/27	62.37	40.54	60	141.3	1.0
HP24	48.54	31.55	60	78.5	1.0

Back-up protection

The harmonic overload protection is back-up for malfunction of the Reactive Power controller, causing lack of filtering capability, which in turn would cause harmonic overload of remaining filters. The fundamental frequency overload part shall detect faults that result in complete or partial capacitor rack short circuits in the high voltage capacitor and that neither the a.c. bus differential overcurrent protections nor the unbalance protections are able to detect.

4.3.2
AC filter low voltage reactor overload protection, QHLA 278

Protective zone

- The low voltage reactor, LL.

Primary objective

- To protect the filter reactor against thermal overload.

Detection principles

- For the 3/36:th and the 5/27:th branches the protection is measuring the sum of the current through the reactor, LL, and the resistor, RL, where the reactor current is approximately 95% of the total current.
- For the 11/13:th branch the protection is directly measuring the reactor current.

  The protections has an inverse time characteristic function to which the amplitude and time duration of the measured harmonic current is compared.

Protective switching actions

- Trip of sub-bank a.c. circuit breaker.

Settings

BRANCH	PROTECTED COMPONENT	I_{TRIP} (A)	I_{ALARM} (A)	TIME KONSTANT (S)
11/13	Reactor LL	1197.0	778.1	
3/36	Reactor LL	122.1	79.4	
5/27	Reactor LL	51.0	33.2	

Back-up protection

The protection is back-up for malfunction of the reactive power controller, causing lack of filtering capability, which in turn cause harmonic overload of remaining filters.

4.3.3
AC filter low voltage resistor overload protection.

An a.c. filter replica circuit board together with circuit board QHLA 278 are used for this protection.

Protective zone

The low voltage resistor RL, of the 3/36 and 5/27 branches.

The low voltage resistor R of the 11/13 branch.

Primary objective

- To protect the filter resistor against thermal overload.

Detection principles

- For the 3/36 and the 5/27 branches, the sum of the current through the low voltage components RL and LL is measured.
- For the 11/36 branch, the total filter branch current is measured.

The protection consist of the corresponding a.c. filter replica, by which the current through the resistor is detected. The amplitude and duration of the detected current is compared to the inverse time characteritic function of the protection in order to detect component stresses.

Protective switching actions

- Trip of sub-bank a.c. circuit breakers.

Settings

BRANCH	PROTECTED COMPONENT	I_{TRIP} (A)	I_{ALARM} (A)	TIME KONSTANT (S)
11/13	Resistor R	6.58	4.28	60
3/36	Resistor RL	3.35	2.18	60
5/27	Resistor RL	2.02	1.31	60

Back-up protection

The protection is back-up for malfunction of the reactive power controller, causing lack of filtering capability, which in turn cause harmonic overload of remaining filters.

Annexure-A.VIII

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली योजना एवं मूल्यांकन-I प्रभाग
Power System Planning & Appraisal-I Division

सेवा में / To

1. COO, CTUIL, Plot No. 16, IRCON International Tower, Institutional Area, Sector 32, Gurugram, Haryana-122001
2. Director (System Operation), Grid- India, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi-110010
3. Director (Projects), POWERGRID, Saudamini, Plot No.2, Sector 29, Gurugram, Haryana-122001
4. Chief Engineer (Kashmir), JKPTCL, PDD Complex, Bemina, Srinagar, UT of J&K-190010

विषय / Subject: Minutes of the meeting regarding FTC of 1x25 MVAR, 220 kV bus reactor at 220/66 kV Alusteng S/s of JKPTCL

Madam/Sir,

The minutes of the meeting held through VC on 23.12.2024 under Member (Power Systems), CEA, regarding FTC of 1x25 MVAR, 220 kV bus reactor at 220/66 kV Alusteng S/s of JKPTCL is attached herewith.

संलग्न / Encl: यथोपरि / as above

भवदीय / Yours faithfully,

Signed by Nitin Deswal
Date: 02-01-2025 11:18:43
(नितिन देसवाल / Nitin Deswal)
उप निदेशक / Deputy Director

प्रति लिपि/Copy to:

1. SA to Member (PS), CEA
2. Member Secretary (NRPC), Qutab Institutional Area, Katwaria Sarai, New Delhi-110010

Minutes of the meeting regarding FTC of 1x25 MVAR, 220 kV bus reactor at 220/66 kV Alusteng S/s of JKPTCL

List of participants is at Annex-I.

Background

Implementation of 1x25 MVAR, 220 kV bus reactor at 220/66 kV Alusteng sub-station of JKPTCL was approved in the 6th meeting of NCT on 29.10.2021 through RTM mode with POWERGRID as the implementing agency. It is part of the transmission scheme for strengthening of Srinagar – Leh Transmission System (SLTS). The scope of work at Alusteng sub-station includes: 25 MVAr, 220 kV bus reactor - 1 No. & 220 kV reactor bay - 1 No.

POWERGRID informed that there was space constraint at Alusteng S/s for construction of independent reactor bay construction and the matter was taken up with JKPTCL and subsequently, the space near the 220 kV Bus Coupler Bay has been utilized for the reactor and the 220 kV bus isolator of the Bus Coupler Bay has been be utilized for connecting the reactor. Now, POWERGRID has requested for the FTC (first time charging) of the bus reactor through the above arrangement.

Deliberations held in the meeting

POWERGRID stated that considering the space constraint at Alusteng sub-station (JKPTCL) and the importance of Bus Reactor at Alusteng station being connected directly to Srinagar Leh Transmission System (SLTS), the arrangement of utilizing the existing Bus Coupler Bay for connecting new 25 MVAr Bus Reactor through its isolator at Alusteng sub-station may be agreed and first time charging clearance may be accorded by Grid India. Similar type of arrangement is already operational at Wagoora sub-station.

Grid India stated that the arrangement made by POWERGRID for connecting the bus reactor is not in accordance with the scheme approved by NCT. Grid India added that Remote Terminal Unit (RTU) is also not installed at Alusteng sub-station; therefore, it would not be possible to get the actual continuous data during the continuous trial run of the reactor for 24 hours. Also, there would be issues in declaration of availability of the asset. Further, bus bar protection scheme and Event Logger is not present at the sub-station.

POWERGRID informed that LoA has already been placed for RTU (under ULDC Phase-III scheme) at Alusteng and same would be installed by July 2025. POWERGRID suggested that in the meantime, data could be measured at specific intervals and after getting it certified from JKPTCL, it could be submitted/transmitted to RLDC.

CTUIL stated that issue of availability of space at Alusteng sub-station and arrangement made by POWERGRID for connecting the bus reactor was not intimated to CTUIL/NCT earlier. The issues should have been intimated at the stage of identification of the problem so that the deviation in the scope of works could have been taken up with the approving authority.

Regarding the query from CTUIL about the other associated works under the scheme for strengthening of SLTS, POWERGRID informed that the cable works in SLTS are at advance stage and would be commissioned shortly after clearing of snow and the 2x25 MVAr reactor at Drass sub-station (PG) is almost ready and would be commissioned in few weeks.

CEA stated that any deviation from the agreed scope of works of the transmission scheme should be intimated to CTUIL so that the same could be timely brought in the notice of NCT.

Grid India highlighted that real time data availability from JKPTCL sub-stations is an issue and it becomes very difficult to monitor the data. The issue has been flagged in various meetings of NRPC.

Member (Power Systems), CEA, stated that it is not advisable to operate bus reactor without proper monitoring arrangements. The present case may be treated as an exceptional condition. The bus reactor may be permitted for charging subject to condition of safe and secure operation in writing by the concerned stakeholders. The issue of bus bar protection scheme and provision of event logger at JKPTCL sub-station should to be taken up in TCC/OCC meetings of NRPC.

After deliberations, following was agreed:

1. The implementation arrangement of 25 MVAr Bus Reactor at Alusteng (JKPTCL) by utilizing the existing Bus Coupler Bay through its isolator may be noted.
2. The first time charging of 25 MVAr bus reactor at Alusteng (JKPTCL) may be permitted as an exceptional case as agreed by the stakeholders. POWERGRID and JKPTCL to ensure availability of data to Grid India. Modalities of data transfer to be firmed up by POWERGRID and JKPTCL in consultation with Grid India.
3. POWERGRID to expedite the implementation of RTU at Alusteng sub-station and other critical locations in J&K.
4. POWERGRID to note that any deviation from the agreed scope of works of the transmission scheme being implemented by POWERGRID should be timely intimated to CTUIL/CEA.
5. The issue of bus bar protection scheme and provision of event logger at J&K sub-stations to be taken up in TCC/OCC/PCC meetings of NRPC.

***

Annex-I

List of Participants:

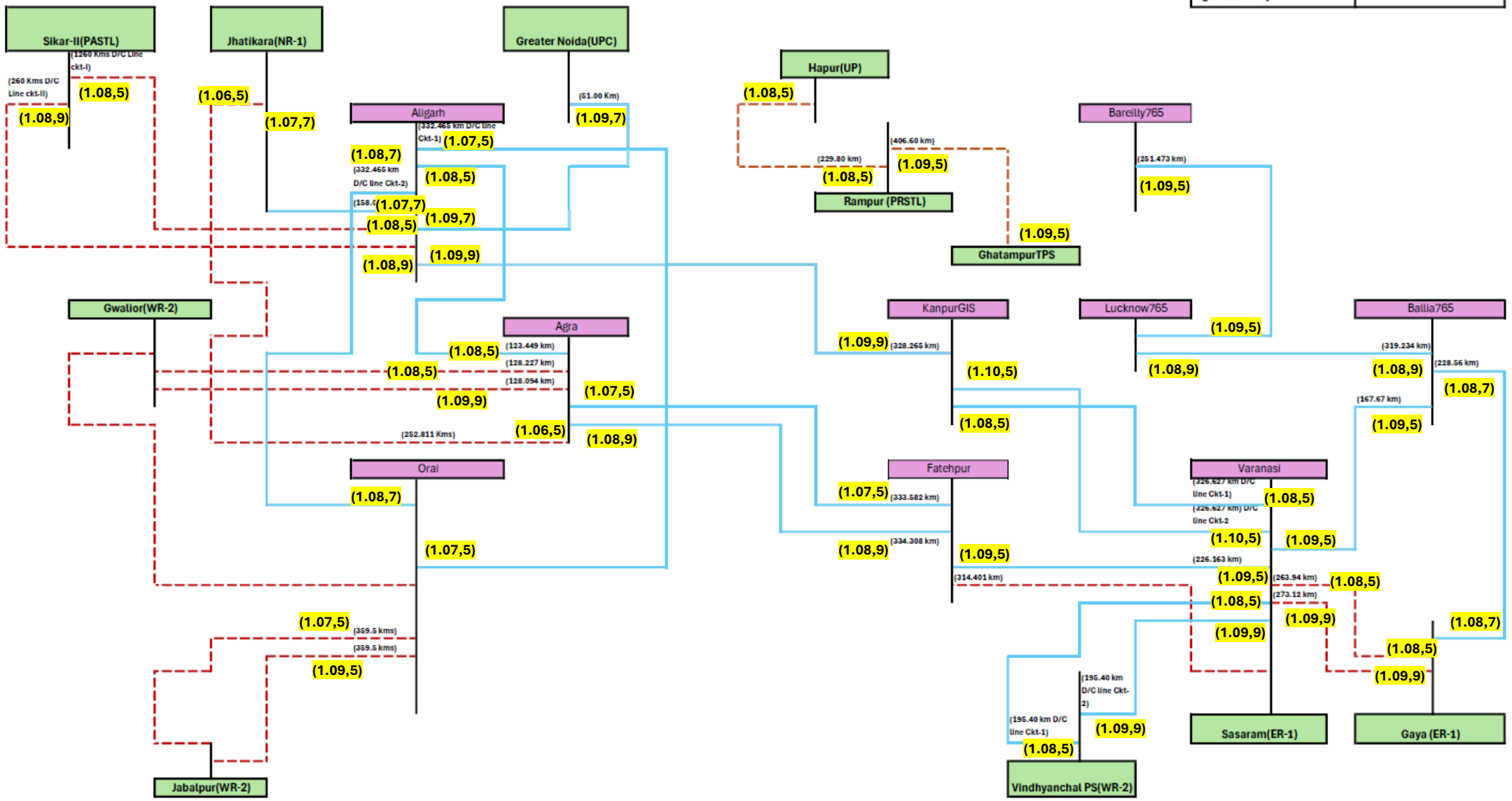
Sl. No.	Name	Designation
	CEA	
1	Sh. A.K. Rajput	Member (Power Systems)
2	Sh. Ishan Sharan	Chief Engineer (PSPA-I)
3	Sh. Nitin Deswal	Dy. Director (PSPA-I)
	Grid India	
2	Sh. Vivek Pandey	Sr. General Manager
3	Sh. Sunil Aharwal	General Manager (SO)
4	Sh. Priyam Jain	Chief Manager (SO)
5	Sh. Gaurav Singh	Chief Manager
6	Sh. Gaurab Dash	Dy. Manager
	CTUIL	
1	Sh. K.K Sarkar	Sr. GM
2	Sh. Kashish Bhambhani	GM
	POWERGRID	
1	Sh. Arindam Chakraborty	CGM (Projects)
2	Sh. Jagat Ram	GM (AM)
3	Sh. Praveen Kumar	Sr. DGM (PESM)
4	Sh. Rakesh Gupta	Chief Manager (RTAMC)
5	Sh. Mitin Gupta	Chief Manager
	JKPTCL	
1	Sh. Mohammad Saleem	AEE

Settings for Inter-regional lines to be discussed with WRPC/ERPC/NLDC

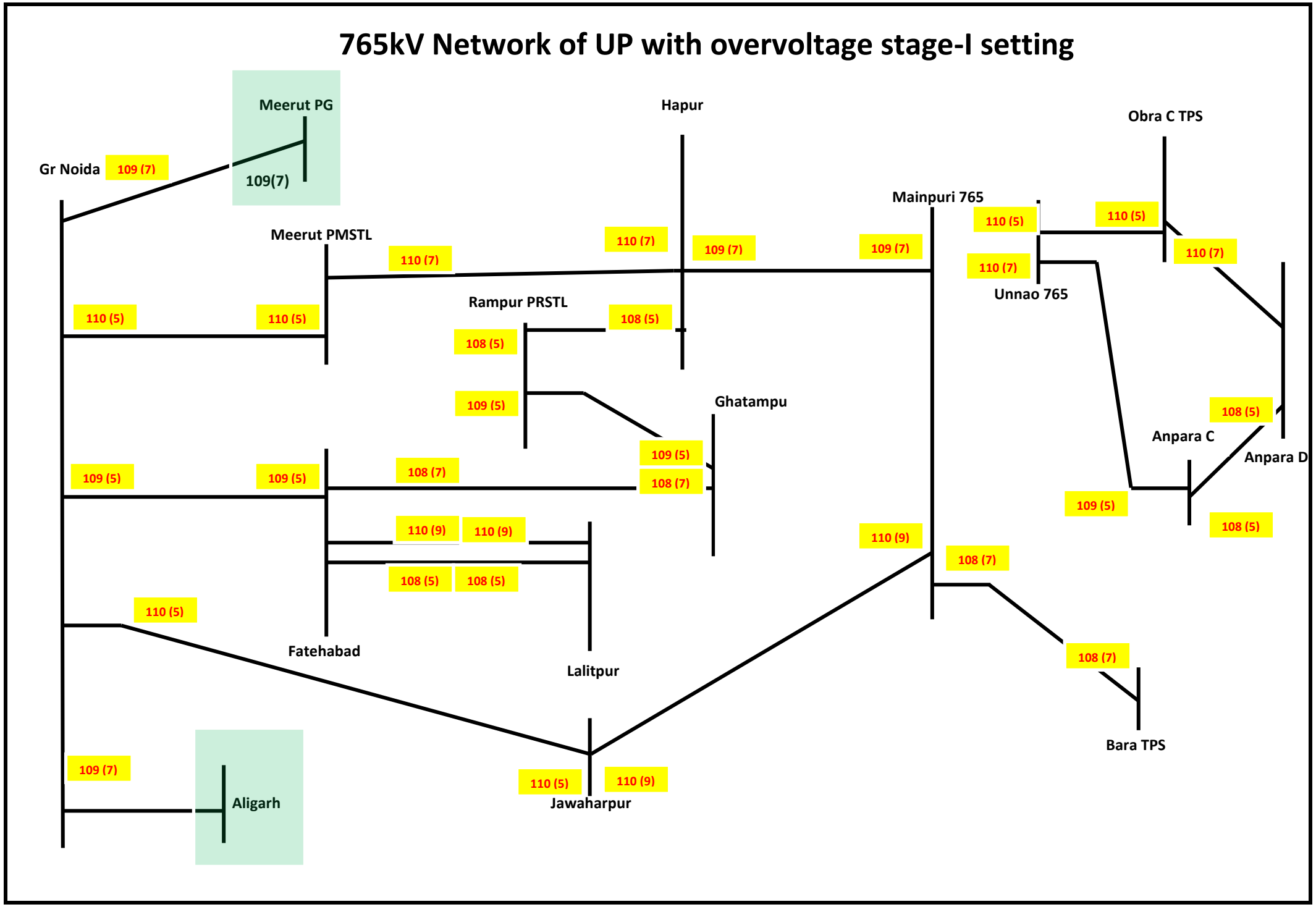
Annexure-A.IX

CONNECTION DIAGRAM OF 765kV SYSTEM IN POWERGRID NR-III

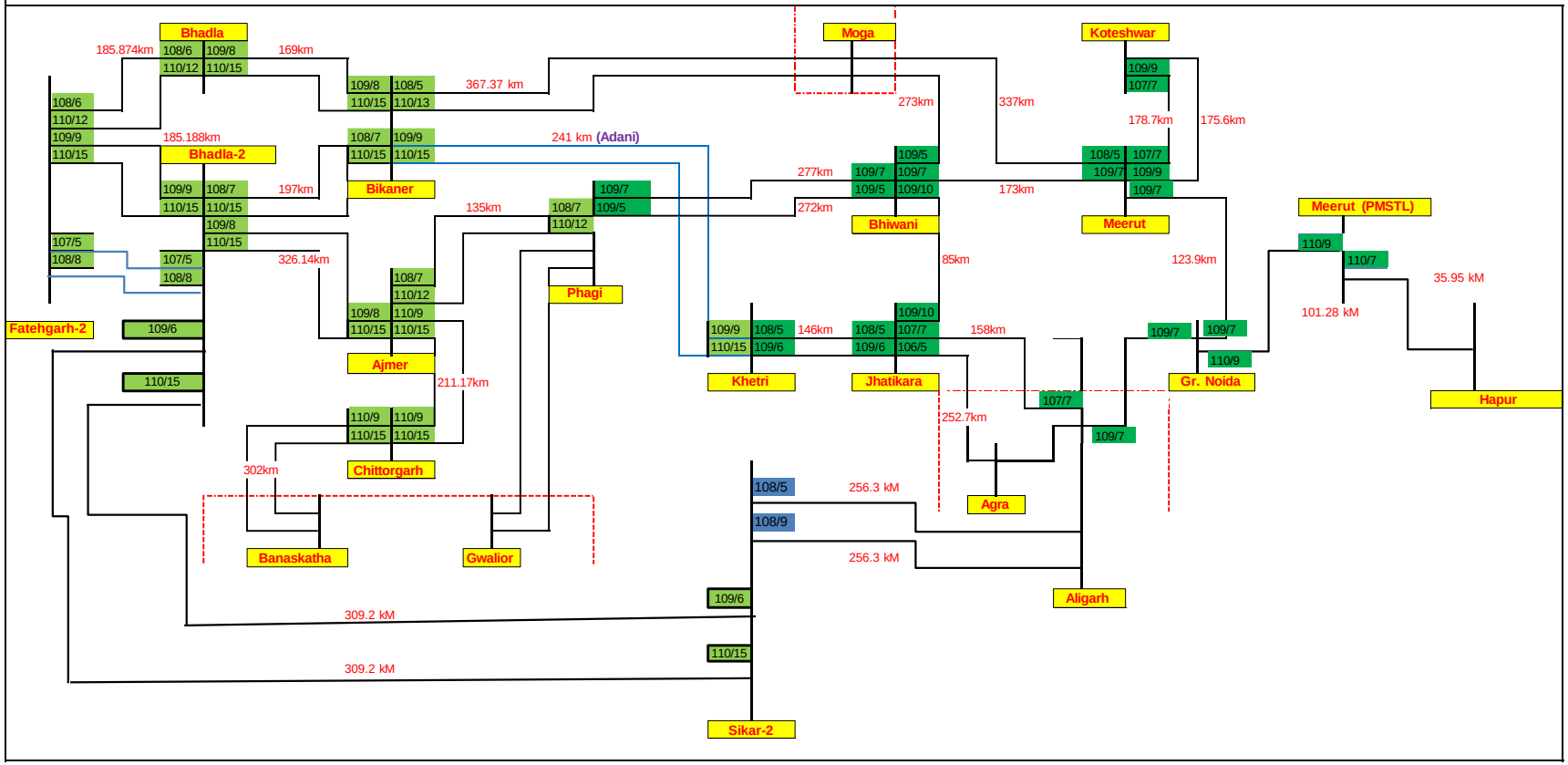
Description	Color coding
Power Grid NR-3 S/S	
Other region and other utility s/s	
Transmission Line under NR-3	
Transmission Line under Other region and utility	



765kV Network of UP with overvoltage stage-I setting



OVER VOLTAGE RELAY SETTINGS (STAGE-I) OF 765kV SYSTEM OF NORTHERN REGION-I



Annexure-B.I

Status of actions points recommended during previous PSC meetings (to be discussed in 57th PSC meeting)

S. No	Agenda	Remdial actions recommended during PSC meeting	Status of remdial action taken		
			55th PSC (20.12.2024)	56th PSC (20.01.2025)	57th PSC (20.02.2025)
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.	Compliance report submitted by HPSEBL was discussed during the meeting. NRLDC representatibe highlighted that there are number on protection related non-compliance mentioned in 3rd party protection audit report. HPSEBL was requested to share the timeline for rectification of all the issues. HPSEBL represenatives were not present in the meeting. SLDC-HP was requested to further follow-up with HPSEBL for expedited corrective actions at their end. Protection audit of other remeianing stations (Baddi, Upperla Nangal etc) also need to be completetd on priority.	HPSEBL representative stated that they have applied for the PSDF for rectification of issues in this complex. Some observation have come from PSDF. They will again submit the application by incorporating the observations. *PSC forum requested HPSEBL to take expeditious actions at your 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 availability of OPGW has been confirmed. Design team of HVPNL shall put up the case for purchase of differential relay. *PSC forum recommended HVPNL to expedite the implementation of differential protection in short lines.*	HVPNL representative informed that status is same, HVPNL design team is following up this case. They are compiling all such cases and then purchase order will be placed for complete package. *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 400/220kV Akal (RS) on 08th Jun 2024, 19:53 hrs	**51 PSC:** a) Bus bar protection at 220kV bus at 400/220kV Akal shall be made operational at the earliest. b) Time synchronization of recording instruments (DR/EL) need to be ensured.	RVPNL representative stated that work hasn't completed yet due to manpower issue because of parallel work at Pachpadra S/s (newly commissioned) and issue of bus bar at Akal S/s shall be resolved by the end of January 2025.	RVPNL representative stated that work got delayed due to manpower issue because of parallel work at Pachpadra S/s (newly commissioned) and issue of bus bar at Akal S/s shall be resolved by the end of February 2025. Further, they will take remedial actions to avoid complete outage of station. Regarding non submission of DR/EL of recently occurred grid events, it was informed that due to unavailability of designated manpower, DR/EL files couldn't be extracted timely which later got lapsed. *PSC forum recommended RVPNL to expedite the process and make bus bar protection at Akal S/s healthy & operational at the earliest.*	
4	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 they will receive differential relay in January 2025 and laying of OPGW on 400kV Parbati2-Sainj line (length 700-800m) will take ~2 months(Feb25). Visit of GE engineer is also scheduled in January 2025. Representatives of Sainj HEP were not present in the meeting. *PSC forum recommended NHPC to expedite the process at their end and HPPTCL was requested to follow up with HPPCL for necessary actions required at Sainj HEP.*	NHPC representative informed that Visit of GE engineer is scheduled in February 2025. Implementation of differential protection and testing of A/R operation will be done during that time only. Representative from HPPCL informed that they will take remedial action to ensure healthiness of PLCC at their end and will also conduct loop test of PLCC in coordination with NHPC. *PSC forum recommended NHPC & HPPCL to take expeditious action at their end and ensure healthiness of protection system.*	
5	Multiple elements tripping at 400kV Khedar(RGTPS) Station at 10th May 2024, 19:35 hrs	**51 PSC:** a) Revised corrected protection settings of Main-2 Micome P4442 distance protection relay and A/R scheme at Khedar(RGTPS) end need to implemented at the earliest.	RGTPS representative informed that shutdown is planned in January 2025, issue will be resolved during that period. *PSC forum requested RGTPS & HVPNL to ensure the desired correction in logic of A/R function at Khedar TPS at the earliest.*	RGTPS representative informed that work is in process, and it will be completed by the end of this month i.e., January 2025 only. *PSC forum requested RGTPS to take necessary remedial action as per mentioned timeline and ensure healthiness of protection system.*	
6	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.	POWERGRID(NR-1) representative informed that, materials have been received and work has been started. It will get completed by the end of January 2025. *PSC forum requested POWERGRID(NR-1) to expedite the process of implementation of differential protection at Koteshwar HEP*	POWERGRID(NR-1) representative informed that, work is in progress, shutdown is planned on 27-28th Jan 2025. It will be completed by the end of January 2025 only.	
7	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 representatives were not present in the meeting.	PSTCL representative informed that bus bar protection at 220kV Sarna will be commissioned by the end of March 2025. *PSC forum requested PSTCL to expedite the work related to implementation of bus bar protection at Sarna S/s.*	
8	Multiple elements tripping at 400/132kV Masoli(UP) on 29th May 2024, 15:57 hrs	**51 PSC:** a) Up shall implement the bus bar protection at 132kv level at 400/132kV Masoli S/s.	UPPTCL representative informed that bus bar protection has been arranged for Masoli(UP) station. Shutdown has been planned after 24th February (after Kumbh Mela) and it is expected that bus bar commissioning at 132kV Masoli(UP) will get completed by the end of March 2025. *PSC forum requested UPPTCL to expedite the process of bus bar protection implementation at 400/132kV Masoli(UP) and such other stations.*	UPPTCL representative stated that status is same. Bus bar commissioning at 132kV Masoli(UP) will get completed by the end of March 2025. *PSC forum requested UPPTCL to expedite the process of bus bar protection implementation at 400/132kV Masoli(UP) and such other stations.*	
9	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 representatives were not present in the meeting.	RVUNL representative stated that work is at stage of tender processing. Necessary follow up actions are being taken. *PSC forum requested RVUNL for expeditious actions at their end.*	
10	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 civil work has not been completed yet. Implementation of duplex panels will be started after completion of civil work. *PSC forum requested RVPNL to expedite the process.*	RVPNL representative informed that major part of the civil work has been completed at Sakatpura S/s. Work of panel replacement will be completed by the end of February 2025. PSC forum requested RVPNL to expedite the actions at their end.	

11	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.	UPPTCL representative informed that work of relay replacement has been started and all the line protection electromechanical relays at Khara(UP) will be replaced with numerical relays by the end of December 2024. *PSC forum requested UPPTCL to expedite the replacement of relay at Khara(UP) end.*	UPPTCL representative informed that continuous shutdown is going on for work of relay replacement at Khara S/s. Work is completed in Unit-1 and currently going on in Unit-2. Relay replacement in Saharanpur line will also get completed within next 07 days. It is expected that complete work i.e., relay replacement and their testing will get completed by the end of March 2025. *PSC forum requested UPPTCL to expedite the replacement of relay at Khara(UP) end.*	
12	Multiple elements tripping event at Patiala(PG)	**52 & 53 PSC:** POWERGRID was requested to expedite the process of commissioning of new bus bar scheme.	POWERGRID(NR-2) representative informed that status is same and implementation of new bus bar protection at Patiala(PG) will be completed by the end of January 2025. *PSC forum requested POWERGRID(NR-2) to expedite the process.*	POWERGRID(NR-2) representative informed that work at Nallagarh S/s hasn't completed yet. Therefore it is expected that implementation of bus bar protection at Patiala(PG) will be completed by the end of March 2025. *PSC forum requested POWERGRID(NR-2) to expedite the process.*	
13	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 following during the meeting: •Over frequency & overcurrent protection in generating units are yet to be reviewed. It will be done at the earliest. •There are wiring related issues which have to be corrected to enable the A/R operation in Sarsawan line. Visit of OEM is being planned as per shutdown availability. •Replacement of Unit breakers is also planned. Follow ups are being done with OEM. •Isolator selection relay is also planned to be replaced within next 2 months(Feb25). After this, bus bar protection will be made operational. HPSEBL representatives were not present in the meeting. *PSC forum recommended following actions to UJVUNL:* *•Expedite the necessary corrective actions to ensure all the protection compliance mentioned in CPRI audit report.* *•Submit the action plans w.r.t. all the desired remedial actions at Khodri HEP* *•HPSEBL shall take corrective actions to ensure proper operation of protection system in 220kV Khodri-Mazri ckt-2.*	UJVUNL representative informed following during the meeting: •Over frequency & overcurrent protection has been reviewed and found in order. •Visit of GE team has been planned. A/R operation related issue will be resolved during that time. •Bus bar protection relay is of electromechanical type. Tender has been floated for replacement of some component. Commissioning of numerical relay will take long time therefore it we are planning to make existing electromechanical relay healthy. •Maintenance and testing of Unit breakers was done on 10.12.2024. Thereafter, breakers are working smoothly. Apart from this, tender process for commissioning of new unit breakers has also been planned and same has been shared by mail. HPSEBL representatives agreed to review the protection settings in 220kV Khodri-Majri line-II. *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.*	
14	Frequent tripping of 220 KV Nanauta(UP)-Saharanpur(PG) (UP) Ckt-1 & 220 KV Sarsawan(UP)-Khodri(UK) (UP) Ckt-1:	**54 PSC:** PSC forum requested UPPTCL to ensure resolution of issue with the Main-2 relay configuration at Nanauta(UP) & Sarsawan(UP) at the earliest.	UPPTCL representative informed that issue hasn't been resolved yet. As a precautionary measure Z-1 time delay in Main-2 relay has been kept 100msec. In case of Ph-N fault, Main-1 relay would be able to facilitate A/R operation. Issue in relay configuration in mnain-2 relay will be resolved during next available shutdown.	UPPTCL representative stated that no A/R operation related issues are observed since changes in Main-1 relay was done at both the stations. Issue in relay configuration will be resolved during next available shutdown (approx. after 2-3 months). *PSC forum requested UPPTCL for expedited corrective actions.*	
15	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 Bus bar protection relay is of electromechanical type, and it has to be replaced with numerical relay. Around 6-month (June25) time will be required for this work. Issue of time sync will be resolved by the end of January 2025.	UPPTCL representative informed that status is same. *PSC forum requested UPPTCL for expedited corrective actions.*	
16	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 Commissioning and Implementation of numerical relays in 132kV ICT-1&2 at Obra_A(UP) is expected to get completed by 1st week of February 2025.	UPPTCL representative informed that status is same. *PSC forum requested UPPTCL for expedited corrective actions.*	
17	Multiple elements tripping at 400/220kV Kashipur(Utt) on 10th October 2024	**54 PSC Recommendations:** a)PTCUL shall review the SPS scheme at 400/220kV Kashipur S/s. b)Overcurrent protection setting (IDMT) need to be revised in line with the approved protection philosophy.	PTCUL representaitve were not present in the meeting.	PTCUL representative informed that some correction in protection setting / protection coordination has been done. *PSC forum requested PTCUL to review the SPS scheme and submit in next PSC/OCC meeting.* PTCUL agreed to review the SPS scheme at Kashipur S/s.	
18	Multiple elements tripping at 220kV Dausa(RS) on 21st October 2024	**54 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.	RVPNL representative informed that total 5 electromechanical have to be replaced with numerical relays. 3 no. of relays have been allotted, remaining 2 relay will get allotted in next phase. It is expected that work of relay replacement will get completed by the end of January 2025.	RVPNL representative informed that one relay is planned to be replaced within next 2-3 days. Bassi-I&II line is of POWERGRID and their shutdown is planned in February 2025. Remaining two relays shall be replaced during bulk relay replacement. RVPNL representative informed that time sync issue is not resolved yet. Resolution of time sync issue has also been taken up in parallel. *PSC forum requested RVPNL for expedited corrective actions.*	
19	Multiple elements tripping at 400kV Alwar(RS) on 30th October 2024	**54 PSC Recommendations:** RVPNL shall design a suitable SPS for 400/220kV Alwar S/s a propose the same in next OCC/PSC meeting for discussion.	RVPNL representative informed that proposal of SPS at Alwar has been sent to planning team and agenda of the same is expected to be submitted in next meeting. NRLDC representative suggested to submit the proposed scheme by mail for preliminary review further it can be put up in OCC for discussion.	RVPNL representative stated that SPS shall be proposed in next OCC meeting.	
20	Frequent tripping of 220 KV Auraiya(NT)-Mehgaon(MP) (MPSEB) Ckt-1	**54 PSC Recommendations:** PSC forum recommended NTPC to take necessary actions to minimise the tripping and ensure proper operation of A/R in line	NTPC representative stated that as informed by the site there are no protection related issues at Auraiya end. NRLDC representative stated that DR files submitted from Auraiya end shows A/R block after few msec of A/R start. Reason of the same need to be identified. NTPC was requested to further review the tripping incidents.	NTPC representatives were not present in the meeting.	
21	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.	Installation of bird guard throughout the line, replacement of earth wire throughout the line and replacement of damaged disc insulators are being done in lines evacuating from Sakatpura(RS). Work is almost completed in line connected to RAPP_A and in line connected to RAPP_B, it will get completed with in next 35-40 days. (by the end of january 2025)	RVPNL representative informed that work has been completed in both the lines connected to RAPP_A and in line connected to RAPP_B, it will get completed by the end of January 2025.	
22	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 was requested to plan replacement of porcelain insulators with polymer type.*	PSTCL representative informed that replacement of insulators of these lines are planned in next financial year (2025-26). *PSC forum requested PSTCL to for expeditious actions for insulators replacement.*	

23	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 shall ensure the healthiness of carrier communication and A/R operation at Muradnagar_1(UP) end.*	UPPTCL representative stated that issue of carrier communication still persists there. ZIV is the OEM and they are not able receive OEM support. Further follow up is being done for corrective actions otherwise new carrier system will be implemented. *PSC forum requested UPPTCL for expedited corrective actions.*	
24	Multiple element tripping event at 400/220kV Merta(RS) on 11th November, 2024	**55 PSC Recommendations:** a) RVPNL shall share the further analysis of this grid event within one week. b) RVPNL shall take necessary remedial actions to ensure timely collection of DRs from site after any grid incidents.	*a)RVPNL shall share the further analysis of this grid event within one week.* *b)RVPNL shall take necessary remedial actions to ensure timely collection of DRs from site after any grid incidents.*	RVPNL representative informed that fault was on 220kV Jethana line. Line tripped from Jethana end in Z-2 with carrier. However, at Merta end, jumper snapped and fell on both the bus led to bus fault on both the 220kV bus at Merta S/s. On this fault, bus bar protection of both the bus operated. However, CB of Bhopalgarh feeder got stuck and fault cleared with the tripping of breaker from Bhopalgarh end in Z-2. Due to this, there was delayed clearance of fault. RVPNL representative stated that routine maintenance is done on regular basis. In addition, they have followed up with OEMs for inspection of breaker and necessary actions to resolve the issues faced at site. *PSC forum requested RVPNL to take necessary remedial actions and ensure proper operation of protection system.*	
25	Multiple element tripping event at 400/220kV Hindaun(RS) on 16th November, 2024	**55 PSC Recommendations:** a)RVPNL shall share the further analysis of this grid event within one week. b)RVPNL shall review the protection system at Hinduan S/s (specifically TEED protection) and take necessary remedial actions to ensure proper operation of protection system.	*a)RVPNL shall share the further analysis of this grid event within one week.* *b)RVPNL shall review the protection system at Hinduan S/s (specifically TEED protection) and take necessary remedial actions to ensure proper operation of protection system.*	RVPNL representative informed that fault was towards bus reactor thus it was not bus fault. Fault occurred during switching of reactor. Members stated that as per fault location shared by RVPNL, it should be come under zone of TEED protection. Regarding TEED protection, RVPNL representative couldn't able to share the analysis. *PSC forum requested RVPNL to review the TEED protection and ensure proper operation of protection system.*	
26	Multiple element tripping event at 220kV Pong(BB) on 06th November, 2024	**55 PSC Recommendations:** BBMB shall share the event analysis and details of remedial action taken within one week.	*BBMB shall share the event analysis and details of remedial action taken within one week.*	BBMB representative couldn't able to share the tripping analysis and assured that they will share the details within 1-2 days. CGM SO, NRLDC suggested BBMB to share the tripping analysis details along with remedial action taken with NRLDC. Further, it can be discussed in next PSC meeting. *PSC forum requested BBMB to ensure timely submission of DR/EL & tripping report*	
27	Frequent tripping of 400 KV Akal-Jodhpur (RS) Ckt-1	**56 PSC Recommendations:** RVPNL shall rectify A/R issue of main-I relay at Jodhpur end.		RVPNL representative informed that there is issue at Jodhpur end w.r.t. A/R operation. Due to old version of the relay, engineers couldn't able to rectify the issue. Now, A/R operation has been shifted to Main-2 earlier it was on Main-1. Now, A/R will operate from Jodhpur end also.	
28	Multiple element tripping event at 400kV Jaisalmer(RS) at 12:13 hrs on 11th December, 2024	**56 PSC Recommendations:** a) RVPNL shall ensure the healthiness of protection system and their proper operation. b) Timely submission of disturbance recorder (DR) and event logger (EL) files need to be ensured.		RVPNL representative informed that there was no fault in system. Tripping occurred during maloperation of LBB relay during shifting of elements from one bus to another bus to avail shutdown for reconfiguration of LBB relay. Issue with the LBB relay at Jaisalmer S/s has been rectified. OEM has reconfigured the relay and testing of the same has also been done. Relay is working properly now.	
29	Multiple element tripping event at 220kV Bhiwani(BBMB) at 10:41 hrs on 13th December, 2024	**56 PSC Recommendations:** a) BBMB shall share the DR/EL & tripping details within one week. b) Timely submission of disturbance recorder (DR) and event logger (EL) files need to be ensured.		BBMB agreed to share all the details within 1-2 days.	
30	Multiple elements tripping at 220kV Mehalkalan(PS)on at 13:48 hrs on 27th November, 2024	**56 PSC Recommendations:** a) PSTCL shall share the DR/EL & tripping details within one week. b) Timely submission of disturbance recorder (DR) and event logger (EL) files need to be ensured.		PSTCL representative stated that they couldn't analyse the grid event. DR/EL & tripping details are yet to be collected. They will share the tripping analysis within one week.	
31	Multiple elements tripping at 220kV CB Ganj(UP) at 15:56 hrs on 29th December, 2024	**56 PSC Recommendations:** a) UPPTCL shall sensitise the site engineer about important alarms and practice to attend those alarms on priority. b) Healthiness of protection system and their proper operation need to be ensured. c) Timely submission of disturbance recorder (DR) and event logger (EL) files need to be ensured.		During investigation w.r.t. protection non-operation at in Dohna line, it was found that Line PT was not available on Relay measurements & PT fuse of all R,Y,B Phase were found broken in Switch Yard (PT Terminal box) and also cable from relay Panel to PT Junction box for both Main & Backup Protection core, was found damaged due to which Distance and Back up Protection was Blocked and Protection not Operated. PT Fuse of all Phases has been replaced of 220KV Dohna Line (Faulty Line). Cable from Relay Panel to PT Junction box for both Main & Backup Protection core has been replaced. UPPTCL representative stated that they have sensitised the site engineers in this regard. However, they will take further necessary actions.	
32	Multiple element tripping event at 400/220kV Bikaner(RS) at 18:05 hrs on 14th December, 2024	**56 PSC Recommendations:** a) RVPNL shall resolve the issue with the bus bar protection at Bikaner(RS) at the earliest. b) Healthiness of protection system and their proper operation need to be ensured. c) Timely submission of disturbance recorder (DR) and event logger (EL) files need to be ensured.		RVPNL representative agreed to taken necessary action on priority. RVPNL informed that Bus bar protection was not healthy during the event due to faulty FO cable (interconnecting cables).Case for replacement of FO cable is in process and will be resolved during commissioning work of new 500 MVA transformed at Bikaner(RS). Commissioning of ICT is panned in April 2025.	
33	Multiple element tripping event at 220kV Dausa(RS) at 11:30 hrs on 29th December, 2024	**56 PSC Recommendations:** a) RVPNL shall expedite the replacement of static relays with numerical relay. b) Healthiness of protection system and their proper operation need to be ensured. c) Timely submission of disturbance recorder (DR) and event logger (EL) files need to be ensured.		RVPNL informed that one of the relay (static type) was faulty and other relay (numerical type) didn't operated due to PT fuse fail alarm. Case of replacing stating relays with numerical relays has already been initiated. To address the issue of PT fuse fail, PT selection will be switched from bus PT to line PT. Three number of relays are available and shall be replaced in priority in Bassi-I&II and Sawaimadhopur feeder.	

Annexure-B.II

Grid Event summary for January 2025

S.No.	Category of Grid Incident/ Disturbance	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)	Compliance of Protection Protocol/Standard		
	(GI-1 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	(i)210 MW Guru Gobind Singh TPS (Ropar) - UNIT 6 (ii)210 MW Guru Gobind Singh TPS (Ropar) - UNIT 3 (iii)210 MW Guru Gobind Singh TPS (Ropar) - UNIT 4	Punjab	PSTCL	6-Jan-25	09:32	i)220/132 KV Ropar (GGSTP) has double main bus system in 220KV and 132KV side. ii)During antecedent condition, 210 MW Guru Gobind Singh TPS (Ropar) - UNIT 3, Unit 4 and Unit 6 generating 180MW, 167MW and 176MW respectively. iii)As reported at 09:32 hrs, during the synchronization of the 210 MW Unit-5 at Guru Gobind Singh Thermal Power Station (Ropar), the R- phase limb of the 220 kV generator transformer circuit breaker for Unit-5 ruptured. This incident triggered the tripping of Units 3, 4, and 6, each with a capacity of 210 MW. Consequently, a blackout occurred at the 220 kV Guru Gobind Singh TPS substation. (Details of protection operation yet to be received). iv)As observed from PMU at Abdullapur (PG) S/s, R-N phase to earth fault was observed. Fault clearance time of 120 msec can be seen in the PMU. v)During this event, a total generation loss of 521MW was observed in Punjab control area . (As per SCADA). vi)As per SCADA, 225MW of change in demand is observed in Punjab control area.	225	521	120	Y(d)	N	N
2	GI-2	(i) 400 KV Fatehgarh_II(PG)-Fatehgarh Pooling (FBTL) (FBTL) Ckt-1	Rajasthan	FBTL	8-Jan-25	13:38	i)400KV Fatehgarh (Adani) pooling station has one and half breaker scheme with 400KV Fatehgarh (Adani) – Fatehgarh II Ckt 1 & 2, 400KV Fatehgarh (Adani) – Acme, 400KV Fatehgarh (Adani) – Fatehgarh PSS Ckt. 1 & 2. ii)As reported, at 13:38hrs, 400 KV Fatehgarh_II(PG)-Fatehgarh Pooling (FBTL) (FBTL) Ckt-1 tripped on R-Y phase to phase fault with fault distance of 45.8Km and fault current of 8.1KA from Fatehgarh (Adani) end. iii)As per PMU at Fatehgarh, R-Y phase to phase fault (voltage dipped upto 0.514 p.u.) is observed with fault clearing time of 80ms. After the fault clearance voltage increased upto .99 p.u. iv)As per PMU at Bassi (PG), a sharp drop in frequency is observed from 49.97 Hz to 49.83 Hz and frequency recovered to 49.99 Hz within 1 min. v)As per PMU, solar generation loss of approx., 719MW, 30MW, 218MW and 98MW are observed respectively at ASHPL (IP), AHEJ3 (IP), RSUPL (IP) and CSPJP (IP). vi)As per SCADA, dip in NR total solar generation of approx. 1450 MW is observed with change in Rajasthan solar generation of approx. 177 MW.	1450	0	80	Y	Y(d)	N (Partial detail received)
3	GI-2	(i)220 kV Akal – Bhainsara Ckt-1 & 2 (ii)400/220 KV 500 MVA ICT 1, 2 & 4 AT AKAL(RS) (iii)400/220 KV 315 MVA ICT 3 AT AKAL(RS) (iv)220 kV Akal(RS) BUS-1 & 2 (v)220 KV AKAL-GIRAL (vi)220KV AKAL-BARMER (vii)220 AKAL- AMARSAGAR (viii)220 AKAL- MADA (ix)220 AKAL- AKAL(SUZLON) ckt-1 & 2 (x)220 AKAL- RAJGARH (xi)220 AKAL- JAJIYA (xii)220 AKAL- BHU ckt-1 & 2 (xiii)220 AKAL- DANGRI ckt-1 & 2 (xiv)220 AKAL- MOOLANA (xv)220 AKAL- LALA	Rajasthan	RVPNL	9-Jan-25	23:35	i)400/220kV Akal(RS) has one and half breaker scheme at 400kV level and double main and transfer bus scheme at 220kV level. ii)During antecedent condition, 400/220 kV 500 MVA ICT-1 & ICT-2 were connected to 400kV bus-1 and 400/220 kV 315 MVA ICT-3 & 500 MVA ICT-4 were connected to 400kV bus-2. iii)As reported, at 23:35 hrs, Y-phase jumper of 220kV bus-1 of 220kV Akal-Bhensara Ckt-1 snapped which created bus fault on both 220kV buses at Akal(RS). iv)As per PMU at Bhadla(PG), Y-N phase to earth fault with delayed fault clearance time of 720 msec is observed. v)Bus bar protection is not in service at 220kV side of Akal S/s. Therefore, fault cleared with the operation of back up protection i.e., 400/220kV ICTs at Akal. All four ICTs tripped on O/C E/F protection operation. vi)Due to tripping of all four ICTs at Akal(RS), evacuation path lost for all the wind power plants connected at 220kV bus-1 & bus-2 at Akal(RS). On this, both 220kV buses became dead at Akal(RS) S/s. vii)During this event, dip in Rajasthan wind generation of approx. 523 MW is observed out of which approx. 232 MW recovered within 6 minutes. (As per SCADA). viii)As per SCADA, about 171MW demand change is observed in Rajasthan control area.	523	171	720	N (Partial detail received)	N (Partial detail received)	N (Partial detail received)
4	GI-2	(i)400/220 kV 250 MVA ICT 1 at Heerapura(RS) (ii)400/220 kV 250 MVA ICT 3 at Heerapura(RS)	Rajasthan	RVPNL	10-Jan-25	13:35	i)400/220KV Heerapura sub-station has one and half breaker scheme in the 400KV side and Double main & transfer scheme in the 220 KV side. ii)As reported at 13:35hrs, a kite thread fell on the 220KV side of the ICTs. As a result Bus- Bar protection operated on the 220KV side led to tripping 400/220 kV 250 MVA ICT 1 and 3 at Heerapura(RS). (exact reason and nature of protection operated yet to be shared). iii)As per PMU at Heerapura (RS), R-N fault (delayed fault clearance in R-ph) is observed with delayed fault clearing time of 320ms. iv)As per SCADA, change in demand of approx. 320MW in Rajasthan control area is observed.	0	320	320	N	N	N
5	GD-1	(i)400/220 KV 500 MVA ICT 1 AT AKAL(RS) (ii)400/220 KV 500 MVA ICT 2 AT AKAL(RS) (iii)400/220 KV 500 MVA ICT 3 AT AKAL(RS) (iv)400/220 KV 500 MVA ICT 4 AT AKAL(RS) (v)400/220 KV 500 MVA ICT 2 AT RAMGARH(RS) (vi)400 KV AKAL-JODHPUR (RS) CKT-1 (vii)400 KV AKAL-BARMER (RS) CKT-1 (viii)400 KV AKAL-JAISALMER (RS) CKT-1 (ix)400 KV AKAL-RAMGARH (RS) CKT-1 (x)400 KV AKAL-RAMGARH (RS) CKT-2 (xi)400 KV AKAL-KANKANI (RS) CKT-1	Rajasthan	RVPNL	12-Jan-25	06:31	i)400/220kV Akal(RS) has one and half breaker scheme at 400kV level and double main and transfer bus scheme at 220kV level. ii)During antecedent condition, 400/220 kV 500 MVA ICT-1 & ICT-2 were connected to 400kV bus-1 and 400/220 kV 315 MVA ICT-3 & 500 MVA ICT-4 were connected to 400kV bus-2. iii)As reported, at 06:31 hrs, B-N fault occurred on 400 KV Akal-Barmer (RS) Ckt, fault distance was 99.62KM and fault current was 2.42 KA from Barmer end. iv)However, as observed from PMU at Bhadla (PG) S/s, B-N fault was observed and subsequently it converted to Y-B-N double phase to earth fault. Delayed fault clearance time of 2120 msec can be seen in the PMU. v)On this fault, line tripped from Barmer end but breaker of Akal end got stuck due to issue in SF6 gas pressure. Due to non opening of breaker of Akal end, LBB protection would have operated. vi)However, all the 400kV lines and 400/220kV ICTs at Akal tripped during the event. Exact details of protection operation not received yet from SLDC-Rajasthan. vii)Due to tripping of all four ICTs at Akal(RS), evacuation path lost for all the wind power plants connected at 220kV bus-1 & bus-2 at Akal(RS). On this, both 400 and 220kV buses became dead at Akal(RS) S/s. viii)During this event, a dip in Rajasthan wind generation of approx. 340 MW is observed which recovered completely within 5 minutes. (As per SCADA). ix)As per SCADA, 206MW of change in demand is observed in Rajasthan control area.	340	206	2120	N	N (Partial details received)	N (Partial details received)
6	GD-1	1) 220 KV AHEJ4L PSS 2 HB_FGRAH_FBTL (AHEJ4L)-Adani RenewPark_SL_FGARH_FBTL (AREPRL) (AHEJ4L) Ckt	Rajasthan	AHEJ4L, AREPRL	13-Jan-25	14:04	i)Generation of 220 KV AHEJ4L PSS 2 (ASPS2) (IP) station evacuates through 220 KV AHEJ4L PSS 2 HB_FGRAH_FBTL (AHEJ4L)-Adani RenewPark_SL_FGARH_FBTL (AREPRL) (AHEJ4L) Ckt. During antecedent condition, 220 KV AHEJ4L PSS 2 (ASPS2) (IP) was generating approx. 280 MW (as per PMU). ii)As reported, at 14:04hrs, 220 KV AHEJ4L PSS 2 HB_FGRAH_FBTL (AHEJ4L)-Adani RenewPark_SL_FGARH_FBTL (AREPRL) (AHEJ4L) Ckt tripped on R-Y phase to phase fault with fault distance of 14km and fault current of 6.7kA from Adani Fatehgarh Solar Park end. During inspection, broken insulator was found at 220 KV AHEJ4L PSS 2 (ASPS2) (IP) gantry. iii)Due to tripping of 220 KV AHEJ4L PSS 2 HB_FGRAH_FBTL (AHEJ4L)-Adani RenewPark_SL_FGARH_FBTL (AREPRL) (AHEJ4L) Ckt, 220 KV AHEJ4L PSS 2 (ASPS2) (IP) S/s lost its connectivity from grid and blackout occurred at 220 KV AHEJ4L PSS 2 (ASPS2) (IP) S/s. iv)As per PMU at 400kV Adani Fatehgarh(IP), R-Y phase to phase fault (voltage dipped upto 0.823 p.u.) is observed with fault clearing time of 120ms. v)As per PMU, solar generation loss of approx. 280 MW was observed at 220 KV AHEJ4L PSS 2 (ASPS2) (IP).	280	0	120	N	N	N
7	GD-1	1) 220 KV Bhadla_2 (PG)-RSDCL(PSS4)_SL_BHD2_PG (RSDCL) Ckt 2) 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt 3) 220/33 kV 100 MVA ICT 1 at Nokhra SL_BHD2 (NTPC) 4) 220/33 kV 100 MVA ICT 2 at Nokhra SL_BHD2 (NTPC) 5) 220/33 kV 100 MVA ICT 3 at Nokhra SL_BHD2 (NTPC)	Rajasthan	PGCIL, RSDCL, NTPC	15-Jan-25	13:13	i)Generation of 220kV Nokhra (IP) and 220kV RSDCL-4(IP) stations evacuate through 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt and 220 KV Bhadla_2 (PG)-RSDCL(PSS4)_SL_BHD2_PG (RSDCL) Ckt respectively. ii)During antecedent condition, 220kV Nokhra (IP) and 220kV RSDCL-4(IP) were generating approx. 295 MW and 178 MW respectively (as per PMU). iii)As reported, at 13:13hrs, 220 KV Bhadla_2 (PG)-RSDCL(PSS4)_SL_BHD2_PG (RSDCL) Ckt tripped on B-N phase to earth fault with fault distance of 1.3km and fault current of 23.4kA from Bhadla2(PG) end. During inspection it was found that jumper snapped out at tower location no. 8. iv)During the same time, 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt along with 220/33 kV 100 MVA ICT 1, 2 and 3 at Nokhra SL_BHD2 (NTPC) also tripped. Line tripped from Nokhra(NTPC) end only (exact reason of tripping and nature of protection operated yet to be shared). v)Due to tripping of 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt and 220 KV Bhadla_2 (PG)-RSDCL(PSS4)_SL_BHD2_PG (RSDCL) Ckt , 220kV Nokhra (IP) and 220kV RSDCL-4(IP) S/s lost their connectivity from grid and blackout occurred at 220kV Nokhra (IP) and 220kV RSDCL-4(IP) S/s. vi)As per PMU at 220kV Nokhra(NTPC), B-N phase to earth fault (voltage dipped upto 0.269 p.u.) is observed with fault clearing time of 80ms. vii)As per PMU, solar generation loss of approx. 295 MW at Nokhra(IP) and 178 MW at RSDCL-4(IP) were observed.	473	0	80	N (Partial details received)	N (Partial details received)	N (Partial details received)
8	GD-1	i) 220 KV Anta(NT)-Sakatpura(RS) (RS) Ckt-1 ii) 220 KV SAWAIMADHOPUR(RS)- Anta(NT) (PG) CKT-1	Rajasthan	NTPC, RVPNL &PGCIL	22-Jan-25	09:13	i)Generation of 220kV Anta station evacuate through 220 KV Anta(NT)-Sakatpura(RS) (RS) Ckt-1, 220 KV SAWAIMADHOPUR(RS)- Anta(NT) (PG) CKT-1, 220 KV ANTA(NT)-BHILWARA(RS) (PG) CKT-1 & 2, 220 KV LALSOTE(RS)-Anta(NT) (PG) CKT-1 and 220 KV RAPS_C(NP)-ANTA(NT) (PG) CKT-1 respectively. ii)During antecedent condition, GT-I, II & III, 220 KV ANTA(NT)-BHILWARA(RS) (PG) CKT-1 & 2, 220 KV RAPS_C(NP)-ANTA(NT) (PG) CKT-1 were under shutdown respectively (as per PMU). iii)As reported, at 09:13hrs, 220 KV Anta(NT)-Sakatpura(RS) (RS) Ckt-1 tripped on B-N phase to earth fault with fault distance of 54.5km and fault current of 1.07kA from Anta end(Z2 Operated). During the inspection it was found that B-Phase CT of 220 KV Anta(NT)-Sakatpura(RS) (RS) Ckt-1 failed on Sakatpura end . iv)Again at 10:10 hrs, 220 KV SAWAIMADHOPUR(RS)- Anta(NT) (PG) CKT-1 which was carrying 52MW load tripped due to high voltage (details of tripping awaited). And this led to the blackout of 220KV Anta substation. v)As per PMU at 400KV Kota(PG), B-N phase to earth fault (voltage dipped upto 0.71 p.u.) is observed with fault clearing time of 120ms. vi)As per PMU, solar generation loss of approx. 38 MW at 09:13 hrs and 54 MW at 10:10 hrs occurred in Anta was observed.	54	0	120	N (Partial details received)	N (Partial details received)	N (Partial details received)
9	GD-1	i) 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-1 ii) 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-2 iii) 220 kV HUKMAWALI(HV)-CHORMAR(HV) CKT-1 iv) 220 kV HUKMAWALI(HV)-CHORMAR(HV) CKT-2	Haryana	HVPNL & PGCIL	23-Jan-25	06:09	i)220/132/33KV HUKMAWALI S/stn sub-station has double main bus scheme in all voltage level. ii)During antecedent condition, 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-1, 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-2, and 220 kV HUKMAWALI(HV)-CHORMAR(HV) CKT-1 were carrying 27MW, 28MW and 19MW load respectively. iii)As reported at 06:09hrs, B-phase CT of 220 kV HUKMAWALI(HV)-CHORMAR(HV) CKT-1 exploded and thereby led to Bus bar protection operation. This resulted in tripping of all the elements connected to 220KV Bus bar. As a result, the Sub-station lost its connectivity to the Grid and Blackout occurred. iv)As per DR and EL of 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-1 at 220KV Fatehabad, the line tripped due to Main-1, Zone-2 protection operation. The fault current in B phase was 6.8KA and Y phase was 7.4KA. v)As per PMU at 400 Fatehabad (PG), B-N fault converted to Y-B-N fault is observed with delayed fault clearing time of 400ms. vi)As per SCADA, no change in demand in Haryana control area is observed.	0	0	400	Y(d)	Y(d)	N
10	GI-1	i) 220 KV BTPSL_SL_BIK2_PG-Bikaner_2 (PBTSL) (BANDERWALA_TPSL) Ckt-1	Rajasthan	RVPNL & PGCIL	24-Jan-25	16:38	i)Generation of 220kV Tata Power Saurya Banderwala evacuate through 220 KV BTPSL_SL_BIK2_PG-Bikaner_2 (PBTSL) (BANDERWALA_TPSL) Ckt. ii)During antecedent condition, 220 KV BTPSL_SL_BIK2_PG-Bikaner_2 (PBTSL) (BANDERWALA_TPSL) Ckt was evacuating 126MW of load (as per PMU). iii)As reported, at 16:38hrs, 220 KV BTPSL_SL_BIK2_PG-Bikaner_2 (PBTSL) (BANDERWALA_TPSL) Ckt tripped on B-N phase to earth fault. (exact reason of tripping and nature of protection operated yet to be shared). Due to tripping of the evacuation path, the sub-station lost its connectivity from grid and blackout occurred at 220 kV Tata Power Saurya Banderwala S/S. iv)As per PMU at TPSB, B-N phase to earth fault (voltage dipped upto 0.02 p.u.) is observed with unsuccessful A/R operation is observed. v)As per PMU, solar generation loss of approx. 126MW of Generation loss had occurred in TPSB and 269 MW of change in NR Solar generation was observed.	269	0	1200	N (Partial details received)	N (Partial details received)	N (Partial details received)
11	GI-2	(i)400/220 kV 500 MVA ICT 1 at Jehta_Hardoi Road (UP) (ii)400/220 kV 500 MVA ICT 2 at Jehta_Hardoi Road (UP) (iii)220/132kV 200 MVA ICT-1 at Jehta(UP) (iv)220/132kV 200 MVA ICT-2 at Jehta(UP) (v)220kV Jehta-Hardoi road (UP) ckt-1 (vi)220kV Jehta-Hardoi road (UP) ckt-2 (vii)220kV Jehta-Mallawan (UP) ckt-1 (viii)220kV Jehta-Mallawan (UP) ckt-2 (ix)220kV Bus coupler at Jehta(UP)	Uttar Pradesh	UPPTCL	29-Jan-25	12:09	i)400/220/132KV Jehta S/stn sub-station has double main bus scheme in all voltage level. ii)During antecedent condition, 400/220 kV 500 MVA ICT-1 & ICT-2 were connected to 400kV bus-1 and bus-2 respectively carrying 107MW of load each. 220/132KV ICT-3 and ICT-4 were carrying 35MW load each. iii)As reported at 12:09 hrs, 400/220KV ICT -1 and ICT-2 tripped due to Bus Bar protection. This led to further tripping of 220/132KV ICT-3 and ICT-4 downstream along with tripping of both 220KV Bus-I and Bus-II. As a result, all the elements connected to 220KV Bus Bar tripped. iv)DR and EL submitted by SLDC for 400/220KV ICT-1 and 2, shows Bus Bar protection operation. However as per PMU no fault was observed. Reason of operation of bus bar protection need to be shared. v)As per SCADA, 252MW of change in demand is observed in Rajasthan control area.	0	252	NA	Y	Y	Y

Annexure-B.III

Sr No	Element Name	Outage Date	Outage Time	Reason
1	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-1	08-Jan-25	00:58	Phase to earth fault R-N. As per PMU, R-N fault occured, no auto-reclosing is observed.
		20-Jan-25	01:09	Phase to earth fault R-N. As per PMU, no fault is observed ar the reported time, but R-N fault occurred at 01:05 hrs, no auto-reclosing is observed.
		20-Jan-25	03:32	Phase to earth fault R-N. As per PMU, R-N fault occured, no auto-reclosing is observed.
		20-Jan-25	06:53	Phase to earth fault R-N. As per PMU, R-N fault occured, no auto-reclosing is observed.
		22-Jan-25	09:13	Failure of CT. As per PMU, B-N fault occured, no auto-reclosing is observed.
		23-Jan-25	03:24	Phase to earth fault R-N. As per PMU, R-N fault occured, no auto-reclosing is observed.
		26-Jan-25	06:18	Phase to earth fault R-N. As per PMU, R-N fault occured, no auto-reclosing is observed.
		30-Jan-25	04:07	Phase to earth fault R-N. As per PMU, R-N fault occured, no auto-reclosing is observed.
2	220 KV Agra(PG)-Bharatpur(RS) (PG) Ckt-1	01-Jan-25	01:48	Phase to earth fault Y-N. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
		03-Jan-25	07:19	Phase to earth fault B-N. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
		21-Jan-25	05:19	Phase to earth fault R-N. As per PMU, no fault is observed ar the reported time, but R-N fault occurred at 05:15 hrs, no auto-reclosing is observed.
		22-Jan-25	04:58	Phase to earth fault Y-N. As per PMU, no fault is observed ar the reported time, but Y-N fault occurred at 04:55 hrs, no auto-reclosing is observed.
		23-Jan-25	04:43	Phase to earth fault B-N. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
3	400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2	06-Jan-25	02:37	Phase to earth fault R-N. As per PMU, R-N fault occured, no auto-reclosing is observed.
		06-Jan-25	06:25	Phase to Phase Fault R-Y. As per PMU, R-Y fault is observed.
		14-Jan-25	15:48	Earth fault. As per PMU, R-Y fault is observed.
4	400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1	06-Jan-25	21:25	Phase to earth fault B-N. As per PMU, no fault is observed ar the reported time, but B-N fault occurred at 21:18 hrs, no auto-reclosing is observed.
		10-Jan-25	06:53	Phase to earth fault B-N. As per PMU, B-N fault occured, no auto-reclosing is observed.
		16-Jan-25	00:23	Phase to earth fault B-N. As per PMU, As per PMU, no fault is observed ar the reported time, but B-N fault occurred at 00:13 hrs, no auto-reclosing is observed.
5	132 KV Dehar(BB)-Kangoo(HP) (HPPTCL) Ckt-1	01-Jan-25	16:10	Phase to earth fault B-N. As per PMU, no fault is observed.
		19-Jan-25	14:54	Phase to Phase Fault R-Y. As per PMU, R-Y fault is observed.
		20-Jan-25	23:48	Phase to earth fault Y-N. As per PMU, R-N fault occured, no auto-reclosing is observed.
6	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	03-Jan-25	06:28	Phase to earth fault R-N. As per PMU, R-N fault occured, no auto-reclosing is observed.
		26-Jan-25	00:15	Phase to earth fault R-N. As per PMU, R-N fault occured, no auto-reclosing is observed.
		26-Jan-25	02:02	Phase to earth fault R-N. As per PMU, R-N fault occured, no auto-reclosing is observed.
7	220 KV Sohawal(PG)-Barabanki(UP) (UP) Ckt-1	06-Jan-25	03:37	Phase to earth fault B-N. As per PMU, no fault is observed at the reported time, but Y-N fault occurred at 03:49 hrs, no auto-reclosing is observed.
		25-Jan-25	15:20	Phase to earth fault R-N. As per PMU, R-Y fault is observed.
		25-Jan-25	17:52	PLCC maloperation. As per PMU, no fault is observed.
8	400 KV Merta-Ratangarh (RS) Ckt-1	04-Jan-25	18:48	Phase to earth fault R-N. As per PMU, B-N fault occured, no auto-reclosing is observed (Phase sequence issue).
		22-Jan-25	07:02	Phase to earth fault R-N. As per PMU, B-N fault occured, no auto-reclosing is observed (Phase sequence issue).
		28-Jan-25	01:21	Phase to earth fault B-N. As per PMU, Y-N fault occured, no auto-reclosing is observed (Phase sequence issue).
9	400 KV Mohanlalganj (PGYTL)-Unnao(UP) (PGYTL) Ckt-1	06-Jan-25	02:02	Phase to earth fault R-N. As per PMU, R-N fault occured, no auto-reclosing is observed.
		06-Jan-25	03:49	Phase to earth fault B-N. As per PMU, Y-N fault occured, no auto-reclosing is observed (Phase sequence issue).
		18-Jan-25	01:23	Over Voltage. As per PMU, no fault is observed.

Annexure-B.IV

Grid Event to be discussed in 57th 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	(i)210 MW Guru Gobind Singh TPS (Ropar) - UNIT 6 (ii)210 MW Guru Gobind Singh TPS (Ropar) - UNIT 3 (iii)210 MW Guru Gobind Singh TPS (Ropar) - UNIT 4	Punjab	PSTCL	6-Jan-25	09:32	i)220/132 KV Ropar (GGSTP) has double main bus system in 220KV and 132KV side. ii)During antecedent condition, 210 MW Guru Gobind Singh TPS (Ropar) - UNIT 3, Unit 4 and Unit 6 generating 180MW, 167MW and 176MW respectively. iii)As reported at 09:32 hrs, during the synchronization of the 210 MW Unit-5 at Guru Gobind Singh Thermal Power Station (Ropar), the R- phase limb of the 220 kV generator transformer circuit breaker for Unit-5 ruptured. This incident triggered the tripping of Units 3, 4, and 6, each with a capacity of 210 MW. Consequently, a blackout occurred at the 220 kV Guru Gobind Singh TPS substation. (Details of protection operation yet to be received). iv)As observed from PMU at Abdullapur (PG) S/s, R-N phase to earth fault was observed. Fault clearance time of 120 msec can be seen in the PMU. v)During this event, a total generation loss of 521MW was observed in Punjab control area . (As per SCADA). vi)As per SCADA, 225MW of change in demand is observed in Punjab control area.	225	521	120	Details analysis of the event and remedial action taken details.
2	GI-2	(i)220 kV Akal – Bhainsara Ckt-1 (ii)220 kV Akal – Bhainsara Ckt-2 (iii)400/220 KV 500 MVA ICT 1 AT AKAL(RS) (iv)400/220 KV 500 MVA ICT 2 AT AKAL(RS) (v)400/220 KV 500 MVA ICT 3 AT AKAL(RS) (vi)400/220 KV 500 MVA ICT 4 AT AKAL(RS) (vii)220 kV Akal(RS) BUS-1 (viii)220 kV Akal(RS) BUS-2 (ix)220 KV AKAL-GIRAL (x)220KV AKAL-BARMER (xi)220 AKAL- AMARSAGAR (xii)220 AKAL- MADA (xiii)220 AKAL- AKAL(SUZLON) ckt-1 (xiv)220 AKAL- AKAL(SUZLON) ckt-2 (xv)220 AKAL- RAJGARH (xvi)220 AKAL- JAJIYA (xvii)220 AKAL- BHU ckt-1 (xviii)220 AKAL- BHU ckt-2 (xix)220 AKAL- DANGRI ckt-1 (xx)220 AKAL- DANGRI ckt-2 (xxi)220 AKAL- MOOLANA (xxii)220 AKAL- LALA	Rajasthan	RVPNL	9-Jan-25	23:35	i)400/220kV Akal(RS) has one and half breaker scheme at 400kV level and double main and transfer bus scheme at 220kV level. ii)During antecedent condition, 400/220 kV 500 MVA ICT-1 & ICT-2 were connected to 400kV bus-1 and 400/220 kV 315 MVA ICT-3 & 500 MVA ICT-4 were connected to 400kV bus-2. iii)As reported, at 23:35 hrs, Y-phase jumper of 220kV bus-1 of 220kV Akal-Bhensara Ckt-1 snapped which created bus fault on both 220kV buses at Akal(RS). iv)As per PMU at Bhadla(PG), Y-N phase to earth fault with delayed fault clearance time of 720 msec is observed. v)Bus bar protection is not in service at 220kV side of Akal S/s. Therefore, fault cleared with the operation of back up protection i.e., 400/220kV ICTs at Akal. All four ICTs tripped on O/C E/F protection operation. vi)Due to tripping of all four ICTs at Akal(RS), evacuation path lost for all the wind power plants connected at 220kV bus-1 & bus-2 at Akal(RS). On this, both 220kV buses became dead at Akal(RS) S/s. vii)During this event, dip in Rajasthan wind generation of approx. 523 MW is observed out of which approx. 232 MW recovered within 6 minutes. (As per SCADA). viii)As per SCADA, about 171MW demand change is observed in Rajasthan control area.	523	171	720	Details analysis of the event and remedial action taken details.
3	GI-2	(i)400/220 kV 250 MVA ICT 1 at Heerapura(RS) (ii)400/220 kV 250 MVA ICT 3 at Heerapura(RS)	Rajasthan	RVPNL	10-01-2025	13:35:00	i)400/220KV Heerapura sub-station has one and half breaker scheme in the 400KV side and Double main & transfer scheme in the 220 KV side. ii)As reported at 13:35hrs, a kite thread fell on the 220KV side of the ICTs. As a result Bus- Bar protection operated on the 220KV side led to tripping 400/220 kV 250 MVA ICT 1 and 3 at Heerapura(RS). (exact reason and nature of protection operated yet to be shared). iii)As per PMU at Heerapura (RS), R-N fault (delayed fault clearance in R ph) is observed with delayed fault clearing time of 320ms. iv)As per SCADA, change in demand of approx. 320MW in Rajasthan control area is observed.	0	320	320	Details analysis of the event and remedial action taken details.
4	GD-1	(i)400/220 KV 500 MVA ICT 1 AT AKAL(RS) (ii)400/220 KV 500 MVA ICT 2 AT AKAL(RS) (iii)400/220 KV 500 MVA ICT 3 AT AKAL(RS) (iv)400/220 KV 500 MVA ICT 4 AT AKAL(RS) (v)400/220 KV 500 MVA ICT 2 AT RAMGARH(RS) (vi)400 KV AKAL-JODHPUR (RS) CKT-1 (vii)400 KV AKAL-BARMER (RS) CKT-1 (viii)400 KV AKAL-JAISALMER (RS) CKT-1 (ix)400 KV AKAL-RAMGARH (RS) CKT-1 (x)400 KV AKAL-RAMGARH (RS) CKT-2 (xi)400 KV AKAL-KANKANI (RS) CKT-1	Rajasthan	RVPNL	12-01-2025	06:31:00	i)400/220kV Akal(RS) has one and half breaker scheme at 400kV level and double main and transfer bus scheme at 220kV level. ii)During antecedent condition, 400/220 kV 500 MVA ICT-1 & ICT-2 were connected to 400kV bus-1 and 400/220 kV 315 MVA ICT-3 & 500 MVA ICT-4 were connected to 400kV bus-2. iii)As reported, at 06:31 hrs, B-N fault occurred on 400 KV Akal-Barmer (RS) Ckt, fault distance was 99.62KM and fault current was 2.42 KA from Barmer end. iv)However, as observed from PMU at Bhadla (PG) S/s, B-N fault was observed and subsequently it converted to Y-B-N double phase to earth fault. Delayed fault clearance time of 2120 msec can be seen in the PMU. v)On this fault, line tripped from Barmer end but breaker of Akal end got stuck due to issue in SF6 gas pressure. Due to non opening of breaker of Akal end, LBB protection would have operated. vi)However, all the 400kV lines and 400/220kV ICTs at Akal tripped during the event. Exact details of protection operation not received yet from SLDC-Rajasthan. viii)Due to tripping of all four ICTs at Akal(RS), evacuation path lost for all the wind power plants connected at 220kV bus-1 & bus-2 at Akal(RS). On this, both 400 and 220kV buses became dead at Akal(RS) S/s. viii)During this event, a dip in Rajasthan wind generation of approx. 340 MW is observed which recovered completely within 5 minutes. (As per SCADA). ix)As per SCADA, 206MW of change in demand is observed in Rajasthan control area.	340	206	2120	Details analysis of the event and remedial action taken details.
5	GD-1	1) 220 KV Bhadla_2 (PG)-RSDCL(PSS4)_SL_BHD2_PG (RSDCL) Ckt 2) 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt 3) 220/33 kV 100 MVA ICT 1 at Nokhra SL_BHD2 (NTPC) 4) 220/33 kV 100 MVA ICT 2 at Nokhra SL_BHD2 (NTPC) 5) 220/33 kV 100 MVA ICT 3 at Nokhra SL_BHD2 (NTPC)	Rajasthan	PGCIL, RSDCL, NTPC	14-Jan-25	13:13	i)Generation of 220kV Nokhra (IP) and 220kV RSDCL-4(IP) stations evacuate through 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt and 220 KV Bhadla_2 (PG)-RSDCL(PSS4)_SL_BHD2_PG (RSDCL) Ckt respectively. ii)During antecedent condition, 220kV Nokhra (IP) and 220kV RSDCL-4(IP) were generating approx. 295 MW and 178 MW respectively (as per PMU). iii)As reported, at 13:13hrs, 220 KV Bhadla_2 (PG)-RSDCL(PSS4)_SL_BHD2_PG (RSDCL) Ckt tripped on B-N phase to earth fault with fault distance of 1.3km and fault current of 23.4kA from Bhadla2(PG) end. During inspection it was found that jumper snapped out at tower location no. 8. iv)During the same time, 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt along with 220/33 kV 100 MVA ICT 1, 2 and 3 at Nokhra SL_BHD2 (NTPC) also tripped. Line tripped from Nokhra(NTPC) end only (exact reason of tripping and nature of protection operated yet to be shared). v)Due to tripping of 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt and 220 KV Bhadla_2 (PG)-RSDCL(PSS4)_SL_BHD2_PG (RSDCL) Ckt , 220kV Nokhra (IP) and 220kV RSDCL-4(IP) S/s lost their connectivity from grid and blackout occurred at 220kV Nokhra (IP) and 220kV RSDCL-4(IP) S/s. vi)As per PMU at 220kV Nokhra(NTPC), B-N phase to earth fault (voltage dipped upto 0.269 p.u.) is observed with fault clearing time of 80ms. vii)As per PMU, solar generation loss of approx. 295 MW at Nokhra(IP) and 178 MW at RSDCL-4(IP) were observed.	473	0	80	Details analysis of the event and remedial action taken details.
6	GD-1	i) 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-1 ii) 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-2 iii) 220 kV HUKMAWALI(HV)-CHORMAR(HV) CKT-1 iv) 220 kV HUKMAWALI(HV)-CHORMAR(HV) CKT-2	Haryana	HVPNL & PGCIL	23-Jan-25	06:09	i)220/132/33KV HUKMAWALI S/stn sub-station has double main bus scheme in all voltage level. ii)During antecedent condition, 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-1, 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-2, and 220 kV HUKMAWALI(HV)-CHORMAR(HV) CKT-1 were carrying 27MW, 28MW and 19MW load respectively. iii)As reported at 06:09hrs, B-phase CT of 220 kV HUKMAWALI(HV)-CHORMAR(HV) CKT-1 exploded and thereby led to Bus bar protection operation. This resulted in tripping of all the elements connected to 220KV Bus bar. As a result, the Sub-station lost its connectivity to the Grid and Blackout occurred. iv)As per DR and EL of 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-1 at 220KV Fatehabad, the line tripped due to Main-1, Zone-2 protection operation. The fault current in B phase was 6.8KA and Y phase was 7.4KA. v)As per PMU at 400 Fatehabad (PG), B-N fault converted to Y-B-N fault is observed with delayed fault clearing time of 400ms. vi)As per SCADA, no change in demand in Haryana control area is observed.	0	0	400	Details analysis of the event and remedial action taken details.
7	GD-1	i) 220 KV Agra(PG)-Kirawali(UP) (PG) Ckt-1 ii) 220 KV Auraiya(NT)-Sikandra(UP) (PG) Ckt-1 iii) 220 kV Sikandra - Agra(UP) Ckt-1 iv) 220 kV Sikandra - Agra(UP) Ckt-2	Uttar Pradesh	UPPTCL, POWERGRID	23-Jan-25	04:29	i) At 04:29 hrs, multiple elements tripped at 220kV Sikandra(UP). ii) As reported by POWERGRID, Y-N fault at ~95km from Agra(PG) end was observed. iii) During the event, all the 220kV lines connected at 220kV Sikandra tripped and complete station got blackout. iv) As per SCADA, change in UP demand of ~72 MW was observed.	0	60		Details analysis of the event and remedial action taken details.
8	GI-2	(i)400/220 kV 500 MVA ICT 1 at Jehta_Hardoi Road (UP) (ii)400/220 kV 500 MVA ICT 2 at Jehta_Hardoi Road (UP) (iii)220/132kV 200 MVA ICT-1 at Jehta(UP) (iv)220/132kV 200 MVA ICT-2 at Jehta(UP) (v)220kV Jehta-Hardoi road (UP) ckt-1 (vi)220kV Jehta-Hardoi road (UP) ckt-2 (vii)220kV Jehta-Mallawan (UP) ckt-1 (viii)220kV Jehta-Mallawan (UP) ckt-2 (ix)220kV Bus coupler at Jehta(UP)	Uttar Pradesh	UPPTCL	29-Jan-25	12:09	i)400/220/132KV Jehta S/stn sub-station has double main bus scheme in all voltage level. ii)During antecedent condition, 400/220 kV 500 MVA ICT-1 & ICT-2 were connected to 400kV bus-1 and bus-2 respectively carrying 107MW of load each. 220/132KV ICT-3 and ICT-4 were carrying 35MW load each. iii)As reported at 12:09 hrs, 400/220KV ICT -1 and ICT-2 tripped due to Bus Bar protection. This led to further tripping of 220/132KV ICT-3 and ICT-4 downstream along with tripping of both 220KV Bus-I and Bus-II. As a result, all the elements connected to 220KV Bus Bar tripped. iv)DR and EL submitted by SLDC for 400/220KV ICT-1 and 2, shows Bus Bar protection operation. However as per PMU no fault was observed. Reason of operation of bus bar protection need to be shared. v)As per SCADA, 252MW of change in demand is observed in Rajasthan control area.	0	252	NA	Details analysis of the event and remedial action taken details.

Utilities are requested to prepare detailed analysis report and present the event details during 57th 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)	Suggestive measures	Remarks
			Date	Time									
1	220 KV Auraiya(NT)-Malanpur(MP) (PG) Ckt-1	POWERGRID	03-Jan-25	05:55	Nil	Phase to earth fault R-N	NA	80 msec	NO	NO	NA	DR/EL needs to be shared	As per PMU (Unnao UP). B-N phase to earth fault occurred.
2	132 KV Rihand(UP)-Garwa(JS) (UP) Ckt-1	UPPTCL	05-Jan-25	00:09	Nil	Phase to earth fault Y-N	NA	NA	Yes (After 24 hours)	YES	NA		As per PMU (Unchahar NTPC), voltage dip is observed in all three phases. As per DR (Rihand UP), Y-N phase to earth fault occurred. Fault distance was 43.7 km (42.8%) from Rihand (UP) end.
3	400 KV Allahabad-Sasaram (PG) Ckt-1	POWERGRID	07-Jan-25	00:32	Nil	Phase to earth fault B-N	NA	80 msec	Yes (After 24 hours)	NO	NA	DR/EL needs to be shared	As per PMU (Allahabad PG), B-N phase to earth fault followed by B-N phase to earth fault within reclaim time occurred. As reported, B-ph porcelain insulator de-capped at Loc.no-530 & B-ph cross Arm bend at Loc.No.-531.
4	800 KV HVDC Kurukshetra(PG) Pole-1	POWERGRID	09-Jan-25	19:36	Nil	Pole-1 blocked due to CIB card failure at Kurukshetra.	NA	NA	Yes (After 24 hours)	Yes (After 24 hours)	NA		As per PMU (Kurukshetra PG), fluctuation in voltage is observed. As reported, Pole-1 blocked on Converter differential protection Operated due to maloperation of DCCT sensor (Idc) at Kurukshetra end .
5	400 KV Gorakhpur(PG)-Motihari(BS) (PG) Ckt-2	POWERGRID	21-Jan-25	00:40	Nil	Phase to earth fault Y-N	NA	80 msec	Yes	NO	NA	DR/EL needs to be shared	As per PMU (Kanpur PG). Y-N phase to earth fault with unsuccessful A/R occurred

 # 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

Annexure-B.VI

Sr. No.	Scheme Name	Responsible agency for conducting Mock Test exercise	Date of review of SPS	Last date on which Mock testing carried out	Tentaitve schedule of SPS Mock testing during 2024-25	Remarks
1	SPS for WR-NR corridor - 765kV Agra-Gwalior D/C	POWERGRID/NRLDC		12-03-2024		
2	SPS for contingency due to tripping of HVDC Mundra-Mahendergarh	ADANI/NRLDC				
3	SPS for high capacity 400 kV Muzaffarpur-Gorakhpur D/C Inter-regional tie-line related contingency	POWERGRID/NRLDC				
4	SPS for 1500 MW HVDC Rihand-Dadri Bipole related contingency	POWERGRID/NRLDC				
5	System Protection Scheme (SPS) for HVDC Balia-Bhiwadi Bipole	POWERGRID/NRLDC				
6	SPS for contingency due to tripping of multiple lines at Dadri(NTPC)	NTPC				
7	SPS for reliable evacuation of power from NJPS, Rampur, Sawra Kuddu, Baspa, Sorang, Naitwar Mori and Karcham Wangtoo HEP	SJVN/HPPTCL/JSW/NRLDC			counducted on 19-12-2024	
8	SPS for Reliable Evacuation of Ropar Generation	Punjab				
9	SPS for Reliable Evacuation of Rosa Generation	Uttar Pradesh		07-05-2022	counducted on 20-04-2024	
10	SPS for contingency due to tripping of evacuating lines from Narora Atomic Power Station	NAPS				
11	SPS for evacuation of Kawai TPS, Kalisindh TPS generation complex	Rajasthan				
12	SPS for evacuation of Anpara Generation Complex	Uttar Pradesh		06-07-2020		
13	SPS for evacuation of Lalitpur TPS Generation	Uttar Pradesh		14-07-2018	counducted on 21.05.2024	
14	SPS for Reliable Evacuation of Bara TPS Generation	Uttar Pradesh				
15	SPS for Lahal Generation	Himachal Pradesh		08-07-2020		
16	SPS for Transformers at Ballabhgarh (PG) substation	POWERGRID				
17	SPS for Transformers at Maharanibagh (PG) substation	POWERGRID				
18	SPS for Transformers at Mandola (PG) substation	POWERGRID				
19	SPS for Transformers at Bamnauli (DTL) Substation	Delhi				
20	SPS for Transformers at Moradabad (UPPTCL) Substation	Uttar Pradesh			counducted on 20-04-2024	
21	SPS for Transformers at Muradnagar (UPPTCL) Substation	Uttar Pradesh		07-02-2023	counducted on 20-04-2024	
22	SPS for Transformers at Muzaffarnagar(UPPTCL) Substation	Uttar Pradesh			counducted on 20-04-2024	
23	SPS for Transformers at Greater Noida(UPPTCL) Substation	Uttar Pradesh			SPS Unhealthy	
24	SPS for Transformers at Agra (UPPTCL) Substation	Uttar Pradesh		12-07-2023		
25	SPS for Transformers at 400kV Sarojininagar (UPPTCL) Substation	Uttar Pradesh		17-05-2023		
26	SPS for Transformers at 220kV Sarojininagar (UPPTCL) Substation	Uttar Pradesh		18-05-2022		
27	SPS for Transformers at 400kV Unnao (UPPTCL) Substation	Uttar Pradesh		19-05-2023	SPS Unhealthy	
28	SPS for Transformers at 220kV Unnao (UPPTCL) Substation	Uttar Pradesh				
29	SPS for Transformers at 400kV Sultanpur (UPPTCL) Substation	Uttar Pradesh			SPS Unhealthy	
30	SPS for Transformers at 400kV Bareilly (UPPTCL) Substation	Uttar Pradesh				
31	SPS for Transformers at 400kV Azamgarh (UPPTCL) Substation	Uttar Pradesh		14-05-2023	counducted on 06-05-2024	
32	SPS for Transformers at 400kV Mau (UPPTCL) Substation	Uttar Pradesh		17-01-2019	counducted on 27-04-2024	
33	SPS for Transformers at 400kV Gorakhpur (UPPTCL) Substation	Uttar Pradesh		14-05-2023	counducted on 27-04-2024	
34	SPS for Transformers at 400kV Sarnath (UPPTCL) Substation	Uttar Pradesh		19-05-2023	counducted on 23-05-2024	
35	SPS for Transformer at 400kV Rajpura (PSTCL) Substation	Punjab				
36	SPS for Transformers at 400kV Mundka (DTL) Substation	Delhi		19-06-2023		
37	SPS for Transformers at 400kV Deepalpur (JKTPL) Substation	Haryana				
38	SPS for Transformers at 400kV Ajmer (RVPN) Substation	Rajasthan			Condcuted on 10.09.2024	
39	SPS for Transformers at 400kV Merta (RVPN) Substation	Rajasthan			Condcuted on 12.09.2024	
40	SPS for Transformers at 400kV Chittorgarh (RVPN) Substation	Rajasthan			Condcuted on 31.08.2024 & 05.09.2024	
41	SPS for Transformers at 400kV Jodhpur (RVPN) Substation	Rajasthan			Condcuted on 24.09.2024	
42	SPS for Transformers at 400kV Bhadla (RVPN) Substation	Rajasthan			Condcuted on 27.09.2024	
43	SPS for Transformers at 400kV Ratangarh (RVPN) Substation	Rajasthan			Condcuted on 20.09.2024	
44	SPS for Transformers at 400kV Nehtaur(UPPTCL) Substation	Uttar Pradesh		05-07-2022		
45	SPS for Transformers at Obra TPS	Uttar Pradesh			counducted on 20-05-2024	
46	SPS for Transformers at 400KV Kashipur (PTCUL) substation	Uttarakhand		03-09-2023	Septemeber 2024	
47	SPS for Transformers at 400KV Fatehgarh Solar Park (AREPRL)	ADANI				
48	SPS to relive transmission congestion in RE complex (Bhadla2)	POWERGRID				
49	SPS for Transformers at 400kV Bikaner (RVPN) Substation	Rajasthan			Condcuted on 26.09.2024	
50	SPS for Transformers at 400kV Bawana (DTL) Substation	Delhi		06-09-2023		
51	SPS for Transformers at 400kV Bhilwara (RVPN) Substation	Rajasthan			Condcuted on 09.07.2024 & 10.07.2024	
52	SPS for Transformers at 400kV Hinduan (RVPN) Substation	Rajasthan			Condcuted on 26.09.2024	
53	SPS for Transformers at 400kV Suratgarh (RVPN) Substation	Rajasthan				During frequent actual operation of SPS scheme. All alarm & tripping status found OK

 Annexure-B.VII

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 Subsatation, 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 Subsatation, 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.

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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			