



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

दिनांक: 14.06.2025

सेवा में

As per the attached list of Members and Other invitees

विषय: संरक्षण उप-समिति की 60 वीं बैठक की कार्यवृत्त।

Subject: Minutes for 60th Protection Sub-Committee Meeting.

संरक्षण उप-समिति की 60 वीं बैठक, दिनांक 26.05.2025 को 10:30 बजे से एनआरपीसी सचिवालय, कटवारिया सराय, नई दिल्ली में आयोजित की गयी थी। उक्त बैठक की कार्यवृत्त संलग्न है। यह उत्तर क्षेत्रीय विद्युत् समिति की वेबसाइट (<http://164.100.60.165/>) पर भी उपलब्ध है।

The 60th meeting of the Protection Sub-Committee was held on 26.05.2025 at 10:30 Hrs at NRPC Secretariat, Katwaria Sarai, New Delhi. The minutes of the meeting are attached herewith. The same is also available on the NRPC website (<http://164.100.60.165/>).

(डी.के. मीना)
(D.K. Meena)
निदेशक (संरक्षण)

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

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

Date and time of meeting : 26.05.2025 10.30 Hrs.

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

MS, NRPC welcomed all the participants. The list of participants is attached as **Annexure-P**.

Part-A: NRPC

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

- A.1.1 AEE (P), NRPC apprised that the 59th PSC meeting was held on 23.04.2025. Minutes of the meeting were issued vide letter dated. 08.05.2025. No comment has been received till date.
- A.1.2 He further added that NHPC vide mail dated 08.05.2025 submitted the comments on the issued minutes of the 58th PSC meeting related to Agenda item B.3 i.e. Multiple elements tripping at 400kV Sainj(HP) & Parbati3(NH) at 19:35 hrs on 03rd February, 2025. The submitted comments are attached as **Annexure-A.0**. Accordingly, NHPC has requested to revise the analysis of the fault mentioned at page no-194 of 58th PSC meeting minutes (Annexure-B.II, S.No. 3). Forum approved to consider the comment of NHPC. Therefore, the analysis of the fault mentioned at S. No. 3 of Annexure-B.II is replaced as below-
- i. During the incidence, only one unit was in running condition and both Parbati-III-Banala Line & Parbati-III-Sainj Line were in charged condition.
 - ii. Fault occurred on Parbati-III-Banala Line and the distance protection relay at Parbati-III end sensed the fault in Z2 at R-N Phase fault and got reset within

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170 msec. However, R-Phase External Trip was received and Auto Reclose was blocked at 19:26:47.692 Hrs.

- iii. In the SCADA event, "Direct Trip-2 Receive" was recorded, which led to activate three phase tripping from Parbati-III end.
- iv. Line CB of Parbati-III-Sainj Line remained in closed condition from Parbati-III end and tripped from Sainj end.
- v. Due to the unavailability of power evacuation path, the running unit i.e. Unit#4 tripped on the operation of over frequency protection

Decision taken by the Forum:

Forum approved the minutes of the 59th PSC meeting as issued and amended minutes of 58th PSC meeting based on comments of NHPC.

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

- A.2.1 The status of action taken on the decisions of the 59th PSC meeting was informed to the Forum.
- A.2.2 Concerned utilities submitted the status of action taken. Forum noted the same.
- A.2.3 Updated status of action taken is attached as **Annexure-A.I.**

Decision taken by the Forum

Forum instructed to take necessary action on pending issues.

A.3. Submission of protection performance indices along with reason and corrective action taken for indices less than unity to NRPC Secretariat on a monthly basis (agenda by NRPC Secretariat)

- A.3.1 AEE (P), NRPC apprised that 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 $D = N_c / (N_c + N_f)$
 - b) The **Security Index** defined as $S = N_c / (N_c + N_u)$

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c) The **Reliability Index** defined as $R = N_c / (N_c + N_i)$

where,

N_c is the number of correct operations at internal power system faults,

N_f is the number of failures to operate at internal power system faults,

N_u is the number of unwanted operations,

N_i is the number of incorrect operations and is the sum of N_f and N_u

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

- Each user shall also submit the reasons for performance indices less than unity of individual element wise protection system to the respective RPC and action plan for corrective measures. The action plan will be followed up regularly in the respective RPC.

A.3.1 In the earlier PSC meeting, it was decided that each utility shall submit the **performance indices of the previous month by the 7th day of the next month.**

A.3.2 Accordingly, the status of the indices reported for the month of **April-2025** was presented before the Forum as attached as **Annexure-A.II. Utilities from where, indices were pending, were asked to submit in a timely manner in the future.**

A.3.3 The Following issues were highlighted by AEE (P):

- i. Some Utilities have not submitted data for April-2025.
- ii. Utilities have submitted data for some plants but not all.
- iii. Utilities have not mentioned corrective action taken for indices less than unity.
- iv. Some utilities have sent data after the cut-off date of the 7th.

A.3.4 **Following utilities were found non-compliant as indices were not received even on the date of the meeting:**

- i. **NTPC (Anta, Auriya, Koldam, Rihand, Singrauli)**
- ii. **NPCIL (NAP-1,2)**
- iii. **PSPCL (RSD)**
- iv. **Azure Power India Pvt. Ltd.**
- v. **Adani Green Energy Limited**
- vi. **UT of Ladakh**

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- vii. **UT of Chandigarh**
- viii. **TBCB projects POWERGRID NR-1**
- ix. **Vishnuprayag Hydro Electric Plant (J.P.)**
- x. **Barsingsar Plant in Rajasthan Control area**
- xi. **RE plants mentioned in Annexure-A.II**

- A.3.5 NTPC representative ensured to take up the matter and arrange the performance indices accordingly.
- A.3.6 AEE (P), NRPC apprised that the RAPSC to RAPS B 220kV tie line-2 was tripped due to a fault in inter trip cable failure as reported during submission of protection performance indices. However, corrective action was not mentioned. Further, NPCIL vide email dated 10.06.2025 has updated that the faulty inter trip cable was replaced.
- A.3.7 EE (P), NRPC highlighted that there is need to improve the reporting of protection-related data by RE plants. MS, NRPC stated that the agenda may be discussed in the RE Sub-Committee meeting. CGM, NRLDC was also of the same view.
- A.3.8 Incidents causing indices less than one, were discussed. Concerned officials apprised the cause and corrective action undertaken/ planned. A summary of such incidents is attached as **Annexure-A.III**.
- A.3.9 HVPN representative submitted that tripping of 400 KV Jind PG – Kirori Ckt. 2 occurred due to PLCC malfunctioning.
- A.3.10 AEE (P), NRPC mentioned that in the performance indices of the Khara plant, SOTF has been mentioned as failed to operate. UPSLDC representative conveyed that Khara has been told to consider the SOTF as correct operation.
- A.3.11 SE, UPPTCL informed that bus bar operated at 220kV Substation Nehtaur through a fault, which needs to be blocked and will be done accordingly.
- A.3.12 POWERGRID NR-2 representative stated that WAGOORA 315MVA ICT-IV got tripped due to PRV operation of the spare phase of ICT caused by maloperation of PRD limit switch, which has been replaced now.
- A.3.13 Regarding tripping of 400kV Sorang Kala amb lilo portion, based on submitted

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indices, AEE (P), NRPC apprised that as per PKATL, line tripped from Soran due to maloperation of Overcurrent protection at Sorang Greenko and subsequently Direct trip received at Kalaamb. The line current was normal at that time. Bay and protection at Sorang are owned by Greenko. Forum recommended that overcurrent protection is not to be applied on the 400kV line. Greenko end may review the protection settings accordingly to the NRPC protection philosophy.

- A.3.14 PSTCL shared the indices on 24.05.2025. Forum noted the late submission of performance indices by PSTCL. Due to late submission, same could not be deliberated in the meeting.
- A.3.15 SLDCs were directed to share the compiled data of all utilities (GENCOs, & TRANSCOs) under their jurisdiction. They may take regular follow-ups with other utilities who are not members of NRPC and arrange the protection performance indices.
- A.3.16 Subsequently, MS, NRPC highlighted that utilities may submit the performance indices of the previous month by 7th day of next month element wise along with the reason for indices less than unity and corrective action taken. He also requested RE Plants to comply the IEGC with respect to the protection chapter added newly in the IEGC.
- A.3.17 Further, it was also highlighted that IEGC 2023 has given responsibility to RPCs for receiving indices from all utilities however, all utilities are not members of NRPC. SLDCs have been requested in earlier PSC meetings to follow up with the concerned utilities of states which are not NRPC members and to send compiled indices to NRPC.

Decision of the Forum:

Non-compliant utilities were asked to submit the Protection performance indices timely by the 7th day of month element wise along with corrective action taken for indices less than unity.

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

A.4.1 AEE (P), NRPC apprised that as per clause 16 of IEGC 2023;

- *The users and SLDCs shall report about the operation of SPS immediately and detailed report shall be submitted within three days of operation to the concerned RPC and RLDC in the format specified by the respective RPCs.*
- *The performance of SPS shall be assessed as per the protection performance indices specified in these Regulations. In case, the SPS fails to operate, the concerned User shall take corrective actions and submit a detailed report on the corrective actions taken to the concerned RPC within a fortnight.*

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

A.4.3 In view of above, Forum requested that the following may be complied by utilities for compliance of IEGC:

- I. Utilities and SLDCs shall report about the operation of SPS immediately and detailed report shall be submitted within three days of operation to the concerned RPC and RLDC.
- II. SLDCs may submit protection performance indices for SPS on monthly basis by 7th date of each month in the same format as that of protection performance indices of elements (lines/ICT etc).

A.4.4 EE (P), NRPC highlighted that SLDCs may submit the protection performance indices for all SPSs pertaining to their control area in the same format used for Line/ICT along with justification for indices less than unity.

A.4.5 RVPN representative raised the concern that RE plants do not report about tripping incidents most of the times. NRLDC representative suggested that monthly meetings may be organized by Rajasthan with RE plants to sensitize them about the reporting of power system operations. UPSLDC

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representative highlighted that violation notice may be issued to such RE plants who are not following the grid code. The forum was also of the same view.

Decision of the Forum:

Forum directed the utilities to comply the followings-

- I. Utilities and SLDCs shall report about the operation of SPS immediately and detailed report shall be submitted within three days of operation to the concerned RPC and RLDC.
- II. SLDCs may submit protection performance indices for SPS on a monthly basis by 7th date of each month in the same format as that of protection performance indices of elements (lines/ICT etc).

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

A.5.1 AEE (P), NRPC apprised that as per clause 15 (1) of IEGC 2023;

- *All users shall conduct an 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 an action plan for rectification of deficiencies detected, if any, shall be shared with the respective RPC for users connected at 220 kV and above (132 kV and above in NER).*

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

A.5.3 In 59th PSC meeting, Utilities (other than non-compliant) were asked to submit report and compliance status within one month of completion of audit, latest by 30.04.2025. Audit reports have been received from POWERGRID (NR-3) and RVUN (KSTPS) for discussion.

A.5.4 UPPTCL representative informed that protection audit reports for internal audit FY 24-25 have been submitted recently.

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- A.5.5 PSTCL representative mentioned that internal protection audits have not been done in FY 24-25. They will conduct an internal protection audit in the current financial year.

Decision of the Forum:

Utilities were requested to submit reports of the internal audit done in FY 2024-25. A compliance report for the audited substation may be submitted.

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

- A.6.1 AEE (P), NRPC apprised that as per clause 15 of IEGC 2023;
- *Annual audit plan for the next financial year shall be submitted by the users to their respective RPC by 31st October. The users shall adhere to the annual audit plan and report compliance of the same to their respective RPC.*
- A.6.2 In view of the 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 the 54th, 55th, 56th, 57th & 58th PSC meetings.
- A.6.3 The Audit plan submitted by the utilities were presented. Status of submitted annual audit plans is enclosed as **Annexure- A.V**.
- A.6.4 It was observed that the following utilities had not submitted their plans and thus are non-compliant:
- i. **NPCIL**
 - ii. **PSTCL**
 - iii. **HPGCL**
 - iv. **Aravali Power Company Pvt. Ltd**
 - v. **MEJA Urja Nigam Ltd.**
 - vi. **Adani Power Rajasthan Limited**
 - vii. **Tata Power Renewable Energy Ltd.**
 - viii. **UT of J&K**
 - ix. **UT of Ladakh**
 - x. **UT of Chandigarh**
 - xi. **ADHPL**
 - xii. **Khara Power house**

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- xiii. **Barsingar Plant (Rajasthan Control Area)**
- xiv. **RE plants mentioned in Annexure-A.V.**

- A.6.5 Concerned were requested to submit the audit plan at the earliest. SE (P), NRPC reiterated that the internal audit plan may be submitted tentatively.
- A.6.6 PSTCL representative informed that the Annual Protection Audit Plan for FY 2025-26 will be submitted within 15 days.
- A.6.7 PTCUL has shared the same on 27.05.2025.
- A.6.8 There was no representative from APCPL in the meeting.
- A.6.9 J&K representative informed that Annual protection audit plan for FY 2025-26 will be submitted within 15 days.
- A.6.10 HPGCL representative informed that audit plan will be submitted before next PSC meeting.
- A.6.11 AESL representative and NTPC representative assured to communicate the Adani Power limited and Meja Urja Nigam Limited respectively to arrange the protection audit plan.
- A.6.12 Rajasthan SLDC was requested to arrange the internal protection audit plan for Barsingar Plant pertaining to Rajasthan control area.

Decision of the Forum:

Non-compliant utilities were asked to submit annual audit plan without any further delay. Other utilities were asked to submit report and compliance status within one month of completion of audit.

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

- A.7.1 AEE (P), NRPC apprised that as clause 15 of IEGC 2023:

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

- A.7.2 In view of the above, some utilities have submitted their third-party protection audit

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plans (enclosed as **Annexure-A.VI**).

A.7.3 It was observed that audit plan has not been received from the following:

- i. **NPCIL (except NAPS)**
- ii. **HVPNL**
- iii. **RVPNL**
- iv. **PSTCL**
- v. **HPGCL**
- vi. **UPRVUNL (Panki)**
- vii. **UJVNL (except Dharasu)**
- viii. **PSPCL (RSD)**
- ix. **HPSEBL (except Kunihar, Baddi, Upera Nangla)**
- x. **Aravali Power Company Pvt. Ltd**
- xi. **Tata Power Renewable Energy Ltd.**
- xii. **UT of J&K**
- xiii. **UT of Ladakh**
- xiv. **UT of Chandigarh**
- xv. **Barsingsar plant**
- xvi. **RE plants as mentioned in Annexure-A.VI.**

A.7.4 RVPN representative informed that approval has been taken from the higher authorities for third party audit to be done by other utilities. He added that letter has been sent from RVPN to other state as Haryana, Punjab, POWERGRID, Adani etc. for conducting third party protection audit of the RVPN substations. However, no response has been received as of now.

A.7.5 HVPN representative informed that status for third party protection audit is the same as last meeting i.e. higher management has given clearance to conduct third party protection audit by other state utilities. SE (P), NRPC directed HVPN to expedite the third-party protection audit.

A.7.6 DTL representative informed that they are going to conduct third party protection audit from Punjab. SE (P), NRPC directed DTL to expedite the process for finalization of the same and start third party protection audit as per the submitted schedule.

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- A.7.7 HPGCL representative informed that HPGCL has already taken up with CPRI for third party protection audit and within 6-8 months, third party audit will be completed for all plants. AEE (P), NRPC asked HPGCL to share the schedule for third party protection audit accordingly.
- A.7.8 UPSLDC representative mentioned that third party protection audit for Obra C will be conducted in February, 2026. For Panki TPS, he submitted that they have not finalized the same as of now. For Khara Power House, the schedule will be December, 2025. For Ghatampur TPS, the schedule will be FY 2027-28.
- A.7.9 J&K representative informed that third party protection audit plan will be submitted within 15 days.
- A.7.10 POWERGRID NR-2 representative stated that third party protection audit plan for PKATL will be shared by 26.05.2025 evening.
- A.7.11 POWERGRID NR-1 representative stated that third party protection audit plan for TBCB projects will be shared by 27.05.2025.

Decision of the Forum:

Forum directed utilities to submit an audit plan. Subsequently, the audit reports along with compliance status may be submitted to the NRPC Secretariat within one month of completion of the audit.

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

- A.8.1 AEE (P), NRPC apprised that as per clause 15 of IEGC 2023;

- ***All users shall conduct an internal audit of their protection systems annually, and any shortcomings identified shall be rectified and reported to their respective RPC. The audit report along with an action plan for rectification of deficiencies detected, if any, shall be shared with the respective RPC for users connected at 220 kV and above (132 kV and above in NER).***

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

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

A.8.3 Following utilities submitted the internal audit report based on the audit done at their substations:

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

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

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

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- A.8.5 Compliance/ action plan on recommendation of audit has not been submitted by any utilities after the 59th PSC meeting.
- A.8.6 **The above submitted reports were made available at the NRPC website: <http://164.100.60.165/meetings/prsub.html>**
- A.8.7 In the meeting, the above reports were discussed and concerned utilities were asked to submit a compliance report of the issues highlighted by the audit.
- A.8.8 EE (P), NRPC highlighted that POWERGRID NR-3 has conducted an internal protection audit and observed minor issues also. Various portals have been mentioned in the reports, which are good practices.
- A.8.9 MS, NRPC appreciated the efforts of POWERGRID NR-3 put up for the protection audit. The same practices may be adopted by other utilities.
- A.8.10 POWERGRID NR-2 representative informed that POWERGRID has several templates and setups that are used to validate the protection aspects implemented in the substation.
- A.8.11 As per the submitted internal protection audit report of KSTPS, Kota, AEE (P), NRPC highlighted that the auto recloser is not in service in 220kV KSTPS-Beawar feeder. RVPN representative informed that KSTPS -Beawar feeder has now been removed and connected to Bundi. EE (P), NRPC commented that there is still a need to have an auto recloser in service. Further, AEE (P), NRPC highlighted that only the protection settings of the transmission line have been mentioned in the KSTPS report. Protection settings of other equipment are also required to be included in the report.
- A.8.12 As per the 3rd party protection audit report of Talwani Saboo Private Limited, AEE (P), NRPC highlighted that the auto recloser has been kept off in all transmission lines by TSPL. He added that over-voltage protection has also been disabled. The same may be reviewed by TSPL as per report of the committee of review of over-voltage protection settings. Further, AEE (P), NRPC highlighted that PSB unblock time has been kept as 1.5 sec, which needs to be reviewed as per the finalized protection

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philosophy of the Northern Region. Forum directed TSPL and Punjab SLDC to review the protection settings as per the finalized protection philosophy of the Northern Region

Decision of the Forum:

Forum noted the audit report and directed utilities to submit a compliance report. Further, other utilities were directed to submit the protection audit report (for audited S/s as per submitted plan) to the NRPC Secretariat and to update the compliance status regularly.

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

- A.9.1 AEE (P), NRPC apprised that in 59th PSC meeting, POWERGRID NR-3 representative submitted that protection philosophy may be reviewed and standardised for various cases as below-
- a. Protection setting for idle charging or Anti-theft charging of transmission line (765kV, 400kV and 220kV)
 - b. Protection settings for idle charging of future bay up to **LA** (Lightning arrestor) in case of GIS (Gas insulated S/S) or AIS
 - I. Future Bay equipped with all standard protection (Main-I, Main-II, LBB and BCU)
 - II. Future Bay equipped with LBB & BCU protection.

The diagram shows a single-line representation of a power system. A central vertical bus is labeled **BAY-421**. Connected to this bus are several components:

- At the top: Breaker **421-89B** (3150A) and Breaker **421-89BE** (3150A).
- Below these: Two sets of CTs (CT5 and CT4) connected to PTs (P2 and P1) with ratings **3000-2000-500/1A PX**. These are collectively labeled **421-CTB**.
- In the middle: Breaker **421-52** (3150A, 50kA).
- Below that: Two sets of CTs (CT3 and CT2) connected to PTs (P1 and P2) with ratings **3000-2000-1000-500/1A 0.2S, 20VA** and **3000-2000-500/1A PX**. These are collectively labeled **421-CTA**.
- At the bottom of the bus: Breaker **421-89A** (3150A) and Breaker **421-89AE** (3150A).
- To the right of the bus: Breaker **421-89L** (3150A) and Breaker **421-89LE** (3150A).

The bus is connected to a horizontal line labeled **4000A, 50Hz**. This line is connected to a transformer labeled **Z1 (1Ø X 3)**. The transformer is connected to a vertical line that leads to a line labeled **LINE FUTURE-2**. The diagram also shows a ground connection and a switch symbol.

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

A.9.2 During the discussion in the 59th PSC meeting, for case of Protection settings for idle charge of future bay up to LA (Lightning arrestor), UPPTCL representative conveyed

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that distance relay would be needed for protection. HVPN representative mentioned that overcurrent protection may be kept with definite time because of such short line, distance relay protection is not much accurate. RVUN representative highlighted that any phase over current protection would be better.

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

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

A.9.5 Further, AESL representative conveyed the following philosophy for antitheft Line charging as shared by AESL by email:

- I. Zone-2 setting time delay should be Zero.
- II. Over Voltage setting should be 105% and 3 sec delay.
- III. Auto reclosure function should be OFF.
- IV. Overcurrent setting with minimum (20%) with instantaneous trip.

A.9.6 Further, shared comments of BBMB were conveyed as below-

- i. For idle charging or Anti-theft charging of transmission line (765kV, 400kV and 220kV), Zone-1 setting in the distance protection relay may be kept as 110 % of the protected line with instantaneous time setting as per protection philosophy for radial lines.
- ii. For idle charge of future bay up to LA (Lightening arrestor) in case of GIS (Gas Insulated S/S) or AIS
 - a) **Future Bay equipped with all standard protection (Main-1, Main-II, LBB and BCU)** - In BCU (it is assumed having backup protection) and Main-I and Main-II relays second stage of High set with instantaneous time setting with appropriate current settings be enabled for both over current and earth fault protection functions.
 - b) **Future Bay equipped with LBB & BCU protection**- In BCU (it is assumed having backup protection) second stage of High set with instantaneous time

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setting with appropriate current settings be enabled for both over current and earth fault protection functions

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

- a) In case of transmission line element, Zone-4 time setting should be kept as 160msec with reach adequate to cover Bus faults during the period Bus Bar Protection is kept out of service.
- b) In case of ICT and Bus reactor, High set protection function stage with instantaneous time setting be introduced and current setting of such function be coordinated with existing High set protection function stages.

A.9.7 Accordingly, following philosophy were decided for antitheft Line charging as below-

- a. Zone-1 settings may be kept as actual settings of transmission line.
- b. Zone-2 setting time delay may be kept as Zero with impedance settings as actual criteria.
- c. Auto reclosure function to be kept as OFF.
- d. Non directional earth fault may be kept enabled with definite time of 100msec.
- e. In case of 400kV transmission lines, Over Voltage setting may be kept as 105%-107% pick up with 3-4 secs time delay and in case of 765kV transmission lines, it may be kept as 104%-106% pick up with 3-4 secs time delay.

A.9.8 In the meeting, RVPN representative commented that during the shutdown of any line, settings still remain same as charged line. Therefore, for Future Bay equipped with all standard protection (Main-1, Main-II, LBB and BCU), all actual settings may be implemented as it is done for actual line if line length is known. UPPTCL representative added that over voltage protection settings may be kept on lower side as DT is not available from other side due to unavailability of another end.

A.9.9 Further, it was conveyed that for idle charging of future bay up to LA (Lightening arrestor) with all standard protection (Main-1, Main-II, LBB and BCU) and line availability, stub protection (false status of open line isolator is needed to be kept i.e. physically line isolator is closed), Teed and over current protection may be applied. It

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depends on bus configuration. Further, over voltage protection settings may be kept as normal way. If in this case line is present, then distance protection philosophy for antitheft charged line may be applied.

A.9.10 For idle charge of future bay up to LA (Lightening arrestor) equipped with LBB & BCU protection, over current protection may be kept in BCU.

A.9.11 For protection settings of connected transmission line element, ICT and Bus Reactor in case of Bus Bar out of service due to retrofitting work, it was decided following:

- i. In case of transmission line element, Zone-4-time setting should be kept as 160msec with reach adequate to cover Bus faults. Over current protection should be enabled on bus coupler with time setting less than 160msec.
- ii. In case of ICT and Bus reactor, High set protection function stage with instantaneous time setting be introduced and current setting of such function be coordinated with existing High set protection function stages.

A.9.12 Subsequently, MS, NRPC stated that the draft may be prepared based on the discussion and may be considered for finalization in the next PSC meeting. He directed utilities to share the suggestions/comments if any.

Decision of the Forum:

Forum decided that philosophy for the above cases may be finalized in the next meeting, considering the above discussion. Utilities may share the suggestions/comments if any.

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

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

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

A.10.2 Apraava Energy submitted that on **May 2, 2025, at 05:22:41 hrs**, JPL Power Station experienced a **complete blackout** due to the **tripping of all four 400 kV**

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transmission lines emanating from the station. The incident led to a total loss of generation evacuation and station power. Approximately **three hours later**, one 400 kV line was successfully recharged, enabling the restoration of station auxiliaries and the startup of generating units.

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

- **Root cause analysis** is required for the sequence of events involving the tripping of **JPL–Kabulpur 400 kV lines**:
 - At 04:07:32 hrs, auto-reclosure occurred in R-phase of **Kabulpur Ckt-2**, with the fault current of 15 kA in R-phase. Our generator transformer fed 15KA current. It is detrimental to the transformer.
 - JPL team immediately informed M/s Indigrid for on-ground verification.
 - At 04:25:57 hrs, both **Kabulpur Ckt-I** and **Ckt-II** tripped on Zone-2 protection from the JPL end.
 - As a result, the entire generation load shifted to the two Dhanoda 400 kV lines.
 - At 05:22:41 hrs, both Dulatabad lines at Dhanoda substation tripped, leading to total evacuation failure and unit tripping on over frequency due to lack of load.
- The **reason for the delayed protection action** at **Kabulpur substation**—which contributed to the Zone-2 operation at JPL—needs to be established.
- M/s **Indigrid** may be requested to furnish a **detailed protection report and fault analysis** for the Kabulpur lines.
- M/s **HVPNL Dhanoda team** may be requested to furnish a **detailed protection report and fault analysis** for the Dhanonda lines.
- **Recommendations** for preventing recurrence may include:
 - Review of distance protection settings and grading.

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

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

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

- Deliberation and directions on the above issue.
- Inputs from Indigrid, HVPNL, and SLDC for a joint resolution to prevent such incidents in future.

A.10.6 NRLDC representative stated that the event happened in May, 2025 month which will be discussed in the grid event analysis in next PSC meeting. DRs have been received from CLP Jhajjar but in pdf form that may be shared in dot cfg/dat format.

A.10.7 MS, NRPC conveyed that a detailed discussion may be held in the next meeting during the grid event analysis agenda based on the tripping inputs received from IndiGrid and HVPN.

A.10.8 EE (P), NRPC suggested CLP Jhajjar to review the protection philosophy at its end by the meantime.

Decision of the Forum:

Forum directed IndiGrid and HVPN to provide the tripping related inputs to NRLDC. Any required remedial measures will be directed by Forum based on the discussion in the next meeting during grid event analysis.

A.11. 5 days Residential Training Program on “Electrical Protection of Power System” for officials of NRPC Constituents (Table agenda by NRPC Secretariat)

A.11.1 This agenda was discussed as table agenda in the meeting wherein it was apprised that in 53rd TCC & 78th NRPC meeting (held on 16-17 March, 2025), Forum approved

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the proposal of 5-day residential training program on Electrical Protection of Power System for 135 participants to be conducted by POWERGRID at PAL, Manesar and funded by NRPC fund.

- A.11.2 Accordingly, nominations were sought from utilities vide letter dated 28.04.2025 & 19.05.2025 (attached as **Annexure-A.VII**)
- A.11.3 EE (P), NRPC commented that some utilities have not sent nominations as asked as per the allocated numbers to them.
- A.11.4 MS, NRPC highlighted that training is being convened to enhance the knowledge on protection. He urged utilities to expedite the nominations in order to facilitate batch-wise officers' details.
- A.11.5 He stated that utilities who are willing to send more officers for training may also send additional nominations, which will be considered to fulfil the batch depending upon the availability of nominations of officers from utilities.

Decision of the Forum:

Forum decided that additional nominations from utilities may also be considered to make batches of requisite numbers if nominations are not received from asked utilities.

Part-B: Agenda by NRLDC

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

- B.1.1 As per 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 were requested to share the status of remedial actions taken. List of points discussed in 60th PSC meeting is attached as **Annexure-B.I**. During the meeting constituents were

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requested to apprise the status of the same. Discussion during the meeting were as follows:

i. Frequent multiple elements tripping at 220kV Kunihar, Baddi, Upperla Nangal complex and load loss event in HP control area

PSC (51, 52 & 53) recommendations: 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.

During 54th PSC meeting, HPSEBL informed that Protection audit of 220kV Kunihar was conducted by POWERGRID on 19th October 2024. Protection audit of rest of the stations (Bhabha, Upperla Nangal, Baddi etc.) shall be conducted in near future and will be completed by December 2024. HPSEBL also submitted protection audit and its compliance report.

During 55th PSC meeting, the compliance report submitted by HPSEBL was discussed. NRLDC representative highlighted protection related non-compliance mentioned in 3rd party protection audit report. HPSEBL representatives were not present in the meeting. SLDC-HP was requested to further follow up with HPSEBL for expedited corrective actions at their end.

During 56th PSC meeting, the HPSEBL representative stated that they have applied for the PSDF for rectification of issues in this complex. Some observations have come from PSDF. They will again submit the application by incorporating the observations.

During 57th PSC meeting, HPSEBL representatives were not present in the meeting.

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During 58th PSC meeting, HPSEBL representative stated that protection audit at Baddi and Upperla Nangal is completed on 20th March 2025 by POWERGRID. Audit reports are awaited.

During 59th PSC meeting, HPSEBL representative stated that status is same and as major work is of relay replacement, they will need PSDF fund for rectification of issues.

NRLDC representative highlighted that it is necessary to complete the work before summer in view of the increase in tripping.

During 60th PSC meeting, the HPSEBL representative stated that they are going for combined scheme through PSDF fund for rectification of issues.

NRLDC representative highlighted that this issue is going on for the last several PSC meetings, hence HP needs to have a proper action plan and cost estimate for rectification of issues to ensure the healthiness of protection system at the earliest.

CGM(SO), NRLDC also emphasized that if there is any problem in getting PSDF fund for rectification of issues, HP needs to expedite the process at their own cost and an action plan may be made accordingly.

PSC Forum requested HPSEBL to take expeditious actions at their end and ensure the healthiness of protection system in this complex.

ii. Multiple elements tripping at 220kV Hissar(BBMB) 07th May 2024, 11:16 hrs

PSC (51 & 52) recommendations: Expedite the implementation of differential protection in short lines to avoid undesired operation of distance protection.

During 53rd PSC meeting, HVPNL representative stated that matter has been taken up with HVPNL and is pending at their end. HVPNL representative informed that design team has compiled all such requirements in Haryana control area and is now working on the further process.

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During 54th PSC meeting, HVPNL representative informed that existing earth wire is normal earth wire which is to be replaced with OPGW. Process of the same has been started. After this, process of implementation of differential protection will be started.

During 55th PSC meeting, HVPNL representative informed that availability of OPGW has been confirmed. Design team of HVPNL is taking further actions in this regard.

During 56th PSC meeting, 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.

During 57th PSC meeting, HVPNL representative informed that status is same and estimated timeline will be 6 months to complete the work.

During 58th PSC meeting, HVPNL representative informed that no further update is there in this regard and matter is pending at Head Office level.

During 59th PSC meeting, HVPNL representative informed that tendering is in process. Exact timeline will be shared in next PSC.

NRLDC representative requested HVPNL to expedite the process at their end.

During 60th PSC meeting, HVPNL representative informed that work will be completed within 1 month.

NRLDC representative requested HVPNL to expedite the process at their end.

PSC Forum recommended HVPNL to expedite the implementation of differential protection in short lines and also share the expected timeline.

- iii. **Multiple elements tripping at 400kV Sainj(HP), 400kV Parbati2 & Parbati3 (NHPC) Stations on 07th May 2024, 16:17 hrs:**

PSC 51 recommendations:

- NHPC shall follow up with the relay engineer and take necessary remedial actions to ensure proper operation of A/R scheme at Parbati2 end.

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- NHPC and HPPTCL shall review the healthiness of PLCC at Parbati3 and Sainj end and take necessary actions to ensure their proper operation.
- Expedite the implementation of differential protection in 400kV Parbati2-Sainj line.
- Standardisation of recording instruments (DR/EL) need to be ensured.

NHPC representative informed following during 52nd PSC meeting:

- Shutdown has been planned in 1st week of November 2024, testing of A/R scheme and implementation of differential protection will be done during that period.
- PLCC card at Parabti3 end will be replaced by the end of September 2024. For dual test of PLCC operation, PLCC at Sainj end also need to be healthy. Sainj HEP representative was not present in the meeting. HPPTCL was requested to intimate concerned person of HPPCL to taken necessary corrective actions and ensure healthiness of PLCC at Sainj end.

Further in 53rd PSC meeting, NHPC representative informed following:

- Due to unavailability of OEM, shutdown plan has been now rescheduled in last week of November or 1st week of December. Testing of A/R scheme and implementation of differential protection will be done during that period.
- PLCC card at Parabti3 end has been replaced and made functional. However, for dual test, PLCC at Sainj end also need to be functional.

During 54th PSC meeting, NHPC representative informed that status is same. Implementation of differential protection & testing of A/R in 400kV Parbati2-Sainj line will be completed by December end. Further, PLCC at Sainj HEP end also need to be healthy for testing of PLCC at Parbati3 end and proper operation of carrier communication in line.

During 55th PSC meeting, 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. Visit of GE engineer is also

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scheduled in January 2025. Representatives of Sainj HEP were not present in the meeting.

During 56th PSC meeting, 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.

NRLDC representative requested NHPC and HPPCL to complete the work as per mentioned timeline.

During 57th PSC meeting, NHPC representative informed that OPGW laying is ongoing. GE engineers are yet to visit and the work is expected to get completed by March 2025.

During 58th PSC meeting, NHPC representatives were not present due to ongoing commissioning activity in Parbati-II Project, as communicated. However, vide mail dt. 26.03.2025, NHPC informed that as per LOA, OPGW work shall be completed by Dec'2025. GE engineer visited Parbati-II site, however it is observed during commissioning that there is communication issue with the supplied line differential relay. The relay has been sent to OEM's premisses for rectification. After rectification of the same, the relay can be installed. The same is expected to be completed by May'2025.

During 59th PSC meeting, relay will be purchased by 15th May 2025, but they will be commissioned after OPGW work is completed.

During 60th PSC meeting, NHPC representative informed that relays are already purchased, they will be commissioned after OPGW work is completed.

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NRLDC representative raised concern over PLCC maloperation issue at Sainj end.

Sainj representative stated that Over-voltage protection is disabled at Sainj end and PLCC will be made available/healthy within 15-20 days.

PSC Forum recommended NHPC & HPPCL to take expeditious action at their end and ensure healthiness of protection system.

iv. Multiple elements tripping at 400kV Koteshwar(PG) on 17th May 2024, 17:21 hrs

PSC 51 recommendation: 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.

During 53rd PSC meeting, POWERGRID (NR-1) representative informed that order for the material of differential protection has been placed. It is estimated that materials will get delivered in next 3-months. In addition, to avoid delayed fault clearance in case of high resistive fault, time delay of DEF protection and carrier aided DEF operation has been implemented.

During 54th PSC meeting, POWERGRID(NR-1) representative informed that, material for differential protection is expected to be arrived by the end of December 2024 and the same will be implemented by the end of January 2025.

During 55th PSC meeting, POWERGID(NR-1) representative informed that materials related to differential protection have been received and work has been started. It will get completed by the end of January 2024.

During 56th PSC meeting, POWERGRID(NR-1) was requested to apprise the forum about the present status. 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.

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During 57th PSC meeting, POWERGRID(NR-1) representative informed that work is completed for 400kV Koteshwar(PG)-Koteshwar(TH) D/C.

During 58th PSC meeting, THDC representative informed that differential protection scheme on 400kV Koteshwar(PG)-Tehri(TH) D/C has not been implemented yet.

During 59th PSC meeting, POWERGRID(NR-1) representative informed that different tender was issued for 400kV Koteshwar(PG)-Tehri(TH) D/C which got cancelled and hence retendering is in progress. This will need at least 6 months to complete the work. However, during shutdown, they have implemented and tested carry-aided DEF protection operation which will take care of faults in the meantime.

During 60th PSC meeting, POWERGRID(NR-1) representative informed that the differential protection scheme implementation on 400kV Koteshwar(PG)-Tehri(TH) D/C is in the tendering stage and work will be completed within 4-5 months.

PSC Forum requested POWERGRID to expedite the work related to implementation of the differential protection scheme on 400kV Koteshwar(PG)-Tehri(TH) D/C.

v. Multiple elements tripping at 220kV Sarna (PS) on 04th May 2024, 07:10 hrs

PSC 51 recommendations:

- Punjab shall expedite the commissioning of the new bus scheme.
- POWERGRID shall revise the Z-4 time delay setting of Kishenpur lines at Sarna (PS) end as 160msec till bus bar get operational.

During 52nd PSC meeting, Punjab representative informed that tender of bus bar protection has been processed, bus bar protection at 220kV Sarna will be commissioned within 4-5 months tentatively.

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During 53rd PSC meeting, PSTCL representative informed that tender of bus bar scheme is in process and POWERGID(NR-2) representative informed that Z-4 time delay setting of lines of their control area has been revised.

During 54th PSC meeting, PSTCL representative stated that process is still at the tender stage. It will be commissioned in next 3 months.

During 55th PSC meeting, PSTCL representatives were not present in the meeting.

During 56th PSC meeting, PSTCL representative informed that bus bar protection at 220kV Sarna will be commissioned by the end of March 2025.

During 57th PSC meeting, PSTCL representative informed that there is delay in tender stage and bus bar protection at 220kV Sarna will be commissioned by June 2025. Materials are under inspection.

During 58th PSC meeting, PSTCL representative informed that status is same and materials are under inspection.

During 59th PSC meeting, material inspection is done and installation process has started. Bus bar protection at 220kV Sarna will be commissioned within 1 month.

During 60th PSC meeting, PSTCL representative informed that materials arrived at site. Due to shutdown unavailability during paddy season, bus bar protection will be commissioned after paddy season.

NRLDC representative requested PSTCL for expeditious remedial actions and ensure implementation of bus bar protection as per mentioned timeline.

PSC Forum requested PSTCL to expedite the work related to implementation of bus bar protection at Sarna S/s.

- vi. **Multiple elements tripping at 220kV KTPS (RVUN) on 21st June 2024, 11:37 hrs**

PSC 51 recommendations: Commissioning of bus coupler between 220kV Bus-

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3 & 5 need to be expedited.

During 52nd PSC meeting, RVUNL representative informed that tender for the same has been floated.

During 53rd PSC meeting RVUNL representative informed that process is at same stage. It will take around 01 year to complete all the process and implementation of bus coupler.

During 54th PSC meeting, RVUNL representative stated that whole process will take time. Tender process is completed and review meeting is scheduled on 25th December 2024.

During 55th PSC meeting, RVUNL representatives were not present in the meeting.

During 56th PSC meeting, RVUNL representative stated that work is at stage of tender processing. Necessary follow up actions are being taken.

During 57th PSC meeting, RVUNL representative stated that status is same and work is at stage of tender processing.

During 58th PSC meeting, RVUNL representative stated that status is same and work is at stage of tender processing (administrative process delay).

During 59th PSC meeting, RVUNL representative stated that tender bid has been opened and techno-commercial evaluation is in progress.

During 60th PSC meeting, RVUNL representatives were not present.

NRLDC representative requested RVPNL to expedite the tender and other followed action.

PSC Forum requested RVUNL for expeditious actions at their end.

- vii. **Frequent tripping of 220 KV Anta(NT)-Sakatpura(RS) (RS) Ckt-1 : Non operation of A/R in line**

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PSC 52 recommendations: RVPN was requested to expedite the process of relay replacement and rectification of issues related to A/R operation.

During 53rd PSC meeting, RVPNL representative informed that request of relay panel has been floated however DI of the same is yet to be issued.

During 54th PSC meeting, RVPNL representative informed that existing panels are of simplex type which have to be replaced with duplex panels. Panels have been issued however civil work is required for installation of the same. Delay is due to civil work.

During 55th PSC meeting, RVPNL representative informed that civil work has not been completed yet. Implementation of duplex panels will be started after completion of civil work.

During 56th PSC meeting, 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.

During 57th PSC meeting, RVPNL representative informed that there is delay in panel replacement. If the work is delayed further, A/R will be enabled in the old panel during shutdown on 27th and 28th February 2025.

During 58th PSC meeting, RVPNL representative informed that work is delayed due to unavailability of shutdown on 27th and 28th February 2025, next shutdown is planned during May 2025.

During 59th PSC meeting, RVPNL representative informed that A/R will be enabled in the old panel subject to shutdown availability, otherwise as civil work is almost completed at Sakatpura S/s, new panel will be installed in new control room by end of May 2025.

During 60th PSC meeting, RVPNL representative informed that work is delayed by 2 months due to issue (plan change) in civil work.

NRLDC representative requested RVPNL to take necessary follow-up actions to

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ensure expeditious completion of work.

PSC Forum requested RVPNL to expedite the actions at their end.

viii. Frequent tripping of 220 KV Khara(UP)-Saharanpur(PG) (UP) Ckt-1

PSC 52 recommendations:

- 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.

Discussion during 53rd PSC meeting, SLDC UP representative informed that status is same and follow up is being done to ensure the relay replacement in Nov-Dec 2024.

NRLDC representative highlighted the issue of non-operation of A/R in this line also at the Saharanpur end and requested POWERGRID(NR-1) to review the healthiness of A/R operation in all the lines at Saharanpur(PG). An issue in A/R operation at Khara end in case of Y-ph fault is observed. 2*ph A/R is occurring in this scenario. SLDC UP may review the same.

SLDC UP representative stated that remedial actions are been taken to rectify the cause of faults, such as replacement of old insulators etc. Further necessary actions will also be initiated to minimise the occurrence of faults in line.

During 54th PSC meeting, POWERGRID(NR-1) representative informed that, A/R function in the line has been reviewed and it is healthy and operational. He further raised concerns over frequent faults in line. Further, the SLDC UP representative informed that all the line protection relays at Khara(UP) are of electromechanical type. Relays will be replaced with numerical relays by the end of December 2024.

During 55th PSC meeting, the SLDC UP representative informed that the work of relay replacement has been started and all the line protection electromechanical

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relays at Khara(UP) will be replaced with numerical relays by the end of December 2024.

During 56th PSC meeting, SLDC UP representative informed that continuous shutdown is going on for work of relay replacement at Khara S/s. Relay replacement in Saharanpur line will 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.

During 57th PSC meeting, SLDC UP representative informed that relay replacement in Saharanpur line is completed and that in Beas line will be completed by 22nd February 2025. It is expected that relay replacement in unit-1 will get completed by the end of March 2025 followed by unit-2 & 3.

During 58th PSC meeting, SLDC UP representative informed that relay replacement in unit-1 will get completed on 30th March 2025 followed by unit-2 & 3 within next 6 months.

During 59th PSC meeting, SLDC UP representative informed that relay replacement in unit-1 is completed on 30th March 2025. The same in unit-2 & 3 will be done within next 6 months.

During 60th PSC meeting, SLDC UP representative informed that relays are available at site. Relay replacement will be done as per shutdown availability.

NRLDC representative requested UP for expeditious completion of work.

PSC Forum requested UPPTCL to expedite the replacement of relay at Khara(UP) end.

ix. Multiple elements tripping event at Patiala(PG) on 19th July 2024, 18:50 hrs

PSC 52 recommendation: Implementation of new bus bar relay at Patiala (PG).

During 54th PSC meeting, POWERGRID(NR-2) representative informed that materials have been arrived. Presently, team is working at Nallagarh(PG) S/s, thereafter work will start at Patiala(PG). Implementation of new bus bar protection

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at Patiala (PG) will be completed by the end of January 2025.

During 55th PSC meeting, 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.

During 56th PSC meeting, 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.

During 57th PSC meeting, POWERGRID(NR-2) representative informed that status is same.

During 58th PSC meeting, POWERGRID(NR-2) representatives were not present.

During 59th PSC meeting, POWERGRID(NR-2) representative informed that implementation of bus bar protection at Patiala (PG) will be completed by May 2025.

During 60th PSC meeting, POWERGRID(NR-2) representative informed that implementation of bus bar protection at Patiala(PG) will be completed by 15th June 2025.

PSC Forum requested POWERGRID(NR-2) to expedite the process.

- x. Multiple elements tripping at 220kV Khodri HEP & Chibro HEP on 5th, 11th & 19th September 2024**

PSC 53 recommendation:

- 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.

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- HPPTCL shall take necessary actions to rectify the protection related issue in 220kV Khodri-Majri ckt-2.
- Over Voltage protection needs to be disabled in 220kV lines at the earliest.
- Over frequency and over current protection operation in units at Khodri HEP need to be reviewed.
- A/R should be made operational in Sarsawan line at the earliest.
- UJVNL shall share the CPRI audit report and details of remedial action taken within one week.
- Replacement of Units breakers need to be expedited.

During 54th PSC meeting, UJVUNL representative informed following during the meeting:

- Timely submission of DR/EL & tripping reports for the tripping incidents are being ensured.
- Overvoltage setting in all the lines at Khodri HEP has been disabled. However, 220kV Khodri-Mazri ckt-2 is in jurisdiction of HPSEBL.
- Over frequency & overcurrent protection in generating units have been proposed to review.
- Audit report of the CPRI conducted in October 2023 has already been submitted by mail.
- A/R operation in Sarsawan line and replacement of Unit breakers has been proposed. Follow ups are being done with OEM.
- Time delay setting of Z-4 in distance protection in all the lines at Khodri has been revised from 1sec to 160msec.

During 55th PSC meeting, HPSEBL representatives were not present in the meeting and 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.

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- 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. After this, bus bar protection will be made operational.

During 56th PSC meeting, 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 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.

NRLDC representative stated that unit breakers at Khodri HEP have to be replaced on priority because their improper operation is leading to loss of generation of two hydro generating stations (Khodri & Chibro HEP). UJVUNL was requested to expedite the necessary remedial action and also to share the action plan.

Further, NRLDC representative requested HPSEBL to review the protection settings of 220kV Khodri-Majri line-II specifically overvoltage protection. Ensure protection setting in line as per approved protection philosophy. HPSEBL representatives agreed to review the protection settings in 220kV Khodri-Majri line-II.

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During 57th PSC meeting, UJVUNL representative informed that GE team has already been contacted to resolve the A/R issue in relay, but there is delay from GE end. Further, tender is under process regarding replacement of bus bar protection relay. Action plan is prepared and shared for attending the issue in unit/line breaker.

During 58th PSC meeting, UJVUNL representative informed that GE team has denied the scope of work. Hence open tender will be issued to resolve the A/R issue in relay.

During 59th PSC meeting, UJVUNL representative informed that open tender process is in progress and it will take at least 4-5 months to complete the work.

During 60th PSC meeting, UJVUNL representative informed that offer is received from GE and tender is at approval stage.

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.

xi. Multiple elements tripping at 220kV Obra_A(UP) on 9th October 2024**PSC 54 recommendation:**

- I. UPPTCL & Obra_A(UP) shall ensure the implementation of LBB protection at the earliest at 220kV side.
- II. GPS scheme shall be implemented at Obra_B(UP) by the end of January 2025 and time sync of recording devices will be ensured.

During 55th PSC meeting, UPPTCL representative informed that Bus bar protection relay is of electromechanical type, and it has to be replaced with numerical relay. Around 6-month (till June 2025) time will be required for this work. Issue of time sync will be resolved by the end of January 2025.

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During 56th PSC meeting, UPPTCL representative informed that status is same.

During 57th PSC meeting, UPPTCL representative informed that time sync issue will be resolved by March 2025 (delay in visit by ABB engineers). Further, bus bar relay replacement will be done within 1 year.

During 58th PSC meeting, UPPTCL representative informed that time sync issue and bus bar relay replacement both the works will be addressed by ABB engineers and work is further delayed due to delay in visit.

During 59th PSC meeting, UPPTCL representative informed that work is further delayed due to delay in visit by ABB engineers.

During 60th PSC meeting, UPPTCL representative informed that work will be completed within 4 months and LBB relay will be replaced by FY 2026-27.

NRLDC representative requested UPPTCL to take necessary follow up actions for expeditious completion of work.

PSC Forum requested UPPTCL for expedited corrective actions.

xii. Multiple elements tripping at 220/132kV Obra_A(UP) on 9th October 2024

PSC 54 recommendation: 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.

During 55th PSC meeting, 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.

During 56th PSC meeting, UPPTCL representative informed that status is same.

During 57th PSC meeting, UPPTCL representative informed that Commissioning and Implementation of numerical relays in 132kV ICT-1&2 at Obra_A(UP) will be completed by March 2025 (delay in visit by ABB engineers).

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During 58th PSC meeting, UPPTCL representative informed that Commissioning and Implementation of numerical relays in 132kV ICT-1&2 at Obra_A(UP) will be addressed by ABB engineers and work is further delayed due to delay in visit.

During 59th PSC meeting, the UPPTCL representative informed that work is further delayed due to delay in visit by ABB engineers.

During 60th PSC meeting, UPPTCL representative informed that work will be completed within 4 months and LBB relay will be replaced by FY 2026-27.

NRLDC representative requested UPPTCL to take necessary follow up actions for expeditious completion of work.

PSC Forum requested UPPTCL for expedited corrective actions.

xiii. Multiple elements tripping at 220kV Dausa(RS) on 21st October 2024

PSC 54 recommendation:

- i. RVPNL will expedite the replacement of all the static relays at 220kV Dausa S/s with numerical relays.
- ii. Time synchronization of all the recording instruments need to be ensured.

During 55th PSC meeting, RVPNL representative informed that total 5 electromechanical have to be replaced with numerical relays. 3 no. of relays have been allotted, remaining 2 relays will get allotted in next phase. It is expected that work of relay replacement will get completed by the end of January 2025.

During 56th PSC meeting, 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. Further time sync issue is not resolved yet same. Resolution of time sync issue has also been taken up in parallel.

During 57th PSC meeting, RVPNL representative informed that 3 relays will be replaced during shutdown available on 21st, 22nd and 28th February 2025. Rest 2

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relays are under procurement stage.

During 58th PSC meeting, RVPNL representative informed that one relay is already replaced on 27th February 2025. One relay will be replaced on 28th March 2025 and other one will be replaced during shutdown in April 2025. Rest 2 relays are under procurement stage.

During 59th PSC meeting, RVPNL representative informed that total three relays are replaced till now. In rest two elements one relay (Main-I/II) is numerical and other one is static. In those 2 static relays DR extraction facility is made available through Main-I/II numerical relay till they are replaced.

During 60th PSC meeting, RVPNL representative informed that 2 static relays replacement will require atleast 3-4 months. However, issue is resolved for now as 2 static relays DR extraction facility is made available through Main-I/II numerical relay till they are replaced.

NRLDC representative stated that in that case issue will be again followed up after 3 months for knowing the status of work.

xiv. Frequent tripping of 220 KV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-1 &2

PSC 55 recommendation: Expeditious corrective actions to minimise frequent faults in line.

(Rajasthan representative informed that 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 within next 35-40 days)

During 56th PSC meeting, RVPNL representative informed that work has been completed in one of the lines connected to RAPP_A and in other line and the line connected to RAPP_B, it will get completed by the end of January 2025.

During 57th PSC meeting, RVPNL representative informed that work is completed in 220kV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-1. For 220kV RAPS_A(NP)-

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Sakatpura (RS) (RS) Ckt-2 and 220kV RAPS_B(NP)- Sakatpura (RS) (RS) Ckt, it will be completed by March 2025.

During 58th PSC meeting, RVPNL representative informed that 6 bird-guards need to be installed and some broken earth wires need to be attended further in 220kV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-1. Work is almost completed in 220kV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-2, however, some newly installed insulators failed due to manufacturing defect which are being replaced. Work in 220kV RAPS_B(NP)- Sakatpura (RS) (RS) Ckt will also be completed soon depending on shutdown availability.

During 59th PSC meeting, RVPNL representative informed that work in 220kV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-1 & 2 is complete except some broken earth wires need to be attended. It was also stated that 10-20km from Sakatpura end of 220kV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-1 & 2 passes through forest area and faults are often of transient nature. A/R is disabled at RAPS_A end although it is enabled at Sakatpura end. Communication from RVPNL is sent to RAPS_A to enable A/R and replace CB at RAPS_A end if any issue is there, but no reply is received so far. Work in 220kV RAPS_B(NP)- Sakatpura (RS) (RS) Ckt is in progress.

During 60th PSC meeting, RVPNL representative informed that work in 220kV RAPS_B(NP)- Sakatpura (RS) (RS) Ckt is completed.

NRLDC representative raised concern about the fact that A/R is disabled at RAPS_A end. However, NPCIL representatives were not present in the meeting.

PSC Forum requested NPCIL to enable A/R at RAPS_A end of 220kV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-1 & 2.

- xv. **Frequent tripping of 400 KV Amritsar(PG)- Makhu(PS) (PSTCL) Ckt-1 & 400 KV Talwandi Saboo(PSG)-Nakodar (PSG) (PS) Ckt-1**

PSC 55 recommendation: PSTCL was requested to plan replacement of

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porcelain insulators with polymer type.

During 56th PSC meeting, PSTCL representative informed that replacement of insulators of these lines are planned in next financial year (2025-26).

NRLDC representative requested PSTCL for expedite the replacement of insulators in these lines to minimise the tripping events.

During 57th PSC meeting, PSTCL representative informed that status is same.

During 58th PSC meeting, PSTCL representative informed that insulator replacement will be completed before next winter season 2025.

During 59th PSC meeting, PSTCL representative informed that status is same.

During 60th PSC meeting, PSTCL representative informed that PO (Purchase order) is in process and work will be completed before foggy season 2025.

NRLDC representative requested PSTCL for expedite the replacement of insulators in these lines (by October 2025) to minimise the tripping events due to fog during next winter season. PSTCL agreed for the same.

PSC Forum requested PSTCL to for expeditious actions for insulators replacement.

xvi. Multiple element tripping event at 400kV Aligarh(UP) on 02nd November, 2024

PSC 55 recommendation: UPPTCL shall ensure the healthiness of carrier communication and A/R operation at Muradnagar_1(UP) end.

During 56th PSC meeting, 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.

During 57th PSC meeting, UPPTCL representative informed that carrier

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communication issue exists in Aligarh(UP) end also. Hence communication upgradation will be done at both the ends. Work is expected to get completed by end of May 2025.

During 58th PSC meeting, UPPTCL representative informed that allotment order is yet to get issued. Work will get completed after allotment is done.

During 59th PSC meeting, UPPTCL representative informed that carrier cabinet is to be installed at both Aligarh(UP) and Muradnagar_1(UP) end, but they are yet not allotted.

During 60th PSC meeting, UPPTCL representative informed that status is same and carrier cabinet is yet to be allotted.

NRLDC representative requested UPPTCL to take necessary follow up actions for expeditious rectification of carrier communication issue at Aligarh(UP) and Muradnagar_1(UP) end.

PSC Forum requested UPPTCL for expedited corrective actions.

xvii. *Frequent tripping of 220 KV Agra(PG)-Bharatpur(RS) (PG) Ckt-1*

PSC 57 recommendation:

Impedance measurement and distance relay settings of the line need to be reviewed before summer (high demand period).

During 58th PSC meeting, RVPNL informed that anti-fog disc and bird-guard installation is in progress. POWERGRID (NR-3) informed that impedance measurement and distance relay settings review will be done in the next available shutdown.

During 59th PSC meeting, RVPNL informed that insulator disc replacement is almost done. Two towers need to be changed due to less ground clearance. POWERGRID (NR-3) informed that impedance measurement and distance relay settings review is done and settings are corrected.

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During 60th PSC meeting, RVPNL informed that ground clearance issue is resolved.

xviii. *Frequent tripping of 400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2*

PSC 57 recommendation:

Healthiness of carrier communication needs to be reviewed.

During 58th PSC meeting, UPPTCL informed that only one carrier cabinet is in working condition among the two MAIN-I and MAIN-II carrier cabinet, hence cross-wiring could not be done. Another carrier cabinet will be made healthy for redundancy.

During 59th PSC meeting, UPPTCL informed that one carrier cabinet is needed and requirement/demand for the same is already placed. It will be installed once allotted.

During 60th PSC meeting, UPPTCL representative informed that carrier cabinet is yet to be allotted.

PSC Forum requested UPPTCL for expedited corrective actions.

xix. *Frequent tripping of 400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1*

PSC 57 recommendation:

a) Timely submission of disturbance recorder (DR) and event logger (EL) files need to be ensured.

b) Time sync issue need to be addressed.

c) Issue in A/R non-operation need to be resolved.

During 58th PSC meeting, UPPTCL representative informed time sync issue is

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attended. A/R non-operation issue is resolved at Noida Sec 148 end and it will be resolved at Noida Sec 123 end within 1.5 months.

During 59th PSC meetings, UPPTCL representative informed that A/R non-operation issue is yet to be resolved at Noida Sec 123 end and it is delayed due to delay in visit by GE engineers. If work gets delayed further, then it will be attended by third party during SAS (automation) work at another substation.

During 60th PSC meetings, UPPTCL representative informed that issue couldn't be resolved by third party, hence they are again trying to do the work through OEM which is under process.

PSC Forum requested UPPTCL to take necessary follow up actions for expeditious completion of work.

xx. Frequent tripping of 400 KV Merta-Ratangarh (RS) Ckt-1**PSC 57 recommendation:**

- a) DR standardization need to be checked (DR time window of ~800ms is not as per standard).
- b) Phase sequence issue need to be resolved.
- c) Status of A/R operation at Ratangarh end need to be reviewed.

During 58th PSC meeting, RVPNL informed that DR time window is made as per standard. Status of A/R operation at Ratangarh end couldn't be reviewed due to shutdown unavailability and will be attended in next available shutdown.

During 59th PSC meeting, RVPNL informed that they have applied for shutdown on 19th and 20th May 2025. One relay replacement and review of A/R operation will be done during shutdown.

During 60th PSC meeting, RVPNL informed that work is completed on 13th May 2025.

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xxi. *Multiple elements tripping at 220/132kV Ropar(PS) on 06th January, 2025*

PSC 57 recommendation:

PSTCL need to share the DR/EL & tripping details within one week.

During 58th PSC meeting, PSPCL representative informed that DR/EL could not be extracted due to software issue.

During 59th PSC meeting, PSPCL representative was not present.

During 60th PSC meeting, PSPCL representative was not present.

PSC Forum requested PSTCL to share detailed report along with observations and remedial action taken.

xxii. *Multiple elements tripping at 400/220KV Heerapura(RS) on 10th January, 2025*

PSC 57 recommendation:

a) Instantaneous OC relay (High set) settings of ICTs at Heerapura(RS) may be reviewed.

b) Replacement of remaining electromechanical/ static relays & schemes with numerical relay need to be expedited at Heerapura(RS).

During 58th PSC meeting, RVPNL representative informed that already 8 static/ electromechanical relays are replaced with numerical relays. Remaining relays are also being replaced in phased manner, but it will take time as relays of whole substation including busbar relay need to be replaced.

During 59th PSC meeting, RVPNL representative informed that all electromechanical/ static relays are replaced with numerical relays except busbar

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relay.

During 60th PSC meeting, RVPNL representative informed that estimated timeline for bus bar relay replacement is approx. 6 months

PSC Forum requested RVPNL to expedite the bus bar replacement.

xxiii. *Frequent tripping of 220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1*

PSC 58 recommendation: Expeditious corrective actions to minimise frequent faults in line.

During 58th PSC meeting, RVPNL representative informed that this line is almost 200km long and total no. of location is 450. There is issue in almost 1300 string insulators and it will take at least 3-4 months to complete the whole work subject to shutdown availability. Some work has already been done during February 2025 and tripping has also reduced since then.

During 59th PSC meeting, RVPNL representative informed that complete line need refurbishment which will require long shutdown. For now, insulator disc replacement is being done as and when shutdown opportunity is there.

During 60th PSC meeting, RVPNL representative informed that strengthening work has already been started as complete line refurbishment will require long shutdown. Work is expected to get completed within 4 months.

PSC Forum requested RVPNL to take expeditious corrective action to minimise frequent faults in line.

xxiv. *Frequent tripping of 400 KV Bareilly-Unnao (UP) Ckt-1*

PSC 59 recommendation:

A/R issue at Bareilly end need to be resolved at the earliest.

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During 59th PSC meeting, UPPTCL representative stated that carrier was unhealthy in both the channels. Issue is resolved from Unnao end. Testing will be done at Bareilly end during shutdown.

PSC Forum requested UPPTCL to resolve A/R issue at Bareilly end at the earliest.

During 60th PSC meeting, UPPTCL representative stated that testing is already done on 5th May 2025 and issue is resolved at Bareilly end also.

xxv. *Frequent tripping of 400 KV Merta-Kankani (RS) Ckt-1*

PSC 59 recommendation:

A/R operation need to be reviewed at both the ends.

During 59th PSC meeting, PSC forum requested RVPNL to review A/R operation at both the ends.

During 60th PSC meeting, RVPNL representative stated that A/R operation review is already done at Merta end and the same at Kankani end will be done by June 2025.

PSC Forum requested RVPNL to review A/R operation at Kankani end at the earliest.

xxvi. *Multiple elements tripping at 220KV Dasuya(PS) at 14:32 hrs on 10th March, 2025*

PSC 59 recommendation:

PSTCL shall share the DR/EL & tripping details within one week.

During 59th PSC meeting, PSTCL representative informed that they will share DR/EL & tripping details within one week.

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During 60th PSC meeting, PSTCL representative informed that detailed report is shared through mail.

- xxvii. Multiple elements tripping at 220/132/33kV Baraut(UP) at 01:06 hrs on 12th March, 2025**

PSC 59 recommendation:

DT scheme of 220 KV Baghpat(PG)-Shamli(UP) (UP) Ckt need to be checked during earliest available shutdown.

During 59th PSC meeting, PSC forum requested UPPTCL to check DT scheme of 220 KV Baghpat(PG)-Shamli(UP) (UP) Ckt during earliest available shutdown.

During 60th PSC meeting, UPPTCL representative stated that if there is delay in getting shutdown, DT scheme will be checked by removing the actual connection to lockout relay. The work is expected to get completed within 1 month.

PSC Forum requested UPPTCL to expedite checking of DT scheme of 220 KV Baghpat(PG)-Shamli(UP) (UP) Ckt.

- xxviii. Multiple elements tripping at 220/66/33kV Delhi Rohtak Road(BB) at 18:34 hrs on 14th March, 2025**

PSC 59 recommendation:

a) Resistive reach settings of zones need to be reviewed.

b) Instead of keeping Main-2 relay out of service, it can be kept in service with zone-1 settings of 100 msec until it is being replaced by new relay.

During 59th PSC meeting, PSC Forum requested to review resistive reach settings of zones and to keep Main-2 relay in service with zone-1 settings of 100 msec until it is being replaced by new relay.

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During 60th PSC meeting, BBMB representative stated that review of resistive reach settings of zones is done and zone-1 settings of Main-2 relay is updated to 100 msec.

- xxix. *Multiple elements tripping at 400kV Parbati_3(NH) and 400kV Sainj HEP(HP) at 14:46 hrs on 16th March, 2025***

PSC 59 recommendation:

SLDC HP need to ensure under-voltage at Sainj end of 400 KV Parbati_2(NH)-Sainj(HP) (PKTCL) Ckt is disabled.

During 59th PSC meeting, PSC forum requested SLDC HP to ensure under-voltage at Sainj end of 400 KV Parbati_2(NH)-Sainj(HP) (PKTCL) Ckt is disabled.

During 60th PSC meeting, Sainj representative stated that under-voltage at Sainj end of 400 KV Parbati_2(NH)-Sainj(HP) (PKTCL) Ckt is disabled.

- xxx. *Multiple elements tripping at 400kV AGE25L & 220kV Nokhra(IP) at 10:00 hrs on 18th March, 2025***

PSC 59 recommendation:

NTPC needs to ensure that over-voltage is disabled at Nokhra end of 220kV Nokhra-Bhadla2 Ckt.

During 59th PSC meeting, NTPC representative informed that 220 KV NOKHRA SL_BHD2 (NTPC)-BHADLA_2 (PG) (NOKHRA) CKT-1 tripped on over-voltage protection operation at Nokhra end.

During 60th PSC meeting, NTPC representative informed that they are yet to confirm the status of over-voltage protection operation (disabled or not) at Nokhra end.

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PSC Forum requested NTPC to ensure that over-voltage is disabled at Nokhra end of the 220kV Nokhra-Bhadla2 Ckt.

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

- B.2.1 A total of **24** grid events occurred in the month of **April 2025** of which **16** are of GD-1 category, **03** are of GI-2 Category and **05** are of GI-1 Category. The tripping report of all the events have been issued from NRLDC. A list of all these events is attached at **Annexure-B.II.**
- B.2.2 Maximum delayed clearance of fault observed in event of multiple elements tripping at 400/220kV Gurgaon(PG) and 220kV Gurgaon Sec72(HR) at 13:59 hrs on 17th April, 2025 (As per PMU at Gurgaon(PG), B-N phase to earth fault converted into Y-B fault with delayed clearance of ~1800msec is observed).
- B.2.3 Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total 08 events out of 24 grid events occurred in the month. In 01 (no.) of grid event, there was no fault in the grid.
- B.2.4 NRLDC representative presented the reporting status of DR/EL & tripping reports w.r.t. grid events occurred in April 2025. It was highlighted that detailed report of majority of the tripping events have not received. Utilities were requested to start preparing the detailed report of the tripping events as per timeline mentioned in IEGC 2023 and share the report with NRLDC, NRPC and PSC forum. Remedial actions taken by constituents to avoid such multiple elements tripping may also be included in the detail report.
- B.2.5 Members stated that delay occurred due to non-submission of DR/EL & tripping details from site however they are taking continuous follow up actions to ensure timely completion of tripping analysis within stipulated timeline.
- B.2.6 **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**

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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.

Decision of the Forum

Forum requested members to 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.

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

a) Frequent elements tripping during April 2025:

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

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

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16	765 KV Bhadla_2 (PG)-Sikar_2(PSTL) (PSTL) Ckt-2	3	PGCIL
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B.3.2 List of tripping is attached as **Annexure-B.III**.

B.3.3 NRLDC representative highlighted that frequent tripping of transmission elements affects the reliability and security of the grid. In view of the same, utilities were requested to analyse the root cause of the tripping and share the remedial measures taken/being taken in this respect.

Discussion during the meeting:

- **200 MW Parbati II HEP - UNIT 1 & 2:** NRLDC representative raised concern over frequent incidents of tripping of units due to synchronisation failure. NHPC representative stated that there is delay in governor response leading to synchronisation failure. Work to rectify this issue is going on.
- **220 KV Ballabgharh-Charkhi Dadri (BB) Ckt-1:** NRLDC representative raised concern over frequent incidents of faults. It was further highlighted that the line tripped 3 number of times in April 2025 and in every case no auto-reclosing is observed. BBMB representative informed that this line is composite in nature and hence A/R is disabled.
- **220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2:** NRLDC representative raised concern over frequent incidents of faults and non-operation of A/R. It was further highlighted that the lines tripped 3 number of times each in April 2025. RVPNL representative stated that A/R is disabled at RAPS_A end although it is enabled at Sakatpura end.
- **765 KV Bhadla_2 (PG)-Sikar_2(PSTL) (PSTL) Ckt-2:** NRLDC representative raised concern over frequent incidents of faults and line tripped 3 number of times each in April 2025. POWERGRID (NR-1) representative stated that thorough patrolling of this line was done and it was found that there was clearance issue in line and this issue is currently resolved. NRLDC representative requested POWERGRID to share the patrolling report of the same. It was also highlighted that POWERGRID will identify similar clearance issues in major lines through

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periodic patrolling and take remedial action for the same.

- B.3.4 NRLDC representative emphasized that A/R (auto re-closer) issue was found in many of these tripping. All the utilities are sensitized to ensure healthiness/in service of A/R in 220 kV and above transmission lines in compliance to CEA Grid Standards. It was further informed that most of the tripping are of transient in nature but due to non-operation of A/R, it resulted into tripping of the transmission element thus reducing the reliability of the grid. All the utilities shall endeavour to keep auto re-closer in service and healthy condition of 220 kV and above voltage level transmission line. The issue of time syncing of DR/EL at many of the stations was highlighted, constituents were requested to ensure the time syncing of DR/EL. In addition, necessary actions also need to be taken to ensure the Right of Way and other operation & maintenance issues to minimize the frequent faults in the line. All utilities agreed for the same.

PSC Forum reiterated that frequent outages of such elements affect the reliability and security of the grid. Members were requested to investigate such frequent outages and share the suitable 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.3.5 The list of major tripping events occurred during April 2025 is attached as **Annexure-B.IV**. Concerned constituents/utilities were requested to share the detailed analysis of the tripping elements along with status of remedial action taken/to be taken.
- B.3.6 Utilities were requested to prepare detailed analysis report and present the event details during 60th PSC meeting. Events involving more than one utility may be jointly prepared and presented.

Discussion during the meeting:

Tripping Events

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A. Tripping event at 220/33KV Thar Surya1(IP) at 10:02 hrs on 07th April, 2025

Discussion during the meeting:

i. Brief of the event shared by NRLDC representative based on detail available is as follows:

- Generation of 220/33 KV Thar Surya1 (IP) station evacuates via 220 KV Bikaner(PG)-Thar Surya1(IP) Ckt through 220/33 kv 160 MVA ICT 1 & 2 at Thar Surya1 SL_BKN_PG (TS1PL).
- During antecedent condition, 220/33 kv 160 MVA ICT 2 at Thar Surya1 SL_BKN_PG (TS1PL) was already out (tripped at 14:27 hrs on 06.04.2025 due to pressure release valve operated). 220 KV Thar Surya1 (IP) was generating approx. 155 MW (as per PMU).
- As reported, at 10:02hrs, 220/33 kv 160 MVA ICT 1 at Thar Surya1 SL_BKN_PG (TS1PL) tripped due to heavy sparking on LV side bay 309 (exact nature, location and reason of fault yet to be received).
- Due to tripping of 220/33 kv 160 MVA ICT 1 at Thar Surya1 SL_BKN_PG (TS1PL), 220 KV Thar Surya1 (IP) S/s lost its connectivity from grid and blackout occurred at 220 KV Thar Surya1 (IP) S/s.
- As per PMU at 400kV Bikaner(IP), B-N phase to phase fault is observed with delayed fault clearing time of 240ms.
- As per PMU at TS1PL(IP), solar generation loss of approx. 155 MW was observed at 220 KV Thar Surya1 (IP).
- **Major observations:**
 - Exact nature, location and reason of fault need to be shared.
 - Reason of delayed clearance of fault need to be shared.
 - DR/EL along with tripping report need to be shared from plant end.
 - Remedial action taken report to be shared.

Thar Surya1(IP) representative was not present during the meeting.

PSC Forum Recommendations:

- *Thar Surya1(IP) shall share the DR/EL & tripping details within one week.*

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B. Multiple elements tripping event at 220/132KV Fatehabad(HV) at 02:06 hrs on 09th April, 2025

Discussion during the meeting:

i. Brief of the event shared by NRLDC representative based on details available is as follows:

- 220/132KV Fatehabad(HV) has double main bus scheme at 220kV level.
- As reported, at 02:06 hrs, R-phase CT of 220kV bus-coupler damaged which further led to bus bar protection operation at both the 220kV buses of Fatehabad(HV).
- Due to busbar operation, all the elements connected to 220kV Bus-1 & 2 at Fatehabad(HV) tripped and complete blackout occurred at 220/132KV Fatehabad(HV).
- As per PMU at Fatehabad(PG), R-N phase to earth fault is observed with delayed fault clearing time of 480 ms.
- As per SCADA, change in demand of approx. 85 MW is observed in Haryana control area.
- **Major observations:**
 - Reason of delayed fault clearance need to be shared.
 - DR/EL along with tripping report need to be shared for each element from both the ends.
 - Remedial action taken report needs to be shared.

ii. HVPNL representative informed the following:

- On dated 09.04.2025 at 02:07 Hrs, the 220kV R-Phase Bus Coupler CT got damaged due to internal fault with heavy blast at 220kV S/S HVPNL Fatehabad.
- Due to the heavy blast of the CT, Busbar Protection (Bus-I and Bus-II) got activated.
- All the 220 KV elements on 220 KV Fatehabad end tripped as a result of busbar protection. CBs at other ends didn't trip.

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- Only 220kV Fatehabad-Mehnakhera Ckt-2 tripped on zone-2 distance protection operation with fault distance of 55.731km from Mehnakhera end. (Which led to delayed clearance of fault)
- The fault was generated due to heavy blast of R-Phase Bus Coupler CT which led to the activation of busbar protection. The busbar protection-initiated command to all the 220 KV elements connected on Bus-I and Bus-II and all the elements were tripped.
- **As remedial action taken, 220 KV Bus Coupler CT (R-Phase) was installed at the earliest.**

PSC Forum Recommendations:

- *DT scheme of bus bar protection at 220kV Fatehabad(HV) need to be checked at the earliest.*
- *Reason of tripping of 220kV Fatehabad-Mehnakhera Ckt-2 on zone-2 from remote end instead of busbar protection operation at Fatehabad end need to be analysed.*

C. Multiple elements tripping at 220/66KV Dandharikalan(PS) at 14:19 hrs on 11th April, 2025

Discussion during the meeting:

i. Brief of the event shared by NRLDC representative based on detail available is as follows:

- During antecedent condition, 220kV Jamalpur(BB)-Dandharikalan(PS) (PSTCL) Ckt-1 and 2 were under planned shutdown.
- As reported, at 14:19 hrs, 220 KV DandhariKalan(PS)-Ludhiana(PG) (PSTCL) Ckt-1 tripped on B-N phase to earth fault with fault distance of 15.68km from Ludhiana(PG) end. As per DR at Ludhiana(PG), fault current was ~9.473 kA from Ludhiana(PG). Fault sensed in zone-2, but carrier-aided trip operated; fault clearing time was ~70ms.
- During the same time, 220 KV DandhariKalan(PS)-Ludhiana(PG) (PSTCL) Ckt-2 also tripped on B-N phase to earth fault with fault distance of 6.74km from Ludhiana(PG) end. As per DR at Ludhiana(PG), fault cur-

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rent was ~7.919 kA from Ludhiana(PG). Zone-2 protection operated; fault clearing time was 550ms.

- Due to tripping of all the 220kV elements complete blackout occurred at 220/66KV Dandharikalan(PS).
- As per PMU at Ludhiana(PG), two consecutive B-N phase to earth fault is observed with fault clearing time of 120ms and 560ms (delayed) respectively.
- As per SCADA, change in demand of approx. 180 MW is observed in Punjab control area.
- **Major observations:**
 - Exact reason of fault need to be shared.
 - Reason of delayed clearance of fault in 220 KV DandhariKalan(PS)-Ludhiana(PG) (PSTCL) Ckt-2 need to be shared.
 - Detailed tripping report need to be shared.
 - Remedial action taken report needs to be shared.

ii. PSTCL representative informed the following:

- 220 kV Dhandari kalan – BBMB Jamalpur ckt -1 & 2 were kept discharged due to maintenance work. 220 kV Dhandari kalan – PGCIL Ludhiana kt-1 & 2 were only source of supply remained for Dhandari Substation
- At 14:20 Hrs. Distance protection of 220 kV Dhandari kalan – PGCIL Ludhiana ckt – 1 picked B-phase to ground fault in Zone-1. Relay issued single phase trip command and AR start detected. B-phase CB opened and fault was cleared under 60 msec. but 3-pole tripped before relay could initiate AR. Thus Auto-reclose could not perform. This may be due to DT received from other end, due to which Dhandari end 3-pole tripped. (similar incident found in Dhandari – PGCIL Ludhiana ckt-2 also)
- Distance protection Main-1 of 220 kV Dhandari kalan – PGCIL Ludhiana ckt – 2 picked B phase to ground fault initially at 14:12:39.731 Hrs. but relay unpicked after 87 msec. Relay again picked b-phase to ground fault in Zone-1 at 14:13:21.086 Hrs. and Main-1 relay issued single phase trip

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command. DT received from other end at 14:13:21.683 Hrs. due to which 3-pole CB tripped and Auto-reclose could not perform.

- Due to tripping of 220 kV Dhandari kalan – PGCIL Ludhiana ckt-1 & 2, 220 kV S/s Dhandari blacked out as no other 220 kV source remained in circuit. It is worth to mention that at Dhandari end. Auto-reclose could have been performed if DT not received from PGCIL Ludhiana end, so PGCIL may need to explain the reason of DT send at their end.
- On patrolling it was found that Polymer disc of 220 kV Dhandari kalan–PGCIL Ludhiana ckt-2 flashed near Tower no. 6B & 6C.

PSC Forum Recommendations:

- *It is apparent from the DR submitted that protection operated correctly at PGCIL end.*
- *PSTCL need to review distance protection settings and carrier communication in both the lines at the earliest at DandhariKalan end.*

D. Multiple elements tripping at 220KV Unchahar-II&III TPS(NT) at 05:54 hrs on 13th April, 2025

Discussion during the meeting:

i. Brief of the event shared by NRLDC representative based on detail available is as follows:

- During antecedent condition, 210 MW Unchahar II TPS - UNIT 1 and 210 MW Unchahar III TPS - UNIT 1 were generating approx. 185 MW and 135 MW respectively (as per SCADA).
- As reported, at 05:54 hrs, line CB at Unchahar end of 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1 failed and LBB protection operated. This led to tripping of 220kV Bus-3 at Unchahar TPS.
- As per DR at Unchahar(NT) end, R-N Phase to earth fault occurred on 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1 with fault current of ~12.97kA from Unchahar(NT) end; fault sensed in zone-2. As per DR at Kanpur(PG) end, A/R operated at Kanpur(PG) end of 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1.

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- Due to LBB protection operation 210 MW Unchahar II TPS - UNIT 1 and 210 MW Unchahar III TPS - UNIT 1 also tripped.
- During the same time, as per DR at Raebareilly(PG), 220 KV Unchahar(NT)-Raebareilly(PG) (PG) Ckt-3 tripped from Raebareilly(PG) end only on directional earth fault protection operation (exact reason yet to be shared).
- As per PMU at Kanpur(PG), R-N phase to earth fault is observed with delayed fault clearing time of 640ms.
- As per SCADA, generation loss of approx. 185 MW at Unchahar-II TPS and approx. 135 MW at Unchahar-III TPS is observed.
- **Major observations:**
 - Reason of delayed clearance of fault need to be shared.
 - Exact reason of tripping of 220 KV Unchahar(NT)-Raebareilly(PG) (PG) Ckt-3 need to be shared.
 - Healthiness of protection system need to be ensured.
 - Remedial action taken report needs to be shared.

ii. NTPC representative informed the following:

- 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1 tripped from Unchahar end only on transient R-N fault.
- **As remedial action taken, relay is now replaced.**

iii. POWERGRID representative informed the following:

- 220 KV Unchahar(NT)-Raebareilly(PG) (PG) Ckt-3 tripped from Raebareilly(PG) end only on directional earth fault protection operation. Both Main-I & II sensed directional earth fault, distance protection didn't pick up.

PSC Forum Recommendations:

- *NTPC shall share the DR/EL & tripping details within one week.*
- *POWERGRID shall share directional earth fault and distance protection settings of Raebareilly end.*

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E. Multiple elements tripping at 220kV Bairasiul HEP(NH) at 21:28 hrs on 16th April, 2025

Discussion during the meeting:

i. Brief of the event shared by the NRLDC representative based on details available is as follows:

- During the antecedent condition, 220kV Jessore(HP)-Pong(BB) (PG) Ckt and 220kV Jessore(HP)-RSDPH Ckt were not in service. 60 MW Bairasiul HPS - UNIT 1, 2 and 3 were generating 60 MW each (as per SCADA).
- As reported, at 21:28 hrs, 220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt tripped on R-N phase to ground fault with fault distance of 79km from Bairasiul end due to inclement weather conditions.
- Due to tripping of 220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt and with 220kV Jessore(HP)-Pong(BB) (PG) Ckt and 220kV Jessore(HP)-RSDPH Ckt already not in service, 60 MW Bairasiul HPS - UNIT 1, 2 and 3 tripped on over-speeding due to loss of evacuation path and complete blackout occurred at 220kV Bairasiul(NH) S/s.
- Further at 22:06 hrs, CBs of 220 KV Bairasiul(NH)-Jessore(HP) (PG) Ckt were manually opened (no power flow).
- As per PMU at Pong(BB), two consecutive R-N phase to earth faults were observed with fault clearing time of 80ms and 400ms (delayed) respectively.
- As per SCADA, generation loss of approx. 180 MW at Bairasiul HEP (NH) is observed.
- **Major observations:**
 - Reason of delayed clearance of fault need to be shared.
 - DR/EL (.dat/.cfg file) of all tripped elements along with detailed tripping report need to be shared from both the ends.
 - Remedial action taken report to be shared.

ii. NHPC representative informed the following:

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- 220 KV Bairasiul-Pong Line tripped on operation of Z2 protection at 21:13:37.977 Hrs. upon receiving of carrier signal from remote end on R-N Phase fault (VR=95.84 KV, IR=1782 A). Auto reclose operation started in R-Phase.
- However within 140 msec, Auto reclose operation was blocked due to receiving of "CBF Re-trip command "from Busbar Protection relay and Three Phase tripping occurred from Bairasiul end.
- From Busbar Protection relay DR, it is evident R-Phase current of Line#1 was increased to 1805 A from 245 A. However within 90 msec current reduced to 90 amp which is below present value for LBB operation i.e. 110 A.
- The Line CB of 220kV Bairasiul-Jessore Line remained in closed condition from Bairasiul end.
- Due to tripping of outgoing lines from Jessore Sub- Station lead to unavailability of Power evacuation path for Bairasiul Power Station.
- All the three running units tripped on operation of over speed protection due to sudden load throw of.
- **As remedial action taken,**
 - **Initiation of re-trip command from Busbar relay to Line#1 is already been taking up with OEM i.e. M.s GE.**

PSC Forum Recommendations:

- *HPSEBL need to confirm whether any downstream element to 220kV Jessore S/s tripped during the event.*

F. Multiple elements tripping at 400 kV Gurgaon(PG) & 220 kV SEC-72 Gurgaon(HV) at 13:59 hrs on 17th April, 2025

Discussion during the meeting:

- i. Brief of the event shared by NRLDC representative based on detail available is as follows:**
 - 400/220KV Gurgaon(PG) and 220/66/33KV Gurgaon sec72 has double main bus system in 220KV side. 220kV Sec72 Gurgaon(HR) has source

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from 400/220kV Gurgaon(PG) station through four 220kV feeders. 220kV Gurgaon(PG)-Sec72 Gurgaon ckt-4 was under shutdown since 02.12.2024.

- As reported, at 13:59 hrs, Y-B fault occurred on 220 kV Sec72 Gurgaon – Sec52 Gurgaon (HR) line. Fault occurred due to fire incident due to blast in HCG (Haryana City Gas) pipeline under the line(tower no 45-46), leading to melting of Y & B ph conductor. At the same time B-ph CT of 220 kV Sec72 Gurgaon –Sec52 Gurgaon (HR) line at Sec72 Gurgaon(HR) end also got damaged (blast).
- As per PMU at Gurgaon(PG), B-N phase to earth fault converted into Y-B fault with delayed clearance of ~1800msec is observed.
- On this fault, distance protection as well as back up Dir. E/F O/C protection at Sec72 Gurgaon(HR) end didn't operate.
- Fault cleared with the tripping of all four 400/220kV ICTs (2*315 + 2*500MVA) at Gurgaon(PG) on back up overcurrent protection operation. 220kV Gurgaon(PG)-Gurgaon72 ckt-3 also tripped from Gurgaon(PG) end on overcurrent protection.
- With the tripping of all four ICTs at Gurgaon(PG), supply to 220kV Sec72 Gurgaon(HR) got lost.
- As per SCADA, change in demand of approx. ~815MW in Haryana control area is observed.
- 400/220kV ICTs at Guragon(PG) restored back between 15:13 hrs- 15:50 hrs and supply to Sec72 Gurgaon(HR) restored.
- **Major observations:**
 - Why did line protection (both Main-1&2) at Sec72 Gurgaon(HR) end didn't operate on line fault? Reason of non-operation of protection system need to be shared.
 - DR/EL (dat/.cfg file) of all the tripped elements along with detailed tripping report need to be shared from both the ends.
 - SCADA Data in Gurgaon Sec-72 became unavailable after tripping. Availability and Healthiness of SCADA data needs to be ensured.
 - Remedial action taken report to be shared.

60th Protection Sub-Committee Meeting (26th May, 2025)-MoM**ii. HVPNL representative informed the following:**

- The fire incident originated at 13:59 hrs. due to the bursting of a gas pipeline belonging to Haryana City Gas (HCG). This resulted in the formation of a massive fireball, rising from ground level to a height of approximately 10–12 meters, reaching the two bottom conductors of the 220 kV Sector-72 to Sector-52 line. Consequently, multiple lines and ICTs tripped at the 400 kV Substation, PGCIL, Sector-72, Gurugram.
- The supply of all 220 kV feeders connected to both the 220 kV Substation, Sector-72, HVPNL, Gurugram, and the 400 kV Substation, PGCIL, Gurugram, failed simultaneously.
- CCTV footage, arranged by the Transmission System (TS) wing from a nearby house located in front of the incident site, confirmed that the fire originated at ground level from the Piped Natural Gas (PNG) pipeline.
- The footage captured a sustained and intense vertical flame, indicating continuous gas leakage and combustion. The resulting high-temperature arc extended well beyond 10–12 meters above ground level. The footage further revealed that after 5 min 6 sec after the onset of the fire, “B” phase conductor got broken and fell on the ground. Later, after 6min 18sec of the onset of the fire 2nd conductor i.e. “Y” phase conductor also broken down and fell on the ground. The sequential failure of both conductors was due to the prolonged exposure to the extremely high temperature generated around by the intense gas flame, which caused the melt-down of Aluminum ACSR conductors.
- Upon investigation, it was observed that the Potential Transformer (PT) supply to the protection relays of the 220kV Sector-72- Sector-52 line was unavailable due to defective PT selection relay (75A slot) for Bus-I.
- As per the relay fault log data, the most recent tripping of the 220 kV Sector-72 to Sector-52 line occurred on 08.04.2025 due to the operation of the Main-1 Distance Protection Relay.
- On 10.04.2025 at 09:45 hrs, bus changeover of the 220 kV Sector-72 to Sector-52 line from 220 kV Bus-2 to 220 kV Bus-1 was carried out. However, the PT selection relays were not switched from slot 75-B to 75-A, resulting non tripping of the line at the 220 kV Sector-72 end on

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17.04.2025. Consequently, the fault was cleared from the 400 kV PGCIL Substation, Gurugram.

- During the incident, one 220 kV line CT (“B” phase) and the line isolators of the “B” and “Y” phases of the 220 kV Sector-72 to Sector-52 line bay at the 220 kV Sector-72 Substation got damaged. These components were simultaneously replaced/repared during the night hours.
- **As remedial action taken,**
 - **The PT Selection Relay for 220 kV Bus-1 of the 220 kV Sector-72–Sector-52 line at the 220 kV Sector-72 Substation was found defective and was replaced on 20.04.2025.**
 - **The two broken conductors of the 220 kV Sector-72 to Sector-52 line were repaired, and the line was restored on 18.04.2025 at 07:55 hrs, although there was no disruption in power supply due to the outage/repair work of the 220 kV Sector-72 to Sector-52 single circuit line.**
 - **To strengthen the power system in Gurugram, the alternate power supply of 220 kV Substations Sector-52 & Sector-56 has been approved from the 400 kV Substation at Kadarapur. The execution of this work commenced in February 2025, which is targeted for completion by April 2026.**

iii. POWERGRID representative informed the following:

- 220kV Gurgaon(PG)-Gurgaon72 ckts do not have distance protection as these lines are too short. They have differential protection. As fault was outside the lines hence protection of these lines didn’t operate and fault cleared through ICTs at Gurgaon(PG).

PSC Forum Recommendations:

- *POWERGRID shall share the DR of 400/220kV ICT-3 & 4 at Gurgaon(PG) and review backup E/F protection of lines at Gurgaon(PG) end .*

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G. Multiple elements tripping at 220KV Charkhi Dadri(BB) at 17:00 hrs on 25th April, 2025

Discussion during the meeting:

i. Brief of the event shared by NRLDC representative based on detail available is as follows:

- 220KV Charkhi Dadri(BB) has double main scheme in 220KV.
- During antecedent condition, 220 KV BHIWANI-CHARKHI DADRI (BB) Ckt 1, 2 , 3 & 4, were carrying 50MW, 51MW, 52MW and 49MW respectively.
- As per DR at Ballabgarh(PG), at 16:49 hrs, 220 KV BALLABHGARH-CHARKHI DADRI (BB) CKT-1 tripped due to B-N phase to earth fault with fault current of ~1.425kA and fault distance of 119.9 km (100%) from Ballabgarh end; fault sensed in zone-2.
- As reported, at 16:52 hrs, 220 KV PANIPAT-CHARKHI DADRI (BB) CKT-1 tripped due to R-N fault. Z-2 distance protection operated, the fault current is 1.72KA and fault location is 110KM from Panipat(BBMB) s/stn.
- As per DR at Samaypur(BB), at 16:53 hrs, 220 KV CHARKHI DADRI-SAMAYPUR (BB) CKT-1 tripped B-N phase to earth fault with fault current of ~4.944kA and fault distance of 26.8 km (23.1%) from Samaypur(BB) end; zone-1 distance protection operated.
- As reported, at 16:55 hrs, 220 KV BHIWANI-CHARKHI DADRI (BB) CKT-1, Ckt-2, Ckt-3 and Ckt-4 were hand tripped due to fire at Charkhi Dadri s/stn. Exact cause of fire in s/stn needs to be shared.
- During this event, change in demand of 109 MW was observed in SLDC Haryana control area as per SCADA.
- As per PMU, R-N phase to earth-fault was observed and delayed fault clearing time of 360msec observed.
- **Major observations:**
 - Details of protection operation and sequence of the tripping need to be shared.
 - Reason of delayed clearance of fault need to be shared.
 - Phase sequence issue need to be resolved.

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- DR/EL (.dat/.cfg file) of all tripped elements along with detailed tripping report and remedial action taken report need to be shared.
- 220KV Charkhi Dadri SCADA data is unavailable after tripping. Availability and healthiness of SCADA data need to be ensured.

ii. BBMB representative informed the following:

- Fault in 220 KV BALLABHGARH-CHARKHI DADRI (BB) CKT-1 at 16:49 hrs was cleared within 80 ms.
- At 16:52 hrs, Phase to earth fault occurred in 220 KV PANIPAT-CHARKHI DADRI (BB) CKT-1. During A/R dead time, fault in another phase occurred and the fault was sensed in zone-2 and no carrier was also received, indicating that fault was not of the same line. Hence delayed clearance of fault occurred.

PSC Forum Recommendations:

- BBMB shall share the DR/EL & tripping details within one week.

H. Multiple elements tripping at 220/132kV Lalsote(RS) at 17:06 hrs on 26th April, 2025

Discussion during the meeting:

i. Brief of the event shared by NRLDC representative based on detail available is as follows:

- 220/132kV Lalsote(RS) has double main bus scheme at both 220KV and 132KV voltage level.
- During antecedent condition, 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 and 220 KV Anta(NT)-Lalsote(RS) (PG) Ckt-1 were carrying 30MW and 49MW of load respectively.
- As reported, at 17:06 hrs, 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 tripped due to B-N phase to earth fault with fault current of ~4.75kA and fault distance of 2.366km from Lalsot and fault distance of 44.32km from Dausa. As per DR, fault sensed in zone-1 at Lalsot end and zone-2 at Dausa end. It is interesting to note that Z-4 protection picked up before

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zone-1 operated at both Dausa and Lalsot (reason for the same need to be shared).

- During the same time, as per DR, 220 KV Anta(NT)-Lalsote(RS) (PG) Ckt-1 also tripped on B-N phase to earth fault with fault current of 5.452kA from Lalsote(RS) end. As further reported, fault sensed in zone-1 at Lalsote and fault distance was 0.8km from Lalsote end and fault sensed in zone-2 at Anta and fault distance was 195.4km from Anta end.
- Due to tripping of both 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 and 220 KV Anta(NT)-Lalsote(RS) (PG) Ckt-1, complete blackout occurred at 220/132KV Lalsote s/s.
- As per PMU, B-N phase to earth-fault was observed with unsuccessful A/R and delayed fault clearing time of 360msec.
- As per SCADA, change in demand of approx. 116 MW was observed in Rajasthan control area.
- **Major observations:**
 - Details of protection operation and sequence of the tripping need to be shared.
 - Reason of delayed clearance of fault need to be shared.
 - As per DR of 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1, Z-4 protection picked up before zone-1 operated at Lalsot end and Z-4 protection picked up after zone-2 operated at Dausa end . Reason for the same need to be shared.
 - DR/EL (.dat/.cfg file) along with detailed tripping report need to be shared from Anta end.
 - Remedial action taken report need to be shared.

ii. RVPNL representative informed the following:

- There are 2 Nos. of 220 KV feeders connected at 220 KV GSS Lalsot: 220 KV Lalsot - Anta Line and 220 KV Lalsot - Dausa Line.
- B-N fault (zone-1, 0.9km from Lalsote end) occurred on 220KV Lalsot - Anta Line at 17:01 Hrs on dated 26.04.2025 at 220 KV GSS Lalsot due to heavy storm.

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- As per DR, B-N phase to earth fault occurred on 220 KV Lalsot - Anta Line and distance relay picked up on IL3 which initiated 1-Phase trip command with A/R-close command but may be the fault still persisted in the system so, relay gave three phase trip command and CB tripped.
- Both the 220 KV Anta & Dausa lines are paralleled on double circuit towers up to more than 2 KM and as per trip indications the fault location was in this parallel section.
- As the fault location was in that parallel section and as per DR at Lalsote end, ZONE-4 start in Dist. relay Main-I of 220 KV Lalsot – Dausa line with fault in 220 KV Anta feeder.
- As per examination of Disturbance record of both feeders it may be concluded that due to Non-Reclosing of C.B. with AR close command given by the dist. Relay of Anta feeder, the Dist. relay again pickup on C-Phase fault and at same time of instance the ZONE-4 again start in dist. Relay Main-I of 220 KV Dausa Feeder.
- But due to three pole trip of 220 KV anta feeder, the 220 KV dausa feeder start working as radial feeder.
- During the same time, B-N phase to earth fault (zone-1, 2.366km from Lalsote end & zone-2, carrier received, 44.32km from Dausa end) occurred on 220KV Lalsot – Dausa Line. Due to problem of CB at 220 kV GSS Dausa end, CB gave delayed tripping and fault was cleared in 353 msec.
- **As remedial action taken, 220 kV GSS Dausa is advised for carrying out CB timing test of 220 kV Lalsot bay for checking healthiness of the CB.**

PSC Forum Recommendations:

- *RVPNL need to ensure healthiness of CBs at Dausa and other S/s.*

B.3.7 Grid event analysis details of all the aforementioned grid incidents is attached as **Annexure- B.IV (A).**

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B.4 Details of tripping of Inter-Regional lines from Northern Region for April'25 (agenda by NRLDC)

- B.4.1 A total of 13 inter-regional lines tripping occurred in the month of April 2025. The list is attached at **Annexure-B.V**. The status of receipt of preliminary reports, DR/EL within 24hrs of the event and fault clearing time as per PMU data has also been mentioned in the table. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 37.2(c) of IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.
- B.4.2 NRLDC representative highlighted that carrier communication healthiness at Fatehpur end of 765 KV Fatehpur-Sasaram (PG) Ckt-1 may be reviewed.

Decision of the Forum

Forum recommended members to take necessary actions to minimise the tripping on inter regional line and ensure proper operation of protection system.

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

- B.5.1 As per IEGC clause 16.2
"For the operational SPS, RLDC or NLDC, as the case may be, in consultation with the concerned RPC(s) shall perform regular load flow and dynamic studies and mock testing for reviewing SPS parameters & functions, at least once a year. RLDC or NLDC shall share the report of such studies and mock testing, including any shortcomings 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

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

- B.5.3 There are 55 numbers of System Protection Schemes (SPS) approved in the Northern Region. These SPS are implemented at major generation complexes, important evacuating transmission lines and ICTs which are N-1 non-compliant. System Protection Scheme Document of Northern Region has been revised/updated on 31st January, 2025.
- B.5.4 NRLDC representative stated that 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. Further In compliance with IEGC clause 16.3, users shall also share the detailed report of SPS operation in their respective control area within 3 days of its operation. Presently, reports are being received from UP only.
- B.5.5 In this regard, communication has already been sent to constituents through NRLDC letter dated 01.05.2024, 21.02.2025 & 05.03.2025 and continuous follow up is being done in OCC & PSC meeting since May 2024.
- B.5.6 Mock testing of most of the SPS has been conducted in FY 2024-25, however it is pending at some of the stations / complex shown in table below:

Not conducted Mock Testing of SPS in 2024-25				
Sr. No.	Scheme Name	Control Area	Remarks	Date of Last Mock testing conducted
1	SPS for contingency due to tripping of HVDC Mundra-Mahendergarh	ADANI	Not healthy. Review is being done at OCC/PSC forum	
2	System Protection Scheme (SPS) for HVDC Balia-Bhiwadi Bipole	POWERGRID	Schedule not received. Review of SPS is needed.	

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3	SPS for high capacity 400 kV Muzaffarpur-Gorakhpur D/C Inter-regional tie-line related contingency	POWERGRID	Schedule not received. Review of SPS is needed.	
4	SPS for Reliable Evacuation of Ropar Generation	Punjab	Schedule not received	
5	SPS for contingency due to tripping of evacuating lines from Narora Atomic Power Station	NAPS	Schedule not received	
6	SPS for Lahal Generation	Himachal Pradesh	Schedule not received	08-07-2020
7	SPS for evacuation of Kawai TPS, Kalisindh TPS generation complex	Rajasthan	Partially conducted on 14-03-2025. Complete exercise needs to be conducted.	
8	SPS for Transformers at Ballabgarh (PG) substation	POWERGRID	Not in service, Review is being done in OCC/PSC forum	
9	SPS for Transformers at Maharanibagh (PG) substation	POWERGRID	Not in service, Review is being done in OCC/PSC forum	
10	SPS for Transformers at Mandola (PG) substation	POWERGRID	Not in service, Review is being done in OCC/PSC forum	
11	SPS for Transformers at Bamnauli (DTL) Substation	Delhi	Schedule not received; Review is being done at OCC/PSC forum	
12	SPS for Transformers at 400kV Deepalpur (JKTPL) Substation	INDIGRID	Schedule not received	
13	SPS for Transformers at 400kV Unnao (UPPTCL) Substation	Uttar Pradesh	SPS Unhealthy	19-05-2023

B.5.7 In view of the above, utilities were requested to conduct the mock testing of pending SPS (mentioned in above table) by the end of April 2025 month through NRLDC letter dated 04.04.2025.

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

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

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- v. Evacuation of Kawai TPS, Kalisindh TPS generation complex: 26.04.2025
- vi. ICTs at Deepalpur(JKTPL): 08.05.2025

- B.5.9 Concerned constituents/utilities are requested to conduct the mock testing of pending SPS (whose mock testing was not conducted in 2024-25) at the earliest.
- B.5.10 Representatives from PSPCL, NPCIL and INDIGRID were not present during the meeting.
- B.5.11 Concerned constituents/ utilities were also requested to share the tentative schedule plan for conducting mock testing of SPS in their respective control area during 2025-26 in the format attached as **Annexure-B.VI** of the agenda. Update in this regard is received only from Rajasthan till now.
- B.5.12 Further, in view of changes in network connectivity, network augmentation and load flow, review of some of the major SPS is needed. List of such SPS is shown in below table:

Sr. No.	Scheme Name	Control Area	Earlier ICT rating	Present ICT rating	Remarks	Comment from NRLDC
1	System Protection Scheme (SPS) for HVDC Balia-Bhiwadi Bipole	POWERGRID	NA		Proposed to be reviewed. (In view of change in power flow scenario).	Currently under review by NLDC.
2	SPS for high capacity 400 kV Muzaffarpur-Gorakhpur D/C Inter-regional tie-line related contingency	POWERGRID	NA		Proposed to be reviewed. (In view of change in power flow scenario).	Currently under review by NLDC.
3	SPS for Transformers at Ballabgarh (PG)	POWERGRID	4*315 MVA	4 x 500 MVA	Not in service, With the augmentation of ICT, at present there is no requirement of SPS (input from POWERGRID).	In view of the cumulative ICT loading remaining well below the N-1 loading limit during the period from 01.05.2024 to 01.05.2025, as shown above, the SPS may be disabled.
4	SPS for Transformers at	Delhi	4 x 315 MVA	2 x 500 MVA+1	With the augmentation of ICTs	In view of the cumulative ICT loading remaining well

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	Bamnauli (DTL)			x 315 MVA	and load shifting to other substation, at present there is no requirement of SPS. (input from Delhi)	below the N-1 loading limit during the period from 01.05.2024 to 01.05.2025, as shown above, the SPS may be disabled.
5	SPS for Transformers at 400KV Muzaffarnagar (UP)	Uttar Pradesh	3 x 315 MVA	3 x 315 MVA + 1 x 500 MVA	New ICT have been incorporated in the SPS (confirmed in 229 OCC)	In view of the cumulative ICT loading remaining well below the N-1 loading limit during the period from 01.05.2024 to 01.05.2025, as shown above, the SPS may be disabled.
6	SPS for Transformers at 400KV Unnao (UPPTCL)	Uttar Pradesh	3 x 315 MVA	2 x 315 MVA + 1 x 500 MVA	New ICT have been incorporated in the SPS (SPS Unhealthy)	The loading of Unnao ICTs reaches ~700 MW+ during August month close to the N-1 loading limits. Considering future load growth, the SPS may be kept in service.
7	SPS for Transformers at 400KV Sultanpur (UPPTCL)	Uttar Pradesh	2 x 315 MVA+1 x 240	3 x 315 MVA+1 x 240	SPS is no longer required due to change in network configuration and load shifting (input from UP)	In view of the cumulative ICT loading remaining well below the N-1 loading limit during the period from 01.05.2024 to 01.05.2025, as shown above, the SPS may be disabled.
8	SPS for Transformers at 400KV Gorakhpur (UPPTCL)	Uttar Pradesh	1 x 500 MVA, 1 x 315 MVA & 1 x 240 MVA	2 x 500 MVA + 1 x 315	New ICT have been incorporated in the SPS (confirmed in 229 OCC)	In view of the cumulative ICT loading remaining well below the N-1 loading limit during the period from 01.05.2024 to 01.05.2025, as shown above, the SPS may be disabled.
9	SPS for Transformers at 400KV Rajpura (PSTCL)	Punjab	2 x 500 MVA	3 x 500 MVA	With the augmentation of ICT, at present there is no requirement of SPS (input from Punjab)	The loading of Rajpura ICTs reaches crosses their N-1 loading limits during summer months. The SPS need to be kept in service.
10	SPS for Transformers at 400KV Mundka (DTL)	Delhi	2 x 315 MVA	3 x 315 MVA	New ICT have been incorporated in the SPS (confirmed in 229 OCC)	The loading of Mundka ICTs reaches crosses their N-1 loading limits during summer months. The SPS need to be kept in service.
11	SPS for Lahal Generation	HP	NA		SPS need to be reviewed (input from HP)	POWERGRID and HP may share their inputs
12	SPS for contingency due to tripping of evacuating lines	UP	NA		SPS need to be reviewed (in view of change in N/W configuration)	Updated network and base case details need to be shared by UP

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	from Narora Atomic Power Station				
13	SPS for contingency due to tripping of multiple lines at Dadri(NTPC)	NTPC	NA	SPS shall be disabled (decided in 229 OCC)	

B.5.13 During the meeting, it was decided that the SPS which are not required from constraint point of view will not be disabled for keeping the assets associated with SPS healthy and will be treated as “reserve SPS”, as may be required during prolonged outages of any system element. In case of reserve SPS for transformers (where logic was based on “tripping” of transformer) logic need to be modified based on “loading” of transformer in place of “tripping” of transformer. The list of reserve SPS as decided in the meeting is as follows:

- i. SPS for Transformers at Ballabhgarh (PG)
- ii. SPS for Transformers at Bamnauli (DTL)
- iii. SPS for Transformers at 400KV Muzaffarnagar (UP)
- iv. SPS for Transformers at 400KV Sultanpur (UPPTCL)
- v. SPS for Transformers at 400KV Gorakhpur (UPPTCL)
- vi. SPS for Lahal Generation
- vii. SPS for contingency due to tripping of multiple lines at Dadri(NTPC)

B.5.14 Regarding review of “SPS for contingency due to tripping of evacuating lines from Narora Atomic Power Station”, updated network and base case details need to be shared by SLDC UP.

B.5.15 It was further requested to all the constituents to review the existing SPS schemes in their control area. At many of the stations, augmentation of ICTs has already done. So, review of requirement of SPS by taking consideration of load enhancement in near future may be done. In view of this, concerned members were requested to share their input for further discussion in this regard. SLDC UP representative informed that Case 2.2 of “SPS for safe evacuation of Bara TPS Generation” is not implemented till now. UPPTCL representative informed that “SPS for Transformers at Greater Noida(UPPTCL) Substation” need to be kept as one 500 MVA ICT at Greater Noida(UP)

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got damaged on 25.05.2025. NRLDC representative requested NTPC to confirm whether “SPS for contingency due to tripping of multiple lines at Dadri(NTPC)” is taken under reserve or not (as decided in 229th OCC).

Decision of the Forum

PSC Forum requested members 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 after conducting mock test.

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

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

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

PSC Forum requested J&K to take expeditious action at their end to minimise this kind of events in future.

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

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

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

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

J&K representative stated that work of installation of OPGW was delayed due to payment issues. However, payment has been processed now and they will expedite the installation.

NRLDC representative also highlighted that protection audit must be done at majorly affected substations of J&K control area to identify protection related issues and resolve them at the earliest.

PSC Forum requested J&K to share the details of actions taken to address aforementioned issues. Also share status of follow-up actions taken/to be taken in this regard.

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

It is to be noted that as per the IEGC provision under clause 37.2 (c), tripping report along with DR/EL has to be furnished within 24 hrs of the occurrence of the event and detail report of the event is to be submitted within a week of event. However, no DR/EL & tripping report of any event have been received from J&K control area for any of the grid event till date. Data submission status for period of Jan'24-April'25 is attached as **Annexure-B.VIII**. Field data is very much important for complete analysis of the grid events.

NRLDC representative raised concern about reporting status of J&K. J&K representative informed that they will provide DR/EL of the events occurring at their SAS based station. NRLDC representative also requested J&K to share a list of

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substations under J&K control area mentioning whether it is SAS based or not (DR/EL available or not).

J&K through mail dt 26.05.2025 informed the list of S/s where SCADA is installed. Name of such S/s under JKPTCL Jammu are 220/132/33kV Gladni, 220/33kV Chowadi, 220/66kV Samba (IGC, Phase-III) & 220/66kV Kathua(Ghatti-II); name of such S/s under JKPTCL Kashmir are 220/33kV Lassipora GIS, 132/33kV GIS Tengpora, 220/33kV Harwan & 132/33kV Khanyar GIS; name such of S/s under JKPDCL are 400kV Baglihar-I & 400kV Baglihar-II.

DR/EL of all the tripping shall be uploaded on Web Based Tripping Monitoring System “<https://postda.nrlc.in/Account/Login.aspx>” within 24 hours of the events as per IEGC clause 37.2(c) and clause 15.3 of CEA grid standard.

PSC Forum requested J&K to note the above and advise the concerned for timely submission of the DR/EL & tripping details in future.

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

- B.7.1 On 17th May 2024 on outage of both pole (carrying total ~1500MW), SPS of 500kV HVDC Mundra-Mahindergarh inter regional link didn't operate. This issue was discussed during 51st PSC meeting and ADANI was requested to share the details w.r.t. SPS operation during the meeting.
- B.7.2 Further, NRLDC in coordination with NLDC conducted an online discussion meeting with concerned stakeholders (SLDCs, ADANI, POWERGRID) on 12th August 2024, for further remedial actions required to make this SPS healthy.
- B.7.3 Following actions were decided during the meeting:

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- i. POWERGRID, ADANI and concerned states were requested to identify the issue in communication links and take expeditious actions to make the all the communication link healthy. POWERGRID & ADANI shall review the healthiness of SPS system at different load centres and communication path between them in coordination with the SLDCs.
- ii. States were requested to go through the details of load feeders mentioned in SPS document and share the changes / modifications as per present scenario and share the inputs w.r.t. unavailability in identified load feeders and load shedding. SLDCs shall share the revised updated feeder details (radial) along with expected average/peak load relief through respective feeders.
- iii. SLDCs in coordination with their transmission and protection team shall share the status and healthiness of existing SPS system along with details of availability of communication path for incorporation of proposed revised/additional feeders.

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

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

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

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

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

B.7.9 During discussion in 54th PSC meeting also there was no further update received from

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ADANI team.

- B.7.10 During 55th PSC meeting, ADANI representative stated that there are basically communication related issues at various location involved in this scheme. OEM / vendor has been assigned and instructed to inspect all the stations and list out the different issues. After compilation of all the issues comprehensive action plan would be shared. Further, issue related to coordination & communication with the state nodal officers was highlighted by ADANI representative.
- B.7.11 NRLDC representative emphasized that ADANI shall take lead as this SPS scheme was commissioned by them and further stated that details of nodal officers will be provided. States were also requested to ensure proper coordination from their end. Further, states were also requested to ensure incorporation of revised decided feeders during work at their stations.
- B.7.12 States representative assured to provide all necessary coordination from their end.
- B.7.13 During 56th PSC meeting, ADANI was requested to apprise the forum about the present status of remedial actions.
- B.7.14 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.
- B.7.15 NRLDC representative requested ADANI to ensure completion of whole work before summer 2025. State representatives were also requested to coordinate with the ADANI team and also ensure incorporation of identified revised feeders for load relief in SPS.
- B.7.16 During 57th PSC meeting, ADANI representative informed that visit by COMTEL engineers at all the sites is completed and COMTEL will submit the report within 10 days.
- B.7.17 NRLDC representative requested ADANI to share the report at the earliest and make

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Action Plan accordingly to ensure completion of whole work before summer 2025.

- B.7.18 During 58th PSC meeting, ADANI representative shared the observations made by COMTEL engineers and informed that it would at least require 6 months to complete the work.
- B.7.19 NRLDC CGM (SO) highlighted that in view of envisaged growth in demand in next summer season, it is important to ensure rectification of issues and healthiness of SPS.
- B.7.20 ADANI representative further informed that cost implication in this case is estimated as approx. Rs. 1.5 Cr. Till now they conducted technical assessment and made cost estimation. He submitted to allow the cost recovery of this under ADDCAP. MS, NRPC conveyed that Adani may bring the separate agenda for approval of cost recovery mode with proper justification. Adani representative mentioned that he will look into the regulatory aspect and will present accordingly.
- B.7.21 NRLDC vide letter dt. 02nd April 2025 requested ADANI to share weekly progress in rectification work. However, no such weekly progress report is being currently received from ADANI.
- B.7.22 During 59th PSC meeting, ADANI representative informed that they are doing discussions with ULDC for allocation of necessary links between locations. They have also initiated internal approval for placing necessary orders to the partner for execution of upgradation activity. They are expecting to complete the execution within 4-5 months in collaboration with all the stakeholders from respective utilities and ULDC team. Communication from ATIL in this regard is also sent to NRLDC through letter dated 10th April 2025.
- B.7.23 During 60th PSC meeting, ADANI representative informed that internal approval is taken for placing the order and order will be released to vendor by end of May 2025. They have expedited the execution of upgradation activity and now it is expected to get completed by August 2025.
- B.7.24 NRLDC representative requested to share weekly progress report once the execution work starts and ADANI agreed for the same.

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Decision of the Forum

Forum emphasized the importance of 500kV Mundra-Mahendergarh SPS and its healthiness is important to ensure rectification of issues in SPS system before summer 2025. State representatives were also requested to coordinate with the ADANI team and also ensure incorporation of identified revised feeders for load relief in SPS. Desired remedial actions need to be expedited.

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

- B.8.1 The committee formed by NRPC (during 52nd PSC meeting held on 20.09.2024) to review the Overvoltage Protection settings of 400kV and 765kV transmission lines in NR finalized the philosophy for overvoltage protection and proposed the revised overvoltage protection setting for 400kV and 765kV transmission lines in NR. The proposed protection settings were discussed and approved in 58th Protection Sub-Committee (PSC) meeting held on 26.03.2025. The PSC forum requested all the utilities to implement the proposed overvoltage protection settings in 400kV and 765kV transmission lines in their respective control area. Details of the revised overvoltage protection setting to be implemented at site is attached as **Annexure-B.X**.
- B.8.2 Further, the agenda in this regard was again discussed in 230 OCC meeting held on 17.04.2025 and members were requested to ensure the implementation of proposed overvoltage settings by the end of April 2025.
- B.8.3 Status of confirmation received from UPPTCL (west zone, Meerut), Lalitpur TPS (LPGCL), Alaknanda HEP (stage-2 setting revised), Hissar(PG) and N.Jhakri (SJVN).
- B.8.4 RVPNL representative stated that confirmation regarding the same is already shared
- B.8.5 POWERGRID and PSTCL representative stated that they will share the confirmation within 1 week

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B.8.6 NHPC representative confirmed that they have implemented the proposed settings.

B.8.7 Moreover, NRLDC vide letter dated 28.04.2025 requested all the constituents to disable the phase overcurrent protection in line and share the confirmation. Status of confirmation received from UPPTCL (South East Zone), Chamara-II & III, Dhauliganga HEP, RAPS-B, POWERGRID (NR-1), AD Hydro and Budhil HEP only.

Decision of the Forum

PSC Forum requested all the to share the confirmation regarding the implementation of revised overvoltage protection settings in 400kV and 765kV transmission lines in their respective control area within 1 week through mail.

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

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

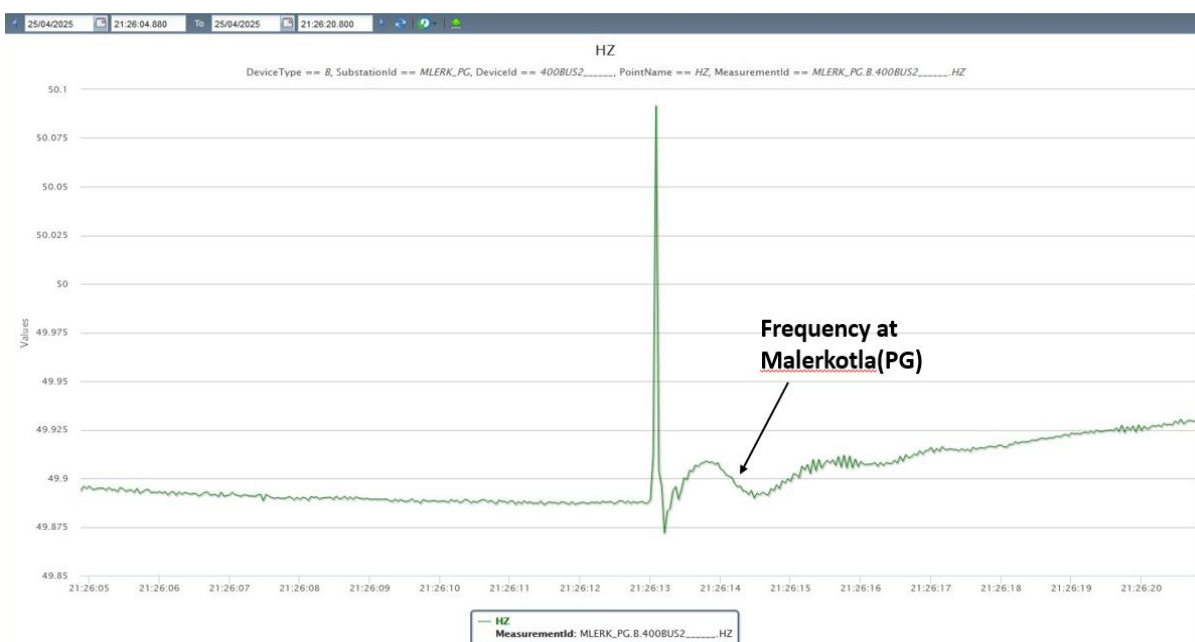


Figure 1 Frequency profile during the event

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

B.9.3 During May-June 2024 also, multiple incidents of df/dt operation leading to significant quantum of load loss were observed in Punjab control area. Details of recent df/dt

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operation and during May-June 2024 is attached as **Annexure-B.XI**.

- B.9.4 Punjab confirmed that they have reviewed the df/dt setting and settings has been kept in line with the philosophy. However, the recent operation of df/dt on 25.04.2025 indicates issue in df/dt settings in Punjab control area.
- B.9.5 In view of the above, review of UFR and df/dt settings is required to avoid unwanted tripping of feeders and load loss in states. Major review is needed in Punjab control area.

Decision of the Forum

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

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

- C.1.1 AEE (P), NRPC mentioned that NRLDC has submitted the list of FTCs allowed in month of April-2025. The same may be found on NRPC website: <http://164.100.60.165/meetings/prsub.html>
- C.1.2 As per the approved procedure of NRPC, utilities have to put up an agenda in the PSC forum for final approval of settings.
- C.1.3 Following utilities submitted the agenda for approval of settings:
- i. PRTL
 - ii. RVPNL
- C.1.4 AEE (P), NRPC stated that zone-1 has been kept unblocked for PSB for transmission lines commissioned at Sangod, which is not as per the finalized protection philosophy.
- C.1.5 Forum approved the above proposed FTC settings subject to review of PSB protection settings of transmission lines at Sangod substation. AESL and RVPNL

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confirmed to change the protection settings of PSB in line with finalized protection settings.

C.1.6 However, none of the settings was put up by following utilities:

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

C.1.7 UPSLDC representative informed that Protection settings have been shared for Panki TPS and PPGCL recently. He also added that utilities will now directly put up agenda for final approval of FTC.

C.1.8 Further, HVPN also submitted the settings for FTC allowed at the Haryana SLDC level for the following elements as below-

- i. 100 MVA, 220/66kV, ABB Make T-2 T/F(new) commissioned on 15.04.2025 at 220 KV S/Stn Transport Hub

B. March 2025.

C.1.9 NHPC submitted agenda for final approval of protection settings of Parbati-II & Karinsar, Bikaner Solar for which FTC approved in the month of March, 2025 by NRLDC. Forum approved the proposed settings.

C. January 2025

C.1.10 HPSLDC submitted the protection setting of 220 kV Wangtoo - Bhabha Circuit from 400/220/66 kV GIS at Wangtoo to 3*40 MW Bhabha HEP for FTC allowed at

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HPSLDC level in January 2025. Forum approved the proposed settings

C.1.11 Further, it was highlighted 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

C.1.12 MS, NRPC stated that utilities should take approval as the procedure has been approved by Forum only and it is requirement of IEGC 2023.

C.1.13 These all submitted settings are available at NRPC website:
<http://164.100.60.165/meetings/prsub.html>

Decision of the Forum:

After detailed deliberation, the following was decided as below-

- 1) Forum approved the proposed protection settings of the elements of PRTL, RVPNL, that allowed FTC at NRLDC level in April, 2025 subject to review of PSB protection settings of transmission lines at Sangod substation in line with finalized protection philosophy.*
- 2) Forum approved the proposed protection settings of the elements of HVPN that allowed FTC at SLDC level in April, 2025.*
- 3) Forum approved the proposed protection settings of Parbati-II & Karinsar, Bikaner Solar of NHPC that allowed FTC by NRLDC in March, 2025.*
- 4) Forum approved the proposed protection settings of the element 220 kV Wangtoo - Bhabha Circuit from 400/220/66 kV GIS at Wangtoo to 3*40 MW Bhabha HEP that allowed FTC at HPSLDC level in January, 2025.*
- 5) Concerned members who have not submitted the agenda were requested to put up agenda timely for approval of settings.*

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60th Protection Sub-Committee Meeting on 26.05.2025 (10:30 AM)

S. No.	Name	Designation	Organization	E-mail
1	V.K. Singh	MS, NRPC	NRPC	ms-nrpc@nic.in
2	D.K. Meena	SE, NRPC	NRPC	seo-nrpc@nic.in
3	Reeturaj Pandey	EE	NRPC	pandeyr.cea@gov.in
4	Lokesh Agarwal	AEE	NRPC	lokesh.cea@gov.in
5	Akash Jain	AE	NRPC	akashjain.cea@gov.in
6	Sagar Bagra	Asst. Manager	THDCIL	sagarbagra@thdc.co.in
7	Arif Rahman	DGM (Protection)	IPGCL	arifipgcl@gmail.com
8	Sudhir Kumar	Dy. G.M. (T) Both	IPGCL-PPCL	sudhirkumar.ipgpp@nic.in
9	Vaibhav Vivek	DGM (PHEH)	SJVN	vaibhav.vivek@sjvn.nic.in
10	Harshit Shukla	Manager	PPGCL	harshit.shukla@ppgcl.co.in
11	Hamender Kumar	A.E.	HPGCL	hkv12037@gmail.com
12	Pritam Chauhan	SE	HPSEBL	seesshimla@gmail.com
13	Fahim	Dy. Mgr	POWERGRID	fammy.123@powergrid.in
14	Anuj Kumar	EE	UPSLDC	eera@upslcd.org
15	Jai Prakash Premi	AM	Rosa Power Supply Co. Ltd.	jai.premi@redianceada.com
16	D.K. Jain	SE	RVPN	se.protengg@rvpn.co.in
17	R.C. Juwal	EE	UPPTCL	rah.rcjutal1965@gmail.com
18	P.K. Mishra	SE (T&C)	UPPTCL	setncmrt@upptcl.org
19	Vinay Atri	XEN	HVPNL	xenmpcctbd@hvpn.org.in
20	B.R. Meena	DGM	NRLDC	brmeena@grid-india.in
21	Mahair Prasad Singh	DGM	NRLDC	mahavir@grid-india.in
22	Deepak Kumar	Dy. Manager	NRLDC	deepakkumar@gmail.com
23	Sugata Battacharya	Dy. Manager	NRLDC	sugata@grid-india.in
24	M. Mishra	DGM	NHPC	marwati.mishra@nhpc.nic.in
25	Jaganath Pani	Sr. Manager	NHPC	jaganathpani@nhpc.nic.in
26	Sunil Raval	GM	AESL	sunil.raval@adani.com
27	S.R. Verma	ADCE	AVVNL	ceitmnp145@gmail.com
28	Uma Shankar	EE	UJVNL	atestdharasu@gmail.com
29	Arvind Bahuguna	AE	UJVNL	arvind.anvi222@gmail.com
30	Aditya Thakur	Sr. Manager	HPPCL	aadityasingh.thakur@gmail.com
31	Shikhar Mahajan	Sr. Manager	HPPCL	shikharmahajan@gmail.com
32	Sajjan Singh	A.D.	BBMB	ddpntpnp@gmail.com
33	Susheel Kumar Goel	Sr. XEN	BBMB	ddpntbwn@gmail.com
34	Er. Rashmi Gautam	Dy. Director	BBMB	ddlech@bbmb.nic.in
35	B.L. Gujjar	AGM	DTL	bl.gujar@dtl.gov.in
36	Er. Karan Bansal	Sr. XEN	Punjab SLDC	ase-sldcop@pstcl.org
37	Amandeep Singh	Sr. XEN	PSTCL	srsen-poot2-ldh@pstcl.org
38	Er. Dharmendra Kumar	A.E.	HPSLDC	dharm.hpslsc@gmail.com
39	Er. Ashwini	EE	PTCUL	ee_tandc_ddun@ptcul.org
40	Krishan Swaroop	SE/ M & P	DHBVN	sempdhbvn@dhbvn.org.in
41	Sudipto Sarkar	Ch. Manager	NRLDC	ssarkar@grid-india.in
42	Rohit Kumar Jain	A.E.	SLDC, Rajasthan	se.sold@nnpn.co.in
43	Vijay Pal	XEN	RRVNL	xen.prot.alwar@rvpn.co.in
44	Neeraj Kumar Verma	A.V.P.	Sekura Energy Pvt.Ltd.	neeraj.verma@energy_sel.com
45	Dilip S. Mehta	Director	Hexa Climate	Dilip.mehta@hexaclimate.com
46	Manoj Kumar Goyal	V.P.	Hexa Climate	Manoj.goyal@hexaclimate.com
47	Shashi Saini	Sr. Manager	Apraava Energy	shashi.saini@apraava.com
48	Ramneet Chanana	Dy. Manager	DTL	Chanana.hamneet@gmail.com

Attendees on Webex are as below-

Sr. No.	Name	Organization
1	AEE Hiranagar TLMD V	JKPTCL
2	Ankit Bhargava	
3	DEEPAK ABROL	
4	Imtiyaz Ahmad Sheikh	JKPTCL
5	JKPTCL AE Sd-Hgr TLMD-V	JKPTCL
6	JKPTCL AE Sd-Hgr TLMD-V	JKPTCL
7	Pankaj Kumar Jha	POWERGRID
8	R singh	
9	SLDC J&K	
10	hpptcl	
11	vivek	

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

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

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

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

Ref- 1) 58th PSC meeting MOM

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

1. During the incidence, only one unit was in running condition and both Parbati-III-Banala Line & Parbati-III-Sainj Line were in charged condition.
2. Fault occurred on Parbati-III-Banala Line and distance protection relay at Parbati-III end sense the fault in Z2 at R-N Phase fault and got resetted within 170 msec. However, R-Phase External Trip was received and Auto Reclose was blocked at 19:26:47.692 Hrs.
3. In SCADA event, "Direct Trip-2 Receive" was recorded which led to activate three phase tripping from Parbati-III end.
4. Line CB of Parbati-III-Sainj Line remained in closed condition from Parbati-III end and tripped from Sainj end.
5. Due to unavailability of power evacuation path, the running unit i.e. Unit#4 tripped on operation of over frequency protection.

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

Thanks

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





Status of action taken on decisions of 59th PSC

S.N.	Agenda No.	Agenda	Decision of 59 th PSC	Status of action Taken
1	A.3	Submission of protection performance indices along with reason and corrective action taken for indices less than unity to NRPC Secretariat on monthly basis (agenda by NRPC Secretariat)	Non-compliant utilities were asked to submit the Protection performance indices timely by 7 th day of month element wise along with corrective action taken for indices less than unity.	Status of reporting of indices has been taken as an agenda. The same was discussed.
2	A.5	Annual protection audit plan for FY 2025-26 (agenda by NRPC Secretariat)	<p>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.</p> <p>PSTCL, PTCUL, APCPL, HPGCL and J&K representative ensured to arrange the internal protection audit plan after the meeting.</p>	<p>Some utilities have submitted audit report. Same was taken as agenda and discussed.</p> <p>HPGCL vide mail dated 06.05.2025 submitted that report for internal protection Audit of 400KV Switchyard, RGTPP and 220 KV Switchyard, DCRTTPP, HPGCL, Yamuna Nagar for</p>

Status of action taken on decisions of 59th PSC

				<p>the year 2025-26 may be submitted by Aug-Sept-2025.</p> <p>PSTCL representative informed that Annual protection audit plan for FY 2025-26 will be submitted within 15 days.</p> <p>PTCUL has shared the same on 27.05.2025.</p> <p>There was no representative from APCPL in the meeting.</p> <p>J&K representative informed that Annual protection audit plan for FY 2025-26 will be submitted within 15 days.</p> <p>HPGCL representative informed that audit</p>
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Status of action taken on decisions of 59th PSC

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

Status of action taken on decisions of 59th PSC

5	A.10.	Implementation of SPS for ICTs at POWERGRID Substations (agenda by POWERGRID NR-1)	<p>Forum directed Rajasthan SLDC to submit the feeder details to NRLDC within 10 days for the SPSs at mentioned locations. Rajasthan SLDC may also plan the SPS for Heerapura and Deedwana if commissioning of new ICT gets delayed by end of May, 2025.</p> <p>MS, NRPC directed to complete the implementation of mentioned SPSs latest by 10.05.2025</p>	<p>RVPN updated that feeder details are under approval.</p> <p>Rajasthan also updated that new ICT is yet to be commissioned at Heerapura and Deedwana.</p> <p>Therefore, NRLDC asked Rajasthan to plan the SPS for Heerapura and Deedwana.</p>
4	B.9	Corrective action for healthiness of 500kV Mundra-Mahindergarh SPS (agenda by NRLDC)	<p>Forum emphasized the importance of 500kV Mundra-Mahindergarh SPS and its healthiness is important to ensure rectification of issues in SPS system before summer 2025. State representatives were also requested to coordinate</p>	<p>The same was discussed as agenda.</p>

Status of action taken on decisions of 59th PSC

			<p>with the ADANI team and also ensure incorporation of identified revised feeders for load relief in SPS. Desired remedial actions need to be expedited.</p>	
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Status of performance indices report of April 2025 (Last date of submission 07.05.2025)

S. No.	Member Utility		Received Status (Yes/No)	Vide mail dated	Remarks	Indices less than 1 (Yes/No)	Reason submitted and corrective action taken
1	PGCIL	Central Government owned Transmission Company	Yes	06.05.2025	NR-1	No	NA
			Yes	21.05.2025	NR-2	Yes	Yes
			Yes	06.05.2025	NR-3	No	NA
2	NTPC	Central Generating Company			Anta		
					Auriya		
			Yes	08.05.2025	Dadri	No	NA
					Koldam		
					Rihand		
					Singrauli		
			Yes	08.05.2025	Unchahar	No	NA
			Yes	02.05.2025	Tanda	No	NA
3	BBMB		Yes	25.05.2025		No	NA
4	THDC		Yes	05.05.2025	Tehri	No	NA
			Yes	19.05.2025	Koteshwar	No	NA
5	SJVN		Yes	03.05.2025	RHPS	No	NA
			Yes	05.05.2025	NJHPS	No	NA
6	NHPC		Yes	02.05.2025		Yes	Yes
7	NPCIL		Yes	06.05.2025	RAPS-A	NO	NA
			Yes	05.05.2025	RAPS-B	No	NA
			Yes	05.05.2025	RAPS-C(5&6)	Yes	Yes
					NAPS-1&2		
8	DTL		Yes	07.05.2025		NO	NA
9	HVPNL		Yes	07.05.2025		Yes	No
10	RRVNL		Yes	07.05.2025		Yes	Yes
11	UPPTCL	State Transmission Utility	Yes	03.05.2025	Meerut Circle	Yes	Yes
			Yes	03.05.2025	Agra Circle	No	NA
			Yes	03.05.2025	Jhansi Circle	No	NA
			Yes	03.05.2025	Prayagraj Circle	No	NA
			Yes	03.05.2025	Gorakhpur Circle	No	NA
			Yes	03.05.2025	Lucknow Circle	No	NA
			Yes	07.05.2025		No	NA
12	PTCUL		Yes	24.05.2025		Yes	No
13	PSTCL		Yes	13.05.2025		No	NA
14	HPPTCL		Yes	05.05.2025	PPS-I	No	NA
15	IPGCL		Yes	05.05.2025	PPS-III, Bawana	No	NA
16	HPGCL		Yes	06.05.2025	PTPS, Panipat		
			Yes	06.05.2025	DCRTPP, Yamunanagar		
			Yes	06.05.2025	RGTPP (Khedar)	No	NA
17	RRVUNL		Yes	07.05.2025	KTPS	No	NA
			Yes	05.05.2025	CSCTPP Chhabra	No	NA
			Yes	02.05.2025	RGTPP, Ramgarh	No	NA
			Yes	07.05.2025	Ctpp, Chhabra	No	NA
			Yes	07.05.2025	DCCPP, Dholpur	No	NA
			Yes	07.05.2025	kATPP, Jhalawar	No	NA
			Yes	07.05.2025	STPS Suratgarh	No	NA
			Yes	07.05.2025	SSCTPS Suratgarh	No	NA
			Yes	07.05.2025	Parichha B (220 kV)	No	NA
18	UPRVUNL	State Generating Company	Yes	02.05.2025	Parichha C (400 kV)	No	NA
			Yes	06.05.2025	DTPS Anpara	No	NA
			Yes	17.05.2025	Obra A & B	No	NA
			Yes	07.05.2025	Obra C	No	NA
			Yes	07.05.2025	Harduaganj 400 kV	No	NA
			Yes	05.05.2025	Ghatampur 765 kV	No	NA
			Yes	09.05.2025	Anpara-A&B	Yes	Yes
			Yes	07.05.2025	Panki TPS	No	NA
			Yes	07.05.2025	Jawaharpur	No	NA
19	UJVNL		Yes	03.05.2025	Dharasu	No	NA
			Yes	03.05.2025	Tiloth	No	NA
			Yes	24.05.2025	Khodri	No	NA
			Yes	24.05.2025	Chibro	No	NA
			Yes	24.05.2025	Vyasi	No	NA
20	HPPCL		Yes	14.05.2025	Kashang HEP	No	NA
			Yes	14.05.2025	Sawara Kuddu	No	NA
			Yes	14.05.2025	Sainj	No	NA
21	PSPCL	State Generating Company & State owned Distribution Company			RSD		
			Yes	05.05.2025	GGSTPS, Rupnagar	No	NA
			Yes	06.05.2025	GVK Power Goindwal Shahib Ltd.	No	NA
			Yes	06.05.2025	GHSTPS, Lehra Mohabbat	No	NA

22	HPSEBL	Distribution company having Transmission connectivity ownership	Yes	06.05.2025	Hamirpur Circle	No	NA
23	Prayagraj Power Generation Co. Ltd.		Yes	24.05.2025	Shimla Circle	No	NA
24	Aravali Power Company Pvt. Ltd		Yes	03.05.2025		No	NA
25	Apraava Energy Private Limited		Yes	05.05.2025		No	NA
26	Talwandi Sabo Power Ltd.		Yes	06.05.2025		No	NA
27	Nabha Power Limited		Yes	07.05.2025		No	NA
28	MEIL Anpara Energy Ltd (Anpara-C)		Yes	01.05.2025		No	NA
29	Rosa Power Supply Company Ltd		Yes	05.05.2025		No	NA
30	Lalitpur Power Generation Company Ltd		Yes	02.05.2025		No	NA
31	MEJA Urja Nigam Ltd.		Yes	03.05.2025		No	NA
32	Adani Power Rajasthan Limited		Yes	07.05.2025		No	NA
33	JSW Energy Ltd. (KWHEP)		Yes	28.05.2025		No	NA
34	RENEW Power Pvt Ltd						
35	NTPC Green Energy Limited	RE Generating Company having more than 1000 MW installed capacity	Yes	26.05.2025		No	NA
36	Azure Power India Pvt. Ltd.						
37	Avaada Energy Private Limited		Yes	20.05.2025		No	NA
38	Adani Green Energy Limited						
39	UT of J&K		Yes	25.05.2025		No	NA
40	UT of Ladakh	UT of Northern Region					
41	UT of Chandigarh						
	ISTS Transmission Utilities						
42	INDIGRID		Yes	13.05.2025		No	NA
43	ADHPL		Yes	07.05.2025		No	NA
45	Adani Transmission Limited	AESL	Yes	20.05.2025		No	NA
46	Bikaner Khetri Transmission Limited		Yes	20.05.2025		No	NA
47	Fatehgarh Bhadla Transmission Limited		Yes	20.05.2025		No	NA
48	Powergrid Sikar Transmission Limited	POWERGRID, NR-1					
49	Powergrid Aligarh Sikar Transmission Limited						
50	Powergrid Ajmer Phagi Transmission Limited						
51	Powergrid Bikaner Transmission System Limited						
52	Powergrid Khetri Transmission System Limited						
53	Powergrid Ramgarh Transmission Limited						
54	Powergrid Fatehgarh Transmission Limited						
55	Powergrid Bhadla Transmission Limited						
56	Powergrid Meerut Simbhavli Transmission Limited						
57	Powergrid Kala Amb Transmission Limited	POWERGRID, NR-2	Yes	21.05.2025		Yes	No
	State Utilities						
	Uttar Pradesh						
58	Vishnuprayag Hydro Electric Plant (J.P.)						
59	Alaknanda Hydro Electric Plant (GVK)		Yes	06.05.2025		No	NA
60	Khara Power House (Khara)		Yes	08.05.2025		Yes	Yes
61	WUPPTCL		Yes	03.05.2025		No	NA
62	SEUPPTCL		Yes	24.05.2025		No	NA
63	ATSCL	AESL	Yes	20.05.2025		No	NA
64	GTL	AESL	Yes	20.05.2025		No	NA
65	HPTSL	AESL	Yes	20.05.2025		No	NA
66	MTSCL	AESL	Yes	20.05.2025		No	NA
67	OCBTL	AESL	Yes	20.05.2025		No	NA
	Rajasthan						
68	Barsingsar Plant	NLC					

	RE Utilities						
69	ABC Renewable Pvt. Ltd						
70	ACME Heeragarh powertech Pvt. Ltd						
71	ACME Chittorgarh Solar Energy Pvt Ltd						
72	Adani Hybrid Energy Jaisalmer One Ltd.						
73	Adani Hybrid Energy Jaisalmer Two Ltd.						
74	Adani Hybrid Energy Jaisalmer Three Ltd.						
75	Adani Hybrid Energy Jaisalmer Four Ltd.						
76	Adani Renewable Energy (RJ) limited Rawara						
77	Adani Solar Energy Jaisalmer One Pvt. Ltd._450MW (Solar)						
78	Adani Solar Enegrgy Four Private Limited						
79	Adani Hybrid Energy Jaisalmer Four Ltd. (AEML 2-350)						
80	Project Two						
81	SB Energy Six Private Limited, Bhadla						
82	Adani Solar Enegrgy Jodhpur Two Limited, Rawara						
83	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)						
84	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)						
85	Adani Green Energy 24 Limited (Bhimsar)						
86	Adani Green Twenty-Five Limited (Badisid)						
87	Altra Xergi Pvt. Ltd.		Yes	06.05.2025		No	NA

88	AMP Energy Green Five Pvt. Ltd.						
89	AMP Energy Green Six Pvt. Ltd.						
90	Amplus Ages Private Limited	AmPlus Solar	Yes	08.05.2025		No	NA
91	Avaada RJHN_240MW	Avaada	Yes	20.05.2025		No	NA
92	Avaada sunce energy Pvt limited		Yes	20.05.2025		No	NA
93	Avaada Sunrays Pvt. Ltd.		Yes	20.05.2025		No	NA
94	Avaada Sustainable RJ Pvt. Ltd.		Yes	20.05.2025		No	NA
95	Ayana Renewable Power Three Private Limited						
96	Ayaana Renewable Power One Pvt. Ltd.						
97	Azure Power Forty One Pvt limited						
98	Azure Power Forty Three Pvt. Ltd._RSS						
99	Azure Maple Pvt. Ltd.						
100	AZURE POWER INDIA Pvt. Ltd., Bhadla						
101	Azure Power Thirty Four Pvt. Ltd.						
102	Clean Solar Power (Jodhpur) Pvt. Ltd.						
103	Clean Solar Power (Bhadla) Pvt. Ltd						
104	Eden Renewable Cite Private Limited						
105	Grian Energy private limited	AmPlus Solar	Yes	08.05.2025		No	NA
106	Mahindra Renewable Private Limited						
107	Mega Surya Urja Pvt. Ltd. (MSUPL)						
108	AURAIYA Solar						
109	DADRI SOLAR						
110	SINGRAULI SOLAR						
111	Anta Solar						
112	Unchahar Solar						
113	NTPC Devikot Solar plant_240MW	NGEL	Yes	26.05.2025		No	NA
114	NTPC Kolayat_400kV						
115	Nedan Solar NTPC						
116	SKB NTPC	NGEL	Yes	26.05.2025		No	NA
117	NTPC Nokhra_300MW						
118	One Volt energy Pvt. Ltd.	AmPlus Solar	Yes	08.05.2025		No	NA
119	ReNew Solar Urja Private Limited	IndiGrid	Yes	21.05.2025		No	NA
120	ReNew Solar Energy (Jharkhand Three) Private Limited	ReNew					
121	RENEW SOLAR POWER Pvt. Ltd. Bhadla						
122	Renew Sun Bright Pvt. Ltd. (RSBPL)						
123	Renew Sun Waves Private Limited (RSEJ4L)						
124	Renew Surya Partap Pvt. Ltd.						
125	Renew Surya Ravi Pvt. Ltd.						
126	Renew Surya Roshni Pvt. Ltd.						
127	Renew Surya Vihan Pvt. Ltd.						
128	Renew Surya Ayaan Pvt. Ltd.						
129	Renew Solar Photovoltaic Pvt Ltd						
130	RENEW SOLAR POWER Pvt. Ltd. Bikaner						
131	Rising Sun Energy-K Pvt. Ltd.						
132	Serentica Renewables India 4 Private Limited						
133	Tata Power Green Energy Ltd. (TPGEL)	TATA POWER	Yes	05.05.2025		No	NA
134	Tata Power Renewable Energy Ltd. (TPREL)		Yes	05.05.2025		No	NA
135	Banderwala Solar Plant TP Surya Ltd.		Yes	05.05.2025		No	NA
136	Thar Surya Pvt. Ltd.						
137	TP Surya Pvt. Ltd.						
138	TRANSITION ENERGY SERVICES PRIVATE LIMITED						
139	Transition Green Energy Private Limited						
140	Transition Sustainable Energy Services Private Limited						

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

Format No.-PI-01

Reporting of performance indices for protection system

(for elements connected at 220 kV and above)

Name of Utility: HVPNL

Month: April, 2025

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

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

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

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

Nc is the number of correct operations at internal power system faults

Nf is the number of failures to operate at internal power system faults

Nu is the number of unwanted operations

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

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

												restored at 16:20hrs		
2	03.04.25	XEN TS Palwal	220KV Rangala Rajpur	220KV Sohna Road- Rangala Rajpur Ckt-2	69.31 Km	21:08	01:00 (04.04. 25)	3:52	DPR, Z-1, D=53.76km, main-1&2, E/F, B-ph, master86	Not tripped	Transient fault	NIL	<p>The 220kV Sohna Road – Rangala Rajpur Ckt-2 tripped from 400kV Sohna Road S/Stn. end with the operation of DPS M-1, Z-1, B-PH 53.76 KM, 3.014 kA and DPS M-2, Z-1, B - PH 52.6 KM, 2.104 kA. No tripping occurred at 220kV Rangala Rajpur S/Stn. end. Line probably tripped due to transient fault. NO fault found during patrolling of the line.</p>	<ul style="list-style-type: none"> • The line should be thoroughly patrolled from time to time to prevent any unnecessary tripping of the line. • Night patrolling and thermo vision scanning of the line be also carried out periodically to prevent tripping of the line due to occurrence of any hot points in the line. Trimming of tree branches in the vicinity of ROW of the line be carried out to prevent undue

															tripping during windstorm and rain in the region
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Protection Performance Indices (PPI) for the month of April 2025 of KPH, Khara.

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

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

ET&CD, Gr. Noida		Unit (SPS/Line/ICT/GT/etc)	Nc	Nf	Nu	Ni	Dependability Index (D)	Security Index (S)	Reliability Index (R)	REMARK
S.N.	Sub-station									
1	220 kV Rukhi	220 K.V Rukhi-Harduananj line	1	0	0	0	1	1	1	
		CB No. - 84 , 220kV Khurja- 220kV Napp Line	3	0	0	0	1	1	1	
		220 kV NAPP LINE	1	0	0	0	1	1	1	
2	220 kV KHURJA	200 MVA T/F-I	1	0	0	0	1	1	1	
		220 kV NAPP line	1	0	0	0	1	1	1	
3	220 kV Simbhaoli	200 MVA T/F-I	2	0	0	0	1	1	1	
ET&CD, Ghaziabad		Unit (SPS/Line/ICT/GT/etc)	Nc	Nf	Nu	Ni	Dependability Index (D)	Security Index (S)	Reliability Index (R)	REMARK
S.N.	Sub-station									
1	400 kV Muradnagar-I	400 kV Aligarh line	5	0	0	0	1	1	1	
		220 kV Faridnagar line	1	0	0	0	1	1	1	
		220 kV Interconnector-I line	1	0	0	0	1	1	1	
		220 kV Interconnector-II line	1	0	0	0	1	1	1	
		220 kV Pratapvihar line	2	0	0	0	1	1	1	
		400kV MATHURA LINE	5	0	0	0	1	1	1	
2	400 kV -II Muradnagar	220kV MORTA LINE	4	0	0	0	1	1	1	
		220 kV Ataur line	1	0	0	0	1	1	1	
3	220 kV Muradnagar	220 kV Ataur line	1	0	0	0	1	1	1	
		220 kV I/C -IInd line MDR-400kV S/S-Ist	1	0	0	0	1	1	1	
		220 kV line 400kV Muradnagar-Ist	1	0	0	0	1	1	1	
4	220kV Faridnagar	CB NO.86 220kV SBB-Pratapvihar Line	1	0	0	0	1	1	1	
5	220kV Sahibabad	220kV MORTI-ATAUR LINE I	1	0	0	0	1	1	1	
6	220kV Morti	CB NO.83 220kV Bhushan Steel Line	1	0	0	0	1	1	1	
7	220kV Sahibabad	160 MVA T/F I	1	0	0	0	1	1	1	
		220kV Sahibabad Line	1	0	0	0	1	1	1	
8	220kV Pratap Vihar	220kV Muradnagar Line	1	0	0	0	1	1	1	
ET&CD, Moradabad-I		Unit (SPS/Line/ICT/GT/etc)	Nc	Nf	Nu	Ni	Dependability Index (D)	Security Index (S)	Reliability Index (R)	REMARK
S.N.	Sub-station									
1	400 kV Moradabad	400 kV Moradabad-Hapur Line	1	0	0	0	1	1	1	
		400 kV Moradabad-Kashipur Line	1	0	0	0	1	1	1	
2	220 kV Moradabad	220 kV Moradabad -C.B. Ganj Line	2	0	0	0	1	1	1	

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ET&CD, Moradabad-II

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

ET&CD, Muzaffarnagar

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

ET&CD, NOIDA

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

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ET&CD, MEERUT


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

PERFORMANCES
INDICES FROM TW
ZONE UPPTCL

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

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

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


 (Pramod Kumar Mishra)
 Superintending Engineer

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

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

[illegible]

PROTECTION PERFORMANCE INDICES POWERGRID NR2

NR213202	604120	132KV SEWA2 - MAHANPUR	4/16/2025 20:17	4/17/2025 0:35	00:00	00:00	04:18	00:00	NR2504-4471	GGDC	As intimated by NHPC, due to sudden load through off in the area due to collapse of JKPTCL network caused by whirl wind and localised storm in the area, all machines got tripped at NHPC SEWA resulting in Zero voltage in the Lines. Line CB remain closed and later on opened manually. For reference, DR of Mahanpur end indicating no fault is attached	NC
NR213204	604118	132KV MAHANPUR - KATHUA	4/16/2025 20:15	4/16/2025 22:40	00:00	00:00	02:25	00:00	NR2504-4466	GGDC	As intimated by NHPC, due to sudden load through off in the area due to collapse of JKPTCL network caused by whirl wind and localised storm in the area, all machines got tripped at NHPC SEWA resulting in Zero voltage in the Lines. Line CB remain closed and later on opened manually. For reference, DR of Kathua end indicating no fault is attached	NC
NR213206	604119	132KV SEWA2 - KATHUA	4/16/2025 20:16	4/16/2025 23:30	00:00	00:00	03:34	00:00	NR2504-4472	GGDC	As intimated by NHPC, due to sudden load through off in the area due to collapse of JKPTCL network caused by whirl wind and localised storm in the area, all machines got tripped at NHPC SEWA resulting in Zero voltage in the Lines. Line CB remain closed and later on opened manually. For reference, DR of Kathua end indicating no fault is attached	NC
NR222036	604116	220KV JALANDHAR-NEHRUAN (HPSEB)-I	4/16/2025 21:54	4/16/2025 21:54	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient R-N fault from both ends.	NC
NR240010	604080	400KV CHAMERAI-JALANDHAR-I	4/11/2025 8:31	4/11/2025 8:31	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient B-N fault from both ends.	NC
NR240013	604151	400KV DULHAISTI-KISHENPUR-I	4/19/2025 18:12	4/19/2025 18:12	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient B-N fault from both ends.	NC
NR240032	604021	800KV KISHENPUR-MOGA-I	4/2/2025 13:08	4/2/2025 13:08	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient R-N fault from both ends.	NC
NR240067	604114	400KV KISHENPUR-SAMBHA-II	4/16/2025 19:59	4/16/2025 19:59	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient R-N fault from both ends.	NC
NR240075	604152	400KV KISHENPUR-NEW WANPOH-I	4/19/2025 20:52	4/19/2025 20:52	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient B-N fault from both ends.	NC
NR240075	604153	400KV KISHENPUR-NEW WANPOH-I	4/19/2025 20:54	4/19/2025 20:54	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient B-N fault from both ends.	NC
NR240075	604154	400KV KISHENPUR-NEW WANPOH-I	4/20/2025 01:09	4/20/2025 01:09	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient Y-N fault from both ends.	NC
NR240085	604193	400KV PANIPAT (BIMB)- PANCHKULA (PGCL) LILO PORTION	4/23/2025 13:49	4/23/2025 13:49	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient R-N fault from both ends.	NC
NR240109	604141	400KV PATIALA-PATKAN-II	4/18/2025 18:04	4/18/2025 18:04	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient Y-N fault from both ends.	NC
NR240117	604031	400KV DADRI-KAITHAL	4/3/2025 6:19	4/3/2025 6:19	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient Y-N fault from both ends.	NC
NR240117	604066	400KV DADRI-KAITHAL	4/14/2025 5:56	4/14/2025 5:56	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient Y-N fault from both ends.	NC
NR240117	604102	400KV DADRI-KAITHAL	4/16/2025 3:01	4/16/2025 3:01	00:00	00:00	00:00	00:00	----	LART	Line Auto reclosed successfully on transient Y-N fault from both ends.	NC
NR240117	604192	400KV DADRI-KAITHAL	4/25/2025 13:31	4/25/2025 13:31	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient Y-N fault from both ends.	NC
NR276504	604137	765KV MEERUT-MOGA	4/18/2025 17:28	4/18/2025 17:28	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient Y-N fault from both ends.	NC
NR276504	604138	765KV MEERUT-MOGA	4/18/2025 17:29	4/18/2025 17:29	00:00	00:00	00:00	00:00	-----	LART	Line Auto reclosed successfully on transient Y-N fault from both ends.	NC
NR222033	604112	220KV SAMBA-HIRANAGAR-I	4/16/2025 20:04	4/17/2025 20:26	00:00	00:00	24:22	00:00	NR2504-4456	LNCC	Line tripped on R-B fault due to collapse of tower at Loc No-26 caused by localised storms and whirl winds in the area. A Big sheesham tree of girth 116CM also found uprooted at 50meters from tower indicating huge winds. Fault data at Samba: 7.456 IAA,8.987 Km. Following documents have been attached for reference: 1.Time tag photo with GPS coordinate of tower name plate. 2.Detailed report regarding tower collapse 3.Snaps of relay fault distance of Samba end 4.Tower Schedule and KMZ file. 6.NRLDC Flash report	NC
NR222035	604148	220KV KISHANGANGA (NHPC) - DELINA (JKPDD) - II	4/19/2025 10:33	4/19/2025 13:34	00:00	00:00	03:01	00:00	NR2504-5080	LNCC	Line tripped on B-N fault due to bad weather, thunderstorm and lightning. Flashover marks were found on the arcing horns at Tloc 110 indicating lightning. Fault data Kishanganaga: 2.63KA, 31km Fault data Delina: 5.37KA, 7.28km Following supporting documents are being submitted : 1.GPS tagged photo of Tower Name plate 2.GPS tagged photo of arcing horns showing flash marks 3.Fault location relay report of Kishanganaga end 4.Tower schedule and KMZ file.	NC
NR222044	604156	220KV KARGIL-KHALSTI	4/20/2025 5:05	4/20/2025 8:08	00:00	00:00	03:03	00:00	NR2504-5277	LNCC	Line tripped on R-Y fault due to Snowavalanche/ heavy snow storm in the area. Fault data Kargil: 0.956 KA, 51km Following documents has been attached for reference: 1. Newspaper cutting showing snow storms in the area. 2. Govt order indicating extreme weatherwarning. 3. Cps tagged video showing heavy snowfall 4. Relay fault data	NC
NR222044	604157	220KV KARGIL-KHALSTI	4/20/2025 9:34	4/20/2025 17:01	00:00	00:00	07:27	00:00	-----	LNCC	Line tripped on R-Y fault due to Snowstorm and heavy snow fall in the area.FLR Kargil:82.9km, 16.799KA,3y=267A, FLR Khasli:13.2km, 1y=110KA,3y=124A. Following documents has been attached for reference: 1. Newspaper cutting showing snow storms in the area. 2. Govt order Regarding Incident weather in area. 3. Cps tagged video showing heavy snowfall 4. Relay fault data	NC
NR222047	604113	220KV CHOWADI-SAMBHA	4/16/2025 20:04	4/17/2025 20:26	00:00	00:00	24:22	00:00	NR2504-4467	LNCC	Line tripped on R-B fault due to collapse of tower at Loc No-26 caused by localised storms and whirl winds in the area. A Big sheesham tree of girth 116CM also found uprooted at 50meters from tower indicating huge winds. Fault data at Samba: 7.456 IAA,8.987 km. Following documents have been attached for reference: 1.Time tag photo with GPS coordinate of tower name plate. 2.Detailed report regarding tower collapse 3.Snaps of relay fault distance of Samba end 4.Tower Schedule and KMZ file. 6.NRLDC Flash report	NC
NR240033	604115	800KV KISHENPUR-MOGA-II	4/16/2025 21:13	4/17/2025 8:08	00:00	00:00	10:55	00:00	NR2504-4455	LNCC	Line tripped on Y-N fault due to snapping of subconductor which created Ph-Ph fault caused by localised winds in nearby hilly area. At the same date, Tower No 26 of 220KV Samba Hiranaga Line also collapsed in adjoining area indicating huge turbulence in the area. Fault data Moga : 2.23KA, 166.380KM. Fault data Kishenpur 3.82KA, 89.562KM. 1. DR of Moga(PG) 2. Event of Moga(PG) 3. DR of Kishenpur(PG) 4. Event of Kishenpur(PG)	NC
NR240054	604091	400KV NALAGARH-KOLDAM-II	4/12/2025 15:52	4/12/2025 17:11	00:00	00:00	01:19	00:00	NR2504-3430	LNCC	Line tripped on R-N fault due to thunderstorm and LIGHTENING. Faults data Nalagarh: 7.499KA, 39.93KM. GPS Tagged photo with flashover marks on Arcing horns and insulators due to lightning are attached for reference. Supporting documents uploaded are : 1. GPS Tagged photo with flashover marks on Arcing horns and insulators 2.GPS tagged photo of nearest tower footing with name plate. 3.Nalagarh end Relay fault report showing fault distance 39.93KM 4. Nalagarh end DR 5.Tower Schedule and KMZ file. 6.IMD Weather report	NC
NR222012	604111	220KV KISHENPUR-SARNA-I	4/16/2025 20:01	4/17/2025 2:48	00:00	06:47	00:00	00:00	NR2504-4491	OMSU	Line tripped on R-N fault due to Kite Threat found wrapped at location 36. Fault data Kishenpur: 8.295 KA,11.11km. Following documents have been attached for reference : 1. Time tag photo with google coordinates indicating Kite threat. 2.Time tag photo with GPS coordinate for nearest tower name plate. 3.Snaps of relay of Kishenpur(PG) end showing fault distance 11.11km 4.Tower Schedule and KMZ file. 5. DR showing line tripped	NC
NR222033	604238	220KV SAMBA-HIRANAGAR-I	4/30/2025 14:55	4/30/2025 17:15	00:00	02:20	00:00	00:00	NR2504-8239	OMSU	Line tripped on B-N fault due to fault in the JKPTCL portion of the Line. During Dead time fault also observed in Y- phase - 1y=5.7KA.Fault distance was 14km from Samba (PG) whereas POWERGRID portion is 13.827km from Samba (PG).Fault Data Samba: 14km, 7.7KA. Following documents has been attached for reference: 1.Relay fault location Samba (PG) showing fault at 14km	NC
NR222034	604150	220KV KISHANGANGA (NHPC) - DELINA (JKPDD) - I	4/19/2025 16:40	4/19/2025 18:37	00:00	01:57	00:00	00:00	NR2504-5239	OMSU	Line tripped on R-N fault due to foreign object found wrapped around R Phase insulator. Fault data Kishanganaga: 0.3KA, FL=21 km, Fault data Delina: 3.2KA, 19.78km Following documents attached 1. GPS Tagged photo of tower name plate 2. GPS Tagged photoshowing foreign object 3. Relay fault distance	NC
NR222039	604218	220KV HAMIRPUR-NEHRUAN (HPSEB)-II	4/26/2025 15:22	4/26/2025 17:42	00:00	02:20	00:00	00:00	NR2504-7277	OMSU	Line tripped on transient B-N fault followed Y-N Fault in dead time due to forest fire in span Loc No.354-355. Fault data Hamirpur: 7.9KA, 7.08km & fault data Nehraui: 1.4KA, 49.91km. Following documents have been attached for reference: 1.Time tag photo with GPS coordinate for nearest tower name plate. 2.Time tag photo with google coordinates showing fire. 3.Snaps of relay fault distance of Hamirpur end 4.Tower Schedule and KMZ file	NC
NR240086	604020	400KV DEHAR (BBMB) - PANCHKULA (PGCL) LILO PORTION	4/2/2025 12:26	4/2/2025 14:21	00:00	01:55	00:00	00:00	NR2504-427	OMSU	Line tripped on R-N fault due to fault in BBMB portion of the Line. Fault distance was 51.15km from Panchkula (PG) whereas POWERGRID portion is 6.034KM (LILO portion only) from Panchkula (PG). Fault data Panchkula: 7.2KA, 51.15km, Fault data Dehar : 3.24KA, 92.58km Following documents has been attached for reference: 1.Snaps of Relay fault location from Panchkula(PG) 2.Email from BBMB indicating fault in BBMB portion 3. DR from Panchkula(PG)	NC
NR240086	604098	400KV DEHAR (BBMB) - PANCHKULA (PGCL) LILO PORTION	4/14/2025 14:26	4/14/2025 16:33	00:00	02:07	00:00	00:00	NR2504-3874	OMSU	Line tripped on R-B fault due to fault in BBMB portion of the Line. Fault distance was 53.53km from Panchkula (PG) whereas POWERGRID portion is only 9.054KM (LILO portion only) from Panchkula (PG). Fault data Panchkula : 53.54km, 8.2KA. Following documents has been attached for reference: 1.Snaps of Relay fault location from Panchkula (PG) 2.Message from BBMB indicating fault in BBMB portion 3.DR from Panchkula (PG)	NC
NR240112	604099	400KV DEHAR (BBMB) - RAIPURA (PTCL) LILO PORTION	4/14/2025 14:26	4/14/2025 16:26	00:00	02:00	00:00	00:00	NR2504-3870	OMSU	Line tripped on R-B fault from Raipura (PTCL) on operation of distance protection in Zone-3 due to fault beyond line length. Fault data Raipura : 249.4km, 2.03KA. Total Line Length is 129km, therefore fault was beyond line length. For reference Relay fault data from Raipura (PTCL) showing fault at 249.4km is attached	NC

NR240116	604140	400KV KATHAL-MALERKOTLA	4/18/2025 17:49	4/18/2025 18:40	00:00	00:51	00:00	00:00	NR2504-4968	OMSU	Line tripped on R-N fault due to Foreign material foundwapped in SPAN 449-450.Lightning,rain and thunderstorm was present during Tripping.FLR Malerkotla: FL=31.1KM, L=5.351KA. Following documents have been attached for reference : 1. Time tag photo with gogle coordinates indicating Foreign material. 2.Time tag photo with GPS coordinate for nearest tower name plate. 3.Snap of relay of Malekotla (PG) end showing fault distance 31.1KM which is matching with tower schedule and Foreign Material location. 4.Tower Schedule and KMZ file.	NC
NR276504	604139	765KV MEERUT-MOGA	4/18/2025 17:41	4/18/2025 21:48	00:00	04:07	00:00	00:00	NR2504-4972, NL-1749	OMSU	Line tripped on R-Y-N fault due to Kite Thread in span between location no.719-720 Lightning ,rain and thunderstorm was present during tripping. FLR Meerat:256.1km,LR=4.3ka,lb=3.97ka. Following documents have been attached for reference : 1. Time tag photo with gogle coordinates indicating Kite thread. 2.Time tag photo with GPS coordinate for nearest tower name plate. 3.Snap of relay of Meerat(PG) end showing fault distance 256.1KM which is matching with tower schedule and Kite/Kite thread location. 4.Tower Schedule and KMZ file.	NC
NR222011	604122	220KV JESSORE-PONG	4/16/2025 21:18	4/17/2025 0:07	00:00	02:49	00:00	00:00	NR2504-4485	SBBU	As intimated by BBMB, there was Bus fault in 220KV Bus at BBMB Pong resulting in tripping of all feeders connected to 220KV Bus. Following documents are attached : 1. DR of BBMB Pong indicating 220KV Bus fault 2. Snap shot of charging code requested by BBMB indicating bus fault	NC
NR222016	604105	220KV SALAL-JAMMU-I	4/16/2025 19:43	4/17/2025 10:18	00:00	14:35	00:00	00:00	NR2504-4596	SBBU	As intimated by NHPC Salal, there was complete blackout at Salal NHPC due to operation of 220KV Bus 1 & Bus 2 protection caused by jumper snapping in their yard and resulting in outage of all six feeders emanating from Salal NHPC. 1. DR of Busbar Protection Relay at Salal end showing 87B trip. 2. Email from Salal end.	NC
NR222017	604106	220KV SALAL-JAMMU-II	4/16/2025 19:43	4/16/2025 23:49	00:00	04:06	00:00	00:00	-----	SBBU	As intimated by NHPC Salal, there was complete blackout at Salal NHPC due to operation of 220KV Bus 1 & Bus 2 protection caused by jumper snapping in their yard and resulting in outage of all six feeders emanating from Salal NHPC. 1. DR of Busbar Protection Relay at Salal end showing 87B trip. 2. Email from Salal end.	NC
NR222018	604107	220KV SALAL-KISHENPUR-I	4/16/2025 19:43	4/16/2025 23:11	00:00	03:28	00:00	00:00	-----	SBBU	As intimated by NHPC Salal, there was complete blackout at Salal NHPC due to operation of 220KV Bus 1 & Bus 2 protection caused by jumper snapping in their yard and resulting in outage of all six feeders emanating from Salal NHPC. 1. DR of Busbar Protection Relay at Salal end showing 87B trip. 2. Email from Salal end.	NC
NR222019	604108	220KV SALAL-KISHENPUR-II	4/16/2025 19:43	4/16/2025 23:08	00:00	03:25	00:00	00:00	-----	SBBU	As intimated by NHPC Salal, there was complete blackout at Salal NHPC due to operation of 220KV Bus 1 & Bus 2 protection caused by jumper snapping in their yard and resulting in outage of all six feeders emanating from Salal NHPC. 1. DR of Busbar Protection Relay at Salal end showing 87B trip. 2. Email from Salal end.	NC
NR222020	604109	220KV SALAL-KISHENPUR-III	4/16/2025 19:43	4/16/2025 21:40	00:00	01:57	00:00	00:00	-----	SBBU	As intimated by NHPC Salal, there was complete blackout at Salal NHPC due to operation of 220KV Bus 1 & Bus 2 protection caused by jumper snapping in their yard and resulting in outage of all six feeders emanating from Salal NHPC. 1. DR of Busbar Protection Relay at Salal end showing 87B trip. 2. Email from Salal end.	NC
NR222021	604110	220KV SALAL-KISHENPUR-IV	4/16/2025 19:43	4/16/2025 23:12	00:00	03:29	00:00	00:00	-----	SBBU	As intimated by NHPC Salal, there was complete blackout at Salal NHPC due to operation of 220KV Bus 1 & Bus 2 protection caused by jumper snapping in their yard and resulting in outage of all six feeders emanating from Salal NHPC. 1. DR of Busbar Protection Relay at Salal end showing 87B trip. 2. Email from Salal end.	NC
NR21CT37	604209	WAGOOORA 315MVA ICT-IV	4/25/2025 12:10	4/25/2025 16:47	04:37	00:00	00:00	00:00	NR2504-6894	SRMT	ICT tripped due to PGV operation of Spare Ph of ICT caused by maloperation of PGD limit switch.	NU
NR213208	604005	132KV SEWA2 - KATHUA	4/1/2025 4:37	4/1/2025 5:49	00:00	01:12	00:00	00:00	NR2504-23	SRMU	As intimated by JKPTCL & NHPC SSEWA, Line remains charged from JKPTCL. Kathua(POWERGRID Bay) but tripped from Sewa_2 NHPC only due to maloperation of line protection in their bay at NHPC SEWA. Following documents has been attached for reference: 1. Mail from Sewa_2(NHPC) 2. DR of Kathua (JKPTCL)	NC
NR222002	604117	220KV BAIIRASIUL-PONG	4/16/2025 21:13	4/16/2025 22:24	00:00	01:11	00:00	00:00	NR2504-4465	SRMU	As intimated by BBMB Pong, Line successfully Autoreclosed from BBMB Pong (POWERGRID Bay) on transient R-N fault but tripped from Bairasul (NHPC) due to maloperation of Autoreclose scheme at NHPC Bairasul. 1. DR of Pong end 2.Event at Pong end	NC
NR222002	604217	220KV BAIIRASIUL-PONG	4/26/2025 14:16	4/26/2025 16:27	00:00	02:11	00:00	00:00	NR2504-7218	SRMU	As intimated by BBMB Pong, Line successfully Auto-reclosed on R-N fault from BBMB Pong(POWERGRID BAY) but tripped from Bairasul (NHPC) due to maloperation of Auto-reclosure scheme at Bairasul (NHPC). Bay at Bairasul (NHPC) is owned and maintained by Bairasul (NHPC) . Following documents has been attached for reference: DR.pong(BBMB) showing Successful Auto reclosure.	NC
NR222047	604239	220KV CHOWADI-SAMBA	4/30/2025 14:55	4/30/2025 17:27	00:00	02:32	00:00	00:00	NR2504-8240	SRMU	Line successfully Auto-reclosed on Y-N fault from Samba (PG) but tripped from Chowadi (JKPTCL) due to maloperation of Auto-reclosure scheme at Chowadi (JKPTCL). Bay at Chowadi (JKPTCL) is owned and maintained by Chowadi (JKPTCL). Following documents has been attached for reference: 1.DR Samba (PG) showing Successful Auto reclosure.	NC
NR240112	604047	400KV DEHAR (BBMB) - RAIPURA (PSTCL) LILO PORTION	4/4/2025 10:15	4/4/2025 16:01	00:00	05:46	00:00	00:00	NR2504-1101	SRMU	As intimated by PSTCL, Line remains charged from PSTCL Raipura (POWERGRID Bay) but tripped from Dehar BBMB due to maloperation of Line protection in their bay at Dehar. Following Documents has been attached: 1. Mail from BBMB regarding protection maloperation at Dehar BBMB. 2.Mail from Raipura PSTCL regarding No tripping at PSTCL Raipura.	NC

	Total tripping including LNCC & successful autoreclosures	48
NC	Nc is the number of correct operations at internal power system faults	47
NF	Nf is the number of failures to operate at internal power system faults,	0
NU	Nu is the number of unwanted operations,	1
NI	Ni is the number of incorrect operations and is the sum of NF and Nu	1
	The Dependability Index defined as $D = Nc / (Nc + Nf)$	100.00%
	The Security Index defined as $S = Nc / (Nc + Nu)$	97.92%
	The Reliability Index defined as $R = Nc / (Nc + Ni)$	97.92%

PROTECTION PERFORMANCE INDICES PKATL

PKA40003	604123	400KV WANGTOO (HPPTCL)-KALA AMB-1 LILO PORTION	4/16/2025 23:50	4/17/2025 0:38	00:00	00:48	00:00	00:00	NR2504-4489	OMSU	Line tripped on Y-B-N fault. Fault distance was 136M from Kala Amb (PKATL) whereas PKATL portion is 0.558KM (LILO portion only) from Kala Amb (PKATL). FLR KalaAmb: FL=136KM, Iy=3.29KA, Ib=3.98KA. 1. DR KalaAmb 2. Relay fault location from Kala Amb(PKATL).	NC
PKA40004	604077	400KV SORANG (HPPTCL)-KALA AMB LILO PORTION	4/10/2025 17:28	4/10/2025 20:04	00:00	02:36	00:00	00:00	NR2504-2846	SRMU	As intimated by HPPTCL, Line tripped from Sorang due to misoperation of Overcurrent protection at Sorang Greenco and subsequently Direct trip recieve at Kalaamb. Line current was normal at that time. Bay and protection at Sorang is owned by Greenco. Following documents has been attached for reference: 1.DR KalaAmb End showing receipt of DT at Kalaamb.	NI
PKA40004	604160	400KV SORANG (HPPTCL)-KALA AMB LILO PORTION	4/20/2025 12:29	4/20/2025 13:49	00:00	01:20	00:00	00:00	NR2504-5358	OMSU	Line tripped on B-N fault due to fault in PHTL portion of the line.FLR Kala Amb:96.6KM,Ib=3.0KA. Fault distance was 96.6KM from Kala Amb (PKATL) whereas PKATL portion is 0.558KM (LILO portion only) from Kala Amb (PKATL). The following document has been attached on NRLDC portal: 1. Relay fault location from Kala Amb(PKATL).	NC

	Total tripping including L4	3
NC	Nc is the number of correct	2
NI	Ni is the number of incorrect	0
NU	Nu is the number of unrecd	1
NI	Ni is the number of incorrect	1
	The Dependability Index d	100.00%
	The Security Index defines	66.67%
	The Reliability Index defin	66.67%

REPORTING OF PERFORMANCE INDICES FOR PROTECTION SYSTEM
NAME OF UTILITY: PUNJAB STATE TRANSMISSION CORPORATION LIMITED

Apr-25									
Sr. No.	Sub – Station	Unit (SPS/Line/ICT/GT/etc.	N_c	N_f	N_u	N_i	Dependability Index (D)	Security Index (S)	Reliability Index (R)
1		400 kV Makhu Amritsar ckt.I	5	0	0	0	1	1	1
2		400 KV Makhu Amritsar ckt.II	1	0	0	0	1	1	1
3		400 kV Makhu-Muktsar ckt.I	2	0	0	0	1	1	1
4		400 KV Makhu-Nakodar ckt.I	1	0	0	0	1	1	1
5		220 kV Nakodar(400)-Hoshiarpur ckt.	1	0	0	0	1	1	1
6		400 kV Dhanansu-Kurukshetra ckt.	1	0	0	0	1	1	1
7		220 kV Dhanansu-Kohara ckt.	1	0	0	0	1	1	1
8		400 kV Muktsar-Makhu ckt.II	1	0	0	0	1	1	1
9		220 kV Muktsar(400)-Abohar ckt.II	1	0	0	0	1	1	1
10		220 KV Dhuri-Kheru Ckt-1	1	0	0	0	1	1	1
11		220 KV Dhuri-Kheru Ckt-2	1	0	0	0	1	1	1
12		220 KV Dhuri-Sunam Ckt-1	1	0	0	0	1	1	1
13		220 KV Dhuri-Sunam Ckt-2	1	0	0	0	1	1	1
14		220 KV Dhuri-Nabha Ckt	1	0	0	0	1	1	1
15	400 kV S/S Dhuri	500 MVA ICT-3	1	0	0	0	1	1	1
16	400 kV S/S Dhuri	400 kV 125 MVAr Reactor	0	0	1	1	0	0	0
17		220 KV Dhuri-Dhanaula Ckt-2	1	0	0	0	1	1	1
18	400 kV S/S Dhuri	500 MVA ICT-1	0	0	1	1	0	0	0
19		400 kV Behman-HMEL Ckt - 1	1	0	0	0	1	1	1
20		400 kV Rajpura-Dehar ckt.	0	0	1	0	0	0	0
21	400 kV S/S Ropar	500 MVA ICT-1	1	0	0	0	1	1	1
22	400 kV S/S Ropar	500 MVA ICT-2	1	0	0	0	1	1	1
23	220 Kv Doraha	220 Kv Doraha - PGCIL Line	1	0	0	0	1	1	1
24		220 Kv Mehal Kalan - Moga Ckt. 1	1	0	0	0	1	1	1
25		220 Kv Mehal Kalan - Moga Ckt. 2	1	0	0	0	1	1	1
26		220 Kv Mehal Kalan - Pakhowal Ckt. 1	1	0	0	0	1	1	1
27		220 Kv Mehal Kalan - Pakhowal Ckt. 2	2	0	0	0	1	1	1
28		220 Kv Mehal Kalan - Moga Ckt. 2	1	0	0	0	1	1	1
29		220 Kv Mehal Kalan - Moga Ckt. 1	1	0	0	0	1	1	1
30	220 Kv Mehal Kalan	T-1 (100 MVA)	1	0	0	0	1	1	1
31	220 Kv Mehal Kalan	T-2 (100 MVA)	1	0	0	0	1	1	1
32		220 Kv Dhandari 1 - PGCIL Ckt. 1	1	0	0	0	1	1	1
33		220 Kv Dhandari 1 - PGCIL Ckt. 1	1	0	0	0	1	1	1
34		220 Kv Dhandari 1 - PGCIL Ckt. 2	1	0	0	0	1	1	1
36		220 Kv Sahnewal - Kohara	1	0	0	0	1	1	1
37		220 Kv Dharamkot - Kotkaror ckt. 2	1	0	0	0	1	1	1
38		220 Kv Dharamkot - Kotkaror ckt. 1	0	0	1	1	0	0	0
39	220 Kv Badhni Kalan	P/T/F T-4 (100 MVA, 220/66 kV)	1	0	0	0	1	1	1
40		220 Kv Himmatpura - Ajitwal	1	0	0	0	1	1	1
41		220 Kv Himmatpura - Lehra Mohabbat 1	1	0	0	0	1	1	1
42		220 Kv Himmatpura - Lehra Mohabbat 2	1	0	0	0	1	1	1
43		220 Kv Himmatpura - Badhni Kalan	1	0	0	0	1	1	1
44	220 Kv Himmatpura	P/T/F T-1 (100 MVA)	1	0	0	0	1	1	1
45	220 Kv Himmatpura	P/T/F T-3 (160 MVA)	1	0	0	0	1	1	1

46	220KV S/S Rajla	160 MVA PTF T-1	1	0	0	0	1	1	1
47		220KV Rajla-Banwala	1	0	0	0	1	1	1
48		220KV Sunam-Patran	2	0	0	0	1	1	1
49		220KV Sunam-Bhalwan ckt no-1	1	0	0	0	1	1	1
50		220KV Sunam-Bhalwan ckt no-2	1	0	0	0	1	1	1
51		220 Kv Passiana-Ablowal	1	0	0	0	1	1	1
52		220 Kv Passiana-Rajla	1	0	0	0	1	1	1
53		220 Kv Passiana-Railway	1	0	0	0	1	1	1
54	220KV S/S Bhawanigarh	160 MVA P TF T-1	0	0	1	1	0	0	0
55	220KV S/S Nabha	220kv Nabha-Bhalwan	1	0	0	0	1	1	1
56		220kv Nabha-Bhawanigarh Ckt-1	1	0	0	0	1	1	1
57		220kv Nabha-Bhawanigarh Ckt-2	1	0	0	0	1	1	1
58		220 kv Dhanaula-Bhalwan Ckt-2	1	0	0	0	1	1	1
59		220kv Dhuri-Bhalwan Ckt-1	1	0	0	0	1	1	1
60		220kv Dhuri-Bhalwan Ckt-2	1	0	0	0	1	1	1
61	220kv S/S Dhuri	100MVA PTF T-1	0	0	1	1	0	0	0
62	220kv S/S Dhuri	100MVA PTF T-3	0	0	1	1	0	0	0
63		220kv Mohali- Nalagarh Ckt-1	1	0	0	0	1	1	1
64		220kv Mohali- Majra Ckt	2	0	0	0	1	1	1
65		220kv Derabassi - Mohali 2 Ckt	1	0	0	0	1	1	1
66		220 KV GNDTP-Lehra Ckt. 01	1	0	0	0	1	1	1
67		220 KV GNDTP- Badal Line	1	0	0	0	1	1	1
68		220 KV GNDTP-Lehra Ckt. 02	1	0	0	0	1	1	1
69		220 KV GNDTP- Lehra Ckt. 01	1	0	0	0	1	1	1
70		220 KV GNDTP Lehra Ckt. 02	1	0	0	0	1	1	1
71	220 KV S/S Mansa	220 KV Busbar 01 & 02	1	0	0	0	1	1	1
72		220 KV Mansa- Patran Line	1	0	0	0	1	1	1
73		220 KV Mansa- Patran Line	1	0	0	0	1	1	1
74		220 KV Sadiq-Muktsar line	1	0	0	0	1	1	1
75		220 KV Maur-Lehra Line	1	0	0	0	1	1	1
76		220 KV Maur Talwandi Line	1	0	0	0	1	1	1
77		220 KV Barnala-Lehra Line	1	0	0	0	1	1	1
78	220 KV S/S Handiaya	220 KV Bus-Coupler	1	0	0	0	1	1	1
79	220 KV S/S Handiaya	220 KV Busbar 01 & 02	1	0	0	0	1	1	1
80	220 KV S/S Handiaya	220 KV Bus-Coupler	1	0	0	0	1	1	1
81		220 KV Botianwala-Ferozepur line	1	0	0	0	1	1	1
82		220 kv Dharmakot-Kotkaror line	1	0	0	0	1	1	1
83		220 KV Abohar- Muktsar Ckt. 02	1	0	0	0	1	1	1
84		220 kv Sarna - Udhampur Circuit	1	0	0	0	1	1	1
85		220 kv Sarna - R.S.D. Circuit No.-2	0	0	1	0	0	0	0
86		220 kv Sarna - R.S.D. Circuit No.-1	1	0	0	0	1	1	1
87		220 kv Dasuya - Pong Circuit No.-3	0	0	1	0	0	0	0
88		220 kv Dasuya - Pong Circuit No.-4	1	0	0	0	1	1	1
89		220 kv F.Churrian - Majitha Circuit	0	0	1	0	0	0	0
90		220 kv Udhoke - Verpal Circuit	0	0	1	0	0	0	0
91		220 kv Udhoke - W Granthian Circuit	0	0	2	0	0	0	0
92		220 kv W. Granthian - Udhoke Circuit	0	0	1	0	0	0	0
93		220 kv W. Granthian - Verpal Circuit	0	0	1	0	0	0	0
94		220KV Patti - Sultanpur Circuit.	3	0	0	0	1	1	1
95		220 kv Verpal - Udoke Circuit	1	0	1	0	1	0.5	1
96		220 kv Verpal - Wadala Granthian Circuit	1	0	1	0	1	0.5	1
97		220kv Chohla Sahib - GVK Circuit No. 1	1	0	0	0	1	1	1
PSTCL Overall			92	0	17	6	1	0.8440367	0.93877551

REPORTING OF PERFORMANCE INDICES FOR PROTECTION SYSTEM										
NAME OF UTILITY: PUNJAB STATE TRANSMISSION CORPORATION LIMITED										
Apr-25										
Sr. No.	Sub – Station	Unit (SPS/Line/ICT/GT/etc.	N_c	N_f	N_u	N_i	Dependability	Security	Reliability	Remarks
							Index (D)	Index (S)	Index (R)	
1	400 kV Makhu	400 kV Makhu Amritsar ckt.I	5	0	0	0	1	1	1	
		400 KV Makhu Amritsar ckt.II	1	0	0	0	1	1	1	
		400 kV Makhu-Muktsar ckt.I	2	0	0	0	1	1	1	
		400 KV Makhu-Nakodar ckt.I	1	0	0	0	1	1	1	
		400 kV Makhu-Muktsar ckt.II	1	0	0	0	1	1	1	
400 kV Makhu			10	0	0	0	1	1	1	
2	400 kV Nakodar	220 kV Nakodar(400)-Hoshiarpur ckt.	1	0	0	0	1	1	1	
400 kV Nakodar			1	0	0	0	1	1	1	
3	400 kV Dhanansu	400 kV Dhanansu-Kurukshetra ckt.	1	0	0	0	1	1	1	
		220 kV Dhanansu-Kohara ckt.	1	0	0	0	1	1	1	
400 kV Dhanansu			2	0	0	0	1	1	1	
4	400 kV Muktsar	400 kV Muktsar-Makhu ckt.I	2	0	0	0	1	1	1	
		400 kV Muktsar-Makhu ckt.II	1	0	0	0	1	1	1	
		220 kV Muktsar(400)-Abohar ckt.II	1	0	0	0	1	1	1	
400 kV Muktsar			4	0	0	0	1	1	1	
5	400 kV S/S Dhuri	220 KV Dhuri-Kheru Ckt-1	1	0	0	0	1	1	1	
		220 KV Dhuri-Kheru Ckt-2	1	0	0	0	1	1	1	
		220 KV Dhuri-Sunam Ckt-1	1	0	0	0	1	1	1	
		220 KV Dhuri-Sunam Ckt-2	1	0	0	0	1	1	1	
		220 KV Dhuri-Nabha Ckt	1	0	0	0	1	1	1	
		500 MVA ICT-3	1	0	0	0	1	1	1	Due to Heavy Thunderstorm
		400 kV 125 MVAr Reactor	0	0	1	1	0	0	0	Due to Heavy Thunderstorm
		220 KV Dhuri-Dhanaula Ckt-2	1	0	0	0	1	1	1	
500 MVA ICT-1			0	0	1	1	0	0	0	Due to DC Leakage
400 kV S/S Dhuri			7	0	2	2	1	0.7777778	0.7777778	
6	400 kV Behman Jassa Singh	400 kV Behman-HMEL Ckt - 1	1	0	0	0	1	1	1	
400 kV Behman Jassa Singh			1	0	0	0	1	1	1	
7	400 kV Rajpura	400 kV Rajpura-Dehar ckt.	0	0	1	0	0	0	0	
400 kV Rajpura			0	0	1	0	0	0	0	
8	400 kV S/S Ropar	500 MVA ICT-1	1	0	0	0	1	1	1	Flame due to CVT blast came in contact with R-ph
		500 MVA ICT-2	1	0	0	0	1	1	1	
400 kV S/S Ropar			2	0	0	0	1	1	1	
9	220 kV Doraha	220 Kv Doraha - PGCIL Line	1	0	0	0	1	1	1	
220 kV Doraha			1	0	0	0	1	1	1	
10	220 kV Mehal Kalan	220 Kv Mehal Kalan - Moga Ckt. 1	1	0	0	0	1	1	1	
		220 Kv Mehal Kalan - Moga Ckt. 2	1	0	0	0	1	1	1	
		220 Kv Mehal Kalan - Pakhowal Ckt. 1	1	0	0	0	1	1	1	
		220 Kv Mehal Kalan - Pakhowal Ckt. 2	1	0	0	0	1	1	1	
		T-1 (100 MVA)	1	0	0	0	1	1	1	
		T-2 (100 MVA)	1	0	0	0	1	1	1	
		220 Kv Mehal Kalan - Pakhowal Ckt. 2	1	0	0	0	1	1	1	
		220 Kv Mehal Kalan - Moga Ckt. 1	1	0	0	0	1	1	1	
220 Kv Mehal Kalan - Moga Ckt. 2		1	0	0	0	1	1	1		

220 kV Mehal Kalan			9	0	0	0	1	1	1
11	220 kV Dhandari	220 Kv Dhandari 1 - PGCIL Ckt. 1	1	0	0	0	1	1	1
		220 Kv Dhandari 1 - PGCIL Ckt. 1	1	0	0	0	1	1	1
		220 Kv Dhandari 1 - PGCIL Ckt. 2	1	0	0	0	1	1	1
220 kV Dhandari			3	0	0	0	1	1	1
12	220 kV Sahnewal	220 Kv Sahnewal - Ghulal	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
		220 Kv Sahnewal - Kohara	1	0	0	0	1	1	1
220 kV Sahnewal			1	0	0	0	1	1	1
13	220 kV Kohara	220 Kv Kohara - Sahnewal	1	0	0	0	1	1	1
		220 Kv Kohara - Dhanansu	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
220 kV Kohara			1	0	0	0	1	1	1
14	220 kV Dharamkot	220 Kv Dharamkot - Kotkaror ckt. 2	1	0	0	0	1	1	1
		220 Kv Dharamkot - Kotkaror ckt. 1	0	0	1	1	0	0	0
220 kV Dharamkot			1	0	1	1	1	0.5	0.5
15	220 kV Badhni Kalan	P/T/F T-4 (100 MVA, 220/66 kV)	1	0	0	0	1	1	1
220 kV Badhni Kalan			1	0	0	0	1	1	1
16	220 kV Pakhowal	220 Kv Pakhowal - Mehal Kalan ckt. 2	1	0	0	0	1	1	1
220 kV Pakhowal			1	0	0	0	1	1	1
17	220 kV Himmatpura	220 Kv Himmatpura - Ajitwal	1	0	0	0	1	1	1
		220 Kv Himmatpura - Lehra Mohabbat 1	1	0	0	0	1	1	1
		220 Kv Himmatpura - Lehra Mohabbat 2	1	0	0	0	1	1	1
		220 Kv Himmatpura - Badhni Kalan	1	0	0	0	1	1	1
		P/T/F T-1 (100 MVA)	1	0	0	0	1	1	1
		P/T/F T-3 (160 MVA)	1	0	0	0	1	1	1
220 kV Himmatpura			6	0	0	0	1	1	1
18	220KV S/S Rajla	160 MVA PTF T-1	1	0	0	0	1	1	1
		220KV Rajla-Banwala	1	0	0	0	1	1	1
220KV S/S Rajla			2	0	0	0	1	1	1
19	220 KV Sunam	220 KV Sunam-Patran	2	0	0	0	1	1	1
		220KV Sunam-Bhalwan ckt no-1	1	0	0	0	1	1	1
		220KV Sunam-Bhalwan ckt no-2	1	0	0	0	1	1	1
220 KV Sunam			4	0	0	0	1	1	1
20	220 kV Passiana	220 Kv Passiana-Ablowal	1	0	0	0	1	1	1
		220 Kv Passiana-Rajla	1	0	0	0	1	1	1
		220 Kv Passiana-Railway	1	0	0	0	1	1	1

220 kV Passiana			3	0	0	0	1	1	1	
21	220KV S/S Bhawanigarh	220 kv Nabha ckt. No. 1	1	0	0	0	1	1	1	
		220 kv Nabha ckt. No. 2	1	0	0	0	1	1	1	
		160 MVA P TF T-1	0	0	1	1	0	0	0	Due to Low ALF of CTs and fault current being higher than ALF and bad weather
220KV S/S Bhawanigarh			2	0	1	1	1	0.6666667	0.6666667	
22	220KV S/S Nabha	220kV Nabha-Bhalwan	1	0	0	0	1	1	1	
		220kV Nabha-Bhawanigarh Ckt-1	1	0	0	0	1	1	1	
		220kV Nabha-Bhawanigarh Ckt-2	1	0	0	0	1	1	1	
220KV S/S Nabha			3	0	0	0	1	1	1	
23	220 kV Dhanaula	220 kV Dhanaula-Bhalwan Ckt-2	1	0	0	0	1	1	1	
220 kV Dhanaula			1	0	0	0	1	1	1	
24	220kV S/S Dhuri	220kV Dhuri-Bhalwan Ckt-1	1	0	0	0	1	1	1	
		220kV Dhuri-Bhalwan Ckt-2	1	0	0	0	1	1	1	
		100MVA PTF T-1	0	0	1	1	0	0	0	Due to Low ALF of CTs and fault current being higher than ALF and bad weather
		100MVA PTF T-3	0	0	1	1	0	0	0	
220kV S/S Dhuri			2	0	2	2	1	0.5	0.5	
25	220 kV Mohali	220kv Mohali- Nalagarh Ckt-1	1	0	0	0	1	1	1	
		220 kv Mohali- Majra Ckt	2	0	0	0	1	1	1	
220 kV Mohali			3	0	0	0	1	1	1	
26	220 kV Derabassi	220 kV Derabassi - Mohali 2 Ckt	1	0	0	0	1	1	1	
220 kV Derabassi			1	0	0	0	1	1	1	
27	220 KV GNDTP Bathinda	220 KV GNDTP-Lehra Ckt. 01	2	0	0	0	1	1	1	
		220 KV GNDTP- Badal Line	1	0	0	0	1	1	1	
		220 KV GNDTP-Lehra Ckt. 02	2	0	0	0	1	1	1	
220 KV GNDTP Bathinda			5	0	0	0	1	1	1	
28	220 KV S/S Mansa	220 KV Busbar 01 & 02	1	0	0	0	1	1	1	Y-phase Isolator rotary insulator support is broken and get earthed
		220 KV Mansa- Patran Line	2	0	0	0	1	1	1	
220 KV S/S Mansa			3	0	0	0	1	1	1	
29	220 KV Sadiq	220 KV Sadiq-Muktsar line	1	0	0	0	1	1	1	
220 KV Sadiq			1	0	0	0	1	1	1	
30	220 KV Maur	220 KV Maur-Lehra Line	1	0	0	0	1	1	1	
		220 KV Maur - Talwandi Line	1	0	0	0	1	1	1	
220 KV Maur			2	0	0	0	1	1	1	

31	220 KV S/S Handiaya	220 KV Barnala-Lehra Line	1	0	0	0	1	1	1	Due to heavy tripping jerk of 220kV Lehra-Handiaya Line. Busbar no.1 and LA damaged at BBMB interlink ckt which is linked to 220kV
		220 KV Bus-Coupler	1	0	0	0	1	1	1	
		220 KV Busbar 01 & 02	1	0	0	0	1	1	1	
		220 KV Bus-Coupler	1	0	0	0	1	1	1	
220 KV S/S Handiaya			4	0	0	0	1	1	1	
32	220 KV Botianwala	220 KV Botianwala-Ferozepur line	1	0	0	0	1	1	1	
220 KV Botianwala			1	0	0	0	1	1	1	
33	220 KV S/S Kotkaror	220 kV Dharmakot-Kotkaror line	1	0	0	0	1	1	1	
220 KV S/S Kotkaror			1	0	0	0	1	1	1	
34	220 KV S/S Abohar	220KV Abohar- Muktsar Ckt. 02	1	0	0	0	1	1	1	
220 KV S/S Abohar			1	0	0	0	1	1	1	
35	220 kV S/S Sarna	220 kV Sarna - Udampur Circuit	1	0	0	0	1	1	1	
		220 kV Sarna - R.S.D. Circuit No.-2	0	0	1	0	0	0	0	
		220 kV Sarna - R.S.D. Circuit No.-1	1	0	0	0	1	1	1	
220 kV S/S Sarna			2	0	1	0	1	0.6666667	1	
36	220 kV S/S Dasuya	220 kV Dasuya - Pong Circuit No.-3	0	0	1	0	0	0	0	
		220 kV Dasuya - Pong Circuit No.-4	1	0	0	0	1	1	1	
220 kV S/S Dasuya			1	0	1	0	1	0.5	1	
37	220 kV S/S Fatehgarh Churian	220 kV F.Churrian - Majitha Circuit	0	0	1	0	0	0	0	Due to problem associated with PLC Cabinet
220 kV S/S Fatehgarh Churian			0	0	1	0	0	0	0	
38	220 kV S/S Udhoke	220 kV Udhoke - Verpal Circuit	0	0	1	0	0	0	0	Due to Damaging of Y-Phase 220 kV CT of 220 kV Udhoke - Verpal Circuit.
		220 kV Udhoke - W Granthian Circuit	0	0	2	0	0	0	0	Due to very Bad & Stormy Weather
220 kV S/S Udhoke			0	0	3	0	0	0	0	
39	220 kV S/S Wadala Granthian	220 kV W. Granthian - Udhoke Circuit	0	0	2	0	0	0	0	
		220 kV W. Granthian - Verpal Circuit	1	0	0	0	0	1	0	
220 kV S/S Wadala Granthian			1	0	2	0	0	0.3333333	0	
40	220 KV S/S Patti	220KV Patti - Sultanpur Circuit.	3	0	0	0	1	1	1	
220 KV S/S Patti			3	0	0	0	1	1	1	
41	220 kV S/S Verpal	220 kV Verpal - Udoke Circuit	1	0	1	0	0	0.5	0	
		220 kV Verpal - Wadala Granthian Circuit	1	0	1	0	1	0.5	1	
220 kV S/S Verpal			2	0	2	0	1	0.5	1	
42	220 kV S/S Chohla Sahib	220kV Chohla Sahib - GVK Circuit No. 1	1	0	0	0	1	1	1	
220 kV S/S Chohla Sahib			1	0	0	0	1	1	1	

Tripping Details of April-2025						
Punjab State Transmission Corporation Limited						
S.N.	Sub-Station	Unit (SPS/Line/ICT/GT/etc.)	Date on which Power System Fault occurred	Local End Indications	Remote End Indications	Remarks if any
1	400 KV S/S Makhu	400 KV Makhu Amritsar ckt 1	09.04.25 at 13:24	L2 to earth, Fault current-9.7 KA, Fault distance-30.9km	L2 to earth, Fault current-8.1 KA, Fault distance-30.1 km	During discharging of 400 kV Amritsar ckt.I on OV
		400 KV Makhu Amritsar ckt 01	13.04.25 at 11:00	L1 to earth, Fault current-4.69 KA, Fault distance-51.5 km	L1 to earth, Fault current-14.34KA, Fault distance-11.32km	
		400 KV Makhu Amritsar ckt 01	14.04.25 at 14:42	L1 to earth, Fault current-06.38 KA, Fault distance-34.5km	L1 to earth, Fault current-8.3 KA, Fault distance-28.5km	
		400 KV Makhu Amritsar ckt 01 (Auto-Reclosed)	15.04.25 at 16:19	L1 to earth, Fault current-04.25 KA, Fault distance-51.4km	L1 to earth, Fault current-14.93 KA, Fault distance-9.29 km	
		400 KV Makhu Amritsar ckt 01 (Auto-Reclosed)	15.04.25 at 16:34	L3 to earth, Fault current-10.58 KA, Fault distance-16.3km	L3 to earth, Fault current-06.49 KA, Fault distance-49.41km	
		400 KV Makhu Amritsar ckt 02	20.04.25 at 15:09	L1 to earth, Fault current-3.18 KA, Fault distance-58.4km	L1 to earth, Fault current-12.07 KA, Fault distance-9.05km	
		400 KV Makhu Muksar ckt 01	07-04-2025 at 16.22 Hrs	Main-01 Dist=79.7 Km, Fault Current=3.44 Ka,Red ph	Main-01 Dist=8.2 Km, Fault Current = 9.67 Ka,Red ph ,Zone - 01 Main-02 L1-N, distance= 7.2km, IL1 = 9.6ka, IN = 10.5ka	
		400 KV Makhu Muksar ckt 01	24.04.25 at 11:20	L2 to earth, Fault current-8.34 KA, Fault distance-28.9 km	L2 to earth, Fault current-3.9 KA, Fault distance-58.9 km	
		400 KV bay 404 (Main Bay of 400 KV Makhu Nakodar ckt 1)	25.04.25 at 06:02	L3 to earth, Fault current-11.88 KA, Fault distance-11.8 km	L3 to earth, Fault current-5.82 KA, Fault distance-44.7 km	
		400 KV Makhu Muksar ckt 02(Auto-reclosed)	25.04.25 at 06:02	No indication	L3 to earth, Fault current-3.9 KA, Fault distance-66.7 km	
2	400 kv S/S Nakodar	220 KV NAKODAR HOSHIARPUR CKT	16/4/2025 at 21:31	Rph E/Fault Fault Current 3.03 Ka Distance 67 km	Rph E/Fault Fault Current 5.02 Ka Distance 5.069 km , Z1	
3	400 kv S/S Dhanansu	400 kv Dhanansu-Kurukshetra ckt.	18-04-2025 at 18.54 Hrs	Zone-I, B-ph ,Auto reclose optd.	B-ph, Fault distance-52 km	
		220 kv Dhanansu-Kohara ckt.	45995	Zone-I, R-ph	Not tripped (No indication)	
4	400 kv S/S Muksar	400 kv Muksar-Makhu ckt.I(A/R optd both ends)	07-04-2025 at 16.22 Hrs	Main-01 Dist=8.2 Km, Fault Current=9.67 Ka,Red ph ,Zone -01 Main-02 L1-N, distance= 7.2km, IL1=9.6ka, IN=10.5ka	Main-01 Dist=79.7 Km, Fault Current=3.44 Ka,Red ph	
		400 kv Muksar-Makhu ckt.I(A/R optd both ends)	24-04-2025 at 11.20 Hrs	Main-1, Y-Ph Fault current= 3.86KA, Distance = 66.4KM, Main-2 : L2-N, Distance = 58.5KM, IL2= 3.9ka, IN= 4.2ka	Fault Current= 8.34KA, Y-Phase, Distance= 28.9Km	
		400 kv Muksar-Makhu ckt.II(A/R optd both ends)	25-04-2025 at 06.02 Hrs	Main-1: No Indication Main-2: L3-N, Distance = 69.7KM, IL3= 3.9ka IN= 3.5ka	Not tripped (No indication)	
		220 kv Muksar(400)-Abohar ckt.II	19-04-2025 at 15.02 Hrs	Main-01 Dist=37.7 Km, Fault Current=3.28 Ka,Red ph ,Zone -01 , Main-02 L1-N, dist= 35.9km, IL1=3.3ka, IN=2.6ka	Main-01 Dist=5.322 Km, Fault Current=3334 Amp,Red ph	

5	400 kV S/S Dhuri	220 KV Dhuri-Kheru Ckt-1	18-04-2025 at 17:31	Fault Loop-CG Ic = 10.48 kA Fault dist = 10.8 km	Main-I : Zone - I, Dist = 10.78km R-Phase = 493.2 A Y-Phase = 176.3 A B-Phase = 6.396 kA Main-II: Dist = 10.85 km, R-Phase = 494.3 A Y-Phase = 175.9 A, B-Phase = 6.378 kA	Due to Heavy Thunderstorm
		220 KV Dhuri-Kheru Ckt-2	18-04-2025 at 17:26	Fault Loop-AG Ia = 8.19 kA Fault dist = 20.3 km	Main-I: Zone-1 Dist = 2.41km R-Phase = 13.08 kA Y-Phase = 270.6 A B-Phase = 536.5 A	Due to Heavy Thunderstorm
		220 KV Dhuri-Sunam Ckt-1	18-04-2025 at 17:33	Fault Loop-AG Ia = 10.66 kA Fault dist = 11.5 km	DPR Main-1& 2 optd Zone-1 Distance = 20.74km Ia = 2.270 kA, Ib = 89.70 A, Ic = 229.7A	Due to Heavy Thunderstorm
		220 KV Dhuri-Sunam Ckt-2	18-04-2025 at 17:38	Fault Loop-BG Ia = 9.84 kA Ib = 10.22 kA Fault dist = 12.1 km	DPR Main-1 & 2 optd Zone-1 Distance = 15.36 km Ia = 881.6 A Ib = 2.130 kA Ic = 756.8 A	Due to Heavy Thunderstorm
		220 KV Dhuri-Nabha Ckt	18-04-2025 at 17:44	Ia = 8.413 KA Fault dist = 19.50 km	Main-1 relay Zone-1 R-phase = 7.121ka, Y-phase = 248.8 A, B-phase = 515.6 A, Fault Location = 8.313km Main-2 relay: Zone-1, R-phase = 7.19 kA, Y-phase = 247.8 A, B-phase = 514.9 A, Fault Location = 8.269 km	Due to Heavy Thunderstorm
		500 MVA ICT-3	18-04-2025 at 17:38	Differential Relay Trip		Due to Heavy Thunderstorm
		400 kV 125 MVar Reactor	18-04-2025 at 17:40	REF Trip optd		Due to Heavy Thunderstorm
		220 KV Dhuri-Dhanaula Ckt-2	19-04-2025 at 10:53	Fault Loop-AG Trip Phase ABC Ia = 13.35 kA Ib = 0.24 kA Ic = 0.31 kA Fault dist = 1.8 km	DPR Main-1 o/c R-Phase, E/F, Auto Reclose Blocked, Fault location = 29.69 km Ia = 4.31 kA, Zone - 2 DPR Main-2: o/c R-Phase, E/F Reclose Shot, Fault location = 27.7 km	No Fault found
		500 MVA ICT-1	19-04-2025 at 10:53	86.1 oPtd. 86.2 optd. Pick up ON Relay pick up ON PRD-1 TRIP (67.1/V)		Due to DC Leakage
6	400kV Sub Station Behman Jassa Singh	400 kV Behman-HMEL Ckt - 1	Auto Reclosed operated on 25-04-2025 at 12:18	Main 1: Phase-C, Zone 1, Distance = 7.9kM, Ic = 8.66kA Main 2: Phase C, Zone 1, Distance = 8.236kM, Ic = 8.013kA	NA	
7	400 kV S/S Rajpura	400 kV Rajpura-Dehar ckt.	14-04-2025	Zone-III, R-ph & B-ph, Fault Location-249.4 km	Not tripped (No indication)	
8	400 kV S/S Ropar	500 MVA ICT-1	28-04-2025 at 19.08 Hrs	Differential Relay Trip, Master optd.		Flame due to CVT blast came in contact with R-ph
		500 MVA ICT-2	28-04-2025 at 19.08 Hrs	Main CB tripped due to B/Bar-II tripped, Tie CB tripped due to received DT at same time, 220 kV side was charged		

9	220 Kv Doraha	220 Kv Doraha - PGCIL Line	10/4/2025 AT 12:30	Zone - 1, Fault Location - 10.59 km , R-Phase, Auto Reclose Blocked	Zone - 1, Fault Location - 10.99 km , R-Phase, Auto Reclose Blocked	
10	220 Kv Mehal Kalan	220 Kv Mehal Kalan - Moga Ckt. 1 220 Kv Mehal Kalan - Moga Ckt. 2 220 Kv Mehal Kalan - Pakhowal Ckt. 1 220 Kv Mehal Kalan - Pakhowal Ckt. 2 T-1 (100 MVA) T-2 (100 MVA)	8/4/2025 AT 22:20	All lines / transformers tripped due to operation of bus bar protection	None of the line tripped from another end	Bus Bar protection operated in Zone 1 and Zone 2 due to R-Phase CT blast of 220 Kv bus coupler and blackout occurred
		220 Kv Mehal Kalan - Moga Ckt. 2	3/4/2025 AT 20:09	Zone - 1, Fault Location - 23.53 km , B-Phase, Auto Reclose Blocked	Zone - 1, Fault Location - 26.83 km , B-Phase, Auto Reclose Blocked	
		220 Kv Mehal Kalan - Moga Ckt. 1	7/4/2025 AT 13:41	Zone - 1, Fault Location - 41.69 km , B-Phase, Auto Reclose Blocked	Zone - 1, Fault Location - 16.40 km , B-Phase, Auto Reclose Blocked	
		220 Kv Mehal Kalan - Pakhowal Ckt. 2	18/4/2025 AT 17:01	Zone - 1, Fault Location - 1.63 km , B-Phase, Auto Reclose Blocked	Zone - 1, Fault Location - 22.34 km , B-Phase, Auto Reclose Blocked	
11	220 Kv Dhandari 1	220 Kv Dhandari 1 - PGCIL Ckt. 1	3/4/2025 AT 22:51	Zone - 1, Fault Location - 7 km , B-Phase, Auto Reclose Blocked	Zone - 1, Fault Location - 14.5 km , B-Phase, Auto Reclose Blocked	
		220 Kv Dhandari 1 - PGCIL Ckt. 1	11/4/2025 AT 14:18	Zone - 1, Fault Location - 5.03 km , B-Phase, Auto Reclose Blocked	Zone - 1, Fault Location - 9.74 km , B-Phase, Auto Reclose Blocked	
		220 Kv Dhandari 1 - PGCIL Ckt. 2	11/4/2025 AT 14:18	Zone - 1, Fault Location - 1.1 km , B-Phase, Auto Reclose Blocked	Zone - 1, Fault Location - 6.74 km , B-Phase, Auto Reclose Blocked	POLYMAR INSULATOR DISK FLASH BETWEEN TOWER NO. 6B TO 6C
12	220 Kv Sahnewal	220 Kv Sahnewal - Ghulal	3/4/2025 AT 23:32			
		220 Kv Sahnewal - Kohara	3/4/2025 AT 23:32	Zone - 2, Fault Location - 13.6 km , B-Phase, Auto Reclose Blocked	Zone - 1, Fault Location - 6.12 km , B-Phase, Auto Reclose Blocked	
13	220 Kv Kohara	220 Kv Kohara - Sahnewal	3/4/2025 AT 23:32	Zone - 1, Fault Location - 6.12 km , B-Phase, Auto Reclose Blocked	Zone - 2, Fault Location - 13.6 km , B-Phase, Auto Reclose Blocked	
		220 Kv Kohara - Dhanansu	3/4/2025 AT 23:32			
14	220 Kv Dharamkot	220 Kv Dharamkot - Kotkaror ckt. 2	18/4/2025 AT 15:33	Zone - 2, Fault Location - 30.48 km , YB-Phase, Auto Reclose Blocked	Zone - 1, Fault Location - 782 m , YB-Phase, Auto Reclose Blocked	
		220 Kv Dharamkot - Kotkaror ckt. 1	18/4/2025 AT 15:33	Zone - 3, Fault Location - 35 km , B-Phase, Auto Reclose Blocked	Breaker not tripped	
15	220 Kv Badhni Kalan	P/T/F T-4 (100 MVA, 220/66 kV)	23/4/2025 AT 11:03	Differential operated	—	
16	220 Kv Pakhowal	220 Kv Pakhowal - Mehal Kalan ckt. 2	18/4/2025 AT 17:01	Zone - 1, Fault Location - 22.34 km , B-Phase, Auto Reclose Blocked	Zone - 1, Fault Location - 1.63 km , B-Phase, Auto Reclose Blocked	

17	220 Kv Himmatpura	220 Kv Himmatpura - Ajitwal 220 Kv Himmatpura - Lehra Mohabbat 1 220 Kv Himmatpura - Lehra Mohabbat 2 220 Kv Himmatpura - Badhni Kalan P/T/F T-1 (100 MVA) P/T/F T-3 (160 MVA)	23/4/2025 AT 11:05	All the elements tripped from this side due to breakdown of string insulator on the overhead of T-1 and hence bus bar protection operated	None of the line tripped from another end	All the elements tripped from this side due to breakdown of string insulator on the overhead of T-1 and hence bus bar protection operated
18	220KV S/S Rajla	160 MVA PTF T-1	18.4.2025 at 18.08 to 18.04.2025 at 23.55	IDMT-B Phase O/C	N.A.	Tripped due to heavy hailstorm and flash at 66 kV Tulewal Circuit Breaker- B Phase limb.
		220KV Rajla-Banwala	18.4.2025 at 17.52 to 18.04.2025 at 23.04	DPR Main-1, Zone 1,R-Phase, Fault location- 8.522km, Fault current Ia-1.534kA.	R-phase, E/F relay, Fault location-26.9km, Fault current-3.43kA	
19	220KV S/S Sunam	220KV Sunam-Patran	11.4.2025 at 17.58 to 11.4.2025 at 18.27	DPR - 1 Operated RY Phase O/C E/F Main-1 & 2 auto reclose blocked	Line was not tripped at Patran End	
			18.4.2025 at 17.33 to 18.4.25 at 20.47	DPR Main-1 Operated, R Phase O/C E/F Main-1 & 2 auto reclosed blocked	Line was not tripped at Patran End	
		220KV Sunam-Bhalwan ckt no-1	18.4.2025 at 17.33 to 19.4.25 at 10.05	DPR Main - 1 & 2 operated , AN Operated Zone-1 , Distance-20.75km, Ia=2.270kA, Ib=89.70 A,Ic=229.7 A	Main-1 R Phase Zone-1, Main-2 Zone-1 & 2 carrier send	
		220KV Sunam-Bhalwan ckt no-2	18.4.2025 at 17.38 to 19.4.25 at 9.25	DPR Main - 1 & 2 , BN Operated, Distance - 15.36km, Zone-1 Ia=881.6 A, Ib = 2.130 kA,Ic=756.8 A	Y Phase Zone-1 carrier send	
20	220KV S/S Passiana	220 Kv Passiana-Ablowal (A-1)	18.4.2025 at 18.02 to 18.4.25 at 19.19	DPR red phase =302.46 A , Yellow phase = 6.22 kA, Main-1, Zone-1 optd	No Indications	Due to Due to heavy storm and bad weather.
		220 Kv Passiana-Rajla (A-2)	18.4.2025 at 18.02 to 18.4.25 at 22.48	DPR Main-II, Zone-I optd., Red Pahse=35.37A, Yellow Phase= 2.53 kA,	No Indications	Due to heavy Wind Storm and jumper of red phase from wave trap to isolator got broken
		220 Kv Passiana-Railway (A-6)	18.4.2025 at 18.02 to 18.4.25 at 19.35	DPR-I Zone-I optd., Red phase 5.42 A, Yellow phase 8.13 kA	No Indications	Due to Due to heavy storm and bad weather.
21	220KV S/S Bhawanigarh	220 kv Nabha ckt. No. 1	18.4.2025 at 17.46 to Continue	DT Send, Bus Bar Operated	DPR M-1 Z-2 YB-phase ly-6.049kA Ib-6.005kA 20.03KM & DPR M-2 Z-2 YB-phase 20.2KM	Due to heavy storm and subsequent damage of 220 KV towers
		220 kv Nabha ckt. No. 2	18.4.2025 at 17.46 to Continue	Main 1 R,Y,B phase; Carrier Send, Fault duration 61.79ms , Fault location:0.0km, Ia= 4.462kA, Ib= 571.4A, Ic= 594.6A;; Main 2 Ia=4.470kA, Ib= 573.9A, Ic=597A	DPR M-1 Z-1 R-phase 3.362kA 14.78KM & DPR M-2 Z-1 R-phase 15.4KM	Due to heavy storm and subsequent damage of 220 KV towers
		160 MVA P TF T-1	18.4.2025 at 17.46 to Continue	Bus bar operated	N.A	Due to Low ALF of CTs and fault current being higher than ALF and bad weather
22	220KV S/S Nabha	220kv Nabha-Bhalwan	18.4.2025 at 17.44 to 19.4.25 at 16.16	DPR M-1 Z-1 R-phase 7.121kA 8.313KM & DPR M-2 Z-1 R-phase 7.19kA 8.269KM	DPR 86-A optd Z-3 Line AIL-1 fault mag 8256.65A, Line A-IN fault mag 7809.73A and DPR 86-B optd Z-2 8.413kA 19.50KM	Letter issued vide memo no.231 dt 26.3.2025 for rectification of the configrution of relay.
		220kv Nabha-Bhawanigarh Ckt-1	18.4.2025 at 17.46 to Continue	DPR M-1 Z-2 YB-phase ly-6.049kA Ib-6.005kA 20.03KM & DPR M-2 Z-2 YB-phase 20.2KM	DT send, BB operated	Line tripped due to collapsing of (220kv Nabha-Bhawanigarh) line tower due to bad weather.
		220kv Nabha-Bhawanigarh Ckt-2	18.4.2025 at 17.46 to Continue	DPR M-1 Z-1 R-phase 3.362kA 14.78KM & DPR M-2 Z-1 R-phase 15.4KM	DPR M-1 BCPU faulty RYB-phase Z-1 Ia-4.462kA 0.0KM and DPR M-2 Ia-4.470kA 0.0KM	Line tripped due to collapsing of (220kv Nabha-Bhawanigarh) line tower due to bad weather.
23	220kv S/S Dhanaula	220 kv Dhanaula-Bhalwan Ckt-2	19.4.2025 at 10.53 to 19.4.25 at 15.38	DPR M-1 R-phase 4.310kA, Z-2 E/F, Auto reclose blocked, 29.69KM & DPR M-2 R-phase E/F, Reclose Shot, 27.7KM	DPR FL Loop AG RYB-phase Ia-13.35kA Ib-0.24kA Ic-0.31kA 1.8KM	

24	220kV S/S Dhuri	220kV Dhuri-Bhalwan Ckt-1	18.4.2025 at 17.31 to 19.4.25 at 13.23	Main-1,zone-1, Distance = 10.78km,Ir= 493.2A,Iy= 176.3A,Ib:- 6.396kA,Iy =75.9A,Ib=6.398kA	DPR FL Loop CG Ic-10.48kA 10.8KM	Due to Due to heavy storm and bad weather.
		220kV Dhuri-Bhalwan Ckt-2	18.4.2025 at 17.26 to 19.4.25 at 13.26	Main-2,zone-1, Distance = 2.418km,Ir= 13.08kA,Iy= 270.6A,Ib:-536.5A Main - 1.Zone-1,Distance =2.5km,PSR,PSN,CSZ	DPR FL Loop AG Ia-8.19kA 20.3KM	Due to Due to heavy storm and bad weather.
		100MVA PTF T-1	18.4.2025 at 17.28 to 18.4.25 at 23.55	HV REF Operated	N.A.	Due to Low ALF of CTs and fault current being higher than ALF and bad weather
		100MVA PTF T-3	18.4.2025 at 17.28 to 19.4.25 at 3.24	HV REF Operated	N.A.	Due to Low ALF of CTs and fault current being higher than ALF and bad weather
25	220kv S/S Mohali	220kv Mohali- Nalagarh Ckt-1	18.04.25 AT 23:03	Main1 protection optd., Carrier send, carrier receive, Autoreclosed blocked, Main1 : distance 8.4 km, Trip phase ABC, Z1, Ia= 8.05kA, Ib= 0.31 kA, Ic=0.09kA,	Rphase E/F , Ia= 4.06 kA, Distance=50.11 kM	Due to transient fault
		220kv Mohali- Majra Line	16.04.25 AT 23:08	DPR indications: Z1, Bphase, Distance 4.9 km, Ic= 18.11 kA	Main-1 Active group-1 started Ph-C- N,Tripped Ph-C, Zone-2, Distance- 20.84Km,Ic-1.927KA Main-2 Zone-1, Phase- C,N Distance-17Km	Due to transient fault
			18.04.25 AT 12:10	Main1 Tripped phase C, Z1, Auto reclosed block, Ic= 11.64 kA, Distance 9.3 km, Main- 2 Indications: started phase C, Z1, Distance = 5.592 km, Ic= 11.75 kA	Main1 distance= 15.39 km, Ic= 2.213 kA,	Due to transient fault
26	220kv S/S Derabassi	220kv Derabassi Mohali- 2 Line	16.04.25 AT 23:24	DPR Main-1:-Y-ph, Ib=4.232kA, Distance =20.2km	DPR main-1:-Y-ph, Z- 1,Ib=8.62kA,distt.=4.9km	Due to transient fault due to strong wind
27	220 KV S/S GNDTP Bathinda	220 KV GNDTP-Lehra Ckt-1	01-04-2025 AT 15:17:00	Auto-Reclosed, DPR Main-1, Dist- 1.5km, Zone-1, R phase- 898.7 A, Y phase 10.21A, B phase- 662.7A, DPR Main-2, Dist- 889.1km, Zone-1, R phase- 898 A,Y phase 10.21A, B phase- 662.7A, IN=9969.47 A	DPR Main-1 & Main-2 Operated Main-1 ,Zone=2, Distance=25.343 km, R phase- 1.128 A,Y phase 5.460 A, B phase-848 Ma, N- 3.497 A Main-2, Zone-2 Distance-27.01 Km, R phase-918.6 A,Y phase-4.372 KA, B phase-671.8 A	
		220 KV GNDTP-Badal Line	10-04-2025 AT 14:09:00	DPR Main-1 Operated, Zone-1 Dist-2.353km,YB Phase Fault Current: R phase- 65.18 A,Y phase 13.26 KA, B phase- 10.58 KA	DPR main-1 Operated E/F IN1 , R phase- 643.6 A ,Y phase 69.63A, B phase- 204A DPR Main-2 Operated,YB Phase Dist- 53.2 Km	
		220 KV GNDTP- Lehra Ckt-2 (BBMB)	19/4/2025 AT 11:23	Indications :- DPR Main-1 Operated Zone-1 Dist- Not Measured RN Phase Fault Current: R phase- 3.203 KA,Y phase-109A, B phase- 250 KA , Main-2 , R phase- 2337.09A,Y phase 75.60A, B phase 183.12A, N-2593.59A	DPR Main-1 Operated Zone-1 Dist- 23.78km RN Phase R phase- 3.482 A,Y phase-108mA, B phase- 272 mA ,IN- 3.103A DPR Main-2 , RN Dist-19.27km R phase- 2.419KA,Y phase 68.42A, B phase- 192.9A	
		220 KV GNDTP- Lehra Ckt-1	19/4/2025 AT 14:23	DPR Main-1 Operated Zone-1 Dist-8.547km YN Phase Fault Current: R phase- 748.5A,Y phase- 6.238 KA, B phase-475.7A , Main-2 , R phase- 3.55A,Y phase- 6599.53A, B phase- 10.24A, N- 6599.33A	DPR Main-1 Operated Zone-1 YN Phase Dist-12.46km R phase- 762.9A,Y phase-8.425A, B phase- 472.5 mA DPR Main-2 , YN Dist-12.685km R phase- 909 mA,Y phase 10.324A, B phase- 598 mA,N- 8.891	
		220 KV GNDTP- Lehra-2 Ckt (BBMB)	25-04-2025 AT 14:07	Auto reclosed, DPR Main-1 Dist-10.786km RY Phase, Zone-1 Main-2 Dist-11.067km RY Phase, Zone-1	Main-1, RY Phase, Zone-1, Dist.-16.715 km , Main-2, RY Phase, Zone-1, Dist.16.46 km	

28	220 KV S/S Mansa	220 Busbar 01 & 02	02-04-2025 AT 09:40:00	Busbar prot. Optd. 87BB Trip, B-Phase Ia= 13.15A, Ib= 9.964kA, Ic=19.57A, In=10.08kA Zone 1 & 2 trip.	N.A	Y-phase Isolator rotary insulator support is broken and get earthed during busbar sparing operation.
		220 KV Mansa Patran Line	11-04-2025 AT 17:58:00	Main-1 RYB Phase Zone-2 Dist-69.82km Fault Current: R phase- 2.340 KA,Y phase- 2.368 KA, B phase- 85.32 KA , DPR Main-2 RYB Phase , Dist- 69.12km, R phase- 2.344 KA,Y phase 2.387 KA, B phase- 83.44A,	Zone=1, Distance=5.1 km, Fault Current: R phase- 15.07 KA,Y phase 15.5KA,	
		220 KV Mansa- Patran Line	18/4/2025 AT 17:34	DPR Main-1 YN Phase Zone-1 Dist-24.38km Fault Current: R phase- 45.73 A,Y phase- 4.291 KA, B phase- 148.8 A , DPR Main-2 YN Phase Zone-1 Dist-27.52km Fault Current: R phase- 17.97 A,Y phase- 4.381 KA, B phase- 149 A ,	Y Phase, Zone=2, Distance=41.4 km, Fault Current: Y phase- 3.68 KA	
29	220 KV S/S Sadiq	220 KV Sadiq-Muksar line	07-04-2025 AT 13:51:00	DPR operated, Auto Reclose Operated Zone- 1 6.035 KMStarted phase:AN Tripped phase:- ABCMain-1 Ia- 5.167 KA Ib-. 16.45 A Ic- 15.04 AMuksar end indications:-DPR Operated: R ph, Z-1, distance:30.7KM IR- 3856AIN- 3072 A	DPR Relay operated RN Phase, Zone-1, 30.7km DPR Operated: R ph, Z-1, distance:30.7KM IR- 3856A IN- 3072 A	
30	220 KV S/S Maur	220 KV S/S Lehra-Maur Line	10-04-2025 AT 12:34:00	UFR trip,Dir.E/F protection optd.,R PH	Main 1:DPR operated,YN PH,Zone- 1,D= - 0.334KM Main 2: DPR operated,YN PH,Zone- 1, D= 84.06mtr	
		220 KV Maur-Talwandi Line	16-4-2025 AT 12:33	DPR Main-1 Operated Z1 Loc-1.68 km. Phase- YB, Auto Reclosed Blocked	Relay-Main 1 operated,carried send . Started phase-BC, Ia-80.37 A, Ib-86.49 A, Ic- 80.64 A	
31	220 KV S/S Handiaya	220 KV Lehra-Barnala Line	14-04-2025 AT 13:12:00	Auto Reclose optd. DPR Main-1 Z-1 Location:- 21.12 km. Started element- Yellow phase. Red phase-88.17 A, Yellow phase-4253 A, Blue phase-156 A , DPR Main -2 RY phase ZONE-1 carrier send operated	DPR Zone=1, Locatrimon=12.74 km, R phase- 116mA,Y phase 11.828 A,B phase- 197 Ma, N-11.810 A	
		220 kV Buscoupler	14-04-2025 AT 13:12:00	Dir O/C & E/F relay operated R phase- 517 A,Y phase- 4095 A, B phase- 383 A , IN- 27A	N.A	Due to heavy tripping jerk of 220kV Lehra-Handiaya Line.
		220 Busbar 01 & 02	22/4/2025 AT 15:42	Busbar Protection optd, 87 BB Operated IA Diff- 18.60 A, IB Diff-6.415 A , IC Diff-12.44 kA , IN Diff-12.51kA	N.A	Due to earthwire breakdown on 220 kV Busbar no.1 and LA damaged at BBMB interlink ckt which is linked to 220kV Busbar-02
		220 KV Buscoupler	25-04-2025 AT 12:48	Dir O/C & E/F relay operated R Phase -O/C DMT R Phase-1461 A, Y Phase-1461 A, B Phase- 253 A, N-2773 A	NA	
32	220 KV S/S Botian Wala	220 KV Botianwala-Ferozepur Line	18-04-2025 AT 15:13:00	DPR Relay operated Zone-1 started phase AN tripped phase A Fault location 29.27 Km IA= 4.865 kA IB= 474.9A IC = 538.8 A	DPR Relay operated Zone-1 started phase AN tripped phase A Fault location 11.10 Km FZR end Ir - 4.049 Ka Iy - 435 A Ib - 492.4 A	
33	220 KV S/S Kotkaror	220 KV Dharmakot-Kotkaror line	18-04-2025 AT 15:33:00	Main -1 DPR operated , Auto re-closed Blocked BCN Ph.-1 Z-1, 30.48 KM	DPR operated, Auto reclosed BlockedStarted phase:BCN Trippedphase:- ABCMain-1 Zone-1 782.4 Mtr Ia- 252.1 A Ib- . 14.37 kA Ic- 15.60 kA Van:- 269.9 kV Vbn:- 197.1 kV Vcn:-. 158.9 kV	
34	220 KV S/S Abohar	220 KV Abohar-Mukatsar Ckt-2	19/4/2025 AT 15:06	Main-1 Dist-37.7km Fault Current: Ia- 3.28 kA, Main-2 , L1-N Location:35.9km, IL1 :3.3kA, IN:2.6 kA	Zone=1, Distance=5.322 km, Ia-3334 A	

35	220 kV SARNA	220 kV Udampur Circuit	16.04.2025 AT 19:54	DPR M-1, CN PHASE, Z1, FAULT LOCATION 96.21KM IC -1.470KA + MTR 86	DPR M-1, CN PHASE, Z1, FAULT LOCATION 41.7 KM + MTR 86	Due to very Bad & Stormy Weather
		220 kV RSD Circuit No.-2	16.04.2025 AT 20:49	DPR M1, AN PHASE, Z2, FAULT LOCATION 35.92KM, IA-2.043KA	Didn't Tripped	Due to very Bad & Stormy Weather (1 st Tower ਤੇ Gantry ਤੇ Earth wire ਟੱਟਣ ਕਾਰਨ।)
		220 kV RSD Circuit No.-1	16.04.2025 AT 20:53	DPR M1, AN PHASE, Z2, FAULT LOCATION 28.16 KM, IA-2.602KA	DPR M1 Z1 CN PHASE FAULT LOCATION 0.517KM + MTR 86	Due to very Bad & Stormy Weather (1 st Tower ਤੇ Gantry ਤੇ Earth wire ਟੱਟਣ ਕਾਰਨ।)
36	220 kV DASUYA	220 kV Pong Circuit No. - 3	16.04.2025 AT 22:53	ON	DPR M1, BN PHASE + MTR 86	Due to very Bad & Stormy Weather
		220 kV Pong Circuit No. - 4	16.04.2025 AT 21:18	DPR M1, RN PHASE, Z1 + MTR 86	DPR M1, AN PHASE, Z1 + MTR 86	Due to very Bad & Stormy Weather
37	220 kV F.G.Churian	220 kV Majitha Circuit	05.04.2025 AT 14:53	DPR M1, CR - Send, CR - Received, LBB	DT - Send	Due to problem associated with PLC Cabinet
38	220 kV UDHOKE	220 kV Verpal Circuit	07.04.2025 AT 01:25	DPR M1 Z4, 220 kV BBPS Operated + MTR 86	DPR M1 Z2, 220 kV BN + MTR 86	Due to Damaging of Y-Phase 220 kV CT of 220 kV Udhoke - Verpal Circuit.
		220 kV WG Circuit	07.04.2025 AT 01:25	DPR M1 Z4, 220 kV BBPS Operated + MTR 86	DPR M1 Z2, 220 kV BN + MTR 86	Due to Damaging of Y-Phase 220 kV CT of 220 kV Udhoke - Verpal Circuit.
		220 kV WG Circuit	16.04.2025 AT 21:11	DPR M1, RN PHASE, Z2 + MTR 86	ON	Due to very Bad & Stormy Weather
39	220 kV WADALA G	220 kV Udhoke Circuit	06.04.2025 AT 21:13	DPR M1, RN + MTR 86	ON	-
		220 kV Udhoke Circuit	07.04.2025 AT 1:25	DPR M1 Z2, 220 kV BN + MTR 86	DPR M1 Z4, 220 kV BBPS Operated + MTR 86	Due to Damaging of Y-Phase 220 kV CT of 220 kV Udhoke - Verpal Circuit.
		220 kV Verpal Circuit	27.04.2025 AT 14:12	DPR M1, BN PHASE, Z1, IB - 2.902 kA + MTR 86	Zone-1, B phase, 86	No Visible abnormality observed during patrolling
40	220 kV Patti	220 KV Patti- Sultanpur (Both ends)	06.4.25 at 12:34	Zone-1,B phase DPR -1 operated		Found Nothing
		220 KV Patti- Sultanpur (Both ends)	11.4.25 at 10:58	General trip, R phase, Zone-1		Due to heavy strong winds
		220 KV Patti- Sultanpur (Both ends)	17.4.25 at 21:38	Zone-1, R phase DPR -2 operated		Found Nothing
41	220 kV Verpal	220 KV Verpal-Udoke	07.4.25 at 1.25	DPR M1 Z2, 220 kV BN + MTR 86	DPR M1 Z4, 220 kV BBPS Operated + MTR 86	Y phase CT damage at 220 KV S/Stn Udoke
		220 KV Verpal-Udoke	16.4.25 at 21.15	B phase, General trip, 86		Found Nothing
		220 KV Verpal-Wadala Granthian	16.4.25 at 21.15	B phase, General trip, 86		Found Nothing
		220 KV Verpal-Wadala Granthian	27.4.25 at 14.12	Zone-1, B phase, 86	DPR M1, BN PHASE, Z1, IB - 2.902 kA + MTR 86	Found Nothing
42	220 KV Chohla sahib	220 KV Chohla sahib- GVK-1	18.4.25 at 15.29	General trip, R phase, Zone-1		Found Nothing



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



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

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

दिनांक: 05.05.2025

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

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

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

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

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

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

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

4. CHITTORGARH 400KV LINE: -

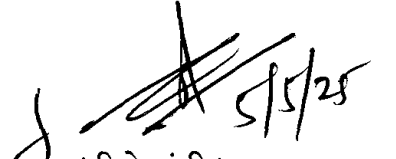
Dependability Index (D)	Security Index (S)	Reliability Index (R)	Remark
Nc = 1	Nc = 1	Nc = 1	One tripping is reported.
Nf = 0	Nu = 0	Ni = 0	
$D = Nc / Nc + Nf$	$S = Nc / Nc + Nu$	$R = Nc / Nc + Ni$	
D = 1	S = 1	R = 1	


5. KANKROLI 400KV LINE: -

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

6. KOTA-1 400KV LINE: -

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


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


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

To,

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

CC:

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

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

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

No. of Unwanted operation – 1

Reason of unwanted operation –

Interruption may be occurred due to DC fault

Corrective Action taken – Partial

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

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

No. of Unwanted operation – 1

Reason of unwanted operation –

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

Corrective Action taken – YES

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

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

No. of Unwanted operation – 1

Reason of unwanted operation –

NDR setting in TRIP.

Corrective Action taken – YES

Relay setting revised and changed to ALARM.

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

No. of Unwanted operation – 1

Reason of unwanted operation –

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

Corrective Action taken – YES

Relay setting revised and changed to ALARM.

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

No. of Unwanted operation – 1

Reason of unwanted operation –

Radiator valves remained closed and caused rise in OIL temperature.

Corrective Action taken – YES

Valve position corrected.

Status of Internal Protection Audit Plan for FY 2024 -25									
S. No.	NRPC Member	Category	Status	Schedule submitted as per utility	Present Status Completed (yes/no)	Audit Completed Date	Report Submission Date by audit party	Discussion held in PSC meeting number	Compliance status
1	PGCIL	Central Government owned Transmission Company	Received		POWERGRID NR-3 (765kV Bareilly, Aligarh, Fatehpur, Orai, Rampur, Varanasi, 400kV Alhabad, Bareilly, Firozabad, Jaunpur, Mainpuri, Mohanlalgarh, Jhithorgarh, Sambhal, Sahawli)	May, July, Sept, Oct, Dec- 2024, Jan-Feb-March, 2025	21.03.2025 (by mail)	60	
2	NTPC	Central Generating Company	Received						
3	BBMB		Received						
4	THDC		Received		Tehri	Feb-25	28.02.2025	58	
5	SJVN		Received		RHPS, NHPS	Mar-25	25-03.2025	59	
6	NHPC		Received						
7	NPCIL								
8	Delhi SLDC	SLDC							
9	Haryana SLDC								
10	Rajasthan SLDC								
11	Uttar Pradesh SLDC		Ghatampur Thermal Power Station	Yes			25.02.2025	59	
			ALAKNANDA	Yes			Feb. 2025	59	
			Vishnuprayag	Yes			27.7.2024	52	
			WUPPTCL		Greater Noida, Sikandrabad, Dasna, Indrapuram, Nahtaur, ataur, hapur)		(25.03.2025)	59	
12	Uttarakhand SLDC								
13	Punjab SLDC								
14	Himachal Pradesh SLDC								
15	DTL		Received						
16	HVPNL		Received		Mohana	Jan-25	17.1.2025	58	compiled
17	RRVPNL	State Transmission Utility	Received		220kV Substations Bhadra, Basani, Asu, Amarsagar, Badliid, Balotra, BAP, Bhinmal, Kanwar, Phalodi, Ramgarh, Reodar, Sirahi, Hamirgarh, PPS4 Nokh, RSDCL-I, RSDCL-II, Sawa			59	
					Ratangarh, Badnu, Bikaner, Chhatargarh, Gajner, Halasar, Goner, NPH, Sanghaer, SEZ, VKIA, Shri Dungargarh, Sujargarh, Tehendesar, Akal, Chittorgarh			58 57	Pending Pending
					BARLI, NPH, TINHWARI, ALWAR, BANSUR, BEHROR, BHARATPUR, BHIWADI, CHHONKARWADA, DHOLPUR, KG BAS, KHUSHERA, KOTPUTALL, MANDAWAR, MANOHARPUR, NADBAI, NEEMRANA, PHAGI, AMER, DOONI, GGC, SIKRAI, HINDAUN, SWM, BHENSARA, ANTA, BHIWARA, RAMGARH, RATANGARH, LALSOT				
					220 kV Chaksu 220 kV Mansarovar 765 kV Anta 220 kv Mandalgargh 220 kV Pratagarh			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,II,III)						
23	HPGCL		Received		RGTPP (Khedar)	Jan-25	07.02.2025	58	Pending
24	RRVUNL		Received		KSTPS, Kota	Jan-25	22.02.2025	60	
					OSCTPP, Chhabra	Dec-24	19.02.2025	58	
					DCPP, Dholpur	Nov-24	19.02.2025	58	
		State Generating Company			STPS, Suratgarh	Jan-25	06.02.2025	58	
					Ramgarh Gas			56	Pending
					Sutargarh Supercritical				
25	UPRVUNL		Received (obra -B, Anpara-B, D switch yard, Harduaganj-C, D, E)		Parichha BTPS	Jan-25	08.03.2025	58	
					Parichha CTPS	Feb-25	07.03.2025	58	
		State Generating Company			Harduaganj, Anpara-B, C, D			57	Pending
26	UJVNL		Received (Khodri, Chibro, Vyasi, Dharasu - Talab)		Obra A & B	Jan-Feb 2025	18.02.2025	59	
27	HPPCL				Dharasu			58	
28	PSPCL	State Generating Company & State owned Distribution Company	Received (Ranjat sagar dam, GHTP, GGSSTP, GATP)						
29	HPSEBL	Distribution company having Transmission connectivity ownership	Received						
30	Pravara Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Received		Yes	24.07.2024	12.09.2024	56	Pending
31	Aravali Power Company Pvt. Ltd		Received						
32	Aprava Energy Private Limited		Received						
33	Talwandi Sabo Power Ltd.		Completed		Nov/24	Nov/ 24			
34	Nabha Power Limited		Received		400 kV NPL Sub-station			56	Pending
35	MEIL Anpara Energy Ltd		Received						
36	Rosa Power Supply Company Ltd		Received			Jan-25	11.02.2025	59	
37	Lalitpur Power Generation Company Ltd		Received		Yes	Oct-Nov 2024	30.11.2024	57	Pending
38	MEJA Urja Nigam Ltd.								
39	Adani Power Rajasthan Limited		Received						
40	JSW Energy Ltd. (KWHEP)	Other transmission licensee	Received						
41	AESL		Received (ATIL -400kV Mohindergarh Ss, OBTL, FBTL, MTSL, ATSL, HPTSL, BKTL, GTL)						
42	Tata Power Renewable Energy Ltd.		Received (TPGEL, BTPSL)		300MW TPREL Chhayan	28.02.2025	11.03.2025	58	
					300MW TP Surya Banderwala Solar Plant	01.03.2025	11.03.2025	58	
43	UT of J&K	UT of Northern Region			225MW TPGEL and 110MW KSLB Solar Plant	28.02.2025	11.03.2025	58	
44	UT of Ladakh								
45	UT of Chandigarh								
46	INDIGRID		Received						
47	ADHPL		Received		Completed	Mar-25	08.03.2025	58	Issue taken up with HPPTCL

Status of Internal Protection Audit Plan for FY 2025 -26								
S. No.	NRPC Member	Category	Status	Schedule submitted as per utility	Present Status Completed (yes/no)	Report Submission Date by audit party	Discussion held in PSC meeting number	Compliance status
1	PGCIL	Central Government owned Transmission Company	Received (NR-1,2,3)					
2	NTPC	Central Generating Company	Received					
3	BBMB		Received					
4	THDC		Received	Tehri- March, 2026 Koteshwar- December, 2025				
5	SJVN		Received (NUHPS, RHPS)					
6	NHPC		Received					
7	NPCIL		Received (RAP C)	July, 2025				
8	Delhi SLDC	SLDC						
9	Haryana SLDC							
10	Rajasthan SLDC							
11	Uttar Pradesh SLDC		Received (Jaypee Vishnu Prayag, WUPPTCL, SEUPPTCL, Alaknanda, GTL)	GTL- Jan'2026 & Feb'2026				
12	Uttarakhand SLDC							
13	Punjab SLDC	State Transmission Utility	Received					
14	Himachal Pradesh SLDC		Received					
15	DTL		Received					
16	HVPNL		Received					
17	RRVNL		Received					
18	UPPTCL		Received (All zones)	Jan-March 2026				
19	PTCUL		Received	July-December 2025				
20	PSTCL							
21	HPPTCL		Received					
22	IPGCL		Received (PPS-III, II)					
23	HPGCL	State Generating Company	Received					
24	RRVUNL		Received					
25	UPRVUNL		Received					
			Received (Anpara B)	Jun-25				
			Received (Obra A & B)	Jan - March 2026				
			Received (Anpara D)	May-25				
			Received (Harduaganj)	April -May 2025				
			Received (Harduaganj , D)	April -May 2025				
			Received (Harduaganj , E)	April -May 2025				
			Received (Parichha)	May-25				
			Received (Parichha Ext)	Feb-26				
			Received (Obra C)	Mar-26				
			Received (Jawaharpur)	Jul-25				
			Received (Chibro)	Oct-25				
			Received (Khodri)	Nov-25				
			Received (Vyasi)	Dec-25				
			Received (Dharashu, Tiloth)					
			Received (Kasheng HEP, Sawara Kuddu, Sainj)	Nov-25-Mar'26				
26	UJVNL	State Generating Company & State owned Distribution Company	Received					
27	HPPCL		Received					
28	PSPCL	Distribution company having Transmission connectivity ownership	Received					
29	HPSEBL	IPP having more than 1000 MW installed capacity	Received					
30	Prayagraj Power Generation Co. Ltd.		Received	Aug'25				
31	Aravali Power Company Pvt. Ltd							
32	Apraava Energy Private Limited		Received	May'25				
33	Talwandi Sabo Power Ltd.		Received	May'25				
34	Nabha Power Limited		Received	May'25				
35	MEIL Anpara Energy Ltd		Received	May'25				
36	Rosa Power Supply Company Ltd		Received	Jan'26				
37	Lalitpur Power Generation Company Ltd		Received	Oct - Nov 2025				
38	MEJA Urja Nigam Ltd.							
39	Adani Power Rajasthan Limited							
40	JSW Energy Ltd. (KWHEP)		Received	Nov-25 to Feb'26				
41	UT of J&K	UT of Northern Region						
42	UT of Ladakh							
43	UT of Chandigarh							
	ISTS Transmission Utilities							
44	INDIGRID		Received	Aug-25 to March-26				
45	ADHPL							
46	Adani Transmission Limited		Received (400kV Mohindergarh SS)	October, 2025				
47	Bikaner Khetri Transmission Limited		Received (765 kV Bikaner and Khetri extension bays)	September, 2025				
48	Fatehgarh Bhadla Transmission Limited		Received (400 kV Fatehgarh SS)	September, 2025				
49	Powergrid Sikar Transmission Limited		Received	Sikar- August, 25				
50	Powergrid Aligarh Sikar Transmission Limited		Received	Aligarh- April, 25 August, 25	Sikar-			
51	Powergrid Ajmer Phagi Transmission Limited		Received	March, 2025				
52	Powergrid Bikaner Transmission System Limited		Received	Bikaner-II Feb, 2025				
53	Powergrid Khetri Transmission System Limited		Received	Khetri-Feb, 2025				
54	Powergrid Ramgarh Transmission Limited		Received	Fatehgarh-II Dec, 2025				
55	Powergrid Fatehgarh Transmission Limited		Received	Fatehgarh-III May, 2025				
56	Powergrid Bhadla Transmission Limited		Received	Bhadla-II Jan, 2025				
57	Powergrid Meerut Simbhavli Transmission Limited		Received	Fatehgarh-II Dec, 2025				
58	Powergrid Kala Amb Transmission Limited		Received	Bhadla-II Jan, 2025 Nov, 2025				
	State Utilities							
	Uttar Pradesh							
59	Vishnu Prayag Hydro Electric Plant (J.P.)		Received	Jun-25				
60	Alaknanda Hydro Electric Plant (GVK)		Received	Dec'25 -Mar'26				
61	Ghatampur TPS		Received	February, 26				
62	Khara Power House (Khara)							
63	WUPPTCL		Received	Oct-25				
64	SEUPPTCL		Received	Jan-26				
65	ATSCCL	AESL	Received (400/220KV Alwar SS)	September, 2025				
66	GTL	AESL	Received (765 kV Hapur extension bays)	September, 2025				
67	GTL	AESL	Received (765 kV Agra and Gr. Noida extension bays)	September, 2025				
68	HPTSL	AESL	Received (220KV Ranpur SS)	August, 2025				
69	MTSCL	AESL	Received (400/220/132KV Deedwana SS)	August, 2025				
70	OBTL	AESL	Received (400/220/132KV Badaun SS)	Jan'2026				
71	STSL	AESL						
	Rajasthan							
72	Barsingar Plant	NLC						
73	Rajwest Plant	JSW						

	RE Utilities							
74	ABC Renewable Pvt. Ltd							
75	ACME Heeraqarh powertech Pvt. Ltd	Received	Jun-25					
76	ACME Pholidi	Received	Jun-25					
77	ACME Deagarh	Received	Jun-25					
78	ACME Raisar	Received	Jun-25					
79	ACME Dhoulpar	Received	Jun-25					
80	ACME Chittorgarh Solar Energy Pvt Ltd							
81	Adani Hybrid Energy Jaisalmer One Ltd.	Received	Jul-25					
82	Adani Hybrid Energy Jaisalmer Two Ltd.	Received	Jul-25					
83	Adani Hybrid Energy Jaisalmer Three Ltd.	Received	Aug-25					
84	Adani Hybrid Energy Jaisalmer Four Ltd.	Received	Aug-25					
85	Adani Renewable Energy (RJ) limited Rawara	Received	Sep-25					
86	Adani Solar Energy Jaisalmer One Pvt. Ltd. 450MW (Solar)	Received	Oct-25					
87	Adani Solar Energy Four Private Limited	Received	Sep-25					
88	Adani Hybrid Energy Jaisalmer Four Ltd. (AEML 2-350)	Received	Sep-25					
89	Adani Solar Energy Jaisalmer Two Private Limited Project Two	Received	Oct-25					
90	SB Energy Six Private Limited, Bhadia	Received	Oct-25					
91	Adani Solar Energy Jodhpur Two Limited, Rawara	Received	Sep-25					
92	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)	Received	Nov-25					
93	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)	Received	Nov-25					
94	Adani Green Energy 24 Limited (Bhimsar)	Received	Nov-25					
95	Adani Green Twenty-Five Limited (Badisid)	Received	Dec-25					
96	Altra Xergi Pvt. Ltd.							
97	AMP Energy Green Five Pvt. Ltd.							
98	AMP Energy Green Six Pvt. Ltd.							
99	Amplus Ages Private Limited							
100	Avaada RJHV 240MW							
101	Avaada sunce energy Pvt limited							
102	Avaada Sunrays Pvt. Ltd.							
103	Avaada Sustainable RJ Pvt. Ltd.							
104	Ayana Renewable Power Three Private Limited							
105	Ayaana Renewable Power One Pvt. Ltd.							
106	Azure Power Forty One Pvt limited							
107	Azure Power Forty Three Pvt. Ltd. RSS							
108	Azure Maple Pvt. Ltd.							
109	AZURE POWER INDIA Pvt. Ltd., Bhadia							
110	Azure Power Thirty Four Pvt. Ltd.							
111	Clean Solar Power (Jodhpur) Pvt. Ltd.							
112	Clean Solar Power (Bhadia) Pvt. Ltd							
113	Eden Renewable Cite Private Limited							
114	Grian Energy private limited							
115	Mahindra Renewable Private Limited							
116	Mega Surya Urja Pvt. Ltd. (MSUPL)							
117	AURAIYA Solar							
118	DADRI SOLAR							
119	SINGRAULI SOLAR							
120	Anta Solar							
121	Unchahar Solar							
122	NTPC Devikot Solar plant 240MW							
123	NTPC Kolayat 400kV							
124	Nedan Solar NTPC							
125	NTPC Nokhra 300MW							
126	One Volt energy Pvt. Ltd.							
127	ReNew Solar Energy (Jharkhand Three) Private Limited	Received	19-11-2025					
128	RENEW SOLAR POWER Pvt. Ltd. Bikaner	Received	17-11-2025					
129	ReNew Solar Urja Private Limited							
130	Renew Sun Bright Pvt. Ltd. (RSBPL)	Received	20-11-2025					
131	Renew Sun Waves Private Limited (RSEJ4L)							
132	Renew Surya Partap Pvt. Ltd.	Received	21-11-2025					
133	Renew Surya Ravi Pvt. Ltd.	Received	18-11-2025					
134	Renew Surya Roshni Pvt. Ltd.	Received	24-11-2025					
135	Renew Surya Vihan Pvt. Ltd.	Received	28-11-2025					
136	Renew Surya Ayaan Pvt. Ltd.							
137	Renew Solar Photovoltaic Pvt Ltd	Received	25-11-2025					
138	Renew Hans Urja Pvt Ltd	Received	26-11-2025					
139	Renew Surya Jyoti Pvt Ltd	Received	27-11-2025					
140	RENEW SOLAR POWER Pvt. Ltd. Bhadia							
141	Rising Sun Energy-K Pvt. Ltd.							
142	Serentica Renewables India 4 Private Limited							
143	Tata Power Green Energy Ltd. (TPGEL) (225MW)	Received	30-1-2026					
144	Tata Power Renewable Energy Ltd. (TPREL) (300MW)	Received	28-1-2026					
145	Thar Surya Pvt. Ltd.							
146	TP Surya Ltd., Noorsar (110MW)	Received	30-1-2026					
147	Banderwala Solar Plant TP Surya Ltd. (300MW)	Received	28-02-2026					
148	TRANSITION ENERGY SERVICES PRIVATE LIMITED							
149	Transition Green Energy Private Limited							
150	Transition Sustainable Energy Services Private Limited							

Status of 3rd Party Protection Audit Plan								
S. No.	NRPC Member	Category	Status	Schedule submitted as per utility	Present Status Completed (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				
3	BBMB		Received (Tanda)	By 17.07.2025				
4	THDC		Received	Feb-27				
5	SJVN		Received	March 2026-Tehri, F.Y. 2025-26- Koteshwar				
6	NHPC		Received	Nov-Dec 2025 for RHPS, Nov 24- March 25 for NJHPS				
7	NPCIL	SLDC	Completed (220kV) (NAPS)	Jan'25	Completed	18.01.2025	57	
8	Delhi SLDC							
9	Haryana SLDC							
10	Rajasthan SLDC							
11	Uttar Pradesh SLDC		Received (Tanda extension)	17.07.2025				
12	Uttarakhand SLDC		Received (Tanda)	17.07.2025				
13	Punjab SLDC							
14	Himachal Pradesh SLDC							
15	DTL		Received	September, 2025 to November, 2026				
16	HVPNL	State Transmission Utility						
17	RRVPNL							
18	UPPTCL		Received	2025	Under tendering			
19	PTCUL		Received	By Jan 2025				
20	PSTCL		Received	FY 25-26				
21	HPPTCL	State Generating Company	Received (PPS-III)	FY 25-26				
22	IPGCL							
23	HPGCL							
24	RRVUNL		Received	2026-27				
25	UPRVUNL		Obra-B	Feb-26				
26	UVNL		Obra-C	2025	Under tendering			
27	HPPCL		Anpara D	2025	Under tendering			
28	PSPCL		Anpara B	2025	Under tendering			
29	HPSEBL		Hartkuanani	2025	Under tendering			
30	Prayagraj Power Generation Co. Ltd.		Harduaganj D	2025	Under tendering			
31	Aaravali Power Company Pvt. Ltd.		Batichia	2025	Under tendering			
32	Aprava Energy Private Limited		Parichha Ext	2025	Under tendering			
33	Talwandi Sabo Power Ltd.		Jawaharpur	2025	Under tendering			
34	Nalaha Power Limited		Paricha BTPS	2026				
35	MEIL Anpara Energy Ltd		Unnao					
36	Rosa Power Supply Company Ltd.		Dhargadu	2026	Completed in Nov, 2024		56	submitted
37	Lalitpur Power Generation Company Ltd		Swara Kuddu	2026				
38	MEJA Unia Nigam Ltd.		Sahangrhap	FY 2025-26				
39	Adani Power Rajasthan Limited	State Generating Company & State owned Distribution Company	Received (GHTP)					
40	JSW Energy Ltd. (KWHEP)		Received (GATP)	Dec, 2025				
41	UT of J&K		GGSTP	May 2025				
42	UT of Ladakh		RSD/ Sahapur Kandi	2026				
43	UT of Chandigarh							
44	ISTS Transmission Utilities	Distribution company having Transmission connectivity ownership	Kunihar	Conducted			55	
45	INDGRID		Upper Nancaal	Conducted			61	
46	ADHPL		Baddi	Conducted			81	
47	Adani Transmission Limited		Ghatghat	Conducted			59	
48	Bikaner Khetri Transmission Limited							
49	Fatehgarh Bhadla Transmission Limited	IPP having more than 1000 MW installed capacity	Received	Dec-24	January 2025	08.01.2025		
50	Powergrid Sikar Transmission Limited		Received	By May, 2025				
51	Powergrid Alwar Sikar Transmission Limited		Conducted	Dec'22	Completed	20.12.2024	60	
52	Powergrid Amer Phad Transmission Limited		Received	By December, 2025				
53	Powergrid Bikaner Transmission System Limited		Received	May 2025				
54	Powergrid Khetri Transmission System Limited		Conducted	By 30.09.2024	08.08.2024	13.01.2025	57	
55	Powergrid Ramgarh Transmission Limited		Conducted	26.03.2024				
56	Powergrid Fatehgarh Transmission Limited		Conducted	November, 2024	Completed in Oct, 2024	22.03.2025	59	
57	Powergrid Bhadla Transmission Limited		Conducted	December 2024 to March 2025	Completed		56	Pending
58	Powergrid Meerut Simbhami Transmission Limited		Received				57	Pending
59	Powergrid Kala Amb Transmission Limited	UT of Northern Region						
60	State Utilities							
61	Uttar Pradesh							
62	Vishnu Pravaa Hydro Electric Plant (J.P.)		Received	December, 2028				
63	Alankanda Hydro Electric Plant (GVK)		Received	Mar-25				
64	Ghatampur TPS	AESL	Received	FY 27-28				
65	Khara Power House (Khara)		Received	December, 2025				
66	WUPPTCL		Received (765 kV Bikaner and Khetri extension bays)	September, 2025				
67	SEUPPTCL		Received (400 kV Fatehgarh SS)	September, 2025				
68	ATSCL		Received (400/220KV Alwar SS)	September, 2025				
69	GTL	AESL	Received (765 kV Hapur extension bays)	September, 2025				
70	GTL		Received (765 kV Agra and Gr. Noida extension bays)	September, 2025				
71	HPTSL		Received (220kV Ranpur SS)	August, 2025				
72	MTSCL		Received (400/220/132KV Deedwana SS)	August, 2025				
73	OCBTL		Received (400/220/132KV Badaun SS)	FY 24-25	Completed			
74	STSL	AESL						
75	Rajasthan							
76	Barsingar Plant							
77	Rajwast Plant	NLC						
78		JSW						
79	RE Utilities							
80	ABC Renewable Pvt. Ltd							
81	ACME Heeragarh powertech Pvt. Ltd							
82	ACME Pholdi							
83	ACME Deogarh							
84	ACME Raisal							
85	ACME Dholpur							
86	ACME Chittorgarh Solar Energy Pvt Ltd							
87	Adani Hybrid Energy Jaisalmer One Ltd.							
88	Adani Hybrid Energy Jaisalmer Two Ltd.							
89	Adani Hybrid Energy Jaisalmer Three Ltd.							
90	Adani Hybrid Energy Jaisalmer Four Ltd.							
91	Adani Renewable Energy (R.J) limited Rawara							
92	Adani Solar Energy Jaisalmer One Pvt. Ltd., 450MW (Solar)							
93	Adani Solar Energy Four Private Limited							
94	Adani Hybrid Energy Jaisalmer Four Ltd. (AEML 2-350)							

89	Adani Solar Energy Jaisalmer Two Private Limited Protect Two						
90	SB Energy Six Private Limited, Bhadia						
91							
92	Adani Solar Energy Jodhpur Two Limited, Rawara						
93	Adani Solar Energy RJ Two Pvt. Ltd. (Devkot)						
94	Adani Solar Energy RJ Two Pvt. Ltd. (Phalod)						
95	Adani Green Energy 24 Limited (Bhimsar)						
96	Adani Green Twenty-Five Limited (Badsid)						
97	Altra Xergi Pvt. Ltd.	Conducted		Completed	01.02.2025-04.02.2025	60	
98	AMP Energy Green Five Pvt. Ltd.						
99	AMP Energy Green Six Pvt. Ltd.						
100	Amplus Ages Private Limited						
101	Avaada RJHN_240MW						
102	Avaada sunce energy Pvt limited						
103	Avaada Sunravs Pvt. Ltd.						
104	Avaada Sustainable RJ Pvt. Ltd.						
105	Ayaana Renewable Power Three Private Limited	Conducted		18.05.2025		61	
106	Ayaana Renewable Power One Pvt. Ltd.	Conducted		09.03.2025		59	
107	Azure Power Forty One Pvt limited						
108	Azure Power Forty Three Pvt. Ltd. RSS						
109	Azure Maple Pvt. Ltd.						
110	AZURE POWER INDIA Pvt. Ltd., Bhadia						
111	Azure Power Thirty Four Pvt. Ltd.						
112	Clean Solar Power (Jodhpur) Pvt. Ltd.						
113	Clean Solar Power (Bhadia) Pvt. Ltd.						
114	Eden Renewable Cite Private Limited						
115	Grian Energy private limited						
116	Mahindra Renewable Private Limited						
117	Mesa Surya Unja Pvt. Ltd. (MSUPL)						
118	ALURAYA Solar						
119	DADRI SOLAR						
120	SINGRAULI SOLAR						
121	Anta Solar						
122	Unchahar Solar						
123	NTPC Devkot Solar plant_240MW						
124	NTPC Kolavrat_400kV						
125	Nedan Solar NTPC						
126	NTPC Nokhra_300MW						
127	One Volt energy Pvt. Ltd.						
128	ReNew Solar Energy (Jharkhand Three) Private Limited						
129	RENEW SOLAR POWER Pvt. Ltd. Bhadia						
130	ReNew Solar Unja Private Limited						
131	Renew Sun Bright Pvt. Ltd. (RSBPL)						
132	Renew Sun Waves Private Limited (RSEJL)						
133	Renew Surya Partap Pvt. Ltd.						
134	Renew Surya Ravi Pvt. Ltd.						
135	Renew Surya Roohini Pvt. Ltd.						
136	Renew Surya Vihan Pvt. Ltd.						
137	Renew Surya Ayaan Pvt. Ltd.						
138	Renew Solar Photovoltaic Pvt Ltd						
139	RENEW SOLAR POWER Pvt. Ltd. Bikaner						
140	Rising Sun Energy-K Pvt. Ltd.						
141	Serentica Renewables India 4 Private Limited						
142	Tata Power Green Energy Ltd. (TPGEL) (225MW)	Received	31-03-2027				
143	Tata Power Renewable Energy Ltd. (TPREL) (300MW)	Received	31-03-2027				
144	Thar Surya Pvt. Ltd.						
145	TP Surya Ltd., Nokrasar (110MW)	Received	31-03-2027				
146	Bandarwala Solar Plant TP Surya Ltd. (300MW)	Received	31-03-2027				
147	TRANSITION ENERGY SERVICES PRIVATE LIMITED						
148	Transition Green Energy Private Limited						
	Transition Sustainable Energy Services Private Limited						



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

दिनांक: 19 मई, 2025

सेवा में / To,

As per addressee list (attached)

विषय: एनआरपीसी घटकों के अधिकारियों के लिए विद्युत प्रणाली के संरक्षण पर 5 दिवसीय आवासीय प्रशिक्षण-संबंधित।

Subject: 5 days Residential Training on Electrical Protection of Power System for officials of NRPC Constituents-reg.

Reference: - NRPC Secretariat letter dated 28.04.2025 (**enclosed**)

Reference is invited to NRPC Secretariat letter dated 28.04.2025 vide which nominations were sought for 5-day residential training program on Electrical Protection of Power System to be conducted by POWERGRID at PAL, Manesar and training program funded by NRPC fund. Accordingly, schedule of four batches for '5 days' residential training program were shared.

In this regard, it is to inform that during VC meeting held with POWERGRID on 09.05.2025, it was decided to postpone the training as officers' availability at their respective posting location was of utmost importance than training due to blackout situations in some states in view of tension with Pakistan. A mail was also sent to all on 09.05.2025 for postponement of training.

Now, training program schedule has been reviewed and accordingly, dates for the 1st & 2nd batches have been changed. The finalized training program schedule for all the four batches are as below-

बैच	कार्यक्रम तिथियां
बैच-3	जून 16-20, 2025
बैच-4	जून 30- जुलाई 04, 2025
बैच-1	जुलाई 14-18, 2025
बैच-2	जुलाई 28- अगस्त 01, 2025

Further, the nominations received earlier have been considered in accordance with the shared batches. However, concerned utilities who have not yet sent the nominations are requested to expedite the same and send the nominations of officers related to protection domain as per batch and number of officers allocated in the attached schedule (**annexure-I of letter dated 28.04.2025**) for the respective organizations.

The nominations may be sent (at lokesh.cea@gov.in) with the details as below latest by **26.05.2025**.

Name of officer	Designation	Mobile No.	E-mail Id	Present Posting location	Batch Number (as per schedule)

Encls: As above

This issues with approval of MS, NRPC.

Signed by Lokesh Agrawal
Date: 20-05-2025 14:34:19

(लोकेश अग्रवाल)
सहायक निदेशक (संरक्षण)

List of addressee:

S. No.	Organization	Designation	Email-ID
1	NPC, CEA	Chief Engineer	cenpcccea@gmail.com
2	CTUIL	COO	pcgarg@powergrid.in
3	PGCIL	ED, NR-1	aloksharma99@powergrid.in
4	NLDC	Head of NLDC	susha@grid-india.in
5	NRLDC	CGM(SO)	somara.lakra@grid-india.in
6	NTPC	DGM(OS-NR)	rameshsingh@ntpc.co.in , asbhogal@ntpc.co.in
7	BBMB	Director (P&C)	dirpc@bbmb.nic.in
8	THDC	Chief General Manager (EM-Design)	rrsemwal@thdc.co.in , ravindrasrana@thdc.co.in
9	SJVN	General Manager	sjvn.cso@sjvn.nic.in
10	NHPC	General Manager (O&M)	hod-om-co@nhpc.nic.in
11	NPCIL	Director (Finance), SO/F, TSU(E&I)	df@npcil.co.in , rajeshsharma@npcil.co.in
12	Delhi SLDC	General Manager	gmsldc@delhisldc.org
13	Haryana SLDC	Chief Engineer (SO&C)	cesocomm1@hvpn.org.in
14	Rajasthan SLDC	Chief Engineer (LD)	ce.ld@rvpn.co.in
15	Uttar Pradesh SLDC	Superintending Engineer (R&A)	sera@upsldc.org
16	Uttarakhand SLDC	Chief Engineer	anupam_singh@ptcul.org
17	Punjab SLDC	Chief Engineer	ce-sldc@punjabslldc.org
18	Himachal Pradesh SLDC	Chief Engineer	cehpsldc@gmail.com
19	DTL	AGM-Protection	bharatqujardtl@gmail.com
20	HVPNL	Chief Engineer (TS)	cetspk1@hvpn.org.in
21	RRVPNL	CE (M&P)	ce.mps@rvpn.co.in
22	UPPTCL	Managing Director	md@upptcl.org
23	PTCUL	SE(T&C)	setandchld@gmail.com
24	PSTCL	Chief Engineer (P&M)	ce-pm@pstcl.org
25	HPPTCL	Managing Director	md.tcl@hpmail.in
26	IPGCL	DGM (Protection)	arif.ipgcl@gmail.com
27	HPGCL	SE/M&T RGTPP	semt.rgtp@hpgcl.org.in
28	RRVUNL	CMD	cmd@rrvunl.com
29	UPRVUNL	Chief Engineer, (L-2)	ce.ppm@uprvunl.org
30	UJVNL	Managing Director	mduivnl@ujvnl.com
31	HPPCL	Managing Director	md@hppcl.in
32	PSPCL	Chief Engineer/GHTP	ce-ghtp@pspcl.in
33	UHBVN	Managing Director	md@uhbvn.org.in
34	Jodhpur Vidyut Vitran Nigam Ltd.	Managing Director	MD.JDVNL@RAJASTHAN.GOV.IN
35	Paschimanchal Vidyut Vitaran Nigam Ltd.	Managing Director	md@pvnvl.org
36	UPCL	Managing Director	md@upcl.org
37	HPSEB	Managing Director	md@hpseb.in
38	Prayagraj Power Generation Co. Ltd.	Head (Commercial & Regulatory), DGM - Elect	sanjay.bhargava@tatapower.com , ghananjay.singh@ppgcl.co.in
39	Aravali Power Company Pvt. Ltd	CEO	brahmaig@ntpc.co.in
40	Apraava Energy Private Limited	GM-Electrical	navin.chaturvedi@apraava.com
41	Talwandi Sabo Power Ltd.	COO	Vibhav.Agarwal@vedanta.co.in
42	Nabha Power Limited	CEO	sk.narang@larsentoubro.com
43	MEIL Anpara Energy Ltd	COO & WTD, Executive Director	anandkumar.singh@meilanparapower.com , arun.tholia@meilanparapower.com
44	Rosa Power Supply Company Ltd	GM-ELECTRICAL	kesarinandan.pandey@relianceada.com
45	Lalitpur Power Generation Company Ltd	Head of Maintenance, GM Electrical	alokkumar.ltp@lpqcl.com , aupadhyay.ltp@lpqcl.com
46	MEJA Urja Nigam Ltd.	AGM-EMD	SPSPUNDIR@NTPC.CO.IN
47	Adani Power Rajasthan Limited	GM	Ashish.Baviskar@adani.com
48	JSW Energy Ltd. (KWHEP)	Head Regulatory & Power Sales	jyotiprakash.panda@jsw.in
49	TATA POWER RENEWABLE	Zonal Head, NR	dhmahabale@tatapower.com
50	UT of J&K	MD, JKPTCL	mdjkptcl1@gmail.com
51	UT of Ladakh	Chief Engineer, LPDD	cepdladakh@gmail.com
52	UT of Chandigarh	Executive Engineer	elop2-chd@nic.in
53	Noida Power Company Limited	Head – Power Purchase	ssrivastava@noidapower.com
54	Fatehgarh Bhadla Transmission Limited	Head-Protection, AESL	Sunil.Raval@adani.com
55	NTPC Vidyut Vyapar Nigam Ltd.	CEO	ceonvvn@ntpc.co.in
56	ReNew Power Private Limited	CEO	sumant@renew.com
57	NTPC Green Energy Limited	CEO, Sr. Mgr	rajivgupta@ntpc.co.in , sandeepdahiya@ntpc.co.in
58	Azure Power India Pvt. Limited	CEO	sunil.gupta@azurepower.com
59	Avaada Energy Private Limited	CEO	kishor.nair@avaada.com
60	Adani Green Energy Limited	AVP	sanjay.bhatt@adani.com



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

दिनांक: 28 अप्रैल, 2025

सेवा में / To,

As per addressee list (attached)

विषय: एनआरपीसी घटकों के अधिकारियों के लिए विद्युत प्रणाली के संरक्षण पर 5 दिवसीय आवासीय प्रशिक्षण-संबंधित।

Subject: 5 days Residential Training Program on “Electrical Protection of Power System” for officials of NRPC Constituents-reg.

It is to inform that in 53rd TCC & 78th NRPC meeting (held on 16-17 March, 2025), Forum approved the proposal of 5-day residential training program on Electrical Protection of Power System to be conducted by POWERGRID at PAL, Manesar and funded by NRPC fund.

Accordingly, in consultation with POWERGRID, PAL, Manesar, four batches have been formed for this ‘5 days’ residential training program as per schedule below:

बैच	कार्यक्रम तिथियाँ
बैच -1	मई 19-23, 2025
बैच -2	जून 02-06, 2025
बैच -3	जून 16-20, 2025
बैच -4	जून 30- जुलाई 04, 2025

Course content approved by NRPC Forum is as below:

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.

F. Communication (PLCC) for protection

G. Relay testing

In view of above each organization has been allotted batch number (as per schedule attached as Annexure-I) and number of officers as decided in above NRPC meeting.

Therefore, it is requested to send the nominations of officers related to protection domain as per batch and number of officers allocated in the **attached schedule** for the respective organizations.

The nominations may be sent (at lokesh.cea@gov.in) with the details as below latest by **08.05.2025**.

Name of officer	Designation	Mobile No.	E-mail Id	Present Posting location	Batch Number (as per schedule)

It may be noted that entitled DA/TA shall be borne by parent organization and accommodation/ food will be provided by PAL, Manesar for training duration only.

Encls: As above

Signed by Dharmendra
Kumar Meena
Date: 28-04-2025 13:01:39

(डी. के. मीना)
निदेशक (संरक्षण)

List of addressee:

S. No.	Organization	Designation	Email-ID
1	NPC, CEA	Chief Engineer	cenpcccea@gmail.com
2	CTUIL	COO	pcgarg@powergrid.in
3	PGCIL	ED, NR-1	aloksharma99@powergrid.in
4	NLDC	Head of NLDC	susha@grid-india.in
5	NRLDC	CGM(SO)	somara.lakra@grid-india.in
6	NTPC	DGM(OS-NR)	rameshsingh@ntpc.co.in , asbhogal@ntpc.co.in
7	BBMB	Director (P&C)	dirpc@bbmb.nic.in
8	THDC	Chief General Manager (EM-Design)	rrsemwal@thdc.co.in , ravindrasrana@thdc.co.in
9	SJVN	General Manager	sjvn.cso@sjvn.nic.in
10	NHPC	General Manager (O&M)	hod-om-co@nhpc.nic.in
11	NPCIL	Director (Finance), SO/F, TSU(E&I)	df@npcil.co.in , rajeshsharma@npcil.co.in
12	Delhi SLDC	General Manager	gmsldc@delhisldc.org
13	Haryana SLDC	Chief Engineer (SO&C)	cesocomm1@hvpn.org.in
14	Rajasthan SLDC	Chief Engineer (LD)	ce.ld@rvpn.co.in
15	Uttar Pradesh SLDC	Superintending Engineer (R&A)	sera@upsldc.org
16	Uttarakhand SLDC	Chief Engineer	anupam_singh@ptcul.org
17	Punjab SLDC	Chief Engineer	ce-sldc@punjabslldc.org
18	Himachal Pradesh SLDC	Chief Engineer	cehpsldc@gmail.com
19	DTL	AGM-Protection	bharatqujardtl@gmail.com
20	HVPNL	Chief Engineer (TS)	cetspk1@hvpn.org.in
21	RRVNL	CE (M&P)	ce.mps@rvpn.co.in
22	UPPTCL	Managing Director	md@upptcl.org
23	PTCUL	SE(T&C)	setandchld@gmail.com
24	PSTCL	Chief Engineer (P&M)	ce-pm@pstcl.org
25	HPPTCL	Managing Director	md.tcl@hpmail.in
26	IPGCL	DGM (Protection)	arif.ipgcl@gmail.com
27	HPGCL	SE/M&T RGTPP	semt.rgtp@hpgcl.org.in
28	RRVUNL	CMD	cmd@rrvunl.com
29	UPRVUNL	Chief Engineer, (L-2)	ce.ppm@uprvunl.org
30	UJVNL	Managing Director	mduivnl@ujvnl.com
31	HPPCL	Managing Director	md@hppcl.in
32	PSPCL	Chief Engineer/GHTP	ce-ghtp@pspcl.in
33	UHBVN	Managing Director	md@uhbvn.org.in
34	Jodhpur Vidyut Vitran Nigam Ltd.	Managing Director	MD.JDVNL@RAJASTHAN.GOV.IN
35	Paschimanchal Vidyut Vitaran Nigam Ltd.	Managing Director	md@pvvnl.org
36	UPCL	Managing Director	md@upcl.org
37	HPSEB	Managing Director	md@hpseb.in
38	Prayagraj Power Generation Co. Ltd.	Head (Commercial & Regulatory), DGM - Elect	sanjay.bhargava@tatapower.com , ghananjay.singh@ppgcl.co.in
39	Aravali Power Company Pvt. Ltd	CEO	brahmaig@ntpc.co.in
40	Apraava Energy Private Limited	GM-Electrical	navin.chaturvedi@apraava.com
41	Talwandi Sabo Power Ltd.	COO	Vibhav.Agarwal@vedanta.co.in
42	Nabha Power Limited	CEO	sk.narang@larsentoubro.com
43	MEIL Anpara Energy Ltd	COO & WTD, Executive Director	anandkumar.singh@meilanparapower.com , arun.tholia@meilanparapower.com
44	Rosa Power Supply Company Ltd	GM-ELECTRICAL	kesarinandan.pandey@relianceada.com
45	Lalitpur Power Generation Company Ltd	Head of Maintenance, GM Electrical	alokkumar.ltp@lpqcl.com , aupadhyay.ltp@lpqcl.com
46	MEJA Urja Nigam Ltd.	AGM-EMD	SPSPUNDIR@NTPC.CO.IN
47	Adani Power Rajasthan Limited	GM	Ashish.Baviskar@adani.com
48	JSW Energy Ltd. (KWHEP)	Head Regulatory & Power Sales	ivyotiprakash.panda@jsw.in
49	TATA POWER RENEWABLE	Zonal Head, NR	dhmahabale@tatapower.com
50	UT of J&K	MD, JKPTCL	mdjkptcl1@gmail.com
51	UT of Ladakh	Chief Engineer, LPDD	cepdladakh@gmail.com
52	UT of Chandigarh	Executive Engineer	elop2-chd@nic.in
53	Noida Power Company Limited	Head – Power Purchase	ssrivastava@noidapower.com
54	Fatehgarh Bhadla Transmission Limited	Head-Protection, AESL	Sunil.Raval@adani.com
55	NTPC Vidyut Vyapar Nigam Ltd.	CEO	ceonvvn@ntpc.co.in
56	ReNew Power Private Limited	CEO	sumant@renew.com
57	NTPC Green Energy Limited	CEO, Sr. Mgr	rajivgupta@ntpc.co.in , sandeepdahiya@ntpc.co.in
58	Azure Power India Pvt. Limited	CEO	sunil.gupta@azurepower.com
59	Avaada Energy Private Limited	CEO	kishor.nair@avaada.com
60	Adani Green Energy Limited	AVP	sanjay.bhatt@adani.com

Batches for protection training at PAL, Manesar

S. No.	NRPC Member Organization (as decided in 53rd TCC/ 78th NRPC meeting held on 16-17 Mar 2025)	Total No of trainees	Batch-1	Batch-2	Batch-3	Batch-4
			19-23 May25	02-06 Jun25	16-20 Jun25	30Jun-4July25
1	CEA	5	2	1	1	1
2	NRPC Secretariat	6	2	1	1	2
3	CTUIL	2	1	1	x	x
4	PGCIL	3	1	1	1	x
5	NLDC	2	1	1	x	x
6	NRLDC	2	1	1	x	x
7	NTPC	2	1	1	x	x
8	BBMB	2	1	1	x	x
9	THDC	2	1	1	x	x
10	SJVN	2	x	x	1	1
11	NHPC	2	x	x	1	1
12	NPCIL	2	x	x	1	1
13	Delhi SLDC	2	1	1	x	x
14	Haryana SLDC	2	1	1	x	x
15	Rajasthan SLDC	2	1	1	x	x
16	Uttar Pradesh SLDC	2	1	1	x	x
17	Uttarakhand SLDC	2	x	x	1	1
18	Punjab SLDC	2	x	x	1	1
19	Himachal Pradesh SLDC	2	x	x	1	1
20	DTL	2	1	1	x	x
21	HVPNL	2	1	1	x	x
22	RRVNL	3	1	1	x	1
23	UPPTCL	6	1	1	2	2
24	PTCUL	2	1	1	x	x
25	PSTCL	2	x	x	1	1
26	HPPTCL	2	x	x	1	1
27	IPGCL	2	x	x	1	1
28	HPGCL	2	x	x	1	1
29	RRVUNL	2	1	1	x	x
30	UPRVUNL	2	1	1	x	x
31	UJVNL	2	1	1	x	x
32	HPPCL	2	x	x	1	1
33	PSPCL	2	x	x	1	1
34	UHBVN	2	1	1	x	x
35	Jodhpur Vidyut Vitran Nigam Ltd.	2	1	1	x	x
36	Paschimanchal Vidyut Vitaran Nigam Ltd.	2	x	x	1	1
37	UPCL	2	x	x	1	1
38	HPSEB	2	1	1	x	x
39	Prayagraj Power Generation Co. Ltd.	2	1	1	x	x
40	Aravali Power Company Pvt. Ltd	2	1	1	x	x
41	Aprava Energy Private Limited	2	1	1	x	x
42	Talwandi Sabo Power Ltd.	2	1	1	x	x
43	Nabha Power Limited	2	x	x	1	1
44	MEIL Anpara Energy Ltd	2	x	x	1	1
45	Rosa Power Supply Company Ltd	2	x	x	1	1
46	Lalitpur Power Generation Company Ltd	2	x	x	1	1
47	MEJA Urja Nigam Ltd.	2	x	x	1	1
48	Adani Power Rajasthan Limited	2	x	x	1	1
49	JSW Energy Ltd. (KWHEP)	2	x	x	1	1
50	TATA POWER RENEWABLE	2	1	x	1	x
51	UT of J&K (JKPTCL)	2	1	1	x	x
52	UT of Ladakh	2	1	1	x	x
53	UT of Chandigarh	2	x	x	1	1
54	Noida Power Company Limited	2	1	x	1	x
55	Fatehgarh Bhadla Transmission Limited	2	x	x	1	1
56	NTPC Vidyut Vyapar Nigam Ltd.	2	x	1	1	x
57	ReNew Power Private Limited	2	x	x	1	1
58	NTPC Green Energy Limited	2	x	1	1	x
59	Azure Power India Pvt. Limited	2	x	1	1	x
60	Avaada Energy Private Limited	2	1	1	x	x
61	Adani Green Energy Limited	2	x	1	1	x
GRAND TOTAL		135	35	35	35	30

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

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

10	Multiple elements tripping at 220kV Khodri HEP & Chibro HEP on 5th, 11th & 19th September 2024	53 PSC: a) Timely submission of disturbance recorder (DR) and event logger (EL) files need to be ensured. As per IEGC clause 37.2 (c), Disturbance Recorder (DR), station Event Logger (EL), Data Acquisition System (DAS) shall be submitted within 24 hrs of the event. b) HPPTCL shall taken necessary actions to rectify the protection related issue in 220kV Khodri-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.	UJVNL representative informed that open tender process is in progress and it will take at least 4-5 months to complete the work. PSC forum requested UJVNL & HPSEBL to take necessary remedial action at their end and ensure proper operation of protection system. UJVNL shall expedite the action plan and HPSEBL shall review the protection setting of 220kV Khodri-Majri line-II.	
11	Multiple elements tripping at 400/220kV Obra_A(UP) on 9th October 2024	54 PSC Recommendations: a) UPPTCL & Obra_A(UP) shall ensure the implementation of LBB protection at the earliest at 220kV side. b) GPS scheme shall be implemented at Obra_B(UP) by the end of January 2025 and time sync of recording devices will be ensured.	UPPTCL representative informed that work is further delayed due to delay in visit by ABB engineers. PSC forum requested UPPTCL for expedited corrective actions.	
12	Multiple elements tripping at 220/132kV Obra_A(UP) on 9th October 2024	54 PSC Recommendations: Commissioning and Implementation of numerical relays in 132kV ICT-1&2 at Obra_A(UP) need to be expedited. Timely commissioning of the same need to be ensured.	UPPTCL representative informed that work is further delayed due to delay in visit by ABB engineers. PSC forum requested UPPTCL for expedited corrective actions.	
13	Multiple elements tripping at 220kV Dausa(RS) on 21st October 2024 and on 29th December, 2024	54 & 56 PSC Recommendations: a) RVPNL will expedite the replacement of all the static relays at 220kV Dausa S/s with numerical relays. b) Time synchronization of all the recording instruments need to be ensured. c) Healthiness of protection system and their proper operation need to be ensured. d) Timely submission of disturbance recorder (DR) and event logger (EL) files need to be ensured.	RVPNL representative informed that total three relays are replaced till now. In rest two elements one relay (Main-I/II) is numerical and other one is static. In those 2 static relays DR extraction facility is made available through Main-I/II numerical relay till they are replaced. PSC forum requested RVPNL for expedited corrective actions.	
14	Frequent tripping of 220 KV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-1 & 2	55 PSC Recommendations: Expeditious corrective actions to minimise frequent faults in line.	RVPNL representative informed that work in 220kV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-1 & 2 is complete except some broken earth wires need to be attended. It was also stated that 10-20km from Sakatpura end of 220kV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-1 & 2 passes through forest area and faults are often of transient nature. A/R is disabled at RAPS_A end although it is enabled at Sakatpura end. Communication from RVPNL is sent to RAPS_A to enable A/R and replace CB at RAPS_A end if any issue is there, but no reply is received so far. Work in 220kV RAPS_B(NP)- Sakatpura (RS) (RS) Ckt is in progress. PSC forum requested NPCIL to enable A/R at RAPS_A end of 220kV RAPS_A(NP)- Sakatpura (RS) (RS) Ckt-1 & 2. RVPNL is also requested for expedited corrective actions at their end.	
15	Frequent tripping of 400 KV Amritsar(PG)-Makhu(PG) (PSTCL) Ckt-1 & 400 KV Talwandi Saboo(PSG)-Nakodar (PSG) (PS) Ckt-1	55 PSC Recommendations: PSTCL was requested to plan replacement of porcelain insulators with polymer type.	PSTCL representative informed that status is same (insulator replacement will be completed before next winter season 2025). NRLDC representative requested PSTCL for expedite the replacement of insulators in these lines (by October 2025) to minimise the tripping events due to fog during next winter season. PSTCL agreed for the same. PSC forum requested PSTCL to for expeditious actions for insulators replacement.	
16	Multiple element tripping event at 400kV Aligarh(UP) on 02nd November, 2024	55 PSC Recommendations: UPPTCL shall ensure the healthiness of carrier communication and A/R operation at Muradnagar_1(UP) end.	UPPTCL representative informed that carrier cabinet is to be installed at both Aligarh(UP) and Muradnagar_1(UP) end, but they are yet not allotted. PSC forum requested UPPTCL for expedited corrective actions.	
17	Frequent tripping of 220 KV Agra(PG)-Bharatpur(RS) (PG) Ckt-1	57 PSC Recommendations: Impedance measurement and distance relay settings of the line need to be reviewed before summer (high demand period).	RVPNL informed that insulator disc replacement is almost done. Two towers need to be changed due to less ground clearance. POWERGRID (NR-3) informed that impedance measurement and distance relay settings review is done and settings are corrected. PSC forum requested RVPNL for expedited corrective actions.	
18	Frequent tripping of 400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2	57 PSC Recommendations: Healthiness of carrier communication need to be reviewed.	UPPTCL informed that one carrier cabinet is needed and requirement/demand for the same is already placed. It will be installed once allotted. PSC forum requested UPPTCL for expedited corrective actions.	

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

Grid Event summary for April 2025

S.No.	Category of Grid Incident/ Disturbance	Name of Elements (Tripped/Manually opened)	Affected Area	Owner / Agency	Outage		Loss of generation / loss of load during the Grid Disturbance		Fault Clearance time (in ms)	Compliance of Protection Protocol/Standard		
	(GI-4 to GD-V)				Date	Time	Generation Loss(MW)	Load Loss (MW)		Flash Report Submission (Y/N)	DR/EL Submission (Y/N)	Detail Tripping Report Submission (Y/N)
1	GD-1	1) 400 KV AYANA1 SL_BKN_PG (ARP1PL)-ARP3PL_SL_BIK_PG (Ayana_RP3PL) Ckt 2) 400KV SJVN Solar-Bikaner2(PG) ckt	Rajasthan	Ayana_RP3PL(AR P3PL), PGCIL, SGEL	2-Apr-25	14:45	1060	0	120	N	N	N
2	GI-2	1) 125 MVAR Bus Reactor No 1 at 400 KV Jaisalmer(RS) 2) 400 KV Kankani-Jaisalmer (RS) Ckt 3) 400 KV Jaisalmer(RS)-M/s Renew Hans urja pvt Ltd (RS) (RHUPL) Ckt-1 4) 400/220 kv 500 MVA ICT 1 at Jaisalmer(RS) 5) 400/220 kv 500 MVA ICT 2 at Jaisalmer(RS) 6) 400/220 kv 500 MVA ICT 3 at Jaisalmer(RS) 7) 400KV Bus-2 at Jaisalmer(RS)	Rajasthan	RVPNL, Renew Hans Urja	2-Apr-25	17:26	140	0	80	Y(d)	Y(d)	Y(d)
3	GD-1	1) 220 KV Bhadia(PG)-Azure Power 34 Solar(APTFL) (APTFL) Ckt	Rajasthan	PGCIL, APTFL	6-Apr-25	13:47	130	0	120	N (Partial details received)	N (Partial details received)	N (Partial details received)
4	GD-1	1) 220/33 kv 160 MVA ICT 1 at Thar Surya1 SL_BKN_PG (TS1PL)	Rajasthan	Thar Surya1(IP)	7-Apr-25	10:02	155	0	240	N	N	N
5	GD-1	1) 220 KV Moga(PG)-Mehal kalan (PS) (PSTCL) Ckt-1 2) 220 KV Moga(PG)-Mehal kalan (PS) (PSTCL) Ckt-2 3) 220 KV Pakhwal-Mehal kalan (PS) (PSTCL) Ckt-1 4) 220 KV Pakhwal-Mehal kalan (PS) (PSTCL) Ckt-2 5) 220/66 kv ICT 1 at MehalKalan(PS) 6) 220/66 kv ICT 2 at MehalKalan(PS)	Punjab	PGCIL, PSTCL	8-Apr-25	22:20	0	85	80	Y(d)	N (Partial details received)	N (Partial details received)
6	GD-1	1) 220 KV Fatehabad(PG)-Fatehabad(HV) (HVPNL) Ckt-1 2) 220 KV Fatehabad(PG)-Fatehabad(HV) (HVPNL) Ckt-2 3) 220 KV Hissar(PG)-Fatehabad(HV) (HVPNL) Ckt-1 4) 220 KV Hissar(PG)-Fatehabad(HV) (HVPNL) Ckt-2 5) 220 KV Rania- Fatehabad(HV) (HVPNL) Ckt 6) 220/132 kv 200 MVA ICT 1 at Fatehabad(HV) 7) 220/132 kv 160 MVA ICT 2 at Fatehabad(HV) 8) 220/132 kv 200 MVA ICT 3 at Fatehabad(HV)	Haryana	PGCIL, HVPNL	9-Apr-25	02:06	0	85	480	Y(d)	N (Partial details received)	N (Partial details received)
7	GD-1	1) 220 KV Singoli Bhatwari (Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-1 2) 220 KV Singoli Bhatwari (Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-2 3) 33MW Unit-1 at Singoli Bhatwari HEP	Uttarakhand	Singoli, PTCUL	9-Apr-25	13:58	32	0	120	Y(d)	Y(d)	N (Partial details received)
8	GD-1	1) 400 KV Kala Amb(PKTL)-Sorang(Greenko) (Greenko) Ckt 2) 50 MW Unit-1 at Sorang (Greenko) 3) 50 MW Unit-2 at Sorang (Greenko)	Himachal Pradesh	PKTL, Greenko	10-Apr-25	17:29	26	0	NA	N	N	N
9	GD-1	1) 220 KV DandhariKalan(PS)-Ludhiana(PG) (PSTCL) Ckt-1 2) 220 KV DandhariKalan(PS)-Ludhiana(PG) (PSTCL) Ckt-2	Punjab	PGCIL, PSTCL	11-Apr-25	14:19	0	180	560	Y(d)	N (Partial details received)	N (Partial details received)
10	GD-1	1) 220 KV Renew SunBright SL_FGARH_PG (RSBPL)-Fatehgarh_II(PG) (RENEW SUN BRIGHT (RSBPL)) Ckt	Rajasthan	PGCIL, Renew Sun Bright	11-Apr-25	10:48	50	0	120	N (Partial details received)	N (Partial details received)	N (Partial details received)
11	GI-1	1) 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1 2) 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-2 3) 220 KV Unchahar(NT)-Raebareilly(PG) (PG) Ckt-3 4) 220/6 kv 50 MVA ST 3 at Unchahar(NT) 5) 210 MW Unchahar II TPS - UNIT 1 6) 210 MW Unchahar III TPS - UNIT 1	Uttar Pradesh	PGCIL, NTPC	13-Apr-25	05:54	320	0	640	Y(d)	Y(d)	N (Partial details received)
12	GD-1	i)400 KV Muzaffarnagar(UP)-Vishnuprayag(IP) (UP) Ckt ii)110 MW Vishnuparyag HPS - UNIT 2 iii)110 MW Vishnuparyag HPS - UNIT 3	Uttar Pradesh	UPPTCL	17-Apr-25	03:16	150	0	120	N (Partial details received)	N (Partial details received)	N (Partial details received)
13	GD-1	i)220 KV Salal(NH)-Jammu(PDD) (PG) Ckt-1 ii)220 KV Salal(NH)-Jammu(PDD) (PG) Ckt-2 iii)220 KV Kishenpur(PG)-Salal(NH) (PG) Ckt-1 iv)220 KV Kishenpur(PG)-Salal(NH) (PG) Ckt-2 v)220 KV Kishenpur(PG)-Salal(NH) (PG) Ckt-3 vi)220 KV Kishenpur(PG)-Salal(NH) (PG) Ckt-4 vii)115 MW Salal HPS - UNIT 1 viii)115 MW Salal HPS - UNIT 2 ix)115 MW Salal HPS - UNIT 4 x)115 MW Salal HPS - UNIT 6	J&K	NHPC, PGCIL and JKPD	16-Apr-25	19:43	455	0	120	Y(d)	N (Partial details received)	N (Partial details received)
14	GI-1	i)220 KV JESSORE(HP)-PONG(BB) (PG) CKT-1 ii)220KV BUS 2 AT PONG(BB) iii)220 KV JALANDHAR-PONG (BB) CKT-2 iv)220 KV PONG(BB)-DASUYA(PS) (BBMB) CKT-2 v)220 KV PONG(BB)-DASUYA(PS) (BBMB) CKT-1 vi)66MW Unit-6 at Pong(BB)	Himachal Pradesh	BBMB & HPSEB	16-Apr-25	21:18	52	0	120	Y(d)	N (Partial details received)	N (Partial details received)
15	GD-1	i)220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt ii)60 MW Bairasiul HPS - UNIT 1 iii)60 MW Bairasiul HPS - UNIT 2 iv)60 MW Bairasiul HPS - UNIT 3	Himachal Pradesh	NHPC & BBMB	16-Apr-25	21:28	180	0	400	N	N	N

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

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

Grid Events to be discussed in 60th PSC Meeting

S.No.	Category of Grid Incident/ Disturbance (Grid-A to Grid-V)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Event (As reported)	Loss of generation / loss of load during the Grid Disturbance		Fault Clearance time (in ms)	Points of discussion
					Date	Time		Generation Loss(MW)	Load Loss (MW)		
1	GD-1	1) 220/33 kV 160 MVA ICT 1 at Thar Surya SL_BKN_PG (TS1PL)	Rajasthan	Thar Surya(I)P	7-Apr-25	10.02	i)Generation of 220/33 kV Thar Surya (IP) station evacuates via 220 kV Bikaner(PG)-Thar Surya(IP) Ckt through 220/33 kV 160 MVA ICT 1 & 2 at Thar Surya SL_BKN_PG (TS1PL). During antecedent condition, 220/33 kV 160 MVA ICT 2 at Thar Surya SL_BKN_PG (TS1PL) was already out (tripped at 14:27 hrs on 06-06-2025 due to phase-to-phase fault). 220 kV Thar Surya (IP) was generating approx. 155 MW (as per PMU). ii)As reported, at 10:02hrs, 220/33 kV 160 MVA ICT 1 at Thar Surya SL_BKN_PG (TS1PL) tripped due to heavy sparking on LV side bay 309 (exact nature, location and reason of fault yet to be received). iii)Due to tripping of 220/33 kV 160 MVA ICT 1 at Thar Surya SL_BKN_PG (TS1PL), 220 kV Thar Surya (IP) 5/6 lost its connectivity from grid and blackout occurred at 220 kV Thar Surya (IP) 5/6. iv)As per PMU at 400kV Bikaner(IP), B-N phase to phase fault is observed with delayed fault clearing time of 240ms. v)As per PMU, auto generation loss of approx. 155 MW was observed at 220 kV Thar Surya (IP).	155	0	240	Details analysis of the event and remedial action taken details.
2	GD-1	1) 220 kV Fatehabad(PG)-Fatehabad(HV) (HVPNL) Ckt-1 2) 220 kV Fatehabad(PG)-Fatehabad(HV) (HVPNL) Ckt-2 3) 220 kV Hissar(PG)-Fatehabad(HV) (HVPNL) Ckt-1 4) 220 kV Hissar(PG)-Fatehabad(HV) (HVPNL) Ckt-2 5) 220 kV Rana- Fatehabad(HV) (HVPNL) Ckt 6) 220/132 kV 200 MVA ICT 1 at Fatehabad(HV) 7) 220/132 kV 160 MVA ICT 2 at Fatehabad(HV) 8) 220/132 kV 200 MVA ICT 3 at Fatehabad(HV)	Haryana	PGCIL, HVPNL	9-Apr-25	02.06	i)220/132kV Fatehabad(HV) has double main bus scheme at 220kV level. ii)As reported, at 22:20 hrs, B-phase CT of 220kV bus-coupler damaged which further led to bus bar protection operation at both the 220kV buses of Fatehabad(HV). iii)Due to busbar operation, all the elements connected to 220kV Bus-1 & 2 at Fatehabad(HV) tripped and complete blackout occurred at 220/132kV Fatehabad(HV). iv)As per PMU at Fatehabad(PG), R-N phase to earth fault is observed with delayed fault clearing time of 480 ms. v)As per SCADA, change in demand of approx. 85 MW is observed in Haryana control area.	0	85	480	Details analysis of the event and remedial action taken details.
3	GD-1	1) 220 kV Dandhar(Kalan)(PS)-Ludhiana(PG) (PSTCL) Ckt-1 2) 220 kV Dandhar(Kalan)(PS)-Ludhiana(PG) (PSTCL) Ckt-2	Punjab	PGCIL, PSTCL	11-Apr-25	14.19	i)During antecedent condition, 220kV Jamalpur(BB)-Dandhar(Kalan)(PS) (PSTCL) Ckt-1 and 2 were under planned shutdown. ii)As reported, at 14:19 hrs, 220 kV Dandhar(Kalan)(PS)-Ludhiana(PG) (PSTCL) Ckt-1 and 2 tripped on B-N phase to earth fault (exact nature, location and reason of fault yet to be shared). iii)Due to tripping of all the 220kV elements complete blackout occurred at 220kV/60kV Dandhar(Kalan)(PS). iv)As per PMU at Ludhiana(PG), two consecutive B-N phase to earth fault is observed with fault clearing time of 120ms and 560ms (delayed) respectively. v)As per SCADA, change in demand of approx. 180 MW is observed in Punjab control area.	0	180	560	Details analysis of the event and remedial action taken details.
4	GI-1	1) 220 kV Kamrupi(PG)-Unchahar(NT) (PG) Ckt-1 2) 220 kV Kamrupi(PG)-Unchahar(NT) (PG) Ckt-2 3) 220 kV Unchahar(NT)-Raebareilly(PG) (PG) Ckt-3 4) 220/6 kV 50 MVA ST 3 at Unchahar(NT) 5) 210 MW Unchahar II TPS - UNIT 1 6) 210 MW Unchahar III TPS - UNIT 1	Uttar Pradesh	PGCIL, NTPC	13-Apr-25	05.54	i)During antecedent condition, 210 MW Unchahar II TPS - UNIT 1 and 210 MW Unchahar III TPS - UNIT 1 were generating approx. 185 MW and 135 MW respectively (as per SCADA). ii)As reported, at 05:54 hrs, line CB at Unchahar end of 220 kV Kamrupi(PG)-Unchahar(NT) (PG) Ckt-1 failed and LBB protection operated. This led to tripping of 220kV Bus-1 at Unchahar TPS. iii)Due to LBB protection operation 210 MW Unchahar II TPS - UNIT 1 and 210 MW Unchahar III TPS - UNIT 1 also tripped. iv)During the same time, 220 kV Unchahar(NT)-Raebareilly(PG) (PG) Ckt-3 tripped on directional earth fault protection operation (exact reason yet to be shared). v)As per PMU at Kamrupi(PG), R-N phase to earth fault is observed with delayed fault clearing time of 640ms. vi)As per SCADA, generation loss of approx. 185 MW at Unchahar-II TPS and approx. 135 MW at Unchahar-III TPS is observed.	320	0	640	Details analysis of the event and remedial action taken details.
5	GD-1	i)220 kV Baisraul(NH)-Pong(BB) (PG) Ckt ii)60 MW Baisraul HPS - UNIT 1 iii)60 MW Baisraul HPS - UNIT 2 iv)60 MW Baisraul HPS - UNIT 3	Himachal Pradesh	NHPC & BMBB	16-Apr-25	21:28	i)During antecedent condition, 220kV Jessorah(PH)-Pong(BB) (PG) Ckt and 220kV Jessorah(H)-RSDPH (PG) Ckt were not in service. 60 MW Baisraul HPS - UNIT 1, 2 and 3 were generating 60 MW each (as per SCADA). ii)As reported, at 21:28 hrs, 220 kV Baisraul(NH)-Pong(BB) (PG) Ckt tripped on R-N phase to ground fault with fault distance of 79km from Baisraul end due to inclement weather conditions. iii)Due to tripping of 220 kV Baisraul(NH)-Pong(BB) (PG) Ckt and 220kV Jessorah(H)-RSDPH (PG) Ckt and 220kV Jessorah(H)-RSDPH Ckt already not in service, 60 MW Baisraul HPS - UNIT 1, 2 and 3 tripped on over-speeding due to loss of evacuation path and complete blackout occurred at 220kV Baisraul(NH) 5/6. iv)Further at 22:06 hrs, Cts of 220 kV Baisraul(NH)-Jessorah(PG) Ckt were manually opened (no power flow). v)As per PMU at Pong(BB), two consecutive R-N phase to earth faults were observed with fault clearing time of 80ms and 400ms (delayed) respectively. vi)As per SCADA, generation loss of approx. 180 MW at Baisraul HEP (NH) is observed.	180	0	400	Details analysis of the event and remedial action taken details.
6	GD-1	i)220 kV Sec 72 - Sec52 (HVPNL) ii)400/220kV 315 MVA ICT 1 at Gurgaon(PG) iii)400/220kV 315 MVA ICT 2 at Gurgaon(PG) iv)400/220kV 500 MVA ICT 3 at Gurgaon(PG) v)400/220kV 500 MVA ICT 4 at Gurgaon(PG) vi)220 kV Gurgaon(PG)-Gurgaon-Sec72(HV)(HVPNL)-3	Haryana	HVPNL & PGCIL	17-Apr-25	13.59	i)400/220kV Gurgaon(PG) and 220/64/33kV Gurgaon-Sec72 has double main bus system in 220kV side. 220kV Sec72 Gurgaon(HR) has source from 400/220kV Gurgaon(PG) station through four 220kV feeders. 220kV Gurgaon(PG)-Sec72 Gurgaon ckt-4 was under shutdown since 02.12.2024. ii)As reported, at 13:59 hrs, Y-B fault occurred on 220 kV Sec-72 Gurgaon -Sec52 Gurgaon (HR) line. Fault occurred due to fire incident due to blast in HCG (Haryana City Gas) pipeline under the linetower no 45-46, leading to melting of Y & B ph conductor. At the same time B-ph CT of 220 kV Sec72 Gurgaon -Sec52 Gurgaon (HR) line at Sec72 Gurgaon(HR) end also got damaged (blast). iii)As per PMU at Gurgaon(PG), B-N phase to earth fault converted into Y-B fault with delayed clearance of ~1800ms is observed. iv)On this fault, distance protection as well as back up Dr. F.O.C protection at Sec72 Gurgaon(HR) end didn't operate. v)Fault cleared with the tripping of all four 400/220kV CTS (2*13.5 + 2*500MVA) at Gurgaon(PG) on back up overcurrent protection operation. 220kV Gurgaon(PG)-Gurgaon72 ckt-3 also tripped from Gurgaon(PG) end on overcurrent protection. vi)With the tripping of all four ICTs at Gurgaon(PG), supply to 220kV Sec72 Gurgaon(HR) got lost. vii)As per SCADA, change in demand of approx. 615MW in Haryana control area is observed. viii)220/64/33 kV Cts at Gurgaon(RS) restarted back between, 15:13 hrs - 15:50 hrs and supply to Sec72 Gurgaon(HR) resumed.	0	815	1800	Details analysis of the event and remedial action taken details.
7	GI-1	i)220 kV BHIWANI-CHARKHI DADRI (BB) Ckt-1 ii)220 kV BHIWANI-CHARKHI DADRI (BB) Ckt-2 iii)220 kV BHIWANI-CHARKHI DADRI (BB) Ckt-3 iv)220 kV BHIWANI-CHARKHI DADRI (BB) Ckt-4 v)220 kV CHARKHI DADRI-SAMAPUR (BB) Ckt-1 vi)220 kV BALLABGARH-CHARKHI DADRI (BB) Ckt-1 vii)220 kV PANIPAT-CHARKHI DADRI (BB) Ckt-1	Haryana	BMBB	25-Apr-25	16:52	i)220kV Charkhi Dadri(HR) has double main scheme in 220kV. ii)During antecedent condition, 220 kV BHIWANI-CHARKHI DADRI (BB) Ckt 1, 2, 3, 4, were carrying 50MW, 51MW, 52MW and 49MW respectively. iii)As reported, at 16:49 hrs, 220 kV BALLABGARH-CHARKHI DADRI (BB) Ckt-1 tripped due to R-N phase to earth fault. 2-2 distance protection operated and Fault location - 129.3km from Ballabgarh end. iv)At 16:52 hrs, 220 kV PANIPAT-CHARKHI DADRI (BB) Ckt-1 tripped due to R-N fault. 2-2 distance protection operated, the fault current is 1.72KA and fault location is 1100km from Panipat(BMBB) s/nth. v)At 16:53 hrs, 220 kV CHARKHI DADRI-SAMAPUR (BB) Ckt-1 tripped due to R-N fault. 2-1 protection operated, fault current = 4.6KA and the fault distance was 1366M from Samapur end. vi)At 16:55 hrs, 220 kV BHIWANI-CHARKHI DADRI (BB) Ckt-2, Ckt-3, Ckt-4 and Ckt-4 were hand tripped due to fire at Charkhi Dadri s/nth. Exact cause of fire is s/nth needs to be shared. vii)During this event, change in demand of 109 MW was observed in SLDC Haryana control area as per SCADA. viii)As per PMU, R-N phase to earth-fault was observed and delayed fault clearance time of upto 360ms was observed.	0	109	360	Details analysis of the event and remedial action taken details.
8	GD-1	i)220 kV Lalotser(RS) Dausa(RS) (PG) Ckt-1 ii)220 kV Antant(N) Lalotser(RS) (PG) Ckt-1	Rajasthan	PGCIL, NTPC & RVNL	26-Apr-25	17.06	i)220/132kV Lalotser(RS) has double main bus scheme at both 220kV and 132kV voltage level. ii)During antecedent condition, 220 kV Lalotser(RS) Dausa(RS) (PG) Ckt-1 and 220 kV Antant(N) Lalotser(RS) (PG) Ckt-1 were carrying 30MW and 49MW of load respectively. iii)As reported, at 17:06 hrs, 220 kV Lalotser(RS) Dausa(RS) (PG) Ckt-1 tripped due to B-N phase to earth fault. 2-2 distance protection operated and fault current was 4.95KA. It is interesting to note that 2-4 protection for the same line operated after 2-2 distance protection operated. iv)Consequently, at the same time 220 kV Antant(N) Lalotser(RS) (PG) Ckt-1 also tripped due to B-N phase to earth fault only. The fault current observed was 6.84KA. v)Following these events due to loss of both transmission line in 220kV side, complete blackout of 220/132kV Lalotser s/nth occurred. vi)During this event, change in demand of 116 MW was observed in Rajasthan control area as per SCADA. vii)As per PMU, B-N phase to earth-fault was observed with unsuccessful A/N and delayed fault clearance time of upto 360ms was observed.	0	116	360	Details analysis of the event and remedial action taken details.
Utilities are requested to prepare detailed analysis report and present the event details during 58th PSB meeting of following grid events (Events involving more than one utility may be joint/for prepared and presented)											

Tripping event at 220/33KV Thar Surya1(IP)

At 10:02 hrs on 07.04.2025

Tripped Elements

S. No	Name of Elements	Outage Time	Revival Time	Reason of tripping
1.	220/33 kV 160 MVA ICT 1 at Thar Surya1 SL_BKN_PG (TS1PL)	10:02 <u>hrs</u>	11:44 <u>hrs</u>	Tripped due to heavy sparking on LV side bay 309.

Brief details of the event

- i) Generation of 220/33 KV Thar Surya1 (IP) station evacuates via 220 KV Bikaner(PG)-Thar Surya1(IP) Ckt through 220/33 kv 160 MVA ICT 1 & 2 at Thar Surya1 SL_BKN_PG (TS1PL).
- ii) During antecedent condition, 220/33 kv 160 MVA ICT 2 at Thar Surya1 SL_BKN_PG (TS1PL) was already out (tripped at 14:27 hrs on 06.04.2025 due to pressure release valve operated). 220 KV Thar Surya1 (IP) was generating approx. 155 MW (as per PMU).
- iii) As reported, at 10:02hrs, 220/33 kv 160 MVA ICT 1 at Thar Surya1 SL_BKN_PG (TS1PL) tripped due to heavy sparking on LV side bay 309 (exact nature, location and reason of fault yet to be received).
- iv) Due to tripping of 220/33 kv 160 MVA ICT 1 at Thar Surya1 SL_BKN_PG (TS1PL), 220 KV Thar Surya1 (IP) S/s lost its connectivity from grid and blackout occurred at 220 KV Thar Surya1 (IP) S/s.
- v) As per PMU at 400kV Bikaner(IP), B-N phase to phase fault is observed with delayed fault clearing time of 240ms.
- vi) As per PMU at TS1PL(IP), solar generation loss of approx. 155 MW was observed at 220 KV Thar Surya1 (IP).

SLD of 220/33KV Thar Surya1(IP) before the event

CONTACT DETAILS

EMAIL	--
MOBILE	--
HOTLINE	20112529

THAR SURYA 1 (300 MW)

Stat Expl GenSum Company

7 . 4 . 25 10 : 0 : 0



SLD of 220/33KV Thar Surya1(IP) after the event

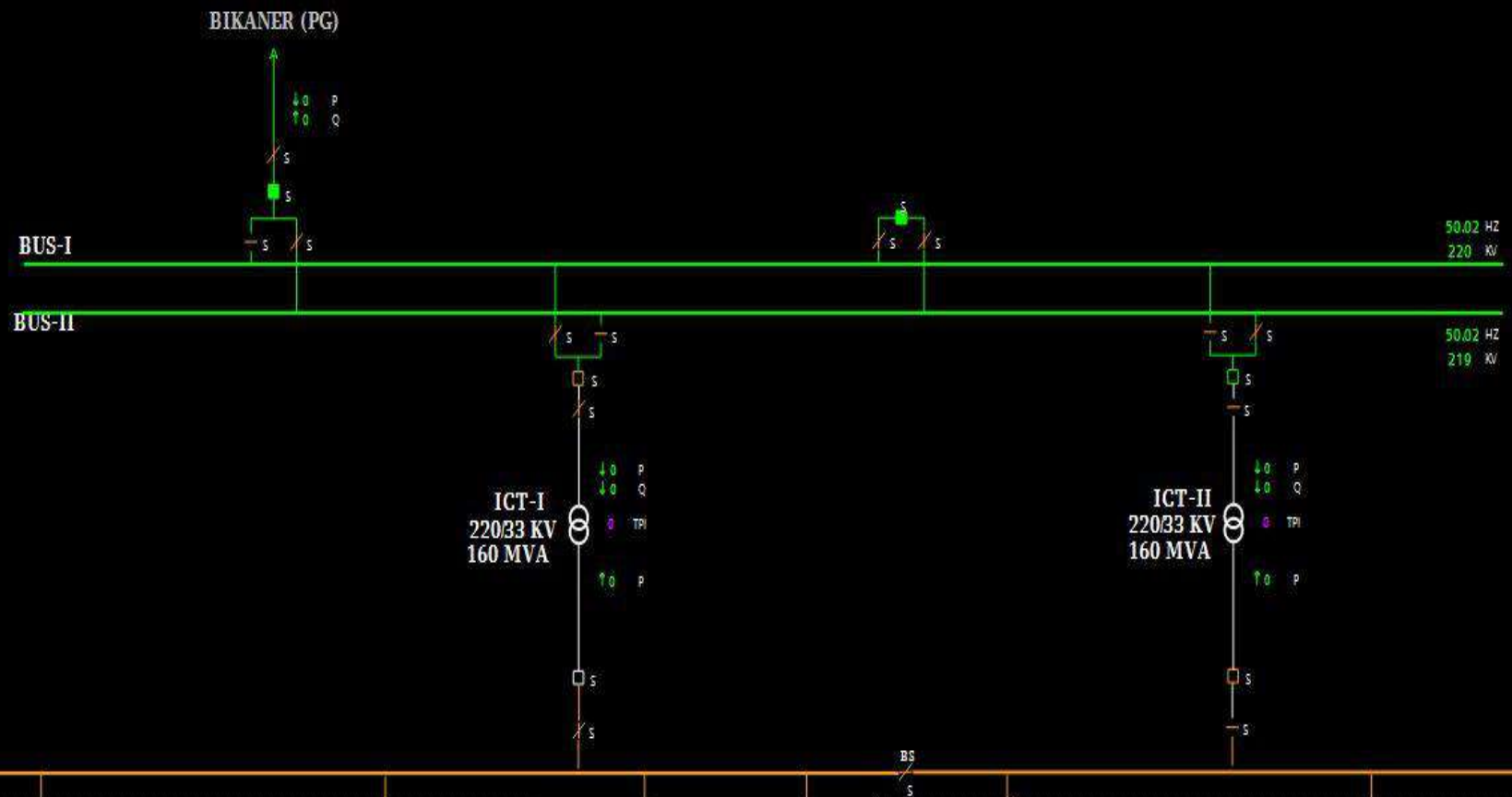
THAR SURYA 1 (300 MW)

Stat Expl GenSum Company

7 . 4 . 25 10 : 5 : 0

CONTACT DETAILS

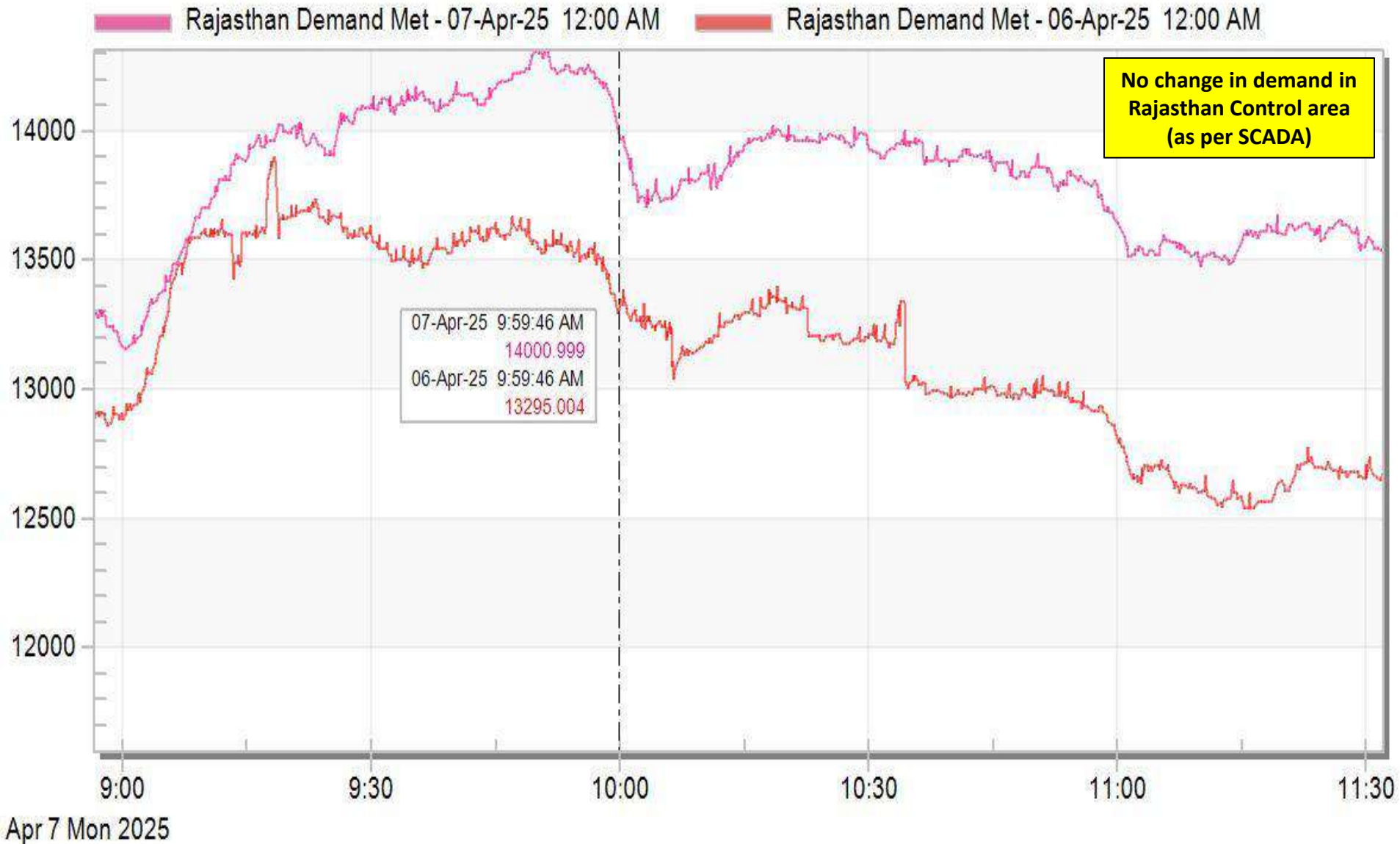
EMAIL	--
MOBILE	--
HOTLINE	20112529



Mon April 7 2025 10:05:00

Rajasthan Demand during the event

Rajasthan Demand Met



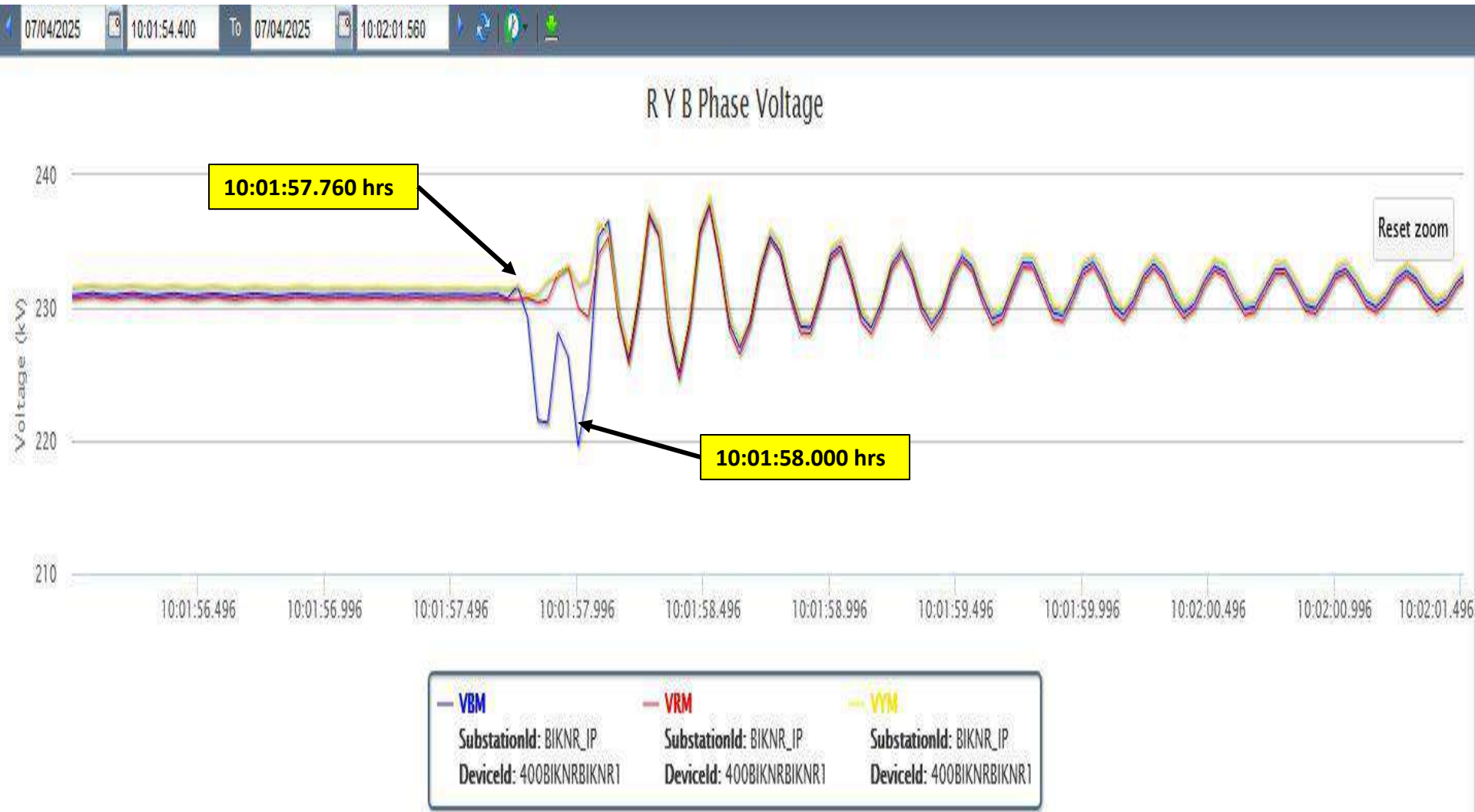
PMU Plot of frequency at Bikaner(IP)

10:02hrs/07-Apr-25



PMU Plot of phase voltage at Bikaner(IP)

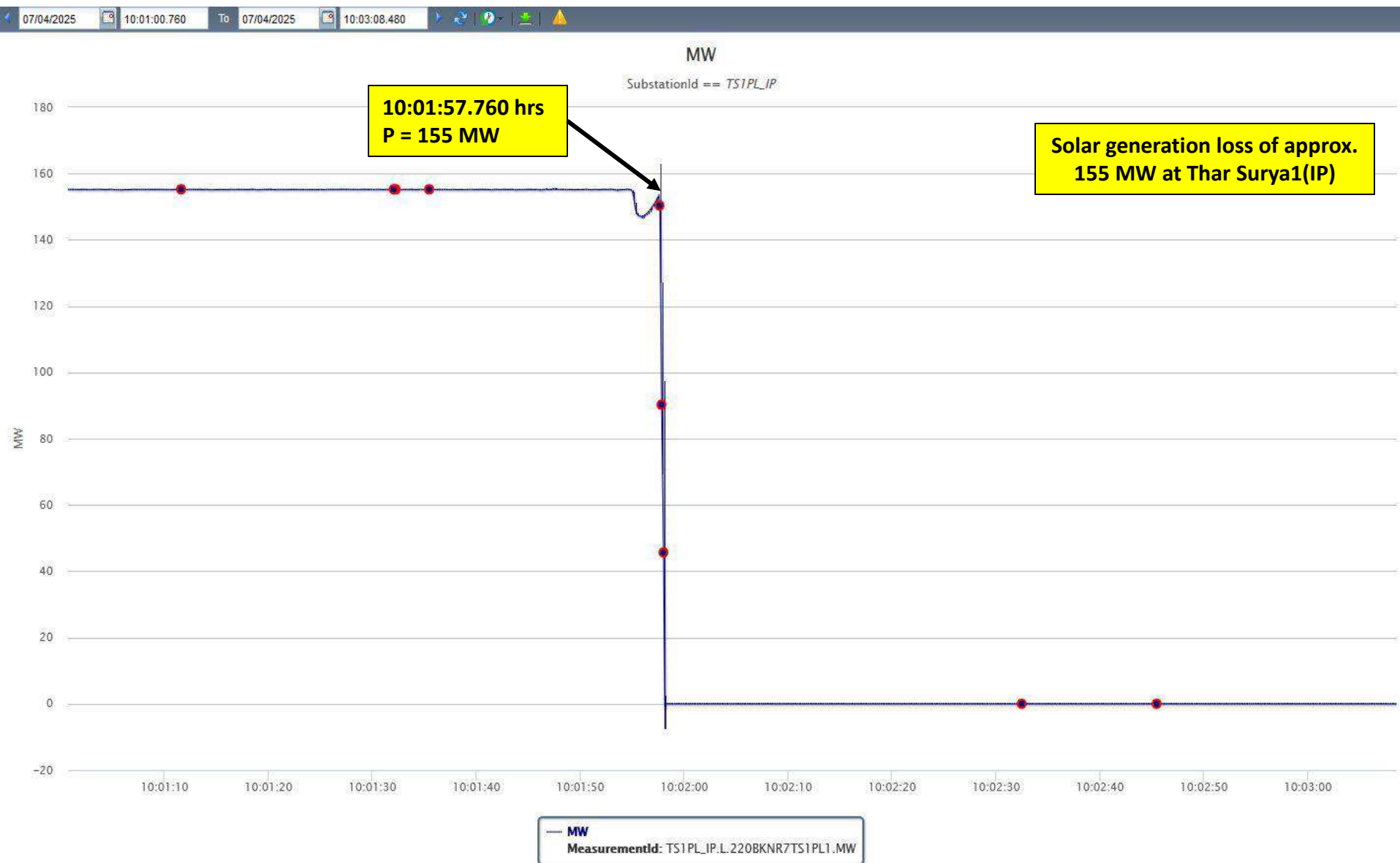
10:02hrs/07-Apr-25



✓ As per PMU, B-N fault is observed with delayed fault clearing time of 240ms.

PMU Plot of Active Power at Thar Surya1 (IP)

10:02hrs/07-Apr-25



Points for Discussion

- i) Exact nature, location and reason of fault need to be shared.
- ii) Reason of delayed clearance of fault need to be shared.
- iii) DR/EL along with tripping report need to be shared from plant end.
- iv) Remedial action taken report to be shared.

Multiple element tripping event at 220/132KV Fatehabad(HV)

At 02:06 hrs on 09.04.2025

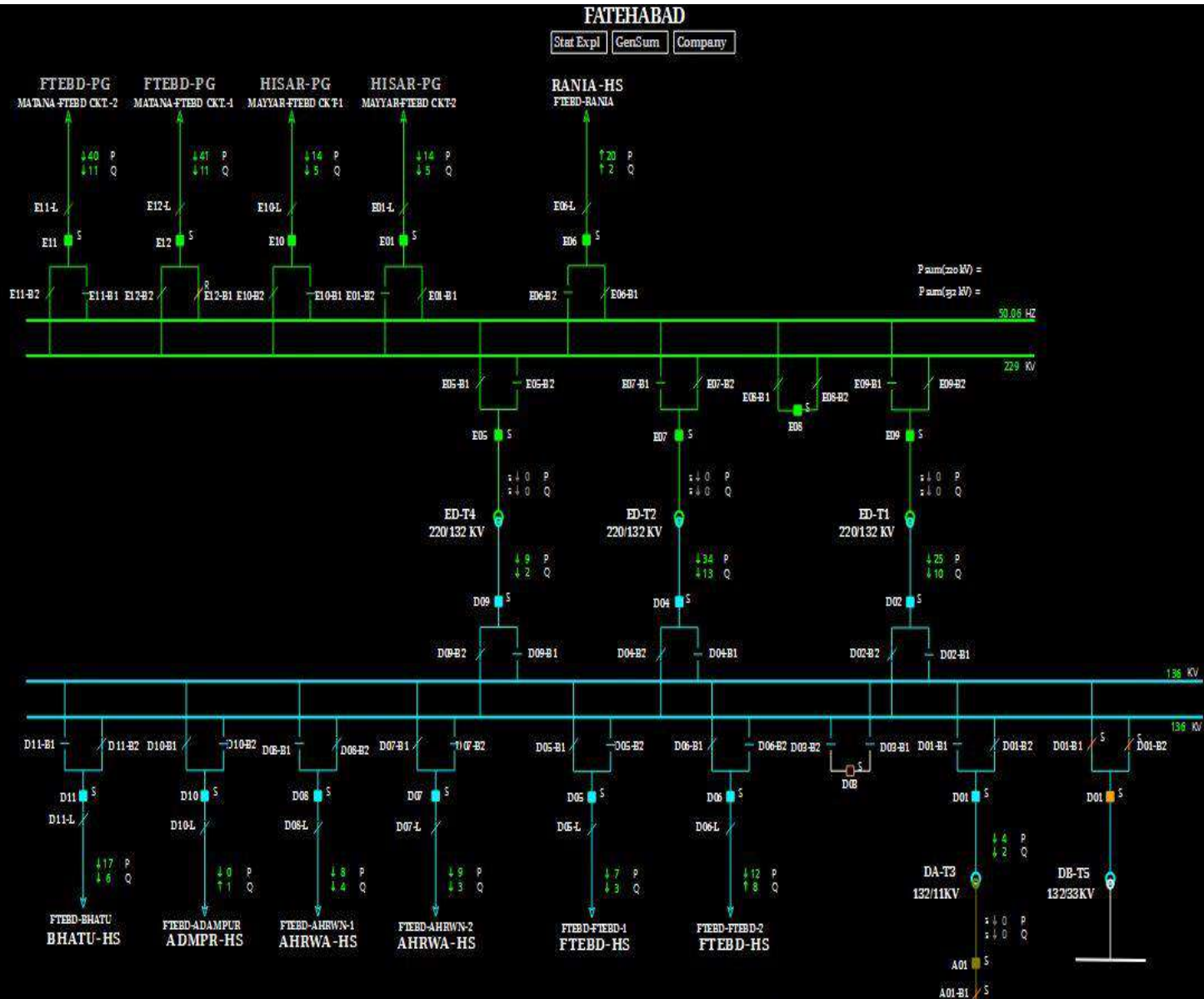
Tripped Elements

S. No	Name of Elements	Outage Time	Revival Time	Reason of tripping
1.	220 KV <u>Fatehabad(PG)-Fatehabad(HV) (HVPNL) Ckt-1</u>	02:06 <u>hrs</u>	05:48 hrs	Bus bar protection operated at <u>Fatehabad(HV)</u>
2.	220 KV <u>Fatehabad(PG)-Fatehabad(HV) (HVPNL) Ckt-2</u>		05:48 <u>hrs</u>	
3.	220 KV Hissar(PG)- <u>Fatehabad(HV) (HVPNL) Ckt-1</u>		06:17 <u>hrs</u>	
4.	220 KV Hissar(PG)- <u>Fatehabad(HV) (HVPNL) Ckt-2</u>		06:17 <u>hrs</u>	
5.	220 KV Rania- <u>Fatehabad(HV) (HVPNL) Ckt</u>		03:36 <u>hrs</u>	
6.	220/132 kV 200 MVA ICT 1 at <u>Fatehabad(HV)</u>		05:49 <u>hrs</u>	
7.	220/132 kV 160 MVA ICT 2 at <u>Fatehabad(HV)</u>		04:35 <u>hrs</u>	
8.	220/132 kV 200 MVA ICT 3 at <u>Fatehabad(HV)</u>			

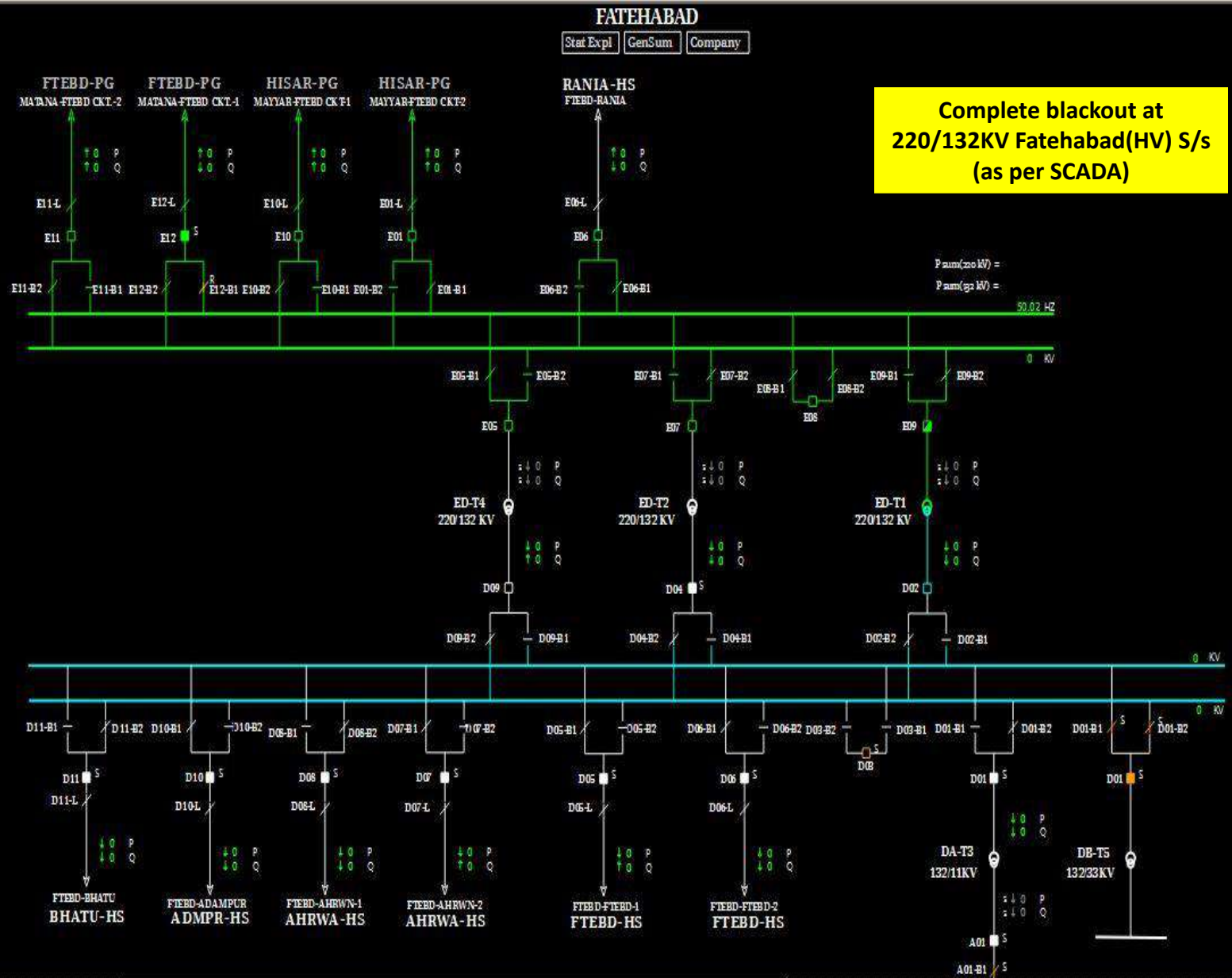
Brief details of the event

- i) 220/132KV Fatehabad(HV) has double main bus scheme at 220kV level.
- ii) As reported, at 22:20 hrs, R-phase CT of 220kV bus-coupler damaged which further led to bus bar protection operation at both the 220kV buses of Fatehabad(HV).
- iii) Due to busbar operation, all the elements connected to 220kV Bus-1 & 2 at Fatehabad(HV) tripped and complete blackout occurred at 220/132KV Fatehabad(HV).
- iv) As per PMU at Fatehabad(PG), R-N phase to earth fault is observed with delayed fault clearing time of 480 ms.
- v) As per SCADA, change in demand of approx. 85 MW is observed in Haryana control area.

SLD of 220/132KV Fatehabad(HV) before the event

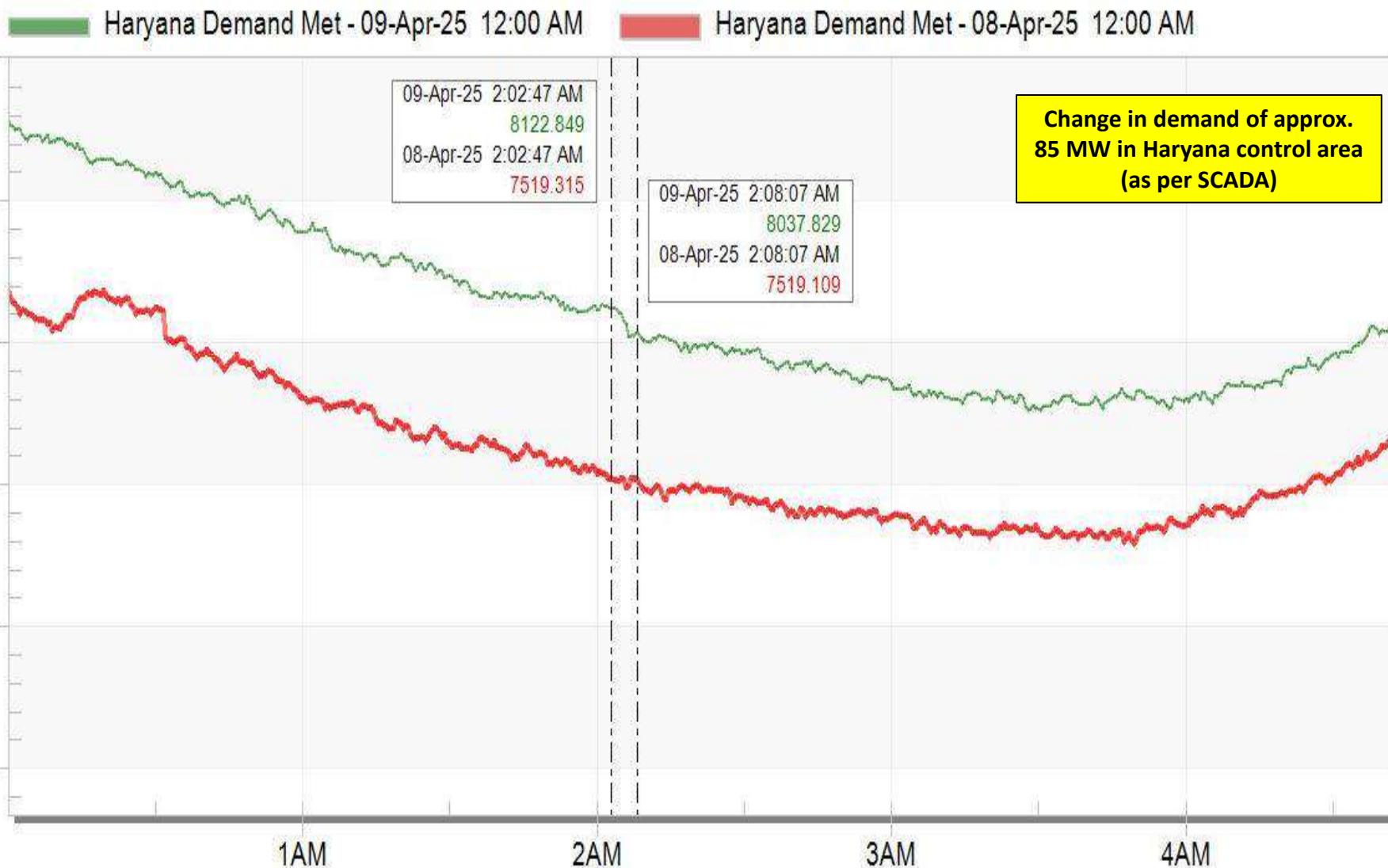


SLD of 220/132KV Fatehabad(HV) after the event

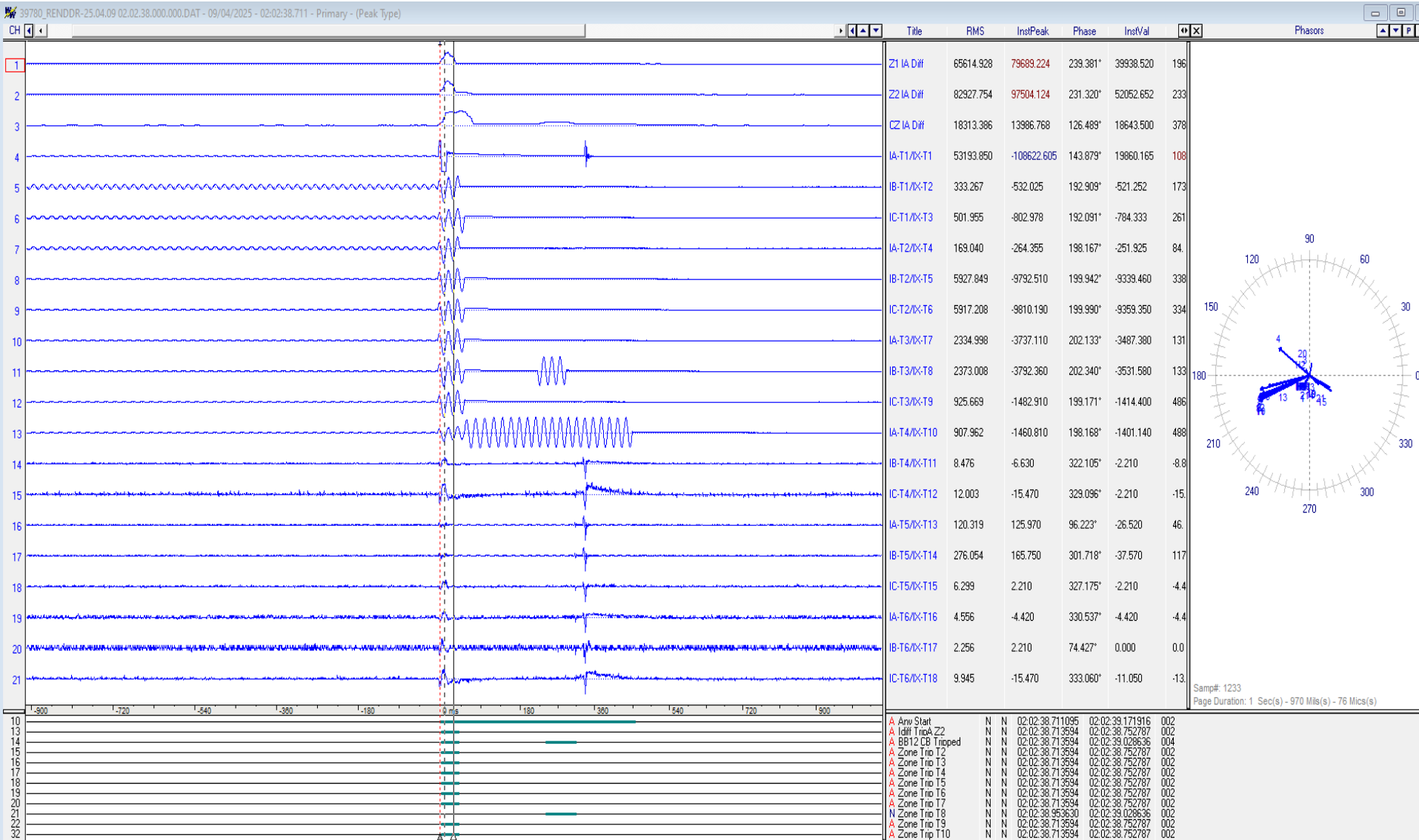


Haryana Demand during the event

Haryana Demand Met



DR of Busbar relay at Fatehabad(HV)



✓ Zone-2 busbar differential operated

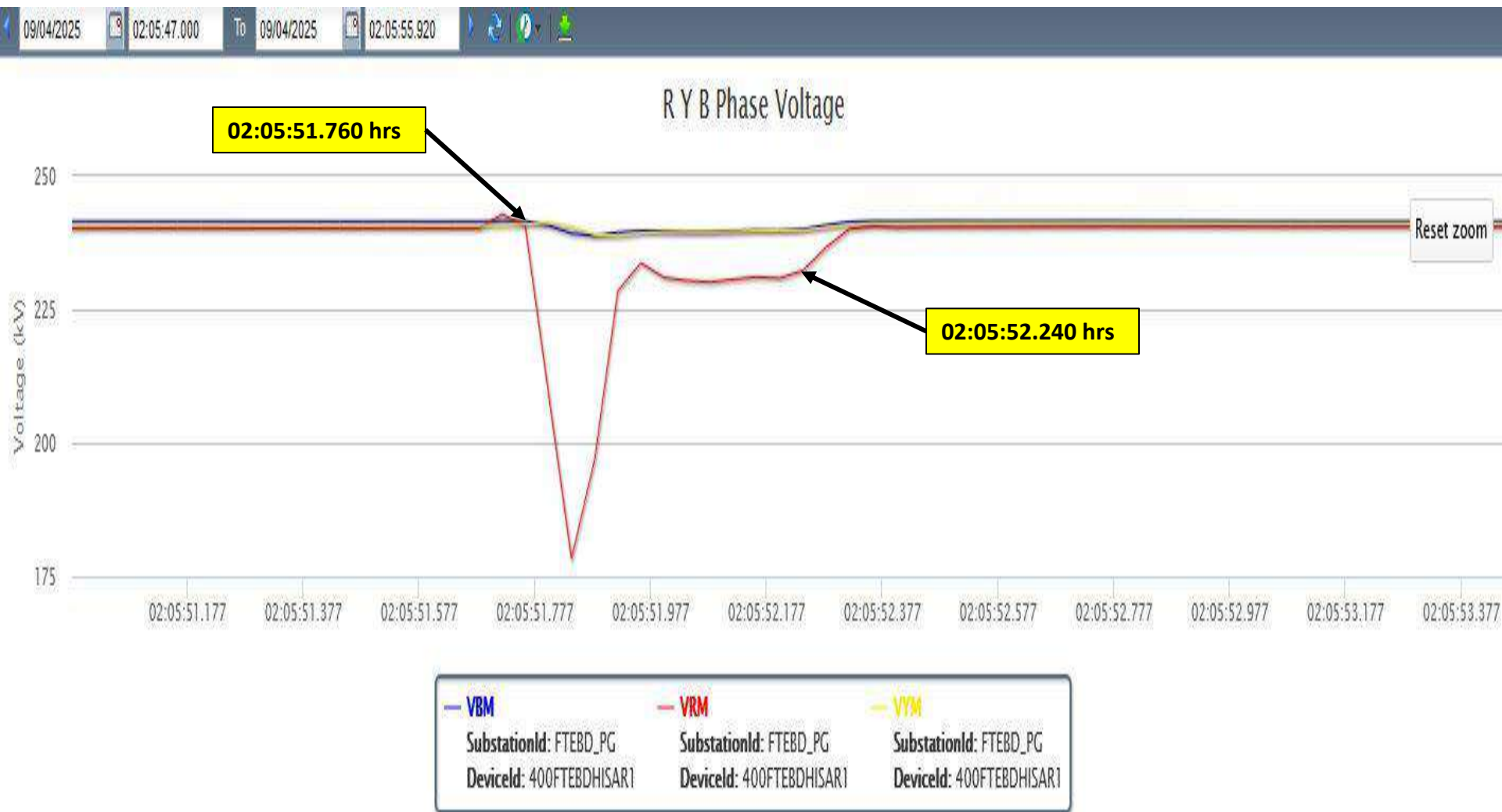
PMU Plot of frequency at Fatehabad(PG)

02:06hrs/09-Apr-25



PMU Plot of phase voltage at Fatehabad(PG)

02:06hrs/09-Apr-25



✓ As per PMU, R-N fault is observed with delayed fault clearing time of 480ms.

Points for Discussion

- i) Reason of delayed fault clearance need to be shared.
- ii) DR/EL along with tripping report need to be shared for each element from both the ends.
- iii) Remedial action taken report needs to be shared.

Report on multiple tripping occurred at 220 KV S/Stn. Fatehabad on dated 09.04.2025

Description of Disturbance

At 02:07 Hrs on dated 09.04.2025, the 220kV R-Phase Bus-Coupler CT at the 220 KV S/Stn. HVPNL Fatehabad got blast/damaged leading to the activation of Bus-bar protection (Bus-I and Bus-II) due to which all 220kV elements from 220kV S/Stn. HVPNL Fatehabad got tripped.

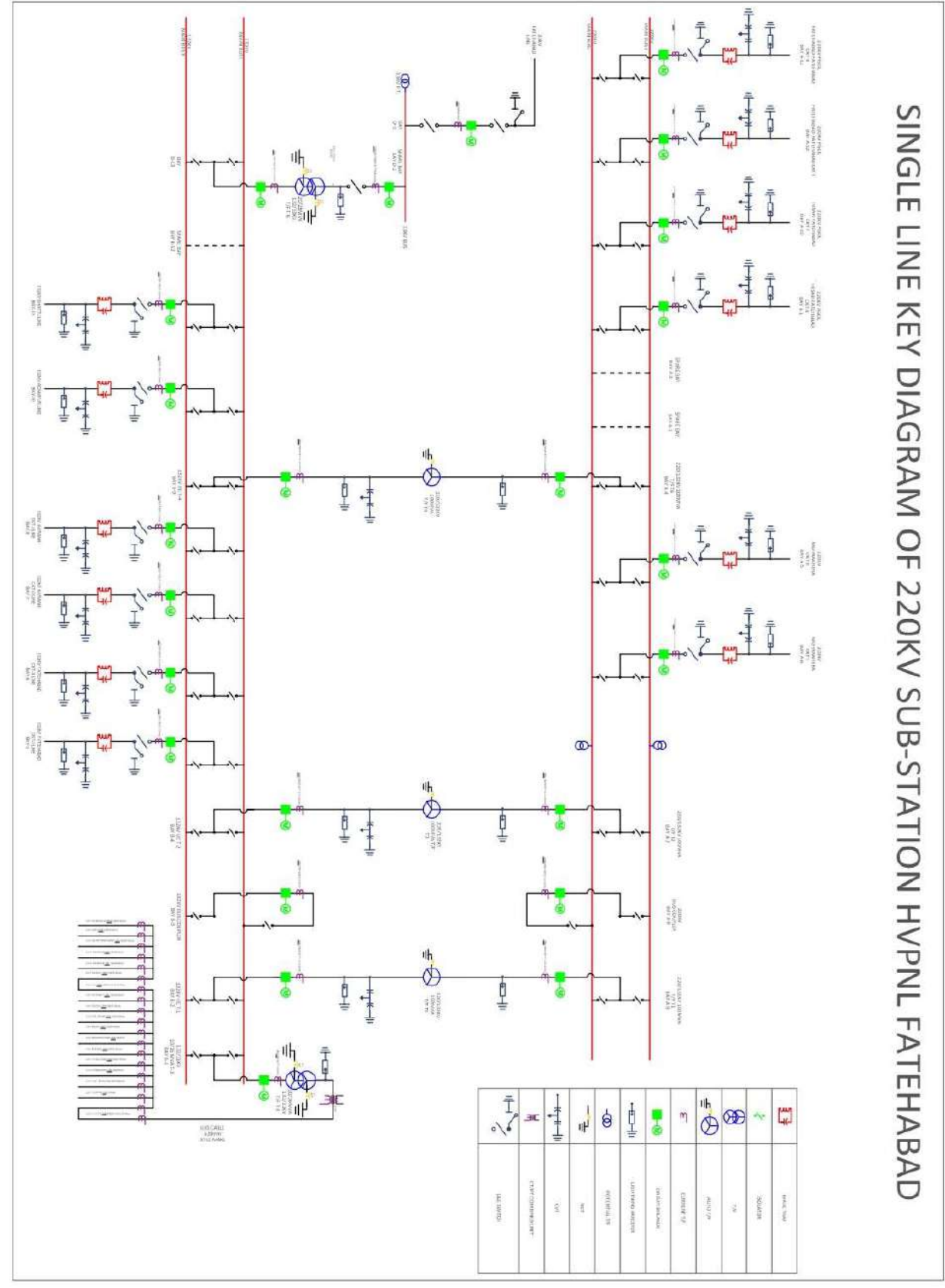
Name of tripped elements

- 220 KV PGCIL Fatehabad – Fatehabad Ckt. I
- 220 KV PGCIL Fatehabad – Fatehabad Ckt. II
- 220 KV PGCIL Hisar – Fatehabad Ckt. I
- 220 KV PGCIL Hisar – Fatehabad Ckt. II
- 220 KV Mehnakhera Ckt. I
- 220 KV Mehnakhera Ckt. II
- 220/132 KV 100 MVA T/F T-1
- 220/132 KV 160 MVA T/F T-2
- 220/132 KV 100 MVA T/F T-4
- 220 KV Bus Coupler

Tripping Details (Date : 09.04.2025)

Name of element	Tripping Time	Restoration Time	Relay Operated at Fatehabad end	Relay operated at other end
220 KV Bus Coupler	02:07 Hrs	20:22 Hrs	Busbar Protection operated	-
220 KV PGCIL Fatehabad – Fatehabad Ckt. I	02:07 Hrs	05:48 Hrs	Busbar Protection operated	Not Tripped
220 KV PGCIL Fatehabad – Fatehabad Ckt. II	02:07 Hrs	05:48 Hrs	Busbar Protection operated	Not Tripped
220 KV PGCIL Hisar – Fatehabad Ckt. I	02:07 Hrs	06:17 Hrs	Busbar Protection operated	Not Tripped
220 KV PGCIL Hisar – Fatehabad Ckt. II	02:07 Hrs	06:17 Hrs	Busbar Protection operated	Not Tripped
220 KV Mehna-khera Ckt. I	02:07 Hrs	02:59 Hrs	Busbar Protection operated	Not Tripped
220 KV Mehnakhera Ckt. II	02:07 Hrs	03:36 Hrs	Busbar Protection operated	DPR, Z-2, D=55.731km, R-ph, master86
220/132 KV 100 MVA T/F T-1	02:07 Hrs	05:35 Hrs	Busbar Protection Operated	-
220/132 KV 160 MVA T/F T-2	02:07 Hrs	04:35 Hrs	Busbar Protection Operated	-
220/132 KV 100 MVA T/F T-4	02:07 Hrs	05:40 Hrs	Busbar Protection Operated	-

Single Line Diagram



Antecedent Conditions

1. 220 KV Bus Coupler was in operation and coupled Bus-1 and Bus-2.
2. No 220 KV Lines or Transformers at 220 KV S/Stn. HVPNL Fatehabad were under shutdown/breakdown.
3. Transmission elements were connected as follows :

Sr. No.	220 KV Bus No. I	220 KV Bus No. II
1	220 KV Mehnakhara Ckt. II	220 KV PGCIL Fatehabad-Fatehabad Ckt. I
2	220 KV Hisar PGCIL Ckt. I	220 KV PGCIL Fatehabad-Fatehabad Ckt. II
3	220 KV Hisar PGCIL Ckt. II	220 KV Mehnakhara Ckt. I
4	220/132 KV 160 MVA T/F T-2	220/132 KV 100 MVA T/F T-1
5		220/132 KV 100 MVA T/F T-4

Analysis of Tripping

1. On dated 09.04.2025 at 02:07 Hrs, the 220kV R-Phase Bus Coupler CT got damaged due to internal fault with heavy blast at 220kV S/Stn. HVPNL Fatehabad.
2. Due to the heavy blast of the CT, Busbar Protection (Bus-I and Bus-II) got activated.
3. All the 220 KV elements on 220 KV Fatehabad end tripped as a result of busbar protection.
4. The fault was generated due to heavy blast of R-Phase Bus Coupler CT which led to the activation of busbar protection. The busbar protection-initiated command to all the 220 KV elements connected on Bus-I and Bus-II and all the elements were tripped.

Precautions

1. The 220 KV Bus Coupler CT (R-Phase) was installed at the earliest.

Multiple element tripping event at 220/66KV Dandharikalan(PS)

At 14:19 hrs on 11.04.2025

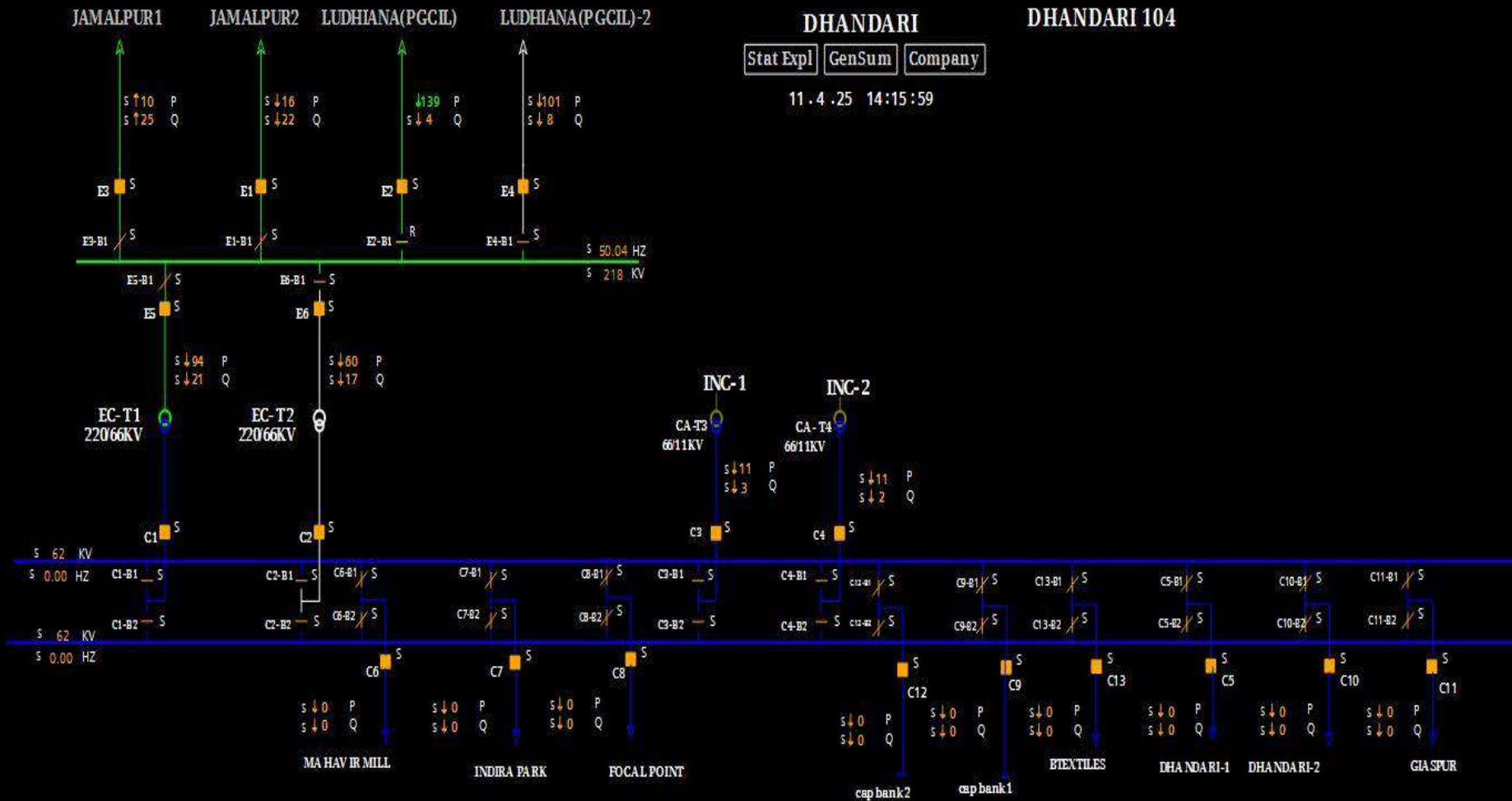
Tripped Elements

S. No	Name of Elements	Outage Time	Revival Time	Reason of tripping
1.	220 KV <u>DandhariKalanI</u> (PS)- Ludhiana(PG) (PSTCL) Ckt-1	14:19 <u>hrs</u>	18:02 hrs	B-N phase to earth fault
2.	220 KV <u>DandhariKalanI</u> (PS)- Ludhiana(PG) (PSTCL) Ckt-2		22:32 <u>hrs</u>	

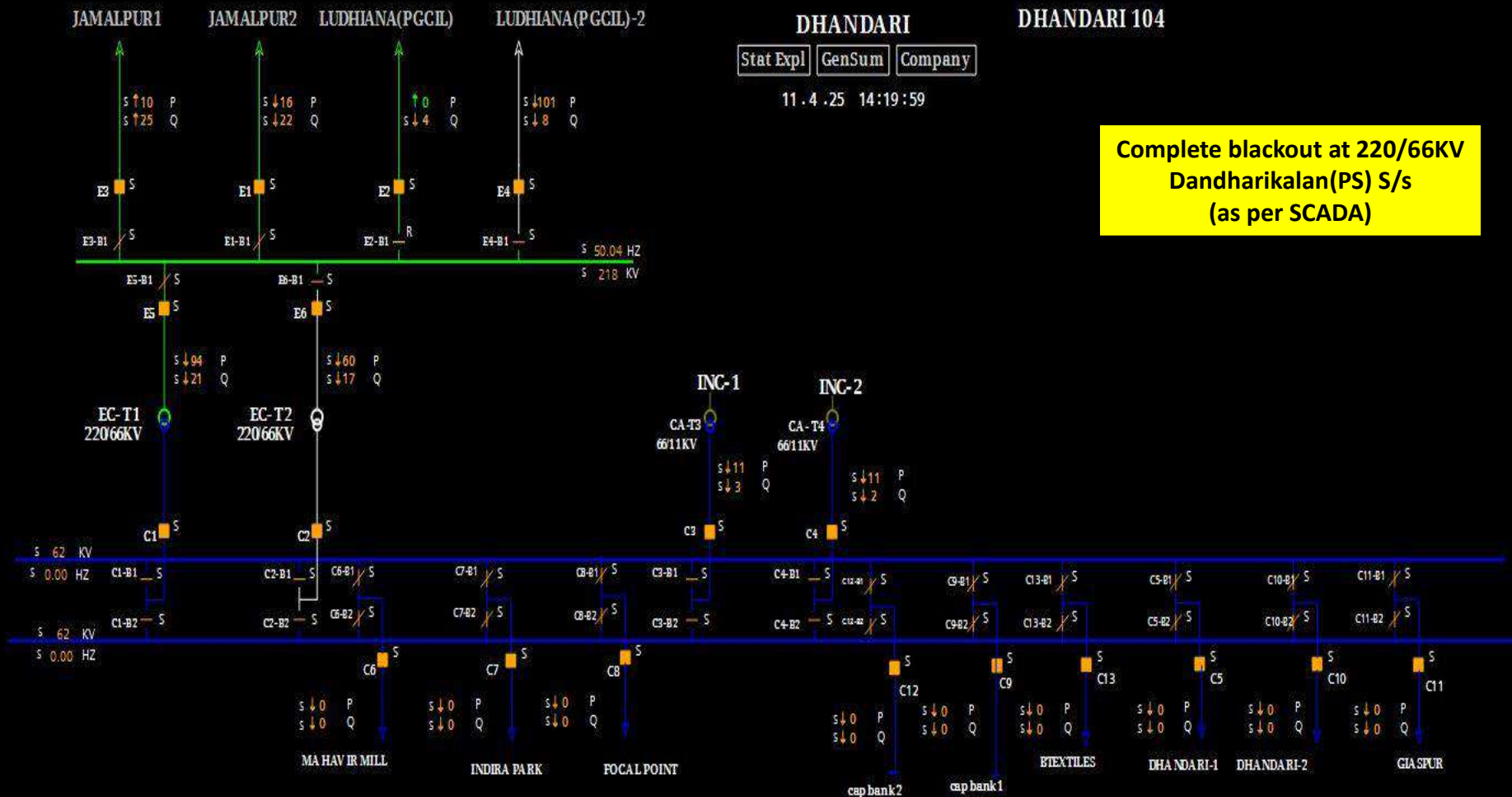
Brief details of the event

- i) During antecedent condition, 220kV Jamalpur(BB)-Dandharikalan(PS) (PSTCL) Ckt-1 and 2 were under planned shutdown.
- ii) As reported, at 14:19 hrs, 220 KV DandhariKalanI(PS)-Ludhiana(PG) (PSTCL) Ckt-1 tripped on B-N phase to earth fault with fault distance of 15.68km from Ludhiana(PG) end. As per DR at Ludhiana(PG), fault current was ~ 9.473 kA from Ludhiana(PG). Fault sensed in zone-2, but carrier-aided trip operated; fault clearing time was ~ 70 ms.
- iii) During the same time, 220 KV DandhariKalanI(PS)-Ludhiana(PG) (PSTCL) Ckt-2 also tripped on B-N phase to earth fault with fault distance of 6.74km from Ludhiana(PG) end. As per DR at Ludhiana(PG), fault current was ~ 7.919 kA from Ludhiana(PG). Zone-2 protection operated; fault clearing time was 550ms.
- iv) Due to tripping of all the 220kV elements complete blackout occurred at 220/66KV Dandharikalan(PS).
- v) As per PMU at Ludhiana(PG), two consecutive B-N phase to earth fault is observed with fault clearing time of 120ms and 560ms (delayed) respectively.
- vi) As per SCADA, change in demand of approx. 180 MW is observed in Punjab control area.

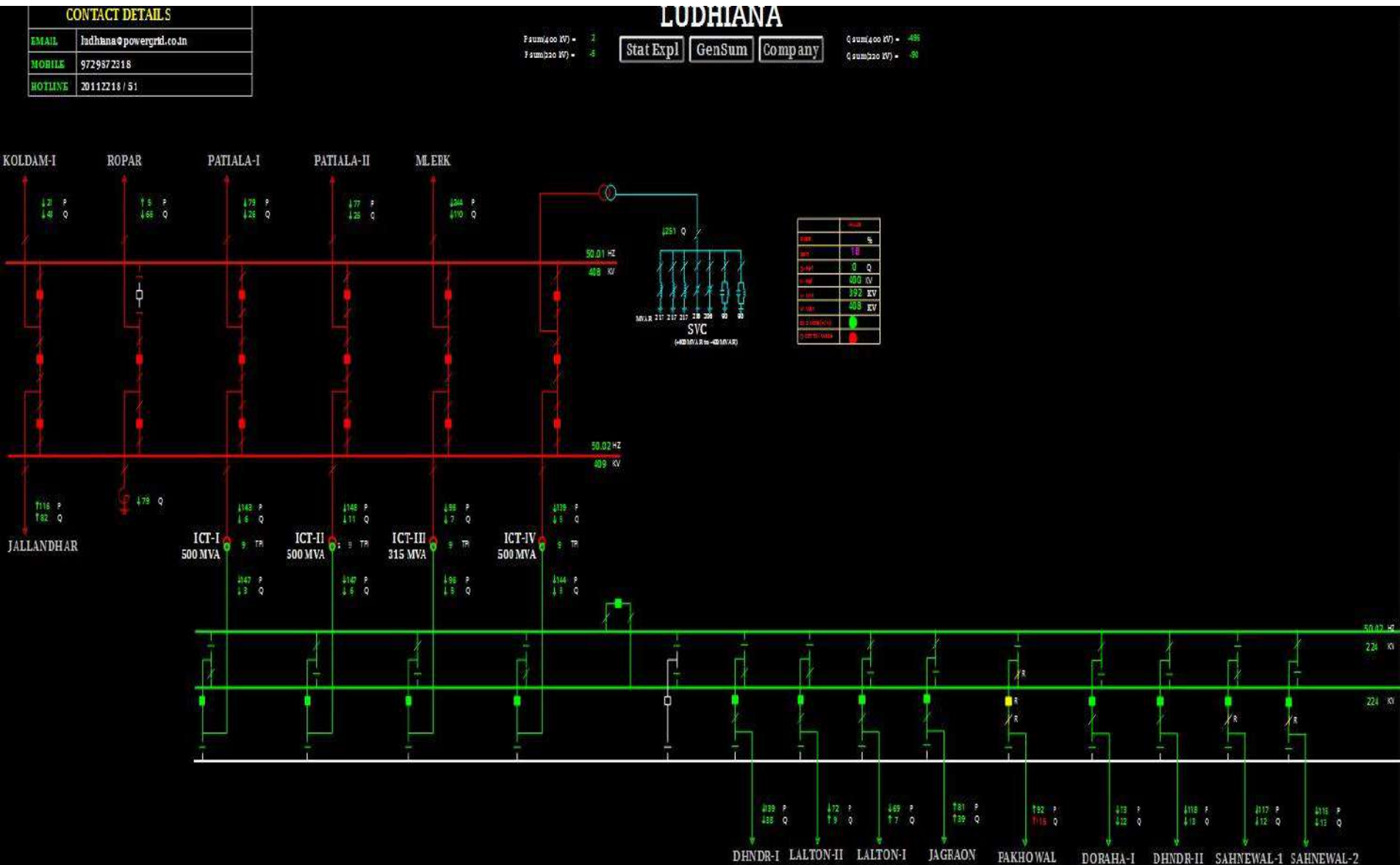
SLD of 220/66KV Dandharikalan(PS) before the event



SLD of 220/66KV Dandharikalan(PS) after the event



SLD of 400/220KV Ludhiana(PG) before the event



SLD of 400/220KV Ludhiana(PG) after the event

CONTACT DETAILS

EMAIL: ludhiana@powergrid.co.in
MOBILE: 9729872318
HOTLINE: 20112218 / 51

LUDHIANA

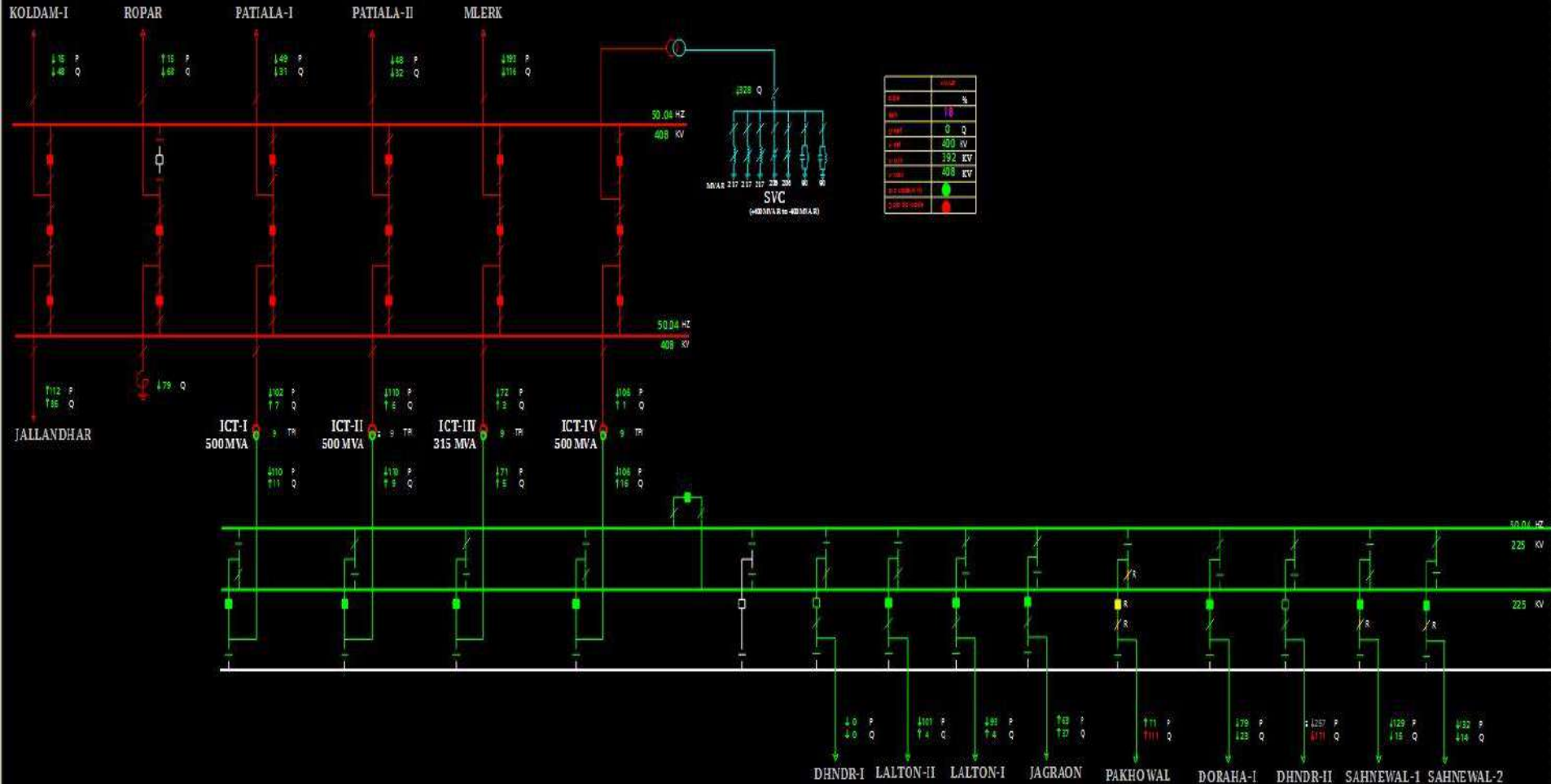
P sum(400 KV) = 4
P sum(220 KV) = 261

Stat Expl

GenSum

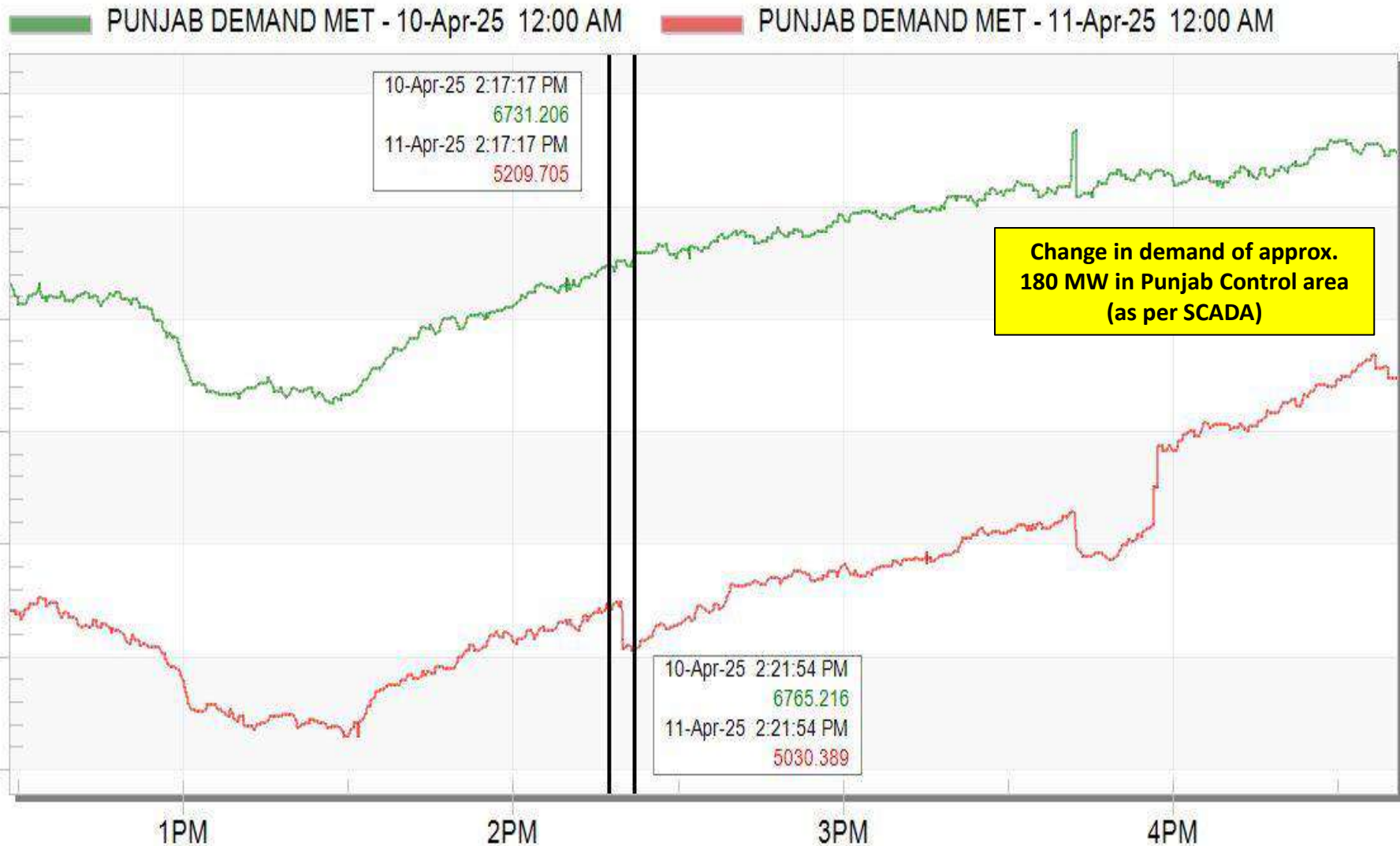
Company

Q sum(400 KV) = 484
Q sum(220 KV) = 108



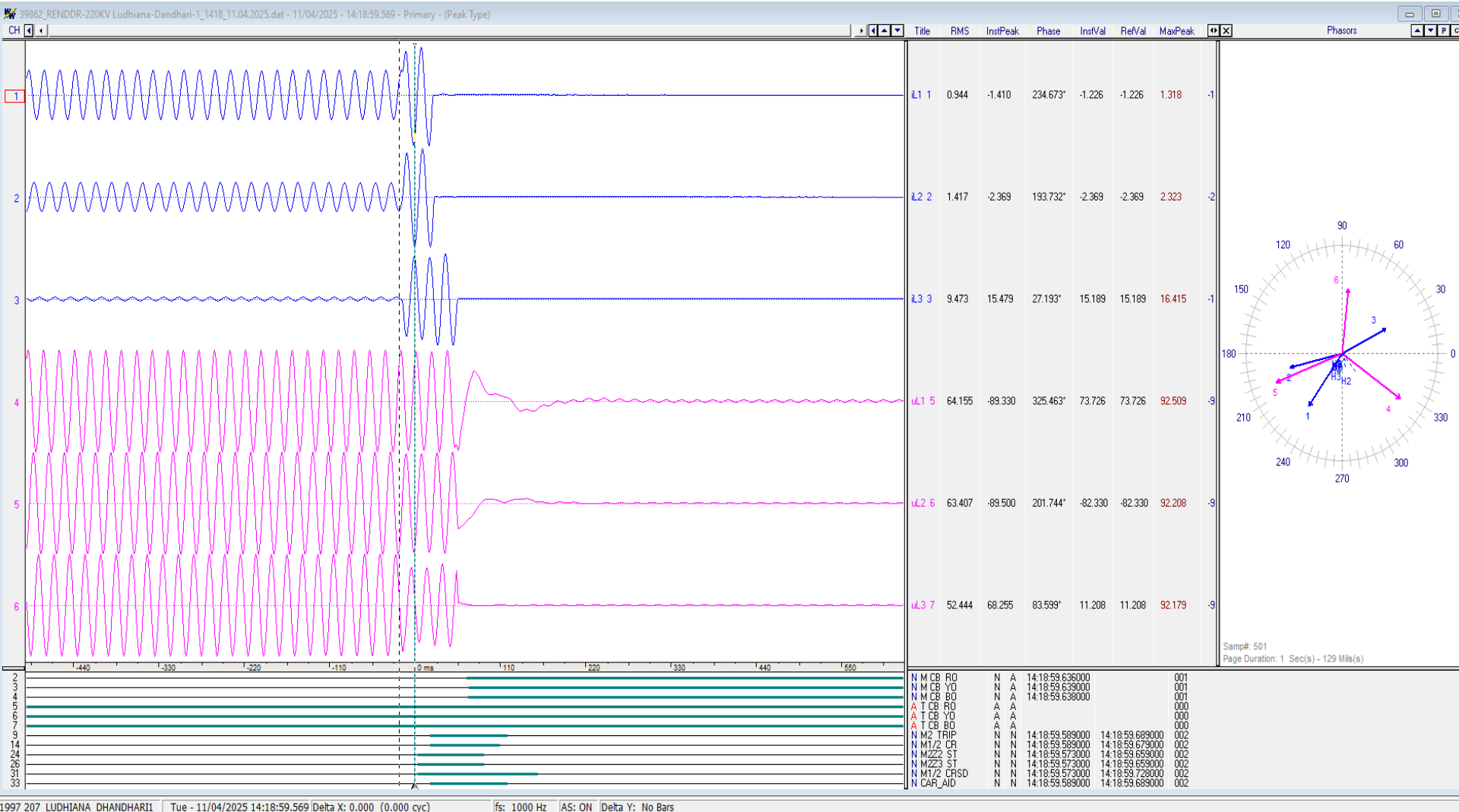
Punjab Demand during the event

Punjab Demand



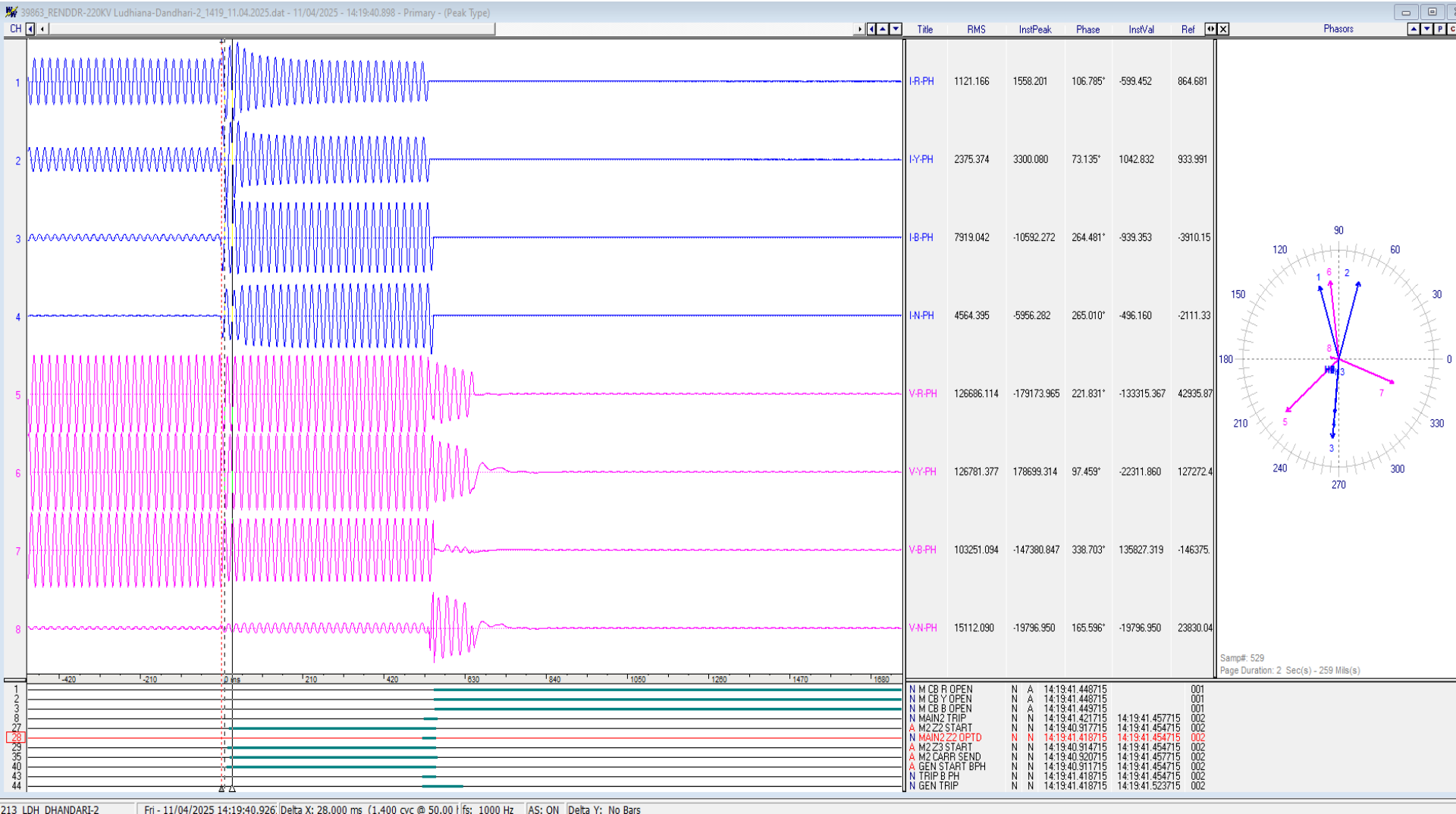
Apr 10 Thu 2025

DR of 220 KV DandhariKalan(PS)-Ludhiana(PG) (end) (PSTCL) Ckt-1



- ✓ B-N phase to earth fault; $I_b \approx 9.473 \text{ kA}$
- ✓ Fault sensed in zone-2; Carrier-aided trip
- ✓ Fault clearing time $\approx 70 \text{ ms}$

DR of 220 KV DandhariKalan(PS)-Ludhiana(PG) (end) (PSTCL) Ckt-2



- ✓ B-N phase to earth fault; Ib=~7.919kA
- ✓ zone-2 protection operated
- ✓ Fault clearing time=~550ms

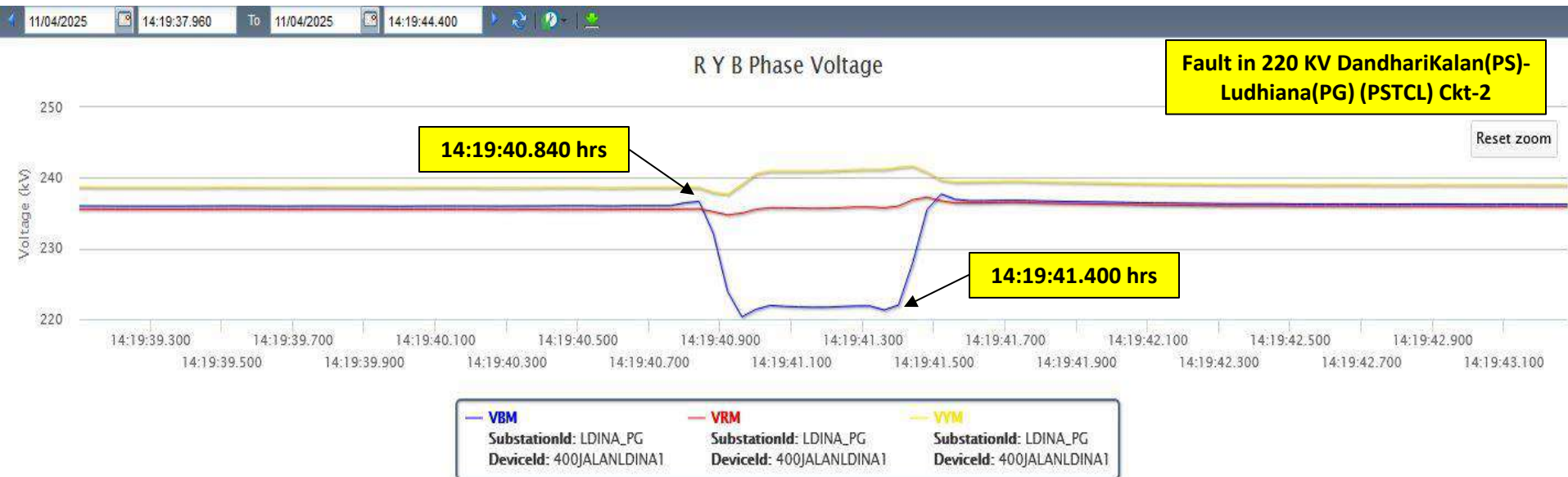
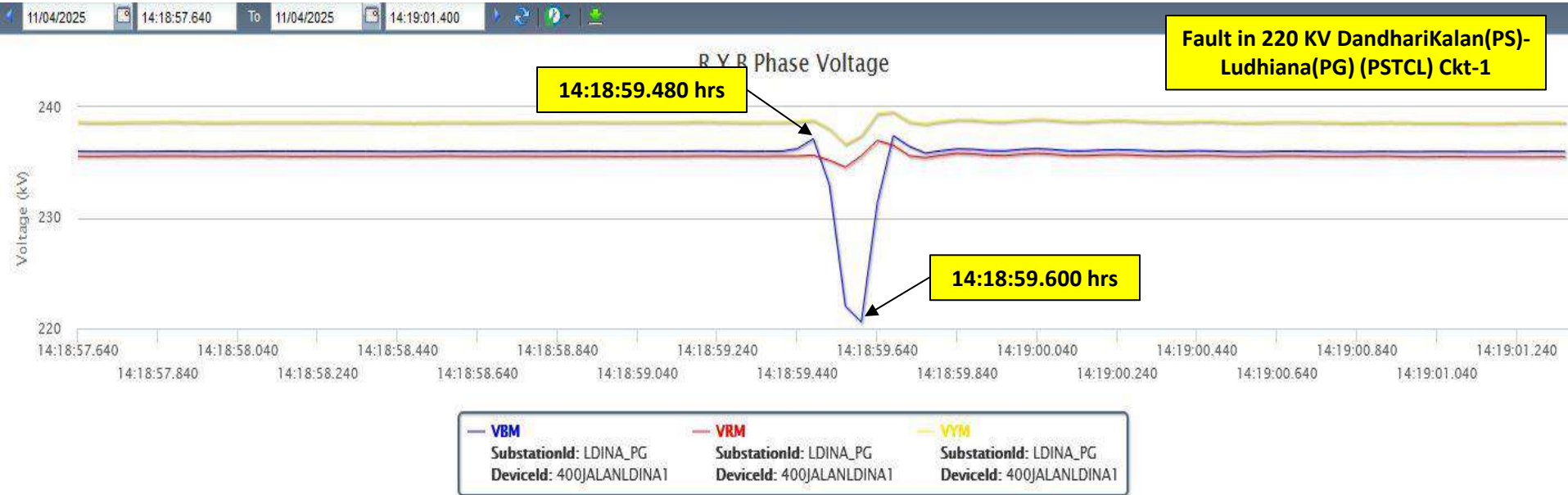
PMU Plot of frequency at Ludhiana(PG)

14:19hrs/11-Apr-25



PMU Plot of phase voltage at Ludhiana(PG)

14:19hrs/11-Apr-25



Points for Discussion

- i) Exact reason of fault need to be shared.
- ii) Reason of delayed clearance of fault in 220 KV DandhariKalan(PS)-Ludhiana(PG) (PSTCL) Ckt-2 need to be shared.
- iii) Detailed tripping report need to be shared.
- iv) Remedial action taken report needs to be shared.

Tripping Report for fault on Dated 11.04.2025 at 220 kV Dhandari-kalan

Detailed Report		
a.	Time and date of event (GPS Sync time)	11.04.25 14:20 Hrs
b.	Location.	Dhandari-kalan (Punjab),
c.	Plant and/or Equipment directly involved.	<ul style="list-style-type: none"> 400/220 kV PGCIL Ludhiana 220/66 kV T/F T-1 & T-2
D	Plant and/or Equipment under maintenance	<ul style="list-style-type: none"> 220 kV BBMB Jamalpur ckt-1 & 2
e.	Single line diagram showing the connection (isolators) of various 400 KV lines, bus coupler, ICT's etc	Attached
f.	Description and cause of event.	Polymer disc of 220 kV Dhandari kalan- PGCIL Ludhiana ckt-2 flashed near Tower no. 6B & 6C
g.	Bus Voltage/Frequency, Time duration of tripping including Weather Condition prior to the event.	220kV Bus Voltage – 221 kV 220kV Bus Frequency – 50.05 Hz Weather Condition - Clear
h.	Duration of interruption and Demand and/or Generation (in MW and MWh) interrupted.	Nil
i.	All Relevant system data including copies of records of all recording instruments including Disturbance Recorder, Event Logger, DAS etc of DPR's of affected lines.	Attached
j.	Sequence of tripping with time.	#
k.	Details of Relay Flags.	
l.	Remedial measures.	--



Sr.XEN, Protection & OS Div
PSTCL, Ludhiana

220 kV S/S DHANDARI - KALAN

Loading condition Before and After Tripping

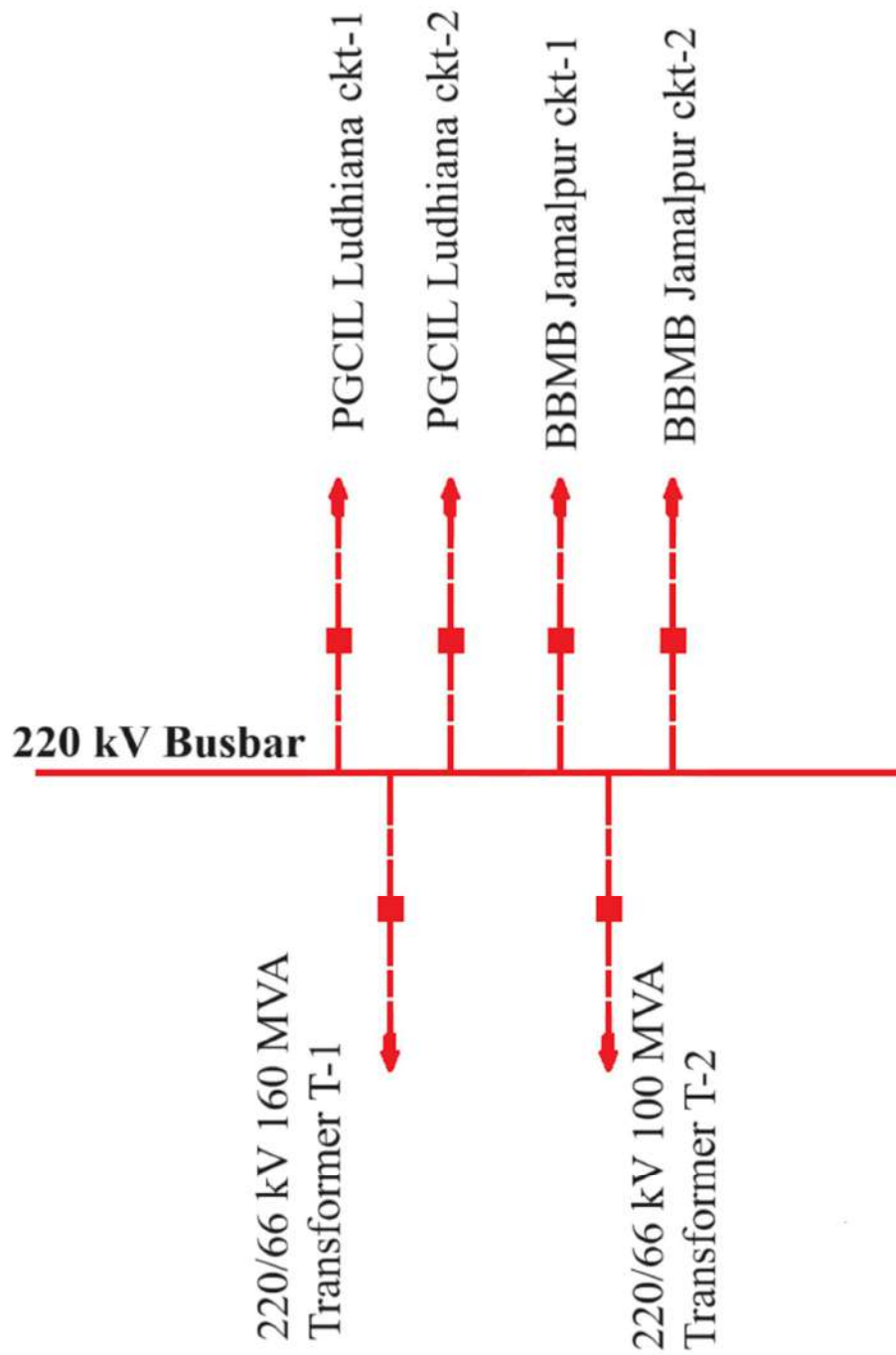
Before Fault (At 14:00 Hrs.)

Bus Voltage :- 221 kV

Bus Frequency:- 50.05 Hz

	Element Name	Load at 14:00 Hrs (Amp)	Load at 15:00 Hrs (Amp)
Dhandari kalan	220kV Dhandari kalan – PGCIL Ludhiana ckt-1	337	Auto Trip
	220kV Dhandari kalan – PGCIL Ludhiana ckt-2	288	Auto Trip
	220kV Dhandari kalan – BBMB Jamalpur ckt 1	PTW	PTW
	220kV Dhandari kalan – BBMB Jamalpur ckt 2	PTW	PTW
	160 MVA T/F T-1	210	Manually Trip
	100 MVA T/F T-2	134	Manually Trip

Single Line Diagram of 220 kV S/s Dhandari-kalan



#Tripping Sequence

Power System Fault Date 11.04.2025 Time 14:20 Hrs

220kV S/S Dhandari - kalan

220KV Dhandari kalan – PGCIL Ludhiana ckt-1

Dhandari-kalan end(Time not synch).:-

Main-1

- Fault current started developing in B-phase at 14:11:59.558 Hrs. and Distance protection picked B phase to ground fault in Zone-1 at 14:11:59.569 Hrs. (Ref to Annexure-1) with fault current – 5.93 kAmp.
- Relay sent carrier to other end simultaneously.
- Relay issued instant single pole trip command to B-phase CB.
- B-phase CB opened and fault current isolated at 14:11:59.613 Hrs. **(Fault clearance time – 55 msec.)**
- Before attempting Auto-reclose, Voltage and current profile indicates Line CB tripping but reason of tripping could not confirm as Events were not available.(Refer Annexure – 2)

220KV Dhandari kalan – PGCIL Ludhiana ckt-2

Dhandari end(Time not synch).:-

Main-1

- Distance protection picked B phase to ground fault at 14:12:39.731 Hrs. (Ref to Annexure-3) with fault current – 2.4 kAmp. but relay got unpick after 87 msec. and line remain charged with balance load in 3-phase.
- Relay again picked at 14:13:21.075 Hrs. and issued Zone-1 B-phase trip command at 14:13:21.086 Hrs. (Annexure – 4)
- B-phase CB opened and fault current isolated at 14:13:21.140 Hrs. **(Fault clearance time – 65 msec.)**
- DT received from other end at 14:13:21.683 Hrs. (refer to Annexure – 4) and 3-pole trip command initiated by relay at 14:13:21.694 Hrs. (refer Annexure – 4)
- 3-pole of CB open detected at 14:13:21.734 Hrs.

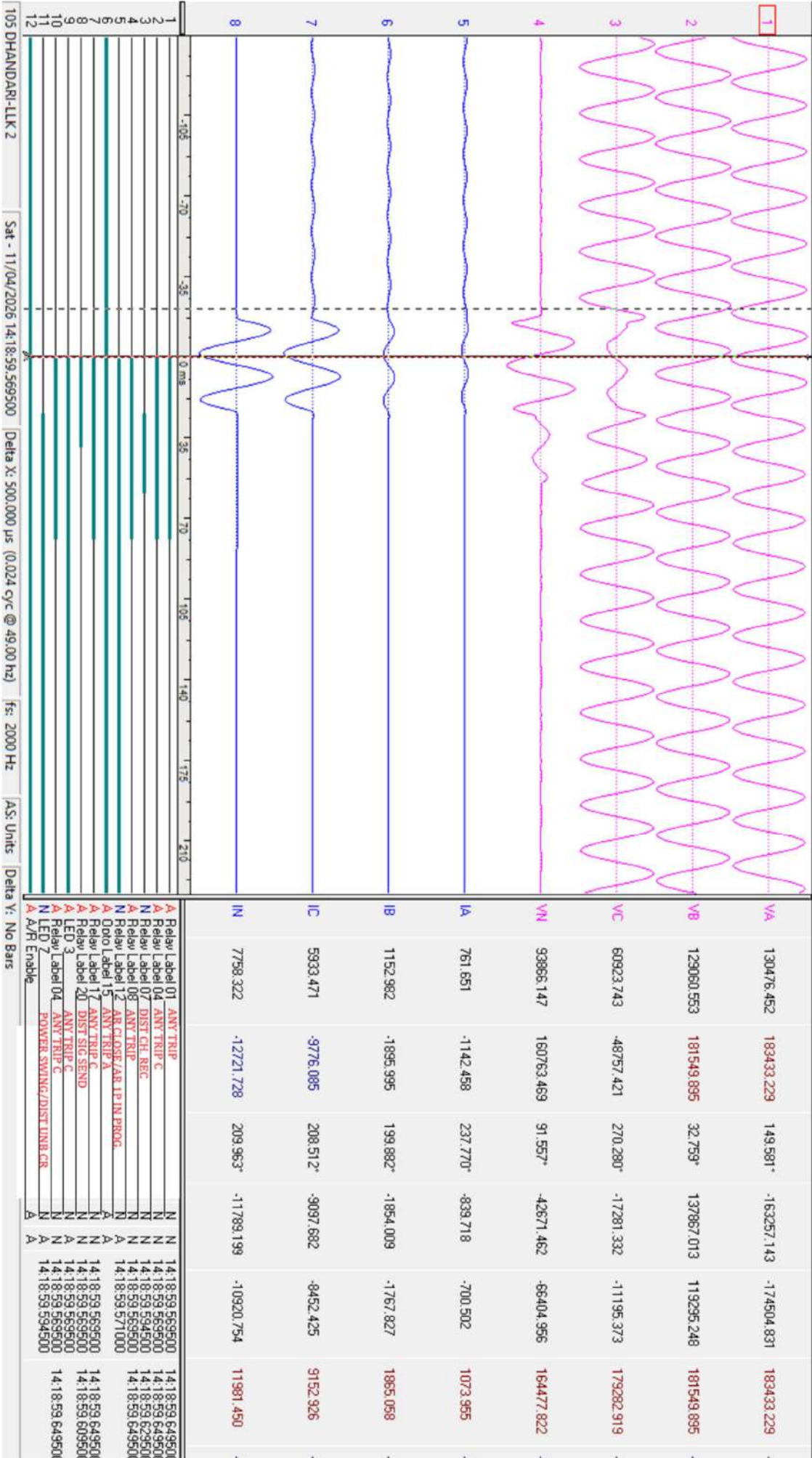
Main-2

- Distance protection picked B phase to ground fault at 14:17:08.812 Hrs. (Ref to Annexure-5) with fault current – 2.1 kAmp.
- Carrier received from other end at 14:17:08.872 Hrs. and at 14:17:08.898 Hrs. relay got unpicked and line remain charged with balance load in 3-phase.
- Relay again picked at 14:17:50.157 Hrs. and issued Zone-1 B-phase trip command at 14:17:50.167 Hrs. (Annexure – 6).
- Carrier received from other end at 14:17:50.202 Hrs.
- B-phase CB opened and fault current isolated at 14:17:50.222 Hrs. **(Fault clearance time – 65 msec.)**
- At around 14:17:50.767 Hrs. DT received from other end (refer Annexure – 7) and 3-pole trip command initiated by relay at 14:17:50.777 Hrs. (refer Annexure – 8)
- 3-pole of CB open detected at 14:17:50.820 Hrs.

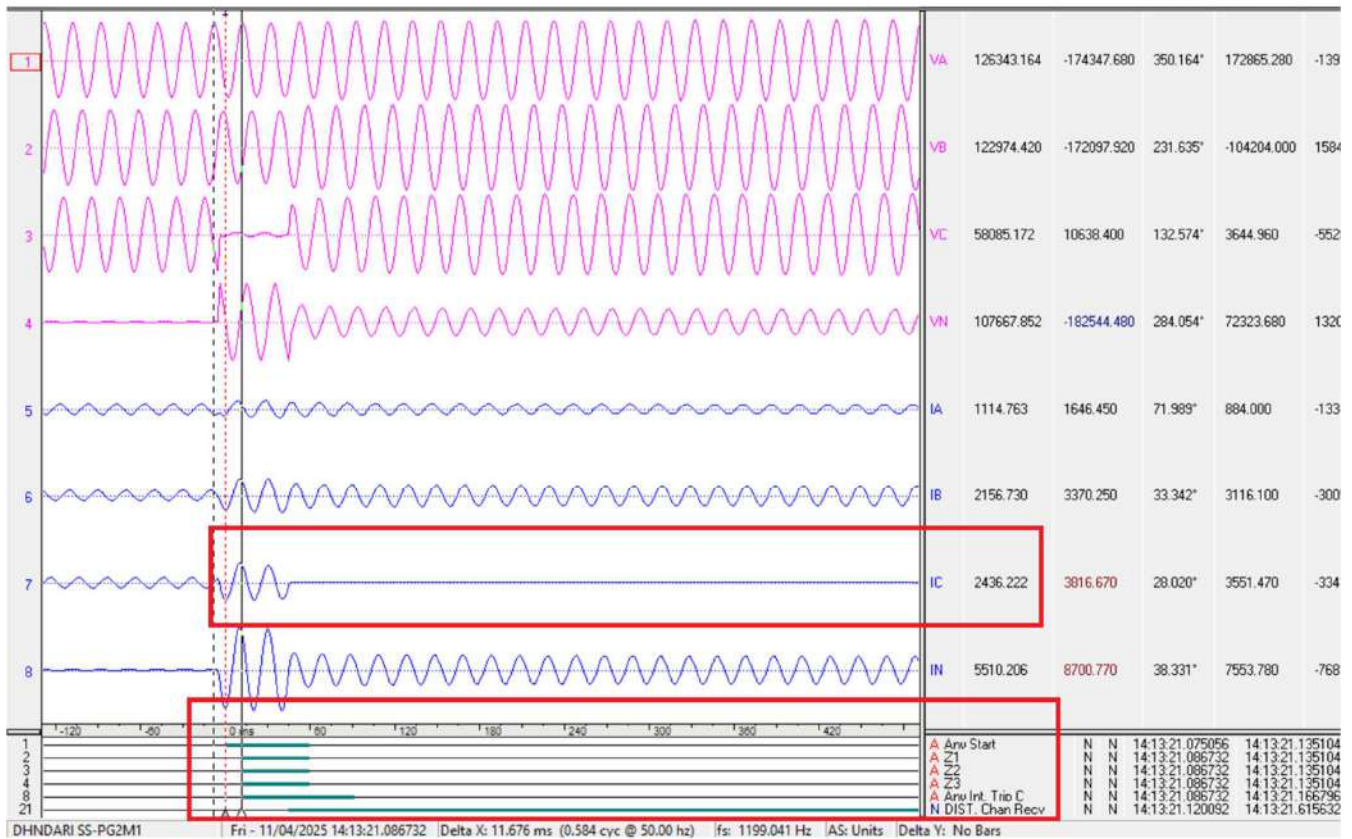
Reason of tripping & Conclusion :-

- **220 kV Dhandari kalan – BBMB Jamalpur ckt -1 & 2** were kept discharged due to maintenance work. **220 kV Dhandari kalan – PGCIL Ludhiana kt-1 & 2** were only source of supply remained for Dhandari Substaion.
- **At 14:20 Hrs.** Distance protection of **220 kV Dhandari kalan – PGCIL Ludhiana ckt – 1** picked **B-phase** to ground fault in **Zone-1**. Relay issued **single phase trip** command and **AR start** detected. B-phase CB opened and fault was cleared **under 60 msec.** but 3-pole tripped before relay could initiate AR. Thus Auto-reclose could not perform. This may be due to DT received from other end, due to which Dhandari end 3-pole tripped. (similar incident found in Dhandari – PGCIL Ludhiana ckt-2 also)
- Distance protection **Main-1** of **220 kV Dhandari kalan – PGCIL Ludhiana ckt – 2** picked **B-phase** to ground fault initially at 14:12:39.731 Hrs. but relay unpicked after 87 msec. Relay again picked b-phase to ground fault in **Zone-1** at **14:13:21.086 Hrs.** and Main-1 relay issued single phase trip command. **DT received** from other end at 14:13:21.683 Hrs. due to which 3-pole CB tripped and **Auto-reclose could not perform.**
- Due to tripping of 220 kV Dhandari kalan – PGCIL Ludhiana ckt-1 & 2, **220 kV S/s Dhandari blacked out** as no other 220 kV source remained in circuit. It is worth to mention that at Dhandari end Auto-reclose could have been performed if DT not received from PGCIL Ludhiana end, so PGCIL may need to explain the reason of DT send at their end.
-
- On patrolling it was found that Polymer disc of 220 kV Dhandari kalan– PGCIL Ludhiana ckt-2 flashed near Tower no. 6B & 6C.

Annexure - 1



105 DHANDARI-LK 2 Sat - 11/04/2026 14:18:59.569500 Delta X: 500.000 μ s (0.024 cyc @ 49.00 hz) fs: 2000 Hz AS: Units Delta Y: No Bars



Friday 11 April 2025 14:13:21.684: Logic Inputs 1

Description: Dhandarikalan

Plant reference: DHNDARI SS-PG2M1

Model number: P44291PB6M0550K

Address: 001 Column: 00 Row: 20

Event type: Logic Input Changed State

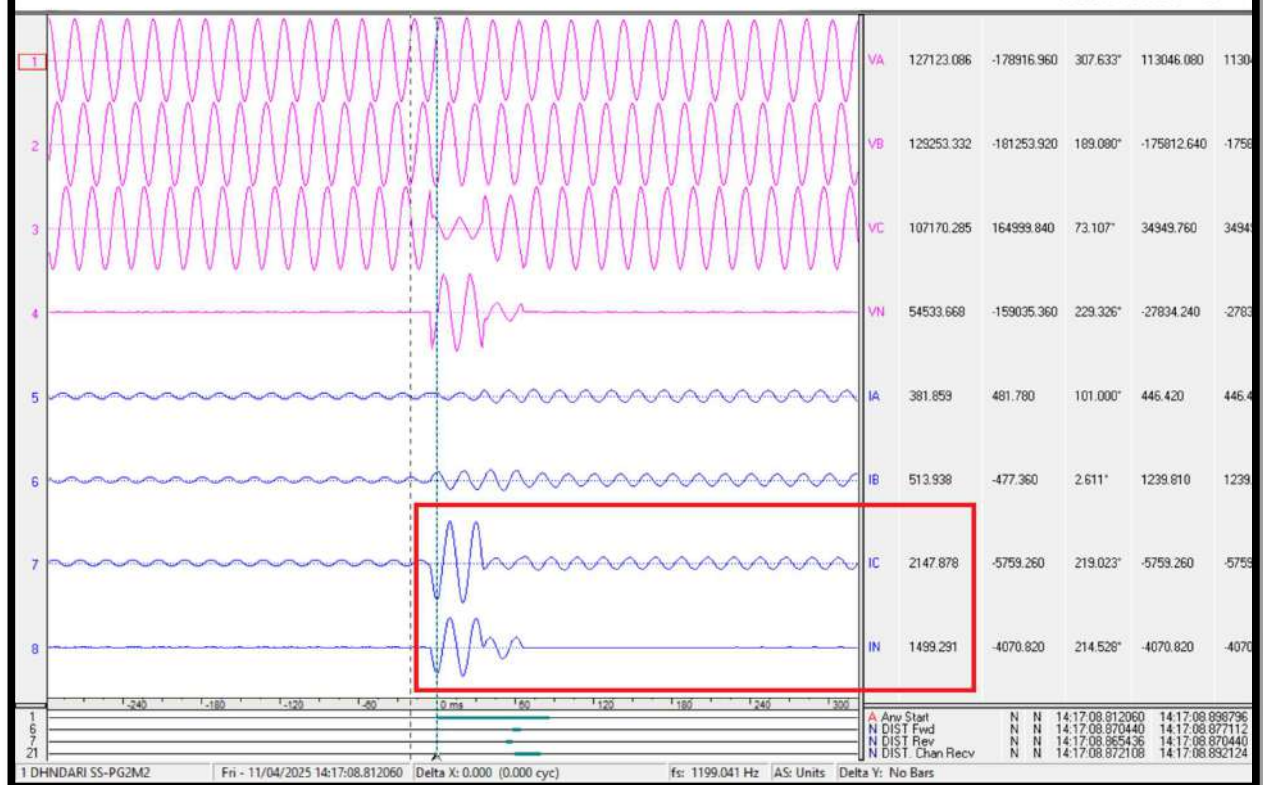
Category: 0

Event Value : 0000010110001011

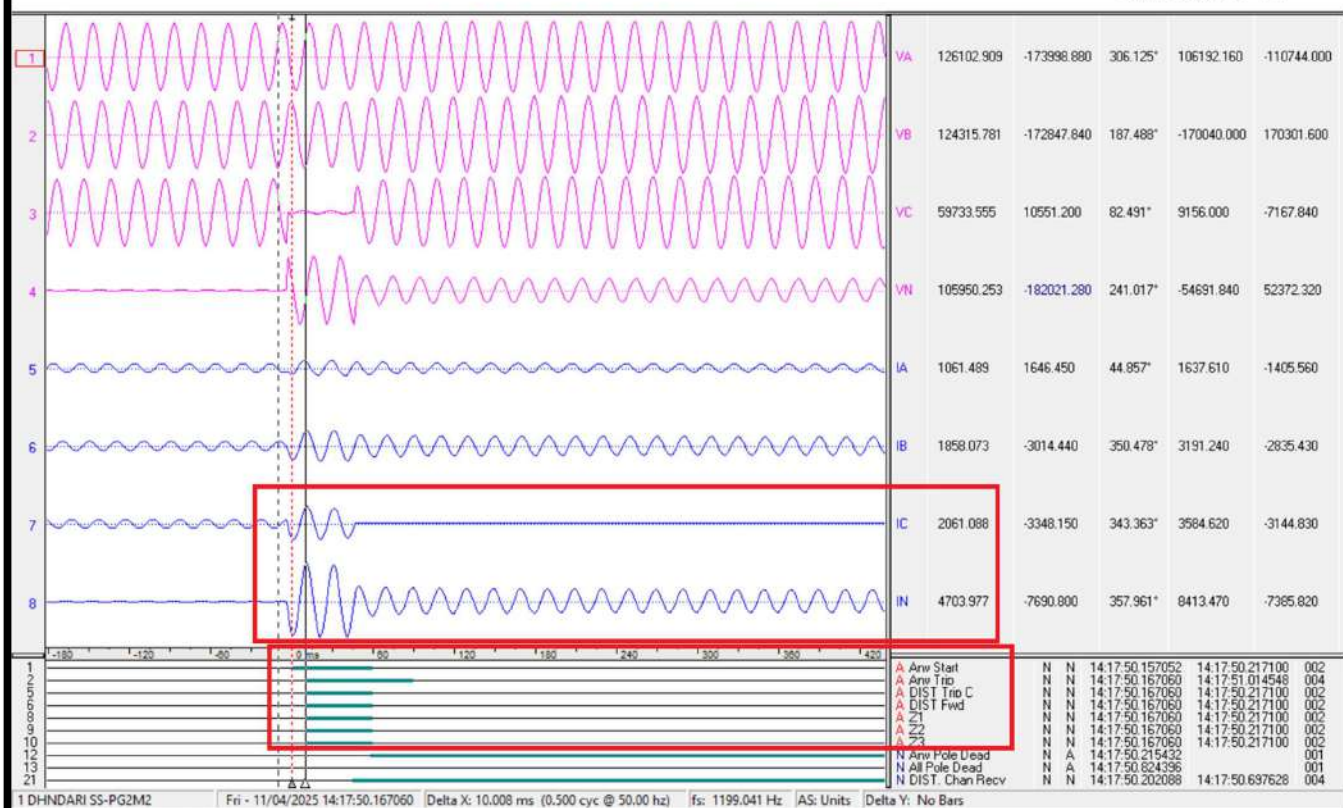
0 L1 R-PH OPEN	: ON
1 L2 Y-PH OPEN	: ON
2 L3 B-PH OPEN	: OFF
3 CB healthy	: ON
4 L5 M2 A/R INI R	: OFF
5 L6 M2 A/R INI Y	: OFF
6 L7 M2 A/R INI	: OFF
7 Car Healthy	: ON
8 L9 CR HEALTHY	: ON
9 L10 CR RECEIVE	: OFF
10 DT Recieve	: ON
11 Opto Label 12	: OFF
12 BAR	: OFF
13 Opto Label 14	: OFF
14 L15 MAN CLOSE CB	: OFF


Friday 11 April 2025 14:13:21.694: 3P Trip ON	Description: Dhandarikalan	Plant reference: DHNDARI SS-PG2M1	Model number: P44291PB6M0550K	Address: 001 Column: 0F Row: 2A	Event type: Standard Event	Category: 0	Event Value : 0000000000110000000000011000010
Friday 11 April 2025 14:13:21.694: Any Trip C ON	Description: Dhandarikalan	Plant reference: DHNDARI SS-PG2M1	Model number: P44291PB6M0550K	Address: 001 Column: 0F Row: 2A	Event type: Standard Event	Category: 0	Event Value : 00000000001100000000000011000010
Friday 11 April 2025 14:13:21.694: Any Trip B ON	Description: Dhandarikalan	Plant reference: DHNDARI SS-PG2M1	Model number: P44291PB6M0550K	Address: 001 Column: 0F Row: 2A	Event type: Standard Event	Category: 0	Event Value : 00000000001100000000000011000010
Friday 11 April 2025 14:13:21.694: Any Trip A ON	Description: Dhandarikalan	Plant reference: DHNDARI SS-PG2M1	Model number: P44291PB6M0550K	Address: 001 Column: 0F Row: 2A	Event type: Standard Event	Category: 0	Event Value : 00000000001100000000000011000010
Friday 11 April 2025 14:13:21.694: Any Trip ON	Description: Dhandarikalan	Plant reference: DHNDARI SS-PG2M1	Model number: P44291PB6M0550K	Address: 001 Column: 0F Row: 2A	Event type: Standard Event	Category: 0	Event Value : 00000000001100000000000011000010

Annexure - 5



Annexure - 6



 Friday 11 April 2025 14:17:50.767: Logic Inputs 1

Description: DhandariKalan


Plant reference: DHNDARI SS-PG2M2

Model number: P44491NB6M0710M

Address: 001 Column: 00 Row: 20

Event type: Logic Input Changed State

Category: 0

 Event Value : 000000000000010110001011

0 Opto Label 01 : ON

1 Opto Label 02 : ON

2 Opto Label 03 : OFF

3 Opto Label 04 : ON

4 Opto Label 05 : OFF

5 Opto Label 06 : OFF

6 Opto Label 07 : OFF

7 Opto Label 08 : ON

8 Opto Label 09 : ON

9 Opto Label 10 : OFF

10 Opto Label 11 : ON DT Receive

11 Opto Label 12 : OFF

12 Opto Label 13 : OFF

13 Opto Label 14 : OFF

14 Opto Label 15 : OFF

15 Opto Label 16 : OFF

16 Opto Label 17 : OFF

17 Opto Label 18 : OFF

Annexure -8

Evt Unique Id : 15756

Friday 11 April 2025 14:17:50.777: 3P Trip ON

Description: Dhandaikalan

Plant reference: DHNDARI SS-PG2M2

Model number: P44491NB6M0710M

Address: 001 Column: 0F Row: 2A

Event type: Standard Event

Category: 0

Event Value : 000000000011000000000001011100010

Evt Unique Id : 15755

Friday 11 April 2025 14:17:50.777: Any Trip C ON

Description: Dhandaikalan

Plant reference: DHNDARI SS-PG2M2

Model number: P44491NB6M0710M

Address: 001 Column: 0F Row: 2A

Event type: Standard Event

Category: 0

Event Value : 000000000011000000000000011100010

Evt Unique Id : 15754

Friday 11 April 2025 14:17:50.777: Any Trip B ON

Description: Dhandaikalan

Plant reference: DHNDARI SS-PG2M2

Model number: P44491NB6M0710M

Address: 001 Column: 0F Row: 2A

Event type: Standard Event

Category: 0

Event Value : 0000000000110000000000000001100010

Evt Unique Id : 15753

Friday 11 April 2025 14:17:50.777: Any Trip A ON

Description: Dhandaikalan

Plant reference: DHNDARI SS-PG2M2

Model number: P44491NB6M0710M

Address: 001 Column: 0F Row: 2A

Event type: Standard Event

Category: 0

Event Value : 00000000001100000000000000000100010

Evt Unique Id : 15752

Friday 11 April 2025 14:17:50.777: Any Trip ON

Description: Dhandaikalan

Plant reference: DHNDARI SS-PG2M2

Model number: P44491NB6M0710M

Address: 001 Column: 0F Row: 2A

Event type: Standard Event

Category: 0

Multiple element tripping event at 220KV Unchahar-II&III TPS(NT)

At 05:54 hrs on 13.04.2025

Tripped Elements

S. No	Name of Elements	Outage Time	Revival Time	Reason of tripping
1.	220 KV Kanpur(PG)- <u>Unchahar(NT) (PG) Ckt-1</u>	05:54 <u>hrs</u>	17:16 <u>hrs</u>	Breaker Fail at <u>Unchahar end</u>
2.	220 KV Kanpur(PG)- <u>Unchahar(NT) (PG) Ckt-2</u>		18:27 <u>hrs</u>	LBB operated
3.	220 KV <u>Unchahar(NT)-</u> <u>Raebareilly(PG) (PG) Ckt-3</u>		07:43 <u>hrs</u>	Directional earth fault protection operated
4.	220/6 kV 50 MVA ST 3 at <u>Unchahar(NT)</u>		19:31 <u>hrs</u> on 14 th Apr'24	LBB operated
5.	210 MW <u>Unchahar II TPS -</u> UNIT 1		11:58 <u>hrs</u>	LBB operated
6.	210 MW <u>Unchahar III TPS -</u> UNIT 1		16:53 <u>hrs</u>	

Brief details of the event

- i) During antecedent condition, 210 MW Unchahar II TPS - UNIT 1 and 210 MW Unchahar III TPS - UNIT 1 were generating approx. 185 MW and 135 MW respectively (as per SCADA).
- ii) As reported, at 05:54 hrs, line CB at Unchahar end of 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1 failed and LBB protection operated. This led to tripping of 220kV Bus-3 at Unchahar TPS.
- iii) As per DR at Unchahar(NT) end, R-N Phase to earth fault occurred on 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1 with fault current of $\sim 12.97\text{kA}$ from Unchahar(NT) end; fault sensed in zone-2. As per DR at Kanpur(PG) end, A/R operated at Kanpur(PG) end of 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1.
- iv) Due to LBB protection operation 210 MW Unchahar II TPS - UNIT 1 and 210 MW Unchahar III TPS - UNIT 1 also tripped.
- v) During the same time, as per DR at Raebareilly(PG), 220 KV Unchahar(NT)-Raebareilly(PG) (PG) Ckt-3 tripped from Raebareilly(PG) end only on directional earth fault protection operation (exact reason yet to be shared).
- vi) As per PMU at Kanpur(PG), R-N phase to earth fault is observed with delayed fault clearing time of 640ms.
- vii) As per SCADA, generation loss of approx. 185 MW at Unchahar-II TPS and approx. 135 MW at Unchahar-III TPS is observed.

SLD of 220KV Unchahar I-III TPS(NTPC) before the event

CONTACT DETAILS

EMAIL: sceupr@gmail.com

MOBILE: 9450925139

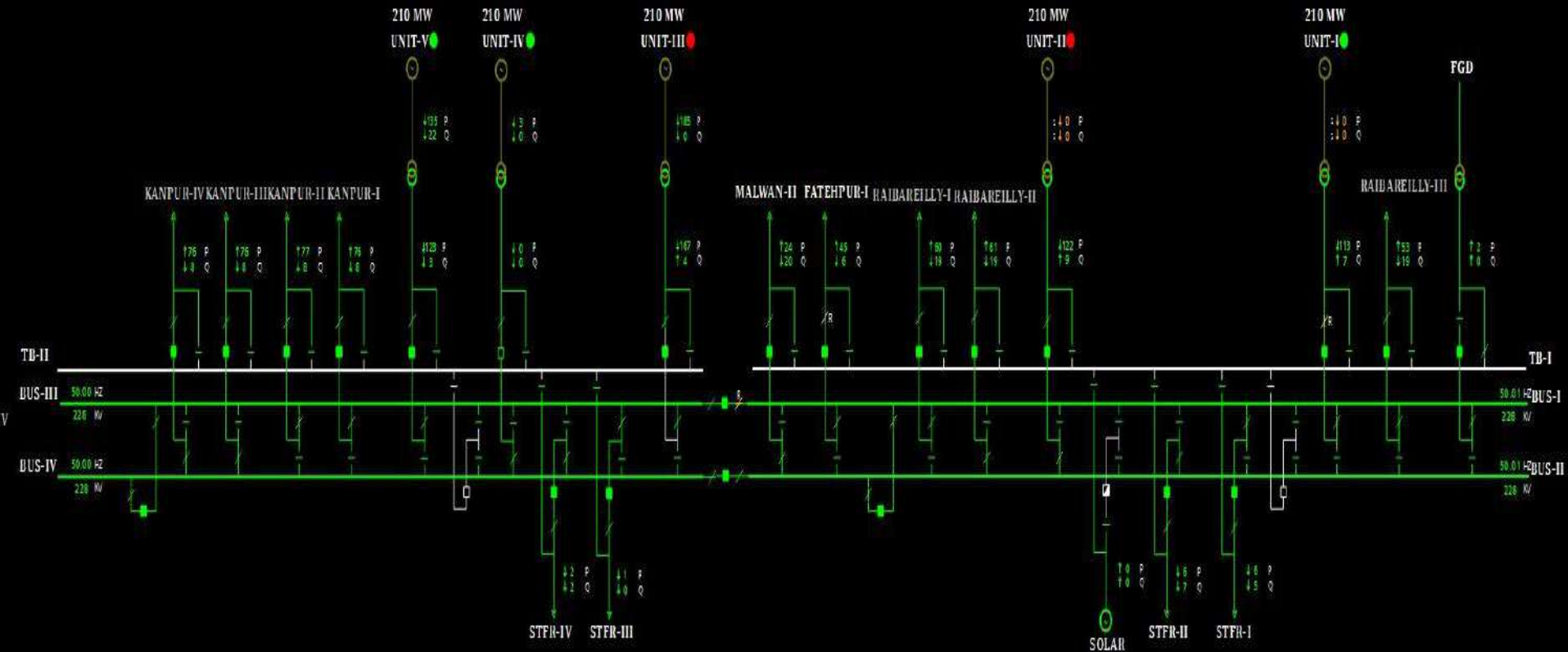
P sum(corr)= 41
Q sum(corr)= -32

UNCHAHAR I-III

Stat Expl GenSum Company

PL =
SENT = 526

13.4.25 5:51:59



SLD of 220KV Unchahar I-III TPS(NTPC) after the event

CONTACT DETAILS

EMAIL: scepup@gmail.com
MOBILE: 9450925139

P max(200MVA) = -13
Q max(200MVA) = -13

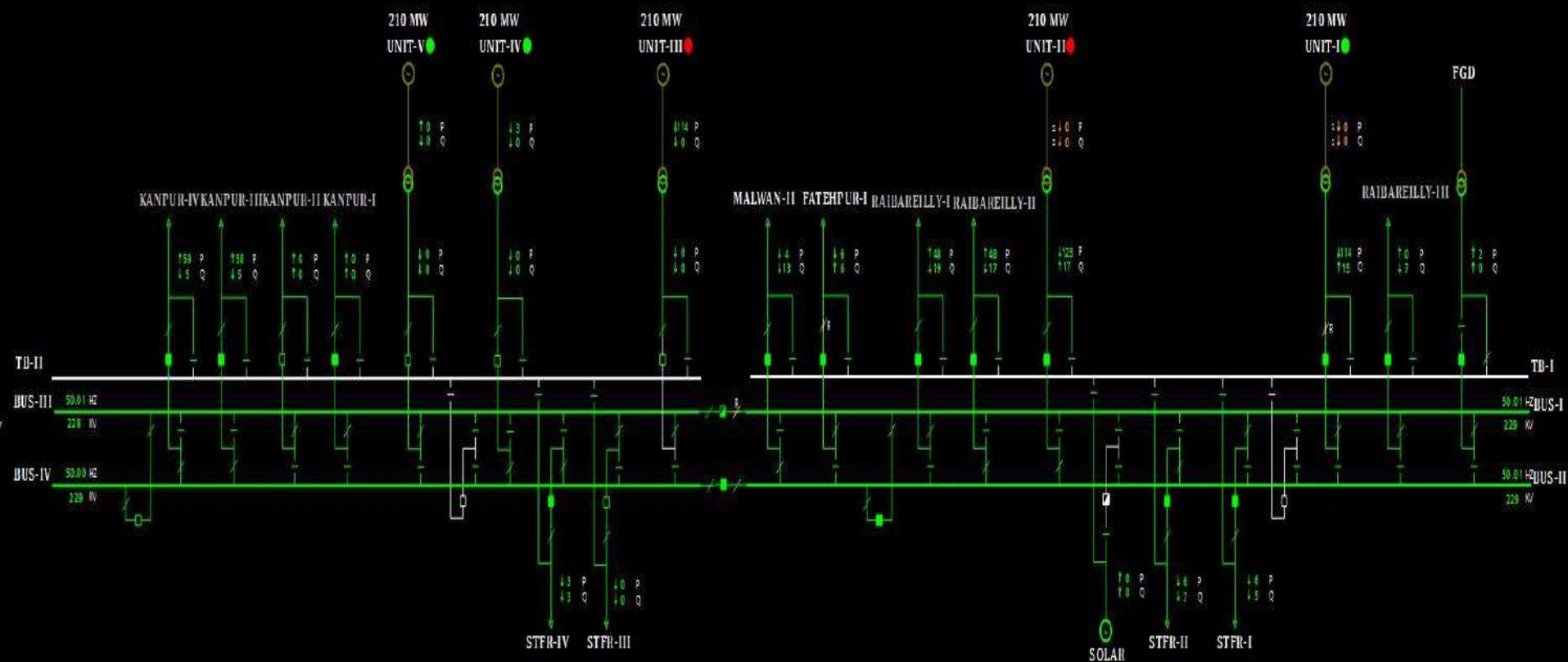
UNCHAHAR I-III

Stat Expl GenSum Company

13.4.25 5:55:59

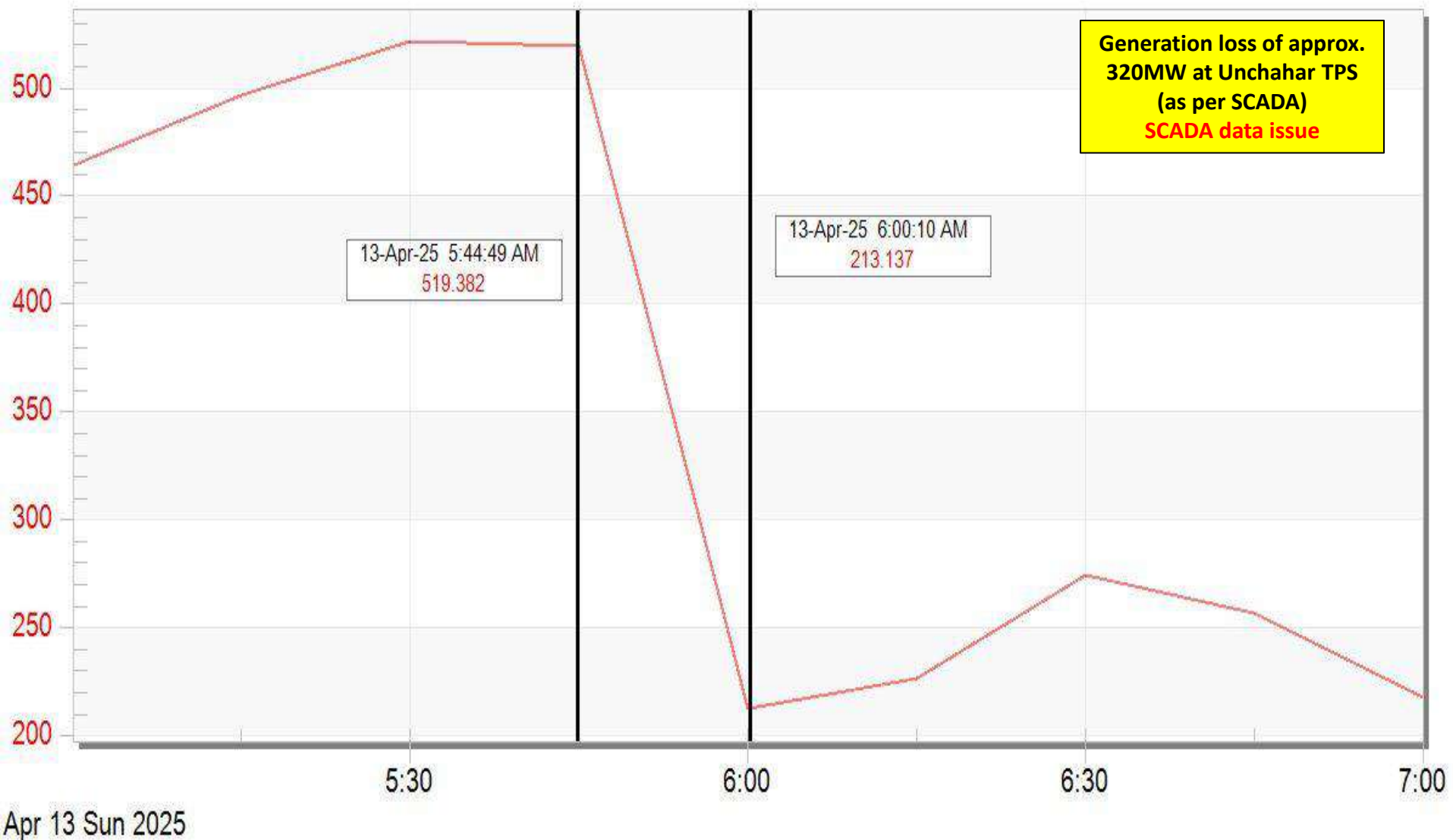
PL =
SEMI = 206

Generation loss of approx.
320MW at Unchahar TPS
(as per SCADA)



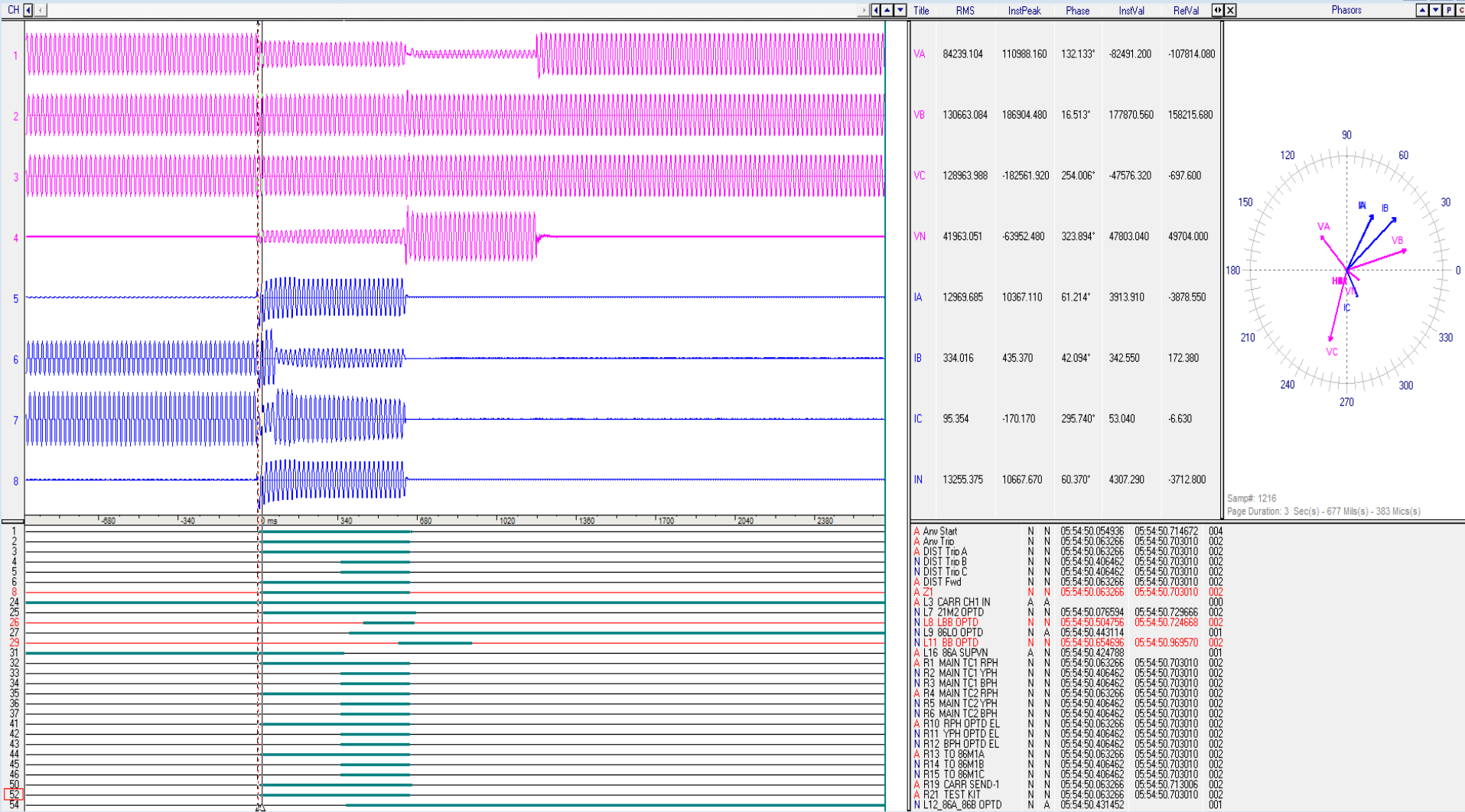
Unchahar TPS generation during the event

Unchahaar-I&II&III ACT



DR of 220 KV Kanpur(PG)-Unchahar(NT) (end) (PG) Ckt-1

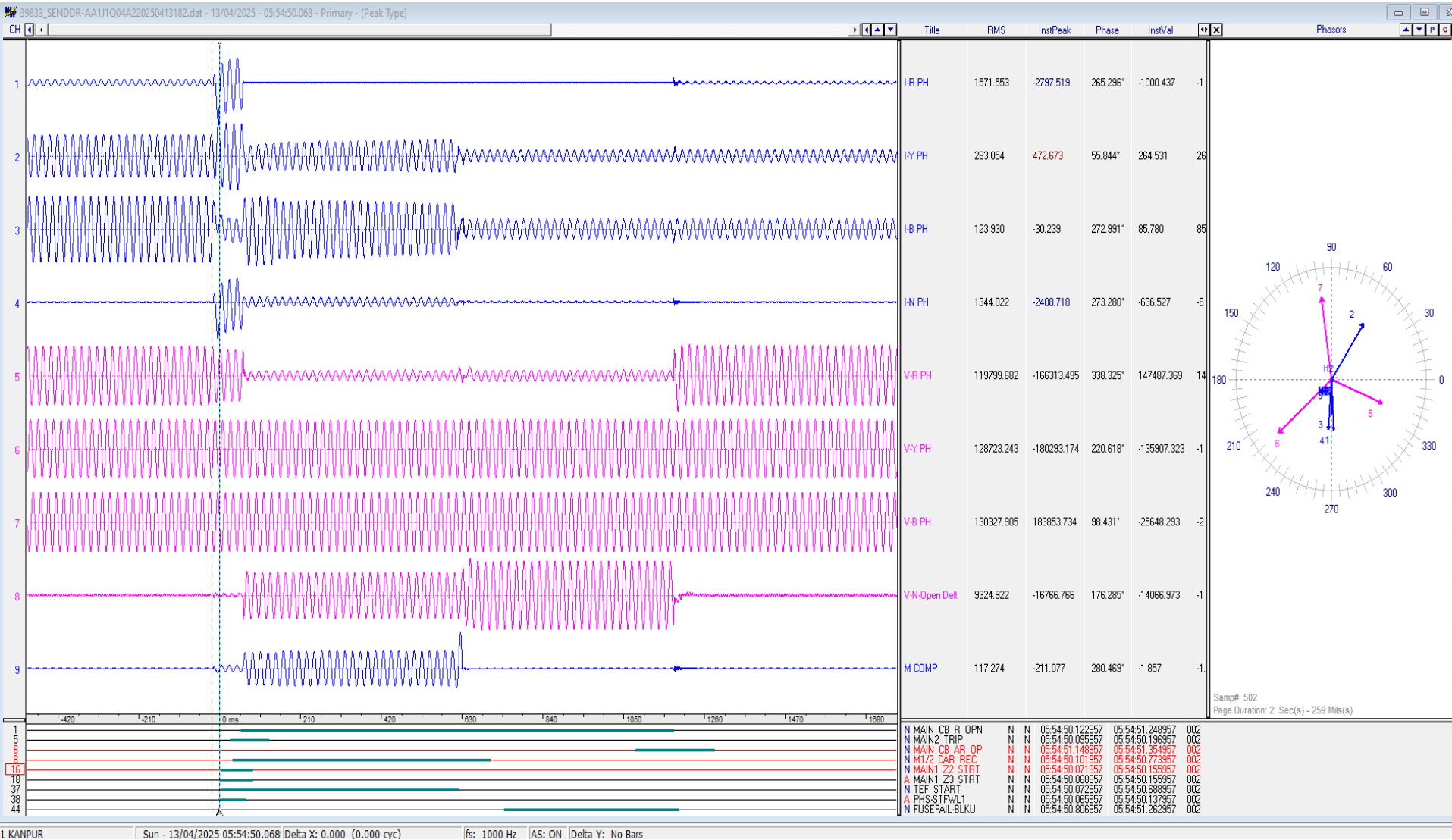
398333_RENDDR-Sunday 13 April 2025 05:54:50.000.DAT - 13/04/2025 - 05:54:50.055 - Primary - (Peak Type)



UNCHAHAR Sun - 13/04/2025 05:54:50.074 Delta X: 19.159 ms (0.958 cyc @ 50.001 fs: 1200.48 H/AS: ON Delta Y: No Bars

- ✓ R-N Phase to earth fault; $I_r \sim 12.97\text{kA}$
- ✓ Fault sensed in zone-2
- ✓ LBB operated

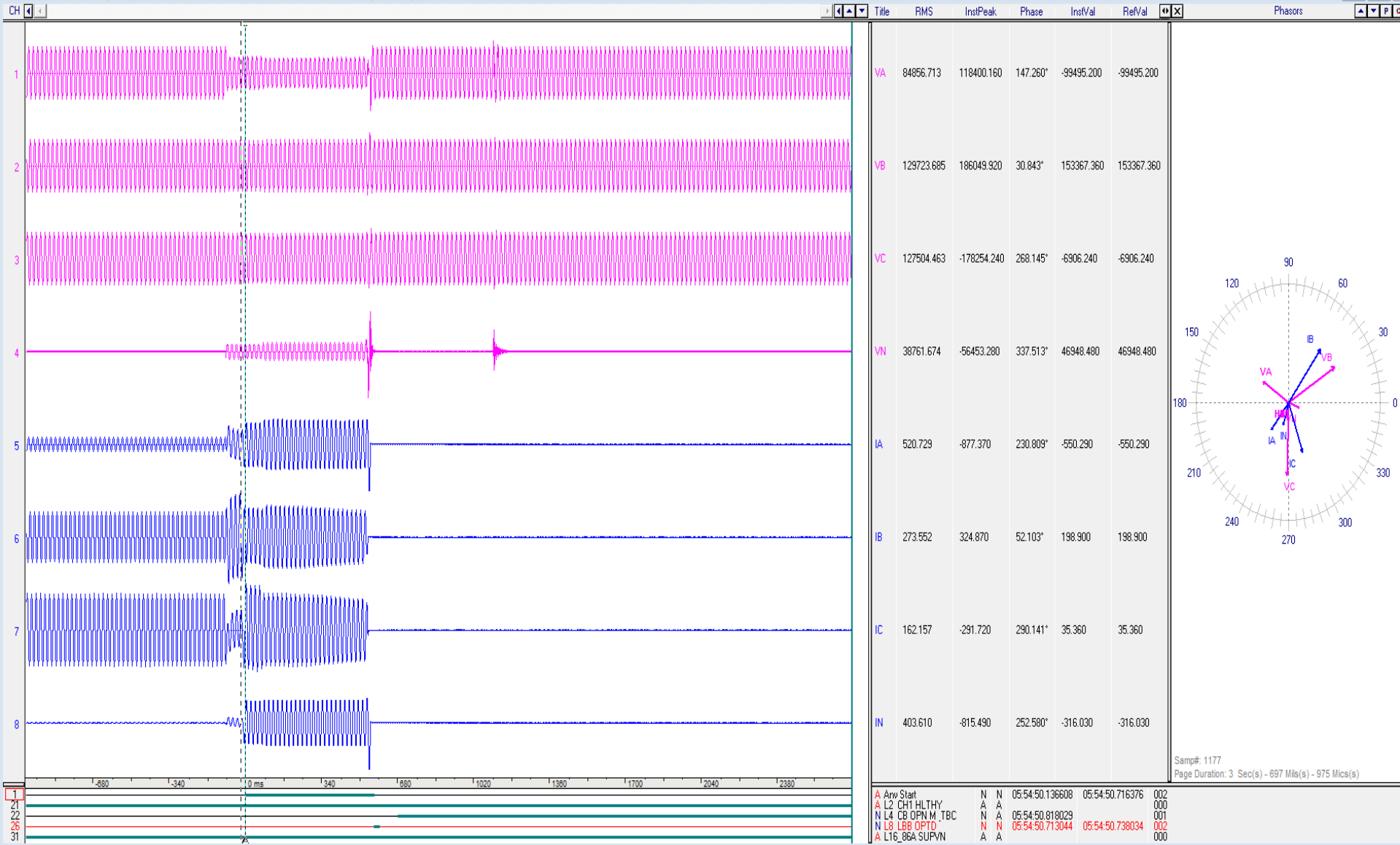
DR of 220 KV Kanpur(PG) (end)-Unchahar(NT) (PG) Ckt-1



- ✓ R-N Phase to earth fault; $I_r \approx 1.57\text{kA}$
- ✓ Fault sensed in zone-2; carrier received
- ✓ A/R operated at Kanpur end; Line didn't trip from Kanpur end

DR of 220 KV Kanpur(PG)-Unchahar(NT) (end) (PG) Ckt-2

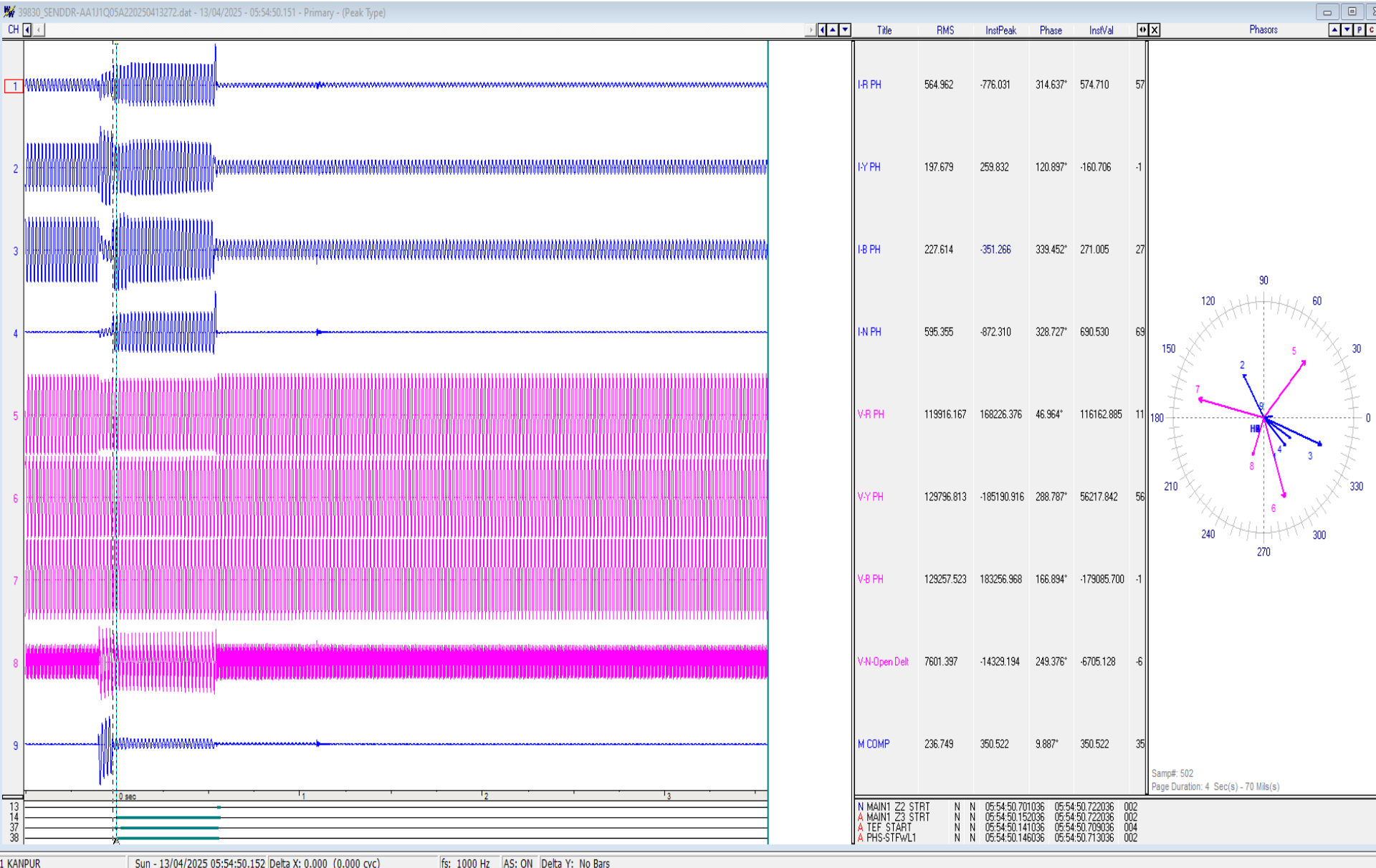
39830_RENDDR-Sunday 13 April 2025 05:54:50.000.DAT - 13/04/2025 - 05:54:50.137 - Primary - (Peak Type)



1 UNCHAHAR Sun - 13/04/2025 05:54:50.136 Delta X: 0.000 (0.000 cyc) fs: 1200.48 H/AS: ON Delta Y: No Bars

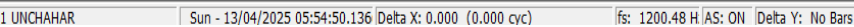
✓ LBB operated

DR of 220 KV Kanpur(PG) (end)-Unchahar(NT) (PG) Ckt-2



✓ Fault sensed in zone-2; Line didn't trip from Kanpur end

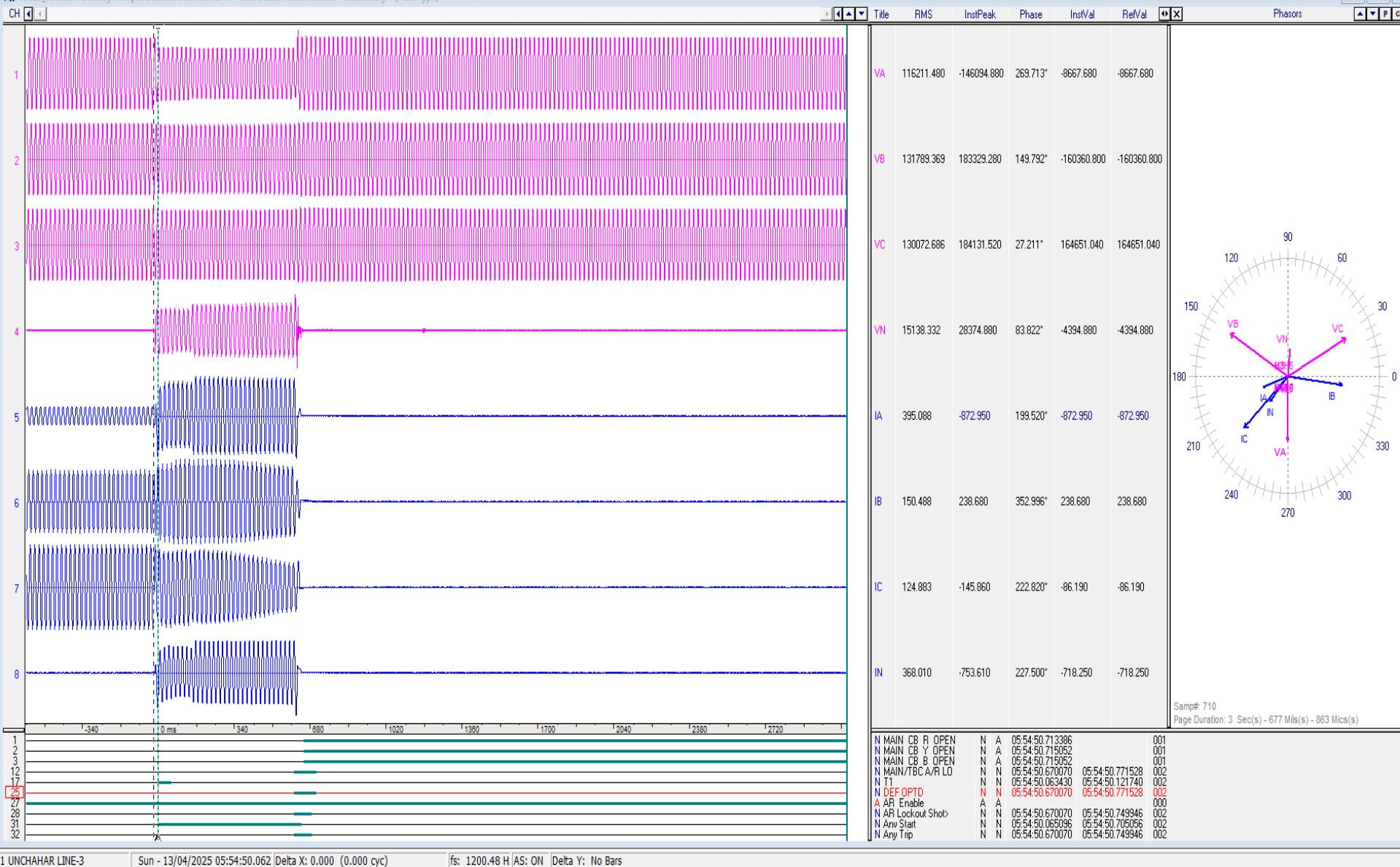
39830_RENDDR-Sunday 13 April 2025 05:54:50.000.DAT - 13/04/2025 - 05:54:50.137 - Primary - (Peak Type)



A	Anw Start	N	N	05:54:50.136608	05:54:50.716376	002
A	L2 CH1 HLTHY	A	A			000
N	L4 CB DPN M_TBC	N	A	05:54:50.818029		001
N	L8 LBB OPTD	N	N	05:54:50.713044	05:54:50.738034	002
A	L16 86A SUPVN	A	A			000

DR of 220 KV Unchahar(NT)-Raebareilly(PG) (end) (PG) Ckt-3

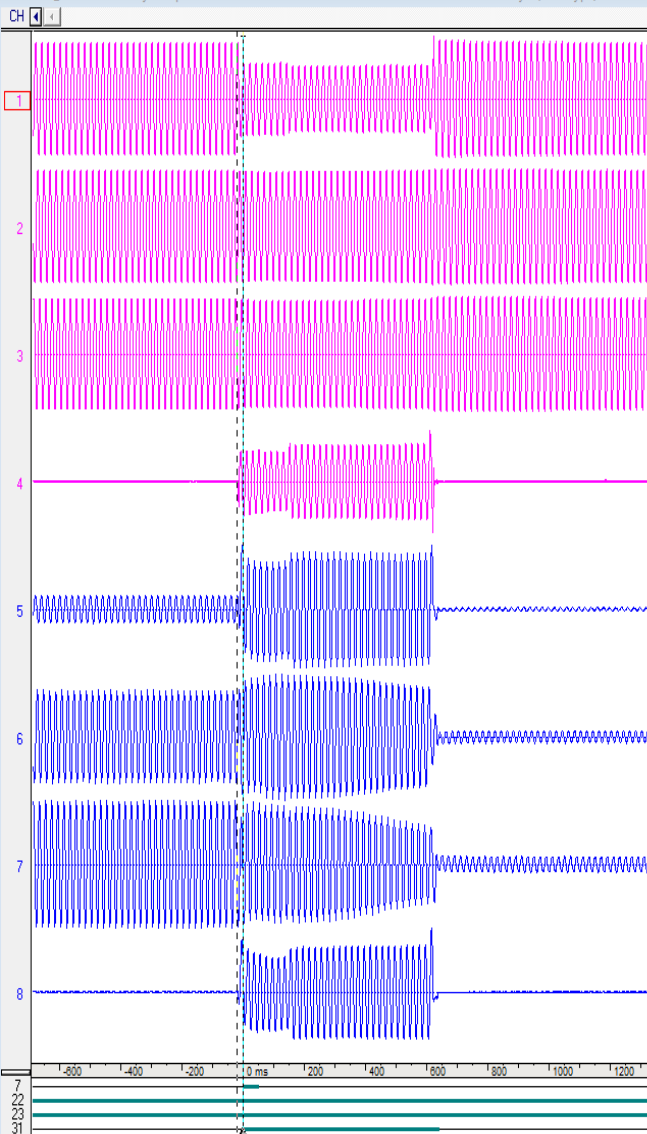
39829_RENDDR-Sunday 13 April 2025 05:54:50.000.DAT - 13/04/2025 - 05:54:50.063 - Secondary - (Peak Type)



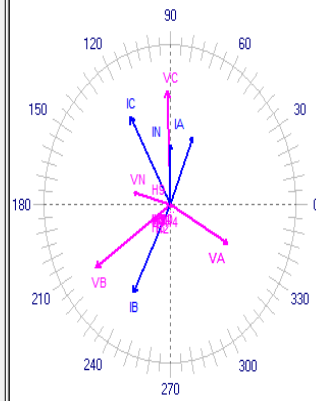
✓ Directional Earth Fault (DEF) operated at Raebareilly(PG)

DR of 220 KV Unchahar(NT) (end) -Raebareilly(PG) (PG) Ckt-3

39829_SENDDR-Sunday 13 April 2025 05:54:46.000.DAT - 13/04/2025 - 05:54:46.057 - Secondary - (Peak Type)



	Title	RMS	InstPeak	Phase	InstVal	RefVal
VA		103161.654	-126910.880	331.396°	103070.400	103070.400
VB		131551.629	-184253.600	213.963°	-151675.680	-151675.680
VC		129712.310	182806.080	92.254°	-6278.400	-6278.400
VN		32227.027	50035.360	164.905°	-54883.680	-54883.680
IA		490.597	886.210	67.146°	457.470	457.470
IB		164.026	-251.940	242.150°	-121.550	-121.550
IC		132.517	161.330	120.161°	-123.760	-123.760
IN		409.957	740.350	88.782°	212.160	212.160



Sampl#: 827
Page Duration: 2. Sec(s) - 18 Mils(s) - 215 Mics(s)

A T1	N	N	05:54:46.053726	05:54:46.107038	002
A CB Health	A	A			000
A A/R Enable	A	A			000
A Any Start	N	N	05:54:46.057058	05:54:46.696802	002

JAI BARELY M1 . Sun - 13/04/2025 05:54:46.057 Delta X: 0.000 (0.000 cyc) fs: 1200.48 H/AS: ON Delta Y: No Bars

✓ Line didn't trip from Unchahar end

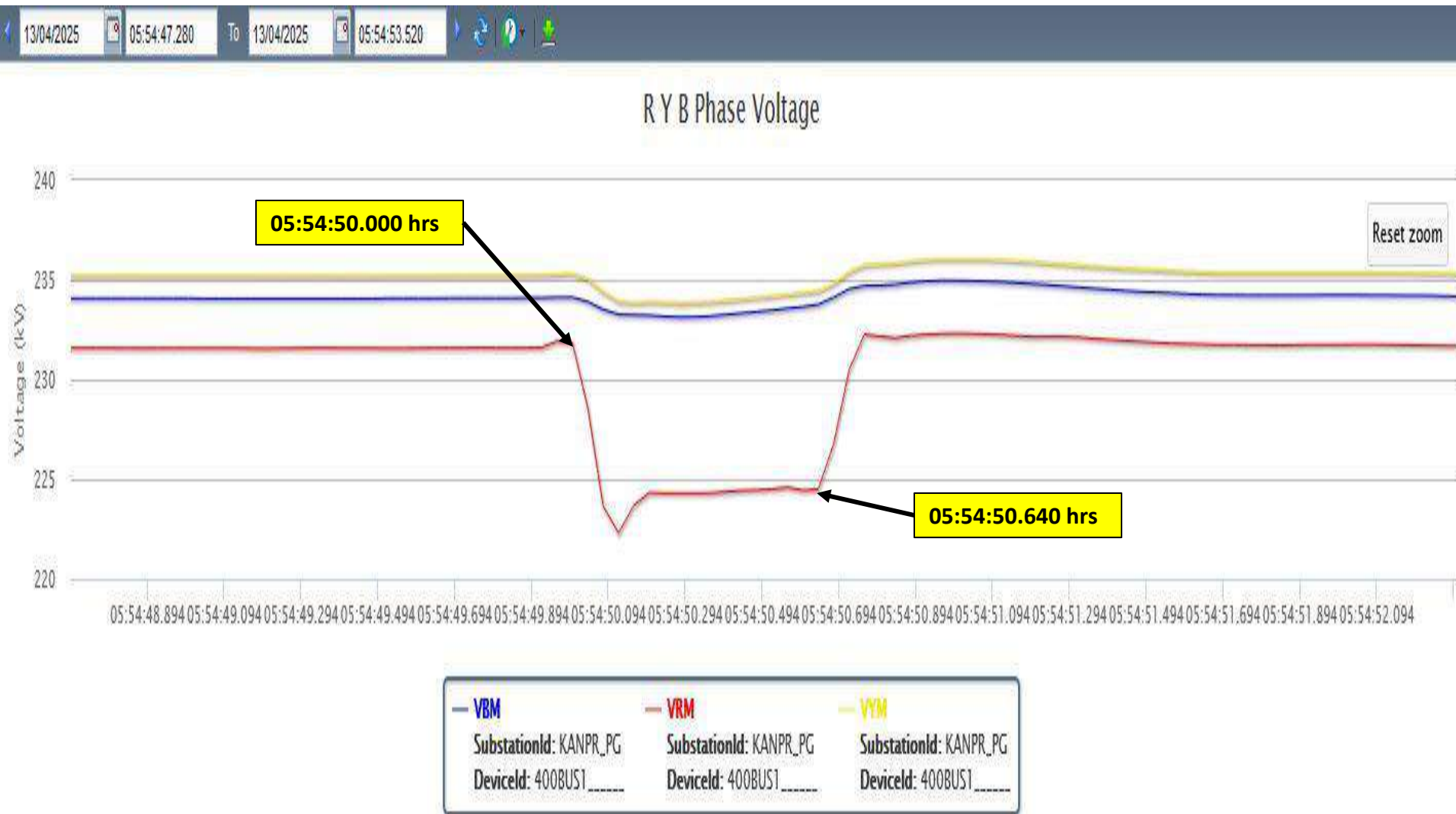
PMU Plot of frequency at Kanpur(PG)

05:54hrs/13-Apr-25



PMU Plot of phase voltage at Kanpur(PG)

05:54hrs/13-Apr-25



✓ As per PMU, R-N fault is observed with delayed fault clearing time of 640ms.

Points for Discussion

- i) Reason of delayed clearance of fault need to be shared.
- ii) Exact reason of tripping of 220 KV Unchahar(NT)-Raebareilly(PG) (PG) Ckt-3 need to be shared.
- iii) Healthiness of protection system need to be ensured.
- iv) Remedial action taken report needs to be shared.

Multiple element tripping event at 220kV Bairasiul HEP(NH)

At 21:28 hrs on 16.04.2025

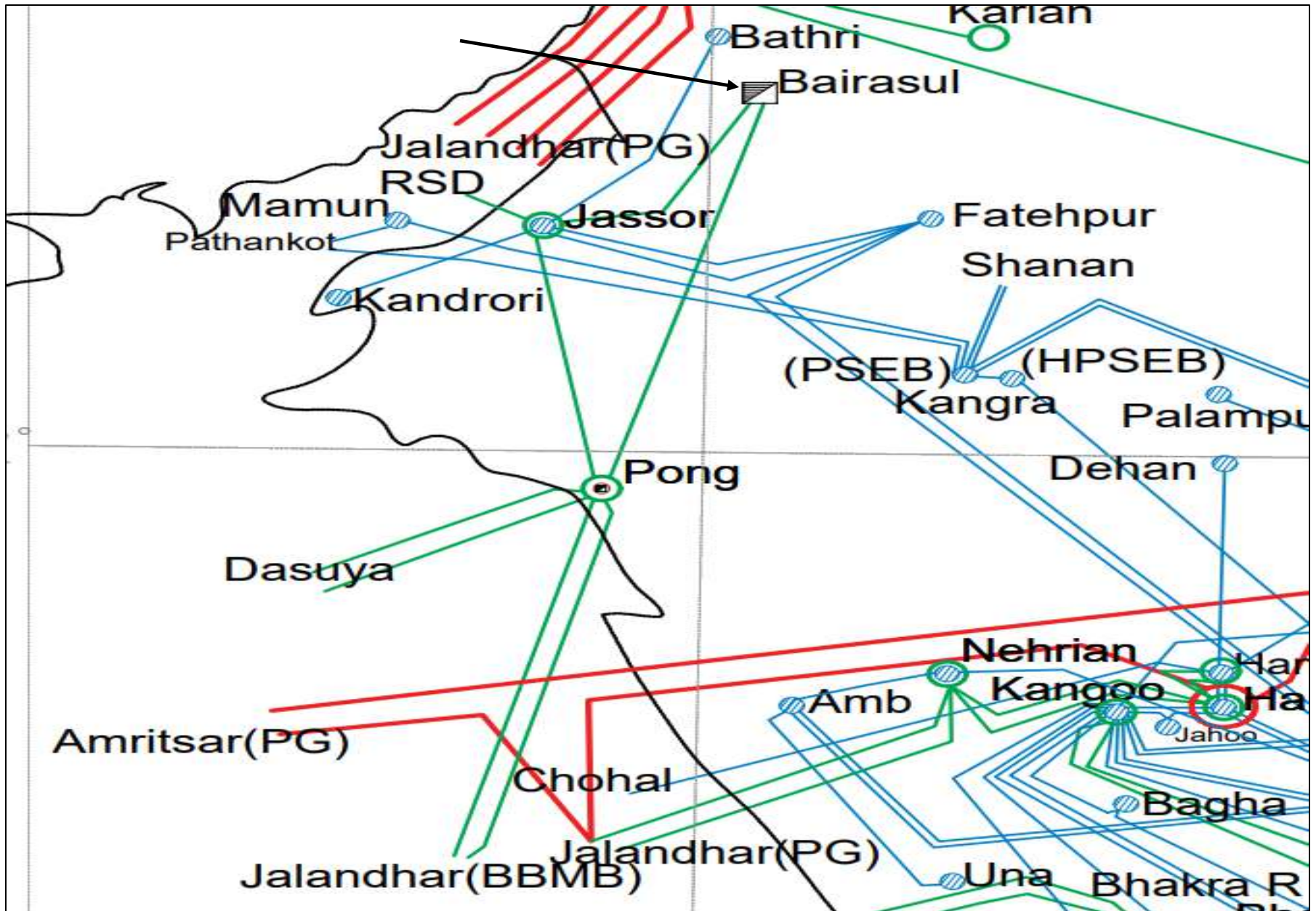
Tripped Elements

S. No	Name of Elements	Outage Time	Revival Time	Reason of tripping
1.	220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt	21:28 hrs	22:24 hrs	R-N phase to earth fault
2.	60 MW Bairasiul HPS - UNIT 1		22:46 hrs	Tripped on over-speeding due to loss of evacuation path
3.	60 MW Bairasiul HPS - UNIT 2		22:35 hrs	
4.	60 MW Bairasiul HPS - UNIT 3		22:27 hrs	

Brief details of the event

- i) During antecedent condition, 220kV Jessore(HP)-Pong(BB) (PG) Ckt and 220kV Jessore(HP)-RSDPH Ckt were not in service. 60 MW Bairasiul HPS - UNIT 1, 2 and 3 were generating 60 MW each (as per SCADA).
- ii) As reported, at 21:28 hrs, 220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt tripped on R-N phase to ground fault with fault distance of 79km from Bairasiul end due to inclement weather conditions.
- iii) Due to tripping of 220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt and with 220kV Jessore(HP)-Pong(BB) (PG) Ckt and 220kV Jessore(HP)-RSDPH Ckt already not in service, 60 MW Bairasiul HPS - UNIT 1, 2 and 3 tripped on over-speeding due to loss of evacuation path and complete blackout occurred at 220kV Bairasiul(NH) S/s.
- iv) Further at 22:06 hrs, CBs of 220 KV Bairasiul(NH)-Jessore(HP) (PG) Ckt were manually opened (no power flow).
- v) As per PMU at Pong(BB), two consecutive R-N phase to earth faults were observed with fault clearing time of 80ms and 400ms (delayed) respectively.
- vi) As per SCADA, generation loss of approx. 180 MW at Bairasiul HEP (NH) is observed.

Network Diagram



SLD of 220kV Bairasiul(NH) before the event

CONTACT DETAILS	
EMAIL	nhpcbairasiul@gmail.com
MOBILE	9816503231 / 61

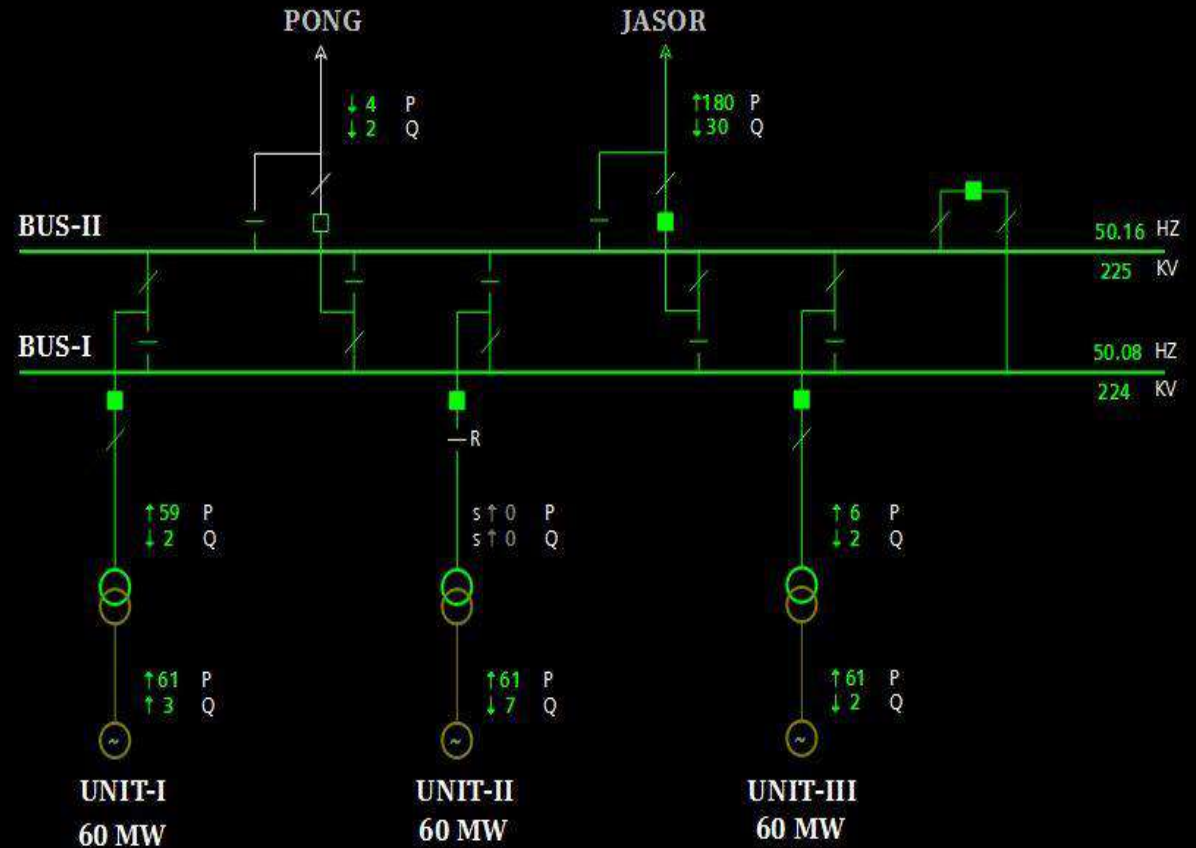
P sum(220 kV) = 5 111
Q sum(220 kV) = 5 -29

BAIRASIUL(NHPC)

Stat Expl GenSum Company

16.4 .25 21:28:30

PL = 5 65
SENT = 176



SLD of 220kV Bairasiul(NH) after the event

CONTACT DETAILS

EMAIL	nhpchairasiul@gmail.com
MOBILE	9816503231 / 61

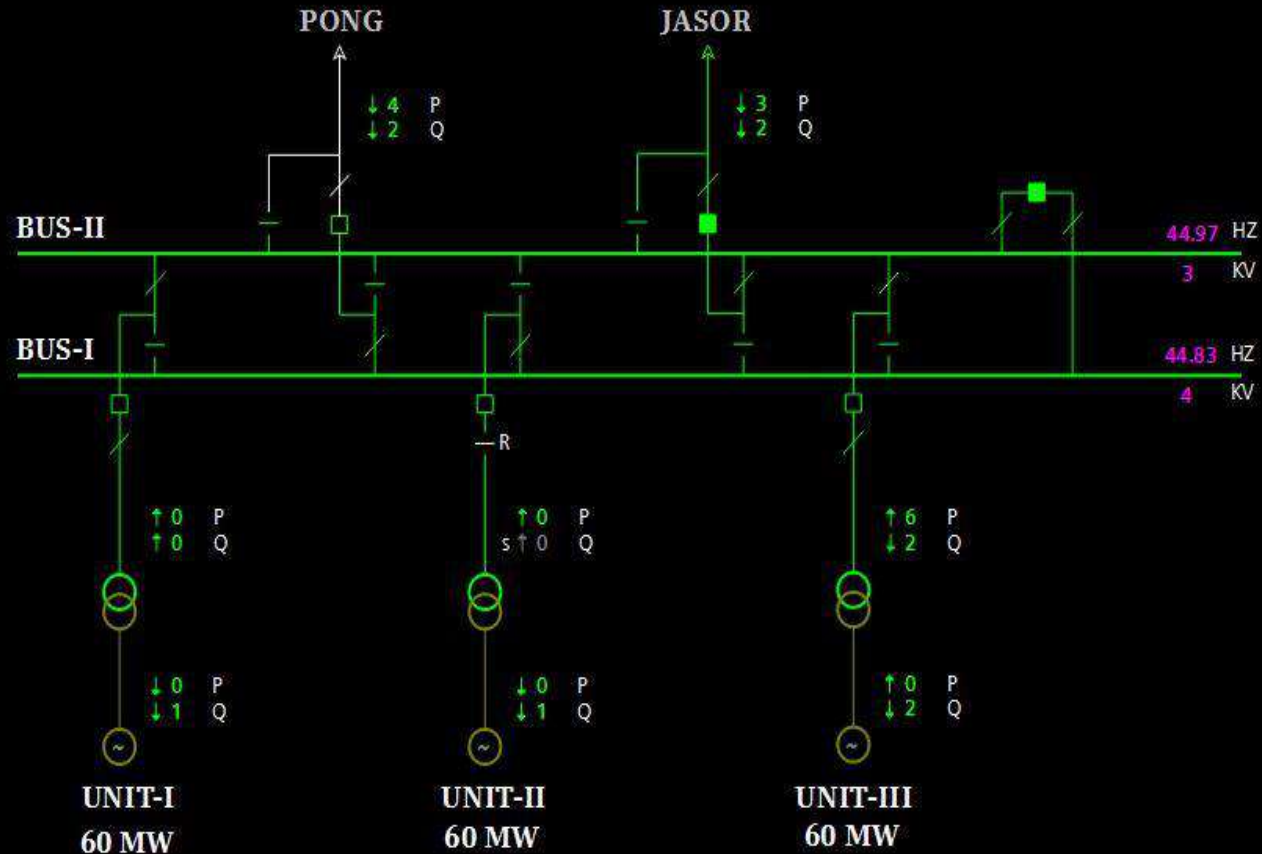
P sum(220 kV) = -13
Q sum(220 kV) = -40

BAIRASIUL(NHPC)

Stat Expl GenSum Company

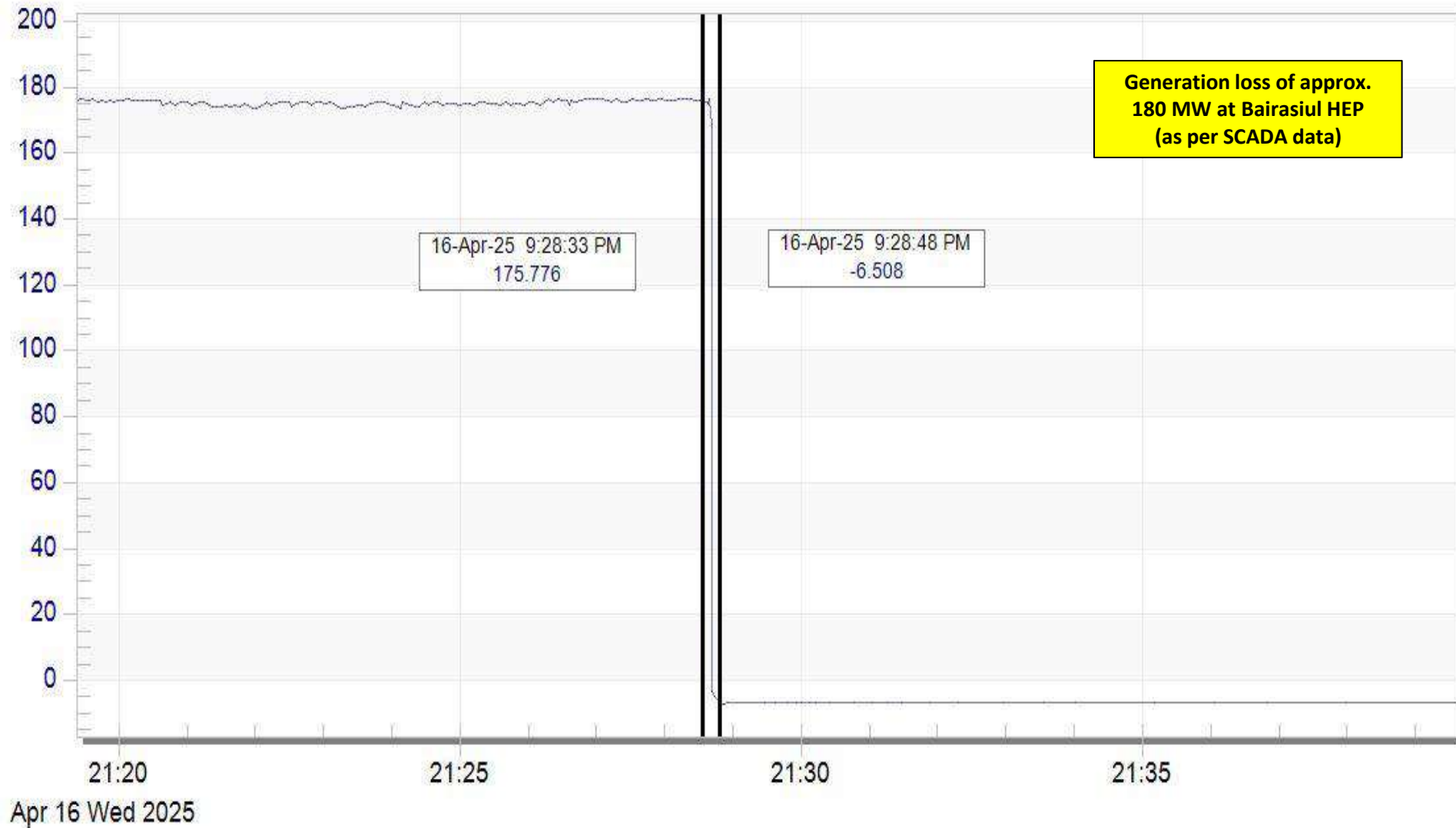
16.4 .25 21:29:0

PL = 6
SENT = -8



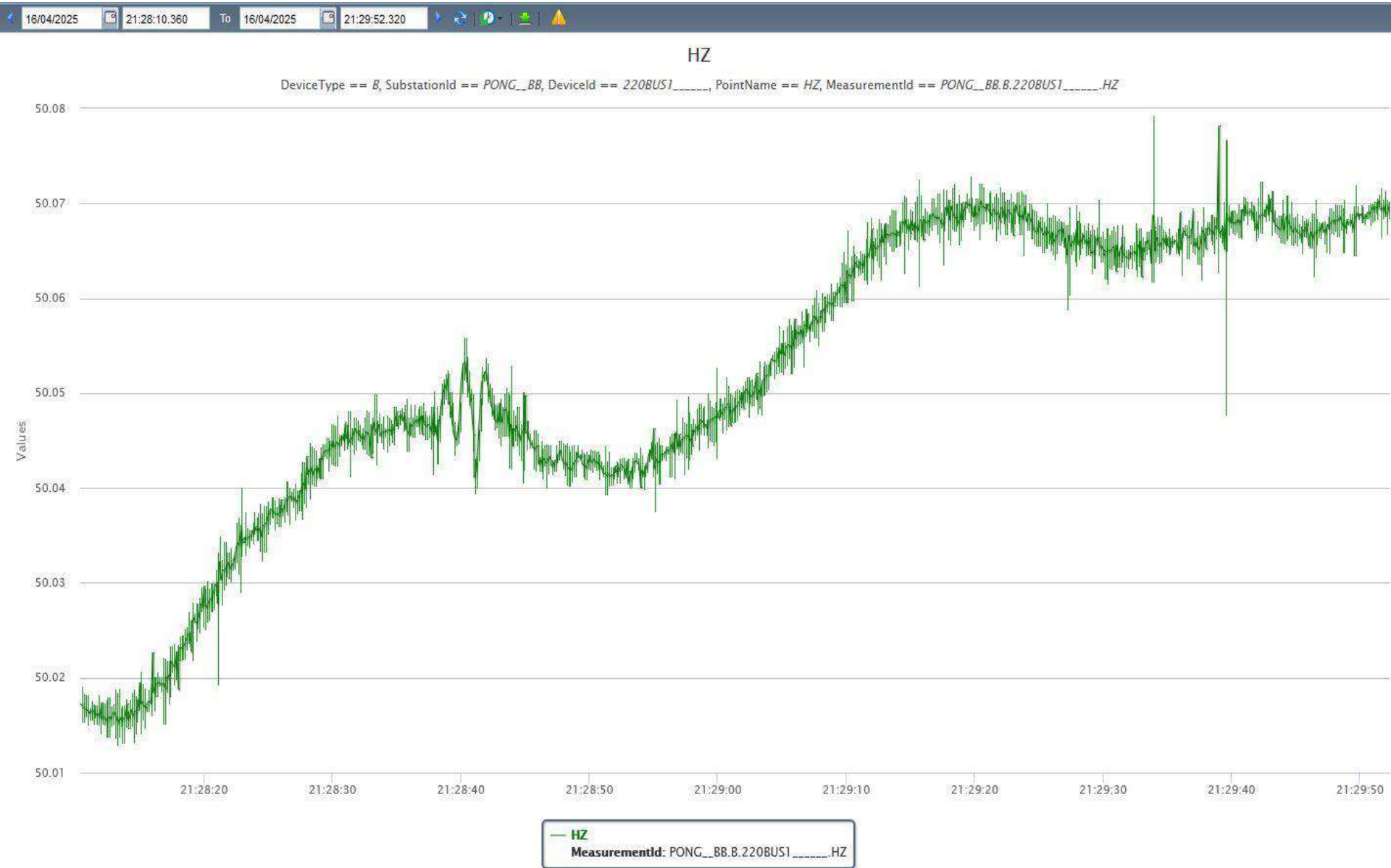
Bairasiul HEP generation during the event

ICOMPANIES!PGCILINRLDC_PG!SENT!BAIRA_NH!P.MvMoment



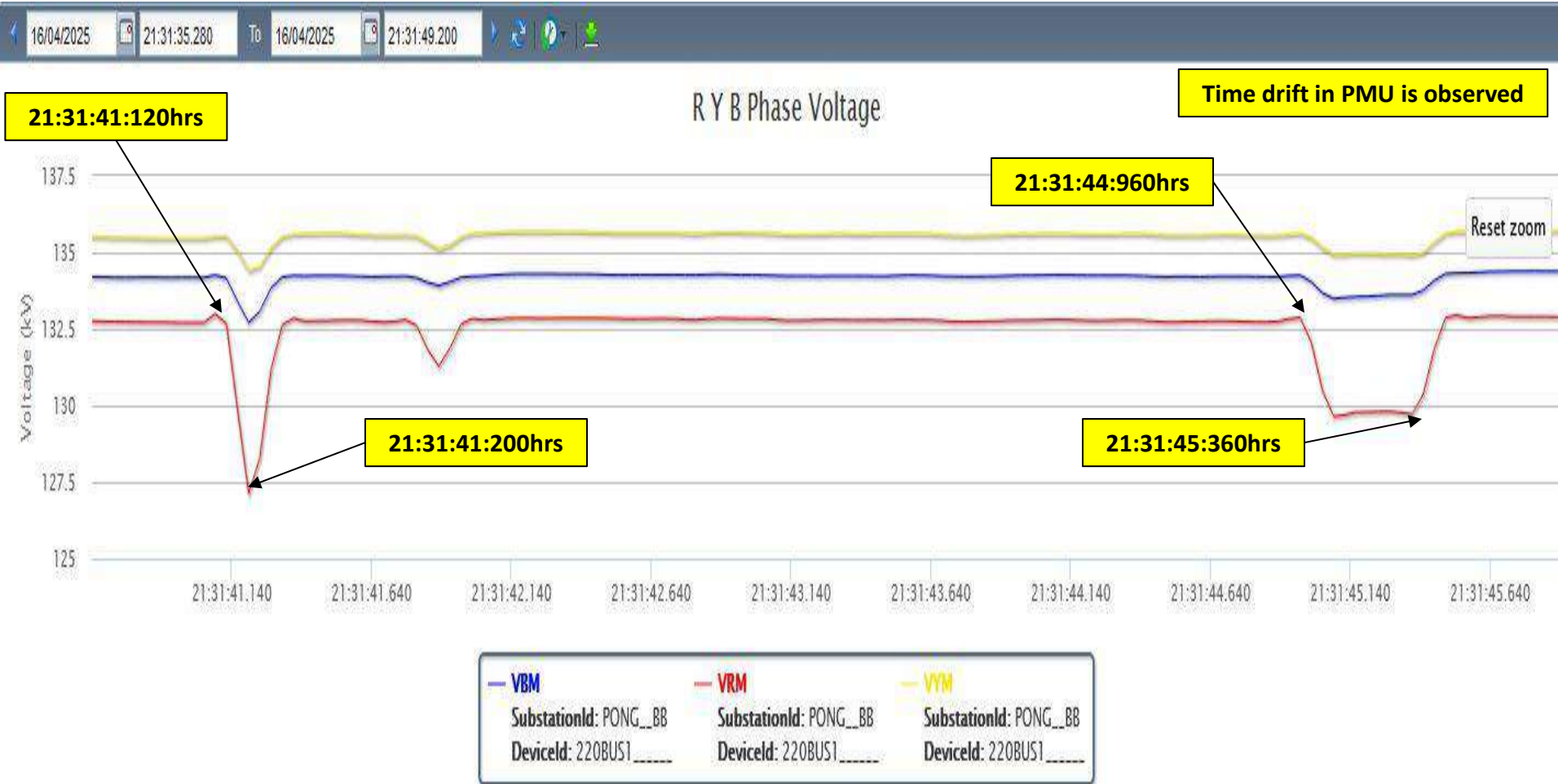
PMU Plot of frequency at Pong(BB)

21:28hrs/16-Apr-25



PMU Plot of phase voltage magnitude at Pong(BB)

21:31hrs/16-Apr-24



R Y B Phase Voltages Angles

SCADA SOE

Time	Station Name	Voltage Level	Element Name	Element Type	Element Status	Remarks
21:28:46,584	BAIRA_NH	220kV	03G3	Circuit Breaker	Open	CB at 220kV side of 60 MW Unit-3 at bairasiul(NH) opened
21:28:46,584	BAIRA_NH	220kV	02G2	Circuit Breaker	Open	CB at 220kV side of 60 MW Unit-2 at bairasiul(NH) opened
21:28:48,147	BAIRA_NH	220kV	01G1	Circuit Breaker	Open	CB at 220kV side of 60 MW Unit-1 at bairasiul(NH) opened

Points for Discussion

- i) Reason of delayed clearance of fault need to be shared.
- ii) DR/EL (.dat/.cfg file) of all tripped elements along with detailed tripping report need to be shared from both the ends.
- iii) Remedial action taken report to be shared.

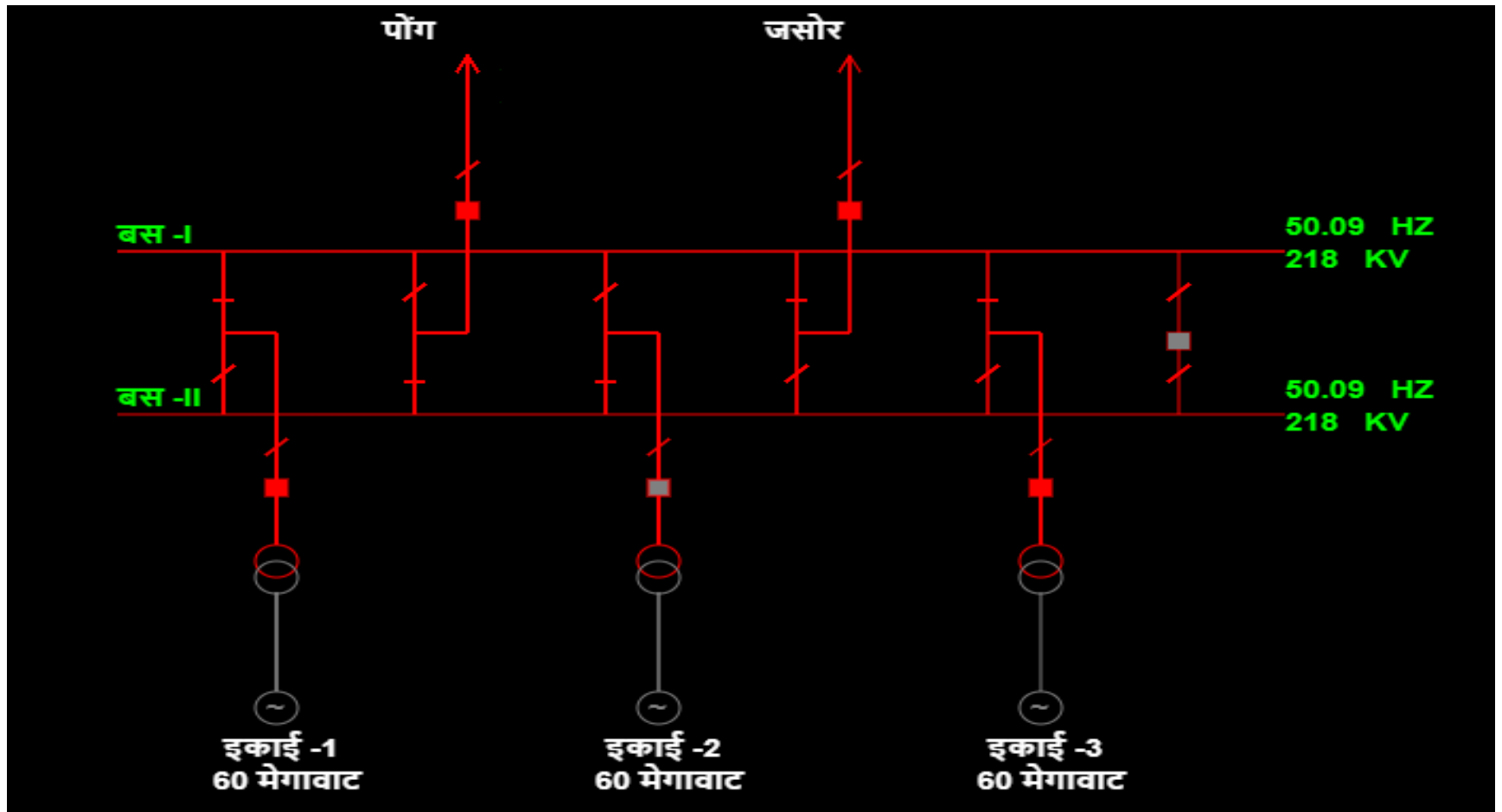
60th PCC Meeting of NRPC

NHPC Limited

Agenda Point No.5

- Complete outage of Bairasuil Power Station(NHPC) at 21:28 hrs on 16-Apr-25

SLD of Bairasuil



Elements Tripped on 16/04/2025

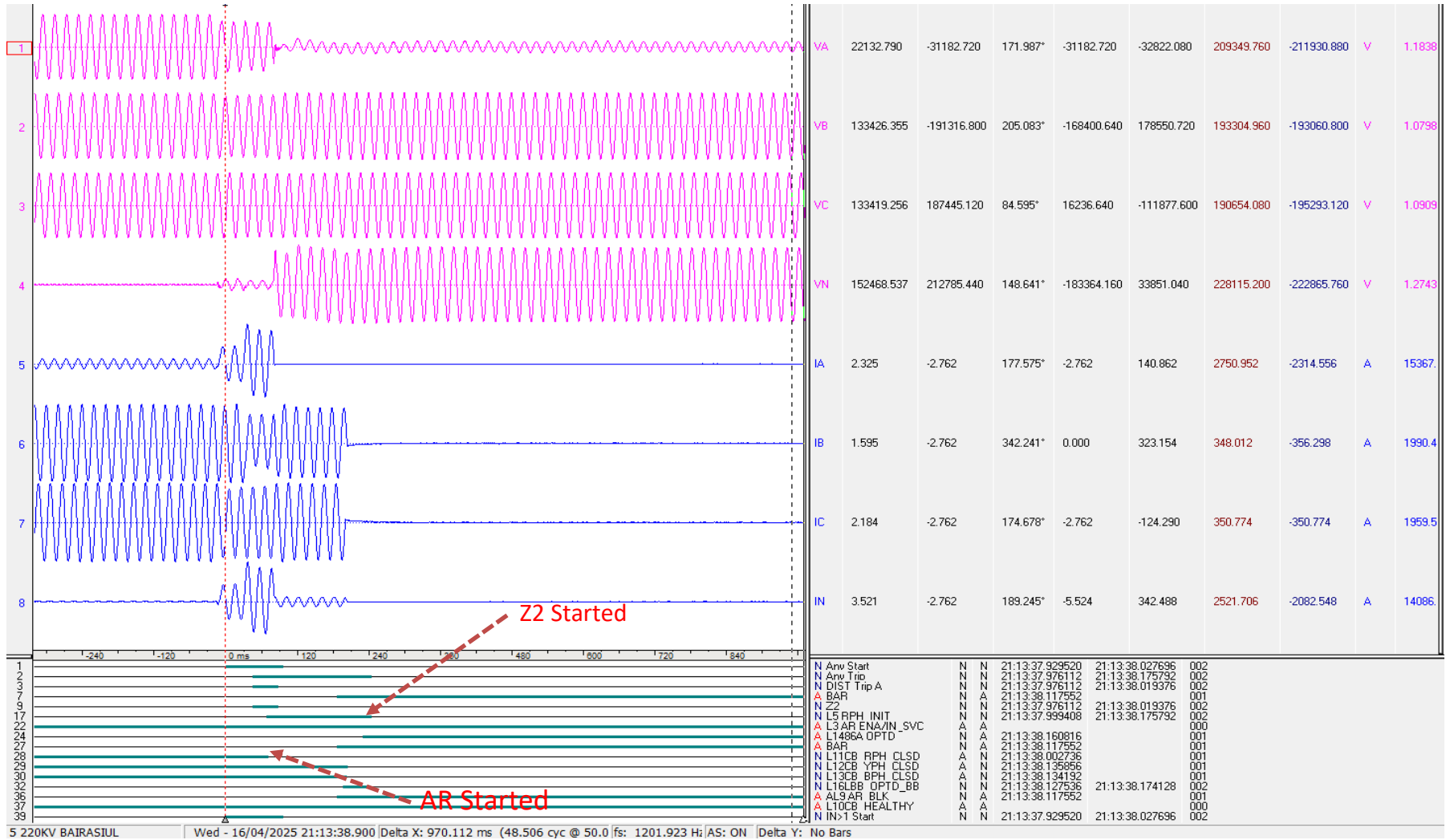
क्रम सं	यूनिट / लाइन नाम	से		तक		कुल आउटेज समय	आउटेज के कारण	ऊर्जा नुकसान (मेगावाट)
		तारीख	समय	तारीख	समय			
1	220KV Bairasuil-Pong Line#1	16-Apr-25	21:13:00	16-Apr-25	22:24:00	1:11:00	Distance protection operated in Z21	0
2	Unit#1	16-Apr-25	21:28:00	16-Apr-25	22:46:00	1:18:00	Over Speed protection operated	60
3	Unit#2	16-Apr-25	21:28:00	16-Apr-25	22:35:00	1:07:00	Over Speed protection operated	60
4	Unit#3	16-Apr-25	21:28:00	16-Apr-25	22:27:00	0:59:00	Over Speed protection operated	60

Detail Analysis

220 KV Bairasuil-Pong Line:-

- i. Tripped on operation of Z2 protection at 21:13:37.977 Hrs. upon receiving of carrier signal from remote end on R-N Phase fault ($V_R=95.84$ KV, $I_R=1782$ A).
- ii. Auto reclose operation started in R-Phase.
- iii. However within 140 msec, Auto reclose operation was blocked due to receiving of "CBF Re-trip command "from Busbar Protection relay and Three Phase tripping occurred from Bairasuil end.
- iv. From Busbar Protection relay DR, it is evident R-Phase current of Line#1 was increased to 1805 A from 245 A. However within 90 msec current reduced to 90 amp which is below present value for LBB operation i.e. 110 A.

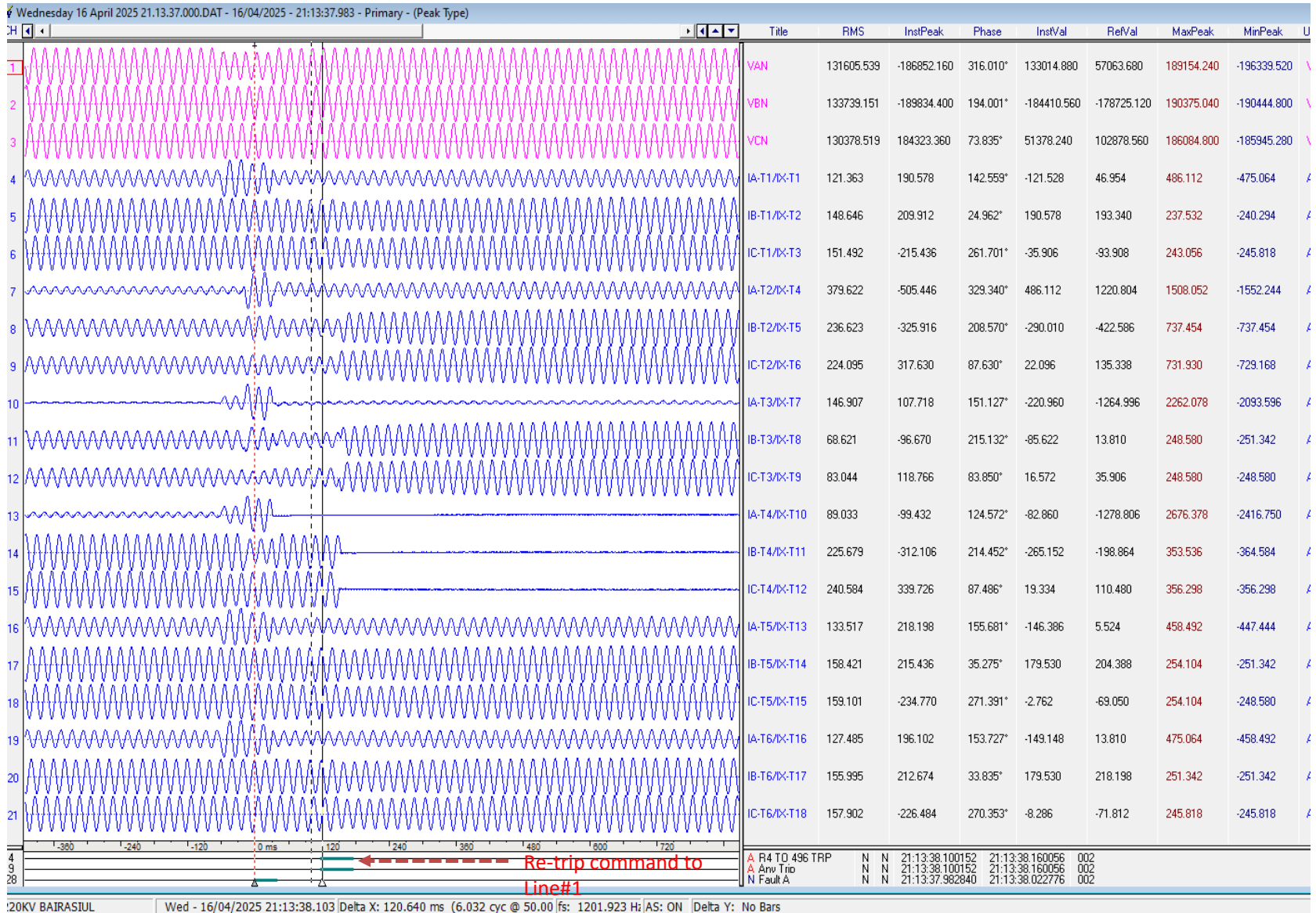
Bairasuil-Pong Line DR



































Pong Line Relay EL

...	Wednesday	16	April	2025	21:13:38.157	Logic Inputs 1
...	Wednesday	16	April	2025	21:13:38.132	Logic Inputs 1
...	Wednesday	16	April	2025	21:13:38.130	Logic Inputs 1
...	Wednesday	16	April	2025	21:13:38.129	Output Contacts1
...	Wednesday	16	April	2025	21:13:38.125	Check Synch. OK ON
...	Wednesday	16	April	2025	21:13:38.124	Logic Inputs 1
...	Wednesday	16	April	2025	21:13:38.119	A/R Lockout ON
...	Wednesday	16	April	2025	21:13:38.119	AR Discrim. OFF
...	Wednesday	16	April	2025	21:13:38.119	A/R Trip 3P ON
...	Wednesday	16	April	2025	21:13:38.119	A/R 1P In Prog OFF
...	Wednesday	16	April	2025	21:13:38.114	Logic Inputs 1
...	Wednesday	16	April	2025	21:13:38.084	DIST UNB CR OFF
...	Wednesday	16	April	2025	21:13:38.079	Logic Inputs 1
...	Wednesday	16	April	2025	21:13:38.057	Output Contacts1
...	Wednesday	16	April	2025	21:13:38.057	Any Int. Trip A OFF
...	Wednesday	16	April	2025	21:13:38.057	Any Int. Trip OFF
...	Wednesday	16	April	2025	21:13:38.029	Any Start OFF
...	Wednesday	16	April	2025	21:13:38.029	IN> 1 Start OFF
...	Wednesday	16	April	2025	21:13:38.029	Any Pole Dead ON
...	Wednesday	16	April	2025	21:13:38.022	I> Start Any A OFF
...	Wednesday	16	April	2025	21:13:38.022	Dist Start N ON
...	Wednesday	16	April	2025	21:13:38.022	I>1 Start OFF
...	Wednesday	16	April	2025	21:13:38.021	Output Contacts1
...	Wednesday	16	April	2025	21:13:38.021	Z2 OFF
...	Wednesday	16	April	2025	21:13:38.021	Dist Start N OFF
...	Wednesday	16	April	2025	21:13:38.021	DIST Start A OFF
...	Wednesday	16	April	2025	21:13:38.021	DIST Trip A OFF
...	Wednesday	16	April	2025	21:13:38.021	DIST Fwd OFF
...	Wednesday	16	April	2025	21:13:38.019	Check Synch. OK OFF
...	Wednesday	16	April	2025	21:13:38.006	I>1 Start ON
...	Wednesday	16	April	2025	21:13:37.999	Logic Inputs 1
...	Wednesday	16	April	2025	21:13:37.996	Logic Inputs 1
...	Wednesday	16	April	2025	21:13:37.982	I> Start Any A ON
...	Wednesday	16	April	2025	21:13:37.979	A/R 1P In Prog ON
...	Wednesday	16	April	2025	21:13:37.979	AR Discrim. ON
...	Wednesday	16	April	2025	21:13:37.977	Output Contacts1
...	Wednesday	16	April	2025	21:13:37.977	1P Trip ON
...	Wednesday	16	April	2025	21:13:37.977	Any Trip A ON
...	Wednesday	16	April	2025	21:13:37.977	Any Int. Trip A ON
...	Wednesday	16	April	2025	21:13:37.977	Any Trip ON
...	Wednesday	16	April	2025	21:13:37.977	Z2 ON
...	Wednesday	16	April	2025	21:13:37.977	DIST Trip A ON
...	Wednesday	16	April	2025	21:13:37.977	Any Int. Trip ON
...	Wednesday	16	April	2025	21:13:37.972	Dist Start N ON
...	Wednesday	16	April	2025	21:13:37.972	DIST Start A ON
...	Wednesday	16	April	2025	21:13:37.972	DIST Fwd ON
...	Wednesday	16	April	2025	21:13:37.959	DIST UNB CR ON
...	Wednesday	16	April	2025	21:13:37.954	Logic Inputs 1
...	Wednesday	16	April	2025	21:13:37.931	Any Start ON
...	Wednesday	16	April	2025	21:13:37.931	IN> 1 Start ON
...	Wednesday	16	April	2025	18:07:04.614	Check Synch. OK ON

DR of Busbar Protection Relay



EL of Busbar Relay

	Wednesday 16 April 2025 21:28:45.230	Logic Inputs 1
	Wednesday 16 April 2025 21:28:45.220	Logic Inputs 1
	Wednesday 16 April 2025 21:28:43.928	Logic Inputs 2
	Wednesday 16 April 2025 21:28:43.918	Logic Inputs 2
	Wednesday 16 April 2025 21:28:43.860	Dead Bus Zone 1 ON
	Wednesday 16 April 2025 21:28:43.357	Logic Inputs 2
	Wednesday 16 April 2025 21:28:43.345	Logic Inputs 2
	Wednesday 16 April 2025 21:13:38.303	Logic Inputs 1
	Wednesday 16 April 2025 21:13:38.168	Logic Inputs 1
	Wednesday 16 April 2025 21:13:38.166	Fault Recorded
	Wednesday 16 April 2025 21:13:38.161	Output Contacts1
	Wednesday 16 April 2025 21:13:38.161	Trip Initial OFF
	Wednesday 16 April 2025 21:13:38.160	Any Trip OFF
	Wednesday 16 April 2025 21:13:38.160	CBF Retrip T4 OFF
	Wednesday 16 April 2025 21:13:38.153	Logic Inputs 1
	Wednesday 16 April 2025 21:13:38.101	CBF Retrip T4 ON
	Wednesday 16 April 2025 21:13:38.101	Any Trip ON
	Wednesday 16 April 2025 21:13:38.101	Trip Initial ON
	Wednesday 16 April 2025 21:13:38.101	Breaker Fail ON
	Wednesday 16 April 2025 21:13:38.101	Output Contacts1
	Wednesday 16 April 2025 21:13:38.101	CB Fail Alm T4 ON
	Wednesday 16 April 2025 21:13:38.086	Fault Recorded
	Wednesday 16 April 2025 21:13:38.023	Any Start OFF
	Wednesday 16 April 2025 21:13:38.023	DeadZone 3 Start OFF
	Wednesday 16 April 2025 21:13:38.023	Fault A OFF
	Wednesday 16 April 2025 21:13:38.023	DeadZone3 StartA OFF
	Wednesday 16 April 2025 21:13:38.001	Logic Inputs 1
	Wednesday 16 April 2025 21:13:37.983	DeadZone3 StartA ON
	Wednesday 16 April 2025 21:13:37.983	Any Start ON
	Wednesday 16 April 2025 21:13:37.983	DeadZone 3 Start ON
	Wednesday 16 April 2025 21:13:37.983	Fault A ON
	Wednesday 16 April 2025 18:11:42.479	Logic Inputs 2

220 KV Bairasuil-Jessure Line

- The Line CB of Bariasuil-Jessure Line remained in closed condition from Bairasuil end.

Unit Tripping

- i. Due to tripping of outgoing lines from Jessure Sub- Station lead to unviability of Power evacuation path for Bairasuil Power Station.
- ii. All the three running units tripped on operation of over speed protection due to sudden load throw of.

Remedial Measures

- Initiation of re-trip command from Busbar relay to Line#1 is already been taking up with OEM i.e.. M.s GE for remedial action.

Thanks

Multiple element tripping event at
400 kV Gurgaon(PG) & 220 kV SEC-
72 Gurgaon(HVPNL)

At 13:59 hrs on 17.04.2025

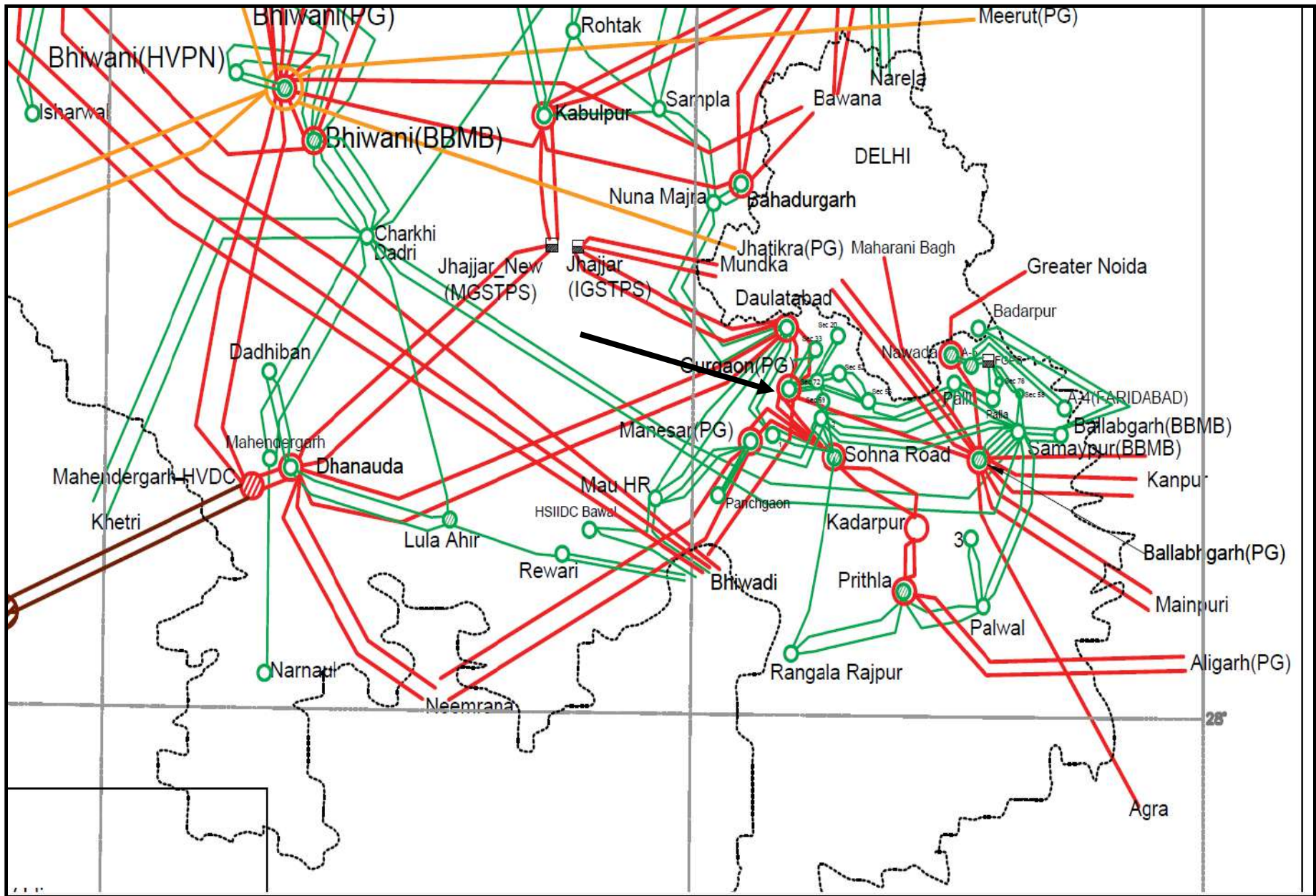
Tripped Elements

S. No	Name of Elements	Outage Time	Revival Time	Reason of tripping
1.	220 KV Sec 72 – Sec52 (HVPNL)	13:59 hrs	07:55 hrs on 18.04.2025	Y-B phase conductor broken and B-phase CT blast at sector 72 end during fire incident.
2.	400/220kV 315 MVA ICT 1 at Gurgaon(PG)		15:13 hrs	HV side Backup Overcurrent Protection operated
3.	400/220kV 315 MVA ICT 2 at Gurgaon(PG)		15:23 hrs	
4.	400/220kV 500 MVA ICT 3 at Gurgaon(PG)		15:42 hrs	
5.	400/220kV 500 MVA ICT 4 at Gurgaon(PG)		15:49 hrs	
6.	220 KV Gurgaon(PG)-GurgaonSec72(HV)(HVPNL)-3		17:05 hrs	Overcurrent protection operated at Gurgaon(PG) end.

Brief details of the event

- i) 400/220KV Gurgaon(PG) and 220/66/33KV Gurgaon sec72 has double main bus system in 220KV side. 220kV Sec72 Gurgaon(HR) has source from 400/220kV Gurgaon(PG) station through four 220kV feeders. 220kV Gurgaon(PG)-Sec72 Gurgaon ckt-4 was under shutdown since 02.12.2024.
- ii) As reported, at 13:59 hrs, Y-B fault occurred on 220 kV Sec72 Gurgaon –Sec52 Gurgaon (HR) line. Fault occurred due to fire incident due to blast in HCG (Haryana City Gas) pipeline under the line(tower no 45-46), leading to melting of Y & B ph conductor. At the same time B-ph CT of 220 kV Sec72 Gurgaon –Sec52 Gurgaon (HR) line at Sec72 Gurgaon(HR) end also got damaged (blast).
- iii) As per PMU at Gurgaon(PG), B-N phase to earth fault converted into Y-B fault with delayed clearance of ~1800msec is observed.
- iv) On this fault, distance protection as well as back up Dir. E/F O/C protection at Sec72 Gurgaon(HR) end didn't operate.
- v) Fault cleared with the tripping of all four 400/220kV ICTs (2*315 + 2*500MVA) at Gurgaon(PG) on back up overcurrent protection operation. 220kV Gurgaon(PG)-Gurgaon72 ckt-3 also tripped from Gurgaon(PG) end on overcurrent protection.
- vi) With the tripping of all four ICTs at Gurgaon(PG), supply to 220kV Sec72 Gurgaon(HR) got lost.
- vii) As per SCADA, change in demand of approx. ~815MW in Haryana control area is observed.
- viii) 400/220kV ICTs at Guragon(PG) restored back between 15:13 hrs- 15:50 hrs and supply to Sec72 Gurgaon(HR) restored.

Network Diagram



SLD of 400/220KV Gurgaon(PG) before the event

CONTACT DETAILS	
EMAIL	glsggn@powergrid.co.in
MOBILE	9667322400
HOTLINE	20112351 / 20112179

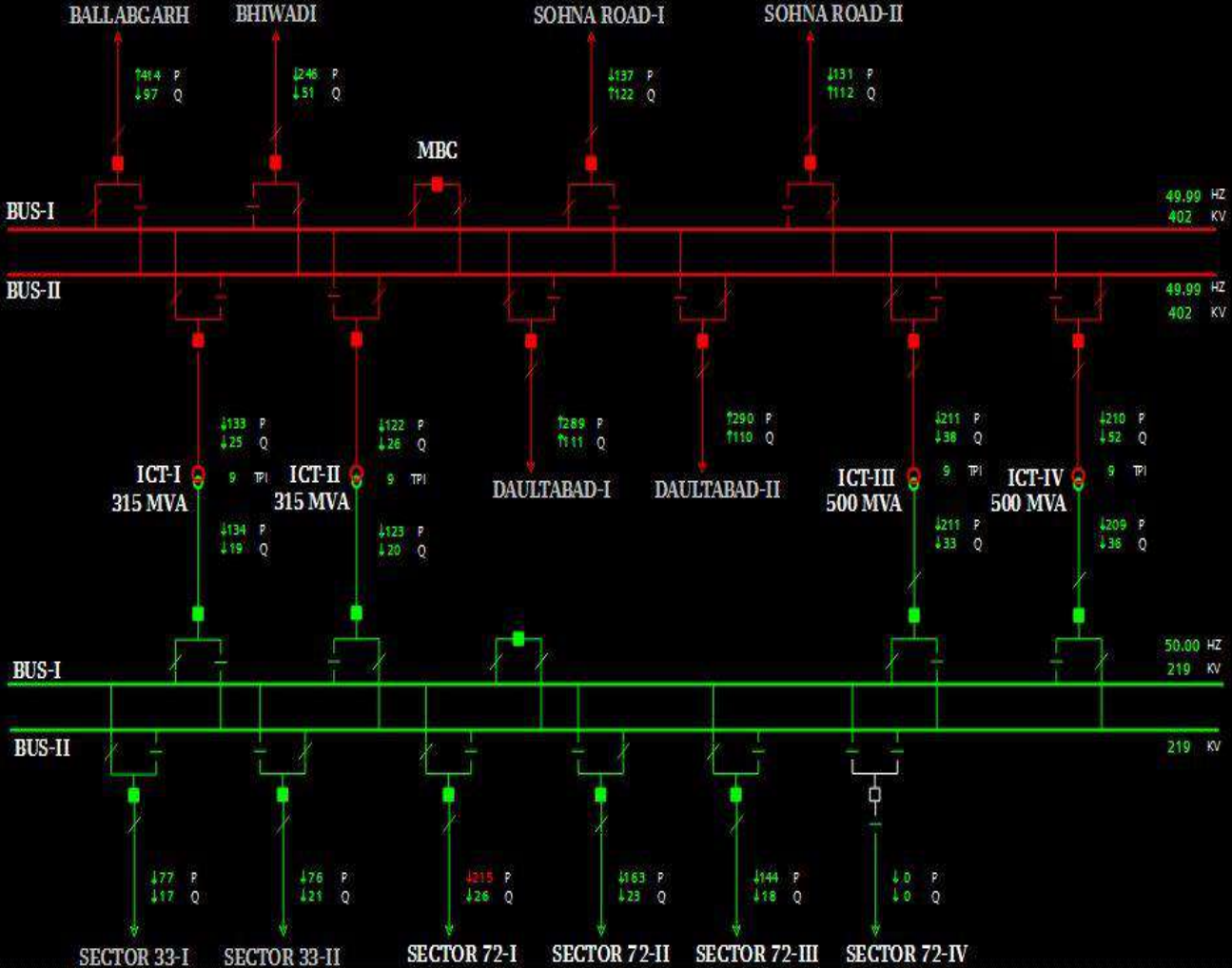
P sum(400 kV) = -3
P sum(220 kV) = -0

GURGAON-PG(GIS)

Stat Expl	GenSum	Company
-----------	--------	---------

17.4.25 13:59:30

Q sum(400 kV) = -83
Q sum(220 kV) = 75



SLD of 400/220KV Gurgaon(PG) after the event

CONTACT DETAILS	
EMAIL	glsngn@powergrid.co.in
MOBILE	9667322400
HOTLINE	20112351 / 20112179

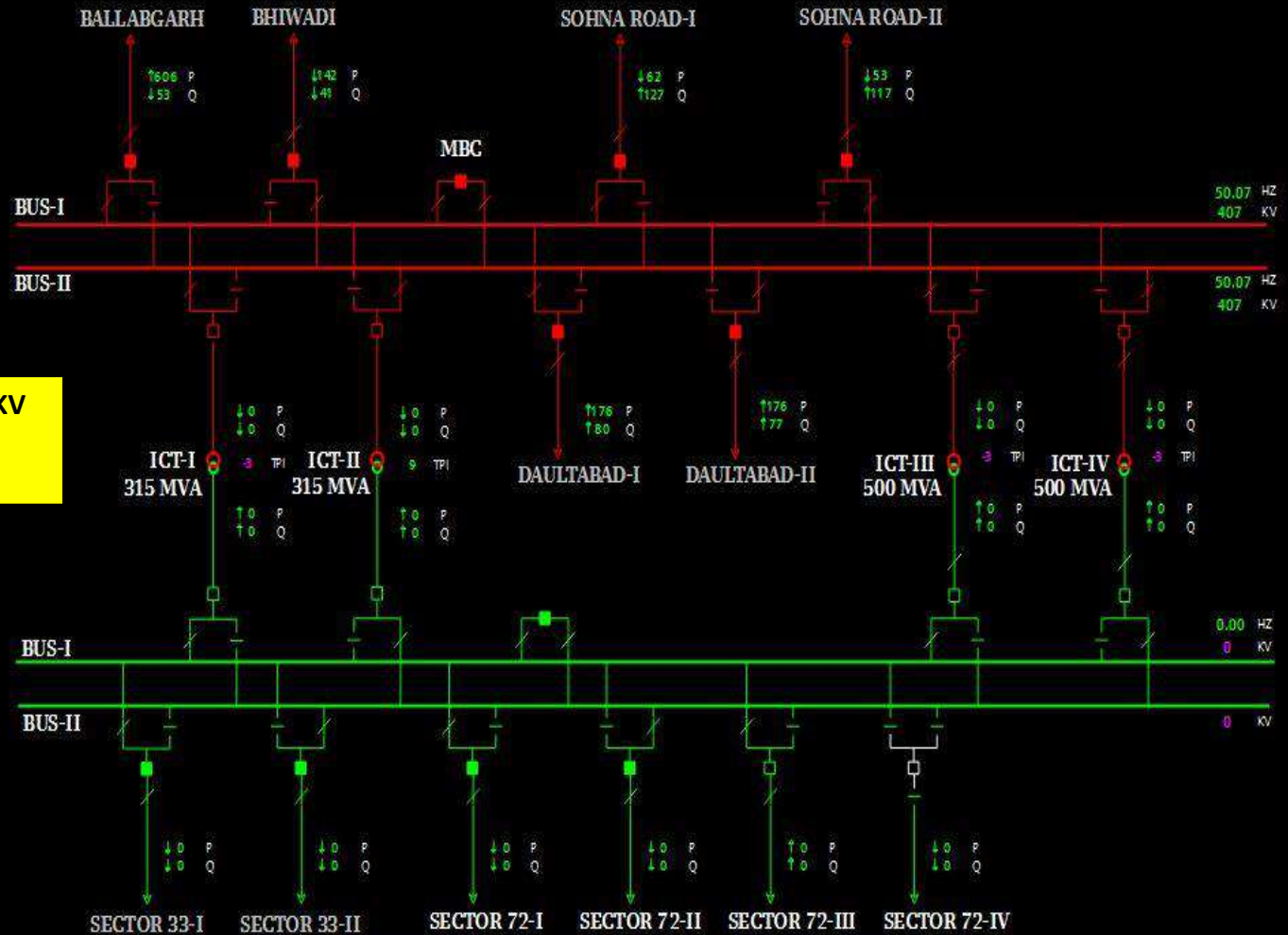
P sum(400 kV) = -5
P sum(220 kV) = -0

GURGAON-PG(GIS)

Stat Expl GenSum Company

17.4 .25 14:0 :30

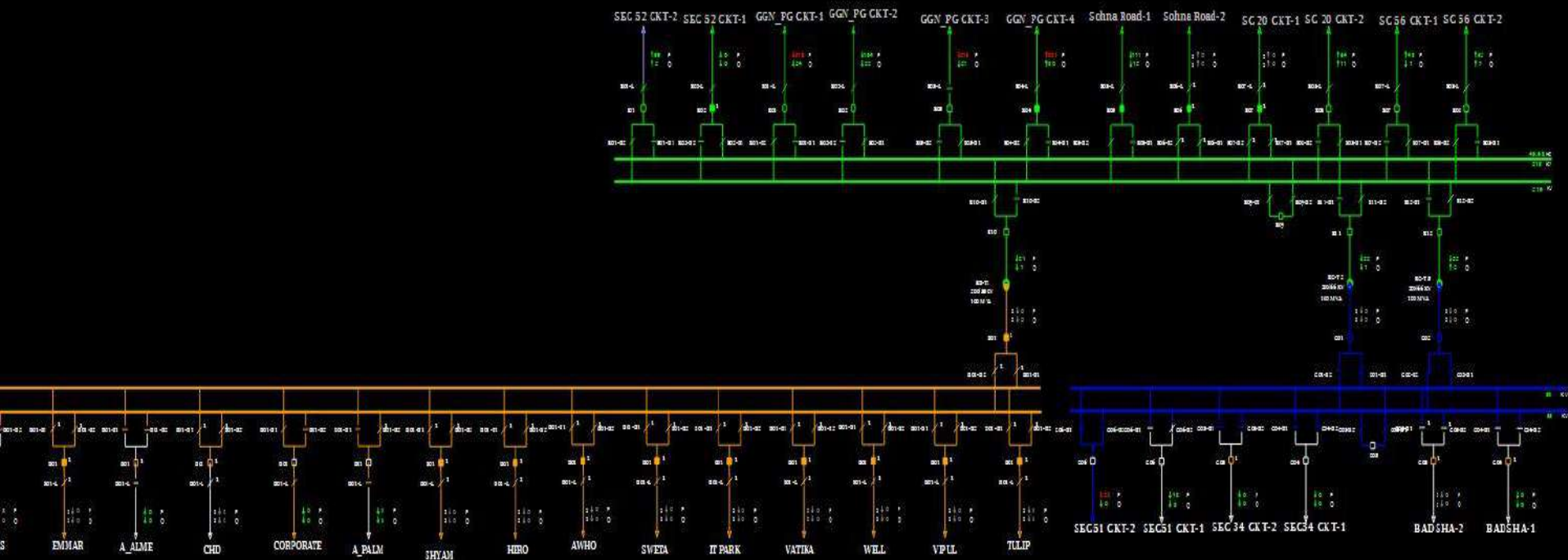
Q sum(400 kV) = -7
Q sum(220 kV) = -0



Complete tripping of 220KV side of Gurgaon S/s (as per SCADA)

SLD of 220/66/33KV Sec72(HR) before the event

SEC72 GURGAON

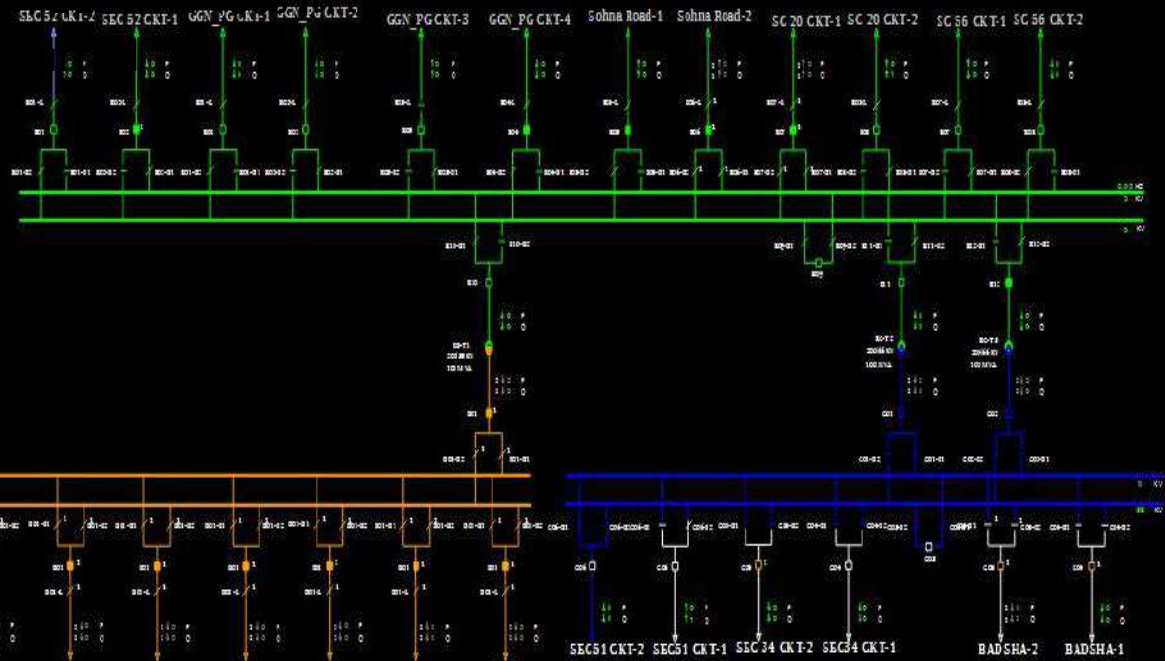


SLD of 220/66/33KV Sec72(HR) after the event

**Blackout of 220kV Sec72
Gurgaon S/s
(as per SCADA)**

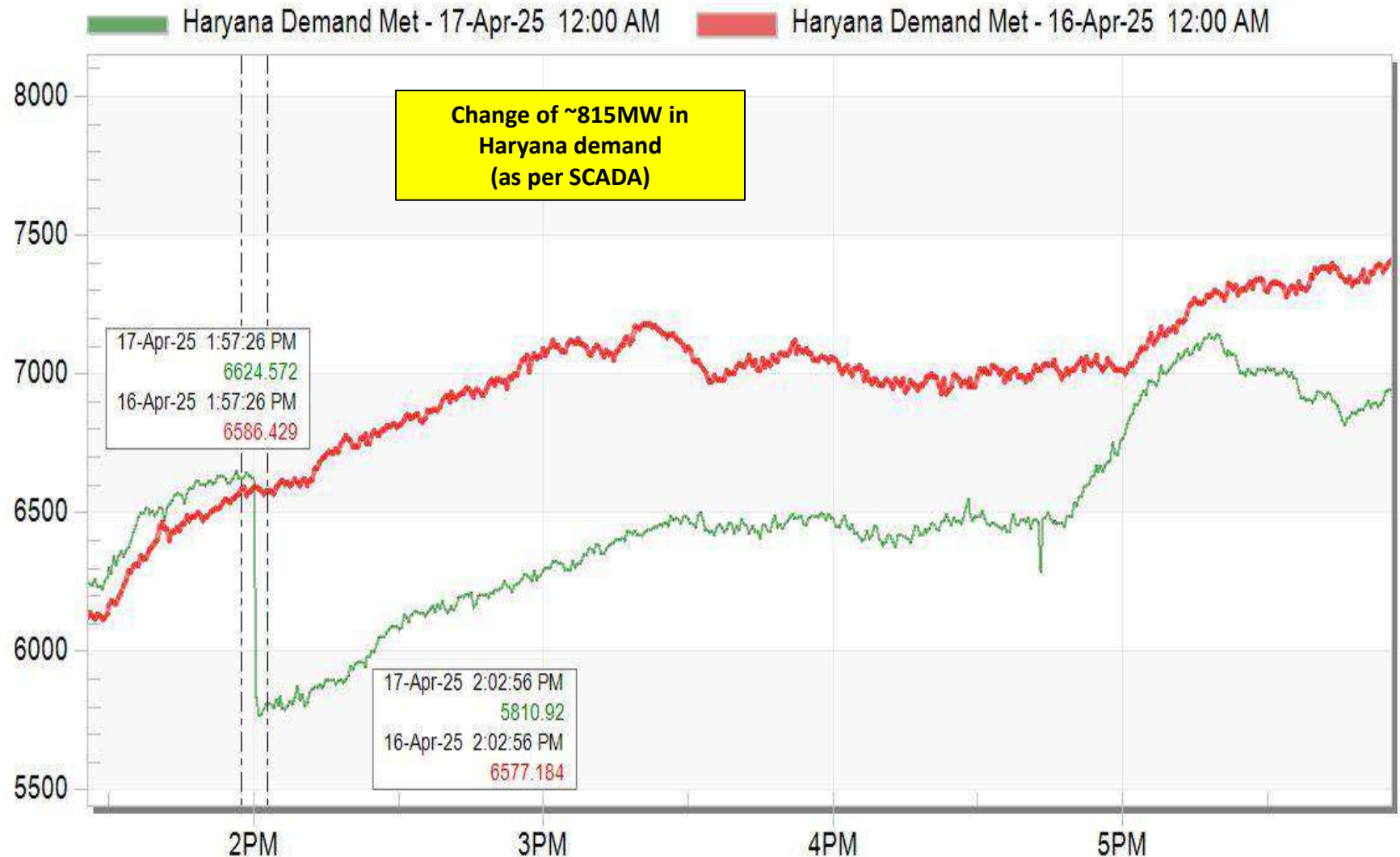
SEC72 GURGAON

State Grid Company



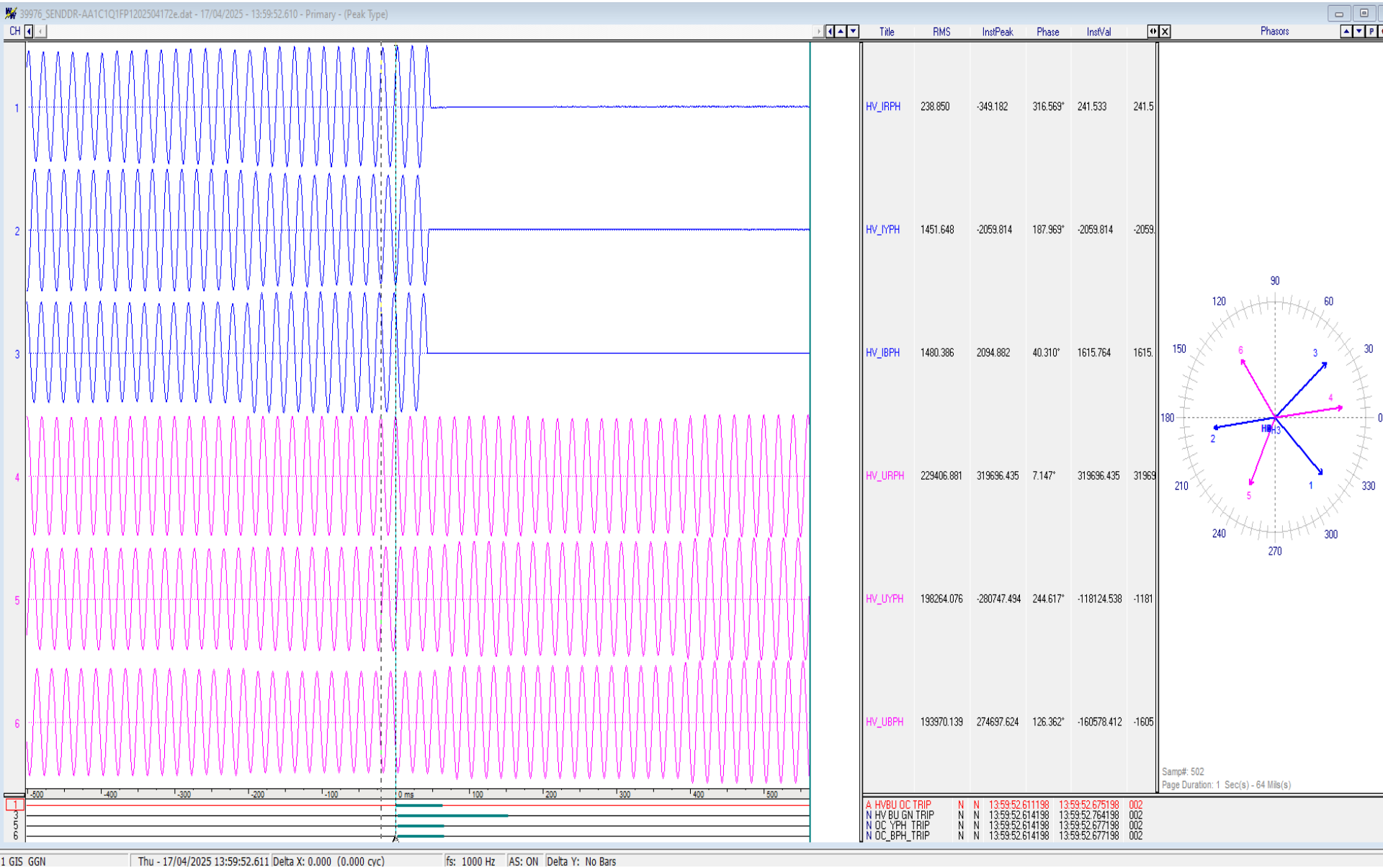
Haryana Demand during the event

Haryana Demand Met



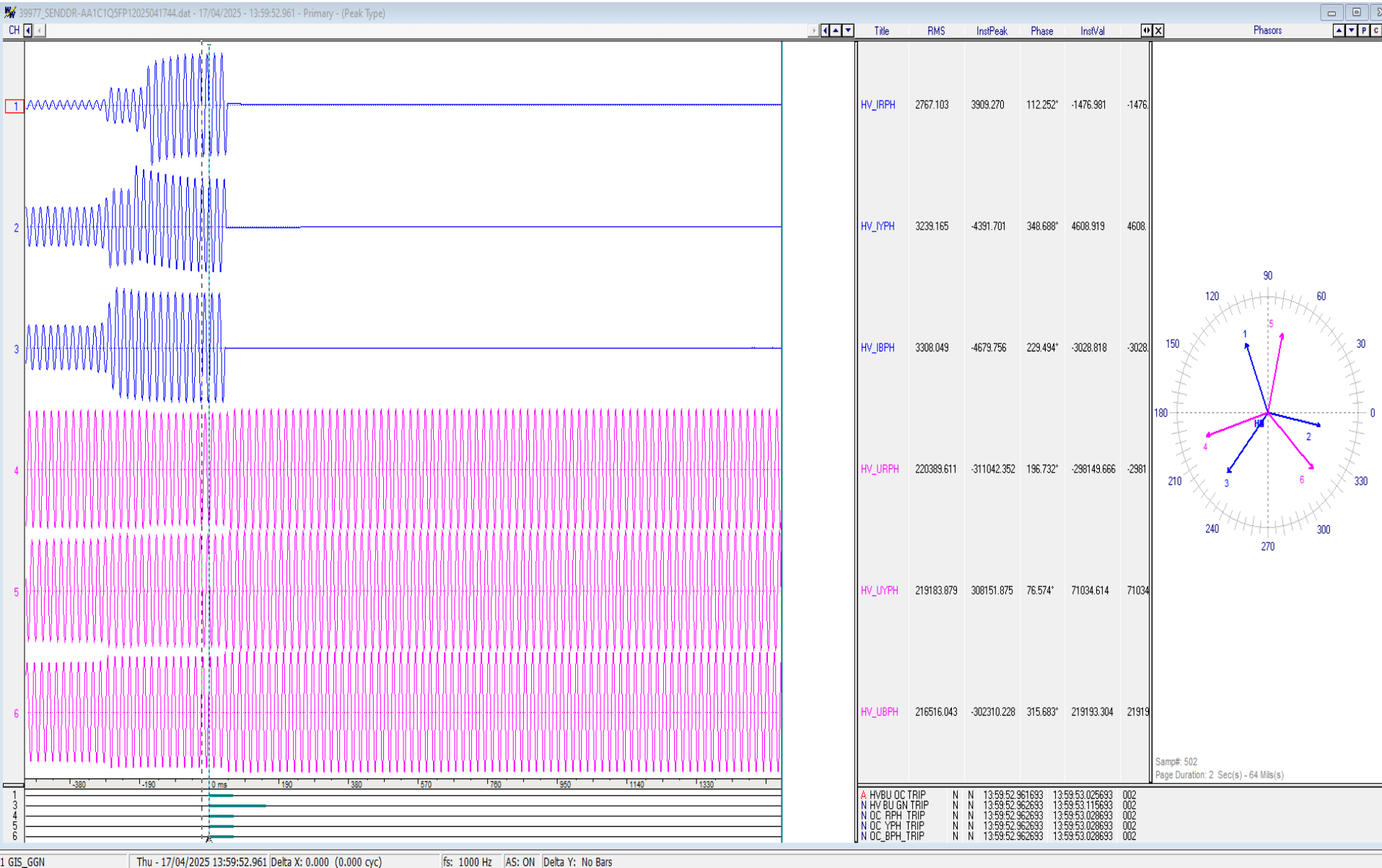
Apr 17 Thu 2025

DR of 400/220 kV 315 MVA ICT 1 at Gurgaon(PG)



✓ HV side Back-up Over-current protection operated

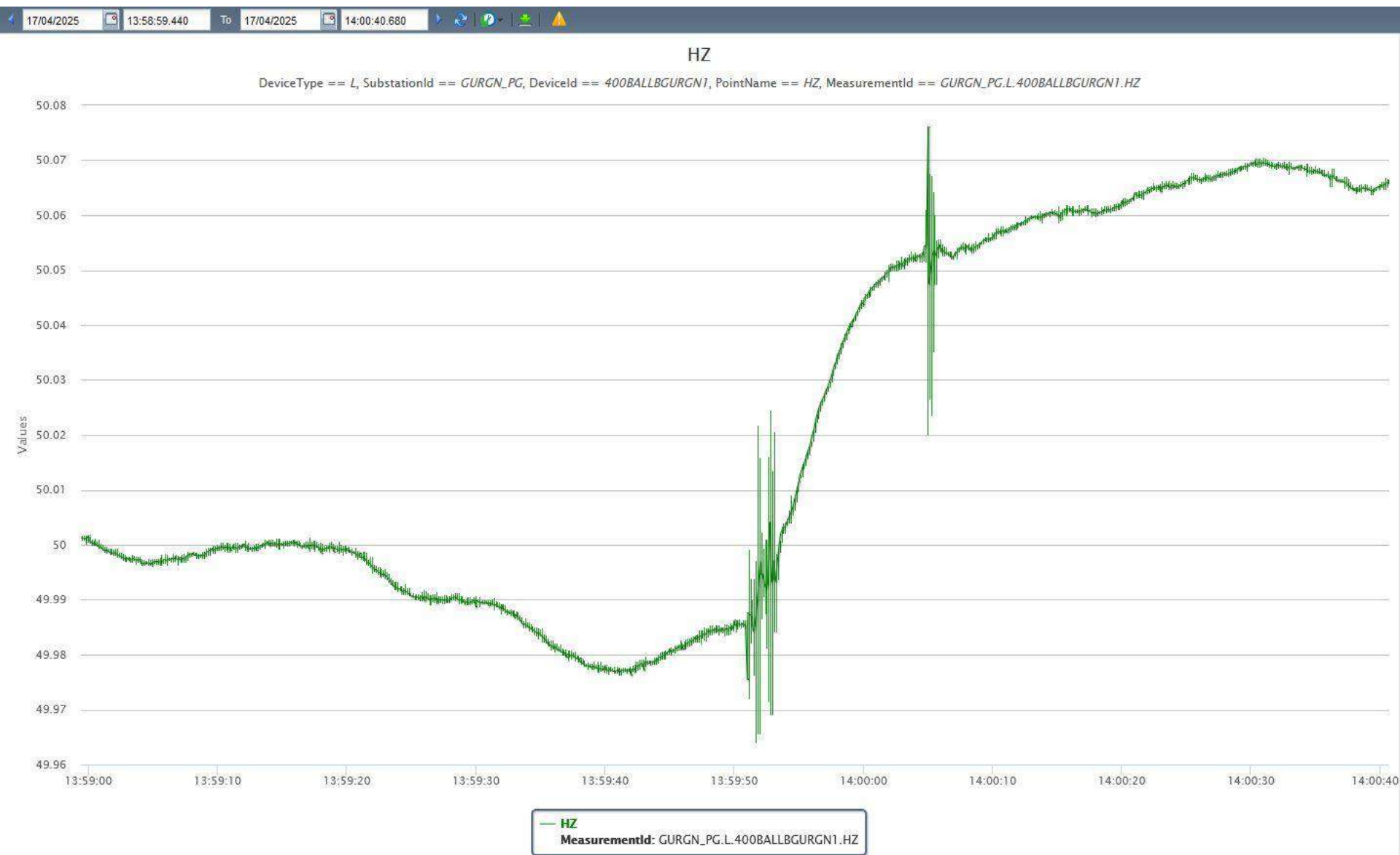
DR of 400/220 kV 315 MVA ICT 2 at Gurgaon(PG)



✓ HV side Back-up Over-current protection operated

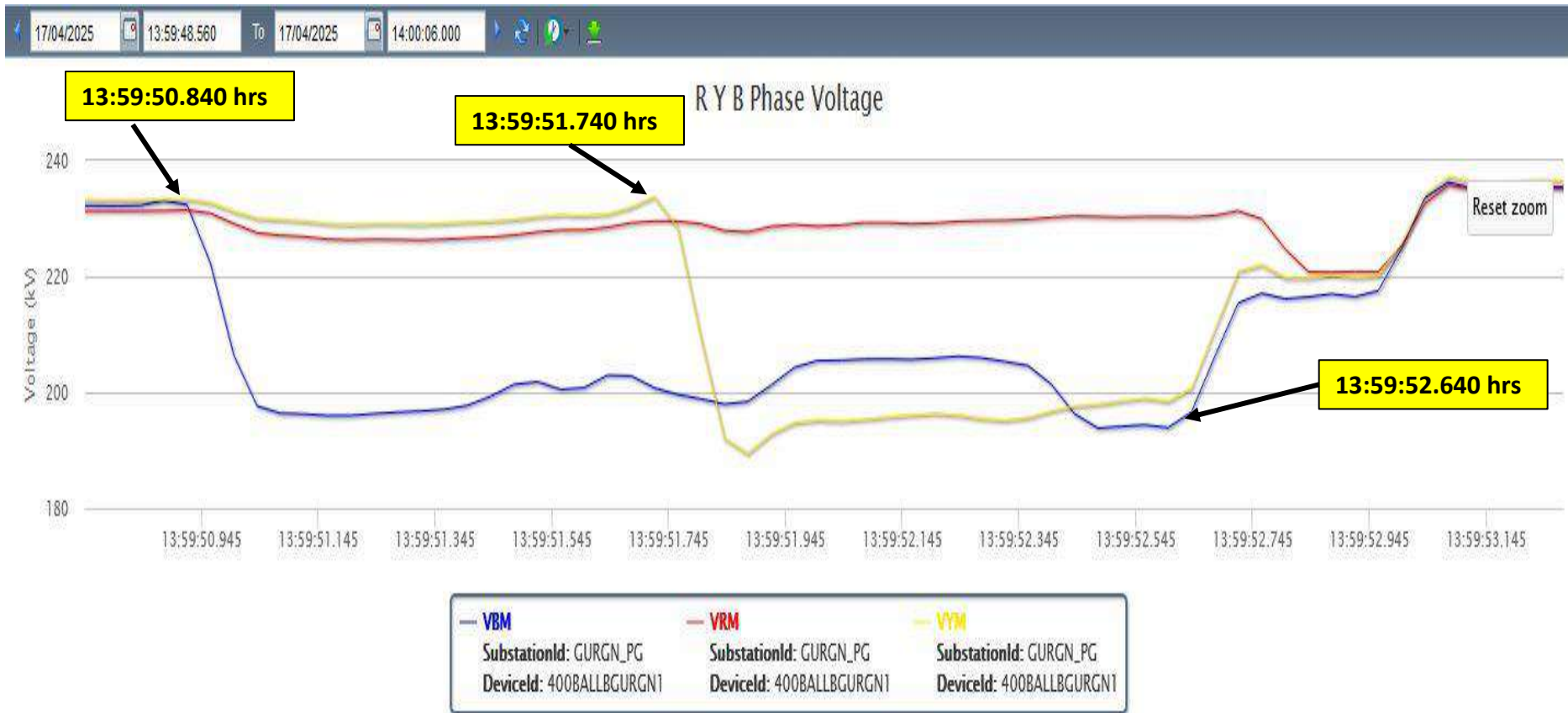
PMU Plot of frequency at Gurgaon(PG)

13:59hrs/17-Apr-25



PMU Plot of phase voltage at Gurgaon(PG)

13:59hrs/17-Apr-25



R Y B Phase Voltages Angles

- ✓ As per PMU, B-N fault converted to Y-B fault is observed with delayed fault clearing time of 1800ms.

SCADA SOE

Time	Station Name	Votage level	Element Name	Element Type	Element Status	Remarks
13:59:51,696	GURGAON	220kV	08HVPNL3	Circuit Breaker	Open	
13:59:52,662	GURGAON	400kV	01T1	Circuit Breaker	Open	Opening of 400KV side CB of 400/220 kV 315 MVA ICT 1 at Gurgaon(PG)
13:59:52,674	GURGAON	220kV	06T1	Circuit Breaker	Open	Opening of 220KV side CB of 400/220 kV 315 MVA ICT 1 at Gurgaon(PG)
13:59:52,696	GURGAON	220kV	11T4	Circuit Breaker	Open	Opening of 220KV side CB of 400/220 kV 315 MVA ICT 4 at Gurgaon(PG)
13:59:52,696	GURGAON	220kV	10T3	Circuit Breaker	Open	Opening of 220KV side CB of 400/220 kV 315 MVA ICT 3 at Gurgaon(PG)
13:59:52,702	GURGAON	400kV	11T4	Circuit Breaker	Open	Opening of 400KV side CB of 400/220 kV 315 MVA ICT 4 at Gurgaon(PG)
13:59:52,704	GURGAON	400kV	10T3	Circuit Breaker	Open	Opening of 400KV side CB of 400/220 kV 315 MVA ICT 3 at Gurgaon(PG)
13:59:53,009	GURGAON	400kV	05T2	Circuit Breaker	Open	Opening of 400KV side CB of 400/220 kV 315 MVA ICT 2 at Gurgaon(PG)
13:59:53,023	GURGAON	220kV	07T2	Circuit Breaker	Open	Opening of 220KV side CB of 400/220 kV 315 MVA ICT 2 at Gurgaon(PG)
14:00:07,991	SEC72GURGAON	220kV	EB_T3_P	Circuit Breaker	Close	

Points for Discussion

- i) Why did line protection (both Main-1&2) at Sec72 Gurgaon(HR) end didn't operate on line fault? Reason of non-operation of protection system need to be shared.
- ii) DR/EL (dat/.cfg file) of all the tripped elements along with detailed tripping report need to be shared from both the ends.
- iii) SCADA Data in Gurgaon Sec-72 became unavailable after tripping. Availability and Healthiness of SCADA data needs to be ensured.
- iv) Remedial action taken report to be shared.

Subject: Multiple tripping report at 220 kV S/Stn. HVPNL, Sector 72, Gurgaon due to fire incident in HCG (Haryana City Gas) pipeline beneath the 220 kV Sector 72-Sector 52 line on dated 17.04.2025.

It was reported that a fire incident occurred at Haryana City Gas (HCG) pipeline, beneath the 220 kV Sector 72–Sector 52 transmission line (Between tower location No 45 & 46, Near Ardee City, Sector-52 Gurugram) in Gurugram area on 17.04.2025. The incident resulted in a blackout at the 220 kV Substation, HVPNL, Sector 72, Gurugram,

A. Description of Disturbance

- I. On 17.04.2025 at 13:59 hrs., a major fire was broke-out in the Haryana City Gas (HCG) pipeline running under the green belt beneath the multi-circuit lines (located between Tower Location No 45 & 46) of 220 kV Sector 72–Sector 52 (Lower Cross Arms) and 220kV Sector-69 – Sector-20 (Upper Cross Arms) near Ardee city, sector-52, Gurugram.
- II. The fire explosion caused by a PNG leakage resulted in massive flames reaching the height of the 220 kV conductors, creating a conductive zone that led to the tripping of the 220 kV system. This, in turn, affected all 220 kV feeders connected to the 220 kV Substation, Sector-72, HVPNL, Gurugram, as well as the 400 kV Substation, PGCIL, Gurugram.
- III. As observed from the CCTV footage of a nearby house, the PNG flame led to the melting of the 'B' and 'Y' phase conductors of the 220 kV Sector-72 to Sector-52 circuit approximately 5min-6sec & 6min-18sec respectively after the flame ignition. Both the conductors subsequently fell to the ground after melting.
- IV. The incidence caused power failure at 220kV Sector-72, 220kV Sector-52, 220kV Sector-56, 220kV Sector-57, 220kV Sector-20, 220kV Sector-15, 220kV Sector-33 substations due to failure of power source from 400kV Substation PGCIL.

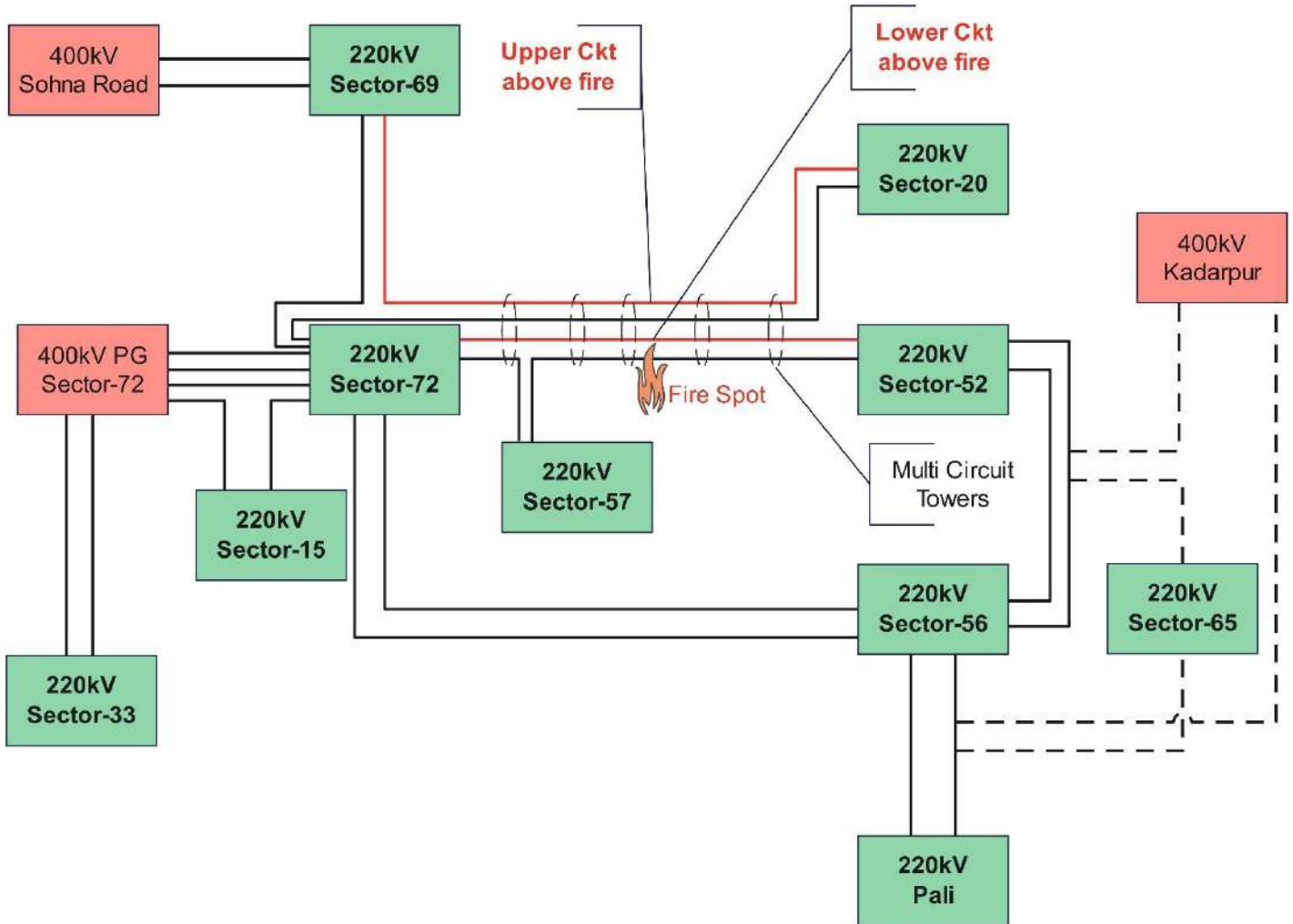
The details of tripping as well as affected elements are as below:

Sr. No.	Name of Element	Line length	Time of Tripping/Restoration (Hrs)		Relay Operated	
			From	To	This end	Other End
Tripped Elements						
1.	400/220 kV, 315 MVA ICT-1 at Sector 72 (PGCIL)	-	13:59 Hrs	15.13 Hrs	Back up HV O/C	-
2.	400/220 kV, 315 MVA ICT-2 at Sector 72 (PGCIL)	-	13:59 Hrs	15.23 Hrs	Back up HV O/C	-
3.	400/220 kV, 500 MVA ICT-3 at Sector 72 (PGCIL)	-	13:59 Hrs	15.42 Hrs	Back up HV O/C	-
4.	400/220 kV, 500 MVA ICT-4 at Sector 72 (PGCIL)	-	13:59 Hrs	15.49 Hrs	Back up HV O/C	-

5.	220 kV Sec 72-Sec 52 (HV) Ckt	12.5 KM	13:59 Hrs	07:55 Hrs Dt 18.04.25	VT Fail / Not tripped due to blocked relay	PSB (Power Swing Bocking) Operated
6.	220 kV Sec 69-Sec 20 (HV) Ckt	22.2 KM	13:59 Hrs	16:18 Hrs	M1 & M2 DPR, Zone-1, Dist=8.591 KM	
7.	220 kV B/C at Sector 72 (HV)	-	13:59 Hrs	14:59 Hrs	Earth fault relay operated	
8.	220 kV Sec 72-Sec 69 (HV) Ckt	8.5 KM	13:59 Hrs	14:28 Hrs	-	E/F (Ib=2.408 A)
Elements which remained out of power due to Source Supply Failure at Sector-72/Sector-52/Sector-57/Sector-56/Sector-33/Sector-20/Sector-15						
9.	220 kV Gurgaon (PG)-Gurgaon Sec 72 (HV) Ckt-1	350 Mtr	13:59	16:42 Hrs	Supply fails from PGCIL	-
10.	220 kV Gurgaon (PG)-Gurgaon Sec 72 (HV) Ckt-2	350 Mtr	13:59 Hrs	16:44 Hrs		-
11.	220 kV Gurgaon (PG)-Gurgaon Sec 72 (HV) Ckt-3	350 Mtr	13:59 Hrs	17:05 Hrs		-
12.	220 kV Gurgaon (PG)-Gurgaon Sec 33 (HV) Ckt-1	3.4 KM	13:59 Hrs	16:18 Hrs		-
13.	220 kV Gurgaon (PG)-Gurgaon Sec 33 (HV) Ckt-2	3.4 KM	13:59 Hrs	16:36 Hrs		-
14.	220 kV Sec 72-Sec 57 (HV) Ckt	10 KM	13:59 Hrs	15:26 Hrs	Supply fail	
15.	220 kV Sec 72-Sec 56 (HV) Ckt 1	9 KM	13:59 Hrs	15:24 Hrs	Supply fail	
16.	220 kV Sec 72-Sec 56 (HV) Ckt 2	9 KM	13:59 Hrs	15:05 Hrs	Supply fail	
17.	220 kV Sec 72-Sec 20 (HV) Ckt	19.5 KM	13:59 Hrs	16:50 Hrs	Supply fail	
18.	220 kV Sec 72-Sec 15 (HV) Ckt	8 KM	13:59 Hrs	14:38 Hrs	Supply fail	
19.	220 kV Sec 57-Sec 52 (HV) Ckt	2.5 KM	13:59 Hrs	15:45 Hrs	Supply fail	
20.	220 kV Sec 56-Sec 52 (HV) Ckt 2	4.5 KM	13:59 Hrs	15:12 Hrs	Supply fail	

- V. In the meantime, the alternate power supply of 220kV Sector-72 was restored from 220kV Sector-69 at 14:28Hrs dated 17.04.2025 and alternate supply of 220kV Sector-52 was restored from 220kV S/Stn Pali at 15:20Hrs dated 17.04.2025 to provide 66kV power to DMRC and Rapid Metro.
- VI. The supply at 220 kV level emanating from the 400 kV Substation, PGCIL, Sector-72, was restored between 16:18 hrs. to 17:05 hrs.
- VII. Further, the power supply to all the affected substations mentioned in the above table was normalized by 5 pm on dated 17.04.2025.
- VIII. Due to the above incident, one 220 kV line CT (“B” phase) and the line isolators of the “B” and “Y” phases of the 220 kV Sector-72 to Sector-52 line at the 220 kV Sector-72 Substation were damaged. These components were repaired/replaced during the night hours.
- IX. Simultaneously, officials from Haryana City Gas (HCG) began repair work on the damaged gas pipeline located directly beneath the 220 kV line circuit. This caused a further delay of 4–5 hours in HVPNL's repair activities during the night hours.
- X. The two broken conductors of the 220 kV Sector-72 to Sector-52 line were repaired, and the line was restored on 18.04.2025 at 07:55 hrs, although there was no disruption in power supply due to the outage/repair work of the 220 kV Sector-72 to Sector-52 single circuit line.

B. Connectivity Map:



C. Observation/Analysis of fault:

- I. The fire incident originated at 13:59 hrs. due to the bursting of a gas pipeline belonging to Haryana City Gas (HCG). This resulted in the formation of a massive fireball, rising from ground level to a height of approximately 10–12 meters, reaching the two bottom conductors of the 220 kV Sector-72 to Sector-52 line. Consequently, multiple lines and ICTs tripped at the 400 kV Substation, PGCIL, Sector-72, Gurugram.
- II. The supply of all 220 kV feeders connected to both the 220 kV Substation, Sector-72, HVPNL, Gurugram, and the 400 kV Substation, PGCIL, Gurugram, failed simultaneously.
- III. CCTV footage, arranged by the Transmission System (TS) wing from a nearby house located in front of the incident site, confirmed that the fire originated at ground level from the Piped Natural Gas (PNG) pipeline.
- IV. The footage captured a sustained and intense vertical flame, indicating continuous gas leakage and combustion. The resulting high-temperature arc extended well beyond 10–12 meters above ground level. The footage further revealed that after 5 min 6 sec after the onset of the fire, “B” phase conductor

got broken and fell on the ground. Later, after 6min 18sec of the onset of the fire 2nd conductor i.e. “Y” phase conductor also broken down and fell on the ground. The sequential failure of both conductors was due to the prolonged exposure to the extremely high temperature generated around by the intense gas flame, which caused the melt-down of Aluminum ACSR conductors.

- V. **Upon investigation, it was observed that the Potential Transformer (PT) supply to the protection relays of the 220kV Sector-72- Sector-52 line was unavailable due to defective PT selection relay (75A slot) for Bus-I.**
- VI. As per the relay fault log data, the most recent tripping of the 220 kV Sector-72 to Sector-52 line occurred on 08.04.2025 due to the operation of the Main-1 Distance Protection Relay.
- VII. On 10.04.2025 at 09:45 hrs, Sh. Sandeep Yadav, JE/Substation, carried out a bus changeover of the 220 kV Sector-72 to Sector-52 line from 220 kV Bus-2 to 220 kV Bus-1. However, the PT selection relays were not switched from slot 75-B to 75-A, resulting non tripping of the line at the 220 kV Sector-72 end on 17.04.2025. Consequently, the fault was cleared from the 400 kV PGCIL Substation, Gurugram.
- VIII. During the incident, one 220 kV line CT (“B” phase) and the line isolators of the “B” and “Y” phases of the 220 kV Sector-72 to Sector-52 line bay at the 220 kV Sector-72 Substation got damaged. These components were simultaneously replaced/repaired during the night hours.

D. Conclusion:

- I. The fault was primarily caused by ionization of the air between the conductors of the 220 kV Sector-72–Sector-52 and 220 kV Sector-20–Sector-69 lines, both of which are situated directly above the high-temperature arc generated by the PNG leakage and subsequent fire.
- II. The arc persisted for an extended duration, producing extremely high temperatures that led to the melting of two conductors of Y and B phases of 220 kV Sector-72–Sector-52 line. These conductors eventually fell on the ground.
- III. **The fault on the 220 kV Sector-72–Sector-52 line did not clear at the Sector-72 end due to nonfunctioning of DPS relay in the absence of a PT selection relay.**
- IV. The PT selection relay for the 220 kV Sector-72–Sector-52 circuit at Sector-72 was replaced during a shutdown on 20.04.2025.
- V. The 220 kV Sector-72–Sector-52 line was commissioned in March 2012, whereas the HCG gas pipeline was laid later, sometime after 2016.

E. Remedial Measures/Suggestion for corrective action:

- I. The PT Selection Relay for 220 kV Bus-1 of the 220 kV Sector-72–Sector-52 line at the 220 kV Sector-72 Substation was found defective and was replaced on 20.04.2025.
- II. The two broken conductors of the 220 kV Sector-72 to Sector-52 line were repaired, and the line was restored on 18.04.2025 at 07:55 hrs, although there was no disruption in power supply due to the outage/repair work of the 220 kV Sector-72 to Sector-52 single circuit line.
- III. As a remedial measure and to strengthen the power system in Gurugram, the alternate power supply of 220 kV Substations Sector-52 & Sector-56 has been approved from the 400 kV Substation at Kadarapur. The execution of this work commenced in February 2025, which is targeted for completion by April 2026.
- IV. To ensure grid safety and to prevent such incidents which may result in fatal accidents, the CNG/PNG/Oil companies should not be permitted to lay pipelines within the Right of Way (RoW) of existing HVPNL transmission lines. This matter may be escalated to the Government level to mandate the requirement of obtaining a No Objection Certificate (NoC) from HVPNL prior to the installation of CNG/PNG/gas pipelines within the RoW of existing transmission corridors in line with Para (60) of CENTRAL ELECTRICITY AUTHORITY NOTIFICATION dated 8th June 2023.

Multiple element tripping event at 220KV Charkhi Dadri(BB)

At 17:00 hrs on 25.04.2025

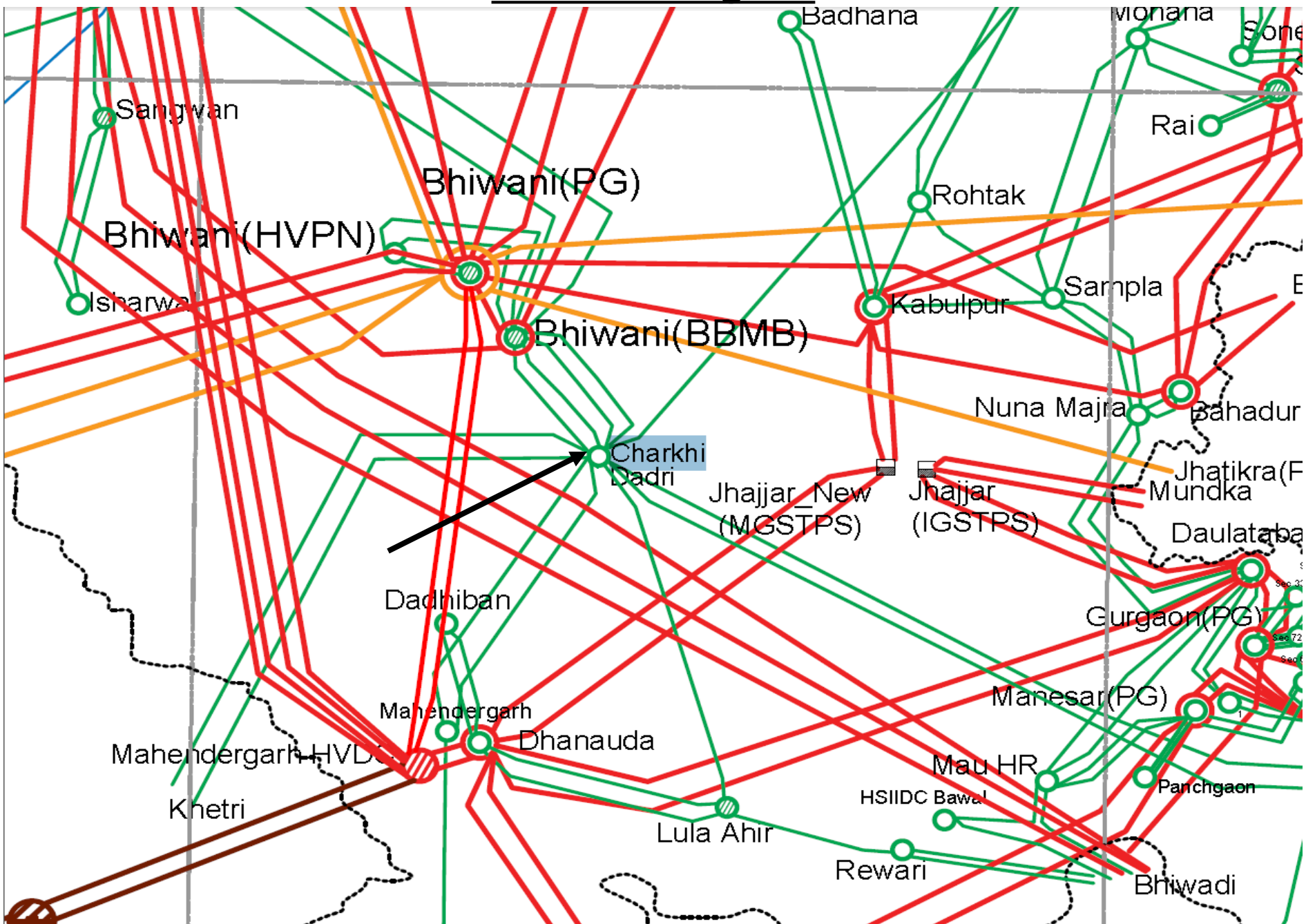
Tripped Elements

S. No	Name of Elements	Outage Time	Revival Time	Reason of tripping
1.	220 KV BHIWANI-CHARKHI DADRI (BB) CKT-1	16:55 hrs	18:26 <u>hrs</u>	Hand Tripped due to fire at Dadri Switchyard
2.	220 KV BHIWANI-CHARKHI DADRI (BB) CKT-2		18:27 <u>hrs</u>	
3.	220 KV BHIWANI-CHARKHI DADRI (BB) CKT-3		18:27 <u>hrs</u>	
4.	220 KV BHIWANI-CHARKHI DADRI (BB) CKT-4		18:28 <u>hrs</u>	
5.	220 KV CHARKHI DADRI-SAMAYPUR (BB) CKT-1	16:53 <u>hrs</u>	18:43 <u>hrs</u>	R-N
6.	220 KV BALLABHGARH-CHARKHI DADRI (BB) CKT-1	16:49 <u>hrs</u>	19:46 <u>hrs</u>	R-N
7.	220 KV PANIPAT-CHARKHI DADRI (BB) CKT-1	16:52 <u>hrs</u>	19:42 <u>hrs</u>	R-N

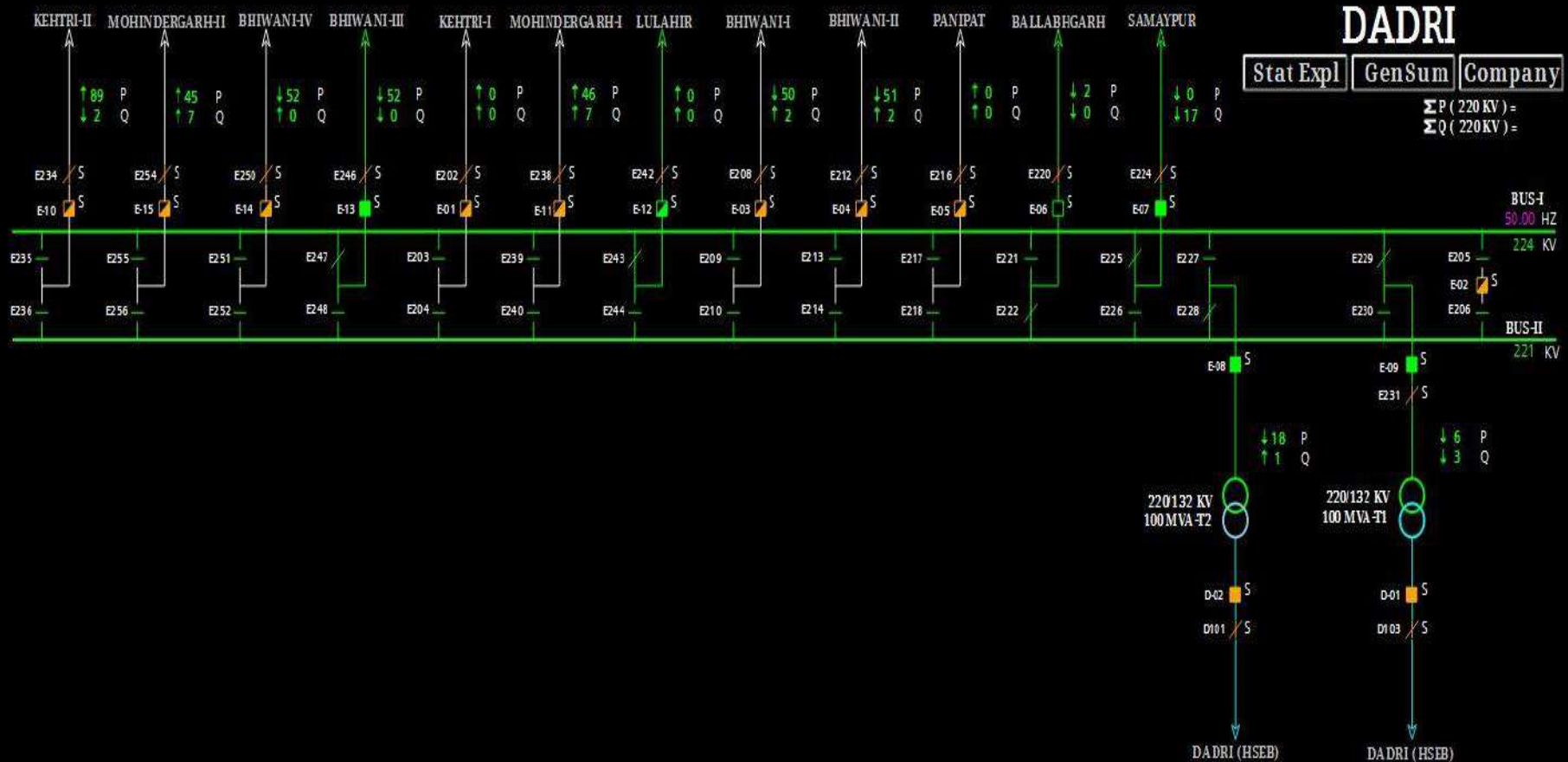
Brief details of the event

- i) 220KV Charkhi Dadri(BB) has double main scheme in 220KV.
- ii) During antecedent condition, 220 KV BHIWANI-CHARKHI DADRI (BB) Ckt 1, 2 , 3 & 4, were carrying 50MW, 51MW, 52MW and 49MW respectively.
- iii) As per DR at Ballabharh(PG), at 16:49 hrs, 220 KV BALLABHGHARH-CHARKHI DADRI (BB) CKT-1 tripped due to B-N phase to earth fault with fault current of $\sim 1.425\text{kA}$ and fault distance of 119.9 km (100%) from Ballabharh end; fault sensed in zone-2.
- iv) As reported, at 16:52 hrs, 220 KV PANIPAT-CHARKHI DADRI (BB) CKT-1 tripped due to R-N fault. Z-2 distance protection operated, the fault current is 1.72KA and fault location is 110KM from Panipat(BBMB) s/stn.
- v) As per DR at Samaypur(BB), at 16:53 hrs, 220 KV CHARKHI DADRI-SAMAYPUR (BB) CKT-1 tripped B-N phase to earth fault with fault current of $\sim 4.944\text{kA}$ and fault distance of 26.8 km (23.1%) from Samaypur(BB) end; zone-1 distance protection operated.
- vi) As reported, at 16:55 hrs, 220 KV BHIWANI-CHARKHI DADRI (BB) CKT-1, Ckt-2, Ckt-3 and Ckt-4 were hand tripped due to fire at Charkhi Dadri s/stn. Exact cause of fire in s/stn needs to be shared.
- vii) During this event, change in demand of 109 MW was observed in SLDC Haryana control area as per SCADA.
- viii) As per PMU, R-N phase to earth-fault was observed and delayed fault clearing time of 360msec observed.

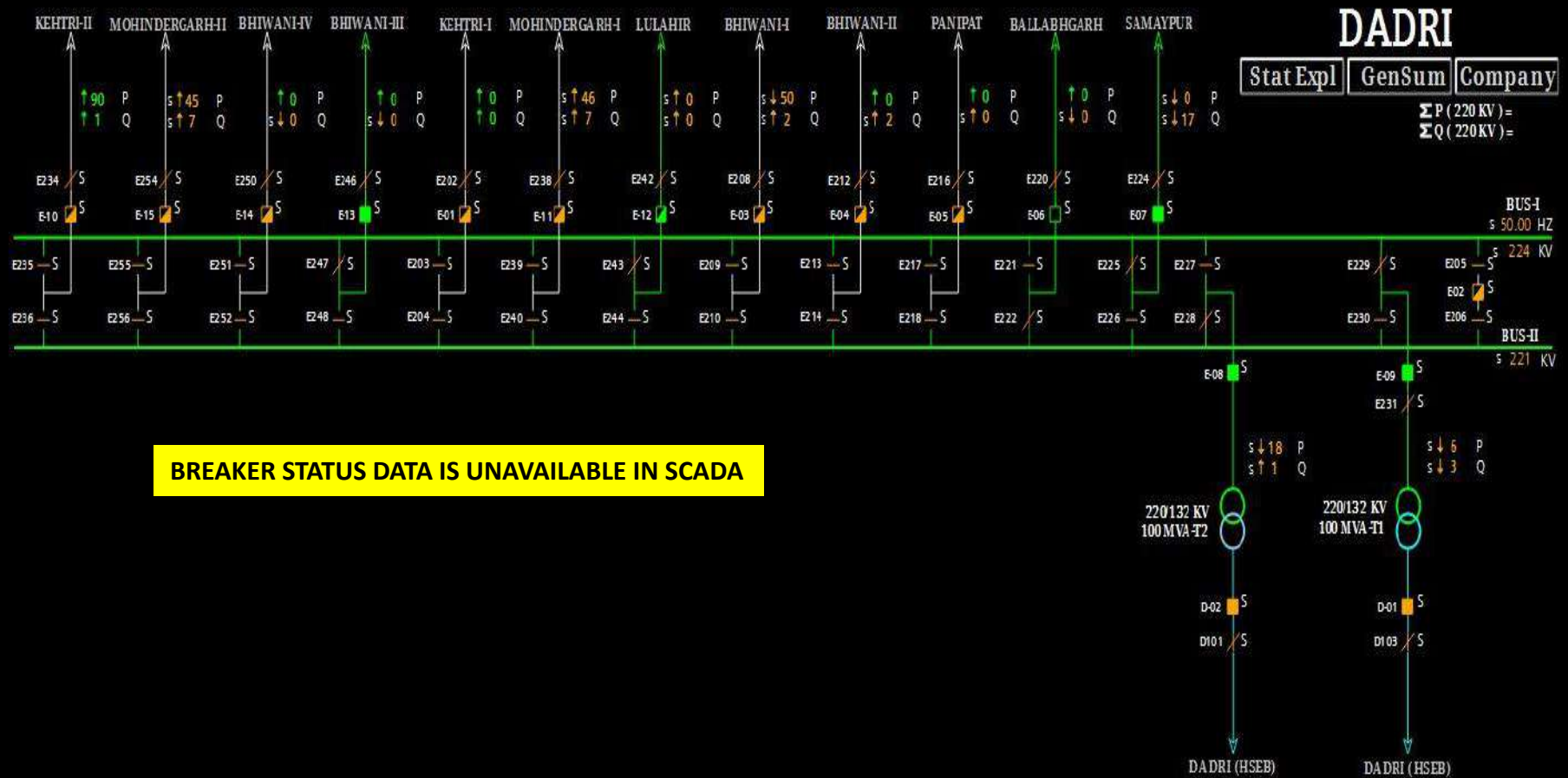
Network Diagram



SLD of 220KV Charkhi Dadri(HR) before the event



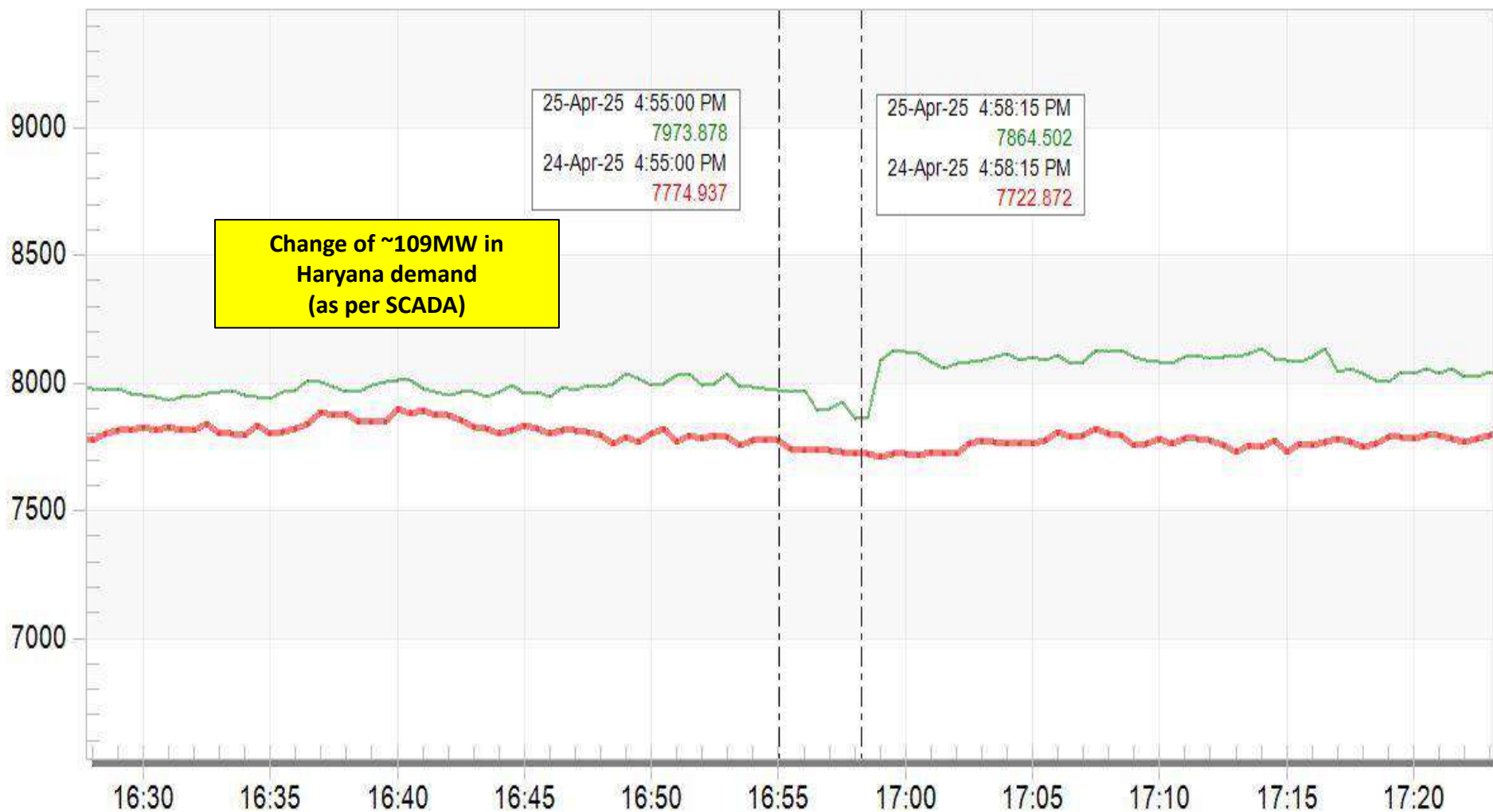
SLD of 220KV Charkhi Dadri(HR) after the event



Haryana Demand during the event

Haryana Demand Met

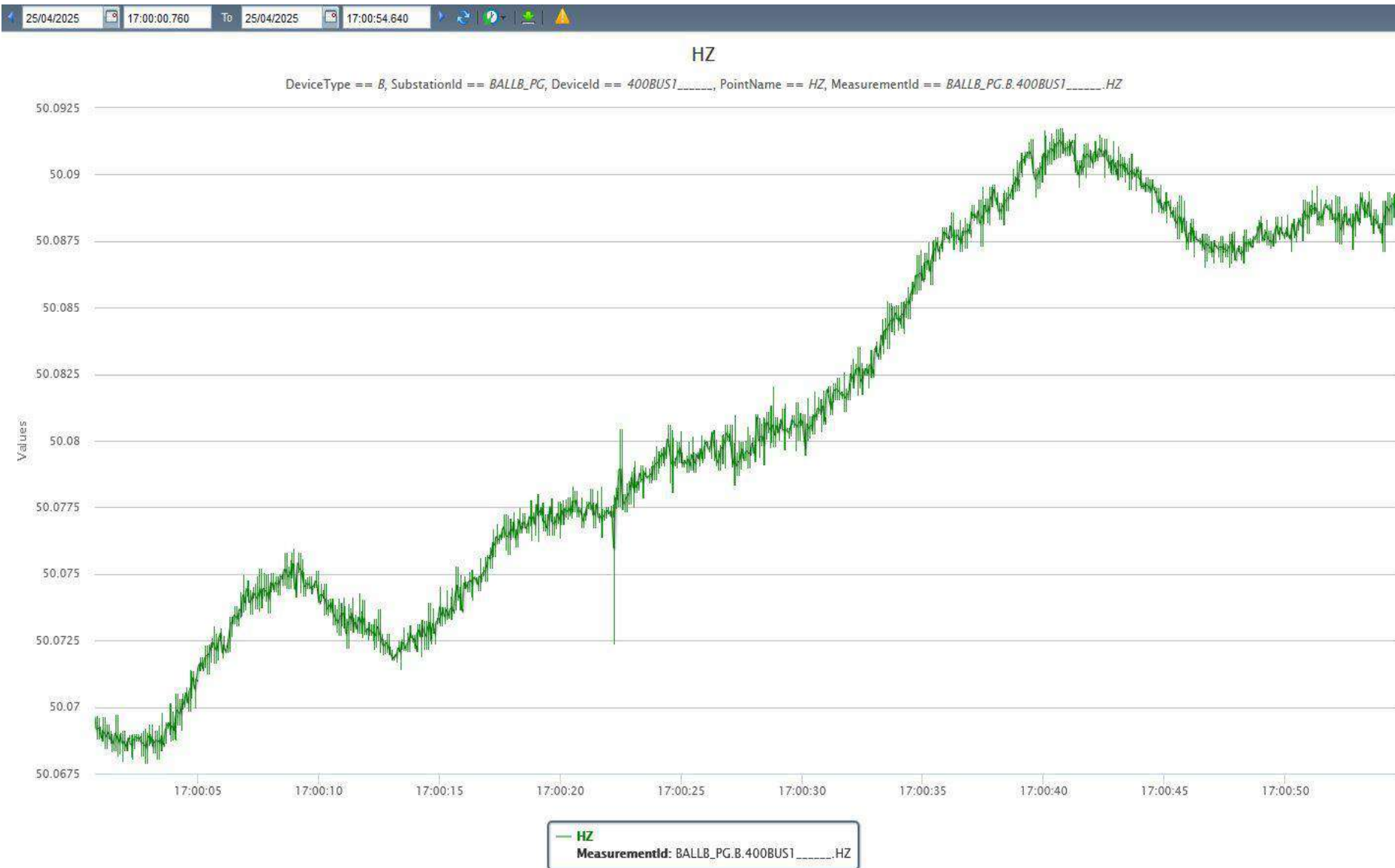
Haryana Demand Met - 25-Apr-25 12:48 PM Haryana Demand Met - 24-Apr-25 12:48 PM



Apr 25 Fri 2025

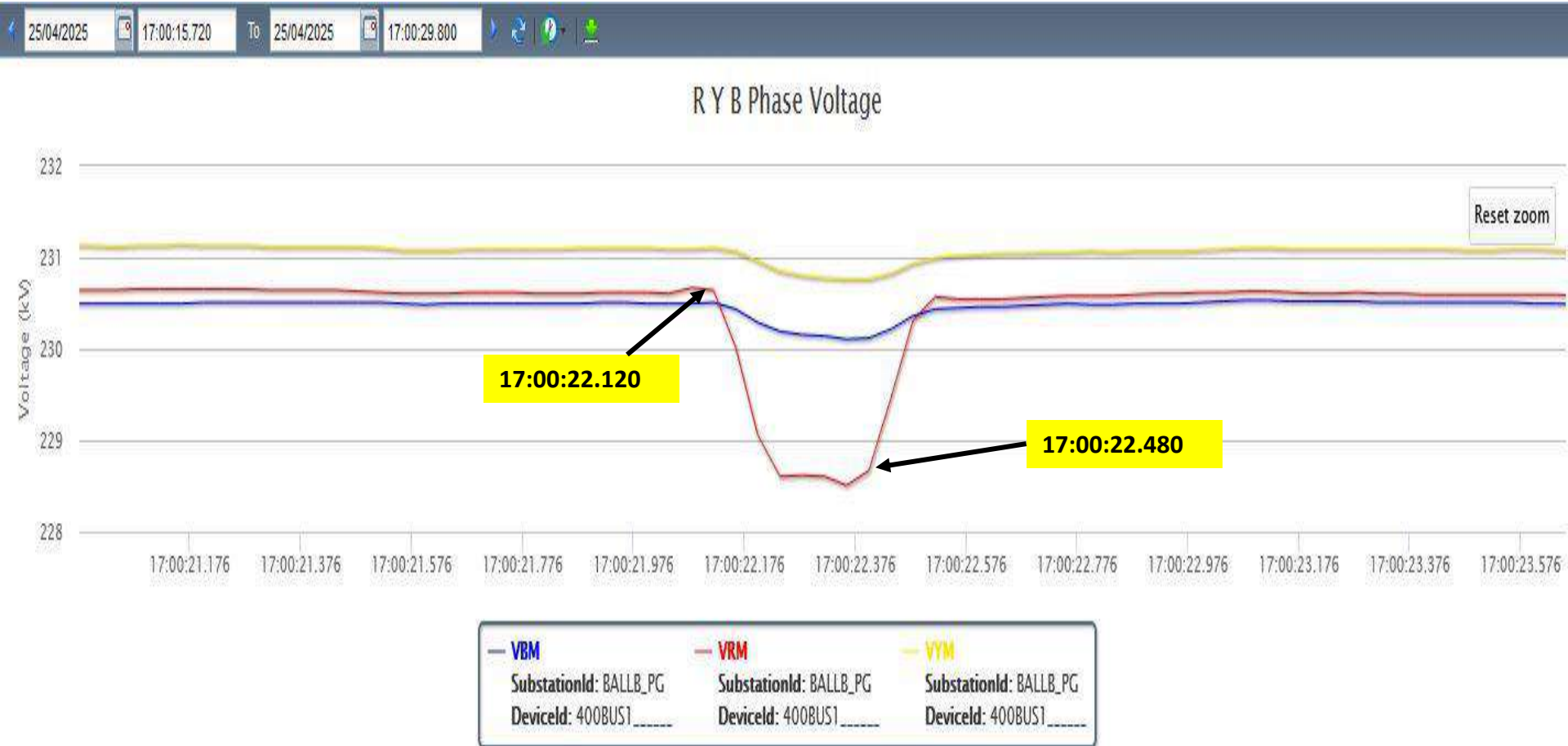
PMU Plot of frequency at 400KV BALLABHGARH(PG)

17:00hrs/25-Apr-25



PMU Plot of frequency at 400KV BALLABHGARH(PG)

17:00hrs/25-Apr-25



R Y B Phase Voltages Angles

- ✓ As per PMU, R-N fault observed.
- ✓ Delayed Fault clearance of 360msec observed.

DR of 220 KV Ballabhgarh (end)-Charkhi Dadri (BB) Ckt-1



Disturbance Short Report

Disturbance Recordings Information

Device Information

Recorder ID 1
IED type REL650
IED version 1.1.0.6
Station name Station name
Object name REL650-A01
IED name Unit name

Fault Information

Trig date and time 4/25/2025 4:49:31.050 PM
Trigger signal name START_Z3
Recording number 235
Total recording time 2375 ms
Pre-trig recording time 300 ms
Post trig recording time 2000 ms
Max. recording time 5000 ms

General Recordings Information

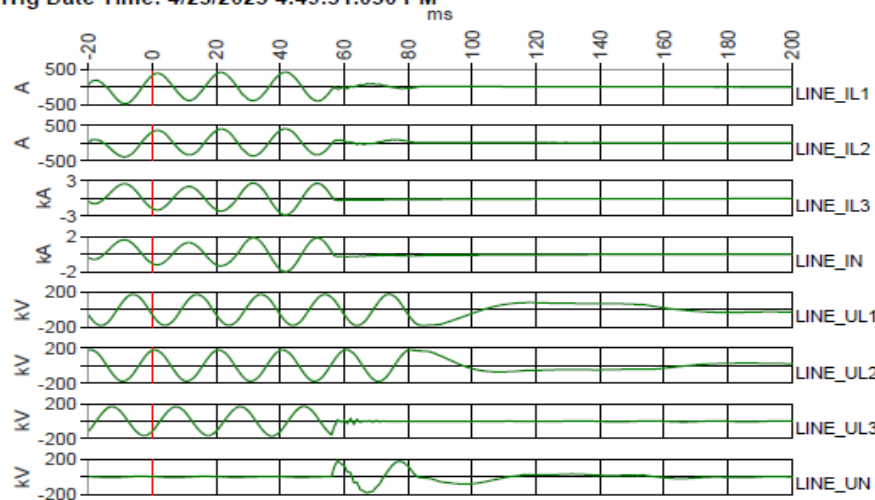
Disturbance recorder Installed
Event recorder Installed
System frequency 50 Hz
Sampling frequency 1 kHz
Active setting group during recording 1

Fault Location Information

Fault loop type L3-N
Fault location 119.9 (100.0 %)
Status of fault calculation Ok
Fault direction Forward

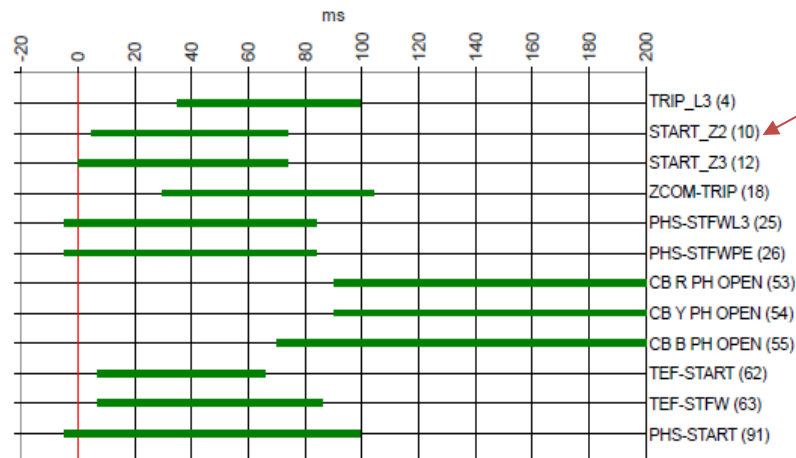
Analog Time Diagram

Trig Date Time: 4/25/2025 4:49:31.050 PM



Binary Time Diagram

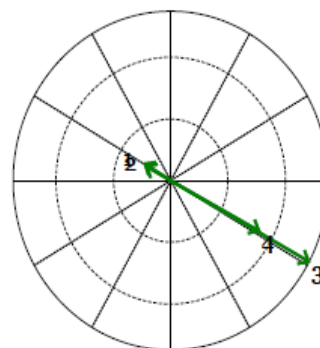
Trig Date Time: 4/25/2025 4:49:31.050 PM



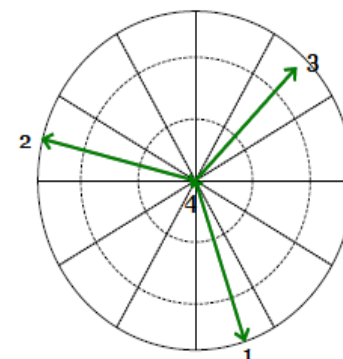
Vector Diagrams

Calculation Time Period : -5 ms to 14 ms

Currents



Voltages



No.	Name	RMS	Angle	No.	Name	RMS	Angle
1	LINE_IL1	272.876(A)	148.8°	1	LINE_UL1	125337.531 (V)	288.3°
2	LINE_IL2	248.854(A)	151.7°	2	LINE_UL2	126281.227 (V)	165.8°
3	LINE_IL3	1424.945(A)	331.4°	3	LINE_UL3	116075.789 (V)	46.2°
4	LINE_IN	905.009(A)	332.1°	4	LINE_UN	5015.865(V)	237.6°

DR of 220 KV Charkhi Dadri-Samaypur (end) (BB) Ckt-1



Disturbance Short Report

Disturbance Recordings Information

Device Information

Recorder ID 1
IED type REL650
IED version 1.1.0.10
Station name SAMAYPUR SS
Object name REL650-A01
IED name DADRI S/C

Fault Information

Trig date and time 3/24/2025 6:48:36.631 AM
Trigger signal name PHS-STFWL3
Recording number 644
Total recording time 2070 ms
Pre-trig recording time 1000 ms
Post trig recording time 1000 ms
Max. recording time 3000 ms

General Recordings Information

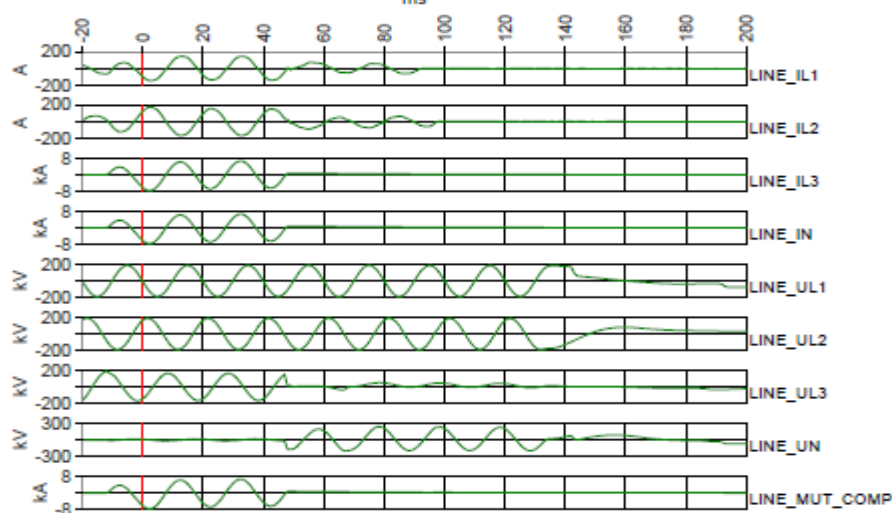
Disturbance recorder Installed
Event recorder Installed
System frequency 50 Hz
Sampling frequency 1 kHz
Active setting group during recording 1

Fault Location Information

Fault loop type L3-N
Fault location 26.8 (23.1 %)
Status of fault calculation Ok
Fault direction Forward

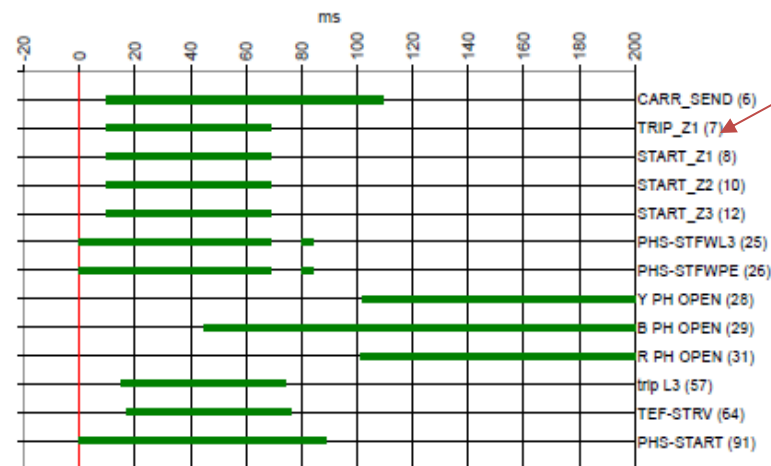
Analog Time Diagram

Trig Date Time: 3/24/2025 6:48:36.631 AM



Binary Time Diagram

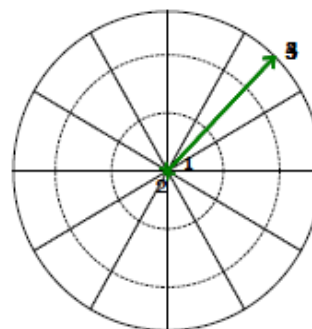
Trig Date Time: 3/24/2025 6:48:36.631 AM



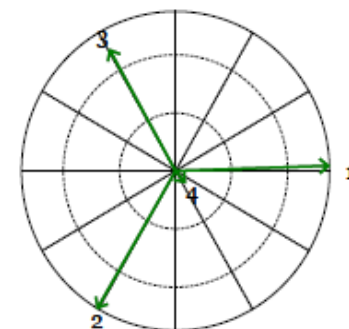
Vector Diagrams

Calculation Time Period : 0 ms to 19 ms

Currents



Voltages



No.	Name	RMS	Angle	No.	Name	RMS	Angle
1	LINE_IL1	106.448(A)	36.3°	1	LINE_UL1	132144.844 (V)	1.9°
2	LINE_IL2	122.95(A)	219.4°	2	LINE_UL2	132815.656 (V)	239.5°
3	LINE_IL3	4943.9(A)	45.9°	3	LINE_UL3	115842.188 (V)	119.4°
4	LINE_IN	4926.508(A)	45.8°	4	LINE_UN	12058.497(V)	310.6°
5	LINE_MUT_COMP	4926.508(A)	45.8°				

Points for Discussion

- i) Details of protection operation and sequence of the tripping need to be shared.
- ii) Reason of delayed clearance of fault need to be shared.
- iii) Phase sequence issue need to be resolved.
- iv) DR/EL (.dat/.cfg file) of all tripped elements along with detailed tripping report and remedial action taken report need to be shared.
- v) 220KV Charkhi Dadri SCADA data is unavailable after tripping. Availability and healthiness of SCADA data need to be ensured.

Multiple element tripping event at 220/132kV Lalsote(RS)

At 17:06 hrs on 26.04.2025

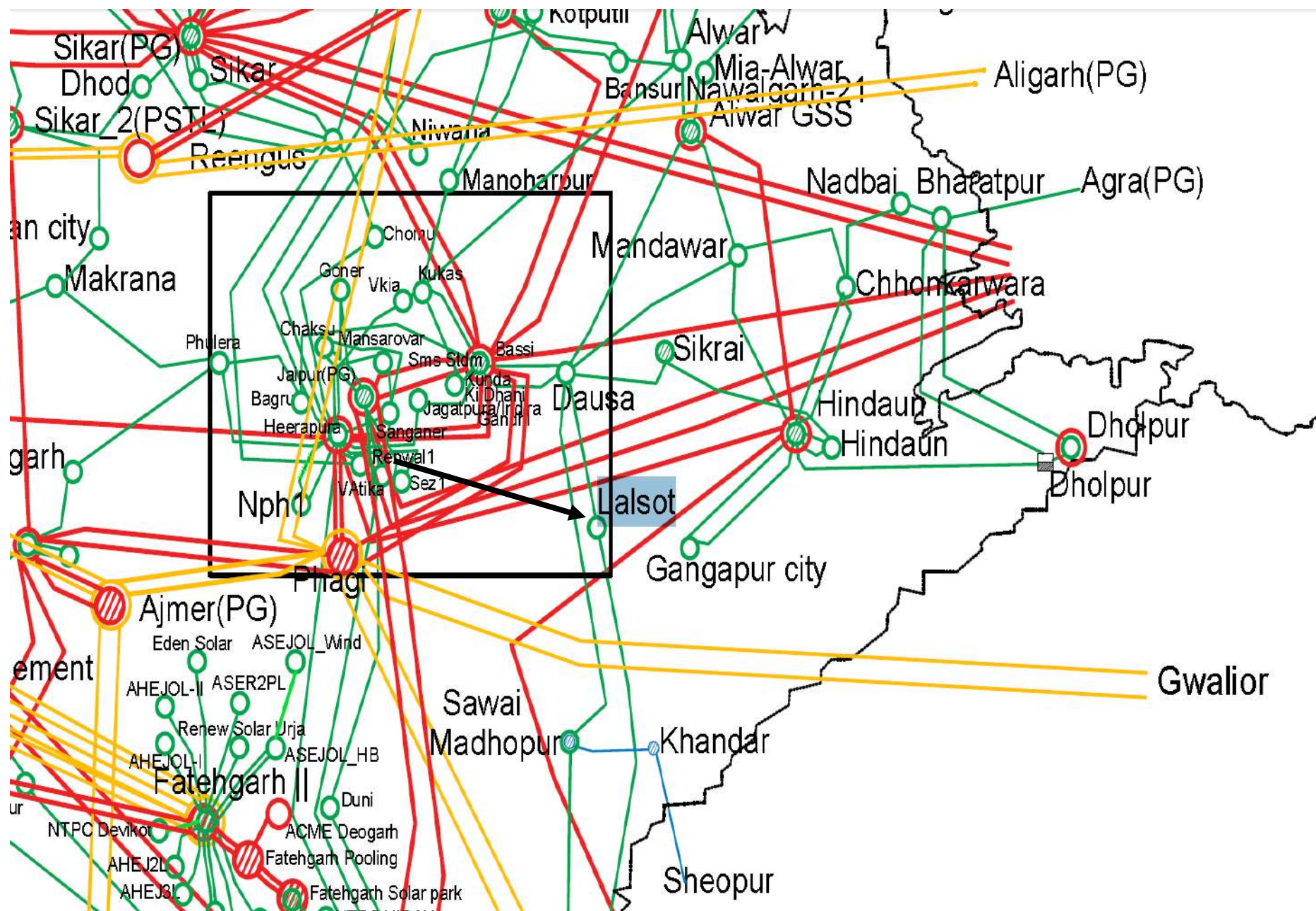
Tripped Elements

S. No	Name of Elements	Outage Time	Revival Time	Reason of tripping
1.	220 KV <u>Lalsote(RS)-Dausa(RS)</u> (PG) Ckt-1	17:06 hrs	20:44 <u>hrs</u>	B-N Phase to earth fault
2.	220 KV Anta(NT)- <u>Lalsote(RS)</u> (PG) Ckt-1		19:57 <u>hrs</u>	

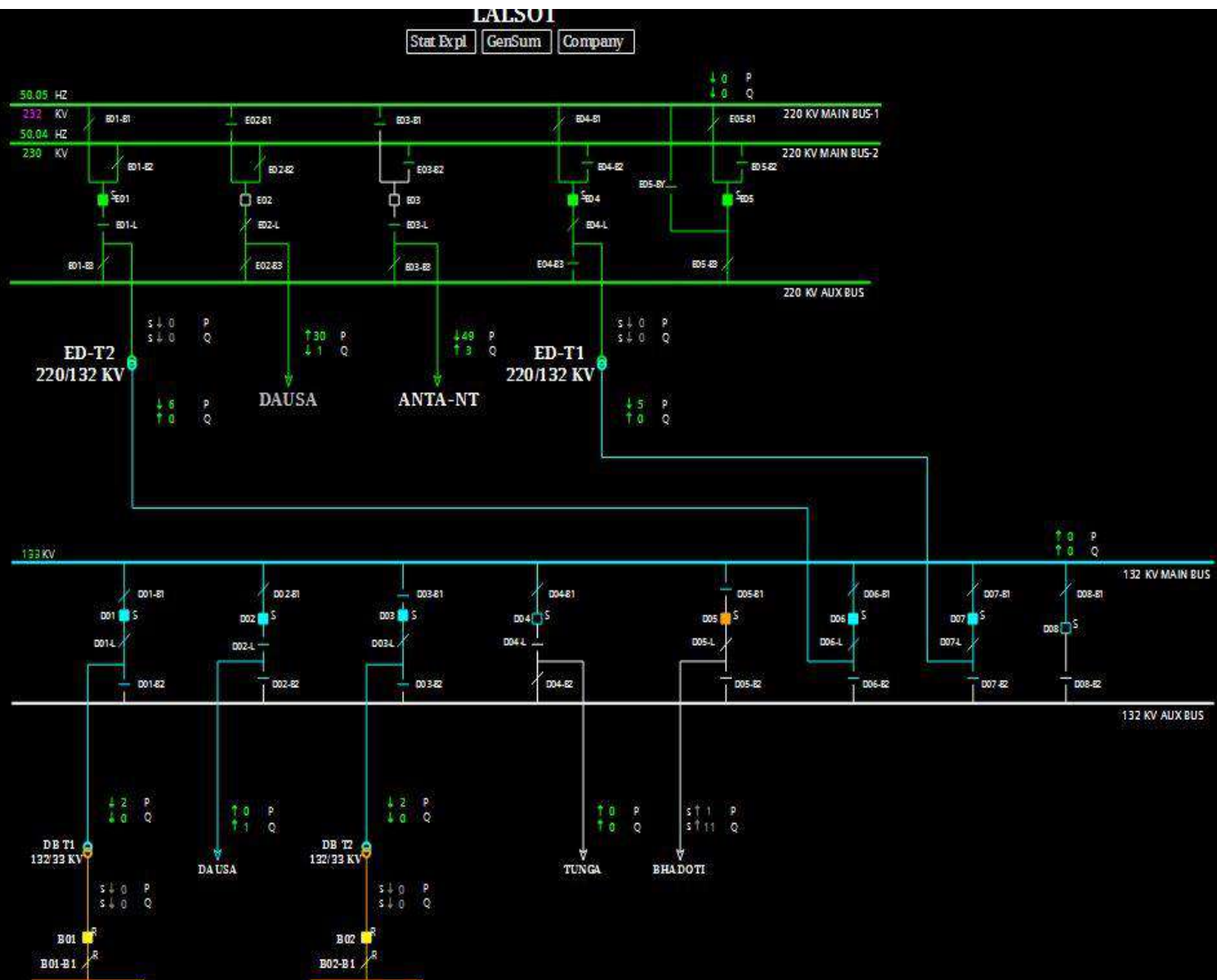
Brief details of the event

- i) 220/132kV Lalsote(RS) has double main bus scheme at both 220KV and 132KV voltage level.
- ii) During antecedent condition, 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 and 220 KV Anta(NT)-Lalsote(RS) (PG) Ckt-1 were carrying 30MW and 49MW of load respectively.
- iii) As reported, at 17:06 hrs, 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 tripped due to B-N phase to earth fault with fault current of $\sim 4.75\text{kA}$ and fault distance of 2.366km from Lalsot and fault distance of 44.32km from Dausa. As per DR, fault sensed in zone-1 at Lalsot end and zone-2 at Dausa end. It is interesting to note that Z-4 protection picked up before zone-1 operated at both Dausa and Lalsot (reason for the same need to be shared).
- iv) During the same time, as per DR, 220 KV Anta(NT)-Lalsote(RS) (PG) Ckt-1 also tripped on B-N phase to earth fault with fault current of 5.452kA from Lalsote(RS) end. As further reported, fault sensed in zone-1 at Lalsote and fault distance was 0.8km from Lalsote end and fault sensed in zone-2 at Anta and fault distance was 195.4km from Anta end.
- v) Due to tripping of both 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 and 220 KV Anta(NT)-Lalsote(RS) (PG) Ckt-1, complete blackout occurred at 220/132KV Lalsote s/s.
- vi) As per PMU, B-N phase to earth-fault was observed with unsuccessful A/R and delayed fault clearing time of 360msec.
- vii) As per SCADA, change in demand of approx. 116 MW was observed in Rajasthan control area.

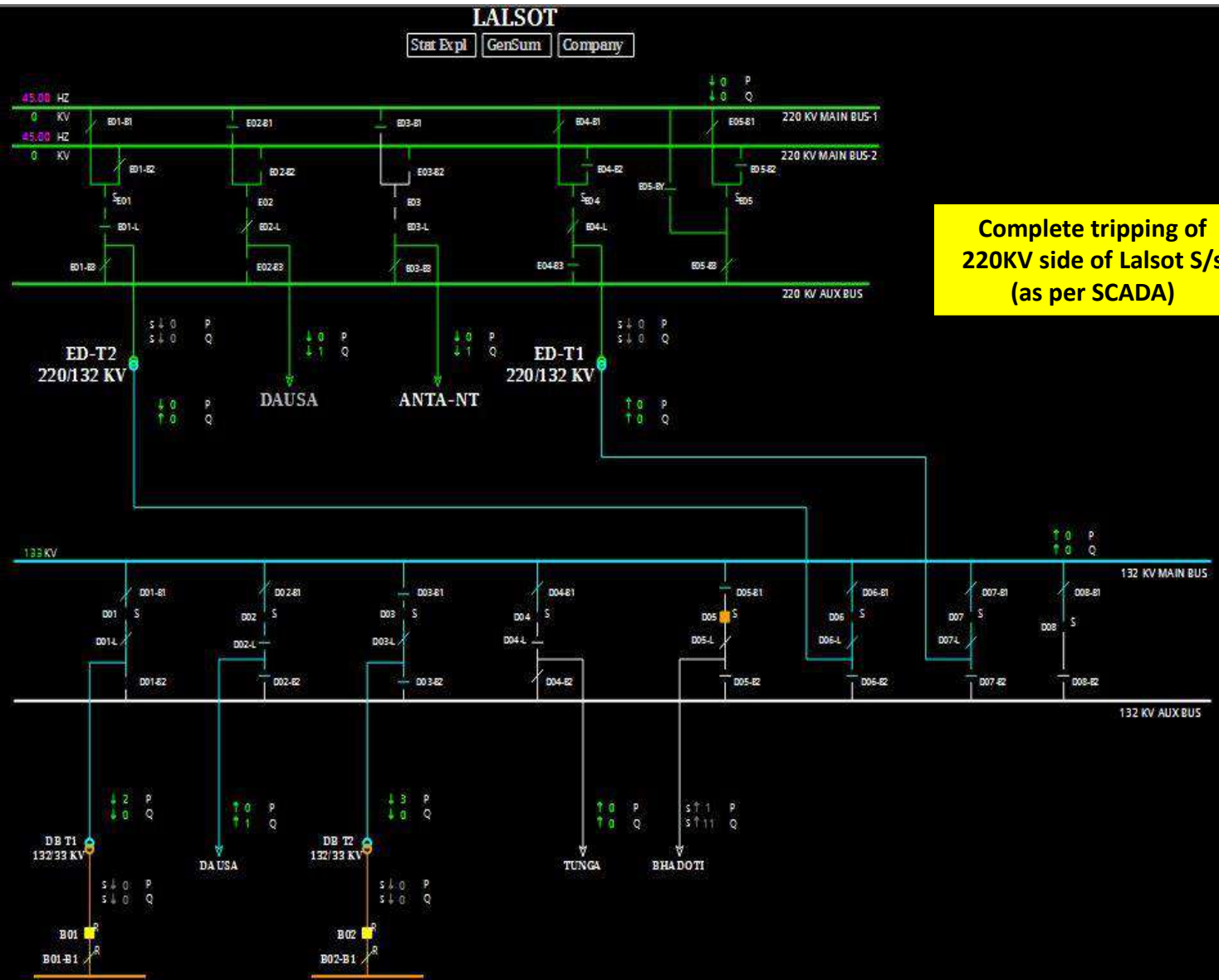
Network Diagram



SLD of 220/132KV Lalsot(RS) before the event

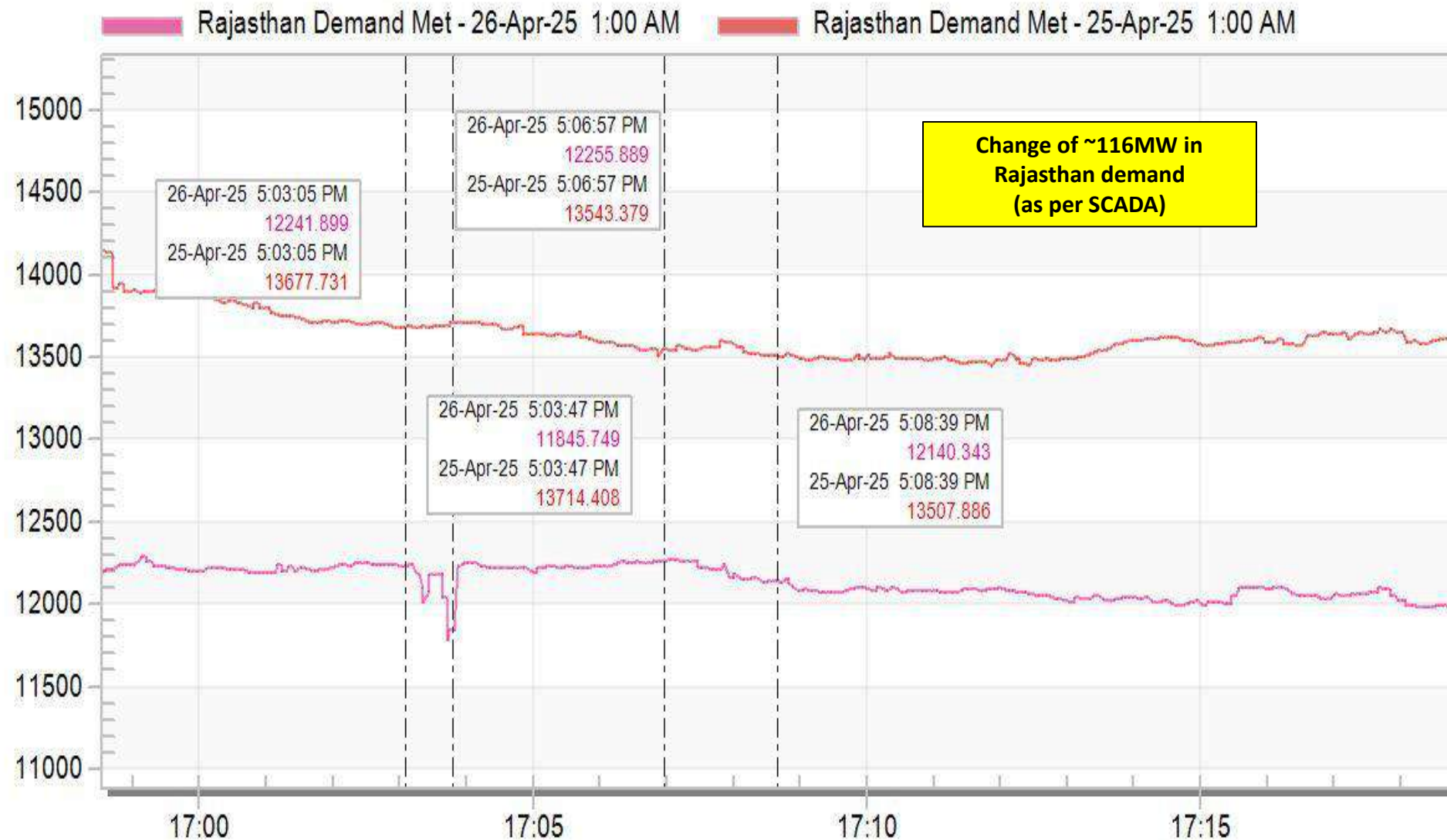


SLD of 220/132KV Lalsot(RS) after the event



Rajasthan Demand during the event

Rajasthan Demand Met



Apr 26 Sat 2025

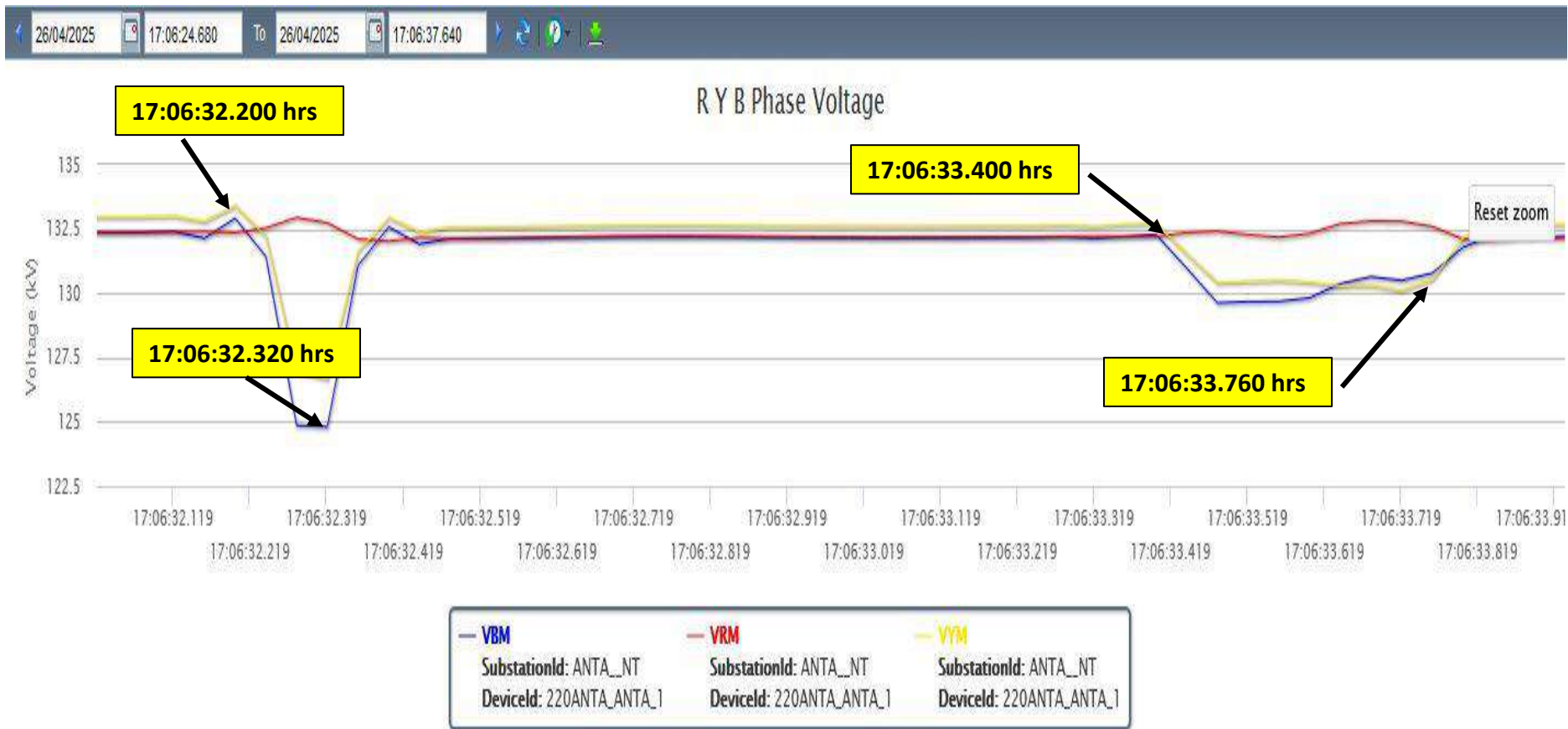
PMU Plot of frequency at Anta(NTPC)

17:06hrs/26-Apr-25



PMU Plot of phase voltage at Anta(NTPC)

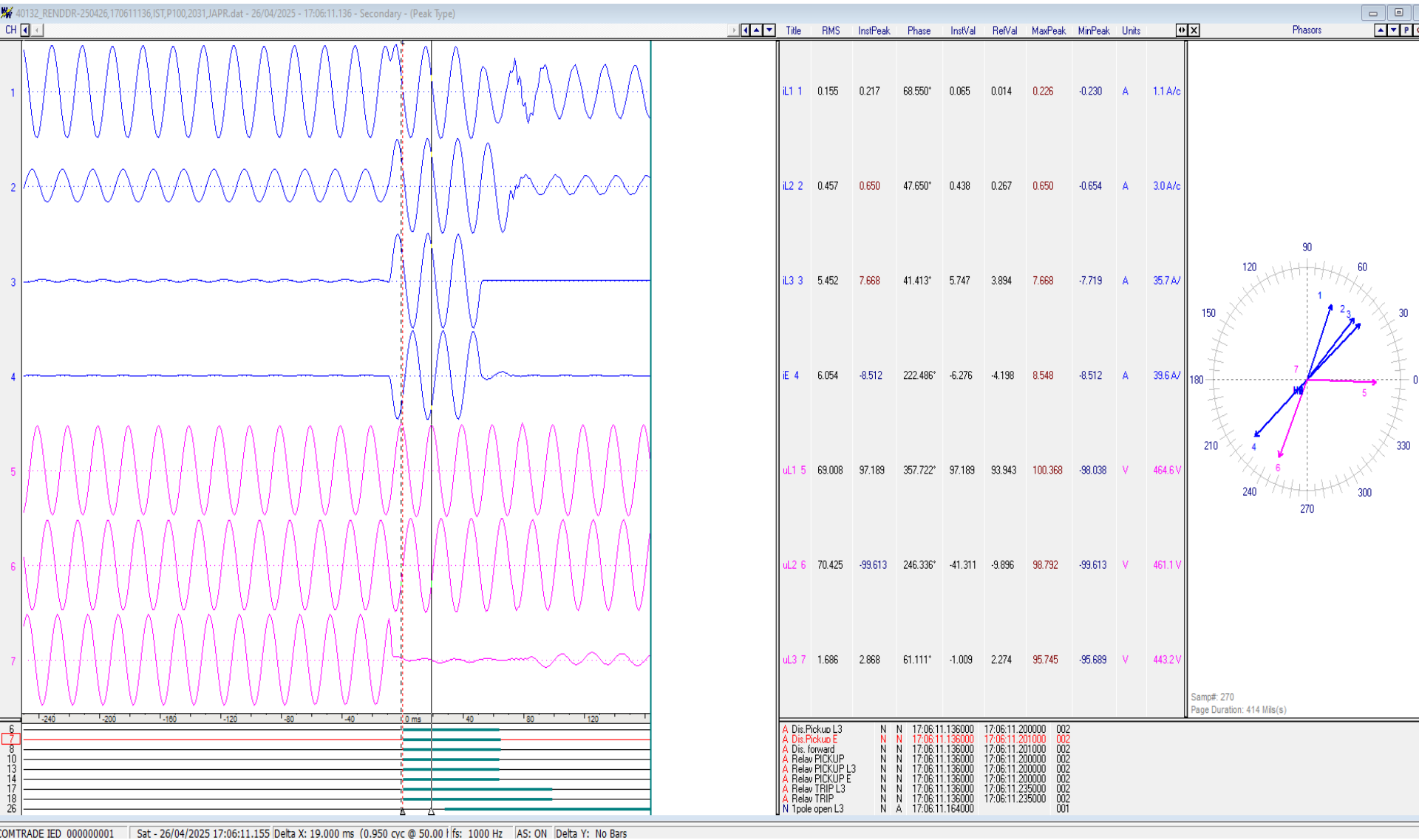
17:06hrs/26-Apr-25



R Y B Phase Voltages Angles

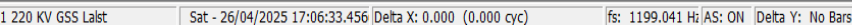
- ✓ As per PMU, B-N fault observed with unsuccessful A/R due to permanent fault.
- ✓ Delayed fault clearance of 360msec observed.

DR of 220 KV Anta(NT)-Lalsote(RS) (end) (PG) Ckt-1



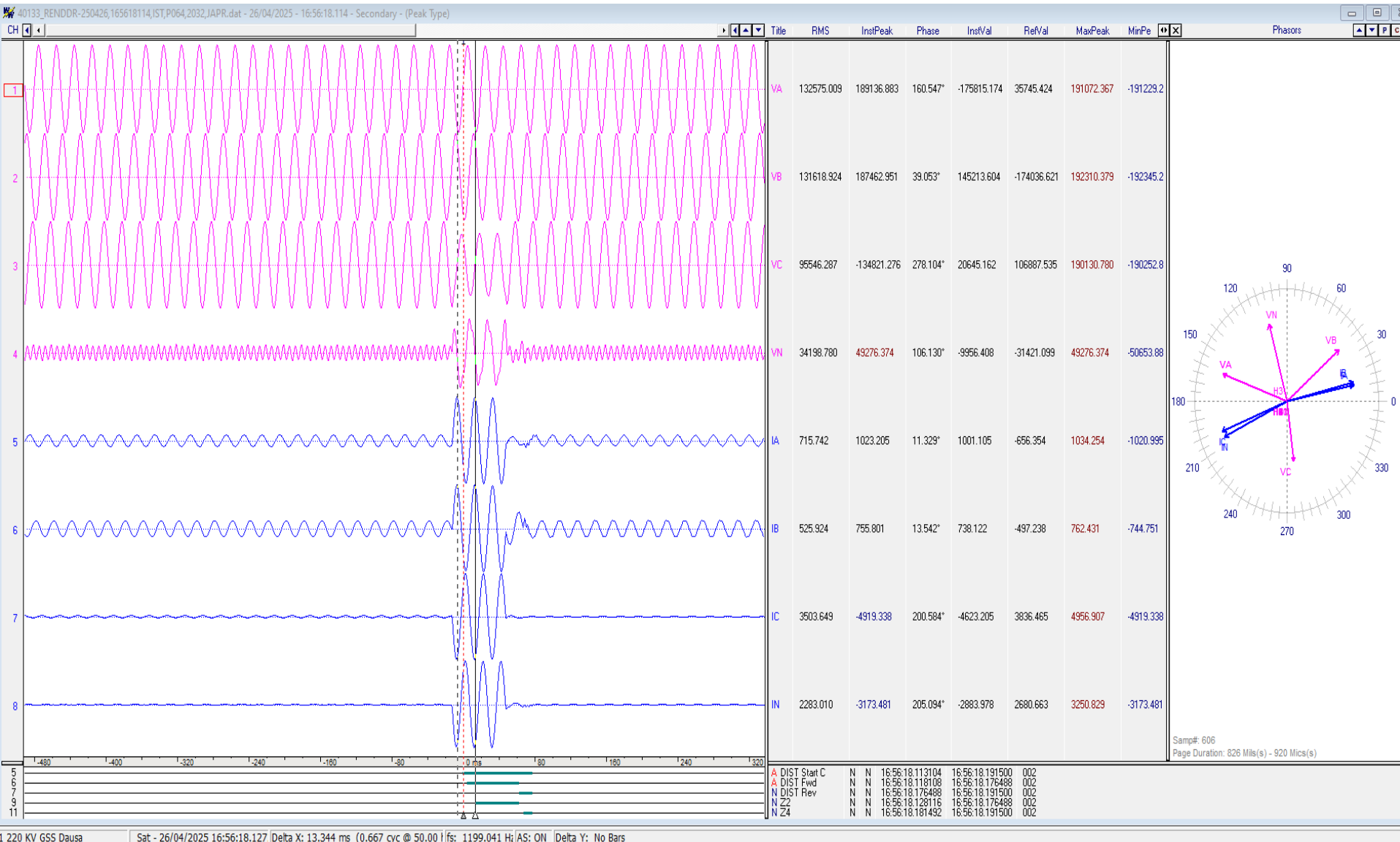
- ✓ B-N phase to earth fault; $I_b \approx 5.452 \text{ kA}$
- ✓ Fault clearing time $\approx 60 \text{ ms}$

40133_SENDDR-250426,170633457,IST,P100,2022,JAPR.dat - 26/04/2025 - 17:06:33.457 - Secondary - (Peak Type)



- ✓ B-N phase to earth fault; $I_b \approx 4.752 \text{ kA}$
- ✓ Fault clearing time $\approx 180 \text{ ms}$

DR of 220 KV Lalsote(RS)-Dausa(RS) (end) (PG) Ckt



- ✓ B-N phase to earth fault; $I_b \approx 3.504 \text{ kA}$
- ✓ Fault clearing time $\approx 60 \text{ ms}$

SCADA SOE

Time	Station Name	Voltage level	Element Name	Element Type	Element Status	Remarks
17:06:32,385	ANTA	220kV	04LALST1	Circuit Breaker	Open	Opening of line CB of 220KV Anta- Lalsot Ckt at Anta
17:06:33,381	LALSOT	220kV	E_02_B1(DAUSA-1)	Circuit Breaker	Open	Opening of line CB of 220KV Dausa- Lalsot Ckt at Lalsot
17:06:33,491	LALSOT	220kV	E_03_B1(ANTA_-1)	Circuit Breaker	Open	Opening of line CB of 220KV Anta- Lalsot Ckt at Lalsot
17:06:36,488	DAUSA	220kV	E_03(ANTA_-1)	Circuit Breaker	Open	Opening of line CB of 220KV Dausa- Lalsot Ckt at Dausa

Points for Discussion

- i) Details of protection operation and sequence of the tripping need to be shared.
- ii) Reason of delayed clearance of fault need to be shared.
- iii) As per DR of 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1, Z-4 protection picked up before zone-1 operated at Lalsot end and Z-4 protection picked up after zone-2 operated at Dausa end . Reason for the same need to be shared.
- iv) DR/EL (.dat/.cfg file) along with detailed tripping report need to be shared from Anta end.
- v) Remedial action taken report need to be shared.



RVPN

An ISO 9001:2015
Certified Company

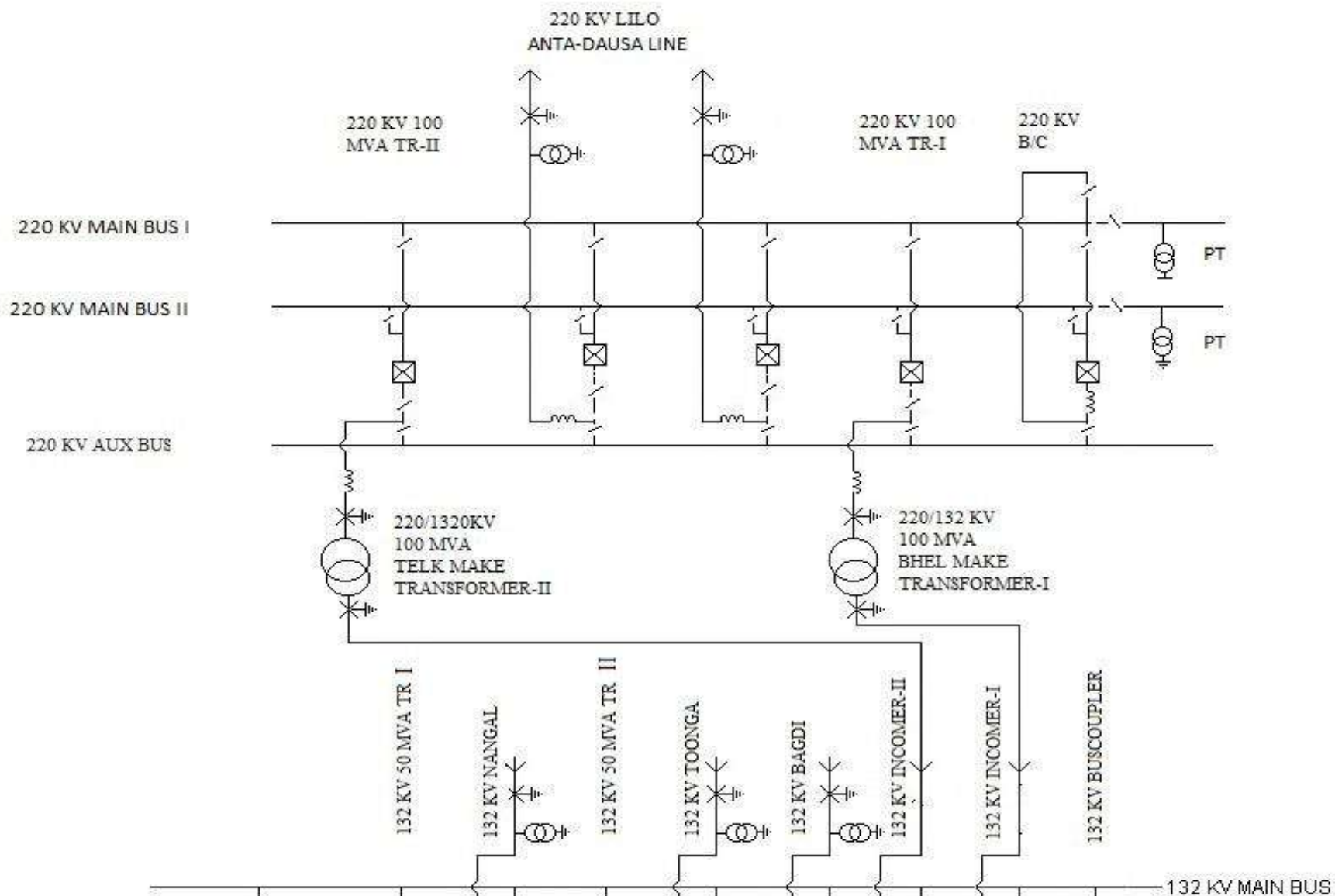
RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM

ASSISTANT ENGINEER(MPT&S),SWM

T&C Building, 220KV GSS Kherda Power house, Sawai Madhopur -322001

TRIPPING REPORT
220KV LALSOT-DAUSA & LALSOT-ANTA LINE
Dated 26.04.25
AT 220KV GSS LALSOT

SINGLE LINE DIAGRAM 220 KV GSS LALSOT



- There is 2 Nos. 220 KV Feeders connected at 220 KV GSS Lalsot
 1. 220 KV Lalsot - Anta Line
 2. 220 KV Lalsot - Dausa Line
- A Fault tripping occurred on 220KV Lalsot - Anta Line at 17:01 Hrs on dated 26.04.2025 at 220 KV GSS Lalsot due to heavy storm
- Following relay indications are observed at 220 KV GSS Lalsot

M1 (<u>Siemens-7SA522</u>)	Distance Prot. Zone-1 0.9 KM, B phase (out of RYB)
M2(<u>Siemens-7SA611</u>)	Distance Prot. Zone-1 0.8 KM, B phase (out of RYB)

Trip Indication extracted from DPS (Main-I) Siemens-7SA522

M I 7SA52 / 7SA522 V4.6 Var/7SA522

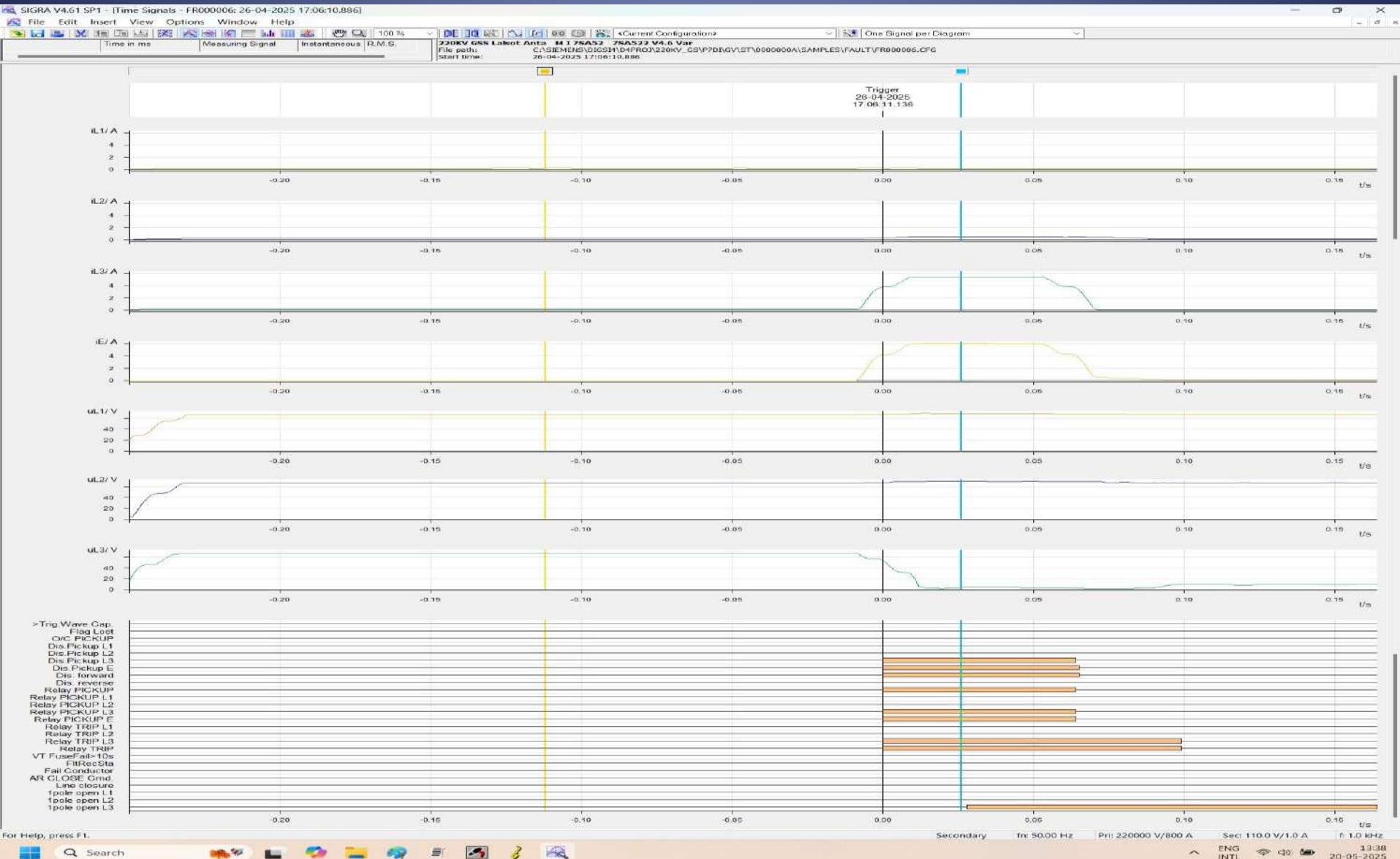
Number	Indication	Value	Date and time	Cause	State
00301	Power System fault	35 - ON	26.04.2025 17:06:11.136		
00302	Fault Event	36 - ON	26.04.2025 17:06:11.136		
03688	Distance Pickup L3E	ON	0 ms		
03703	Distance Loop L3E selected forward	ON	0 ms		
03804	Distance TRIP command - Only Phase L3	ON	0 ms		
03811	Distance TRIP single-phase Z1	ON	0 ms		
04056	Dis. Telep. Carrier SEND signal	ON	0 ms		
02844	AR 1st cycle running	ON	0 ms		
02801	AR: Auto-reclose in progress	ON	1 ms		
00535	Primary fault current IL3	4.46 kA	1 ms		
00593	Single pole open detected in L3	ON	28 ms		
03671	Distance PICKED UP	OFF	65 ms		
03703	Distance Loop L3E selected forward	OFF	65 ms		
03811	Distance TRIP single-phase Z1	OFF	99 ms		
00511	Relay GENERAL TRIP command	OFF	99 ms		
02839	AR dead time after 1pole trip running	ON	100 ms		
01125	Fault Locator Loop L3E	ON	48 ms		
01117	Flt Locator: secondary RESISTANCE	0.25 Ohm	48 ms		
01118	Flt Locator: secondary REACTANCE	0.17 Ohm	48 ms		
01114	Flt Locator: primary RESISTANCE	0.61 Ohm	48 ms		
01115	Flt Locator: primary REACTANCE	0.43 Ohm	48 ms		
01119	Flt Locator: Distance to fault	1.1 km	48 ms		
01120	Flt Locator: Distance [%] to fault	0.5 %	48 ms		
02851	AR: Close command	ON	1098 ms		
02784	AR: Auto-reclose is not ready	ON	1098 ms		
00593	Single pole open detected in L3	OFF	1175 ms		
00302	Fault Event	37 - ON	26.04.2025 17:06:12.312		
03688	Distance Pickup L3E	ON	1176 ms		
03703	Distance Loop L3E selected forward	ON	1176 ms		
03805	Distance TRIP command Phases L123	ON	1176 ms		
03823	DisTRIP 3phase in Z1 with single-ph Flt.	ON	1176 ms		
04056	Dis. Telep. Carrier SEND signal	ON	1177 ms		
00533	Primary fault current IL1	0.08 kA	1177 ms		
00534	Primary fault current IL2	0.07 kA	1177 ms		
00535	Primary fault current IL3	4.21 kA	1177 ms		
00536	Relay Definitive TRIP	ON	1179 ms		
03671	Distance PICKED UP	OFF	1243 ms		
03703	Distance Loop L3E selected forward	OFF	1243 ms		
03823	DisTRIP 3phase in Z1 with single-ph Flt.	OFF	1278 ms		
00511	Relay GENERAL TRIP command	OFF	1278 ms		
01125	Fault Locator Loop L3E	ON	1230 ms		
01117	Flt Locator: secondary RESISTANCE	0.11 Ohm	1230 ms		
01118	Flt Locator: secondary REACTANCE	0.14 Ohm	1230 ms		
01114	Flt Locator: primary RESISTANCE	0.28 Ohm	1230 ms		
01115	Flt Locator: primary REACTANCE	0.34 Ohm	1230 ms		
01119	Flt Locator: Distance to fault	0.9 km	1230 ms		
01120	Flt Locator: Distance [%] to fault	0.4 %	1230 ms		

Trip Indication extracted from DPS (Main-II) Siemens-7SA611

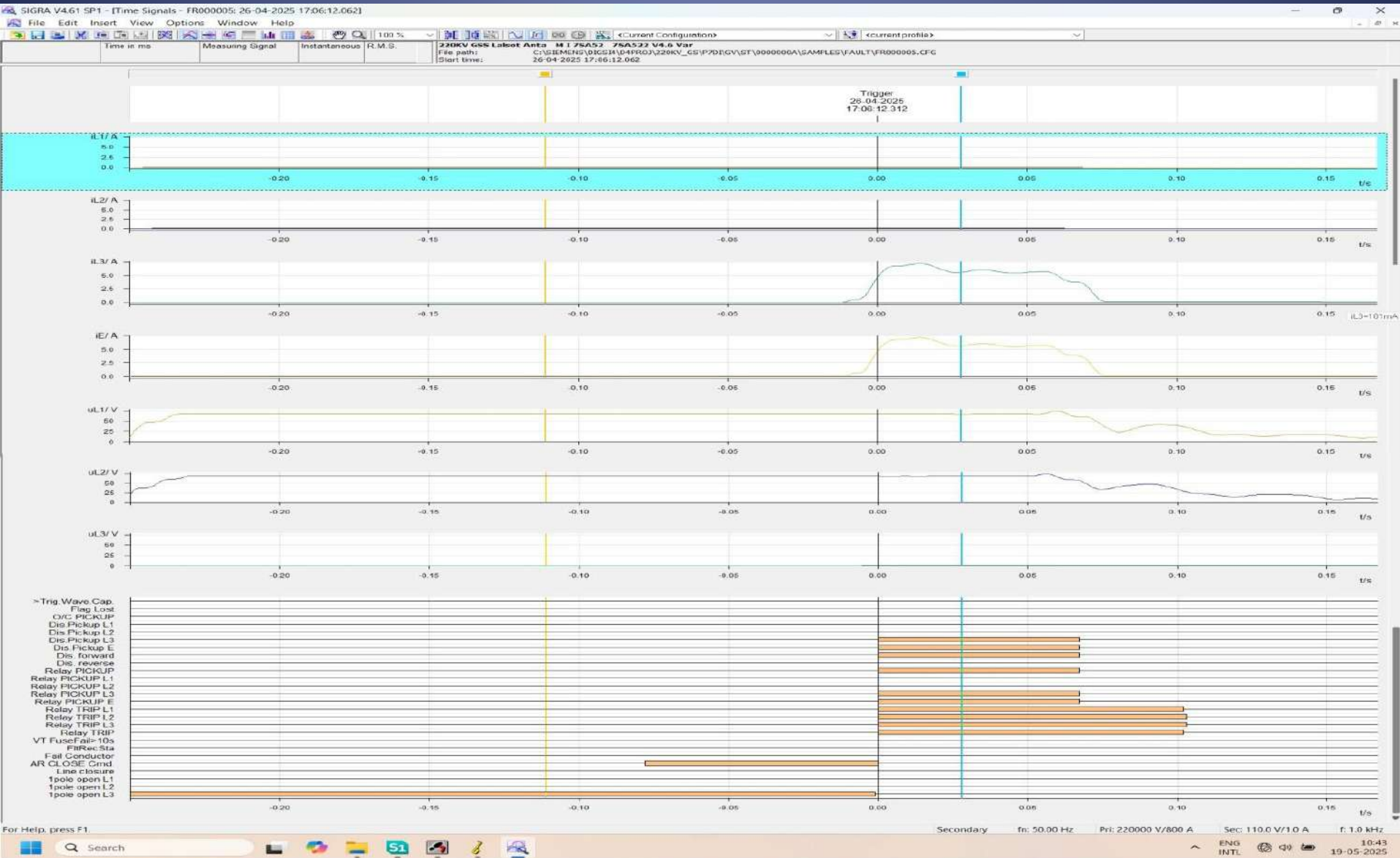
M II / 7SA611 V4.6 Var/7SA611

Number	Indication	Value	Date and time	Cause	State
00301	Power System fault	2 - ON	26.04.2025 17:06:42.956		
00302	Fault Event	2 - ON	26.04.2025 17:06:42.956		
03688	Distance Pickup L3E	ON	0 ms		
03703	Distance Loop L3E selected forward	ON	1 ms		
03804	Distance TRIP command - Only Phase L3	ON	1 ms		
04056	Dis. <u>Telep.</u> Carrier SEND signal	ON	1 ms		
02844	AR 1st cycle running	ON	1 ms		
02801	AR: Auto-reclose in progress	ON	1 ms		
00535	Primary fault current IL3	4.47 kA	2 ms		
00593	Single pole open detected in L3	ON	29 ms		
03671	Distance PICKED UP	OFF	65 ms		
03703	Distance Loop L3E selected forward	OFF	65 ms		
00511	Relay GENERAL TRIP command	OFF	101 ms		
02839	AR dead time after 1pole trip running	ON	101 ms		
01125	Fault Locator Loop L3E	ON	43 ms		
01117	Flt Locator: secondary RESISTANCE	0.14 Ohm	43 ms		
01118	Flt Locator: secondary REACTANCE	0.25 Ohm	43 ms		
01114	Flt Locator: primary RESISTANCE	0.36 Ohm	43 ms		
01115	Flt Locator: primary REACTANCE	0.63 Ohm	43 ms		
01119	Flt Locator: Distance to fault	1.6 km	43 ms		
01120	Flt Locator: Distance [%] to fault	0.8 %	43 ms		
00593	Single pole open detected in L3	OFF	330 ms		
00302	Fault Event	3 - ON	26.04.2025 17:06:44.130		
03688	Distance Pickup L3E	ON	1174 ms		
03703	Distance Loop L3E selected forward	ON	1174 ms		
03804	Distance TRIP command - Only Phase L3	ON	1174 ms		
04056	Dis. <u>Telep.</u> Carrier SEND signal	ON	1175 ms		
02818	AR: Evolving fault recognition	ON	1175 ms		
02784	AR: Auto-reclose is not ready	ON	1175 ms		
00536	Relay Definitive TRIP	ON	1175 ms		
00535	Primary fault current IL3	4.25 kA	1176 ms		
00593	Single pole open detected in L3	ON	1203 ms		
03671	Distance PICKED UP	OFF	1244 ms		
03703	Distance Loop L3E selected forward	OFF	1244 ms		
00511	Relay GENERAL TRIP command	OFF	1274 ms		
01125	Fault Locator Loop L3E	ON	1229 ms		
01117	Flt Locator: secondary RESISTANCE	0.09 Ohm	1229 ms		
01118	Flt Locator: secondary REACTANCE	0.13 Ohm	1229 ms		
01114	Flt Locator: primary RESISTANCE	0.24 Ohm	1229 ms		
01115	Flt Locator: primary REACTANCE	0.32 Ohm	1229 ms		
01119	Flt Locator: Distance to fault	0.8 km	1229 ms		
01120	Flt Locator: Distance [%] to fault	0.4 %	1229 ms		

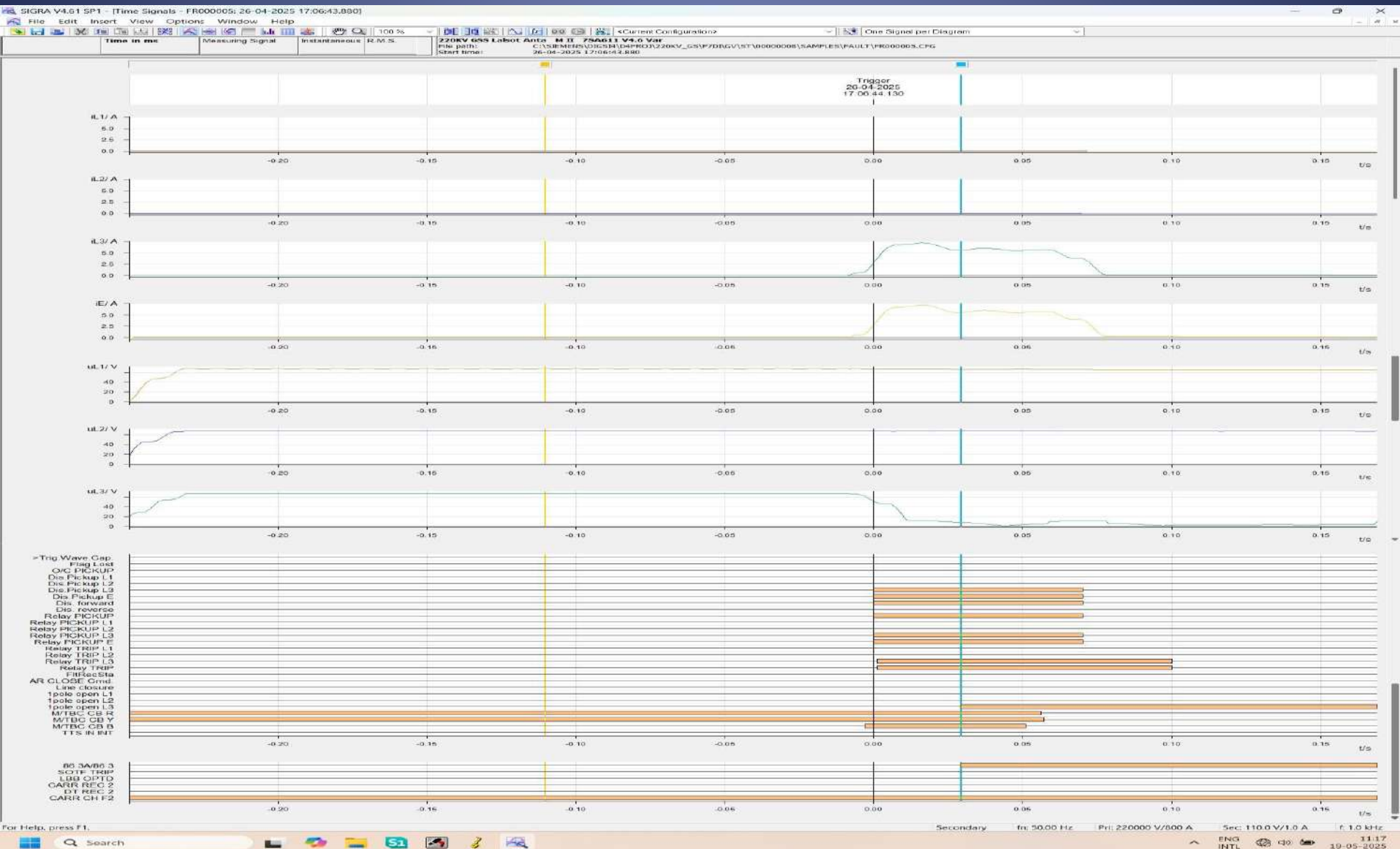
Disturbance Record taken from DPS (Main-I)



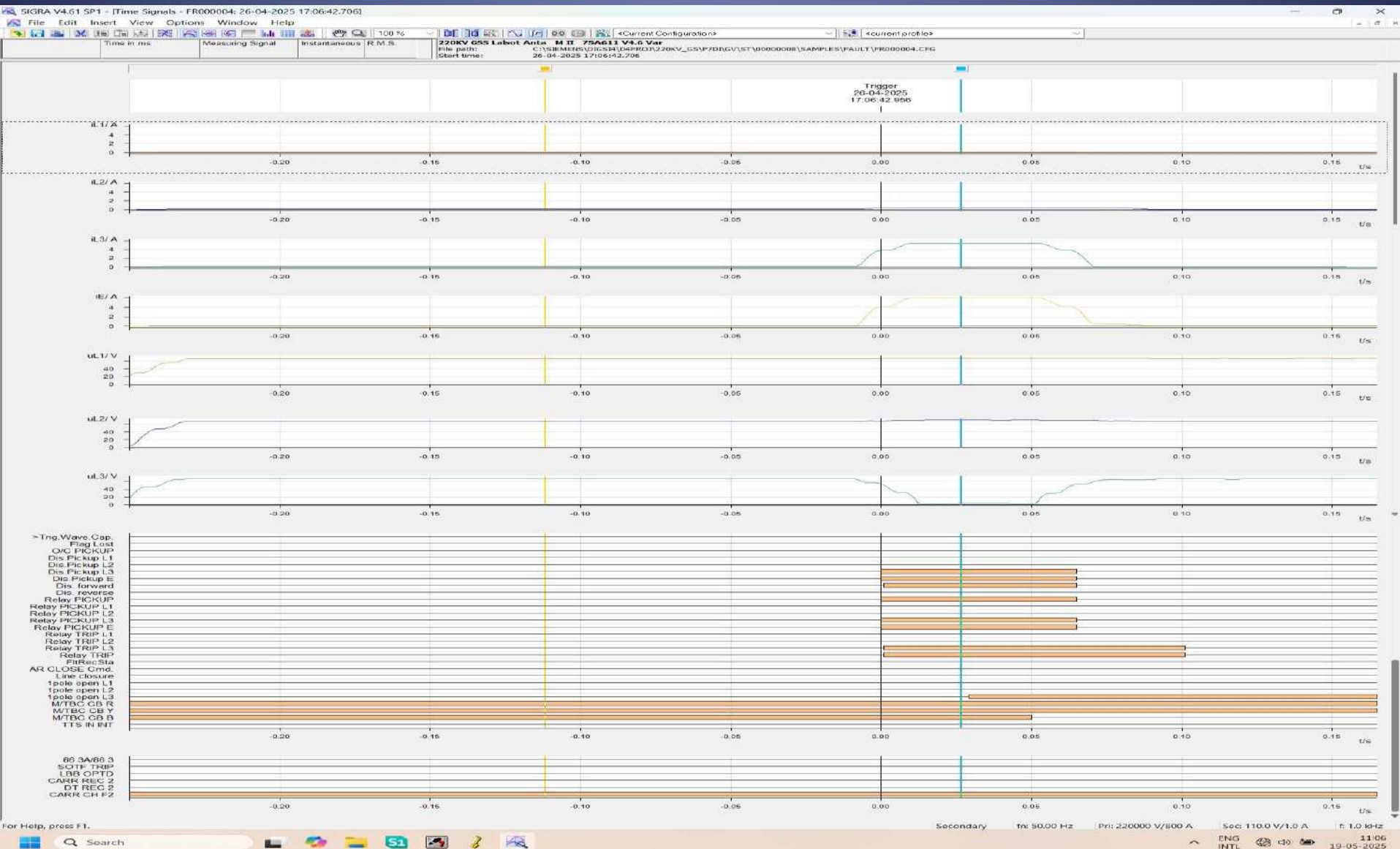
Disturbance Record taken from DPS (Main-I)



Disturbance Record taken from DPS (Main-II)



Disturbance Record taken from DPS (Main-II)

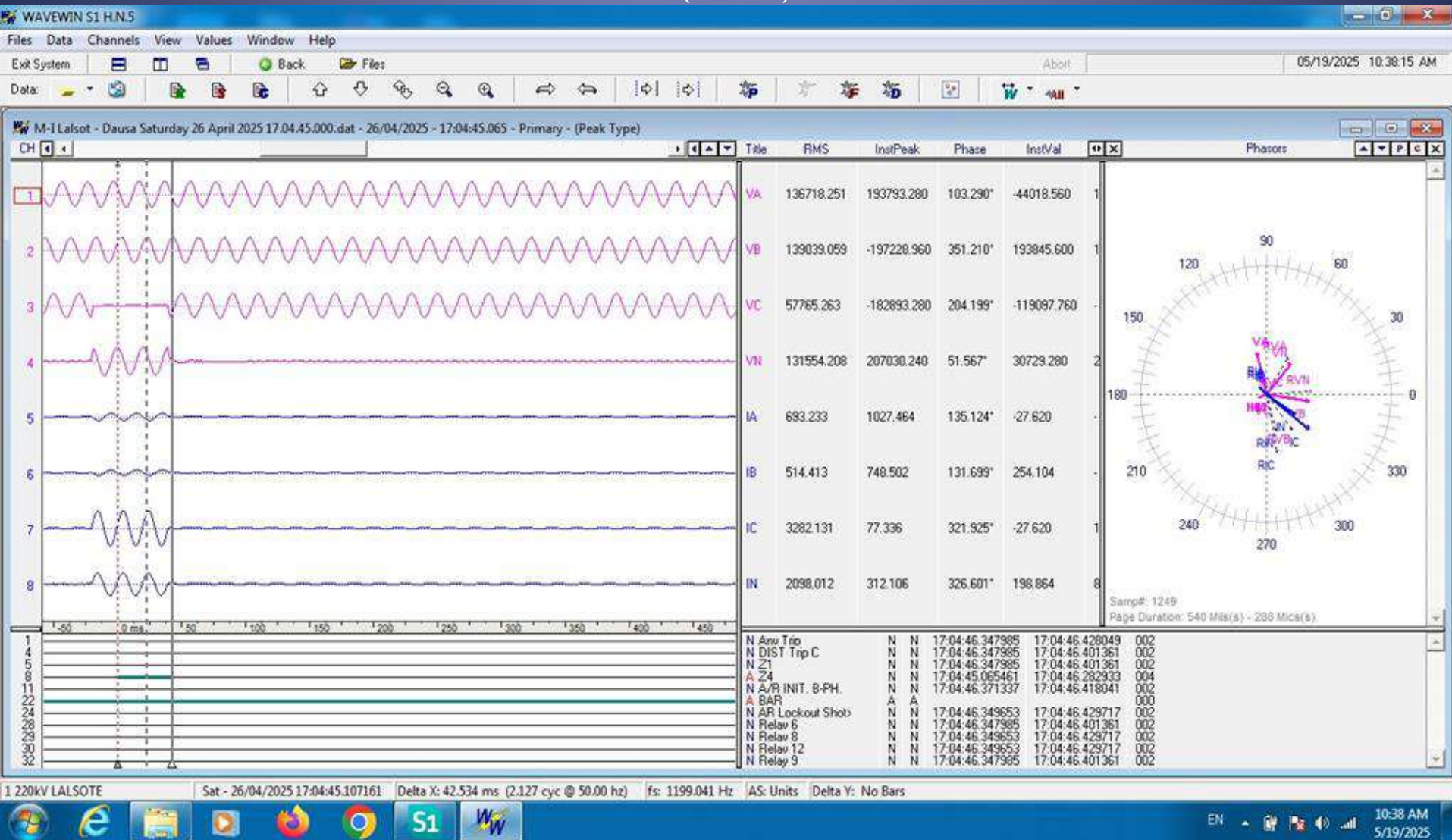


- As per Disturbance record extracted from DPS (Main-1 & Main-2) of 220 KV Lalsot - Anta Line a single phase fault in C-phase{ABC} triggered and pickup Distance relay on IL3 which initiated 1-Pole trip command with AR-close command but may be the fault still persisted in the system so, The relay gave three pole trip command and C.B. had tripped.
- Both the 220 KV Anta & Dausa lines are paralleled on double circuit towers up to more then 2 KM and as per trip indications the fault location was in this parallel section.
- As the fault location was in that parallel section and As per Disturbance record extracted from DPS – P442 (Main-1) of 220 KV Lalsot – Dausa line the ZONE-4 start in Dist. relay Main-I of 220 KV Dausa Feeder with fault in 220 KV Anta feeder

Disturbance Record taken from DPS (Main-I)

220 KV Lalsot -Dausa Line

(Part-I)



- As per examination of Disturbance record of both feeders it may conclude that Due to Non-Reclosing of C.B. with AR close command given by the dist. Relay of Anta feeder, the Dist. relay again pickup on C-Phase fault and at same time of instance the ZONE-4 again start in dist. Relay Main-I of 220 KV Dausa Feeder.
- But due to three pole trip of 220 KV anta feeder, the 220 KV dausa feeder start working as radial feeder.
- A Fault tripping occurred on 220KV Lalsot – Dausa Line
- Following relay indications are observed at 220 KV GSS Lalsot

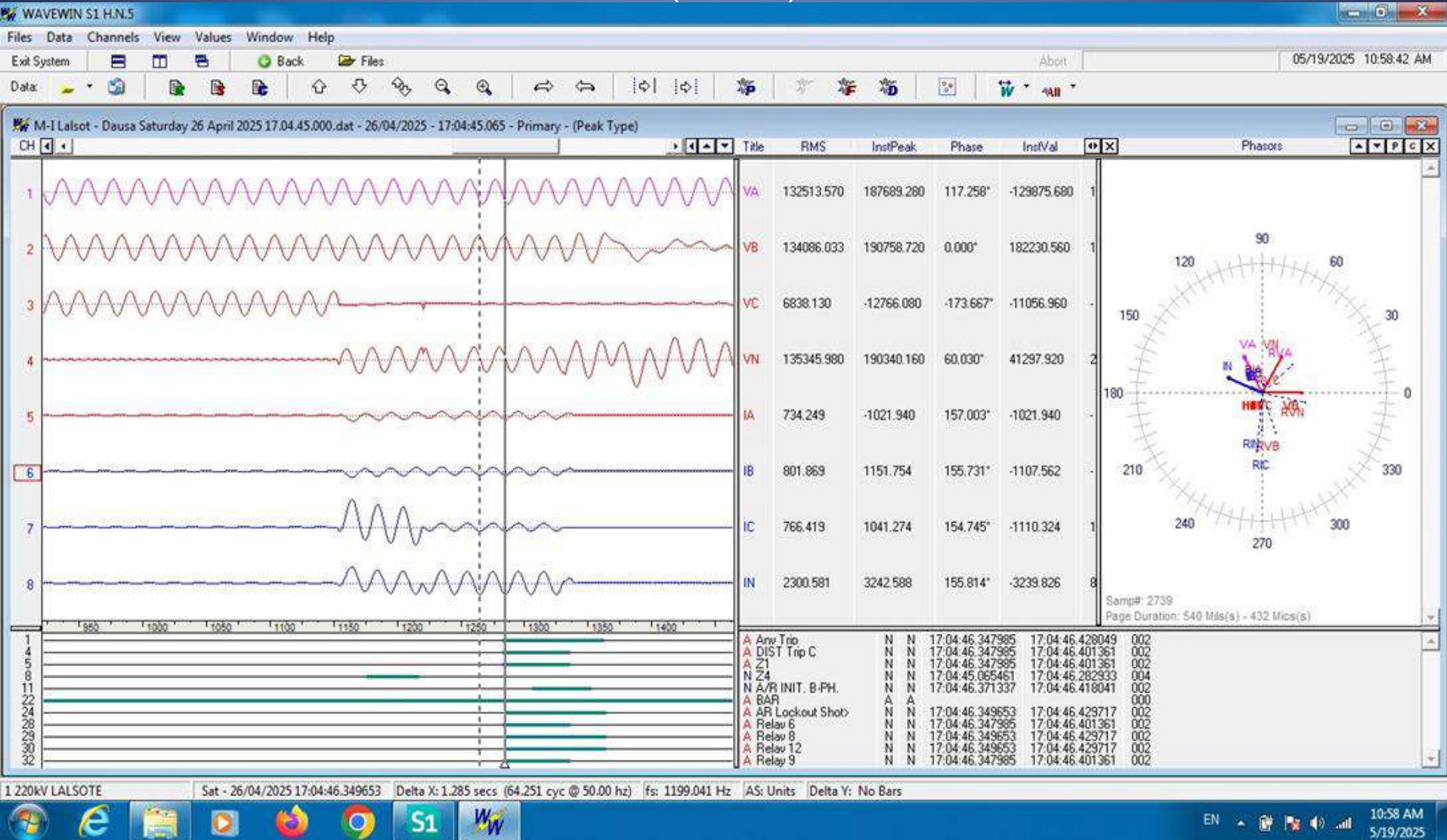
M1 (Micom-P442)

Distance Prot. Zone-1
2.366 KM, C- Phase (out of ABC)

Disturbance Record taken from DPS (Main-I)

220 KV Lalsot -Dausa Line

(Part-II)



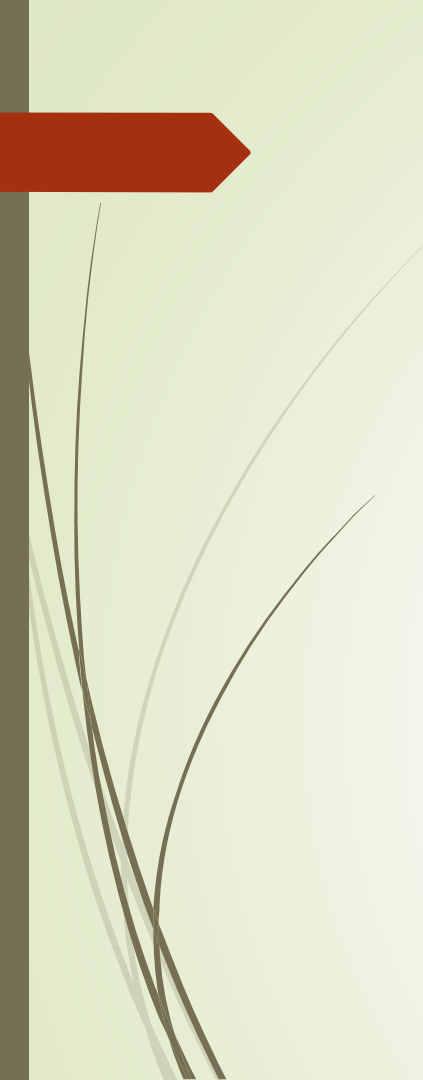
FINAL CONCLUSION

- As per examination of Disturbance record of DPS Main-I (part-2) of 220 KV Lalsot-dausa feeder it may conclude that as 220 KV Duasa feeder working as radial feeder and due to flow of co- Phaser current by transformers, the 220 KV Dausa feeder tripped on Zone-1 fault at 220 KV GSS, lalsot.



RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM LTD. (RRVPNL)

220 kV GSS Dausa



Analysis of tripping of 220 kV Dausa-Lalsot line on Dt. 26.04.2025

- Tripping Event were as following:
- Tripping of 220 kV Dausa-Lalsot Line occurred during heavy storm near 220 kV GSS Lalsot
- 220 kV Lalsot-Anta line also tripped at the same time at 220 kV GSS Lalsot (220 kV Dausa & Anta line are Double circuit till LILO point)
- 220 kV Dausa-Lalsot tripped with following indications:



220 kV Dausa-Lalsot line tripped at 17:01 Hrs:

At 220 kV GSS Dausa end:

Zone-2,C-Phase,Distance-44.32 km, $I_a = 687$ A, $I_b = 777$ A, $I_c = 3.69$ kA ,
Carrier Received

At 220 kV GSS Lalsot end :

Zone-1,C-Phase,Distance-2.3 km



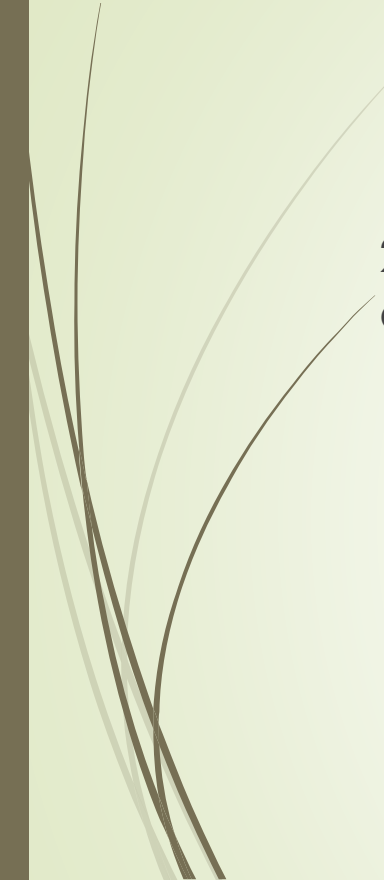


Tripping Analysis as per available DR and events recorded-

1. 220 kV Dausa-Lalsot line tripped in Zone-2 with Carrier Aided Tripping.
2. Relay trip time recorded was 80 msec.
3. But it seems due to problem of CB at 220 kV GSS Dausa end, CB gave delayed tripping and fault was cleared in 353 msec.



Remedial action taken-



220 kV GSS Dausa is advised for carrying out CB timing test of 220 kV Lalsot bay for checking healthiness of the CB.

DR of M-1 of 220 kV Dausa-Lalsot line :



DR of M-2 of 220 kV Dausa-Lalsot line:





THANKS

S. No.	Name of Transmission Element Tripped	Owner/ Utility	Outage		Load Loss/ Gen. Loss	Brief Reason (As reported)	Category as per CEA Grid standards	# Fault Clearance Time (>100 ms for 400 kV and 160 ms for 220 kV)	*FIR Furnished (YES/NO)	DR/EL provided in 24 hrs (YES/NO)	Other Protection Issues and Non Compliance (inference from PMU, utility details)	Remarks
			Date	Time								
1	800 KV HVDC Agra-Bishwanath Chariali (PG) Ckt-2	POWERGRID	06-Apr-25	12:45	Nil	Earth fault	NA	NA	Yes	Yes		As per DR, EL & tripping report received, line-2 tripped during DC fault in line after unsuccessful restart attempt due to permanent fault. As per PMU at Agra(PG) end, fluctuation in voltage is observed.
2	400 KV Ballia-Biharshariff (PG) Ckt-2	POWERGRID	12-Apr-25	09:52	Nil	Snapping of Earth wire	NA	NA	Yes (After 24 hours)	No	DR/EL & tripping report not received	As reported, line tripped on B-N fault in ER-1 jurisdiction. DR/EL not received. As per PMU at Ballia(PG) end, no fault in system is observed. DR/EL not received.
3	400 KV Ballia-Biharshariff (PG) Ckt-2	POWERGRID	12-Apr-25	22:42	Nil	Phase to earth fault B-N	NA	80	Yes (After 24 hours)	Yes (After 24 hours)		
4	765 KV Fatehpur-Sasaram (PG) Ckt-1	POWERGRID	14-Apr-25	15:46	Nil	Phase to Phase Fault R-B	NA	560 (delayed fault clearance)	Yes (After 24 hours)	Yes (After 24 hours)	Carrier communication healthiness may be reviewed.	As per DR of Fatehpur end, R-B fault in Z-2 with delayed clearance of ~560msec is observed. Carrier received signal not observed in DR. Main-1 carrier faulty flag is observed in Fatehpur end Station event logger.
5	765 KV Chittorgarh-Banaskantha (PG) Ckt-1	POWERGRID	17-Apr-25	07:00	Nil	Phase to earth fault B-N	NA	80	Yes (After 24 hours)	Yes (After 24 hours)		As per DR of Chittorgarh(PG) end, line tripped on B-N (Z-1) fault after unsuccessful A/R operation on permanent fault. Fault distance was 241km(79%)and fault current was ~4.5kA from Chittorgarh end.
6	400 KV Kankroli-Zerda (PG) Ckt-2	POWERGRID	18-Apr-25	15:33	Nil	Phase to earth fault R-N	NA	80	Yes	Yes		As per DR of kankroli end, line tripped on R-N fault in reclaim time (within 1sec). Fault current was ~8.5kA from Kankroli end.
7	765 KV Phagi(RS)-Gwalior(PG) (PG) Ckt-1	POWERGRID	24-Apr-25	13:07	Nil	Phase to earth fault R-N	NA	80	Yes (After 24 hours)	Yes (After 24 hours)		As per DR of Phagi end, line tripped on R-N fault in reclaim time (within 1.6sec). Fault current was ~2.35kA from Phagi end.
8	765 KV Phagi(RS)-Gwalior(PG) (PG) Ckt-2	POWERGRID	24-Apr-25	13:08	Nil	Phase to earth fault B-N	NA	80	Yes (After 24 hours)	Yes (After 24 hours)		As per DR of Phagi end, line tripped on B-N fault after unsuccessful A/R operation on permanent fault. Fault current was ~2.89kA from Phagi end.
9	800 KV HVDC Agra-Bishwanath Chariali (PG) Ckt-2	POWERGRID	28-Apr-25	02:39	Nil	Earth fault	NA	NA	Yes (After 24 hours)	No	DR/EL & tripping report not received	As reported, line tripped on earth fault, fault distance was ~982.1km from Agra end. As per PMU at Agra(PG) end, fluctuation in voltage is observed.

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

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

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

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

Reporting of Violation of Regulation for various issues for above tripping

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

Status of Mock Test of SPS in NR during 2025-26

Sr. No.	Scheme Name	Control Area	Mock testing conducted before 2025-26	Tentative Schedule of SPS Mock testing to be conducted during 2025-26	Date of SPS Mock testing conducted during 2025-26	Remarks
1	SPS for WR-NR corridor - 765kV Agra-Gwalior D/C	POWERGRID	27-03-2025			
2	SPS for contingency due to tripping of HVDC Mundra-Mahendergarh	ADANI				Review is being done at OCC/PSC forum
3	SPS for high capacity 400 kV Muzaffarpur-Gorakhpur D/C Inter-regional tie-line related contingency	POWERGRID				
4	SPS for 1500 MW HVDC Rihand-Dadri Bipole related contingency	POWERGRID	19-03-2025 and 20-03-2025			
5	System Protection Scheme (SPS) for HVDC Balia-Bhiwadi Bipole	POWERGRID				
6	SPS for contingency due to tripping of multiple lines at Dadri(NTPC)	NTPC				Review is being done at OCC/PSC forum (SPS Not required)
7	SPS for reliable evacuation of power from NJPS, Rampur, Sawra Kuddu, Baspa Sorang and Karcham Wangtoo HEP	SJVN/HPPTCL/JSW	19-12-2024			
8	SPS for Reliable Evacuation of Ropar Generation	Punjab				
9	SPS for Reliable Evacuation of Rosa Generation	Uttar Pradesh	20-04-2024		12-04-2025	
10	SPS for contingency due to tripping of evacuating lines from Narora Atomic Power Station	NAPS				
11	SPS for evacuation of Kawai TPS, Kalisindh TPS generation complex	Rajasthan	14-03-2025 (Partial)			
12	SPS for evacuation of Anpara Generation Complex	Uttar Pradesh	08-10-2024 (unit-7) and 19-10-2024 (unit-6)			
13	SPS for evacuation of Lalitpur TPS Generation	Uttar Pradesh	21-05-2024		09-04-2025	
14	SPS for Reliable Evacuation of Bara TPS Generation	Uttar Pradesh	20-11-2024			
15	SPS for Lahal Generation	Himachal Pradesh	08-07-2020			
16	SPS for Transformers at Ballabgarh (PG) substation	POWERGRID				Not in service, Review is being done at OCC/PSC forum
17	SPS for Transformers at Maharani Bagh (PG) substation	POWERGRID				
18	SPS for Transformers at Mandola (PG) substation	POWERGRID				
19	SPS for Transformers at Barnauli (DTL) Substation	Delhi				Review is being done at OCC/PSC forum
20	SPS for Transformers at Moradabad (UPPTCL) Substation	Uttar Pradesh	20-04-2024		02-04-2025	
21	SPS for Transformers at Muradnagar (UPPTCL) Substation	Uttar Pradesh	20-04-2024			
22	SPS for Transformers at Muzaffarnagar (UPPTCL) Substation	Uttar Pradesh	20-04-2024			
23	SPS for Transformers at Greater Noida (UPPTCL) Substation	Uttar Pradesh				SPS Unhealthy; SPS not required now, as informed by Transmission wing; Hence SPS may be reviewed
24	SPS for Transformers at Agra (UPPTCL) Substation	Uttar Pradesh	21-03-2025			
25	SPS for Transformers at 400kV Sarojinagar (UPPTCL) Substation	Uttar Pradesh	15-05-2024			
26	SPS for Transformers at 220kV Sarojinagar (UPPTCL) Substation	Uttar Pradesh	06-06-2024			
27	SPS for Transformers at 400kV Unnao (UPPTCL) Substation	Uttar Pradesh	19-05-2023			SPS Unhealthy; SPS need to be made healthy; Expected functioning before 20-03-2025, as informed by Transmission wing-
28	SPS for Transformers at 220kV Unnao (UPPTCL) Substation	Uttar Pradesh				
29	SPS for Transformers at 400kV Sultanpur (UPPTCL) Substation	Uttar Pradesh				SPS Unhealthy; SPS not required now, as informed by Transmission wing; Hence SPS may be reviewed
30	SPS for Transformers at 400kV Bareilly (UPPTCL) Substation	Uttar Pradesh				SPS has been shifted (Not in service)
31	SPS for Transformers at 400kV Azamgarh (UPPTCL) Substation	Uttar Pradesh	06-05-2024			
32	SPS for Transformers at 400kV Mau (UPPTCL) Substation	Uttar Pradesh	27-04-2024			
33	SPS for Transformers at 400kV Gorakhpur (UPPTCL) Substation	Uttar Pradesh	27-04-2024			
34	SPS for Transformers at 400kV Sarnath (UPPTCL) Substation	Uttar Pradesh	23-05-2024			
35	SPS for Transformer at 400kV Rajpura (PSTCL) Substation	Punjab	31-01-2025			
36	SPS for Transformers at 400kV Mundka (DTL) Substation	Delhi	03-02-2025			
37	SPS for Transformers at 400kV Deepalpur (JKTPL) Substation	Haryana				
38	SPS for Transformers at 400kV Ajmer (RVPN) Substation	Rajasthan	10-09-2024			
39	SPS for Transformers at 400kV Merta (RVPN) Substation	Rajasthan	12-09-2024			
40	SPS for Transformers at 400kV Chittorgarh (RVPN) Substation	Rajasthan	31-08-2024 and 05-09-2024			
41	SPS for Transformers at 400kV Jodhpur (RVPN) Substation	Rajasthan	24-09-2024			
42	SPS for Transformers at 400kV Bhadla (RVPN) Substation	Rajasthan	27-09-2024			
43	SPS for Transformers at 400kV Ratangarh (RVPN) Substation	Rajasthan	20-09-2024			
44	SPS for Transformers at 400kV Nehtaur (WUPPTCL) Substation	Uttar Pradesh	11-01-2025			
45	SPS for Transformers at Obra TPS	Uttar Pradesh	20-05-2024			
46	SPS for Transformers at 400kV Kashipur (PTCUL) substation	Uttarakhand	Septemeber 2024			
47	SPS for Transformers at 400kV Fatehgarh Solar Park (AREPRL)	ADANI			12-04-2025	
48	SPS to relieve transmission congestion in RE complex (Bhadla2)	POWERGRID				
49	SPS for Transformers at 400kV Bikaner (RVPN) Substation	Rajasthan	26-09-2024			
50	SPS for Transformers at 400kV Bawana (DTL) Substation	Delhi	04-01-2025			
51	SPS for Transformers at 400kV Bhilwara (RVPN) Substation	Rajasthan	09-07-2024 and 10-07-2024			
52	SPS for Transformers at 400kV Hinduan (RVPN) Substation	Rajasthan	26-09-2024			
53	SPS for Transformers at 400kV Suratgarh (RVPN) Substation	Rajasthan				Implemented in 2024-25
54	SPS for Transformers at 400kV Babai (RS) Substation	Rajasthan				
55	SPS for Transformers at 400kV Allahabad (PG) Substation	Uttar Pradesh				
56	SPS for Transformers at 400kV Jaunpur (UP) Substation	Uttar Pradesh				Yet to be implemented

Summary of Grid Event occurred in J&K control area during Jan'24-Apr'25										
Sl. No.	Category of Grid Disturbance (i.e. CD-I to CD-V)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Event (As reported)	Line of generation / line of load during the Grid Disturbance		Fault Clearance time (in ms)
					Date	Time		Generation Loss(MW)	Load Loss (MW)	
1	GD-I	1) 220 KV Aushang-Draos [PG] CH	Jammu and Kashmir	PGCIL, BPTCL	18 Feb 24	19:39	1) 220KV(Draos) have double main bus arrangement at 220KV side. i) During event occurred, approx. 220MW power was coming from Aushang to Draos and approx. 220MW power was going out from Draos to Kargil. ii) As reported, at 19:39 hrs, 220 KV Aushang-Draos [PG] CH tripped on R phase to phase fault with fault current of 24k A and 2.3kA from Aushang and R phase from Draos end. iii) Due to this tripping supply to 220 KV Draos [PG] Kargil CH was lost and blacked out occurred at 220KV(Draos) 5/s. iv) As per PMU at Anargah, R phase to earth fault is observed with fault clearing time of 280ms. v) As per SCADA, change in demand of approx. 100MW is observed in J&K control area.	0	340	200
2	GD-I	1) 220 KV Aushang-Draos [PG] CH	Jammu and Kashmir	PGCIL, BPTCL	15 Feb 24	10:00	1) 220KV(Draos) have double main bus arrangement at 220KV side. i) During event occurred, approx. 42MW power was coming from Aushang to Draos and approx. 250MW power was going out from Draos to Kargil. ii) As reported, at 10:00 hrs, 220 KV Aushang-Draos [PG] CH tripped on R phase to phase fault with fault current of 24k A and 2.3kA from Aushang and R phase from Draos end. iii) Due to this tripping supply to 220 KV Draos [PG] Kargil CH was lost and blacked out occurred at 220KV(Draos) 5/s. iv) As per PMU at Aushang, R phase to phase fault is observed with fault clearing time of 80ms. v) As per SCADA, change in demand of approx. 135MW is observed in J&K control area.	0	115	80
3	GD-I	1) 220 KV Aushang-Draos [PG] CH	Jammu and Kashmir	PGCIL, BPTCL	14 Mar 24	00:19	1) 220KV(Draos) have double main bus arrangement at 220KV side. 220V Draos is connected with 220/130KV Kargil which is further connected with Khushi and Leth. Chusha HEP is connected at 680V level to 220/130V Kargil and Narnoo Bage HEP is connected at 680V level to 220/130V Leth. i) During event occurred (at 00:19 hrs) approx. 220MW power was coming from Aushang to Draos and approx. 220MW power was going out from Draos to Kargil. ii) As reported, at 00:19 hrs, 220 KV Aushang-Draos [PG] CH tripped on R phase to earth fault. iii) Due to this tripping supply to 220 KV Draos [PG] Kargil CH was lost and blacked out occurred at 220KV(Draos) 5/s. iv) As per PMU at Aushang, R phase to earth fault is observed with fault clearing time of 122ms. v) As per SCADA, load loss of approx. 220MW at 00:19 hrs is observed in J&K control area.	0	23	16
4	GD-I	1) 220 KV Aushang-Draos [PG] CH	Jammu and Kashmir	PGCIL, BPTCL	3 Mar 24	02:09	1) During event occurred (at 02:09 hrs) approx. 50MW power was coming from Aushang to Draos and approx. 250MW power was going out from Draos to Kargil. Chusha HEP was generating 120MW. ii) As reported, at 02:09 hrs, 220 KV Aushang-Draos [PG] CH tripped on R phase to phase fault with fault current of 24k A and 2.3kA from Aushang and R phase from Draos end. iii) Due to this tripping supply to 220 KV Draos [PG] Kargil CH was lost and blacked out occurred at 220KV(Draos) 5/s. iv) As per PMU at Aushang, R phase to earth fault is observed with fault clearing time of 122ms. v) As per SCADA, load loss of approx. 140MW at 02:09 hrs is observed in J&K control area.	0	14	120
5	G-I-1	1) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-1 2) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-2	Jammu and Kashmir	INDIGRIS, PDD IR	06 Mar 24	04:15	1) 220/120KV Zunkote 5/s have two bus at 220KV side i.e., main bus & reserve bus. i) During event occurred, 220KV Anargah(INDIGRIS)-Zunkote[PG] CH-1 carrying 162MW only was feeding Daskotan load. ii) As reported, at 04:15 hrs, 220 KV Anargah(INDIGRIS) Zunkote[PG] CH-2 tripped on R phase to phase fault with fault current of only 84.46 per DR at Anargah end, current in R and Y phase increased upto 10.85kA and 1.48kA respectively. Exact reason, nature and location of fault need to be ascertained. iii) As per PMU at Anargah(INDIGRIS), 8 phase to earth fault is observed with fault clearing time of 120ms. iv) As per SCADA, change in demand of approx. 120MW is observed in J&K control area.	0	225	NA
6	GD-I	1) 220 KV Aushang-Draos [PG] CH	Jammu and Kashmir	PGCIL	29 Apr 24	06:06	i) Power flow from Aushang[PG] to Draos[PG] to Kargil to Khushi to Leth (partial connection). Generation of Chusha is connected to Kargil and generation of Narnoo bage is connected to Leth. ii) As reported, at 06:06 hrs, 220 KV Aushang-Draos [PG] CH tripped on R phase to phase fault with fault distance of 18.4km from Draos[PG]. iii) Upon the tripping of 220 KV Aushang-Draos [PG] CH, complete blacked out occurred at 220/130V(Draos) and supply to Kargil, Khushi and Leth was failed. iv) Generation of Chusha and Narnoo Bage tripped due to loss of evacuation path resulting in generation loss of approx. 72MW each at Chusha and Narnoo Bage (as per SCADA). v) As per PMU at Anargah(INDIGRIS), R phase to phase fault is observed with fault clearing time of 120ms. vi) As per SCADA, change in demand of approx. 120MW is observed in J&K control area.	14	15	120
7	G-I-1	1) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-1 2) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-2	Jammu and Kashmir	INDIGRIS, BPTCL	10 May 24	13:06	1) 220/120KV Zunkote 5/s have two bus at 220KV side i.e., main bus & reserve bus. i) During event occurred, 220KV Anargah(INDIGRIS)-Zunkote[PG] CH-1 carrying 170MW only was feeding Daskotan load. ii) As reported, at 13:06 hrs, 220 KV Anargah(INDIGRIS) Zunkote[PG] CH-2 tripped on R phase to phase fault with fault current of 87.213kA and 97.213kA and fault distance of 4.75kms from Zunkote[PG] end, fault current in zone-1 at Zunkote[PG] end. Exact reason yet to be ascertained. iii) As per PMU at Anargah(INDIGRIS), R phase to phase fault with fault clearing time of 120ms is observed. iv) As per SCADA, change in demand of approx. 120MW is observed in J&K control area.	0	130	120
8	GD-I	1) 220 KV Wagwagan[PG] Parnapang[PG] (PG) CH-1 2) 220 KV Wagwagan[PG] Parnapang[PG] (PG) CH-2	Jammu and Kashmir	PDD IR, PGCIL	30 May 24	14:49	1) 220/130V Parnapang have double main bus arrangement at 220KV side. i) During event occurred, power flow from Wagwagan[PG] to Parnapang[PG] 5/s was approx. 265MW through 220 KV Wagwagan[PG] Parnapang[PG] (PG) D/C. 220KV Parnapang Kargil D/C was not in service. ii) As reported, at 14:49 hrs, 220 KV Wagwagan[PG] Parnapang[PG] (PG) CH-1 tripped on R phase to phase fault with fault current of 24k A and 2.3kA from Wagwagan[PG] end, from Parnapang[PG] end, only 28.8 KV Wagwagan[PG] Parnapang[PG] (PG) CH-2 tripped. iii) As reported, at 14:49 hrs, 220 KV Wagwagan[PG] Parnapang[PG] (PG) CH-1 & 2, both CTs also tripped on overloading. iv) As per PMU at Anargah(INDIGRIS), R phase to phase fault is observed in zone-2 and zone-1 at 220 KV Wagwagan[PG] Parnapang[PG] (PG) CH-1 & 2 respectively. Fault current observed to be 7.3kA & 8.7kA respectively. Exact reason, nature and location of fault need to be ascertained. v) As per PMU at Anargah(INDIGRIS), R phase to earth fault is observed with delayed fault clearing time of 520ms. vi) As per SCADA, change in demand of approx. 220MW is observed in J&K control area.	0	215	520
9	GD-I	1) 220 KV Bar[PG] Kishang[PG] CH-1 2) 220 KV Bar[PG] Kishang[PG] CH-2	Jammu and Kashmir	PDD IR, PGCIL	3 Jun 24	17:30	i) During event occurred, at 17:30 hrs, 220 KV Bar[PG] Kishang[PG] CH-1 tripped on R phase to earth fault with fault current of 2.05kMA from Kishang[PG] end and per CH-2. As per DR, zone-1 distance protection occurred at Kishang[PG] and exact reason and location of fault yet to be ascertained. ii) Upon the same time, 220 KV Bar[PG] Kishang[PG] CH-2 also tripped from Bar[PG] end only on R phase to earth fault with fault current of 2.8kMA from Kishang[PG] end and per CH-2. As per DR, fault current in zone-1 at Kishang[PG] end and the reason of fault yet to be ascertained. iii) As reported, at 17:30 hrs, 220 KV Bar[PG] Kishang[PG] CH-1 & 2, complete blacked out occurred at 220/120V Bar[PG] 5/s. iv) As per PMU at Kishang[PG], R phase to earth fault with fault clearing time of 120ms is observed. v) As per SCADA, load loss of approx. 120MW occurred in J&K control area.	0	120	120
10	GD-I	1) 220 KV Aushang-Draos [PG] CH	Jammu and Kashmir	PGCIL	6 Jun 24	19:11	i) Power flow from Aushang[PG] to Draos[PG] to Kargil to Khushi to Leth (partial connection). Generation of Chusha is connected to Kargil and generation of Narnoo bage is connected to Leth. ii) As reported, at 19:11 hrs, 220 KV Aushang-Draos [PG] CH tripped on R phase to earth fault with fault distance of 1.1km from Aushang[PG]. iii) Upon the tripping of 220 KV Aushang-Draos [PG] CH, complete blacked out occurred at 220/130V(Draos) and supply to Kargil, Khushi and Leth was failed. iv) Generation of Chusha and Narnoo Bage tripped due to loss of evacuation path resulting in generation loss of approx. 72MW at Chusha and Narnoo Bage (as per SCADA). v) As per PMU at Anargah(INDIGRIS), R phase to earth fault is observed with fault clearing time of 80ms. vi) As per SCADA, change in demand of approx. 120MW is observed in J&K control area.	61	0	80
11	G-I-1	1) 220/120KV 10MVA CT-1 at Bar[PG] 2) 220/120KV 10MVA CT-2 at Bar[PG] 3) 220/120KV 10MVA CT-3 at Bar[PG]	Jammu and Kashmir	PDD IR	7 Jun 24	16:29	i) Due to shifting of fault of 220/120KV 10MVA CT-1 to 220/120KV 10MVA CT-1 & 2, both CTs also tripped on overloading. ii) As reported, at 16:29 hrs, 220/120KV 10MVA CT-2 & 3 tripped on Y phase to phase fault with fault current of 21.8kA and 21.8kA respectively. Exact reason of fault yet to be ascertained. iii) As per PMU at Kishang[PG], R phase to phase fault with delayed fault clearing time of 2180 ms is observed. iv) As per SCADA, load loss of approx. 300MW occurred in J&K control area.	0	363	2180
12	G-I-1	1) 220 KV Bar[PG] Kishang[PG] CH-1 2) 220 KV Bar[PG] Kishang[PG] CH-2	Jammu and Kashmir	PGCIL, PDD IR	15 Jun 24	06:48	1) 220/120V Kishang[PG] have double main bus arrangement at 220KV voltage side. i) During event occurred, power flow from Bar[PG] to Kishang[PG] 5/s was approx. 140MW (20 MW only) through 220 KV Bar[PG] Kishang[PG] (PG) D/C. 220KV Kishang[PG] Bar[PG] D/C was not in service. ii) As reported, at 06:48 hrs, 220 KV Bar[PG] Kishang[PG] (PG) CH-1 tripped on R phase to phase fault with fault current of 24k A and 2.3kA from Bar[PG] end, from Kishang[PG] end, only 28.8 KV Bar[PG] Kishang[PG] (PG) CH-2 tripped. iii) As reported, at 06:48 hrs, 220 KV Bar[PG] Kishang[PG] (PG) CH-1 & 2, both CTs also tripped on overloading. iv) As per PMU at Anargah(INDIGRIS), R phase to phase fault is observed with fault clearing time of 80 ms is observed. v) As per SCADA, load loss of approx. 300MW in J&K control area is observed. However, as per SCADA, approx. 120MW load loss is observed in J&K control area.	0	500	80
13	G-I-1	1) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-1 2) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-2	Jammu and Kashmir	PDD IR, INDIGRIS	18 Jul 24	11:01	1) 220/120KV Zunkote 5/s have two bus at 220KV side i.e., main bus & reserve bus. 220KV Anargah-Zunkote-01-02 are on the same tower (DC tower) and line length is 72.4km. i) During event occurred, 220KV Anargah(INDIGRIS)-Zunkote[PG] CH-2 carrying 130 MW only was feeding Daskotan load. ii) As reported, at 11:01 hrs, 220 KV Anargah(INDIGRIS) Zunkote[PG] CH-1 tripped on R phase to phase fault with fault current of 21.8kA and 21.8kA respectively. Exact reason of fault yet to be ascertained. iii) As per PMU at Anargah(INDIGRIS), R phase to earth fault is observed within 120 msec is observed. iv) As per SCADA, change in demand of approx. 120MW is observed in J&K control area.	0	210	120
14	G-I-1	1) 220/120KV 10MVA CT-1 at Bar[PG] 2) 220/120KV 10MVA CT-2 at Bar[PG] 3) 220/120KV 10MVA CT-3 at Bar[PG]	Jammu and Kashmir	JR PDD	2 Aug 24	15:01	i) As reported, at 15:01 hrs, 220/120KV 10MVA CT-1, 220KV Bar[PG] Kishang[PG] CH-1 & 2 tripped on Y phase to phase fault which occurred on 120KV Bar[PG] CH-1 (DC tower) and line length of 72.4km. ii) As reported, due to tripping of CT-1, the complete load shifted on 220/120KV 10MVA CT-2 & 3 which led to tripping of 220/120KV 10MVA CT-2 & 3 on overloading at Bar[PG] 5/s. iii) As per PMU at Kishang[PG], Y phase to phase fault with fault clearing time of 120ms is observed. iv) As per SCADA, load loss of approx. 300MW occurred in J&K control area.	0	345	120
15	G-I-1	1) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-1 2) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-2	Jammu and Kashmir	PDD IR, INDIGRIS	26 Aug 24	13:53	1) 220/120KV Zunkote 5/s have two bus at 220KV side i.e., main bus & reserve bus. 220KV Anargah-Zunkote-01-02 are on the same tower (DC tower) and line length is 72.4km. i) During event occurred, 220KV Anargah(INDIGRIS)-Zunkote[PG] CH-2 carrying 130 MW only was feeding Daskotan load. ii) As reported, at 13:53 hrs, 220 KV Anargah(INDIGRIS) Zunkote[PG] CH-1 tripped on R phase to phase fault with fault current of 21.8kA and 21.8kA respectively. Exact reason of fault yet to be ascertained. iii) As per PMU at Anargah(INDIGRIS), R phase to earth fault is observed within 120 msec is observed. iv) As per SCADA, change in demand of approx. 120MW is observed in J&K control area.	0	180	120
16	G-I-1	1) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-1 2) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-2	Jammu and Kashmir	JR PDD, INDIGRIS	15 Oct 24	10:01	1) 220/120KV Zunkote 5/s have two bus at 220KV side i.e., main bus & reserve bus. 220KV Anargah-Zunkote-01-02 are on the same tower (DC tower) and line length is 72.4km. i) During event occurred, 220KV Anargah(INDIGRIS)-Zunkote[PG] CH-2 carrying 130 MW only was feeding Daskotan load. ii) As reported, at 10:01 hrs, 220 KV Anargah(INDIGRIS) Zunkote[PG] CH-1 tripped on R phase to phase fault with fault current of 21.8kA and 21.8kA respectively. Exact reason of fault yet to be ascertained. iii) As per PMU at Anargah(INDIGRIS), R phase to earth fault is observed within 120 msec is observed. iv) As per SCADA, change in demand of approx. 120MW is observed in J&K control area.	0	175	80
17	G-I-1	1) 220 KV Wagwagan[PG] Parnapang[PG] (PG) CH-1 2) 220 KV Wagwagan[PG] Parnapang[PG] (PG) CH-2	Jammu and Kashmir	PDD IR, PGCIL	16 Oct 24	13:45	1) 220/130V Parnapang have double main bus arrangement at 220KV side. i) During event occurred, power flow from Wagwagan[PG] to Parnapang[PG] 5/s was approx. 140MW (20 MW only) through 220 KV Wagwagan[PG] Parnapang[PG] (PG) D/C. 220KV Parnapang Kargil D/C was not in service. ii) As reported, at 13:45 hrs, Y phase dis ruptured in 220KV main bus at Parnapang. iii) Upon the same time, 220KV Wagwagan[PG] Parnapang[PG] (PG) CH-1 tripped on R phase to phase fault with fault current of 24k A and 2.3kA from Wagwagan[PG] end, from Parnapang[PG] end, only 28.8 KV Wagwagan[PG] Parnapang[PG] (PG) CH-2 tripped. iv) As per PMU at Anargah(INDIGRIS), Y phase to earth fault is observed with fault clearing time of 100ms is observed. v) As per SCADA, change in demand of approx. 220 MW is observed in J&K control area.	0	350	1000
18	G-I-1	1) 220/120KV 10MVA CT-1 at Bar[PG] 2) 220/120KV 10MVA CT-2 at Bar[PG] 3) 220/120KV 10MVA CT-3 at Bar[PG]	Jammu and Kashmir	JR PDD, INDIGRIS	26 Nov 24	14:13	1) 220/120KV Zunkote 5/s have two bus at 220KV side i.e., main bus & reserve bus. 220KV Anargah-Zunkote-01-02 are on the same tower (DC tower) and line length is 72.4km. i) During event occurred, 220KV Anargah(INDIGRIS)-Zunkote[PG] CH-2 carrying 130 MW only was feeding Daskotan load. ii) As reported, at 14:13 hrs, 220 KV Anargah(INDIGRIS) Zunkote[PG] CH-1 tripped on R phase to earth fault with fault current of 22.34kA per CH-1 and fault current of 87.43kA (as per DR) from Anargah end. Fault current in zone-2 at Anargah end. iii) As reported, at 14:13 hrs, 220 KV Anargah(INDIGRIS) Zunkote[PG] CH-1 & 2, both CTs also tripped on overloading. iv) As per PMU at Anargah(INDIGRIS), R phase to earth fault is observed within 120 msec is observed. v) As per SCADA, change in demand of approx. 120 MW is observed in J&K control area.	0	360	80
19	G-I-1	1) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-1 2) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-2	Jammu and Kashmir	INDIGRIS and JR PDD	10 Dec 24	05:17	1) 220/120KV Zunkote 5/s have two bus at 220KV side i.e., main bus & reserve bus. i) During event occurred, 220KV Anargah(INDIGRIS)-Zunkote[PG] CH-1 carrying 130 MW only was feeding Daskotan load. ii) As reported, at 05:17 hrs, 220 KV Anargah(INDIGRIS) Zunkote[PG] CH-2 tripped on R phase to phase fault with fault current of 21.8kA and 21.8kA respectively. Exact reason of fault yet to be ascertained. iii) As per PMU at Anargah(INDIGRIS), R phase to earth fault is observed within 120 msec is observed. iv) As per SCADA, change in demand of approx. 120 MW is observed in J&K control area.	0	225	120
20	G-I-1	1) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-1 2) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-2	Jammu and Kashmir	JR PDD	10 Dec 24	13:13	1) 220/120KV Zunkote 5/s have two bus at 220KV side i.e., main bus & reserve bus. 220KV Anargah-Zunkote-01-02 are on the same tower (DC tower) and line length is 72.4km. i) During event occurred, 220 KV Anargah(INDIGRIS)-Zunkote[PG] CH-1 carrying 130 MW only was feeding Daskotan load. ii) As reported, at 13:13 hrs, 220 KV Anargah(INDIGRIS) Zunkote[PG] CH-2 tripped on R phase to phase fault with fault current of 21.8kA and 21.8kA respectively. Exact reason of fault yet to be ascertained. iii) As per PMU at Anargah(INDIGRIS), R phase to earth fault is observed with fault clearing time of 880 msec is observed. iv) As per SCADA, change in demand of approx. 120 MW is observed in J&K control area.	0	76	880
21	G-I-1	1) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-1 2) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-2	Jammu and Kashmir	INDIGRIS and JR PDD	10 Dec 24	19:47	1) 220/120KV Zunkote 5/s have two bus at 220KV side i.e., main bus & reserve bus. 220KV Anargah-Zunkote-01-02 are on the same tower (DC tower) and line length is 72.4km. i) During event occurred, 220KV Anargah(INDIGRIS)-Zunkote[PG] CH-2 carrying 130 MW only was feeding Daskotan load. ii) As reported, at 19:47 hrs, 220 KV Anargah(INDIGRIS) Zunkote[PG] CH-1 tripped on R phase to phase fault with fault current of 21.8kA and 21.8kA respectively. Exact reason of fault yet to be ascertained. iii) As per PMU at Anargah(INDIGRIS), R phase to earth fault is observed with fault clearing time of 80 msec is observed. iv) As per SCADA, change in demand of approx. 22.5 MW is observed in J&K control area.	0	215	80
22	G-I-1	1) 220/120KV 10MVA CT-1 at Bar[PG] 2) 220/120KV 10MVA CT-2 at Bar[PG] 3) 220/120KV 10MVA CT-3 at Bar[PG]	Jammu and Kashmir	PDD IR	17 Feb 25	6:43:00:333	1) 220/120KV Zunkote 5/s have two bus at 220KV side i.e., main bus & reserve bus. 220KV Anargah-Zunkote-01-02 are on the same tower (DC tower) and line length is 72.4km. i) During event occurred, 220KV Anargah(INDIGRIS)-Zunkote[PG] CH-2 carrying 130 MW only was feeding Daskotan load. ii) As reported, at 6:45:18 hrs, Y phase dis ruptured due to broken jumper conductors while returning the same time from shutdown (Exact reason, nature and location of fault need to be ascertained). iii) Upon the same time, 220/120KV 10MVA CT-1 & 2, both CTs also tripped on overloading. iv) As per PMU at Anargah(INDIGRIS), Y phase to earth fault is observed with fault clearing time of 118 ms and fault current of 91.130k A from Zunkote end. Fault current in zone-1 at Zunkote end. v) As per PMU at Anargah(INDIGRIS), Y phase to earth fault is observed with fault clearing time of 80 msec is observed. vi) As per SCADA, change in demand of approx. 22.5 MW is observed in J&K control area.	0	210	80
23	G-I-1	1) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-1 2) 220 KV Anargah (INDIGRIS) Zunkote[PG] (PG) CH-2	Jammu and Kashmir	INDIGRIS & JR PDD	28 Feb 25	6:14:03:113	1) 220/120KV Zunkote 5/s have two bus at 220KV side i.e., main bus & reserve bus. 220KV Anargah-Zunkote-01-02 are on the same tower (DC tower) and line length is 72.4km. i) During event occurred, 220KV Anargah(INDIGRIS)-Zunkote[PG] CH-2 carrying 130 MW only was feeding Daskotan load. ii) As reported, at 03:10 hrs, 220 KV Anargah(INDIGRIS) Zunkote[PG] CH-1 tripped on R phase to earth fault with fault current of 21.8kA and 21.8kA respectively. Exact reason of fault yet to be ascertained. iii) As per PMU at Anargah(INDIGRIS), R phase to earth fault is observed with fault clearing time of 240 msec is observed. iv) As per SCADA, change in demand of approx. 126 MW is observed in J&K control area.	0	126	NA

24	GD-1	0230 KV (LH)(PG) - BUS 1 0220/66 KV 50 MVA ICT 1 AT (LH)(PG) 0220 KV 60/66KV 50MVA ICT-1	Jerome and Kednor	RPSC & PGCL	26-Nov-25	0.19722222 Details available: Due to tripping of both the ICTs, the generator at Nimoo Bargo HRP also tripped due to loss of evacuation path along with other 66KV feeders. This led to complete blackout of 220KV substation. gfa per PMU, R-R phase to earth fault with fault clearance time of 220ms was observed. Vibe per SCADA, total loss of approx. 20 MW in B&C control area and generation loss of approx. 6 MW at Nimoo were observed.		6	21	120
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**Status of submission of FIR/DR/EL/Tripping Report
on NR Tripping Portal of J&K
Time Period: Jan 2024- Apr 2025**

S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)
			Value	%	Value		%	Value		%	Value		%
1	Jan-24	1	0	0	1	0	100	1	0	100	1	0	100
2	Feb-24	21	3	14	21	0	100	21	0	100	18	0	86
3	Mar-24	9	4	44	4	5	100	4	5	100	4	4	80
4	Apr-24	13	6	46	7	1	58	8	1	67	6	0	46
5	May-24	23	3	13	4	19	100	3	20	100	4	8	27
6	Jun-24	29	2	7	28	0	97	28	0	97	12	0	41
7	Jul-24	11	0	0	11	0	100	11	0	100	11	0	100
8	Aug-24	16	0	0	16	0	100	16	0	100	16	0	100
9	Sep-24	17	0	0	15	2	100	15	2	100	11	6	100
10	Nov-24	9	4	44	4	5	100	5	4	100	4	3	67
11	Dec-24	11	1	9	11	0	100	11	0	100	8	0	73
12	Jan-25	1	0	0	1	0	100	1	0	100	0	0	0
13	Feb-25	5	4	80	4	1	100	4	1	100	4	0	80
14	Mar-25	8	0	0	8	0	100	8	0	100	8	0	100
14	Apr-25	21	0	0	21	0	100	21	0	100	21	0	100
Total in NR Region		195	27	14	156	33	96	157	33	97	128	21	74

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

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

Deepak Kumar

Tue 04-Feb-25 17:04

To: Sugata Bhattacharya (सुगता 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; aeoprotection@upslcd.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@upslcd.org; ldrrpn@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@upslcd.org; sesc@upslcd.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

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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)

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

S. No	Site name	Region	Site visit
1	Ialtokalan	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 <nrlcdso2@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;

****Warning****

This email has not originated from Grid-India. Do not click on attachment or links unless sender is reliable.
Malware/ Viruses can be easily transmitted via email.

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
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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 <nrlcdso2@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@upslcd.org>; Rajasthan <SE.LDRVNL@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@upslcd.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 (सुगता 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

***CAUTION:** This mail has originated from outside Adani. Please exercise caution with links and attachments.*

Sir,

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



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

Sangeeta
(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), Pareshan Bhawan, 130D, Hydrel 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
उपप्रोपावर 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@upslde.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 Jhinhana	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-Mahendargarh 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-Mahendargarh Line is hereby recommended

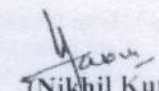
(A). In Maximum Load Condition :-

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

(B). In Average Load Condition :-

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

Submitted for information and necessary action


(Nikhil Kumar)
Superintending Engineer

संख्या / No.

/E.T.C./MZN/

दिनांक / DATED

Copy forwarded to the following for information and necessary action :

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

(Nikhil Kumar)
Superintending Engineer

कार्यालय
अधीक्षण अभियन्ता
विद्युत परीक्षण एवं परिचालन मण्डल
उ०प्र० पावर ट्रांसमिशन कारपोरेशन लि०
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)
UPSLDC Vibhuti Khand,
Gomti Nagar,
Lucknow.

(By e-mail)

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 - Mahendargarh 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

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" <sempccdk@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

**Every 8333.3 sheets of paper costs us a tree.
Please don't print this e-mail unless you really need to. Save Paper Save Trees**

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;

****Warning****

This email has not originated from Grid-India. Do not click on attachment or links unless sender is reliable. Malware/ Viruses can be easily transmitted via email.

Sir,

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

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

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

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

Rest information kept unchanged. It is also added here that the fiber connectivity is also available on all the above substations.

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

This is for information & further necessary action please.

From: "Executive Engineer TS Rewari" <xentsrwr@hvpn.org.in>

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

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

Sent: Thursday, August 29, 2024 1:20:08 PM

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

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

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

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

From: "Executive Engineer TS Rewari" <xentsrwr@hvpn.org.in>

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

Cc: "SE TS GGN" <setsggn@hvpn.org.in>, "Executive Engineer Executive Engineer" <xen400kvdhanoda@hvpn.org.in>, "Substation Engineer" <sse220kvnarnaul@hvpn.org.in>

Sent: Wednesday, August 28, 2024 12:46:13 PM

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

In reference of trailing email it is submitted that 220 kV Lula Ahir is connected with 400 kV Dhanonda through 220kV D/C line and with 220 kV Dadri through 220kV S/C line and with 220 kV Rewari with 220kV S/C line.

In general circuits of 400 kV Dhanonda and 220 kV Dadri runs in synchronization. The maximum load (for FY 2023-24) on three no. 100 MVA TFs installed at 220 kV Lula Ahir is 53.46 MVA, 86.26 MVA and 87.02 MVA. It is further added that in general 220 kV Dadri takes load from 220 kV Lula Ahir substation and thus act as sink.

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

Regards

XEN/TS Division

HVPNL Rewari.

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

To: "Executive Engineer TS Rewari" <xentsrwr@hvpn.org.in>, "Executive Engineer TS Rohtak" <xentsrtk@hvpn.org.in>, "Executive Engineer Ts Bhiwani" <xentsbhw@hvpn.org.in>, "Executive Engineer Executive Engineer" <xen400kvdhanoda@hvpn.org.in>, xendhanonda@gmail.com

Cc: "Chief Engineer SO Commercial" <cesocomml@hvpn.org.in>, "Chief Engineer TS Panchkula" <cetspkl@hvpn.org.in>, "Chief Engineer TS Hisar" <cetshsr@hvpn.org.in>, "Superintending Engineer SLDC OP" <sesldcop@hvpn.org.in>, "SE TS Rohtak" <setsrtk@hvpn.org.in>, "SE TS GGN" <setsggn@hvpn.org.in>, "Superintending Engineer TS Hisar" <setshsr@hvpn.org.in>, "Superintending Engineer MP CC Dhulkote" <sempccdk@hvpn.org.in>, "Superintending Engineer MP CC Delhi" <sempccdelhi@hvpn.org.in>, "Executive Engineer MP Rohtak" <xenmpccrtk@hvpn.org.in>, "XEN MP Hisar" <xenmpccshr@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

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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 2 nd 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 2 nd 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 2 nd 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.

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>;

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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
उ०क्षे०भा०प्रे०के०/ NRLDC
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड/ Grid Controller of India Limited
Formerly known as
पोसोको / POSOCO

Punjab Details

Punjab Control Area	Name of S/S	66kV Feeders	Average Demand(Amp.)	Maximum Demand(Amp.)
	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	ghanonda400kv@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 Materkotla	Er. Sanju Bala	96461-64007	sse-pm-mlrk@pstcl.org
UP	Shamli	Er. Krishna Nand	9412756631	eeetdshamli@upptcl.org
	400kV Muradnagar	Er. D.S. Sengar	9412748666	ee400mrd2@upptcl.org
Delhi	400/220kV Bamnauli			
	400/220kV Mandola			

ULDC network for SPS Mundra-Mohindergarh 500kV HVDC

Sumeet Sharma <Sumeet.Sharma@adani.com>

Thu 4/10/2025 5:42 PM

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

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

 1 attachments (323 KB)

20250408 ULDC discussion..pdf;

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Dear Meena ji,

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

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

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

Regards,

Sumeet Sharma

Head- Automation, Communications & OT-Cyber Technology

Adani Energy Solutions Limited.(Grid Division)

Mob +91 90990 05648 | sumeet.sharma@adani.com | www.adani.com

KP Epitome | 10th Floor South Wing | SG Highway | Ahmedabad-382421 | Gujarat

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SPS Protection scheme for Mohindergarh-Mundra HVDC Transmisison System

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

Ref No. : ATIL_NRPC_SPS-NR_20250410_1

10-Apr-25

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

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

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

Sir,


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

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

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

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

Regards


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

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

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

- i. Pick up voltage & time delay setting of Antitheft lines to be kept low with sufficient time gap from other lines at S/s. In case of 400kV lines, it may be kept as 105%-107% pick up with 3-4 secs time delay and in case of 765kV lines, it may be kept as 104%-106% pick up with 3-4 secs time delay. Further, it may be decided on case-to-case basis.
- ii. Parallel lines grading to be done such that one line should trip early by setting at low voltage and other line should trip last by keeping setting at high voltage. Stage-1 of over voltage protection setting in all the 400kV lines to be kept as 110 % with 5 sec delay and stage-2 setting to be kept as 140-150 % with 100msec delay.
- iii. In case of parallel lines, both voltage and time grading need to be done (in line with the NRPC protection philosophy of lines). Voltage grading (110% & 112% with 5 & 6 sec time delay for double circuits and 110%, 111% & 112% with 5,6 & 7 sec time delay for triple circuits).
- iv. Highly loaded lines should be given last priority in tripping.
- v. Net MVAR relief (based on the line charging MVAR & MVAR compensation in line) based on the simulation to be considered for arriving at the priority of line tripping. Lines providing high net MVAR relief to be tripped early.
- vi. Grading to be done in such a manner that one major incoming and outgoing line shall remain connected after tripping of lines at any node.
- vii. Protection setting of remote end station of a line need to be coordinated so as to avoid tripping of line from the other end.
- viii. Drop-off to pick-up ratio of relays implemented for overvoltage protection shall be more than 99%. In case of old relays in which there is no option for changing this setting, utilities may take up this issue with OEM for increasing this setting to 99% or higher.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

71	Noida Sec 148- Noida Sec 123	1	110	5	140	0.1	110	5	140	0.1
72	Noida Sec 148- Noida Sec 123	2	112	6	140	0.1	112	6	140	0.1
73	Obra-B-Sultanpur	1	110	5	140	0.1	110	5	140	0.1
74	Obra-B - Jaunpur	1	112	6	140	0.1	112	6	140	0.1
75	Orai-Paricha	1	110	5	140	0.1	110	5	140	0.1
76	Orai-Paricha	2	112	6	140	0.1	112	6	140	0.1
77	Panki- Panki TPS	1	110	5	140	0.1	110	5	140	0.1
78	Panki- Panki TPS	2	112	6	140	0.1	112	6	140	0.1
79	Rasra-Mau	1	112	6	150	0.1	112	6	150	0.1
80	Rewa Road- Masauli	1	110	5	140	0.1	110	5	140	0.1
81	Rewa road-Obra	1	110	6	140	0.1	110	6	140	0.1
82	Rewa road-Panki	1	111	6	140	0.1	111	6	140	0.1
83	Roorkee- Muzaffarnagar	1	111	6	150	0.1	111	6	150	0.1
84	Rosa-Badaun	1	110	5	140	0.1	110	5	140	0.1
85	Rosa-Badaun	2	112	6	140	0.1	112	6	140	0.1
86	Sarnath-Azamgarh	1	110	5	140	0.1	110	5	140	0.1
87	Simbholi- Muradnagar II	1	110	5	150	0.1	110	5	150	0.1
88	Simbholi- Muradnagar II	2	112	6	150	0.1	112	6	150	0.1
89	Simbholi-Meerut	1	110	5	150	0.1	110	5	150	0.1
90	Simbholi-Meerut	2	112	6	150	0.1	112	6	150	0.1
91	Sultanpur(UP)- Mohanlalganj(PGY TL)	1	110	5	140	0.1	110	5	150	0.1
92	Sultanpur-Tanda Stage II	1	111	6	150	0.1	111	6	150	0.1
93	Tanda-Basti	1	110	5	140	0.1	110	5	150	0.1
94	Tanda-Basti	2	112	6	140	0.1	112	6	150	0.1
95	Unnao(UP)- Mohanlalganj(PGY TL)	1	110	5	140	0.1	110	5	150	0.1
96	Unnao-Panki	1	111	6	140	0.1	111	6	140	0.1
97	Varanasi(PG)- Jaunpur	1	110	5	140	0.1	110	5	140	0.1
98	Varanasi(PG)- Jaunpur	2	112	6	140	0.1	112	6	141. 8	0.1
D. THDCIL										
1	Aligarh(PG)-Khurja STPP(TH)	1	110	5	150	0.1	110	5	140	0.1
2	Aligarh(PG)-Khurja STPP(TH)	2	112	6	150	0.1	112	6	140	0.1
E. Rajasthan										

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

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

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

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

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

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

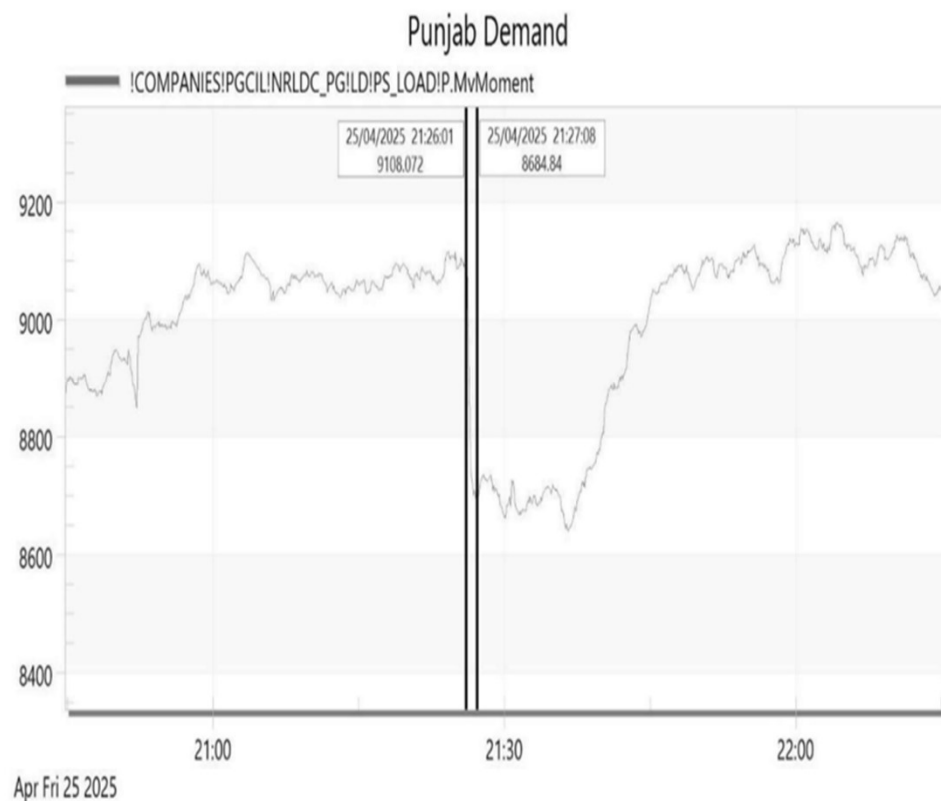
1	Babai(RS)- Bhiwani(PG)	1	110	5	150	0.1	110	5	150	0.1
2	Babai(RS)- Bhiwani(PG)	2	112	6	150	0.1	112	6	150	0.1
3	Babai(RS)- Neemrana(PG)	1	110	5	150	0.1	110	5	150	0.1
4	Babai(RS)- Sikar(PG)	1	112	6	150	0.1	112	6	150	0.1
Q. NRSSXXI(B) (Sekura Energy)										
1	Amritsar- Malerkotla	1	110	5	150	0.1	110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

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

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

Punjab Demand: 425 MW load loss

**df/dt operation in Punjab
on 25.04.2025**



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

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

Summary of df/dt operation during May-June 2024

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

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

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

State wise quantum of load relief under different stages of UFR

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