सत्यमेव जयते

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

विषय: उ.क्षे.वि.स. की नवीकरणीय ऊर्जा उप-समिति की 6वीं बैठक का कार्यवृत।

Subject: Minutes of the 6th meeting of Renewable Energy Sub-committee of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की नवीकरणीय ऊर्जा उप-समन्वय उप-समिति की 6वीं बैठक दिनांक 23.03.2026 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत संलग्न है और यह उत्तर क्षेत्रीय विद्युत् समिति की वेबसाइट https://www.nrpc.gov.in पर भी उपलब्ध है।

The 6th Renewable Energy sub-committee meeting of NRPC was held on 23.03.2026. The Minutes of this meeting is attached herewith and the same has been uploaded on the NRPC website https://www.nrpc.gov.in.

DHARMENDER KUMAR MEENA
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(डी. के. मीना)
अधीक्षण अभियंता (प्रचालन)

सेवा में : उ.क्षे.वि.स. की नवीकरणीय ऊर्जा उप समिति के सभी सदस्य।
To : All Members of Renewable Energy Sub-committee of NRPC
(As per attached list)

List of addressee (via mail)

List of Members of Renewable Energy Sub-committee

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22	Adani Hybrid Energy Jaisalmer Three Ltd.	
23	Adani Hybrid Energy Jaisalmer Four Ltd.	
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25	Adani Solar Energy Jaisalmer One Pvt. Ltd._450MW (Solar)	
26	Adani Solar Energy Four Private Limited	
27	Adani Solar Energy Jaisalmer Two Private Limited	
28	Adani Solar Energy Jaisalmer	

	Two Private Limited Project Two	
29	SB ENERGY FOUR PRIVATE LIMTED, Bhadla	
30	SB Energy Six Private Limited, Bhadla	
31	Adani Solar Enegry Jodhpur Two Limited, Rawara	
32	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)	
33	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)	
35	Adani Green Energy Twenty Four Limited	
36	ADANI GREEN ENERGY TWENTY FIVE LIMITED	
37	Adani Solar Energy Jodhpur Six Pvt. Ltd.	
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78	Renew Sun Bright Pvt. Ltd. (RSBPL)	
79	Renew Sun Waves Private Limited (RSEJ4L)	
80	Renew Surya Partap Pvt. Ltd.	
81	Renew Surya Ravi Pvt. Ltd.	
82	Renew Surya Roshni Pvt. Ltd.	
83	Renew Surya Vihan Pvt. Ltd.	
84	RENEW SOLAR POWER Pvt. Ltd. Bikaner	
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86	Renew Surya Jyoti Pvt. Ltd.	
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101	Transition Green Energy Private Limited	
102	Transition Sustainable Energy Services Private Limited	
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105	NTPC Bhadla-2 Solar	
106	NTPC Bhensara Solar	rakeshswami@ntpc.co.in; riteshlakra01@ntpc.co.in;
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Contents

उत्तर क्षेत्रीय विद्युत समिति की नवीकरणीय ऊर्जा उप-समिति की 6वीं बैठक का कार्यवृत्त

The 6th Renewable Energy Sub-Committee meeting of NRPC was held on 23.03.2026 at NRPC Secretariat, New Delhi.

MS, NRPC welcomed all the participants to the 6th RE Sub-Committee Meeting. List of participants is attached as ***Annexure-A***.

A.1 Confirmation of Minutes

A.1.1 Minutes of the 5th Renewable Energy sub-committee meeting of NRPC was issued on 10.03.2026.

A.1.2 Renewable Energy Sub-Committee confirmed the minutes of the meeting.

A.2 Submission of periodic testing schedule of RE generators (agenda by NRPC Secretariat)

A.2.1 EE(O), NRPC apprised that as per Regulation 40 (1) of CERC (IEGC) Regulations, 2023 stipulate that there shall be periodic tests, as required under clause (3) of this Regulation, carried out on power system elements for ascertaining the correctness of mathematical models used for simulation studies as well as ensuring desired performance during an event in the system.

A.2.2 These tests shall be performed once every five (5) years or whenever major retrofitting is done. If any adverse performance is observed during any grid event, then the tests shall be carried out even earlier, if advised by SLDC/RLDC/NLDC/RPC, as the case may be.

A.2.3 Further, Regulation 40(1)(b) stipulate that “All equipment owners shall submit a testing plan for the next year to the concerned RPC by 31st October to ensure proper coordination during testing as per the schedule. In case of any change in the schedule, the owners shall inform the concerned RPC in advance.”

A.2.4 Extract of IEGC 2023 clause 40,

“40. PERIODIC TESTING

(1) There shall be periodic tests, as required under clause (3) of this Regulation, carried out on power system elements for ascertaining the correctness of mathematical models used for simulation studies as well as ensuring desired performance during an event in the system.

(2) General provisions

(a) The owner of the power system element shall be responsible for carrying out tests as specified in these regulations and for submitting reports to NLDC, RLDCs, CEA and CTU for all elements and to STUs and SLDCs for intra-State elements.

(b) ***All equipment owners shall submit a testing plan for the next year to the concerned RPC by 31st October to ensure proper coordination during testing as per the schedule****. In case of any change in the schedule, the owners shall inform the concerned RPC in advance.*

(c) The tests shall be performed once every five (5) years or whenever major retrofitting is done. If any adverse performance is observed during any grid event, then the tests shall be carried out even earlier, if so advised by SLDC, RLDC, NLDC, or RPC, as the case may be.

(d) The owners of the power system elements shall implement the recommendations, if any, suggested in the test reports in consultation with NLDC, RLDC, CEA, RPC and CTU.

(3) Testing requirements

The following tests shall be carried out on the respective power system elements:

TABLE 9 : TESTS REQUIRED FOR POWER SYSTEM ELEMENTS

Power System Elements	Tests	Applicability
Synchronous Generator	(1) Real and Reactive Power Capability assessment. (2) Assessment of Reactive Power Control Capability as per CEA Technical Standards for Connectivity (3) Model Validation and verification test for the complete Generator and Excitation System model including PSS. (4) Model Validation and verification of Turbine/Governor and Load Control or Active Power/ Frequency Control Functions. (5) Testing of Governor performance and Automatic Generation Control.	Individual Unit of rating 100MW and above for Coal/lignite, 50MW and above gas turbine and 25 MW and above for Hydro.
Non synchronous Generator (Solar/Wind)	(1) Real and Reactive Power Capability for Generator (2) Power Plant Controller Function Test (3) Frequency Response Test (4) Active Power Set Point change test. (5) Reactive Power (Voltage / Power Factor / Q) Set Point change test	Applicable as per CEA Technical Standards for Connectivity.
HVDC/FACTS Devices	(1) Reactive Power Controller (RPC) Capability for HVDC/FACTS (2) Filter bank adequacy assessment based on present grid condition, in consultation with NLDC. (3) Validation of response by FACTS devices as per settings.	To all ISTS HVDC as well as Intra-State HVDC/FACTS, as applicable

A.2.5 NRPC secretariat vide letter dated 05.08.2025 had requested all generators including

RE generators to submit testing schedule for period 2024-29 in prescribed format.

A.2.6 The procedure for the periodic testing is available on NLDC website and the link for the same is mentioned below:

https://webcdn.grid-india.in/files/grdw/uploads/2023/09/Final-Procedure-of-Periodic-Testing-for-Power-System-Elements-submitted-to-CERC.pdf

A.2.7 EE(O), NRPC apprised the status of submission of periodic testing schedule by RE Generating.

A.2.8 Updated list of generating stations from which schedule for periodic testing has been received is attached as ***Annexure-I***.

A.2.9 List of generating stations from schedule for periodic testing has not been received is attached as ***Annexure-II***.

A.2.10 Representative of ABC RENEWABLE ENERGY and Adani Green Energy Ltd. informed that their plants were commissioned in 2022. Therefore, periodic testing is due in 2027.

A.2.11 MS, NRPC stated that although the testing is due in 2027, schedule for periodic testing for next 5 years may be submitted so that the status of testing may be monitored.

A.2.12 Representative of Adept Renewables stated that periodic testing schedule would be submitted within a week.

A.2.13 MS, NRPC asked all the RE Generators whose periodic testing is due in next 5 years to submit the schedule of Periodic Testing in the format attached at ***Annexure-III*** **to seo-nrpc@nic.in.**

Decision of the forum:

Forum directed all the RE Generators whose periodic testing is due in next 5 years to submit the schedule of Periodic Testing in the format attached at Annexure-III to seo-nrpc@nic.in.

A.3 Submission of protection performance indices of 220 kV and above system along with reason and corrective action taken for indices less than unity to NRPC Secretariat for month of January-February 2026 (agenda by NRPC Secretariat)

A.3.1. AEE (P), NRPC apprised that as per clause 15 (6) of IEGC 2023;

A.3.2. Users shall submit the following protection performance indices of previous month to their respective RPC and RLDC on monthly basis for 220 kV and above (132 kV and above in NER) system, which shall be reviewed by the RPC:

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

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

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

where,

(a). Nc is the number of correct operations at internal power system faults,

(b). Nf is the number of failures to operate at internal power system faults,

(c). Nu is the number of unwanted operations,

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

A.3.3. 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.3.4. In earlier PSC meeting, it was decided that each utility shall submit the performance **indices of previous month by 7th day of next month.**

A.3.5. Accordingly, the status of the indices reported for the month of January-February 2026 is attached as **Annexure-IV & V.**

A.3.6. It has been observed that many of RE utilities are compliant in submission of protection indices.

A.3.7. AGEL representative ensured to share the protection performance indices for Ambuja Cements Limited_300MW in future.

A.3.8. MS, NRPC highlighted that performance indices are key indicator to reduce and avoid any type of unwanted trippings. Therefore, it is required to do analysis of such events and take corrective action accordingly. These events are being regularly discussed in each PSC meetings and recommended to review protection settings wherever it is required.

A.3.9. Further, based on submitted data by the utilities, incidents, where indices were found less than one, were discussed attached as **Annexure-A.VI.**

A.3.10. ACME representative informed that on 25.01.2026, 89C bypass Isolator was used for charging the PTR-2. During charging, the Remote end relay tripped of 220 kV side - Bhadla-2 due to DT received. No fault was present at our end and suspecting malfunctioning Which is under review. Forum directed ACME to share the further remedial action in this regard.

A.3.11. Regarding tripping of 315 MVA PTR-3 (RAISAR) on 03.02.2026 due to Banana clip left connected at CT secondary terminals after testing, Forum recommended ACME to prepare a SOP for testing so that such unwanted operations may be avoided. She also asked all utilities to share any SOP is available for testing of equipment.

Decision taken by Forum:

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

A.4 Annual protection audit plan for FY 2026-27 (agenda by NRPC Secretariat)

A.4.1. 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.4.2. In view of above, all utilities were requested to submit the annual protection audit plan for FY-2026-27 latest by 31st October 2025 in 63rd, 64th, 65th PSC & in the 56th TCC & 81st NRPC meeting (held on 29-30 October, 2025).

A.4.3. Accordingly, annual audit plans submitted by utilities have been compiled **(enclosed as Annexure- A.VII).**

A.4.4. It has been observed that some RE utilities have not submitted audit plan even after passing of deadline. Further, audit report is also awaited for FY 2025-26.

Decision taken by Forum:

Forum directed all RE utilities to submit annual audit plan for FY 2026-27 as deadline of 31st October 2025 has already passed and for FY 2025-26 audit report may be submitted where audit has been completed.

A.5 Third-party protection audit plan (agenda by NRPC Secretariat)

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

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

A.5.2. In view of above, third party audit plans submitted by utilities have been compiled **(enclosed as Annexure-A.VIII).**

A.5.3. It has been observed that some RE utilities have not submitted third party audit plan and report is also awaited.

A.5.4. AGEL was requested to share the 3rd Party protection audit plan for the plants which have not completed 5 years since commissioning considering the commissioning date with audit to be completed once in five years. SE (P), NRPC asked to share the year in which 3rd party protection audit plan is planned.

A.5.5. MS, NRPC mentioned that NPC has prepared Qualifying criteria for the selection of prospective bidders (Company) for conducting Third-Party Protection Audits which can be used by utilities as a reference document.

A.5.6. MS, NRPC suggested that RE developers may approach state Transco of its State in which plant is connected for 3rd party protection audit.

A.5.7. AEE (P), NRPC mentioned that 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). All the audited protection settings need to be shared with the audit report.

Decision taken by Forum:

Forum directed all the RE Developers to submit the third-party audit plan. Further, utilities may update the status of 3rd party protection audit as per the submitted audit plans. Subsequently, the audit reports along with compliance status may be submitted to NRPC Secretariat regularly.

A.6 Cause and mitigation of Voltage Oscillation and Voltage spikes in RE complex (Agenda by Serentica Renewables)

A.6.1 Serentica Renewables has requested forum to deliberate upon following:

i. Impact of Siemens STATCOMs voltage dead band on oscillations and scope for increasing evacuation under T-GNA post the same.

ii. Findings on root cause analysis of RE Plants to be discussed and suggested mitigation to be deliberated. In case RE Developers have not submitted root cause analysis, deliberation on way forward and action to be taken.

iii. Update on latest status of Rajasthan Ph III transmission projects.

iv. Status of implementation of remedies as mentioned below, suggested by Grid India vide its Note on Restriction of Renewable Energy Generation in Northern Region ISTS RE Complex dated 03.02.2026:

a. Root Cause Analysis & tuning of controllers of RE plants and STATCOM
b. Uprating the terminal equipment of 400 kV Bhadla – Bikaner D/C (RRVPNL) & other RVPNL lines.
c. Interconnection of 400 kV Bikaner PG to Bikaner RS D/C (30 km) may be explored

v. Roadmap and actionable points for increasing T-GNA margin in RJ and ensure its monthly follow-up with deliberation in the RE Subcommittee meeting.

vi. Considering delay in COD of Neemrana 2 S/s (expected Dec 2026) to consider an interim arrangement so as to enhance the evacuation capacity from Bikaner-2/3 substations, such as interconnection of Bikaner 3 – Neemrana 2 765kV 2xD/c (expected Dec 2026) with Sikar-II – Narela 765kV D/c line (schedule Aug 2025, expected in June 2026) so as to form Bikaner-3 – Sikar-II and Bikaner-3 – Narela sections by April 2026, or any other suitable arrangement. This may improve evacuation capacity at Bikaneer-2 / 3 substations and facilitate evacuation of RE power.

A.6.2 Representative of NRLDC stated that point i, ii, iii and iv(a) may be discussed under separately under NRLDC agenda items. He further mentioned that a petition has also been filed by Serentica Renewables covering all these issues.

A.6.3 MS, NRPC stated that sub judice matters are generally not discussed in NRPC meeting. She requested members to not put up sub judice matters for discussion in NRPC meetings.

A.6.4 SE(O), NRPC apprised that a Committee was constituted comprising members from NRPC, NRLDC, CTUIL, CEA, RRVPNL and POWERGRID to assess the feasibility of proposal for Interconnection of 400kV Bikaner (PGCIL) and 400kV Bikaner (RVPNL) Substations. Committee was of view that interconnection of 400kV Bikaner (PG) and 400kV Bikaner (RVPNL) substations may not be required as the timeline required for approval and implementation of proposed interconnection of 400kV Bikaner (PG) and 400kV Bikaner (RRVPNL) would be around 30 to 32 months. RRVPNL has confirmed to complete the rectification work of Quad-Moose 400kV Bhadla (RVPNL)- Bikaner (RVPNL) transmission line and upgradation work of terminal equipment by December 2025 and then the line would be available for its full rated thermal capacity of 1700 MW approx. In 56th TCC/ 81st NRPC meetings, NRPC forum concurred with the Committee recommendation.

A.6.5 SE(O), NRPC further informed that uprating the terminal equipment of 400 kV Bhadla – Bikaner D/C (RRVPNL) & other RVPNL lines has already been taken up with RVPN.

A.6.6 Regarding interim arrangement proposed by Serentica Renewables to enhance the evacuation capacity from Bikaner-2/3 substations, representative of CTU mentioned that a study is being carried out by them and results of the study would be shared with CEA, NRPC and NRLDC within two weeks.

A.6.7 SE(O), NRPC enquired about the status of Neemrana 2 S/s.

A.6.8 Representative of CTU informed that it's scheduled COD was Dec'25. However, the same is delayed and updated commissioning schedule is Dec'26.

A.6.9 Representative of Rajasthan SLDC stated that for any interim arrangement connectivity may be allowed only when SCR is more than 5. To which CTU representative replied that all technical parameters as per CEA planning criteria are followed during the planning.

A.6.10 MS, NRPC asked CTU to carry out study on the proposed interim arrangement within two weeks. Subsequently matter may be taken up in next RE Sub-committee meeting.

Decision taken by Forum:

Forum asked CTU to carry out study on the proposed interim arrangement within two weeks.

A.7 Modification in the termination arrangement at Fatehgarh-III PS for transmission lines under schemes Rajasthan Phase-III Part F and Part G (Agenda by Resonia)

A.7.1 Representative of Resonia stated that, BTL is implementing the Transmission System for Evacuation of Power from REZ in Rajasthan (20 GW) under Phase-III Part F (Part F Project).

A.7.2 In terms of the TSA, referenced, BTL is required to implement the following elements as part of its transmission project:

a. Establishment of 2x1500MVA 765/400kV Substation at suitable location near Beawar along with 2x330 MVAr 765kV Bus Reactor & 2x125 MVAr 420kV Bus Reactor (Beawar S/s/Element 1)
b. LILO of both circuit of Ajmer-Chittorgarh 765 kV D/c at Beawar (LILO of AC Line/Element 2)
c. LILO of 400 kV Kota Merta line at Beawar (LILO of KM Line/Element 3)
d. Fatehgarh-3 PS-Beawar 765 kV D/c along with 330 MVAr Switchable line reactor for each circuit at each end of Fatehgarh-3- Beawar 765 kV D/c line (FB Line/Element 4)
e. ±2x300MVAr STATCOM, 4x125 MVAr MSC, 2x125 MVAr MSR at Fatehgarh3 PS along with 2 nos. of 400 kV bays at Fatehgarh-3 PS (Statcom/Element 5)

A.7.3 In terms of Schedule 2 of the TSA, Element Nos. 1-4 are required to be commissioned simultaneously.

A.7.4 A meeting under the chairmanship of Chairperson, CEA was held on 20.01.2026 regarding modification in the termination arrangement at Fatehgarh-III PS for transmission lines under schemes Rajasthan Phase-III Part F and Part G. In the meeting, M/s Resonia was requested to put best efforts to expedite the completion of_the Fatehgarh-III PS - Beawar 765 kV line along With Beawar Station and its

associated lines by Feb/March 2026.

A.7.5 In terms of Regulation 27(1)(c)(ii) of the CERC (Indian Electricity Grid Code) Regulations, 2023:

The COD of a transmission element of the transmission system under Tariff Based Competitive Bidding shall be declared only after the declaration of the COD of all the pre-required transmission elements as per the Transmission Services Agreement:

Provided that in case any transmission element is required in the interest of the power system as certified by the concerned RPC(s), the COD of the said transmission element may be declared prior to the declaration of the COD of its prerequired transmission elements.

A.7.6 Therefore, in view of the urgent need of evacuation/ISTS transmission margins in the State of Rajasthan, to mitigate against the loss being faced by RE developers due to the recent 4.3 GW T-GNA curtailment in the Rajasthan, and in furtherance of the directions issued by the CEA to BTL, Resonia has requested for requisite certification in terms of Regulation 27(1)(c)(ii) of the CERC (Indian Electricity Grid Code) Regulations, 2023 to allow declaration of COD for the Beawar S/s, LILO of KM Line and/or LILO of AC Line ahead of the COD of other elements otherwise pre-required/required to be commissioned simultaneously.

A.7.7 Representative of CTU stated that Fatehgarh-III PS has two sections. Currently in 1380 MW and 1300 MW RE generation has been commissioned in Section-1 and Section-2 respectively. Total generation of approximately 2600 MW is being evacuated through Section-1 through Jaisalmer and Fatehgarh-II S/s. In Section-2 there are two 765kV Fatehgarh-III – Beawar D/C lines, LILO of both circuit of 765 kV Ajmer-Chittorgarh D/C line at Beawar, LILO of 400 kV Kota - Merta line at Beawar and 765kV Beawar – Dausa line. As per the study if LILO of 400 kV Kota - Merta line at Beawar is commissioned before commissioning of LILO of 765 kV Ajmer-Chittorgarh D/C line at Beawar, then loading of 400 kV Kota - Merta line would be around 900 MW whereas its thermal limit is 850 MW. Therefore, 400 kV Kota - Merta line will be overloaded and N-1 non-compliant.

A.7.8 MS, NRPC enquired about the scheduled COD of these elements. To which Representative of Resonia replied that scheduled COD of 765kV Beawar S/s, LILO of 765 kV Ajmer-Chittorgarh D/C line at Beawar and LILO of 400 kV Kota - Merta line at Beawar was Mar’25 and scheduled COD of STATCOMs at Bearwar was Sep’25.

A.7.9 MS, enquired about increase in the evacuation margin if part COD is allowed.

A.7.10 Representatives of CTU and NRLDC stated that approximately 1500 MW additional

power may be evacuated under TGNA upon commissioning of both LILOs and Beawar S/s. Further, there would be not much benefit without LILO of 765 kV Ajmer-Chittorgarh D/C line.

A.7.11 Representatives of CTU and NRLDC mentioned that part COD can be allowed if LILO of 765 kV Ajmer-Chittorgarh D/C line at Beawar, LILO of 400 kV Kota - Merta line at Beawar and 765/400kV Beawar S/s are commissioned together.

A.7.12 Representative of Rajasthan SLDC mentioned that there is no capacity for evacuation of any additional power injected at 400 KV Merta S/s due to this arrangement as 220 KV Merta-Heerpura line in downstream network is already overloaded.

A.7.13 CTU representative stated that this issue would not arse if LILO of 765 kV Ajmer-Chittorgarh D/C line at Beawar is commissioned alonwith 765kV Beawar S/s.

A.7.14 NRLDC stated that if LILO of 400 kV Kota - Merta line is commissioned without LILO of 765 kV Ajmer-Chittorgarh D/C line then NR Export TTC would be violated as RAPP Shujalpur line would be overloaded. Therefore, he suggested that LILO of 400 kV Kota - Merta line may be charged at no load.

A.7.15 MS, NRPC stated that in-principal approval may be accorded for commissioning of Beawar S/s, LILO of 400 kV Kota Merta line and LILO of both circuit of Ajmer-Chittorgarh 765 kV D/C line at Beawar simultaneously, ahead of the COD of prerequisite element i.e. Fatehgarh-3- Beawar 765 kV D/c line (FB Line/Element 4) subject to the approval in the next NRPC meeting.

Decision taken by Forum:

Forum accorded in-principal approval for commissioning of Beawar S/s, LILO of 400 kV Kota Merta line and LILO of both circuit of Ajmer-Chittorgarh 765 kV D/C line at Beawar simultaneously, ahead of the COD of prerequisite element i.e. Fatehgarh-3-Beawar 765 kV D/c line (FB Line/Element 4) subject to the approval in the next NRPC meeting. Further, forum decided that LILO of 400 kV Kota - Merta line may be charged at no load until the charging of LILO of 765 kV Ajmer-Chittorgarh D/C at Beawar.

A.8 RE generation loss events in case of fault in the vicinity of RE complex and Low Voltage Ride Through (LVRT) & High Voltage Ride Through (HVRT) non-compliance by RE Generators at interconnection point (Agenda by NRLDC)

A.8.1 Regulations pertaining to LVRT & HVRT as per CEA (Technical Standards for

Connectivity to the Grid) (Amendment) Regulations, 2019 are as follows.

(i). Clause B2 (3) under Part II of the Schedule for LVRT:

Quote

"The generating station connected to the grid shall remain connected to the grid when the voltage at the interconnection point on any or all phases dips up to the level depicted by the thick lines in the following curve, namely:

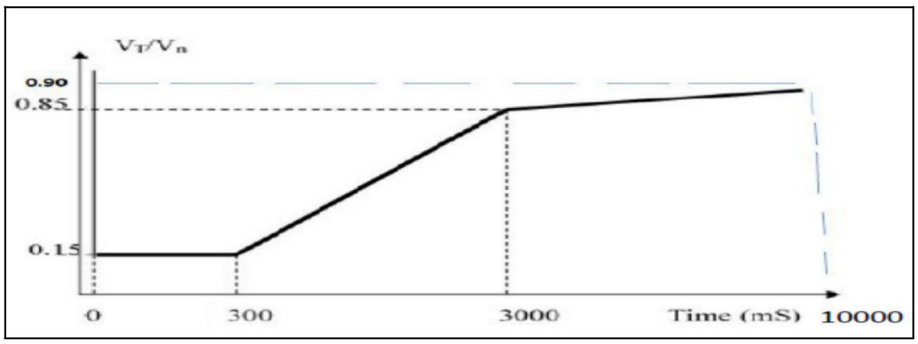


Figure 1 LVRT operating range

Provided that during the voltage dip, the supply of ***reactive power has first priority****, while the supply of active power has second priority and* ***the active power preferably be maintained during voltage drops****, provided, a reduction in active power within the plant's design specifications is acceptable and* ***active power be restored to at least 90% of the pre-fault level within 1 sec*** *of restoration of voltage."*

Unquote

(ii). Clause B2(7) under Part II of Schedule for HVRT:

Quote

"The generating station connected to the grid, shall remain connected to the grid when the voltage at the interconnection point, on any or all phases (symmetrical or asymmetrical overvoltage conditions) rises above the specified values given below for specified time".

Over voltage (pu)	Minimum time to remain connected (Seconds)
1.30 < V	0 Sec (Instantaneous trip)
1.30 ≥ V > 1.20	0.2 Sec
1.20 ≥ V >1.10	2 Sec
V ≤ 1.10	Continuous

Unquote

A.8.2 Further, CEA has issued the clarification on HVRT clause vide file no.

12/X/STD/CONN/GM/2023/438 dated 06.01.2023.

Quote

"In HVRT mode, the generating station shall provide reactive power support (absorption) proportional to the voltage rise at point of interconnection. During this phase, the quantum of reactive current absorption shall be dependent on reactive current gain in the system i.e. HVRT "K" factor. The active current and overall current shall be limited as per the transient rated current limit of the plant".

Unquote

Details of RE generation loss events from on 14.01.2026 and LVRT/HVRT non-compliance of RE generators:

A.8.3 The issue of renewable energy (RE) generation loss during faults in the vicinity of the RE complex and non-compliance of LVRT/HVRT requirements by RE generators at the interconnection point was thoroughly discussed in the previous meetings for the events occurred on 14th January 2026.

A.8.4 The necessary action points for RE developers were outlined in the last meeting. Since then, total 2 numbers of RE generation loss events (>1000MW) occurred in RE complex of Northern Region. Summary of these two (2) events is shown below;

Summary of RE Generation loss in NR (16th and 21st Feb'26):

S. No	Date & Time	Fault event	Dip in RE generation	Frequency Dip (Hz)
1	16.02.2026, 11:33Hrs	No fault was observed; however, a sharp voltage dip resulted in generation loss.	2062 MW	0.14
2	21.02.2026, 13:36Hrs	Y phase jumper snapping of 220 KV RSDCL(PSS1)_SL_BHD2 _PG-Bhadla_2 (PG)	1752 MW	0.15

A.8.5 The above two (2) events have been analysed in detail based on SCADA/PMU data available at NRLDC. Based on the analysis, list of LVRT/HVRT Non-compliant RE Plants, their Generation Loss quantum, and details of common inverters are given below.

16th Feb 2026 event details

(a). Dip of approx. 2062 MW in NR total solar generation, among which approx. 1093 MW recovered within 1 minute (dip of approx. 686 MW in Rajasthan solar generation).

(b). Generation loss of approx. 650 MW at RAPP-D
(c). Pumping loss of approx. 221 MW at Tehri PSP.

Table-1: List of LVRT/HVRT Non-compliant RE Plants and their Generation Loss quantum for 16th Feb'26, 11:33Hrs event:

Compliance Status of RE plants vis-à-vis CEA Technical Standards for Connectivity to the Grid 11:33Hrs event on 16.02.2026									
S. No	Name of SPPD/Generator	Pooling Station	Installed Capacity (MW)	Inverter/WTG Make	Inverter/WTG Model	Active Power (MW)			HVRT / LVRT Compliance
						Before	After	Percentage Recovered immediately after fault	
1	RENEW SOLAR POWER Pvt. Ltd. Bhadla	Bhadla	50+200	HUAWEI	SUN2000-95KTL-INH1	109.825	67.37	61.34	Non-Complaint
	AZURE POWER INDIA Pvt. Ltd., Bhadla			SUNGROW/ TMEIC	SG3125HV/ PVH-L2500EQ	109.825	67.37	61.34	Non-Complaint
2	Mega Suryaurja Private Limited (MSUPL)	Bhadla 2	250	SINENG	EP3125-HA-UD	232.569	185.895	79.93	Non-Complaint
3	NTPC Kolayat 2		200	KEHUA	SPI3125K-B-H	285.64	240.195	84.09	Non-Complaint
4	Avaada Sunrays Pvt. Ltd.		320	SINENG	SP-250K-INH	326.814	232.991	71.29	Non-Complaint
5	AMP Energy Green FIVE Pvt. Ltd.		100	SUNGROW	SG320HX	101.436	70.714	69.71	Non-Complaint
6	SBSR Power Cleantech Eleven Private Limited	Bikaner	300	KEHUA	SPI3125K-B-H	284.768	232.819	81.76	Non-Complaint

	(SPCEP)								
7	Azure 43		600	SUNGROW	SG3125HV	462	160	34	Non-Complaint
5	SINGRAULI SOLAR PV POWER STATION (SPRJ) - Nedan Solar NTPC	Fatehgarh1	296	HUAWEI	SUN2000-185KTL-INHO	287.246	205.329	71.48	Non-Complaint
6	Adani Solar Park PSS-1 (ASPS1)		250	HUAWEI	SUN2000-185KTL-H1	246.616	166.973	67.71	Non-Complaint
7	Renew Sun Bright Private Limited (RSBPL)	Fatehgarh2	300	HUAWEI	Huawei SUN2000-185KTL-INHO	274.85	193.698	70.47	Non-Complaint
8	Adani Hybrid Energy Jaisalmer One Limited ckt1		360	Suzlon WTG	SUN2000-185KTL-H1	184.573	145.439	78.8	Non-Complaint
	Adani Hybrid Energy Jaisalmer One Limited (ADNHB) ckt2		101	HUAWEI Siemens Gamesa WTG	Siemens Gamesa S2.2	184.573	145.439	78.8	Non-Complaint
9	Adani Solar Energy Jaisalmer one Limited: Solar (ckt 1)		209	SUNGROW	SG3125HV SPI312K-B-HUD,	143.73	122.343	85.12	Non-Complaint
	Adani Solar Energy Jaisalmer one Limited: Solar (ckt II)		212.5	SUNGROW	SPI312K-B-H2	140.808	119.425	84.81	Non-Complaint
10	ReNew Solar Energy Jharkhand Three Pvt. Ltd (RJ3PL)		300	HUAWEI	Huawei SUN2000-185KTL-INHO	281.558	223.844	79.5	Non-Complaint
1	ReNew Solar		300	SUNGR	SG250	280.	146.654	52.3	Non-

1	Urja Private Limited(RSUPL)			OW/ TBEA	HX-IN/ TS208K TL-HV	426			Complaint
12	Adani Hybrid Energy Jaisalmer Three Limited (AHEJ3)		300 (300+75)	TBEA	TS208K TL-HV	274	234	85.4	Non-Complaint
13	ReNew Sun Waves Private Limited, Fatehgarh-II (RNEWJ)		300	SUNGROW	SG250 HX-IN	279	183	65.6	Non-Complaint

21st Feb 2026 event details

(a). Dip of approx. 1752 MW in NR total solar generation, out of which dip of approx. 467 MW in Rajasthan solar generation.

(b). As reported, at 13:36 hrs, 220 KV RSDCL(PSS1)_SL_BHD2 _PG-Bhadla_2 (PG) (RSDCL) Ckt tripped due to snapping of the Y-phase jumper at the Tower Loc. No. 25 (exact nature of protection operation yet to be shared).

(c). During the same time, 220 KV ABCRenew_RJ01_SL _BHD2_PG-Bhadla_2 (PG) (ABC RJ01) Ckt also tripped on Y-B phase to phase fault (exact reason & location of fault and nature of protection operation yet to be shared).

Table-2: List of LVRT/HVRT Non-compliant RE Plants and their Generation Loss quantum for 21st Feb'26, 13:36Hrs event:

Compliance Status of RE plants vis-à-vis CEA Technical Standards for Connectivity to the Grid 13:36Hrs event on 21.02.2026									
S. No	**Name of SPPD/Generator**	**Pooling Station**	**Ins CAPACITY**	**Inverter/ WTG Make**	**Inverter/ WTG Model**	**Actual MW before tripping**	**Actual MW after tripping**	**Generation Recovered(%)**	**HVRT/ LVRT Compliance**
1	ACME Chittorgarh Solar Energy Pvt. Ltd (ACME)	BHADLA (PG)	250	TBEA	TC3750 KF	235	207	88	Non-Complaint
2	Adani Solar Enegry Four Private Limited		50	HUAWEI	SUN2000-185KTL-H2	48	28	58	Non-Complaint
3	SB ENERGY FOUR PRIVATE LIMTED, Bhadla		200	KEHUA	SPI3125 K-B-H	180	158	88	Non-Complaint

4	Azure Power Thirty Four Pvt. Ltd.		130	TMEIC	PVH-L2500EQ-2	134	61	46	Non-Complaint
5	Adani Hybrid Energy Jaisalmer Three Limited (AHEJ3)	Fatehgar2 (PG)	300 (300 +75)	TBEA	TS208 KTL-HV	275	234	85	Non-Complaint
6	ReNew Solar Urja Private Limited(RSUPL)		300	SUNGROW/ TBEA	SG250HX-IN/ TS208KTL-HV	290	251	87	Non-Complaint
7	ACME RAISER	Fategarh1(PG)	300	Sungrow	SG3300UD-20	321	284	88	Non-Complaint
8	SINGRAULI SOLAR PV POWER STATION (SPRJ) - Nedan Solar NTPC		296	HUAWEI	SUN2000-185KTL-INHO	300	249	83	Non-Complaint
9	Rising Sun Energy-K Pvt. Ltd.	BHADLA2 (PG)	190	SINENG	EP-3125-HB-UD	200	140	70	Non-Complaint
10	ABC Renewable Energy (RJ-01) Private Limited (ABCRL)		300	TBEA	TC3125 KF	302	0	0	Tripped
11	NTPC Nokh Solar Project		735	Fimer/ Sineng	PVS980-58-500-L/ EP-3300-UB-UD	619	419	68	RSDCL1(245MW) tripped
12	Juniper Green Cosmic Private Ltd	BIKANER 2 (PG)	100	Sungrow	SG-4400-UD	101	71	70	Non-Complaint

A.8.6 **NRLDC Representative highlighted key Issues**

(a). The drop in RE generation is primarily attributed to LVRT non-compliance of RE plants during fault events, where several plants failed to restore at least 90% of pre-fault active power within 1 second. In addition, undesirable inverter tripping has been observed in some plants, even though the POI voltage and frequency conditions did not warrant tripping.

(b). Despite being discussed in multiple previous meetings, adequate corrective measures from some RE developers to address the generation loss issue are still pending.

(c). Only a few RE developers have submitted the required information for event analysis and identification of the reasons behind generation loss and LVRT/HVRT non-compliance at the POI. Non-submission of tripping details constitutes non-compliance with IEGC Clause 37.2(c) and Clause 15.3 of the CEA Grid Standards, resulting in unresolved issues and continued non-compliance.

(d). The validation of plant-level simulation models using actual fault events also remains unaddressed. As per the FTC procedure, RE plants are required to validate their plant-level simulation models within three months of commissioning. However, the models submitted during connectivity/FTC often fail to represent actual plant behaviour, mainly due to incomplete modelling of inverter protections and other field-implemented elements, which can lead to abnormal tripping during fault events.

A.8.7 **NRLDC provided some suggestions for improvement:**

(a). RE plants need to keep the settings of Plant's internal elements *(from 220kV or 400kV evacuating line to Inverters terminal)* in coordination with Point of Interconnection (POI) as per CEA standards, to prevent tripping of any internal elements of plants (causing generation loss) when voltage and frequency at Interconnection point remains within the No-trip zone. HVRT, over voltage, over current, Transient O/V and frequency protection settings of Inverters need to be reviewed & rectified for Non-complaints RE plants.

(b). RE developers should include the requirement of IEEE 2800-2200 (i.e. No ROCOF protection in Inverter) or if frequency protection or df/dt protection is there in inverters then operation of protection should be on frequency measured by averaging the frequency of 4-5 cycles window. (Same was suggested in 1st RE sub-committee meeting)

(c). RE generators need to analyse the reactive power support from Inverter during HVRT in case of any tripping of Inverter in Over voltage, as several cases have been observed where plant didn't absorb reactive power despite Inverters went in HVRT and tripped on O/V.

(d). Firmware of Inverters may be updated to resolve the issue of sharp reduction in active power during fault (even despite insignificant voltage dip) and to resolve the issue of any reduction in active power during HVRT (until the transient current limit of the Inverter/WTG is not hit).

(e). Firmware of Inverters may be updated for adequate and prompt reactive power support (i.e. injection during LVRT, ceasing reactive power immediately after fault clearance and absorption during HVRT).

(f). RE generators should also analyse the events of generation loss and non-compliance of LVRT/HVRT requirements at their end, high resolution data archiving and data logging facility at least in case of fault event should be ensured at plant end for better analysis of the events, remedial actions should be taken accordingly to resolve the issue.

A.8.8 **The following points were deliberated in the meeting-**

(a). Representative from **Renew SOLAR POWER Pvt. Ltd. Bhadla** stated that as per the PPC report, no dip has been observed; however, the RCA is still awaited. It has also been noted in previous events that inverters, particularly Huawei, are not

tripping but exhibit slow recovery, resulting in non-compliance. The inverter OEM has recommended keeping the HVRT triggering voltage below 15% and also improving the recovery rate.

(b). In response, the **NRLDC representative** highlighted that back-to-back triggering of LVRT and HVRT has previously caused inverters to enter idle mode. It was advised to consult the OEM before making any changes and not to modify protection settings, except for reducing the threshold after proper consultation.

(c). **Representative from NTPC** stated that they are experiencing challenges with OEM support for Kehua inverters, as the OEMs have not responded despite multiple attempts to communicate. NRLDC suggested that the matter may be taken up with NSEFI.

(d). **Representative from Adani** stated that the data has been submitted to the OEM for RCA and is currently pending at their end, and will be shared shortly. He also informed the forum that plants equipped with SVGs have demonstrated better compliance during events, which was concurred by other RE developers.

(e). **Representative from Azure** stated that RCA is in process and shall be submitted within a week.

(f). **Representative from RSBPL** stated that work is going on and the report shall be shared shortly.

(g). **The representative from RSUPL** stated that inverter upgradation is currently underway, which was evident from the second event where recovery performance showed significant improvement. The upgradation is expected to be completed for all inverters shortly.

(h). **Representative from ACME** stated that data has been sent to OEM and is pending at their end.

(i). Representative from OEM suggested to include active power at the time of the fault for better analysis, which was agreed by the forum, and NRLDC representative highlighted that the generation must be restored to 90% of the pre-fault generation, not of during fault generation.

(j). **Installing external recorders for high-resolution data** - RE developers and OEMs stated that, due to the large number of string inverters, installing external recorders for high-resolution data on all units is not practical. However, this is feasible for central inverters, which in some cases can directly report data to SCADA, offering easy access to developers—a practice already being implemented in several plants.

In response, the NRLDC representative suggested that, where feasible, external recorders could be installed on a few inverters that experience frequent tripping to enable analysis.

(k). MS, NRPC emphasized that, since the grid is continuously evolving and changing, frequent and regular(monthly) parameter tuning based on the current conditions should be adopted as a standard practice to ensure improved response during events.

(l). **NRLDC representative** stated that only Avaada has submitted RCA of the above mentioned events and requested all RE developers to submit RCA within 2 weeks.

(m). It was noted that the current data storage capacity in inverters is inadequate, with data sometimes being overwritten within a single day, especially when multiple events occur. **MS NRPC** highlighted this concern and requested MNRE and the NSEFI to flag the issue and consider revising specifications for future inverters.

(n). The representative from **ABC RJ** informed the forum that OEMs often claim compliance at the inverter level, even when the plant is non-compliant at the POI. The lack of high-resolution POI data further complicates the RE developers' ability to identify appropriate solutions. They requested the forum to organize a separate meeting with OEMs and developers to address this issue. In response, **MS NRPC** requested the NSEFI to convene a meeting with OEMs, developers, and NRLDC to discuss the matter raised, along with the timely submission of data and work towards a resolution.

Decision taken by Forum:

i. RE developers to look into the suggestions given by NRLDC at point A 8.7 and take action accordingly.

ii. Forum emphasized the importance of OEM-led skill development initiatives for RE developers to strengthen their data analysis capabilities and improve response time.

iii. It was also highlighted the need for effective delegation to enable in-depth analysis and ensure timely submission of RCA.

iv. Additionally, the Forum stressed the importance of establishing clear timelines between OEMs and RE developers for post-event data submission and requested all RE developers to submit the RCA within two weeks.

v. NSEFI to convene a meeting with OEMs on the issues raised by RE developers, and NRLDC at point A 8.8 (c) & A8.8 (n), along with the timely submission of data and work towards a resolution. NSEFI to also flag the issue and consider revising specifications for future inverters regarding storage capacity.

A.9 Voltage Oscillation and Voltage fluctuation (spikes & dips) issues in Rajasthan RE Complex (Agenda by NRLDC)

A.9.1 NRLDC representative stated that voltage Oscillation/ fluctuation observed in Rajasthan RE complex can be broadly classified into Four (4) categories, same is summarized in below Table-3 and detailed case study are present in subsequent section,

Table-3: Four types of Voltage Oscillation/ fluctuation observed in Rajasthan RE complex

S. No.	Type of Oscillation	Frequency Range	Antecedent System Condition	Operational Observations
1	Low-Frequency Voltage Oscillations	**0.1 – 0.2 Hz**	**High RE penetration + low SCR + RE Plants in voltage control**	Generally low amplitude oscillations. Different PPC response time of RE plants operating in voltage control mode is one of the major reasons for these oscillations. PPC standardization is important to address this issue.
2	High-Frequency Voltage Oscillations **(80-100kV)**	**3.5 – 7 Hz**	**High RE generation + Low SCR + STATCOM Gain Reduction**	Low amplitude oscillations of > 4 Hz due to operation of RE plants in low SCR conditions. Amplification of these low frequency oscillations due to gain reduction of STATCOM. Interim solution was implemented by STATCOM OEM in all 05 STATCOMs in Rajasthan on 04th Feb 2026. The impact of the interim solution is discussed in subsequent section.
3	Sub-Synchronous Oscillations (Both in Voltage and frequency)	**~8 – 20 Hz**	**During very low SCR due to transmission line outages.** **Observed even during very low RE generation.**	~16–20 Hz oscillations observed in Rajasthan RE complex while facilitating outage of 400 kV Bikaner PG – Bikaner-II D/C.
	Large voltage	**System-wide**	**High RE generation + Low SCR + No dynamic support**	Observed when all STATCOMs in Rajasthan are either in Fixed-Q mode or in voltage dead-band control mode.

4	**dips/spikes (80-90 kV)**	**impact** **(Not cyclic)**	**from any STATCOMs, (i.e. all STATCOMs are either in Manual Fixed-Q or in Dead-band VDBCM mode)**	System-wide hunting observed in synchronous generators on 4th Feb 2026 oscillation event.

A.9.2 Low fault level/SCR, improper tuning of RE plants controllers and STATCOM controllers are the major reasons for these oscillations.

A.9.3 **NRLDC representative further explained the four categories in detail**

Type-1: Low-Frequency Voltage Oscillations (0.1-0.2 Hz)

(a). High RE penetration, low SCR, low voltages,
(b). RE plants in voltage control mode,
(c). Different response time of PPCs,
(d). Triggered during high RE penetration, low voltage conditions when RE plants are in Voltage Control mode and no fast dynamic support (from STATCOM) left in the system, i.e. either STATCOMs in Manual Fixed-Q or in Dead-band control (VDBCM) mode with RE plants in Voltage control mode during High RE penetration (low SCR) scenario.
(e). Signature is shown in below PMU plot of Voltage at 765kV Bhadla-II (PG) and Bhadla (PG) as occurred on 03rd Feb'26.

Short-term mitigating measures: (Being taken by NRLDC)

(i). Running RE plants in Fixed-Q mode (Compromise the dynamic reactive power support and thus needs manual intervention for managing the voltage during variability of Solar generation).

Or

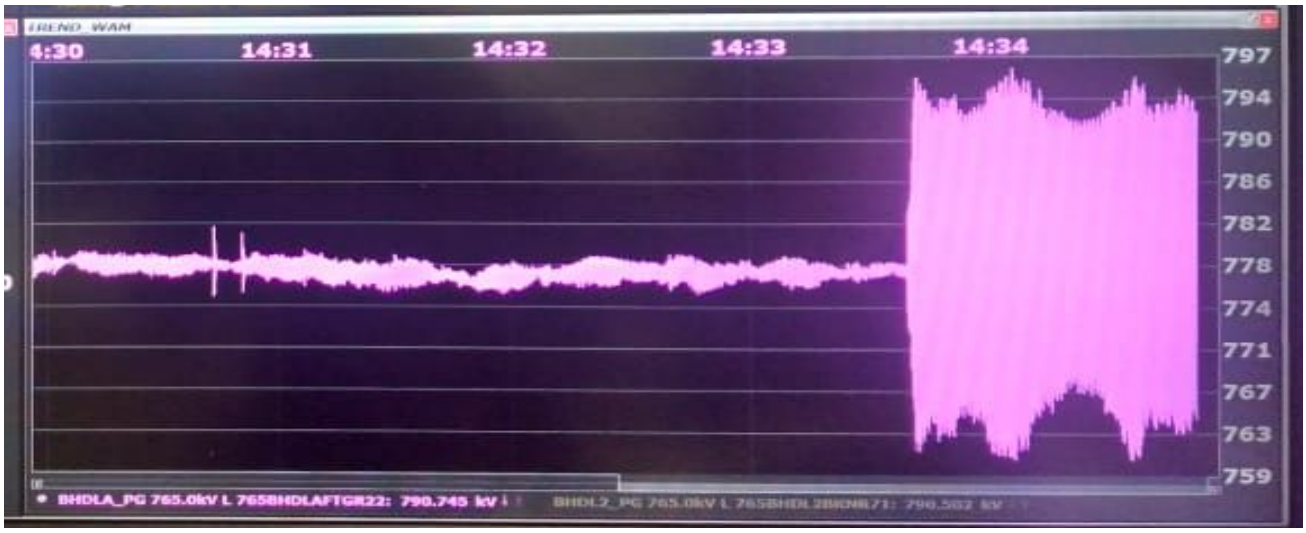
(ii). Running STATCOMs at Fatehgarh-II (PG) and Bhadla-II (PG) in Auto Voltage Control with single Vref (When STATCOMs run in single Vref, chances of occurrence of High-Frequency Voltage Oscillations, 3.5-5 Hz 70-80kV).

Long-term measures: (Action- RE Plants)

1. Standardization of PPC Power Plant Controllers (PPC) performance requirements.
2. Uniform communication delays and response time of RE plants.
3. Stable and quick Reactive power (MVAr) response from PPC of RE plants for Voltage control similar to the Automatic Voltage regulator (AVR) of the conventional plant.
4. Proper tuning of gain and time constant as per actual Fault level/SCR of the RE pooling S/s, and review & tuning of parameters time-to-time.

Type-2: High-Frequency Voltage Oscillations (3.5-7 Hz, 80-100kV)

(a). High RE penetration, low SCR,
(b). STATCOM in Auto Voltage Control with single Vref + low amplitude, high frequency oscillations.
(c). Interaction among RE plants.
(d). Signature is shown in below PMU plot of Voltage at 765kV Bhadla-II (PG) and Bhadla (PG) for 31st Jan'2026.



Short-term mitigating measures: (Being taken by NRLDC)

(i). Running STATCOMs in Manual Fixed-Q mode (defeat the purpose of dynamic reactive power support from STATCOM, Occurrence of large voltage dips/spikes)-Not recommended by STATCOM OEM.

Or

(ii). Running STATCOMs in Auto Voltage Control mode with dead-band (VDBCM) with dual Vref, i.e. Vref (inductive) and Vref (capacitive). (defeat the purpose of dynamic reactive power support from STATCOM within dead-band, Occurrence of large voltage dips/spikes)- Implemented by OEM in STATCOMs at Fatehgarh-II (on 30th Jan'26), at Bhadla-II (on 2nd Feb'26) as an interim measure.

Long-term measures: (Action- RE Plants and STATCOM OEM)

1. RE plants need to perform the Root cause analysis (RCA) and needs to tune the Inverter & PPC parameters-List of RE plants published in Table No. 4 & 5 of MoM of 5th RE Sub-committee meeting those were found to have the major oscillatory reactive power as per PMU data analyses of total 14 numbers of High-Frequency Voltage oscillation events (occurred b/w Aug'25 to Jan'26).

2. Individual communications were sent to 13 RE developers (24 RE plants) as per list of RE plants published in Table No. 4 of MoM of 5th RE Sub-committee meeting. As of 16.03.26, reply received only from 6 RE developers (8 RE plants), Reply is awaited for remaining 16 RE plants. Further, not a single RE developer submitted the RCA report yet, only 1 RE developer submitted the preliminary report only. Detailed status of Reply received/not received, RCA received/not received and any corrective action implemented by RE plants for the List of RE plants published in Table No. 4 & 5 of MoM of 5th RE Sub-committee is given in **Annexure-IX** and **Annexure-X.** RE plants as mentioned in Annexure-IX may update the status and actions being taken at their end.

3. Permanent solutions to STATCOM gain reduction issue need to be expedited so that all the STATCOMs in the complex can be reliably kept in voltage control mode without any dead-band.

Type-3: Sub- Synchronous Oscillations (Both in Voltage and frequency) (8 – 20 Hz)

(a). During very low SCR due to transmission line outages,
(b). Observed even during very low RE generation.
(c). Unique signature- Oscillation in frequency also, 0.07 Hz fluctuation in frequency.
(d). Signature is shown in below PMU plot of frequency at 400kV Fatehpur (PG) for 24th Feb'2026.

Background:

(i). While facilitating the outage of 400 kV Bikaner (PG)-Bikaner-II D/C line for LILO at Bikaner-III from 22nd Feb to 23rd Feb 2026, severe oscillations (~20 Hz) in frequency and voltage were observed. Multiple combinations such as STATCOM mode changes, disconnection of certain RE plants with oscillatory behaviour, STATCOM switching, HVDC Balia- Bhiwadi switching etc. were attempted during this period to identify the root cause

of oscillations during this period. However, the oscillations persisted till at least one circuit was taken back In-service.

(ii). As per study, after outage of 400 kV Bikaner (PG)-Bikaner-II D/C, the fault level at 400 kV Bikaner-II is reducing from 17134 MVA (SCR-4.42) to 6870 MVA (SCR-1.77).

(iii). Even when, the generation at Bikaner-II was very less, oscillations were observed after opening of 400 kV Bikaner(PG)-Bikaner-II D/C line, indicating stability issues of inverters to even remain connected in low fault level conditions.

(iv). To ensure the pre-outage SCR, injection limit at Bikaner-II PS had to be restricted to 1555 MW, therefore 801 numbers of Inverters had to be disconnected to facilitate the S/D.

Short-term mitigating measures: (Being taken by NRLDC)

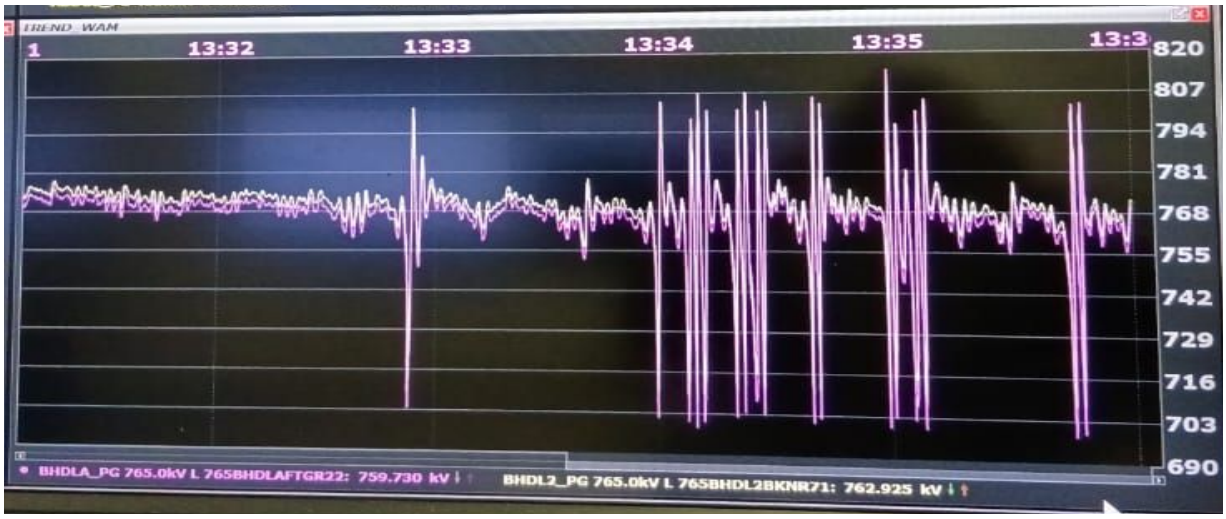
1. In case of very low SCR (<2), no other options work rather than disconnecting the number of Inverters connected at underlying network of RE Pooling S/s.

Long-term measures: (Action- CTUIL)

1. N-1 and N-2 contingency studies for RE pooling S/s to review the SCR in planning scenario and accordingly deploying the Synchronous Condenser in weak RE pooling S/s.

Type-4: Large voltage dips/spikes (80-90 kV) (System- wide impact, no specific frequency)

(a). High RE penetration, low SCR,
(b). No dynamic support from any STATCOMs, (i.e. all STATCOMs are either in Manual Fixed-Q or in Auto Voltage Control with dead-band (VCDBM) mode.
(c). Intermediate dips & spikes in Voltages (80-90kV) observed on 04th Feb'2026 is shown below PMU plot;



Two case studies of 04th Feb'26 and 12th Feb'26 are shown below for providing detailed insight on the large voltage dips/spikes (80-90 kV) events in the grid.

1. <u>Case Study for 04th Feb'2026 event: Inter-Area Oscillation Event / Large Voltage Dip & spikes Event / Interim Solution for STATCOM Issue:</u>

(a). The interim solution proposed by the STATCOM OEM to address the gain reduction and oscillation amplitude amplification was implemented by OEM in STATCOMs at Fatehgarh-II (on 30th Jan'26), at Bhadla-II (on 2nd Feb'26) and at Bikaner-II PS (on 04th Feb'26). Thus, on 04th Feb'26 morning all 5 STATCOMs in Rajasthan RE complex (02 nos. – Fatehgarh-II, 02 nos. – Bhadla-II, 01 no. – Bikaner-II) were running in Voltage dead-band Control Mode (VDBCM).

(b). In the interim solution, the STATCOMs remains unresponsive within the specified dead-band but provide fast reactive power support whenever the voltage crosses dead-band.

(c). On 4th Feb'26, during peak solar hours, all STATCOMs were running in Voltage dead-band Control Mode (VDBCM) as per the interim solution introduced by STATCOM OEM. Though this interim measure helped in addressing the amplification of low magnitude oscillations, the same also resulted in reduction in dynamic reactive power support.

(d). Large voltage dips up to 80-90 kV were observed in the system probably due to maloperation of controller of certain RE plants and unavailability of any fast-acting reactive device support (e.g. STATCOM) to arrest such voltage spikes & dips as all STATCOMs were in dead-band (VDBCM). With reduction in dynamic reactive power support due to STATCOM dead-band, it was challenging to address these dips.

(e). The inter-area oscillations and voltage dips propagated across regions and far- away located Nuclear, Thermal and Hydro generators also reported hunting.

(f). As the RE generation reduction had to be implemented as an operational measure to control the oscillations. Keeping RE plants in voltage control mode does not help in these situations either, as the support from the power plant controller (PPC) is typically received within a timeframe of 500 ms to 1 second or longer.

(g). Post event analysis suggested that at least STATCOM in Rajasthan RE complex should be kept in Auto Voltage control mode without any dead-band (i.e. STATCOMs in single Vref) to provide adequate dynamic reactive power support and dynamic stability in the complex to arrest such large voltage dips/spikes. Accordingly, STATCOM at Bikaner-II PS is running in Auto Voltage control mode without any dead-band (i.e. STATCOMs in single Vref) since 05th Feb'26 onwards.

(h). A detailed analysis for 4th Feb'26 event has been carried out; It has been observed that same capacity plant connected at same interconnection point exhibited different Active power (MW) and Reactive power (MVAr) fluctuation in

same voltage dips/spikes event. Thus, these RE plants are having some issue in controller behaviour and needs proper tuning of controller parameters and implementation other necessary corrective measures, List of these RE plants along with their detailed analysis is enclosed as **Annexure-XI**. RE plants as mentioned in Annexure-III may update their finding on 04th Feb'26 event.

2. <u>Case Study for 12th Feb'2026 event: Tripping of Bikaner-II STATCOM and Large Voltage Dip & Spikes Event:</u>

(a). On 12th Feb 2026, STATCOM at Bikaner-II which was being kept in voltage control mode without any dead-band to provide dynamic reactive power support tripped.

(b). After tripping of STATCOM, large voltage dips similar to 4th Feb 2026 were observed in Rajasthan ISTS RE complex as remaining STATCOMs at Bhadla-II and Fatehgarh-II were running in Voltage dead-band control mode (VDBCM) with ±5% dead-band.

(c). As Bikaner-II STATCOMs were out of the system, therefore, to address the large Voltage dip & spikes, STATCOMs at either Bhadla-II or Fatehgarh-II were required to be taken in Single Vref i.e. Voltage dead-band control mode without dead-band. However, with STATCOMs in Single Vref could cause the occurrence of High-frequency voltage oscillation. Accordingly, STATCOMs at Fatehgarh-II (PG) was first taken in Manual Fixed-Q mode and immediately STATCOMs at Bhadla-II (PG) was taken in Single Vref i.e. Voltage dead-band control mode without dead-band to provide dynamic reactive power support which helped in arresting the voltage dips & spikes. However, later this mode of STATCOM operation led to amplification of low amplitude oscillations due to which STATCOMs shifted to Fixed 'Q' mode

(d). The event highlights the low system strength issues in the complex along with urgent need for fast dynamic reactive power compensation such as STATCOMs and Synchronous Condenser.

<u>Short-term mitigating measures: (Being taken by NRLDC)</u>

1. At least one STATCOM in Rajasthan RE complex is being operated in Auto Voltage control mode without any dead-band (i.e. STATCOMs in single Vref). *(When STATCOMs run in single Vref, chances of occurrence of High-Frequency Voltage Oscillations, 3.5-5 Hz 70-80kV due to hunting detection and aggressive gain reduction feature of Stability controller of STATCOM).*

<u>Long-term measures: (Action- RE plants, STATCOM OEM and CTUIL)</u>

1. Root Cause Analysis and Fine tuning of various parameters of Inverters and PPC controllers, deploying the adequate infra to ensure the stable operation of RE plants and to mitigate and active and reactive power fluctuation issues in RE plants.

2. Permanent solution to STATCOM gain reduction issue needs to be expedited so that all the STATCOMs in the complex can be reliably kept in voltage control mode without any dead-band.
3. Expeditious commissioning of planned transmission system for RE evacuation.
4. Planning for N-1 contingency of STATCOM.
5. N-1 contingency studies for RE evacuating system to review the SCR in planning scenario and ensure adequate SCR as per requirement of CEA technical standard.
6. Planning and commissioning of Synchronous Condensers or any other suitable device for improvement in fault level and dynamic reactive power support on priority
7. Deployment of grid-forming inverters on pilot basis at locations where stability issues are being observed.

A.9.4 **The following additional points were deliberated in the meeting:**

1. The NRLDC representative informed the forum that a list of plants exhibiting Type-2 oscillations has been identified; however, none of the plants have submitted their RCA to date. All concerned plants were requested to submit the RCA at the earliest.

2. It was emphasized that a more in-depth and collaborative analysis involving PPC and inverter OEMs is necessary to identify the root cause of the oscillations and arrive at an effective resolution. PPC command to inverter and inverters response to the command generated needs to be analysed to find which device is responsible for fluctuations.
3. In response to NRLDC's suggestion to conduct N-1 contingency studies for RE evacuation systems to assess SCR under planning scenarios and ensure compliance with CEA standards, it was recommended that this requirement may be incorporated into the CEA planning criteria. It was further suggested that for highly concentrated RE pockets, a minimum SCR of 7 may be considered instead of 5 during planning studies.
4. The NRLDC representative further observed that plants connected to the same POI exhibit varying behaviour during oscillations. Developers were therefore requested to collaborate and consider adopting the settings/parameters of plants demonstrating stable performance to mitigate fluctuations.

5. The representative from Adaptive (PPC OEM) suggested that coordinated tuning of PPC gains for plants connected to the same pooling station has yielded positive results in reducing PPC-induced oscillations in the Khandwa complex, and a similar approach may be explored for the NR RE pocket. MS NRPC recommended undertaking this activity on a pilot basis in the Northern Region.

6. MS NRPC emphasised on skill development of RE developers so as to reduce dependency on OEMs and requested to submit RCA at the earliest.

Decision taken by Forum:

The Forum noted that although plants exhibiting Type-2 oscillations have been identified, no RCAs have been submitted, urged all concerned to submit them at the earliest. It emphasized the need for detailed joint analysis involving PPC and inverter OEMs, including assessment of PPC commands and inverter responses, to identify the source of fluctuations. It reiterated the importance of skill development of RE developers to reduce OEM dependency and stressed early submission of RCAs.

A.10 Status of RE evacuation Phase-III transmission system (Agenda by NRLDC)

A.10.1 NR representative stated that the commissioning of the planned Phase-III transmission system for evacuation of renewable energy (RE) generation from the Rajasthan RE complex, which is still pending, is critical not only for power evacuation but also for strengthening the RE pocket. It will enhance overall system stability and reduce vulnerability to fluctuations and issues at the Point of Interconnection (POI).

A.10.2 Although approximately ~3.3 GW of Phase-III RE generation capacity has already been commissioned, for which corresponding Phase-III transmission infrastructure is still pending. This mismatch is creating a major bottleneck in RE power evacuation and is resulting in curtailment of RE schedules, being treated as TGNA..

A.10.3 Commissioning of Phase-III transmission system would not only create additional margin but would also relieve constraints in the existing system.

PGCIL/Resonia provided the updated timeline of commissioning for following elements;

i. 765kV Sikar-II-Khetri D/C line. **- April,26**
ii. 765kV Sikar-II-Narela D/C line. **– June,26**
iii. 765kV Fatehgarh-III-Bewar D/C (Sterlite) **– April,26**
iv. 765kV Beawar-Dausa D/C **– April,26**
v. LILO of both circuits of Jaipur (Phagi)-Gwalior 765 kV D/c at Dausa. **– Already completed**
vi. LILO of both circuits of Ajmer – Chittorgarh 765 kV D/c at Beawar.**- April,26**
vii. LILO of 400kV Kota-Merta at Beawar (Sterlite).- **March,26**
viii. 2*300MVAR STATCOM at Ramgarh PS. - **April,26**

A.10.4 It was further informed to the forum that as on 15.03.2026. ~3.3 GW of present commissioned RE power having non effective GNA is being restricted during solar peak hrs. i.e. 11:30hrs to 14:30hrs to ensure the Grid Security and Reliability, evacuation of the restricted RE power can be facilitated with commissioning of above-

mentioned Transmission elements.

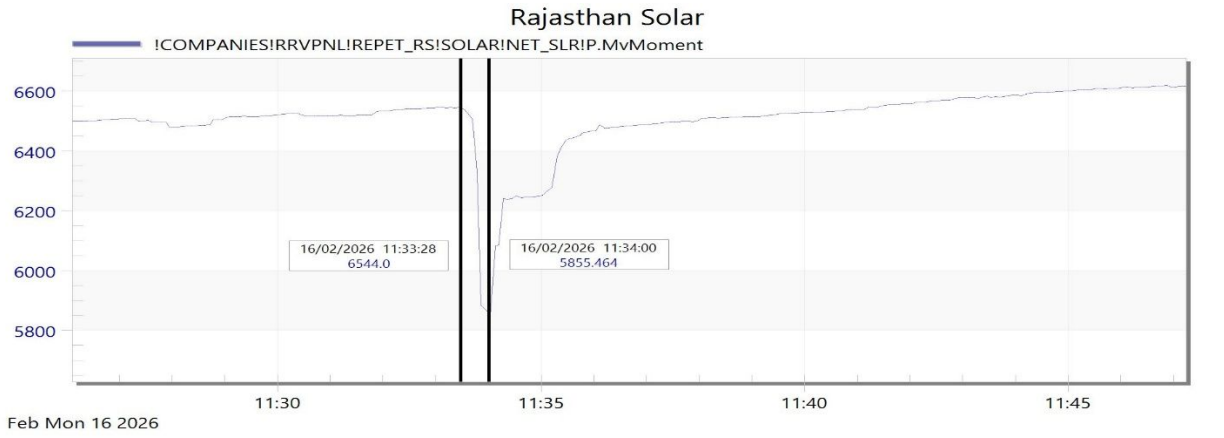
Decision taken by Forum:

The Forum asked concerned TSP's to expedite the transmission system for early commissioning.

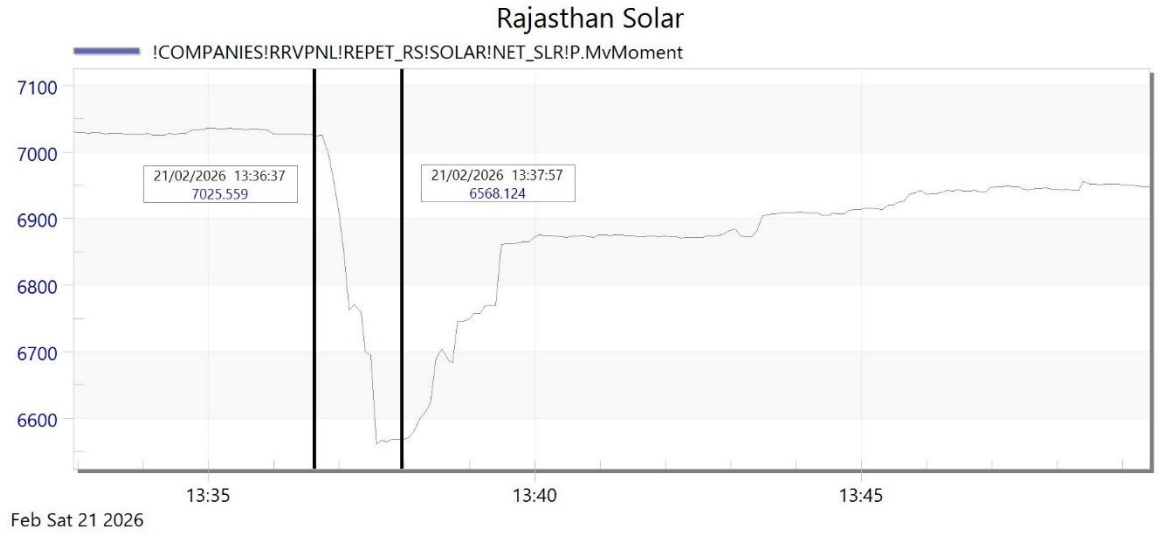
A.11 Assessment of HVRT/LVRT Compliance and Performance of RE Generators during Oscillations in Rajasthan (Agenda by NRLDC)

A.11.1 NR representative stated Rajasthan currently has an **installed renewable energy capacity of approximately 12,000 MW**, with **significant additional capacity under various stages of development and implementation.** With **the growing penetration of intra-state renewable generation** and the **installation of Phasor Measurement Units (PMUs) at renewable generating stations,** it has become essential to carry out **continuous performance monitoring and detailed analysis of RE plants,** particularly to assess their **compliance with HVRT/LVRT requirements.**

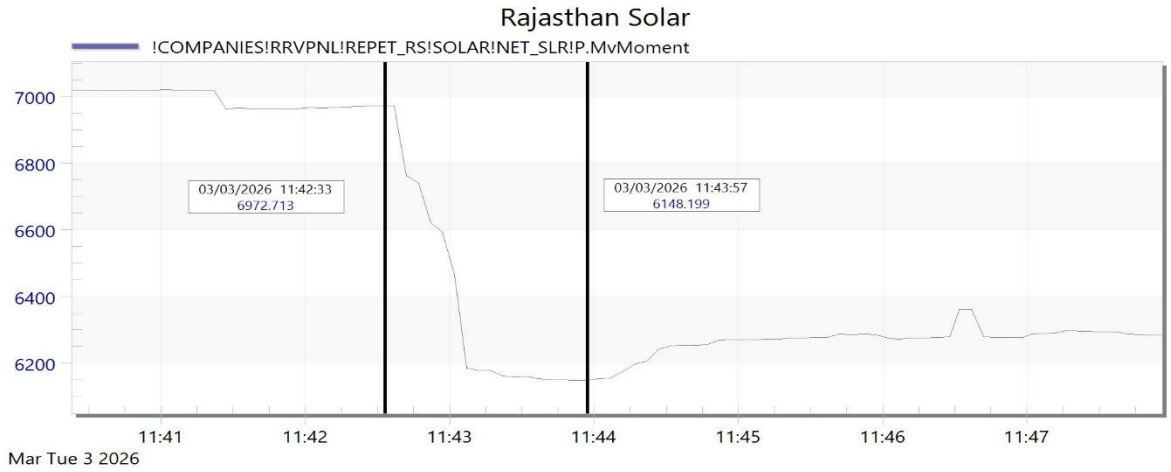
A.11.2 Furthermore, **substantial generation loss has been observed in several intra-state RE generators in Rajasthan**, making it **critical to conduct a detailed technical analysis of plant performance.** Such analysis is necessary to **identify non-compliant plants and pursue corrective actions with the respective developers to resolve the issues.**



16th Feb 2026



21st Feb 2026



3rd March 2026

A.11.3 The above three events show that significant generation loss has been observed in several intra-state RE generators in Rajasthan which necessitates the need of analysis to identify non-compliant plants.

A.11.4 The representative from Rajasthan informed that, in line with the agenda, a directive has been issued to all RE developers connected at 132 kV and above to install PMUs within one month. At present, out of 54 solar feeders, PMUs have been installed on 17 feeders, while for wind, only 1 out of 30 feeders is equipped with a PMU. RE developers were requested to accord priority to this requirement and ensure timely installation.

A.11.5 The NRLDC representative further stated that PMU data may also be made available at NRLDC

Decision taken by Forum:

The Forum requested Rajasthan to undertake analysis of system events to identify and highlight non-compliant plants and to subsequently pursue them for issue resolution. It was further emphasized that, given the electrical proximity of the Rajasthan pocket and the ISTS RE pocket, a holistic approach is required, with coordinated efforts on both sides.

A.12 Unavailability of PMU Data at RE Generating Stations (Agenda by NRLDC)

A.12.1 NR representative stated that the availability of **PMU data** is essential for **monitoring and analysing the behaviour of renewable energy (RE) plants during grid disturbances,** including assessment of **HVRT/LVRT performance and inverter response.** However, PMU data from several RE-generating stations have been **unavailable or incomplete,** making it difficult to **accurately analyse plant performance and determine the causes of generation loss or abnormal tripping during events.**

A.12.2 An **annexure-XII is attached highlighting the instances of PMU data availability for the period October to December 2025.** Concerned stakeholders are requested to **ensure continuous availability of PMU data for effective monitoring and analysis.**

A.12.3 The NR representative requested stakeholders to address the issues raised via email and provide a defined timeline for resolution through return communication. It was also highlighted that plants such as Azure43, Renew Surya Pratap, Renew Surya Vihan and Khidrat renewables are not reporting data, which is a matter of serious concern and requires immediate resolution.

A.12.4 Representative from Azure stated that the issue is being taken up by them, service is expected to arrive shortly and will be resolved the 28th March 2026

A.12.5 Representative from RENEW stated that the issue will be resolved by 2-3 weeks. Representative from Khidrat stated that the issue is being taken up and will be resolved at the earliest.

Decision taken by Forum:

The Forum directed all plants to ensure the availability of PMU data and to expedite the restoration of PMUs that are currently not reporting data.

A.13 Protection related issues in multiple elements tripping, detailed analysis of the events and status of remedial measures (Agenda by NRLDC)

A.13.1 The list of major RE tripping events occurred during January-February 2026 is attached as **Annexure-XIII** of agenda.

A.13.2 **RE plants were requested to review the above-mentioned grid events, prepare detailed analysis report and present the event details during 06th RE sub-committee meeting.** Necessary actions also need to be taken to ensure the compliance of LVRT/HVRT during any grid events.

A.13.3 Further, it is also emphasised that overvoltage protection setting at RE plants to be kept in coordination with the LVRT/HVRT settings at inverter level to avoid unwanted loss of RE generation.

Discussion during the meeting:

Tripping Events

A. 220KV Fatehgarh-II(PG)-AHEJ3L PSS HB_FGRAH_PG(AHEJ3L) Ckt at 13:36 hrs on 11.01.2026

A.13.4 NRLDC representative shared the following observations w.r.t. tripping event:

i. Exact nature, location and reason of fault need to be shared.
ii. DR/EL along with tripping report need to be shared from both ends.
iii. SCADA data at 220kV AHEJ3L(IP) was freezed after the event. Availability and healthiness of SCADA data need to be ensured.
iv. Remedial action taken report to be shared.

A.13.5 ADANI representative informed that DR/EL has not been triggered for the event and Line patrolling was subsequently carried out.

A.13.6 NRLDC representative highlighted that DR/EL along with detailed tripping report need to be uploaded in Tripping portal within 24 hours of the event as specified in IEGC. Since DR/EL was not generated, the station is required to verify and ascertain the reasons for the non-generation of the report.

Decision taken by Forum:

FORUM requested ADANI & POWERGRID to share DR/EL along with detailed tripping report at the earliest.

B. Tripping event at 220/33 kV 213 MVA ICT 1&2 at XL_XPPL_SL_Ftg3(PG) at 15:55 hrs on 10.02.2026

A.13.7 NRLDC representative shared the following observations w.r.t. tripping event:

i. Exact nature, location and reason of fault need to be shared.
ii. Reason of tripping of ICTs during A/R of line need to be analysed.
iii. O/C and E/F protection settings of ICTs at XL XERGI may be shared.
iv. SCADA data at 220kV XL XERGI(IP) was freezed after the event. Availability and healthiness of SCADA data need to be ensured.
v. DR channels were high even before event triggering, hence DR couldn't not be analysed properly. Proper DR channel configuration at ICTs of XL XERGI may be ensured.
vi. Detailed tripping report to be shared from XL XERGI end.
vii. Remedial action taken report to be shared.

A.13.8 The representative from XL XERGI was not present at the meeting.

A.13.9 NRLDC representative stated that, as per the report received from the site, the fault occurred on the line and A/R was successfully operated at the PG end, whereas the ICTs at XL XERGI tripped. There appears to be a time-grading related issue in the overcurrent (O/C) protection settings as well as in A/R.

Decision taken by Forum:

FORUM requested XL XERGI to review the time setting of the O/C protection & A/R and same may be shared.

C. Tripping event at 220 KV ABC Renew_RJ01_SL _BHD2_PG-Bhadla_2 (PG) (ABC RJ01) Ckt, 220 KV RSDCL(PSS1)_SL_BHD2 _PG-Bhadla_2 (PG) (RSDCL) Ckt & 765 KV Bhadla_3(PB3TL)-Sikar_2(PSTL) (PB3TL) Ckt-1 at 13:36 hrs on 21.02.2026.

A.13.10 NRLDC representative shared the following observations w.r.t. tripping event:

i. Exact reason of tripping of 220 KV ABCRenew_RJ01_SL _BHD2_PG-Bhadla_2 (PG) (ABC RJ01) Ckt and 220 KV RSDCL(PSS1)_SL_BHD2 _PG-Bhadla_2 (PG) (RSDCL) Ckt need to be shared. Exact location of fault and nature of protection operation also need to be shared.
ii. DR (.cfg/.dat) for each tripped elements along with detailed tripping report need to be shared from both the ends.
iii. Remedial action taken report to be shared.

A.13.11 ABC renew informed that line was tripped in Z-1 protection (transient fault) and DR was not generated at their end. ABC renew was seeking for DR and other related reports from POWERGRID end for analysis purpose and it was found that fault was from 5.6KM(Approx). NRLDC representative requested to share the detailed report

and RCA with NRLDC through mail (if portal is non-functioning) within 7days of the incident.

FORUM requested to review the protection setting and same may be shared.

D. Tripping event at 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt alongwith 3nos of ICTs at Nokhra(NT) at 10:19hrs of 24.02.2026 & Tripping event at 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt alongwith 220/33kV 100 MVA ICT-2 at Nokhra(IP) at 17:05 of 26.02.2026

A.13.12 NRLDC representative shared the following observations w.r.t. tripping event:

i. Exact nature and location of fault need to be shared.
ii. Reason of tripping of 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt may be shared.
iii. SCADA data was freezed after the event at 220kV Nokhra(NT) S/s. Availability and healthiness of SCADA data need to be ensured.
iv. DR/EL & tripping analysis of the event need to be shared.

A.13.13 NRLDC representative stated that Y-N fault was reported at 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt and fault sensed in zone-1 at Nokhra (NT) end. Line was not tripped from POWERGRID end, only over current was picked up which indicates that there was no fault in the line. So, reason of tripping of line is not clear.

A.13.14 NTPC representative informed that the fault was at the feeder level, and therefore the line should not have tripped. It was explained that two nos of relays are installed, namely Main-I (M1) of Siemens make and Main-II (M2) of GE make. It was observed that the M2 relay had erroneously sensed directional overcurrent fault due to incorrect timer setting. Secondly, M1 relay was not operated as it was in disabled condition.

A.13.15 The representative of NTPC Limited confirmed that the time delay setting of the Main-II (M2) relay has been revised from 380 ms to 1000 ms, and the Main-I (M1) relay has been enabled. Necessary corrective actions have been taken.

Decision taken by Forum:

FORUM requested to review the relay status at site and same may be sensitized. Protection setting, alarms and other protection related equipment at site may be checked on regular basis. Relay settings at all other stations may be reviewed and verified to prevent any further inadvertent tripping.

A.14 Blackout event at 400/220kV Bikaner2(PG) on 22.02.2026 (Agenda by NRLDC)

A.14.1 A blackout event occurred at 400/220 kV Bikaner-II (PG) at 17:08 hrs on 22 February 2026. Consequently, all Renewable Energy (RE) plants connected at the 400 kV and 220 kV levels of Bikaner-II (PG) were also tripped. Significant drop in NR total RE generation has been observed during these events. Details report is available in **Annexure-XIV**.

A.14.2 List of transmission lines tripped during the event:

S. No	Name of Elements	Outage Time	Revival Time	Reason of tripping
1.	220 KV Bikaner_2 (PBTSL)-JGCPL_SL_BIK2_PG (Juniper_NEPL) Ckt	16:24 hrs	20:48 hrs	Tripped from Bikaner2 end only
2.	220 KV Bikaner_2 (PBTSL)-KSP_NHPC_LTD_SL_BKN2 (KSP_NHPC_LTD)	16:58 hrs	20:21 hrs	Over-voltage
3.	500 KV HVDC Balia-Bhiwadi (PG) Ckt-1	17:08 hrs	19:07 hrs	Sub synchronous resonance 81 SSR block operated
4.	500 KV HVDC Balia-Bhiwadi (PG) Ckt-2			
5.	400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1	17:08 hrs	19:40 hrs	Over-voltage stage-1 operated at Bikaner2 end
6.	400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-2		19:38 hrs	
7.	400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-3	17:09 hrs	20:01 hrs	
8.	400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-4	17:10 hrs	18:50 hrs	
9.	400 KV Bikaner_2 (PBTSL)-SJVN_GEL_SL_BKN2 (SJVNGEL_BKN2) Ckt		19:13 hrs	Over-voltage stage-2 operated at Bikaner2 end
10.	220 KV ASSPL_SL_BKN2-Bikaner_2 (PBTSL) (ASSPL_BKN2) Ckt		19:44 hrs	Due to loss of evacuation path
11.	220 KV Renew_Dinkar_SL_Bik2-Bikaner_2 (PBTSL) (Renew Dinkar_UPL) Ckt		20:19 hrs	
12.	220 KV SRI4PL_SL_BIK2_PG-Bikaner_2 (PBTSL) (SERENTICA_RI4PL_Bik2) Ckt		19:34 hrs	
13.	220 KV Bikaner_2 (PBTSL)-KHIDRAT_REPL_SL_BKN2 (KHIDRAT_REPL) Ckt		20:43 hrs	
14.	220KV Grian_BIK2_(AMPLUS)-Bikaner_2 (PBTSL) (GRIAN ENERGY PRIVATE LIMITED) Ckt		20:38 hrs	

15.	220 KV Bikaner_2 (PBTSL)-Juna_REPL_SL_BKN2 (Juna_REPL) Ckt		20:15 hrs	
16.	220 KV BTPSL_SL_BIK2_PG-Bikaner_2 (PBTSL) (BANDERWALA_TPSL) Ckt		20:15 hrs	
17.	220 KV PGPL_SL_BIK2_PG-Bikaner_2 (PBTSL) (PRERAK GREENTECH PVT LTD) Ckt		19:32 hrs	

Preliminary observations:

i. Exact reason of tripping of 220 KV Bikaner_2 (PBTSL)-JGCPL_SL_BIK2_PG (Juniper_NEPL) Ckt need to be shared by PG.
ii. Over-voltage protection in all 220kV lines need to be disabled as per NRPC protection philosophy.
iii. KSP(NHPC) and RDUPL(IP) need to check the exact reason of huge MW fluctuation exhibited by their inverters (SINENG and SUNGROW make respectively). RCA of the same need to be shared at the earliest.

A.14.3 It may be noted that frequent tripping of such elements affects the reliability and security of the grid.

A.14.4 It may be noted that frequent tripping of such elements affects the reliability and security of the grid. Hence, **utilities were requested to analyse the root cause of the tripping and share the remedial measures taken/being taken in this respect.**

A.14.5 During 67th PSC meeting, NHPC was requested to disable over-voltage stage-1 in 220 KV Bikaner_2 (PBTSL)-KSP_NHPC (KSP_NHPC_LTD) Ckt and NHPC agreed for the same. Status of same is still awaited from NHPC.

A.14.6 NRLDC representative stated that Bikaner-2 experienced a blackout, and significant MW fluctuations were observed. Juniper plant connected to Bikaner #2 tripped from Bikaner_2 end only whereas exact reason of tripping is still awaited. Other RE plants, witnessed generation reduction due to voltage fluctuations, while some plants also tripped before blackout of the Bikaner#2. NRLDC representative informed that no significant observations were obtained in the DR/EL data. Hence detail analysis for tripping the plants may be shared immediately.

A.14.7 Juniper informed that the detailed analysis to ascertain the root cause of the tripping is still pending from OEM.

A.14.8 NRLDC representative informed that heavy MW fluctuation was also observed at KSP (NHPC) & RDUPL end and RCA of the same need to be shared. Identification of the relay command indicated in the Event Logger is required initially to ascertain the type of protection involved. Hence, system should be made available at site to facilitate fault identification.

Decision taken by Forum:

Forum requested to review the DR/EL flags and the availability of the Event Logger at site be ensured to prevent any further tripping due to maloperation.

A.15 Status of submission of DR/EL and tripping report for the month of January-February 2026 (Agenda by NRLDC)

A.15.1 The status of receipt of DR/EL and tripping report of utilities for the month of **January-February 2026** are attached as **Annexure-XV**.

A.15.2 As per IEGC clause 37.2 (c), Disturbance Recorder (DR), station Event Logger (EL), Data Acquisition System (DAS) shall be submitted within 24 hrs of the event and as per IEGC clause 37.2 (e), the user shall submit a detailed report in the case of grid disturbance or grid incidence within one (1) week of the occurrence of event to RLDC and RPC.

A.15.3 However, it is evident from submitted data that the reporting status is not satisfactory and needs improvement. Non-submission od DR/EL and tripping details further affects grid event analysis.

A.15.4 Members may please note and advise the concerned for the timely submission of the information.

A.15.5 **RE plants are requested to upload DR/EL of all the tripping incidents on Web Based Tripping Monitoring System "https://postda.nrldc.in/Default.aspx" within 24 hours of the events as per IEGC clause 37.2.(c) and clause 15.3 of CEA grid standard.**

A.15.6 Apart from the prints of DR outputs, the corresponding COMTRADE files(.cfg/.dat) may please also be submitted in tripping portal/through email.

A.15.7 NRLDC representative requested all the RE stations to improve the status of submission of DR/EL & tripping reports. RE stations were also 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. Remedial actions taken by constituents to avoid such multiple elements tripping may also be included in the detail report.

A.15.8 ACME representative informed that the detailed report has been prepared; however, submission could not be completed due to issues with the portal.

A.15.9 NRLDC representative informed that portal issued has been rectified and also requested that, in case the portal is non-functional, the same may be communicated via email.

A.15.10 ABC Renewable informed that they have shared all the information through mail as they were facing some issues with the portal.

A.15.11 NRLDC representative confirmed that the portal issue has been resolved and also verified the email ID. It was requested that all communications to be sent to nrldcso2@grid-india.in.

A.15.12 He also requested all the members to make a practice of uploading tripping details on NR Tripping Monitoring System dashboard. This will be helpful in event analysis and maintaining the tripping database. In case of any issue in uploading the details on the portal, concerned may contact the NRLDC Protection Team.

Decision taken by Forum:

Forum requested all to the members to share the Preliminary Report, DR/EL & detailed report of the events to RLDC in line with the regulations. Members agreed to take necessary follow-up actions to improve the reporting status.

A.16 Non-submission of Self-audit reports (Agenda by NRLDC)

A.16.1 NRLDC representative stated that as per Regulation 56, Clause 2,

Quote

All users, CTU, STUs, NLDC, RLDCs, RPCs and SLDCs, power exchanges, QCAs, SNAs shall conduct annual self-audits to review compliance of these regulations and submit the reports by 31st July of every year The self-audit report shall inter alia contain the following information with respect to non-compliance: 165 (i) Sufficient information to understand how and why the non-compliance occurred. (ii)Extent of damage caused by such non-compliance. (iii) Steps and timeline planned to rectify the same. (iv) Steps taken to mitigate any future recurrence.

Unquote

A.16.2 However, to date only 7 users have submitted the report.

i. TPREL CHAYAN
ii. TRPEL TP Saurya
iii. TPSL KSEB
iv. TPSL NOORSAR
v. Altra XERGI
vi. Manikaran Analytics Ltd (QCA)
vii. AREH5PL

A.16.3 The Forum was further informed that a standardized format for the annual self-audit

report to be submitted by RE generators is not currently available and needs to be developed.

A.16.4 After detailed deliberation, the Forum requested NRLDC to prepare a draft format and present it in the next meeting for consultation with RE developers.

Decision taken by Forum:

Forum requested NRLDC to prepare a draft format and present it in the next meeting for consultation with RE developers.

AA.1 Discussion on audit reports submitted by utilities and compliance of recommendations of protection audit (agenda by NRPC Secretariat)

AA1.1. AEE (P), NRPC apprised that as per clause 15 (1) of IEGC 2023;

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

AA1.2. 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.

AA1.3. Following **internal audit reports** were discussed in the meeting and observations (attached as **Annexure-A.XVI)** were given considering approved protection philosophy of Northern Region:

S.N.	FY (Audit Date)	Utility	Stations
1	2025-26	AGEL	2 plants (Adani Solar Energy RJ Two Private Limited Adani Green Twenty-Five Limited)
2	2025-26	ReNew	3 Plants

			(Renew Solar Power Pvt Ltd Renew Surya Ravi Pvt Ltd Renew Solar Energy Jharkhand 3 Pvt Ltd)
3	2025-26	Tata Power	3 Plants (TPGEL Noorsar TPREL Chhayan (300MW) TPTCL Bhanipura (300MW))

The above submitted reports are available at NRPC website: https://nrpc.gov.in/meetings/prsub.html

Decision taken by Forum:

Forum discussed the audit report and directed utilities to submit compliance report. Protection settings may be aligned with NRPC philosophy. Further, other utilities were directed to submit the protection audit report (for audited S/s as per submitted plan) to NRPC Secretariat and to update the compliance status regularly.

AA.2 Installation of Special Protection Scheme (SPS) at 400 kV GSS Bikaner in power step-up condition and modification in already implemented SPS in step down condition(agenda by RRVPNL)

AA2.1

1. **Representative of Rajasthan SLDC submitted that:**

a. The 400 kV transformers at 400 kV GSS Bikaner are fully loaded/overloaded during the morning and evening peak hours (non-solar generation period) under power step-down condition.

b. The 400 kV transformers at 400 kV GSS Bikaner are also fully loaded/overloaded during the solar generation period under power step-up condition.

AA2.2 Following Special Protection Scheme (SPS) was approved in 60th NRPC meeting held on 30.11.2022 to avoid tripping of the 400 kV transformers at 400kV GSS, Bikaner in power step-down over load condition: -

i. SPS logic : SPS signal is generated in the condition of 110% overloading of the ICTs in all three phases simultaneously for 3 seconds continuously

ii. Tripping of following 220 kV lines on SPS Signal :

a. 220 kV Bikaner (400 kV GSS)-Nokha line

b. 220 kV Bikaner (400 kV GSS)-Sri Dungargarh line

AA2.3 The aforesaid SPS has been implemented as per NRPC approval and is presently in operation. However, it requires modification to make it directional, in view of the tripping incident that occurred on 11.03.2026 at 11:41 hrs under power step-up conditions. On 11.03.2026, the 400/220 kV transformers at 400 kV GSS Bikaner were overloaded. Consequently, the SPS operated and tripped the 220 kV Bikaner (400 kV GSS)–Nokha and 220 kV Bikaner (400 kV GSS)–Sri Dungargarh lines. These lines were evacuating approximately 350 MW of solar power injected at the 220 kV bus of 400 kV GSS Bikaner through the 220 kV D/C Gajner–Bikaner (400 kV GSS) line and two 220 kV interconnecting lines between 220 kV GSS Bikaner and 400 kV GSS Bikaner.

AA2.4 The tripping of these lines resulted in further overloading of the 400/220 kV transformers, ultimately leading to tripping of both transformers. This caused a total loss of approximately 1097 MW of solar generation connected to 220 kV GSS Gajner (441.63 MW), 220 kV GSS Chhattargarh(350 MW), 132 kV GSS Kolayat(89.37 MW), 132 kV GSS Nokha Daiya(16 MW) and 220 kV GSS Badnu(200 MW) . Further, it is observed that during solar generation hours, significant overloading (power step-up condition) is occurring daily on the 400/220 kV transformers at 400 kV GSS Bikaner. The 220 kV transmission lines/GSS and solar projects in the vicinity of 400 kV GSS Bikaner are depicted in Figure-1 below.

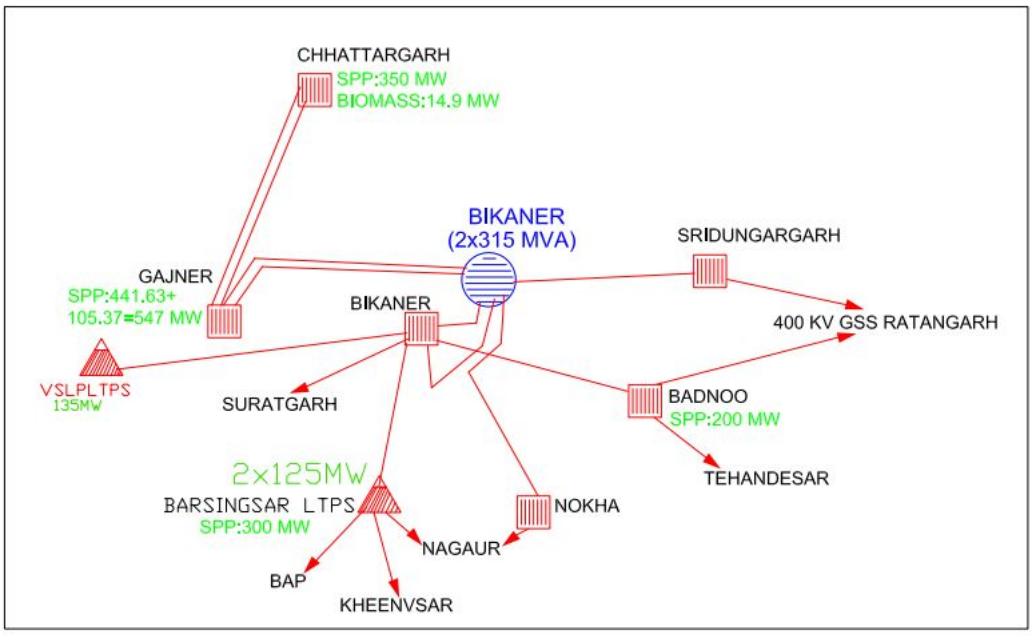


Fig-1 : 220 kV transmission lines/GSS and solar projects in the vicinity of 400 kV GSS Bikanerss

AA2.5 In view of the above, the existing approved and implemented SPS needs to be reviewed. Additionally, an SPS scheme for power step-up condition is required to be implemented.

AA2.6 In order to avoid tripping of 400 kV transformers at 400 kV GSS Bikaner due to overloading under step-up condition, the following SPS scheme is proposed based on PSSE load flow studies:

Table-4: SPS Solar Feeders

Stage-1 SPS feeder	Stage-2 SPS feeder	Stage-3 SPS feeder	PSSE LFS Plot reference
Tripping of 220 kV S/C Gajner-Mahindra Susten line at 220 kV GSS Gajner end (200 MW solar feeder)	Tripping of 132 kV S/C Chhattargarh-NTPC line at 220 kV GSS Chhattargarh end (150 MW solar feeder)	Tripping of 220 kV S/C Chhattargarh-Mahindra Solren line at 220 kV GSS Chhattargarh end (200 MW solar feeder)	Base Case:Exhibit-1 Stage-1 : Exhibit-2 Stage-2 : Exhibit-3 Stage-3 : Exhibit-4

Load flow study results in Base Case and after SPS operation of Stage-1, Stage-2 and Stgae-3 are placed at respective Exhibits and tabulated hereunder :-

Table-5 : Load on 400/220 kV transformers(MW) after SPS operation

Base Case	After Stage1 SPS operation	After Stage2 SPS operation	After Stage3 SPS operation	PSSE Load Flow results reference
2x240 MW	2x183 MW	2x145 MW	2x89 MW	Base Case:Exhibit-1 Stage-1 : Exhibit-2 Stage-2 : Exhibit-3 Stage-3 : Exhibit-4

AA2.7 Proposed SPS Logic **:**

i. **Stage-1 Operation** : Trip commands for Stage-1 SPS shall be generated with a **time delay of 5 seconds (DT) when all three phases** of any one of the 400/220 kV ICT/transformers at 400 kV GSS Bikaner is overloaded beyond **110% (only in step-up condition).**

ii. **Stage-2 Operation**: Trip commands for Stage-2 SPS shall be generated with a **time delay of 8 seconds (DT) when all three phases** of any one of the 400/220 kV ICT/transformers at 400 kV GSS Bikaner is overloaded beyond **110% (only in step-up condition).**

iii. **Stage-3 Operation:** Trip commands for Stage-3 SPS shall be generated with a **time delay of 10 seconds (DT)** when all three phases of any one of the 400/220 kV ICT/ transformers at 400 kV GSS Bikaner is overloaded beyond **110% (only in step-up condition).**

AA2.8 Modification in Implemented SPS under Power Step-Down Condition

i. The implemented SPS at 400 kV GSS Bikaner needs to be made directional in view of the tripping incident that occurred on 11.03.2026 at 11:41 hrs under step-up condition.

ii. Following the above incident, and upon request of SLDC Rajasthan, RVPN has made the SPS directional on 13.03.2026.

iii. The forum is requested to ratify the aforesaid modification carried out by RVPN on 13.03.2026 based on the recommendation of SLDC Rajasthan.

AA2.9 He requested forum to consider and approve the following SPS scheme under power step-up condition at 400 kV GSS Bikaner for 2 × 315 MVA, 400/220 kV transformers:

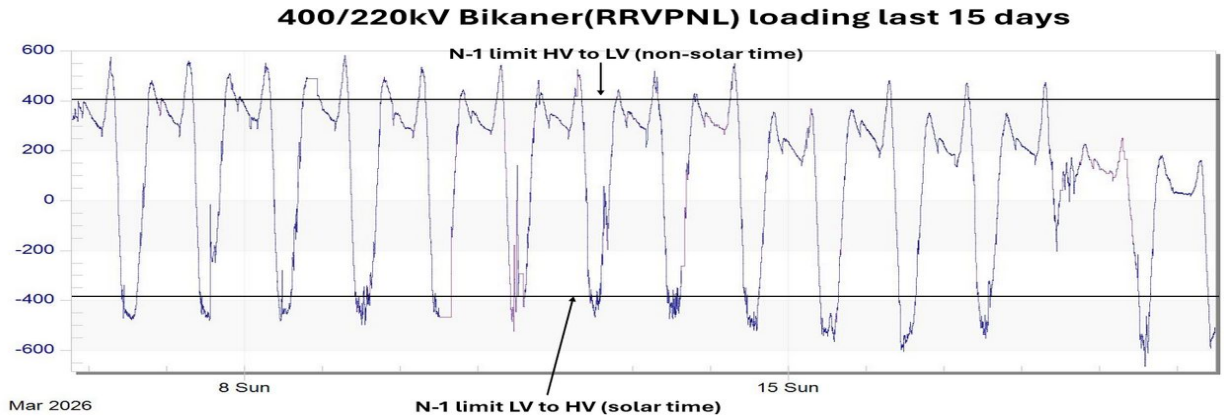
Table-6 : SPS solar feeders and logic

S. No.	SPS particulars	SPS feeder	SPS logic
1	Stage-1 of the SPS	Tripping of 220 kV S/C Gajner-Mahindra Susten line at 220 kV GSS Gajner end (200 MW solar feeder)	Trip commands for Stage-1 SPS shall be generated with a **time delay of 5 seconds (DT) when all three phases** of any one of the 400/220 kV ICT/transformers at 400 kV GSS Bikaner is overloaded beyond **110% (only in step-up condition).**
2	Stage-2 of the SPS	Tripping of 132 kV S/C Chhattargarh-NTPC line at 220 kV GSS Chhattargarh end (150 MW solar feeder)	Trip commands for Stage-2 SPS shall be generated with a time delay of 8 seconds (DT) when all three phases of any one of the 400/220 kV ICT/transformers at 400 kV GSS Bikaner is overloaded beyond 110% (only in step-up condition).
3	Stage-3 of the SPS	Tripping of 220 kV S/C Chhattargarh-Mahindra Solren line at 220 kV GSS Chhattargarh end (200 MW solar feeder)	Trip commands for Stage-3 SPS shall be generated with a time delay of 10 seconds (DT) when all three phases of any one of the 400/220 kV ICT/ transformers at 400 kV GSS Bikaner is overloaded beyond 110% (only in step-up condition).

AA2.10 Representative of Rajasthan SLDC mentioned that the implemented SPS at 400 kV GSS Bikaner has already been made directional (i.e., SPS signals are generated only when overloading occurs under power step-down condition). He requested to consider and ratify the aforesaid modification carried out by RVPN on 13.03.2026.

AA2.11 NRLDC representative stated that SPS logic implementation for step-down condition (HV to LV flow) is also required and existing SPS can be made-directional (from HV side to LV side) as proposed by Rajasthan SLDC.

AA2.12 NRLDC representative apprised that from the simulation study results, tripping of these feeders under SPS is providing relief. However, as there can be issues in transmission of signal to NTPC line as additional 220/132kV transformer also gets involved and reliability of signal transfer at 220kV is better, RRVPNL may swap the feeders for Stage-2 and Stage-3 for making the SPS more reliable. Further as the ICTs are heavily N-1 non-compliant with flow from LV to HV side during solar hours, loading may become excessively high under N-1 contingency and may not be able to sustain for 10 sec (Stage-3 SPS operation time). Therefore, time grading may further may be reduced.



AA2.13 Revised logic as recommended by NRLDC is shown below:

S. No.	SPS particulars	SPS feeder	SPS logic
1	Stage-1 of the SPS	Tripping of 220 kV S/C Gajner–Mahindra Susten line at 220 kV GSS Gajner end (200 MW solar feeder)	Trip commands for Stage-1 SPS shall be generated with a time delay of **3 seconds** (DT) when all three phases of any one of the 400/220 kV ICT/transformers at 400 kV GSS Bikaner is overloaded beyond 110% (only in step-up condition).
2	Stage-2 of the SPS	Tripping of **220 kV S/C Chhattargarh–Mahindra Solren line** at 220 kV GSS Chhattargarh end (200 MW solar feeder)	Trip commands for Stage-2 SPS shall be generated with a time delay of **5 seconds** (DT) when all three phases of any one of the 400/220 kV ICT/transformers at 400 kV GSS Bikaner is overloaded beyond 110% (only in step-up condition).
3	Stage-3 of the SPS	Tripping of **132 kV S/C Chhattargarh–NTPC line** at 220 kV GSS Chhattargarh end (150 MW solar feeder)	Trip commands for Stage-3 SPS shall be generated with a time delay of **7 seconds** (DT) when all three phases of any one of the 400/220 kV ICT/transformers at 400 kV GSS Bikaner is overloaded beyond 110% (only in step-up condition).

AA2.14 NRLDC representative suggested that the solar generators identified may be rotated after each SPS operation or on annual basis, so that each solar generator gets treated fairly and is not repeatedly tripping on SPS operation.

AA2.15 Representative of Rajasthan SLDC agreed with the revised logic as recommended by NRLDC and rotation of solar generators.

AA2.16 NRLDC representative enquired about the status of commission of additional ICT at 400 kV GSS Bikaner.

AA2.17 Representative of Rajasthan SLDC replied that additional ICT is expected within a month.

AA2.18 MS, NRPC enquired about the requirement of SPS after commissioning of ICT.

AA2.19 Representative of Rajasthan SLDC replied that requirement of SPS may be reviewed after commissioning of ICT.

AA2.20 MS, NRPC enquired about the revival of generators after the operation of SPS.

AA2.21 Representative of Rajasthan SLDC replied within a 5 minutes after the operation of SPS, uniform 20% curtailment would be done for all generators whose generation is being evacuated through 400 kV GSS Bikaner. Further, an SOP would be prepared in this regard.

AA2.22 SE(O), NRPC suggested that SOP may be shared with concerned RE generators as well.

AA2.23 MS, NRPC stated that SPS may be made-directional with revised logic as recommended by NRLDC. She requested Rajasthan SLDC to prepare the SOP for revival of generators after SPS operation. Further, she suggested that requirement of SPS may be reviewed after commissioning of ICT.

Decision taken by Forum:

Forum decided that SPS may be made-directional with revised logic as recommended by NRLDC. Further, forum asked Rajasthan SLDC to prepare the SOP for revival of generators after SPS operation. Further also agreed that requirement of SPS may be reviewed after commissioning of ICT.

Annexure-A

06th RE Sub-Committee Meeting held on 23.03.2026 (10:30 AM)			
S. No.	**Name**	**Designation**	**Organization**
1	Rishika Sharan	Member Secretary	NRPC
2	D.K. Meena	SE, NRPC	NRPC
3	Reeturaj Pandey	EE	NRPC
4	Omkishor	EE	NRPC
5	Lokesh Agarwal	AEE	NRPC
6	V. Murali Krishna	Sr. Manager	VEH India
7	Mohanram C	Lead-Power System	Smart Grid Analytics
8	Omesh Kumar	Senior Manager Commercial	NTPC Green Energy Ltd.
9	Naveen Kumar	CTO-Asia Region	TBEA (Inueste & SVG)
10	Gagandeep	Manager Technical	TBEA (Inueste & SVG)
11	Naveen Chandar	Manager	Serentica
12	Ashwary Sharma	Chief Manager	Serentica Renewable
13	Anil Kumar	PPC Manager	Adaptive Energy Pvt. Ltd.
14	Darshan Goswami	Head Bussiness	Adaptive
15	Vivek Ratna	Service Head	Wattpower
16	Rishabh	D. Manager	UPC Renewables
17	Nitesh Pareek	Sr. Manager	Avaada Energy
18	Manoj Kumar Thakur	DGM	NTPC Ltd, NOKH, NGEL
19	Rajat Xalxo	Assit. Manager	Resowen (Gorbea Sdar)
20	Gulshan Kumar	DGM	AMPIN Energy
21	Sunny Dixit	AGM	Juniper Green Energy Ltd.
22	Saurabh Patil	Sr. Manager	Mahindra Susten
23	Ankit Belgaoknkar	Sr. Manager D&E	Mahindra Susten
24	Shah Alam Ansari	Manag. Trainee	Wattpower
25	Shivam Gupta	Dy. Manager	ACME
26	Prachi Chauhan	Dy. Manager	ACME
27	Jitendra Ku.Murari	Assit. Manager	ACME
28	Aman Chaturvedi	Assit. Manager	Gentari India
29	Ravi Balana	DGM	NGEL
30	Ankit Singh	DM	Sembcorp
31	Ankur Kumar	Associate Director	National Solar Energy Federation of India
32	Birendra Pandey	Sr. GM	Juniper Green Energy Ltd.
33	Subhajit Roy	DGM	AVADDA
34	Nilesh Apte	DGM	Renew
35	Samriddri Gogoi	Assistant. Manager	Renew
36	Kunal L Kaistha	VP, Regulater	Serentica Renewable
37	Abhishek K. Yadav	AM	Serentic
38	Jitendra Raj	Manager	Acciona Energy (JREPL)
39	Shiv Verma	AGM	Adani
40	Sandeep Kumawat	DGM	CTU
41	Nitin Yadav	Dy. GM	NLDC, GRID-INDIA
42	Dr. Aravindh M.A.	Scientist D	MNRE
43	Ashok Kumar	CGM	NRLDC
44	Sajan Geoge	ED	NRLDC

45	Rahul Negi	Deputy Manager	NRLDC
46	Aman Gautam	Chief Manager	NLDC
47	Suhas Dambhare	CGM	NLDC
48	Dinesh Laha	AGM	INDIGRID
49	Kartikey Singh	AM	INDIGRID
50	R.K. Agarwal	Consultant	SECI
51	Vineet Kumar	DGM	SECI
52	Kapil Gupta	AEN	RVPN
53	M.P. Sharma	EE	RVPN, SLDC
54	Gaurav Mitra	AGM OPS	Manikaran Analytics Ltd
55	Neelabhra Paul	President	Manikaran Analytics Ltd
56	Mohammad Irfan	Testing-Lead	TATA POWER REN.Energy. Ltd.
57	Vimal Vangir	Scada-Lead	TPREL
58	Vineet George	Group Head F & S	TPREL
59	Sunil Jalutharia	Dy. Manager	POWERGRID
60	Anil Pareek	Staion Head	TPREL
61	Ashutosh Behera	Management Trainee	Hero Future Energies
62	Sahil Aneja	Manager	Hero Future Energies
63	Mr. Mohit Sharma	Sr. Engineer	Hero Future Energies
64	Sangeet Attri	CM	RESONIA LTD.
65	Lokendra Singh Ranawat	Head Regulatory	INDIGRID
66	Risha Tripathi	Dy. Manager	INDIGRID
67	Satyabrat Nayar	Sr. Manager	NHPC
68	Akash Tomar	Dy. Manager	GRID-INDIA
69	Sunil Aharwal	Dy. GM	NLDC, GRID-INDIA
70	Deepak Kumar	Dy. Manager	GRID-INDIA
71	Neeraj Kumar Verma	A.V.P. Com & Rg	Sekura Energy Pvt.Ltd.

Annexure-I

Renewable Energy Plants

S. No.	Name of Plant	Pooling Station Name	Installed Capacity	Type (Solar/Wind)	COD	Owner	Sector	Control Area	Inverter/ WTG Make	Inverter/ WTG Model	PPC Make	Real and Reactive Power Capability for Generator			Power Plant Controller Function Test			Frequency Response Test			Active Power Set Point change test			Reactive Power (Voltage / Power Factor / Q) Set Point change test			Revised Simulation Models	Remarks
												Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Whether Revised Models Submitted ?	
1	Clean Solar Power Bhadl_R-1 Pvt Ltd	220 KV SUCRL PSS-2	100	Solar	15-02-20	Clean Solar Power Bhadl_R-1 Pvt Ltd	MNRE		Huawei	SUN2000- 95KTL	Siemens	15-02-20	Yes	Dec-25	15-02-20	Yes	Dec-25	15-02-20	Yes	Dec-25	15-02-20	Yes	Dec-25	15-02-20	Yes	Dec-25			
2	Clean Solar Power Bhadl_R-2 Pvt Ltd	220 KV SUCRL PSS-2	100	Solar	28-02-20	Clean Solar Power Bhadl_R-2 Pvt Ltd	MNRE		Huawei	SUN2000- 95KTL	Siemens	28-02-20	Yes	Dec-25	28-02-20	Yes	Dec-25	28-02-20	Yes	Dec-25	28-02-20	Yes	Dec-25	28-02-20	Yes	Dec-25			
3	Clean Solar Power Bhadl_R-3 Pvt Ltd	220 KV SUCRL PSS-2	100	Solar	10-12-19	Clean Solar Power Bhadl_R-3 Pvt Ltd	MNRE		Huawei	SUN2000- 95KTL	Adaptive	10-12-19	Yes	Dec-25	10-12-19	Yes	Dec-25	10-12-19	Yes	Dec-25	10-12-19	Yes	Dec-25	10-12-19	Yes	Dec-25			
4	Clean Solar Power Jodhpur Pvt Ltd	220 KV CSPJ PSS	250	Solar	21-04-22	Clean Solar Power Jodhpur Pvt Ltd	MNRE		Sungrow	SG250HX-IN & SG2500HV	Adaptive	21-04-22	NO	20-04-27	21-04-22	NO	20-04-27	21-04-22	NO	20-04-27	21-04-22	NO	20-04-27	21-04-22	NO	20-04-27			
5	Amplus AGES	220 KV Bikaner-2 GSS	100		02-08-2024								NO	31-12-2029		NO	31-12-2029		NO	31-12-2029		NO	31-12-2029		NO	31-12-2029			
6	GRIAN	220 KV Bikaner-2 GSS	100		02-06-2024								NO	31-12-2029		NO	31-12-2029		NO	31-12-2029		NO	31-12-2029		NO	31-12-2029			
7	Onevolt	220 KV Bikaner-2 GSS	100		02-02-2024								NO	31-12-2029		NO	31-12-2029		NO	31-12-2029		NO	31-12-2029		NO	31-12-2029			
8	Avaada Sunce Energy Pvt. Ltd.	PGCIL, Bikaner 1	350 MW	Solar	08-Apr-22	Avaada Energy Private Limited	Power	MCR / PPC	Sineng Electric	EP-3125-HA-UD	Adaptive Engineering Pvt. Ltd.	22-Aug	No	18-01-2027	22-Aug	No	18-01-2027	22-Aug	No	18-01-2027	22-Aug	No	18-01-2027	22-Aug	No	18-01-2027			
9	Avaada Sustainable RJ Project Pvt. Ltd.	PGCIL, Bikaner 1	300 MW	Solar	11-May-22	Avaada Energy Private Limited	Power	MCR / PPC	Sineng Electric	EP-3125-HA-UD	Adaptive Engineering Pvt. Ltd.	22-Aug	No	18-01-2027	22-Aug	No	18-01-2027	22-Aug	No	18-01-2027	22-Aug	No	18-01-2027	22-Aug	No	18-01-2027			
10	Avaada RJHN Pvt. Ltd.	PGCIL, Bikaner 1	240 MW	Solar	11-May-22	Avaada Energy Private Limited	Power	MCR / PPC	Sineng Electric	EP-3125-HA-UD: 137.5 MW SP-250K-INH: 102.5 MW	Adaptive Engineering Pvt. Ltd.	22-Aug	No	18-01-2027	22-Aug	No	18-01-2027	22-Aug	No	18-01-2027	22-Aug	No	18-01-2027	22-Aug	No	18-01-2027			
11	Avaada Sunrays Energy Private Limited	Bhadla-II (PG)	320 MW	Solar	10-Dec-22	Avaada Energy Private Limited	Power	MCR / PPC	Sineng Electric	SP-250K-INH	Armax Automation	23-May	No	17-01-2028	23-May	No	17-01-2028	23-May	No	17-01-2028	23-May	No	17-01-2028	23-May	No	17-01-2028			
12	Singrauli Solar		15	Solar		NTPC Limited	Central	NRLDC						22-12-2028						22-12-2028			22-12-2028			22-12-2028		
13	Unchahar Solar		10	Solar		NTPC Limited	Central	NRLDC						23-12-2028						23-12-2028			23-12-2028			23-12-2028		
14	Dadri Solar		5	Solar		NTPC Limited	Central	NRLDC						24-12-2028						24-12-2028			24-12-2028			24-12-2028		
15	Auraiya Solar		20	Solar		NTPC Limited	Central	NRLDC						25-12-2028						25-12-2028			25-12-2028			25-12-2028		
16	Auraiya Floating Solar		20	Solar		NTPC Limited	Central	NRLDC						26-12-2028						26-12-2028			26-12-2028			26-12-2028		
17	Faridabad Solar		5	Solar		NTPC Limited	Central	NRLDC						27-12-2028						27-12-2028			27-12-2028			27-12-2028		
18	Anta Solar		90	Solar		NTPC Limited	Central	NRLDC						28-12-2028						28-12-2028			28-12-2028			28-12-2028		
19	Nokh Solar-1		167	Solar		NTPC Limited	Central	NRLDC						29-12-2028						29-12-2028			29-12-2028			29-12-2028		
20	Nokh Solar-2		245	Solar		NTPC Limited	Central	NRLDC						30-12-2028						30-12-2028			30-12-2028			30-12-2028		
21	Nokh Solar-3		245	Solar		NTPC Limited	Central	NRLDC						31-12-2028						31-12-2028			31-12-2028			31-12-2028		
22	TPREL (Chhayan)	PGCIL Bhadla-1	300	Solar	24-08-2021	TPREL	Power		TMEIC (TVH-L2500EQ-2)/Sungrow (SG3125HV-20)	TMEIC (TVH-L2500EQ-2)/Sungrow (SG3125HV-20)	ABB/Schneider		Yes	Aug-26		Yes	Aug-26	10-09-2025	No	Aug-26		Yes	Aug-26		Yes	Aug-26		
23	TATA POWER GREEN ENERGY	PGCIL Bikaner-1	225	Solar	02-08-2022	TPREL	Power		Sungrow (SG3125HV-32)	Sungrow (SG3125HV-32)	Schneider		Yes	Jul-27		Yes	Jul-27	03-09-2025	No	Jul-27		Yes	Jul-27		Yes	Jul-27		
24	TP Saurya Limited	PGCIL Bikaner-1	110	Solar	01-06-2023	TPREL	Power		Sungrow (SG3125HV-32)	Sungrow (SG3125HV-32)	Schneider	Dec-23	No	Mar-28	Dec-23	No	Mar-28	09-04-2025	No	Mar-28	Dec-23	No	Mar-28	Dec-23	No	Mar-28		
25	Banderwala TP Saurya Limited	PGCIL Bikaner- 2	300	Solar	31-10-2025	TPREL	Power		Sungrow (SG4400UD-20)	Sungrow (SG4400UD-20)	Schneider	Sep-25	No	Sep-30	Sep-25	No	Sep-30	Feb-25	No	Sep-30	Sep-25	No	Sep-30	Sep-25	No	Sep-30		
26	ReNew Solar Power Private Limited	Bhadla	50											Oct-26						Oct-26			Oct-26			Oct-26		
27	ReNew Solar Power Private Limited	Bikaner	250											Nov-26						Nov-26			Nov-26			Nov-26		
28	ReNew Solar Energy Jharkhand 3 Pvt Ltd	SECI-IV Karada	300											Dec-26						Dec-26			Dec-26			Dec-26		
29	ReNew Surya Ravi Private Limited	Bikaner B2B	300											Apr-28						Apr-28			Apr-28			Apr-28		
30	ReNew Surya Vihaan Pvt Ltd. + Renew Surya Pratap Private Limited	SECI-IX 100MW + B2B Amazon 200MW	100+200											May-29						May-29			May-29			May-29		
31	ReNew Surya Roshni Pvt Ltd.	RTC 400MW	400											May-29						May-29			May-29			May-29		
32	Neemba ReNew Surya Vihan Pvt Ltd	SECI-VIII 200 MW	200											May-30						May-30			May-30			May-30		
33	ReNew Surya Jyoti Pvt. Ltd	D-2 210 MW	210											May-30						May-30			May-30			May-30		

Annexure-II

List of generators who have not furnished the testing schedule

RE Station Name	Installed Capacity	Tests for which schedule is to be furnished
ABC RENEWABLE ENERGY	300	No schedule given
ACME DEOGARH	300	No schedule given
ACME PHALODI	300	No schedule given
ACME RAISAR	300	No schedule given
ACME CSEPL	250	No schedule given
ACME DHAULPUR	500	No schedule given
ADEPT RENEWABLE	110	No schedule given
AEG4P	130.77	No schedule given
AMP Energy Green Fiv	100	No schedule given
AMP Energy Green Six	100	No schedule given
ADANI GREEN ENERGY 25	512	No schedule given
ADANI GREEN ENERGY 25 INF	95	No schedule given
Adani Green Energy 19 Limited	50	No schedule given
Adani Green Energy 24	500	No schedule given
Adani Green Energy 24_infirm	238	No schedule given
ADANI HYBRID	390	No schedule given
ADANI HYBRID TWO	301.4	No schedule given
ADANI HYBRID THREE	300.54	No schedule given
ADANI HYBRID FOUR	700	No schedule given
ACME Heergarh	300	No schedule given
ADANI HYBRID SOLAR	80	No schedule given
AZURE POWER MAPLE	300	No schedule given
Adani RERJL	200	No schedule given
AYANA RENEWABLE ONE	300	No schedule given
AYANA RENEWABLE 3 IN	194.32	No schedule given
AYANA RENEWABLE 3	388.64	No schedule given
Adani SE Jaisalmer 1	450	No schedule given
Adani SE Jodhpur 2	50	No schedule given
ASERJ2PL_Phalodi	150	No schedule given
ASERJ2PL_infrm	120.05	No schedule given
ASERJ2PL	180	No schedule given
ACME SIKAR SOLAR Infirm	165	No schedule given
ACME SIKAR SOLAR	300	No schedule given
ALTRA XERGI	380	No schedule given
AZURE THIRTY FOUR	130	No schedule given
AZURE FORTY ONE	300	No schedule given
AZURE FORTY THREE	600	No schedule given
AZURE SOLAR	200	No schedule given
DEVIKOT SOLAR	240	No schedule given
EDEN RENEWABLE	300	No schedule given
EESPL QCA BHADLA-1	3280	No schedule given
EESPL QCA BIKANER-2	1094	No schedule given
EESPL QCA BIKANER-1	3475	No schedule given
ENRICO RE	10.6	No schedule given
EDEN RENEWABLE INFIRM	100	No schedule given
EDEN RENEWABLE ALMA	100	No schedule given
GORBEA SOLAR	300	No schedule given
GORBEA INFIRM 2	100	No schedule given
GORBEA INFIRM 1	100	No schedule given
JUNIPER GREEN COSMIC	100	No schedule given
JUNIPER NIRJARA	50	No schedule given
Juniper Nirjara Energy Pvt Ltd	50	No schedule given
JUNA RENEWABLE	335.25	No schedule given
NHPC KARNISAR SOLAR INF	53.57	No schedule given
NHPC KARNISAR SOLAR	214.28	No schedule given
KHIDRAT RENEWABLE INFIRM	0	No schedule given
KHIDRAT RENEWABLE	300	No schedule given

KHIDRT SCH INFIRM	250	No schedule given
Adani SE4L	50	No schedule given
KOLYAT SOLAR BIKANER	550	No schedule given
MAHOBA SOLAR	200	No schedule given
MAL_QCA_Fatehgarh3	1390	No schedule given
MAL_QCA_Fatehgarh1	1900	No schedule given
MAL_QCA_Fatehgarh2	1500	No schedule given
Mega Solis Renewables	250	No schedule given
Mega Suryaurja	250	No schedule given
NOKHRA SOLAR	300	No schedule given
NIDAN SOLAR FATEHGAR	296	No schedule given
RENEW Solar	50	No schedule given
RENEW SURYA AYAAN	300	No schedule given
Renew Surya Roshini_infirm	95	No schedule given
RENEW SURYA ROSHNI	400	No schedule given
RENEW SUN BRIGHT	300	No schedule given
RENEW JHARKHAND	300	No schedule given
Rising Sun Energy	190	No schedule given
Renew Surya Jyoti	210	No schedule given
RENEW SURYA NEEMBA	200	No schedule given
RENEW SURYA PRATAP	200	No schedule given
Renew Surya Pratap Infirm	22	No schedule given
RENEW POWER	250	No schedule given
RENEW SURYA RAVI	300	No schedule given
RENEW SOLAR URJA	300	No schedule given
RENEW SURYA VIHAAN	141.7	No schedule given
RENEW SUN WAVES	300	No schedule given
Adani SERJ1PL	300	No schedule given
Adani SEJ5PL	200	No schedule given
Adani SEJ6L	50	No schedule given
Adani SEJ2PL P	150	No schedule given
Adani SEJ2PL M	150	No schedule given
Adani SEJ2PL	300	No schedule given
SJVN GREEN ENERGY	501.25	No schedule given
SERENTICA RENEWABLE 5 INF	55	No schedule given
SERENTICA RENEWABLE 5	220	No schedule given
SERENTICA RENEWABLE 4 Inf	40	No schedule given
SERENTICA RENEWABLE 4	168	No schedule given
TCTE	84.4	No schedule given
Transition Sustainable	84.4	No schedule given
Transition Green Energy	100	No schedule given
TPSL_BKN2	200	No schedule given
THAR SURYA 1	300	No schedule given
TRANSITION ONE INFIRM	55.6	No schedule given
XL XERG	400	No schedule given

Annexure-III

Renewable Energy Plants

S. No.	Name of Plant	Pooling Station Name	Installed Capacity	Type (Solar/Wind)	COD	Owner	Sector	Control Area	Inverter/ WTG Make	Inverter/ WTG Model	PPC Make	Real and Reactive Power Capability for Generator			Power Plant Controller Function Test			Frequency Response Test			Active Power Set Point change test			Reactive Power (Voltage / Power Factor / Q) Set Point change test			Revised Simulation Models		
												Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Whether Revised Models Submitted?	Remarks	

Annexure-IV

Status of perfomance indices reporting of January 2026 (Last date of submission 07.02.2026)							
S. No.	**Utility**		**Received Status (Yes/No)**	**Vide mail dated**	**Remarks**	**Indices less than 1 (Yes/No)**	**Reason submitted and corrective action taken**
1	ABC Renewable Pvt. Ltd	ABC R Rj01	Y	18.02.2026		No	NA
2	ACME Heeragarh powertech Pvt. Ltd	**ACME**	Y	05.02.2026		Yes	NO
3	ACME Phalodi	**ACME**	Y	05.02.2026		No	NA
4	ACME Deogarh	**ACME**					
5	ACME Raisar	**ACME**					
6	ACME Dhaulpur	**ACME**					
7	ACME Sikar	**ACME**	Y	05.02.2026		No	NA
8	ACME Chittorgarh Solar Energy Pvt Ltd (Ayana)	**AYANA**					
9	AHEJOL-Hybrid-1 Madhopura	ADANI GREEN	Y	05.02.2026		No	NA
10	AHEJ3L - Hybrid-2B 300MW	ADANI GREEN	Y	05.02.2026		No	NA
11	AHEJFL(AEML_250)	ADANI GREEN	Y	05.02.2026		No	NA
12	AHEJ4L(AEML-350)	ADANI GREEN	Y	05.02.2026		No	NA
13	ASEJ2PL(Hapasar 300MW) SPC11PL	ADANI GREEN	Y	05.02.2026		No	NA
14	Adani Renewable Energy (RJ) Limited Rawra 200	ADANI GREEN	Y	05.02.2026		No	NA
15	Adani Solar Energy Four Limited SECI 50	ADANI GREEN	Y	05.02.2026		No	NA
16	Adani Solar Energy Jodhpur Two Limited Merchant 50	ADANI GREEN	Y	05.02.2026		No	NA
17	ASEJ05PL (RJ200)	ADANI GREEN	Y	05.02.2026		No	NA
18	ASERJ2PL - Phalodi 150 MW	ADANI GREEN	Y	05.02.2026		No	NA
19	ASERJ01PL-Pokhran 300 MW (SB energy six)	ADANI GREEN	Y	05.02.2026		No	NA
20	AGE25L(Badi Sid)	ADANI GREEN	Y	05.02.2026		No	NA
21	Bhadla park - South block	ADANI GREEN	Y	05.02.2026		No	NA
22	AGE24L (Bhimsar)	ADANI GREEN	Y	05.02.2026		No	NA
23	AHEJ2L - Hybrid-2A 300MW	ADANI GREEN	Y	05.02.2026		No	NA
24	ASERJ2PL - Devikot 180 MW	ADANI GREEN	Y	05.02.2026		No	NA
25	ASEJOPL-Hybrid 450 MW	ADANI GREEN	Y	05.02.2026		No	NA
26	Altra Xergi Pvt. Ltd.		Y	05.02.2026		No	NA
27	AMP Energy Green Four Pvt. Ltd.	AMPIN ENERGY	Y	05.02.2026		No	NA
28	AMP Energy Green Five Pvt. Ltd.	AMPIN ENERGY					
29	AMP Energy Green Six Pvt. Ltd.	AMPIN ENERGY					
30	Amplus Ages Private Limited	GENTARI	Y	02.02.2026		No	NA
31	Avaada RJHN_240MW	AVAADA	Y	05.02.2026		No	NA
32	Avaada sunce energy Pvt limited						
33	Avaada Sustainable RJ Project Pvt. Ltd.						
34	Avaada Sunrays Pvt. Ltd.		Y	05.02.2026		No	NA
35	Ayana Renewable Power Three Private Limited		Y	02.03.2026		No	NA
36	Ayaana Renewable Power One Pvt. Ltd.		Y	02.03.2026		No	NA
37	Azure Power Forty One Pvt limited						
38	Azure Power Forty Three Pvt. Ltd._RSS						
39	Azure Maple Pvt. Ltd.						
40	AZURE POWER INDIA Pvt. Ltd., Bhadla						
41	Azure Power Thirty Four Pvt. Ltd.						
42	Clean Solar Power (Jodhpur) Pvt. Ltd.	Hero Future Energies	Y	02.02.2026		No	NA
43	Eden Renewable Cite Private Limited		Y	23.03.2026		NO	NA
44	Grian Energy private limited	GENTARI	Y	02.02.2026		No	NA
45	Juna Renewable Energy Pvt. Ltd.		Y	18.03.2026		No	NA
46	Mahindra Renewable Private Limited						
47	Mega Surya Urja Pvt. Ltd. (MSUPL)		Y	13.02.2026		No	NA
48	AURAIYA Solar		Y	05.02.2026		No	NA
49	DADRI SOLAR						

50	SINGRAULI SOLAR						
51	Anta Solar		Y	17.02.2026		No	NA
52	Unchahar Solar		Y	03.02.2026		No	NA
53	NTPC Devikot Solar plant-1	NGEL	Y	05.02.2026		No	NA
54	NTPC Devikot Solar plant-2		Y	05.02.2026		No	NA
55	SKB NTPC -1 (250MW)	NGEL	Y	05.02.2026		No	NA
56	SKB NTPC-2 (300MW)		Y	05.02.2026		No	NA
57	NTPC Nokhra_300MW		Y	05.02.2026		No	NA
58	NTPC Fatehgarh 296MW		Y	05.02.2026		No	NA
59	One Volt energy Pvt. Ltd.	GENTARI	Y	02.02.2026		No	NA
60	ReNew Solar Urja Private Limited	IndiGrid	Y	23.03.2026		NO	NA
61	ReNew Solar Energy (Jharkhand Three) Private Limited		Y	04.02.2026		No	NA
62	Neemba Renew Surya Vihan Pvt. Ltd.		Y	04.02.2026		No	NA
63	Renew Sun Bright Pvt. Ltd. (RSBPL)						
64	Renew Surya Partap Pvt. Ltd.		Y	04.02.2026		No	NA
65	Renew Surya jyoti Pvt. Ltd.		Y	04.02.2026		No	NA
66	Renew Surya Ravi Pvt. Ltd.	ReNew	Y	04.02.2026		No	NA
67	Renew Surya Roshni Pvt. Ltd.		Y	04.02.2026		No	NA
68	Renew Surya Vihan Pvt. Ltd.		Y	04.02.2026		No	NA
69	Renew Solar Photovoltaic Pvt Ltd		Y	04.02.2026		No	NA
70	Renew Hans Urja Pvt Ltd.		Y	04.02.2026		No	NA
71	RENEW SOLAR POWER Pvt. Ltd. Bikaner		Y	04.02.2026		No	NA
72	ReNew Dinkar Urja Pvt. Ltd.		Y	04.02.2026		No	NA
73	Renew Surya Ayaan Pvt. Ltd.	IndiGrid	Y	23.03.2026		NO	NA
74	Rising Sun Energy-K Pvt. Ltd.						
75	Serentica Renewables India 4 & 5 Private Limited	Serentica	Y	02.02.2026		No	NA
76	Khidrat Renewable energy Pvt ltd.		Y	06.02.2026		No	NA
77	Solzen Urja Private Limited	Sekura	Y	06.02.2026		No	NA
78	Tata Power Green Energy Ltd. (TPGEL)	TATA POWER	Y	02.02.2026		No	NA
79	Tata Power Renewable Energy Ltd. (TPREL)		Y	02.02.2026		No	NA
80	Banderwala Solar Plant TP Surya Ltd.		Y	02.02.2026		No	NA
81	Thar Surya Pvt. Ltd.						
82	TRANSITION ENERGY SERVICES PRIVATE LIMITED						
83	Transition Green Energy Private Limited						
84	Transition Sustainable Energy Services Private Limited						
85	GSPL_BHDL2 (Gorbea Solar Pvt Ltd)	Zelestra	Y	06.02.2026		No	NA
86	Prerak Greentech Pvt Limited		Y	12.02.2026		No	NA
87	Megasolis Renewables Pvt Ltd(MSRPL)		Y	13.02.2026		No	NA

Status of perfomance indices reporting of February 2026 (Last date of submission 07.03.2026)							
S. No.	**Utility**		**Received Status (Yes/No)**	**Vide mail dated**	**Remarks**	**Indices less than 1 (Yes/No)**	**Reason submitted and corrective action taken**
1	ABC Renewable Pvt. Ltd	ABC R Rj01	Y	11.03.2026		NO	NA
2	ABC Renewable Energy (RJ-02) Pvt. Ltd.						
3	ACME Heeragarh powertech Pvt. Ltd	**ACME**	Y	05.03.2026		Yes	Yes
4	ACME Phalodi	**ACME**	Y	05.03.2026		Yes	Yes
5	ACME Deogarh	**ACME**					
6	ACME Raisar	**ACME**					
7	ACME Dhaulpur	**ACME**					
8	ACME Sikar	**ACME**	Y	05.03.2026		Yes	No
9	ACME Chittorgarh Solar Energy Pvt Ltd (Ayana)	**AYANA**					
10	AHEJOL-Hybrid-1 Madhopura	ADANI GREEN	Y	09.03.2026		NO	NA
11	AHEJ3L - Hybrid-2B 300MW	ADANI GREEN	Y	09.03.2026		NO	NA
12	AHEJFL(AEML_250)	ADANI GREEN	Y	09.03.2026		NO	NA
13	AHEJ4L(AEML-350)	ADANI GREEN	Y	09.03.2026		NO	NA
14	ASEJ2PL(Hapasar 300MW) SPC11PL	ADANI GREEN	Y	09.03.2026		NO	NA
15	Adani Renewable Energy (RJ) Limited Rawra 200	ADANI GREEN	Y	09.03.2026		NO	NA
16	Adani Solar Energy Four Limited SECI 50	ADANI GREEN	Y	09.03.2026		NO	NA
17	Adani Solar Energy Jodhpur Two Limited Merchant 50	ADANI GREEN	Y	09.03.2026		NO	NA
18	ASEJ05PL (RJ200)	ADANI GREEN	Y	09.03.2026		NO	NA
19	ASERJ2PL - Phalodi 150 MW	ADANI GREEN	Y	09.03.2026		NO	NA
20	ASERJ01PL-Pokhran 300 MW (SB energy six)	ADANI GREEN	Y	09.03.2026		NO	NA
21	AGE25L(Badi Sid)	ADANI GREEN	Y	09.03.2026		NO	NA
22	Bhadla park - South block	ADANI GREEN	Y	09.03.2026		NO	NA
23	AGE24L (Bhimsar)	ADANI GREEN	Y	09.03.2026		NO	NA
24	AHEJ2L - Hybrid-2A 300MW	ADANI GREEN	Y	09.03.2026		NO	NA
25	ASERJ2PL - Devikot 180 MW	ADANI GREEN	Y	09.03.2026		NO	NA
26	ASEJOPL-Hybrid 450 MW	ADANI GREEN	Y	09.03.2026		NO	NA
27	Ambuja Cements Limited_300MW	ADANI GREEN					
28	Altra Xergi Pvt. Ltd.		Y	06.03.2026		NO	NA
29	XL Xergi Power Pvt. Ltd.		Y	06.04.2026		NO	NA
30	AMP Energy Green Four Pvt. Ltd.	AMPIN ENERGY					
31	AMP Energy Green Five Pvt. Ltd.	AMPIN ENERGY					
32	AMP Energy Green Six Pvt. Ltd.	AMPIN ENERGY					
33	Amplus Ages Private Limited	GENTARI	Y	06.03.2026		NO	NA
34	Avaada RJHN_240MW	AVAADA	Y	11.03.2026		NO	NA
35	Avaada sunce energy Pvt limited						
36	Avaada Sustainable RJ Project Pvt. Ltd.						
37	Avaada Sunrays Pvt. Ltd.		Y	11.03.2026		NO	NA
38	Ayana Renewable Power Three Private Limited		Y	02.03.2026		NO	NA
39	Ayaana Renewable Power One Pvt. Ltd.		Y	02.03.2026		NO	NA
40	Azure Power Forty One Pvt limited		Y	13.03.2026		NO	NA

41	Azure Power Forty Three Pvt. Ltd._RSS						
42	Azure Power Forty Three Pvt. Ltd._PSS						
43	Azure Maple Pvt. Ltd.						
44	AZURE POWER INDIA Pvt. Ltd., Bhadla						
45	Azure Power Thirty Four Pvt. Ltd.						
46	Clean Solar Power (Jodhpur) Pvt. Ltd.	Hero Future Energies	Y	02.03.2026		NO	NA
47	Eden Renewable Cite Private Limited		Y	23.03.2026		NO	NA
48	Eden Renewable Alma Pvt. Ltd.						
49	Energizent Power Private Limited						
50	Grian Energy private limited	GENTARI	Y	06.03.2026		NO	NA
51	Juna Renewable Energy Pvt. Ltd.		Y	18.03.2026		NO	NA
52	Juniper Green Cosmic Private Limited						
53	Juniper Nirjara Energy Private Limited						
54	Karinsar Solar Plant NHPC Ltd	NHPC	Y	02.03.2026		NO	NA
55	Megasolis Renewables Pvt Ltd(MSRPL)						
56	Mega Surya Urja Pvt. Ltd. (MSUPL)		Y	02.03.2026		NO	NA
57	AURAIYA Solar		Y	10.03.2026		NO	NA
58	DADRI SOLAR		Y	12.03.2026		NO	NA
59	SINGRAULI SOLAR		Y	12.03.2026		NO	NA
60	Anta Solar		Y	11.03.2026		NO	NA
61	Unchahar Solar		Y	11.03.2026		NO	NA
62	NTPC Devikot Solar plant-1	NGEL	Y	06.03.2026		NO	NA
63	NTPC Devikot Solar plant-2		Y	06.03.2026		NO	NA
64	SKB NTPC -1 (250MW)	NGEL	Y	06.03.2026		NO	NA
65	SKB NTPC-2 (300MW)		Y	06.03.2026		NO	NA
66	NTPC Nokhra_300MW		Y	06.03.2026		NO	NA
67	NTPC Fatehgarh 296MW		Y	06.03.2026		NO	NA
68	One Volt energy Pvt. Ltd.	GENTARI	Y	06.03.2026		NO	NA
69	ReNew Solar Urja Private Limited	IndiGrid	Y	23.03.2026		NO	NA
70	ReNew Solar Energy (Jharkhand Three) Private Limited		Y	05.03.2026		NO	NA
71	Neemba Renew Surya Vihan Pvt. Ltd.		Y	05.03.2026		NO	NA
72	Renew Surya Partap Pvt. Ltd.		Y	05.03.2026		NO	NA
73	Renew Surya jyoti Pvt. Ltd.		Y	05.03.2026		NO	NA
74	Renew Surya Ravi Pvt. Ltd.	ReNew	Y	05.03.2026		NO	NA
75	Renew Surya Roshni Pvt. Ltd.		Y	05.03.2026		NO	NA
76	Renew Surya Vihan Pvt. Ltd.		Y	05.03.2026		NO	NA
77	Renew Solar Photovoltaic Pvt Ltd		Y	05.03.2026		NO	NA
78	Renew Hans Urja Pvt Ltd.		Y	05.03.2026		NO	NA
79	RENEW SOLAR POWER Pvt. Ltd. Bikaner		Y	05.03.2026		NO	NA
80	ReNew Dinkar Urja Pvt. Ltd.		Y	05.03.2026		NO	NA
81	Renew Sun Bright Pvt. Ltd. (RSBPL)	Sembcorp					
82	Renew Surya Ayaan Pvt. Ltd.	IndiGrid	Y	23.03.2026		NO	NA
83	Rising Sun Energy-K Pvt. Ltd.						
84	Serentica Renewables India 4 & 5 Private Limited	Serentica	Y	03.03.2026		NO	NA

85	Khidrat Renewable energy Pvt ltd.		Y	07.03.2026		NO	NA
86	SJVN Green Energy Limited						
87	Solzen Urja Private Limited	Sekura	Y	09.03.2026		NO	NA
88	Tata Power Green Energy Ltd. (TPGEL)	TATA POWER	Y	03.03.2026		NO	NA
89	Tata Power Renewable Energy Ltd. (TPREL)		Y	03.03.2026		NO	NA
90	Banderwala Solar Plant TP Surya Ltd.		Y	03.03.2026		NO	NA
91	Thar Surya Pvt. Ltd.						
92	Adept Renewable Technologies Pvt. Ltd.						
93	Transition Cleantech Services Private Limited						
94	Transition Energy Services Private Limited						
95	Transition Green Energy Private Limited						
96	Transition Sustainable Energy Services Private Limited						
97	Transition Sustainable Energy Services One Pvt Ltd						
98	GSPL_BHDL2 (Gorbea Solar Pvt Ltd)	Zelestra	Y	05.03.2026		NO	NA
99	Prerak Greentech Pvt Limited		Y	17.03.2026		NO	NA

Annexure-VI

Reporting of performance indices for protection System
(for element connected at 220kV and above)
Name of Utility : ACME Heergarh- MSEDCL2 Badisidd - 300 MW
Month : January-26

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	300 MW MSEDCL2 Badisidd	220 kV Badisidd -Bhadla-2	1	0	1	1	1	0.5	0.5	**25-Jan-2026:** Female contact of 89T Isolator of PTR 2 has melted. Therefore we have used 89C bypass Isolator. During charging the Remote end relay tripped due to DT received. No fault was present at our end and we are suspecting malfunctioning. Which is under review.
		150 MVA PTR-1	0	0	0	0	0	0.0	0	
		150 MVA PTR-2	1	0	0	0	1	1.0	1	**25-Jan-2026: Manual Shutdown of Transformer.** 89T isolator of ICT02 (B-Phase) busbar melted due to overheat therefore isolator arching horn also melted so the total length of isolator shorted & start the burning of 89T isolator in B Phase after that jumper malted from clamp so manually trip the ICT02
		Bus coupler Bay	0	0	0	0	0	0.0	0	
		220 kV Main BUS -1	0	0	0	0	0	0.0	0	
		220 kV Main BUS -2	0	0	0	0	0	0.0	0	

PERFORMANCES INDICES FORM ACME Heergarh- MSEDCL2 Badisidd - 300 MW	**Dependability Index (D) D=(Nc/(Nc+Nf))**	0
	Security Index (S) S=(Nc/(Nc+Nu))	0
	Reliability Index (R) R=(Nc/(Nc+Ni))	0

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

Nc - Number of correct operations at internal power system Faults.
Nf - Number of Failures to operations at internal power system Faults.
Nu - Number of unwanted operations.
Ni - Number of incorrect operations, (Ni= Nf+Nu)

Reporting of performance indices for protection System
(for element connected at 400kV and above)
Name of Utility : ACME 1200 MW PSS 400KV - Deogarh,Phalodi,Dholpur & RAISAR - Sanawara - Pokhran.
Month : Feb.2026

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	1200 MW ISTS POKARAN	400 kV ISTS - FBTL Line	0	0	0	0	0	0	0	
		315 MVA PTR-1 (DHAULPUR)	0	0	0	0	0	0	0	
		315 MVA PTR-2 (PHALODI)	0	0	0	0	0	0	0	
		315 MVA PTR-3 (RAISAR)	0	0	1	1	0	0	0	**03-Feb-2026:** PTR tripped in Differential Protection due to Banana clip left connecetd at CT secondary terminals after testing, which lead to tripping when load reached upto 100MW.
		315 MVA PTR-4 (DEOGHAR)	0	0	0	0	0	0	0	
		400 kV BUSBAR -1	0	0	0	0	0	0	0	
		400 kV BUSBAR -2	0	0	0	0	0	0	0	

PERFORMANCES INDICES FORM ACME 1200 MW Pooling Station Sanawara-Pokhran	**Dependability Index (D) D=(Nc/(Nc+Nf))**	
	Security Index (S) S=(Nc/(Nc+Nu))	
	Reliability Index (R) R=(Nc/(Nc+Ni))	

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

Nc - Number of correct operations at internal power system Faults.

Nf - Number of Failures to operations at internal power system Faults.

Nu - Number of unwanted operations.

Ni - Number of incorrect operations, (Ni= Nf+Nu)

Reporting of performance indices for protection System
(for element connected at 220kV and above)
Name of Utility : ACME Heergarh- MSEDCL2 Badisidd - 300 MW
Month : February-26

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	300 MW MSEDCL2 Badisidd	220 kV Badisidd -Bhadla-2	0	0	0	0	0	0.0	0	
		150 MVA PTR-1	1	0	1	1	1	0.5	0.5	**28-Feb-2026:** Tripped in Differential Protection due to Wrong CT core selection of newly commissioned BESS system. Correct core selected and system restored.
		150 MVA PTR-2	0	0	0	0	0	0.0	0	
		Bus coupler Bay	0	0	0	0	0	0.0	0	
		220 kV Main BUS -1	0	0	0	0	0	0.0	0	
		220 kV Main BUS -2	0	0	0	0	0	0.0	0	

PERFORMANCES INDICES FORM ACME Heergarh- MSEDCL2 Badisidd - 300 MW	**Dependability Index (D) D=(Nc/(Nc+Nf))**	0
	Security Index (S) S=(Nc/(Nc+Nu))	0
	Reliability Index (R) R=(Nc/(Nc+Ni))	0

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

Nc - Number of correct operations at internal power system Faults.

Nf - Number of Failures to operations at internal power system Faults.

Nu - Number of unwanted operations.

Ni - Number of incorrect operations, (Ni= Nf+Nu)

Reporting of performance indices for protection System
(for element connected at 220kV and above)
Name of Utility : ACME Sikar Solar Pvt Ltd-300 MW
Month : Feb-26

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	300 MW Sikar Nokha	220 kV Sikar -Bikaner-2	2	0	0	0	1	1	1	**22-Feb-2026:** Grid Fail **17-Feb-2026:** Grid Fail from remote end due to remote end Isolator Y phase female contact melt.
		150 MVA PTR-1	1	0	1	1	1	0.5	0.5	**28-Feb-2026:** PTR Manual trip due to abnormal noise from LV box. Loose 630 Sq mm cable found which is connected to BESS.
		150 MVA PTR-2	0	0	0	0	0	0	0	
		Bus coupler Bay	0	0	0	0	0	0	0	
		220 kV Main BUS -1	0	0	0	0	0	0	0	
		220 kV Main BUS -2	0	0	0	0	0	0	0	

PERFORMANCES INDICES FORM ACME Sikar Solar Pvt Ltd-300 MW	**Dependability Index (D) D=(Nc/(Nc+Nf))**	0
	Security Index (S) S=(Nc/(Nc+Nu))	0
	Reliability Index (R) R=(Nc/(Nc+Ni))	0

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

Nc - Number of correct operations at internal power system Faults.

Nf - Number of Failures to operations at internal power system Faults.

Nu - Number of unwanted operations.

Ni - Number of incorrect operations, (Ni= Nf+Nu)

Status of Internal Protection Audit Plan for FY 2026 -27				
S. No.	**Organization/Plant**	**Category**	**Status**	**Schedule submitted as per utililty**
1	ABC Renewable Pvt. Ltd		Received	20-09-2026
2	ABC Renewable Energy (RJ-02) Pvt. Ltd.			
3	ACME Heeragarh powertech Pvt. Ltd	ACME	Received	Jan-27
4	ACME Pholidi	ACME	Received	Jan-27
5	ACME Deagarh	ACME		
6	ACME Raisar	ACME		
7	ACME Dhoulpar	ACME		
8	ACME Sikar	ACME	Received	Jan-27
9	ACME Chittorgarh Solar Energy Pvt Ltd	AYANA		
10	Adani Hybrid Energy Jaisalmer One Ltd.	AGEL	Received	16-07-2026
11	Adani Hybrid Energy Jaisalmer Two Ltd.	AGEL	Received	25-07-2026
12	Adani Hybrid Energy Jaisalmer Three Ltd.	AGEL	Received	08-08-2026
13	Adani Hybrid Energy Jaisalmer Four Ltd. (AEML 1 -350)	AGEL	Received	15-08-2026
14	Adani Hybrid Energy Jaisalmer Four Ltd. (AEML 2 -250)	AGEL	Received	11-09-2026
15	Adani Renewable Energy (RJ) limited Rawara	AGEL	Received	26-09-2026
16	Adani Solar Enegry Four Private Limited	AGEL	Received	26-09-2026
17	Adani Solar Energy Jaisalmer Two Private Limited Project Two	AGEL	Received	17-10-2026
18	SB Energy Six Private Limited, Bhadla	AGEL	Received	28-10-2026
19	Adani Solar Enegry Jodhpur Two Limited, Rawara	AGEL	Received	26-09-2026
20	Adani Solar Energy Jaisalmer One Ltd. (Hybrid450)	AGEL	Received	03-10-2026
21	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)	AGEL	Received	07-11-2026
22	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)	AGEL	Received	14-11-2026
23	Adani Green Energy 24 Limited (Bhimsar)	AGEL	Received	26-11-2026
24	Adani Green Twenty-Five Limited (Badisid)	AGEL	Received	04-12-2026
25	Bhadla park - South block	AGEL	Received	16-12-2026
26	AEML-250 WIND (Hybrid-2A)	AGEL	Received	16-09-2026
27	AEML-260 WIND (Hybrid-2B)	AGEL	Received	20-09-2026
28	Hybrid450-WIND (SBE Hybrid 450)	AGEL	Received	07-10-2026
29	Ambuja Cements Limited_300MW	AGEL		
30	Altra Xergi Pvt. Ltd.			
31	XL Xergi Power Pvt. Ltd.			
32	AMP Energy Green Four Pvt. Ltd.			
33	AMP Energy Green Five Pvt. Ltd.			
34	AMP Energy Green Six Pvt. Ltd.			
35	Amplus Ages Private Limited	Gentari	Received	31-12-2026
36	Avaada RJHN 240MW	Avaada	Received	Aug-26
37	Avaada sunce energy Pvt limited	Avaada	Received	Aug-26
38	Avaada Sunrays Pvt. Ltd.	Avaada	Received	Aug-26
39	Avaada Sustainable RJ Pvt. Ltd.	Avaada	Received	Aug-26
40	Ayana Renewable Power Three Private Limited			
41	Ayaana Renewable Power One Pvt. Ltd.			
42	Azure Power Forty One Pvt limited			
43	Azure Power Forty Three Pvt. Ltd._RSS			
44	Azure Power Forty Three Pvt. Ltd. PSS			
45	Azure Maple Pvt. Ltd.			
46	AZURE POWER INDIA Pvt. Ltd., Bhadla			
47	Azure Power Thirty Four Pvt. Ltd.			
48	Clean Solar Power (Jodhpur) Pvt. Ltd.	Hero Future Energies	Received	May, 2026
49	Eden Renewable Cite Private Limited			
50	Eden Renewable Alma Pvt. Ltd.			
51	Energizent Power Private Limited			
52	Grian Energy private limited	Gentari	Received	31-12-2026
53	Juna Renewable Energy Pvt. Ltd.	Juna	Received	20-07-2026
54	Juniper Green Cosmic Private Limited			
55	Juniper Nirjara Energy Private Limited			
56	Karinsar Solar Plant NHPC Ltd	NHPC		
57	Megasolis Renewables Pvt Ltd(MSRPL)			
58	Mega Surya Urja Pvt. Ltd. (MSUPL)			
59	AURAIYA Solar			
60	DADRI SOLAR			
61	SINGRAULI SOLAR			
62	Anta Solar			
63	Unchahar Solar			
64	NTPC Devikot Solar plant_240MW	NGEL	Received	15-05-2026
65	NTPC Kolayat (SKB -1)	NGEL	Received	31-05-2026
66	NTPC Kolayat (SKB-2)	NGEL	Received	30-11-2026
67	Nedan Solar NTPC	NGEL	Received	15-05-2026
68	NTPC Nokhra_300MW	NGEL	Received	31-08-2026
69	One Volt energy Pvt. Ltd.	Gentari	Received	31-12-2026
70	ReNew Solar Urja Private Limited (IndiGrid)	IndiGrid		
71	Renew Surya Ayaan Pvt. Ltd. (IndiGrid)	IndiGrid		
72	ReNew Solar Energy (Jharkhand Three) Private Limited	ReNew	Received	24/11/2026
73	RENEW SOLAR POWER Pvt. Ltd. Bikaner	ReNew	Received	17/11/2026
74	Renew Surya Partap Pvt. Ltd.	ReNew	Received	21/11/2026
75	Renew Surya Ravi Pvt. Ltd.	ReNew	Received	18/11/2026
76	Renew Surya Roshni Pvt. Ltd.	ReNew	Received	24/11/2026
77	Renew Surya Vihan Pvt. Ltd.	ReNew		
78	Renew Solar Photovoltaic Pvt Ltd	ReNew		
79	Renew Hans Urja Pvt Ltd	ReNew		
80	Renew Surya Jyoti Pvt Ltd	ReNew	Received	15/10/2026
81	Neemba Renew Surya Vihan Pvt Ltd	ReNew	Received	15/10/2026
82	ReNew Dinkar Urja Pvt. Ltd.	ReNew		

83	Renew Sun Bright Pvt. Ltd. (RSBPL)	Sembcorp	Received (submitted by ReNew)	19/11/2026
84	Rising Sun Energy-K Pvt. Ltd.			
85	Serentica Renewables India 4 Private Limited	Serentica	Received	Sep-26
86	Serentica Renewables India 5 Private Limited	Serentica	Received	Sep-26
87	Khidrat Renewable energy Pvt ltd.	Serentica	Received	Jun-26
88	SJVN Green Energy Limited	SJVN		
89	Solzen Urja Private Limited	Sekura	Received	November, 2026
90	Tata Power Green Energy Ltd. (TPGEL) (225MW)	Tata Power	Received	31-03-2027
91	Tata Power Renewable Energy Ltd. (TPREL) (300MW)	Tata Power	Received	31-03-2027
92	Thar Surya Pvt. Ltd.			
93	TP Surya Ltd., Noorsar (110MW)	Tata Power	Received	31-03-2027
94	Banderwala Solar Plant TP Surya Ltd. (300MW)	Tata Power	Received	31-03-2027
95	Adept Renewable Technologies Pvt. Ltd.			
96	Transition Cleantech Services Private Limited			
97	Transition Energy Services Private Limited			
98	Transition Green Energy Private Limited			
99	Transition Sustainable Energy Services Private Limited			
100	Transition Sustainable Energy Services One Pvt Ltd			
101	Gorbea Solar Pvt Ltd (GSPL)		Received	Oct-26
102	Prerak Greentech Private Limited (PGPL)			

Annexure-VIII

Status of 3rd Party Protection Audit Plan

S. No.	Organization/Plant	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	ABC Renewable Pvt. Ltd							
2	ABC Renewable Energy (RJ-02) Pvt. Ltd.							
3	ACME Heeragarh powertech Pvt. Ltd	ACME	Received	2027				
4	ACME Pholidi	ACME	Received	2028				
5	ACME Deagarh	ACME						
6	ACME Raisar	ACME						
7	ACME Dhoulpar	ACME						
8	ACME Sikar	ACME	Received	2028				
9	ACME Chittorgarh Solar Energy Pvt Ltd	Ayana						
10	Adani Hybrid Energy Jaisalmer One Ltd.		5 years have not completed since commissiong					
11	Adani Hybrid Energy Jaisalmer Two Ltd.		5 years have not completed since commissiong					
12	Adani Hybrid Energy Jaisalmer Three Ltd.		5 years have not completed since commissiong					
13	Adani Hybrid Energy Jaisalmer Four Ltd. (AEML 1 - 350)		5 years have not completed since commissiong					
14	Adani Hybrid Energy Jaisalmer Four Ltd. (AEML 2 - 250)		5 years have not completed since commissiong					
15	Adani Renewable Energy (RJ) limited Rawara		Received	15-01-2026				
16	Adani Solar Energy Four Private Limited		5 years have not completed since commissiong					
17	Adani Solar Energy Jaisalmer Two Private Limited Project Two		5 years have not completed since commissiong					
18	SB Energy Six Private Limited, Bhadla		5 years have not completed since commissiong					
19	Adani Solar Energy Jodhpur Two Limited, Rawara	AGEL	5 years have not completed since commissiong					
20	Adani Solar Energy Jaisalmer One Ltd. (Hybrid450)		5 years have not completed since commissiong					
21	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)		5 years have not completed since commissiong					
22	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)		5 years have not completed since commissiong					
23	Adani Green Energy 24 Limited (Bhimsar)		5 years have not completed since commissiong					
24	Adani Green Twenty-Five Limited (Badisid)		5 years have not completed since commissiong					
25	Bhadla park - South block		Received	28-01-2026				
26	AEML-250 WIND (Hybrid-2A)		5 years have not completed since commissiong					
27	AEML-260 WIND (Hybrid-2B)		5 years have not completed since commissiong					
28	Hybrid450-WIND (SBE Hybrid 450)		5 years have not completed since commissiong					
29	Ambuja Cements Limited 300MW							
30	Altra Xergi Pvt. Ltd.		Conducted		Completed	04.02.2025	60	
31	XL Xergi Power Pvt. Ltd.							
32	AMP Energy Green Four Pvt. Ltd.				Completed for common substation			
33	AMP Energy Green Five Pvt. Ltd.		Received	Nov-27				
34	AMP Energy Green Six Pvt. Ltd.		Received	Nov-27		02.09.2025	63	
35	Amplus Ages Private Limited		Received	31-12-2028				
36	Avaada RJHN_240MW		Received	Aug-26				
37	Avaada sunce energy Pvt limited		Received	Aug-26				
38	Avaada Sunrays Pvt. Ltd.		Received	Aug-27				
39	Avaada Sustainable RJ Pvt. Ltd.		Received	Aug-26				
40	Ayana Renewable Power Three Private Limited		Conducted		24.05.2025		61	
41	Ayaana Renewable Power One Pvt. Ltd.		Conducted				59	
42	Azure Power Forty One Pvt limited							
43	Azure Power Forty Three Pvt. Ltd. RSS							
44	Azure Power Forty Three Pvt. Ltd. PSS							
45	Azure Maple Pvt. Ltd.							
46	AZURE POWER INDIA Pvt. Ltd., Bhadla							
47	Azure Power Thirty Four Pvt. Ltd.							
48	Clean Solar Power (Jodhpur) Pvt. Ltd.	Hero Future Energies	Received	Dec-26				
49	Eden Renewable Cite Private Limited		Received	Aug-26				
50	Eden Renewable Alma Pvt. Ltd.		Received	Jul-30				
51	Energizent Power Private Limited							
52	Grian Energy private limited		Received	31-12-2028				
53	Juna Renewable Energy Pvt. Ltd.		Received	Jun-30				
54	Juniper Green Cosmic Private Limited							
55	Juniper Nirjara Energy Private Limited							
56	Karinsar Solar Plant NHPC Ltd	NHPC						
57	Megasolis Renewables Pvt Ltd(MSRPL)							
58	Mega Surya Urja Pvt. Ltd. (MSUPL)							
59	AURAIYA Solar							
60	DADRI SOLAR							
61	SINGRAULI SOLAR							
62	Anta Solar							
63	Unchahar Solar							
64	NTPC Devikot Solar plant 240MW		Received	Aug-26				
65	NTPC Kolayat 400kV		Received	May-26				
66	Nedan Solar NTPC		Received	Jul-26				
67	NTPC Nokhra 300MW		Received	Jun-26				
68	One Volt energy Pvt. Ltd.		Received	31-12-2028				
69	ReNew Solar Urja Private Limited	IndiGrid						
70	Renew Surya Ayaan Pvt. Ltd.	IndiGrid						
71	ReNew Solar Energy (Jharkhand Three) Private Limited	ReNew	Received	29-01-2027				
72	RENEW SOLAR POWER Pvt. Ltd. Bhadla	ReNew	Not Applicable as Plant running on 33kV					
73	Renew Surya Partap Pvt. Ltd.	ReNew	Received	22-07-2029				
74	Renew Surya Ravi Pvt. Ltd.	ReNew	Received	24-07-2027				
75	Renew Surya Roshni Pvt. Ltd.	ReNew	Received	09-04-2029				
76	Renew Surya Vihan Pvt. Ltd.	ReNew	Received	27-08-2029				
77	Neemba Renew Surya Vihan Pvt Ltd	ReNew	Received	30-09-2030				
78	ReNew Surya Jyoti Pvt. Ltd	ReNew	Received	10-11-2030				
79	Renew Solar Photovoltaic Pvt Ltd	ReNew	STU-connected projects					
80	ReNew Hans Urja Pvt Ltd.	ReNew	STU-connected projects					
81	RENEW SOLAR POWER Pvt. Ltd. Bikaner	ReNew	awarded the PO					
82	ReNew Dinkar Urja Pvt. Ltd.	ReNew						
83	Renew Sun Bright Pvt. Ltd. (RSBPL)	Sembcorp	Received (submitted by ReNew)	16-04-2027				
84	Rising Sun Energy-K Pvt. Ltd.							
85	Serentica Renewables India 4 Private Limited		Received	Mar-29				
86	Serentica Renewables India 5 Private Limited		Received	Mar-29				
87	Khidrat Renewable energy Pvt ltd.		Received	Jun-30				
88	SJVN Green Energy Limited	SJVN						
89	Solzen Urja Private Limited		Received	Oct-26				
90	Tata Power Green Energy Ltd. (TPGEL) (225MW)		Received	31-03-2027				
91	Tata Power Renewable Energy Ltd. (TPREL) (300MW)		Received	31-03-2027				
92	Thar Surya Pvt. Ltd.							
93	TP Surya Ltd., Noorsar (110MW)		Received	31-03-2027				
94	Banderwala Solar Plant TP Surya Ltd. (300MW)		Received	31-03-2027				
95	Adept Renewable Technologies Pvt. Ltd.							
96	Transition Cleantech Services Private Limited							
97	Transition Energy Services Private Limited							
98	Transition Green Energy Private Limited							
99	Transition Sustainable Energy Services Private Limited							
100	Transition Sustainable Energy Services One Pvt Ltd							
101	Gorbea Solar Pvt Ltd (GSPL)		Received	Dec-28				
102	Prerak Greentech Private Limited (PGPL)							

Annexure-IX

Sl No.	RE Plant Name	Pooling Station	Plant Capacity (MW)	Total Nos. of Voltage oscillation instances considered	Number of time RE plant was found giving Oscillatory MVAr (>30 MVAr) out of total instances considered	% of time RE plant was found giving Oscillatory MVAr (>30 MVAr) out of total instances considered	Owner Name	Any reply received from Plant	Root cause analysis report status	Status of corrective action
1	ACME Solar Holading Pvt. Ltd. (ASHPL, 300×4)	Fatehgarh-I (Adani Pooling)	1200	14	14	**100%**	**ACME**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
2	Avaada Bikaner (Avaada Sunce_350+Avaada Sustainable_300+Avaada RJHN_240)	Bikaner(PG)	890	14	14	**100%**	**Avaada**	Plant gave reply vide mail dt. 04.02.2026 1. Plant submitted only PPC and Inverter settings. 2. Plant just re-share the implemented setting as submitted for LVRT/HVRT Non-complince issues of the plant. 3. No analysis/data received for voltage oscillation issues plant. 4. No RCA report submitted, abnormal behaviour of plant is still unidentified.	**Not Received**	Corrective action is yet to be implemented
3	Ayaana Renewable Bikaner (ARP1PL + ARP3PL)	Bikaner(PG)	600	14	12	**86%**	**Ayaana**	Plant gave reply vide mail dt. 11.02.26. 1. Plant submitted only PPC and Inverter settings. 2. No RCA report other information as asked submitted yet.	**Not Received**	Corrective action is yet to be implemented. In its priliminary report plant stated they are taking-up with OEMs but no further update received it
4	Adani Solar Energy Jaisalmer Two Private Limited (P1+P2)	Bikaner(PG)	300	14	12	**86%**	**Adani**	Plant gave reply vide mail dt. 05.02.26. 1. Only PPC data of (1sec) resolution submitted, plant made the PPC response slightly slower by reducing the gain and time constant but no action at Inverter level. 2. No RCA report submitted, abnormal behaviour of plant is still unidentified.	**Not Received**	Corrective action is yet to be implemented (Only HVRT setting of SVGs is revised and PPC Gain & Time constant reduced to make PPC response slower)
5	SB Energy Six Private Limited, Bhadla_ESSEL park	Bhadla(PG)	300	14	12	**86%**	**Adani**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
6	Mahoba Solar	Bhadla(PG)	300	14	12	**86%**	**Adani**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
7	Mega Surya Urja Pvt. Ltd. (MSUPL)	Bhadla-II (PG)	250	14	12	**86%**	**Mahindra**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
8	NTPC Nokh Solar	Bhadla-II (PG)	735	14	12	**86%**	**NTPC**	Plant gave reply vide mail dt. 20.02.26. 1. Plant submitted only PPC and Inverter settings. 2. No RCA report other information as asked submitted yet.	**Not Received**	Corrective action is yet to be implemented. In its priliminary report plant stated they are taking-up with OEMs but no further update received it
9	Altra Xergi Pvt. Ltd.	Fatehgarh-III	380	14	12	**86%**	**O2 Power**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
10	Adani Hybrid Energy Jaisalmer One Ltd	Fatehgarh-II(PG)	390	14	11	**79%**	**Adani**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
11	Adani Hybrid Energy Jaisalmer Four Ltd.	Fatehgarh-I (Adani Pooling)	700	14	11	**79%**	**Adani**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
12	SJVNL Solar Project	Bikaner-II (PBTSL)	888	14	11	**79%**	**SJVN**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
13	RENEW SOLAR POWER Pvt. Ltd. Bikaner	Bikaner(PG)	550	14	10	**71%**	**Renew**	Plant gave reply vide mail dt. 05.02.26 and 26.02.26. 1. Plant submitted only PPC and Inverter settings. 2. Plant submitted that there is no provision of recording high resolution data. 3. No RCA report submitted, abnormal behaviour of plant is still unidentified.	**Not Received**	Corrective action is yet to be implemented. In its priliminary report plant stated they are taking-up with OEMs but no further update received it
14	Adani Hybrid Energy Jaisalmer Two Ltd.	Fatehgarh-II(PG)	300	14	10	**71%**	**Adani**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
15	Adani Hybrid Energy Jaisalmer Three Ltd.	Fatehgarh-II(PG)	300	14	10	**71%**	**Adani**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
16	ReNew Solar Urja Private Limited	Fatehgarh-II(PG)	300	14	10	**71%**	**Indi-Grid**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
17	Eden Renewable Cite Private Limited	Fatehgarh-II(PG)	300	14	10	**71%**	**Eden**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
18	Renew Sun Bright Pvt. Ltd. (RSBPL)	Fatehgarh-II(PG)	300	14	10	**71%**	**Renew**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
19	ReNew Solar Energy (Jharkhand Three) Private Limited	Fatehgarh-II(PG)	300	14	10	**71%**	**Renew**	Plant gave reply vide mail dt. 05.02.26 and 26.02.26. 1. Plant submitted only PPC and Inverter settings. 2. Plant submitted that there is no provision of recording high resolution data. 3. No RCA report submitted, abnormal behaviour of plant is still unidentified.	**Not Received**	Corrective action is yet to be implemented. In its priliminary report plant stated they are taking-up with OEMs but no further update received it
20	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)	Fatehgarh-II(PG)	180	14	10	**71%**	**Adani**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
21	ACME Heeragarh powertech Pvt. Ltd	Bhadla-II (PG)	300	14	10	**71%**	**ACME**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
22	Rising Sun Energy-K Pvt. Ltd.	Bhadla-II (PG)	190	14	10	**71%**	**Rising sun**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented

23	Renew Surya Roshni Pvt. Ltd.	Fatehgarh-III	400	14	8	**57%**	**Renew**	Plant gave reply vide mail dt. 05.02.26 and 26.02.26. 1. Plant submitted only PPC and Inverter settings. 2. Plant submitted that there is no provision of recording high resolution data. 3. No RCA report submitted, abnormal behaviour of plant is still unidentified.	**Not Received**	Corrective action is yet to be implemented. In its priliminary report plant stated they are taking-up with OEMs but no further update received it
24	Tata Power Renewable Energy Ltd. (TPREL)	Bhadla(PG)	300	14	7	**50%**	**Tata Power**	Plant gave reply vide mail dt. 26.02.26. 1. Plant submitted priliminary report only. 2. In its priliminary report, plant highlighted the issue in TMEIC inverters and it fails to provide reactive support and also due to 1.11pu HVRT setting it was going into HVRT causing active/reactive power fluctuation.	**Not Received**	Corrective action is yet to be implemented. (HVRT setting changed from 1.11 puto 1.15 pu, SVG installation is in advance stage, Required implementation of smooth Q polarity transition (+Q to −Q) in ABB PPC)

Annexure-X

Sl No.	RE Plant Name	Pooling Station	Plant Capacity (MW)	RE plants MVAr fluctuations 17.12.2025 10:51-11:02	% (Max. MVAr fluctuation/Plant capacity)	Owner Name	Any reply received from Plant	Root cause analysis report status	Status of corrective action
1	Adani Solar Energy Jaisalmer Two Private Limited (P1+P2)	Bikaner(PG)	300	231	77%	Adani	Plant gave reply vide mail dt. 05.02.26. 1. Only PPC data of (1sec) resolution submitted, plant made the PPC response slightly slower by reducing the gain and time constant but no action at Inverter level. 2. No RCA report submitted, abnormal behaviour of plant is still unidentified.	Not Received	Corrective action is yet to be implemented (Only HVRT setting of SVGs is revised and PPC Gain & Time constant reduced to make PPC response slower)
2	ReNew Solar Energy (Jharkhand Three) Private Limited	Fatehgarh-II (PG)	300	127	42%	Renew	Plant gave reply vide mail dt. 05.02.26 and 26.02.26. 1. Plant submitted only PPC and Inverter settings. 2. Plant submitted that there is no provision of recording high resolution data. 3. No RCA report submitted, abnormal behaviour of plant is still unidentified.	Not Received	Corrective action is yet to be implemented. In its priliminary report plant stated they are taking-up with OEMs but no further update received it
3	Mega Surya Urja Pvt. Ltd. (MSUPL)	Bhadla-II (PG)	250	74	30%	Mahindra	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
4	SB ENERGY FOUR PRIVATE LIMTED, Bhadla	Bhadla(PG)	200	52	26%	Adani	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
5	Azure Power Forty One Pvt limited	Bhadla(PG)	300	77	26%	Azure	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
6	Rising Sun Energy-K Pvt. Ltd.	Bhadla-II (PG)	190	45	24%	Rising sun	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
7	Renew Sun Bright Pvt. Ltd. (RSBPL)	Fatehgarh-II (PG)	300	70	23%	Renew	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
8	RENEW SOLAR POWER Pvt. Ltd. Bikaner	Bikaner(PG)	550	117	21%	Renew	Plant gave reply vide mail dt. 05.02.26 and 26.02.26. 1. Plant submitted only PPC and Inverter settings. 2. Plant submitted that there is no provision of recording high resolution data. 3. No RCA report submitted, abnormal behaviour of plant is still unidentified.	Not Received	Corrective action is yet to be implemented. In its priliminary report plant stated they are taking-up with OEMs but no further update received it
9	Mahoba Solar	Bhadla(PG)	300	63	21%	Adani	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
10	Adani Hybrid Energy Jaisalmer One Ltd	Fatehgarh-II (PG)	390	82	21%	Adani	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
11	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)	Fatehgarh-II (PG)	180	38	21%	Adani	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
12	ACME Heeragarh powertech Pvt. Ltd	Bhadla-II (PG)	300	63	21%	ACME	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
13	ACME Solar Holading Pvt. Ltd. (ASHPL, 300×4)	Fatehgarh-I (Adani Pooling)	1200	242	20%	ACME	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
14	Eden Renewable Cite Private Limited	Fatehgarh-II (PG)	300	60	20%	Eden	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
15	ABC Renewable Pvt. Ltd	Bhadla-II (PG)	300	56	19%	ABC Renewable	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
16	Adani Hybrid Energy Jaisalmer Two Ltd.	Fatehgarh-II (PG)	300	54	18%	Adani	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
17	Clean Solar Power (Jodhpur) Pvt. Ltd.	Bhadla(PG)	250	44	18%	Hero future	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
18	Azure Maple Pvt. Ltd.	Bhadla(PG)	300	52	17%	Azure	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
19	Adani Hybrid Energy Jaisalmer Three Ltd.	Fatehgarh-II (PG)	300	51	17%	Adani	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
20	SB Energy Six Private Limited, Bhadla_ESSEL park	Bhadla(PG)	300	49	16%	Adani	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented
21	Renew Surya Ayaan Pvt. Ltd.	Fatehgarh-III	300	47	16%	IndiGrid	No Reply received yet.	Not Received	Reply awaited from plant, Corrective action is yet to be implemented

22	Avaada Sunrays Pvt. Ltd.	Bhadla-II (PG)	320	47	**15%**	Avaada	Plant gave reply vide mail dt. 04.02.2026 1. Plant submitted only PPC and Inverter settings. 2. Plant just re-share the implemented setting as submitted for LVRT/HVRT Non-complince issues of the plant. 3. No analysis/data received for voltage oscillation issues plant. 4. No RCA report submitted, abnormal behaviour of plant is still unidentified.	**Not Received**	Corrective action is yet to be implemented
23	ReNew Solar Urja Private Limited	Fatehgarh-II (PG)	300	43	**14%**	**Indi-Grid**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
24	Avaada Bikaner (Avaada Sunce_350+Avaada Sustainable_300+Avaada RJHN_240)	Bikaner(PG)	890	123	**14%**	**Avaada**	Plant gave reply vide mail dt. 04.02.2026 1. Plant submitted only PPC and Inverter settings. 2. Plant just re-share the implemented setting as submitted for LVRT/HVRT Non-complince issues of the plant. 3. No analysis/data received for voltage oscillation issues plant. 4. No RCA report submitted, abnormal behaviour of plant is still unidentified.	**Not Received**	Corrective action is yet to be implemented
25	Altra Xergi Pvt. Ltd.	Fatehgarh-III	380	51	**14%**	**O2 Power**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
26	Tata Power Renewable Energy Ltd. (TPREL)	Bhadla(PG)	300	40	**13%**	**Tata Power**	Plant gave reply vide mail dt. 26.02.26. 1. Plant submitted priliminary report only. 2. In its priliminary report, plant highlighted the issue in TMEIC inverters and it fails to provide reactive support and also due to 1.11pu HVRT setting it was going into HVRT causing active/reactive power fluctuation.	**Not Received**	Corrective action is yet to be implemented. (HVRT setting changed from 1.11 puto 1.15 pu, SVG installation is in advance stage, Required implementation of smooth Q polarity transiθon (+Q to −Q) in ABB PPC)
27	Renew Surya Roshni Pvt. Ltd.	Fatehgarh-III	400	53	**13%**	**Renew**	Plant gave reply vide mail dt. 05.02.26 and 26.02.26. 1. Plant submitted only PPC and Inverter settings. 2. Plant submitted that there is no provision of recording high resolution data. 3. No RCA report submitted, abnormal behaviour of plant is still unidentified.	**Not Received**	Corrective action is yet to be implemented. In its priliminary report plant stated they are taking-up with OEMs but no further update received it
28	One Volt energy Pvt. Ltd. +Amplus ages +Grian	Bikaner-II (PBTSL)	300	34	**11%**	Onevolt	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
29	Renew Sun Waves Private Limited (RSEJ4L)	Fatehgarh-II (PG)	300	33	**11%**	Sulzon	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
30	Ayaana Renewable Bikaner (ARP1PL + ARP3PL)	Bikaner(PG)	600	58	**10%**	**Ayaana**	Plant gave reply vide mail dt. 11.02.26. 1. Plant submitted only PPC and Inverter settings. 2. No RCA report other information as asked submitted yet.	**Not Received**	Corrective action is yet to be implemented. In its priliminary report plant stated they are taking-up with OEMs but no further update received it
31	SJVNL Solar Project	Bikaner-II (PBTSL)	888	81	**9%**	**SJVN**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
32	Mahindra Renewable Private Limited	Bhadla(PG)	250	22	**9%**	Mahindra	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
33	NTPC Nokh Solar	Bhadla-II (PG)	735	64	**9%**	**NTPC**	Plant gave reply vide mail dt. 20.02.26. 1. Plant submitted only PPC and Inverter settings. 2. No RCA report other information as asked submitted yet.	**Not Received**	Corrective action is yet to be implemented. In its priliminary report plant stated they are taking-up with OEMs but no further update received it
34	AMP Energy Green Six Pvt. Ltd. +AEG5PL +AEG4PL	Bhadla-II (PG)	300	25	**8%**	AMP	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
35	Adani Solar Energy Jaisalmer One Pvt. Ltd.	Fatehgarh-II (PG)	450	32	**7%**	Adani	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
36	XL Xergi Power Pvt. Ltd.	Fatehgarh-III	400	25	**6%**	O2 Power	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
37	Adani Hybrid Energy Jaisalmer Four Ltd.	Fatehgarh-I (Adani Pooling)	700	35	**5%**	**Adani**	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
38	Renew Surya Jyoti Pvt. Ltd.	Fatehgarh-III	210	10	**5%**	Renew	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
39	ADANI GREEN ENERGY TWENTY FIVE LIMITED	Bhadla-II (PG)	500	15	**3%**	Adani	No Reply received yet.	**Not Received**	Reply awaited from plant, Corrective action is yet to be implemented
40	NTPC Kolayat_400kV	Bhadla-II (PG)	550	PMU Data NA		NTPC	Plant gave reply vide mail dt. 20.02.26. 1. Plant submitted only PPC and Inverter settings. 2. No RCA report other information as asked submitted yet.	**Not Received**	Corrective action is yet to be implemented. In its priliminary report plant stated they are taking-up with OEMs but no further update received it

Annexure-XI

Detailed Analysis of 04.02.206 Voltage Oscillation/Fluctuation event							
Sl No.	**RE Plant Name**	**Pooling Station**	**Plant Rated Capacity (MW) as on 04.02.2026**	**Evacuating line**	**Active Power (MW) fluctuation**	**Reactive Power (MVAr) fluctuation**	**Summary of Analysis**
1	Azure Power Forty Three Pvt. Ltd._PSS		300	400kV Azure 43 Pvt. Ltd.-Bikaner (PG) S/C line	415	64	Severe fluctuation in Active power observed as per REMC SCADA, Active power was fluctuating from 415 MW to 0 MW. As reported by Plant, it was continously going In & Out-LVRT. Plant is yet to give the reply on NRLDC communication dt. 04.02.26 and 06,02.26.
	Azure Power Forty Three Pvt. Ltd._RSS		300				
2	RENEW SOLAR POWER Pvt. Ltd. Bikaner		250	400kV ReNew Bikaner-Bikaner (PG) S/C line	31	76	No major fluctuation observed in Active power, maximum fluctuation in active power observed 31 MW at 11:118 hrs Continous fluctuation in Reactive power observed from 11:04 hrs to 11:44 hrs in range of 66 MVAr to 182 MVAr, with maximum reactive power fluctuation of 76 MVAr at 11:14 hrs.
	Renew Surya Ravi Pvt. Ltd.		300				
3	Avaada sunce energy Pvt limited		350	400kV Avaada Pooling-Bikaner (PG) S/C line	14	115	No major fluctuation observed in Active power. Reactive power fluctuation started at 11:02hrs, and maximum fluctuation in reactive power (~115 MVAr) observed after 11:10 hrs
	Avaada Sustainable RJ Pvt. Ltd.		300				
	Avaada RJHN_240MW		240				
4	Ayaana Renewable Power One Pvt. Ltd.	Bikaner(PG)	300	400kV Ayana Pooling-Bikaner (PG) S/C line	38	37	Fluctuation of 38 MW in active power and 37 MVAr in reactive power observed, reactive power fluctuation was predominant and continous fluctuation in reactive power from 11:04-11:44 hrs.
	Ayana Renewable Power Three Private Limited		300				
5	Thar Surya Pvt. Ltd.		300	220kV Thar Surya 1 Pvt. Ltd.-Bikaner (PG) S/C line	2	14	No major fluctuation observed in Active power and Reactive power.
6	Tata Power Green Energy Ltd. (TPGEL)		225	220kV TPGEL-Bikaner (PG) S/C line	9	65	No major fluctuation observed in Active power. Reactive power fluctuation started at 11:05hrs with fluctuation of ~20 MVAr, and maximum fluctuation in reactive power (~65 MVAr) observed after 11:42 hrs
	TP Surya Pvt. Ltd.		110				
7	Adani Solar Energy Jaisalmer Two Private Limited		150	220kV SBSR-Bikaner (PG) S/C line	215	114	Major fluctuation in Active and Reactive power observed. Active power fluctuation started at 11:04 hrs, with maximum active power fluctuation of ~215 MW (72% of rated capacity) observed at 11:42 hrs. Reactive power fluctuation/oscillation started at 11:04 hrs, with maximum reactive power fluctuation of ~114 MVAr observed at 11:30 hrs. Severe issue in plant, need to be resolved on urgent basis
	Adani Solar Energy Jaisalmer Two Private Limited Project Two		150				
	Total capacity_Bikaner(PG)		**3575**				
1	RENEW SOLAR POWER Pvt. Ltd. Bhadla		50	220kV Adani Bhadla-Bhadla (PG) D/C line	-	-	No major fluctuation observed in Active and Reactive power as per SCADA data. However, resolution is poor for SCADA data of this plant, also Active and Reactive power is coming Zero "0" at 11:16 hrs and 11:42 hrs. Any inference can't be made based on SCADA data. SCADA data reporting at NRLDC needs to be corrected.
	AZURE POWER INDIA Pvt. Ltd., Bhadla		200				
2	Azure Power Thirty Four Pvt. Ltd.		130	220kV APTFPL-Bhadla (PG)	49	19	Major fluctuation in Active and Reactive power observed. Reactive power fluctuation/oscillation started at 11:03:20 hrs, with maximum reactive power fluctuation of ~20 MVAr observed at 11:15 hrs. Active power fluctuation started at 11:07:05 hrs, with maximum active power fluctuation of ~50 MW (37% of rated capacity) observed at 11:22 hrs. It can be inferred that first fluctuation in reactive power observed and then fluctuation in active power (~3.5 mins later) observed.
3	SB ENERGY FOUR PRIVATE LIMTED, Bhadla		200	220kV Surya Urja Bhadla-Bhadla (PG) D/C line	75	25	SCADA data resolution is poor for this plant, also Active and Reactive power is coming Zero "0" at 11:16 hrs and 11:42 hrs. Any conclusive inference can't be made based on SCADA data. SCADA data reporting at NRLDC needs to be corrected.
	Clean Solar Power (Bhadla) Pvt. Ltd		300				
4	SB Energy Six Private Limited, Bhadla		300	220kV ESUCRL-Bhadla (PG) D/C line	52	180	Major fluctuation in Reactive power observed. Reactive power fluctuation/oscillation started at 11:03:40 hrs, with maximum reactive power fluctuation of ~180 MVAr observed at 11:15 hrs. Active power fluctuation started at 11:06:39 hrs, with maximum active power fluctuation of ~52 MW (7% of rated capacity) observed at 11:35 hrs. It can be inferred that first fluctuation in reactive power observed and then fluctuation in active power (~3 mins later) observed. Further, reactive power fluctuation was pre-dominant.
	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)		150				
	Ambuja Cements Limited		300				
5	Azure Power Forty One Pvt limited		300	220kV Azure 41 Pvt. Ltd.-Bhadla (PG) S/C line	26	59	SCADA data resolution is slightly poor for this plant. Any conclusive inference can't be made based on SCADA data. However, it can be inferred that first fluctuation in reactive power observed (at 11:03 hrs) and then fluctuation in active power (at 11:11hrs, ~8 mins later) observed.
6	ACME Chittorgarh Solar Energy Pvt Ltd	Bhadla(PG)	250	220kV ACME Chittorgarh-Bhadla (PG) S/C line	15	17	SCADA data resolution is poor for this plant. Any conclusive inference can't be made based on SCADA data. However, it can be inferred that after removal of TRAS, with active power ramped from 200 MW to 214 MW at 11:59hrs, at the same time reactive power reduced from 33MVAr to 16 MVAr. Such reduction in reduction power may cause low voltage and triggering of oscillation/fluctuation event.
7	Mahindra Renewable Private Limited		250	220kV MRPL-Bhada (PG) S/C line	25	30	Initially no major fluctuation in active power observed but after 12:12 hrs fluctuation of ~25 MW observed. First, plant suddenly reduced the reactive power injection from 33 MVAr to 14 MVAr at 10:58hrs, then fluctuation in reactive power started at 11:04 hrs, with major fluctuation of 30MVAr observed at 11:38hrs.
8	Adani Solar Enegry Four Private Limited		50	220kV Mahoba Solar-Bhadla (PG) line S/C line	42	41	Reactive power fluctuation started at 11:03:34 hrs, with maximum reactive power fluctuation of ~41 MVAr observed at 11:20 hrs. Active power fluctuation started at 11:08:19 hrs, active power was fluctuating in 25MW range, maximum active power fluctuation of ~42 MW observed at 11:20 hrs. It can be inferred that first fluctuation in reactive power observed and then fluctuation in active power (~5 mins later) observed. Further, It can also be infered that, before 11:03hrs plant was injecting 15MVAr but after that reactive power was fluctuating between -10 to +7MVAr, net reduction of ~13MVAr.
	Adani Renewable Energy (RJ) limited Rawara		200				
	Adani Solar Enegry Jodhpur Two Limited, Rawara		50				
9	Azure Maple Pvt. Ltd.		300	220kV Azure Maple Pvt. Ltd.-Bhadla (PG) S/C line	8	64	Reactive power fluctuation started at 11:03:41 hrs, with maximum reactive power fluctuation of ~64 MVAr observed at 11:09 hrs. No major fluctuation observed in active power. Reactive power fluctuation of 32 MVAr started at 11:03 hrs, with maximum fluctuation observed 64 MVAr at 11:09 hrs. Further,
10	Tata Power Renewable Energy Ltd. (TPREL)		300	220kV TPREL-Bhadla (PG) S/C line	108	57	Major fluctuation in Active and Reactive power observed. Reactive power fluctuation/oscillation started at 11:05:01 hrs, with maximum reactive power fluctuation of ~57 MVAr observed at 11:19 hrs. Active power fluctuation started at 11:09:55 hrs, with maximum active power fluctuation of ~108 MW (36% of rated capacity) observed at 11:34 hrs. It can be inferred that first fluctuation in reactive power observed and then fluctuation in active power (~5 mins later) observed.
11	Clean Solar Power (Jodhpur) Pvt. Ltd.		250	220kV CSP(J)PL-Bhadla (PG) S/C line	62	35	Initially no major fluctuation in active power observed but after 11:17 hrs fluctuation of ~48 MW and at 11:21 fluctuation of ~48 MWobserved. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:46 hrs, maximum fluctuation in reactive power ~35 MVAr observed at 11:22 hrs.
	Total capacity_Bhadla(PG)		**3580**				
1	Adani Hybrid Energy Jaisalmer One Ltd.		390	220kV AHEJOL-Fatehgarh-II (PG) D/C line	74	32	Continous fluctuation in Active and Reactive power observed from 11:03 hrs to 11:44 hrs. Active power was fluctuating from 11:04 hrs to 11:44 hrs in range of 275 MW to 370 MW, with maximum fluctuation of 74 MW observed at 11:30 hrs. Reactive power was fluctuating from 11:03 hrs to 11:44 hrs in range of -16 MVAr to 47 MVAr, with maximum fluctuation of 32 MVAr observed at 11:23 hrs.

Annexure-III

Detailed Analysis of 04.02.206 Voltage Oscillation/Fluctuation event							
Sl No.	**RE Plant Name**	**Pooling Station**	**Plant Rated Capacity (MW) as on 04.02.2026**	**Evacuating line**	**Active Power (MW) fluctuation**	**Reactive Power (MVAr) fluctuation**	**Summary of Analysis**
2	Adani Hybrid Energy Jaisalmer Two Ltd.	**Fatehgarh-II(PG)**	300	220kV AHEJ2L-Fatehgarh-II (PG) S/C line	**80**	**68**	Continous fluctuation in Active and Reactive power observed from 11:03 hrs to 11:44 hrs. Active power was fluctuating from 11:06 hrs to 11:44 hrs in range of 200 MW to 280 MW, with maximum fluctuation of 80 MW observed at 11:21 hrs. Reactive power was fluctuating from 11:03 hrs to 11:44 hrs in range of -19 MVAr to 60 MVAr, with maximum fluctuation of 68 MVAr observed at 11:40 hrs.
3	Adani Hybrid Energy Jaisalmer Three Ltd.		300	220kV AHEJ3L-Fatehgarh-II (PG) S/C line	**41**	**39**	Continous fluctuation in Active and Reactive power observed from 11:03 hrs to 11:44 hrs. Active power was fluctuating from 11:04 hrs to 11:44 hrs in range of 218 MW to 260 MW, with maximum fluctuation of 41 MW observed at 11:17 hrs. Reactive power was fluctuating from 11:03 hrs to 11:44 hrs in range of -28 MVAr to 15 MVAr, with maximum fluctuation of 39 MVAr observed at 11:08 hrs.
4	ReNew Solar Urja Private Limited		300	220kV RSUPL-Fatehgarh-II (PG) S/C line	**63**	**65**	Continous fluctuation in Active and Reactive power observed from 11:03 hrs to 11:44 hrs. Active power was fluctuating from 11:04 hrs to 11:44 hrs in range of 172 MW to 277 MW, with maximum fluctuation of 63 MW observed at 11:27 hrs. Reactive power was fluctuating from 11:03 hrs to 11:44 hrs in range of -20 MVAr to 54 MVAr, with maximum fluctuation of 65 MVAr observed at 11:21 hrs.
5	Eden Renewable Cite Private Limited		300	220kV EDEN Renewable-Fatehgarh-II (PG) S/C line	**51**	**33**	Continous fluctuation in Active and Reactive power observed from 11:03 hrs to 11:44 hrs. Initial Active power was fluctuating from 275MW to 300MW which further increase at 11:35 hrs and was fluctuating in range of 268 MW to 319 MW, with maximum fluctuation of 51 MW observed at 11:35 hrs. Reactive power was fluctuating from 11:03 hrs to 11:44 hrs in range of --4 MVAr to 29 MVAr, with maximum fluctuation of 33 MVAr observed at 11:19 hrs.
6	Renew Sun Waves Private Limited (RSEJ4L)		300	220kV RSWPL-Fatehgarh-II (PG) S/C line	**75**	**75**	Continous fluctuation in Active and Reactive power observed from 11:03 hrs to 11:44 hrs. Active power was fluctuating from 11:04 hrs to 11:44 hrs in range of 203 MW to 297 MW, with maximum fluctuation of 75 MW observed at 11:20 hrs. Reactive power was fluctuating from 11:03 hrs to 11:44 hrs in range of -32 MVAr to 59 MVAr, with maximum fluctuation of 75 MVAr observed at 11:21 hrs.
7	Renew Sun Bright Pvt. Ltd. (RSBPL)		300	220kV RSBPL-Fatehgarh-II (PG) S/C line	**22**	**109**	No major fluctuation observed in Active power, maximum fluctuation of 22MW observed in active power at 11:11-11:12 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of -27 MVAr to 64 MVAr, with maximum fluctuation of 109 MVAr observed at 11:22 hrs.
8	ReNew Solar Energy (Jharkhand Three) Private Limited		300	220kV RSEJ3L-Fatehgarh-II (PG) S/C line	**35**	**68**	No major fluctuation observed in Active power, maximum fluctuation of 35 MW observed in active power at 11:04:40 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of -25 MVAr to 61 MVAr, with maximum fluctuation of 68 MVAr observed at 11:11:48 hrs.
9	Adani Solar Energy Jaisalmer One Pvt. Ltd.		450	220kV ASEJ1L-Fatehgarh-II (PG) D/C line	**34**	**66**	No major fluctuation observed in Active power, maximum fluctuation of 34 MW observed in active power at 11:11 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of -38 MVAr to 29 MVAr, with maximum fluctuation of 66 MVAr observed at 11:15 hrs.
10	NTPC Devikot Solar plant_240MW		240	220kV NTPC Devikot-Fatehgarh-II (PG) S/C line	**15**	**23**	No major fluctuation observed in Active power, maximum fluctuation of 15 MW observed in active power at 11:29 hrs. Intermittent fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of 0 MVAr to 21 MVAr, with maximum fluctuation of 23 MVAr observed at 11:18 hrs.
11	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)		180	220kV ASERJ2PL(F-2)-Fatehgarh-II (PG) S/C line	**4**	**30**	No fluctuation observed in Active power, maximum fluctuation of only 4 MW observed in active power at 11:11 hrs. Reactive power suddenly reduced from 68 MVAr to 16 MVAr b/w 11:03:38-11:04:25 hrs, and then Continous fluctuation in Reactive power observed from 11:04 hrs to 11:44 hrs in range of 5 MVAr to 42 MVAr, with maximum fluctuation of 30 MVAr observed at 11:30 hrs.
12	Adani Green Energy Twenty Four Limited		500	220kV AGE24L-Fatehgarh-II (PG) D/C line	**256**	**83**	Intermittent fluctuation observed in Active power, at 11:09 hrs Active power suddenly droped from 466 MW to 210 MW (256 MW drop). Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of 94 MVAr to 198 MVAr, with maximum fluctuation of 83 MVAr observed at 11:23 hrs.
	Total capacity_Fatehgarh-II(PG)		**3860**				
1	Adani Hybrid Energy Jaisalmer Four Ltd.	**Fatehgarh-I (Adani Pooling)**	700	400kV AREPRL-Fatehgarh-I D/C line	**121**	**118**	Active power was fluctuating from 11:08 hrs to 11:44 hrs in range of 760 MW to 889 MW, with maximum fluctuation of 121 MW observed at 11:21 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of -75 MVAr to 52 MVAr, with maximum fluctuation of 118 MVAr observed at 11:33 hrs.
	Nedan Solar NTPC		296				
2	ACME DEOGHAR SOLAR POWER PRIVATE LIMITED		300	400kV ACME Pooling-Fatehgarh-I S/C line	**140**	**244**	Continous fluctuation in Active and Reactive power observed from 11:03 hrs to 11:44 hrs. Initial Active power was fluctuating from 1136 MW to 1207 MW which further increase at 11:38 hrs and was fluctuating in range of 1134 MW to 1274 MW, with maximum fluctuation of 140 MW observed at 11:40 hrs. First reactive power increased from -95 MVAr to 127 MVAr b/w 11:03 hrs -11:04 hrs, then continous fluctuation in Reactive power was fluctuating from 11:04 hrs to 11:44 hrs in range of -100 MVAr to 165 MVAr, with maximum fluctuation of 244 MVAr observed at 11:19 hrs.
	ACME PHALODI SOLAR POWER PRIVATE LIMITED		300				
	ACME RAISAR SOLAR POWER PRIVATE LIMITED		300				
	ACME DHAULPUR SOLAR POWER PRIVATE LIMITED		300				
	Total capacity_Fatehgarh-I (Adani pooling)		**2196**				
1	ACME Heeragarh powertech Pvt. Ltd	**Bhadla-II (PG)**	300	220kV ACME Heergarh-Bhadla-II ((PG) S/C line	**37**	**44**	Initially no major fluctuation observed in active power but after 12:06 hrs fluctuation of ~37 MW observed. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of -24 MVAr to 20 MVAr, with maximum fluctuation of 44 MVAr observed at 11:08 hrs
2	ABC Renewable Pvt. Ltd		300	220kV ABC(RJ-01) Pvt. Ltd.-Bhadla-II ((PG) S/C line	**64**	**141**	Initially no major fluctuation observed in active power but at 11:37 hrs Active power reduced 297 MW to 233 MW (reduction by 64 MW). Further, after 12:05 hrs slight fluctuation (~30 MW) observed in Active power. Reactive power fluctuation is coming even before the event, continous fluctuation in reactive power from -108 MVAr to 33 MVAr can be seen in SCADA plot between 10:38-10:47 hrs, however event started at 11:03 hrs. Plant need to analyse it in detailed whether significant reactive power fluctuation in ABC Renewable (RJ-01) even before the event caused the triggering? Further, continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of -19 MVAr to 33 MVAr, with maximum fluctuation of 57 MVAr observed at 11:37 hrs
3	Mega Surya Urja Pvt. Ltd. (MSUPL)		250	220kV MSUPL-Bhadla-II ((PG) S/C line	**13**	**43**	No major fluctuation observed in Active power, maximum fluctuation of 13 MW observed in active power at 11:12 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs; Fluctuation in range of 25 MVAr to 68 MVAr between 11:03-11:10 hrs and fluctuation in range of -2 MVAr to 35 MVAr between 11:10-11:44 hrs, with maximum fluctuation of 43 MVAr observed at 11:08 hrs
4	NTPC Kolayat_400kV		550	400kV NTPC Kolayat-Bhadla-II (PG) S/C line	**126**	**106**	Intermittent fluctuation observed in Active power, No fluctuation observed till 11:20 hrs, but between 11:20-11:24 hrs fluctuation in active power observed from 519 MW to 393 MW, maximum fluctuation of 126 MW observed at 11:22 hrs. Sudden reduction in Reactive power from 82 MVAr to 17 MVAr at 11:01 hrs, then continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of -40 MVAr to 65 MVAr, with maximum fluctuation of 106 MVAr observed at 11:29 hrs. Further, spike of 178 MVAr observed at 11:40 hrs.
5	Avaada Sunrays Pvt. Ltd.		320	220kV ASEPL-Bhadla-II (PG) S/C line	**7**	**43**	No major fluctuation observed in Active power, maximum fluctuation of 7 MW observed in active power at 11:38 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of 6 MVAr to 57 MVAr, with maximum fluctuation of 43 MVAr observed at 11:11 hrs
6	NTPC Nokhra_300MW		300	220kV NTPC Nokhra-Bhadla-II (PG) S/C line	**13**	**48**	No major fluctuation observed in Active power, maximum fluctuation of 13 MW observed in active power at 11:32 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of -18 MVAr to 39 MVAr, with maximum fluctuation of 48 MVAr observed at 11:15 hrs
7	Rising Sun Energy-K Pvt. Ltd.		190	220kV RSEKPL-Bhadla-II (PG) S/C line	**9**	**38**	No fluctuation observed in Active power, maximum fluctuation of only 9 MW observed in active power at 11:11 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of 1 MVAr to 46 MVAr, with maximum fluctuation of 38 MVAr observed at 11:07 hrs
8	AMP Energy Green Six Pvt. Ltd.		100	220kV AEGPL-Bhadla-II (PG) S/C line	**5**	**16**	No fluctuation observed in Active power, maximum fluctuation of only 5 MW observed in active power at 11:07 hrs. Sudden reduction in Reactive power from 47 MVAr to 21 MVAr at 10:58-11:00 hrs, then continous fluctuation in Reactive power observed from 11:04 hrs to 11:44 hrs in range of 9 MVAr to 29 MVAr, with maximum fluctuation of 16 MVAr observed at 11:10 hrs.
	AMP Energy Green Five Pvt. Ltd.		100				
	AMP Energy Green Four Pvt. Ltd.		100				
9	ADANI GREEN ENERGY TWENTY FIVE LIMITED		500	400kV AGE25L-Bhadla-II (PG) S/C line	**25**	**68**	No major fluctuation observed in Active power, maximum fluctuation of 25 MW observed in active power at 11:37 hrs. Reduction in Reactive power from 81 MVAr to 32 MVAr at 11:08-11:09 hrs, then Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of -20 MVAr to 58 MVAr, with maximum fluctuation of 68 MVAr observed at 11:18 hrs
	Adani Solar Energy Jodhpur Six Pvt. Ltd.		50				
10	NTPC Nokh Solar		735	220kV NTPC Nokh-Bhadla-II (PG) S/C line	**13**	**80**	No fluctuation observed in Active power, maximum fluctuation of only 13 MW observed in active power at 11:22 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of 60 MVAr to 150 MVAr, with maximum fluctuation of 80 MVAr observed at 11:19 hrs

Annexure-III

Detailed Analysis of 04.02.206 Voltage Oscillation/Fluctuation event							
Sl No.	**RE Plant Name**	**Pooling Station**	**Plant Rated Capacity (MW) as on 04.02.2026**	**Evacuating line**	**Active Power (MW) fluctuation**	**Reactive Power (MVAr) fluctuation**	**Summary of Analysis**
11	Gorbea Solar Pvt Ltd		300	220kV Gorbea Solar-Bhadla-II (PG) S/C line	**14**	-	No major fluctuation observed in Active power, maximum fluctuation of 14 MW observed in active power at 11:12 hrs. Reactive power data is flat zero (suspected)
12	Eden Renewable Alma Pvt. Ltd.		300	220kV ERAPL-Bhadla-II (PG) S/C line	**16**	**28**	No major fluctuation observed in Active power, maximum fluctuation of 16 MW observed in active power at 11:12 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of --2 MVAr to 24 MVAr, with maximum fluctuation of 28 MVAr observed at 11:09 hrs
	Total capacity_Bhadla-II(PG)		**4395**				
1	One Volt energy Pvt. Ltd.		100	220kV GEPL-Bikaner-II (PG) S/C line	**5**	**28**	No fluctuation observed in Active power, maximum fluctuation of only 5 MW observed in active power at 11:14 hrs. Continous fluctuation in Reactive power observed from 11:04 hrs to 11:44 hrs in range of -3 MVAr to 37 MVAr, with maximum fluctuation of 28 MVAr observed at 11:22 hrs.
	Amplus Ages Private Limited		100				
	Grian Energy private limited		100				
2	Adept Renewable Technologies Pvt. Ltd.		110	220kV Prerak Green Tech Pvt.Ltd.-Bikaner-II (PG) S/C line	-	**31**	No conclusive inference can be made as SCADA data resolution is poor for this plant. However, no No fluctuation observed in Active power. Sudden reduction in Reactive power from 99 MVAr to 14 MVAr at 10:54-10:55 hrs, then continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of -4 MVAr to 32 MVAr, with maximum fluctuation of 31 MVAr observed at 11:11 hrs.
	TRANSITION ENERGY SERVICES PRIVATE LIMITED		60				
	TRANSITION CLEANTECH SERVICES PRIVATE LIMITED		24				
	Transition Sustainable Energy Services Private Limited		50				
	Transition Green Energy Private Limited		100				
	Transition Sustainable Energy Services One Pvt Ltd		56				
3	Banderwala Solar Plant TP Surya Ltd.		300	220kV Banderwala TPSL-Bikaner-II (PG) S/C line	**14**	**18**	No major fluctuation observed in Active power, maximum fluctuation of 14 MW observed in active power at 11:12 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs; Fluctuation in range of 43 MVAr to 61 MVAr between 11:03-11:09, then plant reduced the reactive power from 61 MVAr to 21 MVAr at 11:09 hrs and to 10 MVAr at 11:23 hrs with reactive power fluctuation in range of 1 MVAr to 15 MVAr between 11:23-11:44 hrs, with maximum fluctuation of 18 MVAr observed at 11:07 hrs
4	Serentica Renewables India 4 Private Limited	**Bikaner-II (PBTSL)**	168	220kV SRIPL-Bikaner-II (PG) S/C line	**7**	**16**	No fluctuation observed in Active power, maximum fluctuation of only 7 MW observed in active power at 11:10 hrs. Sudden reduction in Reactive power from 81 MVAr to 20 MVAr at 11:00-11:01 hrs, then continous fluctuation in Reactive power observed from 11:04 hrs to 11:44 hrs in range of 16 MVAr to 47 MVAr, with maximum fluctuation of 16 MVAr observed at 11:10 hrs.
	Serentica Renewables India 5 Private Limited		232				
5	JUNIPER GREEN COSMIC PRIVATE LIMITED		100	220kV Juniper-Bikaner-II (PG) S/C line	**16**	**9**	No major fluctuation observed in Active power, maximum fluctuation of 16 MW observed in active power at 11:41 hrs Continous fluctuation in Reactive power observed from 11:04 hrs to 11:44 hrs, with maximum fluctuation of 9 MVAr observed at 11:10 hrs.
	JUNIPER NIRJARA ENERGY PRIVATE LIMITED		50				
6	SJVNL Solar Project		888	400kV SJVNL-Bikaner-II (PG) S/C line	**9**	**122**	No fluctuation observed in Active power, maximum fluctuation of only 9 MW observed in active power at 11:38 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of -35 MVAr to 118 MVAr, with maximum fluctuation of 122 MVAr observed at 11:37 hrs.
7	Karinsar Solar Plant NHPC Ltd		300	220kV NHPC-Bikaner-II (PG) S/C line	**10**	**54**	No fluctuation observed in Active power, maximum fluctuation of only 10 MW observed in active power at 11:23 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of -24 MVAr to 44 MVAr, with maximum fluctuation of 54 MVAr observed at 11:06 hrs.
8	ACME Sikar Solar Power Pvt. Ltd.		300	220kV ACME Sikar-Bikaner-II (PG) S/C line	-	-	Data Not available
9	Juna Renewable Energy Pvt. Ltd.		335	220kV JREPL-Bikaner-II (PG) S/C line	-	-	Data Not available
10	Khidrat Renewable Energy Pvt. Ltd.		300	220kV KREPL-Bikaner-II (PG) S/C line	**7**	**15**	No fluctuation observed in Active power, maximum fluctuation of only 7 MW observed in active power at 11:12 hrs. Sudden reduction in Reactive power from 74 MVAr to 21 MVAr at 10:54-10:55 hrs, then continous fluctuation in Reactive power observed from 11:03 hrs to 11:44 hrs in range of 13 MVAr to 28 MVAr, with maximum fluctuation of 15 MVAr observed at 11:08 hrs.
11	Renew Dinkar Urja Private Limited		200	220kV RDUPL-Bikaner-II (PG) S/C line	-	-	Data Not available
	Total capacity_Bikaner-II		**3873**				
1	Altra Xergi Pvt. Ltd.		380	220kV AXPPL-Fatehgarh-III S/C line	**10**	**62**	No fluctuation observed in Active power, maximum fluctuation of only 10 MW observed in active power at 11:11 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:28 hrs in range of -33 MVAr to 49 MVAr, with maximum fluctuation of 62 MVAr observed at 11:11 hrs. It seems that SCADA data is freezed from 11:28-11:41 hrs and dip in Active power to Zero '0" value at 11:41 hrs for all the RE plants connected at Fatehgarh-III is also suspected.
2	Renew Surya Vihan Pvt. Ltd.		100	220kV RSVPL-Fatehgarh-III S/C line	-	**13**	No fluctuation observed in Active power, but momentraly dip from 98 MW to 0 W observed at 11:41:08 hrs which recovered immediately, is 98 MW dip actual dip observed or it is data issue? Continous fluctuation in Reactive power observed from 11:03 hrs to 11:28 hrs in range of -5 MVAr to 12 MVAr, with maximum fluctuation of 13 MVAr observed at 11:41 hrs. It seems that SCADA data is freezed from 11:28-11:41 hrs and dip in Active power to Zero '0" value at 11:41 hrs for all the RE plants connected at Fatehgarh-III is also suspected.
	Renew Surya Partap Pvt. Ltd.		200				
3	Renew Surya Ayaan Pvt. Ltd.		300	220kV RSAPL-Fatehgarh-III S/C line	**92**	**36**	Active power was fluctuating from 11:05 hrs and droped from 276 MW to 184 MW in 11:08-11:11 hrs. Reactive power injection reduced from 69 MVAr (at 10:55hrs) to 15 MVAr (10:59 hrs), Further, continous fluctuation in Reactive power observed from 11:04 hrs to 11:28 hrs in range of -14 MVAr to 42 MVAr, with maximum fluctuation of 36 MVAr observed at 11:22 hrs. It seems that SCADA data is freezed from 11:28-11:41 hrs and dip in Active power to Zero '0" value at 11:41 hrs for all the RE plants connected at Fatehgarh-III is also suspected.
4	Renew Surya Roshni Pvt. Ltd.	**Fatehgarh-III**	400	220kV Renew Roshni-Fatehgarh-III S/C line	**7**	**96**	No fluctuation observed in Active power, maximum fluctuation of only 7 MW observed in active power at 11:15 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:28 hrs in range of -54 MVAr to 55 MVAr, with maximum fluctuation of 96 MVAr observed at 11:11 hrs. It seems that SCADA data is freezed from 11:28-11:41 hrs and dip in Active power to Zero '0" value at 11:41 hrs for all the RE plants connected at Fatehgarh-III is also suspected.
5	Neemba Solar Plant Renew Surya Vihaan Pvt. Ltd.		200	220kV Renew Jyoti-Fatehgarh-III S/C line	-	-	Data Not available
	Renew Surya Jyoti Pvt. Ltd.		210				

Annexure-III

Detailed Analysis of 04.02.206 Voltage Oscillation/Fluctuation event							
Sl No.	**RE Plant Name**	**Pooling Station**	**Plant Rated Capacity (MW) as on 04.02.2026**	**Evacuating line**	**Active Power (MW) fluctuation**	**Reactive Power (MVAr) fluctuation**	**Summary of Analysis**
6	XL Xergi Power Pvt. Ltd.		400	220kV XXPPL-Fatehgarh-III S/C line	**5**	**38**	No fluctuation observed in Active power, maximum fluctuation of only 5 MW observed in active power at 11:08 hrs. Reactive power fluctuation is coming even before the event, continous fluctuation in reactive power from 70 MVAr to 128 MVAr can be seen in SCADA plot between 10:30-10:33 hrs, however event started at 11:03 hrs. Plant need to analyse it in detailed whether significant reactive power fluctuation in ABC Renewable (RJ-01) even before the event caused the triggering? Further, continous fluctuation in Reactive power observed from 11:03 hrs to 11:28 hrs in range of 9 MVAr to 27 MVAr. It seems that SCADA data is freezed from 11:28-11:41 hrs and dip in Active power to Zero '0" value at 11:41 hrs for all the RE plants connected at Fatehgarh-III is also suspected.
7	Energizent Power Private Limited		69	220kV EPPL-Fatehgarh-III S/C line	**5**	**3**	No fluctuation observed in Active power, maximum fluctuation of only 5 MW observed in active power at 11:08 hrs. Slight fluctuation in Reactive power observed from 11:03 hrs to 11:28 hrs in range of 2 MVAr to 6 MVAr, with maximum fluctuation of 3 MVAr observed at 11:08 hrs. It seems that SCADA data is freezed from 11:28-11:41 hrs and dip in Active power to Zero '0" value at 11:41 hrs for all the RE plants connected at Fatehgarh-III is also suspected.
8	ABC Renewable Energy (RJ-02) Pvt. Ltd.		400	220kV ABCR (RJ-02) PL-Fatehgarh-III S/C line	**19**	**35**	No major fluctuation observed in Active power, maximum fluctuation of 19 MW observed in active power at 11:07 hrs. Continous fluctuation in Reactive power observed from 11:03 hrs to 11:28 hrs in range of -21 MVAr to 32 MVAr, with maximum fluctuation of 35 MVAr observed at 11:08 hrs. It seems that SCADA data is freezed from 11:28-11:41 hrs and dip in Active power to Zero '0" value at 11:41 hrs for all the RE plants connected at Fatehgarh-III is also suspected.
	Total capacity_Fatehgarh-III		**2659**				
	Total NR ISTS_Rajasthan (Large)		**24138**				

PMU Data Availability of RE plants in Northern Region from October to December 2025						
S.No	**Connected at**	**Name of SPPD/Generator**	**Installed Capacity (MW)**	**SubstationId**	**DeviceId**	**PMU Data Availability (%)**
1	400 kV Bhadla I (PG)	Adani Solar Enegry Jodhpur Two Limited, Rawara	50	RAWRA_IP	220BHDLARAWRA1	99
2	400 kV Bhadla I (PG)	Adani Solar Enegry Four Private Limited	50			
3	400 kV Bhadla I (PG)	Adani Renewable Energy (RJ) limited Rawara	200			
4	400 kV Bhadla I (PG)	Mahindra Renewable Private Limited (MRPL)	250	MRPL_IP	220BHDLAMRPL_1	79
5	400 kV Bhadla I (PG)	Azure Power Maple Pvt. Limited (AZRMP)	300	AZRMP IP	220AZRMPBHDLA1	99
6	400 kV Bhadla I (PG)	ACME Chittorgarh Solar Energy Pvt. Ltd (ACME)	250	ACME IP	220ACME_BHDLA1	48
7	400 kV Bhadla I (PG)	Azure Power Forty One Private Limited (AZR41)	300	AZR41 IP	220AZR41BHDLA1	82
8	400 kV Bhadla I (PG)	RENEW SOLAR POWER Pvt. Ltd. Bhadla	50	AREPR IP	220AREPRBHDLA1	99
9	400 kV Bhadla I (PG)	AZURE POWER INDIA Pvt. Ltd., Bhadla	200	AREPR_IP_Azure	220AREPRBHDLA1	99
10	400 kV Bhadla I (PG)	TPREL (Chhayan)	300	TPREL IP	220BHDLATPREL1	96
11	400 kV Bhadla I (PG)	SB ENERGY FOUR PRIVATE LIMTED, Bhadla	200	SURJA IP_SB	220BHDLASURJA1	98
12	400 kV Bhadla I (PG)	Clean Solar Power (Bhadla) Pvt. Ltd	300	SURJA IP_Clean	220BHDLASURJA2	98
13	400 kV Bhadla I (PG)	Azure Power Thirty Four Pvt. Ltd.	130	APTFL IP	220APTFLBHDLA1	99
14	400 kV Bhadla I (PG)	Clean Solar Power (Jodhpur) Pvt. Ltd.	250	CSPJP IP	220BHDLACSPJP1	78
15	400 kV Bhadla I (PG)	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)	150	ESELM_IP	220ESELMESLN11+220ESELMESLN21	97
15	401 kV Bhadla I (PG)	Ambuja Cements Limited	300			
15	400 kV Bhadla I (PG)	Essel Saurya Urja Company of Rajasthan Limited (ESURL)	300			

Status of RE Plants at 765 kV Bhadla 2 (PG)						
S.No	**Connected at**	**Name of SPPD/Generator**	**Installed Capacity (MW)**	**PMU Code**	**DeviceId**	**PMU Data Availability (%)**
1	765 kV Bhadla 2 (PG)	Mega Suryaurja Private Limited (MSUPL)	250	MSUPL IP	220BHDL2MSUPL1	0
2	766 kV Bhadla 2 (PG)	ACME Heergarh Powertech Private Limited (AHPPL)	300	AHPPL IP	220AHPPLBHDL21	97
3	767 kV Bhadla 2 (PG)	ABC Renewable Energy (RJ-01) Private Limited (ABCRL)	300	ABCRL IP	220ABCRLBHDL21	94
4	768 kV Bhadla 2 (PG)	NTPC Kolayat_1	550	SKBSL_NT	400BHDLASKBSL1	45
5	769 kV Bhadla 2 (PG)	NTPC Kolayat 2		SKBS2_NT	400SKBS2SKBSL1	4
6	770 kV Bhadla 2 (PG)	Avaada Sunrays Pvt. Ltd.	320	ASEPL_IP	220ASEPLBHDL21	96
7	771 kV Bhadla 2 (PG)	NTPC Nokhra	300	Nokra_NT	220BHDL2NOKRA1	81
8	772 kV Bhadla 2 (PG)	Rising Sun Energy-K Pvt. Ltd.	190	RSEKPL_IP	220BHDL2RSEPL1	0
9	777 kV Bhadla 2 (PG)	AMP Energy Green Six Pvt. Ltd.	100	AEGPL_IP	220AEGPLBHDL21	81

PMU Data Availability of RE plants in Northern Region from October to December 2025

Status of RE Plants at 765 kV Bikaner (PG)

S.No	Connected at	Name of SPPD/Generator	Installed Capacity (MW)	PMU Code	DeviceId	PMU Data Availability (%)
1	765 kV Bikaner (PG)	Avaada RJHN 240MW	240	AVADA_IP	400AVADABKNR71	98
2	766 kV Bikaner (PG)	Avaada sunce energy Pvt limited	350			
3	767 kV Bikaner (PG)	Avaada Sustainable RJ Pvt. Ltd.	300			
4	768 kV Bikaner (PG)	Ayana Renewable Power	300	AYANA_IP	400AYANABKNR71	98
7	771 kV Bikaner (PG)	Azure Power Forty Three Pvt. Ltd._RSS	300	AZR43_IP	400AZR43BKNR71	0
9	773 kV Bikaner (PG)	Adani Solar Energy Jaisalmer Two Private Limited Project Two	150	SPCEP_IP	220BKNR7SPCEP1	98
10	774 kV Bikaner (PG)	Thar Surya 1 Private Limited (TS1PL)	300	TS1PL_IP	220BKNR7TS1PL1	50
11	775 kV Bikaner (PG)	Renew Surya Ravi Private Limited Bikaner (RSRPL)	300	RSRPL_IP	400BIKNRRSRPL1	87
12	776 kV Bikaner (PG)	Renew Solar Power Pvt Ltd, Bikaner (250MW) (BIKNP)	250	BIKNR_IP	400BIKNRBIKNR1	97
14	778 kV Bikaner (PG)	Tata Power Green Energy Ltd. (TPGEL)	225	TPGEL_IP	220BKNR7TPGEL1	96

Status of RE Plants at 400 kV Fatehgarh (Adani)

S.No	Connected at	Name of SPPD/Generator	Installed Capacity (MW)	PMU Code	DeviceId	PMU Data Availability (%)
1	400 kV Fatehgarh (Adani)	SINGRAULI SOLAR PV POWER STATION (SPRJ) - Nedan Solar NTPC	296	SPRJ_NT	220AFSPSSPRJ_1	89
2	401 kV Fatehgarh (Adani)	Adani Solar Park PSS-1 (ASPS1)	700	ASPS1_IP	220AFSPSASPS11+220AFSPSASPS21+220AFSPSAWPS11+220AFSPSAWPS21	89
3	402 kV Fatehgarh (Adani)	Adani Solar Park PSS-2 (ASPS2)	-	ASPS2_IP	220AFSPSASPS11+220AFSPSASPS21+220AFSPSAWPS11+220AFSPSAWPS21	87
4	403 kV Fatehgarh (Adani)	Adani Wind Park PSS-3 (AWPS1)	-	AWPS1_IP	220AFSPSASPS11+220AFSPSASPS21+220AFSPSAWPS11+220AFSPSAWPS21	74
5	404 kV Fatehgarh (Adani)	Adani Wind Park PSS-4 (AWPS2)	-	AWPS2_IP	220AFSPSASPS11+220AFSPSASPS21+220AFSPSAWPS11+220AFSPSAWPS21	86
6	405 kV Fatehgarh (Adani)	ACME DEOGHAR SOLAR POWER PRIVATE LIMITED	300	ASHPL_IP	400ASHPLFTHGR1	83
7	406 kV Fatehgarh (Adani)	ACME PHALODI SOLAR POWER PRIVATE LIMITED	300			
8	407 kV Fatehgarh (Adani)	ACME RAISAR SOLAR POWER PRIVATE LIMITED	300			
9	408 kV Fatehgarh (Adani)	ACME DHAULPUR SOLAR POWER PRIVATE LIMITED	300			

PMU Data Availability of RE plants in Northern Region from October to December 2025

Status of RE Plants at 765 kV Fatehgarh II (PG)

S.No	Connected at	Name of SPPD/Generator	Installed Capacity (MW)	PMU Code	DeviceId	PMU Data Availability (%)
1	765 kV Fatehgarh II (PG)	Renew Sun Bright Private Limited (RSBPL)	300	RSBPL_IP	220FTGR2RSBPL1	97
2	766 kV Fatehgarh II (PG)	Adani Hybrid Energy Jaisalmer Two Limited (AHEJ2)	300	AHEJ2_IP	220AHEJ2FTGR21	97
3	767 kV Fatehgarh II (PG)	Adani Hybrid Energy Jaisalmer Two Limited (AHEJ2): Wind	0			
4	768 kV Fatehgarh II (PG)	Adani Hybrid Energy Jaisalmer Three Limited (AHEJ3)	300	AHEJ3_IP	220AHEJ3FTGR21	78
5	769 kV Fatehgarh II (PG)	Adani Hybrid Energy Jaisalmer Three Limited (AHEJ3): Wind	0			
6	770 kV Fatehgarh II (PG)	Adani Hybrid Energy Jaisalmer One Limited (ADNHB)	390	ADNHB_IP	220ADNHBFTGR21	88
7	771 kV Fatehgarh II (PG)	Adani Hybrid Energy Jaisalmer One Limited (ADNHB): Wind	0	ADNHB_IP	220ADNHBFTGR22	88
8	772 kV Fatehgarh II (PG)	Adani Solar Energy Jaisalmer one Limited: Solar (ckt 1)	450	ASJ1S_IP_Ckt1	220ASJ1SFTGR21	81
9	773 kV Fatehgarh II (PG)	Adani Solar Energy Jaisalmer one Limited: Solar (ckt II)	0	ASJ1S_IP_Ckt2	220ASJ1SFTGR22	81
10	774 kV Fatehgarh II (PG)	Eden Renewable Cite Private Limited (EDEN)	300	EDEN_IP	220EDEN_FTGR21	98
11	775 kV Fatehgarh II (PG)	ReNew Solar Energy Jharkhand Three Pvt. Ltd (RJ3PL)	300	RJ3PL_IP	220FTGR2RJ3PL1	98
12	776 kV Fatehgarh II (PG)	ReNew Solar Urja Private Limited(RSUPL)	300	RSUPL_IP	220FTGR2RSUPL1	64
13	777 kV Fatehgarh II (PG)	ReNew Sun Waves Private Limited, Fatehgarh-II (RNEWJ)	300	RNEWJ_IP	400FTGR2RNEWJ1	94
14	778 kV Fatehgarh II (PG)	NTPC Devikot Solar Plant	240	DVKOT_NT	220DVKOTFTGR21	98
15	779 kV Fatehgarh II (PG)	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)	180	ASER2_IP	220ASER2FTGR21	85
16	780 kV Fatehgarh II (PG)	Adani Green Energy Twenty Four Limited	500	AGE24_IP	220AGE24FTGR21	79

Status of RE Plants at 765 kV Fatehgarh III (PG)

S.No	Connected at	Name of SPPD/Generator	Installed Capacity (MW)	PMU Code	DeviceId	PMU Data Availability (%)
1	Fatehgarh III (PG)	Altra Xergi Pvt. Ltd.	380	AXPPL_IP	220AXPPLFTGR31	91
2	Fatehgarh III (PG)	Renew Surya Vihan Pvt. Ltd.	100	RSVPL_IP	220FTGR3RERSH1	0
3	Fatehgarh III (PG)	Renew Surya Partap Pvt. Ltd.	200		220FTGR3RSAPL1	0
4	Fatehgarh III (PG)	Renew Surya Ayaan Pvt. Ltd.	300	RSAPL_IP	220FTGR3RSAPL1	68
5	Fatehgarh III (PG)	Renew Surya Roshni Pvt. Ltd.	400	RERSH_IP	220FTGR3RERSH1	87
6	Fatehgarh III (PG)	Neemba Solar Plant Renew Surya Vihaan Pvt. Ltd.	200	NRVPL_IP	220NRVPLRSJPL1	44
7	Fatehgarh III (PG)	Renew Surya Jyoti Pvt. Ltd.	210	RSJPL_IP	220FTGR3RSJPL1	98
8	Fatehgarh III (PG)	XL Xergi Power Pvt. Ltd.	400	XXPPL_IP	220FTGR3XXPPL1	84
9	Fatehgarh III (PG)	Energizent Power Private Limited	69	EPPL__IP	220EPPL_FTGR31	97
10	Fatehgarh III (PG)	ABC Renewable Energy (RJ-02) Pvt. Ltd.	340	ABC02_IP	220ABC02FTGR31	0

PMU Data Availability of RE plants in Northern Region from October to December 2025

Status of RE Plants at 765 kV Bikaner-II (PG)

S.No	Connected at	Name of SPPD/Generator	Installed Capacity (MW)	PMU Code	DeviceId	PMU Data Availability (%)
1	Bikaner-II (PG)	One Volt energy Pvt. Ltd.	110	GEPL_IP	220BKNR2GEPL_1	79
2	Bikaner-II (PG)	Amplus Ages Private Limited	60			
3	Bikaner-II (PG)	Grian Energy private limited	24.4			
4	Bikaner-II (PG)	Adept Renewable Technologies Pvt. Ltd.	50	PGPL_IP	220BKNR2PGPL_1	72
5	Bikaner-II (PG)	TRANSITION ENERGY SERVICES PRIVATE LIMITED	100			
6	Bikaner-II (PG)	TRANSITION CLEANTECH SERVICES PRIVATE LIMITED	55.6			
7	Bikaner-II (PG)	Transition Sustainable Energy Services Private Limited	50			
8	Bikaner-II (PG)	Transition Green Energy Private Limited	100			
9	Bikaner-II (PG)	Transition Sustainable Energy Services One Pvt Ltd	55.6			
10	Bikaner-II (PG)	Banderwala Solar Plant TP Surya Ltd.	300	TPSB_IP	220BKNR2TPSB_1	86
11	Bikaner-II (PG)	Serentica Renewables India 4 Private Limited	168	SRI4P_IP	220SRI4PSRI4P1	87
12	Bikaner-II (PG)	Serentica Renewables India 5 Private Limited	232			
13	Bikaner-II (PG)	JUNIPER GREEN COSMIC PRIVATE LIMITED	100	JGCPL_IP	220BKNR2JGCPL1	59
14	Bikaner-II (PG)	JUNIPER NIRJARA ENERGY PRIVATE LIMITED	50			
15	Bikaner-II (PG)	SJVNL Solar Project	888	SGEL__IP	400BKNR2SGEL_1	98
16	Bikaner-II (PG)	Karinsar Solar Plant NHPC Ltd	300	KBNHP_IP	220BKNR2KBNHP1	66
17	Bikaner-II (PG)	ACME Sikar Solar Pvt. Ltd.	300	ASSPL_IP	220ASSPLBKNR21	0
18	Bikaner-II (PG)	Juna Renewable Energy Pvt. Ltd.	335	JREPL_IP	220BKNR2JREPL1	0
19	Bikaner-II (PG)	Khidrat Renewable Energy Pvt. Ltd.	300	KREPL_IP	220BKNR2KREPL1	0

Annexure-XIII

Grid Event summary for January-February 2026

S.No.	Category of Grid Incident/ Disturbance (GI-I to GD-V)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Duration (hh:mm)	Event (As reported)	Loss of generation / loss of load during the Grid Disturbance		Fault Clearance time (in ms)	Remarks
					Date	Time	Date	Time			Generation Loss(MW)	Load Loss (MW)		
1	GD-1	1) 220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt 2) 220 KV Debari(RS)-RAPS_B(NP) (PG) Ckt 3) 220/132kV 50 MVA ICT-1 at Debari(RS) 4) 220/132kV 160 MVA ICT-3 at Debari(RS) 5) 220/132kV 160 MVA ICT-4 at Debari(RS) 6) 220/132kV 100 MVA ICT-5 at Debari(RS)	Rajasthan	RVPNL, NPCIL	4-Jan-26	07:02	4-Jan-26	07:15	00:13	i)220/132kV Debari(RS) has double main and transfer bus scheme at 220kV level. ii)As reported, at 06:04 hrs, 220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt tripped on Y-N phase to earth fault with fault distance of 103.8 km and fault current of 1.02 kA from Debari(RS) end and fault distance of 97.18 km and fault current of 1.835 kA from RAPS_A(NP) end. iii)As further reported, at 07:02 hrs, during charging attempt of 220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt, bus bar protection mal-operated at 220kV Debari(RS) which resulted in tripping of all 220/132kV ICTs also. Complete blackout occurred at 220/132kV Debari(RS). iv)Supply to following area were disturbed during this event: a)132 KV GSS Dakankotra w.e.f. 07:02 to 07:45 hrs (43 mins) (Along with railway Feeder at Dakan Kotra) b)132 KV GSS Bhatewar w.e.f. 07:02 to 08:18 hrs (16mins) c)132 KV GSS Mavli w.e.f. 07:02 to 07:27 hrs (25 mins) (Along with railway Feeder at Mavli(29min)) d)132 KV HZL feeder and 132 KV UCW feeder and Local w.e.f. 07:02 to 07:42hrs (40 mins) feeders v)As per PMU at RAPP_C(NP), no fault was observed in the system. vi)As per SCADA change in demand of approx. 124 MW in Rajasthan control area was observed. vii)Supply was taken from 220 kV Debari-Amberi (PG) Ckt at 07:15hrs. 220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt was charged after replacement of disc string fail at TL-306 (Y Phase).	0	124	NA	The exact reason of bus bar protection mal-operation and DR/EL of all the tripping elements may be shared from both ends. The remedial action taken may be shared.
2	GD-1	1) 220 KV Fatehgarh_II(PG)-AHEJ3L PSS HB_FGRAH_PG (AHEJ3L) (AHEJ3L) Ckt	Rajasthan	AHEJ3L, PGCIL	11-Jan-26	10:36	11-Jan-26	14:25	03:49	i)Generation of 220kV AHEJ3L(IP) station evacuates through 220KV Fatehgarh_II(PG)-AHEJ3L PSS HB_FGRAH_PG (AHEJ3L) (AHEJ3L) Ckt-1. ii)During antecedent condition, 220kV AHEJ3L(IP) station was generating approx. 264 MW (as per SCADA). iii)As reported, at 10:36 hrs, 220 KV Fatehgarh_II(PG)-AHEJ3L PSS HB_FGRAH_PG (AHEJ3L) (AHEJ3L) Ckt-1 tripped on Y-N phase to earth fault with fault current of 1.08kA from AHEJ3L end (exact nature, location and reason of fault yet to be shared) which led to complete blackout out of 220kV AHEJ3L(IP) S/s. iv)As per PMU at Fatehgarh2(PG), Y-N phase to earth fault was observed with fault clearing time of 80ms. Voltage dipped upto 0.943 pu during fault. v)As per PMU, solar generation loss of approx. 264 MW was observed at AHEJ3L(IP).	264	0	120	The exact reason of fault, location and DR/EL along with tripping report may be shared from both ends. Availability and healthiness of SCADA data need to be ensured. The remedial action taken may be shared.
3	GD-1	1) 400 KV Bassi(PG)-Phagi(RS) (PG) Ckt-1 2) 765 KV Bhadla_2 (PG)- Fatehgarh_II(PG) (PBTL) Ckt-3 3) 220 KV Fatehgarh_III(PG)- RSAPL_SL_FTHG3_PG (RENEW SURYA AAYAN PRIVATE LIMITED) Ckt-1 4) 700 MW RAPS D unit--1	Rajasthan	RVPNL, PGCIL, RSAPL, NPCIL	14-Jan-26	13:38	14-Jan-26	14:31	00:53	i)As reported, at 13:38 hrs, 400kV Bassi-Phagi ckt-2 tripped on R-Y fault. Fault occurred due to kite thread. As per PMU plot of phase current of line at Bassi(PG), R-Y fault which cleared within 100 msec is observed. ii)On this fault during voltage dip, significant dip in RE generation observed which further led to the overvoltage in transmission network. iii)Due to this overvoltage, 765 KV Bhadla2-Fatehgarh2 ckt-3 tripped on overvoltage stage-1. As per PMU plot of phase voltage of line at Fatehgarh2(PG), overvoltage upto Vph:469kV, ~1.06 pu is observed. At the same time, 220 KV Fatehgarh_III(PG)-RSAPL(RENEW SURYA AAYAN PRIVATE LIMITED) Ckt also tripped on overvoltage and RAPS-D unit-1 tripped due to turbine trip during grid disturbance. (Exact reason of RAPS-D unit tripping is yet to be received). Tripping of 220kV RSAPL RE station on overvoltage needs to be reviewed. iv)As per SCADA, total drop of approx. 1680 MW NR RE generation observed during the event. Out of which ~300 MW lost due to tripping of RSAPL RE station and ~100 MW at APTFL, ~90 MW at Devikot, ~50 MW at AHEJ4L, ~85 MW at TPGEL, ~180 MW ASEJ2L, ~82 MW at ARTPL and ~135 MW at MSUPL affected due to suspected LVRT/HVRT non-compliance during the event. Additionally, loss of ~600 MW nuclear generation observed at RAPS-D due to tripping of RAPS-D unit-1.	2281	0	80	Root cause analysis and LVRT behaviour of such RE stations may be reviewed. Cause of tripping of 220kV RSAPL and Renew Dinkar RE generators may be shared. As per protection philosophy, over-voltage protection has to be kept OFF at 220kV level. DR/EL and voltage protection setting of RSAPL & RDUPL RE stations may be shared. Tripping of 765kV feeders from Bhadla-2 may be reviewed. DR/EL and tripping analysis of these lines may be shared. The remedial action taken may be shared.
4	GD-1	1) 765 KV Sikar_2(PSTL)-Aligarh(PG) (PASTL) Ckt-1 2) 220 KV Renew_Dinkar-Bikaner_2 (PBTSL) (Renew Dinkar_UPL Ckt-1 3) 400 KV ACME_Deoghar_Ftgh1(PG)- Fatehgarh Pooling(FBTL) Ckt-1 4) 765 KV Bikaner-Bhadla_2 (PG) Ckt-1 5) 765 KV Bhadla_2 (PG)- Fatehgarh_II(PG) (PBTL) Ckt-4 6) 400 KV Bikaner(PG)-Bikaner RENEW Solar(RENEW) (Renew Power) Ckt 7) 400 KV Renew SuryaRavi (RSRPL)- Bikaner RENEW Solar(RENEW) Ckt-1 8) 765 KV Bhadla_2 (PG)- Fatehgarh_II(PG) (PFTL) Ckt-1 9) 765 KV Ajmer-Bhadla_2 (PG) Ckt-1 10) 765 KV Bhiwani(PG)-Narela(PNTL) (PNTL) Ckt-1	Rajasthan	PGCIL, RDUPL, ACME, RENEW, RSRPL	14-Jan-26	14:05	14-Jan-26	15:43	01:38	i)As reported, at 14:05 hrs, 765kV Sikar2-Aligarh ckt-1 tripped on R-Y-B three phase fault. Fault occurred due to kite thread. As per PMU plot of phase current of line at Sikar2(PG), R-Y-B three phase fault which cleared within 100 msec is observed. ii)On this fault during voltage dip, significant dip in RE generation observed which further led to the overvoltage in transmission network. iii)Due to this overvoltage, 765kV Fatehgarh2-Bhadla2 ckt-1 & 4, 765kV Bikaner-Bhadla2 ckt-1, 765kV Bhadla2-Ajmer ckt-1, 765kV Bhiwani-Narela ckt, 400kV Fatehgarh1-ACME Pool ckt, 400kV Bikaner(PG)-Bikaner Renew Solar ckt, 400kV Bikaner Renew Solar-Renew Surya Ravi ckt and 220kV Bikaner2(PG)-Renew Dinkar ckt tripped tripped on overvoltage stage-1. As per PMU plot of phase voltage of line, Vph: 475kV (1.075 pu) at Bhadla2(PG) and 467kV (1.057 pu) at Bhiwani(PG) is observed. Tripping of 220kV Renew Dinkar RE station on overvoltage needs to be reviewed. iv)As per SCADA, total drop of approx. 3787 MW NR RE generation observed during the event. Out of which ~1650 MW lost due to tripping of ACME pooling station, Bikaner Renew Solar, Renew Surya Ravi and Renew Dinkar RE station and ~50 MW at SB Energy, ~66 MW at AHEJ3L, ~74 MW at AHEJ1L, ~35 MW at EDEN, ~135 MW RSUPL, ~88 MW at Avada SSTN, ~78 MW at TPGEL, ~65 MW at Kolayat, ~225 MW ABCRL, ~293 MW at NTPC Nokhra, ~125 MW at Karniser NHPC, ~82 MW at ARTPL and ~61 MW at RSEKPL affected due to suspected LVRT/HVRT non-compliance during the event.	3787	252	80	
5	GI-2	1) 765 KV Sikar_2(PSTL)-Aligarh(PG) (PASTL) Ckt-2	Rajasthan	PGCIL	14-Jan-26	14:09	14-Jan-26	23:33	09:24	i)As reported, at 14:09 hrs, 765kV Sikar2-Aligarh ckt-2 tripped on R-Y fault. Fault occurred due to kite thread. ii) As per PMU plot of phase current of line at Sikar2(PG), R-Y fault which cleared within 100 msec is observed. iii)On this fault during voltage dip, as per SCADA, total drop of approx. 925 MW NR RE generation observed.	925	0	80	
6	GD-1	1) 220/33 kV 213 MVA ICT 1 at XL_XPPL_SL_Ftg3(PG) 2) 220/33 kV 213 MVA ICT 2 at XL_XPPL_SL_Ftg3(PG)	Rajasthan	XXPPL_Ftg3	10-Feb-26	15:55	10-Feb-26	23:32	07:37	i)Generation of 220kV XL XERGI(IP) station evacuates through 220 KV Fatehgarh_III(PG)-XL_XPPL_SL_Ftg3(PG) (XL_XPPL) Ckt which is further connected to 220/33 kV 213 MVA ICT 1 & 2 at XL_XPPL_SL_Ftg3(PG). ii)During antecedent condition, 220kV XL XERGI(IP) station was generating approx. 165 MW (as per PMU and SCADA). iii)As reported, at 15:55 hrs, 220 KV Fatehgarh_III(PG)-XL_XPPL_SL_Ftg3(PG) (XL_XPPL) Ckt auto-reclosed from Fatehgarh_III(PG) end on R-N phase to earth fault (exact reason, nature and location of fault yet to be shared). iv)During auto-recloser operation, unbalanced current flow through neutral led to tripping of both 220/33 kV 213 MVA ICT 1 & 2 at XL_XPPL_SL_Ftg3(PG) on O/C E/F protection operation. This resulted into complete blackout of 220kV XL XERGI(IP). v)As per PMU at Fatehgarh3(PG), R-N phase to earth fault was observed with fault clearing time of 80ms. Voltage dipped upto 0.57 pu during fault. vi)As per PMU and SCADA, solar generation loss of approx. 165 MW was observed at XL XERGI(IP). As per SCADA, change in NR total generation of approx. 186 MW was observed.	165	0	80	The exact nature, location and reason of fault alongwith detailed tripping report from XL XERGI end may be shared. The reason of tripping of ICTs during A/R of line may be analysed and O/C E/F protection settings of ICTs at XL XERGI and setting may be in accordance with NRPC protection philosophy. Availability and healthiness of SCADA data may be ensured. Proper DR channel configuration need to be ensured at ICTs of XL XERGI. The remedial action taken at site may be shared.
7	GI-2	1) 700MW RAPS-D - UNIT 1 2) 250 MW (PSP) TEHRI HPS - UNIT 6	Rajasthan	RAPP-D, Tehri PSP	16-Feb-26	11:33	16-Feb-26	11:57	00:24	i)During antecedent condition, 700MW RAPS-D - UNIT 1 was generating approx. 650 MW and 250 MW (PSP) TEHRI HPS - UNIT 5 & 7 were pumping approx. 265 MW each. 250 MW (PSP) TEHRI HPS - UNIT 6 started pumping at around 11:30 hours and was gradually increasing pumping. Just before tripping, it was pumping approx. 221 MW. NR total solar generation was approx. 28642 MW among which Rajasthan solar generation was approx. 6544 MW. ii)As reported, at 11:33 hrs, 250 MW (PSP) TEHRI HPS - UNIT 6 tripped on QSD (Quick Shut down) due to deadband timeout (exact reason yet to be shared). iii)During the same time, 700MW RAPS-D - UNIT 1 also tripped due to Turbine-Generator (TG) trip on reverse power during MW hunting (exact reason yet to be shared). iv)As per SCADA, Line CB at A43RS(IP) end of 400 KV AzurePS43 SL_BKN_PG-AzureRS43 SL_BKN_PG (Azure) Ckt opened at 11:34:11.929 hrs and again closed at 11:34:50.173 hrs. However, Azure43 verbally reported that there was data issue at A43RS(IP) during that time, no tripping or auto-reclosing occurred during that time (written confirmation yet to be received from Azure43). v)As per SCADA SOE, 33kV Feeder and Block tripping was detected at A43RS_IP, ASPS2_IP and AVDAS_IP. vi)As per PMU at RAPP-C(NP), consecutive three 3-phase voltage dips were observed with voltage recovery time of 80 ms, 4360 ms and 80 ms. vii)As per SCADA, dip of approx. 2062 MW occurred in NR total solar generation among which approx. 1093 MW recovered within 1 minute (dip of approx. 686 MW in Rajasthan solar generation among which approx. 381 MW recovered within 1 minute). viii)As per SCADA, generation loss of approx. 650 MW at RAPP-D and pumping loss of approx. 221 MW at Tehri PSP was observed.	2491	0	4360	Exact reason of tripping of RAPS-D and PSP TEHRI HPS may be analysed and RCA report may be shared by NPCIL and THDC respectively. DR along with tripping report may be shared. Availability and healthiness of SCADA data may be ensured. The remedial action taken report to be shared.
8	GD-1	1) 220 KV ABCRenew_RJ01_SL_BHD2_PG-Bhadla_2 (PG) (ABC RJ01) Ckt 2) 220 KV RSDCL(PSS1)_SL_BHD2 _PG-Bhadla_2 (PG) (RSDCL) Ckt 3) 765 KV Bhadla_3(PB3TL)-Sikar_2(PSTL) (PB3TL) Ckt-1	Rajasthan	ABCRL, RSDCL PSS1, PGCIL	21-Feb-26	13:36	21-Feb-26	15:05	01:29	i)Generation of 220kV ABCRL(IP) and 220kV RSDCL PSS1 (NT) station evacuate through 220 KV ABCRenew_RJ01_SL_BHD2_PG-Bhadla_2 (PG) (ABC RJ01) Ckt and 220 KV RSDCL(PSS1)_SL_BHD2 _PG-Bhadla_2 (PG) (RSDCL) Ckt. ii)During antecedent condition, 220kV ABCRL(IP) and 220kV RSDCL PSS1 (NT) station were generating approx. 303 MW and 207 MW respectively (as per PMU). iii)As reported, at 13:36 hrs, 220 KV RSDCL(PSS1)_SL_BHD2 _PG-Bhadla_2 (PG) (RSDCL) Ckt tripped due to snapping of the Y-phase jumper at the Tower Loc. No. 25 (exact nature of protection operation yet to be shared). iv)During the same time, 220 KV ABCRenew_RJ01_SL_BHD2_PG-Bhadla_2 (PG) (ABC RJ01) Ckt also tripped on Y-B phase to phase fault (exact reason & location of fault and nature of protection operation yet to be shared). v)Due to tripping of 220 KV ABCRenew_RJ01_SL_BHD2_PG-Bhadla_2 (PG) (ABC RJ01) Ckt and 220 KV RSDCL(PSS1)_SL_BHD2 _PG-Bhadla_2 (PG) (RSDCL) Ckt, complete blackout occurred at 220kV ABCRL(IP) and 220kV RSDCL PSS1 (NT) due to loss of evacuation path. vi)As per PMU, generation loss of approx. 303 MW and 207 MW occurred at 220kV ABCRL(IP) and 220kV RSDCL PSS1 (NT) respectively. vii)As per SCADA, at the same time, dip in NR total Solar Generation of approx. 1752 MW among which dip in Rajasthan Solar Generation of approx. 456 MW was observed. viii)Due to drop in solar generation, over-voltage situation occurred due to unloading of EHV lines and subsequently 765 KV Bhadla_3(PB3TL)-Sikar_2(PSTL) (PB3TL) Ckt-1 tripped on over-voltage stage-1 protection operation. ix)As per PMU of 765 KV Bhadla_3(PB3TL)-Sikar_2(PSTL) (PB3TL) Ckt-1, voltage reached upto 1.138 pu at Bhadla3(PG) end and 1.129 pu at Sikar2(PG) end just before tripping of the line. x)As per PMU at Bhadla2(PG), Y-B phase to phase fault was observed with fault clearing time of 80 ms followed by over-voltage condition. Voltage at 220kV Bhadla2(PG) dipped upto 0.832 pu during fault and after 3.6s, voltage rose to 1.042 pu.	1752	0	80	The exact reason of tripping, location of fault and nature of protection setting may be shared. DR/EL and detailed tripping report may be shared from both the ends. The remedial action taken report may be shared.

S.No.	Category of Grid Incident/ Disturbance	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Duration (hh:mm)	Event (As reported)	Loss of generation / loss of load during the Grid Disturbance		Fault Clearance time (in ms)	Remarks
	(GI-I to GD-V)				Date	Time	Date	Time			Generation Loss(MW)	Load Loss (MW)		
9	GD-1	1) 220 KV Bikaner_2 (PBTSL)-JGCPL_SL_BIK2_PG (Juniper_NEPL) Ckt 2) 220 KV Bikaner_2 (PBTSL)-KSP_NHPC_BKN2 (KSP_NHPC_LTD) Ckt 3) 500 KV HVDC Balia-Bhiwadi (PG) Ckt-1 & 2 4) 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1, 2, 3 & 4 5) 400 KV Bikaner_2 (PBTSL)-SIVN_GEL_BKN2 (SIVNGEL_BKN2) Ckt 6) 220 KV ASSPL_SL_BKN2-Bikaner_2 (PBTSL) (ASSPL_BKN2) Ckt 7) 220 KV Renew_Dinkar_SL_Bik2-Bikaner_2 (PBTSL) (Renew Dinkar_UPL) Ckt 8) 220 KV SRI4PL_SL_BIK2_PG-Bikaner_2 (PBTSL) (SERENTICA_RI4PL_Bik2) Ckt 9) 220 KV Bikaner_2 (PBTSL)-KHIDRAT_REPL_SL_BKN2 (KHIDRAT_REPL) Ckt 10) 220KV Grian_BIK2_(AMPLUS)-Bikaner_2 (PBTSL) (GRIAN ENERGY PRIVATE LIMITED) Ckt 11) 220 KV Bikaner_2 (PBTSL)-Juna_REPL_SL_BKN2 (Juna_REPL) Ckt 12) 220 KV BTPSL_SL_BIK2_PG-Bikaner_2 (PBTSL) (BANDERWALA_TPSL) Ckt 13) 220 KV PGPL_SL_BIK2_PG-Bikaner_2 (PBTSL) (PRERAK GREENTECH PVT LTD) Ckt	Rajasthan	PGCIL, SGEL, JGCPL, KSP_NHPC, ASSPL, RDUPL, SRI4PL, KREPL, GEPL, JREPL, BTPSL & PGPL	22-Feb-26	17:08	22-Feb-26	19:07	01:59	i)Generation of 400kV SGEL(SIVN) and 220kV JGCPL(IP), KSP(NHPC), ASSPL(IP), RDUPL(IP), SRI4PL(IP), KREPL(IP), GEPL(IP), JREPL(IP), BTPSL(IP) & PGPL(IP) stations evacuate through individual single circuit lines from plants to Bikaner2(PG). ii)400 kV Bikaner_2 (PBTSL) – Bikaner (PG) Ckt-1 & 2 were taken under planned outage from 16:00 hrs on 22.02.2026 to 05.03.2026 for LILO of the 400 kV Bikaner_2 (PBTSL) – Bikaner (PG) D/C lines at 400 kV Bikaner-III substation. The outage code was issued by NRLDC at 16:21 hrs. Subsequently, the lines were opened at 16:40 hrs. ISTS solar generation at that time was ~11,600 MW and Bikaner 2 generation at that time was ~1800 MW. After opening of these lines, oscillations observed in the System Frequency from 16:44 hrs onward as per PMU frequency plots. However, no corresponding fluctuation was observed in the PMU voltage plots. Immediately after opening of 400 kV Bikaner_2 (PBTSL) – Bikaner (PG) D/C lines at 16:41 hrs, huge fluctuation in active power started in 300MW Karnisar NHPC and 200MW Renew Dinkar at 16:44 hrs. iii)With triggering of active power fluctuation in 300MW Karinsar NHPC and 200MW Renew Dinkar at 16:44 hrs, other RE plants also exhibited the continuous active power fluctuation but magnitude in other plants were comparatively lesser. iv)As reported, at 16:24 hrs, 220 KV Bikaner_2 (PBTSL)-JGCPL_SL_BIK2_PG (Juniper_NEPL) Ckt tripped from Bikaner2 end only (exact reason yet to be shared by PG). v)Further, at 16:58 hrs, 220 KV Bikaner_2 (PBTSL)-KSP_NHPC_LTD_SL_BKN2 (KSP_NHPC_LTD) Ckt tripped on over-voltage (over-voltage protection in 220kV lines need to be disabled as per NRPC protection philosophy). vi)Followed by this, huge active power fluctuation started at 17:00 hrs almost in all plants connected at Bikaner2(PG). vii)As reported, at 17:08 hrs, 500 KV HVDC Balia-Bhiwadi (PG) Ckt-1 & 2 tripped on sub-synchronous resonance 81 SSR block operation (as per EL) followed by tripping of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1, 2, 3 & 4 (over-voltage stage-1) and 400 KV Bikaner_2 (PBTSL)-SIVN_GEL_SL_BKN2 (SIVNGEL_BKN2) Ckt (over-voltage stage-2). viii)Due to tripping of all four 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1, 2, 3 & 4 (with 400 kV Bikaner_2 (PBTSL) – Bikaner (PG) Ckt-1 & 2 under outage), all 220kV RE plants connected at Bikaner2(PG), i.e., JGCPL(IP), KSP(NHPC), ASSPL(IP), RDUPL(IP), SRI4PL(IP), KREPL(IP), GEPL(IP), JREPL(IP), BTPSL(IP) & PGPL(IP) also tripped due to loss of evacuation path which led to complete blackout of 400/220kV Bikaner2(PG) along with all RE plants connected at 400kV and 220kV level of Bikaner2(PG). ix)As per PMU, no fault was observed in the system. As per SCADA, reduction in NR total Solar Generation of approx. 525 MW was observed at around 17:08 hrs.	525	0	NA	The exact reason, location and RCA of tripping may be shared. Over-voltage protection setting of all 220kV lines may be disabled as per NRPC protection philosophy. The remedial action taken report may be shared.
10	GD-1	1) 220 KV Bikaner_2 (PBTSL)-JGCPL_SL_BIK2_PG (Juniper_NEPL) Ckt	Rajasthan	PGCIL, JGCPL	22-Feb-26	16:24	22-Feb-26	20:48	04:24	i)Generation of 220kV Juniper Green(JGCPL)(IP) station evacuates through 220 KV Bikaner_2 (PBTSL)-JGCPL_SL_BIK2_PG (Juniper_NEPL) Ckt. ii)During antecedent condition, 220kV Juniper Green(JGCPL)(IP) station was generating approx. 80 MW (as per PMU and SCADA). iii)As reported, at 16:24 hrs, 220 KV Bikaner_2 (PBTSL)-JGCPL_SL_BIK2_PG (Juniper_NEPL) Ckt tripped from Bikaner_2(PG) end only, no CB tripping occurred at JGCPL(IP) end (exact reason of tripping yet to be shared by PG). iv)Due to tripping of 220 KV Bikaner_2 (PBTSL)-JGCPL_SL_BIK2_PG (Juniper_NEPL) Ckt, complete blackout occurred at 220kV Juniper Green(JGCPL)(IP) due to loss of evacuation path. v)As per PMU at Bikaner2(PG), no fault was observed in the system. vi)As per PMU and SCADA, solar generation loss of approx. 80 MW was observed at 220kV Juniper Green(JGCPL)(IP).	80	0	NA	The exact reason of tripping,DR along with detailed tripping report may be shared. Availability and healthiness of SCADA and PMU data need to be ensured. The remedial action taken may be shared.
11	GD-1	1) 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt 2) 220/33kV 100 MVA ICT-1 at Nokhra(NT) 3) 220/33kV 100 MVA ICT-2 at Nokhra(NT) 4) 220/33kV 100 MVA ICT-3 at Nokhra(NT)	Rajasthan	PGCIL, Nokhra_NTPC	24-Feb-26	10:19	24-Feb-26	11:51	01:32	i)Generation of 220kV Nokhra (NT) stations evacuates through 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt which is further connected to 220/33kV 100 MVA ICT-1, 2 & 3 at Nokhra(NT). ii)During antecedent condition, 220kV Nokhra (NT) was generating approx. 240 MW (as per PMU). iii)As reported, at 10:19hrs, Y-ph VCB (Vacuum Circuit Breaker) of Capacitor bank bay-1 at Nokhra(NT) was burst. iv)Due to this, 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt tripped on Y-N phase to earth fault; fault sensed in zone-1 at Nokhra(NT) end (exact nature and location of fault yet to be shared). As per PMU, fault current of approx. 842.38 A was observed at Nokhra(NT) end. v)During the same time, 220/33kV 100 MVA ICT-1, 2 & 3 at Nokhra(NT) also tripped due to loss of evacuation path which led to complete blackout of 220kV Nokhra(NT) S/s. vi)As per PMU at Bhadla2(PG), Y-N phase to earth fault was observed with fault clearing time of 80 ms. vii)As per PMU at Nokhra(NT), solar generation loss of approx. 240 MW occurred at Nokhra(NT) S/s.	240	0	80	The exact nature and location of fault DR/EL & tripping analysis of the event may be shared. Availability and healthiness of SCADA data may be ensured. The remedial action taken report may be shared.
12	GD-1	1) 220/33kV 100 MVA ICT-2 at Nokhra(IP) 2) 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt	Rajasthan	PGCIL, Nokhra_NTPC	26-Feb-26	17:05	14-Jan-26	19:51	02:46	i)Generation of 220kV Nokhra (NT) stations evacuates through 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt which is further connected to 220/33kV 100 MVA ICT-1, 2 & 3 at Nokhra(NT). ii)During antecedent condition, 220kV Nokhra (IP) was generating approx. 105 MW (as per PMU). iii)As reported, at 17:05hrs, 220/33kV 100 MVA ICT-2 at Nokhra(IP) tripped on R-N phase to earth fault (exact reason, nature and location of fault along with exact nature of protection operation yet to be shared) . iv)During the same time, 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt also tripped (exact reason of tripping and nature of protection operation yet to be shared) sensing the same fault. As per PMU, fault current of approx. 1254.5 A was observed at Nokhra(NT) end. v)With tripping of 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt, complete blackout occurred at 220kV Nokhra (NT) S/s due to loss of evacuation path. vi)As per PMU at Bhadla2(PG), R-N phase to earth fault was observed with fault clearing time of 80 ms. vii)As per PMU at Nokhra(NT), solar generation loss of approx. 105 MW occurred at Nokhra(NT) S/s.	105	0	80	The exact reason, nature and location of fault along with exact nature of protection may be shared. Any protection related issue may be rectified at the earliest to avoid unwanted tripping of line in future. DR/EL & tripping analysis of the event may be shared. The remedial action taken report may be shared.

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भारत सरकार का उद्यम
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(Report on Event of tripping at 400/220kV Bikaner2(PG))

1. **Date & Time of event:** 17:08 hrs on 22.02.2026

2. **Location/Control Area:** Rajasthan

3. **Plant/Substation Name:** 400/220kV Bikaner2(PG)

4. **GD/GI Category:** GD-1 (Blackout of 400/220kV Bikaner2(PG) and all RE plants connected at 400kV and 220kV level of Bikaner2(PG))

5. **Antecedent Condition:**
   - NR Load : 46136 MW
   - Affected state load(Rajasthan) : 13198 MW
   - Frequency : 49.99 Hz
   - weather condition : Normal
   - IR exchange : 2006 MW

6. **Generation loss/Load loss:** Reduction in NR total Solar Generation of approx. 525 MW (as per SCADA).

7. **Duration of interruption:** ~01:59 (hh:mm) (Restoration time : 19:07 hrs)

8. **Tripped elements:**

S. No	Name of Elements	Outage Time	Revival Time	Reason of tripping
1.	220 KV Bikaner_2 (PBTSL)-JGCPL_SL_BIK2_PG (Juniper_NEPL) Ckt	16:24 hrs	20:48 hrs	Tripped from Bikaner2 end only (exact reason yet to be shared by PG)
2.	220 KV Bikaner_2 (PBTSL)-KSP_NHPC_LTD_SL_BKN2 (KSP_NHPC_LTD) Ckt	16:58 hrs	20:21 hrs	Over-voltage
3.	500 KV HVDC Balia-Bhiwadi (PG) Ckt-1	17:08 hrs	19:07 hrs	Sub synchronous resonance 81 SSR block operated
4.	500 KV HVDC Balia-Bhiwadi (PG) Ckt-2			

5.	400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1	17:08 hrs	19:40 hrs	Over-voltage stage-1 operated at Bikaner2 end
6.	400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-2		19:38 hrs	
7.	400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-3	17:09 hrs	20:01 hrs	
8.	400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-4	17:10 hrs	18:50 hrs	
9.	400 KV Bikaner_2 (PBTSL)-SJVN_GEL_SL_BKN2 (SJVNGEL_BKN2) Ckt		19:13 hrs	Over-voltage stage-2 operated at Bikaner2 end
10.	220 KV ASSPL_SL_BKN2-Bikaner_2 (PBTSL) (ASSPL_BKN2) Ckt		19:44 hrs	Due to loss of evacuation path
11.	220 KV Renew_Dinkar_SL_Bik2-Bikaner_2 (PBTSL) (Renew Dinkar_UPL) Ckt		20:19 hrs	
12.	220 KV SRI4PL_SL_BIK2_PG-Bikaner_2 (PBTSL) (SERENTICA_RI4PL_Bik2) Ckt		19:34 hrs	
13.	220 KV Bikaner_2 (PBTSL)-KHIDRAT_REPL_SL_BKN2 (KHIDRAT_REPL) Ckt		20:43 hrs	
14.	220KV Grian_BIK2_(AMPLUS)-Bikaner_2 (PBTSL) (GRIAN ENERGY PRIVATE LIMITED) Ckt		20:38 hrs	
15.	220 KV Bikaner_2 (PBTSL)-Juna_REPL_SL_BKN2 (Juna_REPL) Ckt		20:15 hrs	
16.	220 KV BTPSL_SL_BIK2_PG-Bikaner_2 (PBTSL) (BANDERWALA_TPSL) Ckt		20:15 hrs	
17.	220 KV PGPL_SL_BIK2_PG-Bikaner_2 (PBTSL) (PRERAK GREENTECH PVT LTD) Ckt		19:32 hrs	

9. Details of fault (if any) :

i) Nature of fault: No fault as per PMU.

ii) Fault clearing time: NA

10. Brief description of event:

i) Generation of 400kV SGEL(SJVN) and 220kV JGCPL(IP), KSP(NHPC), ASSPL(IP), RDUPL(IP), SRI4PL(IP), KREPL(IP), GEPL(IP), JREPL(IP), BTPSL(IP) & PGPL(IP)

stations evacuate through individual single circuit lines from plants to Bikaner2(PG).

ii) 400 kV Bikaner_2 (PBTSL) – Bikaner (PG) Ckt-1 & 2 were taken under planned outage from 16:00 hrs on 22.02.2026 to 05.03.2026 for LILO of the 400 kV Bikaner_2 (PBTSL) – Bikaner (PG) D/C lines at 400 kV Bikaner-III substation. The outage code was issued by NRLDC at 16:21 hrs. Subsequently, the lines were opened at 16:40 hrs. ISTS solar generation at that time was ~11,600 MW and Bikaner 2 generation at that time was ~1800 MW.

iii) After opening of these lines, oscillations observed in the System Frequency from 16:44 hrs onward as per PMU frequency plots. However, no corresponding fluctuation was observed in the PMU voltage plots.

iv) Immediately after opening of 400 kV Bikaner_2 (PBTSL) – Bikaner (PG) D/C lines at 16:41 hrs, huge fluctuation in active power started in 300MW Karnisar NHPC and 200MW Renew Dinkar at 16:44 hrs.

v) With triggering of active power fluctuation in 300MW Karinsar NHPC and 200MW Renew Dinkar at 16:44 hrs, other RE plants also exhibited the continuous active power fluctuation but magnitude in other plants were comparatively lesser.

vi) As reported, at 16:24 hrs, 220 KV Bikaner_2 (PBTSL)-JGCPL_SL_BIK2_PG (Juniper_NEPL) Ckt tripped from Bikaner2 end only (exact reason yet to be shared by PG).

vii) Further, at 16:58 hrs, 220 KV Bikaner_2 (PBTSL)-KSP_NHPC_LTD_SL_BKN2 (KSP_NHPC_LTD) Ckt tripped on over-voltage (over-voltage protection in 220kV lines need to be disabled as per NRPC protection philosophy).

viii) Followed by this, huge active power fluctuation started at 17:00 hrs almost in all plants connected at Bikaner2(PG).

ix) As reported, at 17:08 hrs, 500 KV HVDC Balia-Bhiwadi (PG) Ckt-1 & 2 tripped on sub-synchronous resonance 81 SSR block operation (as per EL) followed by tripping of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1, 2, 3 & 4 and 400 KV Bikaner_2 (PBTSL)-SJVN_GEL_SL_BKN2 (SJVNGEL_BKN2) Ckt.

x) Sequence of the event as per DR, PMU and SCADA SOE is as follows:

   a. 17:08:05 hrs: 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1 tripped on over-voltage stage-1 protection operation. As per DR, voltage went upto 1.14 pu at Bikaner2 end. As per EL, Over-voltage stage-1 operated with a time delay of 5 s and DT sent to Khetri end.

   b. 17:08:21 hrs: 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-2 tripped on over-voltage stage-1 protection operation. As per DR, voltage went upto 1.23 pu at Bikaner2 end. As per EL, Over-voltage stage-1 operated with a time delay of 6 s and DT sent to Khetri end.

c. 17:09:16 hrs: 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-3 tripped on over-voltage stage-1 protection operation. As per DR, voltage went upto 1.16 pu at Bikaner2 end. As per EL, Over-voltage stage-1 operated with a time delay of 6 s and DT sent to Khetri end.

d. 17:10:12 hrs; 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-4 tripped on over-voltage stage-1 protection operation. As per DR, voltage went upto 1.238 pu at Bikaner2 end. Over-voltage stage-1 operated and DT sent to Khetri end.

e. 17:10:13 hrs: 400 KV Bikaner_2 (PBTSL)-SJVN_GEL_SL_BKN2 (SJVNGEL) Ckt tripped on over-voltage stage-2 protection operation. As per DR, voltage went upto 1.38 pu at Bikaner2 end. As per EL, Over-voltage stage-2 operated at Bikaner2 end. DT received from SGEL end.

xi) Due to tripping of all four 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1, 2, 3 & 4 (with 400 kV Bikaner_2 (PBTSL) – Bikaner (PG) Ckt-1 & 2 under outage), all 220kV RE plants connected at Bikaner2(PG), i.e., JGCPL(IP), KSP(NHPC), ASSPL(IP), RDUPL(IP), SRI4PL(IP), KREPL(IP), GEPL(IP), JREPL(IP), BTPSL(IP) & PGPL(IP) also tripped due to loss of evacuation path which led to complete blackout of 400/220kV Bikaner2(PG) along with all RE plants connected at 400kV and 220kV level of Bikaner2(PG).

xii) As per PMU, no fault was observed in the system.

xiii) As per SCADA, reduction in NR total Solar Generation of approx. 525 MW was observed at around 17:08 hrs.

11. Preliminary Observations:

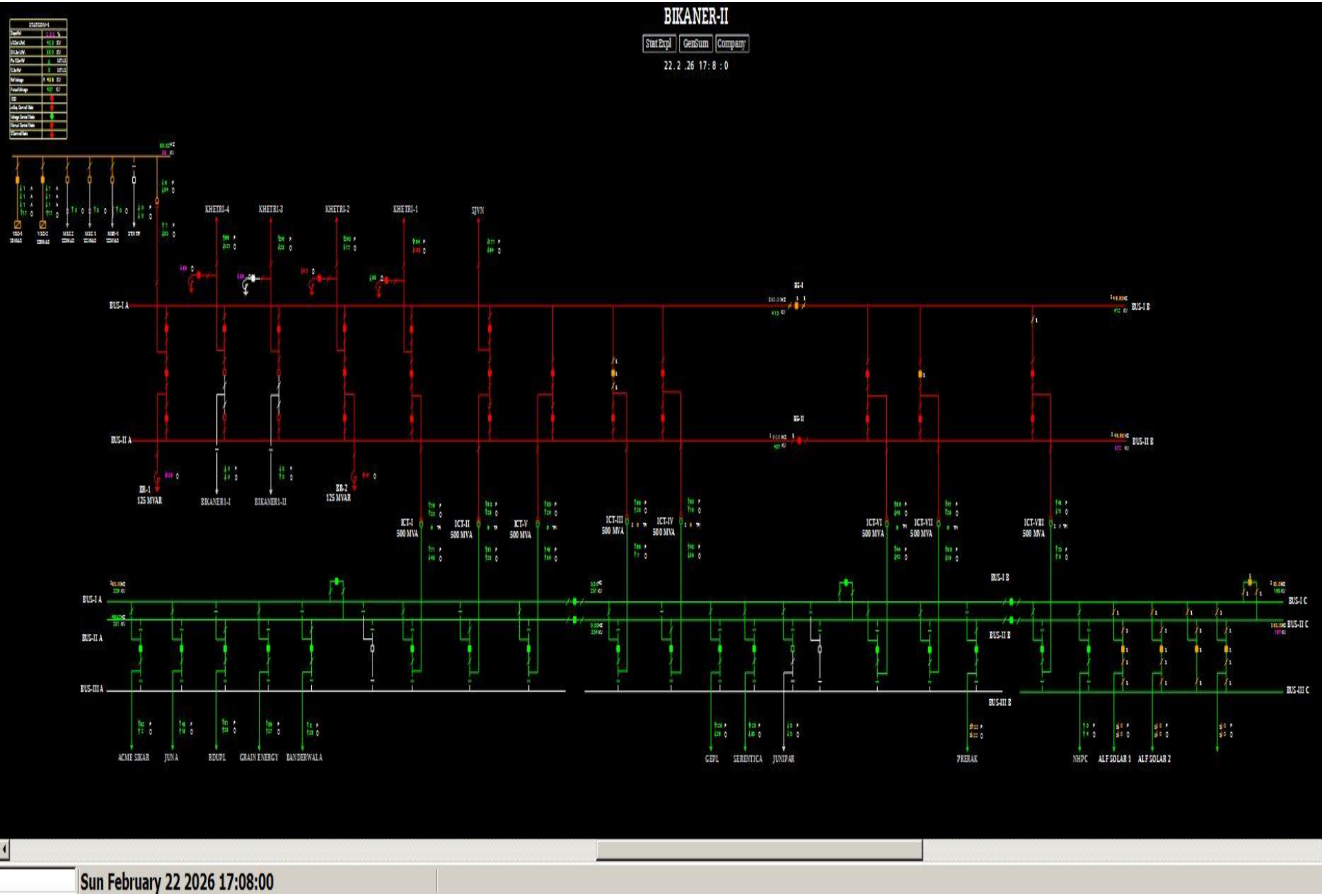
i) Exact reason of tripping of 220 KV Bikaner_2 (PBTSL)-JGCPL_SL_BIK2_PG (Juniper_NEPL) Ckt need to be shared by PG.

ii) Over-voltage protection in all 220kV lines need to be disabled as per NRPC protection philosophy.

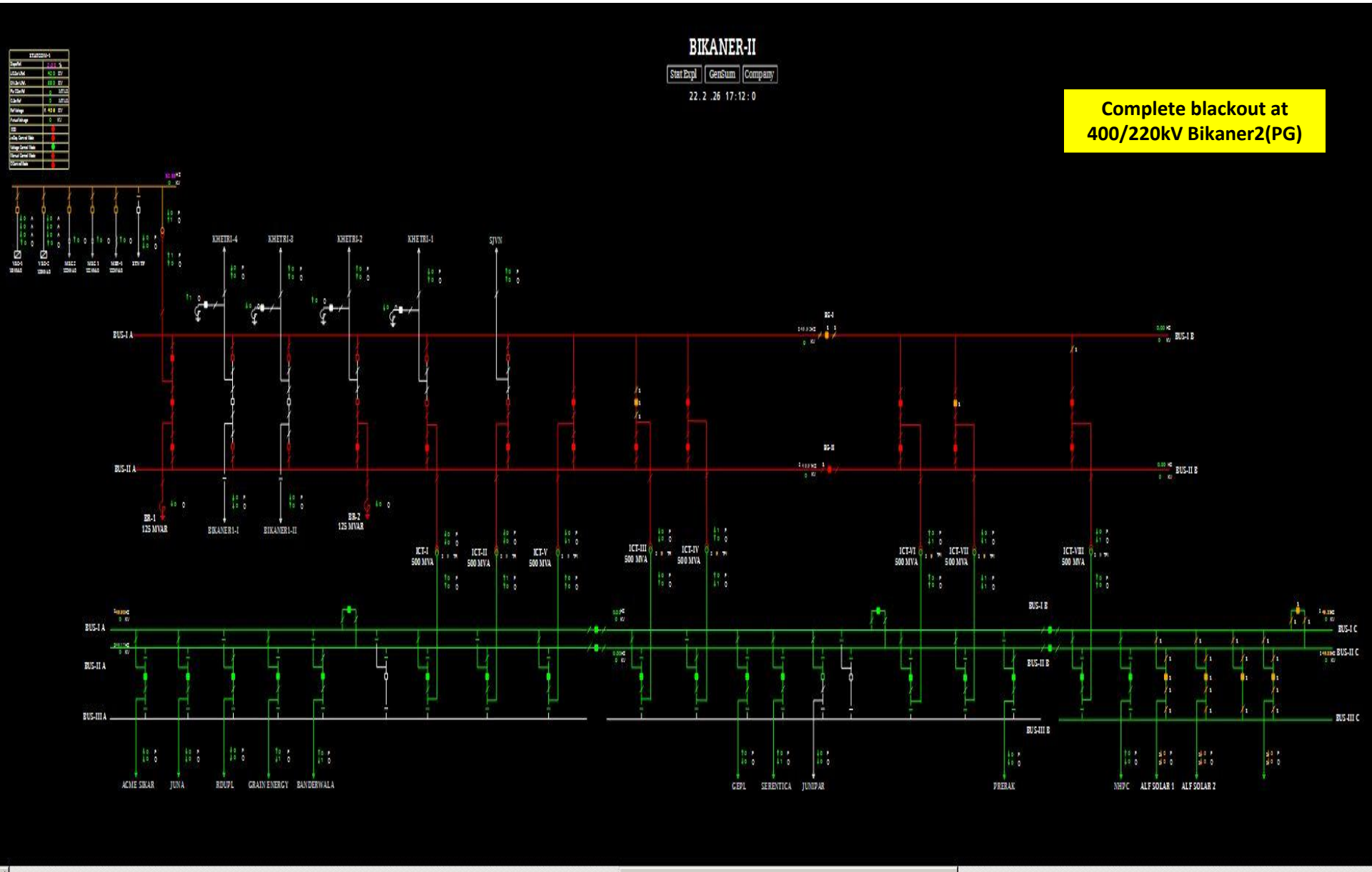
iii) KSP(NHPC) and RDUPL(IP) need to check the exact reason of huge MW fluctuation exhibited by their inverters (SINENG and SUNGROW make respectively). RCA of the same need to be shared at the earliest.

***Detailed SCADA, PMU and DR analysis are attached in Annexure**

SLD of 400/220kV Bikaner2(PG) before the event

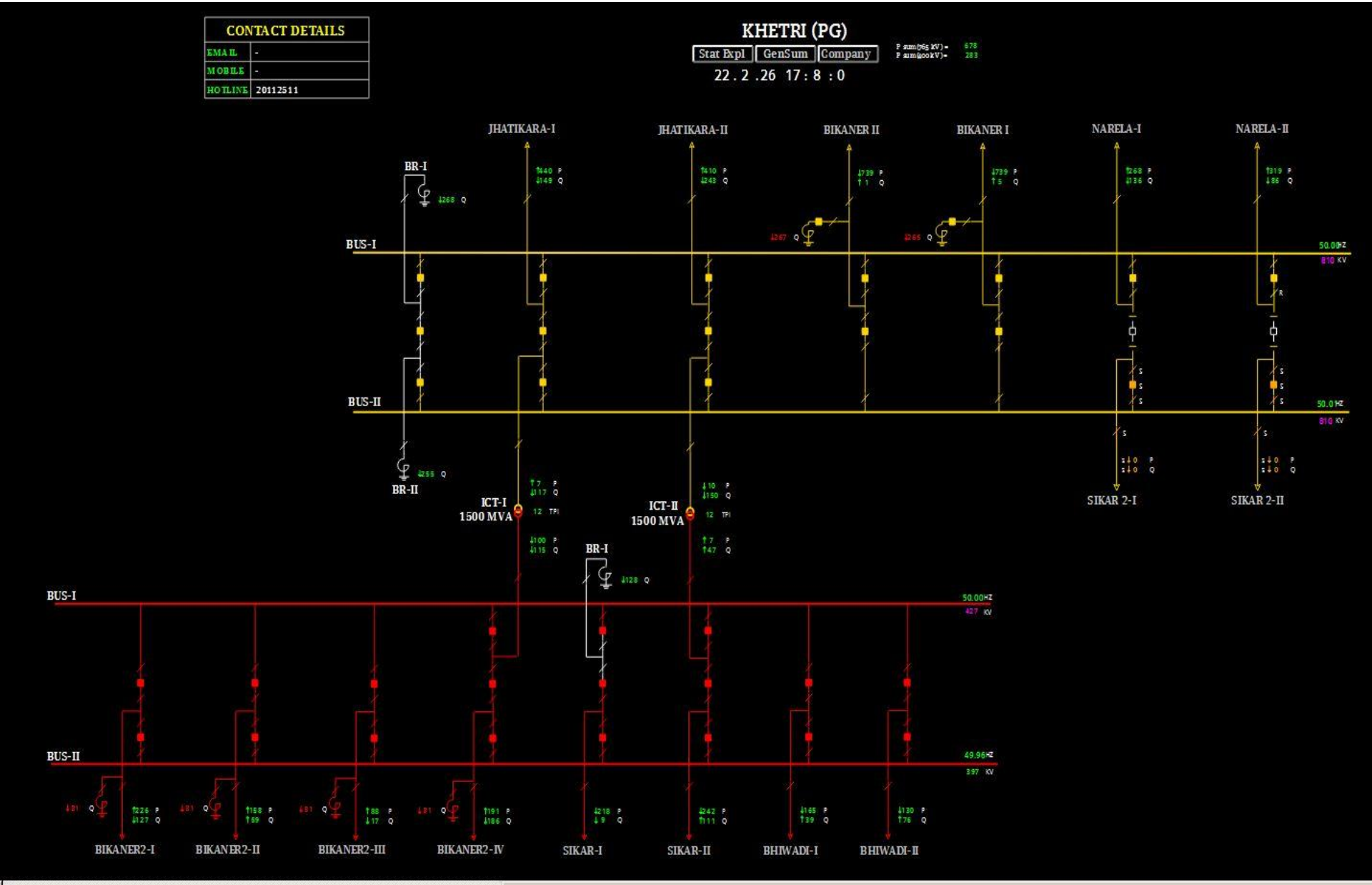


SLD of 400/220kV Bikaner2(PG) after the event

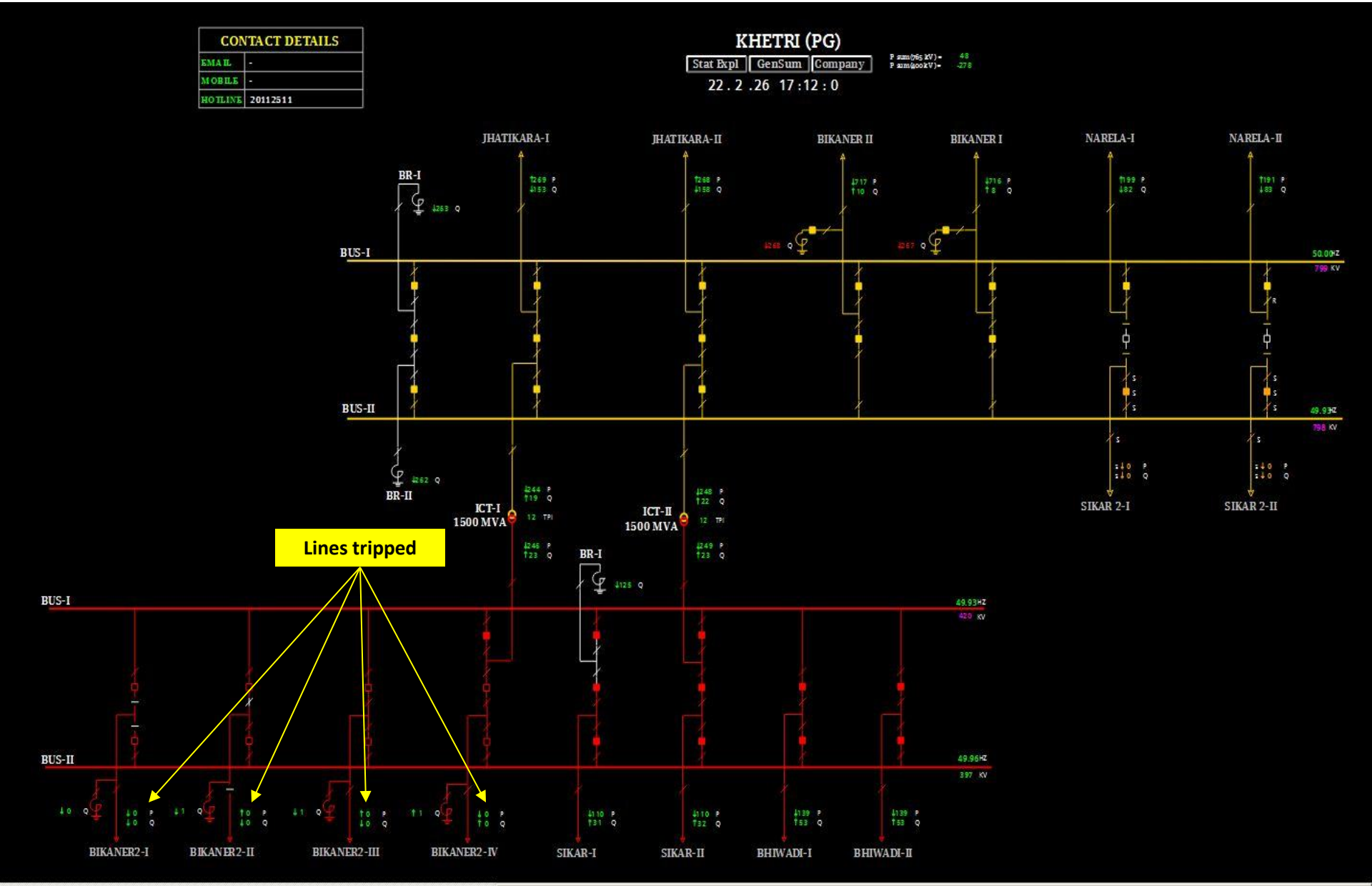


Sun February 22 2026 17:12:00

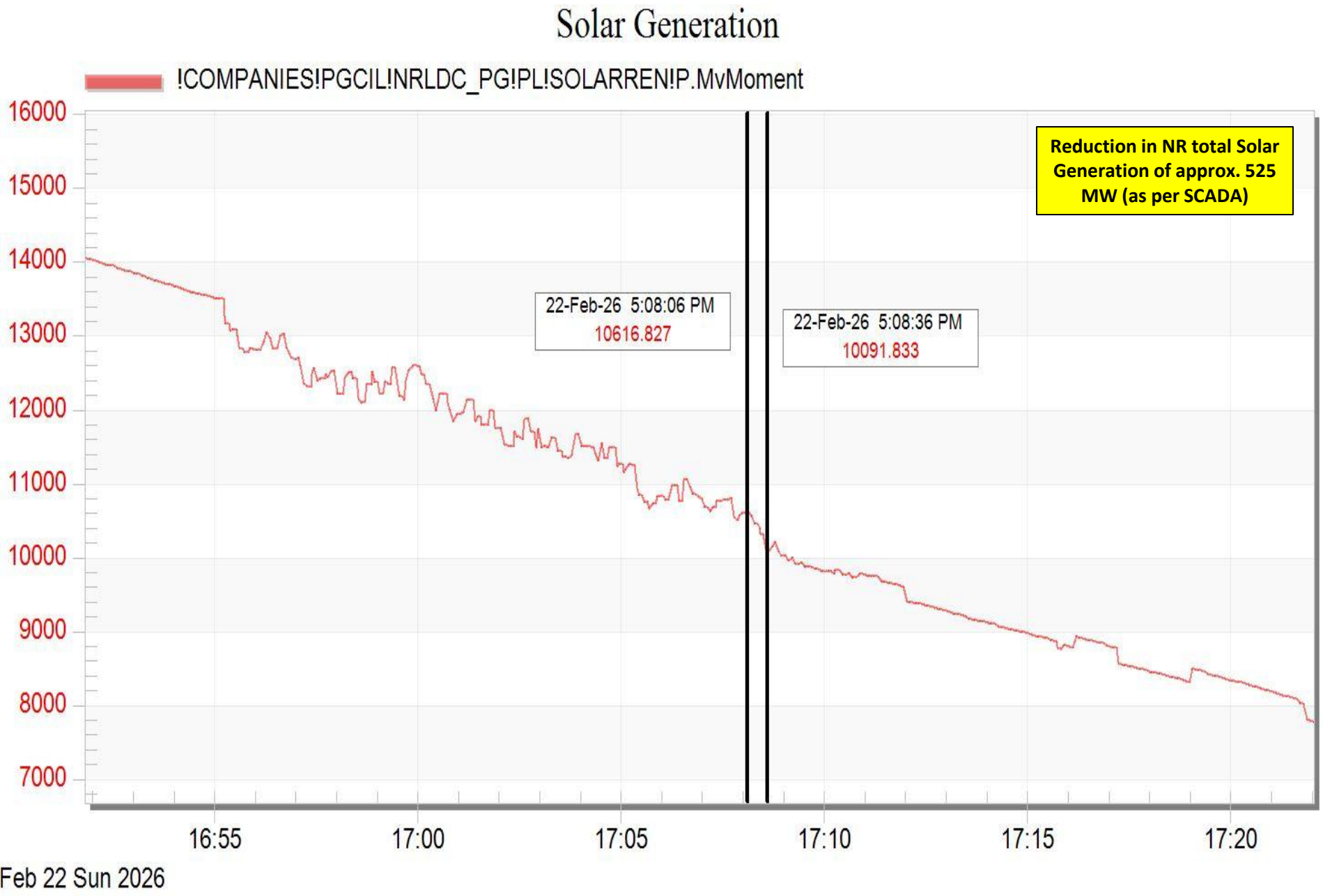
SLD of 765/400kV Khetri(PG) before the event



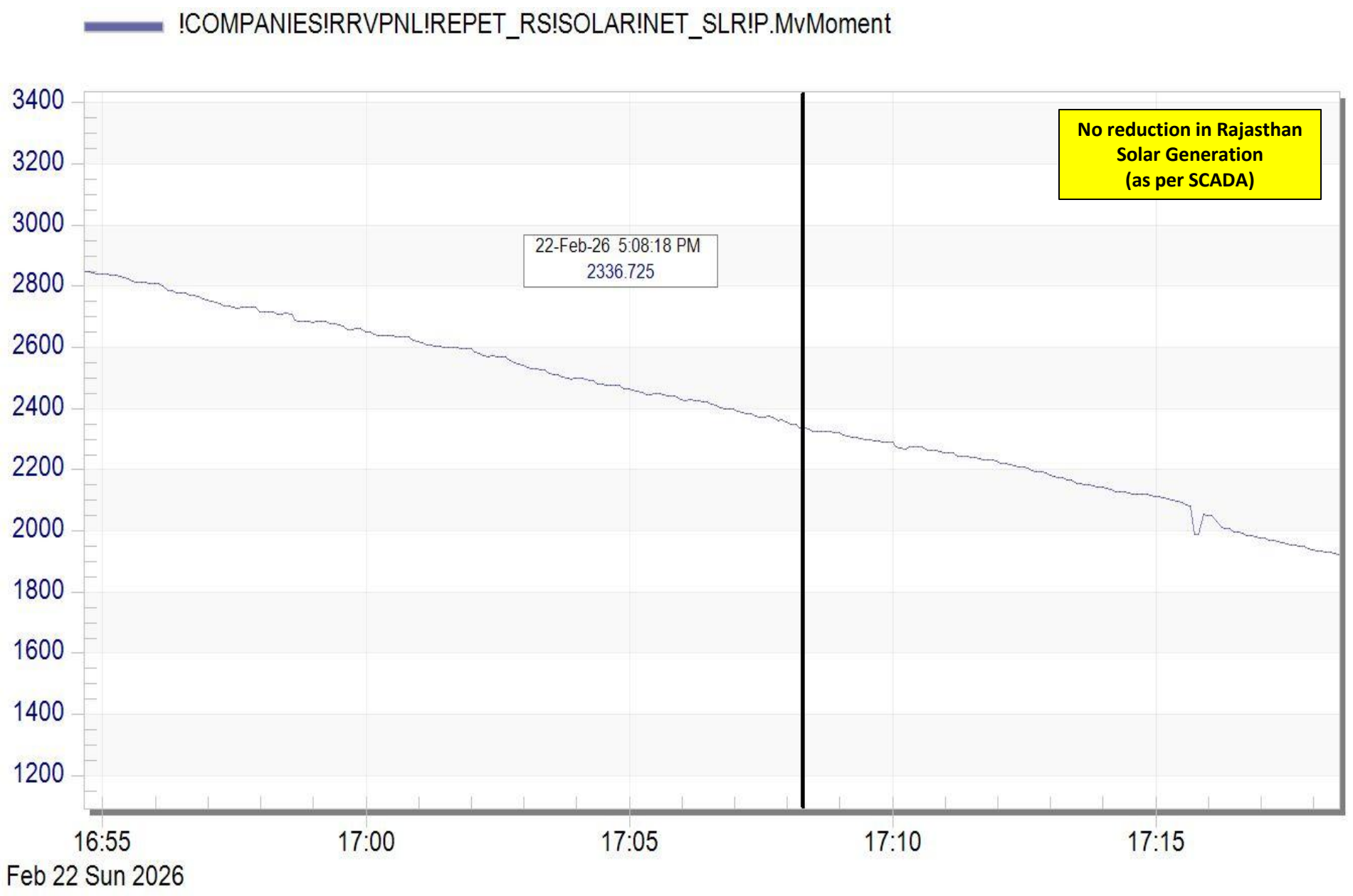
SLD of 765/400kV Khetri(PG) after the event



NR Total Solar Generation during the event



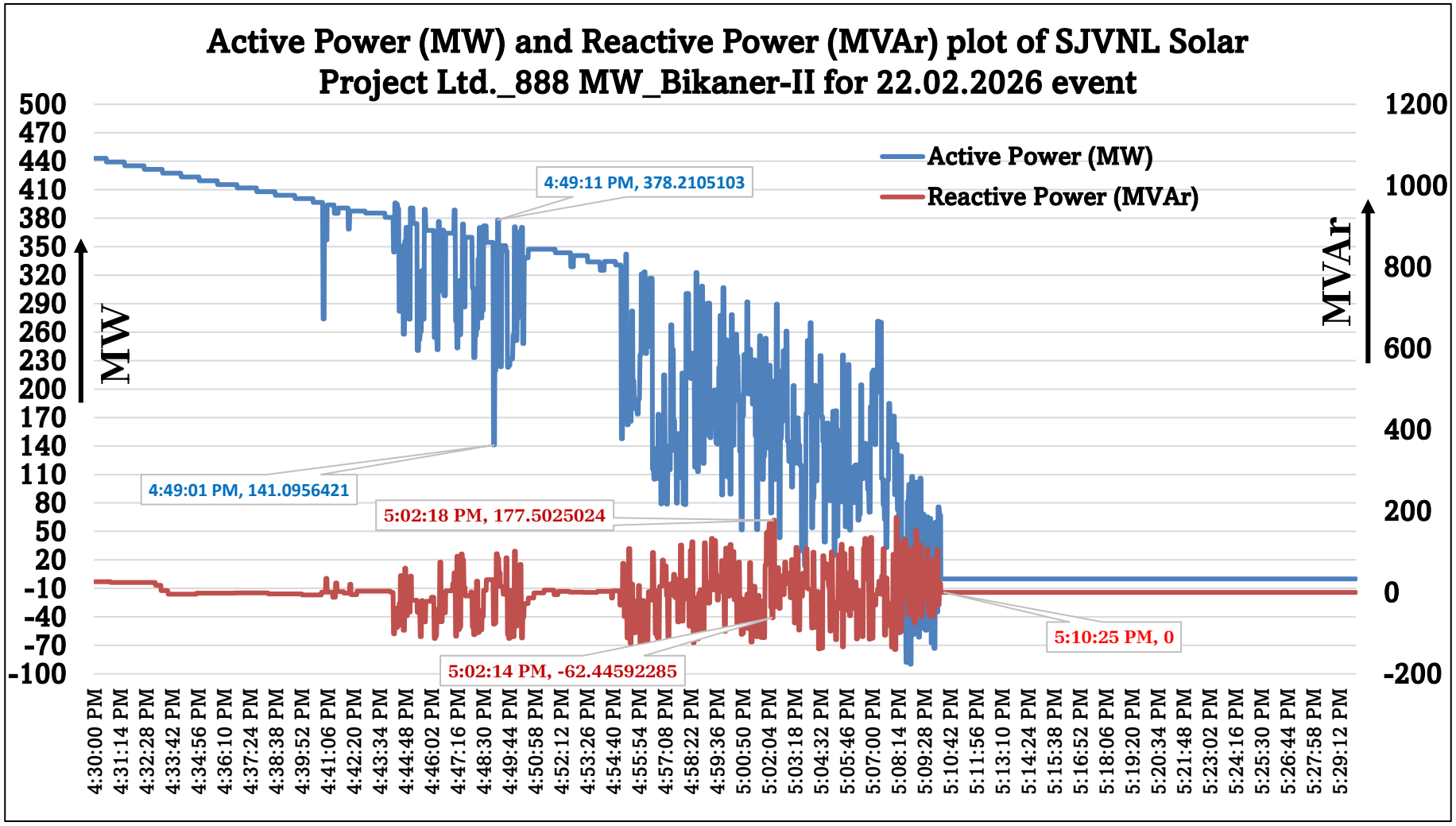
Rajasthan Solar Generation during the event



Details of % MW fluctuation, Starting time of Severe fluctuation in active power, Plant outage time, Inverters Make and model

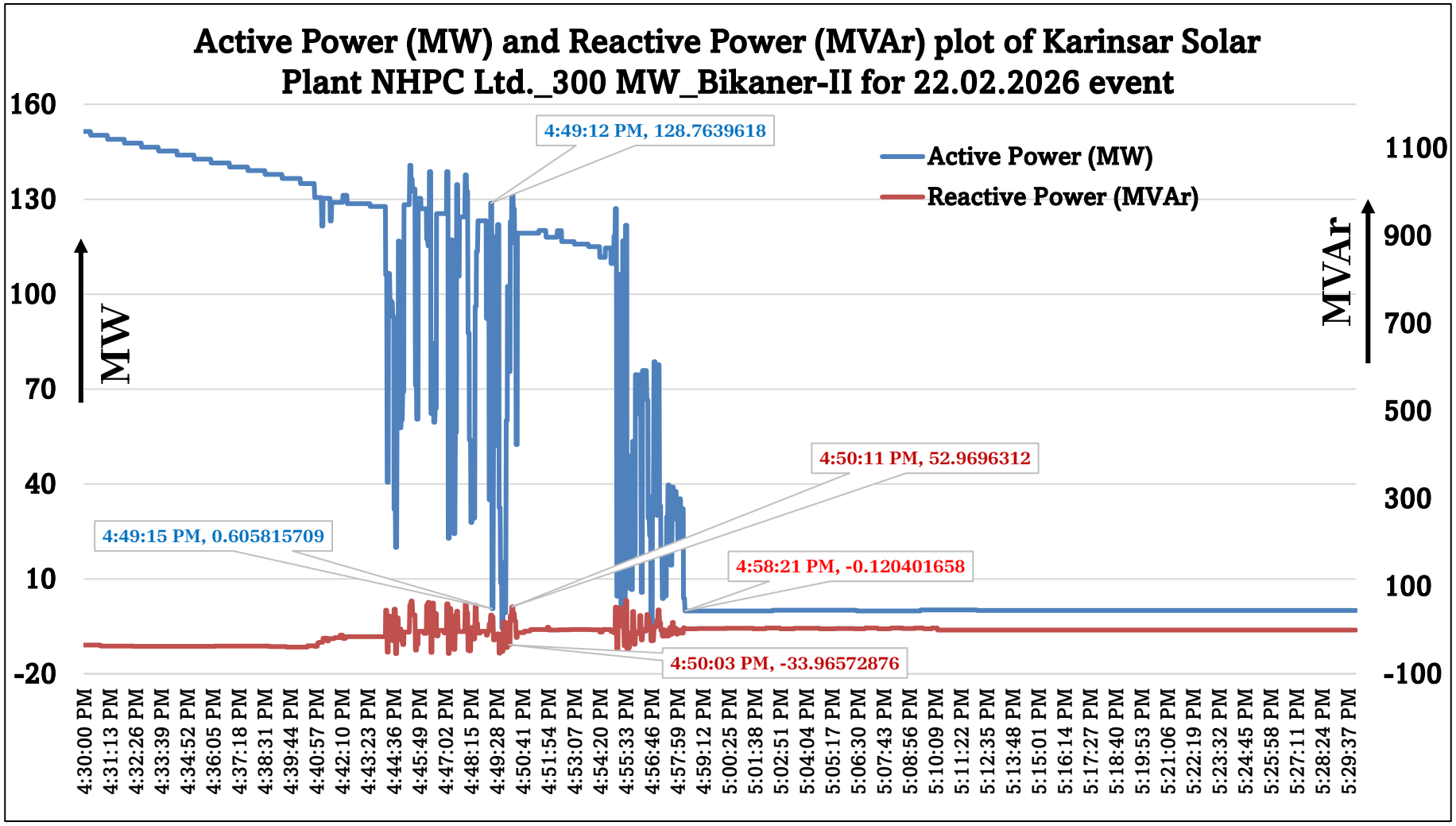
Plant Name	Plant Capacity (MW)	Active Power before the event (16:41 hrs) (A)	Maximum Active power fluctuation (MW) (B)	% of Max. fluctuation w.r.t pre-event active power (B/A)*100	Starting time of Severe fluctuation in active power	Maximum Reactive power fluctuation (MVAr)	Plant outage time	Inverters Make	Inverters Model	No. of Inverters
Karinsar Solar Plant NHPC Ltd.	300	130	128	98%	16:44	85	16:48	SINENG	EP-3300-HB-UD	112
Renew Dinkar Urja Pvt. Ltd.	200	71	68	96%	16:46	59	17:08	SUNGROW	SG4400 UD-20	50
								SUNGROW	SG3300 UD-20	8
Banderwala Solar Plant TP Surya Ltd.	300	128	100	78%	16:53	69	17:10	SUNGROW	SG4400 UD-20	81
Juna Renewable Energy Pvt. Ltd.	335	200	143	72%	17:00	Data suspected	17:10	SUNGROW	SG4400 UD-20	80
SJVNL Solar Project Ltd.	888	400	237	59%	16:55	85	17:10	SUNGROW	SG4400 UD-21	248
Khidrat Renewable Energy Pvt. Ltd.	300	131	70	53%	17:00	66	17:10	SUNGROW	SG320HX	90
								SUNGROW	SG3300 UD-20	90
Amplus Grian Onevolt	300	189	100	53%	17:01	96	17:10	SUNGROW	SG3300 UD-20	89
								SUNGROW	SG4400 UD-20	13
Juniper Green Cosmic + Nirjara Pvt. Ltd.	150+41(BESS)	190	67	35%	17:01	86	17:10	SUNGROW	SG4400 UD-20	36
ACME Sikar Solar Pvt. Ltd.	300	120	33	28%	Data suspected	17	17:08	SUNGROW	SG4400 UD-20	80
Prerak Green Tech Pvt. Ltd.	400	220	44	20%	Not observed	93	17:09	SUNGROW	SG3300 UD-20	144
Serentica Renewables India Pvt. Ltd.	400	270	51	19%	Not observed	74	17:10	SUNGROW	SG3300 UD-20	144

Active Power (MW) and Reactive Power (MVAr) plot of SJVNL Solar Project Ltd._888 MW_Bikaner-II



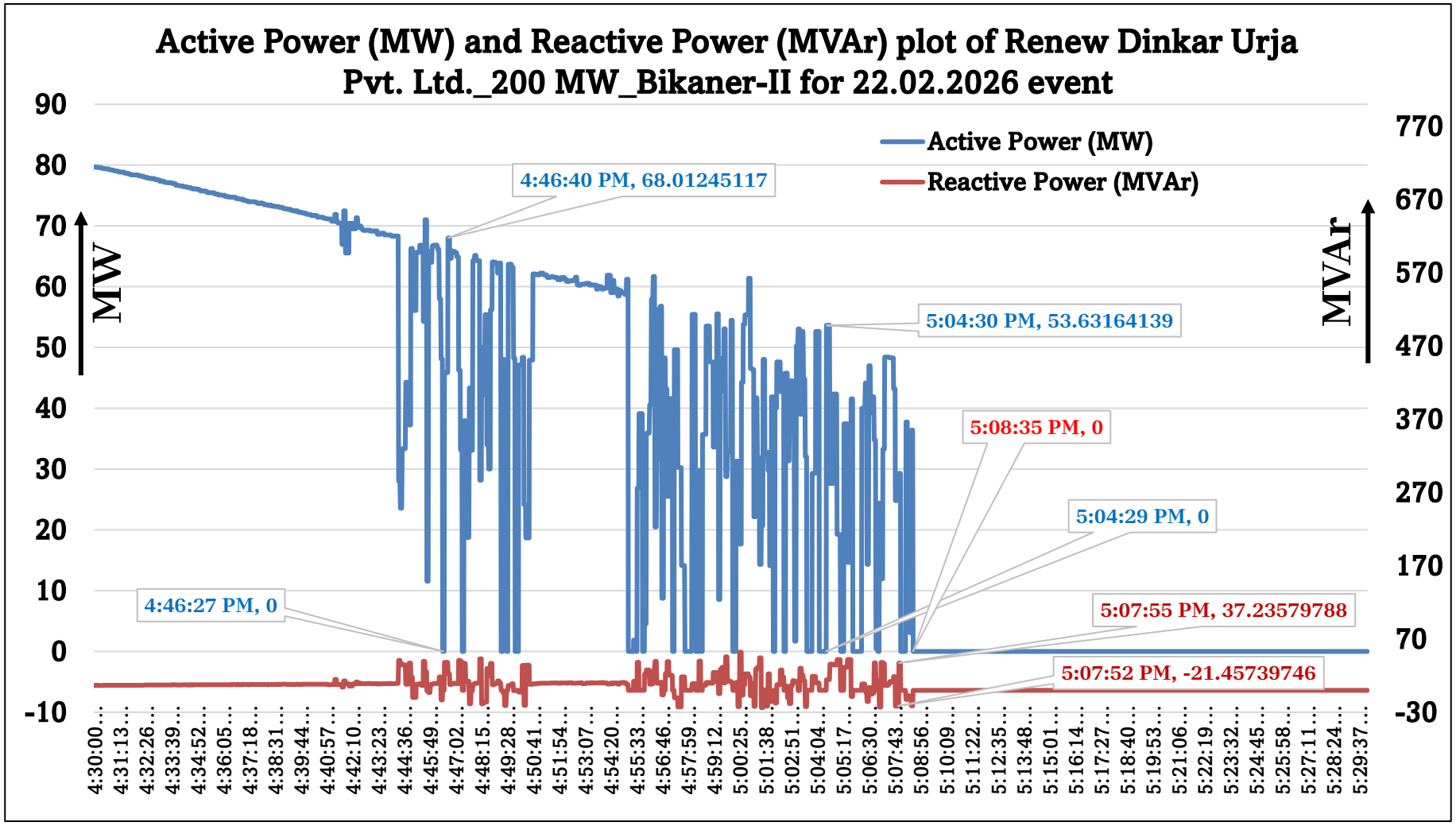
- ✓ Active Power fluctuation: 378 MW to 141 MW, ~237 MW fluctuation in active power
- ✓ Reactive Power fluctuation: 52 MVAr to -33 MVAr, ~85 MVAr fluctuation in reactive power
- ✓ Plant outage time: 17:10 hrs
- ✓ Severe fluctuation in active power started at: 16:55.

Active Power (MW) and Reactive Power (MVAr) plot of Karnisar Solar Plant NHPC Ltd._300 MW_Bikaner-II



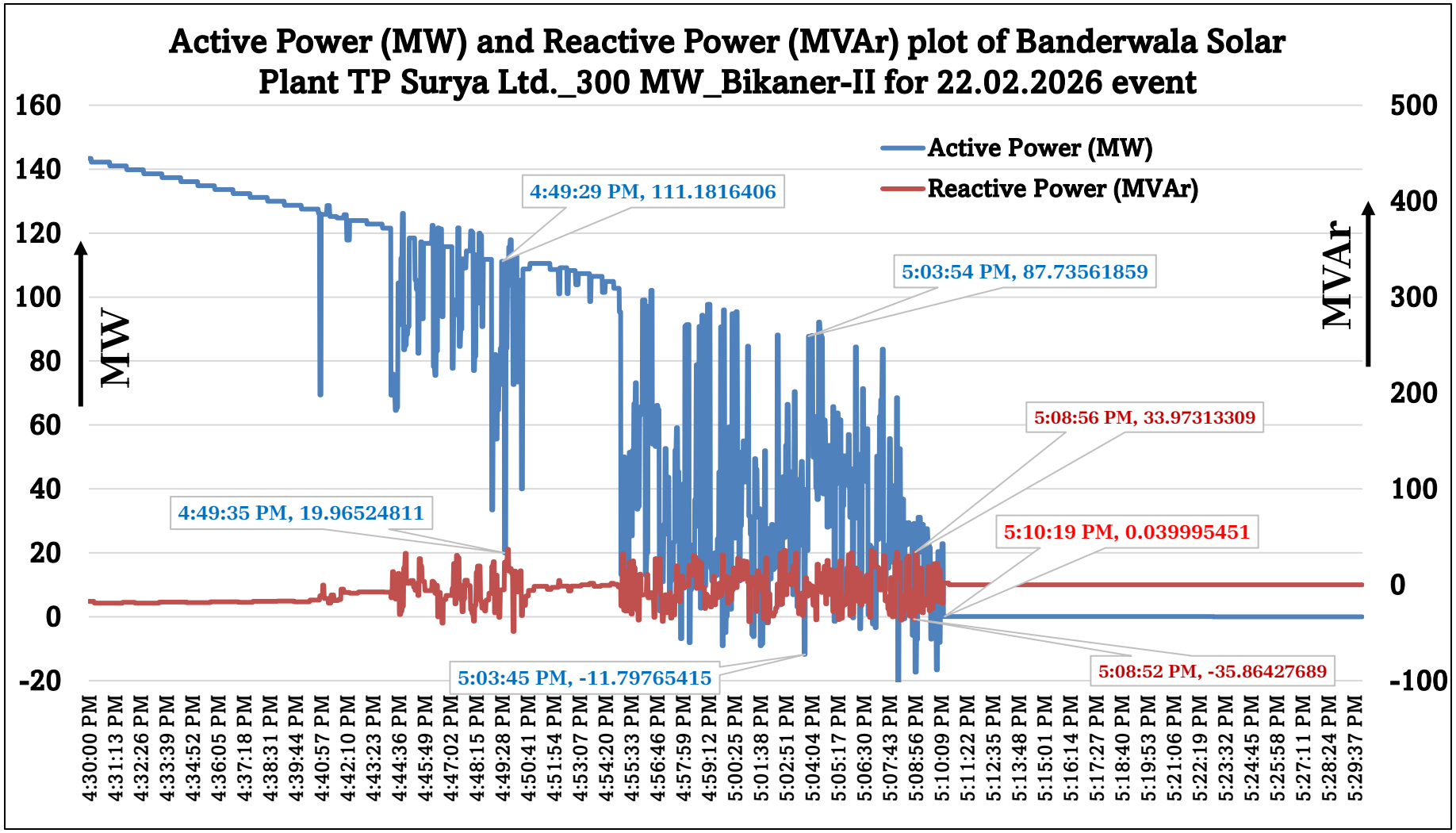
- ✓ Active Power fluctuation: 128 MW to 0 MW, ~128 MW fluctuation in active power
- ✓ Reactive Power fluctuation: 52 MVAr to -33 MVAr, ~85 MVAr fluctuation in reactive power
- ✓ Plant outage time: 16:58:21 hrs
- ✓ Severe fluctuation in active power started at: 16:44.

Active Power (MW) and Reactive Power (MVAr) plot of Renew Dinkar Urja Pvt. Ltd._200 MW_Bikaner-II



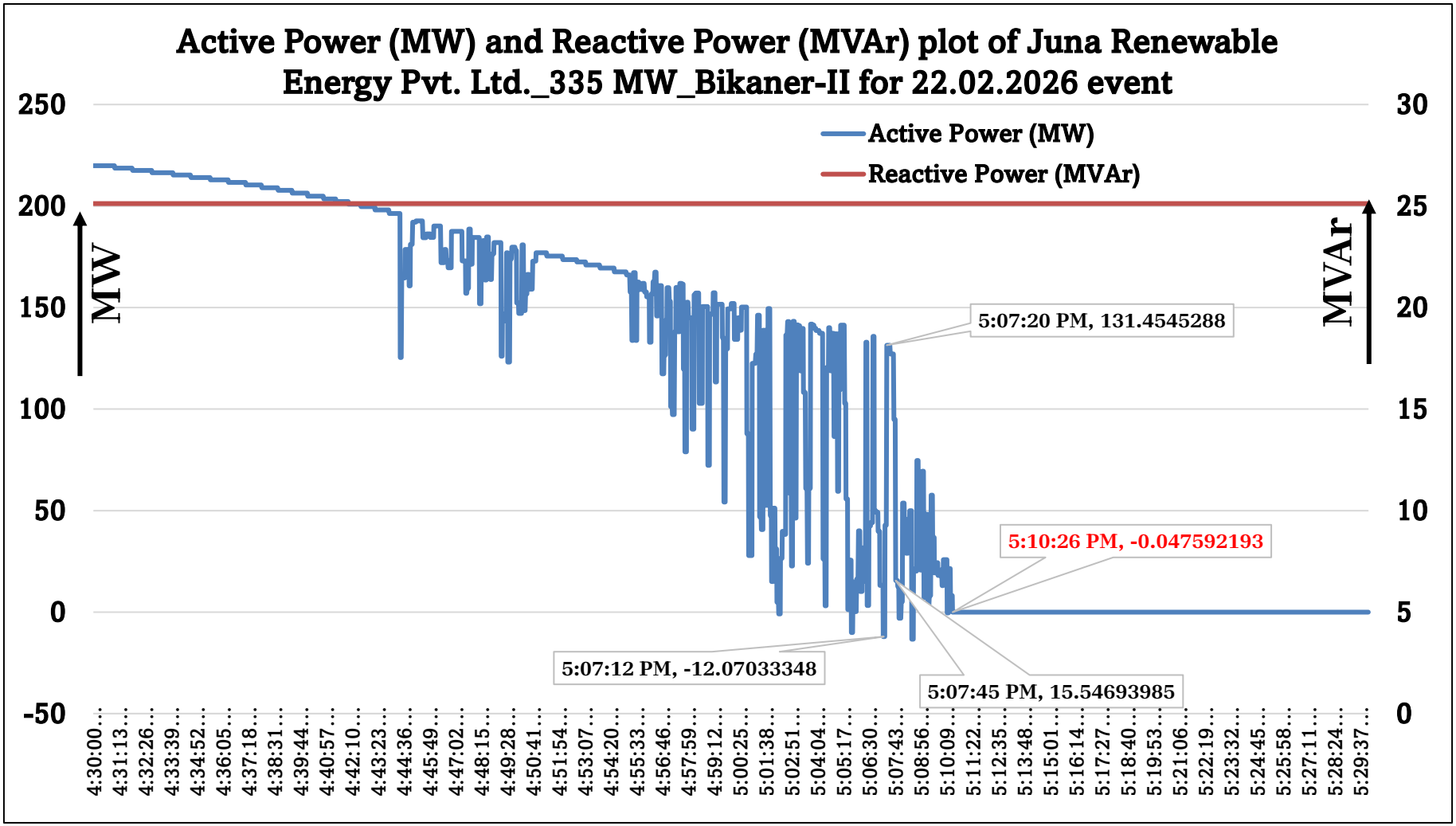
- ✓ Active Power fluctuation: 68 MW to 0 MW, ~68 MW fluctuation in active power
- ✓ Reactive Power fluctuation: 37 MVAr to -21 MVAr, ~59 MVAr fluctuation in reactive power
- ✓ Plant outage time: 17:08 hrs
- ✓ Severe fluctuation in active power started at: 16:46 hrs

Active Power (MW) and Reactive Power (MVAr) plot of Banderwala Solar Plant TP Surya Ltd._300 MW_Bikaner-II



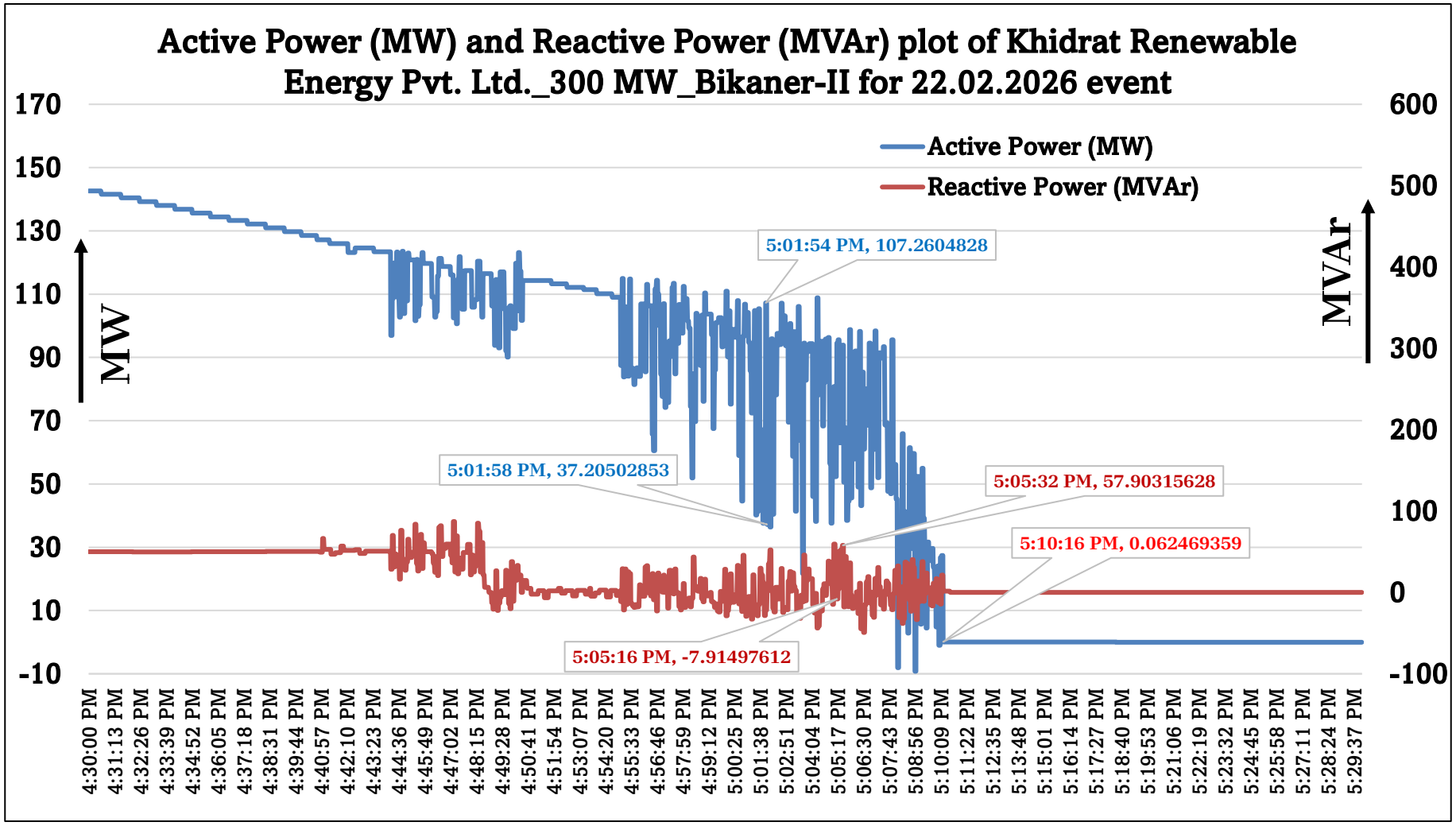
- ✓ Active Power fluctuation: 88 MW to -12 MW, **~100 MW** fluctuation in active power
- ✓ Reactive Power fluctuation: 34 MVAr to -35 MVAr, **~69 MVAr** fluctuation in reactive power
- ✓ Plant outage time: 17:10 hrs
- ✓ Severe fluctuation in active power started at: 16:53 hrs

Active Power (MW) and Reactive Power (MVAr) plot of Juna Renewable Energy Pvt. Ltd._335 MW_Bikaner-II



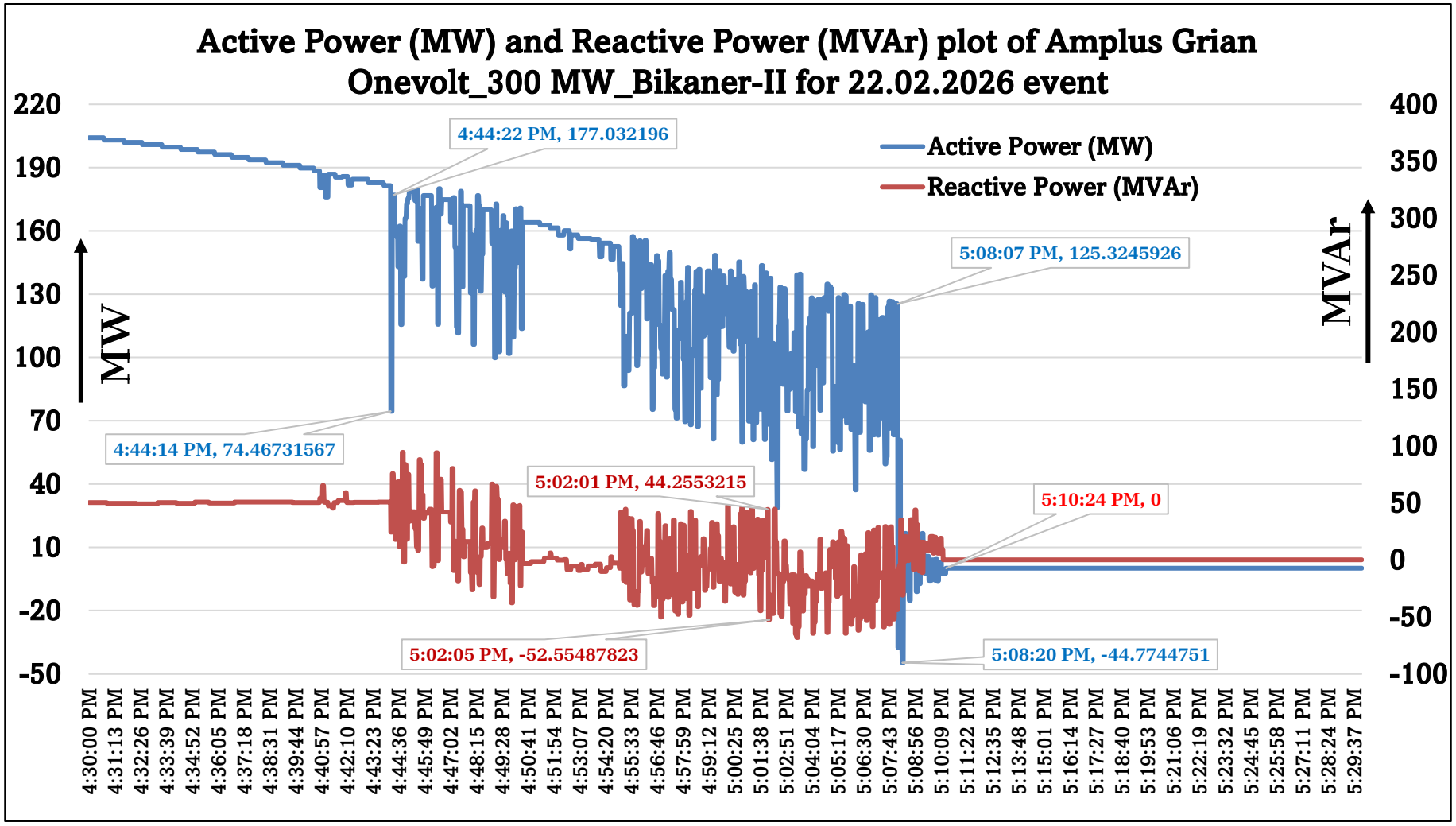
- ✓ Active Power fluctuation: 131 MW to -12 MW, ~143 MW fluctuation in active power
- ✓ Reactive Power fluctuation: Data freeze and suspected
- ✓ Plant outage time: 17:10 hrs
- ✓ Severe fluctuation in active power started at: 17:00 hrs

Active Power (MW) and Reactive Power (MVAr) plot of Khidrat Renewable Energy Pvt. Ltd._300 MW_Bikaner-II



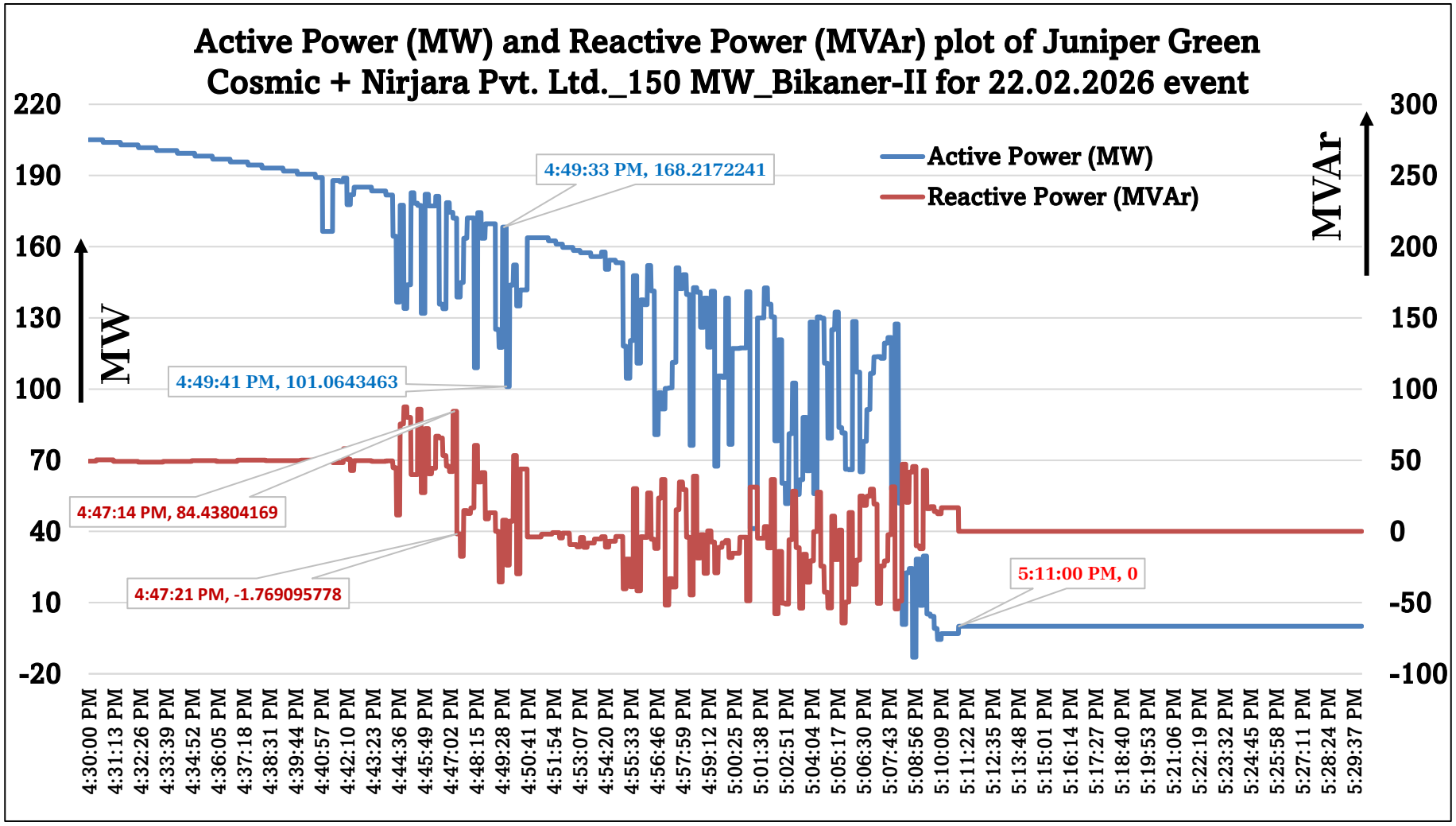
- ✓ Active Power fluctuation: 107 MW to 37 MW, **~70 MW** fluctuation in active power
- ✓ Reactive Power fluctuation: 58 MVAr to -8 MVAr, **~66 MVAr** fluctuation in reactive power
- ✓ Plant outage time: 17:10 hrs
- ✓ Severe fluctuation in active power started at: 17:00 hrs

Active Power (MW) and Reactive Power (MVAr) plot of Amplus Grian Onevolt_300 MW_Bikaner-II



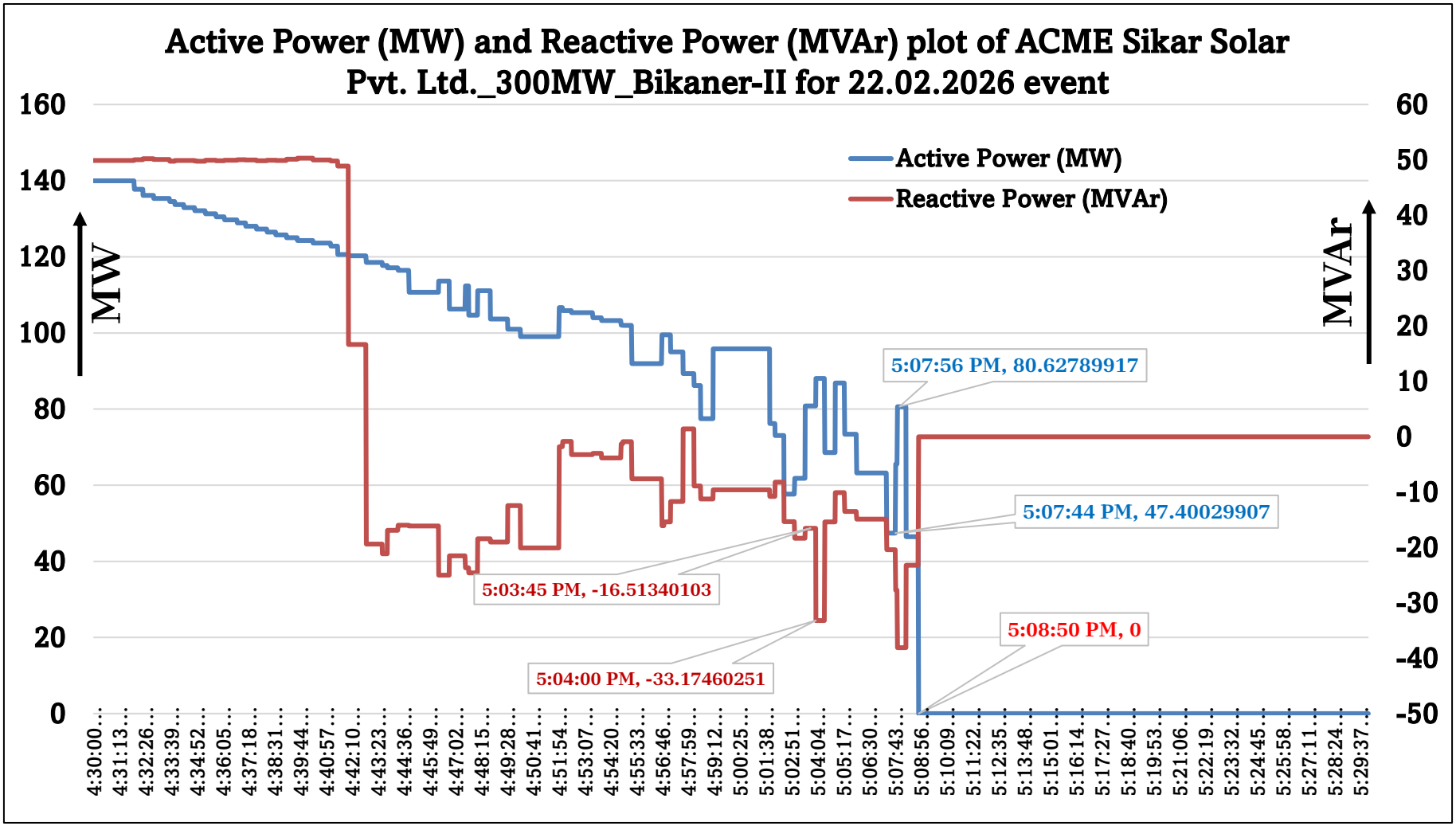
- ✓ Active Power fluctuation: 177 MW to 74 MW, **~100 MW** fluctuation in active power
- ✓ Reactive Power fluctuation: 44 MVAr to -52 MVAr, **~96 MVAr** fluctuation in reactive power
- ✓ Plant outage time: 17:10 hrs
- ✓ Severe fluctuation in active power started at: 17:01 hrs

Active Power (MW) and Reactive Power (MVAr) plot of Juniper Green Cosmic + Nirjara Pvt. Ltd._150 MW_Bikaner-II



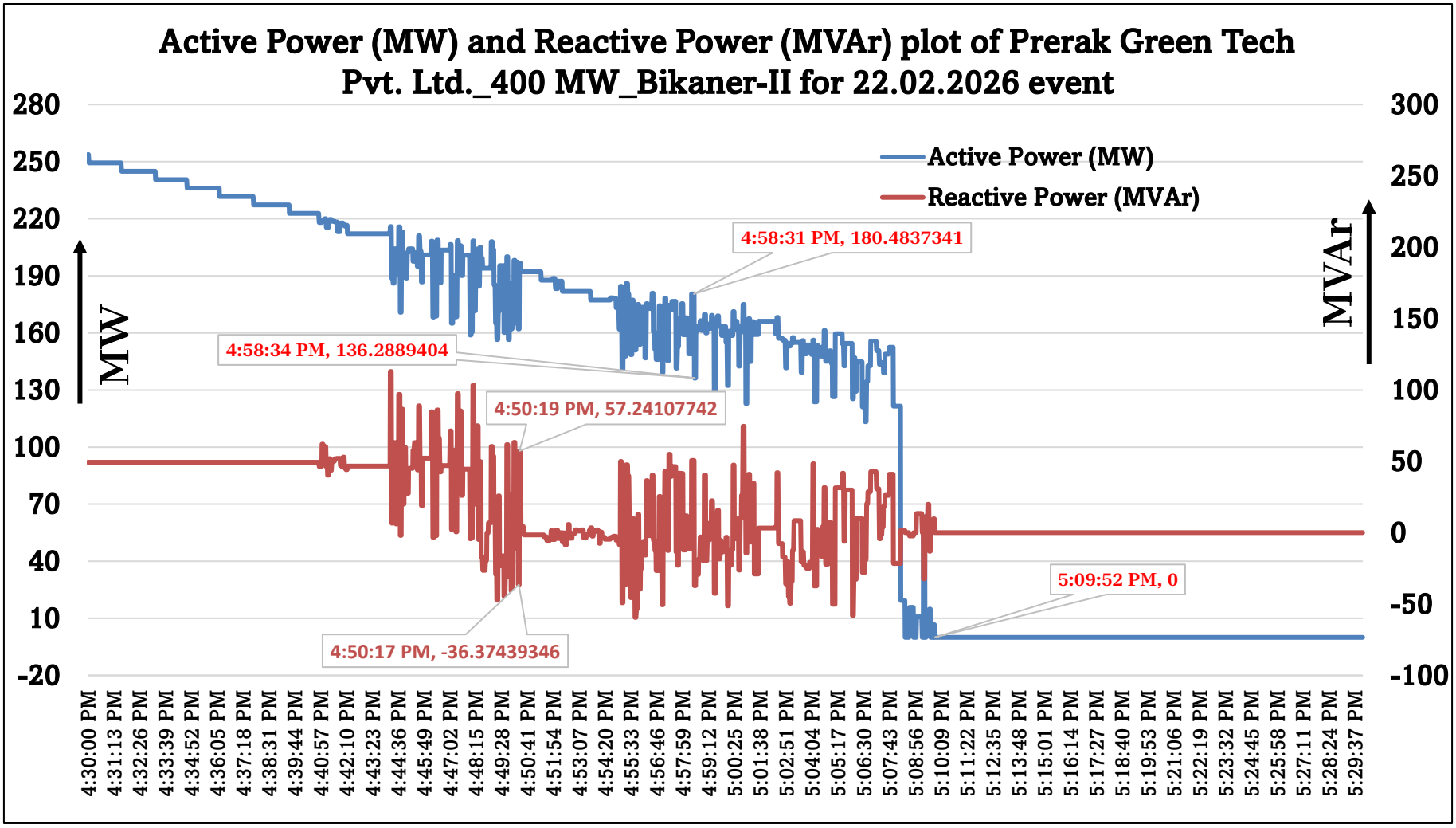
- ✓ Active Power fluctuation: 168 MW to 101 MW, **~67 MW** fluctuation in active power
- ✓ Reactive Power fluctuation: 84 MVAr to -2 MVAr, **~86 MVAr** fluctuation in reactive power
- ✓ Plant outage time: 17:10 hrs
- ✓ Severe fluctuation in active power started at: 17:01 hrs

Active Power (MW) and Reactive Power (MVAr) plot of ACME Sikar Solar Pvt. Ltd._300MW_Bikaner-II



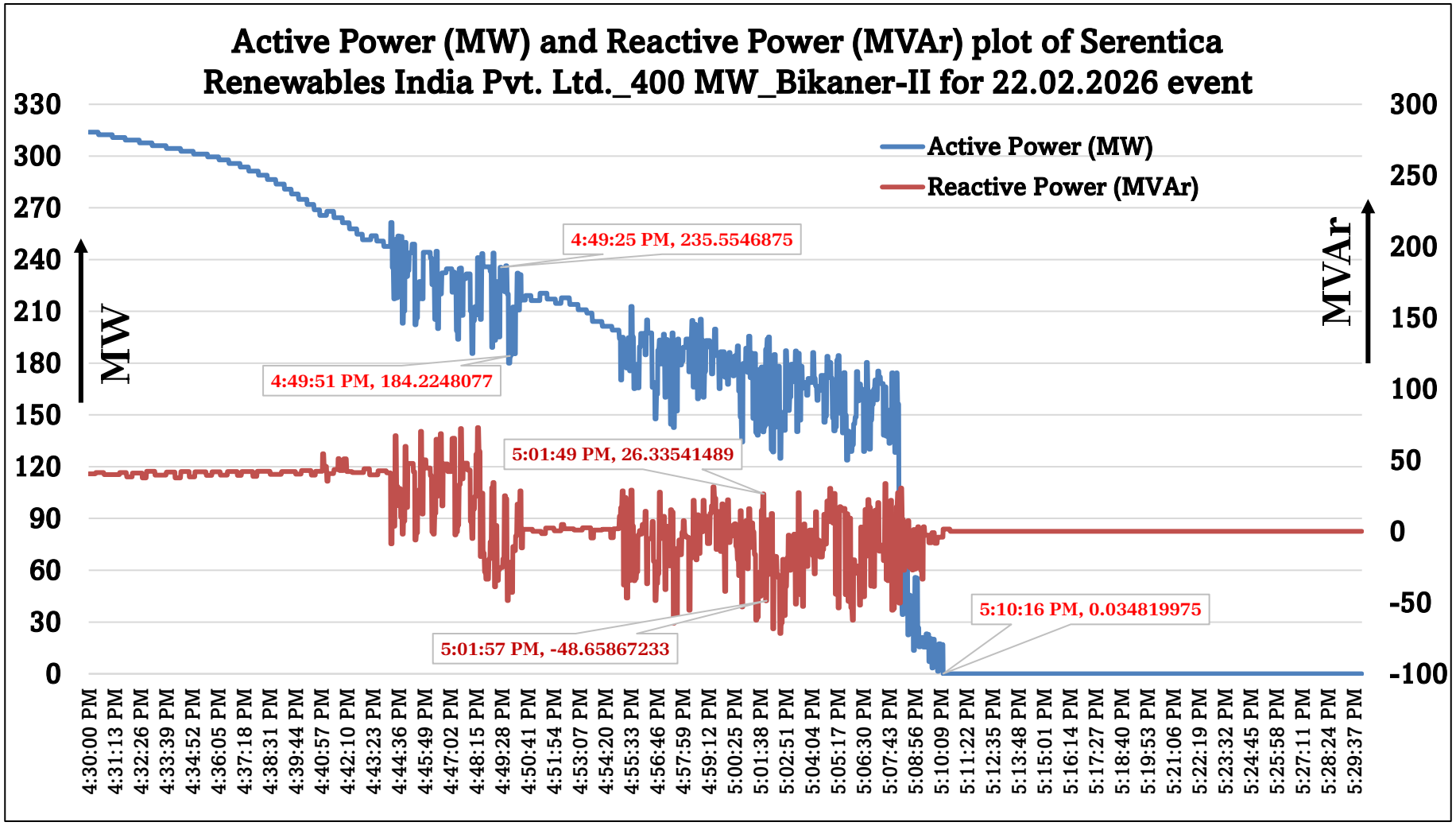
- ✓ Active Power fluctuation: 80 MW to 47 MW, **~33 MW** fluctuation in active power
- ✓ Reactive Power fluctuation: -16 MVAr to -33 MVAr, **17 MVAr** fluctuation in reactive power
- ✓ Plant outage time: 17:08:50 hrs
- ✓ Severe fluctuation in active power started at: **Data suspected.**

Active Power (MW) and Reactive Power (MVAr) plot of Prerak Green Tech Pvt. Ltd._400 MW_Bikaner-II



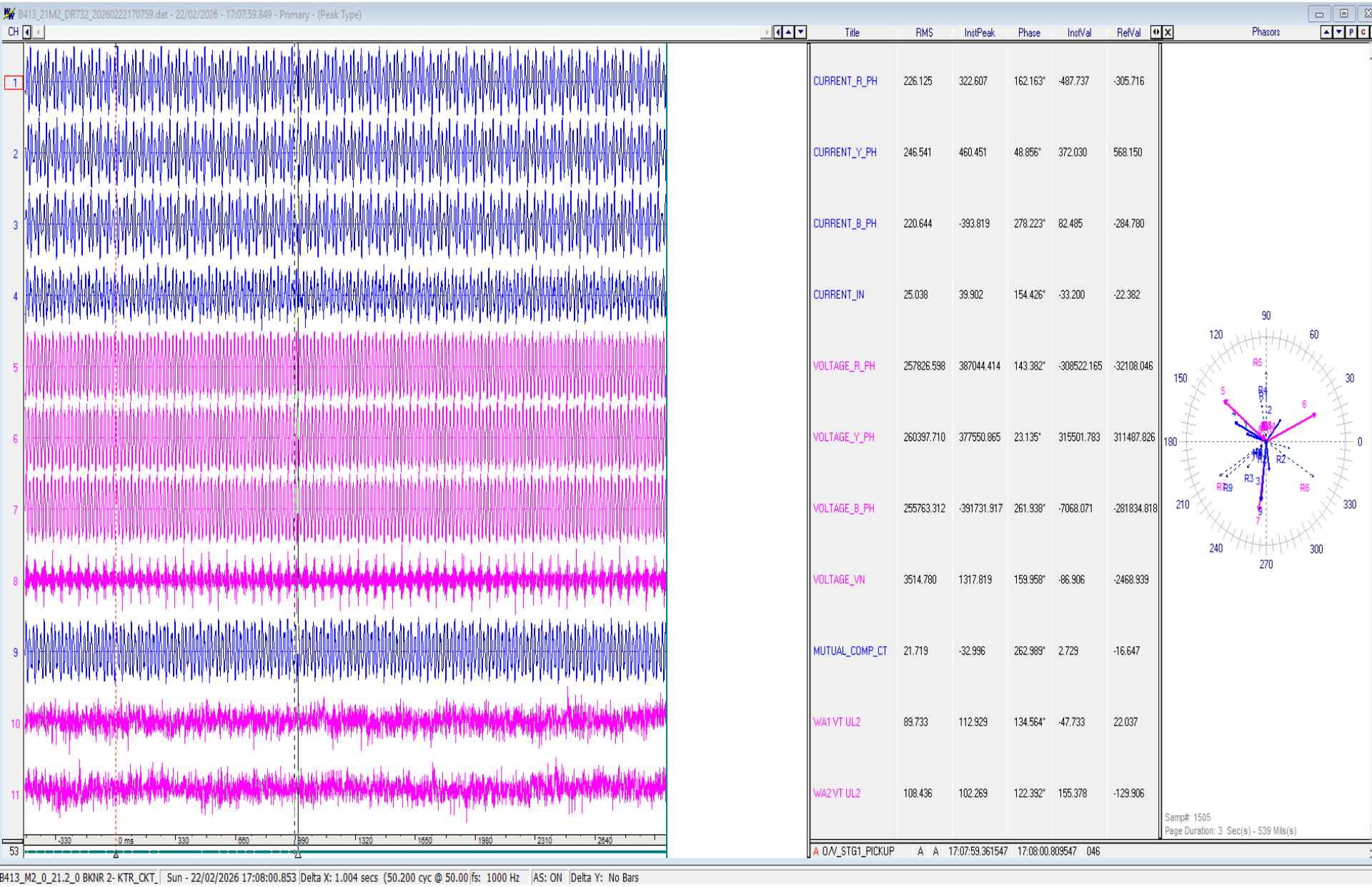
- ✓ Active Power fluctuation: 180 MW to 136 MW, **~44 MW** fluctuation in active power
- ✓ Reactive Power fluctuation: 57 MVAr to -36 MVAr, **~93 MVAr** fluctuation in reactive power
- ✓ Plant outage time: 17:09:52 hrs
- ✓ Severe fluctuation in active power started at: **Not observed.**

Active Power (MW) and Reactive Power (MVAr) plot of Serentica Renewables India Pvt. Ltd._400 MW_Bikaner-II



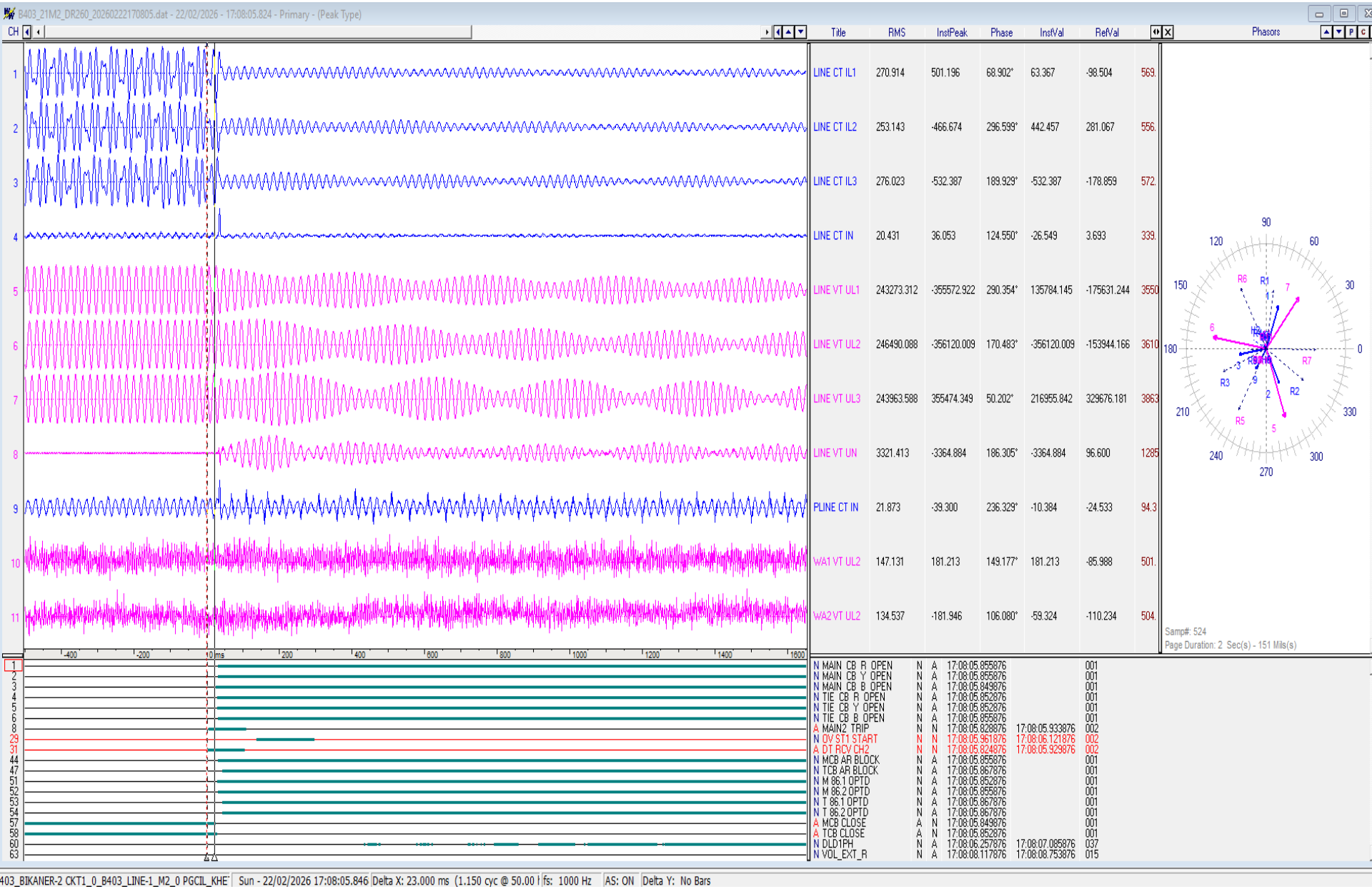
- ✓ Active Power fluctuation: 235 MW to 184 MW, **~51 MW** fluctuation in active power
- ✓ Reactive Power fluctuation: 26 MVAr to -48 MVAr, **~74 MVAr** fluctuation in reactive power
- ✓ Plant outage time: 17:10 hrs
- ✓ Severe fluctuation in active power started at: **Not observed.**

DR of 400 KV Bikaner_2 (PBTSL) (end)-Khetri (PKTSL) (PBTSL) Ckt-1



- ✓ As per DR, voltage went upto 1.14 pu at Bikaner2 end.

DR of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (end) (PBTSL) Ckt-1



- ✓ As per DR, DT received at Khetri end.

EL of 400 KV Bikaner_2 (PBTSL) (end)-Khetri (PKTSL) (PBTSL) Ckt-1

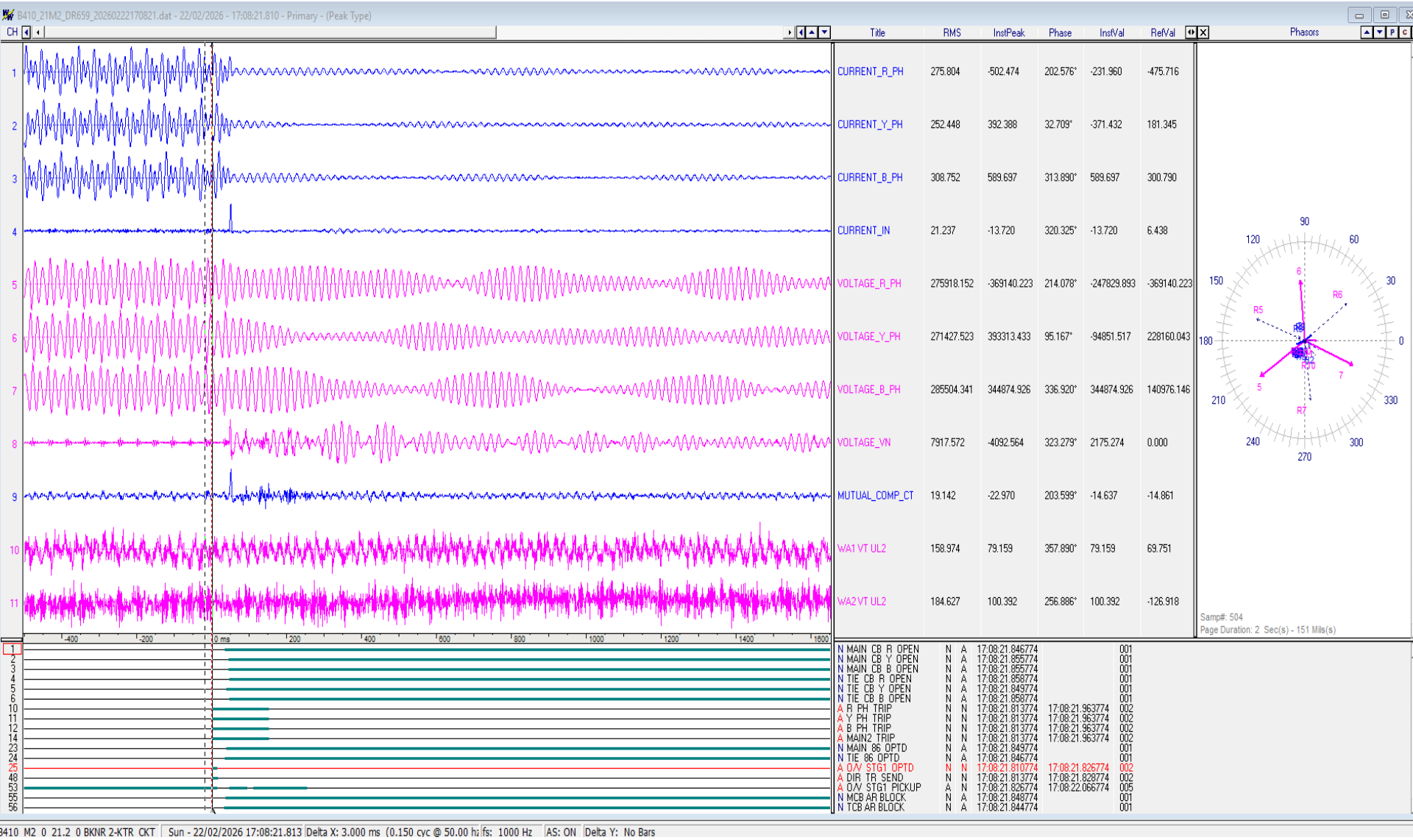
P	2/22/2026 5:08:05 PM	B_PH_TRIP	Off
P	2/22/2026 5:08:05 PM	MAIN2_TRIP	Off
P	2/22/2026 5:08:05 PM	R_PH_TRIP	Off
P	2/22/2026 5:08:05 PM	Y_PH_TRIP	Off
P	2/22/2026 5:08:05 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:08:05 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:08:05 PM	TIE_CB_B_OPEN	On
P	2/22/2026 5:08:05 PM	TIE_CB_Y_OPEN	On
P	2/22/2026 5:08:05 PM	MAIN_CB_B_OPEN	On
P	2/22/2026 5:08:05 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:08:05 PM	MAIN_CB_R_OPEN	On
P	2/22/2026 5:08:05 PM	MAIN_CB_Y_OPEN	On
P	2/22/2026 5:08:05 PM	TIE_CB_R_OPEN	On
P	2/22/2026 5:08:05 PM	MAIN_86_OPTD	On
P	2/22/2026 5:08:05 PM	MCB AR BLOCK	On
P	2/22/2026 5:08:05 PM	TCB AR BLOCK	On
P	2/22/2026 5:08:05 PM	TIE_86_OPTD	On
P	2/22/2026 5:08:05 PM	DIR_TR_SEND	Off
P	2/22/2026 5:08:05 PM	O/V_STG1_OPTD	Off
P	2/22/2026 5:08:05 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:08:05 PM	B_PH_TRIP	On
P	2/22/2026 5:08:05 PM	DIR_TR_SEND	On
P	2/22/2026 5:08:05 PM	MAIN2_TRIP	On
P	2/22/2026 5:08:05 PM	R_PH_TRIP	On
P	2/22/2026 5:08:05 PM	Y_PH_TRIP	On
P	2/22/2026 5:08:05 PM	O/V_STG1_OPTD	On
P	2/22/2026 5:08:00 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:08:00 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:08:00 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:08:00 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:08:00 PM	O/V_STG1_PICKUP	On

					Project: 5458_PGCIL_Bikaner-II(3)	Responsible department: ABB Ltd.	Technical ref...	Document kind: IED events
				Repla...	5458_PGCIL_Bikaner-II(3).Substation.400kV.KEC		Created by	Title: BIKA413M2DIS
Re	Modification	Rel.	Created	Based			Approved by	

Doc. designation: B413_21M2 | Document id.: 0 | Rev. | Rel. date | Lan | 1 / 109

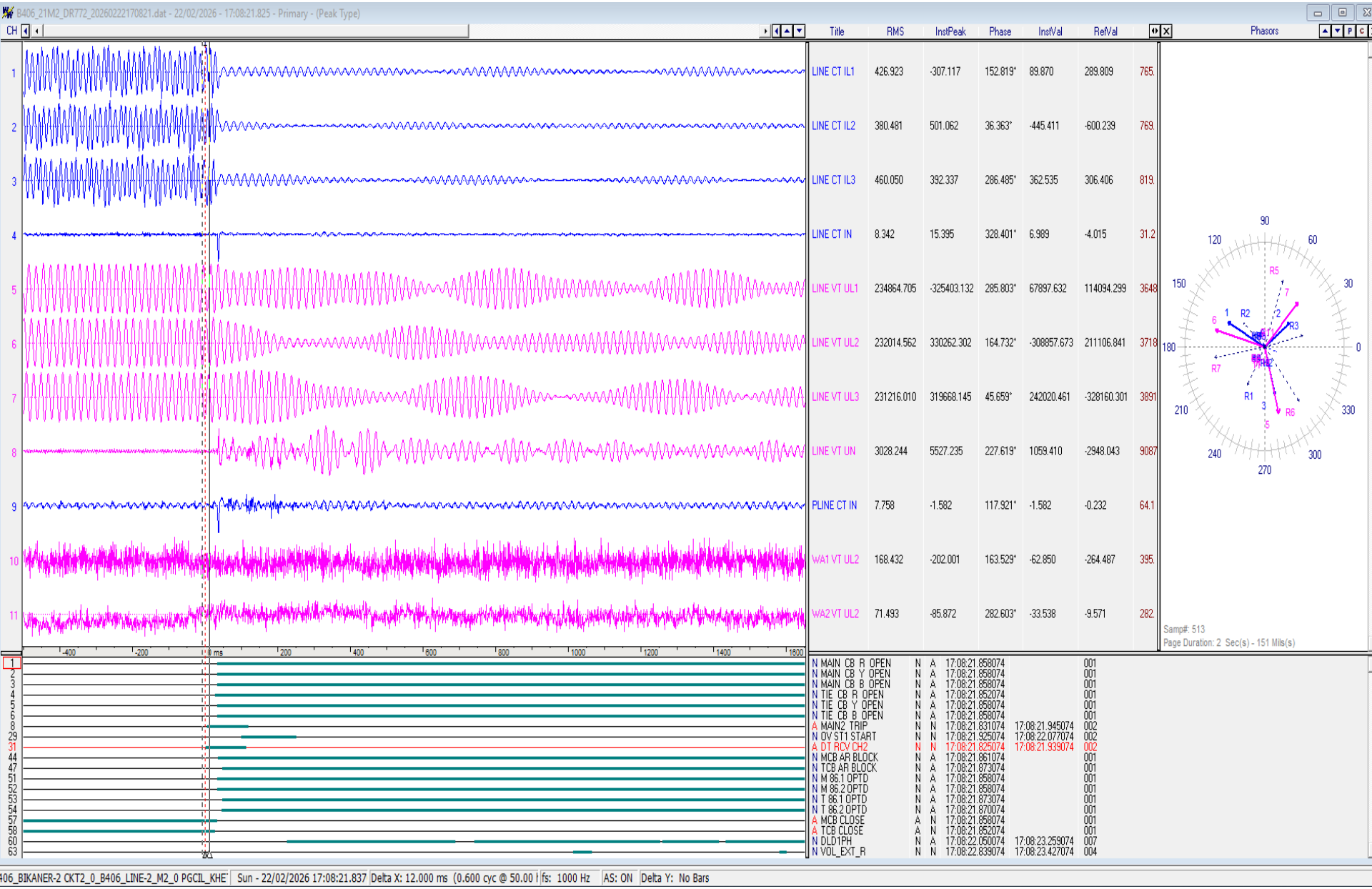
✓ As per EL, Over-voltage stage-1 operated with a time delay of 5 s and DT sent to Khetri end.

DR of 400 KV Bikaner_2 (PBTSL) (end)-Khetri (PKTSL) (PBTSL) Ckt-2



- ✓ As per DR, voltage went upto 1.23 pu at Bikaner2 end.
- ✓ Over-voltage stage-1 operated at Bikaner2 end.
- ✓ DT sent to Khetri end

DR of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (end) (PBTSL) Ckt-2



- ✓ As per DR, DT received at Khetri end.

EL of 400 KV Bikaner_2 (PBTSL) (end)-Khetri (PKTSL) (PBTSL) Ckt-2

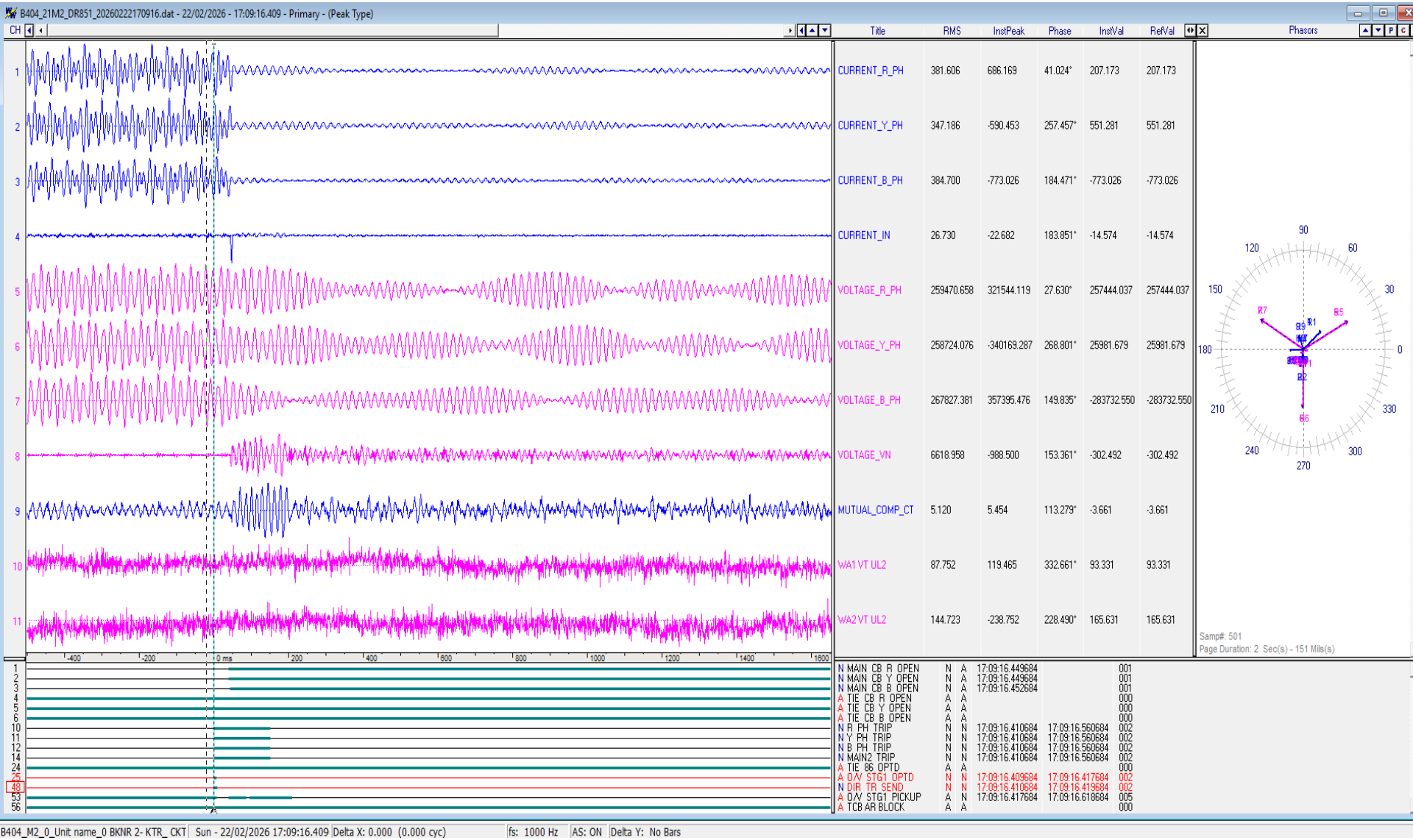
P	2/22/2026 5:08:21 PM	B_PH_TRIP	Off
P	2/22/2026 5:08:21 PM	MAIN2_TRIP	Off
P	2/22/2026 5:08:21 PM	R_PH_TRIP	Off
P	2/22/2026 5:08:21 PM	Y_PH_TRIP	Off
P	2/22/2026 5:08:21 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:08:21 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:08:21 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:08:21 PM	TIE_CB_B_OPEN	On
P	2/22/2026 5:08:21 PM	TIE_CB_R_OPEN	On
P	2/22/2026 5:08:21 PM	MAIN_CB_B_OPEN	On
P	2/22/2026 5:08:21 PM	MAIN_CB_Y_OPEN	On
P	2/22/2026 5:08:21 PM	MAIN_86_OPTD	On
P	2/22/2026 5:08:21 PM	TIE_CB_Y_OPEN	On
P	2/22/2026 5:08:21 PM	MCB AR BLOCK	On
P	2/22/2026 5:08:21 PM	MAIN_CB_R_OPEN	On

					Project: 5458_PGCIL_Bikaner-II(3)	Responsible department: ABB Ltd.	Technical ref...	Document kind: IED events	Doc. designation: B410_21M2	
				Repla...	5458_PGCIL_Bikaner-II(3).Substation.400kV.KEC	ABB	Created by	Title: BIKA410M2DIS	Document id.: 0	
Rev.	Modification	Rel. date	Created by	Based on			Approved by		Rev. / Rel. date / Lan / 1 / 109	

Type	Date & Time	Signal name	Status
P	2/22/2026 5:08:21 PM	TIE_86_OPTD	On
P	2/22/2026 5:08:21 PM	TCB AR BLOCK	On
P	2/22/2026 5:08:21 PM	DIR_TR_SEND	Off
P	2/22/2026 5:08:21 PM	O/V_STG1_OPTD	Off
P	2/22/2026 5:08:21 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:08:21 PM	B_PH_TRIP	On
P	2/22/2026 5:08:21 PM	DIR_TR_SEND	On
P	2/22/2026 5:08:21 PM	MAIN2_TRIP	On
P	2/22/2026 5:08:21 PM	R_PH_TRIP	On
P	2/22/2026 5:08:21 PM	Y_PH_TRIP	On
P	2/22/2026 5:08:21 PM	O/V_STG1_OPTD	On
P	2/22/2026 5:08:15 PM	O/V_STG1_PICKUP	On

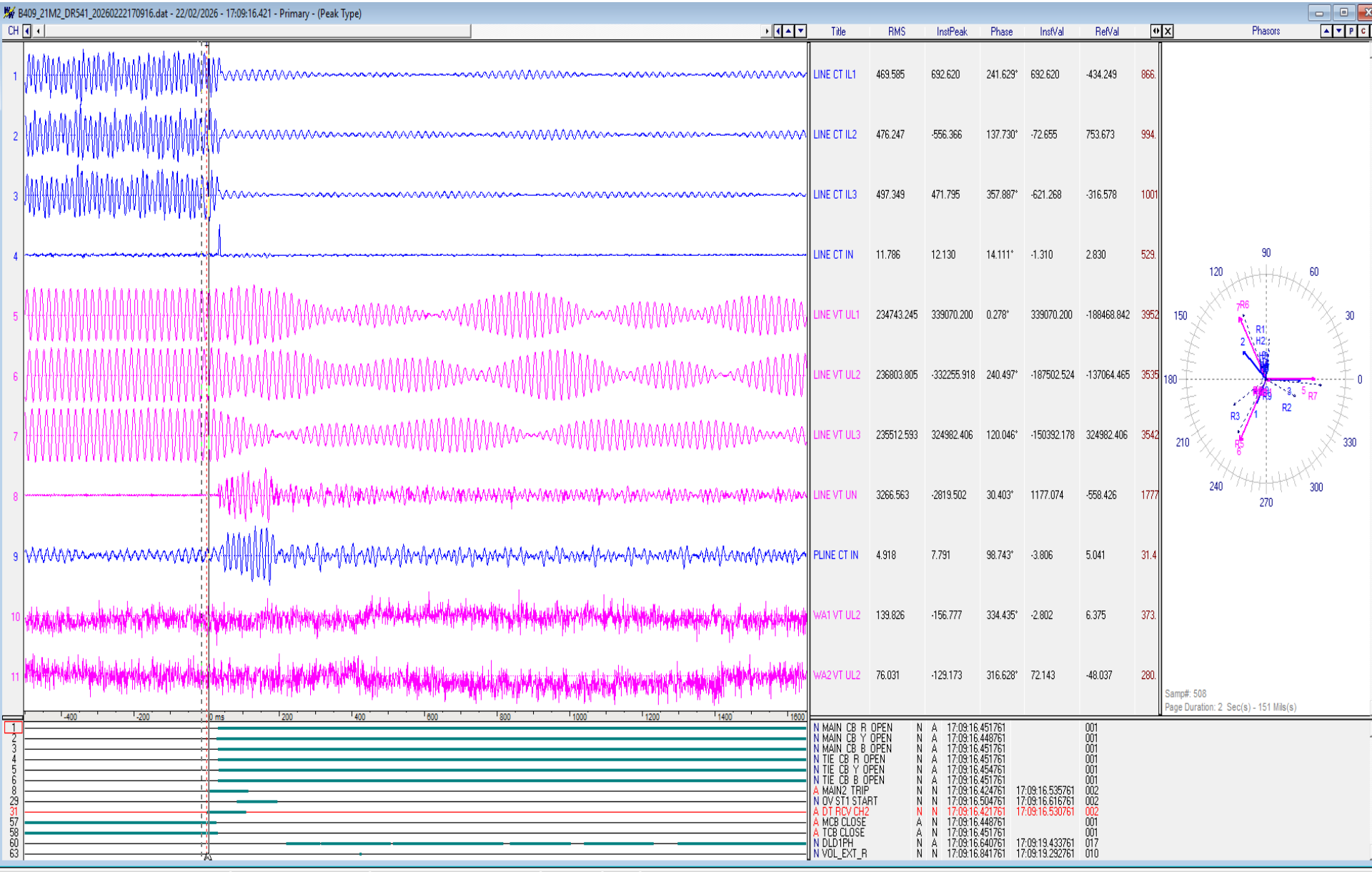
✓ As per EL, Over-voltage stage-1 operated with a time delay of 6 s and DT sent to Khetri end.

DR of 400 KV Bikaner_2 (PBTSL) (end)-Khetri (PKTSL) (PBTSL) Ckt-3



- ✓ As per DR, voltage went upto 1.16 pu at Bikaner2 end.
- ✓ Over-voltage stage-1 operated at Bikaner2 end.
- ✓ DT sent to Khetri end.

DR of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (end) (PBTSL) Ckt-3



✓ As per DR, DT received at Khetri end.

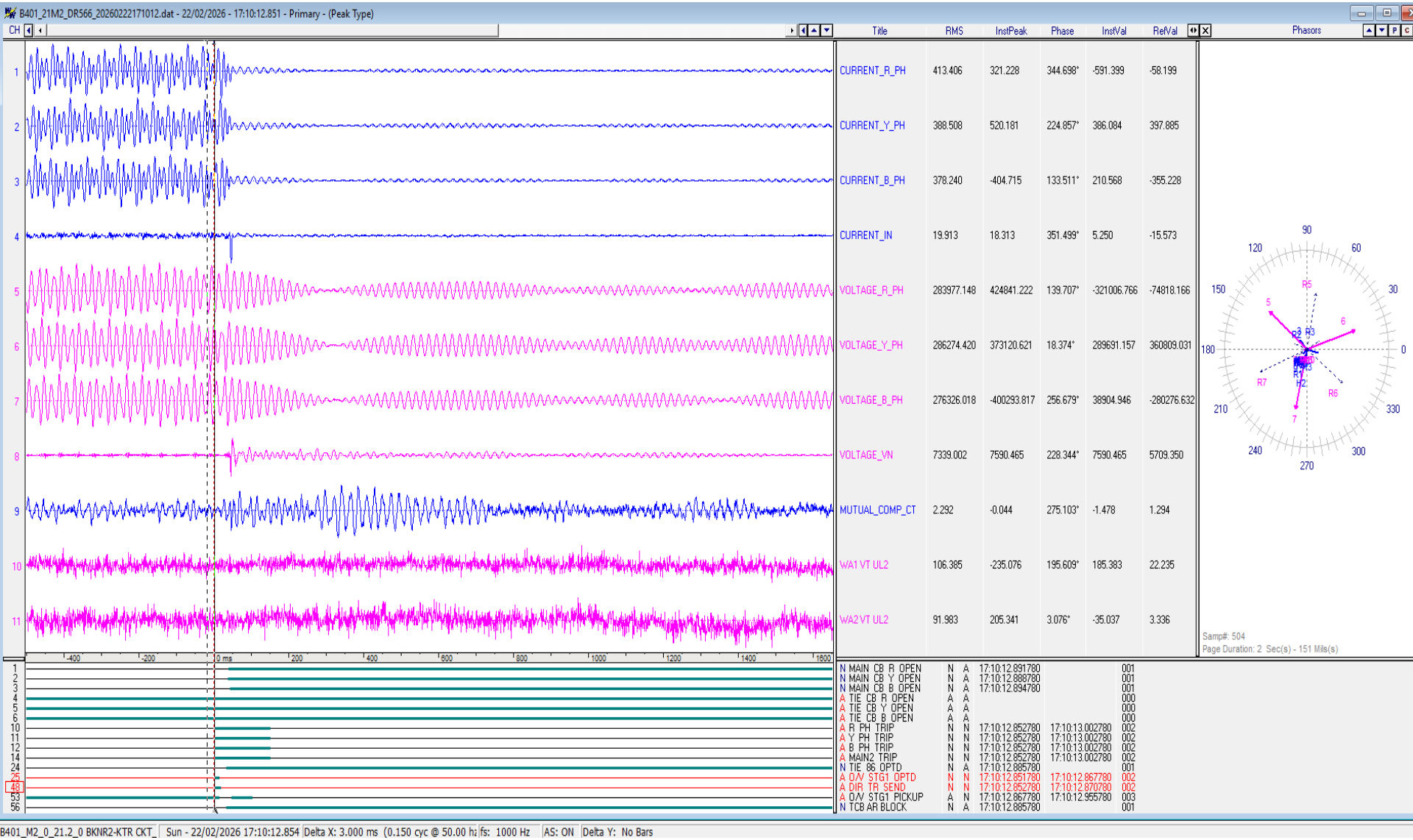
EL of 400 KV Bikaner_2 (PBTSL) (end)-Khetri (PKTSL) (PBTSL) Ckt-3

P	2/22/2026 5:09:16 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:09:16 PM	B_PH_TRIP	Off
P	2/22/2026 5:09:16 PM	MAIN2_TRIP	Off
P	2/22/2026 5:09:16 PM	R_PH_TRIP	Off
P	2/22/2026 5:09:16 PM	Y_PH_TRIP	Off
P	2/22/2026 5:09:16 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:09:16 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:09:16 PM	MAIN_CB_B_OPEN	On
P	2/22/2026 5:09:16 PM	MAIN_CB_R_OPEN	On
P	2/22/2026 5:09:16 PM	MAIN_CB_Y_OPEN	On
P	2/22/2026 5:09:16 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:09:16 PM	DIR_TR_SEND	Off
P	2/22/2026 5:09:16 PM	O/V_STG1_OPTD	Off
P	2/22/2026 5:09:16 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:09:16 PM	B_PH_TRIP	On
P	2/22/2026 5:09:16 PM	DIR_TR_SEND	On
P	2/22/2026 5:09:16 PM	MAIN2_TRIP	On
P	2/22/2026 5:09:16 PM	R_PH_TRIP	On
P	2/22/2026 5:09:16 PM	Y_PH_TRIP	On
P	2/22/2026 5:09:16 PM	O/V_STG1_OPTD	On
P	2/22/2026 5:09:10 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:09:10 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:09:05 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:09:05 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:09:04 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:09:04 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:09:03 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:09:03 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:09:00 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:09:00 PM	O/V_STG1_PICKUP	Off
P	2/22/2026 5:09:00 PM	O/V_STG1_PICKUP	On
P	2/22/2026 5:09:00 PM	O/V_STG1_PICKUP	Off

					Project: 5458_PGCIL_Bikaner-II(3)	Responsible department: ABB Ltd.	Technical ref...	Document kind: IED events	Doc. designation: B404_21M2	
				Repla...	5458_PGCIL_Bikaner-II(3).Substation.400kV.KEC	ABB	Created by	Title: BIKA404M2DIS	Document id.: 0	
Rev.	Modification	Rel. date	Created by	Based on			Approved by		Rev. / Rel. date / Lan: en	1 / 68

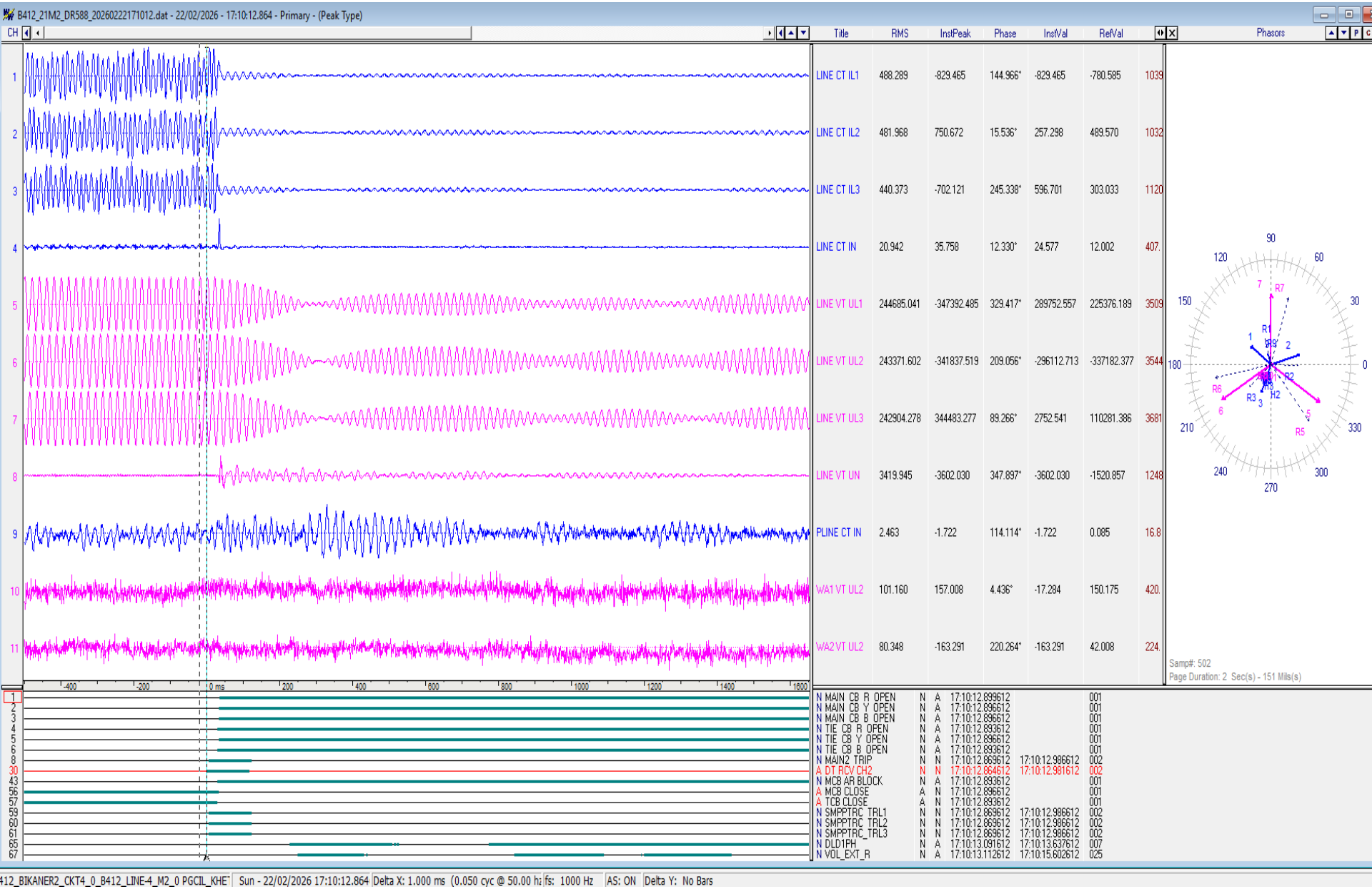
✓ As per EL, Over-voltage stage-1 operated with a time delay of 6 s and DT sent to Khetri end.

DR of 400 KV Bikaner_2 (PBTSL) (end)-Khetri (PKTSL) (PBTSL) Ckt-4



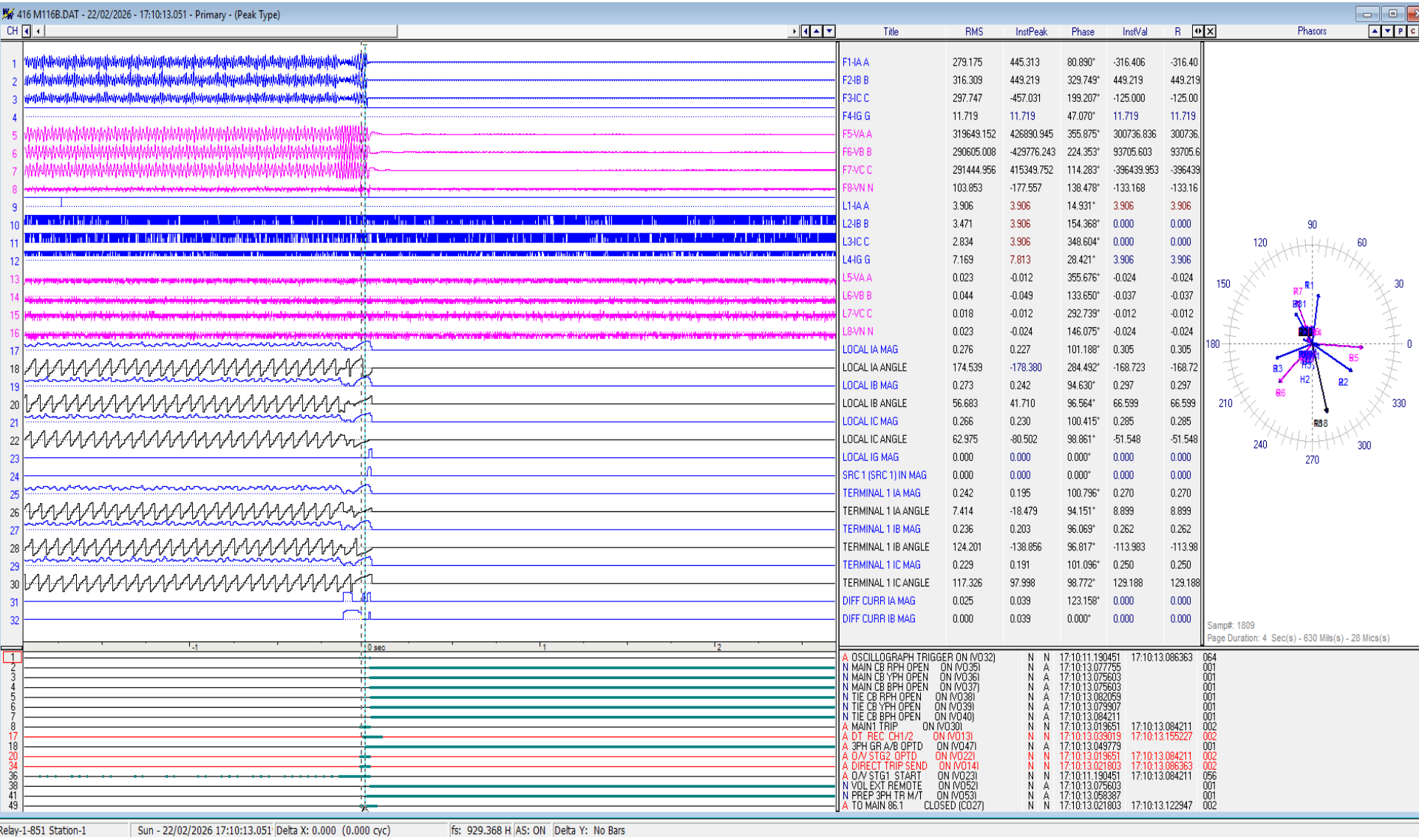
- ✓ As per DR, voltage went upto 1.238 pu at Bikaner2 end.
- ✓ Over-voltage stage-1 operated at Bikaner2 end.
- ✓ DT sent to Khetri end.

DR of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (end) (PBTSL) Ckt-4



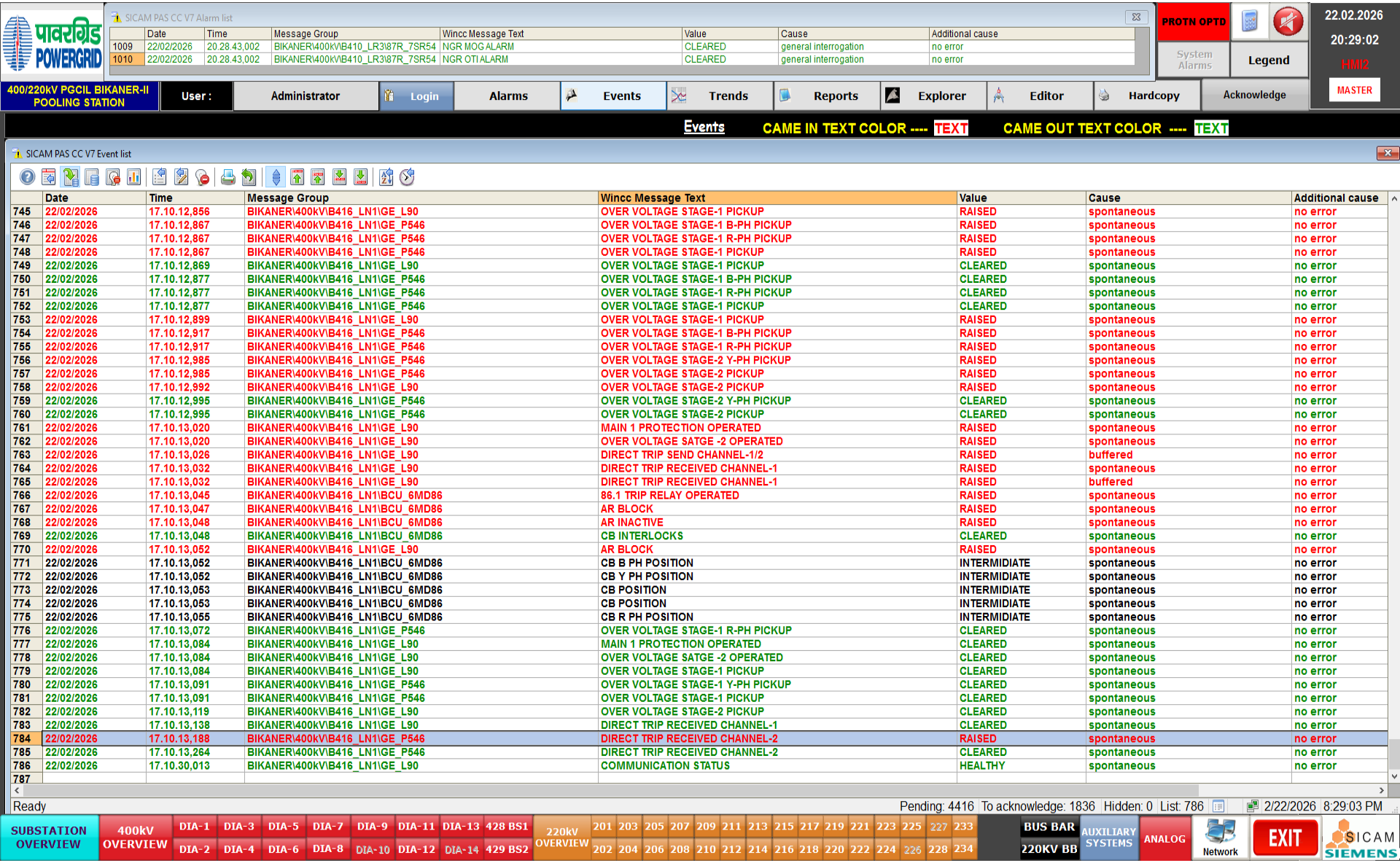
- ✓ As per DR, DT received at Khetri end.

DR of 400 KV Bikaner_2 (PBTSL)-SJVN_GEL_SL_BKN2 (SGEL_BKN2) Ckt



- ✓ As per DR, voltage went upto 1.38 pu at Bikaner2 end.
- ✓ Over-voltage stage-2 operated at Bikaner2 end.
- ✓ DT received from SGEL end as well as sent to SGEL end.

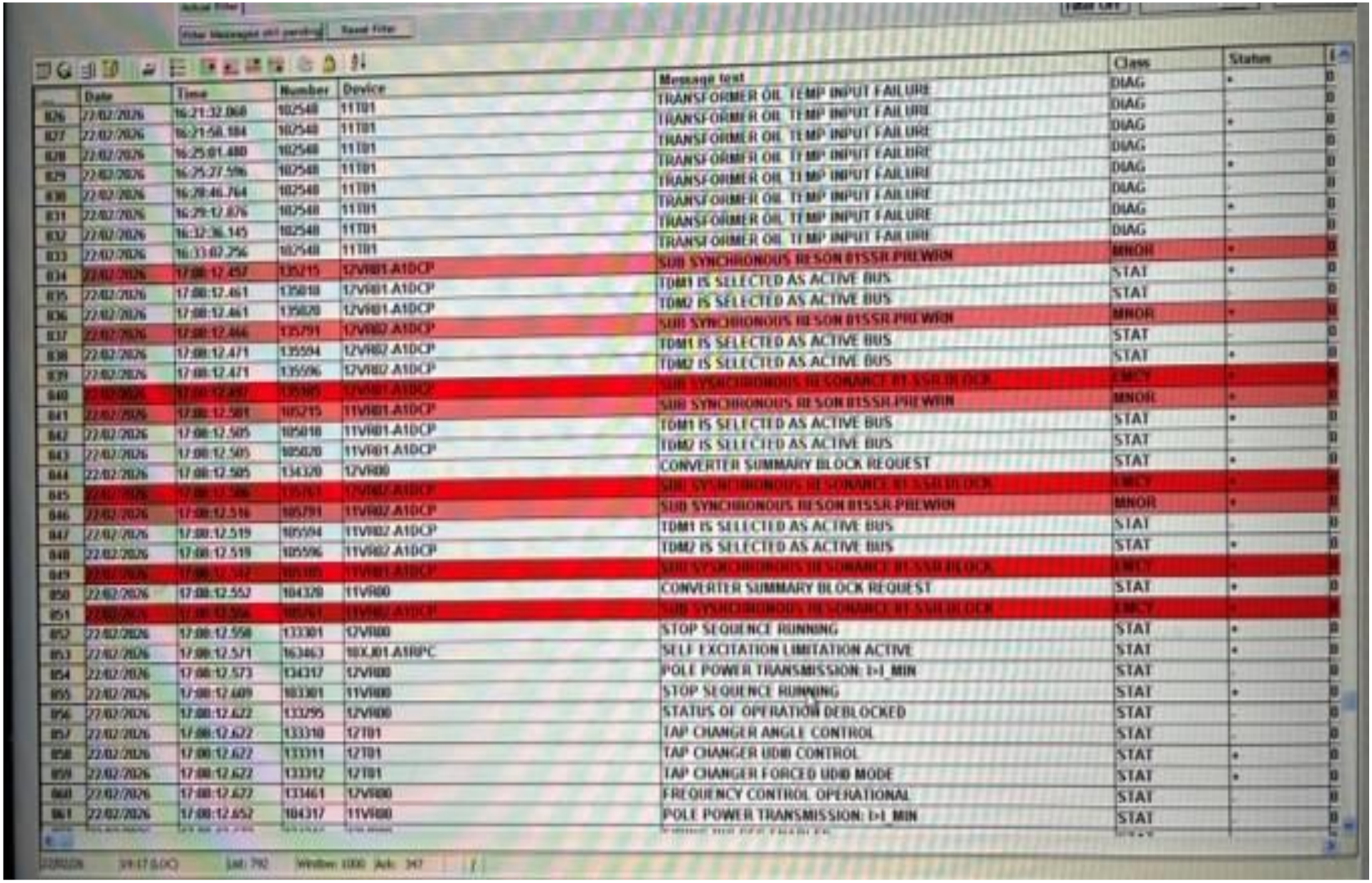
EL of 400 KV Bikaner_2 (PBTSL)-SJVN_GEL_SL_BKN2 (SGEL_BKN2) Ckt



	Date	Time	Message Group	Wincc Message Text	Value	Cause	Additional cause
745	22/02/2026	17.10.12,856	BIKANER\400kV\B416_LN1\GE_L90	OVER VOLTAGE STAGE-1 PICKUP	RAISED	spontaneous	no error
746	22/02/2026	17.10.12,867	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-1 B-PH PICKUP	RAISED	spontaneous	no error
747	22/02/2026	17.10.12,867	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-1 R-PH PICKUP	RAISED	spontaneous	no error
748	22/02/2026	17.10.12,867	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-1 PICKUP	RAISED	spontaneous	no error
749	22/02/2026	17.10.12,869	BIKANER\400kV\B416_LN1\GE_L90	OVER VOLTAGE STAGE-1 PICKUP	CLEARED	spontaneous	no error
750	22/02/2026	17.10.12,877	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-1 B-PH PICKUP	CLEARED	spontaneous	no error
751	22/02/2026	17.10.12,877	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-1 R-PH PICKUP	CLEARED	spontaneous	no error
752	22/02/2026	17.10.12,877	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-1 PICKUP	CLEARED	spontaneous	no error
753	22/02/2026	17.10.12,899	BIKANER\400kV\B416_LN1\GE_L90	OVER VOLTAGE STAGE-1 PICKUP	RAISED	spontaneous	no error
754	22/02/2026	17.10.12,917	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-1 B-PH PICKUP	RAISED	spontaneous	no error
755	22/02/2026	17.10.12,917	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-1 R-PH PICKUP	RAISED	spontaneous	no error
756	22/02/2026	17.10.12,985	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-2 Y-PH PICKUP	RAISED	spontaneous	no error
757	22/02/2026	17.10.12,985	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-2 PICKUP	RAISED	spontaneous	no error
758	22/02/2026	17.10.12,992	BIKANER\400kV\B416_LN1\GE_L90	OVER VOLTAGE STAGE-2 PICKUP	RAISED	spontaneous	no error
759	22/02/2026	17.10.12,995	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-2 Y-PH PICKUP	CLEARED	spontaneous	no error
760	22/02/2026	17.10.12,995	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-2 PICKUP	CLEARED	spontaneous	no error
761	22/02/2026	17.10.13,020	BIKANER\400kV\B416_LN1\GE_L90	MAIN 1 PROTECTION OPERATED	RAISED	spontaneous	no error
762	22/02/2026	17.10.13,020	BIKANER\400kV\B416_LN1\GE_L90	OVER VOLTAGE SATGE -2 OPERATED	RAISED	spontaneous	no error
763	22/02/2026	17.10.13,026	BIKANER\400kV\B416_LN1\GE_L90	DIRECT TRIP SEND CHANNEL-1/2	RAISED	buffered	no error
764	22/02/2026	17.10.13,032	BIKANER\400kV\B416_LN1\GE_L90	DIRECT TRIP RECEIVED CHANNEL-1	RAISED	spontaneous	no error
765	22/02/2026	17.10.13,032	BIKANER\400kV\B416_LN1\GE_L90	DIRECT TRIP RECEIVED CHANNEL-1	RAISED	buffered	no error
766	22/02/2026	17.10.13,045	BIKANER\400kV\B416_LN1\BCU_6MD86	86.1 TRIP RELAY OPERATED	RAISED	spontaneous	no error
767	22/02/2026	17.10.13,047	BIKANER\400kV\B416_LN1\BCU_6MD86	AR BLOCK	RAISED	spontaneous	no error
768	22/02/2026	17.10.13,048	BIKANER\400kV\B416_LN1\BCU_6MD86	AR INACTIVE	RAISED	spontaneous	no error
769	22/02/2026	17.10.13,048	BIKANER\400kV\B416_LN1\BCU_6MD86	CB INTERLOCKS	CLEARED	spontaneous	no error
770	22/02/2026	17.10.13,052	BIKANER\400kV\B416_LN1\GE_L90	AR BLOCK	RAISED	spontaneous	no error
771	22/02/2026	17.10.13,052	BIKANER\400kV\B416_LN1\BCU_6MD86	CB B PH POSITION	INTERMIDIATE	spontaneous	no error
772	22/02/2026	17.10.13,052	BIKANER\400kV\B416_LN1\BCU_6MD86	CB Y PH POSITION	INTERMIDIATE	spontaneous	no error
773	22/02/2026	17.10.13,053	BIKANER\400kV\B416_LN1\BCU_6MD86	CB POSITION	INTERMIDIATE	spontaneous	no error
774	22/02/2026	17.10.13,053	BIKANER\400kV\B416_LN1\BCU_6MD86	CB POSITION	INTERMIDIATE	spontaneous	no error
775	22/02/2026	17.10.13,055	BIKANER\400kV\B416_LN1\BCU_6MD86	CB R PH POSITION	INTERMIDIATE	spontaneous	no error
776	22/02/2026	17.10.13,072	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-1 R-PH PICKUP	CLEARED	spontaneous	no error
777	22/02/2026	17.10.13,084	BIKANER\400kV\B416_LN1\GE_L90	MAIN 1 PROTECTION OPERATED	CLEARED	spontaneous	no error
778	22/02/2026	17.10.13,084	BIKANER\400kV\B416_LN1\GE_L90	OVER VOLTAGE SATGE -2 OPERATED	CLEARED	spontaneous	no error
779	22/02/2026	17.10.13,084	BIKANER\400kV\B416_LN1\GE_L90	OVER VOLTAGE STAGE-1 PICKUP	CLEARED	spontaneous	no error
780	22/02/2026	17.10.13,091	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-1 Y-PH PICKUP	CLEARED	spontaneous	no error
781	22/02/2026	17.10.13,091	BIKANER\400kV\B416_LN1\GE_P546	OVER VOLTAGE STAGE-1 PICKUP	CLEARED	spontaneous	no error
782	22/02/2026	17.10.13,119	BIKANER\400kV\B416_LN1\GE_L90	OVER VOLTAGE STAGE-2 PICKUP	CLEARED	spontaneous	no error
783	22/02/2026	17.10.13,138	BIKANER\400kV\B416_LN1\GE_L90	DIRECT TRIP RECEIVED CHANNEL-1	CLEARED	spontaneous	no error
784	22/02/2026	17.10.13,188	BIKANER\400kV\B416_LN1\GE_P546	DIRECT TRIP RECEIVED CHANNEL-2	RAISED	spontaneous	no error
785	22/02/2026	17.10.13,264	BIKANER\400kV\B416_LN1\GE_P546	DIRECT TRIP RECEIVED CHANNEL-2	CLEARED	spontaneous	no error
786	22/02/2026	17.10.30,013	BIKANER\400kV\B416_LN1\GE_L90	COMMUNICATION STATUS	HEALTHY	spontaneous	no error
787							

- ✓ As per EL, Over-voltage stage-2 operated at Bikaner2 end.
- ✓ DT received from SGEL end.

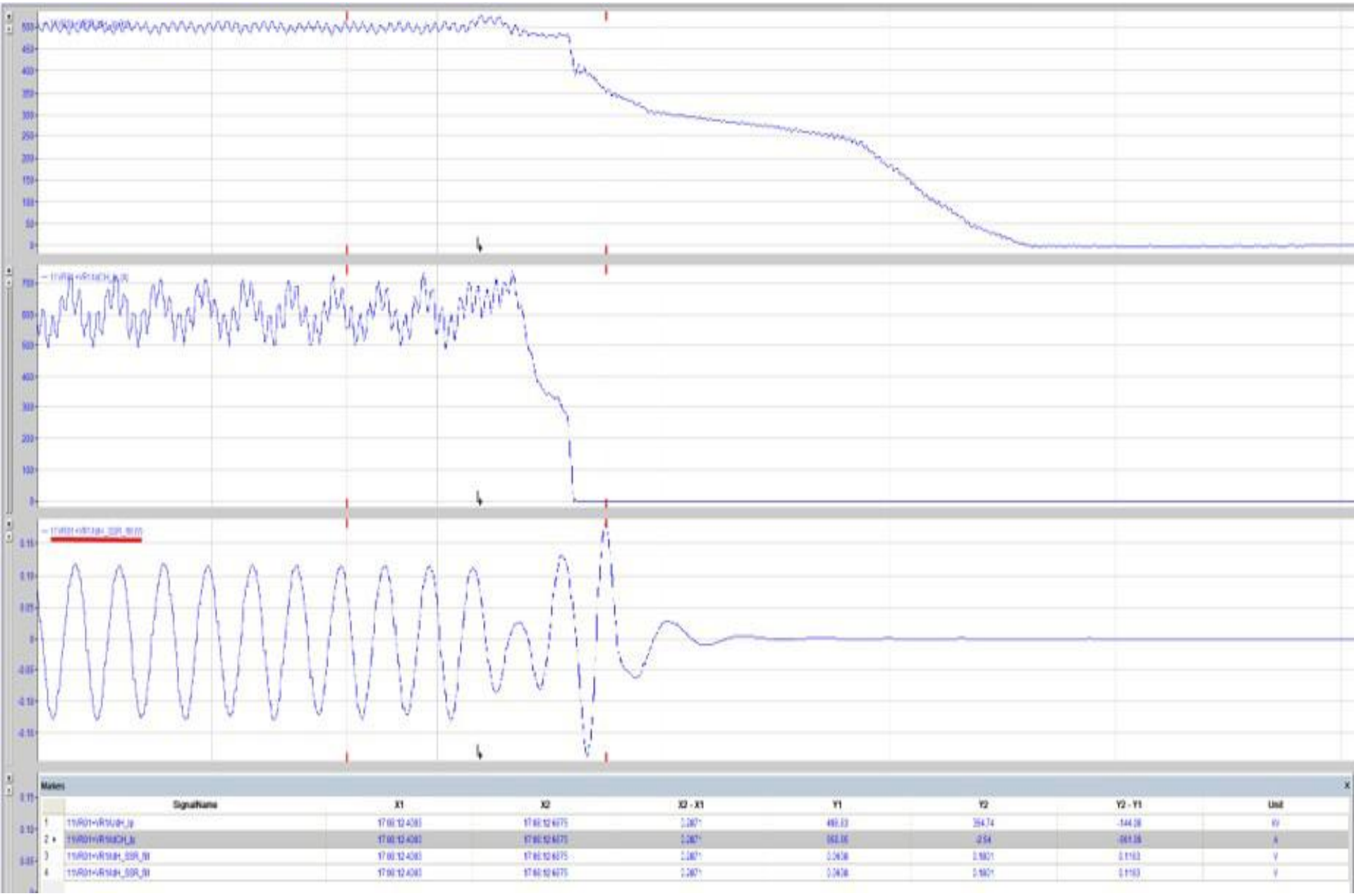
Event Logger details at Balia end of 500 KV HVDC Balia-Bhiwadi (PG)



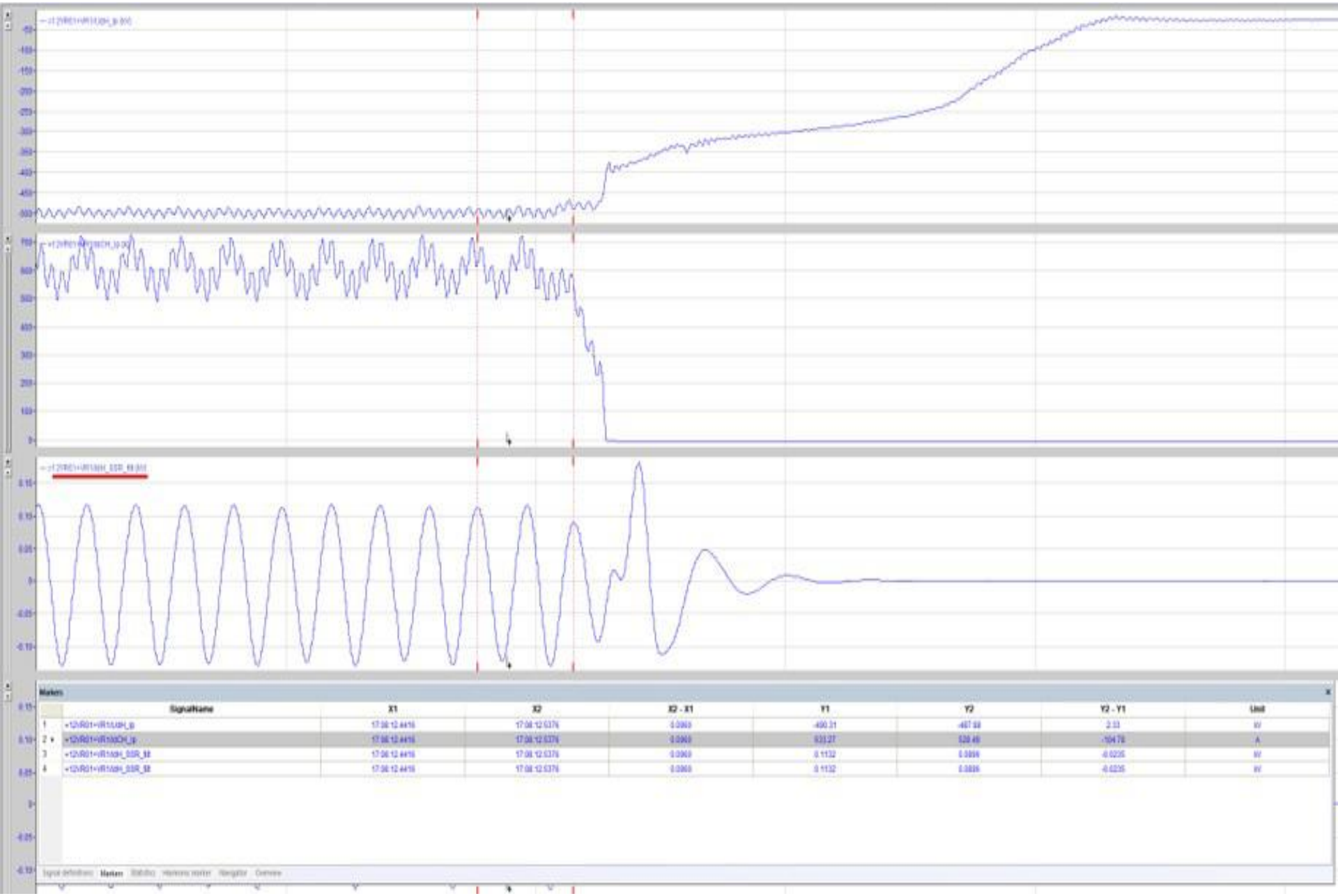
	Date	Time	Number	Device	Message text	Class	Status
826	22/02/2026	16:21:32.068	102548	11T01	TRANSFORMER OIL TEMP INPUT FAILURE	DIAG	*
827	22/02/2026	16:21:58.184	102548	11T01	TRANSFORMER OIL TEMP INPUT FAILURE	DIAG	
828	22/02/2026	16:25:01.480	102548	11T01	TRANSFORMER OIL TEMP INPUT FAILURE	DIAG	*
829	22/02/2026	16:25:27.596	102548	11T01	TRANSFORMER OIL TEMP INPUT FAILURE	DIAG	
830	22/02/2026	16:28:46.764	102548	11T01	TRANSFORMER OIL TEMP INPUT FAILURE	DIAG	*
831	22/02/2026	16:29:12.876	102548	11T01	TRANSFORMER OIL TEMP INPUT FAILURE	DIAG	
832	22/02/2026	16:32:36.145	102548	11T01	TRANSFORMER OIL TEMP INPUT FAILURE	DIAG	*
833	22/02/2026	16:33:02.256	102548	11T01	SUB SYNCHRONOUS RESON 81SSR PREWRN	MINOR	*
834	22/02/2026	17:08:12.457	135215	12VR01.A1DCP	TDM1 IS SELECTED AS ACTIVE BUS	STAT	*
835	22/02/2026	17:08:12.461	135018	12VR01.A1DCP	TDM2 IS SELECTED AS ACTIVE BUS	STAT	
836	22/02/2026	17:08:12.461	135020	12VR01.A1DCP	SUB SYNCHRONOUS RESON 81SSR PREWRN	MINOR	*
837	22/02/2026	17:08:12.466	135791	12VR02.A1DCP	TDM1 IS SELECTED AS ACTIVE BUS	STAT	
838	22/02/2026	17:08:12.471	135594	12VR02.A1DCP	TDM2 IS SELECTED AS ACTIVE BUS	STAT	*
839	22/02/2026	17:08:12.471	135596	12VR02.A1DCP	[illegible]	[illegible]	[illegible]
840	[illegible]	[illegible]	[illegible]	[illegible]	SUB SYNCHRONOUS RESON 81SSR PREWRN	MINOR	*
841	22/02/2026	17:08:12.501	105215	11VR01.A1DCP	TDM1 IS SELECTED AS ACTIVE BUS	STAT	*
842	22/02/2026	17:08:12.505	105018	11VR01.A1DCP	TDM2 IS SELECTED AS ACTIVE BUS	STAT	
843	22/02/2026	17:08:12.505	105020	11VR01.A1DCP	CONVERTER SUMMARY BLOCK REQUEST	STAT	*
844	22/02/2026	17:08:12.505	134320	12VR00	[illegible]	[illegible]	[illegible]
845	[illegible]	[illegible]	[illegible]	[illegible]	SUB SYNCHRONOUS RESON 81SSR PREWRN	MINOR	*
846	22/02/2026	17:08:12.516	105791	11VR02.A1DCP	TDM1 IS SELECTED AS ACTIVE BUS	STAT	
847	22/02/2026	17:08:12.519	105594	11VR02.A1DCP	TDM2 IS SELECTED AS ACTIVE BUS	STAT	*
848	22/02/2026	17:08:12.519	105596	11VR02.A1DCP	[illegible]	[illegible]	[illegible]
849	[illegible]	[illegible]	[illegible]	[illegible]	CONVERTER SUMMARY BLOCK REQUEST	STAT	*
850	22/02/2026	17:08:12.552	104320	11VR00	[illegible]	[illegible]	[illegible]
851	[illegible]	[illegible]	[illegible]	[illegible]	STOP SEQUENCE RUNNING	STAT	*
852	22/02/2026	17:08:12.558	133301	12VR00	SELF EXCITATION LIMITATION ACTIVE	STAT	*
853	22/02/2026	17:08:12.571	163463	10XJ01.A1RPC	POLE POWER TRANSMISSION: I>I_MIN	STAT	
854	22/02/2026	17:08:12.573	134317	12VR00	STOP SEQUENCE RUNNING	STAT	*
855	22/02/2026	17:08:12.609	103301	11VR00	STATUS OF OPERATION DEBLOCKED	STAT	
856	22/02/2026	17:08:12.622	133295	12VR00	TAP CHANGER ANGLE CONTROL	STAT	
857	22/02/2026	17:08:12.622	133310	12T01	TAP CHANGER UDI0 CONTROL	STAT	*
858	22/02/2026	17:08:12.622	133311	12T01	TAP CHANGER FORCED UDI0 MODE	STAT	*
859	22/02/2026	17:08:12.622	133312	12T01	FREQUENCY CONTROL OPERATIONAL	STAT	
860	22/02/2026	17:08:12.677	133461	12VR00	POLE POWER TRANSMISSION: I>I_MIN	STAT	
861	22/02/2026	17:08:12.652	104317	11VR00	[illegible]	[illegible]	[illegible]

✓ As per EL, HVDC Balia-Bhiwadi both poles tripped on sub synchronous resonance 81 SSR block.

DR at Balia end of 500 KV HVDC Balia-Bhiwadi (PG) Ckt-1



DR at Balia end of 500 KV HVDC Balia-Bhiwadi (PG) Ckt-2

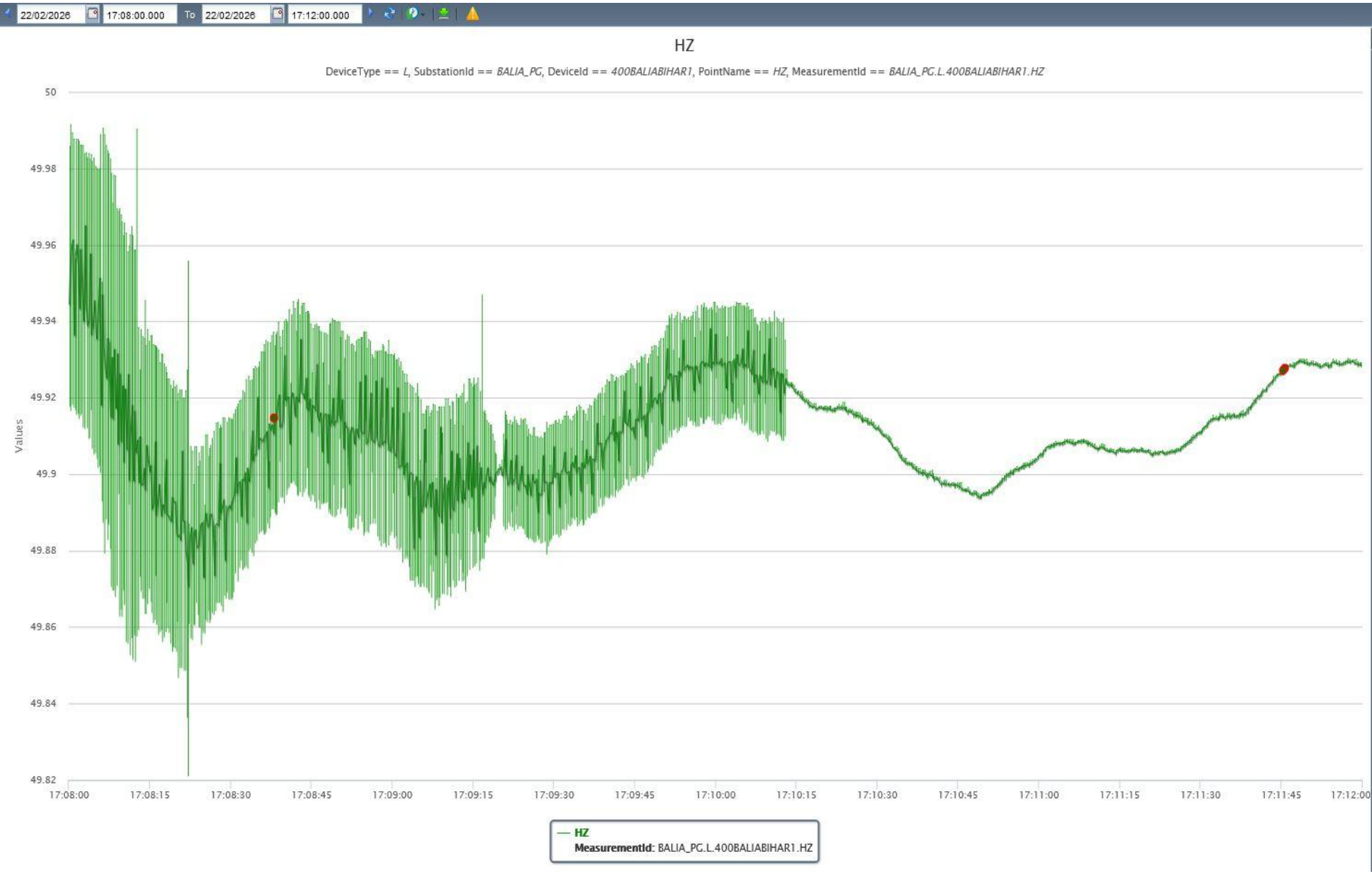


PMU Plot of frequency at Bhiwadi(PG)

17:08hrs-17:10hrs/22-Feb-26

PMU Plot of frequency at Balia(PG)

17:08hrs-17:10hrs/22-Feb-26

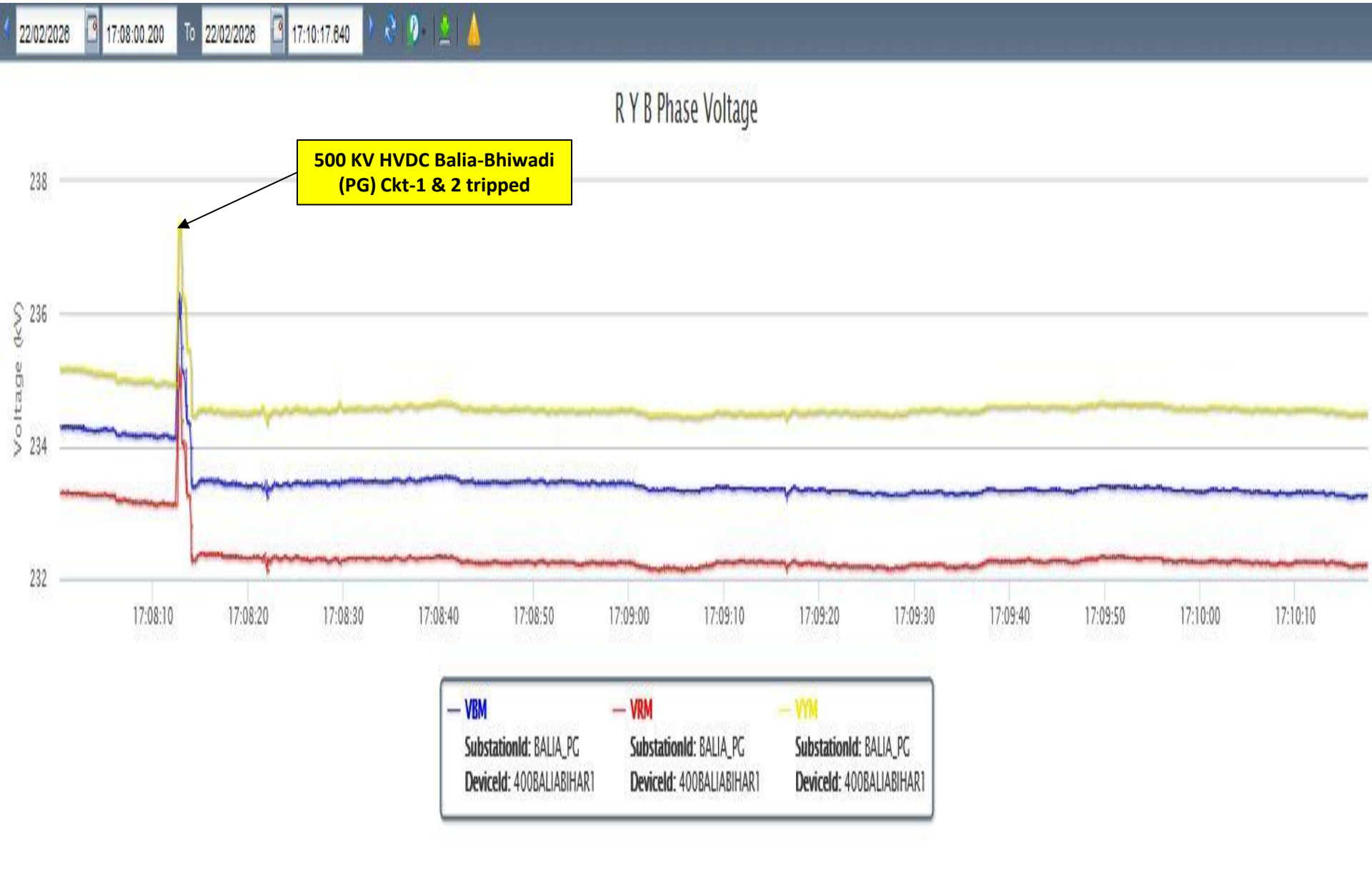


PMU Plot of Phase Voltage Magnitude at Bhiwadi(PG)

17:08hrs-17:10hrs/22-Feb-26

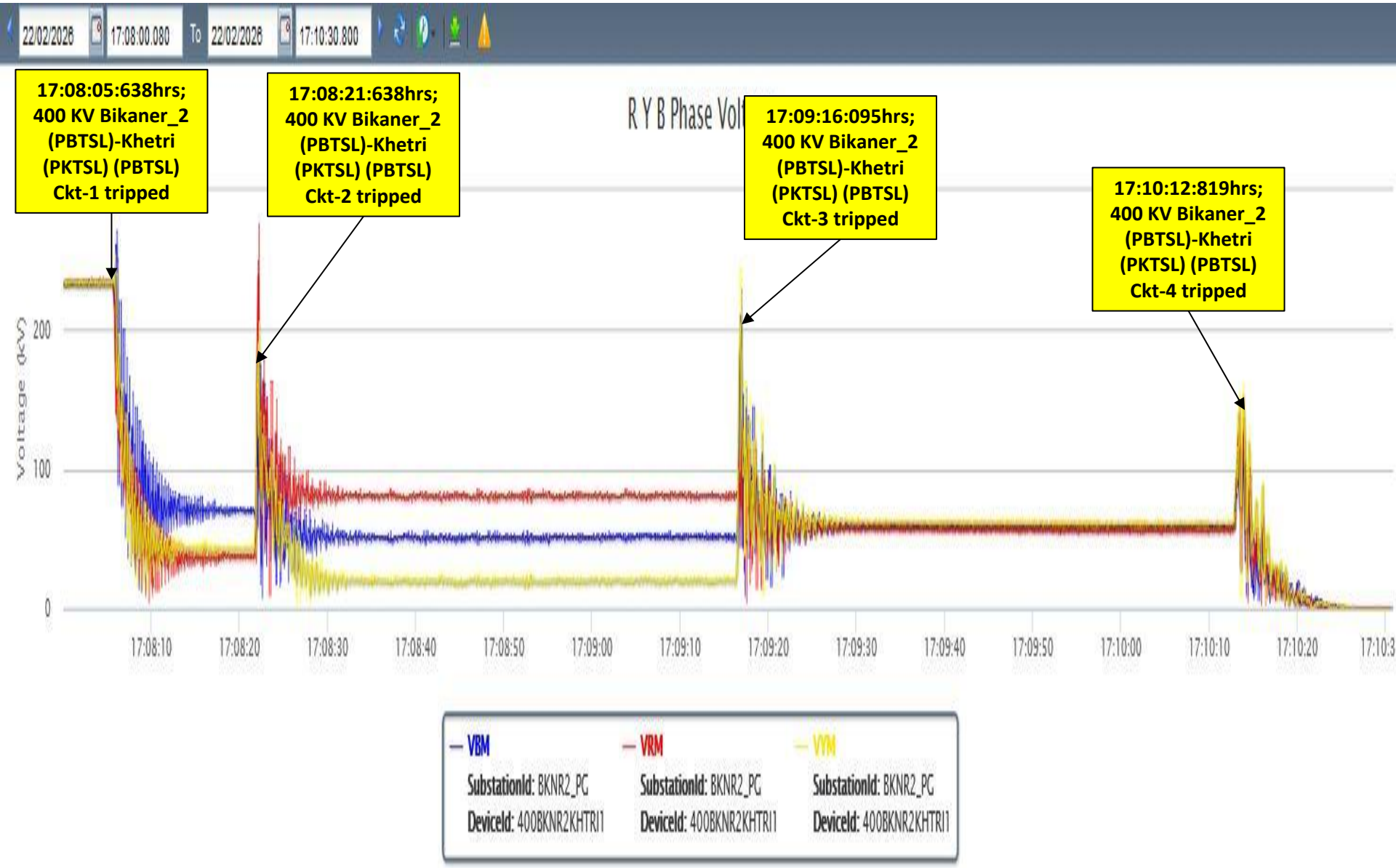
PMU Plot of Phase Voltage Magnitude at Balia(PG)

17:08hrs-17:10hrs/22-Feb-26



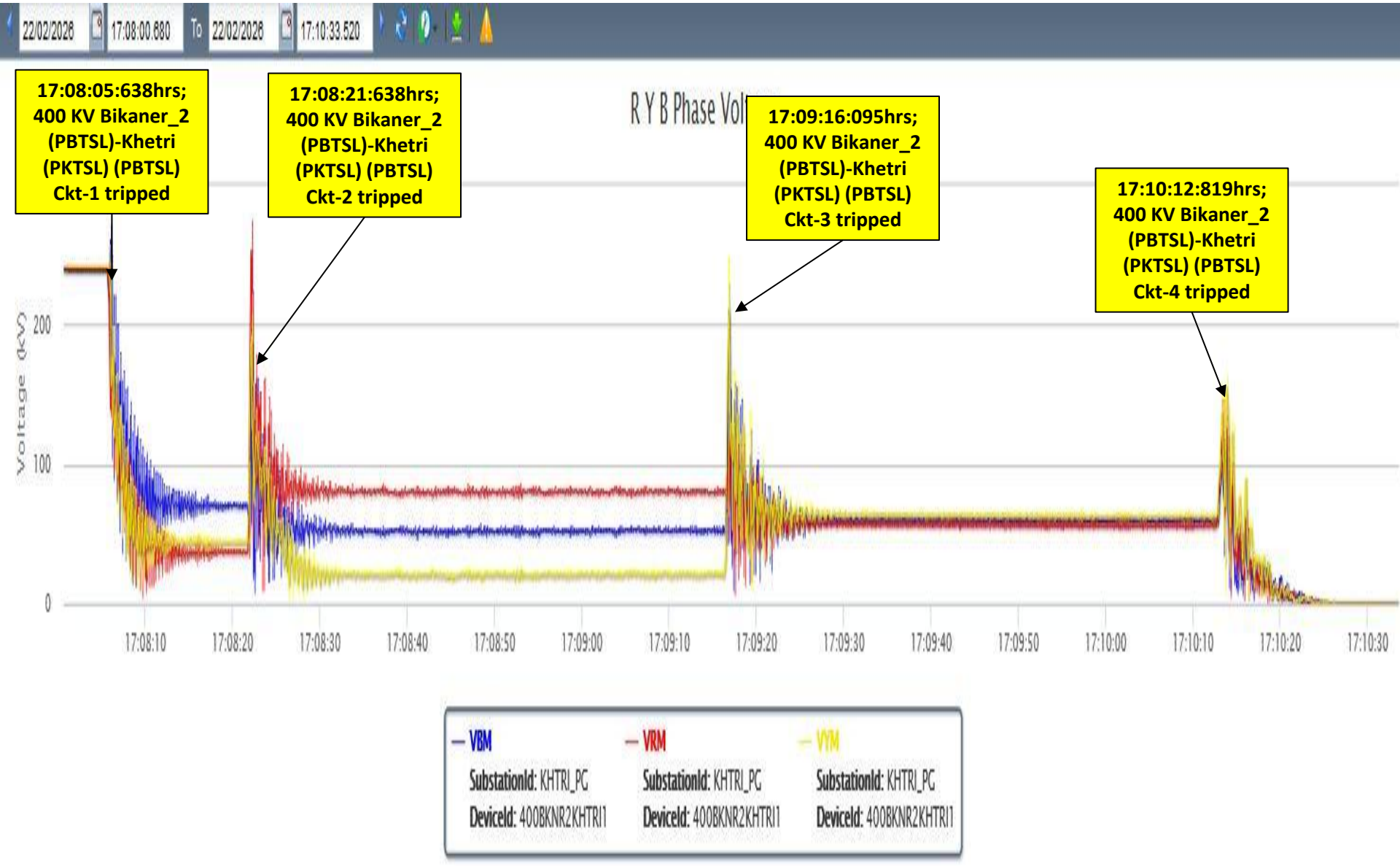
PMU Plot of Phase Voltage Magnitude at Bikaner2(PG)

17:08hrs-17:10hrs/22-Feb-26



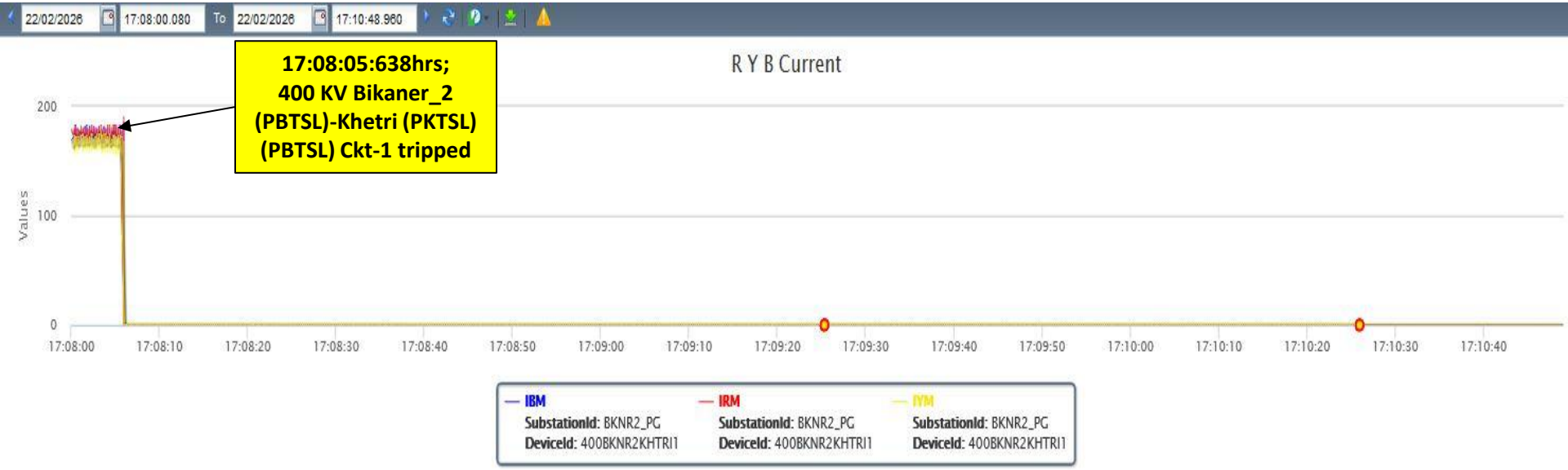
PMU Plot of Phase Voltage Magnitude at Khetri(PG)

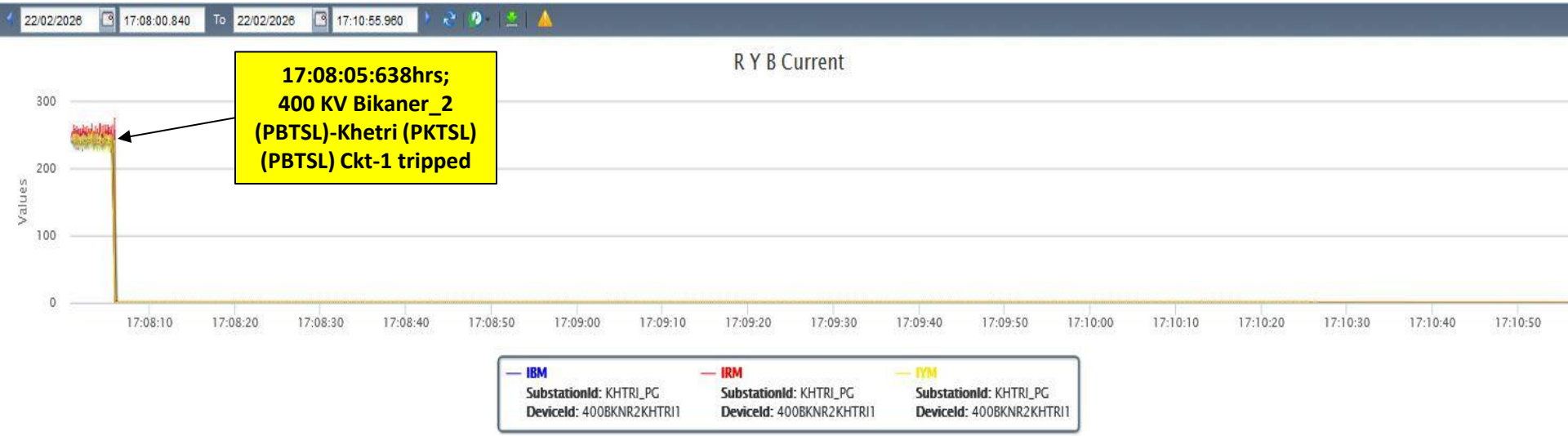
17:08hrs-17:10hrs/22-Feb-26



PMU Plot of Phase Current Magnitude of both ends 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1

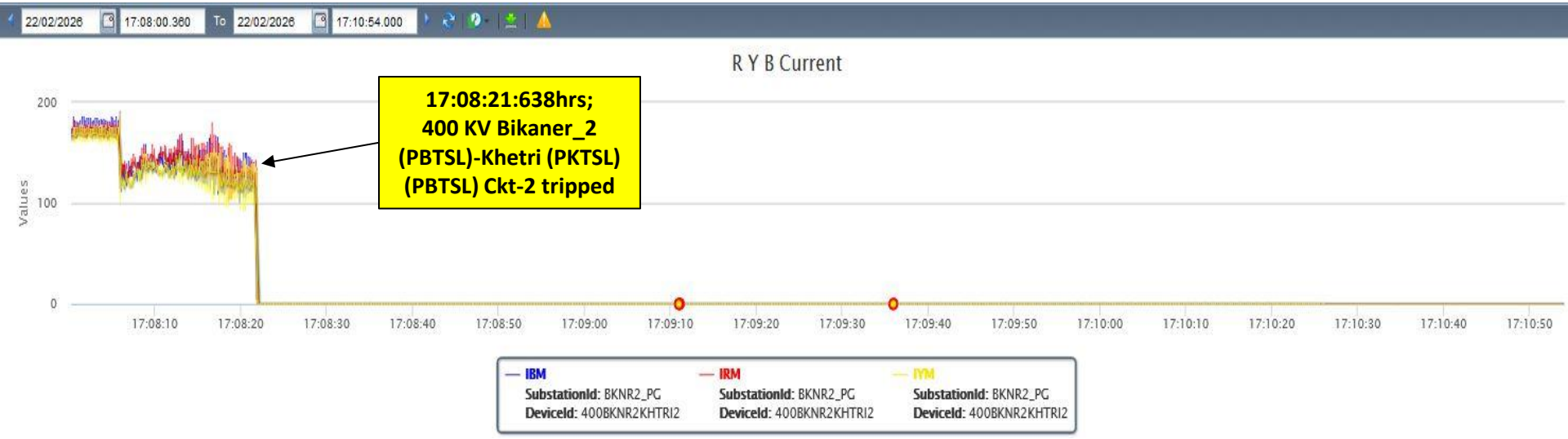
17:08hrs-17:10hrs/22-Feb-26

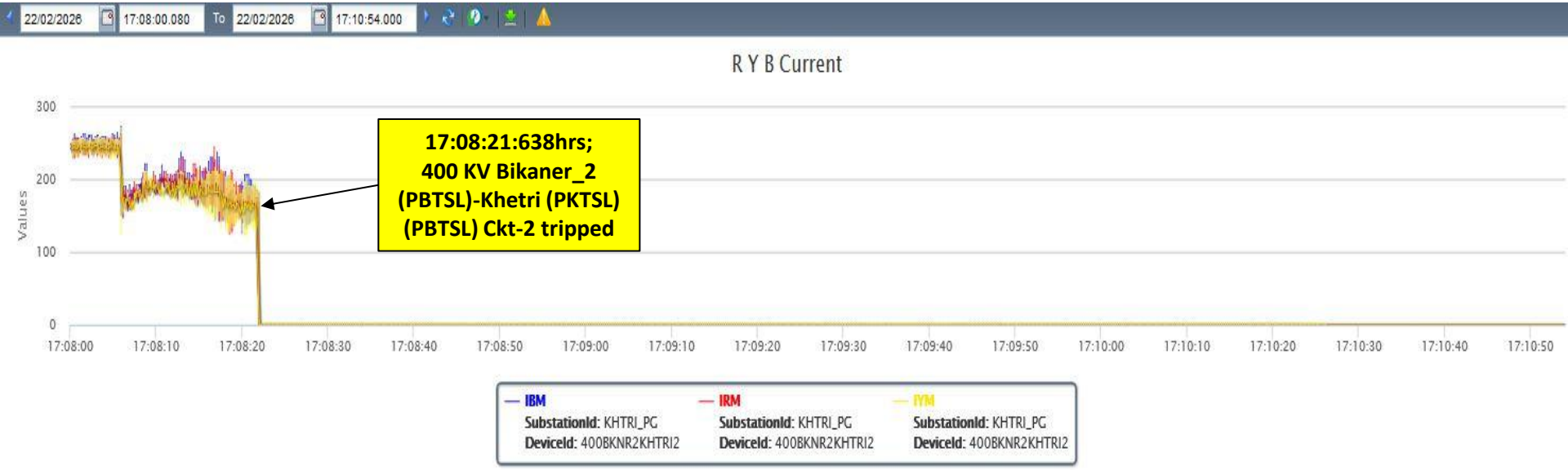




PMU Plot of Phase Current Magnitude of both ends 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-2

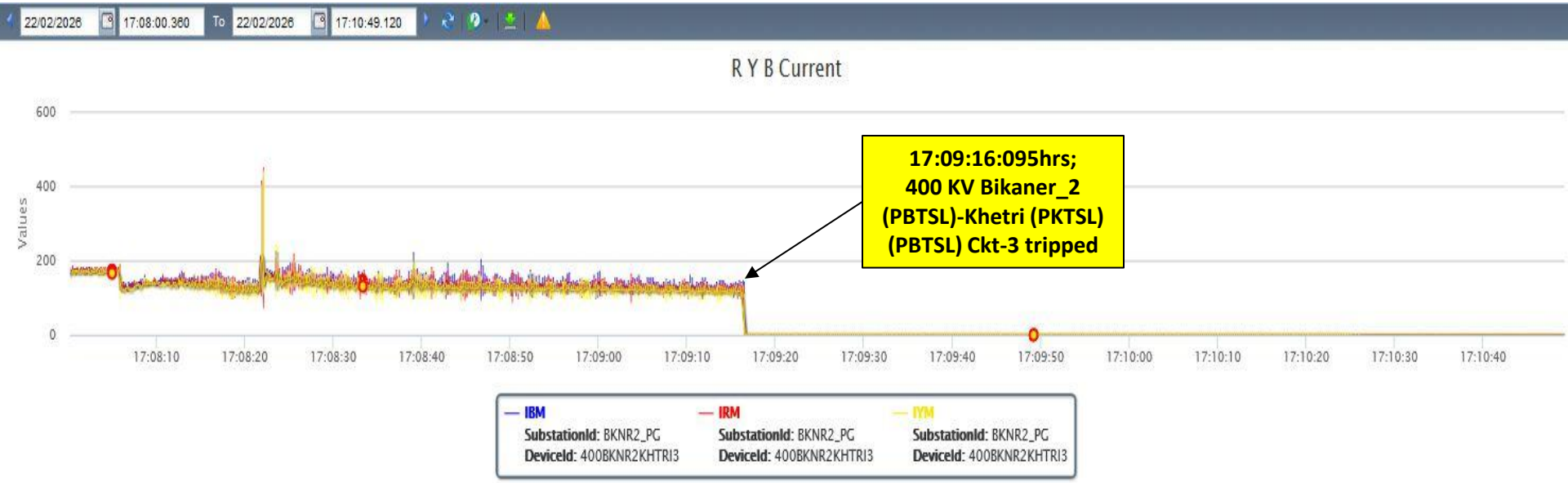
17:08hrs-17:10hrs/22-Feb-26

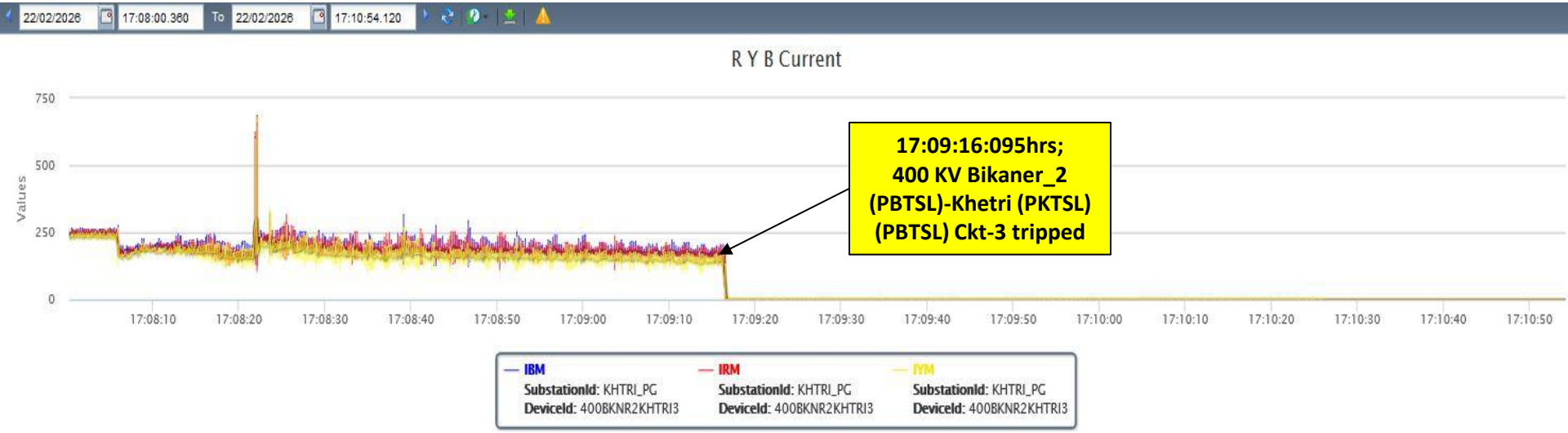




PMU Plot of Phase Current Magnitude of both ends 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-3

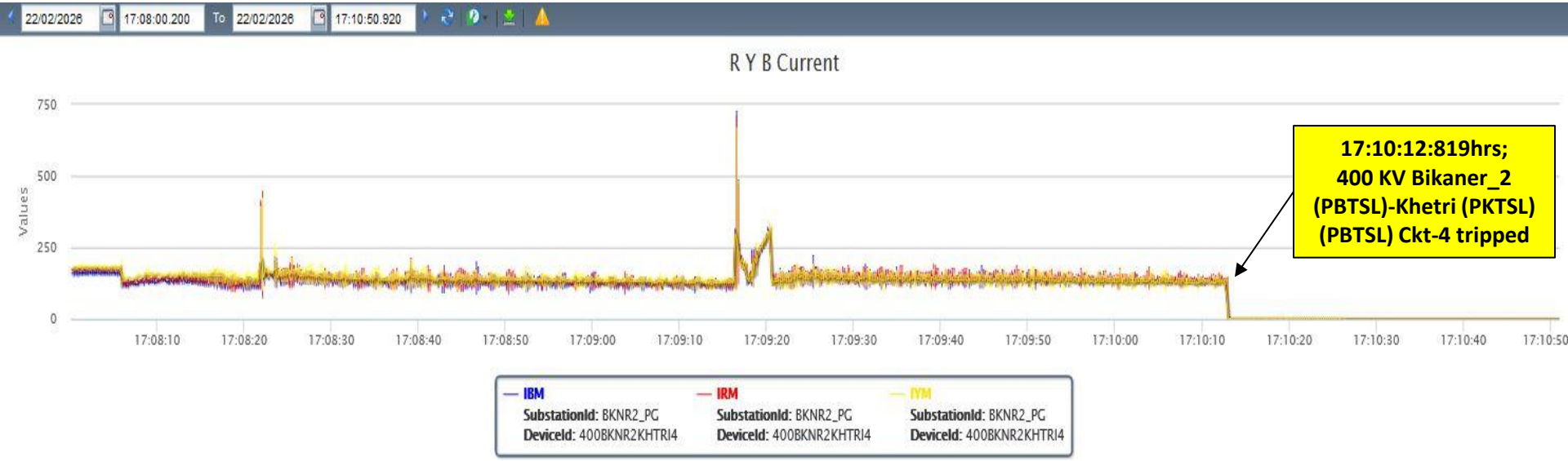
17:08hrs-17:10hrs/22-Feb-26

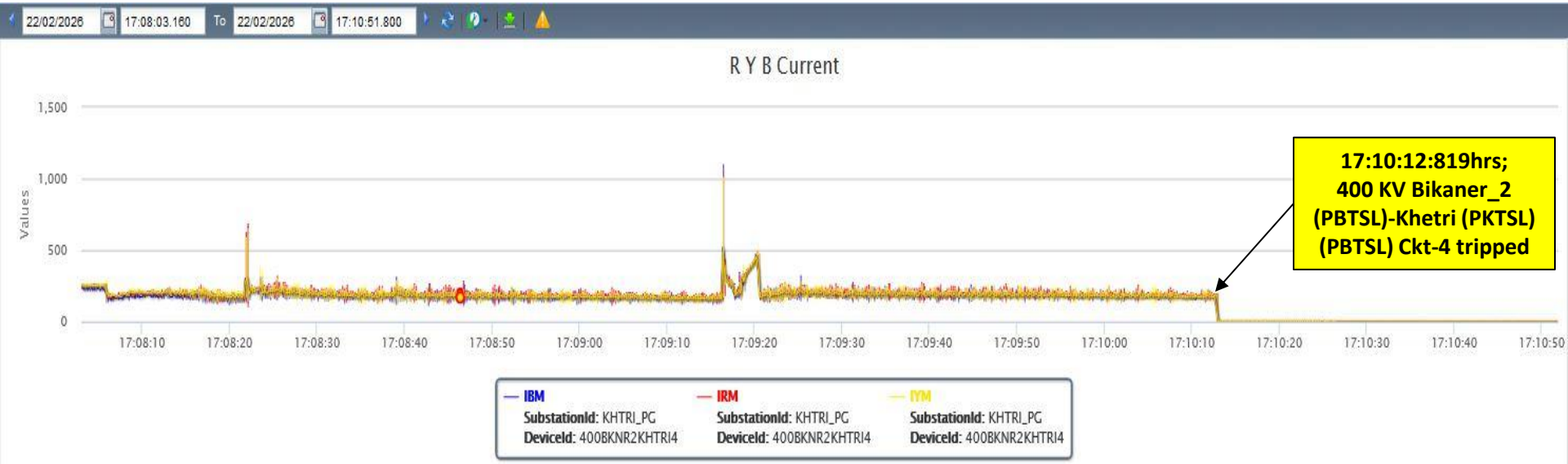




PMU Plot of Phase Current Magnitude of both ends 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-4

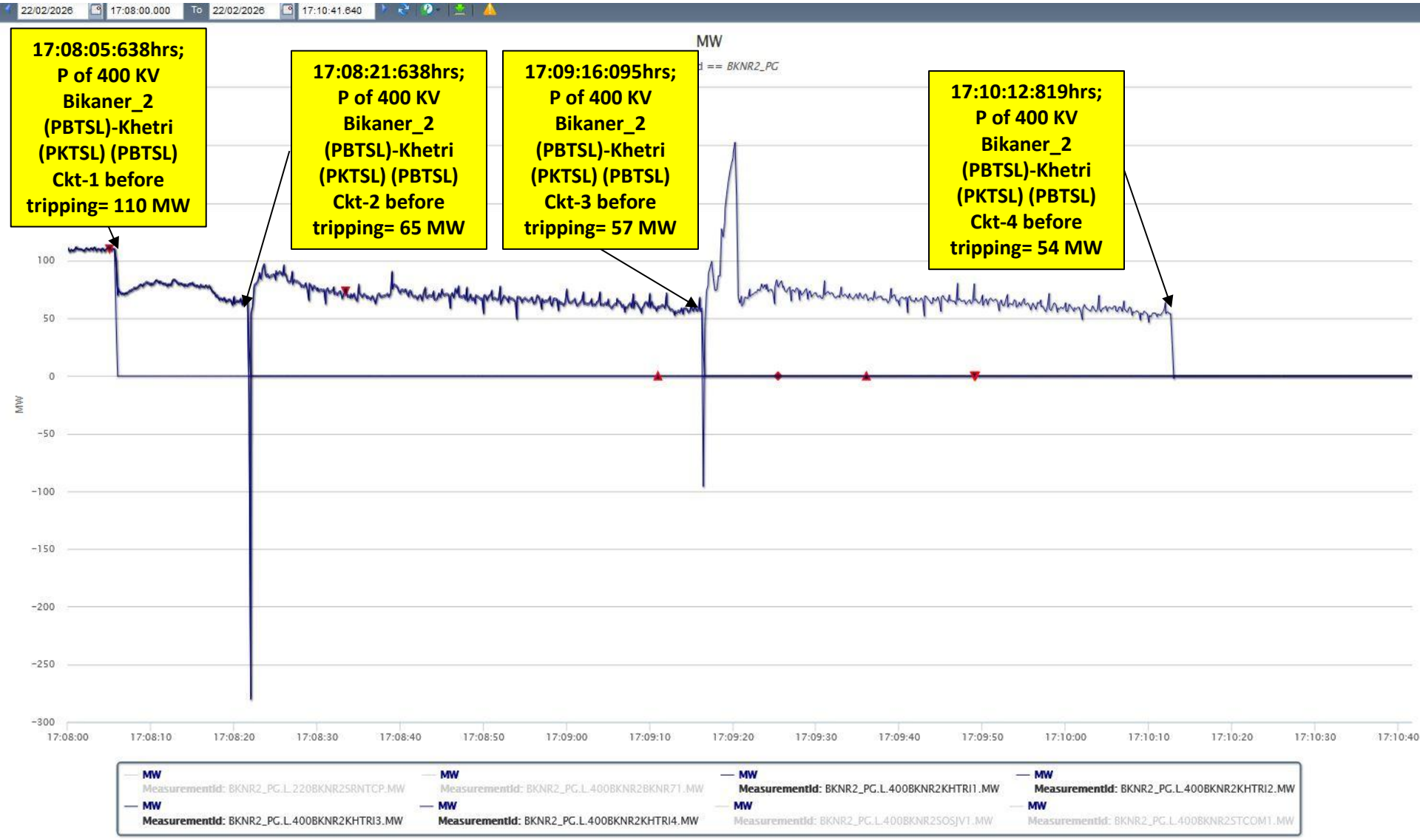
17:08hrs-17:10hrs/22-Feb-26





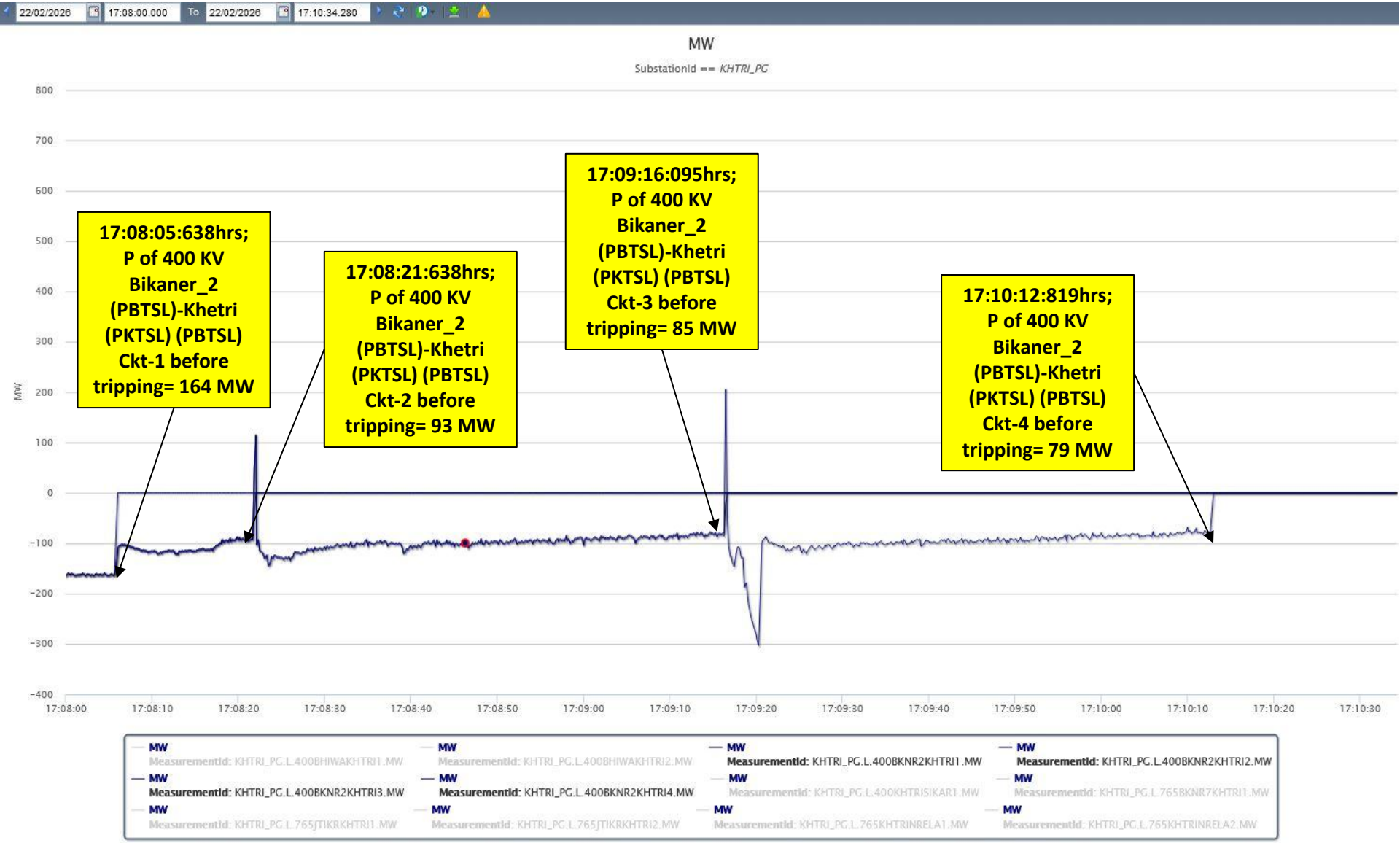
PMU Plot of Active Power flow at Bikaner2(PG) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1 , 2, 3 & 4

17:08hrs-17:10hrs/22-Feb-26



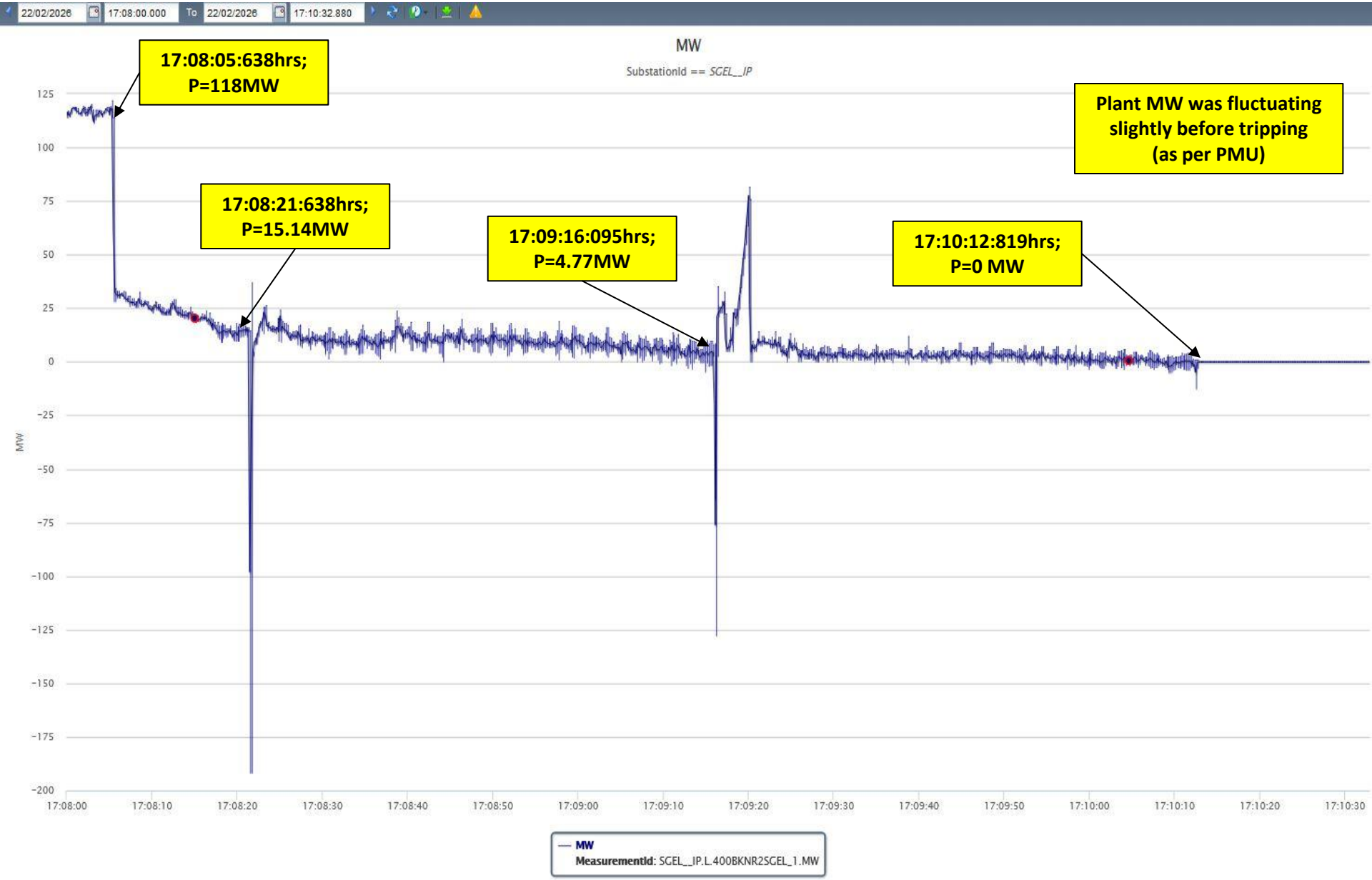
PMU Plot of Active Power flow at Khetri(PG) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1 , 2, 3 & 4

17:08hrs-17:10hrs/22-Feb-26



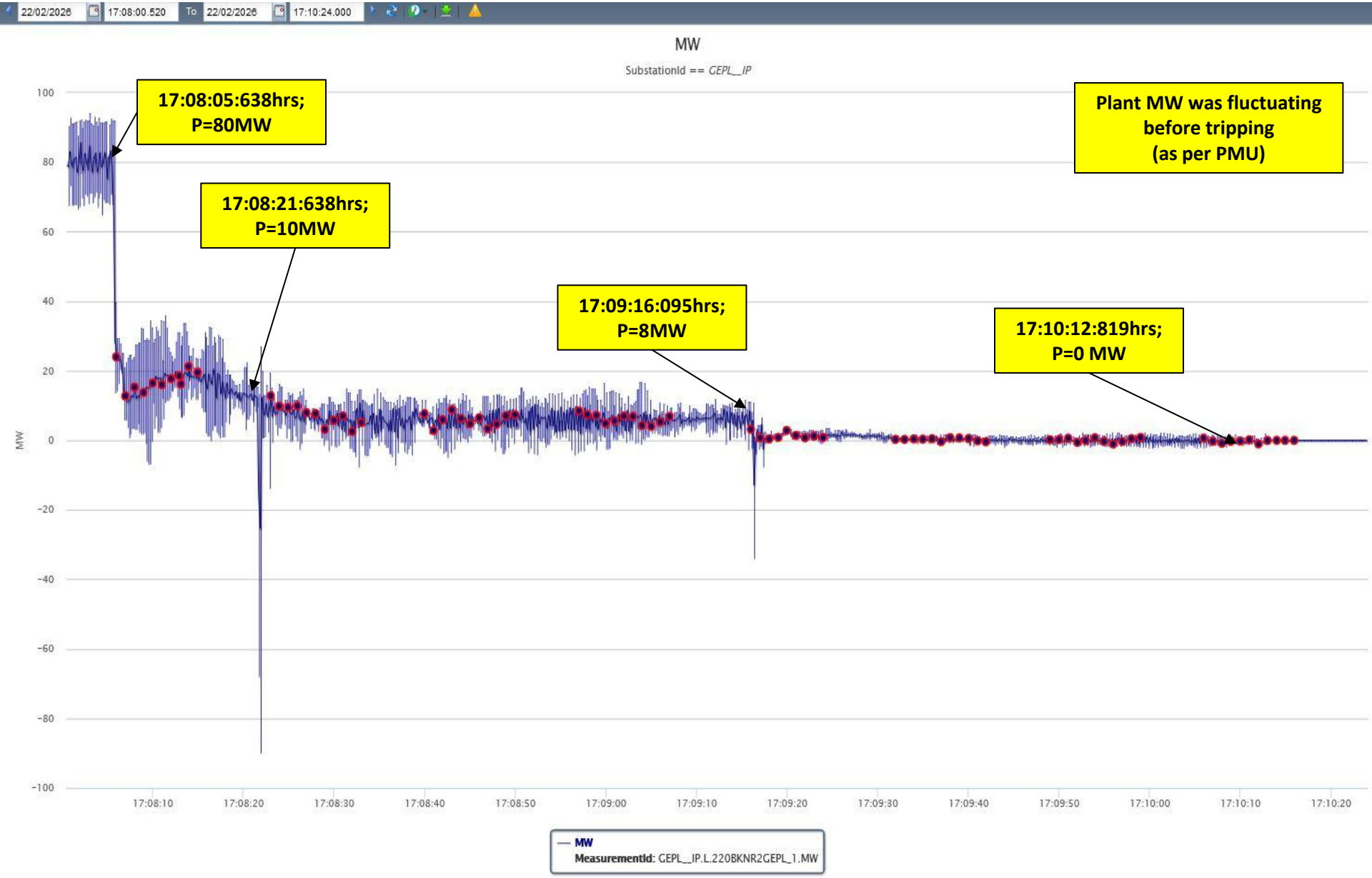
PMU Plot of Active Power at SGEL(IP)

17:08hrs-17:10hrs/22-Feb-26



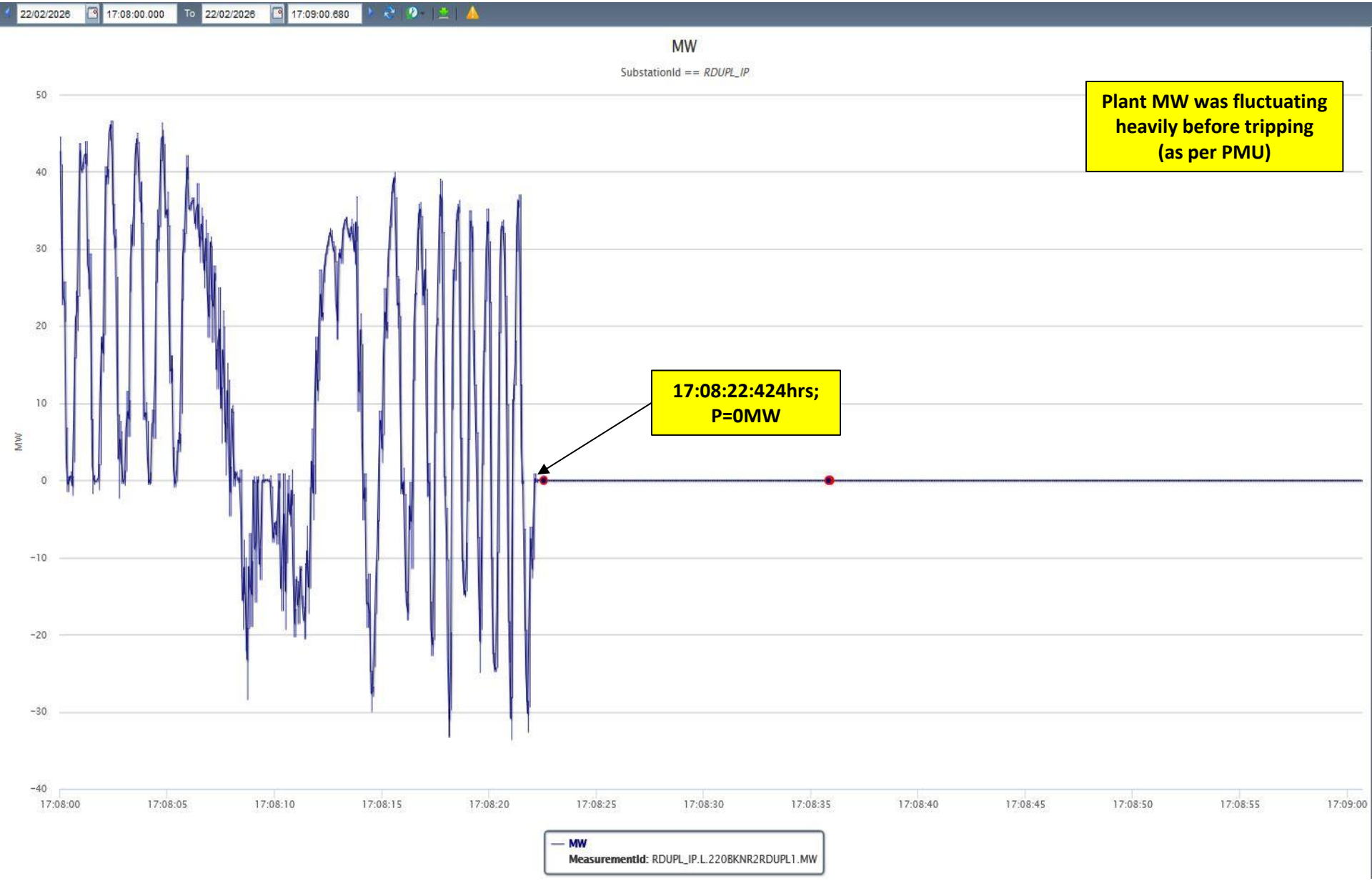
PMU Plot of Active Power at GPEL(IP)

17:08hrs-17:10hrs/22-Feb-26



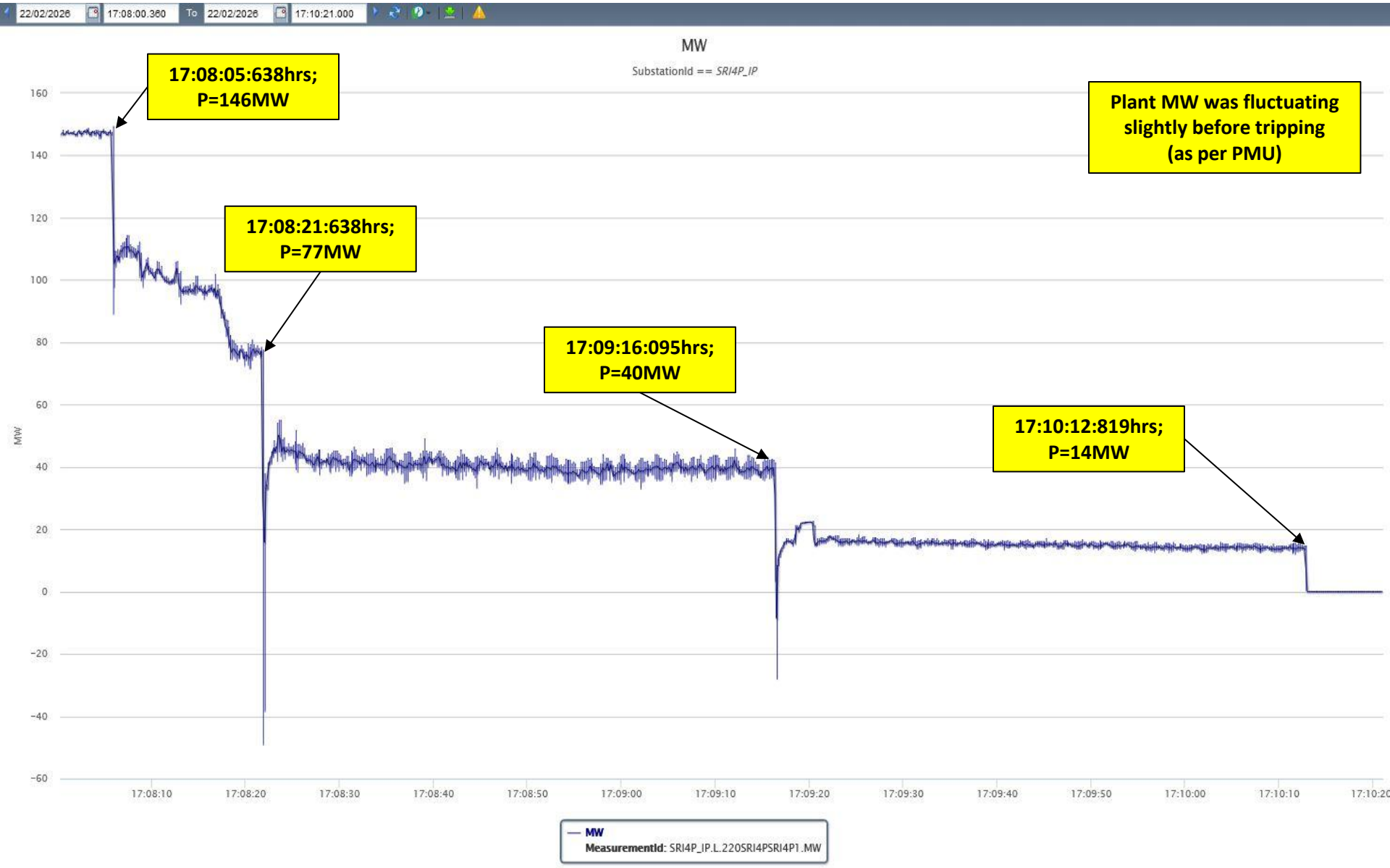
PMU Plot of Active Power at RDUPL(IP)

17:08hrs-17:10hrs/22-Feb-26



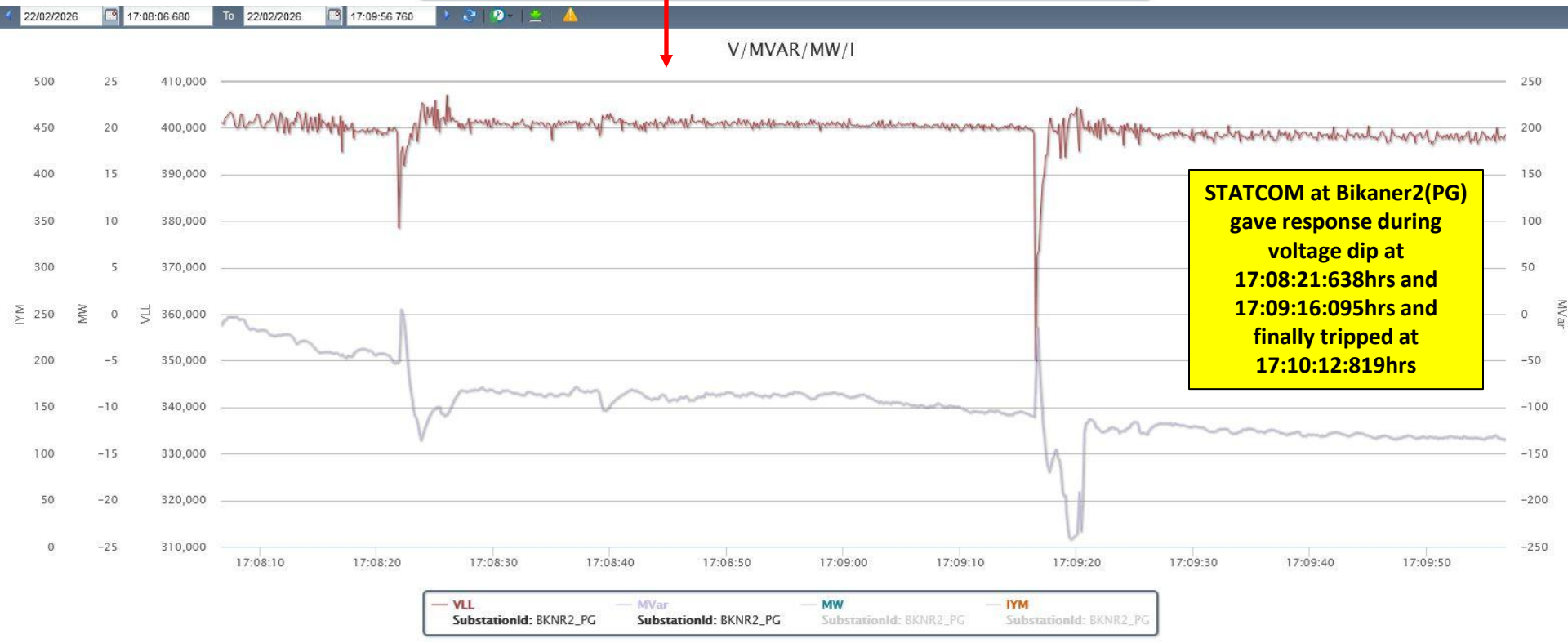
PMU Plot of Active Power at SRI4P(IP)

17:08hrs-17:10hrs/22-Feb-26



PMU Plot of Voltage vs Reactive Power of STATCOM at Bikaner2(PG)

17:08hrs-17:10hrs/22-Feb-26



STATCOM at Bikaner2(PG) gave response during voltage dip at 17:08:21:638hrs and 17:09:16:095hrs and finally tripped at 17:10:12:819hrs

SCADA SOE

Time	Station Name	Voltage (in kV)	Element Name	Element Type	Element Status	Remarks
17:07:16,675	BKNR2_PG	34.5	1MSC1	Circuit Breaker	Open	CB at 33kV side of MSC-1 at Bikaner2(PG) opened
17:08:05,865	BKNR2_PG	400	13KTRI01	Circuit Breaker	Open	Main CB at Bikaner_2 (PBTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1 opened
17:08:05,870	KHTRI_PG	400	03BKNR21	Circuit Breaker	Open	Main CB at Khetri (PKTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1 opened
17:08:05,873	KHTRI_PG	400	02TIE	Circuit Breaker	Open	Tie CB at Khetri (PKTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1 opened
17:08:05,874	BKNR2_PG	400	14TIE	Circuit Breaker	Open	Tie CB at Bikaner_2 (PBTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-1 opened
17:08:21,871	BKNR2_PG	400	10KTRI02	Circuit Breaker	Open	Main CB at Bikaner_2 (PBTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-2 opened
17:08:21,873	KHTRI_PG	400	06BKNR22	Circuit Breaker	Open	Main CB at Khetri (PKTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-2 opened
17:08:21,875	BKNR2_PG	400	11TIE	Circuit Breaker	Open	Tie CB at Bikaner_2 (PBTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-2 opened
17:08:21,876	KHTRI_PG	400	05TIE	Circuit Breaker	Open	Tie CB at Khetri (PKTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-2 opened
17:09:16,463	KHTRI_PG	400	09BKNR23	Circuit Breaker	Open	Main CB at Khetri (PKTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-3 opened
17:09:16,467	BKNR2_PG	400	4KTRI03	Circuit Breaker	Open	Main CB at Bikaner_2 (PBTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-3 opened
17:09:16,468	KHTRI_PG	400	08TIE	Circuit Breaker	Open	Tie CB at Khetri (PKTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-3 opened
17:10:12,910	BKNR2_PG	400	1KTRI04	Circuit Breaker	Open	Main CB at Bikaner_2 (PBTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-4 opened
17:10:12,913	KHTRI_PG	400	11TIE	Circuit Breaker	Open	Tie CB at Khetri (PKTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-4 opened
17:10:12,916	KHTRI_PG	400	12BKNR24	Circuit Breaker	Open	Main CB at Khetri (PKTSL) end of 400 KV Bikaner_2 (PBTSL)-Khetri (PKTSL) (PBTSL) Ckt-4 opened
17:10:13,065	SGEL__IP	400	03BKNR2	Circuit Breaker	Open	Main CB at SGEL(IP) end of 400 KV Bikaner_2 (PBTSL)-SJVN_GEL_SL_BKN2 (SJVNGEL_BKN2) Ckt opened
17:10:13,066	SGEL__IP	400	02TIE	Circuit Breaker	Open	Tie CB at SGEL(IP) end of 400 KV Bikaner_2 (PBTSL)-SJVN_GEL_SL_BKN2 (SJVNGEL_BKN2) Ckt opened
17:10:13,074	BKNR2_PG	400	16SOSJVN	Circuit Breaker	Open	Main CB at Bikaner_2 (PBTSL) end of 400 KV Bikaner_2 (PBTSL)-SJVN_GEL_SL_BKN2 (SJVNGEL_BKN2) Ckt opened
17:10:13,080	BKNR2_PG	400	17TIE	Circuit Breaker	Open	Tie CB at Bikaner_2 (PBTSL) end of 400 KV Bikaner_2 (PBTSL)-SJVN_GEL_SL_BKN2 (SJVNGEL_BKN2) Ckt opened

Annexure-XV

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

Time Period: 1st January 2026 - 31st January 2026

S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value		%	Value		%	Value		%	
1	ACME SIKAR SOLAR PRIVATE LIMITED(ASSPL)	2	2	100	2	0	100	2	0	100	2	0	100	DR, EL & Tripping report not submitted
2	ACME SOLAR HOLDINGS LIMITED	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
3	ACME_HEERGARH	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
4	ADANI GREEN ENERGY TWENTY FOUR LIMITED	2	2	100	2	0	100	2	0	100	2	0	100	DR, EL & Tripping report not submitted
5	AHEJ3L	1	0	0	0	0	0	0	0	0	0	0	0	Details received
6	AMPIN ENERGY GREEN EIGHT PRIVATE LIMITED (AEG8PL)	2	2	100	2	0	100	2	0	100	2	0	100	DR, EL & Tripping report not submitted
7	EDEN (ERCPL)	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
8	KARINSAR SOLAR PLANT NHPC LTD(KSP_NHPC)	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
9	KHIDRAT RENEWABLE ENERGY PRIVATE LIMITED(KREPL)	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
10	RENEW	3	0	0	0	1	0	0	1	0	0	1	0	Details received
11	RENEW DINKAR URJA PRIVATE LIMITED (RDUPL)	2	1	50	0	1	0	0	1	0	1	0	50	DR, EL & Tripping report not submitted
12	RENEW SURYA AAYAN PRIVATE LIMITED	3	0	0	0	0	0	0	0	0	0	1	0	Details received
13	RENEW SURYA JYOTI PRIVATE LIMITED(RSJPL)	1	0	0	0	0	0	0	0	0	0	0	0	Details received
14	RENEW SURYA VIHAAN PRIVATE LIMITED	1	0	0	0	0	0	0	0	0	0	0	0	Details received
15	RSDCL	4	4	100	4	0	100	4	0	100	4	0	100	DR, EL & Tripping report not submitted
16	SJVN GREEN ENERGY LIMITED	4	4	100	4	0	100	4	0	100	4	0	100	DR, EL & Tripping report not submitted
Total in NR Region		**30**	**20**	**67**	**19**	**2**	**68**	**19**	**2**	**68**	**20**	**2**	**71**	

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

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

Time Period: 1st February 2026 - 28th February 2026

S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value		%	Value		%	Value		%	
1	ABC RENEWABLE_RJ01	1	1	100	1	0	100	1	0	100	1	0	100	
2	ACME SIKAR SOLAR PRIVATE LIMITED(ASSPL)	1	1	100	1	0	100	1	0	100	1	0	100	
3	ACME_HEERGARH	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
4	ADANI	1	1	100	1	0	100	1	0	100	1	0	100	
5	AHEJ3L	3	2	67	2	1	100	2	1	100	2	0	67	
6	AHEJ4L	1	0	0	0	0	0	1	0	100	0	0	0	Details received
7	ANTA-NT	2	2	100	2	0	100	2	0	100	2	0	100	DR, EL & Tripping report not submitted
8	APL	1	0	0	0	0	0	0	0	0	0	0	0	Details received
9	AREPRL	1	0	0	0	1	0	0	0	0	0	0	0	
10	BANDERWALA_TPSL	1	0	0	0	1	0	0	1	0	0	1	0	Details received
11	GRIAN ENERGY PRIVATE LIMITED	1	1	100	1	0	100	1	0	100	1	0	100	
12	JUNA RENEWABLE ENERGY PRIVATE LIMITED(JREPL)	1	1	100	1	0	100	1	0	100	1	0	100	
13	JUNIPER GREEN COSMIC PRIVATE LIMITED	2	1	50	1	0	50	1	1	100	1	0	50	
14	KHIDRAT RENEWABLE ENERGY PRIVATE LIMITED(KREPL)	2	1	50	2	0	100	2	0	100	2	0	100	
15	RENEW DINKAR URJA PRIVATE LIMITED (RDUPL)	1	1	100	1	0	100	1	0	100	1	0	100	
16	RSDCL	1	1	100	1	0	100	1	0	100	1	0	100	
17	SERENTICA RENEWABLES INDIA 4 PRIVATE LIMITED	1	1	100	1	0	100	1	0	100	1	0	100	
18	SJVN GREEN ENERGY LIMITED	3	3	100	3	0	100	3	0	100	3	0	100	
19	XL XERGI POWER PRIVATE LIMITED	2	2	100	2	0	100	2	0	100	2	0	100	
Total in NR Region		**27**	**20**	**74**	**21**	**3**	**88**	**22**	**3**	**92**	**21**	**1**	**81**	

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

ReNew (internal 2025-26)

1. Renew Solar Power Private Limited (400kV)

1. Breaker failure protection is not active in 400kV ReNew Bikaner PG Line.
2. 125MVA ICT-1 & 2, cross blocking is disabled in the differential protection.
3. For ICT 1 & 2, I5/I=30% has been taken which is not as per philosophy.
4. For ICT-1 & 2, earth fault protection settings are not as per philosophy.
5. Back up O/C protection settings are not included in the audit report.
6. Zone-4 time delay of 400kV line has been kept at 1 sec.

2. Renew Surya Ravi Private Limited (400kV)

1. 150MVA ICT-1 & 2, cross blocking is disabled in the differential protection.
2. For ICT 1 & 2, I5/I=1% has been taken which is not as per philosophy.
3. For ICT 1 & 2, Earth fault high set time on HV side is 150msec which is not as per philosophy.
4. For ICT 1 & 2, HV side REF pick up current is higher than philosophy.
5. Back up O/C protection settings are not included in the audit report.

3. ReNew Solar Energy Jharkhand Three Pvt. Ltd. (220kV)

1. Pick up for High set Back-up directional O/C for 220kV/33kV, 150MVA transformer-1,2 is not as per philosophy. (Adopted-500% Ib while as per philosophy, 100-110% of through fault level). Time delay has been kept at .4 sec. while as per philosophy, it should be 0-50msec.
2. Pick up for High set Back-up directional E/F for 220kV/33kV, 150MVA transformer-1,2 is not as per philosophy. (Adopted-50% Ib while as per philosophy, 100-110% of through fault level). Time delay has been kept at .4 sec. while as per philosophy, it should be 0-50msec.
3. Over voltage protection enabled for 220kV/33kV, 150MVA transformers-1,2 along with over flux/excitation protection. Over voltage protection of ICT is not to be kept as per philosophy.
4. Zone -2 reach for transmission line has been kept at 150% of protected line though line is single circuit.

TATA POWER (internal 2025-26)

1. TPGEL, NOORSAR

1. Tripping on Power swing is to be kept blocked for all zones as per philosophy.
2. Differential protection, REF protection settings of Transformers, Distance protection settings of line have not been included in the audit report.

2. TPREL Chhayan

1. Distance protection settings of line have not been included in the audit report.

3. TPTCL Bhanipura (300MW)

1. Differential protection, REF protection settings of Transformers, Distance protection settings of line have not been included in the audit report.

ASERJ2PL_POKHRAN_212.5MW (internal 2025-26)

1. Main Bus 1& 2: LBB trip time is mentioned as 150 msec. However as per NRPC protection Philosophy, the LBB time delay shall be 200 msec.

2. Power Transformer (125 MVA 220/33 KV)- 87T Cross blocking is disabled. Need to be enabled.