Minutes
of
89th PCC Meeting

Date: 13.03.2020
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

MINUTES OF 89TH PROTECTION SUB-COMMITTEE MEETING HELD AT ERPC, KOLKATA ON 13.03.2020 (FRIDAY) AT 11:00 HOURS

List of participants is enclosed at **Annexure-A**.

PART – A

ITEM NO. A.1: Confirmation of minutes of 88th Protection sub-Committee Meeting held on 18th February, 2020 at ERPC, Kolkata.

The minutes of 88th Protection Sub-Committee meeting held on 18.02.2020 circulated vide letter dated 05.03.2020.

Members may confirm the minutes of 88th PCC meeting.

Deliberation in the meeting

Members confirmed the minutes of 88th PCC meeting.

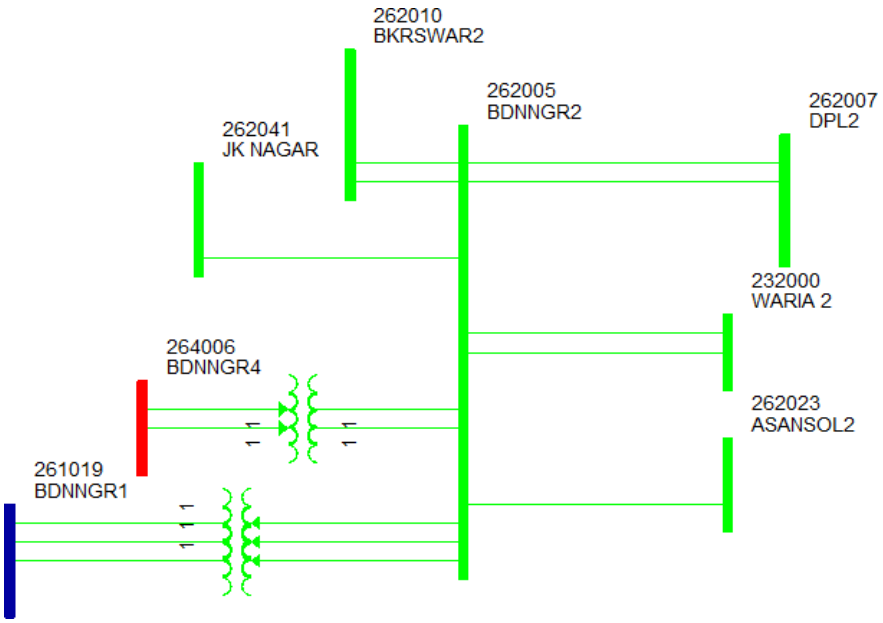
PART – B

ANALYSIS & DISCUSSION ON GRID INCIDENCES OCCURRED IN FEBRUARY, 2020

ITEM NO. B.1: Disturbance at 220 kV Bidhannagar Substation on 01.02.2020 at 21:05 Hrs.

At 21:05 Hrs, R phase CT of 220 kV Bus coupler at 400/220/132 kV Bidhan Nagar (WBSETCL) substation failed which led to Bus fault on both 220 kV Buses. With this, 220 kV both buses and all connected elements tripped on Bus bar protection operation.

Both 220 kV buses at Bidhannagar S/S tripped on Bus differential protection resulting into tripping of all 220kV outgoing feeders connected at Bidhannagar, 2 x 315MVA 400/220kV ICTs at Bidhannagar, 3 x 160MVA 220/132kV ICTs at Bidhannagar and two running units (unit #7 & #8) of DPL due to loss of evacuation path. There is a load loss of approx. 300 MW around Bidhannagar, DPL embedded area and Ukhra.



Relay Indications:

Transmission line/ unit	End 1 Relay Indication	End 2 Relay Indication
220 kV Bidhan Nagar Bus 1	Bus Bar Protection Optd	-
220 kV Bidhan Nagar Bus 2	Bus Bar Protection Optd	
220 kV Bidhan Nagar –Waria 1	Bus Bar Protection Optd	-
220 kV Bidhan Nagar –Waria 2	Bus Bar Protection Optd	-
220 kV Bidhan Nagar –JK Nagar	Bus Bar Protection Optd	-
220/132 kV 200 MVA ICT 1	Bus Bar Protection Optd	-
220 kV Bidhan Nagar –Asansol	Bus Bar Protection Optd	Zone 2 Tripped
400/220 kV 315 MVA Bidhan Nagar ICT 1	Bus Bar Protection Optd	-
400/220 kV 315 MVA Bidhan Nagar ICT 1	Bus Bar Protection Optd	-
220 kV Bidhan Nagar-DPL 1	Bus Bar Protection Optd	-
220 kV Bidhan Nagar-DPL 2	Bus Bar Protection Optd	-
220/132 kV 200 MVA ICT 2	Bus Bar Protection Optd	-
220/132 kV 200 MVA ICT 3	Bus Bar Protection Optd	-
220 kV Bidhan Nagar-Bakreshwar 1	Bus Bar Protection Optd	-
220 kV Bidhan Nagar-Bakreshwar 2	Bus Bar Protection Optd	-

Generation Loss: 382 +12 MW and Load Loss: 477 MW

WBSETCL may explain

Deliberation in the meeting

WBSETCL informed that there was a bus fault at 220kV Bus coupler of Bidhannagar S/s due to R-ph CT failure of 220kV Bus coupler. Bus bar protection REB 670 operated and tripped all the elements connected to 220kV Bus I and II. WBSETCL explained that there is a limitation in REB 670 relay to segregate the faulty zone for a fault at bus coupler as a result, the relay had issued trip command to all the elements of Bus I & II. Sending DT to other end on operation of bus bar protection was not implemented as a result DT was not sent to other end.

WBSETCL added that after this incidence there was another B-N fault occurred due to fire at 220 k V Bidhan Nagar – Asansol transmission line. There was no damage to equipment and operating persons. In fault protection operated at Bidhanagar, as the line CB was already in open condition LBB protection operated at Bidhanagar. The fault got cleared from Asansol end on zone 2 distance protection.

WBSETCL informed that sending DT to other end on operation of bus bar protection had been implemented after the disturbance.

PCC observed that uneven distribution of transmission lines and high fault current levels at Bidhanagar bus.

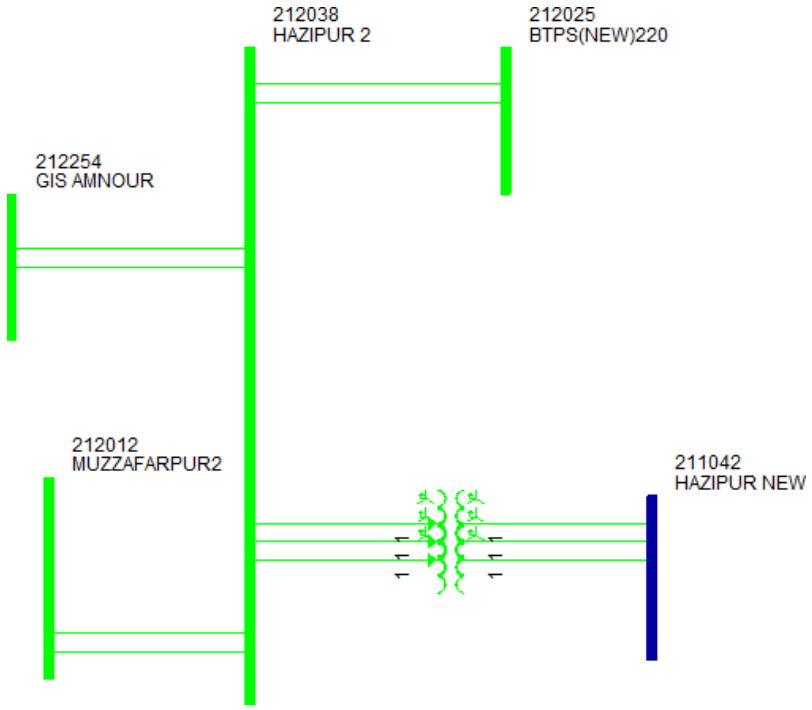
PCC suggested WBSETCL to take the following remedial measures:

- *Submit the last test report of the CT which was failed during the disturbance*
- *Carry out the testing of other CTs at Bidhanagar S/s*
- *Avoid uneven distribution of lines between the Buses*
- *WBSETCL along with SLDC, WB should explore to change the network configuration to reduce the fault current level at Bidhanagar*

ITEM NO. B.2: Tripping of 220 kV Muzaffarpur-Hajipur D/C on 09.02.2020 at 12:53 Hrs.

At 12:53 hrs, 220 kV Muzaffarpur-Hajipur D/C tripped due to bus bar protection operation at Hajipur leading to tripping of all feeders connected to 220 KV Hajipur S/S, causing load loss at Hajipur, Amnour, Siwan, Chhapra, Hathua, New Siwean(Raghunathpur) & Gopalganj (traction load loss of approx. 25MW at Hajipur, Siwan, Chhapra)

As per PMU data at Muzaffarpur, no fault has been observed.



Relay Indications:

Name	Realy indication at end 1	Realy indication at end 2
220 kV Muzaffarpur - Hajipur D/C	Yet to be received	B/B protection operation at Hajipur
220 kV Hajipur - Amnour D/C	B/B protection operation at Hajipur	Yet to be received

Load Loss: 183 MW

BSPTCL may explain.

Deliberation in the meeting

BSPTCL informed that bus bar protection at Hajipur operated due to maloperation of one of the isolator selector switch. As a result all the elements connected to 220kV Bus at Hajipur tripped on bus bar protection. During investigation, it was found that the isolator selector switch NO contact became stuck at NC. Similar incident was occurred on 10 February 2020 as given in item no. B.3. BSPTCL added that the isolator contact has been replaced after this disturbance.

ERLDC informed that around 3kV voltage unbalance was observed at Muzaffarpur PG Substation during normal operation.

PCC advised BSTCL to take the following actions:

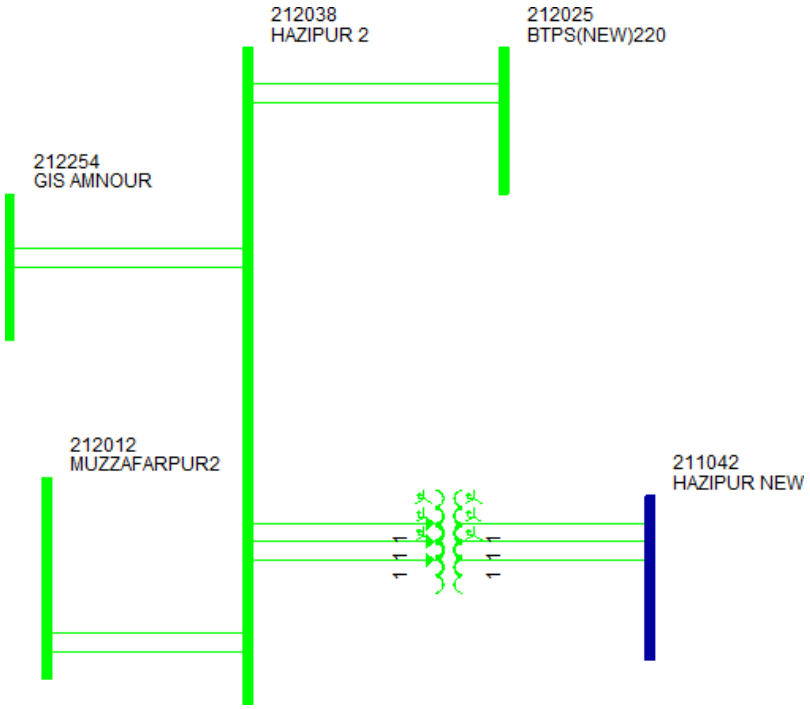
- *Check the past trippings for successful/unsuccessful operation of LBB and Bus Bar protection*
- *Test LBB protection and Bus bar protection.*

PCC also advised SLDC Bihar and Powergrid to check reason for voltage unbalance at Muzaffarpur Substation.

ITEM NO. B.3: Tripping of 220 kV Hajipur-Amnour D/C on 10.02.2020 at 17:32 Hrs.

At 17:32 hrs, 220 KV Hajipur-Amnour D/c tripped leading to load loss of 142 MW at Amnour, Siwan, Chhapra, Hathua, New Siwan(Raghunathpur) & Gopalganj (traction load loss of approx. 15MW at Siwan, Chhapra).

As per PMU data at Muzaffarpur, no fault has been observed.



Load Loss: 142 MW

BSPTCL may explain**.**

Deliberation in the meeting

The disturbance was discussed along with item B2.

ITEM NO. B.4: Disturbance at 220 kV New Melli and Tashiding Substation on 25.02.2020 at 08:14 Hrs

At 08:14 hrs 220 kV Tashiding - New Melli S/C, 220 kV Tashiding - Rangpo S/C, 220 kV Rangpo - New Melli - S/C tripped resulting total power failure at New Melli and Tashiding S/S and tripping of unit #2 at Tashiding due to loss of evacuation path. At the time of the incident, heavy thunderstorm and inclement weather were reported.

Jorethang has also reported that its 220 kV Jorethang-New Melli 1 has also tripped in zone 1 protection on B phase to earth fault.

As per PMU data, R-Y-B phase fault was detected by Rangpo PMU at 08:15:39 hrs. Fault was cleared within 100 ms. No fault was detected by Rangpo PMU at 08:15:45.110 hrs (Based on this DR for Rangpo end time synchronization error is suspected).

Relay Indications:

Name	Relay Indication at end 1	Relay Indication at end 2
220 kV Tashiding - New Melli S/C	Y-N, Z-I, 11.74 km, IR = 0.35 kA IY = 2.29 kA, & IB = 0.68 kA (DR not properly configured)	Not Tripped
220 kV Tashiding - Rangpo S/C	Y-N, IR = 0.225 kA IY = 1.878 kA, & IB = 0.5957 kA (DR not properly configured)	R-B-N, Z-I, IR = 4.3 kA IY = 3 kA, & IB = 3.4 kA,
220 kV Rangpo - New Melli - S/C	R-Y-B-N, Z-I, IR = 4.2 kA IY = 1.9 kA, & IB = 3.4 kA,	Y-B-N , Tripped (Zone 1)
220 kV JLHEP – New Melli – 1	Y-N, Z-I, IY = 1.2 kA	Not Tripped

Generation Loss: 48.5 MW

DANS Energy may explain.

Deliberation in the meeting

Powergrid informed that there was a fault in 220 kV Tashiding - Rangpo S/C and 220 kV Rangpo - New Melli - S/C. Both the ends cleared the fault on zone 1 distance protection.

PCC observed that 220 kV Tashiding - New Melli S/C and 220 kV JLHEP – New Melli – 1 should not trip in this case. Similar incidences were occurred in past PCC Meeting. PCC observed that distance relay settings at Tashiding and JLHEP were not proper and DANS ENERGY was advised to review the settings.

ERLDC informed that they send the DRs but not sent any report with detailed analysis.

Representative from DANS ENEGRY was not available in the meeting.

It was informed that representative from DANS ENEGRY was not attending the meeting even with repeated persuasions.

PCC took serious note of the non compliances of decisions taken in the previous PCC Meeting and repeated uncoordinated trippings in around Tashiding, Jorethang and New Melli.

PCC decided to pursue the issue with DANS ENERGY.

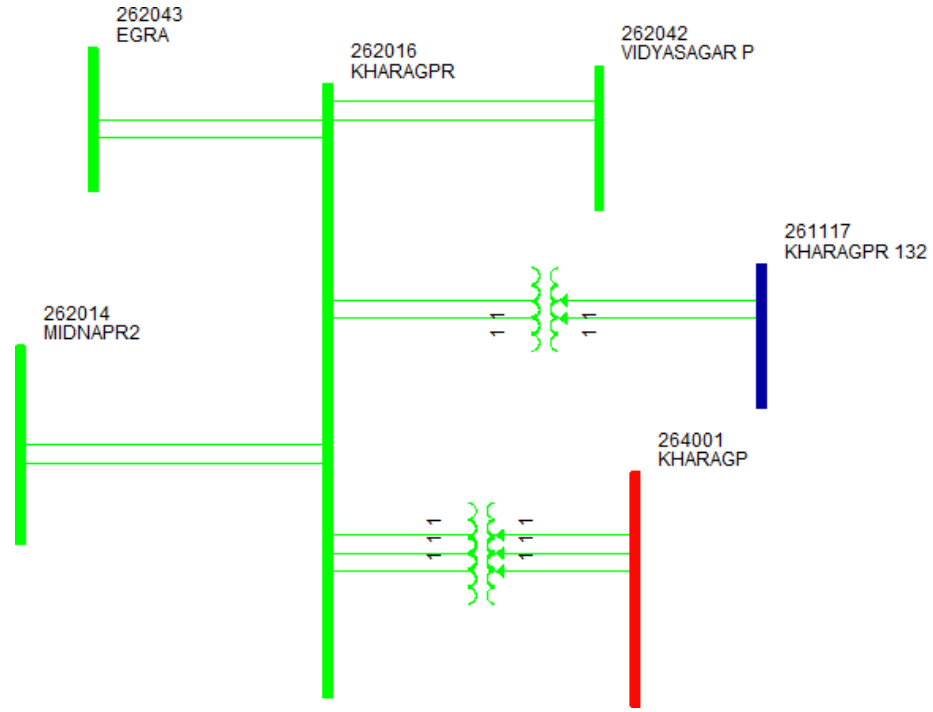
ITEM NO. B.5: Total Power Failure at Egra and Vidyasagar S/s on 11.02.2020 at 08:33 Hrs

220 KV Kharagpur-Midnapore D/c under planned shutdown. At 08:33 Hrs, LBB of 220 KV Kharagpur-Vidyasagar Park I operated due to closing of earth switch at Kharagpur end resulting into tripping of both 220 KV buses at Kharagpur and total power failure at Vidyasagar Park and Egra.

It was reported by WBSETCL that Both Zone 1 and 2 along with check zone of Bus bar protection has operated causing tripping of both 220 kV buses at Kharagpur. This has led to all 220 kV Connected elements tripping from 220 kV buses of Kharagpur along with 400/220 kV and 220/132 kV ICTs.

With this 220 kV and 132 kV buses were having no supply at Kharagpur. This has led to total power failure at radially fed 220/132 kV Vidyasagar Park and Egra substation and 132 kV Keshiary causing load loss of 262 MW.

The detailed report prepared by ERLDC is given at **Annexure-B5.**



Load Loss: 43 MW

Relay Indications:

Name	Relay Indication at end 1	Relay Indication at end 2
220 KV Kharagpur-Vidyasagar Park D/c	B/B protection operation at Kharagpur	Yet to be received
220 KV Kharagpur-Egra D/c	B/B protection operation at Kharagpur	Yet to be received
3 x 315 MVA 400/220 KV ICTs at Kharagpur	B/B protection operation at Kharagpur	B/B protection operation at Kharagpur
2 x 160 MVA 220/132 KV ICTs at Kharagpur	B/B protection operation at Kharagpur	B/B protection operation at Kharagpur

WBSETCL may explain.

Deliberation in the meeting

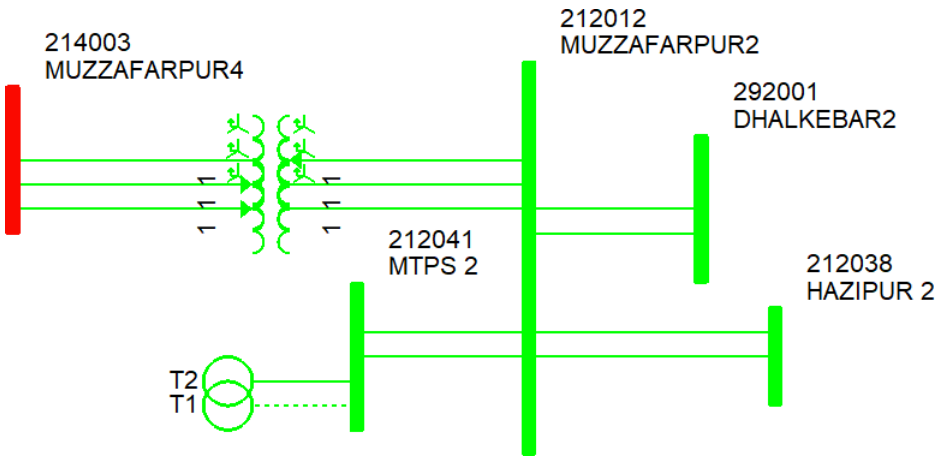
WBSETCL informed that 220 KV Kharagpur-Midnapore D/c were under planned shutdown and the operator inadvertently closed the earth switch of 220 KV Kharagpur-Vidyasagar Park I at Kharagpur. As a result, Bus bar protection operated at Kharagpur and tripped all the elements connected to 220kV Bus.

PCC advised WBSETCL to train the operators to avoid such mistakes.

ITEM NO. B.6: Disturbance at Muzaffarpur Substation on 20.02.2020 at 12:29 Hrs.

At 12:29 Hrs, 220 KV Bus 2 at Muzaffarpur (PG) tripped leading to tripping of 220 KV Muzaffarpur-Dhalkebar 2, 220 KV Muzaffarpur-Hajipur 2, 220 KV Muzaffarpur-MTPS (KBUNL) 2, 500 MVA 400/220 KV ICT III. Subsequently 220 KV Muzaffarpur-Dhalkebar I also tripped on O/c and supply to Nepal interrupted.

As per PMU data at Muzaffarpur, 0.5 kV voltage dip observed in all three phases for more than 6 seconds. All three-phase voltage raised by 1 kV after that.



Load Loss: 260 MW

BSPTCL and Powergrid may explain.

Deliberation in the meeting

Powergrid informed that fault occurred due to malfunction of gas density monitor of 220 KV Muzaffarpur-MTPS (KBUNL) 2. The issue of gas density monitor had been resolved after the disturbance.

Powergrid added that the bays are belongs to BSPTCL and there is no agreement signed for carrying out operation and maintenance works.

PCC advised BSPTCL to resolve the O&M issues with Powergrid at the earliest.

ITEM NO. B.7: Disturbance at Maithon Generating Station on 20.02.2020 at 06:14 Hrs

Both the units at MPL was running with 525 MW generation. At 6:14:02 hrs. CW pump 1A,1C and ACW Pump 1A Tripped followed by initiation of Vacuum Very low trip signal at 06:14:54 hrs and

subsequently tripping of turbine resulted tripping of unit #1 at MPL on Class – B protection. At 6:14:00 hrs. MFT of unit #2 occurred due to loss of all fuel as all 6.6KV and 415V bus section got Tripped .

Generation Loss: 1050 MW

MPL may explain.

Deliberation in the meeting

MPL representative was not available in the meeting for discussion.

PCC decided to take up with MPL.

ITEM NO. B.8: Disturbance at HVDC Talcher Substation on 17.02.2020 at 17:38 Hrs

On 17th Feb 2020, at 17:38 hrs HVDC Talcher-Kolar Pole-2 tripped due to persistent DC line fault. Before tripping the flow on Bipole was 2000 MW and in post outage, flow on Pole-1 jumped to 1250 MW from 1000 MW. After 30 seconds, it came down to 1000 MW and after 75 seconds, flow through the link was 150 MW as per ground return scheme. Due to generation of SPS -3 signal, generation back down of 666 MW occurred at Talcher. At same time, generation reduction occurred at GMR and JITPL also.

Generation Loss: 836 MW

Powergrid may explain.

Deliberation in the meeting

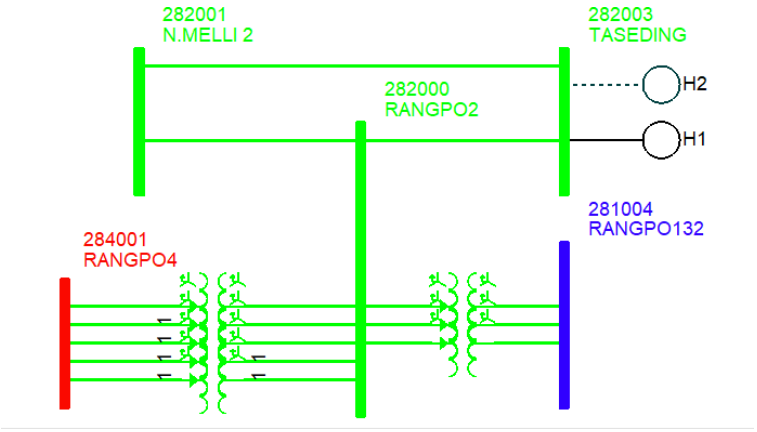
Powergrid informed that HVDC Talcher-Kolar tripped on emergency switch off signal received from Talcher.

ITEM NO. B.9: Disturbance at 220 KV Rangpo S/s on 11.01.2020 at 11:45 Hrs

220 kV Bus II at Rangpo was under shutdown. At 11:45 Hrs, 220 KV Bus I at Rangpo became dead due to operation of bus bar protection resulting tripping of all five 315 MVA 400/220 KV ICTs at Rangpo, 220 KV Rangpo-New Melli S/C, 220 KV Rangpo-Tashiding S/C and all 3 100 MVA 220/132 KV ICTs at Rangpo.

Total power failure occured at 220 kV S/S at Tashiding, New Melli and Jorethang S/S. 400 kV bus at Rangpo was in service. Power supply to Gangtok interrupted as it was being fed through 132 KV Rangpo-Gangtok D/c.

No generation occured loss at Jorethang, Tashiding and Chuzachen as no machine was running.



In 88th PCC meeting, Powergrid vide mail informed that MTL was working on Bus 2 for commissioning of their 220 kV bays at Rangpo. Busbar protection relay got initiated due to malfunction of contact.

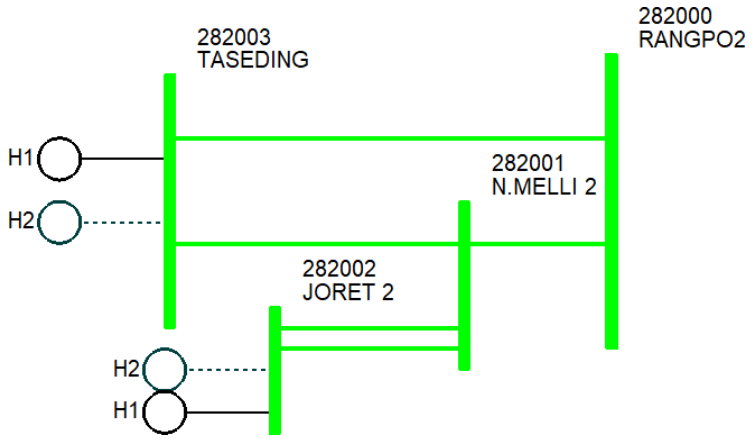
Powergrid and DANS Energy may explain.

Deliberation in the meeting

Powergrid vide mail informed that MTL was working on Bus 2 for commissioning of their 220 kV bays at Rangpo. Busbar protection relay got initiated due to malfunction of contact.

ITEM NO. B.10: Total power failure at Tashiding Substation on 16.01.2020 at 15:48 Hrs.

At 15:48 hrs, 220 kV New Melli-Tashiding S/C, 220 kV-Tashiding-Rangpo S/C, 220 kV New Melli-Jorethang-I tripped on Y-N fault resulting total power failure at Tashiding S/S. There was no generation at Tashiding



In 88th PCC meeting ERLDC informed that there was a B-N fault in 220kV New Melli-Jorethang line -I and Jorethang end tripped on zone 1. The fault got cleared within 100 ms. Reason for tripping of 220 kV New Melli-Tashiding S/C, 220 kV-Tashiding-Rangpo S/C lines needed explanation.

ERLDC informed that no detailed report had been received from DANS Energy.

PCC observed that there was uncoordinated tripping at Jorethang & Tashiding due to improper protection relay settings. In earlier PCC Meetings, DANS Energy was advised to review the relay settings. The compliance report is yet to be received from DANS Energy.

It was decided to pursue the issue with DANS Energy.

PCC decided to conduct protection audit at Jorethang, Tashiding and New Melli S/s in the month of March, 2020.

DANS Energy may explain.

Deliberation in the meeting

It was decided to pursue the issue with DANS Energy.

ITEM NO. B.11: Chuzachen HEP Protection setting review and PLCC system commissioning

Protection settings: 132 KV Chuzachen-Rangpo I & II feeders were formed on 01 July 2019.

After changes in the line length and termination points, protection settings of Micom relay should be reviewed and verified for proper functioning. Chuzachen HEP has contacted ERPC & PGCIL on the matter and awaited for the response.

PLCC system commissioning: PLCC system commissioning could not be completed during formation of 132 KV Chuzachen-Rangpo I & II feeders due to shutdown constraints in the peak monsoon season. Due to reason, carrier intertripping and Voice communication are not functional. GOS power department and Rangpo PGCIL were in opinion to complete PLCC system commission in lean season. Chuzachen HEP has informed GOS Power department and PGCIL Rangpo to take up the matter in month of Dec-2019 for fully commissioning of PLCC system.

Members may discuss.

Deliberation in the meeting

PRDC presented the issues related to distance relay settings at Chuzachen.

PCC observed that the resistive reach setting of zone 3 distance protection is very high as a result 132 KV Chuzachen-Rangpo line tripped from Chuzachen on zone 3 for a high resistance fault in 400kV line.

PCC advised to set the resistive reach setting judicially.

PCC also observed the autoreclose scheme is in disable mode.

PCC advised Powergrid and Chuzachen to explore the possibility to keep the single phase autorecloser in service.

Regarding PLCC and communications issues, Chuzachen was advised to coordinate with Sikkim and Powergrid to resolve the issues.

ITEM NO. B.12: Tripping Incidences in the month of February, 2020.

Other tripping incidences occurred in the month of February, 2020 which needs explanation from constituents of either of the end is given in **Annexure-B12**.

In 36th TCC, all the constituents were advised to use the PDMS on-line portal for uploading the single line tripping details along with DR (comtrade files), EL and other relevant files for all trippings of August 2017 onwards. Otherwise, it will be considered as violation of compliance of clause 5.2(r) & 5.9 of IEGC.

In 74th PCC, all the constituents were requested to submit the disturbance report along with DR through the new version of on-line portal which was implemented from 01st Jan. 2019.

Members may discuss.

Deliberation in the meeting

Explanation from constituents of either of the end was updated in Annexure -B12.

ITEM NO. B.13: List of DR discrepancies in the month of February, 2020.

The list of all DR discrepancies in month of February 2020 which needs explanation from constituents of either of end is given at **Annexure – B13.**

Members may discuss.

Deliberation in the meeting

ERLDC updated the latest status. The updated status is enclosed at Annexure –B13 . PCC advised all constituents to go through annexure and resolve issue at earliest.

ITEM NO. B.14: Multiple tripping incidents in the month of February 2020

14.1. Multiple tripping incident at RTPS at 01:55 hrs on 08-02-2020

400 kV Andal – Jamshedpur # 1 is under planned outage since 03-02-2020. 400 kV Maithon – RTPS S/C tripped at 01:53 hrs prior to the incident due to DT received from Maithon. At around 01:55 hrs, due to BO9 error of Bus bar protection (Binary output card error), DT signal was sent to remote end for 400 kV RTPS – Ranchi # 1 & 3 and 400 kV Andal – RTPS D/C resulting tripping of these circuits.

Following points may be explained by DVC:

1. Remedial action taken after the event may be explained by DVC.
2. Reason for tripping of 400 kV Maithon – RTPS S/C may be explained by POWERGRID ERTS-II.
3. 400 kV Andal – RTPS 1 and 400 kV Ranchi – RTPS # 1 & 3 were connected to bus 1 at RTPS and 400 kV Andal – RTPS 2 was connected to bus 2 at RTPS. Reason for tripping of all four feeders due to BCU problem may be explained by DVC.

Deliberation in the meeting

DVC informed that BOM 9 error happened. It was rectified and Bus bar relay was replaced. PCC advised DVC to change GPS time synchronization.

14.2. Multiple tripping incident at NBU at 22:01 hrs on 29-02-2020

At 22:01 Hrs on 29-02-2020, B phase CT of 132 KV NBU-Rammam burst, leading to bus fault at NBU and 132 KV NBU S/s became dead. All lines emanating from NBU tripped and power supply to NBU, TCF I, TCF II, TCF III, Islampur interrupted. Following lines at NBU tripped:

- 132 KV NBU-NJP
- 132 KV NBU-Rammam
- 132 KV NBU-Lebong
- 132 KV NBU-TCF
- 132 KV NBU-Siliguri (PG)
- 132 KV NBU-Ujanoo

WB SLDC/WBSETCL may share detailed report along with root cause analysis, DR/EL and remedial actions taken. Switching scheme of substations having single bus bar with transfer bus scheme may be changed to two main bus bar scheme for improving reliability of the system.

Deliberation in the meeting

PCC advised WBSETCL to send detailed report to ERPC.

14.3. Multiple tripping incident at Arrah at 23:53 hrs on 29-02-2020

At 23:53 Hrs, B phase CVT of 132 KV Arrah (PG)-Jagdishpur II burst at Arrah (PG). Subsequently, all 3*220/132 KV ICTs at Arrah (PG) tripped and 132 KV bus became dead. Power supply interrupted at Arrah, Dumraon and Jagdishpur. Following lines at Arrah tripped:

- 132 KV Arrah (PG)-Arrah
- 132 KV Arrah (PG)-Dumraon
- 132 KV Arrah (PG)-Jagdishpur D/c

Bihar SLDC/BSPTCL may share detailed report along with root cause analysis, DR/EL and remedial actions taken. Switching scheme of substations having single bus bar with transfer bus scheme may be changed to two main bus bar scheme for improving reliability of the system.

Deliberation in the meeting

Powergrid informed that static relay would be replaced by numerical relay with directional feature.

14.4. Frequent tripping of 400 KV Barh-Gorakhpur D/C

400 KV Barh-Gorakhpur D/C tripped on several instances in the month of February 2020 as shown in the list. 400 KV Barh-Gorakhpur D/C is a major link in ER-NR corridor. Hence, tripping of this line affects reliability as well as Transfer Capability of ER-NR corridor. Besides, Barh being a 2X660 MW generating station, frequent fault in the lines emanating from Barh is another cause of concern. It is also observed that, for Single-Line-To-Ground (SLG) fault, Auto Reclose (A/R) did not operate on some instances either at one or at both ends. Even DR/EL for the tripping are neither received at ERLDC via email nor uploaded in PDMS portal on time.

In view of the above, POWERGRID ERTS-I is requested to:

1. Maintain healthiness of 400 KV Barh-Gorakhpur D/C by proper patrolling.
2. Ensure the healthiness of Auto Reclosure for maximizing the line availability under transient SLG faults.
3. Share DR/EL for all tripping incidences within 24 hours of tripping in compliance to IEGC section 5.2 (r).

Element Name	Tripping Date	Tripping Time	Reason	Revival Date	Revival Time
400KV-BARH-GORAKHPUR-2	24-02-20	0:52	Y-N Fault	24-02-20	18:52
400KV-BARH-GORAKHPUR-1	24-02-20	0:52	Y-N Fault	24-02-20	12:14
400KV-BARH-GORAKHPUR-2	25-02-20	7:41	DT received at Gorakhpur	25-02-20	8:25
400KV-BARH-GORAKHPUR-1	25-02-20	7:41	DT received at Gorakhpur	25-02-20	9:55
400KV-BARH-GORAKHPUR-1	26-02-20	12:30	R-N Fault (400 kV Barh – Patna – 4 tripped at same time)	26-02-20	17:53

The same was requested to POWERGRID ERTS – I vide letter no. ० ० ० ०
० / ० अ०/2019-20/4442 dated 27-02-2020. POWERGRID ERTS – I may respond.

Deliberation in the meeting

Element Name	Tripping Date	Tripping Time	Reason	POWERGRID ERTS – I's remarks
400KV-BARH-GORAKHPUR-2	24-02-20	0:52	Y-N Fault	Persistent fault in Y phase while attempting auto reclose
400KV-BARH-GORAKHPUR-1	24-02-20	0:52	Y-N Fault	DT received at Gorakhpur
400KV-BARH-GORAKHPUR-2	25-02-20	7:41	DT received at Gorakhpur	AR successful initially due to BN fault. Then DT received from Barh end leading to the tripping
400KV-BARH-GORAKHPUR-1	25-02-20	7:41	DT received at Gorakhpur	*DT received from Barh*
400KV-BARH-GORAKHPUR-1	26-02-20	12:30	R-N Fault (400 kV Barh – Patna – 4 tripped at same time)	*DT received at Gorakhpur for 400KV-BARH-GORAKHPUR-1. . 400 kV Patna Barh 4 tripped due to insulator decapping.*

Frequently, DT received has been observed for 400 kV Barh Gorakhpur D/C. POWERGRID has been advised to find the reason for frequent DT receipt

ITEM NO. B.15: Sharing DR/EL for any tripping incident within 24 hrs of the incident and detailed report of any grid disturbance/grid incident/grid event within seven days

As per IEGC section 5.2 (r), all the users, STU/SLDC and CTU are to send information including DR/EL output to RLDC within 24 hours from the tripping incident. But in case of some tripping incidents, DR/EL and detailed tripping report are yet to be received even after the end of the month. All the users, STU/SLDC and CTU are suggested to upload DR/EL of both main 1 and main 2 protection (if available) in comtrade format in PDMS within 24 hours from the tripping incident. In case of technical constraints related to uploading of DR/EL in PDMS, DR/EL may be sent to erldcprotection@posoco.in and erpcprotection@gmail.com. All the SLDCs and generating stations may send detailed report along with root cause analysis and remedial action taken to ERLDC/ERPC within seven days of any grid disturbance/grid incident/grid event within their control area.

Following table shows the events where DR/EL and detail report are yet to be received for GD/GI events in the month of February 2020.

Date	Time	S/S involved	Reporting status*
09-02-2020	12:53	Hajipur & Amnour	Detail report, DR/EL yet to be received from Bihar SLDC/BSPTCL.
10-02-2020	17:32	Amnour	Detail report, DR/EL yet to be received from Bihar SLDC/BSPTCL.
11-02-2020	08:33	Egra, Vidyasagar Park, Kharagpur	Detail report, DR/EL yet to be received from WB SLDC/WBSETCL (Flash report received)
20-02-2020	06:14	MPL	Detail inspection report yet to be received from MPL.
20-02-2020	12:29	Muzaffarpur	Detail report, DR/EL yet to be received from PG

* As on 08-03-2020

Members may discuss.

Deliberation in the meeting

PCC advised SLDCs, generating stations and transmission utilities involved to send detailed report along with DR/EL to ERPC and ERLDC.

ITEM NO. B.16: Protection Coordination for New Lines/ICTs Prior to First Time Charging in ER ISTS system

The details of new units/transmission elements commissioned in the month of February 2020 based on information furnished by the constituents are depicted below:

All the utilities are advised to review the protection setting at the substations which are connected to Meramundali, Mendasal, Talcher and Kahalgaon.

Name of the element	Line length and conductor type	End 1 remote substations	End 2 remote substations
400kV Talcher Meramundali 2	86 km, ACSR twin moose	PG – Rengal, Rourkela	OPTCL - Duburi, Mendasal, JSPL, Lapanga

			PG - Bolangir
400 KV Meramundali-Mendasal 2	98 km, ACSR twin moose	OPTCL - Duburi, Mendasal, JSPL, Lapanga PG - Bolangir	PG – Pandiabili,

Members may discuss.

Deliberation in the meeting

PCC advised that in every month PCC meeting, details of new units/transmission elements commissioned in previous month would be agenda so all constituents were advised to update. PCC advised OPTCL and Powergrid to give feedback to ERPC and ERLDC and to intimate other utilities concerned.

ITEM NO. B.17: Severe Fluctuation in Voltage and Power in Jeypore -Gajuwaka Area (HVDC pole 1 tripped) observed on 31 Jan and 4th and 5th Feb 2020

Three events of severe nature have occurred near Jeypore and Gajuwaka Area where severe hunting has been observed in Power and Voltage and HVDC Gajuwaka Pole 1 has tripped. The timing of the event is as follows:

1. 14:46hrs to 14:51hrs on 31-01-2020
2. 14:34hrs to 14:36hrs on 04-02-2020
3. 08:34hrs to 08:38hrs on 05-02-2020

In addition to the above, similar events have also been observed 17, 18, 24 and 25th February 2020. Based on the significant data that have been received from HVDC, OPTCL, OPGC and PMU data at ERLDC, analysis has been carried out with the following observations.

1. **Gajuwaka HVDC Bipole** : Power order of HVDC has fluctuated from 100 MW to 600 MW. Pole 1 has observed failure of multiple thyristor on two occasions i.e. 3rd and 4th March 2020. Based on PMU data it was observed that the fault signature of pole tripping on thyristor failure and all these voltage dip are similar in nature
2. **STATCOM at Jeypore** : Response is observed due to the Voltage Variation during these events on multiple occasions.
3. **Jeypore-Gajuwaka Line DR from Jeypore** : 400 kv Jeypore-Gajuwaka D/C observed power swing on various occasion during these fluctuation and some of them entered in Zone 3. From the voltage and current plot, the normal fault type signature is not observed. Voltage waveform and current waveform are distorted unline during fault and harmonic content of 2nd and third harmonics is high. On some occasions FSC of these lines have bypassed at Gajuwaka end on Ferro-resonace.
4. **OHPC Units :** Units at Upper Kolab and Balimela have tripped on few occasions on the overall differential protection due to the jerk observed during these events.
5. **OPTCL** : No Fault in any transmission line or any frequenct Auto-reclosure events in any of the lines.
6. **PGCIL Orissa** : No Fault is any transmission lines.

Based on this, it is suspected that these fluctuation are not from the grid side and is due to HVDC. PGCIl is advised to kindly analyse the event further and submit the report.

Members may discuss.

Deliberation in the meeting

ERLDC informed that these incidences were not due to any fault.

PART- C:: OTHER ITEMS

ITEM NO. C.1: FOLLOW-UP OF DECISIONS OF THE PREVIOUS PROTECTION SUB-COMMITTEE MEETING(S)

The decisions of previous PCC Meetings are given at **Annexure-C1.**

In 73rd PCC, it was observed that latest status on the implementation of the previous PCC recommendations were not updated by the constituents regularly. All the constituents were advised to update the latest status of the recommendations as per the list given in Annexure.

Members may update the latest status.

Deliberation in the meeting

PCC advised all constituents to send updated status to ERPC secretariat.

ITEM NO. C.2: Status of Third-Party Protection Audit

The compliance status of 1st Third Party Protection Audit observations is as follows:

Name of Constituents	Total Observations	Complied	% of Compliance
Powergrid	54	46	85.19
NTPC	16	14	87.50
NHPC	1	1	100.00
DVC	40	26	65.00
WB	68	49	72.06
Odisha	59	42	71.19
JUSNL	34	25	73.53
BSPTCL	16	5	31.25
IPP (GMR, Sterlite and MPL)	5	5	100.00

** Pending observations of Powergrid are related to PLCC problems at other end.*

The substation wise status of compliance is available at ERPC website (Observations include PLCC rectification/activation which needs a comprehensive plan).

In 77th PCC, BSPTCL has submitted the updated status.

In 79th & 80th PCC, BSPTCL was advised to submit the details of the compliance report.

BSPTCL may update.

Deliberation in the meeting

PCC advised ERPC and ERLDC to plan Audit at nearest substation by end of March 2020.

ITEM NO. C.3: Non-commissioning of PLCC / OPGW and non-implementation of carrier aided tripping in 220kV and above lines.

According to CEA technical standard for construction of electric plants and electric lines -Clause 43(4) (c), transmission line of 220 KV and above should have single-phase auto-reclosing facility for improving the availability of the lines. However, from the tripping details attached June-August, 2016 it is evident that the some of 220kV above Inter & Intra-Regional lines do not having auto-reclose facility either at one end or at both ends. Out of these for some of the lines even PLCC/OPGW is not yet installed and carrier aided protection including Autorecloser facility is not yet implemented. Based on the trippings of June- August, 2016 and PMU analysis a list of such lines has been prepared and as given below:

List of line where auto reclose facility is not available (Information based on PMU data analysis)							
S. No	**Transmission Lines name**	**Date of Tripping**	**Reason of Tripping**	**Owner Detail**		**Present Status**	
				End-1	**End-2**	**OPGW/PLCC Link available**	**AR facility functional**
13	220KV BUDIPADAR-KORBA-II	23.06.16	Y-N FAULT	OPTCL	CSEB	PLCC not available	will be activated in consultation with Korba
17	220 KV TSTPP-RENGALI	17.07.16	EARTH FAULT	NTPC	OPTCL	OPGW replaced PLCC.	by March 2018
18	220KV BUDIPADAR-RAIGARH	21.07.16	EARTH FAULT	OPTCL	PGCIL	PLCC defective.	To be commissioned be Chhatisgarh.
20	220 KV FARAKKA-LALMATIA	03.08.16	B-N FAULT .	NTPC	JUNSL	Yes	Old Relay and not functional. 7-8 months required for auto re-close relay procurement.
23	220 KV MUZAFFARPUR - HAZIPUR - II	10.08.16	B-N FAULT	PGCIL	BSPTCL	PLCC commissioned.	Voice established. For carrier required shutdown
24	220 KV ROURKELA - TARKERA-II	11.08.16	B-N FAULT	PGCIL	OPTCL	OPGW available	DTPC installed. A/R to be commissioned.
27	220 KV BIHARSARIF-TENUGHAT	07.09.16	B-N FAULT	BSPTCL	TVNL		
33	220KV Jamshedpur-Jindal-SC						

34th TCC advised all the respective members to update the above list along with the last tripping status in next PCC meeting.

TCC further advised all the constituents to give the latest status of PLCC of other 220kV and above lines under respective control area.

OPTCL:

1. 220kV Rengali(PG)-Rengali S/Y : *Contract awarded*
2. 220kV Indravati(PG)-Indravati(PH) : *Contract awarded*
3. 132kV Baripada(PG)-Baripada : *OPGW completed*
4. 132kV Baripada(PG)-Rairangpur : *OPGW completed*

BSPTCL:

Sl No.	***Lines***	***Status***
1	*220 kV Purnea(PG)-Madhepura*	*Protection through PLCC is working properly*
2	*220 kV Biharsharif-BTPS new*	*BHEL would complete this work*
3	*220 kV BTPS new- Begusarai*	*BHEL would complete this work*
4	*220 kV Biharshariff-Bodhgaya line LILO*	*OPGW is present. Protection is done through*

	at Khizersarai	*DPC.*
5	*132 kV MTPS-Motiari line*	*OPGW is installed.*
6	*220KV Madhepura-New Purnea D/C*	*Protection through PLCC is working properly*
7	*220KV Muzaffarpur-Hajipur D/C line*	*Protection through PLCC is working properly*
8	*220KV Patna-Khagaul-SC*	*PLCC Panel working properly.*
9	*220 kV DMTCL(Darbhanga)-Laukhi Circuit-I*	*PLCC Panel working properly*
10	*220 kV Tenughat-Biharsharif S/C*	*PLCC to be commissioned*
11	*220 kV Gaya-Sonenagar New circuit-I*	*Communication through OPGW*
12	*220 kV Pusauli-Dehri S/C*	*PLCC not working. OPGW commissioned at Dehri end.*
13	*220 kV Begusarai-Purnea(PG) D/C*	*PLCC working properly*
14	*220 kV DMTCL-Motipur ckt-II*	*PLCC to be commissioned.*
15	*220 kV Dehri- Gaya D/C*	*PLCC working properly*
16	*220 kV Kishanganj(PG)-Kishanganj(B)-II*	*PLCC working properly*

In 79th PCC, BSPTCL submitted PLCC status of some of the lines. The details have been updated in above table.

In 80th PCC meeting, BSPTCL was advised to rectify the PLCC & Auto reclose issues in coordination with their communication wing.

Members may update.

Deliberation in the meeting

PCC advised all constituents to update.

ITEM NO. C.4: Any additional agenda – with permission of the Chair.

Annexure - A

Participants in 89th PCC Meeting

Venue: ERPC Conference Hall, Kolkata Time: 11:00 hrs Date: 13.03.2020 (Friday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
1	**J. Bandyopadhyay**	**Member Secretary ERPC**	**9432326351**	**mserpc-power@gov.in**	
2	**D. K. Jain**	**Executive Director, ERLDC**	**9910344127**	**dk.jain@posoco.in**	
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4	A. Mallick	CGM	9436302720	cmarindam.mallick@posoco.in	
5	SURAJIT BANERJEE	SR. GM, ERLDC	9433041823	surajit.banerjee@posoco.in	
6	Sukdev Bal	Ch. Mgr. POWERGRID	9903180042	sukdevbal@powergrid.com	
7	S. MAITI	S.D.E(E), DVC	7545867453	sudiptam77m@gmail.com	S. Maiti
8	Rahul Anand.	Sr. Manager(OS) NTPC	9425823430	rahulanand@ntpc.co.in	
9	Madhab Mukherjee	SE	7980594471	madhab.mukherjee@prdcinfotech.com	
10	K. Praveen	Engineer-PSS	9676493353	Praveen.K@Prdcinfotech.com	
11	RAJ PROTIM	DY Mgr, ERLDC	9903329591	rajprotim@posoco.in	
12	Kumar Satyam	AD-II, ERPC	7355661655	satyam2436@gmail.com	Kumar Satyam
13	J. G. Rao	EE, ERPC	9547891353	ganeshrao.jada@gov.in	
14	CHANDAN KUMAR	Manager ERLDC, Posoco	9869251460	chandan@posoco.in	
15	JAYANTA KANJILAL	ACE, WBSETCL	9434910189	CECTDWBSETL@GMAIL.COM	
16	GAUTAM NAYAK	ACE, WBSETCL	9434910544	— do —	
17	KRISHNENDU SARKAR	Mgr. WBSEDCL	8336008840	k.sarkar01@wbpdcl.co.in	
18	M. Z. Hudc	Gm OPTCL	9438907491	ele.mzhuda@optcl	
19	Debi Prasad Kar	AGM, SLDC Odisha	9438907416	ele.dpkar@sldcodisha.odg.in	DPKar
20	Siddhartha Singh	Manager (C&M)	8170005771	SIDDHARTHA.SINGH@GATIINFRA.COM	

"Coming together is a beginning, staying together is progress, and working together is success." –Henry Ford

Participants in 89th PCC Meeting

Venue: ERPC Conference Hall, Kolkata Time: 11:00 hrs Date: 13.03.2020 (Friday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
21	Shri Mohan Jha	Consultant, ERPC	6289127726	erpcjha@yahoo.co.in	
22	Shivam Asati	AD-II, ERPC	8253035332	shivam.asati@gov.in	
23	B. SARKHEL	Consultant ERPC	9433065724		
24	Anjani Kumar	EEE/BSPTCL	9262991468	tochajibu@gmail.com	13/03/2020
25	Jitesh Kr.	EEE, BSPTCL	7763817782	jiteshkv1@gmail.	
26	GAGAN KUMAR	EEE, SLDC BSPTCL	7763817782	gagankmishra@gmail.com	
27	Brajesh Kumar	AGM/SLDC BSPTCL	9852167381	brajeshzone123@gmail.	
28	Goutam Dutta	S.E. SLDC, WB	9434910266	g_dutta0304@rediffmail.com	13/3/2020
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"Coming together is a beginning, staying together is progress, and working together is success." –Henry Ford

							Annexure-B12	
LINE NAME	**TRIP DATE**	**TRIP TIME**	**Relay Indication LOCAL END**	**Relay Indication REMOTE END**	**Reason**	**Fault Clearance time in msec**	**Remarks**	**PCC remarks**
220KV-BUDHIPADAR-KORBA-3	2/7/2020	2:56	Master trip		Master trip at Budhipadar	--	Carrier maloperation suspected by OPTCL (panel maintained by PGCIL), No fault observed in PMU data	PG and OPTCL to jointly review
400KV-PATNA-BALIA-2	2/19/2020	22:09	O/V stage 1, DT sent at Patna	DT receipt at Balia	O/V stage-1 at Patna	--	PG ERTS - I to confirm whether conversion of Line reactor of 400 kV Barh Patna - 1 to bus reactor at Patna was done through Tie Bay causing overcompenstation leading to LC oscillation.	
400KV-MERAMUNDALI-LAPANGA-2	2/27/2020	14:56	Did not trip form Meramundali	Tripped from Lapanga end only	Tripped from Lapanga end only	--	Reason not found	OPTCL to check the DC circuit.
400KV-MAITHON-MAITHON RB-2	2/26/2020	9:58	DT received at Maithon		DT received at Maithon	--	MPL to explain the reason for tripping. As per DR only E/F picked up at MPL end. PG to configure DR at Maithon as per PCC's recommendation	
No A/R Operation								
400KV-BINAGURI-KISHANGANJ-1	2/5/2020	15:11	R-N, 41KM, 1.85KA, A/R SUCCESSFUL	R-N, 86KM, 4.6KA	R-N Fault	< 100 msec	No A/R operation from Kishanganj	Main and Tie BCU fail, to be replaced by 31st March
220KV-NEW PURNEA-MADHEPURA-2	2/24/2020	4:35	BN, 3.39 KA, 18.9 KM, A/R Successful	BN, Z1, 73.2 KM		< 100 msec	No A/R operation at Madhepura	BSPTCL to check and share the reason
220KV-DEHRI -GAYA-2	2/25/2020	9:55	R-N,3.2 KA	A/R SUCCESSFULL,R-N		< 100 msec	No A/R operation	BSPTCL to check and share the reason

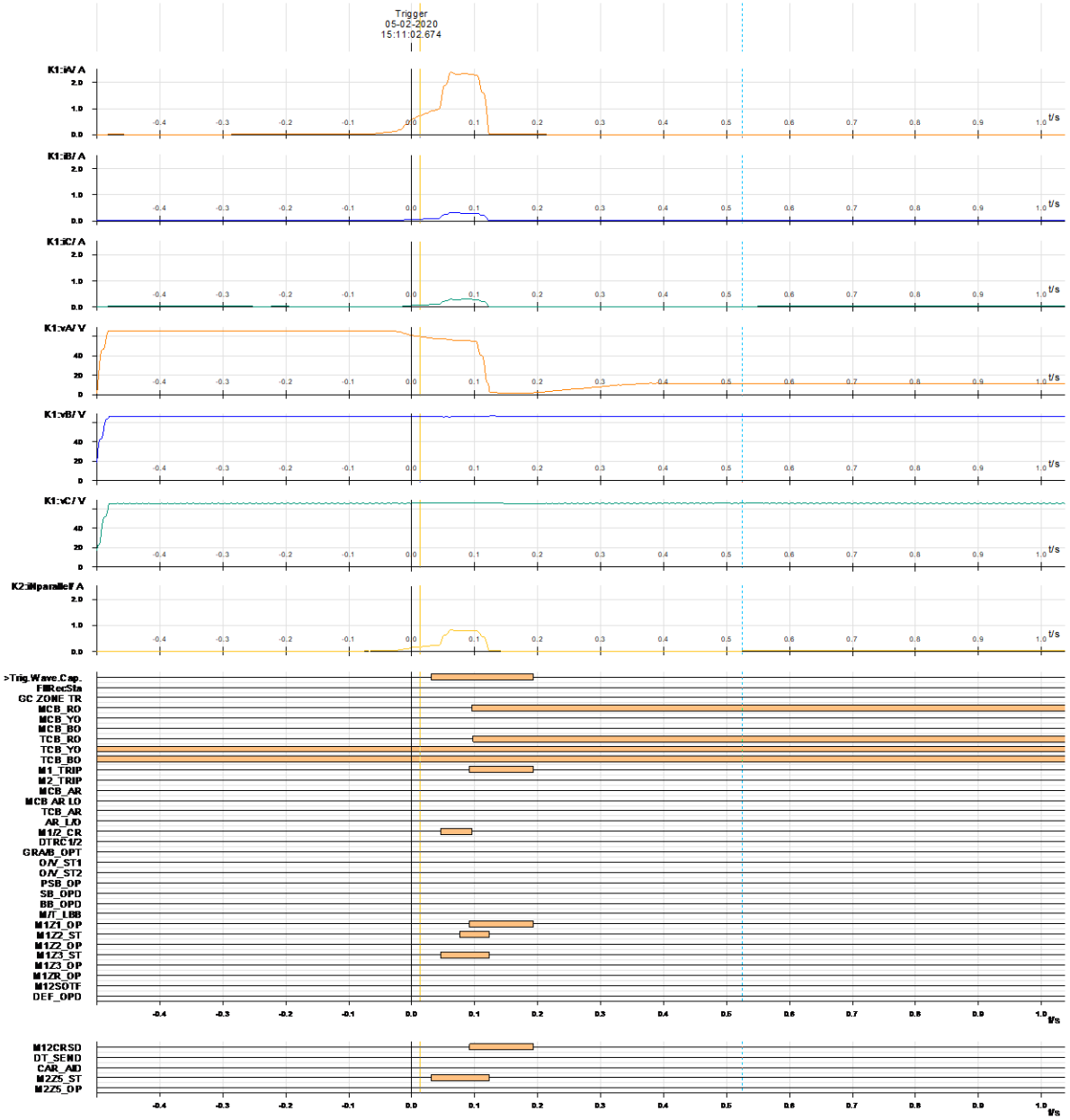
LINE NAME	TRIP DATE	TRIP TIME	Relay Indication LOCAL END	Relay Indication REMOTE END	Reason	Fault Clearance time in msec	Remarks	PCC remarks
400KV-ALIPURDUAR (PG)-BINAGURI-3	2/25/2020	17:04	B_N,4.99 kA, AR successful	B_N, 85.4 KM, 2.49 kA		--	No A/R operation at Binaguri	Rectified
400KV-DURGAPUR-SAGARDIGHI-2	2/26/2020	9:58		R-N fault, 2.1 KA, Z-2,157 km		< 100 msec	At same time unsuccessful A/R operation occurred at Jamshedpur end of 400 kV Durgapur Jamshedpur S/C.	WBPDCL/WBSLDC to share the reason for tripping in Z-II inspite of being fault clearing <100 ms. Z-II triggering is not recorded in DR shared. PG ER-II to send DR of Durgapur - Jamshedpur line at Durgapur end.
400KV-MEERAMUNDALI-MENDHASAL-II	2/28/2020	14:01	R-N, Z1, 73.14 km, 4.016 kA	R-N, Z1, 32.5 km, 5.43 kA		< 100 msec	No A/R operation; Tree fault reported	Carrier channel was off at the time of tripping and now in service
A/R related issue								
400KV-GAYA-KODERMA-2	2/25/2020	9:19	At Gaya:B-N,6.33 KA,49.16 KM			< 100 msec	Different timimng of A/R at both end	Annexure B.13 may be checked. PG ER-I to reviewPSL logic.
400KV-JHARSUGUDA(GIS)-OPGC-2	2/28/2020	12:56	JSG: B-N, 39.63Km, 9.02KA			< 100 msec	Different timimng of A/R at both end	Dead time is to be verified with OPGC
400KV-PATNA-KISHANGANJ-1	2/22/2020	5:07	Patna: B-N, 181.241Km, 4.632KA	KSN: B-N, 164.792KM, 4.942KA		< 100 msec	3ph fault as per PMU , A/R attempt	OK
400KV-PATNA-KISHANGANJ-2	2/22/2020	5:07	Patna: Y-N, 142.178Km, 2.696KA	KSN: Y-N, 110.09Km, 2.887KA		< 100 msec	3ph fault as per PMU , A/R attempt	OK
400KV-PATNA-KISHANGANJ-1	2/24/2020	0:49	77 KM 5 KA Y-N	179 KM 1.59 KA Y-N		< 100 msec	Kishanganj : A/R in 2000 msec	Rectified

LINE NAME	TRIP DATE	TRIP TIME	Relay Indication LOCAL END	Relay Indication REMOTE END	Reason	Fault Clearance time in msec	Remarks	PCC remarks
400KV-PATNA-KISHANGANJ-2	2/24/2020	1:35	Y_N, FD 125 KM 3.27 KA	140 KM 1.93 KA Y-N		< 100 msec	Kishanganj : A/R attempt after fault in reclaim time	Rectified

Annexure - B13

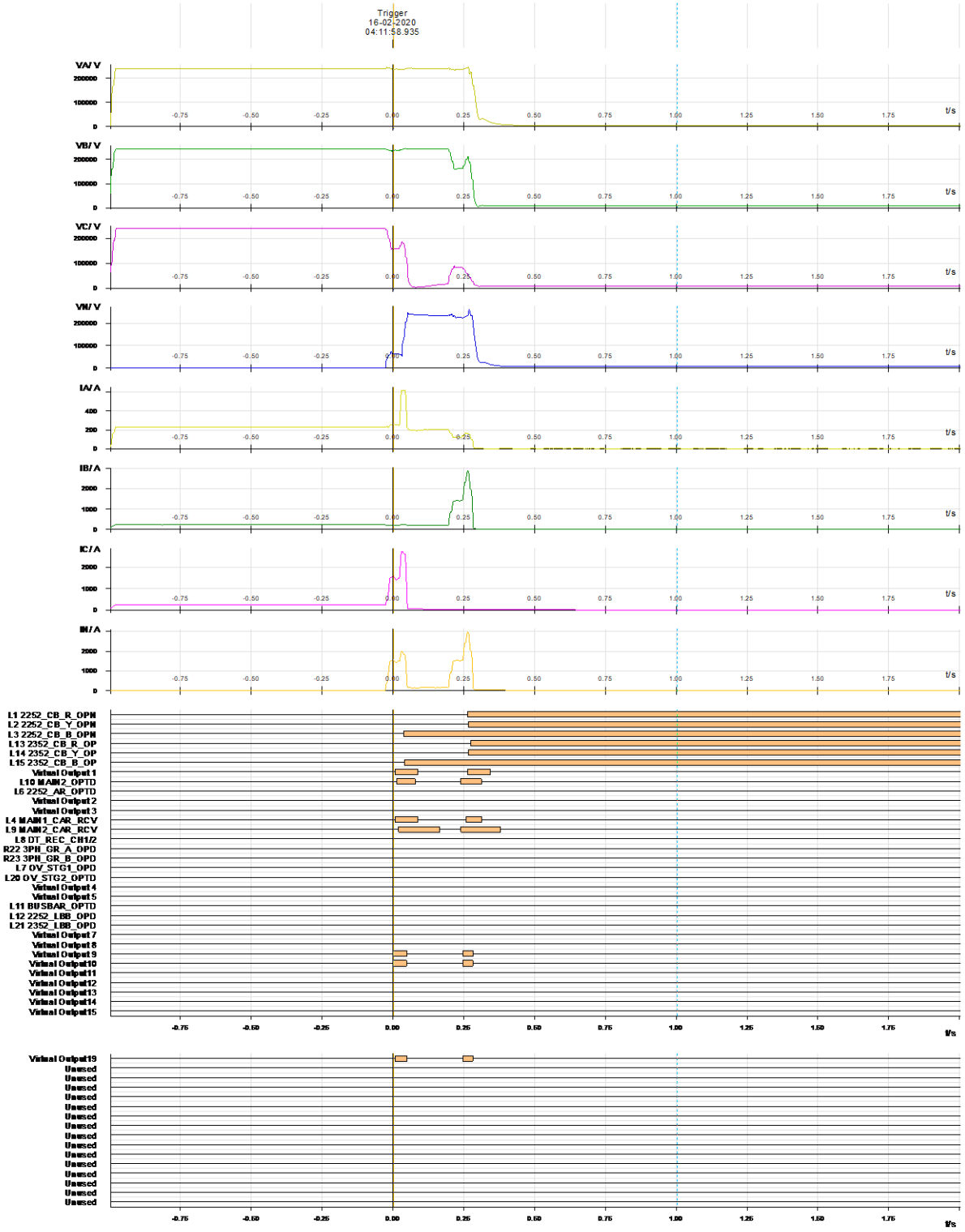
Sr No	Date	Time	Name	end	issue	Utility remarks	Heading
1	2/5/2020	15:11	400 kV Kishangunj Binaguri - 1	Kishanganj	Post fault DR time window less than 1.1 sec; A/R operaton not properly captured; Y and B phase T CB remained open prior to the tripping;	POWERGRID ER-I to update	DR of 400 kV Kishangunj Binaguri - 1 at Kishangunj at 15:11 on 05-02-2020
2	2/16/2020	4:11	400 kV Binaguri - New Purnea -1	Binaguri	DR not properly configured	POWERGRID ER-II to update	DR of 400 kV Binaguri - New Purnea -1 at Binaguri at 04:11 on 16-02-2020
3	2/16/2020	4:11	400 kV Binaguri - New Purnea -1	New Purnea	Main II protection not operated as per main I DR	POWERGRID ER-I to update	DR of 400 kV Binaguri - New Purnea -1 at New Purnea at 04:11 on 16-02-2020
4	2/16/2020	4:15	400 kV Binaguri - New Purnea -2	Binaguri	DR not properly configured	POWERGRID ER-II to update	DR of 400 kV Binaguri - New Purnea -2 at Binaguri at 04:15 on 16-02-2020
5	2/19/2020	9:16	400 kV Binaguri - Alipurduar - 3	Binaguri	Whether line tripped by main I or main II protection? If tripped by main II, main II DR required. Z-I trip did not pick up in main I DR, in case of successful A/R operation	POWERGRID ER-II to update	DR of 400 kV Binaguri - Alipurduar - 3 at Binaguri at 09:16 on 19-02-2020
6	2/23/2020	20:24	132 kV Chujachen - Rangpo - 1	Chujachen	DR not properly configured	Chujachen to update	DR of 132 kV Chujachen - Rangpo - 1 at Chujachen at 20:24 on 23-02-2020
7	2/24/2020	4:34	220 kV New Purnea - Madhepura 2	New Purnea	Breaker operation is not configured in DR	POWERGRID ER-I to update	DR of 220 kV New Purnea - Madhepura 2 at New Purnea at 04:34 on 24-02-2020
8	2/25/2020	17:04	400 kV Binaguri - Alipurduar - 3	Binaguri	In main I DR, no reason of tripping recorded; Main II DR not received	POWERGRID ER-II to update	DR of 400 kV Binaguri - Alipurduar - 3 at Binaguri at 17:04 on 25-02-2020
9	2/25/2020	9:19	400 kV Gaya - Koderma - 2	Gaya	Post fault DR time window around 1.5 seconds, tie breaker A/R operation not properly captured; Even after tripping of main breakers and remaining poles of tie breakers, A/R operation of B pole tie breaker took place	POWERGRID ER-I to update	DR of 400 kV Gaya - Koderma - 2 at Gaya at 09:19 on 25-02-2020
10	2/26/2020	9:58	400 kV MPL - Maithon - 2	Maithon	DR not properly configured	POWERGRID ER-II to update	DR of 400 kV MPL - Maithon - 2 at Maithon at 09:58 on 26-02-2020
11	2/26/2020	9:58	400 kV MPL - Maithon - 2	MPL	Reason of tripping not recorded in DR	MPL to update	DR of 400 kV MPL - Maithon - 2 at MPL at 09:58 on 26-02-2020
12	2/28/2020	14:01	400 kV Meramundali - Mendasal -	Meramundali	DR not properly configured, No breaker operation was recorded	GRIDCO/OPTCL to update	DR of 400 kV Meramundali - Mendasal - 2 at Meramundali at 14:01 on 28-02-2020
13	2/28/2020	12:56	400 kV IB - Sundargarh - 1	Sundargarh	DR not properly configured, DR time window to be increased	POWERGRID Odisha to update	DR of 400 kV IB - Sundargarh - 1 at Sundargarh at 12:56 on 28-02-2020
14	2/26/2020	9:58	400 kV Durgapur - Sagardighi - 2	Sagardighi	DR at Sagardighi end is not time synchronized; Time of both DR shared is different from tripping time. It is reported Z-II was triggered from Sagardighi end. Reason of tripping is not recorded.	WBPDCL to update	DR of 400 kV Durgapur - Sagardighi - 2 at Sagardighi at 09:58 on 26-02-2020

1. DR of 400 kV Kishangunj Binaguri - 1 at Kishangunj at 15:11 on 05-02-2020



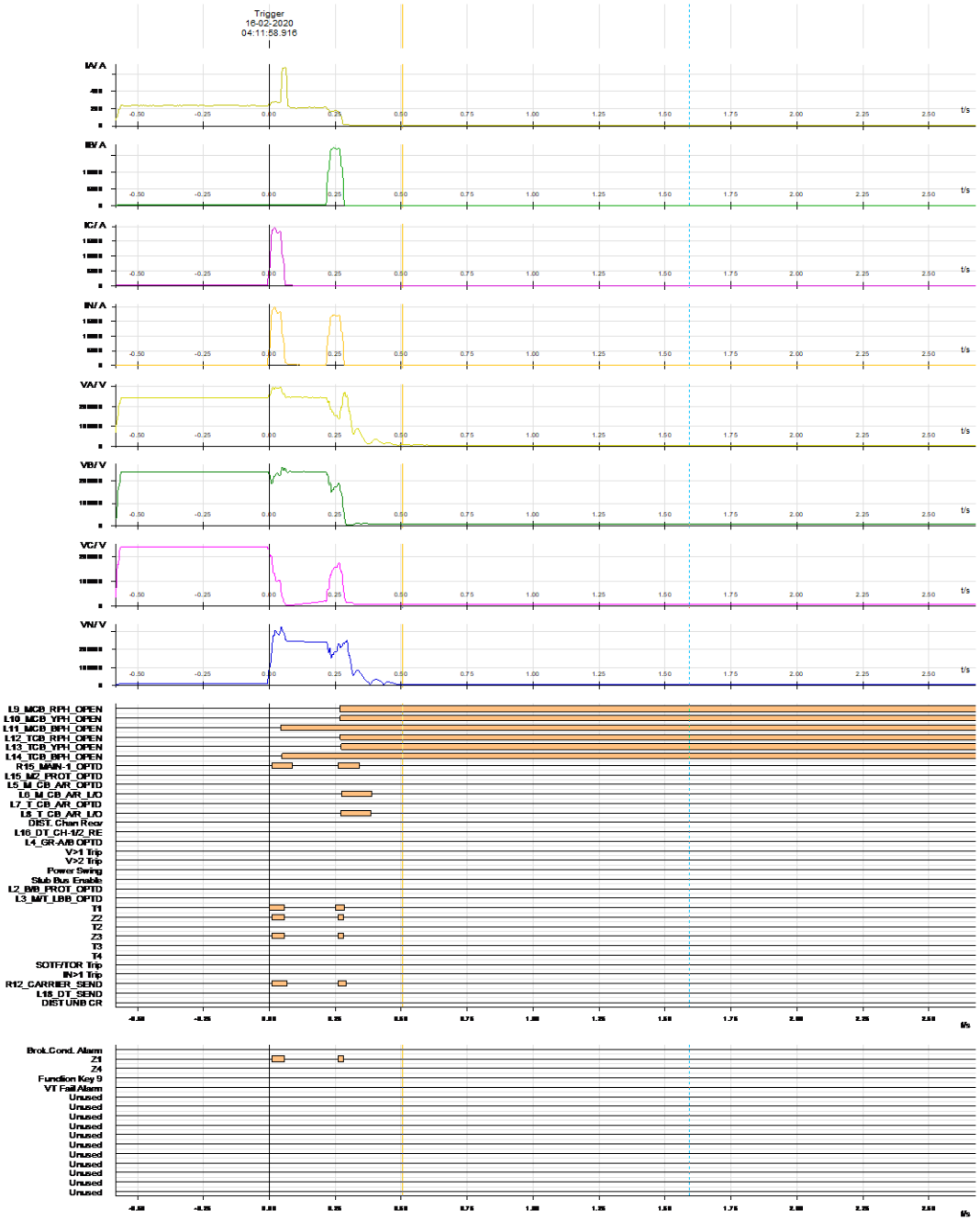
Issue: Post fault DR time window less than 1.1 sec; A/R operaton not properly captured; Y and B phase T CB remained open prior to the tripping;

2. DR of 400 kV Binaguri - New Purnea -1 at Binaguri at 04:11 on 16-02-2020



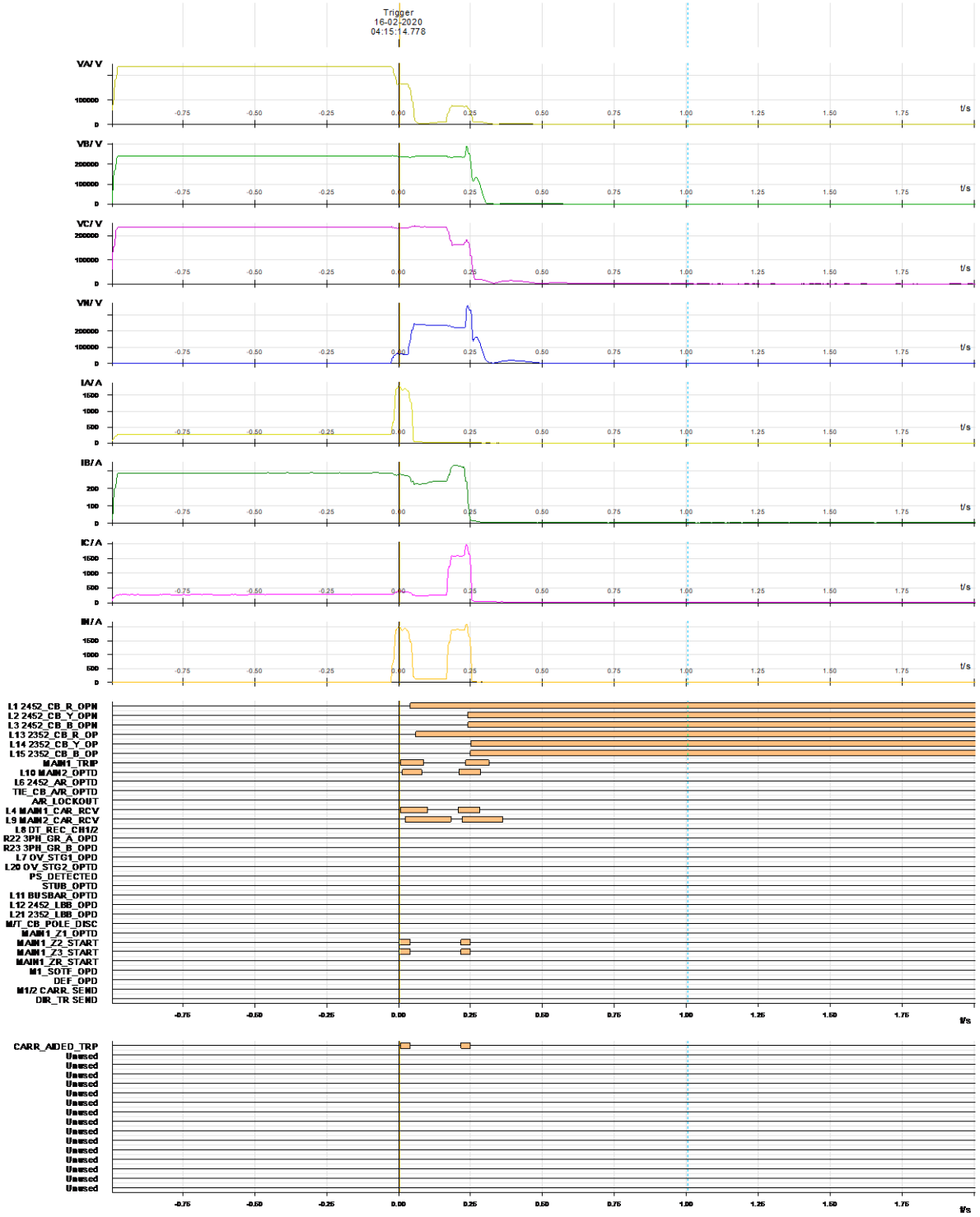
Issue: DR not properly configured;

3. DR of 400 kV Binaguri - New Purnea -1 at New Purnea at 04:11 on 16-02-2020



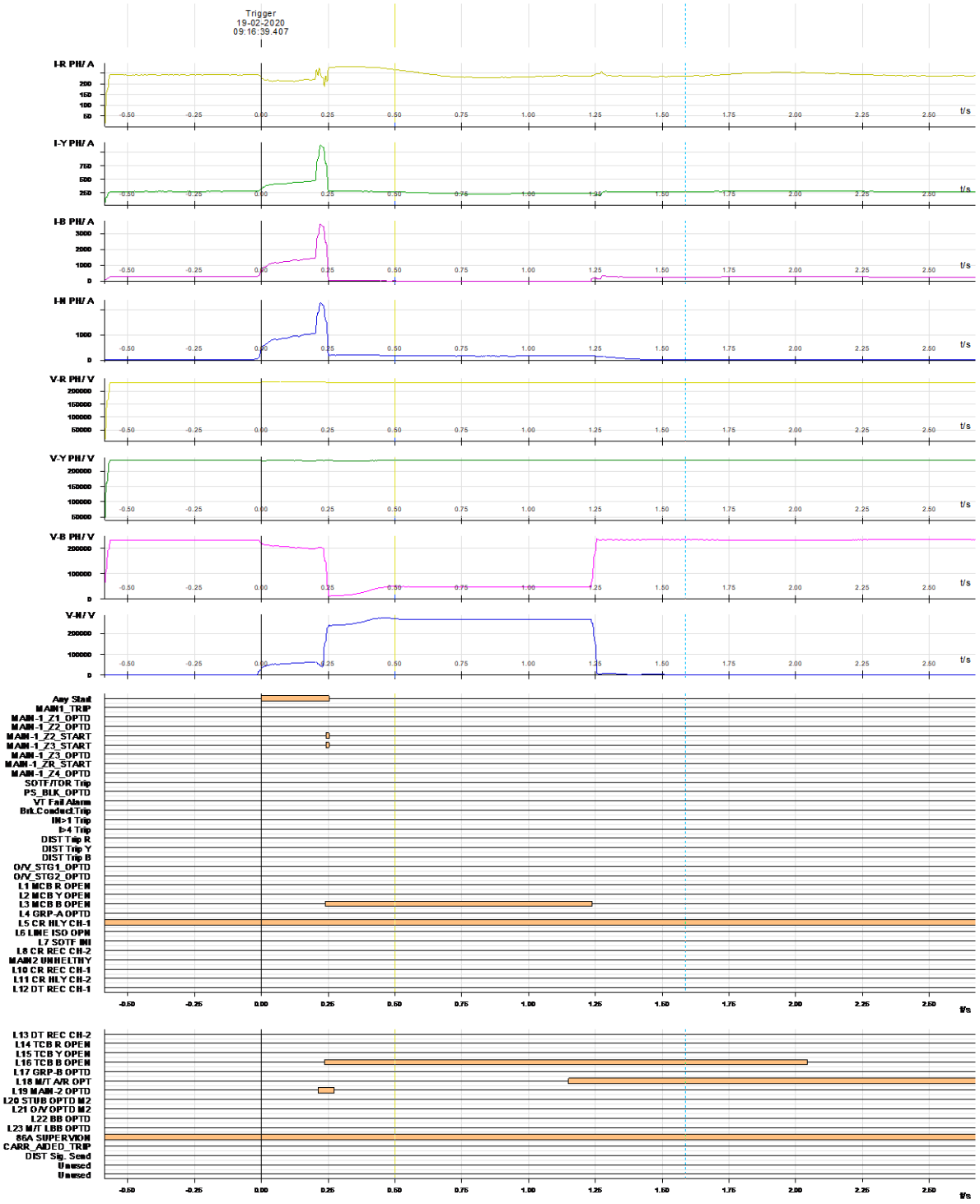
Issue: Main II protection not operated as per main I DR

4. DR of 400 kV Binaguri - New Purnea -2 at Binaguri at 04:15 on 16-02-2020



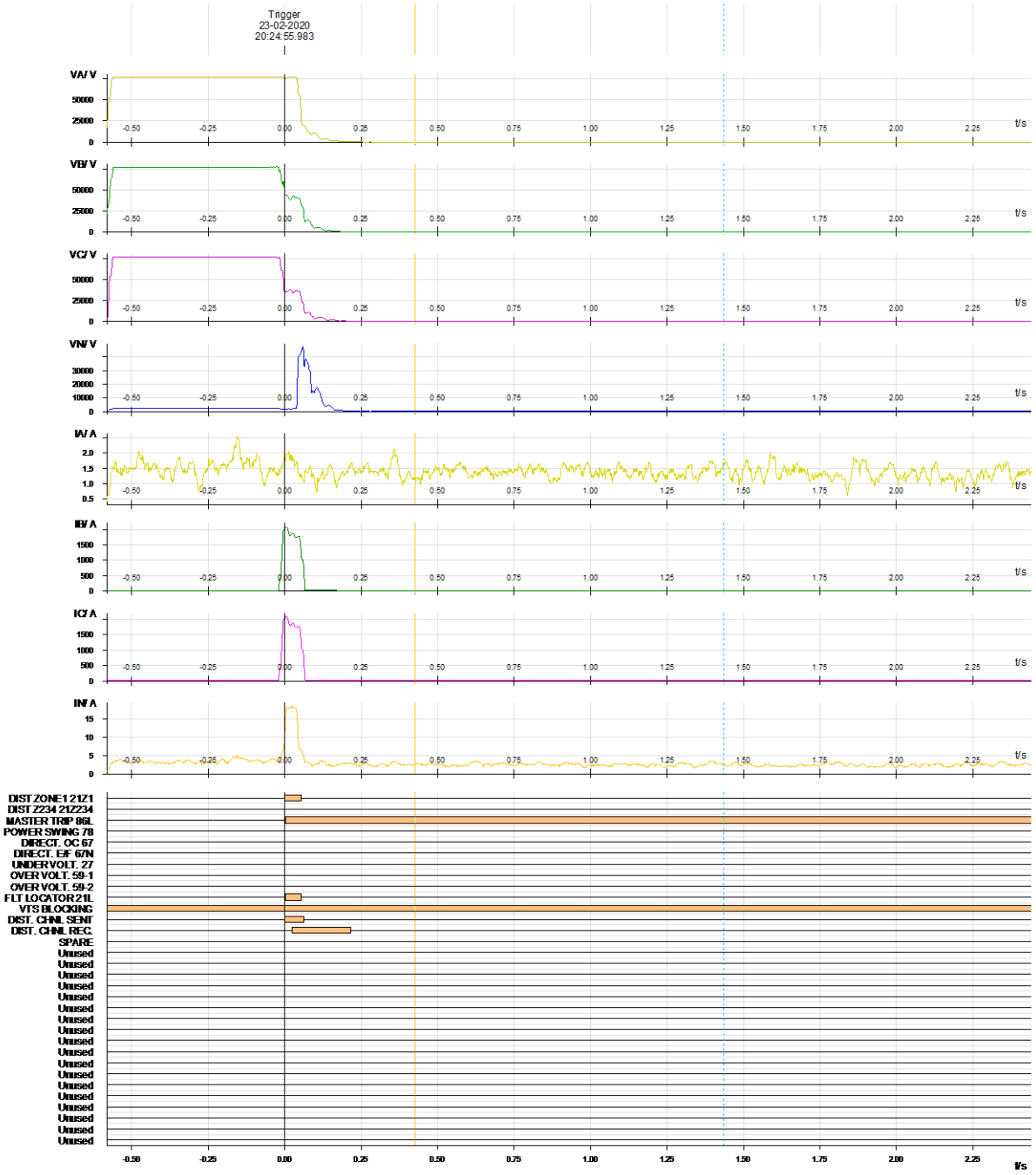
Issue: DR not properly configured;

5. DR of 400 kV Binaguri - Alipurduar - 3 at Binaguri at 09:16 on 19-02-2020



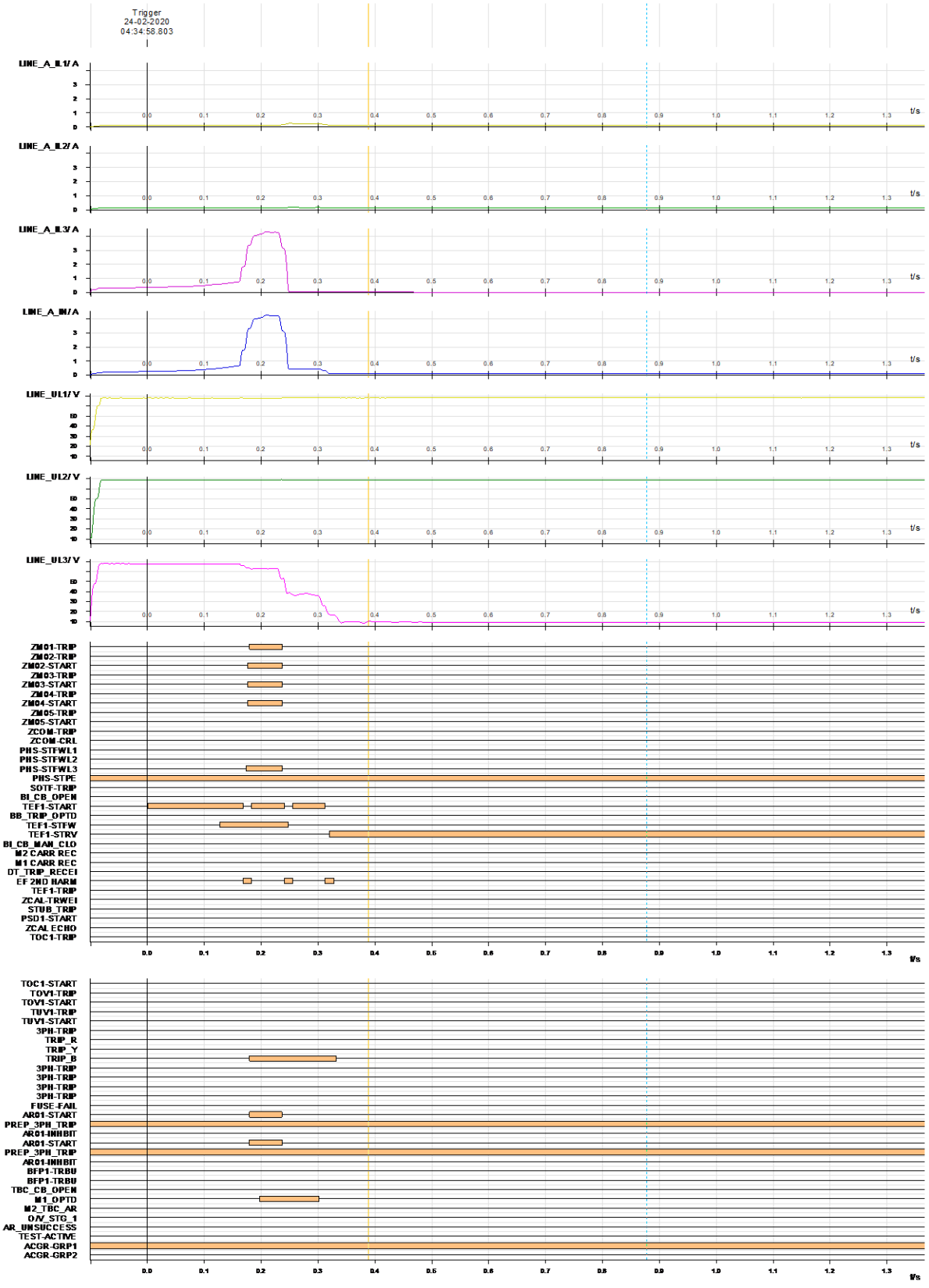
Remarks: Whether line tripped by main I or main II protection? If tripped by main II, main II DR required. Z-I trip did not pick up in main I DR, in case of successful A/R operation

6. DR of 132 kV Chujachen - Rangpo - 1 at Chujachen at 20:24 on 23-02-2020



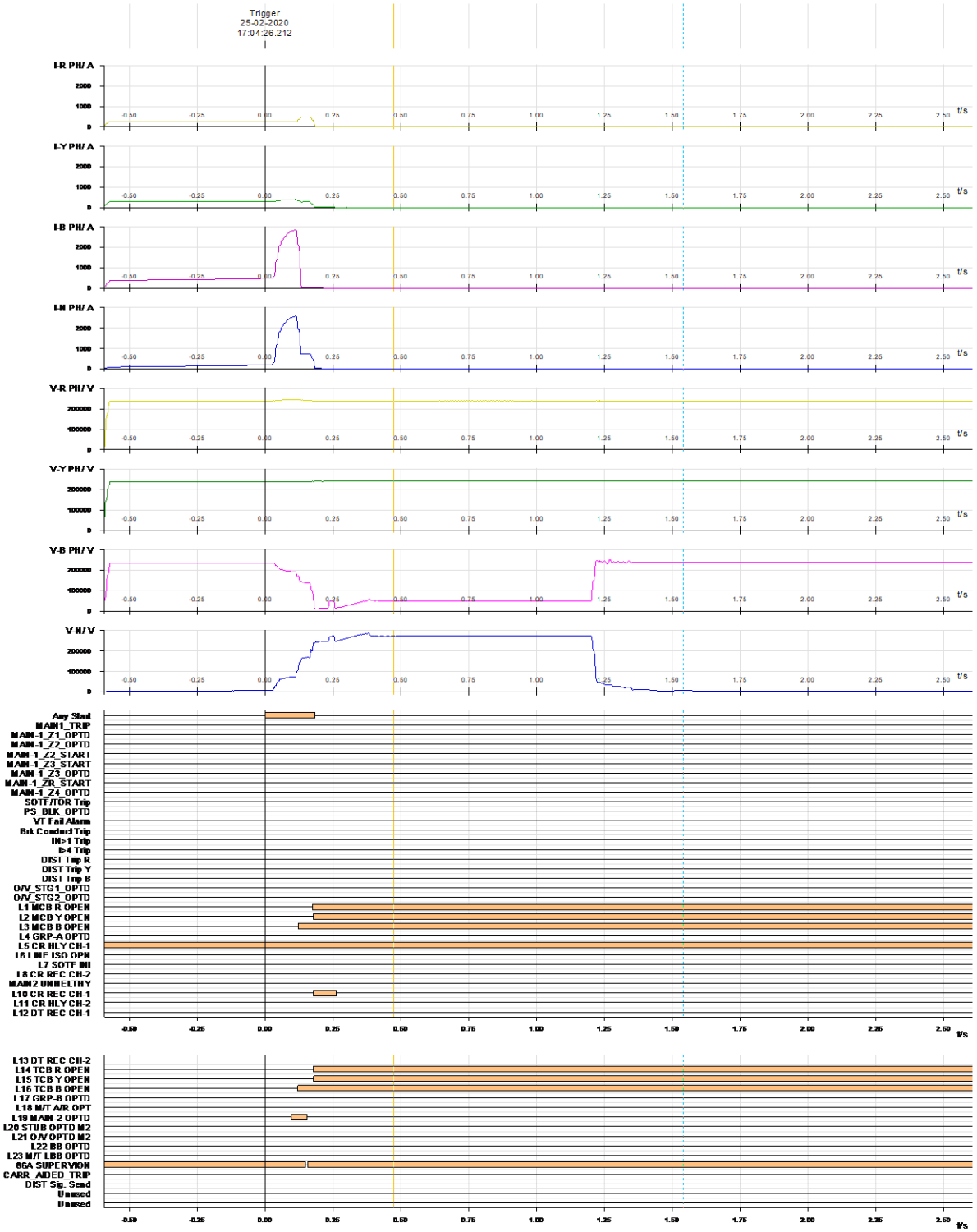
Issue: DR not properly configured

7. DR of 220 kV New Purnea - Madhepura 2 at New Purnea at 04:34 on 24-02-2020



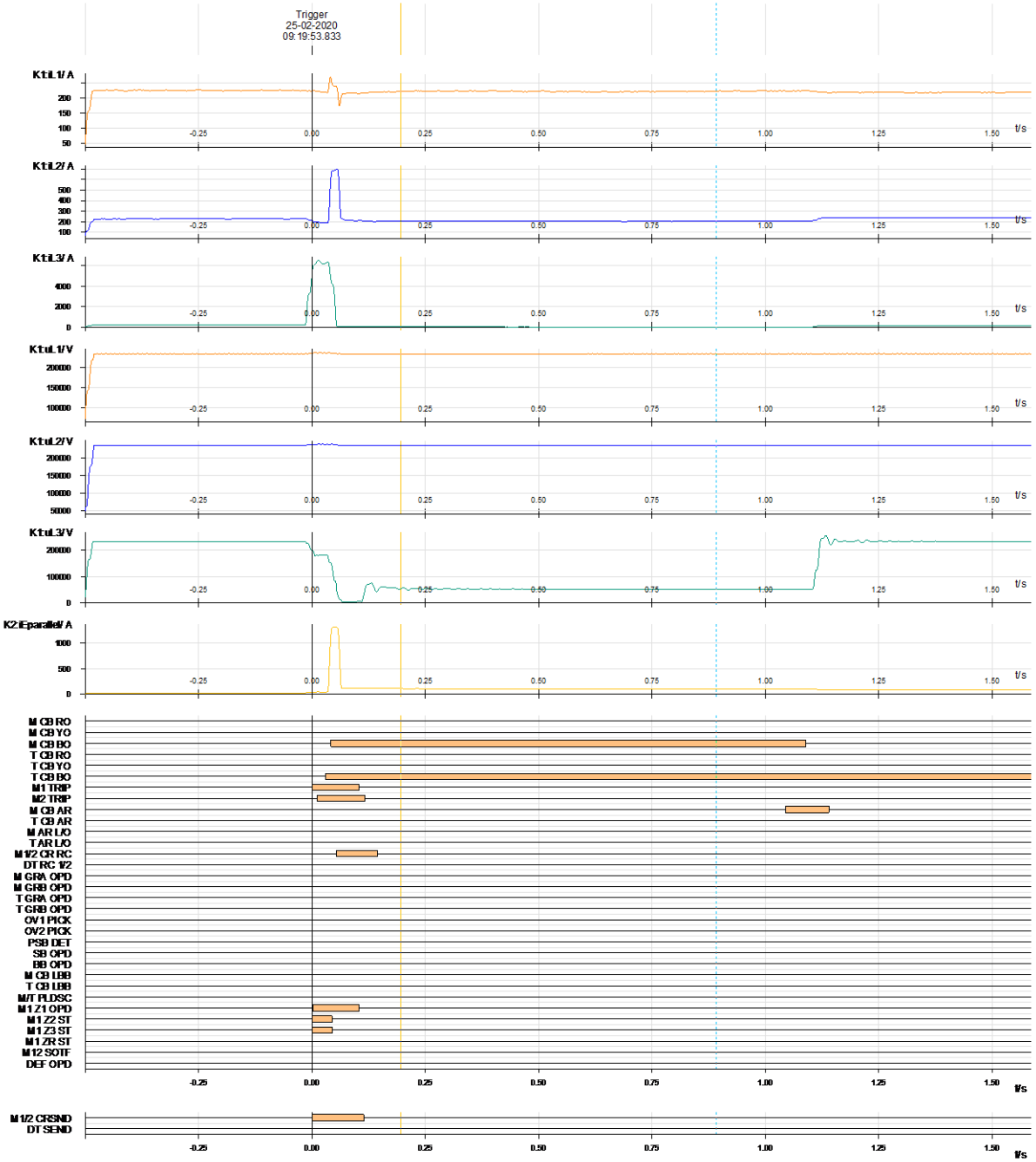
Issue: Breaker operation is not configured in DR

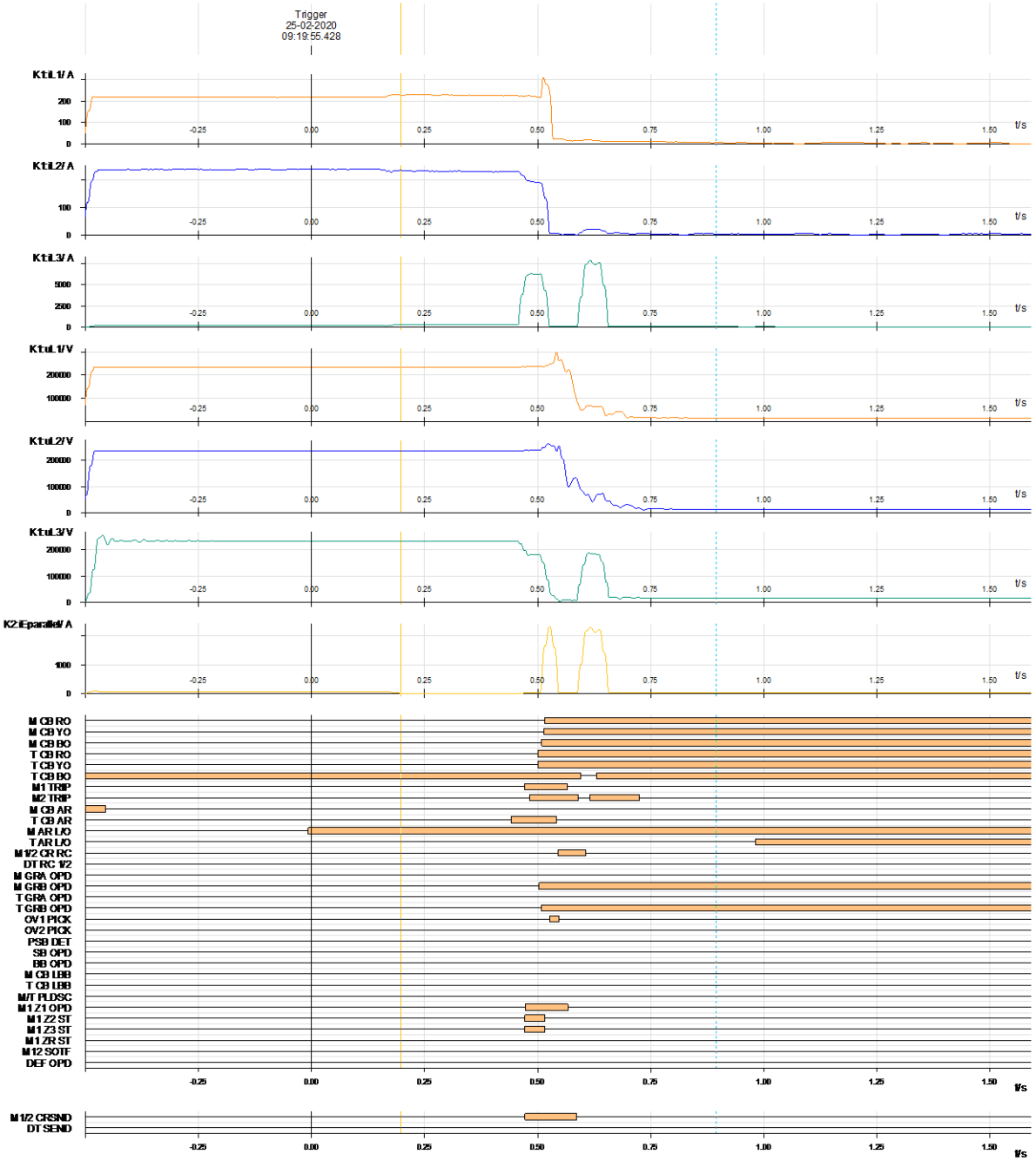
8. DR of 400 kV Binaguri - Alipurduar - 3 at Binaguri at 17:04 on 25-02-2020



Issue: In main I DR, no reason of tripping recorded; Main II DR not received

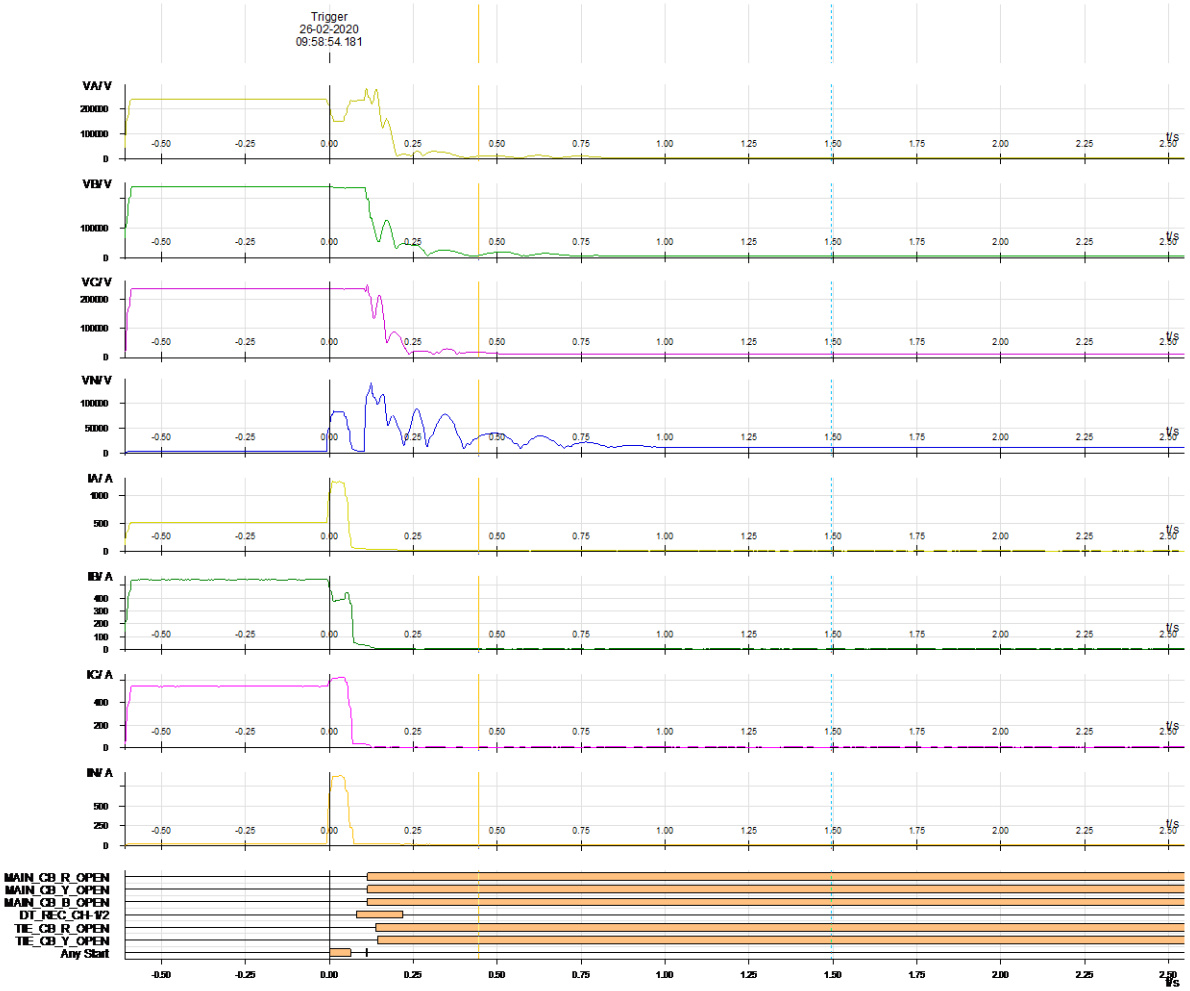
9. DR of 400 kV Gaya - Koderma - 2 at Gaya at 09:19 on 25-02-2020





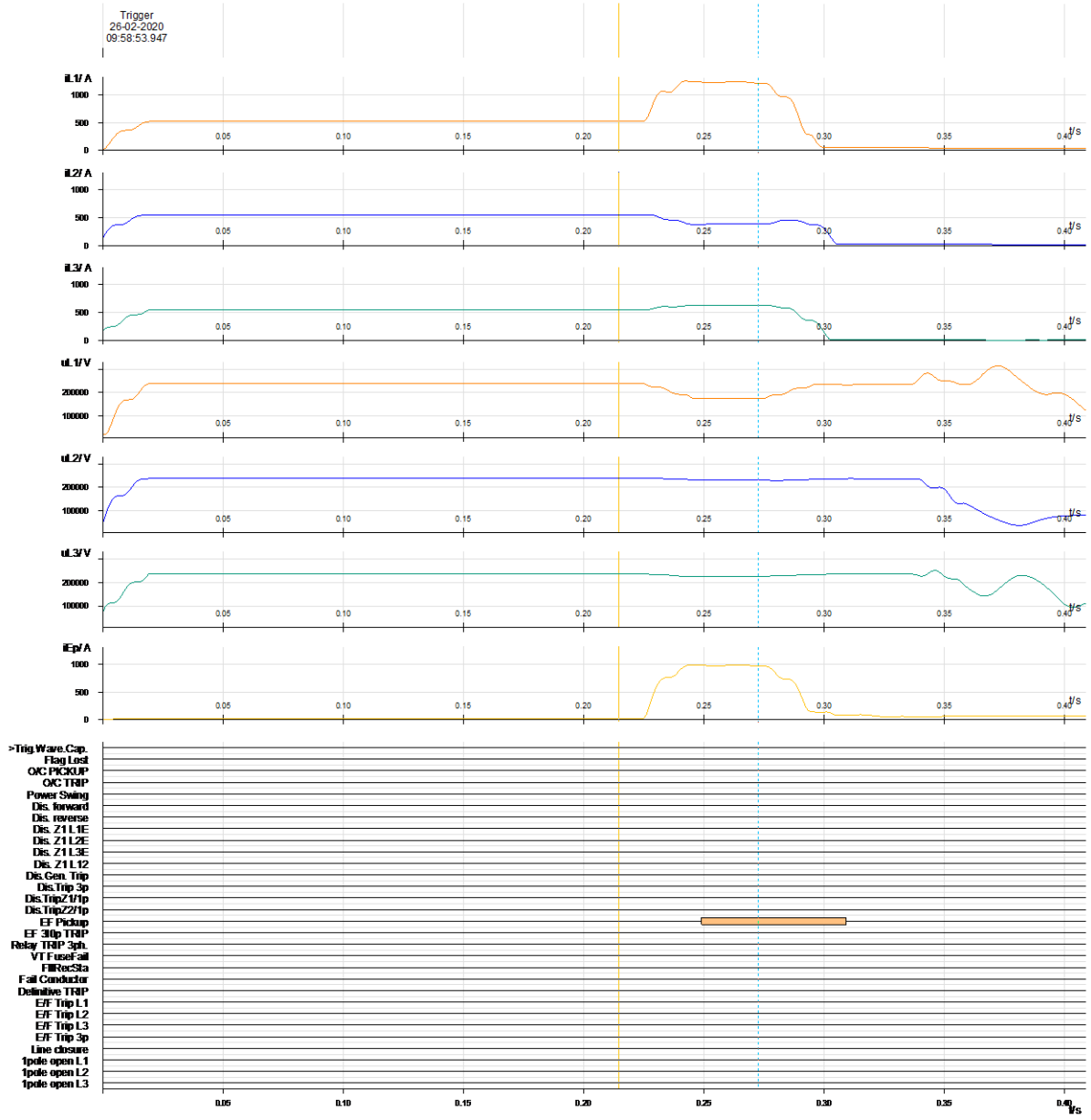
Issue: Post fault DR time window around 1.5 seconds, tie breaker A/R operation not properly captured; Even after tripping of main breakers and remaining poles of tie breakers, A/R operation of B pole tie breaker took place

10. DR of 400 kV MPL - Maithon - 2 at Maithon at 09:58 on 26-02-2020



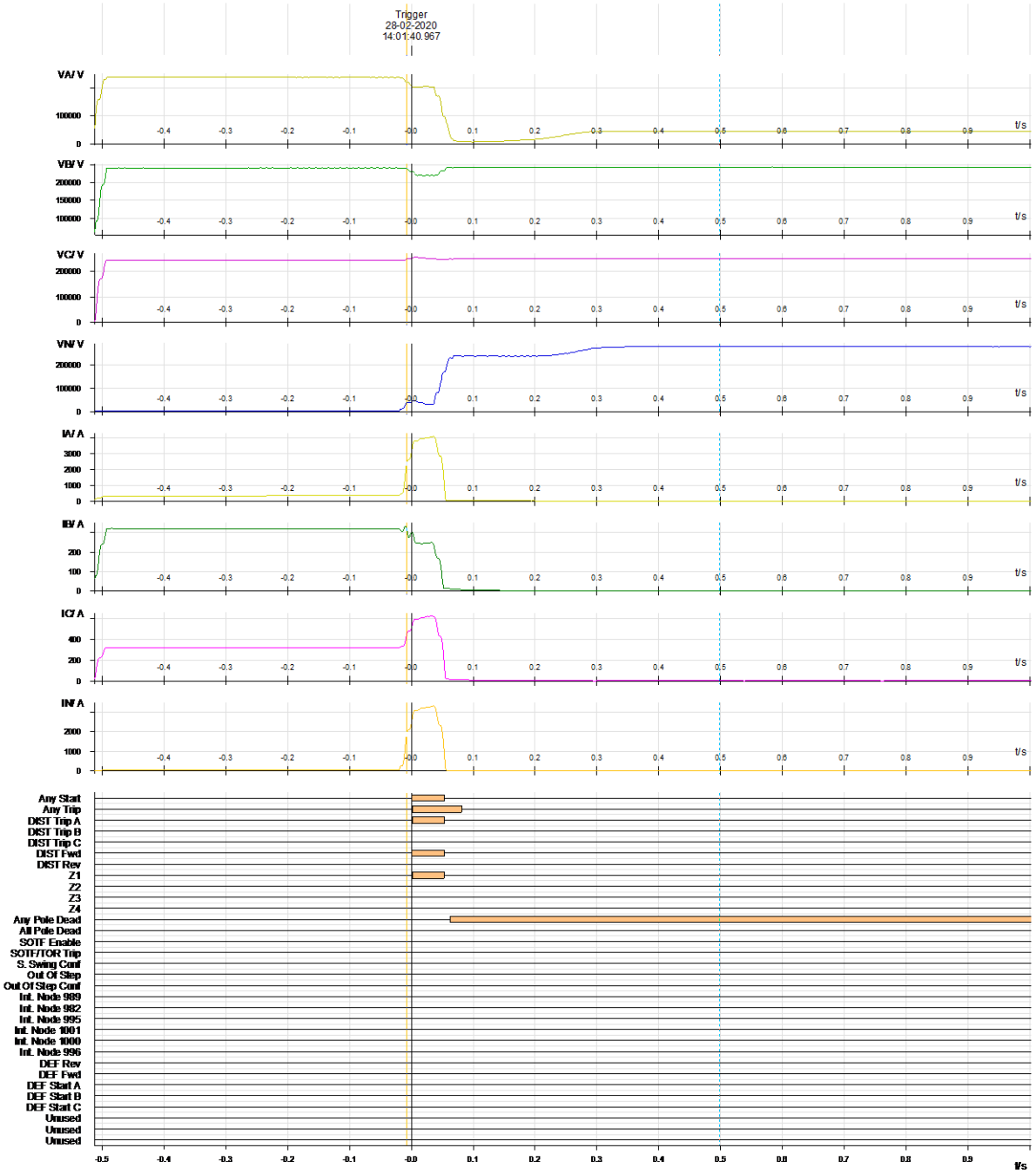
Issue: DR not properly configured

11. DR of 400 kV MPL - Maithon - 2 at MPL at 09:58 on 26-02-2020



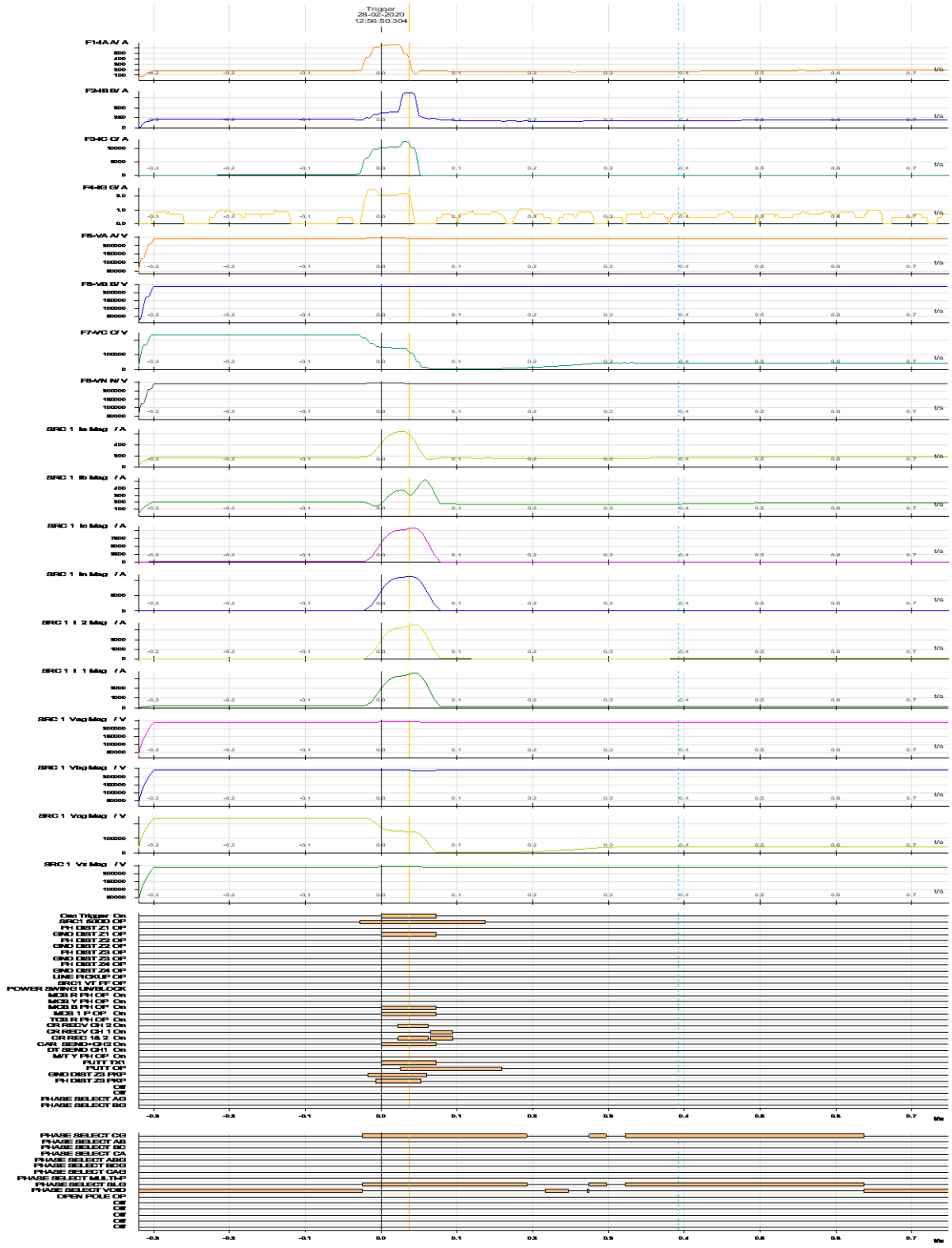
Issue: Reason of tripping not recorded in DR

12. DR of 400 kV Meramundali - Mendasal - 2 at Meramundali at 14:01 on 28-02-2020



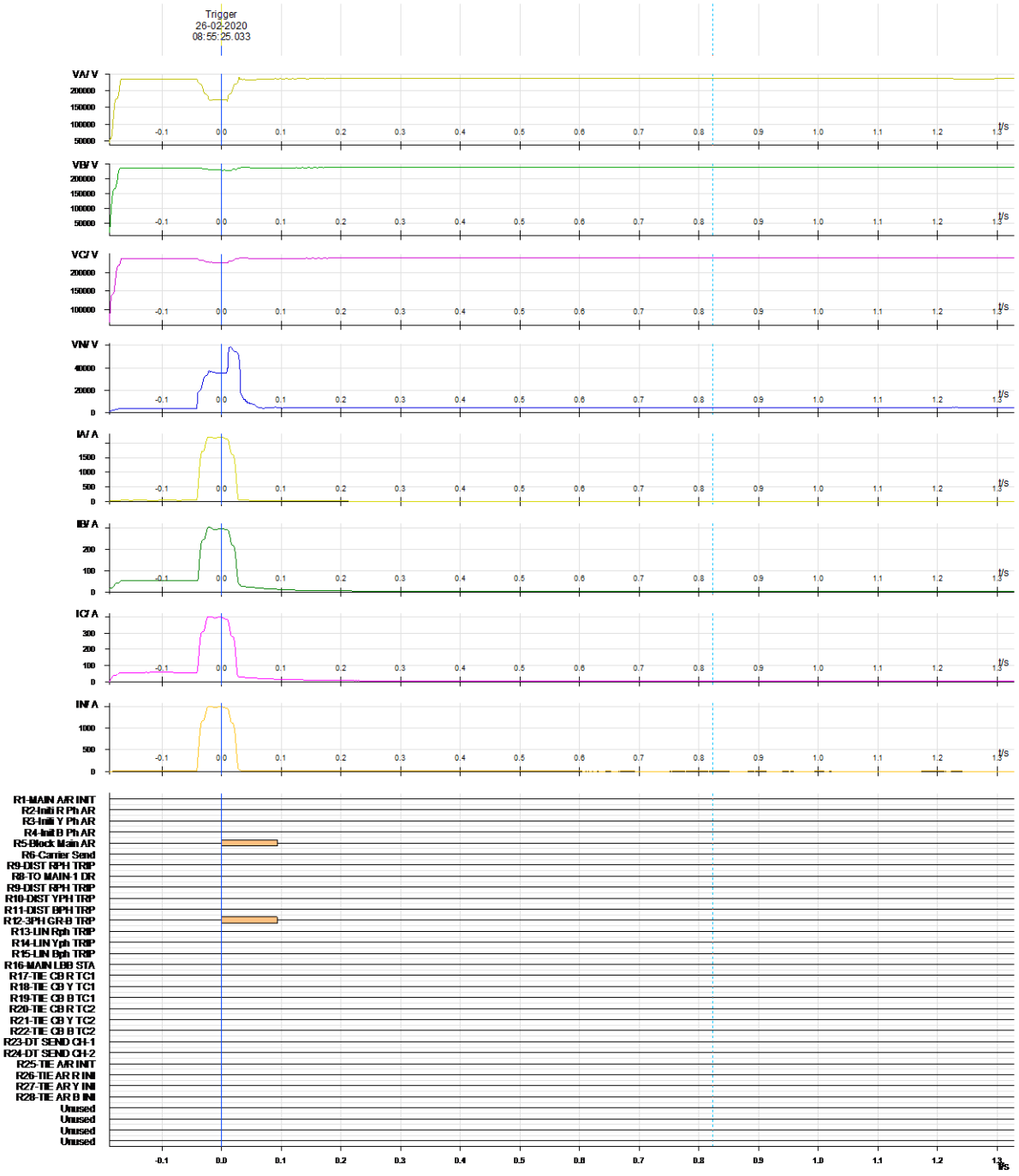
Issue: DR not properly configured, No breaker operation was recorded

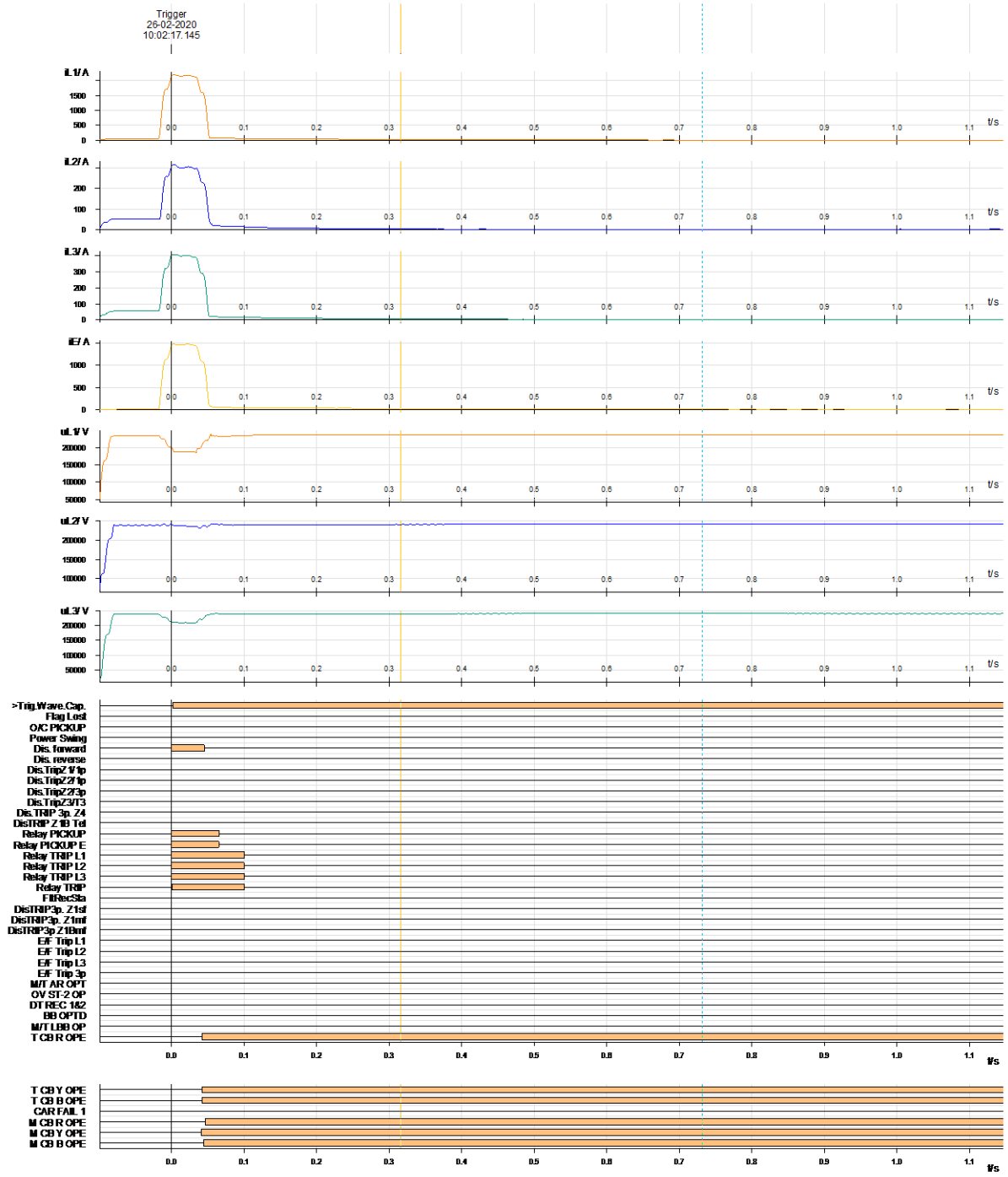
13. DR of 400 kV IB - Sundargarh - 1 at Sundargarh at 12:56 on 28-02-2020



Issue: DR not properly configured, DR time window to be increased

14. DR of 400 kV Durgapur - Sagardighi - 2 at Sagardighi at 09:58 on 26-02-2020





Issue: DR at Sagardighi end is not time synchronized; Time of both DR shared is different from tripping time. It is reported Z-II was triggered from Sagardighi end. Reason of tripping is not recorded.

ANNEXURE-C1

Sl No.	Name of the incidence	PCC Recommendation	Latest status
88th PCC Meeting			
1.	Disturbance at 220 kV Maithon(PG) Substation on 25.01.2020 at 15:14 Hrs.	PCC advised Powergrid to replace the relay with numerical relay.	
2.	Tripping of 220 KV Gaya Sonenagar D/C on 13.01.2020 at 00:40 Hrs.	PCC advised BSTPCL take the following corrective actions: • Send the PSL logic and relay setting file to ERPC Secretariat. • DR synchronisation need to be reviewed.	
3.	Tripping of 400 kV Teesta V – Rangpo D/C on 05.01.2020 at 20:04 Hrs.	PCC advised NHPC to take following corrective actions: • Revise their Zone-4 time settings to 500 ms. • 400kV Teesta-V – Rangpo Ckt-I distance protection input needed to be checked.	
87th PCC Meeting			
1.	Tripping of 220 KV Darbhanga (DMTCL) – Motipur I on 14.12.2019 at 02:50 Hrs.	PCC advised BSPTCL to take following corrective actions: - • Digital signals configuration of relays at Motipur end need to be checked. • Over voltage settings of relay at Motipur end need to be reviewed.	
2.	Tripping of 132 kV Dumka – Lalmatia D/C on 09.12.2019 at 11:35 hrs	PCC advised JUSNL to collect DRs and discuss above issue with the SLDC and send the details to ERPC/ERLDC.	

		PCC advised NTPC to share the DR at Lalmatia end. In 88th PCC meeting JUSNL informed that they did not got the reply from SLDC Jharkhand yet	
83rd PCC Meeting			
1.	Total power failure at 220 kV Darbhanga (BSPTCL) S/s on 16.08.2019 at 22:23 Hrs.	PCC observed that DR configuration at DMTCL end is not in order. PCC advised DMTCL to configure the DR settings as per the standard. In 87th PCC meeting, DMTCL informed that DR would be configured by end of February, 2020.	
81st PCC Meeting			
1.	Disturbance at 400 kV Dikchu S/s on 30.06.2019 at 09:55 Hrs.	The time setting for the DEF relay at Jorethang end was 500 msec. PCC advised Jorethang to review the timer setting of DEF protection at Jorethang end. PCC advised Chuzachen to review the zone settings for 132 kV Chuzachen-Rangpo line. PCC advised TPTL to do line patrolling for 400 kV Rangpo-Dikchu line to find out the cause of such high resistive fault in the line. In 87th PCC meeting, Chuzachen informed that they have asked for information related to Rangpo end from Powergrid and Sikkim. Further, Chuzachen informed that they would send the zone setting file to ERPC/ERLDC at the earliest.	*PCC advised Chuzachen to review the zone 3 settings for 132 kV Chuzachen-Rangpo line as it is very high*
1.	Disturbance at 220 kV Budhipadar(OPTCL) S/s on 12.06.2019 at 00:37 Hrs.	PCC advised OPTCL to properly configure the DRs for 220 kV Budhipadar – Korba D/C & 220 kV Budhipadar-Raigarh circuit at Budhipadar end and for 220 kV Budhipadar – Lapanga - II at Lapanga end as per the DR standard finalised in 79th PCC	

		Meeting. PCC also advised OPTCL to check the time synchronization. In 3rd TeST meeting, OPTCL informed that they had replaced the old relay at Korba. In 87th PCC meeting, OPTCL informed that DR for Budhipadar – Korba Circuit-I has been configured.	