



# Minutes of 74<sup>th</sup> PCC Meeting

**Date: 02.01.2019**  
**Eastern Regional Power Committee**  
**14, Golf Club Road, Tollygunge**  
**Kolkata: 700 033**

# EASTERN REGIONAL POWER COMMITTEE

## **MINUTES OF 74<sup>TH</sup> PROTECTION SUB-COMMITTEE MEETING HELD AT ERPC, KOLKATA ON 19.12.2018 (WEDNESDAY) AT 10:30 HOURS**

List of participants is attached in **Annexure-A**.

### **PART – A**

#### **ITEM NO. A.1: Confirmation of minutes of 73<sup>rd</sup> Protection sub-Committee Meeting held on 29<sup>th</sup> November, 2018 at ERPC, Kolkata.**

The minutes of 73<sup>rd</sup> Protection Sub-Committee meeting held on 29.11.18 circulated vide letter dated 11.12.18.

Members may confirm the minutes of 73<sup>rd</sup> PCC meeting.

#### **Deliberation in the meeting**

*Members approved the minutes of 73<sup>rd</sup> PCC meeting.*

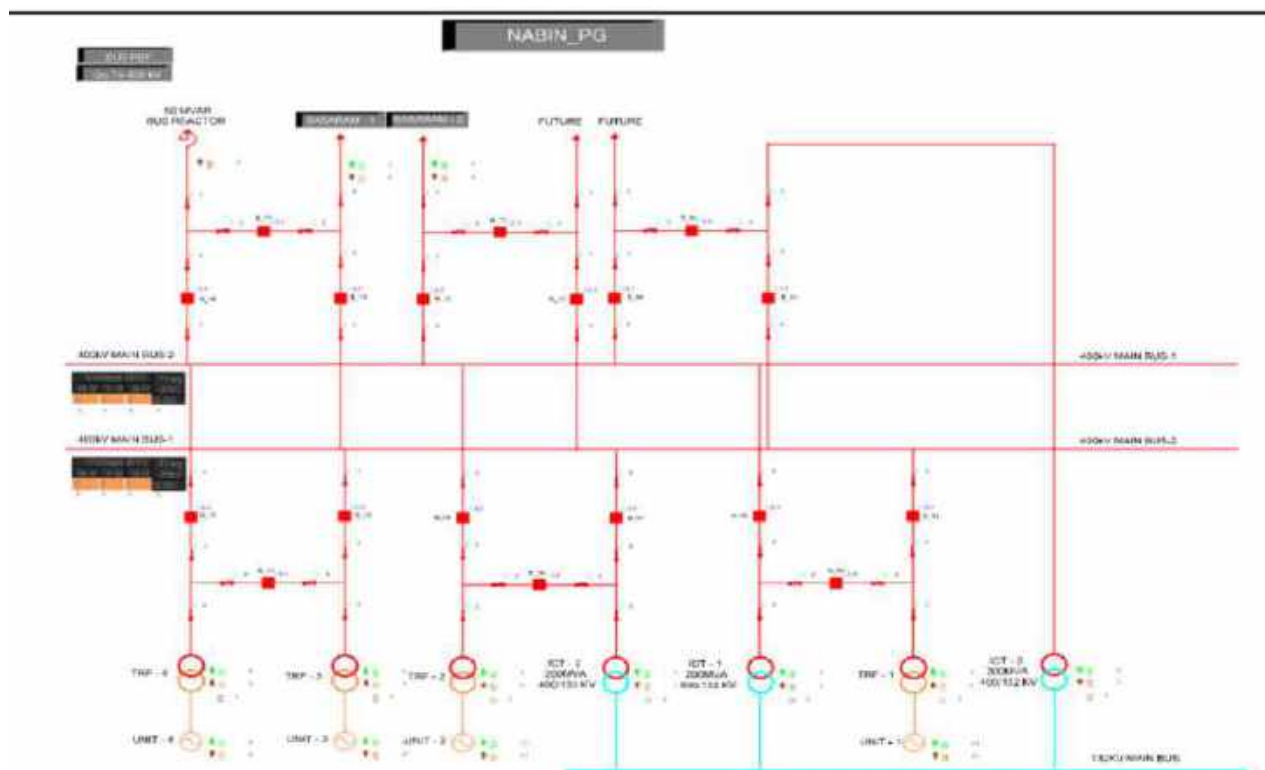
### **PART – B**

#### **ANALYSIS & DISCUSSION ON GRID INCIDENCES OCCURRED IN NOVEMBER, 2018**

#### **ITEM NO. B.1: Disturbance at 400 kV BRBCL S/s on 25.11.18 at 16:31 hrs.**

At 16:31 hrs, 400 kV bus-II at BRBCL tripped due to mal-operation of bus bar protection. At the same time, tie CB between 400/132 kV ICT – I & GT – I tripped on master trip signal due to logic error from Bus bar relay of Bus II, which again led to erroneous LBB re trip signal to main CB no. 401 connected to GT I leading to tripping of unit I.

At the same time, the main bay tripping of 400 KV Sasaram line-I led to DT sending in remote end leading to outage of the said line.



## Generation Loss: 230 MW

BRBCL may explain.

### Deliberation in the meeting

*BRBCL representative was not present in the meeting.*

*Based on preliminary report submitted, PCC could not conclude the disturbance and observed that the followings issue need to be explained.*

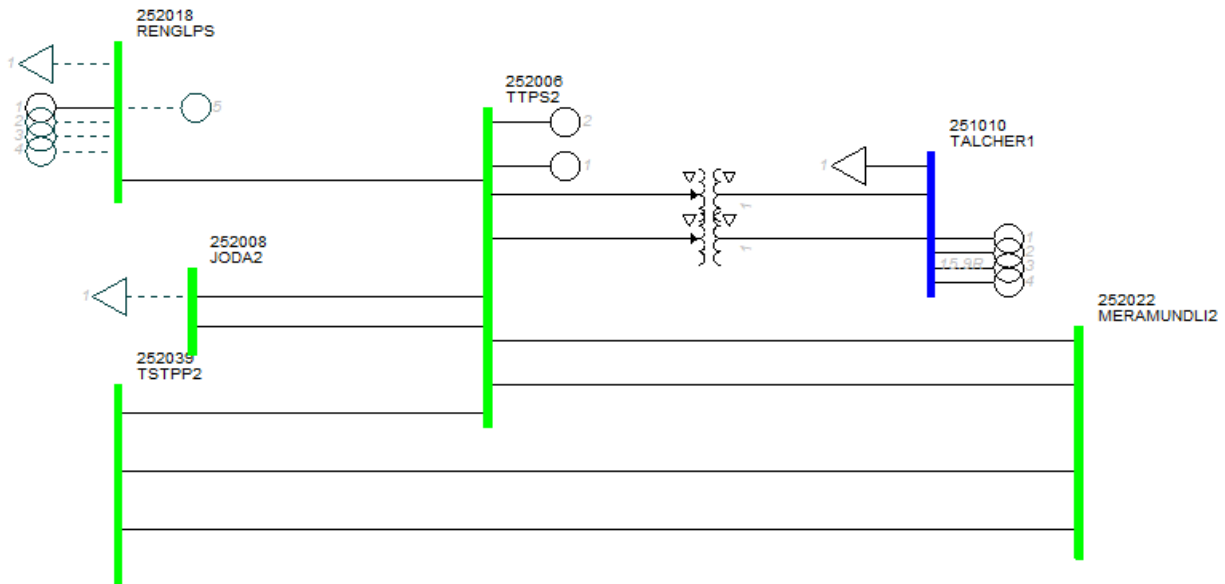
- Reason for mal operation of Busbar Relay which tripped 400 kV Bus-II.
- Reason for tripping of tie circuit Breaker between 400/132 kV ICT – I & GT – I at the same time.
- Reason for tripping of main circuit breaker of GT-I connected to 400 kV Bus-I.
- Reason for tripping of 400 kV BRBCL-Sasaram-I line.

*It was decided that PCC observations shall be communicated to BRBCL for necessary action.*

## ITEM NO. B.2: Disturbance at 220 kV TTPS (NTPC) S/s on 29.11.18 at 07:21 hrs.

At 07:21 hrs, LBB protection operated for 220KV Meramundali Line -1 which caused tripping of all the elements connected to TTPS substation along with 2\*110 MW running units.

## Generation Loss: 200 MW



NTPC may explain.

### Deliberation in the meeting

*NTPC explained the disturbance with a detailed presentation. The presentation is enclosed at Annexure B.2.*

*NTPC informed that all the loads along with the two running units are in 220 kV Bus-II as Bus-I was under shutdown due to some maintenance work. 220kV TTPS-Meramundali-I was scheduled*

for planned shutdown on 29.11.18 for replacement of breaker mechanism box. On that day, when the tripping command was given from control room to the circuit breaker of 220kV TTPS-Meramundali-I line, only Y-pole of the CB opened. R & B-pole of the CB did not open. After 3.1 sec, R-pole opened on pole discrepancy operation. As the B-pole did not open even after PD operation, respective 86 relays had activated and tripped all the CBs of Bus-II. Both the units tripped on over speed protection and total power failure occurred at 220 kV TTPS substation. The B-pole was opened by manual operation of trip latch.

NTPC explained that 86 relay got activated on operation of pole discrepancy.

PCC opined that 86 relay should not get activated on operation of pole discrepancy. PCC observed that the distance relay of 220kV TTPS-Meramundali-I line at TTPS end had picked up during the above incident. PCC advised NTPC to verify the PSL logic in the distance relay and check the reason for distance relay pickup in this case.

PCC felt that 3.1 sec for pole discrepancy timer is quite high and advised NTPC to review the pole discrepancy timer settings.

NTPC informed that the breaker for 220kV TTPS-Meramundali-I was replaced after the incident.

### **ITEM NO. B.3: Disturbance at 400 kV Dikchu S/s on 14.11.18 at 16:31 hrs.**

At 16:30 hrs, 400/132 kV ICT at Dikchu tripped along with 400 kV Teesta III – Dikchu S/C from Teesta end resulting tripping of all running units of Dikchu due to loss of evacuation path.

As per DR received, ICT tripped in E/F protection. At the same time, 400 kV Teesta III – Dikchu S/C tripped from Teesta-III end due to operation of cable directional O/C protection.

### **Generation Loss: 90 MW**

Relay Indication:

Name of the elements	End 1 Relay Indication	End 2 Relay Indication
400 kV Dikchu-Teesta-III	No Tripping	Directional O/C protection (IB = 1.695 kA, IN = 1.6 kA)
400/132 kV ICT @ Dikchu	E/F (132 kV side current: IA = 387 A, IB = 316 A, IC = 525 A, IN = 171 A)	

Dikchu may explain.

### **Deliberation in the meeting**

Dikchu representative was not present in the meeting. Teesta-III representative informed that 400 kV Dikchu-Teesta-III tripped on E/F protection from Teesta-III end.

From the DR submitted by Dikchu, PCC could not conclude the disturbance. It was also found that disturbance recorders are not time synchronized correctly.

PCC decided to intimate Dikchu for submitting the detail report on the disturbance (including the location of fault and status of line tripping at Dikchu end) and to rectify the time synchronization issue in the relays.

#### ITEM NO. B.4: Disturbance at 400 kV Kahalgaon(NTPC) S/s on 24.11.18 at 02:05 hrs.

At 02:05 Hrs, 400 KV Bus#1 tripped due to operation of Breaker Failure Relay (BFR) of main Bay of GT#1, leading to outage of Unit#1 (210 MW). At the same time, U#7 also tripped as it was synchronized through bus#1 only.

No fault has been observed in PMU data at the time of the event.

#### Generation Loss: 700 MW

NTPC may explain.

#### Deliberation in the meeting

NTPC explained the disturbance with a presentation. The presentation is enclosed at **Annexure-B.4**.

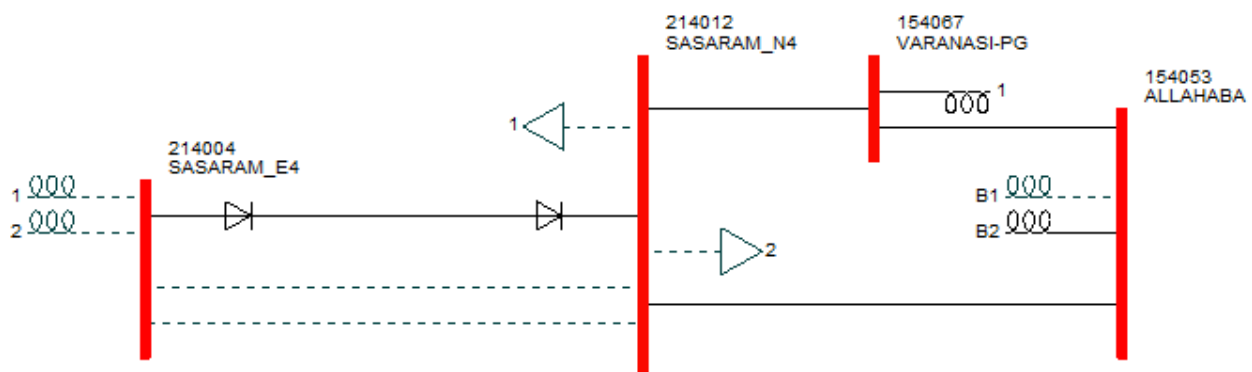
NTPC informed as follows:

- i. On 24.11.18, unit#1 got tripped on boiler drum level protection. Subsequently due to delayed opening of Y-phase pole of the main breaker, the BFR got operated for U#1 main breaker.
- ii. This resulted into operation of bus bar protection for 400 kV Bus-I, thereby tripping all the associated breakers with the 400KV Bus-I.
- iii. The tripping of Bus-I leads to tripping of unit#7 since the unit was connected to 400 kV main bus-I only through its main breaker. The tie breaker was earlier kept out of service for persisting SF6 leakage in R-phase pole.

NTPC informed that the Y-phase pole of main breaker of Unit#1 was checked and overheating marks in both the tripping coils 1 & 2 as well as in series resistance of tripping coils were found. They had replaced the tripping coils along with the series resistance.

#### ITEM NO. B.5: Disturbance at 400 kV Sasaram S/s on 27.11.18 at 13:26 hrs.

On 27th Nov 2018, at 13:26 Hrs 400 kV Sasaram-Allahabad & 400 kV Sasaram-Varanasi tripped due to Y-B phase fault. At the same time HVDC Sasaram also got blocked due to operation of inter-zone protection of Northern converter transformer.



Powergrid may explain.

### **Deliberation in the meeting**

*Powergrid ER-I representative was not available for discussion.*

*From the analysis of disturbance recorder, it was found that there was a fault in 400 kV Sasaram-Allahabad line near to Sasaram end. The fault was cleared from both the ends instantaneously.*

*At the same time, 400 kV Sasaram-Varanasi got tripped from Sasaram end. The tripping signal was initiated from Main-I relay of Sasaram. But there was no proper relay indication of the protection operated within Main-I relay due to inadequate configuration of digital channels in DR. Zone-2 pickup in Main-II relay at Sasaram end of 400kV Sasaram-Varanasi line was also observed.*

*PCC viewed that the tripping of 400 kV Sasaram-Varanasi line from Sasaram end for the fault in 400 kV Sasaram-Allahabad line is not desirable and advised Powergrid to submit a detailed report explaining the reason for tripping of the line by Main-I relay and reason for zone-2 pick up by Main-II relay. PCC also advised Powergrid to configure the digital channels properly in the disturbance recorders.*

### **ITEM NO. B.6: Repeated Tripping incidents at Darbhanga(DMTCL) S/S in the month of November 2018.**

#### **A. Multiple tripping incident at Darbhanga at 13:33 hrs on 06-11-18 and at 15:23 hrs on 06-11-18.**

*In both the instances, 400 kV Darbhanga – Muzaffarpur-II along with 400/220 kV ICT I & II at Darbhanga tripped on B-N fault. A/R was successful at Muzaffarpur end whereas A/R attempt was not taken place at Darbhanga end.*

*At the same time, 400/220 kV ICT – I & II at Darbhanga tripped on directional overcurrent protection. On investigation, it was found overcurrent setting of ICTs was very low, 0.5A (CT ratio 1600/1).*

### **Deliberation in the meeting**

*DMTCL informed that fault was in 400 kV Darbhanga – Muzaffarpur-II line in both the instances. A/R was not attempted at DMTCL end due to problem in breaker Hydraulic mechanism. They informed that they have planned for checking the healthiness of breaker after availing the shutdown.*

*Regarding tripping of 400/220 kV ICTs, they informed that ICTs got tripped on over current highset protection. The highset setting was low which they have increased to 5A after these disturbances.*

*PCC observed that the setting of 5A (CT ratio 1600/1) for highset operation is still at lower side which may lead to unwanted tripping of the ICTs for any fault in the transmission line. As per the details submitted by DMTCL representative, PCC suggested to keep the highset setting more than 7 and advised DMTCL to review the settings.*

#### **B. Tripping of 400 kV Darbhanga – Muzaffarpur II at 12:36 hrs on 27-11-18**

*400 kV Darbhanga – Muzaffarpur-II tripped at 12:36 hrs on 27-11-18 on B-N fault. As per DR received, at Darbhanga end, A/R operation started and B pole opened and it remained in opened condition due to non-readiness of charging CB spring at the time of reclose. After 2.5 seconds, other two poles also tripped. A/R was successful at Muzaffarpur end.*

*In DR at Darbhanga end, digital signal for Z-I, II, III, Z-IV are not configured.*

DMTCL may explain.

### **Deliberation in the meeting**

*The issue of autoreclosure operation at Darbhanga had been discussed in part B.6.A.*

*Regarding configuration of digital signals, PCC advised DMTCL to review the DR configuration settings at Darbhanga end.*

## **ITEM NO. B.7: Tripping incidents in West Bengal system during the month of November, 2018.**

### **A. Tripping of 400 kV KTPP Kharagpur - I S/C on 11.11.18**

400 kV Kharagpur – KTPP – I tripped at 12:50 hrs and 13:46 hrs on 11-11-18 due to R-N fault. The discrepancies observed are explained in detailed report which is enclosed at **Annexure B.7.**

### **Deliberation in the meeting**

*For fault at 12:50 hrs, PCC advised WBSETCL and WBPDCCL to coordinate autorecloser discrimination time with the dead time of circuit breaker.*

*For fault at 13:46 hrs, WBSETCL informed that, the issue of counter increment in channel –II is due to the PLCC problem at their side. They informed that replacement of PLCC is under progress and will be completed by one month.*

### **B. Tripping of 400 KTPP New Chanditala S/C at 12:12 hrs on 15.11.18**

400 kV KTPP New Chanditala S/C tripped at 12:12 hrs on 15th November 2018. As per DR received from KTPP end, line tripped within 100 ms after the picking of Z-III relay.

### **Deliberation in the meeting**

*WBPDCCL informed that the fault was in 400 kV N. Chanditala-Kharagpur line. The fault was picked up correctly from KTPP end of 400 kV KTPP-N. Chanditala line but the line got tripped within 100msec.*

*After detailed deliberation PCC advised WBPDCCL to verify zone-3 time settings as well as TOR settings.*

### **C. Tripping of 400 kV KTPP-Kharagpur-2 & 400 KTPP-New Chanditala S/C at 12:21 hrs on 23.11.18**

400 kV KTPP-Kharagpur-2 & 400 KTPP-New Chanditala S/C tripped at 12:21 hrs on 23-11-18. As per DR for 400 kV KTPP Kharagpur-2 at KTPP, A/R was successful at KTPP end. As per DR for 400 kV KTPP-New Chanditala S/C at KTPP end, Y & B phase current were zero throughout the time window captured by DR.

### **Deliberation in the meeting**

*It was informed that there was a fault in 400 kV KTPP-Kharagpu-2 line. The A/R was successful at KTPP end. A/R at Khargpur end was not successful .*

*PCC advised WBSETCL to check the reason for unsuccessful autorecloser at Khargpur end.*

*Regarding tripping of 400 KTPP-New Chanditala S/C, PCC advised WBPDCCL to submit a report explaining the following points.*

- Reason for tripping of Y & B phase breaker in 400 KTPP-New Chanditala S/C line and subsequently non-operation of pole discrepancy relay at KTPP end.*
- Reason for sending carrier signal from KTPP end to New Chanditala end.*
- Reason for delayed opening of R-phase breaker(manually) of 400 KTPP-New Chanditala S/C line at KTPP end.*

*PCC also advised WBSETCL and WBPDCCL to verify the DEF status for 400 KTPP-New Chanditala S/C line at respective end.*

#### **D. Tripping of 400 kV Jeerat-Bakreswar S/C at 00:22 hrs on 18.11.18**

400 kV Jeerat Bakreswar tripped at 00:22 Hrs on 18th November 2018. 19 kV voltage dip was observed in Durgapur PMU data. A/R was not in service at Jeerat end as line was in service via transfer bus and A/R lock out was triggered at Jeerat end after detecting the fault. As per DR output at Bakreswar, it was observed A/R operation was started at Bakreswar end followed by three pole opening after receiving DT signal from remote end.

WBPDCCL and WBSETCL may explain.

#### **Deliberation in the meeting**

*WBSETCL informed that the autorecloser was not successful due to non-availability of sufficient binary input at main relay and informed that old EM type relay at Jeerat would be replaced with numerical relay.*

*PCC observed that sampling frequency and time duration of DR at Bakreswar end is not proper and advised WBPDCCL to take necessary action.*

#### **ITEM NO. B.8: Tripping Incidences in the month of November, 2018.**

Other tripping incidences occurred in the month of November 2018 which needs explanation from constituents of either of the end is given in Annexure-B.8.

In 58<sup>th</sup> PCC, ERLDC informed that most of the constituents are not submitting the DR and EL data for single line trippings.

PCC advised all the constituents to upload the details along with DR and EL in PDMS on-line portal and referred the issue to TCC for further guidance.

In 36<sup>th</sup> 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.

Members may discuss.

#### **Deliberation in the meeting**

*Members explained the tripping incidences. Updated status is enclosed at **Annexure-B8**.*

*PCC advised all the concern constituents to take necessary corrective actions to resolve the issues.*



## **PART- C:: OTHER ITEMS**

### **ITEM NO. C.1: Islanding scheme at IbTPS- OPGC**

68<sup>th</sup> PCC opined that the draft scheme submitted by Odisha was three years old and the draft scheme is needed to be reviewed with existing network configuration.

PCC decided to discuss the islanding scheme in next PCC Meeting and advised OPTCL to submit all the relevant details to ERPC and ERLDC.

In 69<sup>th</sup> PCC, OPTCL presented the revised islanding scheme based on updated network configuration and power flows.

It was decided that ERLDC and ERPC will study and finalize the islanding scheme in next PCC Meeting.

In 72<sup>nd</sup> PCC, OPTCL and OPGC were advised to prepare a joint presentation highlighting the below mentioned points in order to have a clarity of the overall scheme.

- The logic for islanding operation such as frequency limit, overvoltage settings, vector shift settings etc.
- Logic/Actions to be adopted for different grid scenarios for both generator side and transmission side.
- The actions to be taken at generator side vis-a vis at transmission side for different conditions.

In 73<sup>rd</sup> PCC, it was decided to convene a separate meeting on 12.12.18 at ERPC secretariat in order to have a detailed deliberation on IBTPS islanding scheme. PCC advised OPTCL and OPGC to present the scheme along with the clarifications sought by PCC in the meeting scheduled on 12.12.18.

It was also decided to invite representatives of WBPDC as special invitee to the above meeting on 12.12.18.

OPTCL and OPGC may update.

### **Deliberation in the meeting**

*It was informed by OPTCL that the islanding scheme was finalized in the special meeting held on 12.12.18 and the details of the scheme in brief is as below:*

- *Islanding relay at Budhipadar will operate at 47.8 Hz of grid frequency with 250msec time delay.*
- *One unit(210 MW) of IBTPS with the selected loads of 149 MW connected through 132 kV level at Budhipadar substation will be initiated.*
- *The alarm for islanding scheme will be set at 49.2 Hz.*

*OPTCL added that a final presentation in this regard will be presented in next OCC meeting.*

### **ITEM NO. C.2: Total power failure at 220kV Hatia (JUSNL) S/s on 20.07.18 at 09:10 hrs.**

Due to clearance issue with some 11 KV feeder (which has an in feed from Hatia old) repeated faults occurred in 220 kV Ranchi - Hatia-I and II. As a result total power failed at 220kV Hatia S/s.

In 70<sup>th</sup> PCC, JUSNL informed that repeated disturbances and total power failure at Hatia substation on 20.07.18 was due to the clearance issue with 11kV feeder under 220kV Ranchi-

Hatia D/C line. JUSNL informed that the 11 kV feeders were re-routed after the above incidences to get the sufficient clearance.

PCC advised JUSNL to check the Sag level and clearance of 220 KV lines to avoid this type of tripping.

From the analysis of PMU plot and disturbance recorders at Ranchi & Hatia end, a number of protection related issues came into notice.

PCC analysed the issue & advised JUSNL to take the following actions

- Whenever PLCC will remain out of service, the auto reclose operation should be made to non-auto mode and zone 2 timing may be reduced (preferably less than 0.35 Sec.) to minimize the fault clearing time.
- The trip on reclose function should be enabled in the relay whenever autoreclose function is in operation.

Regarding unwanted tripping of 220/132 kV ATRs at Hatia and Patraru substations and tripping of Hatia-Patraru line in zone-4, PCC felt that there was a protection coordination issue and advised JUSNL to submit the corresponding relay settings to ERPC/ERLDC at the earliest.

The issue of delayed opening of breaker at Hatia end i.e.400 msec after zone-I tripping initiation was remained unexplained. The sequence of operation as well as the details of elements tripped during the incident could not be explained by JUSNL.

PCC decided to discuss this issue in next PCC meeting and advised JUSNL to explain the issue in next meeting with all the relevant details.

In 73<sup>rd</sup> PCC, JUSNL could not explain the disturbance and PCC also could not conclude the same.

JUSNL informed that CRITL team doesn't have any facilities to test the protection relays and they are doing the testing through third party agency which would take more time.

PCC took serious note of the issue and advised JUSNL to submit the details of procedure being followed for testing/verification of the relays.

PCC also advised JUSNL to test the healthiness of the relays at 220kV Patraru and 220/132kV Hatia S/s on urgent basis.

JUSNL may update.

### **Deliberation in the meeting**

*JUSNL informed that testing for healthiness of relays will be done by third party vendor. The work has already been awarded to the vendor and it will be completed by one month.*

### **ITEM NO. C.3: FOLLOW-UP OF DECISIONS OF THE PREVIOUS PROTECTION SUB-COMMITTEE MEETING(S)**

The decisions of previous PCC Meetings are given at Annexure-C.3.

In 73<sup>rd</sup> 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**

*The updated status was given in **Annexure-C.3**.*

#### **ITEM NO. C.4: Schedule of training program to be conducted by PRDC**

PRDC, as per the AMC, is going to conduct 2<sup>nd</sup> training programme on PDMS and PSCT in state utility premises of Eastern Region. The tentative schedule is given below:

Training in Month	State	Date
January	West Bengal	07.01.2019-11.01.2019
April	Sikkim	08.04.2019-12.04.2019
July	Bihar	08.07.2019-12.07.2019
September	Odisha	09.09.2019-13.09.2019

Members may discuss.

### **Deliberation in the meeting**

*Members noted.*

*PRDC gave a presentation on the new version of tripping analysis module of PDMS and informed that the new features have been added taking into consideration of feedbacks on earlier module. They explained the new features to the members with a live demo.*

*They also informed that a test link has been created for practice purpose for the utilities. The link is <http://111.93.167.139:8185>.*

*PCC advised all the constituents to give their feedback on this new version of tripping analysis module.*

*PCC decided to implement the new version of tripping analysis module from 01.01.2019 and advised all the constituents to submit the disturbance report along with DR in the on-line portal.*

*PRDC also gave a detailed presentation on works carried out during the first support period (year 2017-2018) as a part of Annual Maintenance Contract. Presentation is enclosed **Annexure-C4**.*

*PCC noted.*

#### **ITEM NO. C.5: Zone 3 settings of ISTS lines**

Based on the data available in PDMS, the zone 3 settings of all ISTS lines in Eastern Region were verified and compared with the corresponding resistive reach of the line thermal loading. Zone 3 settings were also checked with the agreed protection philosophy of ER. The discrepancies observed in the settings will be presented in the meeting.

In 67<sup>th</sup> PCC, PRDC presented the list of ISTS lines where they observed the discrepancy in zone-3 setting.

In 70<sup>th</sup> PCC, PRDC was advised to resend the list of the lines to all constituents and constituents were advised to verify the settings at the earliest.

In 72<sup>nd</sup> PCC, it was informed that some of the constituents have verified the settings. PCC advised all other constituents to verify the settings by next month and report discrepancy, if any.

In 73<sup>rd</sup> PCC, It was informed that Powergrid ER-I had verified the settings. Powergrid ER-II and Powergrid odisha will verify the settings at the earliest.

DVC informed that they will verify the settings by next month.

Members may update.

#### **Deliberation in the meeting**

*Powergrid informed that the line configuration has been changed for some of the lines. Accordingly the zone-3 settings will be changed as per new line length. They informed that they will submit the verified settings at the earliest.*

*DVC also informed that they will verify the settings at the earliest.*

#### **ITEM NO. C.6: Status of Third Party Protection Audit**

The compliance status of 1<sup>st</sup> 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 are available at ERPC website (Observations include PLCC rectification/activation which needs a comprehensive plan).

Members may note.

#### **Deliberation in the meeting**

*Members noted.*

#### **ITEM NO. C.7: 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/P LCC Link available	AR facility functional
13	<u>220KV BUDIPADAR-KORBA-II</u>	23.06.16	Y-N FAULT	OPTCL	CSEB	PLCC available	will be activated in consultation with Korba
17	<u>220 KV TSTPP-RENGALI</u>	17.07.16	EARTH FAULT	NTPC	OPTCL		by March 2018
18	<u>220KV BUDIPADAR-RAIGARH</u>	21.07.16	EARTH FAULT	OPTCL	PGCIL	PLCC defective	
20	<u>220 KV FARAKKA-LALMATIA</u>	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	<u>220 KV MUZAFFARPUR - HAZIPUR - II</u>	10.08.16	B-N FAULT	PGCIL	BSPTCL		Voice established. For carrier required shutdown
24	<u>220 KV ROURKELA - TARKERA-II</u>	11.08.16	B-N FAULT	PGCIL	OPTCL	OPGW available	Expected to install protection coupler by Jan 17
27	<u>220 KV BIHARSARIF-TENUGHAT</u>	07.09.16	B-N FAULT	BSPTCL	TVNL		
33	220KV Jamshedpur-Jindal-SC						

34<sup>th</sup> 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:**

- 220kV Rengali(PG)-Rengali S/Y (Proposal for Commn. in OPGW is pending): *PSDF appraisal committee accepted the proposal*
- 220kV Indravati(PG)-Indravati(PH) (Proposal for Commn. in OPGW pending): *PSDF appraisal committee accepted the proposal*
- 132kV Baripada(PG)-Baripada ( Tendering in Progress for OPGW): *Contract awarded*
- 132kV Baripada(PG)-Rairangpur (Tendering in Progress for OPGW): *Contract awarded*

**BSPTCL:**

- 220kV Purnea (PG)-Madhepura line
  - 220 kV Biharshariff- Begusarai line
  - 220 kV Biharshariff- Bodhgaya line
- } *Work is in progress expected to be commissioned by December 2017.*

- |    |                                    |  |
|----|------------------------------------|--|
| 4. | 220kV MTPS-Motiari line            |  |
| 5. | 220KV Madhepura-New Purnea D/C     | Auto recloser is out of service at Madhepura |
| 6. | 220KV Muzaffarpur-Hajipur D/C line | Auto recloser is out of service at Hazipur   |
| 7. | 220KV FSTPP-Lalmatia-1             | Auto recloser is out of service at Lalmatia  |
| 8. | 220KV Patna-Khagaul-SC             | Auto recloser is out of service at Khagaul   |

In 67<sup>th</sup> PCC, BSPTCL informed that they are planning to hire an agency for implementing PLCC system in all the lines in their network.

Members may update.

### **Deliberation in the meeting**

*PCC observed that there is no progress in implementation of PLCC and Autorecloser in BSPTCL system. PCC advised BSPTCL to take up the issue with the implementation agency and expedite for early commission of PLCC and Autorecloser.*

### **ITEM NO. C.8: Disturbance monitoring equipment(DME) standardization**

The power system is routinely subjected to faults or disturbances which can range from transient faults on transmission lines to system-wide disturbances involving multiple control areas, states and even countries. Investigation of each incident is critical in optimizing the performance of protection systems with the goal of preventing future incidents from becoming wide-area disturbances. The tools required to perform post-incident analyses include DME which can capture pre-event, event, and post-event conditions with a high degree of accuracy.

Recorders can be classified into two categories:

- FR (Fault Recorder)
- Sequence of events Recorder (SER)

For FR (Fault Recorder) following points may be standardized:

- a. Deployment
- b. Record Length
- c. Triggers
- d. Sampling Rates

For Sequence of events Recorder following points may be standardized:

- a. SER Capability
- b. Point Assignments
- c. Use of RTUs for SER

Common issues:

- a. Data format
- b. Power Supply
- c. Monitoring

Reference documents for this:

1. NERC Standard PRC-002-2 Disturbance Monitoring and Reporting Requirements
2. NPCC Regional Reliability Reference Directory # 11 Disturbance Monitoring Equipment Criteria

In 72<sup>nd</sup> PCC all the constituents were advised to submit the settings related to configuring disturbance recorders to ERLDC.

74<sup>th</sup> PCC Minutes

In 73<sup>rd</sup> PCC, it was decided that ERLDC, ERPC and PRDC would prepare a draft report on “settings for configuring disturbance recorders” and place the draft in next PCC Meeting.

Members may update.

#### **Deliberation in the meeting**

*The draft standard on “disturbance recorder configuration for Transmission Line protection” was prepared and the document is enclosed at **Annexure-C8**.*

*PCC advised all the constituents to submit their comments/observations relating to the draft standard.*

*PCC decided that similar kind of standard would be prepared for Transformer Protection and Busbar Protection.*

#### **ITEM NO. C.9: Checklist for submission of updated data for Protection Database**

The network data in Protection Database needs to be updated on regular basis on account of commissioning of new elements in the CTU as well as STU networks. Accordingly a checklist has been prepared which is enclosed in **Annexure-C9**.

All the constituents requested to submit the checklist on monthly bases in every OCC/PCC meetings.

Constituents may note.

#### **Deliberation in the meeting**

*Members noted.*

\*\*\*\*\*



**Participants in 74<sup>th</sup> PCC Meeting of ERPC**

Venue: ERPC Conference Hall, Kolkata

Time: 10:30 hrs

Date: 19.12.2018 (Tuesday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
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19	B. SARKHEL	Consultant ERPC	9433065724	buddha_sarkhel @kahoo.co.in	
20	Prashant Kr.	AEE/CRITL BSPTCL	7763818080 9835726712	Prashantkumarsahy @yahoo.com	

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



### Participants in 74<sup>th</sup> PCC Meeting of ERPC

Venue: ERPC Conference Hall, Kolkata

Time: 10:30 hrs

Date: 19.12.2018 (Tuesday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
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32	RAJDEEP BHATTACHARJEE	RE, BSPHCL	9830380689	rekolbphcl@gmail.com	
33	T.R. Mohapatra	Chief Manager PRDC	9433041673	trmohapatra@posco.in	
34	Sobanati Das	Head ER	980301043	dsobanati@prdc.in	
35	M. Muehjee	SE/PRDC	779787778	muehjee.muehjee@prdcinfotech.com	
36	R. Das	PRDC	7278885852	rajam.das@prdcinfotech.in	
37	J. G. Rao	EE, ERPC	9547891353	erpcprotection@gmail.com	
38					
39					
40					

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

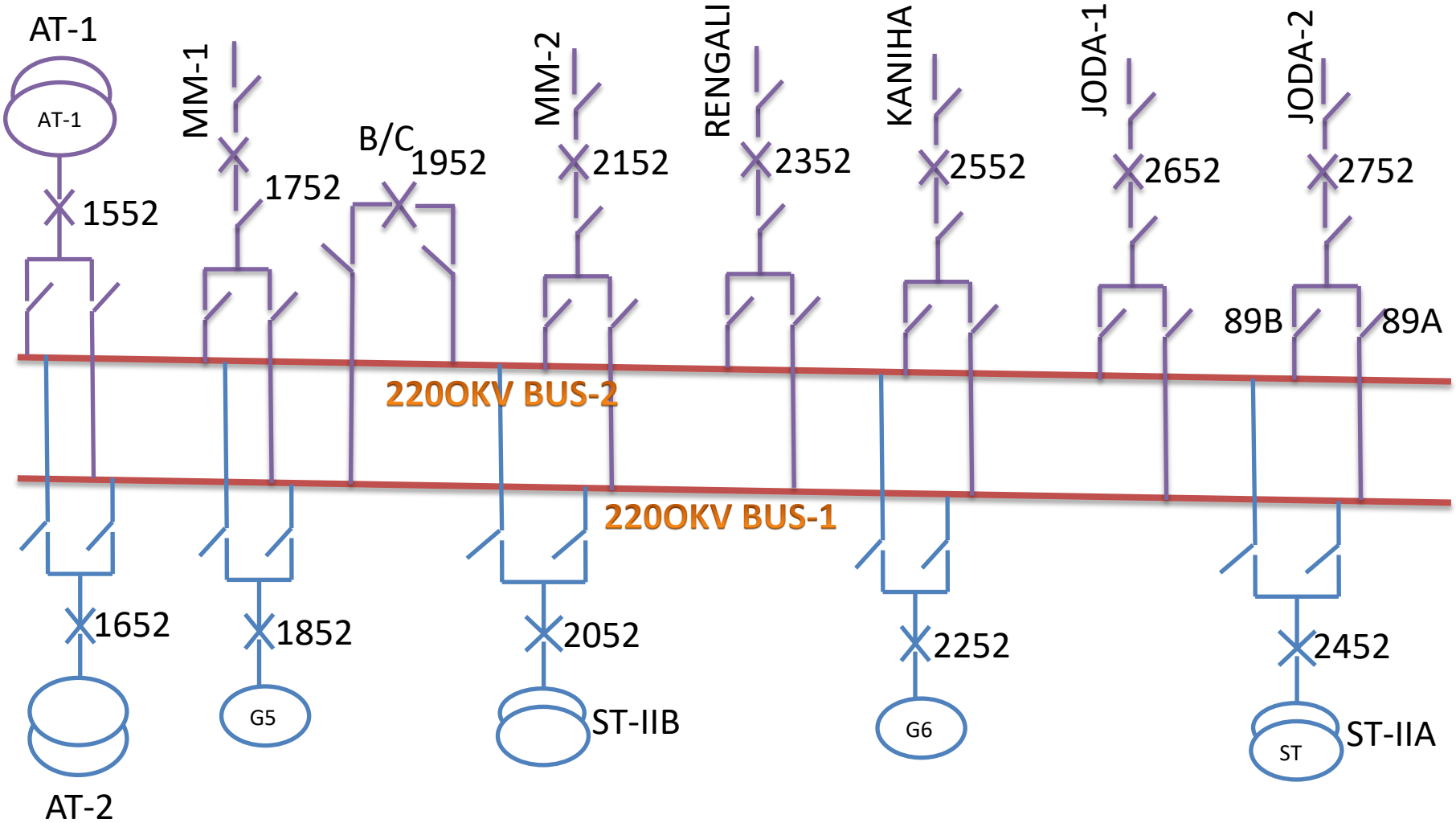


**Talcher Thermal**

Tripping of 220KV System  
at NTPC-Talcher Thermal switchyard  
on dated 29.11.2018.

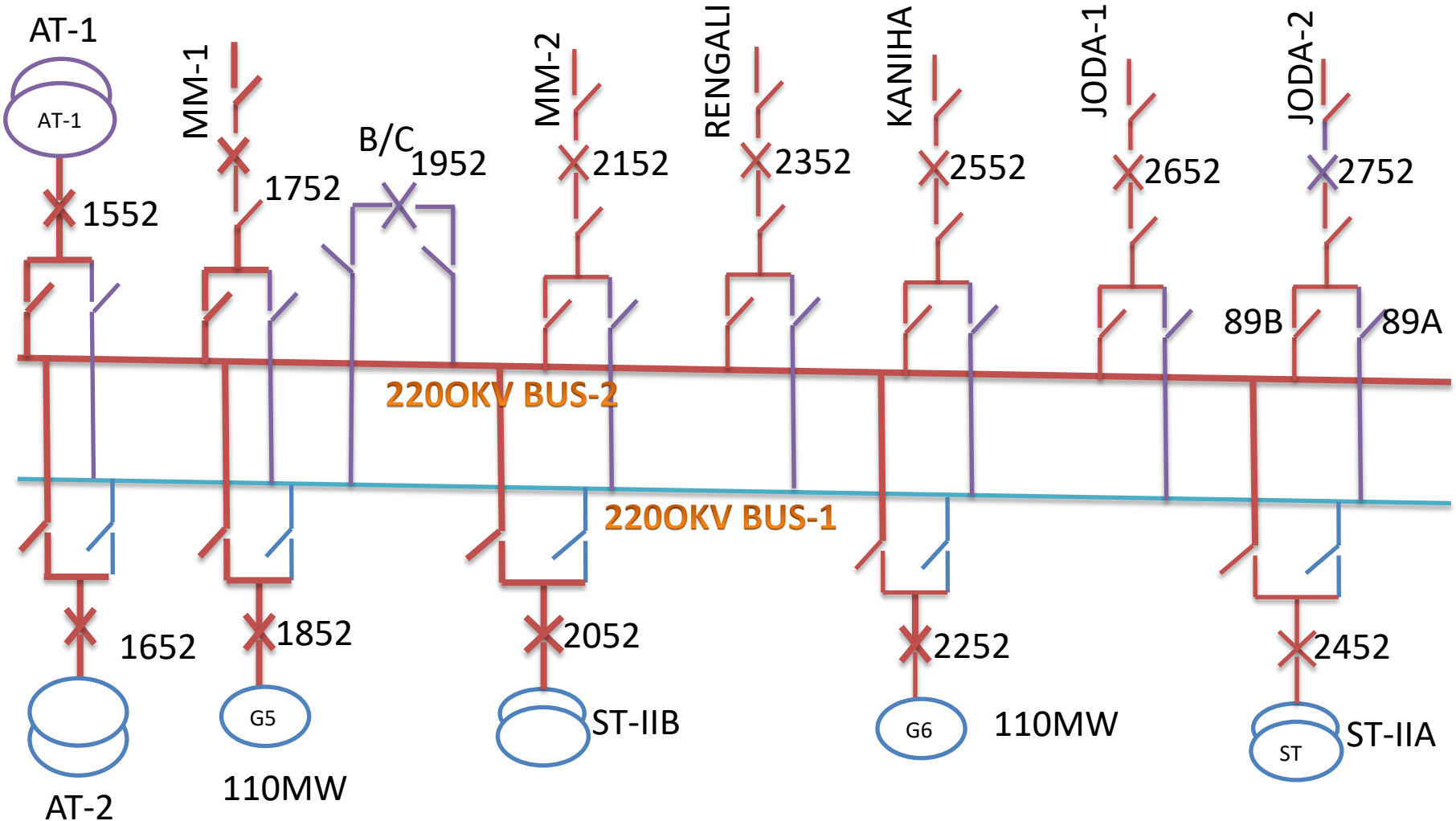
Presented by :  
Suresh Chandra Behera  
DGM ( EMD )

## SINGLE LINE DIAGRAM OF NTPC-TTPS 220KV BUS BAR SCHEME



AN OVERVIEW OF NTPC/TTPS 220KV SWYD

## SINGLE LINE DIAGRAM OF NTPC-TTPS 220KV BUS BAR SCHEME



All load in BUS-2

## Tripping of 220KV system at NTPC/TTPS

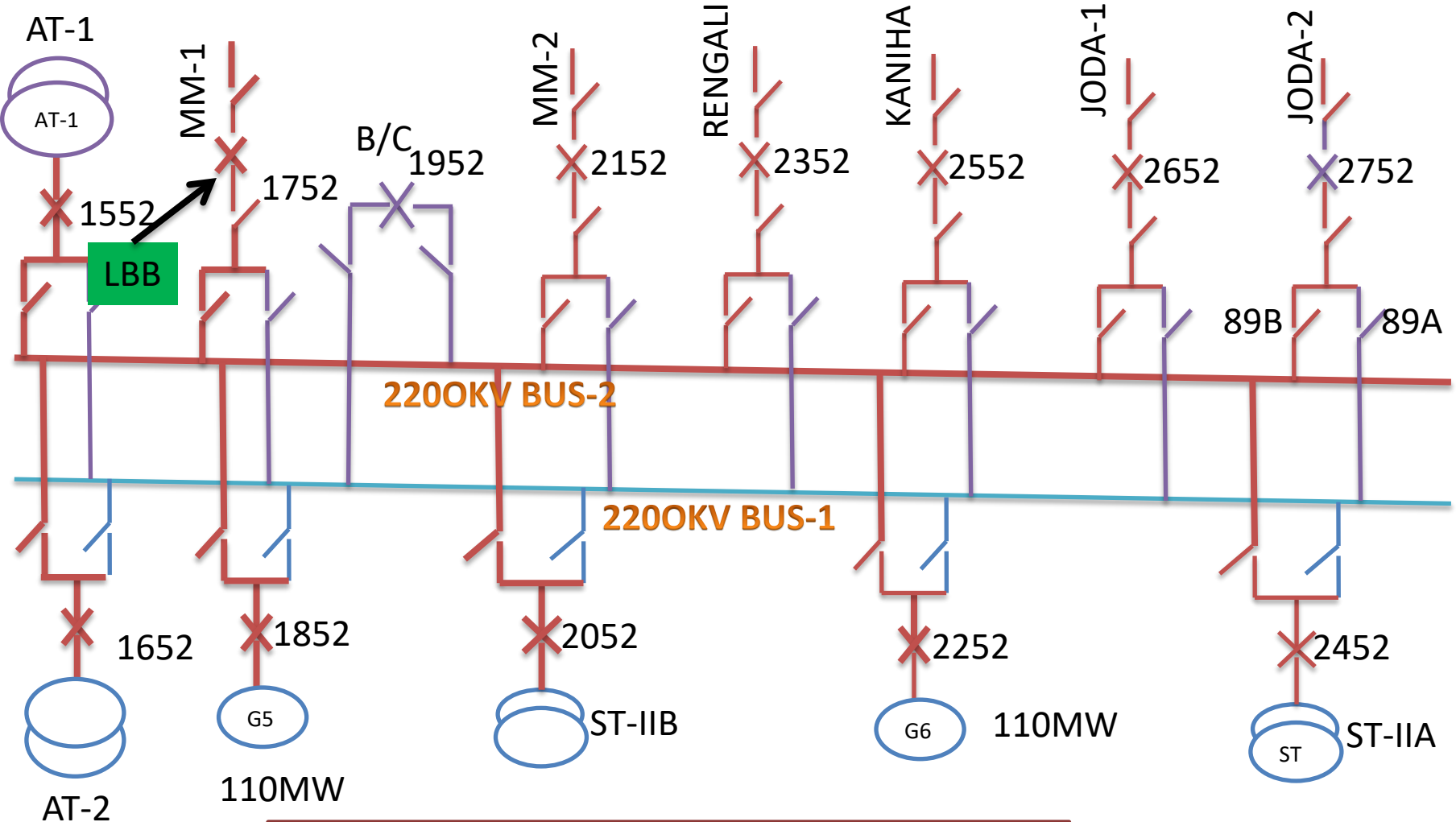
- 220KV TTPS-Meramundali Line-1 tripped on LBB operation on dated:29.11.2018 @ 07:21:49hrs.
  1. 220KV TTPS-Kaniha Line tripped @ 07:21:49hrs
  2. 220KV TTPS-Joda-1 line tripped @ 07:21:49hrs
  3. 220KV TTPS-Joda-2 line tripped @ 07:21:49hrs
  4. 220KV TTPS-MM-2 line tripped @ 07:21:49hrs
  5. 220KV AT-1 & 2 tripped @ 07:21:49hrs
  6. 220KV STN –IIA & IIB tripped @ 07:21:49hrs
  7. Unit-5 tripped @ 07:21:49hrs.
  8. Unit-6 tripped @ 07:21:49hrs.

## Tripping of 220KV system at NTPC/TTPS

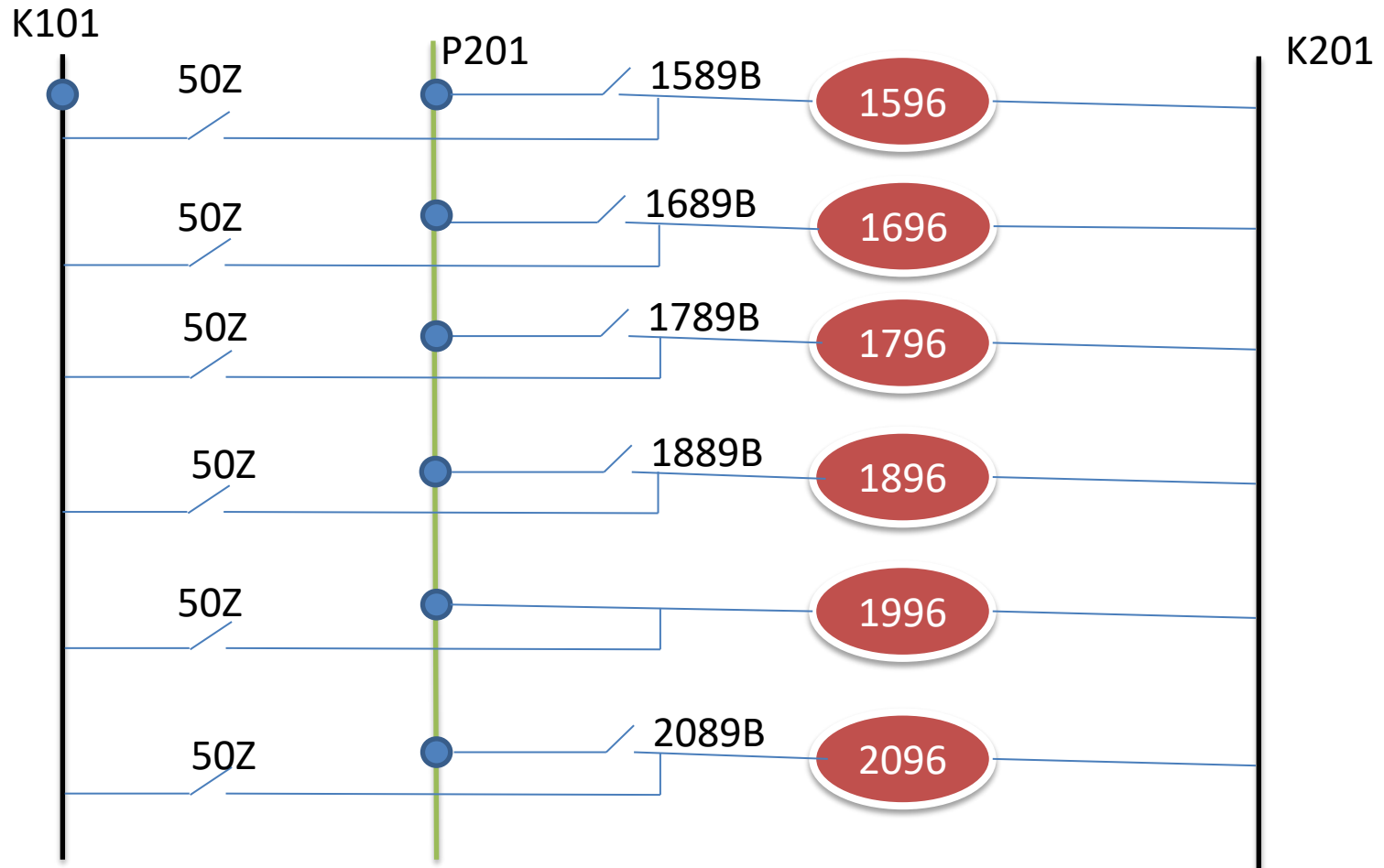
- Sequence of event ...
  1. Trip command from control room was issued to MM-1 line at 07.21.42hrs for overhauling of BKR mechanism box.
  2. Y-pole of MM-1 BKR opened 07.21.42hrs.
  3. R-pole of MM-1 BKR opened 07.21.45:452hrs on BKR PD operation.
  4. LBB of MM-1 line operated 07.21.45:733hrs
  5. All 220KV system dead on LBB relay operation.
  6. B-pole of MM-1 opened by manual operation of trip latch.



## SINGLE LINE DIAGRAM OF NTPC-TTPS 220KV BUS BAR SCHEME

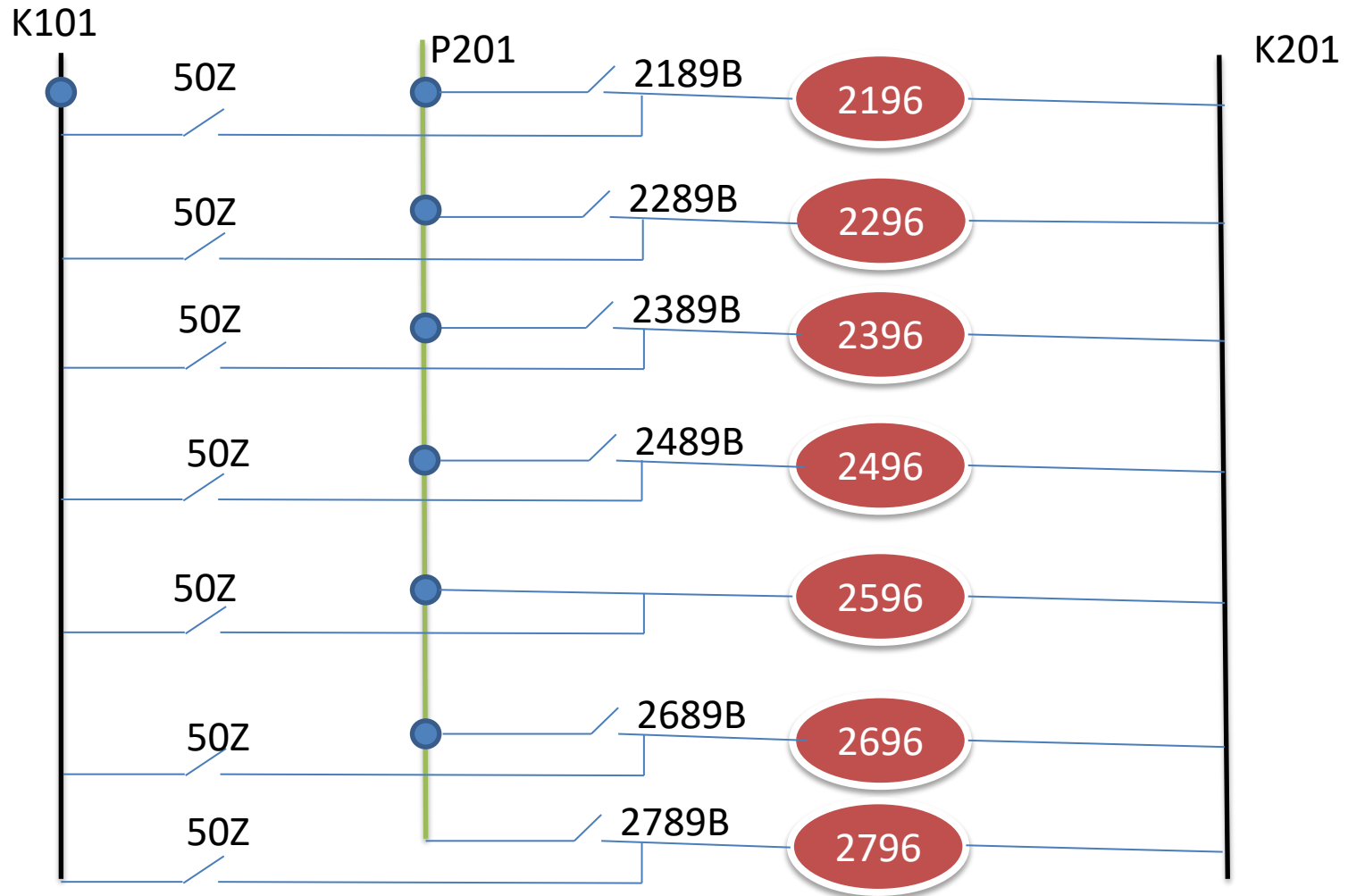


## TRIPPING LOGICS OF BUS-2 LBB PROTECTION





## TRIPPING LOGICS OF BUS-2 LBB PROTECTION



# EVENT RECORDING LOGS

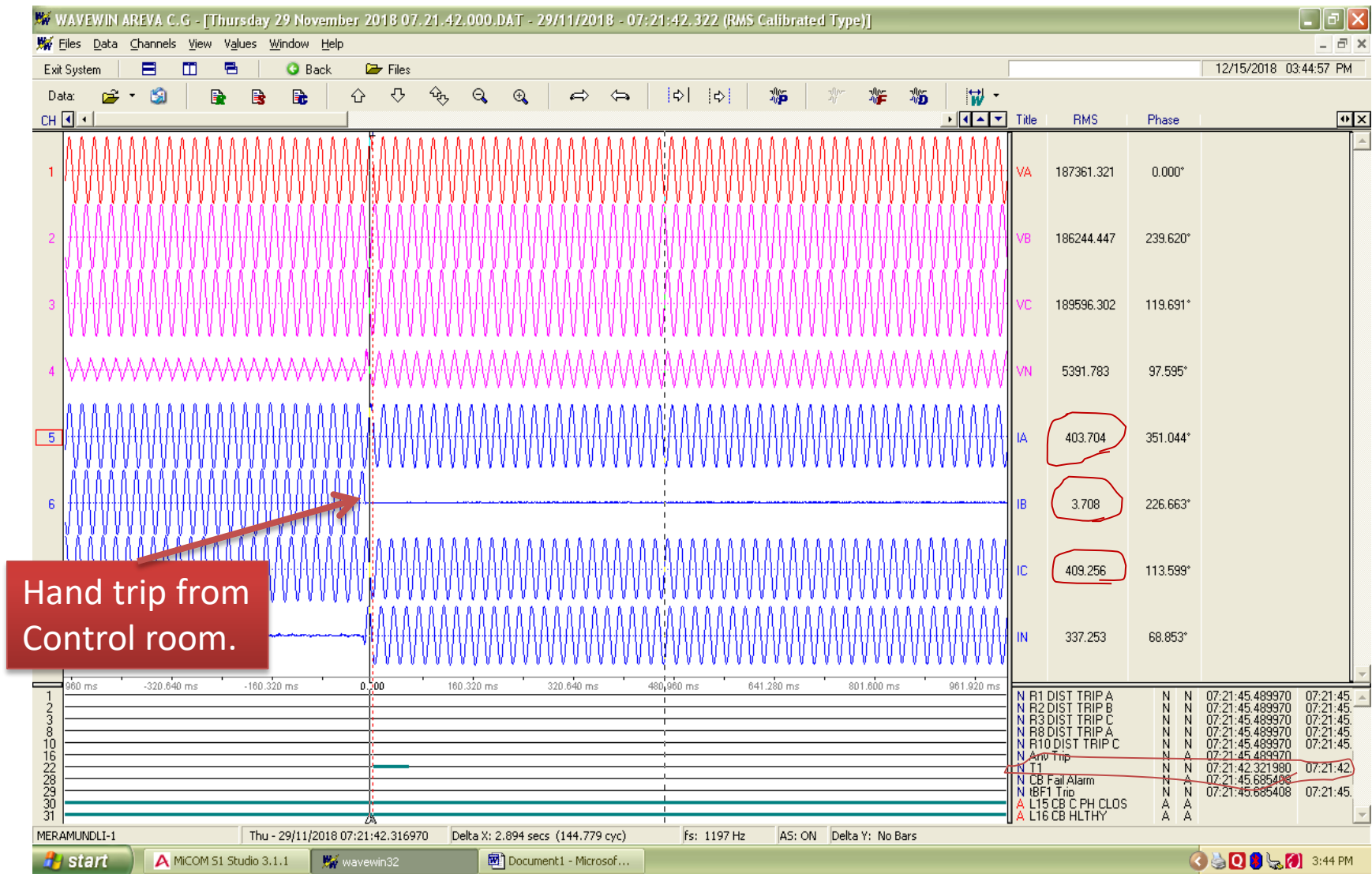
Sr. No.	SER Name	SER	Status	Date and Time	Point No.	Legend
8	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:46:394	23	220KV MERAMUNDLI-I LINE TC-1 UNHEALTHY
9	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:46:396	3	220KV MM-1 LINE CB B-POLE OPENED
10	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:46:799	23	220KV MERAMUNDLI-I LINE TC-1 UNHEALTHY
11	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:79	23	220KV MERAMUNDLI-I LINE TC-1 UNHEALTHY
12	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:549	13	220KV MERAMUNDLI-I LINE CB TROUBLE TRIP
13	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:566	12	220KV MERAMUNDLI-I LINE CB TROUBLE ALARM
14	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:586	18	220KV MERAMUNDLI-I LINE MAIN 1/2 A-PH TRIP OPTD.
15	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:625	20	220KV MERAMUNDLI-I LINE MAIN 1/2 B-PH TRIP OPTD.
16	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:650	22	220KV MERAMUNDLI-I LINE MAIN 1/2 C-PH TRIP OPTD.
17	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:689	22	220KV MERAMUNDLI-I LINE MAIN 1/2 C-PH TRIP OPTD.
18	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:49:724	18	220KV MERAMUNDLI-I LINE MAIN 1/2 A-PH TRIP OPTD.
19	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:49:724	20	220KV MERAMUNDLI-I LINE MAIN 1/2 B-PH TRIP OPTD.
20	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:781	31	220KV MERAMUNDLI-I LINE LBB OPTD.
21	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:810	312	132KV AT-2 TRIP RELAY OPTD.
22	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:810	114	220KV JODA-II LINE MAIN 1/2 A-PH TRIP OPTD.
23	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:810	50	220KV KANIHA LINE MAIN 1/2 A-PH TRIP OPTD.
24	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:812	82	220KV JODA-I LINE MAIN 1/2 A-PH TRIP OPTD.
25	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:813	178	220KV NALCO LINE MAIN 1/2 A-PH TRIP OPTD.
26	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:816	299	132KV AT-1 TRIP RELAY OPTD.
27	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:816	241	220KV ST-IIA TC-1/2 UNHEALTHY
28	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:816	243	220KV ST-IIB CB 52 OPENED
29	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:49:818	131	220KV MM-2 LINE CB POLE-B OPENED
30	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:49:818	133	220KV LINE CB POLE-C OPENED
31	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:49:820	260	220KV AT-1 CB 52 ON
32	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:49:820	277	220KV AT-2 CB 52 OPENED
33	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:49:821	218	220KV GT-5 CB 52 OPENED
34	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:49:821	129	220KV MM-2 LINE CB POLE-A OPENED
35	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:49:821	65	220KV JODA-I 2652 BKR OPENED
36	TTPS_SWYD	SER01	Alarm	29/11/2018 06:21:49:822	288	220KV AT-2 TC-1/2 UNHEALTHY
37	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:49:822	33	220KV KANIHA LINE CB 2552 OPENED
38	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:49:825	97	220KV JODA-II LINE CB 2752 OPENED
39	TTPS_SWYD	SER01	Normal	29/11/2018 06:21:49:827	214	220KV GT-6 CB 52 OPEN

BKR PD TRIP  
command

BKR LBB  
operation

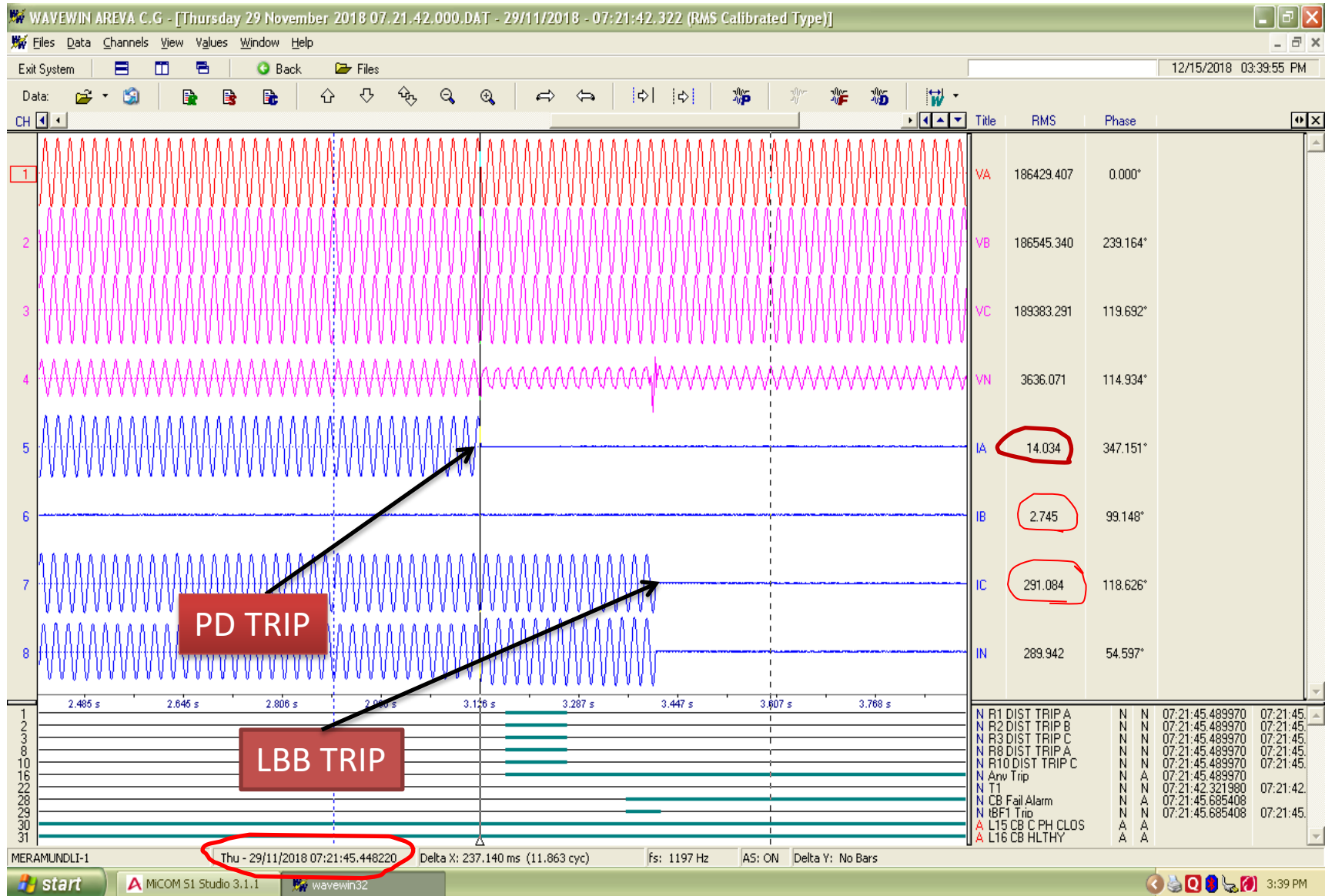
Trip command  
from control room

# Tripping of 220KV system at NTPC/TTPS



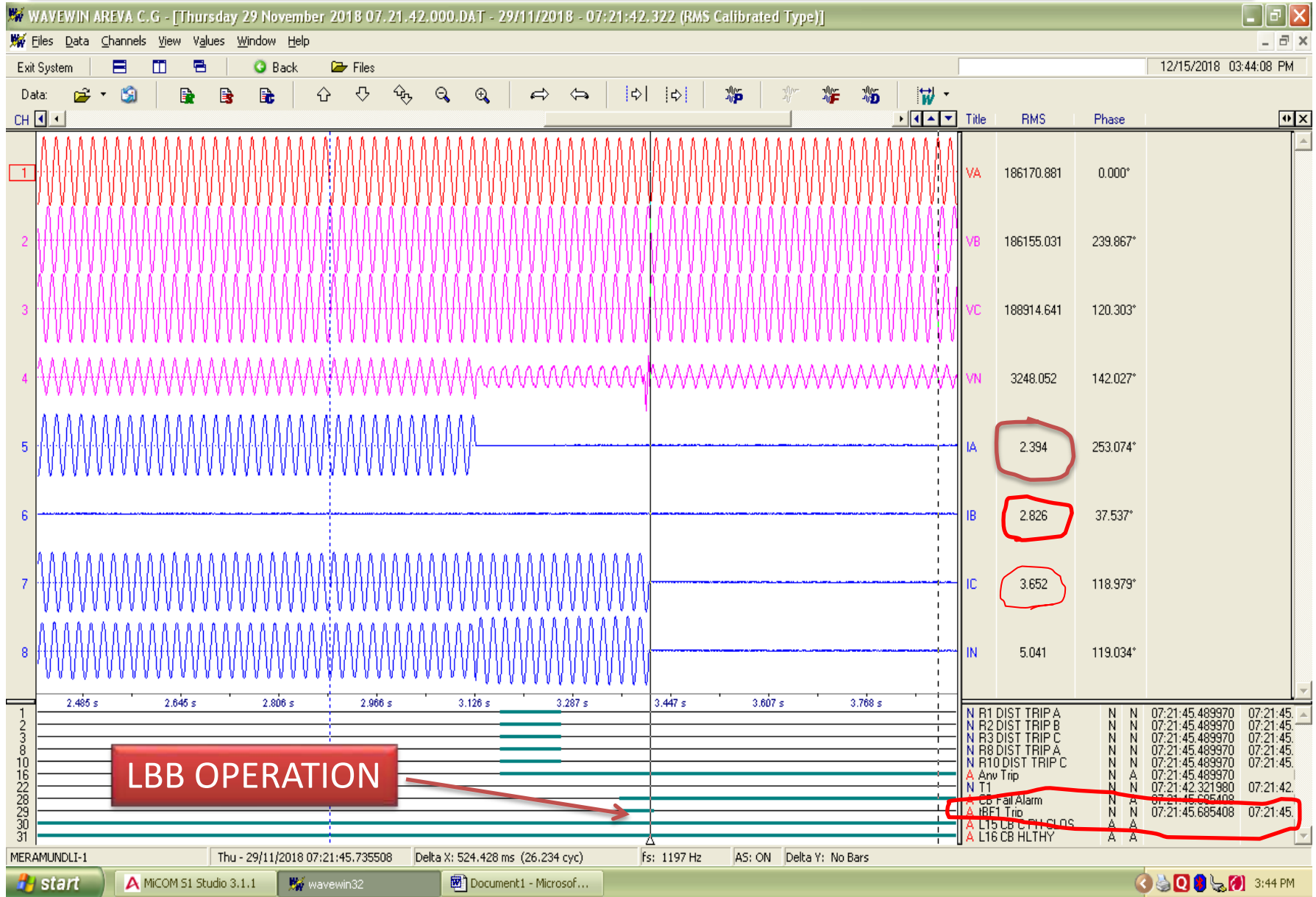
Trip command issued and Y-pole opened

# Tripping of 220KV system at NTPC/TTPS



Opening of R-pole after 3.1 sec of Y-pole opening

# Tripping of 220KV system at NTPC/TTPS



LBB OPERATION , TRIPPING OF ALL 220KV SYSTEM

## Tripping of 220KV system at NTPC/TTPS

### Conclusion :

- ✓ Overhauling of all 220KV BKR mechanism box completed by OEM.
- ✓ PM of 220KV BKR be done once in a year by OEM.
- ✓ During planned s/d of feeders , remote end BKR to be opened first.
- ✓ Problem in EL GPS time synchronization and stand alone DR recording to be rectify very shortly.



Talcher Thermal

Thank you ,

**400 KV Bus 1 tripping  
at  
Kahalgaon (KhSTPP)  
on  
24.11.2018**



## **On 24.11.2018 at about 02:00 Hrs Unit # VII tripped on 400KV Bus bar protection while in service at about 273 MW.**

Unit#1 got tripped on boiler drum level protection at about 02:00 Hrs.

Unit#7 got tripped on Bus bar protection. Class-A Generator protection Lock-out relays found operated.

11kV 7UA , 7UB Bus Changeover to Station Source was found to be normal.

Switchyard 400KV Bus bar protection was found operated for Bus-I.

All Circuit Breakers connected to 400KV Bus-I were found to be in tripped condition.

BFR for Unit#1 main breaker (connected to 400KV Bus-I) was found to have operated.

As per the switchyard event logger Unit#1 main breaker Y-Phase pole found to have opened with a delay.

## Note

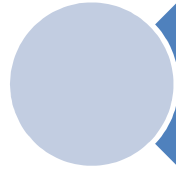
During the incident, Unit#7 was connected to the 400KV Bus-I only through its main breaker. Unit#7 400KV Tie bay was kept isolated since 01st Nov'2018 from the Jack bus of unit main bay for facilitating R-Phase breaker pole replacement of Tie bay since the tie breaker was kept out of service due to persisting SF6 leakage. However, R-Phase breaker pole of the tie breaker was made ready after pole replacement but, for reconnection of the tie bay tap off to the main bay jack bus unit shutdown on opportunity was required.

# Analysis

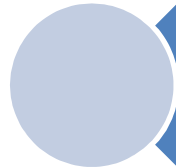
Unit#1 tripped on its **boiler drum level protection**, subsequently **the BFR got operated** for U#1 main breaker due to **delay opening of the main breaker Y-Phase pole**. This resulted into operation of **400KV Bus-I “Bus bar protection”** thereby tripping of all the associated breakers with the 400KV Bus-I. This lead to tripping of Unit#7 on **“Bus bar protection” through the Class-A Generator protection Lock-out relays** since, in Unit#7 its 400KV main breaker was only in service while its tie bay was kept isolated (as per the NOTE detailed above).

In view of the above analysis, root cause of unit#7 tripping is due to **non-availability of the U#7 400KV tie bay** even though the tie breaker was ready but, unit shutdown on opportunity was required for reconnection of the tie bay tap off to the main bay jack bus.

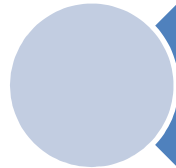
# Actions Taken



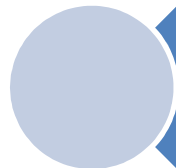
The 400KV Bus-I was charged as per the structured procedure after ensuring its healthiness checking and confirming that all the breakers associated to the said bus are in off condition.



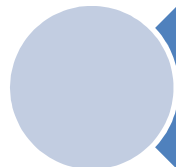
All the breakers associated with 400KV Bus-I were taken into service one by one except Unit#1 main breaker.



Clearance was given for Unit#1 boiler light up and subsequent synchronization through its 400KV tie bay.



Unit#1 was synchronized at about 04:39 Hrs through its 400Kv tie bay.



Unit#7 400KV tie bay tap off was reconnected to the main bay over head jack bus.

Clearance was given for Unit#7 synchronization at 07:30 Hrs..

Unit#7 was synchronized through its 400KV main breaker at about 08:18 Hrs and its 400KV tie breaker was taken into service at about 08:23 Hrs.

Unit#1 main breaker Y-Phase pole was checked and overheating marks were observed in the series resistance of Tripping coil 1 & 2. Additionally, **both the trip coils were also found to have over heating marks. The series resistances along with trip coil 1 & 2 assemblies were replaced, all wire connections were ensured for their tightness.** Breaker closing and tripping timings were checked and found to be satisfactory.

Unit#1 main breaker was finally taken into service at about 22:30 Hrs.

**Thank You**

**Event Description:**

400 kV Kharagpur – KTPP – I tripped at 12:50 hrs and 13:46 hrs on 11-11-18 due to R-N fault. The event is analysed based on DR recorded at Kharagpur and KTPP end and PMU data recorded at ERLDC end.

**Sequence of Events:**

Time (Hrs)	Kharagpur end	KTPP end
12:50:49.096 (1 <sup>st</sup> Voltage dip)	R-N, Z-I, 4 kA, A/R started	R-N, Z-I, 6.8 kA, A/R started
12:50:49.730	--	A/R successful at KTPP end; As R pole is opened at KGP end; R phase current is low
12:50:50.037 (2 <sup>nd</sup> Voltage dip)	Y and B phase current increased from 180 A to 780 A. Dist. Channel and DT signal received; A/R lock out; No tripping (R pole in open condition)	Fault in reclaim time; R-N, Z-I, 6 kA; Y and B phase current increased from 180 A to 850 A. TOR/SOTF also triggered; three pole opened
12:50:50.200 (3 <sup>rd</sup> Voltage dip)	Despite of DT receipt, A/R attempt took place; three phase breaker opened R-N, Z-I, 7.8 kA; SOTF/TOR	--
13:46 (Second fault)	R-N, Z-I, 7.1 kA, A/R started but three pole tripped within 40 ms after receiving DT & Distance Signal receipt and A/R lock out enabled signal picked up (During first fault A/R took place despite receiving of same signal).	R-N, Z-I, 4.6 kA, Unsuccessful A/R took place after 600 ms

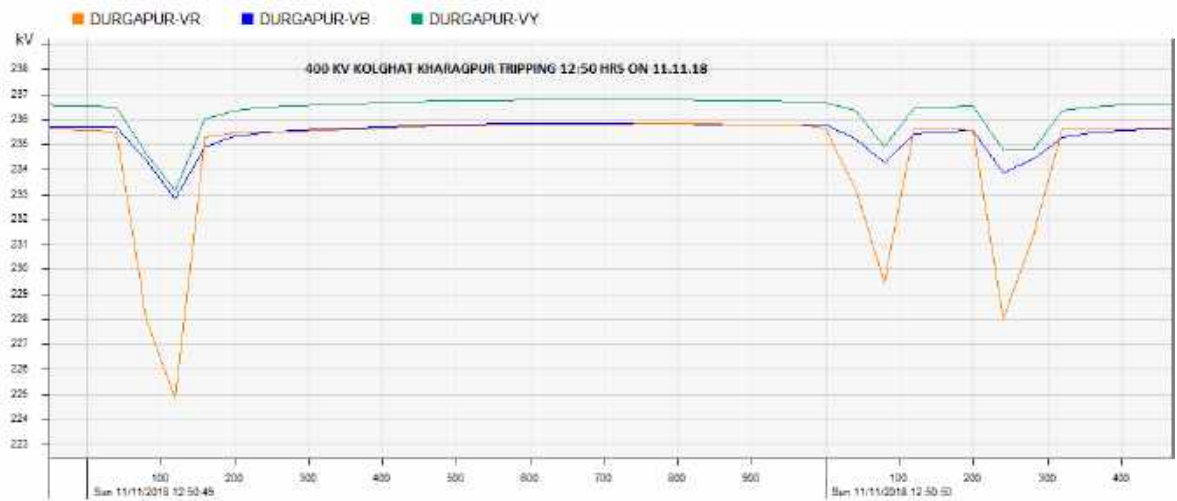
**Points of concern:**

1. DR installed at Kharagpur end is not time synchronised
2. Dead time at KTPP end (generating station) was 500 ms while dead time at Kharagpur end was more than 1000 ms. WBPDCCL has informed they have increased dead time at KTPP end to 900 ms after the incident. Kharagpur end dead time may be co-ordinated with KTPP end dead time.
3. During first fault, A/R attempt taken at Kharagpur end even after receiving of DT signal and enabling of A/R LOCK OUT. WBSETCL may check the reason.
4. During second fault, DT received at Kharagpur end within 40 ms of the fault. At KTPP end, counter increased for CMD – I & II for channel I but no counter increased for CMD – I & II for channel I. WBPDCCL/WBSETCL may share the reason. After receiving of DT, three poles opened at Kharagpur end. At KTPP end, three pole opened after unsuccessful reclose attempt.
5. Prior to the event unbalance has been observed in current recorded by DR installed at KTPP and KGP end. Three phase currents recorded at KGP and KTPP end were 217A, 173 A, 167 A and 73 A, 183 A, 174 A respectively.

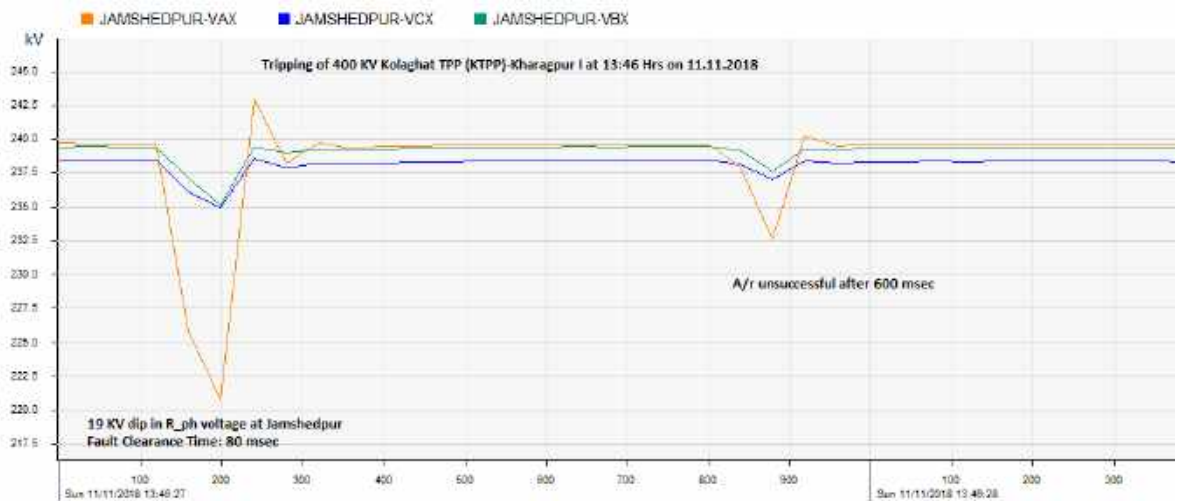
**Enclosure:**

1. PMU observation during both the fault:
2. DR output recorded at KTPP end during first fault
3. DR output recorded at Kharagpur end during first fault
4. DR output recorded at KTPP end during second fault
5. DR output recorded at Kharagpur end during second fault

## 1. PMU observation during both the events:



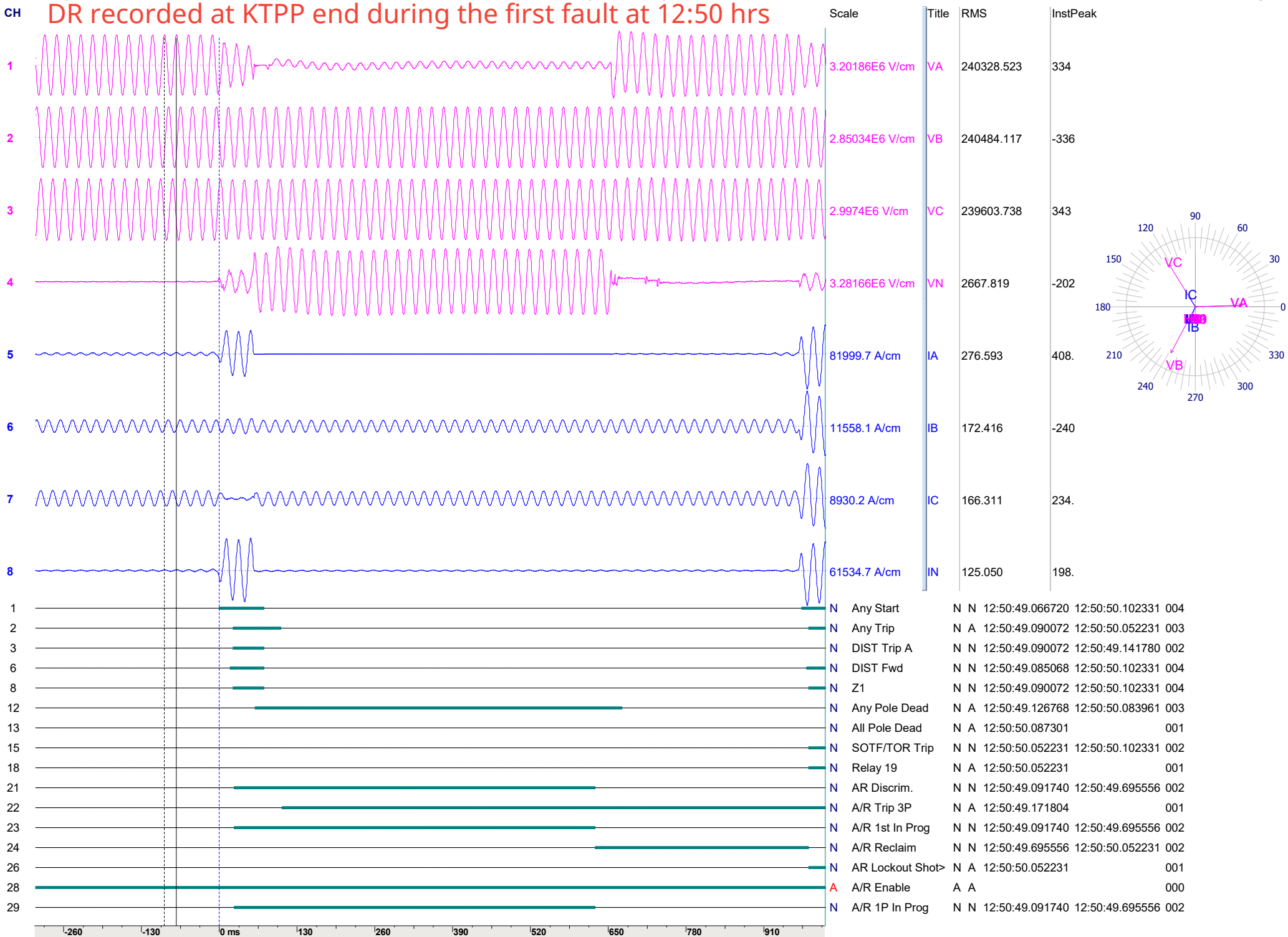
PMU observation at Durgapur end for the fault at 12:50 hrs



PMU observation at Durgapur end for the fault at 13:46 hrs



# DR recorded at KTPP end during the first fault at 12:50 hrs



## \* File Information::

```

* -----
      Station: KTPS
      Device: 4
      File Name: C:\USERS\PG\DOWNLOADS\11 KTPP KGP\KHARAGPUR DR ON 11.11.2018\DR FILES\Sunday 11 November 2018 12.50.49.000.DAT
      File Size: 248065 Bytes
      Prefault Time: 11/11/2018 12:50:48.583000
      Fault Time: 11/11/2018 12:50:49.067000
      Save Time: 11-16-2018 04:09:16
      Process Time: 11-17-2018 11:46:30
      Start Date && Time: 11/11/2018 12:50:48.583000
      End Date && Time: 11/11/2018 12:50:50.103166
      File Duration: 1 Sec(s) - 520 Mils(s) - 166 Mics(s)
      Sampling Frequency: 1199.040767, 834.000 Microsecond Rate
      Line Frequency: 50.000000

```

## \* Maximum/Minimum Analog Summary:

```

* -----
> Max-Inst      Min-Inst      Max-RMS      Min-RMS      One-Bit      Inst-Diff      RMS-Diff      pUnits      Description
380273.200      -368068.700      310287.063      6901.528      31.7000      12204.500      303385.534      V            1-VA
338524.300      -338207.300      324227.594      198842.844      31.7000      317.000        125384.750      V            2-VB
355991.000      -353962.200      246761.688      52182.629      31.7000      2028.800       194579.059      V            3-VC
389751.500      -378878.400      261455.906      2029.790      31.7000      10873.100      259426.116      V            4-VN
 8109.232       -9738.812        6296.198         9.617         2.7620      1629.580        6286.580      A            5-IA
 1372.714       -1157.278        902.575        119.660        2.7620      215.436         782.916      A            6-IB
 1060.608       -903.174         691.019         20.453        2.7620      157.434         670.566      A            7-IC
 6775.186       -7308.252        4740.139         44.192        2.7620      533.066        4695.947      A            8-IN

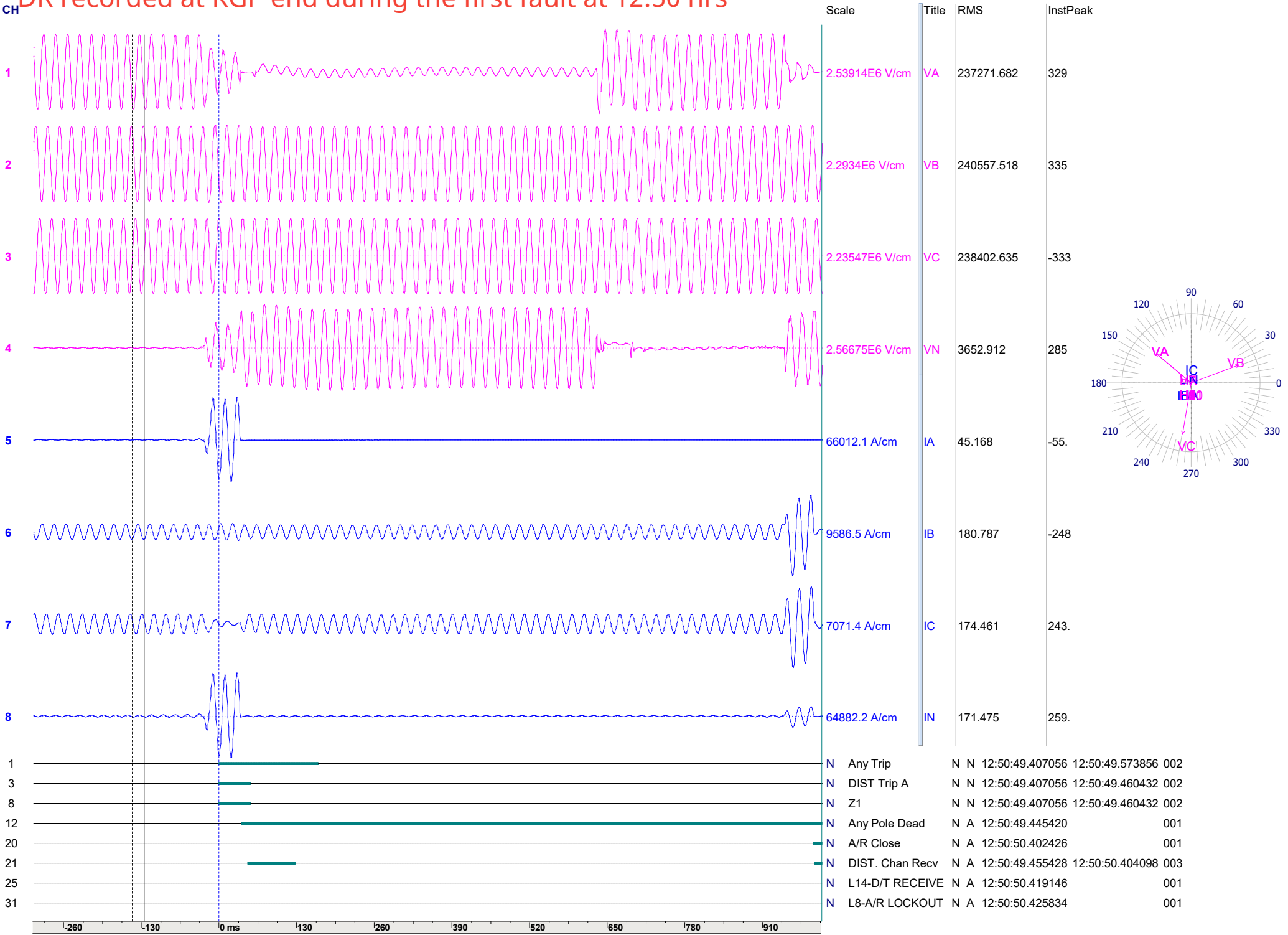
```

## \* Events/Sensors Activity Summary:

```

* -----
>Fst  Lst  Fst-Change      Lst-Change      Changes      Description
N      N      12:50:49.066720    12:50:50.102331    004          1-Any Start
N      N      12:50:49.090072    12:50:50.052231    003          2-Any Trip
N      N      12:50:49.090072    12:50:49.141780    002          3-DIST Trip A
N      N      12:50:49.085068    12:50:50.102331    004          6-DIST Fwd
N      N      12:50:49.090072    12:50:50.102331    004          8-Z1
N      N      12:50:49.126768    12:50:50.083961    003          12-Any Pole Dead
N      N      12:50:50.087301    xx:xx:xx:xxxxxx    001          13-All Pole Dead
N      N      12:50:50.052231    12:50:50.102331    002          15-SOTF/TOR Trip
N      N      12:50:50.052231    xx:xx:xx:xxxxxx    001          18-Relay 19
N      N      12:50:49.091740    12:50:49.695556    002          21-AR Discrim.
N      N      12:50:49.171804    xx:xx:xx:xxxxxx    001          22-A/R Trip 3P
N      N      12:50:49.091740    12:50:49.695556    002          23-A/R 1st In Prog
N      N      12:50:49.695556    12:50:50.052231    002          24-A/R Reclaim
N      N      12:50:50.052231    xx:xx:xx:xxxxxx    001          26-AR Lockout Shot>
A      A      xx:xx:xx:xxxxxx    xx:xx:xx:xxxxxx    000          28-A/R Enable
N      N      12:50:49.091740    12:50:49.695556    002          29-A/R 1P In Prog
N      N      12:50:50.075611    xx:xx:xx:xxxxxx    001          30-BAR
A      A      xx:xx:xx:xxxxxx    xx:xx:xx:xxxxxx    000          31-SPAR Enable
N      N      12:50:49.695556    12:50:49.795396    002          32-A/R Close

```



## \* File Information::

\* -----

Station: AREVA  
 Device: 1  
 File Name: C:\USERS\PG\DOWNLOADS\11 KTPP KGP\KTPP-1\Sunday 11 November 2018 12.50.49.000.DAT  
 File Size: 248065 Bytes  
 Prefault Time: 11/11/2018 12:50:48.920000  
 Fault Time: 11/11/2018 12:50:49.407000  
 Save Time: 11-16-2018 04:09:10  
 Process Time: 11-17-2018 11:49:21  
 Start Date && Time: 11/11/2018 12:50:48.920000  
 End Date && Time: 11/11/2018 12:50:50.440046  
 File Duration: 1 Sec(s) - 520 Mils(s) - 46 Mics(s)  
 Sampling Frequency: 1199.040767, 834.000 Microsecond Rate  
 Line Frequency: 50.000000

## \* Maximum/Minimum Analog Summary:

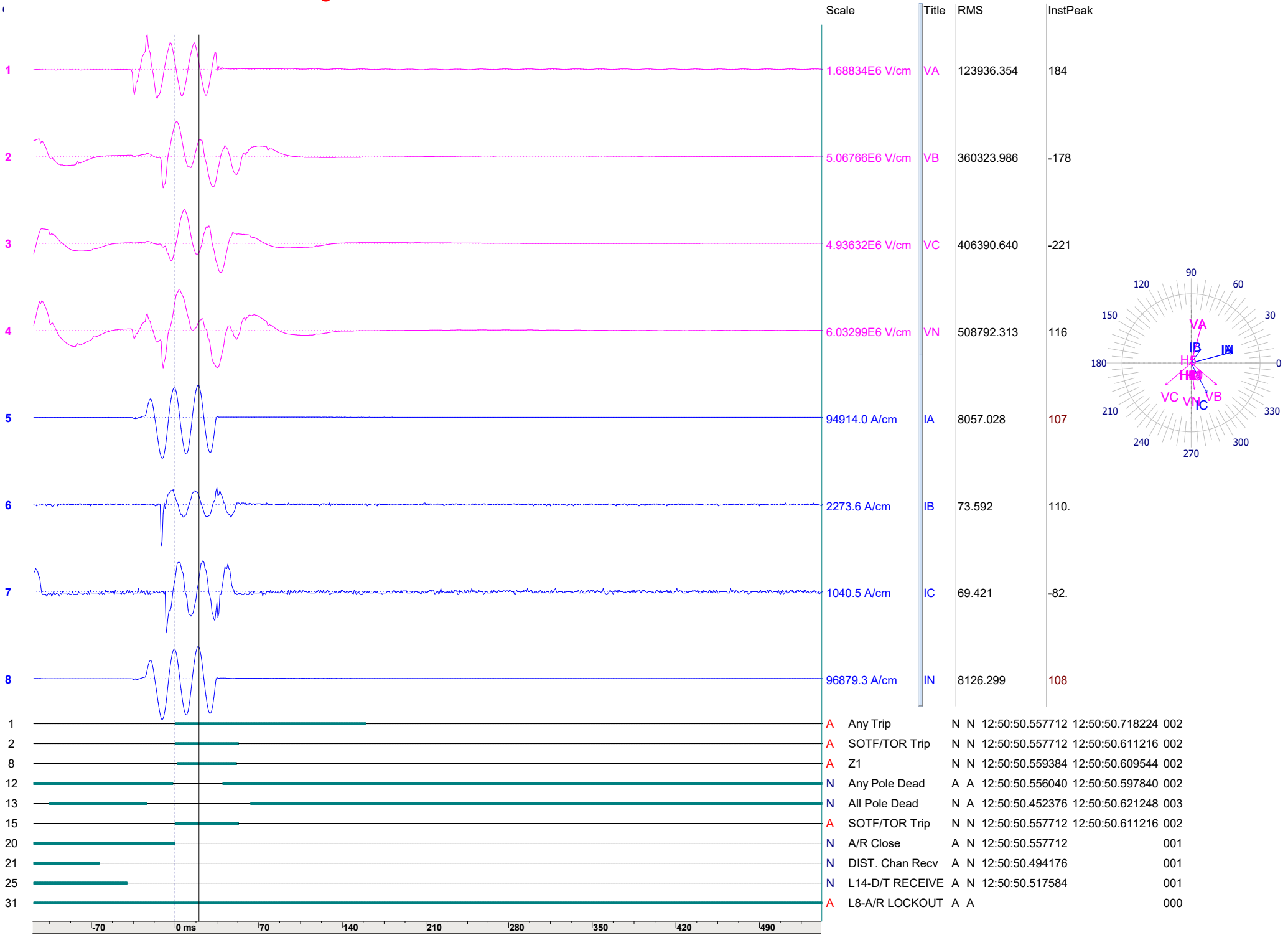
\* -----

> Max-Inst	Min-Inst	Max-RMS	Min-RMS	One-Bit	Inst-Diff	RMS-Diff	pUnits	Description
384869.700	-371460.600	275897.250	3505.474	31.7000	13409.100	272391.776	V	1-VA
347622.200	-344103.500	335766.406	229608.813	31.7000	3518.700	106157.594	V	2-VB
338841.300	-337890.300	245677.547	129212.227	31.7000	951.000	116465.320	V	3-VC
389054.100	-377578.700	260064.594	1680.100	31.7000	11475.400	258384.494	V	4-VN
10005.775	-9646.650	7020.703	10.925	5.5250	359.125	7009.778	A	5-IA
1221.025	-1453.075	955.649	57.597	5.5250	232.050	898.053	A	6-IB
928.200	-1071.850	710.100	27.417	5.5250	143.650	682.683	A	7-IC
9834.500	-9464.325	6884.795	38.675	5.5250	370.175	6846.120	A	8-IN

## \* Events/Sensors Activity Summary:

\* -----

>Fst	Lst	Fst-Change	Lst-Change	Changes	Description
N	N	12:50:49.407056	12:50:49.573856	002	1-Any Trip
N	N	12:50:49.407056	12:50:49.460432	002	3-DIST Trip A
N	N	12:50:49.407056	12:50:49.460432	002	8-Z1
N	N	12:50:49.445420	xx:xx:xx.xxxxxx	001	12-Any Pole Dead
N	N	12:50:50.402426	xx:xx:xx.xxxxxx	001	20-A/R Close
N	N	12:50:49.455428	12:50:50.404098	003	21-DIST. Chan Recv
N	N	12:50:50.419146	xx:xx:xx.xxxxxx	001	25-L14-D/T RECEIVE
N	N	12:50:50.425834	xx:xx:xx.xxxxxx	001	31-L8-A/R LOCKOUT



## \* File Information::

```

* -----
      Station: AREVA
      Device: 1
      File Name: C:\USERS\PG\DOWNLOADS\11 KTPP KGP\KTPP-1\Sunday 11 November 2018 12.50.50.000.DAT
      File Size: 244801 Bytes
      Prefault Time: 11/11/2018 12:50:50.439000
      Fault Time: 11/11/2018 12:50:50.558000
      Save Time: 11-16-2018 04:09:14
      Process Time: 11-17-2018 12:09:19
      Start Date && Time: 11/11/2018 12:50:50.439000
      End Date && Time: 11/11/2018 12:50:51.942964
      File Duration: 1 Sec(s) - 503 Mils(s) - 964 Mics(s)
      Sampling Frequency: 1196.172249, 836.000 Microsecond Rate
      Line Frequency: 50.000000

```

## \* Maximum/Minimum Analog Summary:

```

* -----
> Max-Inst      Min-Inst      Max-RMS      Min-RMS      One-Bit      Inst-Diff      RMS-Diff      pUnits      Description
242061.200      -204243.100      137584.203      1364.445      31.7000      37818.100      136219.758      V            1-VA
726564.000      -657426.300      480110.313      523.936      31.7000      69137.700      479586.377      V            2-VB
707734.200      -606484.400      426394.875      412.989      31.7000      101249.800      425981.886      V            3-VC
864966.200      -784955.400      596982.063      1583.477      31.7000      80010.800      595398.586      V            4-VN
10729.550       -13608.075       8623.021        5.525        5.5250      2878.525      8617.496      A            5-IA
132.600         -325.975        113.453         0.000        5.5250      193.375      113.453      A            6-IB
110.500         -149.175        76.290          2.522        5.5250      38.675      73.769      A            7-IC
10840.050       -13889.850      8708.271        4.788        5.5250      3049.800      8703.483      A            8-IN

```

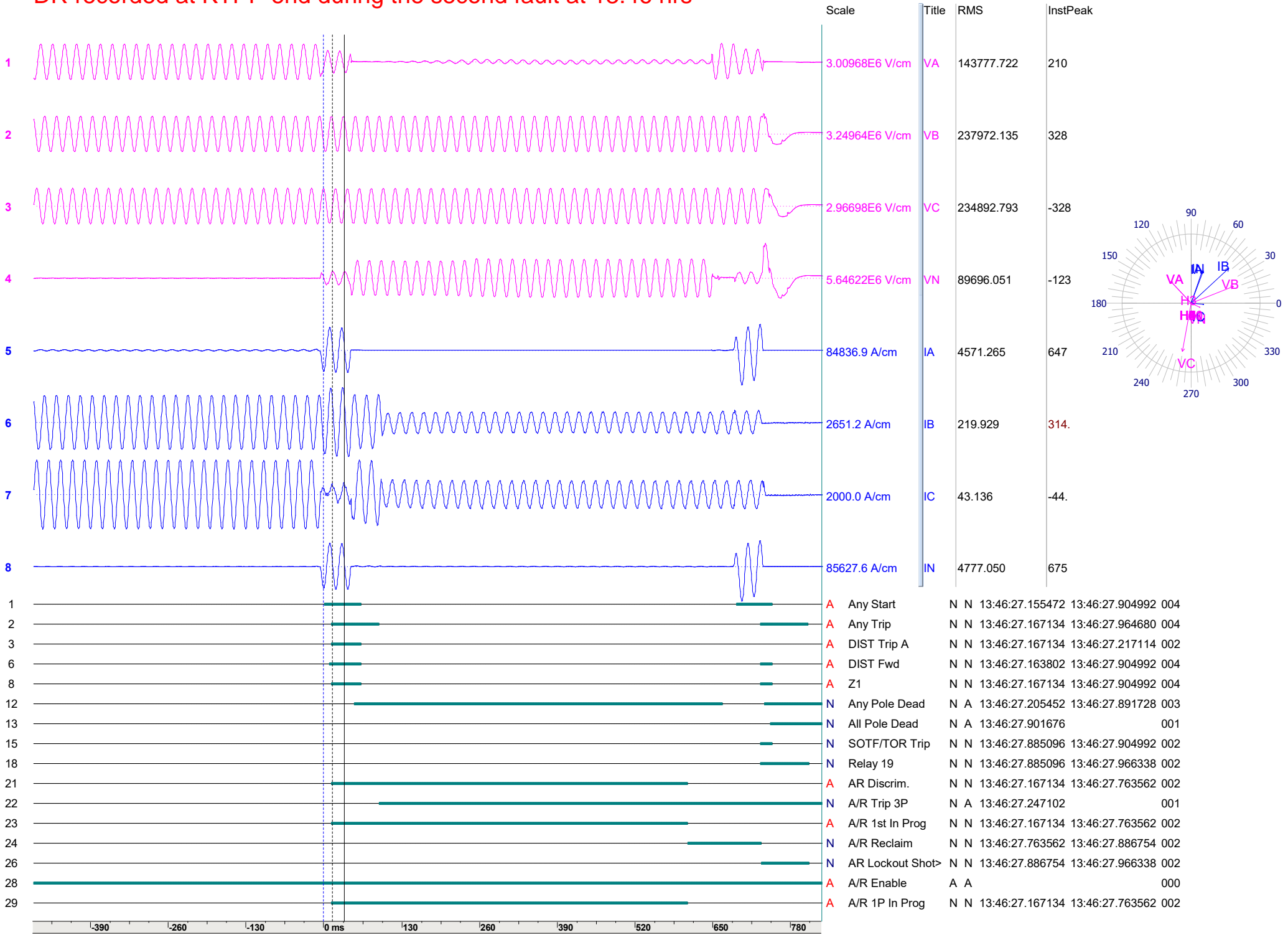
## \* Events/Sensors Activity Summary:

```

* -----
>Fst  Lst  Fst-Change      Lst-Change      Changes      Description
N      N      12:50:50.557712      12:50:50.718224      002          1-Any Trip
N      N      12:50:50.557712      12:50:50.611216      002          2-SOTF/TOR Trip
N      N      12:50:50.559384      12:50:50.609544      002          8-Z1
A      A      12:50:50.556040      12:50:50.597840      002          12-Any Pole Dead
N      N      12:50:50.452376      12:50:50.621248      003          13-All Pole Dead
N      N      12:50:50.557712      12:50:50.611216      002          15-SOTF/TOR Trip
A      A      12:50:50.557712      xx:xx:xx.xxxxxx      001          20-A/R Close
A      A      12:50:50.494176      xx:xx:xx.xxxxxx      001          21-DIST. Chan Recv
A      A      12:50:50.517584      xx:xx:xx.xxxxxx      001          25-L14-D/T RECEIVE
A      A      xx:xx:xx.xxxxxx      xx:xx:xx.xxxxxx      000          31-L8-A/R LOCKOUT

```

DR recorded at KTPP end during the second fault at 13:46 hrs



## \* File Information::

\* -----

```

      Station: KTPS
      Device: 4
      File Name: C:\USERS\PG\DOWNLOADS\11 KTPP KGP\KHARAGPUR DR ON 11.11.2018\DR FILES\Sunday 11 November 2018 13.46.27.000.DAT
      File Size: 248065 Bytes
      Prefault Time: 11/11/2018 13:46:26.669000
      Fault Time: 11/11/2018 13:46:27.155000
      Save Time: 11-16-2018 04:09:16
      Process Time: 11-17-2018 12:17:17
      Start Date && Time: 11/11/2018 13:46:26.669000
      End Date && Time: 11/11/2018 13:46:28.186023
      File Duration: 1 Sec(s) - 517 Mils(s) - 23 Mics(s)
      Sampling Frequency: 1200.480192, 833.000 Microsecond Rate
      Line Frequency: 50.000000

```

## \* Maximum/Minimum Analog Summary:

\* -----

> Max-Inst	Min-Inst	Max-RMS	Min-RMS	One-Bit	Inst-Diff	RMS-Diff	pUnits	Description
357449.200	-338112.200	315965.594	1276.909	31.7000	19337.000	314688.685	V	1-VA
385947.500	-340679.900	319757.906	1653.401	31.7000	45267.600	318104.505	V	2-VB
351331.100	-352377.200	269034.063	1011.901	31.7000	1046.100	268022.162	V	3-VC
670581.800	-380400.000	390594.688	253.600	31.7000	290181.800	390341.087	V	4-VN
7526.450	-10075.776	6297.665	7.929	2.7620	2549.326	6289.736	A	5-IA
314.868	-306.582	223.722	1.120	2.7620	8.286	222.602	A	6-IB
237.532	-237.532	172.706	1.782	2.7620	0.000	170.923	A	7-IC
7620.358	-10169.684	6363.267	3.654	2.7620	2549.326	6359.613	A	8-IN

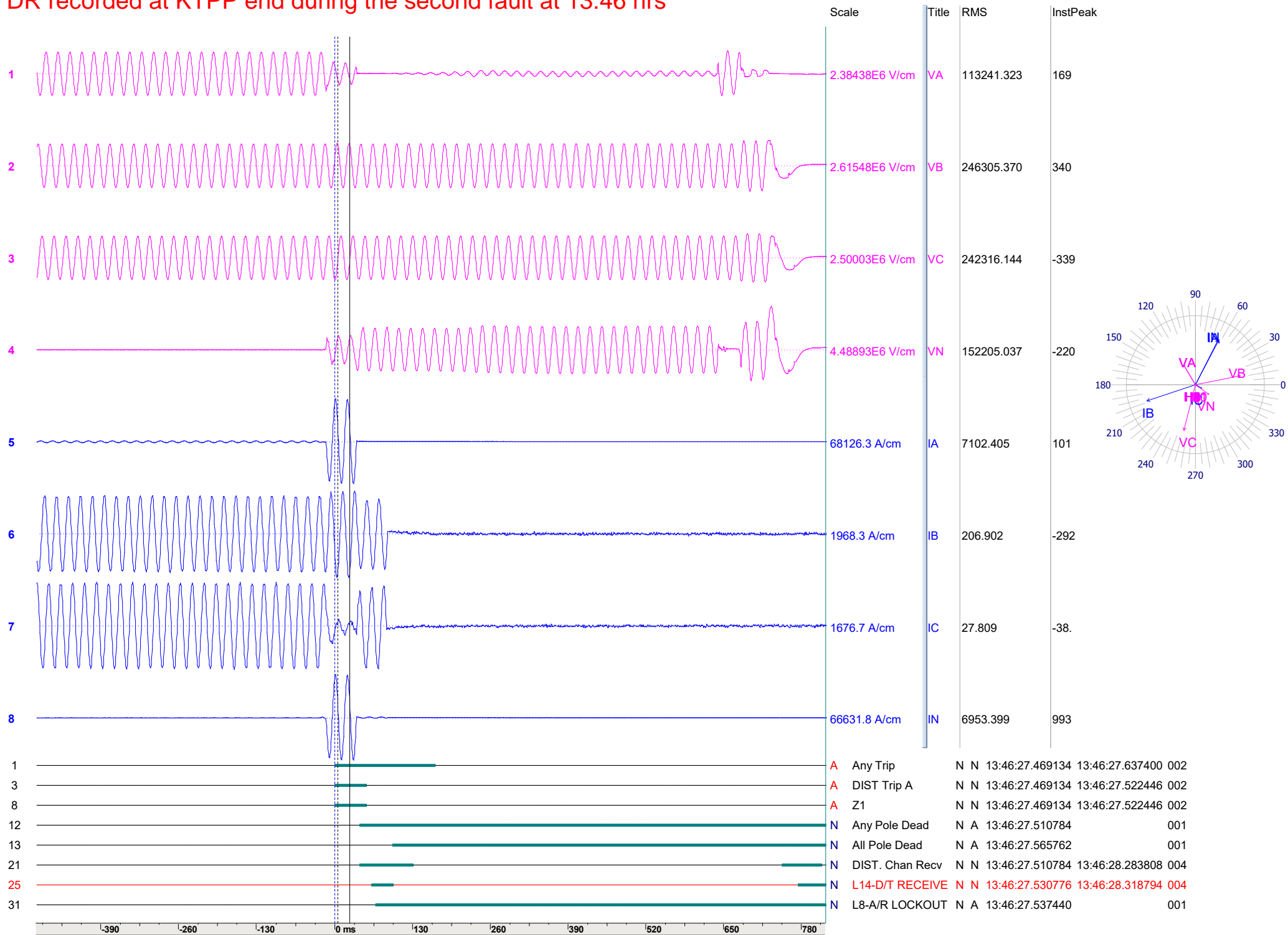
## \* Events/Sensors Activity Summary:

\* -----

>Fst	Lst	Fst-Change	Lst-Change	Changes	Description
N	N	13:46:27.155472	13:46:27.904992	004	1-Any Start
N	N	13:46:27.167134	13:46:27.964680	004	2-Any Trip
N	N	13:46:27.167134	13:46:27.217114	002	3-DIST Trip A
N	N	13:46:27.163802	13:46:27.904992	004	6-DIST Fwd
N	N	13:46:27.167134	13:46:27.904992	004	8-Z1
N	N	13:46:27.205452	13:46:27.891728	003	12-Any Pole Dead
N	N	13:46:27.901676	xx:xx:xx.xxxxxx	001	13-All Pole Dead
N	N	13:46:27.885096	13:46:27.904992	002	15-SOTF/TOR Trip
N	N	13:46:27.885096	13:46:27.966338	002	18-Relay 19
N	N	13:46:27.167134	13:46:27.763562	002	21-AR Discrim.
N	N	13:46:27.247102	xx:xx:xx.xxxxxx	001	22-A/R Trip 3P
N	N	13:46:27.167134	13:46:27.763562	002	23-A/R 1st In Prog
N	N	13:46:27.763562	13:46:27.886754	002	24-A/R Reclaim
N	N	13:46:27.886754	13:46:27.966338	002	26-AR Lockout Shot>
A	A	xx:xx:xx.xxxxxx	xx:xx:xx.xxxxxx	000	28-A/R Enable
N	N	13:46:27.167134	13:46:27.763562	002	29-A/R 1P In Prog
N	N	13:46:27.881780	xx:xx:xx.xxxxxx	001	30-BAR
A	A	xx:xx:xx.xxxxxx	xx:xx:xx.xxxxxx	000	31-SPAR Enable
N	N	13:46:27.763562	13:46:27.863522	002	32-A/R Close



## DR recorded at KTPP end during the second fault at 13:46 hrs



## \* File Information::

\* -----

Station: AREVA  
 Device: 1  
 File Name: C:\USERS\PG\DOWNLOADS\11 KTPP KGP\KTPP-1\Sunday 11 November 2018 13.46.27.000.DAT  
 File Size: 248065 Bytes  
 Prefault Time: 11/11/2018 13:46:26.971000  
 Fault Time: 11/11/2018 13:46:27.469000  
 Save Time: 11-16-2018 04:09:16  
 Process Time: 11-17-2018 12:18:24  
 Start Date && Time: 11/11/2018 13:46:26.971000  
 End Date && Time: 11/11/2018 13:46:28.489559  
 File Duration: 1 Sec(s) - 518 Mils(s) - 559 Mics(s)  
 Sampling Frequency: 1200.480192, 833.000 Microsecond Rate  
 Line Frequency: 50.000000

## \* Maximum/Minimum Analog Summary:

\* -----

> Max-Inst	Min-Inst	Max-RMS	Min-RMS	One-Bit	Inst-Diff	RMS-Diff	pUnits	Description
361411.700	-338397.500	244624.625	1206.697	31.7000	23014.200	243417.928	V	1-VA
393301.900	-396440.200	321122.938	1390.964	31.7000	3138.300	319731.973	V	2-VB
372728.600	-378941.800	329394.688	618.682	31.7000	6213.200	328776.006	V	3-VC
680408.800	-485105.100	471319.688	1032.223	31.7000	195303.700	470287.464	V	4-VN
10326.225	-10022.350	7193.394	13.049	5.5250	303.875	7180.344	A	5-IA
292.825	-298.350	222.043	3.185	5.5250	5.525	218.859	A	6-IB
254.150	-254.150	248.625	2.983	5.5250	0.000	245.642	A	7-IC
10099.700	-9806.875	7046.673	3.907	5.5250	292.825	7042.766	A	8-IN

## \* Events/Sensors Activity Summary:

\* -----

>Fst	Lst	Fst-Change	Lst-Change	Changes	Description
N	N	13:46:27.469134	13:46:27.637400	002	1-Any Trip
N	N	13:46:27.469134	13:46:27.522446	002	3-DIST Trip A
N	N	13:46:27.469134	13:46:27.522446	002	8-Z1
N	N	13:46:27.510784	xx:xx:xx.xxxxxx	001	12-Any Pole Dead
N	N	13:46:27.565762	xx:xx:xx.xxxxxx	001	13-All Pole Dead
N	N	13:46:27.510784	13:46:28.283808	004	21-DIST. Chan Recv
N	N	13:46:27.530776	13:46:28.318794	004	25-L14-D/T RECEIVE
N	N	13:46:27.537440	xx:xx:xx.xxxxxx	001	31-L8-A/R LOCKOUT

## List of Intra Regional line tripping in the month of November 2018 where violation of protection standard has been observed

LINE NAME	TRIP DATE	TRIP TIME	RESTORATION DATE	RESTORATION TIME	Relay Indication LOCAL END	Relay Indication REMOTE END	Reason	Fault Clearance time in msec	DR/EL RECEIVED FROM LOCAL END	DR/EL RECEIVED FROM REMOTE END	Remarks	PCC comments
<b>Miscellaneous: High Fault clearing time, Tripping on DT, No Fault observed in PMU</b>												
<a href="#">315MVA ICT-1 AT BIHARSARIFF</a>	02-11-2018	6:06	02-11-2018	15:32	Reason not furnished		Reason not furnished		No	No		Mal-operation of the bucholz relay, Remedial action: Canoppy provided over bucholz and sealent applied
<a href="#">400KV BIHARSARIFF(PG)-PUSPAULLI</a>	17-11-2018	6:10	17-11-2018	7:42	Spurious trip with B-ph pole (main bay at B'SRF)stuck	Reason not furnished			No	No		Failure of DC-DC converter of teed protection. Remedial action: DC - DC converter replaced.
<a href="#">400KV JEERAT-BAKRESWAR-SC</a>	22-11-2018	11:02	22-11-2018	11:40	Y ph, Z-2, Dist:- 162 Km	Y-ph, Z-1, A/R L/O,Dist:-4.3 km, FA:- 4.5 KA.	Y-N Fault	1000 msec	No	No		line was in TBC, and AR is kept OFF in TBC. No AR operation was there. The CB tripped single pole and then tripped through pole discrepancy relay.
220KV BUDHIPADAR-KORBA-III	23-11-2018	16:29	23-11-2018	19:06	DT RECEIVED AT KORBA		DT RECEIVED AT KORBA		No	No		Communication related work is going on in OPTCL, will take 3-4months to complete the project.
<a href="#">220KV BINAGURI-NIP-I</a>	29-11-2018	15:14	29-11-2018	15:42	spurious trip		spurious trip		No	No		At NIP end testing work was going on.
<b>Autoreclose related issues</b>												
400KV NEW PPSP-ARAMBAGH-I	01-11-2018	12:07	01-11-2018	12:20	Y PHASE Z1, 128 KM, 2.48 KA		Y-N Fault		Yes	No	No Auto-reclose operation	Persisting fault
<a href="#">220KV PANDIABILI-SAMANGARA-II</a>	04-11-2018	22:41	04-11-2018	23:00	B-N,3.6 KA,52.3 KM		B-N Fault	<100 msec	No	No	No Auto-reclose operation	Communication related work is going on in OPTCL, will take 3-4months to complete the project.
<a href="#">400KV KHARAGPUR-KOLAGHAT-I</a>	11-11-2018	12:50	11-11-2018	13:02	R-N,Z-1,24.9 KM	R-N,5.26 KA Z-1,40 KM	R-N Fault	<100 msec	Yes	Yes	A/R timing issue	Timing issue solved
<a href="#">400KV KHARAGPUR-KOLAGHAT-I</a>	11-11-2018	13:46	11-11-2018	17:30	R-N FAULT		R-N Fault	<100 msec	Yes	Yes	A/R timing issue	Timing issue solved
<a href="#">220KV DARBHANGA(DMTCL)-LAUKAHLI</a>	12-11-2018	3:52	12-11-2018	4:30	R-N, 2.9 KA, 50 km		R-N Fault	<100 msec	No	No	No Auto-reclose operation	A/R not available
<a href="#">400KV KOLAGHAT-NEW CHANDITALA-SC</a>	23-11-2018	12:21	23-11-2018	12:51	'B' PHASE, Z1, DIST: 30 KM,	D/T RECEIVED.	B-N Fault	<100 msec	Yes	Yes	No Auto-reclose operation	WRSETCL to confirm whether any successful A/R occurred or not prior to this tripping as line tripped on TOR/SOTF
<a href="#">400KV DARBHANGA (DMTCL)-MUJSAFFARPUR-II</a>	27-11-2018	12:36	27-11-2018	12:58	Z2 CARRIER RECEIVED AT DMTCL	A/R SUCCESSFUL, B-N 6.2 KA,24 KM	B-N fault	<100 msec	Yes	Yes	No Auto-reclose operation	Problem at Darbhanga end solved
<a href="#">220KV JODA-RAMCHANDRAPUR-SC</a>	28-11-2018	5:53	28-11-2018	09:22	B-N, I- 3.249 kA, 28 km	Z-1, B-N, I- 1.923 KA, 102 KM	B-N Fault	<100 msec	No	No	No Auto-reclose operation	Communication related work is going on in OPTCL, will take 3-4months to complete the project.
<a href="#">220KV TENUGHAT-BIHARSARIFF-SC</a>	29-11-2018	19:04	30-11-2018	1:21	Y-n, z3, 189.8 km, 1.251 kA	Y-n, 21.68 kA..charging attempt fail at 19:58 hrs	Y-N Fault	<100 msec	Yes	Yes	No Auto-reclose operation	A/R not available

SI No.	Name of the incidence	PCC Recommendation	Latest status
<b>73<sup>rd</sup> PCC Meeting</b>			
1.	Tripping of 400 kV Rangpo-Binaguri-I and subsequent operation of SPS-I on 01.10.18 at 15:41 hrs.	PCC advised powergrid to configure In>1 pick up in DR output at Rangpo and Binaguri end.	Powergrid informed that DR output has been configured as per PCC recommendation.
2.	Total Power failure at 220 kV Hatia (JUSNL) substation on 03.10.18 at 17:23 hrs and on 04.10.18 at 00:26 hrs	PCC advised JUSNL to test the Bus bar and LBB protection, PLCC and configuration of DT signal in the relay at Hatia end.	JUSNL informed that tender has been awarded to local agency for testing of PLCC & protection system. The testing will be completed within 10 days. They have configured the DT signal at Hatia end.
3.	Total Power failure at Madhepura(BSPTCL) S/s on 20.10.18 at 09:48 hrs.	PCC advised BSPTCL to check for any trippings in downstream network.	
4.	Total Power failure at TLDP-III S/s on 27.10.18 at 10:24 hrs.	PCC advised WBSETCL and NHPC to review the DEF settings for proper protection coordination between the transmission lines and generating station.	PCC advised PRDC to coordinate the settings with reference to GT of TLDP side.
5.	Disturbance at 765 kV Jharsuguda S/s on 31.10.18 at 23:52 hrs.	PCC advised Powergrid to configure all bay channels in output of Busbar DR for Bus-II at Jharsuguda substation.	Powergrid informed that DR has been configured as per PCC recommendation.
<b>72<sup>nd</sup> PCC Meeting</b>			
6.	HVDC TFR triggering standardization and reporting requirements.	PCC advised POWERGRID to submit TFR triggering criteria and TFR signal list for all HVDC station of Eastern region to ERLDC	
7.	Repeated tripping of 220 kV Jorethang-New Melli D/C and Tashiding-N. Melli S/C	PCC advised DANS energy to review the relay settings for both the lines.	
8.	Disturbance at Tenughat (TVNL)S/s on 27.09.18 at 13:14	PCC advised TVNL to change the timer settings of O/C and E/F relay at	JUSNL informed that they have changes

	hrs.	TTPS end as per IEC curve in order to have a proper coordination among the stations.	the settings at PTPS end.
<b>71<sup>st</sup> PCC Meeting</b>			
9.	Disturbance at 220/132 kV Motipur(BSPTCL) S/s on 15.08.18 at 13:00 hrs.	PCC advised BSPTCL to check the disturbance recorders of all the lines in 220 kV Motipur S/s and communicate the findings to ERPC/ERLDC at the earliest.	
10.	Disturbance at 400 kV Farakka S/s on 19.08.18 at 15:26 hrs.	PCC advised NTPC to replace/divert Micom P437 relay to avoid unwanted tripping of such important transmission line. PCC also advised to check the reason for not sending carrier from Farakka to Kahalgaon and non-operation of Autorecloser.	NTPC informed that the relay has been replaced.
11.	Disturbance at 400 kV MPL S/s on 19.08.18 at 15:47 hrs.	PCC advised Powergrid to share the procedure/directives regarding implementation of the POP scheme with ERPC/ERLDC.	Powergrid submitted the procedure to ERLDC.
<b>68<sup>th</sup> PCC Meeting</b>			
12.	Issues related with Generation Backing down during Talcher-Kolar SPS operation on 16th May 2018.	<p>PCC advised Powergrid to explore for inclusion of pole block with ground return mode signal in the SPS logic.</p> <p>PCC advised NTPC, GMR and JITPL to ensure the generation reduction as per the SPS logic.</p> <p>PCC advised NTPC also to explore for inclusion of pole block with ground return mode signal in the SPS logic.</p>	Regarding inclusion of pole block with ground return mode signal in the SPS logic, Powergrid informed that the issue was referred to OEM.
13.	Issue of Protection Coordination Observed during Blackout of Tala on 23rd May 2018.	PCC advised Bhutan representatives to submit a detailed report on the above disturbance to ERPC and ERLDC at the earliest.	
14.	Disturbance at 400/220 kV Biharshariff S/s on 28-03-2018 at 18:43 hrs and 19-03-2018 at 02:02 hrs.	<p>PCC advised BSPTCL and Powergrid to ensure proper relay coordination between 400kV and 220 kV system including ICTs at Biharshariff S/s.</p> <p>71<sup>st</sup> PCC advised BSPTCL to</p>	BSPTCL informed that they have implemented the revised settings.

		configure the zone-2 timings as 250-300 msec for the lines which do not have PLCC operational so that a proper relay coordination will be ensured between ICTs and the lines.	
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**Creation and maintaining a Web based Protection Database and Desktop based Protection setting calculation tool for Eastern Regional Grid**

**Activities  
1<sup>st</sup> Year of SUPPORT  
PERIOD**

# PROJECT SUPPORT

1

- SOFTWARE RELATED SUPPORT

2

- SERVICE RELATED SUPPORT



# VALUE ADDITION IN SOFTWARE

NEW MODULE FOR TRIPPING INCIDENT IN PDMS

DATABASE MAINTAINANCE

ADVANCEMENT OF NAVIGATION

MiP-PSCT VERSION UPGRADE

# TRIPPING INCIDENT PORTAL

*“Tripping Incident Reporting”* portal redesigned for better record keeping based on the feedback of SRLDC/ERLDC

24 hrs. time frame management for monitoring committee maintained in this portal

Centralized data for all Tripping Incidents including DR/EL files for post mortem analysis

# TRIPPING INCIDENT REPORTING PORTAL

	Title	Tripping Date & Time	Element Type	Element Name	From Owner	From Station	FIR(F)	DR(F)	EL(F)	To Owner	To Station	FIR(T)	DR(T)	EL(T)	Last Updated	Status
	220 KV-KASBA 220KV-220 KV-Alipurduar 220 kv-1	04-12-2018 05:05:00	Transmission Line	220 KV-KASBA 220KV-220 KV-Alipurduar 220 kv-1	WBSETCL	220 KV-KASBA 220KV	✓	✗		WBSETCL	220 KV-Alipurduar 220 kv	✓	✗	✗	17-12-2018 13:12:00	OPEN
	132 KV-JAHANABAD 132KV--1	15-11-2018 12:00:00	Bus	132 KV-JAHANABAD 132KV--1	BSPTCL	132 KV-JAHANABAD 132KV	✗	✗	✗						15-11-2018 12:05:34	OPEN
	33 KV-MASAURAHI 132KV--1	14-11-2018 16:06:00	Shunt Reactor	33 KV-MASAURAHI 132KV--1	BSPTCL	33 KV-MASAURAHI 132KV	✗	✗							14-11-2018 16:14:1	OPEN

: File/Report not uploaded 
 : FIR uploaded after 24Hrs 
 : FIR uploaded within 24Hrs 
 : File uploaded after 24Hrs 
 : File uploaded within 24Hrs

# ROUTINE DATABASE MAINTAINANCE

DATABASE HEALTH CHECK UP

TEMPORARY FILE/CACHE CLEARING

PDMS LINK CHECK UP

TEST LINK CREATION FOR ROUGH WORK AND  
HANDS ON PRACTICE

# ADVANCEMENT OF NAVIGATION FOR RELAY

Relay navigation is done newly from CT/PT/CVT page

This new facility will take user to the specific relay associated with the instrument directly

Core No.	Tap Index	Tap1	Tap2	Secondary (A)	Vk (V)	I <sub>mag</sub> (A)	R <sub>sec</sub> (ohms)	X <sub>sec</sub> (ohms)	Class Type	%Error	Accuracy Class	Accuracy Limit	CT Burden (VA)	Burden pf	Start Point	Information	Associate/Dissociate	Delete
1	Tap2 ▼	800	400	1	700.0	60.0	2.25	100.0	Protection ▼	5	P5	5	0	1	Towards the element ▼	DIST	Relay	✕
2	Tap2 ▼	800	400	1	700.0	60.0	2.25	100.0	Protection ▼	5	P5	5	0	1	Towards the element ▼	OC & EF	Relay	✕
3	Tap2 ▼	800	400	1	0.0	0.0	0.0	100.0	Metering ▼	5	0.25	5	20	1	Towards the element ▼	Metering	Relay	✕
4	Tap2 ▼	800	400	1	0.0	0.0	0.0	100.0	Metering ▼	5	0.25	5	20	1	Towards the element ▼	Metering	Relay	✕

# MiP-PSCT VERSION UPGRADE

MiP-PSCT VER-  
9.2

MiP-PSCT VER-  
10.0

F/N

DISTANCE RELAY CHARACTERISTICS AS PER VENDOR SPEC.

PROTECTION SIMULATION FOR GEN. PROTECTION

# SERVICE RELATED SUPPORT

FOUR TRAININGS (1 WEEK) IN FOUR STATE WITH ALL UTILITY

ONE TUTORIAL IN ERPC ON FAULT CALCULATION AND TRIPPING INCIDENT ANALYSIS

MONTHLY BACK-UP OF SERVER HARD DISC FOR BETTER MEMORY MANAGEMENT

SUBSTATION DATA VALIDATION

# SERVICE RELATED SUPPORT

STATE WISE POWER MAP UPDATION

UPDATION OF DATABASE(PSCT/PDMS) FROM DMNS  
REQUEST

UPDATION OF DATABASE (PSCT/PDMS) FROM OCC  
MOM

S/S DATA VERIFICATION WITH REFERENCE TO THE  
ERLDC NETWORK DOCUMENT

TWO DEDICATED ENGINEERS FROM PRDC IS PRESENT  
IN ERPC FOR PSCT/PDMS RELATED ACTIVITIES



# SERVICE RELATED SUPPORT

ATTENDING THE PCC MEETINGS AND ANALYSING THE  
CASES IN DISCUSSION WITH ERPC

ZONE-3 SETTING CALCULATION FOR INTER UTILITY &  
INTER STATE LINES

NEWLY ERECTED S/S VISIT FOR DATA COLLECTION

DATA POPULATION IN PSCT/PDMS FOR ALL NEWLY  
VISITED S/S

TASK BASED PROBLEM SOLVING AND MANAGING  
QUERIES OF ALL CLIENTS BY WA GROUP

# ACTIVITIES DONE

NEW S/S VISIT

TOTAL-27 (ODISHA-9, BIHAR-13, JHARKHAND-4, WB-1)

DATABASE UPDATAION AS PER OCC MOM

UPDATED TILL SEPTEMBER MOM.  
(OCT & NOV IS IN PROGRESS)

S/S DATA VERIFICATION

DONE FOR ALL 765kV & 400kV S/S  
(220kV IS IN PROGRESS)

# Thank You

• • • FOR CONTINUOUS SUPPORT

**STANDARD FOR DR CONFIGURATION FOR TRANSMISSION LINES PROTECTION**

Triggering criteria for DR : Any Start  
 DR time window : minimum 3 seconds.  
 Pre-fault time window: 0.5 seconds;  
 Post fault time window: 2.5 seconds.  
 Minimum sampling frequency: 1000 Hz

**Analog signals as per priority****A. Mandatory signals:**

1. Three phase voltage
2. Neutral voltage
3. Three phase current
4. Neutral current

**B. Optional signals:**

1. Mutual current
2. Check Sync
3. Open Delta

**Digital signals as per priority****A. Mandatory signals:**

1. Any Start
2. Any trip
3. Z1, Z2, Z3, Z4 pick up
4. Over current and Earth fault pick up
5. Over voltage stage I & II pick up
6. DT send & reverse
7. Carrier send & Receive
8. Main three phase CB open signal
9. Tie three phase CB open signal (where applicable)
10. Power Swing
11. SOTF/TOR
12. LBB
13. A/R L/O
14. Main-1/2 operated
15. Bus Bar trip
16. VT failure
17. Distance Forward & Reverse
18. T1, T2, T3, T4
19. Broken conductor
20. 86A & 86B
21. A/R 1P In Prog
22. A/R Fail
23. STUB/TEED (where applicable)

**B. Optional signals:**

1. Any External input
2. Any Binary Input

**Checklist for Submission of new transmission elements for updation in Protection Database**

**NAME OF ORGANISATION:**  
**FOR THE MONTH OF:**

**SUBSTATION DETAIL:**

SI No	DETAILS OF ELEMENTS	DATA TYPE	Status of Submission (Y/N)	Remarks
1	TRANSMISSION LINE	LINE LENGTH, CONDUCTOR TYPE, VOLTAGE GRADE		
2	POWER TRANSFORMER	NAMEPLATE DETAILS		
3	GENERATOR	TECHNICAL PARAMETERS		
4	CURRENT TRANSFORMER	NAMEPLATE DETAILS		
5	VOLTAGE TRANSFORMER	NAMEPLATE DETAILS		
6	RELAY DATA	MAKE, MODEL and FEEDER NAME		
7	RELAY SETTINGS	NUMERICAL RELAYS: CSV or XML file extracted from Relay ELECTROMECHANICAL RELAYS: SNAPSHOT of RELAY		
8	REACTOR	NAMEPLATE DETAILS		
9	CAPACITOR	NAMEPLATE DETAILS		
9	UPDATED SLD			

**SIGNATURE:**  
**NAME OF REPRESENTATIVE:**  
**DESIGNATION:**  
**CONTACT:**  
**E-MAIL ID:**