



Minutes
of
91st PCC Meeting

Date: 24.06.2020
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

MINUTES FOR 91ST PROTECTION SUB-COMMITTEE MEETING HELD ON 24.06.2020 AT 10:30 HOURS

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

PART – A

ITEM NO. A.1: Confirmation of minutes of 90th Protection sub-Committee Meeting held on 13th May 2020 at ERPC, Kolkata.

The minutes of 90th Protection Sub-Committee meeting held on 13.05.2020 circulated vide letter dated 03.06.2020.

Members may confirm the minutes of 90th PCC meeting.

Deliberation in the meeting

Members confirmed the minutes of 90th PCC meeting.

PART – B

ANALYSIS & DISCUSSION ON GRID INCIDENCES OCCURRED IN May 2020.

ITEM NO. B.1: Repeated trippings of 400kV Barh-Motihari line

1. Disturbance at 400 k V Motihari Substation on 07.05.2020 at 12:51 hrs

Tripping of 400 kV Barh - Motihari - 2 due to Y phase to earth fault, had led to loss of supply to Betiah/Raxaul/Motihari as being the single source of supply.

Load Loss: 85 MW

2. Disturbance at 400 k V Motihari Substation on 10.05.2020 at 23:56 hrs

Tripping of 400 kV Barh - Motihari - 2 due to Y phase to earth fault, had led to loss of supply to Betiah/Raxaul/Motihari as being the single source of supply.

Load Loss: 120 MW

3. Disturbance at 400 k V Motihari Substation on 11.05.2020 at 02:48 hrs

Tripping of 400 kV Barh - Motihari - 2 due to Y phase to earth fault, had led to loss of supply to Betiah/Raxaul/Motihari as being the single source of supply.

Load Loss: 120 MW

4. Disturbance at 400 k V Motihari Substation on 20.05.2020 at 13:23 hrs

Tripping of 400 kV Barh - Motihari - 2 due to Y phase to earth fault, had led to loss of supply to Betiah/Raxaul/Motihari as being the single source of supply.

Fault level of 400/132 kV Motihari S/S is reduced to very low as around 3000 MW. DMTCL may restore the others lines at the earliest so the fault level of this substations may be improved.

During April-May 2020, 400 kV Barh-Motihari 2 has tripped on multiple occasions with same fault location and fault parameter. These incidents to lead to repeated total loss of power supply to Betiah, Raxaul, Motihari and grid disturbance at 400/132 kV Motihari S/S.

During the event, Y and B phase poles (healthy phase) of Tie breaker also got opened at around 300 ms after the opening of R phase pole (faulty phase) (refer Annexure 1). Same was observed in case of earlier events also. DMTCL informed auto reclose operation of main/tie breaker got blocked by starting signal supervision. It means fault was cleared (pole of faulted phase of the breaker opened) but relay was getting initiation continuously. So, relay gave the definite trip to circuit breaker. DMTCL may find the root cause of this mal operation and can take remedial action. Same issue was raised in 90th ER PCC meeting

As per DR recorded at Barh, R pole of the main breaker (faulted phase) did not auto-reclose at 1 second after the fault. After 2 seconds, R pole of the tie breaker attempted at Barh. As the fault persisted, all the healthy poles of main and tie breaker tripped. Non-attempt of auto-reclose has been observed in case of 26th April's event also. NTPC Barh is requested to take action to mitigate these types of repeated problem.

Relay Indications :

Element Name	Motihari End	Barh End	PMU observation
400 kV Barh Motihari - 2	R-N, Zone - 1, 22.6KM, F/C 0.61 KA	R-N, Zone – 1, 3 kA	Unsuccessful auto-reclose operation has been found in PMU data. Fault clearing time was less than 100 ms. As per Barh PMU's data, dead time for auto-reclose operation was 2 secs.

Load Loss: 120 MW

5. Disturbance at 400 k V Motihari Substation on 30.05.2020 at 19:22 hrs

At 19:22 hrs 400 kV Barh – Motihari – 2 tripped due to Y phase to earth fault. The tripping has led to loss of supply to Betiya and Motihari as being the single source of supply causing Grid Disturbance 1 (GD-1) category event.

During April-May 2020, 400 kV Barh-Motihari 2 has tripped on multiple occasions (shown in table 2) with same fault location and fault parameter. These incidents to lead to repeated total loss of power supply to Betiya, Raxaul, Motihari and grid disturbance at 400/132 kV Motihari S/S. Further, during fault, A/R has been successful however fault is reappearing immediately in reclaim time causing voltage dip and line tripping. Such multiple auto-reclosure event in the line connecting a major generating station (NTPC Barh) is not desirable in view of health of the power plant. POWERGRID ERTS – 1 is requested to do the root cause analysis of these repetitive tripping, take the preventive measures for reducing these tripping. Same issue has been raised in 90th ER PCC meeting.

No SOE has been recorded in ERLDC SCADA data at the time of the event. NTPC Barh, BSPTCL and DMTCL are requested to check this issue. Bihar SLDC is requested to share detailed report indicating load loss, loss of energy unserved and restoration of load and any other relevant information

During the event, R and B phase poles (healthy phase) of Tie breaker also got opened at around 300 ms after the opening of Y phase pole (faulty phase) . Same was observed in case of earlier events also. DMTCL informed auto reclose operation of main/tie breaker got blocked by starting signal supervision. It means fault was cleared (pole of faulted phase of the breaker opened) but relay was getting initiation continuously. So, relay gave the definite trip to circuit breaker. DMTCL may find the root cause of this mal operation and can take remedial action. Same issue was raised in 90th ER PCC meeting

Relay Indications:

Time	Element Name	Motihari End	Barh End	PMU observation
19:22 Hrs	400 kV Barh Motihari - 2	Y-N, 121 km, F/C 0.4KA	Y-N, Zone -1, F/C 4.2 kA	Y phase to earth fault in reclaim time after successful auto-reclose on the same fault. Fault clearing time is less than 100 ms.
22:05 Hrs		Y-N Z-1 FC0.33kA,123 km	Y-N Z-1 Dist-93km FC-4.61kA	Unsuccessful auto-reclose due to persistent Y phase to earth fault. Fault clearing time is less than 100 ms

Load Loss: 126 MW

6. Disturbance at 400 k V Motihari Substation on 30.05.2020 at 22:05 hrs

At 22:05 hrs 400 kV Barh – Motihari – 2 tripped due to Y phase to earth fault. The tripping has led to loss of supply to Motihari as being the single source of supply causing Grid Disturbance 1 (GD-1) category event.

Load Loss: 0 MW

BSPTCL , DMTCL , NTPC Barh and Powergrid may explain

Deliberation in the meeting

Powergrid informed that OPGW stringing work was in progress before lockdown, however the agency had suddenly stopped the stringing work during lockdown. As a result, there were clearance issues at certain locations. Powergrid added that the clearance issues were addressed during last week of May 2020 and no such trippings were occurred thereafter.

ERLDC confirmed that last tripping incidence of this line had occurred on 30.05.2020 and no tripping incidence was reported thereafter.

PCC advised Powergrid to take proper care while carrying out OPGW stringing works as it is a serious concern to observe multiple trippings of the line.

ERLDC informed that certain transmission lines are going out of service for a transient fault occurring during bad weather conditions because of keeping the Auto recloser out of service to carry out the OPGW stringing works.

ERLDC suggested to stop such works with proper care and safety measures like enabling Auto-reclose during known bad weather conditions in advance so that unwanted outage of the lines could be avoided.

ERLDC advised NTPC Barh to review the prefault and postfault timing of Disturbance recorder in Siemens distance protection.

NTPC Barh agreed to look into it.

PCC informed that repeated tripping incidences had increased from March 2020 and most of these incidences are related to clearance issues.

PCC advised all the transmission utilities to take necessary action to reduce unwanted tripping of the lines.

ITEM NO. B.2: Disturbance at 220 k V Darbhanga Substation on 05.05.2020 at 19:09 hrs.

On 5th May 2020, at 19:09 Hrs, 220 kV Darbhanga (DMTCL)-Darbhanga (BSPTCL) D/C tripped on Y phase to earth fault. At the same time 220 kV Dharbhanga-Mushahari-1 also tripped resulting in load loss at Darbhanga, Madhubani and Pandaul. Later on it was informed by BSPTCL that there was a Y-phase jumper snapping of 220 kV Darbhanga (DMTCL)-Darbhanga (BSPTCL) - 2 which was the root cause of the event.

Load Loss: 180 MW

BSPTCL may explain.

Deliberation in the meeting

BSPTCL shared a report related to this incidence in the meeting which is enclosed at **Annexure B2**. As per the report, Y-phase jumper snapping of 220 kV Darbhanga (DMTCL)-Darbhanga (BSPTCL) circuit 1 was the root cause of the event. The line was tripped from BSPTCL end on zone 1 but with 600 msec delay.

BSPTCL explained that there could be delay in circuit breaker operation.

DMTCL informed that fault was on 220 kV Darbhanga (DMTCL)-Darbhanga (BSPTCL) circuit 2 near to BSPTCL end. The line got tripped from DMTCL end on zone 1. No fault pickup was observed for line 1.

After detailed deliberation, PCC observed that there could be confusion in nomenclature at BSPTCL and DMTCL end. PCC advised BSPTCL and DMTCL to check nomenclature of circuit 1 and circuit 2 on both sides and confirm it by today.

PCC also observed that LBB should be operated after 200 ms in case of delay in Circuit Breaker operation. PCC advised BSPTCL to test the Circuit Breaker, LBB operation and verify the distance relay settings of circuit 1 and circuit 2 and submit a detailed report to ERPC and ERLDC.

ITEM NO. B.3: Total Power failure at 220 k V Sonenagar Substation on 10.05.2020 at 22:51 hrs.

220 kV Gaya-Sonenagar – D/C tripped at 22:51 hrs due to R phase to earth fault resulting total power failure at Sonenagar S/S. Around 130 MW load loss was reported at Aurangabad, Sonenagar, Rafi Ganj, Japla. Around 15 MW traction load loss was reported at Japla, Garwah and Rafi Ganj.

Load Loss: 130 MW

BSPTCL may explain

Deliberation in the meeting

BSPTCL informed that 220 kV Gaya-Sonenagar line -I tripped from Sonenagar end in Zone 1 due to R phase to earth fault and 2kA fault current was observed.

Powergrid informed that 220 kV Gaya-Sonenagar line -II tripped on R-N fault and auto-reclose was successful.

ERLDC informed that there was much delay in restoration of circuit 2 as it was restored on next day at 12:24 hrs.

PCC advised BSPTCL to check the PLCC and autoreclose relay at Sonenagar end. PCC also advised BSPTCL to check the line parameters and relay reach settings and send detailed report to ERPC and ERLDC by next week.

PCC advised BSPTCL, SLDC, Bihar and Powergrid to avoid delay in restoration of line.

ITEM NO. B.4: Disturbance at 220 k V Muzaffarpur Substation on 24.05.2020 at 19:51 hrs.

220 kV Muzaffarpur Dhalkebar D/C tripped due to B phase directional O/C resulting in loss of power supply to Dhalkebar. Prior to the tripping export schedule to Nepal was 90 MW. Around 60-70 MW power was flowing through 220 kV Muzaffarpur Dhalkebar D/C. At 19:49 hrs power through these two circuits increased to more than 145 MW. No load loss reported in Indian grid.

No load and gen. loss

Powergrid may explain.

Deliberation in the meeting

Powergrid informed that 220 kV Muzaffarpur-Dhalkebar D/C tripped on B phase directional O/C, E/F protection after 2.2 sec. Powergrid explained that it was a high resistance fault in downstream network of Nepal system and the relay has operated correctly as per the settings.

PCC informed that the tripping incidence would be discussed in coordination meeting with Nepal.

ITEM NO. B.5: Total Power failure at 220/132 kV Chaibasa Substation on 06.05.2020 at 01:19 hrs.

At 01:13 hrs 400/220 kV ICT 1 & 2 at Chaibasa (PG) tripped from 220 kV side due to mal-operation of back up impedance relay. At 01:19 hrs, 220 kV Chaibasa (JUSNL) – Chaibasa (PG) D/C and 220 kV Chaibasa (JUSNL) – Ramchandrapur D/C tripped due to R phase to earth fault resulting in total power failure at 220/132 kV Chaibasa (JUSNL) S/S. 132 kV Rajkharwan – Goelkhera S/C also tripped at same time.

Load Loss: 20 MW

JUSNL may explain.

Deliberation in the meeting

*JUSNL shared a presentation in the meeting which is enclosed at **Annexure B5**.*

JUSNL explained that there was a R-N fault in 220 kV Chaibasa(JUSNL) – Ramchandrapur circuit 1 near to Chaibasa end. Chaibasa end identified the fault in zone 1 and issued trip

command to respective circuit breaker to clear the fault. But circuit breaker at Chaibasa end failed to open. Both circuits of 220 kV Chaibasa(JUSNL) – Ramchandrapur tripped from Ramchandrapur on zone 2. 220 kV Chaibasa(JUSNL)- Chaibasa (PG) line 1 tripped from JUSNL end on zone 4 within 300 ms.

Powergrid explained that there was another fault (R-Y-B fault) simultaneously occurred in 220 kV Chaibasa(JUSNL)- Chaibasa (PG) line 1. The fault was cleared by line differential protection from PG end. But overvoltage protection also operated which was inadvertently kept enabled. 400/220 kV ICT 1 & 2 at Chaibasa (PG) were also tripped within 60 ms from 220 kV side due to incorrect relay settings.

Powergrid added that over voltage settings of line differential protection and relay settings of 400/220 kV ICT 1 & 2 have been reviewed after the disturbance.

JUSNL failed to explain how the fault in 220 kV Chaibasa – Ramchandrapur circuit 1 got cleared from 220kV and 132 kV side protection system.

PCC opined that since circuit breaker of Chaibasa (JUSNL) end failed to clear the fault in 220 kV Chaibasa – Ramchandrapur circuit 1, the fault should be cleared from 220/132 kV ATRs or 132kV transmission line backup protection. PCC observed that SLDC, JUSNL was not present the meeting and not submitted any report on trippings.

After detailed deliberation, PCC advised JUSNL to take the following action and submit a report to ERPC and ERLDC:

- SLDC, Jharkhand should check any tripping in 132kV system during this disturbance
- CB of Chaibasa(JUSNL) end of 220 kV Chaibasa – Ramchandrapur circuit 1 to be tested
- Zone 4 tripping time (300 ms) of 220 kV Chaibasa(JUSNL)- Chaibasa (PG) line 1 from Chaibasa(JUSNL) is not in order. The same needed to be verified and corrected.
- Protection system of 220/132 kV ATRs and 132kV transmission lines to be tested

ITEM NO. B.6: Total Power failure at 220/132 k V Hatia Substation on 14.05.2020 at 15:33 hrs

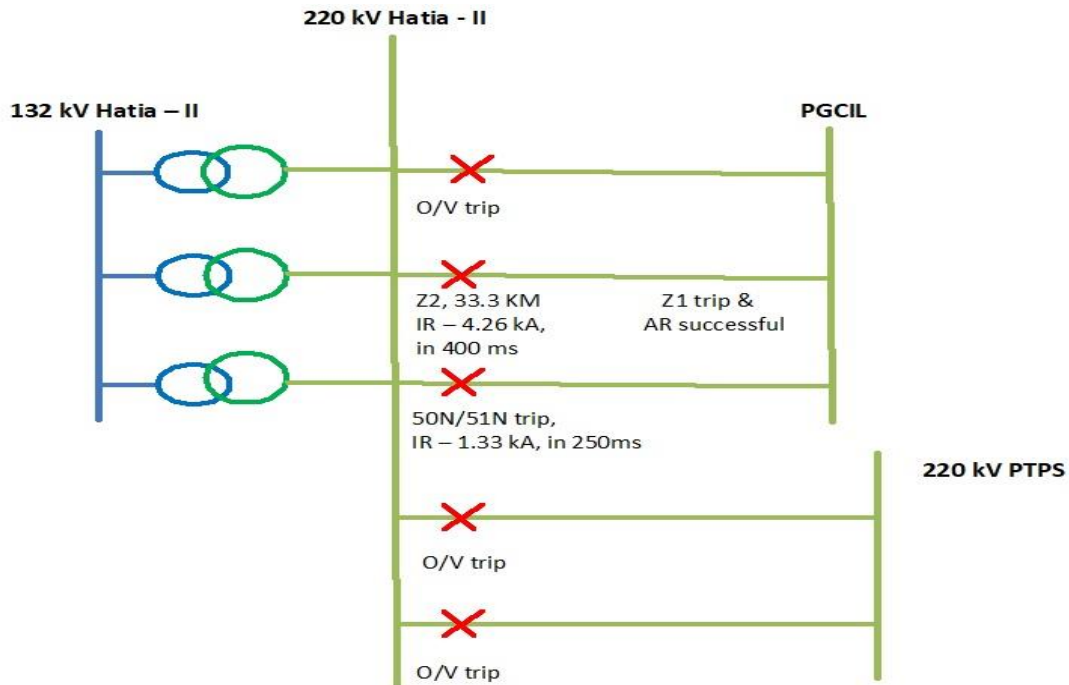
220 kV Ranchi Hatia T/C, 220 kV Patratu-Hatia D/C and 220/132KV 150MVA ICT-1, 2 and 3 at Hatia tripped at same time resulting in total power failure at 220/132 kV Hatia S/S. In Jamshedpur PMU data, one R phase to earth fault has been captured. Fault was cleared at around 400 ms.

Load Loss: 161 MW

JUSNL may explain.

Deliberation in the meeting

JUSNL shared a presentation in the meeting which is enclosed at **Annexure B6**.



JUSNL explained that there was a transient fault in 220 kV Hatia(II) – Ranchi (PG) circuit 2 due to bad weather, the line got tripped on zone 2 from JUSNL end and on zone 1 from Powergrid end.

Powergrid explained that auto-reclose was successful for 220 k V Hatia(II) – Ranchi (PG) circuit 2 at Ranchi end.

JUSNL added that 220 kV Hatia(II) – Ranchi (PG) circuit 3 got tripped from JUSNL end on 50N/51N within 250 ms. JUSNL further added that 220 kV Hatia(II) – Ranchi (PG) circuit 1 and 220 kV Patratu-Hatia D/C got tripped due to overvoltage protection from JUSNL end.

PCC advised JUSNL to check the following and submit a report to ERPC and ERLDC:

- Verify the reason for non-operation of autorecloser and carrier inter tripping of 220 kV Hatia(II) – Ranchi (PG) circuit 2 from Hatia end
- Verify settings of backup overcurrent protection related to false tripping of 220 kV Hatia(II) – Ranchi (PG) circuit 3.
- Verify overvoltage settings of 220 kV Hatia(II) – Ranchi (PG) circuit 1 and 220 kV Patratu-Hatia D/C at Hatia especially pickup to drop off ratio.

PCC observed that as per the DR the voltage was went upto 190 kV (phase to ground) and opined that SLDC, Jharkhand should take necessary action to control the over voltage in their system so that unwanted trippings of the lines could be avoided.

ITEM NO. B.7: Disturbance at 220/132 k V Hatia Substation on 19.05.2020 at 02:56 hrs.

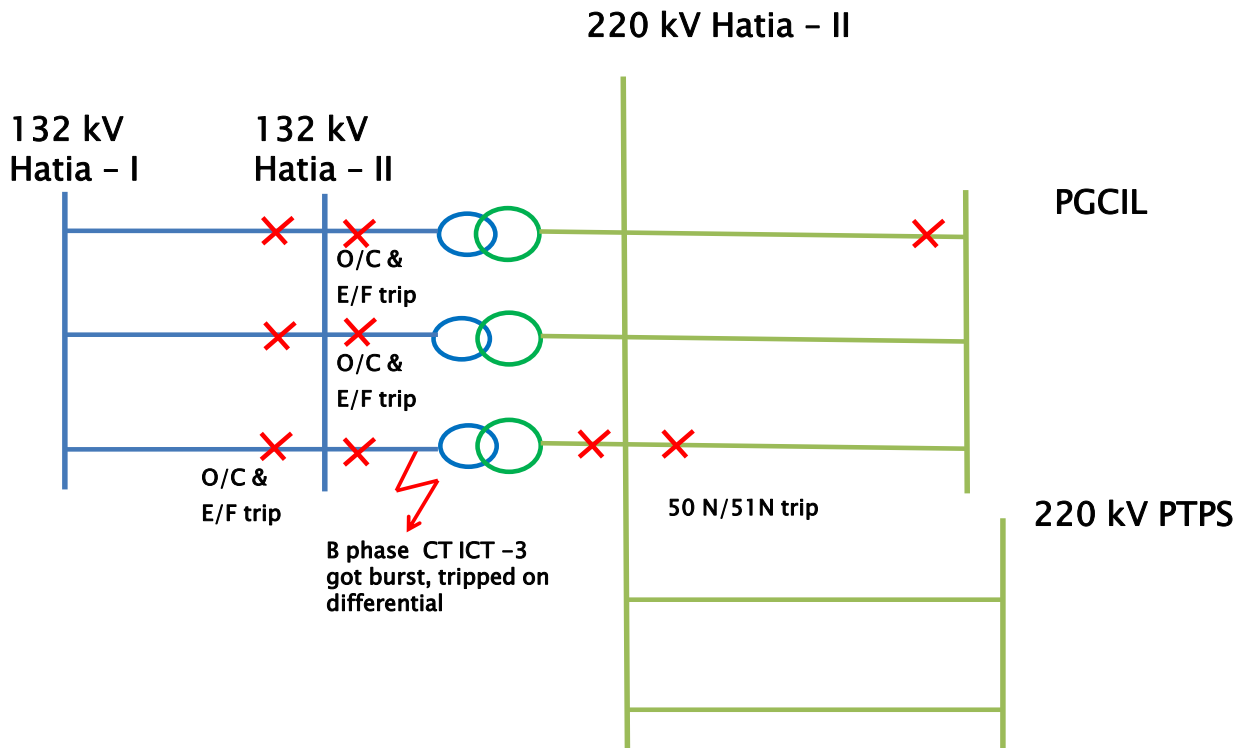
132 kV side B phase CT of 220/132 kV ICT – 3 at 220/132 kV Hatia S/s got burst. At same time, 220 kV Ranchi Hatia 1 and 3, 220/132KV 150MVA ICT-1, 2 and 3 at Hatia tripped resulting total loss of supply at 132 kV voltage level of Hatia S/S. 220 kV bus at Hatia remained in service along with 220 kV PTPS – Hatia D/C and 220 kV Ranchi – Hatia – 2.

Load Loss : 200 MW

JUSNL may explain.

Deliberation in the meeting

JUSNL shared presentation in meeting which is enclosed at **Annexure B7**.



JUSNL explained that 132 kV side B phase CT of ICT – 3 got burst resulted in a bus fault at 132kV bus of Hatia II and ICT – 3 tripped on differential protection. The reason for bursting of CT could not be found out. Both ICT -2 & 3 tripped on backup O/C and Earth fault in 300 ms and 350 ms approx respectively. 132 kV Hatia (I)- Hatia(II) line I, II and III also tripped on O/C, E/F protection as no bus bar protection was present.

JUSNL added that 220 kV PGCIL – III tripped E/F in 250 ms approx, due to wrong setting (Non-directional, T. Delay – 0.25 s) and the same had been rectified after the disturbance.

ITEM NO. B.8: Tripping of both units at TTPS on 24.05.2020 at 12:38 hrs.

At 12:28 hrs 220 kV TTPS – Bihar Sharif S/C tripped due to R phase to earth fault. The whole power generated by TTPS was being evacuated through 220 kV TTPS – PTPS S/C. At 12:38 hrs, 220 kV TTPS – PTPS S/C tripped due to B phase to earth fault resulting in tripping of both running units at TTPS.

Gen. Loss : 292 MW

JUSNL, BSPTCL and TVNL may explain.

Deliberation in the meeting

TVNL and BSPTCL informed that 220 kV TTPS – Bihar Sharif S/C tripped due to R phase to earth fault, both ends cleared the fault in zone 1.

JUSNL and TVNL informed that there was another high resistance B-N fault in 220 kV TTPS – PTPS S/C and both ends cleared the fault in zone 2.

During analysis, it was found that the fault was near to PTPS end, but the fault was identified in zone 2 instead of zone 1 at PTPS end because of high fault resistance.

PCC observed that 220 kV TTPS – Bihar Sharif S/C and 220 kV TTPS – PTPS S/C lines are frequently tripping during last four months.

PCC advised JUSNL and BSPTCL carry out the line patrolling and clear the vegetation to reduce

the faults in the line.

ITEM NO. B.9: Disturbance at 220 k V TTPS Substation on 18.05.2020 at 0:53 hrs.

220 kV TTPS – PTPS S/C tripped from PTPS end only on B phase to earth fault. 220 kV TTPS – PTPS S/C, unit 2 at TTPS and station transformer 2 at TTPS were connected to 220 kV bus 2 at TTPS. So, both the running units at TTPS and 220 kV bus coupler at TTPS (tripping of bus coupler was verbally informed by TTPS) tripped to clear the fault. 220 kV TTPS – Bihar Sharif S/C and 220 kV bus 1 at TTPS did not trip during this event. Gen Loss: 749 MW

Gen.Loss : 302 MW

JUSNL, BSPTCL and TVNL may explain.

Deliberation in the meeting

JUSNL explained that 220 k V TTPS – PTPS S/C tripped in zone 2 from PTPS end only due to B phase to earth fault. They added that on inspection no physical fault was found in the line.

TVNL explained that both the running units at TTPS and 220 kV bus coupler at TTPS tripped, more than 3kA current was observed at TTPS but line protection of 220 k V TTPS – PTPS S/C was not operated.

PCC opined that distance protection at TTPS end must had operated either in zone 1 or zone 4. PCC advised TTPS to verify the location of the fault once again and advised to submit the distance relay settings to ERPC and ERLDC.

PCC also advised TTPS to test the healthiness of the relay.

ITEM NO. B.10: Total Power failure at Dikchu HEP on 19.05.2020 at 20:57 hrs.

At 20:57 hrs both circuits tripped resulting in total power failure at Dikchu HEP. 400 kV Teesta III – Dikchu S/C tripped due to B phase to earth fault. 400 kV Rangpo – Dikchu S/C tripped due to direct trip signal received at Rangpo.

High resistance fault followed by delayed clearing of fault had been observed in the past for 400 kV Rangpo – Dikchu S/C and 400 kV Rangpo – Kishangunj S/C. Considering importance of reliability of 400 kV Teesta III – Kishangunj S/C and 400 kV Teesta III – Dikchu – Rangpo section, option for implementation of differential protection may be explored on these circuit including 400 kV Rangpo-Kishanganj circuit. Similar type of events has occurred on 12th April 2019, 16th April 2019, 30th June 2019 and 15th March 2020 followed by loss of hydro generation. TVTPL, TUL, DIKCHU, PGCIL ERTS-2, PGCIL ERTS-1 may kindly review this for betterment of system. This issue has been highlighted in 90th ER PCC meeting also.

Where was the actual fault and whether the fault was on both circuits or only one also need to be clarified. The fault was in whose jurisdiction (TVTPL or Dikchu LILO portion) also need deliberation and details from the utility and ISTS licensee. TVPTL was instructed to patrol line after failed charging attempt of 400 kV Teesta III – Dikchu S/C at 22:03 hrs. TVPTL is requested to share line patrolling report.

Reason for non-auto reclose attempt at Teesta III end for 400 kV Teesta III – Dikchu S/C may be shared by Teesta III

Relay Indications :

Time	Line name	End 1	End 2	PMU observation
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20:57 Hrs.	400 kV Teesta III – Dikchu S/C	B-N, F/C 4.2 kA, Zone – 1; No auto-reclose attempt observed	E/F (TEF) trip, IR = 0.5kA, IY = 0.6Ka, IB = 2.6kA, IN = 1.9 kA, DT sent	High resistance B phase to earth fault has been observed in Rangpo PMU data at the time of the event. Fault clearing time is around 1600 ms.
20:57 Hrs	400 kV Dikchu – Rangpo S/C	E/F (TEF) trip, IR = 0.5kA, IY = 0.6Ka, IB = 2.6kA, IN = 1.9 kA, DT sent	DT received	

Gen Loss : 55 MW

Powergrid , TUL , TVTPL and Dikchu may explain.

Deliberation in the meeting

Dikchu explained that at 20:57 hrs both circuits tripped resulting in total power failure at Dikchu HEP due to fault in 400 kV Teesta III – Dikchu S/C line. It was informed that 400 kV Teesta III – Dikchu S/C tripped on B phase to earth fault on backup E/F protection from Dikchu and zone 1 from Teesta III.

400 kV Rangpo – Dikchu S/C tripped due to direct trip signal received at Rangpo. Dikchu explained that Dikchu end E/F protection operated for 400 kV Dikchu – Rangpo S/C due to wrong settings and sent DT to Rangpo end. Dikchu informed that the settings were corrected after the disturbance.

ITEM NO. B.11: Disturbance at 220 k V Jorethang and 220 k V Tashiding Substation on 27.05.2020 at 04:28 hrs.

220 kV New Melli - Jorethang - 1 tripped on Y phase to earth fault from Jorethang end. 220 kV New Melli - Jorethang - 2 tripped on overcurrent protection from Jorethang end only. At same time 220 kV Tashiding - New Melli S/C and 220 kV Tashiding - Rangpo S/C tripped from Tashiding end only on Y phase to earth fault.

Tripping of more than one circuits due to single fault is very common in 220 kV JLHEP – New Melli – Tashiding HEP – Rangpo section. Similar type of events has occurred on 16th January 2020, 25th February 2020, 01st April 2020 followed by loss of hydro generation. Due to variable hydro generation and high resistance of the fault, configuration of distance protection setting may be very challenging. Possibility of differential protection system may be explored for this section. JLHEP, THEP and POWERGRID may kindly review this for betterment of system.

Polarity of distance protection relay at Tashiding end of 220 kV Tashiding – Rangpo S/C may be reviewed. O/C protection setting at JLHEP may be reviewed also

Relay Indications:

Line name	End 1	End 2	PMU observation
220 kV Jorethang - New Melli -1	Y-N, Zone-1, IR=0.2 kA IY=1.7 kA, IB=0.3 kA	Y-N, Zone – 1, A/R successful	Around 25 kV dip has been observed in Y phase voltage at Rangpo PMU. Fault clearing time is less than 100 ms.
220 kV Jorethang - New Melli -2	O/C, IR=0.1 kA, IY=0.1 kA, IB=0.1 kA	Did not trip, Zone – 3 start in Y phase	
220 kV Tashiding - New Melli S/C	Y-N, Zone-1, 10.64 km, F/C 2.4 kA	Did not trip	
220 kV Tashiding - Rangpo S/C	Y-N, Zone-1, 28 km, F/C 1.75 kA	Did not trip	

Gen Loss: 110 MW

Powergrid ,JLHEP , THEP and DANS Energy may explain.

Deliberation in the meeting

DANS Energy informed that due to thunderstorm, 220 kV Jorethang - New Melli -1 got tripped from both ends. Because of low overcurrent setting, 220 kV Jorethang - New Melli -2 also tripped from Jorethang. The relay settings of 220 kV Jorethang - New Melli D/C lines were reviewed incoordination with ERPC and ERLDC and implemented the revised settings on 06-06-2020.

PCC observed that 220kV Tashiding – Rangpo S/C line tripped from Tashiding end is not in order PCC advised DANS ENERGY to verify the polarity and reach settings of distance protection relay at Tashiding end of 220 kV Tashiding – Rangpo S/C.

PCC also observed that 220kV lines under the jurisdiction of Govt. of Sikkim were not being maintained properly as a results repeated faults are being occurred due to lot of vegetation.

PCC advised Sikkim to take necessary action to avoid repeated faults in the lines.

ITEM NO. B.12: Tripping of all 220 k V lines from 220 k V NJP Substation on 27.05.2020 at 0:56 hrs

At 00:56 Hrs. all 220 kV lines from 220 kV NJP tripped due to tripping of both 220 kiva Buses ,causing generation loss at TLDP III and TLDP IV on no evacuation path

During tripping at 19:04 hrs. both TLDP IV feeders were connected to 220 kV bus – 2 at NJP. Tripping of bus 2 at NJP buses resulted tripping of both TLDP IV feeders. Both TLDP – IV may be connected different buses at NJP . No SOE has been recorded in ERLDC SCADA data at the time of the events. WBSLDC/WBSETCL are requested to check this issue.

WBSETCL shared the information that 96 relay of NJP s/s mal operated due to earth fault in control cable between NJP (WB) and Binaguri (PG) and temporary dc earth fault developed due to heavy rain during tripping event at 19:04 hrs. At 01:30 hrs. same incident occurred in addition to tripping of 220 kV bus-1 at NJP also due to water ingress in isolator auxiliary causing mal operation of CT switching relay of 220/132 kV 160MVA ICT – 3 at NJP. System finally restored after changing defective cores of cable by spare ones. WBSETCL may take preventive action for reducing the numbers of such mal-operation. WBSLDC is requested to share detail report along with details at TLDP. WBSETCL is advised to share the information whether the bus bar protection and other equipment are numerical or non-numerical in nature. WBSETCL is advised to share the information of last protection audit along with internal protection audit and details of last DC measurement at substation. Based on submitted details, DC fault on multiple occasion could have resulted in quite serious situation for evacuation of TLDC III and IV Hydro plant.

Relay Indications :

Time	Element Name	NJP end details	PMU observation
19:04 Hrs.	220 kV bus 2 at NJP, 220/132 kV ICT 2 & 3 at NJP and 220 kV NJP – TLDP IV D/C	96 Trip Relay Operated;	Voltage dip was observed in all three phases from Binaguri bus voltage. Fault was cleared within 100 ms. This indicate transient fault in the system
20:21 Hrs.	220 kV bus 2 at NJP, 220/132 kV ICT 2 & 3 at NJP and 220 kV	96 Trip Relay Operated;	Voltage dip was observed in all three phases from Binaguri

	NJP – TLDP IV - 1		bus voltage. Fault was cleared within 100 ms. This indicate transient fault in the system
00:56 Hrs. (27-05-2020)	220 kV bus 1 and 2 at NJP, 160 MVA, 220/132 kV ICT 1, 2 & 3 at NJP, 220 kV NJP – TLDP IV D/C and 220 kV NJP – TLDP III S/C	96 Trip Relay Operated;	Voltage dip was observed in all three phases from Binaguri bus voltage. Fault was cleared within 100 ms. This indicate transient fault in the system

Gen Loss: 280 MW

WBSETCL and TLDP may explain.

Deliberation in the meeting

WBSETCL shared that 96 relay of NJP s/s mal operated due to ground fault in inter-tripping cable of NJP (WB) and Binaguri (PG) and temporary dc earth fault was developed due to heavy rain during tripping event at 19:04 hrs. At 00:56 hrs, same incident occurred in addition to tripping of 220 kV bus-1 at NJP also due to water ingress in isolator auxiliary causing mal operation of CT switching relay of 220/132 kV 160MVA ICT – 3 at NJP. System finally restored after changing defective cores of cable by spare ones.

Powergrid informed that in 2016, many such tripping incidences were occurred and a Committee submitted a report after detailed investigation. Powergrid suggested that the Committee recommendations may be implemented to minimize such disturbances.

Powergrid also suggested to install separate CB at West Bengal or to interconnect the DC earthing of NJP and Binaguri.

PCC advised Powergrid to share the report with ERPC and ERLDC.

ITEM NO. B.13: Disturbance at 400 kV Alipurduar Substation on 07.05.2020 at 18:47 hrs.

At 18:47 Hrs, 400 KV Alipuduar - Jigmelling D/C tripped on R-Y-N fault caused tripping of Mangdechu units #1 and #2 (At Bhutan) on no evacuation path. No generation and load loss at Indian grid. At Bhutan grid around 238 MW generation loss occurred at Mangdechu.

No load and gen. Loss

Powergrid may explain.

Deliberation in the meeting

Powergrid explained that 400 KV Alipuduar - Jigmelling D/C tripped on R-Y-N fault which caused tripping of Mangdechu units #1 and #2 (At Bhutan). They added that the fault was near to Jigmelling. Alipuduar end has seen the fault in zone 2 and tripped within zone 1 time after receiving carrier from remote end.

ITEM NO. B.14: Total Power failure at 400 k V JSPL Substation on 16.05.2020 at 19:28 hrs.

At 19:26 hrs. 400 kV Meramundali – JSPL – 1 tripped due to receipt of DT signal at Meramundali end. After around 1 min, 400 kV Meramundali – JSPL – 2 tripped due to same reason resulting total power failure at JSPL. Inclement weather condition was reported at the time of the event.

Load Loss: 160 MW , Gen Loss : 230 MW

OPTCL may explain.

Deliberation in the meeting

OPTCL explained that at JSPL end marcilin box of tie- breaker was opened accidentally and water got filled in hence the DT was sent to Meramundali end inadvertently. The issue was rectified after the disturbance.

PCC advised OPTCL that DR is to be configured as per PCC recommendation.

ITEM NO. B.15: Tripping Incidences in month of May 2020

Other tripping incidences occurred in the month of May 2020 which needs explanation from constituents of either of the end is given in **Annexure-B15**.

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

*All concerned utilities discussed this issue and explanation from constituents of either of the end is given in **Annexure-B15**.*

ITEM NO. B.16: List of DR discrepancies in the month of May 2020.

The list of all DR discrepancies in month of May 2020 which needs explanation from constituents of either of end is to be discussed.

Members may discuss.

Deliberation in the meeting

*Explanation from constituents of either of the end is given in **Annexure-B16**.*

ITEM NO. B.17: Submission of detailed tripping information on Transmission Element Tripping

A format for submission of detailed information on Transmission element tripping has been prepared for analysis and record keeping. The format includes the details to ensure the better record keeping in view of various requirement in line with IEGC and CEA Regulations. All the transmission owners/licensees were advised to share this detailed record through mail in 90th ER PCC meeting. But tripping information is being received for very few tripping incidents.

Members may discuss.

Deliberation in the meeting

PCC advised all the constituents to submit the tripping information as per IEGC and CEA regulations.

ITEM NO. B.18: Submission of Follow Up on the Issues Raised by ERLDC in their detailing GD/GI report to utilities

ERLDC through its various detailed report of GD/GI has asked on the various issues and discrepancies observed during any event. It has been observed that follow up action are quite delayed or not being submitted properly by the utilities. All utilities are advised to submit the action taken on the Issues discussed in the last PCC at the beginning of the PCC meeting for ensuring that such tripping will not reoccur. Same has been raised in 90th ER PCC meeting.

Members may discuss.

Deliberation in the meeting

PCC advised all the utilities to submit the action taken report to ERPC and ERLDC on the Issues discussed in the last PCC.

ITEM NO. B.19: Nomination of nodal persons for communication related to tripping of grid elements

For analysis of tripping incident of any grid elements, high resolution data from various generating stations, transmission utilities, SLDCs and other users. For smooth communication regarding this transfer of data, all the regional generating stations, transmission utilities and SLDCs are requested to nominate at least two persons as nodal person(s) for tripping analysis of any grid element. Name, contact number and email address of nominated persons may be shared as per following table.

	Nodal Person-1 Name & Contact Details (Phone, email id)	Nodal Person-2 Name & Contact Details (Phone, email id)
NTPC Farakka		
NTPC Kahalgaon		
NTPC Talcher		
NTPC Barh		
NTPC Darlipalli		
BRBCL		
NPGC		
MPL		
Adhunik		
GMR		
JITPL		
KBUNL		
Teesta V		
Teesta III		
Rangit		
Chujachen		
Jorethang		

	Nodal Person-1 Name & Contact Details (Phone, email id)	Nodal Person-2 Name & Contact Details (Phone, email id)
Tashiding		
Dikchu		
Bihar SLDC		
Jharkhand SLDC		
DVC SLDC		
GRIDCO SLDC		
WB SLDC		
Sikkim SLDC		
POWERGRID ER -1		
POWERGRID ER -2		
POWERGRID Odisha		
DMTCL		

Deliberation in the meeting

PCC advised all the utilities including SLDCs to nominate at least two nodal persons within a week for tripping analysis.

ITEM NO. B.20: Repeated tripping of transmission lines due to same reason/fault at nearby areas.

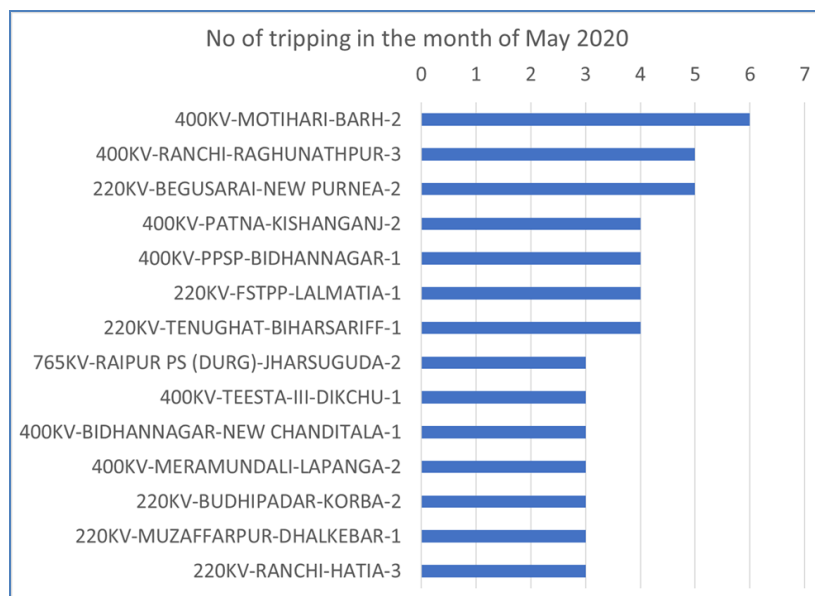


Figure 1: List of the transmission lines which tripped more than two times during the month of May 2020

As shown in Figure 1, there are 14 transmission lines having voltage level 220 kV and above and which tripped more than two times in the month of May 2020. Around 11 transmission lines having voltage level 220 kV and above tripped more than two times in the month of April 2020. Growing number of repeated tripping of transmission lines is putting grid in grid in vulnerable condition. Repeated tripping of some transmission lines resulted repeated grid disturbances and grid incidents along with load and generation loss. **Transmission lines utilities are requested to maintain line properly so that repeated tripping may be avoided.** In some cases, lines tripped due to same reason or fault at nearby location. List of those lines is shown below:

Name of the line	Reason	No of tripping
400KV-MOTIHARI-BARH-2	Y phase to earth fault at 119km to 123 km from Motihari	5
400KV-RANCHI-RAGHUNATHPUR-3	R phase fault at various location	4
220KV-BEGUSARAI-NEW PURNEA-2	Various fault at 32 - 44 km from Begusarai	5
400KV-PATNA-KISHANGANJ-2	Y and B phase fault at 208 km from Kishanganj	3

Deliberation in the meeting

DVC explained that line patrolling was done on regular basis and fault location was identified for Ranchi-Raghunathpur trippings. They added that three faults were R-N fault while one fault was R-Y-N fault.

BSPTCL explained that they had done line patrolling of the lines but unable to identify the location of fault and agreed inspect the lines again.

PCC advised all the concerned utilities to take necessary action to avoid repeated trippings of the transmission lines.

ITEM NO. B.21: Repetitive tripping of Transmission Lines from Lalmatia substation during March-June 2020

220/132 kV Lalmatia substation and associated transmission lines healthiness has been discussed in detail in the past in the ER protection forum based on which protection audit has also been carried out. The audit finding has been deliberated in the Eastern region Board Meeting in detail. After that, the decision was taken during the board meeting that respective utilities (JUSNL/BSPTCL/NTPC) will be maintaining the equipment healthiness to ensure reliability at the substation.

Since the last two months (after Covid19 Lockdown), it has been observed that 220 kV Farakka-Lalmatia cks, 132 kV Lalmatia-Kahalgaon (NTPC) and 132 kV Kahalgaon(BSEB)-Lalmtia are tripping on multiple occasions. The list of tripping is given below where reasons attributed are transient fault (either zone protection or O/C & E/F) or Equipment failure.

Element Name	Tripping Date	Tripping Time	End 1	End 2
132KV-KAHALGAON(BSEB)-LALMATIA-1	20-03-2020	13:59	TRIPPED	
132KV-KAHALGAON(BSEB)-LALMATIA-1	24-03-2020	07:35		Overcurrent in B phase
132KV-KAHALGAON(BSEB)-LALMATIA-1	12-04-2020	03:02	Y,B-Phase fault, overcurrent Protection	
220KV-FSTPP-LALMATIA-1	19-04-2020	23:51	R phase to E/F; Z-1, Fault Loc : 62 km	
132KV-KAHALGAON(BSEB)-LALMATIA-1	19-04-2020	23:55	Zone 1 Distance Protection	
132KV-KAHALGAON(BSEB)-LALMATIA-1	25-04-2020	08:06	No Trip at Lalmatia	

Element Name	Tripping Date	Tripping Time	End 1	End 2
132KV-KAHALGAON(BSEB)-LALMATIA-1	28-04-2020	10:22	O/C & E/F	
132KV-KAHALGAON(BSEB)-LALMATIA-1	02-05-2020	14:20	Earth Fault	
220KV-FSTPP-LALMATIA-1	04-05-2020	07:01	CVT blast in Lalmatia-ECL line at ECL	
132KV-KHSTPP-LALMATIA-1	04-05-2020	07:01	CVT blast in Lalmatia-ECL line at ECL	
132KV-KAHALGAON(BSEB)-LALMATIA-1	04-05-2020	07:01	CVT blast in Lalmatia-ECL line at ECL	
132KV-KAHALGAON(BSEB)-LALMATIA-1	07-05-2020	15:42	Zone 1 Distance Protection	
132KV-KHSTPP-LALMATIA-1	13-05-2020	13:05	Y-B- phase to earth fault ; Fault Loc : 37.1 km	
132KV-KAHALGAON(BSEB)-LALMATIA-1	20-05-2020	12:40	Over current	
132KV-KAHALGAON(BSEB)-LALMATIA-1	20-05-2020	21:13	R phase to E/F	
220KV-FSTPP-LALMATIA-1	24-05-2020	16:06	B phase to E/F, Z1, Fault loc :85 km	
220KV-FSTPP-LALMATIA-1	25-05-2020	15:38	MASTER TRIP(86) RELAY TRIP	
220KV-FSTPP-LALMATIA-1	27-05-2020	01:47	B-N, Zone – 1	
132KV-KAHALGAON(BSEB)-LALMATIA-1	27-05-2020	16:10	O/C operated from Kahalgaon	
220KV-FSTPP-LALMATIA-1	04-06-2020	10:42	Due to tripping of ICT at Lalmatia (O/C E/F-86, I1-0.11 KA, I2-0.12 KA,I3-0.15 KA.)	FSTPP-Z2 R-Y-B ph FD-90.2km
132KV-KAHALGAON(BSEB)-LALMATIA-1	04-06-2020	22:46	R_Y_N, Ir: 2.077 kA, Iy: 1.816 kA, 77.46 KM	

*As on 09th June 2020

Such multiple tripping on account of fault is reducing the substation reliability and as being connected to the fuel source of NTPC power plant. Further lines are going to NTPC power plants thus multiple faults feeding to plants is also causing stress on generating station.

ERLDC advised BSPTCL, JUSNL and NTPC to ensure the healthiness of 220/132 kV Lalmatia substation and associated transmission lines via e-mail communication dated 26th May 2020. But tripping incidents of lines connected to Lalmatia S/S, did not reduce.

BSPTCL, JUSNL and NTPC may share the reason of repeated tripping of these lines.

Members may discuss.

Deliberation in the meeting

After detailed deliberation, PCC advised BSPTCL, JUSNL and NTPC to send the issues to ERPC and ERLDC. PCC decided to discuss the issues in a separate meeting with NTPC, JUSNL and BSPTCL.

ITEM NO. B.22: Overcompensation of transmission lines in Eastern Region and occurrence of resonance due to overcompensation

On 07th May 2020 at 03:16:10 hrs 400 kV Meramundali-Bolangir tripped on R- Phase to earth fault. Auto-reclose operation started at Bolangir end and line got tripped from Meramundali end. Due to almost 100% shunt compensation, resonance took place in the open phase during auto-reclose operation and extremely high voltage was generated even after line is opened from Meramundali and O/V stage 2 has operated.

In Eastern Region, it has been observed around 38 transmission lines have compensation level more than 70%. Among them, resonance phenomenon has been observed already in five cases.

Members may discuss

Deliberation in the meeting

Powegrid informed that the details had been received from Meramundali and the issue of over compensation has been referred to their corporate office.

PCC opined that switchable reactor at Bolangir may be switched OFF during autorecloser operation to avoid resonance.

ERLDC informed that they had sent a letter to CEA and CTU related to Overcompensation of transmission lines in Eastern Region and occurrence of resonance due to overcompensation.

ITEM NO. B.23: Other tripping incidents in the month of May 2020

ITEM NO.B.23.1 : Multiple tripping incident at Jeerat at 18:08 hrs on 27-05-2020

At 18:08 Hrs on 27-05-2020, following elements tripped at 400 KV Jeerat S/S (having double main and transfer scheme) along with 400 KV Bus – 2 at Jeerat

- 400/220 KV ICT – 1 and 3
- 400 KV Jeerat-New Chanditala S/C
- 400 KV Jeerat-Sagardighi S/C

As per PMU data (shown in figure 2), at Jeerat there was one Y phase to earth fault followed by R & Y phase fault. Both the faults were cleared within 100 ms. Detailed analysis from WBSETCL/WBSLDC is yet to be received.

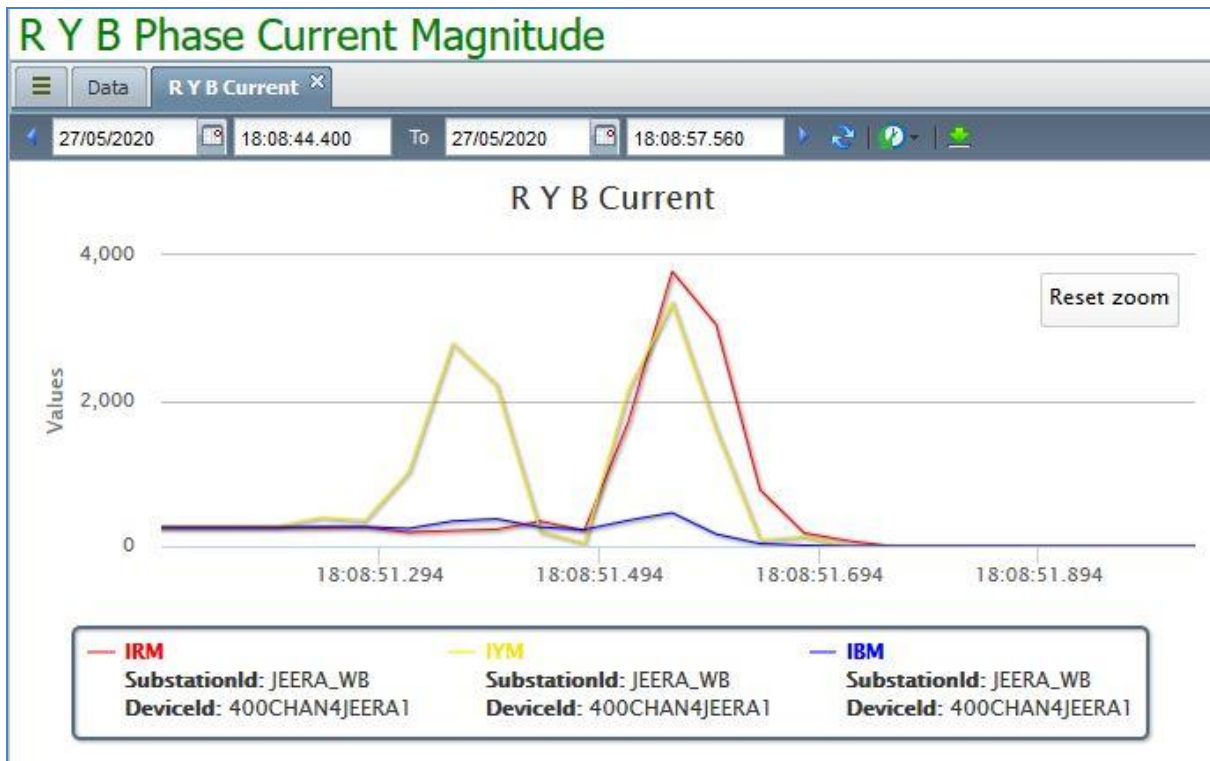


Figure 2: current measured at Jeerat end of 400 kV Jeerat Chanditala S/C

Members may discuss

Deliberation in the meeting

PCC advised WBSETCL to submit a report to ERPC and ERLDC.

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

*Updated status is enclosed at **Annexure C1**.*

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 all the concerned constituents to comply the observations and send the updated status to ERPC.

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/P LCC Link available	AR facility functional
13	<u>220KV BUDIPADAR-KORBA-II</u>	23.06.16	Y-N FAULT	OPTCL	CSEB	PLCC not available	will be activated in consultation with Korba
17	<u>220 KV TSTPP-RENGALI</u>	17.07.16	EARTH FAULT	NTPC	OPTCL	OPGW replaced PLCC.	by March 2018
18	<u>220KV BUDIPADAR-RAIGARH</u>	21.07.16	EARTH FAULT	OPTCL	PGCIL	PLCC defective.	To be commissioned be Chhatisgarh.
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	PLCC commissioned.	Voice established. For carrier required shutdown
24	<u>220 KV ROURKELA - TARKERA-II</u>	11.08.16	B-N FAULT	PGCIL	OPTCL	OPGW available	DTPC installed. A/R to be commissioned.
27	<u>220 KV BIHARSARIF-TENUGHAT</u>	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 at Khizersarai	OPGW is present. Protection is done through 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 the constituents to rectify the PLCC and Auto reclose issues at the earliest.

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

Meeting ended with vote of thanks to the chair

Name	Email Address	Company Name
Alok Pratap Singh	apsingh@posoco.in	POSOCO,ERLDC
Amaresh Mallick	amaresh65@rediffmail.com	POSOCO,ERLDC
Ankur Kumar	ankur@powergridindia.com	Power Grid Corporation of India Limited
Arindam choudhary	ari010689@gmail.com	bsptcl
Arun Kumar Chaudhary	ce.sysop@gmail.com	Bihar State Power Transmission Company Limited
Ashim Nayak	nayakak@tatapower.com	Maithon power limited
Ashish Kr Sharma	ashishtvnl@gmail.com	TTPS, TVNL
CHANDAN MALLICK	chandan.mallick@posoco.in	POSOCO,ERLDC
Ch Mohan Rao	mohan.rao@powergridindia.com	Power Grid corporation of India Limited
Chandan Kumar	chandan@posoco.in	POSOCO,ERLDC
DHANANJAY KUMAR	dhananjaykumar@ntpc.co.in	NTPC LTD, Kahalgaon
Devendra Kumar B	devendra.b@teestaurja.com	Teestaurja Ltd
Dharm Das Murmu	cecritl.jusnl@rediffmail.com	JUSNL
Dinesh Kharel	acepowersikkim@gmail.com	SLDC SIKKIM(Power Department)
GAGAN KUMAR	gagankmishra@gmail.com	SLDC,BSPTCL
Goutam Dutta	gdutta0304@gmail.com	SLDC, WB, WBSETCL
J Ganesh Rao	ganesh.jada@gov.in	ERPC
JAYANTA KANJILAL	cectdwsetcl@gmail.com	WBSETCL
Kshemachand Agrawala	kcagrawala@ntpc.co.in	NTPC LTD
Laldhari Kumar	laldhari@posoco.in	POSOCO,ERLDC
Makarand Prakash Joshi	makarandprakash.j@greenkogroup.com	Dikchu H.E.P
Manoranjan Panigrahi	mpanigrahi@ntpc.co.in	NTPC, TSTPS
Nishant Kumar	nishant.kumar@sekura.in	DMTCL- Sekura
O P SRIDHARAN PERUMAL	electrical_orissa@jindalgroup.com	jindal india thermal power limited
PRITAM MUKHERJEE	pritam@posoco.in	POSOCO,ERLDC
Pallavi Kansal	pallavi.k@tvptl.com	TVPTL
Prachi Gupta	prachigupta18oct@gmail.com	BSPTCL
R V PATNAIK	rvpatnaik@ntpc.co.in	NTPC
RAHUL RAJ	rahulraj.rnr@gmail.com	BSPTCL
RAMBABOO SINGH	eeecritl@gmail.com	Bsptcl
Rabten Rabten	r.rabten302@drukgreen.bt	DGPC,CHP
Rahul Anand	rahulanand@ntpc.co.in	NTPC
Rahul Kumar	rahulmit2k7@gmail.com	BSPTCL
Raj Protim Kundu	rajprotim@posoco.in	POSOCO,ERLDC
Rajat Kumar Koley	rajatkumarkoley@gmail.com	WBPDCL
Rajdeep Bhattacharjee	rekolbsphcl@gmail.com	BSPHCL
SATHISH KUMAR NATARAJAN	sathishkumar.natarajan@sekura.in	DMTCL-SEKURA
SUDEEP KUMAR	sudeepkumar@powergridindia.com	POWERGRID
SUDIPTA MAITI	sudiptam77m@gmail.com	DAMODAR VALLEY CORPORATION
Saibal Ghosh	saibal@posoco.in	POSOCO,ERLDC
Sanjeev Kumar	sanjeev@dansenergy.com	Shiga Energy Pvt Ltd
Santosh Ghodekar	santosh.ghodekar@dansenergy.com	DANS Energy Private Limited
Satya Deep Tangudu	satyadeep.t@greenkoenergyprojects.com	SKPPL, Dikchu H.E.P
Satyanarayan Kumar	cetransom.bsptcl@gmail.com	BSPTCL
Saurav Sahay	saurav.sahay@posoco.in	POSOCO,ERLDC
Shiv Shankar Mardi	imtheshiv@gmail.com	JUSNL
Sonam ongchuk Lepcha	sikkim.sldc@gmail.com	State Load Despatch Centre
Sucharit Mondal	sucharit.mondal@rpsg.in	CESC
Sunil Chandra Das	scdas01@ntpc.co.in	NTPC FARAOKA
UMAKANTA MISHRA	ele.umishra@optcl.co.in	OPTCL
Vivek Karthikeyan	vivek.karthikeyan@sterlite.com	Sterlite Power
Vivek Pushpakar	vivekpushpakar@ntpc.co.in	NTPC BARH
Ziaul Huda	ele.mzhuda@optcl.co.in	OPTCL
sukdev bal	sukdevbal@powergridindia.com	POWERGRID

Annexure A

Disturbance at 220 KV GSS Darbhanga (BSPTCL) on dated- 05/05/2020 at 19:10 Hrs

- Y-Phase jumper of Darbhanga (BSPTCL)-DMTCL ckt-1 got snapped towards BSPTCL end.
- Line tripped at BSPTCL end on distance protection Z1 (600 m). (DR uploaded)
- At the same time Darbhanga (BSPTCL)-DMTCL ckt-2 got tripped at DMTCL end on distance protection Z1 (1.8 km).
- Subsequently Darbhanga (BSPTCL)-Mushahari ckt-1 got tripped on Z-3 at Mushahari end. (DR uploaded)

Observations:

- Breaker timing test of Darbhanga (BSPTCL)-DMTCL ckt-1 at Darbhanga (BSPTCL) end needs to be done. We will do it shortly.

SLD of 220 kv Ring of Darbhanga(BSPTCL), DMTCL, Motipur, Mushahari and MTPS has been attached with the mail.

Kindly give your valuable instructions/suggestions regarding this.

Total Power failure at 220/132 kV
Chaibasa GSS on 06.05.2020 at
01:19 hrs.



Annexure B5

▶ Overview of Incident :-

At 01:19 hrs, 220 kV Chaibasa - Chaibasa (PGCIL) D/C and 220 kV Chaibasa - Ramchandrapur D/C tripped due to R phase to earth fault resulting in total power failure at 220/132 kV Chaibasa GSS.

▶ Load loss - approx 20 MW.

▶ Weather - Thunderstorm & Rainy

▶ **Major elements tripped :-**

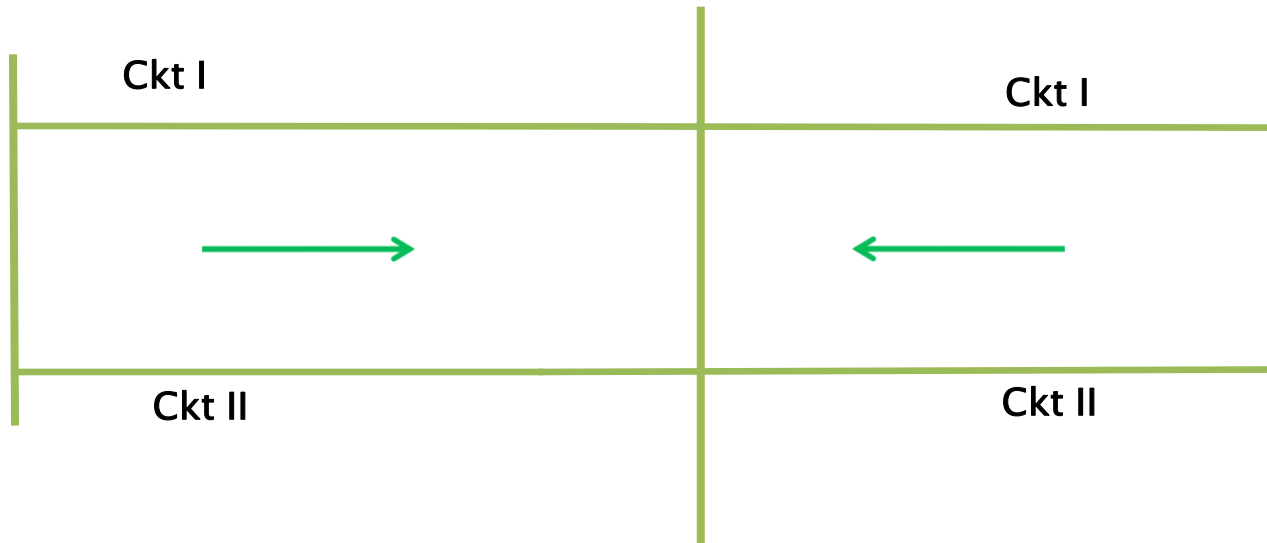
- 220 kV Chaibasa (JUSNL) - Chaibasa (PG) D/C
- 220 kV Chaibasa (JUSNL) - Ramchandrapur D/C

Prefault condition :-

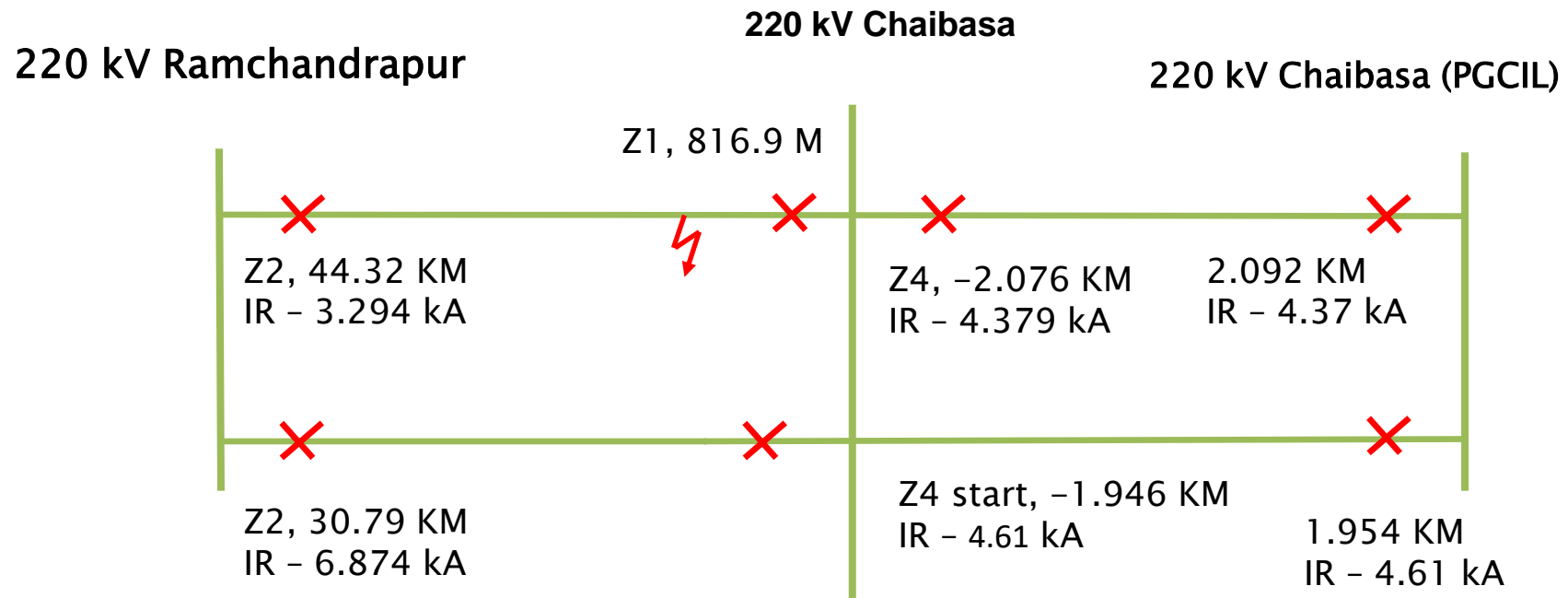
220 kV Ramchandrapur

220 kV Chaibasa

220 kV Chaibasa (PGCIL)



Post fault condition :-



- ❖ 220 kV Chaibasa - Chaibasa (PGCIL) ckt - II did not tripped from Chaibasa end.

▶ Relay Indications:

Element Name	Relay Indication at End 1	Relay Indication at End 2	Remarks
220 kV Chaibasa – Chaibasa (PGCIL) - I	RN fault, Z4, F. Loc = - 2.076 KM, IR – 4.379 kA, IY – 626.5 A, IB – 418.5 A, VRN – 9.256 kV, VYN – 138.9 kV, VBN – 141.7 kV	RN fault, F. Loc = 2.092 KM, IR – 4.37 kA	# Tripped from both end.
220 kV Chaibasa – Chaibasa (PGCIL) - II	RN fault, Z4 Start, F. Loc = - 1.946 KM, IA – 4.539 kA (facia) Not tripped	RN fault, F. Loc = 1.95 KM, IR – 4.61 kA	# Tripped from PGCIL end only.
220 kV Chaibasa – Ramchandrapur - I	RN fault, Z1, F. Loc- 816.9 m, F/Duration- 1.185 S, RTT-79.91 mS,	RN fault, Z2, F. Loc- 44.32 km, F/Duration- 76.58 mS, RTT-0.0005 mS, IR- 3.294 KA, IB- 838.8 A, IB- 660.7 A, VRN- 85.35 kV, VYN- 130.9 kV, VBN- 130.2 kV F/R- 2.366 ohm	# Tripped from both end.
220 kV Chaibasa – Ramchandrapur - II	Not Recorded	R-N fault, Z2, F. Loc- 30.79 KM F/Duration- 381.1 ms, Relay trip time- 91.53 ms, IR- 6.874KA, IB- 18.80 A, IB- 18.11A, VRN- 89.58 kV, VYN- 137.1 kV, VBN- 136.0 kV F/R- 1.183 ohm	# Tripped from both end.

Total Power failure at 220/132 kV Hatia – II GSS on 14.05.2020 at 15:33 hrs.

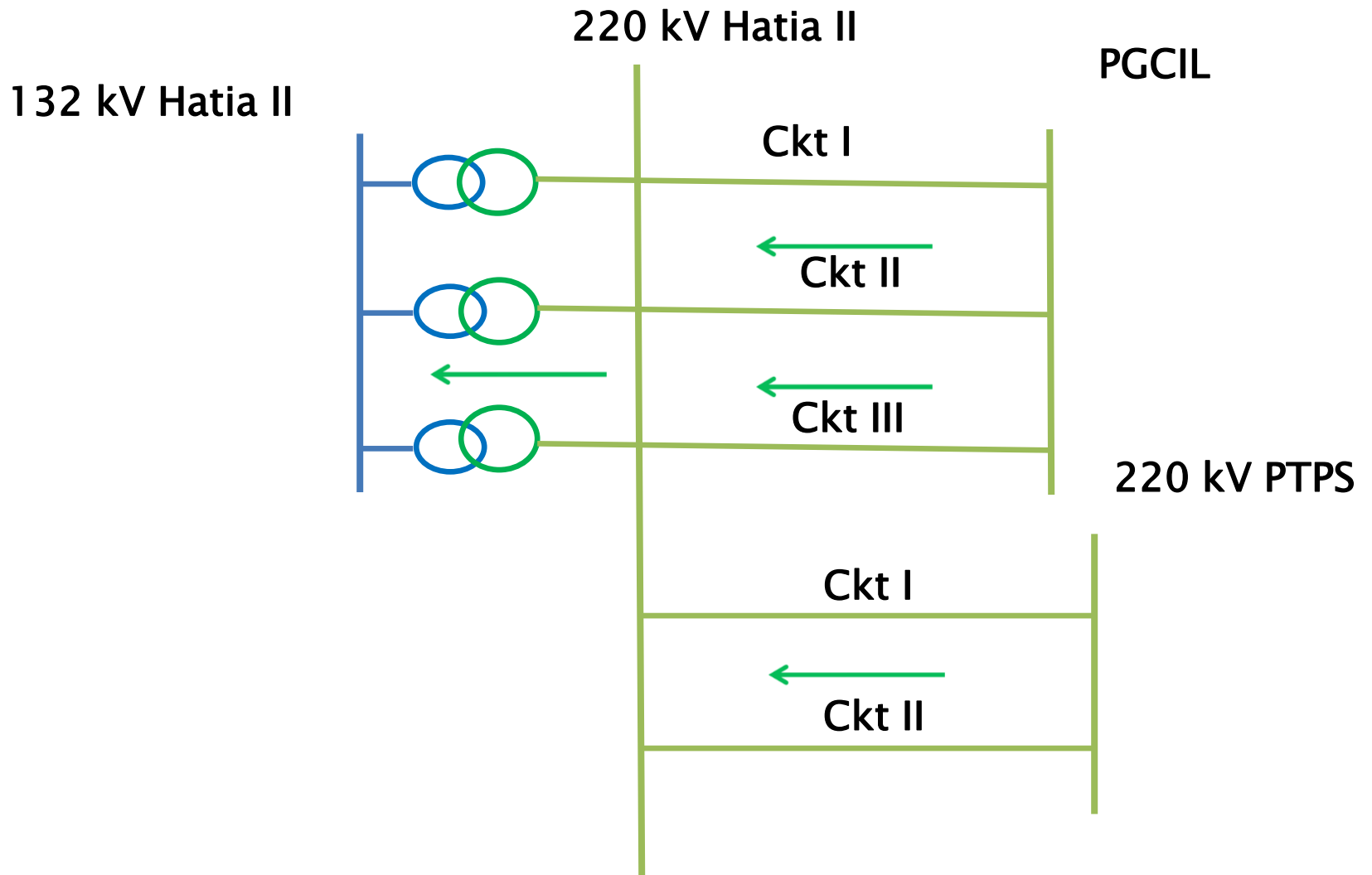


Annexure B6

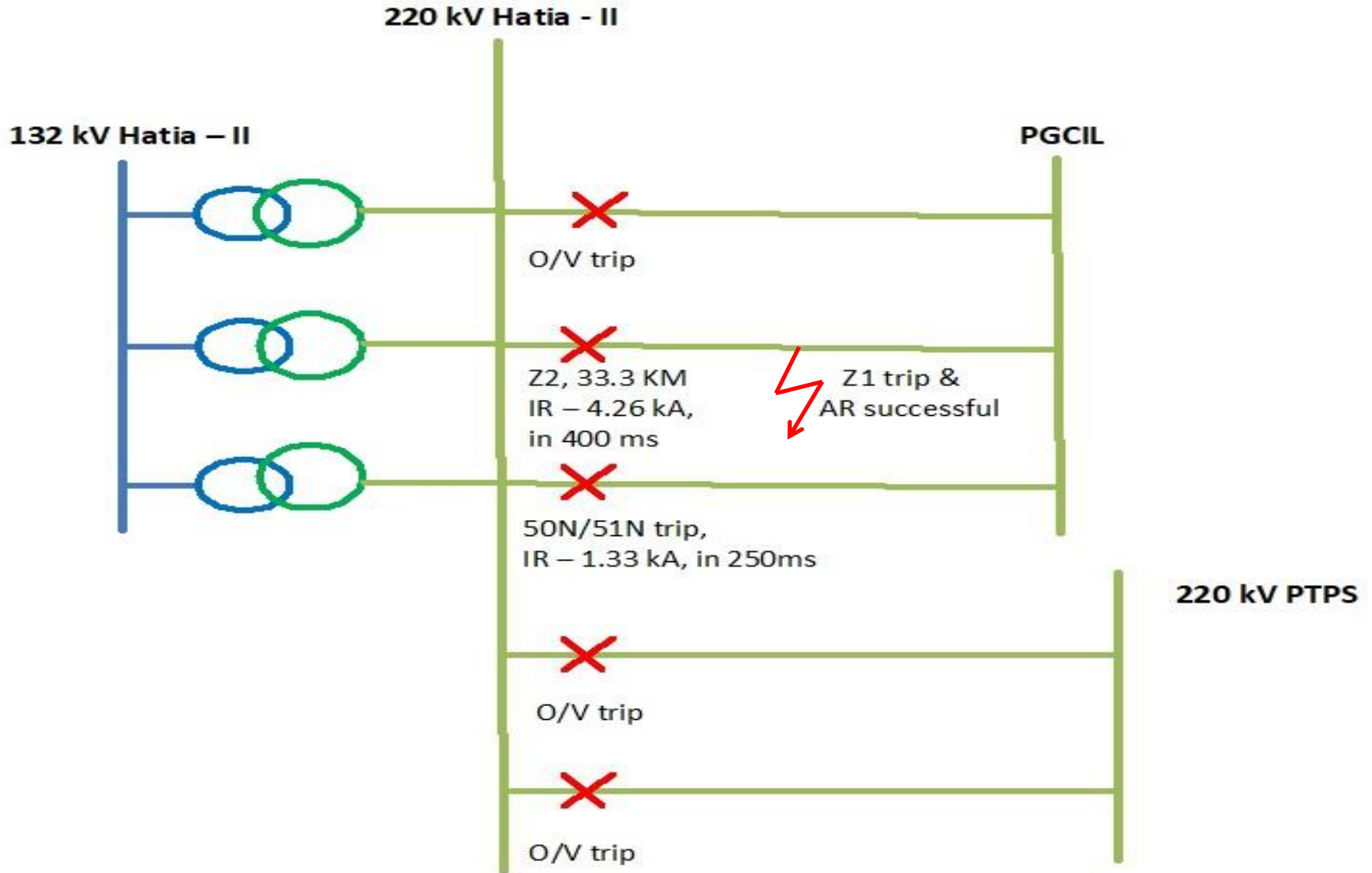
Overview of Incident : –

- ▶ **220 kV Ranchi (PGCIL) – Hatia –II T/C and 220 kV Patratu – Hatia – II D/C tripped resulting in total power failure at 220/ 132 kV Hatia – II GSS.**
- ▶ **Load Loss – 161 MW**
- ▶ **Weather – Rainy**
- ▶ **Major elements tripped:**
 - ▶ **220 kV Ranchi (PGCIL) – Hatia – II T/C,**
 - ▶ **220 kV Patratu–Hatia – II D/C**

► Prefault Condition :-



▶ Post fault Condition :-



- Did not trip any of the 150 MVA, 220/ 132 kV ICTs.
- Did not trip at PTPS End.

► Relay Indications :-

Element Name	Relay indication at End 1	Relay indication at End 2	Remarks
220 kV Ranchi (PGCIL) - Hatia II ckt 1	Did not trip at PG end	O/V trip at Hatia end, Phase to neutral voltage around 137 kV)	
220 kV Ranchi (PGCIL) - Hatia II ckt 2	Did not trip at PG end Z1 Trip, IA – 10 kA approx & Successful AR	R-N, Zone – 2, F/C - 4.26 kA, F. Loc – 33.3 KM, Fault Cleared in 400 ms.	
220 kV Ranchi (PGCIL) - Hatia II ckt 3	Did not trip at PG end	50N/51N tripped, IR- 1.33 kA, IY – 610 A, IC – 390 A, in 250 ms	# E/F setting was Non-directional and Time delay – 0.25 s at the time of tripping
220 kV Patratu-Hatia – II Ckt 1	Did not trip at PTPS End	O/V trip Phase to neutral voltage around 140 kV	# O/ V Setting (Ph-Ph) – 110% with 5s time delay
220 kV Patratu-Hatia – II Ckt 2	Did not trip at PTPS End	O/V trip Phase to neutral voltage around 140 kV	# O/ V Setting (Ph-Ph) – 110% with 5s time delay

▶ Tripping Analysis :-

- ❖ There was a transient Fault in 220 kV Hatia II – PGCIL Ckt – II. Tripped in Z2, F. Loc – 33.3 km in 400 ms from Hatia end and same fault was observed in Z1 from remote end (A/R successful).
- ❖ 220 kV PGCIL Ckt– I tripped on O/V (Main –II relay), Ph–N voltage around 137 kV.
- ❖ 220 kV PGCIL Ckt– III tripped on E/F in 250 ms approx, which is due to wrong setting (Non – directional, T. Delay – 0.25 s).
- ❖ 220 kV PTPS – I & II both tripped on O/V, Ph–N voltage around 140kV. {O/V setting (Ph–Ph) is 110% , T. Delay – 5s.

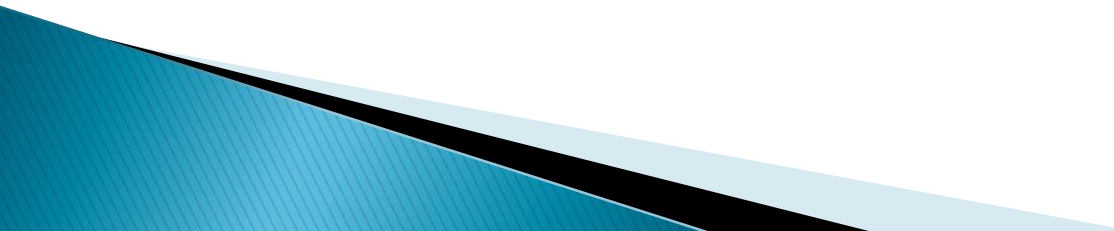
▶ Remedial Measures :-

❖ 220 kV Hatia II – PGCIL Ckt – III E/F setting is revised as :

▶ Directional – Fwd,

▶ T. Delay – 1.25 s

THANK YOU



Grid Disturbance at 220/132 kV Hatia – II GSS on 19.05.2020 at 02:56 hrs.



Annexure B7

Overview of Incident : –

- ▶ 132 kV side B phase CT of 220/132 kV ICT – 3 at 220/132 kV Hatia S/S got burst. At same time, 220 kV Ranchi Hatia 1 and 3, 220/132KV 150MVA ICT–1, 2 and 3 at Hatia tripped resulting total loss of supply at 132 kV voltage level of Hatia S/S. 220 kV bus at Hatia remained in service along with 220 kV PTPS – Hatia D/C and 220 kV Ranchi – Hatia – 2.
- ▶ **Load Loss – 161 MW**
- ▶ **Major elements tripped :-**
220 kV Ranchi Hatia –1 and 3,
220/132KV 150MVA ICT–1, 2 and 3

▶ Prefault Condition :-

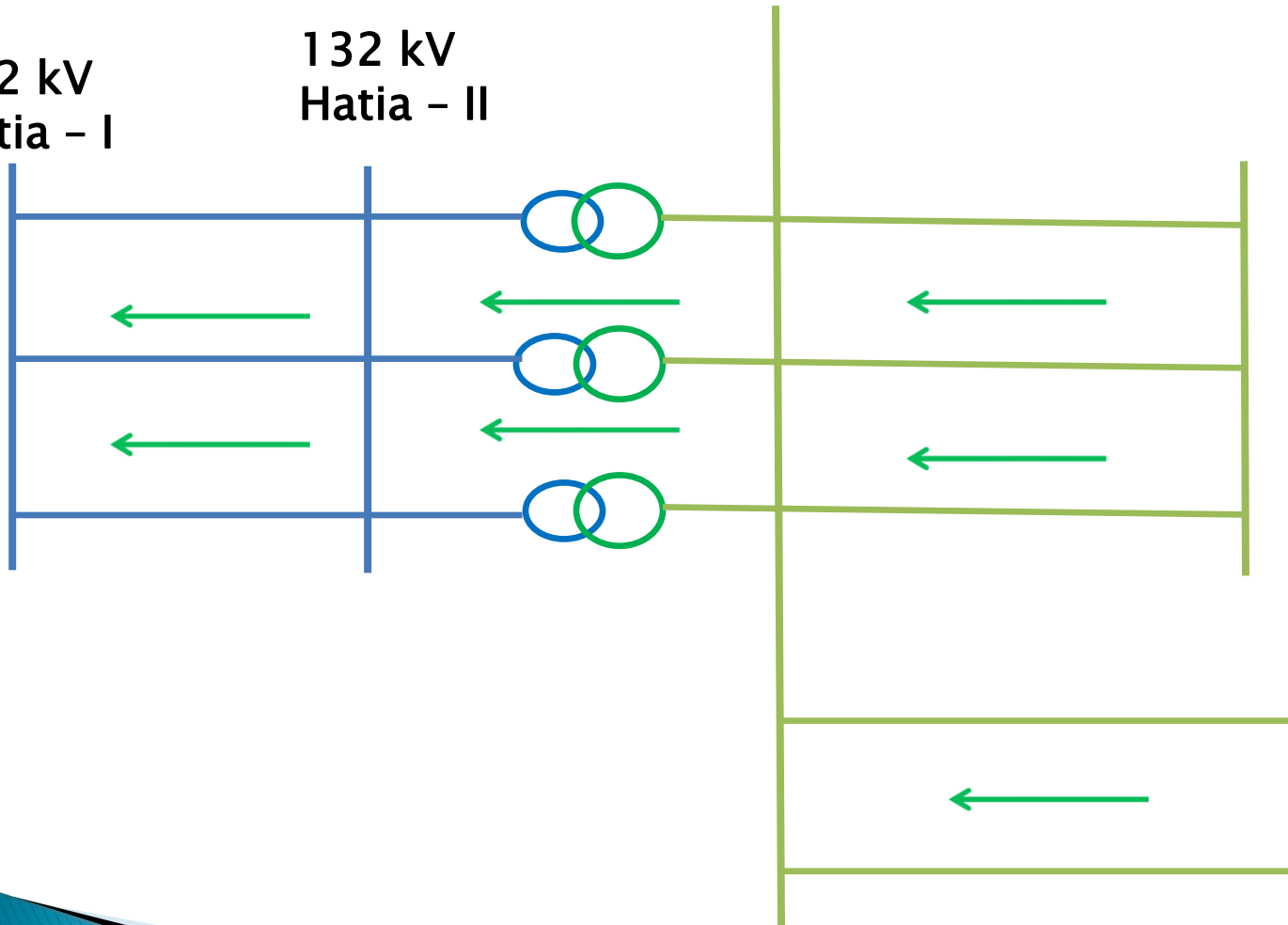
220 kV Hatia - II

132 kV
Hatia - I

132 kV
Hatia - II

PGCIL

220 kV PTPS

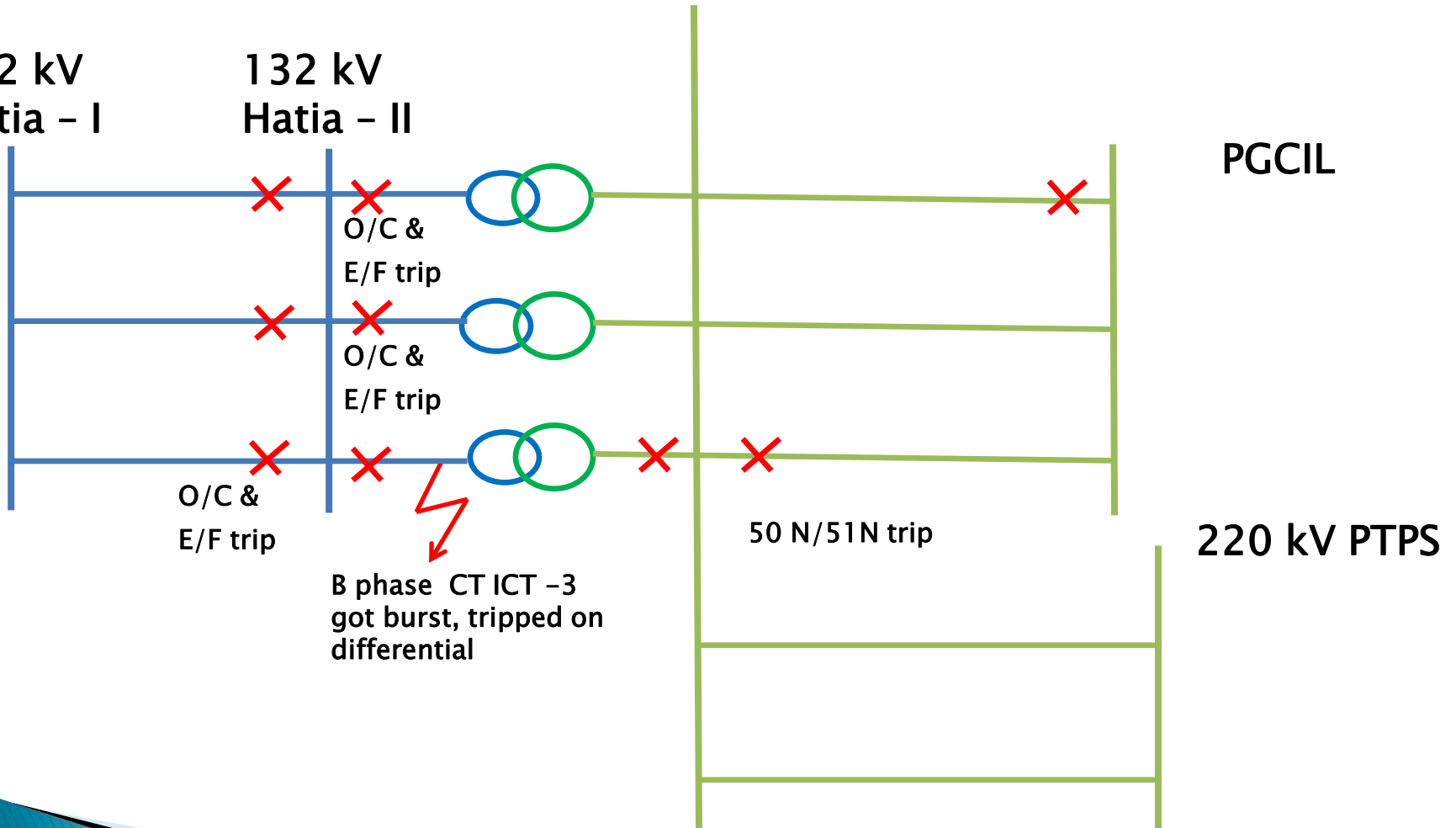


▶ Post fault Condition :-

220 kV Hatia - II

132 kV Hatia - I

132 kV Hatia - II



- 220 kV PGCIL - I tripped from remote end only.
- Did not trip 220 kV PGCIL - II and 220 kV Hatia -II - PTPS D/C.

► Relay Indications :-

Element Name	Relay indication at End 1	Relay indication at End 2	Remarks
220 kV Ranchi (PGCIL) - Hatia - 3	Did not trip at PG end	50N/51N Trip in 300 ms approx, IR-0.19 kA, IY – 0.39 kA, IC -0.90 kA	# E/F setting was Non-directional and Time delay – 0.25 s at the time of tripping
150 MVA, 220/132 kV ICT - 1	LV (Back Up) – O/C & E/F trip, in 300 ms approx. IL1 – 0.23kA, IL2 – 0.84kA, IL3 – 3.80kA		
150 MVA, 220/132 kV ICT - 2	LV (Back Up) – O/C & E/F trip, in 350 ms approx. IL1 – 0.30kA, IL2 – 0.88kA, IL3 – 3.87kA,		
150 MVA, 220/132 kV ICT - 3	GR. A & GR.B Master Trip Relay, 86AX & 86BX Trip Mult. Relay, Flt. Event ON 0ms, 10, Relay Pickup On 0ms, DIR O/C PU ON 0ms, DIR E Pickup PU ON 0ms, IEp DIR PU ON 0ms, DIR L3 PU ON 10ms, Ip DIR PU ON 10ms, DIR L2 PU ON 20ms, DIR L2 PU ON 68ms, PU Time 88ms 88ms, <u>LT SIDE:-</u> Pow. Sys. Flt. ON 52 0ms, Flt. Event ON 52 0ms, Relay Pickup On 0ms, O/C PU ON 0ms, O/C Earth PU ON 0ms, IEp Picked UP ON 0ms, O/C Earth PU ON 0ms, PU Time 50ms. <u>IN FACIA OPTD.:-</u> X-Mer Diff Protn. Optd. GR. A & GR. B Trip Relay Optd. HV Protn. Optd		# B PH CT was got burst
132 Hatia – I ckt -3	DIR O/C & E/F Trip in 200 ms approx. IL1 – 0.42kA, IL2 – 0.78kA, IL3 – 0.62kA		

▶ Tripping Analysis :-

- ❖ 132 kV side B phase CT of ICT - 3 got burst and ICT - 3 tripped on differential relay. Reason for bursting of CT could not be found out.
(The last CT test report is attached)
- ❖ 220 kV PGCIL - III tripped E/F in 250 ms approx, which due to wrong setting (Non -directional, T. Delay - 0.25 s).
- ❖ Both ICT -2 & 3 tripped on O/C and Earth fault in 300 ms and 350 ms approx respectively.
- ❖ 132 kV Hatia - III DIR O/C & E/F Trip in 200 ms approx.

132 KV ICT - II CT

Make - SCT Ltd, Date of Charging :- 12/08/2014
 SL. NO - R Y B
 871/2013 870/2013 869/2013

Available Ratio - 800-400-200/1-1-1A
 Connected Ratio - 800/1A
 Accuracy class - 0.5

Date :- 24/12/2019
 On date 24/12/2019 Preventive Maintenance &
 All CT Testing has done

Insulation Resistance

Applied voltage - 5000 volt

	R	Y	B
Primary Earth →	550 GΩ	600 GΩ	585 GΩ
	462 GΩ	500 GΩ	520 GΩ
	348 GΩ	400 GΩ	380 GΩ
	200 GΩ	300 GΩ	250 GΩ
	300 GΩ	350 GΩ	400 GΩ
	380 GΩ	400 GΩ	420 GΩ

Applied voltage - 500 volt Ratio Test :-

	Applied current (A)	Measurement current (A)
R PH - 400		0.499
800		1.00
Y PH - 400		0.500
800		1.00
B PH - 400		0.501
800		1.00

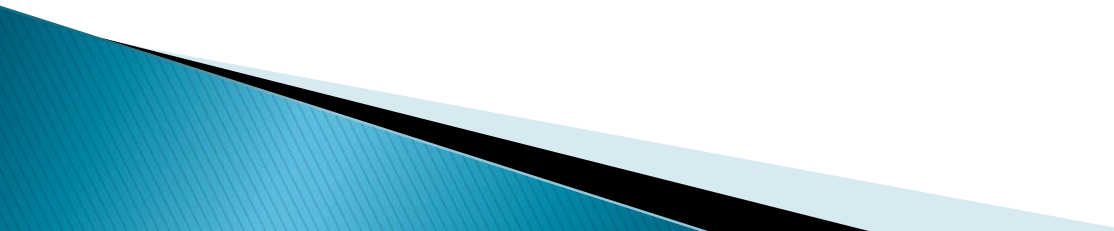
Ravindra B.R.
 24/12/19
 JEE HSD Halwa-II

24/12/19
 AEB HSD Halwa-II

▶ Remedial Measures :-

- ❖ 220 kV Hatia II – PGCIL Ckt – III E/F setting is revised after 19.05.2020 grid disturbance as –
 - Directional – Fwd,
 - T. Delay – 1.25 s

THANK YOU



41	ISSV-NEM-PPSP-ABANGGAN-2	5/27/2021	16:45	ASG - OT base, Center rec	MPSP - Carrier send OT and	OT sent from MPSP	-----	Reason of OT sent from MPSP may be changed	Aranghaji	Yes	No	ISSGETC to update	Full operation of gas pressure monitor corrected of our data feedback section during battery only. OT was sent to remote and Center Operator provided the problem. The issue have been corrected for verification
42	ISSV-DUNGAJUR-SAGARONG-6	5/27/2021	17:10	Dunqaur - 4, 6, 8, 9, 10, 26, 28, 30, 31	ASG successful	BPANAG TO EASTN FAULT	<100 msec	Dunqaur PMU - Faulty BPANAG did not received. This issue is logging after 3 sec. Both and DR may be changed	Aranghaji	No	No	PG DR-3 and ISSGETC to update	
43	ISSV-ABAT-NEM-CHANDITALA-5	5/27/2021	18:00	Operation has fault from 10 adjacent 900V primary distribution of PMU by manual - 10 Chanditara being an anomaly, respectively 100%	BPANAG TO EASTN FAULT BP PANAG	BP PANAG TO EASTN FAULT BP PANAG	400 msec	Failure to both fault corrected in 40 sec. Please to both fault in per PMU. Both and DR may be changed. Reason of fault logging at manual may be changed	Aranghaji	Yes	Yes	ISSGETC to update	On 27-05-2021 at 18:00 hrs observe manual Chanditara 100% operation to both 900V primary switch both and adjacent to both successfully and adjacent to all 100V 100V is cleared both is 80% but no earth occurred which occurred by both and 100V primary switching. From manual during clearing the manual fault 70% of 10 primary switch is not from manual and adjacent manual clearing and from DR operation leading to change of manual. As a result of DR operation is manual Chanditara 100% (next Page) High clearance stopped
44	ISSV-ABAT-SAGARONG-5	5/27/2021	18:00	Aranghaji		BPANAG TO EASTN FAULT AS PANAG	<100 msec	No All Operation. Both and DR may be changed	Aranghaji	No	No	ISSGETC to update	
45	ISSV-KATAPP-BABU-5	5/27/2021	20:50	KATAPP 22.8 km KATAPP 22.8 km KATAPP 22.8 km	No Fault Observed in PMU	No Fault Observed in PMU	-----	Both and DR may be changed with reason of logging	Kathubon	No	No	NTFC both and Kathubon to update	
46	ISSV-KATAPP-LAKSHMAN-5	5/28/2021	20:50	Aranghaji		No Fault Observed in PMU	-----	Both and DR may be changed with reason of logging	Kathubon	No	Yes	PG DR-3 and NTFC Kathubon to update	As failure in heavy cyclone windstorm. As regional and district services
47	ISSV-BANAGARI-TALA-4	5/28/2021	14:22	OT RECEIPT AT BANAGARI Banu Kurum, Bagan Tala, AT TALA	BPANAG TO EASTN FAULT	BPANAG TO EASTN FAULT	<100 msec	As failure to both fault in per PMU with 400 sec in primary distribution. Reason of fault logging at manual may be changed	Aranghaji	No	No	PG DR-3 to update	
48	ISSV-BANAGARI-KORUM-3	5/28/2021	21:40	BPANAG TO EASTN FAULT	BPANAG TO EASTN FAULT	BPANAG TO EASTN FAULT	<100 msec	No All from both end	Banubabu	Yes	No	ISSGETC to update	
49	ISSV-PPSP-BANAGARI-5	5/28/2021	16:30	BPANAG TO EASTN FAULT	BPANAG TO EASTN FAULT	BPANAG TO EASTN FAULT	<100 msec	No All Operation. Both and DR may be changed	Dunqaur	No	No	ISSGETC to update	AS DR not operation is to disabled from both and reason for DR operation is approved from ISSGETC. For All issue disabled as per recommendation of ICM of Government
50	ISSV-KORUM-BANAGARI-KORUM-3	5/28/2021	15:50	BPANAG TO EASTN FAULT	BPANAG TO EASTN FAULT	BPANAG TO EASTN FAULT	520 msec	Reason of delayed fault clearance may be changed	Aranghaji	No	No	ISSGETC and ISSGETC to update	

Sl No.	Name of the incidence	PCC Recommendation	Latest status
90th PCC Meeting			
1.	Tripping of both running units at 220 k V TTPS on 15.03.2020 at 16:12 hrs.	<p>PCC advised JUSNL to take the following measures to avoid the unwanted tripping of transmission lines:</p> <ul style="list-style-type: none"> • Check any fault was appeared in downstream network of Patratu PTPS S/s • Send the relevant DR of zone 4 tripping of 220 kV TTPS – PTPS S/C line at PTPS end • Check the zone 4 reach and time settings of 220 kV TTPS – PTPS S/C line at PTPS end as the line should not trip within 100 ms. • Test the protection relays of 132kV and 220 kV system at PTPS including 220/132kV ATRs 	
2.	Black out at 220 k V Tenughat Substation on 14.04.2020 at 12:47 hrs	<p>After detailed deliberation. PCC opined that tripping of 220 kV TTPS – PTPS S/C line not clear, PCC advised JUSNL to collect the details and submit to ERPC and ERLDC.</p> <p>PCC advised BSPTCL, JUSNL and TVNL to take following corrective measures to avoid frequent tripping of the lines:</p> <ul style="list-style-type: none"> • 220 kV Tenughat Biharshariff S/C tripped 7 times in the months of March and April, 2020. 220 KV TTPS PTPS line also tripped several times in March and April 2020. JUSNL and BSPTCL were advised to carry out the line patrolling and ensure healthiness of these line. • TVNL was advised to review the O/C, E/F protection settings of 220 kV Tenughat Biharshariff S/C , O/C , 	

		E/F protection settings of PTPS unit so that high resistance faults could be identified reliably.	
3.	Total Power failure at 220 k V TTPS on 22.04.2020 at 20:12 hrs	PCC advised JUSNL to submit the relay settings of 220 kV PTPS-TTPS line at PTPS end to ERPC and ERLDC	
4.	Disturbance at 220 k V Tenughat Substation on 28.04.2020 at 06:29 hrs.	PCC advised TVNL to replace the EM type Busbar protection with numerical relay.	
5.	Disturbance at 220 k V Chandil Substation on 29.03.2020 at 19:21 hrs.	<p>PCC observed the following discrepancies and advised JUSNL and WBPDCCL to take appropriate action:</p> <ul style="list-style-type: none"> • 220kV Chandil-Ramchandrapur S/C line got tripped within 100 ms. (Relay fault pickup details are not available due to incorrect DR configuration) JUSNL may check timing of distance protection at Ramchandrapur. • Disturbance recorders of all the substations of JUSNL involved in this disturbance are to be configured as per the ERPC guidelines. • STPS end DR of 220kV Chandil-STPS line is to be configured as per the ERPC guidelines • Protection system of 220/132kV ATRs to be tested and the settings are to be coordinated with 220kV and 132 kV protection relays. • Busbar protection for all 220kV substations are to be installed to minimize the fault clearing time. • As 220kV Chandil S/s has single bus and transfer scheme, option for sectionalizer may be explored. • Healthiness of carrier signal of 220kV Chandil-STPS line is to be 	

		<p>checked.</p> <ul style="list-style-type: none"> • STPS end DR of 220kV Chandil-STPS line is to be configured as per the ERPC guidelines 	
6.	Total Power failure at 220 k V Chandil Substation on 15.04.2020 at 17:20 hrs	<p>PCC observed the following discrepancies and advised JUSNL to take appropriate action:</p> <ul style="list-style-type: none"> • Disturbance recorders of all the substations involved in this disturbance are to be configured as per the ERPC guidelines. • CB of 220kV STPS-Chandil line at Chandil end is to be tested • Protection system of 220/132kV ATRs to be tested and the settings are to be coordinated with 220kV and 132 kV protection relays. • Busbar protection for all 220kV substations are to be installed to minimize the fault clearing time. 	
7.	Total Power failure at 220 k V Chandil Substation on 30.04.2020 at 19:37 hrs	<p>PCC observed the following discrepancies and advised JUSNL to take appropriate action:</p> <ul style="list-style-type: none"> • Disturbance recorders of all the substations involved in this disturbance are to be configured as per the ERPC guidelines. • The reach and time settings of distance protection of 220kV STPS-Chandil line at Chandil end are to be reviewed. • Protection system of 220/132kV ATRs to be tested and the settings are to be coordinated with 220kV and 132 kV protection relays. 	
8.	Total Power failure at 400 k V Teesta III and Dikchu Substations on 15.03.2020 at 16:12 hrs	<p>PCC advised Powergrid to explore implementation of line differential protection for 400 kV Teesta III – Kishangunj S/C, 400 kV Rangpo –</p>	

		<p>Kishangunj S/C and 400 kV Teesta III – Dikchu – Rangpo section to avoid uncoordinated trippings. This would identify the high resistive faults reliably and clear the faults immediately.</p> <p>PCC advised Dikchu to review earth fault settings at 400 k V side of 400/132 kV ICT of Dikchu HEP as tripping of this ICT is not desirable. PCC already advised same in earlier PCC Meetings.</p>	
9.	Tripping of 400 k V Teesta III – Dikchu S/C from both ends on 21.04.2020 at 11:00 hrs	<p>PCC advised Dikchu to review the relay settings.</p> <p>PCC advised TUL to maintain the spare reserves.</p>	
10.	Black out of 132 k V Chujachen Hydro Power Substation on 01.04.2020	PCC advised DANS Energy to send relay settings , SLD and line parameters at Tashiding and Jorethang to ERPC and ERLDC.	
11.	Tripping of Unit 1 of JITPL on 05.03.2020 at 19:27 hrs	<p>PCC advised JITPL take following corrective actions:</p> <ul style="list-style-type: none"> • Reduce zone 4 time setting of transmission lines to 0.5 second. • Bay CT could be taken in reactor differential protection. • As a temporary measure, set reactor bays backup impedance tripping time to 200-300 milisecond instead of 0 second to avoid maloperation. 	
12.	Tripping of both units of JITPL on 21.04.2020 at 18:29 hrs	<p>PCC advised JITPL to take following action:</p> <ol style="list-style-type: none"> 1) Tripping of both units at JITPL for bus bar protection operation of any bus may be reviewed. 2) Units shall be connected to grid 	

		through remaining healthy bus	
13.	Multiple tripping incident at Melli at 18:29 hrs on 13-03-2020	PCC advised powergrid and sikkim to take necessary action and submit details to ERPC and ERLDC	
14.	Islanding of CESC system at 14:31 hrs on 28-04-2020	PCC advised WBSETCL and CESC to coordinate the protection settings and islanding scheme settings to minimize separation of CESC system.	
89th PCC Meeting			
1.	Disturbance at 220 kV Bidhannagar Substation on 01.02.2020 at 21:05 Hrs.	<p>PCC suggested WBSETCL to take the following remedial measures:</p> <ul style="list-style-type: none"> • 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 	
2.	Tripping of 220 kV Muzaffarpur-Hajipur D/C on 09.02.2020 at 12:53 Hrs and Tripping of 220 kV Hajipur-Amnour D/C on 10.02.2020 at 17:32 Hrs.	<p>PCC advised BSTCL to take the following actions:</p> <ul style="list-style-type: none"> • Check the past trippings for successful/unsuccessful operation of LBB and Bus Bar protection • Test LBB protection and Bus bar protection. <p>PCC also advised SLDC Bihar and Powergrid to check reason for voltage unbalance at Muzaffarpur Substation.</p>	

3.	Disturbance at Muzaffarpur Substation on 20.02.2020 at 12:29 Hrs.	PCC advised BSPTCL to resolve the O&M issues with Powergrid at the earliest.	
4.	Multiple tripping incident at RTPS at 01:55 hrs on 08-02-2020	PCC advised DVC to change GPS time synchronization.	
5.	Multiple tripping incident at NBU at 22:01 hrs on 29-02-2020	PCC advised WBSETCL to send detailed report to ERPC.	
6.	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	PCC advised SLDCs, generating stations and transmission utilities involved to send detailed report along with DR/EL to ERPC and ERLDC	
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.	<p>PCC advised BSTPCL take the following corrective actions:</p> <ul style="list-style-type: none"> • 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.	<p>PCC advised NHPC to take following corrective actions:</p> <ul style="list-style-type: none"> • 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.	<p>PCC advised BSPTCL to take following corrective actions: -</p> <ul style="list-style-type: none"> • 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	<p>PCC advised JUSNL to collect DRs and discuss above issue with the SLDC and send the details to ERPC/ERLDC.</p> <p>PCC advised NTPC to share the DR at Lalmatia end. In 88th PCC meeting JUSNL informed that they did not get the reply from SLDC Jharkhand yet</p>	
83rd PCC Meeting			
1.	Total power failure at 220 kV Darbhanga (BSPTCL) S/s on 16.08.2019 at 22:23 Hrs.	<p>PCC observed that DR configuration at DMTCL end is not in order. PCC advised DMTCL to configure the DR settings as per the standard.</p> <p>In 87th PCC meeting, DMTCL informed that DR would be configured by end of February, 2020.</p>	
81st PCC Meeting			
1.	Disturbance at 400 kV Dikchu S/s on 30.06.2019 at 09:55	The time setting for the DEF relay at Jorethang end was 500 msec. PCC advised Jorethang to review the	

	Hrs.	<p>timer setting of DEF protection at Jorethang end.</p> <p>PCC advised Chuzachen to review the zone settings for 132 kV Chuzachen-Rangpo line.</p> <p>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.</p> <p>In 87th PCC meeting, Chuzachen informed that they have asked for information related to Rangpo end from Powergrid and Sikkim.</p> <p>Further, Chuzachen informed that they would send the zone setting file to ERPC/ERLDC at the earliest.</p> <p>In 89th PCC Chuzachen was advised to review the zone 3 settings for 132 kV Chuzachen-Rangpo line as it is very high</p>	
2.	Disturbance at 220 kV Budhipadar(OPTCL) S/s on 12.06.2019 at 00:37 Hrs.	<p>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.</p> <p>PCC also advised OPTCL to check the time synchronization.</p> <p>In 3rd TeST meeting, OPTCL informed that they had replaced the old relay at Korba.</p> <p>In 87th PCC meeting, OPTCL informed that DR for Budhipadar – Korba Circuit-I has been configured.</p>	