



Minutes
of
58th PCC meeting

Date: 11.09.2017
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

MINUTES OF 58TH PROTECTION SUB-COMMITTEE MEETING HELD AT ERPC, KOLKATA ON 29.08.2017 (TUESDAY) AT 11:00 HOURS

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

PART – A

ITEM NO. A.1: Confirmation of minutes of 57th Protection sub-Committee Meeting held on 25th July, 2017 at ERPC, Kolkata.

The minutes of 57th Protection Sub-Committee meeting held on 25.07.17 circulated vide letter dated 10.08.17.

Members may confirm the minutes of 57th PCC meeting.

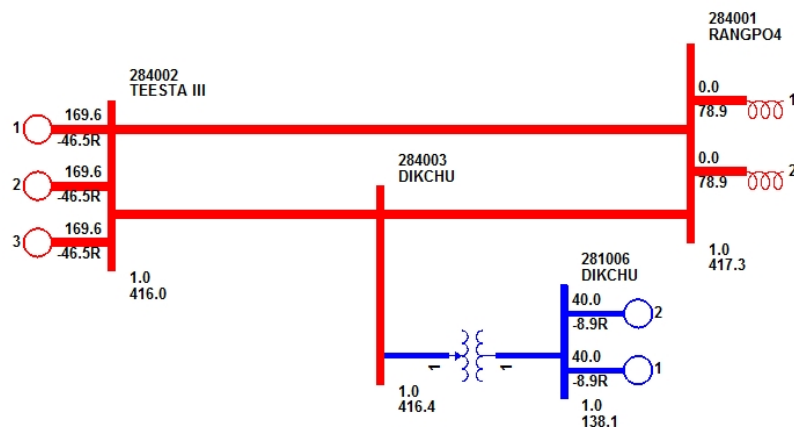
Deliberation in the meeting

Members confirmed the minutes of 56th PCC meeting.

PART – B

ANALYSIS & DISCUSSION ON GRID INCIDENCES OCCURRED IN JULY, 2017

ITEM NO. B.1: Repeated disturbances at 400kV Teesta-III, Dikchu and Rangpo on at 00:30 hrs on 16-07-2017, 15:56 hrs & 19:11 hrs on 24-07-2017 and 10:08 hrs on 27-07-2017



At 00:30 hrs on 16-07-2017:

400 kV Teesta III - Dikchu S/C (tripped only from Teesta III end) and Unit #I at Dikchu tripped due to operation of cable differential protection (B phase current 1.1 kA at Teesta III) resulting generation loss at Unit # II at Dikchu due to loss of evacuation path.

At 15:56 hrs on 24-07-2017:

400 kV B/C at Teesta III tripped on receipt of SPS signal resulting in tripping of unit I, II & IV. However both circuits of 400 kV Rangpo - Binaguri D/C were in service. Flow in 400 kV Rangpo - Binaguri D/C was around 800 MW/Ckt. Rangpo personnel verbally confirmed non increment of TX counter dedicated for transmitting SPS signal.

At 19:11 hrs on 24-07-2017:

Due to Rotor Earth Fault in Unit #5 of Teesta III there was a dip in DC Voltage during Unit 5 Start-up (DC Field Flushing) leading other synchronized units to No Load Operation.

At 10:08 hrs on 27-07-2017:

At 10:08 hrs 400 kV Rangpo – Binaguri – II tripped due to B-N fault. (DEF, F/C at Rangpo and DT received at Binaguri). After tripping of circuit – II, power flow in 400 kV Rangpo – Binaguri – I became more than 850 MW (1700 MW approx.) and SPS – I (generation reduction at Teesta III, Dikchu, JLHEP and Chujachen.) got activated resulting tripping of one unit at each power plant at Chujachen, JLHEP and Dikchu. Due to non-tripping of any unit at Teesta III, power flow in 400 kV Rangpo – Binaguri – I remained more than 850 MW for more than 500 ms and SPS – II got activated resulting tripping of 400 kV Teesta III – Rangpo S/C followed by tripping of remaining units at Teesta III and Dikchu due to loss of evacuation path.

Teesta-III, Dikchu and Powergrid may explain.

Deliberation in the meeting

Teesta-III and Dikchu representatives were not available for discussion.

PCC took serious note of non-submission of the complete details of the disturbances and absence of Teesta-III and Dikchu representatives in the meeting.

It was informed that only Teesta III station has received SPS trip signal at 15:56 hrs on 24-07-2017 but Rangpo end confirm non-transmission of SPS signal. Hence it may be a spurious tripping.

In other instance at 10:08 hrs on 27-07-2017, Teesta-III did not provide generation relief when 400 kV Rangpo – Binaguri – II tripped and SPS operated at Rangpo.

PCC felt that this kind of inadvertent SPS operations of Teesta-III may endanger the grid security and advised Teesta-III to check and review the SPS at their end.

PCC opined that in view of repeated unsatisfactory SPS operations during last few months, the threshold limit on power flow through 400 kV Rangpo – Binaguri D/C line needs to be reviewed.

In last few OCC meetings, Teesta-III, Jorethang, Dikchu, Chuzachen & Powergrid were not submitting the healthiness certificate for Rangpo SPS as per the decision of special meeting of 21.06.2017.

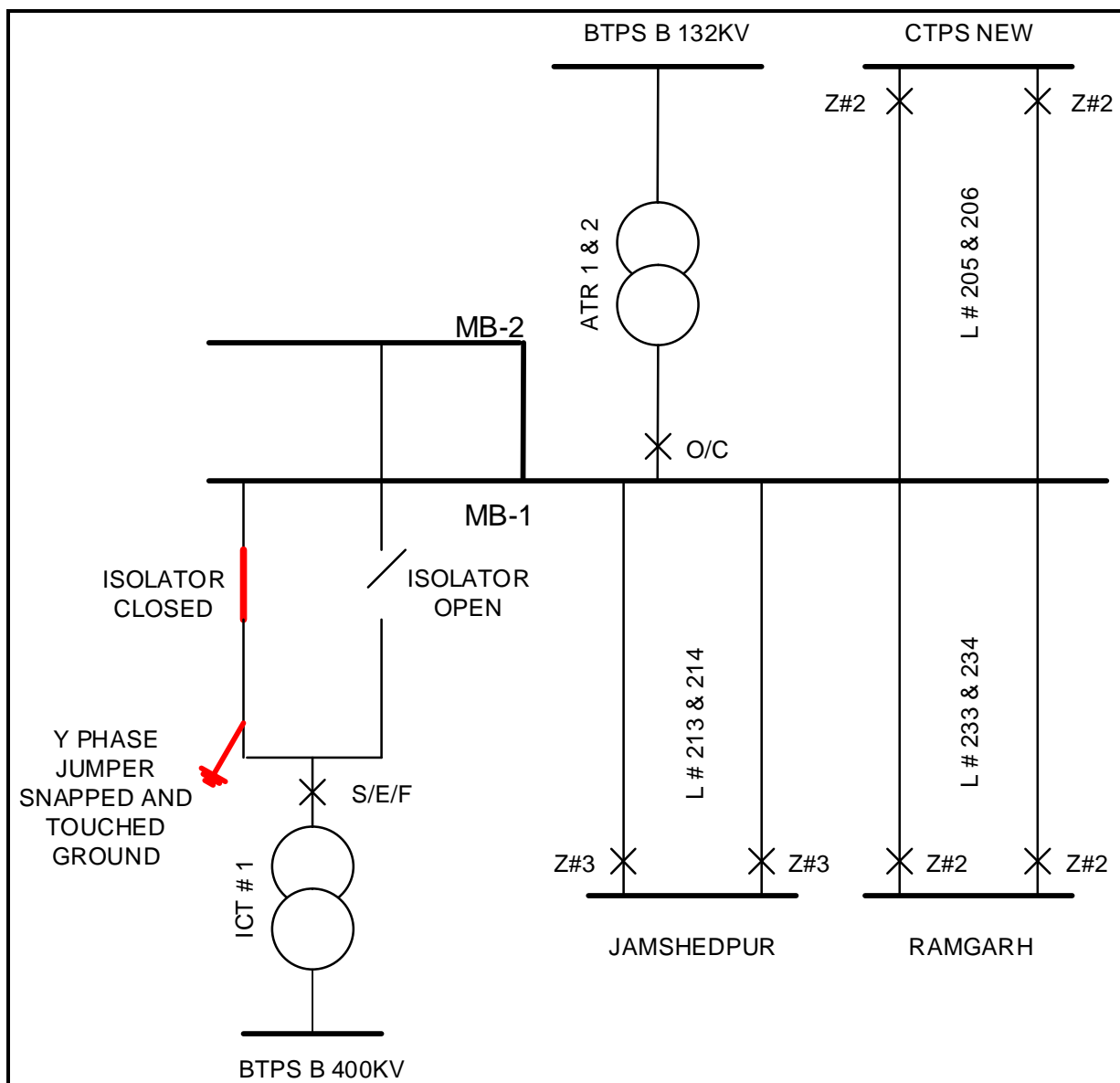
The issue was referred to TCC.

ITEM NO. B.2: Disturbance at 400 kV Bokaro S/s on 13-07-17 at 20:18 hrs

On 13.07.10 at about 20:18hrs total power failed in BTPS B 220KV Switchyard due to tripping of all 220KV lines, both 220 / 132 KV ATRs and one 400 / 220 KV ICT.

Bus configuration:

MB#1	MB#2
ATR#1	ATR#2
SST#1	SST#2
L#205	L#206
L#213	L#214
L#233	L#234
ICT#1	



Relay indications:

Bay	BTPS 'B' end	Other end
L#205 & 206	No Trip	Dist. Prot. Y-Ph, Zone 2
L#213, 214	No Trip	Dist. Prot. R, Y Ph, Zone 3
L#233 & 234	No Trip	Dist. Prot. Y-Ph, Zone 2
ICT#1 (Main Relay)	Stand By E/F	
220 kV bus tie	Check Zone A Phase, B Phase	

Analysis:

1. As Bus-Differential protection circuit and relays were found to be healthy during subsequent testing, it is apprehended that due to wrong selection of VAJC Relays in multiple bays, CT supervision relay (95A & 95AX) of Main Zone # 1 was in operated condition at the time of fault which remained unnoticed (while testing 95A relay it was also observed that annunciation did not appear when the relay was operating), which resulted in bypassing of Main Zone#1 Bus-differential protection function at the time of the fault. Thus the fault could not be cleared through Bus-differential protection even though Check Zone relay had operated.
2. The tripping of L # 203, 204, 233 & 234 through Distance Zone 2 from remote end is correct. The tripping of L # 213 & 214 from remote end through Distance Zone 3 might have happened due to

overreach due to mutual coupling as this line is a long(150km) line. The Zone 2 settings of the line was already 150% of line length and it is felt that it would not be prudent to increase the Z2 reach further. Hence no remedial measure has been taken for this Zone 3 tripping.

3. The tripping of ICT through Standby E/F and both ATRs through O/C relay was also correct.

Remedial measures taken:

1. Annunciation Ckt of 95A relay was checked and problem was resolved.
2. On both days CRITL visited BTPS B for busbar protection testing it has been observed that VAJC Relay operations are not as per Isolator positions. As wrong VAJC operation may ultimately lead to mal operation/non operation of Bus Differential protection it is strongly recommended to check VAJC position after each Isolator operation.
3. A complete refurbish of Bus Differential Scheme with Numerical Relays is strongly recommended. As in the present scheme, The CT Switching Relays (VAJC Relays) are situated at switch yard and the flag operation of the Relay cannot be observed by the operators unless going to the S/Y after each Isolator operation. Moreover, the wire schedules for operation of VAJC Relays through relevant Isolator contacts are also not available at BTPS-B which makes it more difficult for maintenance of the scheme.

Modern day Numerical Relays for Busbar Protection (with low impedance operating principle) does not require any separate CT Switching Relays thereby reducing the complexity of the scheme from maintenance point of view also along with other advantages of Numerical Relays over the existing electro-mechanical types of Relays.

DVC may explain.

Deliberation in the meeting

DVC explained that old Electro Mechanical type bus bar protection was available at 220kV Bokaro S/s. The CT supervision relay (95A & 95AX) of Main Zone # 1 might be in operated condition at the time of fault which remained unnoticed as the annunciation did not appear. This resulted in bypassing of Main Zone#1 Bus-differential protection function at the time of the fault. Thus the fault could not be cleared through Bus-differential protection even though Check Zone relay had operated.

DVC informed that annunciation problem of CT supervision relay (95A & 95AX) of Main Zone # 1 has been rectified.

On enquiry, DVC informed that the same old Electro Mechanical bus bar protection is also in operation at 220kV Kalyaneswari, Chandrapura and Durgapur S/s.

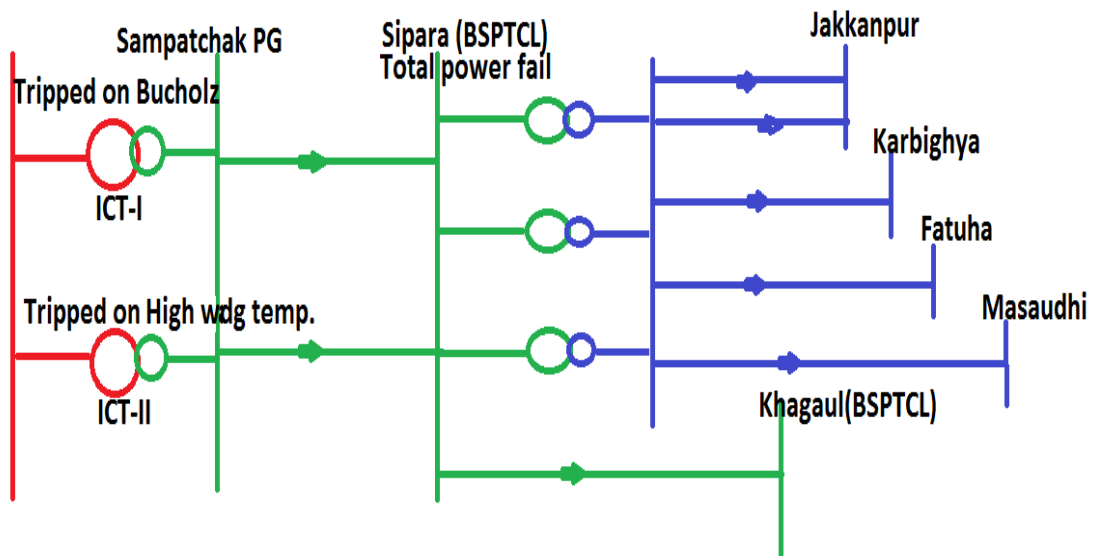
PCC advised DVC to replace these old Electro Mechanical bus bar protection with numerical bus bar protection to improve the reliability.

ITEM NO. B.3: Disturbance at 400kV Patna on 03-07-17 at 18:53 hrs.

At 18:53 hrs, 400/220 kV 500 MVA ICT - I at Patna tripped on operation of Bucholtz relay due to ingress of moisture through cables during rain.

Prior to the tripping, total loading of the ICTs was 571 MW. After tripping of ICT - I, loading at other 400/220 kV ICT (315 MVA) at Patna increased to 430 MW. At 19:14 hrs, 400/220 kV ICT - II tripped due to overload resulting load loss at surrounding area.

Powergrid may explain.



Deliberation in the meeting

Powergrid explained that 400/220 kV 500 MVA ICT - I at Patna tripped on operation of Buchholz relay due to ingress of moisture through cables during rain.

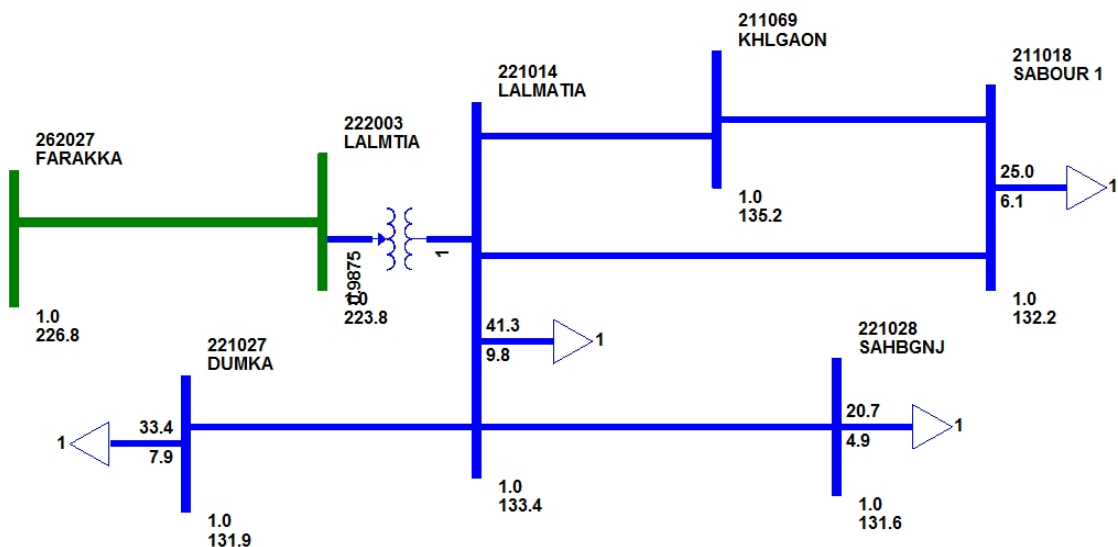
Powergrid added that the cable connections of buchholz relay are connected from top of the relay for all old transformers. This is causing moisture ingress through cable connections during rain.

Powergrid informed that they will place a shed on top of bucholtz relay to stop the moisture ingress.

ITEM NO. B.4: Disturbance at 220 kV Lalmatia S/s on 15-07-17 at 09:40 hrs & 13:54 hrs

At 09.40hrs 132kv Kahalgaon(BSTPCL) –Lalmatia and 132kv Kahalgaon(NTPC) –lalmatia tripped due to E/F relay causing load loss of 22 MW at Sahebgunj. No recording has been observed in Micom relay.

132 kV Kahalgaon(BSPTCL) - Lalmatia S/C & 132 kV Kahalgaon(NTPC) - Lalmatia S/C tripped again at 13:54 hrs on E/F.



JUSNL, BSPTCL and NTPC may explain.

Deliberation in the meeting

JUSNL, BSPTCL and NTPC explained the disturbance as follows:

At 09:40 hrs:

132 kV Kahalgaon(BSPTCL) - Lalmatia S/C line tripped from both ends on B-ph O/C, E/F protection simultaneously 132 kV Kahalgaon(NTPC) - Lalmatia S/C line tripped from Lalmatia end only on O/C, E/F protection. NTPC informed that 132 kV Kahalgaon(NTPC) - Lalmatia S/C line did not trip from Kahalgaon(NTPC) end.

At 13:54 hrs:

132 kV Kahalgaon(BSPTCL) - Lalmatia S/C line tripped from Lalmatia end on O/C, E/F protection simultaneously 132 kV Kahalgaon(NTPC) - Lalmatia S/C line tripped from Lalmatia end only on O/C, E/F protection. NTPC informed that 132 kV Kahalgaon(NTPC) - Lalmatia S/C line did not trip from Kahalgaon(NTPC) end.

ERLDC added that total fault clearing time as per the PMU data was 100 ms in both the cases.

PCC advised JUSNL to review the O/C, E/F protection settings of 132 kV Kahalgaon(NTPC) - Lalmatia S/C line at Lalmatia end as the line got tripped from Lalmatia end only in both the cases.

On query, JUSNL explained that the 132 kV Kahalgaon(BSPTCL) - Lalmatia S/C line is directly feeding Shaebganj through a single breaker and transfer bus at Lalmatia.

ITEM NO. B.5: Disturbance at 220 kV Lalmatia S/s on 03-07-17 at 18:32 hrs

At 18.32hrs all the 132kV feeders, 33kV feeders and the entire transformer has been tripped due to DC failure at 220/132/33 kV GSS Lalmatia. There are two sources of DC supply one is from JUSNL side and other is from NTPC side. At the time of tripping JUSNL side battery bank system was not in service.

JUSNL and NTPC may explain.

Deliberation in the meeting

JUSNL explained that there are two sources of DC supply one is from JUSNL side and other is from NTPC side. JUSNL side battery bank system was not in service due to some problem in battery charger. NTPC battery bank was also not available due to cable fault. Because of no DC source was available at 220kV Lalmatia, they tripped all the lines manually.

JUSNL added that now both the battery banks are in service.

ITEM NO. B.6: LBB operation at 220 kV Tarkera S/s on 31-07-17 at 11:24 hrs

At 11:24 hrs, B phase isolator drop jumper of 220 kV Tarkera - Chandiposh - Rengali snapped at Tarkera end. But relay at Tarkera end failed to operate due to DC failure in relay panel of same line resulting tripping of all elements connected to 220 kV Bus at Tarkera due to LBB operation.

OPTCL may explain.

Deliberation in the meeting

*OPTCL informed that LBB protection was not operated at 220kV Tarkera S/s. OPTCL explained the disturbance with detailed presentation. Presentation is enclosed at **Annexure-B6**. OPTCL explained that ---*

- At 11:24 hrs, B phase isolator drop jumper of 220 kV Tarkera - Chandiposh - Rengali snapped at Tarkera end.*

- Relay at Tarkera end failed to operate due to some connection problem in DC cable.
- As a result, 220kV Tarkera-Bonai-Barkote tripped from Barkote end
- 220kV Tarkera-Rengali line-I tripped from Rengali end
- 220 kV Tarkera-Rengali line II which was charged through bus coupler got tripped at Tarkera end on operation of back up relay.
- 220 kV Tarkera-Budhipadar-2 feeder tripped at Budhipadar end on Zone 3.
- Budipadar end relay of 220kV Tarkera-Budipadar line-I operated but did not issue trip command to CB because of some connection problem. The same tripped from Tarkera end on reverse zone
- The 220 kV side of 220/132kV Auto transformer 1,2,3 and 4 tripped on operation of back up relay.

PCC felt that 220kV Tarkera-Bonai line should trip from Bonai end.

OPTCL added that they have replaced the DC cable of Tarkera end relay of 220 kV Tarkera - Chandiposh – Rengali line. Cables between relay to CB of Budipadar end of 220kV Tarkera-Budipadar line-I have been replaced. Bonai end relay settings of 220kV Tarkera-Bonai line have been reviewed.

ITEM NO. B.7: Bus bar protection operation at 220 kV Dalkhola S/s on 19-07-17 at 10:50 hrs

220 kV Dalkhola - Kishangunj D/C and 220 kV Dalkhola - Purnea D/C lines tripped due to operation of bus bar protection of bus - I.

Powergrid may explain.

Deliberation in the meeting

Powergrid informed that bus bar protection was operated by mistake during NTAMC work.

PCC advised Powergrid not to repeat such mistakes in future.

ITEM NO. B.8: Classification of any event as Grid Disturbance/Grid Incident

Section 2(i) of CEA (Grid standards) regulations, 2010 reads as

"grid disturbance" means tripping of one or more power system elements of the grid like a generator, transmission line, transformer, shunt reactor, series capacitor and Static VAR Compensator, resulting in total failure of supply at a sub-station or loss of integrity of the grid, at the level of transmission system at 220 kV and above (132 kV and above in the case of North-Eastern Region);"

While reporting performance of Eastern Region, any load loss or generation loss event irrespective of voltage level is treated as grid disturbance. But as per Section 2(i) of CEA (Grid standards) regulations, 2010 unless total failure of supply at a sub-station or loss of integrity of the grid occurs at the level of transmission system at 220 kV and above, it will not be treated as grid disturbance.

Section 2(j) of CEA (Grid standards) regulations, 2010 reads as

"grid incident" means tripping of one or more power system elements of the grid like a generator, transmission line, transformer, shunt reactor, series capacitor and Static VAR Compensator, which requires re-scheduling of generation or load, without total loss of supply at a sub-station or loss of integrity of the grid at 220 kV and above (132 kV and above in the case of North-Eastern Region);"

While reporting performance of Eastern Region, instants of multiple elements tripping incidents without load loss or generation loss are treated as grid incidents. But as per definition of grid incident, re-scheduling of generation or load has to take place without total loss of supply at a sub-station or

loss of integrity of the grid for qualifying an event to be treated as grid incident.

Philosophy regarding classification of any event as Grid Disturbance/Grid Incident may be discussed.

Deliberation in the meeting

After detailed deliberation, PCC decided to continue the present procedure being followed by ERLDC.

PART- C:: OTHER ITEMS

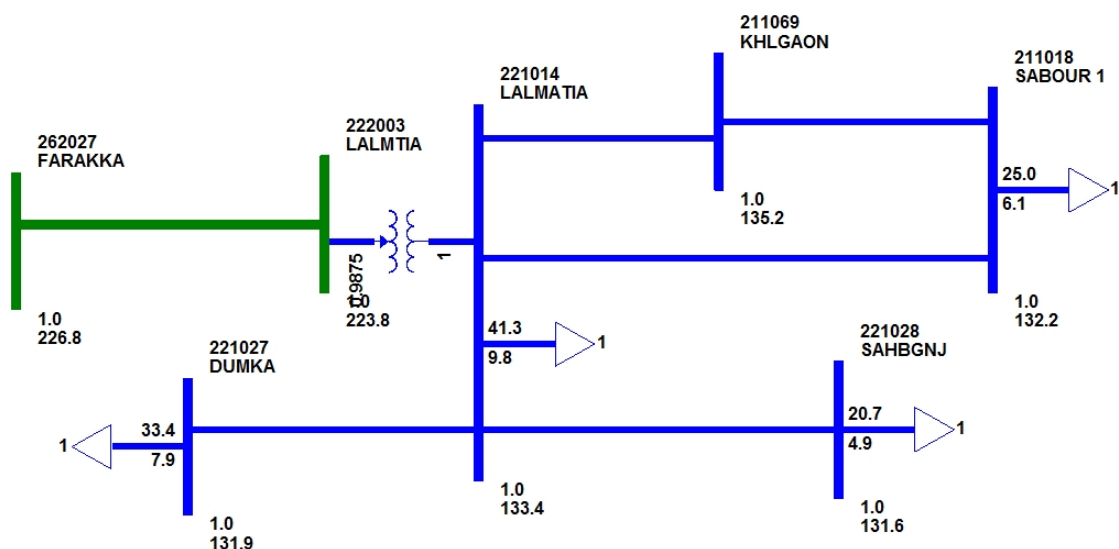
FOLLOW-UP OF DECISIONS OF THE PREVIOUS PROTECTION SUB-COMMITTEE MEETING(S)

(The status on the follow up actions is to be furnished by respective constituents)

ITEM NO. C.1: Disturbance at 220 kV Lalmatia S/s(JUSNL) on 21-05-17 at 16:39 hrs.

At 16:39 hrs 220 kV Farakka Lalmatia S/C line tripped from Farakka end on O/C E/F protection F/C 4.68 kA in B phase at Farakka.

132 KV Kahalgaon(BSPTCL) - Lalmatia S/C & 132 KV Kahalgaon(NTPC)-Lalmatia S/C were also tripped resulting total loss of power supply at Lalmatia & Sahebgunj. Load at Dumka got survived as it was radially fed from Maithon.



JUSNL and NTPC may explain the following:

- Location of fault
- Tripping of 220 kV Farakka Lalmatia S/C line
- Tripping of 132 KV Kahalgaon(BSPTCL) - Lalmatia S/C & 132 KV Kahalgaon(NTPC)-Lalmatia S/C

In 56th PCC, NTPC informed that 220kV Farakka-Lalmatia line tripped from Farakka end on B-N fault, the fault distance was 59 km. 132 KV Lalmatia- Kahalgaon line didn't trip from Kahalgaon end. However DR recorded in relay of this line indicates that aforesaid line tripped at Lalmatia end.

PCC advised NTPC to collect tripping details of 220kV Farakka-Lalmatia line at Lalmatia end and submit to ERLDC and ERPC.

JUSNL and NTPC may update.

Deliberation in the meeting

NTPC informed that submitted the DR of Farakka end for 220kV Farakka-Lalmatia line tripping.

PCC advised NTPC to collect tripping details of 220kV Farakka-Lalmatia line at Lalmatia end also and submit to ERLDC and ERPC.

ITEM NO. C.2: Multiple elements tripping at 220/132 kV Lalmatia (JUSNL) S/s on 06-02-17 at 16:40 Hrs.

At 16:40hrs, blasting of 132 kV Y & B phase CTs of 132 kV bus sectionalizer at 220/132kV Lalmatia S/s resulted in following events:

- 132 kV Lalmatia - Kahalgaon and 132 kV Lalmatia - Dumka – II tripped from Lalmatia end on zone IV protection.
- 132 kV Lalmatia -Dumka – I feeder tripped from both end.
- Farakka end of 220 kV Farakka Lalmatia line, remain picked up the fault in zone 1 for 880 ms but no line breaker was tripped.

The relay Indications are as follows:

Time	Name of the element	Relay at Lalmatia	Relay at remote end
16:40 hrs	220 kV Lalmatia - Farakka feeder	Did not trip	R-Y-B phase Z-I started, B phase relay picked at 16:40:28.504 hrs, Y phase relay picked at 16:40:28.664 hrs, R phase relay picked at 16:40:28.905 hrs, F/C 1.5 kA in all three phases. All the relay were in picked condition till the end of time frame captured by NTPC end DR (DR is attached)
	132 kV Lalmatia - KhSTPP feeder	B-N, Z-IV, O/C, IA 0.7kA, IB – 0.9 kA, IC – 3kA, Fault duration 183.8 ms.	Did not trip
	132 kV Lalmatia Dumka – I	E/F	D/P
	132 kV Lalmatia Dumka – II	E/F, Z-IV	Did not trip
	220/132 KV ATR, 132/33 KV ATR – I & II at Lalmatia	E/F protection at Lalmatia	

Analysis of PMU plots:

- At 16:40 hrs, 4 kV voltage dip observed in all three phases.
- Fault clearance time is 700 ms. Though the voltage fully recovered to pre-fault value after 600 ms of the fault.

In 53rd PCC, NTPC informed that 132 kV Y & B phase CTs of 132 kV bus sectionalizer were busted at 220/132kV Lalmatia S/s and Bus bar protection was failed to operate. One 220/132kV ATR at Lalmatia (under NTPC control area) tripped on backup E/F protection other ATR which is under JUSNL control area was failed to clear the fault. As a result, 220kV Lalmatia-Farakka line tripped from Farakka end on directional E/F protection.

JUSNL informed that 132kV Lalmatia-Dumka D/C line and 132kV Lalmatia-Khahalgaon S/C line tripped from Lalmatia end on non directional over current protection. The 220/132kV ATR at Lalmatia under their control area also tripped on over current E/F protection.

PCC observed that 220kV Lalmatia-Farakka line tripped from Farakka end after 6 sec which is not acceptable and tripping of 220/132kV ATRs is not clear.

PCC advised the following:

- NTPC should check the reason for non-operation of busbar protection at 132kV Lalmatia S/s.
- NTPC and JUSNL should jointly test the healthiness of the busbar protection at 132kV Lalmatia S/s
- NTPC and JUSNL should place the details of ATR tripping along the relevant DR.
- JUSNL should disable the non-directional over current protection feature in all 132kV lines and enable directional over current protection with proper relay coordination.

PCC advised JUSNL and NTPC to submit the action taken report to ERPC and ERLDC within a week.

In 54th PCC, NTPC and JUSNL informed that they will test the healthiness of the busbar protection at 132kV Lalmatia S/s in May 2017.

JUSNL informed they have not yet disabled the non-directional over current protection feature in all 132kV lines.

NTPC and JUSNL may update.

Deliberation in the meeting

JUSNL informed that they have disabled the non-directional over current protection feature in all 132kV lines and enabled directional over current protection on 30th July 2017.

PCC advised JUSNL and NTPC to comply the other observations and submit the action taken report to ERPC and ERLDC.

ITEM NO. C.3: Disturbance at 132 kV Chandil and Adityapur S/s (JUSNL) on 13-05-17 at 13:37 hrs.

132 kV Adityapur - Rajkarswan S/C and 132 kV Chandil - Rajkarswan S/C tripped due to Y-B fault resulting total loss of power supply at Rajkarswan.

JUSNL may explain the following:

- Location of fault
- Tripping of 132 kV Adityapur - Rajkarswan S/C and 132 kV Chandil - Rajkarswan S/C

In 56th PCC, JUSNL explained that one line from 132kV Chandil is directly connected to Rajkarswan and other line is connected via Adityapur through 132kV Tie bus.

There was Y-B fault in 132kV Chandil-Rajkaswan line but 132kV Adityapur-Rajkaswan line tripped from Rajkaswan end on over current protection before tripping of 132kV Chandil-Rajkaswan line from Chandil end on zone 1.

PCC felt that Rajkaswan end of 132kV Chandil-Rajkaswan line should also trip in this case. PCC advised to check the relay settings at Rajkaswan end settings of both 132kV Chandil-Rajkaswan line and 132kV Adityapur-Rajkaswan line.

It was informed that no DR was received from JUSNL. PCC advised JUNL to send the relevant DRs of this disturbance.

JUSNL may update.

Deliberation in the meeting

JUSNL informed that the settings have been revised as per the ERPC recommended settings.

JUSNL added that they could not extract the DRs as the old DRs were over written with new events.

ITEM NO. C.4: Disturbance at 765 kV Dharamjaigarh S/s on 15-06-17 at 14:23 hrs.

At 14:23:12.417, distance protection of Dharamjaigarh-Jabalpur Ckt-3 issued trip command on R-Y fault at both ends. At Dharamjaigarh end, main CB tripped, however, none of the poles of Tie CB tripped, thus all the connected lines tripped on Zone-3 from remote end. LBB did not operate at Dharamjaigarh due to failure in DC supply. Fault was cleared after tripping of 765kV Dharamjaigarh-Ranchi - II after 4 minutes from the fault.

In 57th PCC, Powergrid explained that R-Y fault occurred in 765kV Dharamjaigarh-Jabalpur Ckt-3, main CB at Dharamjaigarh end tripped, but none of the poles of Tie CB tripped. LBB at 765kV Dharamjaigarh also not operated due to some problem in DC supply. As a result, all the connected lines of 765kV Dharamjaigarh tripped from remote end on Zone-3. But Ranchi end of 765kV Dharamjaigarh-Ranchi line- II tripped after 4 minutes.

Powergrid informed that Ranchi end relay observed power swing hence the power swing blocking was initiated and blocked the relay to trip the line.

PCC felt that fault in 765kV network was cleared after 4 minutes is not acceptable. Moreover Powergrid did not send any report to ERPC and ERLDC in this regard.

PCC advised Powergrid to analyze the tripping and submit a detailed report to ERPC and ERLDC.

Powergrid may update.

Deliberation in the meeting

Powergrid vide mail dated 30th Aug 2017 informed that during investigation of delayed tripping, the zone 3 reach setting was found slightly less than the calculated zone 3 reach value. This might caused delay in pickup and drop of zone 3.

The zone 3 reach setting has been corrected.

ITEM NO. C.5: Station blackouts at 220kV MTPS

Station Blackout being faced at MTPS due to tripping of 220KV MTPS-Kaffen Ckt-1 & 2 on various reasons. It may be noted that above lines are connected to the grid, while remaining lines emanating from MTPS remain connected in radial mode. Though 220KV MTPS-Motipur Ckt-1 and 220KV MTPS-Ujjiyarpur Ckt-2 has grid connectivity, but these two lines are also most of the times kept on radial mode by SLDC, Patna due to power flow constraints.

Following three incidents Kaffen Ckt-1 & 2 trippings resulted in Station Blackout at KBUNL. This causes not only heavy loss to KBUNL but heavy stress on machines due to sudden power failure. North Bihar area which is connected with the MTPS with 6 Nos. 220KV & 7 Nos. 132KV lines also goes in dark during above period.

1. TRIPPING OF 220KV MTPS-KAFFEN CKT-1 & 2 FROM KAFFEN END ON 20.06.2017, 08:42 HRS RESULTING IN UNIT-2 TRIPPING AND THUS STATION BLACKOUT.

2. **TRIPPING OF 220KV MTPS-KAFFEN CKT-1 & 2 DUE TO PLCC MALFUNCTION ON 07.05.2017, 14:41 HRS RESULTING IN UNIT-1 TRIPPING AND THUS STATION BLACKOUT.**
3. **TRIPPING OF 220KV MTPS-KAFFEN CKT-1 & 2 DUE TO PLCC MALFUNCTION ON 18.04.2017, 22:55 HRS RESULTING IN STATION BLACKOUT.**

In 57th PCC, Powergrid informed that the relays of 220KV MTPS-Kaffen Ckt-1 & 2 at Kaffen(PG) were not functioning properly. The relays have been replaced with new relays.

Regarding malfunction of PLCC system of 220KV MTPS-Kaffen Ckt-1 & 2, Powergrid informed that BPL make PLCC system has been rectified and now it is in order.

Regarding installation of PLCC system in other 220kV lines, BSPTCL informed that they have given consultancy to Powergrid for installing of OPGW in three 220kV lines.

PCC advised BSPTCL to place their action plan for installation of PLCC system in other transmission lines.

BSPTCL may update.

Deliberation in the meeting

BSPTCL informed that PLCC system for 220kV MTPS-Motiari line is available at site. Clearance from MTPS end is awaited for installation of PLCC system.

ITEM NO. C.6: Concerned members may update the latest status.

1. **Disturbance at 220 kV Hatia, Biharsharif and Fatua S/s on 05-06-17 at 20:27 hrs.**

In 57th PCC, PCC recommended the following:

- *PCC felt that 220/132kV ATRs at 220kV Hatia S/s should not trip for a fault in 220 kV Ranchi – Hatia line-I and advised JUSNL to check the relays of 220/132kV ATRs at 220kV Hatia S/s*
- *BSPTCL should check the relays at Fatua end of 220 kV Patna – Fatuah S/C line as the fault in 220 kV Patna – Fatuah S/C line was not cleared from Fatuah end.*
- *220 kV TVNL – Biharshariff S/C line should not trip from TVNL end on zone 2 in this case. PCC advised TVNL to review the zone 2 settings of 220 kV TVNL – Biharshariff S/C line at TVNL end.*

JUSNL, BSPTCL and TVNL may update.

Deliberation in the meeting

BSPTCL informed that they have replaced Fatua end distance relay of 220 kV Patna – Fatuah S/C line with numerical relay in July 2017.

2. **Disturbance at 220 kV Fatua S/s (BSPTCL) on 15-06-17 at 06:23 hrs.**

In 57th PCC, BSPTCL was advised to take the following corrective actions:

- *CB of 220 kV Sipara - Fatuah S/C line at Fatuah end should be tested.*
- *Non directional over current feature should be disabled for 220 kV Biharshariff - Fatuah – I at Fatua end and backup directional over current protection should be properly coordinated with distance protection.*

BSPTCL may update.

Deliberation in the meeting

BSPTCL informed the following:

- *They are planning to test CB of 220 kV Sipara - Fatuah S/C line at Fatuah end and submit the report after testing.*
- *Non directional over current feature has been disabled for 220 kV Biharshariff - Fatuah – I at Fatua end and backup directional over current protection was properly coordinated with distance protection.*
- *CB of 220 kV Biharshariff - Fatuah – II at Fatua end has been tested and found that opening time is higher and they are planning to replace the breaker.*

3. Disturbance at 132 kV Jamui S/s (BSPTCL) on 04-06-17 at 17:28 hrs.

In 57th PCC BSPTCL was advised to check the settings of 132/33 kV transformer I & II relays and healthiness of CBs.

BSPTCL may update.

Deliberation in the meeting

BSPTCL informed that CBs have been tested and found ok.

BSPTCL added that high set over current setting has been incorporated for 132/33 kV transformer I & II at 132kV Jamui S/s.

4. Disturbance at 220 kV Hazipur (BSPTCL) on 11-06-17 at 11:39hrs.

In 57th PCC, members felt that zone 2 time settings of 220 KV Muzaffarpur-Hazipur-D/C line at Muzaffarpur (PG) end should be verified as the PMU fault clearing time was 100 ms.

PCC advised Powergrid to review the zone 2 time setting of 220 KV Muzaffarpur-Hazipur-D/C line at Muzaffarpur (PG) end.

PCC advised BSPTCL to collect the details of 220 KV Hazipur -Amnour line- I at Amnour end and send it to ERPC and ERLDC.

Powergrid and BSPTCL may update.

Deliberation in the meeting

PCC advised BSPTCL to collect the details of 220 KV Hazipur -Amnour line- I at Amnour end and send it to ERPC and ERLDC.

5. Disturbance at 220 kV Khagul S/s (BSPTCL) on 07-06-17 at 11:44 hrs.

In 57th PCC, members felt that 100 MVA Transformer-2 at Khagul S/s should not trip in this case and advised BSPTCL to verify the relay settings of the transformer.

BSPTCL may update.

Deliberation in the meeting

BSPTCL informed that the high set over current setting of 100 MVA Transformer-2 at Khagul S/s was very low (at 100%). The setting has been increased to 500%.

6. Disturbance at 220 kV Nandokhar S/s (BSPTCL) on 28-06-17 at 15:02 hrs and 15:52 hrs.

In 57th PCC, Powergrid informed that DT was sent to Nandokhar end because of PLCC problem at Sasaram end.

Powergrid added that Sasaram end PLCC is the property of BSPTCL and they are checking the PLCC system.

Powergrid and BSPTCL may update.

Deliberation in the meeting

BSPTCL informed that PLCC system has been tested and found ok.

BSPTCL added that Powergrid was carrying out some maintenance work at Sasaram 220kV bus at that time which might initiated the DT.

7. Disturbance at 400 kV New Dubri S/s on 26-05-17 at 10:20 hrs.

In 56th PCC, OPTCL explained the disturbance with a presentation. New Dubri received direct trip command from Meramundali end and main breaker tripped but B-ph of tie breaker got stuck. As a result the LBB protection operated at New Dubri.

PCC felt that there is no fault in the line and LBB should not get activated without any fault current. PCC advised OPTCL to check the LBB settings.

OPTCL may update.

Deliberation in the meeting

OPTCL informed that LBB scheme at 400kV New Dubri has been verified and found that the scheme is getting activated due to incorrect cable connections.

OPTCL added that scheme the connections have been changed and the LBB scheme is working correctly.

ITEM NO. C.7: Repeated pole blocking at HVDC Sasaram

S. No.	Tripping Date	Tripping Time	Brief Indication	Reason/Relay	Restoration Date	Restoration Time	Duration
1	29-05-17	00:15	System failure alarm		29-05-17	01:24	1:09:00
2	25-04-17	06:03	Auxiliary supply failure		25-04-17	07:14	1:11:00
3	01-04-17	09:15	Tripped due to Valve cooling system problem		01-04-17	12:56	3:41:00
4	11-04-17	23:32	System failure alarm		12-04-17	00:17	0:45:00
5	30-04-17	03:24	Due to tripping of filters on eastern side		30-04-17	16:13	12:49:00
6	12-01-17	13:36	Blocked due to unbalanced auxiliary system		12-01-17	15:06	1:30:00
7	14-01-17	05:03	Tripped due to system failure alarm		14-01-17	08:57	3:54:00
8	10-01-17	13:23	Filter problem at Sasaram		12-01-17	11:24	46:01:00
9	03-01-17	11:00	To take pole in service in HVDC mode		10-01-17	07:42	164:42:00

10	03-12-16	12:15	Converter control protection operated	03-12-16	13:22	1:07:00
11	06-12-16	19:12	Tripped due to CCP east side M1, M2 major alarm and observed sys fail in East side	06-12-16	20:55	1:43:00
12	19-12-16	12:43	Due to tripping of 400 kv Biharshariff-Sasaram-II	19-12-16	13:35	0:52:00
13	05-11-16	04:51	System fail alarm	05-11-16	06:57	2:06:00
14	22-11-16	12:12	CCP Main-2 major alarm	22-11-16	13:35	1:23:00
15	26-11-16	09:36	CB of filter bank burst	27-11-16	11:31	25:55:00

Detail report is not yet to be received from POWERGRID. Regarding pole block on 25-05-17, there is back up in the station in the following form:

132/33 KV Pusauli	315 MVA ICT-2 tertiary	01 No. DG set of 1500 KVA	Battery available for valve cooling system only. It can provide auxiliary supply for at max 2 minutes.
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In 56th PCC, Powergrid was advised to submit the details to ERLDC and ERPC.

Powergrid may update.

Deliberation in the meeting

PCC advised Powergrid to submit the details to ERLDC and ERPC.

ITEM NO. C.8: Implementation of on-line tripping incident reporting system in Protection Database Management System.

On-line tripping incident reporting system has been implemented in Protection Database Management System (PDMS). As decided in 53rd & 54th PCC Meetings, details of the tripping incident along with the DR, EL events and other reports can be uploaded through this online portal.

The tripping incident reporting page can be accessed in PDMS through the ERPC protection database website: www.erpc-protectiondb.in:8185. The link is also available in ERPC website on right side bar. Training on PDMS including on-line tripping incident reporting was given to all the constituents from 22.05.17 to 24.05.17. Subsequently, login ID and password for access of PDMS has been issued to the respective members as nominated by the authorities.

ERPC vide letter dated 12th July 2017 informed all the constituents to submit the tripping incident report along with DR (comtrade files), EL and other relevant files through this on-line portal with immediate effect.

In 57th PCC, all the constituents were advised to submit the tripping incident report along with DR (comtrade files), EL and other relevant files through this on-line portal.

PCC decided to consider both hard copy and details uploaded in the on-line portal for the month of August, 2017.

PCC decided to consider only the on-line tripping incident report as received in PDMS from 1st September, 2017.

Members may comply.

Deliberation in the meeting

The status of online-tripping reporting in PDMS for the disturbances of July, 2017 is as given below:

Sl No	Name of the incidence	Name of the Constituent	Status
1.	Repeated disturbances at 400kV Teesta-III, Dikchu and Rangpo on at 00:30 hrs on 16-07-2017, 15:56 hrs & 19:11 hrs on 24-07-2017 and 10:08 hrs on 27-07-2017	Teesta Urja, Dikchu and Powergrid	Not uploaded in PDMS
2.	Disturbance at 400 kV Bokaro S/s on 13-07-17 at 20:18 hrs	DVC	Uploaded in PDMS
3.	Disturbance at 400kV Patna on 03-07-17 at 18:53 hrs	Powergrid	Uploaded in PDMS
4.	Disturbance at 220 kV Lalmatia S/s on 15-07-17 at 09:40 hrs & 13:54 hrs	JUSNL and BSPTCL	Not uploaded in PDMS
5.	Disturbance at 220 kV Lalmatia S/s on 03-07-17 at 18:32 hrs	JUSNL	Not uploaded in PDMS
6.	LBB operation at 220 kV Tarkera S/s on 31-07-17 at 11:24 hrs	OPTCL	Not uploaded in PDMS
7.	Bus bar protection operation at 220 kV Dalkhola S/s on 19-07-17 at 10:50 hrs	Powergrid	Not uploaded in PDMS

PCC advised all the constituents to upload the tripping details along with DR (comtrade files), EL and other relevant files in PDMS on-line portal.

ERLDC, NTPC, DVC and Powergrid informed that the servers are not allowing to open the PDMS web page because of security reasons.

PRDC agreed to resolve the issues.

PCC advised all the constituents to send their queries to mserpc-power@nic.in & eeop.erp@gov.in if they are facing any problem in uploading the tripping details.

ITEM NO. C.9: Third Party Protection Audit

1. Status of 1st 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	27	39.71
Odisha	59	38	64.41
JUSNL	34	16	47.06
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 update.

Deliberation in the meeting

Members noted.

2. Schedule for 2nd Third Party Protection Audit:

The latest status of 2nd Third Party Protection audit is as follows:

1) Jeerat (PG)	Completed on 15 th July 2015
2) Subashgram (PG)	Completed on 16 th July 2015
3) Kolaghat TPS (WBPDCCL)-	Completed on 7 th August 2015
4) Kharagpur (WBSETCL) 400/220kV -	Completed on 7 th August 2015
5) Bidhannagar (WBSETCL) 400 &220kV	Completed on 8 th September, 2015
6) Durgapur (PG) 400kV S/s	Completed on 10 th September, 2015
7) DSTPS(DVC) 400/220kV	Completed on 9 th September, 2015
8) Mejia (DVC) TPS 400/220kV	Completed on 11 th September, 2015
9) 400/220/132kV Mendhasal (OPTCL)	Completed on 2 nd November, 2015
10) 400/220kV Talcher STPS (NTPC)	Completed on 3 rd November, 2015
11) 765/400kV Angul (PG)	Completed on 4 th November, 2015
12) 400kV JITPL	Completed on 5 th November, 2015
13) 400kV GMR	Completed on 5 th November, 2015
14) 400kV Malda (PG)	Completed on 23 rd February, 2016
15) 400kV Farakka (NTPC)	Completed on 24 th February, 2016
16) 400kV Behrampur(PG)	Completed on 25 th February, 2016
17) 400kV Sagardighi (WBPDCCL)	Completed on 25 th February, 2016
18) 400kV Bakreswar (WBPDCCL)	Completed on 26 th February, 2016
19) 765kV Gaya(PG)	Completed on 1 st November, 2016
20) 400kV Biharshariff(PG)	Completed on 3 rd November, 2016
21) 220kV Biharshariff(BSPTCL)	Completed on 3 rd November, 2016
22) 400kV Maithon (PG)	Completed on 18 th May, 2017
23) 132kV Gola (DVC)	Completed on 17 th May, 2017
24) 132kV Barhi (DVC)	Completed on 18 th May, 2017
25) 132kV Koderma (DVC)	Completed on 18 th May, 2017
26) 132kV Kumardhubi (DVC)	Completed on 19 th May, 2017
27) 132kV Ramkanali (DVC)	Completed on 19 th May, 2017
28) 220kV Ramchandrapur	Completed on 1 st June, 2017
29) 400kV Jamshedpur (PG)	Completed on 1 st June, 2017
30) 132kV Patherdih (DVC)	Completed on 31 st May, 2017
31) 132kV Kalipahari (DVC)	Completed on 30 th May, 2017
32) 132kV Putki (DVC)	Completed on 31 st May, 2017
33) 132kV ASP (DVC)	Completed on 30 th May, 2017
34) 132kV Mosabani (DVC)	Completed on 2 nd June, 2017
35) 132kV Purulia (DVC)	Completed on 1 st June, 2017

It was informed that the third party protection audit observations are available in the ERPC website in important documents.

PCC advised all the constituents to comply the observations at the earliest.

Members may update.

Deliberation in the meeting

Members noted.

ITEM NO. C.10: Implementation of Protection Database Management System Project.

ERPC proposal for "Creation & Maintenance of web based protection database management system and desktop based protection calculation tool for Eastern Regional Grid" has been approved by the Ministry of Power for funding from Power System Development Fund (PSDF) vide No-10/1/2014-OM dated 07.03.2016.

In 49th PCC, PRDC informed that data collection for West Bengal is in progress and it will be completed by December, 2016.

In 50th PCC, It was informed that Software Acceptance Tests are in progress.

In 51st PCC, PRDC informed that data collection of Odisha and Jharkhand has been completed. Data collection in West Bengal and Bihar is in progress. Data collection of Eastern Region will be completed by 15th February 2017.

PRDC added that software acceptance trails of PSCT phase-I have been completed and phase-II will be done from 19th to 21st January 2017. Software acceptance trails of web based PDMS system have been completed and observations will be implemented at the earliest.

It was informed that a format for on-line reporting of tripping incidence has been prepared in PDMS and PRDC will present details in next PCC meeting.

In 52nd PCC, PRDC explained the format for on-line reporting of tripping incidence.

PCC suggested PRDC to include details of the elements under shutdown before the disturbance. In 53rd PCC, PRDC informed that data survey and modeling has been completed and PDMS will be operational by 31st March 2017. The login id will be provided soon.

PRDC presented the format for on-line reporting of tripping incidence.

PCC in principle agreed with the format and advised PRDC to include a summery sheet for the each tripping incidence.

In 54th PCC, PRDC informed that summery sheet for on-line tripping incidence reporting has been prepared. The PDMS is operational and constituents can access the data. Login credentials were given to all the constituents.

It was decided that a separate meeting will be convened in May 2017 to finalize the procedure for on-line reporting and data updation.

In 55th PCC, PRDC informed that collection of relay settings 97 out of 112 substations were completed in Bihar. Rest are in progress.

Pending relay setting file collection of JUSNL substations are in progress. Relay setting file collection of Sikkim substations are pending.

In 56th PCC, PRDC informed that relay setting file collection of BSPTCL and Sikkim substations are in progress.

PRDC may update.

Deliberation in the meeting

It was informed that a special meeting will be held on 7th September 2017 at ERPC, Kolkata for validation of substation/relay data available at PDMS.

PCC advised all the constituents to send their representative with all the relevant details.

ITEM NO. C.11: Non-commissioning of PLCC / OPGW and non-implementation of carrier aided tripping in 220kV and above lines.

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

List of line where auto reclose facility is not available(Information based on PMU data analysis)							
S. No	Transmission Lines name	Date of Tripping	Reason of Tripping	Owner Detail		Present Status	
				End-1	End-2	OPGW/PLCC Link available	AR facility functional
10	400KV PATNA-BALIA-II	21.06.16	B-N FAULT	PGCIL	PGCIL		
12	400KV PATNA-BALIA-I	21.06.16	R-N FAULT	PGCIL	PGCIL	PLCC available	
13	<u>220KV BUDIPADAR-KORBA-II</u>	23.06.16	Y-N FAULT	OPTCL	CSEB	PLCC available	will be activated in consultation with Korba
14	400 KV ARAMBAGH - BIDHANNAGAR	02.07.16	Y-N FAULT	WBSET CL	WBSET CL	PLCC available	AR in service but some problem in y-ph pole
16	400 KV NEW RANCHI - CHANDWA - I	13.07.16	B-N FAULT	PGCIL	PGCIL	PLCC available	
17	<u>220 KV TSTPP-RENGALI</u>	17.07.16	EARTH FAULT	NTPC	OPTCL		
18	<u>220KV BUDIPADAR-RAIGARH</u>	21.07.16	EARTH FAULT	OPTCL	PGCIL	PLCC defective	
19	400 KV KOLAGHAT-KHARAGPUR	03.08.16	Y-N FAULT	WBPDC L	WBSET CL		
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.
21	400 KV PURNEA-MUZAFARPUR-I	03.08.16	R-N FAULT	PGCIL	PGCIL	PLCC available	
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
25	220 KV CHANDIL-SANTALDIH	25.08.16	R-N FAULT	JUSNL	WBPDC L	not available	
26	400 KV MPL-RANCHI-II	02.09.16	R-N FAULT	MPL	PGCIL	PLCC available	
27	220 KV BIHARSARIF-TENUGHAT	07.09.16	B-N FAULT	BSPTC L	TVNL		
29	220 KV RAMCHANDRAPUR - CHANDIL	22.09.16	B-N FAULT	JUSNL	JUNSL		
31	400 KV KOLAGHAT - CHAIBASA	28.09.16	B-N FAULT	WBPDC L	PGCIL	PLCC available	

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.

TCC advised to review the status of above in lower forums report back in next TCC.

Members may update the status.

Deliberation in the meeting

PCC advised all the respective members to update the above list along with the last tripping status.

ITEM NO. C.12: Non-commissioning / non-functional status of bus-bar protection at important 220 kV Sub-stations.

It has been observed that at many 220 kV substations particularly that of STU, bus-bar protection is either not commissioned or non-functional. The non-availability / non-functionality of bus bar protection, results in delayed, multiple and uncoordinated tripping, in the event of a bus fault. This in turn not only results in partial local black out but also jeopardises the security of interconnected national grid as a whole. The matter was also pointed out during the third party protection audit which is being carried out regularly. Constituents are required to meet the audit compliance and commission or made bus –bar protection functional where ever it is not available. A list of such important 220 kV sub-stations as per the first third party audit is placed in the meeting.

In 34th TCC, members updated the status as follows:

Bus Bar Protection not available (record as per third party protection audit)

Bihar				
Sl No	Name of Substation	Bus protection status	Date of audit	Present Status
1	220 kV Bodhgaya	Not available	28-Dec-12	Single bus and there is no space available for busbar protection
Jharkhand				
1	220 kV Chandil	Not available	29-Jan-13	LBB available
2	220 kV Tenughat	Not available	12-Apr-13	

DVC				
1	220 kV Jamsedpur	Not available	10-Apr-13	<i>Single bus. Bus bar will be commissioned under PSDF.</i>
West Bengal				
1	220 kV Arambah	Not available	24-Jan-13	<i>Available in alarm mode. Planning to replace with numerical relay</i>
2	220 kV Jeerat	Not available	20-Dec-12	<i>Relays have been received at site. Installation is in progress.</i>

TCC further advised all the constituents to give the latest status of Bus Bar protection of other 220KV S/S under respective control area.

TCC advised to review the status of above in lower forums report back in next TCC.

Members may update.

Deliberation in the meeting

During deliberation on Disturbance at 400 kV Bokaro S/s on 13-07-17 at 20:18 hrs in Item no. B2, DVC informed that old Electro Mechanical bus bar protection is available at 220kV Bokaro, Kalyaneswari, Chandrapura and Durgapur S/s.

PCC advised DVC to install numerical bus bar protection to improve the reliability.

PART- D

Item No D.1 Tripping incidences in the month of July, 2017

Other tripping incidences occurred in the month of July 2017 which needs explanation from constituents of either of the end is given at **Annexure- D1**.

Members may discuss.

Deliberation in the meeting

*Constituents explained the tripping incidences. Updated status is enclosed at **Annexure-D1**.*

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.

Item No D.2 Any other issues.

Meeting ended with vote of thanks to the chair.

Participants in 58th PCC Meeting of ERPC

Venue: ERPC Conference Room, Kolkata

Time: 11:00 hrs

Date: 29.08.2017 (Tuesday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
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18	DEEPAK KUMAR	SLDC, Patna	7763817776	dkumar27107@gmail.com	Deepak Kumar
19	Sunil Kumar	AEE, T&C, JUSNL	9959444986	star.mit2004@gmail.com	S. Kumar
20	V.K. Bhoi	EBB/CRITL, JUSNL	7488284956	ceesrl.jusnl@rediffmail.com	V.K. Bhoi

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

Participants in 58th PCC Meeting of ERPC

Venue: ERPC Conference Room, Kolkata

Time: 11:00 hrs

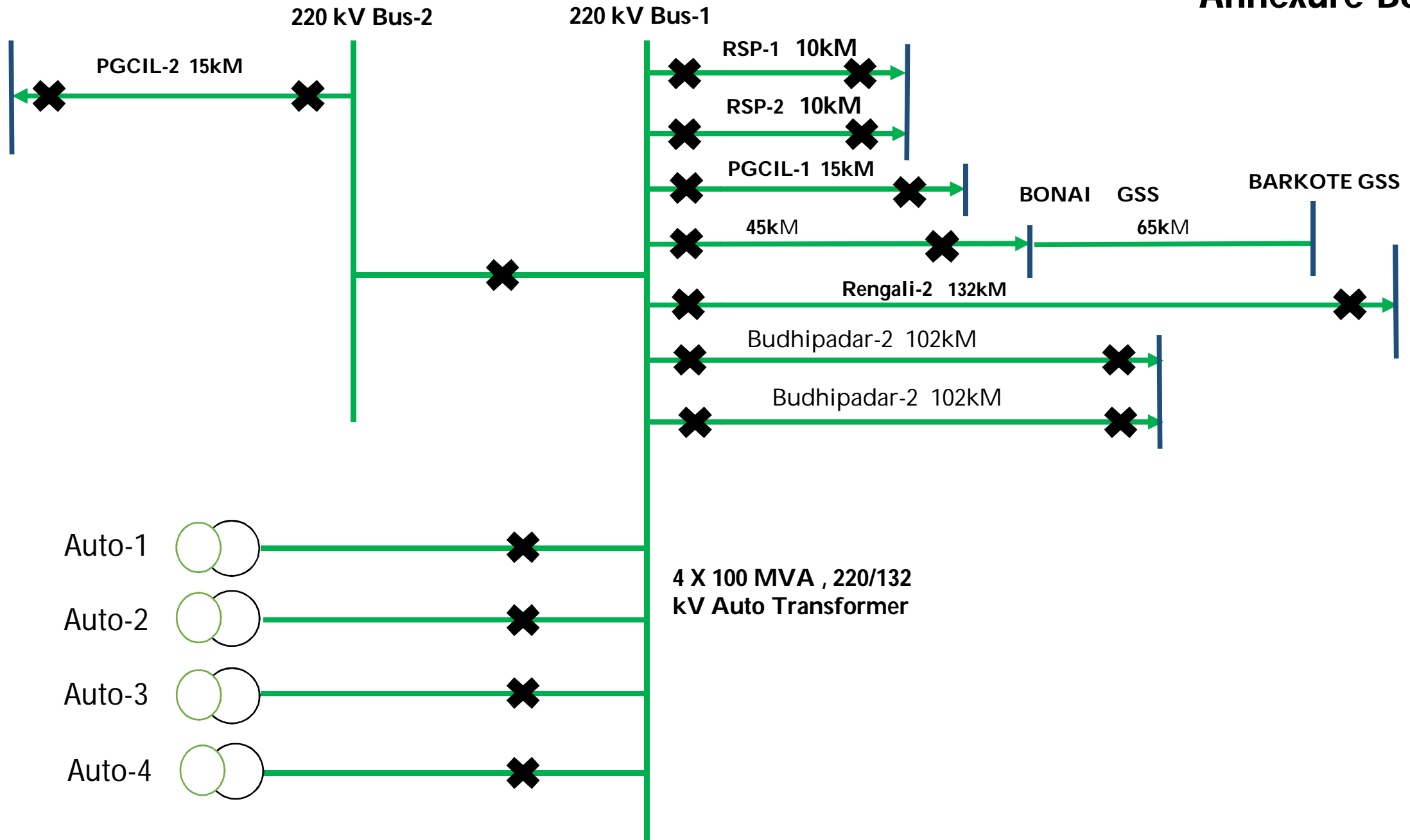
Date: 29.08.2017 (Tuesday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
21	JAYANTA KANJILAL	WBSETCL	9434910189	JAYANTA.KANJILAL @WBSETCL.IN	<i>gnt</i>
22	SHOUVIK BANERJEE	WBSETCL ^{SE(E)}	9434910171	svkbanerjee@yahoo.com	<i>svk</i>
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38					
39					
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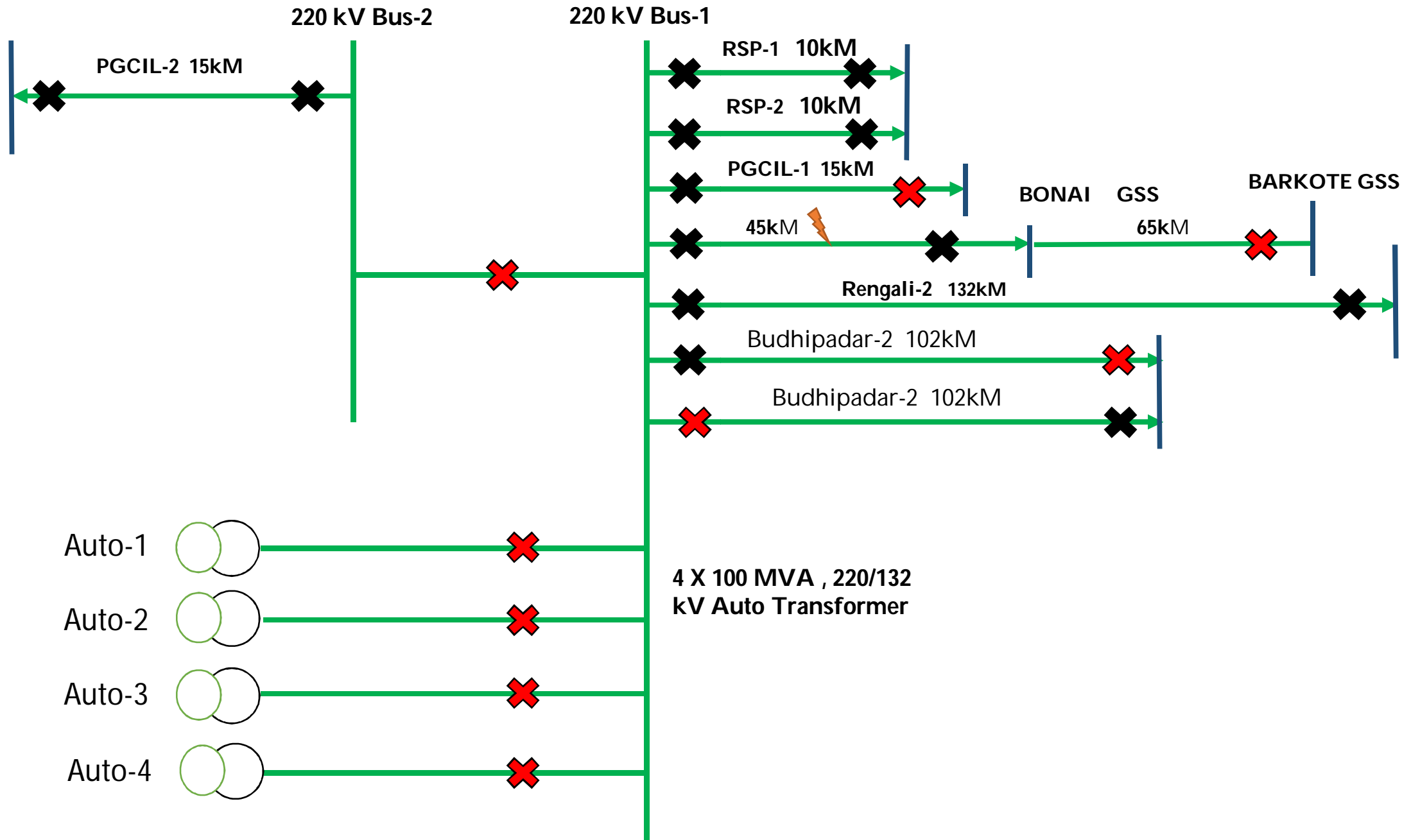
"Coming together is a beginning, staying together is progress, and working together is success." –Henry Ford

TARKERA PRE FAULT SLD

Annexure-B6



TARKERA FAULT SLD



INCIDENT

Weather condition: Rainy

11:24 Hrs: Because of fault in the control cable of Tarkera Rengali-1 feeder, the breaker was in a lock out state. So it did not trip when a fault came on this feeder causing following disturbances. The breaker did not trip due to DC cable Fault.

The 220 kV Budhipadar-1 feeder tripped at Tarkera end on operation of DP relay. (Reverse Zone)

The 220 kV Budhipadar-2 feeder tripped at Budhipadar end on operation of DP relay Z3.

The 220 kV Rengali-1 feeder tripped at Barkote end.

The 220 kV Rengali-2 feeder tripped at Rengali end (BU relay operation) .

The 220 kV PGCIL-1 feeder tripped at PGCIL end.

The 220 kV PGCIL-2 feeder charged through bus coupler was tripped at Tarkera end on operation of BU relay.

The 220 kV side of Auto 1,2,3 and 4 tripped on operation of BU relay.

Analysis

- ❑ Due to DC cable fault the DP relay & the Circuit Breaker did not trip on fault in the 220kV Tarkera-Bonai ckt. However , the BU relay had operated.
- ❑ The LBB protection is presently out of service due to malfunctioning.
- ❑ 220kV Budhipadar Ckt- 2 , PGCIL-2 & Rengali tripped from remote end. 220kV
- ❑ Budhipadar-1 tripped at Tarker end on reverse Zone operation.
- ❑ The 220kV Tarkera-Bonai-Barkote line tripped from Barkote end.
- ❑ All four 100MVA,220/132kV autotransformers tripped on Back Up earth Fault Protection.

The relay DR record is attached herewith.

Remedial Measures.

- ❑ The faulted DC cable was replaced.
- ❑ Through checking of DC ckt ,Control & Protection of Tarkera Grid Substation has been taken up. The work is scheduled to be completed by 1st September'2017.
- ❑ The Relay setting at Bonai Substation is reviewed.
- ❑ The Bus bar & LBB relay will be taken up to service after testing.

Annexure-D1

LINE NAME	TRIP DATE	TRIP TIME	RESTORATION DATE	RESTORATION TIME	Relay Indication LOCAL END	Relay Indication REMOTE END	Reason	Fault Clearance time in msec	Auto Recloser status	DR/EL RECEIVED FROM LOCAL END	DR/EL RECEIVED FROM REMOTE END	Remarks
Fault Clearing time violating protection standard												
220KV FSTPP-LALMATIA-I	18/07/2017	9:50	18/07/2017	12:25	R_N,64.5km ,zone 1 from farakka	Zone 2	R-N FAULT	400 msec	No autoreclose operation observed in PMU data	No	No	From Lalmatia zone 2
220KV CHANDIL-RANCHI-I	21/07/2017	3:56	21/07/2017	4:44	R_N,81 km from ranchi,2.31 kA current, zone2	5.78 KA , 13.27 km from chandil,Zone 1	R-N FAULT	400 msec		Yes	Yes	Carrier trip should be initiated. Powergrid and JUSNL should check PLCC
220KV CHANDIL-STPS(WBSEB)-I	21/07/2017	3:56	21/07/2017	4:41	R_N, zone 2		R-N FAULT	400 msec		Yes	No	Multiple tripping at same time
No autoreclose operation observed in PMU data												
400KV FARAKKA -KAHALGAON-IV	01/07/2017	23:09	01/07/2017	23:43	Did not trip	Y-ph, z1	Y-N FAULT	<100	No autoreclose operation observed in PMU data		No	Did not trip from Farakka end
400KV RANCHI-ROURKELA-I	02/07/2017	16:32	02/07/2017	17:14	Ranchi: Y_N,F.D.26.7 KM, F.C. 8.6 kA	Rourkela: Y_N,F.D. 136 KM, F.C. 2.709 kA, A/R started but after 80 ms healthy phase breakers also opened	Y-N FAULT	<100	No autoreclose operation observed in PMU data	No	Yes	Fault appeared during reclaim time
765KV NEW RANCHI-DHARAMJAIGARH-II	05/07/2017	15:41	05/07/2017	18:45	Y-N, 29.91 KM, F/C=1.5 KA, DT received		Y-N FAULT	<100	No autoreclose operation observed in PMU data	Yes	No	Fault appeared during reclaim time
400KV BIHARSARIFF-MUZAFFARPUR-I	06/07/2017	14:12	06/07/2017	15:12	Y-N, F/C 9.7 kA, 14.44 km from MZF	Y-N, F/C 3.07 kA, 101 km from BSF	Y-N FAULT	<100	No autoreclose operation observed in PMU data	No	No	A/R out of service, OPGW work is in progress.
220KV BARIPADA-BALASORE-II	07/07/2017	11:39	08/07/2017	19:52	R-N, Z-I, 9.2KM , 9.544KA From Baripada	R-N, 70KM from Balasore, 1.36KA	R-N FAULT	<100	No autoreclose operation observed in PMU data	No	Yes	Jumper snapped near Baripada
220KV TSTPP-MEERAMUNDALI-II	08/07/2017	16:09	08/07/2017	19:46	R-N, Z-I, IR=14.39KA		R-N FAULT	<100	No autoreclose operation observed in PMU data	Yes	No	Protection coupler is not available
400KV PATNA-BALIA-II	09/07/2017	15:08	09/07/2017	15:49	Y-N,7.9 km ,F/C 13 KA		Y-N FAULT	<100	No autoreclose operation observed in PMU data	No	No	A/R not initiated due to PLCC problem. The problem has been rectified
400KV PATNA-BALIA-III	09/07/2017	15:16	09/07/2017	17:14	R-N, F/C 10.47 kA, 13.9 km from Patna	125 KM,3.44 KA,R_N from Balia	R-N FAULT	<100	No autoreclose operation observed in PMU data	No	No	A/R kept out of service temporarily
220KV DEHRI -GAYA-II	09/07/2017	15:33	09/07/2017	15:46	B-N, Z-I, 45.7 km from Dehri		B-N FAULT	<100	No autoreclose operation observed in PMU data	No	Yes	Gaya end A/R successful, Dehri end A/R problem
220KV ARRAH-PUSAULI-S/C	10/07/2017	9:13	10/07/2017	9:51	R_N,26.84 km from Arrah,2.839 KA		R-N FAULT	<100	No autoreclose operation observed in PMU data	No	No	Powergrid investigating the reason for not initiating A/R
400KV LAKHISARAI-KhSTPP-II	11/07/2017	8:15	11/07/2017	9:01	y_n,92.1 KM FROM KAHALGAON	Y_N,64.7 KM FROM LAKHISARAI,7.2 KA	Y-N FAULT	<100	No autoreclose operation observed in PMU data	No	No	Fault during reclaim time
220KV GAYA-SONENAGAR-II	20/07/2017	14:24	20/07/2017	15:15	54.1KM From Gaya, B_N, 2.8KA	49KM from Sonenagar,B_N	B-N FAULT	<100	No autoreclose operation observed in PMU data	No	Yes	Both end A/R not initiated. BSPTCL was advised to check
400KV KOLAGHAT-KHARAGPUR-II	28/07/2017	9:04	28/07/2017	9:16	Y_N, F.D. 61.71 KM, F.C. 3.56 kA (Kharagpur end)	Y_N, F.D. 30.52 KM, F.C.7.50 kA, A/R successful (Kolaghat end)	Y-N FAULT	<100	No autoreclose operation observed in PMU data	No	No	PLCC problem. One channel rectified on 23rd Aug 17
220KV CHANDIL-RANCHI-I	29/07/2017	20:16	29/07/2017	20:55	R_N, Z_1 Ir=2.543KA	R_N, Ir=3.704KA, 40.14 KM From Ranchi	R-N FAULT	<100	No autoreclose operation observed in PMU data	Yes	No	Powergrid and JUSNL should check PLCC
400KV PPSP-BIDHANNAGAR-I	30/07/2017	5:33	30/07/2017	5:47	R_N,Z-1,1.1 KA,151 KM FROM BIDHANNAGAR		R-N FAULT	<100	No autoreclose operation observed in PMU data	No	No	A/R disabled

Sasaram HVDC Tripping

HVDC PUSAULI	17/07/2017	5:41	17/07/2017	6:38	SYSTEM FAIL ALARM		SYSTEM FAILURE ALARM AT PUSAULI	--	--	No	No	
HVDC PUSAULI	17/07/2017	16:35	17/07/2017	17:34	SYSTEM FAIL ALARM		SYSTEM FAILURE ALARM AT PUSAULI	--	--	No	No	

HVDC PUSAULI	20/07/2017	8:29	20/07/2017	9:25	SYSTEM FAIL ALARM		System alarm failure	--	--	No	No	
HVDC PUSAULI	31/07/2017	18:34	31/07/2017	19:45	SYSTEM FAIL ALARM		System fail alarm	--	--	No	No	
Miscellaneous: Tripping on DT, No reason furnished												
400KV RANCHI-ROURKELA-I	05/07/2017	17:44	05/07/2017	18:05			No reason furnished	--	--	No	No	
400KV NEW PURNEA-KISHANGANJ-I	10/07/2017	5:36	10/07/2017	6:17	DT received	--	OPERATION OF GIS GAS COMPARTMENT ZONE TRIP (GS-8)	--	--	No	No	
400KV NEW PURNEA-KISHANGANJ-I	10/07/2017	8:28	10/07/2017	10:33	DT received	--	OPERATION OF GIS GAS COMPARTMENT ZONE TRIP (GS-8)	--	--	No	No	
400KV BAHARAMPUR-BHERAMARA-II	11/07/2017	14:18	11/07/2017	15:38	Did not trip		No reason furnished	--	--	No	No	
400KV BINAGURI-BONGAIGAON-I	13/07/2017	10:21	13/07/2017	10:37	DT received	Did not trip	DT RECEIVED AT BINAGURI	--	--	No		
765KV JHARSUGUDA-DARLIPALI-I	17/07/2017	11:20	17/07/2017	19:35	DT Received		DT RECEIVED AT JHARSUGUDA	--	--	Yes	No	
400KV JAMSHEDPUR-ANDAL	17/07/2017	16:50	17/07/2017	17:12	DT Received	Did not trip	DT RECEIVED AT	--	--	No		
400KV FSTPP-BAHARAMPUR-SC	18/07/2017	19:40	18/07/2017	20:07	--	DT Received	DT RECEIVED AT BAHARAMPUR	--	--	No	No	
400KV FSTPP-BAHARAMPUR-SC	18/07/2017	20:09	18/07/2017	22:06	--	DT Received	DT RECEIVED AT BAHARAMPUR	--	--	No	No	
400KV BARIPADA-	19/07/2017	13:15	19/07/2017	13:31	Did not trip		DT RECEIVED AT	--	--	Yes		
1500MVA ICT-2 AT JHARSUGUDA	23/07/2017	14:17	23/07/2017	17:05			No reason furnished	--	--	No	No	
400KV GAYA-KODERMA-I	26/07/2017	16:33	26/07/2017	16:45	DT received at Gaya end.		DT received at Gaya	--	--	No	No	
400KV MEERAMUNDALI-ANGUL-I	28/07/2017	11:03	28/07/2017	11:39	Opened from Meramundali end only. DT received.		DT received at Meramundali	--	--	No	Yes	
400KV TSTPP-RENGALI-I	28/07/2017	22:11	28/07/2017	22:23	INADVERTENT TRIPPING WHILE DOING S/D WORK AT RENGALI MAIN BUS II	DT SENT TO TALCHER	DT SENT TO TALCHER WHILE DOING S/D WORK	--	--	No	Yes	
765KV DHARAMJAIGARH-JHARSUGUDA-I	29/07/2017	10:56	29/07/2017	11:18	Opened from Dharmjaygarh end. DT received.		DT received at Dharmjaygarh	--	--	No		