Agenda
for
62nd PCC meeting

Date: 18.12.2017
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

AGENDA FOR 62ND PROTECTION SUB-COMMITTEE MEETING TO BE HELD AT ERPC, KOLKATA ON 18.12.2017 (MONDAY) AT 11:00 HOURS

PART – A

ITEM NO. A.1: Confirmation of minutes of 61st Protection sub-Committee Meeting held on 28th November, 2017 at ERPC, Kolkata.

The minutes of 61st Protection Sub-Committee meeting held on 28.11.17 circulated vide letter dated 12.12.17.

Members may confirm the minutes of 61st PCC meeting.

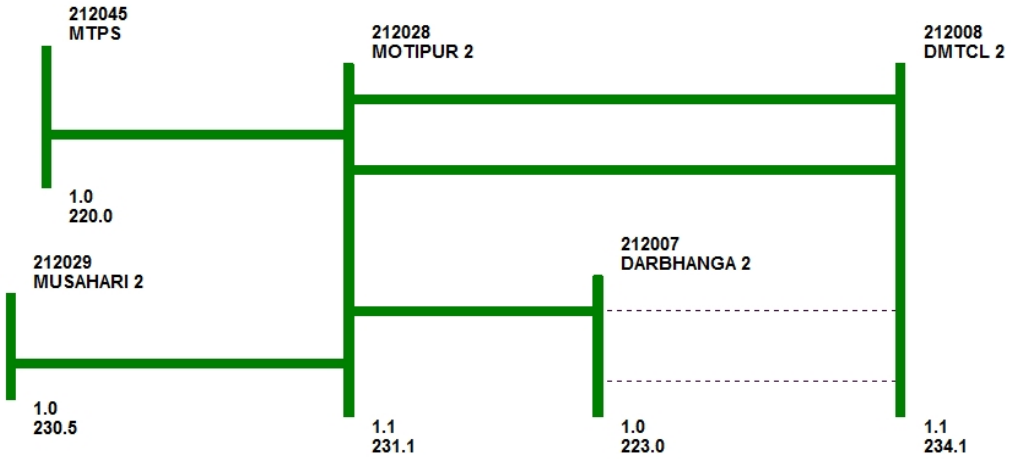
PART – B

ANALYSIS & DISCUSSION ON GRID INCIDENCES OCCURRED IN NOVEMBER, 2017

ITEM NO. B.1: Tripping of 220 KV Darbhanga-Motipur D/C and 220 KV Muzaffarpur (MTPS)-Motipur D/C on 02-11-17 at 13:18 hrs

At 13:18 Hrs total power failure occurred at Motipur, Musari, Darbhanga, Madhubani, Jainagar, Phoolparas due to tripping of 220 KV Darbhanga-Motipur line 2 on Zone 1, Y-B-N fault. At the same time, the following lines tripped on LBB protection from Motipur:

- 220 KV Motipur- DMTCL -1
- 220 KV Motipur-MTPS
- 220 KV Motipur- Darbhanga
- 220 KV Motipur- Musahari



Relay indications are as follows:

Sl.No.	Name of Bay / Line	Time of tripping	Local End Relay Indications
1	220 KV Motipur-DMTCL-2	13:18 hrs	Z-1, YB phase, 36.73 from Motipur
2	220 KV Motipur- DMTCL- 1	13:18 Hrs	LBB
3	220 KV Motipur-MTPS	13:18 Hrs	LBB

4	220 KV Motipur-220 KV Darbhanga	13:18 Hrs	LBB
5	220 KV Motipur- 220 KV Musahari	13:18 Hrs	LBB

Load loss 66 MW

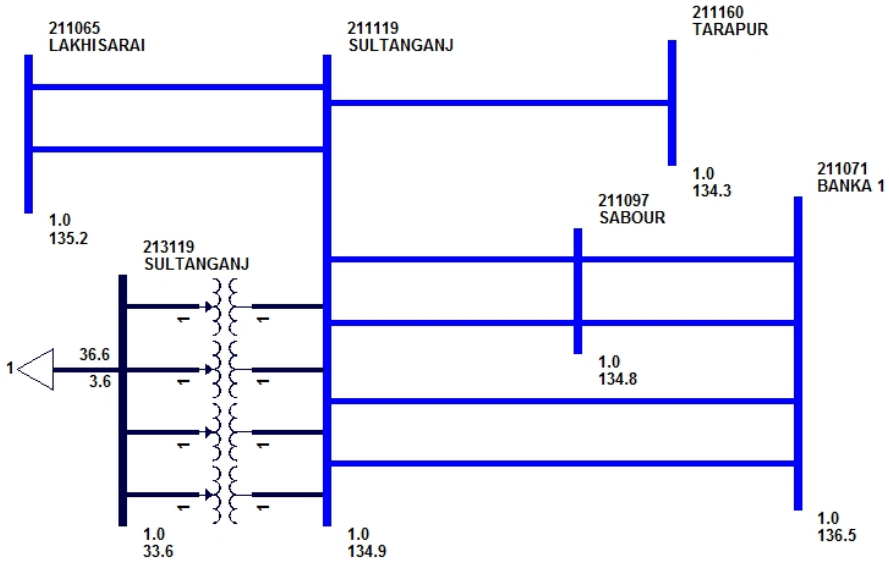
Fault clearing time as per PMU data is less than 100 ms.

Status of reporting: Submitted along with DR

BSPTCL may explain.

ITEM NO. B.2: Tripping of 132 kV Banka – Sultanganj D/C on 13-11-17 at 02:50 hrs

132 KV Banka(PG)-Sultanganj circuit -II tripped on transient fault from both ends and 132 KV Banka(PG)-Sultanganj circuit -I tripped from Banka (PG) end only, leading to total power failure at GSS Sulatanganj(BSPTCL).



Relay indications are as follows:

Relay Indication				
Element Name	**Local Relay**	**Remote Relay**	**Local Indication**	**Remote Indication**
132 KV-SULTANGANJ (BSPTCL)-132 KV-BANKA (PG)-1	No relay tripped	N/A	N/A	N/A
132 KV-SULTANGANJ (BSPTCL)-132 KV-BANKA (PG)-2	distance protection	N/A	R phase O/C,E/F, distance 21.1 KM	N/A

Load loss 38 MW

Fault clearing time as per PMU data is less than 100 ms.

Status of reporting:

- Report and DR received from BSPTCL
- Not received any report, relay indications and DR from Banka (PG).

Powergrid and BSPTCL may explain.

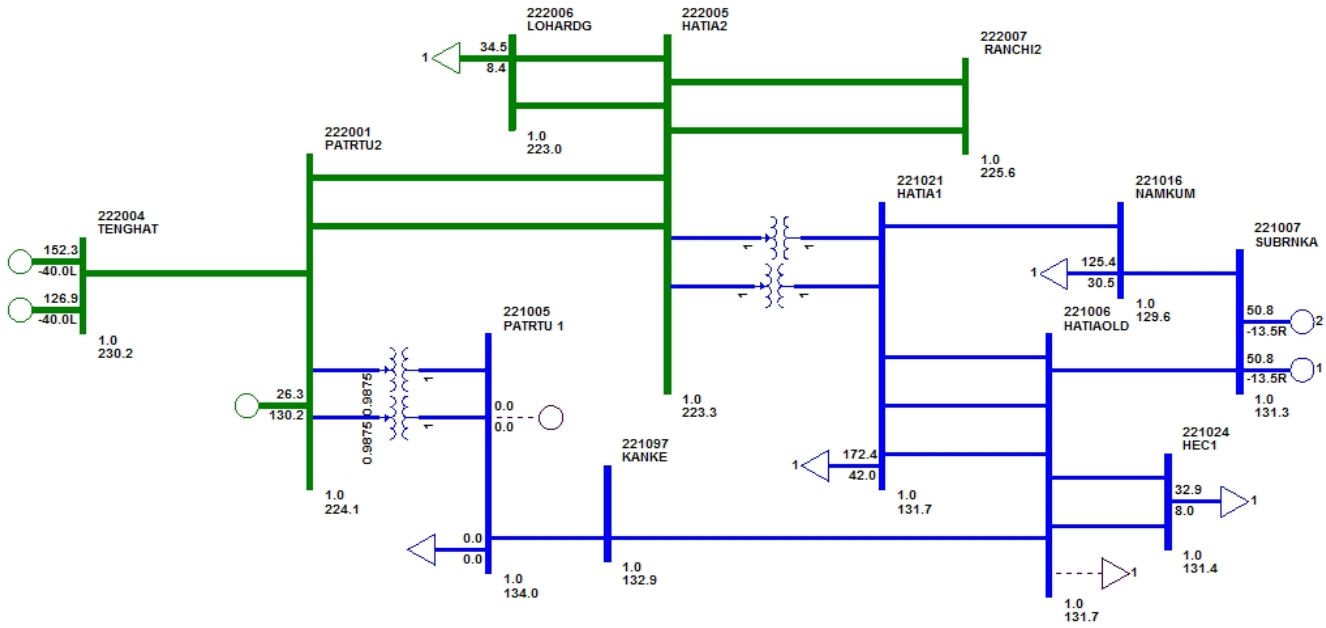
ITEM NO. B.3: Total power failure at 220/132 kV Patratu S/S on 23-11-17 at 11:56 hrs

220 kV main bus II at Patratu was under shutdown hence all elements were connected to main bus I.

At 11:55 hrs 220 kV TVNL - Patratu S/C and 220 kV Hatia - Patratu D/C tripped due to R-Y-N fault at 220kV PTPS switchyard resulting total loss of power supply at 220/132 kV Patratu S/S. 132 kV Hatia I-Kanke line also tripped from Hatia end.

220 kV Hatia - Patratu D/C line tripped from Hatia end within 350 ms on zone 2.

During restoration both units at TVNL were tripped at 12:52 hrs. Voltage fluctuation was reported at TVNL bus.



Relay indications:

Sl.No.	Name of Bay / Line	Local End Relay Indications
1	220 kV Hatia - Patratu line 1	Z-2, RYN fault, Tripped with in 350 ms
2	220 kV Hatia - Patratu line 2	Z-2, RYN fault, Tripped with in 350 ms
3	132 kV Hatia I-Kanke	Hatia end tripped on zone 1, Ia=981.1 A, Ib=777.3 A, Ic= 251.8 A

Load loss 145 MW

Fault clearing time as per PMU data is 900 ms.

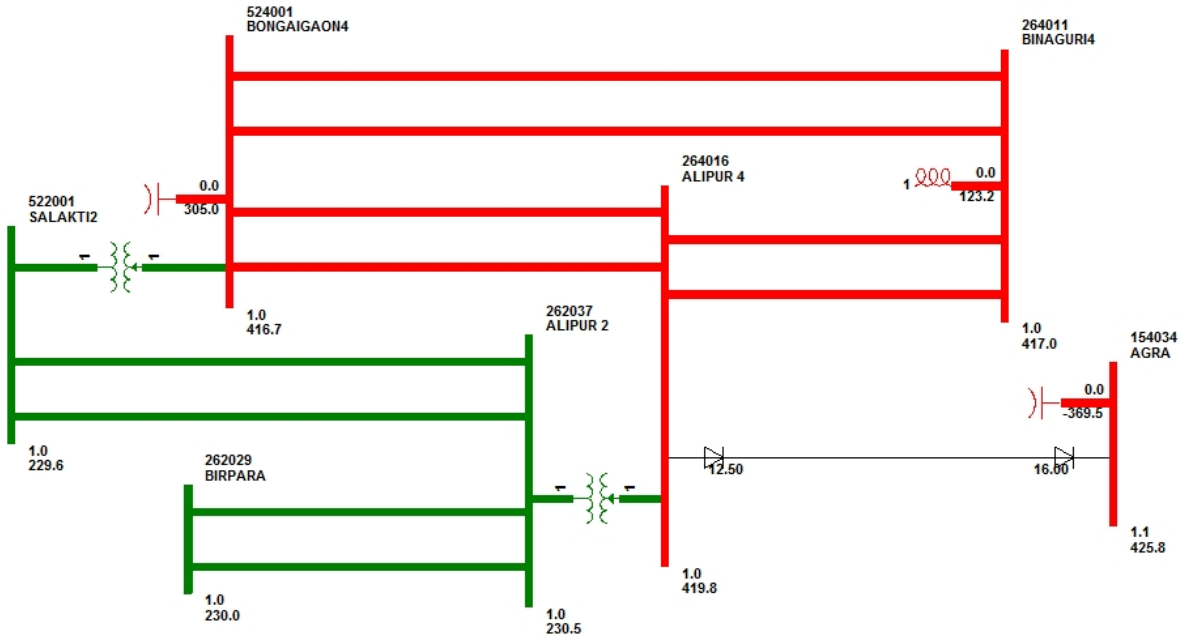
Status of reporting: Report and DR files at Hatia end received. No details received from TVNL end.

JUSNL may explain.

ITEM NO. B.4: Total power failure at 400/220 kV Alipurduar S/S on 26-11-17 at 04:34 hrs

400 kV Alipurduar Bongaigaon - II and 220 kV Alipurduar Salakati D/C were out of service.

At 04:40 hrs 400 kV Alipurduar - Bongaigaon - I, 400 kV Alipurduar Binaguri D/C and 220 kV Alipurduar - Birpara D/C tripped due to overvoltage. HVDC Alipurduar - Agra Bipole blocked (antecedent flow was 150 MW per pole). As a result 400/220 kV Alipurduar S/S became dead.



Powergrid may explain the following:

1. As per the DR all 400 KV lines O/V pick up and tripping took place at 251KV line to Neutral voltage which corresponds to 434 KV line to line voltage. And 460 KV voltage appear after tripping of all 400 KV line. So settings need to be checked. As per verbal communication, they confirms that stage one setting is 110 % with time grading for parallel lines and after the incident they have tested the overvoltage relay and got 439.87 KV pick up and 438.1 KV droop down voltage . But this need to be checked.

2. From HVDC DR it is not clear which block signal was issued. For pole 4 AC under voltage was picked up 200 ms after DC power zero. So 1st power become zero the low Ac voltage detected but no blocking command is seen from DR. Same for pole 3 it is not clear. In both the case TFR is triggered but within the time window of DR no blocking signal issued. POWERGRID is asked to submit complete event recording.

3. Reason for voltage rise after tripping of all 400 KV line is not clear. Though there were some filter switching but capacity wise total MVAR capacity of filters were same before switching and after switching .And MVAR injection only increased in accordance with bus voltage increase. So cause of bus voltage increase need further analysis . Now one possibility could be drastic fault level reduction of Alipurduar after tripping of all 400 KV line. At that point of time it was connected to the grid via 220KV Birpara double circuit line and at that moment 3 filters of filter bank 1 (410 MVAR) was in service (this is as per minimum filter requirement for controlling harmonics injection to the grid). That's why with this low fault level voltage rises abruptly. In PSSE also we found similar result i.e in steady state with all 400 KV line open, with 300 MW power order in HVDC and 3 filter of filter bank 1 in service voltage of 400 KV bus at Alipurduar is rising similarly.

ITEM NO. B.5: Total power failure at 132/66 kV Melli S/S and its surrounding area on 29-11-17 at 05:52 hrs

Due to flashing of PG clamp of line bay of 66 kV Kalimpong - Melli S/C, 132 KV Sagbari-Melli S/C, 132 KV Siliguri-Melli S/C and 132 KV Rangpo-Melli S/C were switched off resulting total power failure at 132/66 kV Melli S/S and its surrounding area.

Status of reporting: Not submitted any report, relay indications and DR.

Powergrid may explain.

ITEM NO. B.6: Tripping of 220 kV Tashiding - New Melli S/C and 220 kV Tashiding - Rangpo S/C on 12-11-17 at 01:30 hrs

At 01:30 hrs 220 kV Tashiding - New Melli S/C and 220 kV Tashiding - Rangpo S/C tripped in Y-N fault resulting generation loss of 40 MW due to loss of evacuation path.

Fault clearing time as per PMU data is less than 100 ms.

Status of reporting: Not submitted any report, relay indications and DR.

Powergrid may explain.

ITEM NO. B.7: Disturbance at 400kV Sasaram on 29-11-17 at 17:19 hrs

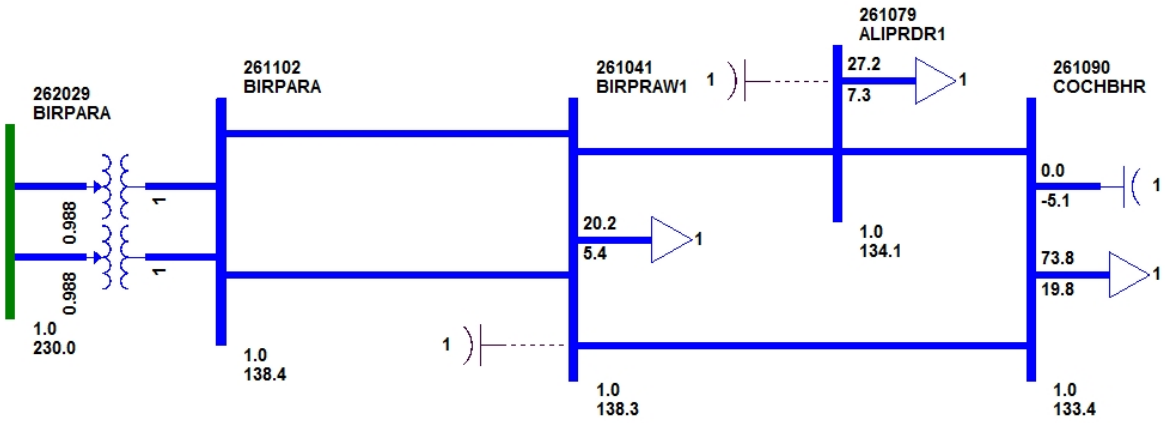
At 17:19 hrs due to bus bar protection operation at Sasaram bus IV, 400 kV Sasaram - Biharshariff - II, 400/220 kV 315 MVA ICT - II at Sasaram and HVDC Sasaram B/B converter tripped. Other elements were connected to another bus to their tie CB.

As per PMU data, fault clearing time is 240 ms approx. (generally observed in the case of LBB).

Powergrid may explain.

ITEM NO. B.8: Total power failure at 132 KV Birpara S/S (WB) on 03-11-17 at 14:43 hrs.

Total power failure occurred at 132 KV Birpara S/S (WB) when 132 KV Birpara-Birpara D/C tripped due to failure of B phase LA of 132 KV Birpara-Birpara-II at WB end. At same time, 132 KV Birpara-Birpara-I tripped from WB end on directional E/F.



Load loss 70 MW

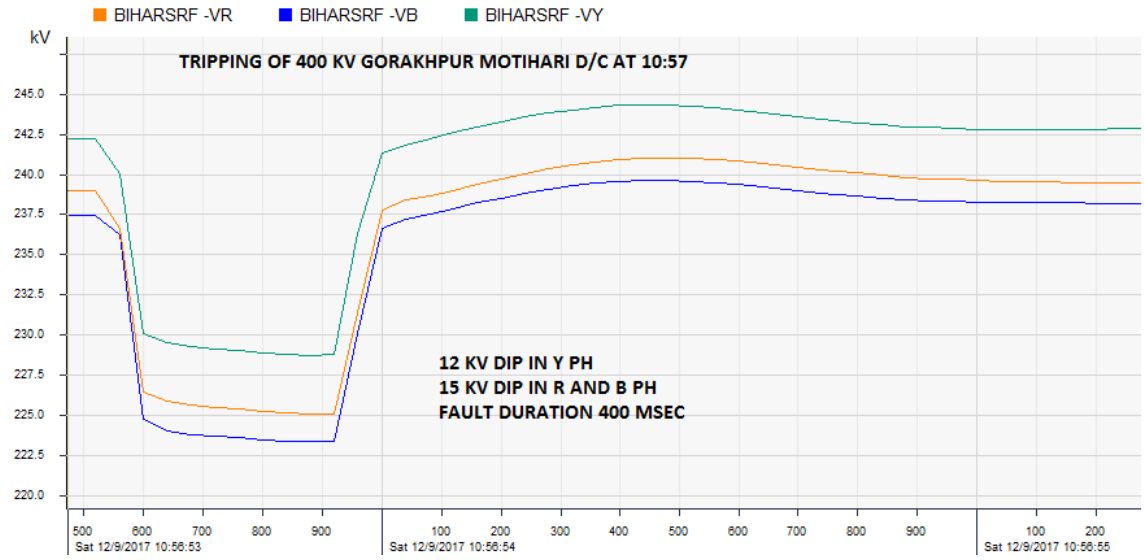
Fault clearing time as per PMU data is less than 100 ms.

Status of reporting: Not submitted any report, relay indications and DR.

WBSETCL and Powergrid may explain.

ITEM NO. B.9: Disturbance at 400/132kV Motihari S/s.

At 10:57 hrs on 09-12-17, all lines connected to 400/132 kV Motihari S/S tipped due to operation of bus bar protection of both bus I & II. It was reported that motorized earth switch connected to main bay of 125 MVAr B/R I (connected to bus II) became grounded resulting operation of bus bar operation at both buses. In PMU data, delayed cleared three phase fault has been observed.



The following points may be discussed:

1. Reason for grounding of earth switch may be discussed. As there are more than one interlock present to avoid this type of operating mistakes.
2. Reason for operation of bus bar protection of both buses may be explained as fault was only at bus II
3. In PMU data, delayed clearance fault has been observed. In case of operation of bus bar protection, fault should be cleared instantaneously.

ITEM NO. B.10: Tripping incidences in the month of November, 2017

Other tripping incidences occurred in the month of November 2017 which needs explanation from constituents of either of the end is given at **Annexure- B10**.

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

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

In 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.

Members may discuss.

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 400 kV Kahalgaon S/s on 15-10-17 at 10:15 hrs

Unit - I was being taken shutdown due to boiler tube leakage. During shutdown process, BFR operated and all breakers connected to bus I tripped. On investigation, it was found that resistance of trip coils of Y & B phase of aforesaid unit #1 main bay breaker was high.

In 61st PCC, NTPC submitted that Unit - I was being taken shutdown due to boiler tube leakage. The BHEL make 400 KV Circuit breakers installed in main & tie bay were manually switched off. At that time, BFR relay of unit#1 main bay breaker operated & tripped all 400 KV main bay breakers associated with 400 KV Bus#1 as per the scheme. No line & unit tripped additionally.

NTPC explained that during preliminary observations it was identified that Y& B pole of Unit#1 main bay circuit breaker did not trip in time resulting into BFR operation. Subsequently, 400 KV BUS#I tripped after approx 200 ms time delay through BFR operation as per settings.

During detailed breaker testing of unit#1 main bay breaker, Resistance of Trip coils of Y & B phase of aforesaid unit#1 main bay 400 KV circuit breaker was found at higher side. These faulty trip coils were replaced immediately. Breaker was again tested & all testing parameters of aforesaid circuit breaker were found in order.

PCC advised NTPC to explain the reason for BFR operation in next PCC meeting.

NTPC may explain.

ITEM NO. C.2: Disturbance at 220 kV Budhipadar S/s on 01-10-17 at 09:25 hrs

Prior to the incident, 220 kV Korba III feeder was in idle charged up to location 24 from Budhipadar end. At 09:25 hrs, fault occurred at idle charged portion and line tripped from Budhipadar end in Z-I protection. At same time, all elements connected to 220 kV Bus I tripped at Budhipadar due to operation of bus bar protection.

It is observed that, the fault current recorded by Korba-3 feeder in B-phase is IL3/In=15.0. The sum of the fault current contribution from all other feeder of Bus-I also found to be IL3/In=15.0. So, no differential current is available but Bus bar relay operates for Bus-1 & tripped all the feeders of Bus-I.

Fault clearing time as per PMU data is less than 100 ms.

In 61st PCC, OPTCL explained that fault occurred in idle charged portion of 220kV Korba-Budhipadar line at 2.5 km from Budhipadar. The line tripped from Budhipadar end in Z-I protection. At same time, all elements connected to 220 kV Bus I tripped at Budhipadar due to operation of bus bar protection. After tripping of all feeders on BUS -1, the central unit of Bus Bar relay was in REBOOTING mode. Therefore proper analysis could not be ascertained.

PCC advised OPTCL to explain the operation of bus bar protection of Bus 1 in next PCC meeting with proper analysis.

OPTCL may explain.

ITEM NO. C.3: Disturbance at 400 kV Teesta-V S/s on 12-10-17 at 12:55 hrs

At 12:55 hrs, heavy sound was observed in the vicinity of 400kV Teesta V and 400 kV Teesta - Rangpo - II tripped on zone 2, Y-N fault from Rangpo end. Teesta end distance protection not observed any fault in the line. Carrier received at Teesta end and Auto reclose operation of 400 kV Teesta - Rangpo - II was successful at Teesta end. In the mean time, B/C at Teesta tripped on O/C, E/F protection, high set stage II resulting tripping of unit III due to loss of evacuation path.

In 61st PCC, Powergrid explained that there was a high resistance Y-N fault in 400 kV Teesta - Rangpo – II close to Teesta V bus. Initially the fault was seen in zone 3 characteristics of distance protection at Rangpo end. Later the fault was evolved into zone 2 characteristics. Since it was an evolving fault the Autorecloser was not initiated at Rangpo end as per the scheme and 400 kV Teesta - Rangpo – II tripped from Rangpo end. DT was sent to Teesta-V end.

PCC advised NHPC to take the following measures:

- *Any one (Main I or II) distance protection should have quadrilateral characteristics to accommodate arc resistance of the fault. The zone settings and starter settings should be modified accordingly in coordination with Rangpo, Powergrid.*
- *The 400kV bus coupler overcurrent setting should be properly coordinated with the distance protection of transmission lines. Otherwise bus coupler will trip for the faults in transmission line. Since busbar protection is available for 400kV bus at Teesta-V, the over current setting of bus coupler can be reviewed and time setting should be coordinated at least with zone 2 time of the transmission line protection.*

PCC opined that since length of 400 kV Teesta - Rangpo D/C line is 12 km and it is in high resistance fault prone area, PCC recommended for differential protection using OPGW to improve the reliability.

NHPC may update.

ITEM NO. C.4: Disturbance at 220 kV Chandaka(OPTCL) on 17-10-17 at 10:23 hrs

220 kV Mendasal - Chandaka Q/C line tripped due to fault in 220 kV Mendasal - Chandaka - I resulting total power failure at Chandaka end. Power was extended to Chandaka by charging circuit II.

Load loss 230 MW. Fault clearing time as per PMU data is 1000 ms.

OPTCL may explain with the relay indications and DR.

In 61st PCC, OPTCL informed that there was a R-N fault in 220 kV Mendasal - Chandaka – III at 15 km from Mendhasal end. Mendhasal end cleared the fault on zone 1 but Chandaka end failed to clear the fault as a result other three 220kV lines of 220 kV Mendasal – Chandaka tripped from Mendhasal end on back up over current relay on high set feature.

PCC advised OPTCL to take the following corrective actions:

- *Chandaka end distance protection of 220 kV Mendasal - Chandaka – III should be tested.*
- *Back over current protection relays at Mendhasal and Chandaka are to be properly coordinated*

OPTCL may update.

ITEM NO. C.5: BSPTCL may update the latest status of following PCC recommendations

1. Disturbance at 220 kV Motipur S/s on 05-09-17 at 10:17 hrs

In 60th PCC, BSPTCL was advised to take the following remedial actions:

- Motipur end backup O/C, E/F protection of 220kV Motipur-Darbanga line should be enabled and coordinated with adjacent line relays.

2. Disturbance at 220 kV Madhepura S/s on 20-10-17 at 23:53 hrs

Total power failure occurred at Madhepura, Saharsa, Sonebarsa and Udaikishanganj due to tripping of 220 kV Purnea - Madhepura D/C on Y-N fault.

In 61st PCC, BSPTCL was advised to check Madhepura end relay of 220 kV Purnea(PG) – Madhepura line – II.

3. Disturbance at 132 kV Sultanganj S/s on 26-10-17 at 09:22 hrs

Total power failure occurred at Sultanganj, Tarapur and Part of Munger after tripping of 132 kV Banka – Sultanganj D/C in R-N fault (Relay Indication: Ckt II: R-N, F/C 2.19 kA, 41.27 km from Banka, Ckt I: R-N, 2.8 kA, 31.62 km from Banka).

In 61st PCC, Powergrid informed that there are multiple R-N faults in both the lines of 132 kV Banka – Sultanganj D/C line with 3 ms time delay. Both the lines tripped from Banka end on zone 1, R-N fault.

BSPTCL informed that no tripping was initiated from Sultanganj end.

BSPTCL failed to explain how the fault got cleared from their end.

PCC advised BSPTCL to collect the details and submit the report to ERPC and ERLDC within a week.

ITEM NO. C.6: Repeated pole blocking at HVDC Sasaram

S. No.	Tripping Date	Tripping Time	Brief Reason/Relay Indication	Restoration Date	Restoration Time	Duration
1	17-07-17	5:41	System failure alarm	17-07-17	6:38	0:57
2	17-07-17	16:35	System failure alarm	17-07-17	17:34	1:00:00
3	20-07-17	8:29	System failure alarm	20-07-17	9:25	0:56
4	31-07-17	18:34	System failure alarm	31-07-17	19:45	1:11:00
5	29-05-17	00:15	System failure alarm	29-05-17	01:24	1:09:00
6	25-04-17	06:03	Auxiliary supply failure	25-04-17	07:14	1:11:00
7	01-04-17	09:15	Tripped due to Valve cooling system problem	01-04-17	12:56	3:41:00
8	11-04-17	23:32	System failure alarm	12-04-17	00:17	0:45:00
9	30-04-17	03:24	Due to tripping of filters on eastern side	30-04-17	16:13	12:49:00

10	12-01-17	13:36	Blocked due to unbalanced auxiliary system	12-01-17	15:06	1:30:00
11	14-01-17	05:03	Tripped due to system failure alarm	14-01-17	08:57	3:54:00
12	10-01-17	13:23	Filter problem at Sasaram	12-01-17	11:24	46:01:00
13	03-01-17	11:00	To take pole in service in HVDC mode	10-01-17	07:42	164:42:00
14	03-12-16	12:15	Converter control protection operated	03-12-16	13:22	1:07:00
15	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
16	19-12-16	12:43	Due to tripping of 400 kv Biharshariff-Sasaram-II	19-12-16	13:35	0:52:00
17	05-11-16	04:51	System fail alarm	05-11-16	06:57	2:06:00
18	22-11-16	12:12	CCP Main-2 major alarm	22-11-16	13:35	1:23:00
19	26-11-16	09:36	CB filter bank burst	27-11-16	11:31	25:55:00

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.

In 56th PCC, Powergrid was advised to submit the details to ERLDC and ERPC.

In 36th TCC, Powergrid informed that pole blocking at HVDC Sasaram system is being initiated on system failure alarm. They have contacted OEM and OEM is also failing to conclude and rectify the issue.

Powergrid added that since the HVDC control system is quite old and it is not operating satisfactorily the HVDC control system at Sasaram needs to be upgraded. Powergrid requested TCC to consider.

TCC felt that Powergrid has not placed any report in the PCC meeting and advised Powergrid to take the issue seriously.

TCC opined that system upgradation needs detailed discussion in lower forums and advised Powergrid to place the details in forthcoming PCC meeting scheduled to be held on 20th September 2017.

In 59th PCC, Powergrid informed that the issue has been referred to their corporate office and they will submit the report soon.

In 61st PCC, Powergrid informed that M/s Alstom has inspected the site and collected all the details. They will submit the report.

Powergrid may update.

ITEM NO. C.7: 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.

2. Schedule for 2nd Third Party Protection Audit

Sl No	Proposed Date	Protection Audit Substations	UFR testing
1	1st week of Jan, 2018	400kV Jaypore(PG)	• UFR Testing at Jeynagar and Sunbedha • UFR Testing at Theruvali
2		220kV Jeynagar (OPTCL)	
3		400kV Indravati (PG)	
4		400kV Indravati (OHPC)	
5		220kV Theruvali (OPTCL)	

The 2nd third party protection audit observations of competed substations are available in the ERPC website in important documents.

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

Members may note.

ITEM NO. C.8: 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	220KV BUDIPADAR-KORBA-II	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	WBSETCL	WBSETCL	PLCC available	Rectified and in service from 7th June 2017
16	400 KV NEW RANCHI - CHANDWA - I	13.07.16	B-N FAULT	PGCIL	PGCIL	PLCC available	
17	220 KV TSTPP-RENGALI	17.07.16	EARTH FAULT	NTPC	OPTCL		
18	220KV BUDIPADAR-RAIGARH	21.07.16	EARTH FAULT	OPTCL	PGCIL	PLCC defective	
19	400 KV KOLAGHAT-KHARAGPUR	03.08.16	Y-N FAULT	WBPDCL	WBSETCL		
20	220 KV FARAKKA-LALMATIA	03.08.16	B-N FAULT .	NTPC	JUNSL	Yes	Old Relay and not functional. 7-8 months required for auto re-close relay procurement.
21	400 KV PURNEA-MUZAFARPUR-I	03.08.16	R-N FAULT	PGCIL	PGCIL	PLCC available	
23	220 KV MUZAFFARPUR - HAZIPUR - II	10.08.16	B-N FAULT	PGCIL	BSPTCL		Voice established. For carrier required shutdown
24	220 KV ROURKELA - TARKERA-II	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	WBPDCL	PLCC available	In service
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	BSPTCL	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	WBPDCL	PGCIL	PLCC available	
32	220KV Bidhannagar-Waria-II			WBSETCL	DVC		
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 (Proposal for Commn. in OPGW is pending): *PSDF appraisal committee accepted the proposal*
2. 220kV Indravati(PG)-Indravati(PH) (Proposal for Commn. in OPGW pending): *PSDF appraisal committee accepted the proposal*
3. 220kV Baripada(PG)-Baripada (Tendering in Progress for OPGW): *Contract awarded*
4. 220kV Baripada(PG)-Rairangpur (Tendering in Progress for OPGW): *Contract awarded*

BSPTCL:

1. 220kV Purnea (PG)-Madhepura line
2. 220 kV Biharshariff- Begusarai line
3. 220 kV Biharshariff- Bodhgaya line
4. 220kV MTPS-Motiari line

Work is in progress expected to be commissioned by December 2017.

5. 220KV Madhepura-New Purnea-I — Auto recloser is out of service at Madhepura
6. 220KV Muzaffarpur-Hajipur D/C line — Auto recloser is out of service at Hazipur
7. 220KV FSTPP-Lalmatia-1 — Auto recloser is out of service at Lalmatia
8. 220KV Patna-Khagaul-SC — Auto recloser is out of service at Khagual

Members may update the status.

ITEM NO. C.9: 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 Bar 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	*Single bus. Bus bar will be commissioned under PSDF.*
West Bengal				
1	220 kV Arambah	Not available	24-Jan-13	*Available in alarm mode. Planning to replace with numerical relay*
2	220 kV Jeerat	Not available	20-Dec-12	*Relays have been received at site. Installation is in progress.*

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.

58th PCC advised DVC to install numerical bus bar protection at 220kV Bokaro, Kalyaneswari, Chandrapura and Durgapur S/s to improve the reliability.

In 36th TCC, *DVC informed that they have already covered the upgradation of busbar protection for 220kV Kalyaneswari and Durgapur in PSDF proposal. They will place their action plan for 220kV Bokaro and Chandrapura in upcoming PCC meeting.*

Members may update.

ITEM NO. C.10: Overvoltage tripping of 400 KV lines from Biharshariff --ERLDC

Overvoltage tripping of lines and healthy phase voltage rise at Biharshariff PMU during nearby SLG fault have become very frequent. In the month of September and august there are frequent such tripping. There are also some discrepancies like high harmonic content, sudden loss of one phase voltage with other two phase voltage rising even when there is no fault etc. In few cases of SLG fault serious high voltage is captured in Biharshariff PMU and in almost all cases of SLG fault near Biharshariff Voltage rise of other phases is very common suggesting that Z0/Z1 ratio at Biharshariff looking into the fault is very high. List of such tripping are as follows:

400KV NEW PURNEA-BIHARSARIFF-II	05-08-17	13:44	05-08-17	20:44	Tripped on O/v from Biharsharif end (Mal-operation, voltage at Biharsharif-410KV).DT received at New Purnea
400KV NEW PURNEA-BIHARSARIFF-II	11-08-17	17:52	11-08-17	18:17	DT RECEIVED AT PURNEA END
400KV BIHARSARIFF-LAKHISARAI-II	16-09-17	16:11	16-09-17	22:01	O/V AT BSF (MAL-OPERATION)
400KV BIHARSARIFF-LAKHISARAI-II	16-09-17	22:46	17-09-17	2:37	Faulty O/V Relay Oprtd
Disturbance at Biharshariff on 25-09-17 at 09:32 hrs (Serious voltage of healthy phases)					

In 60th PCC, ERLDC informed that 400KV NEW PURNEA-BIHARSARIFF-II has been tripped on over voltage but no over voltage condition was observed as per PMU data.

Powergrid informed that line CVTs at Biharshariff end was faulty. The CVT has been replaced.

ERLDC added that they have observed severe voltage rise in healthy phases of 400kV Biharshariff PMU data during single phase to ground faults.

PCC advised Powergrid to take appropriate action to reduce voltage rise in healthy phases during SLG faults.

In 61st PCC, Powergrid informed that they are suspecting earthing problem at Biharshariff S/s. Earthing audit has been done and the audit team will submit the report.

POWERGRID may update.

ITEM NO. C.11: Over voltage settings of 400kV HEL-Subashgram D/C line

In 139th OCC Meeting held on yesterday, OCC felt that in view of high voltage condition at 400kV Subashgram during the winter the over voltage settings of 400kV HEL-Subashgram D/C line need to be reviewed to avoid cascaded tripping of both the lines. OCC referred the issue to PCC meeting.

In last PCC, it was felt that proper time delay should be maintained in the settings so that after tripping of one line, the line loading of other line will increase and provide voltage relief. PCC decided the following over voltage settings:

- 400kV HEL-Subashgram line 1 112% with 8 sec delay
- 400kV HEL-Subashgram line 2 111% with 5 sec delay

PCC advised HEL and Powergrid to implement the settings.

CESC informed that they will communicate the PCC decision to HEL for implementation of the settings.

CESC may update.

ITEM NO. C.12: PRDC visit newly commissioned substations in ER for data collection

Substation data of newly commissioned substations needs to be collected and incorporated in PDMS. PRDC representatives will visit the newly commissioned substations for collection of name plate details and relay setting data. A tentative schedule has been prepared which is enclosed at **Annexure-C12**.

Members may note.

ITEM NO. C.13: Checklist for submission of updated data for Protection Database

The network data in Protection Database needs to be updated on regular basis on account of commissioning of new elements in the CTU as well as STU networks. Accordingly a checklist has been prepared which is enclosed in **Annexure-C13**.

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

Constituents may update.

ITEM NO. C.14: Any other issues.

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Annexure-B10

List of important transmission lines in ER which tripped in November-2017

Sl No	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	Remarks
	No Autoreclose operation observed in PMU data										
1	220KV NEW PURNEA-MADHEPURA-II	02/11/2017	10:32	02/11/2017	10:57	Z1, R-N,F/D-64.6KM, F/C-2.56KA	Z1, R-N, F/D-32.3KM	R-N Fault	< 100	No Auto-reclose operation found in PMU	
2	400KV KHARAGPUR-CHAIBASA-II	02/11/2017	13:01	02/11/2017	13:42	R_N Fault, A/R successful		R-N Fault	< 100	A/R successful at Kharagpur end	
3	400KV KHARAGPUR-CHAIBASA-I	02/11/2017	13:01	02/11/2017	13:45	R_N Fault, A/R successful		R-N Fault	< 100	A/R successful at Kharagpur end	
4	220KV PATNA-KHAGAUL-SC	06/11/2017	9:05	06/11/2017	10:54	B-N , 10 KM , 8 KA		B-N Fault	< 100	No Auto-reclose operation found in PMU	
	Miscellaneous: Tripping on DT, No reason furnished										
6	132KV KhSTPP-LALMATIA-I	07/11/2017	6:57	07/11/2017	7:50	Did not tripped	E/F	E/F			Fault not observed in PMU
7	400KV JHARSUGUDA-STERLITE-II	07/11/2017	10:01	07/11/2017	10:45		DT RECEIVED	DT RECEIVED AT STERLITE			Fault not observed in PMU
8	400KV MALDA-NEW PURNEA-I	09/11/2017	0:32	09/11/2017	1:27	Tripped due to O/V (stg I)-Spurious	DT received	Tripped due to O/V (stg I)-Spurious			
9	400KV MALDA-NEW PURNEA-I	09/11/2017	2:43	09/11/2017	5:55	O/V STG-I		O/V STG-I AT MALDA			
10	400KV PPSP-NEW PPSP-SC	12/11/2017	21:48	12/11/2017	22:43	Relay 86 operated		Relay 86 operated at PPSP			Fault not observed in PMU
11	400KV BIHARSARIFF-PUSAULI-I	13/11/2017	23:52	14/11/2017	0:31	Over Voltage		O/V AT BIHARSARIFF END			
12	400KV JEYPORE-INDRAVATI-I	14/11/2017	12:56	14/11/2017	13:18	DT RECEIPT FROM INDRAVATI	Did not tripped	DT RECEIPT FROM INDRAVATI			Fault not observed in PMU
13	400KV MAITHON-MAITHON RB-II	15/11/2017	10:22	15/11/2017	10:28	DT RECEIVED AT MPL WHILE PGCIL OPENED MAIN BAY DUE TO BUS 3 S/D AT MAITHON;PGCIL REPORTS NON INCREMENT OF DT COUNTER		DT RECEIVED AT MPL			Fault not observed in PMU
14	400KV MAITHON-KhSTPP-II	20/11/2017	11:05	20/11/2017	11:37	Not tripped	DT received	DT received at Kahalgaon			Fault not observed in PMU
15	400KV RANCHI-RAGHUNATHPUR-II	22/11/2017	18:20	22/11/2017	18:35	DT received from RTPS		DT received from RTPS			Fault not observed in PMU
16	400KV MAITHON-MAITHON RB-II	23/11/2017	16:01	23/11/2017	16:06	Did not tripped	DT RECEIVED	DT RECEIVED AT MPL			Fault not observed in PMU
17	400KV RANCHI-RAGHUNATHPUR-II	23/11/2017	18:51	23/11/2017	19:43	DT RECEIVED AT RTPS;NO DT SENT FROM RANCHI		DT RECEIVED AT RTPS;NO DT SENT FROM RANCHI			A/R of 400 KV Ranchi- New Ranchi successful
18	400KV RANCHI-RAGHUNATHPUR-III	23/11/2017	18:51	23/11/2017	19:43	DT RECEIVED AT RTPS;NO DT SENT FROM RANCHI		DT RECEIVED AT RTPS;NO DT SENT FROM RANCHI			A/R of 400 KV Ranchi- New Ranchi successful
19	400KV NEW PPSP-NEW RANCHI-I	24/11/2017	10:15	24/11/2017	10:53	DT received	Did not tripped	DT received at New PPSP			Fault not observed in PMU
20	400KV NEW PPSP-NEW RANCHI-I	24/11/2017	11:41	24/11/2017	12:15	No reason furnished		No reason furnished			Fault not observed in PMU
21	400KV MUZAFFARPUR(PG)-BIHARSARIFF-II	26/11/2017	2:13	26/11/2017	3:07	Over Voltage	DT AT MZF	Over Voltage at Biharshariff			
22	400KV MUZAFFARPUR(PG)-BIHARSARIFF-II	26/11/2017	3:07	26/11/2017	7:21	Overvoltage ;Voltage reported from site: 421 KV	DT SENT AT MZF	Over Voltage at Biharshariff			

PLAN FOR BIHAR

Sl no.	Planned date of Visit	STATION NAME	Owner	Station type	Voltage level	Status
1	11/12/2017	DMTCL, MOTIHARI	DMTCL	SUBSTATION	400KV	VISIT PENDING
2	12/12/2017	CHAKIA	BSPTCL	SUBSTATION	132KV	VISIT PENDING
3	13/12/2017	MAHARAJGANJ	BSPTCL	SUBSTATION	132KV	VISIT PENDING
4	15/12/2017	PUPRI, SURSAND	BSPTCL	SUBSTATION	132KV	VISIT PENDING
5	16/12/2017	ROSERA	BSPTCL	SUBSTATION	132KV	VISIT PENDING
6	18/12/2017	SIMRI BAKHTIYARPUR	BSPTCL	SUBSTATION	132KV	VISIT PENDING
7	19/12/2017	DHAMDAHA	BSPTCL	SUBSTATION	132KV	VISIT PENDING

PLAN FOR WEST BENGAL

Sl no.	Planned date of Visit	STATION NAME	Owner	Station type	Voltage level	Status
1	22/12/2017	ALIPURDUAR	WBSETCL	SUBSTATION	220kV	VISIT PENDING
2	23/12/2017	UJANU	WBSETCL	SUBSTATION	132KV	VISIT PENDING
3	25/12/2017	SADAIPUR	WBSETCL	SUBSTATION	220KV	VISIT PENDING
4	26/12/2017	NEW PPSP	WBSETCL	SUBSTATION	400KV	VISIT PENDING
5	27/12/2017	NEW CHANDITOLA	WBSETCL	SUBSTATION	400KV	VISIT PENDING

PLAN FOR ODISHA

Sl no.	Planned date of Visit	STATION NAME	Owner	Station type	Voltage level	Status
1	02/01/2018	CHANDAKA-B	OPTCL	SUBSTATION	220kV	VISIT PENDING
2	03/01/2018	MANIA	OPTCL	SUBSTATION	132KV	VISIT PENDING
3	04/01/2018	ACME	CPP	CPP	132KV	VISIT PENDING
4	04/01/2018	GRID STEEL	CPP	CPP	132KV	VISIT PENDING
5	04/01/2018	BHUBANESWAR POWER	CPP	CPP	132KV	VISIT PENDING
6	05/01/2018	KHAJURIAKATA	OPTCL	SUBSTATION	132KV	VISIT PENDING
7	06/01/2018	BANEI	OPTCL	SUBSTATION	132KV	VISIT PENDING
8	08/01/2018	TUSHURA	OPTCL	SUBSTATION	132KV	VISIT PENDING
9	10/01/2018	MALKANGIRI	OPTCL	SUBSTATION	132KV	VISIT PENDING
10	12/01/2018	OLAVAR	OPTCL	SUBSTATION	132KV	VISIT PENDING
11	13/01/2018	BHOGARAI	OPTCL	SUBSTATION	132KV	VISIT PENDING

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

NAME OF ORGANISATION:
FOR THE MONTH OF:

SUBSTATION DETAIL:

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

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