



Agenda
for
88th PCC Meeting

Date: 18.02.2020
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

AGENDA FOR 88TH PROTECTION SUB-COMMITTEE MEETING TO BE HELD AT ERPC, KOLKATA ON 18.02.2020 (TUESDAY) AT 11:00 HOURS

PART – A

ITEM NO. A.1: Confirmation of minutes of 87th Protection sub-Committee Meeting held on 21st January, 2020 at ERPC, Kolkata.

The minutes of 87th Protection Sub-Committee meeting held on 21.01.2020 circulated vide letter dated 11.02.2020.

Members may confirm the minutes of 87th PCC meeting.

PART – B

ANALYSIS & DISCUSSION ON GRID INCIDENCES OCCURRED IN JANUARY, 2020

ITEM NO. B.1: Disturbance at DSTPS Generating Station on 14.01.2020 at 13:16 Hrs.

400 kV bus II at Durgapur Steel Thermal Power Station was under shutdown.

At 13:16 Hrs, 400 KV Bus-I of DSTPS (Andal) DVC tripped leading to tripping of 2 running units Unit #1 and #2 (500 MW each) and 400 KV DSTPS-RTPS D/C & 400 KV DSTPS-Jamshedpur D/C.

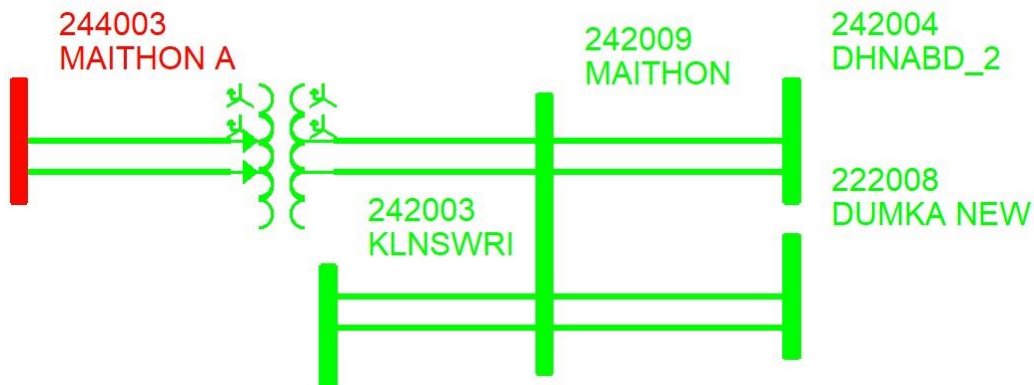
Generation Loss: 700 MW

DVC may explain.

ITEM NO. B.2: Disturbance at 220 kV Maithon(PG) Substation on 25.01.2020 at 15:14 Hrs.

At 15:14 Hrs, LBB operated at 220 kV Bus Coupler bay at Maithon(PG) leading to tripping of 220 kV Bus-1 and 2, 500MVA 400/220kV ICT-1 and 2, 220kV Maithon-Dhanbad Ckt-1 and 2, 220kV Maithon-Kalyaneswari Ckt-1 and 2, 220kV Maithon-Dumka Ckt-1 and 2.

Load loss of around 119 MW in JSEB at Dumka, Pakur and Deoghar area.



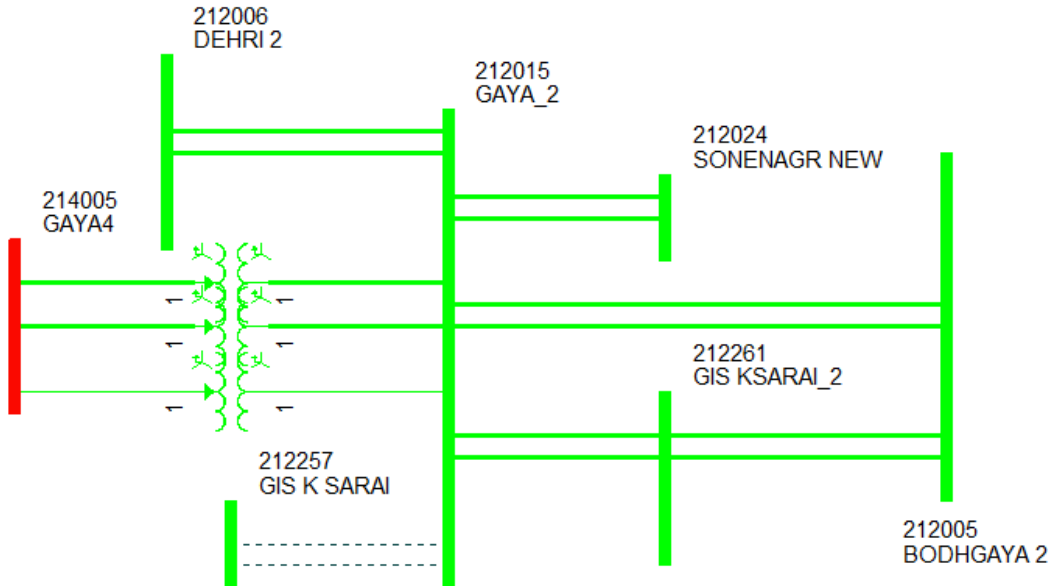
Load Loss: 119 MW

JUSNL and Powergrid may explain.

ITEM NO. B.3: Tripping of 220 KV Gaya Sonenagar D/C on 13.01.2020 at 00:40 Hrs.

At 00:40 Hrs, 220 KV Gaya-Sonenagar D/C tripped due to B-N Fault, leading to load loss of 130 MW in Aurangabad, Sonenagar, Rafiganj, Japla.

Load Loss: 130 MW

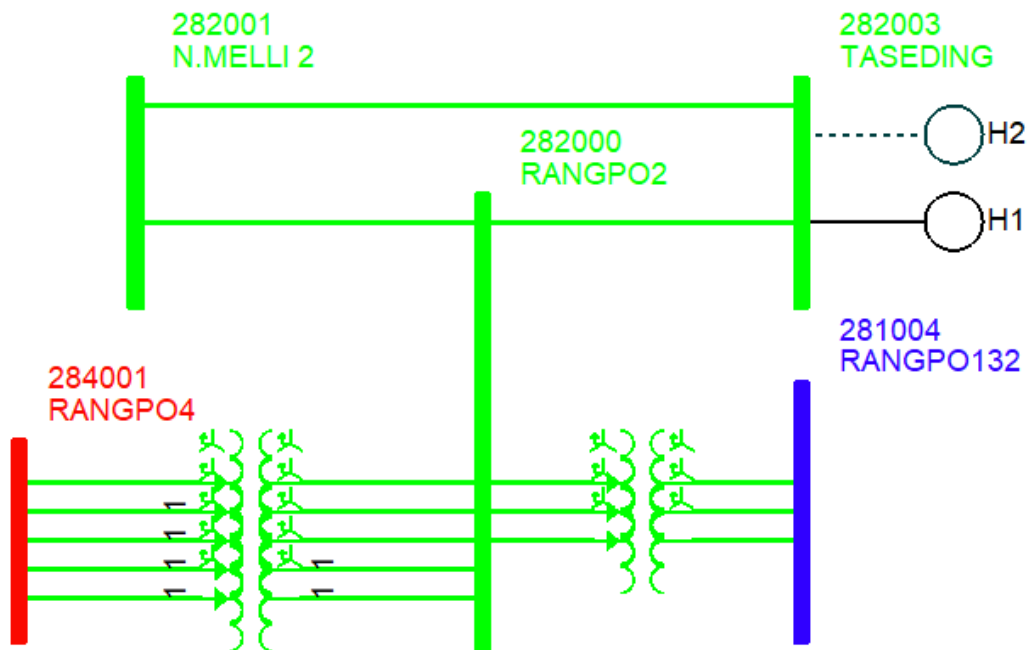


BSPTCL may explain.

ITEM NO. B.4: Disturbance at 220 kV Rangpo Substation on 11.01.2020 at 11:45 Hrs.

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

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



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

Load Loss: 45 MW

Powergrid may explain.

ITEM NO. B.5: Tripping of 400 kV Teesta V – Rangpo D/C on 05.01.2020 at 20:04 Hrs.

Both 400 kV Teesta V – Rangpo D/C tripped from Rangpo end at 20:04 Hrs on Y-N fault. Unit-III was stopped at 20:03 Hrs before the incident. No generation loss occurred as no generation at Teesta V was scheduled.

However, it was observed that SF₆ gas failure of Unit-III GIS circuit breaker alarm was appeared in SOE of Scada at 20:04. On preliminary investigation on the checking of purity of SF₆ gas of Y-Phase detected the presence of SO₂. Both circuits were restored at 22:13hrs & 22:51hrs respectively.

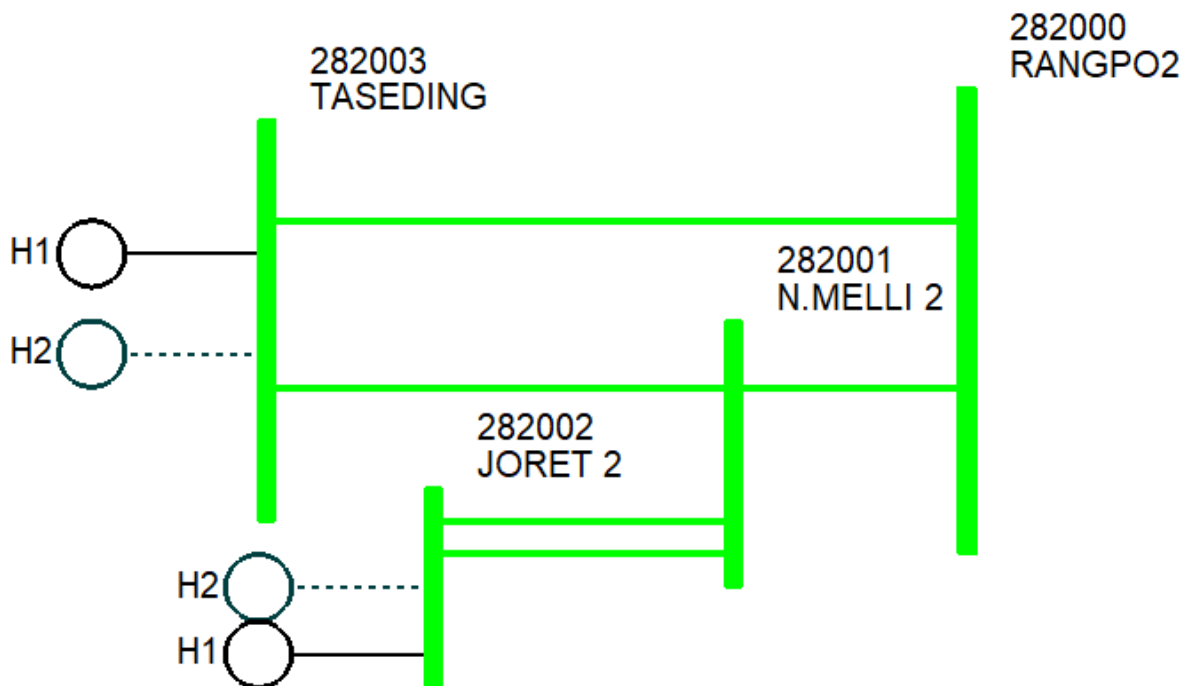
No Load & Generation Loss

NHPC and Powergrid may explain.

ITEM NO. B.6: Total power failure at Tashiding Substation on 16.01.2020 at 15:48 Hrs.

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

No Load & Generation Loss



DANS Energy may explain.

ITEM NO. B.7: Tripping of 400 kV Kishanganj – Darbhanga D/C line on 29.05.2019 at 21:44 Hrs.

400 kV Darbhanga - Kishanganj D/C along with 400 kV bus-2 at Darbhanga tripped at 21:44 hrs. It was intimated by ATL that 400 kV Darbhanga - Kishanganj D/C has tripped due to collapse of Tower No 385 (Loc. 96/0, suspension type) due to high speed wind.

After isolation of these lines, 400 kV Bus 2 was tried to normalize. However, it again tripped. Thereafter, both transmission lines and 400 kV Darbhanga bus-2 were declared under breakdown.

As per PMU data, fault was cleared within 100 ms.

In 80th PCC meeting, KPTL informed that the disturbance occurred due to the tower collapse of 400 kV Darbhanga - Kishanganj D/C line. KPTL explained the sequence of events as follows:

- *Initially there was a L-G fault in R-phase of 400 kV Darbhanga – Kishanganj circuit-II. Subsequently R-phase to ground fault was also occurred in circuit I of 400 kV Darbhanga – Kishanganj line.*
- *Auto-reclosure was successful for both the circuits.*
- *After some time, fault occurred again in R-phase and subsequently in other two phases and both the circuits got tripped. At the same time, the busbar protection operated for Bus-II at Darbhanga substation and tripped all the connecting elements.*
- *It was informed that while attempting to charge the line, SOTF protection operated for the line and subsequently the busbar protection also operated again.*

KPTL informed that the PIR of Circuit breaker was found to be damaged and this caused the triggering of busbar protection in both the occasion.

They added that as per their analysis, due to ferro resonance between PIR & shunt reactors at Darbhanga end, the PIR got damaged.

PCC also opined that the shunt reactors shall be tripped whenever the corresponding line trips so that the overcompensation of the line can be reduced thus the ferro resonance effect can be avoided.

Further, this line was again the tripped-on 22nd June, 2019.

Members may discuss.

ITEM NO. B.8: Training on Safe and Secure Power System Operation.

As a part of Capacity Building initiative for the Power Sector engineers of the Eastern Region, a '5 days Training Programme' on "Ensuring Safe and Secure Power System Operation" is being organized by ERPC in association with Asia Institute of Power Management (AIPM), a training arm of CESC Limited at Kolkata from 02.03.2020 to 06.03.2020 (5 days) under PSDF Project. This will be the 4th Training Module for the year 2019 – 20 and ERPC Secretariat had notified to all the Power Utilities of ER on 27.01.2020 seeking nomination for 1 to 2 engineers of each organisation since the batch size is limited to 35 nos. only. Except a few organisation of ER including Bhutan Authorities, the nominations from most of the organizations are still awaited.

The Constituents who are yet to nominate engineers (1 / 2 nos.) for the 4th Module of AIPM Training commencing from 02.03.2020 to 06.03.2020 may please send the nominations to ERPC Secretariat at mserpc-power@nic.in positively by 21.02.2020.

Members may note and send the nomination.

ITEM NO. B.9: Tripping Incidences in the month of January, 2020.

Other tripping incidences occurred in the month of January, 2020 which needs explanation from constituents of either of the end is given in **Annexure-B9**.

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

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

Members may discuss.

PART- C:: OTHER ITEMS

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

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

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

Members may update the latest status.

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

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

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

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

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

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

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

BSPTCL may update.

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

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

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

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

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

OPTCL:

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

BSPTCL:

Sl No.	Lines	Status
1	220 kV Purnea(PG)-Madhepura	<i>Protection through PLCC is working properly</i>
2	220 kV Biharsharif-BTPS new	<i>BHEL would complete this work</i>
3	220 kV BTPS new- Begusarai	<i>BHEL would complete this work</i>
4	220 kV Biharshariff-Bodhgaya line LILO at Khizersarai	<i>OPGW is present. Protection is done through DPC.</i>
5	132 kV MTPS-Motiari line	<i>OPGW is installed.</i>
6	220KV Madhepura-New Purnea D/C	<i>Protection through PLCC is working properly</i>
7	220KV Muzaffarpur-Hajipur D/C line	<i>Protection through PLCC is working properly</i>
8	220KV Patna-Khagaul-SC	<i>PLCC Panel working properly.</i>
9	220 kV DMTCL(Darbhanga)-Laukhi Circuit-I	<i>PLCC Panel working properly</i>
10	220 kV Tenughat-Biharsharif S/C	<i>PLCC to be commissioned</i>
11	220 kV Gaya-Sonenagar New circuit-I	<i>Communication through OPGW</i>
12	220 kV Pusauli-Dehri S/C	<i>PLCC not working. OPGW commissioned at Dehri end.</i>
13	220 kV Begusarai-Purnea(PG) D/C	<i>PLCC working properly</i>
14	220 kV DMTCL-Motipur ckt-II	<i>PLCC to be commissioned.</i>
15	220 kV Dehri- Gaya D/C	<i>PLCC working properly</i>
16	220 kV Kishanganj(PG)-Kishanganj(B)-II	<i>PLCC working properly</i>

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

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

Members may update.

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

List of important transmission lines in ER which tripped in January-2020										Annexure-B8
S.NO	LINE NAME	TRIP DATE	TRIP TIME	Relay Indication LOCAL END	Relay Indication REMOTE END	Reason	Fault Clearance time in msec	DR/EL RECEIVED FROM LOCAL END	DR/EL RECEIVED FROM REMOTE END	Primary observation/ Remarks
1	220KV-PUSAULI-SAHUPURI-1	01-01-2020	16:35	R-Y-B, 127.2 KM, F/C=2 KA IN EACH PHASE	No tripping	R-Y-B Fault	2000 msec	NO	NO	High Fault Clearence Time
2	400KV-BIHARSARIFF(PG)-VARANASI-2	02-01-2020	11:22		DT received at Varanasi.	DT received at Varanasi.	--	NO	NO	No fault observed in PMU
3	400KV-JAMSHEDPUR-ANDAL-2	08-01-2020	08:36	DT received		DT received at Jamshedpur	--	YES	NO	No fault observed in PMU
4	400KV-MAITHON-KHSTPP-1	11-01-2020	18:41		DT received	DT received at Kahalgaon	--	NO	NO	No fault observed in PMU
5	220KV-DARBHANGA (DMTCL)-MOTIPUR-2	13-01-2020	21:14	DT received at Motipur		DT received at Motipur	--	NO	NO	--
6	220KV-BOLANGIR(PG)-SADEIPALI-1	16-01-2020	13:34	MASTER TRIP RELAY		MASTER TRIP RELAY	--	NO	NO	No fault observed in PMU
7	220KV-DARBHANGA (DMTCL)-MOTIPUR-2	17-01-2020	08:40	DT RECEIVED		DT RECEIVED AT DMTCL	--	NO	NO	No fault observed in PMU
8	400KV-KODERMA-BIHARSARIFF(PG)-2	17-01-2020	12:22	21.8 km,R-N,ZO	R-N,98.689 km,z-1, 5.495 KA, A/R unsuccessful	R-N Fault	1000 msec	NO	YES	High Fault Clearence Time
9	400KV-MEERAMUNDALI-ANGUL-2	21-01-2020	08:25	Tripped from Meeramundali end only		Tripped from meeramundali end only	--	YES	NO	No fault observed in PMU

S.NO	LINE NAME	TRIP DATE	TRIP TIME	Relay Indication LOCAL END	Relay Indication REMOTE END	Reason	Fault Clearance time in msec	DR/EL RECEIVED FROM LOCAL END	DR/EL RECEIVED FROM REMOTE END	Primary observation/ Remarks
10	220KV-PATNA-SIPARA-2	24-01-2020	11:50	False tripping			--	NO	NO	No fault observed in PMU
11	220KV-PATNA-SIPARA-1	24-01-2020	12:34	Mal operation during maintenance		Mal operation during maintenance	--	NO	NO	No fault observed in PMU
12	220KV-BUDHIPADAR-RAIGARH-1	26-01-2020	01:58		O/V at Raigarh	O/V at Raigarh	--	NO	NO	No fault observed in PMU
13	220KV-SILIGURI-KISHANGANJ(PG)-1	12-01-2020	06:39	A/R successful, Y-N, 74.87 km, z1, 2.223 KA	Y-N, 4.34 ka, 29.7 km	Y-N Fault	< 100 msec	YES	YES	No A/R operation from Kishanganj
14	220KV-GAYA-SONENAGAR-2	13-01-2020	00:40	A/R successful at Gaya	B-N, 2.492KA, 22Km	B-N Fault	< 100 msec	YES	YES	No A/R operation from Sonenagar
15	220KV-GAYA-SONENAGAR-1	13-01-2020	00:40	A/R successful at Gaya			< 100 msec	YES	YES	No A/R operation from Sonenagar
16	220KV-BOLANGIR(PG)-SADEIPALI-1	13-01-2020	06:45		Tripped From Sadeipalli end only	Tripped From Sadeipalli end only	500 msec	NO	NO	No A/R operation, B-N fault as per PMU
17	220KV-CHANDIL-STPS(WBSEB)-1	14-01-2020	05:32	R_N, 54 KM, 5.432 kA	A/R Successful, R_N, 83 KM, 1.9 kA	R-N Fault	< 100 msec	YES	NO	No A/R operation
18	400KV-ALIPURDUAR(PG)-BINAGURI-3	16-01-2020	15:52	TRIPPED ON ZONE 3 SENSING CKT 4'S FAULT AT BINAGURI			100 msec	NO	NO	No A/R operation, B-N fault as per PMU
19	220KV-CHANDIL-STPS(WBSEB)-1	20-01-2020	21:22		Y_N, 5.19 kA, 20.30 KM	Y-N Fault	< 100 msec	YES	NO	No A/R operation
20	400KV-RANGPO-TEESTA-V-2	29-01-2020	17:22	Y-N, 14 KM, 2.5 KA		Y-N Fault	< 100 msec	NO	NO	No A/R operation

Sl No.	Name of the incidence	PCC Recommendation	Latest status
87th PCC Meeting			
1.	Disturbance at CTPS-A 220 kV/132 kV substation on 28.12.2019 at 05:26 Hrs.	<p>PCC advised DVC to take following corrective actions: -</p> <ul style="list-style-type: none"> • Retrofitting of 220 kV CTPS-A bus bar protection is to be done at the earliest • 220/132kV ATR protection settings to be reviewed • Zone settings of 220 kV CTPS-A-CTPS-B Tie Ckt-1 and 2 to be reviewed. • Relay settings at Unit #8 of CTPS-B plant to be reviewed. 	
2.	Tripping of 220 KV Darbhanga (DMTCL) – Motipur I on 14.12.2019 at 02:50 Hrs.	<p>PCC advised BSPTCL to take following corrective actions: -</p> <ul style="list-style-type: none"> • Digital signals configuration of relays at Motipur end need to be checked. • Over voltage settings of relay at Motipur end need to be reviewed. 	
3.	Tripping of 132 kV Dumka – Lalmatia D/C on 09.12.2019 at 11:35 hrs	<p>PCC advised JUSNL to collect DRs and discuss above issue with the SLDC and send the details to ERPC/ERLDC.</p> <p>PCC advised NTPC to share the DR at Lalmatia end.</p>	
4.	CT failure of 220 kV Gokarna – Sadaipur – 2 at Gokarna on 06.12.2019 at 10:58 Hrs	PCC advised WBSETCL to review the 400/220kV ICT protection settings and carry out the protection coordination between 220kV and 400kV system to avoid uncoordinated tripping.	
5.	Disturbance at Liluah substation on 27.11.2019 at 02:36 Hrs	<p>PCC advised WBSETCL to reduce their Zone-2 time setting to 250 ms for the time coordination between line tripping and CESC islanding.</p> <p>PCC also advised CESC to study whether they can increase the SPS time setting from 300 ms for better safety margin between time settings of WBSETCL protection system and CESC islanding scheme.</p>	
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7.	Total power failure at 220 kV Darbhanga (BSPTCL) S/s on 16.08.2019 at 22:23 Hrs.	<p>PCC observed that DR configuration at DMTCL end is not in order. PCC advised DMTCL to configure the DR settings as per the standard.</p> <p>In 87th PCC meeting, DMTCL informed that DR would be configured by end of February, 2020.</p>	
81st PCC Meeting			
8.	Disturbance at 400 kV Dikchu S/s on 30.06.2019 at 09:55 Hrs.	<p>The time setting for the DEF relay at Jorethang end was 500 msec. PCC advised Jorethang to review the timer setting of DEF protection at Jorethang end.</p> <p>PCC advised Chuzachen to review the zone settings for 132 kV Chuzachen-Rangpo line.</p> <p>PCC advised TPTL to do line patrolling for 400 kV Rangpo-Dikchu line to find out the cause of such high resistive fault in the line.</p> <p>In 87th PCC meeting, Chuzachen informed that they have asked for information related to Rangpo end from Powergrid and Sikkim.</p> <p>Further, Chuzachen informed that they would send the zone setting file to ERPC/ERLDC at the earliest.</p>	
9.	Disturbance at 220 kV Budhipadar(OPTCL) S/s on 12.06.2019 at 00:37 Hrs.	<p>PCC advised OPTCL to properly configure the DRs for 220 kV Budhipadar – Korba D/C & 220 kV Budhipadar-Raigarh circuit at Budhipadar end and for 220 kV Budhipadar – Lapanga - II at Lapanga end as per the DR standard finalised in 79th PCC Meeting.</p> <p>PCC also advised OPTCL to check the time synchronization.</p> <p>In 3rd TeST meeting, OPTCL informed that they had replaced the old relay at Korba.</p> <p>In 87th PCC meeting, OPTCL informed that DR for Budhipadar – Korba Circuit-I has been configured.</p>	